



YAMAHA  
**ROBOT**  
CATALOG 2020/2021

- YA
- LCM100
- Robonity
- TRANSERVO
- FLIP-X
- PHASER
- XY-X
- YK-X
- YP-X
- CLEAN
- CONTROLLER

**ENGLISH**

# FULL LINEUP

## ARTICULATED ROBOTS

### YA Series

Features P. 8  
Specifications P.113

#### 6-axis

YA-RJ  
YA-R3F  
YA-R5F  
YA-R5LF  
YA-R6F



▶ P.115

#### 7-axis

YA-U5F  
YA-U10F  
YA-U20F



▶ P.120

Controller for use with the  
YA series  
YAC100



▶ P.123

## LINEAR CONVEYOR MODULES

### LCM100

Features P.10  
Specifications P.125

LCM100-4M/3M/2MT  
(Linear module)



▶ P.126

LCM100-4B/3B  
(Belt module)



▶ P.126

Controller LCC140 for Linear  
module



▶ P.132

## CLOSED LOOP STEPPING MOTOR SINGLE-AXIS ROBOTS

### TRANSERVO Series

Features P.20  
Specifications P.151

SS Type (Slider type)  
Straight model/Space-saving model

SS05H-S SS05H-R (L)  
SS05-S SS05-R (L)  
SS04-S SS04-R (L)



▶ P.154

SG Type (Slider type)

SG07



▶ P.160

SR Type (Rod type)  
Straight model/Space-saving model

SR05-S SR05-R (L)  
SR04-S SR04-R (L)  
SR03-S SR03-R (L)



▶ P.161

SR Type (Rod type with support guide)  
Straight model/Space-saving model

SRD05-S SRD05-U  
SRD04-S SRD04-U  
SRD03-S SRD03-U



▶ P.164

STH Type  
(Slide table type)  
Straight model/  
Space-saving model

STH04-S STH04-R (L)  
STH06-S STH06-R (L)



▶ P.174

RF Type  
(Rotary type)  
Standard model/  
High rigidity model

RF02  
RF03  
RF04



▶ P.178

BD Type  
(Belt type)  
Straight model

BD04  
BD05  
BD07



▶ P.190

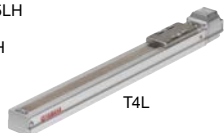
## SINGLE-AXIS ROBOTS

### FLIP-X Series

Features P.26  
Specifications P.193

T type Frame-less structure model

T4L/T4LH  
T5L/T5LH  
T6L  
T9/T9H



▶ P.198

F type / GF type  
High rigidity frame model

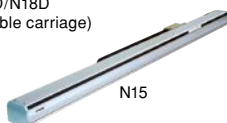
F8/F8L/F8LH/F10/F10H/F14/F14H/  
F17/F17L/F20/F20N  
GF14XL/GF17XL



▶ P.205

N type Nut rotation type model

N15/N18  
N15D/N18D  
(Double carriage)



▶ P.222

R type Rotation axis type model

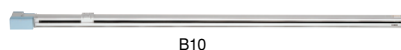
R5  
R10  
R20



▶ P.236

B type Timing belt drive model

B10  
B14/B14H



B10

▶ P.230

## MOTOR-LESS SINGLE AXIS ACTUATOR

### Robonity

Features P.16  
Specifications P.133

Basic model [LBAS]

LBAS04  
LBAS05  
LBAS08



Advanced model [LGXS]

LGXS05  
LGXS05L  
LGXS07  
LGXS10  
LGXS12  
LGXS16  
LGXS20

## LINEAR MOTOR SINGLE-AXIS ROBOTS

### PHASER Series

Features P.36  
Specifications P.239

MF Type Long stroke & high-power using flat motor with core

■ Double Carriages Standard on all Modules

MF7/7D  
MF15/15D  
MF20/20D  
MF30/30D  
MF75/75D



▶ P.242

## CARTESIAN ROBOTS

### XY-X Series

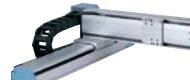
Features P.40  
Specifications P.259

PXYx



▶ P.270

FXYx



▶ P.276

FXYBx



▶ P.282

SXYx



▶ P.379

SXYBx



▶ P.381

MXYx



▶ P.383

NXY



▶ P.314

NXY-W



▶ P.318

HXYx



▶ P.385

HXYLx



▶ P.352





## SCARA ROBOTS

### YK-TW Series / YK-XG Series / YK-XE Series YK-XGS / YK-XGP

Features P.44  
Specifications P.389

#### Orbit type [YK-TW]

Arm length: 350mm/500mm  
Maximum payload: 5kg

YK500TW



▶P.394

#### Low cost high performance model [YK-XE]

Arm length: 400mm to 710mm  
Maximum payload: 4kg to 10kg

YK400XE-4 ▶P.405  
YK610XE-10 ▶P.411  
YK710XE-10 ▶P.416



YK400XE-4

#### Extra small type [YK-XG]

Arm length: 120mm to 220mm  
Maximum payload: 1kg

YK120XG  
YK150XG  
YK180XG  
YK180X  
YK220X



YK180XG

▶P.396

#### Small type [YK-XG]

Arm length: 250mm to 400mm  
Maximum payload: 5kg

YK250XG  
YK350XG  
YK400XG



YK400XG

▶P.401

#### Medium type [YK-XG]

Arm length: 500mm to 600mm  
Maximum payload: 5kg to 20kg

YK500XGL/XG  
YK600XGL/XG/XGH



YK500XGL

▶P.408

#### Large type [YK-XG/YK-X]

Arm length: 700mm to 1200mm  
Maximum payload: 10kg to 50kg

YK700XG/XGL  
YK800XG  
YK900XG  
YK1000XG  
YK1200X



YK1200X

▶P.417

#### Wall mount / inverse type [YK-XGS]

Arm length: 300mm to 1000mm  
Maximum payload: 20kg



YK500XGS

▶P.423

#### Dust-proof & drip-proof type [YK-XGP]

Arm length: 250mm to 1000mm  
Maximum payload: 20kg



YK250XGP

▶P.433

## PICK & PLACE ROBOTS

### YP-X Series

Features P.52  
Specifications P.451

#### 2 axes type

YP220BX  
YP320X



YP220BX

▶P.453

#### 3 axes type

YP220BXR  
YP320XR  
YP330X



YP220BXR

▶P.455

#### 4 axes type

YP340X



YP340X

▶P.458

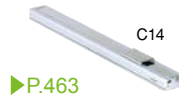
## CLEAN ROBOTS

### CLEAN Type

Features P.54  
Specifications P.459

#### Single-axis robots

SSC04/05/05H  
C4L/C4LH/  
C5L/C5LH/C6L  
C8/C8L/C8LH  
C10/C14/C14H  
C17/C17L/C20

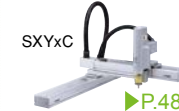


C14

▶P.463

#### Cartesian robots

SXYxC  
SXYxC (ZSC12)  
SXYxC (ZSC6)  
SXYxC (ZRSC12)  
SXYxC (ZRSC6)



SXYxC

▶P.484

#### SCARA robots

YX180XC/ YK700XC/  
YK220XC/ YK800XC/  
YK250XGC YK1000XC  
YK350XGC/  
YK400XGC/  
YK500XGLC  
YK500XC/  
YK600XGLC/  
YK600XC/



YK250XGC

▶P.486

## ROBOTS CONTROLLER

### Controllers

Features P.58  
Specifications P.503

#### Single axis Robot positioner



TS-S2  
TS-SH

TS-X  
TS-P

▶P.514

#### Single axis Robot driver

<pulse train input only>



TS-SD

RDV-X  
RDV-P

▶P.524

▶P.528

#### Single axis Robot controller

<small servo 24V · 30W>



ERCD

▶P.534

#### Single axis Robot controller



SR1-X  
SR1-P

▶P.540

#### 1 to 2 axis

#### Robot controller



RCX221

RCX222

RCX320

▶P.558

#### 1 to 4 axes

#### Robot controller



RCX340

▶P.566

## ROBOT VISION Robot with image processing functions

### IVY2 System

Features P.78

A robot-integrated vision system

RCX340 + iVY2



Tracking board

iVY2 unit

▶P.596

## ELECTRIC GRIPPER

### YRG Series

Features P.90  
Specifications P.602



YRG-4225S

YRG-2810W

YRG-2840FS

YRG-2820T

▶P.602

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XX-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION

# YAMAHA ROBOT

## History and approach

### 40 years of proven reliability.

YAMAHA's robot development started as it was introduced in our motorcycle production line more than 30 years ago.

Since then, YAMAHA's industrial robots have supported production equipment in a wide variety of industries, such as assembly of electronic products, transfer of in-vehicle components, and manufacture of large-scale LCD panels.

Over the years YAMAHA has striven to develop and improve the market and this is a testament to YAMAHA's reliability.



### Technical development based on the originally developed technologies and focusing on the needs of the market

"Motor control technology" absolutely necessary for precise and high-speed operation "Controller development technology" is based on the highest evaluation standards and Signal processing technology allowing stable operation even under extreme environmental conditions.

Rigidity, durability, and operability are features of YAMAHA's products base on "Coretechnologies"

\*Control boards, linear motors, and linear scales (position detectors), etc.



### Evaluation system provides high reliability

YAMAHA continues to evaluate technology to assure product reliability.

In the product development phase, the evaluation test at "anechoic chamber"\* (YAMAHA's equipment) was developed to ensure the high reliability and quality.

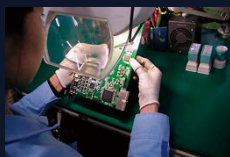
\*Anechoic chamber: This equipment is intended to synthetically develop the EMC (Electro-Magnetic Compatibility) technologies for YAMAHA Group products and to share the developed technologies. This equipment can evaluate the compliance with each country's regulation in conformity with the international standards.



### YAMAHA quality ensuring safety

Manufacturing, sales, and technology integrated system is utilized at its maximum level to establish a system that consistently performs a series of processes: inspection → manufacture → assembly → inspection → shipping. This can provide the customers with high quality, low price, and short delivery time.

Key components are manufactured through in-house processing and machining. YAMAHA as a robot manufacturer builds the components to the highest quality level. Furthermore, the quality control based on the severe standards achieves the craftsmanship with high quality.



# ALL YOU

Only Yamaha can provide a  
We provide the best solution

#### Orbit type robots YK-TW

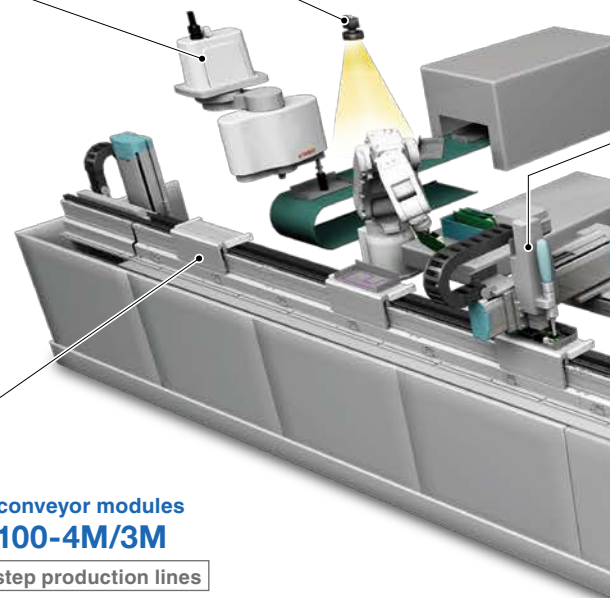
High-speed transfer processing

Ideal for narrow or limited space

#### Integrated robot vision iVY2 SYSTEM

Verify workpiece positioning

Unified control with only the robot program



#### Linear conveyor modules LCM100-4M/3M

Multi-step production lines

Shorten transport time and save space

#### Belt modules

#### LCM100-4B/3B

Slider return

Reduce facility cost

NEW

New product

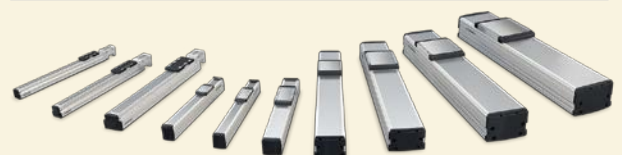
Motor-less Single Axis Actuator

Robonity

P.133



Motor-less



Wide selection of payload and speed requirements

Choice of ball screw leads

Wide selection stroke range

Choice of stroke range from 50 mm up to 1450 mm

Advanced model LGXS only

# ASSEMBLE

unified lineup from miniature actuators to articulated robots.  
for a wide range of automation.

## Cartesian robots (2-axis to 6-axis) XY-X Series

Sealing work

High-rigidity guide ensures long life

## Single-axis AC servo motor robot FLIP-X Series

Board inspection work

A wide range of general-purpose robots

## Linear motor single-axis robots PHASER Series

For long-distance or high-mass transport

## Closed loop stepping motor single-axis robots TRANSERVO Series

Low-cost positioning equipment

## Scara robots YK-XG Series

Pick and place work

Completely beltless design for high rigidity and high precision

## Articulated robots (6-axis · 7-axis) YA Series

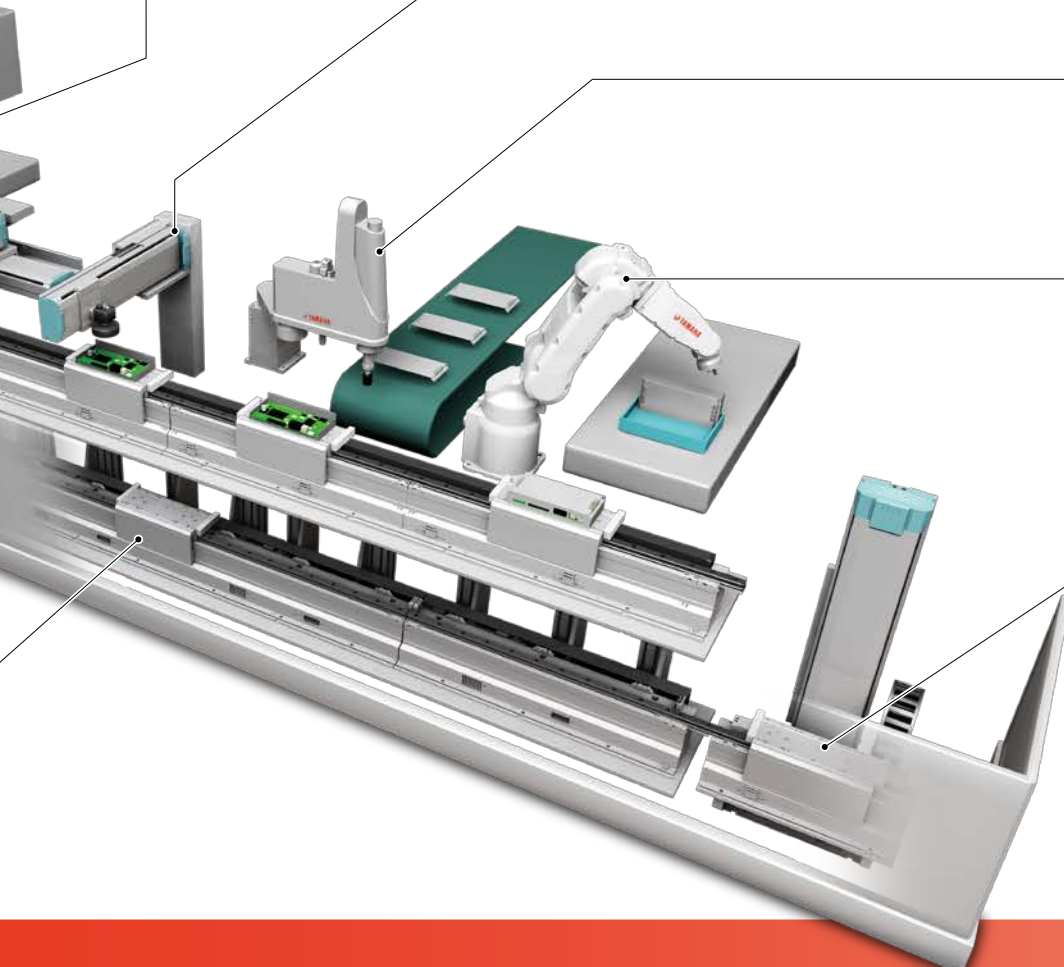
Variable-orientation workpiece assembly work

Allows more complex work

## Circulation module LCM100-2MT

"Insert" and "eject" sliders

Reduce the number of steps for design and execution



### SCARA ROBOTS

## YK400XE-4

P.405

High performance Economy Model High reliability

Standard cycle time **0.41 sec**

Note. For details about the operating conditions, check the basic specifications.


Maximum payload **4 kg**



### 2-axis comprehensive controller

## RCX320

P.548

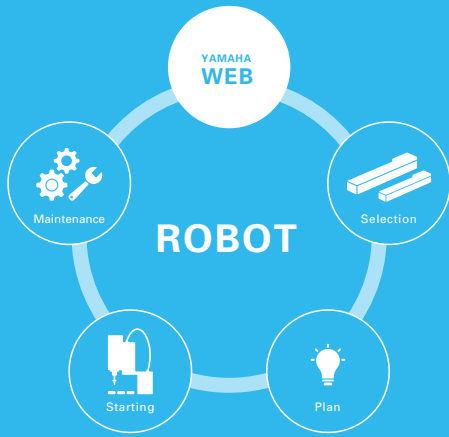
 Real-Time output function for preventive maintenance information.

Easy and user-friendly operation system

More enhanced expandability

Improvement of basic performance





# YAMAHA ROBOT WEB MEMBER SITE

YAMAHA Robot Member Site provides information you can utilize in the model selection or design phase when introducing industrial robots. Additionally, the contents necessary for the start-up or maintenance work are also prepared.



## Before

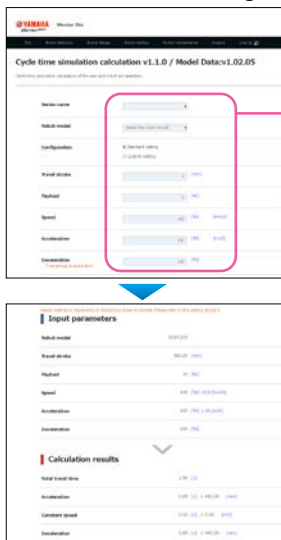


### Selection

### Plan

#### Cycle time simulation calculation

Use this when selecting models or calculating cycle time.



**Input simple parameters**  
Input robot model, operating stroke, payload mass, and acceleration

**Automatic calculation**

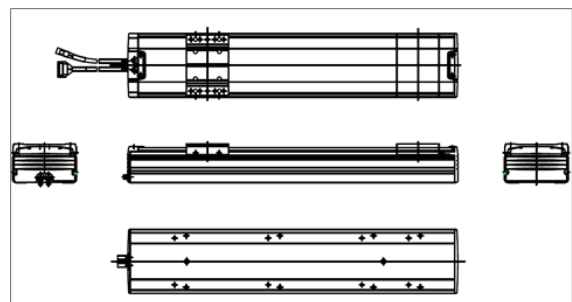
- Total movement time
- Acceleration/deceleration time
- Acceleration/deceleration distance
- Constant speed time
- Constant speed distance

#### 2D/3D CAD data download

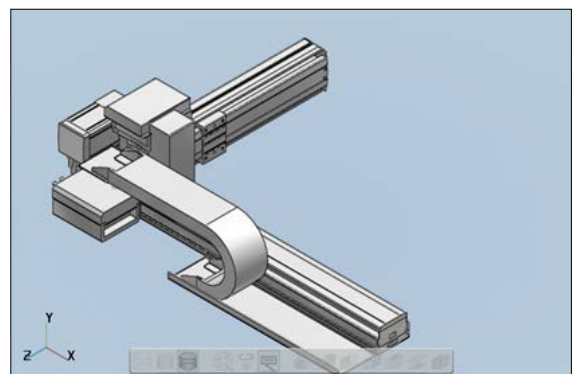
Use this for production line design and device design, and to check the layout and operating range.

You can download 2D/3D CAD data for Yamaha robots and controllers.

##### Download 2D CAD data



##### Download 3D CAD data

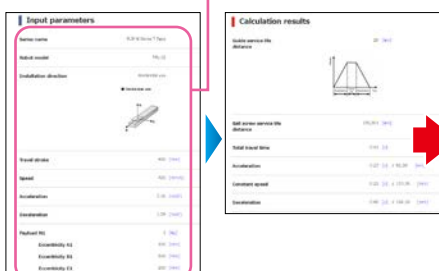


#### Robot life calculation

Use this when selecting models or calculating payload shape.

**Input simple parameters**

Enter the robot model, installation direction, operating stroke, speed setting, payload mass, eccentricity, etc.



**Automatic calculation**

- Guide lifetime distance
- Ball screw movement distance
- Total movement time
- Acceleration/deceleration time
- Constant speed time
- Constant speed distance

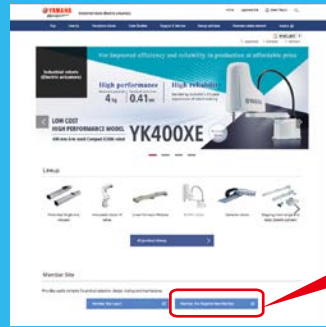


# Accepting registrations from website

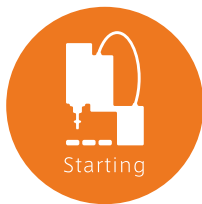
Useful contents from model selections to design, start-up, and maintenance work are provided.

To register as a new member

Go to New Registration screen from the top page  
<https://global.yamaha-motor.com/business/robot/>



Go to New Registration screen from here



Starting

After



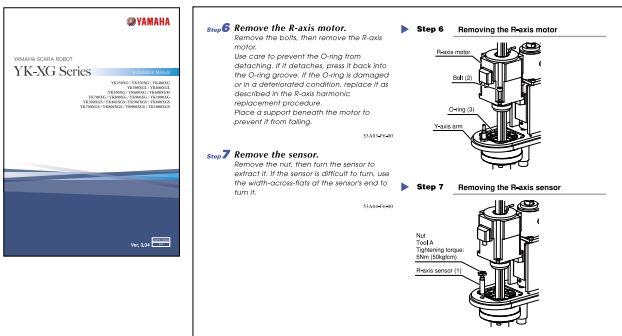
Maintenance

Maintenance

## Manual download

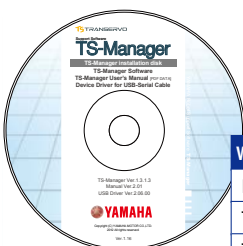
User's Manual Installation Manual Maintenance Manual

Since this describes not only operating methods and setting methods but also robot placement and examples of external wiring for the controller, it will be helpful for pre-setup work. Since component replacement methods are also described, this also is useful for maintenance in conjunction with the parts list.



## TS-Manager

You have peace of mind even if a problem occurs. Even if the official version is not at hand, you can back up data or transfer data.



What you can do using TS-Manager (free version)

- Initialize robot data
- Transfer data from the controller to the PC
- Transfer data from the PC to the controller
- Obtain alarm history

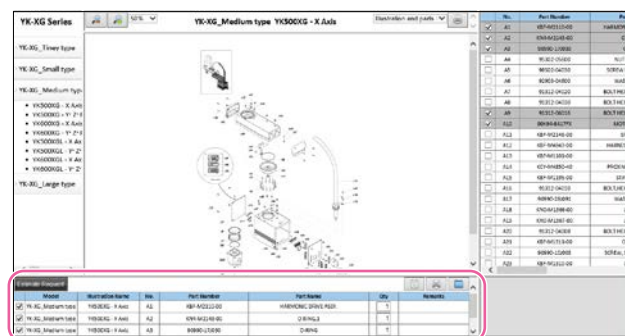
## Parts List and Exploded View

You can view parts lists, and request quotations.

Part lists for Yamaha robots are available. For some parts, this shows associated parts for which replacement is required or recommended; this is helpful for maintenance activity.

Parts are shown in detail

Very convenient for repair work



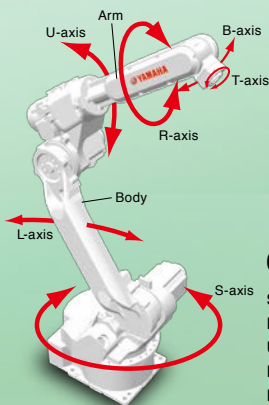
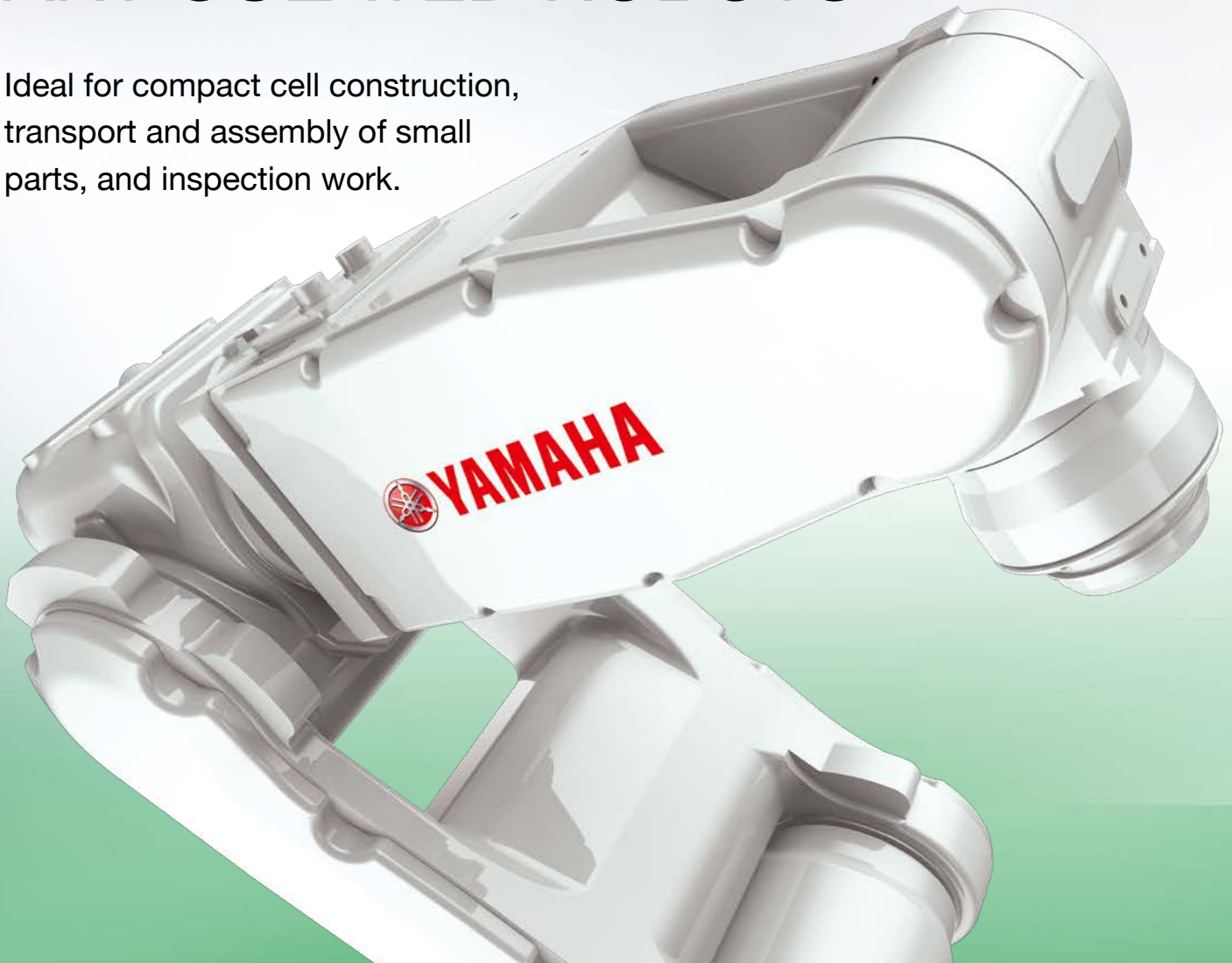
You can also request a price estimate for the selected part.

# YA Series

Product Lineup

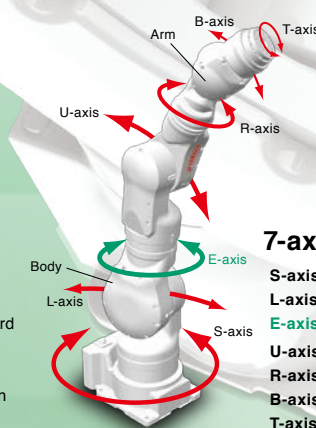
## ARTICULATED ROBOTS

Ideal for compact cell construction, transport and assembly of small parts, and inspection work.



### 6-axis robots

- S-axis:** Rotate the body horizontally
- L-axis:** Move the body forward/backward
- U-axis:** Move the arm up/down
- R-axis:** Rotate the arm
- B-axis:** Move the tip of the arm up/down
- T-axis:** Rotate the tip of the arm



### 7-axis robots

- S-axis:** Rotate the body horizontally
- L-axis:** Move the body forward/backward
- E-axis:** Twist the arm
- U-axis:** Move the arm up/down
- R-axis:** Rotate the arm
- B-axis:** Move the tip of the arm up/down
- T-axis:** Rotate the tip of the arm

# Reduce personnel, increase productivity

## 6-axis



## 7-axis



Type	Model	Application	Number of axes	Payload (kg)	Vertical reach (mm)	Horizontal reach (mm)	Page
6-axis	YA-RJ	Handling (general)	6-axis	1 kg (max. 2 kg <sup>Note</sup> )	909	545	P.115
	YA-R3F			3	804	532	P.116
	YA-R5F			5	1193	706	P.117
	YA-R5LF			5	1560	895	P.118
	YA-R6F			6	2486	1422	P.119
7-axis	YA-U5F	Assembly / Placement	7-axis	5	1007	559	P.120
	YA-U10F			10	1203	720	P.121
	YA-U20F			20	1498	910	P.122

Note. When a load is more than 1 kg, the motion range will be smaller. Use the robot within the recommended motion range.

### POINT

#### High-speed operation reduces cycle time

Thanks to high-speed, low-inertia AC servo motors, an arm designed for light weight, and the latest control technology, these robots achieve an operating speed that is best in their class. From supply, assembly, inspection, and packing to palletization, all applications can enjoy shorter cycle time and improved productivity.

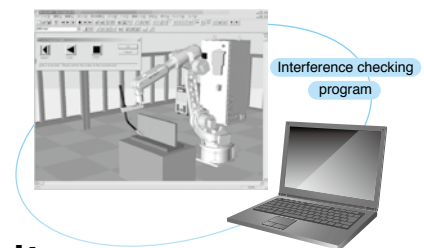
#### Workpieces with a high wrist load are also supported

With a wrist section that has the highest allowable moment of inertia in its class, these robots can support jobs involving a high wrist load, or simultaneous handling of multiple workpieces.

#### Robot simulator dramatically reduces startup time

We provide software that lets you use 3D CAD data to construct a production facility in virtual space in a personal computer, and easily perform engineering tasks such as creating programs and checking for robot interference. Teaching can be performed even before the actual production line is completed, dramatically reducing line startup time.

Note. Optional support



## Free arm movement further boosts productivity.

#### 7-axis Reduced space allows sophisticated system layouts

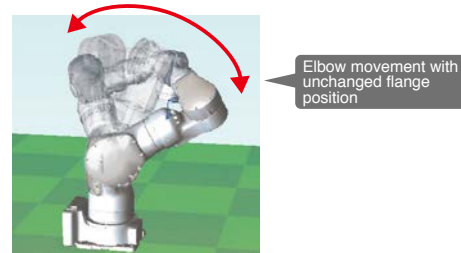
Since these robots can be installed close to workpieces or other equipment, you can reduce the space required for your production facility. By locating multiple robots close to each other, processing can be integrated and shortened.

#### 7-axis Access the workpiece from the opposite side or from below

Rotation of the seventh axis enables flexible movement with the same freedom of motion as a human arm, allowing the workpiece to be accessed from the opposite side or from below. This allows the robot to enter narrow locations that a person could not fit in, or to approach the workpiece in a way that avoids obstructions, giving you more freedom to design the layout for shorter cycle time and reduced space.

#### 7-axis "Elbow movement" unique to 7-axis models allows optimal posture to be maintained

The 7-axis U-type robots allow "elbow movement," changing only the elbow angle without affecting the position or posture of the tool. This permits operation to avoid nearby obstructions.



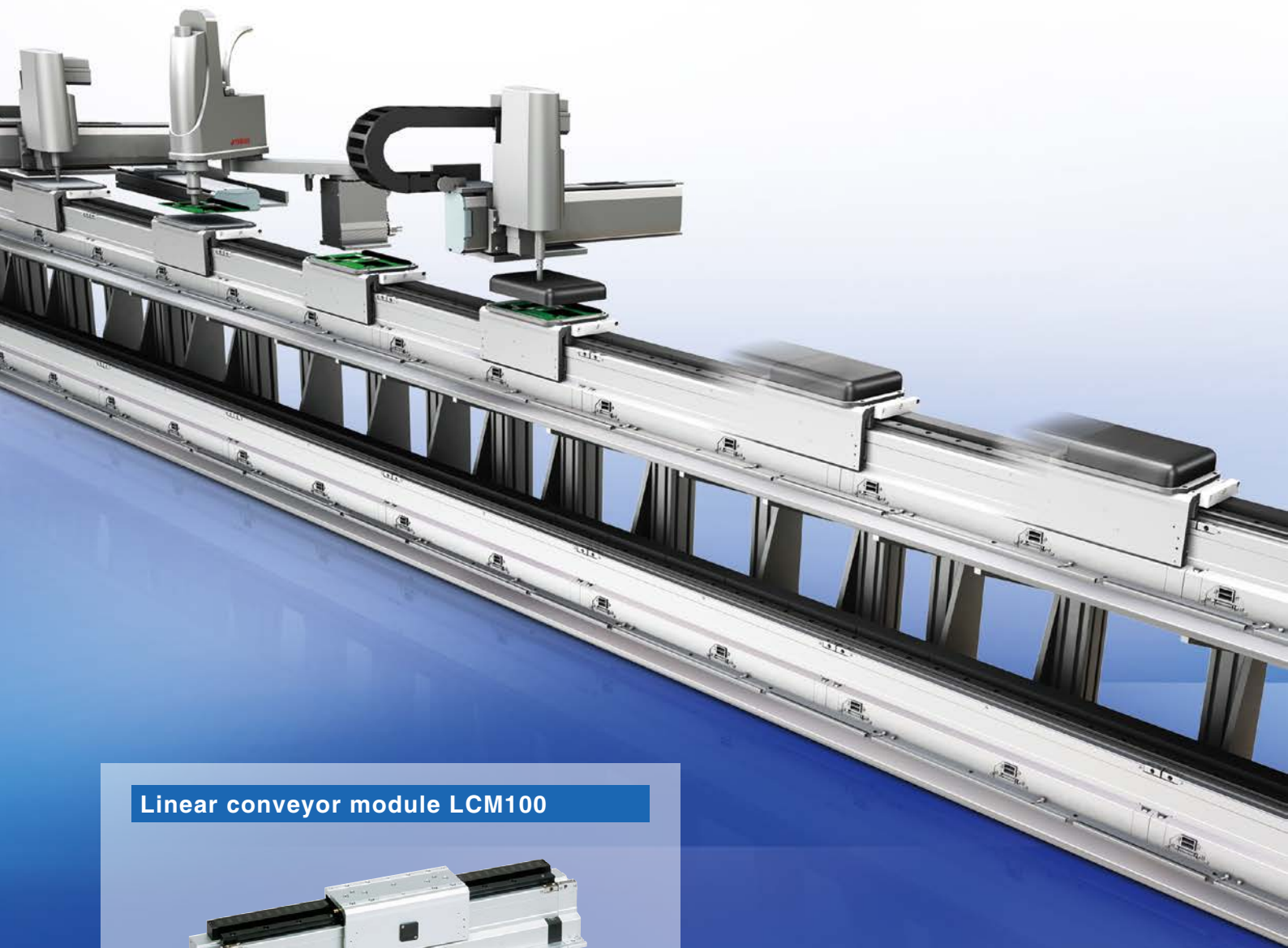
LCM100

Product Lineup

# LINEAR CONVEYOR MODULES

From "flow" to "move"

Efficient transfer processes for increased profitability



Linear conveyor module LCM100

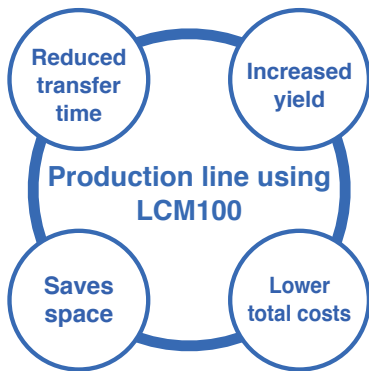
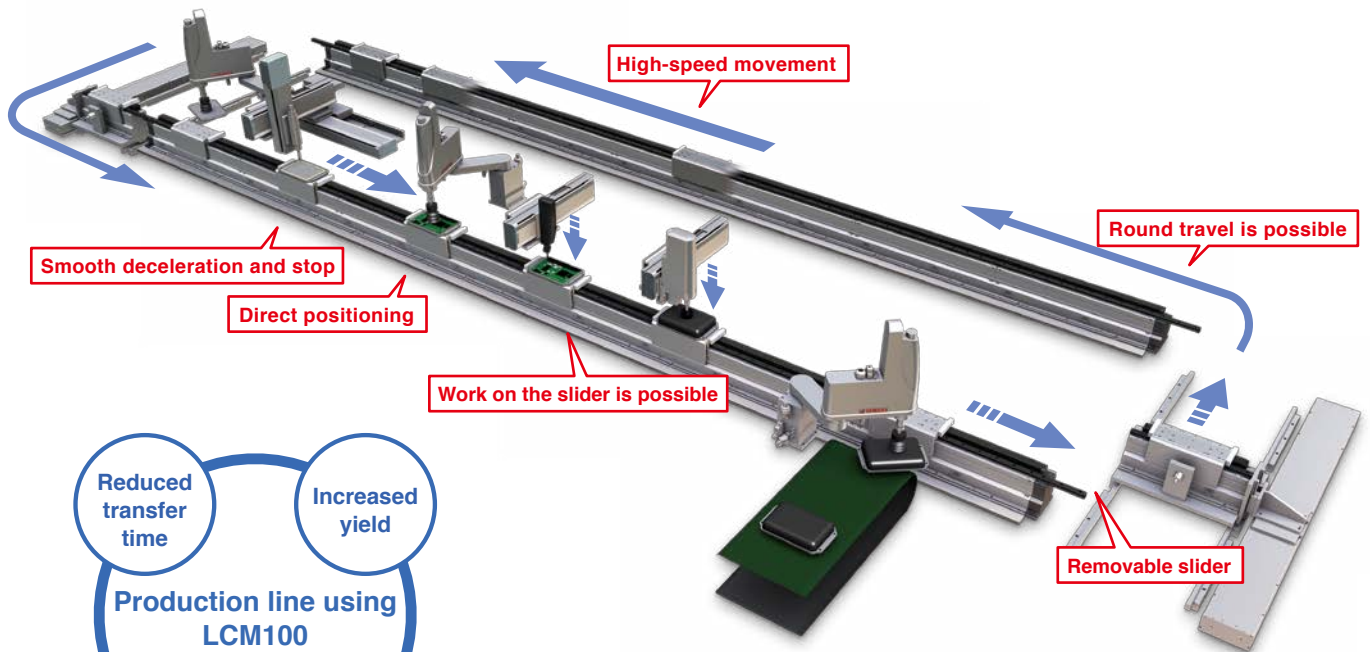


Note. As the figure shown above illustrates CG images, they are different from the actual product.



# Linear Conveyor Module LCM100

## Constructing high-speed throughput lines.



### High-speed and high-accuracy transfer

- Max. speed: **3000mm/sec**
- Max. acceleration: **2G**
- Max. load mass: **15kg**
- Repeated positioning accuracy: **±0.015mm (standalone slider)** <sup>Note</sup>

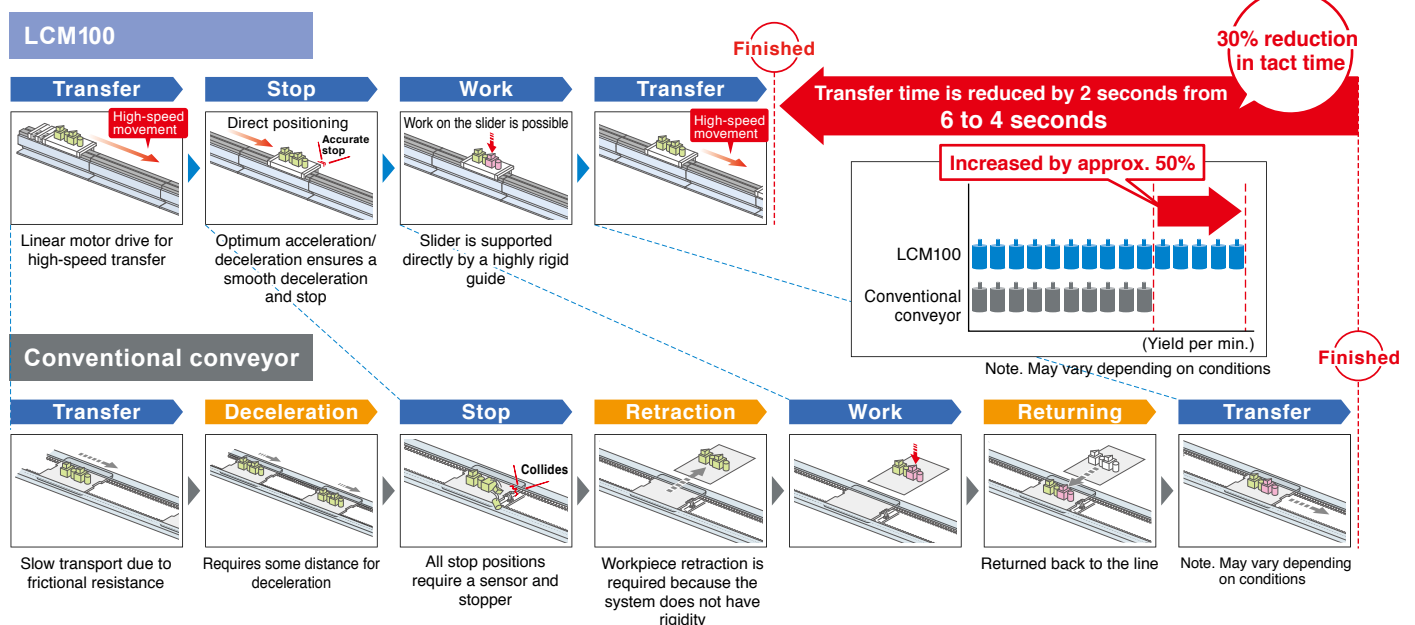
Note. This is the repeated positioning accuracy for a standalone slider when positioning from one direction (single-side approach).

Note. The positioning accuracy for the single-side approach after correction by RFID is 0.1 mm including the mutual difference between sliders.

### POINT

## Increase productivity by shortening transport time

- Comparison between LCM100 and a conventional conveyor

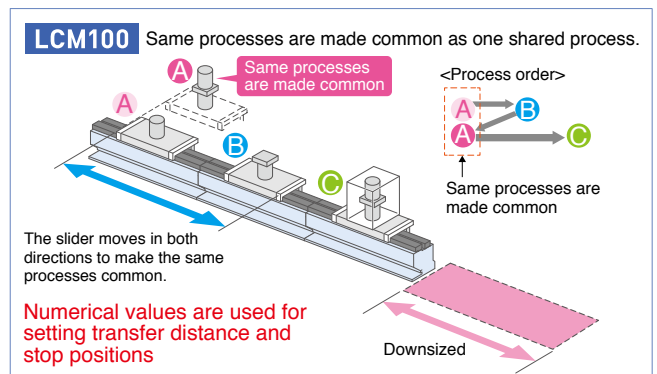
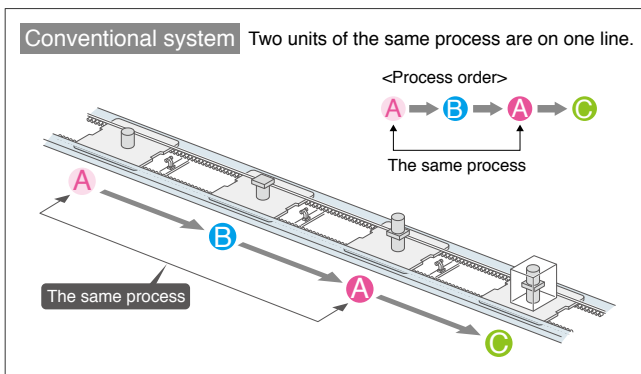


# The length of the transfer line can be adjusted freely by adding modules.

**POINT**

## Save equipment space.

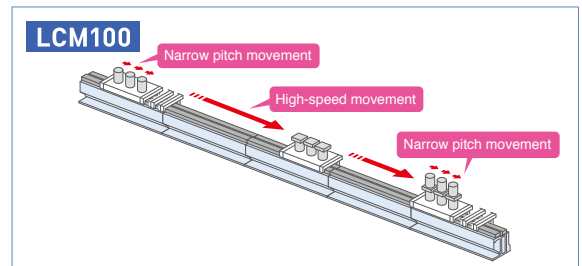
- Since the movement direction can be changed, the same processes are made common. This makes the equipment compact and results in cost reduction.
- Forward and backward movement at a high speed can be set freely.
- Flexible actions such as moving only some sliders backward is possible.



**POINT**

## Can be moved efficiently between processes with different tacts

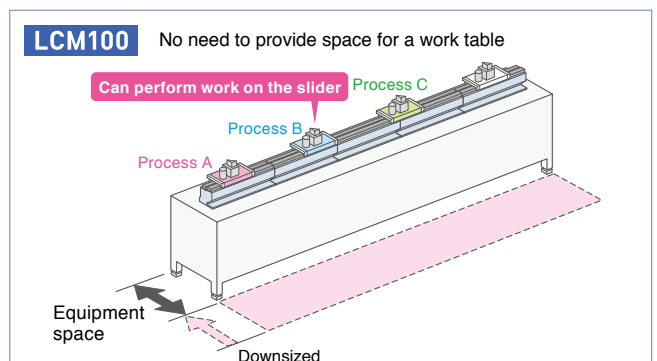
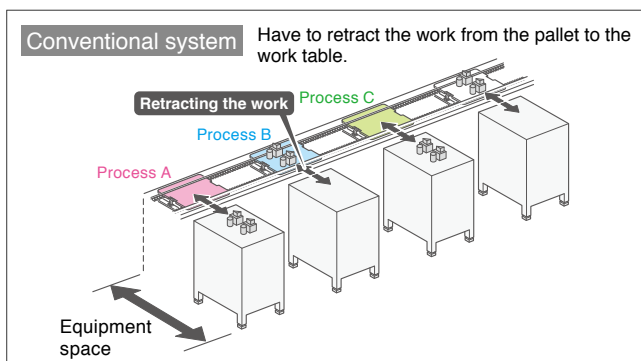
- Narrow pitch movement is possible.
- Movement time can be reduced by combining the use of different movements, such as using pitch-feed for the same processes in short-time processes while transferring three workpieces at the same time at a high speed in long-time processes.



**POINT**

## Workpieces do not need to be retracted

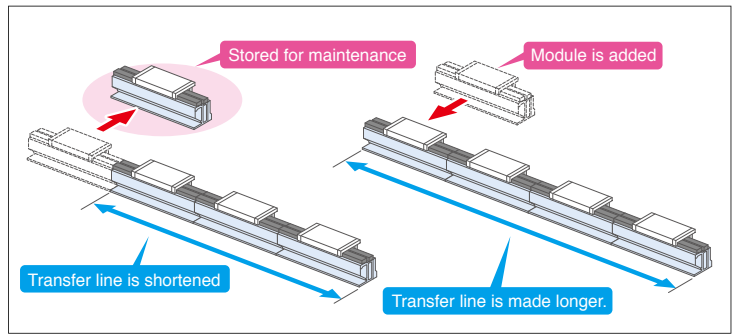
- As the work moves down, you can assemble and process them on the transfer line.
- Eliminates having to retract the work from the pallet to the work table.
- Reduces costs.



**POINT**

**Significant reduction of start-up time**

- Just connect modules for easy construction of a transfer line.
- Lifting cylinders, sensors, stoppers, and other complex parts are not necessary.
- Operations can be performed by using only the LCC140 Controller.
- Economical as excess modules can be used for other lines or stored for maintenance.

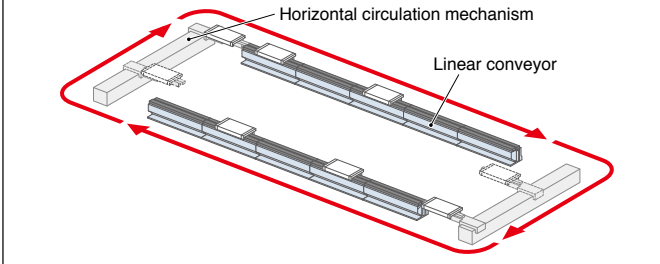


**POINT**

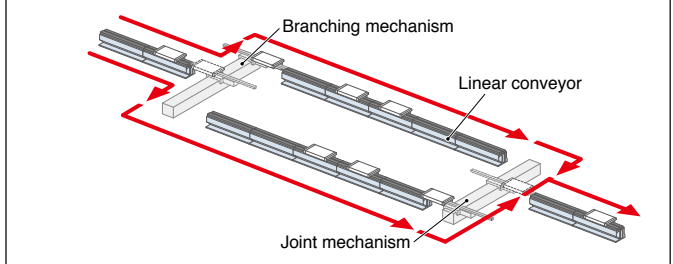
**Construct branching lines, joint lines, and other lines in flexible configurations.**

- Layout examples by combining modules with circulation mechanisms

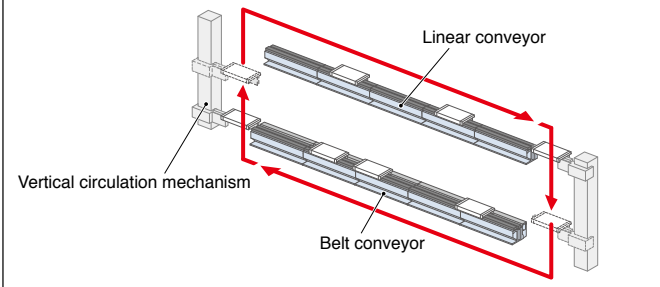
**Example of horizontal circulation**



**Example of horizontal branching**



**Example of vertical circulation**

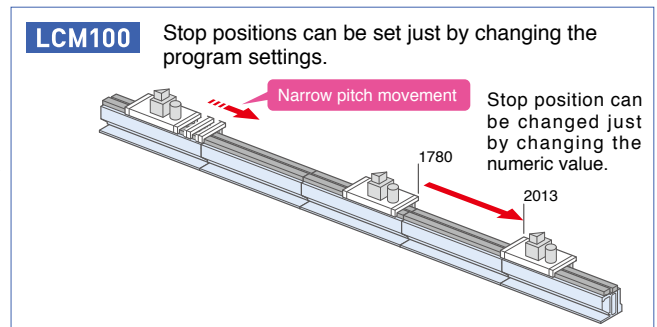
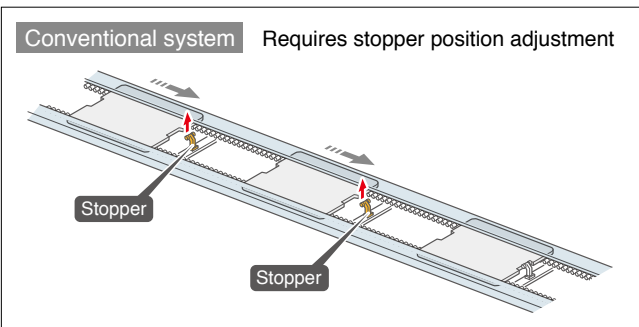


Note. The customer needs to prepare the return unit and the circulation mechanism.  
Note. Modules convenient for the circulation are configured.

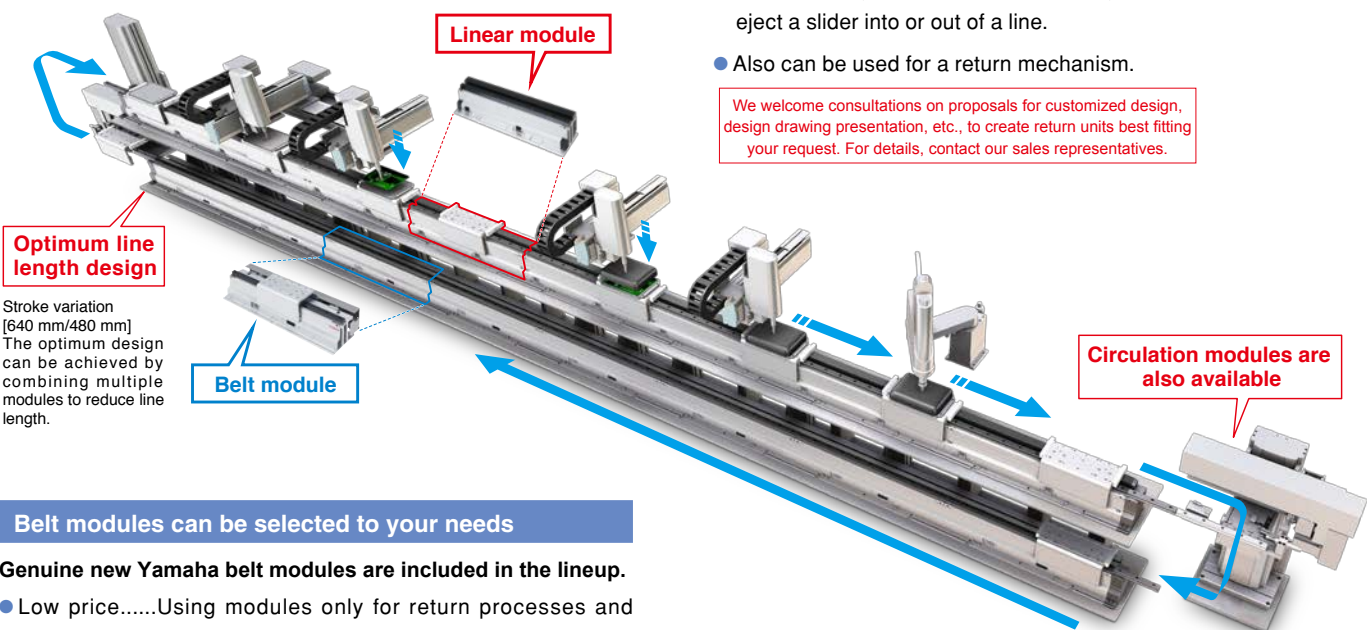
**POINT**

**Optimal for small batch production of various product types**

- No need for mechanical stoppers or sensors. Change layout easily.
- Reconstruction can be finished quickly by just changing the program to set a stop position.
- Frequent unit changes for different models can be handled flexibly.



**Flexible set-up of the slider's acceleration/deceleration, forward/backward movement, positioning, and other actions. The variety of possible line structures has been greatly expanded to supersede conventional models.**



**Optimum line length design**

Stroke variation [640 mm/480 mm]  
The optimum design can be achieved by combining multiple modules to reduce line length.

**Linear module**

**Belt module**

**Circulation modules are also available**

**Simpler design and fewer processing steps**

- LCM100-2MT, a module for circulation, is available to insert or eject a slider into or out of a line.
- Also can be used for a return mechanism.

We welcome consultations on proposals for customized design, design drawing presentation, etc., to create return units best fitting your request. For details, contact our sales representatives.

**Belt modules can be selected to your needs**

**Genuine new Yamaha belt modules are included in the lineup.**

- Low price.....Using modules only for return processes and interprocess transfer will help reduce the facility cost.
- Easy control without controllers and no need to create robot programs

**POINT**

**Quick recovery by replacing the slider when machine trouble occurs**

- Parts can be replaced easily.
- Parts can be kept for maintenance as they are standardized.
- Possible to minimize the downtime of a production line.



**POINT**

**Easy maintenance**

- Motors and scales do not make contact and are free from abrasion.
- As only the rails are sliding parts, dust generation is low.
- There are only a few consumable parts, which mean a long service life.





## System configuration diagram (when 3 sliders are connected)

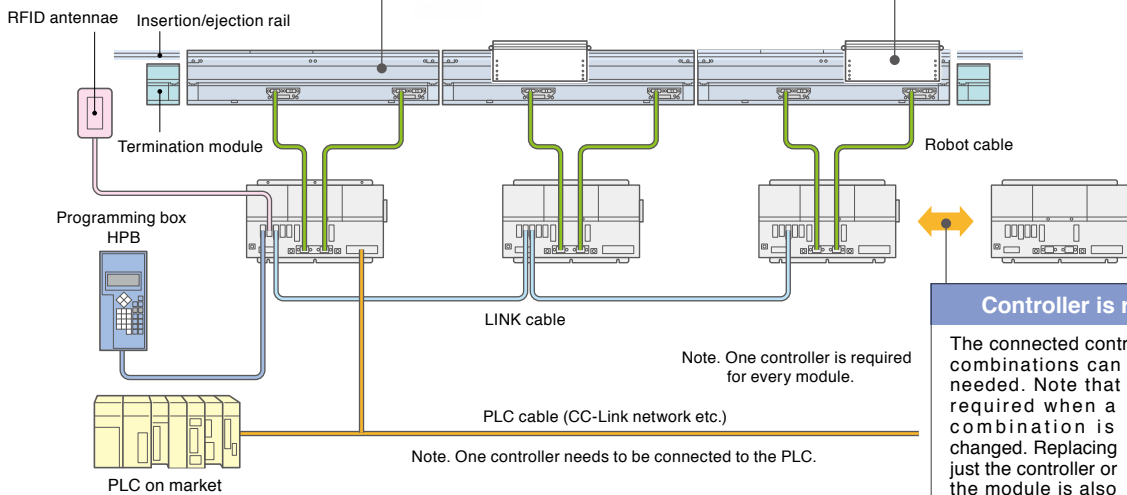
The module is standardized and can also be stored for maintenance.

If a short line is used and modules are in excess, they can be diverted to another line or stored for maintenance.



Standardized slider

The slider is standardized and can be used for any line. It is also possible to share the slider on multiple lines. Production can be restored immediately by replacing a failed slider if trouble occurs.

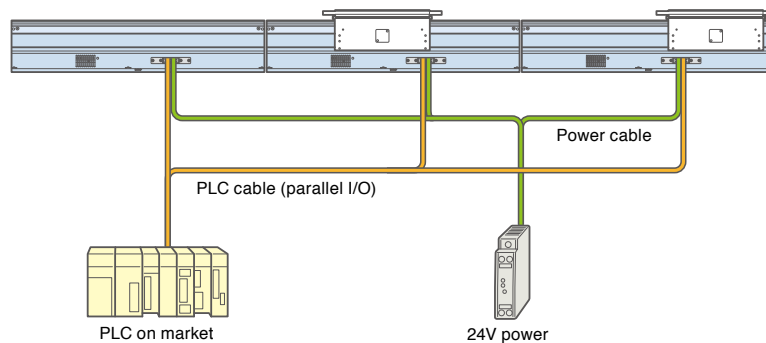


Controller is replaceable

The connected controller and module combinations can be changed as needed. Note that initial setting is required when a combination is changed. Replacing just the controller or the module is also possible.



## Belt module



This interface allows the customer to supply 24V power and select just the necessary signals to use.<sup>Note</sup>  
 Note. The customer will need to prepare the wiring on the user side.

## Linear module controller LCC140

Program operation

The LCC140 controller can perform operations using registered programs and operations using remote commands from the PLC.

In addition to the control of input/output signals such as movement or positioning, processes related to the insertion/ejection of sliders can be performed.

Controller-linking function

You can use the link cables dedicated to LCC140 controllers to connect the controllers when two or more modules are connected. You can handle multiple controllers as if they were one controller.

SR1 controller base operation system

The same user interface as the SR1 controller is incorporated, and specifications and functions specific to the linear conveyor module have been added based on this user interface. A very user friendly operation system is provided.<sup>Note 1</sup>

Position correction function using RFID

When multiple sliders are each stopped at a position of your choice, actual stop positions has an error width (machine difference) of 500  $\mu\text{m}$ . This is because each slider has a different stopping accuracy. Link the RFID unit and LCC140 controller to suppress the machine difference of individual sliders to an error width of approximately 100  $\mu\text{m}$ .<sup>Note 2</sup>



Note 1. Please note that some Yamaha single-axis controller SR1 functions are not available with the linear conveyor controller.  
 Note 2. All sliders stop within the width of 100 $\mu\text{m}$  that includes a teaching point.

# Robonity Series

Product Lineup

**LBAS** Basic model

**LGXS** Advanced model

## MOTOR-LESS SINGLE AXIS ACTUATOR

Your choice of Motor and Driver System



Wide selection of payload and speed requirements

Choice of ball screw leads

Wide selection stroke range

Choice of stroke range from  
50 mm up to 1450 mm

(Advanced model LGXS only)

# For a wide range of usage from positioning to conveyance.

## Basic model LBAS

P134



High Rigidity

Compact

Low Cost

- Maximum payload 2 kg to 100 kg
- Maximum speed 133 to 1,333 mm/sec
- Stroke 50 to 1,100 mm

## Advanced model LGXS

P140



High Precision Accuracy  
Class C5

High Durability

Clean specification as  
a standard feature

- Maximum payload 2 kg to 160 kg
- Maximum speed 300 to 2,400 mm/sec
- Stroke 50 to 1,450 mm

Model	Adaptable motor (W)	Stroke (mm)	Maximum speed (mm/sec.) <sup>Note 1</sup> (or equivalent)	Ball screw lead (mm)	Maximum payload <sup>Note 2</sup> (or equivalent)		Page	
					Horizontal	Vertical		
Basic model	LBAS04	50	50 to 800 (50 pitch)	800	12	12	2	P134
				400	6	20	5	
	LBAS05	100	50 to 800 (50 pitch)	1333	20	12	3	P136
				666	10	24	6	
				333	5	40	12	
	LBAS08	200	50 to 1100 (50 pitch)	133	2	45	15	P138
1200				20	40	8		
Advanced model	LGXS05	50	50 to 800 (50 pitch)	300	5	100	30	P140
				600	10	80	20	
				1200	20	40	8	
	LGXS05L	100	50 to 800 (50 pitch)	1333	20	12	3	P141
				666	10	24	6	
				333	5	32	12	
	LGXS07	100	50 to 1100 (50 pitch)	1800	30	10	2	P142
				1200	20	25	4	
				600	10	45	8	
	LGXS10	200	100 to 1250 (50 pitch)	300	5	85	16	P143
				1800	30	25	4	
				1200	20	40	8	
	LGXS12	400	100 to 1250 (50 pitch)	600	10	80	20	P144
				300	5	100	30	
				1800	30	35	8	
	LGXS16	750	100 to 1450 (50 pitch)	1200	20	50	15	P145
				600	10	95	25	
				300	5	115	45	
	LGXS20	750	100 to 1450 (50 pitch)	2400	40	45	12	P146
				1200	20	95	28	
				600	10	130	55	
				2400	40	65	15	P146
				1200	20	130	35	
				600	10	160	65	

Note 1. When a moving distance is short and depending on an operation condition, it may not reach the maximum speed.

Note 2. The rated thrust and maximum transferable weight are values assuming the attached motor outputs the rated torque.

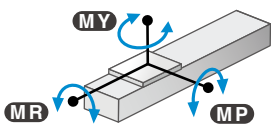
## Basic model LBAS

Newly designed integrated guide rail/frame structure.  
 Improved moment load capacity in compact frame size.  
 Designed to accommodate motors from most leading manufacturers.

### POINT 1

#### High Rigidity

Moment rigidity is increased approximately three times from current models.

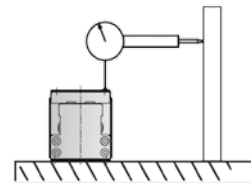


	Existing product T6L	<b>NEW</b> LBAS05		Existing product T9H	<b>NEW</b> LBAS08
MY	35	59	MY	86	221
MP	40	63	MP	133	309
MR	50	103	MR	117	343
		(N · m)			(N · m)

### POINT 2

#### High Precision

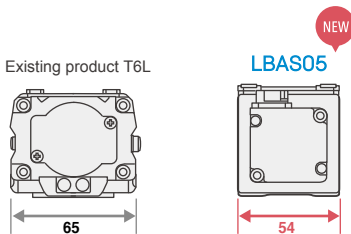
Straightness (running parallelism):  
 +/-0.02/800 mm



### POINT 3

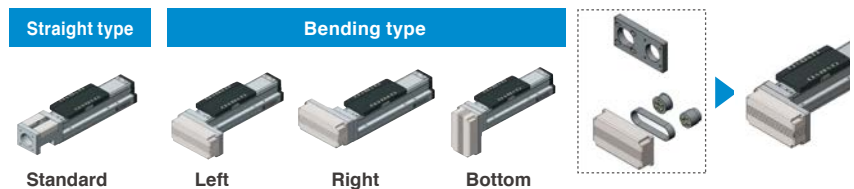
#### Compact

Frame width is reduced by approximately 20% from current models



### POINT 4

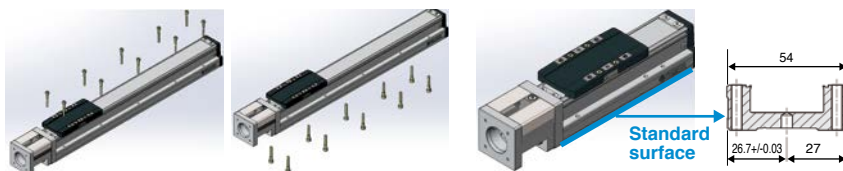
#### Motor attaching direction, Easily changeable with the special bending part



### POINT 5

#### Installation process is simple and easy

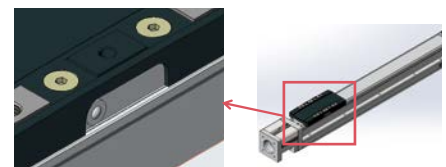
1. Mounting holes are accessible from top or bottom without disassembling actuator unit.
2. Standard surface on the side and dowel pin holes on the bottom.



### POINT 6

#### Easy Maintenance

Moving parts can be lubricated from outside without opening actuator



Grease nipple on the slider side surface



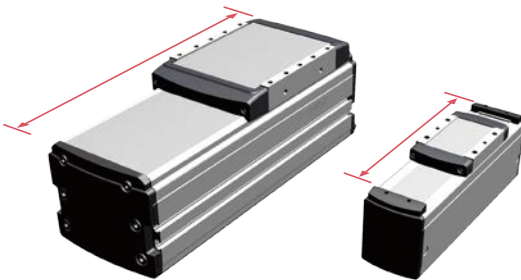
## Advanced model LGXS

Higher efficiency, accuracy, and reliability from ground ball screw.  
Ideal for base axis of multi-axis configuration.

### POINT 1

#### Shortest Overall Length

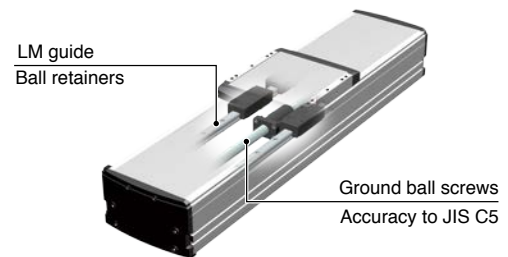
The industry's shortest class is achieved for the total length in relation to the effective stroke.



### POINT 2

#### High Precision

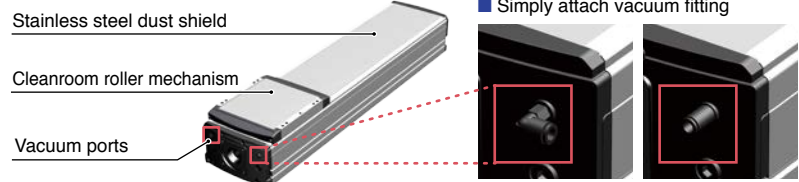
- Adopted ground ball screws
- Ball screw Remove Accuracy: Accuracy class C5
- Positioning Remove Accuracy repeatability:  $\pm 5 \mu\text{m}$



### POINT 3

#### Cleanroom Ready Design

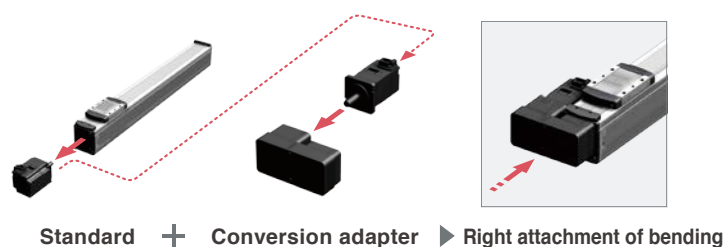
- Protective stainless dust shield
- Ports are ready for vacuum fittings



### POINT 4

#### Motor orientation is changeable with optional conversion unit

Motor unit of standard straight type can be used for side-mount setup.



# TRANSERVO Series

Product Lineup

## CLOSED LOOP STEPPING MOTOR SINGLE-AXIS ROBOTS

Excellent characteristics of both stepping motor and servomotor were combined. Stepping motor single-axis robots "TRANSERVO" series breaking through existing conventions.



### Robot positioner TS-S2/TS-SH

P.514

This robot positioner is specialized for the I/O point trace input. The positioning or pushing operation can be performed using simple operation, only by specifying a point number from the host control unit and inputting the START signal.

Applicable models:

SS SG<sup>Note</sup> SR STH  
RF BD

Note. SG07 is only applicable to TS-SH.



TS-S2 TS-SH

### Robot driver TS-SD

P.524

This robot driver omits the operation with robot languages and is dedicated to the pulse train input. This driver can be made applicable to the open collector method or line driver method using the parameter setting and signal wiring. So, you can match the robot driver to the host unit to be used.

Applicable models:

SS SR STH<sup>Note</sup> RF<sup>Note</sup> BD

Note. Except for STH vertical specifications and RF sensor specifications.



TS-SD

# Newly developed vector control method provides functions and performance similar to servomotors.

## SS type (Slider type)

## SG type (Slider type)

Straight model

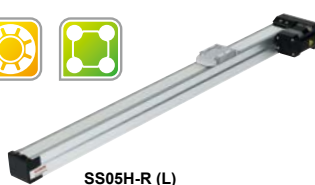
P.154

Space-saving model  
(Side mounted motor model)

P.155

Straight model

P.160



## SR type (Rod type standard)

Straight model

P.161

Space-saving model (Side mounted motor model)

P.162



## SR type (Rod type with support guide)

Straight model

P.164

Space-saving model (Side mounted motor model)

P.165



Type	Model	Size (mm) <sup>Note 1</sup>	Lead (mm)	Maximum payload (kg) <sup>Note 2</sup>		Maximum speed (mm/sec.) <sup>Note 3</sup>	Stroke (mm)	Page
				Horizontal	Vertical			
SS type (Slider type) Straight model/ Space-saving model	SS04-S SS04-R (L)	W49 × H59	12	2	1	600	50 to 400	SS04-S: P.154
			6	4	2	300		
			2	6	4	100		
	SS05-S SS05-R (L)	W55 × H56	20	4	-	1000	50 to 800	SS05-S: P.156
			12	6	1	600		SS05-R (L): P.157
			6	10	2	300		
	SS05H-S SS05H-R (L)	W55 × H56	20	6	-	1000	50 to 800	SS05H-S: P.158
			12	8	2	600 (Horizontal) 500 (Vertical)		SS05H-R (L): P.159
			6	12	4	300 (Horizontal) 250 (Vertical)		
SG type (Slider type)	SG07	W65 × H64	20	36	4	1200	50 to 800	SG07: P.160
			12	43	12	800		
			6	46	20	350		
SR type (Rod type standard) Straight model/ Space-saving model	SR03-S SR03-R (L) SR03-U	W48 × H56.5	12	10	4	500	50 to 200	SR03-S: P.161
			6	20	8	250		SR03-R (L): P.162
								SR03-U: P.163
	SR04-S SR04-R (L)	W48 × H58	12	25	5	500	50 to 300	SR04-S: P.166
			6	40	12	250		SR04-R (L): P.167
			2	45	25	80		
	SR05-S SR05-R (L)	W56.4 × H71	12	50	10		50 to 300	SR05-S: P.170
			6	55	20	150		SR05-R (L): P.171
			2	60	30	50		
SR type (Rod type with support guide) Straight model/ Space-saving model	SRD03-S SRD03-U	W105 × H56.5	12	10	3.5	500	50 to 200	SRD03-S: P.164
			6	20	7.5	250		SRD03-U: P.165
			12	25	4	500		SRD04-S: P.168
	6	40	11	250	SRD04-U: P.169			
	2	45	24	80				
	SRD05-S SRD05-U	W157 × H71	12	50	8.5	300	50 to 300	SRD05-S: P.172
			6	55	18.5	150		SRD05-U: P.173
			2	60	28.5	50		

Note 1. The size shows approximate maximum cross sectional size.

Note 2. The payload may vary depending on the operation speed. For details, refer to the detailed page of relevant model.

Note 3. The maximum speed may vary depending on the transfer weight or stroke length. For details, refer to the detailed page of relevant model.

■ Allowable ambient temperature for robot installation

SS/SR type 0 to 40 °C

As the slide table type, rotary type, and belt type were added to the product lineup, the design flexibility was extended.

### STH type (Slide table type)

Straight model

P.174

Space-saving model

P.175



Type	Model	Size (mm) <sup>Note 1</sup>	Lead (mm)	Maximum payload (kg) <sup>Note 2</sup>		Maximum speed (mm/sec.) <sup>Note 3</sup>	Stroke (mm)	Page
				Horizontal	Vertical			
STH type (Slide table type) Straight model/ Space-saving model	STH04-S	W45 × H46	5	6	2	200	50 to 100	STH04-S: P.174
	STH04-R (L) <sup>Note 4</sup>	W73 × H51	10	4	1	400		STH04-R (L): P.175
	STH06	W61 × H65	8	9	2	150	50 to 150	STH06: P.176
	STH06-R (L)	W106 × H70	16	6	4	400		STH06-R (L): P.177

### RF type (Rotary type)

Standard model

P.178

High rigidity model

P.179



Type	Model	Height (mm)	Torque type	Rotation torque (N · m)	Maximum pushing torque (N · m)	Maximum speed (mm/sec.) <sup>Note 3</sup>	Rotation range (°)	Page
RF type (Rotary type) Standard/High rigidity	RF02-N	42 (Standard)	N: Standard	0.22	0.11	420	310 (RF02-N)	RF02-N: P.178
	RF02-S	49 (High rigidity)	H: High torque	0.32	0.16	280	360 (RF02-S)	RF02-S: P.181
	RF03-N	53 (Standard)	N: Standard	0.8	0.4	420	320 (RF03-N)	RF03-N: P.182
	RF03-S	62 (High rigidity)	H: High torque	1.2	0.6	280	360 (RF03-S)	RF03-S: P.185
	RF04-N	68 (Standard)	N: Standard	6.6	3.3	420	320 (RF04-N)	RF04-N: P.186
	RF04-S	78 (High rigidity)	H: High torque	10	5	280	360 (RF04-S)	RF04-S: P.189

### BD type (Belt type)

Straight model

P.190



Type	Model	Size (mm) <sup>Note 1</sup>	Lead (mm)	Maximum payload (kg) <sup>Note 2</sup>		Maximum speed (mm/sec.) <sup>Note 3</sup>	Stroke (mm)	Page
				Horizontal	Vertical			
BD type (Belt type)	BD04	W40 × H40	48	1	-	1100	300 to 1000	BD04: P.190
	BD05	W58 × H48	48	5	-	1400	300 to 2000	BD05: P.191
	BD07	W70 × H60	48	14	-	1500	300 to 2000	BD07: P.192

Note 1. The size shows approximate maximum cross sectional size.

Note 2. The payload may vary depending on the operation speed. For details, refer to the detailed page of relevant model.

Note 3. The maximum speed may vary depending on the transfer weight or stroke length. For details, refer to the detailed page of relevant model.

Note 4. STH04-R (L) with 50-stroke and brake is not supported.

■ Allowable ambient temperature for robot installation

STH/RF/BD type 5 to 40 °C

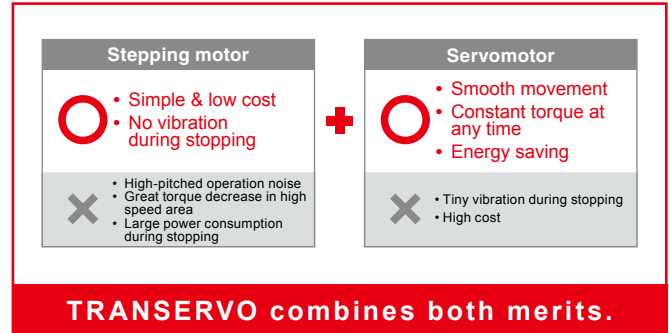


# Common features of TRANSRVO Series

## POINT 1

### New control method combining the advantages of both the servomotor and stepping motor

The stepping motor provides features that its price is less expensive and hunting (minute vibration) does not occur during stopping. However, this motor has disadvantages that the positional deviation due to step-out occurs (in the open loop mode), the torque decreases greatly in the high speed area, and the power consumption is large during stopping. As YAMAHA's TRANSERVO uses the closed loop control, this ensures complete "no step-out". Furthermore, use of a newly developed vector control method ensures less torque decrease in the high speed area, energy saving, and low noise. The function and performance equivalent to the servomotor are achieved at a low cost even using the stepping motor.



### Energy saving

As the basic control is the same as the servomotor, waste power consumption is suppressed. This greatly contributes to the energy saving and CO<sub>2</sub> reduction.

### No hunting during stopping

Stop mode without hunting can be set in the same manner as the general stepping motor. So, select this mode as required.

## POINT 2

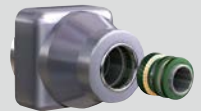
### Closed loop control using excellent environment resistant resolver

A resolver with excellent reliability is used to detect the motor position in the same manner as YAMAHA's upper model. The stable position detection can be made even in a poor environment where fine particle dusts or oil mists exist. Additionally, a high resolution of 20480 pulses per revolution is provided.



This resolver is a magnetic position detector. The resolver features a simple structure without using electronic components and optical elements, and less potential failure factors when compared to general optical encoders.

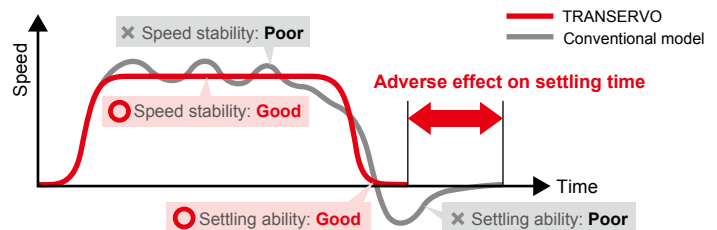
The resolver has **high environment resistance and low failure ratio**, and is used in a wide variety of fields aiming at reliability such as automobile or aircraft industry.



## POINT 3

### High resolution (4096, 20480 pulse/rev)

Use of a high resolution makes it possible to maintain excellent controllability. Variations in speed are small and settling time during deceleration stop can be shortened.



## POINT 4

### Return-to-origin is not needed to shorten the start-up time.

New type robot positioner TS-SH applicable to the high power was newly developed.

This robot positioner is applicable to the absolute position system and does not need any return-to-origin.

The work can be started quickly to shorten the start-up time.



TS-SH

**SS type (Slider type) Straight model/Space-saving model**

**POINT**

**4-row circular arc groove type 2-point contact guide applicable to even large moment load**



A newly developed module guide is employed with a 4-row circular arc groove type 2-point contact guide built into a very compact body similar to the conventional model. This guide maintains a satisfactory rolling movement with less ball differential slip due to its structure even if a large moment load is applied or the installation surface precision is poor, and has characteristics that are difficult to malfunction, such as unusual wear.

**Conventional model**

■ 2-row gothic arch groove type 4-point contact guide

If a large moment load is applied or the installation surface precision is poor, a large differential slip may occur easily.

**TRANSERVO (SS type)**

■ 4-row circular arc groove type 2-point contact guide

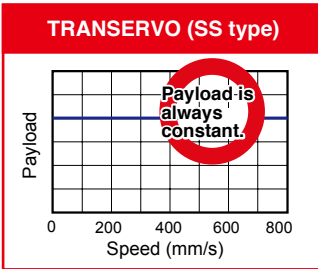
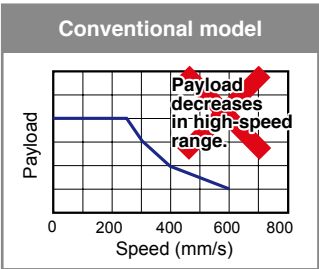
Differential slip is small due to its structure and service life is long.

**POINT**

**Tact is shortened by high-speed movement.**

As advantages of the vector control method are utilized at maximum level, the TRANSERVO maintains a constant payload even in a high-speed range. This greatly contributes to shortening of the tact time. Additionally, by combining this feature with high-lead ball screws, the TRANSERVO has achieved a maximum speed of 1 m/sec.<sup>Note</sup> which is faster than any single-axis servo motor.

Note. SS05-S/SS05H-S with 20 mm-lead specifications



**SG type (Slider type)**

**POINT**

**Maximum payload is 46 kg. A maximum payload of 20 kg is supported even with the vertical specifications.**

As rigid table slide and 56 □ motor are adopted, the payload is increased greatly. A maximum payload of 46 kg is achieved. Up to 20 kg can be transferred even with the vertical specifications.

**SS05H**

Maximum payload 12 kg

**SG07**

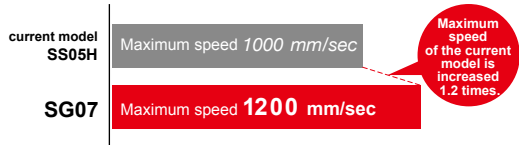
Maximum payload 46 kg

Payload is increased about 4 times.

**POINT**

**Maximum speed is 1200 mm/sec.**

The maximum speed is made 1.2 times faster than that of the current model SS05H. The tact-up of the equipment can be achieved.



**SR type (Rod type) Standard model/Model with support guide**

**POINT**

**Long-term maintenance free is achieved.**

A lubricator used in the ball screw and a contact scraper installed at the rod inlet and outlet provide maintenance-free operation.

**Maintenance interval is greatly extended.**

Normal grease lubrication on the ball screw loses a very small amount of oil as the ball screw moves. The SR type has a lubricator that supplies grease lost over long periods to greatly extend the maintenance interval and ensure near maintenance-free operation<sup>Note</sup>.

Note. The maintenance-free period is within the running life of the robot.

**Highly reliable resolver is used.**

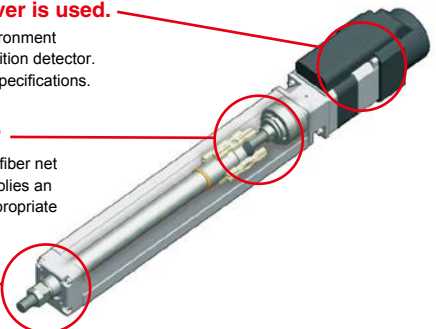
A resolver with excellent environment resistance is used for the position detector. All models can select brake specifications.

**Ball screw lubricator**

A lubricator with high density fiber net impregnated with grease supplies an adequate amount of oil to appropriate locations.

**Laminated type contact scraper**

A dual-layer scraper removes fine foreign objects sticking to the rod to prevent them from entering the inside and troubles caused by foreign objects. Rod rattle is suppressed effectively.



## Environment-friendly lubrication system

The lubrication system is environment-friendly as it uses a high density fiber net and supplies an adequate amount of oil to appropriate locations to eliminate waste lubrication.

## Prevention of foreign object entry

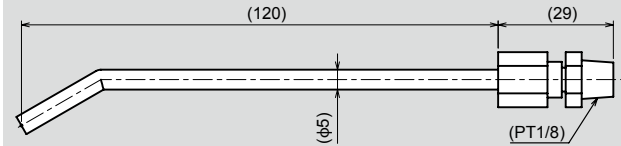
The dual-layer scraper is in contact with the front of the rod to ensure excellent fine contaminant particle removal performance. The scraper removes fine contaminant particles sticking to the rod through multi steps to prevent them from entering the inside and troubles caused by foreign objects. Additionally, oleo-synthetic foam rubber with a self-lubricating function ensures low-friction resistance.

### ■ Tip nozzle for grease application

When applying the grease to the ball screw of the SR type space-saving model SR03-UB or SRD03-UB, use a grease gun with the tip bent.

Model	KCU-M3861-00
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Note: YAMAHA's recommended product. This tip nozzle can be attached to a generally available grease gun.

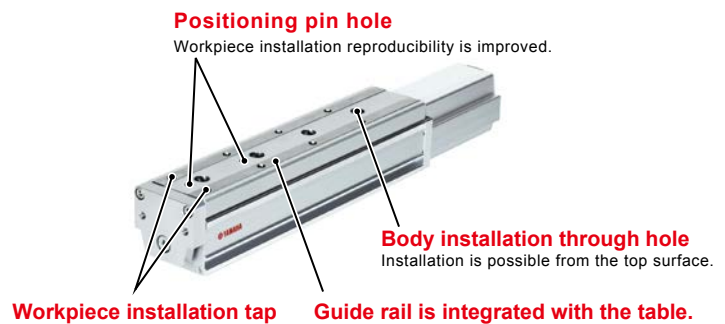


## STH type (Slide table type) Straight model/Space-saving model

### POINT

### Use of a circulation type linear guide achieves the high rigidity and high accuracy.

- Guide rail is integrated with the table.
- Table deflection amount is small.
- Use of a circulation type linear guide achieves the high rigidity and high accuracy.
- STH06 provides an allowable overhang exceeding that of FLIP-X series T9.
- Space-saving model with the motor built-into the body is also added to the product lineup.
- Suitable for precision assembly.

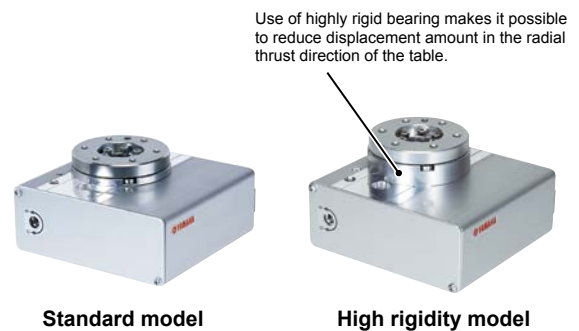


## RF type (Rotary type) Standard model/High rigidity model

### POINT

### Rotation axis model, first in TRANSERVO series

- Rotation axis model, first in TRANSERVO series
- Thin and compact
- Can be secured from the top or bottom surface.
- Hollow hole, through which the tool wiring is passed, is prepared.
- Workpiece can be attached easily.
- Motor is built-into the body to achieve the space-saving.
- Standard model or high rigidity model can be selected.



## BD type (Belt type) Straight model

### POINT

### Belt type applicable to long stroke

- Applicable to up to 2000 mm-stroke.
- High speed movement at a speed of up to 1500 mm/sec. can be made.
- Maximum payload 14 kg
- Main body can be installed without disassembling the robot.
- Shutter is provided as standard equipment. This prevents grease scattering or entry of foreign object.



# FLIP-X Series

Product Lineup

## SINGLE-AXIS ROBOTS

General-purpose single-axis robots can be used for various applications, such as assembly and inspection work.

6 types and 28 models ranging from compact size to long-stroke robots are available.



**Various custom specifications are also supported.**

Various custom specifications, such as double-slider and wide slider are also supported.  
For details, please consult YAMAHA.



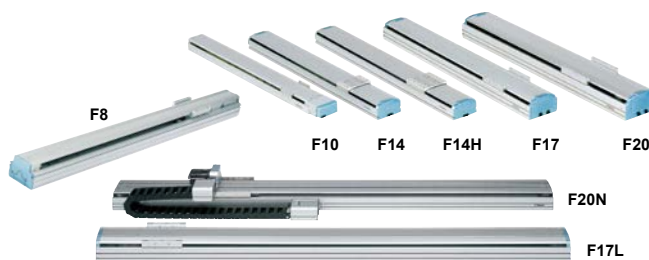
# Six types with high reliability and durability

## T type Frame-less structure model P.198



- Double appeal of compact body and low price.
- Ideal in applications as an actuator directly installed on an installation base.

## F type Model with high rigidity frame P.205



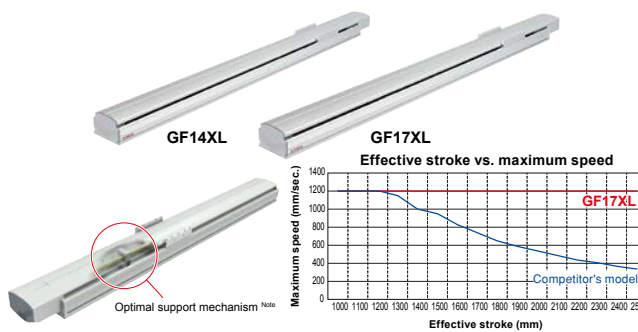
- Tolerable load moment is large and highly resistant to the offset load.
- Suitable for Cartesian robots needing rigid arm or moving arms that move the entire axis.

## R type Rotation axis model P.236



- Repeated positioning accuracy +/- 30 sec. (0.0083 °)
- The robot can be used as the rotation axis when combined with other robots or utilized for a wide variety of applications, such as index tables.
- High rigidity and high accuracy by harmonic drive.

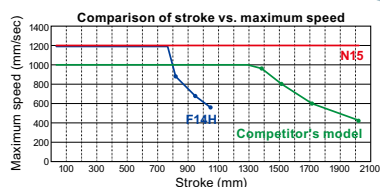
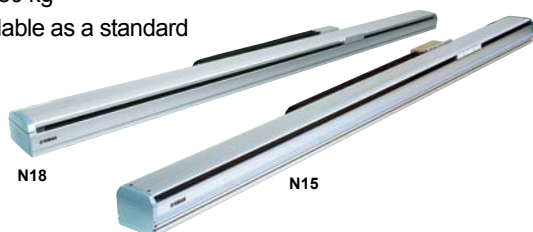
## GF type Long stroke model with high rigidity frame P.214



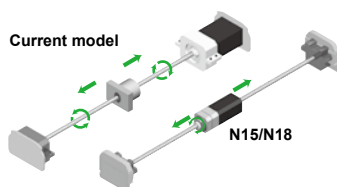
- Movable at 1200 mm/sec. in the whole area without critical speed.
- Suitable for long distance transfer.

## N type Nut rotation type model P.222

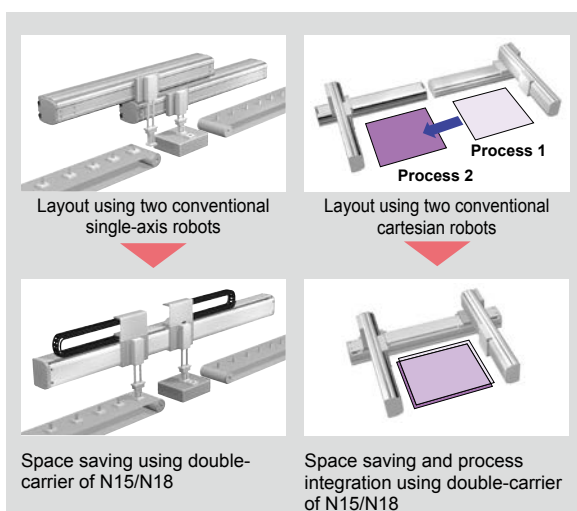
- Repeated positioning accuracy +/- 0.01 mm
- Maximum payload 80 kg
- Double-carrier available as a standard



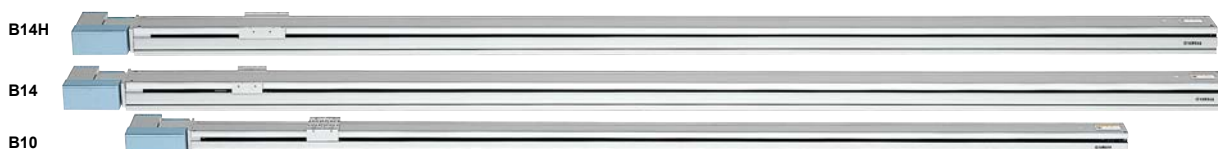
Critical speed is not restricted and high-speed transfer is possible.  
Stroke: 2500 mm  
Maximum speed: 1200 mm/sec.



In this structure, the hollow motor is connected to the nut of the ball screw and the nut is rotated with the screw shaft secured to perform the movement.



## B type Timing belt drive model P.230



- Maximum stroke is 3050 mm. Long-distance transfer between the processes is possible.

POINT 1

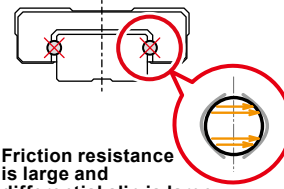
**4-row circular arc groove type 2-point contact guide that is resistant to large moment load is adopted.** <sup>Note 1</sup>



4-row circular arc groove type 2-point contact guide with less differential slip is used for the linear guide. This guide has less ball differential slip due to its structure when compared to the 2-row Gothic arch type 4-point contact guide and maintains a satisfactory rolling movement even if a large moment load is applied or the installation surface precision is poor. The guide has characteristics that are difficult to malfunction, such as unusual wear and provides excellent reliability.

Note 1. Except for T4L/T4LH and T5L/T5LH

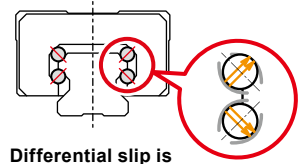
**2-row gothic arch groove type 4-point contact guide**



**Friction resistance is large and differential slip is large.**

- Easy to receive adverse effects of installation surface accuracy, friction, and elastic deformation.
- Breakage may occur before expiration of calculation service life.

**4-row circular arc groove type 2-point contact guide**

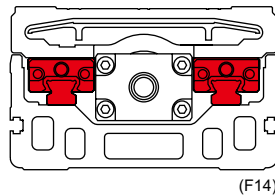


**Differential slip is small and self-centering function is high.**

- Resistant to alignment changes and moment loads.
- Difficult to break.

**F/N/B type** <sup>Note 2</sup>

For the F type, N type, and B type, two guide frames are laid out on the high rigidity aluminum extruded material frame. Two bearing units per rail, four bearing units in total, support a large load firmly. As a large moment load is mainly converted into vertical force, the moment applied to one bearing unit becomes small to ensure excellent durability.

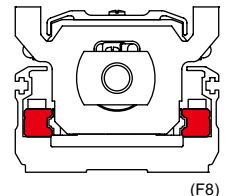


(F14)

Note 2. Except for F8 series/F10/B10.

**F8 series**

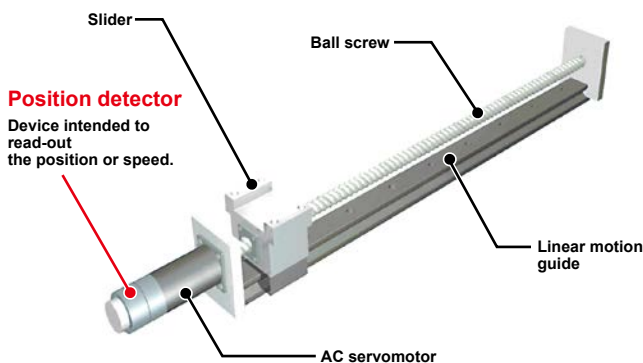
The F8 series uses a newly developed module guide to greatly reduce the cross-sectional area (70 % when compared to F10). The rail is laid out in the full width of the frame to ensure the high rigidity even with compact design. Of course, this series also uses the 4-row circular arc groove type 2-point contact guide.



(F8)

POINT 2

**Resolver with excellent environment resistance is used for the position detector.**



**Position detector**  
Device intended to read-out the position or speed.

**Optical encoder**



- Optical type
- Electronic components are required and structure is complicated.
- Damaged easily by electronic component breakdown, dew condensation on or oil sticking to the disk.

**Detection failure**

**Resolver**



- Magnetic type
- Simple structure only with iron core and winding has less potential failure factors.
- Immune to shock and electric noise.

**High reliability**

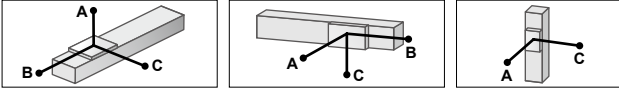
A resolver is used for the position detector. The resolver has a simple and rigid structure without using electronic components and optical elements. Detection problems due to electronic component breakdown, dew condensation on or oil sticking to the disk that may occur in optical encoders do not occur in the resolver. The resolver provides excellent durability. Additionally, as the absolute specifications and incremental specifications use the same mechanical specifications and common controller, desired specifications can be selected only by setting parameters. Furthermore, even when the absolute battery is consumed completely, the robot can still operate as the incremental specifications. So, even if a trouble occurs, the line stop is not needed to ensure the safe production line. Furthermore, the backup circuit has been completely renovated and now has a backup period of one year in the non-energizing state.

### POINT 3

## Long service life greatly reduces the maintenance cost.

As the acceleration is determined by the weight parameter, the service life can be assured when the weight and position of center of gravity are known.

**Allowable overhang** Note

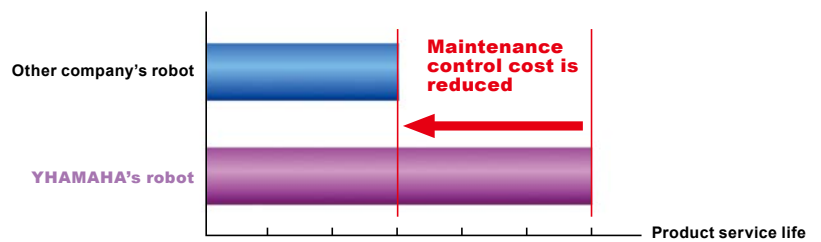


Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)				
	A	B	C		A	B	C		A	C		
Lead 30	5kg	864	501	383	5kg	348	384	776	Lead 20	1kg	600	600
	15kg	491	156	140	15kg	87	40	306		2kg	1098	1098
Lead 20	5kg	1292	505	462	5kg	416	388	1186	Lead 10	4kg	545	545
	15kg	572	158	151	15kg	92	42	386		4kg	594	594
Lead 10	30kg	455	73	75	30kg	0	0	61	Lead 5	8kg	280	280
	20kg	617	119	127	10kg	193	132	910		10kg	217	217
Lead 5	40kg	422	53	59	20kg	53	0	400	Lead 5	10kg	221	221
	55kg	420	36	40	30kg	0	0	109		15kg	135	135
Lead 5	50kg	722	42	47	10kg	197	133	2360	Lead 5	20kg	92	92
	60kg	657	33	37	20kg	54	0	985				
Lead 5	80kg	577	23	25	30kg	0	0	427				

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

As YAMAHA's robot uses high rigidity ball screw or guide, it provides excellent durability. This greatly contributes to reduction of the customer's maintenance cost.







### Cost reduction by high durability



### POINT 4

## Controllers suitable for applications are prepared.

In addition to the robot program operation and pulse train control, a positioner that is operated by specifying a point number was added to the product lineup. Additionally, multi specifications that control multiple robots using one controller are also supported. You can select an optimal controller suitable for your application.

Program				I/O point trace (Positioner)	Pulse-train control
SR1-X	RCX320	RCX222	RCX340	TS-X	RDV-X
					
P.540	P.548	P.558	P.566	P.514	P.528

### POINT 5

## Various custom specifications are supported.

YAMAHA supports custom orders flexibility to meet the customers' various needs.

<b>Addition of free slider</b>	Free slider is added. Various applications, such as rigidity increase or use of two heads are supported.
<b>Wide slider</b>	To increase the slider rigidity, the standard slider is processed to the wide slider.
<b>Specified stroke</b>	A stroke smaller than the minimum stroke may be supported. For details, please consult YAMAHA.
<b>Lead beyond catalog</b>	The lead may be changed to that not stated in the catalog. For details, please consult YAMAHA.
<b>Origin non-motor specifications</b>	Even when not stated in the catalog, the origin may be changed to the non-motor side. For details, please consult YAMAHA.

YAMAHA has a wide variety of custom order results other than those shown above. If you have any requirement or request, please feel free to contact YAMAHA.

Type	Size (mm) <sup>Note 1</sup>	Model	Lead (mm)	Maximum payload (kg)		Maximum speed (mm/sec.)	Stroke (mm)	Page
				Horizontal	Vertical			
T type Frame-less structure model	W45 × H53	T4L/T4LH	12	4.5	1.2	720	50 to 400	T4L: P.198
			6	6	2.4	360		T4LH: P.199
			2	6	7.2	120		
	W55 × H52	T5L/T5LH	20	3	-	1200	50 to 800	T5L: P.200
			12	5	1.2	800		T5LH: P.201
			6	9	2.4	400		
	W65 × H56	T6L	20	10	-	1333	50 to 800	P.202
			12	12	4	800		
			6	30	8	400		
	W94 × H98	T9 (Standard)	30	15	-	1800	150 to 1050	P.203
			20	30	4	1200		
			10	55	10	600		
			5	80	20	300		
		T9H (High thrust)	30	25	-	1800	150 to 1050	P.204
			20	40	8	1200		
10			80	20	600			
5			100	30	300			
F type Model with high rigidity frame	W80 × H65	F8	20	12	-	1200	150 to 800	P.205
			12	20	4	720		
			6	40	8	360		
	W80 × H65	F8L	30	7	-	1800	150 to 1050	P.206
			20	20	4	1200		
			10	40	8	600		
			5	50	16	300		
	W80 × H65	F8LH	20	30	-	1200	150 to 1050	P.208
			10	60	-	600		
			5	80	-	300		
	W110 × H71	F10 (Standard)	30	15	-	1800	150 to 1050	P.209
			20	20	4	1200		
			10	40	10	600		
			5	60	20	300		
		F10H (High thrust)	30	25	-	1800	150 to 1000	P.210
			20	40	8	1200		
			10	80	20	600		
	W136 × H83	F14 (Standard)	30	15	-	1800	150 to 1050	P.212
			20	30	4	1200		
			10	55	10	600		
			5	80	20	300		
		F14H (High thrust)	30	25	-	1800	150 to 1050	P.213
			20	40	8	1200		
			10	80	20	600		
5			100	30	300			
W168 × H100	F17L	50	50	10	2200	1100 to 2050	P.217	
		40	40	-	2400	200 to 1450	P.215	
	F17	20	80	15	1200	200 to 1250		
		10	120	35	600			
W202 × H115	F20	40	60	-	2400	200 to 1450	P.219	
		20	120	25	1200			
		10	-	45	600			
W202 × H120	F20N	20	80	-	1200	1150 to 2050	P.221	
GF type	W140 × H91.5	GF14XL	20	45	-	1200	750 to 2000	P.214
	W168 × H105.5	GF17XL	20	90	-	1200	850 to 2500	P.218
N type Nut rotation type model	W145 × H120	N15 (Single-carrier)	20	50	-	1200	500 to 2000	P.222
		N15D (Double-carrier)					250 to 1750	P.224
	W180 × H115	N18 (Single-carrier)		80	-		500 to 2500	P.226
		N18D (Double-carrier)					250 to 2250	P.228
B type Timing belt drive model	W100 × H81	B10	Belt drive	10	-	1875	150 to 2550	P.230
	W146 × H94	B14 (Standard)	Belt drive	20	-	1875	150 to 3050	B14: P.232
		B14H (High thrust)	Belt drive	30	-	1875		B14H: P.234
R type Rotation axis model	-	R5	-	0.12 kgm <sup>2</sup>	-	360 °/sec	360 °	P.236
		R10		0.36 kgm <sup>2</sup>	-			P.237
		R20		1.83 kgm <sup>2</sup>	-			P.238

Note 1. The size shows approximate maximum cross sectional size.



# Multi-robot

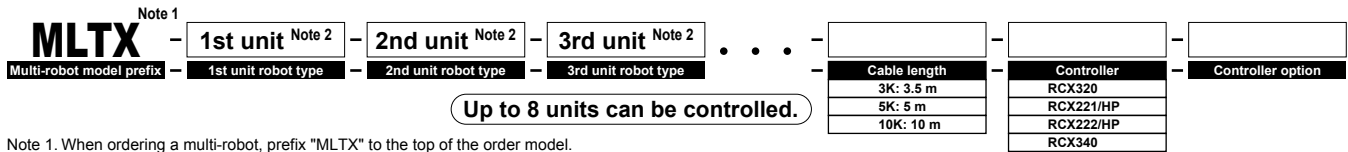
MULTI-FLIP/MULTI-PHASER

This robot has multi specifications that control multiple robots using one controller.

## Advantages of control with multi-axis controller

- Sequence control is easy. System upgrades are easy at less expensive price.
- Compact and space saving when compared to the operation with multiple single-axis controllers.
- More advanced control is possible.
- RCX320, RCX221 and RCX340 provide mixed control of the FLIP-X series and PHASER series (linear single-axis).

## Multi-robot ordering method



Note 1. When ordering a multi-robot, prefix "MLTX" to the top of the order model.

Note 2. Select either MULTI-FLIP or MULTI-PHASER shown below.

Note 3. For details about the controller and controller option models, please refer to relevant page of each controller.

### MULTI-FLIP

Type	Model	Lead (mm)	Stroke (mm)	
T type Frame-less structure model	T4L/T4LH	12	50 to 400	
		6		
		2		
	T5L/T5LH	20	50 to 800	
		12		
		6		
	T6L	20	50 to 800	
		12		
		6		
	T9 (Standard)	30	150 to 1050	
		20		
		10		
5				
T9H (High thrust)	30	150 to 1050		
	20			
	10			
	5			
F type Model with high rigidity frame	F8	20	150 to 800	
		12		
		6		
	F8L	30	150 to 1050	
		20		
		10		
		5		
	F8LH	20	150 to 1050	
		10		
		5		
	F10 (Standard)	30	150 to 1050	
		20		
10				
5				
F10H (High thrust)	30	150 to 1000		
	20			
	10			
	5			
F14 (Standard)	30	150 to 1050		
	20			
	10			
	5			
	5			
F14H (High thrust)	30	150 to 1050		
	20			
	10			
F17L	50	1100 to 2050		
	40	200 to 1450		
	20	200 to 1250		
F17	40	200 to 1450		
	20	200 to 1250		
	10	200 to 1250		
F20	40	200 to 1450		
	20	200 to 1250		
	10	200 to 1250		
F20N	20	1150 to 2050		
	20	750 to 2000		
	20	850 to 2500		
GF type	GF14XL	20	750 to 2000	
	GF17XL	20	850 to 2500	
	N type Nut rotation type model	N15 (Single-carrier)	20	500 to 2000
		N15D (Double-carrier)		250 to 1750
N18 (Single-carrier)		500 to 2500		
N18D (Double-carrier)		250 to 2250		
B type Timing belt drive model	B10	Belt drive	150 to 2550	
	B14 (Standard)	Belt drive	150 to 3050	
	B14H (High thrust)	Belt drive	150 to 3050	
R type Rotation axis model	R5	-	360 °	
	R10			
	R20			

### MULTI-PHASER

Type	Model	Carrier	Stroke (mm)
MF type Flat type with core Linear motor specifications	MF7	Single	100 to 4000
	MF7D	Double	100 to 3800
	MF15	Single	300 to 4000
	MF15D	Double	100 to 3800
	MF20	Single	150 to 4050
	MF20D	Double	150 to 3850
	MF30	Single	100 to 4000
	MF30D	Double	150 to 3750
	MF75	Single	1000 to 4000
	MF75D	Double	680 to 3680

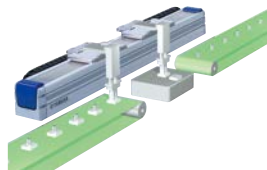
## Robot settings

### 2-robot settings

Use of 2-robot settings and multi-task program makes it possible to perform asynchronous independent operation. As the auxiliary axis setting is used together, more free axis assignment can be made.

### Double-carrier

In robot types that the motor runs separately, such as linear motor single-axis PHASER series or N type (nut rotation type) of FLIP-X series, two motors can be added to one axis.

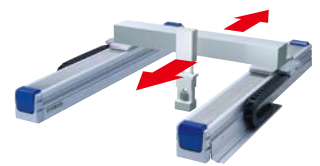


### Main auxiliary axis setting





This auxiliary axis setting is used when it is inconvenient that two axes move simultaneously by the MOVE command. The axis set for the main auxiliary axis does not operate by the MOVE command and it operates only by the DRIVE command (movement command in axis units). This setting is recommended for the axis that needs to be operated asynchronously from the main robot.

### Dual setting

This setting is used when performing the dual drive (2-axis synchronous control). This setting is used when the gantry type Cartesian robot with a long Y-axis stroke stabilizes the high acceleration/deceleration or when a high load or high thrust is needed.



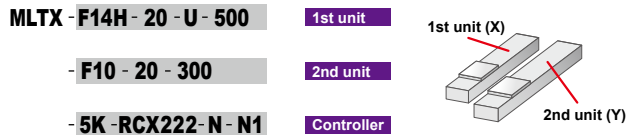
## Applicable controllers

Name	1 to 2 axes controller		1 to 2 axes controller		1 to 4 axes controller
	RCX320	RCX221	RCX222	RCX340	
Appearance	 P.548	 P.558	 P.558	 P.566	
Position detection	Incremental/Absolute	Incremental	Absolute	Incremental/Absolute	
Control model	FLIP-X and PHASER can be mixed.	FLIP-X and PHASER can be mixed.	FLIP-X	FLIP-X and PHASER can be mixed.	
Maximum number of programs	100 programs	100 programs		100 programs	
Maximum number of points	30,000 points	10,000 points		30,000 points	
Number of input/output points	Standard	Dedicated input 8 points/ dedicated output 9 points General-purpose input 16 points/ general-purpose output 8 points	Dedicated input 10 points/ dedicated output 12 points General-purpose input 16 points/ general-purpose output 8 points	Dedicated input 8 points/ dedicated output 9 points General-purpose input 16 points/ general-purpose output 8 points	
	Expansion	General-purpose input 24 points/ general-purpose output 16 points	General-purpose input 24 points/ general-purpose output 16 points	General-purpose input 24 points/ general-purpose output 16 points	
Network option	CC-Link, DeviceNet™, EtherNet/IP™, Ethernet, PROFIBUS, PROFINET, EtherCAT	CC-Link, DeviceNet™, PROFIBUS		CC-Link, DeviceNet™, EtherNet/IP™, Ethernet, PROFIBUS, PROFINET, EtherCAT	

## Examples of multi-robot ordering methods

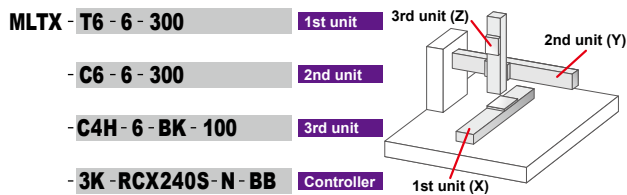
### Separate single axes

<Example> F14H and F10 are installed separately.



### 2 axes + 1 axis

<Example> T6 is installed on the base for the 1st axis, C6 is secured to the upper portion for the 2nd axis, and CH4 is secured to the upper portion for the 3rd axis to assemble the C6 and C4H to the XZ. (Either 2 axes + 1 axis or 3 axes simultaneous control can be made by the setting.)

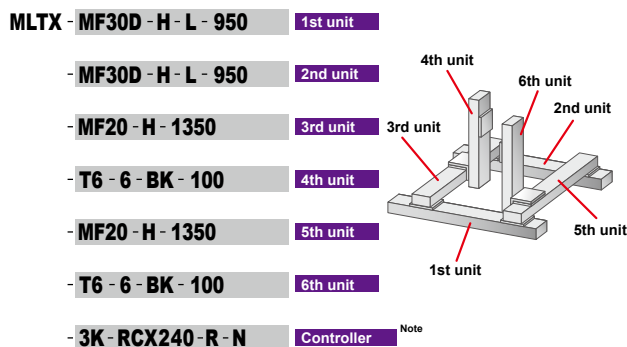


Note. When the customer combines each axis, it is recommended to use the cable terminal (relay cable) for the wiring among axes. For details about cable terminal, please contact YAMAHA.

### Double-carrier/dual drive (2-axis simultaneous control)

#### Example of 8-axis control

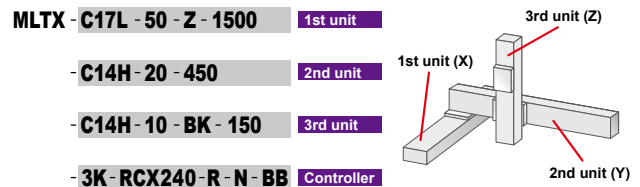
<Example> Two double-carriers of the MF30 are arranged in parallel and two MF20 installed on the top are moved by the dual-drive. T6 is attached to each tip of the MF20 and the robots are controlled using two controllers.



Note. For this specification, when writing one controller model, two controller will be arranged automatically.

### 3 axes combination

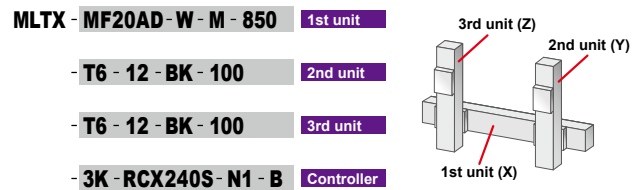
<Example> C17L, C14H, and C14H are used for the X-axis, Y-axis, and Z-axis, respectively to form a 3-axis XYZ combination.



### Double-carrier

#### Example of 4-axis control

<Example> Two T6 are assembled to the double-carrier of the MF20A, and they are used as XZ type and controlled using one controller.



Note. For the double-carrier, since one robot occupies two axes of the controller, the number of robots may differ from the number of controllable axes.

## CAUTION

### Conditions needing regenerative unit on multi-robot

- The total motor capacity exceeds 450 W.
- The total motor capacity of the vertical axis exceeds 240 W.
- The B14H performs the operation at a maximum speed of more than 1250 mm/s.
- When the vertical axis is 240 W or less, the conditions shown below are satisfied.
  - There is a 200 W-vertical axis.
  - A 100 W-vertical axis has a stroke of 700 mm or more.
  - There are two 100 W-vertical axes with a 5 mm-lead.

## FLIP-X terminology

### High lead

This term indicates models supporting ball screw leads that exceed the standard lead (12 mm or 20 mm). (The standard lead of the F17L and C17L is 50.)

### Origin on non-motor side

This term indicates models that are applicable to the origin non-motor specifications as standard. The origin on the non-motor side in the standard state is not supported with a lead not stated in the catalog. If special specifications are needed, please consult YAMAHA.

### Maximum speed

This term indicates the maximum transfer speed. YAMAHA's single-axis robots can transfer a workpiece at this speed regardless of the transfer weight as long as it is within the maximum payload. However, as the workpiece is heavier, the acceleration/deceleration curve becomes gentle. If the movement distance is short, the speed does not reach the maximum speed stated in the catalog.

#### CAUTION

When the stroke of the ball screw drive type is long, noise or vibration is produced due to resonance of the ball screw if moved at the maximum speed. If this happens, lower the speed to that stated in the note column. (It is also possible to lower the transfer speed of the entire program using the SPEED setting or make the adjustment for each movement command.)

### Maximum payload

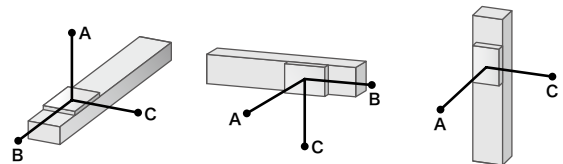
This term indicates the maximum weight that can be loaded on the slider and transferred. Select an appropriate model so that the total weight of the customer's tools (air cylinder or chuck) and workpiece is less than this data. When the center of gravity of the tool or workpiece is offset from the center of the slider, the allowable overhang needs to be taken into consideration. Additionally, when entering the total weight of the tool and workpiece for the payload parameter of the controller, optimal acceleration/deceleration and servo parameter are automatically set.

### Rated thrust

This term indicates the force to be applied in the slider advancing direction in the slider stationary (hold) state. When using vertically, the weight of the loaded workpiece is subtracted from this value (when the force is applied downward from the top). The slider can move only at a low speed (approximately 10 % of the maximum speed), but this value becomes lower than the specification value. Additionally, the type B of the timing belt drive cannot be used for applications, in which thrust is applied.

### Allowable overhang

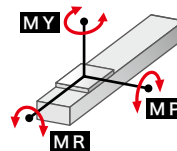
This term indicates an allowable overhang of an object to be transferred. In the specification data, this indicates the distance from the center of the top face of the slider to the center of gravity of an object to be transferred by the weight. This value is determined according to the service life of the linear guide. Under normal operation conditions<sup>Note</sup>, the 90 %-service life of the linear guide is 10,000 km or more if gravity centers of the workpiece and tool are kept within the allowable overhang. When using with an overhang amount exceeding the specification data, it is necessary to install a separate support guide or restrict operating conditions (speed, acceleration) so that a load is not applied to the linear guide of the single-axis robot. For detail, please consult YAMAHA.



Note. Speed, acceleration 100 % (It is preconditioned that the weight parameters are set correctly.)  
There shall be no impact load or excessive vibration during operation.  
Additionally, the alignment is correct.

### Static tolerance moment

This term indicates the load moment applied to the slider in the robot stationary state.



### Critical speed

When the stroke of the ball screw drive type is long, noise or vibration is produced due to resonance of the ball screw if moved at the maximum speed. If this happens, lower the speed to that stated in the note column. (It is also possible to lower the transfer speed of the entire program using the SPEED setting or make the adjustment for each movement command.)





# PHASER Series

Product Lineup

## LINEAR MOTOR SINGLE-AXIS ROBOTS

No limit on critical speed even when using a long stroke of 4 m.  
"PHASER" series delivers superb performance  
during long distance transfer.



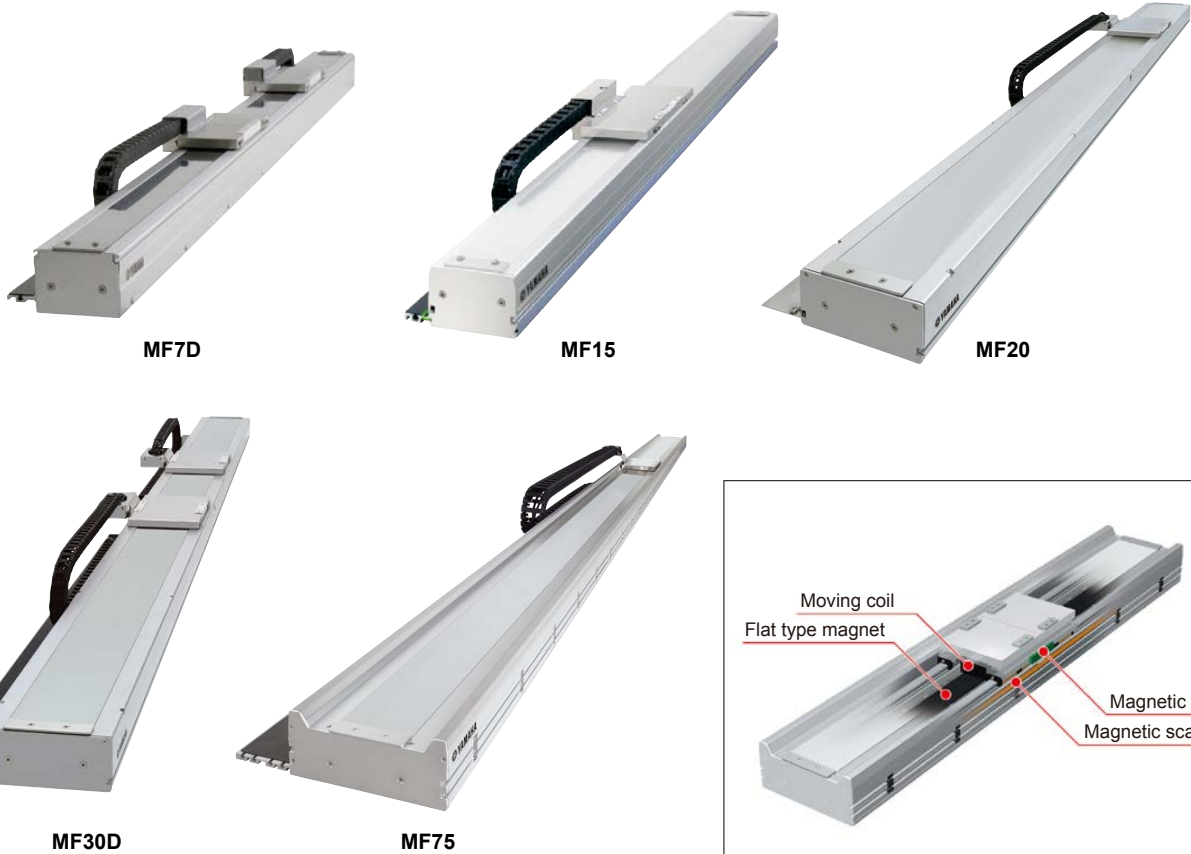
# Critical speed is not restricted and high-speed long-stroke transfer is possible.

## MF type

High-power and long-stroke using flat motor with core

P.242

- Maximum stroke: 4050 mm
- Maximum speed: 2500 mm/s
- Repeated positioning accuracy: +/-5 μm
- Maximum payload: 7 to 160 kg



Type	Size (mm) <sup>Note 1</sup>	Model	Carrier	Maximum payload (kg)	Maximum speed (mm/sec.)	Stroke (mm)	Page
MF type Flat type with core Linear motor specifications	W85 × H80	MF7	Single	10 (7) <sup>Note 2</sup>	2500	100 to 4000	P.242
		MF7D	Double			100 to 3800	
	W100 × H80	MF15	Single	30 (15) <sup>Note 2</sup>		100 to 4000	P.248
		MF15D	Double			100 to 3800	
	W150 × H80	MF20	Single	40 (20) <sup>Note 2</sup>		150 to 4050	P.252
		MF20D	Double			150 to 3850	
		MF30	Single	60 (30) <sup>Note 2</sup>		100 to 4000	P.255
		MF30D	Double			150 to 3750	
	W210 × H100	MF75	Single	160 (75) <sup>Note 2</sup>		1000 to 4000	P.258
		MF75D	Double			680 to 3680	

Note 1. The size shows approximate maximum cross sectional size.

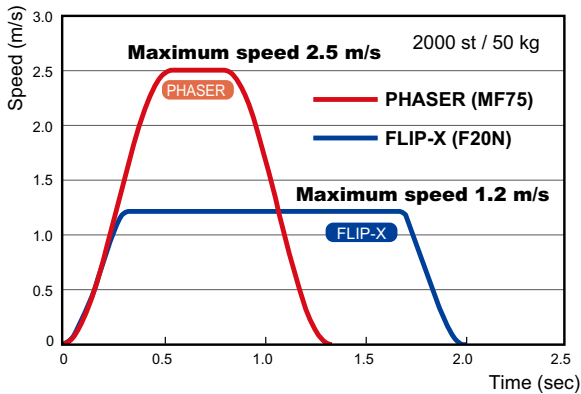
Note 2. When using at the maximum speed, the maximum payload becomes the value in ( ).

POINT 1

**Maximum speed 2.5 m/sec. and no critical speed limit**

The linear motor single-axis robot has no restrictions on critical speed like ball screw. The maximum stroke is 4 m. The long-distance transfer reduces the cycle time greatly.

**Movement time comparison between linear single-axis robot PHASER and single-axis robot FLIP-X**



POINT 2

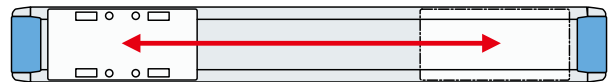
**Suitable for heavy object transfer. Maximum payload 160 kg**

The maximum payload is 160 kg. The robot can transfer a heavy object, such as large LCD panel at a high speed with high accuracy. (In the payload range of some MF types, the maximum speed may be restricted. For details, refer to the specification page of each model.)

POINT 3

**Effective use of stroke**

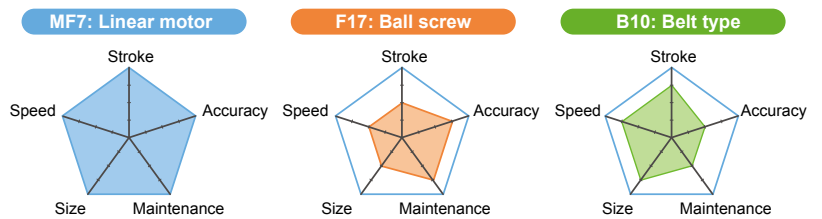
As the linear motor single-axis robot incorporates a coil that is the drive part inside the table, dead spaces are eliminated to maximize the stroke. Additionally, as the main body is symmetrical, the flexibility of the layout is improved.



POINT 4

**In-house manufacturing of major parts achieves low costs.**

Magnetic scales are developed and manufactured at YAMAHA. In-house manufacturing of other major parts achieves large cost reduction. Nowadays, the linear motor is not a special mechanism. The customer can select the linear motor or ball screw in the similar way according to the customer's needs. In particular, when performing a high-speed and long-distance transfer of a light workpiece, selecting linear motor robots may reduce the cost.



■ Comparison of single-axis robot models

Model name	Main body price <sup>Note 1</sup>	Maximum speed (mm/sec.)	Maximum payload (kg)	Repeated positioning accuracy (μm)	Maximum stroke (mm)	Maximum cross-sectional dimension <sup>Note 2</sup> (mm)
MF7-1500		2500	10 (7) <sup>Note 3</sup>	+/- 5	4000	W85 × H80
F17-40-1450		720 <sup>Note 4</sup>	40	+/- 10	1450	W168 × H100
B10-1450		1850	10	+/- 40	2550	W100 × H81

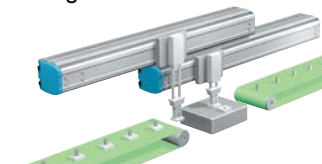
Note 1: The prices are compared with the strokes shown above.  
 Note 2: Cable carriers are not included.  
 Note 3: The payload is 7 kg when the maximum speed is 2500 mm/s. (10 kg-payload: 2100 mm/s)  
 Note 4: This value is obtained by considering the critical speed with a stroke of 1450 mm.

POINT 5

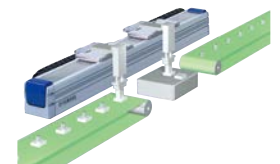
**Double-carrier available as standard**

Double-carrier specifications that operate two carriers on one robot are available as standard. High effects, such as space saving, cost reduction, and tact improvement are obtained when compared to two single-axis robots. Furthermore, no axis alignment is needed and tools are commonly used to shorten the setup time. (When using the RCX series controller, an anti-collision function can be used.)

■ Layout using two ball screw single-axis robots



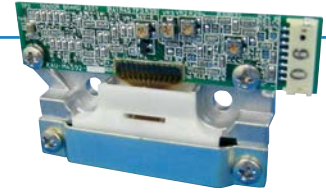
■ Space saving using double-carrier



## POINT 6

### Linear scale developed by YAMAHA

YAMAHA originally developed a new linear scale based on its excellent magnetic signal detection technology.



#### Magnetic scale provides high environment resistance.

YAMAHA's magnetic scale is resistant to dirt and can be used in an environment where grease or cutting fluid sometimes splashes.

#### Semi-absolute specifications

The current position is obtained by reading the signal recorded in the linear scale. So, it is not necessary to perform a large return-to-origin movement before starting the operation after turning on the power (the slider moves up to 76 mm when reading the signals).

#### Cost reduction

In-house linear scale development and manufacturing achieves large cost reduction.

#### High resolution 1 $\mu\text{m}$

Magnetic signals recorded in the magnetic scale are detected and interpolated to achieve a highly accurate resolution of 1  $\mu\text{m}$ .

#### Repeated positioning accuracy: $\pm 5 \mu\text{m}$

A fully-closed control that always feeds back the table position provides high accuracy steadily.

Additionally, there are no mechanical backlashes, such as ball screws or timing belts.

## POINT 7

### Silence and long service life

Unlike ball screw type robots, there are few sliding and rotating parts. So, the operation is very quiet. Moreover, as the coil is not in contact with the magnet, they are not worn out and can be used for an extended period of time.

## POINT 8

### Dust-proof structure

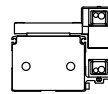
All YAMAHA's linear motor robots use a stainless steel shutter. This prevents entry of foreign objects. Additionally, these shutters are made of tough stainless steel with an extremely high fatigue strength to support high-speed and long-stroke operation.

## POINT 9

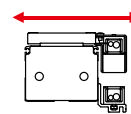
### Flat type without cable carrier protrusion

For the MF7, as the main body is made compact, a flat type that the cable carrier becomes flat on the top surface of the table is prepared as standard. Please select this type according to the tool or workpiece shape, or installation method.

#### Standard type



#### Flat type



As the cable carrier does not protrude from the table upper surface in the flat type, a large tool can be installed easily.



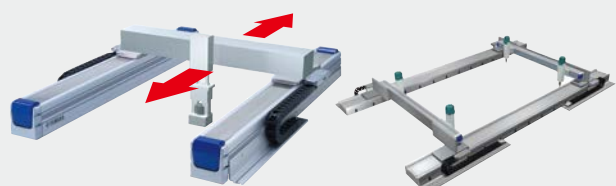
#### Applicable to multi-carrier operation

The PHASER series also supports "multi-carrier" operation that allows using three or more carriers on one robot. This "multi-carrier" operation drastically extends applications due to its high effect in improving tact time and saving space.



#### Applicable to dual-drive

As a dual-drive that simultaneously drives two axes, high-speed transfer and heavy object transfer are possible in a wide area. YAMAHA can propose an optimal control method according to the robot linkage rigidity.





# XY-X Series

Product Lineup

## CARTESIAN ROBOTS

Offering a full lineup of Cartesian robots that come with exact performances and sizes supports a wide variety of applications.



### Fulfilling product lineups

Fulfilling product lineups are provided, such as compact and low price PXYx type, HXYLx allowing long-distance transfer with a maximum payload of 50kg, and NXY with hollow servomotor used for the X-axis applicable to double-arm. Fulfilling arm and performance variations support the customers' various requests.

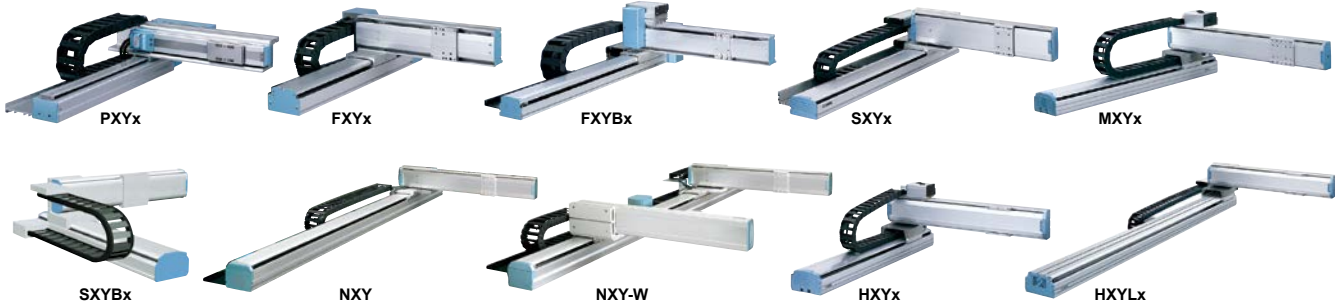
Additionally, various custom-order products other than models stated in the catalog are also supported. For detail, please feel free to consult YAMAHA.

# Fulfilling product lineups support a wide variety of applications.

## Various variations

P.262

Models with 3 or more axes can be selected from: ■ Z-axis clamped base and moving table type  
 ■ Z-axis clamped table and moving base type



Model	Applicable arm variations					Number of axes	Maximum payload (kg)	Maximum stroke (mm)	
	Arm	Gantry	Moving arm	Pole	XZ			X-axis	Y-axis
PXYx	●	-	-	-	-	2 axes	4.5	150 to 650	50 to 300
FXYx	●	-	-	-	-	2 axes/3 axes	12	150 to 1050	150 to 550
FXYBx	●	-	-	-	-	2 axes	7	150 to 2450	150 to 550
SXYx	●	-	●	●	●	2 axes/3 axes/4 axes	20	150 to 1050	150 to 650
SXYBx	●	-	-	-	●	2 axes/3 axes/4 axes	14	150 to 3050	150 to 550
MXYx	●	●	●	●	●	2 axes/3 axes/4 axes	30	250 to 1250	150 to 650
NXY	●	-	-	-	-	2 axes/3 axes	25	500 to 2000	150 to 650
NXY-W	●	-	-	-	-	4 axes/6 axes	25	250 to 1750	150 to 650
HXYx	●	●	●	●	●	2 axes/3 axes/4 axes	40	250 to 1250	250 to 650
HXYLx	●	●	-	-	-	2 axes	40	1150 to 2050	250 to 650

Note. The maximum payloads and maximum strokes shown above are values when using arm type/cable carrier specifications.

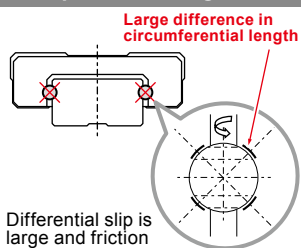
### POINT 1

#### Use of 4-row circular arc groove type 2-point contact achieves high durability.



4-row circular arc groove type 2-point contact guide with less differential slip is adopted. When compared to the 2-row Gothic arch type 4-point contact guide, the robot provides features that it does not stop due to catching or overload and is difficult to malfunction even under poor conditions with low installation surface accuracy or large overhang amount. Guide rail type suitable for Cartesian robots, to which moment is always applied.

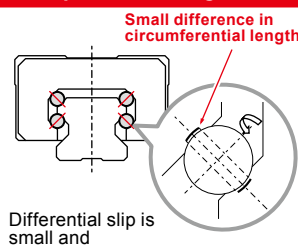
#### 2-row gothic arch groove type 4-point contact guide



Differential slip is large and friction resistance is large.

- Easy to receive effects of poor installation surface accuracy, friction, and elastic deformation.
- Breakage may occur even within the calculated service life.

#### 4-row circular arc groove type 2-point contact guide



Differential slip is small and self-centering function is high.

- Resistant to alignment changes and moment loads.
- Difficult to break.

### POINT 2

#### Highly reliable resolver is used.



A resolver is used for the position detector. As the resolver uses a simple and rigid structure without using electronic components and optical elements, it features high environment resistance and low failure ratio. Detection problems due to electronic component breakdown, dew condensation on or oil sticking to the disk that may occur in optical encoders do not occur in the resolver due to its structure. Additionally, as the absolute specifications and incremental specifications use the same mechanical specifications and common controller, desired specifications can be selected only by setting parameters. Furthermore, even when the absolute battery is consumed completely, the robot can still operate as the incremental specifications. So, even if a trouble occurs, the line stop is not needed to ensure the safe production line. Furthermore, the backup circuit has been completely renovated and now has a backup period of one year in the non-energizing state.

### POINT 3

#### Easy maintenance

Even when the built-in structure is used, the motor or ball screw can be replaced individually to ensure smooth maintenance work.

POINT 4

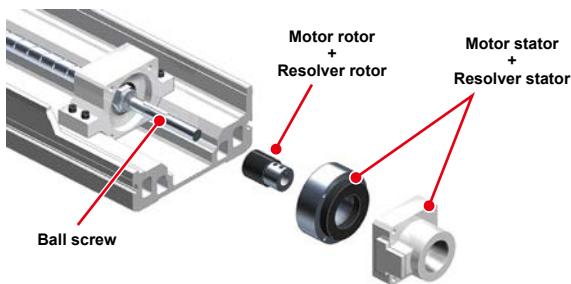
Low price

It was succeeded to reduce the number of parts while improving the basic performance. So, further cost reduction was achieved. Additionally, the resolver was used to eliminate the existing image "absolute specifications are expensive". Additionally, both the absolute specifications and incremental specifications use exactly same mechanical parts.

POINT 5

Lightweight and compact

The ball screw drive motor is renovated to a couplingless built-in structure to make dead spaces small and contribute to space saving.

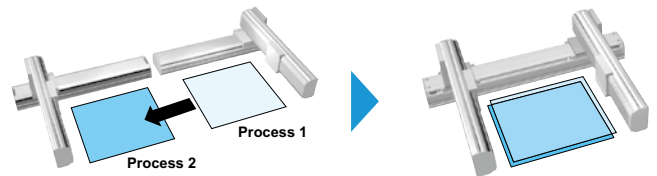


POINT 6

Double Y-axis available as standard

The NXY with nut rotation type structure supports a double Y-axis with two carriers arranged on the same axis. Two Cartesian robots can be made compact to improve the work efficiency at a low cost and ensures the space saving.

- Layout using two conventional Cartesian robots
- Space saving and process integration using NXY-W



Arm & cable variations

Cable variations

Two kinds of cable specifications, cable carrier and whipover (separate cable), are available. (PXYx uses only the cable carrier.)

● Cable carrier (C)

[User cable is provided as standard equipment.]  
When adding cables into a cable carrier, carefully check the space factor (30 % or less), etc.  
Note. User cable: 10-core, 0.3 sq



● Whipover (S)

[User cable and air tubing are provided as standard equipment.]  
Be aware that sagging or faulty wiring may occur if a load is applied to the whipover. Additionally, sagging may also occur when using a long-stroke.  
Note. User cable: 7-core, 0.2 sq  
Note. User tubing: φ 4-air tube, 2 pcs.



Arm variations

2 axes combination

● Arm type

Type with Y-axis slider movement



● Moving arm type

Type with entire Y-axis arm movement



● Gantry type

Type with support guide attached to the Y-axis tip of the arm type



● Pole type

Type with Y-axis slider vertical movement



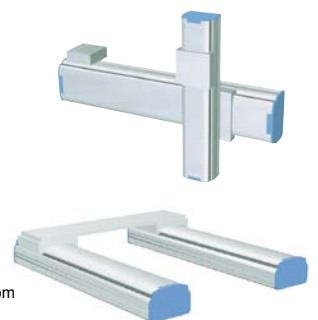
● XZ type

Type with combination of X-axis for horizontal movement and Z-axis for vertical movement

Clamped table/moving base



Clamped base/moving table



● Dual-robot (2 axes)

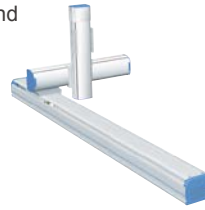
Type with synchronous drive between two axes  
Note. The dual-robot is supported as a custom order.

### 3 axes combinations

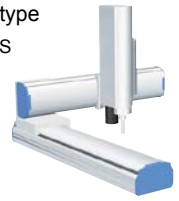
- Z-axis clamped base and moving table type  
ZR-axis model: ZT / ZF / ZFL / ZL



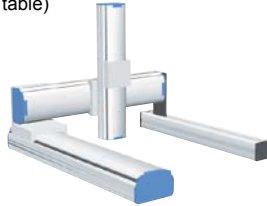
- Z-axis clamped table and moving base type  
ZR-axis model: ZFH / ZH



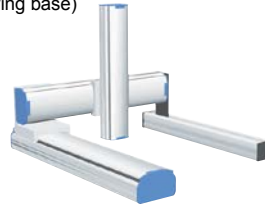
- Shaft up/down type  
ZR-axis model: ZS



- X-Y Gantry + Z-axis  
(Clamped base/moving table)



- X-Y Gantry + Z-axis  
(Clamped table/moving base)

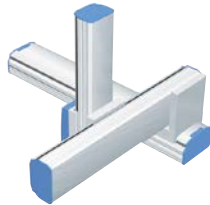


- Dual-robot (3 axes)  
Note. The dual-robot is supported as a custom order.



### 4 axes combinations

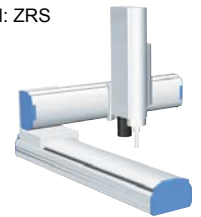
- Z-axis clamped base and moving table type + rotation axis  
ZR-axis model: ZRF / ZRFL / ZRL



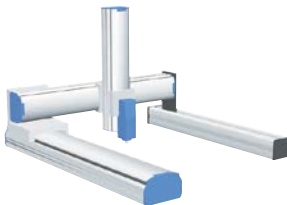
- Z-axis clamped table and moving base type + rotation axis  
ZR-axis model: ZRFH / ZRH



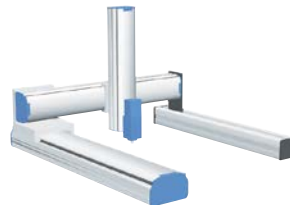
- ZR-axis integrated type  
ZR-axis model: ZRS



- X-Y Gantry + Z-axis  
(Clamped base/moving table) + rotation axis



- X-Y Gantry + Z-axis  
(Clamped table/moving base) + rotation axis



- Dual-robot (4 axes)  
Note. The dual-robot is supported as a custom order.

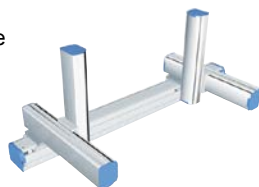


- Double Y-axis specifications  
Robot model: NXY-W

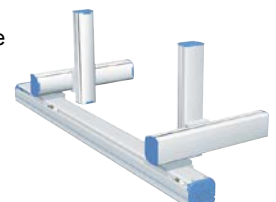


### 6 axes combination

- Double Y-axis specifications/ Z-axis clamped base and moving table type  
Robot model: NXY-W-ZFL



- Double Y-axis specifications/ Z-axis clamped table and moving base type  
Robot model: NXY-W-ZFH



#### Special orders

YAMAHA supports models with strokes and payloads other than the standards as special orders. For detail, please feel free to consult YAMAHA.

Contact Us E-mail: [robotn@yamaha-motor.co.jp](mailto:robotn@yamaha-motor.co.jp)

## YK-X Series

Product Lineup

YK-TW	Orbit type
YK-XG/YK-X	Completely beltless model <sup>Note</sup>
YK-XE	Low cost high performance model
YK-XGS	Wall mount/inverse model
YK-XGP	Dust-proof & drip-proof model

Note. Except for YK1200X

# SCARA ROBOTS

Arm length of 120 mm to 1200 mm, full-selection of lineup is top in the world. Completely beltless structure pursues the features of SCARA robots to their utmost limits.



Low cost high performance model  
YK400XE-4

### History of 40 years

The first YAMAHA robots were SCARA robots. Since the first SCARA robot called "CAME" was produced in 1979, some 40 years of SCARA robot innovations have continually appeared. These SCARA robots have undergone countless modifications in an ever changing marketplace and amassed a hefty record of successful products making them an essential part of the YAMAHA robot lineup.



1979  
<YK7000>



# Comprehensive line of YAMAHA SCARA robots

## Orbit type

P.392

- Arm length 350 mm / 500 mm
- Maximum payload 5 kg



## Low cost high performance model

P.405

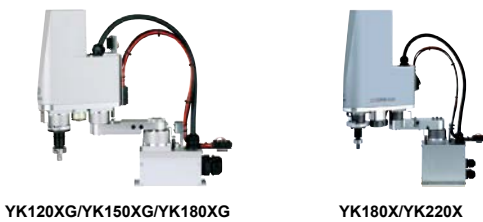
- Arm length 400 mm to 710 mm
- Maximum payload 4 kg to 10 kg



## Extra small type

P.396

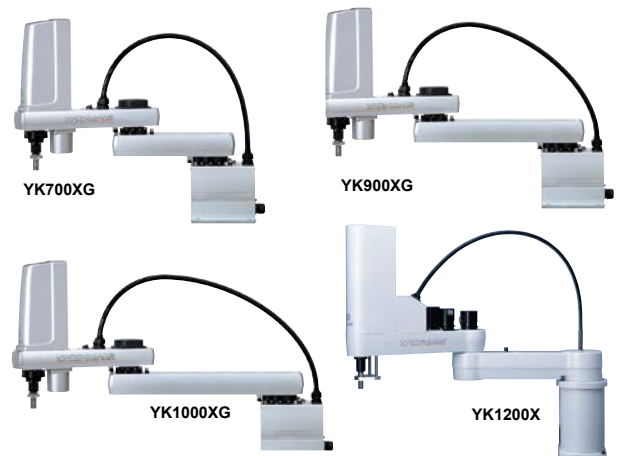
- Arm length 120 mm to 220 mm
- Maximum payload 1 kg



## Large type

P.417

- Arm length 700 mm to 1200 mm
- Maximum payload 10 kg to 50 kg



## Small type

P.401

- Arm length 250 mm to 400 mm
- Maximum payload 5 kg



## Wall mount/inverse model

P.423

YK300XGS to YK1000XGS

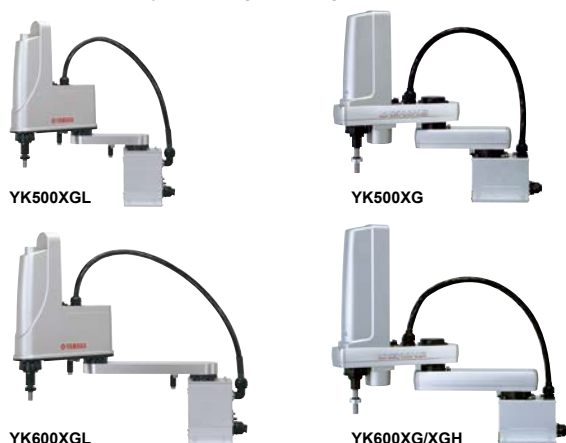


- Wall mount type  
Type where the robot body is installed in the wall.
- Inverse type  
Type where the wall mount type is installed upside down.

## Medium type

P.408

- Arm length 500 mm to 600 mm
- Maximum payload 5 kg to 20 kg



## Dust-proof & drip-proof model

P.433



YK250XGP/YK350XGP/YK400XGP  
YK500XGLP/YK600XGLP

Plays active part in the working environment with a large amount of water or dust (protection class equivalent to IP65).

- Please consult YAMAHA for anti-droplet protection for fluids other than water.

## YK-TW Orbit type

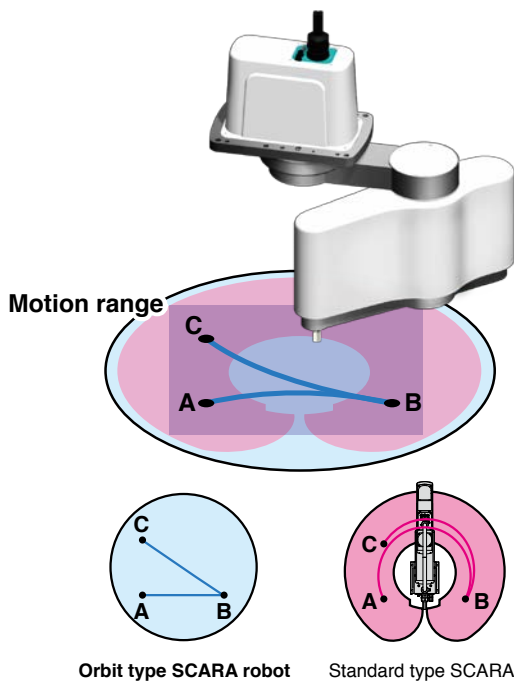
### YK-TW POINT 1

#### Layout design freedom

**User: We want a smaller equipment footprint.**

**YK-TW can move anywhere through the full  $\phi$  1000 mm <sup>Note 2</sup> work envelope.**

Featuring a ceiling-mount configuration with a wide arm rotation angle, the YK-TW can access any point within the full  $\phi$  1000 mm downward range. This eliminates all motion-related restrictions with regard to pallet and conveyor placement operations, while dramatically reducing the equipment footprint.



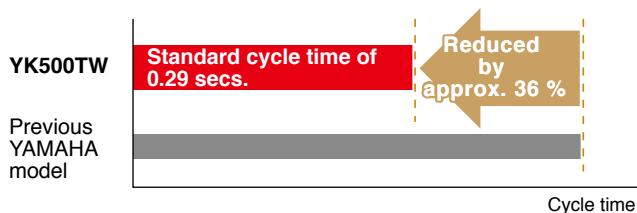
### YK-TW POINT 2

#### Higher productivity

**User: We need to reduce cycle time.**

**Standard cycle time of 0.29 secs. <sup>Note 2</sup>**

Y-axis (arm 2) passes beneath the X-axis (arm 1) and it has a horizontal articulated structure, allowing it to move along the optimal path between points. Moreover, the optimized weight balance of the internal components reduces the cycle time by 36 % as compared to previous models.



The standard cycle time for moving a 1-kg load horizontally 300 mm and up/down 25 mm is shortened by approximately 36 % compared to existing YAMAHA models.

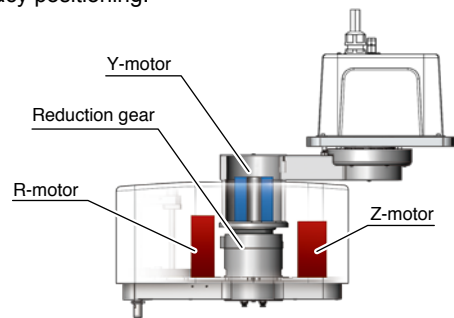
### YK-TW POINT 3

#### High quality

**User: We want a high precision assembly system.**

**YK-TW offers a repeated positioning accuracy of  $\pm 0.01$  mm <sup>Note 1</sup> (XY axes).**

Higher repeated positioning accuracy than that offered by a parallel-link robot. This was accomplished by optimizing the robot's weight balance through an extensive re-design of its internal construction. The lightweight yet highly rigid arm has also been fitted with optimally tuned motors to enable high accuracy positioning.



#### Hollow construction

Y-motor and reduction gear feature a hollow construction which allows them to be housed inside the harness arm.

**360° Rotation.**

#### Optimized rotation center of gravity moment

Weight balance was optimized by placing the R-motor and Z-motor at the left and right sides respectively.

**Reduced inertia enables high-speed motion.**

### YK-TW POINT 4

#### Suitable for a wide range of applications

**User: We need to move heavy workpieces at high speeds.**

**YK-TW handles payloads up to 5 kg.**

Handles loads up to 5 kg. Also accommodates arm-end tools which tend to be heavy, making it highly adaptable to various applications.

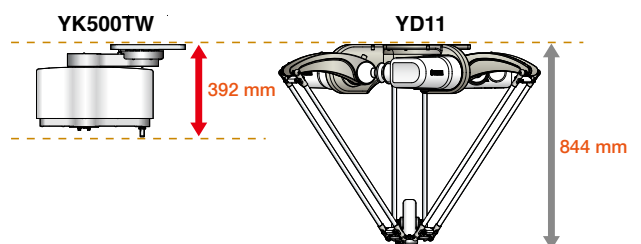
### YK-TW POINT 5

#### Smaller equipment footprint

**User: We want to reduce the height of our equipment.**

**YK-TW offers both a lower height and a smaller footprint.**

YK-TW height is only 392 mm. This compact size enables more freedom in the equipment layout design.



Note 1. Applies to the YK350TW    Note 2. Applies to the YK500TW

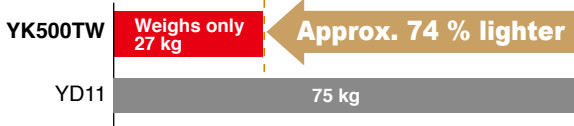
## YK-TW POINT 6

### Easy installation

User: Parallel-link robots require large frames which complicates installation...

YK-TW has a total height of only 392 mm, and weighs only 27 kg <sup>Note 2</sup>.

Lower inertia = Lighter frame



## YK-TW POINT 7

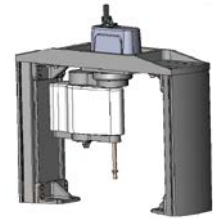
### Reduce the number of steps

User: Preparing the frame is extra work.

We can optionally provide a dedicated frame for the YK-TW.

With no need for complex calculations of strength, startup steps can be reduced.

Note. For details on dimensions and price, please contact Yamaha.

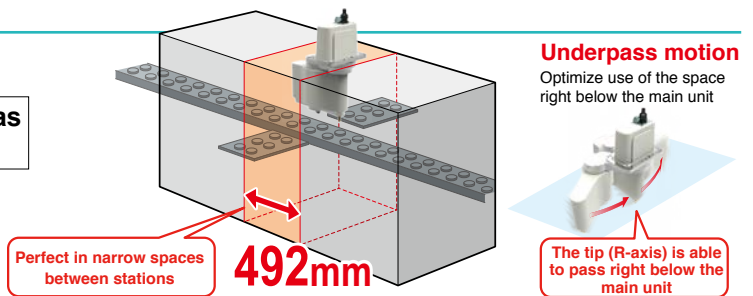


## YK-TW POINT 8

### Ideal for narrow space applications

User: We need to install in limited space, such as between equipment.

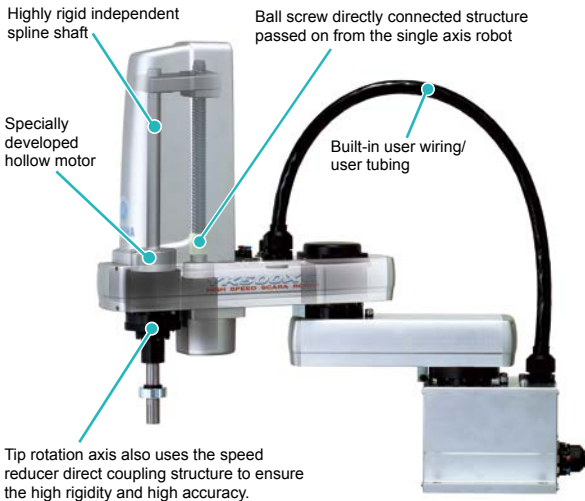
Minimum installation width 492mm <sup>Note 1</sup>



## YK-XG Completely beltless type

### Integral structure designed for optimal operation

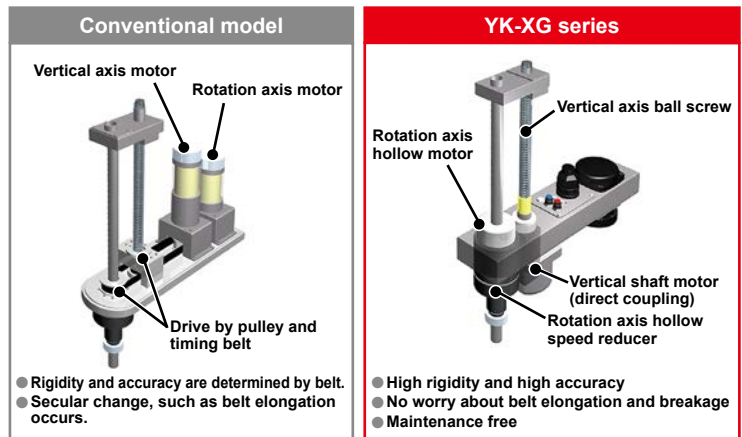
Note. The following shows an example of YK500XG.



## YK-XG POINT 1

### Completely beltless structure

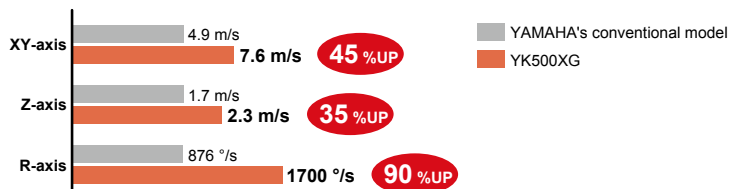
A completely beltless structure was achieved using a ZR-axis direct coupling structure. This completely beltless structure greatly reduces waste motion. This structure also maintains high accuracy for an extended period of time. Additionally, this structure ensures maintenance-free operation for an extended period of time without worrying about belt breakage, elongation, or secular deterioration (except for Orbit type and large type).



## YK-XG POINT 2

### High speed

The standard cycle time is fast. Additionally, YAMAHA also places special emphasis on the tact time in the practical working area. The speed reduction ratio or maximum motor RPM was reviewed to greatly improve the maximum speed. This contributes to improvement of the tact time.



YK-XG POINT 3

Resolver is used for position detector.



As the resolver uses a simple and rigid structure without using electronic components and optical elements, it features high environment resistance and low failure ratio. Detection problems due to electronic component breakdown, dew condensation on or oil sticking to the disk that may occur in optical encoders do not occur in the resolver due to its structure. Additionally, as **the absolute specifications and incremental specifications use the same mechanical specifications and common controller**, the specifications can be changed only by setting parameters. Furthermore, even when the absolute battery is consumed completely, the robot can still operate as the incremental specifications. So, even if a trouble occurs, the line stop is not needed to ensure the safe production line. The backup circuit has been completely renovated and now has a backup period of one year in the non-energizing state.

Note. The resolver has a simple structure without using electronic components. So, the resolver is highly resistant to low and high temperatures, impacts, electrical noise, dust particles, and oil, etc., and is used in automobiles, trains, and aircrafts that particularly require the reliability.

**Optical encoder**




- Optical type
- Electronic components are required and structure is complicated.
- Electronic component malfunction, or dew condensation on or oily content sticking to disk may occur easily.

▼

**Detection failure**

**Resolver**



- Magnetic type
- Simple structure only with iron core and winding has less potential failure factors.
- Immune to shock and electric noise.

▼

**High reliability**

YK-XG POINT 4

Excellent maintenance ability

The covers of YAMAHA SCARA robot YK-XG series can be removed forward or upward. The cover is separated from the cable, so the maintenance work is easy. Additionally, the grease replacement of the speed reducer needs many steps to disassemble the gear and may cause positional deviation. However, since the speed reducer of the YAMAHA SCARA robot uses long-life grease, the grease replacement is not needed.

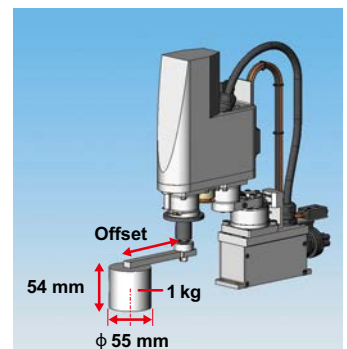
YK-XG POINT 5

Surprising R-axis tolerable moment of inertia

The SCARA robot performance cannot be expressed only by the standard cycle time. In actual operating environments, there are various workpieces, such as heavy workpiece or workpiece with large offset. At this time, since the robot with low R-axis tolerable moment of inertia needs to decrease the speed during operation, the cycle time decreases greatly. All YAMAHA SCARA robot YK-XG types have the tip rotation axis directly coupled to the speed reducer. Since the R-axis tolerable moment of inertia is very high when compared to a general structure in which the moment of inertia is transmitted by a belt after decelerating, the robot can operate at a high speed even with workpieces that have been offset.

R-axis tolerable moment of inertia: Comparison between YK120XG and other company's model

When the offset from the R-axis to the center of gravity of the load is large, the inertia becomes large and the acceleration during operation is restricted. The R-axis tolerable moment of inertia of YAMAHA XG series is exceedingly large when compared to other company's SCARA robots in the similar class, so it can operate at a high speed even in the offset state.



**YK120XG**  
(R-axis tolerable moment of inertia: 0.1 kgfcm<sup>2</sup>)

When the tip load weight is 1 kg, it is possible to operate at **approx. 100 mm** offset.

When the load weight is 1 kg (refer to the right in the figure.)

Offset (mm)	Inertia (kgfcm <sup>2</sup> )	Operation	
		YK120XG	Company A
0	0.0039	○	○
45	0.025	○	×
97	0.1	○	×

○: Operable    ×: Out of catalog value tolerance range

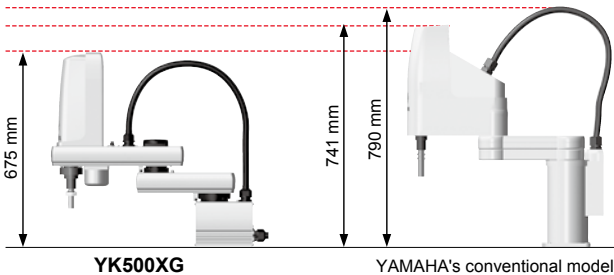
◆ R-axis tolerable moment of inertia: YK120XG ..... 0.1 kgfcm<sup>2</sup>

Company A ..... 0.0039 kgfcm<sup>2</sup>

## YK-XG POINT 6

### Compact

As the cable layout is changed, the cable height becomes lower than the main body cover. Additionally, use of extruded material base and motor with low overall height achieves the lowest overall height in the same class.



## YK-XG POINT 7

### Hollow shaft and tool flange options are selectable.

Hollow shaft that allows easy wiring to the tip tool and tool flange for tool mounting are provided as options.



Hollow shaft option convenient for routing of air tubes and harness wires

Note. YK250XG to YK400XG  
YK500XGL/YK600XGL



Tool flange option for easy mounting of a tool to the tip

Note. YK250XG to YK1000XG

## YK-XG POINT 8

### Zone control (= Optimal acceleration/deceleration automatic setting) function

In the SCARA robot, the load applied to the motor and speed reducer in the arm folded state greatly differs from that in the arm extended state. YAMAHA SCARA robot **automatically selects** optimal acceleration and deceleration from the arm postures at operation start and operation end. Therefore, the robot does not exceed the tolerance value of **the motor peak torque** or **speed reducer allowable peak torque** only by entering the initial payload. So, full power can be extracted from the motor whenever needed and high acceleration/deceleration are maintained.

#### For X-axis of YK500XG

The torque in the arm folded state is 5 or more times different from that in the arm extended state.

**This may greatly affect the service life, vibration during operation, and controllability.**

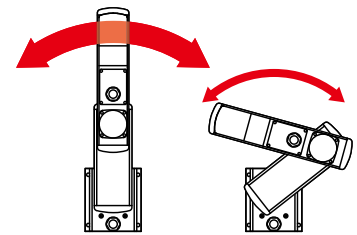
If the motor torque exceeds the peak value

→ **This may adversely affect the controllability and mechanical vibration, etc.**

If the torque exceeds the tolerable peak torque value of the speed reducer

→ **This may cause early breakage or shorten the service life extremely.**

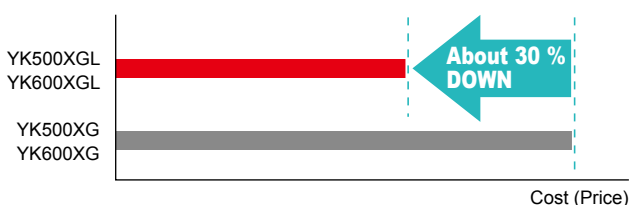
**Robot stops at a desired position accurately to ensure long service life.**



## YK-XG POINT 9

### Low price models with the arm length 500 mm/600 mm specifications are also added to the product lineup.

The customers require to use SCARA robots at a more affordable price. Models YK500XGL/YK600XGL were developed to meet these customer's requests. About 30 %-cost reduction was achieved when compared to the conventional models YK500XG/600XG.





## YK-XE Low cost high performance model

### YK-XE POINT 1

#### New addition of higher payload models to YK-XE series

In addition to existing 400 mm horizontal arm reach YK400-XE, models with 10 kg payload capacity and 610 mm and 710 mm arm reach are added to YK-XE lineup.

### YK-XE POINT 2

#### Improvement of productivity by high-speed operation

By reviewing the arm structure, the vibration is reduced and the motion is optimized to shorten the standard cycle time. High-speed, less-vibration, and agile operation contributes to improvement of the productivity.

### YK-XE POINT 3

#### Aordable Price and Improved Performance

Both the high operation performance and affordable price are achieved. Production equipment with high cost performance can be constructed.

## YK-XGS Wall mount/inverse model

#### Hanging type is renewed. Completely beltless structure and high rigidity

As the conventional hanging type is changed to the wall mount type, the flexibility of the system design is improved. The production equipment can be downsized. Additionally, as an inverse type that allows upward operation is also added to the product lineup, the flexibility of the working direction is widened. Furthermore, use of a completely beltless structure achieves a maximum payload of 20 kg and a R-axis tolerable moment of inertia of 1 kgm<sup>2</sup>Note that are the top in the class. A large hand can also be installed. So, this robot is suitable for heavy load work.

Note. YK700XGS to YK1000XGS



## YK-XGP Dust-proof & drip-proof model

#### Up/down bellows structure improves the dust-proof and drip-proof performance.

The dust-proof and drip-proof type that can be operated even in a work environment where water or particle dust scatters was renewed to a completely beltless structure. The belt does not deteriorate and poor environment resistance is improved. Additionally, an up/down bellows structure is used to improve the dust-proof and drip-proof performance.

Note. YK250XGP to YK600XGLP



### Protection class equivalent to IP65 (IEC60529)

Seals are added to the joints to maintain the dust-proof and drip-proof performance without air purging. The robot conforms to the protection class equivalent to IP65 (IEC60529).

**IP 65** - Class of protection against invasion of water: 5  
 Water injected from any direction does not affect adversely.  
 The standard pressure of the injected water is 30 KPa (30 KN/m<sup>2</sup>, 0.3 kgf/cm).  
 The injection speed is 12.5 liters/min. and the injection time is 3 min.  
 Note. The water injected under conditions exceeding those shown above may enter the unit.  
**Class of protection against solid objects: 6**  
 No invasion of particle dust.

### Dust-proof and drip-proof connector for user wiring is provided as standard.



YK250XGP to 600XGLP (arm part)



YK250XGP to 600XGLP (base part)

Model/Type		Model	Arm length (mm)	Maximum payload (kg)	Standard cycle time (sec.)	Page
<b>Orbit type</b>		YK350TW	350	5.0	0.32	P.392
		YK500TW	500	5.0	0.29	P.394
<b>Standard</b>	<b>Extra small type</b>	YK120XG	120	1.0	0.33	P.396
		YK150XG	150	1.0	0.33	P.397
		YK180XG	180	1.0	0.33	P.398
		YK180X	180	1.0	0.39	P.399
		YK220X	220	1.0	0.42	P.400
	<b>Small type</b>	YK250XG	250	5.0	0.43	P.401
		YK350XG	350	5.0	0.44	P.403
		YK400XE-4	400	4.0	0.41	P.405
		YK400XG	400	5.0	0.45	P.406
	<b>Medium type</b>	YK500XGL	500	5.0	0.48	P.408
		YK500XG	500	10.0	0.42	P.410
		YK610XE-10	610	10.0	0.39	P.411
		YK600XGL	600	5.0	0.54	P.412
		YK600XG	600	10.0	0.43	P.414
		YK600XGH	600	20.0	0.47	P.415
	<b>Large type</b>	YK710XE-10	710	10.0	0.42	P.416
		YK700XGL	700	10.0	0.50	P.417
		YK700XG	700	20.0	0.42	P.418
		YK800XG	800	20.0	0.48	P.419
		YK900XG	900	20.0	0.49	P.420
YK1000XG		1000	20.0	0.49	P.421	
<b>Wall mount/inverse model</b>		YK1200X	1200	50.0	0.91	P.422
		YK300XGS	300	5.0	0.49	P.423
		YK400XGS	400	5.0	0.49	P.425
		YK500XGS	500	10.0	0.45	P.427
		YK600XGS	600	10.0	0.46	P.428
		YK700XGS	700	20.0	0.42	P.429
		YK800XGS	800	20.0	0.48	P.430
		YK900XGS	900	20.0	0.49	P.431
<b>Dust-proof &amp; drip-proof model</b>		YK1000XGS	1000	20.0	0.49	P.432
		YK250XGP	250	4.0	0.50	P.433
		YK350XGP	350	4.0	0.52	P.435
		YK400XGP	400	4.0	0.50	P.437
		YK500XGLP	500	4.0	0.66	P.439
		YK500XGP	500	10.0	0.55	P.441
		YK600XGLP	600	4.0	0.71	P.442
		YK600XGP	600	10.0	0.56	P.444
		YK600XGHP	600	18.0	0.57	P.445
		YK700XGP	700	20.0	0.52	P.446
		YK800XGP	800	20.0	0.58	P.447
		YK900XGP	900	20.0	0.59	P.448
YK1000XGP	1000	20.0	0.59	P.449		

Note 1. The standard cycle time is measured under the following conditions.

- During back and forth movement 25mm vertically and 100mm horizontally (extra small type)
- During back and forth movement 25mm vertically and 300mm horizontally (small type / medium type / large type)

# YP-X Series

Product Lineup

## PICK & PLACE ROBOTS

Ideal for small components high-speed pick & place work.  
Positioning is made by servo control, so no complex mechanical  
adjustments are needed.



# Full lineup of 6 models in all from 2 axes to 4 axes

2 axes type

P.453

3 axes type

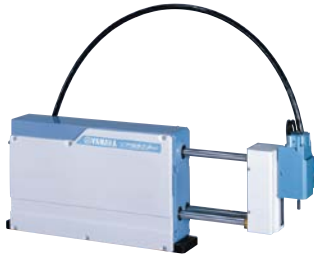
P.455

4 axes type

P.458



YP220BX/YP320X



YP220BXR/YP320XR/YP330X



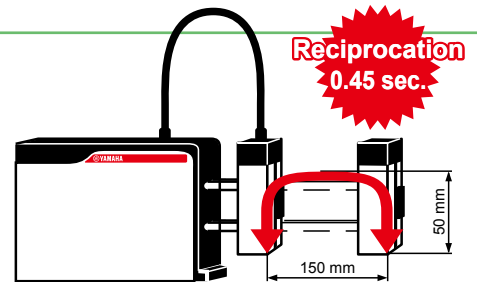
YP340X

Model	Axis	Structure				Maximum payload (kg)	Cycle time (sec.)	Page
		X-axis	Y-axis	Z-axis	R-axis			
YP220BX	2 axes	Belt	-	Belt	-	3	0.45	P.453
YP320X		Ball screw	-	Belt	-	3	0.57	P.454
YP220BXR	3 axes	Belt	-	Belt	Rotation axis	1	0.62	P.455
YP320XR		Ball screw	-	Belt	Rotation axis	1	0.67	P.456
YP330X		Ball screw	Ball screw	Belt	-	3	0.57	P.457
YP340X	4 axes	Ball screw	Ball screw	Belt	Rotation axis	1	0.67	P.458

## POINT 1

### High speed

Super high-speed pick & place operation with a standard cycle time of 0.45 sec. (YP220BX with up/down 50 mm, back/forth 150 mm, arch amount 50, load 1 kg) greatly contributes to improvement of the productivity. Since it is possible to output a signal to turn on/off any external equipment from any position while the axis is moving, the actual production cycle time is further improved.



## POINT 2

### Compact

Use of a compact size with an overall width of 109 mm (YP220BX) makes it possible to make the production line compact and simple. The moving arm structure with less interference with surroundings contributes to space saving.

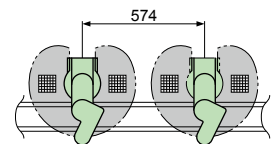
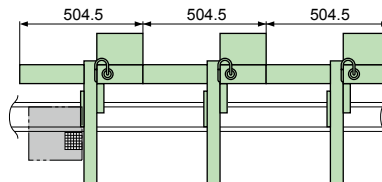
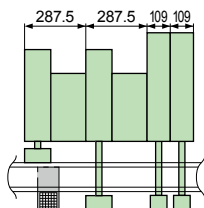
#### Reference examples of robot layout comparisons

■ Line using pick & place utilizing space saving

■ Line using YAMAHA's compact Cartesian robot PXYx  
X-axis stroke: 250 mm  
Y-axis stroke: 250 mm

■ Line using YAMAHA's compact SCARA robot YK250X

The compactness can be checked by comparing the occupied spaces when the YP-X series and YAMAHA's Cartesian/SCARA robots are laid out.



## POINT 3

### High accuracy

Both extremely high-speed performance and high repeated positioning accuracy of +/- 0.02 mm (YP320X, YP320XR, YP330X, YP340X) are assured.

## POINT 4

### Complete absolute position system

As the complete absolute position system is used, no return-to-origin operation is needed.

## POINT 5

### Versatility

Use of YAMAHA's unique servo system makes it possible to freely program the stop point and operation pattern settings. This robot is applicable to production of many models in small quantities that cannot be supported by the cam type robot.

CLEAN  
Type

Product Lineup

# CLEAN ROBOTS

Suitable for electronics component, food, and medical unit related work in clean room.

High sealing structure, dust generation prevention, and improvement of suction efficiency are achieved.

Both the high cleanliness degree and high performance are established.

Clean robots contribute to automation and labor saving of production systems in clean rooms.





# Both high cleanliness degree and high performance were achieved. Clean single-axis, Cartesian, and SCARA robots were added to the product lineup.

## Clean SCARA robots

### YK-XGC/XC type

The Z-axis spline is covered with bellows made of materials with low dust generation and other sliding parts are sealed completely. Harnesses are also incorporated completely and the inside of the robot is sucked from the rear of the base to prevent dust generation.

- Arm length: 180 mm to 1000 mm
- Suction amount: 30 to 60 Nℓ/min.
- Cleanliness degree: CLASS ISO3 (ISO14644-1)  
CLASS10 (FED-STD-209D)
- Maximum payload: 20 kg



### POINT 1

#### Vertical bellows structure improves the reliability of the clean performance.

As a beltless structure is used, no dust generation caused by the belt occurs. Furthermore, as the YK-XGC type was renewed to a structure, in which the bellows are installed on the Z-axis vertically, the reliability of the clean performance was further improved.

Note. Except for YK500XC to YK1000XC



### POINT 2

#### High durability

As a beltless structure is used, the robot can be operated without worry about belt elongation and secular change <sup>Note</sup>. Additionally, the bellows installed on the Z-axis use material with high durability to ensure the durability performance.

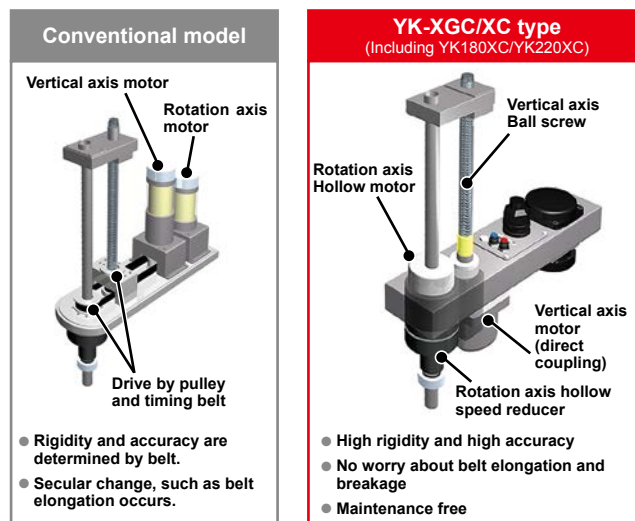
Note. Except for YK500XC to YK1000XC

### POINT 3

#### Completely beltless structure improves the rigidity.

A completely beltless structure was achieved using a ZR-axis direct coupling structure. As a speed reducer is coupled to the tip rotation axis, the R-axis tolerable moment of inertia is very high and the high-speed movement is possible even with a heavy workpiece or largely offset workpiece.

Note. Except for YK500XC to YK1000XC



Type	Model	Arm length (mm)	Maximum payload (kg)	Standard cycle time (sec.)	Beltless structure	Page
Extra small type	YK180XC	180	1.0	0.42	○	P.486
	YK220XC	220		0.45	○	P.487
Small type	YK250XGC	250	4.0	0.50	○	P.488
	YK350XGC	350		0.52	○	P.490
	YK400XGC	400		0.50	○	P.492
Medium type	YK500XC	500	10.0	0.53	-	P.496
	YK500XGLC	500	4.0	0.66	○	P.494
	YK600XC	600	10.0	0.56	-	P.499
	YK600XGLC	600	4.0	0.71	○	P.497
Large type	YK700XC	700	20.0	0.57	-	P.500
	YK800XC	800			-	P.501
	YK1000XC	1000			-	P.502

## Clean single-axis robots

### FLIP-XC type

P.466

The FLIP-XC type robots are single-axis robots "FLIP-X series" with clean room specifications. According to the applications, an optimal robot can be selected from 14 models from a lightweight and compact model to a large model with a maximum payload of 120 kg. As an air joint for suction is provided as standard equipment, grease with low dust generative characteristics is used, and stainless sheets with an excellent durability are used for the slide table surface, high cleanliness degree is achieved.

- Stroke: 50 to 2050 mm
- Suction amount: 15 to 90 Nℓ/min.
- Cleanliness degree: CLASS10<sup>Note</sup>
- Maximum payload: 120 kg (When installed horizontally)

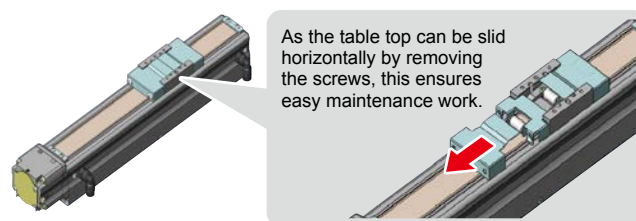
Note. C4L/C4LH, C5L/C5LH, and C6L are CLASS ISO3 (ISO14644-1).



### POINT

#### Excellent maintenance ability

For C4L to C6L models, removing the screws from the side panel of the slider will allow replacement of the inner roller without detaching the tool. For C8 to C20 models, even when the direct coupling structure is used, the motor or ball screw can be replaced individually.



Model	Size (mm) <sup>Note</sup>	Lead (mm)	Maximum payload (kg)		Maximum speed (mm/sec.)	Stroke (mm)	Page
			Horizontal	Vertical			
C4L C4LH	W45 × H55	12	4.5	1.2	720	50 to 400	C4L : P.466 C4LH : P.467
		6	6	2.4	360		
		2	6	7.2	120		
C5L C5LH	W55 × H65	20	3	-	1000	50 to 800	C5L : P.468 C5LH : P.469
		12	5	1.2	800		
		6	9	2.4	400		
C6L	W65 × H65	20	10	-	1000	50 to 800	P.470
		12	12	4	800		
		6	30	8	400		
C8	W80 × H75	20	12	-	1000	150 to 800	P.471
		12	20	4	720		
		6	40	8	360		
C8L	W80 × H75	20	20	4	1000	150 to 1050	P.472
		10	40	8	600		
		5	50	16	300		
C8LH	W80 × H75	20	30	-	1000	150 to 1050	P.473
		10	60	-	600		
		5	80	-	300		
C10	W104 × H85	20	20	4	1000	150 to 1050	P.474
		10	40	10	500		
		5	60	20	250		
C14	W136 × H96	20	30	4	1000	150 to 1050	P.475
		10	55	10	500		
		5	80	20	250		
C14H	W136 × H96	20	40	8	1000	150 to 1050	P.476
		10	80	20	500		
		5	100	30	250		
C17	W168 × H114	20	80	15	1000	250 to 1250	P.477
		10	120	35	600		
C17L	W168 × H114	50	50	10	1000	1150 to 2050	P.478
C20	W202 × H117	20	120	25	1000	250 to 1250	P.479
		10	-	45	500		

Note 1. The size shows approximate maximum cross sectional size.

## Clean single-axis robots

### SSC type (TRANSERVO)

P.463

The SSC type robots are stepping motor single-axis robots "TRANSERVO series" with clean room specifications. Use of a newly developed vector control method achieves the function and performance equivalent to the servomotor at a low cost even using the stepping motor. As an air joint for suction is provided as standard equipment, grease with low dust generative characteristics is used and stainless sheets with an excellent durability are used for the slide table surface, the high cleanliness degree is achieved.

- Stroke: 50 to 800 mm
- Suction amount: 15 to 80 Nℓ/min.
- Cleanliness degree: CLASS10
- Maximum payload: 12 kg (When installed horizontally)



Model	Size (mm) <sup>Note 1</sup>	Lead (mm)	Maximum payload (kg)		Maximum speed (mm/sec.)	Stroke (mm)	Page
			Horizontal	Vertical			
SSC04	W49 × H59	12	2	1	600	50 to 400	P.463
		6	4	2	300		
		2	6	4	100		
SSC05	W55 × H56	20	4	-	1000	50 to 800	P.464
		12	6	1	600		
		6	10	2	300		
SSC05H	W55 × H56	20	6	-	1000	50 to 800	P.465
		12	8	2	600 (horizontal) / 500 (vertical)		
		6	12	4	300 (horizontal) / 250 (vertical)		

Note 1. The size shows approximate maximum cross sectional size.

## Clean Cartesian robots

### XY-XC type

P.480

This Cartesian robot XY-XC type is applicable to clean rooms. As stainless sheets with excellent durability are used, the opening can be designed to be its minimum level and the robots area applicable to CLASS10 with less suction amount. Furthermore, as the ZR-axis of the SXYxC uses a super high speed unit of the SCARA robot, this achieves great reduction of the cycle time.

- Suction amount: 60 to 90 Nℓ/min.
- Cleanliness degree: CLASS10 <sup>Note</sup>
- Maximum payload: 20 kg
- Maximum speed: 1000 mm/sec.

Note. User wiring: D-Sub 25-pin connector (Numbers 1 to 24 are already wired and number 25 is frame ground.)  
Note. User tubing: φ 6-air tube, 3 pcs.



Type	Model	Axis	Movement range	Maximum speed (mm/sec.)	Maximum payload (kg)	Page
2 axes	SXYxC	X	150 to 1050 mm	1000	20	P.480
		Y	150 to 650 mm	1000		
3 axes	SXYxC (ZSC12)	X	150 to 1050 mm	1000	3	P.482
		Y	150 to 650 mm	1000		
		Z	150 mm	1000		
3 axes	SXYxC (ZSC6)	X	150 to 1050 mm	1000	5	P.483
		Y	150 to 650 mm	1000		
		Z	150 mm	500		
4 axes	SXYxC (ZRSC12)	X	150 to 1050 mm	1000	3	P.484
		Y	150 to 650 mm	1000		
		Z	150 mm	1000		
		R	360 °	1020 °/sec		
4 axes	SXYxC (ZRSC6)	X	150 to 1050 mm	1000	5	P.485
		Y	150 to 650 mm	1000		
		Z	150 mm	500		
		R	360 °	1020 °/sec		

## CONTROLLERS

An optimal controller can be selected from various command input formats.

As servo parameters and deceleration patterns suitable for robots are pre-registered, robots can be operated quickly without complex settings.



# High performance controllers supporting YAMAHA robots

		TRANSERVO	FLIP-X		PHASER	
		Stepping motor	[T4L/T5L] Small type servomotor (24 V • 30 W)	General-purpose servomotor (30 to 600 W)	Linear motor	
1 axis	<ul style="list-style-type: none"> <li>I/O point trace</li> <li>Remote command</li> <li>Online command</li> </ul>	 TS-S2 TS-SH		 TS-X	 TS-P	TS-S2/ TS-SH/ TS-X/TS-P  P.514
	<ul style="list-style-type: none"> <li>Pulse train</li> </ul>	 TS-SD	 ERCD	 RDV-X	 RDV-P	TS-SD P.524  RDV-X/ RDV-P P.528  ERCD P.534
	<ul style="list-style-type: none"> <li>Program (YAMAHA SRC language)</li> <li>I/O point trace</li> <li>Remote command</li> <li>Online command</li> </ul>			 SR1-X	 SR1-P	SR1-X/ SR1-P  P.540
2 axis	<ul style="list-style-type: none"> <li>Program (YAMAHA BASIC language) <sup>Note 1</sup></li> <li>I/O command</li> <li>Remote command</li> <li>Online command</li> </ul>			 RCX222 RCX221	 RCX320	RCX320 P.548  RCX221/ RCX222 P.558
	<ul style="list-style-type: none"> <li>Program (YAMAHA BASIC language) <sup>Note 1</sup></li> <li>Remote command</li> <li>Online command</li> </ul>			 RCX340		RCX340 P.566

## Five or more axes can also be supported

up to 16 axes

**RCX320 RCX340**

**YC-Link/E**

Up to four RCX320, RCX340 controllers (up to 16 controllable axes) can be connected.

The RCX340 controller and RCX320 controller can be connected.

All programs and settings are managed using the master.

Connectable using LAN cable. YC-Link/E

Controllers without program settings

Note 1. The RCX320, RCX340 uses YAMAHA BASIC2 language.

**P** : Robot positioner      **D** : Robot driver      **C** : Robot controller



POINT 1

Selectable from various control methods

Program input

A variety of operation settings, calculations, and conditional branching is possible

The single-axis robot controllers use the YAMAHA SRC language <sup>Note</sup> which is simple yet contains all required functions, such as I/O outputs and conditional branching, etc. The multi-axis controller RCX series uses the YAMAHA BASIC language capable of more sophisticated programming and includes all types of arithmetic operations, flexible variable settings, and various conditional branching, etc. Both are easy to use robot language conforming to the BASIC. These languages support various needs from simple operations to expert user's sophisticated work.

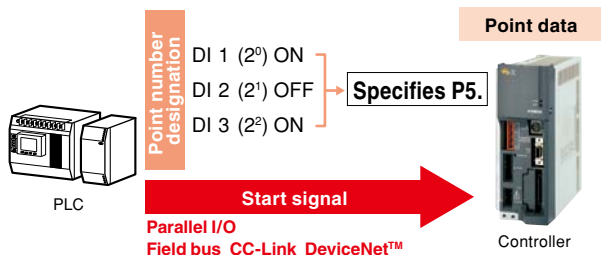
Note. The 2-axis controller DRCX also uses YAMAHA SRC language.

Single-axis robot controller	YAMAHA SRC language <Example>	MOVA 1, 100	Moves to point number 1 at 100 %-speed.
		DO 1, 1	Turns on general-purpose output number 1.
		WAIT 2, 1	Waits until general-purpose input number 2 turns on.
Multi-axis robot controller	YAMAHA BASIC language <Example>	IF DO(10)=1 THEN *END	Jumps to *END if general-purpose input number 10 turns on. Otherwise, moves to the next line.
		MOVE P, P2, STOPON DI(1) =1	Moves to point number 2. Stops when general-purpose input number 1 turns on during movement.
		WAIT ARM	Waits until the robot arm operation ends.
		P3=WHERE	Writes the current position into point number 3.
		*END:	Defines the label named "END".
HOLD	Pauses the program.		

I/O point trace

Program-less means easy

The host unit specifies a point number in binary format and the robot moves to the specified point when the start signal is input. The controller can operate only by teaching the point data without programs.

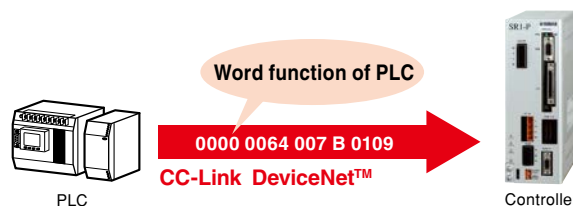


Remote command

Ideal for unified data management

The word function of the CC-Link or DeviceNet<sup>TM</sup> is used to issue various commands or data to the robot. The expandability of the word function from simple operation instructions to point data writing is fully utilized to freely use the robot controller functions from the host unit.

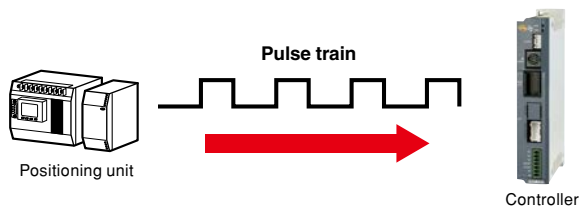
Note. This function is enabled when selecting an option network board.



Pulse train

Acceleration/deceleration curves can be created freely

The robot is controlled using pulse trains sent from the positioning unit. The controller does not need to have programs or point data. This pulse train is convenient when the control is centralized to the host unit.



Online command

Execute everything from a PC

The PC can issue various commands or data to the controller or receive the data or status through the RS-232C or Ethernet <sup>Note</sup>. All executable operations from the teaching pendant can be executed from the PC.

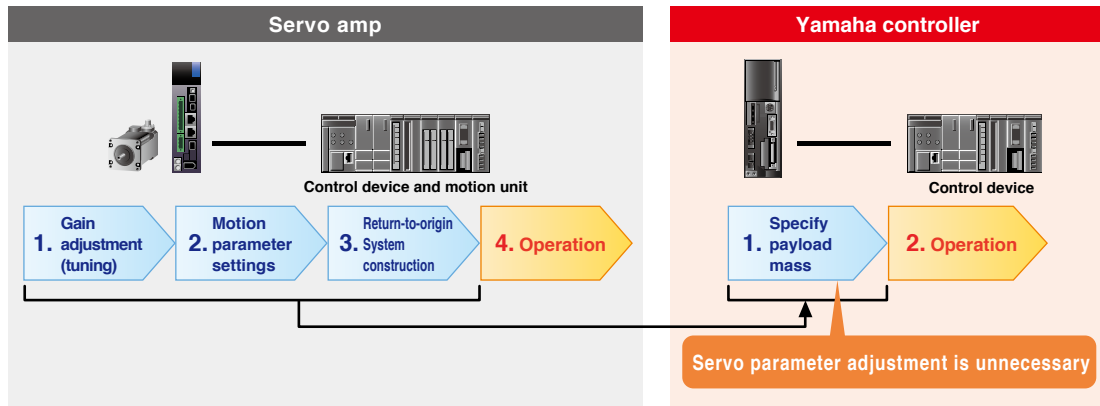
Note. Ethernet is enabled when selecting an option network board. (For the RCX340, Ethernet is provided as standard function.)



## Easy optimal setup

### Complicated parameter settings are unnecessary

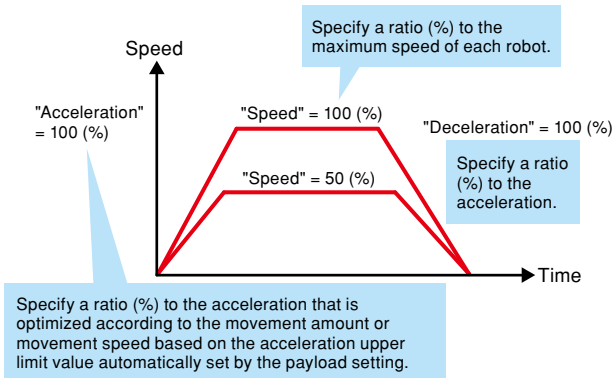
Robot controllers are specially designed for YAMAHA robots. Optimal values for servo parameters required for robot operation, such as gain are already registered beforehand. **Start operating immediately without any need for complicated settings or tuning, even if you don't have knowledge or experience about control.**



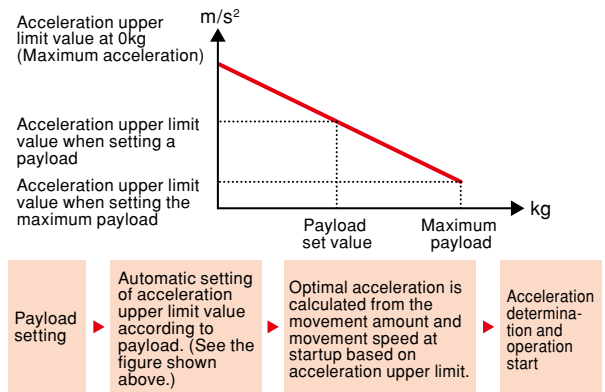
### Easy acceleration/deceleration settings

The acceleration/deceleration is an important factor that affects the service life of the machine. **If too high acceleration is set, this may cause the service life of the machine to shorten. If the acceleration is too low, the motor power cannot be used effectively, causing the fact time to lower.** The acceleration/deceleration setting of YAMAHA robot controller is determined finely by load weight. Setting only payload parameters will automatically set optimal acceleration/deceleration by taking the service life of the machine and motor capability into consideration. Detailed robot knowledge from YAMAHA is what makes this possible. (Note: For the pulse train input, the customer may need to set the acceleration/deceleration.)

### Concept of speed and acceleration



### Acceleration calculation algorithm

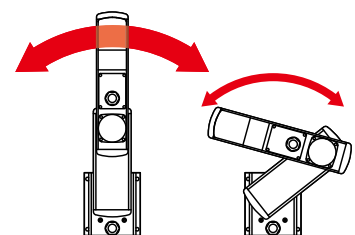


### Zone control (= Optimal acceleration/deceleration automatic setting) function

The SCARA robot also incorporates a zone control function that always operates the robot at its maximum performance level by considering changes in inertia due to the arm posture. Therefore, the robot does not exceed the tolerance value of the motor peak torque or speed reducer allowable peak torque only by entering the initial payload to bring out the full power of the motor and keep the high acceleration/deceleration.

#### For X-axis of YK500XG

The torque in the arm folded state is 5 or more times different from that in the arm extended state.



**This may greatly affect the service life, vibration during operation, and controllability.**

If the motor torque exceeds the peak value

→ **This may adversely affect the controllability and mechanical vibration, etc.**

If the torque exceeds the tolerable peak torque value of the speed reducer

→ **This may cause early breakage or shorten the service life extremely.**

POINT 3

### Multi-function and expandability

■ Multi-axis controllers support up to 30,000 points (10,000 points for the RCX2 series, 1,000 points for the single-axis controller (255 points for the TS series)). Up to 100 programs can be created on each controller.

■ Various field networks, CC-Link, DeviceNet™, PROFIBUS, and EtherNet/IP™ are supported.

Note. Some models do not support all networks.

■ The TS series, RD series, SR1 series, and RCX series use a dual-power supply system with separate control power supply and power supply.

■ As the controllers conform to the CE marking that is safety standards in EU (Europe), they can be used safely even overseas.

The TS series (except for TS-S), SR1 series, and RCX series conform to up to safety category 4.

For details about functions of each controller, refer to controller details pages from P.503.

Name	Type	Number of points	Number of programs	Applicable network							Compliance with CE
				CC-Link	DeviceNet™	Ethernet	EtherNet/IP™	PROFIBUS	PROFINET	EtherCAT	
TS-S2/TS-SH	1 axis robot positioner	255	-	○	○	-	○	-	○	-	○
TS-X/TS-P		255	-	○	○	-	○	-	○	-	○
TS-SD	1 axis robot driver	-	-	-	-	-	-	-	-	-	○
RDV-X/RDV-P		-	-	-	-	-	-	-	-	-	○
ERCD	1 axis robot controller	1,000	100	-	-	-	-	-	-	-	-
SR1-X/SR1-P		1,000	100	○	○	○	-	○	-	-	○
RCX320	1 to 2 axes controller	30,000	100	○	○	○	○	○	○	○	○
RCX221/RCX222	1 to 2 axes controller	10,000	100	○	○	-	-	○	-	-	○
RCX340	1 to 4 axes controller	30,000	100	○	○	○	○	○	○	○	○

## RDV-X/RDV-P

P.528

FLIP-X

PHASER

### [Robot driver]



Operation method	Pulse train
Input power	Main power Single-phase/3-phase AC 200 V to 230 V Control power Single-phase AC 200 V to 230 V
Origin search method	Incremental

#### Dedicated pulse train control

The dedicated pulse train control has achieved a compact body and a low price.

#### Position setting time reduced by 40%

The response frequency is enhanced about two times in comparison with former models. The position setting time of uniaxial robots is reduced by about 40%.<sup>Note 1</sup>

#### Large cost reduction possible

It is easy to assemble them in automated machinery. You can save much labor in designing, parts selection, setting and more. A large cost reduction is possible.

#### Contributing to saving space for the whole control board

The compact design has reduced the width up to a maximum of 38% in comparison with former models. In addition, the improvement of radiation efficiency makes it possible to arrange the devices with less space in between. Multiple units can be installed side by side in a neat arrangement.

#### Easy replacement

The parameter settings and fastening-hole pitches are the same as those of former models. It is easy to replace the software and the hardware as well.

#### Command input: Line driver (2 Mpps)

#### Command output: ABZ-phase output (with a divider function)

#### Real-time operation status monitoring

You can have analog outputs for speed, amperage, and more information to know the operation status in real time. RDV-Manager, the dedicated support software, is also available for a graphical view of the status.

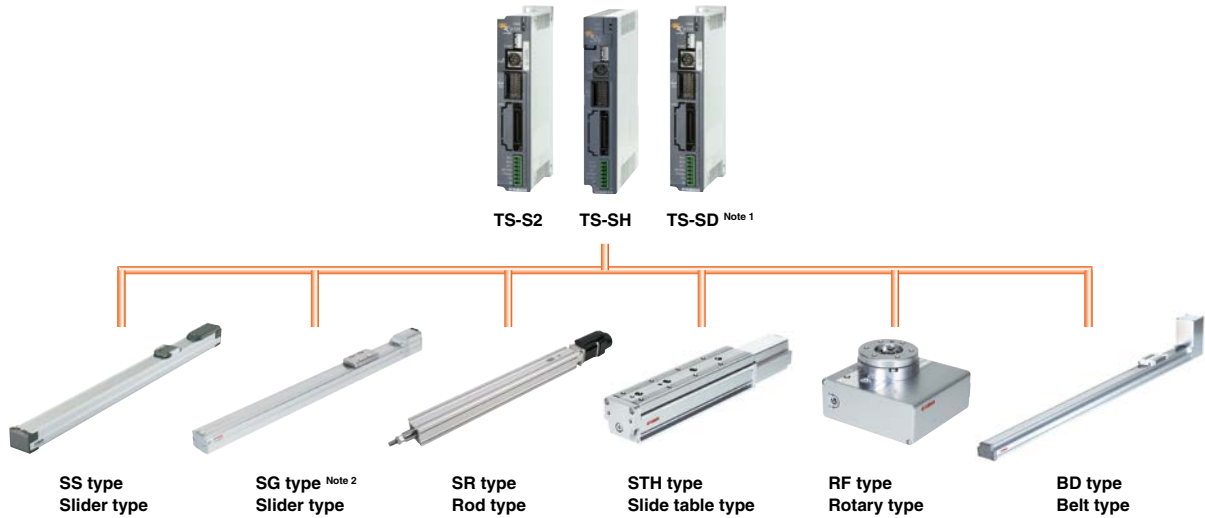
#### Main power: Single and three phases supported (200V)

The full-specification operation is available with a single-phase power supply.

Note 1. With a 400W servomotor, 20mm ball screw lead, and portability of 40kg.

# TS-S2/TS-SH/TS-SD POINT

## Usable for all TRANSERVO series models



Note 1. The STH type vertical specifications and RF type sensor specifications do not support the TS-SD.  
 Note 2. SG07 is only applicable to TS-SH.

## TS-SD

P.524

TRANSERVO

### [Robot driver]



Operation method	Pulse train	
Input power	Main power	DC 24 V +/- 10 %
	Control power	DC 24 V +/- 10 %
Origin search method	Incremental	

### ■ Pulse train input driver dedicated to "TRANSERVO"

A robot driver dedicated to the pulse train input for "TRANSERVO".

### ■ Torque decrease in high-speed area is suppressed

As a vector control method is used, the torque decrease in high-speed area is small and high-speed operation even with high payload can be performed. This greatly contributes to shortening of the tact time.

### ■ Excellent silence

High-pitched operation sounds unique to the stepping motor are suppressed to achieve silent operation sounds similar to the AC servo.

### ■ Easy operation with support software TS-Manager

In the same manner as the robot positioner TS series, the operation can be performed with the TS-Manager (Ver.1.3.0 or later) having various convenient functions, such as robot parameter setting, backup, and real-time trace (The handy terminal "HT1" cannot use this TS Manager).

### ■ Applicable to a wide variety of pulse train command inputs

This robot driver can be made applicable to the open collector method or line driver method using the parameter setting and signal wiring. In the open collector method, a wide voltage range from 5 V to 24 V is supported. So, the robot driver can be matched to the specifications of the host unit to be used.

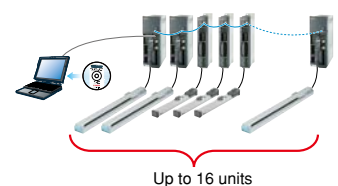
### ■ TS-Manager: Real-time trace function

The current position, speed, load factor, current value, and voltage value, etc. can be traced at real-time. Additionally, as trigger conditions are set, the data when the conditions are satisfied can be automatically acquired. Furthermore, as a range is specified from the monitor results, the maximum value, minimum value, and average value can be calculated. So, this is useful for the analysis if a trouble occurs.

Real-time traceable items (up to four items)		
• Voltage type	• Command position	• Current position
• Command speed	• Current speed	• Internal temperature
• Command current value	• Current current value	• Motor load factor
• Input/output I/O state	• Input pulse count <sup>Note 1</sup>	• Movement pulse count <sup>Note 1</sup>
• Word input/output state <sup>Note 2</sup>	Note. 1: TS-SD only   Note. 2: TS controller only	

### ■ Daisy chain function

As multiple TS series controllers and drivers are connected in a daisy chain, the data of a desired unit can be edited from the personal computer (up to 16 units).



**TS-S2/TS-SH** P.514 **TRANSERVO**

**TS-X/TS-P** P.514 **FLIP-X PHASER**

[Robot positioner]



<b>Operation method</b>	Point trace Remote command Online command
<b>Number of points</b>	255 points
<b>Input power</b>	Main power DC 24 V +/- 10 % Control power DC 24 V +/- 10 %
<b>Origin search method</b>	TS-S2 Incremental TS-SH Absolute Incremental

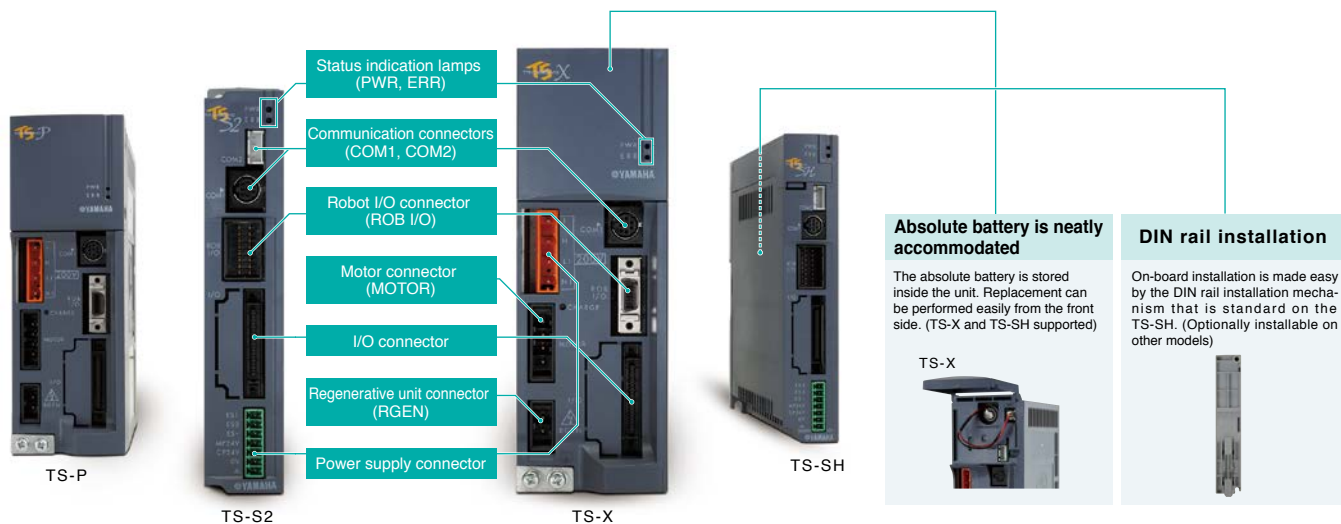


<b>Operation method</b>	Point trace Remote command Online command
<b>Number of points</b>	255 points
<b>Input power</b>	AC 100 V / AC 200 V
<b>Origin search method</b>	TS-X Absolute Incremental TS-P Incremental Semi-absolute

**Design that allows a clean installation**

**Unified installation sizes**

Height and installation pitch are unified throughout the series. Units can be installed neatly within the control board.



**Selectable I/O interfaces**

**Two RS-232C ports provided**

● **Connect support tools**

Intuitive operation supports controller design and maintenance.

● **Daisy-chaining**

Two ports can be used to daisy-chain up to 16 units.

● **Communication commands**

Easily understood ASCII text strings can be used to perform robot operations.



**Selectable 100V/200V**

- The TS-X/P let you select AC100/200V as the power input. (The 20A model is 200V only.)
- The TS-S2/SH is DC24V input.

**A variety of I/O interfaces**

In addition to NPN and PNP, you can choose CC-Link, DeviceNet™, EtherNet/IP™, and PROFINET field networks.



● **Positioner interface**

Functionality has been condensed into an I/O interface with 16 inputs and 16 outputs. In addition to easy positioning, this also includes functionality that enhances interoperability with the control device.

● **Remote commands**

Numerical data can be directly manipulated by using the four-word input and four-word output areas. You can add new direct positioning commands to further unify the data at the control device.

● **Gateway function**

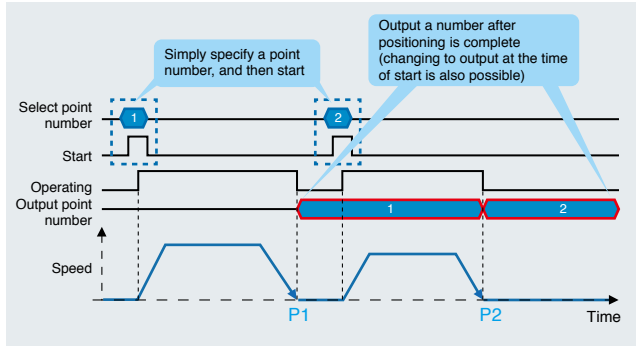
New types of connection are provided to reduce network costs. (CC-Link, EtherNet/IP™, and PROFINET are supported.)



# Positional interface

## "Positioner function" for easy positioning

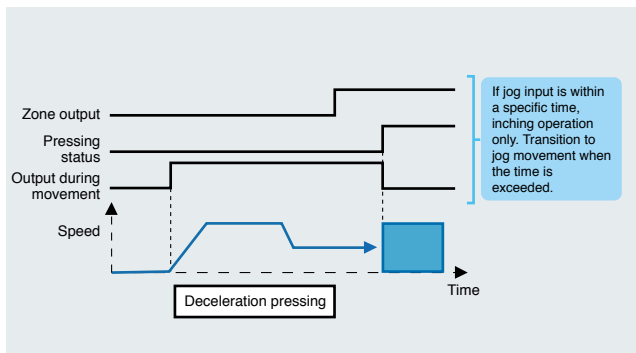
You can easily perform positioning operations by specifying the number of a point that is registered in the data, and entering a start command.



Number	Operation type	Position (mm)	Speed (%)	Acceleration (%)	Deceleration (%)	Branch	Timer (ms)
P1	ABS	100.00	100	100	100	0	0
P2	ABS	200.00	80	100	100	0	0

## A variety of output functions

The TS controller provides a variety of status outputs that are linked with positioning operations. By selecting and using an output appropriate for the scene, this can contribute to cost-saving measures such as making the steps of the control device's program more efficient or by reducing the peripheral equipment.

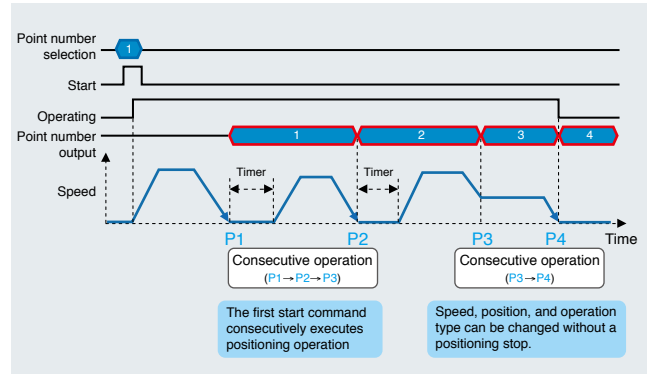


List of outputs	
• Zone output .....	Output ON when between the two specified points
• Near position output .....	Output ON when entering the specified region from the goal position
• In movement output .....	Output ON when above the specified speed
• Pressing status .....	Output ON when specified pressing strength is reached

Also provided are return-to-origin completed status, manual mode status, warning output, and alarm number output, etc.

## Consecutive operation, linked operation

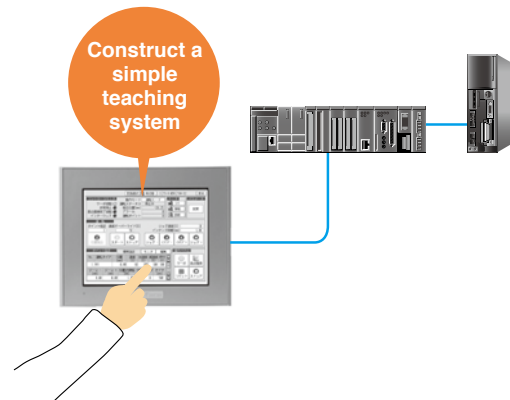
By specifying a branch destination, it is possible to execute positioning operations consecutively. Additionally, by specifying linked operation, operation with the branch destination can be executed while changing the speed without positioning stops; this allows control programming to be simplified and takt to be shortened.



Number	Operation type	Position (mm)	Speed (%)	Acceleration (%)	Deceleration (%)	Branch	Timer (ms)
P1	ABS	100.00	100	100	100	2	500
P2	ABS	200.00	80	100	100	3	800
P3	ABS linked	300.00	100	100	100	4	0
P4	ABS	350.00	30	100	100	0	0

## Jog and point teaching functions are provided as standard

Jog movement and point teaching functions are provided as standard for input signals. By linking these with buttons of a touch panel etc., a simple teaching system can be constructed.



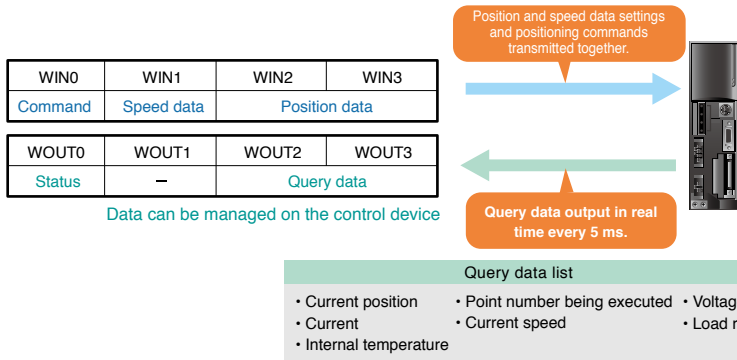
TS-S2/TS-SH/TS-X/TS-P

Remote commands

Ideal for unifying data management

Remote commands are functions by which the control device can directly handle data such as points and parameters using the word area of the field network.

Numerical data can be operated directly by using the word area. This promotes unification of data management.



**New function** Direct positioning commands that directly specify position and speed data

As remote commands, "direct positioning commands" are provided, allowing the position and speed data to be specified directly and then positioning operations to be performed. In addition to unifying the positioning data on the control device, this allows it to be done with a single command, simplifying programming of the control device.

Consecutive queries for realtime update of various status information

Normally, remote commands only update data when responding, but if a consecutive query is issued, the data continues to be updated at a fixed interval until permission is given to stop. This is useful in various cases such as when it is desirable to obtain positioning data during operation for interoperation with peripheral devices, or to obtain current values in order to monitor the status of a robot.

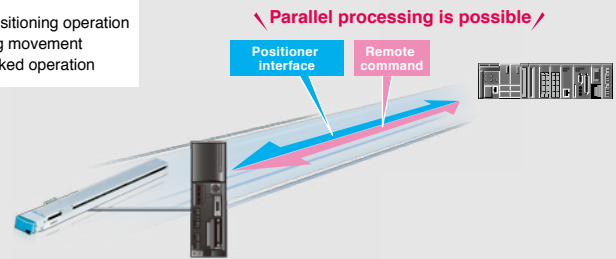
Parallel processing of "positioner interface" and "remote commands"

Since positioner interface and remote commands operate independently of each other, parallel processing is possible.

- < Usage examples >
- Obtain the current position during positioning operation
  - Obtain the current position during jog movement
  - Change the target position during linked operation

		Positioner interface		Remote command
		Positioning operation	Jog movement	Positioning operation
Remote commands	Data write	○	○	-
	Data read	○	○	-
	Consecutive query	○	○	○

○ : Parallel processing possible

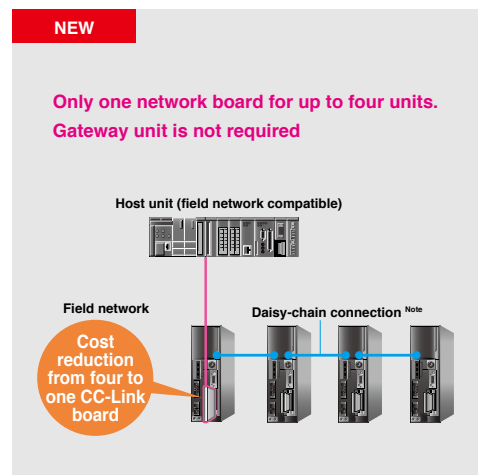
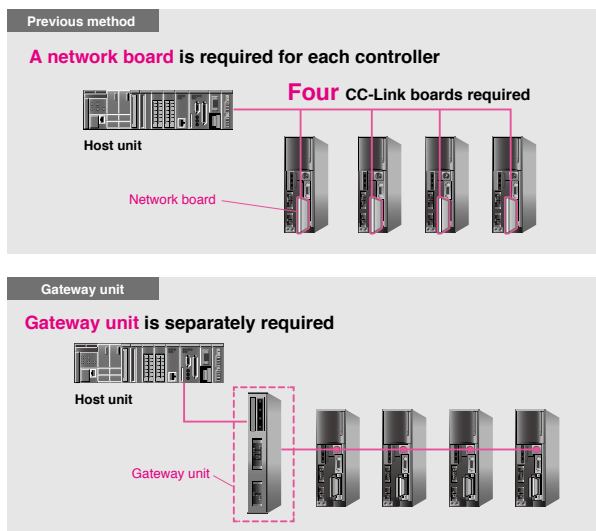


"Gateway function" — a new way to connect

New function

Decrease network cost

One controller equipped with a field network board can provide unified management of up to four I/O interfaces via a daisy-chain connection. This allows network cost to be decreased while enabling the same type of I/O control as when one board is installed for each unit. (CC-Link and EtherNet/IP™ are supported)



Note. Daisy chain connection cable is required.

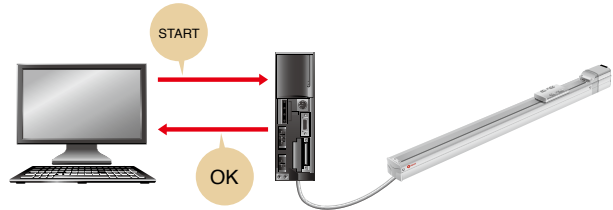
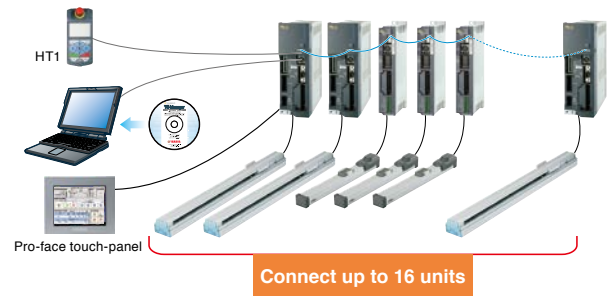
## Daisy chain connection

### No need to connect or disconnect cables during operation (up to 16 units)

From a single PC, handy terminal, or touch-panel display, it is possible to specify point data and parameters, perform operations, and monitor the status for up to 16 axes on daisy-chained controllers. For everything from design to maintenance, a connection to only the first controller is sufficient; any desired controller can be accessed simply by switching the station number, without having to connect or disconnect cables.

### Communication commands

An easily handled command protocol using ASCII text strings supports a wide range of needs from data editing to operation and status monitoring. By daisy-chaining multiple devices, simple multi-axis control can be performed.



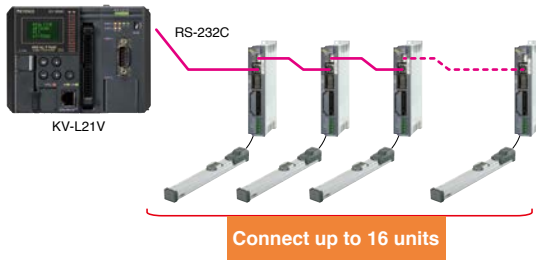
## "KEYENCE PROTOCOL STUDIO Lite" serial communication settings software

By loading a TS settings file into PROTOCOL STUDIO Lite, communication settings and main communication commands can be registered automatically. Ladder-less data editing and daisy-chaining can be easily accomplished.

Contact for questions regarding PROTOCOL STUDIO Lite  
Keyence Corporation, [www.keyence.co.jp/red/kv01/](http://www.keyence.co.jp/red/kv01/)

### Daisy-chain connections (up to 16 axes)

Communication with the KV-L21V uses a Yamaha-made communication cable (D-sub type). By using daisy-chain connections, up to 16 axes can be managed together.



### Automatic device assignment for each communication command

If the communication type is specified as cyclic, the desired information to be obtained is automatically stored in data memory.

No.	名前	通信方法	通信速度	方向	データ	データ	コメント	実行
1	位置位置	サイクル毎	19200	送	DM1000 - DM1000	現在の位置	NC200	
2	位置速度	サイクル毎	19200	送	DM1000 - DM1000	現在の速度	NC200	
3	位置加速度	サイクル毎	19200	送	DM1000 - DM1000	現在の加速度	NC200	
4	位置位置	サイクル毎	19200	送	DM1000 - DM1000	現在の位置	NC200	
5	位置速度	サイクル毎	19200	送	DM1000 - DM1000	現在の速度	NC200	
6	位置加速度	サイクル毎	19200	送	DM1000 - DM1000	現在の加速度	NC200	

## Touch operator interface "Pro-Face" GP4000 Series

Connecting GP4000 Series made by Pro-face to Robot Positioner, TS-S2, TS-SH, TS-X, TS-P enables you to use a lot of functions as well as basic operations on Touch Operator Interface.

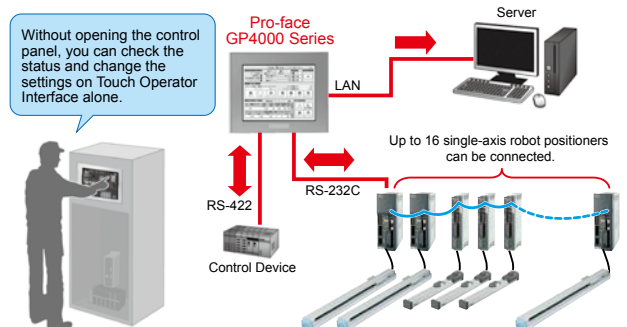
Free download of the program file from the  
Pro-face home page  
<http://www.proface.com>

### Can easily check a state and change settings.

- Check the status (the current position, speed etc)
- Basic operations such as Jog operation, inching operation, return to origin, error reset etc.
- Set, edit, or back up point data and parameters
- Check triggered alarms and detailed descriptions of alarm history

### Supports 3 languages

- Supports Japanese, English, and Chinese (simplified, traditional)



# SR1-X/SR1-P

P.540

FLIP-X

PHASER

## [Single-axis robot controller]



SR1-X

SR1-P

<b>Operation method</b>	Program Point trace Remote command Online command
<b>Number of points</b>	1000 points
<b>Input power</b>	AC 100 V AC 200 V
<b>Origin search method</b>	SR1-X Absolute Incremental SR1-P Incremental Semi-absolute

### Various command methods

An optimal method can be selected from various command methods, such as program, point trace, remote command, and online command. The program uses the YAMAHA SRC language that is similar to the BASIC. Various operations, such as I/O output and conditional branching, etc. can be executed using simple operations.

### Applicable to complete absolute position system

The SR1-X is applicable to complete absolute position system. No return-to-origin is needed. (The backup period is one year in the non-energizing state.)

### I/O assignment function

As the I/O assignment is changed, the point trace operation, point teaching, and trace operation by specifying coordinate values can be selected in addition to the normal program operation. Since the JOG movement through the I/O is possible in the point teaching mode, the point teaching can be performed from the host unit without the HPB.

### Current position output function

The position data is output as feedback pulse or binary data. This allows the host unit to understand the current robot position at real-time. Furthermore, functions, zone output or point zone output to output near point number are incorporated.

### Torque limiting

As this function limits the maximum torque command value at desired timing, it is effective in operations such as pushing and workpiece gripping operations. Furthermore, in addition to the torque limiting by the parameter data value, the torque limiting by the analog input voltage can be performed.

# ERCD

P.534

T4L/T5L

## [Single-axis robot controller]



ERCD

<b>Operation method</b>	Program Point trace Online command Pulse train
<b>Number of points</b>	1000 points
<b>Input power</b>	DC 24 V
<b>Origin search method</b>	Incremental

### Four command formats

A desired command format can be selected from four command formats, program operation using various commands, point trace operation only by instructing a point number, online command, and pulse train input.

### Compact design

Compact box size of W 44 × H 142 × D 117mm is achieved with the functions improved.

The installation space can be reduced greatly.

### Various input/output functions

As a feedback pulse output function is provided, the host control unit can easily manage the current position. Additionally, as the movement point number can be output in binary format during point trace, the operation can be checked easily. As a teaching function using the I/O is added, the flexibility and usability of the system configuration are further improved.

This output is enabled in the program or point trace operation and the number of outputs can be changed to a desired level using the division setting.

### Various monitor functions

The controller status can be checked using the input/output status monitor, duty monitor, and LED status display.

### Error history and alarm history

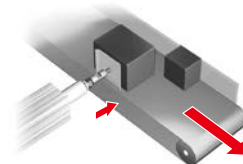
The error or alarm history that occurred in the past can be displayed and checked on the HPB or personal computer screen.

### Robot number management

As the controller is initialized by the robot number of the robot to be controlled, parameters suitable for each robot model are automatically registered and no complicated servo adjustment is needed.

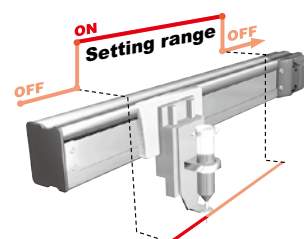
### Torque limiting control

The torque limiting control can be performed using the program command. The axis can be stopped with the torque applied. This torque limiting control can be used for continuous positioning of workpieces with different sizes, press-fitting work, and workpiece holding operation.



### Zone output function

The general-purpose output on/off setting between desired points can be performed using the parameter setting. The positive logic/negative logic setting can be made and the axis position can be easily judged by an external unit. Up to four patterns can be set.

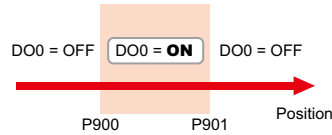


# SR1-X/SR1-P/ERCD Various functions

## Position data output function

### Zone output

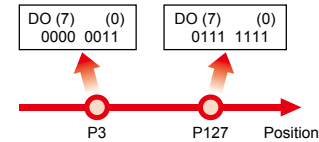
Outputs whether or not the robot position is within the specified range.



It is possible to reverse the output logic.

### Point zone output

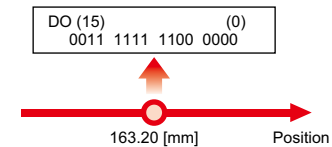
Outputs the point number near the robot position in binary format.



It is also possible to limit to only the moving point.

### Binary output

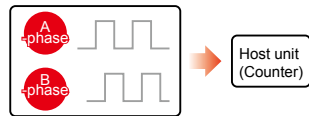
Outputs the current robot position in 16-bit binary format. (This function is available only in the SR1.)



It is possible to adjust the unit of the output position data to be output using parameters.

### Feedback pulse output

Outputs the current position counter value of the robot through the A/B-phase line driver.



It is possible to perform the monitoring by host unit at real-time. A frequency division function is built-in.

## Point teaching

The JOG movement of the robot and the point reaching can be performed from the host unit.

### Concept

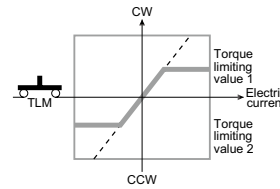
- The robot is moved to the teaching position using the JOG+/JOG- command.
- The current position is registered into the point number specified by the PSET input.



## Torque limiting function

As the torque limiting is performed during operation, the operation, such as pushing and workpiece gripping can be performed.

### Concept



### Features

#### SR1

- Host unit manages the limiting time using the TLM input.
- Limiting status is understood using the torque limiting status output (TLON).
- Torque limit value is changed (up to 4 patterns) using the input.
- Torque can be limited using the program command.
- Torque can be limited using the analog input (0 to +10 V / 12 bit).

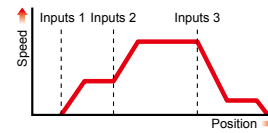
#### ERCD

- Torque can be limited using the T program command.

## Movement data change function

The movement speed or target position can be changed during movement. (This function is available only in the SR1.)

### Concept



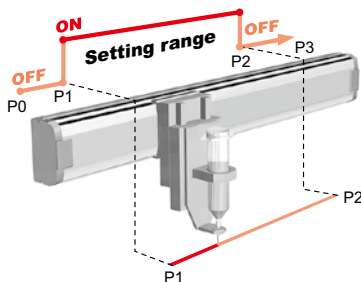
### Features

- Host unit manages the limiting time using the movement command input.
- Movement command is ABS-PT (absolute movement command) or ABS-BN (binary specified movement command).
- Change speed can be specified in a range of 1 to 100 % (up to 4 patterns).
- Changing is disabled in the deceleration zone.

# YAMAHA SRC language convenient functions

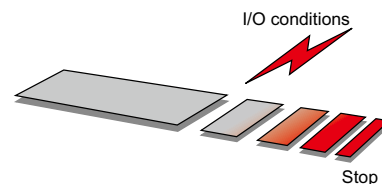
## Multi-task function

This function can execute multi tasks, such as robot peripheral units in parallel at the same time. Up to four tasks can be executed. With the multi-task function combined with JMPP command, the I/O signals can be output when the robot passes through the specified point during movement.



## Conditional stop function during movement

The arm can be decelerated and stopped using I/O conditions of the MOVF command while it is moving. This function is useful when searching for the target position with the sensor.





# RCX2 series

## RCX221/222

P.558

### [Multi-axis robot controller]



<b>Operation method</b>	Program Remote command Online command
<b>Number of points</b>	10000 points
<b>Input power</b>	AC 200 V
<b>Origin search method</b>	Incremental Semi-absolute



<b>Operation method</b>	Program Remote command Online command
<b>Number of points</b>	10000 points
<b>Input power</b>	AC 200 V
<b>Origin search method</b>	Absolute Incremental

#### Applicable to all YAMAHA robot models

The RCX series is applicable to all YAMAHA robot models, such as PHASER, FLIP-X, and XY-X, etc. As the single-axis robot (FLIP-X/ PHASER) can be combined with the Cartesian robot freely, various applications can be supported (except for some compact single-axis robots).

#### Complete absolute position system

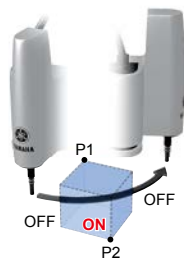
The RCX uses complete absolute specifications that need no return-to-origin when the power turns on. The completely same system can be applicable to the incremental specifications. (When the PHASER series uses the magnetic scale, it is applicable to the semi-absolute or incremental specifications.)

#### Extension of absolute data backup time

As the backup circuit is improved to the energy saving, the absolute position data retention period in the non-energizing state is greatly extended. The maximum one month of the conventional model is extended to approximately one year. The current position information is monitored during long vacations, equipment storage, or even during transportation, and no return-to-origin is needed when energized again. This allows quick production start.

#### Area check output function

This function can output the I/O signals when the robot enters a set area during operation. Up to eight check areas can be set.



#### Applicable to dual-drive

A dual-drive function is incorporated that controls two axes synchronously. This function is effective for heavy workpiece transfer or Y-axis long stroke of the Cartesian robot. The function can perform the operation using the high-speed and high acceleration/ deceleration of YAMAHA robots.

Note. The dual-drive is supported as a custom order. For detail, please consult YAMAHA.

##### Example of dual-drive

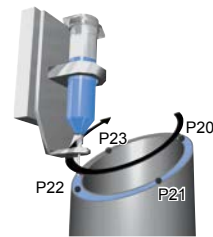


#### Double-carrier anti-collision function

When using the double-carrier, collisions between both carriers can be prevented by the control in the controller. Collision preventions by the zone judgments or external sensors are no longer needed to make the double-carrier easier to use.

#### 3D linear/circular interpolation control

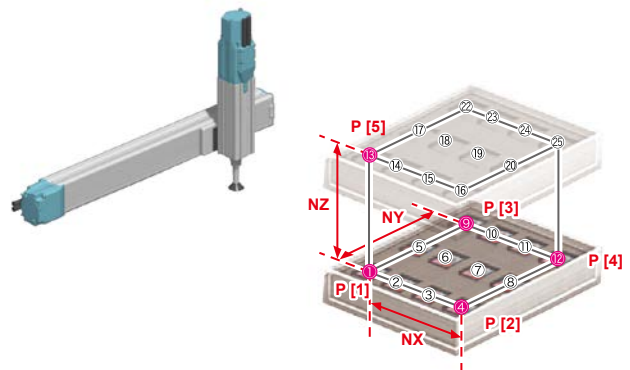
2D and 3D linear and circular interpolation controls are possible. This ensures the smooth and highly accurate operations suitable for the sealing work. (The 3D interpolation is not available in the RCX221/222.)



#### Palletizing function

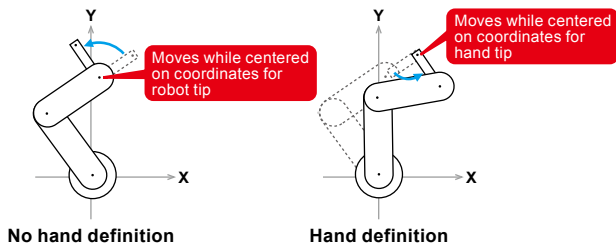
This function can easily define up to 20 kinds of pallets only by entering four corner positions on the pallet as the teaching points. When entering the teaching point in the height direction, even three-dimensional pallets are supported.

When specifying the defined pallet number and executing the movement command, the palletizing work is then performed. Various operations, one point → pellet, pallet → one point, and pallet → pallet, can be performed using the programs.



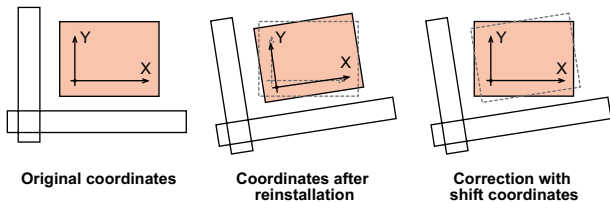
## Hand definition

This function operates the robot based on coordinates of the offset tool tip when the tool is attached to the tip of the robot axis in the offset state. Particularly, this function is effective during tool rotation of SCARA robots or robots including the rotation axis.



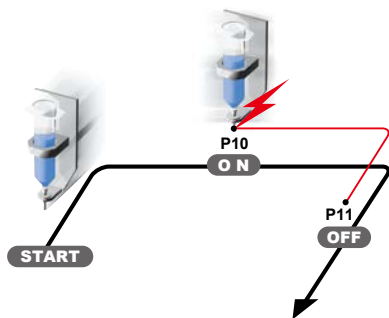
## Shift coordinates

A deviation may occur in the coordinate system when re-installing or replacing the robot during maintenance work. In this case, the coordinate system can be corrected using the shift coordinate function. So, the point data can be used as it is. No re-teaching is needed.



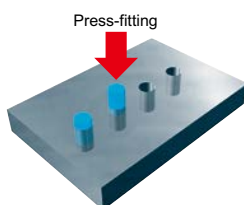
## Passing point output control

The general-purpose output on/off can be controlled by specified points without stopping the axis operation during interpolation operation. The dispense can be turned on or off with the axis operated during sealing to allow smooth and stable dispensing.



## Torque limiting function

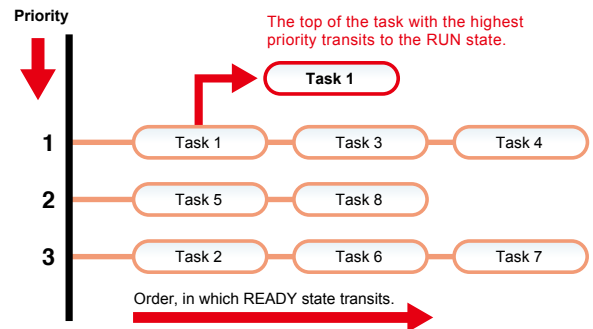
The motor torque can be limited during gripping or press-fitting.



## Multi-task function

This function can execute multi tasks (up to eight tasks), such as robot peripheral units in parallel at the same time. When there are multiple tasks, the task can be changed by means of the time sharing method and a priority can be put on the task. Additionally, the priority can also be changed while the task is running. The multi-task function simplifies the control configuration of the entire system to improve the operation efficiency.

### Task scheduling

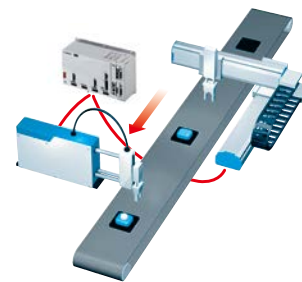


## Sequence program

In addition to the normal task, a task to individually control the input/output (parallel, serial, memory, timer) can be executed. As the sequence program can be enabled even in the manual mode, this is effective to construct a safety system linked with peripheral units.

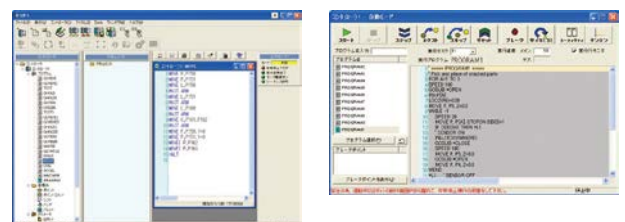
## 2-robot control

Two robots that are assigned to the main and sub robots can be simultaneously controlled using one controller. As this function is used together with the multi-task, advanced and smooth linking of two robots can be performed using one controller.



## Powerful support software: VIP+ (plus)

This application software allows you to easily and visually operate the robot, create and edit programs, and teach points. The user interface is greatly improved and made easier to use when compared to the conventional support software VIP.



# RCX3 series

## RCX320

P.548

## RCX340

P.566

### [Multi-axis robot controller]

2 axes

3 to 4 axes



RCX320

<b>Operation method</b>	Program Remote command Online command
<b>Number of points</b>	30000 points
<b>Input power</b>	Single phase : AC200V to 230V +/- 10% maximum
<b>Origin search method</b>	Absolute Incremental Semi-absolute



RCX340

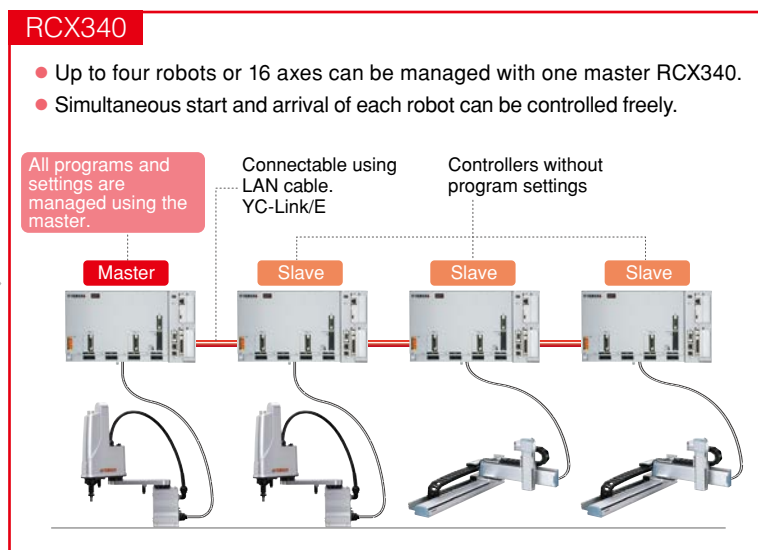
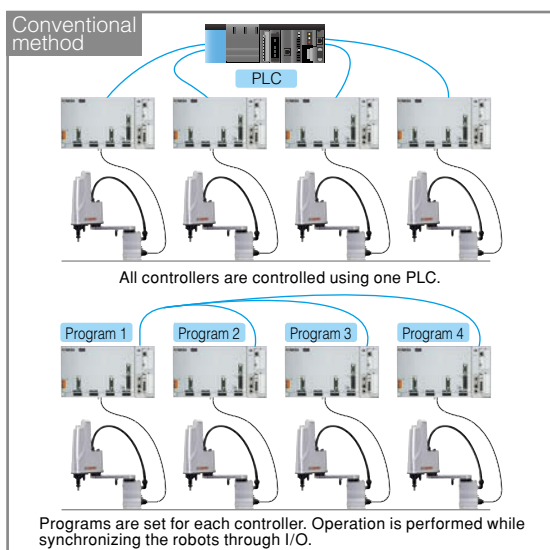
<b>Operation method</b>	Program Remote command Online command
<b>Number of points</b>	30000 points
<b>Input power</b>	Single phase : AC200V to 230V +/- 10% maximum
<b>Origin search method</b>	Absolute Incremental Semi-absolute

### Advanced functionality allowing construction of high-level equipment

Multiple robots can be operated synchronously through the high-speed communication. Use of linking among controllers makes it possible to store programs into only one controller. Use of a newly developed algorithm achieves shortening of the positioning time and improvement of the tracking accuracy.

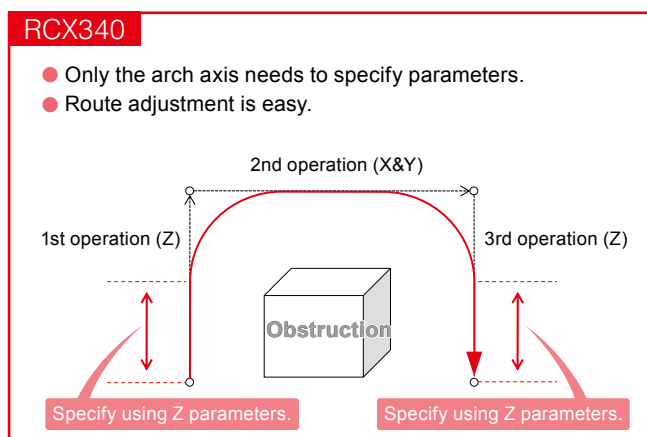
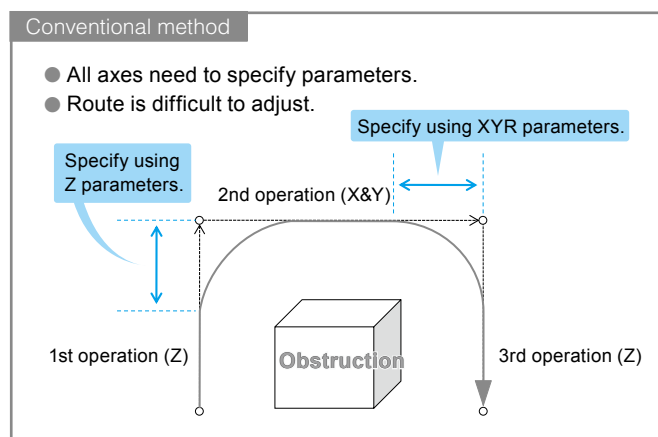
#### The control of multiple robots can be managed using one master controller

The RCX340 controller allows high-speed communication among the controllers. As the operation command can be sent to the controller of each slave from the master controller, the programs or points can be managed only using the host master controller. Additionally, as this controller supports multi tasks flexibly, data exchanging with the PLC can be simplified. Simultaneous start and simultaneous arrival of each robot can be controlled freely. Complicated and precision robot system using many axes can be constructed at a low cost.



#### Arch motion can be specified more intuitively

As the arch motion route designation method is changed and the designation method is simplified, the arch motion can be specified more intuitively.

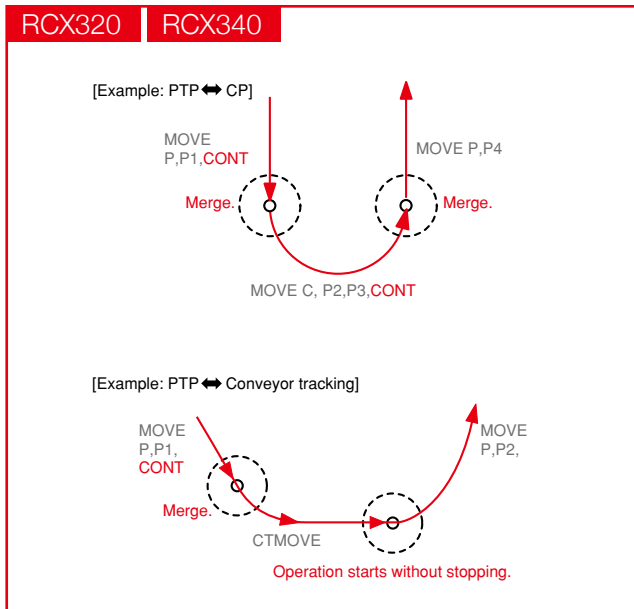


## Smooth movement is achieved by greatly improving motion functions

As a new servo motion engine is incorporated, various operations can be merged. Use of a newly developed algorithm achieves shortening of the positioning time and improvement of the tracking accuracy.

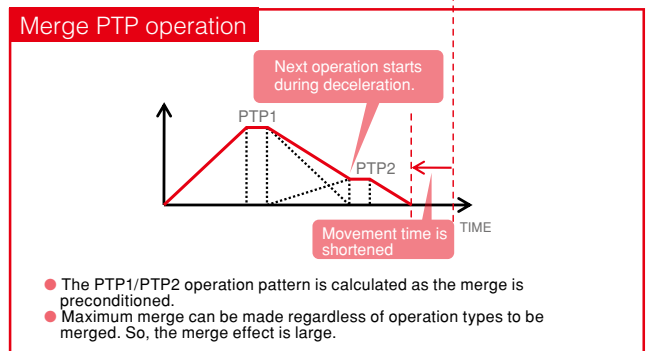
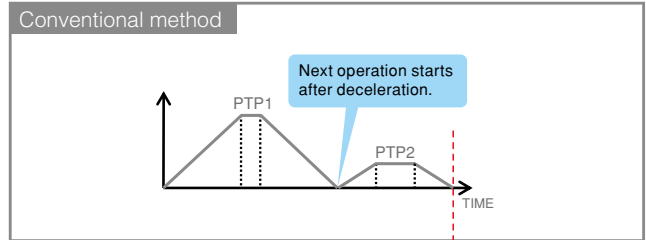
### Expansion of CONT option function

Different type operations, such as PTP, interpolation operation, and conveyor tracking, etc. are merged to improve the speed.



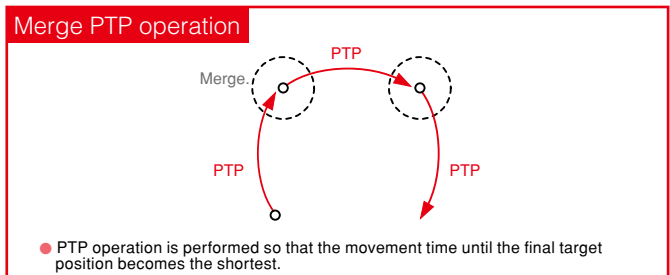
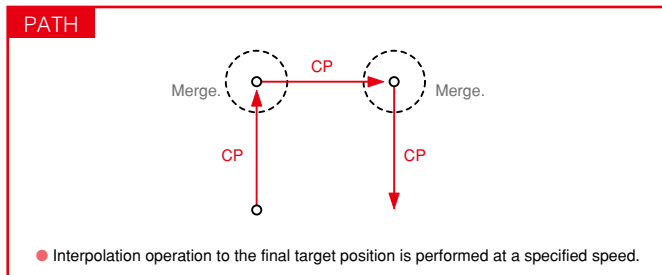
### Improvement of operation speed <sup>Note</sup>

All operations can be merged as much as possible using the merge PTP. As even operations with different acceleration or deceleration time are merged at maximum level with priority put on the operation time, the movement time is shortened greatly.



### Proper use according to application <sup>Note</sup>

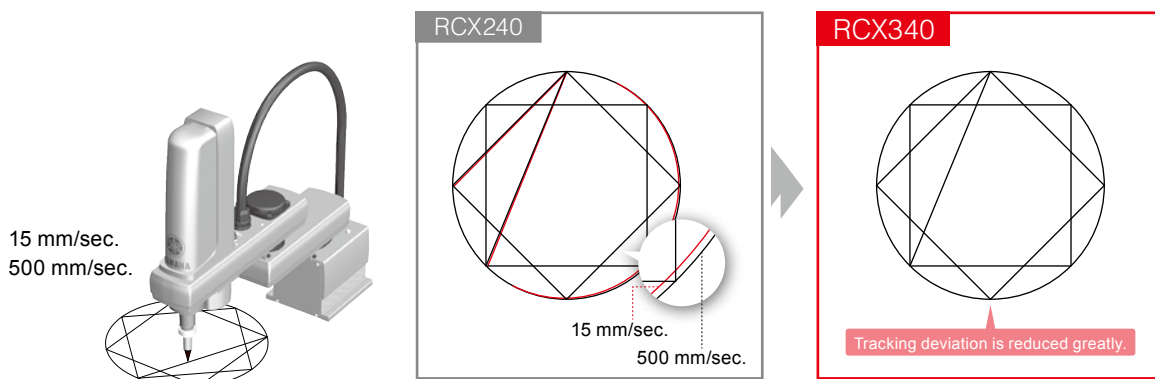
When performing the continuous operation, an optimal operation can be selected according the application, like traditional PATH is used for constant-speed operation, such as sealing and merge PTP is used for operation with priority put on the movement time.



Note. It is necessary to upgrade the firmware to its latest version.

## Improvement of tracking accuracy

Use of visualization with servo analyze function and high responsiveness with new servo function makes it possible to increase the follow-up ability and improve the tracking accuracy when compared to the conventional models.



## Improved basic performance

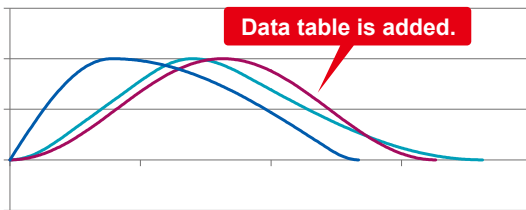
Functions, such as robot language, multi-task, sequence function, communication, and field bus are improved and made easier to use.

### Motion optimization

The optimization of the motion to meet the operation pattern is further strengthened to bring out the robot performance at its maximum level. Higher quality robot operations, such as shortening of the operation time and suppression of vibrations during stopping are achieved.

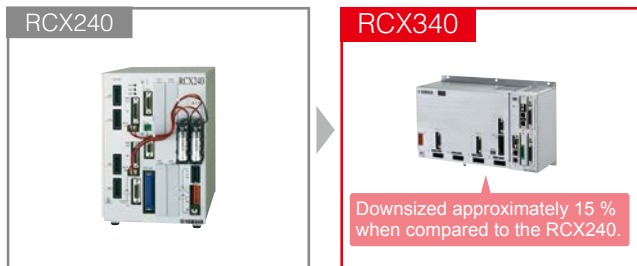
### Optimal acceleration/deceleration motion

Acceleration/deceleration motion is generated that can perform the high-speed operation while suppressing vibrations.



### Compact design

The outside dimensions are approximately 355 mm (W) × 195 mm (H) × 130 mm (D). The volume ratio is reduced to approximately 85 % and the body size is made compact when compared to the conventional 4-axis controllers so as to make the installation inside the control panel easy.

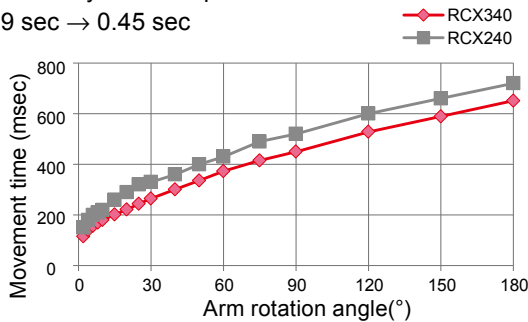


### Improvement of cycle time

The speed-up of the YK-XG series is achieved.

#### Example: YK400XG

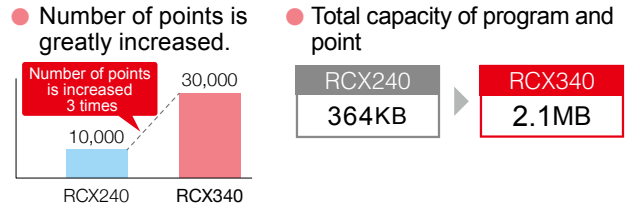
- Standard cycle time operation  
0.49 sec → 0.45 sec



### Built-in regenerative unit RCX340

As the regenerative unit (equivalent to RGU3) is built-in, no additional regenerative unit is needed when connecting to the existing robot.

### User memory capacity increase



### Economical solution for 6 axes robot setup.

Use of the inter-controller "YC-Link/E" system makes it possible to easily link the RCX340 controller with the RCX320 controller. The control of the 6-axis<sup>Note</sup> can be achieved at low cost.

Note. The vertical articulated robot YA series are outside the target.



### PBX with USB port for backup

Simple and easy operation for adding function or editing work.

Storing backup data is a simple task.



### Convenient LED Display for Error Status.

The operation status is displayed on the "7-segment LED display" located on the front panel of the controller.

If an error occurs, the relevant error message is displayed. The error status can visibly recognized without connecting the programming box.



▲ 7-segment LED display



# PC Programming Software “RCX-Studio Pro”

Both RCX340 and RCX320 run with RCX-Studio Pro. With an emulator function, writing programs or debugging can be done without connecting a controller.

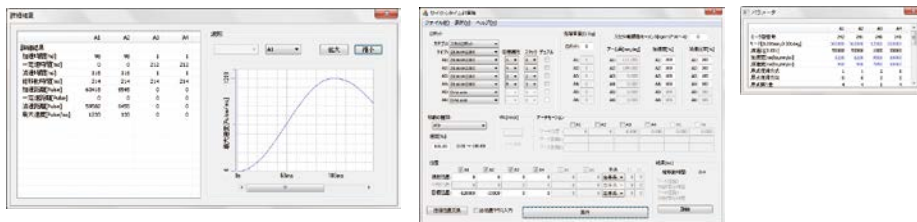
Cycle time calculator between two points simplified a selection of the most suitable robot system. After startup, real-time trace and multi-tasking debug information is displayed simultaneously for monitoring status.

Robot operations like initial setup and maintenance tasks are easier than ever.

## Model Selection Stage

Reduces evaluation time before design stage.

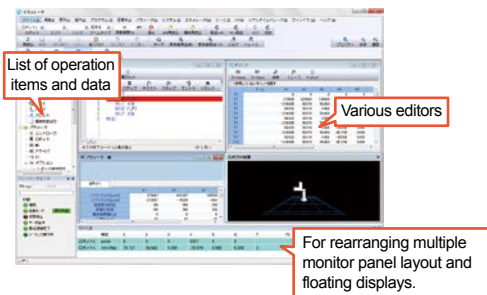
- **Emulator function** > The software can be debugged in the offline mode.
- **Cycle time calculator** > Easy selection of the most suitable robot system.



## Design Stage

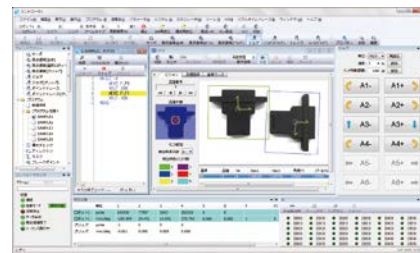
Reduced design workload

- **Easy-to-use operating controls**



- **iVY2 editor provide**

The component type can be registered without changing the software when the robot vision is used.

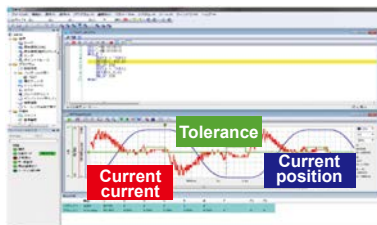


## Startup and Operation Stage

Visualized information for easy monitoring.

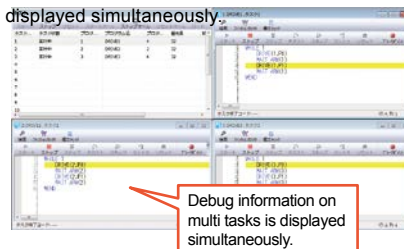
- **Realtime trace**

The internal information of the controller is output continuously.



- **Application debugging function**

The debugging statuses of multiple tasks can be displayed simultaneously.



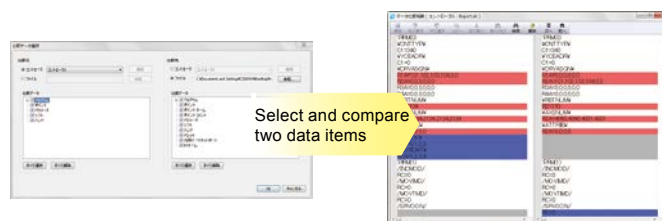
Debug information on multi tasks is displayed simultaneously.

## Maintenance

The maintenance and service time is reduced greatly.

- **Data comparison tool**

The specified two data is compared to visually display the difference. Comparison of all or by program “all” files or comparison with online data can be selected.



### Enhanced expandability

RS-232C and Ethernet ports are provided as standard equipment. A wide variety of high-speed and large capacity field networks, such as CC-Link, DeviceNet™, EtherNet/IP™, and EtherCAT are supported as options. Connections with general-purpose servo amplifier or other company's VISION are easy. So, the RCX320 and RCX340 is called "connectable controller".

#### Communication between controllers

**YC-Link/E**

Up to four RCX320 and RCX340 controllers (up to 16 controllable axes) can be connected.

- More flexible robot configuration
- Easy programming
- Centralized control of multiple robots
- Cost reduction

### Applicable to various field buses/centralized control of robots through connections of up to four controllers

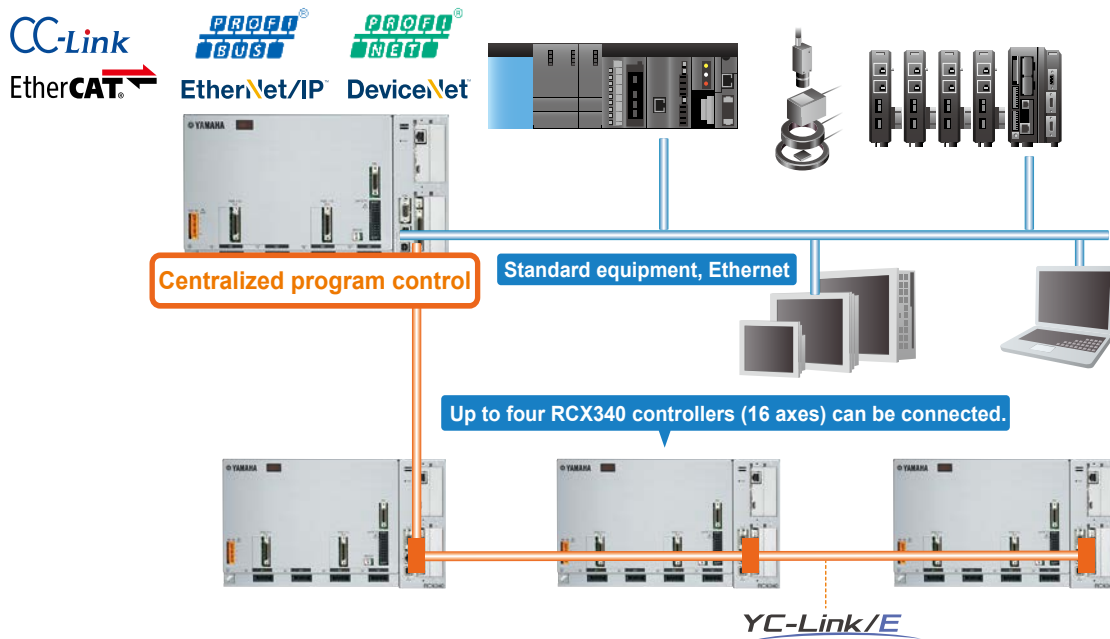
RS-232C and Ethernet ports are provided as standard equipment. Additionally, fulfilling field buses, such as CC-Link, EtherNet/IP™, DeviceNet™, PROFIBUS, PROFINET <sup>Note 1</sup>, and EtherCAT can be supported to connect and control a wide variety of devices. For 5 or more axes, use of YC-Link/E makes it possible to connect up to four RCX340 controllers so as to perform the centralized control of multiple robots.

Additionally, when using YC-Link/E <sup>Note 2</sup>, multiple robots can be handled as if they are operated using one controller. This ensures very easy robot programming and management.

Therefore, this robot controller contributes to reduction of unseen costs, such as labor cost necessary for the setup work.

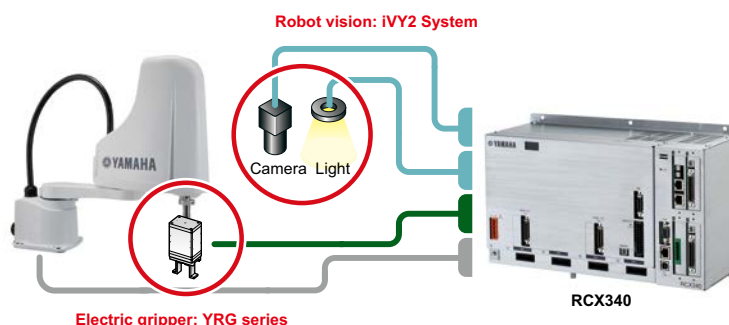
Note 1. Supports PROFINET Ver. 2.2

Note 2. When ordering YC-Link/E, please specify what robot is connected to what number controller.



### Applicable to electric gripper "YRG series"

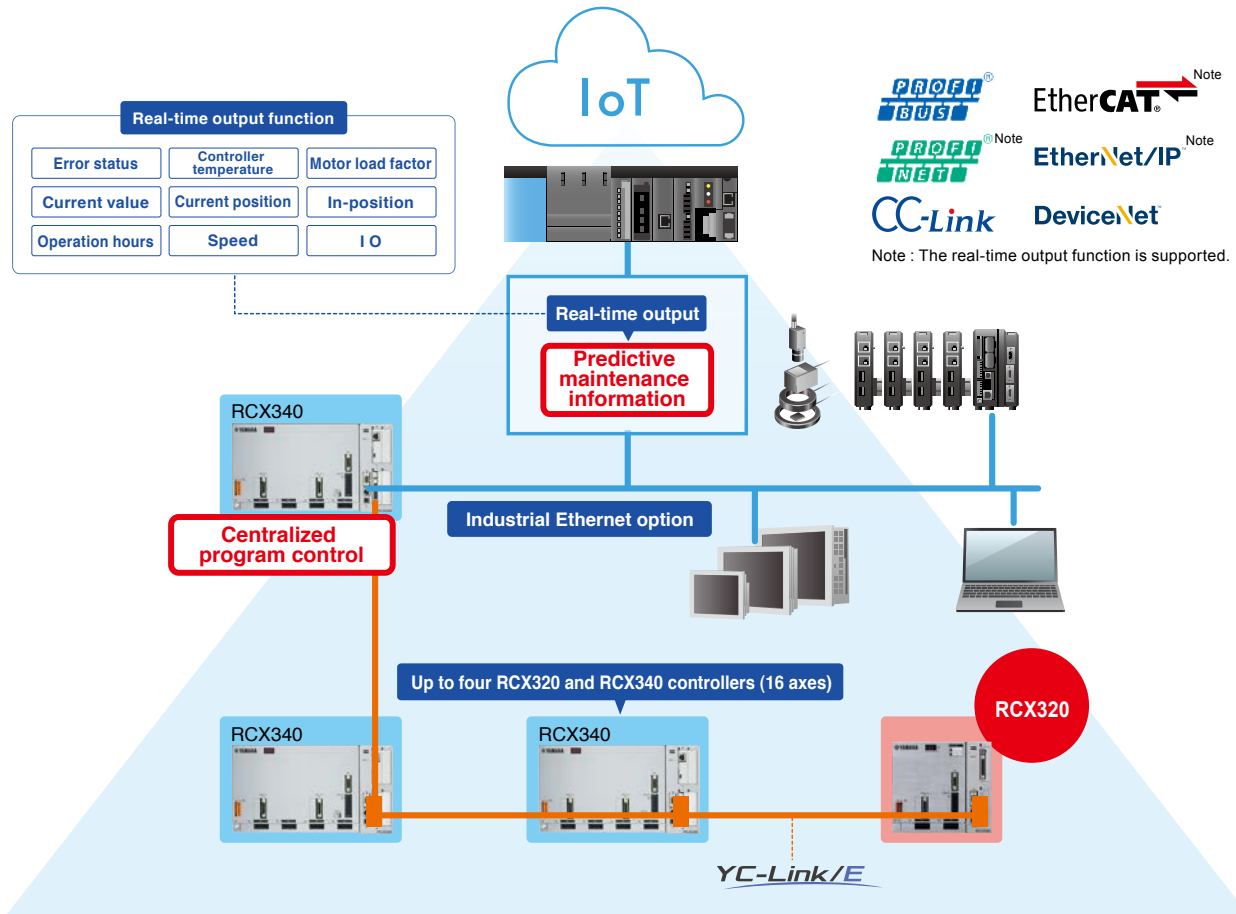
The gripper can be controlled entirely by one RCX320 or RCX340 controller. Data exchanging with the host unit, such as PLC is not needed. The setup or startup is very easy.



# Real-Time output function for Preventive Maintenance.

## Industrial Ethernet option Real-Time output function

When the industrial Ethernet option (Ethernet/IP, EtherCAT, or Profinet) is selected, the information necessary for the predictive maintenance such as error status, current position, current value, motor load factor, operation hours, and others can be output in real-time to contribute to achievement of the “non-stop production line”.

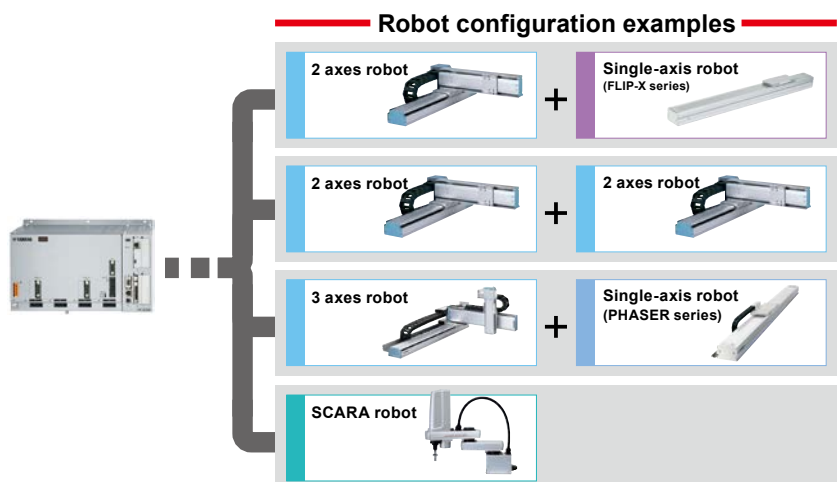


## RCX340 are applicable to all single-axis, Cartesian, SCARA, and P&P robots <sup>Note</sup>

The 4-axis robot controller RCX340 are applicable to all robot models including single-axis, Cartesian, SCARA, and Pick & Place robots.

As the mixed control of the ball screw type FLIP-X series and linear motor type PHASER series can be performed, the robots can be combined freely according to the applications. Additionally, when preparing the robot controllers for the maintenance work of multiple robots, it is enough to prepare only one robot controller. This robot controller can be used for any model only by changing the setting.

Note. Except for 24 V specification models.



# iVY2 System

Product Lineup

## ROBOT VISION iVY2 RCX340

Easy to use and reduction of work steps.

"Finds and Picks up" and "Pursues and Picks up" without teaching.

Many robot users might think, "We tried vision recognition, but it seemed to take a lot of work" or "we tried it before, but making adjustments was a tough job".

But YAMAHA iVY2 system solves these problems.

Anyone can make the setup easily to contribute to reduction of work steps.



### Simplicity

Setup is completed as little as eight minutes after power-on.  
**Auto-calibration** makes setup easy.

### Sophistication

**With up to five million pixels, a variety of workpieces can be supported.**  
Improve throughput to 100 CPM with conveyor tracking.

### Assurance

**Comprehensive support** covers everything from camera image acquisition to the operation of the gripper and robot.  
With support that only the robot manufacturer can provide, you can relax.

<b>Camera</b> Supports from 300,000 to <b>5</b> million pixels	<b>Number of registered types</b> Increased to <b>254</b> types	<b>Shorter search time</b> Approximately <b>50</b> % less	<b>Longer cables usable</b> Cables can be as long as <b>20</b> m	<b>Monitoring</b> Monitor output is provided
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Note. Time depends on the workpiece.

## So, the iVY2 system can solve such problems.

### Number of teaching steps needs to be reduced.

Robot teaching work requires a lot of labor and time. The iVY2 system acts as “robot eye”. The final fine positioning can be automated to greatly reduce the teaching time that was required for the conventional models.

### Positioning mechanism needs to be simplified.

In the current trend toward small-lot production of multiple models, a larger number of models means that positioning and other aspects of setup will require more time and trouble. Use of the iVY2 system makes it possible to greatly reduce costs necessary for manufacture, management, and replacement of positioning jigs.

### Random workpieces need to be handled.

Use of a position detection function of the iVY2 system makes it possible to simply construct operations, such as “workpiece is directly placed from the parts feeder” and “workpiece in the pallet is gripped and transferred”.

### Workpiece flowing on the conveyor is picked up.

The iVY2 system is applicable to conveyor tracking. The position of the flowing workpiece is continuously recognized according to the signals from the encoder. The workpiece can be picked up without stopping the conveyor.

### Consultation destination is not found if a trouble occurs.

When a generally available image processing unit is combined with the robot, various problems such as being unable to capture images, unable to write data, or position deviation occur. YAMAHA iVY2 system will solve such troubles. The iVY2 system delivers total support for tasks ranging from capturing of images from the camera to operating the robot.

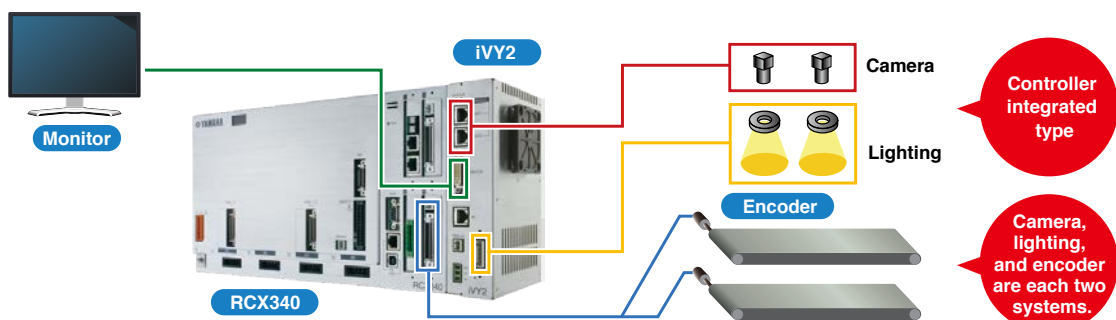
## What the iVY2 system can perform.

- Positioning of products that are taken roughly.
- Finding and taking of products that are arranged randomly.
- Following up of products that are flown by the conveyor.
- Positioning of products that are secured roughly.

The following can also be performed!  
 Top/bottom judgement  
 OK/NG judgement

### POINT 1

#### Robot controller integrated type





## POINT 2

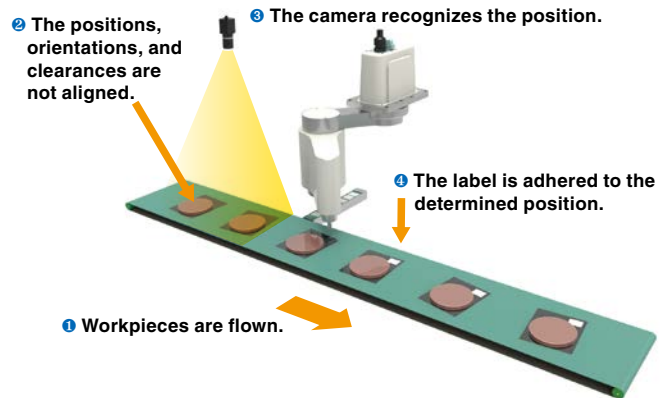
## Various application examples

### ● Workpieces are flown randomly.

The workpiece positions are recognized by the camera and the labels are adhered to the determined positions. The adhesion position can also be specified for each part type.

POINT

Even when the positions or orientations of workpieces that are flown are not aligned, the labels are adhered to the same positions.

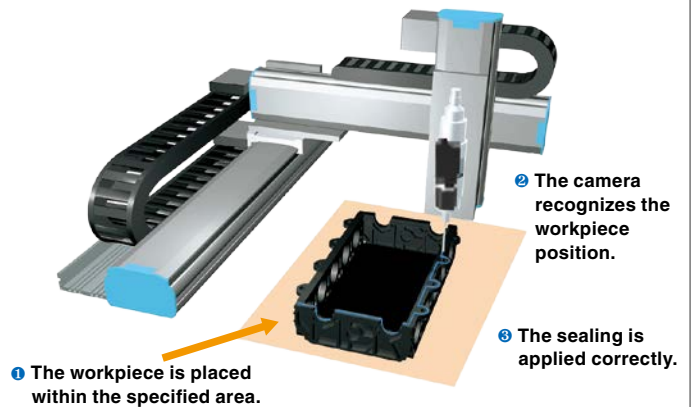


### ● The sealing position is corrected.

The placed position is recognized from the workpiece shape correctly. The jig change (setup) is not needed when the part type is changed.

POINT

The workpiece shape is recognized by the camera and the sealing is applied to the correct position. Workpieces that are not aligned are adhered to the same positions.

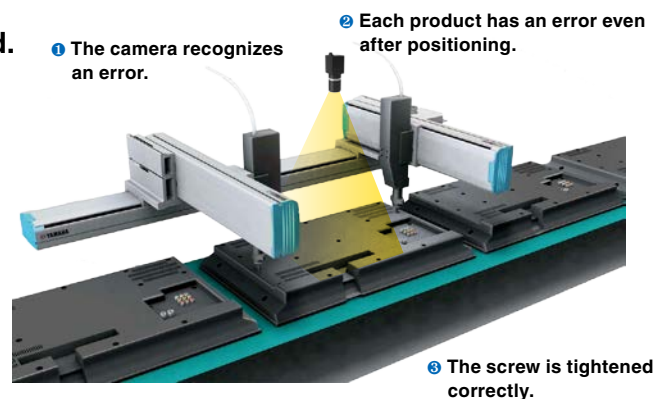


### ● The screw tightening position is corrected.

The correct position of even the workpiece whose hole position varies depending on the workpiece is recognized by the camera and the screw can be tightened.

POINT

Even when there are variations in product accuracy such as resin mold product, the products can be assembled correctly.

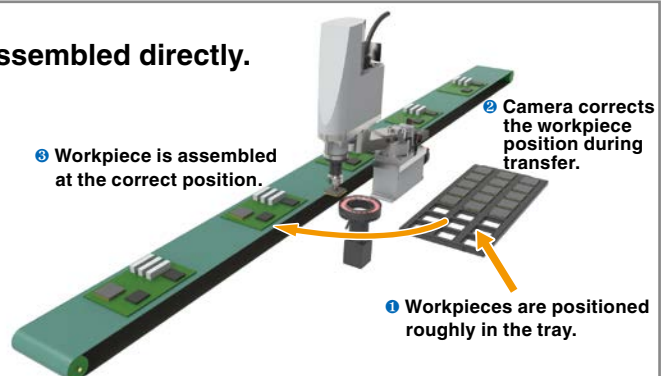


### ● Workpiece is picked up from the tray and assembled directly.

Workpiece is picked up from the tray, its position is corrected during transfer, and it is assembled directly. Difficult-to-grip workpiece is centered.

POINT

Use of the upward camera makes it possible to correct the position during transfer.



## Easy for anyone to use, applicable to a wide variety of applications

When the system was upgraded by combining the robot with a generally available image processing unit, it took a long time conventionally to adjust the robot controller and image processing unit, and perform the correction calculation. In YAMAHA "iVY2 system", the vision board is integrated into the robot controller and the functions are limited to the positioning and position correction so as to greatly simplify the operability. This makes the system incredibly easy to use when compared to conventional vision systems. YAMAHA aimed at "a vision system that anyone can easily use". Please try to use YAMAHA's new robot vision.

### Conventional robot vision

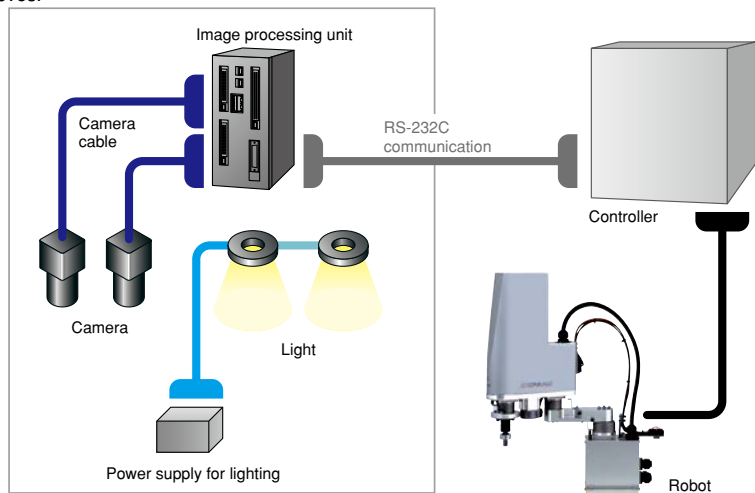
- ① Alignment with robot coordinates is difficult.
- ② Correction calculation is needed when the camera moves.
- ③ Operation deviation between the camera and robot due to communication time.
- ④ Adjustment of communication format is needed.



- Difficult to handle.
- Hard to actually operate.
- Installation and setup costs are high.
- Difficult to know emergency contact address.

#### Special skills are required and many work steps are needed.

Connecting an external camera to the robot controller requires tasks such as coordinate alignment (calibration), and correction programs are needed, so the startup work is difficult. When using for simple applications, many work steps are needed. So, possible applications are limited.



### iVY2 system

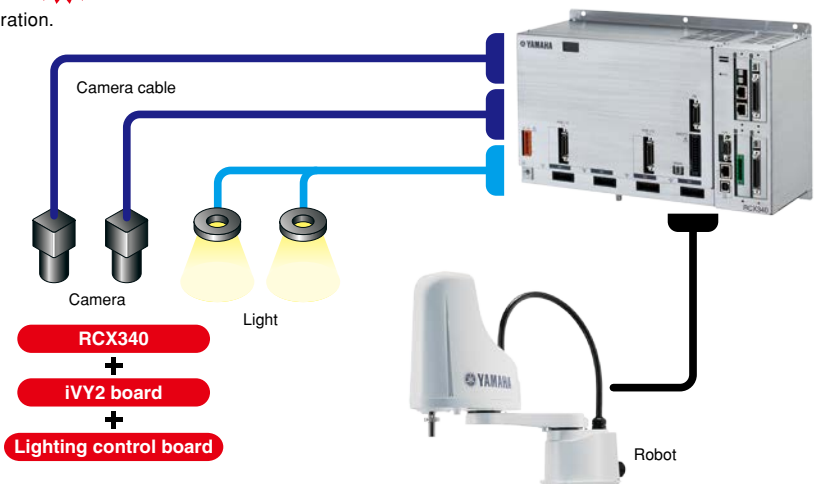
- ① Simple calibration function is incorporated.
- ② Coordinates are corrected automatically even when the camera moves.
- ③ High-speed connections through dedicated bus line.
- ④ Controller is incorporated to provide the central operation.
- ⑤ Applicable to all models of YAMAHA robot lineup.



- Easy to use
- Various applications are supported using easy operation.
- Cost reduction by reducing work steps.
- YAMAHA gives you total support.

#### Easy operation extends applications

YAMAHA iVY2 system can be calibrated very simply. Furthermore, the coordinates are corrected automatically when a camera is installed on the robot. As iVY2 system can be used, it can be applied to various applications.



POINT 4

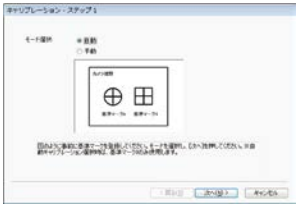
Auto-calibration

Easily complete high-precision calibration just by following a wizard! Even if equipment becomes misaligned, execute auto-calibration and resume operation.

Requires as little as 5 minutes

**STEP. 1**

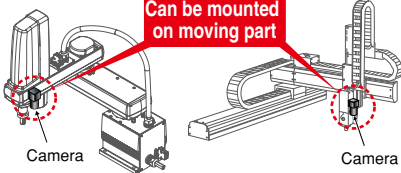
Register the desired fiducial mark



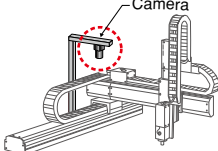
**STEP. 2**

Select the camera mounting method

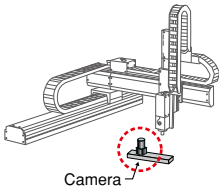
Mounted on robot



Fixed downward



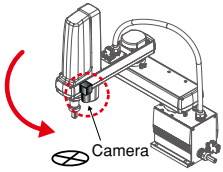
Fixed upward



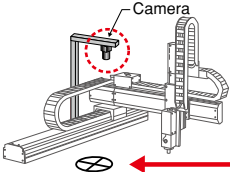
**STEP. 3**

Align fiducial mark position

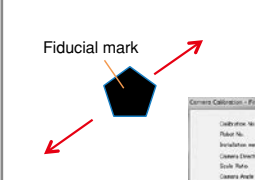
If camera is movable, move the robot

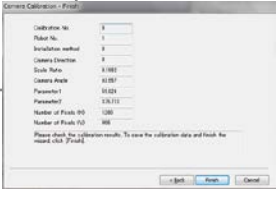


If camera is fixed, attach fiducial mark to robot, and move it



**Execute auto-calibration**





POINT 5

Easy workpiece registration only with 3 steps


From image acquisition, registration takes just three steps.

Requires as little as 3 minutes

**STEP. 1**

Capture images.

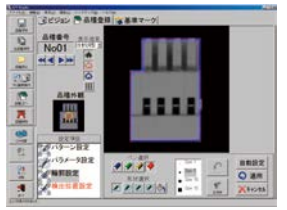
Put the workpiece within the camera field-of-view and specify an image capturing range.



**STEP. 2**

Set the contour.

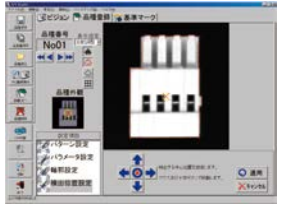
Contour is automatically extracted. Paint the necessary contour with a pen tool.



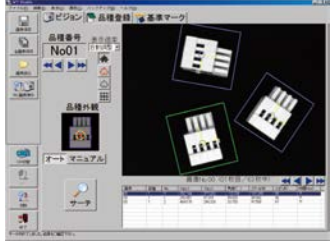
**STEP. 3**

Register the detection position.

Specify the detection position with the mouse. Desired positions can be set.



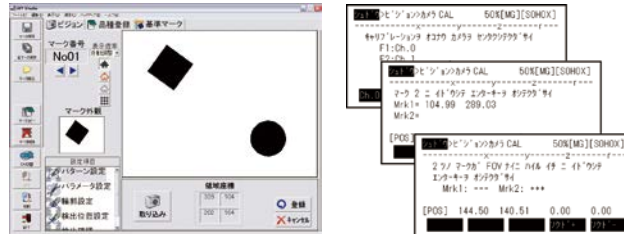
**Search results**



POINT 6

### Simple calibration function (coordinate matching alignment work) incorporated

The iVY2 system includes dedicated software "iVY2 Studio". All operations related to the vision, such as registration of fiducial marks used for the calibration or workpieces (edge setting, various parameter setting, and image capturing range setting, etc.), backup, restore, and operation monitor can be performed only with this software.



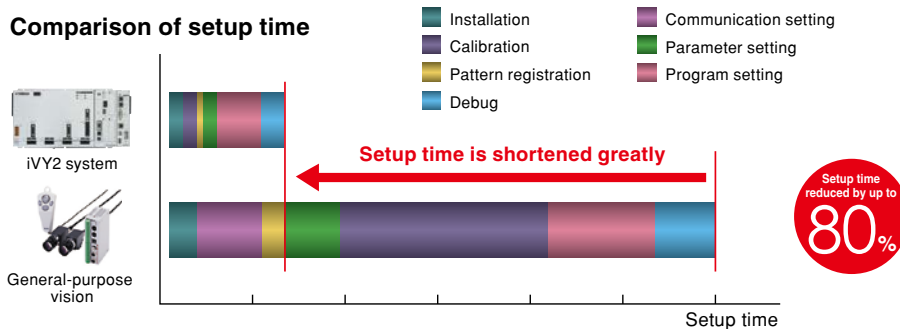
Just follow instructions on Wizards

POINT 7

### Setup time reduced greatly

When using a general vision, a coordinate conversion program needs to be created in the robot controller since the robot coordinate data differs from the vision format.

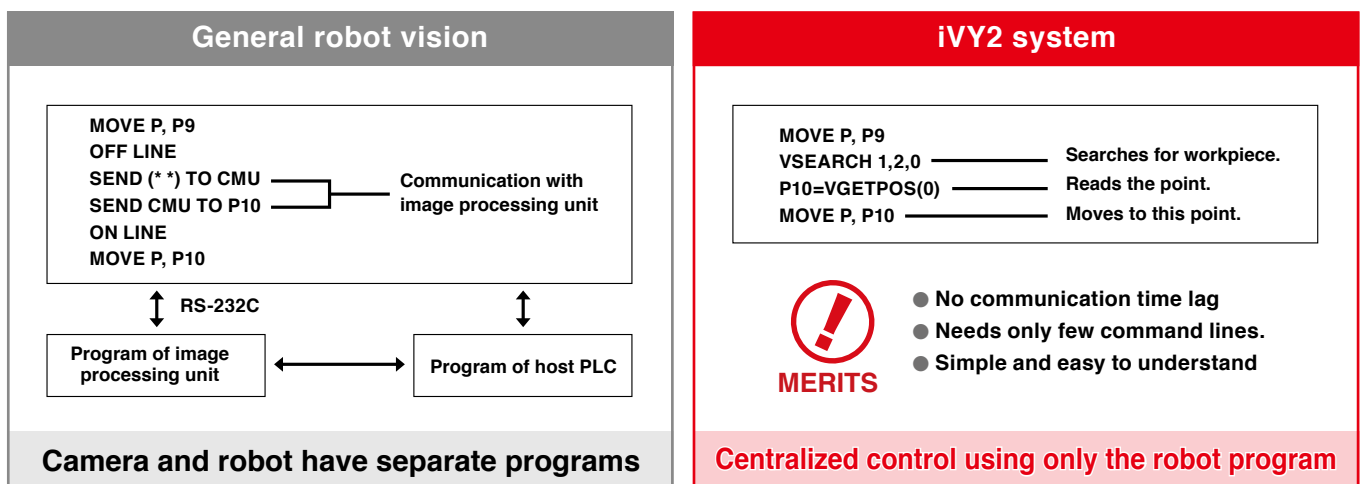
Since the robot controller is integrated into the iVY2 system, the robot coordinate data can be stored into the robot point data using single process. This ensures very simple operation. Additionally, the unified control of the camera control and light control can be performed using the robot program. The control becomes easy and the number of start-up steps can also be reduced.



POINT 8

### No need to create a coordinate conversion program.

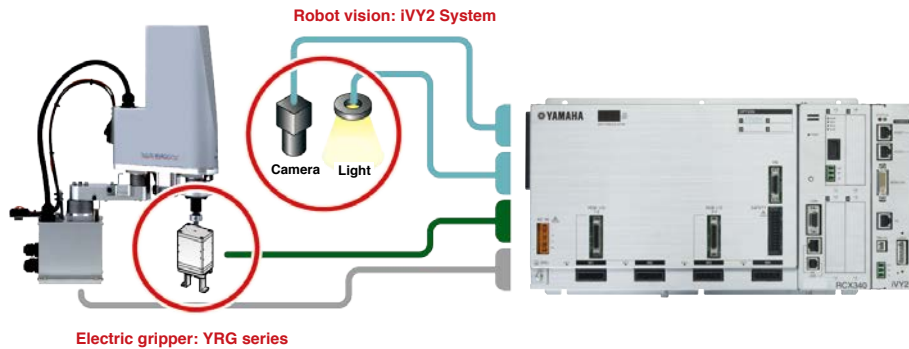
Dedicated robot language for vision is provided.



POINT 9

**Easy inter-operation with peripheral equipment**

The same controller provides unified control of robot, gripper, and lighting.



POINT 10

**Workpiece handling without teaching**

When the robot handles a workpiece, the teaching work to the correct position is absolutely required. If the workpiece position deviates, the correct handling cannot be performed.

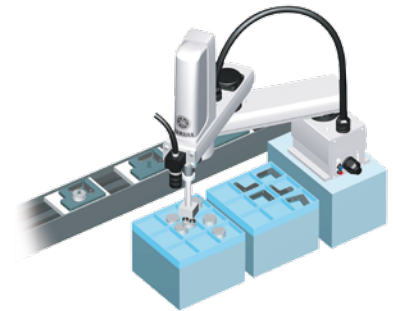
Use of iVY2 system makes it possible to detect the correct position through the image recognition after coarse positioning. The workpiece can be transferred without teaching, so the start-up steps are reduced and workpiece can be changed or added flexibly.



POINT 11

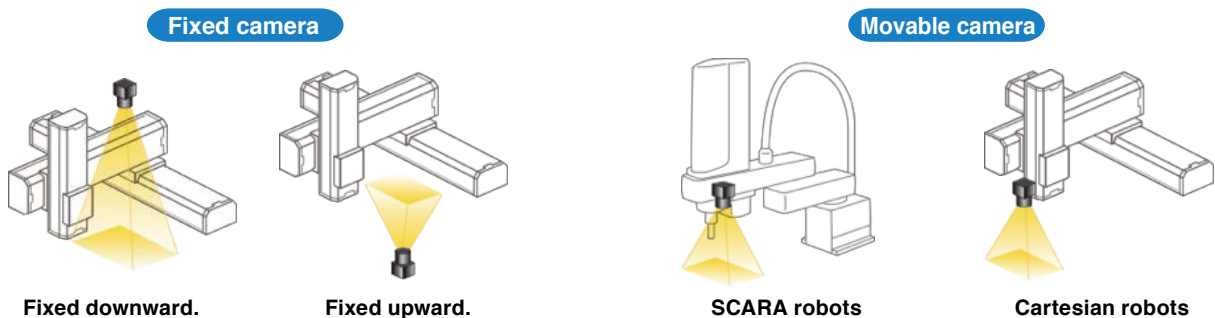
**Also supports moving camera**

Even if the camera is mounted on the robot, coordinates are automatically converted according to the robot's movement.



POINT 12

**Camera position can be selected in accordance with the application.**



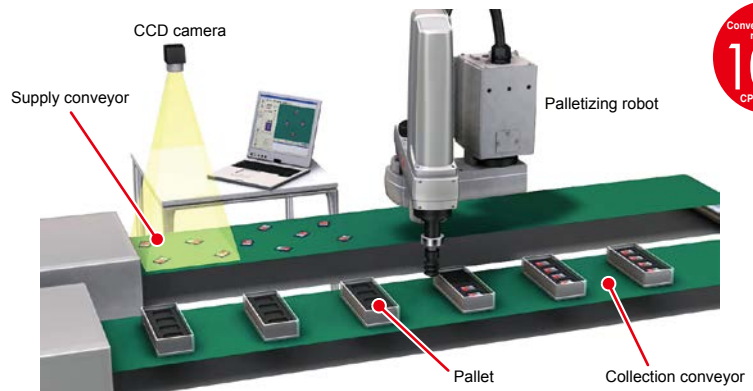
**Even when the camera is moved, the coordinates are corrected automatically.**



POINT 13

Applicable to conveyor tracking

Ideal for high-speed packaging arrangement high-speed transport of multiple types of items such as pharmaceuticals, cosmetics, and food products. The vision camera detects the position and orientation of parts moving on the conveyor, and the robot picks them up.



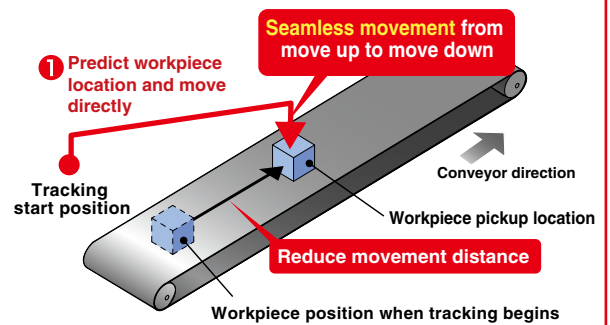
Conveyor tracking reaches **100** CPM per unit

Example program

1 New CTMOVE CTMOVE (1),Z=0.0,CTZ=10.0

Can be executed with a single command

Unify the move up command, follow workpiece command, move down command



Operating conditions: YK500XG / payload 1 kg (total of workpiece and tool) / horizontal movement 250 mm / vertical movement 1 mm / conveyor speed 100 mm/sec

POINT 14

Control multiple robots for even more improvement in production efficiency.

Shortened cycle time

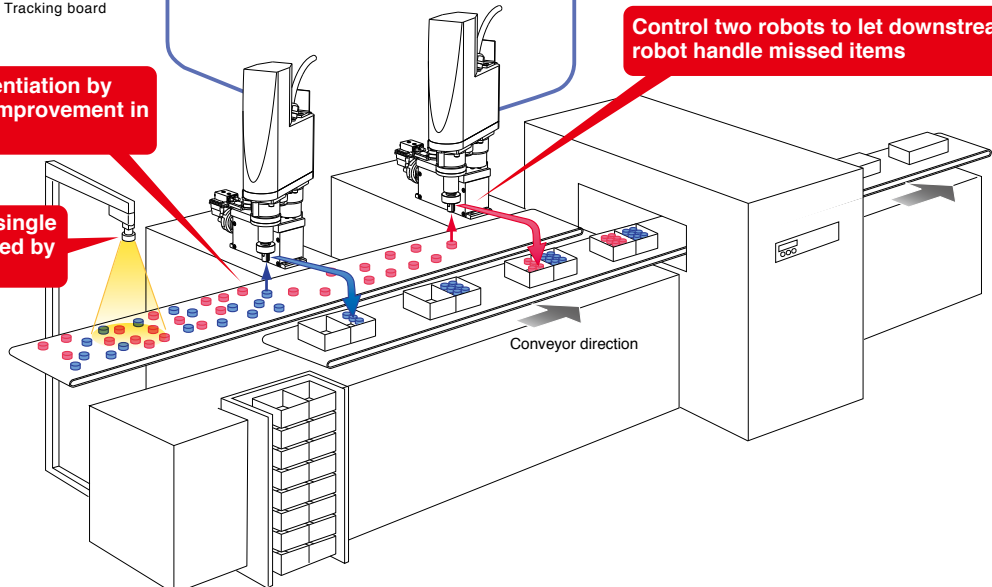
Improve throughput



Program allows differentiation by model for even more improvement in production efficiency

Information from a single camera can be shared by multiple robots

Control two robots to let downstream robot handle missed items

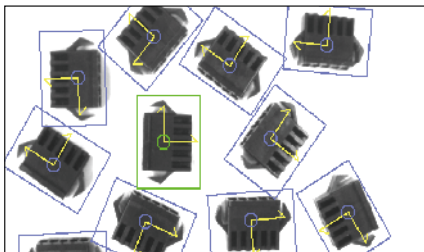


POINT 15

**Approximately double the search speed** (compared to previous model)

Even a large number of workpieces can be detected at high speed. The search speed is approximately double that of the previous model. This can be used for a wide variety of applications, including molded plastic parts or food items.

Sample workpiece ① Connector-shaped workpiece



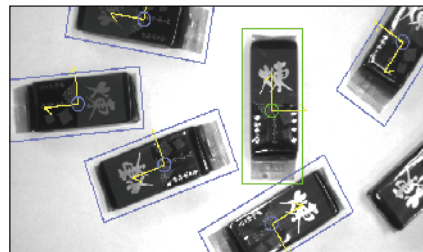
RCX240 + iVY	RCX340 + iVY2
158.7 ms	83.8 ms

Sample workpiece ② Washer-shaped workpiece



RCX240 + iVY	RCX340 + iVY2
200.2 ms	91.7 ms

Sample workpiece ③ Food item workpiece



RCX240 + iVY	RCX340 + iVY2
149.8 ms	91.1 ms

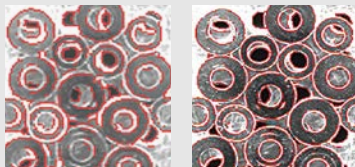
POINT 16

**Support for five-megapixel cameras**

(Choose from 300,000 pixel, 1.3 megapixel, and 2 megapixel, and 5 megapixel)

Detailed edge detection is possible even if workpieces are touching each other or have a complex shape.

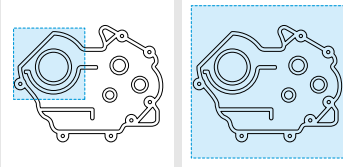
- Previous: 300,000 pixel camera
- New: 1.3 megapixel camera



(partial detail illustration) (partial detail illustration)

A single search allows detection even for a large workpiece, improving takt.

- Previous: 300,000 pixel camera
- New: two-megapixel camera



Field of vision

POINT 17

**254 types can be registered**

Setup changes require only that part numbers be changed. Setup changes are easy.



POINT 18

**Monitor output is provided**

- Monitor the operating status

Monitor the search status while making calibration settings or during automatic operation.

Contents of output

- Selected type / Captured image
- Search result (position, score, scale)
- Executed command
- Time required by command

Output method

- DVI-I (supports digital monitor or analog monitor)

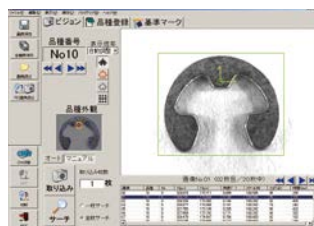


POINT 19

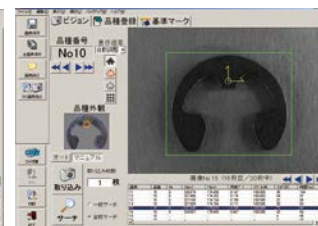
**High-precision search even under low light**

- Edge search engine is built-in

Supports a variety of applications while being minimally affected by the external environment.



When lighting is sufficient



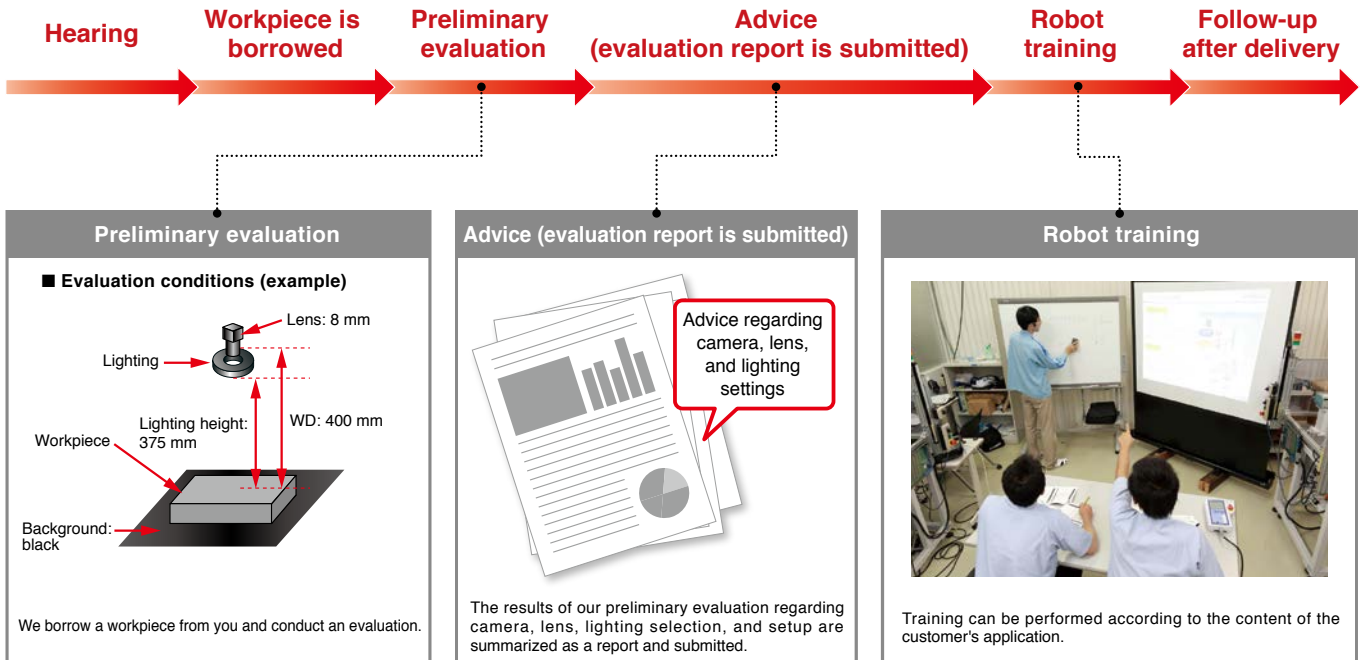
Accurate search even if lighting is insufficient

**POINT 20**

**Preparatory evaluation and advice give you peace of mind**

We borrow the workpiece from you, evaluate it, and submit an evaluation report.

In addition, we draw on our wealth of experience and evaluation results to provide advice and training regarding selection and installation of robots and peripheral equipment.



**POINT 21**

**Choose freely from Yamaha's lineup of robots**

A low-cost and convenient robot vision system can be constructed using the models that are optimal for the customer's application.

■ XY-X Cartesian robots

■ YK-XG/XE SCARA robots

■ YK-TW orbit type robots

■ FLIP-X single-axis robots



Note. The YA series is not supported.


**POINT 22**

**Easy-to-use dedicated software iVY2 Studio**

With support software "iVY2 Studio", all vision related operations such as registration of fiducial marks and workpieces used for calibration (contour settings, various parameter settings, and read range settings), backup, restore operation, and operation monitor can be performed.

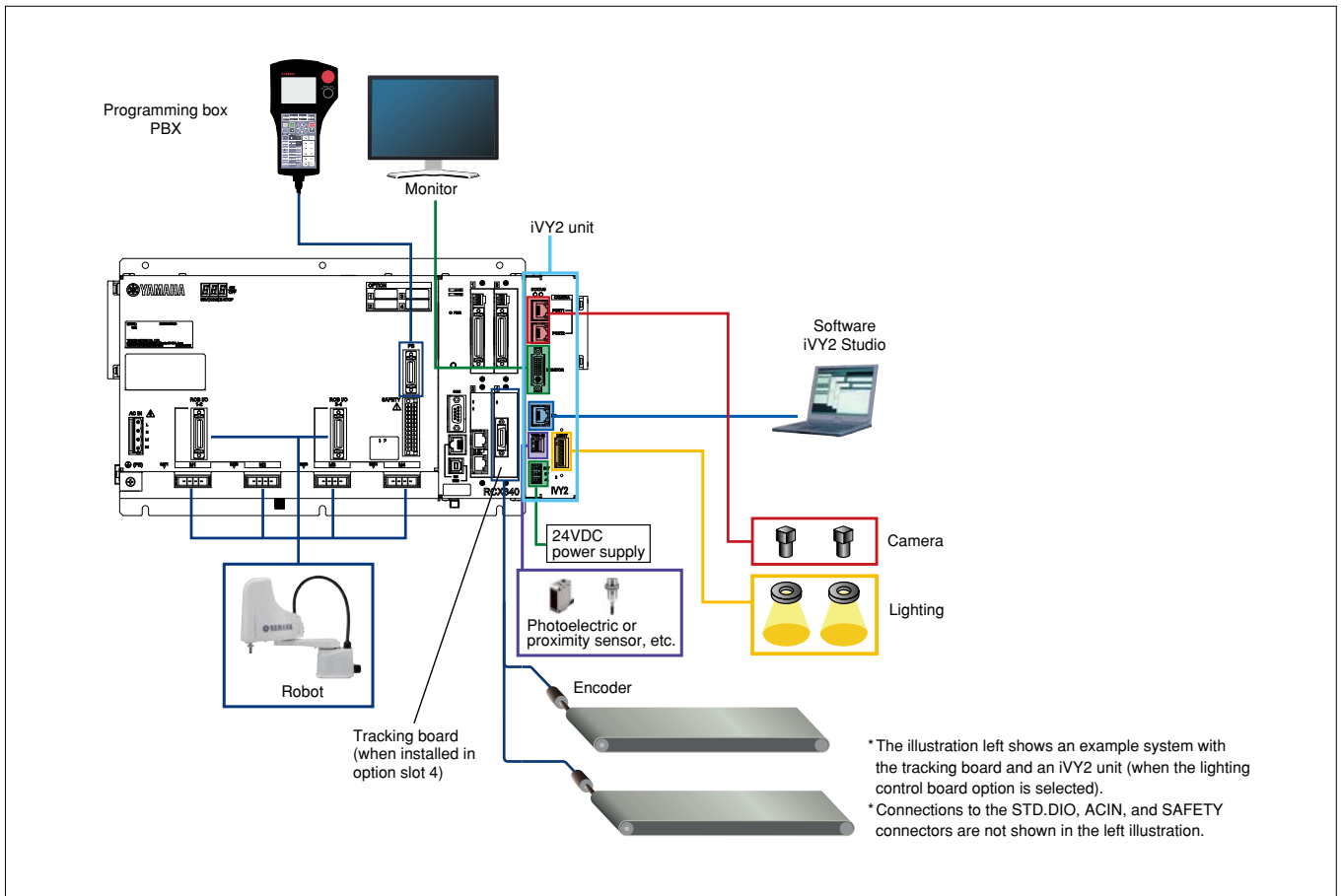
[Download from website \(member site\)](#)

**Support software iVY2 Studio**



- Search trial-run, part type registration
- Reference mark registration (for calibration)
- Up to 40 workpiece types can be registered.
- Workpiece can also be added easily.
- Up to 40 workpieces can be detected at once.
- Data backup
- This software functions as a monitor during program operation.

### iVY2 System configuration illustration







# YRG Series

Product Lineup

## ELECTRIC GRIPPERS

Electric grippers dedicated to the RCX320 and RCX340 controller.  
Easy operation is achieved as YAMAHA robot language gives unified control.



### Gripping force control

Gripping force can be set in 1 % steps from 30 to 100 %.

### Measuring

Workpiece can be measured using position detection function.

### Speed control

Speed can be set in 1 % steps from 20 to 100 % and acceleration can be set in 1 % steps from 1 to 100 %.

### Multi-point position control

Up to 10,000 positioning points can be set.

### Workpiece check function

Workpiece gripping mistake or workpiece drop can be checked by the HOLD output signal without using sensor.

# Plenty of lightweight and compact model variations

## S type Single cam type

P.603

Lightweight, compact, high-speed



**Single cam structure**  
Use of a unique cam structure achieves the simple and compact design. As the self-lock is not activated, the fingers can be operated using an external force.

## W type Double cam type

P.605

High gripping force



**Double cam structure**  
Unique double cam structure with gear. Use of a simple structure achieves high gripping force with compact body.

## Screw type Straight shape

P.606

High accuracy, long stroke



**Ball screw structure**  
As the ground ball screw is driven by the belt, the long stroke with high efficiency and high accuracy is achieved.

## Screw type "T" shape

P.607

## Three fingers type

P.608

Compact, high rigidity, long stroke



**Compact ball guide structure**  
Use of a special cam provides lightweight and compact electric grippers. These electric grippers are suitable for transfer of round workpieces made of glass or similar materials.

Type	Model	Gripping force(N)	Open/close stroke (mm)	Maximum speed (mm/sec.)	Repeated positioning accuracy (mm)	Main body weight (g)	Page
Compact single cam	YRG-2005SS	5	3.2	100	+/- 0.02	90	P.603
Single cam	YRG-2010S	6	7.6	100	+/- 0.02	160	P.604
	YRG-2815S	22	14.3	100	+/- 0.02	300	
	YRG-4225S	40	23.5	100	+/- 0.02	580	
	YRG-2005W	50	5	60	+/- 0.03	200	
Double cam	YRG-2810W	150	10	60	+/- 0.03	350	P.605
	YRG-4220W	250	19.3	45	+/- 0.03	800	
	YRG-2020FS	50	19	50	+/- 0.01	420	
Screw type Straight shape	YRG-2840FS	150	38	50	+/- 0.01	880	
Screw type "T" shape	YRG-2020FT	50	19	50	+/- 0.01	420	P.607
	YRG-2840FT	150	38	50	+/- 0.01	890	
Three fingers type	YRG-2004T	2.5	3.5	100	+/- 0.03	90	P.608
	YRG-2013T	2	13	100	+/- 0.03	190	P.609
	YRG-2820T	10	20	100	+/- 0.03	340	
	YRG-4230T	20	30	100	+/- 0.03	640	

- Gripping force control: 30 to 100 % (1 % steps)
- Speed control: 20 to 100 % (1 % steps)
- Acceleration control: 1 to 100 % (1 % steps)
- Multi-point position control: Maximum 10,000 points
- Workpiece size judgment: 0.01 mm steps (by ZON signal)

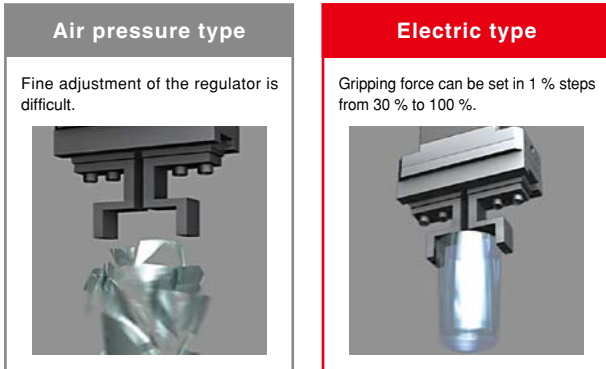
## POINT 1

## Electric grippers achieve highly accurate gripping force, and position, and speed controls.

The YRG series provides the gripping force control, speed and acceleration controls, multi-point control, and workpiece measurement that were difficult by conventional air-driven devices. The YRG series flexibly supports various applications.

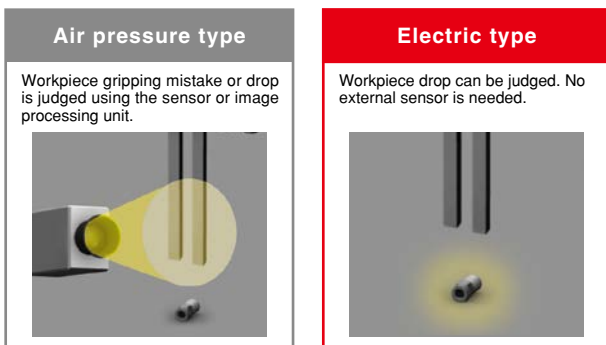
### Gripping force control

The gripping force can be set in 1 % steps. Workpieces that are easy to break or deform, such as glass or spring can be gripped. The gripping force is constant even when the finger position changes.



### Workpiece presence check function

The electric gripper outputs the HOLD signal. Workpiece gripping mistake or workpiece drop during transfer can be checked. No external sensors are needed.



### Speed control

The speed and acceleration can be set in a range of 20 to 100 mm/sec. in 1 % steps (single cam and three fingers type). The gripper can gently touch workpieces that are vulnerable to impact, such as lenses or electronic components.

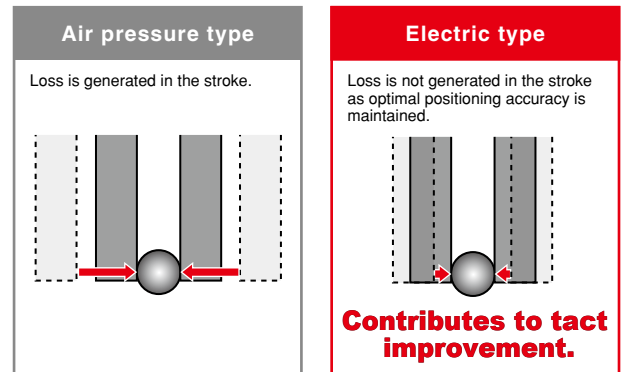
## POINT 2

## Gripper can be controlled with controller commands.

The gripper controls can be performed with one multi-axis controller RCX320, RCX340. Data exchanging with the host unit, such as PLC is not needed. The setup or startup can be made easily.

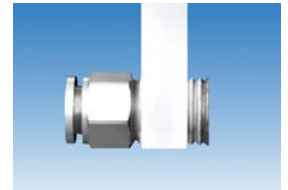
### Multi-point position control

The finger can be set to a desired position according to the workpiece size. This contributes to efficiency improvement of lines with different workpiece sizes and materials mixed and lines with many setup steps.



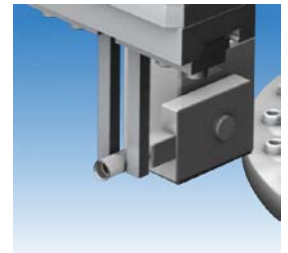
### Measuring function

The gripped workpiece can be measured using the position detection. Use of this function makes it possible to correctly judge what portion of the workpiece is gripped.



### Zone range function

Use of this zone range function makes it possible to judge the size OK/NG and check for slant insertion.



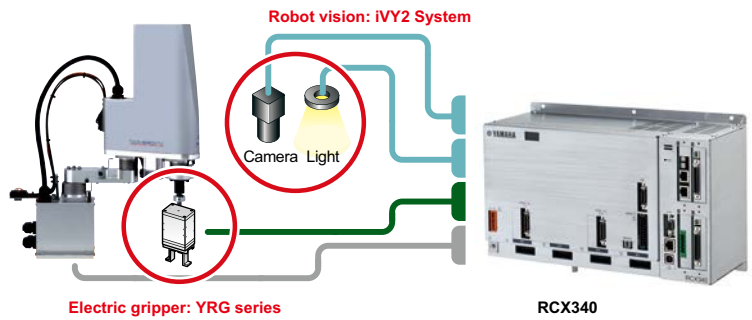
### List of robot languages (example)

Language name	Function
<b>GDRIVE</b>	Absolute position movement
<b>GDRIVEI</b>	Relative position movement
<b>GHOLD</b>	Absolute position gripping movement
<b>GHOLDI</b>	Relative position gripping movement
<b>GOPEN</b>	Constant speed gripping movement (open)
<b>GCLOSE</b>	Constant speed gripping movement (close)
<b>GORIGIN</b>	Gripper axis return-to-origin
<b>GSTATUS</b>	Status acquisition
<b>ORIGIN</b>	Return-to-origin
<b>WHERE</b>	Main group current position acquisition (joint coordinate: pulse)
<b>WHERE2</b>	Sub group current position acquisition (joint coordinate: pulse)
<b>WHRXY</b>	Main group current position acquisition (Cartesian coordinate: mm, degree)
<b>WHRXY2</b>	Sub group current position acquisition (Cartesian coordinate: mm, degree)

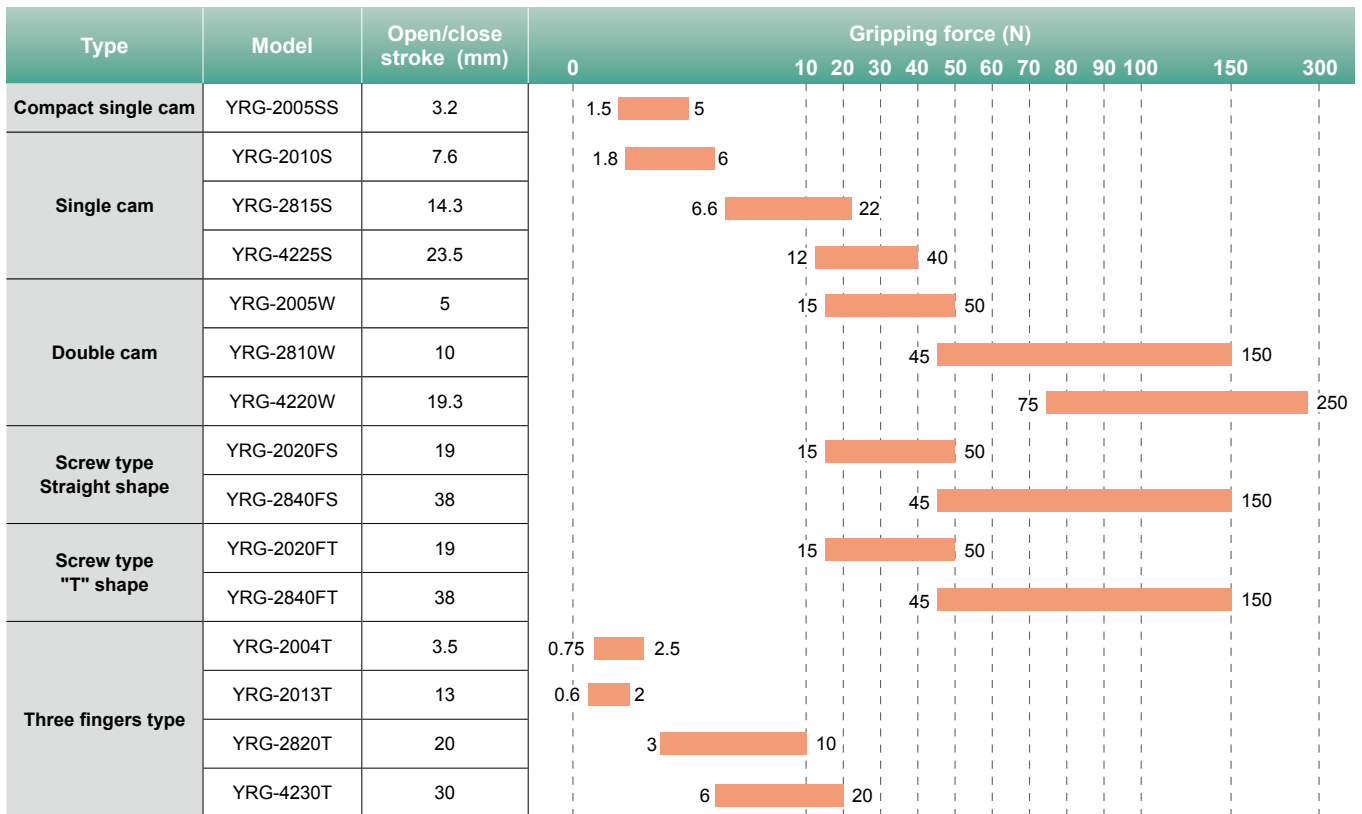
## POINT 3

### Combination with a vision system supports a wide variety of applications.

As the YRG series is combined with controller integrated robot vision "iVY2 System", the operations from the positioning using the camera to workpiece handling can be controlled in the batch mode using the RCX320, RCX340 controller. Sophisticated systems can be easily configured.

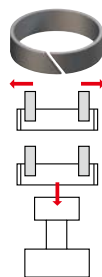
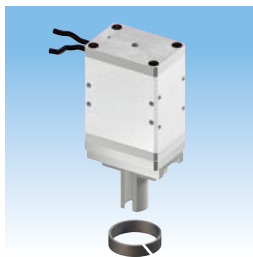


## Gripping force comparison of electric gripper models



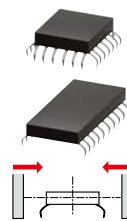
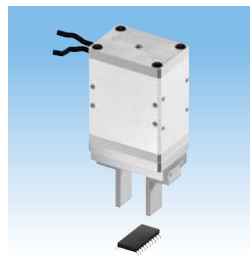
## Application examples

### Deformation prevention transfer of resin rings, etc.



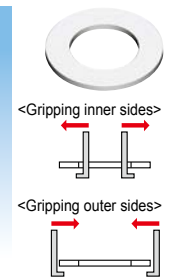
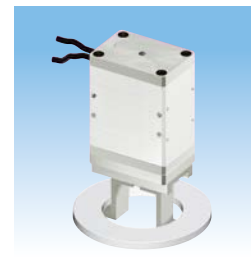
- Measuring function (Maintains workpiece shape.)
- Gripping force control (Maintains workpiece shape and prevents scratches.)
- Speed control (Maintains workpiece shape and prevents scratches.)
- Multi-point position control (Applicable to many part types of workpieces.)

### Chip assembly transfer Deformation prevention and lead protrusion dimension check



- Measuring function (Checks lead protrusion dimensions.)
- Gripping force control (Maintains workpiece shape and prevents scratches.)
- Speed control (Maintains workpiece shape and prevents scratches.)
- Multi-point position control (Applicable to many part types of workpieces.)

### Transfer and dimension check of flexible workpieces with different sizes



- Measuring function (Checks lead protrusion dimensions.)
- Gripping force control (Prevents workpiece deformation.)
- Speed control (Prevents scratches.)
- Multi-point position control (Applicable to many part types of workpieces.)
- Reduction of setup work (Improves productivity.)

Note. Air unit cannot control the gripping force and speed, causing workpiece to be scratched or tact time not to be shortened.





# APPLICATION

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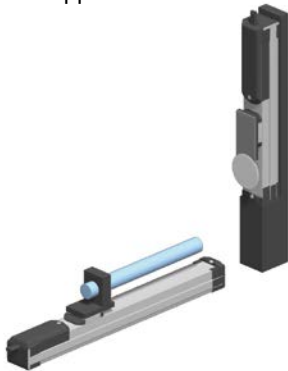
## YAMAHA STEPPING MOTOR SINGLE-AXIS ROBOTS

TRANSERVO  
Series

P.151

## Pressing and cutter machines

- Cuts plastic lens material
- Pressing function applications

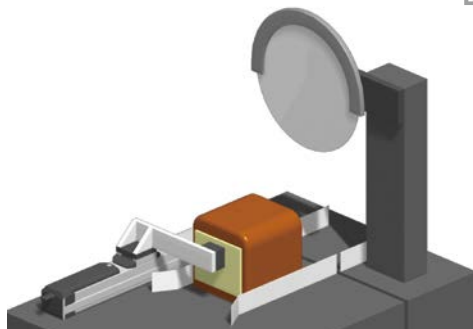


## POINT

- Cutting tasks using the TRANSERVO (TS-S, TS-X, TS-P) pressing function
- Pressing torque is adjustable, and time-out time and operation after reaching specified torque can be selected as desired (continuous pressing, position hold).
- Host control can be simplified by setting multiple continuous operation points.

## Pressing and pitch feed

- Positioning for bread loaf slicing
- Pressing function and pitch feed applications



## POINT

- Measures bread thickness with robot and identifies bread type. (TS positioner can send feedback on current position.)
- Varies the pitch feed quantity to match workpiece type.
- Pressing torque is adjustable to match the workpiece type.

## YAMAHA SINGLE-AXIS ROBOTS

FLIP - X  
Series

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## Clean, dustproof / drip-proof, high-speed conveying unit

- Transfer and conveyance in the clean environment.
- Transfer and conveyance in the harsh environment.

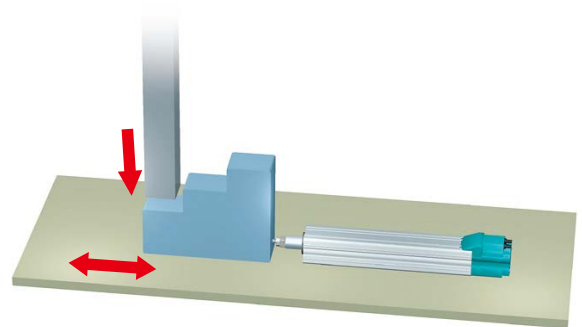


## POINT

- Belt drive type robot complying with cleanliness requirement.
- With a large payload, it is optimum for conveying panels.
- Provided with specifications for cleanliness and applicable to long stroke.
- With the payload and moment permissible value at high level, it is applicable to the Cartesian combination.
- Equivalent to B10 (YAMAHA model) .

## Contact stopper height change unit

- Change of stopper height in multiple number of steps.

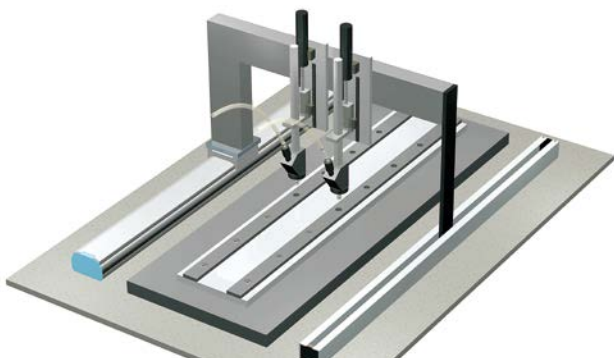


## POINT

- The stop position for the stopper block is positioned by the cylinder type robot.
- It is possible to make set-up done by single touch operation or automatically.

## Screw tightening device

- Tightening screws arranged on a straight line.

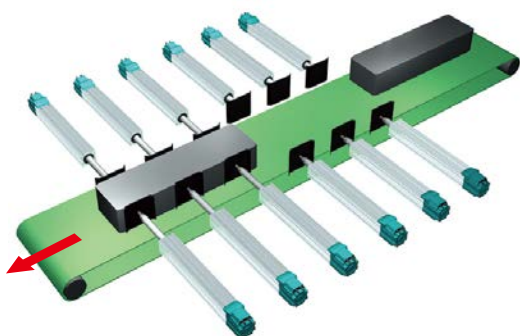


### POINT

1. High rigidity with a support axis added.
2. Pitch selectable freely in the moving axis direction.

## Device to shift workpiece in width direction

- Positioning of workpieces flowing on the conveyor.

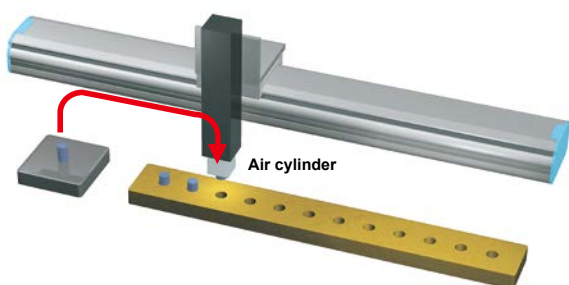


### POINT

1. Arrangement of multiple number of compact robots.
2. Pulse string control from the upper controller.

## Press-fitting device

- Workpieces are press-fitted in holes arranged on a straight line.

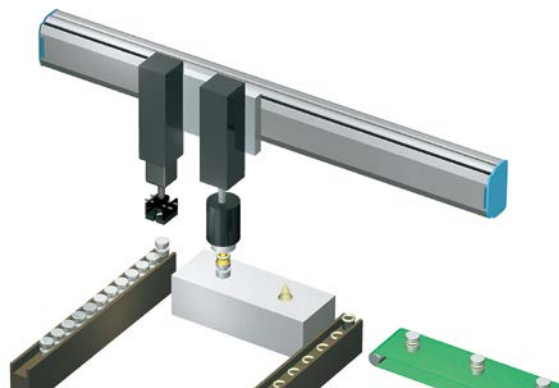


### POINT

1. Highly rigid frame.
2. Applicable to work positions arranged linearly.

## O-ring fitting device

- Handling workpieces to assembly units arranged on a straight line.

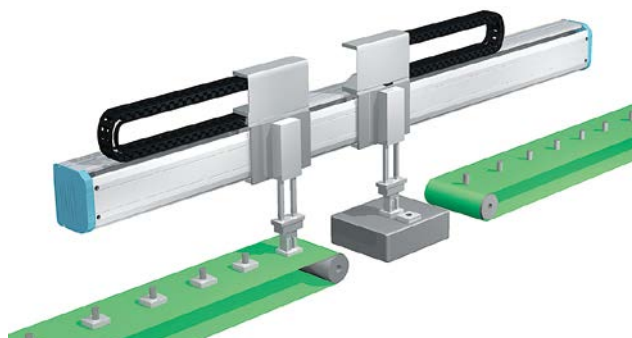


### POINT

1. Assembly jigs arranged on a straight line under the single axis robot.

## Carrying and transferring equipment

- Handling parts

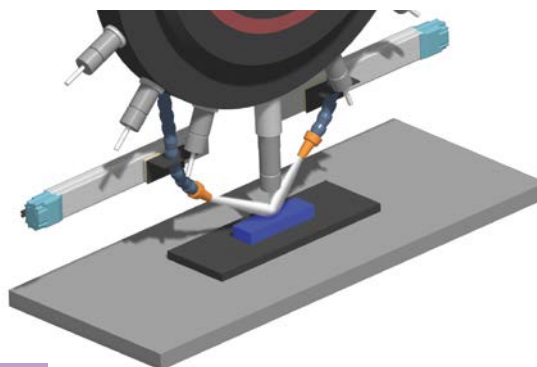


### POINT

1. Space saving layout using double carrier. (N15 / N18)

## Jig and tool positioning mechanism

- Adjustment of cutting fluid nozzle position of machining center
- Positioning under harsh working environments



### POINT

1. The adoption of a magnetic accuracy detection resolver allows use even under adverse conditions.

## Painting by combining multiple single-axis robots

- Interpolation control of multiple single-axis robots is performed for painting work.

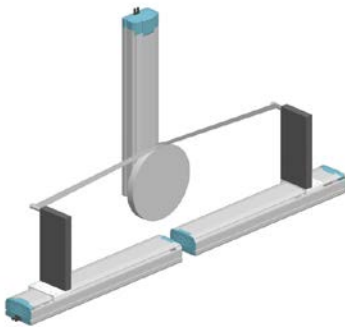


### POINT

- As single-axis robots are controlled with the multi-axis controller, such as RCX240, the linear or circular interpolation operation can be performed with combined coordinates.
- A layout, such as desktop type that is different from the normal Cartesian robot can be configured.
- Optimal specifications can be selected from the versatile single-axis robot lineup and they can be combined.

## Tape affixing to circular workpieces

- Interpolation control of multiple single-axis robots is performed for tape affixing to circular workpieces

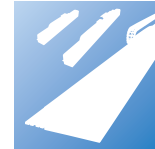


### POINT

- Multiple single-axis robots are controlled with one multi-axis controller (multi-robot).
- Use of an interpolation function of the multi-axis controller makes it possible to synchronize each axis.
- As each axis is synchronized, a tension applied to the tape is kept constant to provide tape affixing without elongation or sagging.

## YAMAHA LINEAR MOTOR SINGLE-AXIS ROBOTS

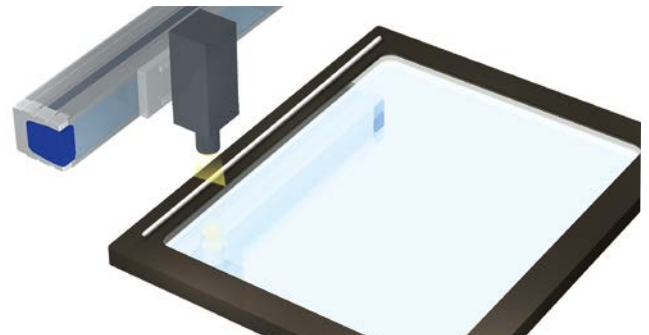
# PHASER Series



P.239

## Check camera moving unit

- Checking with moving camera.
- Multi-point check with a camera.
- Drawing created with line sensor and moving axes.

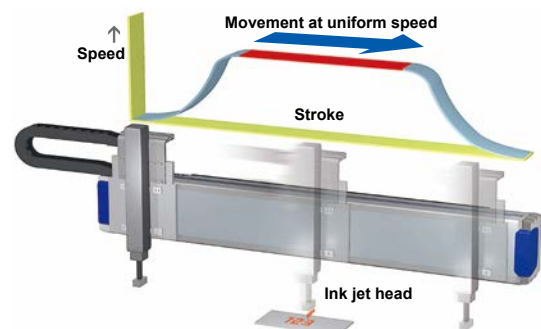


### POINT

- Allows movement with minimal speed fluctuations.
- Compact size.

## Ink jet printer

- Ink jet feeding mechanism.

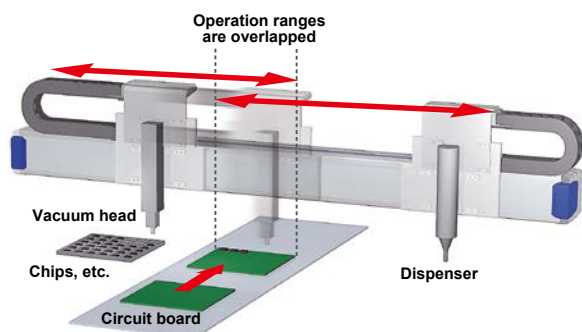


### POINT

- Allows movement with minimal speed fluctuations.
- Capable of coping with a request for high speed. (Max. 2,500mm/sec)
- Allows setting long constant-speed sections, with large acceleration.

## Chip mounter

- Bonding and chip mounting on circuit board.
- Electronic part mounting process.

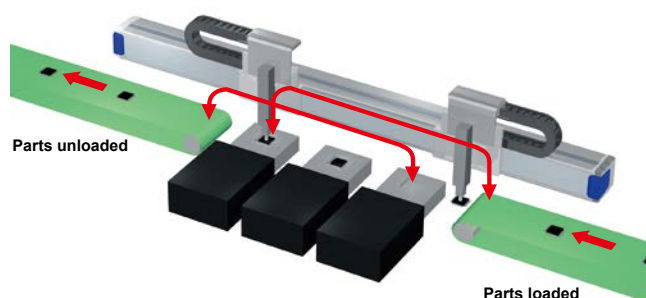


### POINT

1. Double carrier structure enabled compact size.
2. Layout designing is easy as different workpieces can be carried onto the same axis.
3. Clean specification requirement can be coped with easily.

## Check device

- Handling to multiple number of check devices.

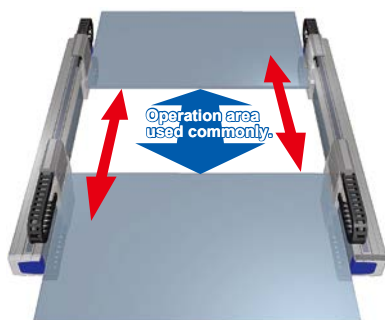


### POINT

1. 2 heads can be installed to the same axis compactly.
2. High speed operation.

## Open / close device

- Wide open/close of shutter.

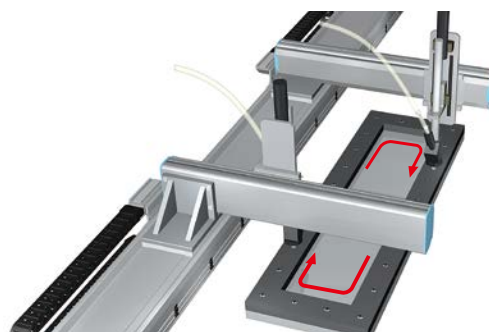


### POINT

1. It is possible to drive a work with a large width (shutter) using the dual drive method.
2. Various advantages (such as center layout, higher open / close speed, sharing of effective stroke) are available due to adoption of the double carrier mechanism.
3. Drives with the dual drive mechanism with 2 units of double carrier PHASER in parallel and fixing them with sliders respectively.
4. RCX240 can control 4 axes in all.

## High-speed screw tightening unit

- Positioning 2 nut runners at the same time for a large work piece.
- 2 screws at opposite locations tightened at the same time.

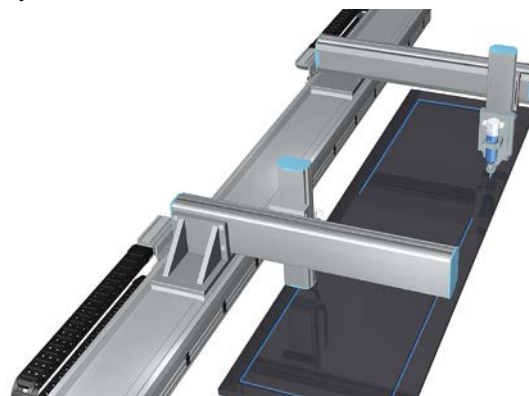


### POINT

1. Performs high-speed, high-accuracy screw tightening on large work pieces such as large construction materials.

## High-speed applicator (1)

- Application to a large size workpiece such as liquid crystal circuit board and the like.

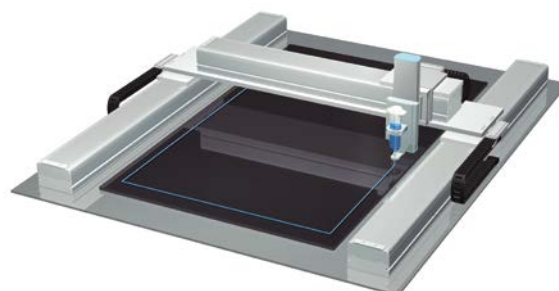


### POINT

1. Capable of applying to a large size work such as a flat panel display.

## High-speed applicator (2)

- Application to a large size workpiece such as liquid crystal circuit board and the like.



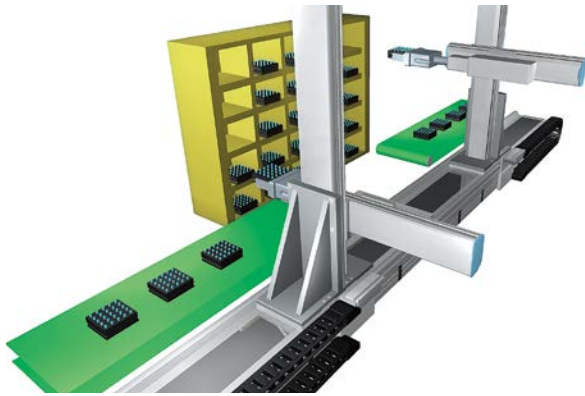
### POINT

1. Capable of applying to a large size work such as a flat panel display.
2. It is possible to drive a work with a large width using the dual drive method.



## High-speed pick & place unit

- Pick & place operation from the rack for large size parts.

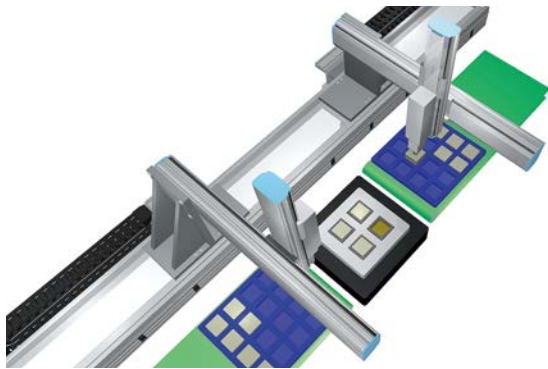


### POINT

1. Capable of carrying over a long distance between processes in various production facilities.

## High-speed loading / unloading robot

- The loading unit and unloading unit are mounted on the same axis.



### POINT

1. Utilizing double-carriers allows building systems that are highly efficient in saving space.

## YAMAHA CARTESIAN ROBOTS

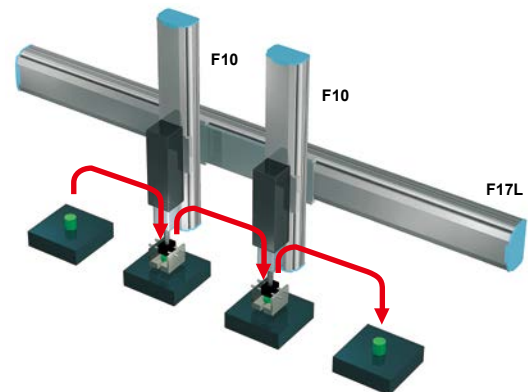
## XY-X Series



P.261

## Conveyor (2 parts simultaneously)

- Conveyance with high efficiency using double arms.

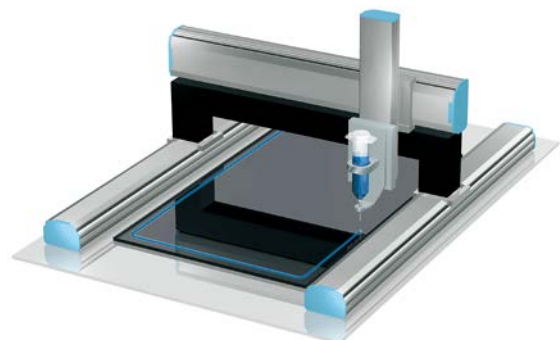


### POINT

1. Setting 2 units on the Z-axis intersecting XZ drastically cuts the total tact time and reduces the required installation space.
2. Customization only possible because a highly rigid frame and guide are used.

## Application of adhesive agent

- Application of adhesive agent within a large size liquid crystal surface processing unit.

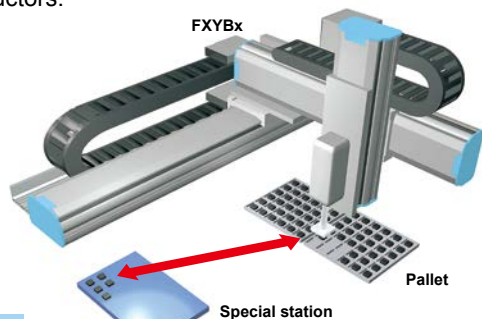


### POINT

1. Capable of handling large size workpieces.
2. Also applicable to cutting work with a cutter, surface check with a camera, etc.

## IC palletizing within the unit

- ICs are taken out of the pallet and parts are transferred to the specified place by the XYZ Cartesian robot.
- Application as a part of the machine used in the process where a die is attached to the circuit board using thermocompression bonding in the manufacture of semi-conductors.

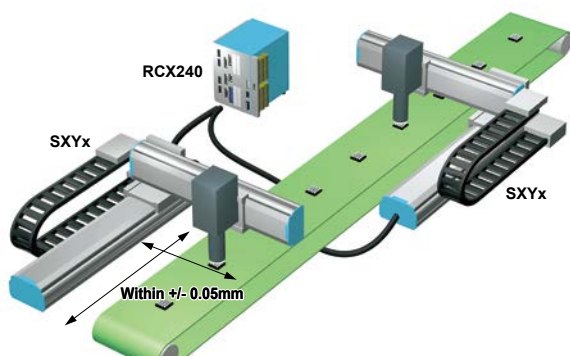


### POINT

1. By using the RCX controller, it is possible to use the result of the operation based on variables during palletizing.

## Tester (2 Cartesian robots controlled simultaneously)

- Use as a tester in the post-process of manufacturing electronic parts.

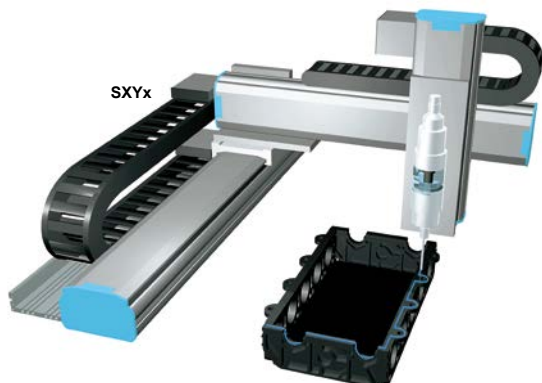


### POINT

1. 2 units of SXYx are operated using 1 unit of RCX240 with settings for 2 robots.
2. The vertical traveling accuracy of XY axes of both 2 units of SXYx is within +/- 0.05mm.

## Sealing

- Spreading sealant to mating faces of the cases.

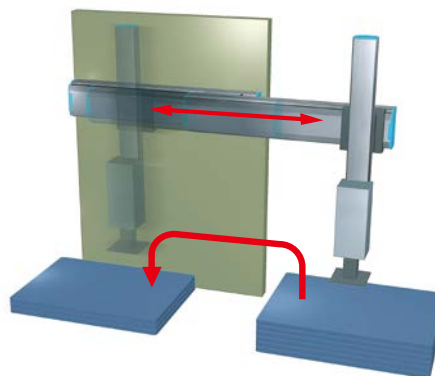


### POINT

1. Three dimensional application using 3 axes Cartesian robot. Cartesian robot incorporated with special purpose machine.

## Transfer and stacking device within the unit

- Used in the sheet metal processing unit.

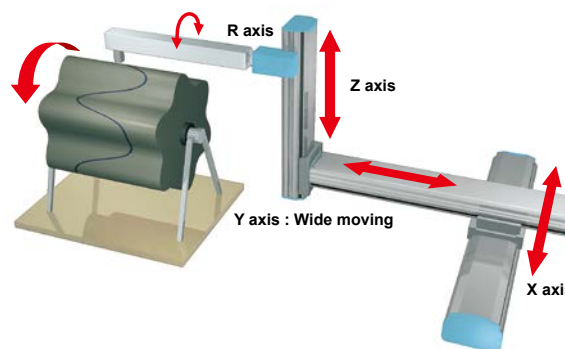


### POINT

1. X1 and X2 axes are superposed for space efficiency.
2. The unit layout is easy even for the doubled stroke.

## Dispenser

- Spreading adhesive agent to drums.



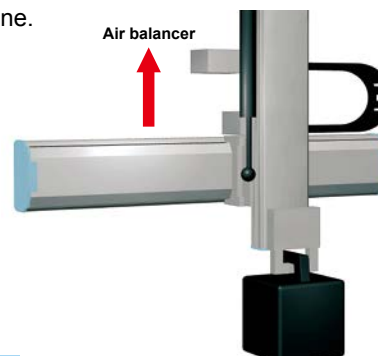
### POINT

1. Boosting the R axis strength allows 3-dimensional interpolation + R operation.
2. Each axis has high rigidity and so can easily withstand harsh conditions such as on the moving arm (handles 100mm/sec).

## Insertion unit

(Tare weight cancellation using moving Z + air balancer)

- Heavy workpiece inserted in the pallet, etc.
- Heavy workpiece before processing set in the processing machine.

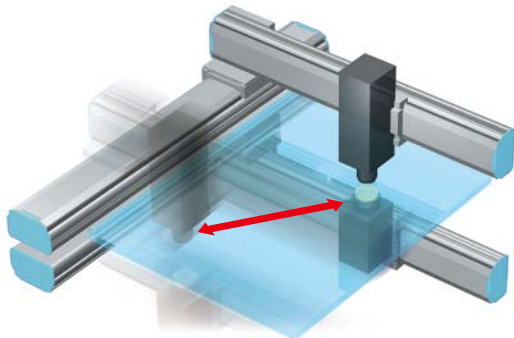


### POINT

1. Z axis moving type: The heavy workpiece is cancelled by the air balancer and moved up and down.

## Assembler & tester base machine (Simultaneous operation at upper and lower levels)

- Tester (upper and lower probes, camera with lighting) .
- Precision spot welding machine.
- Simultaneous assembly at upper and lower levels (caulking parts, screw tightening) .

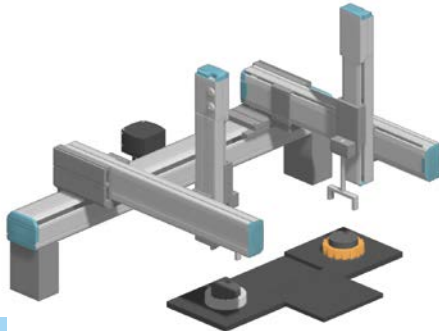


### POINT

1. Simultaneous control of 2 Cartesian robots.
2. Levelness of upper and lower robots assured (custom specification) .

## Part assembly machine

- Automotive clutch assembly
- Efficient alternate assembly of two different parts

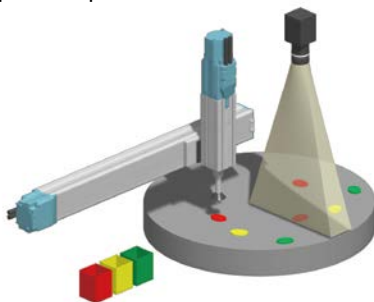


### POINT

1. Double-arm ensures a short tact time along with a space-saving footprint.
2. Double-arm specifications selectable as standard feature.
3. Y axis and Z axis strokes are selectable separately for left and right. (Special orders available)
4. Nut rotation type X axis supports long stroke and also maintains maximum speed.

## Part pick and place

- Pick and place of parts from index

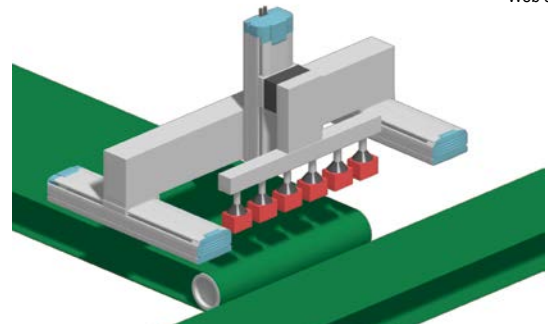


### POINT

1. Vision system recognizes parts on index, and robot extracts and sorts the parts.
2. Vision system identifies the type and position and directs robot to operating position.
3. Robot shifts not only to pre-instructed teaching position but also to any position based on data sent from external device.
4. Fieldbus to communicate with controller is selectable from RS-232C, Ethernet or CC-Link.

## Dual-drive transport between processes

- Uses dual-drive to convey large and heavy workpieces

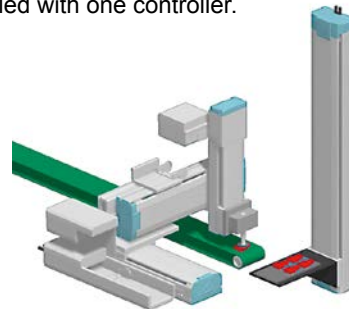


### POINT

1. Dual-drive allows synchronized operation of two single-axis robots of the same type.
2. Using dual-drive even allows conveying heavy items or large size parts and products.
3. Enhanced acceleration also helps cut tact time.

## Application example of combination with auxiliary single-axis

- Cartesian robot and single-axis robot are controlled with one controller.



### POINT

1. Multiple robots can be controlled simultaneously with one controller. Up to 8 axes of maximum 2 groups can be expanded.
2. As multiple robots are controlled with one controller, the linking can be performed without using the I/O of the PLC or between the controllers. Therefore, there are merits that the number of control program creation steps is reduced to shorten the equipment startup time and reduce the labor cost.

## Application example of long-stroke and dual-drive

- Long-stroke axis is combined with Cartesian axis using the dual-drive control.



### POINT

1. As the dual drive (simultaneous 2 axes) control is applied, a Y-axis long-stroke of up to 2m can be supported. This is applicable to long-distance transfer and heavy workpiece transfer specifications.
2. As the vertical axis is combined, this can be applied to the inspection with large LCD glass panels arranged vertically.
3. According to required repeated accuracy, YAMAHA proposes optimal combination mechanism and control method.

YAMAHA SCARA ROBOT

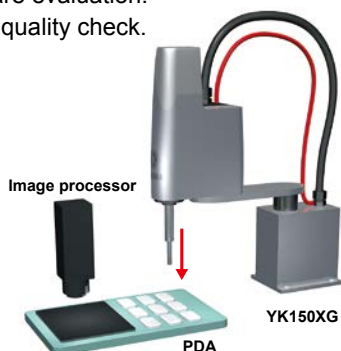
YK - X Series



P.389

Finished product inspection, touch-panel type evaluation machine

- Finished product function test.
- Developed software evaluation.
- Push-button type quality check.

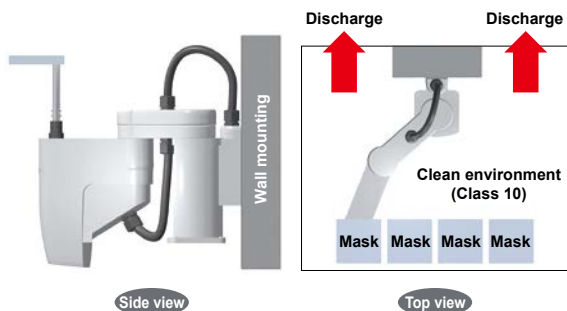


POINT

1. Supports a variety of systems in a product lineup that is top class in its field with arm lengths from 120mm to 1200mm.
2. Space saving.
3. Using SCARA, judgment is made through image processing by pushing each button.

Conveying masks for wafers

- Replacing wafer mask from the stocker.

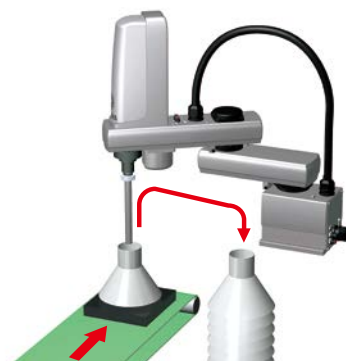


POINT

1. Drive section installed beneath work pieces has clean specs + inverted structure.
2. If the cylindrical coordinate type robot is used, a running axis is necessary for this application. However, if SCARA with the interpolation function is used, the fixed type is usable.

Tall work pieces conveying and stacking machine

- Tall workpieces stacked by utilizing long Z axis.



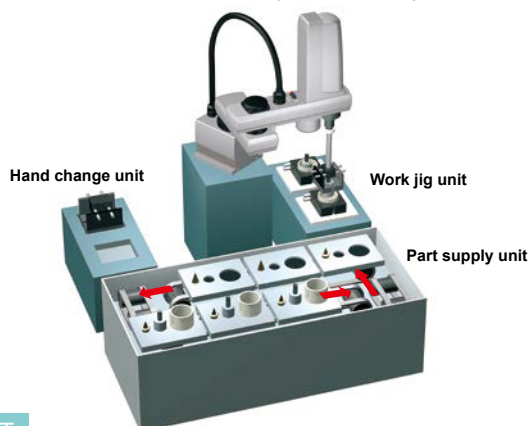
POINT

1. Z-axis long stroke is also accepted as special order. If a stroke longer than the standard stroke shown below is needed, consult YAMAHA.  

Standard Z-axis stroke	
[YK120XG to YK180XG]..... 50mm	[YK180X to YK220X]..... 100mm
[YK250XG to YK600XGL].... 150mm	[YK500XG to YK600XG].. 200mm/300mm
[YK600XGH to YK1000XG].. 200mm/400mm	[YK1200X]..... 400mm
2. SCARA robot is used by utilizing its advantages, such as X/Y-axis speed and space saving installation.

Assembly cell (independent cell)

- Base machine of independent type assembly cell.

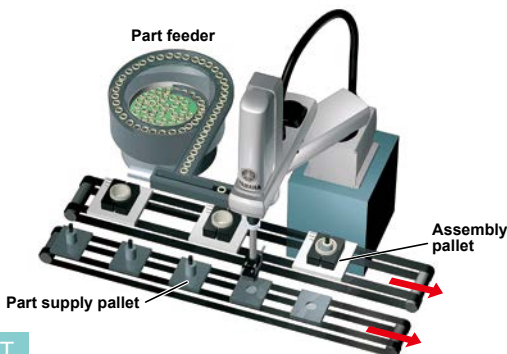


POINT

1. Optimum for multi type variable quantity production.
2. Setting up reception places forms a construction of multiple number of cells.

Assembly cell (line cell)

- Base machine of line type assembly cell.



POINT

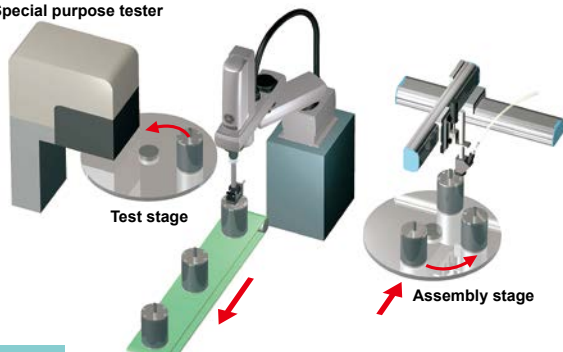
1. Utilization of advantages of SCARA with a wide operation range.
2. Form a line to any length by coupling these cells together.



## Assembly cell (Handling unit for special purpose tester)

- When placed between 2 turn tables, handling of both tables is possible.

Special purpose tester



### POINT

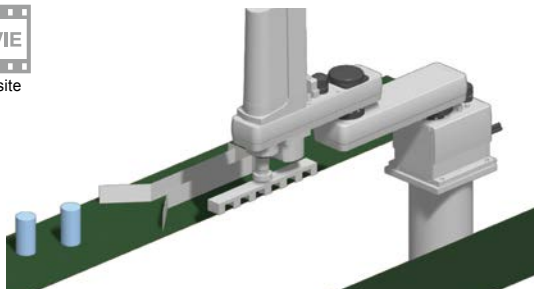
- Utilization of advantages of SCARA which has a wide operation range.

## Inter-process transport

- Conveys large and heavy workpieces



Web site



### POINT

- Built-in structure with no timing belt achieves high allowable moment-of-inertia on R axis.
- High allowable moment-of-inertia on R axis permits using large hand on robot. So more workpieces can be conveyed per one time which makes operation more efficient.
- R axis can be driven at high acceleration during low moment-of-inertia. This shortens the tact time.

## Inter-process transport with inverse specifications applied

- Workpiece inter-process transport with inverse specifications applied



Web site



### POINT

- As the inverse specifications are applied, the workpieces can be held from the lower portion to prevent foreign objects from dropping onto workpieces being transported.
- The performance of the robot mechanical section is similar to the standard specifications. The high performance of the YK-XG series can be utilized.
- YAMAHA SCARA robot can select three installation patterns, standard floor installation, wall-mount, inverse specifications<sup>(Note)</sup>. YAMAHA proposes various ideas about equipment design.

Note. If the robot with the standard specifications, normal ceiling-mount specifications, or wall-mount specifications is installed upside down, this may cause a malfunction. When considering the installation like this, be sure to use the robot with the dedicated inverse specifications (YK-XS-U).

## YAMAHA PICK & PLACE ROBOTS

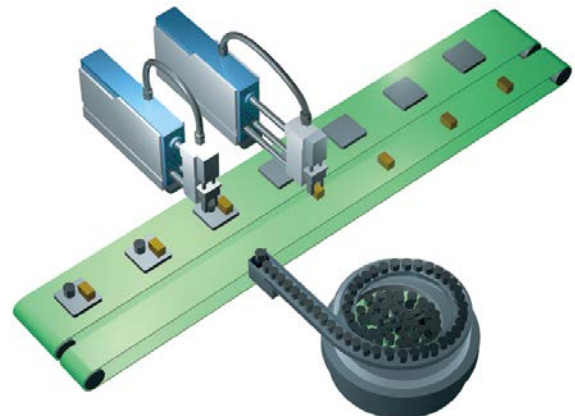
### YP - X Series



P.451

## Precision part assembler (1)

- Assembly of small size precision parts.

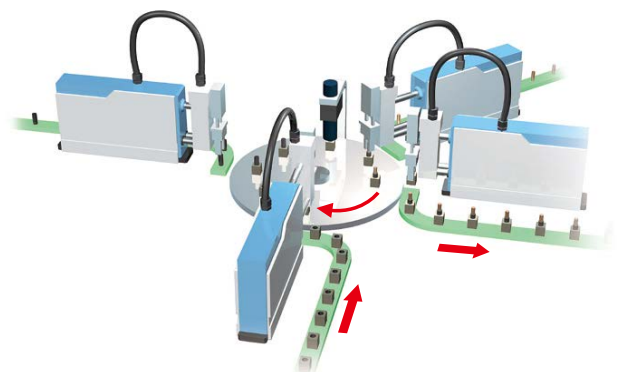


### POINT

- High speed assembly.
- Narrow machine width, and settable with a tiny pitch.

## Precision part assembler (2)

- Assembly of small size precision parts.



### POINT

- Speed increased even more when used in combination with a rotary table.



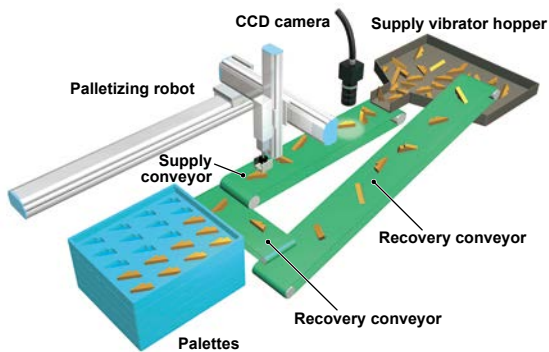
# iVY/iVY2 System



iVY P.664 / iVY2 P.596

## Small part palletizing

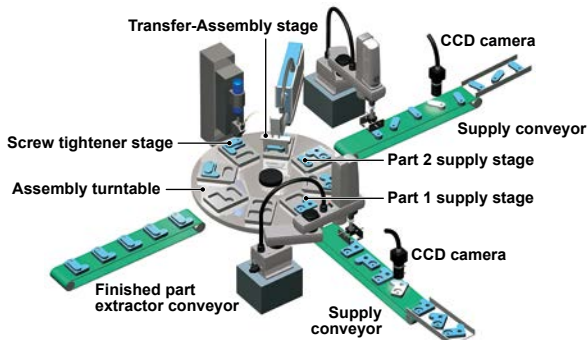
- Assemble a sorting pallet for the automated machine in the next process.



### POINT

## Loading parts into assembler machine

- Loads unsorted parts or components into automated equipment.



### POINT

## Screw tightening work with SCARA robot

- Screw tightening work with the SCARA robot is improved using the iVY system.

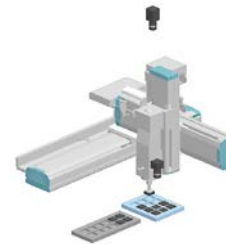


### POINT

- As the position detection function using the iVY system is added, the robot is applicable to various conditions. For example, if the screw hole position varies, the workpiece position on the conveyor is not constant, or various workpieces are supplied, the robot can be installed easily.
- Use of iVY system makes it possible to perform the calibration using system operation. As the teaching steps can be reduced, the equipment start-up time is shortened and labor cost can be reduced.

## Pick & place work

- Component pick & place work is improved using iVY system.

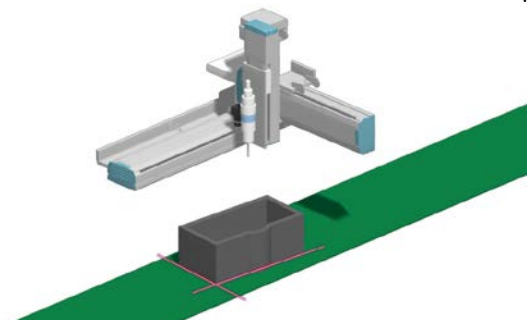


### POINT

- As the position detection function using the iVY system is added, components on soft pallets or pallets with low accuracy can be gripped correctly.
- Therefore, merits are provided that the pallet manufacture cost is reduced, positioning mechanism is simplified, and equipment cost is reduced.
- Two camera input channels are provided on one controller.
- The camera can be incorporated into the robot or secured outside the robot. Simple calibration work can be performed under either of the conditions.

## Sealing correction

- Sealing tasks for placing gaskets or applying adhesives in parts
- Coating trajectory correction using iVY system

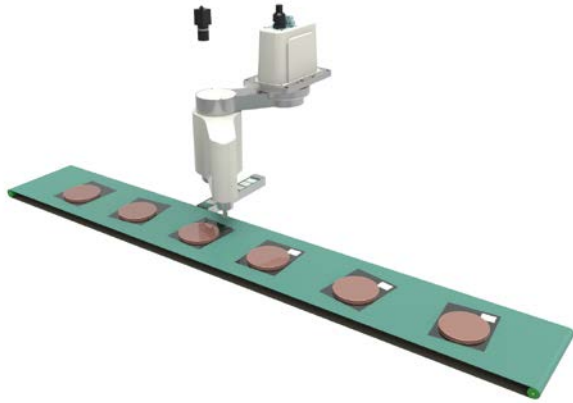


### POINT

- Use of iVY system makes corrections to Cartesian robot sealing tasks.
- iVY system detects deviations and tilting even if workpiece strayed from its main position, and automatically corrects the coating trajectory.
- Maintains high coating quality even during low positioning accuracy on component side.

## Labeling device

- Affixing labels to food packages

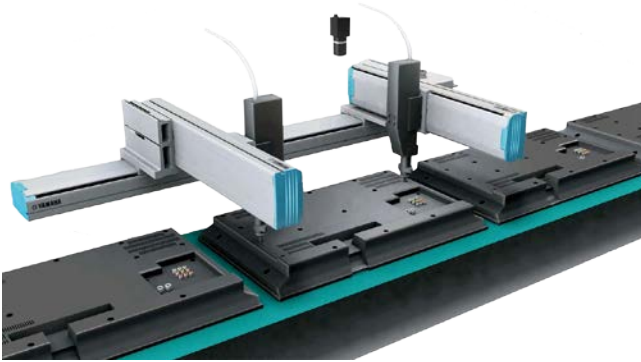


### POINT

1. Even if the incoming workpieces are irregularly spaced or positioned, labels can be affixed at the same position.

## Screw attachment position detection

- Television panel screw attachment

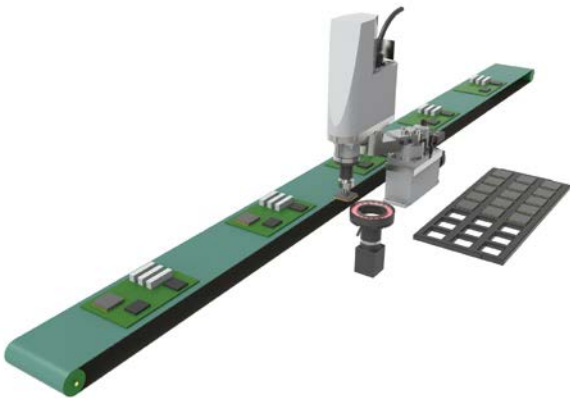


### POINT

1. Hole position is detected, and screws are fastened accurately.

## Position compensation with upward-facing camera

- Installing irregularly-shaped parts on a circuit board



### POINT

1. The roughly-positioned circuit board connector is picked up, the upward-facing camera is used to apply position compensation, and the part is mounted directly on the circuit board.

# Officially discontinued models and service period

Models listed in the current model column are equivalent items. Since these might not be compatible in some cases, please contact Yamaha if you are considering replacement.  
E-MAIL [robotn@yamaha-motor.co.jp](mailto:robotn@yamaha-motor.co.jp)

Single-axis robots				
Series	Model	Sale discontinued time	Service period	Current model (equivalent)
FLIP-X	YMS45	Dec. 2013	Dec. 2020	-
	YMS55			
	T4	Dec. 2012	Dec. 2019	T4L
	T4H			T4LH
	T5			T5L
	T5H			T5LH
	T6			T6L
	C4			C4L
	C4H			C4LH
	C5			C5L
	C5H			C5LH
	C6			C6L
	T7	Dec. 2009	Dec. 2016	-
	F17 (Former model)	Sep. 2002	Sep. 2009	F17 (Latter model)
	F17 (Latter model)	-	-	On sale
	F20 (Former model)	Sep. 2002	Sep. 2009	F20 (Latter model)
	F20 (Latter model)	-	-	On sale
	T9 (Former model)	Oct. 2001	Oct. 2008	T9 (Latter model)
	T9 (Latter model)	-	-	On sale
	T9H (Former model)	Oct. 2001	Oct. 2008	T9H (Latter model)
	T9H (Latter model)	-	-	On sale
F10 (Former model)	Oct. 2001	Oct. 2008	F10 (Latter model)	
F10 (Latter model)	-	-	On sale	
F14 (Former model)	Oct. 2001	Oct. 2008	F14 (Latter model)	
F14 (Latter model)	-	-	On sale	
F14H (Former model)	Oct. 2001	Oct. 2008	F14H (Latter model)	
F14H (Latter model)	-	-	On sale	
PHASER	MR12/12D	Dec. 2019	Dec. 2026	MF7
	MR16/16D	Dec. 2011	Dec. 2018	MF15/15D
	MR16H/16HD			MF20/20D
	MR20/20D			MF30/30D
	MR25/25D	Mar. 2011	Mar. 2018	MF75
	MF50/50D			
MF100/100D				
Pico	T4P	Dec. 2009	Dec. 2016	-
	T5P			
FLIPt	FSt	Jan. 2002	Jan. 2009	F10
	BFSSt			B10
	LTt			T9
	LSt			F14
	BLSt			B14
	LRt			-
	LTHt			T9H
	LSHt			F14H
	BLSHt			B14H
	MSt			F17
	HSt			F20
	HSLt			F20N
	BHS			-
	FROP-Ft			R5
	FROP-St			R10
	FROP-Mt			R20
	TR			-
FTt	-			
Economy Type	BPS	Jan. 2002	Jan. 2009	-
	PS			
	BSt			
FLIP AC	BFSA	Jul. 1998	Jul. 2005	B10
	BLSA			B14
	BSA			-
	FROP-FA			R5
	FROP-HA			-
	FROP-MA			R20
	FSA			F10
	FTA			-
	HSA			F20
	HSC			C20
	HSLA			F20N
FLIP AC	LRA	Jul. 1998	Jul. 2005	-
	LSA			F14
	LTA			T9
	MS			-
	MSA			F17
	MTA			T9H

Continues on next page ▶

Models listed in the current model column are equivalent items. Since these might not be compatible in some cases, please contact Yamaha if you are considering replacement.  
E-MAIL robotn@yamaha-motor.co.jp

## Single-axis robots (continued)

Series	Model	Sale discontinued time	Service period	Current model (equivalent)
FLIP DC	BFS	Jul. 1998	Jul. 2005	B10
	BLSII			B14
	BS			-
	FROP-F			R5
	FROP-M			R20
	FROP-H			-
	FS			F10
	FT			-
	FTB			-
	HS			-
	HSL			-
	LR			-
	LS/LSII/LSB/LSI			F14
	LT/LTB/LTI			T9
MS	F17			
MT	T9H			

## Cartesian robots

Series	Model	Sale discontinued time	Service period	Current model (equivalent)
XY-X	MXYY 3 axis ZF	Jan. 2005	Jan. 2012	MXYY 3 axis ZFL/ZFH
	MXYY 4 axis ZRF			MXYY 4 axis ZRFL/ZRFH
	MXYY pole type ZPM			MXYY pole type
	TXYX	Mar. 2004	Mar. 2011	PXYX
	SXYX (Former model)	Oct. 2001	Oct. 2008	SXYX (Latter model)
	SXYX (Latter model)	-	-	On sale
	MXYY (Former model)	Oct. 2001	Oct. 2008	MXYY (Latter model)
	MXYY (Latter model)	-	-	On sale
	HXYX (Former model)	Sep. 2002	Sep. 2009	HXYX (Latter model)
HXYX (Latter model)	-	-	On sale	
XYt	FXYt	Jan. 2002	Jan. 2009	FXYBX
	SXYt-C			SXYX
	SXYt-S			SXYBX
	SXYLt			MXYY
	MXYt-C			HXYX
	MXYt-S			HXYLX
	HXYt-C			HXYLX
HXYt-S	HXYLX			
HXYLt	HXYLX			
XY AC	SXYA	Jan. 1999	Jan. 2006	SXYX
	SXYLA			SXYBX
	MXYA			MXYY
	HXYA			HXYX
	HXYLA			HXYLX
XY DC	FXY	Jan. 1999	Jan. 2006	-
	FXYL			SXYX
	SXY			-
	SXYI			-
	SXYL	-		
	MXY	Oct. 1995	Oct. 2002	-
	MXYL	-	-	-

## Pick & place robots

Series	Model	Sale discontinued time	Service period	Current model (equivalent)
YP	YPX220	Apr. 2001	Apr. 2008	YP220BX
YP AC	YP320A	Apr. 2001	Apr. 2008	YP320X
	YP340A			YP340X
	YP330A			YP330X
YP DC	YPS21	Jul. 1998	Jul. 2005	-
	YP340	May 1996	May 2003	YP340X
	YP330			YP320X
	YP320			YP320X

Models listed in the current model column are equivalent items. Since these might not be compatible in some cases, please contact Yamaha if you are considering replacement.  
E-MAIL robotn@yamaha-motor.co.jp

SCARA robots				
Series	Model	Sale discontinued time	Service period	Current model (equivalent)
YK-XR	YK400XR	Jun. 2020	Jun. 2027	YK400XE
YK-XP	YK500XP	Dec. 2013	Dec. 2020	YK500XGP
	YK600XP			YK600XGP
	YK700XP			YK700XGP
	YK800XP			YK800XGP
	YK1000XP			YK1000XGP
	YK250XP	Dec. 2012	Dec. 2019	YK250XGP
	YK350XP			YK350XGP
YK400XP	YK400XGP			
YK-XC	YK250XC(H)	Dec. 2012	Dec. 2019	YK250XGC
	YK350XC(H)			YK350XGC
	YK400XC(H)			YK400XGC
YK-XS	YK300XHS	Dec. 2012	Dec. 2019	YK300XGS
	YK400XHS			YK400XGS
	YK500XS			YK500XGS
	YK600XS			YK600XGS
	YK700XS			YK700XGS
	YK800XS			YK800XGS
	YK1000XS			YK1000XGS
YK-X	YK250X(H)	Dec. 2012	Dec. 2019	YK250XG
	YK350X(H)			YK350XG
	YK400XH			YK400XG
	YK550X(H)	Dec. 2009	Dec. 2016	-
	YK120X	Dec. 2008	Dec. 2015	YK120XG
	YK150X			YK150XG
	YK400X			YK400XG
	YK500X			YK500XG
	YK600X			YK600XG
	YK700X			YK700XG
	YK800X			YK800XG
YK1000X	YK1000XG			
YK AC (SANYO motor model)	YK550H	Mar. 2003	Mar. 2010	YK550X(H)
	YK420A-I/420ALZ-I/440A-I	Mar. 2001	Mar. 2008	YK400XG
	YK540A-I/541A-I			YK500XG
	YK520A-I			YK600XG
	YK640A-I/641A-I			YK700XG
	YK620A-I			YK800XG
	YK740A-I/741A-I			YK1000XG
	YK720A-I			-
	YK840A-I/841A-I			YK1200X
	YK820A-I			-
	YK1041A-I			-
	YK1043A-I			-
YK1243A-1	-			
YK AC (YASUKAWA motor model)	YK420A/420ALZ/440A	Dec. 1995	Dec. 2002	YK400XG
	YK520A/540A/541A			YK500XG
	YK620A/640A/641A			YK600XG
	YK720A/740A/741A			YK700XG
	YK820A/840A/841A			YK800XG
	YK1041A			YK1000XG
	YK1043A			-
	YK1243A			YK1200X
YK DC	YK5020/5021	May 1997	May 2004	Replacement unavailable
	YK7011/7012/7022			YK400XG
	YK4000/4000LZ/4040			YK500XG
	YK420/420LZ/440			YK600XG
	YK520/540/541			YK700XG
	YK620/640/641			YK800XG
	YK720/740/741			YK1000XG
	YK820/840/841			YK1200X
	YK1041			-
YK1200	-			
CAME	YK5012	Mar. 1990	Mar. 1997	-
	YK8050			-
	YK8080			-

OFFICIALLY DISCONTINUED MODELS AND SERVICE PERIOD



Models listed in the current model column are equivalent items. Since these might not be compatible in some cases, please contact Yamaha if you are considering replacement.  
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## Controllers

Model	Sale discontinued time	Service period	Service availability	Replacing models for maintenance	Current model (equivalent)
RDX/RDP	Aug. 2015	Aug. 2022	Being continued	RDV-X/RDV-P	RDV-X/RDV-P
TS-S	Sep. 2013	Sep. 2020	Being continued	TS-S2	TS-S2
DRCX	Dec. 2012	Dec. 2019	Already discontinued	-	-
ERCX	Jul. 2011	Jul. 2018	Already discontinued	-	-
SRCP30	Mar. 2011	Mar. 2018	Already discontinued	-	-
PRC	Dec. 2009	Dec. 2016	Already discontinued	Replacement unavailable	No current model
RCX240/RCX240S	Dec. 2019	Dec. 2026	Being continued	RCX340	RCX340
RCX141	Dec. 2008	Dec. 2015	Already discontinued	RCX340	RCX340
RCX142				Replacement unavailable	No current model
RCX142-T				Replacement unavailable	No current model
SRCX	Apr. 2008	Apr. 2015	Already discontinued	SR1-X	SR1-X
SRCP05/10/20				SR1-P RDP	SR1-P RDP
SRCD				SR1-X RDX	SR1-X RDX
TRCX				Replacement unavailable	RCX340
RCX40	Oct. 2005	Oct. 2012	Already discontinued	RCX340	RCX340
QRCX	Mar. 2002	Mar. 2009	Already discontinued	Replacement unavailable <sup>Note. 1</sup>	RCX340
QRCX-E					RCX340
SRCH	Jan. 2002	Jan. 2009	Already discontinued	Replacement unavailable	SR1-X
DRCH					RCX222
TRCH3					RCX340
TRCH4					RCX340
DRC-R	Apr. 2001	Apr. 2008	Already discontinued	Replacement unavailable	No current model
QRCH	Mar. 2001	Mar. 2008	Already discontinued	Replacement unavailable	RCX340
QRCH-E					No current model <sup>Note. 2</sup>
QRCH-P					No current model <sup>Note. 2</sup>
MRCH					No current model <sup>Note. 2</sup>
MRCH-E					No current model <sup>Note. 2</sup>
SRCA (Latter model)	Oct. 1999	Oct. 2006	Already discontinued	Replacement unavailable	SR1-X
DRCA (Latter model)					RCX222
ERC					SR1-X
MRCA	Nov. 1997	Nov. 2004	Already discontinued	Replacement unavailable	No current model <sup>Note. 2</sup>
DRC	Sep. 1997	Sep. 2004	Already discontinued	Replacement unavailable	RCX222
SRC-1					SR1-X
SRC-2					SR1-X
QRC	May 1997	May 2004	Already discontinued	Replacement unavailable	RCX340
QRCA					RCX340
SRC-3	Dec. 1995	Dec. 2002	Already discontinued	Replacement unavailable	SR1-X
SRC-4					RCX222
SRCA (Former model)					RCX340
DRCA (Former model)					RCX340
MRCA					RCX340
MRC	Mar. 1994	Mar. 2001	Already discontinued	Replacement unavailable	RCX340
RCH20					SR1-X
SRC2A					SR1-X
SRC4A	Mar. 1992	Mar. 1999	Already discontinued	Replacement unavailable	RCX340
RCH40					RCX340
RCH41	Mar. 1990	Mar. 1997	Already discontinued	Replacement unavailable	RCX340
RCS40					RCX340
RCS41					RCX340
LP					SR1-X

If a replacing model for maintenance is available, it can be used as a set including the controller and the cable for conversion.

When replacing with the current model, it is necessary to replace the robot and the controller as a set.

Note 1. The replacement can be performed using the QRCX→RCX240→RCX340 conversion cable. (Some models are not supported.)

Note 2. Replacement with the current model is possible under certain conditions.

## Robot vision

Model	Sale discontinued time	Service period	Service availability	Current model (equivalent)
iVY System	Dec. 2019	Dec. 2026	Being continued	iVY2 System

Models listed in the current model column are equivalent items. Since these might not be compatible in some cases, please contact Yamaha if you are considering replacement.  
**E-MAIL** robotn@yamaha-motor.co.jp

## Programming box

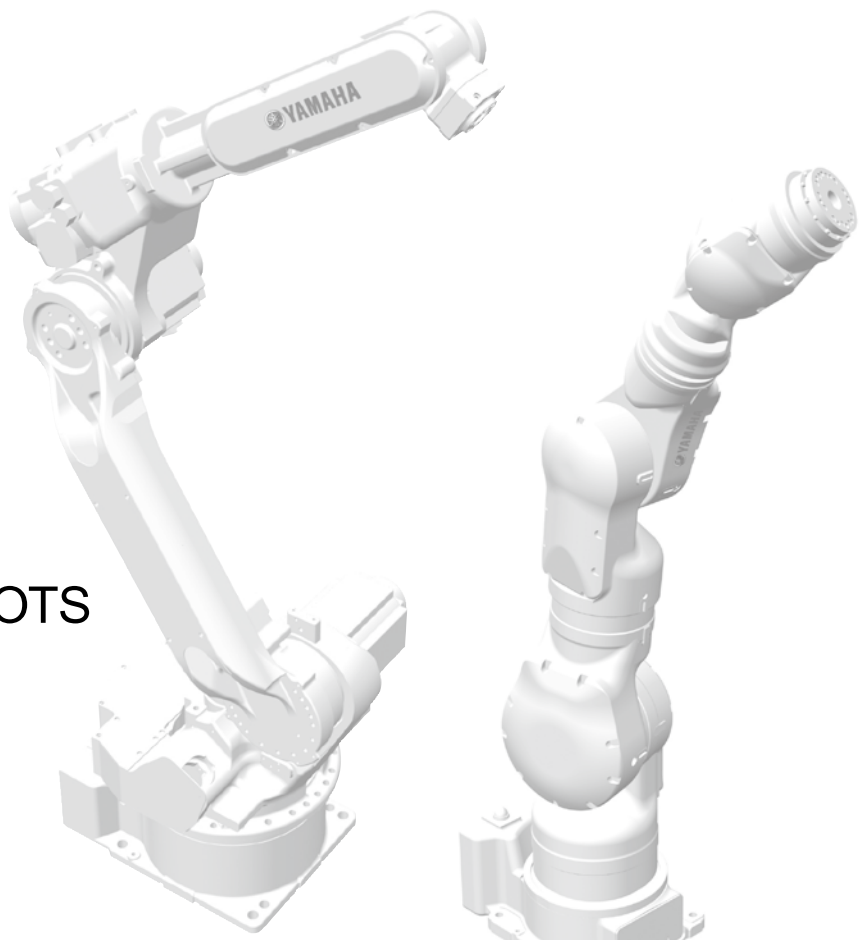
Model	Sale discontinued time	Service period	Service availability	Current model (equivalent)
<b>TP-2</b>	Dec. 2009	Dec. 2016	Already discontinued	-
<b>MPB</b>	Jan. 2009	Jan. 2016	Already discontinued	RPB <sup>Note</sup>
<b>TP-1</b>	Oct. 2005	Oct. 2012	Already discontinued	TP-2
<b>TPB</b>	Jun. 2005	Jun. 2012	Already discontinued	HPB
<b>DPB</b>	Jan. 1999	Jan. 2006	Already discontinued	HPB
<b>YPU20</b>	Mar. 1994	Mar. 2001	Already discontinued	-
<b>SPB-2</b>	Aug. 1992	Aug. 1999	Already discontinued	-
<b>YPU1</b>	Mar. 1992	Mar. 1999	Already discontinued	-
<b>YPU2</b>				-
<b>YPU3</b>				-
<b>SPB</b>				Jan. 1990

Note. Customers using the RCX40/RCX141/RCX142 controllers will use a connector adaptor cable.

## Software

Model	Usage	Sale discontinued time	Current model (equivalent)
<b>POPCOM</b>	ERC series / SRC series / DRC series / SR1 series	Jul. 2013	POPCOM+
<b>VIP</b>	For multi-axis controller	Dec. 2009	VIP+
<b>YPB-Win</b>	Pico series	Dec. 2009	-





## ARTICULATED ROBOTS

# YA SERIES

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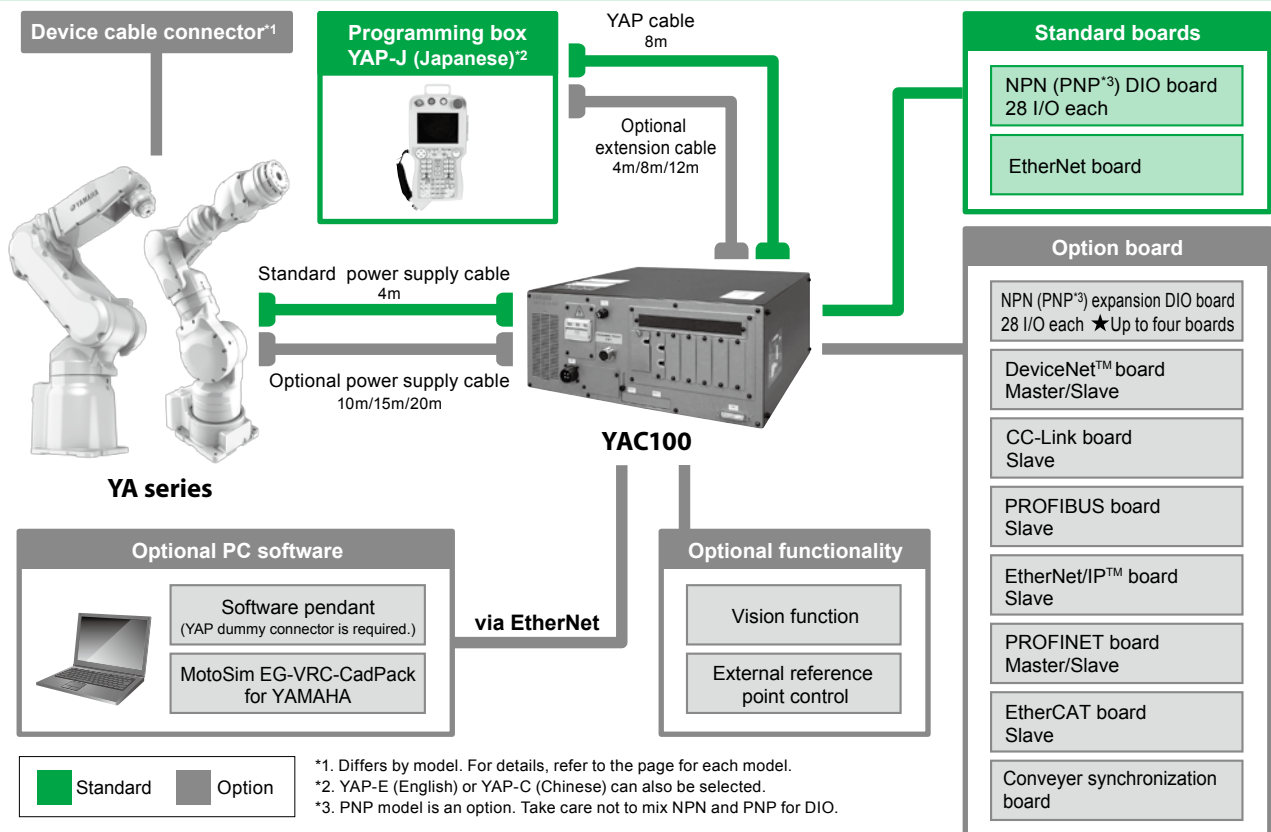
# YA SERIES MANIPULATOR SPECIFICATIONS

	6-axis					7-axis			
Applications	Handling (general)					Assembly / Placement			
Number of axes	6	6	6	6	6	7	7	7	
Payload	1 kg (max. 2 kg <sup>Note 2</sup> )	3 kg	5 kg	5 kg	6 kg	5 kg	10 kg	20 kg	
Vertical reach	909 mm	804 mm	1193 mm	1560 mm	2486 mm	1007 mm	1203 mm	1498 mm	
Horizontal reach	545 mm	532 mm	706 mm	895 mm	1422 mm	559 mm	720 mm	910 mm	
Repeatability	+/-0.03 mm	+/-0.03 mm	+/-0.02 mm	+/-0.03 mm	+/-0.08 mm	+/-0.06 mm	+/-0.1 mm	+/-0.1 mm	
Range of Motion	S-axis (turning)	-160° to +160°	-160° to +160°	-170° to +170°	-170° to +170°	-170° to +170°	-180° to +180°	-180° to +180°	-180° to +180°
	L-axis (lower Arm)	-90° to +110°	-85° to +90°	-65° to +150°	-65° to +150°	-90° to +155°	-110° to +110°	-110° to +110°	-110° to +110°
	E-axis (elbow twist)	-	-	-	-	-	-170° to +170°	-170° to +170°	-170° to +170°
	U-axis (upper arm)	-290° to +105°	-105° to +260°	-136° to +255°	-138° to +255°	-175° to +250°	-90° to +115°	-135° to +135°	-130° to +130°
	R-axis (wrist roll)	-180° to +180°	-170° to +170°	-190° to +190°	-190° to +190°	-180° to +180°	-180° to +180°	-180° to +180°	-180° to +180°
	B-axis (wrist pitch/yaw)	-130° to +130°	-120° to +120°	-135° to +135°	-135° to +135°	-45° to +225°	-110° to +110°	-110° to +110°	-110° to +110°
	T-axis (wrist twist)	-360° to +360°	-360° to +360°	-360° to +360°	-360° to +360°	-360° to +360°	-180° to +180°	-180° to +180°	-180° to +180°
Maximum Speed	S-axis (turning)	160°/s	200°/s	376°/s	270°/s	220°/s	200°/s	170°/s	130°/s
	L-axis (lower Arm)	130°/s	150°/s	350°/s	280°/s	200°/s	200°/s	170°/s	130°/s
	E-axis (elbow twist)	-	-	-	-	-	200°/s	170°/s	170°/s
	U-axis (upper arm)	200°/s	190°/s	400°/s	300°/s	220°/s	200°/s	170°/s	170°/s
	R-axis (wrist roll)	300°/s	300°/s	450°/s	450°/s	410°/s	200°/s	200°/s	200°/s
	B-axis (wrist pitch/yaw)	400°/s	300°/s	450°/s	450°/s	410°/s	230°/s	200°/s	200°/s
	T-axis (wrist twist)	500°/s	420°/s	720°/s	720°/s	610°/s	350°/s	400°/s	400°/s
Allowable Moment	R-axis (wrist roll)	3.33 N·m	5.39 N·m	12 N·m	12 N·m	11.8 N·m	14.7 N·m	31.4 N·m	58.8 N·m
	B-axis (wrist pitch/yaw)	3.33 N·m	5.39 N·m	12 N·m	12 N·m	9.8 N·m	14.7 N·m	31.4 N·m	58.8 N·m
	T-axis (wrist twist)	0.98 N·m	2.94 N·m	7 N·m	7 N·m	5.9 N·m	7.35 N·m	19.6 N·m	29.4 N·m
Allowable Inertia (GD <sup>2</sup> /4)	R-axis (wrist roll)	0.058 kg·m <sup>2</sup>	0.1 kg·m <sup>2</sup>	0.30 kg·m <sup>2</sup>	0.30 kg·m <sup>2</sup>	0.27 kg·m <sup>2</sup>	0.45 kg·m <sup>2</sup>	1.0 kg·m <sup>2</sup>	4.0 kg·m <sup>2</sup>
	B-axis (wrist pitch/yaw)	0.058 kg·m <sup>2</sup>	0.1 kg·m <sup>2</sup>	0.30 kg·m <sup>2</sup>	0.30 kg·m <sup>2</sup>	0.27 kg·m <sup>2</sup>	0.45 kg·m <sup>2</sup>	1.0 kg·m <sup>2</sup>	4.0 kg·m <sup>2</sup>
	T-axis (wrist twist)	0.005 kg·m <sup>2</sup>	0.03 kg·m <sup>2</sup>	0.1 kg·m <sup>2</sup>	0.1 kg·m <sup>2</sup>	0.06 kg·m <sup>2</sup>	0.11 kg·m <sup>2</sup>	0.4 kg·m <sup>2</sup>	2.0 kg·m <sup>2</sup>
Mass	15 kg	27 kg	27 kg	29 kg	130 kg	30 kg	60 kg	120 kg	
Power Requirements <sup>Note 1</sup>	0.5 kVA	0.5 kVA	1.0 kVA	1.0 kVA	1.0 kVA	1.0 kVA	1.0 kVA	1.5 kVA	
Detailed info page	<a href="#">P.115</a>	<a href="#">P.116</a>	<a href="#">P.117</a>	<a href="#">P.118</a>	<a href="#">P.119</a>	<a href="#">P.120</a>	<a href="#">P.121</a>	<a href="#">P.122</a>	

Note 1. Varies in accordance with applications and motion patterns.

Note 2. When a load is more than 1 kg, the motion range will be smaller. Use the robot within the recommended motion range. For details, refer to the dimensional diagram on P.115.

## YA series basic system contents





# YA-RJ

6-axis

- Maximum payload 2 kg
- Longest Reach R545 mm

## Ordering method

<b>YA-RJ</b>	<b>4L</b>	<b>YAC100</b>				
<b>Model</b>	<b>Power cable length</b> 4L: 4m	<b>Controller</b>	<b>Safety standard</b> N: Normal E: CE marking	<b>Language setting</b> JE: Japanese/English JC: Japanese/Chinese EJ: English/Japanese EC: English/Chinese	<b>Option I/O</b> N, P: Standard I/O 28/28 N1, P1: 56/56 points N2, P2: 84/84 points N3, P3: 112/112 points N4, P4: 140/140 points	<b>Network option</b> No entry: None CC: CC-Link DM: DeviceNet master DS: DeviceNet slave PB: PROFIBUS EP: EtherNet/IP™ PM: Profinet master PT: Profinet slave ES: EtherCAT slave

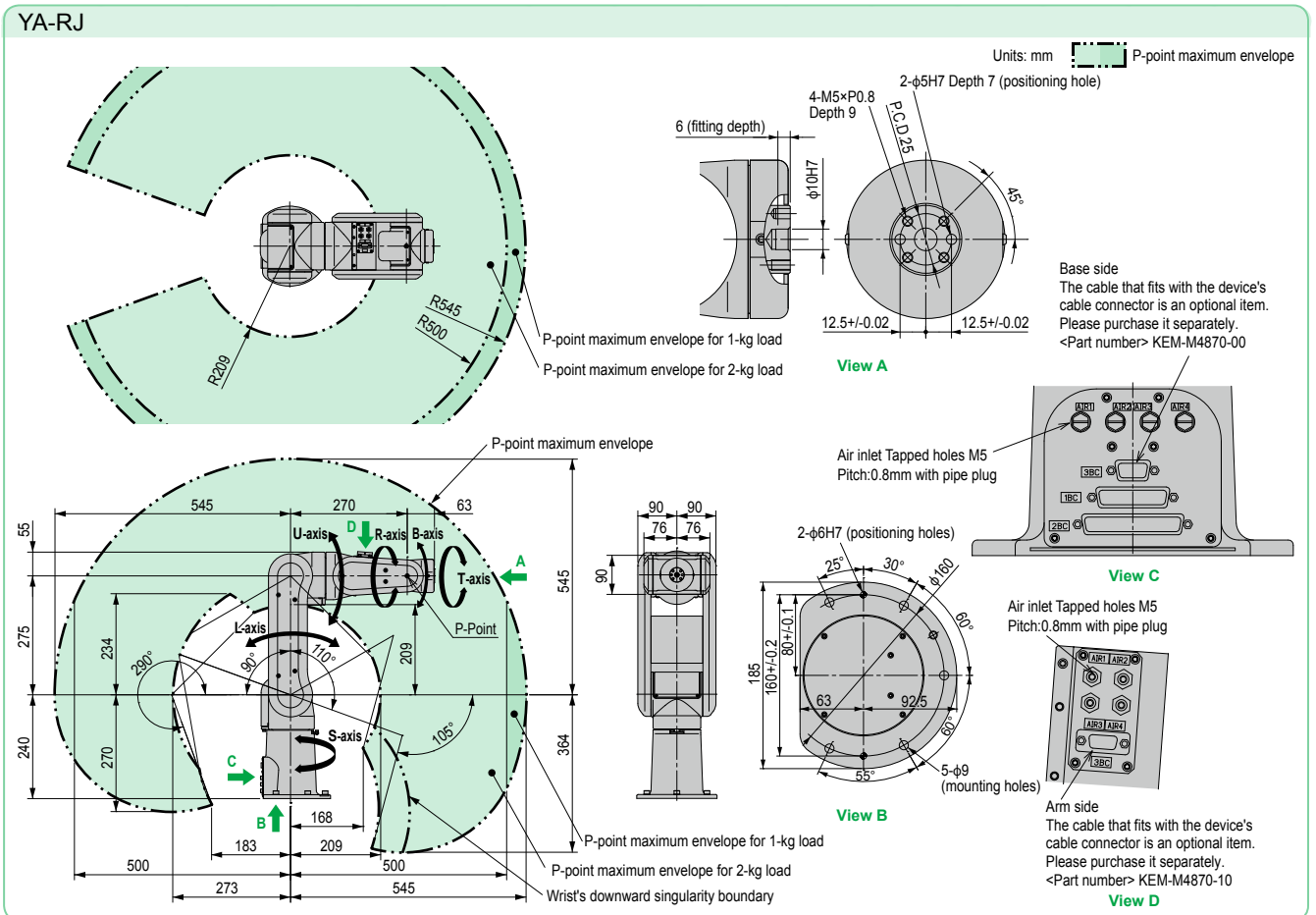


Note. This unit is ideal for small tabletop devices or for education.  
 Note. The ultra-light, compact YA-RJ features portability and easy installation for simplified system integration.  
 Note. Each axis uses a motor of 80 W or less.  
 Note. This unit can also be used in combination with a travel axis or other external axis. Please contact us.

## Specifications

<b>Controlled Axis</b>	6	
<b>Payload</b>	1 kg (max. 2 kg <sup>Note 1</sup> )	
<b>Repeatability</b>	±0.03 mm	
<b>Range of Motion</b>	<b>S-axis (turning)</b>	-160° to +160°
	<b>L-axis (lower Arm)</b>	-90° to +110°
	<b>U-axis (upper arm)</b>	-290° to +105°
	<b>R-axis (wrist roll)</b>	-180° to +180°
	<b>B-axis (wrist pitch/yaw)</b>	-130° to +130°
	<b>T-axis (wrist twist)</b>	-360° to +360°
<b>Axis with brake<sup>Note 2</sup></b>	L-axis, U-axis	
<b>Maximum Speed</b>	<b>S-axis (turning)</b>	2.79 rad/s, 160°/s
	<b>L-axis (lower Arm)</b>	2.27 rad/s, 130°/s
	<b>U-axis (upper arm)</b>	3.49 rad/s, 200°/s
	<b>R-axis (wrist roll)</b>	5.23 rad/s, 300°/s
	<b>B-axis (wrist pitch/yaw)</b>	6.98 rad/s, 400°/s
<b>T-axis (wrist twist)</b>	8.72 rad/s, 500°/s	
<b>Allowable Moment</b>	<b>R-axis (wrist roll)</b>	3.33 N·m
	<b>B-axis (wrist pitch/yaw)</b>	3.33 N·m
	<b>T-axis (wrist twist)</b>	0.98 N·m
	<b>Allowable Inertia (GD<sup>2</sup>/4)</b>	<b>R-axis (wrist roll)</b>
	<b>B-axis (wrist pitch/yaw)</b>	0.058 kg·m <sup>2</sup>
	<b>T-axis (wrist twist)</b>	0.005 kg·m <sup>2</sup>
<b>Mass</b>	15 kg	
<b>Ambient Conditions</b>	<b>Ambient Temperature</b>	During operation: 0 to +40°C, During storage: -10 to +60°C
	<b>Relative Humidity</b>	90% max. (non-condensing)
	<b>Vibration Acceleration</b>	4.9 m/s <sup>2</sup> or less
	<b>Others</b>	<ul style="list-style-type: none"> <li>Free from corrosive gasses or liquids, or explosive gasses</li> <li>Free from exposure to water, oil, or dust</li> <li>Free from excessive electrical noise (plasma)</li> </ul>
<b>Power Requirements<sup>Note 3</sup></b>	0.5 kVA	

Note 1. When a load is more than 1 kg, the motion range will be smaller. Use the robot within the recommended motion range. (See diagrams below)  
 Note 2. The S-, R-, B-, and T-axes do not have any brakes. Make sure that the operation does not require brakes.  
 Note 3. Varies in accordance with applications and motion patterns.  
 Note. SI units are used for specifications.



Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis actuator  
**Robonity**  
 Compact single-axis robots  
**TRANSEVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XX-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
 CLEAN  
 CONTROLLER INFORMATION

# YA-R3F

6-axis



- Maximum payload 3 kg
- Longest Reach R532 mm

## Ordering method

<b>YA-R3F</b>	<b>4L</b>	<b>YAC100</b>				
Model	Power cable length	Controller	Safety standard	Language setting	Option I/O	Network option
	4L: 4m		N: Normal E: CE marking	JE: Japanese/English JC: Japanese/Chinese EJ: English/Japanese EC: English/Chinese	N, P: Standard I/O 28/28 N1, P1: 56/56 points N2, P2: 84/84 points N3, P3: 112/112 points N4, P4: 140/140 points	No entry: None CC: CC-Link DM: DeviceNet master DS: DeviceNet slave PB: PROFIBUS EP: EtherNet/IP™ PM: Profinet master PT: Profinet slave ES: EtherCAT slave

Note. The YA-R3F, a compact manipulator with a motor of 80 W or less mounted on all axes, requires minimal space (baseplate: 240 mm × 170 mm). No fence is required for robot's working area. The robot can be used in applications such as automated guided vehicles (AGVs), testing equipment, and educational tools.

Note. Standard models include four air hoses (diameter: 4 mm), and an internal user I/O wiring harness (0.2 mm<sup>2</sup> × 10) running through the U-arm. This structure simplifies wiring and tubing for easier system construction.

Note. Floor-mounted, wall-mounted, and ceiling-mounted types are available. Please contact us separately regarding wall-mounted or ceiling-mounted installations.

Note. This unit can also be used in combination with a travel axis or other external axis. Please contact us.

## Specifications

<b>Controlled Axis</b>	6	
<b>Payload</b>	3 kg	
<b>Repeatability</b>	+/-0.03 mm	
<b>Range of Motion</b>	<b>S-axis (turning)</b>	-160° to +160° <sup>Note 1</sup>
	<b>L-axis (lower Arm)</b>	-85° to +90°
	<b>U-axis (upper arm)</b>	-105° to +260°
	<b>R-axis (wrist roll)</b>	-170° to +170°
	<b>B-axis (wrist pitch/yaw)</b>	-120° to +120°
	<b>T-axis (wrist twist)</b>	-360° to +360°
<b>Maximum Speed</b>	<b>S-axis (turning)</b>	3.49 rad/s, 200°/s
	<b>L-axis (lower Arm)</b>	2.62 rad/s, 150°/s
	<b>U-axis (upper arm)</b>	3.32 rad/s, 190°/s
	<b>R-axis (wrist roll)</b>	5.24 rad/s, 300°/s
	<b>B-axis (wrist pitch/yaw)</b>	5.24 rad/s, 300°/s
	<b>T-axis (wrist twist)</b>	7.33 rad/s, 420°/s

<b>Allowable Moment</b>	<b>R-axis (wrist roll)</b>	5.39 N·m	
	<b>B-axis (wrist pitch/yaw)</b>	5.39 N·m	
	<b>T-axis (wrist twist)</b>	2.94 N·m	
<b>Allowable Inertia (GD<sup>2</sup>/4)</b>	<b>R-axis (wrist roll)</b>	0.1 kg·m <sup>2</sup>	
	<b>B-axis (wrist pitch/yaw)</b>	0.1 kg·m <sup>2</sup>	
	<b>T-axis (wrist twist)</b>	0.03 kg·m <sup>2</sup>	
<b>Mass</b>		27 kg	
<b>Ambient Conditions</b>	<b>Temperature</b>	0 to +40°C	
	<b>Humidity</b>	20 to 80%RH (non-condensing)	
	<b>Vibration</b>	4.9 m/s <sup>2</sup> or less	
	<b>Others</b>		• Free from corrosive gasses or liquids, or explosive gasses • Free from exposure to water, oil, or dust • Free from excessive electrical noise (plasma)
		<b>Power Requirements</b> <sup>Note 2</sup>	0.5 kVA

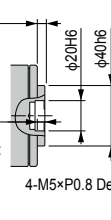
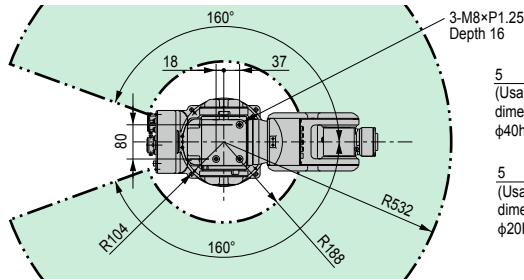
Note 1. For wall-mounted installation, the S-axis operating range is +/-25°.

Note 2. Varies in accordance with applications and motion patterns.

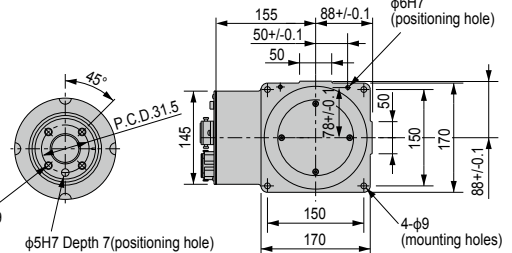
Note. SI units are used for specifications.

## YA-R3F

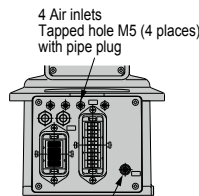
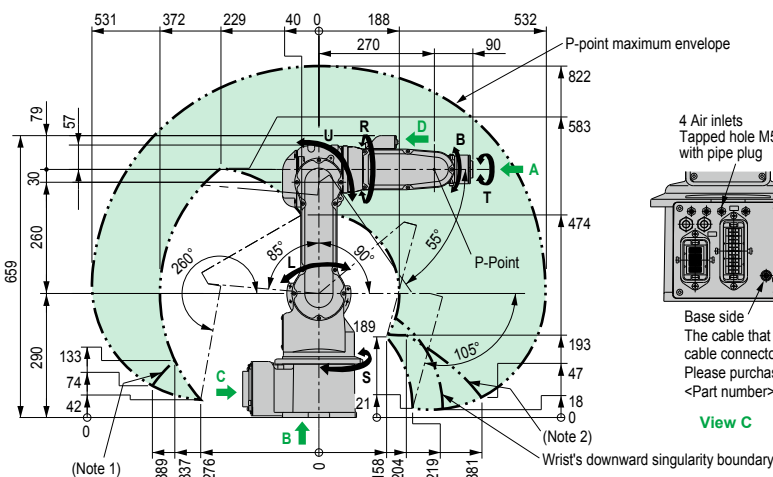
Units: mm    : P-point maximum envelope



View A



View B

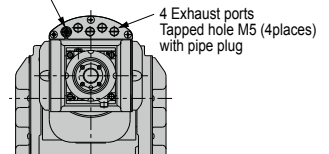


4 Air inlets  
Tapped hole M5 (4 places)  
with pipe plug

Base side  
The cable that fits with the device's cable connector is an optional item. Please purchase it separately.  
<Part number> KEM-M4873-00

View C

Arm side  
The cable that fits with the device's cable connector is an optional item. Please purchase it separately.  
<Part number> KEM-M4874-00



View D

Note 1. Motion range of point P when the S-axis is between -40° to +40°.

Note 2. Motion range of point P when the S-axis is between -125° to -160° or +125° to +160°.

# YA-R5F

6-axis

- Maximum payload 5 kg
- Longest Reach R706 mm



## Ordering method

**YA-R5F** - **4L** - **YAC100**

Model	Power cable length	Controller	Safety standard	Language setting	Option I/O	Network option
	4L: 4m		N: Normal E: CE marking	JE: Japanese/English JC: Japanese/Chinese EJ: English/Japanese EC: English/Chinese	N, P: Standard I/O 28/28 N1, P1: 56/56 points N2, P2: 84/84 points N3, P3: 112/112 points N4, P4: 140/140 points	No entry : None CC: CC-Link DM: DeviceNet master DS: DeviceNet slave PB: PROFIBUS EP: EtherNet/IP™ PM: Profinet master PT: Profinet slave ES: EtherCAT slave

Note. Thanks to the higher control rate of the YAC100 controller and vibration-damping control of the arm, we have reduced the residual vibration when the arm stops moving, while shortening the cycle time and achieving the fastest speed in this class.

Note. Longest reach in a respective class (706 mm)

Note. Floor-mounted, wall-mounted, and ceiling-mounted types are available. Please contact us separately regarding wall-mounted or ceiling-mounted installations.

Note. This unit can also be used in combination with a travel axis or other external axis. Please contact us.

## Specifications

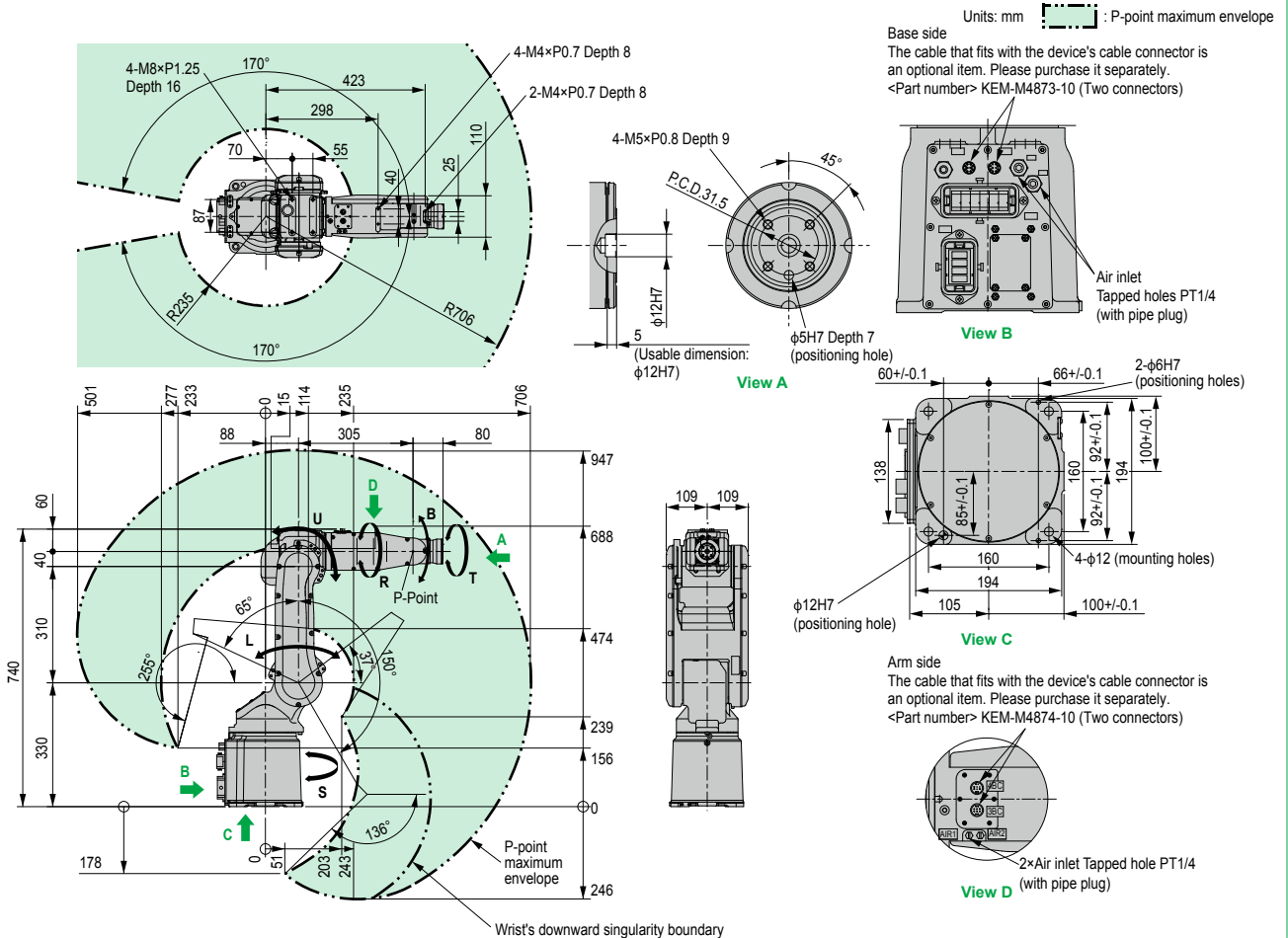
<b>Controlled Axis</b>	6	<b>Allowable Moment</b>	<b>R-axis (wrist roll)</b>	12 N·m	
<b>Payload</b>	5 kg	<b>Allowable Moment</b>	<b>B-axis (wrist pitch/yaw)</b>	12 N·m	
<b>Repeatability</b>	+/-0.02 mm	<b>Allowable Moment</b>	<b>T-axis (wrist twist)</b>	7 N·m	
<b>Range of Motion</b>	<b>S-axis (turning)</b>	-170° to +170° <sup>Note 1</sup>	<b>Allowable Inertia (GD<sup>2</sup>/4)</b>	<b>R-axis (wrist roll)</b>	0.3 kg·m <sup>2</sup>
	<b>L-axis (lower Arm)</b>	-65° to +150°	<b>Allowable Inertia (GD<sup>2</sup>/4)</b>	<b>B-axis (wrist pitch/yaw)</b>	0.3 kg·m <sup>2</sup>
	<b>U-axis (upper arm)</b>	-136° to +255°	<b>Allowable Inertia (GD<sup>2</sup>/4)</b>	<b>T-axis (wrist twist)</b>	0.1 kg·m <sup>2</sup>
	<b>R-axis (wrist roll)</b>	-190° to +190°	<b>Mass</b>		27 kg
	<b>B-axis (wrist pitch/yaw)</b>	-135° to +135°	<b>Ambient Conditions</b>	<b>Temperature</b>	0 to +45°C
	<b>T-axis (wrist twist)</b>	-360° to +360°		<b>Humidity</b>	20 to 80%RH (non-condensing)
<b>Maximum Speed</b>	<b>S-axis (turning)</b>	6.56 rad/s, 376°/s	<b>Vibration</b>	4.9 m/s <sup>2</sup> or less	
	<b>L-axis (lower Arm)</b>	6.11 rad/s, 350°/s	<b>Others</b>	<ul style="list-style-type: none"> <li>Free from corrosive gasses or liquids, or explosive gasses</li> <li>Free from exposure to water, oil, or dust</li> <li>Free from excessive electrical noise (plasma)</li> </ul>	
	<b>U-axis (upper arm)</b>	6.98 rad/s, 400°/s			
	<b>R-axis (wrist roll)</b>	7.85 rad/s, 450°/s			
	<b>B-axis (wrist pitch/yaw)</b>	7.85 rad/s, 450°/s	<b>Power Requirements<sup>Note 2</sup></b>	1.0 kVA	
	<b>T-axis (wrist twist)</b>	12.57 rad/s, 720°/s			

Note 1. For wall-mounted installation, the S-axis operating range is +/-30°.

Note 2. Varies in accordance with applications and motion patterns.

Note. SI units are used for specifications.

## YA-R5F





# YA-R6F

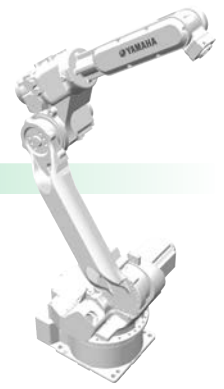
6-axis

- Maximum payload 6 kg
- Longest Reach R1422 mm

## Ordering method

**YA-R6F** - **4L** - **YAC100**

Model	Power cable length	Controller	Safety standard	Language setting	Option I/O	Network option
	4L: 4m		N: Normal E: CE marking	JE: Japanese/English JC: Japanese/Chinese EJ: English/Japanese EC: English/Chinese	N, P: Standard I/O 28/28 N1, P1: 56/56 points N2, P2: 84/84 points N3, P3: 112/112 points N4, P4: 140/140 points	No entry : None CC: CC-Link DM: DeviceNet master DS: DeviceNet slave PB: PROFIBUS EP: EtherNet/IP™ PM: Profinet master PT: Profinet slave ES: EtherCAT slave



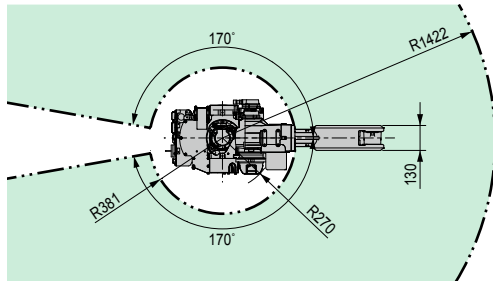
Note. Thanks to the higher control rate of the YAC100 controller and vibration-damping control of the arm, we have reduced the residual vibration when the arm stops moving, while shortening the cycle time and achieving the fastest speed in this class.  
 Note. Longest reach in its class (1422 mm) and increased moment capacity of the wrist.  
 Note. Floor-mounted, wall-mounted, and ceiling-mounted types are available. Please contact us separately regarding wall-mounted or ceiling-mounted installations.  
 Note. This unit can also be used in combination with a travel axis or other external axis. Please contact us.

## Specifications

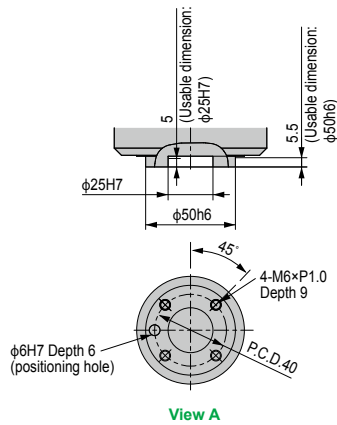
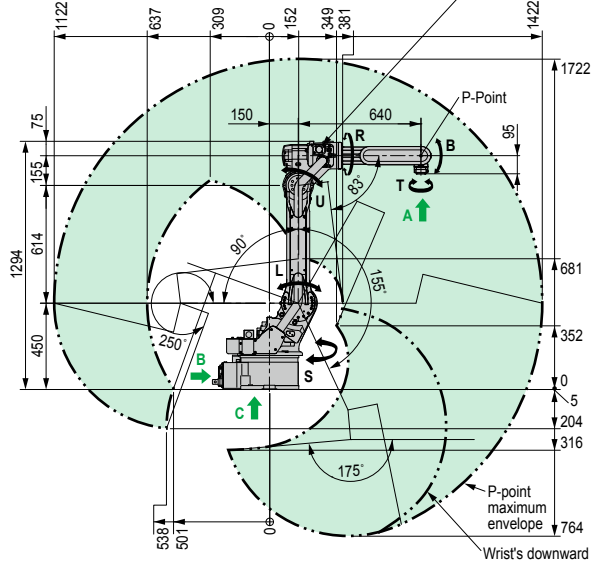
<b>Controlled Axis</b>	6	<b>Allowable Moment</b>	<b>R-axis (wrist roll)</b>	11.8 N-m		
<b>Payload</b>	6 kg		<b>B-axis (wrist pitch/yaw)</b>	9.8 N-m		
<b>Repeatability</b>	+/-0.08 mm		<b>T-axis (wrist twist)</b>	5.9 N-m		
<b>Range of Motion</b>	<b>S-axis (turning)</b>	-170° to +170° <sup>Note 1</sup>	<b>Allowable Inertia (GD<sup>2</sup>/4)</b>	<b>R-axis (wrist roll)</b>	0.27 kg·m <sup>2</sup>	
	<b>L-axis (lower Arm)</b>	-90° to +155°		<b>B-axis (wrist pitch/yaw)</b>	0.27 kg·m <sup>2</sup>	
	<b>U-axis (upper arm)</b>	-175° to +250°		<b>T-axis (wrist twist)</b>	0.06 kg·m <sup>2</sup>	
	<b>R-axis (wrist roll)</b>	-180° to +180°		<b>Mass</b>	130 kg	
	<b>B-axis (wrist pitch/yaw)</b>	-45° to +225°		<b>Ambient Conditions</b>	<b>Temperature</b>	0 to +45°C
	<b>T-axis (wrist twist)</b>	-360° to +360°			<b>Humidity</b>	20 to 80%RH (non-condensing)
<b>Maximum Speed</b>	<b>S-axis (turning)</b>	3.84 rad/s, 220°/s		<b>Vibration</b>	4.9 m/s <sup>2</sup> or less	
	<b>L-axis (lower Arm)</b>	3.49 rad/s, 200°/s		<b>Others</b>	• Free from corrosive gasses or liquids, or explosive gasses	
	<b>U-axis (upper arm)</b>	3.84 rad/s, 220°/s			• Free from exposure to water, oil, or dust	
	<b>R-axis (wrist roll)</b>	7.16 rad/s, 410°/s			• Free from excessive electrical noise (plasma)	
	<b>B-axis (wrist pitch/yaw)</b>	7.16 rad/s, 410°/s			<b>Power Requirements</b> <sup>Note 2</sup>	1.0 kVA
	<b>T-axis (wrist twist)</b>	10.65 rad/s, 610°/s				

Note 1. For wall-mounted installation, the S-axis operating range is +/-30°.  
 Note 2. Varies in accordance with applications and motion patterns.  
 Note. SI units are used for specifications.

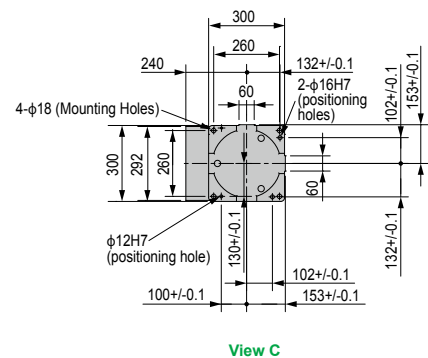
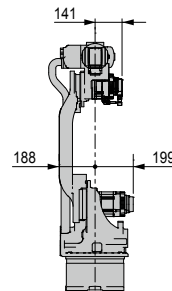
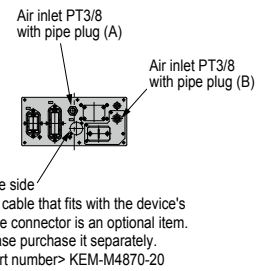
## YA-R6F



Arm side  
 The cable that fits with the device's cable connector is an optional item. Please purchase it separately.  
 <Part number> KEM-M4870-30



Units: mm [ ] : P-point maximum envelope



Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis actuator  
**Robonity**  
 Compact single-axis robots  
**TRANSEVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XY-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
 CLEAN  
 CONTROLLER INFORMATION





# YA-U10F

7-axis

Maximum payload 10 kg

## Ordering method

<b>YA-U10F</b>	<b>4L</b>	<b>YAC100</b>				
<b>Model</b>	<b>Power cable length</b>	<b>Controller</b>	<b>Safety standard</b>	<b>Language setting</b>	<b>Option I/O</b>	<b>Network option</b>
	4L: 4m		N: Normal E: CE marking	JE: Japanese/English JC: Japanese/Chinese EJ: English/Japanese EC: English/Chinese	N, P: Standard I/O 28/28 N1, P1: 56/56 points N2, P2: 84/84 points N3, P3: 112/112 points N4, P4: 140/140 points	No entry: None CC: CC-Link DM: DeviceNet master DS: DeviceNet slave PB: PROFIBUS EP: EtherNet/IP™ PM: Profinet master PT: Profinet slave ES: EtherCAT slave



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XX-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

Information

Information

Information

Information

Information

Information

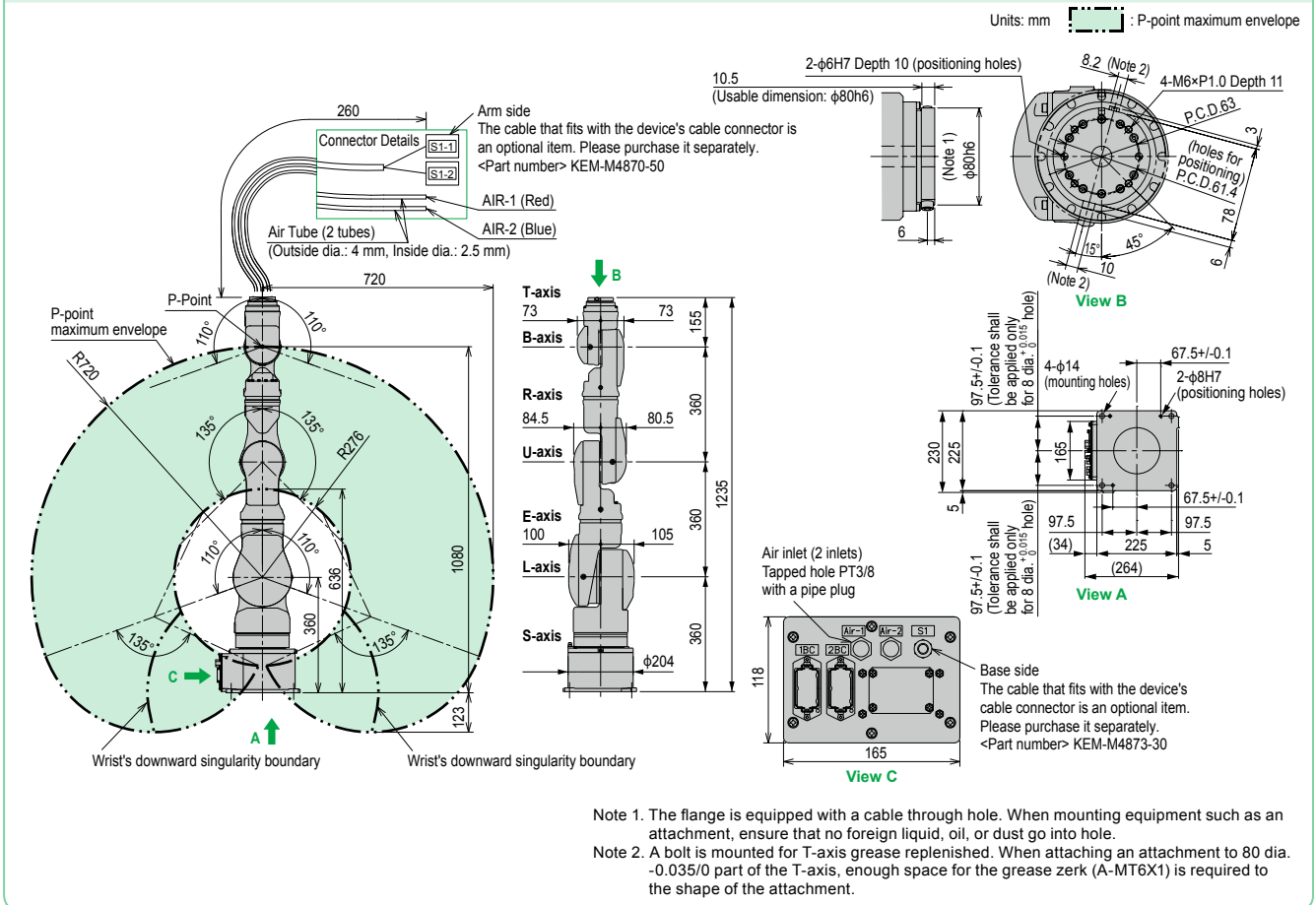
Note. High degree of motion like a human arm with its 7-axis arm.  
 Note. The high flexibility of motion makes operation possible even in narrow spaces inaccessible to humans.  
 Note. Folds to compact size when not in use.  
 Note. Many installation options: on the floor, on the wall or on the ceiling. Please contact us separately regarding wall-mounted or ceiling-mounted installations.  
 Note. Optimal for handling small objects.  
 Note. By utilizing internal user I/O wiring harness and air lines integrated in the arm, layout can be planned offline without worrying about peripheral interference.  
 (Internal user I/O wiring harness and air lines specifications: two air hoses and twelve-core cables)  
 External axis specification for a hand can be accommodated. Contact YAMAHA regarding your requirements.

## Specifications

<b>Controlled Axis</b>	7	<b>Allowable Moment</b>	<b>R-axis (wrist roll)</b>	31.4 N-m	
<b>Payload</b>	10 kg		<b>B-axis (wrist pitch/yaw)</b>	31.4 N-m	
<b>Repeatability</b>	+/-0.1 mm		<b>T-axis (wrist twist)</b>	19.6 N-m	
<b>Range of Motion</b>	<b>S-axis (turning)</b>	-180° to +180°	<b>Allowable Inertia (GD<sup>2</sup>/4)</b>	<b>R-axis (wrist roll)</b>	1.0 kg-m <sup>2</sup>
	<b>L-axis (lower Arm)</b>	-110° to +110°		<b>B-axis (wrist pitch/yaw)</b>	1.0 kg-m <sup>2</sup>
	<b>E-axis (elbow twist)</b>	-170° to +170°		<b>T-axis (wrist twist)</b>	0.4 kg-m <sup>2</sup>
	<b>U-axis (upper arm)</b>	-135° to +135°		<b>Mass</b>	60 kg
	<b>R-axis (wrist roll)</b>	-180° to +180°		<b>Power Requirements</b> <sup>Note 1</sup>	1.0 kVA
	<b>B-axis (wrist pitch/yaw)</b>	-110° to +110°		<b>Temperature</b>	0 to +40°C
	<b>T-axis (wrist twist)</b>	-180° to +180°		<b>Humidity</b>	20 to 80%RH (non-condensing)
<b>Maximum Speed</b>	<b>S-axis (turning)</b>	2.97 rad/s, 170°/s	<b>Ambient Conditions</b>	<b>Vibration</b>	4.9 m/s <sup>2</sup> or less
	<b>L-axis (lower Arm)</b>	2.97 rad/s, 170°/s		<b>Others</b>	• Free from corrosive gasses or liquids, or explosive gasses • Free from exposure to water, oil, or dust • Free from excessive electrical noise (plasma)
	<b>E-axis (elbow twist)</b>	2.97 rad/s, 170°/s			
	<b>U-axis (upper arm)</b>	2.97 rad/s, 170°/s			
	<b>R-axis (wrist roll)</b>	3.49 rad/s, 200°/s			
	<b>B-axis (wrist pitch/yaw)</b>	3.49 rad/s, 200°/s			
	<b>T-axis (wrist twist)</b>	6.98 rad/s, 400°/s			

Note 1. Varies in accordance with applications and motion patterns.  
 Note. SI units are used for specifications.

## YA-U10F



# YA-U20F

7-axis

● Maximum payload 20 kg

## Ordering method

<b>YA-U20F</b>	<b>4L</b>	<b>YAC100</b>				
<b>Model</b>	<b>Power cable length</b> 4L: 4m	<b>Controller</b>	<b>Safety standard</b> N: Normal E: CE marking	<b>Language setting</b> JE: Japanese/English JC: Japanese/Chinese EJ: English/Japanese EC: English/Chinese	<b>Option I/O</b> N, P: Standard I/O 28/28 N1, P1: 56/56points N2, P2: 84/84 points N3, P3: 112/112 points N4, P4: 140/140 points	<b>Network option</b> No entry: None CC: CC-Link DM: DeviceNet master DS: DeviceNet slave PB: PROFIBUS EP: EtherNet/IP™ PM: Profinet master PT: Profinet slave ES: EtherCAT slave



Note. High degree of motion like a human arm with its 7-axis arm.  
 Note. The high flexibility of motion makes operation possible even in narrow spaces inaccessible to humans.  
 Note. Folds to compact size when not in use.  
 Note. Many installation options: on the floor, on the wall or on the ceiling. Please contact us separately regarding wall-mounted or ceiling-mounted installations.  
 Note. Assembles and handles heavy objects up to 20 kg.  
 Note. By utilizing internal user I/O wiring harness and air lines integrated in the arm, layout can be planned offline without worrying about peripheral interference.  
 (Internal user I/O wiring harness and air lines specifications: two air hoses and sixteen-core cables)  
 External axis specification for a hand can be accommodated. Contact YAMAHA regarding your requirements.

## Specifications

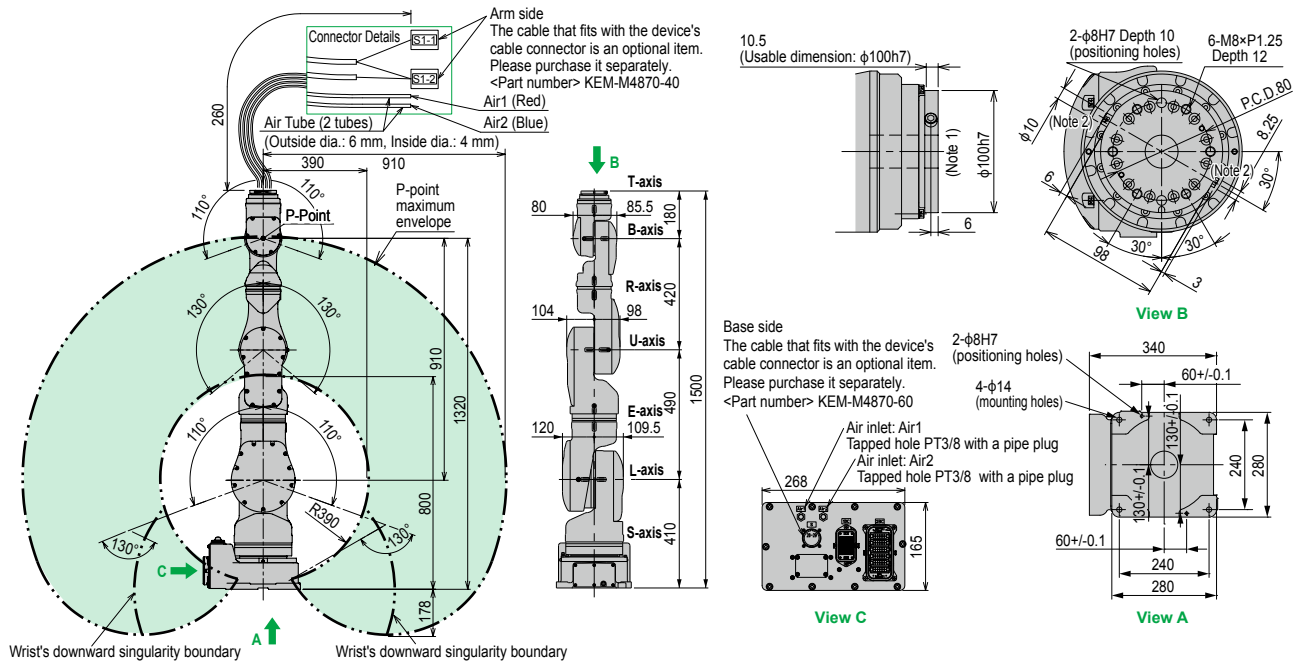
<b>Controlled Axis</b>	7	
<b>Payload</b>	20 kg	
<b>Repeatability</b>	+/-0.1 mm	
<b>Range of Motion</b>	<b>S-axis (turning)</b>	-180° to +180°
	<b>L-axis (lower Arm)</b>	-110° to +110°
	<b>E-axis (elbow twist)</b>	-170° to +170°
	<b>U-axis (upper arm)</b>	-130° to +130°
	<b>R-axis (wrist roll)</b>	-180° to +180°
	<b>B-axis (wrist pitch/yaw)</b>	-110° to +110°
	<b>T-axis (wrist twist)</b>	-180° to +180°
<b>Maximum Speed</b>	<b>S-axis (turning)</b>	2.27 rad/s, 130°/s
	<b>L-axis (lower Arm)</b>	2.27 rad/s, 130°/s
	<b>E-axis (elbow twist)</b>	2.97 rad/s, 170°/s
	<b>U-axis (upper arm)</b>	2.97 rad/s, 170°/s
	<b>R-axis (wrist roll)</b>	3.49 rad/s, 200°/s
	<b>B-axis (wrist pitch/yaw)</b>	3.49 rad/s, 200°/s
	<b>T-axis (wrist twist)</b>	6.98 rad/s, 400°/s

<b>Allowable Moment</b>	<b>R-axis (wrist roll)</b>	58.8 N·m
	<b>B-axis (wrist pitch/yaw)</b>	58.8 N·m
	<b>T-axis (wrist twist)</b>	29.4 N·m
<b>Allowable Inertia (GD<sup>2</sup>/4)</b>	<b>R-axis (wrist roll)</b>	4.0 kg·m <sup>2</sup>
	<b>B-axis (wrist pitch/yaw)</b>	4.0 kg·m <sup>2</sup>
	<b>T-axis (wrist twist)</b>	2.0 kg·m <sup>2</sup>
<b>Mass</b>		120 kg
<b>Power Requirements</b> <sup>Note 1</sup>		1.5 kVA
<b>Ambient Conditions</b>	<b>Temperature</b>	0 to +40°C
	<b>Humidity</b>	20 to 80%RH (non-condensing)
	<b>Vibration</b>	4.9 m/s <sup>2</sup> or less
	<b>Others</b>	<ul style="list-style-type: none"> <li>Free from corrosive gasses or liquids, or explosive gasses</li> <li>Free from exposure to water, oil, or dust</li> <li>Free from excessive electrical noise (plasma)</li> </ul>

Note 1. Varies in accordance with applications and motion patterns.  
 Note. SI units are used for specifications.

## YA-U20F

Units: mm : P-point maximum envelope



Note 1. The flange is equipped with a cable through hole. When mounting equipment such as an attachment, ensure that no foreign liquid, oil, or dust go into hole.  
 Note 2. A bolt is mounted for T-axis grease replenished. When attaching an attachment to 80 dia. -0.035/0 part of the T-axis, enough space for the grease zerk (A-MT6X1) is required to the shape of the attachment.

# YAC100 Specifications

## YAC100 controller specifications

<b>Configuration</b>	Standard: IP20 (open structure)
<b>Dimensions</b>	470 mm (W) × 420 mm (D) × 200 mm (H) (Protrusions are not included.)
<b>Mass</b>	20 kg
<b>Cooling System</b>	Direct cooling
<b>Ambient Temperature</b>	During operation: 0°C to +40°C During storage : -10°C to +60°C
<b>Relative Humidity</b>	90% max. (non-condensing)
<b>Power Supply</b> <sup>Note</sup>	Single-phase 200/230 VAC (+10% to -15%), 50/60 Hz Three-phase 200/220 VAC (+10% to -15%), 50/60 Hz
<b>Grounding</b>	Grounding resistance: 100 Ω or less
<b>Digital I/Os</b>	Specialized signals: 8 inputs and 11 output General signals : 16 inputs and 16 outputs Max. I/O (optional) : 1,024 inputs and 1,024 outputs
<b>Positioning System</b>	By serial encoder
<b>Programming Capacity</b>	JOB: 10,000 steps, 1,000 instructions C/O ladder: 1,500 steps
<b>Expansion Slots</b>	MP2000 bus × 5 slots
<b>LAN (Connection to Host)</b>	1 (10BASE-T/100BASE-TX)
<b>Interface</b>	RS-232C: 1ch
<b>Control Method</b>	Software servo control
<b>Drive Units</b>	Six axes for robots. Two more axes can be added as external axes. (Can be installed in the controller.)
<b>Painting Color</b>	Munsell notation 5Y7/1 (reference value)

Note. YA-R6F: Three-phase only.

## YAP programming pendant specifications



<b>Dimensions</b>	169 mm (W) × 314.5 mm (H) × 50 mm (D)
<b>Mass</b>	0.990 kg
<b>Material</b>	Reinforced plastics
<b>Operation Device</b>	Select keys, axis keys (8 axes), numerical/application keys, Mode switch with key (mode: teach, play, and remote), emergency stop button, enable switch, compact flash card interface device (compact flash is optional.), USB port (1 port)
<b>Display</b>	640 × 480 pixels color LCD, touch panel (Alphanumeric characters, Chinese characters, Japanese letters, Others)
<b>IEC Protection Class</b>	IP65
<b>Cable Length</b>	Standard: 8 m, 4 m / 8 m / 12 m extension cable (maximum 20 m)

## Optimum controller for handling and assembly

The YAC100 is a compact controller with improved performance and functions optimized for handling and assembly.

- Fits in a 19-inch rack and can be installed under conveyors.
- Commands specifically designed for workpiece handling with synchronized conveyors.



Hardware Options
<ul style="list-style-type: none"> <li>• External axis (max.: 2 axes)</li> <li>• I/O module (28 points, NPN or PNP)</li> <li>• Major fieldbus interface boards DeviceNet™ (master/slave), CC-Link (slave), PROFIBUS (slave), EtherNet/IP™ (slave, I/O communications), EtherCAT (slave), PROFINET (master/slave)</li> </ul>

Optional Functions
<ul style="list-style-type: none"> <li>• Conveyor synchronization</li> <li>• Vision function</li> <li>• External reference point control</li> <li>• Software pendant</li> </ul>

## Regarding the concurrent I/O ladder program

The YAC100 controller is equipped with an NPN (or PNP) for standard I/O. Dedicated input/output is assigned to this standard I/O board. For this reason, if dedicated input/output is to be assigned to various types of field bus, concurrent I/O ladder program settings must be made.

Sample programs can be downloaded from our website.<sup>Note</sup>

<https://global.yamaha-motor.com/business/robot/>

Note. The member site requires registration.

## A robot simulator that implements the same functionality as the actual controller

# MotoSim EG-VRC-CadPack for YAMAHA

Virtual programming before the actual line is completed allows major reduction in line startup time.

### Modeling layout

Models of workers and workpieces can be easily laid out.

### Intuitive control of models

Models can be moved intuitively, simply by using the mouse.

### Programming and debugging

Automatic generation of robot operating programs, job editing, and job analysis can be performed easily.

### Intuitive robot operation

The robot's posture can be operated intuitively, allowing more efficient teaching.

### Robot simulation

The robot can be watched as it operates, allowing visual verification.

## Accessories and part options

### YA Series

#### Standard accessories

##### YAP programming box (with 8m cable)

Name	Model	Language
YAP-J	KEN-M5110-0J	Japanese
YAP-E	KEN-M5110-0E	English
YAP-C	KEN-M5110-0C	Chinese

##### Parts for the YAC100 controller

Name	Model
Power supply connector	KEN-M4871-00
Power supply cable clamp	KEN-M4836-00
Dummy connector for shorting safety signal	KEN-M5370-00
Power supply protection fuse	KEN-M5853-00
Standard I/O connector (STD.IO)	KBH-M4420-00
	KEN-M4420-00

##### Power cable (robot cable)

Manipulator name	Model	Cable length	Cable diameter		Bending radius
			Signal wire	Power wire	
YA-RJ	KEM-M4710-40	4 m	Signal wire	φ8.5 mm	85.0 mm
			Power wire	φ13.5 mm	140.0 mm
YA-R3F	KEM-M4711-40	4 m	Signal wire	φ17.5 mm	180.0 mm
			Power wire	φ19.5 mm	200.0 mm
YA-R5F/R5LF/R6F	KEM-M4712-40	4 m	Signal wire	φ17.5 mm	180.0 mm
			Power wire	φ19.5 mm	180.0 mm
YA-U5F/U10F	KEM-M4713-40	4 m	Signal wire	φ17.5 mm	180.0 mm
			Power wire	φ16.1 mm	180.0 mm
YA-U20F	KEM-M4714-40	4 m	Signal wire	φ17.5 mm	180.0 mm
			Power wire	φ26.0 mm	260.0 mm

#### Options

##### Power cable (robot cable)

Manipulator name	Model			Cable diameter		Bending radius
	Cable length (10 m)	Cable length (15 m)	Cable length (20 m)	Signal wire	Power wire	
YA-RJ	KEM-M4710-A0	KEM-M4710-F0	KEM-M4710-L0	Signal wire	φ8.5 mm	85.0 mm
				Power wire	φ13.5 mm	140.0 mm
YA-R3F	KEM-M4711-A0	KEM-M4711-F0	KEM-M4711-L0	Signal wire	φ17.5 mm	180.0 mm
				Power wire	φ19.5 mm	200.0 mm
YA-R5F/R5LF/R6F	KEM-M4712-A0	KEM-M4712-F0	KEM-M4712-L0	Signal wire	φ17.5 mm	180.0 mm
				Power wire	φ19.5 mm	180.0 mm
YA-U5F/U10F	KEM-M4713-A0	KEM-M4713-F0	KEM-M4713-L0	Signal wire	φ17.5 mm	180.0 mm
				Power wire	φ16.1 mm	180.0 mm
YA-U20F	KEM-M4714-A0	KEM-M4714-F0	KEM-M4714-L0	Signal wire	φ17.5 mm	180.0 mm
				Power wire	φ26.0 mm	260.0 mm

##### Device cable connector (connector for user wiring)

Manipulator name	Part position	Model	Remarks
YA-RJ	Base side	KEM-M4870-00	
	Arm side	KEM-M4870-10	
YA-R3F	Base side	KEM-M4873-00	
	Arm side	KEM-M4874-00	
YA-R5F/R5LF	Base side	KEM-M4873-10	Two connectors
	Arm side	KEM-M4874-10	Two connectors
YA-R6F	Base side	KEM-M4870-20	
	Arm side	KEM-M4870-30	
YA-U5F	Base side	KEM-M4873-30	
	Arm side	KEM-M4870-40	
YA-U10F	Base side	KEM-M4873-30	
	Arm side	KEM-M4870-50	
YA-U20F	Base side	KEM-M4870-60	
	Arm side	KEM-M4870-40 <sup>Note</sup>	

Note: Two connectors are required on the arm side of YA-U20F.

##### Extension cable for YAP (extension cable for programming box)

Name	Model	Cable length
Extension cable for YAP	KEN-M531F-10	4 m
	KEN-M531F-20	8 m
	KEN-M531F-30	12 m

##### Dummy connector for YAP

Name	Model
YAP dummy connector	KEN-M5163-00

#### Maintenance parts

Name	Model
Battery unit for YA-RJ/R3F	KEM-M53G3-10
YA-R5F/R5LF/R6F	KEM-M53G3-00
Battery unit for YA-U5F/U10F/U20F	
Battery unit for YAC100 controller	KEN-M53G3-00
AC fan motor	KEN-M6175-00





# LINEAR CONVEYOR MODULES

# LCM100

## CONTENTS

- LCM100 basic specifications... 126
- Static tolerable load of slider.. 126
- Allowable overhang..... 126
- Ordering method ..... 126
- External view of LCM100 .... 127
- Accessory parts ..... 130
- Controller for linear module  
LCC140 basic specifications... 132
- External view of LCC140 ..... 132

Articulated robots YA
Linear conveyor modules LCM100
Motor-less single axis actuator Robonity
Compact single-axis robots TRANSERVO
Single-axis robots FLIP-X
Linear motor single-axis robots PHASER
Cartesian robots XY-X
SCARA robots YK-X
Pick & place robots YP-X
CLEAN
CONTROLLER
INFORMATION

# LCM100 basic specifications



## Basic specifications of linear conveyor module

Model	LCM100-4M / 3M / 2MT
Drive method	Moving magnet type, Linear motor with flat core
Repeat positioning accuracy	+/-0.015mm (single slider) <sup>Note 1</sup> / width 0.1mm (mutual difference among all sliders) <sup>Note 2</sup>
Scale	Electromagnetic type / resolution 5µm
Max. speed	3000mm/sec
Max. acceleration	2G
Max. payload	15kg <sup>Note 3</sup> <sup>Note 4</sup>
Rated thrust	48N
Total module length	640mm (4M) / 480mm (3M) / 400mm (for 2MT circulation)
Max. number of combined modules	16 (total length: 10240 mm)
Max. number of sliders	16 (when 16 modules are combined)
Min. pitch between sliders	420mm
Mutual height difference between sliders	0.08mm
Max. external size of body cross-section	W136.5mm x H155mm (including slider)
Bearing method	1 guide rail / 2 blocks (with retainer)
Module weight	12.5kg (4M) / 9.4kg (3M) / 7.6kg (2MT)
Slider weight	2.4kg / 3.4kg (when the belt module is used.)
Cable length	3m / 5m
Controller	LCC140

## Basic specifications of belt module

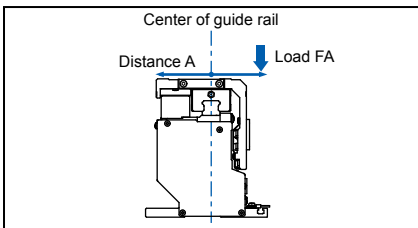
Model	LCM100-4B / 3B
Drive method	Belt back surface pressing force drive <sup>Note 5</sup>
Bearing method	1 guide rail / 2 blocks (with retainer)
Max. speed	560mm/sec
Max. payload	14kg
Module length	640mm (4B) / 480mm (3B)
Max. number of sliders	1 slider / 1 module
Main unit maximum cross-section outside dimensions	W173.8mm×H155mm (including slider)
Cable length	None
Controller	Dedicated driver (Included)
Power supply	DC24V 5A
Communication I/F	Dedicated input/output 16 points
Module weight	11.2kg (4B) / 8.8kg (3B)

Note 5. Because the belt module works on the principle of using the friction of the belt to move the slider, the belt will be abraded and generate dust, making it unsuitable for environments that require a degree of cleanliness.

Note 1. Repeated positioning accuracy when positioning in the same direction (pulsating).  
 Note 2. Positioning accuracy in the pulsating when using the position correction function with the RFID.  
 Note 3. Weight per single slider.  
 Note 4. When used together with the belt module, the max. payload becomes 14kg since the parts dedicated to the belt are attached to the slider.

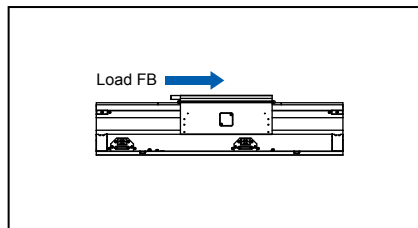
## Static tolerable load of slider

Static loads shown below are tolerable as references when performing the screw tightening, part assembly, or light press-fitting on the slider.

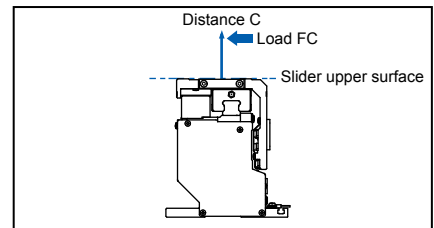


A (mm)	Payload (Unit: N)		
	5 kg	10 kg	15 kg
0	2550	1560	1270
10	1790	1280	1170
20	1380	780	630
30	1130	520	420
40	900	390	310
50	720	310	250
60	600	260	210

Note. The loads shown above are tolerable loads at a position 'A' mm away from the center of the guide rail.



Payload (Unit: N)		
5 kg	10 kg	15 kg
38		



C (mm)	Payload (Unit: N)		
	5 kg	10 kg	15 kg
0	1190	850	780
10	970	710	650
20	760	610	560
30	630	530	490
40	540	480	430
50	470	430	390
60	410	390	360

Note. The loads shown above are tolerable loads at a position 'C' mm away from the slider upper surface.

## Allowable overhang

Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000 km.

	(Unit: mm)		
	A	B	C
5kg	677	325	325
10kg	533	146	146
15kg	468	90	90

## Ordering method

### Linear module

LCM100 -			LCC140 -	10	
Model	Cable length <sup>Note 1</sup>	Controller	Current sensor	Network option <sup>Note 2</sup>	
4M: 640mm 3M: 480mm 2MT: Module for circulation	3L: 3m 5L: 5m 3K: 3m (Flexible cable) 5K: 5m (Flexible cable)		10: 10A	No entry: None CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™	

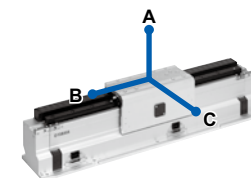
The above shows "one module + one controller" ordering method. When connecting modules, please separately inform the number of necessary modules.

Note 1. The cable for 2MT has flexible specifications.  
 Note 2. For 2MT, be sure to select an appropriate network option.

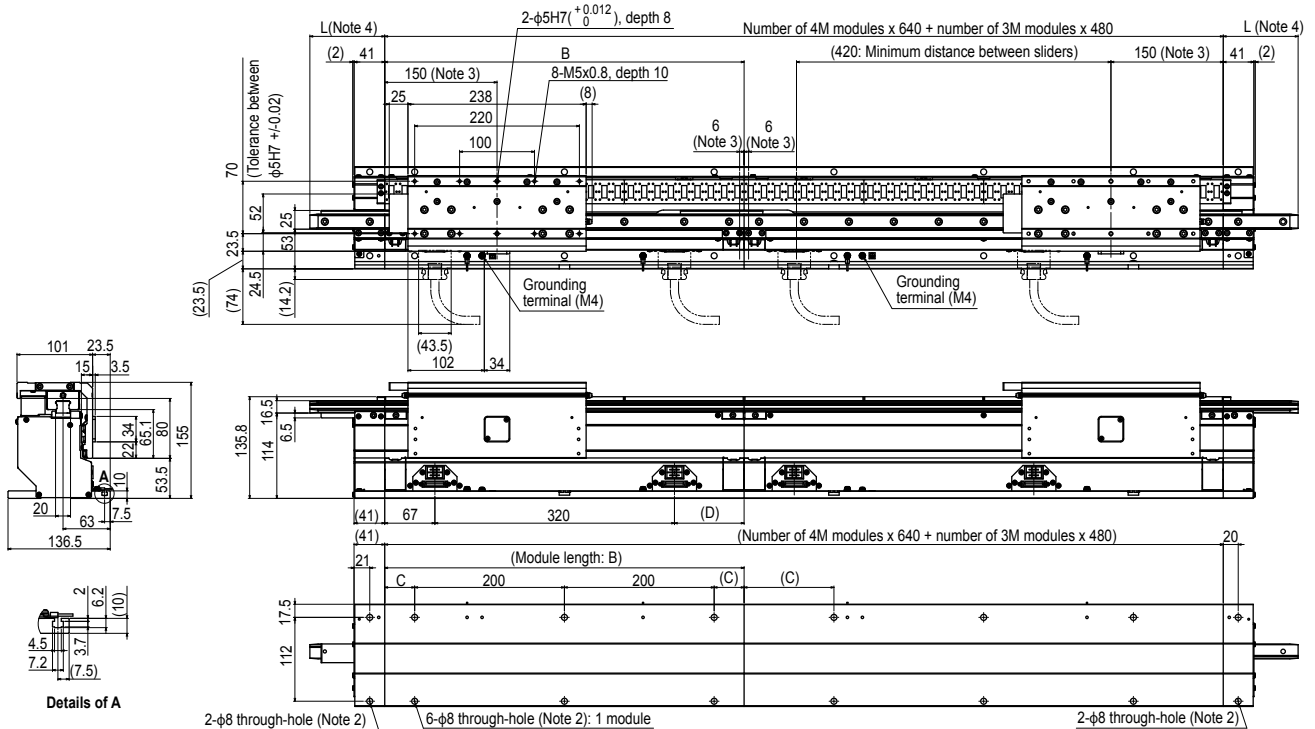
### Belt module

LCM100 -		
Model	Termination module for belt module <sup>Note 1</sup>	
4B: 640mm 3B: 480mm	No entry: None R: Linear module is connected to the right. L: Linear module is connected to the left. RL: Linear module is connected to both sides.	

Note 1. Parts necessary to connect the belt module and linear module. Parts are incorporated into the belt module.



LCM100-4M/3M Linear conveyor module (640mm/ 480mm)



- Note 1. All sliders and modules have the same dimensions.
- Note 2. Use M6 hex socket head bolts to install the main body.
- Note 3. An area of +/-6mm from both ends of each connected module and an area of 150mm from the line end become slider stop inhibited areas. (These dimensions are obtained when the slider is located at its center position.)
- Note 4. Select an appropriate rail length of the insertion/ejection rail option from the "Insertion/ejection rail length selection table" shown on the left.
- Note 5. The LCM100 is installed only in the horizontal direction.
- Note 6. Module variations can be combined freely within the same line. (This figure shows that 3M on the left is combined with 4M on the right.)
- Note 7. It is recommended to install rail support parts on the insertion/ejection rail. When no support parts are installed, the rail may be deflected by the slider's own weight, leading to poor rail accuracy or short service life of the guide.
- Note. No mechanical stoppers are provided due to product characteristics. When necessary, the customer installs appropriate mechanical stoppers.

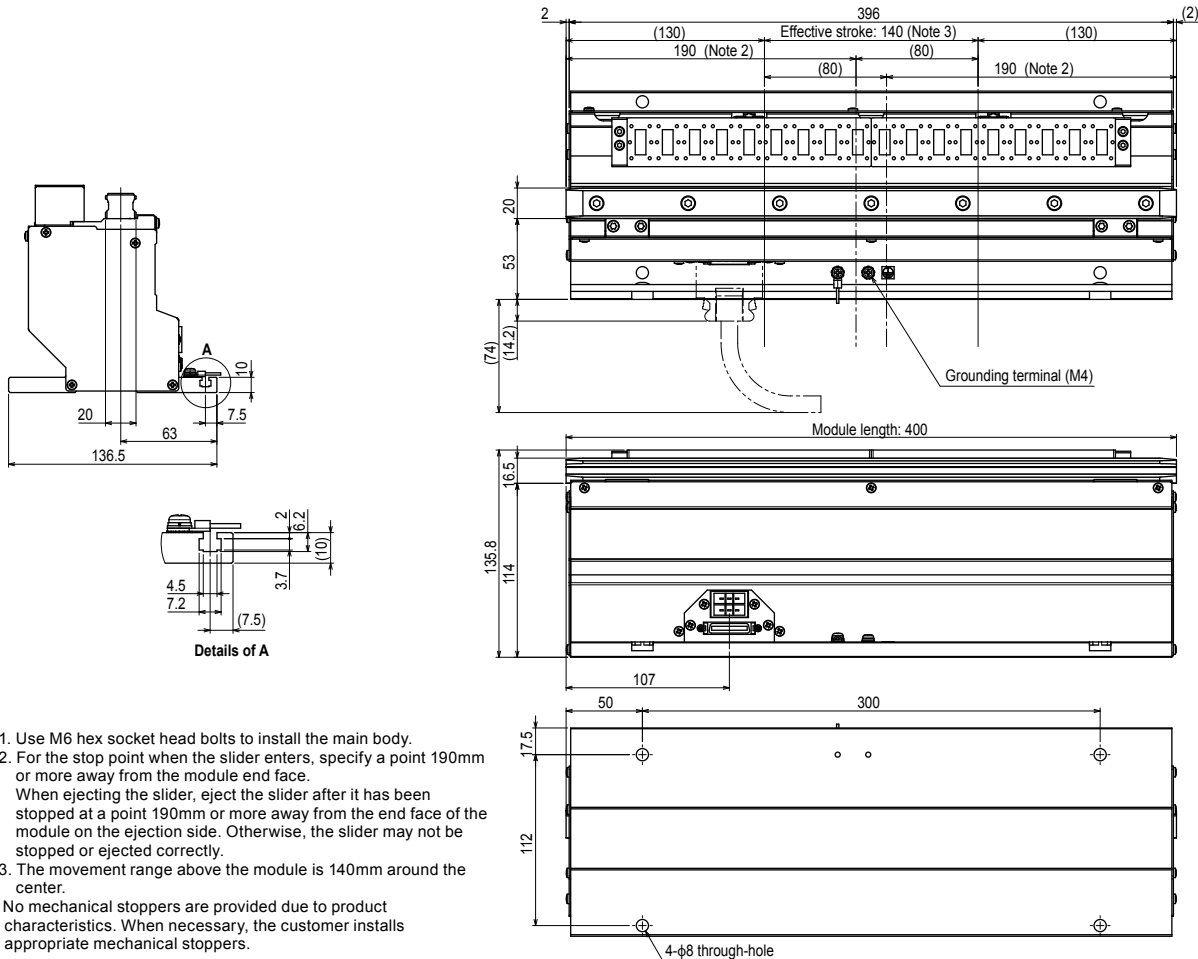
Insertion/ejection rail length selection table

Stroke variations	B	C	D	L
4M	640	120	253	44
3M	480	40	93	100
				340

Insertion/ejection rail (mm)

Stroke variations	B	C	D
4M	640	120	253
3M	480	40	93

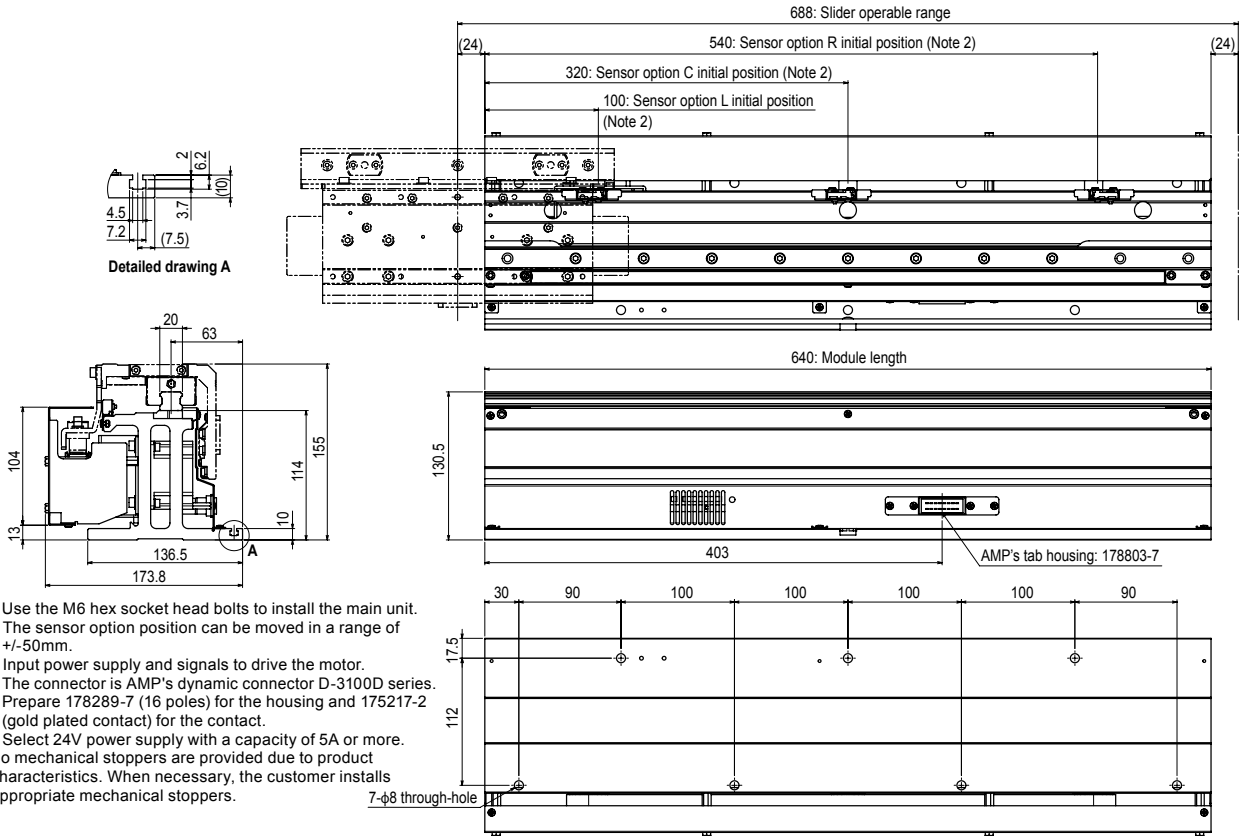
LCM100-2MT Module for circulation



- Note 1. Use M6 hex socket head bolts to install the main body.
- Note 2. For the stop point when the slider enters, specify a point 190mm or more away from the module end face. When ejecting the slider, eject the slider after it has been stopped at a point 190mm or more away from the end face of the module on the ejection side. Otherwise, the slider may not be stopped or ejected correctly.
- Note 3. The movement range above the module is 140mm around the center.
- Note. No mechanical stoppers are provided due to product characteristics. When necessary, the customer installs appropriate mechanical stoppers.

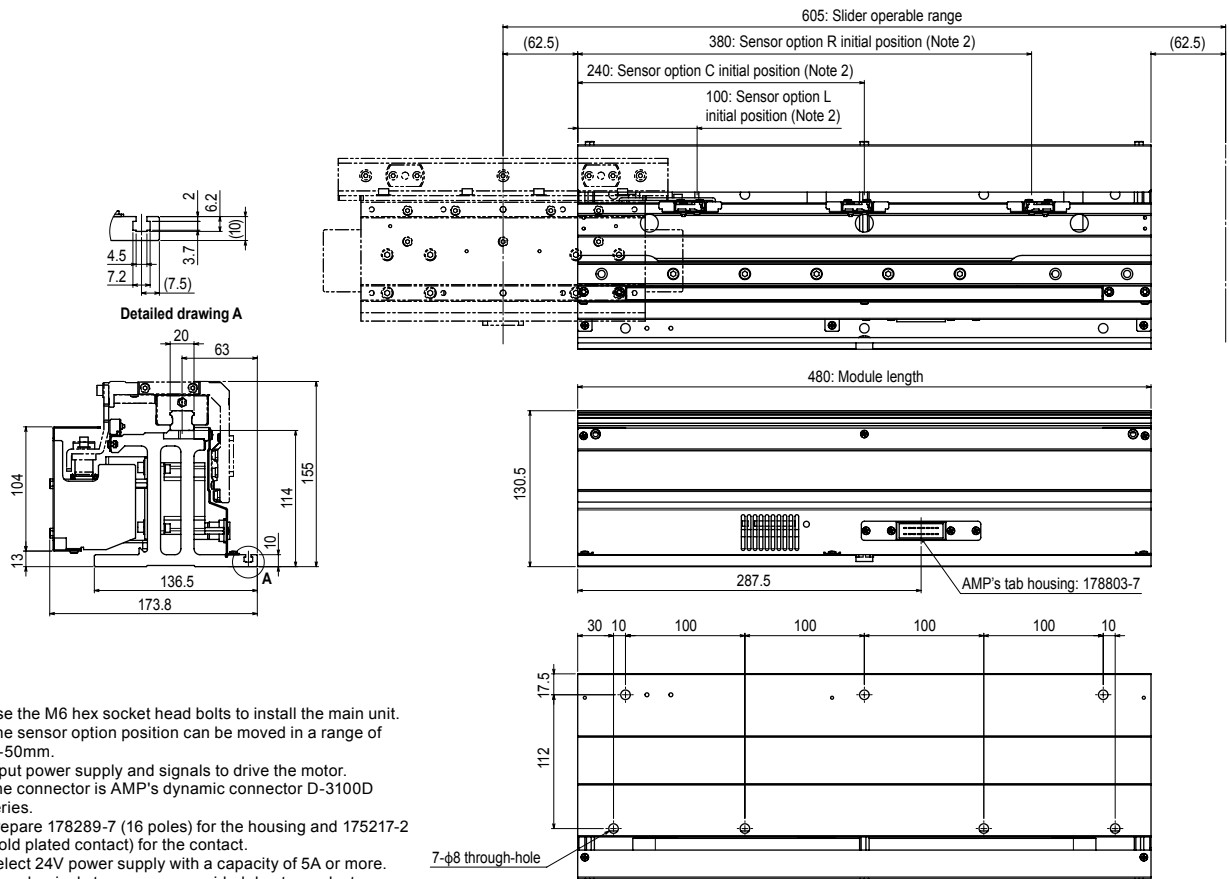
Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEMO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION

## LCM100-4B Belt module (640mm)

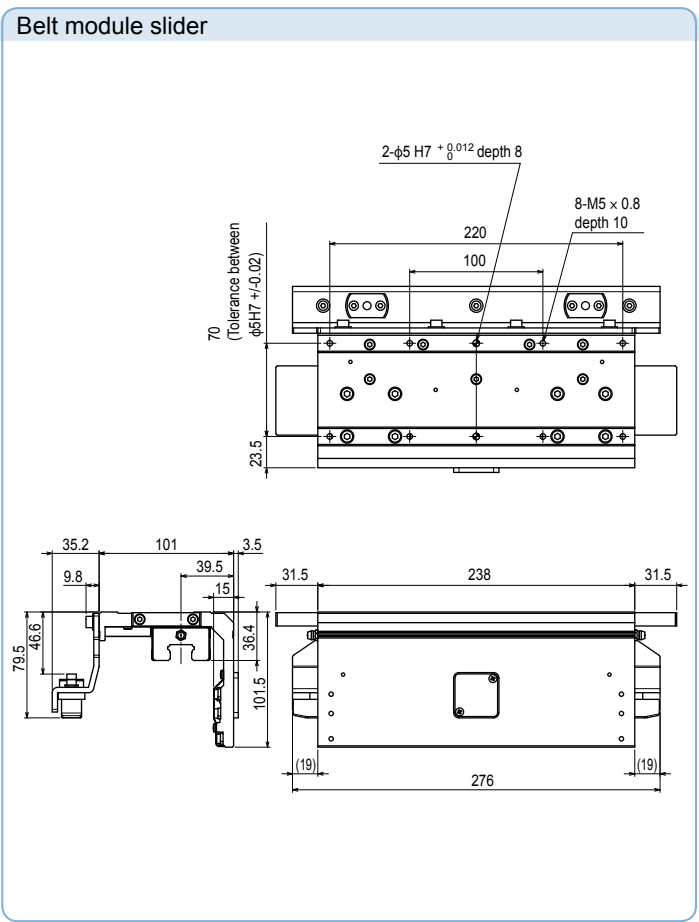
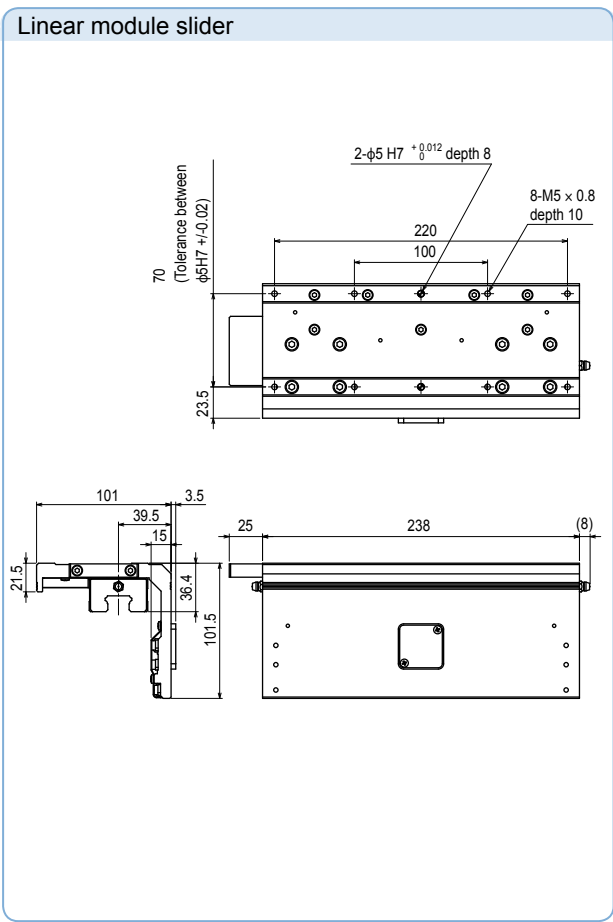


- Note 1. Use the M6 hex socket head bolts to install the main unit.  
 Note 2. The sensor option position can be moved in a range of +/-50mm.  
 Note 3. Input power supply and signals to drive the motor.  
 The connector is AMP's dynamic connector D-3100D series.  
 Prepare 178289-7 (16 poles) for the housing and 175217-2 (gold plated contact) for the contact.  
 Note 4. Select 24V power supply with a capacity of 5A or more.  
 Note. No mechanical stoppers are provided due to product characteristics. When necessary, the customer installs appropriate mechanical stoppers.

## LCM100-3B Belt module (480mm)



- Note 1. Use the M6 hex socket head bolts to install the main unit.  
 Note 2. The sensor option position can be moved in a range of +/-50mm.  
 Note 3. Input power supply and signals to drive the motor.  
 The connector is AMP's dynamic connector D-3100D series.  
 Prepare 178289-7 (16 poles) for the housing and 175217-2 (gold plated contact) for the contact.  
 Note 4. Select 24V power supply with a capacity of 5A or more.  
 Note. No mechanical stoppers are provided due to product characteristics. When necessary, the customer installs appropriate mechanical stoppers.



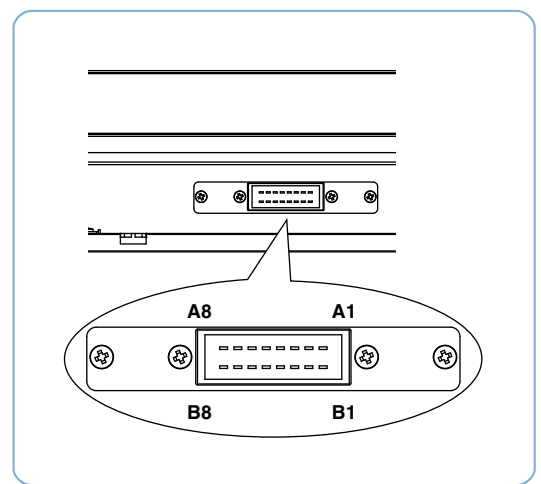
## ■ Belt module outline diagram of input/output signal wiring

### ● Connector on front panel

Pin No.	Signal name	Function
A1	+24V	Power supply connection DC24V (+/-10%)
A2	GND	
A3	(Blank)	
A4	Option sensor L	Detection output
A5	Option sensor C	Detection output
A6	Option sensor R	Detection output
A7	ALARM	Alarm output
A8	SPEED	Speed output
B1	ALARM-RESET	Alarm reset input ON [L]: Reset      OFF [H]: Normal
B2	INT.VR/EXT	Speed setting unit change-over input ON [L]: Internal    OFF [H]: External
B3	CW/CCW	Rotation direction change-over input ON [L]: CW          OFF [H]: CCW
B4	RUN/BRAKE	Brake input ON [L]: Run          OFF [H]: Instantaneous stop
B5	START/STOP	Start/stop input ON [L]: Start        OFF [H]: Stop
B6	VRH	(When using the dedicated speed setting unit)
B7	VRM	Minus (-) side    DC power supply for speed setting
B8	VRL	Plus (+) side      DC0 to 5V, 1mA or more

Note. For each input, a side to be connected to GND by the external switch is ON (L level).  
 Note. When both the START/STOP and RUN/BRAKE signals are turned ON (L level), the motor starts rotating. In this case, when the CW/CCW signal is turned ON (L level), the slider moves to the left as viewed from the connector side.  
 Conversely, when this signal is turned OFF (H level), the slider moves to the right.  
 Note. When the START/STOP signal is turned OFF (H level) in the RUN/BRAKE signal ON (L level) state, the motor stops naturally.  
 According to the operation speed, the slider may overrun several tens to hundreds of millimeters.  
 Note. When the RUN/BRAKE signal is turned OFF (H level) in the START/STOP signal ON (L level) state, the motor stops instantaneously to suppress the slider overrun to its minimal level.

### ● Pin assignment drawing

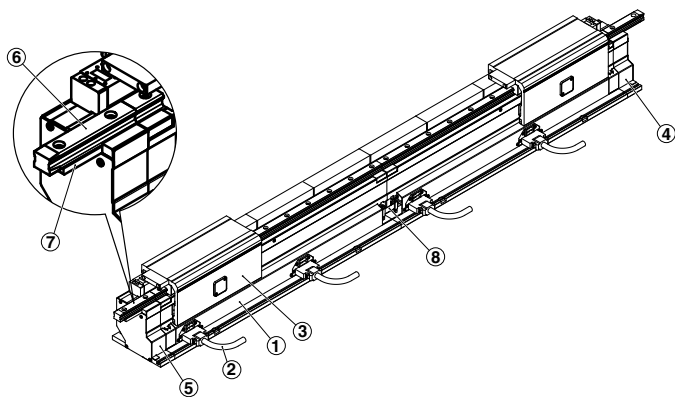


When investigating the linear conveyor module LCM100 actually, it is necessary to discuss the specifications and restrictions in detail. So, please contact YAMAHA or your dealer to hold hearings regarding your requests.



# LCM100

## LCM100/LCC140 Accessory parts

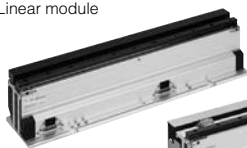


①	Module
②	Robot cable
③	Slider
④	Termination module (R side)
⑤	Termination module (L side)
⑥	Insertion/ejection rail
⑦	Module connection block (with fastening bolts)
⑧	Module connection cable

### LCM100 main body

#### LCM100 module

Linear module



①  
Linear module

Model	LCM100-4M
	KDJ-M2020-40 (640mm)
	LCM100-3M
	KDJ-M2020-30 (480mm)
	LCM100-2MT (for circulation)
KDJ-M2022-20 (400mm)	

#### Belt module

Model	LCM100-4B
	KDJ-4K111-40 (640mm)
	LCM100-3B
	KDJ-4K111-30 (480mm)

#### Robot cable for linear module

Robot cables for the number of modules are required.



②

Model	For LCM100-4M/3M
	KDJ-M4710-30 (3m×2 pcs.)
	KDJ-M4710-50 (5m×2 pcs.)
	For LCM100-2MT
	KDJ-M4721-30
	(Flexible cable 3m×1 pc.)
KDJ-M4721-50	
(Flexible cable 5m×1 pc.)	

#### Slider

For linear module



③

#### Linear module

Model	KDJ-M2264-00
-------	--------------

#### Belt module

Model	KDJ-M2264-10
-------	--------------

For belt module



### Parts for LCM100

#### Termination module for linear module (R side)

This part is attached to the right end of the module. One termination module per line is required. <sup>Note 1</sup> Additionally, even when using only one module without connections, one termination module is required.



④

Model	KDJ-M2021-R0
-------	--------------

#### Termination module for linear module (L side)

This part is attached to the left end of the module. One termination module per line is required. <sup>Note 1</sup> Additionally, even when using only one module without connections, one termination module is required.



⑤

Model	KDJ-M2021-L0
-------	--------------

#### Module connection block (with fastening bolts)

This block connects modules. ([Number of modules making up the line <sup>Note 1</sup>] - 1) blocks are required. Additionally, when installing insertion/ejection rails, one block per rail is required.



⑦

Model	KDJ-M6100-00 (44mm)
	KDJ-M6100-10 (100mm) <sup>Note</sup>

Note. Use this model when installing 100 mm insertion/ejection rails to L side.

#### Module connection cable

This cable connects modules. ([Number of modules] - 1) cables per line are required. <sup>Note 1</sup>

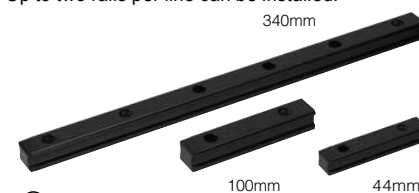


⑧

Model	KDJ-M4811-00
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#### Insertion/ejection rail

Tapered rail. Up to two rails per line can be installed. <sup>Note 1</sup>



⑥

Model	44mm : KDJ-M6200-00 (With a dedicated 44mm connection block)
	100mm : KDJ-M2222-10
	160mm : KDJ-M2222-20 <sup>Note</sup>
	220mm : KDJ-M2222-30 <sup>Note</sup>
	280mm : KDJ-M2222-40 <sup>Note</sup>
340mm : KDJ-M2222-50 <sup>Note</sup>	

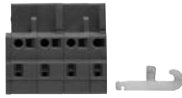
Note. Not in stock. We require some lead time for delivery.

Note 1. A state, in which multiple modules are connected, is called "line".

Parts for LCC140 controller

Power connector + connection lever

One set of parts per LCC140 is required.



Model	KAS-M5382-00
-------	--------------

HPB dummy connector

When performing the operation with the programming box HPB removed, connect this dummy connector to the HPB connector. One connector per LCC140 is required.



Model	KDK-M5163-00
-------	--------------

SAFETY connector

One connector per LCC140 is required.



Not wired (plug + shell kit)

Wired <sup>Note</sup>

Model	Not wired : KDK-M5370-10
	Wired <sup>Note</sup> : KDK-M5370-00

Note. The wired connector is that the wiring for the emergency stop cancel was performed inside the connector. Select this model when performing the operation check or debugging with single linear conveyor.

Parts for line configuration

LINK cable

([Number of modules] - 1) cables per line are required.



Model	1m : KDK-M5361-10
	3m : KDK-M5361-30
	5m : KDK-M5361-50

Terminator connector

When connecting modules, two connectors per line are required.



Model	KDK-M5361-00
-------	--------------

Dust cover (for LINK connector)

This dust cover is attached to the insertion port, into which the LINK cable terminator connector is not inserted. When using only one module without connections, two dust covers are required.

Note. The dust cover is essential for the 2MT.

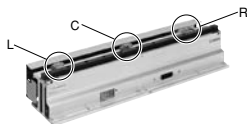


Model	KDK-M658K-00 (for MDR20 pin)
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Selection parts

Proximity sensor for belt module

A sensor for checking the slider position. Install this to prevent slider collisions and to ensure smooth action.



Model	L (Left): KDJ-M2205-L0
	C (Center): KDJ-M2205-C0
	R (Right): KDJ-M2205-R0

Programming box HPB/HPB-D

All operations, such as robot manual operation, program input or edit, teaching, and parameter setting can be performed with this programming box. As an interactive interface with the screen display is used, even personnel who use this programming box for the first time can easily understand how to operate it.

Model	HPB: KBB-M5110-01
	HPB-D: KBB-M5110-21 (CE specifications / with 3-position enable switch)



HPB-D



Backside of HPB-D (with enable switch)

Support software POPCOM+

PC supporting software POPCOM+



POPCOM+ software model	KBG-M4966-00
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POPCOM+ environment

OS	Windows XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.2.1.1 or later)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk	50MB of available space required on installation drive.
Disk operation	RS-232C
Applicable controllers	SRCX to SR1, DRCX, TRCX, ERCX, ERCD, LCC140 <sup>Note 1</sup>

Note 1. LCC140 is applicable to Ver. 2.1.1 or later.

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

Data cables (5m)

Communication cable for POPCOM+. Select from USB cable or D-sub cable.



USB

D-Sub

Model	USB type (5m)	KBG-M538F-00
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10

Note. This USB cable supports Windows 2000/XP or later.

Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro.

Note. USB driver for communication cable can also be downloaded from our website.

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION

# LCM100

## RFID

RFID (manufactured by BALLUFF GmbH)

Reader/writer cable



Model KDK-M6300-00

RFID (manufactured by OMRON)

Antenna amplifier controller cable



Model KDK-M6300-A0

Dust cover (for RFID)

This cover is attached to the insertion port if RFID is not used. (Included as standard)



Model KDK-M658K-10(for MDR26 pin)

Whether or not the RFID system can be used may vary depending on the destination place (country). Before selecting a RFID system, please contact YAMAHA.

## Maintenance parts

Robot cable for LCM100



Model	Fixed cable
	KDJ-M4751-30 (3m×1 pc.)
	KDJ-M4751-50 (5m×1 pc.)
	Flexible cable
	KDJ-M4755-30 (3m×1 pc.)
	KDJ-M4755-50 (5m×1 pc.)

Lithium battery for system backup



Model KDK-M4252-00

Replacement filter for LCC140 (5 pcs. in package)



Model KDK-M427G-00

## Controller for linear module

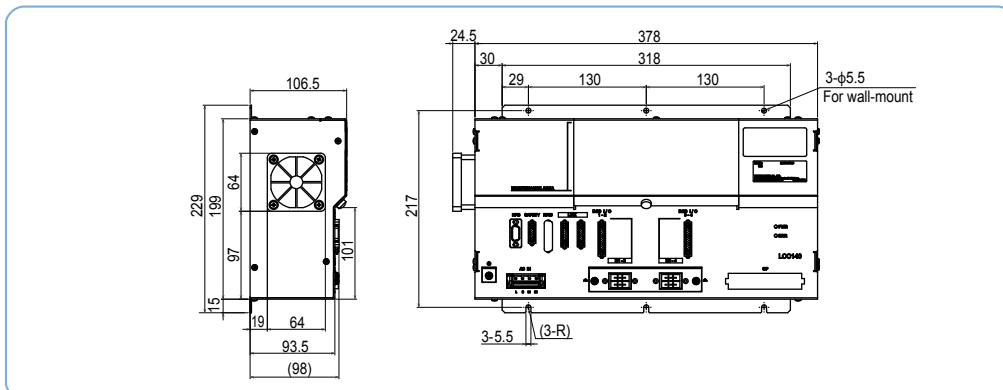
# LCC140 basic specifications

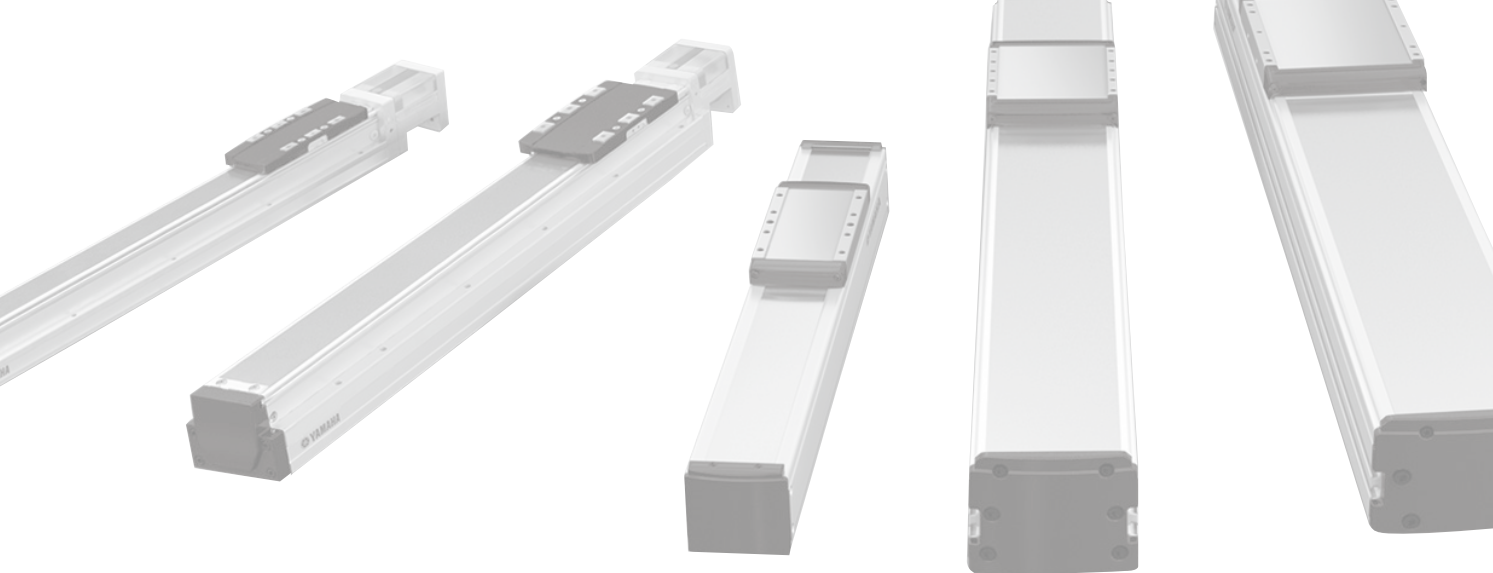
### Basic specifications of LCC140 controller

<b>Controllable robot</b>	Linear conveyor module LCM series
<b>Outside dimensions</b>	W402.5×H229×D106.5mm
<b>Main body weight</b>	4.8kg
<b>Input power voltage</b>	Single-phase AC200 to 230V +/-10% or less (50/60Hz)
<b>Maximum power consumption</b>	350VA (LCM100-4M 1 slider is driven.)
<b>External input/output</b>	SAFETY
	RS-232C (dedicated to RFID)
	RS-232C (for HPB / doubles as POPCOM+)
<b>Network option</b>	CC-Link Ver. 1.10 compatible, Remote device station (2 stations)
	DeviceNet™ Slave 1 node
	EtherNet/IP™ adapter 2 ports
<b>Programming box</b>	HPB, HPB-D (Software version 24.01 or later)



### External view of LCC140





## MOTOR-LESS SINGLE AXIS ACTUATOR

# Robonity

## SERIES

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Articulated robots YA
Linear conveyor modules LCM100
Motor-less single axis actuator Robonity
Compact single-axis robots TRANSEVO
Single-axis robots FLIP-X
Linear motor single-axis robots PHASER
Cartesian robots XY-X
SCARA robots YK-X
Pick & place robots YP-X
CLEAN
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INFORMATION
LBAS
LGXS
Option

# LBAS04

Basic model

## Motor-less Single Axis Actuator

### Ordering method

<b>LBAS04</b>				
Model	Lead designation 12: 12 mm 6: 6 mm	Shape S: Straight A: Bending	Motor specification Y: Y specification (see below) P: P specification (see below)	Stroke 50 to 800 (50 mm pitch)

#### [Caution]

This system is provided as mechanical actuator unit and not including any adapters or electric components. Motor, driver and other components required for installation are user's responsibility. Refer to user's manual for installation details. Refer to your motor manual for tuning or adjustment. Vibration or resonance from actuator will affect service life of actuator. The product performance may not be satisfied depending on the compatible motor. For special parts for motor installation, install and adjust on your side.

### Specifications

Adaptable motor	50 W	
Repeatability <sup>Note 1</sup>	±0.01 mm	
Deceleration mechanism	Shifting position ball screw φ 30 (C7 class)	
Stroke	50 mm to 800 mm (50 mm pitch)	
Maximum speed <sup>Note 2</sup> (or equivalent)	800 mm/sec	400 mm/sec
Ball screw lead	12 mm	6 mm
Maximum payload <sup>Note 3</sup> (or equivalent)	Horizontal	12 kg / 20 kg
	Vertical	2 kg / 5 kg
Rated thrust <sup>Note 3</sup> (or equivalent)		71 N / 141 N
Maximum dimensions of cross section of main unit	W 44 mm × H 52 mm	
Overall length	ST + 214 mm	
Using ambient temperature and humidity	0 to 40 °C, 35 to 80 %RH (non-condensing)	

Note 1. Positioning repeatability in one direction.  
 Note 2. When a moving distance is short and depending on an operation condition, it may not reach the maximum speed.  
 Note 3. The rated thrust and maximum transferable weight are values assuming the attached motor outputs the rated torque.  
 Note. See P.624 for acceleration/deceleration and inertia moment.

### Static loading moment

	(Unit: N·m)		
	MY	MP	MR
	54	54	75

### Allowable overhang <sup>Note</sup>

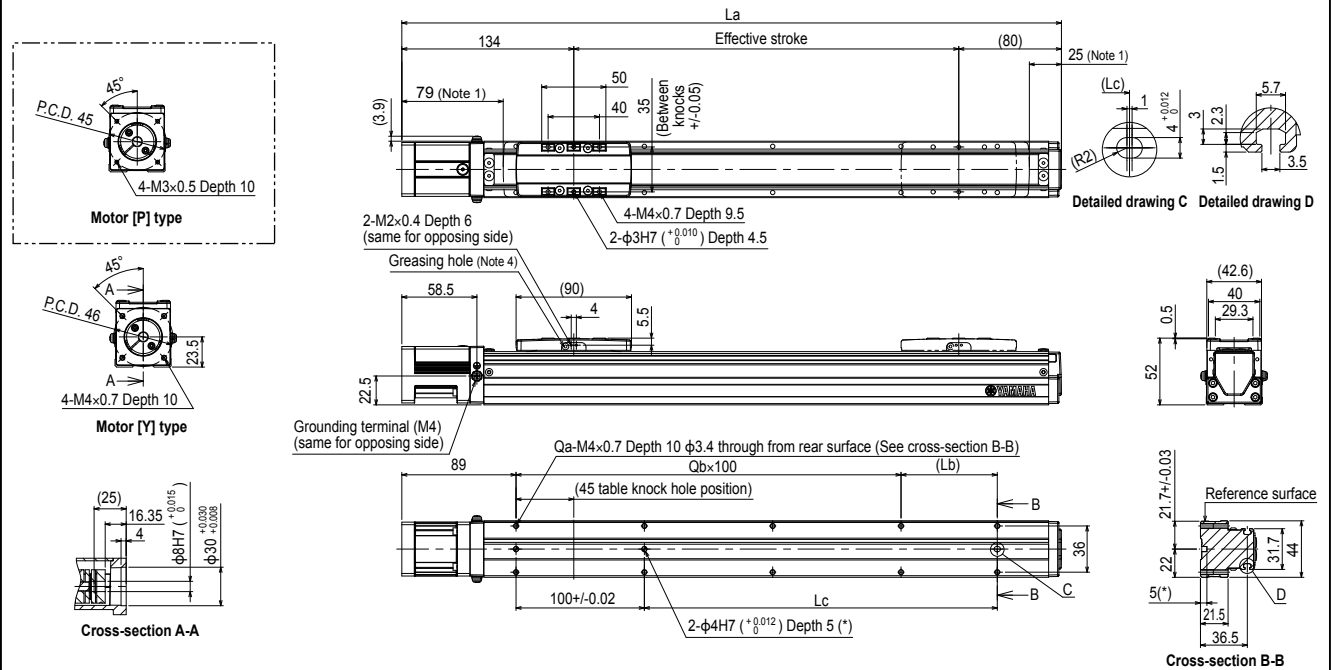
<b>LBAS04-12</b>		<b>LBAS04-6</b>	
Horizontal installation (Unit: mm)		Wall installation (Unit: mm)	
	A	B	C
2kg	1187	271	325
8kg	473	62	77
12kg	431	41	53
Vertical installation (Unit: mm)		Vertical installation (Unit: mm)	
	A	B	C
1kg	534	534	534
2kg	265	265	265

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
 Note. Service life is calculated for 500 mm stroke models.

### Adaptable Servo Motor

Specification	Flange size	□40	
	Wattage	50 W	
Note. Motor models marked with * may not be 50W, but can be installed.			
Motor specification	Manufacturer	Model	
Y	Yasukawa Electric Corp.	SGMJV-A5 SGM7J-A5	
	Keyence Corp.	SV-□005 SV2-□005	
	Mitsubishi Electric Corp.	HF-KP053 HG-KR053 HK-KT053	
	Omron Electronics	R88M-K05030 R88M-1M05030	
	Sanyo Denki	R2□ A04005	
	Tamagawa Seiki	TSM3102	
	Delta Electronics	ECMA-C1040F	
	Fanuc Corp.	β IS0.2/5000	
	Siemens	1FK2102-0AG 1FL6022-2AF	
	Schneider	BCH2MBA53	
	Beckhoff	AM3011B *	
	Allen-Bradley	TLY-A120 *	
	P	Panasonic Corp.	MSMD5A MSMF5A

### LBAS04 Straight type (S)



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
La	264	314	364	414	464	514	564	614	664	714	764	814	864	914	964	1014	
Lb	25	75	25	75	25	75	25	75	25	75	25	75	25	75	25	75	
Lc	25	75	125	175	225	275	325	375	425	475	525	575	625	675	725	775	
Qa	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	
Qb	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	
Weight (kg)	0.9	1.1	1.3	1.5	1.6	1.8	2	2.2	2.4	2.5	2.7	2.9	3.1	3.3	3.4	3.6	
Maximum speed (mm/sec)	Lead 12	800										720	600	480	400	360	320
	Lead 6	400										360	300	240	200	180	160
Speed setting	-										90%	75%	60%	50%	45%	40%	

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Please perform installation and adjustment on the special parts for motor installation by the customer. For detail, refer to the manual.  
 Note 3. For the installation through hole, the length under head << 30 mm or more >> is recommended for the hex socket head bolts <M3 × 0.5>. In the installation tap hole, the length under head << thickness of stand + 10 mm or less >> is recommended for the hex socket head bolts <M4 × 0.7> used to install the main unit. Nozzle set for greasing (recommended) (see P.147 for detail)  
 Note 4. Part number: KFU-M3861-00



### LBAS04 Bending type (A)

**Left attachment**

**Bottom attachment**

**Motor [P] type**

**Right attachment**

**Motor [Y] type**

**Detailed drawing C**

**Detailed drawing D**

**Cross-section A-A**

**Cross-section B-B**

**Effective stroke** (La)

**Mounting dimensions** (Lb, Lc)

**Motor specifications**

**Grounding terminal (M4) (same for opposing side)**

**Qa-M4×0.7 Depth 10 φ3.4 through from rear surface (See cross-section B-B)**

**Qb×100 (45 table knock hole position)**

**2-φ4H7 (+0.012) Depth 5 (\*)**

**2-M2×0.4 Depth 6 (same for opposing side)**

**4-M4×0.7 Depth 9.5**

**2-φ3H7 (+0.010) Depth 4.5**

**Greasing hole (Note 4)**

**45° P.C.D. 45**

**4-M3×0.5 Depth 10**

**45° P.C.D. 46**

**Reference surface**

**5(\*)**

**21.7+0.03**

**31.7**

**44**

**22**

**21.5**

**36.5**

**0.5**

**52**

**28**

**5**

**φ30+0.008**

**φ8H7 (+0.015)**

**25 (Note 1)**

**80**

**116**

**61 (Note 1)**

**50**

**40**

**35 (Between knocks +0.05)**

**90**

**40.5**

**4**

**5.5**

**22.5**

**71**

**100±0.02**

**36**

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# LBAS05

Basic model

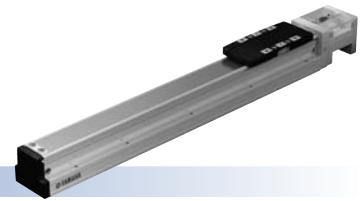
## Motor-less Single Axis Actuator

### Ordering method

<b>LBAS05</b>				
Model	Lead designation	Shape	Motor specification	Stroke
	20: 20 mm 10: 10 mm 5: 5 mm 2: 2 mm	S: Straight A: Bending	Y: Y specification (see below) P: P specification (see below)	50 to 800 (50 mm pitch)

### [Caution]

This system is provided as mechanical actuator unit and not including any adapters or electric components. Motor, driver and other components required for installation are user's responsibility. Refer to user's manual for installation details. Refer to your motor manual for tuning or adjustment. Vibration or resonance from actuator will affect service life of actuator. The product performance may not be satisfied depending on the compatible motor. For special parts for motor installation, install and adjust on your side.



### Specifications

Adaptable motor	100 W
Repeatability <sup>Note 1</sup>	+/-0.01 mm
Deceleration mechanism	Shifting position ball screw φ 12 (C7 class)
Stroke	50 mm to 800 mm (50 mm pitch)
Maximum speed <sup>Note 2</sup> (or equivalent)	1333 mm/sec 666 mm/sec 333 mm/sec 133 mm/sec
Ball screw lead	20 mm 10 mm 5 mm 2 mm
Maximum payload <sup>Note 3</sup> (or equivalent)	Horizontal: 12 kg 24 kg 40 kg 45 kg Vertical: 3 kg 6 kg 12 kg 15 kg
Rated thrust <sup>Note 3</sup> (or equivalent)	84 N 169 N 339 N 854 N
Maximum dimensions of cross section of main unit	W 54 mm × H 60 mm
Overall length	ST + 220.5 mm
Using ambient temperature and humidity	0 to 40 °C, 35 to 80 %RH (non-condensing)

Note 1. Positioning repeatability in one direction.  
 Note 2. When a moving distance is short and depending on an operation condition, it may not reach the maximum speed.  
 Note 3. The rated thrust and maximum transferable weight are values assuming the attached motor outputs the rated torque.  
 Note. See P.626 for acceleration/deceleration and inertia moment.

### Static loading moment

	(Unit: N·m)		
	MY	MP	MR
	59	63	103

### Allowable overhang <sup>Note</sup>

	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
<b>LBAS05-20</b>	A	B	C	A	B	C	A	B	C
2kg	549	324	272	272	324	549	1kg	544	544
8kg	155	73	65	65	73	155	2kg	276	276
12kg	117	46	42	42	46	117	3kg	195	195
<b>LBAS05-10</b>	A	B	C	A	B	C	A	B	C
5kg	769	178	213	213	178	769	2kg	443	443
15kg	314	53	64	64	53	314	4kg	218	218
24kg	216	29	36	36	29	216	6kg	142	142
<b>LBAS05-5</b>	A	B	C	A	B	C	A	B	C
10kg	921	97	131	131	97	921	3kg	345	345
25kg	459	33	45	45	33	459	8kg	124	124
40kg	436	17	23	23	17	436	12kg	79	79
<b>LBAS05-2</b>	A	B	C	A	B	C	A	B	C
15kg	2685	78	109	109	78	2685	5kg	254	254
30kg	1833	34	47	47	34	1833	10kg	122	122
45kg	2621	19	27	27	19	2621	15kg	0	0

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
 Note. Service life is calculated for 500 mm stroke models.

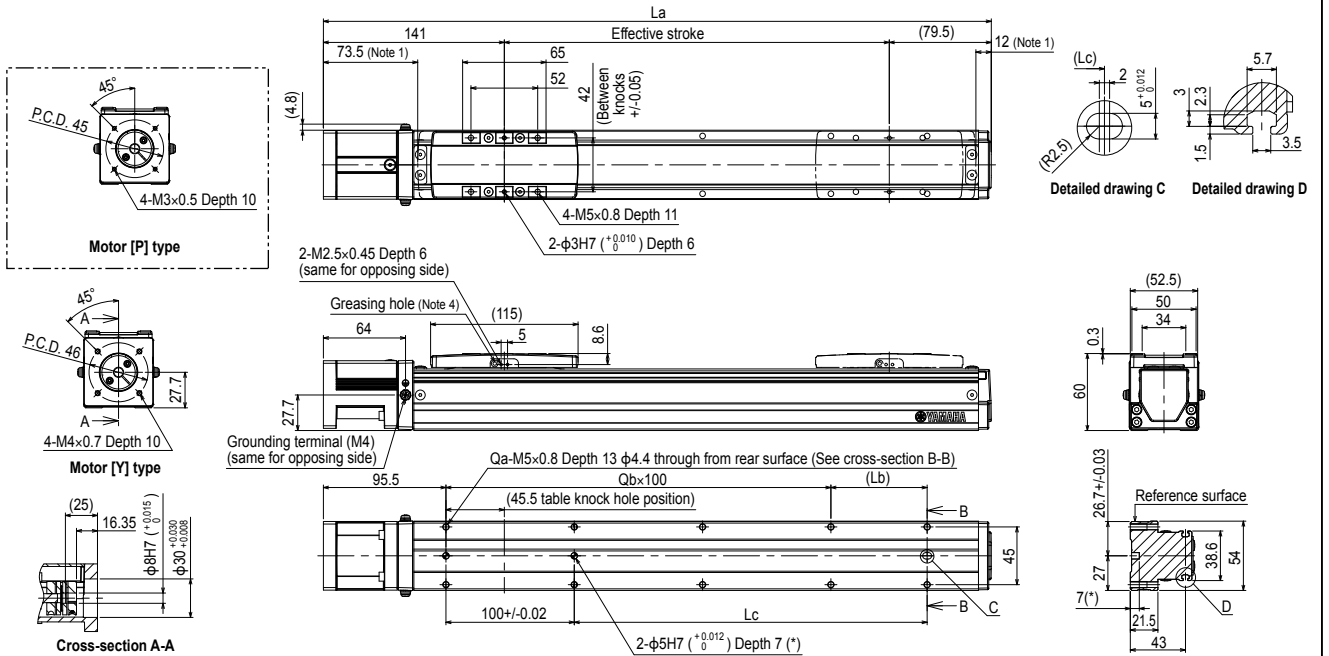
### Adaptable Servo Motor

Specification	Flange size	□40
	Wattage	100 W

Note. Motor models marked with \* may not be 100W, but can be installed.

Motor specification	Manufacturer	Model
Y	Yasukawa Electric Corp.	SGMJV-01 SGM7J-01
	Keyence Corp.	SV-□010 SV2-□010
	Mitsubishi Electric Corp.	HF-KP13 HG-KR13 HK-KT13
	Omron Electronics	R88M-K10030 R88M-1M10030
	Sanyo Denki	R2 □A04010
	Tamagawa Seiki	TSM3104
	Delta Electronics	ECMA-C10401
	Fanuc Corp.	β ISO.3/5000 KSM A01LG
	Kingserve	KSM A01L □S KSM A01LG
	Siemens	1FK2102-1AG 1FL6024-2AF
P	Schneider	BCH2MB013
	Beckhoff	AM3012C *
	Allen-Bradley	TLY-A130 *
	Panasonic Corp.	MSMD01 MSMF01

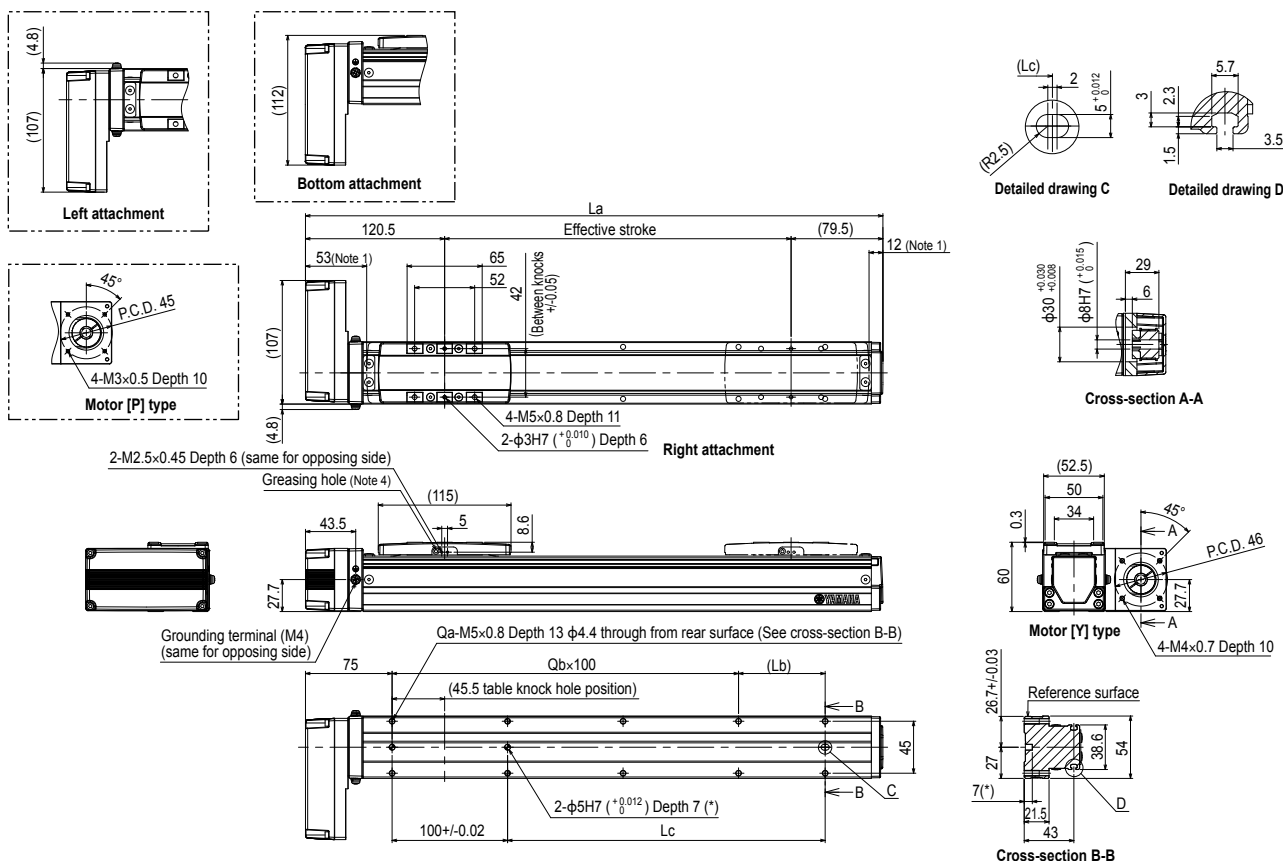
### LBAS05 Straight type (S)



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
La	270.5	320.5	370.5	420.5	470.5	520.5	570.5	620.5	670.5	720.5	770.5	820.5	870.5	920.5	970.5	1020.5
Lb	25	75	25	75	25	75	25	75	25	75	25	75	25	75	25	75
Lc	25	75	125	175	225	275	325	375	425	475	525	575	625	675	725	775
Qa	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20
Qb	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8
Weight (kg)	1.6	1.8	1.9	2.1	2.4	2.5	2.5	2.7	2.8	2.9	3.1	3.3	3.4	3.6	3.7	4.1
Maximum speed (mm/sec)	Lead 20	1333										1133	933	799	666	599
	Lead 10	666										566	466	399	333	299
	Lead 5	333										283	233	199	166	149
	Lead 2	133										113	93	79	66	59
Speed setting	-										85%	70%	60%	50%	45%	

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Please perform installation and adjustment on the special parts for motor installation by the customer. For detail, refer to the manual.  
 Note 3. For the installation through hole, the length under head << 30 mm or more >> is recommended for the hex socket head bolts <M4 × 0.7>. In the installation tap hole, the length under head << thickness of stand +10 mm or less >> is recommended for the hex socket head bolts <M5 × 0.8> used to install the main unit.  
 Note 4. Nozzle set for greasing (recommended) (see P.147 for detail)  
 Part number: KFU-M3861-00

LBAS05 Bending type (A)

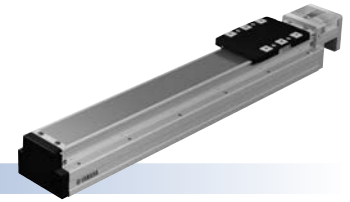


Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
La	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
Lb	25	75	25	75	25	75	25	75	25	75	25	75	25	75	25	75
Lc	25	75	125	175	225	275	325	375	425	475	525	575	625	675	725	775
Qa	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20
Qb	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8
Weight (kg)	1.7	1.8	2	2.2	2.4	2.6	2.6	2.8	2.9	3	3.2	3.3	3.5	3.6	3.8	4.1
Maximum speed (mm/sec)	Lead 20	1333														
	Lead 10	666														
	Lead 5	333														
	Lead 2	133														
Speed setting	-											85%	70%	60%	50%	45%

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Please perform installation and adjustment on the special parts for motor installation by the customer. For detail, refer to the manual.  
 Note 3. For the installation through hole, the length under head << 30 mm or more>> is recommended for the hex socket head bolts <M4 x 0.7>. In the installation tap hole, the length under head << thickness of stand + 10 mm or less>> is recommended for the hex socket head bolts <M5 x 0.8> used to install the main unit.  
 Note 4. Nozzle set for greasing (recommended) (see P.147 for detail)  
 Part number: KFU-M3861-00

# LBAS08

Basic model



## Motor-less Single Axis Actuator

### Ordering method

<b>LBAS08</b>				
Model	Lead designation	Shape	Motor specification	Stroke
	20: 20 mm 10: 10 mm 5: 5 mm	S: Straight A: Bending	Y: Y specification (see below) P: P specification (see below) K: K specification (see below)	50 to 1100 (50 mm pitch)

### [Caution]

This system is provided as mechanical actuator unit and not including any adaptors or electric components. Motor, driver and other components required for installation are user's responsibility. Refer to user's manual for installation details. Refer to your motor manual for tuning or adjustment. Vibration or resonance from actuator will affect service life of actuator. The product performance may not be satisfied depending on the compatible motor. For special parts for motor installation, install and adjust on your side.

### Specifications

Adaptable motor	200 W
Repeatability <sup>Note 1</sup>	+/-0.01 mm
Deceleration mechanism	Shifting position ball screw $\phi$ 16 (C7 class)
Stroke	50 mm to 1100 mm (50 mm pitch)
Maximum speed <sup>Note 2</sup> (or equivalent)	1200 mm/sec 600 mm/sec 300 mm/sec
Ball screw lead	20 mm 10 mm 5 mm
Maximum payload (or equivalent) <sup>Note 3</sup>	Horizontal 40 kg 80 kg 100 kg
	Vertical 8 kg 20 kg 30 kg
Rated thrust (or equivalent) <sup>Note 3</sup>	174 N 341 N 683 N
	Maximum dimensions of cross section of main unit
Overall length	ST + 278 mm
Using ambient temperature and humidity	0 to 40 °C, 35 to 80 %RH (non-condensing)

- Note 1. Positioning repeatability in one direction.  
 Note 2. When a moving distance is short and depending on an operation condition, it may not reach the maximum speed.  
 Note 3. The rated thrust and maximum transferable weight are values assuming the attached motor outputs the rated torque.  
 Note. See P.628 for acceleration/deceleration and inertia moment.

### Static loading moment

	(Unit: N·m)		
	MY	MP	MR
	221	309	343

### Allowable overhang <sup>Note</sup>

LBAS08-20			
Horizontal installation (Unit: mm)			
	A	B	C
15kg	356	131	146
25kg	278	73	86
40kg	255	41	53

Wall installation (Unit: mm)			
	A	B	C
15kg	146	131	356
25kg	86	73	278
40kg	53	41	255

Vertical installation (Unit: mm)			
	A	C	
3kg	645	645	
6kg	333	333	
8kg	252	252	

LBAS08-10			
Horizontal installation (Unit: mm)			
	A	B	C
30kg	466	83	120
50kg	342	44	65
80kg	228	22	34

Wall installation (Unit: mm)			
	A	B	C
30kg	120	83	466
50kg	65	44	342
80kg	34	22	228

Vertical installation (Unit: mm)			
	A	C	
5kg	564	564	
10kg	284	284	
20kg	142	142	

LBAS08-5			
Horizontal installation (Unit: mm)			
	A	B	C
30kg	1612	95	153
50kg	1041	52	83
80kg	719	27	44
100kg	608	19	31

Wall installation (Unit: mm)			
	A	B	C
30kg	153	95	1612
50kg	83	52	1041
80kg	44	27	719
100kg	31	19	608

Vertical installation (Unit: mm)			
	A	C	
10kg	325	325	
20kg	163	163	
30kg	109	109	

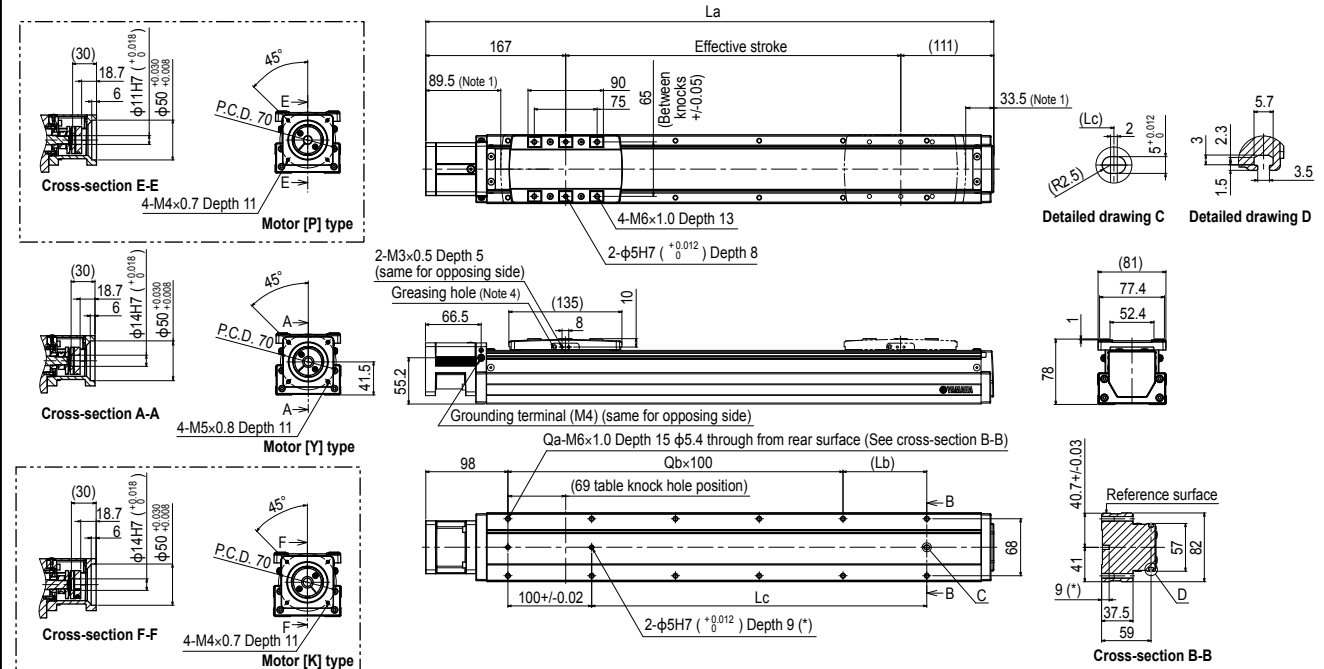
Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
 Note. Service life is calculated for 600 mm stroke models.

### Adaptable Servo Motor

Specification	Flange size <input type="checkbox"/> 60
	Wattage 200 W

Motor specification	Manufacturer	Model
Y	Yasukawa Electric Corp.	SGMJV-02 SGM7J-02
	Keyence Corp.	SV <input type="checkbox"/> 020 SV2 <input type="checkbox"/> 020
	Mitsubishi Electric Corp.	HF-KP23 HG-KR23 HK-KT23
	Sanyo Denki	R2 <input type="checkbox"/> A06020
	Tamagawa Seiki	TSM3202
	Delta Electronics	ECMA-C10602
	Siemens	1FL6032-2AF
	Schneider	BCH2LD023
	Omron Electronics	R88M-K20030 R88M-IM20030
	Panasonic Corp.	MSMD02 MSMF02
K	Kingservo	KSMA02LI KSMA02LG

### LBAS08 Straight type (S)



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	
La	328	378	428	478	528	578	628	678	728	778	828	878	928	978	1028	1078	1128	1178	1228	1278	1328	1378	
Lb	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	
Lc	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	
Qa	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	
Qb	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	
Weight (kg)	3.7	4.1	4.5	4.8	5.2	5.5	5.8	6.2	6.5	6.8	7.2	7.5	7.9	8.2	8.5	8.8	9.2	9.4	9.8	10.1	10.5	10.9	
Maximum speed (mm/sec)	Lead 20	1200																					
	Lead 10	600																					
	Lead 5	300																					
	Speed setting	-																					

- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Please perform installation and adjustment on the special parts for motor installation by the customer. For detail, refer to the manual.  
 Note 3. For the installation through hole, the length under head << 45 mm or more >> is recommended for the hex socket head bolts <M5 x 0.8>. In the installation tap hole, the length under head << thickness of stand +15 mm or less >> is recommended for the hex socket head bolts <M6 x 1.0> used to install the main unit.  
 Note 4. Nozzle set for greasing (recommended) (see P.147 for detail)  
 Part number: KFU-M3861-00

### LBAS08 Bending type (A)

**Left attachment** (156)

**Bottom attachment** (151.5)

**Motor [K] type**: 4-M4×0.7 Depth 12, P.C.D. 70, 45°, φ14H7 (+0.018/0), 34, 5

**Cross-section F-F**: φ50 (+0.030/+0.008), φ14H7 (+0.018/0), 34, 5

**Detailed drawing C**: (Lc), R2.5, 2, 5, 2.3

**Detailed drawing D**: 3, 1.5, 2.3, 3.5, 5.7

**Cross-section E-E**: 45°, P.C.D. 70, φ11H7 (+0.018/0), φ50 (+0.030/+0.008), 4-M4×0.7 Depth 12, Motor [P] type

**Effective stroke** (La): 153.5, 90, 75, 66 (Between knooks ±0.05), 33.5 (Note 1), 76 (Note 1), 111

**Right attachment**: 4-M6×1.0 Depth 13, 2-φ5H7 (+0.012/0) Depth 8

**Greasing hole** (Note 4): 53, 135, 8, 10

**Grounding terminal (M4)** (same for opposing side): 55.2

**Motor [Y] type**: 81, 77.4, 52.4, 45°, P.C.D. 80, 41.5, 4, 78, 4-M5×0.8 Depth 12

**Cross-section A-A**: φ14H7 (+0.018/0), 34, 5, φ50 (+0.030/+0.008)

**Cross-section B-B**: Reference surface, 40.7±0.03, 41, 57, 82, 9 (\*), 37.5, 59

**Other dimensions**: 2-M3×0.5 Depth 5 (same for opposing side), 53, 84.5, Qa-M6×1.0 Depth 15 φ5.4 through from rear surface (See cross-section B-B), Qb×100, (69 table knock hole position), 2-φ5H7 (+0.012/0) Depth 9 (\*), 100±0.02, Lc, 68

Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
<b>La</b>	314.5	364.5	414.5	464.5	514.5	564.5	614.5	664.5	714.5	764.5	814.5	864.5	914.5	964.5	1014.5	1064.5	1114.5	1164.5	1214.5	1264.5	1314.5	1364.5
<b>Lb</b>	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100	50	100
<b>Lc</b>	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
<b>Qa</b>	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26
<b>Qb</b>	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
<b>Weight (kg)</b>	4.1	4.5	4.9	5.2	5.6	5.9	6.2	6.6	6.9	7.2	7.6	7.9	8.3	8.6	8.9	9.2	9.6	9.8	10.2	10.5	10.9	11.3
<b>Maximum speed (mm/sec)</b>	<b>Lead 20</b>	1200											1020	900	780	660	600	540	480	420	360	
	<b>Lead 10</b>	600											510	450	390	330	300	270	240	210	180	
	<b>Lead 5</b>	300											255	225	195	165	150	135	120	105	90	
	<b>Speed setting</b>	-											85%	75%	65%	55%	50%	45%	40%	35%	30%	

**Note 1.** Stop positions are determined by the mechanical stoppers at both ends.

**Note 2.** Please perform installation and adjustment on the special parts for motor installation by the customer. For detail, refer to the manual.

**Note 3.** For the installation through hole, the length under head << 45 mm or more >> is recommended for the hex socket head bolts <M5 × 0.8>. In the installation tap hole, the length under head << thickness of stand +15 mm or less >> is recommended for the hex socket head bolts <M6 × 1.0> used to install the main unit.

**Note 4.** Nozzle set for greasing (recommended) (see P.147 for detail)  
Part number: KFU-M3861-00

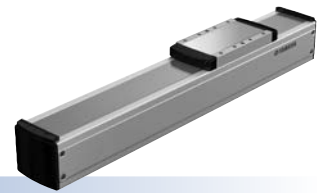






# LGXS07

Advanced model



## Motor-less Single Axis Actuator

### Ordering method

<b>LGXS07</b>		
Model	Lead designation	Stroke
	30: 30 mm	50 to 1100
	20: 20 mm	(50 mm pitch)
	10: 10 mm	
	5: 5 mm	

#### [Caution]

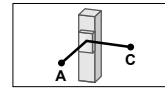
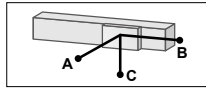
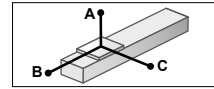
This system is provided as mechanical actuator unit and not including any adapters or electric components. Motor, driver and other components required for installation are user's responsibility. Refer to user's manual for installation details. Refer to your motor manual for tuning or adjustment. Vibration or resonance from actuator will affect service life of actuator. The product performance may not be satisfied depending on the compatible motor.

### Specifications

Adaptable motor	100 W
Repeatability <sup>Note 1</sup>	+/-0.005 mm
Deceleration mechanism	Ground ball screw $\phi$ 15 (C5 class)
Stroke	50 mm to 1100 mm (50 mm pitch)
Maximum speed <sup>Note 2</sup> (or equivalent)	1800 mm/sec, 1200 mm/sec, 600 mm/sec, 300 mm/sec
Ball screw lead	30 mm, 20 mm, 10 mm, 5 mm
Maximum payload (or equivalent)	Horizontal: 10 kg, 25 kg, 45 kg, 85 kg Vertical: 2 kg, 4 kg, 8 kg, 16 kg
Rated thrust (or equivalent) <sup>Note 3</sup>	56 N, 84 N, 169 N, 339 N
Maximum dimensions of cross section of main unit	W 70 mm $\times$ H 76.5 mm
Overall length	ST + 202 mm
Degree of cleanliness <sup>Note 4</sup>	ISO CLASS 3 (ISO14644-1) or equivalent
Intake air <sup>Note 5</sup>	30 N $\ell$ /min to 115 N $\ell$ /min
Using ambient temperature and humidity	0 to 40 $^{\circ}$ C, 35 to 80 %RH (non-condensing)

- Note 1. Positioning repeatability in one direction.  
 Note 2. When a moving distance is short and depending on an operation condition, it may not reach the maximum speed.  
 Note 3. The rated thrust and maximum transferable weight are values assuming the attached motor outputs the rated torque.  
 Note 4. When using in a clean environment, attach a suction air joint. The degree of cleanliness is the cleanliness level achieved when using at 1000 mm/sec or less.  
 Note 5. The required suction amount will vary according to the operating conditions and operating environment.  
 Note. See P632 for acceleration/deceleration and inertia moment.

### Allowable overhang <sup>Note</sup>



**LGXS07-30**  
Horizontal installation (Unit: mm)

	A	B	C
2kg	3084	1512	1223
6kg	1191	502	418
10kg	957	318	282

**Wall installation** (Unit: mm)

	A	B	C
2kg	1240	1445	2981
6kg	393	435	1063
10kg	245	251	794

**Vertical installation** (Unit: mm)

	A	C
1kg	2340	2340
2kg	1160	1160

**LGXS07-20**  
Horizontal installation (Unit: mm)

	A	B	C
10kg	1331	371	358
20kg	1144	187	189
25kg	1829	169	182

**Wall installation** (Unit: mm)

	A	B	C
10kg	314	305	1168
20kg	132	120	812
25kg	117	103	1249

**Vertical installation** (Unit: mm)

	A	C
1kg	3425	3425
2kg	1705	1705
4kg	843	843

**LGXS07-10**  
Horizontal installation (Unit: mm)

	A	B	C
15kg	2431	339	373
30kg	1536	160	177
45kg	1188	101	112

**Wall installation** (Unit: mm)

	A	B	C
15kg	307	273	2203
30kg	107	94	1161
45kg	39	35	629

**Vertical installation** (Unit: mm)

	A	C
3kg	1693	1693
6kg	830	830
8kg	614	614

**LGXS07-5**  
Horizontal installation (Unit: mm)

	A	B	C
30kg	2918	172	197
50kg	2543	96	110
85kg	2031	49	56

**Wall installation** (Unit: mm)

	A	B	C
30kg	122	106	2461
50kg	34	30	1480
85kg	0	0	0

**Vertical installation** (Unit: mm)

	A	C
6kg	907	907
9kg	591	591
16kg	315	315

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
 Note. Service life is calculated for 600 mm stroke models.

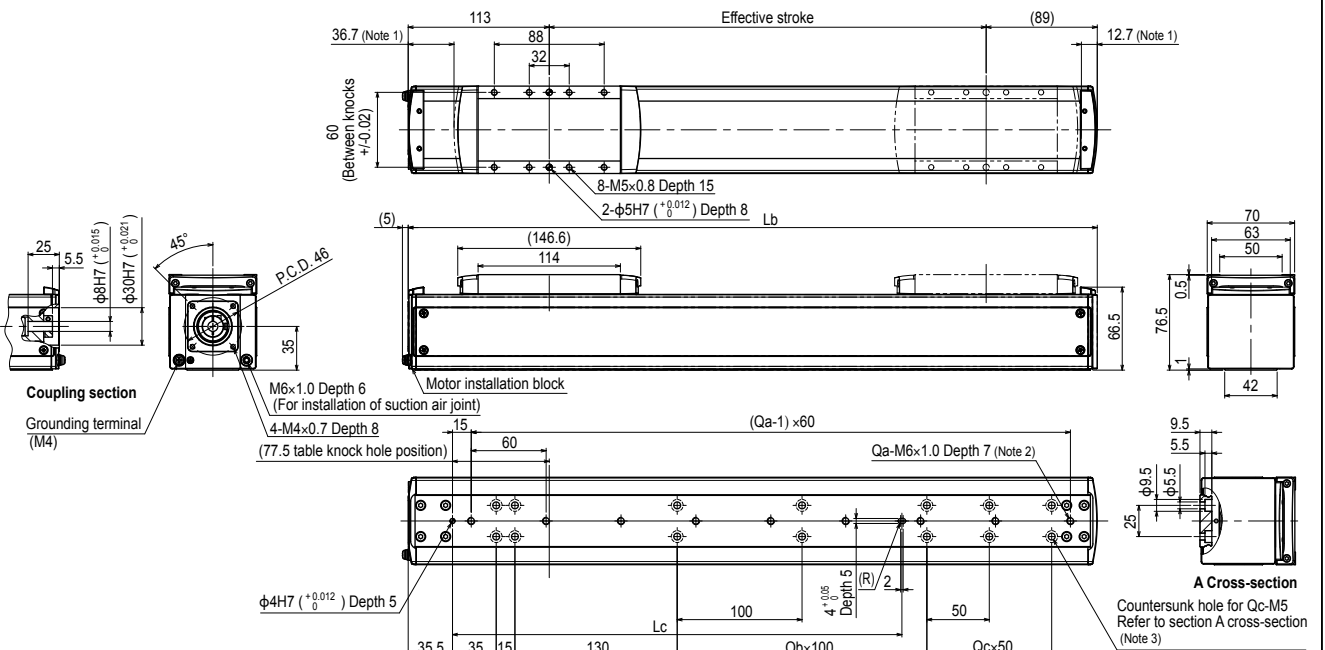
### Static loading moment

	MY	MP	MR
(Unit: N·m)	138	121	121

### Adaptable Servo Motor

Specification	Flange size	Wattage
	<input type="checkbox"/> 40	100 W
Manufacturer	Model	
Yasukawa Electric Corp.	SGMJV-01 SGM7J-01	
Keyence Corp.	SV- <input type="checkbox"/> 010 SV2- <input type="checkbox"/> 010	
Mitsubishi Electric Corp.	HF-KP13 <sup>Note</sup> HG-KR13 <sup>Note</sup> HK-KT13 <sup>Note</sup>	
Note. To combine with the conversion adapter <GX-BEND-40>, the shim plate (t1) is necessary.		
Conversion adapter product model	Shim plate part number	
GX-BEND-40	KES-M2295-00	

## LGXS07

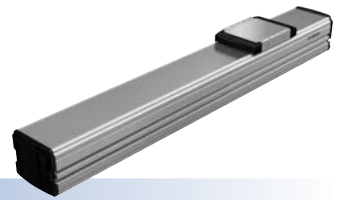


Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
Lb	252	302	352	402	452	502	552	602	652	702	752	802	852	902	952	1002	1052	1102	1152	1202	1252	1302
Lc	160	160	160	160	360	360	360	360	360	360	360	360	360	360	760	760	760	760	760	760	760	760
Qa	4	5	5	6	7	8	9	10	10	11	12	13	14	15	15	16	17	18	19	20	20	21
Qb	0	0	0	0	2	2	2	2	2	2	2	2	6	6	6	6	6	6	6	6	6	6
Qc	0	1	2	3	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	8	9
Qd	6	8	10	12	10	12	14	16	18	20	22	24	18	20	22	24	26	28	30	32	34	36
Weight (kg)	3.2	3.4	3.7	4.0	4.3	4.5	4.8	5.1	5.3	5.6	5.9	6.2	6.4	6.7	7.0	7.2	7.5	7.8	8.1	8.3	8.6	8.9
Lead 30	1800																					
Lead 20	1200																					
Lead 10	600																					
Lead 5	300																					
Speed setting	-																					
Maximum speed (mm/sec)	1530, 1350, 1170, 990, 900, 810, 720, 630, 1020, 900, 780, 660, 600, 540, 480, 420, 510, 450, 390, 330, 300, 270, 240, 210, 255, 225, 195, 165, 150, 135, 120, 105, 85%, 75%, 65%, 55%, 50%, 45%, 40%, 35%																					

- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. When using the tap holes to mount the body, remove the set screws first.  
 Note 3. When using the countersunk holes (section A cross section) to mount the body, remove the cap from the inner side and then fix.

# LGXS10

Advanced model



Motor-less Single Axis Actuator

## Ordering method

<b>LGXS10</b>		
Model	Lead designation	Stroke
	30: 30 mm	100 to 1250
	20: 20 mm	(50 mm pitch)
	10: 10 mm	
	5: 5 mm	

### [Caution]

This system is provided as mechanical actuator unit and not including any adapters or electric components. Motor, driver and other components required for installation are user's responsibility. Refer to user's manual for installation details. Refer to your motor manual for tuning or adjustment. Vibration or resonance from actuator will affect service life of actuator. The product performance may not be satisfied depending on the compatible motor.

## Specifications

Adaptable motor	200 W			
Repeatability <sup>Note 1</sup>	±0.005 mm			
Deceleration mechanism	Ground ball screw φ 15 (C5 class)			
Stroke	100 mm to 1250 mm (50 mm pitch)			
Maximum speed <sup>Note 2</sup> (or equivalent)	1800 mm/sec	1200 mm/sec	600 mm/sec	300 mm/sec
Ball screw lead	30 mm	20 mm	10 mm	5 mm
Maximum payload (or equivalent) <sup>Note 3</sup>	Horizontal	25 kg	40 kg	80 kg
	Vertical	4 kg	8 kg	20 kg
Rated thrust (or equivalent) <sup>Note 3</sup>	113 N	170 N	341 N	683 N
Maximum dimensions of cross section of main unit	W 100 mm × H 99.5 mm			
Overall length	ST + 175.5 mm			
Degree of cleanliness <sup>Note 4</sup>	ISO CLASS 3 (ISO14644-1) or equivalent			
Intake air <sup>Note 5</sup>	30 Nl/min to 90 Nl/min			
Using ambient temperature and humidity	0 to 40 °C, 35 to 80 %RH (non-condensing)			

- Note 1. Positioning repeatability in one direction.  
 Note 2. When a moving distance is short and depending on an operation condition, it may not reach the maximum speed.  
 Note 3. The rated thrust and maximum transferable weight are values assuming the attached motor outputs the rated torque.  
 Note 4. When using in a clean environment, attach a suction air joint. The degree of cleanliness is the cleanliness level achieved when using at 1000 mm/sec or less.  
 Note 5. The required suction amount will vary according to the operating conditions and operating environment.  
 Note. See P634 for acceleration/deceleration and inertia moment.

## Allowable overhang <sup>Note</sup>

<b>LGXS10-30</b>		<b>Horizontal installation</b> (Unit: mm)		<b>Wall installation</b> (Unit: mm)	
	A	B	C	A	B
10kg	880	538	292	10kg	272 474 805
20kg	607	256	146	20kg	118 192 480
25kg	608	211	124	25kg	93 147 454
<b>LGXS10-20</b>		<b>Horizontal installation</b> (Unit: mm)		<b>Wall installation</b> (Unit: mm)	
	A	B	C	A	B
15kg	1272	452	282	15kg	253 388 1162
25kg	756	254	158	25kg	124 190 631
40kg	468	142	88	40kg	51 78 313
<b>LGXS10-10</b>		<b>Horizontal installation</b> (Unit: mm)		<b>Wall installation</b> (Unit: mm)	
	A	B	C	A	B
30kg	1801	299	204	30kg	163 235 1630
50kg	1361	163	111	50kg	69 99 1064
80kg	1273	87	59	80kg	16 23 559
<b>LGXS10-5</b>		<b>Horizontal installation</b> (Unit: mm)		<b>Wall installation</b> (Unit: mm)	
	A	B	C	A	B
30kg	5603	321	225	30kg	181 258 5193
50kg	3691	177	124	50kg	79 113 3109
80kg	2614	95	67	80kg	22 31 1555
100kg	2218	68	48	100kg	0 0 0

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
 Note. Service life is calculated for 600 mm stroke models.

## Static loading moment

(Unit: N·m)		
MY	MP	MR
274	274	241

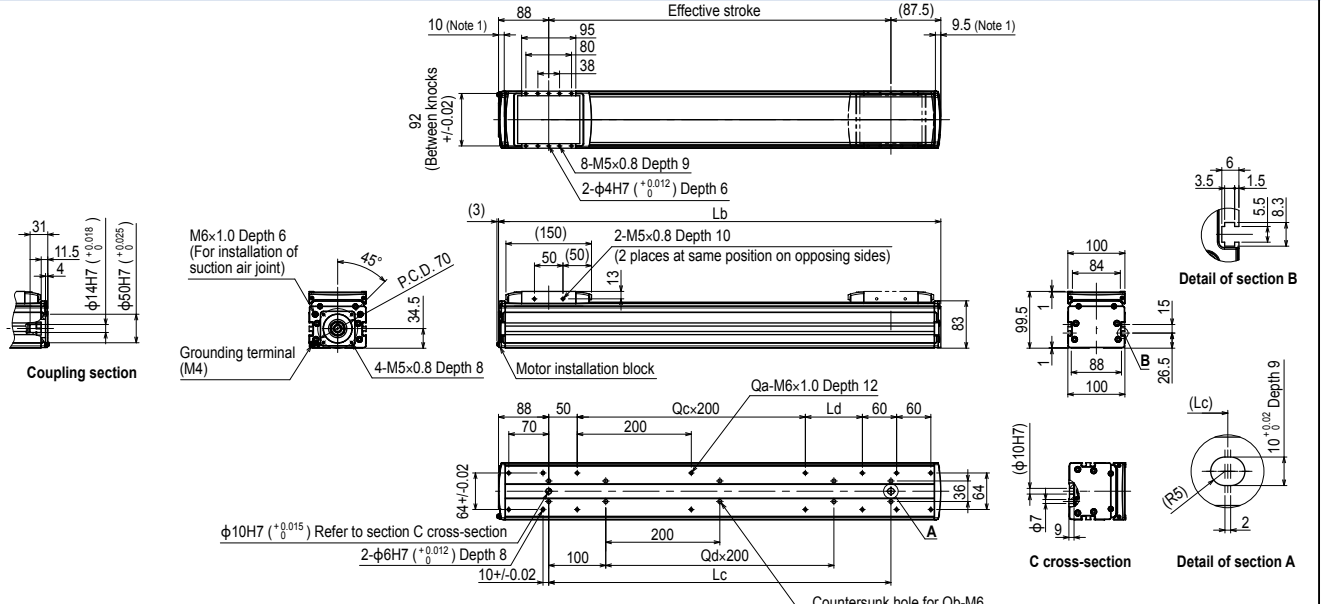
## Adaptable Servo Motor

Specification	Flange size	□60
	Wattage	200 W
Manufacturer	Model	
Yasukawa Electric Corp.	SGMJV-02 SGM7J-02	
Keyence Corp.	SV-□020 SV2-□020	
Mitsubishi Electric Corp.	HF-KP23 HG-KR23 <sup>Note</sup> HK-KT23 <sup>Note</sup>	

Note. To combine with the conversion adapter <GX-BEND-60>, the shim plate (t1) is necessary.

Conversion adapter product model	Shim plate part number
GX-BEND-60	KEV-M2295-00

## LGXS10



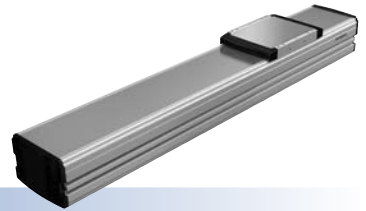
<b>Effective stroke</b>	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
<b>Lb</b>	275.5	325.5	375.5	425.5	475.5	525.5	575.5	625.5	675.5	725.5	775.5	825.5	875.5	925.5	975.5	1025.5	1075.5	1125.5	1175.5	1225.5	1275.5	1325.5	1375.5	1425.5
<b>Lc</b>	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
<b>Ld</b>	0	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
<b>Qa</b>	8	10	10	10	10	12	12	12	14	14	14	14	14	16	16	16	16	18	18	18	18	20	20	20
<b>Qb</b>	4	6	6	6	6	8	8	8	10	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16
<b>Qc</b>	0	0	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
<b>Qd</b>	0	0	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5
<b>Weight (kg)</b>	4.6	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6	9.1	9.6	10.1	10.6	11.1	11.6	12.1	12.6	13.1	13.6	14.1	14.6	15.1	15.6	16.1
<b>Maximum speed (mm/sec)</b>	<b>Lead 30</b>	1800																						
	<b>Lead 20</b>	1200																						
	<b>Lead 10</b>	600																						
	<b>Lead 5</b>	300																						
<b>Speed setting</b>	<b>Lead 30</b>	85%																						
	<b>Lead 20</b>	75%																						
	<b>Lead 10</b>	65%																						
	<b>Lead 5</b>	55%																						

- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. The length under head of the hex socket head bolts <M6 × 1.0> used to mount the body with the mounting countersunk holes (section C cross-section) must be <<20 mm or more>>. The recommended length under head of the hex socket head bolts <M6 × 1.0> used to mount the body with the mounting tap hole specifications is <<frame thickness + 10 mm or less>>.  
 Note 3. When using the mounting countersunk holes (section C cross-section) to mount the body, remove the seal, and then fix.



# LGXS12

Advanced model



## Motor-less Single Axis Actuator

### Ordering method

<b>LGXS12</b>		
Model	Lead designation	Stroke
	30: 30 mm	100 to 1250
	20: 20 mm	(50 mm pitch)
	10: 10 mm	
	5: 5 mm	

#### [Caution]

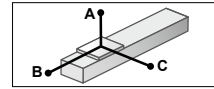
This system is provided as mechanical actuator unit and not including any adapters or electric components. Motor, driver and other components required for installation are user's responsibility. Refer to user's manual for installation details. Refer to your motor manual for tuning or adjustment. Vibration or resonance from actuator will affect service life of actuator. The product performance may not be satisfied depending on the compatible motor.

### Specifications

Adaptable motor	400 W
Repeatability <sup>Note 1</sup>	+/-0.005 mm
Deceleration mechanism	Ground ball screw $\phi$ 15 (C5 class)
Stroke	100 mm to 1250 mm (50 mm pitch)
Maximum speed <sup>Note 2</sup> (or equivalent)	1800 mm/sec, 1200 mm/sec, 600 mm/sec, 300 mm/sec
Ball screw lead	30 mm, 20 mm, 10 mm, 5 mm
Maximum payload (or equivalent)	Horizontal: 35 kg, 50 kg, 95 kg, 115 kg Vertical: 8 kg, 15 kg, 25 kg, 45 kg
Rated thrust (or equivalent) <sup>Note 3</sup>	225 N, 339 N, 678 N, 1360 N
Maximum dimensions of cross section of main unit	W 125 mm x H 101 mm
Overall length	ST + 211.5 mm
Degree of cleanliness <sup>Note 4</sup>	ISO CLASS 3 (ISO14644-1) or equivalent
Intake air <sup>Note 5</sup>	30 NL/min to 90 NL/min
Using ambient temperature and humidity	0 to 40 °C, 35 to 80 %RH (non-condensing)

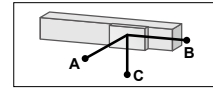
- Note 1. Positioning repeatability in one direction.  
 Note 2. When a moving distance is short and depending on an operation condition, it may not reach the maximum speed.  
 Note 3. The rated thrust and maximum transferable weight are values assuming the attached motor outputs the rated torque.  
 Note 4. When using in a clean environment, attach a suction air joint. The degree of cleanliness is the cleanliness level achieved when using at 1000 mm/sec or less.  
 Note 5. The required suction amount will vary according to the operating conditions and operating environment.  
 Note. See P636 for acceleration/deceleration and inertia moment.

### Allowable overhang <sup>Note</sup>



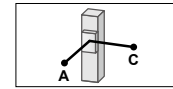
**LGXS12-30**  
Horizontal installation (Unit: mm)

	A	B	C
10kg	1800	1076	638
20kg	1298	531	332
35kg	1343	335	228



Wall installation (Unit: mm)

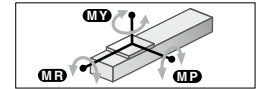
	A	B	C
10kg	632	1011	1724
20kg	315	466	1169
35kg	198	270	1133



Vertical installation (Unit: mm)

	A	C
3kg	2646	2646
6kg	1291	1291
8kg	952	952

### Static loading moment



(Unit: N·m)

MY	MP	MR
334	334	294

### Adaptable Servo Motor

Specification	Flange size	Wattage
	<input type="checkbox"/> 60	400 W
Manufacturer	Model	
Yasukawa Electric Corp.	SGMJV-04 SGM7J-04	
Keyence Corp.	SV- <input type="checkbox"/> 040 SV2- <input type="checkbox"/> 040	
Mitsubishi Electric Corp.	HF-KP43 HG-KR43 <sup>Note</sup> HK-KT43 <sup>Note</sup>	

Note. To combine with the conversion adapter <GX-BEND-60>, the shim plate (t1) is necessary.

Conversion adapter product model	Shim plate part number
GX-BEND-60	KEV-M2295-00

**LGXS12-20**  
Horizontal installation (Unit: mm)

	A	B	C
15kg	2236	906	614
30kg	1293	429	293
50kg	884	238	164

Wall installation (Unit: mm)

	A	B	C
15kg	592	841	2146
30kg	261	364	1171
50kg	126	173	713

Vertical installation (Unit: mm)

	A	C
5kg	2429	2429
10kg	1210	1210
15kg	805	805

**LGXS12-10**  
Horizontal installation (Unit: mm)

	A	B	C
30kg	3119	609	457
50kg	2430	346	261
80kg	2430	199	151
95kg	2565	160	121

Wall installation (Unit: mm)

	A	B	C
30kg	415	544	2988
50kg	216	281	2217
80kg	104	134	1939
95kg	74	95	1838

Vertical installation (Unit: mm)

	A	C
10kg	1868	1868
15kg	1225	1225
25kg	711	711

**LGXS12-5**  
Horizontal installation (Unit: mm)

	A	B	C
30kg	11075	653	504
50kg	7428	373	288
80kg	5449	215	166
115kg	4354	136	105

Wall installation (Unit: mm)

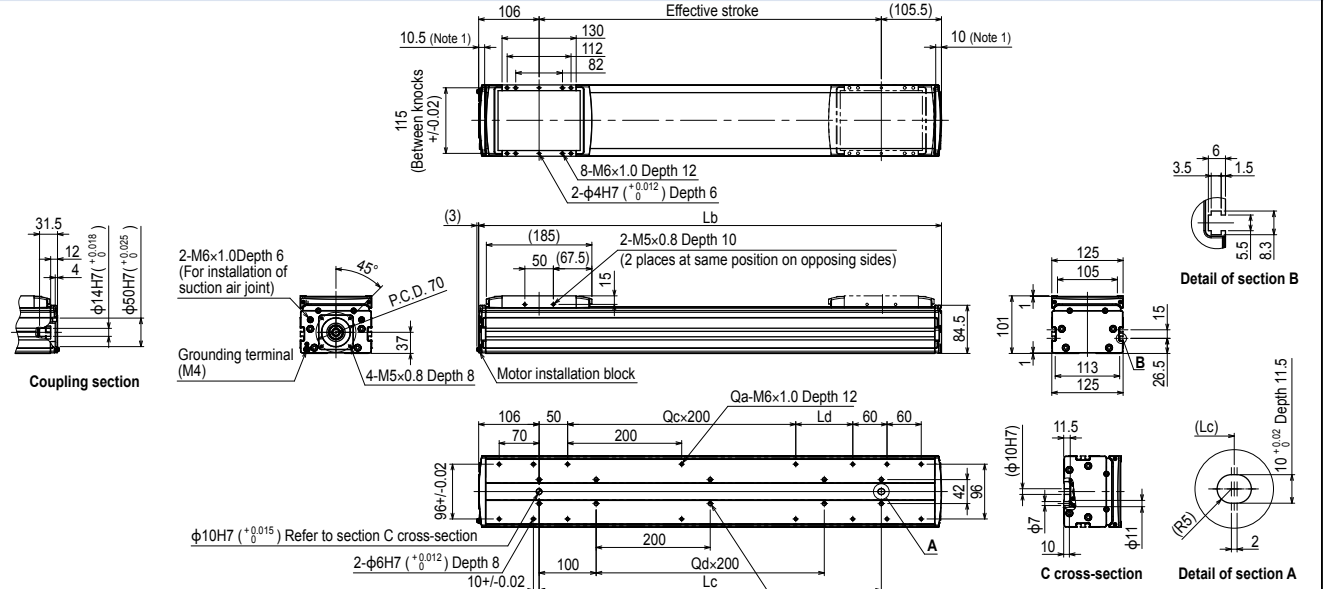
	A	B	C
30kg	456	588	10687
50kg	239	308	6930
80kg	117	150	4706
115kg	55	71	3214

Vertical installation (Unit: mm)

	A	C
15kg	1332	1332
30kg	634	634
45kg	460	460

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
 Note. Service life is calculated for 600 mm stroke models.

## LGXS12



Note 1. Stop positions are determined by the mechanical stoppers at both ends.

Note 2. The length under head of the hex socket head bolts <M6 x 1.0> used to mount the body with the mounting countersunk holes (section C cross-section) must be <<20 mm or more>>. The recommended length under head of the hex socket head bolts <M6 x 1.0> used to mount the body with the mounting tap hole specifications is <<frame thickness + 10 mm or less>>.

Note 3. When using the mounting countersunk holes (section C cross-section) to mount the body, remove the seal, and then fix.

Effective stroke	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	
Lb	311.5	361.5	411.5	461.5	511.5	561.5	611.5	661.5	711.5	761.5	811.5	861.5	911.5	961.5	1011.5	1061.5	1111.5	1161.5	1211.5	1261.5	1311.5	1361.5	1411.5	1461.5	
Lc	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	
Ld	0	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	
Qa	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18	18	18	20	20	20	
Qb	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	
Qc	0	0	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	
Qd	0	0	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	
Weight (kg)	6.5	7.1	7.8	8.5	9.1	9.8	10.5	11.2	11.8	12.5	13.2	13.9	14.5	15.2	15.9	16.5	17.2	17.9	18.6	19.2	19.9	20.6	21.3	21.9	
Maximum speed	1800				1200																				
Lead 30 (mm/sec)																									
Lead 20																									
Lead 10																									
Lead 5																									
Speed setting																									









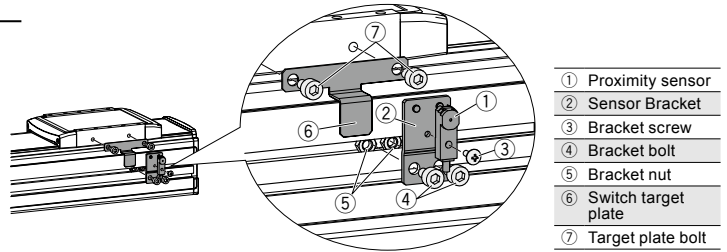
### ■ Sensor Spec

Item	Specification
Manufacturer	Panasonic Industrial Device SUNX, Co., Ltd.
Model	GX-F8B
Output method	NPN type
Output action	ON released
Power voltage	DC12 to 24V
Load current	100 mA or less
Consumption current	15 mA or less

Item	Specification
Display lamp	Orange LED (ON when output ON)
Ambient environment and humidity	-25 to +75 °C, 35 to 85 %RH
Protection structure	IP68
Cable length	5 m

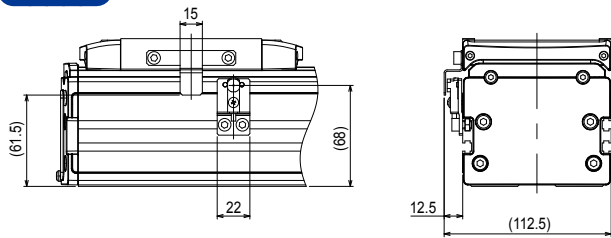
#### [Caution]

- Bracket screw tightening torque: 0.5 N·m
- The detection surface of the sensor and sensor plate clearance is approx. 1 mm.



Note 1. Installation is users' responsibility  
 Note 2. Mounting hardware included  
 Note 3. Sensor cable is 5 m. Adjust as needed.

### LGXS10



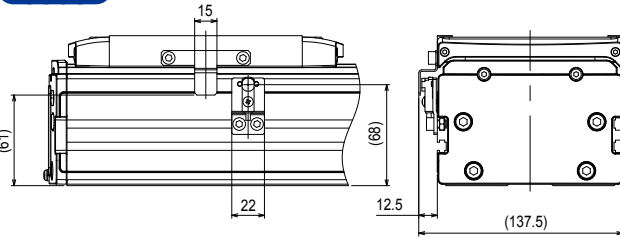
Proximity sensor option (No. KEV-M2205-00)

No.	Name	Number	Qty	Remarks
①	Proximity sensor	KP6-M4855-01	1	
②	Sensor Bracket	KEV-M22FF-00	1	
③	Bracket screw	90990-66J004	1	M3 × 0.5 Length 8
④	Bracket bolt	91312-05008	2	M5 × 0.8 Length 8
⑤	Bracket nut	95302-05700	2	M5

Target plate option (No. KEV-M2206-00)

No.	Name	Number	Qty	Remarks
⑥	Switch target plate	KEV-M22G5-00	1	
⑦	Target plate bolt	91312-05008	2	M5 × 0.8 Length 8

### LGXS12



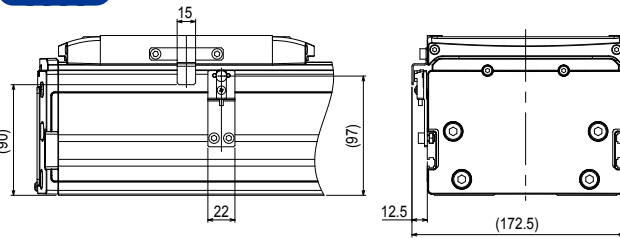
Proximity sensor option (No. KEV-M2205-00)

No.	Name	Number	Qty	Remarks
①	Proximity sensor	KP6-M4855-01	1	
②	Sensor Bracket	KEV-M22FF-00	1	
③	Bracket screw	90990-66J004	1	M3 × 0.5 Length 8
④	Bracket bolt	91312-05008	2	M5 × 0.8 Length 8
⑤	Bracket nut	95302-05700	2	M5

Target plate option (No. KEV-M2206-00)

No.	Name	Number	Qty	Remarks
⑥	Switch target plate	KEV-M22G5-00	1	
⑦	Target plate bolt	91312-05008	2	M5 × 0.8 Length 8

### LGXS16



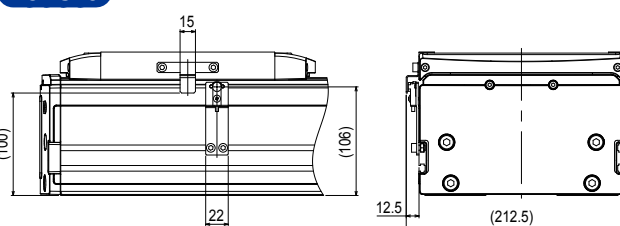
Proximity sensor option (No. KEX-M2205-00)

No.	Name	Number	Qty	Remarks
①	Proximity sensor	KP6-M4855-01	1	
②	Sensor Bracket	KEX-M22FF-00	1	
③	Bracket screw	90990-66J004	1	M3 × 0.5 Length 8
④	Bracket bolt	91312-05008	2	M5 × 0.8 Length 8
⑤	Bracket nut	95302-05700	2	M5

Target plate option (No. KEV-M2206-00)

No.	Name	Number	Qty	Remarks
⑥	Switch target plate	KEV-M22G5-00	1	
⑦	Target plate bolt	91312-05008	2	M5 × 0.8 Length 8

### LGXS20



Proximity sensor option (No. KEY-M2205-00)

No.	Name	Number	Qty	Remarks
①	Proximity sensor	KP6-M4855-01	1	
②	Sensor Bracket	KEY-M22FF-00	1	
③	Bracket screw	90990-66J004	1	M3 × 0.5 Length 8
④	Bracket bolt	91312-05008	2	M5 × 0.8 Length 8
⑤	Bracket nut	95302-05700	2	M5

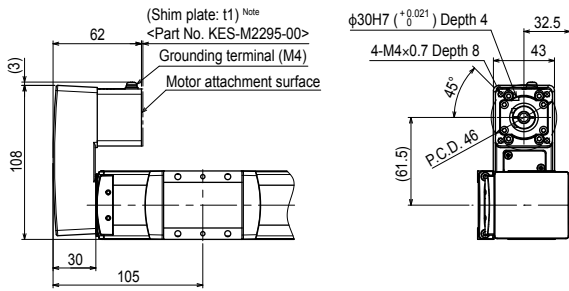
Target plate option (No. KEV-M2206-00)

No.	Name	Number	Qty	Remarks
⑥	Switch target plate	KEV-M22G5-00	1	
⑦	Target plate bolt	91312-05008	2	M5 × 0.8 Length 8

Robonity series

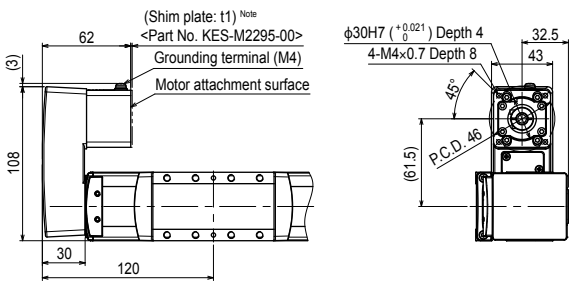
Reference guide for right angle motor mount (right side shown)

LGXS05



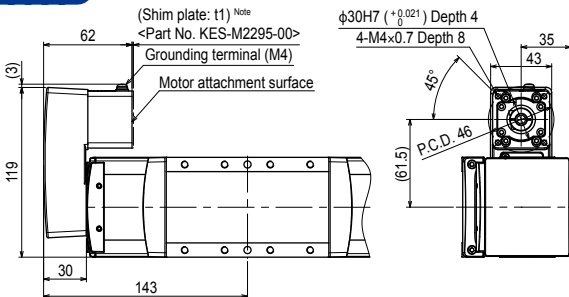
Note. For the availability of shim plate, see the adaptable servo motor table (P.140).

LGXS05L



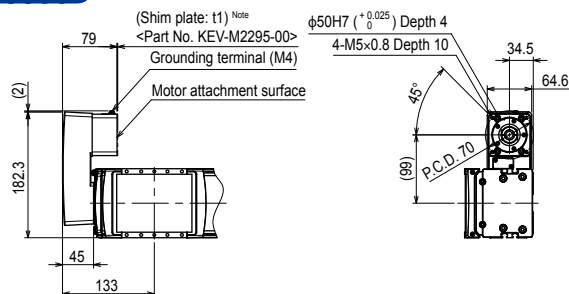
Note. For the availability of shim plate, see the adaptable servo motor table (P.141).

LGXS07



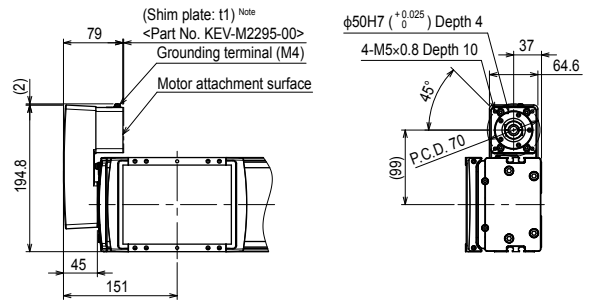
Note. For the availability of shim plate, see the adaptable servo motor table (P.142).

LGXS10



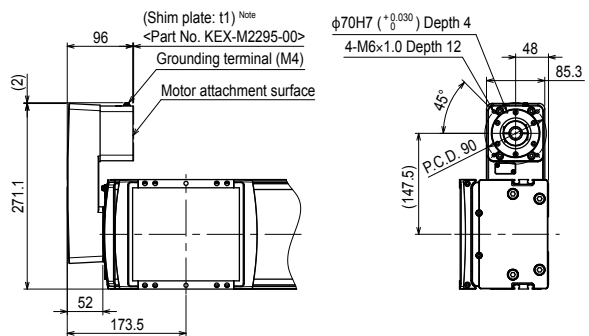
Note. For the availability of shim plate, see the adaptable servo motor table (P.143).

LGXS12



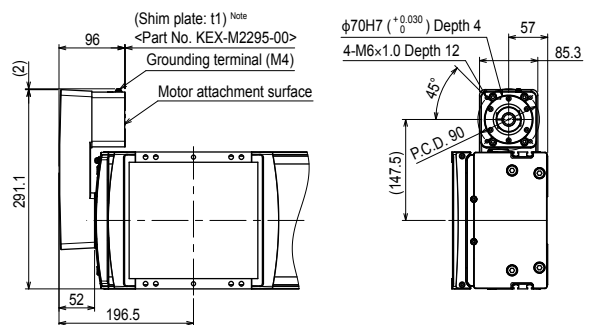
Note. For the availability of shim plate, see the adaptable servo motor table (P.144).

LGXS16



Note. For the availability of shim plate, see the adaptable servo motor table (P.145).

LGXS20



Note. For the availability of shim plate, see the adaptable servo motor table (P.146).

Note 1. Use by attaching the conversion adapter to the main unit. Refer to the manual for the attachment method.

Note 2. A motor is not included in the conversion adapter. Remove a motor from the main unit, and install the conversion adapter.

Note 3. Right installation and left installation are possible.

Model	Product model	Part No.	Weight
LGXS05, LGXS05L, LGXS07	GX-BEND-40	KES-M221M-00	0.4 kg
LGXS10, LGXS12	GX-BEND-60	KEV-M221M-00	1.2 kg
LGXS16, LGXS20	GX-BEND-80	KEX-M221M-00	2.7 kg

- Articulated robots
- YA
- Linear conveyor modules
- LCM100
- Motor-less single axis actuator
- Robonity
- Compact single-axis robots
- TRANSEURO
- Single-axis robots
- FLIP-X
- Linear motor single-axis robots
- PHASER
- Cartesian robots
- XY-X
- SCARA robots
- YK-X
- Pick & place robot
- YP-X
- CLEAN
- CONTROLLER INFORMATION
- LBAS
- LGXS
- Option



# MEMO

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Articulated robots  
**YA**

Linear conveyor  
modules  
**LCM100**

Motor-less single  
axis actuator  
**Robonity**

Compact  
single-axis robots  
**TRANSERVO**

Single-axis robots  
**FLIP-X**

Linear motor  
single-axis robots  
**PHASER**

Cartesian  
robots  
**XY-X**

SCARA  
robots  
**YK-X**

Pick & Place  
robots  
**YP-X**

**CLEAN**

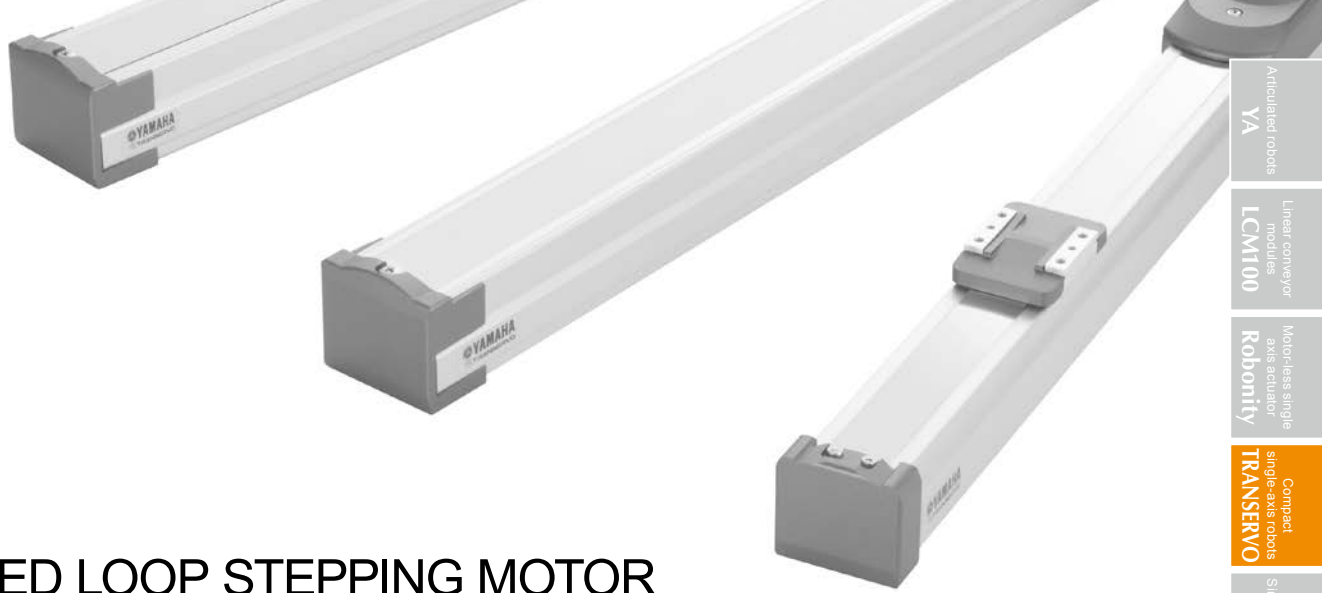
**CONTROLLER**

**INFORMATION**

**LBAS**

**LGXS**

**Option**



## CLOSED LOOP STEPPING MOTOR SINGLE-AXIS ROBOTS

# TRANSERVO SERIES

- Articulated robots  
YA
- Linear conveyor  
modules  
LCM100
- Motor-less single  
axis actuator  
Robonity
- Compact  
single-axis robots  
TRANSERVO
- Single-axis robots  
FLIP-X
- Linear motor  
single-axis robots  
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- Cartesian  
robots  
XY-X
- SCARA  
robots  
YK-X
- Pick & place  
robots  
YP-X
- CLEAN
- CONTROLLER
- INFORMATION

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# TRANSERVO SPECIFICATION SHEET

Type	Model	Size (mm) <sup>Note 1</sup>	Lead (mm)	Maximum payload (kg) <sup>Note 2</sup>		Maximum speed (mm/sec) <sup>Note 3</sup>	Stroke (mm)	Detailed info page
				Horizontal	Vertical			
SS type (Slide type) Straight model/ Space-saving model	SS04-S SS04-R (L)	W49 × H59	12	2	1	600	50 to 400	P.154 - P.155
			6	4	2	300		
			2	6	4	100		
	SS05-S SS05-R (L)	W55 × H56	20	4	-	1000	50 to 800	P.156 - P.157
			12	6	1	600		
			6	10	2	300		
SS05H-S SS05H-R (L)	W55 × H56	20	6	-	1000	50 to 800	P.158 - P.159	
		12	8	2	600 (Horizontal) 500 (Vertical)			
		6	12	4	300 (Horizontal) 250 (Vertical)			
SG type (Slide type)	SG07	W65 × H64	20	36	4	1200	50 to 800	P.160
			12	43	12	800		
			6	46	20	350		
SR Type (Rod type) Straight model/ Space-saving model	SR03-S SR03-R (L) SR03-U	W48 × H56.5	12	10	4	500	50 to 200	P.161 - P.163
			6	20	8	250		
			12	25	5	500		
	SR04-S SR04-R (L)	W48 × H58	6	40	12	250	50 to 300	P.166 - P.167
			2	45	25	80		
			12	50	10	300		
SR05-S SR05-R (L)	W56.4 × H71	6	55	20	150	50 to 300	P.170 - P.171	
		2	60	30	50			
		12	10	3.5	500			
SR Type (Rod type with support guide) Straight model/ Space-saving model	SRD03-S SRD03-U	W105 × H56.5	6	20	7.5	250	50 to 200	P.164 - P.165
			12	25	4	500		
			6	40	11	250		
	SRD04-S SRD04-U	W135 × H58	2	45	24	80	50 to 300	P.168 - P.169
			12	50	8.5	300		
			6	55	18.5	150		
SRD05-S SRD05-U	W157 × H71	2	60	28.5	50	50 to 300	P.172 - P.173	
		6	55	18.5	150			
		12	50	8.5	300			
STH Type (Slide table type) Straight model/ Space-saving model	STH04-S	W45 × H46	5	6	2	200	50 to 100	P.174 - P.175
	STH04-R (L) <sup>Note 4</sup>	W73 × H51	10	4	1	400		
	STH06	W61 × H65	8	9	2	150	50 to 150	P.176 - P.177
	STH06-R (L)	W106 × H70	16	6	4	400		

Type	Model	High (mm)	Torque type	Rotational torque (N · m)	Maximum pushing torque (N · m)	Maximum speed (mm/sec) <sup>Note 3</sup>	Rotation range (°)	Detailed info page
RF Type (Rotary type) Standard model/ High rigidity model	RF02-N	42 (Standard)	N:Standard	0.22	0.11	420	310 (RF02-N)	P.178 - P.181
	RF02-S	49 (High rigidity)	H:High torque	0.32	0.16	280	360 (RF02-S)	
	RF03-N	53 (Standard)	N:Standard	0.8	0.4	420	320 (RF03-N)	P.182 - P.185
	RF03-S	62 (High rigidity)	H:High torque	1.2	0.6	280	360 (RF03-S)	
	RF04-N	68 (Standard)	N:Standard	6.6	3.3	420	320 (RF04-N)	P.186 - P.189
	RF04-S	78 (High rigidity)	H:High torque	10	5	280	360 (RF04-S)	

Type	Model	Size (mm) <sup>Note 1</sup>	Lead (mm)	Maximum payload (kg) <sup>Note 2</sup>		Maximum speed (mm/sec) <sup>Note 3</sup>	Stroke (mm)	Detailed info page
				Horizontal	Vertical			
BD Type (Belt type)	BD04	W40 × H40	48	1	-	1100	300 to 1000	P.190
	BD05	W58 × H48	48	5	-	1400	300 to 2000	P.191
	BD07	W70 × H60	48	14	-	1500	300 to 2000	P.192

Note 1. The size shows approximate maximum cross sectional size.  
 Note 2. The payload may vary depending on the operation speed. For details, refer to the detailed page of relevant model.  
 Note 3. The maximum speed may vary depending on the transfer weight or stroke length. For details, refer to the detailed page of relevant model.  
 Note 4. STH04-R (L) with 50-stroke and brake is not supported.

### ⚠ Precautions for use

- **Handling**  
Fully understand the contents stated in the "TRANSERVO User's Manual" and strictly observe the handling precautions during operation.
- **Allowable installation ambient temperature**  
[SS/SR type] 0 to 40 °C  
[STH/RF/BD type] 5 to 40 °C

## SR/SRD/STH type Speed vs. payload table

### SR03

Horizontal			Lead 12			Lead 6		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
10	450	90	20	225	90	20	225	90
5	500	100	15	237.5	95	10	250	100

Vertical			Lead 12			Lead 6		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
4	300	60	8	150	60	8	150	60
2	432	86	5	200	80	2	250	100
1	500	100	2	250	100	2	250	100

### SRD03

Horizontal			Lead 12			Lead 6		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
10	450	90	20	225	90	20	225	90
5	500	100	15	237.5	95	10	250	100

Vertical			Lead 12			Lead 6		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
3.5	300	60	7.5	150	60	7.5	150	60
1.5	432	86	4.5	200	80	4.5	200	80
0.5	500	100	1.5	250	100	1.5	250	100

### SR04

Horizontal			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
25	320	64	40	200	80	45	80	100	45	80	100
20	363	72	30	225	90	20	250	100	20	250	100
15	407	81	15	250	100	15	250	100	15	250	100
5	500	100	5	500	100	5	500	100	5	500	100

Vertical			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
5	200	40	12	125	50	25	60	75	24	60	75
2	350	70	5	200	80	5	80	100	14	70	87
1	500	100	2	250	100	1	250	100	4	80	100

### SRD04

Horizontal			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
25	320	64	40	200	80	45	80	100	45	80	100
20	363	72	30	225	90	20	250	100	20	250	100
15	407	81	15	250	100	15	250	100	15	250	100
5	500	100	5	500	100	5	500	100	5	500	100

Vertical			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
4	200	40	11	120	48	24	60	75	24	60	75
3	250	50	4	200	80	14	70	87	14	70	87
0.5	500	100	1	250	100	4	80	100	4	80	100

### SR05

Horizontal			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
50	168	56	55	135	90	60	50	100	60	50	100
40	198	66	40	150	100	40	150	100	40	150	100
30	249	83	30	249	83	30	249	83	30	249	83
20	300	100	20	300	100	20	300	100	20	300	100

Vertical			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
10	69	23	20	48	32	30	30	60	30	30	60
5	168	56	15	75	50	5	50	100	5	50	100
1	300	100	2	150	100	2	150	100	2	150	100

### SRD05

Horizontal			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
50	168	56	55	135	90	60	50	100	60	50	100
40	198	66	40	150	100	40	150	100	40	150	100
30	249	83	30	249	83	30	249	83	30	249	83
20	300	100	20	300	100	20	300	100	20	300	100

Vertical			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
8.5	90	30	18.5	48	32	28.5	30	60	28.5	30	60
5.5	138	46	6.5	102	68	5	50	100	5	50	100
0.5	300	100	0.5	150	100	0.5	150	100	0.5	150	100

### STH04

Horizontal			Lead 10			Lead 5		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
4	400	100	6	200	100	6	200	100
2	400	100	3	200	100	3	200	100
1	400	100	1	200	100	1	200	100

Vertical			Lead 10			Lead 5		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
1	220	62	2	150	75	2	150	75
0.75	220	62	1	150	75	1	150	75
0.3	350	100	0.5	200	100	0.5	200	100

### STH06

Horizontal			Lead 16			Lead 8		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
6	400	100	9	150	100	9	150	100
3	400	100	5	150	100	5	150	100
1	400	100	1	150	100	1	150	100

Vertical			Lead 16			Lead 8		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
2	200	80	4	100	66	4	100	66
1.5	200	80	3	100	66	3	100	66
1	250	100	2	140	93	2	140	93
			1	150	100	1	150	100

# Robot ordering method description

In the order format for the YAMAHA single-axis robots TRANSERVO series, the notation (letters/numbers) for the mechanical section is shown linked to the controller section notation.

## [Example]

### ● Mechanical ▶ SS05

- Lead ▷ 6mm
- Model ▷ Straight
- Brake ▷ Yes
- Origin position ▷ Standard
- Grease ▷ Standard
- Stroke ▷ 600mm
- Cable length ▷ 1m

### ● Controller ▶ TS-S2

- Input /Output selection ▷ NPN

### ● Ordering Method

**SS05-06SB-NN-600-1K-S2NP**

Mechanical section

Controller section

To find detailed controller information see the controller page.

TS-S2 ▶ **P.514**, TS-SH ▶ **P.514**, TS-SD ▶ **P.524**

### ● SS type / SG type (Slider type)

Model	Lead	Model	Brake	Origin position	Grease option	Stroke	Cable length
SS04	02 2mm	S Straight model	N With no brake	N Standard	N Standard grease		1K 1m
SS05	06 6mm	R Space-saving model (motor installed on right)	B With brake	Z No-motor side	C Clean room grease		3K 3m
SS05H	12 12mm						5K 5m
SG07	20 20mm	L Space-saving model (motor installed on left)					10K 10m

### ● SR type (Rod type)

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
SR03	02 2mm	S Straight model	N With no brake	N Standard	N No plate		1K 1m
SRD03	06 6mm	R Space-saving model (motor installed on right)	B With brake	Z No-motor side	H With plate		3K 3m
SR04	12 12mm				V With flange		5K 5m
SRD04		L Space-saving model (motor installed on left)					10K 10m
SR05							
SRD05		U Space-saving model (motor installed on top)					

### ● STH Type (Slide table type)

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
STH04	05 5mm	S Straight model	N With no brake	N Standard	N No plate		1K 1m
STH06	08 8mm	R Space-saving model (motor installed on right)	B With brake	Z No-motor side	H With plate		3K 3m
	10 10mm						5K 5m
	16 16mm	L Space-saving model (motor installed on left)					10K 10m

### ● RF Type (Rotary type / Limit rotation specification, Rotary type / Sensor specification)

Model	Return-to-origin method	Bearing	Torque	Cable entry location	Rotation direction	Cable length
RF02-N	N Stroke end (Limit rotation)	N Standard	N Standard torque	R From the right	N CCW	1K 1m
RF02-S	S Sensor (Limitless rotation)	R High rigidity	R High torque	L From the left	Z CW	3K 3m
RF03-N						5K 5m
RF03-S						10K 10m
RF04-N						
RF04-S						

### ● BD Type (Belt type)

Model	Lead	Brake	Origin position	Stroke	Cable length
BD04	48 48mm	N With no brake	N Standard		1K 1m
BD05					3K 3m
BD07					5K 5m
					10K 10m

## ■ Rod type: Bracket plates

### SR03/SRD03 bracket plates



Feet (horizontal mount) Flange (vertical mount)

Type	Model No.
Feet (2 plates per set)	KCU-M223F-00
Flange (1 piece)	KCU-M224F-00

### SR04/SRD04 bracket plates



Feet (horizontal mount) Flange (vertical mount)

Type	Model No.
Feet (2 plates per set)*	KCV-M223F-00
Flange (1 piece)	KCV-M224F-00

\* Comes with 12 mounting nuts for feet.

### SR05/SRD05 bracket plates



Feet (horizontal mount) Flange (vertical mount)

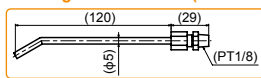
Type	Model No.
Feet (2 plates per set)*	KCW-M223F-00
Flange (1 piece)	KCW-M224F-00

\* Comes with 8 mounting nuts for feet.

## ■ Rod type: Grease gun nozzle tube for space-saving models

When greasing the ball screw in the SR03-UB or SRD03-UB (motor installed on top / with brake), use a grease gun with a bent nozzle tube as shown below.

### ■ Grease gun nozzle tube (YAMAHA recommended nozzle tube)

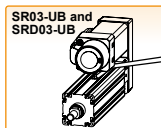


Model KCU-M3861-00

Note. This nozzle tube can be attached to a commercially available ordinary grease gun.

This nozzle tube is even usable when there is little space around the grease port.

For example, when the SR04 or SR05 space-saving model is used with the motor facing up, the grease port is positioned on the side of the robot body. This may make it difficult to refill grease depending on the positions of other robots or peripheral units.



## ■ Rod type: Running life distance to life time conversion example

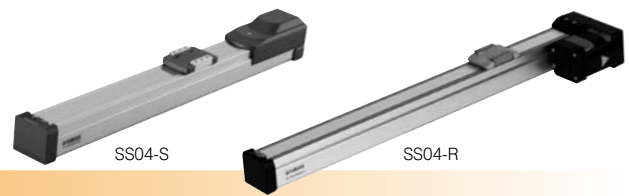
This is an example of life time converted from the running life distance listed on each model page for the SR type.

Model	SR04-02SB, Vertical mount, 25 kg payload
Life distance	500 km → Life time : Approx. 3 years
Operating conditions	100mm back-and-forth movement, shuttle time 16 seconds (duty: 20%)
Word conditions	16 hours per day
Work days	240 days per year

Note. Make sure that the rod is not subjected to a radical load.

# SS04 Slider type

- CE compliance
- Origin on the non-motor side is selectable



## Ordering method

### SS04

Model	Lead	Model	Brake	Origin position	Grease option	Stroke	Cable length <sup>Note 2</sup>
	12: 12mm 06: 6mm 02: 2mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard <sup>Note 1</sup> Z: Non-motor side	N: Standard grease C: Clean room grease	50 to 400 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

### S2

Robot positioner	I/O
S2: TS-S2 <sup>Note 3</sup>	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 4</sup>

### SH

Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 4</sup>	B: With battery (Absolute) N: None (Incremental)

### SD

Robot driver	I/O cable
SD: TS-SD	1: 1m

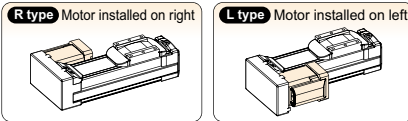
Note 1. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 2. The robot cable is flexible and resists bending.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

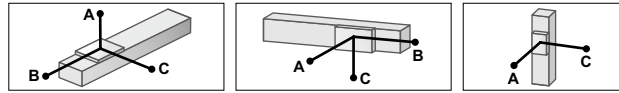
<b>Motor</b>	42 □ Step motor	
<b>Resolution (Pulse/rotation)</b>	20480	
<b>Repeatability <sup>Note 1</sup> (mm)</b>	±0.02	
<b>Deceleration mechanism</b>	Ball screw φ8	
<b>Maximum motor torque (N·m)</b>	0.27	
<b>Ball screw lead (mm)</b>	12	6
<b>Maximum speed (mm/sec)</b>	600	300
<b>Maximum payload (kg)</b>	Horizontal 2	Vertical 4
<b>Max. pressing force (N)</b>	45	90
<b>Stroke (mm)</b>	50 to 400 (50mm pitch)	
<b>Overall length (mm)</b>	Horizontal Stroke+216	Vertical Stroke+261
<b>Maximum outside dimension of body cross-section (mm)</b>	W49 × H59	
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10	

Note 1. Positioning repeatability in one direction.

## Motor installation (Space-saving model)



## Allowable overhang <sup>Note</sup>



Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)			
	A	B	C		A	B	C		A	C	
Lead 12	1kg	807	218	292	1kg	274	204	776	0.5kg	407	408
	2kg	667	107	152	2kg	133	93	611	1kg	204	204
Lead 6	2kg	687	116	169	2kg	149	102	656	1kg	223	223
	3kg	556	76	112	3kg	92	62	516	2kg	107	107
Lead 2	4kg	567	56	84	4kg	63	43	507	2kg	118	118
	4kg	869	61	92	4kg	72	48	829	4kg	53	53
Lead 2	6kg	863	40	60	6kg	39	29	789			

Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000 km (Service life is calculated for 400mm stroke models).

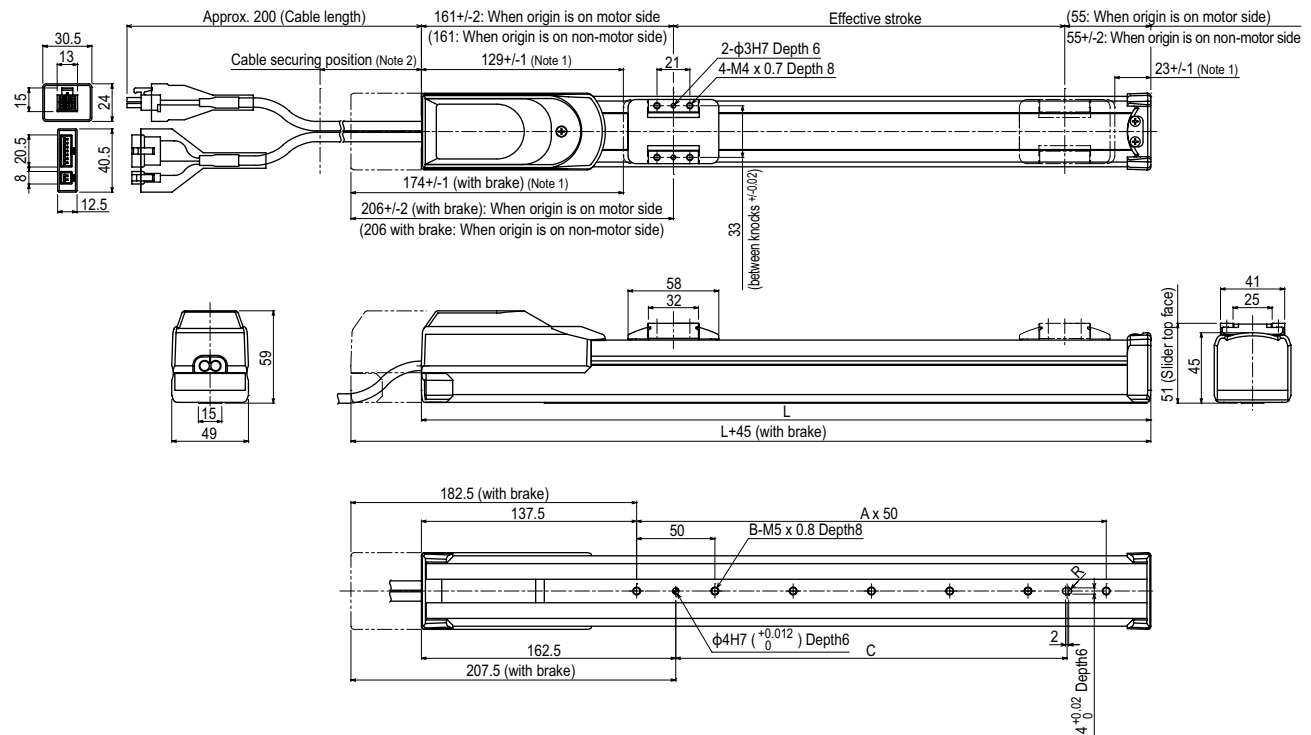
## Static loading moment

Static loading moment (Unit: N·m)		
MY	MP	MR
16	19	17

## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	I/O point trace / Remote command
TS-SD	Pulse train control

## SS04 Straight model S



Effective stroke	50	100	150	200	250	300	350	400
L	266	316	366	416	466	516	566	616
A	2	3	4	5	6	7	8	9
B	3	4	5	6	7	8	9	10
C	50	100	150	200	250	300	350	400
Weight (kg) <sup>Note 4</sup>	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.3

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 3. The cable's minimum bend radius is R30.  
 Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.





# SS05

Slider type



- High lead: Lead 20
- CE compliance
- Origin on the non-motor side is selectable

## Ordering method

### SS05

Model	Lead	Model	Brake	Origin position	Grease option	Stroke	Cable length
	20: 20mm 12: 12mm 06: 6mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: Standard grease C: Clean room grease	50 to 800 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

S2	I/O
Robot positioner S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board
SH	Battery
Robot positioner SH: TS-SH	B: With battery (Absolute) N: None (Incremental)
SD	I/O cable
Robot driver SD: TS-SD	1: 1m

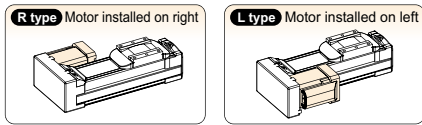
Note 1. Brake-equipped models can be selected only when the lead is 12mm or 6mm.  
 Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 3. The robot cable is flexible and resists bending.  
 Note 4. See P.522 for DIN rail mounting bracket.  
 Note 5. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

Motor	42 Step motor
Resolution (Pulse/rotation)	20480
Repeatability (mm)	+/-0.02
Deceleration mechanism	Ball screw φ12
Maximum motor torque (N·m)	0.27
Ball screw lead (mm)	20 12 6
Maximum speed (mm/sec)	1000 600 300
Maximum payload (kg)	Horizontal 4 6 10 Vertical - 1 2
Max. pressing force (N)	27 45 90
Stroke (mm)	50 to 800 (50mm pitch)
Overall length (mm)	Horizontal Stroke+230 Vertical Stroke+270
Maximum outside dimension of body cross-section (mm)	W55 × H56
Cable length (m)	Standard: 1 / Option: 3, 5, 10

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

## Motor installation (Space-saving model)



## Allowable overhang

Horizontal installation (Unit: mm)	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)					
	A	B	C	A	B	C	A	B	C			
Lead 20	2kg	413	139	218	2kg	192	123	372	Lead 20	0.5kg	578	579
	4kg	334	67	120		4kg	92	265		1kg	286	286
Lead 12	4kg	347	72	139	Lead 12	4kg	109	300	Lead 12	1kg	312	312
	6kg	335	47	95		6kg	63	263		2kg	148	148
Lead 6	4kg	503	78	165	Lead 6	4kg	134	63	496			
	8kg	332	37	79		6kg	76	35	377			
Lead 6	10kg	344	29	62	Lead 6	8kg	47	22	355			

Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000 km (Service life is calculated for 600mm stroke models).

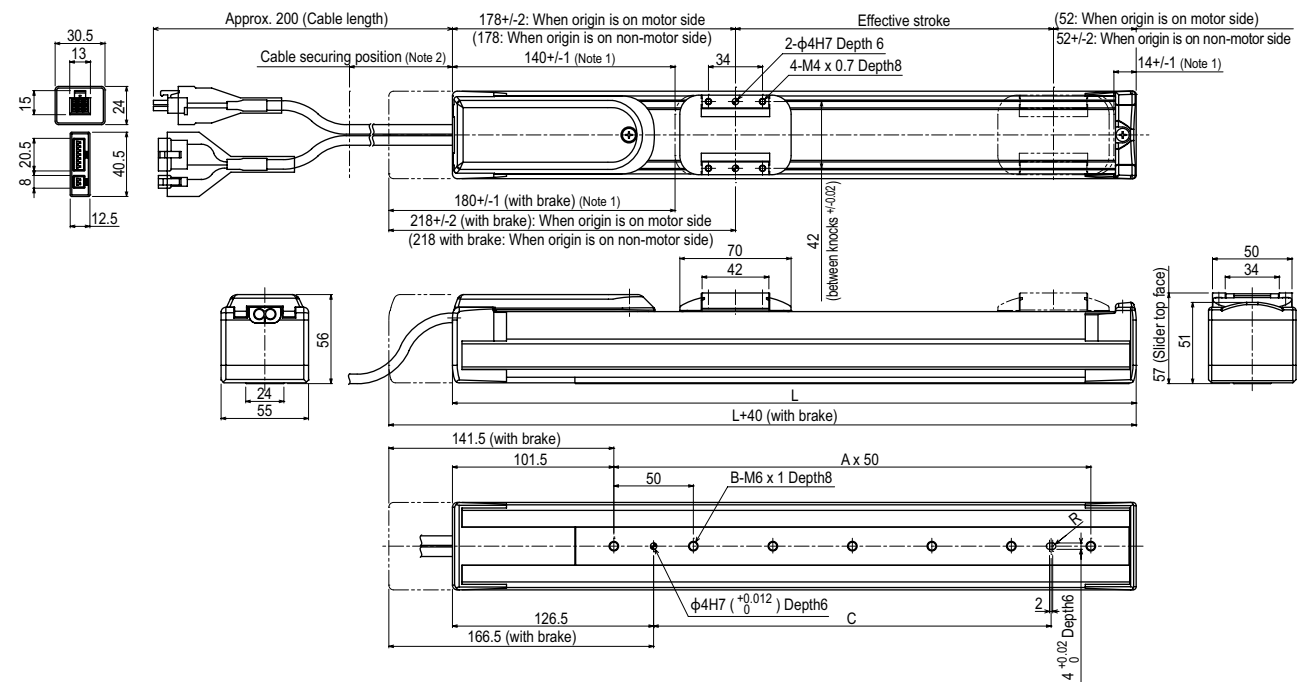
## Static loading moment

Static loading moment (Unit: N·m)		
MY	MP	MR
25	33	30

## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

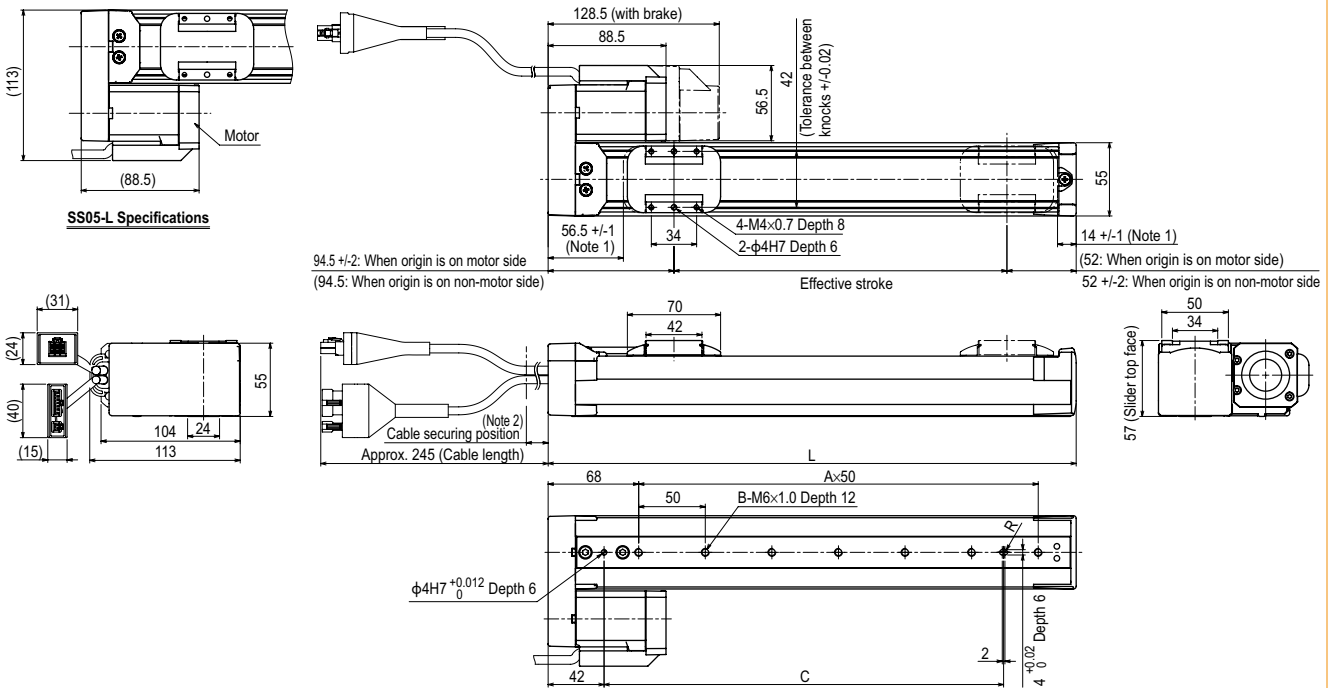
## SS05 Straight model S



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	280	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030
A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
Weight (kg)	2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0
Maximum speed for each stroke (mm/sec)	Lead20	1000										933	833	733	633	
	Lead12	600										560	500	440	380	
	Lead6	300										280	250	220	190	
	Speed setting	-										93%	83%	73%	63%	

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 3. The cable's minimum bend radius is R30.  
 Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.  
 Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

SS05 Space-saving model **R** **L**



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
<b>L</b>	196.5	246.5	296.5	346.5	396.5	446.5	496.5	546.5	596.5	646.5	696.5	746.5	796.5	846.5	896.5	946.5	
<b>A</b>	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
<b>B</b>	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
<b>C</b>	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500	
<b>Weight (kg)</b> <sup>Note 4</sup>	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.1	4.3	4.5	
<b>Maximum speed for each stroke</b> <sup>Note 5</sup> (mm/sec)	<b>Lead20</b>												1000	933	833	733	633
	<b>Lead12</b>												600	560	500	440	380
	<b>Lead6</b>												300	280	250	220	190
	<b>Speed setting</b>												-	93%	83%	73%	63%

- Note 1. Stop positions are determined by the mechanical stoppers at both ends.
- Note 2. Secure the cable with a tie-band 80mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
- Note 3. The cable's minimum bend radius is R30.
- Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.
- Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.
- Note 6. The belt cover's left and right sides are asymmetrical. Therefore, if the motor mounting orientation is changed, the cover cannot be attached.

# SS05H

Slider type



- High lead: Lead 20
- CE compliance
- Origin on the non-motor side is selectable

## Ordering method

<b>SS05H</b>							
<b>Model</b>	<b>Lead</b>	<b>Model</b>	<b>Brake</b> <sup>Note 1</sup>	<b>Origin position</b>	<b>Grease option</b>	<b>Stroke</b>	<b>Cable length</b> <sup>Note 3</sup>
	20: 20mm 12: 12mm 06: 6mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard <sup>Note 2</sup> Z: Non-motor side	N: Standard grease C: Clean room grease	50 to 800 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

<b>S2</b>	<b>I/O</b>
<b>Robot positioner</b> S2: TS-S2 <sup>Note 4</sup>	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 5</sup>
<b>SH</b>	<b>Battery</b>
<b>Robot positioner</b> SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 5</sup> B: With battery (Absolute) N: None (Incremental)
<b>SD</b>	<b>1</b>
<b>Robot driver</b> SD: TS-SD	<b>I/O cable</b> 1: 1m

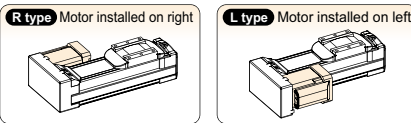
Note 1. Brake-equipped models can be selected only when the lead is 12mm or 6mm.  
 Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 3. The robot cable is flexible and resists bending.  
 Note 4. See P.522 for DIN rail mounting bracket.  
 Note 5. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

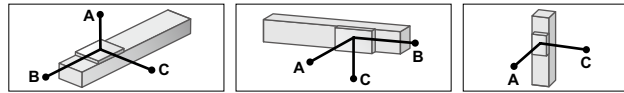
<b>Motor</b>	42 □ Step motor
<b>Resolution (Pulse/rotation)</b>	20480
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.02
<b>Deceleration mechanism</b>	Ball screw φ12
<b>Maximum motor torque (N·m)</b>	0.47
<b>Ball screw lead (mm)</b>	20    12    6
<b>Maximum speed</b> <sup>Note 2</sup> (mm/sec)	<b>Horizontal</b> 1000    600    300 <b>Vertical</b> -    500    250
<b>Maximum payload (kg)</b>	<b>Horizontal</b> 6    8    12 <b>Vertical</b> -    2    4
<b>Max. pressing force (N)</b>	36    60    120
<b>Stroke (mm)</b>	50 to 800 (50pitch)
<b>Overall length (mm)</b>	<b>Horizontal</b> Stroke+286 <b>Vertical</b> Stroke+306
<b>Maximum outside dimension of body cross-section (mm)</b>	W55 × H56
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

## Motor installation (Space-saving model)

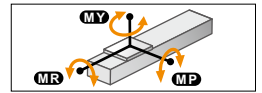


## Allowable overhang <sup>Note</sup>



Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)				
	A	B	C		A	B	C		A	C		
<b>Lead 20</b>	2kg	599	225	291	2kg	262	203	554	<b>Lead 12</b>	1kg	458	459
<b>4kg</b>	366	109	148	4kg	118	88	309	2kg		224	224	
<b>6kg</b>	352	71	104	6kg	71	49	262	2kg		244	244	
<b>Lead 12</b>	4kg	500	118	179	4kg	146	96	449	<b>Lead 6</b>	2kg	244	245
<b>6kg</b>	399	79	118	6kg	85	55	334	4kg		113	113	
<b>8kg</b>	403	56	88	8kg	55	34	305					
<b>Lead 6</b>	6kg	573	83	136	6kg	101	62	519				
	8kg	480	61	100	8kg	64	39	413				
	10kg	442	47	78	10kg	43	26	355				
	12kg	465	39	64	12kg	28	17	338				

## Static loading moment



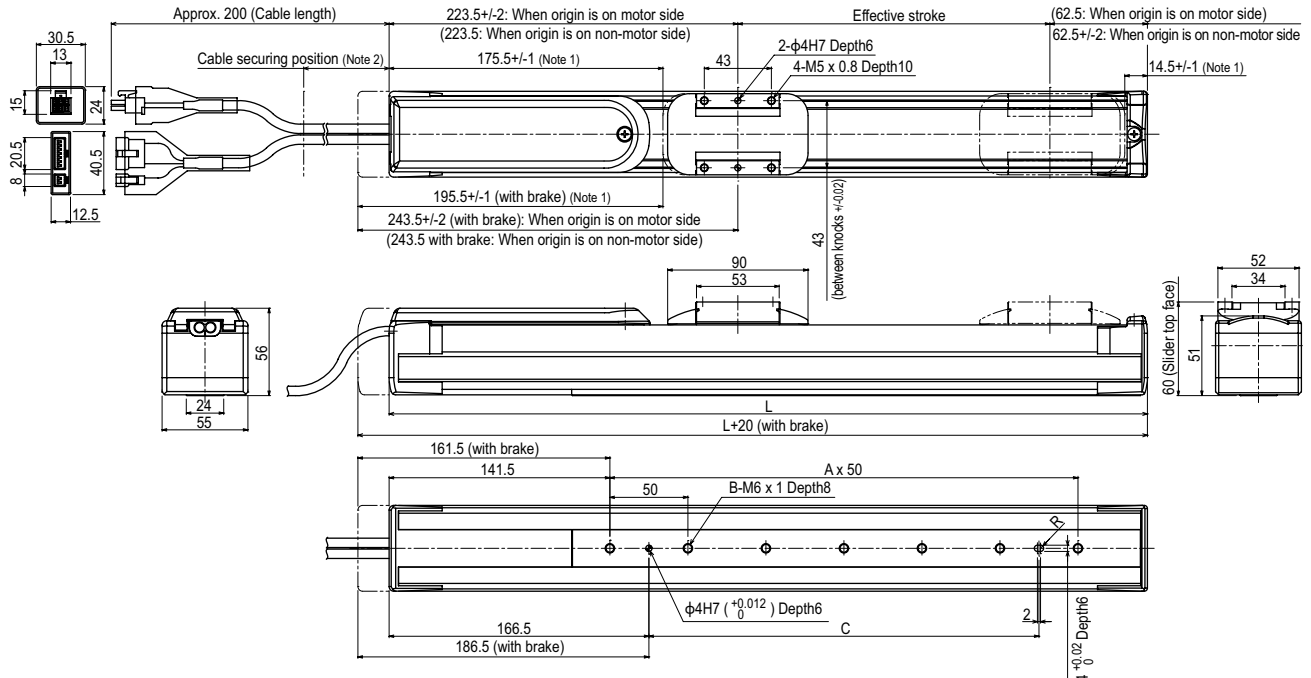
	MY	MP	MR
(Unit: N·m)	32	38	34

## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	I/O point trace / Remote command
TS-SD	Pulse train control

Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000 km (Service life is calculated for 600mm stroke models).

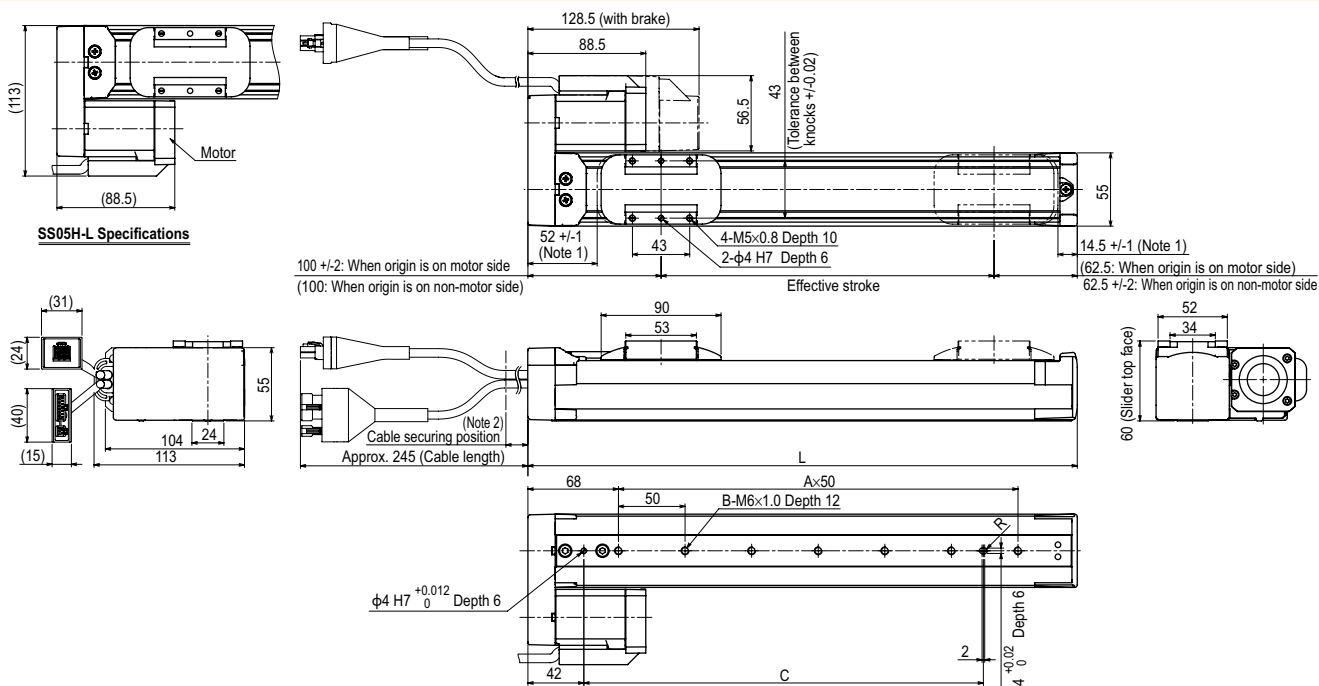
## SS05H Straight model <sup>S</sup>



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
<b>L</b>	336	386	436	486	536	586	636	686	736	786	836	886	936	986	1036	1086
<b>A</b>	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<b>B</b>	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>C</b>	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
<b>Weight (kg)</b> <sup>Note 4</sup>	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.5	4.7	4.9	5.1	5.3
<b>Maximum speed for each stroke</b> <sup>Note 5</sup> (mm/sec)	<b>Lead20</b>	1000														
	<b>Lead12 (Horizontal)</b>	600														
	<b>Lead12 (Vertical)</b>	500														
	<b>Lead6 (Horizontal)</b>	300														
	<b>Lead6 (Vertical)</b>	250														
<b>Speed setting</b>	-															
													93%	83%	73%	63%

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 3. The cable's minimum bend radius is R30.  
 Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.  
 Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

## SS05H Space-saving model R L



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	212.5	262.5	312.5	362.5	412.5	462.5	512.5	562.5	612.5	662.5	712.5	762.5	812.5	862.5	912.5	962.5
A	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
B	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
C	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
Weight (kg) <sup>Note 4</sup>	1.7	1.9	2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6
Maximum speed for each stroke <sup>Note 5</sup> (mm/sec)	Lead20	1000														
	Lead12 (Horizontal)	600														
	Lead12 (Vertical)	500														
	Lead6 (Horizontal)	300														
	Lead6 (Vertical)	250														
Speed setting												93%	83%	73%	63%	

- Note 1. Stop positions are determined by the mechanical stoppers at both ends.
- Note 2. Secure the cable with a tie-band 80mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
- Note 3. The cable's minimum bend radius is R30.
- Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.
- Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.
- Note 6. The belt cover's left and right sides are asymmetrical. Therefore, if the motor mounting orientation is changed, the cover cannot be attached.



# SG07 Slider type

- High lead: Lead 20
- CE compliance
- Origin on the non-motor side is selectable.



## Ordering method

<b>SG07</b>									<b>SH</b>		
<b>Model</b>	<b>Lead</b>	<b>Model</b>	<b>Brake</b>	<b>Origin position</b>	<b>Grease option</b>	<b>Stroke</b>	<b>Cable length</b> <sup>Note 2</sup>	<b>Robot positioner</b>	<b>I/O</b>	<b>Battery</b>	
	20: 20mm 12: 12mm 06: 6mm	S: Straight model	N: With no brake B: With brake	N: Standard <sup>Note 1</sup> Z: Non-motor side	N: Standard grease C: Clean room grease	50 to 800 (60mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m	SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	B: With battery (Absolute) N: None (Incremental)	

Note 1. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 2. The robot cable is flexible and resists bending.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

<b>Motor</b>	56 □ Step motor
<b>Resolution (Pulse/rotation)</b>	20480
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.02
<b>Deceleration mechanism</b>	Ball screw φ12
<b>Ball screw lead (mm)</b>	20 12 6
<b>Maximum speed</b> <sup>Note 2 Note 3</sup> (mm/sec)	1200 800 350
<b>Maximum payload (kg)</b>	Horizontal 36 43 46 Vertical 4 12 20
<b>Max. pressing force (N)</b>	60 100 225
<b>Stroke (mm)</b>	50 to 800 (50pitch)
<b>Overall length (mm)</b>	Horizontal Stroke+288 Vertical Stroke+328
<b>Maximum outside dimension of body cross-section (mm)</b>	W65×H64
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. It is necessary to change the maximum speed according to the payload. For details, see the "Speed vs. payload" graph shown below.  
 Note. Position detectors (resolvers) are common to incremental and absolute specifications.  
 If the controller has a backup function then it will be absolute specifications.

## Allowable overhang

Horizontal installation (Unit: mm)	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	C	
<b>Lead 20</b>	10kg 3572	458 486		10kg 450	402 3261		2kg 2303	2303	
<b>25kg</b>	2971	220 245		25kg 117	155 2943		4kg 1147	1147	
<b>36kg</b>	3150	140 160		36kg 98	85 2520		4kg 1386	1386	
<b>15kg</b>	3703	363 406		15kg 351	307 3403		12kg 442	442	
<b>Lead 12</b>	30kg 1962	172 196		30kg 134	117 1663		7kg 781	781	
<b>Lead 6</b>	43kg 1430	114 131		43kg 68	59 1070		20kg 252	252	
<b>Lead 6</b>	15kg 3853	363 414		15kg 353	307 3541				
<b>Lead 6</b>	30kg 2105	172 197		30kg 134	117 1752				
<b>Lead 6</b>	46kg 1500	106 122		46kg 58	50 1100				

Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000 km (Service life is calculated for 600mm stroke models).  
 Note. Calculated by the speed corresponding to the payload.

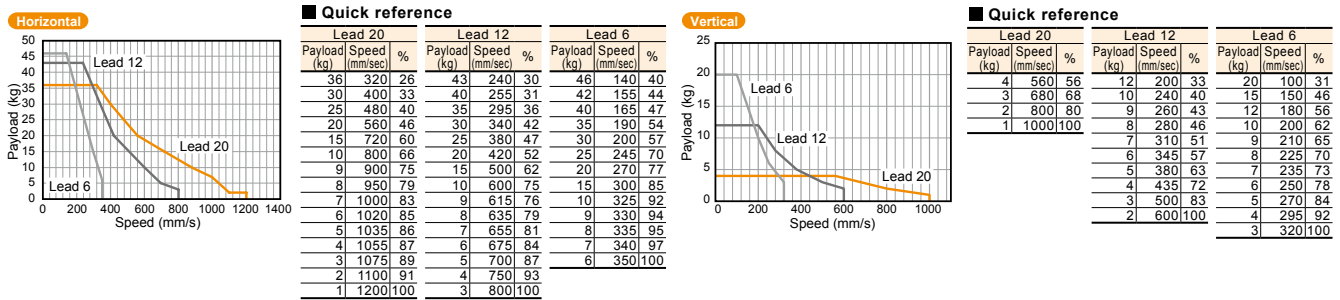
## Static loading moment

Static loading moment (Unit: N·m)		
MY	MP	MR
101	114	101

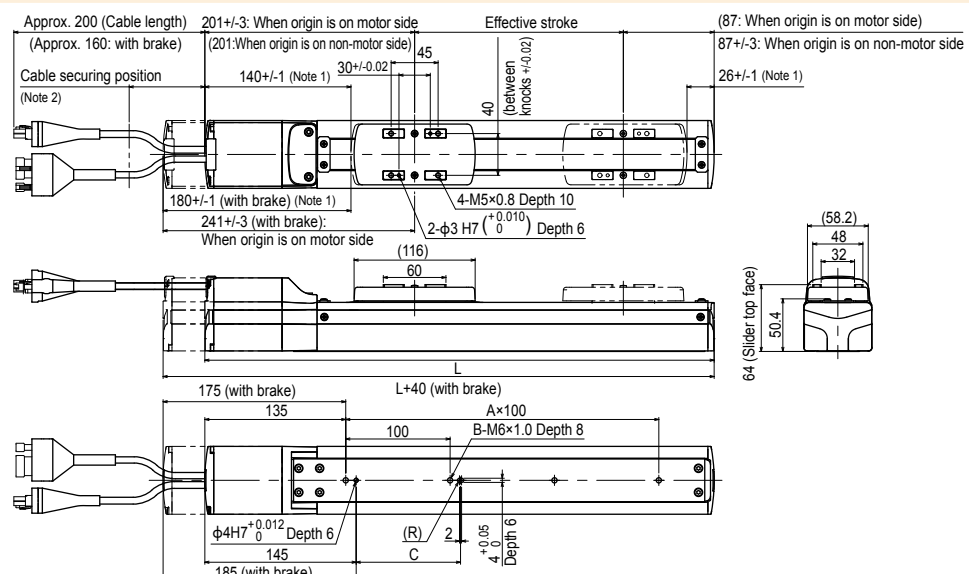
## Controller

Controller	Operation method
TS-SH	I/O point trace / Remote command

## Speed vs. payload



## SG07 Straight model



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
	L	338	388	438	488	538	588	638	688	738	788	838	888	938	988	1038	1088
A	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	
B	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	
C	100	100	100	100	100	100	400	400	400	400	400	400	700	700	700	700	
<b>Weight (kg)</b> <sup>Note 4</sup>	2.9	3.2	3.4	3.6	3.9	4.1	4.3	4.6	4.8	5.0	5.3	5.5	5.7	5.9	6.1	6.3	
<b>Maximum speed for each stroke</b> <sup>Note 5</sup> (mm/sec)	Lead20 (Horizontal)	1200															
	Lead20 (Vertical)	1000															
	Lead12 (Horizontal)	800															
	Lead12 (Vertical)	600															
	Lead6 (Horizontal)	350															
Lead6 (Vertical)	320																
<b>Speed setting</b>	85% 75% 65% 60%																

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 3. The cable's minimum bend radius is R30.  
 Note 4. These are the weights without a brake. The weights are 0.7kg heavier when equipped with a brake.  
 Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the below.

# SR03 Rod type

- CE compliance
- Origin on the non-motor side is selectable



## Ordering method

### SR03

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
	12: 12mm 06: 6mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left) U: Space-saving model (motor installed on top)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: No plate H: With plate V: With flange	50 to 200 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

Note 1. See P.153 for grease gun nozzles.  
Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

Note 3. The robot cable is flexible and resists bending.  
Note 4. See P.522 for DIN rail mounting bracket.  
Note 5. Select this selection when using the gateway function. For details, see P.66.

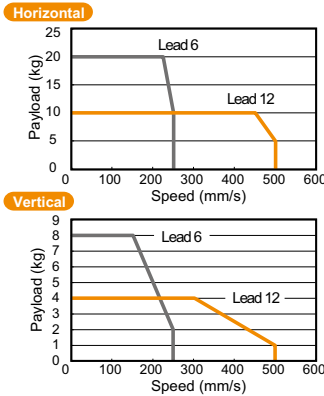
S2	SH	SD
<b>Robot positioner</b> S2: TS-S2	<b>Robot positioner</b> SH: TS-SH	<b>Robot driver</b> SD: TS-SD
<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	<b>I/O cable</b> t: 1m
	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)	
	<b>1</b>	

## Basic specifications

<b>Motor</b>	42 □ Step motor
<b>Resolution (Pulse/rotation)</b>	20480
<b>Repeatability (mm)</b>	+/-0.02
<b>Deceleration mechanism</b>	Ball screw φ8
<b>Ball screw lead (mm)</b>	12
<b>Maximum speed (mm/sec)</b>	500
<b>Maximum payload (kg)</b>	Horizontal: 10 Vertical: 4
<b>Max. pressing force (N)</b>	75
<b>Stroke (mm)</b>	50 to 200 (50pitch)
<b>Lost motion</b>	0.1mm or less
<b>Rotating backlash (°)</b>	+/-1.0
<b>Overall length (mm)</b>	Horizontal: Stroke+236.5 Vertical: Stroke+276.5
<b>Maximum outside dimension of body cross-section (mm)</b>	W48 × H56.5
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10

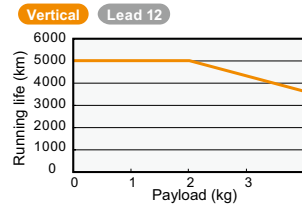
Note 1. The maximum speed needs to be changed in accordance with the payload.  
See the "Speed vs. payload" graph shown on the right.  
For details, see P. 152.

## Speed vs. payload



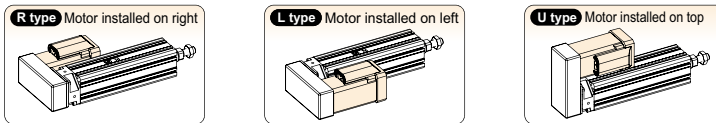
## Running life

5000 km on models other than shown below.  
Running life of only the model shown below becomes shorter than 5000 km depending on the payload, so check the running life curve.



Note. See P.153 for running life distance to life time conversion example.

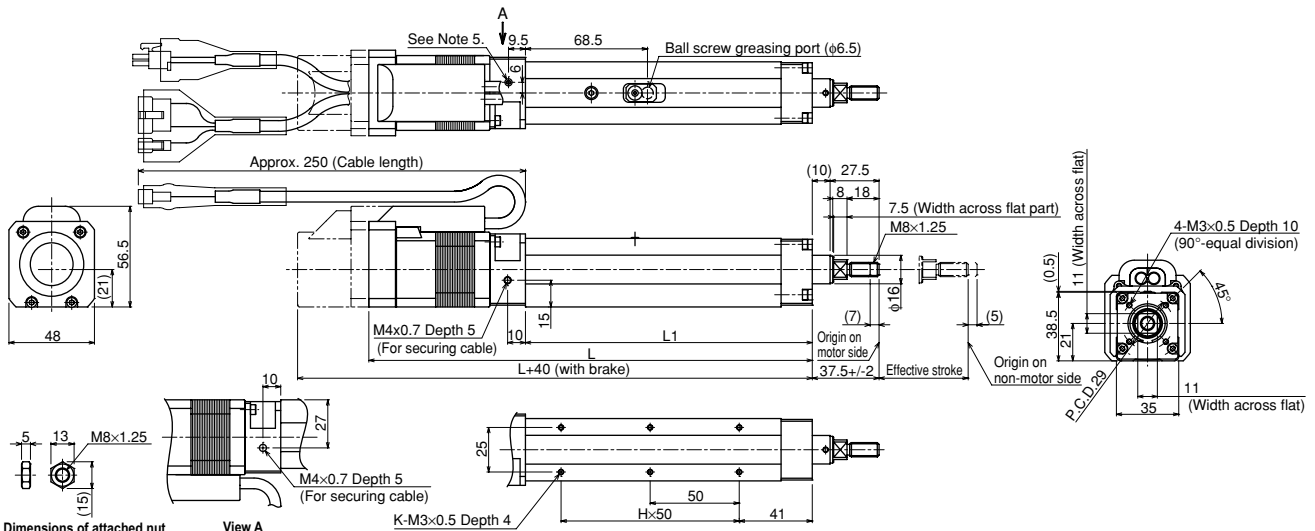
## Motor installation (Space-saving model)



## Controller

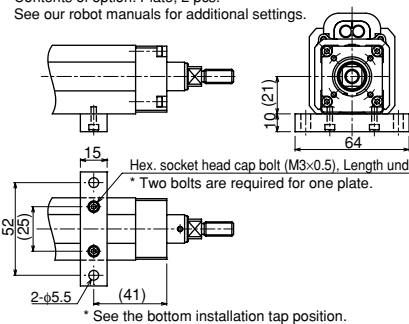
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control
TS-SH			

## SR03 Straight model S

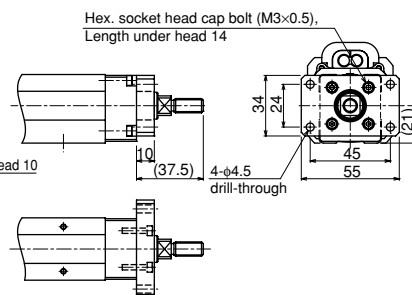


**Option: Horizontal installation plate (foot)**

\* Contents of option: Plate, 2 pcs.  
See our robot manuals for additional settings.



**Option: Vertical installation plate (flange)**



Effective stroke	50	100	150	200
<b>L1</b>	161	211	261	311
<b>L</b>	249	299	349	399
<b>H</b>	2	3	4	5
<b>K</b>	6	8	10	12
<b>Weight (kg)</b>	1.1	1.3	1.4	1.6

Note 1. It is possible to apply only the axial load.  
Note 2. The orientation of the width across flat part is undefined to the base surface.  
Note 3. Use the support guide together to maintain the straightness.  
Note 4. When running the cables, secure cables so that any load is not applied to them.  
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 6. The cable's minimum bend radius is R30.  
Note 7. Models with a brake will be 0.2kg heavier.  
Note 8. Distance to mechanical stopper.

## SR03 Space-saving model (motor installed on right) **R**

**Dimensions of attached nut**

Effective stroke	50	100	150	200
L1	161	211	261	311
L	204	254	304	354
H	2	3	4	5
K	6	8	10	12
Weight (kg) <sup>Note 7</sup>	1.3	1.5	1.6	1.8

**Option: Horizontal installation plate (foot)**

\* Contents of option: Plate, 2 pcs.  
See our robot manuals for additional settings.

**Option: Vertical installation plate (flange)**

Hex. socket head cap bolt (M3×0.5), Length under head 10  
\* Two bolts are required for one plate.

Hex. socket head cap bolt (M3×0.5), Length under head 14

**Note 1.** It is possible to apply only the axial load. Use the external guide together so that any radial load is not applied to the rod.  
**Note 2.** The orientation of the width across flat part is undefined to the base surface.  
**Note 3.** Use the support guide together to maintain the straightness.  
**Note 4.** When running the cables, secure cables so that any load is not applied to them.  
**Note 5.** Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
**Note 6.** The cable's minimum bend radius is R30.  
**Note 7.** Models with a brake will be 0.2kg heavier.  
**Note 8.** Distance to mechanical stopper.

## SR03 Space-saving model (motor installed on left) **L**

**Dimensions of attached nut**

Effective stroke	50	100	150	200
L1	161	211	261	311
L	204	254	304	354
H	2	3	4	5
K	6	8	10	12
Weight (kg) <sup>Note 7</sup>	1.3	1.5	1.6	1.8

**Option: Horizontal installation plate (foot)**

\* Contents of option: Plate, 2 pcs.  
See our robot manuals for additional settings.

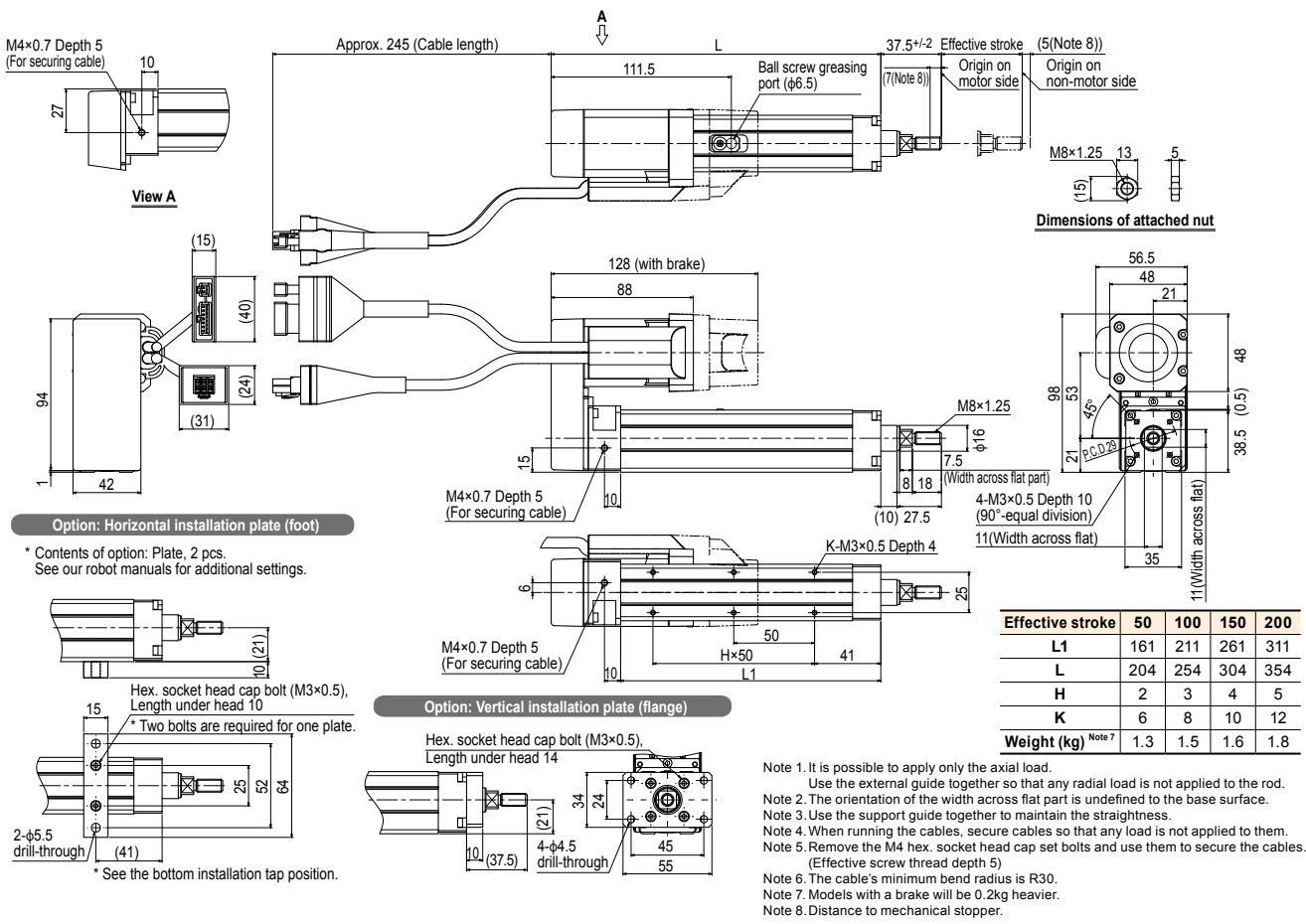
**Option: Vertical installation plate (flange)**

Hex. socket head cap bolt (M3×0.5), Length under head 10  
\* Two bolts are required for one plate.

Hex. socket head cap bolt (M3×0.5), Length under head 14

**Note 1.** It is possible to apply only the axial load. Use the external guide together so that any radial load is not applied to the rod.  
**Note 2.** The orientation of the width across flat part is undefined to the base surface.  
**Note 3.** Use the support guide together to maintain the straightness.  
**Note 4.** When running the cables, secure cables so that any load is not applied to them.  
**Note 5.** Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
**Note 6.** The cable's minimum bend radius is R30.  
**Note 7.** Models with a brake will be 0.2kg heavier.  
**Note 8.** Distance to mechanical stopper.

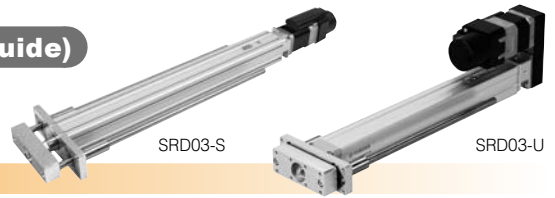
SR03 Space-saving model (motor installed on top) U



# SRD03

Rod type (With support guide)

- CE compliance
- Origin on the non-motor side is selectable: Lead 6, 12



## Ordering method

### SRD03

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length <sup>Note 3</sup>
	12: 12mm 06: 6mm	S: Straight model U: Space-saving model <sup>Note 1</sup> (motor installed on top)	N: With no brake B: With brake	N: Standard <sup>Note 2</sup> Z: Non-motor side	N: No plate H: With plate	50 to 200 (60mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

S2	I/O
Robot positioner S2: TS-S2 <sup>Note 4</sup>	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 5</sup>
SH	Battery
Robot positioner SH: TS-SH	B: With battery (Absolute) N: None (Incremental)
SD	1
Robot driver SD: TS-SD	I/O cable 1: 1m

Note 1. See P.153 for grease gun nozzles.  
Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

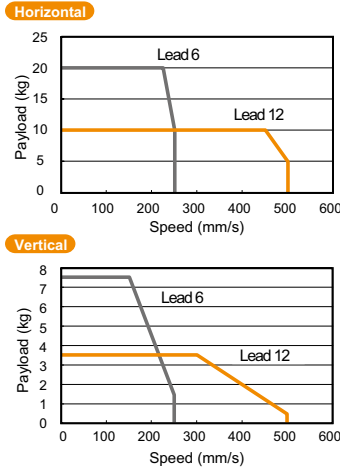
Note 3. The robot cable is flexible and resists bending.  
Note 4. See P.522 for DIN rail mounting bracket.  
Note 5. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

Motor	42 □ Step motor
Resolution (Pulse/rotation)	20480
Repeatability (mm)	+/-0.02
Deceleration mechanism	Ball screw φ8
Ball screw lead (mm)	12      6
Maximum speed <sup>Note 1</sup> (mm/sec)	500      250
Maximum payload (kg)	Horizontal: 10, 20 Vertical: 3.5, 7.5
Max. pressing force (N)	75      100
Stroke (mm)	50 to 200 (50pitch)
Lost motion	0.1mm or less
Rotating backlash (°)	+/-0.05
Overall length (mm)	Horizontal: Stroke+236.5 Vertical: Stroke+276.5
Maximum outside dimension of body cross-section (mm)	W48 × H56.5
Cable length (m)	Standard: 1 / Option: 3, 5, 10

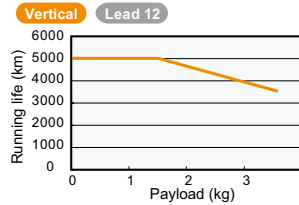
Note 1. The maximum speed needs to be changed in accordance with the payload.  
See the "Speed vs. payload" graph shown on the right.  
For details, see P. 152.

## Speed vs. payload



## Running life

5000 km on models other than shown below.  
Running life of only the model shown below becomes shorter than 5000 km depending on the payload, so check the running life curve.

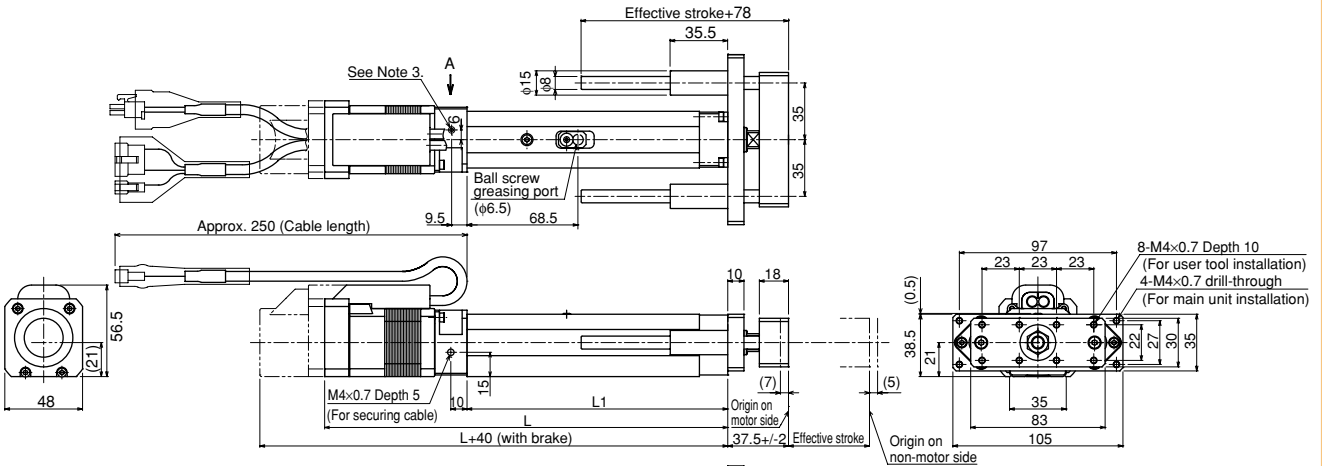


Note. See P.153 for running life distance to life time conversion example.

## Controller

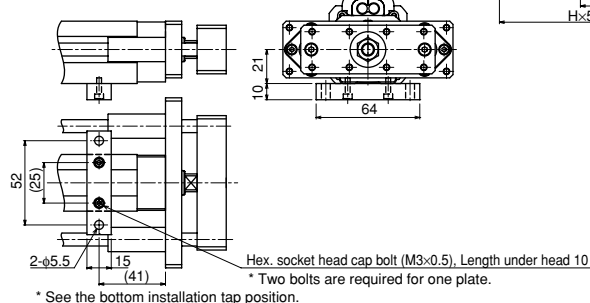
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control

## SRD03 Straight model S



### Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs.  
See our robot manuals for additional settings.

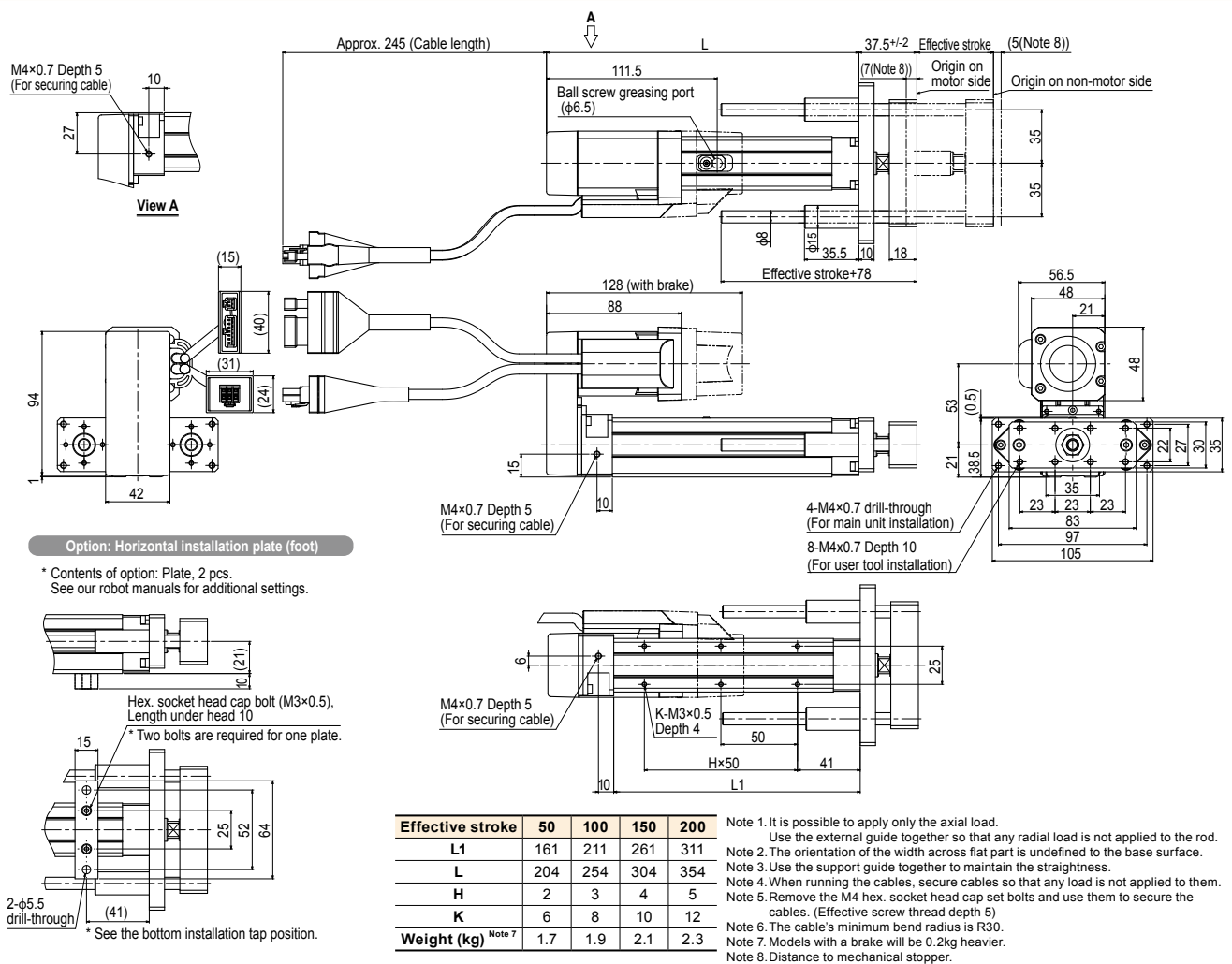


Effective stroke	50	100	150	200
L1	161	211	261	311
L	249	299	349	399
H	2	3	4	5
K	6	8	10	12
Weight (kg) <sup>Note 5</sup>	1.5	1.7	1.9	2.1

Note 1. It is possible to apply only the axial load.  
Use the external guide together so that any radial load is not applied to the rod.  
Note 2. When running the cables, secure cables so that any load is not applied to them.  
Note 3. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 4. The cable's minimum bend radius is R30.  
Note 5. Models with a brake will be 0.2kg heavier.  
Note 6. Distance to mechanical stopper.



SRD03 Space-saving model (motor installed on top) **U**





SR04 Space-saving model (motor installed on right) **R**

Approx. 245 (Cable length)

Effective stroke (5)(Note 8)

42.5<sup>+2</sup> (7)(Note 8)

152 (with brake)  
112

Origin on motor side

Origin on non-motor side (Note 9)

5.8  
3.3  
1.5  
17  
6  
M10x1.25  
(19.6)

Detail of section B

Dimensions of attached nut

56  
14 (Width across flat)

45°

T-slot for M3 (8 locations)

4-M4x0.7 Depth 10 (90°-equal division)

48  
1.5  
25  
45  
102.5

Ball screw greasing port (φ6.5)

L1(T-slot range)

M10x1.25  
φ20  
8.5  
9 22 (Width across flat part)  
(10) 32.5

14 (Width across flat)

M4×0.7 Depth 5 (For securing cable)

9.5

16.5

M4×0.7 Depth 5 (For securing cable)

9.5

M3x0.5 2.4  
(7.8)

Dimensions of attached square nut for T-slot (6 pcs.)

Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 12 pcs.  
See our robot manuals for additional settings.

Option: Vertical installation plate (flange)

Installed within the T-slot range of the main unit.  
(Hex. socket head cap bolt (M3×0.5), Length under head 10)  
\* Six bolts are required for one plate.

2-φ6.6 drill-through  
20  
10  
42.5

Hex. socket head cap bolt (M4×0.7), Length under head 14  
73  
4-φ6.6 drill-through  
60  
45  
34  
71  
(22.5)

Effective stroke	50	100	150	200	250	300
L1	162.5	212.5	262.5	312.5	362.5	412.5
L	209.5	259.5	309.5	359.5	409.5	459.5
Weight (kg) <sup>Note 7</sup>	1.6	1.9	2.1	2.4	2.6	2.9
Maximum speed for each stroke (mm/sec)	Lead 12	500		440		320
	Lead 6	250		220		160
	Lead 2	80		72		53

Note 1. It is possible to apply only the axial load.  
Use the external guide together so that any radial load is not applied to the rod.  
Note 2. The orientation of the width across flat part is undefined to the base surface.  
Note 3. Use the support guide together to maintain the straightness.  
Note 4. When running the cables, secure cables so that any load is not applied to them.  
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 6. The cable's minimum bend radius is R30.  
Note 7. Models with a brake will be 0.2kg heavier.  
Note 8. Distance to mechanical stopper.  
Note 9. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
Note 10. This unit can be installed with the motor facing up (turned 90 degrees from the position in this drawing).

SR04 Space-saving model (motor installed on left) **L**

Approx. 245 (Cable length)

Effective stroke (5)(Note 8)

42.5<sup>+2</sup> (7)(Note 8)

152 (with brake)  
112

Origin on motor side

Origin on non-motor side (Note 9)

5.8  
3.3  
1.5  
17  
6  
M10x1.25  
(19.6)

Detail of section B

Dimensions of attached nut

56  
14 (Width across flat)

45°

T-slot for M3 (8 locations)

4-M4x0.7 Depth 10 (90°-equal division)

48  
1.5  
25  
45  
102.5

Ball screw greasing port (φ6.5)

L1(T-slot range)

M10x1.25  
φ20  
8.5  
9 22 (Width across flat part)  
(10) 32.5

14 (Width across flat)

M4×0.7 Depth 5 (For securing cable)

9.5

28.5

M4×0.7 Depth 5 (For securing cable)

9.5

M3x0.5 2.4  
(7.8)

Dimensions of attached square nut for T-slot (6 pcs.)

Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 12 pcs.  
See our robot manuals for additional settings.

Option: Vertical installation plate (flange)

Installed within the T-slot range of the main unit.  
(Hex. socket head cap bolt (M3×0.5), Length under head 10)  
\* Six bolts are required for one plate.

2-φ6.6 drill-through  
20  
10  
42.5

Hex. socket head cap bolt (M4×0.7), Length under head 14  
73  
4-φ6.6 drill-through  
60  
45  
34  
71  
(22.5)

Effective stroke	50	100	150	200	250	300
L1	162.5	212.5	262.5	312.5	362.5	412.5
L	209.5	259.5	309.5	359.5	409.5	459.5
Weight (kg) <sup>Note 7</sup>	1.6	1.9	2.1	2.4	2.6	2.9
Maximum speed for each stroke (mm/sec)	Lead 12	500		440		320
	Lead 6	250		220		160
	Lead 2	80		72		53

Note 1. It is possible to apply only the axial load.  
Use the external guide together so that any radial load is not applied to the rod.  
Note 2. The orientation of the width across flat part is undefined to the base surface.  
Note 3. Use the support guide together to maintain the straightness.  
Note 4. When running the cables, secure cables so that any load is not applied to them.  
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 6. The cable's minimum bend radius is R30.  
Note 7. Models with a brake will be 0.2kg heavier.  
Note 8. Distance to mechanical stopper.  
Note 9. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
Note 10. This unit can be installed with the motor facing up (turned 90 degrees from the position in this drawing).

# SRD04

## Rod type (With support guide)



- CE compliance
- Origin on the non-motor side is selectable: Lead 6, 12

### Ordering method

## SRD04

<b>Model</b>	<b>Lead</b>	<b>Model</b>	<b>Brake</b>	<b>Origin position</b> <small>Note 2</small>	<b>Bracket plate</b>	<b>Stroke</b>	<b>Cable length</b> <small>Note 4</small>
	12: 12mm 06: 6mm 02: 2mm	S: Straight model J: Space-saving model <small>Note 1</small> (motor installed on top)	N: With no brake B: With brake	N: Standard <small>Note 3</small> Z: Non-motor side	N: No plate H: With plate	50 to 300 (60mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

## S2

<b>Robot positioner</b>	<b>I/O</b>
S2: TS-S2 <small>Note 5</small>	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 6</small>

## SH

<b>Robot positioner</b>	<b>I/O</b>	<b>Battery</b>
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 6</small>	B: With battery (Absolute) N: None (Incremental)

## SD 1

<b>Robot driver</b>	<b>I/O cable</b>
SD: TS-SD	f: 1m

Note 1. See P.153 for grease gun nozzles.  
 Note 2. When "2mm lead" is selected, the origin position cannot be changed (to non-motor side).  
 Note 3. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

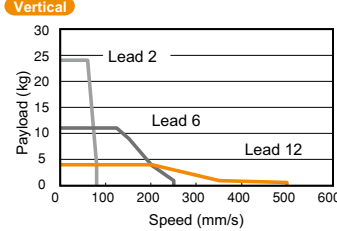
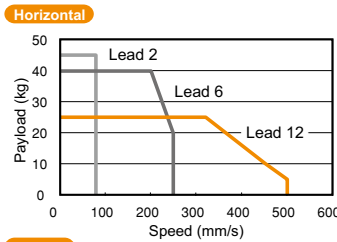
Note 4. The robot cable is flexible and resists bending.  
 Note 5. See P.522 for DIN rail mounting bracket.  
 Note 6. Select this selection when using the gateway function. For details, see P.66.

### Basic specifications

<b>Motor</b>	42 □ Step motor	
<b>Resolution (Pulse/rotation)</b>	20480	
<b>Repeatability (mm)</b>	+/-0.02	
<b>Deceleration mechanism</b>	Ball screw φ8	Ball screw φ10
<b>Ball screw lead (mm)</b>	12    6    2	
<b>Maximum speed</b> <small>Note 1</small> (mm/sec)	500    250    80	
<b>Maximum payload (kg)</b>	<b>Horizontal</b>	<b>Vertical</b>
	25    40    45	4    11    24
<b>Max. pressing force (N)</b>	150    300    600	
<b>Stroke (mm)</b>	50 to 300 (50pitch)	
<b>Lost motion</b>	0.1mm or less	
<b>Rotating backlash (°)</b>	+/-0.05	
<b>Overall length</b>	<b>Horizontal</b>	<b>Vertical</b>
	Stroke+263	Stroke+303
<b>Maximum outside dimension of body cross-section (mm)</b>	W48 × H58	
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10	

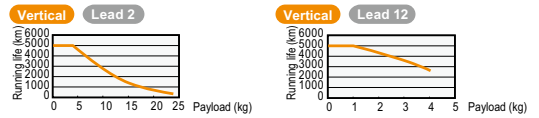
Note 1. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right. For details, see P. 152.  
 Additionally, when the stroke is long, the maximum speed is decreased due to the critical speed of the ball screw.  
 See the maximum speed table shown at the lower portion of the drawing.

### Speed vs. payload



### Running life

5000 km on models other than shown below.  
 Running life of only the model shown below becomes shorter than 5000 km depending on the payload, so check the running life curve.

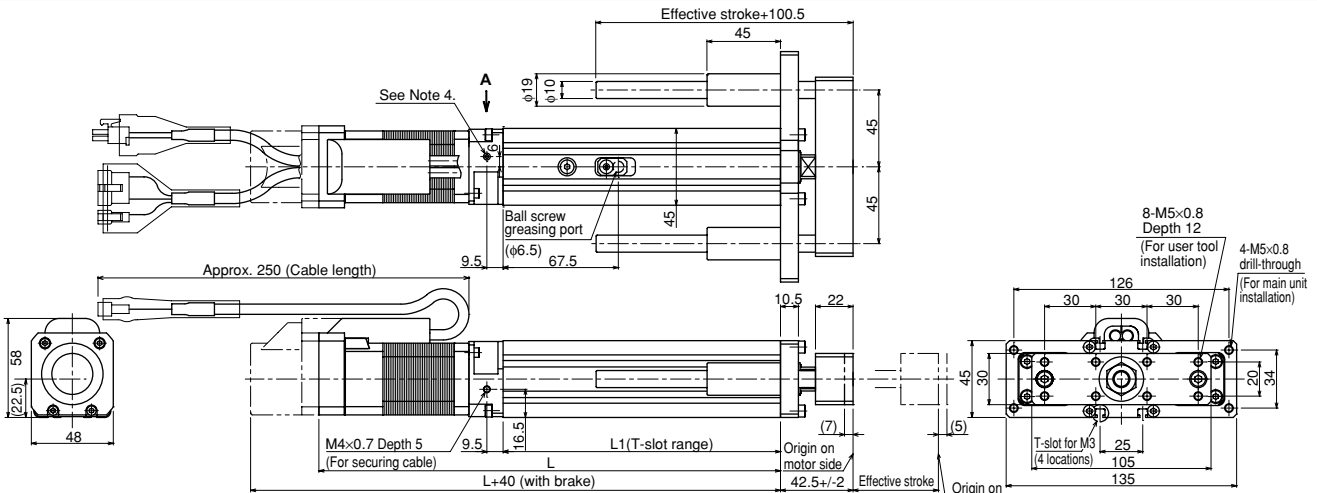


Note. See P.153 for running life distance to life time conversion example.

### Controller

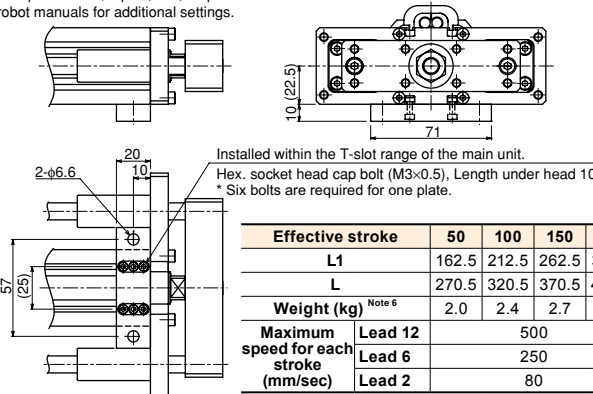
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control
TS-SH			

### SRD04 Straight model S



#### Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 12 pcs.  
 See our robot manuals for additional settings.



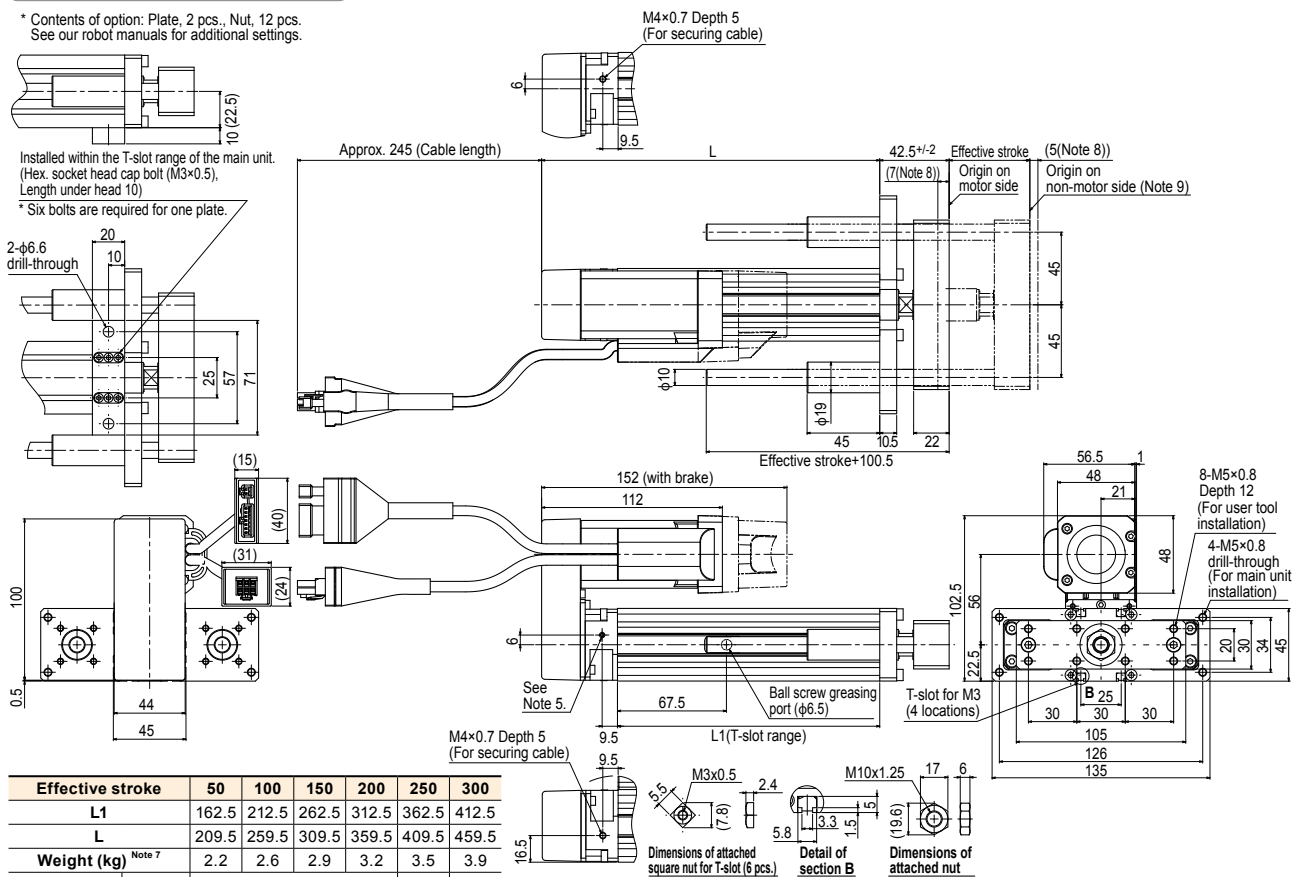
Effective stroke	50	100	150	200	250	300
L1	162.5	212.5	262.5	312.5	362.5	412.5
L	270.5	320.5	370.5	420.5	470.5	520.5
<b>Weight (kg)</b> <small>Note 6</small>	2.0	2.4	2.7	3.0	3.3	3.7
<b>Maximum speed for each stroke (mm/sec)</b>						
Lead 12	500			440		
Lead 6	250			220		
Lead 2	80			72		

Note 1. It is possible to apply only the axial load.  
 Use the external guide together so that any radial load is not applied to the rod.  
 Note 2. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
 Note 3. When running the cables, secure cables so that any load is not applied to them.  
 Note 4. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
 Note 5. The cable's minimum bend radius is R30.  
 Note 6. Models with a brake will be 0.2kg heavier.  
 Note 7. Distance to mechanical stopper.

## SRD04 Space-saving model (motor installed on top) U

Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 12 pcs.  
See our robot manuals for additional settings.



Effective stroke	50	100	150	200	250	300
L1	162.5	212.5	262.5	312.5	362.5	412.5
L	209.5	259.5	309.5	359.5	409.5	459.5
Weight (kg) <sup>Note 7</sup>	2.2	2.6	2.9	3.2	3.5	3.9
Maximum speed for each stroke (mm/sec)	Lead 12	500		440	320	
	Lead 6	250		220	160	
	Lead 2	80		72	53	

Note 1. It is possible to apply only the axial load.  
Use the external guide together so that any radial load is not applied to the rod.  
Note 2. The orientation of the width across flat part is undefined to the base surface.

Note 3. Use the support guide together to maintain the straightness.  
Note 4. When running the cables, secure cables so that any load is not applied to them.  
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 6. The cable's minimum bend radius is R30.  
Note 7. Models with a brake will be 0.2kg heavier.  
Note 8. Distance to mechanical stopper.  
Note 9. For lead 2mm specifications, the origin on the non-motor side cannot be set.



# SR05 Rod type

- CE compliance
- Origin on the non-motor side is selectable: Lead 6, 12



## Ordering method

### SR05

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
	12: 12mm 06: 6mm 02: 2mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: No plate H: With plate V: With flange	50 to 300 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

- Note 1. See P.153 for grease gun nozzles.  
 Note 2. When "2mm lead" is selected, the origin position cannot be changed (to non-motor side).  
 Note 3. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 4. The robot cable is flexible and resists bending.  
 Note 5. See P.522 for DIN rail mounting bracket.  
 Note 6. Select this selection when using the gateway function. For details, see P.66.

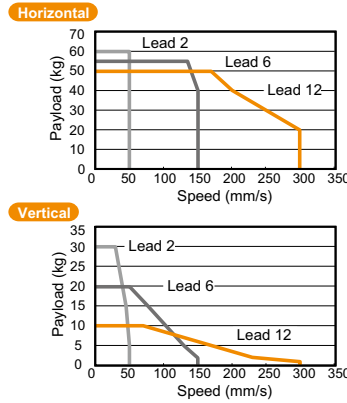
S2	S2	S2
Robot positioner S2: TS-S2	I/O NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	
SH	SH: TS-SH	Battery B: With battery (Absolute) N: None (Incremental)
SD	SD: TS-SD	I/O cable 1: 1m

## Basic specifications

Motor	56 Step motor	
Resolution (Pulse/rotation)	20480	
Repeatability (mm)	±0.02	
Deceleration mechanism	Ball screw φ12	
Ball screw lead (mm)	12	6
Maximum speed (mm/sec)	300	150
Maximum payload (kg)	Horizontal	Vertical
Max. pressing force (N)	250	550
Stroke (mm)	50 to 300 (50pitch)	
Lost motion	0.1mm or less	
Rotating backlash (°)	±1.0	
Overall length (mm)	Horizontal	Vertical
Maximum outside dimension of body cross-section (mm)	W56.4 × H71	
Cable length (m)	Standard: 1 / Option: 3, 5, 10	

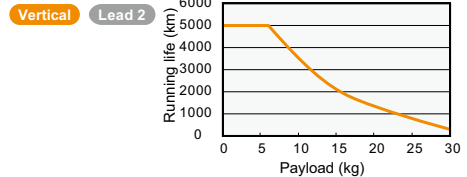
Note 1. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right.  
 For details, see P. 152.

## Speed vs. payload



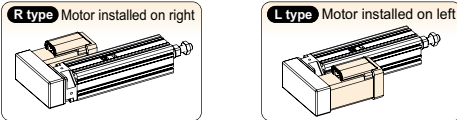
## Running life

5000 km on models other than shown below.  
 Running life of only the model shown below becomes shorter than 5000 km depending on the payload, so check the running life curve.



Note. See P.153 for running life distance to life time conversion example.

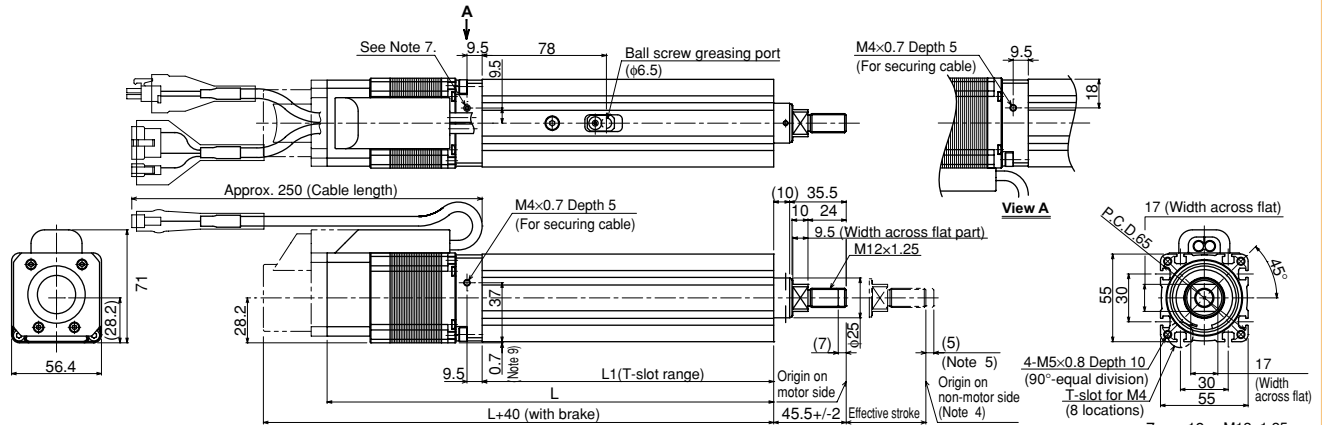
## Motor installation (Space-saving model)



## Controller

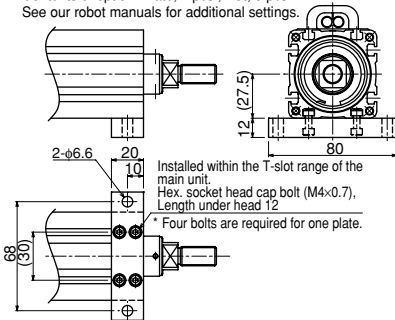
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control

## SR05 Straight model S



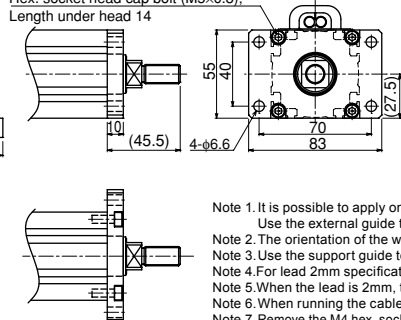
### Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 8 pcs.  
 See our robot manuals for additional settings.



### Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M5×0.8), Length under head 14



Dimensions of attached square nut for T-slot (6 pcs.)

Effective stroke	50	100	150	200	250	300
L1	183	233	283	333	383	433
L	280.5	330.5	380.5	430.5	480.5	530.5
Weight (kg)	2.2	2.6	3.0	3.3	3.7	4.1

- Note 1. It is possible to apply only the axial load.  
 Note 2. Use the external guide together so that any radial load is not applied to the rod.  
 Note 3. The orientation of the width across flat part is undefined to the base surface.  
 Note 4. Use the support guide together to maintain the straightness.  
 Note 5. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
 Note 6. When the lead is 2mm, this dimension is 27mm.  
 Note 7. When running the cables, secure cables so that any load is not applied to them.  
 Note 8. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
 Note 9. The cable's minimum bend radius is R30.  
 Note 10. Models with a brake will be 0.2kg heavier.  
 Note 11. Distance to mechanical stopper.

SR05 Space-saving model (motor installed on right) **R**

Approx. 245 (Cable length)

146 (with brake)  
106

45.5<sup>+/-2</sup> Effective stroke (5(Note 8,Note 12))  
(7(Note 8))

Ball screw greasing port (φ6.5)

Origin on motor side

Origin on non-motor side (Note 9)

M4x0.7 (9.9)

Dimensions of attached square nut for T-slot (6 pcs.)

7.3  
4.3  
1.5  
6

M12x1.25 19 7  
(21.9)

Dimensions of attached nut

Detail of section B

28.5 70  
T-slot for M4 (8 locations)

17 (Width across flat)

30 55  
56.5 71

9.5 (Width across flat part)

10 24 17 (Width across flat)

30 55

56.4

M12x1.25

9.5 (Width across flat part)

10 24 17 (Width across flat)

(10) 35.5

9.5

0.7 (Note 11)

37

9.5

M4x0.7 Depth 5 (For securing cable)

M4x0.7 Depth 5 (For securing cable)

L1(T-slot range)

78

See Note 5.

9.5

Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 8 pcs. See our robot manuals for additional settings.

127.5

56.5

Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M5x0.8), Length under head 14

4-φ6.6 drill-through

2-φ6.6 drill-through

20

10

Installed within the T-slot range of the main unit. (Hex. socket head cap bolt (M4x0.7), Length under head 12)

\* Four bolts are required for one plate.

12 (27.5)

68

80

28.2

40

70

83

45.5

Effective stroke	50	100	150	200	250	300
L1	183	233	283	333	383	433
L	227.5	277.5	327.5	377.5	427.5	477.5
Weight (kg) <sup>Note 7</sup>	2.4	2.8	3.2	3.5	3.9	4.3

Note 1. It is possible to apply only the axial load.  
Use the external guide together so that any radial load is not applied to the rod.  
Note 2. The orientation of the width across flat part is undefined to the base surface.  
Note 3. Use the support guide together to maintain the straightness.  
Note 4. When running the cables, secure cables so that any load is not applied to them.  
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 6. The cable's minimum bend radius is R30.  
Note 7. Models with a brake will be 0.2kg heavier.  
Note 8. Distance to mechanical stopper.  
Note 9. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
Note 10. This unit can be installed with the motor facing up (turned 90 degrees from the position in this drawing).  
Note 11. Take great care as the outer case of the motor and cover belt projects from the bottom of the main unit.  
Note 12. When the lead is 2mm, this dimension is 27mm.

SR05 Space-saving model (motor installed on left) **L**

Approx. 245 (Cable length)

106

146 (with brake)

45.5<sup>+/-2</sup> Effective stroke (5(Note 8,Note 12))  
(7(Note 8))

Ball screw greasing port (φ6.5)

Origin on motor side

Origin on non-motor side (Note 9)

M4x0.7 (9.9)

Dimensions of attached square nut for T-slot (6 pcs.)

7.3  
4.3  
1.5  
6

M12x1.25 19 7  
(21.9)

Dimensions of attached nut

Detail of section B

28.5 70  
T-slot for M4 (8 locations)

17 (Width across flat)

30 55  
56.5 71

9.5 (Width across flat part)

10 24 17 (Width across flat)

30 55

56.4

M12x1.25

9.5 (Width across flat part)

10 24 17 (Width across flat)

(10) 35.5

9.5

18 0.7 (Note 11)

9.5

M4x0.7 Depth 5 (For securing cable)

L1(T-slot range)

78

See Note 5.

9.5

Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 8 pcs. See our robot manuals for additional settings.

127.5

56.5

Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M5x0.8), Length under head 14

4-φ6.6 drill-through

2-φ6.6 drill-through

20

10

Installed within the T-slot range of the main unit. (Hex. socket head cap bolt (M4x0.7), Length under head 12)

\* Four bolts are required for one plate.

12 (27.5)

68

80

28.2

40

70

83

45.5

Effective stroke	50	100	150	200	250	300
L1	183	233	283	333	383	433
L	227.5	277.5	327.5	377.5	427.5	477.5
Weight (kg) <sup>Note 7</sup>	2.4	2.8	3.2	3.5	3.9	4.3

Note 1. It is possible to apply only the axial load.  
Use the external guide together so that any radial load is not applied to the rod.  
Note 2. The orientation of the width across flat part is undefined to the base surface.  
Note 3. Use the support guide together to maintain the straightness.  
Note 4. When running the cables, secure cables so that any load is not applied to them.  
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 6. The cable's minimum bend radius is R30.  
Note 7. Models with a brake will be 0.2kg heavier.  
Note 8. Distance to mechanical stopper.  
Note 9. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
Note 10. This unit can be installed with the motor facing up (turned 90 degrees from the position in this drawing).  
Note 11. Take great care as the outer case of the motor and cover belt projects from the bottom of the main unit.  
Note 12. When the lead is 2mm, this dimension is 27mm.

# SRD05

## Rod type (With support guide)



- CE compliance
- Origin on the non-motor side is selectable: Lead 6, 12

### Ordering method

#### SRD05

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
	12: 12mm 06: 6mm 02: 2mm	S: Straight model J: Space-saving model (motor installed on top)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: No plate H: With plate	50 to 300 (50mm pitch)	Note 4 1K: 1m 3K: 3m 5K: 5m 10K: 10m

#### S2

Robot positioner	I/O
S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board

#### SH

Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

#### SD

Robot driver	I/O cable
SD: TS-SD	f: 1m

Note 1. See P.153 for grease gun nozzles.  
 Note 2. When "2mm lead" is selected, the origin position cannot be changed (to non-motor side).  
 Note 3. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

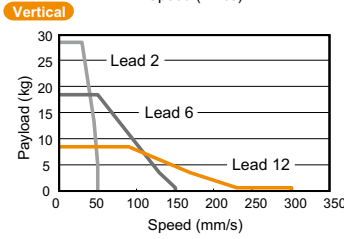
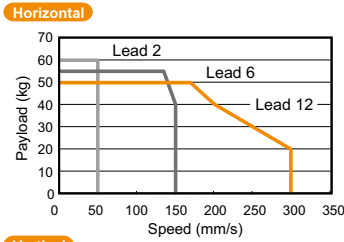
Note 4. The robot cable is flexible and resists bending.  
 Note 5. See P.522 for DIN rail mounting bracket.  
 Note 6. Select this selection when using the gateway function. For details, see P.66.

### Basic specifications

<b>Motor</b>	56 □ Step motor	
<b>Resolution (Pulse/rotation)</b>	20480	
<b>Repeatability (mm)</b>	+/-0.02	
<b>Deceleration mechanism</b>	Ball screw φ12	
<b>Ball screw lead (mm)</b>	12	6
<b>Maximum speed<sup>Note 1</sup> (mm/sec)</b>	300	150
<b>Maximum payload (kg)</b>	Horizontal	Vertical
	50	55
	8.5	18.5
	250	550
<b>Max. pressing force (N)</b>	250	550
<b>Stroke (mm)</b>	50 to 300 (50pitch)	
<b>Lost motion</b>	0.1mm or less	
<b>Rotating backlash (°)</b>	+/-0.05	
<b>Overall length (mm)</b>	Horizontal	Vertical
	Stroke+276	Stroke+316
<b>Maximum outside dimension of body cross-section (mm)</b>	W56.4 × H71	
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10	

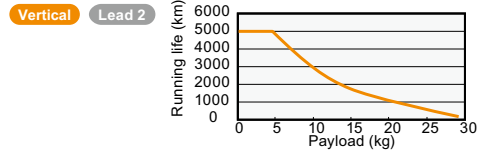
Note 1. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right.  
 For details, see P. 152.

### Speed vs. payload



### Running life

5000 km on models other than shown below.  
 Running life of only the model shown below becomes shorter than 5000 km depending on the payload, so check the running life curve.

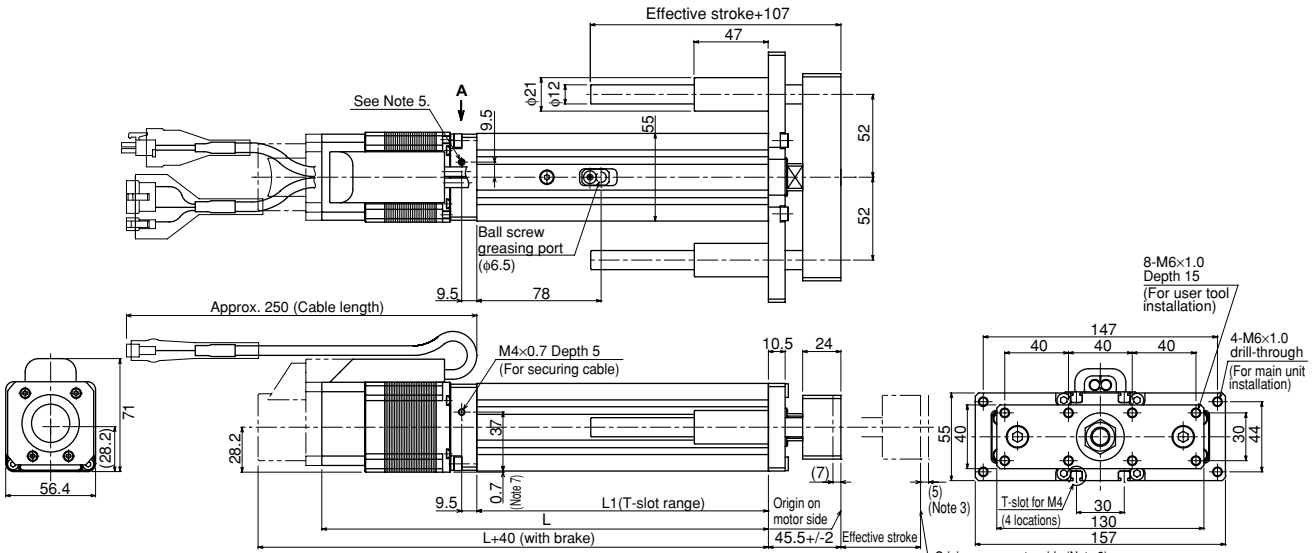


Note. See P.153 for running life distance to life time conversion example.

### Controller

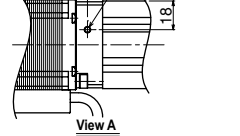
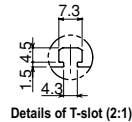
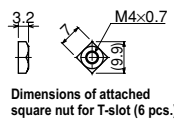
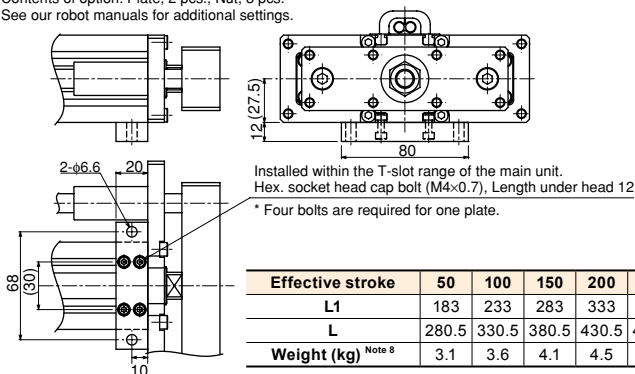
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control
TS-SH			

### SRD05 Straight model S



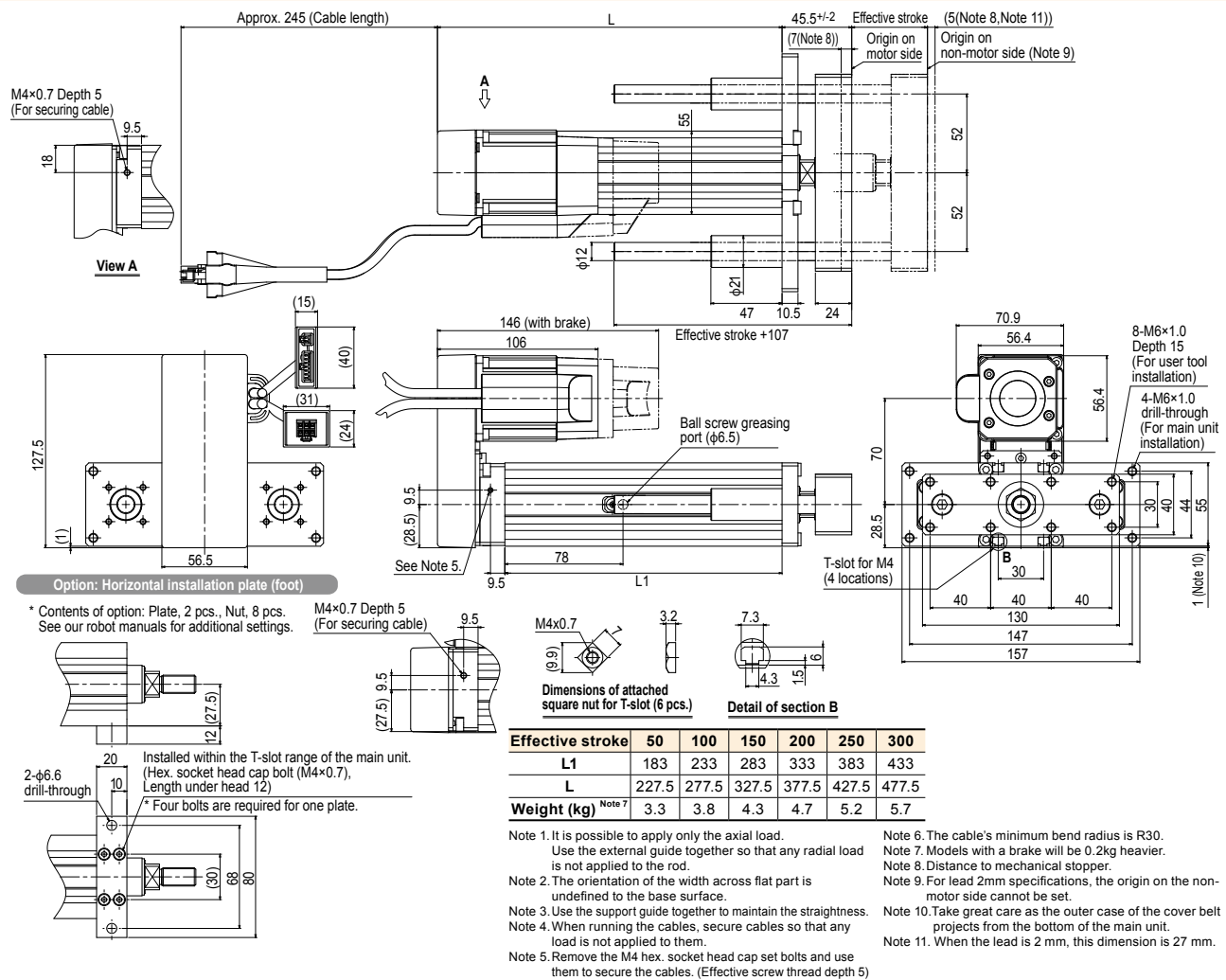
#### Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 8 pcs.  
 See our robot manuals for additional settings.



Note 1. It is possible to apply only the axial load.  
 Use the external guide together so that any radial load is not applied to the rod.  
 Note 2. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
 Note 3. When the lead is 2mm, this dimension is 27mm.  
 Note 4. When running the cables, secure cables so that any load is not applied to them.  
 Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
 Note 6. The cable's minimum bend radius is R30.  
 Note 7. Take great care as the outer case of the motor projects from the bottom of the main unit.  
 Note 8. Models with a brake will be 0.2kg heavier.  
 Note 9. Distance to mechanical stopper.

**SRD05 Space-saving model (motor installed on top) U**



# STH04

## Slide table type

- CE compliance
- Origin on the non-motor side is selectable

### Ordering method

## STH04

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
	05: 5mm 10: 10mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: No plate H: With plate	50: 50mm 100: 100mm	1K: 1m 3K: 3m 5K: 5m 10K: 10m

## S2

Robot positioner	I/O
S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board

## SH

Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

## SD

Robot driver	I/O cable
SD: TS-SD	1: 1m

- Note 1. For the space saving models (R and L), the specifications with brake are applicable to only 100mm strokes.  
 Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 3. Space-saving models (R and L) with the plate cannot be selected.  
 Note 4. The robot cable is flexible and resists bending.  
 Note 5. See P.522 for DIN rail mounting bracket.  
 Note 6. The robot with the brake cannot use the TS-SD.  
 Note 7. Select this selection when using the gateway function. For details, see P.66.

### Basic specifications

Motor	28 □ Step motor	
Resolution (Pulse/rotation)	4096	
Repeatability (mm)	+/-0.05	
Drive method	Straight	Slide screw
	Space-saving	Slide screw + belt
Ball screw lead (mm)	5      10	
Maximum speed (mm/sec)	200    400	
Maximum payload (kg)	Horizontal	6      4
	Vertical	2      1
Max. pressing force (N)	55      30	
Stroke (mm)	50/100	
Maximum outside dimension of body cross-section (mm)	Straight	W45 × H46
	Space-saving	W74.5 × H51
Cable length (m)	Standard: 1 / Option: 3, 5, 10	

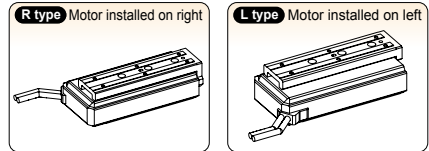
- Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right. For details, see P. 152.

### Allowable overhang

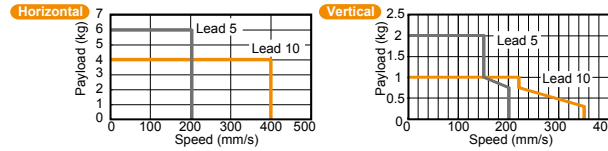
Horizontal installation (Unit: mm)	Note			Wall installation (Unit: mm)	Note			Vertical installation (Unit: mm)	Note						
	A	B	C		A	B	C		A	C					
Lead 10	2kg	1534	611	415	Lead 10	2kg	435	595	1504	Lead 10	0.5kg	2000	2000		
	3kg	949	374	255		Lead 5	3kg	263	359		920	Lead 5	0.75kg	1558	1558
	4kg	656	255	175			Lead 5	4kg	177		241		629	Lead 5	1kg
2kg	1534	611	415	Lead 5	2kg			435	595	1504	Lead 5		1kg		1165
4kg	656	255	175		Lead 5	4kg		177	241	629		Lead 5	1.5kg		771
6kg	364	137	95	Lead 5		6kg	91	123	337	Lead 5	2kg		574	574	

- Note. Overhang at travelling service life of 3000km.  
 (Service life is calculated for 75mm stroke models.)

### Motor installation (Space-saving model)



### Speed vs. payload



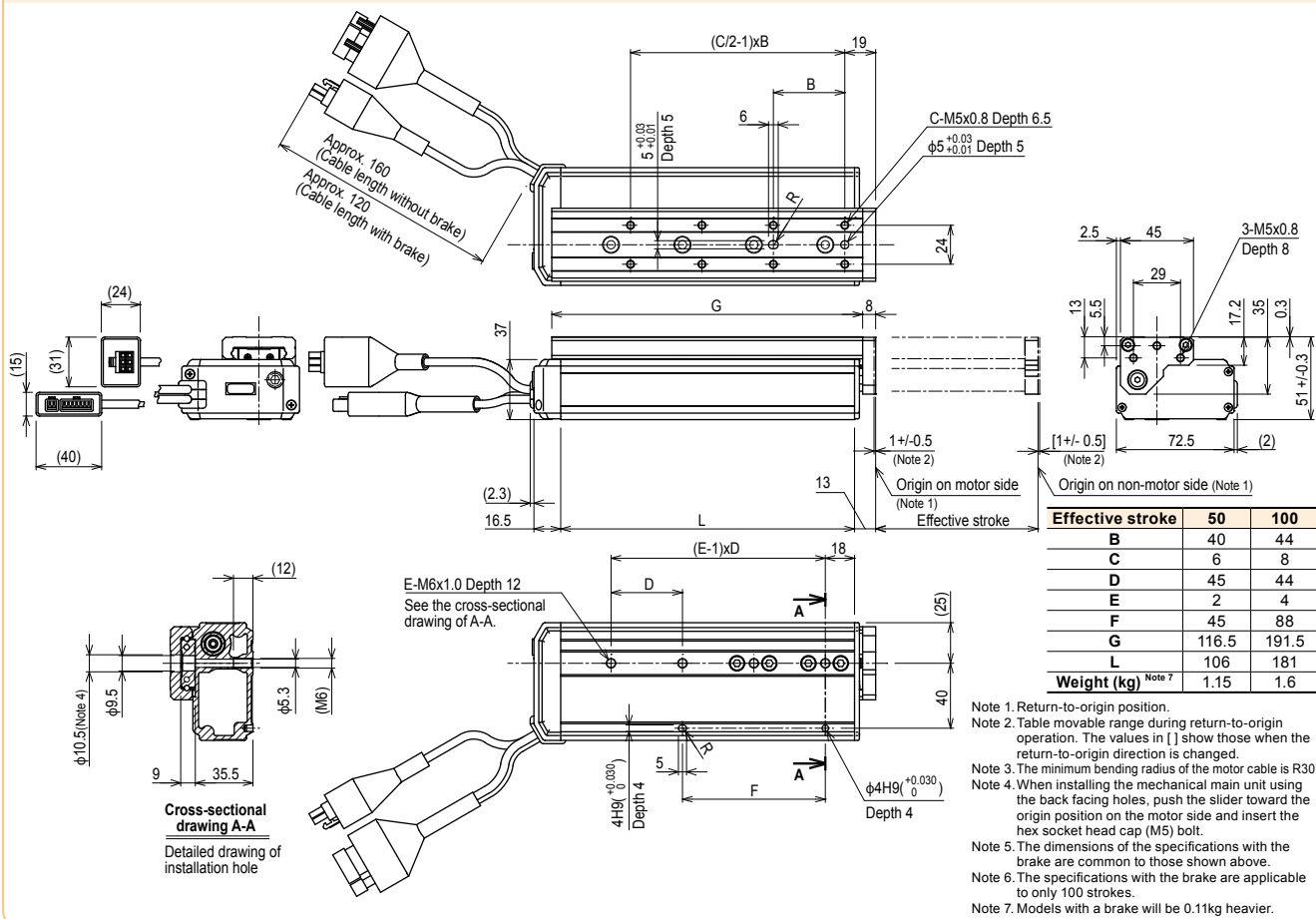
### STH04 Straight model S

Effective stroke	50	100
B	40	44
C	6	8
D	116.5	191.5
E	65	85
G	39.5	88.5
L	122	191
Weight (kg)	1.25	1.7

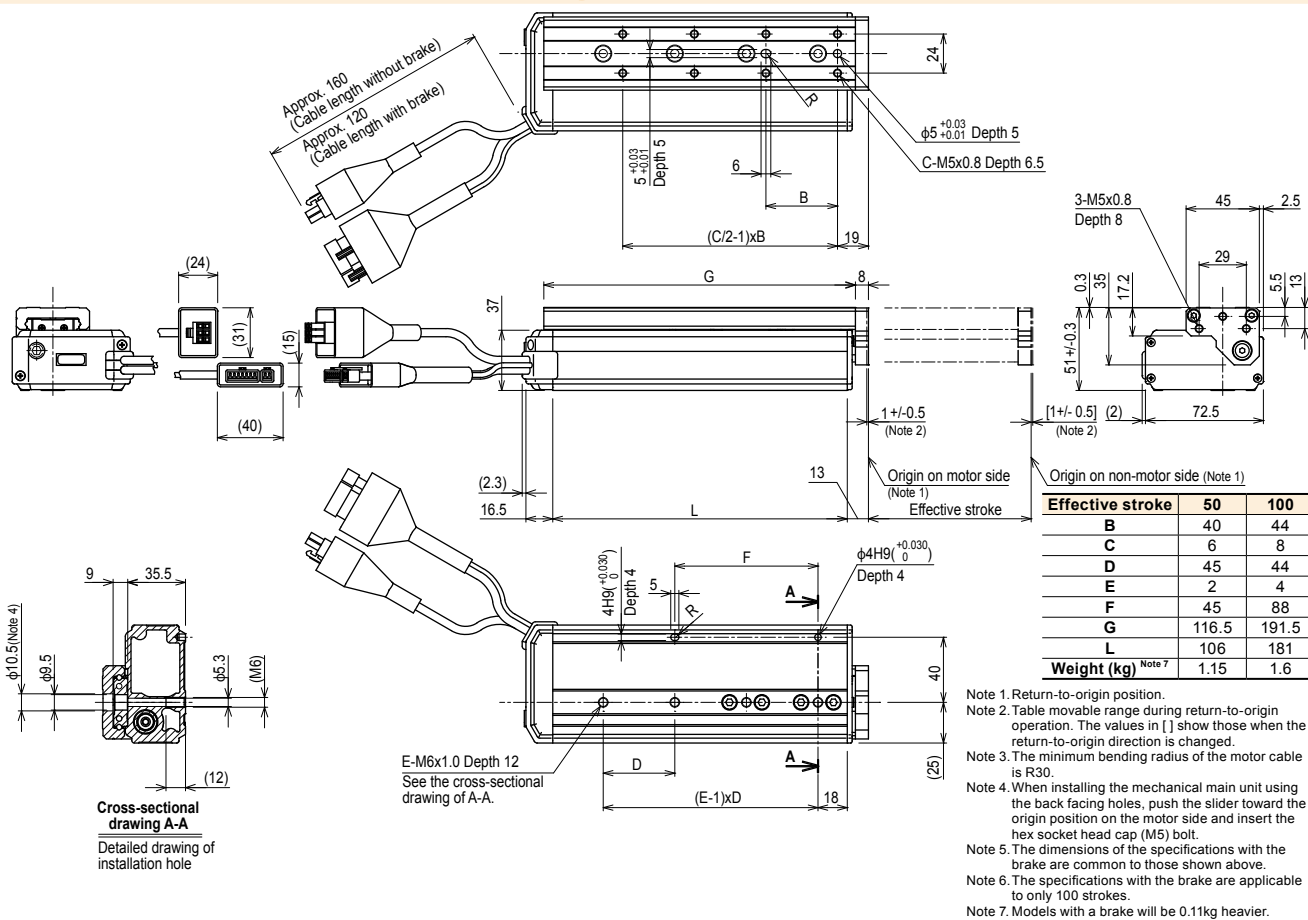
**Option: Installation plate**  
 Contents of option: Plate, 4 pcs.  
 \* For additional settings, contact your distributor.



STH04 Space-saving model (motor installed on right) **R**



STH04 Space-saving model (motor installed on left) **L**



# STH06

Slide table type



- CE compliance
- Origin on the non-motor side is selectable

## Ordering method

### STH06

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
	08: 8mm 16: 16mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: No plate H: With plate	50: 50mm 100: 100mm 150: 150mm	1K: 1m 3K: 3m 5K: 5m 10K: 10m

### S2

Robot positioner	I/O
S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board

### SH

Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

### SD

Robot driver	I/O cable
SD: TS-SD	1: 1m

Note 1. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

Note 2. Space-saving models (R and L) with the plate cannot be selected.

Note 3. The robot cable is flexible and resists bending.

Note 4. See P.522 for DIN rail mounting bracket.

Note 5. The robot with the brake cannot use the TS-SD.

Note 6. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

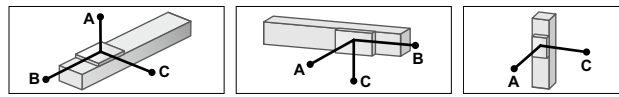
Motor	42 □ Step motor	
Resolution (Pulse/rotation)	20480	
Repeatability (mm)	+/- 0.05	
Drive method	Straight	Slide screw
	Space-saving	Slide screw + belt
Ball screw lead (mm)	8 16	
Maximum speed (mm/sec)	150 400	
Maximum payload (kg)	Horizontal	9 6
	Vertical	4 2
Max. pressing force (N)	180 100	
Stroke (mm)	50/100/150	
Maximum outside dimension of body cross-section (mm)	Straight	W61 × H65
	Space-saving	W108 × H70
Cable length (m)	Standard: 1 / Option: 3, 5, 10	

Note 1. Positioning repeatability in one direction.

Note 2. The maximum speed needs to be changed in accordance with the payload.

See the "Speed vs. payload" graph shown on the right. For details, see P. 152.

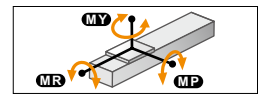
## Allowable overhang



Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	B	C
Lead 16	2kg 3000	2123	1436	2kg 1500	2091	3000	1kg 3000	3000	3000
4kg	2493	1001	680	4kg 710	975	2443	1.5kg 2458	2457	
6kg	1571	627	428	6kg 440	603	1524	2kg 1837	1837	
Lead 8	3kg 3000	1375	932	3kg 979	1347	3000	2kg 1837	1837	
6kg	1571	627	428	6kg 440	603	1524	3kg 1217	1216	
9kg	956	378	260	9kg 260	355	912	4kg 907	906	

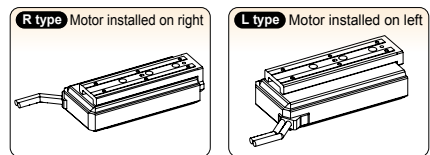
Note. Overhang at travelling service life of 3000km. (Service life is calculated for 100mm stroke models.)

## Static loading moment

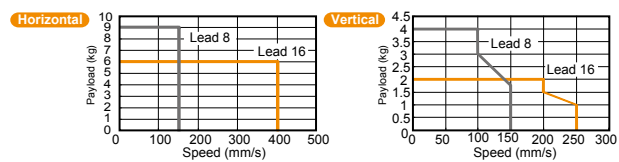


Stroke	(Unit: N·m)		
	MY	MP	MR
50mm	77	77	146
100mm	112	112	177
150mm	155	155	152

## Motor installation (Space-saving model)



## Speed vs. payload



## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

Note. The robot with the brake cannot use the TS-SD.

## STH06 Straight model S

**Approx. 210**  
(Cable length without brake/with brake)

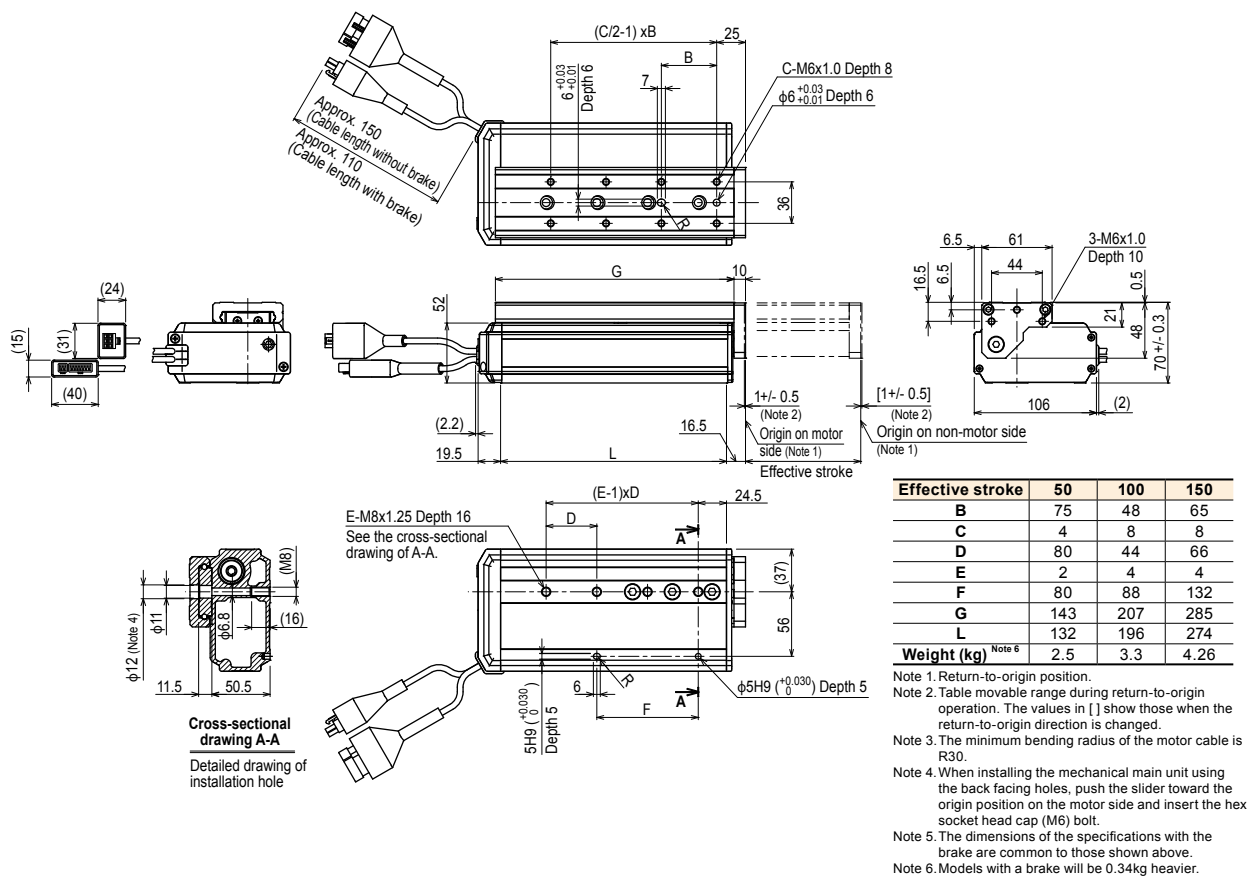
**Effective stroke**

Effective stroke	50	100	150
B	75	48	65
C	4	8	8
D	143	207	285
E	84	98.5	126.5
F	4	4	6
G	40.5	88	69
L	144.5	206.5	284.5
Weight (kg)	2.52	3.27	3.6

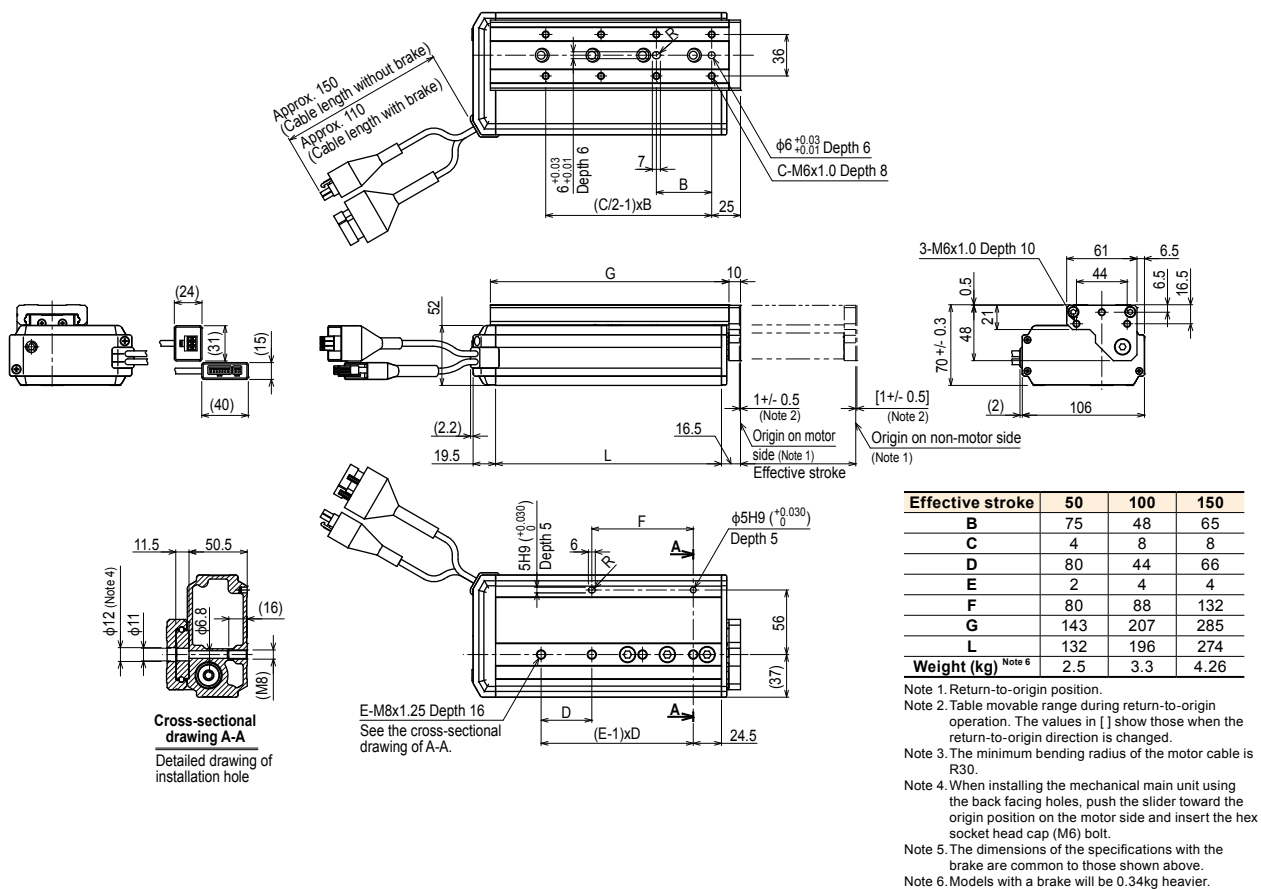
**Option: Installation plate**  
Contents of option: Plate, 4 pcs.  
\* For additional settings, contact your distributor.

Note 1. Return-to-origin position.  
Note 2. Table movable range during return-to-origin operation. The values in [ ] show those when the return-to-origin direction is changed.  
Note 3. The minimum bending radius of the motor cable is R30.  
Note 4. When installing the mechanical main unit using the back facing holes, use the hex socket head cap M6 bolts.  
Note 5. The installation hole positions of the main unit with the specifications with the brake are common to those shown above.  
Note 6. Models with a brake will be 0.34kg heavier.

STH06 Space-saving model (motor installed on right) **R**



STH06 Space-saving model (motor installed on left) **L**



# RF02-N

## Rotary type / Limit rotation specification

- CE compliance
- Rotation range : 310°

### Ordering method

**RF02** - **N** - **L** - **S2** - **SH** - **SD** - **1**

<b>Model</b>	<b>Return-to-origin method</b> N: Stroke end (Limit rotation)	<b>Bearing</b> N: Standard H: High rigidity	<b>Torque</b> N: Standard torque H: High torque	<b>Cable entry location</b> L: From the left	<b>Rotation direction</b> N: CCW Z: CW	<b>Cable length</b> <sup>Note 1</sup> 1K: 1m 3K: 3m 5K: 5m 10K: 10m
--------------	--	---	---	---	--	---

<b>Robot positioner</b> S2: TS-S2 <sup>Note 2</sup>	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>
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<b>Robot positioner</b> SH: TS-SH	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
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<b>Robot driver</b> SD: TS-SD	<b>I/O cable</b> t: 1m
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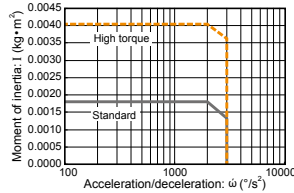
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

### Basic specifications

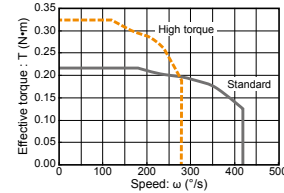
<b>Motor</b>	20 □ Step motor	
<b>Resolution (Pulse/rotation)</b>	4096	
<b>Repeatability</b> <sup>Note 1</sup> (°)	±0.05	
<b>Drive method</b>	Special warm gear + belt	
<b>Torque type</b>	Standard	High torque
<b>Maximum speed</b> <sup>Note 2</sup> (°/sec)	420	280
<b>Rotating torque (N·m)</b>	0.22	0.32
<b>Max. pushing torque (N·m)</b>	0.11	0.16
<b>Backlash (°)</b>	±0.5	
<b>Max. moment of inertia</b> <sup>Note 3</sup> (kg·m <sup>2</sup> )	0.0018	0.004
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10	
<b>Rotation range (°)</b>	310	

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the "Moment of inertia vs. Acceleration/deceleration" graph and the "Effective torque vs. speed" graph (reference).  
 Note 3. For moment of inertia and effective torque details, see P.64.

### Moment of inertia Acceleration/deceleration



### Effective torque vs. speed



### Allowable load

Allowable radial load (N)	Allowable thrust load (N)				Allowable moment (N·m)	
	(a)		(b)			
Standard model	High rigidity model	Standard model	High rigidity model	Standard model	High rigidity model	
78	86	74	78	2.4	2.9	

### Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	I/O point trace / Remote command
TS-SD	Pulse train control

Note. When purchasing the product, set the controller acceleration while carefully checking the "Moment of inertia vs. Acceleration/Deceleration" and "Effective torque vs. Speed" graphs.  
 For details, please refer to the TRANSERVO Series User's Manual.

### RF02-NN Limit rotation specification – Standard model

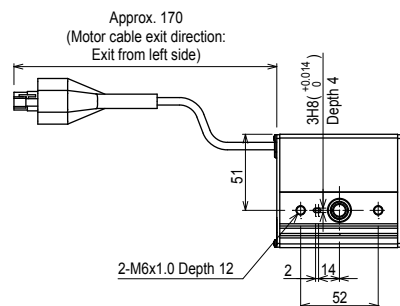
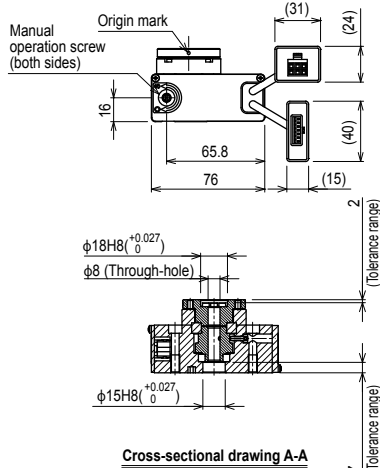
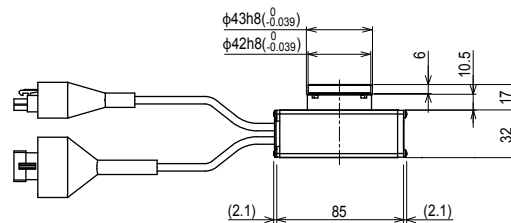
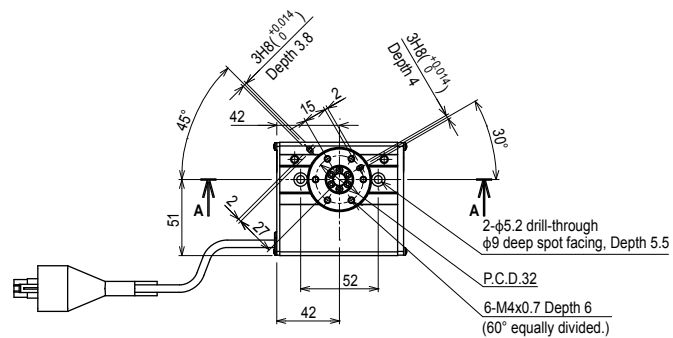
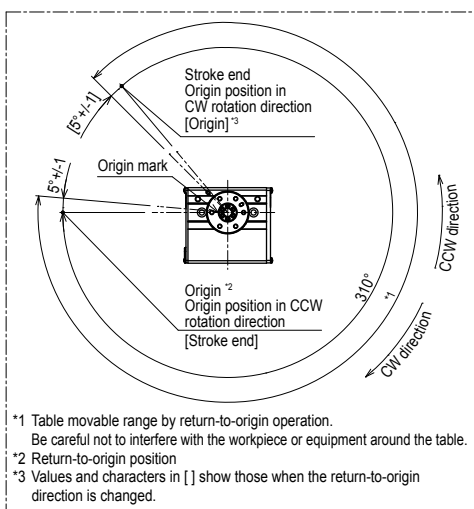
**Weight (kg)** 0.49

Note 1. This drawing is output under the conditions below.  
 Bearing ..... Standard  
 Torque ..... Standard/High torque

Note 2. The minimum bending radius of the motor cable is R30.

Note 3. The motor cable exit direction is only the left side.

RF02-NH Limit rotation specification – High rigidity model



<b>Weight (kg)</b>	0.52
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Note 1. This drawing is output under the conditions below.  
Bearing ..... High rigidity  
Torque ..... Standard/High torque  
Note 2. The minimum bending radius of the motor cable is R30.  
Note 3. The motor cable exit direction is only the left side.



# RF02-S

## Rotary type / Sensor specification



- CE compliance
- Limitless rotation

### Ordering method

**RF02-S-L**

Model	Return-to-origin method S: Sensor (Limitless rotation)	Bearing N: Standard H: High rigidity	Torque N: Standard torque L: High torque	Cable entry location L: From the left	Rotation direction N: CCW Z: CW	Cable length <sup>Note 1</sup> 1K: 1m 3K: 3m 5K: 5m 10K: 10m
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S2S	
Robot positioner S2S: TS-S2 <sup>Note 2</sup>	I/O NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>

SHS		Battery
Robot positioner SHS: TS-SH	I/O NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	B: With battery (Absolute) N: None (Incremental)

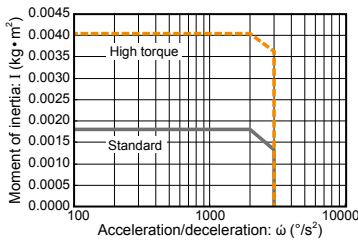
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

### Basic specifications

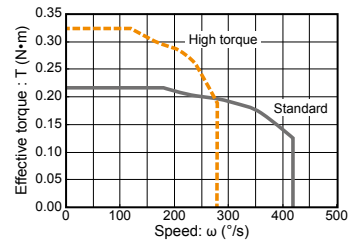
Motor	20 □ Step motor
Resolution (Pulse/rotation)	4096
Repeatability <sup>Note 1</sup> (°)	+/-0.05
Drive method	Special warm gear + belt
Torque type	Standard High torque
Maximum speed <sup>Note 2</sup> (°/sec)	420 280
Rotating torque (N•m)	0.22 0.32
Max. pushing torque (N•m)	0.11 0.16
Backlash (°)	+/-0.5
Max. moment of inertia <sup>Note 3</sup> (kg•m <sup>2</sup> )	0.0018 0.004
Cable length (m)	Standard: 1 / Option: 3, 5, 10
Rotation range (°)	360

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the "Moment of inertia vs. Acceleration/ deceleration" graph and the "Effective torque vs. speed" graph (reference).  
 Note 3. For moment of inertia and effective torque details, see P.641.

### Moment of inertia Acceleration/deceleration



### Effective torque vs. speed



### Allowable load

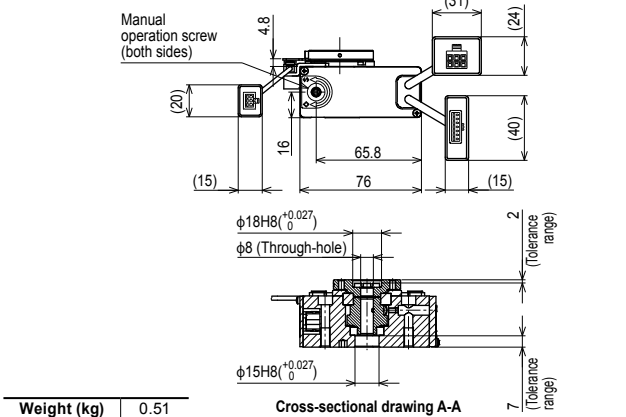
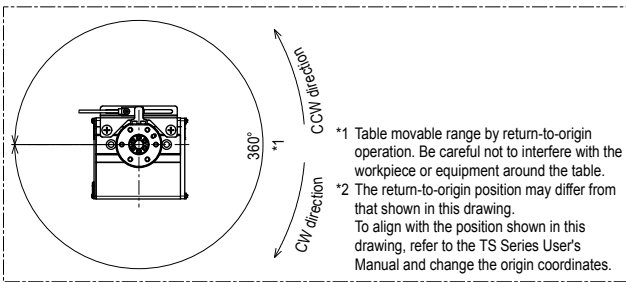
Allowable radial load (N)		Allowable thrust load (N)				Allowable moment (N•m)	
Standard model	High rigidity model	(a)		(b)		Standard model	High rigidity model
78	86	Standard model	High rigidity model	Standard model	High rigidity model	2.4	2.9

Note. When purchasing the product, set the controller acceleration while carefully checking the "Moment of inertia vs. Acceleration/Deceleration" and "Effective torque vs. Speed" graphs. For details, please refer to the TRANSERVO Series User's Manual.

### Controller

Controller	Operation method
TS-S2S	I/O point trace / Remote command
TS-SHS	Remote command

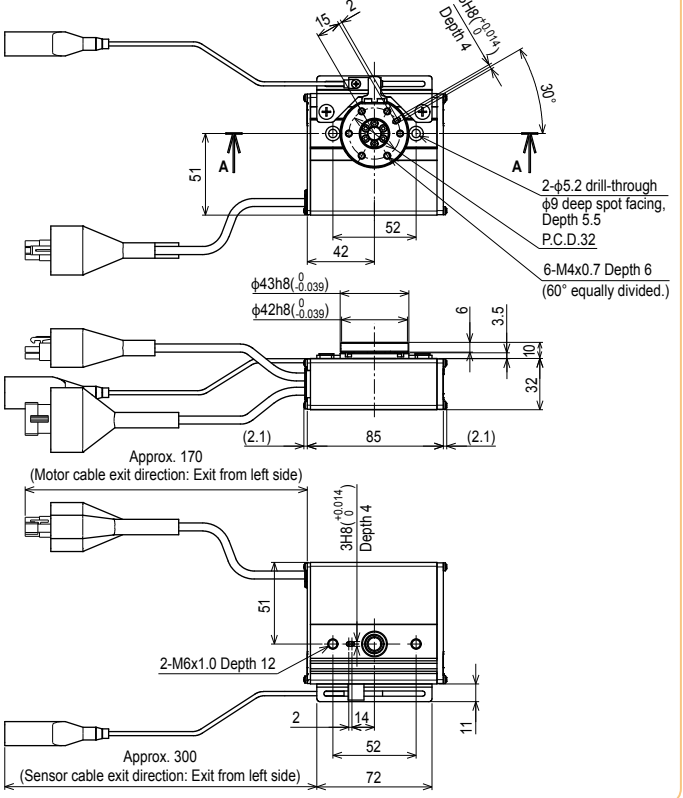
### RF02-SN Sensor specification – Standard model



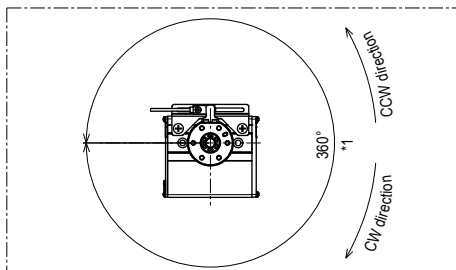
Weight (kg) 0.51

Cross-sectional drawing A-A

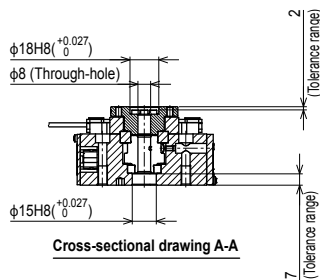
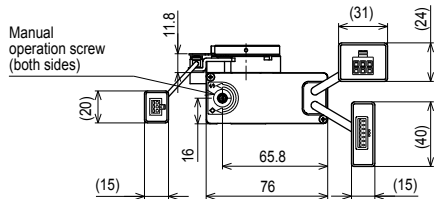
Note 1. This drawing is output under the conditions below.  
 Bearing ..... Standard  
 Torque ..... Standard/High torque  
 Note 2. The minimum bending radii of the motor cable and sensor cable are R30.  
 Note 3. The motor cable exit direction is only the left side.



RF02-SH Sensor specification – High rigidity model

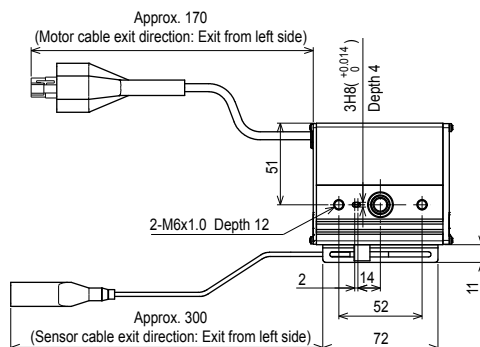
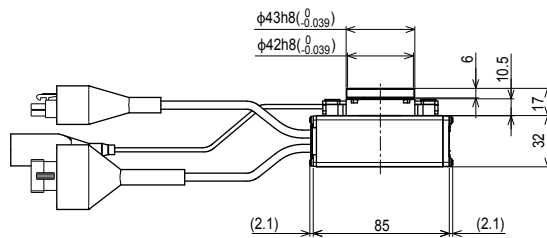
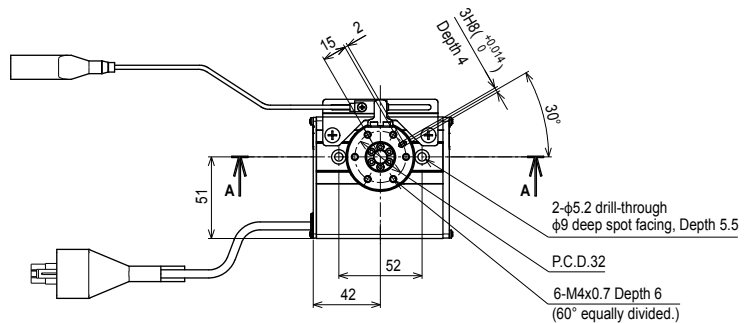


\*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.  
\*2 The return-to-origin position may differ from that shown in this drawing. To align with the position shown in this drawing, refer to the TS Series User's Manual and change the origin coordinates.



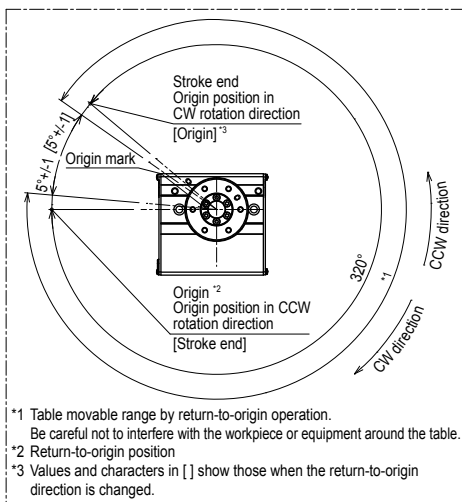
Weight (kg)	0.55
-------------	------

Note 1. This drawing is output under the conditions below.  
Bearing..... High rigidity  
Torque..... Standard/High torque  
Note 2. The minimum bending radii of the motor cable and sensor cable are R30.  
Note 3. The motor cable exit direction is only the left side.

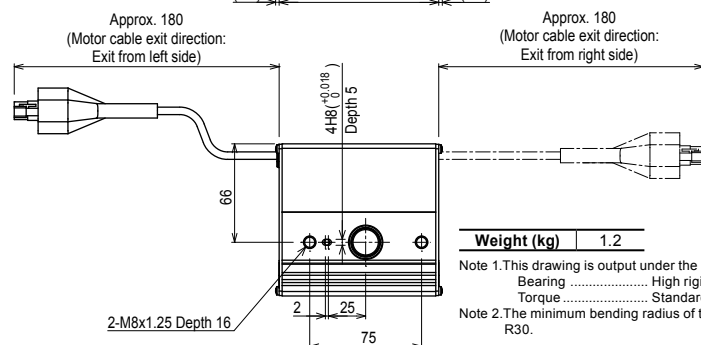
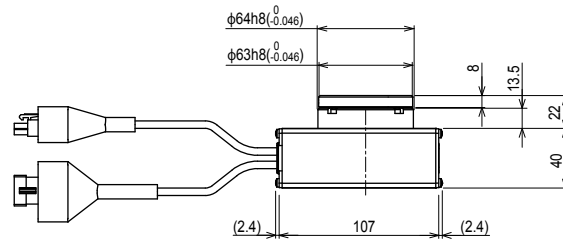
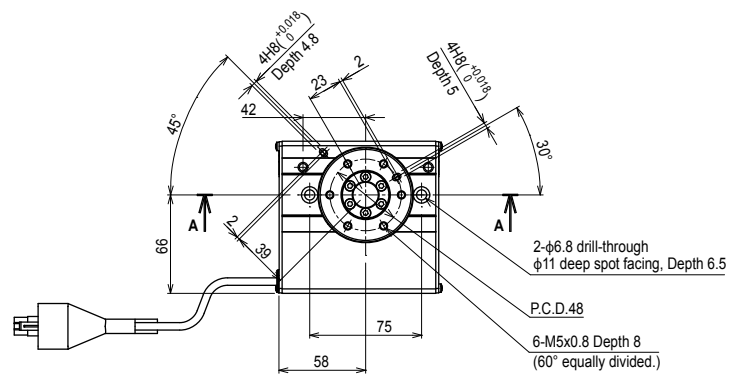
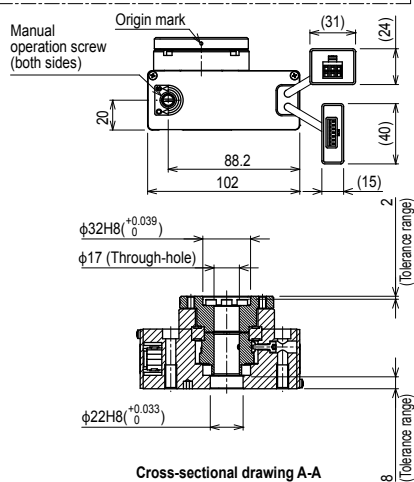




RF03-NH Limit rotation specification – High rigidity model



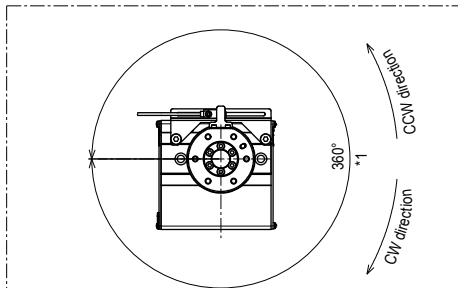
\*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.  
\*2 Return-to-origin position  
\*3 Values and characters in [ ] show those when the return-to-origin direction is changed.



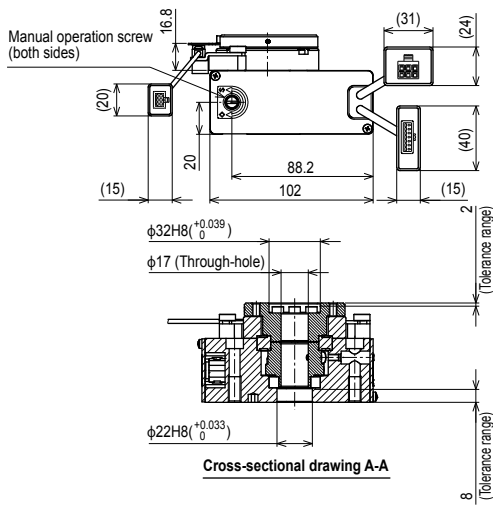




RF03-SH Sensor specification – High rigidity model

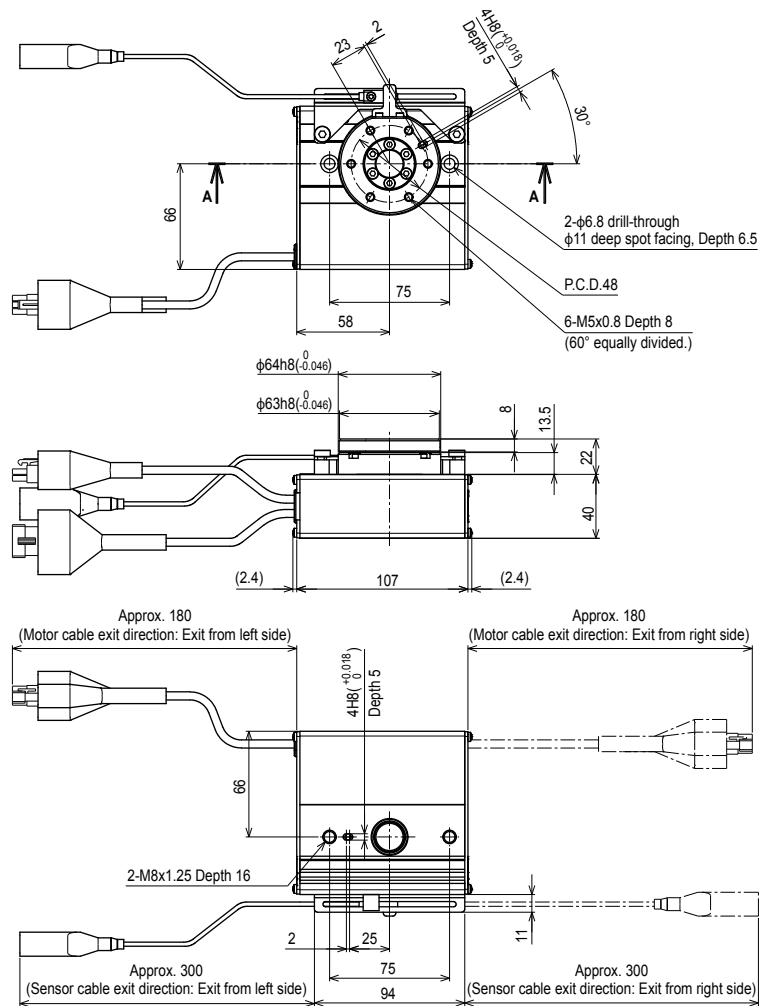


\*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.  
\*2 The return-to-origin position may differ from that shown in this drawing. To align with the position shown in this drawing, refer to the TS Series User's Manual and change the origin coordinates.



Weight (kg)	1.3
-------------	-----

Note 1. This drawing is output under the conditions below.  
Bearing ..... High rigidity  
Torque ..... Standard/High torque  
Note 2. The minimum bending radii of the motor cable and sensor cable are R30.



# RF04-N

## Rotary type / Limit rotation specification



- CE compliance
- Rotation range : 320°

### Ordering method

<b>RF04</b>	<b>N</b>					
<b>Model</b>	<b>Return-to-origin method</b> N: Stroke end (Limit rotation)	<b>Bearing</b> N: Standard H: High rigidity	<b>Torque</b> N: Standard torque H: High torque	<b>Cable entry location</b> R: From the right L: From the left	<b>Rotation direction</b> N: CCW Z: CW	<b>Cable length</b> <sup>Note 1</sup> 1K: 1m 3K: 3m 5K: 5m 10K: 10m

<b>S2</b>	<b>I/O</b>
<b>Robot positioner</b> S2: TS-S2 <sup>Note 2</sup>	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>
<b>SH</b>	<b>Battery</b>
<b>Robot positioner</b> SH: TS-SH	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
<b>SD</b>	<b>1</b>
<b>Robot driver</b> SD: TS-SD	<b>I/O cable</b> t: 1m

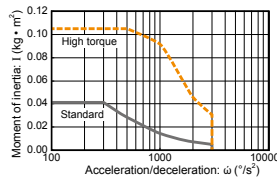
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

### Basic specifications

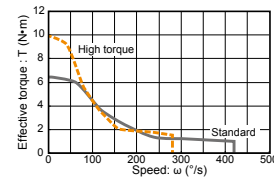
<b>Motor</b>	42 □ Step motor	
<b>Resolution (Pulse/rotation)</b>	20480	
<b>Repeatability</b> <sup>Note 1</sup> (°)	±0.05	
<b>Drive method</b>	Special warm gear + belt	
<b>Torque type</b>	Standard	High torque
<b>Maximum speed</b> <sup>Note 2</sup> (°/sec)	420	280
<b>Rotating torque (N·m)</b>	6.6	10
<b>Max. pushing torque (N·m)</b>	3.3	5
<b>Backlash (°)</b>	±0.5	
<b>Max. moment of inertia</b> <sup>Note 3</sup> (kg·m <sup>2</sup> )	0.04	0.1
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10	
<b>Rotation range (°)</b>	320	

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the "Moment of inertia vs. Acceleration/deceleration" graph and the "Effective torque vs. speed" graph (reference).  
 Note 3. For moment of inertia and effective torque details, see P.641.

### Moment of inertia Acceleration/deceleration



### Effective torque vs. speed



### Allowable load

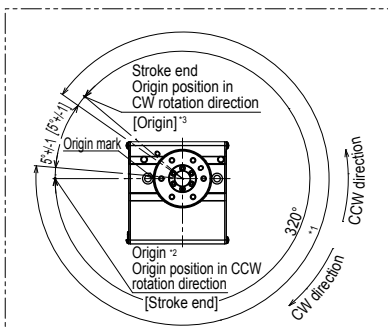
Allowable radial load (N)	Allowable thrust load (N)				Allowable moment (N·m)
	(a)	(b)			
Standard model	Standard model	High rigidity model	Standard model	High rigidity model	Standard model
314	296	398	517	9.7	12.0

Note. When purchasing the product, set the controller acceleration while carefully checking the "Moment of inertia vs. Acceleration/Deceleration" and "Effective torque vs. Speed" graphs.  
 For details, please refer to the TRANSERVO Series User's Manual.

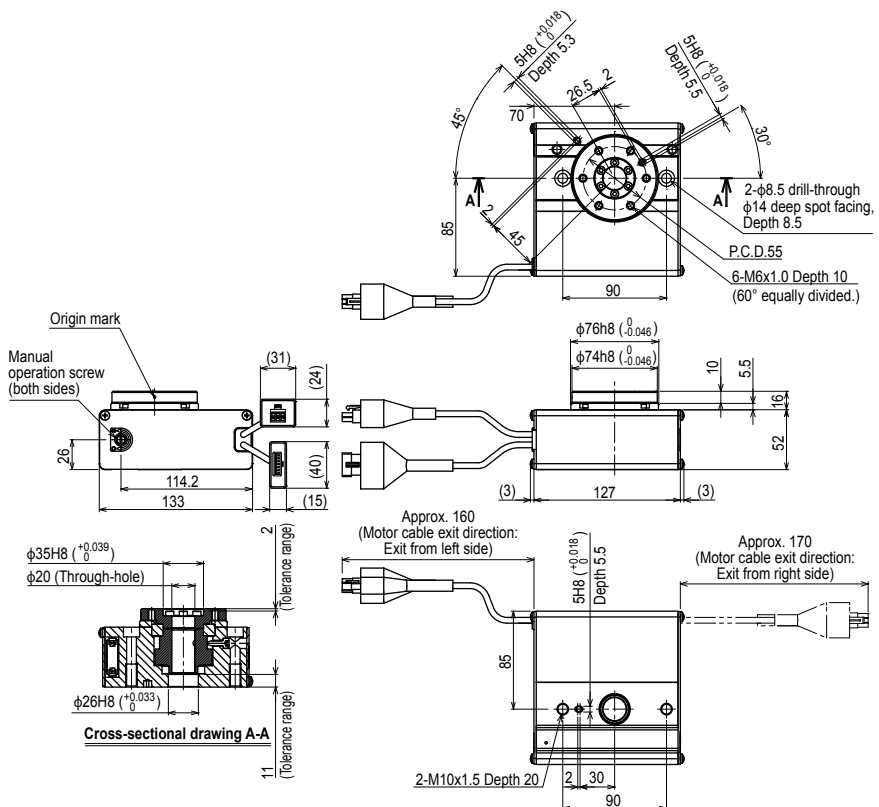
### Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Pulse train control
TS-SD	Pulse train control

### RF04-NN Limit rotation specification – Standard model



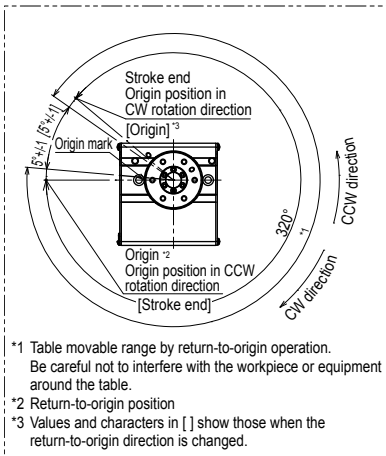
\*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.  
 \*2 Return-to-origin position  
 \*3 Values and characters in [ ] show those when the return-to-origin direction is changed.



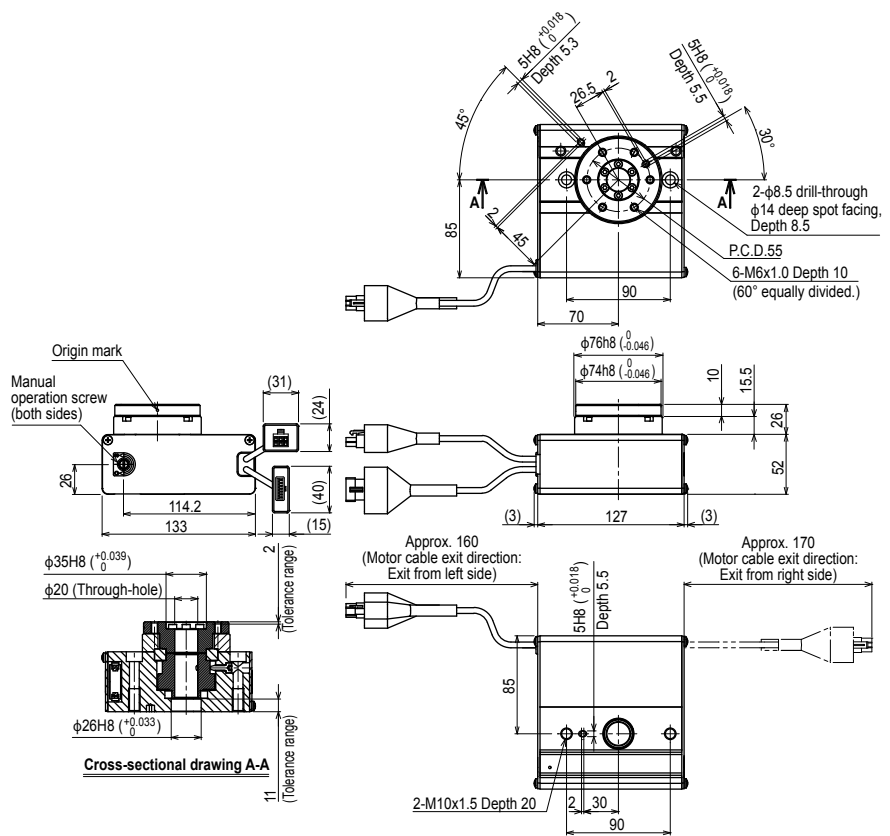
**Weight (kg)** 2.2

Note 1. This drawing is output under the conditions below.  
 Bearing ..... Standard  
 Torque ..... Standard/High torque  
 Note 2. The minimum bending radius of the motor cable is R30.

RF04-NH Limit rotation specification – High rigidity model



- \*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.
- \*2 Return-to-origin position
- \*3 Values and characters in [ ] show those when the return-to-origin direction is changed.



Weight (kg)	2.4
-------------	-----

Note 1. This drawing is output under the conditions below.  
 Bearing..... High rigidity  
 Torque..... Standard/High torque  
 Note 2. The minimum bending radius of the motor cable is R30.

# RF04-S

## Rotary type / Sensor specification

- CE compliance
- Limitless rotation

### Ordering method

<b>RF04</b>	<b>S</b>						<b>S2S</b>		
<b>Model</b>	<b>Return-to-origin method</b> S: Sensor (Limitless rotation)	<b>Bearing</b> N: Standard H: High rigidity	<b>Torque</b> N: Standard torque H: High torque	<b>Cable entry location</b> R: From the right L: From the left	<b>Rotation direction</b> N: CCW Z: CW	<b>Cable length</b> <sup>Note 1</sup> 1K: 1m 3K: 3m 5K: 5m 10K: 10m	<b>Robot positioner</b> S2S: TS-S2 <sup>Note 2</sup>	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	
							<b>SHS</b>		<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
							<b>Robot positioner</b> SHS: TS-SH	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	

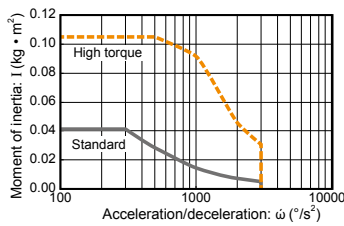
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

### Basic specifications

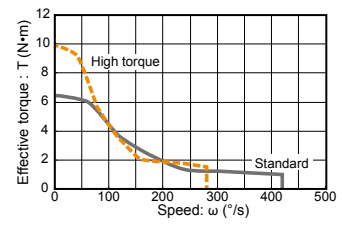
<b>Motor</b>	42 □ Step motor
<b>Resolution (Pulse/rotation)</b>	20480
<b>Repeatability</b> <sup>Note 1</sup> (°)	+/-0.05
<b>Drive method</b>	Special worm gear + belt
<b>Torque type</b>	Standard High torque
<b>Maximum speed</b> <sup>Note 2</sup> (°/sec)	420 280
<b>Rotating torque (N·m)</b>	6.6 10
<b>Max. pushing torque (N·m)</b>	3.3 5
<b>Backlash (°)</b>	+/-0.5
<b>Max. moment of inertia</b> <sup>Note 3</sup> (kg·m <sup>2</sup> )	0.04 0.1
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10
<b>Rotation range (°)</b>	360

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the "Moment of inertia vs. Acceleration/ deceleration" graph and the "Effective torque vs. speed" graph (reference).  
 Note 3. For moment of inertia and effective torque details, see P.641.

### Moment of inertia Acceleration/deceleration



### Effective torque vs. speed



### Allowable load

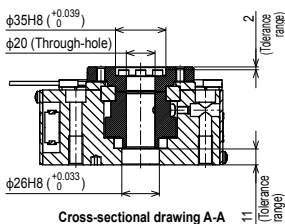
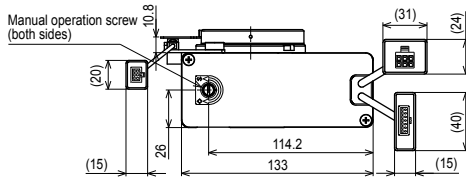
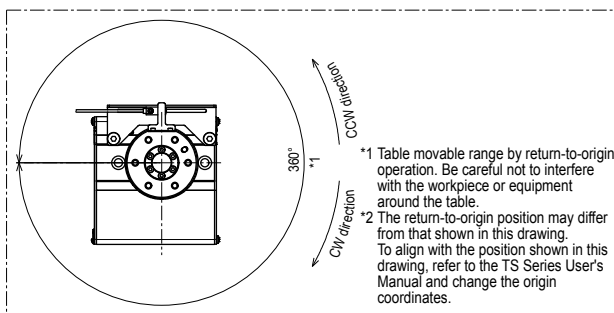
	(a)	(b)	
<b>Allowable radial load (N)</b>	<b>Allowable thrust load (N)</b>		<b>Allowable moment (N·m)</b>
	(a)	(b)	
Standard model	High rigidity model	Standard model	High rigidity model
314	378	296	398
		517	12.0

### Controller

Controller	Operation method
TS-S2S	I/O point trace / Remote command
TS-SHS	Remote command

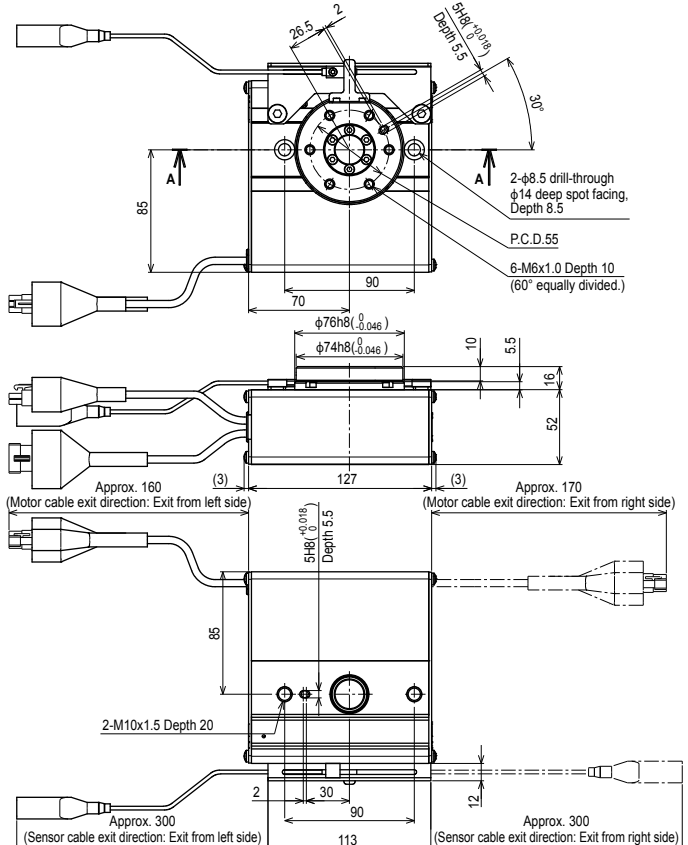
Note. When purchasing the product, set the controller acceleration while carefully checking the "Moment of inertia vs. Acceleration/Deceleration" and "Effective torque vs. Speed" graphs.  
 For details, please refer to the TRANSERVO Series User's Manual.

### RF04-SN Sensor specification – Standard model

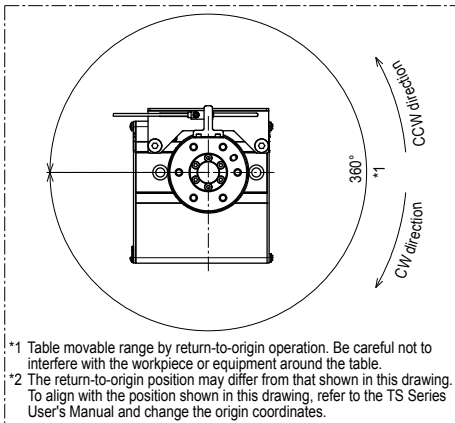


**Weight (kg)** 2.3

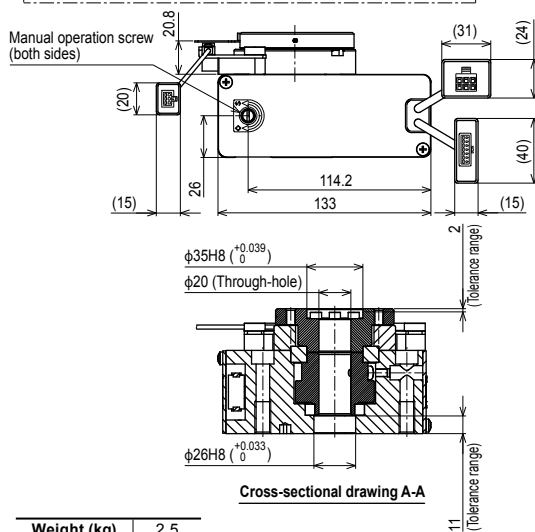
Note 1. This drawing is output under the conditions below.  
 Bearing..... Standard  
 Torque..... Standard/High torque  
 Note 2. The minimum bending radii of the motor cable and sensor cable are R30.



RF04-SH Sensor specification – High rigidity model

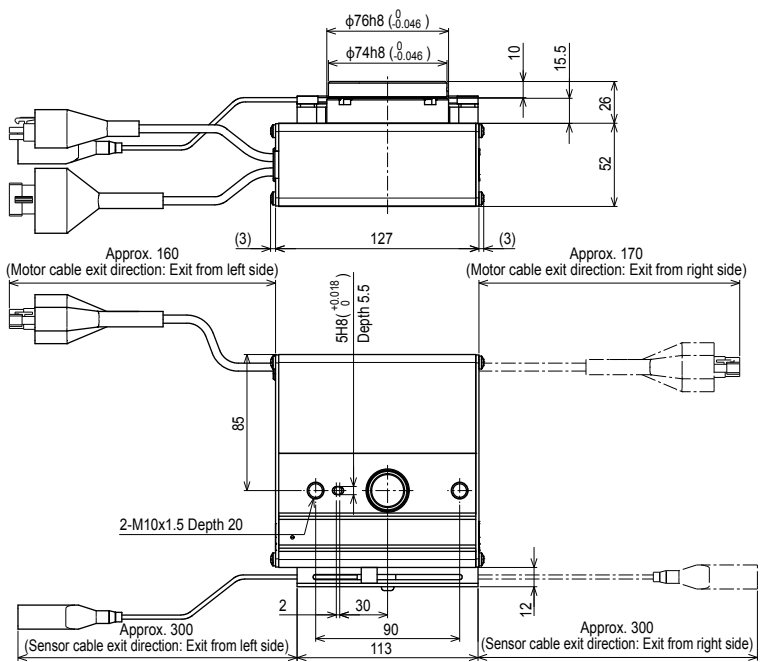
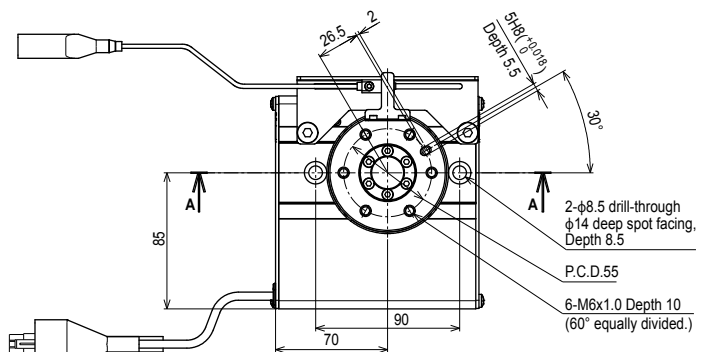


\*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.  
\*2 The return-to-origin position may differ from that shown in this drawing. To align with the position shown in this drawing, refer to the TS Series User's Manual and change the origin coordinates.



Weight (kg) 2.5

Note 1. This drawing is output under the conditions below.  
Bearing ..... High rigidity  
Torque ..... Standard/High torque  
Note 2. The minimum bending radii of the motor cable and sensor cable are R30.





# BD04

Belt type

CE compliance

## Ordering method

<b>BD04</b>	<b>48</b>	<b>N</b>	<b>N</b>			<b>S2</b>	
<b>Model</b>	<b>Lead</b> 48: 48mm	<b>Brake</b> N: With no brake	<b>Origin position</b> N: Standard	<b>Stroke</b> 300: 300mm 500: 500mm 600: 600mm 700: 700mm 800: 800mm 900: 900mm 1000: 1000mm	<b>Cable length</b> <small>Note 1</small> 1K: 1m 3K: 3m 5K: 5m 10K: 10m	<b>Robot positioner</b> S2: TS-S2 <small>Note 2</small>	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 3</small>
						<b>SH</b>	
						<b>Robot positioner</b> SH: TS-SH	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 3</small>
							<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
						<b>SD</b>	<b>1</b>
						<b>Robot driver</b> SD: TS-SD	<b>I/O cable</b> t: 1m

Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

<b>Motor</b>	28 □ Step motor
<b>Resolution (Pulse/rotation)</b>	4096
<b>Repeatability</b> <small>Note 1</small> (mm)	+/-0.1
<b>Drive method</b>	Belt
<b>Equivalent lead (mm)</b>	48
<b>Maximum speed</b> <small>Note 2</small> (mm/sec)	1100
<b>Maximum payload (kg)</b>	1
<b>Stroke (mm)</b>	300/500/600/700/800/900/1000
<b>Overall length (mm) (Horizontal installation)</b>	Stroke + 195.5
<b>Maximum outside dimension of body cross-section (mm)</b>	W40 × H101.9
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right.

## Allowable overhang

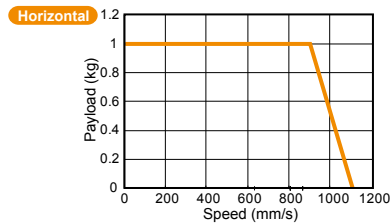
Horizontal installation (Unit: mm)				Wall installation (Unit: mm)			
	A	B	C		A	B	C
0.5kg	8036	1950	1504	0.5kg	1614	1942	8013
1kg	3933	968	747	1kg	798	961	3969

Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000km (This does not warrant the service life of the product.). (Service life is calculated for 600mm stroke models.)

## Static loading moment

(Unit: N·m)		
MY	MP	MR
10	10	20

## Speed vs. payload

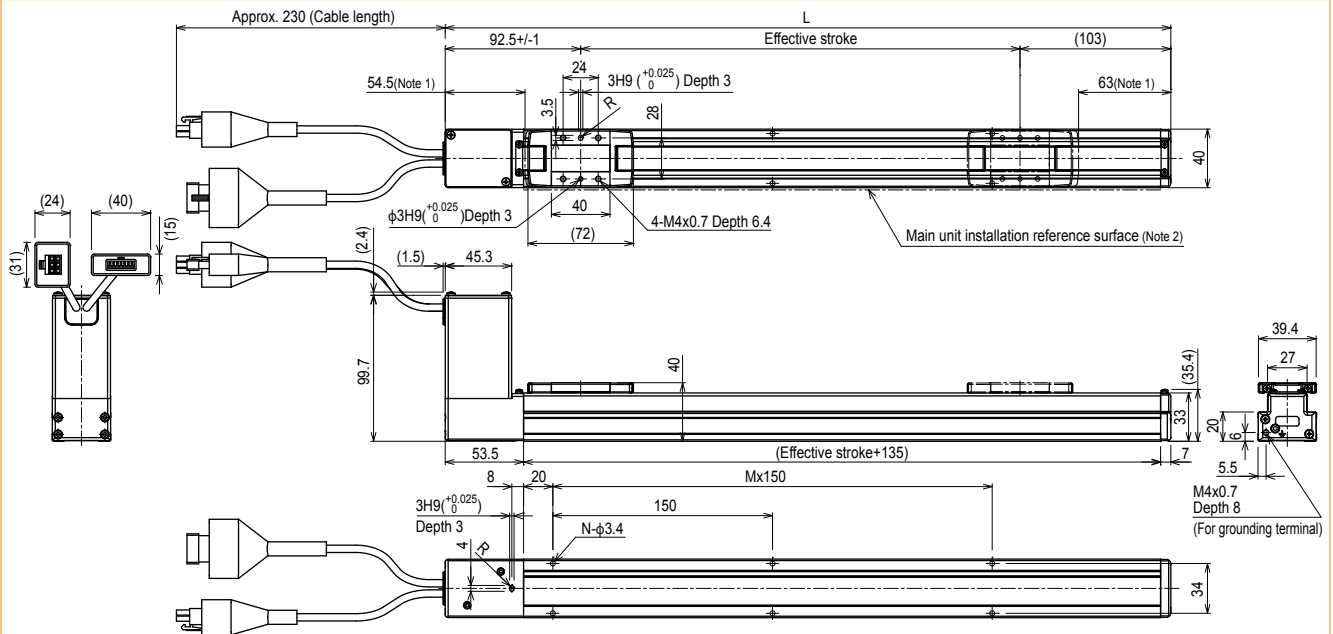


Quick reference		
Payload (kg)	Speed (mm/sec)	%
1	900	90
0.5	1000	95
0	1100	100

## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

## BD04



Effective stroke	300	500	600	700	800	900	1000
<b>L</b>	495.5	695.5	795.5	895.5	995.5	1095.5	1195.5
<b>M</b>	2	4	4	5	6	6	7
<b>N</b>	6	10	10	12	14	14	16
<b>Weight (kg)</b>	1.19	1.45	1.58	1.71	1.84	1.97	2.1

Note 1. Position from both ends to the mechanical stopper. (Movable range during return-to-origin)  
 Note 2. When installing using the main unit installation reference surface, make the mating or positioning height 2mm or more higher than the reference surface since the R-chamfering is provided on the main unit. (Recommended height, 5mm)  
 Note 3. The minimum bending radius of the motor cable is R30.

# BD05

Belt type

CE compliance

## Ordering method

<b>BD05</b>	<b>48</b>	<b>N</b>	<b>N</b>			<b>S2</b>	
<b>Model</b>	<b>Lead</b>	<b>Brake</b>	<b>Origin position</b>	<b>Stroke</b>	<b>Cable length</b> <small>Note 1</small>	<b>Robot positioner</b>	<b>I/O</b>
	48: 48mm	N: With no brake	N: Standard	300: 300mm 500: 500mm 600: 600mm 700: 700mm 800: 800mm 900: 900mm 1000: 1000mm 1200: 1200mm 1500: 1500mm 1800: 1800mm 2000: 2000mm	1K: 1m 3K: 3m 5K: 5m 10K: 10m	S2: TS-S2 <small>Note 2</small>	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 3</small>
						<b>SH</b>	
						<b>Robot positioner</b>	<b>I/O</b>
						SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 3</small>
							<b>Battery</b>
							B: With battery (Absolute) N: None (Incremental)
						<b>SD</b>	<b>1</b>
						<b>Robot driver</b>	<b>I/O cable</b>
						SD: TS-SD	t: 1m

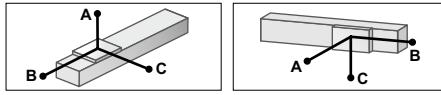
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

<b>Motor</b>	42 □ Step motor
<b>Resolution (Pulse/rotation)</b>	20480
<b>Repeatability</b> <small>Note 1</small> (mm)	+/-0.1
<b>Drive method</b>	Belt
<b>Equivalent lead (mm)</b>	48
<b>Maximum speed</b> <small>Note 2</small> (mm/sec)	1400
<b>Maximum payload (kg)</b>	5
<b>Stroke (mm)</b>	300/500/600/700/800/900/ 1000/1200/1500/1800/2000
<b>Overall length (mm) (Horizontal installation)</b>	Stroke + 241.8
<b>Maximum outside dimension of body cross-section (mm)</b>	W58 × H123
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right.

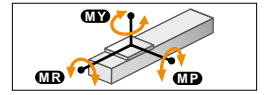
## Allowable overhang Note



Horizontal installation (Unit: mm)				Wall installation (Unit: mm)			
	A	B	C		A	B	C
1kg	9445	2274	1681	1kg	1784	2312	9545
3kg	2982	702	553	3kg	573	743	3082
5kg	1689	385	325	5kg	331	429	1789

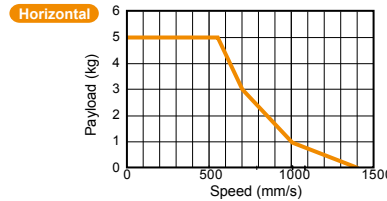
Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000km (This does not warrant the service life of the product.). (Service life is calculated for 600mm stroke models.)

## Static loading moment



(Unit: N·m)		
MY	MP	MR
27	27	52

## Speed vs. payload

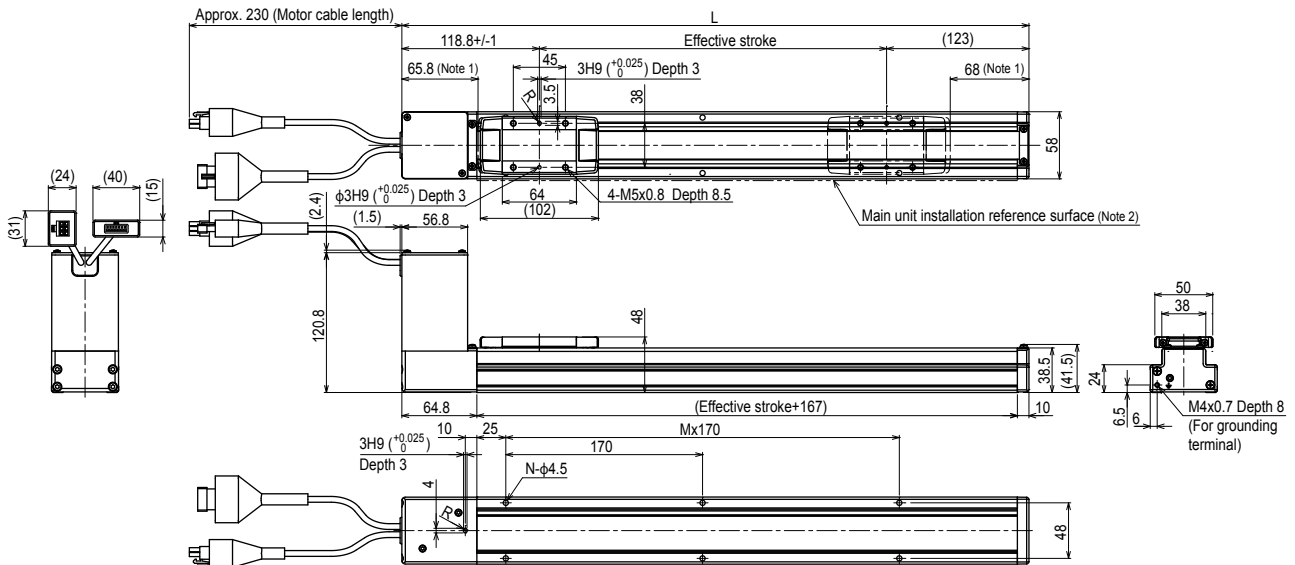


Quick reference		
Payload (kg)	Speed (mm/sec)	%
5	550	39
3	700	50
1	1000	71
0	1400	100

## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

## BD05



Effective stroke	300	500	600	700	800	900	1000	1200	1500	1800	2000
<b>L</b>	541.8	741.8	841.8	941.8	1041.8	1141.8	1241.8	1441.8	1741.8	2041.8	2241.8
<b>M</b>	2	3	4	4	5	6	6	7	9	11	12
<b>N</b>	6	8	10	10	12	14	14	16	20	24	26
<b>Weight (kg)</b>	2.39	2.85	3.08	3.31	3.54	3.77	4	4.46	5.15	5.84	6.3

Note 1. Position from both ends to the mechanical stopper. (Movable range during return-to-origin)  
 Note 2. When installing using the main unit installation reference surface, make the mating or positioning height 2mm or more higher than the reference surface since the R-chamfering is provided on the main unit. (Recommended height, 5mm)  
 Note 3. The minimum bending radius of the motor cable is R30.

Controller

TS-S2 ▶ 514 TS-SH ▶ 514 TS-SD ▶ 524

# BD07

Belt type



CE compliance

## Ordering method

<b>BD07</b>	<b>48</b>	<b>N</b>	<b>N</b>			<b>S2</b>	
<b>Model</b>	<b>Lead</b> 48: 48mm	<b>Brake</b> N: With no brake	<b>Origin position</b> N: Standard	<b>Stroke</b>	<b>Cable length</b> <sup>Note 1</sup>	<b>Robot positioner</b> S2: TS-S2 <sup>Note 2</sup>	<b>I/O</b>
				300: 300mm 500: 500mm 600: 600mm 700: 700mm 800: 800mm 900: 900mm 1000: 1000mm 1200: 1200mm 1500: 1500mm 1800: 1800mm 2000: 2000mm	1K: 1m 3K: 3m 5K: 5m 10K: 10m		NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>
						<b>SH</b>	
						<b>Robot positioner</b> SH: TS-SH	<b>I/O</b>
							NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>
						<b>SD</b>	<b>1</b>
						<b>Robot driver</b> SD: TS-SD	<b>I/O cable</b> t: 1m

Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

<b>Motor</b>	56 □ Step motor
<b>Resolution (Pulse/rotation)</b>	20480
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.1
<b>Drive method</b>	Belt
<b>Equivalent lead (mm)</b>	48
<b>Maximum speed</b> <sup>Note 2</sup> (mm/sec)	1500
<b>Maximum payload (kg)</b>	14
<b>Stroke (mm)</b>	300/500/600/700/800/900/ 1000/1200/1500/1800/2000
<b>Overall length (mm) (Horizontal installation)</b>	Stroke + 285.6
<b>Maximum outside dimension of body cross-section (mm)</b>	W70 × H147.5
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right.

## Allowable overhang

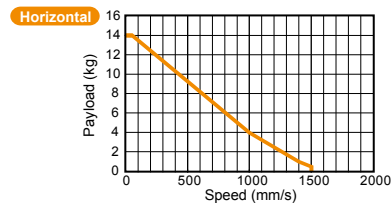
Horizontal installation (Unit: mm)				Wall installation (Unit: mm)			
	A	B	C		A	B	C
<b>3kg</b>	5767	1353	1247	<b>3kg</b>	1324	1354	5588
<b>8kg</b>	1839	399	458	<b>8kg</b>	474	399	1658
<b>14kg</b>	829	154	254	<b>14kg</b>	255	151	643

Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000km (This does not warrant the service life of the product.). (Service life is calculated for 600mm stroke models.)

## Static loading moment

(Unit: N·m)		
MY	MP	MR
46	46	101

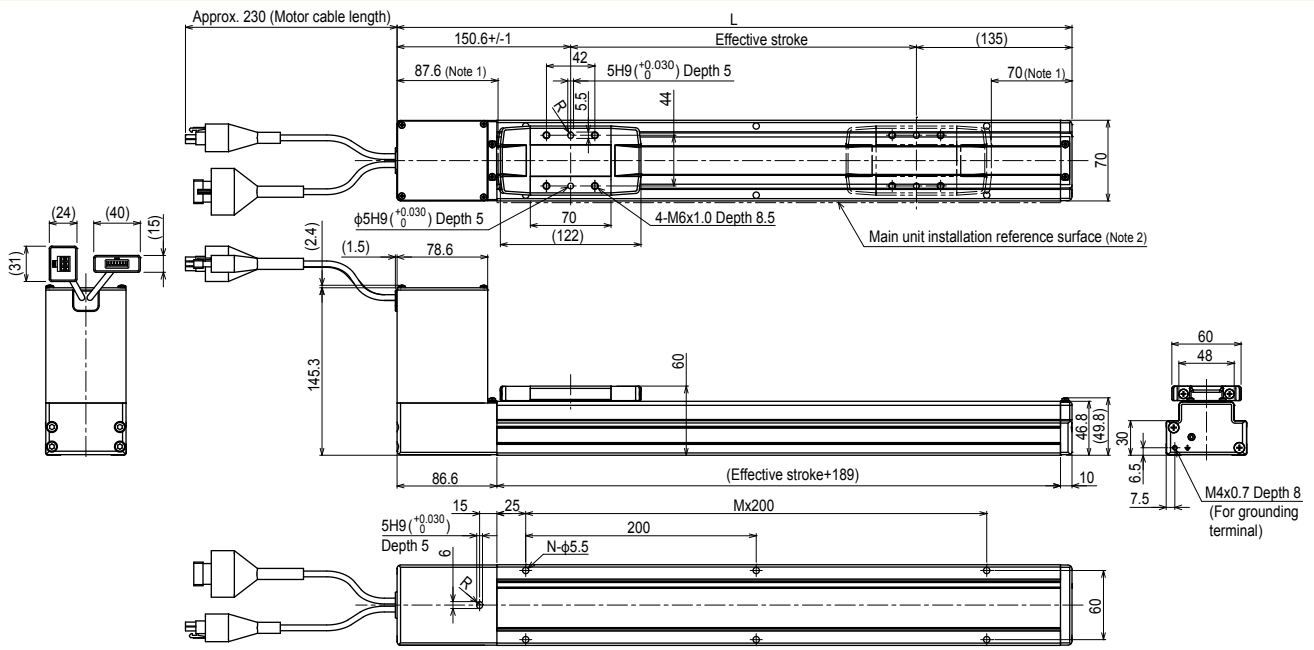
## Speed vs. payload



## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

## BD07



Effective stroke	300	500	600	700	800	900	1000	1200	1500	1800	2000
<b>L</b>	585.6	785.6	885.6	985.6	1085.6	1185.6	1285.6	1485.6	1785.6	2085.6	2285.6
<b>M</b>	2	3	3	4	4	5	5	6	8	9	10
<b>N</b>	6	8	8	10	10	12	12	14	18	20	22
<b>Weight (kg)</b>	4.12	4.8	5.14	5.48	5.82	6.16	6.5	7.18	8.2	9.22	9.9

Note 1. Position from both ends to the mechanical stopper. (Movable range during return-to-origin)  
 Note 2. When installing using the main unit installation reference surface, make the mating or positioning height 2mm or more higher than the reference surface since the R-chamfering is provided on the main unit. (Recommended height, 5mm)  
 Note 3. The minimum bending radius of the motor cable is R30.



Articulated robots  
YA



Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEURO



Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER



Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

T type

F type

GF type

N type

B/R type

# SINGLE-AXIS ROBOTS

# FLIP-X

## SERIES

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# FLIP-X SPECIFICATION SHEET

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YA
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- Compact  
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TRANSEVO
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FLIP-X
- Linear motor  
single-axis robots  
PHASER
- Cartesian  
robots  
XY-X
- SCARA  
robots  
YK-X
- Pick & place  
robots  
YP-X
- CLEAN
- CONTROLLER  
INFORMATION
- T type
- F type
- GF type
- N type
- B type
- R type
- B/R type

Type	Model	Motor output (W)	Repeat-ability (mm)	Lead (mm)	Payload (kg)		Stroke (mm) and maximum speed (mm/s)																					
					Horiz-ontal	Ver-tical	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000		
T type	T4L/ T4LH	30	+/-0.02	12	4.5	1.2	720																					
				6	6	2.4	360																					
				2	6	7.2	120																					
	T5L/ T5LH	30	+/-0.02	20	3	-	1200										960	840	720	660								
				12	5	1.2	800										640	560	480	440								
				6	9	2.4	400										320	280	240	220								
	T6L	60	+/-0.02	20	10	-	1333										1133	1000	866	800								
				12	12	4	800										680	600	520	480								
				6	30	8	400										340	300	260	240								
	T9	100	+/-0.01	30	15	-	1800										1440			1170			900					
				20	30	4	1200										960			780			600					
				10	55	10	600										480			390			300					
5				80	20	300										240			195			150						
T9H	200	+/-0.01	30	25	-	1800										1440			1170			900						
			20	40	8	1200										960			780			600						
			10	80	20	600										480			390			300						
			5	100	30	300										240			195			150						
F type	F8	100	+/-0.02	20	12	-	1200										1080	900	780	720	600							
				12	20	4	720										648	540	468	432	360							
				6	40	8	360										324	270	234	216	180							
	F8L	100	+/-0.01	30	7	-	1800										1530	1350	1170	1080	990	900	810					
				20	20	4	1200										1020	900	780	720	660	600	540					
				10	40	8	600										510	450	390	360	330	300	270					
				5	50	16	300										255	225	195	180	165	150	135					
	F8LH	100	+/-0.01	20	30	-	1200										1020	900	780	720	660	600	540	480				
				10	60	-	600										510	450	390	360	330	300	270	240				
				5	80	-	300										255	225	195	180	165	150	135	120				
	F10	100	+/-0.01	30	15	-	1800										1440			1170			900					
				20	20	4	1200										960			780			600					
10				40	10	600										480			390			300						
5				60	20	300										240			195			150						
F10H	200	+/-0.01	30	25	-	1800										1440	1260	1080	900	720	630							
			20	40	8	1200										960	840	720	600	480	420							
			10	80	20	600										480	420	360	300	240	210							
			5	100	30	300										240	210	180	150	120	105							
F14	100	+/-0.01	30	15	-	1800										1440			1170			900						
			20	30	4	1200										960			780			600						
			10	55	10	600										480			390			300						
			5	80	20	300										240			195			150						
F14H	200	+/-0.01	30	25	-	1800										1440			1170			900						
			20	40	8	1200										960			780			600						
			10	80	20	600										480			390			300						
			5	100	30	300										240			195			150						
F17	400	+/-0.01	40	40	-	2400										1920			1680									
			20	80	15	1200										960			840									
			10	120	35	600										480			420									
F17L	600	+/-0.02	50	50	10																							
F20	600	+/-0.01	40	60	-	2400										1920			1680									
			20	120	25	1200										960			840									
			10	-	45	600										480			420									
F20N	400	+/-0.04	20	80	-																							
GF type	GF14XL	200	+/-0.01	20	45	-																						
	GF17XL	400	+/-0.01	20	90	-																						
N type	N15	400	+/-0.01	20	50	-																						
	N15D	400	+/-0.01	20	50	-	1200																					
	N18	400	+/-0.01	20	80	-																						
	N18D	400	+/-0.01	20	80	-																						
B type	B10	100	+/-0.04	-	10	-																						
	B14	100	+/-0.04	-	20	-																						
	B14H	200	+/-0.04	-	30	-																						

Type	Model	Motor output (W)	Repeat-ability (sec)	Speed reduction ratio	Maximum speed (°/sec)	Detailed info page
R type	R5	50	+/-30	1/50	360	P.236
	R10	100	+/-30	1/50	360	P.237
	R20	200	+/-30	1/50	360	P.238

### ⚠ Precautions for use

- **Handling**  
Fully understand the contents stated in the "FLIP-X Series User's Manual" and strictly observe the handling precautions during operation.
- **Allowable installation ambient temperature**  
0 to 45 °C



																					Detailed info page		
1050	1100	1150	1200	1250	1300	1350	1400	1450	1500 to 1600	1650	1700	1750	1800	1850 to 2000	2050	2150	2250	2350	2400 to 2500	2550	2650 to 3050		
																						T4L: <b>P.198</b> T4LH: <b>P.199</b>	
																							T5L: <b>P.200</b> T5LH: <b>P.201</b>
																							<b>P.202</b>
	810																						<b>P.203</b>
	540																						
	270																						
	135																						
	810																						<b>P.204</b>
	540																						
	270																						
	135																						
																							<b>P.205</b>
	720																						<b>P.206</b>
	480																						
	240																						
	120																						
	420																						<b>P.208</b>
	210																						
	105																						
	810																						
	540																						<b>P.209</b>
	270																						
	135																						
	810																						<b>P.212</b>
	540																						
	270																						
	135																						
	810																						<b>P.213</b>
	540																						
	270																						
	135																						
	1440	1200	960	840	720																		<b>P.215</b>
	720	600	480																				
	360	300	240																				
		2200	1900	1500	1200	900	800																<b>P.217</b>
	1440	1200	960	840	720																		<b>P.219</b>
	720	600	480																				
	360	300	240																				
			1200						1200														<b>P.221</b>
			1200						1200														<b>P.214</b>
																							<b>P.218</b>
		1200																					<b>P.222</b>
																							<b>P.224</b>
																							<b>P.226</b>
																							<b>P.228</b>
		1200																					<b>P.230</b>
		1875																					<b>P.232</b>
		1875																					<b>P.234</b>
		1875																					

- Articulated robots  
**YA**
- Linear conveyor modules  
**LCM100**
- Motor-less single axis actuators  
**Robonity**
- Compact single-axis robots  
**TRANSEVO**
- Single-axis robots  
**FLIP-X**
- Linear motor single-axis robots  
**PHASER**
- Cartesian robots  
**XY-X**
- SCARA robots  
**YK-X**
- Pick & place robots  
**YP-X**
- CLEAN**
- CONTROLLER INFORMATION**
- T** type
- F** type
- GF** type
- N** type
- B/R** type

# Robot ordering method description

In the order format for the YAMAHA single-axis robots FLIP-X series, the notation (letters/numbers) for the mechanical section is shown linked to the controller section notation.

## [Example]

### ● Mechanical ▶ F8

- Lead ▷ 20mm
- Brake ▷ Yes
- Origin position ▷ Non-motor side
- Grease ▷ Standard
- Stroke ▷ 500mm
- Cable length ▷ 3.5m

### ● Controller ▶ SR1-X

- Usable for CE ▷ Not required
- Regenerative unit ▷ Not required
- I/O selection ▷ NPN
- Battery ▷ With battery

### ● Ordering method

# F8-20-BK-Z-500-3L-SR1-X05-N-B

Mechanical section

Controller section

This page describes using the ordering form for mechanical components.

To find detailed controller information see the controller page.

SR1-X ▶ [P.540](#), TS-X ▶ [P.514](#), RDV-X ▶ [P.528](#)

## Mechanical section

### ● T type / F type (F8 / F8L / F8LH)

① Model	③ Lead designation	④ Brake	⑩ Option	⑪ Stroke	⑫ Cable length
T4L F8	30 30mm	No entry / No brakes	Origin position change / None / Standard		3L 3.5m
T4LH F8L	20 20mm	BK / Brakes provided	Z / Non-motor side		5L 5m
T5L F8LH	12 12mm		Grease type / None / Standard		10L 10m
T5LH	10 10mm		GC / Clean		3K 3.5m
T6L	6 6mm				5K 5m
T9	5 5mm				10K 10m
T9H	2 2mm				

### ● F type (Except F8 / F8L / F8LH)

① Model	③ Lead designation	④ Brake	⑥ Cable entry location	⑩ Option	⑪ Stroke	⑫ Cable length
F10 F20	50 50mm	No entry / No brakes	No entry / Standard (S)	Origin position change / None / Standard		3L 3.5m
F10H F20N	40 40mm	BK / Brakes provided	U / From the top	Z / Non-motor side		5L 5m
F14	30 30mm		R / From the right	Grease type / None / Standard		10L 10m
F14H	20 20mm		L / From the left	GC / Clean		3K 3.5m
F17	10 10mm					5K 5m
F17L	5 5mm					10K 10m

### ● GF type

① Model	② Model	⑤ Take out direction	③ Lead designation	⑥ Cable entry location	⑩ Option	⑪ Stroke	⑫ Cable length
GF14XL	S / Straight model	H / Horizontal installation	20 20mm	No entry / Standard (S)	Origin position change / None / Standard		3L 3.5m
GF17XL				U / From the top	Z / Non-motor side		5L 5m
				R / From the right	Grease type / None / Standard		10L 10m
				L / From the left	GC / Clean		3K 3.5m
							5K 5m
							10K 10m

### ● N type (Single carriage)

① Model	③ Lead designation	⑦ Cable carrier entry location	⑧ Cable carrier specification	⑩ Option	⑪ Stroke	⑫ Cable length
N15	20 20mm	RH / Horizontal, right	S / Standard cable carrier	Origin position change / None / Standard		3L 3.5m
N18		LH / Horizontal, left	M / Optional cable carrier	Z / Non-motor side		5L 5m
		RW / Wall, right		Grease type / None / Standard		10L 10m
		LW / Wall, left		GC / Clean		3K 3.5m
						5K 5m
						10K 10m

### ● N type (Double carriage)

① Model	③ Lead designation	⑤ Take out direction	⑧ Cable carrier specification	⑩ Option	⑪ Stroke	⑫ Cable length
N15D	20 20mm	H / Horizontal installation	S / Standard cable carrier	Grease type / None / Standard		3L 3.5m
N18D		W / Wall hanging installation	M / Optional cable carrier	GC / Clean		5L 5m
						10L 10m
						3K 3.5m
						5K 5m
						10K 10m

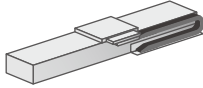
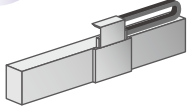
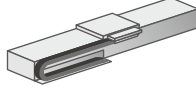
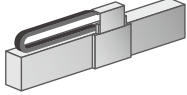
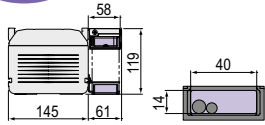
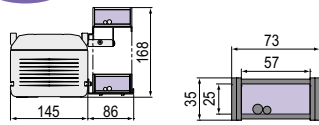
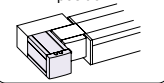
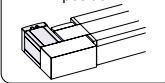
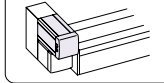
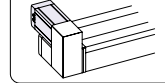
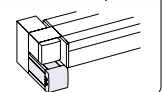
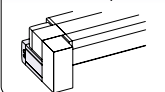
### ● B type

① Model	⑨ Motor installation direction	⑩ Option	⑪ Stroke	⑫ Cable length
B10	L / Motor leftward, horizontal position	Grease type / None / Standard		3L 3.5m
B14	R / Motor rightward, horizontal position	GC / Clean		5L 5m
B14H	LU / Motor leftward, upper position			10L 10m
	RU / Motor rightward, upper position			3K 3.5m
	LD / Motor leftward, lower position			5K 5m
	RD / Motor rightward, lower position			10K 10m

### ● R type

① Model	⑥ Cable entry location	⑫ Cable length
R5	No entry / Standard (S)	3L 3.5m
R10	B / From the side	5L 5m
R20		10L 10m
		3K 3.5m
		5K 5m
		10K 10m

# Robot ordering method terminology

① <b>Model</b>	Enter the robot unit model.
② <b>Model</b>	Straight model only (GF type)
③ <b>Lead designation</b>	Select the ball screw lead.
④ <b>Brake</b>	Select Brake or No-brake. <b>Horizontal specs</b> : No-brake <b>Vertical specs</b> : with Brake
⑤ <b>Take out direction</b>	Select what direction to install the robot (horizontal / wall mounted).
⑥ <b>Cable entry location</b>	Select what direction to extract the robot cable connecting the robot and controller.
⑦ <b>Cable carrier entry location</b>	Select what direction to install the robot (horizontal / wall mounted) and what direction to extract the robot cable carrier.  <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p><b>RH</b> Horizontal, right</p>  </div> <div style="text-align: center;"> <p><b>RW</b> Wall, right</p>  </div> <div style="text-align: center;"> <p><b>LH</b> Horizontal, left</p>  </div> <div style="text-align: center;"> <p><b>LW</b> Wall, left</p>  </div> </div> <p>Note. Be sure to install in the direction as specified (in cable carrier take-out direction drawing and various specification drawings) individually. Installation in any other way will cause a failure. For requirement of installation in any way other than the above standard installation, please consult YAMAHA as special arrangement will be available.</p>
⑧ <b>Cable carrier specification</b>	Select the cable carrier size for the customer wiring.  <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p><b>S type</b> Standard cable carrier</p>  </div> <div style="text-align: center;"> <p><b>M type</b> Optional cable carrier</p>  </div> </div> <p>Note. Cannot pass more than 3 urethane hoses (φ6 x 4).  <span style="display: inline-block; width: 10px; height: 10px; background-color: #ccc; border: 1px solid #000;"></span> Space for optional cable for users</p>
⑨ <b>Motor installation direction</b>	Select what direction to install the motor.  <div style="display: grid; grid-template-columns: repeat(2, 1fr); gap: 10px;"> <div style="text-align: center;"> <p><b>L type</b> Leftward at horizontal position</p>  </div> <div style="text-align: center;"> <p><b>R type</b> Rightward at horizontal position</p>  </div> <div style="text-align: center;"> <p><b>LU type</b> Leftward at upper position</p>  </div> <div style="text-align: center;"> <p><b>RU type</b> Rightward at upper position</p>  </div> <div style="text-align: center;"> <p><b>LD type</b> Leftward at lower position</p>  </div> <div style="text-align: center;"> <p><b>RD type</b> Rightward at lower position</p>  </div> </div>
⑩ <b>Option</b>	<b>Origin position change</b> : Origin point position can be changed.
	<b>Frame</b> : Hole to secure the frame can be selected. (Spot facing/tapping)
	<b>Grease type</b> : Clean grease can be selected.
⑪ <b>Stroke</b>	Select the stroke for the robot movement range.
⑫ <b>Cable length</b>	Select the robot cable length to use for connecting the robot to the controller. <b>3L</b> : 3.5m (Standard) <b>5L</b> : 5m <b>10L</b> : 10m <b>1K</b> : 1m (You can select a 1m cable only when you use T4L/T5L. Flexible cable) <b>3K</b> : 3.5m (Flexible cable) <b>5K</b> : 5m (Flexible cable) <b>10K</b> : 10m (Flexible cable)

YA	Articulated robots
LCM100	Linear conveyor modules
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FLIP-X	Single-axis robots
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XY-X	Cartesian robots
YK-X	SCARA robots
YP-X	Pick & place robots
CLEAN	CLEAN CONTROLLER INFORMATION
T type	T type
F type	F type
GF type	GF type
N type	N type
B/R type	B/R type



# T4LH

● Origin on the non-motor side is selectable

● Controller: 100V / 200V



## Ordering method

### T4LH

Model	Lead designation	Brake	Origin position change	Grease type	Stroke	Cable length <sup>Note 1</sup>
	12: 12mm 6: 6mm 2: 2mm	No entry: No brakes BK: Brakes provided	None: Standard Z: Non-motor side	None: Standard GC: Clean	50 to 400 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

### TSX

Positioner <sup>Note 2</sup>	Driver: Power-supply voltage / Power capacity	LCD monitor	I/O selection	Battery
TS-X	105: 100V/100W or less 205: 200V/100W or less	No entry: None L: With LCD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	B: With battery (Absolute) N: None (Incremental)

### SR1-X

Controller	Driver: Power capacity	Usable for CE	I/O selection	Battery
05	05: 100W or less	No entry: Standard E: CE marking	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	B: With battery (Absolute) N: None (Incremental)

### RDV-X

Driver	Power-supply voltage	Driver: Power capacity
2	2: AC200V	05: 100W or less

Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
Note 2. See P.522 for DIN rail mounting bracket.  
Note 3. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	30
Repeatability <sup>Note 1</sup> (mm)	+/-0.02
Deceleration mechanism	Ball screw φ8
Ball screw lead (mm)	12    6    2
Maximum speed (mm/sec)	720    360    120
Maximum payload (kg)	Horizontal: 4.5, 6, 7.2 Vertical: 1.2, 2.4, 7.2
Rated thrust (N)	32    64    153
Stroke (mm)	50 to 400 (50mm pitch)
Overall length (mm)	Horizontal: Stroke+198 Vertical: Stroke+236
Maximum dimensions of cross section of main unit (mm)	W45 × H53
Cable length (m)	Standard: 3.5 / Option: 5,10
Linear guide type	2 rows of gothic arch grooves × 1 rail
Position detector	Resolvers <sup>Note 2</sup>
Resolution (Pulse/rotation)	16384

Note 1. Positioning repeatability in one direction.  
Note 2. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang<sup>Note</sup>

Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)		
	A	B	C		A	B	C		A	C
Lead 12	2kg	341	90	174	2kg	140	73	300		
	4.5kg	172	37	72		4.5kg	47	22	119	
Lead 6	3kg	355	58	134	3kg	105	42	260		
	6kg	235	27	62		6kg	31	11	135	
Lead 2	3kg	1105	59	142	3kg	113	42	810		
	6kg	520	27	66		6kg	32	11	305	

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
Note. Service life is calculated for 300mm stroke models.

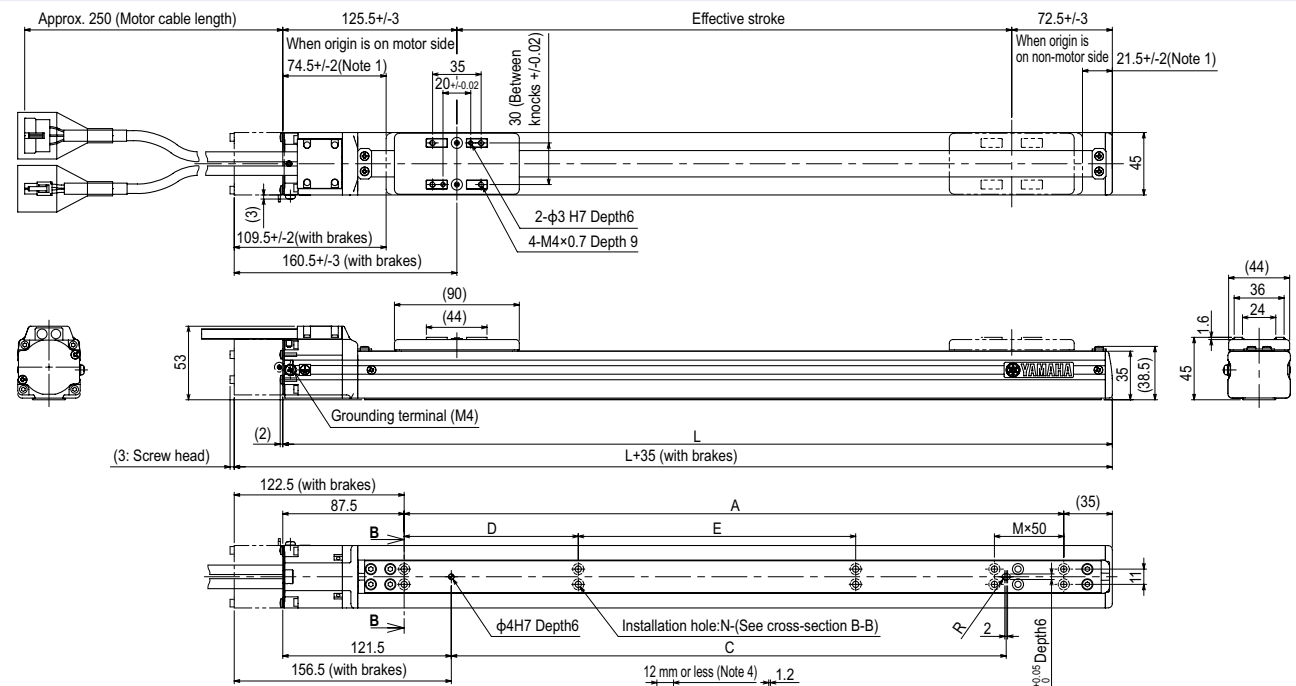
## Static loading moment

(Unit: N·m)		
MY	MP	MR
15	19	18

## Controller

Controller	Operation method
SR1-X05	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX320	
RCX221/222	
RCX340	
TS-X105	I/O point trace / Remote command
TS-X205	
RDV-X205	Pulse train control

## T4LH



Effective stroke	50	100	150	200	250	300	350	400
L	248	298	348	398	448	498	548	598
A	125.5	175.5	225.5	275.5	325.5	375.5	425.5	475.5
C	50	100	150	200	250	300	350	400
D	-	-	-	-	125.5	125.5	125.5	125.5
E	-	-	-	-	-	200	200	200
M	0	1	2	3	0	1	0	1
N	4	6	8	10	6	8	8	10
Weight (kg) <sup>Note 3</sup>	1.1	1.2	1.4	1.5	1.6	1.7	1.8	1.9
Maximum speed for each stroke (mm/sec)	Lead 12	720						
	Lead 6	360						
	Lead 2	120						

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Minimum bend radius of motor cable is R30.  
Note 3. Weight of models with no brake. The weight of brake-attached models is 0.2 kg heavier than the models with no brake shown in the table.  
Note 4. The under-head length of the hex socket-head bolt (M4×0.7) to be used for the installation work is 12mm or less.  
Note 5. External view of T4LH is identical to T4L.



# T5L

- High lead: Lead 20
- Origin on the non-motor side is selectable
- Controller: 24V



## Ordering method

<b>T5L</b>							<b>ERCD</b>	
<b>Model</b>	<b>Lead designation</b>	<b>Brake</b> <sup>Note 1</sup>	<b>Origin position change</b>	<b>Grease type</b>	<b>Stroke</b>	<b>Cable length</b> <sup>Note 2</sup>	<b>Controller</b>	<b>I/O connector specification</b>
	20: 20mm 12: 12mm 6: 6mm	No entry: No brakes BK: Brakes provided	None: Standard Z: Non-motor side	None: Standard GC: Clean	50 to 800 (50mm pitch)	1K: 1m 3K: 3.5m 5K: 5m 10K: 10m		CN1: I/O flat cable 1m (Standard) CN2: Twisted-pair cable 2m (pulse train function)

Note 1. The model with a lead of 20mm cannot select specifications with brake (vertical specifications).  
Note 2. The robot cable is flexible and resists bending. See P.614 for details on robot cable.

## Specifications

<b>AC servo motor output (W)</b>	30
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.02
<b>Deceleration mechanism</b>	Ball screw $\phi 12$
<b>Ball screw lead (mm)</b>	20    12    6
<b>Maximum speed</b> <sup>Note 2</sup> (mm/sec)	1200    800    400
<b>Maximum payload (kg)</b>	<b>Horizontal</b> 3    5    9 <b>Vertical</b> -    1.2    2.4
<b>Rated thrust (N)</b>	19    32    64
<b>Stroke (mm)</b>	50 to 800 (50mm pitch)
<b>Overall length (mm)</b>	<b>Horizontal</b> Stroke+201.5 <b>Vertical</b> Stroke+239.5
<b>Maximum dimensions of cross section of main unit (mm)</b>	W55×H52
<b>Cable length (m)</b>	Standard: 3.5 / Option: 1.5, 10
<b>Linear guide type</b>	2 rows of gothic arch grooves × 1 rail
<b>Position detector</b>	Resolvers <sup>Note 3</sup>
<b>Resolution (Pulse/rotation)</b>	16384

Note 1. Positioning repeatability in one direction.  
Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
Note 3. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang<sup>Note</sup>

Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)			
	A	B	C		A	B	C	Lead 12	A	C	
Lead 20	1kg 600	323	683	Lead 20	1kg 600	291	600	Lead 6	1.2kg	242	240
	3kg 675	103	247		3kg 215	73	589				
Lead 12	2kg 1170	159	406	Lead 12	2kg 368	127	1082	Lead 6	2.4kg	113	113
	5kg 555	59	155		5kg 127	30	449				
Lead 6	3kg 1498	104	294	Lead 6	3kg 263	73	970				
	9kg 628	31	89	Lead 6	9kg 54	0	400				

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
Note. Service life is calculated for 600mm stroke models.

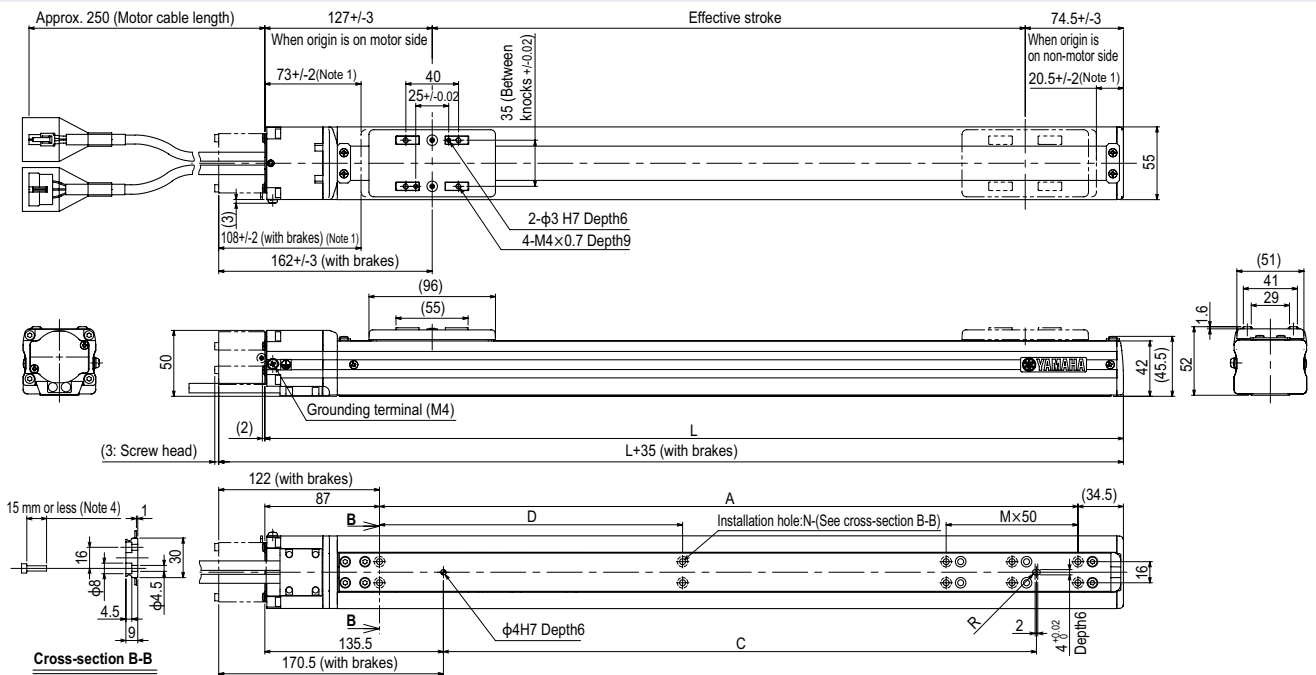
## Static loading moment

(Unit: N·m)		
MY	MP	MR
30	34	40

## Controller

Controller	Operation method
ERCD	Pulse train control / Programming / I/O point trace / Remote command / Operation using RS-232C communication

## T5L



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800		
L	251.5	301.5	351.5	401.5	451.5	501.5	551.5	601.5	651.5	701.5	751.5	801.5	851.5	901.5	951.5	1001.5		
A	130	180	230	280	330	380	430	480	530	580	630	680	730	780	830	880		
C	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800		
D	-	-	-	-	-	230	230	230	230	230	230	230	230	230	230	230		
M	0	1	2	3	4	5	0	1	2	3	4	5	6	7	8	9		
N	4	6	8	10	12	14	6	8	10	12	14	16	18	20	22	24		
<b>Weight (kg)</b> <sup>Note 3</sup>	1.7	1.8	2.0	2.2	2.3	2.5	2.7	2.8	3.0	3.2	3.3	3.5	3.7	3.8	4.0	4.2		
<b>Maximum speed for each stroke</b> <sup>Note 5</sup> (mm/sec)	1200						800						400					
<b>Speed setting</b>	-						80%						70%					

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Minimum bend radius of motor cable is R30.  
Note 3. Weight of models with no brake. The weight of brake-attached models is 0.2 kg heavier than the models with no brake shown in the table.  
Note 4. The under-head length of the hex socket-head bolt (M4×0.7) to be used for the installation work is 15mm or less.  
Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.  
Note 6. External view of T5LH is identical to T5L.



# T6L

- High lead: Lead 20
- Origin on the non-motor side is selectable
- Controller: 100V / 200V



## Ordering method

<b>T6L</b>	<b>Model</b>	<b>Lead designation</b> 20: 20mm 12: 12mm 6: 6mm	<b>Brake</b> <sup>Note 1</sup> No entry: No brakes BK: Brakes provided	<b>Origin position change</b> None: Standard Z: Non-motor side	<b>Grease type</b> None: Standard GC: Clean	<b>Stroke</b> 50 to 800 (50mm pitch)	<b>Cable length</b> <sup>Note 3</sup> 3L: 3.5m 5L: 5m 10L: 10m 5K/5K/10K (Flexible cable)	<b>TSX</b>	<b>Positioner</b> <sup>Note 3</sup> TS-X	<b>Driver: Power supply voltage / Power capacity</b> 105: 100V/100W or less 205: 200V/100W or less	<b>LCD monitor</b> No entry: None L: With LCD	<b>I/O selection</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 4</sup>	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
	<b>SR1-X</b>	<b>Controller</b>	<b>05</b>	<b>Driver: Power capacity</b> 05: 100W or less	<b>Usable for CE</b> No entry: Standard E: CE marking	<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)						
	<b>RDV-X</b>	<b>Driver</b>	<b>2</b>	<b>Power supply voltage</b> 2: AC200V	<b>05</b>	<b>Driver: Power capacity</b> 05: 100W or less	<b>RBR1</b>	<b>Regenerative unit</b>					

Note 1. The model with a lead of 20mm cannot select specifications with brake (vertical specifications).  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

## Specifications

<b>AC servo motor output (W)</b>	60
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.02
<b>Deceleration mechanism</b>	Ball screw $\phi 12$
<b>Ball screw lead (mm)</b>	20 12 6
<b>Maximum speed</b> <sup>Note 2</sup> (mm/sec)	1333 800 400
<b>Maximum payload (kg)</b>	<b>Horizontal</b> 10 12 30 <b>Vertical</b> - 4 8
<b>Rated thrust (N)</b>	51 85 170
<b>Stroke (mm)</b>	50 to 800 (50mm pitch)
<b>Overall length (mm)</b>	<b>Horizontal</b> Stroke+247.5 <b>Vertical</b> Stroke+285.5
<b>Maximum dimensions of cross section of main unit (mm)</b>	W65×H56
<b>Cable length (m)</b>	Standard: 3.5 / Option: 5,10
<b>Linear guide type</b>	2 rows of gothic arch grooves × 1 rail
<b>Position detector</b>	Resolvers <sup>Note 3</sup>
<b>Resolution (Pulse/rotation)</b>	16384

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang

Installation	Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)				
		A	B	C	A	B	C	A	B	C		
Horizontal	20	2kg	319	184	234	2kg	234	152	265	1kg	355	352
	6kg	98	37	77	6kg	61	13	71	2kg	165	165	
	10kg	64	0	55	10kg	30	0	42	4kg	70	72	
Lead 12	3kg	624	125	335	3kg	293	96	510	2kg	171	172	
	8kg	273	41	121	8kg	89	14	210	4kg	73	74	
	12kg	216	24	77	12kg	43	0	130	8kg	23	26	
Lead 6	5kg	694	73	236	5kg	204	45	530				
	10kg	374	33	109	10kg	72	0	245				
	30kg	159	0	25	30kg	0	0	0				

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
 Note. Service life is calculated for 600mm stroke models.

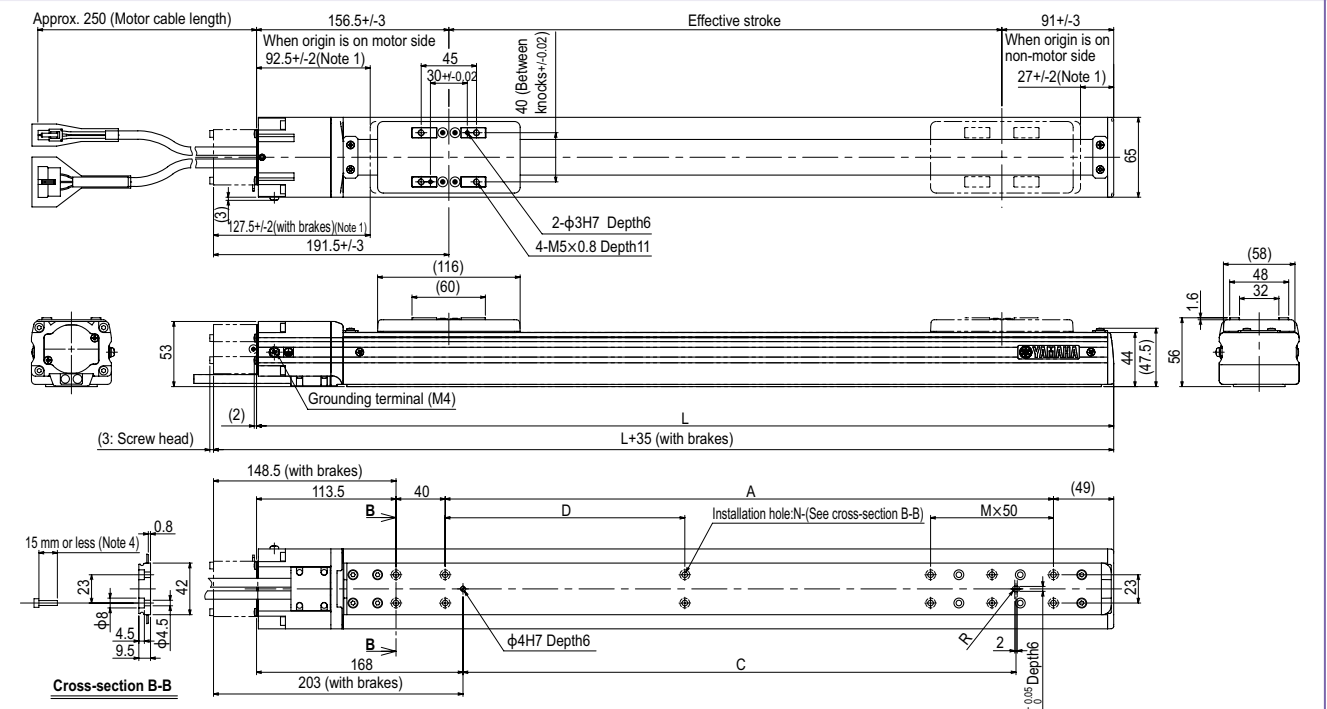
## Static loading moment

(Unit: N·m)		
MY	MP	MR
35	40	50

## Controller

Controller	Operation method
SR1-X05	Programming / I/O point trace
RCX320	Remote command / Operation
RCX221/222	using RS-232C communication
RCX340	
TS-X105	I/O point trace / Remote command
TS-X205	
RDV-X205-RBR1	Pulse train control

## T6L



Effective stroke	Stroke (mm)															
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	297.5	347.5	397.5	447.5	497.5	547.5	597.5	647.5	697.5	747.5	797.5	847.5	897.5	947.5	997.5	1047.5
A	95	145	195	245	295	345	395	445	495	545	595	645	695	745	795	845
C	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
D	-	-	-	-	-	-	195	195	195	195	195	195	195	195	195	195
M	0	1	2	3	4	5	0	1	2	3	4	5	6	7	8	9
N	6	8	10	12	14	16	8	10	12	14	16	18	20	22	24	26
Weight (kg) <sup>Note 3</sup>	2.4	2.6	2.8	3.1	3.3	3.5	3.7	4.0	4.2	4.4	4.6	4.8	5.1	5.3	5.5	5.7
Maximum speed for each stroke <sup>Note 5</sup> (mm/sec)	Lead 20	1333														
	Lead 12	800														
	Lead 6	400														
	Speed setting	85% 75% 65% 60%														

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Minimum bend radius of motor cable is R30.  
 Note 3. Weight of models with no brake. The weight of brake-attached models is 0.2 kg heavier than the models with no brake shown in the table.  
 Note 4. The under-head length of the hex socket-head bolt (M4x0.7) to be used for the installation work is 15mm or less.  
 Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

# T9

● High lead: Lead 30

● Origin on the non-motor side is selectable: Lead 10-20-30

Note. Strokes longer than 1050mm are special order items. Please consult us for delivery time.



## Ordering method

**T9**

Model	Lead designation	Brake	Origin position change	Grease type	Stroke	Cable length
	30: 30mm 20: 20mm 10: 10mm 5: 5mm	No entry: No brakes BK: Brakes provided	None: Standard Z: Non-motor side	None: Standard GC: Clean	Lead 20-10-5: 150 to 1050 (50mm pitch) Lead 30: 150 to 1250 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

**TSX**

Positioner	Driver: Power-supply voltage	Regenerative unit	LCD monitor	I/O selection	Battery
TS-X	105: 100V/100W or less 205: 200V/100W or less	No entry: None R: With RGT	No entry: None L: With LCD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

**SR1-X 05**

Controller	Driver: Power capacity	Usable for CE	Regenerative unit	I/O selection	Battery
SR1-X 05	100W or less	No entry: Standard E: CE marking	No entry: None R: With RG1	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	B: With battery (Absolute) N: None (Incremental)

**RDV-X 2 05 RBR1**

Driver	Power-supply voltage	Driver: Power capacity	Regenerative unit
RDV-X 2	AC200V	05: 100W or less	

- Note 1. The model with a lead of 30mm cannot select specifications with brake (vertical specifications).  
 Note 2. If selecting 5mm lead specifications then the origin point cannot be changed to the non-motor side.  
 Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 4. See P.522 for DIN rail mounting bracket.  
 Note 5. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	100
Repeatability (mm)	+/-0.01
Deceleration mechanism	Ball screw $\phi$ 15
Ball screw lead (mm)	30 20 10 5
Maximum speed (mm/sec)	1800 1200 600 300
Maximum payload (kg)	Horizontal: 15 30 55 80 Vertical: - 4 10 20
Rated thrust (N)	56 84 169 339
Stroke (mm)	150 to 1250 (50mm pitch)
Overall length (mm)	Horizontal: Stroke+259 Vertical: Stroke+289
Maximum dimensions of cross section of main unit (mm)	W94 x H98
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves x 1 rail
Position detector	Resolvers
Resolution (Pulse/rotation)	16384

- Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Strokes longer than 1050mm are available only for high lead (Lead 30). (Special order item)  
 Note 4. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang

Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	C	
Lead 30	5kg 864	501	383	5kg 348	384	776	1kg 600	600	
Lead 20	15kg 491	156	140	15kg 87	40	306	2kg 1098	1098	
	5kg 1292	505	462	5kg 416	388	1186	4kg 545	545	
Lead 10	15kg 572	158	151	15kg 92	42	386	8kg 280	280	
	30kg 455	73	75	30kg 0	0	61	10kg 217	217	
Lead 5	20kg 617	119	127	10kg 193	132	910	10kg 221	221	
	40kg 422	53	59	20kg 53	0	400	15kg 135	135	
Lead 5	55kg 420	36	40	30kg 0	0	109	20kg 92	92	
	50kg 722	42	47	10kg 197	133	2360			
Lead 5	60kg 657	33	37	20kg 54	0	985			
	80kg 577	23	25	30kg 0	0	427			

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

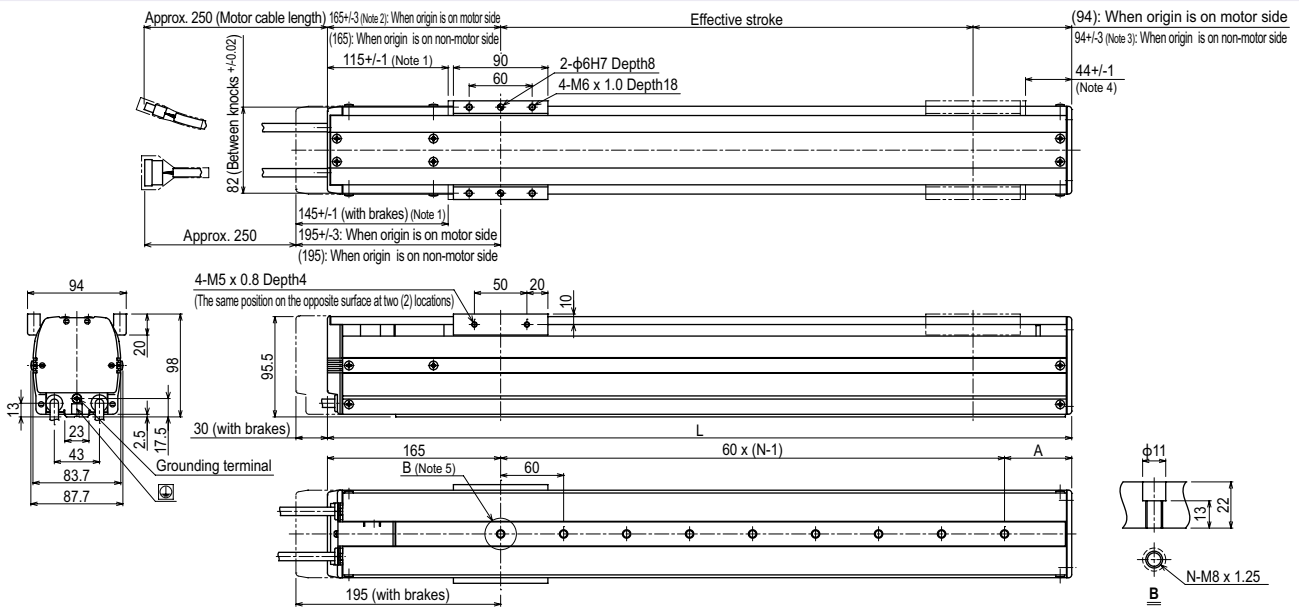
(Unit: N·m)		
MY	MP	MR
86	133	117

## Controller

Controller	Operation method
SR1-X05	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X105	I/O point trace / Remote command
RDV-X205-RBR1	Pulse train control

Note. Regenerative unit is required when the models used vertically and with 700mm or larger stroke.

## T9



- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. 167.5±1 when the high lead specification (Lead 30) is used.  
 Note 3. 94±1 when the high lead specification (Lead 30) is used.  
 Note 4. 41.5±1 when the high lead specification (Lead 30) is used.  
 Note 5. When installing the unit, washers, etc., cannot be used in the  $\phi$ 11 counter bore hole.  
 Note 6. Minimum bend radius of motor cable is R5.  
 Note 7. Weight of models with no brake. The weight of brake-attached models is 0.5 kg heavier than the models with no brake shown in the table.

Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
	L	409	459	509	559	609	659	709	759	809	859	909	959	1009	1059	1109	1159	1209	1259	1309	1359	1409	1459
A	64	54	44	94	84	74	64	54	44	94	84	74	64	54	44	94	84	74	64	54	44	94	84
N	4	5	6	6	7	8	9	10	11	11	12	13	14	15	16	16	17	18	19	20	21	21	22
Weight (kg)	5.5	5.9	6.2	6.6	6.9	7.3	7.6	8.0	8.3	8.7	9.0	9.4	9.7	10.0	10.3	10.7	11.0	11.4	11.7	12.1	12.5	12.9	13.3
Maximum speed (mm/sec)	Lead 30	1800																					
	Lead 20	1200																					
	Lead 10	600																					
	Lead 5	300																					
Speed setting	80%																						

- Note 8. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.  
 Note 9. Strokes longer than 1050mm are special order items. Please contact us for speed setting.



# T9H

● High lead: Lead 30

● Origin on the non-motor side is selectable: Lead 20-30

Note. Strokes longer than 1050mm are special order items. Please consult us for delivery time.



## Ordering method

Model	Lead designation	Brake	Origin position change	Grease type	Stroke	Cable length
	30: 30mm 20: 20mm 10: 10mm 5: 5mm	No entry/No brakes BK: Brakes provided	None: Standard Z: Non-motor side	None: Standard GC: Clean	Lead 20/10/5: 150 to 1050 (50mm pitch) Lead 30: 150 to 1250 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

Positioner	Driver	Regenerative unit	LCD monitor	I/O selection	Battery
TS-X	Power-supply voltage Power capacity 110: 100V/200W 210: 200V/200W	No entry: None R: With RGT	No entry: None L: With LCD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)
SR1-X	10 Controller Power capacity 10: 200W	Usable for CE No entry: Standard E: CE marking	No entry: None R: With RGT	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	B: With battery (Absolute) N: None (Incremental)
RDV-X	2 Driver Power-supply voltage 2: AC200V		10 Driver: Power capacity 10: 200W or less	RBR1 Regenerative unit	

- Note 1. The model with a lead of 30mm cannot select specifications with brake (vertical specifications).
- Note 2. If selecting 10mm-5mm lead specifications then the origin point cannot be changed to the non-motor side.
- Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.
- Note 4. See P.522 for DIN rail mounting bracket.
- Note 5. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	200
Repeatability (mm)	+/-0.01
Deceleration mechanism	Ball screw φ15
Ball screw lead (mm)	30 20 10 5
Maximum speed (mm/sec)	1800 1200 600 300
Maximum payload (kg)	Horizontal 25 40 80 100 Vertical - 8 20 30
Rated thrust (N)	113 170 341 683
Stroke (mm)	150 to 1250 (50mm pitch)
Overall length (mm)	Horizontal Stroke+273 Vertical Stroke+303
Maximum dimensions of cross section of main unit (mm)	W94 × H98
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves × 1 rail
Position detector	Resolvers
Resolution (Pulse/rotation)	16384

- Note 1. Positioning repeatability in one direction.
- Note 2. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.
- Note 3. Strokes longer than 1050mm are available only for high lead (Lead 30). (Special order item)
- Note 4. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang

Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	B	C
Lead 30	10kg 415	286	183	10kg 140	120	323	4kg 515	515	
Lead 20	20kg 270	105	93	20kg 41	0	123	6kg 334	334	
	10kg 667	244	225	10kg 170	128	549	8kg 244	244	
Lead 10	20kg 330	112	107	20kg 46	0	182	10kg 217	217	
	40kg 162	42	47	40kg 0	0	0	15kg 133	133	
Lead 5	30kg 392	75	81	20kg 52	0	335	20kg 90	90	
	50kg 297	40	44	25kg 24	0	235	15kg 135	135	
Lead 3	80kg 265	21	24	30kg 0	0	108	20kg 92	92	
	60kg 477	22	37	20kg 54	0	710	30kg 49	49	
Lead 1	80kg 412	22	25	25kg 25	0	505			
	100kg 362	16	18	30kg 0	0	355			

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

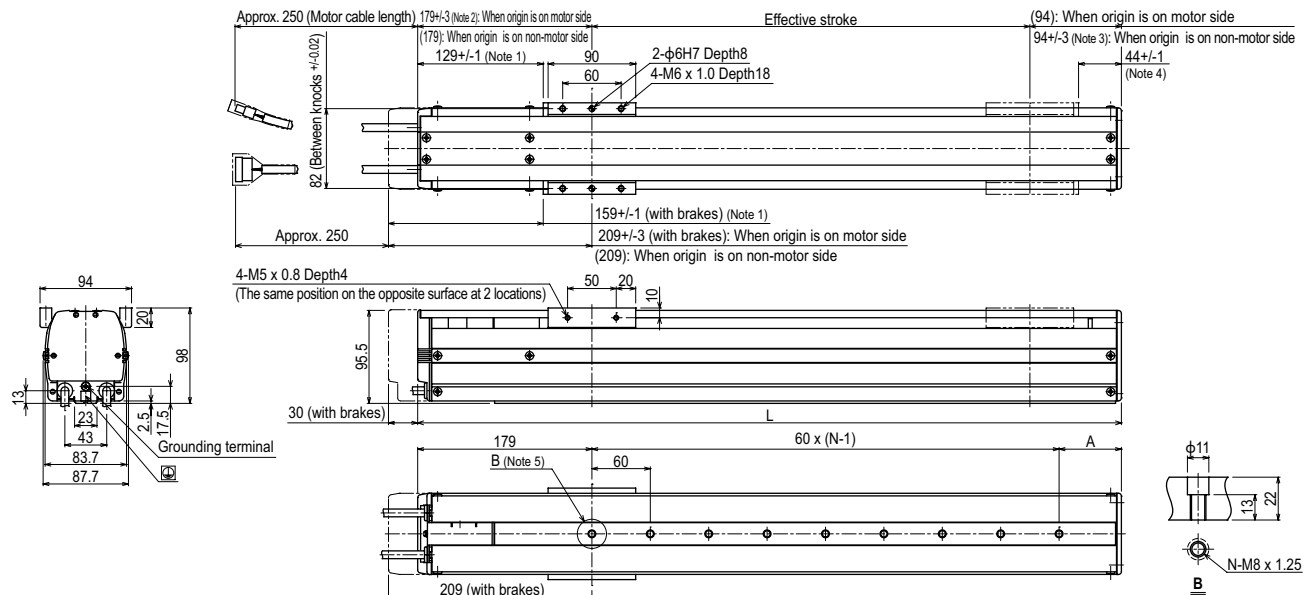
	MY	MP	MR
(Unit: N·m)	86	133	117

## Controller

Controller	Operation method
SR1-X10 Note	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RXC320	
RXC221/222	
RCX340	
TS-X110 Note	I/O point trace / Remote command
TS-X210 Note	
RDV-X210-RBR1	Pulse train control

Note. When using the unit vertically, a regeneration unit is required.

## T9H



- Note 1. Stop positions are determined by the mechanical stoppers at both ends.
- Note 2. 181.5+/-4 when the high lead specification (Lead 30) is used.
- Note 3. 94+/-4 when the high lead specification (Lead 30) is used.
- Note 4. 41.5+/-1 when the high lead specification (Lead 30) is used.
- Note 5. When installing the unit, washers, etc., cannot be used in the φ11 counter bore hole.
- Note 6. Minimum bend radius of motor cable is R5.
- Note 7. Weight of models with no brake. The weight of brake-attached models is 0.5 kg heavier than the models with no brake shown in the table.

Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100 <sup>Note 9</sup>	1150 <sup>Note 9</sup>	1200 <sup>Note 9</sup>	1250 <sup>Note 9</sup>
L	423	473	523	573	623	673	723	773	823	873	923	973	1023	1073	1123	1173	1223	1273	1323	1373	1423	1473	1523
A	64	54	44	94	84	74	64	54	44	94	84	74	64	54	44	94	84	74	64	54	44	94	84
N	4	5	6	6	7	8	9	10	11	11	12	13	14	15	16	16	17	18	19	20	21	21	22
Weight (kg) <sup>Note 7</sup>	5.8	6.2	6.5	6.9	7.3	7.7	8.0	8.4	8.8	9.1	9.5	9.9	10.2	10.6	11.0	11.4	11.7	12.1	12.5	12.9	13.3	13.7	14.1
Maximum speed (mm/sec) <sup>Note 8</sup>	Lead 30	1800																					
	Lead 20	1200																					
	Lead 10	600																					
	Lead 5	300																					
Speed setting	80%															65%			50%				

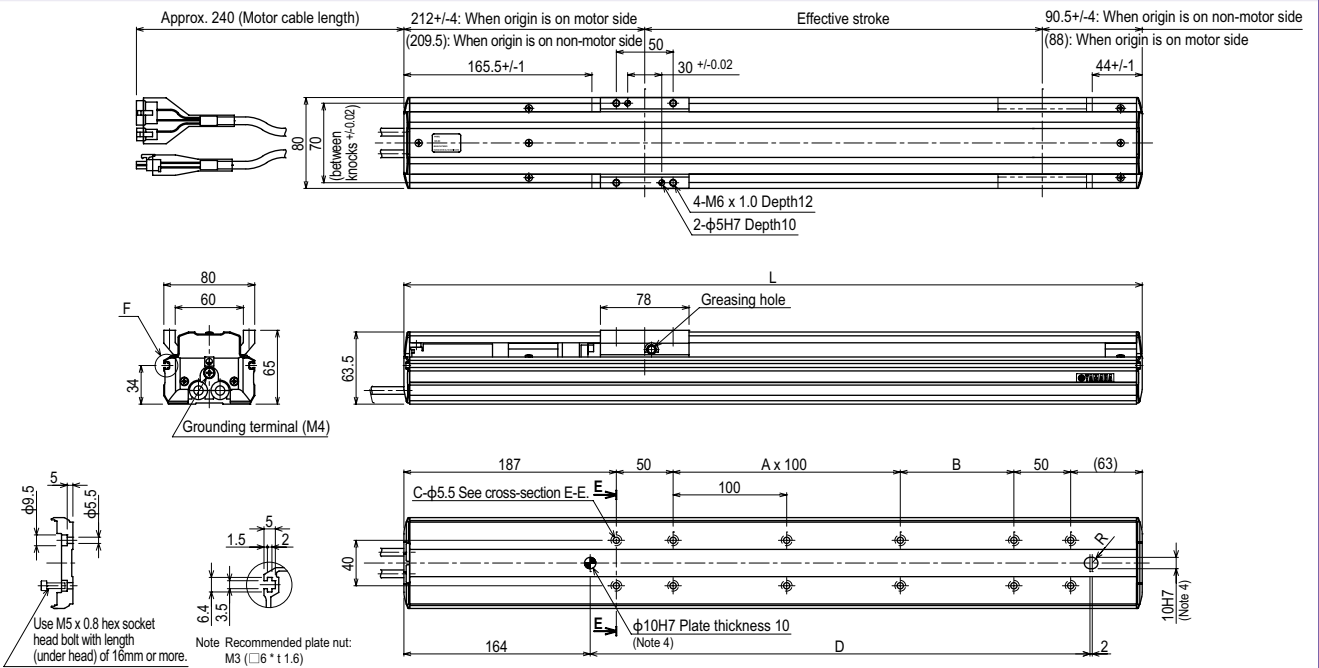
- Note 8. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.
- Note 9. Strokes longer than 1050mm are special order items. Please contact us for speed setting.







F8L High lead type: Lead 30



Cross-section E-E F: Detail of T-groove

Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
A	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9
B	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100
C	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26
D	240	290	340	390	440	490	540	590	640	690	740	790	840	890	940	990	1040	1090	1140
Weight (kg)	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.1	6.4	6.7	7.0	7.3	7.6	7.9	8.2	8.5	8.8	9.2	9.5
Maximum speed <sup>Notes</sup> (mm/sec)	Lead 30	1800										1530	1350	1170	1080	990	900	810	720
	Speed setting	-										85%	75%	65%	60%	55%	50%	45%	40%

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. When installing the robot, do not use washers inside the robot body.  
 Note 3. Minimum bend radius of motor cable is R50.  
 Note 4. When using this φ10 knockpin hole to position the robot body, the knockpin must not protrude more than 10mm inside the robot body.

Note 5. When the stroke is longer than 650mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.





# F10

● High lead: Lead 30

● Origin on the non-motor side is selectable: Lead 10-20-30

Note. Strokes longer than 1050mm are special order items. Please consult us for delivery time.

## Ordering method

### F10

Model	Lead designation	Brake	Cable entry location	Origin position change	Grease type	Stroke	Cable length
	30: 30mm 20: 20mm 10: 10mm 5: 5mm	No entry: No brakes BK: Brakes provided	No entry: Standard (S) U: From the top	None: Standard Z: Non-motor side	None: Standard GC: Clean	Lead 20-10-5: 150 to 1050 3L: 3.5m (50mm pitch) Lead 30: 150 to 1250 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

- Note 1. The model with a lead of 30mm cannot select specifications with brake (vertical specifications).  
 Note 2. If selecting 5mm lead specifications then the origin point cannot be changed to the non-motor side.  
 Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 4. See P.522 for DIN rail mounting bracket.  
 Note 5. Select this selection when using the gateway function. For details, see P.66.

### TSX

Positioner	Driver: Power-supply voltage	Regenerative unit	LCD monitor	I/O selection	Battery
TS-X	Power capacity 105: 100V/100W or less 205: 200V/100W or less	No entry: None R: With RGT	No entry: None L: With LCD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFIBET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

### SR1-X

Controller	Driver: Power capacity	Usable for CE	Regenerative unit	I/O selection	Battery
05	05: 100W or less	No entry: Standard E: CE marking	No entry: None R: With RGT	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	B: With battery (Absolute) N: None (Incremental)

### RDV-X

Driver	Power-supply voltage	Driver: Power capacity	Regenerative unit
2	2: AC200V	05: 100W or less	

## Specifications

AC servo motor output (W)	100
Repeatability (mm)	+/-0.01
Deceleration mechanism	Ball screw $\phi$ 15
Ball screw lead (mm)	30 20 10 5
Maximum speed (mm/sec)	1800 1200 600 300
Maximum payload (kg)	Horizontal: 15 20 40 60 Vertical: - 4 10 20
Rated thrust (N)	56 84 169 339
Stroke (mm)	150 to 1250 (50mm pitch)
Overall length (mm)	Horizontal: Stroke+260 Vertical: Stroke+290
Maximum dimensions of cross section of main unit (mm)	W110 x H71
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves x 1 rail
Position detector	Resolvers
Resolution (Pulse/rotation)	16384

- Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Strokes longer than 1050mm are available only for high lead (Lead 30). (Special order item)  
 Note 4. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang

Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	B	C
Lead 30	5kg 491	273	215	5kg 206	209	480	1kg 600	600	600
Lead 20	15kg 223	61	63	15kg 45	0	177	2kg 649	691	
	5kg 937	282	259	5kg 250	213	905	4kg 306	347	
Lead 10	10kg 487	121	116	10kg 99	51	438	8kg 142	183	
	20kg 236	40	44	20kg 21	0	149	10kg 102	144	
Lead 5	15kg 389	71	74	10kg 105	53	550	15kg 51	93	
	30kg 179	17	20	20kg 22	0	230	10kg 105	146	
Lead 5	40kg 106	0	0	30kg 0	0	0	15kg 51	93	
	30kg 419	19	20	10kg 107	54	1410	20kg 25	66	
Lead 5	50kg 0	0	0	20kg 22	0	540			
	60kg 0	0	0	30kg 0	0	0			

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

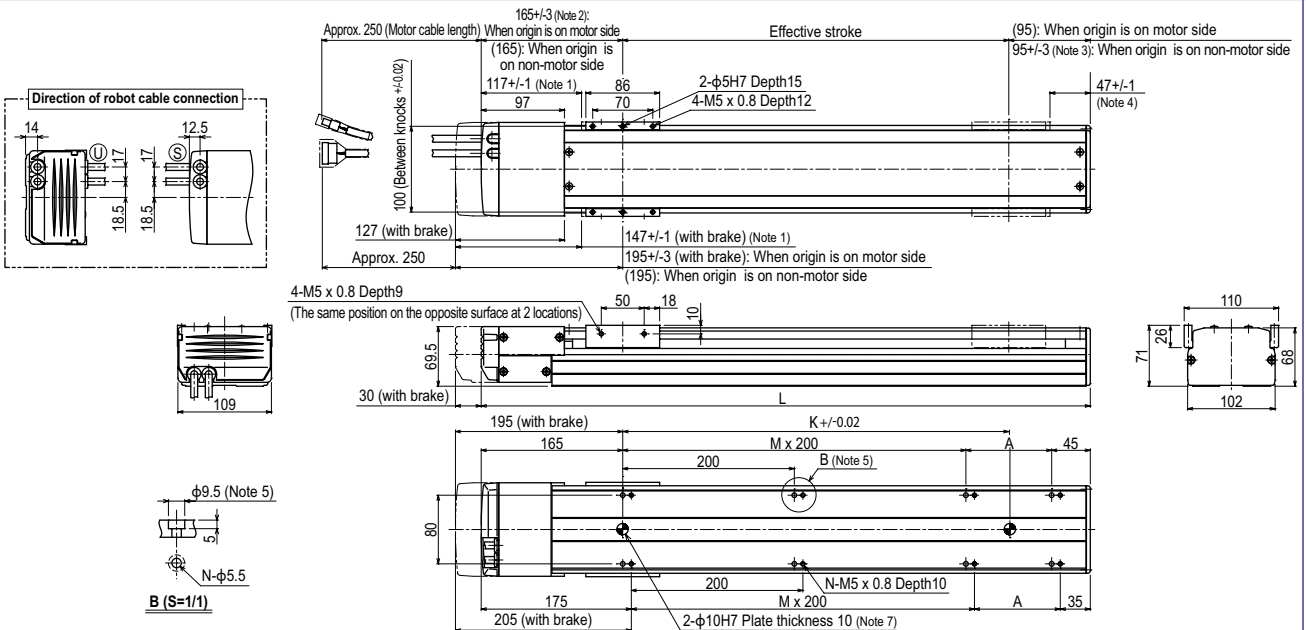
			(Unit: N·m)		
	MY	MP	MR		
	131	131	115		

## Controller

Controller	Operation method
SR1-X05	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RX320	
RX221/222	
RX340	
TS-X105	I/O point trace / Remote command
TS-X205	
RDV-X205-RBR1	Pulse train control

Note. Regenerative unit is required when the models used vertically and with 700mm or larger stroke.

## F10



- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. 167.5+/-4 when the high lead specification (Lead 30) is used.  
 Note 3. 95+/-4 when the high lead specification (Lead 30) is used.  
 Note 4. 44.5+/-1 when the high lead specification (Lead 30) is used.  
 Note 5. When installing the unit, washers, etc., cannot be used in the  $\phi$ 9.5 counter bore hole.  
 Note 6. Minimum bend radius of motor cable is R50.  
 Note 7. When using this  $\phi$ 10 knock-pin hole to position the robot body, the knock-pin must not protrude more than 10mm inside the robot body.  
 Note 8. Weight of models with no brake. The weight of brake-attached models is 0.6 kg heavier than the models with no brake shown in the table.

Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
	L	410	460	510	560	610	660	710	760	810	860	910	960	1010	1060	1110	1160	1210	1260	1310	1360	1410	1460
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16
K	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
Weight (kg)	5.5	5.7	5.8	6.2	6.5	6.9	7.3	7.7	8.1	8.5	8.8	9.2	9.6	10.0	10.4	10.8	11.1	11.5	11.9	12.3	12.7	13.1	13.5
Maximum speed (mm/sec)	Lead 30	1800																					
	Lead 20	1200																					
	Lead 10	600																					
	Lead 5	300																					
Speed setting		80%																					
		65%																					

- Note 9. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.  
 Note 10. Strokes longer than 1050mm are special order items. Please contact us for speed setting.



# F10H

● High lead: Lead 30

● Origin on the non-motor side is selectable: Lead 10-20-30

## Ordering method

### F10H

Model	Lead designation	Brake	Cable entry location	Origin position change	Grease type	Stroke	Cable length
	30: 30mm 20: 20mm 10: 10mm 5: 5mm	No entry: No brakes BK: Brakes provided	No entry: Standard (S) U: From the top	None: Standard Z: Non-motor side	None: Standard GC: Clean	Lead 20-10-5: 150 to 1000 (50mm pitch) Lead 30: 150 to 1000 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

### TSX

Positioner	Driver: Power-supply voltage / Power capacity	Regenerative unit	LCD monitor	I/O selection	Battery
TS-X	110: 100V/200W 210: 200V/200W	No entry: None R: With RGT	No entry: None L: With LCD	N: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

### SR1-X

Controller	Driver: Power capacity	Usable for CE	Regenerative unit	I/O selection	Battery
10	10: 200W	No entry: Standard E: CE marking	No entry: None R: With RGT	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: Profibus	B: With battery (Absolute) N: None (Incremental)

### RDV-X

Driver	Power-supply voltage	Driver: Power capacity	Regenerative unit
2	2: AC200V	10: 200W or less	

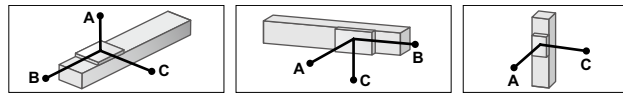
- Note 1. The model with a lead of 30mm cannot select specifications with brake (vertical specifications).  
 Note 2. If selecting 5mm lead specifications then the origin point cannot be changed to the non-motor side.  
 Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 4. See P.522 for DIN rail mounting bracket.  
 Note 5. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	200		
Repeatability (mm)	±0.01		
Deceleration mechanism	Ball screw φ15		
Ball screw lead (mm)	30	20	10
Maximum speed (mm/sec)	1800	1200	600
Maximum payload (kg)	Horizontal	Vertical	
	25	40	80
		8	20
Rated thrust (N)	113	170	341
Stroke (mm)	150 to 1000		
Overall length (mm)	Horizontal	Vertical	
		Stroke+355	
		Stroke+385	
Maximum dimensions of cross section of main unit (mm)	W110 × H71		
Cable length (m)	Standard: 3.5 / Option: 5.10		
Linear guide type	4 rows of circular arc grooves × 1 rail		
Position detector	Resolvers		
Resolution (Pulse/rotation)	16384		

- Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below. When the movement distance is short, the speed may not reach the maximum speed according to the payload.  
 Note 3. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

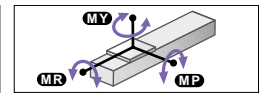
## Allowable overhang



Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	C	
Lead 30	1181	681	219	193	570	1062	4kg	1650	
Lead 20	772	298	99	65	187	549	6kg	1104	
Lead 10	1961	685	232	198	570	1786	8kg	832	
Lead 5	949	301	103	65	187	732	10kg	927	
Lead 30	432	109	38	0	0	0	15kg	614	
Lead 20	1615	239	84	100	283	1981	20kg	458	
Lead 10	1131	112	39	66	187	1546	15kg	752	
Lead 5	812	40	14	30kg	43	1233	20kg	560	
Lead 30	3091	112	39	20kg	134	7629	30kg	369	
Lead 20	2330	64	23	25kg	93	264	5987		
Lead 10	1733	36	12	30kg	66	187	4841		

- Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
 Note. Service life is calculated for 600mm stroke models.

## Static loading moment



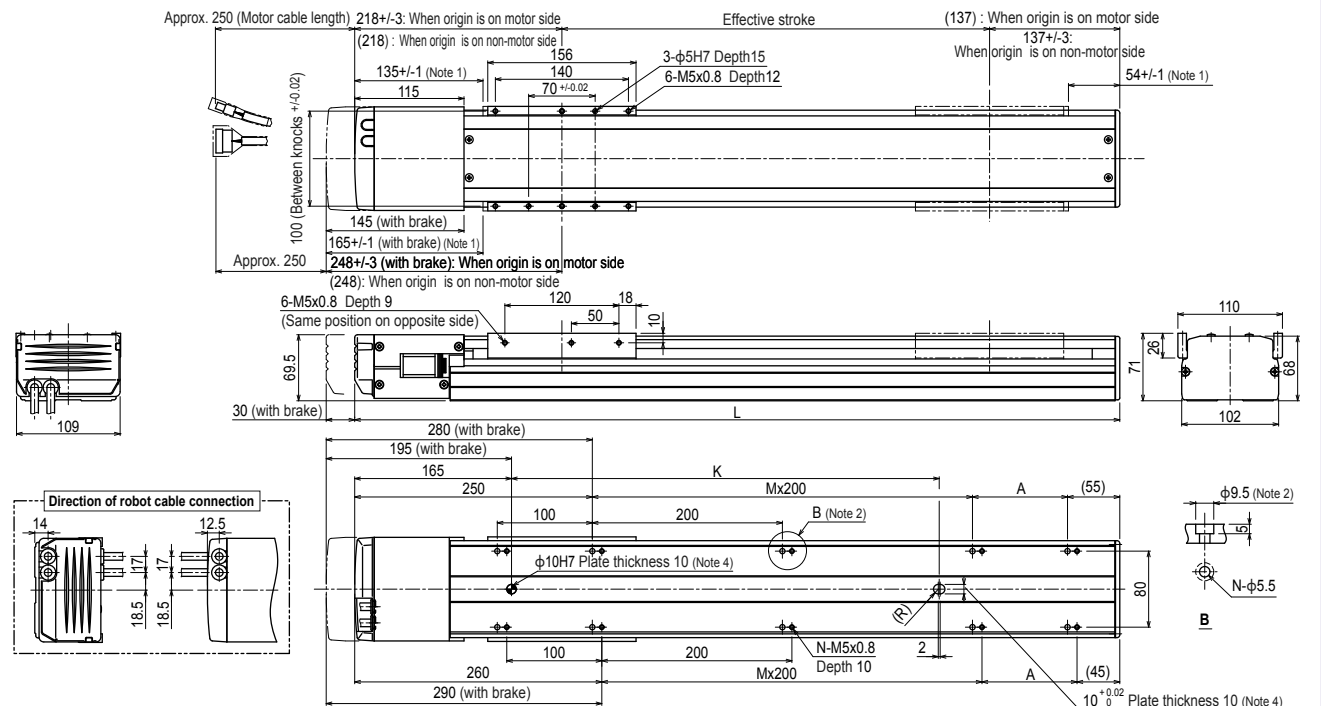
	MY	MP	MR
(Unit: N·m)	348	348	160

## Controller

Controller	Operation method
SR1-X10	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RXC320	
RXC221/222	
RCX340	
TS-X110	I/O point trace / Remote command
TS-X210	
RDV-X210-RBR1	Pulse train control

- Note. When using the unit vertically, a regeneration unit is required.

## F10H



Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
L	505	555	605	655	705	755	805	855	905	955	1005	1055	1105	1155	1205	1255	1305	1355
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5
N	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16
K	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
Weight (kg)	6.9	7.3	7.7	8.1	8.4	8.8	9.2	9.6	10.0	10.3	10.7	11.1	11.5	11.9	12.2	12.6	13.0	13.4
Maximum speed (mm/sec)	1800	1200	600	300						1440	1260	1080	900	720	630	480	420	210
Speed setting	80%	70%	60%	50%						80%	70%	60%	50%	40%	35%			

- Note 1. Stop positions are determined by the mechanical stoppers at both ends. When installing the unit, washers, etc. cannot be used in the φ9.5 counter bore hole.  
 Note 2. Minimum bend radius of motor cable is R50.  
 Note 3. When using this φ10 knock-pin hole to position the robot body, the knockpin must not protrude more than 10mm inside the robot body.  
 Note 4. Weight of models with no brake. The weight of brake-attached models is 0.5 kg heavier than the models with no brake shown in the table.

Note 6. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.



# F14

- High lead: Lead 30
- Origin on the non-motor side is selectable

Note. Strokes longer than 1050mm are special order items. Please consult us for delivery time.



## Ordering method

### F14

Model	Lead designation	Brake	Cable entry location	Origin position change	Grease type	Stroke	Cable length
	30: 30mm 20: 20mm 10: 10mm 5: 5mm	No entry: No brakes BK: Brakes provided	No entry: Standard (S) U: From the top R: From the right L: From the left	None: Standard Z: Non-motor side	None: Standard GC: Clean	Lead 20: 10:5 150 to 1050 (50mm pitch) Lead 30: 150 to 1250 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

### TSX

Positioner	Driver: Power supply voltage Power capacity	Regenerative unit	LCD monitor	I/O selection	Battery
TS-X	105: 100V/100W or less 205: 200V/100W or less	No entry: None R: With RGT	No entry: None L: With LCD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

### SR1-X

Controller	Driver: Power capacity	Usable for CE	Regenerative unit	I/O selection	Battery
05	05: 100W or less	No entry: Standard E: CE marking	No entry: None R: With RGT1	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	B: With battery (Absolute) N: None (Incremental)

### RDV-X

Driver	Power supply voltage	Driver: Power capacity	Regenerative unit
2	2: AC200V	05: 100W or less	RBR1

- Note 1. The model with a lead of 30mm cannot select specifications with brake (vertical specifications).  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	100
Repeatability (mm)	+/-0.01
Deceleration mechanism	Ball screw $\phi$ 15
Ball screw lead (mm)	30 20 10 5
Maximum speed (mm/sec)	1800 1200 600 300
Maximum payload (kg)	Horizontal: 15 30 55 80 Vertical: - 4 10 20
Rated thrust (N)	56 84 169 339
Stroke (mm)	150 to 1250 (50mm pitch)
Overall length (mm)	Horizontal: Stroke+255 Vertical: Stroke+285
Maximum dimensions of cross section of main unit (mm)	W136 x H83
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves x 2 rail
Position detector	Resolvers
Resolution (Pulse/rotation)	16384

- Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Strokes longer than 1050mm are available only for high lead (Lead 30). (Special order item)  
 Note 4. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang

Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	B	C
Lead 30	5kg 1756	1364	863	5kg 951	969	1286	1kg 600	600	600
Lead 20	15kg 1236	467	438	5kg 1066	974	1578	2kg 1200	1200	1200
Lead 10	5kg 2153	1366	980	15kg 402	276	775	4kg 1154	895	895
Lead 5	15kg 1193	465	430	30kg 219	105	678	8kg 634	492	492
Lead 30	20kg 1132	353	361	40kg 140	57	402	10kg 499	387	387
Lead 20	40kg 872	183	218	55kg 92	0	345	10kg 587	456	456
Lead 10	55kg 946	140	184	30kg 246	107	1095	15kg 383	297	297
Lead 5	50kg 1575	158	222	40kg 167	64	798	20kg 281	218	218
Lead 30	60kg 1493	135	194	60kg 88	20	508			
Lead 20	80kg 1466	107	159						

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

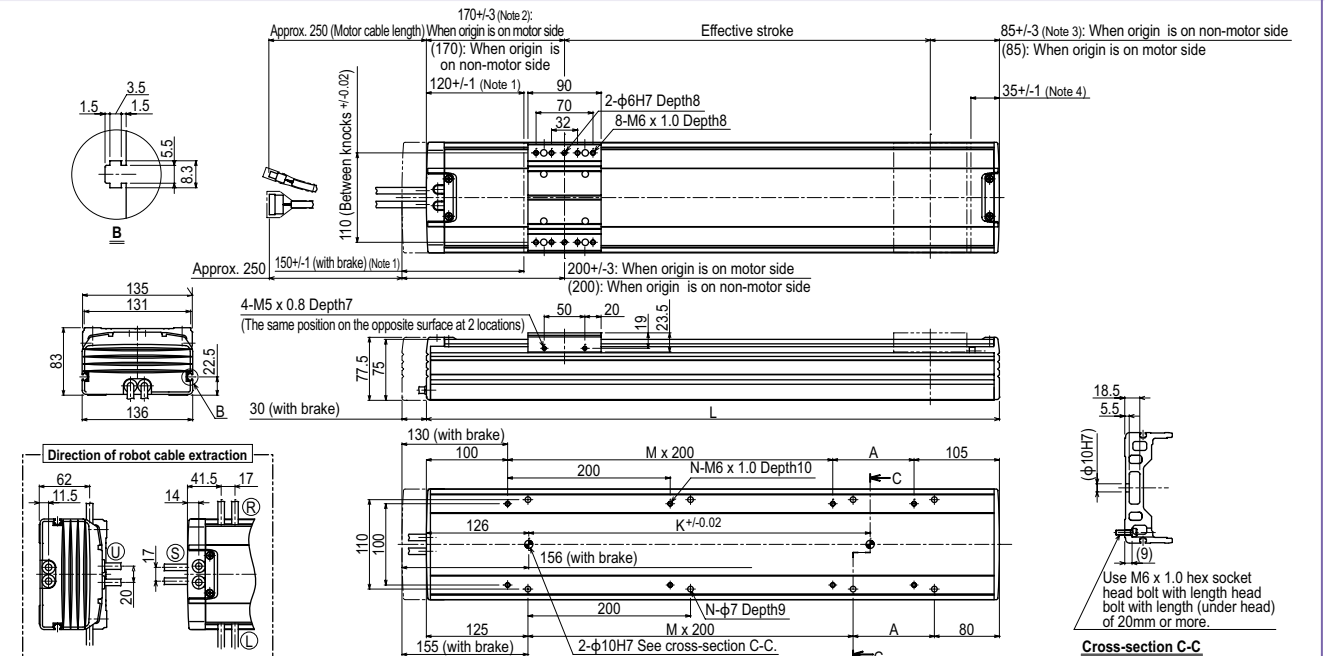
Lead	(Unit: N·m)		
	MY	MP	MR
Lead 30	232	233	204

## Controller

Controller	Operation method
SR1-X05	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RXC320	
RXC221/222	
RXC340	
TS-X105	I/O point trace / Remote command
TS-X205	
RDV-X205-RBR1	Pulse train control

Note. Regenerative unit is required when the models used vertically and with 700mm or larger stroke.

## F14



- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. 172.5+/-4 when the high lead specification (Lead 30) is used.  
 Note 3. 85+/-4 when the high lead specification (Lead 30) is used.  
 Note 4. 32.5+/-1 when the high lead specification (Lead 30) is used.  
 Note 5. Minimum bend radius of motor cable is R50.  
 Note 6. Weight of models with no brake. The weight of brake-attached models is 0.7 kg heavier than the models with no brake shown in the table.

Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
	L	405	455	505	555	605	655	705	755	805	855	905	955	1005	1055	1105	1155	1205	1255	1305	1355	1405	1455
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16
K	240	240	240	240	420	420	420	420	600	600	600	600	780	780	780	780	960	960	960	960	1140	1140	1140
Weight (kg)	6.2	6.9	7.5	8.2	8.8	9.5	10.1	10.8	11.4	12.1	12.6	13.4	13.9	14.6	15.2	15.9	16.5	17.2	17.8	18.5	19.1	19.8	20.4
Maximum speed (mm/sec)	Lead 30	1800	1200	600	300	150	75	37.5	18.75	9.375	4.6875	2.34375	1.171875	0.5859375	0.29296875	0.146484375	0.0732421875	0.03662109375	0.018310546875	0.0091552734375	0.00457763671875	0.002288818359375	0.0011444091796875
Speed setting	Lead 20	1200	800	400	200	100	50	25	12.5	6.25	3.125	1.5625	0.78125	0.390625	0.1953125	0.09765625	0.048828125	0.0244140625	0.01220703125	0.006103515625	0.0030517578125	0.00152587890625	0.000762939453125
	Lead 10	600	400	200	100	50	25	12.5	6.25	3.125	1.5625	0.78125	0.390625	0.1953125	0.09765625	0.048828125	0.0244140625	0.01220703125	0.006103515625	0.0030517578125	0.00152587890625	0.000762939453125	0.0003814697265625
	Lead 5	300	200	100	50	25	12.5	6.25	3.125	1.5625	0.78125	0.390625	0.1953125	0.09765625	0.048828125	0.0244140625	0.01220703125	0.006103515625	0.0030517578125	0.00152587890625	0.000762939453125	0.0003814697265625	0.00019073486328125
	Speed setting	80%	65%	50%	45%																		

Note 7. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.  
 Note 8. Strokes longer than 1050mm are special order items. Please contact us for speed setting.

# F14H

● High lead: Lead 30

● Origin on the non-motor side is selectable: Lead 10-20-30

Note. Strokes longer than 1050mm are special order items. Please consult us for delivery time.



## Ordering method

### F14H

Model	Lead designation	Brake	Cable entry location	Origin position change	Grease type	Stroke	Cable length
	30: 30mm 20: 20mm 10: 10mm 5: 5mm	No entry: No brakes BK: Brakes provided	No entry: Standard (S) U: From the top R: From the right L: From the left	None: Standard Z: Non-motor side	None: Standard GC: Clean	Lead 20/10/5: 150 to 1050 (50mm pitch) Lead 30: 150 to 1250 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

- Note 1. The model with a lead of 30mm cannot select specifications with brake (vertical specifications).  
 Note 2. If selecting 5mm lead specifications then the origin point cannot be changed to the non-motor side.  
 Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 4. See P.522 for DIN rail mounting bracket.  
 Note 5. Select this selection when using the gateway function. For details, see P.66.

### TSX

Positioner	Driver: Power-supply voltage	Regenerative unit	LCD monitor	I/O selection	Battery
TS-X	Power capacity 110: 100V/200W 210: 200V/200W	No entry: None R: With RGT	No entry: None L: With LCD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

### SR1-X

Controller	Driver: Power capacity	Usable for CE	Regenerative unit	I/O selection	Battery
10	10: 200W	No entry: Standard E: CE marking	No entry: None R: With RG1	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFINET	B: With battery (Absolute) N: None (Incremental)

### RDV-X

Driver	Power-supply voltage	Driver: Power capacity	Regenerative unit
2	2: AC200V	10: 200W or less	

## Specifications

AC servo motor output (W)	200
Repeatability (mm)	+/-0.01
Deceleration mechanism	Ball screw φ15
Ball screw lead (mm)	30 20 10 5
Maximum speed (mm/sec)	1800 1200 600 300
Maximum payload (kg)	Horizontal: 25 40 80 100 Vertical: - 8 20 30
Rated thrust (N)	113 170 341 683
Stroke (mm)	150 to 1250 (50mm pitch)
Overall length (mm)	Horizontal: Stroke+320 Vertical: Stroke+350
Maximum dimensions of cross section of main unit (mm)	W136 × H83
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves × 2 rail
Position detector	Resolvers
Resolution (Pulse/rotation)	16384

- Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Strokes longer than 1050mm are available only for high lead (Lead 30). (Special order item)  
 Note 4. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang

Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	C	
Lead 30	10kg: 2152	1673	934	10kg: 975	1219	1625	4kg: 2400	2016	
Lead 20	25kg: 1847	691	533	25kg: 482	426	1257	6kg: 1699	1364	
	10kg: 2265	1674	961	10kg: 999	1220	1711	8kg: 1301	1051	
Lead 10	20kg: 1402	855	537	20kg: 515	558	987	10kg: 1370	1106	
	40kg: 1047	445	324	40kg: 263	227	635	15kg: 906	732	
Lead 5	30kg: 1953	583	485	30kg: 419	338	1282	20kg: 678	548	
	50kg: 1655	365	328	50kg: 240	162	934	20kg: 767	619	
Lead 5	80kg: 1720	242	238	80kg: 134	62	756	25kg: 612	494	
	60kg: 2443	311	317	60kg: 209	117	1398	30kg: 503	407	
Lead 5	80kg: 2193	242	253	80kg: 135	62	1120			
	100kg: 2000	202	214	100kg: 90	29	900			

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

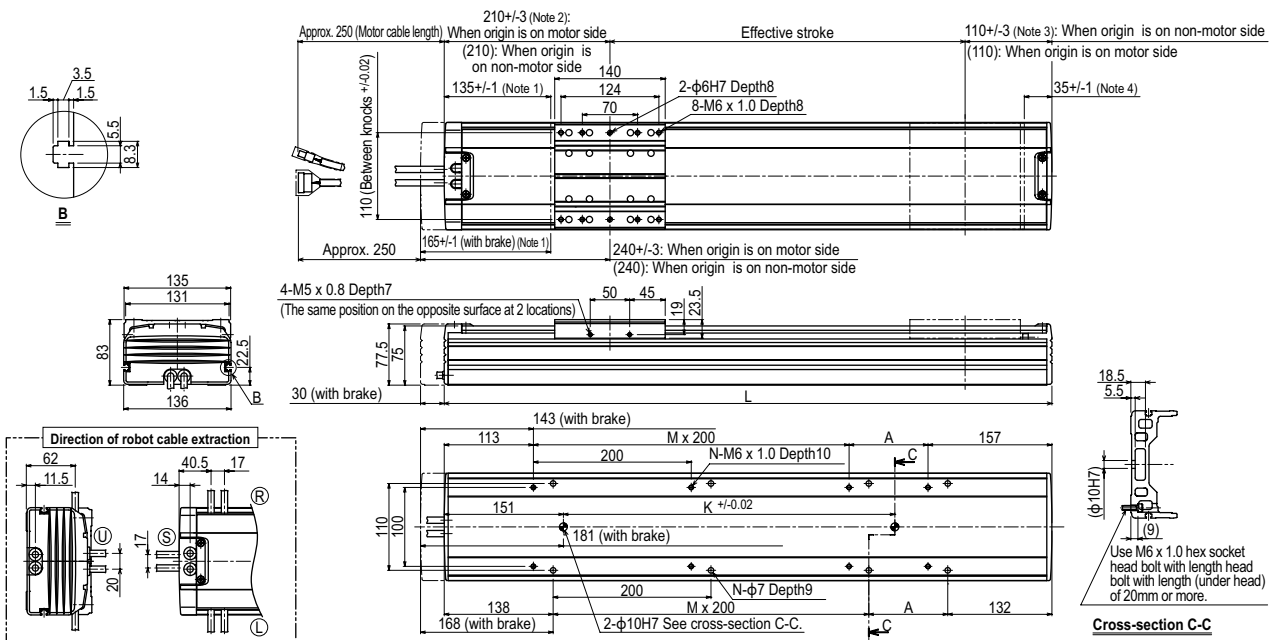
(Unit: N·m)		
MY	MP	MR
551	552	485

## Controller

Controller	Operation method
SR1-X10 Note	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RX320	
RX221/222	
RX340	
TS-X110 Note	I/O point trace / Remote command
TS-X210 Note	
RDV-X210-RBR1	Pulse train control

Note. When using the unit vertically, a regeneration unit is required.

## F14H



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. 212.5+/-4 when the high lead specification (Lead 30) is used.  
 Note 3. 110+/-4 when the high lead specification (Lead 30) is used.  
 Note 4. 32.5+/-1 when the high lead specification (Lead 30) is used.  
 Note 5. Minimum bend radius of motor cable is R50.  
 Note 6. Weight of models with no brake. The weight of brake-attached models is 0.7 kg heavier than the models with no brake shown in the table.

Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
L	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120	1170	1220	1270	1320	1370	1420	1470	1520	1570
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	5	5	5	5	5	6	6
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16
K	240	240	240	420	420	420	600	600	600	600	600	780	780	960	960	960	960	960	1140	1140	1140	1140	1320
Weight (kg)	7.5	8.2	8.8	9.5	10.1	10.8	11.4	12.1	12.7	13.4	13.9	14.6	15.2	15.9	16.5	17.2	17.8	18.5	19.1	19.8	20.4	21.1	21.7
Lead 30	1800												1440	1170			900		810				
Lead 20		1200											960	780			600		540				
Lead 10			600										480	390			300		270				
Lead 5				300									240	195			150		135				
Speed setting													80%	65%			50%		45%				

- Note 7. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.  
 Note 8. Strokes longer than 1050mm are special order items. Please contact us for speed setting.

Controller

SR1-X ▶ 540 TS-X ▶ 514 RDV-X ▶ 528



# GF14XL

● Origin on the non-motor side is selectable

Note. If you need an installation posture other than the horizontal installation, please contact us.

## Ordering method

### GF14XL - S H - 20

Model	Model S: Straight model	Installation direction H: Horizontal installation	Lead designation	Cable entry location No entry: Standard (S) U: From the top R: From the right L: From the left	Origin position change None: Standard Z: Non-motor side	Frame No entry: Standard Spot facing T: Tapping	Grease type None: Standard GC: Clean	Stroke 750 to 2000 (50mm pitch)	Cable length <sup>Note 1</sup> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)
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TSX	Positioner <sup>Note 2</sup> TS-X	Driver: Power-supply voltage Power capacity 110: 100V/200W 210: 200V/200W	LCD monitor No entry: None L: With LCD	I/O selection NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	Battery B: With battery (Absolute) N: None (Incremental)
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SR1-X	10	Controller	Driver: Power capacity 10: 200W	Usable for CE No entry: Standard E: CE marking	I/O selection N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	Battery B: With battery (Absolute) N: None (Incremental)
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RDV-X	2	20	RBR1	Driver	Power-supply voltage 2: AC200V	Driver: Power capacity 20: 600W or less	Regenerative unit
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Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
Note 2. See P.522 for DIN rail mounting bracket.  
Note 3. Select this selection when using the gateway function. For details, see P.66.

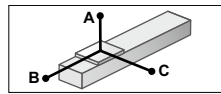
- [Cautions after purchase]
- When changing the origin position, contact us since the adjustment is needed.
  - When changing the cable entry location, contact us since necessary parts may vary depending on the cable entry location.
  - Do not install the robot with the horizontal installation specifications in a direction other than the horizontal direction.

## Specifications

AC servo motor output (W)	200
Repeatability <sup>Note 1</sup> (mm)	+/-0.01
Deceleration mechanism	Ball screw φ15
Ball screw lead (mm)	20
Maximum speed (mm/sec)	1200
Maximum payload (kg)	45
Rated thrust (N)	170
Stroke (mm)	750 to 2000 (50mm pitch)
Overall length (mm)	Stroke+561
Maximum dimensions of cross section of main unit (mm)	W140×H91.5
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves × 2 rail
Position detector	Resolvers <sup>Note 2</sup>
Resolution (Pulse/rotation)	20480

Note 1. Positioning repeatability in one direction.  
Note 2. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

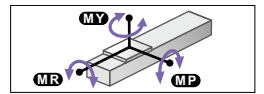
## Allowable overhang <sup>Note</sup>



Horizontal installation (Unit: mm)				
Lead 20	A	B	C	
	10kg	3550	1340	1210
	20kg	2075	685	633
45kg	1280	326	308	

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
Note. Service life is calculated for 1000mm stroke models.

## Static loading moment

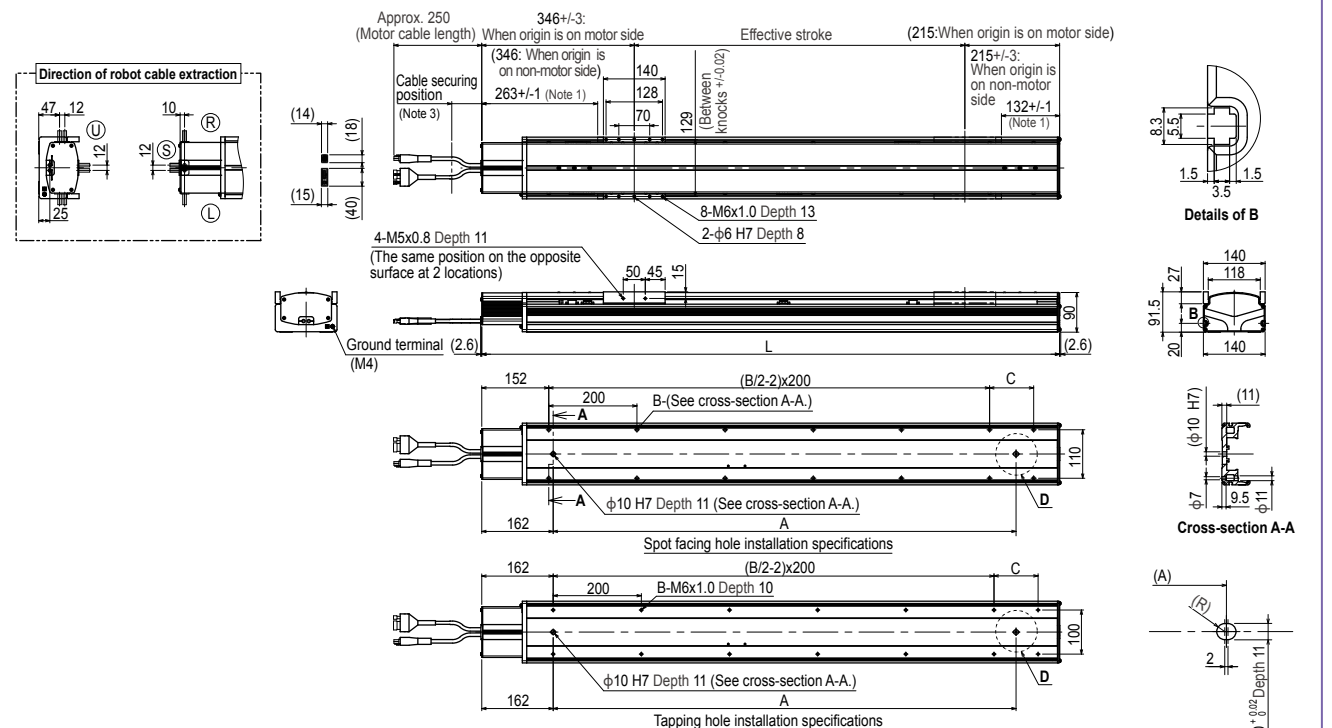


(Unit: N·m)		
MY	MP	MR
551	552	485

## Controller

Controller	Operation method
SR1-X10 RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X110 TS-X210	I/O point trace / Remote command
RDV-X220-RBR1	Pulse train control

## GF14XL



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. When changing the return-to-origin direction, the adjustment is needed. (The standard is the origin on the motor side.)  
Note 3. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
Note 4. The cable's minimum bend radius is R30.  
Note 5. The length under head of the hexagonal socket head bolts (M6 x 1.0) that are used to install the main body with the spot facing hole installation specifications is 20mm or more. It is recommended that the length under head of the hexagonal socket head bolts (M6 x 1.0) that are used to install the main body with the tapping hole installation specifications is the thickness of the installation base + 10mm or less.

Effective stroke	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000
L	1311	1361	1411	1461	1511	1561	1611	1661	1711	1761	1811	1861	1911	1961	2011	2061	2111	2161	2211	2261	2311	2361	2411	2461	2511	2561
A	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300
B	14	14	14	16	16	16	16	18	18	18	18	20	20	20	20	22	22	22	22	24	24	24	24	26	26	26
C	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
Weight (kg)	22.5	23.2	23.8	24.5	25.2	25.9	26.5	27.2	27.9	28.6	29.2	29.9	30.6	31.3	31.9	32.6	33.3	33.9	34.6	35.3	36.0	36.6	37.3	38.0	38.7	39.3



# F17

- High lead: Lead 40
- Origin on the non-motor side is selectable

Note. Upper robot cable (U) on models with brakes is a special order item, so please consult our sales office or sales representative for assistance. (External dimensions: overall length + 20 mm)



## Ordering method

### F17

Model	Lead designation	Brake	Cable entry location	Origin position change	Grease type	Stroke	Cable length
	40: 40mm 20: 20mm 10: 10mm	No entry: B: No brakes BK: Brakes provided	No entry: Standard (S) U: From the top R: From the right L: From the left	None: Standard Z: Non-motor side	None: Standard GC: Clean	Lead 20-10: 200 to 1250 (50mm pitch) Lead 40: 200 to 1450 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

TSX	220	SR1-X	20	RDV-X	2	20
Positioner TS-X	Driver: Power-supply voltage Power capacity 220: 200V/400 to 600W	Controller	Driver: Power capacity 20: 400 to 600W	Driver	Power-supply voltage 2: AC200V	Driver: Power capacity 20: 600W or less
	Regenerative unit No entry: None R: With RGT	Usable for CE No entry: Standard E: CE marking	Regenerative unit No entry: None R: With RG1			Regenerative unit 20: RBR1 (Horizontal) RBR2 (Vertical)
	LCD monitor No entry: None L: With LCD		I/O selection N: NPN P: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board			Battery B: With battery (Absolute) N: None (Incremental)

- Note 1. The model with a lead of 40mm cannot select specifications with brake (vertical specifications).  
 Note 2. Upper robot cable (U) on models equipped with brake is a special-order item.  
 Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 4. See P.522 for DIN rail mounting bracket.  
 Note 5. The robot with the high lead specifications (lead 40) needs a regenerative unit.  
 Note 6. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	400
Repeatability (mm)	+/-0.01
Deceleration mechanism	Ball screw φ20
Ball screw lead (mm)	40 20 10
Maximum speed (mm/sec)	2400 1000 (1200) 600
Maximum payload (kg)	Horizontal 40 80 120 Vertical - 15 35
Rated thrust (N)	169 339 678
Stroke (mm)	200 to 1450 (50mm pitch)
Overall length (mm)	Horizontal Stroke+375 Stroke+365 Vertical - -
Maximum dimensions of cross section of main unit (mm)	W168 x H100
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves x 2 rail
Position detector	Resolvers
Resolution (Pulse/rotation)	16384

- Note 1. Repeatability for single oscillation.  
 Note 2. When the stroke exceeds 800mm, although depending on the moving range, the ball screw may resonate (critical speed). In that case, make adjustment to lower the speed on the program using the maximum speed given in the below table as a guide.  
 Note 3. To operate the unit at a speed exceeding 1,000mm/sec. (Max. speed), a regeneration unit RG1 is required.  
 Note 4. Longer than 1250mm stroke can be handled by the high lead specification (Lead 40) only.  
 Note 5. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang

Installation	Unit (mm)	A	B	C
Horizontal installation	Lead 40	10kg 3540	2753	1999
	20kg 2541	1357	1181	
	40kg 2639	661	736	
	30kg 2647	894	989	
	50kg 1770	521	588	
	80kg 1391	312	362	
Wall installation	Lead 40	10kg 2022	2670	3501
	20kg 1202	1283	2483	
	40kg 752	587	2516	
	30kg 987	820	2578	
	50kg 574	447	1685	
	80kg 342	237	1263	
Vertical installation	Lead 20	5kg 3000	3000	
	10kg 2447	2447		
	15kg 1650	1650		
	15kg 1782	1782		
	25kg 1054	1054		
	35kg 742	742		

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

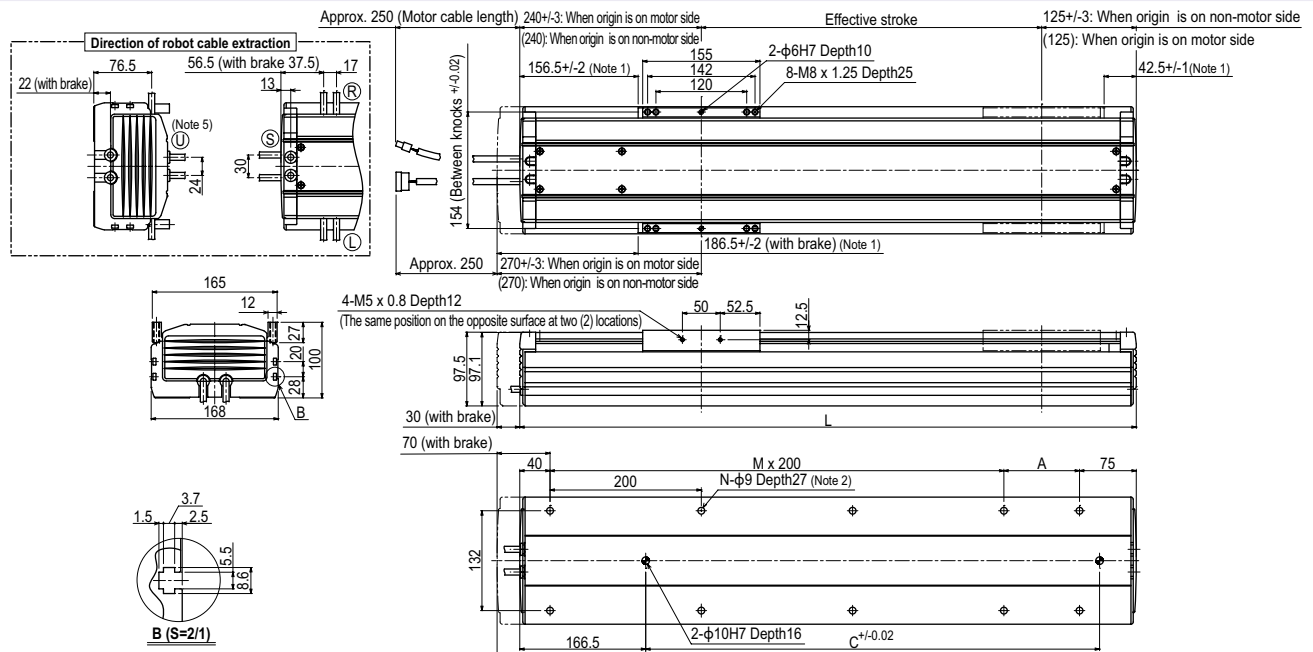
Axis	1032	1034	908
MY			
MP			
MR			

## Controller

Controller	Operation method
SR1-X20	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX320, RCX221/222, RCX340	Programming / I/O point trace / Remote command
TS-X220	I/O point trace / Remote command
RDV-X220-RBR1 (Horizontal)	Pulse train control
RDV-X220-RBR2 (Vertical)	

- Note. [The following arrangements require a regeneration unit.]  
 • Using in the upright position.  
 • To move at a speed exceeding 1,000 mm/sec horizontally.  
 • High lead (40) used horizontally.

## F17



- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. When installing the robot, do not use washers inside the robot body.  
 Note 3. Minimum bend radius of motor cable is R50.  
 Note 4. Weight of models with no brake. The weight of brake-attached models is 1.2 kg heavier than the models with no brake shown in the table.  
 Note 5. Make a separate consultation with us regarding robot cable (brake specifications) U extraction. (External dimensions: overall length + 20 mm)  
 Note 6. When the stroke is longer than 800mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.  
 Note 7. To operate the unit at a speed exceeding 1,000mm/sec. (Max. speed), a regeneration unit RG1 is required.

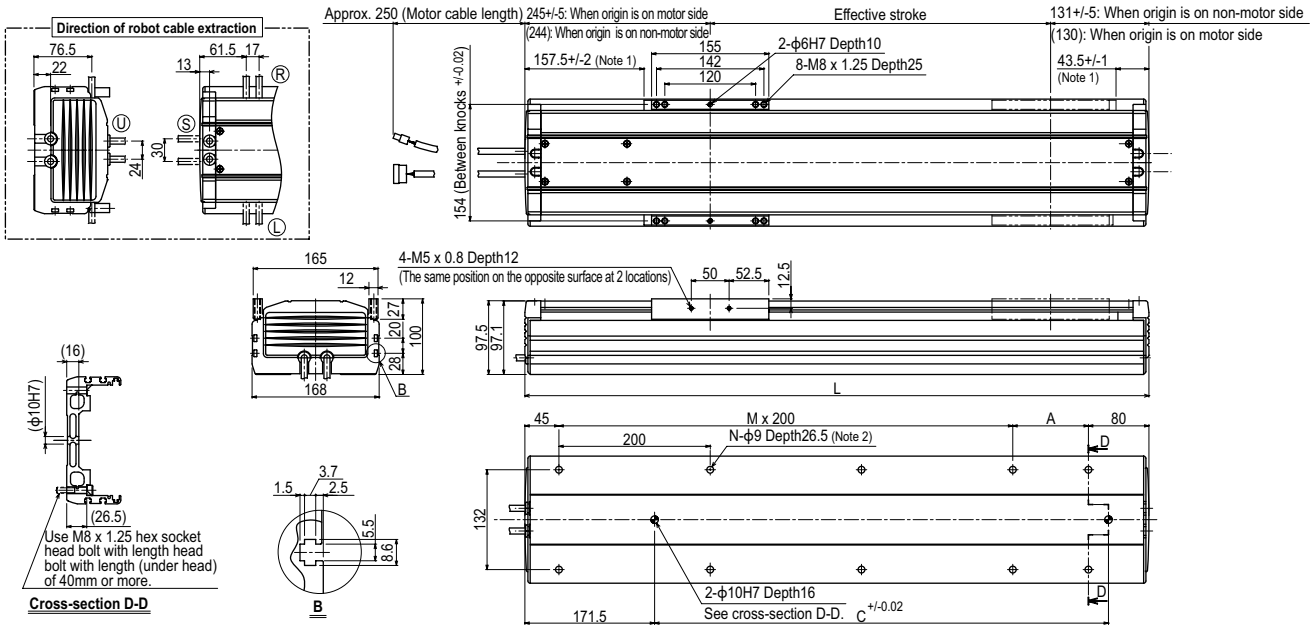
Effective stroke	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	
L	565	615	665	715	765	815	865	915	965	1015	1065	1115	1165	1215	1265	1315	1365	1415	1465	1515	1565	1615	
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	
M	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	7	7	
N	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	16	16	16	16	16	18	18	
C	240	240	420	420	420	600	600	600	600	780	780	780	780	960	960	960	960	1140	1140	1140	1140	1320	
Weight (kg)	14.5	15.3	16.2	17.0	17.8	18.6	19.5	20.3	21.1	21.9	22.8	23.6	24.4	25.2	26.1	26.9	27.7	28.5	29.4	30.2	31.0	31.8	
Maximum speed (mm/sec)	1000(1200)											960	840	720	600	480	420	360	300	240	200	180	
Speed setting	-											80%	70%	60%	50%	40%							

Controller

SR1-X ▶ 540 TS-X ▶ 514 RDV-X ▶ 528

- Articulated robots  
**YA**
- Linear conveyor modules  
**LCM100**
- Motor-less single axis actuator  
**Robonity**
- Compact single-axis robots  
**TRANSEVO**
- Single-axis robots  
**FLIP-X**
- Linear motor single-axis robots  
**PHASER**
- Cartesian robots  
**XY-X**
- SCARA robots  
**YK-X**
- Pick & place robots  
**YP-X**
- CLEAN**
- CONTROLLER INFORMATION**
- T type**
- F type**
- GF type**
- N type**
- B/R type**

## F17 High lead type: Lead 40



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. When installing the robot, do not use washers inside the robot body.

Note 3. Minimum bend radius of motor cable is R50.

Effective stroke	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450
L	575	625	675	725	775	825	875	925	975	1025	1075	1125	1175	1225	1275	1325	1375	1425	1475	1525	1575	1625	1675	1725	1775	1825
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	7	7	7	7	8	8
N	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18	18	18	20	20
C	240	240	420	420	420	600	600	600	600	780	780	780	780	960	960	960	960	1140	1140	1140	1140	1320	1320	1320	1320	1320
Weight (kg)	14.7	15.5	16.4	17.2	18.0	18.8	19.7	20.5	21.3	22.1	23.0	23.8	24.6	25.4	26.3	27.1	27.9	28.7	29.6	30.4	31.2	32.0	32.8	33.6	34.4	35.2
Maximum speed <sup>Note 4</sup> (mm/sec)	Lead 40	2400													1920	1680	1440	1200	960	840	720					
	Speed setting	-													80%	70%	60%	50%	40%	35%	30%					

Note 4. When the stroke is longer than 800mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.

# F17L

● Origin on the non-motor side is selectable

Note. Upper robot cable (U) on models with brakes is a special order item, so please consult our sales office or sales representative for assistance. (External dimensions: overall length + 20 mm)

## Ordering method

### F17L-50

Model	Lead designation	Brake	Cable entry location	Origin position change	Grease type	Stroke	Cable length <sup>Note 2</sup>
		No entry: No brakes BK: Brakes provided	No entry: Standard (S) U: From the top <sup>Note 1</sup> R: From the right L: From the left	None: Standard Z: Non-motor side	None: Standard GC: Clean	1100 to 2050 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

TSX	220	R		
Positioner <sup>Note 3</sup> TS-X	Driver: Power supply voltage <sup>Note 4</sup> Power capacity <sup>Note 4</sup> 220: 200V/400 to 600W	Regenerative unit R: With RGT	LCD monitor No entry: None L: With LCD	I/O selection N: NPN P: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 5</sup>
Battery	B: With battery (Absolute) N: None (Incremental)			
SR1-X	20		R	
Controller	Driver: Power capacity <sup>Note 4</sup> 20: 400 to 600W	Usable for CE No entry: Standard E: CE marking	Regenerative unit R: With RGT1	I/O selection N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS
Battery	B: With battery (Absolute) N: None (Incremental)			
RDV-X	2		20	
Driver	Power supply voltage 2: AC200V		Driver: Power capacity <sup>Note 4</sup> 20: 600W or less	Regenerative unit RBR1 (Horizontal) RBR2 (Vertical)

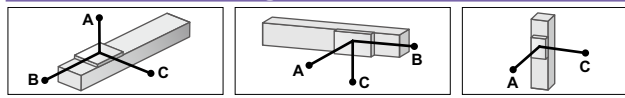
- Note 1. Upper robot cable (U) on models equipped with brake is a special-order item.  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Acceleration / deceleration is different depending the Positioner or Controller or Driver.  
 Note 5. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	600
Repeatability <sup>Note 1</sup> (mm)	+/-0.02
Deceleration mechanism	Ball screw $\phi 25$
Ball screw lead (mm)	50
Maximum speed <sup>Note 2</sup> (mm/sec)	2200
Maximum payload (kg)	Horizontal: 50 Vertical: 10
Rated thrust (N)	204
Stroke (mm)	1100 to 2050 (50mm pitch)
Overall length (mm)	Horizontal: Stroke+475 Vertical: Stroke+505
Maximum dimensions of cross section of main unit (mm)	W168 x H100
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves x 2 rail
Position detector	Resolvers <sup>Note 3</sup>
Resolution (Pulse/rotation)	16384

- Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 1200mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

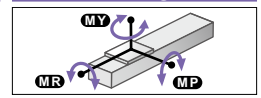
## Allowable overhang <sup>Note</sup>



Lead 50	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	B	C
10kg	4000	2755	2608	2720	2681	4000	2kg	1200	1200
30kg	3045	895	1175	1185	821	3045	5kg	3000	3000
50kg	2602	523	715	680	449	2602	10kg	2650	2650

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

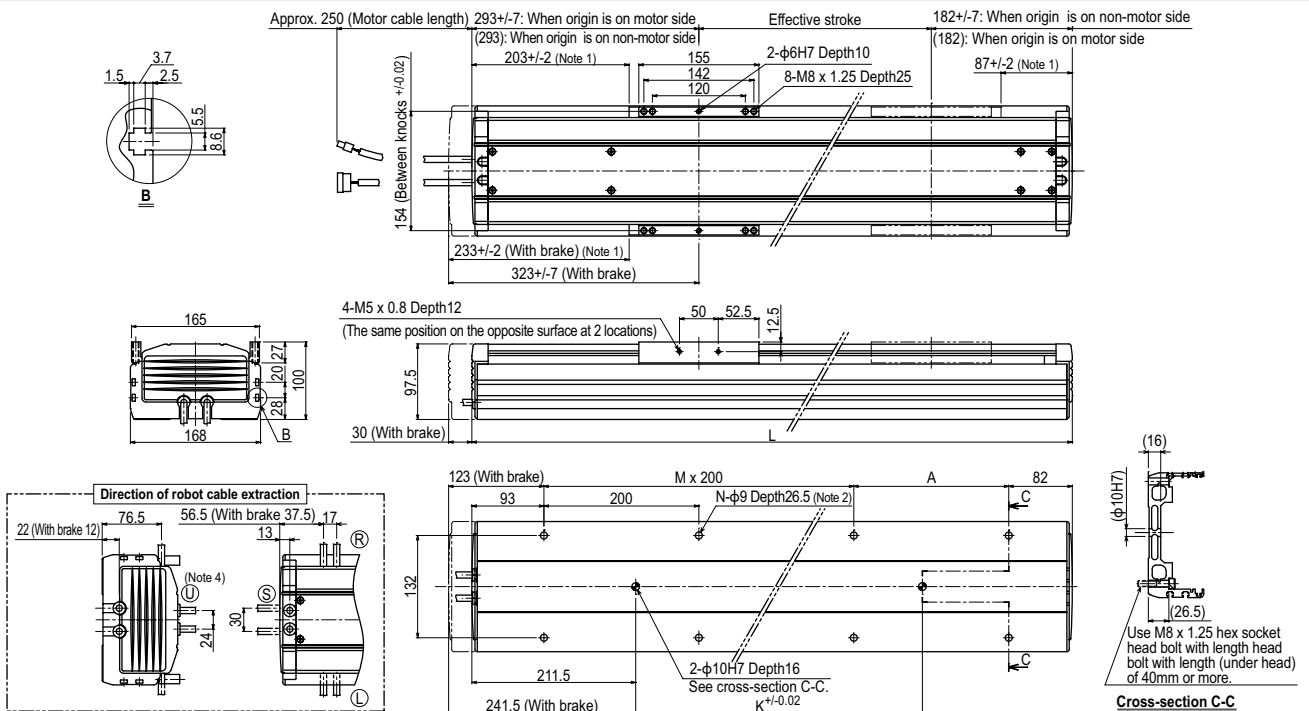


(Unit: N·m)		
MY	MP	MR
1032	1034	908

## Controller

Controller	Operation method
SR1-X20-R RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X220-R RDV-X220-RBR1 (Horizontal) RDV-X220-RBR2 (Vertical)	I/O point trace / Remote command Pulse train control

## F17L



- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. It is not allowed to use a counter bore washer, etc. when installing the main unit.  
 Note 3. This is the weight of the model without a brake. The weight of the model equipped with a brake is 1.2kg heavier than this value.  
 Note 4. Make a separate consultation with us regarding robot cable (brake specifications) U extraction. (External dimensions: overall length + 20 mm)

Effective stroke	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050
L	1575	1625	1675	1725	1775	1825	1875	1925	1975	2025	2075	2125	2175	2225	2275	2325	2375	2425	2475	2525
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
M	6	7	7	7	7	8	8	8	8	9	9	9	9	9	10	10	10	11	11	11
N	16	18	18	18	18	20	20	20	20	22	22	22	22	24	24	24	24	26	26	26
K	1140	1140	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320
Weight (kg) <sup>Note 3</sup>	34.1	34.9	35.8	36.7	37.6	38.4	39.3	40.2	41.1	42	42.9	43.8	44.7	45.6	46.5	47.3	48.2	49.1	50	50.9
Maximum speed <sup>Note 5</sup>	2200				1900				1500				1200				900		800	
(mm/sec)	Speed setting				86%				68%				54%				40%		36%	

Note 5. When the stroke exceeds 1200mm, although depending on the moving range, the ball screw may resonate (critical speed). In that case, make adjustment to lower the speed on the program using the maximum speed given in the above table as a guide.

# GF17XL

Origin on the non-motor side is selectable

Note. If you need an installation posture other than the horizontal installation, please contact us.

## Ordering method

### GF17XL - S H - 20

Model	Model	Installation direction	Lead designation	Cable entry location	Origin position change	Frame	Grease type	Stroke	Cable length
S: Straight model	H: Horizontal installation	No entry: Standard (S) U: From the top R: From the right L: From the left	No entry: Standard Z: Non-motor side	No entry: Standard (Spot facing) T: Tapping	None: Standard GC: Clean	850 to 2500 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)		

<b>TSX</b>	<b>220</b>	<b>SR1-X</b>	<b>20</b>	<b>RDV-X</b>	<b>2</b>	<b>20</b>	<b>RBR1</b>
<b>Positioner</b> Note 2 TS-X	<b>Driver: Power-supply voltage / Power capacity</b> 220: 200V/400 to 600W	<b>Controller</b>	<b>Driver: Power capacity</b> 20: 400 to 600W	<b>Driver</b>	<b>Power-supply voltage</b> 2: AC200V	<b>Usable for CE</b> No entry: Standard E: CE marking R: With RGT	<b>Regenerative unit</b> No entry: None L: With LCD
<b>I/O selection</b> N: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)	<b>Regenerative unit</b> No entry: None R: With RGT	<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PB: PROFIBUS	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)	<b>Regenerative unit</b> No entry: None R: With RGT	<b>Regenerative unit</b> No entry: None L: With LCD	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)

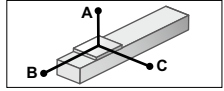
- Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.  
 Note 4. When operating the robot at a speed that is a maximum speed of 750 mm/sec or less, the regenerative unit is not needed.

- [Cautions after purchase]  
 • When changing the origin position, contact us since the adjustment is needed.  
 • When changing the cable entry location, contact us since necessary parts may vary depending on the cable entry location.  
 • Do not install the robot with the horizontal installation specifications in a direction other than the horizontal direction.

## Specifications

AC servo motor output (W)	400
Repeatability <sup>Note 1</sup> (mm)	+/-0.01
Deceleration mechanism	Ball screw φ20
Ball screw lead (mm)	20
Maximum speed (mm/sec)	1200 <sup>Note 2</sup>
Maximum payload (kg)	90
Rated thrust (N)	339
Stroke (mm)	850 to 2500 (50mm pitch)
Overall length (mm)	Stroke+686
Maximum dimensions of cross section of main unit (mm)	W168×H105.5
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves × 2 rail
Position detector	Resolvers <sup>Note 3</sup>
Resolution (Pulse/rotation)	20480

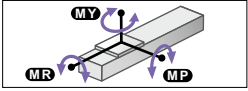
## Allowable overhang<sup>Note</sup>



Horizontal installation (Unit: mm)			
	A	B	C
Lead 20	30kg 4050	1090	1405
	50kg 2755	650	835
	90kg 1610	345	450

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
 Note. Service life is calculated for 1000mm stroke models.

## Static loading moment



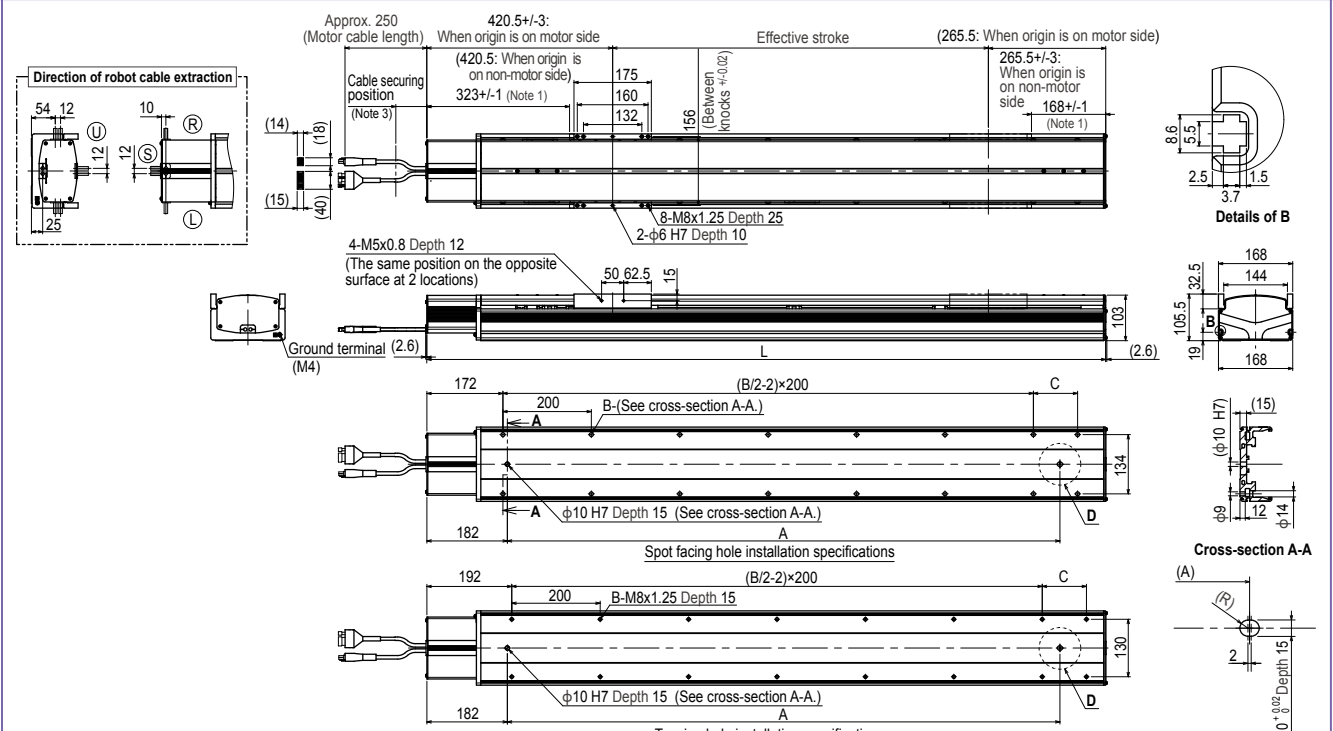
(Unit: N·m)		
MY	MP	MR
1032	1034	908

## Controller

Controller	Operation method
SR1-X20 <sup>Note</sup> RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X220	I/O point trace / Remote command
RDV-X220-RBR1	Pulse train control

Note. To operate the unit at a speed exceeding 750 mm/sec. (Max. speed), a regeneration unit is required.

## GF17XL



- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. When changing the return-to-origin direction, the adjustment is needed. (The standard is the origin on the motor side.)  
 Note 3. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 4. The cable's minimum bend radius is R30.  
 Note 5. The length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the spot facing hole installation specifications is 45 mm or more. It is recommended that the length under head of the hexagonal socket head bolts (M8 x 1.25) that are used to install the main body with the tapping hole installation specifications is the thickness of the installation base + 15 mm or less.

Effective stroke	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500
L	1536	1586	1636	1686	1736	1786	1836	1886	1936	1986	2036	2086	2136	2186	2236	2286	2336	2386	2436	2486	2536	2586	2636	2686	2736	2786	2836	2886	2936	2986	3036	3086	3136	3186
A	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900
B	16	16	16	18	18	18	18	20	20	20	20	22	22	22	22	22	24	24	24	26	26	26	26	28	28	28	28	30	30	30	30	32	32	32
C	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150
Weight (kg)	37.4	38.4	39.4	40.3	41.3	42.3	43.2	44.2	45.2	46.1	47.1	48.1	49.0	50.0	51.0	51.9	52.9	53.9	54.8	55.8	56.8	57.7	58.7	59.7	60.6	61.6	62.6	63.5	64.5	65.5	66.4	67.4	68.4	69.3



# F20

- High lead: Lead 40
- Origin on the non-motor side is selectable

Note. Upper robot cable (U) on models with brakes is a special order item, so please consult our sales office or sales representative for assistance. (External dimensions: overall length + 20 mm)

## Ordering method

### F20

Model	Lead designation	Brake	Cable entry location	Origin position change	Grease type	Stroke	Cable length
	40: 40mm 20: 20mm 10: 10mm	No entry: BK: Brakes provided	No entry: Standard (S) U: From the top R: From the right L: From the left	None: Standard Z: Non-motor side	None: Standard GC: Clean	Lead 20-10: 200 to 1250 (50mm pitch) Lead 40: 200 to 1450 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

- Note 1. The model with a lead of 10mm cannot select specifications without brake (horizontal specifications).  
The model with a lead of 40mm cannot select specifications with brake (vertical specifications).  
Note 2. Upper robot cable (U) on models equipped with brake is a special-order item.  
Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
Note 4. See P.522 for DIN rail mounting bracket.  
Note 5. Acceleration / deceleration is different depending the Positioner or Controller or Driver.  
Note 6. The robot with the high lead specifications (lead 40) needs a regenerative unit.  
Note 7. Select this selection when using the gateway function. For details, see P.66.

TSX	220			
Positioner TS-X	Driver: Power supply voltage Power capacity 220: 200V/400 to 600W	Regenerative unit No entry: None R: With RG1	LC2 monitor No entry: None L: With LCD	I/O selection NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board
SR1-X	20			
Controller	Driver: Power capacity 20: 400 to 600W	Usable for CE No entry: Standard E: CE marking	Regenerative unit No entry: None R: With RG1	I/O selection N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS
RDV-X	2	20		
Driver	Power supply voltage 2: AC200V	Driver: Power capacity 20: 600W or less	Regenerative unit RBR1 (Horizontal) RBR2 (Vertical)	Battery B: With battery (Absolute) N: None (Incremental)

## Specifications

AC servo motor output (W)	600		
Repeatability (mm)	+/-0.01		
Deceleration mechanism	Ball screw φ20		
Ball screw lead (mm)	40	20	10
Maximum speed (mm/sec)	2400	1000 (1200)	600
Maximum payload (kg)	Horizontal 60	Vertical 120	45
Rated thrust (N)	255	510	1020
Stroke (mm)	200 to 1450 (50mm pitch)		
Overall length (mm)	Horizontal Stroke+427	Vertical Stroke+417	-
Maximum dimensions of cross section of main unit (mm)	W202 × H115		
Cable length (m)	Standard: 3.5 / Option: 5.10		
Linear guide type	4 rows of circular arc grooves × 2 rail		
Position detector	Resolvers		
Resolution (Pulse/rotation)	16384		

- Note 1. Positioning repeatability in one direction.  
Note 2. When the stroke is longer than 800mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
Note 3. To operate the unit at a speed exceeding 1,000mm/sec. (Max. speed), a regeneration unit RG1 is required.  
Note 4. Longer than 1250mm stroke can be handled by the high lead specification (Lead 40) only.  
Note 5. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang

Horizontal installation (Unit: mm)	Lead 40			Lead 20					
	A	B	C	A	B	C			
Wall installation (Unit: mm)	10kg	3571	4000	4000	20kg	2118	2164	3397	
	20kg	2118	2164	3397	60kg	1000	648	2443	
	60kg	1000	648	2443	50kg	1097	799	2602	
	50kg	1097	799	2602	80kg	708	458	2193	
Vertical installation (Unit: mm)	15kg	2635	2635	20kg	2000	2000	25kg	1621	1621
	20kg	2000	2000	30kg	1446	1446	45kg	951	951
	30kg	1446	1446	45kg	951	951			
	45kg	951	951						

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

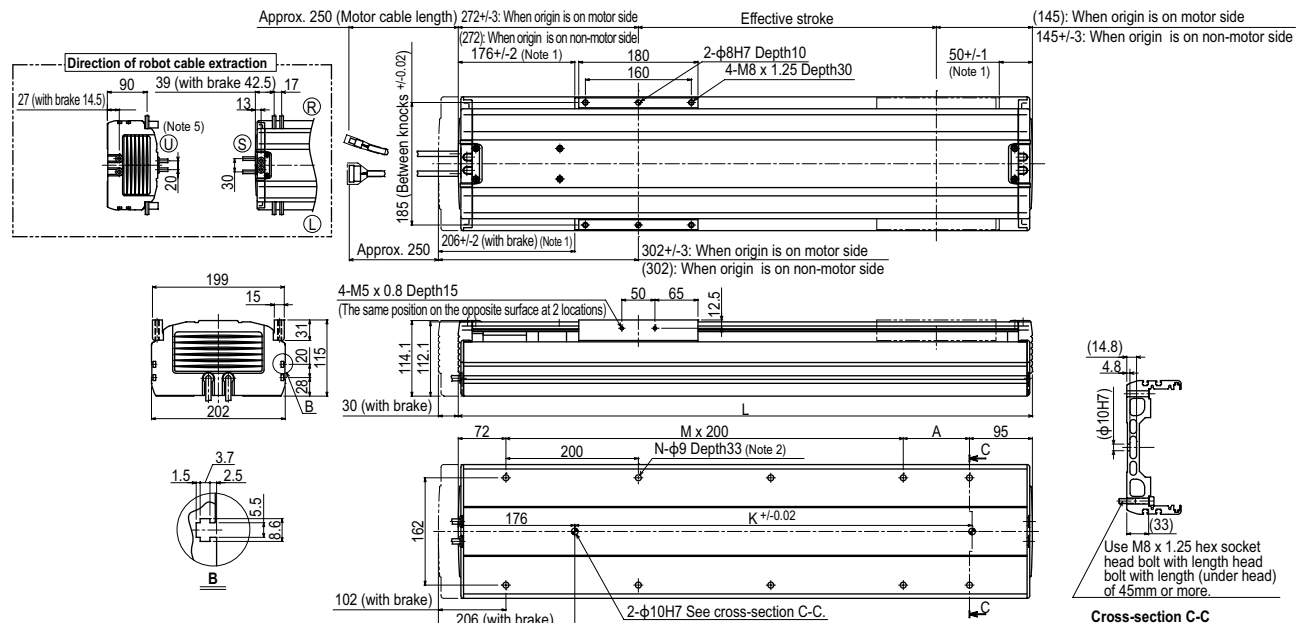
(Unit: N·m)		
MY	MP	MR
1196	1199	1052

## Controller

Controller	Operation method
SR1-X20	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X220	I/O point trace / Remote command
RDV-X220-RBR1 (Horizontal)	Pulse train control
RDV-X220-RBR2 (Vertical)	

- Note. [The following arrangements require a regeneration unit.]  
 • Using in the upright position.  
 • To move at a speed exceeding 1,000 mm/sec horizontally.  
 • High lead (40) used horizontally.

## F20



- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. When installing the robot, do not use washers inside the robot body.  
 Note 3. Minimum bend radius of motor cable is R50.  
 Note 4. Weight of models with no brake. The weight of brake-attached models is 1.5 kg heavier than the models with no brake shown in the table.  
 Note 5. Make a separate consultation with us regarding robot cable (brake specifications) U extraction. (External dimensions: overall length + 20 mm)

Effective stroke	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	
L	617	667	717	767	817	867	917	967	1017	1067	1117	1167	1217	1267	1317	1367	1417	1467	1517	1567	1617	1667	
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	
M	2	2	2	2	3	3	3	3	4	4	4	5	5	5	5	6	6	6	6	6	7	7	
N	8	8	8	8	10	10	10	10	12	12	12	14	14	14	14	16	16	16	16	16	18	18	
K	420	420	420	420	600	600	600	600	780	780	780	780	960	960	960	960	1140	1140	1140	1320	1320	1320	
Weight (kg)	21.0	22.0	22.9	23.8	24.8	25.7	26.6	27.5	28.5	29.4	30.3	31.2	32.1	33.0	34.0	34.9	35.8	36.7	37.7	38.6	39.5	40.4	
Maximum speed	1000 (1200)											960	840	720	600	480							
Speed setting	-											80%	70%	60%	50%	40%							

- Note 6. When the stroke exceeds 800mm, although depending on the moving range, the ball screw may resonate (critical speed). In that case, make adjustment to lower the speed on the program using the maximum speed given in the above table as a guide.  
 Note 7. To operate the unit at a speed exceeding 1,000mm/sec. a regeneration unit RG1 is required.





# F20N



## Ordering method

<b>F20N - 20</b>					
<b>Model</b>	<b>Lead designation</b>	<b>Origin position change</b>	<b>Grease type</b>	<b>Stroke</b>	<b>Cable length<sup>Note 1</sup></b>
		None: Standard 2: Non-motor side	None: Standard GC: Clean	1150 to 2050 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

<b>TSX</b>	<b>220</b>				
<b>Positioner<sup>Note 2</sup></b>	<b>Driver: Power-supply voltage / Power capacity</b>	<b>Regenerative unit</b>	<b>LCD monitor</b>	<b>I/O selection</b>	<b>Battery</b>
TS-X	220: 200V/400 to 600W	No entry: None R: With RGT	No entry: None L: With LCD	N: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	B: With battery (Absolute) N: None (Incremental)
<b>SR1-X</b>	<b>20</b>				
<b>Controller</b>	<b>Driver: Power capacity</b>	<b>Usable for CE</b>	<b>Regenerative unit</b>	<b>I/O selection</b>	<b>Battery</b>
	20: 400 to 600W	No entry: Standard E: CE marking	No entry: None R: With RG1	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	B: With battery (Absolute) N: None (Incremental)
<b>RDV-X</b>	<b>2</b>	<b>20</b>		<b>RBR1</b>	
<b>Driver</b>	<b>Power-supply voltage</b>	<b>Driver: Power capacity</b>		<b>Regenerative unit</b>	
	2: AC200V	20: 600W or less			

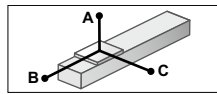
Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

## Specifications

<b>AC servo motor output (W)</b>	400
<b>Repeatability<sup>Note 1</sup> (mm)</b>	+/-0.04
<b>Deceleration mechanism</b>	Ball screw $\phi 20$
<b>Ball screw lead (mm)</b>	20
<b>Maximum speed (mm/sec)</b>	1000 (1200 <sup>Note 2</sup> )
<b>Maximum payload (kg)</b>	80
<b>Rated thrust (N)</b>	339
<b>Stroke (mm)</b>	1150 to 2050 (100mm pitch)
<b>Overall length (mm)</b>	Stroke+420
<b>Maximum dimensions of cross section of main unit (mm)</b>	W202 x H120
<b>Cable length (m)</b>	Standard: 3.5 / Option: 5.10
<b>Linear guide type</b>	4 rows of circular arc grooves x 2 rail
<b>Position detector</b>	Resolvers <sup>Note 3</sup>
<b>Resolution (Pulse/rotation)</b>	16384

Note 1. Positioning repeatability in one direction.  
 Note 2. A regenerative unit is needed if using the SR1-X, TS-X at maximum speeds exceeding 1000mm/sec.. If using the RDV-X, then the regenerative unit RBR1 is required regardless of the installation conditions.  
 Note 3. Position detectors(resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

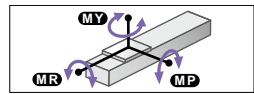
## Allowable overhang<sup>Note</sup>



<b>Horizontal installation</b> (Unit: mm)			
	<b>A</b>	<b>B</b>	<b>C</b>
<b>Lead 20</b>	20kg 3397	2332	2683
	40kg 2795	1144	1361
	60kg 2443	749	914
	80kg 2193	551	695

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment



<b>(Unit: N·m)</b>		
<b>MY</b>	<b>MP</b>	<b>MR</b>
1196	1199	1052

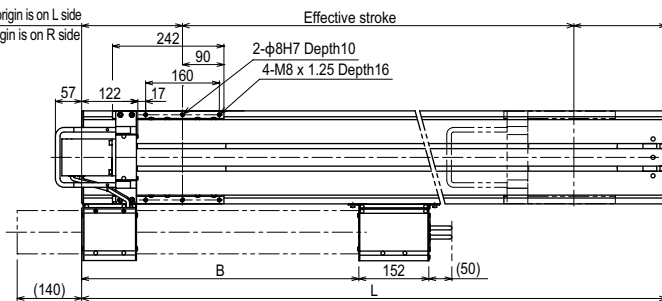
## Controller

Controller	Operation method
SR1-X20 <sup>Note</sup>	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RX320	
RX221/222	
RX340	
TS-X220 <sup>Note</sup>	I/O point trace / Remote command
RDV-X220-RBR1	Pulse train control

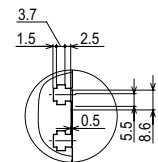
Note. When the unit is operated at a speed exceeding the maximum speed of 1,000mm/sec., a regeneration unit is required.

## F20N

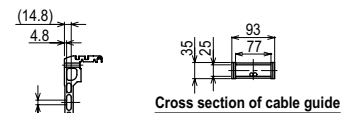
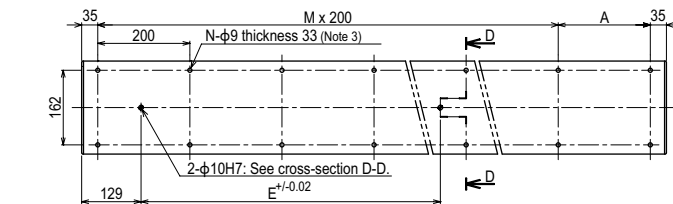
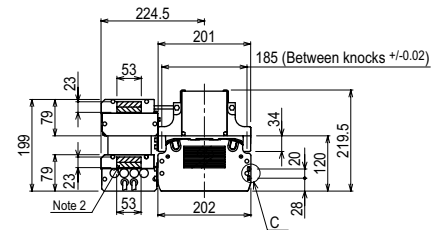
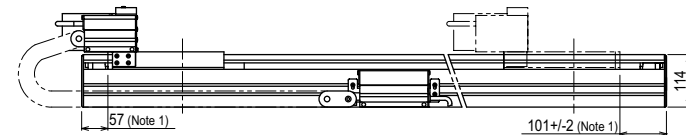
219+/-3: When origin is on L side  
 (219: When origin is on R side)



201+/-3: When origin is on R side  
 (201: When origin is on L side)



C section detailed chart



Use M8 x 1.25 hex socket head bolt with length head bolt with length (under head) of 45mm or more.

Cross-section D-D

Effective stroke	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050
<b>L</b>	1570	1670	1770	1870	1970	2070	2170	2270	2370	2470
<b>A</b>	100	200	100	200	100	200	100	200	100	200
<b>B</b>	602	648	694	740	786	832	878	924	970	1016
<b>E</b>	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320
<b>M</b>	7	7	8	8	9	9	10	10	11	11
<b>N</b>	18	18	20	20	22	22	24	24	26	26
<b>Weight (kg)</b>	54.0	56.2	58.4	60.6	62.9	65.1	67.3	69.6	71.8	74.0

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. The shaded position indicates the user cable extraction port.  
 Note 3. When installing the robot, do not use washers inside the robot body.  
 Note 4. The origin is set on the left (L) side of the sliding.

# N15



## Ordering method

### N15-20

Model	Lead designation	Cable carrier entry location	Cable carrier specification	Origin position change	Grease type	Stroke	Cable length
		RH: Horizontal, right LH: Horizontal, left RW: Wall, right LW: Wall, left	S: Standard M: Optional C: Cable carrier	Hori- zontal None: R side (Standard) Z: L side Wall None: L side (Standard) Z: R side	None: Standard GC: Clean	500 to 2000 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

TSX	220	R			
Positioner	Driver: Power-supply voltage / Power capacity 220: 200V/400 to 600W	Regenerative unit R: With RGT	LCD monitor No entry: None L: With LCD	I/O selection NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	Battery B: With battery (Absolute) N: None (Incremental)
SR1-X	20	R			
Controller	Driver: Power capacity 20: 400 to 600W	Usable for CE No entry: Standard E: CE marking	Regenerative unit R: With RGT	I/O selection N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	Battery B: With battery (Absolute) N: None (Incremental)
RDV-X	2	20		RBR1	
Driver	Power-supply voltage 2: AC200V	Driver: Power capacity 20: 600W or less		Regenerative unit	

Note 1. To find information on cable carrier extraction directions see P.197.  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	400
Repeatability (mm)	+/-0.01
Deceleration mechanism	Ball screw $\phi 15$
Ball screw lead (mm)	20
Maximum speed (mm/sec)	1200
Maximum payload (kg)	50
Rated thrust (N)	339
Stroke (mm)	500 to 2000 (100mm pitch)
Overall length (mm)	Stroke+330
Maximum dimensions of cross section of main unit (mm)	W145 x H120
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves x 2 rail
Position detector	Resolvers
Resolution (Pulse/rotation)	16384

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed may not be reached when the moving distance is short.  
 Note 3. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang

Horizontal installation (Unit: mm)	Wall installation (Unit: mm)		
	A	B	C
Lead 20	10kg 3048	2322	1259
	30kg 1489	841	500
	50kg 1278	544	344

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

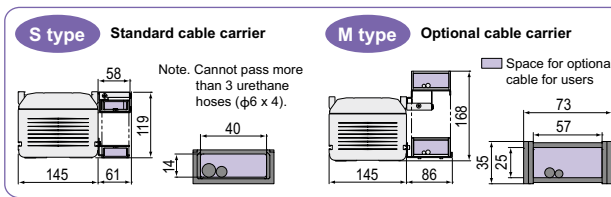
## Static loading moment

(Unit: N·m)		
MY	MP	MR
691	692	608

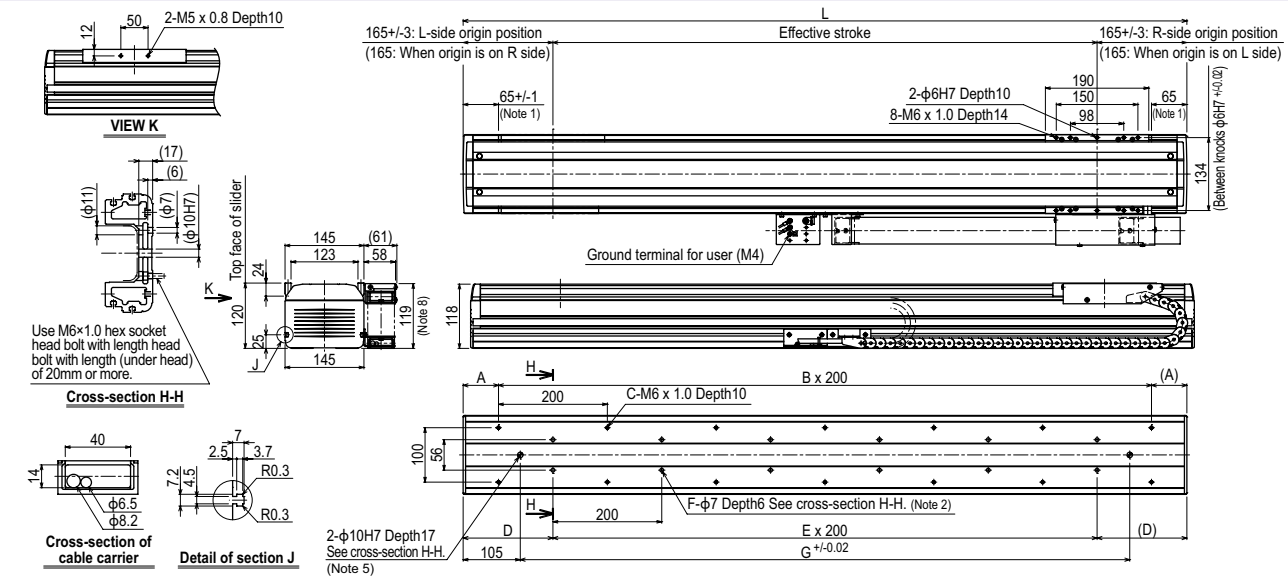
## Controller

Controller	Operation method
SR1-X20-R RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X220-R	I/O point trace / Remote command
RDV-X220-RBR1	Pulse train control

## Cable carrier for users



## N15: Horizontal installation / Standard Cable carrier specification



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. When using  $\phi 7$  holes for installation, do not use a washer, spring washer, etc. in the main unit.  
 Note 3. When shipped from the factory, the horizontal model has the origin on the right side and the wall model has the origin on the left side. (This diagram shows the machine whose cable carrier taken out from right.)  
 Note 4. If the model is a standard cable carrier specification, it is not possible to pass 3 or more  $\phi 6 \times 4$  urethane air hoses.  
 Note 5. When using a  $\phi 10H7$  hole, make sure that the pin does not go into deeper than as shown in the drawing.  
 Note 6. Contact us for vertical installation.  
 Note 7. Weight of models with no brake. The weight of brake-attached models is 1 kg heavier than the models with no brake shown in the table.  
 Note 8. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
L	830	930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
A	15	65	15	65	15	65	15	65	15	65	15	65	15	65	15	65
B	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
C	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24
D	115	165	115	165	115	165	115	165	115	165	115	165	115	165	115	165
E	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10
F	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22
G	620	720	820	920	1020	1120	1220	1320	1420	1520	1620	1720	1820	1920	2020	2120
Weight (kg)	19	20	22	23	24	26	27	29	30	32	33	35	36	38	39	40



# N15D

● Double carriage

## Ordering method

<b>N15D-20</b>							
Model	Lead designation	Installation direction	Cable carrier specification	Option	Stroke	Cable length	Controller <sup>Note 1</sup>
		H: Horizontal installation W: Wall installation	S: Standard Cable carrier M: Optional Cable carrier	Grease type: None: Standard GC: Clean	250 to 1750 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 3</sup>	RCX320 RCX222HP SR1-X (2 units) <sup>Note 2</sup> TS-X (2 units) <sup>Note 2</sup> RDV-X (2 units) <sup>Note 2</sup>

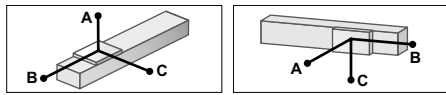
Note 1. To find controller selection options, see the ordering method on each controller page.  
 Note 2. 2 units are required when using SR1-X, TS-X or RDV-X.  
 Note 3. If a flexible cable is needed for the SR1-X, TS-X, or RDV-X, then select 3K/5K/10K. On the RCX320/RCX222HP, the standard cable is a flexible cable, so enter 3L/5L/10L when ordering.

## Specifications

AC servo motor output (W)	400
Repeatability <sup>Note 1</sup> (mm)	+/-0.01
Deceleration mechanism	Ball screw $\phi 15$
Ball screw lead (mm)	20
Maximum speed <sup>Note 2</sup> (mm/sec)	1200
Maximum payload (kg)	50
Rated thrust (N)	339
Stroke (mm)	250 to 1750 (100mm pitch)
Overall length (mm)	Stroke+330
Maximum dimensions of cross section of main unit (mm)	W145 x H120
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves x 2 rail
Position detector	Resolvers <sup>Note 3</sup>
Resolution (Pulse/rotation)	16384

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed may not be reached when the moving distance is short.  
 Note 3. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

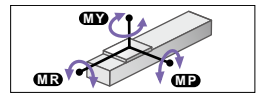
## Allowable overhang<sup>Note</sup>



Horizontal installation (Unit: mm)				Wall installation (Unit: mm)			
Lead 20	A	B	C	Lead 20	A	B	C
10kg	3048	2322	1259	10kg	1258	1823	2449
30kg	1489	841	500	30kg	428	545	1039
50kg	1278	544	344	50kg	248	289	749

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment



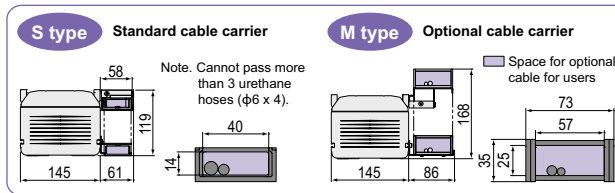
(Unit: N·m)		
MY	MP	MR
691	692	608

## Controller

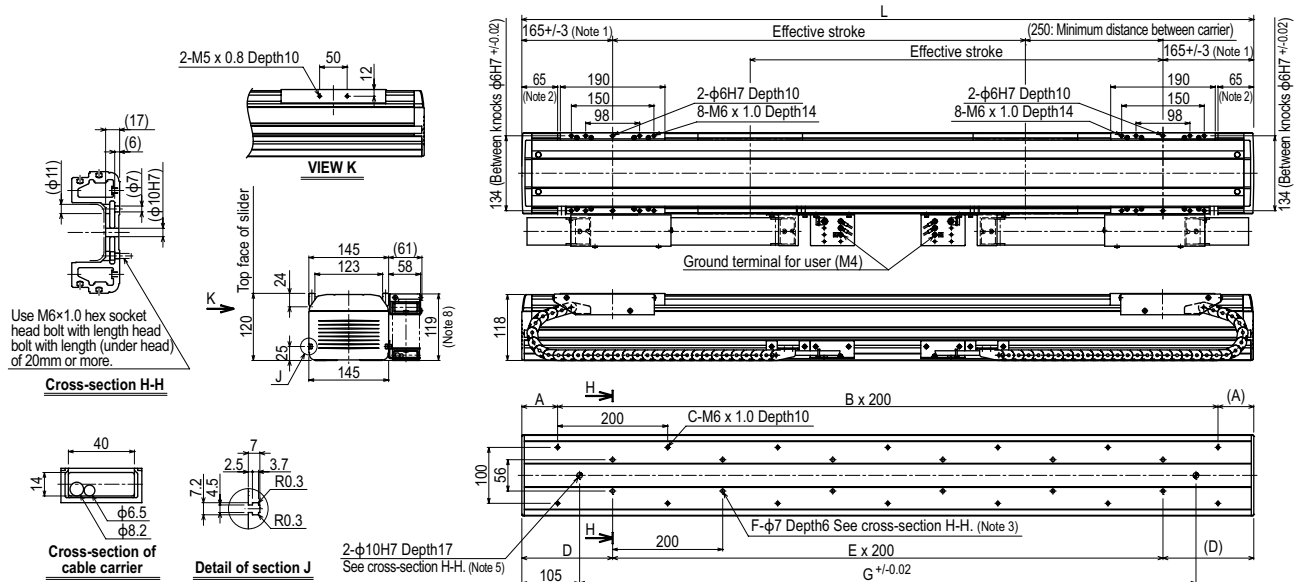
Controller	Operation method
RCX320-R RCX222HP-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
SR1-X20-R <sup>Note</sup>	I/O point trace / Remote command
TS-X220-R <sup>Note</sup>	I/O point trace / Remote command
RDV-X20-RBR1 <sup>Note</sup>	Pulse train control

Note. 2 units are required when using SR-1, TS-X or RDV-X.

## Cable carrier for users



## N15D: Horizontal installation / Standard Cable carrier specification



Note 1. Position of table carriage when searched to the origin.  
 Note 2. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 3. When using  $\phi 7$  holes for installation, do not use a washer, spring washer, etc. in the main unit.  
 Note 4. If the model is a standard cable carrier specification, it is not possible to pass 3 or more  $\phi 6 \times 4$  urethane air hoses.  
 Note 5. When using a  $\phi 10H7$  hole, make sure that the pin does not go into deeper than as shown in the drawing.  
 Note 6. Contact us for vertical installation.  
 Note 7. Weight of models with no brake. The weight of brake-attached models is 1 kg heavier than the models with no brake shown in the table.  
 Note 8. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750
L	830	930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
A	15	65	15	65	15	65	15	65	15	65	15	65	15	65	15	65
B	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
C	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24
D	115	165	115	165	115	165	115	165	115	165	115	165	115	165	115	165
E	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10
F	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22
G	620	720	820	920	1020	1120	1220	1320	1420	1520	1620	1720	1820	1920	2020	2120
Weight (kg) <sup>Note 7</sup>	24	26	27	29	30	32	33	35	36	38	39	40	42	43	45	46





# N18



## Ordering method

**N18- 20**

<b>Model</b>	<b>Lead designation</b>	<b>Cable carrier entry location</b> RH: Horizontal, right LH: Horizontal, left RW: Wall, right LW: Wall, left	<b>Cable carrier specification</b> S: Standard Cable carrier M: Optional Cable carrier	<b>Origin position change</b> Horizontal: None: R side (Standard) Z: L side Wall: None: L side (Standard) Z: R side	<b>Grease type</b> None: Standard GC: Clean	<b>Stroke</b> 500 to 2500 (100mm pitch)	<b>Cable length</b> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	<b>Positioner</b> TS-X	<b>Driver: Power-supply voltage / Power capacity</b> 220: 200V/400 to 600W	<b>Regenerative unit</b> R: With RGT	<b>LCD monitor</b> No entry: None L: With LCD	<b>I/O selection</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
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<b>SR1-X</b>	<b>20</b>	<b>R</b>	<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
<b>Controller</b>	<b>Driver: Power capacity</b> 20: 400 to 600W	<b>Usable for CE</b> No entry: Standard E: CE marking	<b>Regenerative unit</b> R: With RGT	

<b>RDV-X</b>	<b>2</b>	<b>20</b>	<b>RBR1</b>
<b>Driver</b>	<b>Power-supply voltage</b> 2: AC200V	<b>Driver: Power capacity</b> 20: 600W or less	<b>Regenerative unit</b>

Note 1. To find information on cable carrier extraction directions see P.197.  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	400
Repeatability <sup>Note 1</sup> (mm)	+/-0.01
Deceleration mechanism	Ball screw φ20
Ball screw lead (mm)	20
Maximum speed <sup>Note 2</sup> (mm/sec)	1200
Maximum payload (kg)	80
Rated thrust (N)	339
Stroke (mm)	500 to 2500 (100mm pitch)
Overall length (mm)	Stroke+362
Maximum dimensions of cross section of main unit (mm)	W180 × H115
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves × 2 rail
Position detector	Resolvers <sup>Note 3</sup>
Resolution (Pulse/rotation)	16384

Note 1. Repeatability for single oscillation.  
 Note 2. The maximum speed may not be reached when the moving distance is short.  
 Note 3. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang<sup>Note</sup>

Horizontal installation (Unit: mm)	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)		
	A	B	C	A	B	C
Lead 20	30kg	3045	1629	1928	1553	3045
	50kg	2602	961	1157	885	2602
	80kg	2193	586	716	707	509

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

(Unit: N·m)		
MY	MP	MR
1161	1163	1021

## Controller

Controller	Operation method
SR1-X20-R RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X220-R	I/O point trace / Remote command
RDV-X220-RBR1	Pulse train control

## Cable carrier for users

**S type Standard cable carrier**  
 Note. Cannot pass more than 3 urethane hoses (φ6 × 4).  
 Dimensions: 180mm width, 61mm depth, 58mm height, 114mm total height.

**M type Optional cable carrier**  
 Space for optional cable for users.  
 Dimensions: 180mm width, 86mm depth, 166mm height, 73mm cable space, 57mm cable space, 25mm cable space.

## N18: Horizontal installation / Standard Cable carrier specification RH

**Cross-section E-E**  
 Use M8 x 1.25 hex socket head bolt with length head bolt with length (under head) of 40mm or more.  
 Dimensions: 179mm total width, 156mm main width, 58mm height, 36mm depth, 115mm total height, 22mm bottom flange, 180mm main width.

**Cross-section of cable carrier**  
 Dimensions: 40mm width, 14mm depth, φ6.5mm hole, φ8.2mm hole.

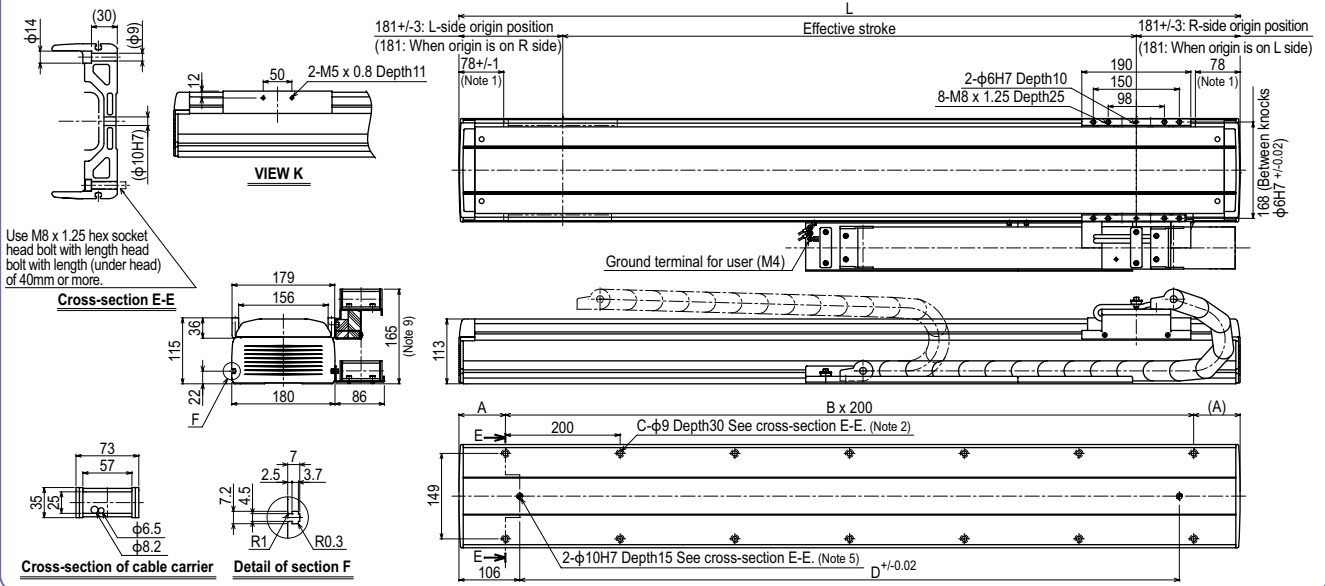
**Detail of section F**  
 Dimensions: 7mm total width, 2.5mm hole, 3.7mm hole, R1, R0.3.

**Side View Dimensions:**  
 - 181±/3: L-side origin position (181: When origin is on R side)  
 - 78±/1 (Note 1)  
 - Effective stroke L  
 - 181±/3: R-side origin position (181: When origin is on L side)  
 - 190mm, 150mm, 98mm, 78mm (Note 1)  
 - 2-φ6H7 Depth10  
 - 8-M8 x 1.25 Depth25  
 - 168mm (Between knobs φ6H7 +0.02)  
 - (Note 7) Ground terminal for user (M4)  
 - A, B x 200, C-φ9 Depth30 See cross-section E-E. (Note 2)  
 - 2-φ10H7 Depth15 See cross-section E-E. (Note 5)  
 - D ±/0.02

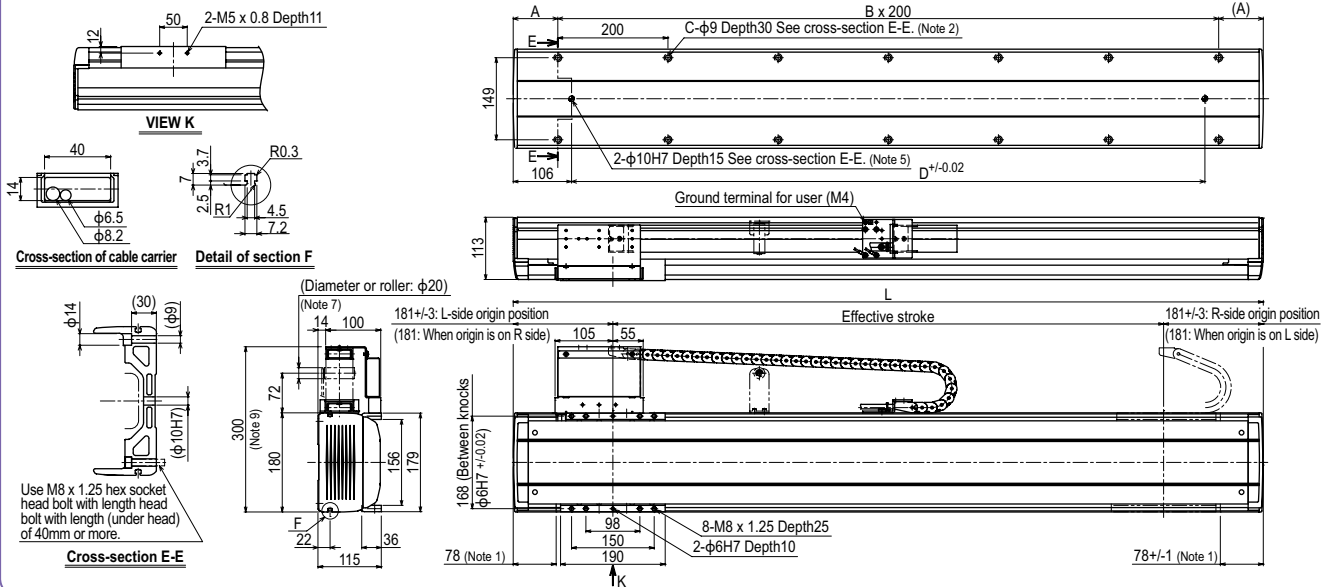
Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. When using φ9 holes for installation, do not use a washer, spring washer, etc. in the main unit.  
 Note 3. When shipped from the factory, the horizontal model has the origin on the right side and the wall model has the origin on the left side. (This diagram shows the machine whose cable carrier taken out from right.)  
 Note 4. If the model is a standard cable carrier specification, it is not possible to pass 3 or more φ6 × 4 urethane air hoses.  
 Note 5. When using a φ10H7 hole, make sure that the pin does not go into deeper than as shown in the drawing.  
 Note 6. Contact us for vertical installation.  
 Note 7. For the robot with more than 2,100 stroke, a roller is installed to prevent the cable carrier hanging.  
 Note 8. Weight of models with no brake. The weight of brake-attached models is 1 kg heavier than the models with no brake shown in the table.  
 Note 9. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500
L	862	962	1062	1162	1262	1362	1462	1562	1662	1762	1862	1962	2062	2162	2262	2362	2462	2562	2662	2762	2862
A	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131
B	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13
C	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28
D	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650
Weight (kg) <sup>Note 8</sup>	27	29	31	33	35	37	39	41	43	45	47	48	50	52	54	56	58	60	62	64	66

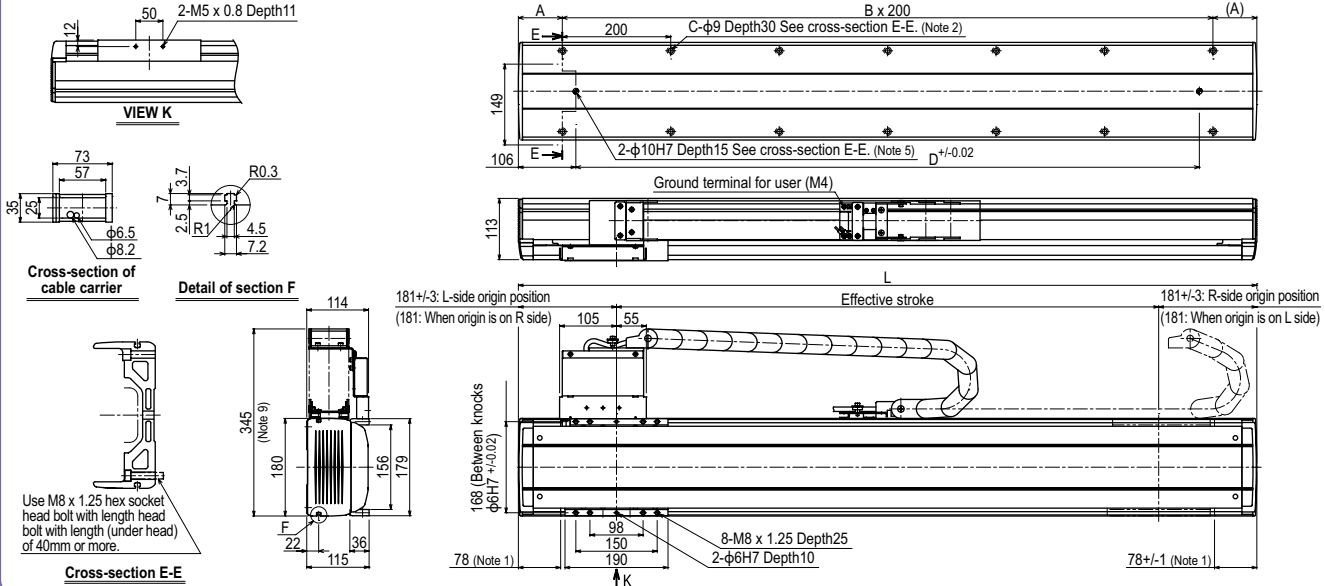
N18: Horizontal installation / Optional Cable carrier specification **RH**



N18: Wall installation / Standard Cable carrier specification **RW**



N18: Wall installation / Optional Cable carrier specification **RW**



Articulated robots  
YA

Linear conveyor modules  
LC/M100

Motor-less single-axis actuator  
Robonity

Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

T type

F type

GF type

N type

BR type

# N18D

Double carriage

## Ordering method

**N18D - 20**

Model	Lead designation	Installation direction	Cable carrier specification	Option	Stroke	Cable length	Controller <sup>Note 1</sup>
		H: Horizontal installation W: Wall installation	S: Standard Cable carrier M: Optional Cable carrier	Grease type None: Standard GC: Clean	250 to 2250 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 3</sup>	RCX320 RCX222HP SR1-X (2 units) <sup>Note 2</sup> TS-X (2 units) <sup>Note 2</sup> RDV-X (2 units) <sup>Note 2</sup>

Note 1. To find controller selection options, see the ordering method on each controller page.

Note 2. 2 units are required when using SR1-X, TS-X or RDV-X.

Note 3. If a flexible cable is needed for the SR1-X, TS-X, or RDV-X, then select 3K/5K/10K. On the RCX320/RCX222HP, the standard cable is a flexible cable, so enter 3L/5L/10L when ordering.

## Specifications

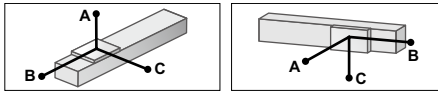
AC servo motor output (W)	400
Repeatability <sup>Note 1</sup> (mm)	+/-0.01
Deceleration mechanism	Ball screw $\phi 20$
Ball screw lead (mm)	20
Maximum speed <sup>Note 2</sup> (mm/sec)	1200
Maximum payload (kg)	80
Rated thrust (N)	339
Stroke (mm)	250 to 2250 (100 pitch)
Overall length (mm)	Stroke+362
Maximum dimensions of cross section of main unit (mm)	W180 x H115
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves x 2 rail
Position detector	Resolvers <sup>Note 3</sup>
Resolution (Pulse/rotation)	16384

Note 1. Positioning repeatability in one direction.

Note 2. The maximum speed may not be reached when the moving distance is short.

Note 3. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

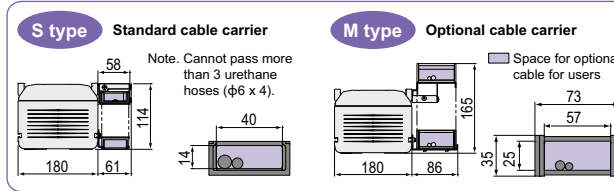
## Allowable overhang<sup>Note</sup>



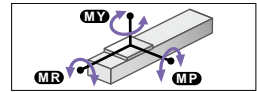
Horizontal installation (Unit: mm)	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)	Wall installation (Unit: mm)		
	A	B	C		A	B	C
Lead 20	30kg 3045	1629	1902	Lead 20	30kg 1928	1553	3045
	50kg 2602	961	1150		50kg 1157	885	2602
	80kg 2193	586	716		80kg 707	509	2193

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Cable carrier for users



## Static loading moment



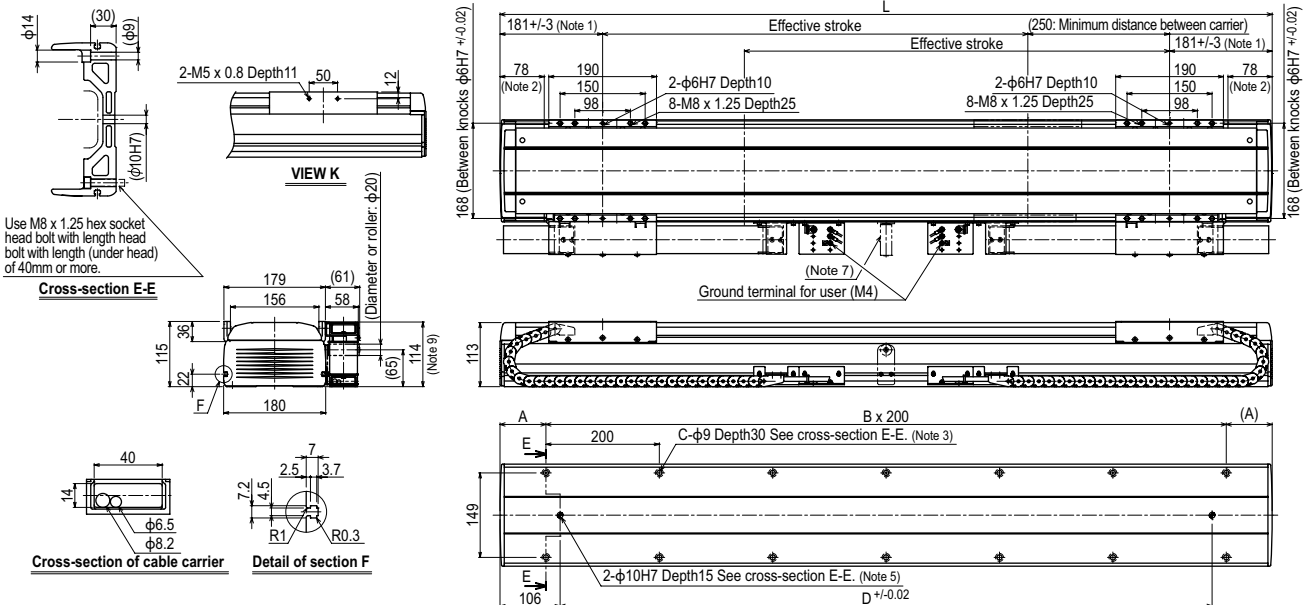
(Unit: N·m)		
MY	MP	MR
1161	1163	1021

## Controller

Controller	Operation method
RCX320-R RCX222HP-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
SR1-X20-R <sup>Note</sup>	I/O point trace / Remote command
TS-X220-R <sup>Note</sup>	I/O point trace / Remote command
RDV-X20-RBR1 <sup>Note</sup>	Pulse train control

Note. 2 units are required when using SR1-X, TS-X or RDV-X.

## N18D: Horizontal installation / Standard Cable carrier specification



Note 1. Position of table carriage when searched to the origin.

Note 2. Stop positions are determined by the mechanical stoppers at both ends.

Note 3. When using  $\phi 9$  holes for installation, do not use a washer, spring washer, etc. in the main unit.

Note 4. If the model is a standard cable carrier specification, it is not possible to pass 3 or more  $\phi 6 \times 4$  urethane air hoses.

Note 5. When using a  $\phi 10H7$  hole, make sure that the pin does not go into deeper than as shown in the drawing.

Note 6. Contact us for vertical installation.

Note 7. For the robot with more than 2,050 stroke, a roller to prevent the cable carrier from hanging is provided.

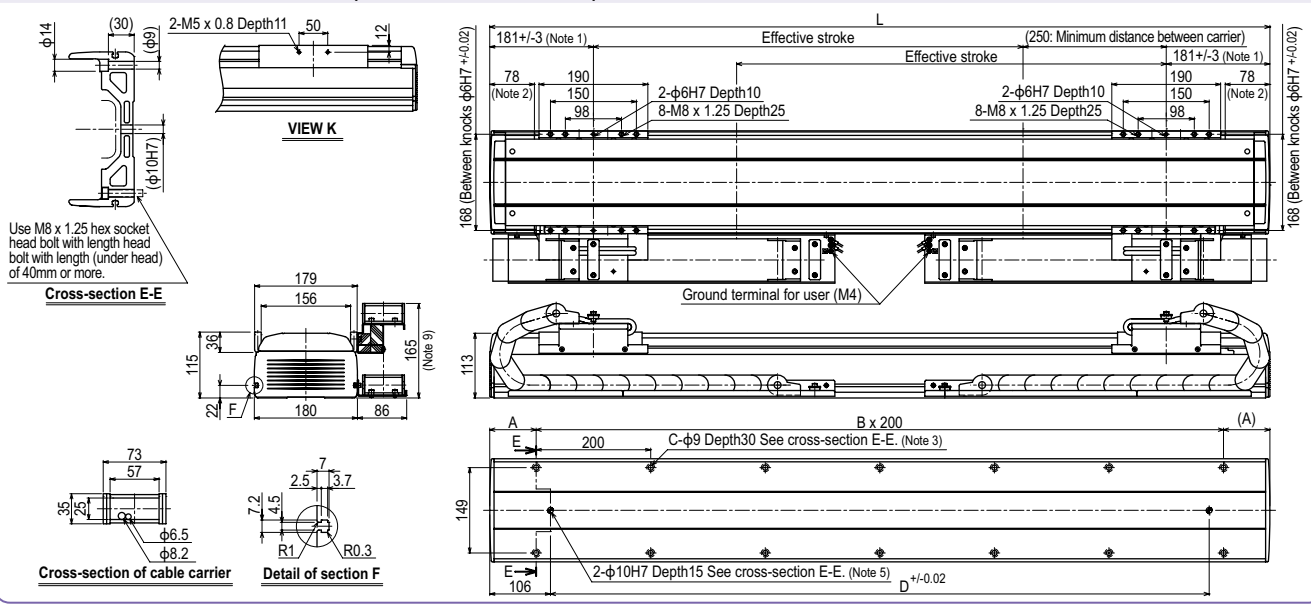
Note 8. Weight of models with no brake. The weight of brake-attached models is 1 kg heavier than the models with no brake shown in the table.

Note 9. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

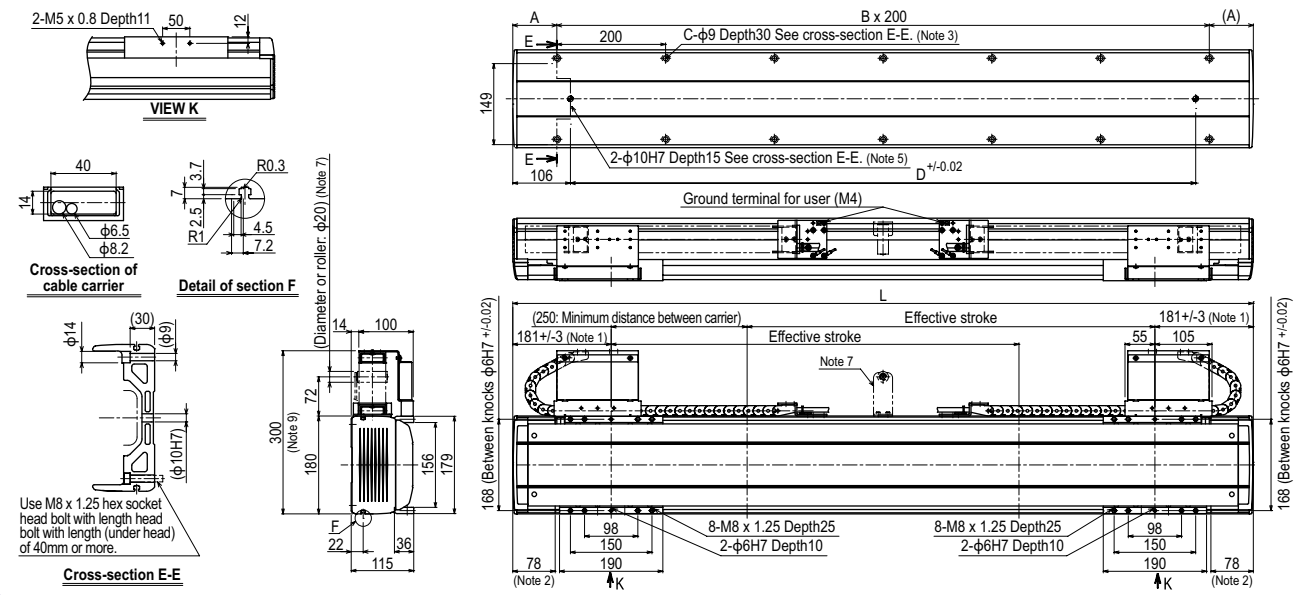
Effective stroke	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250
L	862	962	1062	1162	1262	1362	1462	1562	1662	1762	1862	1962	2062	2162	2262	2362	2462	2562	2662	2762	2862
A	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131
B	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13
C	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28
D	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650
Weight (kg) <sup>Note 8</sup>	35	37	39	41	43	45	47	48	50	52	54	56	58	60	62	64	66	68	70	72	74

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
T type  
F type  
GF type  
N type  
BR type

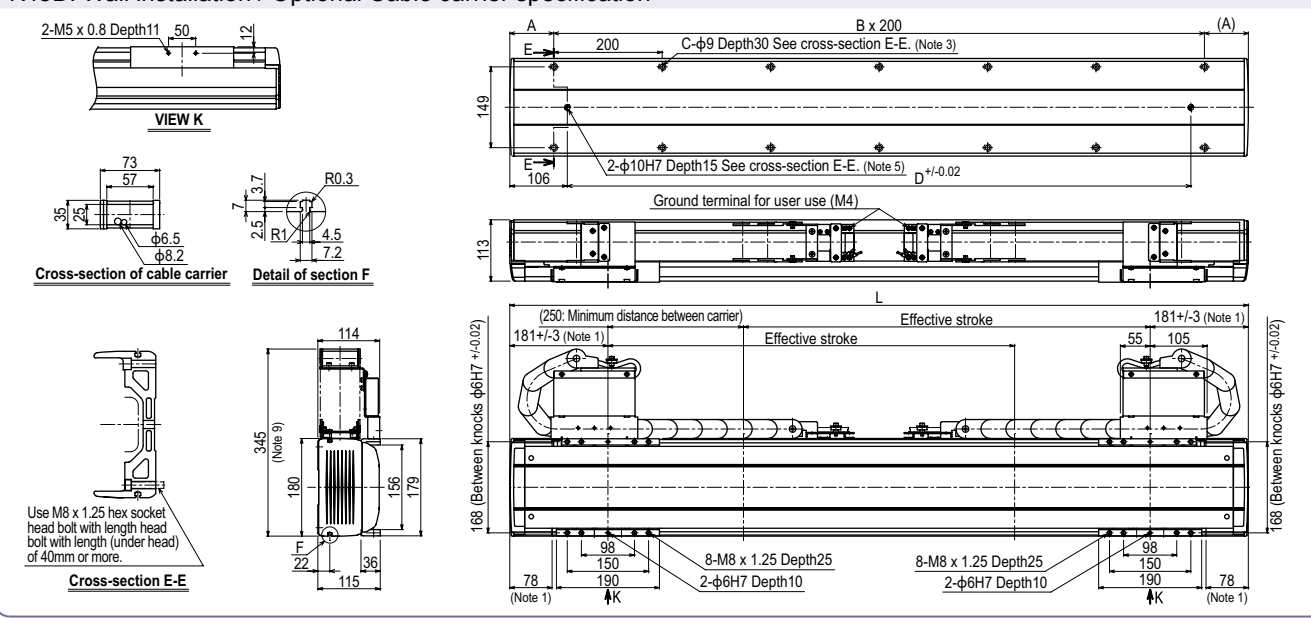
N18D: Horizontal installation / Optional Cable carrier specification



N18D: Wall installation / Standard Cable carrier specification



N18D: Wall installation / Optional Cable carrier specification





# B10



## Ordering method

### B10

Model	Motor installation direction	Option	Stroke	Cable length <sup>Note1</sup>
	L: Motor leftward, horizontal position R: Motor rightward, horizontal position LU: Motor leftward, upper position RU: Motor rightward, upper position LD: Motor leftward, lower position RD: Motor rightward, lower position	Grease type None: Standard GC: Clean	150 to 2550 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

### TSX

Positioner <sup>Note2</sup> TS-X	Driver: Power-supply voltage / Power capacity	LCD monitor	I/O selection	Battery
	105: 100V/100W or less 205: 200V/100W or less	No entry: None L: With LCD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note3</sup>	B: With battery (Absolute) N: None (Incremental)

### SR1-X

Controller	05	Usable for CE	I/O selection	Battery
	Driver: Power capacity 05: 100W or less	No entry: Standard E: CE marking	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	B: With battery (Absolute) N: None (Incremental)

### RDV-X

Driver	2	05	RBR1
	Power-supply voltage 2: AC200V	Driver: Power capacity 05: 100W or less	Regenerative unit

Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.  
See P.614 for details on robot cable.  
Note 2. See P.522 for DIN rail mounting bracket.  
Note 3. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	100
Repeatability <sup>Note1</sup> (mm)	+/-0.04
Belt (mm)	Equivalent to lead 25
Maximum speed (mm/sec)	1875
Maximum payload (kg)	10
Stroke (mm)	150 to 2550 (100mm pitch)
Overall length (mm)	Stroke+397.5
Motor installation	Stroke+310
L/R type	
Another	
Maximum dimensions of cross section of main unit (mm)	W100 x H81
Cable length (m)	Standard: 3.5 / Option: 5.10
Linear guide type	4 rows of circular arc grooves x 1 rail
Position detector	Resolvers <sup>Note2</sup>
Resolution (Pulse/rotation)	16384

Note 1. Positioning repeatability in one direction.  
Note 2. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang<sup>Note</sup>

	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)		
	A	B	C	A	B	C
3kg	1800	1392	1084	1144	1005	1734
5kg	1574	826	696	724	576	1199
8kg	1221	509	474	493	333	918
10kg	1171	403	407	414	254	869

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

(Unit: N·m)		
MY	MP	MR
188	188	165

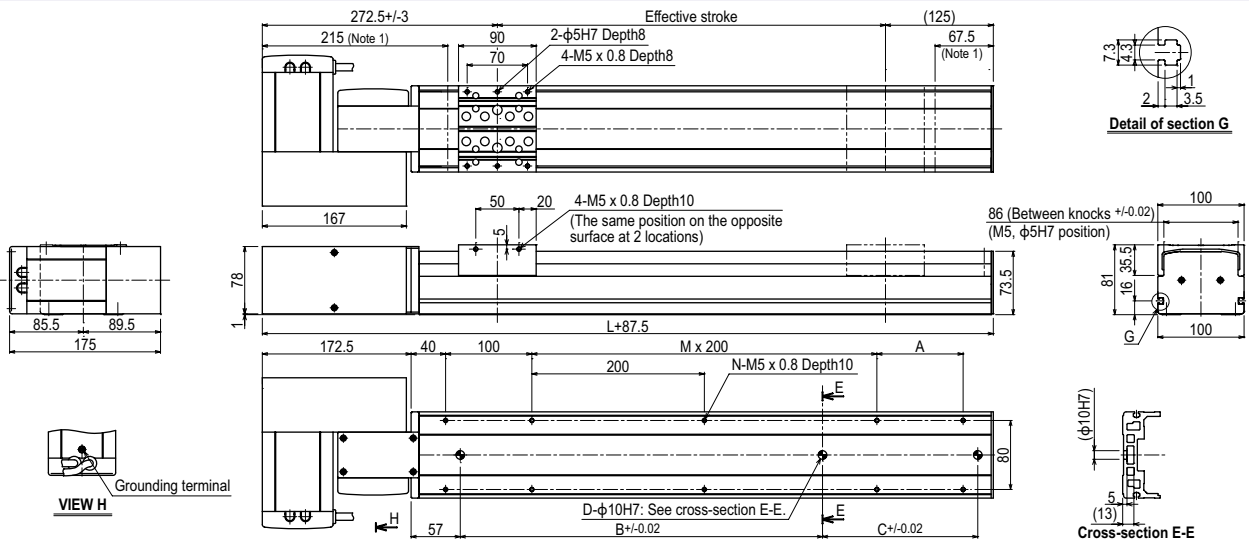
## Controller

Controller	Operation method
SR1-X05	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX320	
RCX221/222	
RCX340	
TS-X105	I/O point trace / Remote command
TS-X205	
RDV-X205-RBR1	Pulse train control

## Motor installation The line-up consisting of six models of different motor installation position as follows.

<b>L type</b> Leftward at horizontal position	<b>R type</b> Rightward at horizontal position	<b>LU type</b> Leftward at upper position	<b>RU type</b> Rightward at upper position	<b>LD type</b> Leftward at lower position	<b>RD type</b> Rightward at lower position
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## B10 R type (Motor rightward, horizontal position)



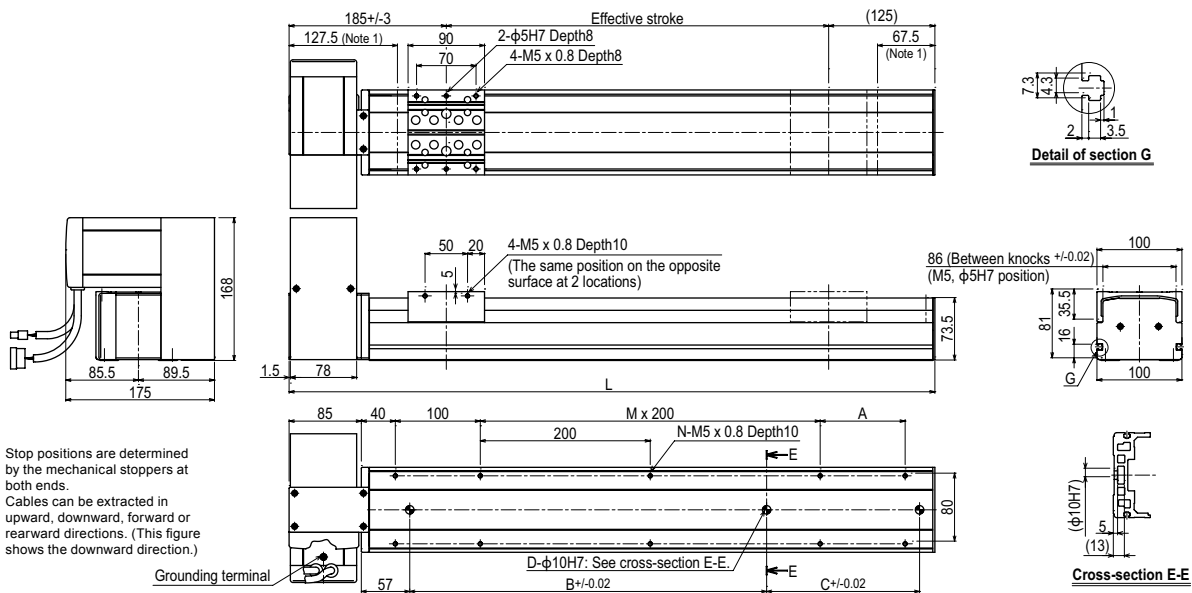
Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
L	460	510	560	610	660	710	760	810	860	910	960	1010	1060	1110	1160	1210	1260	1310	1360	1410	1460	1510	1560	1610	1660
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200
B	240	240	240	420	420	420	600	600	600	600	780	780	780	780	960	960	960	960	1140	1140	1140	1140	1320	1320	1320
C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
D	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
M	-	1	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	5	5	5	5	6	6	6	6
N	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18	18	18
Weight (kg)	7.4	7.8	8.2	8.6	9.0	9.4	9.8	10.1	10.5	10.9	11.3	11.7	12.1	12.5	12.9	13.3	13.7	14.1	14.5	14.9	15.3	15.7	16.1	16.5	16.9

Effective stroke	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550
L	1710	1760	1810	1860	1910	1960	2010	2060	2110	2160	2210	2260	2310	2360	2410	2460	2510	2560	2610	2660	2710	2760	2810	2860
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200
B	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320
C	-	240	240	240	420	420	420	420	600	600	600	600	780	780	780	780	960	960	960	960	1140	1140	1140	1140
D	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
M	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	11	12	12	12
N	20	20	20	22	22	22	22	22	24	24	24	24	26	26	26	26	28	28	28	28	28	30	30	30
Weight (kg)	17.3	17.7	18.0	18.4	18.8	19.2	19.6	20.0	20.4	20.8	21.2	21.6	22.0	22.4	22.8	23.2	23.6	24.0	24.4	24.8	25.2	25.6	25.9	26.3

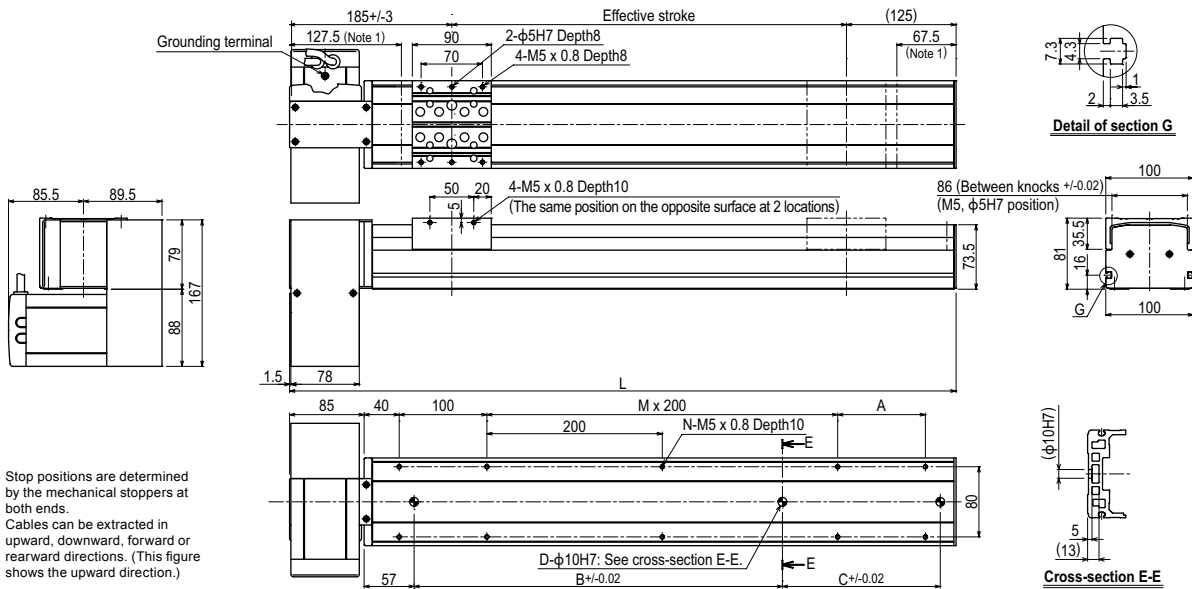
Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the forward direction.)

B10 RU type (Motor rightward, upper position)



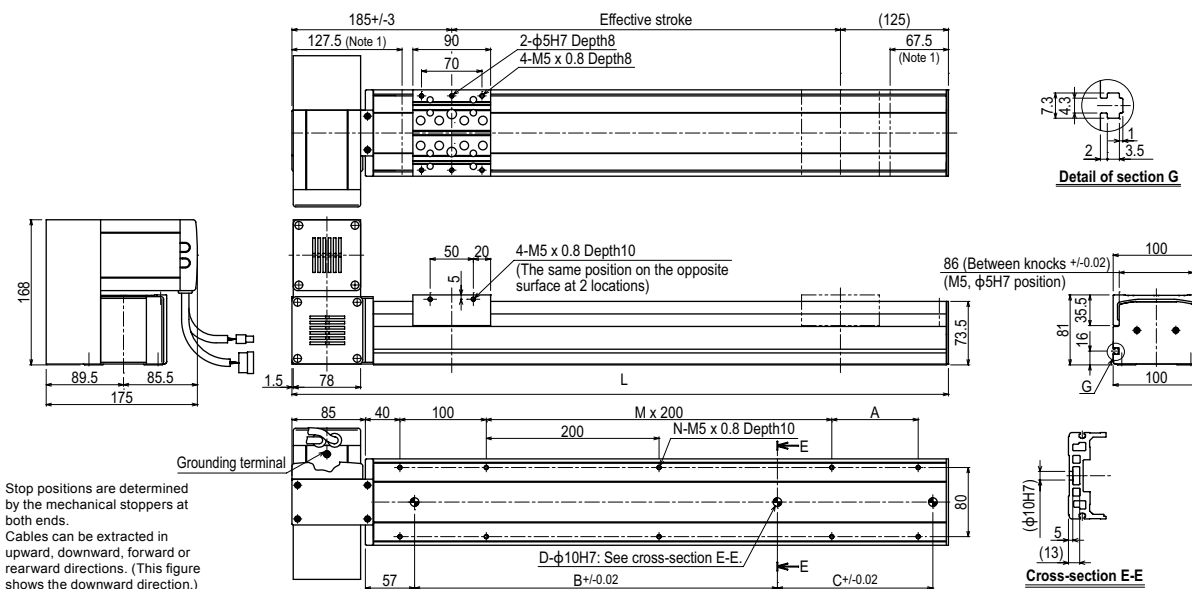
Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the downward direction.)

B10 RD type (Motor rightward, lower position)



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the upward direction.)

B10 LU type (Motor leftward, upper position)



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the downward direction.)

# B14



## Ordering method

<b>B14</b>					<b>TSX</b>				
<b>Model</b>	<b>Motor installation direction</b> L: Motor leftward, horizontal position R: Motor rightward, horizontal position LU: Motor leftward, upper position RU: Motor rightward, upper position LD: Motor leftward, lower position RD: Motor rightward, lower position	<b>Option</b> Grease type None: Standard GC: Clean	<b>Stroke</b> 150 to 3050 (50mm pitch)	<b>Cable length<sup>Note 1</sup></b> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	<b>Positioner<sup>Note 2</sup></b> TS-X	<b>Driver: Power-supply voltage / Power capacity</b> 105: 100V/100W or less 205: 200V/100W or less	<b>LCD monitor</b> No entry: None L: With LCD	<b>I/O selection</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
					<b>SR1-X</b>	<b>05</b>			
					<b>Controller</b>	<b>Driver: Power capacity</b> 05: 100W or less	<b>Usable for CE</b> No entry: Standard E: CE marking	<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
					<b>RDV-X</b>	<b>2</b>	<b>05</b>	<b>RBR1</b>	
					<b>Driver</b>	<b>Power-supply voltage</b> 2: AC200V	<b>Driver: Power capacity</b> 05: 100W or less	<b>Regenerative unit</b>	

Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.  
See P.614 for details on robot cable.  
Note 2. See P.522 for DIN rail mounting bracket.  
Note 3. Select this selection when using the gateway function. For details, see P.66.

## Specifications

<b>AC servo motor output (W)</b>	100
<b>Repeatability<sup>Note 1</sup> (mm)</b>	+/-0.04
<b>Belt (mm)</b>	Equivalent to lead 25mm
<b>Maximum speed (mm/sec)</b>	1875
<b>Maximum payload (kg)</b>	20
<b>Stroke (mm)</b>	150 to 3050 (100mm pitch)
<b>Overall length (mm)</b>	Motor installation L/R type Stroke+425.5 Another Stroke+338
<b>Maximum dimensions of cross section of main unit (mm)</b>	W146 × H94
<b>Cable length (m)</b>	Standard: 3.5 / Option: 5.10
<b>Linear guide type</b>	4 rows of circular arc grooves × 2 rail
<b>Position detector</b>	Resolvers <sup>Note 2</sup>
<b>Resolution (Pulse/rotation)</b>	16384

Note 1. Positioning repeatability in one direction.  
Note 2. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

## Allowable overhang<sup>Note</sup>

	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)		
	A	B	C	A	B	C
5kg	2159	1228	943	1064	816	1468
10kg	1389	623	548	564	377	888
20kg	1102	320	348	305	156	615

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

(Unit: N·m)		
MY	MP	MR
226	227	199

## Controller

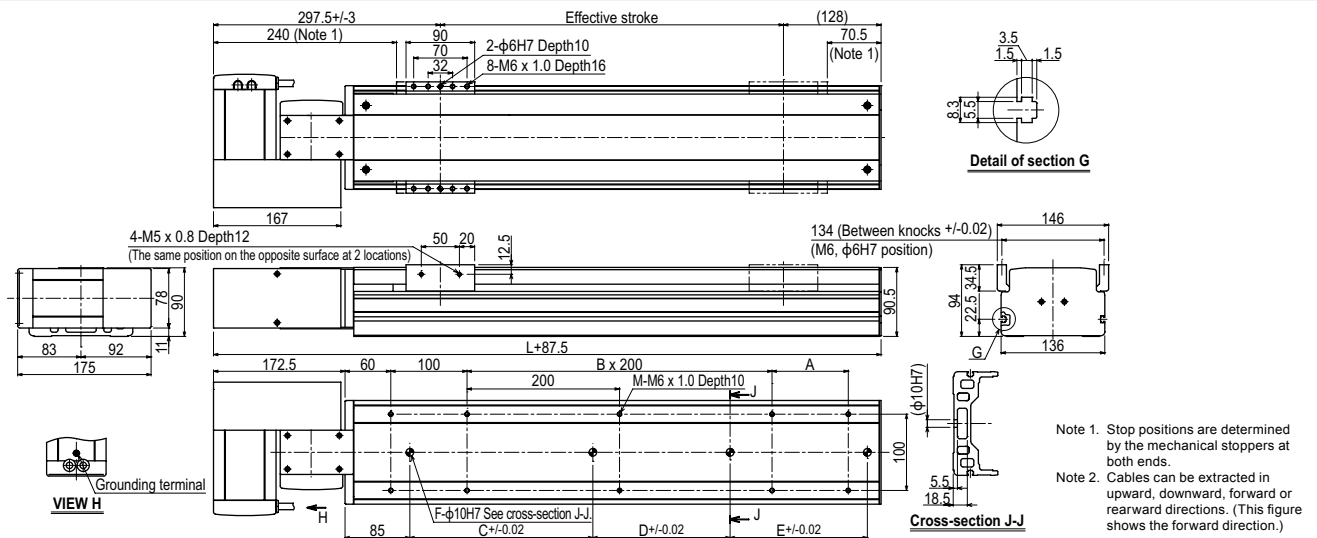
Controller	Operation method
SR1-X05 RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X105 TS-X205	I/O point trace / Remote command
RDV-X205-RBR1	Pulse train control

## Motor installation

The line-up consisting of six models of different motor installation position as follows.

<b>L type</b> Leftward at horizontal position	<b>R type</b> Rightward at horizontal position	<b>LU type</b> Leftward at upper position	<b>RU type</b> Rightward at upper position	<b>LD type</b> Leftward at lower position	<b>RD type</b> Rightward at lower position
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## B14 R type (Motor rightward, horizontal position)



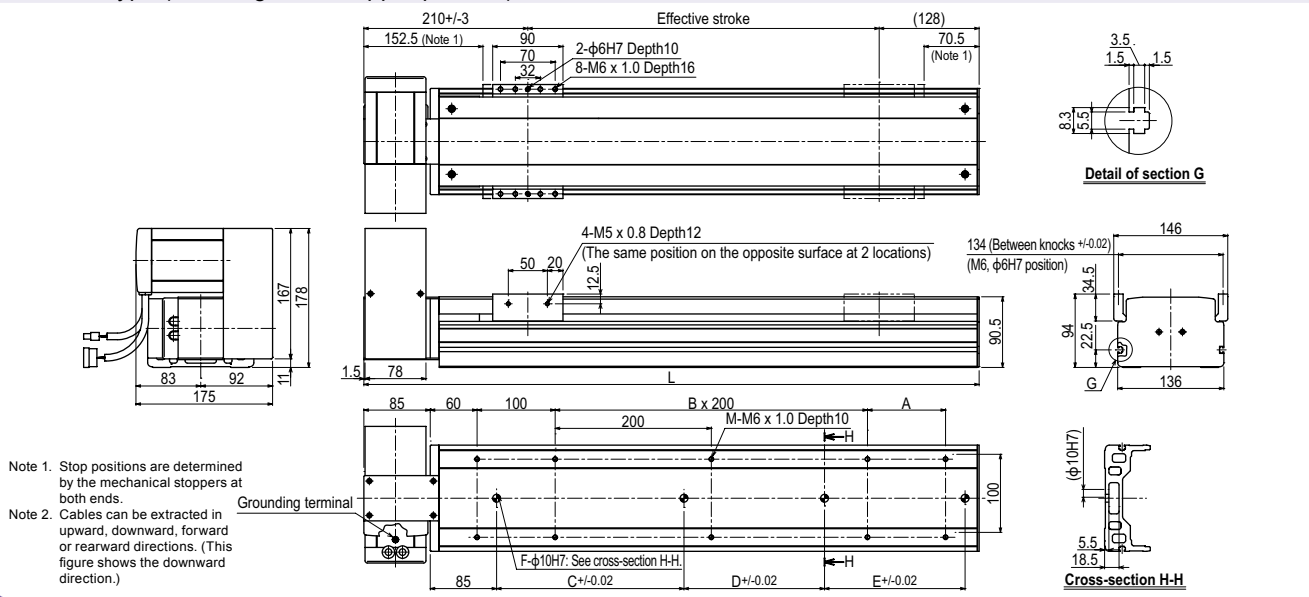
Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the forward direction.)

Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600
L	488	538	588	638	688	738	788	838	888	938	988	1038	1088	1138	1188	1238	1288	1338	1388	1438	1488	1538	1588	1638	1688	1738	1788	1838	1888	1938
M	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	16	16	16	16	16	18	18	18	20	20	20	20	22	
A	-	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50
B	1	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	5	5	5	5	5	6	6	6	7	7	7	7	8	
C	240	240	240	420	420	420	600	600	600	600	780	780	780	780	960	960	960	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	240	240	240	420	420	420	600
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3
Weight (kg)	9.6	10.2	10.8	11.4	12	12.5	13.1	13.7	14.3	14.9	15.5	16.0	16.6	17.2	17.8	18.4	19	19.5	20.2	20.7	21.3	21.9	22.5	23.1	23.7	24.2	24.8	25.4	26	26.6

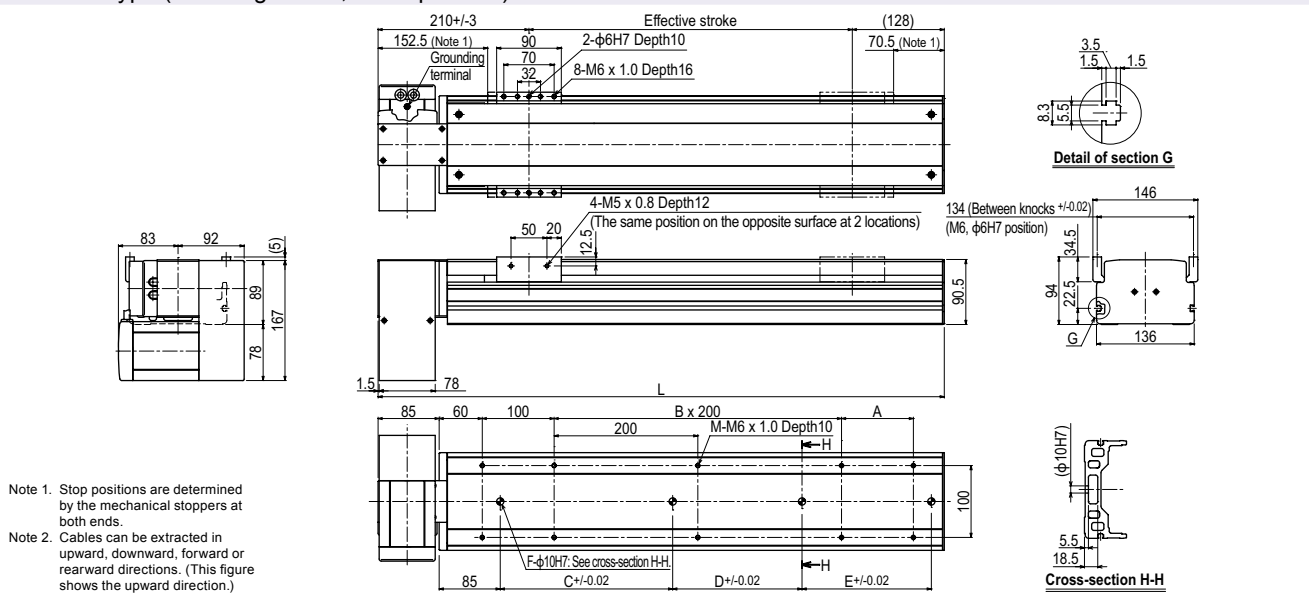
  

Effective stroke	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950	3000	3050	
L	1988	2038	2088	2138	2188	2238	2288	2338	2388	2438	2488	2538	2588	2638	2688	2738	2788	2838	2888	2938	2988	3038	3088	3138	3188	3238	3288	3338	3388	
M	22	22	22	24	24	24	24	26	26	26	26	28	28	28	28	30	30	30	30	32	32	32	34	34	34	34	34	36	36	
A	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	
B	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	13	13	13	13	14	14	14	14	14	15	15	
C	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
D	600	600	600	780	780	780	780	960	960	960	960	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	4	
Weight (kg)	27.2	27.7	28.3	28.9	29.5	30.1	30.7	31.3	31.9	32.4	33	33.6	34.2	34.8	35.4	35.9	36.5	37.1	37.7	38.3	38.9	39.4	40	40.6	41.2	41.8	42.4	43.0	43.6	

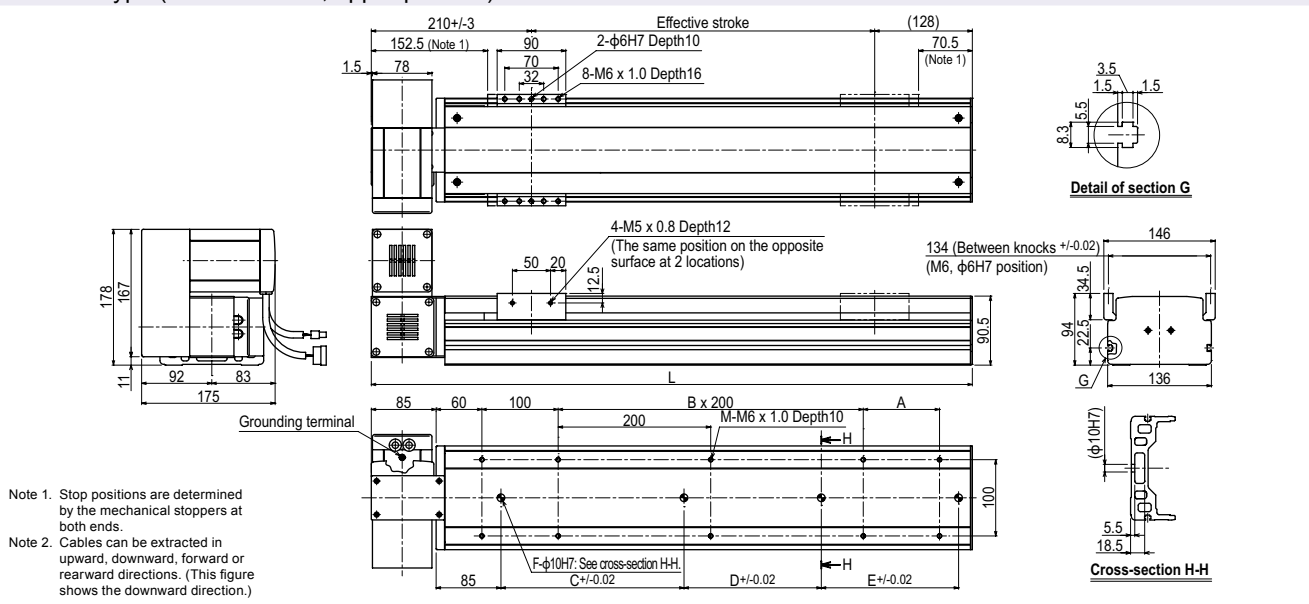
B14 RU type (Motor rightward, upper position)



B14 RD type (Motor rightward, lower position)



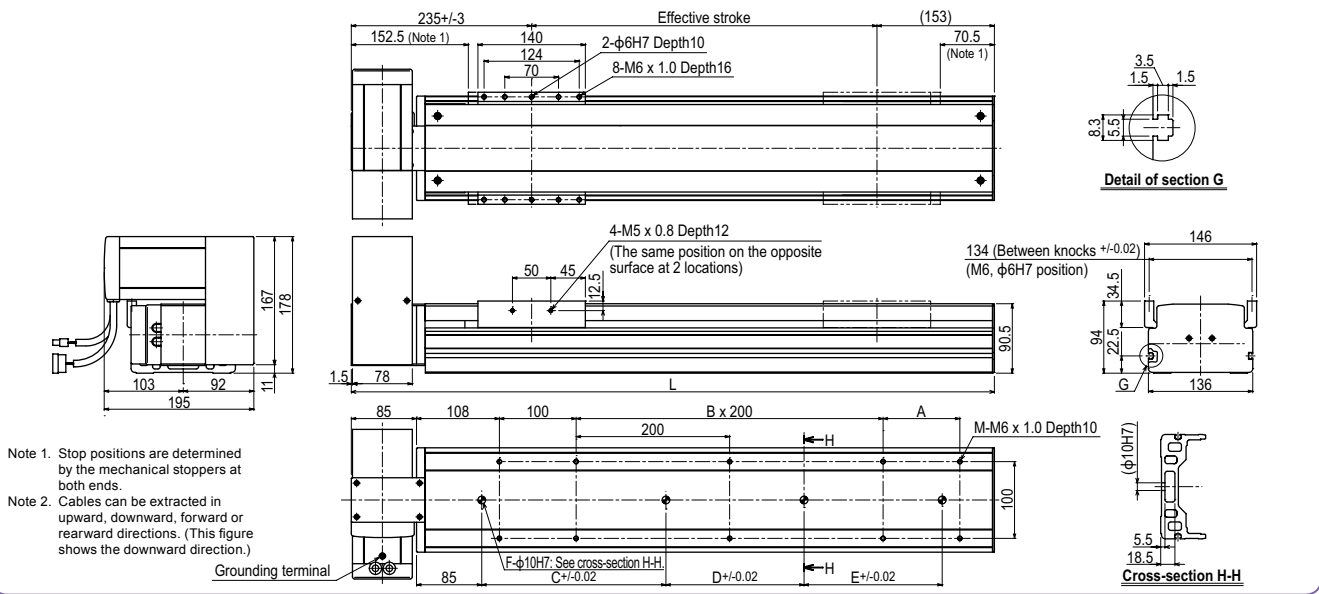
B14 LU type (Motor leftward, upper position)



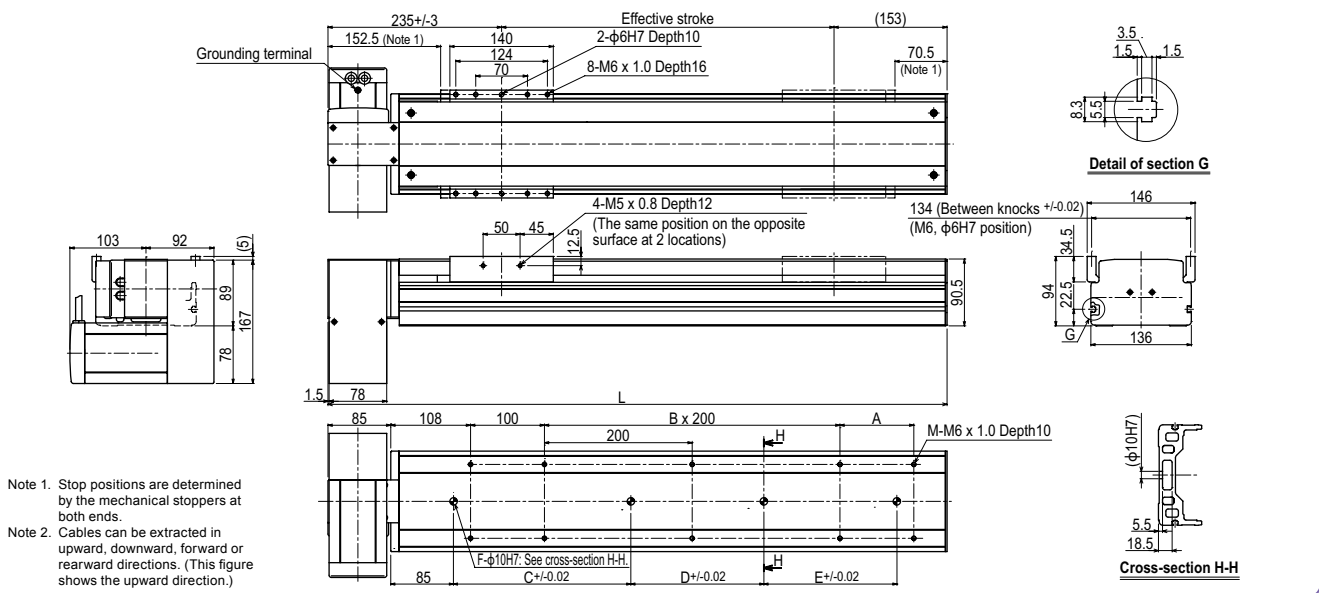




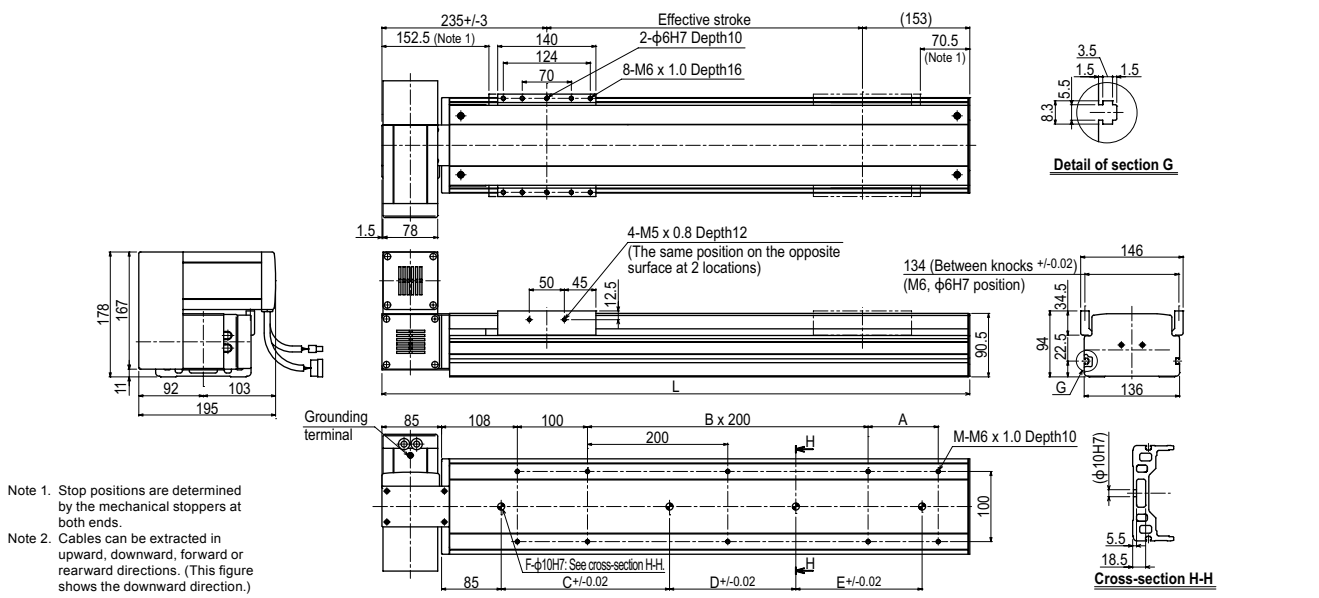
## B14H RU type (Motor rightward, upper position)



## B14H RD type (Motor rightward, lower position)



## B14H LU type (Motor leftward, upper position)



Articulated robots
YA
Linear conveyor modules
LCM100
Motorless single-axis actuator
Robonity
Compact single-axis robots
TRANSEVO
Single-axis robots
FLIP-X
Linear motor single-axis robots
PHASER
Cartesian robots
XY-X
SCARA robots
YK-X
Pick & place robots
YP-X
CLEAN
CONTROLLER
INFORMATION
T type
F type
GF type
N type
B type



# R10



## Ordering method

<b>R10</b>	<b>Model</b>	<b>Cable entry location</b> No entry: Standard (S) B: From the side	<b>Cable length</b> <sup>Note 1</sup> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	<b>TSX</b>	<b>Positioner</b> <sup>Note 2</sup> TS-X	<b>Driver: Power-supply voltage / Power capacity</b> 105: 100V/100W or less 205: 200V/100W or less	<b>LCD monitor</b> No entry: None L: With LCD	<b>I/O selection</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
	<b>SR1-X</b>	<b>Controller</b>	<b>05</b>	<b>Driver: Power capacity</b> 05: 100W or less	<b>Usable for CE</b> No entry: Standard E: CE marking	<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)		
	<b>RDV-X</b>	<b>Driver</b>	<b>2</b>	<b>Power-supply voltage</b> 2: AC200V	<b>05</b>	<b>Driver: Power capacity</b> 05: 100W or less	<b>RBR1</b>	<b>Regenerative unit</b>	

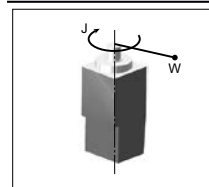
Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
Note 2. See P.522 for DIN rail mounting bracket.  
Note 3. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	100
Repeatability (°)	+/-0.0083
Maximum speed (°/sec)	360
Maximum allowable moment inertia (kgm <sup>2</sup> [kgfcm <sup>2</sup> ])	0.36 [3.71]
Rated torque (Nm[kgfm])	10.78 [1.10]
Speed reduction ratio	1/50
Rotation range (°)	360
Cable length (m)	Standard: 3.5 / Option: 5.10
Speed reducer type	Harmonic drive
Position detector	Resolvers
Resolution (Pulse/rotation)	16384

## Maximum allowable moment inertia

Payload parameters W (kg)	1	2	3	4	5	6	7	8	9	10
Maximum allowable moment inertia J (kgfcm <sup>2</sup> )	0.25	0.49	0.74	0.99	1.24	1.48	1.73	1.98	2.23	2.47
Payload parameters W (kg)	11	12	13	14	15					
Maximum allowable moment inertia J (kgfcm <sup>2</sup> )	2.72	2.97	3.22	3.46	3.71					



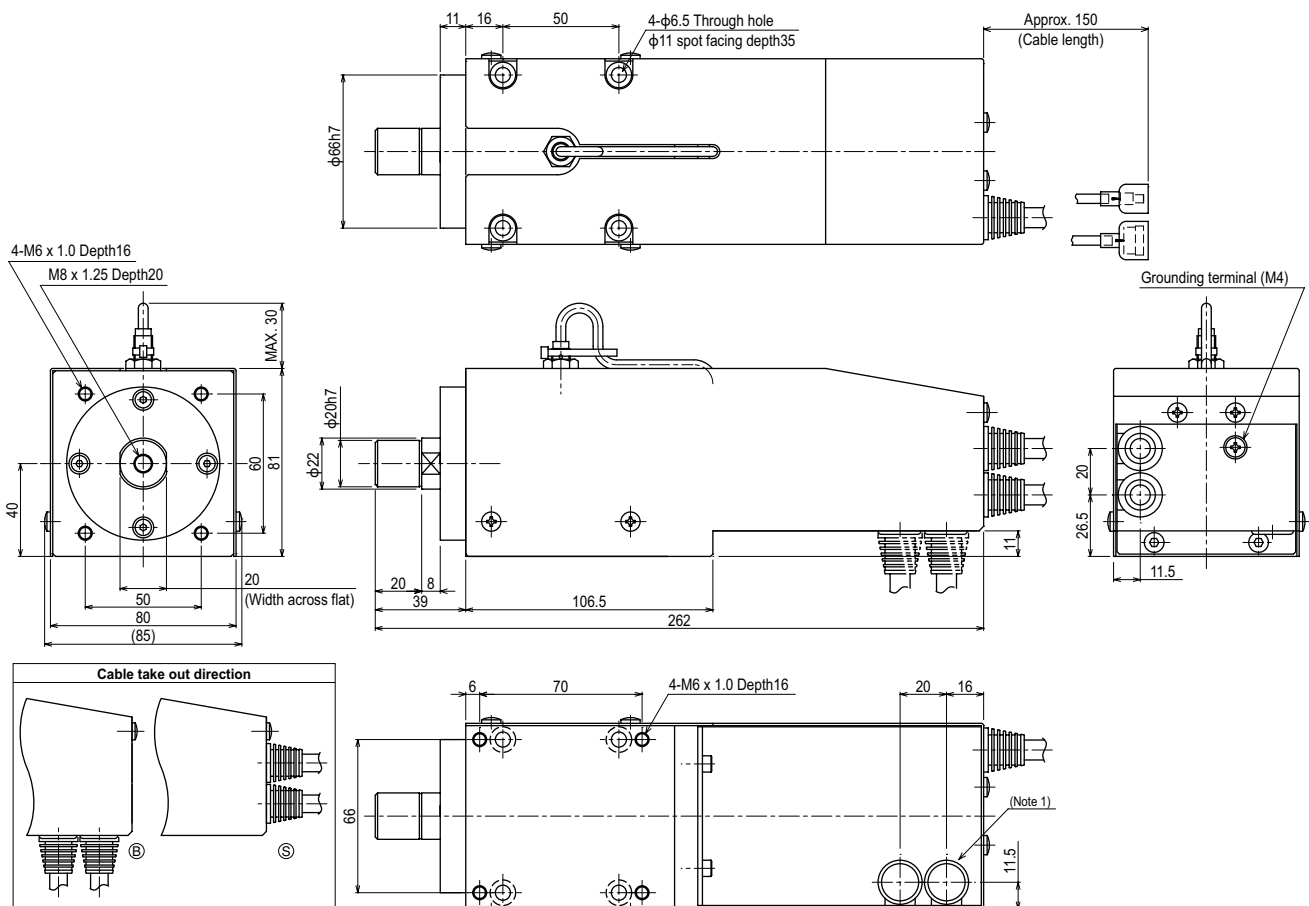
Note. When the weight of a tool or workpiece attached to the shaft R10 is W (kg), its moment of inertia (J) must be smaller than the values shown in the table above. (For example, enter 4kg if W is 3kg and J is 0.99kgf cm sec<sup>2</sup>.) Enter the above mass parameter value for the controller, and optimum acceleration is automatically set based on this value.

Note. For calculation (equation) of the inertia moment, please refer to P.643.

## Controller

Controller	Operation method
SR1-X05 RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X105 TS-X205	I/O point trace / Remote command
RDV-X205-RBR1	Pulse train control

## R10



Weight (kg) 3.5

Note 1. The cable extraction port can be changed.

# R20



## Ordering method

<b>R20</b>	<b>Model</b>	<b>Cable entry location</b> No entry: Standard (S) B: From the side	<b>Cable length</b> <sup>Note 1</sup> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	<b>TSX</b>	<b>Positioner</b> <sup>Note 2</sup> TS-X	<b>Driver: Power-supply voltage / Power capacity</b> 110: 100V/200W or less 210: 200V/200W or less	<b>LCD monitor</b> No entry: None L: With LCD	<b>I/O selection</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
	<b>SR1-X</b>	<b>Controller</b>	<b>10</b>	<b>Driver: Power capacity</b> 10: 200W or less	<b>Usable for CE</b> No entry: Standard E: CE marking		<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)	
	<b>RDV-X</b>	<b>Driver</b>	<b>2</b>	<b>Power-supply voltage</b> 2: AC200V	<b>10</b>	<b>Driver: Power capacity</b> 10: 200W or less	<b>RBR1</b>	<b>Regenerative unit</b>	

Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
Note 2. See P.522 for DIN rail mounting bracket.  
Note 3. Select this selection when using the gateway function. For details, see P.66.

## Specifications

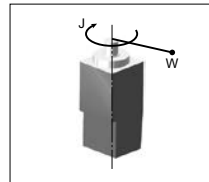
AC servo motor output (W)	200
Repeatability (°)	+/-0.0083
Maximum speed (°/sec)	360
Maximum allowable moment inertia (kgm <sup>2</sup> [kgfcm <sup>2</sup> ])	1.83 [18.7]
Rated torque (Nm[kgfm])	21.46 [2.19]
Speed reduction ratio	1/50
Rotation range (°)	360
Cable length (m)	Standard: 3.5 / Option: 5,10
Speed reducer type	Harmonic drive
Position detector	-
Resolution (Pulse/rotation)	16384

## Maximum allowable moment inertia

Payload parameters W (kg)	1	2	3	4	5	6	7	8	9	10
Maximum allowable moment inertia J (kgfcm <sup>2</sup> )	0.93	1.8	2.8	3.7	4.6	5.6	6.5	7.4	8.4	9.3

Payload parameters W (kg)	11	12	13	14	15	16	17	18	19	20
Maximum allowable moment inertia J (kgfcm <sup>2</sup> )	10.2	11.2	12.1	13.1	14	14.9	15.9	16.8	17.7	18.7



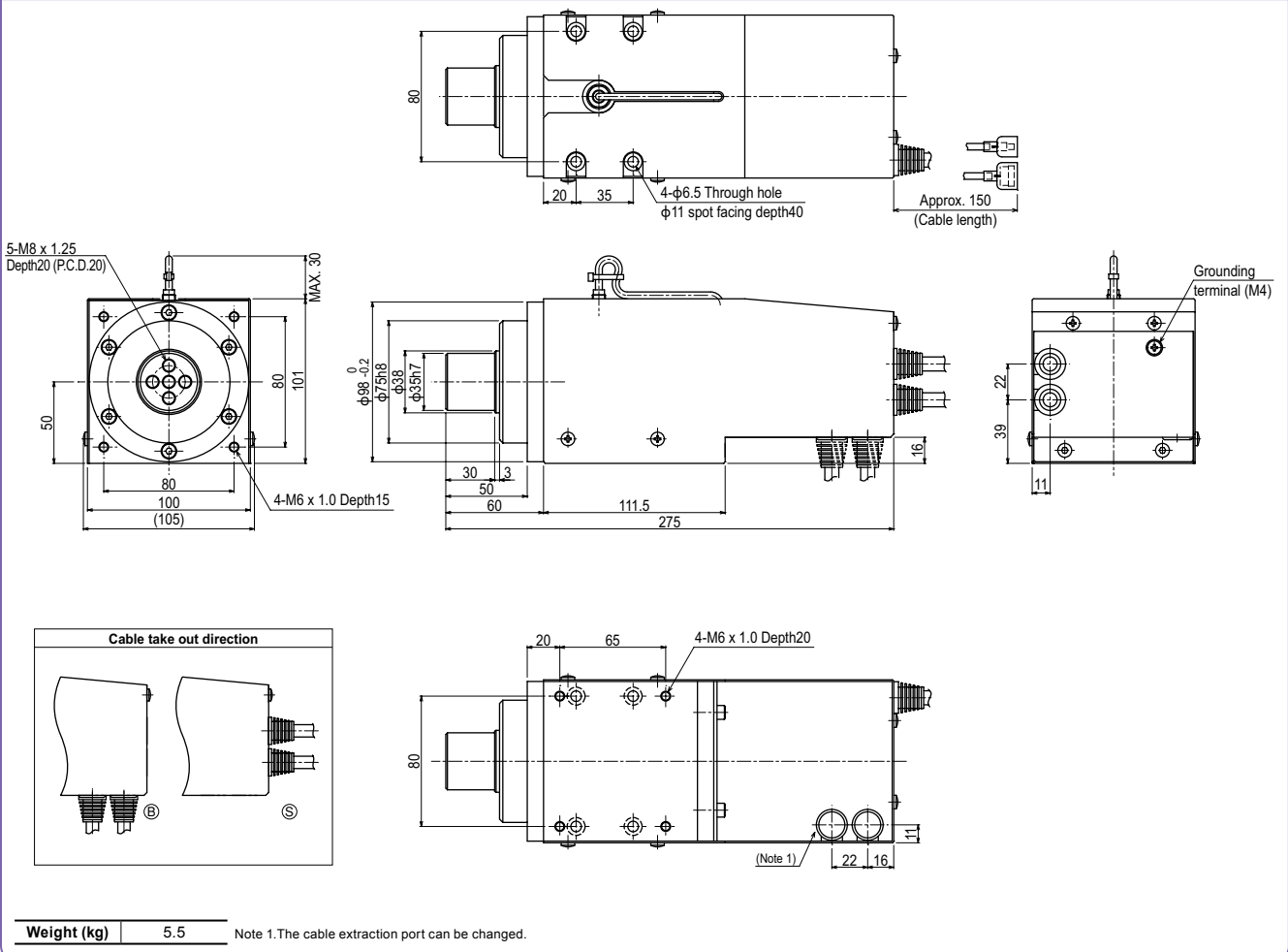
Note. When the weight of a tool or workpiece attached to the shaft R20 is W (kg), its moment of inertia (J) must be smaller than the values shown in the table above. (For example, enter 4kg if W is 3kg and J is 3.7kgf cm sec<sup>2</sup>.) Enter the above mass parameter value for the controller, and optimum acceleration is automatically set based on this value.

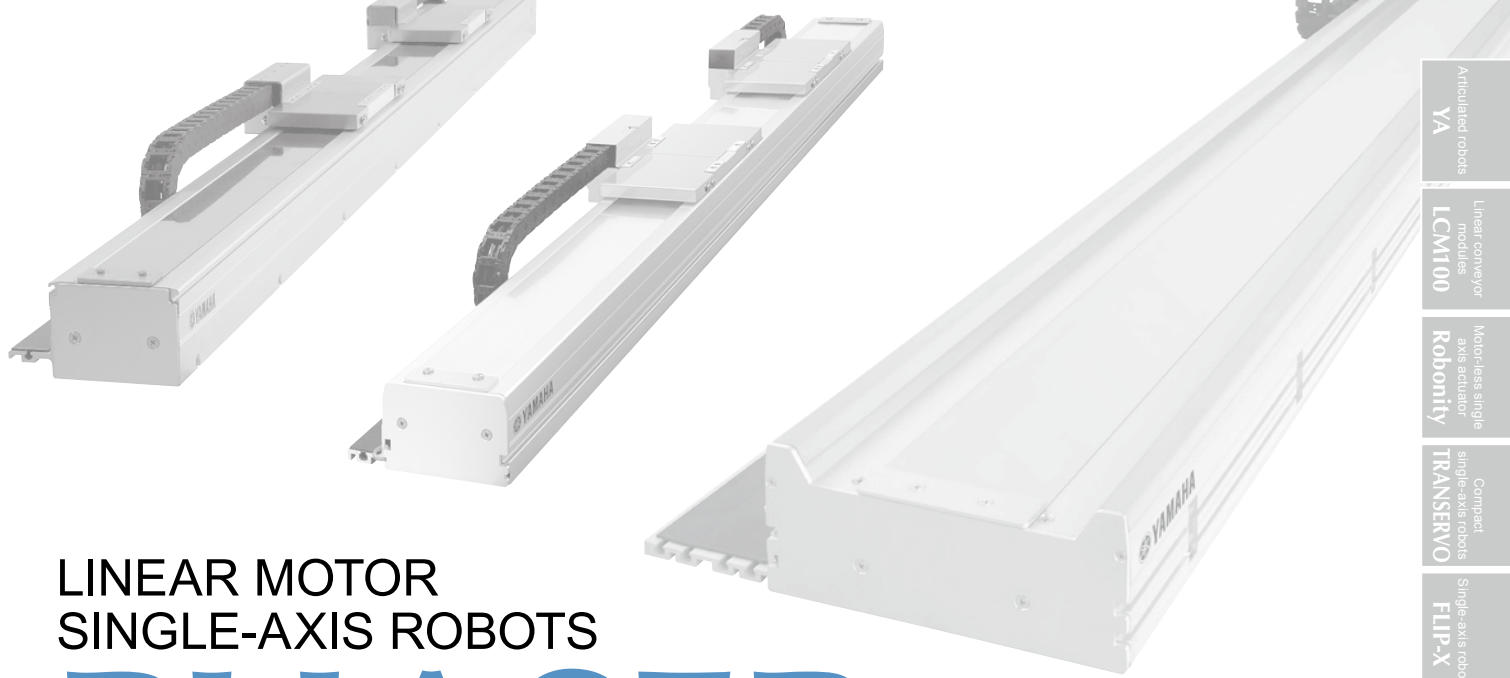
Note. For calculation (equation) of the inertia moment, please refer to P.643.

## Controller

Controller	Operation method
SR1-X10 RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X110 TS-X210	I/O point trace / Remote command
RDV-X210-RBR1	Pulse train control

## R20





## LINEAR MOTOR SINGLE-AXIS ROBOTS

# PHASER SERIES

Articulated robots YA
Linear conveyor modules LCM100
Motor-less single axis actuator Robonity
Compact single-axis robots TRANSEVO
Single-axis robots FLIP-X
Linear motor single-axis robots PHASER
Cartesian robots XY-X
SCARA robots YK-X
Pick & place robots YP-X
CLEAN
CONTROLLER
INFORMATION

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<b>MF TYPE</b>	
MF7/MF7D .....	242
MF15/MF15D .....	248
MF20/MF20D .....	252
MF30/MF30D .....	255
MF75/MF75D .....	258



# PHASER SPECIFICATION SHEET

Type	Size (mm) <sup>Note 1</sup>	Model	Carrier	Maximum payload (kg)	Maximum speed (mm/sec.)	Stroke (mm)	Detailed info page
MF type Flat type with core Linear motor specifications	W85 × H80	MF7	Single	10 (7) <sup>Note 2</sup>	2500	100 to 4000 (Horizontal) 100 to 2000 (Wall mount)	<a href="#">P.242</a>
		MF7D	Double			100 to 3800 (Horizontal) 100 to 1800 (Wall mount)	<a href="#">P.242</a>
	W100 × H80	MF15	Single	30 (15) <sup>Note 2</sup>		100 to 4000 (Horizontal) 100 to 2000 (Wall mount)	<a href="#">P.248</a>
		MF15D	Double			100 to 3800 (Horizontal) 100 to 1800 (Wall mount)	<a href="#">P.248</a>
	W150 × H80	MF20	Single	40 (20) <sup>Note 2</sup>		150 to 4050	<a href="#">P.252</a>
		MF20D	Double			150 to 3850	<a href="#">P.252</a>
		MF30	Single	60 (30) <sup>Note 2</sup>		100 to 4000	<a href="#">P.255</a>
		MF30D	Double			150 to 3750	<a href="#">P.255</a>
	W210 × H100	MF75	Single	160 (75) <sup>Note 2</sup>		1000 to 4000	<a href="#">P.258</a>
		MF75D	Double			680 to 3680	<a href="#">P.258</a>

Note 1. The size shows approximate maximum cross sectional size.

Note 2. When using at the maximum speed, the maximum payload becomes the value in ( ).

## ⚠ Precautions for use

### ■ Handling

- Please be sure to read "PHASER Series Instruction Manual" carefully to have full understanding of its contents before using this product and strictly observe each instruction.
- Dropping or hitting this product may cause it to break. Always handle it carefully.
- Never disassemble this product. Entry of a foreign object will cause deterioration of accuracy.
- This product uses a magnetic type linear scale. Do not bring anything that generates a strong magnetic field near the robot itself as it may cause damage to the linear scale.

### ■ Installation place and environment

When installing this product, avoid the place where any of the following conditions applies.

- The ambient temperature is outside of the 0 °C to 40 °C range.
- Dielectric powder such as iron powder, dust, moist, salt or organic solvent is produced and flies in the air.
- Strong electric field, strong magnetic field, etc. occur.
- The product is affected by vibration or impact.
- Dewing occurs, or corrosive gas or combustible gas is generated.
- The product is exposed to direct sun or radiant heat.
- A noise source exists in the surrounding area.
- Inspection and cleaning cannot be performed.

### ■ Safety precaution

- A high performance rare earth magnets are used in the motor section of this product. For this reason, bringing a magnetic response type device or a medical device such as a heart pace maker close to the robot may cause it to malfunction. Be careful not to bring such a device close to the robot.

## Robot ordering method description

In the order format for the YAMAHA linear motor single-axis robots PHASER series, the notation (letters/numbers) for the mechanical section is shown linked to the controller section notation.

### [Example]

#### ● Mechanical ▶ MF20

- Cable carrier take out direction ▷ RH
- Grease ▷ Standard
- Optional cable carrier for users ▷ S
- Stroke ▷ 550mm
- Origin position ▷ Change (R side)
- Cable length ▷ 3.5m

#### ● Controller ▶ SR1-P

- Regenerative unit ▷ Required
- I/O selection ▷ NPN

#### ● Ordering method

# MF20 - RH - S - Z - 550 - 3L - SR1 - P10 - R - N

Mechanical section

Controller section

This page describes using the ordering form for mechanical components.

To find detailed controller information see the controller page.

SR1-P ▶ [P.540](#), TS-P ▶ [P.514](#), RDV-P ▶ [P.528](#)

## Mechanical section

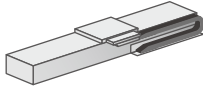
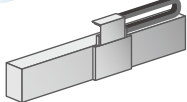
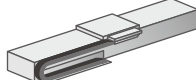
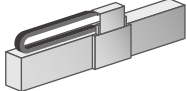
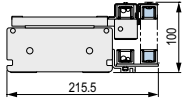
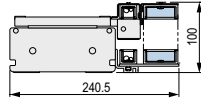
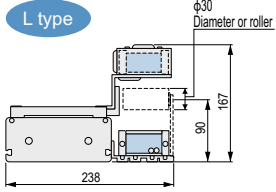
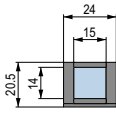
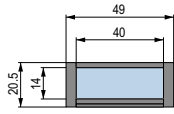
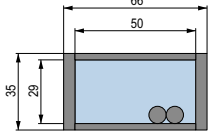
### ● Single carriage

① Model		② Cable carrier entry location	④ Optional cable carrier for users		⑤ Origin position change	⑥ Grease type		⑦ Stroke		⑧ Cable length	
MF7	MF7A	RH Horizontal, right	No entry	None	No entry	L side	No entry	Standard	3L	3.5m	
MF15	MF15A	LH Horizontal, left	S	S type	Z	R side	GC	Clean	5L	5m	
MF20	MF20A	RW Wall mounted, right	M	M type					10L	10m	
MF30	MF30A	LW Wall mounted, left	L	L type					3K	3.5m	
MF75	MF75A								5K	5m	
									10K	10m	

### ● Double carriage

① Model		③ Installing direction	④ Optional cable carrier for users		⑥ Grease type		⑦ Stroke		⑧ Cable length	
MF7D	MF7AD	H Horizontal installation	No entry	None	No entry	Standard	3L	3.5m		
MF15D	MF15AD		S	S type	GC	Clean	5L	5m		
MF20D	MF20AD	W Wall mounted installation	M	M type			10L	10m		
MF30D	MF30AD		L	L type			3K	3.5m		
MF75D	MF75AD						5K	5m		
							10K	10m		

# Robot ordering method terminology

① <b>Model</b>	<p>Enter the robot unit model.                  Select from 2 types: incremental specifications and semi-absolute specifications.</p>
② <b>Cable carrier entry location</b>	<p>Select what direction to install the robot (horizontal / wall mounted) and what direction to extract the robot cable carrier.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p><b>RH</b> Horizontal, right</p>  </div> <div style="text-align: center;"> <p><b>RW</b> Wall hanging, right</p>  </div> <div style="text-align: center;"> <p><b>LH</b> Horizontal, left</p>  </div> <div style="text-align: center;"> <p><b>LW</b> Wall hanging, left</p>  </div> </div> <p><small>Note. Be sure to install in the direction as specified (in cable carrier take-out direction drawing and various specification drawings) individually. Installation in any other way will cause a failure. For requirement of installation in any way other than the above standard installation, please consult YAMAHA as special arrangement will be available.</small></p>
③ <b>Installing direction</b>	<p>Select what direction to install the robot (horizontal / wall mounted).</p>
④ <b>Optional cable carrier for users</b>	<p>Please specify if a cable carrier is needed for customer wiring.  <b>[MF type]</b> (For MF20)</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p><b>S type</b></p>  </div> <div style="text-align: center;"> <p><b>M type</b></p>  </div> <div style="text-align: center;"> <p><b>L type</b></p>  </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div> <p><small>Cable and pipe guide S : φ8 flexible cable x 1, φ4 air tube x 1                  M : φ8 flexible cable x 2, φ6 air tube x 2                  L : φ8 flexible cable x 2, φ8 air tube x 3</small></p> <p style="text-align: right;"><small>Space for optional cable for users</small></p>
⑤ <b>Origin position change</b>	<p>Origin point position can be changed.</p>
⑥ <b>Grease type</b>	<p>Clean grease can be selected.</p>
⑦ <b>Stroke</b>	<p>Select the stroke for the robot operating range.</p>
⑧ <b>Cable length</b>	<p>Select the length of the robot cable connecting the robot to the controller.</p> <p><b>3L</b> : 3.5m (Standard)  <b>5L</b> : 5m  <b>10L</b> : 10m  <b>3K</b> : 3.5m (Flexible cable)  <b>5K</b> : 5m (Flexible cable)  <b>10K</b> : 10m (Flexible cable)</p>

Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis actuator  
**Robonity**  
 Compact single-axis robots  
**TRANSEVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XY-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
 CLEAN  
 CONTROLLER INFORMATION

# MF7/MF7D

- Flat type available
- Can be used for wall-mount



## Ordering method

Single carriage model

**MF7**

Model	MF7: Incremental MF7A: Semi-absolute <sup>Note 1</sup>
Cable carrier entry location	RH: Horizontal, right LH: Horizontal, left FRH: Horizontal, right (Flat) FLH: Horizontal, left (Flat) RW: Wall mount, right LW: Wall mount, left
Optional cable carrier for users <sup>Note 2</sup>	No entry: None S: S type M: M type L: L type
Origin position change	No entry: L side (Standard) Horizontal: Z: R side (Standard) No entry: R side (Standard) Wall: Z: L side
Grease type	No entry: Standard GC: Clean
Stroke <sup>Note 3</sup>	Horizontal: 100 to 4000 (100mm pitch) 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 5</sup>
Cable length <sup>Note 4</sup>	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 5</sup>

**TSP**

Positioner	TS-P
Driver: Power-supply voltage / Power capacity	110: 100V/200W 210: 200V/200W
LCD monitor	No entry: None L: With LCD
I/O selection	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ GW: No I/O board <sup>Note 7</sup>

**SR1-P** **10**

Controller	SR1-P
Driver: Power capacity	10: 200W
Usable for CE	No entry: Standard E: CE marking
I/O selection	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS

**RDV-P** **2** **10** **RBR1**

Driver	RDV-P
Power-supply voltage	2: AC200V
Driver: Power capacity	10: 200W or less
Regenerative unit	RBR1

Note 1. For the details of the semi-absolute model, please refer to P.39. RDV-P has an incremental model only.  
 Note 2. For models with a 2,100mm or longer stroke, optional L type cable carriers can only be used. Flat type cannot be selected for L type.  
 Note 3. Maximum stroke for flat type is 2000mm.  
 Note 4. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 5. If a flexible cable is needed for the SR1-P, TS-P, or RDV-P, then select 3K/5K/10K. On the RCX221, the standard cable is a flexible cable, so enter 3L/5L/10L when ordering.  
 Note 6. These controllers can be mounted on DIN rails. See P.522 for details.  
 Note 7. Select this selection when using the gateway function. For details, see P.66.  
 Note. It is possible to provide the model without a cable carrier. To find information on wiring (cable terminals) within the cable carrier see P.622.

Double carriage model

**MF7D**

Model	MF7D: Incremental MF7AD: Semi-absolute <sup>Note 1</sup>
Installing direction	H: Horizontal installation FH: Horizontal installation (Flat) W: Wall mount installation
Optional cable carrier for users <sup>Note 2</sup>	No entry: None S: S type M: M type L: L type
Grease type	No entry: Standard GC: Clean
Stroke <sup>Note 3</sup>	Horizontal: 100 to 3800 (100mm pitch) 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 5</sup>
Cable length	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 5</sup>
Controller	RCX320 RCX221 SR1-P (2 units) TS-P (2 units) RDV-P (2 units)

Note. Specify various controller setting items.

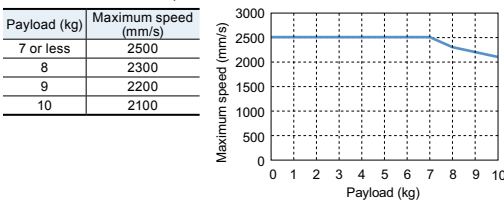
## Specifications

Model	MF7	MF7D
Driving method	Steel cored linear motor with falt magnet	
Repeatability (µm)	+/-5	
Scale (µm)	Magnetic type: resolution of 1	
Maximum speed <sup>Note 2</sup> (mm/sec)	2500	
Rated thrust (N)	37	
Maximum payload (kg)	10 <sup>Note 1</sup>	
Stroke (mm)	Horizontal	100 to 4000 (100mm pitch)
	Wall mount	100 to 2000 (100mm pitch)
Stroke (mm)	Horizontal	100 to 3800 (100mm pitch)
	Wall mount	100 to 1800 (100mm pitch)
Linear guide	4 rows of circular arc grooves × 1 rail	
Maximum cross-section outside dimensions (mm)	W85 × H80 (except the cable carrier section)	
Total length (mm)	Stroke+280	Stroke+480
Cable length (m)	Standard: 3.5 / Option: 5.10	

Note. A vertical model (with brake) is not available with the PHASER series.  
 Note. The basic specifications of semi-absolute model are the same as those of the incremental model.

Note 1. Payload per carrier. When the payload exceeds 7kg, please consult our sales office or sales representative.

Note 2. Table of maximum speed



## Allowable overhang

	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)		
	A	B	C	A	B	C
1kg	3000	3000	680	700	3000	3000
3kg	3000	1350	215	195	1260	3000
5kg	2900	830	125	90	630	2480
7kg	2400	580	85	50	360	1680
9kg	2200	460	60			
10kg	2100	410	55			

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

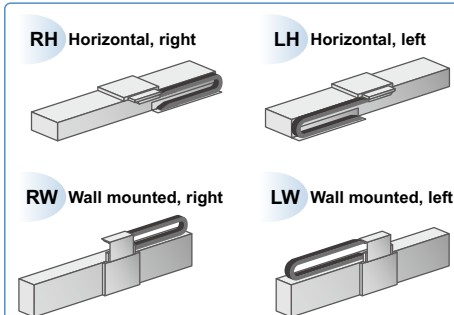
MY	MP	MR
156	156	194

(Unit: N·m)

## Controller

Controller	Operating method
SR1-P10	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX320 RCX221 RCX340	Operation using RS-232C communication
TS-P110	I/O point trace / Remote command
TS-P210	Remote command
RDV-P210-RBR1	Pulse train control

## Cable carrier entry location



Note. Be sure to install in the direction as specified (in cable carrier take-out direction drawing and various specification drawings) individually. Installation in any other way will cause a failure. For requirement of installation in any way other than the above standard installation, please consult YAMAHA as special arrangement will be available.

## Optional cable carrier for users

Cable and air tube guide

S: φ8 flexible cable x 1, φ4 air tube x 1  
 M: φ8 flexible cable x 2, φ6 air tube x 2  
 L: φ8 flexible cable x 2, φ8 air tube x 3

□ Space for optional cable for users

MF7 single carriage horizontal mount model **RH**

**Optional cable carrier M type**      **Optional cable carrier S type**

**Detail of section D**      **Cross-section of E-E**

**Cross-section of cable carrier**

Effective stroke	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
L	380	480	580	680	780	880	980	1080	1180	1280	1380	1480	1580	1680	1780	1880	1980	2080	2180	2280
A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
B	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46
C	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100
Weight (kg)	5.8	6.5	7.3	8	8.7	9.4	10.1	10.9	11.6	12.3	13	13.7	14.5	15.2	15.9	16.6	17.3	18.1	18.8	19.5

MF7 single carriage wall mount model **RW**

**Cross-section of optional cable carrier**      **Cross-section of F-F**

**Detail of section G**

**Standard and S types**

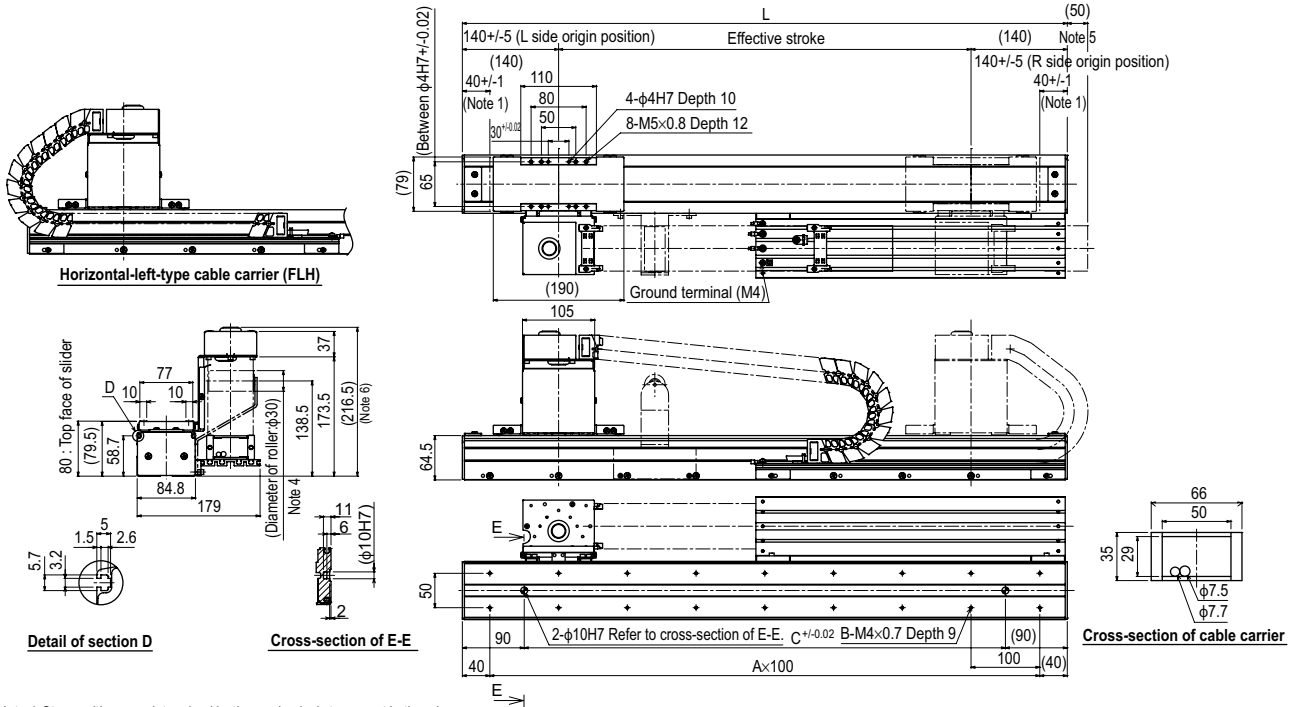
**Standard and M types**

**Standard and S types**

Effective stroke	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
L	380	480	580	680	780	880	980	1080	1180	1280	1380	1480	1580	1680	1780	1880	1980	2080	2180	2280
A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
B	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46
C	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100
D	220	270	320	370	420	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120	1170
Weight (kg)	5.8	6.5	7.3	8	8.7	9.4	10.1	10.9	11.6	12.3	13	13.7	14.5	15.2	15.9	16.6	17.3	18.1	18.8	19.5

Articulated robots  
YA  
Linear conveyer/modelling  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION

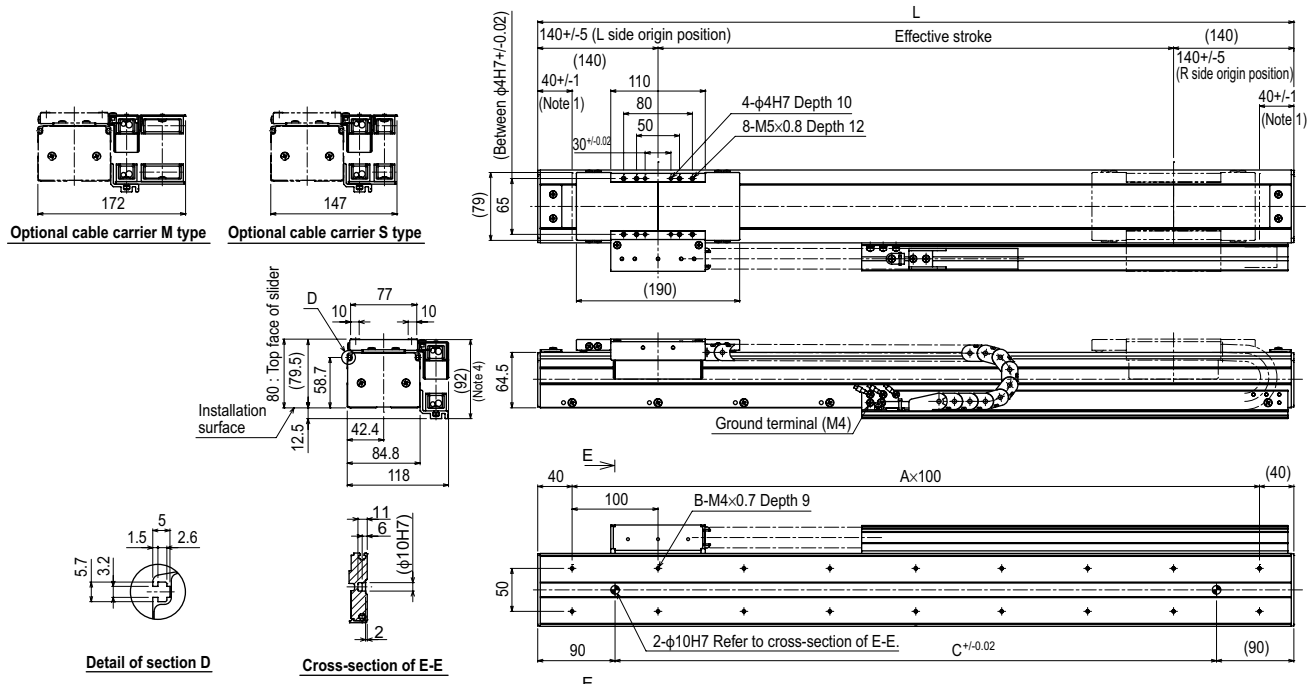
## MF7 single carriage horizontal mount model **RH-L** Optional L-type cable carrier



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. The origin is set on the L side at the time of shipment. It can be changed to the R side by parameter setting.  
 Note 3. The drawings on this page show the unit with horizontal-right-type cable carrier (RH).  
 Note 4. For models with a 3,000mm or longer stroke, a roller is installed to prevent the cable carrier from sagging.  
 Note 5. Protrusion is the distance the cable carrier extends from the edge of the unit.  
 Note 6. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

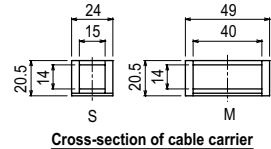
Effective stroke	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000
<b>L</b>	380	480	580	680	780	880	980	1080	1180	1280	1380	1480	1580	1680	1780	1880	1980	2080	2180	2280	2380	2480	2580	2680	2780	2880	2980	3080	3180	3280	3380	3480	3580	3680	3780	3880	3980	4080	4180	4280
<b>A</b>	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
<b>B</b>	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86
<b>C</b>	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100
<b>Weight (kg)</b>	5.8	6.5	7.3	8.0	8.7	9.4	10.1	10.9	11.6	12.3	13.0	13.7	14.5	15.2	15.9	16.6	17.3	18.1	18.8	19.5	20.2	20.9	21.7	22.4	23.1	23.8	24.5	25.3	26.0	26.7	27.4	28.1	28.9	29.6	30.3	31.0	31.7	32.5	33.2	33.9

## MF7 single carriage horizontal mount model **FRH** Flat type



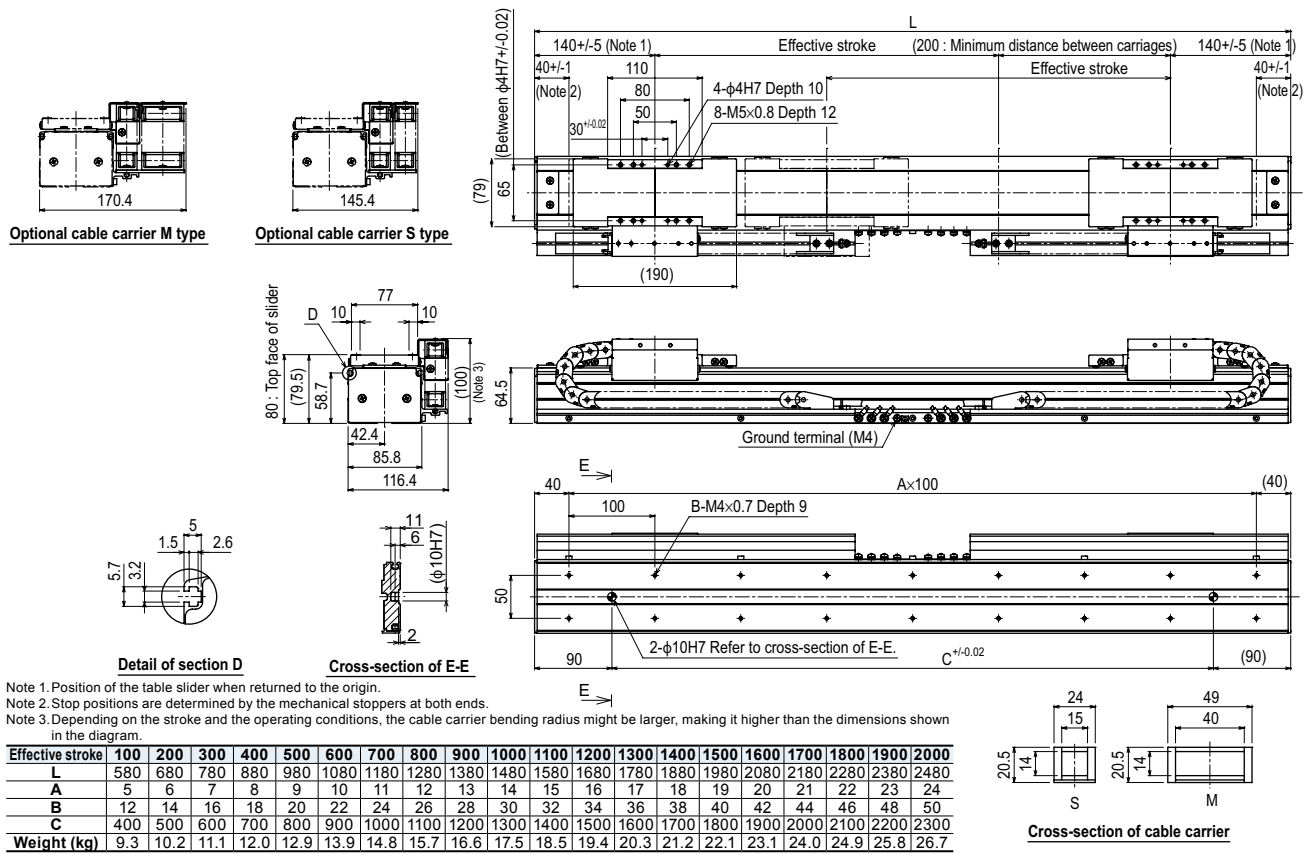
Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. The origin is set on the L side at the time of shipment. It can be changed to the R side by parameter setting.  
 Note 3. The drawings on this page show the unit with horizontal-right-type cable carrier (RH).  
 Note 4. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
<b>L</b>	380	480	580	680	780	880	980	1080	1180	1280	1380	1480	1580	1680	1780	1880	1980	2080	2180	2280
<b>A</b>	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
<b>B</b>	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46
<b>C</b>	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100
<b>Weight (kg)</b>	5.8	6.5	7.3	8	8.7	9.4	10.1	10.9	11.6	12.3	13	13.7	14.5	15.2	15.9	16.6	17.3	18.1	18.8	19.5

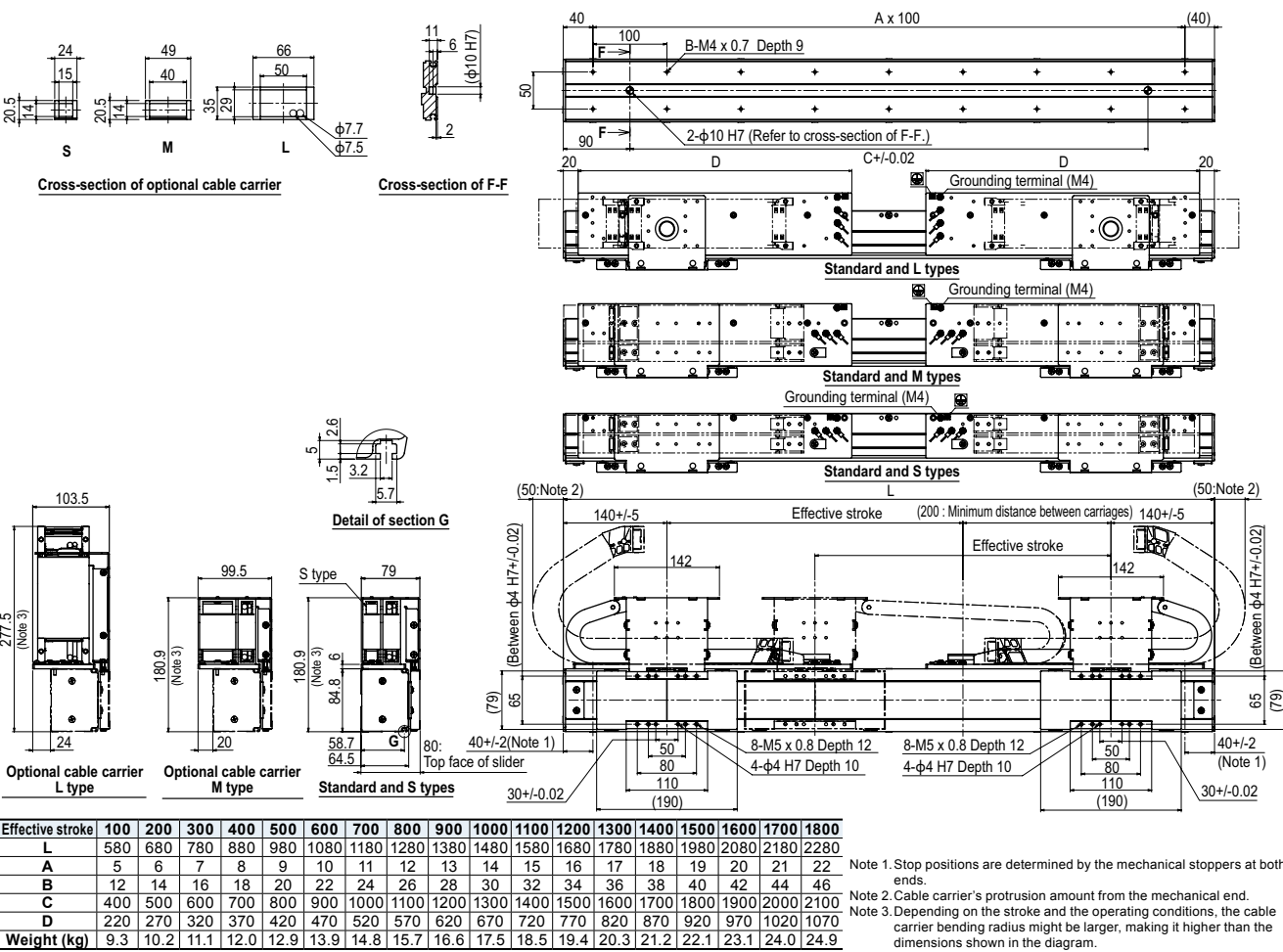




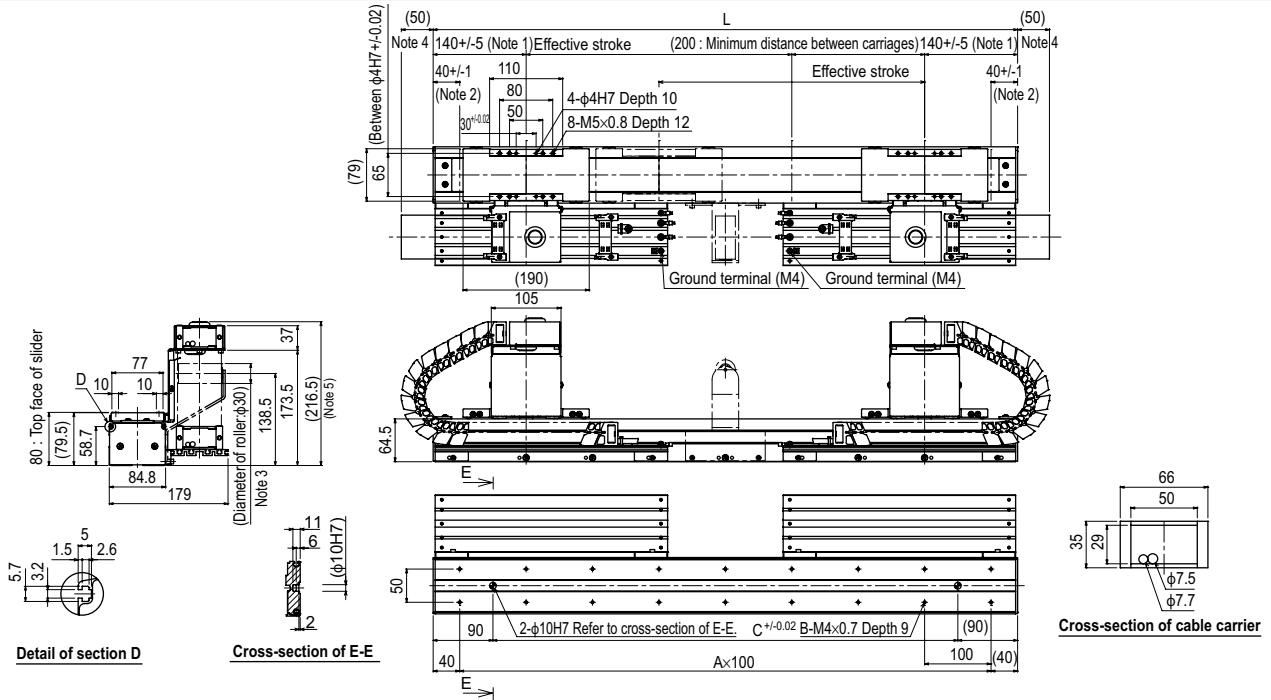
MF7D double carriage horizontal mount model **H**



MF7D double carriage wall mount model **W**



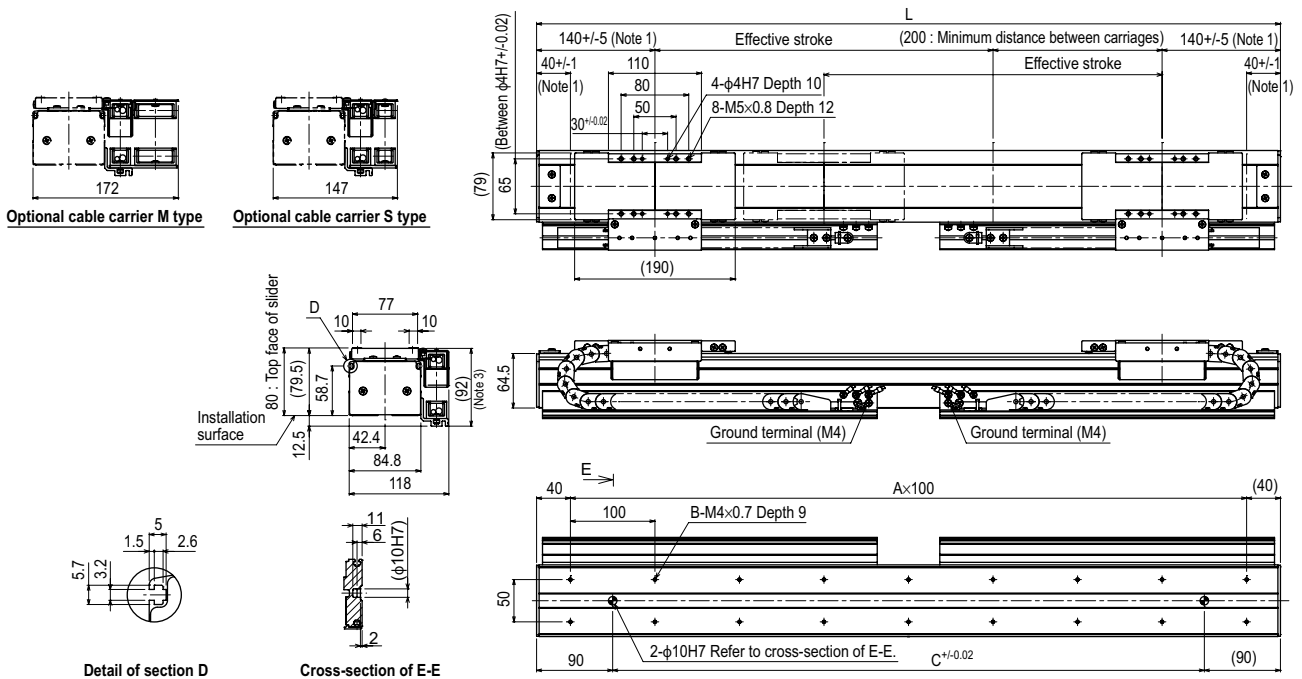
## MF7D double carriage horizontal mount model **H-L** Optional L-type cable carrier



Note 1. Position of the table slider when returned to the origin.  
 Note 2. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 3. For models with a 3,000mm or longer stroke, a roller is installed to prevent the cable carrier from sagging.  
 Note 4. Protrusion is the distance the cable carrier extends from the edge of the unit.  
 Note 5. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800
<b>L</b>	580	680	780	880	980	1080	1180	1280	1380	1480	1580	1680	1780	1880	1980	2080	2180	2280	2380	2480	2580	2680	2780	2880	2980	3080	3180	3280	3380	3480	3580	3680	3780	3880	3980	4080	4180	4280
<b>A</b>	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
<b>B</b>	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86
<b>C</b>	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100
<b>Weight (kg)</b>	9.3	10.2	11.1	12.0	12.9	13.9	14.8	15.7	16.6	17.5	18.5	19.4	20.3	21.2	22.1	23.1	24.0	24.9	25.8	26.7	27.7	28.6	29.5	30.4	31.3	32.3	33.2	34.1	35.0	35.9	36.9	37.8	38.7	39.6	40.5	41.5	42.4	43.3

## MF7D double carriage horizontal mount model **FH** Flat type



Note 1. Position of the table slider when returned to the origin.  
 Note 2. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 3. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
<b>L</b>	580	680	780	880	980	1080	1180	1280	1380	1480	1580	1680	1780	1880	1980	2080	2180	2280	2380	2480
<b>A</b>	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
<b>B</b>	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50
<b>C</b>	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
<b>Weight (kg)</b>	9.3	10.2	11.1	12.0	12.9	13.9	14.8	15.7	16.6	17.5	18.5	19.4	20.3	21.2	22.1	23.1	24.0	24.9	25.8	26.7

Articulated robots  
**YA**

Linear conveyor  
modules  
**LCM100**

Motor-less single  
axis actuator  
**Robonity**

Compact  
single-axis robots  
**TRANSERVO**

Single-axis robots  
**FLIP-X**

Linear motor  
single-axis robots  
**PHASER**

Cartesian  
robots  
**XY-X**

SCARA  
robots  
**YK-X**

Pick & place  
robots  
**YP-X**

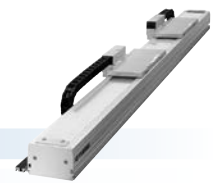
**CLEAN**

**CONTROLLER**

**INFORMATION**

# MF15/MF15D

Can be used for wall-mount



## Ordering method

Single carriage model

<b>MF15</b>		<b>TSP</b>		<b>SR1-P</b>		<b>RDV-P</b>				
<b>Model</b> MF15: Incremental MF15A: Semi-absolute <sup>Note 1</sup>	<b>Cable carrier entry location</b> RH: Horizontal, right LH: Horizontal, left RW: Wall mount, right LW: Wall mount, left	<b>Optional cable carrier for users<sup>Note 2</sup></b> No entry: None S: S type M: M type L: L type	<b>Origin position change</b> Horizontal: No entry: L side (Standard) Z: R side Wall: No entry: R side (Standard) Z: L side	<b>Grease type</b> No entry: Standard GC: Clean	<b>Stroke</b> Horizontal: 100 to 4000 (100mm pitch) 100 to 2000 (100mm pitch) Wall: 100 to 2000 (100mm pitch)	<b>Cable length<sup>Note 3</sup></b> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 4</sup>	<b>Positioner<sup>Note 5</sup></b> TS-P	<b>Driver: Power-supply voltage / Power capacity</b> 110: 100V/200W 210: 200V/200W	<b>LCD monitor</b> No entry: None L: With LCD	<b>I/O selection</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ GW: No I/O board <sup>Note 5</sup>
		<b>Controller</b>		<b>10</b>		<b>RBR1</b>				
		<b>10. 200W</b>		<b>Usable for CE</b> No entry: Standard E: CE marking		<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS				
		<b>2</b>		<b>10</b>		<b>Regenerative unit</b>				
		<b>AC200V</b>		<b>10. 200W or less</b>						

Note 1. For the details of the semi-absolute model, please refer to P.39. RDV-P has an incremental model only.  
 Note 2. For models with a 2,100mm or longer stroke, optional L type cable carriers can only be used.  
 Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 4. If a flexible cable is needed for the SR1-P, TS-P, or RDV-P, then select 3K/5K/10K. On the RCX221, the standard cable is a flexible cable, so enter 3L/5L/10L when ordering.  
 Note 5. These controllers can be mounted on DIN rails. See P.522 for details.  
 Note 6. Select this selection when using the gateway function. For details, see P.66.  
 Note. It is possible to provide the model without a cable carrier. To find information on wiring (cable terminals) within the cable carrier see P.622.

Double carriage model

<b>MF15D</b>		<b>Controller</b>	
<b>Model</b> MF15D: Incremental MF15AD: Semi-absolute <sup>Note 1</sup>	<b>Installing direction</b> H: Horizontal installation W: Wall mount installation	<b>Optional cable carrier for users<sup>Note 2</sup></b> No entry: None S: S type M: M type L: L type	<b>Stroke</b> Horizontal: 100 to 3800 (100mm pitch) 100 to 1800 (100mm pitch) Wall: 100 to 1800 (100mm pitch)
		<b>Grease type</b> No entry: Standard GC: Clean	<b>Cable length</b> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 4</sup>
		<b>Controller</b> RCX320 RCX221 SR1-P (2 units) TS-P (2 units) RDV-P (2 units)	

Note. Specify various controller setting items.

## Specifications

Model	MF15	MF15D
<b>Driving method</b>	Steel cored linear motor with falt magnet	
<b>Repeatability (µm)</b>	+/-5	
<b>Scale (µm)</b>	Magnetic type: resolution of 1	
<b>Maximum speed<sup>Note 2</sup> (mm/sec)</b>	2500	
<b>Rated thrust (N)</b>	54	
<b>Maximum payload<sup>Note 1</sup> (kg)</b>	30	
<b>Stroke (mm)</b>	Horizontal	100 to 4000 (100mm pitch) / 100 to 3800 (100mm pitch)
	Wall mount	100 to 2000 (100mm pitch) / 100 to 1800 (100mm pitch)
<b>Linear guide</b>	4 rows of circular arc grooves x 2 rail	
<b>Maximum cross-section outside dimensions (mm)</b>	W100 x H80 (except the cable carrier section)	
<b>Total length (mm)</b>	Stroke+260	Stroke+460
<b>Cable length (m)</b>	Standard: 3.5 / Option: 5,10	

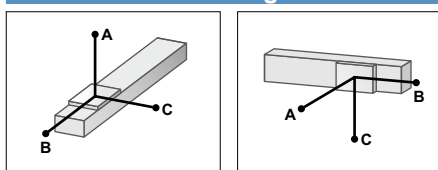
Note. A vertical model (with brake) is not available with the PHASER series. Note. The basic specifications of semi-absolute model are the same as those of the incremental model.

Note 1. Payload per carrier. When the payload exceeds 15kg, please consult our sales office or sales representative.

Note 2. Table of maximum speed

Payload (kg)	Maximum speed (mm/s)
15 or less	2500
20	2200
25	1800
30	1500

## Allowable overhang



Horizontal installation (Unit: mm)

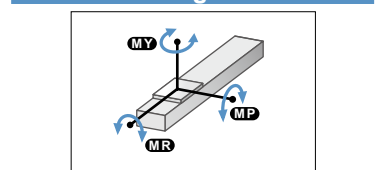
	A	B	C
5kg	3000	3000	915
10kg	2604	1542	481
15kg	2368	1051	340
20kg	1820	600	260
25kg	1470	450	175
30kg	1250	310	145

Wall installation (Unit: mm)

	A	B	C
5kg	865	1880	3060
10kg	410	905	2115
15kg	255	575	1910
20kg	170	410	1780
25kg	120	295	1660
30kg	90	215	1440

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

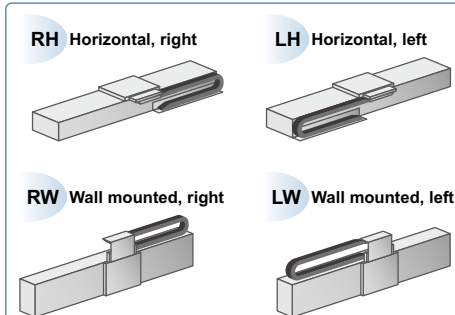


	MY	MP	MR
(Unit: N·m)	290	291	256

## Controller

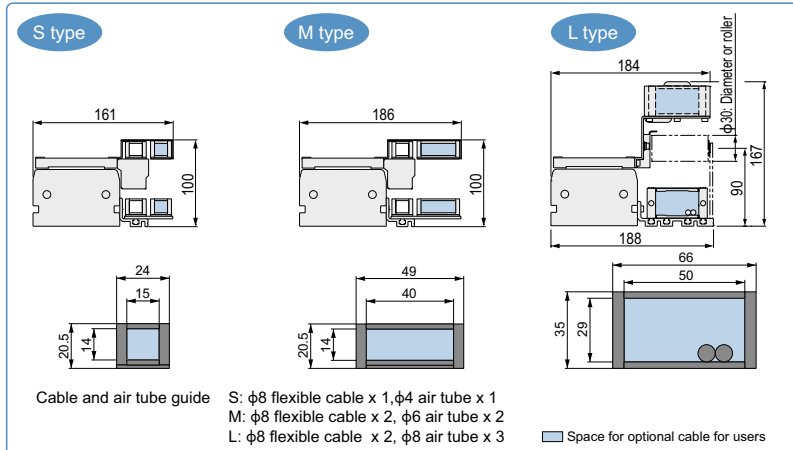
Controller	Operating method
SR1-P10	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX320 RCX221 RCX340	I/O point trace / Remote command
TS-P110 TS-P210	Pulse train control
RDV-P210-RBR1	

## Cable carrier entry location



Note. Be sure to install in the direction as specified (in cable carrier take-out direction drawing and various specification drawings) individually. Installation in any other way will cause a failure. For requirement of installation in any way other than the above standard installation, please consult YAMAHA as special arrangement will be available.

## Optional cable carrier for users

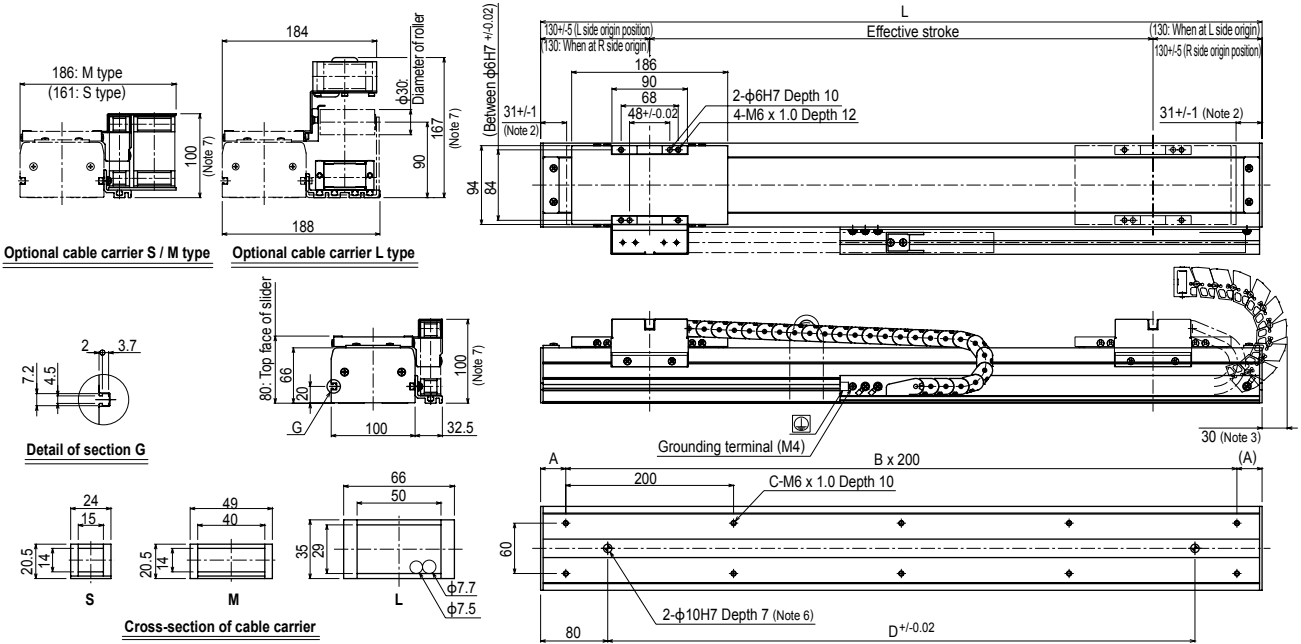


Cable and air tube guide

S: φ8 flexible cable x 1, φ4 air tube x 1  
 M: φ8 flexible cable x 2, φ6 air tube x 2  
 L: φ8 flexible cable x 2, φ8 air tube x 3

Space for optional cable for users

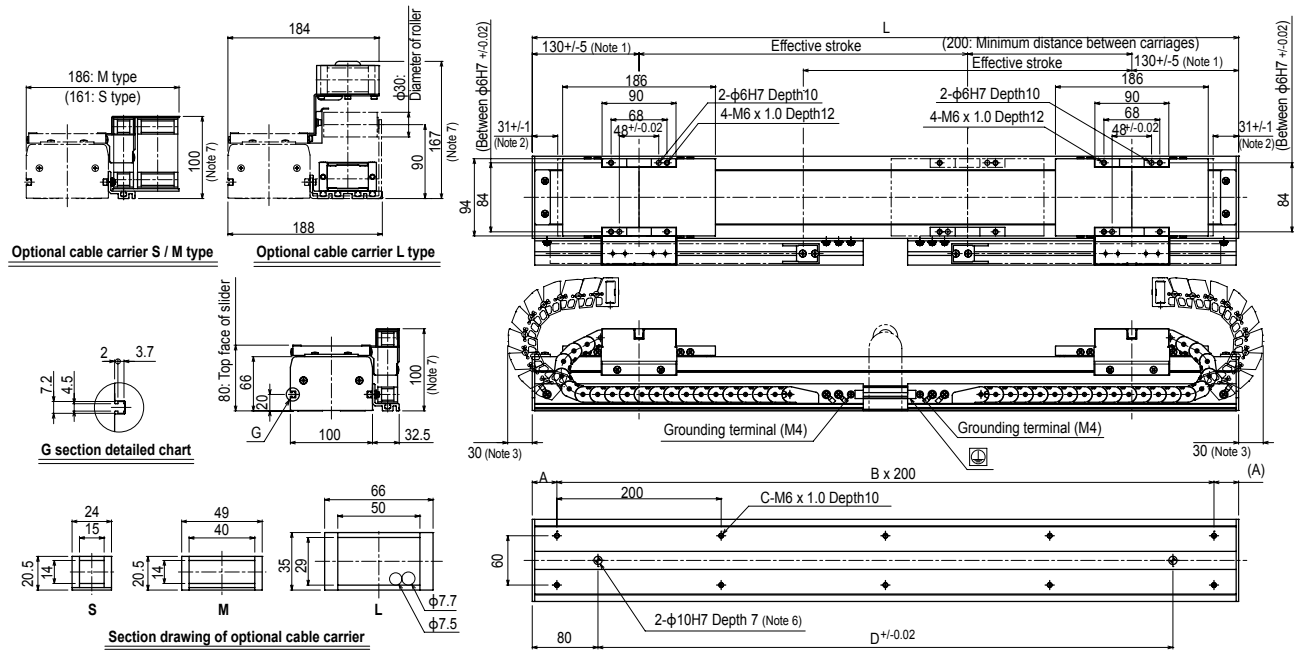
MF15 single carriage horizontal mount model **RH**



Note 1. Position of the table slider when returned to the origin.  
 Note 2. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 3. Protrusion is the distance the cable carrier extends from the edge of unit when an optional L type cable carrier is used.  
 Note 4. For models with a 2,100mm or longer stroke, optional L type cable carriers can only be used.  
 Note 5. For models with a 3,000mm or longer stroke and an optional L type cable carrier, a roller is installed to prevent the cable carrier from sagging.  
 Note 6. When using  $\phi 10$  H7 hole, do not insert the pin more than the depth stated in the drawing. Otherwise, the motor may break.  
 Note 7. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000		
L	360	460	560	660	760	860	960	1060	1160	1260	1360	1460	1560	1660	1760	1860	1960	2060	2160	2260	2360	2460	2560	2660	2760	2860	2960	3060	3160	3260	3360	3460	3560	3660	3760	3860	3960	4060	4160	4260		
A	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30
B	1	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	20	21	21		
C	4	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	
D	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100		
Weight (kg)	6.3	7.3	8.3	9.3	10.3	11.3	12.3	13.3	14.3	15.4	16.4	17.4	18.4	19.4	20.4	21.4	22.4	23.4	24.4	25.4	26.4	27.4	28.4	29.4	30.4	31.4	32.4	33.4	34.4	35.4	36.4	37.4	38.4	39.4	40.4	41.4	42.4	43.4	44.4	45.4	46.4	

MF15D double carriage horizontal mount model **H**



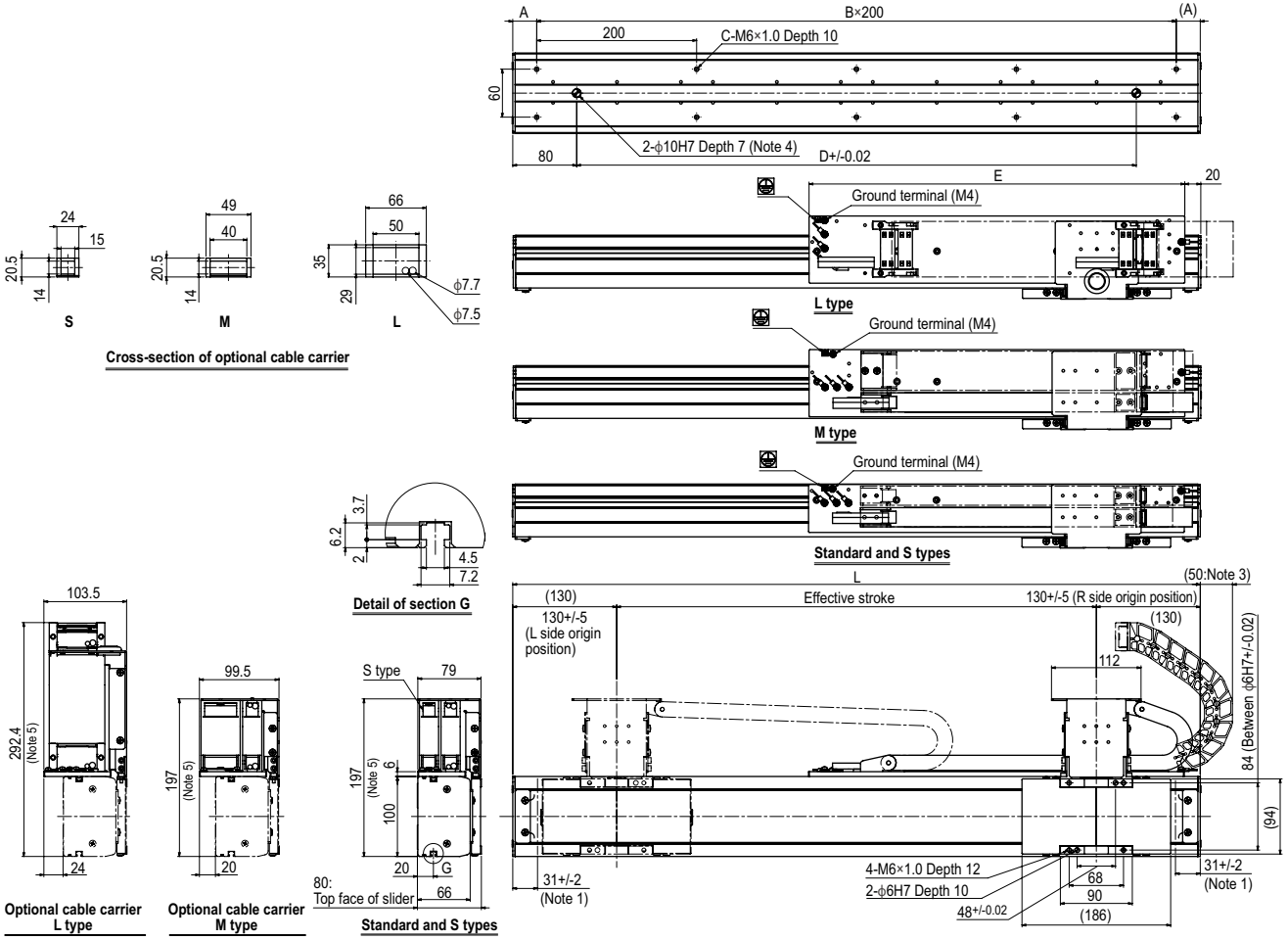
Note 1. Position of the table slider when returned to the origin.  
 Note 2. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 3. Protrusion is the distance the cable carrier extends from the edge of unit when an optional L type cable carrier is used.  
 Note 4. For models with a 2,100mm or longer stroke, optional L type cable carriers can only be used.  
 Note 5. For models with a 3,000mm or longer stroke and an optional L type cable carrier, a roller is installed to prevent the cable carrier from sagging.  
 Note 6. When using  $\phi 10$  H7 hole, do not insert the pin more than the depth stated in the drawing. Otherwise, the motor may break.  
 Note 7. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000
L	560	660	760	860	960	1060	1160	1260	1360	1460	1560	1660	1760	1860	1960	2060	2160	2260	2360	2460	2560	2660	2760	2860	2960	3060	3160	3260	3360	3460	3560	3660	3760	3860	3960	4060	4160	4260		
A	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30
B	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	20	21	21	
C	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	
D	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100		
Weight (kg)	10.3	11.5	12.6	13.7	14.8	16.0	17.1	18.2	19.3	20.5	21.6	22.7	23.8	24.9	26.1	27.2	28.3	29.5	30.6	31.7	32.8	33.9	35.1	36.2	37.3	38.4	39.5	40.6	41.7	42.8	43.9	45.0	46.1	47.2	48.3	49.4	50.5	51.6	52.7	

Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis actuator  
**Robonity**  
 Compact single-axis robots  
**TRANSEVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XX-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
 CLEAN  
 CONTROLLER INFORMATION



## MF15 single carriage wall mount model RW



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. The origin is set on the R side at the time of shipment. It can be changed to the L side by parameter setting.  
 Note 3. Protrusion is the distance the cable carrier extends from the edge of unit when an optional L type cable carrier is used.  
 Note 4. When using φ10 H7 hole, do not insert the pin more than the depth stated in the drawing. Otherwise, the motor may break.  
 Note 5. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
L	360	460	560	660	760	860	960	1060	1160	1260	1360	1460	1560	1660	1760	1860	1960	2060	2160	2260
A	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30	80	30
B	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11
C	4	6	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24
D	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100
E	220	270	320	370	420	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120	1170
Weight (kg)	6.3	7.3	8.3	9.3	10.3	11.3	12.3	13.3	14.3	15.4	16.4	17.4	18.4	19.4	20.4	21.4	22.4	23.4	24.4	25.4



# MF20/MF20D

Can be used for wall-mount



## Ordering method

Single carriage model

**MF20**

Model	Cable carrier entry location	Optional cable carrier for users <sup>Note 2</sup>	Origin position change	Grease type	Stroke	Cable length
MF20: Incremental MF20AD: Semi-absolute <sup>Note 1</sup>	RH: Horizontal, right LH: Horizontal, left RW: Wall mount, right LW: Wall mount, left	No entry: None S: S type M: M type L: L type	Horizontal No entry: L side (Standard) Z: R side Wall No entry: R side (Standard) Z: L side	No entry: Standard GC: Clean	150 to 4050 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 4</sup>

**TSP**

Positioner	Driver: Power-supply voltage / Power capacity	Regenerative unit	LCD monitor	I/O selection
Note 5 TS-P	110: 100V/200W 210: 200V/200W	R: With RGT	No entry: None L: With LCD	N: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ GW: No I/O board <sup>Note 6</sup>

**SR1-P 10**

Controller	Driver: Power capacity	Usable for CE	Regenerative unit	I/O selection
	10: 200W	No entry: Standard E: CE marking	R: With RGT1	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS

**RDV-P 2 10 RBR1**

Driver	Power-supply voltage	Driver: Power capacity	Regenerative unit
	2: AC200V	10: 200W or less	

Note 1. For the details of the semi-absolute model, please refer to P.39. RDV-P has an incremental model only.  
 Note 2. For models with a 2,050mm or longer stroke, optional L type cable carriers can only be used.  
 Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 4. If a flexible cable is needed for the SR1-P, TS-P, or RDV-P, then select 3K/5K/10K. On the RCX221, the standard cable is a flexible cable, so enter 3L/5L/10L when ordering.  
 Note 5. These controllers can be mounted on DIN rails. See P.522 for details.  
 Note 6. Select this selection when using the gateway function. For details, see P.66.  
 Note. It is possible to provide the model without a cable carrier. To find information on wiring (cable terminals) within the cable carrier see P.622.

Double carriage model

**MF20D**

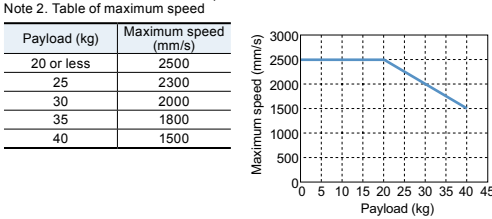
Model	Installing direction	Optional cable carrier for users <sup>Note 2</sup>	Grease type	Stroke	Cable length	Controller
MF20D: Incremental MF20AD: Semi-absolute <sup>Note 1</sup>	H: Horizontal installation W: Wall mount installation	No entry: None S: S type M: M type L: L type	No entry: Standard GC: Clean	150 to 3850 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 4</sup>	RCX320 RCX221 SR1-P (2 units) TS-P (2 units) RDV-P (2 units)

Note. Specify various controller setting items.

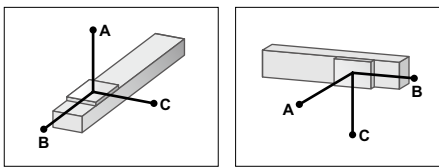
## Specifications

Model	MF20	MF20D
Driving method	Steel cored linear motor with falt magnet	
Repeatability (µm)	+/-5	
Scale (µm)	Magnetic type: resolution of 1	
Maximum speed <sup>Note 2</sup> (mm/sec)	2500	
Rated thrust (N)	86	
Maximum payload <sup>Note 1</sup> (kg)	40	
Stroke (mm)	150 to 4050 (100mm pitch)	150 to 3850 (100mm pitch)
Linear guide	4 rows of circular arc grooves x 2 rail W150 x H80	
Maximum cross-section outside dimensions (mm)	(except the cable carrier section)	
Total length (mm)	Stroke+260	Stroke+460
Cable length (m)	Standard: 3.5 / Option: 5.10	

Note. A vertical model (with brake) is not available with the PHASER series.  
 Note. The basic specifications of semi-absolute model are the same as those of the incremental model.  
 Note 1. Payload per carrier. When the payload exceeds 20kg, please consult our sales office or sales representative.  
 Note 2. Table of maximum speed



## Allowable overhang



	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			
	A	B	C	A	B	C	
10kg	3156	1747	1196	10kg	1220	1320	2540
15kg	2811	1176	883	15kg	870	850	2200
20kg	2679	890	717	20kg	670	610	2030
25kg	2190	720	505	25kg	485	400	1280
30kg	1830	605	370	30kg	350	325	1050
35kg	1580	525	275	35kg	265	270	890
40kg	1390	465	225	40kg	235	230	765

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

MY	MP	MR
373	373	328

(Unit: N·m)

## Controller

Controller	Operating method
SR1-P10-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX320-R RCX221-R RCX340	I/O point trace / Remote command
TS-P110-R TS-P210-R	Pulse train control

## Cable carrier entry location

**RH Horizontal, right** **LH Horizontal, left**

**RW Wall mounted, right** **LW Wall mounted, left**

Note. Be sure to install in the direction as specified (in cable carrier take-out direction drawing and various specification drawings) individually. Installation in any other way will cause a failure. For requirement of installation in any way other than the above standard installation, please consult YAMAHA as special arrangement will be available.

## Optional cable carrier for users

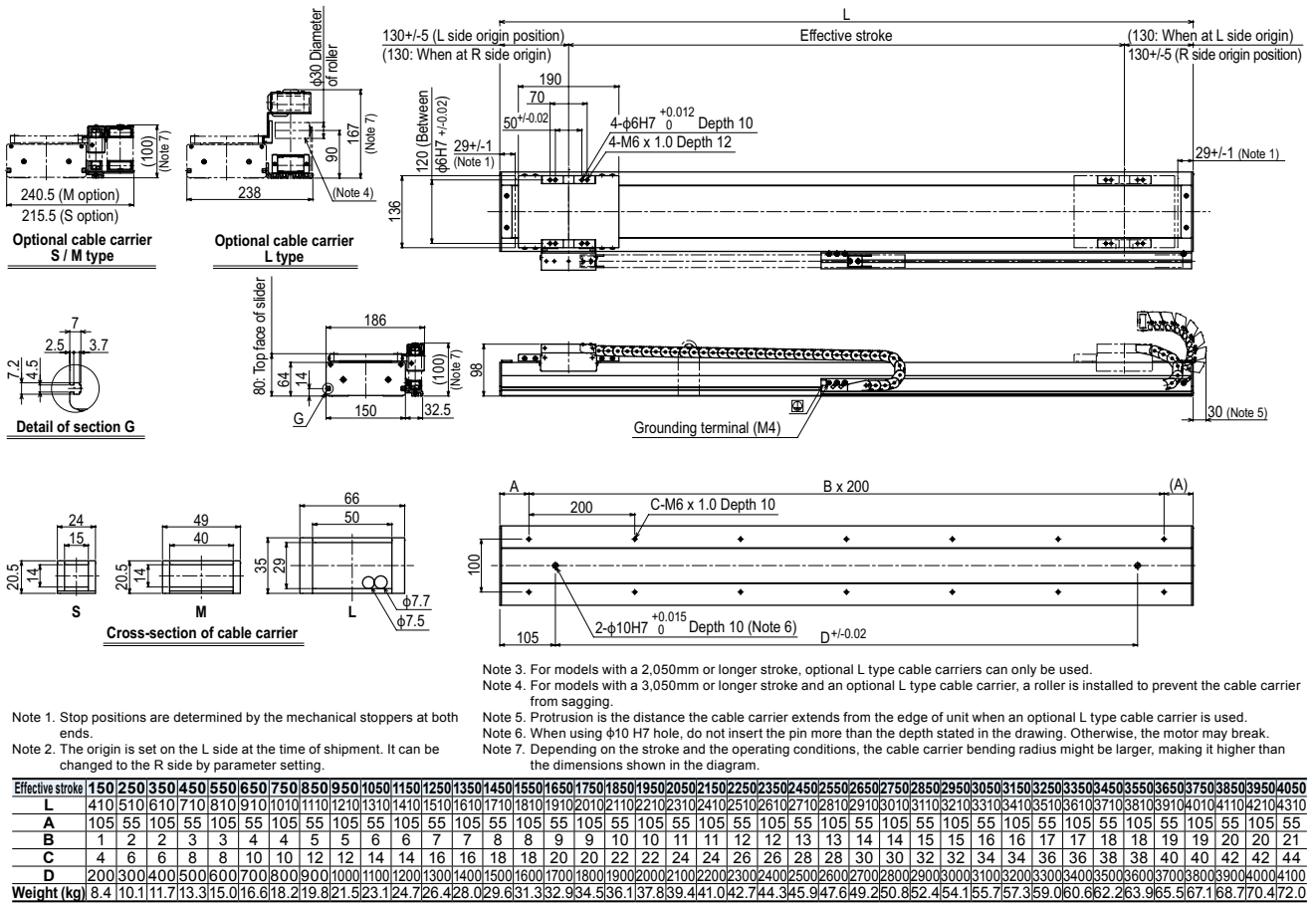
**S type** **M type** **L type**

Cable and air tube guide

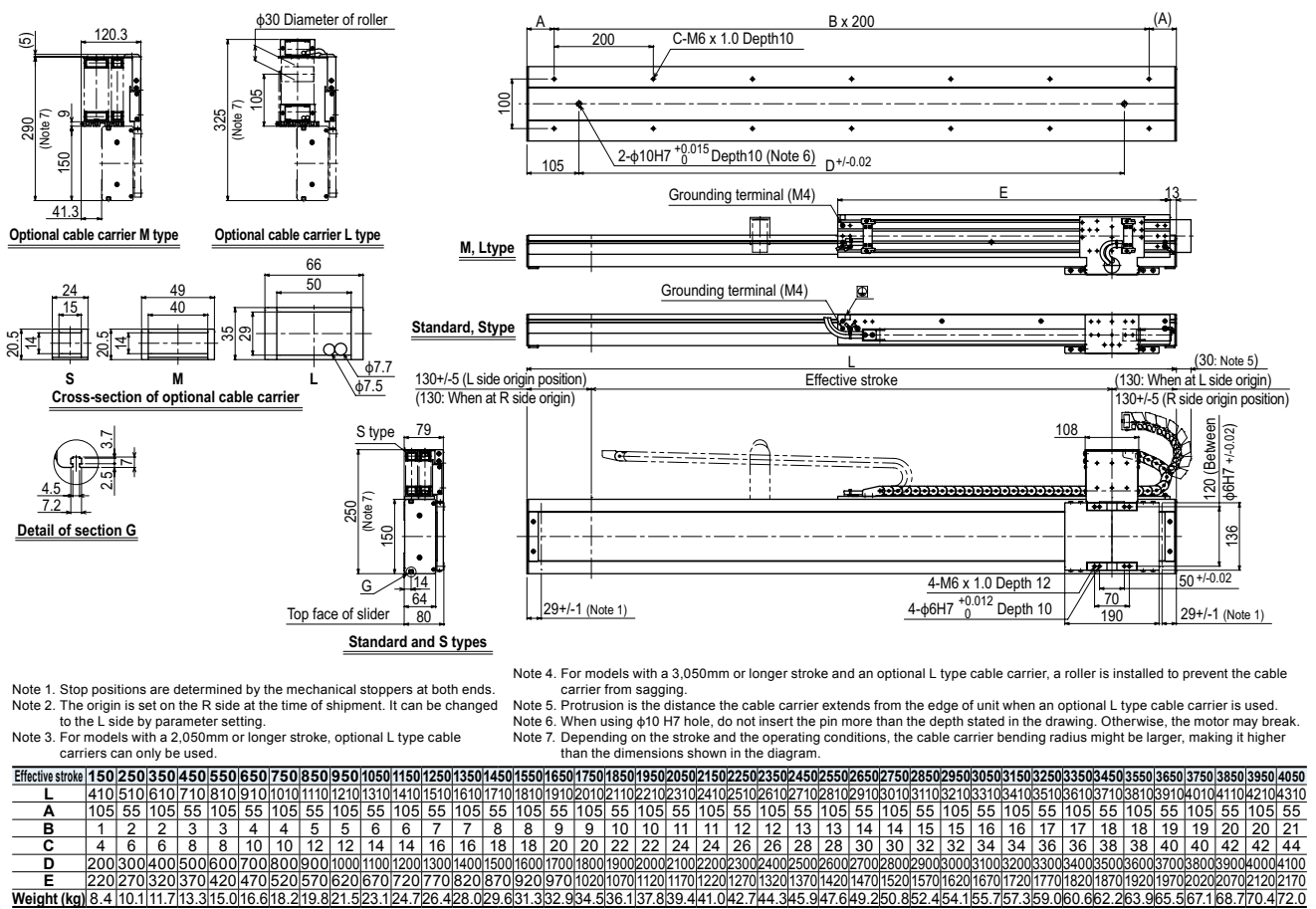
S: φ8 flexible cable x 1, φ4 air tube x 1  
 M: φ8 flexible cable x 2, φ6 air tube x 2  
 L: φ8 flexible cable x 2, φ8 air tube x 3

Space for optional cable for users

MF20 single carriage horizontal mount model **RH**

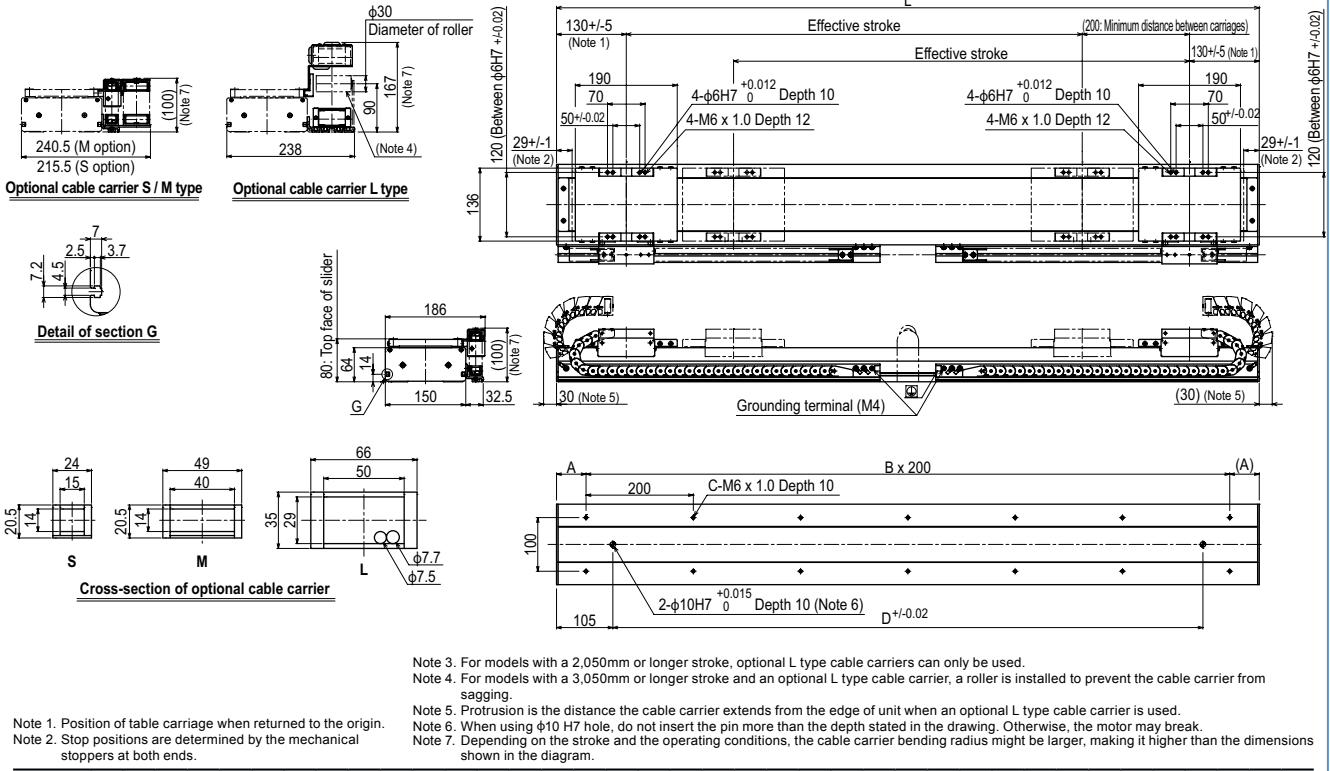


MF20 single carriage wall mount model **RW**



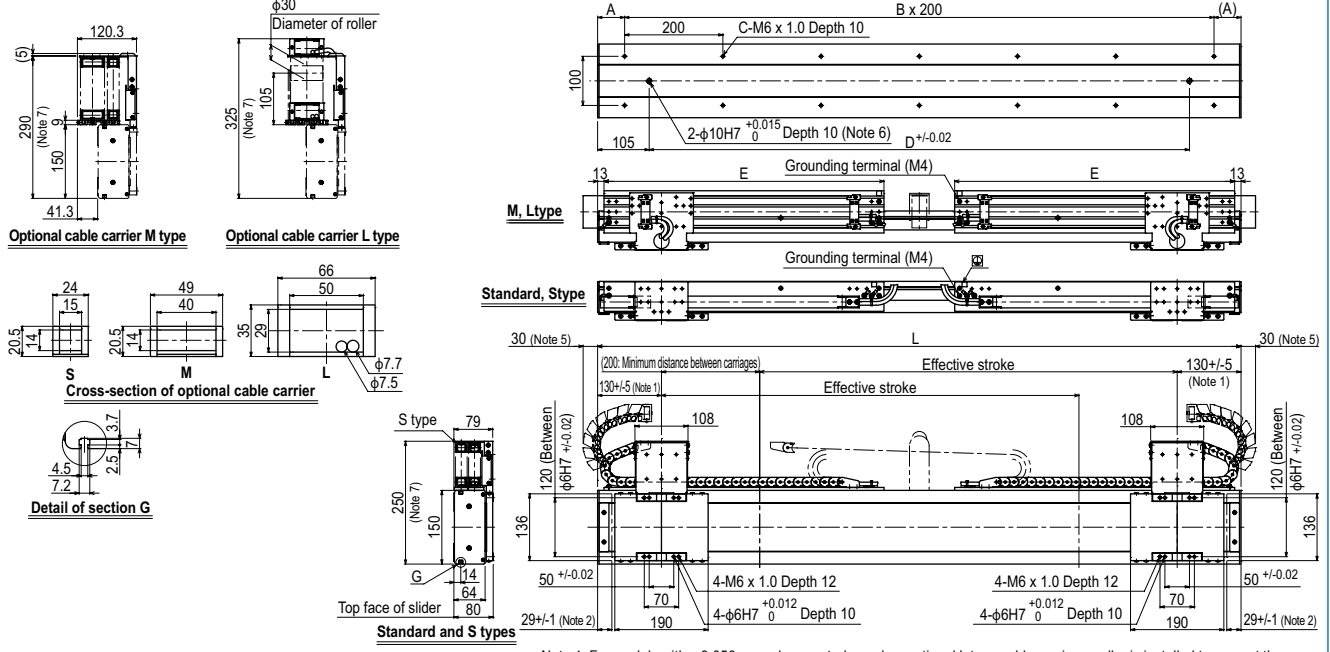
Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-assisted single-axis robots  
Robonity  
Compact axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XX-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION

## MF20D double carriage horizontal mount model H



Effective stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650	2750	2850	2950	3050	3150	3250	3350	3450	3550	3650	3750	3850		
L	610	710	810	910	1010	1110	1210	1310	1410	1510	1610	1710	1810	1910	2010	2110	2210	2310	2410	2510	2610	2710	2810	2910	3010	3110	3210	3310	3410	3510	3610	3710	3810	3910	4010	4110	4210	4310		
A	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55
B	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	20	21	21	
C	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	
D	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100		
Weight (kg)	14.9	16.6	18.3	20.0	21.7	23.5	25.2	26.9	28.6	30.3	32.0	33.7	35.4	37.1	38.8	40.5	42.2	43.9	45.6	47.3	49.0	50.7	52.4	54.1	55.8	57.5	59.2	60.9	62.6	64.3	66.0	67.7	69.4	71.1	72.8	74.5	76.2	77.9		

## MF20D double carriage wall mount model W



Effective stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650	2750	2850	2950	3050	3150	3250	3350	3450	3550	3650	3750	3850		
L	610	710	810	910	1010	1110	1210	1310	1410	1510	1610	1710	1810	1910	2010	2110	2210	2310	2410	2510	2610	2710	2810	2910	3010	3110	3210	3310	3410	3510	3610	3710	3810	3910	4010	4110	4210	4310		
A	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55
B	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	20	21	21	
C	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	
D	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100		
E	220	270	320	370	420	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120	1170	1220	1270	1320	1370	1420	1470	1520	1570	1620	1670	1720	1770	1820	1870	1920	1970	2020	2070		
Weight (kg)	14.9	16.6	18.3	20.0	21.7	23.5	25.2	26.9	28.6	30.3	32.0	33.7	35.4	37.1	38.8	40.5	42.2	43.9	45.6	47.3	49.0	50.7	52.4	54.1	55.8	57.5	59.2	60.9	62.6	64.3	66.0	67.7	69.4	71.1	72.8	74.5	76.2	77.9		



# MF30/MF30D

● Can be used for wall-mount



## Ordering method

Single carriage model

**MF30**

Model	Cable carrier entry location	Optional cable carrier for users <sup>Note 2</sup>	Origin position change	Grease type	Stroke	Cable length
MF30: Incremental MF30A: Semi-absolute <sup>Note 1</sup>	RH: Horizontal, right LH: Horizontal, left RW: Wall mount, right LW: Wall mount, left	No entry: None S: S type M: M type L: L type	No entry: L side (Standard) Z: R side No entry: R side (Standard) Z: L side	No entry: Standard GC: Clean	100 to 4000 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 4</sup>

**TSP 220 R**

Positioner	Driver: Power-supply voltage / Power capacity	Regenerative unit	LCD monitor	I/O selection
TS-P	220: 200V/400 to 600W	R: With RGT	No entry: None L: With LCD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ GW: No I/O board <sup>Note 5</sup>

**SR1-P 20 R**

Controller	Driver: Power capacity	Usable for CE	Regenerative unit	I/O selection
	20: 400 to 600W	No entry: Standard E: CE marking	R: With RGT	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PB: PROFIBUS

**RDV-P 2 RBR1**

Driver	Power-supply voltage	Driver: Power capacity	Regenerative unit
	2: AC200V	20: 400W or less	

- Note 1. For the details of the semi-absolute model, please refer to P.39. RDV-P has an incremental model only.
- Note 2. For models with a stroke of 2100 or longer (2050 or longer for double carriage models), only the optional L type cable carriers can be used.
- Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.
- Note 4. If a flexible cable is needed for the SR1-P, TS-P, or RDV-P, then select 3K/5K/10K. On the RCX221HP, the standard cable is a flexible cable, so enter 3L/5L/10L when ordering.
- Note 5. These controllers can be mounted on DIN rails. See P.522 for details.
- Note 6. Select this selection when using the gateway function. For details, see P.66.
- Note. It is possible to provide the model without a cable carrier. To find information on wiring (cable terminals) within the cable carrier see P.622.

Double carriage model

**MF30D**

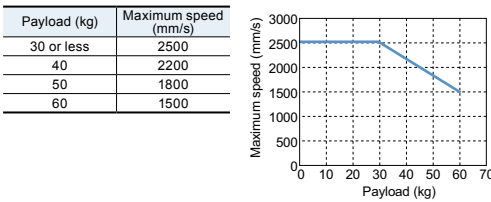
Model	Installing direction	Optional cable carrier for users <sup>Note 2</sup>	Grease type	Stroke	Cable length	Controller
MF30D: Incremental MF30AD: Semi-absolute <sup>Note 1</sup>	H: Horizontal installation W: Wall mount installation	No entry: None S: S type M: M type L: L type	No entry: Standard GC: Clean	150 to 3750 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 4</sup>	RCX320 RCX221HP SR1-P (2 units) TS-P (2 units) RDV-P (2 units)

Note. Specify various controller setting items.

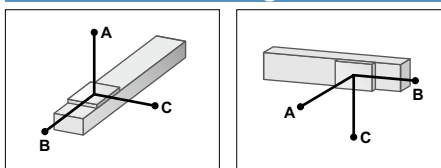
## Specifications

Model	MF30	MF30D
Driving method	Steel cored linear motor with falt magnet	
Repeatability (μm)	+/-5	
Scale (μm)	Magnetic type: resolution of 1	
Maximum speed <sup>Note 2</sup> (mm/sec)	2500	
Rated thrust (N)	125	
Maximum payload <sup>Note 1</sup> (kg)	60	
Stroke (mm)	100 to 4000 (100mm pitch)	150 to 3750 (100mm pitch)
Linear guide	4 rows of circular arc grooves x 2 rail	
Maximum cross-section outside dimensions (mm)	W150 x H80 (except the cable carrier section)	
Total length (mm)	Stroke+310	Stroke+560
Cable length (m)	Standard: 3.5 / Option: 5,10	

- Note. A vertical model (with brake) is not available with the PHASER series.
- Note. The basic specifications of semi-absolute model are the same as those of the incremental model.
- Note 1. Payload per carrier. When the payload exceeds 30kg, please consult our sales office or sales representative.
- Note 2. Table of maximum speed



## Allowable overhang



	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)		
	A	B	C	A	B	C
10kg	3364	2485	1284	1290	1320	2730
20kg	2298	1265	694	650	610	1750
30kg	2060	859	507	430	360	1460
40kg	1570	600	310	205	230	610
50kg	1265	400	180	145	175	470
60kg	1070	350	135	105	140	380

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

MY	MP	MR
373	373	328

(Unit: N-m)

## Controller

Controller	Operating method
SR1-P20-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX320-R RCX221HP-R RCX340	I/O point trace / Remote command
TS-P220-R	Pulse train control
RDV-P220-RBR1	

## Cable carrier entry location

**RH Horizontal, right**      **LH Horizontal, left**

**RW Wall mounted, right**      **LW Wall mounted, left**

Note. Be sure to install in the direction as specified (in cable carrier take-out direction drawing and various specification drawings) individually. Installation in any other way will cause a failure. For requirement of installation in any way other than the above standard installation, please consult YAMAHA as special arrangement will be available.

## Optional cable carrier for users

**S type**      **M type**      **L type**

Cable and air tube guide

S: φ8 flexible cable x 1, φ4 air tube x 1  
M: φ8 flexible cable x 2, φ6 air tube x 2  
L: φ8 flexible cable x 2, φ8 air tube x 3

Space for optional cable for users

Controller

**SR1-P ▶ 540**   **RCX320 ▶ 548**   **RCX221 ▶ 558**   **TS-P ▶ 514**   **RDV-P ▶ 528**

Articulated robots  
YA

Linear conveyer  
modules  
LCM100

Motor-less single  
axis actuator  
Robonity

Compact  
single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor  
single-axis robots  
PHASER

Cartesian  
robots  
XY-X

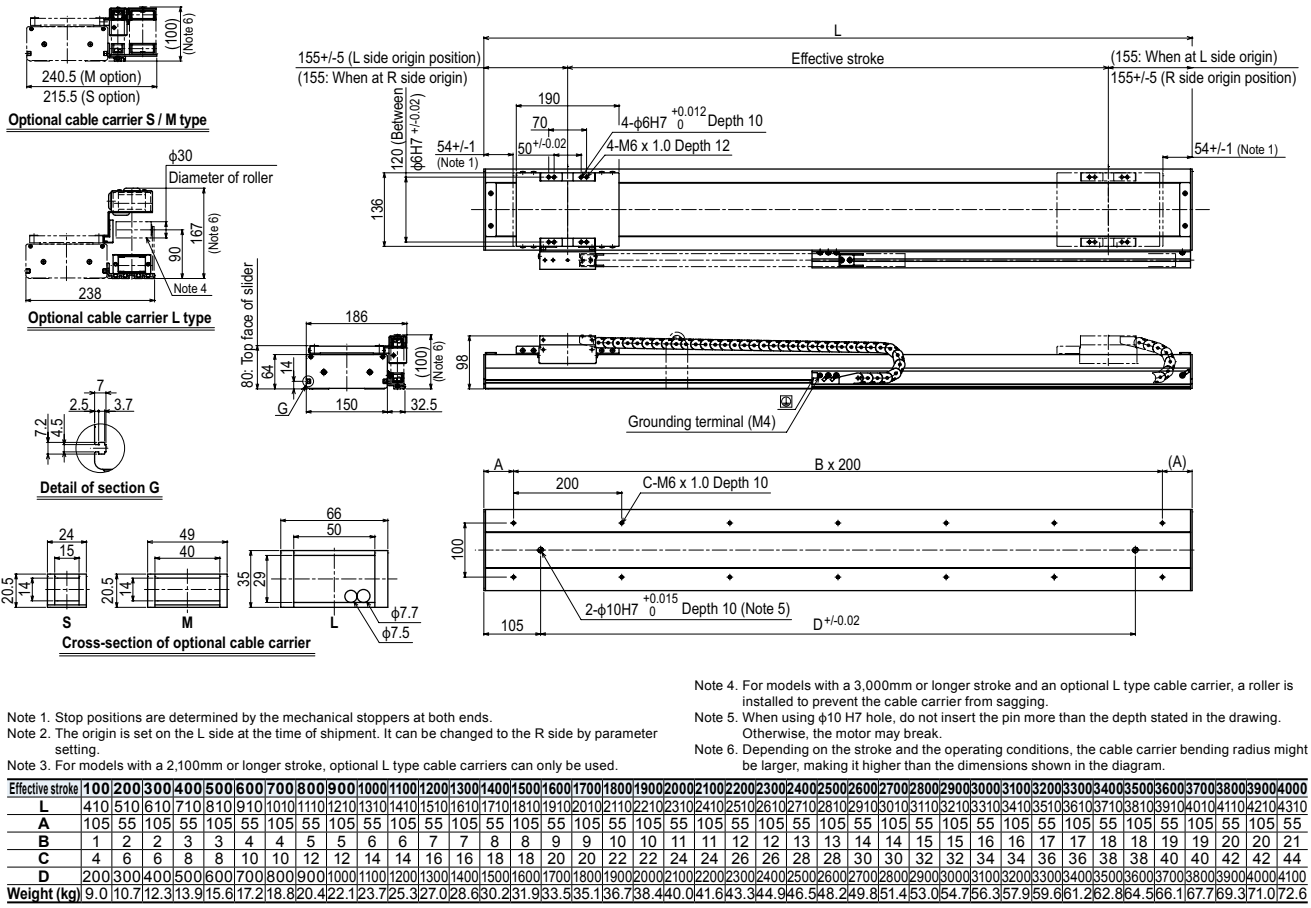
SCARA  
robots  
YK-X

Pick & place  
robots  
YP-X

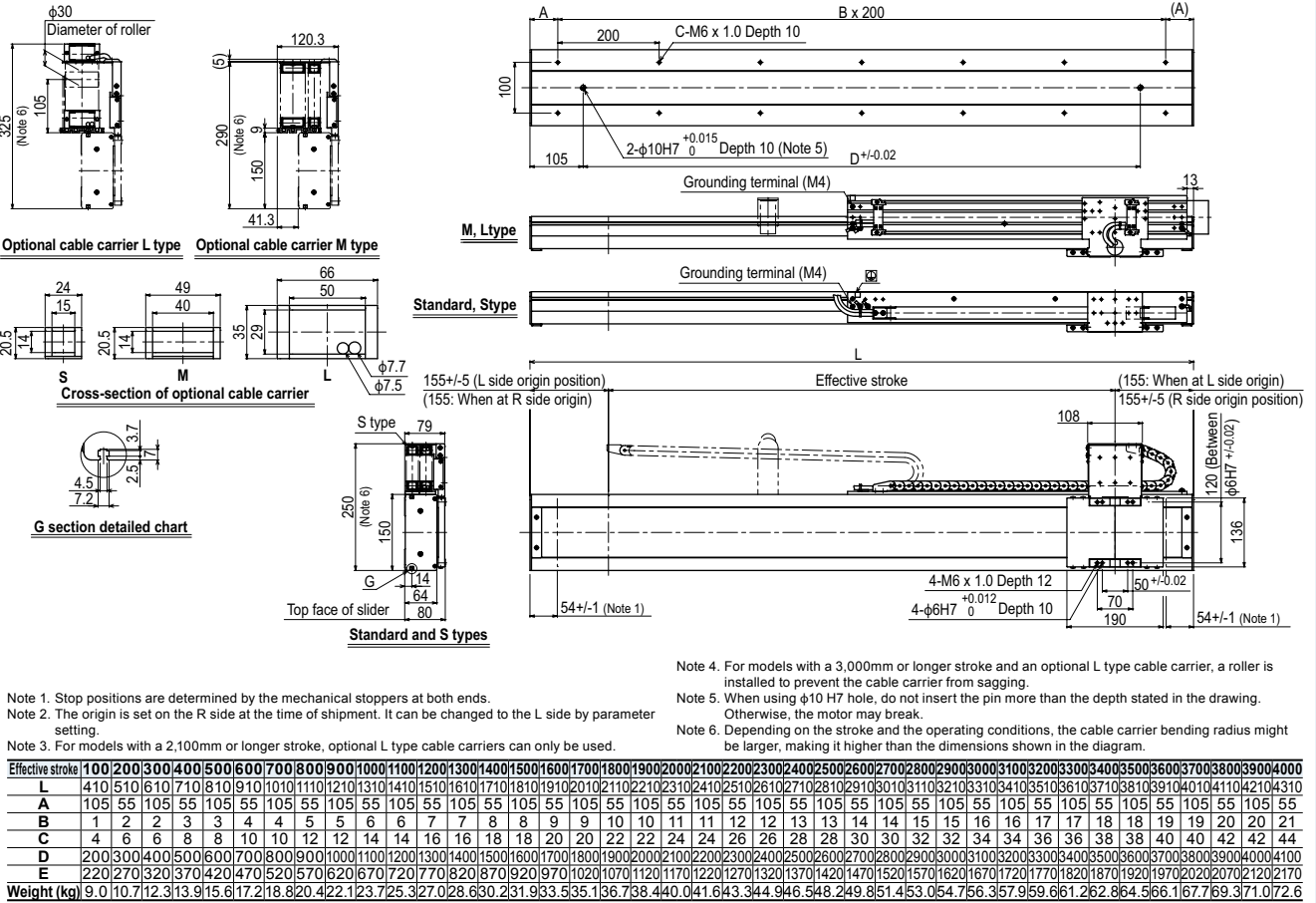
CLEAN

CONTROLLER  
INFORMATION

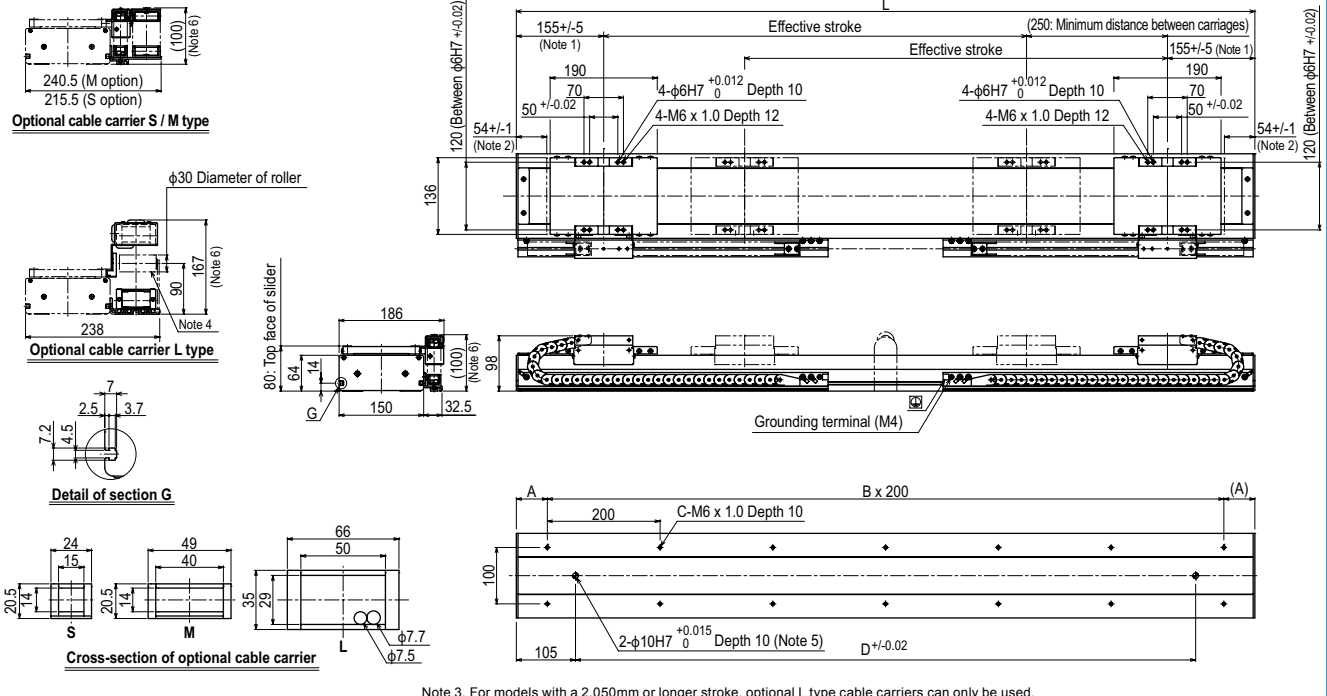
## MF30 single carriage horizontal mount model RH



## MF30 single carriage wall mount model RW



MF30D double carriage horizontal mount model **H**

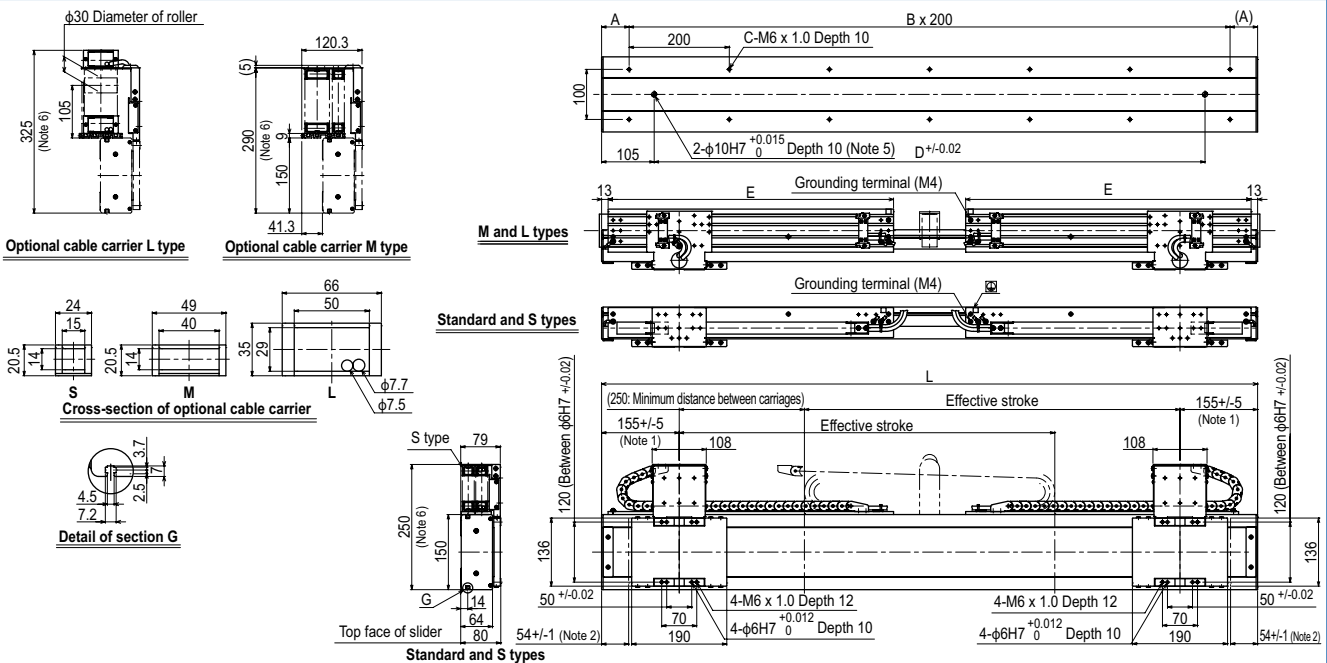


Note 1. Position of table carriage when returned to the origin.  
 Note 2. Stop positions are determined by the mechanical stoppers at both ends.

Note 3. For models with a 2,050mm or longer stroke, optional L type cable carriers can only be used.  
 Note 4. For models with a 3,050mm or longer stroke and an optional L type cable carrier, a roller is installed to prevent the cable carrier from sagging.  
 Note 5. When using  $\phi 10$  H7 hole, do not insert the pin more than the depth stated in the drawing. Otherwise, the motor may break.  
 Note 6. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650	2750	2850	2950	3050	3150	3250	3350	3450	3550	3650	3750		
L	710	810	910	1010	1110	1210	1310	1410	1510	1610	1710	1810	1910	2010	2110	2210	2310	2410	2510	2610	2710	2810	2910	3010	3110	3210	3310	3410	3510	3610	3710	3810	3910	4010	4110	4210	4310		
A	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55
B	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	20	21	21	
C	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	
D	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100	4200	
Weight (kg)	17.6	19.3	21.0	22.8	24.5	26.2	27.9	29.6	31.3	33.0	34.7	36.3	38.0	39.7	41.4	43.1	44.8	46.5	48.2	49.9	51.6	53.3	55.0	56.7	58.4	60.1	61.8	63.5	65.2	66.9	68.6	70.3	72.0	73.7	75.4	77.1	78.8	80.5	

MF30D double carriage wall mount model **W**



Note 1. Position of table carriage when returned to the origin.  
 Note 2. Stop positions are determined by the mechanical stoppers at both ends.

Note 3. For models with a 2,050mm or longer stroke, optional L type cable carriers can only be used.  
 Note 4. For models with a 3,050mm or longer stroke and an optional L type cable carrier, a roller is installed to prevent the cable carrier from sagging.  
 Note 5. When using  $\phi 10$  H7 hole, do not insert the pin more than the depth stated in the drawing. Otherwise, the motor may break.  
 Note 6. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650	2750	2850	2950	3050	3150	3250	3350	3450	3550	3650	3750		
L	710	810	910	1010	1110	1210	1310	1410	1510	1610	1710	1810	1910	2010	2110	2210	2310	2410	2510	2610	2710	2810	2910	3010	3110	3210	3310	3410	3510	3610	3710	3810	3910	4010	4110	4210	4310		
A	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55	105	55
B	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	17	17	18	18	19	19	20	20	21	21	
C	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	36	38	38	40	40	42	42	44	44	
D	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100	4200	
E	220	270	320	370	420	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120	1170	1220	1270	1320	1370	1420	1470	1520	1570	1620	1670	1720	1770	1820	1870	1920	1970	2020		
Weight (kg)	17.6	19.3	21.0	22.8	24.5	26.2	27.9	29.6	31.3	33.0	34.7	36.3	38.0	39.7	41.4	43.1	44.8	46.5	48.2	49.9	51.6	53.3	55.0	56.7	58.4	60.1	61.8	63.5	65.2	66.9	68.6	70.3	72.0	73.7	75.4	77.1	78.8	80.5	

# MF75/MF75D



## Ordering method

Single carriage model

### MF75

<b>Model</b> MF75: Incremental MF75A: Semi-absolute <sup>Note 1</sup>	<b>Cable carrier entry location</b> RH: Horizontal, right LH: Horizontal, left	<b>Origin position change</b> No entry: L side (Standard) Z: R side	<b>Grease type</b> No entry: Standard GC: Clean	<b>Stroke</b> 1000 to 4000 (100mm pitch)	<b>Cable length</b> <sup>Note 2</sup> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 3</sup>
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<b>TSP</b> Positioner <sup>Note 4</sup> TS-P	<b>220</b> Driver: Power-supply voltage / Power capacity 220: 200V/400 to 600W	<b>R</b> Regenerative unit R: With RGU-2	<b>LCD monitor</b> No entry: None L: With LCD	<b>I/O selection</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ GW: No I/O board <sup>Note 5</sup>
--	--	--	---	---

<b>SR1-P</b> Controller	<b>20</b> Driver: Power capacity 20: 400 to 600W	<b>R</b> Usable for CE No entry: Standard E: CE marking	<b>Regenerative unit</b> R: With RGU-2	<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS
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<b>RDV-P</b> Driver	<b>2</b> Power-supply voltage 2: AC200V	<b>25</b> Driver: Power capacity 25: 750W or less	<b>RBR2</b> Regenerative unit
------------------------	---	---	----------------------------------

- Note 1. For the details of the semi-absolute model, please refer to P.39. RDV-P has an incremental model only.
- Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.
- Note 3. If a flexible cable is needed for the SR1-P, TS-P, or RDV-P, then select 3K/5K/10K. On the RCX221HP, the standard cable is a flexible cable, so enter 3L/5L/10L when ordering.
- Note 4. These controllers can be mounted on DIN rails. See P.522 for details.
- Note 5. Select this selection when using the gateway function. For details, see P.66.
- Note. It is possible to provide the model without a cable carrier. To find information on wiring (cable terminals) within the cable carrier see P.622.

Double carriage model

<b>MF75D</b>	<b>H</b>				
<b>Model</b> MF75D: Incremental MF75AD: Semi-absolute <sup>Note 1</sup>	<b>Installing direction</b> H: Horizontal installation	<b>Grease type</b> No entry: Standard GC: Clean	<b>Stroke</b> 680 to 3680 (100mm pitch)	<b>Cable length</b> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 3</sup>	<b>Controller</b> RCX320 RCX221HP SR1-P (2 units) TS-P (2 units) RDV-P (2 units)

Note. Specify various controller setting items.

## Specifications <sup>Note</sup>

Model	MF75	MF75D
<b>Driving method</b>	Steel cored linear motor with falt magnet	
<b>Repeatability (µm)</b>	+/-5	
<b>Scale (µm)</b>	Magnetic type: resolution of 1	
<b>Maximum speed<sup>Note 2</sup> (mm/sec)</b>	2500	
<b>Rated thrust (N)</b>	260	
<b>Maximum payload<sup>Note 1</sup> (kg)</b>	160	
<b>Stroke (mm)</b>	1000 to 4000 (100mm pitch)	680 to 3680 (100mm pitch)
<b>Linear guide</b>	4 rows of circular arc grooves x 2 rail	
<b>Maximum cross-section outside dimensions (mm)</b>	W210xH100 (except the cable carrier section)	
<b>Total length (mm)</b>	Stroke+360	Stroke+680
<b>Cable length (m)</b>	Standard: 3.5 / Option: 5,10	

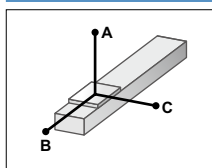
Note. A vertical model (with brake) is not available with the PHASER series.  
Note. The basic specifications of semi-absolute model are the same as those of the incremental model.

Note 1. Payload per carrier. When the payload exceeds 75kg, please consult our sales office or sales representative.

Note 2. Table of maximum speed

Payload (kg)	Maximum speed (mm/s)
75 or less	2500
90	2310
100	2200
110	2090
120	2000
130	1920
140	1840
150	1770
160	1700

## Allowable overhang <sup>Note</sup>

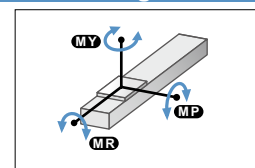


Horizontal installation (Unit: mm)

	A	B	C
20kg	3397	2841	1840
40kg	2795	1389	964
60kg	2200	530	450
80kg	1800	175	150
100kg	1500	130	110
120kg	1250	100	80
140kg	1100	80	65
160kg	950	60	50

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment



(Unit: N-m)

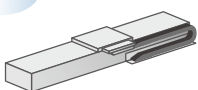
MY	MP	MR
830	831	730

## Controller

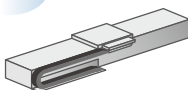
Controller	Operating method
SR1-P20-R	Programming / I/O point trace /
RCX320-R	Remote command /
RCX221HP-R	Operation using RS-232C
RCX340	communication
TS-P220-R	I/O point trace /
	Remote command
RDV-P225-RBR2	Pulse train control

## Cable carrier entry location

**RH** Horizontal, right

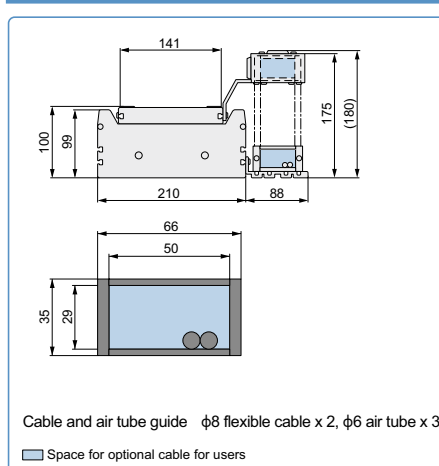


**LH** Horizontal, left

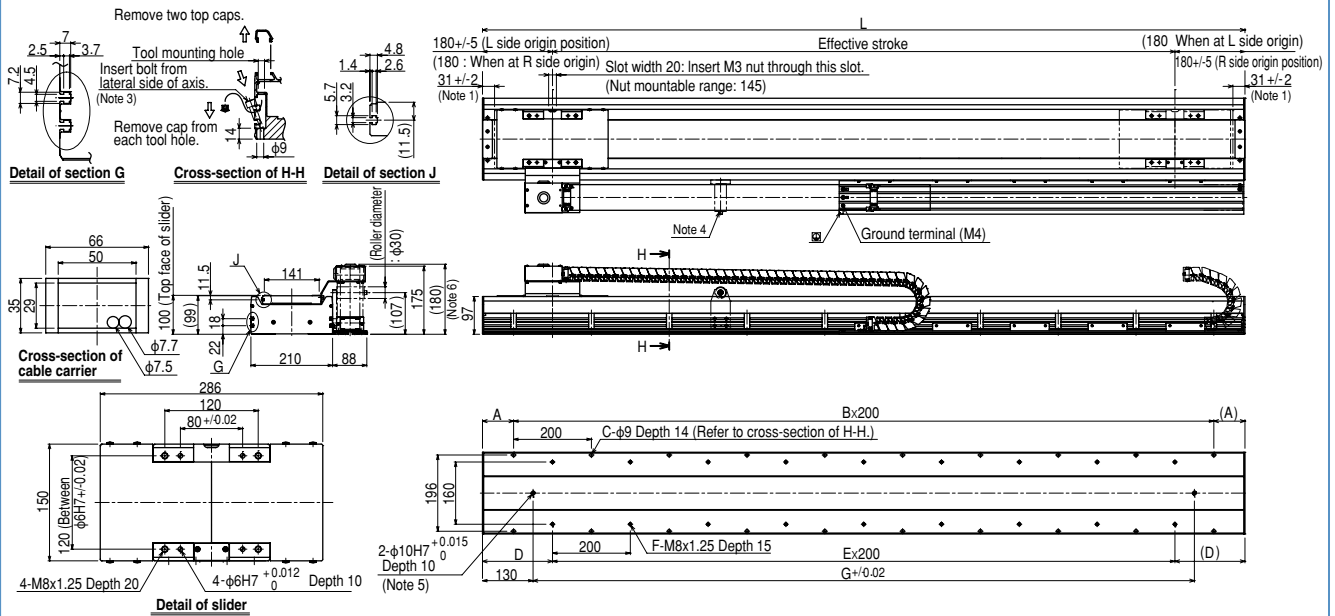


Note. Be sure to install in the direction as specified (in cable carrier take-out direction drawing and various specification drawings) individually. Installation in any other way will cause a failure. For requirement of installation in any way other than the above standard installation, please consult YAMAHA as special arrangement will be available.

## Cable carrier



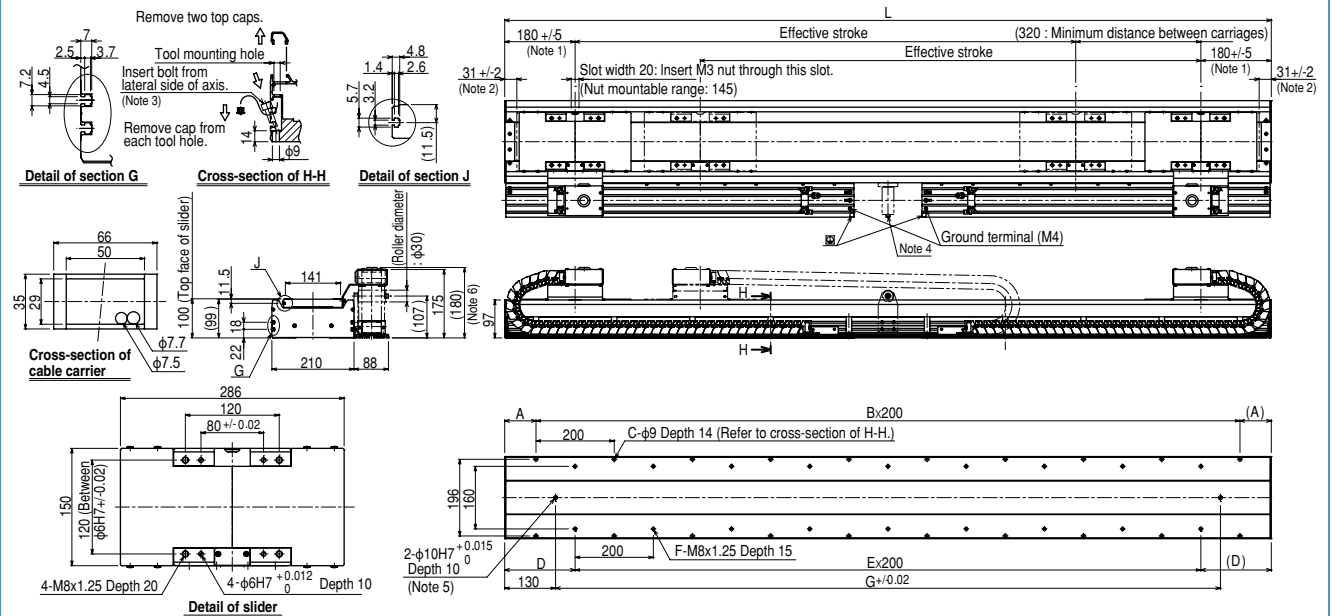
MF75 single carriage horizontal mount model **RH**



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. The origin is set on the L side (as shown above) at the time of shipment. It can be changed to the R side by parameter setting.  
 Note 3. The length under head of M8 hex socket head bolts for installing the robot body must not be longer than 30mm.  
 Note 4. For models with a 3,000mm or longer stroke, a roller is installed to prevent the cable carrier from sagging.  
 Note 5. When using  $\phi 10$  H7 hole, do not insert the pin more than the depth stated in the drawing. Otherwise, the motor may break.  
 Note 6. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000
L	1360	1460	1560	1660	1760	1860	1960	2060	2160	2260	2360	2460	2560	2660	2760	2860	2960	3060	3160	3260	3360	3460	3560	3660	3760	3860	3960	4060	4160	4260	4360
A	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80
B	5	5	7	7	7	7	9	9	9	9	11	11	11	11	13	13	13	13	13	15	15	15	17	17	17	17	19	19	19	19	21
C	12	12	16	16	16	16	20	20	20	24	24	24	24	28	28	28	28	28	32	32	32	32	32	36	36	36	36	40	40	40	44
D	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180
E	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18	18	18	20	20	20
F	14	14	14	14	18	18	18	18	22	22	22	22	26	26	26	26	30	30	30	30	34	34	34	34	38	38	38	38	42	42	42
G	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100
Weight (kg)	46	49	51	54	56	59	61	64	66	69	71	74	76	79	81	84	86	89	91	94	96	99	101	104	106	109	111	114	116	119	121

MF75D double carriage mount model **H**



Note 1. Position of table carriage when returned to the origin.  
 Note 2. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 3. The length under head of M8 hex socket head bolts for installing the robot body must not be longer than 30mm.  
 Note 4. For models with a 3,080mm or longer stroke, a roller is installed to prevent the cable carrier from sagging.  
 Note 5. When using  $\phi 10$  H7 hole, do not insert the pin more than the depth stated in the drawing. Otherwise, the motor may break.  
 Note 6. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

Effective stroke	680	780	880	980	1080	1180	1280	1380	1480	1580	1680	1780	1880	1980	2080	2180	2280	2380	2480	2580	2680	2780	2880	2980	3080	3180	3280	3380	3480	3580	3680
L	1360	1460	1560	1660	1760	1860	1960	2060	2160	2260	2360	2460	2560	2660	2760	2860	2960	3060	3160	3260	3360	3460	3560	3660	3760	3860	3960	4060	4160	4260	4360
A	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80
B	5	5	7	7	7	7	9	9	9	9	11	11	11	11	13	13	13	13	13	15	15	15	17	17	17	17	19	19	19	19	21
C	12	12	16	16	16	16	20	20	20	24	24	24	24	28	28	28	28	28	32	32	32	32	32	36	36	36	36	40	40	40	44
D	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180	230	80	130	180
E	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18	18	18	20	20	20
F	14	14	14	14	18	18	18	18	22	22	22	22	26	26	26	26	30	30	30	30	34	34	34	34	38	38	38	38	42	42	42
G	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800	2900	3000	3100	3200	3300	3400	3500	3600	3700	3800	3900	4000	4100
Weight (kg)	57	60	62	65	67	70	73	75	78	81	83	86	88	91	94	96	99	101	104	107	109	112	114	117	120	122	125	127	130	133	135

Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XX-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER INFORMATION



# MEMO

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Articulated robots  
**YA**

Linear conveyor  
modules  
**LCM100**

Motor-less single  
axis actuator  
**Robonity**

Compact  
single-axis robots  
**TRANSERVO**

Single-axis robots  
**FLIP-X**

Linear motor  
single-axis robots  
**PHASER**

Cartesian  
robots  
**XY-X**

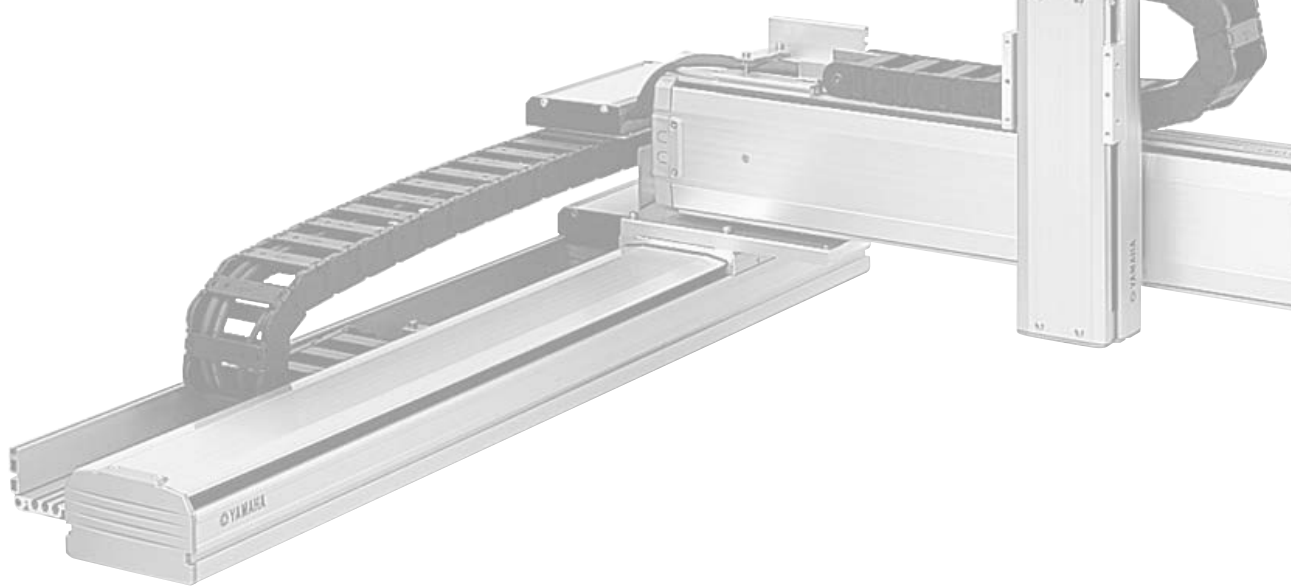
SCARA  
robots  
**YK-X**

Pick & place  
robots  
**YP-X**

**CLEAN**

**CONTROLLER**

**INFORMATION**



Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Arm type

Gantry type

Moving arm type

Pole type

XZ type

# CARTESIAN ROBOTS

# XY-X

## SERIES

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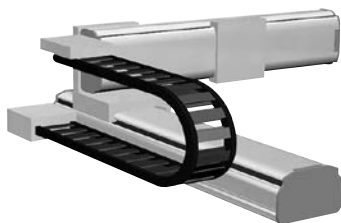
# Arm & cable variations

## Cable variations

Two cable types are available; cable carrier type and whipover type. (except PXYX) The cable carrier type is supplied with a user cable as standard so that cable can be added easily. The whipover type is supplied with a user cable and tube as standard set. A cable duct specially designed for clean rooms is also available. (See P.480 to P.485 for detailed information on Clean Cartesian robots.)

### Cable carrier (C)

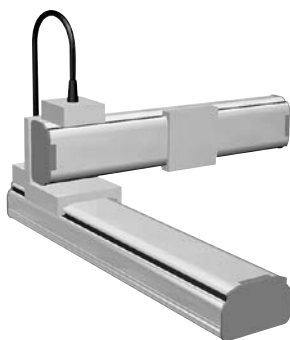
When adding cables to a cable carrier track, keep the cable occupation rate at 30% or less.



Note. User cable 10 cores, 0.2 sq.

### Whipover (S)

Adding a load on whipover will result in sagging and cut. Sagging may also occur when using long strokes.



Note. User cable: 7 cores, 0.2 sq.  
Note. User tube: 2 φ4 air tubes.

## Arm variations

The first step for selection of Cartesian type robot models is to check for applicable models according to specific use and operation area.

### Arm type

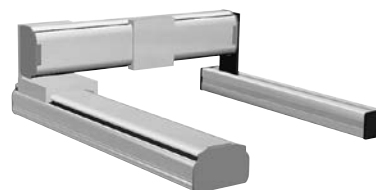
The type with moving Y-axis carriage.



P.272

### Gantry type

The type with a guide railing at the end of Y-axis for support.



P.340

### Moving arm type

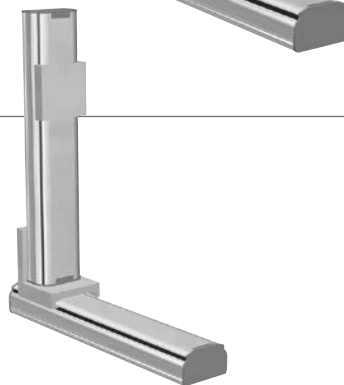
The type with a moving Y-axis arm.



P.356

### Pole type

The type with vertically moving Y-axis carriage.



P.370

### XZ type

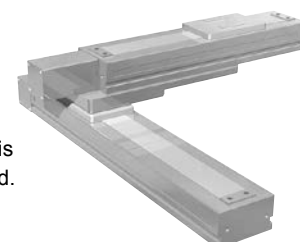
The type with combination of X-axis for horizontal movement and Z-axis for vertical movement.



P.378

### Clean type

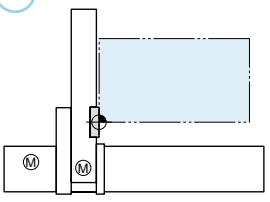
Special model for clean rooms with moving Y-axis carriage installed upward.



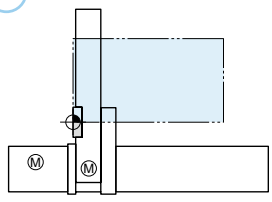
P.480

- Articulated robots  
YA
- Linear conveyor models  
LCM100
- Motor-less single axis actuator  
Robonity
- Compact single-axis robots  
TRANSEVO
- Single-axis robots  
FLIP-X
- Linear motor single-axis robots  
PHASER
- Cartesian robots  
XY-X
- SCARA robots  
YK-X
- Pick & place robots  
YP-X
- CLEAN
- CONTROLLER INFORMATION
- Arm type
- Gantry type
- Moving arm type
- Pole type
- XZ type

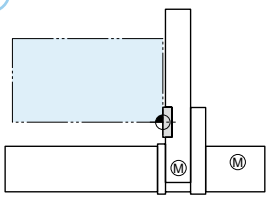
A1



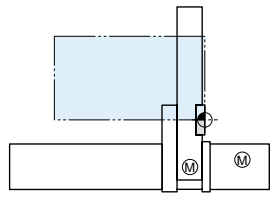
A2



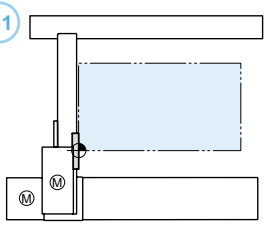
A3



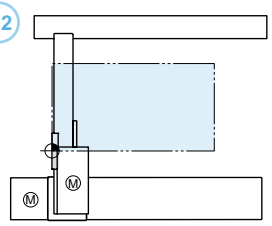
A4



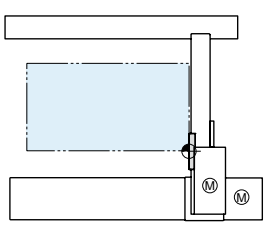
G1



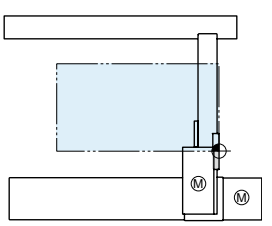
G2



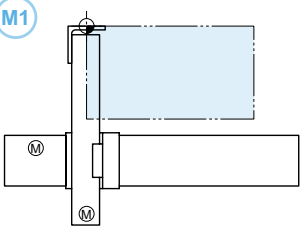
G3



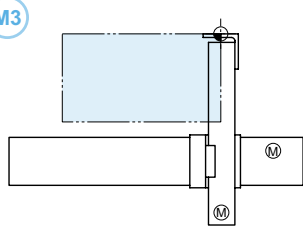
G4



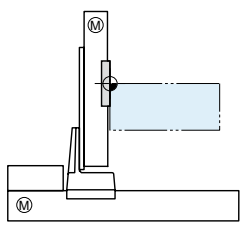
M1



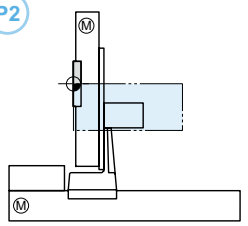
M3



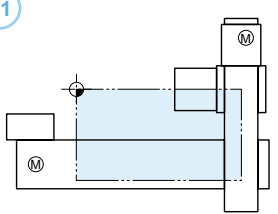
P1



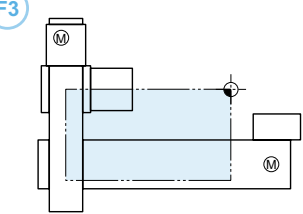
P2



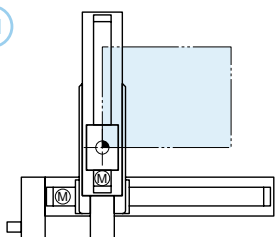
F1



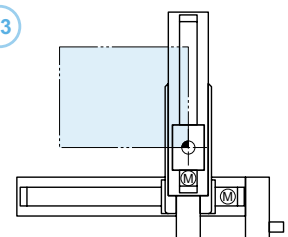
F3



T1



T3



# 2-axis spec selection guide

## Setting method

While checking conditions in order starting from ①, proceed to the right. Select the desired model in ⑥.

① Select the arm variation

### Arm type

The type with moving Y-axis carriage.

### Gantry type

The type with a guide railing at the end of Y-axis for support.

### Moving arm type

The type with a moving Y-axis arm.

### Pole type

The type with vertically moving Y-axis carriage.

### XZ type

The type with combination of X-axis for horizontal movement and Z-axis for vertical movement.

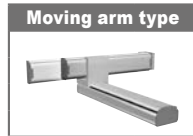
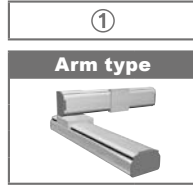
② Select a line satisfying both the Y-axis stroke and payload and move to the right.

③ Check the cable types

④ Check the X axis stroke

⑤ Select the desired speed

⑥ Decide the model



②

Payload (kg)	Y-axis stroke (mm)									
	50	100	150	200	250	300	350	400	450	500
4.5	4.5	3.5	2.5	2	1.5					

Payload (kg)	Y-axis stroke (mm)									
	150	250	350	450	550	650	750	850	950	1050
12	12	11	9	7						
	12	11	9	7						
	7	6	5	3						
	7	6	5	3						
	7	6	5	3						
	20	17	15	13	11	9				
	20	17	15	13	11	9				
	19	16	14	12	10	8				
	14	12	10	8	7					
	25	21	18	16	13	11				
	30	25	20	16						
	30	25	20	16						
	29	24	19	15						
		40	35	30						
	40	35	30							

Payload (kg)	Y-axis stroke (mm)										
	150	250	350	450	550	650	750	850	950	1050	
30	30						25	20			
	29						24	19			
							50				
							50				

Payload (kg)	Y-axis stroke (mm)									
	150	250	350	450	550	650	750	850	950	1050
15	15	14	13							
	20									
	30									

Payload (kg)	Y-axis stroke (mm)									
	150	250	350	450	550	650	750	850	950	1050
8	8									
	20									
	20									
	30									
	30									

Payload (kg)	Z-axis stroke (mm)									
	150	250	350	450	550	650	750	850	950	1050
10	10									
	10									
	8									
	3									
	5									
	10									
	8									
	15									
	14	13	12							
	20									
	30									



③	④	⑤	⑥ Decide the model	
Cable type	X-axis stroke (mm)	Maximum speed (X-axis / Y-axis) (mm/sec)	Model <sup>(Note 1)</sup>	Detailed info page
Cable carrier	150 to 650	720 / 720	PXYx-C-A*	<a href="#">P272</a>
Cable type	X-axis stroke (mm)	Maximum speed (X-axis / Y-axis) (mm/sec)	Model	Detailed info page
Cable carrier	150 to 1050	1200 / 800	FXYx-C-A*	<a href="#">P274</a>
Cable carrier	150 to 1050	1200 / 800	FXYx-C-A* (I/O)	<a href="#">P276</a>
Cable carrier	150 to 2450	1875 / 1875	FXyBx-C-A*	<a href="#">P280</a>
Whipover	150 to 950	1875 / 1875	FXyBx-S-A*	<a href="#">P282</a>
Cable carrier	150 to 2450	1875 / 1875	FXyBx-C-A* (I/O)	<a href="#">P284</a>
Cable carrier	150 to 1050	1200 / 1200	SXYx-C-A*	<a href="#">P286</a>
Whipover	150 to 850	1200 / 1200	SXYx-S-A*	<a href="#">P288</a>
Cable carrier	150 to 1050	1200 / 1200	SXYx-C-A* (I/O)	<a href="#">P290</a>
Cable carrier	150 to 3050	1875 / 1875	SXYBx-C-A*	<a href="#">P304</a>
Cable carrier	500 to 2000	1200 / 1200	NXY-C-A*	<a href="#">P312</a>
Cable carrier	250 to 1250	1200 / 1200	MXyX-C-A*	<a href="#">P322</a>
Whipover	250 to 850	1200 / 1200	MXyX-S-A*	<a href="#">P324</a>
Cable carrier	250 to 1250	1200 / 1200	MXyX-C-A* (I/O)	<a href="#">P326</a>
Cable carrier	250 to 1250	1200 / 1200	HXYx-C-A*	<a href="#">P332</a>
Cable carrier	1150 to 2050	1200 / 1200	HXYLx-C-A*	<a href="#">P338</a>
Cable type	X-axis stroke (mm)	Maximum speed (X-axis / Y-axis) (mm/sec)	Model	Detailed info page
Cable carrier	250 to 1050	1200 / 1200	MXyX-C-G*	<a href="#">P340</a>
Cable carrier	250 to 1050	1200 / 1200	MXyX-C-G* (I/O)	<a href="#">P342</a>
Cable carrier	250 to 1250	1200 / 1200	HXYx-C-G*	<a href="#">P348</a>
Cable carrier	1150 to 2050	1200 / 1200	HXYLx-C-G*	<a href="#">P354</a>
Cable type	X-axis stroke (mm)	Maximum speed (X-axis / Y-axis) (mm/sec)	Model	Detailed info page
Cable carrier	150 to 850	1200 / 1200	SXYx-C-M*	<a href="#">P356</a>
Cable carrier	250 to 1250	1200 / 1200	MXyX-C-M*	<a href="#">P362</a>
Cable carrier	250 to 1250	1200 / 1200	HXYx-C-M*	<a href="#">P368</a>
Cable type	X-axis stroke (mm)	Maximum speed (X-axis / Y-axis) (mm/sec)	Model	Detailed info page
Whipover	150 to 850	1200 / 600	SXYx-S-P*	<a href="#">P370</a>
Cable carrier	250 to 1250	1200 / 600	MXyX-C-P*	<a href="#">P371</a>
Whipover	250 to 950	1200 / 600	MXyX-S-P*	<a href="#">P372</a>
Cable carrier	250 to 1250	1200 / 600	HXYx-C-P*	<a href="#">P374</a>
Whipover	250 to 850	1200 / 600	HXYx-S-P*	<a href="#">P375</a>
Cable type	X-axis stroke (mm)	Maximum speed (X-axis / Y-axis) (mm/sec)	Model	Detailed info page
Cable carrier	150 to 1050	1200 / 600	SXYx-C-F* (ZF)	<a href="#">P378</a>
Whipover	150 to 850	1200 / 600	SXYx-S-F* (ZF)	<a href="#">P379</a>
Cable carrier	150 to 1050	1200 / 1200	SXYx-C-F* (ZFL20)	<a href="#">P380</a>
Cable carrier	150 to 1050	1200 / 1000	SXYx-C-F* (ZS12)	<a href="#">P381</a>
Cable carrier	150 to 1050	1200 / 500	SXYx-C-F* (ZS6)	<a href="#">P381</a>
Cable carrier	150 to 3050	1875 / 600	SXYBx-C-F* (ZF)	<a href="#">P382</a>
Cable carrier	150 to 3050	1875 / 1200	SXYBx-C-F* (ZFL20)	<a href="#">P383</a>
Cable carrier	150 to 1050	1200 / 600	MXyX-C-F* (ZFL10)	<a href="#">P384</a>
Cable carrier	150 to 1050	1200 / 600	MXyX-C-F* (ZFH)	<a href="#">P385</a>
Cable carrier	250 to 1250	1200 / 600	HXYx-C-F* (ZL)	<a href="#">P386</a>
Cable carrier	250 to 1250	1200 / 300	HXYx-C-F* (ZH)	<a href="#">P387</a>

Note 1. The figure entered at \* inside the form, expresses the arm variation. See P. 262 for more information.

Articulated robots  
YA  
Linear conveyor  
modules  
LCM100  
Motor-less single  
axis actuator  
Robonity  
Compact  
single-axis robots  
TRANSEMO  
Single-axis robots  
FLIP-X  
Linear motor  
single-axis robots  
PHASER  
Cartesian  
robots  
XX-X  
SCARA  
robots  
YK-X  
Pick & place  
robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
Arm type  
Gantry type  
Moving arm  
type  
Pole type  
XZ type

# 3-axis spec selection guide

## Setting method

While checking conditions in order starting from ①, proceed to the right. Select the desired model in ⑥.

① Select the arm variation

### Arm type

The type with moving Y-axis carriage.

### Gantry type

The type with a guide railing at the end of Y-axis for support.

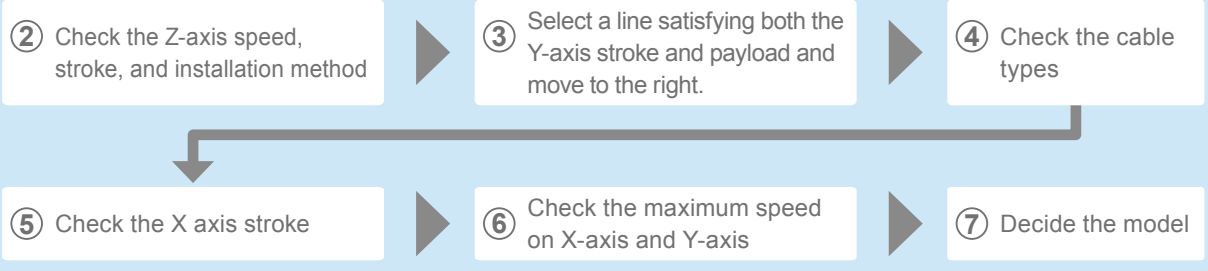
### Moving arm type

The type with a moving Y-axis arm.

### Pole type

The type with vertically moving Y-axis carriage.

①		②			③									
Arm type		Z-axis			Y-axis stroke (mm)									
Speed (mm/sec)	Stroke (mm)	Installation method		150	250	350	450	550	650	750	850	950	1050	
1000	150	Shaft vertical type		3										
500	150													
800	50 to 300	Clamped base · moving table type (60W)		5										
600	150	Clamped base · moving table type (100W)												3
	250													
	350													
600	150	Clamped base · moving table type (100W)		10	9	7	5	3						
	250			10	8	6	4	2						
	350			10	9	7	5	3	1					
1200	150	Clamped base · moving table type (200W)		10	10	8	6	4	2					
	250			10	9	7	5	3	1					
	350			10	9	7	5	3	1					
600	150	Clamped table · moving base type (200W)		8		6	4	2						
	250			8	7	5	3	1						
	350			8	6	4	2	1						
600	150	Clamped table · moving base type (200W)		13	10	8	6	4	2					
	250			12	9	7	5	3	1					
	350			11	8	6	4	2	1					
1000	150	Shaft vertical type		3										
500	150													
600	150	Clamped base · moving table type (100W)		3										
	250													
	350													
1200	150	Clamped base · moving table type (200W)		5										
	250													
	350													
600	150	Clamped table · moving base type (200W)		8	6	4	2	1						
	250			7	5	3	1							
	350			6	4	2								
1200	150	Clamped base · moving table type (200W)		7	5	3	1							
	250			6	4	2								
	350			7	5	3	1							
600	150	Clamped table · moving base type (200W)		6	4	2								
	250			5	3	1								
	350			7	5	3	1							
1000	150	Shaft vertical type		3										
500	150													
1200	150	Clamped base · moving table type (200W)		5										
	250													
	350													
600	150	Clamped table · moving base type (200W)		8	6	4	2	1						
	250			7	5	3	1							
	350			6	4	2								
600	150	Clamped base · moving table type (200W)		7	5	3	1							
	250			6	4	2								
	350			7	5	3	1							
1200	150	Clamped base · moving table type (200W)		8										
	250													
	350													
600	150	Clamped table · moving base type (200W)		13	12	10	8	5	3					
	250			13	11	9	7	4	2					
	350			12	10	8	6	3	1					
600	150	Clamped base · moving table type (200W)		15		12	12	8						
	250			15		11	11	7						
	350			15		10	10	6						
1200	150	Clamped base · moving table type (200W)		8										
	250													
	350													
600	150	Clamped table · moving base type (200W)		8		7								
	250			8		6								
	350			14		12		8						
600	250	Clamped base · moving table type (200W)		13		11		7						
	350			12		10		6						
	250			20		18								
600	350	Clamped base · moving table type (200W)		20		17								
	450			20		16								
	550			20		18		15						
300	250	Clamped table · moving base type (200W)		25		20		18						
	350			25		20		17						
	450			24		19		16						
300	550	Clamped table · moving base type (200W)		23		18		15						



④	⑤	⑥	⑦ Decide the model	
Cable type	X-axis stroke (mm)	Maximum speed (X-axis / Y-axis) (mm/sec)	Model <sup>(Note 1)</sup>	Detailed info page
Cable carrier	150 to 1050	1200 / 800	FXYx-C-A*-ZS12	<a href="#">P.277</a>
Cable carrier	150 to 1050	1200 / 1200	FXYx-C-A*-ZS6	<a href="#">P.277</a>
Whipover	150 to 850	1200 / 1200	FXYx-C-A*-ZT6L	<a href="#">P.278</a>
Cable carrier	150 to 1050	1200 / 1200	SXYx-C-A*-ZF	<a href="#">P.292</a>
Whipover	150 to 850	1200 / 1200	SXYx-S-A*-ZF	<a href="#">P.293</a>
Cable carrier	150 to 1050	1200 / 1200	SXYx-C-A*-ZFL20	<a href="#">P.294</a>
Cable carrier	150 to 1050	1200 / 1200	SXYx-C-A*-ZFH	<a href="#">P.295</a>
Cable carrier	150 to 1050	1200 / 1200	SXYx-C-A*-ZS12	<a href="#">P.296</a>
Whipover	150 to 850		SXYx-S-A*-ZS12	<a href="#">P.296</a>
Cable carrier	150 to 1050		SXYx-C-A*-ZS6	<a href="#">P.297</a>
Whipover	150 to 850		SXYx-S-A*-ZS6	<a href="#">P.297</a>
Cable carrier	150 to 3050	1875 / 1875	SXYBx-C-A*-ZF	<a href="#">P.306</a>
Cable carrier	150 to 3050	1875 / 1875	SXYBx-C-A*-ZFL20	<a href="#">P.307</a>
Cable carrier	150 to 3050	1875 / 1875	SXYBx-C-A*-ZFH	<a href="#">P.308</a>
Cable carrier	150 to 3050	1875 / 1875	SXYBx-C-A*-ZS12	<a href="#">P.309</a>
Cable carrier	150 to 3050	1875 / 1875	SXYBx-C-A*-ZS6	<a href="#">P.309</a>
Cable carrier	500 to 2000	1200 / 1200	NXY-C-A*-ZFL20	<a href="#">P.314</a>
Cable carrier	500 to 2000	1200 / 1200	NXY-C-A*-ZFH	<a href="#">P.316</a>
Cable carrier	250 to 1250	1200 / 1200	MXYx-C-A*-ZFL10	<a href="#">P.327</a>
Cable carrier	250 to 1250	1200 / 1200	MXYx-C-A*-ZFL20	<a href="#">P.327</a>
Cable carrier	250 to 1250	1200 / 1200	MXYx-C-A*-ZFH	<a href="#">P.328</a>
Cable carrier	250 to 1250	1200 / 1200	HXYx-C-A*-ZL	<a href="#">P.334</a>
Cable carrier	250 to 1250	1200 / 1200	HXYx-C-A*-ZH	<a href="#">P.335</a>

Note 1. The figure entered at \* inside the form, expresses the arm variation. See P.262 for more information.

# 3-axis spec selection guide

①

## Gantry type

Z-axis		
Speed (mm/sec)	Stroke (mm)	Installation method
600	150	Clamped base · moving table type (200W)
	250	
	350	
1200	150	Clamped base · moving table type (200W)
	250	
	350	
600	150	Clamped table · moving base type (200W)
	250	
	350	
600	250	Clamped base · moving table type (200W)
	350	
	450	
	550	
300	250	Clamped table · moving base type (200W)
	350	
	450	
	550	

③

Payload (kg)	Y-axis stroke (mm)										
	150	250	350	450	550	650	750	850	950	1050	
Payload (kg)	15							12			
	15							11			
	15							10			
	8										
	8										
	8										
	14							12			
	13							11			
	12							10			
	20										
	20										
	20										
20											
30											
30											
30											
30											

## Moving arm type

Z-axis		
Speed (mm/sec)	Stroke (mm)	Installation method
600	150	Clamped base · moving table type (100W)
	250	
	350	
1200	150	Clamped base · moving table type (200W)
	250	
	350	
600	150	Clamped table · moving base type (200W)
	250	
	350	
1000	150	Shaft vertical type
500	150	
600	150	Clamped base · moving table type (200W)
	250	
	350	
1200	150	Clamped base · moving table type (200W)
	250	
	350	
600	150	Clamped table · moving base type (200W)
	250	
	350	
300	250	Clamped table · moving base type (200W)
	350	
	450	
	550	

Payload (kg)	Y-axis stroke (mm)										
	150	250	350	450	550	650	750	850	950	1050	
Payload (kg)	9	8	7								
	8	7	6								
	7	6	5								
	8	8	7								
	8	7	6								
	7	6	5								
	9	8	7								
	8	7	6								
	7	6	5								
	3										
	5										
	12										
	11										
	10										
	8										
	12										
	11										
	10										
18											
18			17								
18			16								
18			15								

## Pole type

Z-axis		
Speed (mm/sec)	Stroke (mm)	Installation method
1200	150	Clamped table · moving base type (200W)
	250	
	350	
1200	250	Clamped table · moving base type (200W)
	350	
	450	
	550	
	650	
1200	250	Clamped table · moving base type (200W)
	350	
	450	
	550	
	650	

Payload (kg)	Y-axis stroke (mm)										
	150	250	350	450	550	650	750	850	950	1050	
Payload (kg)	10										
	9										
	8										
	15										
	15										
	15										
	15										
	15										
	15										
	15										
	15										

④	⑤	⑥	⑦ Decide the model	
Cable type	X-axis stroke (mm)	Maximum speed (X-axis / Y-axis) (mm/sec)	Model <sup>(Note 1)</sup>	Detailed info page
Cable carrier	250 to 1050	1200 / 1200	MXYx-C-G*-ZFL10	<a href="#">P.343</a>
Cable carrier	250 to 1050	1200 / 1200	MXYx-C-G*-ZFL20	<a href="#">P.343</a>
Cable carrier	250 to 1050	1200 / 1200	MXYx-C-G*-ZFH	<a href="#">P.344</a>
Cable carrier	250 to 1250	1200 / 1200	HXYx-C-G*-ZL	<a href="#">P.350</a>
Cable carrier	250 to 1250	1200 / 1200	HXYx-C-G*-ZH	<a href="#">P.351</a>

Cable type	X-axis stroke (mm)	Maximum speed (X-axis / Y-axis) (mm/sec)	Model <sup>(Note 1)</sup>	Detailed info page
Whipover	150 to 850	1200 / 1200	SXYx-S-M*-ZF	<a href="#">P.358</a>
Whipover	150 to 850	1200 / 1200	SXYx-S-M*-ZFL20	<a href="#">P.359</a>
Whipover	150 to 850	1200 / 1200	SXYx-S-M*-ZFH	<a href="#">P.360</a>
Whipover	150 to 850	1200 / 1200	SXYx-S-M*-ZS12	<a href="#">P.361</a>
Whipover	150 to 850	1200 / 1200	SXYx-S-M*-ZS6	<a href="#">P.361</a>
Cable carrier	250 to 1250	1200 / 1200	MXYx-C-M*-ZFL10	<a href="#">P.364</a>
Cable carrier	250 to 1250	1200 / 1200	MXYx-C-M*-ZFL20	<a href="#">P.364</a>
Cable carrier	250 to 1250	1200 / 1200	MXYx-C-M*-ZFH	<a href="#">P.365</a>
Cable carrier	250 to 1250	1200 / 1200	HXYx-C-M*-ZH	<a href="#">P.368</a>

Note 1. The figure entered at \* inside the form, expresses the arm variation. See P.262 for more information.

Cable type	X-axis stroke (mm)	Maximum speed (X-axis / Y-axis) (mm/sec)	Model	Detailed info page
Cable carrier	250 to 1250	1200 / 600	MXYx-C-P2-ZPMH	<a href="#">P.373</a>
Cable carrier	250 to 1250	1200 / 600	HXYx-C-P2-ZPH	<a href="#">P.376</a>
Whipover	250 to 850	1200 / 600	HXYx-S-P1-ZPH	<a href="#">P.377</a>



# Robot ordering method description

In the order format for the YAMAHA cartesian robots XY-X series, the notation (letters/numbers) for the mechanical section is shown linked to the controller section notation.

## [Example]

### ■ 2-axis specifications

#### ● Mechanical ▶ FXYx (Arm type)

- Cable variations ▷ Cable carrier
- Combination (Arm variations) ▷ A1
- X-axis stroke ▷ 450mm
- Y-axis stroke ▷ 350mm
- Robot cable length ▷ 3.5M

#### ● Controller ▶ RCX320

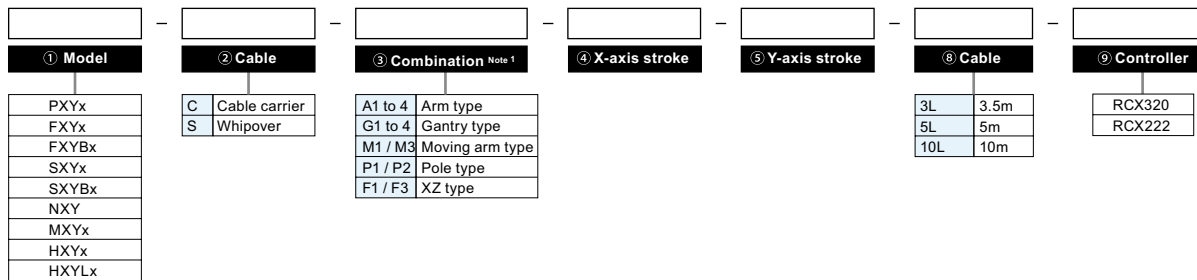
### ● Ordering method

**FXYx - C - A1 - 45 - 35 - 3L - RCX320**

Mechanical section

Controller section

To find detailed controller information see the controller page. **RCX320 ▶ P.548**, **RCX222 ▶ P.558**



Note 1. To find detailed information on arm variations (combinations) see P.262.

## [Example]

### ■ 3 / 4-axis specifications

#### ● Mechanical ▶ SXYx (Moving arm type)

- Cable variations ▷ Whipover
- Combination (Arm variations) ▷ M3
- X-axis stroke ▷ 850mm
- Y-axis stroke ▷ 150mm
- Z-axis stroke ▷ 150mm
- Robot cable length ▷ 5M

#### ● Controller ▶ RCX340

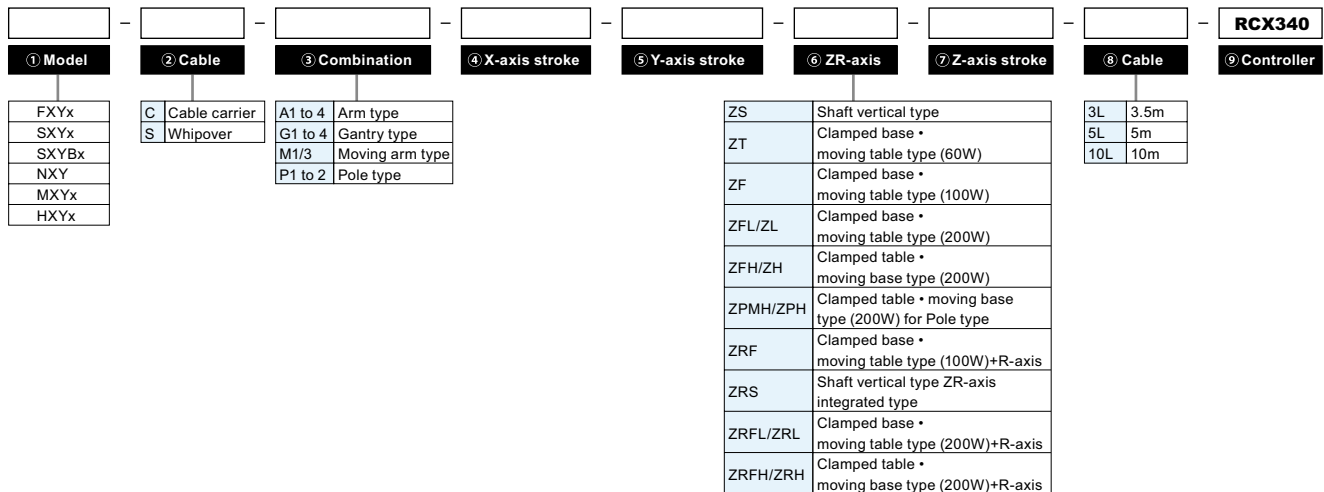
### ● Ordering method

**SXYx - S - M3 - 85 - 15 - ZFH - 15 - 5L - RCX340**







Mechanical section

Controller section

To find detailed controller information see the controller page. **RCX340 ▶ P.566**



# Robot ordering method terminology

① <b>Model</b>	Enter the robot unit model.
② <b>Cable</b>	Cable specs can be selected. To find detailed information see P.262. C: Cable carrier S: Whipover
③ <b>Combination (Arm variations)</b>	<p>Select the arm variation and combination method.</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 15%;"> <p>● <b>Arm type</b> The type with moving Y-axis carriage.</p>  </div> <div style="width: 15%;"> <p>● <b>Gantry type</b> The type with a guide railing at the end of Y-axis for support.</p>  </div> <div style="width: 15%;"> <p>● <b>Moving arm type</b> The type with a moving Y-axis arm.</p>  </div> <div style="width: 15%;"> <p>● <b>Pole type</b> The type with vertically moving Y-axis carriage.</p>  </div> <div style="width: 15%;"> <p>● <b>XZ type</b> The type with combination of X-axis for horizontal movement and Z-axis for vertical movement.</p>  </div> <div style="width: 15%;"> <p>● <b>Clean type</b> Special model for clean rooms with moving Y-axis carriage installed upward.</p>  </div> </div> <p>To find information on combinations see P.262.</p>
④ <b>X-axis stroke</b>	Select the X axis stroke. Enter in centimeters (cm). (For example enter 50 for a stroke of 500mm.)
⑤ <b>Y-axis stroke</b>	Select the Y axis stroke. Enter in centimeters (cm). (For example enter 50 for a stroke of 500mm.)
⑥ <b>ZR-axis</b>	<p>Select the Z axis installation direction. The R axis is installed with 4-axis specifications. To find more information see P.43.</p> <p><b>[3-axes]</b></p> <p>ZS : Shaft vertical type          ZT : Clamped base · moving table type (60W)          ZF : Clamped base · moving table type (100W)          ZFL/ZL : Clamped base · moving table type (200W)          ZFH/ZH : Clamped table · moving base type (200W)          ZPMH/ZPH : Clamped table · moving base type (200W) for pole type</p> <p><b>[4-axes]</b></p> <p>ZRF : Clamped base · moving table type (100W)+R axis          ZRS : ZR axis integrated type          ZRL/ZRFL : Clamped base · moving table type (200W)+R axis          ZRH/ZRFH : Clamped table · moving base type (200W)+R axis</p>
⑦ <b>Z-axis stroke</b>	Select the Z axis stroke. Enter in centimeters (cm). (For example enter 15 for a stroke of 150mm.)
⑧ <b>Cable</b>	Select the length of the robot cable connecting the robot and controller. <b>3L</b> : 3.5m <b>5L</b> : 5m <b>10L</b> : 10m
⑨ <b>Controller</b>	<b>2-axis specifications:</b> Select either the RCX320 or RCX222. <b>3 / 4-axis specifications:</b> Select the RCX340.

YA	Articulated robots
LCM100	Linear conveyor modules
Robonity	Motor-less single axis actuator
TRANSEVO	Compact single-axis robots
FLIP-X	Single-axis robots
PHASER	Linear motor single-axis robots
XX-X	Cartesian robots
YK-X	SCARA robots
YP-X	Pick & place robots
CLEAN	Linear motor
CONTROLLER INFORMATION	
Arm type	
Gantry type	
Moving arm type	
Pole type	
XZ type	





# FXYx 2 axes

● Arm type   ● Cable carrier



## Ordering method

### FXYx - C

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
A1			15 to 105cm	15 to 55cm	3L: 3.5m
A2					5L: 5m
A3					10L: 10m
A4					

### RCX320-2

Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery

Specify various controller setting items. RCX320 ▶ **P.548**

### RCX222

Controller	Usable for CE	I/O selection 1	I/O selection 2

Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Y-axis
<b>Axis construction</b>	—	—
<b>AC servo motor output (W)</b>	100	60
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.01	+/-0.02
<b>Drive system</b>	Ball screw φ15	Ball screw φ12
<b>Ball screw lead</b> <sup>Note 2</sup> (Deceleration ratio) (mm)	20	12
<b>Maximum speed</b> <sup>Note 3</sup> (mm/sec)	1200	800
<b>Moving range (mm)</b>	150 to 1050	150 to 550
<b>Robot cable length (m)</b>	Standard: 3.5   Option: 5,10	

Note 1. Positioning repeatability in one direction.  
 Note 2. Leads not listed in the catalog are also available. Contact us for details.  
 Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

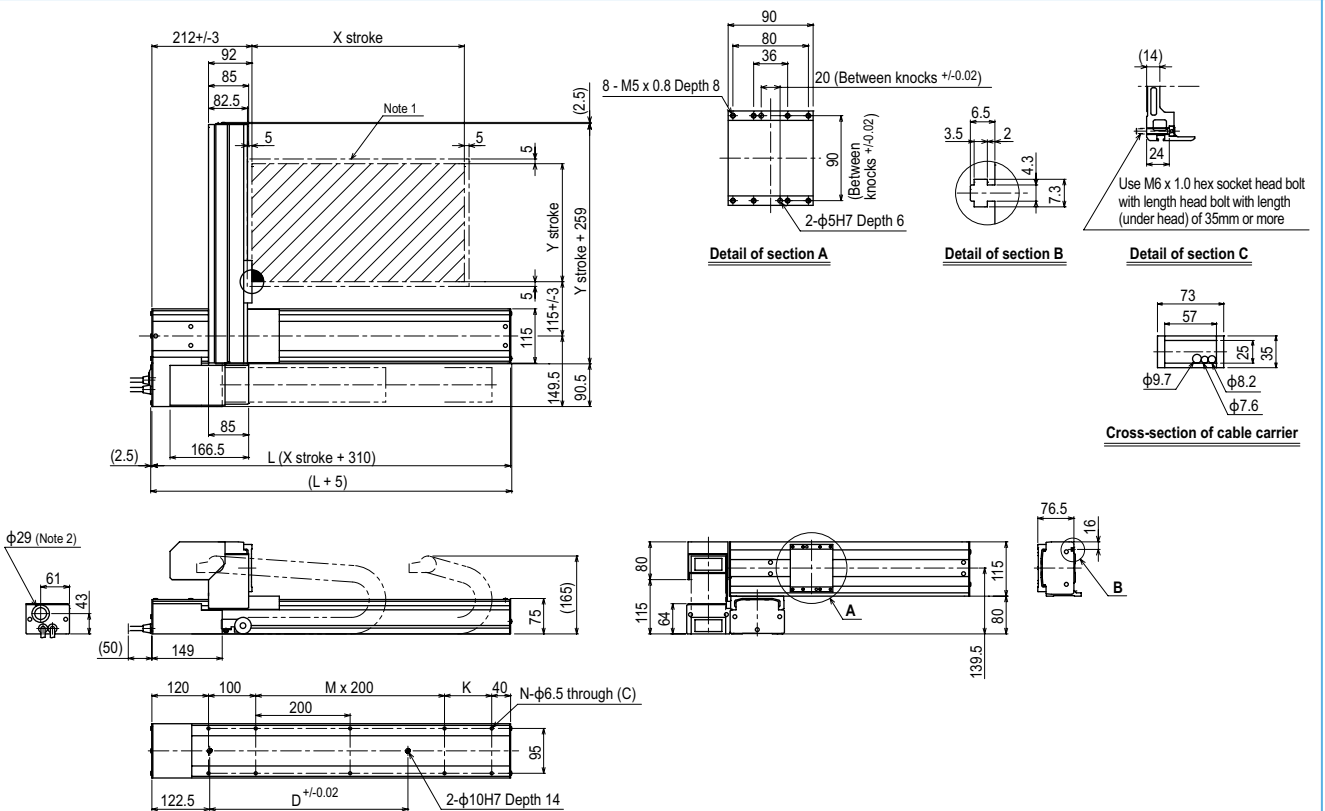
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	12
250	12
350	11
450	9
550	7

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

## FXYx 2 axes A1



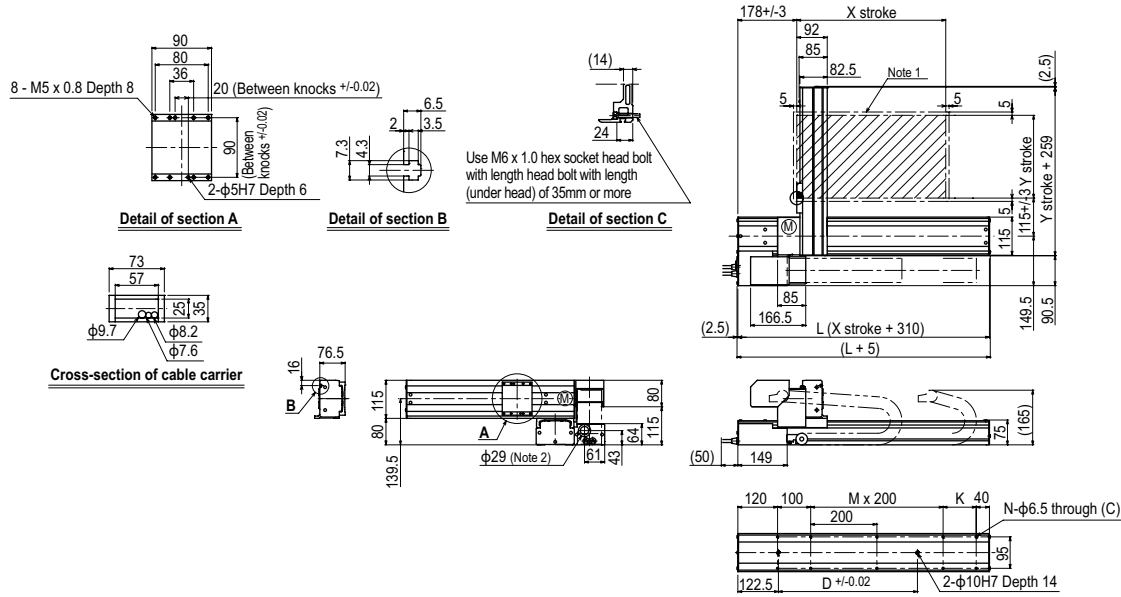
X stroke	Y stroke										
	150	250	350	450	550	650	750	850	950	1050	
<b>L</b>	460	560	660	760	860	960	1060	1160	1260	1360	
<b>K</b>	200	100	200	100	200	100	200	100	200	100	
<b>D</b>	240	240	420	420	600	600	780	960	960	1140	
<b>M</b>	0	1	1	2	2	3	3	4	4	5	
<b>N</b>	6	8	8	10	10	12	12	14	14	16	
<b>Y stroke</b>	150	250	350	450	550						
<b>Maximum speed for each stroke (mm/sec)</b> <sup>Note 3</sup>	<b>X-axis</b>	1200				960	780	600	540		
	<b>Speed setting</b>	—				80%	65%	50%	45%		

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

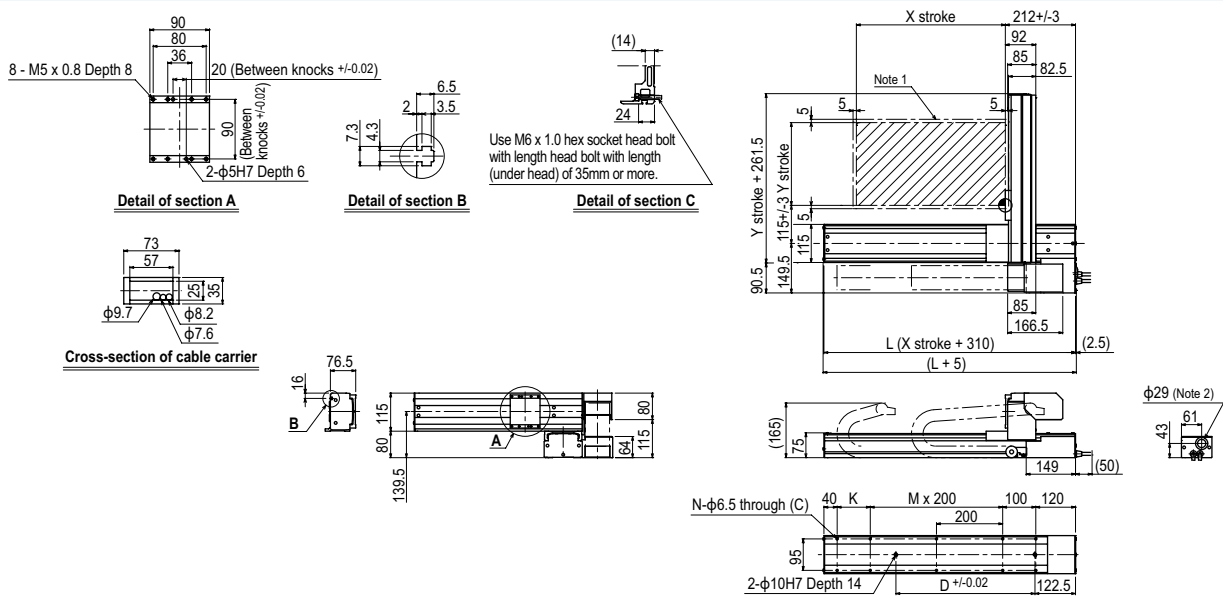
Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



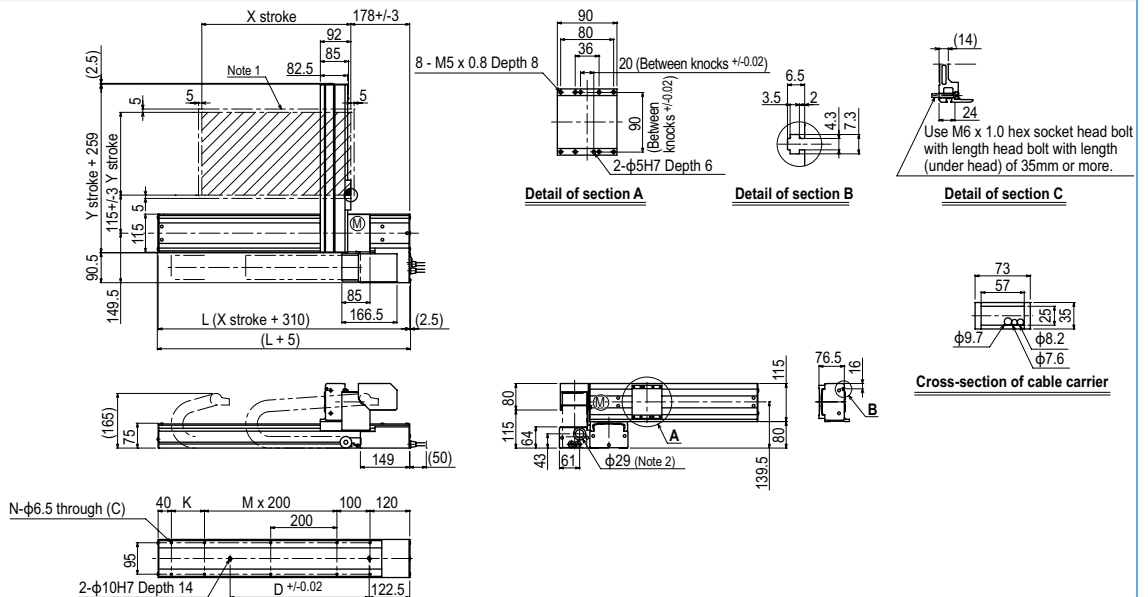
**FXYx 2 axes A2**



**FXYx 2 axes A3**

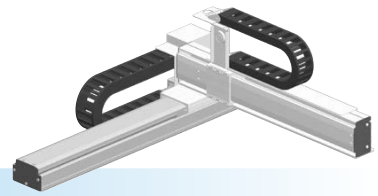


**FXYx 2 axes A4**

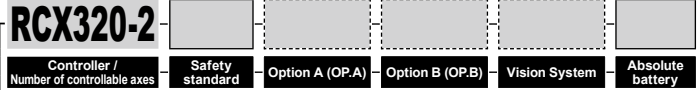
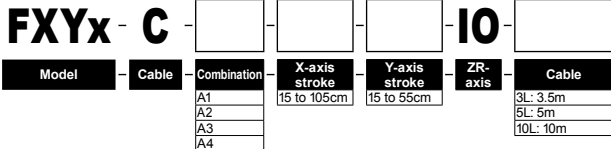


# FXYx 2 axes / IO

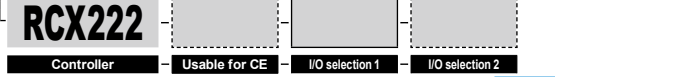
- Arm type
- Cable carrier
- Type with Y-axis I/O cable carrier added



## Ordering method



Specify various controller setting items. RCX320 ▶ **P.548**



Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Y-axis
<b>Axis construction</b>	-	-
<b>AC servo motor output (W)</b>	100	60
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.01	+/-0.02
<b>Drive system</b>	Ball screw φ15	Ball screw φ12
<b>Ball screw lead</b> <sup>Note 2</sup> (Deceleration ratio) (mm)	20	12
<b>Maximum speed</b> <sup>Note 3</sup> (mm/sec)	1200	800
<b>Moving range (mm)</b>	150 to 1050	150 to 550
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5, 10	

Note 1. Positioning repeatability in one direction.  
 Note 2. Leads not listed in the catalog are also available. Contact us for details.  
 Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

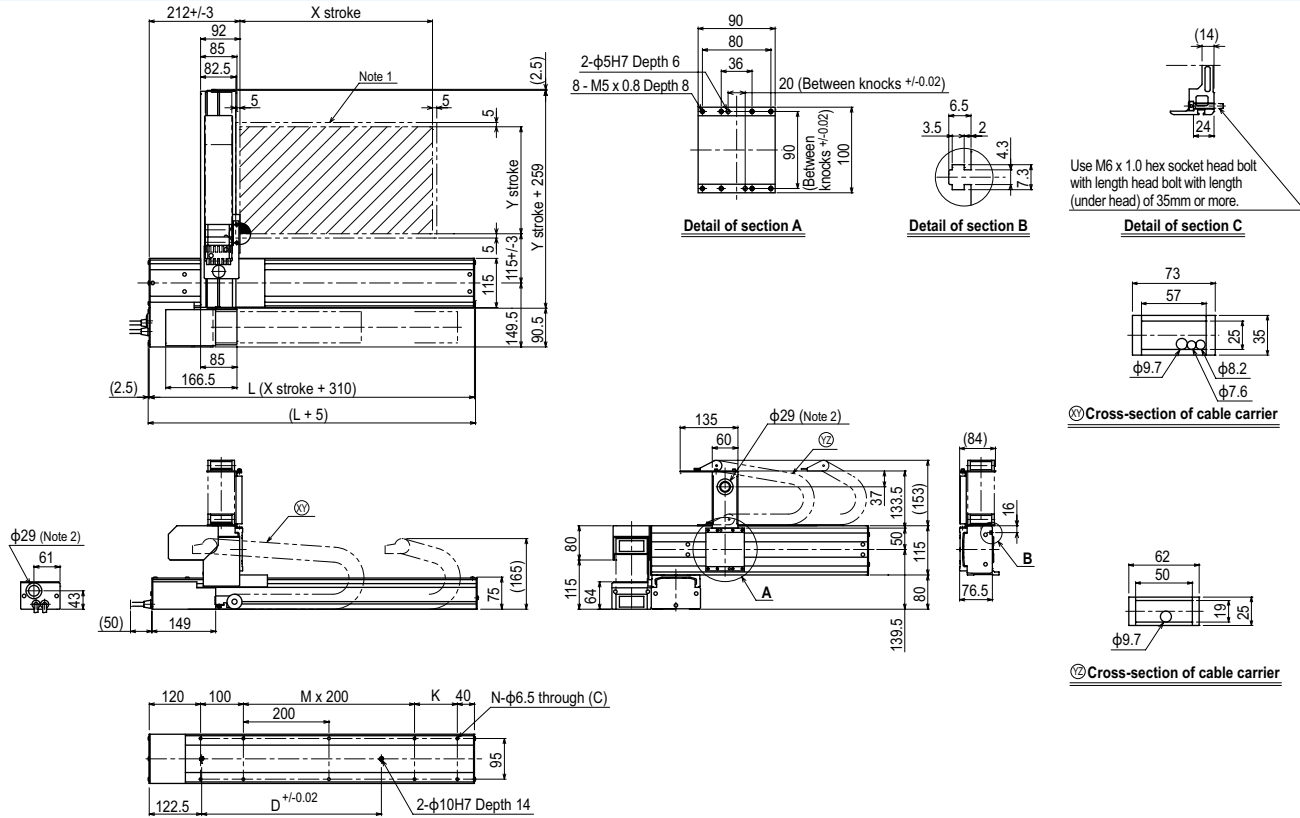
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	12
250	12
350	11
450	9
550	7

## Controller

Controller	Operation method
RCX320 RCX222	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## FXYx 2 axes / IO A1

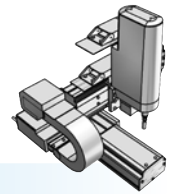


X stroke	Y stroke									
	150	250	350	450	550	650	750	850	950	1050
<b>L</b>	460	560	660	760	860	960	1060	1160	1260	1360
<b>K</b>	200	100	200	100	200	100	200	100	200	100
<b>D</b>	240	240	420	420	600	600	780	960	960	1140
<b>M</b>	0	1	1	2	2	3	3	4	4	5
<b>N</b>	6	8	8	10	10	12	12	14	14	16
<b>Y stroke</b>	<b>150</b>	<b>250</b>	<b>350</b>	<b>450</b>	<b>550</b>					
<b>Maximum speed for each stroke (mm/sec)</b> <sup>Note 3</sup>	<b>X-axis</b>		1200			960		780	600	540
<b>Speed setting</b>			-			80%		65%	50%	45%

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.  
 Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

# FXYx 3 axes / ZS

- Arm type
- Cable carrier
- Z-axis shaft vertical type



## Ordering method

**FXYx - C** [ ] [ ] [ ] [ ] **15** [ ] **RCX340-3** [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
A1			15 to 105cm	15 to 55cm	ZS12		3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specification

	X-axis	Y-axis	Z-axis: ZS12	Z-axis: ZS6
Axis construction	-	-	-	-
AC servo motor output (W)	100	60	60	
Repeatability <sup>Note 1</sup> (mm)	+/-0.01	+/-0.02	+/-0.02	
Drive system	Ball screw φ15	Ball screw φ12	Ball screw φ12	
Ball screw lead <sup>Note 2</sup> (Deceleration ratio) (mm)	20	12	12	6
Maximum speed <sup>Note 3</sup> (mm/sec)	1200	800	1000	500
Moving range (mm)	150 to 1050	150 to 550		150
Robot cable length (m)	Standard: 3.5 Option: 5,10			

Note 1. Positioning repeatability in one direction.  
 Note 2. Leads not listed in the catalog are also available. Contact us for details.  
 Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

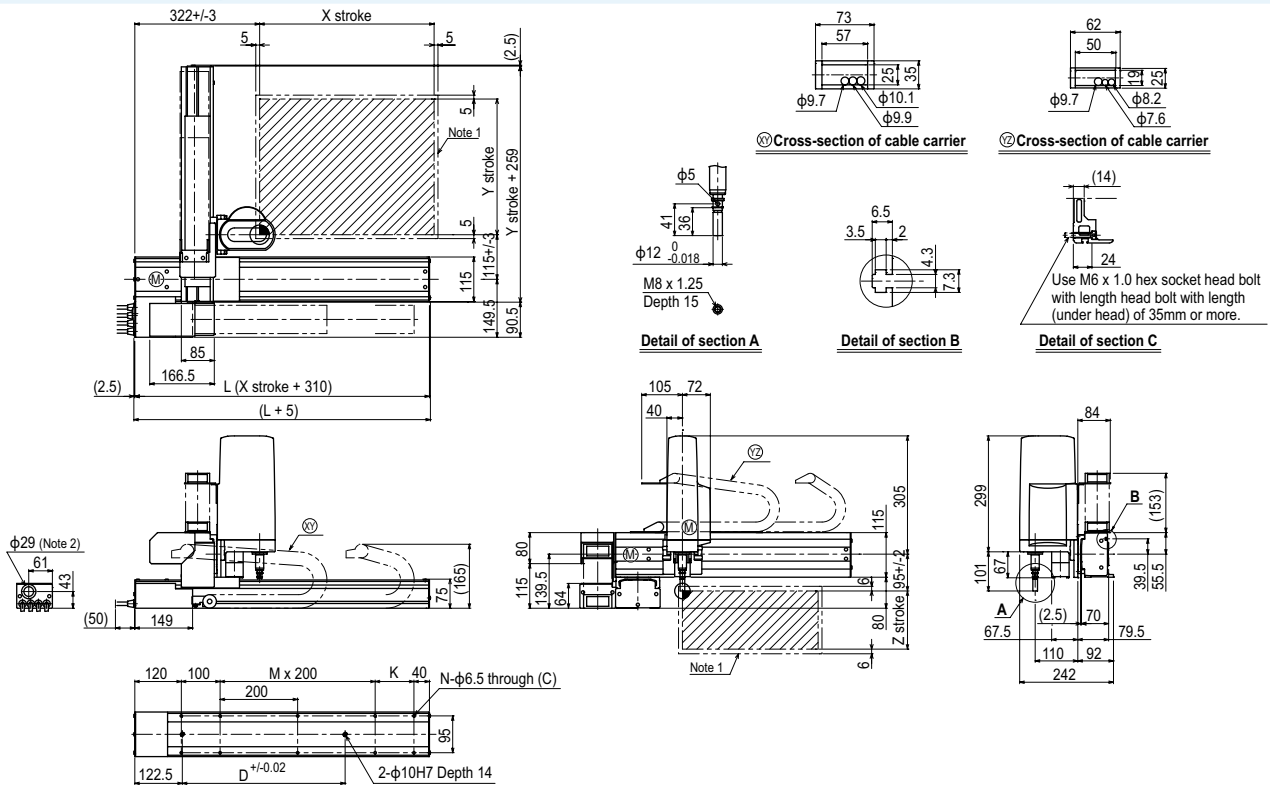
## Maximum payload (kg)

Y stroke (mm)	ZS12	ZS6
150	3	5
250	3	5
350	3	5
450	3	5
550	3	3

## Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## FXYx 3 axes / ZS (A1)



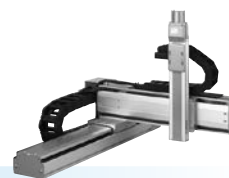
X stroke	150	250	350	450	550	650	750	850	950	1050	
	L	460	560	660	760	860	960	1060	1160	1260	1360
K	200	100	200	100	200	100	200	100	200	100	
D	240	240	420	420	600	600	780	960	960	1140	
M	0	1	1	2	2	3	3	4	4	5	
N	6	8	8	10	10	12	12	14	14	16	
Y stroke	150	250	350	450	550						
Z stroke	150										
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis	1200				960	780	600	540		
	Speed setting	-				80%	65%	50%	45%		

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

# FXYx 3 axes / ZT

- Arm type
- Cable carrier
- Z-axis: clamped base / moving table type (60W)



## Ordering method

**FXYx - C** - **ZT6L - 12** - **RCX340-3**

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Lead	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
		A1	15 to 105cm	15 to 55cm			5 to 30cm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specification

	X-axis	Y-axis	Z-axis
Axis construction <sup>Note 1</sup>	-	-	T6L-12-BK
AC servo motor output (W)	100	60	60
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.02	+/-0.02
Drive system	Ball screw φ15	Ball screw φ12	Ball screw φ12
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	12	12
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	800	800
Moving range (mm)	150 to 1050	150 to 550	50 to 300
Robot cable length (m)	Standard: 3.5 Option: 5,10		

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

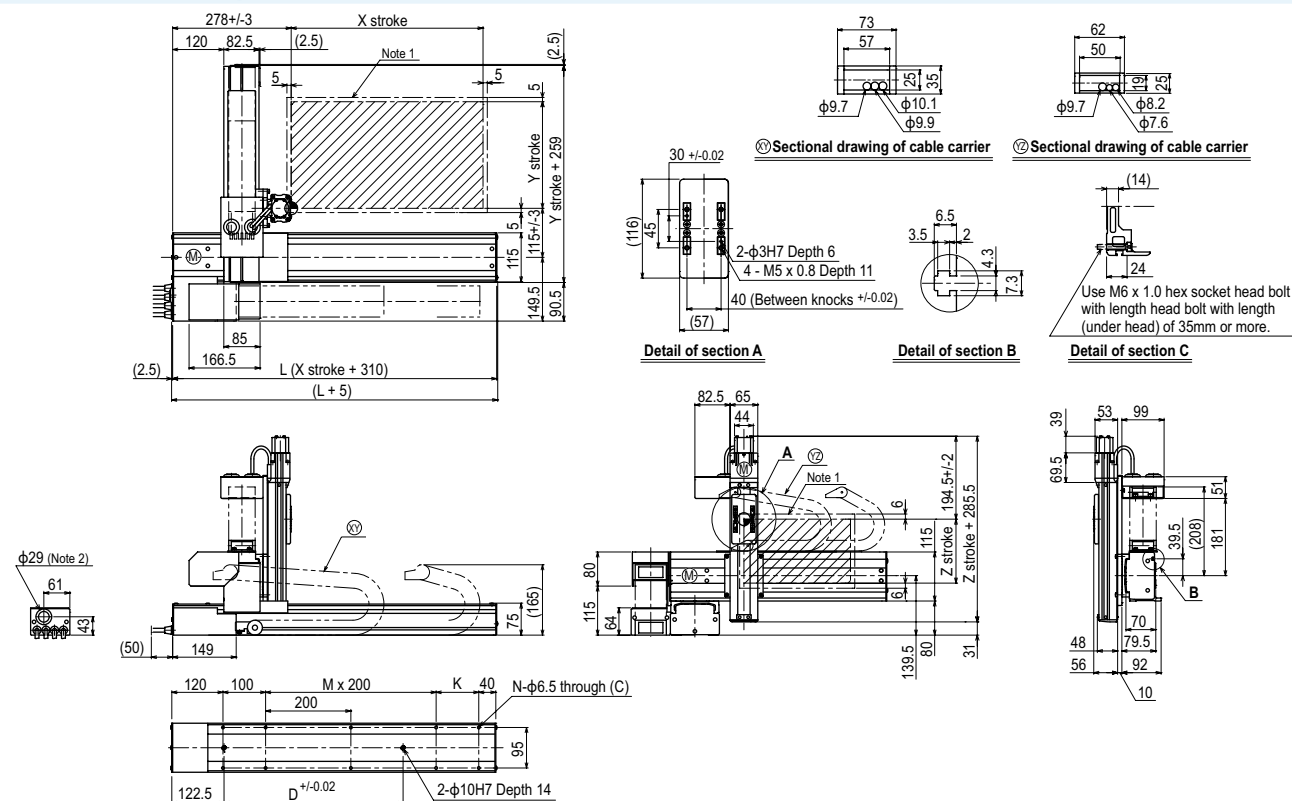
## Maximum payload (kg)

Y stroke (mm)	ZT
150 to 550	3

## Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## FXYx 3 axes / ZT A1



X stroke	150	250	350	450	550	650	750	850	950	1050
L	460	560	660	760	860	960	1060	1160	1260	1360
K	200	100	200	100	200	100	200	100	200	100
D	240	240	420	420	600	600	780	960	960	1140
M	0	1	1	2	2	3	3	4	4	5
N	6	8	8	10	10	12	12	14	14	16
Y stroke	150	250	350	450	550					
Z stroke	50	100	150	200	250	300				
Maximum speed for each stroke (mm/sec) <sup>Note 1</sup>	1200					960	780	600	540	
Speed setting	-					80%	65%	50%	45%	

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Articulated robots  
YA

Linear conveyor  
modules  
LCM100

Motor-less single  
axis actuator  
Robonity

Compact  
single-axis robots  
TRANSERVO

Single-axis robots  
FLIP-X

Linear motor  
single-axis robots  
PHASER

Cartesian  
robots  
XY-X

SCARA  
robots  
YK-X

Pick & place  
robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Arm type

Gantry type

Moving arm  
type

Pole type

XZ type



# FXyBx 2 axes

● Arm type ● Cable carrier



## Ordering method

### FXyBx - C

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
A1			15 to 245cm	15 to 55cm	3L: 3.5m
A2					5L: 5m
A3					10L: 10m
A4					

### RCX320-2

Controller / Number of controllable axes	Safety standard	Option A (O.P.A)	Option B (O.P.B)	Vision System	Absolute battery

Specify various controller setting items. RCX320 ▶ P.548

### RCX222

Controller	Usable for CE	I/O selection 1	I/O selection 2

Specify various controller setting items. RCX222 ▶ P.558

## Specification

	X-axis	Y-axis
Axis construction <sup>Note 1</sup>	B10	-
AC servo motor output (W)	100	100
Repeatability <sup>Note 2</sup> (mm)	+/-0.04	+/-0.04
Drive system	Timing belt	Timing belt
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	Equivalent to lead 25	Equivalent to lead 25
Maximum speed (mm/sec)	1875	1875
Moving range (mm)	150 to 2450	150 to 550
Robot cable length (m)	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.

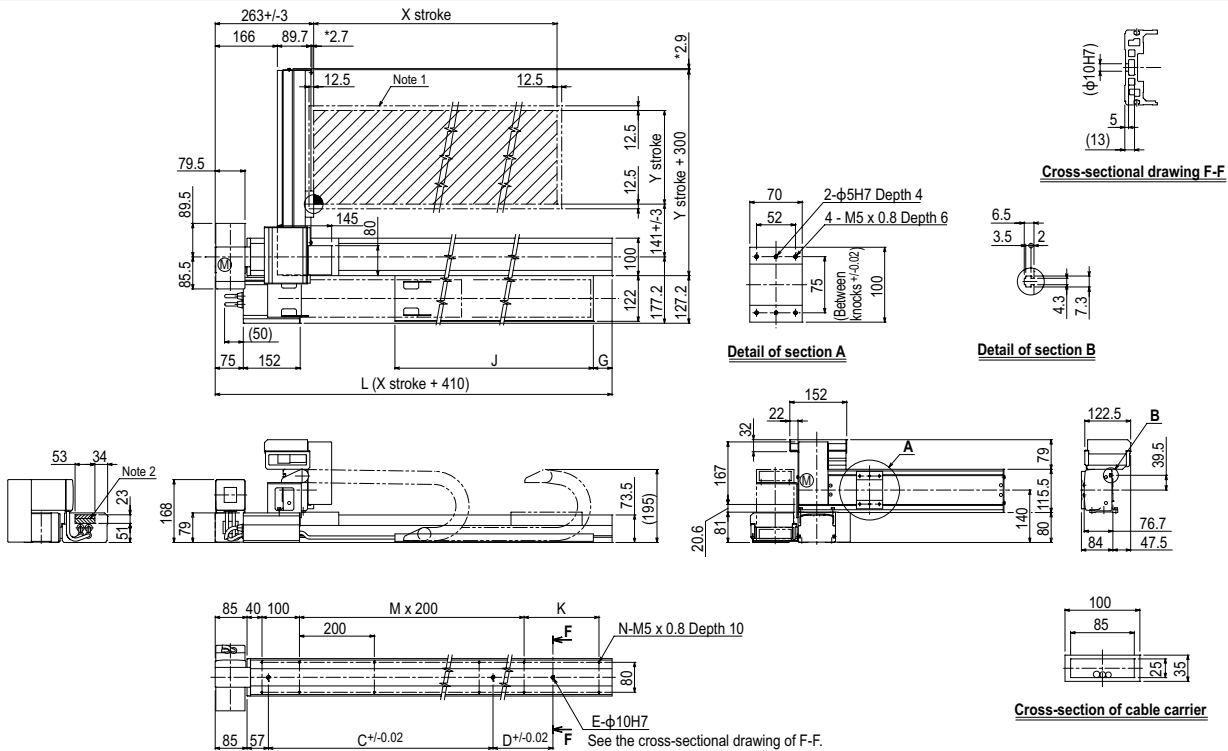
## Maximum payload (kg)

Y stroke (mm)	XY axes
150	7
250	6
350	5
450	5
550	3

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

## FXyBx 2 axes (A1)



Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper. Note 2. The shaded position indicates an user cable extraction port. Note 3. The dimension marked with an asterisk (\*) indicates the height of the screw.

X stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450
L	560	660	760	860	960	1060	1160	1260	1360	1460	1560	1660	1760	1860	1960	2060	2160	2260	2360	2460	2560	2660	2760	2860
C	240	420	600	600	780	780	960	960	1140	1140	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320
D	-	-	-	-	-	-	-	-	-	-	-	240	240	420	420	600	780	780	960	960	1140	1140	1140	1320
E	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3
G	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50
J	330	330	430	430	530	530	630	630	730	730	830	830	930	930	1030	1030	1130	1130	1230	1230	1330	1330	1430	1430
K	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200
M	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12
N	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30
Y stroke	150	250	350	450	550																			



# FXYBx 2 axes

● Arm type ● Whipover

## Ordering method

**FXYBx - S**

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
A1			15 to 95cm	15 to 55cm	3L: 3.5m
A2					5L: 5m
A3					10L: 10m
A4					

**RCX320-2**

Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
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Specify various controller setting items. **RCX320 ▶ P.548**

**RCX222**

Controller	Usable for CE	I/O selection 1	I/O selection 2
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Specify various controller setting items. **RCX222 ▶ P.558**

## Specification

	X-axis	Y-axis
Axis construction <sup>Note 1</sup>	B10	-
AC servo motor output (W)	100	100
Repeatability <sup>Note 2</sup> (mm)	+/-0.04	+/-0.04
Drive system	Timing belt	Timing belt
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	Equivalent to lead 25	Equivalent to lead 25
Maximum speed (mm/sec)	1875	1875
Moving range (mm)	150 to 950	150 to 550
Robot cable length (m)	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.

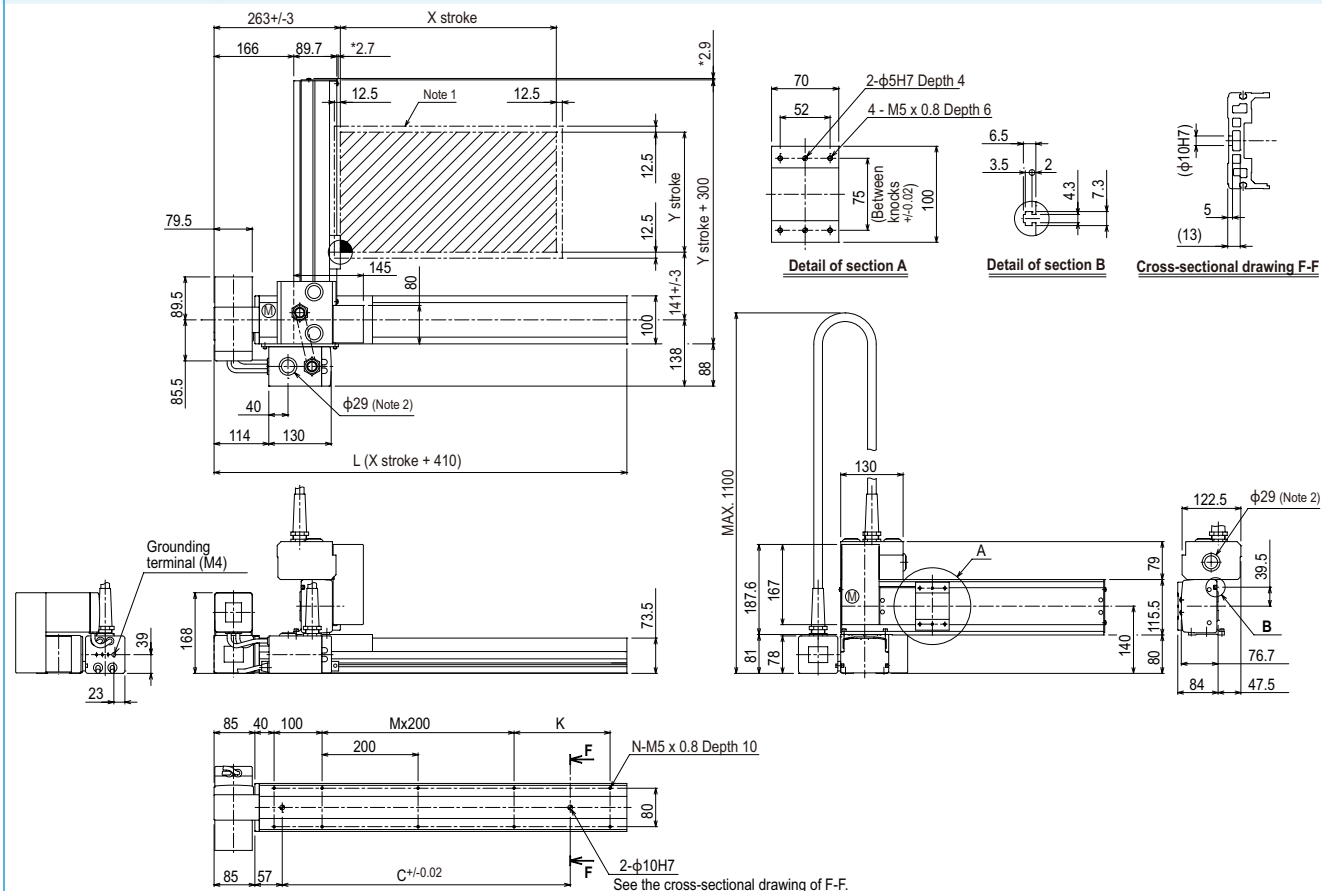
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	7
250	6
350	5
450	5
550	3

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

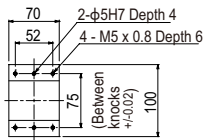
## FXYBx 2 axes A1



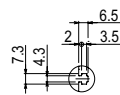
X stroke	150	250	350	450	550	650	750	850	950
L	560	660	760	860	960	1060	1160	1260	1360
C	240	420	600	600	780	780	960	960	1140
K	100	200	100	200	100	200	100	200	100
M	1	1	2	2	3	3	4	4	5
N	8	8	10	10	12	12	14	14	16
Y stroke	150	250	350	450	550				

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.  
 Note 3. The dimension marked with an asterisk (\*) indicates the height of the screw.

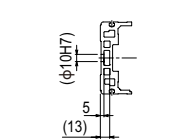
**FXYBx 2 axes A2**



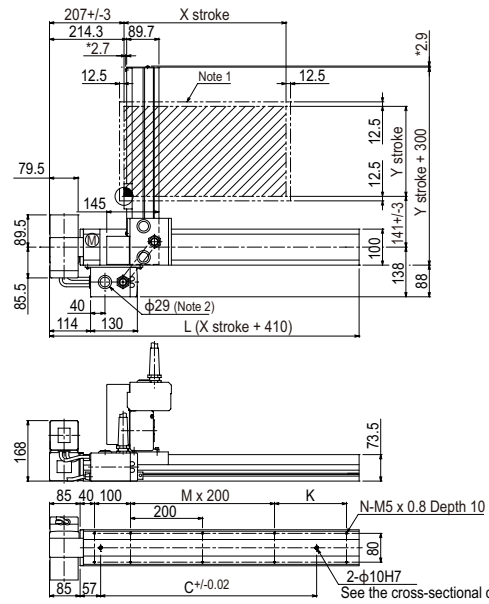
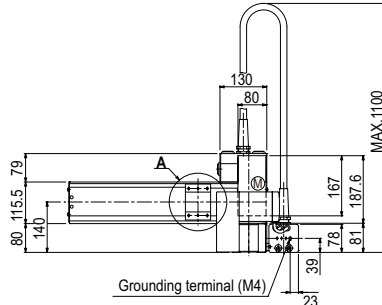
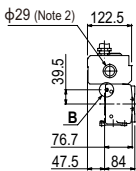
Detail of section A



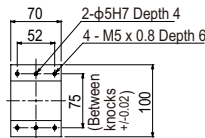
Detail of section B



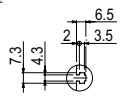
Cross-sectional drawing F-F



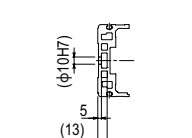
**FXYBx 2 axes A3**



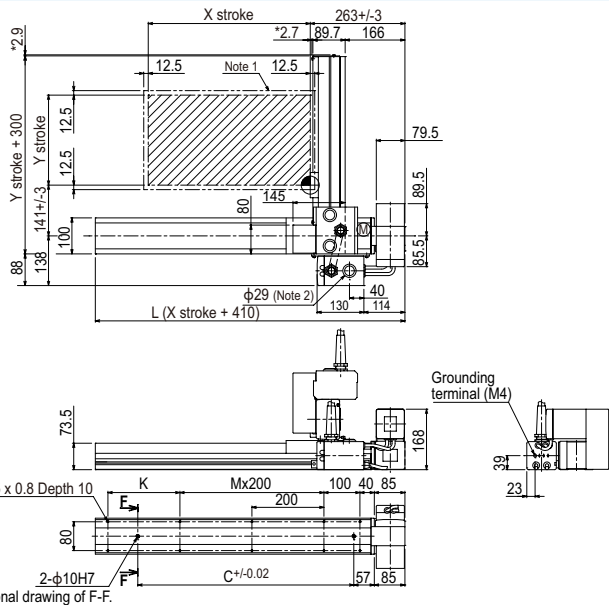
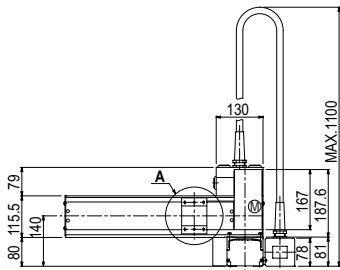
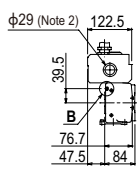
Detail of section A



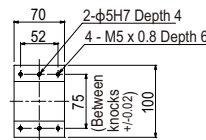
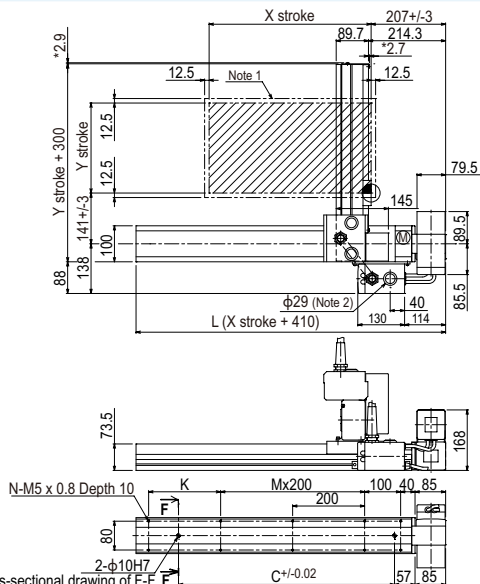
Detail of section B



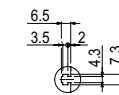
Cross-sectional drawing F-F



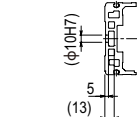
**FXYBx 2 axes A4**



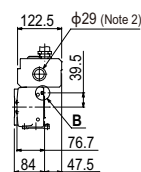
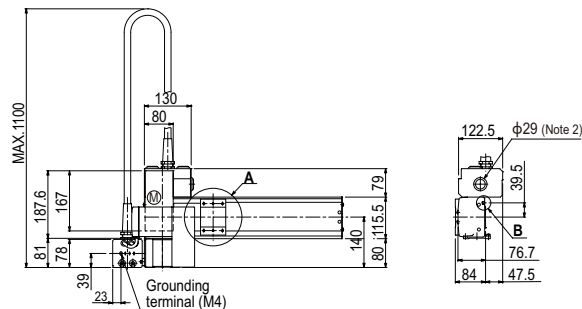
Detail of section A



Detail of section B

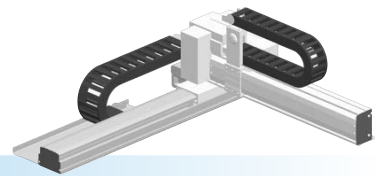


Cross-sectional drawing F-F



# FXyBx 2 axes / IO

- Arm type
- Cable carrier
- Type with Y-axis I/O cable carrier added



## Ordering method

<b>FXyBx - C</b>				<b>IO</b>		
Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Cable
A1			15 to 245cm	15 to 55cm		3L: 3.5m
A2						5L: 5m
A3						10L: 10m
A4						

<b>RCX320-2</b>					
Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
Specify various controller setting items. RCX320 ▶ P.548					

<b>RCX222</b>			
Controller	Usable for CE	I/O selection 1	I/O selection 2
Specify various controller setting items. RCX222 ▶ P.558			

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <sup>Note 1</sup>	B10	-
<b>AC servo motor output (W)</b>	100	100
<b>Repeatability</b> <sup>Note 2</sup> (mm)	+/-0.04	+/-0.04
<b>Drive system</b>	Timing belt	Timing belt
<b>Ball screw lead</b> <sup>Note 3</sup> (Deceleration ratio) (mm)	Equivalent to lead 25	Equivalent to lead 25
<b>Maximum speed (mm/sec)</b>	1875	1875
<b>Moving range (mm)</b>	150 to 2450	150 to 550
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.

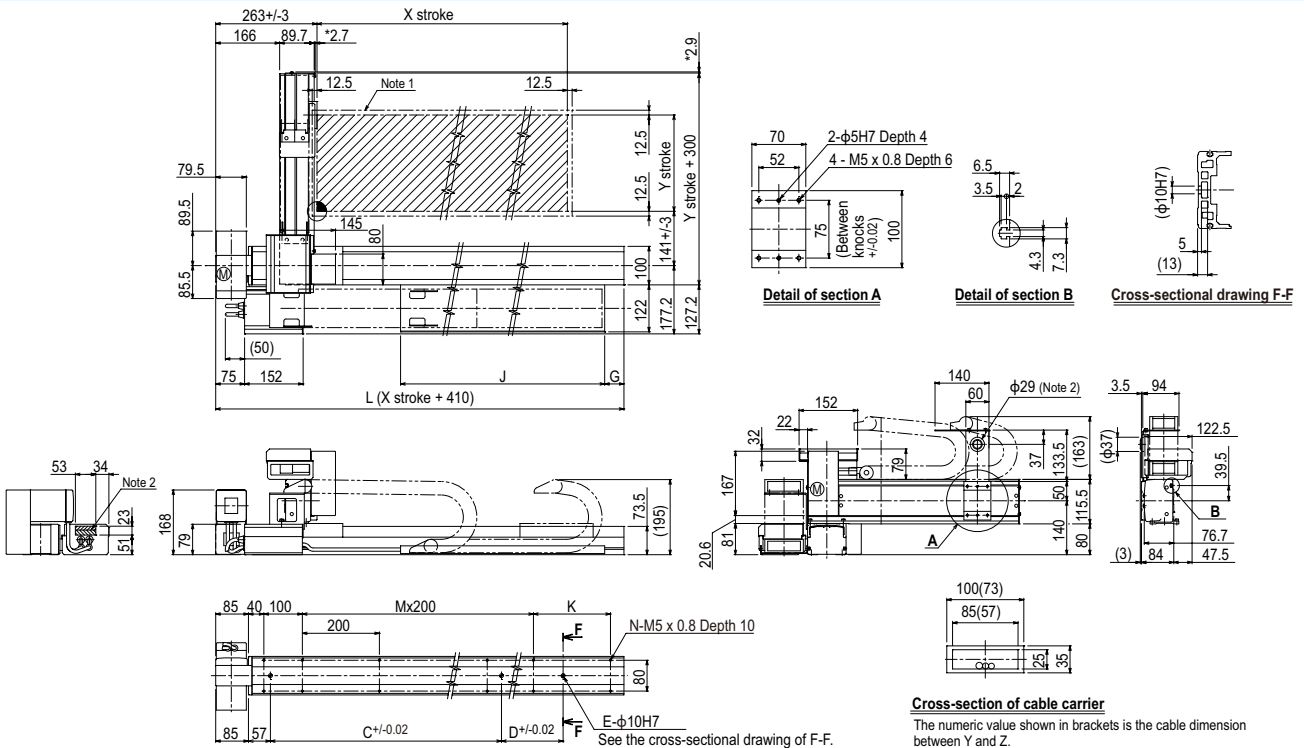
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	7
250	6
350	5
450	5
550	3

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

## FXyBx 2 axes / IO (A1)



Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper. Note 3. The dimension marked with an asterisk (\*) indicates the height of the screw.  
 Note 2. The shaded position indicates an user cable extraction port.

X stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450
<b>L</b>	560	660	760	860	960	1060	1160	1260	1360	1460	1560	1660	1760	1860	1960	2060	2160	2260	2360	2460	2560	2660	2760	2860
<b>C</b>	240	420	600	600	780	780	960	960	1140	1140	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320	1320
<b>D</b>	-	-	-	-	-	-	-	-	-	-	-	240	240	420	420	600	780	780	960	960	1140	1140	1320	1320
<b>E</b>	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3
<b>G</b>	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50
<b>J</b>	330	330	430	430	530	530	630	630	730	730	830	830	930	930	1030	1030	1130	1130	1230	1230	1330	1330	1430	1430
<b>K</b>	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200
<b>M</b>	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12
<b>N</b>	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30
<b>Y stroke</b>	150	250	350	450	550																			



Articulated robots  
YA

Linear conveyor  
modules  
LCM100

Motor-less single  
axis actuator  
Robonity

Compact  
single-axis robots  
TRANSERVO

Single-axis robots  
FLIP-X

Linear motor  
single-axis robots  
PHASER

Cartesian  
robots  
XY-X

SCARA  
robots  
YK-X

Pick & place  
robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Arm type

Gantry type

Moving arm  
type

Pole type

XZ type

# SXYx 2 axes

● Arm type ● Cable carrier



## Ordering method

### SXYx - C

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
A1			15 to 105cm	15 to 65cm	3L: 3.5m
A2					5L: 5m
A3					10L: 10m
A4					

### RCX320-2

Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery

Specify various controller setting items. RCX320 ▶ **P.548**

### RCX222

Controller	Usable for CE	I/O selection 1	I/O selection 2

Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <small>Note 1</small>	F14H	F14
<b>AC servo motor output (W)</b>	200	100
<b>Repeatability</b> <small>Note 2</small> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ15	Ball screw φ15
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	20
<b>Maximum speed</b> <small>Note 4</small> (mm/sec)	1200	1200
<b>Moving range (mm)</b>	150 to 1050	150 to 650
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

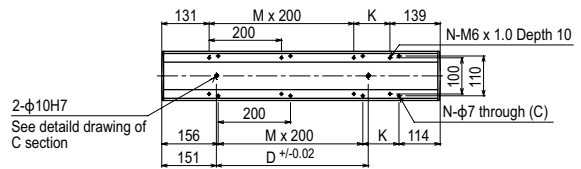
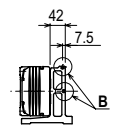
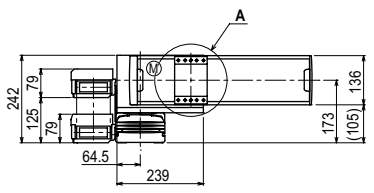
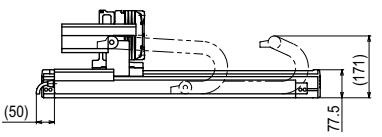
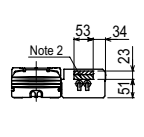
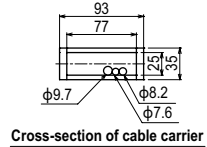
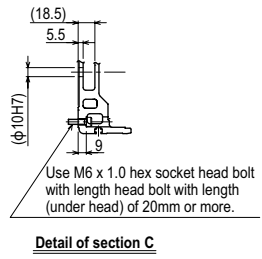
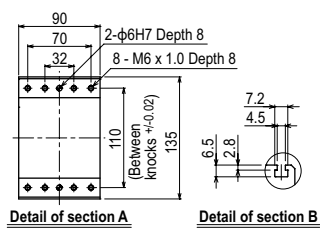
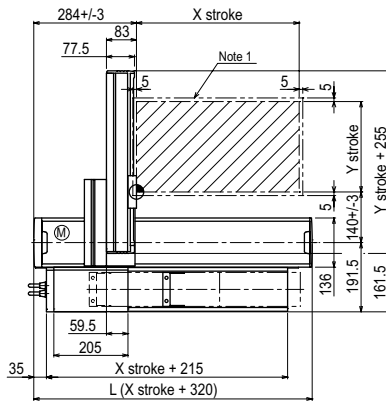
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	20
250	17
350	15
450	13
550	11
650	9

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

## SXYx 2 axes A1

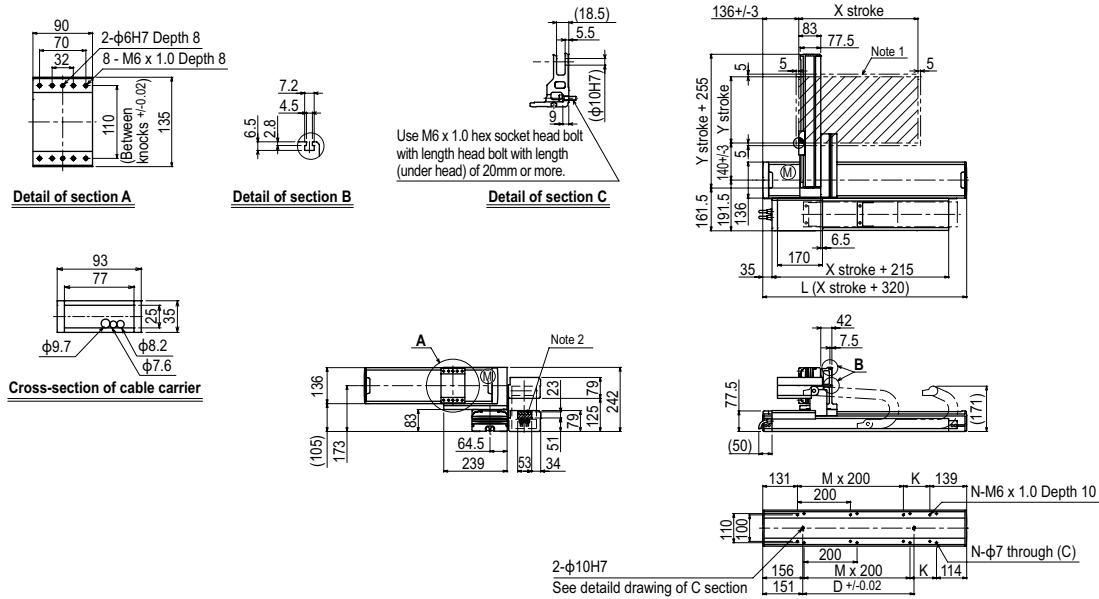


X stroke	150	250	350	450	550	650	750	850	950	1050	
	L	470	570	670	770	870	970	1070	1170	1270	1370
K	200	100	200	100	200	100	200	100	200	100	
D	240	240	420	420	600	600	780	960	960	1140	
M	0	1	1	2	2	3	3	4	4	5	
N	4	6	6	8	8	10	10	12	12	14	
Y stroke	150	250	350	450	550	650					
<b>Maximum speed for each stroke (mm/sec)</b> <small>Note 3</small>	X-axis		1200				960	780	600	540	
	Speed setting		-				80%	65%	50%	45%	

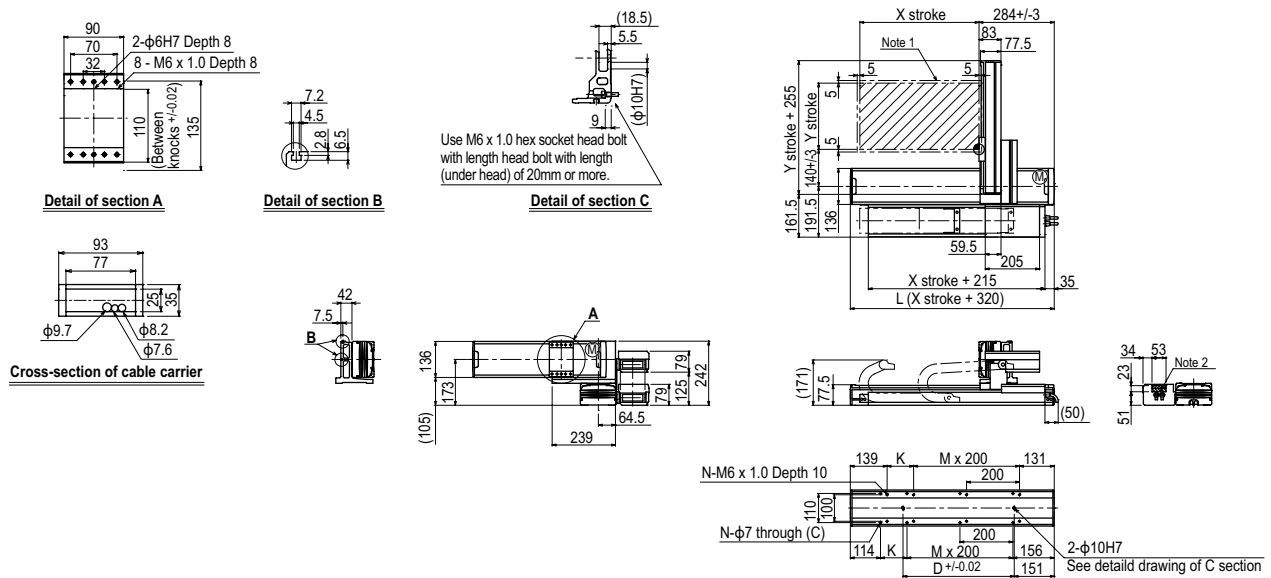
Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates a user cable extraction port.

Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

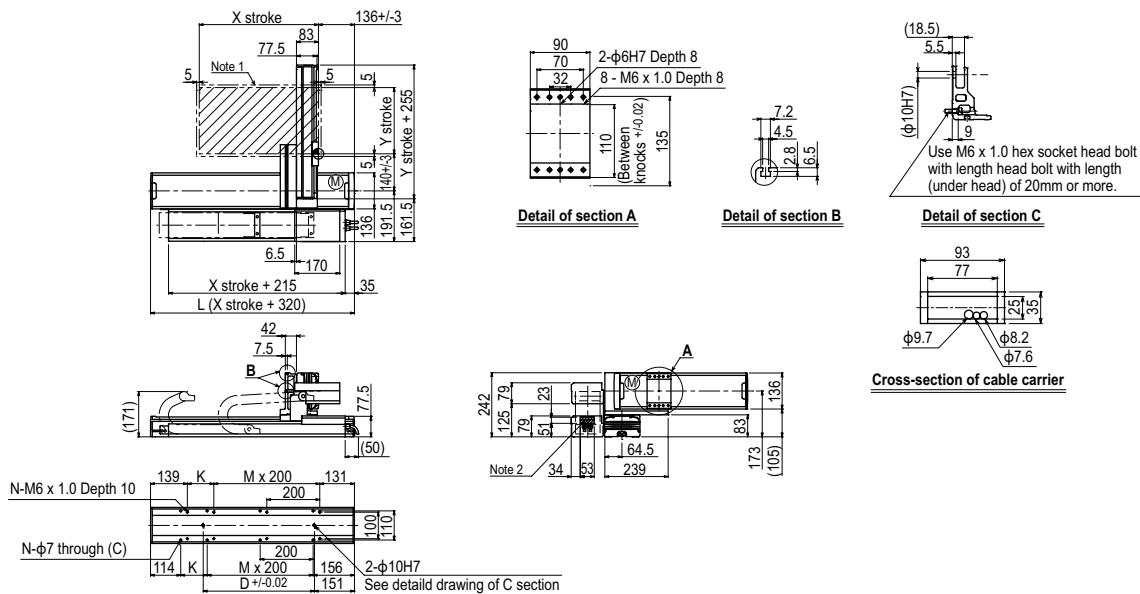
SXYx 2 axes **A2**



SXYx 2 axes **A3**



SXYx 2 axes **A4**



Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER  
 INFORMATION  
 Arm type  
 Gantry type  
 Moving arm type  
 Pole type  
 XZ type

# SXYx 2 axes

● Arm type ● Whipover



## Ordering method

### SXYx - S

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
A1			15 to 85cm	15 to 65cm	3L: 3.5m
A2					5L: 5m
A3					10L: 10m
A4					

### RCX320-2

Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery

Specify various controller setting items. RCX320 ▶ **P.548**

### RCX222

Controller	Usable for CE	I/O selection 1	I/O selection 2

Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Y-axis
Axis construction <sup>Note 1</sup>	F14H	F14
AC servo motor output (W)	200	100
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw φ15	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	1200
Moving range (mm)	150 to 850	150 to 650
Robot cable length (m)	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

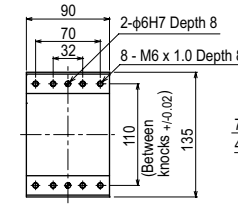
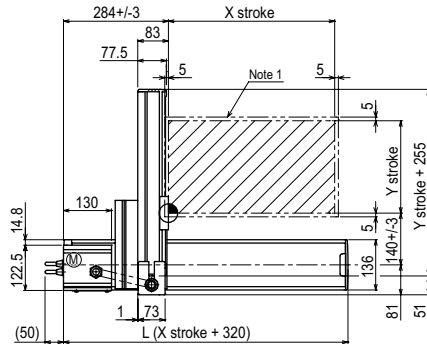
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	20
250	17
350	15
450	13
550	11
650	9

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

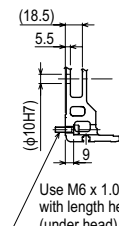
## SXYx 2 axes A1



Detail section A

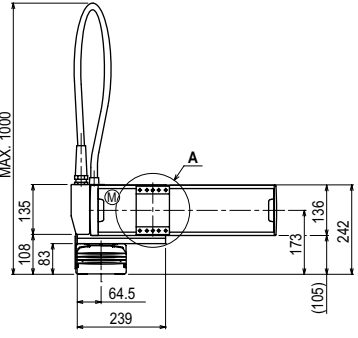
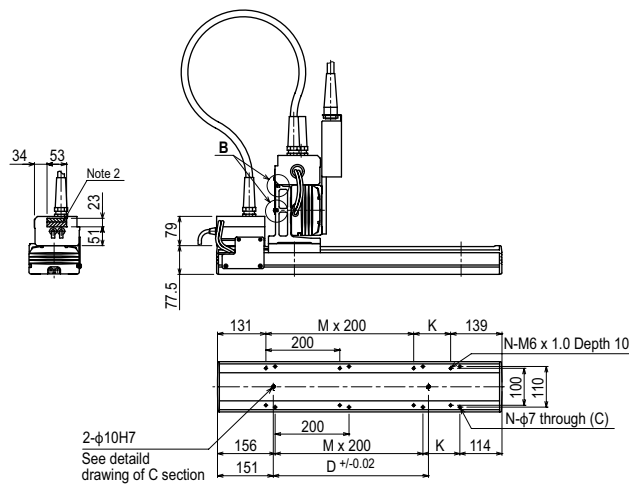


Detail section B



Detail section C

Use M6 x 1.0 hex socket head bolt with length head bolt with length (under head) of 20mm or more.



X stroke	150	250	350	450	550	650	750	850
L	470	570	670	770	870	970	1070	1170
K	200	100	200	100	200	100	200	100
D	240	240	420	420	600	600	780	960
M	0	1	1	2	2	3	3	4
N	4	6	6	8	8	10	10	12
Y stroke	150	250	350	450	550	650		
Maximum speed for each stroke (mm/sec)	X-axis		1200		960		780	
Speed setting			-		80%		65%	

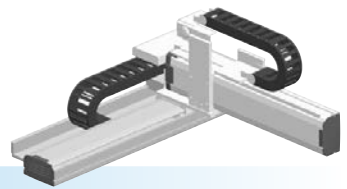
Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates a user cable extraction port.  
 Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



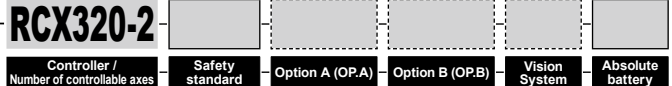
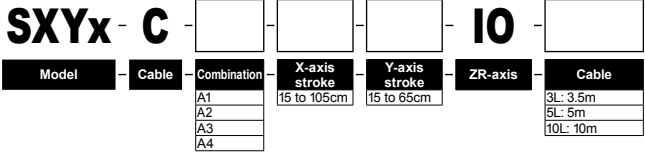


# SXYx 2 axes / IO

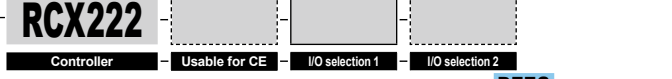
● Arm type ● Cable carrier



## Ordering method



Specify various controller setting items. RCX320 ▶ P.548



Specify various controller setting items. RCX222 ▶ P.558

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <sup>Note 1</sup>	F14H	F14
<b>AC servo motor output (W)</b>	200	100
<b>Repeatability</b> <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ15	Ball screw φ15
<b>Ball screw lead</b> <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20
<b>Maximum speed</b> <sup>Note 4</sup> (mm/sec)	1200	1200
<b>Moving range (mm)</b>	150 to 1050	150 to 650
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5, 10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

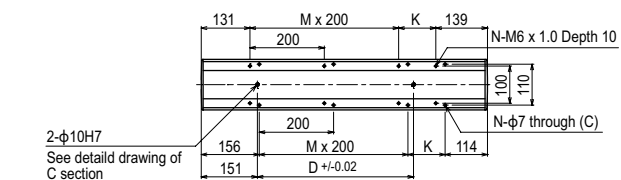
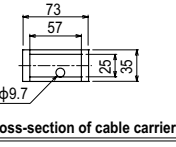
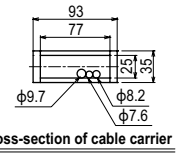
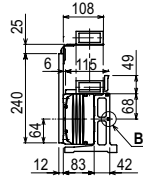
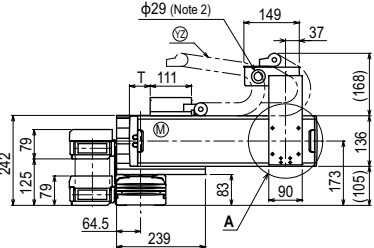
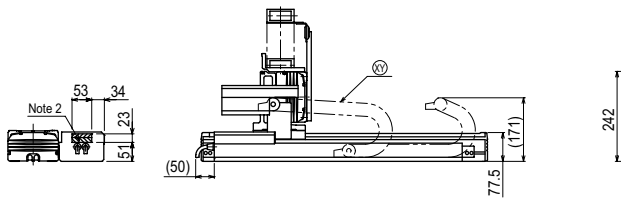
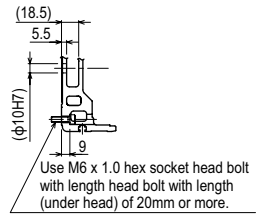
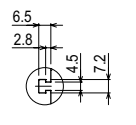
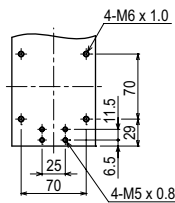
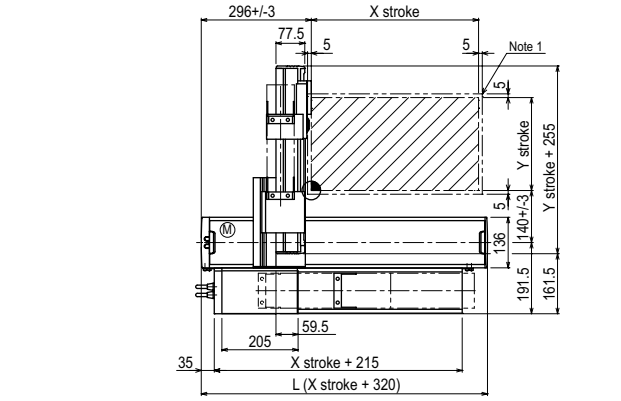
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	19
250	16
350	14
450	12
550	10
650	8

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

## SXYx 2 axes / IO A1



X stroke	150	250	350	450	550	650	750	850	950	1050
<b>L</b>	470	570	670	770	870	970	1070	1170	1270	1370
<b>K</b>	200	100	200	100	200	100	200	100	200	100
<b>D</b>	240	240	420	420	600	600	780	960	960	1140
<b>M</b>	0	1	1	2	2	3	3	4	4	5
<b>N</b>	4	6	6	8	8	10	10	12	12	14
<b>Y stroke</b>	<b>150</b>	<b>250</b>	<b>350</b>	<b>450</b>	<b>550</b>	<b>650</b>				
<b>T</b>	55	110	165	220	275	330				

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates an user cable extraction port.

Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Maximum speed for each stroke (mm/sec)	X-axis	1200	960	780	600	540
<b>Speed setting</b>		-	80%	65%	50%	45%

Articulated robots  
YA

Linear conveyor  
modules  
LCM100

Motor-less single  
axis actuator  
Robonity

Compact  
single-axis robots  
TRANSERVO

Single-axis robots  
FLIP-X

Linear motor  
single-axis robots  
PHASER

Cartesian  
robots  
XY-X

SCARA  
robots  
YK-X

Pick & place  
robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Arm type

Gantry type

Moving arm  
type

Pole type

XZ type





# SXYx 3 axes / ZFL20

- Arm type
- Cable carrier
- Z-axis: clamped base / moving table type (200W)



## Ordering method

**SXYx - C** - **ZFL20** - **RCX340-3**

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
		A1 A2 A3 A4	15 to 105cm	15 to 65cm		15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specification

	X-axis	Y-axis	Z-axis
Axis construction <sup>Note 1</sup>	F14H	F14	F10H-BK
AC servo motor output (W)	200	100	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01	+/-0.01
Drive system	Ball screw φ15	Ball screw φ15	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20	20
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	1200	1200
Moving range (mm)	150 to 1050	150 to 650	150 to 350
Robot cable length (m)	Standard: 3.5 Option: 5,10		

- Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

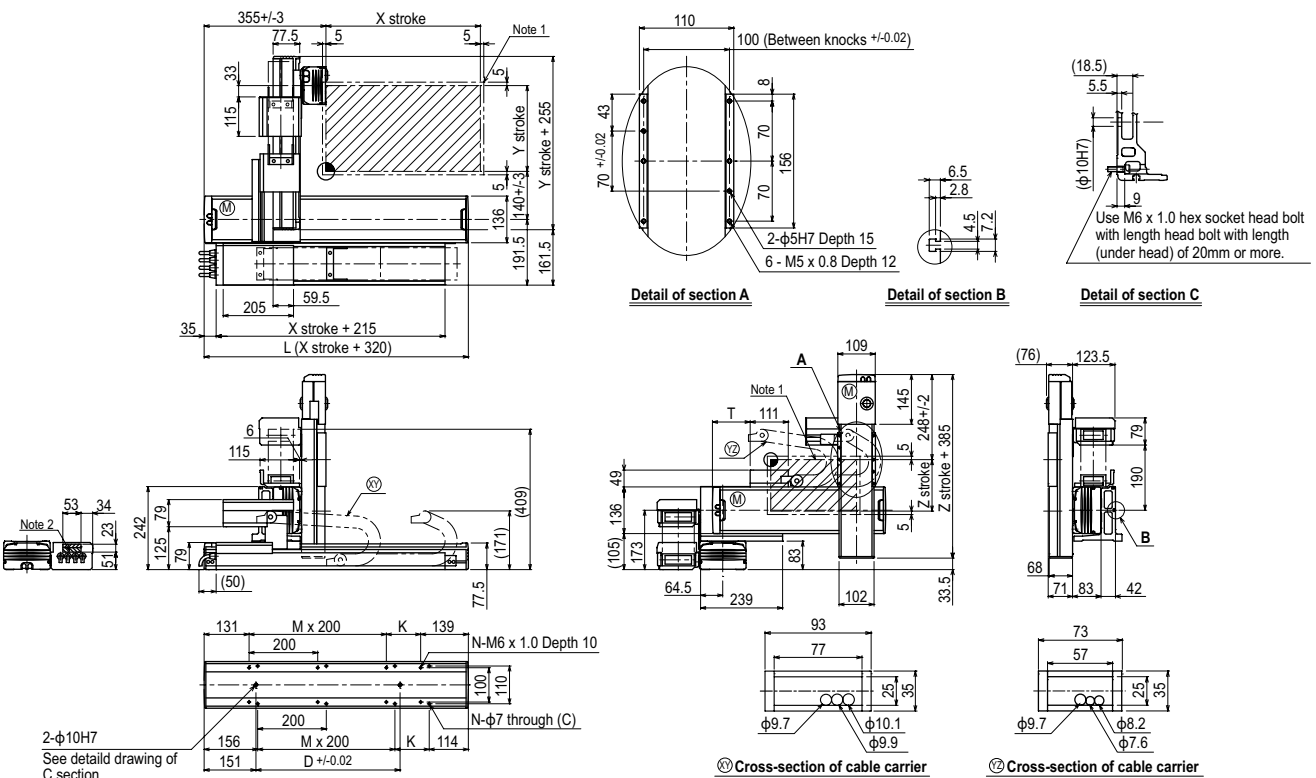
## Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)		
	150	250	350
150	8	8	8
250	8	8	8
350	8	7	6
450	6	5	4
550	4	3	2
650	2	1	1

## Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## SXYx 3 axes / ZFL20 A1



X stroke	150	250	350	450	550	650	750	850	950	1050			
L	470	570	670	770	870	970	1070	1170	1270	1370			
K	200	100	200	100	200	100	200	100	200	100			
D	240	240	420	420	600	600	780	960	960	1140			
M	0	1	1	2	2	3	3	4	4	5			
N	4	6	6	8	8	10	10	12	12	14			
Y stroke	150	250	350	450	550	650							
T	55	110	165	220	275	330							
Z stroke	150	250	350										
Maximum speed for each stroke (mm/sec)	X-axis		1200			960		780		600		540	
Speed setting			-			80%		65%		50%		45%	

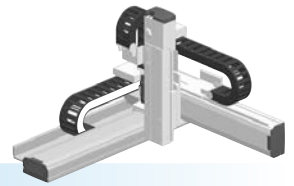
- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates a user cable extraction port.

- Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



# SXYx 3 axes / ZFH

● Arm type ● Cable carrier ● Z-axis: clamped table / moving base type (200W)



## Ordering method

**SXYx - C** [ ] [ ] [ ] **ZFH** [ ] [ ] **RCX340-3** [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
A1			15 to 105cm	15 to 65cm		15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specification

	X-axis	Y-axis	Z-axis
Axis construction <sup>Note 1</sup>	F14H	F14	F10H-BK
AC servo motor output (W)	200	100	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01	+/-0.01
Drive system	Ball screw φ15	Ball screw φ15	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20	10
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	1200	600
Moving range (mm)	150 to 1050	150 to 650	150 to 350
Robot cable length (m)	Standard: 3.5 Option: 5,10		

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

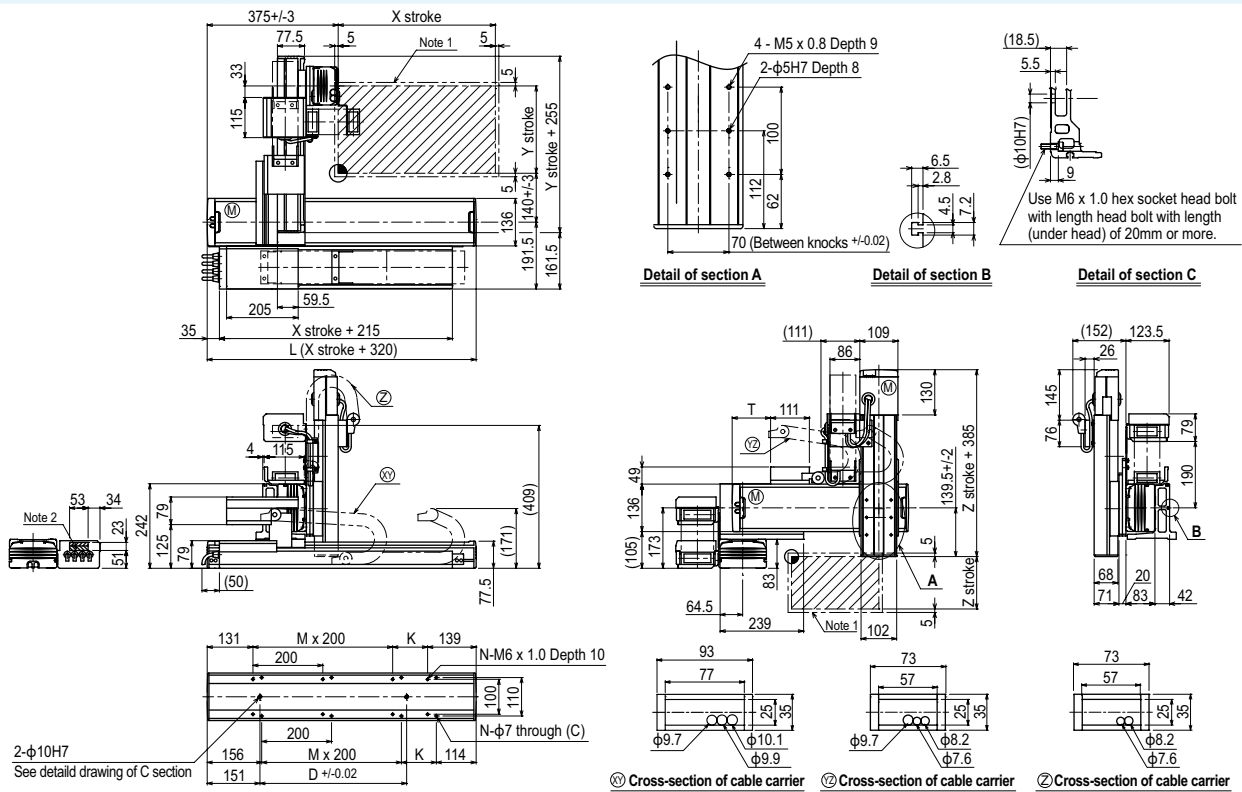
## Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)		
	150	250	350
150	13	12	11
250	10	9	8
350	8	7	6
450	6	5	4
550	4	3	2
650	2	1	1

## Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## SXYx 3 axes / ZFH A1



X stroke	150	250	350	450	550	650	750	850	950	1050	
	L	470	570	670	770	870	970	1070	1170	1270	1370
K	200	100	200	100	200	100	200	100	200	100	
D	240	240	420	420	600	600	780	960	960	1140	
M	0	1	2	2	3	3	3	4	4	5	
N	4	6	6	8	8	10	10	12	12	14	
Y stroke	150	250	350	450	550	650					
T	55	110	165	220	275	330					
Z stroke	150	250	350								
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis	1200					960	780	600	540	
Speed setting		-					80%	65%	50%	45%	

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates an user cable extraction port.

Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Arm type  
Gantry type  
Moving arm type  
Pole type  
XZ type





# SXYx 4 axes / ZRF



- Arm type
- Cable carrier
- Z-axis: clamped base / moving table type (100W)+R-axis

## Ordering method

**SXYx - C** [ ] [ ] [ ] **ZRF** [ ] [ ] **RCX340-4** [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
A1		A1	15 to 105cm	15 to 65cm		15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specification

	X-axis	Y-axis	Z-axis	R-axis
<b>Axis construction</b> <small>Note 1</small>	F14H	F14	F10-BK	R5
<b>AC servo motor output (W)</b>	200	100	100	50
<b>Repeatability</b> <small>Note 2</small> (XYZ: mm) (R: °)	+/-0.01	+/-0.01	+/-0.01	+/-0.0083
<b>Drive system</b>	Ball screw φ15	Ball screw φ15	Ball screw φ15	Harmonic gear
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	20	10	(1/50)
<b>Maximum speed</b> <small>Note 4</small> (XYZ: mm/sec) (R: °/sec)	1200	1200	600	360
<b>Moving range (XYZ: mm) (R: °)</b>	150 to 1050	150 to 650	150 to 350	360
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5, 10			

- Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

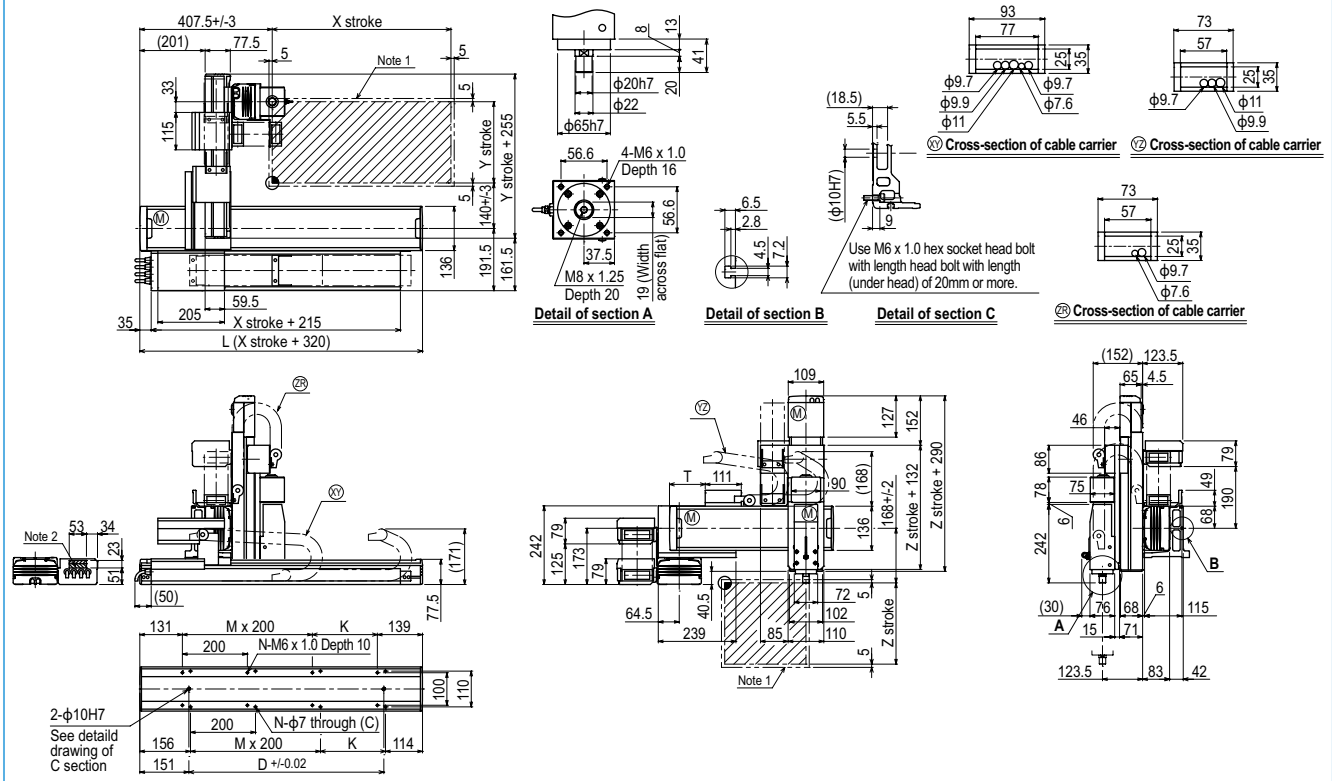
## Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)		
	150	250	350
150	6	6	6
250	6	5	4
350	4	3	2
450	3	2	1
550	2	1	-
650	1	-	-

## Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## SXYx 4 axes / ZRF (A1)



X stroke	Stroke (mm)									
	150	250	350	450	550	650	750	850	950	1050
<b>L</b>	470	570	670	770	870	970	1070	1170	1270	1370
<b>K</b>	200	100	200	100	200	100	200	100	200	100
<b>D</b>	240	240	420	420	600	600	780	960	960	1140
<b>M</b>	0	1	1	2	2	3	3	4	4	5
<b>N</b>	4	6	6	8	8	10	10	12	12	14
<b>Y stroke</b>										
<b>T</b>	55	110	165	220	275	330				
<b>Z stroke</b>										
<b>Maximum speed for each stroke (mm/sec)</b> <small>Note 3</small>										
<b>X-axis</b>	1200									
<b>Speed setting</b>	-									
							960	780	600	540
							80%	65%	50%	45%

- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates a user cable extraction port.

- Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.





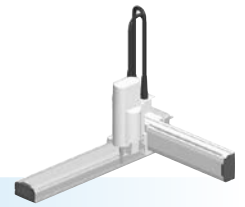






# SXYx 4 axes / ZRS

- Arm type
- Whipover
- ZR axis integrated type



## Ordering method

**SXYx - S** [ ] [ ] [ ] [ ] **15** [ ] **RCX340-4** [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
A1			15 to 85cm	15 to 65cm	ZRS12		3L: 3.5m 5L: 5m 10L: 10m								
A2					ZRS6										
A3															
A4															

Specify various controller setting items. RCX340 ▶ **P.566**

## Specification

	X-axis	Y-axis	Z-axis: ZRS12	Z-axis: ZRS6	R-axis
Axis construction <sup>Note 1</sup>	F14H	F14	-	-	-
AC servo motor output (W)	200	100	60		100
Repeatability <sup>Note 2</sup> (XYZ: mm) (R: °)	+/-0.01	+/-0.01	+/-0.02		+/-0.005
Drive system	Ball screw φ15	Ball screw φ15	Ball screw φ12		Harmonic gear
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20	12	6	(1/50)
Maximum speed <sup>Note 4</sup> (XYZ: mm/sec) (R: °/sec)	1200	1200	1000	500	1020
Moving range (XYZ: mm) (R: °)	150 to 850	150 to 650	150		360
Robot cable length (m)	Standard: 3.5 Option: 5,10				

- Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

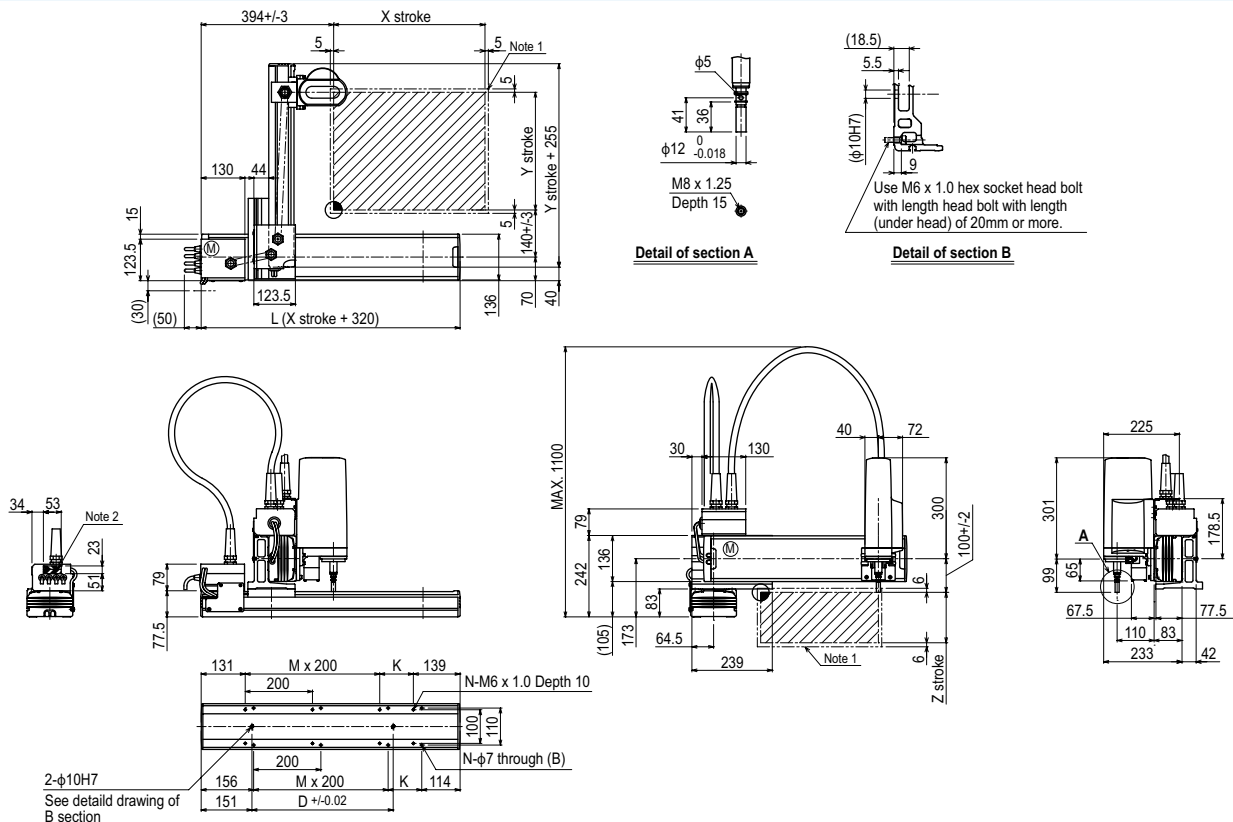
## Maximum payload (kg)

Y stroke (mm)	ZRS12	ZRS6
150	3	5
250	3	5
350	3	5
450	3	5
550	3	5
650	3	4

## Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## SXYx 4 axes / ZRS A1



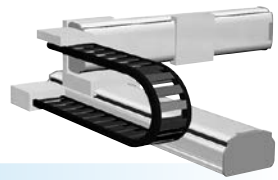
X stroke	150	250	350	450	550	650	750	850	
	L	470	570	670	770	870	970	1070	1170
K	200	100	200	100	200	100	200	100	
D	240	240	420	420	600	600	780	960	
M	0	1	1	2	2	3	3	4	
N	4	6	6	8	8	10	10	12	
Y stroke	150	250	350	450	550	650			
Z stroke	150								
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis	1200					960	780	
	Speed setting	-					80%	65%	

- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates a user cable extraction port.

- Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Articulated robots  
YA  
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Linear motor single-axis robots  
PHASER  
Cartesian robots  
XX-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Arm type  
Gantry type  
Moving arm type  
Pole type  
XZ type

# SXYBx 2 axes



● Arm type ● Cable carrier

## Ordering method

### SXYBx - C

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
A1			15 to 305cm	15 to 55cm	3L: 3.5m
A2					5L: 5m
A3					10L: 10m
A4					

### RCX320-2

Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery

Specify various controller setting items. RCX320 ▶ P.548

### RCX222

Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2

Specify various controller setting items. RCX222 ▶ P.558

Note 1. A regenerative unit is required when the maximum speed exceeds 1250mm/sec.

## Specification

	X-axis	Y-axis
Axis construction <sup>Note 1</sup>	B14H	B14
AC servo motor output (W)	200	100
Repeatability <sup>Note 2</sup> (mm)	+/-0.04	+/-0.04
Drive system	Timing belt	Timing belt
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	Equivalent to lead 25	Equivalent to lead 25
Maximum speed (mm/sec)	1875	1875
Moving range (mm)	150 to 3050	150 to 550
Robot cable length (m)	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.

## Maximum payload (kg)

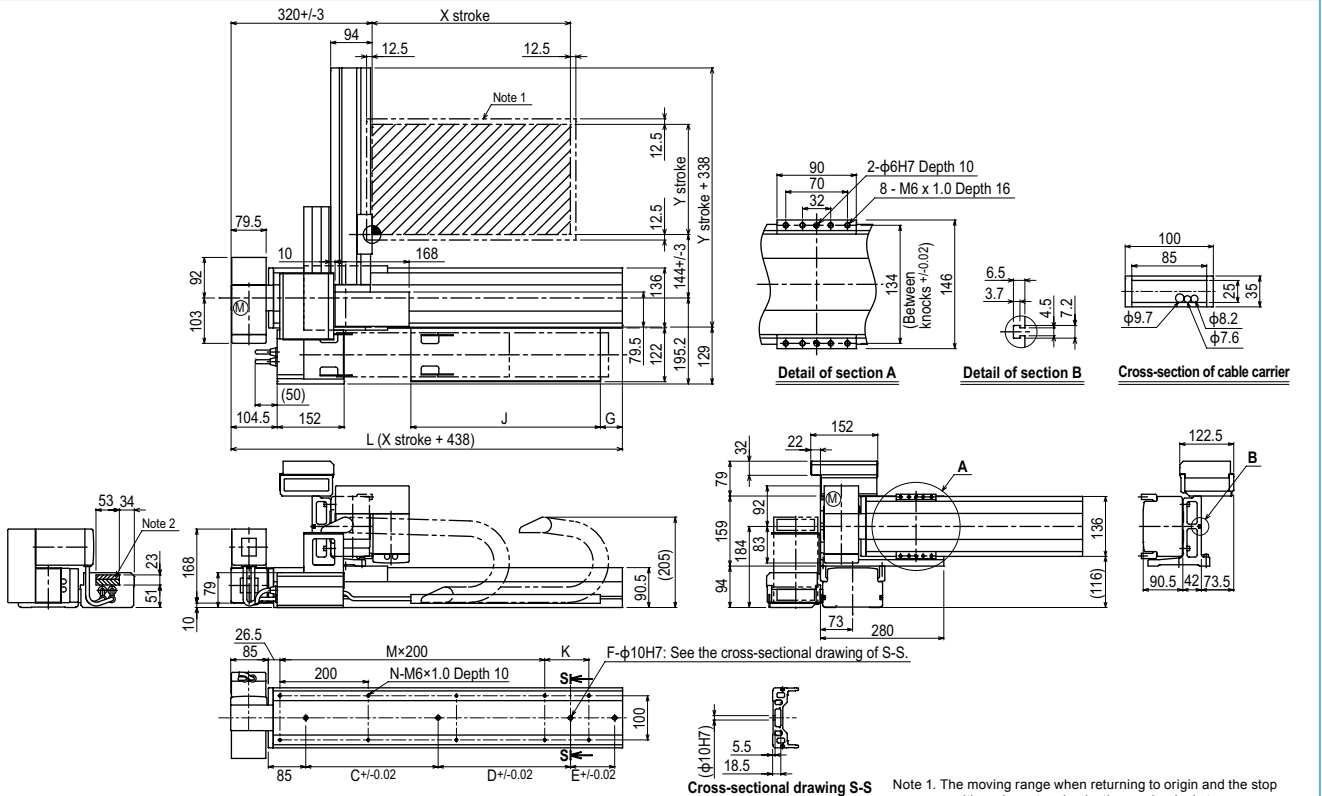
Y stroke (mm)	XY 2 axes
150	14
250	12
350	10
450	8
550	7

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

Note. A regenerative unit is required when the maximum speed exceeds 1250mm/sec.

## SXYBx 2 axes A1

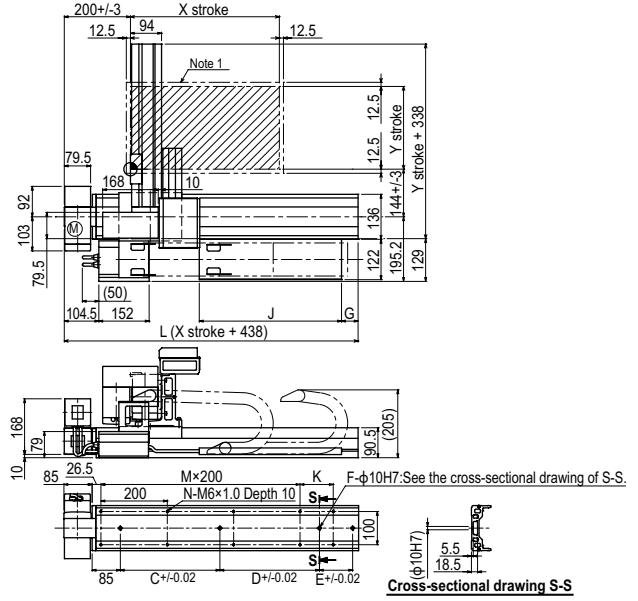
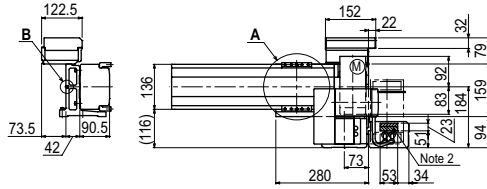
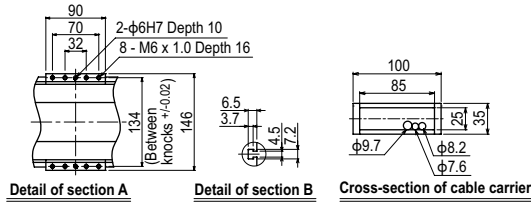


Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates an user cable extraction port.

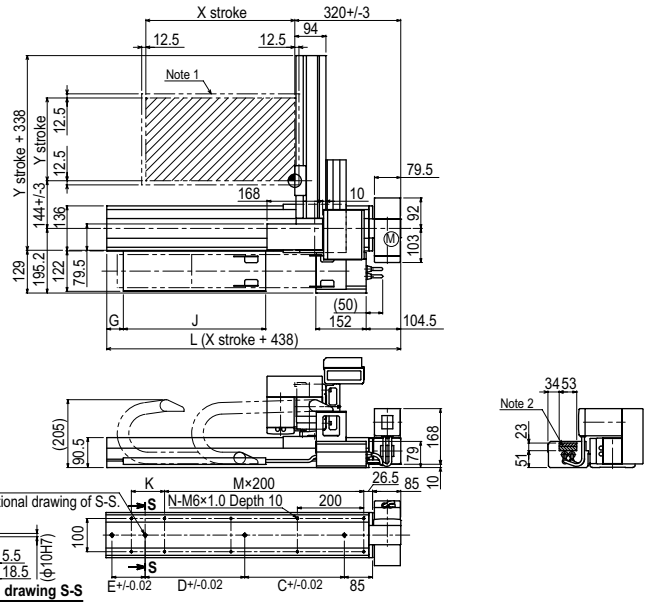
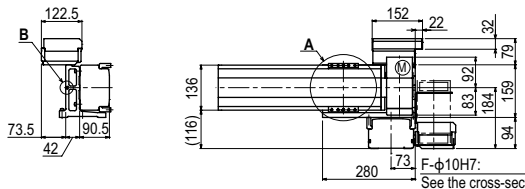
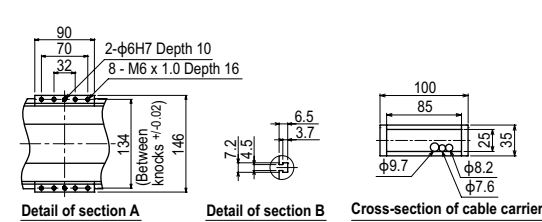
X stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650	2750	2850	2950	3050	
L	588	688	788	888	988	1088	1188	1288	1388	1488	1588	1688	1788	1888	1988	2088	2188	2288	2388	2488	2588	2688	2788	2888	2988	3088	3188	3288	3388	3488	
K	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200
C	240	420	600	600	780	780	960	960	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
D	-	-	-	-	-	-	-	-	-	-	240	240	240	420	600	600	780	780	960	960	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	240	420	420	600	600	780	780	960	960	
F	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
M	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16
N	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	
G	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	
J	330	330	430	430	530	530	630	630	730	730	830	830	930	930	1030	1030	1130	1130	1230	1230	1330	1330	1430	1430	1530	1530	1630	1630	1730	1730	
Y stroke	150	250	350	450	550																										



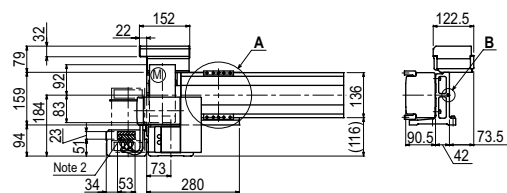
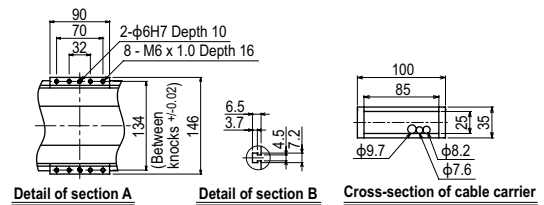
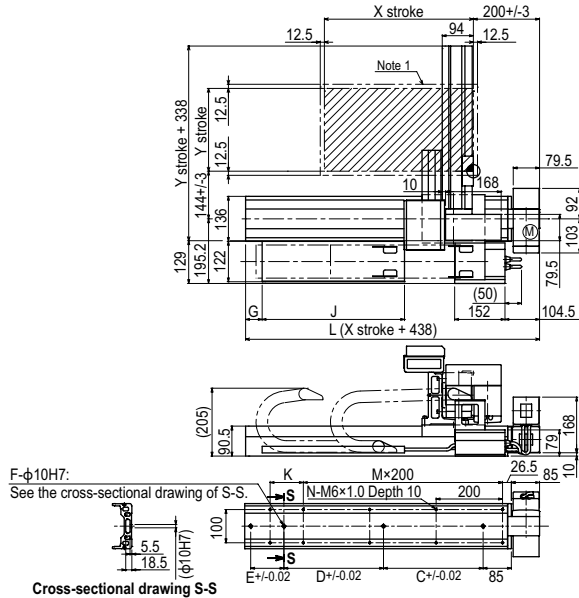
SXYBx 2 axes **A2**



SXYBx 2 axes **A3**



SXYBx 2 axes **A4**



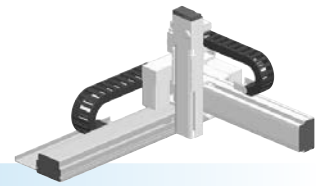
YA	Articulated robots
LCM100	Linear conveyor modules
Robonity	Motor-less single axis actuator
TRANSEVO	Compact single-axis robots
FLIP-X	Single-axis robots
PHASER	Linear motor single-axis robots
XX-X	Cartesian robots
YK-X	SCARA robots
YP-X	Pick & place robots
CLEAN	Clean
CONTROLLER	Controller
INFORMATION	Information
Arm type	Arm type
Gantry type	Gantry type
Moving arm type	Moving arm type
Pole type	Pole type
XZ type	XZ type



# SXYBx

3 axes / ZFL20

- Arm type
- Cable carrier
- Z-axis: clamped base / moving table type (200W)



## Ordering method

**SXYBx - C** [ ] [ ] [ ] **ZFL20** [ ] [ ] **RCX340-3** [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
A1			15 to 305cm	15 to 45cm		15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specification

	X-axis	Y-axis	Z-axis
Axis construction <sup>Note 1</sup>	B14H	B14	F10H-BK
AC servo motor output (W)	200	100	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.04	+/-0.04	+/-0.01
Drive system	Timing belt	Timing belt	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	Equivalent to lead 25	Equivalent to lead 25	20
Maximum speed (mm/sec)	1875	1875	1200
Moving range (mm)	150 to 3050	150 to 450	150 to 350
Robot cable length (m)	Standard: 3.5 Option: 5,10		

Note 1. Use caution that the frame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.

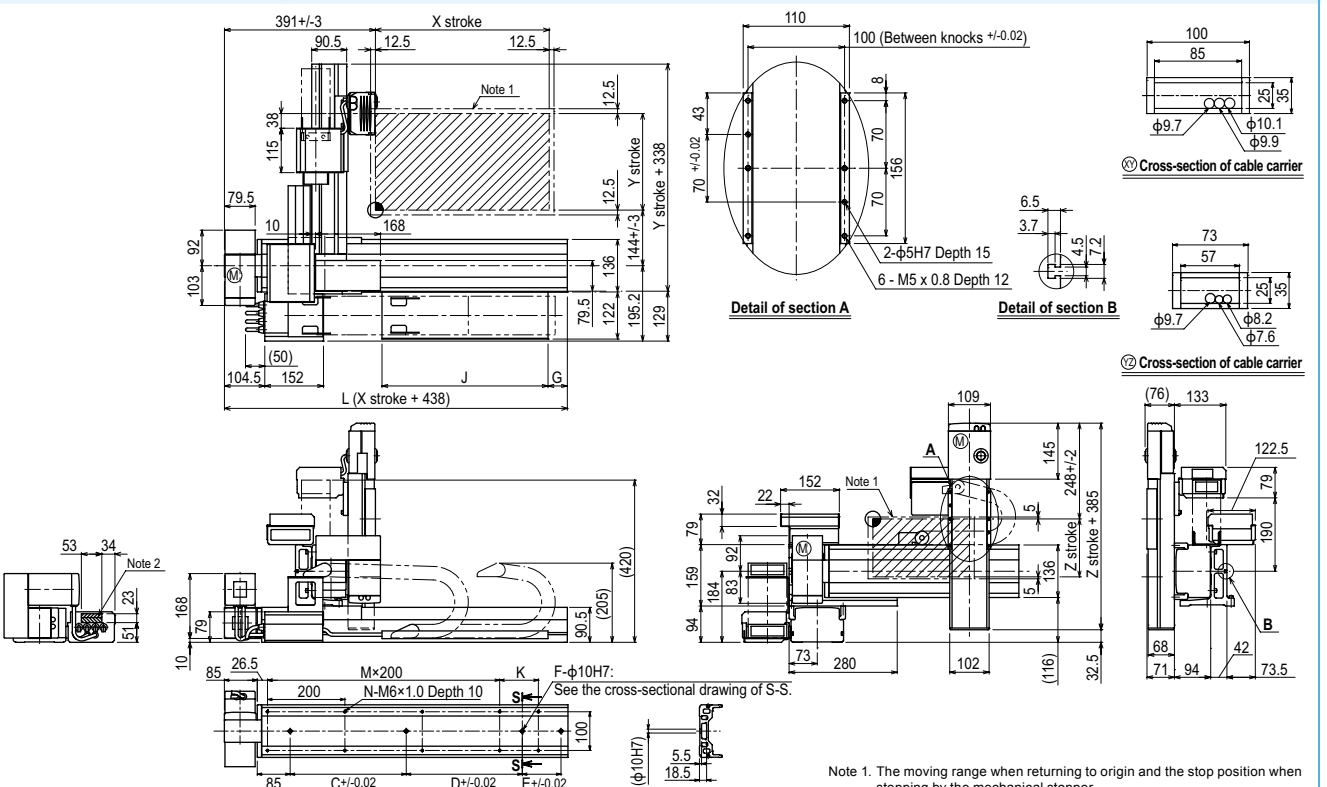
## Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)		
	150	250	350
150	7	6	5
250	5	4	3
350	3	2	1
450	1	-	-

## Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## SXYBx 3 axes / ZFL20 (A1)



X stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650	2750	2850	2950	3050						
L	588	688	788	888	988	1088	1188	1288	1388	1488	1588	1688	1788	1888	1988	2088	2188	2288	2388	2488	2588	2688	2788	2888	2988	3088	3188	3288	3388	3488						
K	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100						
C	240	420	600	600	780	780	960	960	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140						
D	-	-	-	-	-	-	-	-	-	-	240	240	240	420	600	600	780	780	960	960	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140						
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
F	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4						
M	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	16						
N	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36						
G	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50	0	50						
J	330	330	430	430	530	530	630	630	730	730	830	830	930	930	1030	1030	1130	1130	1230	1230	1330	1330	1430	1430	1530	1530	1630	1630	1730	1730						
Y stroke	150	250	350	450																																
Z stroke	150	250	350																																	









Articulated robots <b>YA</b>
Linear conveyor modules <b>LCM100</b>
Motor-less single axis actuator <b>Robonity</b>
Compact single-axis robots <b>TRANSERVO</b>
Single-axis robots <b>FLIP-X</b>
Linear motor single-axis robots <b>PHASER</b>
Cartesian robots <b>XY-X</b>
SCARA robots <b>YK-X</b>
Pick & place robots <b>YP-X</b>
<b>CLEAN</b>
<b>CONTROLLER</b>
<b>INFORMATION</b>
Arm type
Gantry type
Moving arm type
Pole type
<b>XZ type</b>

# NXY 2 axes

● Arm type ● Cable carrier



## Ordering method

**NXY - C**

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
A1			50 to 200cm	15 to 65cm	3L: 3.5m 5L: 5m 10L: 10m
A3					

**RCX320-2** **R**

Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
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Specify various controller setting items. **RCX320 ▶ P.548**

**RCX222** **R**

Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2
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Specify various controller setting items. **RCX222 ▶ P.558**

## Specification

	X-axis	Y-axis
Axis construction <sup>Note 1</sup>	N15	F14
AC servo motor output (W)	400	100
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw φ15	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20
Maximum speed (mm/sec)	1200	1200
Moving range (mm)	500 to 2000	150 to 650
Robot cable length (m)	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.

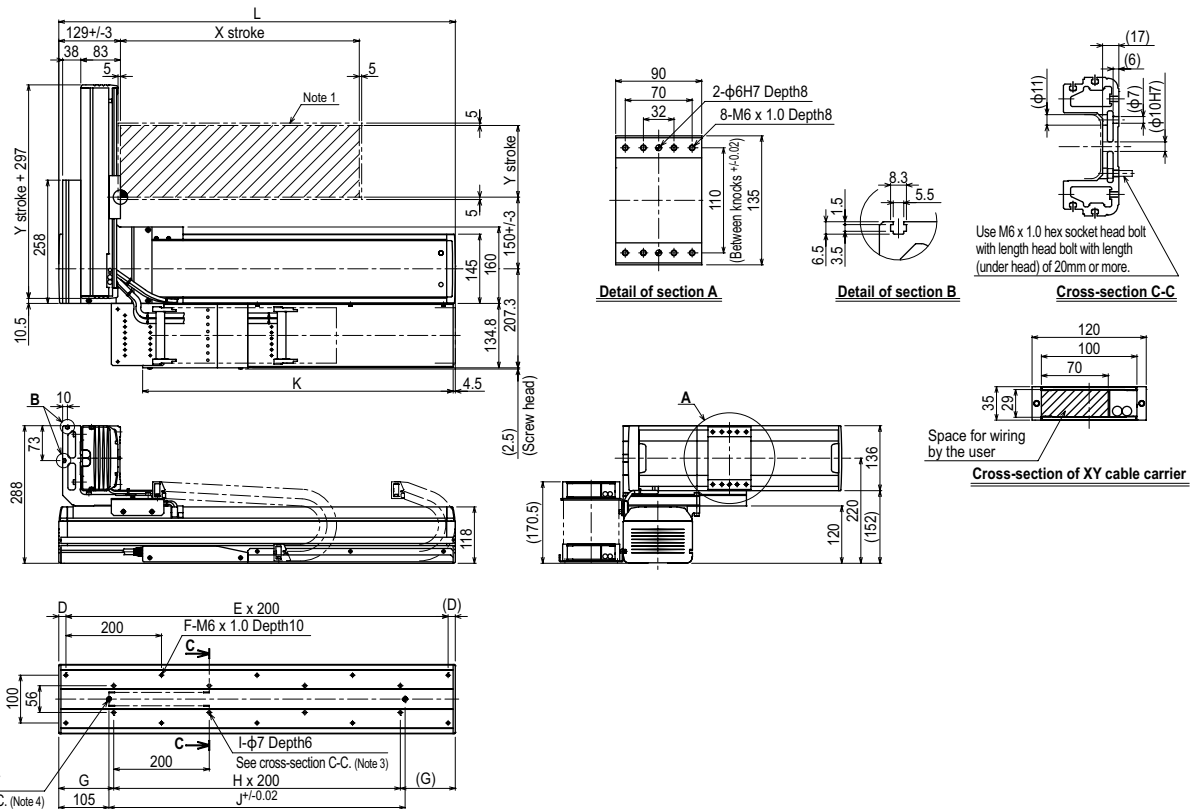
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	25
250	21
350	18
450	16
550	13
650	11

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222-R	

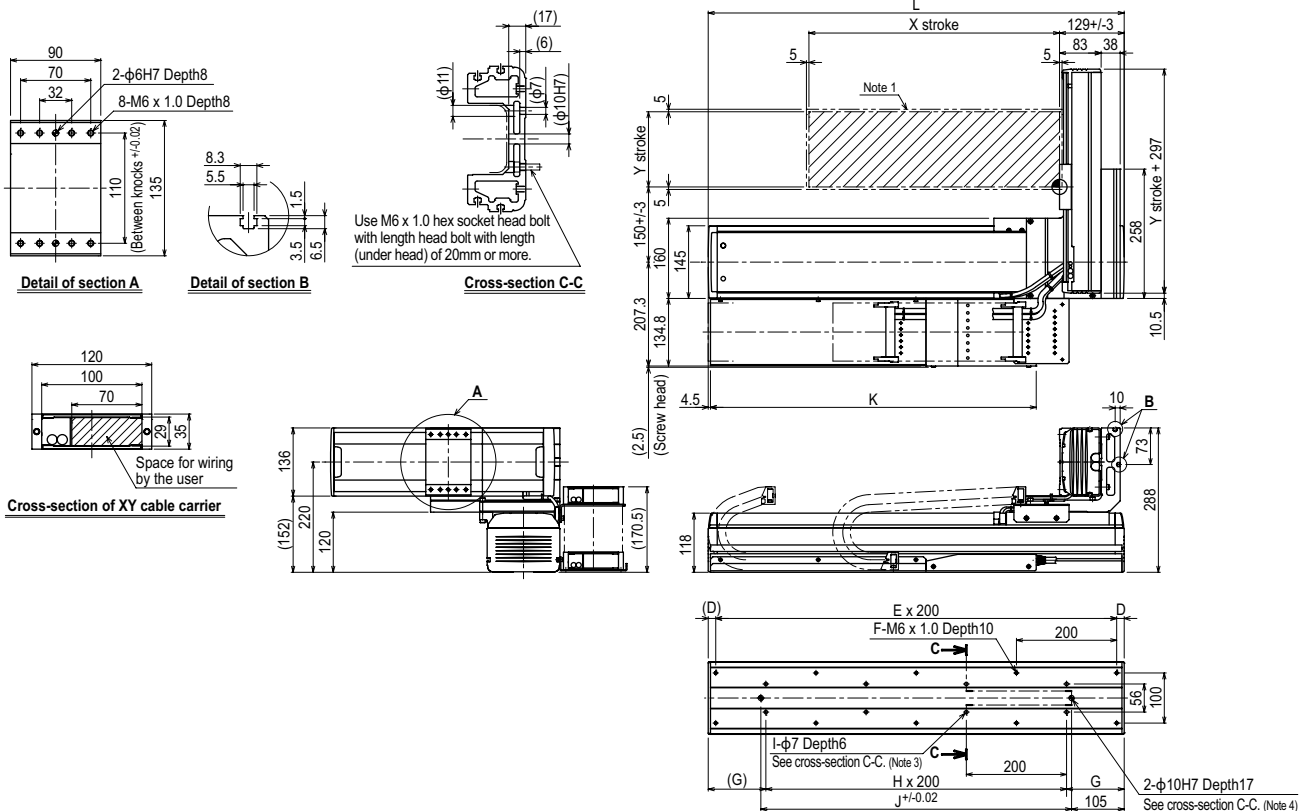
## NXY 2 axes A1



X stroke	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
L	830	930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
D	15	65	15	65	15	65	15	65	15	65	15	65	15	65	15	65
E	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
F	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24
G	115	165	115	165	115	165	115	165	115	165	115	165	115	165	115	165
H	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10
I	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22
J	620	720	820	920	1020	1120	1220	1320	1420	1520	1620	1720	1820	1920	2020	2120
K	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
Y stroke	150	250	350	450	550	650										

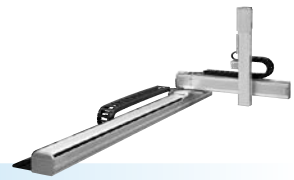
Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The origin of the X axis is set originally as the drawing and it is possible to change it to the R side origin by changing parameters.  
 Note 3. When using φ7 holes for installation, you must not use a washer, spring washer, etc. in the main unit.  
 Note 4. When using a φ10H7 hole, make sure that the pin does not go into deeper than as shown in the drawing.  
 Note 5. Use M4 tap of the box next to X axis for the user grounding terminal.  
 Note 6. The M4 taps at both ends of the cable carriage can be used for fixing cables.

NXY 2 axes **A3**



X stroke	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
L	830	930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
D	15	65	15	65	15	65	15	65	15	65	15	65	15	65	15	65
E	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
F	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24
G	115	165	115	165	115	165	115	165	115	165	115	165	115	165	115	165
H	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10
I	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22
J	620	720	820	920	1020	1120	1220	1320	1420	1520	1620	1720	1820	1920	2020	2120
K	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
Y stroke	150	250	350	450	550	650										

- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.
- Note 2. The origin of the X axis is set originally as the drawing and it is possible to change it to the R side origin by changing parameters.
- Note 3. When using φ7 holes for installation, you must not use a washer, spring washer, etc. in the main unit.
- Note 4. When using a φ10H7 hole, make sure that the pin does not go into deeper than as shown in the drawing.
- Note 5. Use M4 tap of the box next to X axis for the user grounding terminal.
- Note 6. The M4 taps at both ends of the cable carriage can be used for fixing cables.



- Arm type
- Cable carrier
- Z-axis: clamped base / moving table type (200W)

### Ordering method

**NXY - C** [ ] [ ] [ ] **ZFL20** [ ] [ ] **RCX340-3** [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	A1	A3	50 to 200cm	15 to 65cm		15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

### Specification

	X-axis	Y-axis	Z-axis
Axis construction <sup>Note 1</sup>	N15	F14	F10H-BK
AC servo motor output (W)	400	100	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01	+/-0.01
Drive system	Ball screw φ15	Ball screw φ15	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20	20
Maximum speed (mm/sec)	1200	1200	1200
Moving range (mm)	500 to 2000	150 to 650	150 to 350
Robot cable length (m)	Standard: 3.5 Option: 5,10		

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots'.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.

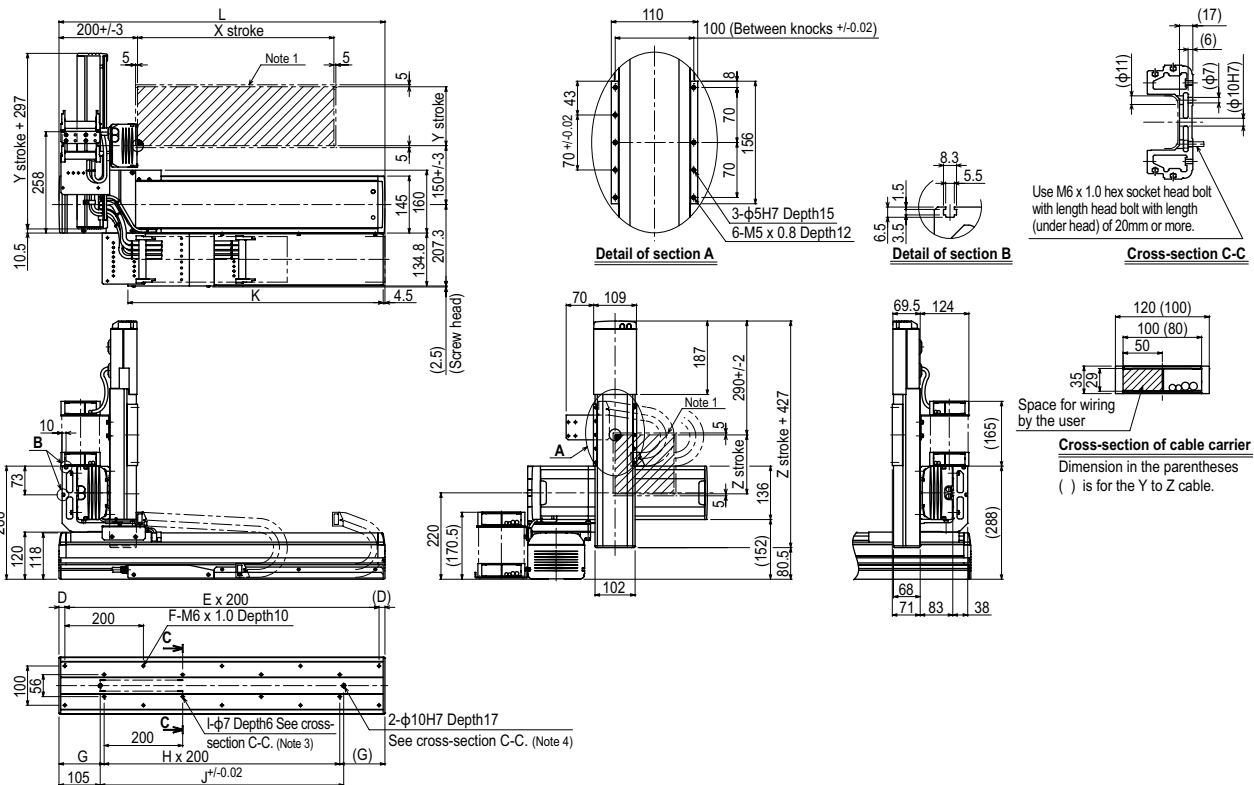
### Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)		
	150	250	350
150	8	8	8
250	8	8	8
350	8	8	8
450	8	7	6
550	5	4	3
650	3	2	1

### Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

### NXY 3 axes / ZFL20 (A1)

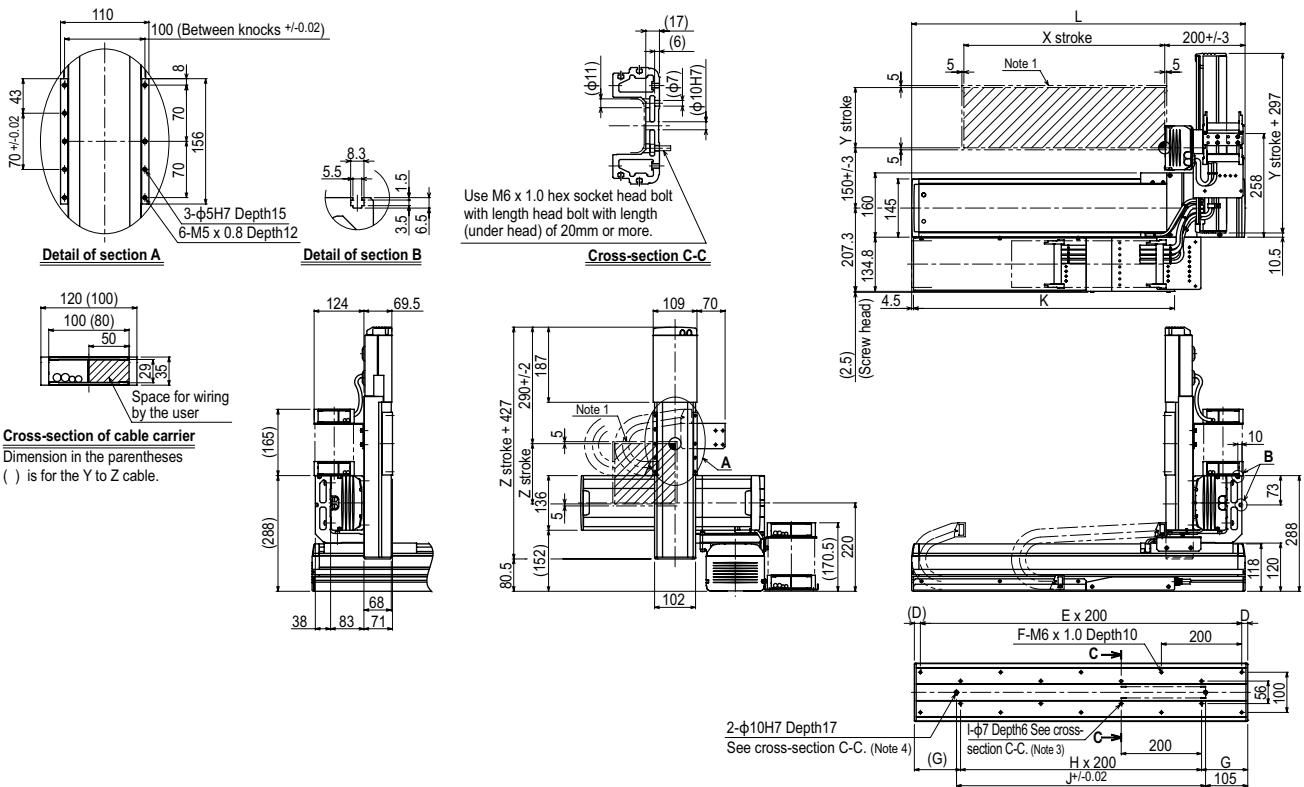


X stroke	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
L	830	930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
D	15	65	15	65	15	65	15	65	15	65	15	65	15	65	15	65
E	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
F	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24
G	115	165	115	165	115	165	115	165	115	165	115	165	115	165	115	165
H	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10
I	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22
J	620	720	820	920	1020	1120	1220	1320	1420	1520	1620	1720	1820	1920	2020	2120
K	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
Y stroke	150	250	350	450	550	650										
Z stroke	150	250	350													

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The origin of the X axis is set originally as the drawing and it is possible to change it to the R side origin by changing parameters.  
 Note 3. When using φ7 holes for installation, you must not use a washer, spring washer, etc. in the main unit.  
 Note 4. When using a φ10H7 hole, make sure that the pin does not go into deeper than as shown in the drawing.  
 Note 5. Use M4 tap of the box next to X axis for the user grounding terminal.  
 Note 6. The M4 taps at both ends of the cable carriage can be used for fixing cables.



NXY 3 axes / ZFL20 **A3**

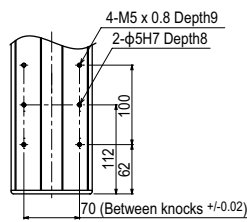


X stroke	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
L	830	930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
D	15	65	15	65	15	65	15	65	15	65	15	65	15	65	15	65
E	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
F	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24
G	115	165	115	165	115	165	115	165	115	165	115	165	115	165	115	165
H	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10
I	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22
J	620	720	820	920	1020	1120	1220	1320	1420	1520	1620	1720	1820	1920	2020	2120
K	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
Y stroke	150	250	350	450	550	650										
Z stroke	150	250	350													

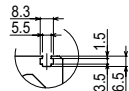
- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.
- Note 2. The origin of the X axis is set originally as the drawing and it is possible to change it to the R side origin by changing parameters.
- Note 3. When using φ7 holes for installation, you must not use a washer, spring washer, etc. in the main unit.
- Note 4. When using a φ10H7 hole, make sure that the pin does not go into deeper than as shown in the drawing.
- Note 5. Use M4 tap of the box next to X axis for the user grounding terminal.
- Note 6. The M4 taps at both ends of the cable carriage can be used for fixing cables.



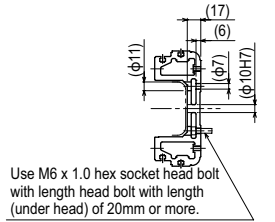
NXY 3 axes / ZFH **A3**



Detail of section A

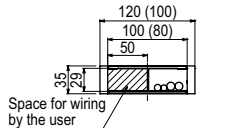


Detail of section B



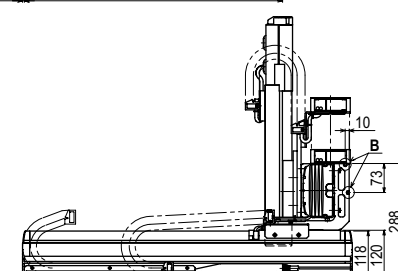
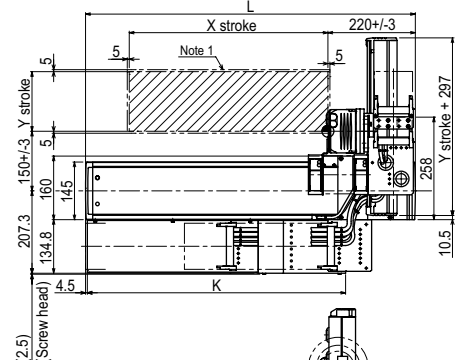
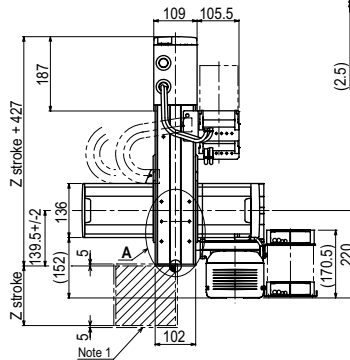
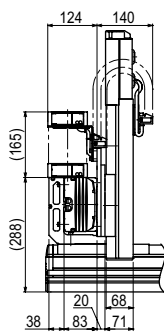
Cross-section C-C

Use M6 x 1.0 hex socket head bolt with length head bolt with length (under head) of 20mm or more.

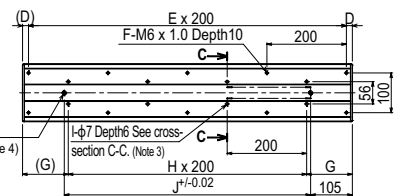


Cross-section of cable carrier  
Dimension in the parentheses ( ) is for the Y to Z cable.

Space for wiring by the user



2-φ10H7 Depth17  
See cross-section C-C. (Note 4)



X stroke	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
L	830	930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
D	15	65	15	65	15	65	15	65	15	65	15	65	15	65	15	65
E	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
F	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24
G	115	165	115	165	115	165	115	165	115	165	115	165	115	165	115	165
H	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10
I	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22
J	620	720	820	920	1020	1120	1220	1320	1420	1520	1620	1720	1820	1920	2020	2120
K	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
Y stroke	150	250	350	450	550	650										
Z stroke	150	250	350													

- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.
- Note 2. The origin of the X axis is set originally as the drawing and it is possible to change it to the R side origin by changing parameters.
- Note 3. When using φ7 holes for installation, you must not use a washer, spring washer, etc. in the main unit.
- Note 4. When using a φ10H7 hole, make sure that the pin does not go into deeper than as shown in the drawing.
- Note 5. Use M4 tap of the box next to X axis for the user grounding terminal.
- Note 6. The M4 taps at both ends of the cable carriage can be used for fixing cables.









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Linear motor  
single-axis robots  
PHASER

Cartesian  
robots  
XY-X

SCARA  
robots  
YK-X

Pick & place  
robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Arm type

Gantry type

Moving arm  
type

Pole type

XZ type

# MXYx 2 axes



● Arm type ● Cable carrier

## Ordering method

**MXYx - C**

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
A1			25 to 125cm	15 to 65cm	3L: 3.5m 5L: 5m 10L: 10m
A2					
A3					
A4					

**RCX320-2** **R**

Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
--	-----------------	-------------------	-----------------	-----------------	---------------	------------------

Specify various controller setting items. **RCX320 ▶ P.548**

**RCX222** **R**

Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2
------------	---------------	-------------------	-----------------	-----------------

Specify various controller setting items. **RCX222 ▶ P.558**

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <small>Note 1</small>	F17	F14H
<b>AC servo motor output (W)</b>	400	200
<b>Repeatability</b> <small>Note 2</small> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw $\phi$ 20	Ball screw $\phi$ 15
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	20
<b>Maximum speed</b> <small>Note 4</small> (mm/sec)	1200	1200
<b>Moving range (mm)</b>	250 to 1250	150 to 650
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

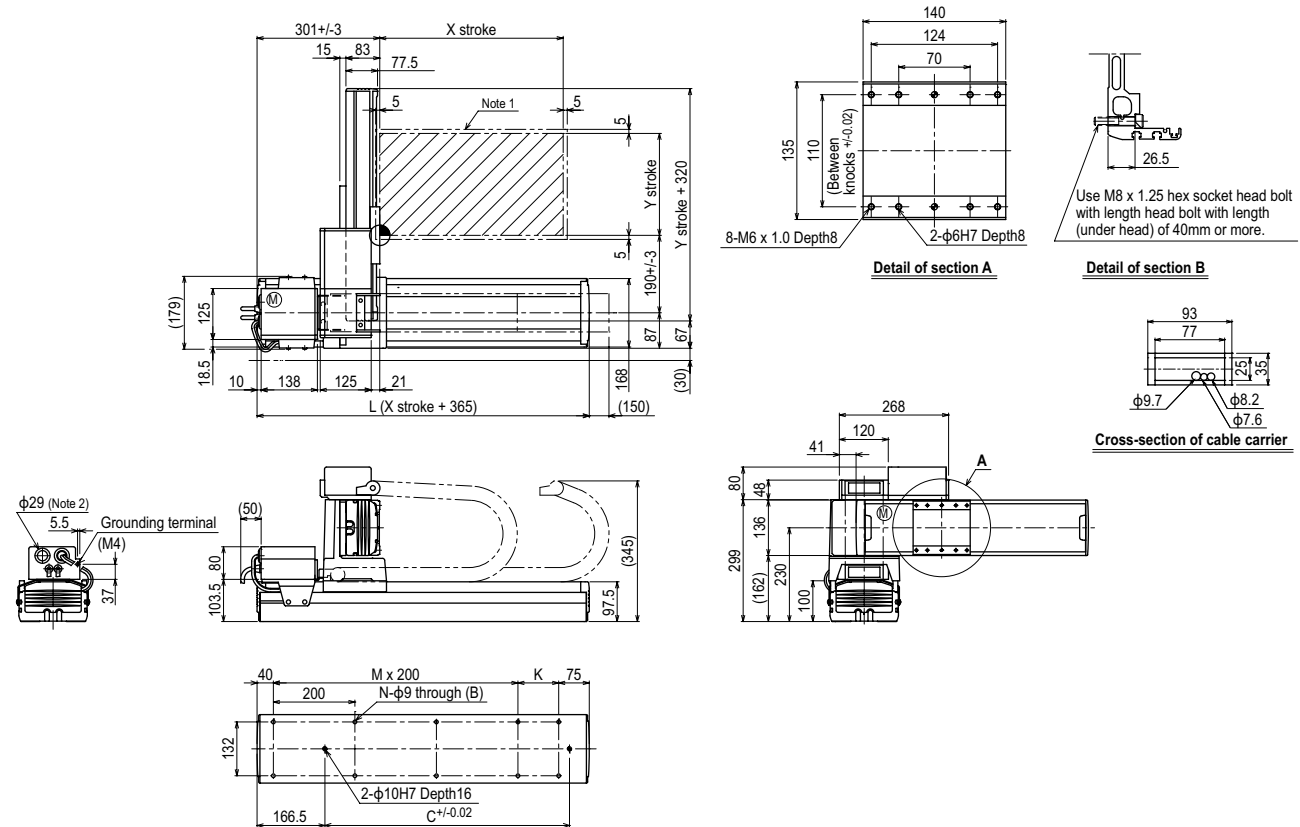
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	30
250	30
350	25
450	20
550	20
650	16

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222-R	

## MXYx 2 axes A1



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250
<b>L</b>	615	715	815	915	1015	1115	1215	1315	1415	1515	1615
<b>K</b>	100	200	100	200	100	200	100	200	100	200	100
<b>C</b>	240	420	600	600	780	780	960	960	1140	1140	1320
<b>M</b>	2	2	3	3	4	4	5	5	6	6	7
<b>N</b>	8	8	10	10	12	12	14	14	16	16	18
<b>Y stroke</b>	150	250	350	450	550	650					
<b>Maximum speed for each stroke (mm/sec)</b> <small>Note 3</small>	X-axis		1200				960	840	720	600	480
<b>Speed setting</b>			-				80%	70%	60%	50%	40%

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

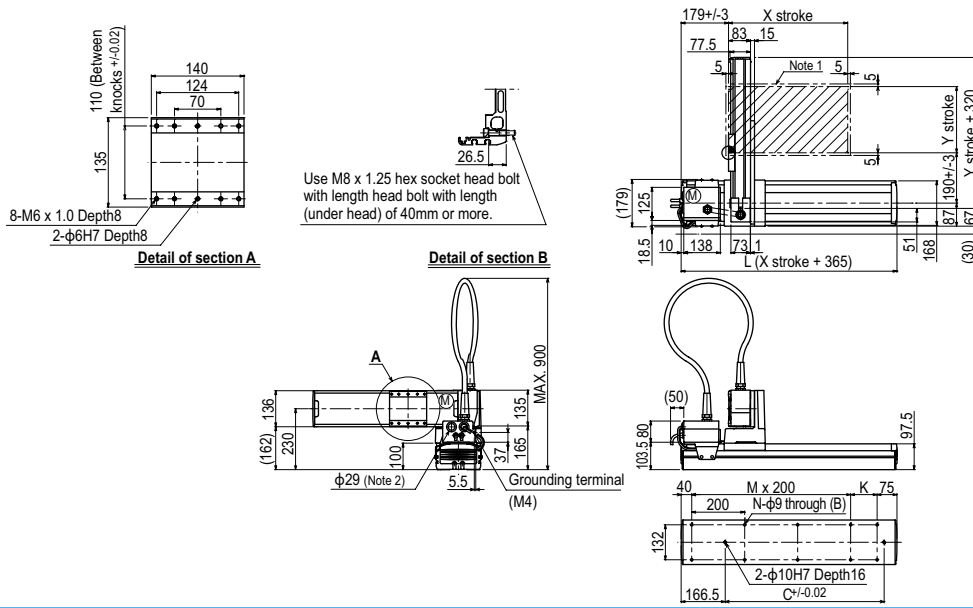




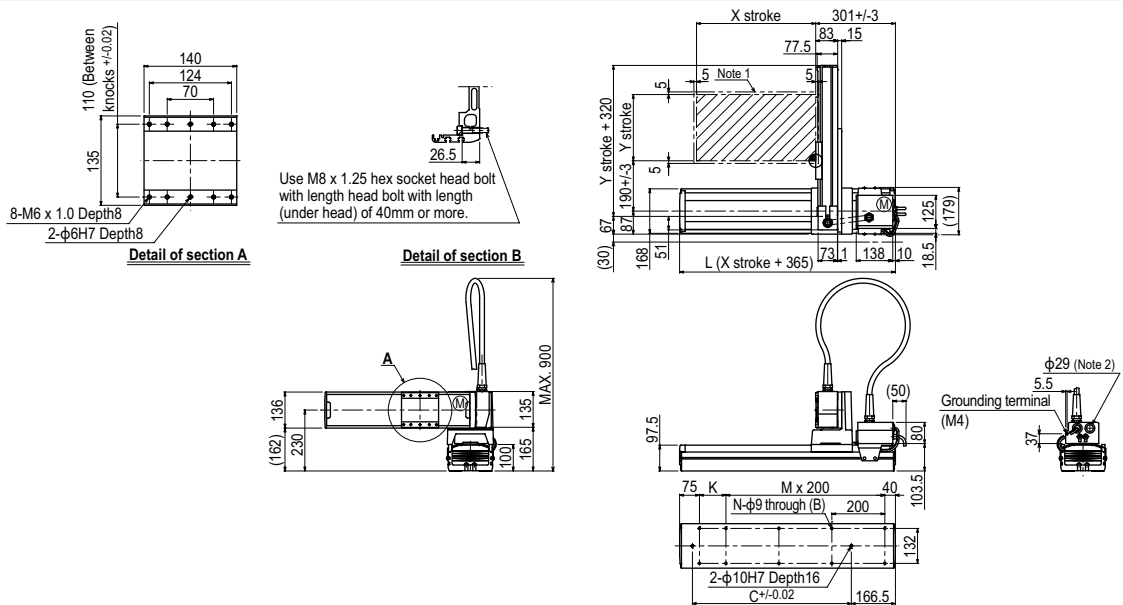


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Cartesian robots
XY-X
SCARA robots
YK-X
Pick & place robots
YP-X
CLEAN
CONTROLLER INFORMATION
Arm type
Gantry type
Moving arm type
Pole type
XZ type

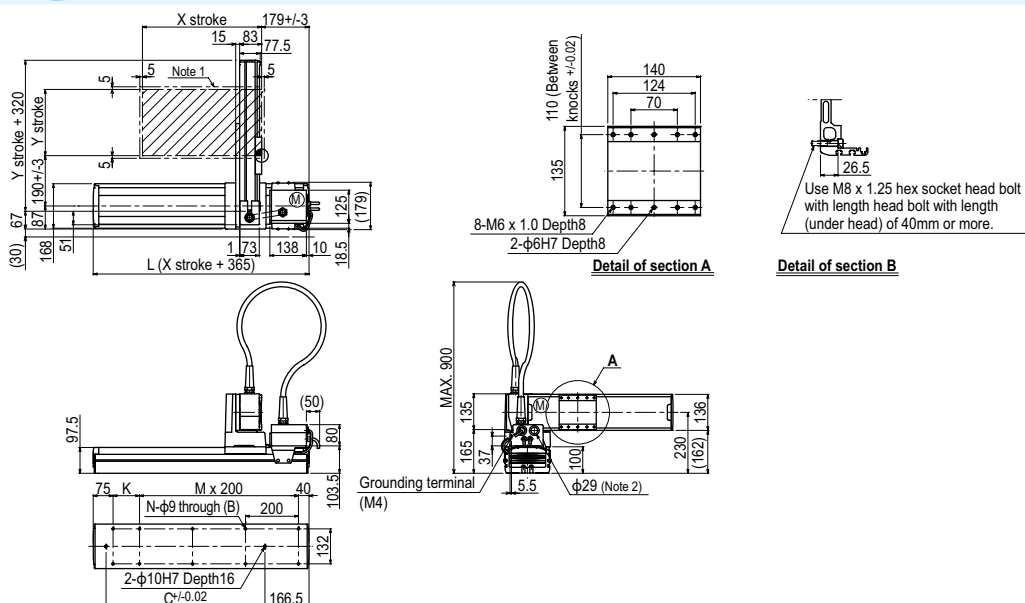
MXyX 2 axes **A2**



MXyX 2 axes **A3**



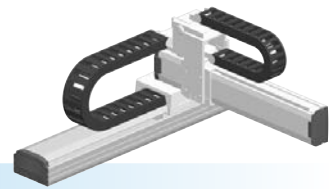
MXyX 2 axes **A4**



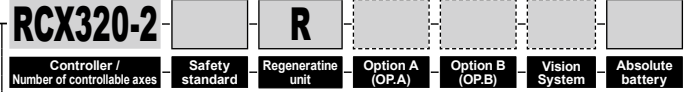
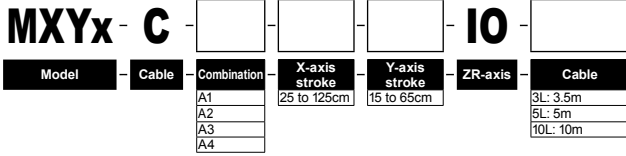
# MXYx

2 axes / IO

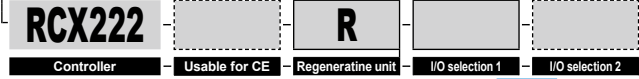
- Arm type
- Cable carrier
- Type with Y-axis I/O cable carrier added



## Ordering method



Specify various controller setting items. RCX320 ▶ P.548



Specify various controller setting items. RCX222 ▶ P.558

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <sup>Note 1</sup>	F17	F14H
<b>AC servo motor output (W)</b>	400	200
<b>Repeatability</b> <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ20	Ball screw φ15
<b>Ball screw lead</b> <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20
<b>Maximum speed</b> <sup>Note 4</sup> (mm/sec)	1200	1200
<b>Moving range (mm)</b>	250 to 1250	150 to 650
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5, 10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

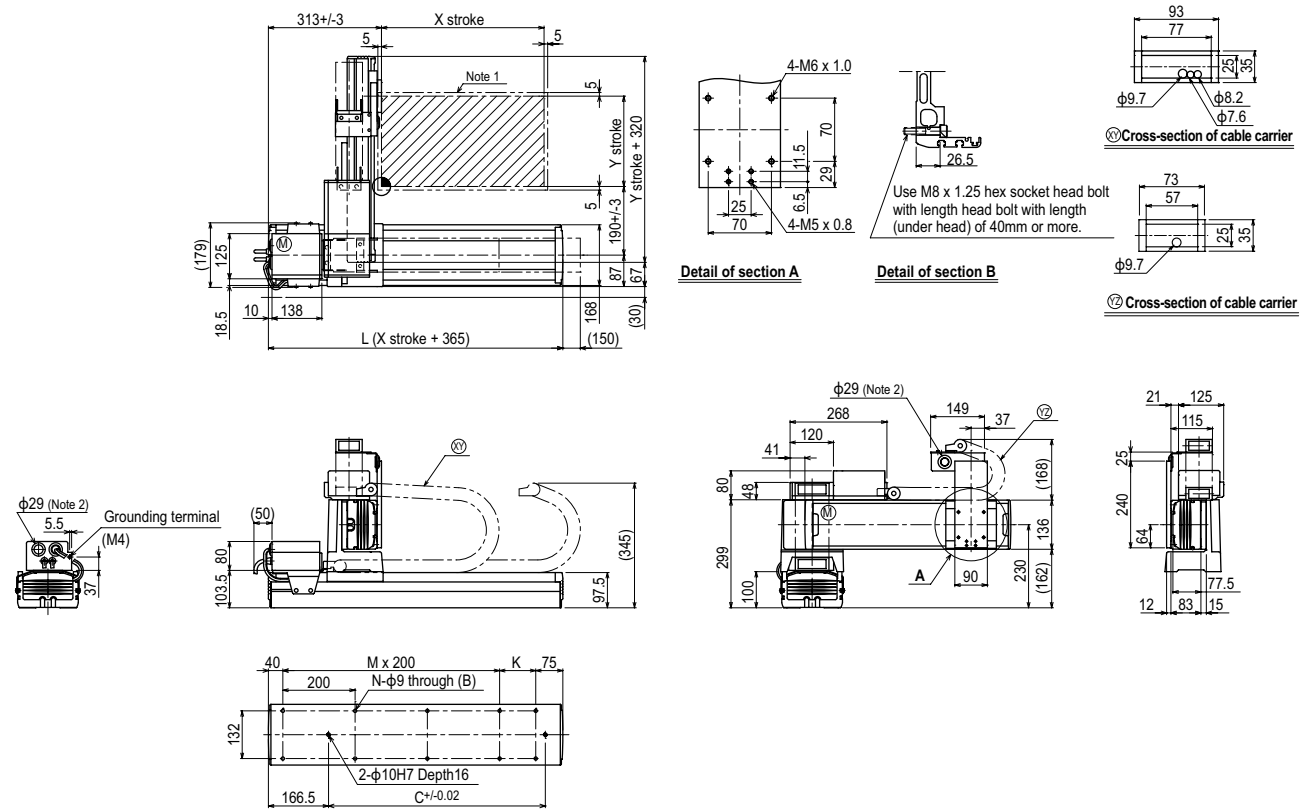
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	29
250	29
350	24
450	19
550	19
650	15

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222-R	

## MXYx 2 axes / IO (A1)



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250
<b>L</b>	615	715	815	915	1015	1115	1215	1315	1415	1515	1615
<b>K</b>	100	200	100	200	100	200	100	200	100	200	100
<b>C</b>	240	420	600	780	780	960	960	1140	1140	1320	1320
<b>M</b>	2	2	3	3	4	4	5	5	6	6	7
<b>N</b>	8	8	10	10	12	12	14	14	16	16	18
<b>Y stroke</b>	150	250	350	450	550	650					
<b>Maximum speed for each stroke (mm/sec)</b> <sup>Note 3</sup>	<b>X-axis</b>		1200				960	840	720	600	480
<b>Speed setting</b>			-				80%	70%	60%	50%	40%

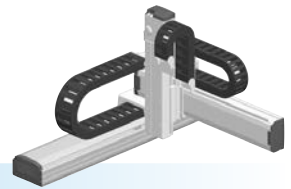
Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



# MXYx

3 axes / ZFH



- Arm type
- Cable carrier
- Z-axis: clamped table / moving base type (200W)

## Ordering method

**MXYx - C** - **ZFH** - **RCX340-3**

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
		A1 A2 A3 A4	25 to 125cm	15 to 65cm		15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specification

	X-axis	Y-axis	Z-axis
Axis construction <sup>Note 1</sup>	F17	F14H	F10H-BK
AC servo motor output (W)	400	200	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01	+/-0.01
Drive system	Ball screw φ20	Ball screw φ15	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20	10
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	1200	600
Moving range (mm)	250 to 1250	150 to 650	150 to 350
Robot cable length (m)	Standard: 3.5 Option: 5,10		

Note. The standard types are ZFH with higher rigidity as compared with ZF types which are conventional standard types. When you need the ZF type, please consult YAMAHA.

Note 1. Use caution that the frame machining (installation holes, tap holes) differs from single-axis robots.

Note 2. Positioning repeatability in one direction.

Note 3. Leads not listed in the catalog are also available. Contact us for details.

Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

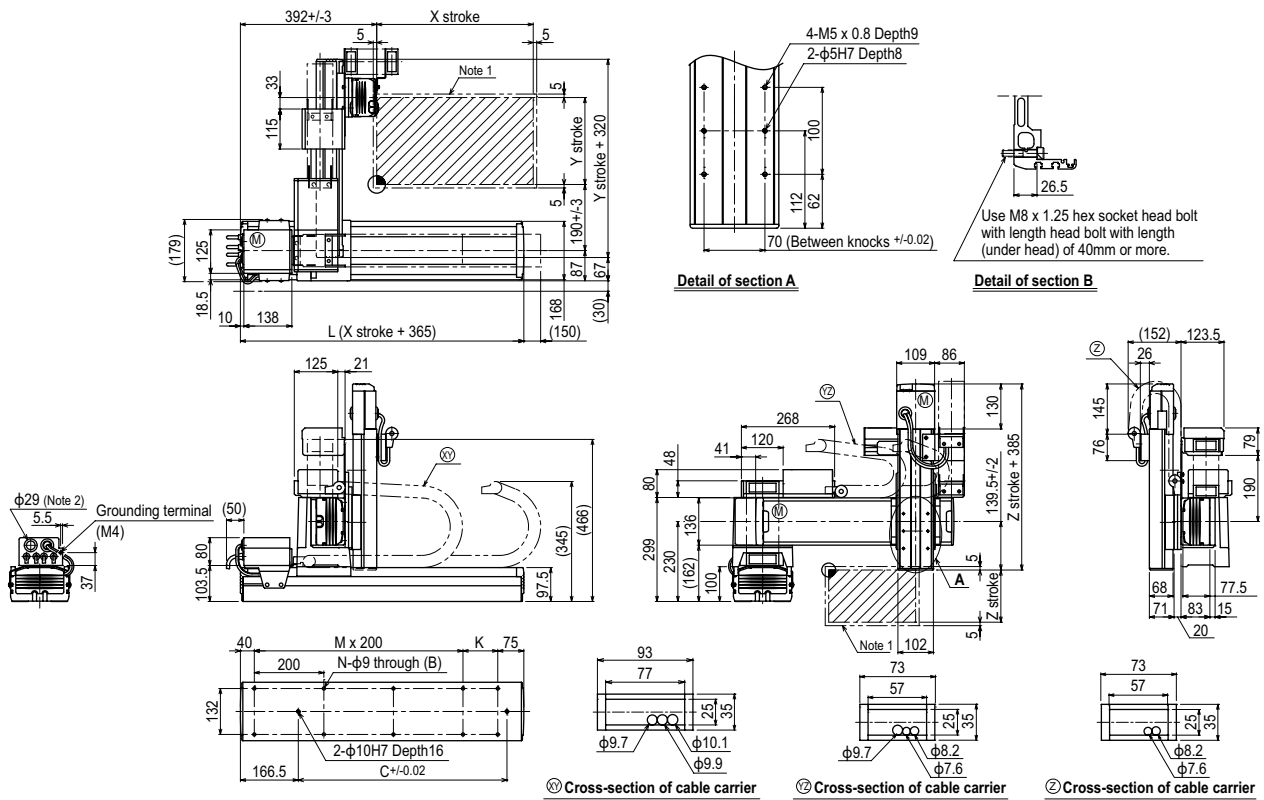
## Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)		
	150	250	350
150	14	13	12
250	14	13	12
350	14	13	12
450	12	11	10
550	12	11	10
650	8	7	6

## Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## MXYx 3 axes / ZFH A1



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250	
L	615	715	815	915	1015	1115	1215	1315	1415	1515	1615	
K	100	200	100	200	100	200	100	200	100	200	100	
C	240	420	600	600	780	780	960	960	1140	1140	1320	
M	2	2	3	3	4	4	5	5	6	6	7	
N	8	8	10	10	12	12	14	14	16	16	18	
Y stroke	150	250	350	450	550	650						
Z stroke	150	250	350									
Maximum speed for each stroke (mm/sec) <sup>Note 1</sup>	X-axis		1200				960		840	720	600	480
Speed setting			-				80%		70%	60%	50%	40%

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.

Note 2. User cable extraction port.

Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.







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robots  
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SCARA  
robots  
**YK-X**

Pick & place  
robots  
**YP-X**

**CLEAN**

**CONTROLLER**

**INFORMATION**

Arm type

Gantry type

Moving arm  
type

Pole type

**XZ** type















# HXYLx 2 axes

● Arm type   ● Cable carrier



## Ordering method

**HXYLx - C**

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
A1			115 to 205cm	25 to 65cm	3L: 3.5m
A2					5L: 5m
A3					10L: 10m
A4					

**RCX320-2**   **R**

Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
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Specify various controller setting items. RCX320 ▶ **P.548**

**RCX222HP**   **R**

Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2
------------	---------------	-------------------	-----------------	-----------------

Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <small>Note 1</small>	F20N	F17
<b>AC servo motor output (W)</b>	400	400
<b>Repeatability</b> <small>Note 2</small> (mm)	+/-0.04	+/-0.01
<b>Drive system</b>	Ball screw φ20	Ball screw φ20
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	20
<b>Maximum speed (mm/sec)</b>	1200	1200
<b>Moving range (mm)</b>	1150 to 2050	250 to 650
<b>Robot cable length (m)</b>	Standard: 3.5   Option: 5,10	

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.

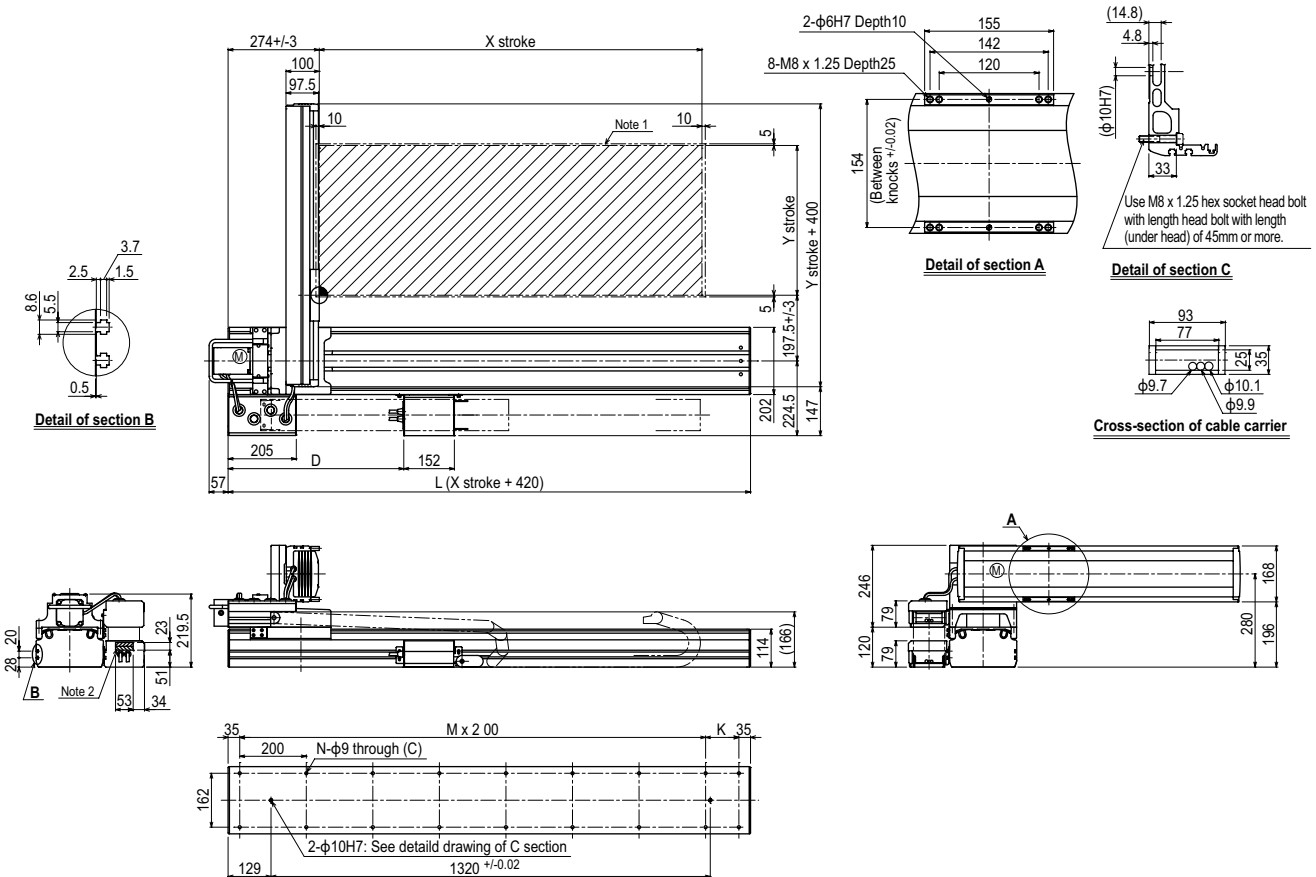
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
250	40
350	40
450	35
550	30
650	30

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222HP-R	

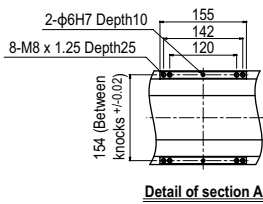
## HXYLx 2 axes A1



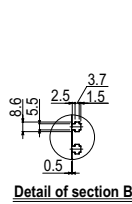
X stroke	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050
<b>L</b>	1570	1670	1770	1870	1970	2070	2170	2270	2370	2470
<b>D</b>	528	574	620	666	712	758	804	850	896	942
<b>K</b>	100	200	100	200	100	200	100	200	100	200
<b>M</b>	7	7	8	8	9	9	10	10	11	11
<b>N</b>	18	18	20	20	22	22	24	24	26	26
<b>Y stroke</b>	250	350	450	550	650					

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates a user cable extraction port.

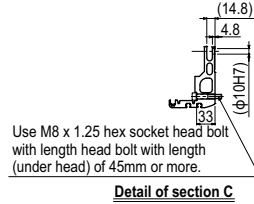
HXYLx 2 axes **A2**



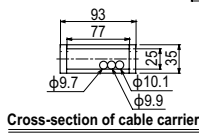
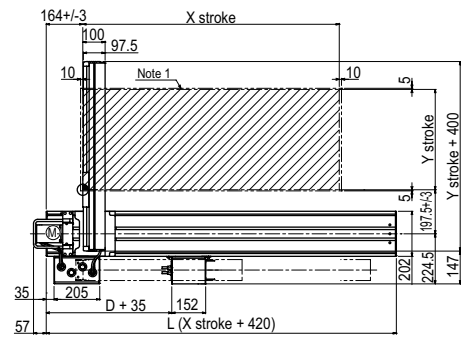
Detail of section A



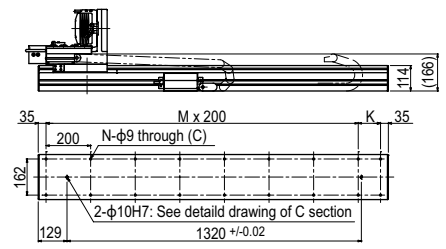
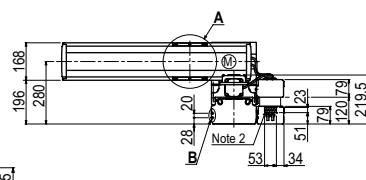
Detail of section B



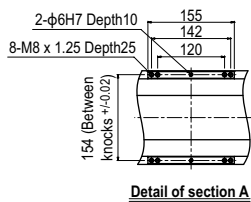
Detail of section C



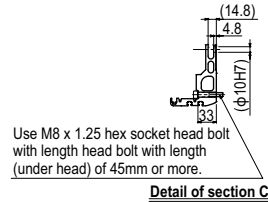
Cross-section of cable carrier



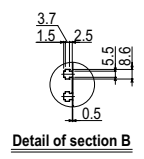
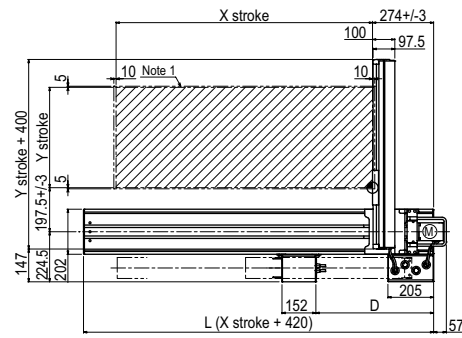
HXYLx 2 axes **A3**



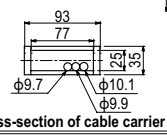
Detail of section A



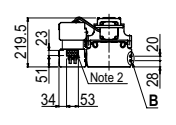
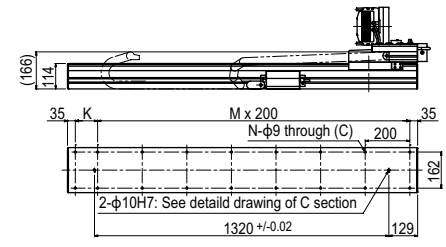
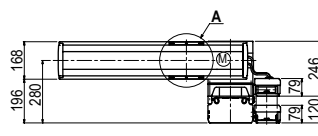
Detail of section C



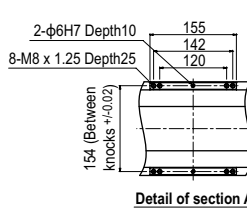
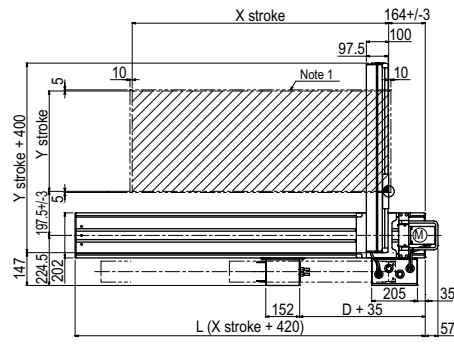
Detail of section B



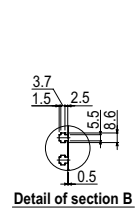
Cross-section of cable carrier



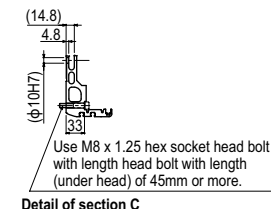
HXYLx 2 axes **A4**



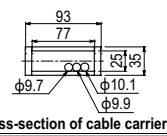
Detail of section A



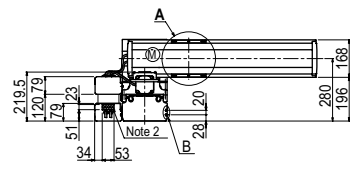
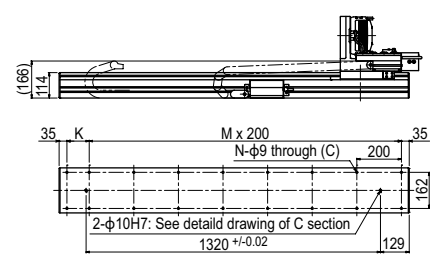
Detail of section B



Detail of section C

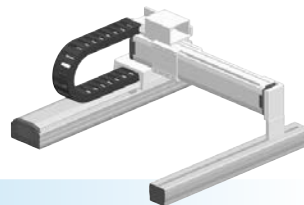


Cross-section of cable carrier



YA	Articulated robots
LCM100	Linear conveyor modules
Robonity	Motor-less single axis actuator
TRANSEVO	Compact single-axis robots
FLIP-X	Single-axis robots
PHASER	Linear motor single-axis robots
XX-X	Cartesian robots
YK-X	SCARA robots
YP-X	Pick & place robots
CLEAN	Clean
CONTROLLER	Controller
INFORMATION	Information
Arm type	Arm type
Gantry type	Gantry type
Moving arm type	Moving arm type
Pole type	Pole type
XZ type	XZ type

# MXYx 2 axes



- Gantry type
- Cable carrier

## Ordering method

**MXYx - C**

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
G1			25 to 125cm	15 to 85cm	3L: 3.5m
G2					5L: 5m
G3					10L: 10m
G4					

**RCX320-2** **R**

Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
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Specify various controller setting items. **RCX320 ▶ P.548**

**RCX222** **R**

Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2
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Specify various controller setting items. **RCX222 ▶ P.558**

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <sup>Note 1</sup>	F17	F14H
<b>AC servo motor output (W)</b>	400	200
<b>Repeatability</b> <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ20	Ball screw φ15
<b>Ball screw lead</b> <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20
<b>Maximum speed</b> <sup>Note 4</sup> (mm/sec)	1200	1200
<b>Moving range (mm)</b>	250 to 1250	150 to 850
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5, 10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm (750mm for Y-axis), resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

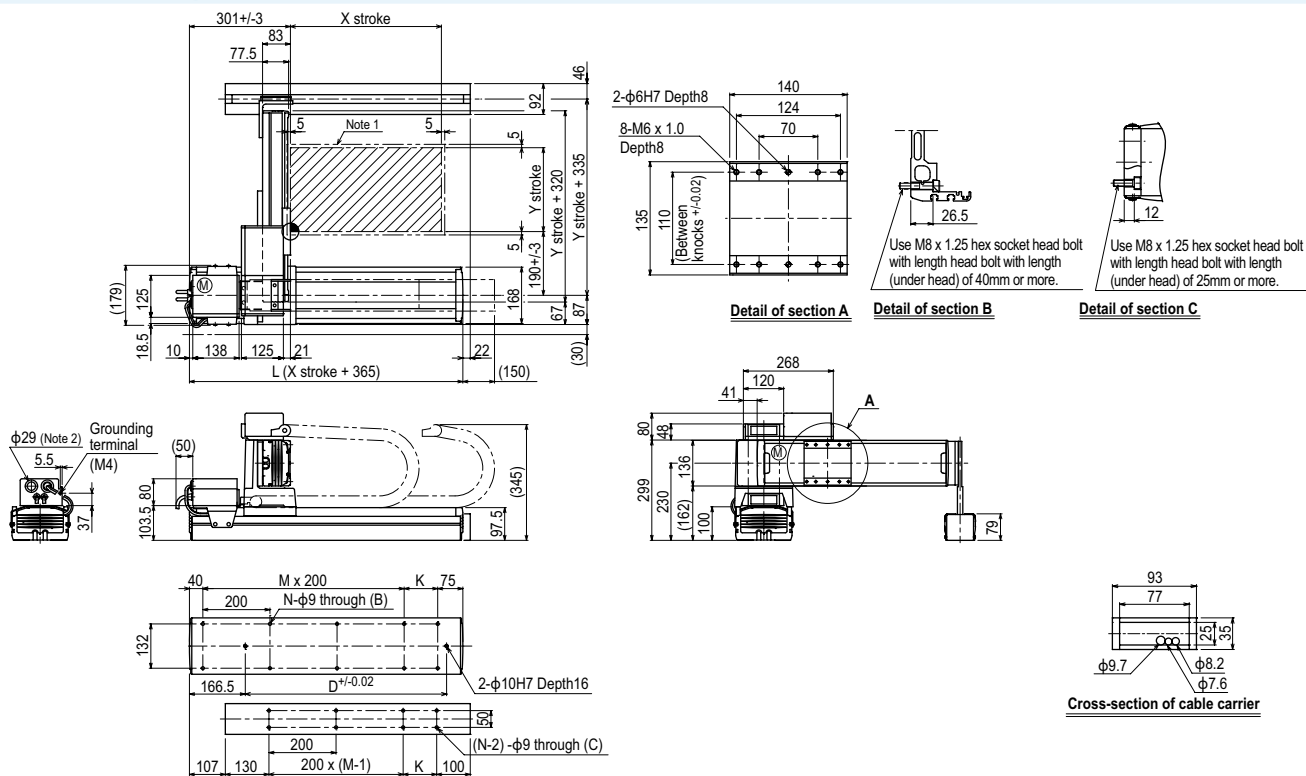
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	30
250	30
350	30
450	30
550	30
650	30
750	25
850	20

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222-R	

## MXYx 2 axes G1



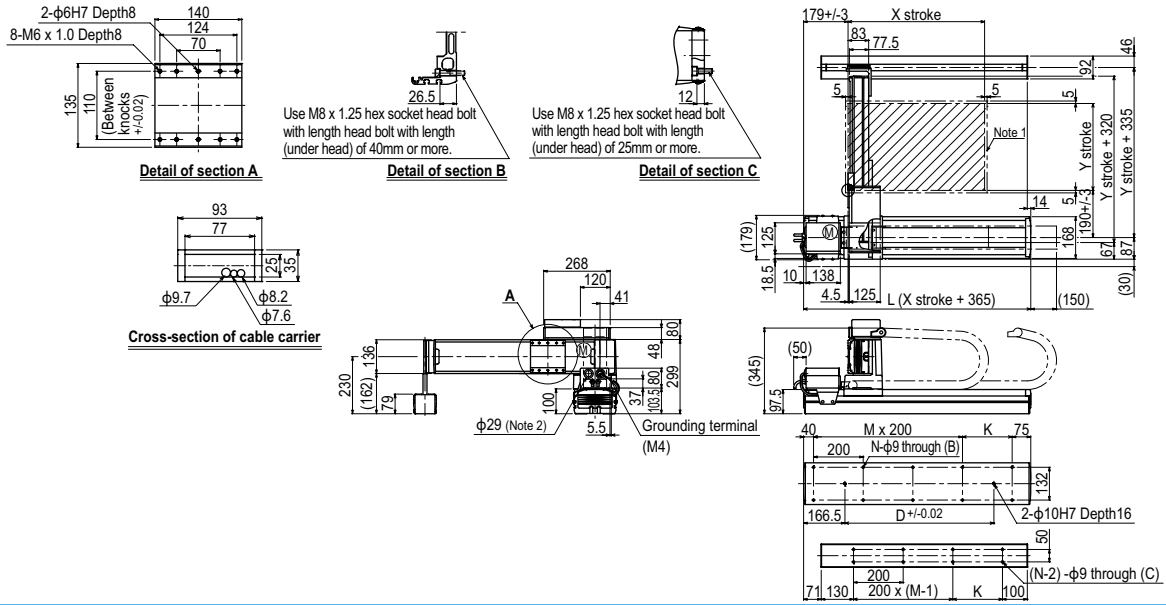
X stroke	250	350	450	550	650	750	850	950	1050	1150	1250
L	615	715	815	915	1015	1115	1215	1315	1415	1515	1615
K	100	200	100	200	100	200	100	200	100	200	100
D	240	420	600	600	780	780	960	960	1140	1140	1320
M	2	2	3	3	4	4	5	5	6	6	7
N	8	8	10	10	12	12	14	14	16	16	18
Y stroke	150	250	350	450	550	650	750	850			
<b>Maximum speed for each stroke</b> <sup>Note 3</sup> (mm/sec)	X-axis		1200		960		840	720	600	480	
	Speed setting		-		80%		70%	60%	50%	40%	
	Y-axis		1200		960		780				
	Speed setting		-		80%		65%				

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

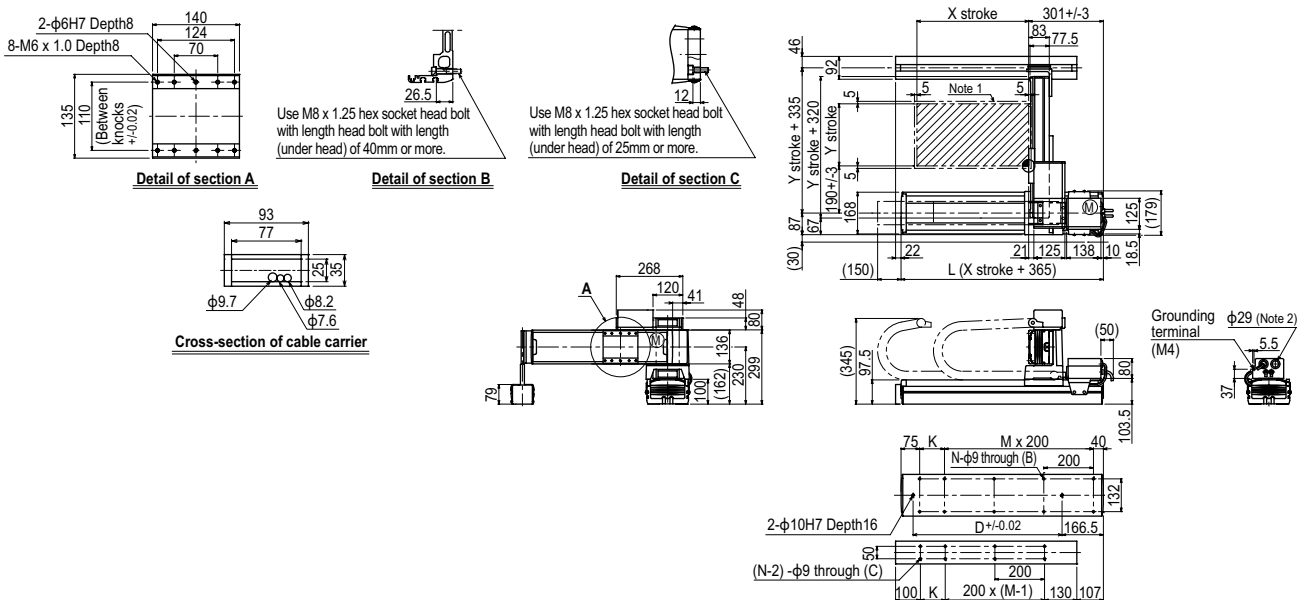
Note 3. When the X-axis stroke is longer than 850mm (750mm for Y-axis), resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



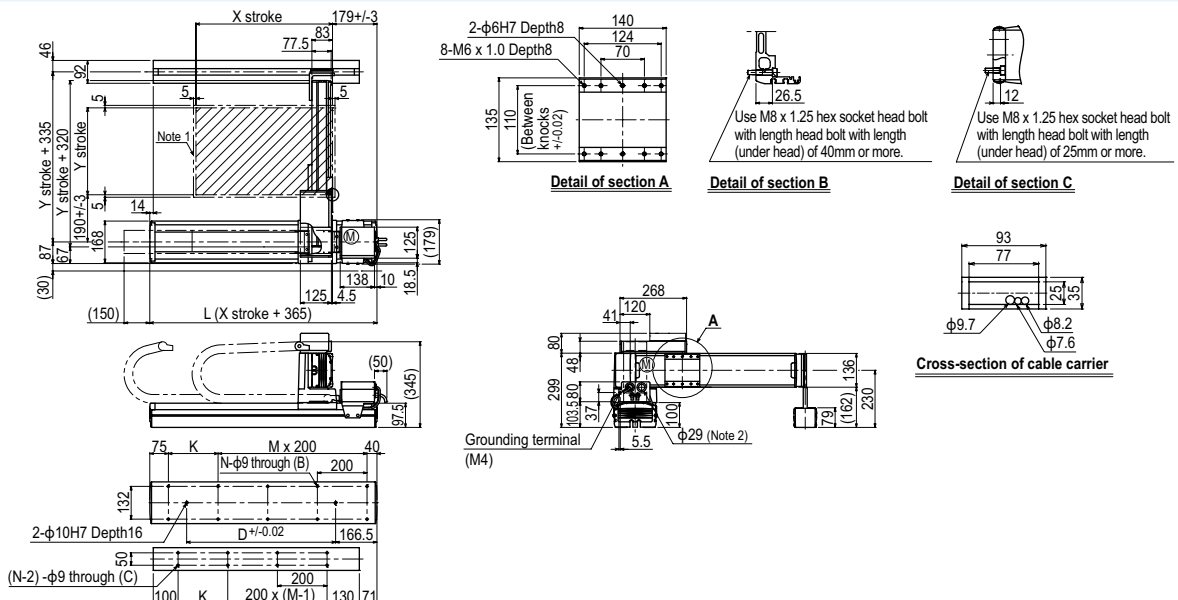
MXyX 2 axes **G2**



MXyX 2 axes **G3**

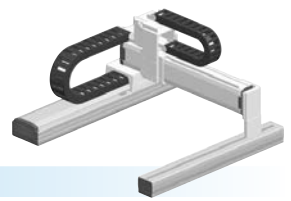


MXyX 2 axes **G4**



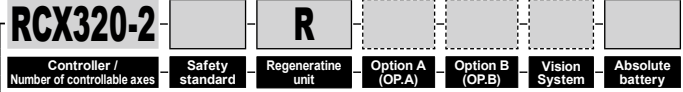
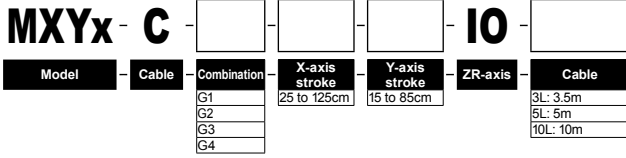
Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis actuator  
**Robonity**  
 Compact single-axis robots  
**TRANSEVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XX-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
 CLEAN INFORMATION  
 INFORMATION  
 Arm type  
 Gantry type  
 Moving arm type  
 Pole type  
 XZ type

# MXYx 2 axes / IO

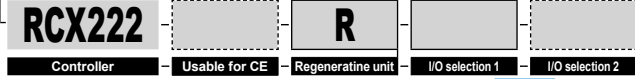


- Gantry type
- Cable carrier
- Type with Y-axis I/O cable carrier added

## Ordering method



Specify various controller setting items. RCX320 ▶ **P.548**



Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <sup>Note 1</sup>	F17	F14H
<b>AC servo motor output (W)</b>	400	200
<b>Repeatability</b> <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ20	Ball screw φ15
<b>Ball screw lead</b> <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20
<b>Maximum speed</b> <sup>Note 4</sup> (mm/sec)	1200	1200
<b>Moving range (mm)</b>	250 to 1250	150 to 850
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm (750mm for Y-axis), resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

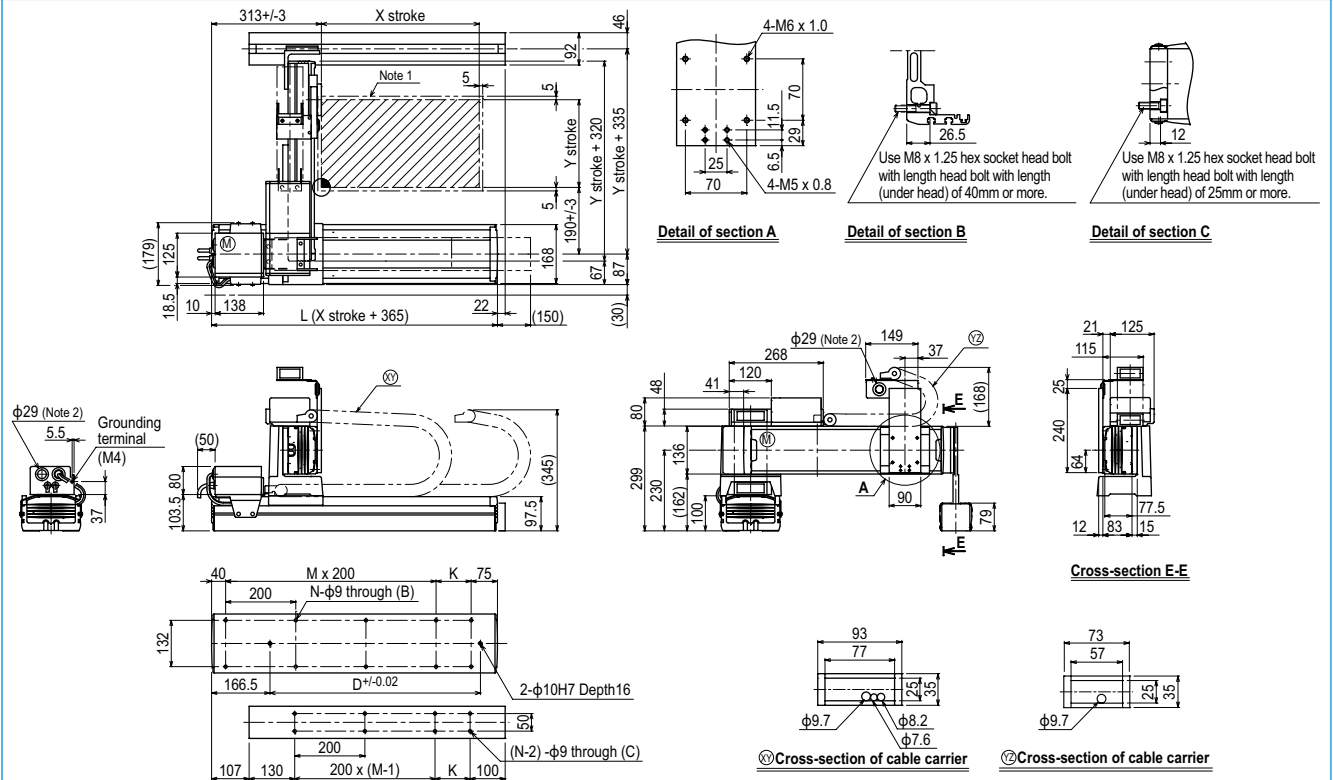
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	29
250	29
350	29
450	29
550	29
650	29
750	24
850	19

## Controller

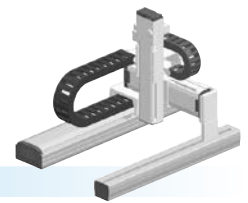
Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222-R	

## MXYx 2 axes / IO (G1)



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250
	<b>L</b>	615	715	815	915	1015	1115	1215	1315	1415	1515
<b>K</b>	100	200	100	200	100	200	100	200	100	200	100
<b>D</b>	240	420	600	600	780	780	960	960	1140	1140	1320
<b>M</b>	2	2	3	3	4	4	5	5	6	6	7
<b>N</b>	8	8	10	10	12	12	14	14	16	16	18
Y stroke	150	250	350	450	550	650	750	850			
	<b>X-axis</b>	1200			960			840	720	600	480
<b>Maximum speed for each stroke (mm/sec)</b> <sup>Note 3</sup>	<b>Speed setting</b>	-			80%			70%	60%	50%	40%
	<b>Y-axis</b>	1200			960			780			
<b>Speed setting</b>	-			80%			65%				

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.  
 Note 3. When the X-axis stroke is longer than 850mm (750mm for Y-axis), resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



### Ordering method

<b>MXy<sub>x</sub>-C</b>							<b>RCX340-3</b>									
<b>Model</b>	<b>Cable</b>	<b>Combination</b>	<b>X-axis stroke</b>	<b>Y-axis stroke</b>	<b>ZR-axis</b>	<b>Z-axis stroke</b>	<b>Cable</b>	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>	
G1 G2 G3 G4		G1 G2 G3 G4	25 to 125cm	15 to 85cm	ZFL20 ZFL10	15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m									

Specify various controller setting items. RCX340 ▶ **P.566**

### Specification

	X-axis	Y-axis	Z-axis: ZFL20	Z-axis: ZFL10
<b>Axis construction</b> <small>Note 1</small>	F17	F14H-BK	F10H-BK	
<b>AC servo motor output (W)</b>	400	200	200	
<b>Repeatability</b> <small>Note 2</small> (mm)	+/-0.01	+/-0.01	+/-0.01	
<b>Drive system</b>	Ball screw φ20	Ball screw φ15	Ball screw φ15	
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	20	20	10
<b>Maximum speed</b> <small>Note 4</small> (mm/sec)	1200	1200	1200	600
<b>Moving range (mm)</b>	250 to 1250	150 to 850	150 to 350	
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5,10			

Note. The standard types are ZFL with higher rigidity as compared with ZF types which are conventional standard types. When you need the ZF type, please consult YAMAHA.  
 Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm (750mm for Y-axis), resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

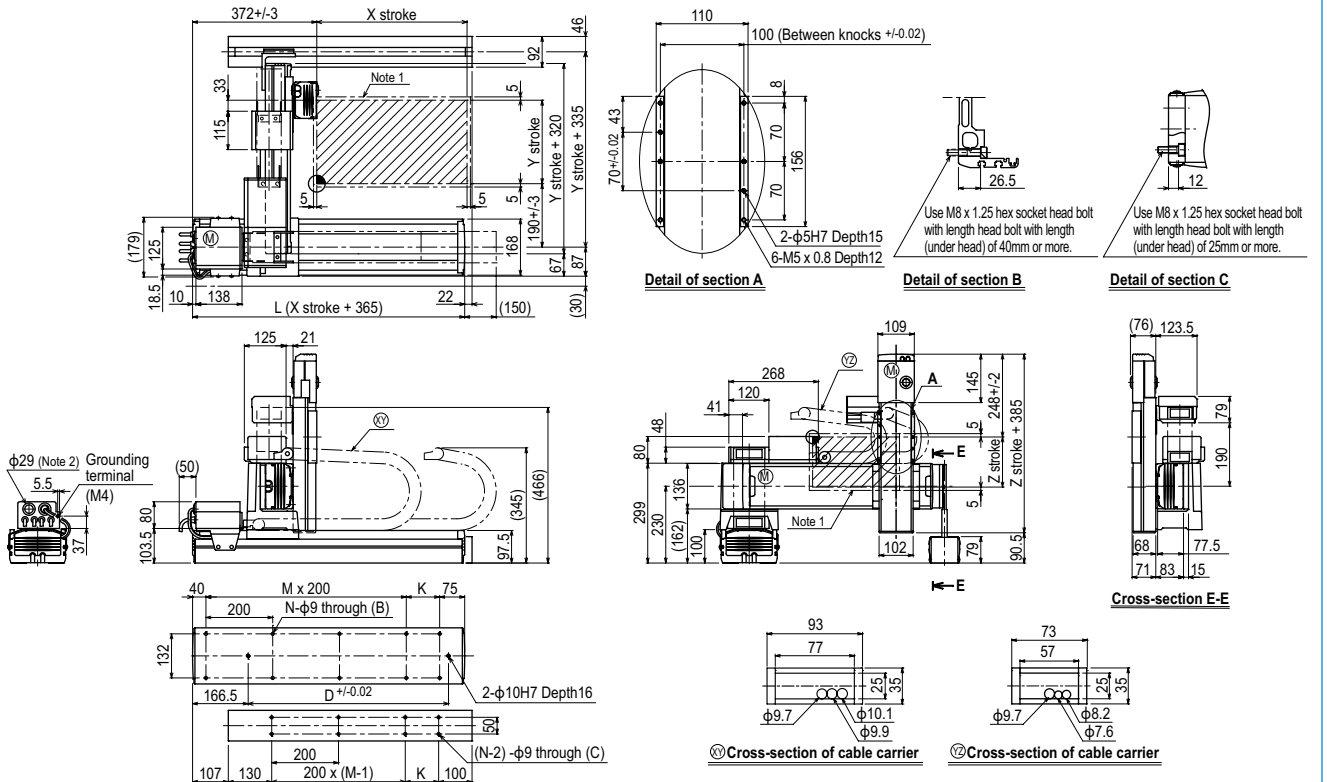
### Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)					
	ZFL20			ZFL10		
150	8	8	8	15	15	15
250	8	8	8	15	15	15
350	8	8	8	15	15	15
450	8	8	8	15	15	15
550	8	8	8	15	15	15
650	8	8	8	15	15	15
750	8	8	8	15	15	15
850	8	8	8	12	11	10

### Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

### MXy<sub>x</sub> 3 axes / ZFL20/10 G1



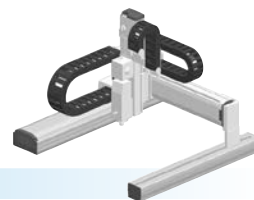
X stroke	250	350	450	550	650	750	850	950	1050	1150	1250	
<b>L</b>	615	715	815	915	1015	1115	1215	1315	1415	1515	1615	
<b>K</b>	100	200	100	200	100	200	100	200	100	200	100	
<b>D</b>	240	420	600	600	780	780	960	960	1140	1140	1320	
<b>M</b>	2	2	3	3	4	4	5	5	6	6	7	
<b>N</b>	8	8	10	10	12	12	14	14	16	16	18	
<b>Y stroke</b>	150	250	350	450	550	650	750	850				
<b>Z stroke</b>	150	250	350									
<b>Maximum speed for each stroke (mm/sec)</b> <small>Note 3</small>	<b>X-axis</b>	1200					960	840	720	600	480	
	<b>Speed setting</b>	-					80%	70%	60%	50%	40%	
	<b>Y-axis</b>	1200					960	780				
	<b>Speed setting</b>	-					80%	65%				

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.  
 Note 3. When the X-axis stroke is longer than 850mm (750mm for Y-axis), resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.









- Gantry type
- Cable carrier
- Z-axis: clamped table / moving base type (200W)+R-axis

### Ordering method

**MXYx - C** [ ] [ ] [ ] **ZRFH** [ ] [ ] **RCX340-4** [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
		G1 G2 G3 G4	25 to 125cm	15 to 85cm		15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

### Specification

	X-axis	Y-axis	Z-axis	R-axis
<b>Axis construction</b> <small>Note 1</small>	F17	F14H	F10H-BK	R5
<b>AC servo motor output (W)</b>	400	200	200	50
<b>Repeatability</b> <small>Note 2</small> (XYZ: mm) (R: °)	+/-0.01	+/-0.01	+/-0.01	+/-0.0083
<b>Drive system</b>	Ball screw φ20	Ball screw φ15	Ball screw φ15	Harmonic gear
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	20	10	(1/50)
<b>Maximum speed</b> <small>Note 4</small> (XYZ: mm/sec) (R: °/sec)	1200	1200	600	360
<b>Moving range (XYZ: mm) (R: °)</b>	250 to 1250	150 to 850	150 to 350	360
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5, 10			

Note. The standard types are ZRFH with higher rigidity as compared with ZRF types which are conventional standard types. When you need the ZRF type, please consult YAMAHA.

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots'.

Note 2. Positioning repeatability in one direction.

Note 3. Leads not listed in the catalog are also available. Contact us for details.

Note 4. When the X-axis stroke is longer than 850mm (750mm for Y-axis), resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

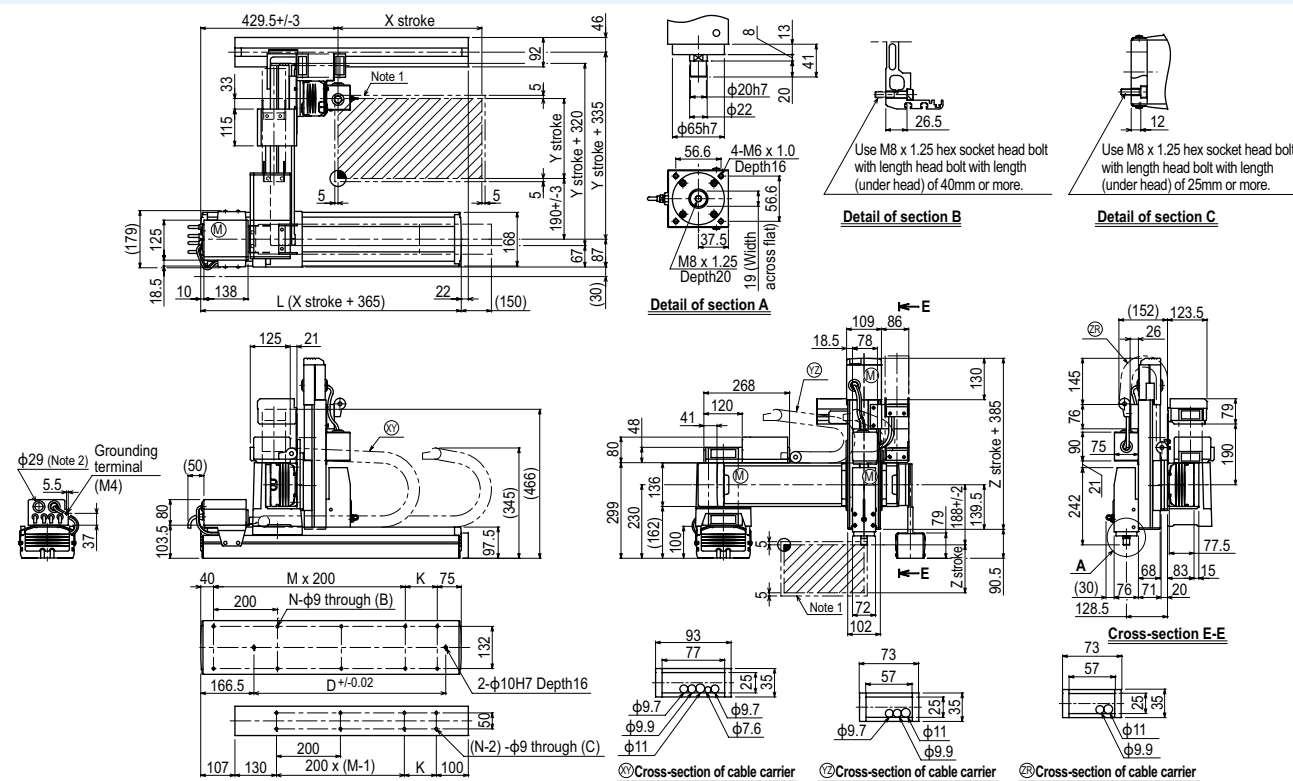
### Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)		
	150	250	350
150	10	9	8
250	10	9	8
350	10	9	8
450	10	9	8
550	10	9	8
650	10	9	8
750	10	9	8
850	8	7	6

### Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

### MXYx 4 axes / ZRFH G1



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250
	L	615	715	815	915	1015	1115	1215	1315	1415	1515
K	100	200	100	200	100	200	100	200	100	200	100
D	240	420	600	600	780	780	960	960	1140	1140	1320
M	2	2	3	3	4	4	5	5	6	6	7
N	8	8	10	10	12	12	14	14	16	16	18
Y stroke	150	250	350	450	550	650	750	850			
Z stroke	150	250	350								
Maximum speed for each stroke (mm/sec) <small>Note 3</small>	X-axis		1200				960	840	720	600	480
	Speed setting		-				80%	70%	60%	50%	40%
	Y-axis		1200				960	780			
	Speed setting		-				80%	65%			

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.

Note 2. Use cable extraction port.

Note 3. When the X-axis stroke is longer than 850mm (750mm for Y-axis), resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



Articulated robots  
YA

Linear conveyor  
modules  
LCM100

Motor-less single  
axis actuator  
Robonity

Compact  
single-axis robots  
TRANSERVO

Single-axis robots  
FLIP-X

Linear motor  
single-axis robots  
PHASER

Cartesian  
robots  
XY-X

SCARA  
robots  
YK-X

Pick & place  
robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Arm type

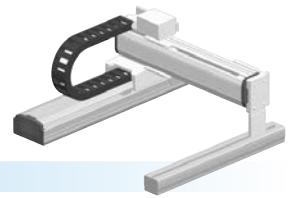
Gantry type

Moving arm  
type

Pole type

XZ type

# HXYx 2 axes



- Gantry type
- Cable carrier

## Ordering method

### HXYx - C

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
G1			25 to 125cm	25 to 105cm	3L: 3.5m
G2					5L: 5m
G3					10L: 10m
G4					

### RCX320-2

Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (O.P.A)	Option B (O.P.B)	Vision System	Absolute battery
		<b>R</b>				

Specify various controller setting items. RCX320 ▶ **P.548**

### RCX222HP

Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2
		<b>R</b>		

Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <small>Note 1</small>	F20	F17
<b>AC servo motor output (W)</b>	600	400
<b>Repeatability</b> <small>Note 2</small> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ20	Ball screw φ20
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	20
<b>Maximum speed</b> <small>Note 4</small> (mm/sec)	1200	1200
<b>Moving range (mm)</b>	250 to 1250	250 to 1050
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5,10	

- Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots'.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis/Y-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

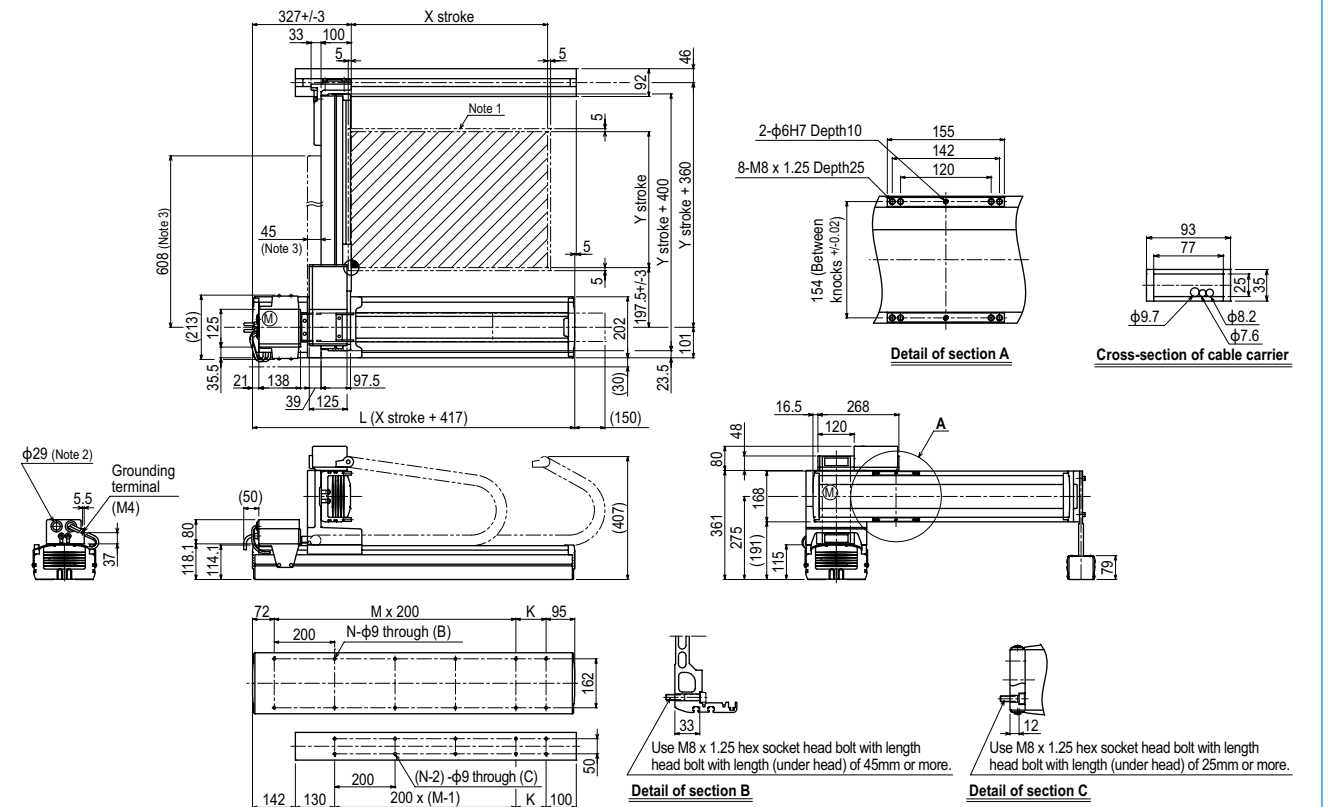
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
250 to 1050	50

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222HP-R	

## HXYx 2 axes G1



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250	
<b>L</b>	667	767	867	967	1067	1167	1267	1367	1467	1567	1667	
<b>K</b>	100	200	100	200	100	200	100	200	100	200	100	
<b>F</b>	420	420	600	600	780	780	960	960	1140	1320	1320	
<b>M</b>	2	2	3	3	4	4	5	5	6	6	7	
<b>N</b>	8	8	10	10	12	12	14	14	16	16	18	
<b>Y stroke</b>	250	350	450	550	650	750	850	950	1050			
<b>Maximum speed for each stroke (mm/sec)</b> <small>Note 4</small>	<b>X-axis</b>	1200					960	840	720	600	480	
	<b>Y-axis</b>	1200					960	840	720			
<b>Speed setting</b>	-						80%	70%	60%	50%	40%	

- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.  
 Note 3. Dimension of reinforced bracket (To be installed when the Y stroke is 750mm or longer)

Note 4. When the X-axis/Y-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



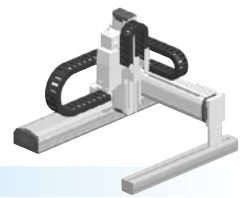






# HXYx

4 axes / ZRL



- Gantry type
- Cable carrier
- Z-axis: clamped base / moving table type (200W)+R-axis

## Ordering method

**HXYx - C** - [ ] - [ ] - [ ] - **ZRL** - [ ] - [ ] - **RCX340-4** - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
		G1	25 to 125cm	25 to 105cm		25 to 55cm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specification

	X-axis	Y-axis	Z-axis	R-axis
<b>Axis construction</b> <sup>Note 1</sup>	F20	F17	F14H-BK	R20
<b>AC servo motor output (W)</b>	600	400	200	200
<b>Repeatability</b> <sup>Note 2</sup> (XYZ: mm) (R: °)	+/-0.01	+/-0.01	+/-0.01	+/-0.0083
<b>Drive system</b>	Ball screw φ20	Ball screw φ20	Ball screw φ15	Harmonic gear
<b>Ball screw lead</b> <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20	10	(1/50)
<b>Maximum speed</b> <sup>Note 4</sup> (XYZ: mm/sec) (R: °/sec)	1200	1200	600	360
<b>Moving range (XYZ: mm) (R: °)</b>	250 to 1250	250 to 1050	250 to 550	360
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5,10			

- Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis/Y-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

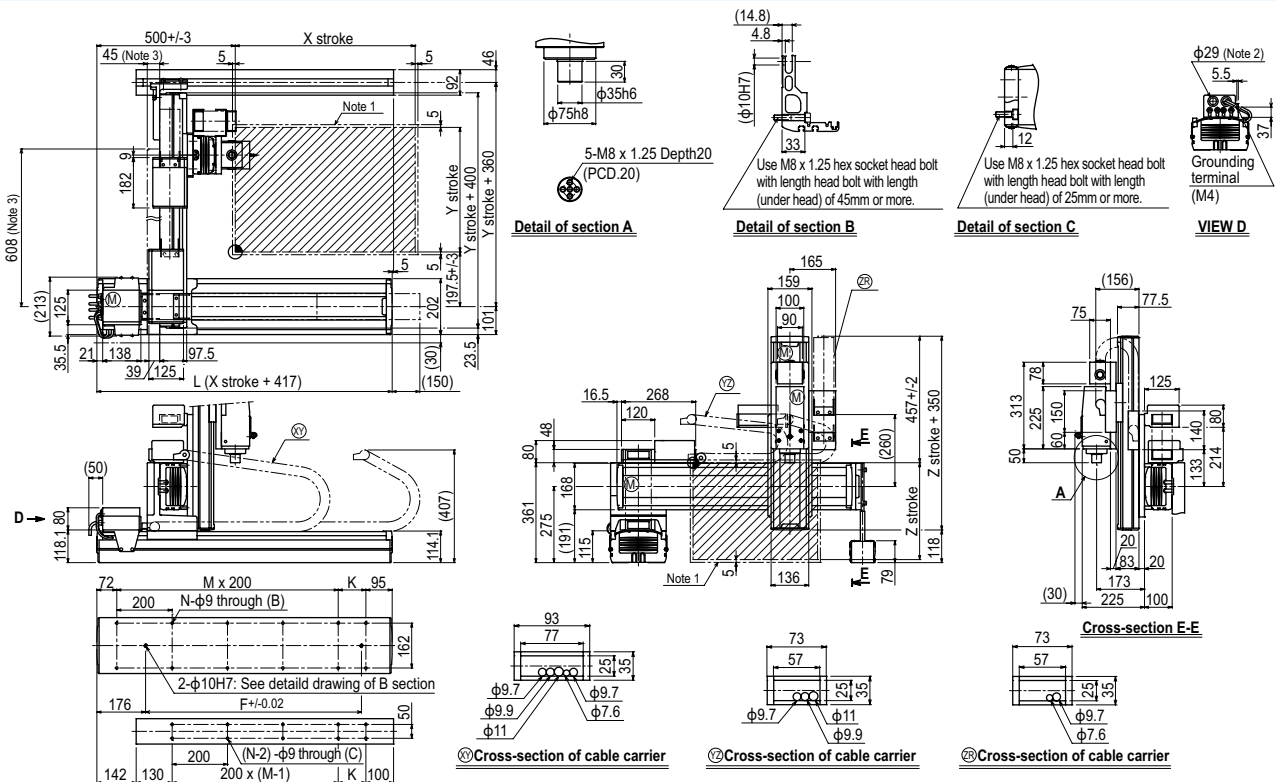
## Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)
250 to 1050	250 to 550
	12

## Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## HXYx 4 axes / ZRL (G1)



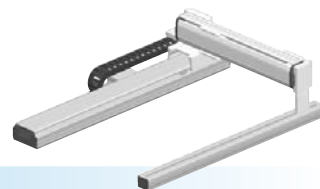
X stroke	250	350	450	550	650	750	850	950	1050	1150	1250	
	L	667	767	867	967	1067	1167	1267	1367	1467	1567	1667
K	100	200	100	200	100	200	100	200	100	200	100	
F	420	420	600	600	780	780	960	960	1140	1320	1320	
M	2	2	3	3	4	4	5	5	6	6	7	
N	8	8	10	10	12	12	14	14	16	16	18	
Y stroke	250	350	450	550	650	750	850	950	1050			
Z stroke	250	350	450	550								
Maximum speed for each stroke (mm/sec) <sup>Note 4</sup>	X-axis	1200					960	840	720	600	480	
	Y-axis	1200					960	840	720			
Speed setting		-					80%	70%	60%	50%	40%	

- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.  
 Note 3. Dimension of reinforced bracket (To be installed when the Y stroke is 750mm or longer)

- Note 4. When the X-axis/Y-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



# HXYLx 2 axes



- Gantry type
- Cable carrier

## Ordering method

**HXYLx - C**

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
G1			115 to 205cm	25 to 105cm	3L: 3.5m
G2					5L: 5m
G3					10L: 10m
G4					

**RCX320-2** R

Controller / Number of controllable axes    Safety standard    Regenerative unit    Option A (O.P.A)    Option B (O.P.B)    Vision System    Absolute battery

Specify various controller setting items. RCX320 ▶ **P.548**

**RCX222HP** R

Controller    Usable for CE    Regenerative unit    I/O selection 1    I/O selection 2

Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <small>Note 1</small>	F20N	F17
<b>AC servo motor output (W)</b>	400	400
<b>Repeatability</b> <small>Note 2</small> (mm)	+/-0.04	+/-0.01
<b>Drive system</b>	Ball screw φ20	Ball screw φ20
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	20
<b>Maximum speed</b> <small>Note 4</small> (mm/sec)	1200	1200
<b>Moving range (mm)</b>	1150 to 2050	250 to 1050
<b>Robot cable length (m)</b>	Standard: 3.5    Option: 5,10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the Y-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

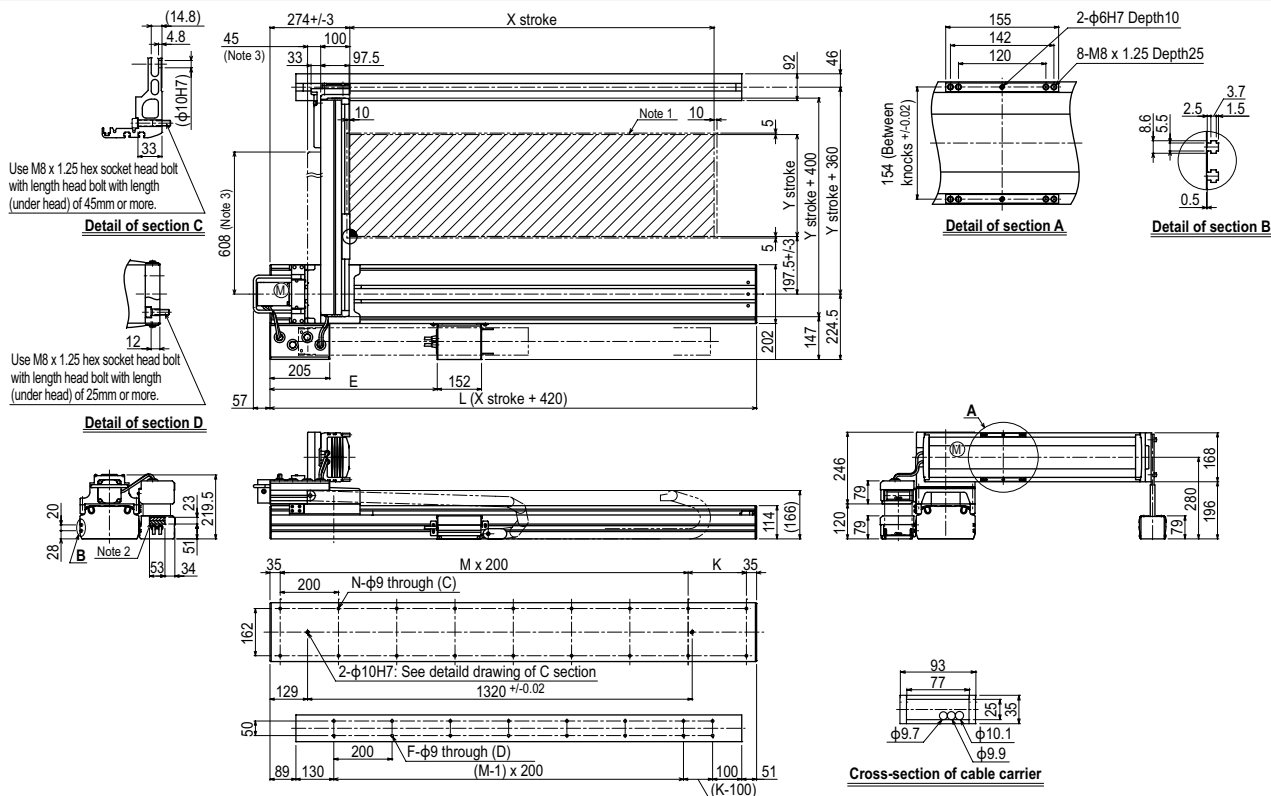
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
250 to 1050	50

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222HP-R	

## HXYLx 2 axes G1

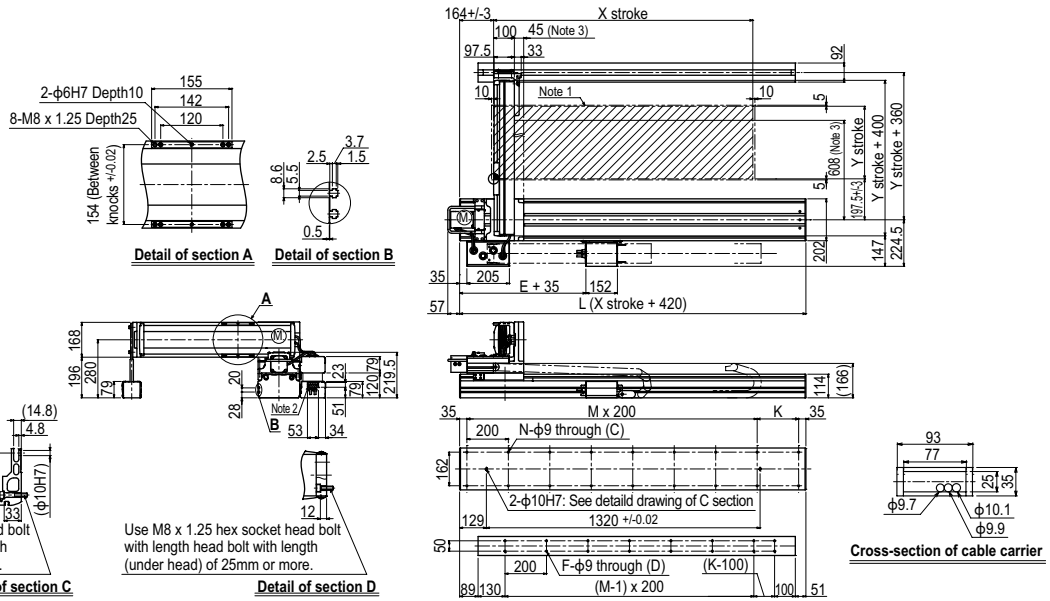


X stroke	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050
<b>L</b>	1570	1670	1770	1870	1970	2070	2170	2270	2370	2470
<b>E</b>	528	574	620	666	712	758	804	850	896	942
<b>K</b>	100	200	100	200	100	200	100	200	100	200
<b>M</b>	7	7	8	8	9	9	10	10	11	11
<b>N</b>	18	18	20	20	22	22	24	24	26	26
<b>F</b>	14	16	16	18	18	20	20	22	22	24
<b>Y stroke</b>	250	350	450	550	650	750	850	950	1050	
<b>Maximum speed for each stroke (mm/sec)</b> <small>Note 4</small>	<b>Y-axis</b>		1200				960	840	720	
<b>Speed setting</b>			-				80%	70%	60%	

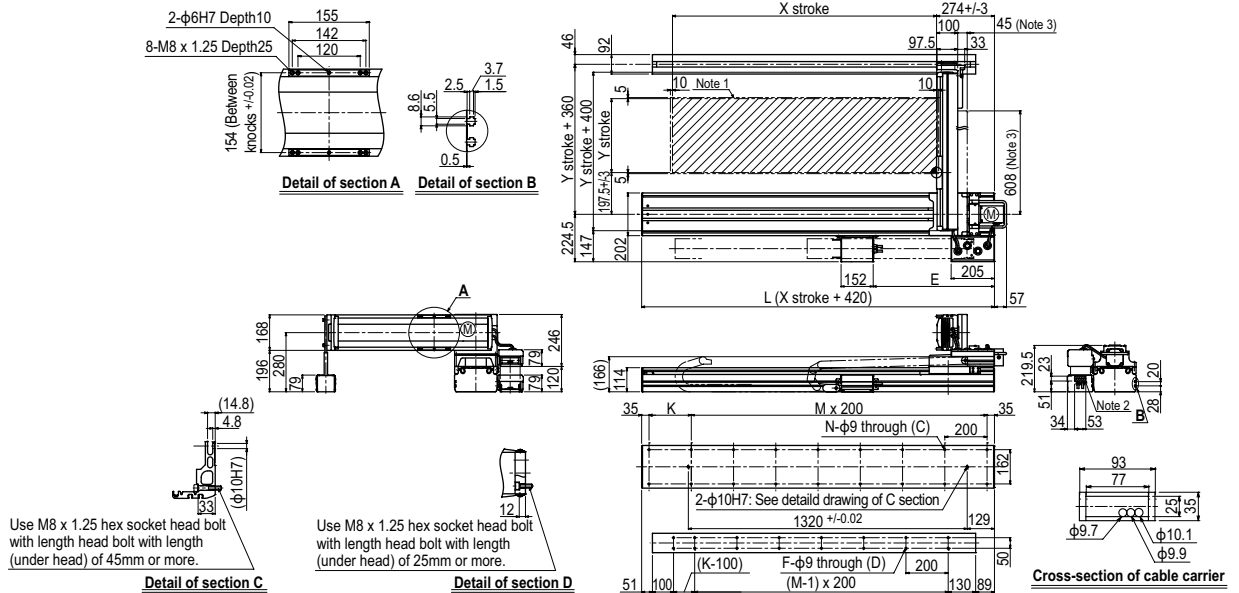
Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.  
 Note 3. Dimension of reinforced bracket (To be installed when the Y stroke is 750mm or longer)

Note 4. When the Y-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

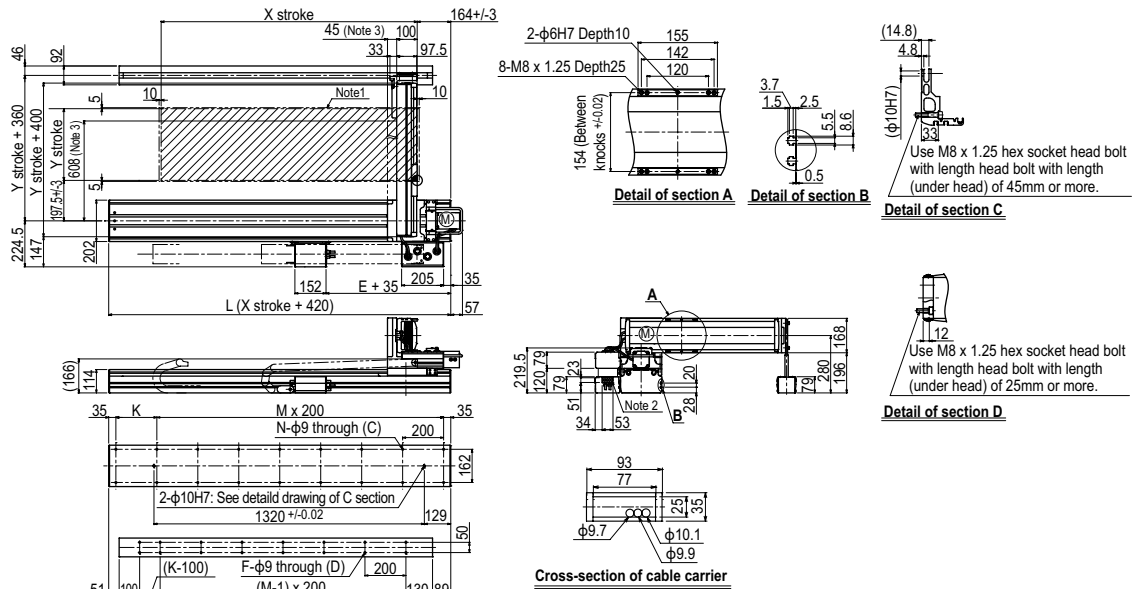
HXYLx 2 axes **G2**



HXYLx 2 axes **G3**



HXYLx 2 axes **G4**



Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN INFORMATION  
 INFORMATION  
 Arm type  
 Gantry type  
 Moving arm type  
 Pole type  
 XZ type

# SXYx 2 axes

● Moving arm type ● Whipover



## Ordering method

### SXYx - S

Model	Cable	Combination	X-axis stroke <sup>Note 1</sup>	Y-axis stroke <sup>Note 1</sup>	Cable
M1	M3		15 to 85cm	15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m

### RCX320-2

Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery

Specify various controller setting items. RCX320 ▶ **P.548**

### RCX222

Controller	Usable for CE	I/O selection 1	I/O selection 2

Specify various controller setting items. RCX222 ▶ **P.558**

Note 1. The total of the X and Y strokes should be 1000mm or less.

## Specification

	X-axis	Y-axis
Axis construction <sup>Note 1</sup>	F14H	F14
AC servo motor output (W)	200	100
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw φ15	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	1200
Moving range (mm)	150 to 850	150 to 350
Robot cable length (m)	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

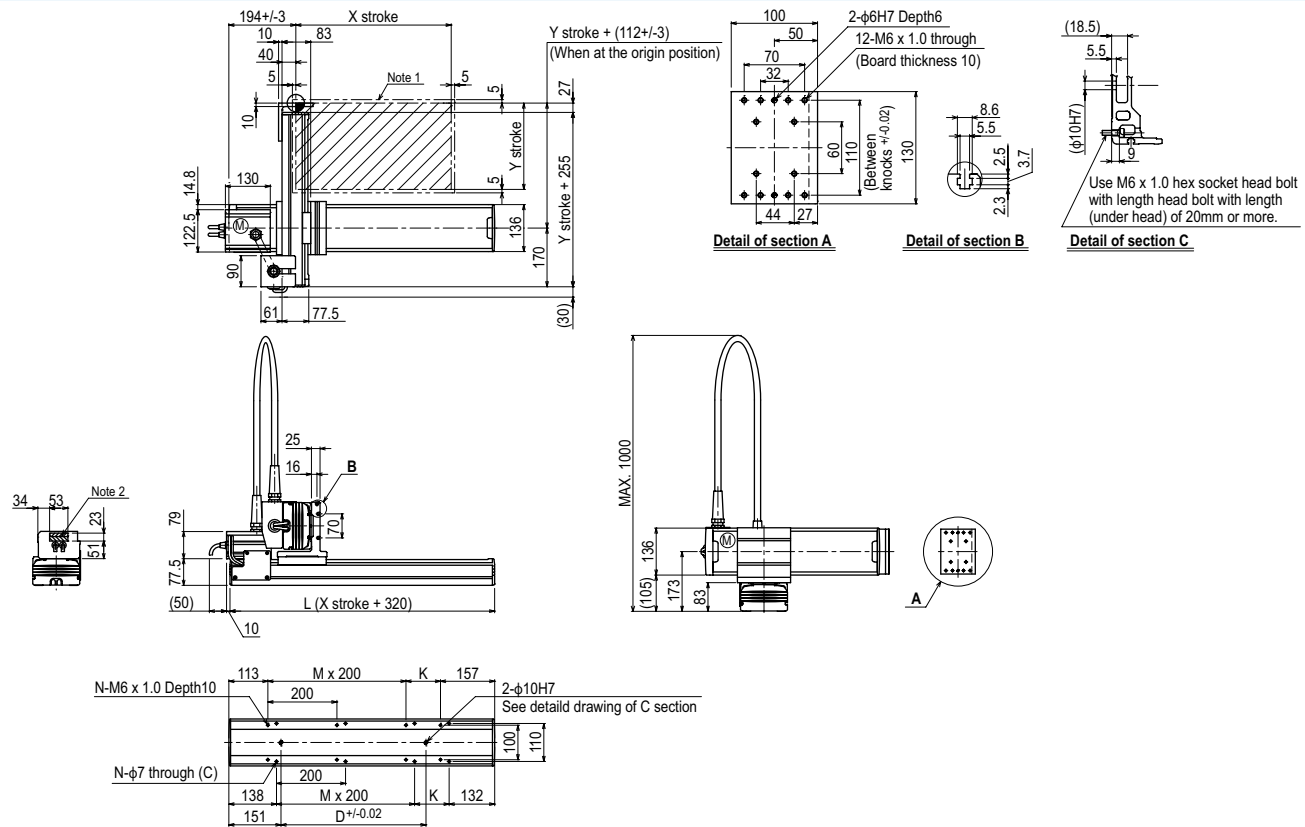
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	15
250	14
350	13

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

## SXYx 2 axes (M1)



X stroke <sup>Note 3</sup>	150	250	350	450	550	650	750	850
L	470	570	670	770	870	970	1070	1170
K	200	100	200	100	200	100	200	100
D	240	240	420	420	600	600	780	960
M	0	1	1	2	2	3	3	4
N	4	6	6	8	8	10	10	12
Y stroke <sup>Note 3</sup>	150	250	350					
Maximum speed for each stroke (mm/sec) <sup>Note 4</sup>	X-axis		1200		960		780	
Speed setting			-		80%		65%	

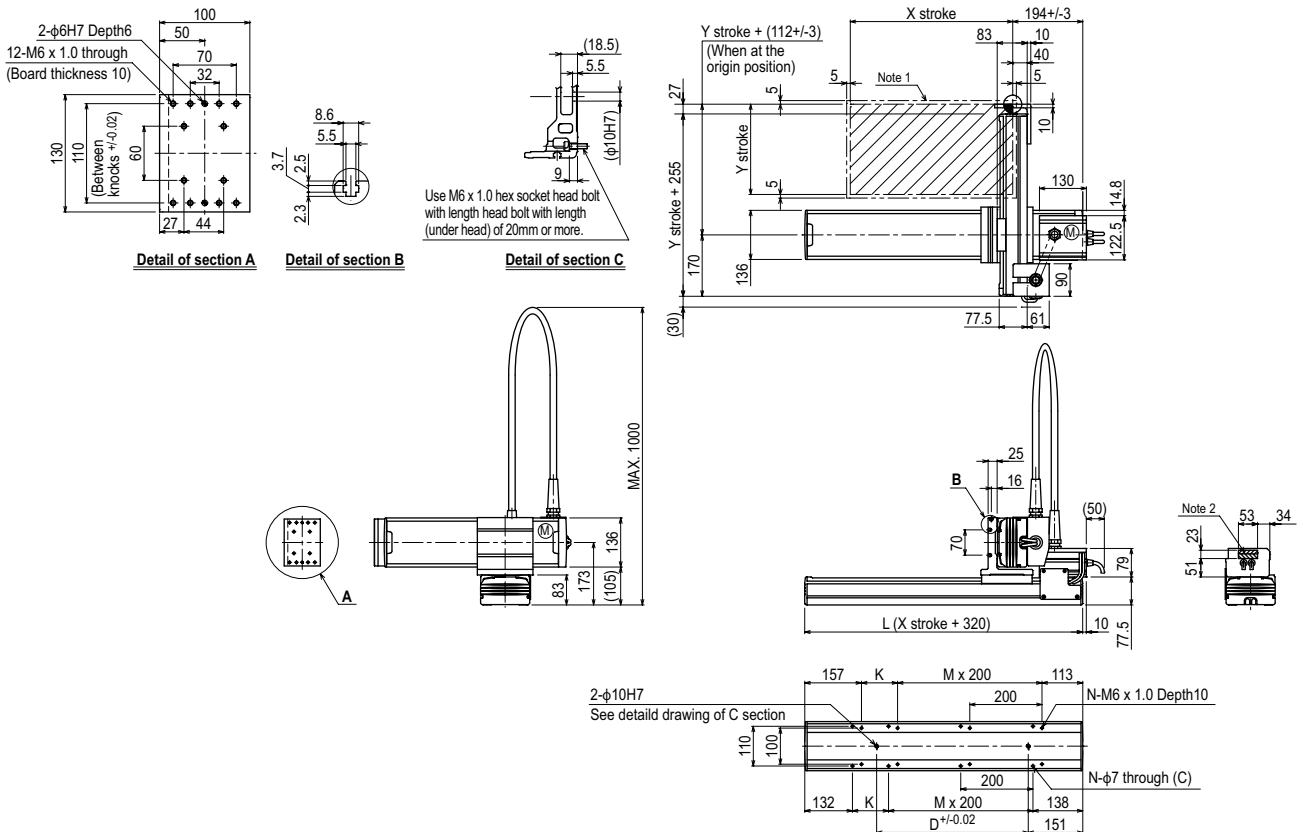
Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.

Note 2. The shaded position indicates a user cable extraction port.

Note 3. The total of the X and Y strokes should be 1000mm or less.

Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

SXYx 2 axes **M3**



X stroke <sup>Note 3</sup>	150	250	350	450	550	650	750	850
L	470	570	670	770	870	970	1070	1170
K	200	100	200	100	200	100	200	100
D	240	240	420	420	600	600	780	960
M	0	1	1	2	2	3	3	4
N	4	6	6	8	8	10	10	12
Y stroke <sup>Note 3</sup>	150	250	350					
Maximum speed for each stroke (mm/sec) <sup>Note 4</sup>	X-axis		1200			960		780
Speed setting			-			80%		65%

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.

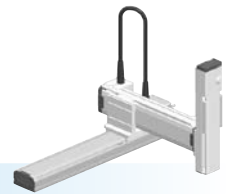
Note 2. The shaded position indicates an user cable extraction port.

Note 3. The total of the X and Y strokes should be 1000mm or less.

Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.







### Ordering method

**SXYx - S** [ ] [ ] [ ] **ZFL20** [ ] [ ] **RCX340-3** [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke <sup>Note 1</sup>	Y-axis stroke <sup>Note 1</sup>	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
		M1 M3	15 to 85cm	15 to 35cm		15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m	Specify various controller setting items. RCX340 ▶ <b>P.566</b>							

Note 1. The total of the X and Y strokes should be 1000mm or less.

### Specification

	X-axis	Y-axis	Z-axis
Axis construction <sup>Note 1</sup>	F14H	F14	F10H-BK
AC servo motor output (W)	200	100	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01	+/-0.01
Drive system	Ball screw φ15	Ball screw φ15	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20	20
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	1200	1200
Moving range (mm)	150 to 850	150 to 350	150 to 350
Robot cable length (m)	Standard: 3.5 Option: 5,10		

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.

Note 2. Positioning repeatability in one direction.

Note 3. Leads not listed in the catalog are also available. Contact us for details.

Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

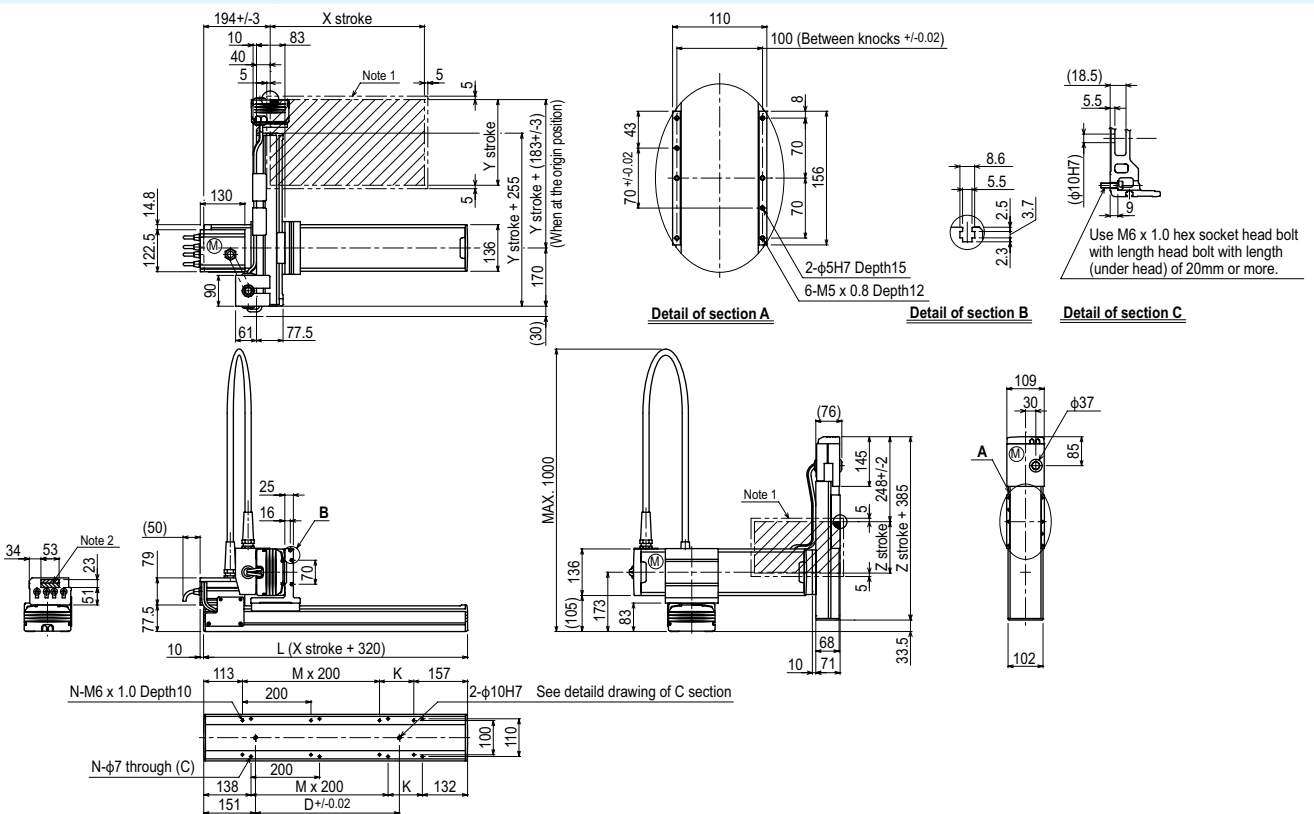
### Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)		
	150	250	350
150	8	8	7
250	8	7	6
350	7	6	5

### Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

### SXYx 3 axes / ZFL20 M1



X stroke <sup>Note 3</sup>	150	250	350	450	550	650	750	850
	L	470	570	670	770	870	970	1070
A	200	100	200	100	200	100	200	100
D	240	240	420	420	600	600	780	960
M	0	1	1	2	2	3	3	4
N	4	6	6	8	8	10	10	12
Y stroke <sup>Note 3</sup>		150	250	350				
Z stroke		150	250	350				
Maximum speed for each stroke (mm/sec) <sup>Note 4</sup>	X-axis	1200			960	780		
	Speed setting	-			80%	65%		

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.

Note 2. The shaded position indicates a user cable extraction port.

Note 3. The total of the X and Y strokes should be 1000mm or less.

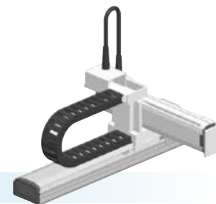
Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Arm type  
Gantry type  
Moving arm type  
Pole type  
XZ type





# MXYx 2 axes



- Moving arm type
- Cable carrier

## Ordering method

**MXYx - C**

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
M1			25 to 125cm	15 to 55cm	3L: 3.5m 5L: 5m 10L: 10m
M3					

**RCX320-2** **R**

Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
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Specify various controller setting items. RCX320 ▶ **P.548**

**RCX222** **R**

Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2
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Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <sup>Note 1</sup>	F17	F14H
<b>AC servo motor output (W)</b>	400	200
<b>Repeatability</b> <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ20	Ball screw φ15
<b>Ball screw lead</b> <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20
<b>Maximum speed</b> <sup>Note 4</sup> (mm/sec)	1200	1200
<b>Moving range (mm)</b>	250 to 1250	150 to 550
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5,10	

- Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

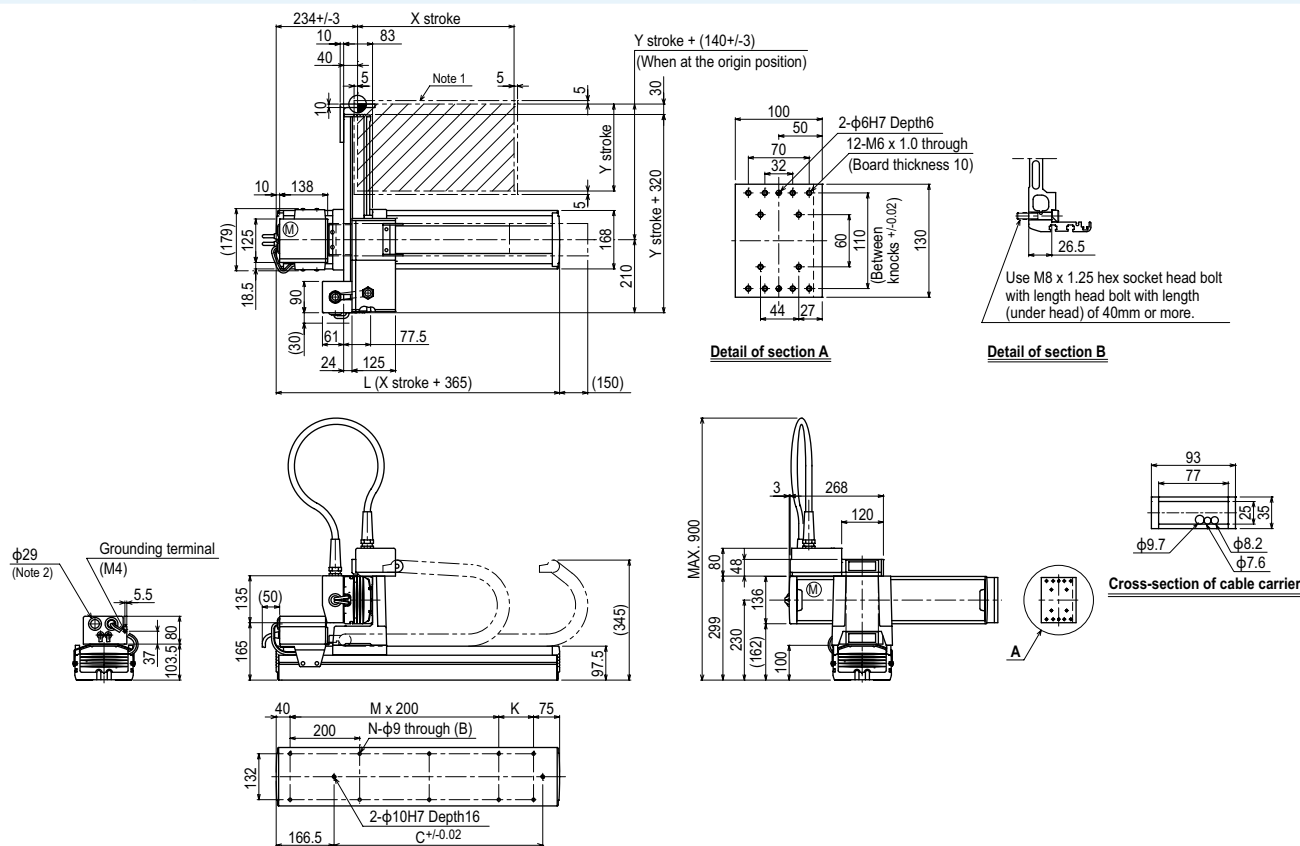
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150 to 550	20

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222-R	

## MXYx 2 axes M1



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250	
<b>L</b>	615	715	815	915	1015	1115	1215	1315	1415	1515	1615	
<b>K</b>	100	200	100	200	100	200	100	200	100	200	100	
<b>D</b>	240	420	600	600	780	780	960	960	1140	1140	1320	
<b>M</b>	2	2	3	3	4	4	5	5	6	6	7	
<b>N</b>	8	8	10	10	12	12	14	14	16	16	18	
<b>Y stroke</b>	150	250	350	450	550							
<b>Maximum speed for each stroke (mm/sec)</b> <sup>Note 3</sup>	X-axis		1200				960		840	720	600	480
<b>Speed setting</b>			-				80%		70%	60%	50%	40%

- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

- Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

MXYx 2 axes **M3**

**Detail of section A**  
100, 50, 70, 32, 2-φ6H7 Depth6, 12-M6 x 1.0 through (Board thickness 10), 60, 110, 130, 27, 44, (Between knockouts +0.02), 26.5, Use M8 x 1.25 hex socket head bolt with length head bolt with length (under head) of 40mm or more.

**Detail of section B**  
93, 77, 25, 35, φ9.7, φ8.2, φ7.6

**Cross-section of cable carrier**  
X stroke, 234+/-3, 83, 10, 10, 40, 5, 5, Note 1, 5, 5, Y stroke + (140+/-3) (When at the origin position), 30, Y stroke, 168, 5, 138, 10, 125, 18.5, 179, 125, 24, 77.5, 61, 30, 100, 150, L (X stroke + 365), Y stroke + 320, 210

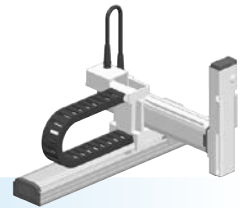
**MAX. 900**  
268, 3, 120, 48, 80, 100, 136, 230, 299, 103.5, 80, 37, 5.5, φ29 (Note 2), Grounding terminal (M4), 135, 165, 50, 345, 97.5, 75, K, M x 200, 40, N-φ9 through (B), 200, 2-φ10H7 Depth16, C+/-0.02, 166.5, 132

X stroke	250	350	450	550	650	750	850	950	1050	1150	1250	
L	615	715	815	915	1015	1115	1215	1315	1415	1515	1615	
K	100	200	100	200	100	200	100	200	100	200	100	
D	240	420	600	600	780	780	960	960	1140	1140	1320	
M	2	2	3	3	4	4	5	5	6	6	7	
N	8	8	10	10	12	12	14	14	16	16	18	
Y stroke	150	250	350	450	550							
Maximum speed for each stroke (mm/sec) Note 3	X-axis	1200					960	840	720	600	480	
	Speed setting	-					80%	70%	60%	50%	40%	

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
Note 2. User cable extraction port.  
Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



- Moving arm type
- Cable carrier
- Z-axis: clamped base / moving table type (200W)



### Ordering method

<b>MXy<sub>x</sub> - C</b>							<b>RCX340-3</b>								
Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
		M1 M3	25 to 125cm	15 to 55cm	ZFL20 ZFL10	15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

### Specification

	X-axis	Y-axis	Z-axis: ZFL20	Z-axis: ZFL10
Axis construction <sup>Note 1</sup>	F17	F14H	F10H-BK	
AC servo motor output (W)	400	200	200	
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01	+/-0.01	
Drive system	Ball screw φ20	Ball screw φ15	Ball screw φ15	
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20	20	10
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	1200	1200	600
Moving range (mm)	250 to 1250	150 to 550	150 to 350	
Robot cable length (m)	Standard: 3.5 Option: 5,10			

Note. The standard types are ZFL with higher rigidity as compared with ZF types which are conventional standard types. When you need the ZF type, please consult YAMAHA.

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.

Note 2. Positioning repeatability in one direction.

Note 3. Leads not listed in the catalog are also available. Contact us for details.

Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

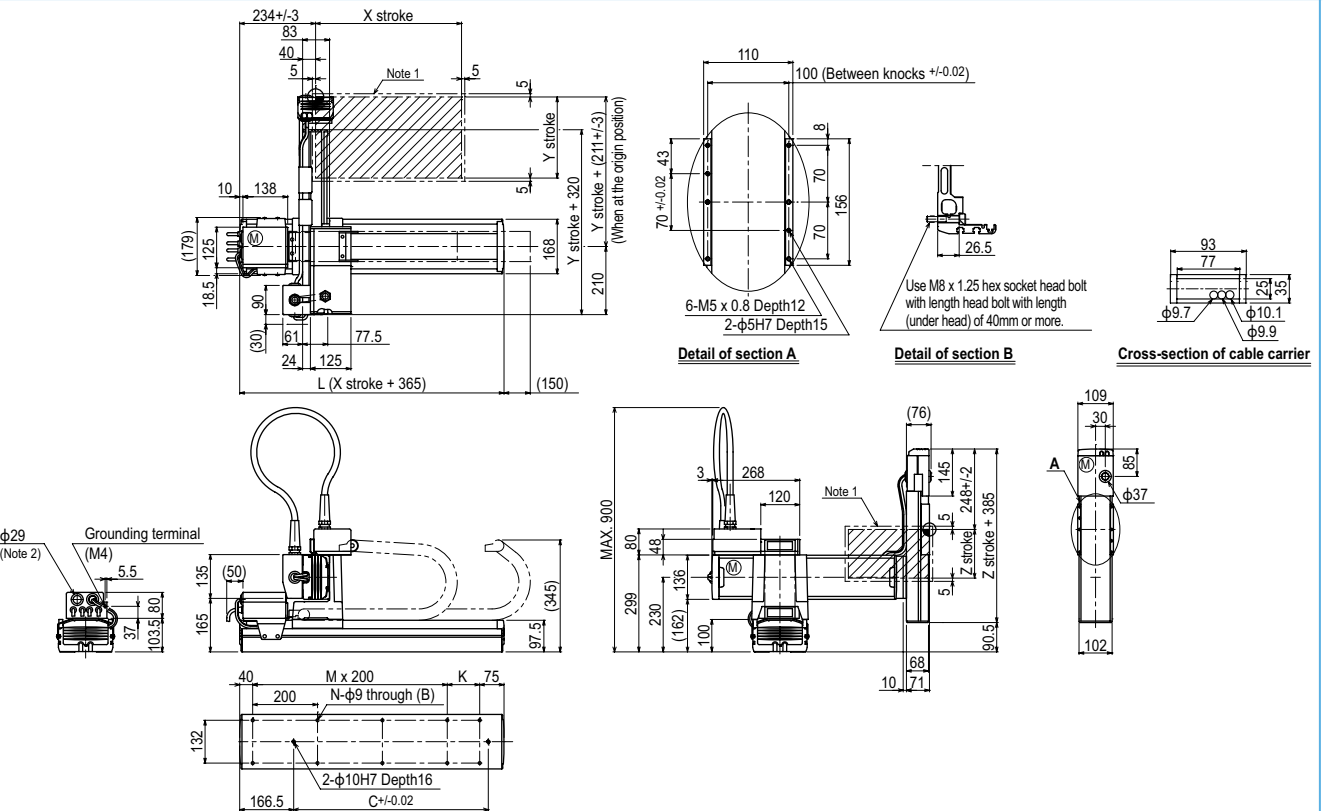
### Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)					
	ZFL20			ZFL10		
150	250	350	150	250	350	
150 to 550	8	8	8	12	11	10

### Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

### MXy<sub>3</sub> axes / ZFL20/10 (M1)



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250	
L	615	715	815	915	1015	1115	1215	1315	1415	1515	1615	
K	100	200	100	200	100	200	100	200	100	200	100	
C	240	420	600	600	780	780	960	960	1140	1140	1320	
M	2	2	3	3	4	4	5	5	6	6	7	
N	8	8	10	10	12	12	14	14	16	16	18	
Y stroke	150	250	350	450	550							
Z stroke	150	250	350									
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis		1200				960		840	720	600	480
Speed setting			-				80%		70%	60%	50%	40%

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.

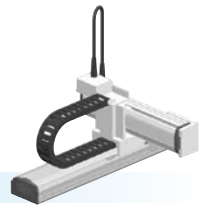
Note 2. User cable extraction port.

Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



# HXYx 2 axes

- Moving arm type
- Cable carrier



## Ordering method

### HXYx - C

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable
M1	M1		25 to 125cm	25 to 65cm	3L: 3.5m
M3	M3				5L: 5m
					10L: 10m

### RCX320-2

Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery

Specify various controller setting items. RCX320 ▶ **P.548**

### RCX222HP

Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2

Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Y-axis
Axis construction <sup>Note 1</sup>	F20	F17
AC servo motor output (W)	600	400
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw φ20	Ball screw φ20
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	1200
Moving range (mm)	250 to 1250	250 to 650
Robot cable length (m)	Standard: 3.5 Option: 5,10	

- Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

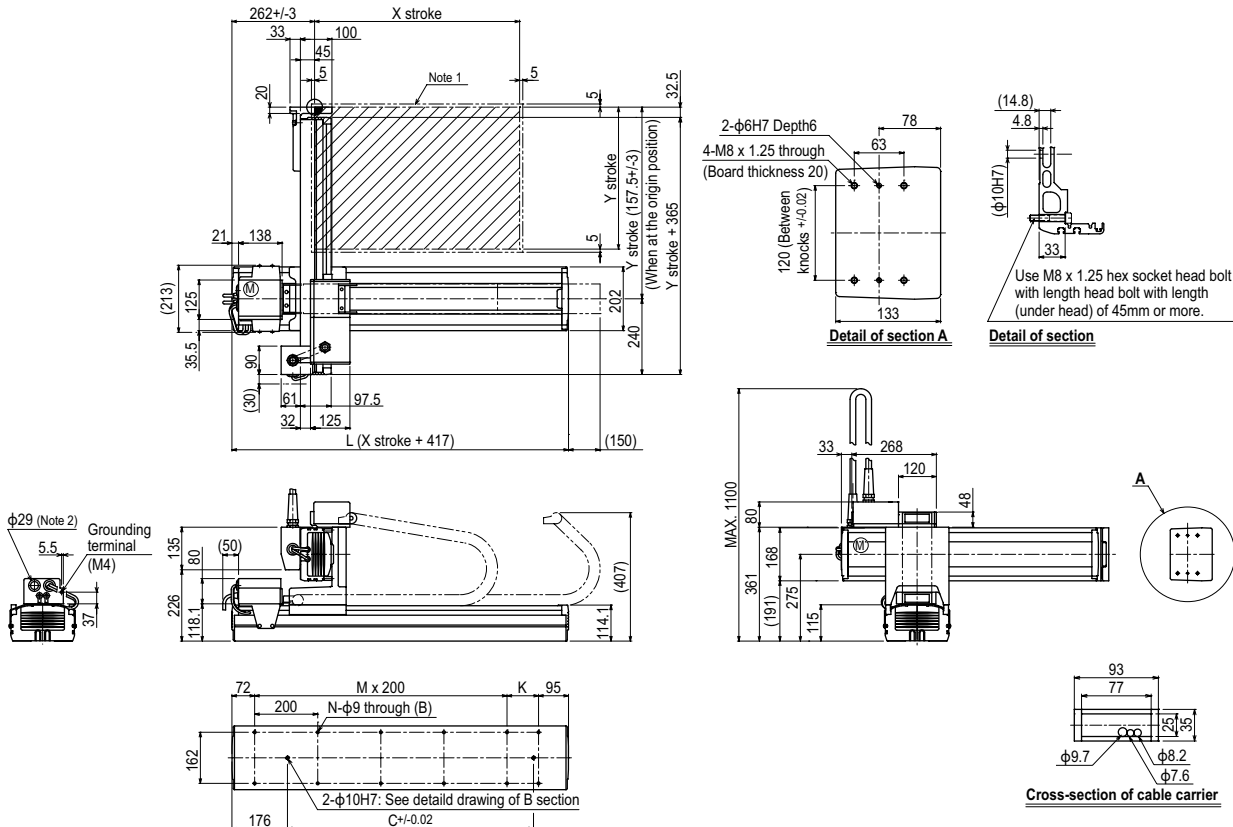
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
250 to 650	30

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222HP-R	

## HXYx 2 axes M1

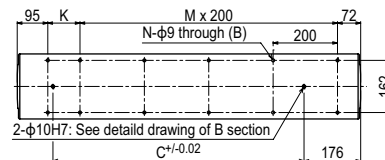
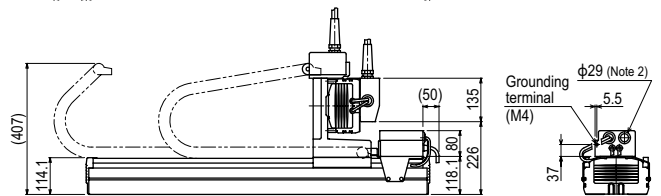
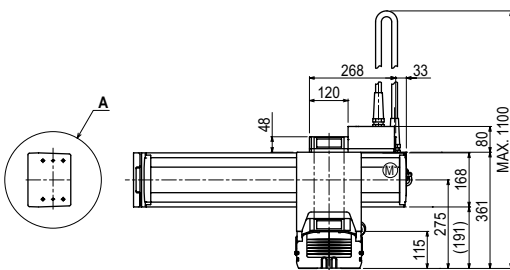
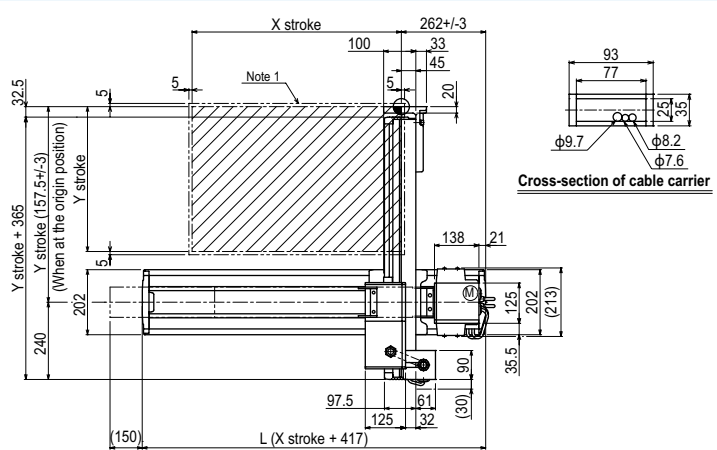
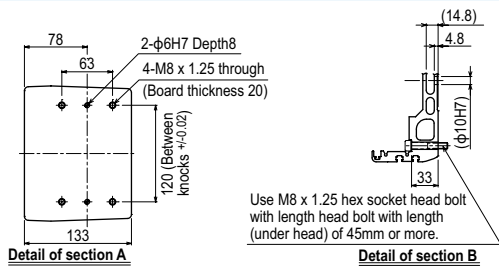


X stroke	250	350	450	550	650	750	850	950	1050	1150	1250
L	667	767	867	967	1067	1167	1267	1367	1467	1567	1667
K	100	200	100	200	100	200	100	200	100	200	100
C	420	420	600	600	780	780	960	960	1140	1320	1320
M	2	2	3	3	4	4	5	5	6	6	7
N	8	8	10	10	12	12	14	14	16	16	18
Y stroke	250	350	450	550	650						
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis		1200				960	840	720	600	480
Speed setting			-				80%	70%	60%	50%	40%

- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

HXYx 2 axes **M3**

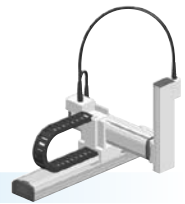


X stroke	250	350	450	550	650	750	850	950	1050	1150	1250	
L	667	767	867	967	1067	1167	1267	1367	1467	1567	1667	
K	100	200	100	200	100	200	100	200	100	200	100	
C	420	420	600	600	780	780	960	960	1140	1320	1320	
M	2	2	3	3	4	4	5	5	6	6	7	
N	8	8	10	10	12	12	14	14	16	16	18	
Y stroke	250	350	450	550	650							
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis	1200					960	840	720	600	480	
	Speed setting	-					80%	70%	60%	50%	40%	

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.  
 Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

# HXYx 3 axes / ZH

- Moving arm type
- Cable carrier
- Z-axis: clamped table / moving base type (200W)



## Ordering method

**HXYx - C** [ ] [ ] [ ] **ZH** [ ] [ ] **RCX340-3** [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke	Y-axis stroke	ZR-axis	Z-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
		M1 M3	25 to 125cm	25 to 65cm		25 to 55cm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specification

	X-axis	Y-axis	Z-axis
Axis construction <sup>Note 1</sup>	F20	F17	F14H-BK
AC servo motor output (W)	600	400	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01	+/-0.01
Drive system	Ball screw φ20	Ball screw φ20	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20	5
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	1200	300
Moving range (mm)	250 to 1250	250 to 650	250 to 550
Robot cable length (m)	Standard: 3.5 Option: 5, 10		

- Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

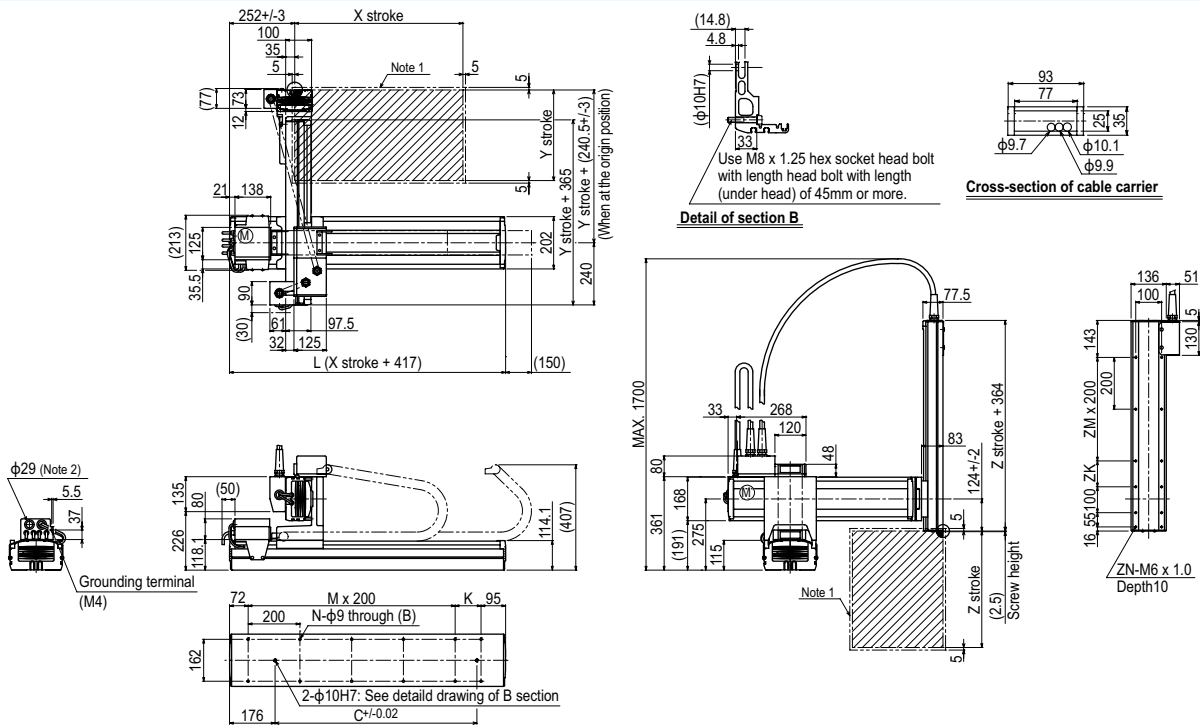
## Maximum payload (kg)

Y stroke (mm)	Z stroke (mm)				
	250	350	450	550	650
250	18	18	18	18	18
350	18	18	18	18	18
450	18	18	18	18	18
550	18	17	16	15	15
650	18	17	16	15	15

## Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## HXYx 3 axes / ZH M1



X stroke	Y stroke											
	250	350	450	550	650	750	850	950	1050	1150	1250	
L	667	767	867	967	1067	1167	1267	1367	1467	1567	1667	
K	100	200	100	200	100	200	100	200	100	200	100	
C	420	420	600	600	780	780	960	960	1140	1320	1320	
M	2	2	3	3	4	4	5	5	6	6	7	
N	8	8	10	10	12	12	14	14	16	16	18	
Y stroke		250	350	450	550	650						
Z stroke		250	350	450	550							
ZK		100	200	100	200							
ZM		1	1	2	2							
ZN		10	10	12	12							
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis	1200				960	840	720	600	480		
	Speed setting	-				80%	70%	60%	50%	40%		

- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

- Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Articulated robots  
YA

Linear conveyor  
modules  
LCM100

Motor-less single  
axis actuator  
Robonity

Compact  
single-axis robots  
TRANSERVO

Single-axis robots  
FLIP-X

Linear motor  
single-axis robots  
PHASER

Cartesian  
robots  
XY-X

SCARA  
robots  
YK-X

Pick & place  
robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Arm type

Gantry type

Moving arm  
type

Pole type

XZ type



# SXYx 2 axes

● Pole type ● Whipover



## Ordering method

**SXYx - S - P1**

Model	Cable	Combination	X-axis stroke <sup>Note 1</sup>	Y-axis stroke <sup>Note 1</sup>	Cable
			15 to 85cm	15 to 55cm	3L: 3.5m 5L: 5m 10L: 10m

**RCX320-2**

Controller / Number of controllable axes	Safety standard	Option A (O.P.A)	Option B (O.P.B)	Vision System	Absolute battery
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Specify various controller setting items. RCX320 ▶ **P.548**

**RCX222**

Controller	Usable for CE	I/O selection 1	I/O selection 2
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Specify various controller setting items. RCX222 ▶ **P.558**

Note 1. The total of the X and Y strokes should be 1100mm or less.

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <sup>Note 1</sup>	F14H	F14-BK
<b>AC servo motor output (W)</b>	200	100
<b>Repeatability</b> <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ15	Ball screw φ15
<b>Ball screw lead</b> <sup>Note 3</sup> (Deceleration ratio) (mm)	20	10
<b>Maximum speed</b> <sup>Note 4</sup> (mm/sec)	1200	600
<b>Moving range (mm)</b>	150 to 850	150 to 550
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots'.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

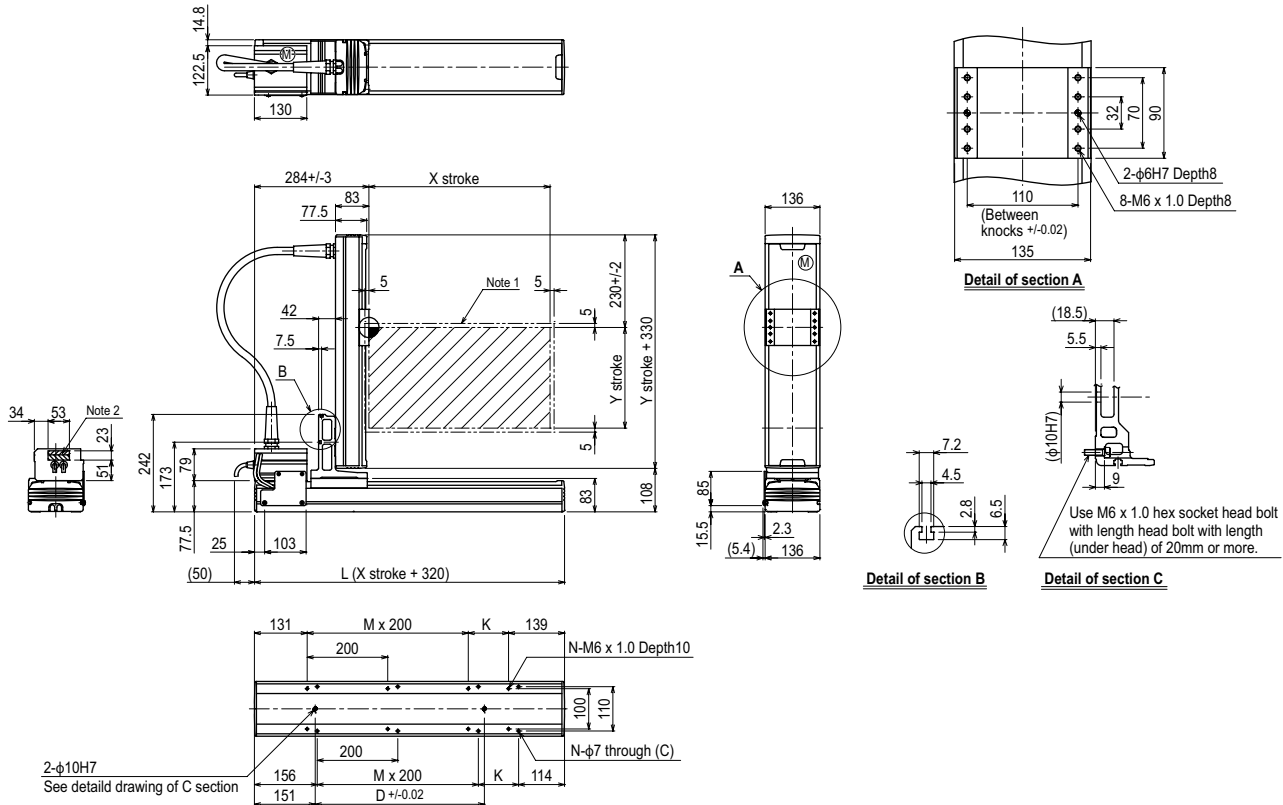
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150 to 550	8

## Controller

Controller	Operation method
RCX320 RCX222	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## SXYx 2 axes P1



X stroke <sup>Note 3</sup>	150	250	350	450	550	650	750	850
<b>L</b>	470	570	670	770	870	970	1070	1170
<b>K</b>	200	100	200	100	200	100	200	100
<b>D</b>	240	240	420	420	600	600	780	780
<b>M</b>	0	1	1	2	2	3	3	4
<b>N</b>	4	6	6	8	8	10	10	12
Y stroke <sup>Note 3</sup>	150	250	350	450	550			
<b>Maximum speed for each stroke (mm/sec)</b> <sup>Note 4</sup>	X-axis		1200			960		780
<b>Speed setting</b>			-			80%		65%

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.

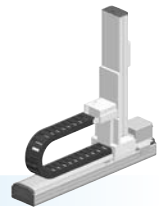
Note 2. The shaded position indicates a user cable extraction port.

Note 3. The total of the X and Y strokes should be 1100mm or less.

Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

# MXYx **2 axes**

● Pole type ● Cable carrier



## Ordering method

**MXYx - C - P2**

Model	Cable	Combination	X-axis stroke 25 to 125cm	Y-axis stroke 15 to 65cm	Cable 3L: 3.5m 5L: 5m 10L: 10m
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**RCX320-2** Controller / Number of controllable axes Safety standard Regenerative unit Option A (O.P.A) Option B (O.P.B) Vision System Absolute battery

Specify various controller setting items. RCX320 ▶ **P548**

**RCX222** Controller Usable for CE Regenerative unit I/O selection 1 I/O selection 2

Specify various controller setting items. RCX222 ▶ **P558**

## Specification

	X-axis	Y-axis
Axis construction <sup>Note 1</sup>	F17	F14H-BK
AC servo motor output (W)	400	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw φ20	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	10
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	600
Moving range (mm)	250 to 1250	150 to 650
Robot cable length (m)	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

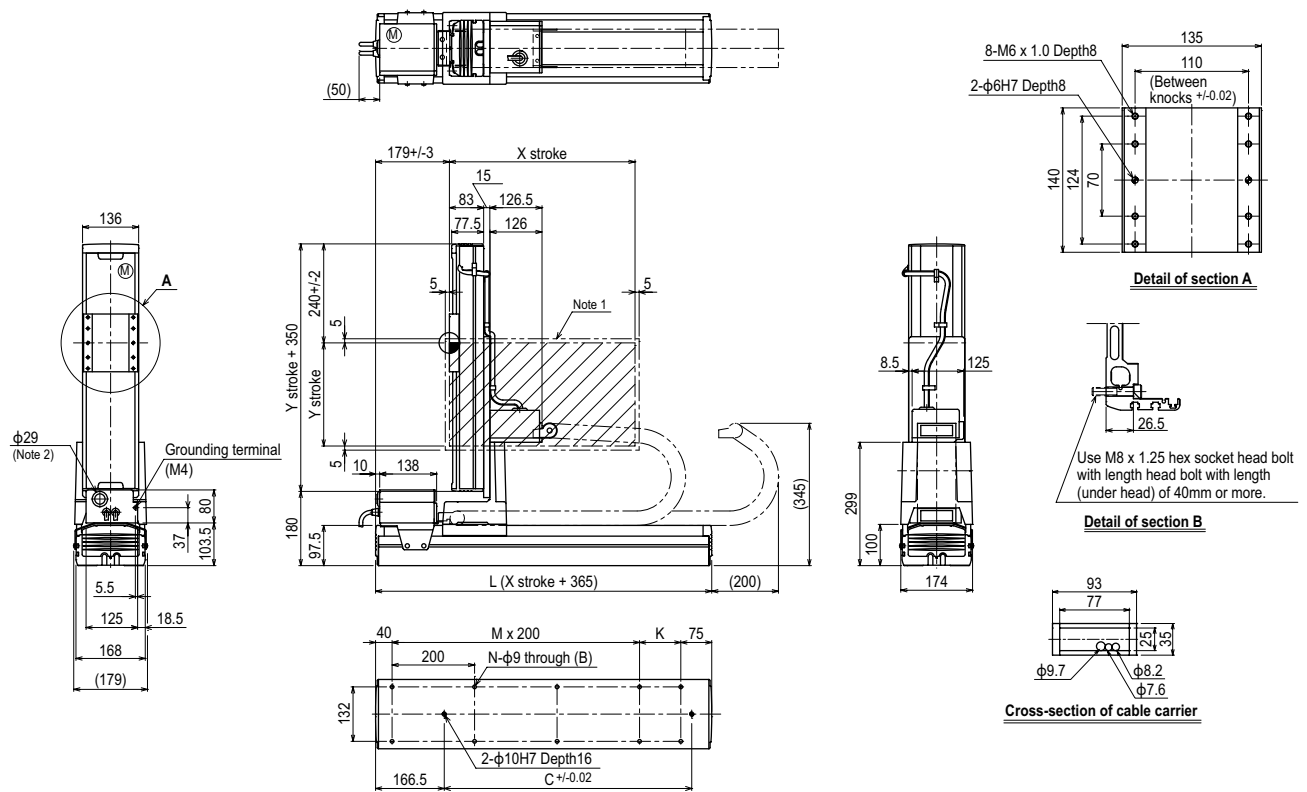
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150 to 650	20

## Controller

Controller	Operation method
RCX320-R RCX222-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## MXYx 2 axes **P2**



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250
L	615	715	815	915	1015	1115	1215	1315	1415	1515	1615
K	100	200	100	200	100	200	100	200	100	200	100
C	240	420	600	600	780	780	960	960	1140	1140	1320
M	2	2	3	3	4	4	5	5	6	6	7
N	8	8	10	10	12	12	14	14	16	16	18
Y stroke	150	250	350	450	550	650					
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis		1200				960	840	720	600	480
Speed setting			-				80%	70%	60%	50%	40%

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Arm type  
Gantry type  
Moving arm type  
Pole type  
XZ type

# MXYx 2 axes

● Pole type ● Whipover



## Ordering method

**MXYx - S - P1**

Model	Cable	Combination	X-axis stroke <sup>Note 3</sup> 25 to 95cm	Y-axis stroke <sup>Note 1</sup> 15 to 65cm	Cable 3L: 3.5m 5L: 5m 10L: 10m
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**RCX320-2** **R**

Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
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Specify various controller setting items. RCX320 ▶ **P.548**

**RCX222** **R**

Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2
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Specify various controller setting items. RCX222 ▶ **P.558**

Note 1. The total of the X and Y strokes should be 1100mm or less.

## Specification

	X-axis	Y-axis
Axis construction <sup>Note 1</sup>	F17	F14H-BK
AC servo motor output (W)	400	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw $\phi$ 20	Ball screw $\phi$ 15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	10
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	600
Moving range (mm)	250 to 950	150 to 650
Robot cable length (m)	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

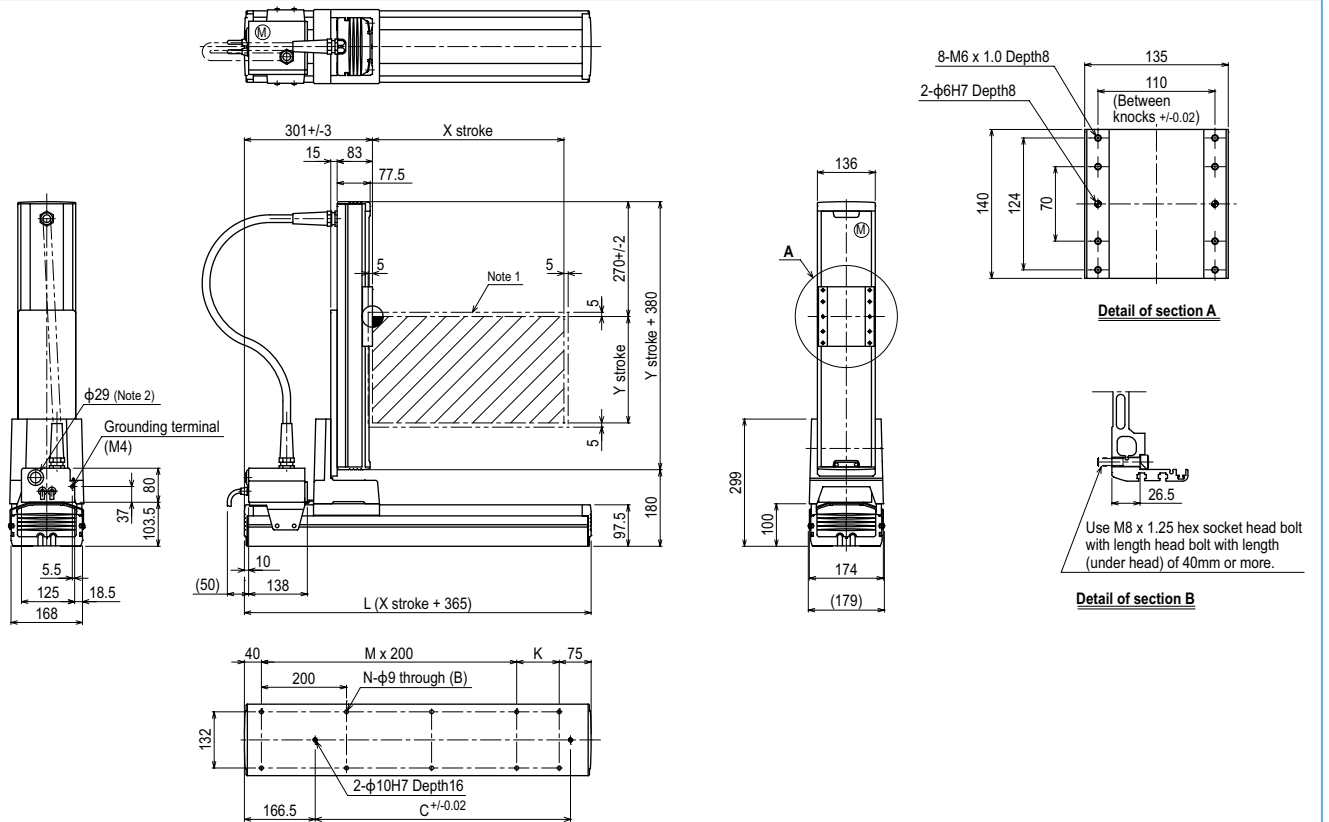
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150 to 650	20

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222-R	

## MXYx 2 axes P1



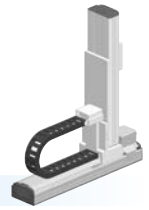
X stroke <sup>Note 3</sup>	250	350	450	550	650	750	850	950
L	615	715	815	915	1015	1115	1215	1315
K	100	200	100	200	100	200	100	200
C	240	420	600	600	780	780	960	960
M	2	2	3	3	4	4	5	5
N	8	8	10	10	12	12	14	14
Y stroke <sup>Note 3</sup>	150	250	350	450	550	650		
Maximum speed for each stroke (mm/sec) <sup>Note 4</sup>	X-axis		1200				960	840
Speed setting			-				80%	70%

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.  
 Note 3. The total of the X and Y strokes should be 1100mm or less.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



# HXYx 2 axes

● Pole type   ● Cable carrier



## Ordering method

**HXYx - C - P2**   **RCX320-2**   **R**

Model	Cable	Combination	X-axis stroke	Y-axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
			25 to 125cm	25 to 105cm	3L: 3.5m 5L: 5m 10L: 10m	RCX320-2		R				

Specify various controller setting items. RCX320 ▶ **P.548**

**RCX222HP**   **R**

Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2
RCX222HP		R		

Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Y-axis
<b>Axis construction</b> <small>Note 1</small>	F20	F20-BK
<b>AC servo motor output (W)</b>	600	600
<b>Repeatability</b> <small>Note 2</small> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ20	Ball screw φ20
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	10
<b>Maximum speed</b> <small>Note 4</small> (mm/sec)	1200	600
<b>Moving range (mm)</b>	250 to 1250	250 to 1050
<b>Robot cable length (m)</b>	Standard: 3.5   Option: 5, 10	

Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis/Y-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

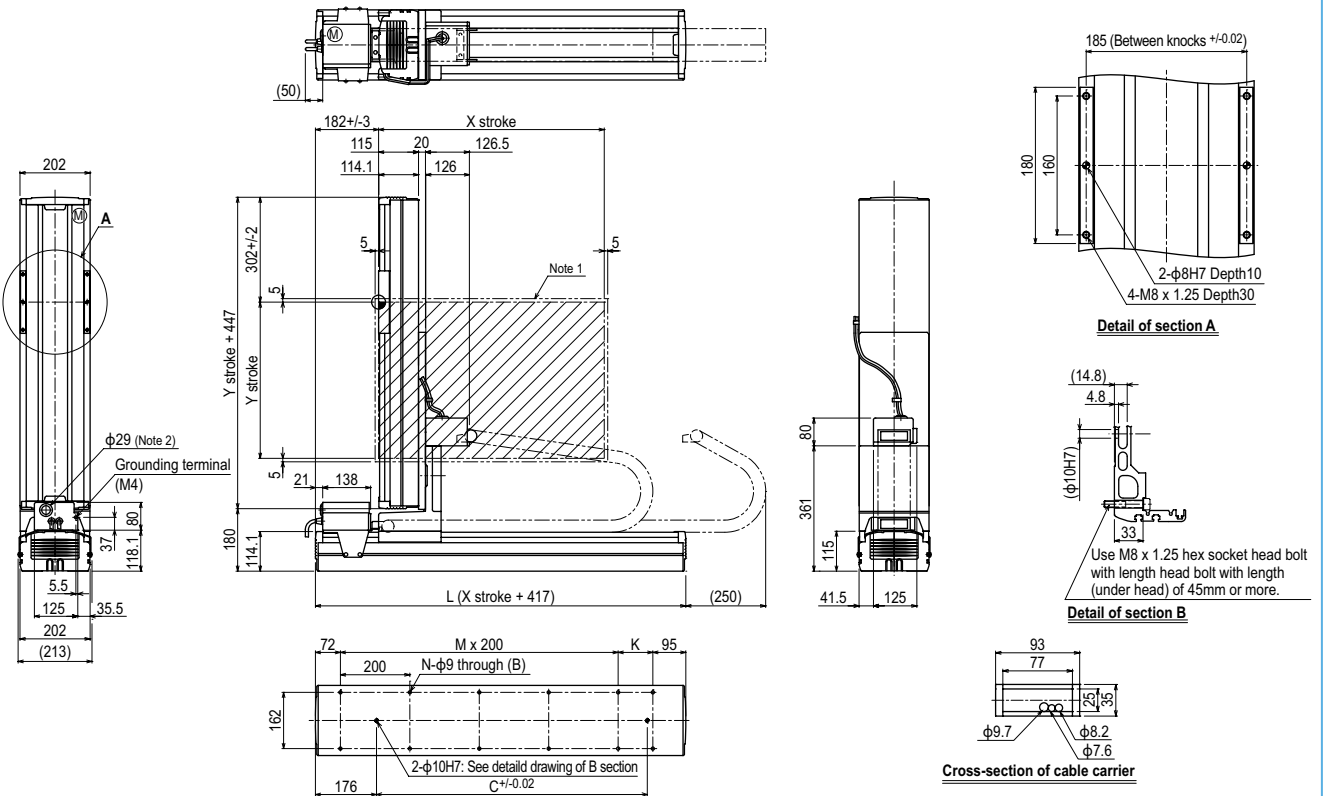
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
250 to 1050	30

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222HP-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## HXYx 2 axes P2



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250
<b>L</b>	667	767	867	967	1067	1167	1267	1367	1467	1567	1667
<b>K</b>	100	200	100	200	100	200	100	200	100	200	100
<b>C</b>	420	420	600	600	780	708	960	960	1140	1320	1320
<b>M</b>	2	2	3	3	4	4	5	5	6	6	7
<b>N</b>	8	8	10	10	12	12	14	14	16	16	18
<b>Y stroke</b>	250	350	450	550	650	750	850	950	1050		
<b>Maximum speed for each stroke (mm/sec)</b> <small>Note 3</small>	<b>X-axis</b>		1200		960		840	720	600	480	
	<b>Y-axis</b>		600		480		420	360			
	<b>Speed setting</b>		-		80%		70%	60%	50%	40%	

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

Note 3. When the X-axis/Y-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

# HXYx 2 axes

● Pole type ● Whipover



## Ordering method

**HXYx - S - P1**

Model	Cable	Combination	X-axis stroke <sup>Note 1</sup>	Y-axis stroke <sup>Note 1</sup>	Cable
			25 to 85cm	25 to 85cm	3L: 3.5m 5L: 5m 10L: 10m

RCX320-2	R					
Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery

Specify various controller setting items. RCX320 ▶ **P548**

RCX222HP	R			
Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2

Specify various controller setting items. RCX222 ▶ **P558**

Note 1. The total of the X and Y strokes should be 1100mm or less.

## Specification

	X-axis	Y-axis
Axis construction <sup>Note 1</sup>	F20	F20-BK
AC servo motor output (W)	600	600
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw φ20	Ball screw φ20
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	10
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	600
Moving range (mm)	250 to 850	250 to 850
Robot cable length (m)	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis/Y-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

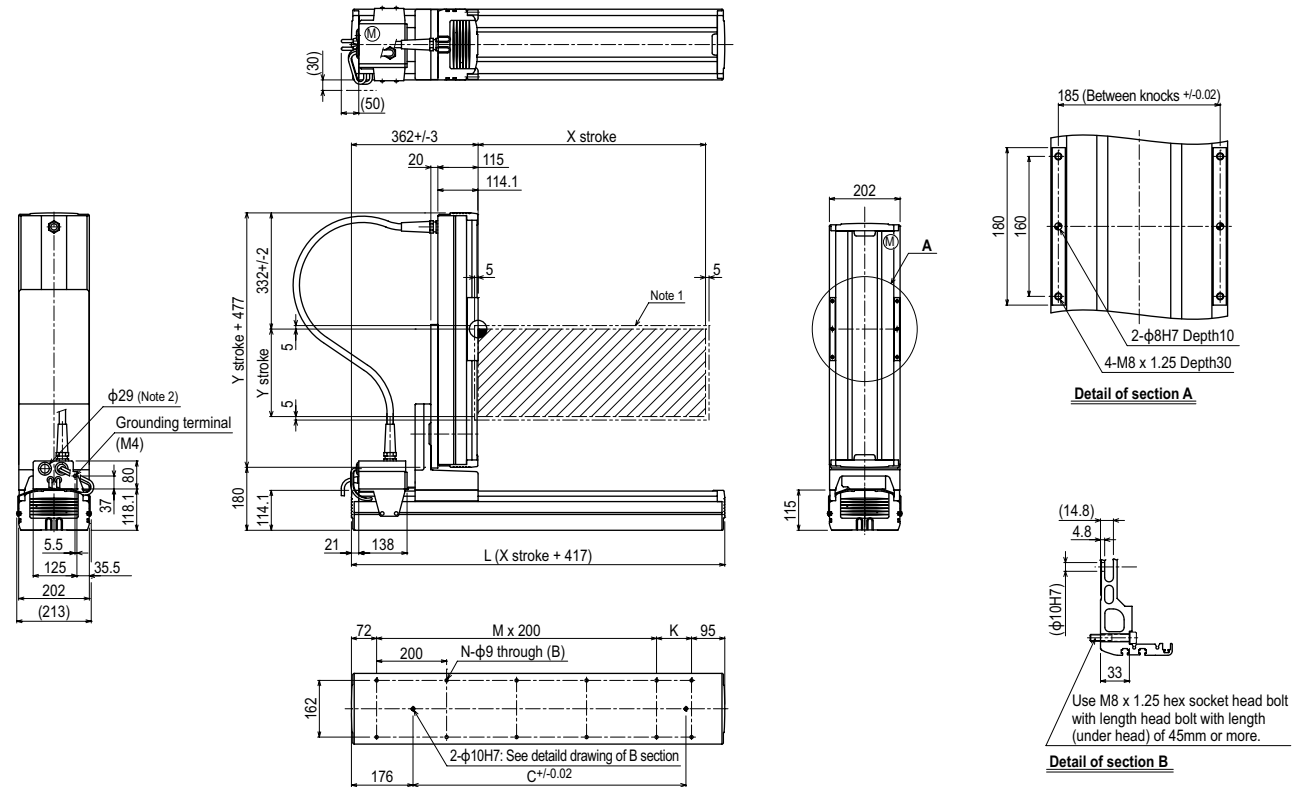
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
250 to 850	30

## Controller

Controller	Operation method
RCX320-R RCX222HP-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## HXYx 2 axes P1



X stroke <sup>Note 3</sup>	250	350	450	550	650	750	850
L	667	767	867	967	1067	1167	1267
K	100	200	100	200	100	200	100
C	420	420	600	600	780	780	960
M	2	2	3	3	4	4	5
N	8	8	10	10	12	12	14
Y stroke <sup>Note 3</sup>	250	350	450	550	650	750	850
Maximum speed for each stroke (mm/sec) <sup>Note 4</sup>	X-axis		1200		960		
	Y-axis		600		480		
Speed setting			-		80%		

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.  
 Note 3. The total of the X and Y strokes should be 1100mm or less.  
 Note 4. When the X-axis/Y-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis robot  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Arm type  
Gantry type  
Moving arm type  
Pole type  
XZ type







# SXYx 2 axes / ZF

● XZ type ● Cable carrier ● Z-axis: clamped base / moving table type (100W)



## Ordering method

**SXYx - C** [ ] [ ] **ZF** [ ] [ ] [ ] [ ] [ ] [ ]

**Model** - **Cable** - **Combination** - **X-axis stroke** - **ZR-axis** - **Z-axis stroke** - **Cable**

F1 15 to 105cm 15 to 35cm 3L: 3.5m  
F3 5L: 5m 10L: 10m

**RCX320-2** [ ] [ ] [ ] [ ] [ ] [ ]

Controller / Number of controllable axes - Safety standard - Option A (OP.A) - Option B (OP.B) - Vision System - Absolute battery

Specify various controller setting items. RCX320 ▶ **P.548**

**RCX222** [ ] [ ] [ ] [ ] [ ] [ ]

Controller - Usable for CE - I/O selection 1 - I/O selection 2

Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Z-axis
<b>Axis construction</b> <small>Note 1</small>	F14	F10-BK
<b>AC servo motor output (W)</b>	100	100
<b>Repeatability</b> <small>Note 2</small> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ15	Ball screw φ15
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	10
<b>Maximum speed</b> <small>Note 4</small> (mm/sec)	1200	600
<b>Moving range (mm)</b>	150 to 1050	150 to 350
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5,10	

Note 1. Use caution that the frame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

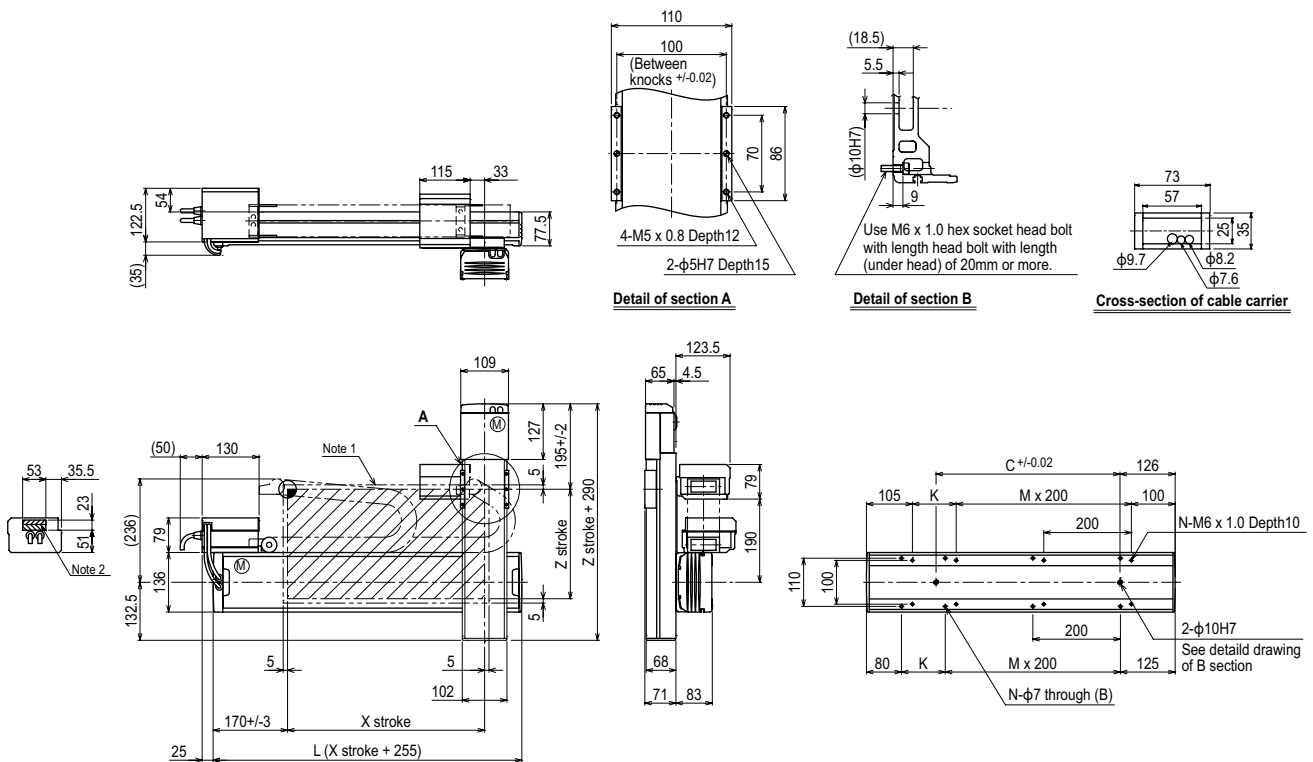
## Maximum payload (kg)

X stroke (mm)	Z stroke (mm)
150 to 1050	150 to 350
	10

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

## SXYx 2 axes / ZF (F1)



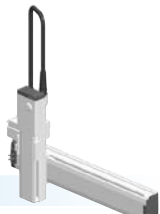
X stroke	150	250	350	450	550	650	750	850	950	1050
<b>L</b>	405	505	605	705	805	905	1005	1105	1205	1305
<b>K</b>	200	100	200	100	200	100	200	100	200	100
<b>C</b>	240	240	420	420	600	600	780	780	960	960
<b>M</b>	0	1	1	2	2	3	3	4	4	5
<b>N</b>	4	6	6	8	8	10	10	12	12	14
<b>Z stroke</b>	150	250	350							
<b>Maximum speed for each stroke (mm/sec)</b> <small>Note 3</small>	1200			960			780	600	540	
<b>Speed setting</b>	-			80%			65%	50%	45%	

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates a user cable extraction port.

Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

# SXYx 2 axes / ZF

XZ type   
  Whipover   
  Z-axis: clamped base / moving table type (100W)



## Ordering method

**SXYx - S** [ ] [ ] **ZF** [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke	ZR-axis	Z-axis stroke	Cable
F1			15 to 85cm		15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m
F3						

**RCX320-2** [ ] [ ] [ ] [ ] [ ] [ ]  
 Controller / Number of controllable axes    Safety standard    Option A (OP.A)    Option B (OP.B)    Vision System    Absolute battery

Specify various controller setting items. RCX320 ▶ **P.548**

**RCX222** [ ] [ ] [ ] [ ] [ ] [ ]  
 Controller    Usable for CE    I/O selection 1    I/O selection 2

Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Z-axis
Axis construction <sup>Note 1</sup>	F14	F10-BK
AC servo motor output (W)	100	100
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw φ15	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	10
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	600
Moving range (mm)	150 to 850	150 to 350
Robot cable length (m)	Standard: 3.5    Option: 5,10	

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

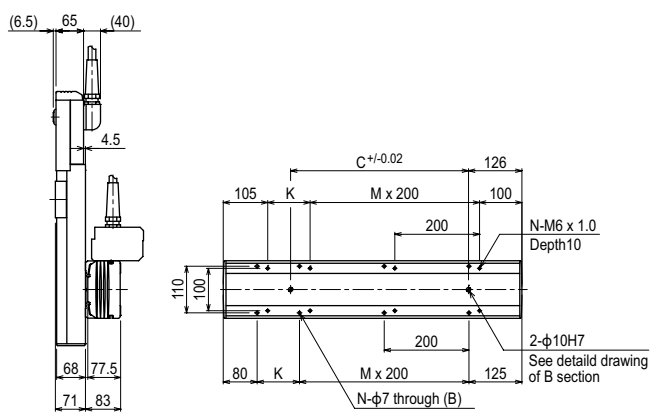
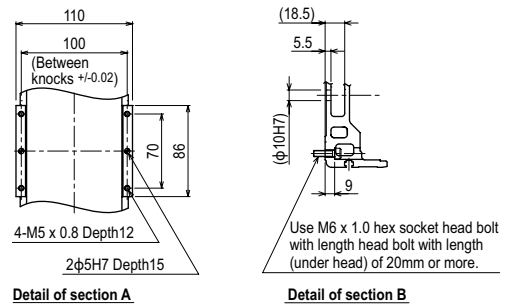
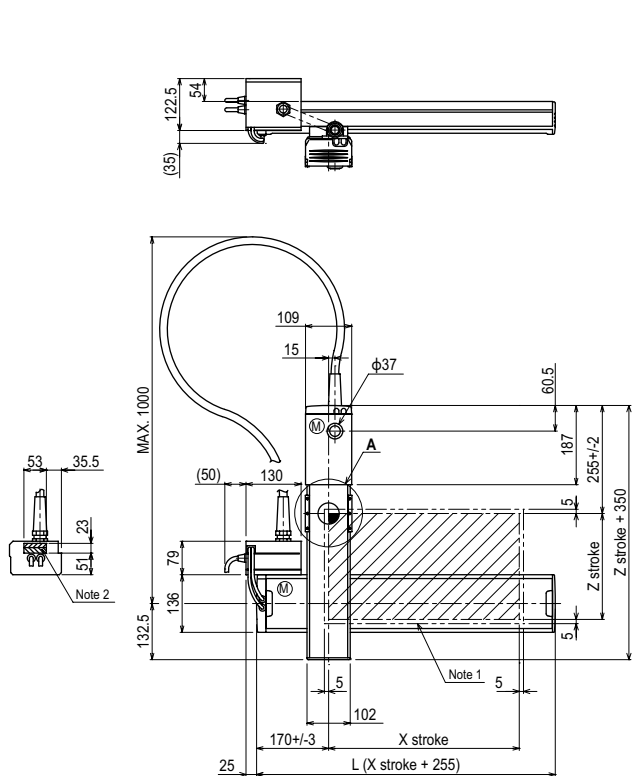
## Maximum payload (kg)

X stroke (mm)	Z stroke (mm)
150 to 850	150 to 350
	10

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

## SXYx 2 axes / ZF (F1)



X stroke	150	250	350	450	550	650	750	850
L	405	505	605	705	805	905	1005	1105
K	200	100	200	100	200	100	200	100
C	240	240	420	420	600	600	780	780
M	0	1	1	2	2	3	3	4
N	4	6	6	8	8	10	10	12
Z stroke	150	250	350					
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis		1200			960		780
Speed setting			-			80%		65%

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates an user cable extraction port.  
 Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

Arm type

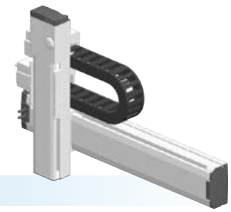
Gantry type

Moving arm type

Pole type

XZ type

# SXYx 2 axes / ZFL20



- XZ type
- Cable carrier
- Z-axis: clamped base / moving table type (200W)

## Ordering method

**SXYx - C** [ ] [ ] **ZFL20** [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke	ZR-axis	Z-axis stroke	Cable
F1			15 to 105cm		15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m
F3						

**RCX320-2** [ ] **R** [ ] [ ] [ ] [ ] [ ]

Controller / Number of controllable axes	Safety standard	Regenerative unit	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
RCX320-2						

Specify various controller setting items. RCX320 ▶ **P.548**

**RCX222** [ ] **R** [ ] [ ] [ ] [ ] [ ]

Controller	Usable for CE	Regenerative unit	I/O selection 1	I/O selection 2
RCX222				

Specify various controller setting items. RCX222 ▶ **P.558**

Note 1. RCX320 uses the YHX-RU regenerative unit. The RCX222 uses the RG2.

## Specification

	X-axis	Z-axis
Axis construction <sup>Note 1</sup>	F14	F10H-BK
AC servo motor output (W)	100	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw φ15	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	1200
Moving range (mm)	150 to 1050	150 to 350
Robot cable length (m)	Standard: 3.5 Option: 5,10	

- Note 1. Use caution that the flame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

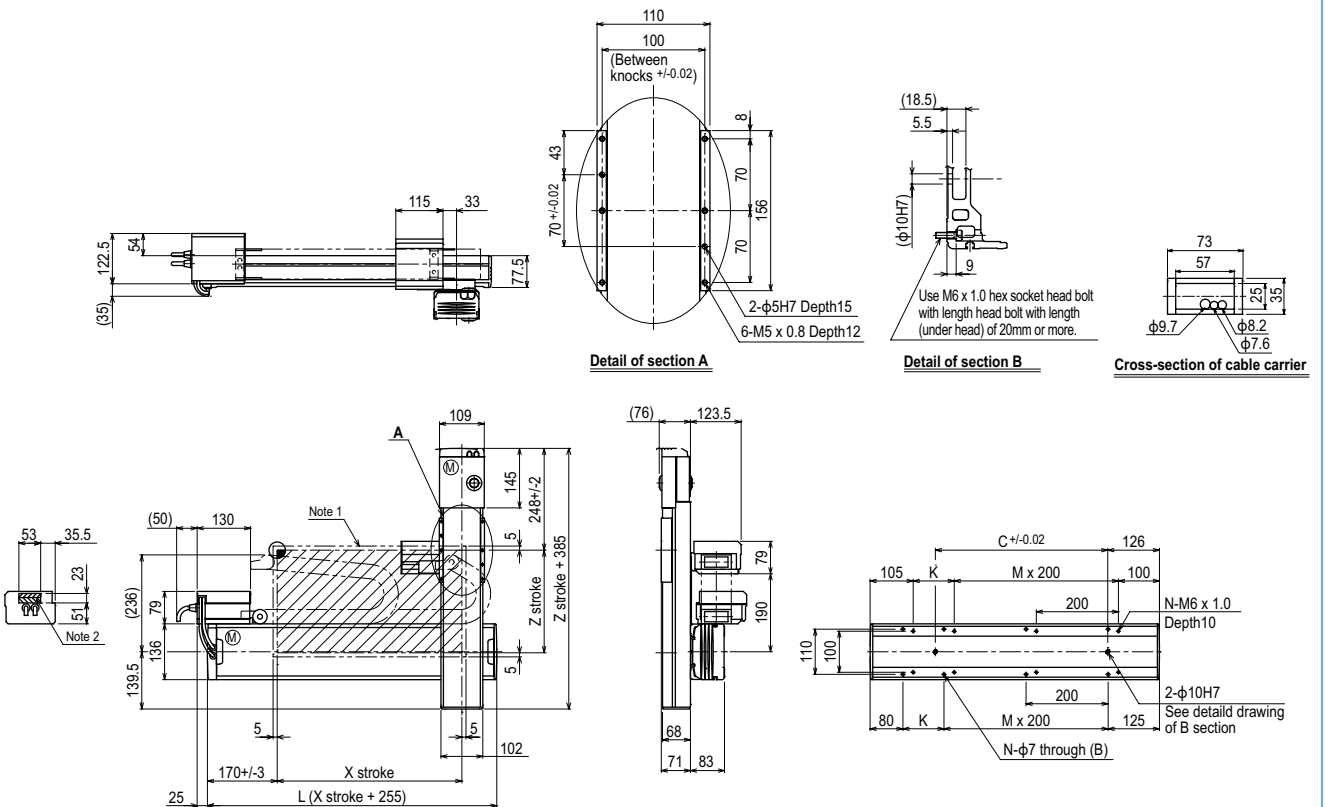
## Maximum payload (kg)

X stroke (mm)	Z stroke (mm)
150 to 1050	150 to 350
	8

## Controller

Controller	Operation method
RCX320-R RCX222-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## SXYx 2 axes / ZFL20 (F1)



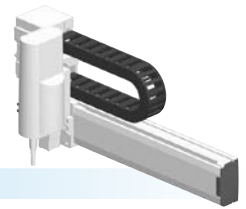
X stroke	150	250	350	450	550	650	750	850	950	1050				
L	405	505	605	705	805	905	1005	1105	1205	1305				
K	200	100	200	100	200	100	200	100	200	100				
C	240	240	420	420	600	600	780	780	960	960				
M	0	1	1	2	2	3	3	4	4	5				
N	4	6	6	8	8	10	10	12	12	14				
Z stroke	150	250	350											
Maximum speed for each stroke (mm/sec)	X-axis		1200				960		780		600		540	
Speed setting			-				80%		65%		50%		45%	

- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates a user cable extraction port.

Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

# SXYx 2 axes / ZS

- XZ type
- Cable carrier
- Z-axis shaft vertical type



## Ordering method

**SXYx - C** [ ] [ ] [ ] **15** [ ]

Model	Cable	Combination	X-axis stroke	ZR-axis	Z-axis stroke	Cable
F1			15 to 105cm	ZS12		3L: 3.5m
F3				ZS6		5L: 5m
						10L: 10m

**RCX320-2** [ ] [ ] [ ] [ ] [ ] [ ]

Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
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Specify various controller setting items. RCX320 ▶ **P548**

**RCX222** [ ] [ ] [ ] [ ] [ ] [ ]

Controller	Usable for CE	I/O selection 1	I/O selection 2
------------	---------------	-----------------	-----------------

Specify various controller setting items. RCX222 ▶ **P558**

## Specification

	X-axis	Z-axis: ZS12	Z-axis: ZS6
Axis construction <sup>Note 1</sup>	F14	-	
AC servo motor output (W)	100	60	
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.02	
Drive system	Ball screw φ15	Ball screw φ12	
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	12	6
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	1000	500
Moving range (mm)	150 to 1050	150	
Robot cable length (m)	Standard: 3.5 Option: 5, 10		

- Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

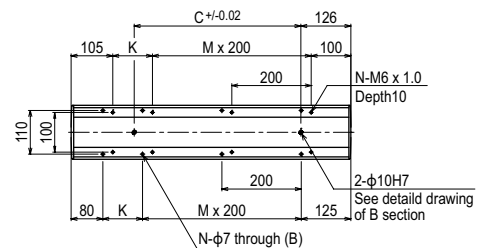
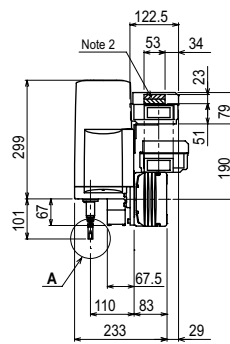
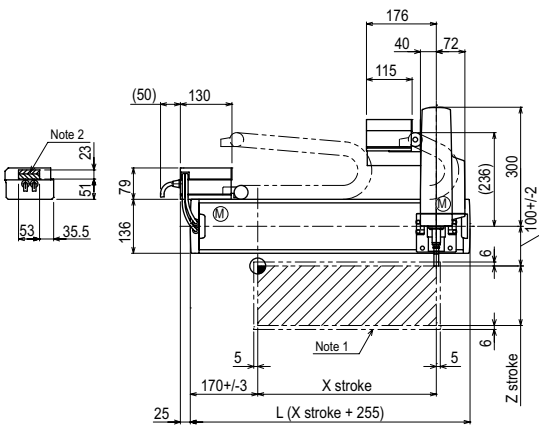
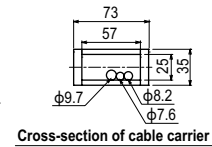
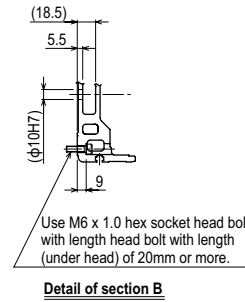
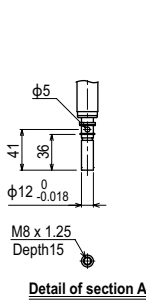
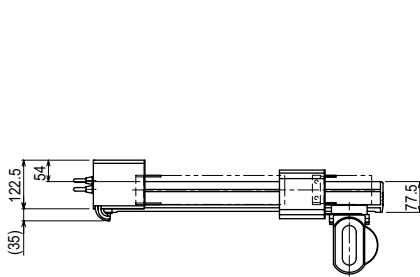
## Maximum payload (kg)

Y stroke (mm)	ZS12	ZS6
150 to 1050	3	5

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

## SXYx 2 axes / ZS (F1)



X stroke	150	250	350	450	550	650	750	850	950	1050				
L	405	505	605	705	805	905	1005	1105	1205	1305				
K	200	100	200	100	200	100	200	100	200	100				
C	240	240	420	420	600	600	780	780	960	960				
M	0	1	1	2	2	3	3	4	4	5				
N	4	6	6	8	8	10	10	12	12	14				
Z stroke	150													
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis		1200				960		780		600		540	
Speed setting			-				80%		65%		50%		45%	

- Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates an user cable extraction port.

- Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Arm type  
Gantry type  
Moving arm type  
Pole type  
XZ type

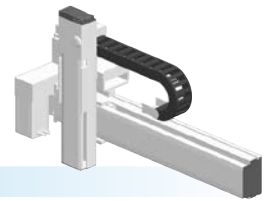




# SXYBx

2 axes / ZFL20

- XZ type
- Cable carrier
- Z-axis: clamped base / moving table type (200W)



## Ordering method

**SXYBx - C** [ ] [ ] **ZFL20** [ ] [ ] **RCX320-2** [ ] **R** [ ] [ ] [ ] [ ] [ ] [ ]

Model Cable Combination X-axis stroke ZR-axis Z-axis stroke Cable

F1 15 to 305cm 3L: 3.5m  
F3 15 to 35cm 5L: 5m  
10L: 10m

Controller / Number of controllable axes Safety standard Regenerative unit Option A (OP.A) Option B (OP.B) Vision System Absolute battery

Specify various controller setting items. RCX320 ▶ **P.548**

**RCX222** [ ] **R** [ ] [ ] [ ] [ ] [ ]

Controller Usable for CE Regenerative unit I/O selection 1 I/O selection 2

Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Z-axis
Axis construction <sup>Note 1</sup>	B14H	F10H-BK
AC servo motor output (W)	200	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.04	+/-0.01
Drive system	Timing belt	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	Equivalent to lead 25	20
Maximum speed (mm/sec)	1875	1200
Moving range (mm)	150 to 3050	150 to 350
Robot cable length (m)	Standard: 3.5 Option: 5, 10	

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.

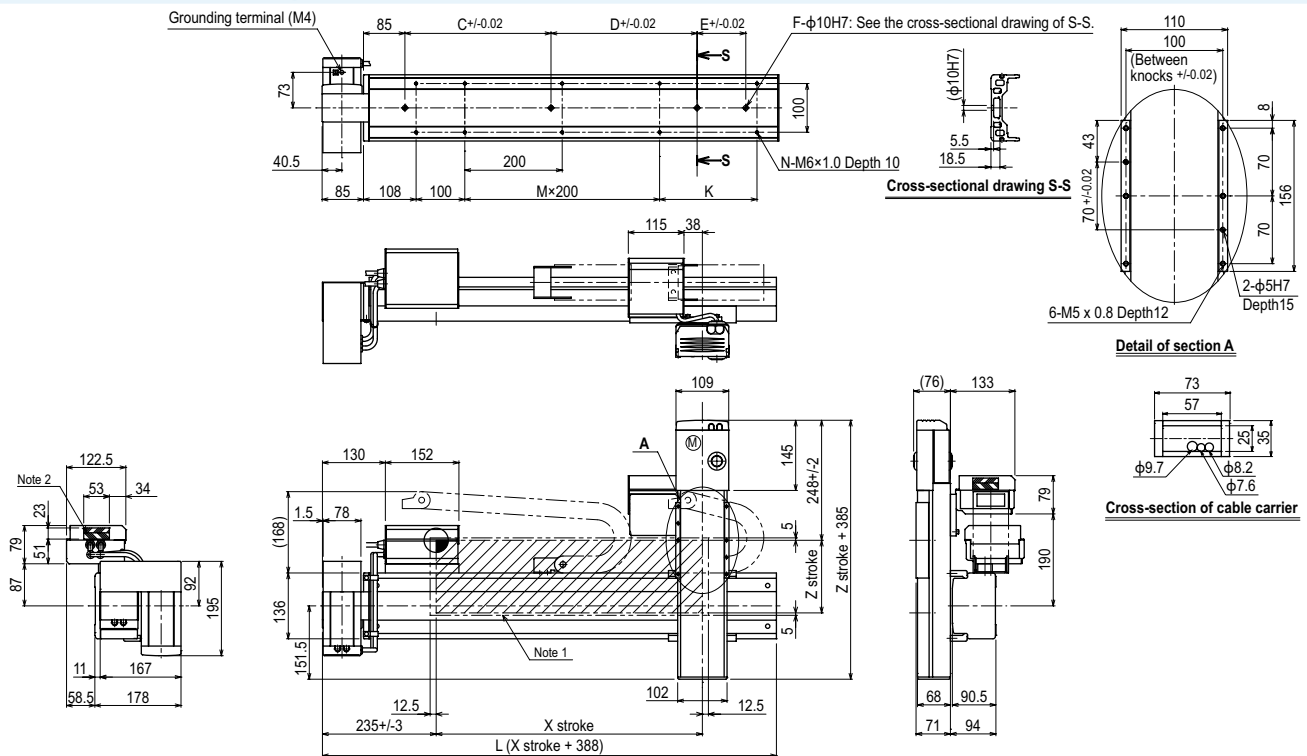
## Maximum payload (kg)

X stroke (mm)	Z stroke (mm)
150 to 3050	150 to 350
	8

## Controller

Controller	Operation method
RCX320-R RCX222-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## SXYBx 2 axes / ZFL20 (F1)



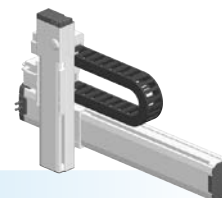
Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates an user cable extraction port.  
 Note 3. LU specification should be used for installation of the X axis motor.

X stroke	150	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750	1850	1950	2050	2150	2250	2350	2450	2550	2650	2750	2850	2950	3050	
L	538	638	738	838	938	1038	1138	1238	1338	1438	1538	1638	1738	1838	1938	2038	2138	2238	2338	2438	2538	2638	2738	2838	2938	3038	3138	3238	3338	3438	
K	-	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	200	100	
C	240	420	420	600	600	780	780	960	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
F	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
M	1	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	15	
N	6	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	28	28	30	30	32	32	34	34	36	
Z stroke	150	250	350																												

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Arm type  
Gantry type  
Moving arm type  
Pole type  
XZ type

# MXYx

2 axes / ZFL10



- XZ type
- Cable carrier
- Z-axis: clamped base / moving table type (200W)

## Ordering method

**MXYx - C** [ ] [ ] **ZFL10** [ ] [ ] **RCX320-2** [ ] **R** [ ] [ ] [ ] [ ] [ ] [ ]

Model	Cable	Combination	X-axis stroke	ZR-axis	Z-axis stroke	Cable
F1			15 to 105cm		15 to 35cm	3L: 3.5m 5L: 5m 10L: 10m
F3						

**RCX320-2** Controller / Number of controllable axes Safety standard Regenerative unit Option A (OP.A) Option B (OP.B) Vision System Absolute battery

Specify various controller setting items. RCX320 ▶ P.548

**RCX222** Controller Usable for CE Regenerative unit I/O selection 1 I/O selection 2

Specify various controller setting items. RCX222 ▶ P.558

## Specification

	X-axis	Z-axis
Axis construction <sup>Note 1</sup>	F14H	F10H-BK
AC servo motor output (W)	200	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw φ15	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	10
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	600
Moving range (mm)	150 to 1050	150 to 350
Robot cable length (m)	Standard: 3.5 Option: 5, 10	

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

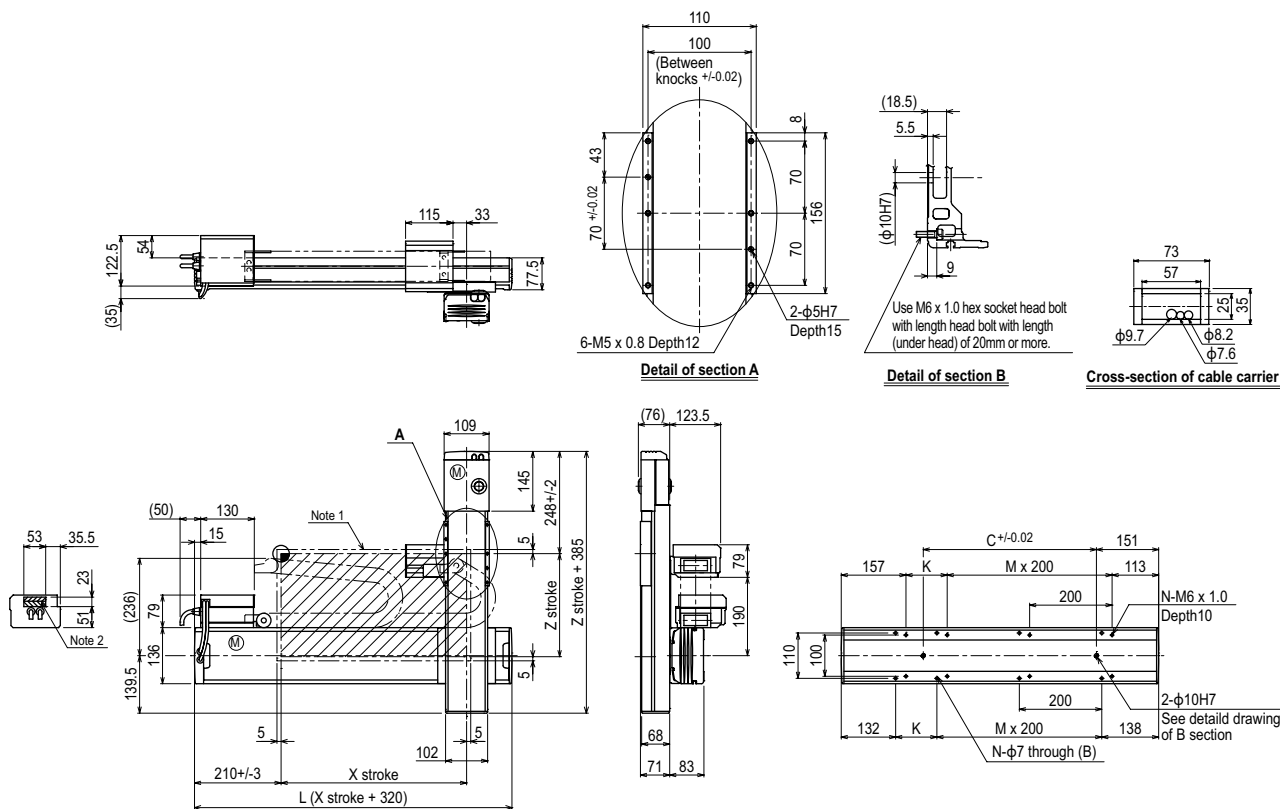
## Maximum payload (kg)

X stroke (mm)	Z stroke (mm)
150 to 1050	150 to 350
	15

## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222-R	

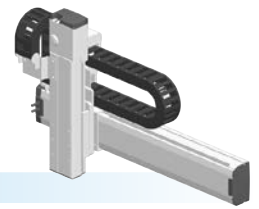
## MXYx 2 axes / ZFL10 (F1)



X stroke	150	250	350	450	550	650	750	850	950	1050			
L	470	570	670	770	870	970	1070	1170	1270	1370			
K	200	100	200	100	200	100	200	100	200	100			
C	240	240	420	420	600	600	780	960	960	1140			
M	0	1	1	2	2	3	3	4	4	5			
N	4	6	6	8	8	10	10	12	12	14			
Z stroke	150	250	350										
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis		1200			960		780		600		540	
Speed setting			-			80%		65%		50%		45%	

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates a user cable extraction port.

Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



### Ordering method

**MXYx - C** [ ] [ ] **ZFH** [ ] [ ] [ ]

**Model** [ ] **Cable** [ ] **Combination** [ ] **X-axis stroke** [ ] **ZR-axis** [ ] **Z-axis stroke** [ ] **Cable** [ ]

**RCX320-2** [ ] [ ] **R** [ ] [ ] [ ] [ ] [ ] [ ] [ ]  
**RCX222** [ ] [ ] **R** [ ] [ ] [ ] [ ] [ ] [ ] [ ]

**Specify various controller setting items. RCX320 ▶ P.548**  
**Specify various controller setting items. RCX222 ▶ P.558**

### Specification

	X-axis	Z-axis
<b>Axis construction</b> <small>Note 1</small>	F14H	F10H-BK
<b>AC servo motor output (W)</b>	200	200
<b>Repeatability</b> <small>Note 2</small> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ15	Ball screw φ15
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	10
<b>Maximum speed</b> <small>Note 4</small> (mm/sec)	1200	600
<b>Moving range (mm)</b>	150 to 1050	150 to 350
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5, 10	

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

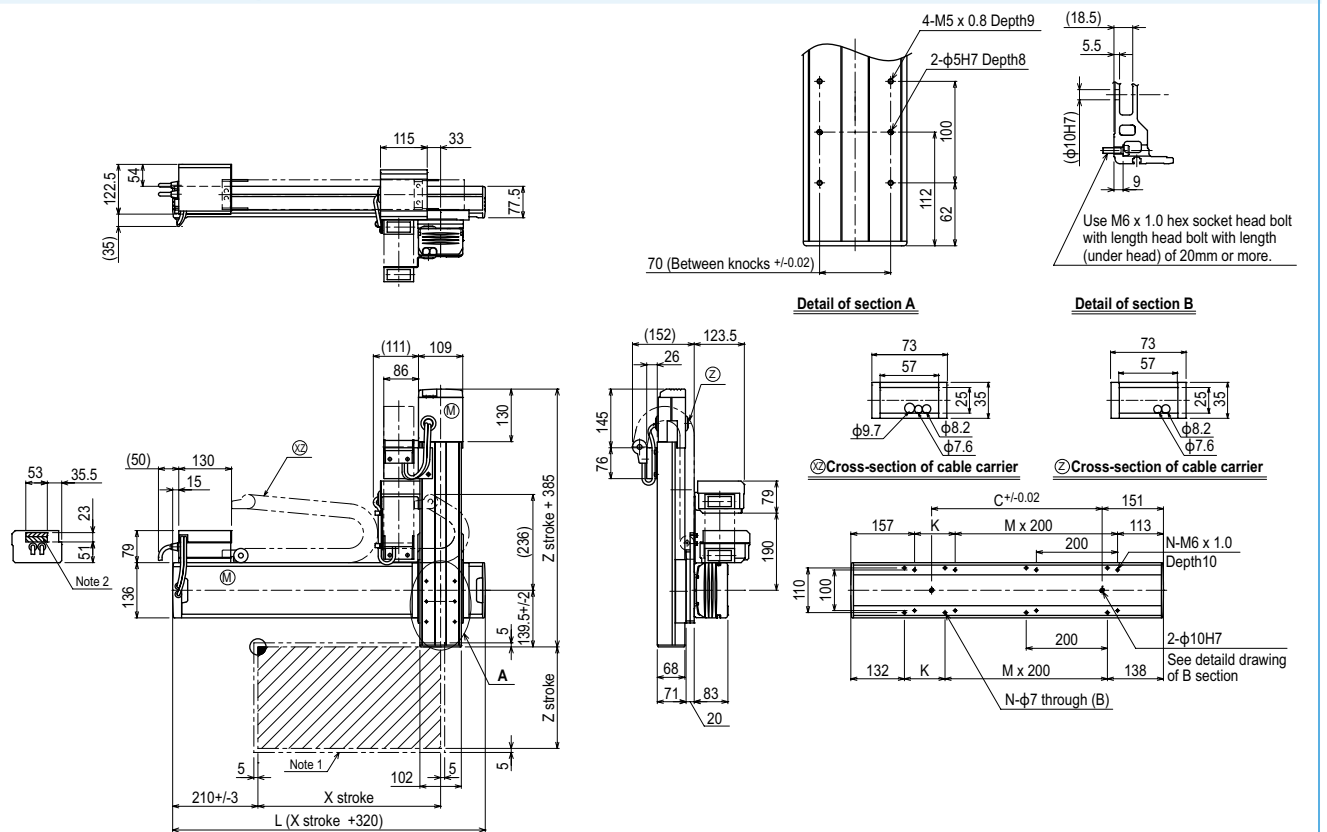
### Maximum payload (kg)

	Z stroke (mm)		
X stroke (mm)	150	250	350
150 to 1050	14	13	12

### Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222-R	

### MXYx 2 axes / ZFH (F1)

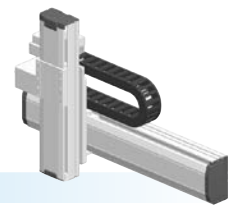


X stroke	150	250	350	450	550	650	750	850	950	1050	
<b>L</b>	470	570	670	770	870	970	1070	1170	1270	1370	
<b>K</b>	200	100	200	100	200	100	200	100	200	100	
<b>C</b>	240	240	420	420	600	600	780	960	960	1140	
<b>M</b>	0	1	1	2	2	3	3	4	4	5	
<b>N</b>	4	6	6	8	8	10	10	12	12	14	
<b>Z stroke</b>	150	250	350								
<b>Maximum speed for each stroke (mm/sec)</b> <small>Note 3</small>	<b>X-axis</b>		1200				960	780	600	540	
<b>Speed setting</b>			-				80%	65%	50%	45%	

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. The shaded position indicates a user cable extraction port.  
 Note 3. When the X-axis stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

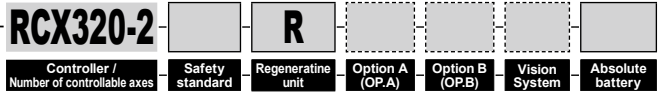
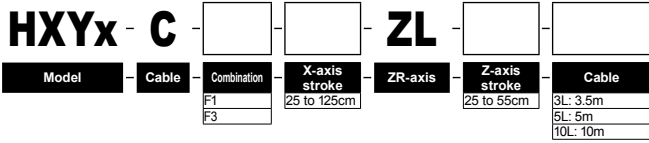
- Articulated robots  
YA
- Linear conveyor modules  
LCM100
- Motor-less single axis actuator  
Robonity
- Compact single-axis robots  
TRANSEVO
- Single-axis robots  
FLIP-X
- Linear motor single-axis robots  
PHASER
- Cartesian robots  
XX-X
- SCARA robots  
YK-X
- Pick & place robots  
YP-X
- CLEAN
- CONTROLLER
- INFORMATION
- Arm type
- Gantry type
- Moving arm type
- Pole type
- XZ type

# HXYx 2 axes / ZL

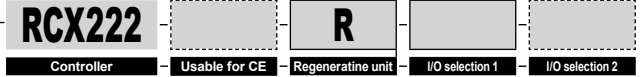


● XZ type   ● Cable carrier   ● Z-axis: clamped base / moving table type (200W)

## Ordering method



Specify various controller setting items. RCX320 ▶ **P.548**



Specify various controller setting items. RCX222 ▶ **P.558**

## Specification

	X-axis	Z-axis
Axis construction <sup>Note 1</sup>	F17	F14H-BK
AC servo motor output (W)	400	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw φ20	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	10
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	600
Moving range (mm)	250 to 1250	250 to 550
Robot cable length (m)	Standard: 3.5   Option: 5, 10	

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

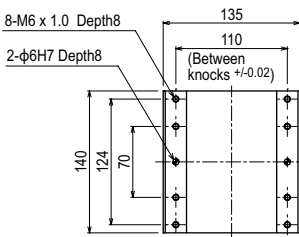
## Maximum payload (kg)

X stroke (mm)	Z stroke (mm)
250 to 1250	250 to 550
	20

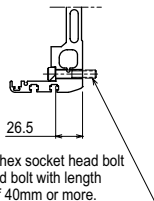
## Controller

Controller	Operation method
RCX320-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222-R	

## HXYx 2 axes / ZL (F1)

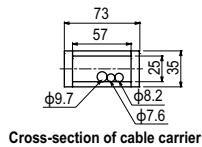


Detail of section A

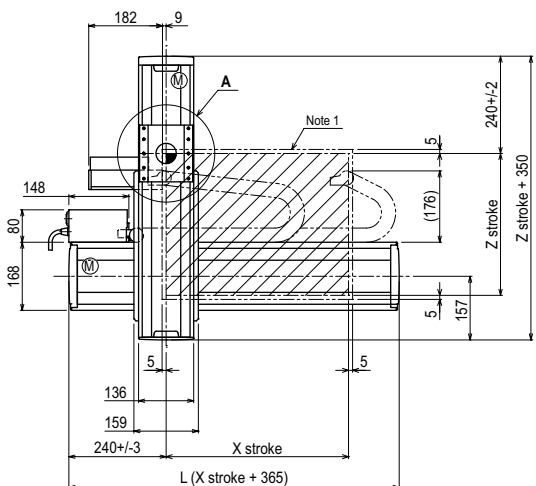
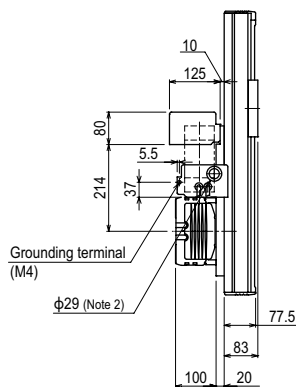
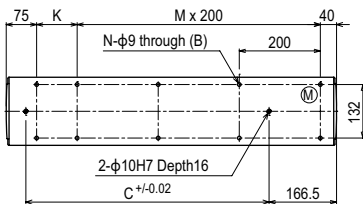


Detail of section B

Use M8 x 1.25 hex socket head bolt with length head bolt with length (under head) of 40mm or more.



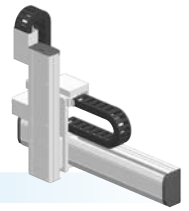
Cross-section of cable carrier



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250
L	615	715	815	915	1015	1115	1215	1315	1415	1515	1615
K	100	200	100	200	100	200	100	200	100	200	100
C	240	420	600	600	780	780	960	960	1140	1140	1320
M	2	2	3	3	4	4	5	5	6	6	7
N	8	8	10	10	12	12	14	14	16	16	18
Z stroke	250	350	450	550							
Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis		1200				960	840	720	600	480
Speed setting			-				80%	70%	60%	50%	40%

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



XZ type
Cable carrier
Z-axis: clamped table / moving base type (200W)

### Ordering method

**HXYx - C** [ ] [ ] **ZH** [ ] [ ] [ ] [ ]

**Model** | **Cable** | **Combination** | **X-axis stroke** | **ZR-axis** | **Z-axis stroke** | **Cable**

F1 | F3 | 25 to 125cm | 25 to 55cm | 3L: 3.5m, 5L: 5m, 10L: 10m

**RCX320-2** [ ] [ ] **R** [ ] [ ] [ ] [ ] [ ] [ ]

**RCX222** [ ] [ ] **R** [ ] [ ] [ ] [ ] [ ] [ ]

**Specify various controller setting items. RCX320 ▶ P.548**  
**Specify various controller setting items. RCX222 ▶ P.558**

### Specification

	X-axis	Z-axis
Axis construction <sup>Note 1</sup>	F17	F14H-BK
AC servo motor output (W)	400	200
Repeatability <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01
Drive system	Ball screw φ20	Ball screw φ15
Ball screw lead <sup>Note 3</sup> (Deceleration ratio) (mm)	20	5
Maximum speed <sup>Note 4</sup> (mm/sec)	1200	300
Moving range (mm)	250 to 1250	250 to 550
Robot cable length (m)	Standard: 3.5 Option: 5, 10	

Note 1. Use caution that the flange machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

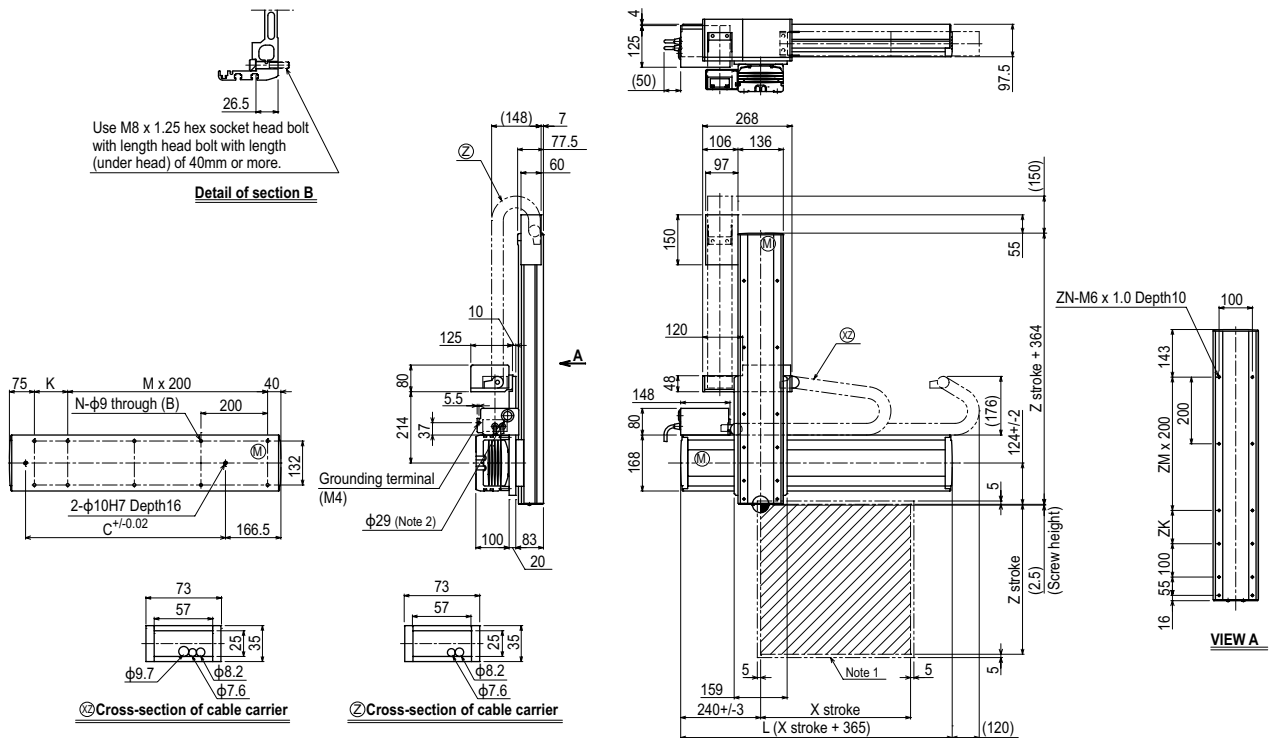
### Maximum payload (kg)

X stroke (mm)	Z stroke (mm)
250 to 1250	30

### Controller

Controller	Operation method
RCX320-R RCX222-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication

### HXYx 2 axes / ZH (F1)



X stroke	250	350	450	550	650	750	850	950	1050	1150	1250
L	615	715	815	915	1015	1115	1215	1315	1415	1515	1615
K	100	200	100	200	100	200	100	200	100	200	100
C	240	420	600	600	780	780	960	960	1140	1140	1320
M	2	2	3	3	4	4	5	5	6	6	7
N	8	8	10	10	12	12	14	14	16	16	18
Z stroke	250	350	450	550							
ZK	100	200	100	200							
ZM	1	1	2	2							
ZN	10	10	12	12							

Note 1. The moving range when returning to origin and the stop position when stopping by the mechanical stopper.  
 Note 2. User cable extraction port.

Maximum speed for each stroke (mm/sec) <sup>Note 3</sup>	X-axis	1200	960	840	720	600	480
Speed setting		-	80%	70%	60%	50%	40%

Note 3. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-assisted axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER INFORMATION  
 Arm type  
 Gantry type  
 Moving arm type  
 Pole type  
 XZ type



# MEMO

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Articulated robots  
**YA**

Linear conveyor  
modules  
**LCM100**

Motor-less single  
axis actuator  
**Robonity**

Compact  
single-axis robots  
**TRANSERVO**

Single-axis robots  
**FLIP-X**

Linear motor  
single-axis robots  
**PHASER**

Cartesian  
robots  
**XY-X**

SCARA  
robots  
**YK-X**

Pick & place  
robots  
**YP-X**

**CLEAN**

**CONTROLLER**

**INFORMATION**

Arm type

Gantry type

Moving arm  
type

Pole type

**XZ** type



# SCARA ROBOTS

# YK-X

## SERIES

- Articulated robots  
YA
- Linear conveyor modules  
LCM100
- Motor-less single axis actuator  
Robonity
- Compact single-axis robots  
TRANSEURO
- Single-axis robots  
FLIP-X
- Linear motor single-axis robots  
PHASER
- Cartesian robots  
XY-X
- SCARA robots  
YK-X
- Pick & place robots  
YP-X
- CLEAN
- CONTROLLER
- INFORMATION
- Orbit/Extra small type
- Small / Medium type
- Large type
- Wall mount / Inverse type
- Dust-proof & drip-proof type

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<p><b>EXTRA SMALL TYPE</b></p> <ul style="list-style-type: none"> <li>YK120XG ..... 396</li> <li>YK150XG ..... 397</li> <li>YK180XG ..... 398</li> <li>YK180X ..... 399</li> <li>YK220X ..... 400</li> </ul>	<p><b>WALL MOUNT / INVERSE TYPE</b></p> <ul style="list-style-type: none"> <li>YK300XGS ..... 423</li> <li>YK400XGS ..... 425</li> <li>YK500XGS ..... 427</li> <li>YK600XGS ..... 428</li> <li>YK700XGS ..... 429</li> <li>YK800XGS ..... 430</li> <li>YK900XGS ..... 431</li> <li>YK1000XGS ..... 432</li> </ul>	
<p><b>SMALL TYPE</b></p> <ul style="list-style-type: none"> <li>YK250XG ..... 401</li> <li>YK350XG ..... 403</li> <li>YK400XE-4 ..... 405</li> <li>YK400XG ..... 406</li> </ul>	<p><b>DUST-PROOF &amp; DRIP-PROOF TYPE</b></p> <ul style="list-style-type: none"> <li>YK250XGP ..... 433</li> <li>YK350XGP ..... 435</li> <li>YK400XGP ..... 437</li> <li>YK500XGLP ..... 439</li> <li>YK500XGP ..... 441</li> <li>YK600XGLP ..... 442</li> <li>YK600XGP ..... 444</li> </ul>	
<p><b>MEDIUM TYPE</b></p> <ul style="list-style-type: none"> <li>YK500XGL ..... 408</li> <li>YK500XG ..... 410</li> <li>YK610XE-10 ..... 411</li> <li>YK600XGL ..... 412</li> <li>YK600XG ..... 414</li> </ul>		

# YK-X SPECIFICATION SHEET

Type	Model	Arm length (mm) and XY axis resultant maximum speed (m/s)												Standard cycle time (sec) <small>Note 1</small>	Maximum payload (kg)	R-axis tolerable moment of inertia (kgm <sup>2</sup> )	Completely beltless structure <small>Note 2</small>	Detailed info page				
		120	150	180	220	250	300	350	400	500	600	700	800						900	1000	1200	
Orbit type	YK350TW	5.6												0.32	5.0	0.005 (Rated) 0.05 (Maximum)		<a href="#">P.392</a>				
	YK500TW	6.8												0.29	5.0	0.005 (Rated) 0.05 (Maximum)		<a href="#">P.394</a>				
Standard	Extra small type	YK120XG	3.3															0.33	1.0	0.01	●	<a href="#">P.396</a>
		YK150XG	3.4															0.33	1.0	0.01	●	<a href="#">P.397</a>
		YK180XG	3.3															0.33	1.0	0.01	●	<a href="#">P.398</a>
		YK180X	3.3															0.39	1.0	0.01	●	<a href="#">P.399</a>
		YK220X	3.4															0.42	1.0	0.01	●	<a href="#">P.400</a>
		YK250XG	4.5															0.43	5.0	0.05	●	<a href="#">P.401</a>
	Small type	YK350XG	5.6												0.44	5.0	0.05	●	<a href="#">P.403</a>			
		YK400XE-4	6.0												0.41	4.0	0.05		<a href="#">P.405</a>			
		YK400XG	6.1												0.45	5.0	0.05	●	<a href="#">P.406</a>			
		YK500XGL	5.1												0.48	5.0	0.05	●	<a href="#">P.408</a>			
	Medium type	YK500XG	7.6												0.42	10.0	0.30	●	<a href="#">P.410</a>			
		YK610XE-10	8.6												0.39	10.0	0.30	●	<a href="#">P.411</a>			
		YK600XGL	4.9												0.54	5.0	0.05	●	<a href="#">P.412</a>			
		YK600XG	8.4												0.43	10.0	0.30	●	<a href="#">P.414</a>			
		YK600XGH	7.7												0.47	20.0	1.0	●	<a href="#">P.415</a>			
	Large type	YK710XE-10	9.5												0.42	10.0	0.30		<a href="#">P.416</a>			
		YK700XGL	9.2												0.50	10.0	0.30	●	<a href="#">P.417</a>			
		YK700XG	8.4												0.42	20.0	1.0	●	<a href="#">P.418</a>			
YK800XG		9.2												0.48	20.0	1.0	●	<a href="#">P.419</a>				
YK900XG		9.9												0.49	20.0	1.0	●	<a href="#">P.420</a>				
YK1000XG		10.6												0.49	20.0	1.0	●	<a href="#">P.421</a>				
YK1200X		7.4												0.91	50.0	2.45		<a href="#">P.422</a>				
Wall mount / inverse type	YK300XGS	4.4												0.49	5.0	0.05	●	<a href="#">P.423</a>				
	YK400XGS	6.1												0.49	5.0	0.05	●	<a href="#">P.425</a>				
	YK500XGS	7.6												0.45	10.0	0.3	●	<a href="#">P.427</a>				
	YK600XGS	8.4												0.46	10.0	0.3	●	<a href="#">P.428</a>				
	YK700XGS	8.4												0.42	20.0	1.0	●	<a href="#">P.429</a>				
	YK800XGS	9.2												0.48	20.0	1.0	●	<a href="#">P.430</a>				
	YK900XGS	9.9												0.49	20.0	1.0	●	<a href="#">P.431</a>				
	YK1000XGS	10.6												0.49	20.0	1.0	●	<a href="#">P.432</a>				
	Dust-proof & drip-proof type	YK250XGP	4.5												0.50	4.0	0.05	●	<a href="#">P.433</a>			
YK350XGP		5.6												0.52	4.0	0.05	●	<a href="#">P.435</a>				
YK400XGP		6.1												0.50	4.0	0.05	●	<a href="#">P.437</a>				
YK500XGLP		5.1												0.66	4.0	0.05	●	<a href="#">P.439</a>				
YK500XGP		7.6												0.55	10.0	0.3	●	<a href="#">P.441</a>				
YK600XGLP		4.9												0.71	4.0	0.05	●	<a href="#">P.442</a>				
YK600XGP		8.4												0.56	10.0	0.3	●	<a href="#">P.444</a>				
YK600XGHP		7.7												0.57	18.0	1.0	●	<a href="#">P.445</a>				
YK700XGP		8.4												0.52	20.0	1.0	●	<a href="#">P.446</a>				
YK800XGP		9.2												0.58	20.0	1.0	●	<a href="#">P.447</a>				
YK900XGP		9.9												0.59	20.0	1.0	●	<a href="#">P.448</a>				
YK1000XGP		10.6												0.59	20.0	1.0	●	<a href="#">P.449</a>				

Note 1. The standard cycle time is measured under the following conditions.

- During back and forth movement 25mm vertically and 100mm horizontally (extra small type)
- During back and forth movement 25mm vertically and 300mm horizontally (small type / medium type / large type)

Note 2. Maintains high accuracy over long periods because the beltless structure drastically cuts down on wasted motion.

Operation is also nearly maintenance-free for long periods with no worries about belt breakage, stretching or deterioration over time.

# Robot ordering method description

In the order format for the YAMAHA SCARA robots YK-X series, the notation (letters/numbers) for the mechanical section is shown linked to the controller section notation.

## [Example]

- **Mechanical ▶ YK250XG**
  - Z-axis stroke ▶ 150mm
  - Tool flange ▶ With tool flange
  - Hollow shaft ▶ With hollow shaft
  - Cable length ▶ 3.5m
- **Controller ▶ RCX340**

### ● Ordering method

**YK250XG-150-F-S-3L-RCX340**

Mechanical section

Controller section

To find detailed controller information see the controller page. **RCX340 ▶ P.566**

① Model	② Z-axis stroke	③ Tool flange	④ Hollow shaft	⑤ Cable	⑥ Controller
YK***	50 50mm 100 100mm 150 150mm 200 200mm 300 300mm 400 400mm	No entry None F With tool flange	No entry None S With hollow shaft	2L 2m 3L 3.5m 5L 5m 10L 10m	<b>RCX340</b>

Note 1. Available only for the master.

# Robot ordering method terminology

① <b>Model</b>	Enter the robot unit model.
② <b>Z-axis stroke</b>	Select the Z axis stroke. The stroke varies with the model you select so see that model's page to confirm the specifications.
③ <b>Tool flange</b>	Tool flange option for easy mounting of a tool to the tip. <b>No entry:</b> None <b>F:</b> With tool flange
④ <b>Hollow shaft</b>	Hollow shaft option for easy routing of air tubes and harness wires. <b>No entry:</b> None <b>S:</b> With hollow shaft
⑤ <b>Cable</b>	Select the length of the robot cable connecting the robot and controller. <b>2L:</b> 2m <sup>(Note 1)</sup> <b>3L:</b> 3.5m <b>5L:</b> 5m <b>10L:</b> 10m <small>Note 1. Only selectable for YK120XG, YK150XG, YK180XG.</small>
⑥ <b>Controller</b>	Select the RCX340.

Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

Orbit/Extra small type

Small / Medium type

Large type

Wall mount / Inverse type

Dust-proof & drip-proof type

# YK350TW

Orbit type



- Arm length 350mm
- Maximum payload 5kg

## Ordering method

**YK350TW-130**

**RCX340-4**

<b>Model</b>	<b>Z axis stroke</b> 130: 130mm	<b>Tool flange</b> No entry: None F: With tool flange	<b>Hollow shaft</b> No entry: None S: With hollow shaft	<b>Cable</b> 3L: 3.5m 5L: 5m 10L: 10m	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
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Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

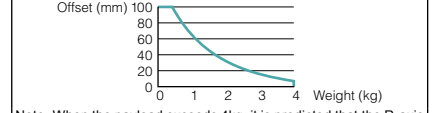
Axis specifications	Arm length	X-axis	Y-axis	Z-axis	R-axis
	175 mm	175 mm	175 mm	130 mm	-
	Rotation angle	+/-225 °	+/-225 °	-	+/-720 °
	AC servo motor output	750 W	400 W	200 W	105 W
Deceleration mechanism	Transmission method	Timing belt	Direct-coupled	Timing belt	Timing belt
	Motor to speed reducer	Timing belt	Direct-coupled	Timing belt	
Repeatability	Speed reducer to output	Direct-coupled			
	Note 1	+/-0.01 mm	+/-0.01 mm	+/-0.01 mm	+/-0.01 °
Maximum speed	Note 2	5.6 m/sec	1.5 m/sec	3000 °/sec	
Maximum payload	Note 2	5 kg			
Standard cycle time: with 1kg payload	Note 3	0.32 sec			
R-axis tolerable moment of inertia	Rated	0.005 kgm <sup>2</sup>			
	Maximum	0.05 kgm <sup>2</sup>			
User wiring		0.15 sq × 8 wires			
User tubing (Outer diameter)		φ 6 × 2			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		26 kg			

Note 1. This is the value at a constant ambient temperature.  
 Note 2. Tool flange specifications (option) are 4 kg.  
 Note 3. When moving a 1 kg load back and forth 300mm horizontally and 25mm vertically (rough positioning arch motion).  
 Note 4. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

## Controller

Controller	Power capacity (VA)	Operation method
RCX340	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

### R-axis moment of inertia (load inertia)

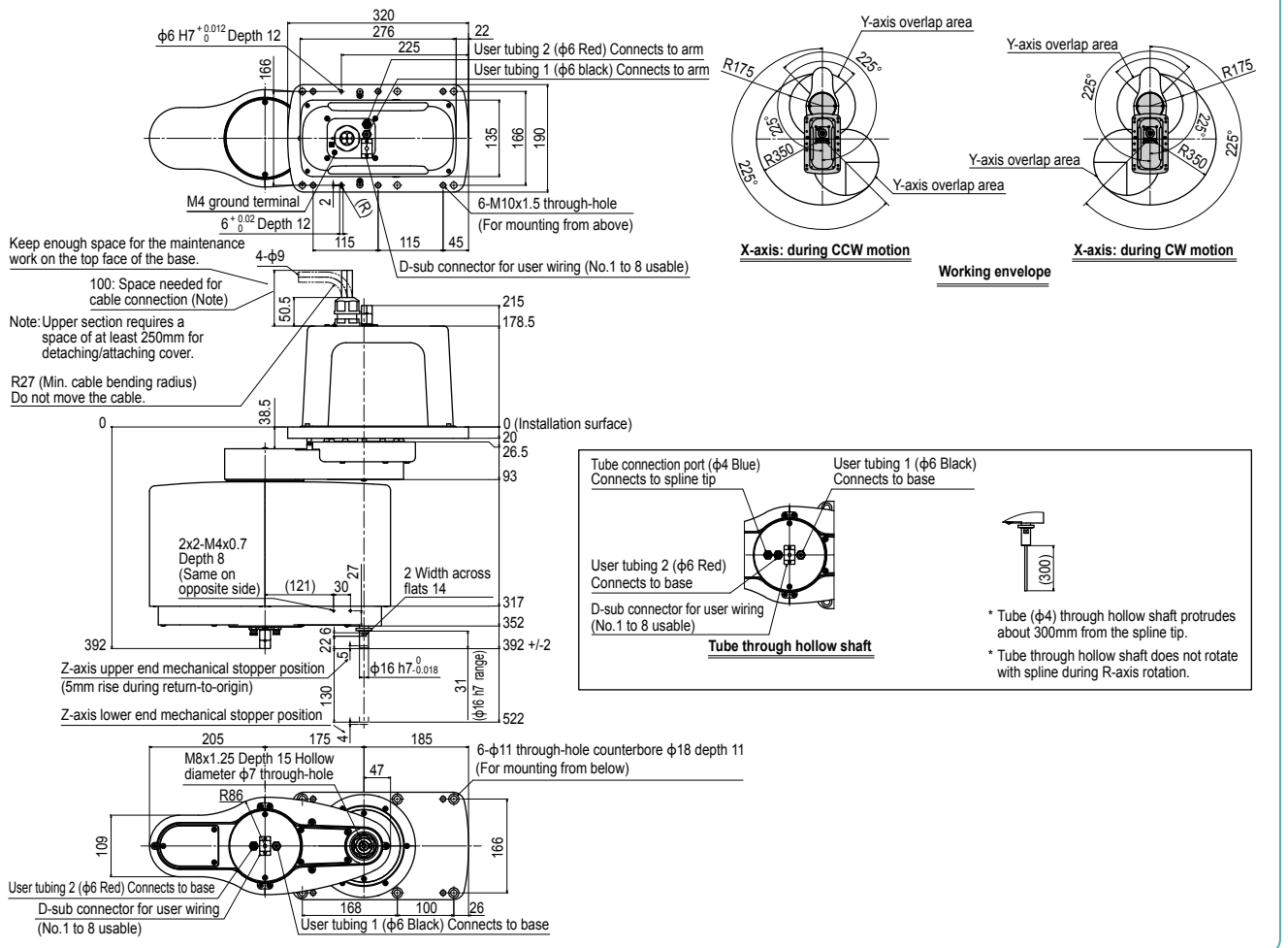


Note. When the payload exceeds 4kg, it is predicted that the R-axis moment of inertia may exceed the rated value. So, make proper parameter setting.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK350TW







# YK500TW

Orbit type



- Arm length 500mm
- Maximum payload 5kg

## Ordering method

YK500TW-130

RCX340-4

Model	Z axis stroke 130: 130mm	Tool flange No entry: None F: With tool flange	Hollow shaft No entry: None S: With hollow shaft	Cable 3L: 3.5m 5L: 5m 10L: 10m	Controller / Number of controllable axes	Safety standard	Option A (OPA)	Option B (OPB)	Option C (OPC)	Option D (OPD)	Option E (OPE)	Absolute battery
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Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

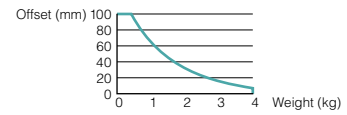
		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	250 mm	250 mm	130 mm	-
	Rotation angle	+/-225 °	+/-225 °	-	+/-720 °
AC servo motor output		750 W	400 W	200 W	105 W
Deceleration mechanism	Transmission method	Timing belt	Direct-coupled	Timing belt	Timing belt
	Motor to speed reducer	Timing belt	Direct-coupled	Timing belt	
Speed reducer to output		Direct-coupled			
Repeatability	Note 1	+/-0.015 mm		+/-0.01 mm	+/-0.01 °
Maximum speed	Note 2	6.8 m/sec		1.5 m/sec	3000 °/sec
Maximum payload	Note 2	5 kg			
Standard cycle time: with 1kg payload	Note 3	0.29 sec			
R-axis tolerable moment of inertia	Rated	0.005 kgm <sup>2</sup>			
	Maximum	0.05 kgm <sup>2</sup>			
User wiring		0.15 sq × 8 wires			
User tubing (Outer diameter)		φ 6 × 2			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		27 kg			

- Note 1. This is the value at a constant ambient temperature.  
 Note 2. For the option specifications (tool flange mount type), the maximum payload becomes 4 kg.  
 Note 3. When moving a 1 kg load back and forth 300 mm horizontally and 25 mm vertically (rough positioning arch motion).  
 Note 4. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

## Controller

Controller	Power capacity (VA)	Operation method
RCX340	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

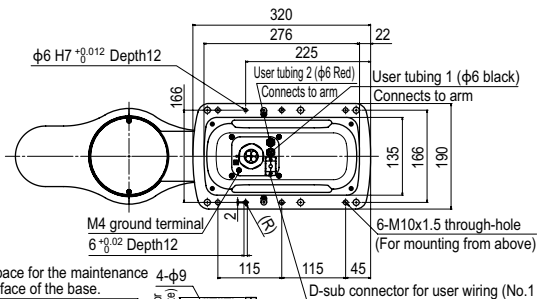
**R-axis moment of inertia (load inertia)**  
 Recommended positional relationship between the load weight and the offset amount from the center of the R-axis (center of gravity position)



Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

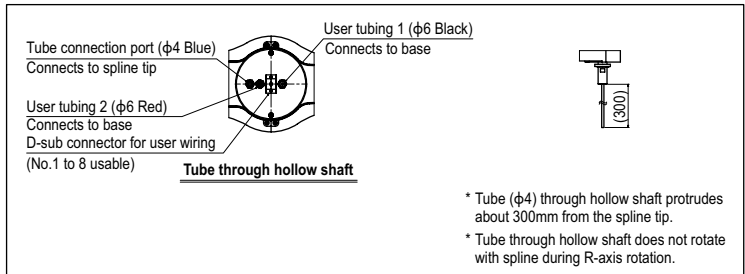
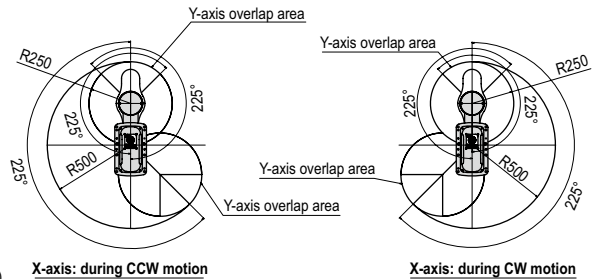
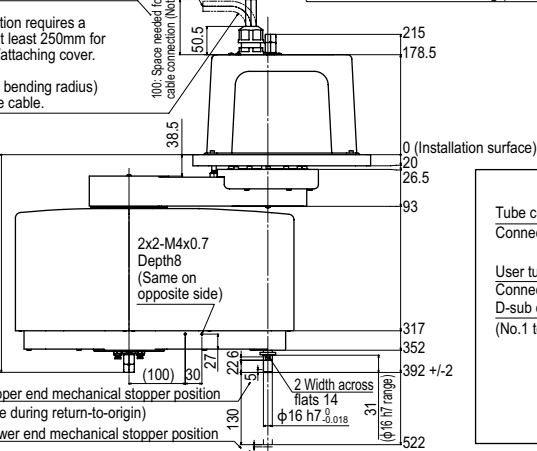
## YK500TW



Keep enough space for the maintenance work on the top face of the base.

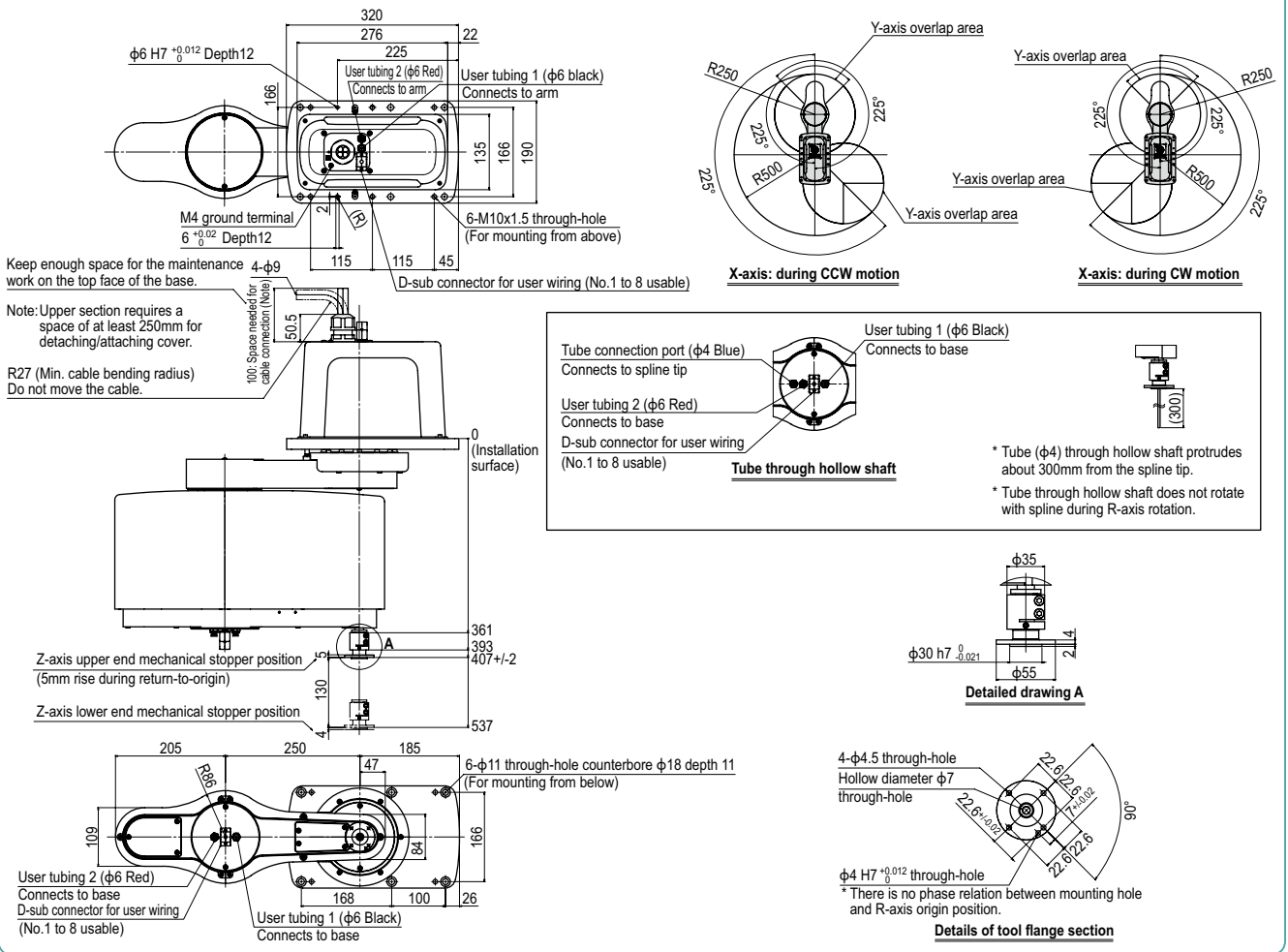
Note: Upper section requires a space of at least 250mm for detaching/attaching cover.

R27 (Min. cable bending radius) Do not move the cable.



- \* Tube (φ4) through hollow shaft protrudes about 300mm from the spline tip.
- \* Tube through hollow shaft does not rotate with spline during R-axis rotation.

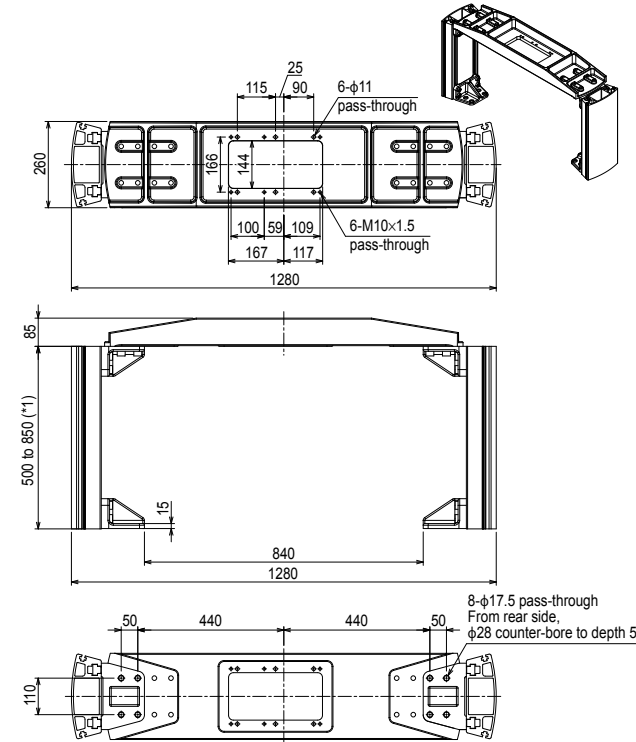
YK500TW Tool flange mount type



Dedicated mounting bracket for the YK-TW <BASE POST ASSY.>

The YK-TW can be easily installed on top of a customer-provided stand.

External diagram for the YK500TW



The mounting bracket is assembled by the customer. Refer to the included assembly diagram for assembly.

\*1. Identical to the height of the robot mounting surface. The height of the stand can be selected at a 50 mm pitch.

Height (mm)	Model	Unit weight (kg)
500	KDU-M6100-P0	46
550	KDU-M6100-50	48
600	KDU-M6100-R0	50
650	KDU-M6100-60	51
700	KDU-M6100-S0	54
750	KDU-M6100-70	55
800	KDU-M6100-T0	57
850	KDU-M6100-80	59

\* YK350TW and YK500TW are parts in common. \* The top plate by itself weighs 19 kg.

- Articulated robots
- YA
- Linear conveyor modules
- LCM100
- Motor-less single axis actuator
- Robonity
- Compact single-axis robots
- TRANSEVO
- Single-axis robots
- FLIP-X
- Linear motor single-axis robots
- PHASER
- Cartesian robots
- XY-X
- SCARA robots
- YK-X
- Pick & place robots
- YP-X
- CLEAN
- CONTROLLER INFORMATION
- Orbit type
- Small / Medium type
- Large type
- Wall mount / Inverse type
- Dust-proof & drip-proof type

# YK120XG

Standard type: Extra small type

- Arm length 120mm
- Maximum payload 1kg

## Ordering method

**YK120XG - 50**

Model	Z axis stroke	Cable
	50: 50mm	2L: 2m 3L: 3.5m 5L: 5m 10L: 10m

**RCX340-4**

Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
--	-----------------	-----------------	-----------------	-----------------	-----------------	-----------------	------------------

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	45 mm	75 mm	50 mm	-
	Rotation angle	+/-125 °	+/-145 °	-	+/-360 °
AC servo motor output		30 W	30 W	30 W	30 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer	Direct-coupled			
Repeatability	Speed reducer to output	Direct-coupled			
	Note 1	+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
Maximum speed		3.3 m/sec	0.9 m/sec	1700 °/sec	
Maximum payload		1.0 kg			
Standard cycle time: with 0.1kg payload		0.33 sec			
R-axis tolerable moment of inertia		0.01 kgm <sup>2</sup>			
User wiring		0.1 sq × 8 wires			
User tubing (Outer diameter)		φ 4 × 2			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 2 m Option: 3.5 m, 5 m, 10 m			
Weight (Excluding robot cable)		3.9 kg			
Robot cable weight		0.9 kg (2 m)	1.5 kg (3.5 m)	2.1 kg (5 m)	4.2 kg (10 m)

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When moving 25mm in vertical direction and 100mm in horizontal direction reciprocally.  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. The total robot weight is the sum of the robot body weight and the cable weight.

## Controller

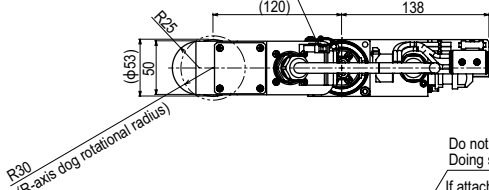
Controller	Power capacity (VA)	Operation method
RCX340	300	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.

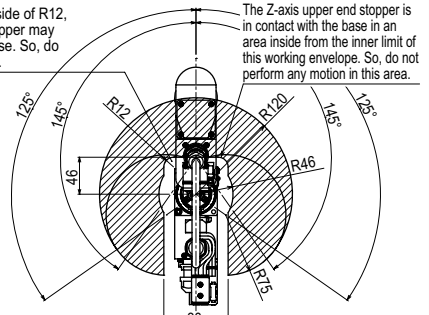
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<https://global.yamaha-motor.com/business/robot/>

## YK120XG

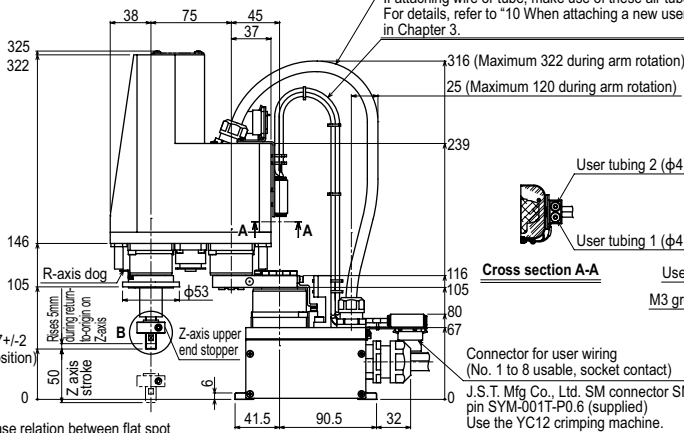
Connector for user wiring (No. 1 to 8 usable, socket contact)  
 J.S.T. Mfg Co., Ltd. SM connector SMR-8V-B, pin SYM-001T-P0.6 (supplied)  
 Use the YC12 crimping tool.



If the robot enters the inside of R12, the Z-axis upper end stopper may be in contact with the base. So, do not perform such motion.

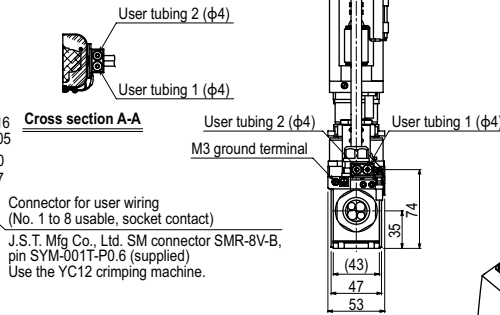


Do not attach any wire or tube to self-supporting cable. Doing so may degrade positioning accuracy.  
 If attaching wire or tube, make use of these air tubes. For details, refer to "10 When attaching a new user wire or tube" in Chapter 3.

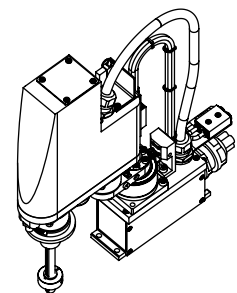
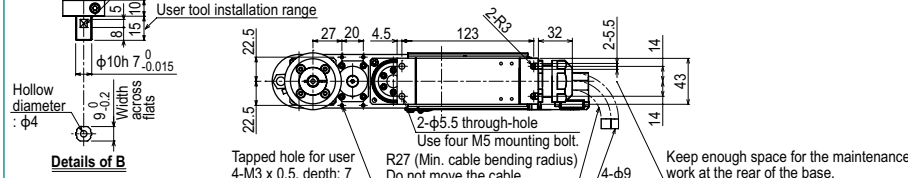


### Working envelope

X, Y-axis origin is at +/-5° with respect to front of robot base  
 When performing return-to-origin, move the axes counterclockwise in advance from the position shown above.



No phase relation between flat spot and R-axis origin  
 User tool installation range



# YK150XG

Standard type: Extra small type

- Arm length 150mm
- Maximum payload 1kg

## Ordering method

**YK150XG - 50**

Model	Z axis stroke	Cable
	50: 50mm	2L: 2m
		3L: 3.5m
		5L: 5m
		10L: 10m

**RCX340-4**

Controller /  
Number of controllable axes

Safety  
standard

Option A  
(OP.A)

Option B  
(OP.B)

Option C  
(OP.C)

Option D  
(OP.D)

Option E  
(OP.E)

Absolute  
battery

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	75 mm	75 mm	50 mm	-
	Rotation angle	+/-125 °	+/-145 °	-	+/-360 °
AC servo motor output		30 W	30 W	30 W	30 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer Speed reducer to output	Direct-coupled			
Repeatability <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
Maximum speed		3.4 m/sec	0.9 m/sec	1700 °/sec	
Maximum payload		1.0 kg			
Standard cycle time: with 0.1kg payload <sup>Note 2</sup>		0.33 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.01 kgm <sup>2</sup>			
User wiring		0.1 sq × 8 wires			
User tubing (Outer diameter)		φ 4 × 2			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 2 m Option: 3.5 m, 5 m, 10 m			
Weight (Excluding robot cable) <sup>Note 4</sup>		4.0 kg			
Robot cable weight		0.9 kg (2 m)	1.5 kg (3.5 m)	2.1 kg (5 m)	4.2 kg (10 m)

Note 1. This is the value at a constant ambient temperature. (X,Y axes)

Note 2. When moving 25mm in vertical direction and 100mm in horizontal direction reciprocally.

Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

Note 4. The total robot weight is the sum of the robot body weight and the cable weight.

## Controller

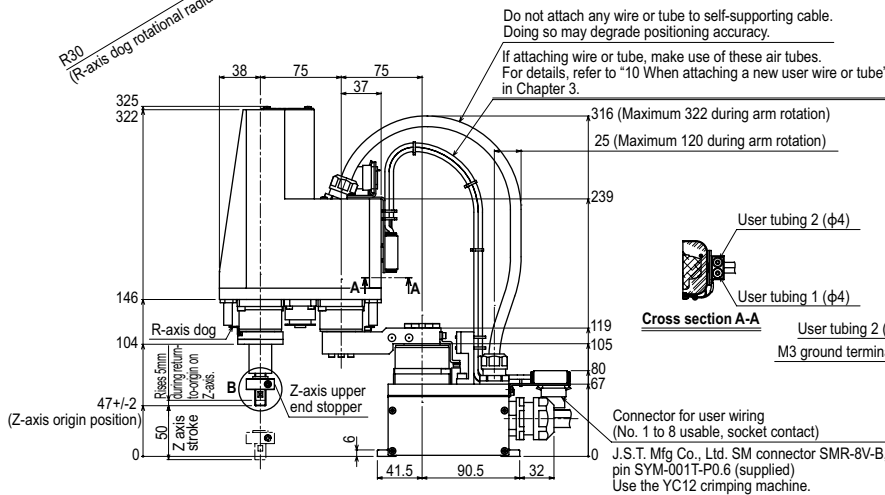
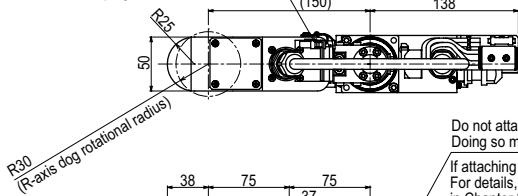
Controller	Power capacity (VA)	Operation method
RCX340	300	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
See our robot manuals (installation manuals) for detailed information.

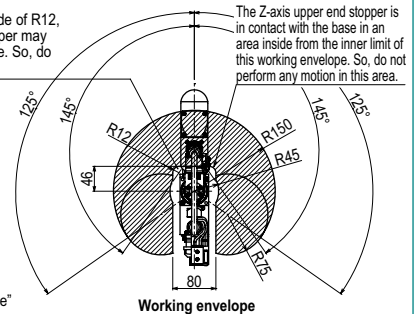
Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK150XG

Connector for user wiring  
(No. 1 to 8 usable, socket contact)  
J.S.T. Mfg Co., Ltd. SM connector  
SMR-8V-B, pin SYM-001T-P0.6  
(supplied)  
Use the YC12 crimping tool.



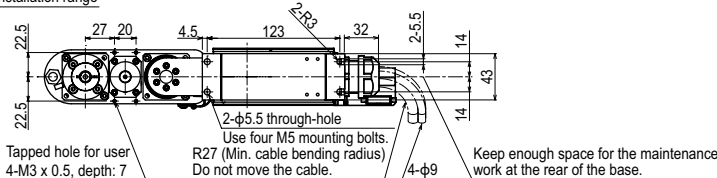
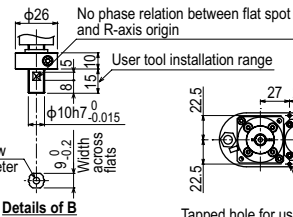
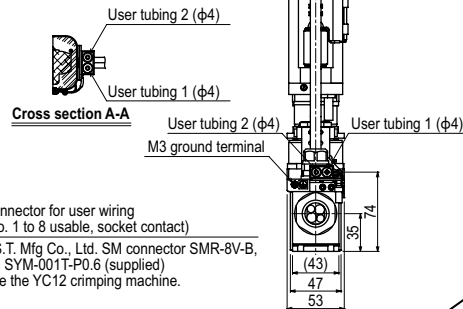
If the robot enters the inside of R12, the Z-axis upper end stopper may be in contact with the base. So, do not perform such motion.



### Working envelope

X, Y-axis origin is at +/-5° with respect to front of robot base

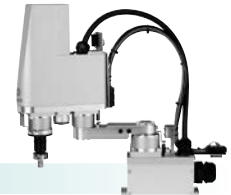
When performing return-to-origin, move the axes counterclockwise in advance from the position shown above.



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motorless single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XX-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Extra small type  
Small / Medium type  
Large type  
Wall mount / Inverse type  
Dust-proof & drip-proof type

# YK180XG

Standard type: Extra small type



- Arm length 180mm
- Maximum payload 1kg

## Ordering method

**YK180XG - 50** **RXC340-4**

Model	Z axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	50 : 50mm	2L: 2m 3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. **RXC340 ▶ P.566**

## Specifications

Axis specifications	Arm length	X-axis	Y-axis	Z-axis	R-axis
	Rotation angle	105 mm	75 mm	50 mm	-
		+/-125 °	+/-145 °	-	+/-360 °
	AC servo motor output	30 W	30 W	30 W	30 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer	Direct-coupled			
Repeatability	Speed reducer to output	+/-0.01 mm		+/-0.01 mm	+/-0.004 °
		3.3 m/sec		0.9 m/sec	1700 °/sec
Maximum speed		1.0 kg			
Maximum payload		0.33 sec			
Standard cycle time: with 0.1kg payload		0.01 kgm <sup>2</sup>			
R-axis tolerable moment of inertia		0.1 sq × 8 wires			
User wiring		φ 4 × 2			
User tubing (Outer diameter)		1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
Travel limit		Standard: 2 m Option: 3.5 m, 5 m, 10 m			
Robot cable length		4.1 kg			
Weight (Excluding robot cable)		0.9 kg (2 m) 1.5 kg (3.5 m) 2.1 kg (5 m) 4.2 kg (10 m)			
Robot cable weight					

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When moving 25mm in vertical direction and 100mm in horizontal direction reciprocally.  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. The total robot weight is the sum of the robot body weight and the cable weight.

## Controller

Controller	Power capacity (VA)	Operation method
RXC340	500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.) See our robot manuals (installation manuals) for detailed information.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK180XG

Connector for user wiring (No. 1 to 8 usable, socket contact)  
 J.S.T. Mfg Co., Ltd. SM connector SMR-8V-B, pin SYM-001T-P0.6 (supplied)  
 Use the YC12 crimping tool.

Do not attach any wire or tube to self-supporting cable. Doing so may degrade positioning accuracy.

If attaching wire or tube, make use of these air tubes. For details, refer to "10 When attaching a new user wire or tube" in Chapter 3.

Working envelope

X, Y-axis origin is at +/-5° with respect to front of robot base

When performing return-to-origin, move the axes counterclockwise in advance from the position shown above.

Connector for user wiring (No. 1 to 8 usable, socket contact)  
 J.S.T. Mfg Co., Ltd. SM connector SMR-8V-B, pin SYM-001T-P0.6 (supplied)  
 Use the YC12 crimping machine.

Details of B

Keep enough space for the maintenance work at the rear of the base.



# YK180X

Standard type: Extra small type



- Arm length 180mm
- Maximum payload 1kg

## Ordering method

**YK180X - 100**

**RCX340-4**

Model	Z axis stroke 100: 100mm	Cable 3L: 3.5m 5L: 5m 10L: 10m	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
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Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	71 mm	109 mm	100 mm	-
	Rotation angle	+/-120 °	+/-140 °	-	+/-360 °
AC servo motor output		50 W	30 W	30 W	30 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer Speed reducer to output	Direct-coupled			
Repeatability <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
Maximum speed		3.3 m/sec	0.7 m/sec	1700 °/sec	
Maximum payload		1.0 kg			
Standard cycle time: with 0.1kg payload <sup>Note 2</sup>		0.39 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.01 kgm <sup>2</sup>			
User wiring		0.1 sq × 6 wires			
User tubing (Outer diameter)		φ 3 × 2			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight (Excluding robot cable) <sup>Note 4</sup>		5.5 kg			
Robot cable weight		1.5 kg (3.5 m)	2.1 kg (5 m)	4.2 kg (10 m)	

- Note 1. This is the value at a constant ambient temperature.  
 Note 2. When reciprocating 100mm in horizontal and 25mm in vertical directions.  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. The total robot weight is the sum of the robot body weight and the cable weight.

## Controller

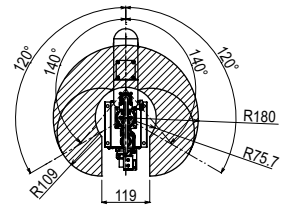
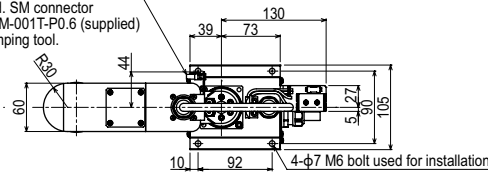
Controller	Power capacity (VA)	Operation method
RCX340	500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

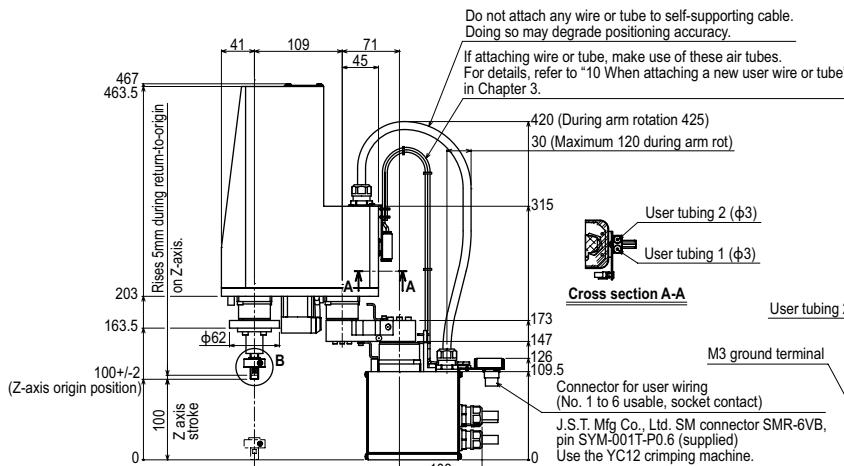
## YK180X

Connector for user wiring  
(No. 1 to 6 usable, socket contact)  
 J.S.T. Mfg Co., Ltd. SM connector  
 SMR-6VB, pin SYM-001T-P0.6 (supplied)  
 Use the YC12 crimping tool.

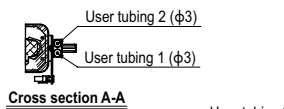


### Working envelope

X-axis origin is at 0° +/- 5° with respect to front of robot base



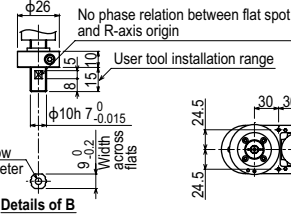
### Cross section A-A



Connector for user wiring  
(No. 1 to 6 usable, socket contact)  
 J.S.T. Mfg Co., Ltd. SM connector SMR-6VB,  
 pin SYM-001T-P0.6 (supplied)  
 Use the YC12 crimping machine.

### X, Y-axis origin position

When performing return-to-origin, move the axes counterclockwise in advance from the position shown above.



### Details of B

No phase relation between flat spot and R-axis origin  
 User tool installation range

For user tool installation  
 4-M4 x 0.7 Depth 6

R27 (Min. cable bending radius)  
 Do not move the cable.  
 Keep enough space for the maintenance work at the rear of the base.

- Articulated robots  
YA
- Linear conveyor modules  
LCM100
- Motor-less single axis reducer  
Robonity
- Compact single-axis robots  
TRANSEVO
- Single-axis robots  
FLIP-X
- Linear motor single-axis robots  
PHASER
- Cartesian robots  
XY-X
- SCARA robots  
YK-X
- Pick & place robots  
YP-X
- CLEAN
- CONTROLLER INFORMATION
- Extra small type
- Small / Medium type
- Large type
- Wall mount / Inverse type
- Dust-proof & drip-proof type



# YK220X

Standard type: Extra small type



- Arm length 220mm
- Maximum payload 1kg

## Ordering method

**YK220X - 100**

**RCX340-4**

Model	Z axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	100: 100mm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	111 mm	109 mm	100 mm	—
	Rotation angle	+/-120 °	+/-140 °	—	+/-360 °
AC servo motor output		50 W	30 W	30 W	30 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer	Direct-coupled			
Speed reducer to output		Direct-coupled			
Repeatability <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
Maximum speed		3.4 m/sec	0.7 m/sec	1700 °/sec	
Maximum payload		1.0 kg			
Standard cycle time: with 0.1kg payload <sup>Note 2</sup>		0.42 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.01 kgm <sup>2</sup>			
User wiring		0.1 sq × 6 wires			
User tubing (Outer diameter)		φ 3 × 2			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight (Excluding robot cable) <sup>Note 4</sup>		5.5 kg			
Robot cable weight		1.5 kg (3.5 m)	2.1 kg (5 m)	4.2 kg (10 m)	

- Note 1. This is the value at a constant ambient temperature.  
 Note 2. When reciprocating 100mm in horizontal and 25mm in vertical directions.  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. The total robot weight is the sum of the robot body weight and the cable weight.

## Controller

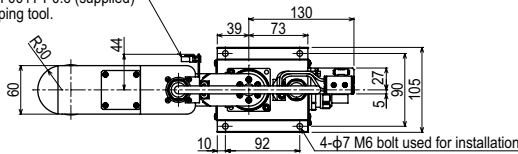
Controller	Power capacity (VA)	Operation method
RCX340	500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.) See our robot manuals (installation manuals) for detailed information.

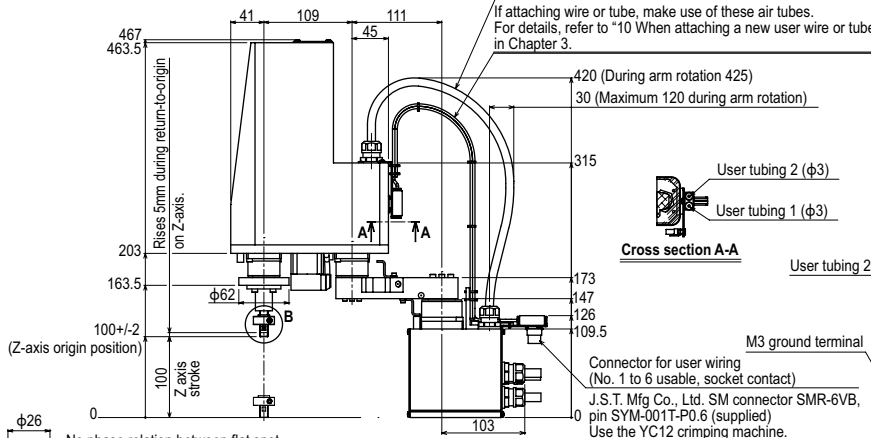
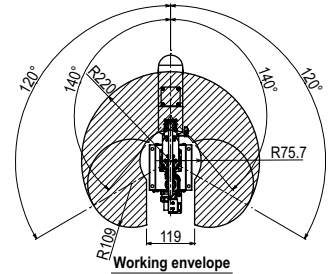
Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK220X

Connector for user wiring  
 (No. 1 to 6 usable, socket contact)  
 J.S.T. Mfg Co., Ltd. SM connector  
 SMR-6VB, pin SYM-001T-P0.6 (supplied)  
 Use the YC12 crimping tool.



Do not attach any wire or tube to self-supporting cable. Doing so may degrade positioning accuracy.  
 If attaching wire or tube, make use of these air tubes. For details, refer to "10 When attaching a new user wire or tube" in Chapter 3.

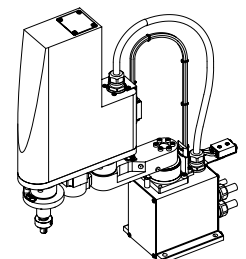
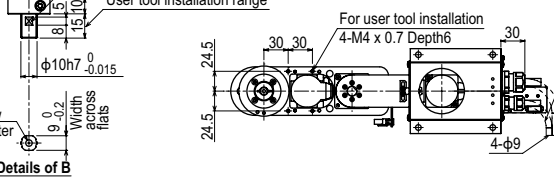


X-axis origin is at 0°/+5° with respect to front of robot base



When performing return-to-origin, move the axes counterclockwise in advance from the position shown above.

No phase relation between flat spot and R-axis origin  
 User tool installation range



# YK250XG

Standard type: Small type

- Arm length 250mm
- Maximum payload 5kg

## Ordering method

**YK250XG - 150**

<b>Model</b>	Z axis stroke 150: 150mm	<b>Tool flange</b> No entry: None F: With tool flange	<b>Hollow shaft</b> No entry: None S: With hollow shaft	<b>Cable</b> 3L: 3.5m 5L: 5m 10L: 10m
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**RCX340-4**

<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
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Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	100 mm	150 mm	150 mm	-
	<b>Rotation angle</b>	+/-140 °	+/-144 °	-	+/-360 °
<b>AC servo motor output</b>		200 W	150 W	50 W	100 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b> Speed reducer to output	Direct-coupled			
<b>Repeatability</b> <sup>Note 1</sup>		+/-0.01 mm		+/-0.01 mm	+/-0.004 °
<b>Maximum speed</b>		4.5 m/sec		1.1 m/sec	1020 °/sec
<b>Maximum payload</b>		5 kg (Standard specification), 4 kg (Option specifications <sup>Note 4</sup> )			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.43 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		0.05 kgm <sup>2</sup> (0.5 kgfcm <sup>2</sup> )			
<b>User wiring</b>		0.2 sq × 10 wires			
<b>User tubing (Outer diameter)</b>		φ 4 × 3			
<b>Travel limit</b>		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		18.5 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)

Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.

Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

Note 4. Maximum payload of option specifications (with tool flange attached or with user wiring and tubing routed through spline shaft) is 4kg.

## Controller

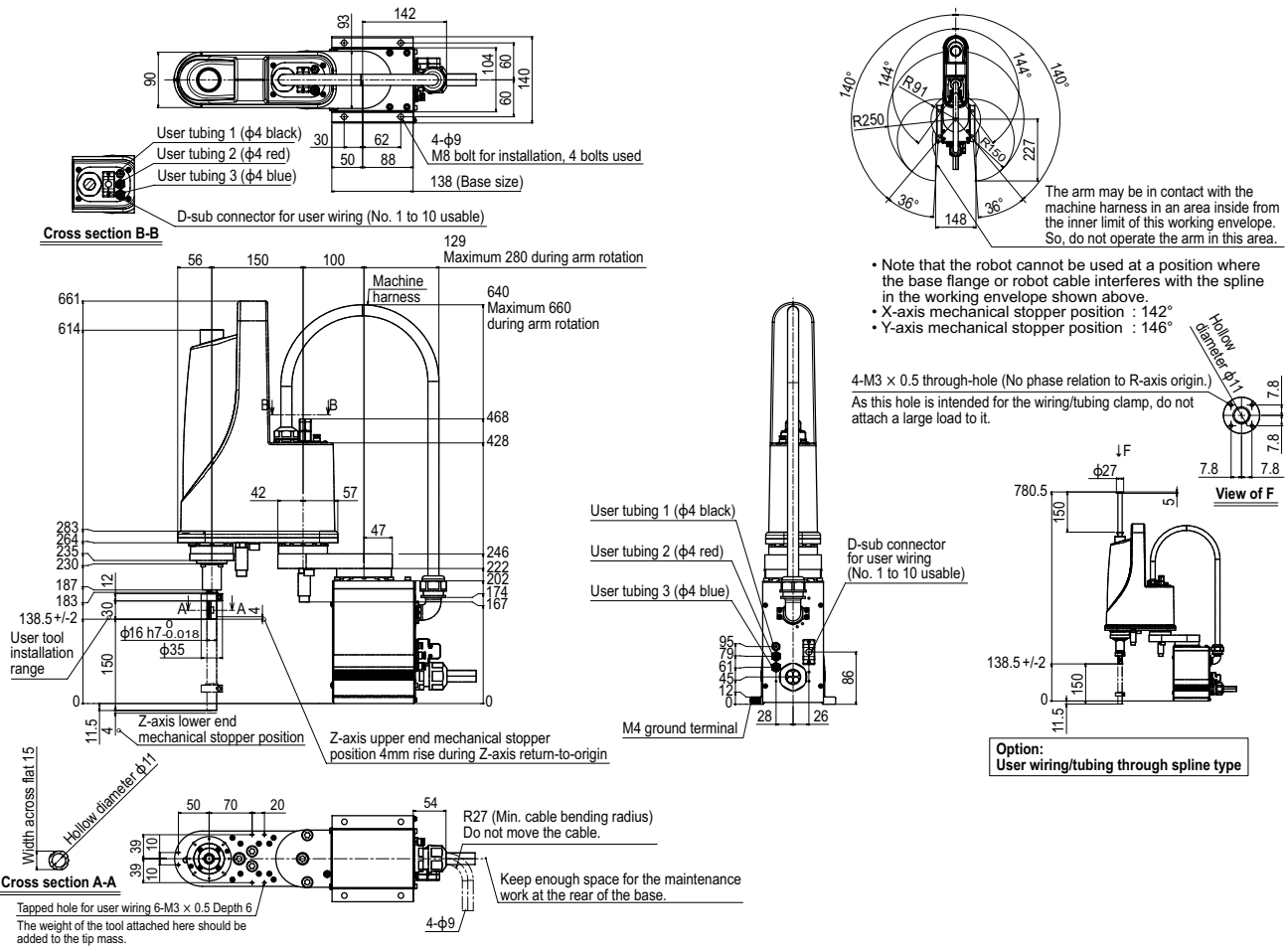
Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.) See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK250XG



Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEURO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

Oh!t/ Extra small type

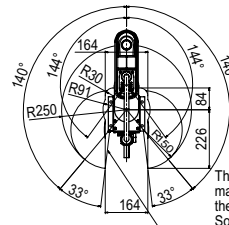
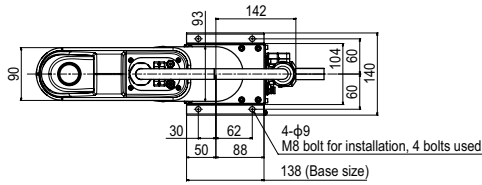
Small type

Large type

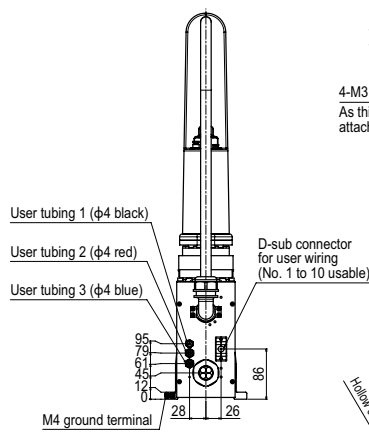
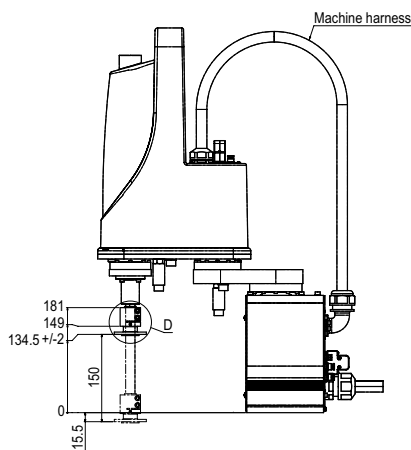
Inverse type

Dust-proof & drip-proof type

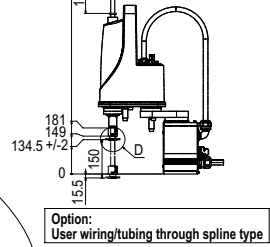
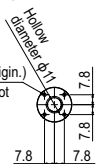
## YK250XG Tool flange mount type



- Note that the robot cannot be used at a position where the base flange or robot cable interferes with the tool flange in the working envelope shown above.
- X-axis mechanical stopper position : 142°
- Y-axis mechanical stopper position : 146°



4-M3 x 0.5 through-hole (No phase relation to R-axis origin.)  
As this hole is intended for the wiring/tubing clamp, do not attach a large load to it.



Tapped hole for user wiring 6-M3 x 0.5 Depth 6  
The weight of the tool attached here should be added to the tip mass.

R27 (Min. cable bending radius)  
Do not move the cable.  
Keep enough space for the maintenance work at the rear of the base.

Detailed drawing D

View of E

# YK350XG

Standard type: Small type

- Arm length 350mm
- Maximum payload 5kg

## Ordering method

**YK350XG - 150**

<b>Model</b>	Z axis stroke 150: 150mm	<b>Tool flange</b> No entry: None F: With tool flange	<b>Hollow shaft</b> No entry: None S: With hollow shaft	<b>Cable</b> 3L: 3.5m 5L: 5m 10L: 10m
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**RCX340-4**

<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
---	------------------------	------------------------	------------------------	------------------------	------------------------	------------------------	-------------------------

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	200 mm	150 mm	150 mm	-
	<b>Rotation angle</b>	+/-140 °	+/-144 °	-	+/-360 °
<b>AC servo motor output</b>		200 W	150 W	50 W	100 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b> <b>Speed reducer to output</b>	Direct-coupled			
<b>Repeatability</b> <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		5.6 m/sec	1.1 m/sec	1020 °/sec	
<b>Maximum payload</b>		5 kg (Standard specification), 4 kg (Option specifications <sup>Note 4</sup> )			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.44 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		0.05 kgm <sup>2</sup> (0.5 kgfcm <sup>2</sup> )			
<b>User wiring</b>		0.2 sq × 10 wires			
<b>User tubing (Outer diameter)</b>		φ 4 × 3			
<b>Travel limit</b>		1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		19 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)

Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.

Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

Note 4. Maximum payload of option specifications (with tool flange attached or with user wiring and tubing routed through spline shaft) is 4kg.

## Controller

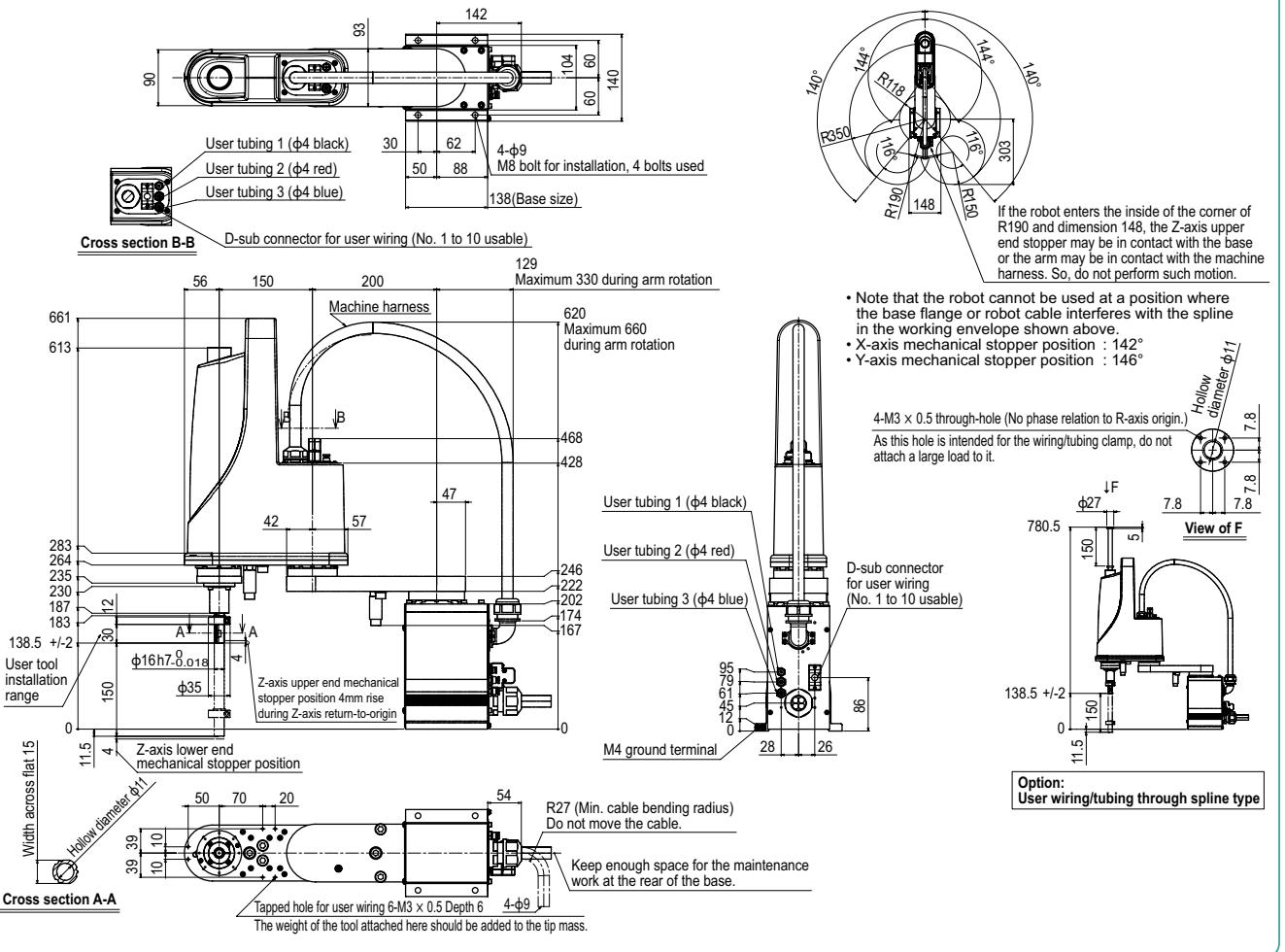
Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.) See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK350XG



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis reducer  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Orbit/Extra small type  
Small type  
Large type  
Wall mount/Inverse type  
Dust-proof & drip-proof type

Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEURO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

Oh!h!  
Extra small type

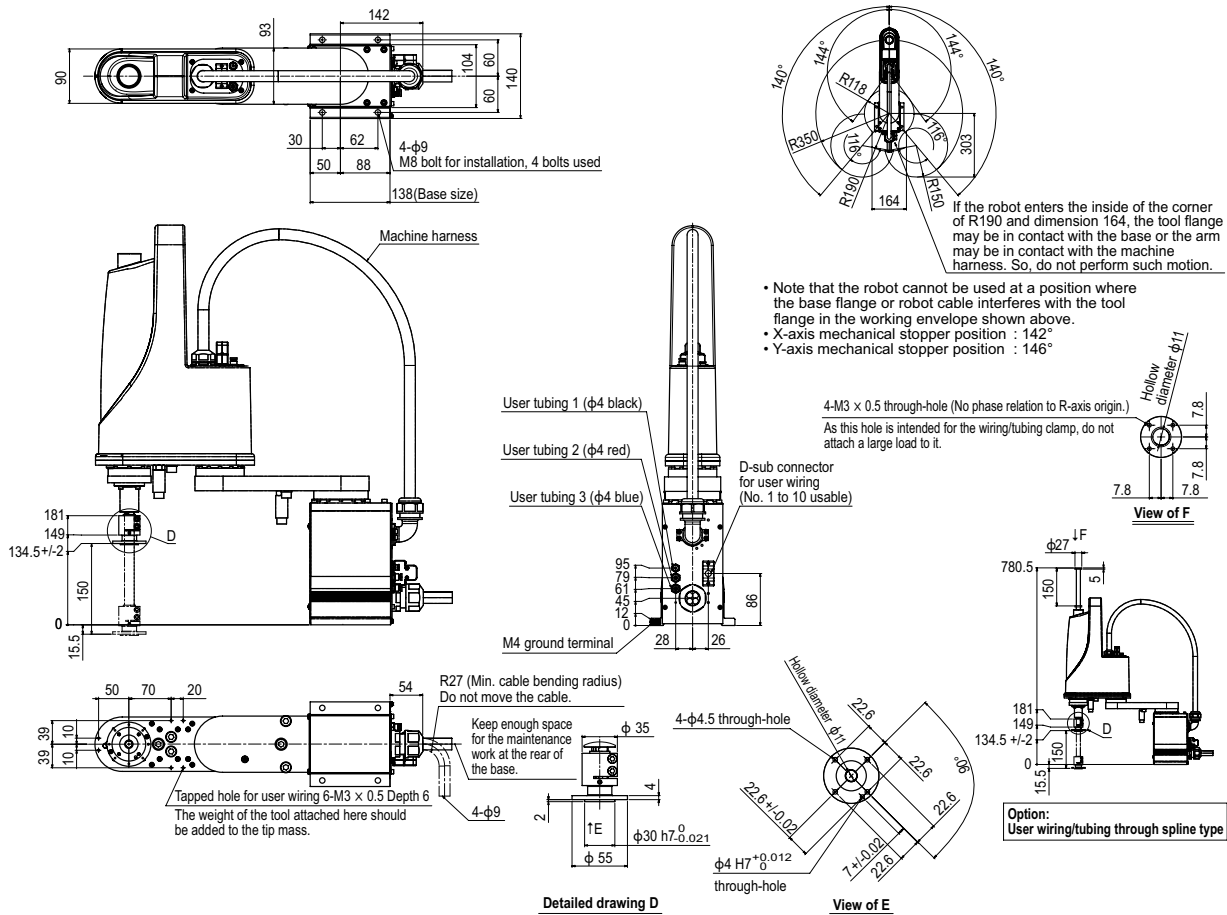
Small type

Large type

Wall mount / Inverse type

Dust-proof & drip-proof type

## YK350XG Tool flange mount type





# YK400XE-4

Standard type: Small type

LOW COST HIGH PERFORMANCE MODEL



- Arm length 400mm
- Maximum payload 4kg

## Ordering method

<b>YK400XE-4</b>	<b>150</b>	<b>RCX340-4</b>																		
<b>Model</b>	<b>Maximum payload</b>	<b>Return-to-origin method</b> S: Sensor T: Stroke end	<b>Z axis stroke</b>	<b>Hollow shaft</b> No entry: None S: With hollow shaft	<b>Cable</b> 3L: 3.5m 5L: 5m 10L: 10m	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>							

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	225 mm	175 mm	150 mm	-
	<b>Rotation angle</b>	+/-132°	+/-150°	-	+/-360°
<b>AC servo motor output</b>		200 W	100 W	100 W	100 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled		Timing belt	
	<b>Speed reducer to output</b>	Direct-coupled		Timing belt	
<b>Repeatability</b> <sup>Note 1</sup>		+/-0.01 mm		+/-0.01 mm	+/-0.01°
<b>Maximum speed</b>		6 m/sec		1.1 m/sec	2600 °/sec
<b>Maximum payload</b>		4 kg (Standard specification), 3 kg (Option specifications) <sup>Note 4</sup>			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.41 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		0.05 kgm <sup>2</sup> (0.5 kgfcm <sup>2</sup> )			
<b>User wiring</b>		0.2 sq × 10 wires			
<b>User tubing (Outer diameter)</b>		φ 4 × 3			
<b>Travel limit</b>		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		17 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions and performing the coarse positioning arch operation.  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and offset amount for R-axis moment of inertia settings.  
 Note 4. Maximum payload of option specifications (with user wiring/tubing through spline type) is 3kg.

## Controller

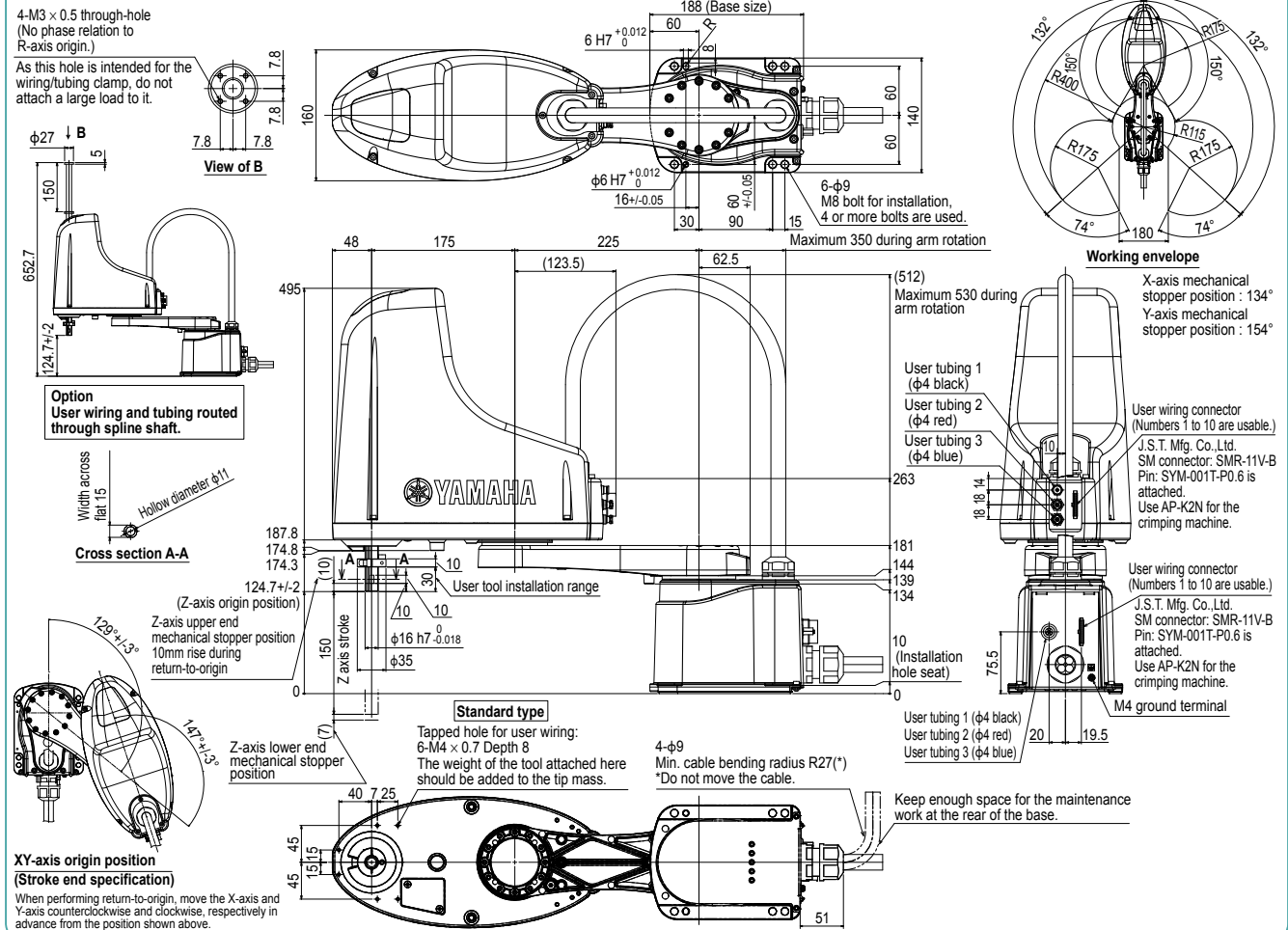
Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / Remote command / Operation using RS-232C communication

Note. The movement range can be restricted by adding the X- and Y-axis mechanical stoppers. (The maximum movement range was set at shipment.)  
 See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

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## YK400XE-4









# YK500XGL

Standard type: Medium type



- Arm length 500mm
- Maximum payload 5kg

## Ordering method

**YK500XGL - 150**

**RCX340-4**

Model	Z axis stroke	Tool flange	Hollow shaft	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	150: 150mm	No entry: None F: With tool flange	No entry: None S: With hollow shaft	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

Axis specifications	Arm length	X-axis	Y-axis	Z-axis	R-axis
Rotation angle		250 mm	250 mm	150 mm	-
AC servo motor output		+/-140 °	+/-144 °	-	+/-360 °
Deceleration mechanism	Transmission method	200 W	150 W	50 W	100 W
	Motor to speed reducer	Direct-coupled			
	Speed reducer to output	Direct-coupled			
Repeatability	Note 1	+/-0.01 mm		+/-0.01 mm	+/-0.004 °
Maximum speed		5.1 m/sec		1.1 m/sec	1020 °/sec
Maximum payload		5 kg (Standard specification), 4 kg (Option specifications Note 4)			
Standard cycle time: with 2kg payload	Note 2	0.48 sec			
R-axis tolerable moment of inertia	Note 3	0.05 kgm <sup>2</sup> (0.5 kgfcm <sup>2</sup> )			
User wiring		0.2 sq × 10 wires			
User tubing (Outer diameter)		φ 4 × 3			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		21 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Maximum payload of option specifications (with tool flange attached or with user wiring and tubing routed through spline shaft) is 4kg.

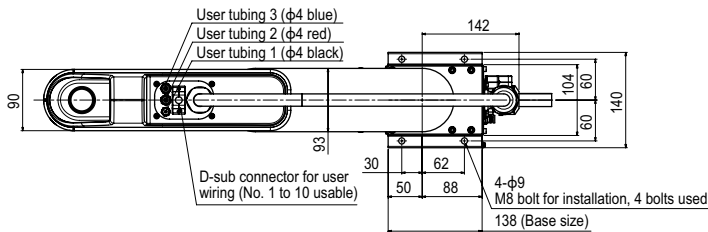
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

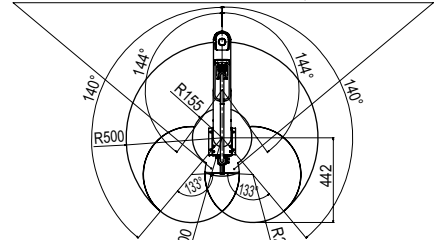
Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.  
 Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

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## YK500XGL

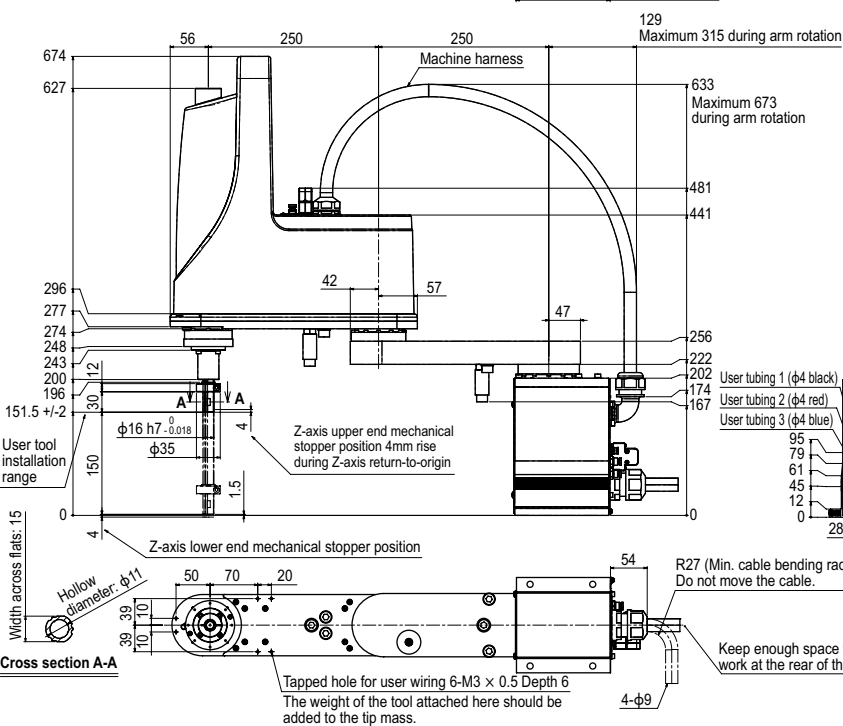
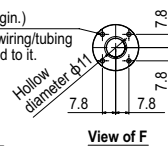


If the robot enters the inside of the corner of R200 and R250, the arm may be in contact with the machine harness. So, do not perform such motion.



- Note that the robot cannot be used at a position where the base flange or robot cable interferes with the spline in the working envelope shown above.
- X-axis mechanical stopper position : 142°
- Y-axis mechanical stopper position : 146°

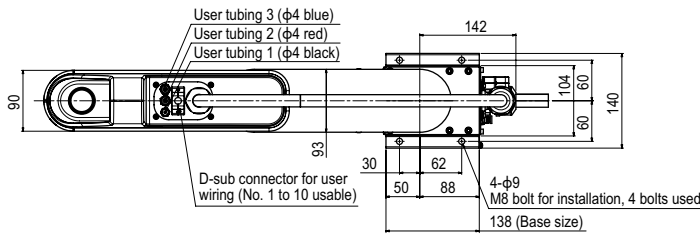
4-M3 × 0.5 through-hole (No phase relation to R-axis origin.)  
 As this hole is intended for the wiring/tubing clamp, do not attach a large load to it.



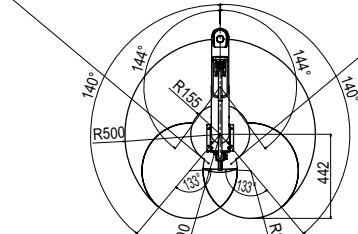
Option: User wiring/tubing through spline type

Articulated robots YA
Linear conveyor modules LCM100
Motor-less single axis actuator Robonity
Compact single-axis robots TRANSEVO
Single-axis robots FLIP-X
Linear motor single-axis robots PHASER
Cartesian robots XY-X
SCARA robots YK-X
Pick & place YP-X
CLEAN
CONTROLLER INFORMATION
Orbit/Extra small type
Medium type
Large type
Wall mount/Inverse type
Dust-proof & drip-proof type

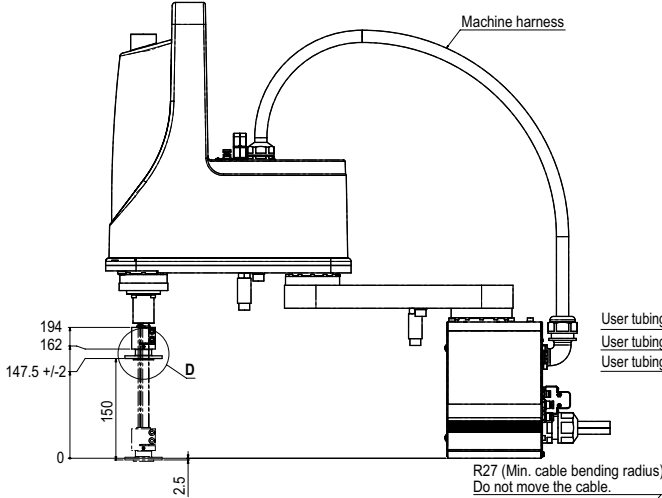
YK500XGL Tool flange mount type



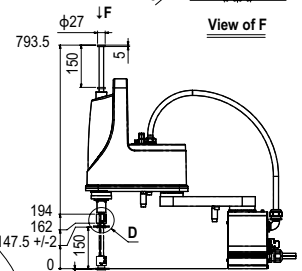
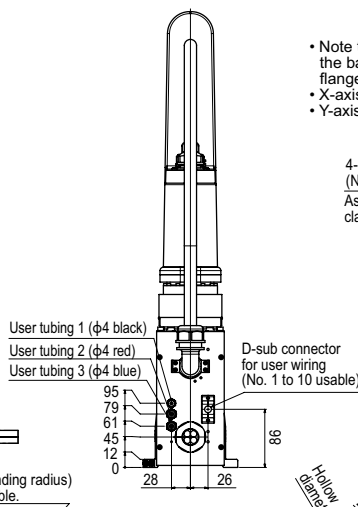
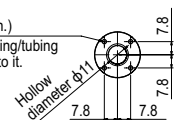
If the robot enters the inside of corners of R200 and R250, the arm may be in contact with the machine harness. So, do not perform such motion.



- Note that the robot cannot be used at a position where the base flange or robot cable interferes with the tool flange in the working envelope shown above.
- X-axis mechanical stopper position : 142°
- Y-axis mechanical stopper position : 146°

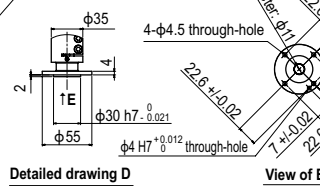


4-M3 × 0.5 through-hole (No phase relation to R-axis origin.)  
As this hole is intended for the wiring/tubing clamp, do not attach a large load to it.



Tapped hole for user wiring 6-M3 × 0.5 Depth 6  
The weight of the tool attached here should be added to the tip mass.

Keep enough space for the maintenance work at the rear of the base.



Option: User wiring/tubing through spline type

# YK500XG

Standard type: Medium type



- Arm length 500mm
- Maximum payload 10kg

## Ordering method

<b>YK500XG</b>				<b>RCX340-4</b>								
<b>Model</b>	<b>Z axis stroke</b> 200: 200mm 300: 300mm	<b>Tool flange</b> No entry: None F: With tool flange	<b>Cable</b> 3L: 3.5m 5L: 5m 10L: 10m	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>	

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	200 mm	300 mm	200 mm 300 mm	—
	<b>Rotation angle</b>	+/-130 °	+/-145 °	—	+/-360 °
<b>AC servo motor output</b>		400 W	200 W	200 W	200 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b> Speed reducer to output	Direct-coupled			
<b>Repeatability</b> <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		7.6 m/sec	2.3 m/sec	1.7 m/sec	1700 °/sec
<b>Maximum payload</b>		10 kg (Standard type), 9 kg (Tool flange mount type)			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.42 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		0.30 kgm <sup>2</sup>			
<b>User wiring</b>		0.2 sq x 20 wires			
<b>User tubing (Outer diameter)</b>		φ 6 x 3			
<b>Travel limit</b>		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		30 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

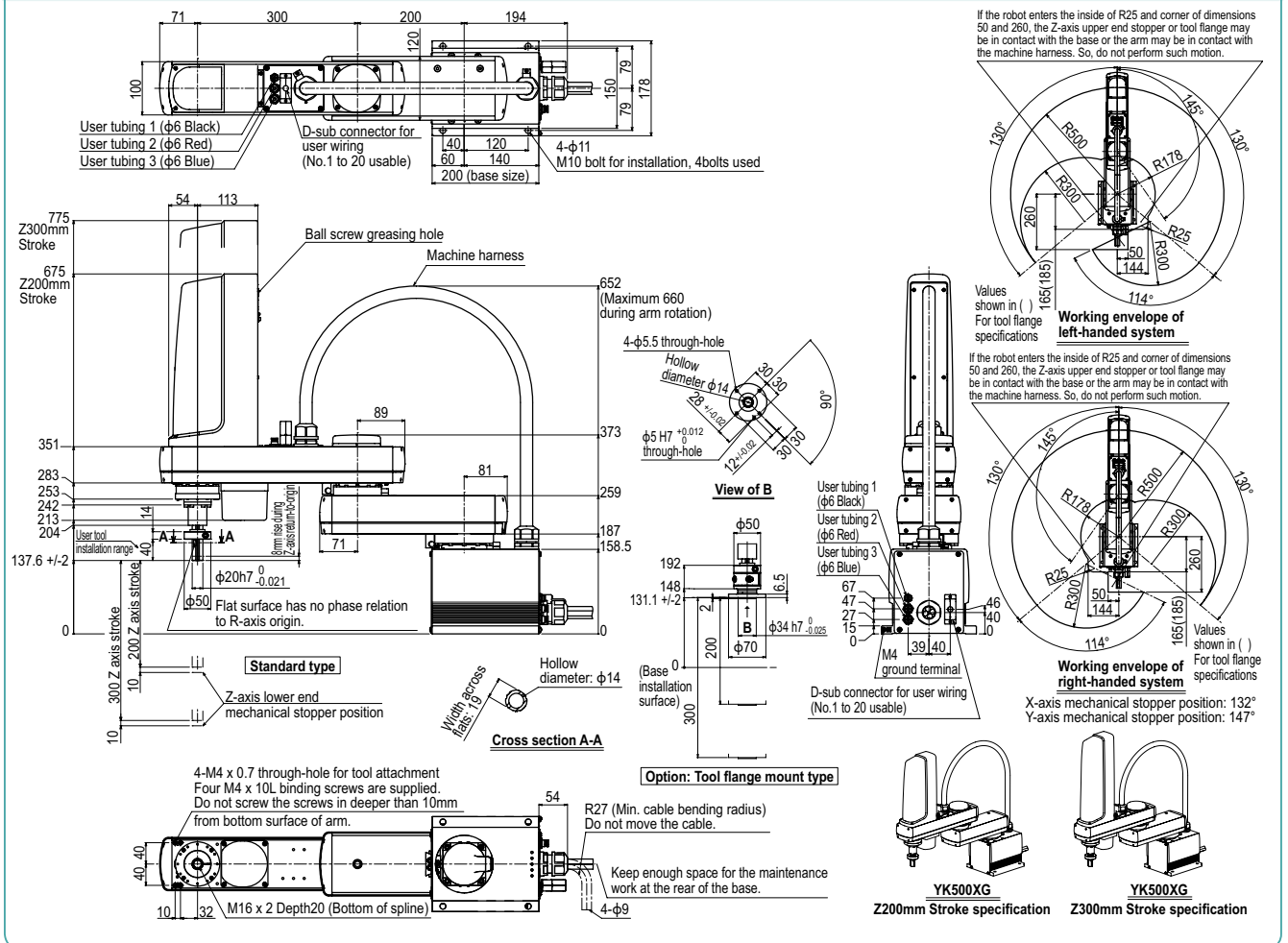
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.  
 Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

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## YK500XG





# YK610XE-10

Standard type: Medium type

● LOW COST HIGH PERFORMANCE MODEL



● Arm length 610mm ● Maximum payload 10kg

## Ordering method

**YK610XE-10-200**

**RCX340-4**

Model	Maximum payload	Z axis stroke	Tool flange	Hollow shaft	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
			No entry: None F: With tool flange	No entry: None S: With hollow shaft	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

Note. The return-to-origin method is provided only in the sensor specifications, but not in the stroke end specifications.

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	335 mm	275 mm	200 mm	-
	Rotation angle	+/-134 °	+/-152 °	-	+/-360 °
AC servo motor output		400 W	200 W	200 W	200 W
Deceleration mechanism	Transmission method	Direct-coupled		Timing belt	
	Speed reducer to output	Direct-coupled		Timing belt	
Repeatability <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.01 °	
Maximum speed		8.6 m/sec	2 m/sec	2600 °/sec	
Maximum payload		10 kg (Standard specification), 9 kg (Option specifications <sup>Note 4</sup> )			
Standard cycle time: with 2kg payload <sup>Note 2</sup>		0.39 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.3 kgm <sup>2</sup>			
User wiring		0.2 sq × 20 wires			
User tubing (Outer diameter)		φ 6 × 3			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		25 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)

Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions and performing the coarse positioning arch operation.

Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and offset amount for R-axis moment of inertia settings.

Note 4. Maximum payload of option specifications (with user wiring/tubing through spline type) is 9kg.

## Controller

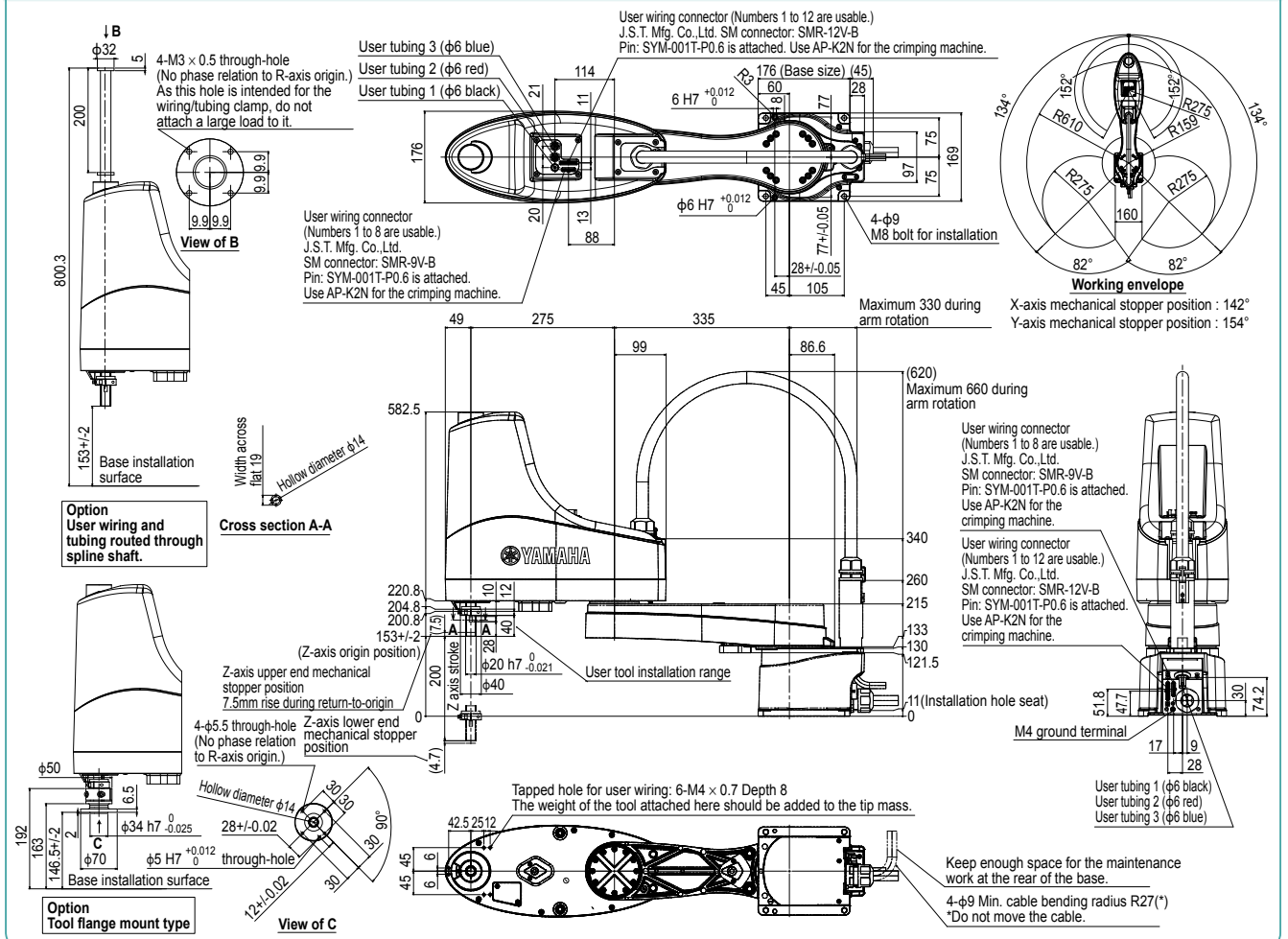
Controller	Power capacity (VA)	Operation method
RCX340	1700	Programming / Remote command / Operation using RS-232C communication

Note. The movement range can be restricted by adding the X- and Y-axis mechanical stoppers. (The maximum movement range was set at shipment.) See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

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## YK610XE-10





# YK600XGL

Standard type: Medium type



- Arm length 600mm
- Maximum payload 5kg

## Ordering method

**YK600XGL - 150**

**RCX340-4**

Model	Z axis stroke	Tool flange	Hollow shaft	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	150: 150mm	No entry: None F: With tool flange	No entry: None S: With hollow shaft	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	350 mm	250 mm	150 mm	-
	Rotation angle	+/-140 °	+/-144 °	-	+/-360 °
AC servo motor output		200 W	150 W	50 W	100 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer Speed reducer to output	Direct-coupled			
Repeatability <sup>Note 1</sup>		+/-0.01 mm		+/-0.01 mm	+/-0.004 °
Maximum speed		4.9 m/sec		1.1 m/sec	1020 °/sec
Maximum payload		5 kg (Standard specification), 4 kg (Option specifications <sup>Note 4</sup> )			
Standard cycle time: with 2kg payload <sup>Note 2</sup>		0.54 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.05 kgm <sup>2</sup> (0.5 kgfcm <sup>2</sup> )			
User wiring		0.2 sq × 10 wires			
User tubing (Outer diameter)		φ 4 × 3			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		22 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Maximum payload of option specifications (with tool flange attached or with user wiring and tubing routed through spline shaft) is 4kg.

## Controller

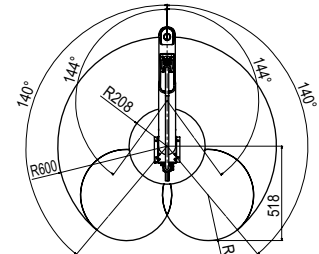
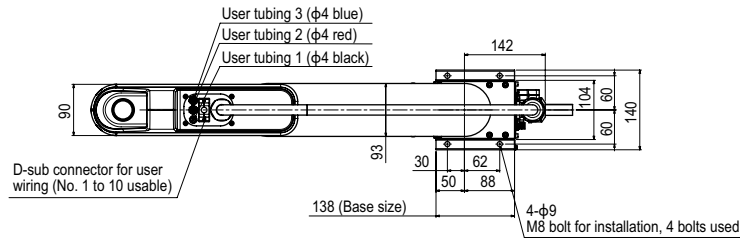
Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
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Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

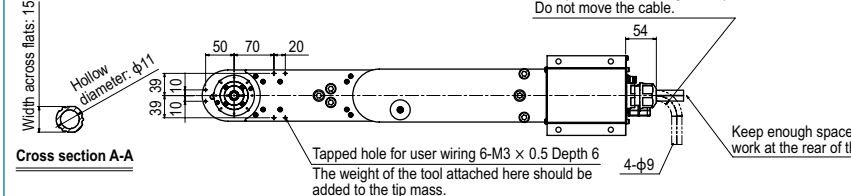
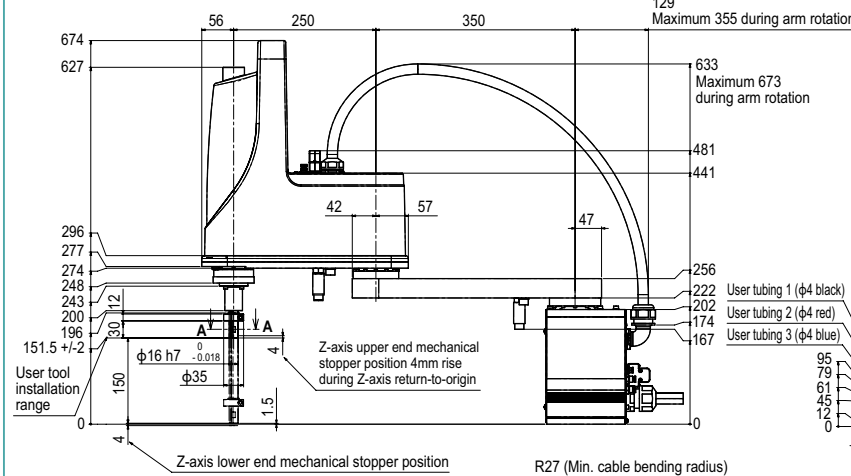
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<https://global.yamaha-motor.com/business/robot/>

## YK600XGL



- Note that the robot cannot be used at a position where the base flange or robot cable interferes with the spline in the working envelope shown above.
- X-axis mechanical stopper position : 142°
- Y-axis mechanical stopper position : 146°

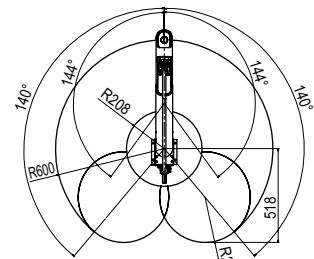
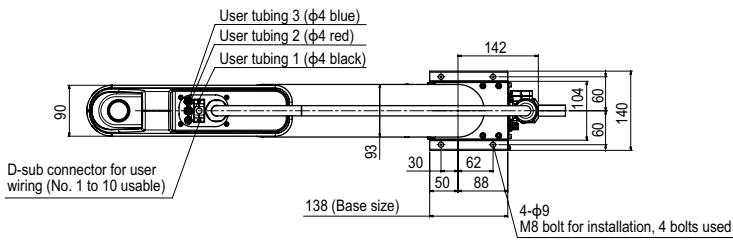
4-M3 × 0.5 through-hole  
 (No phase relation to R-axis origin.)  
 As this hole is intended for the wiring/tubing clamp, do not attach a large load to it.



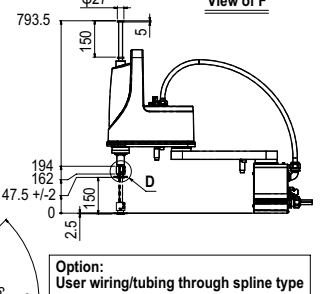
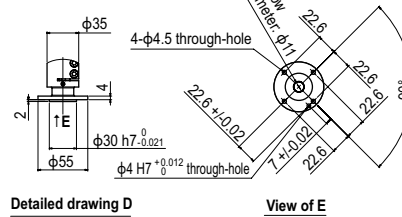
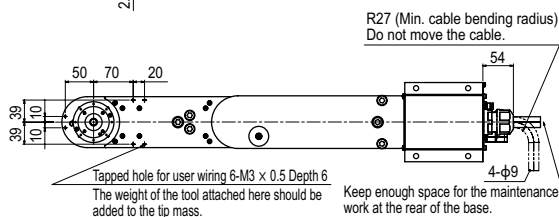
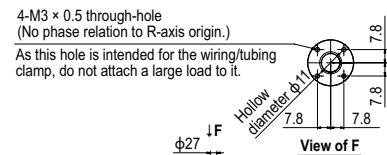
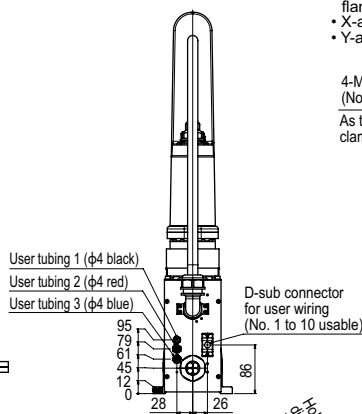
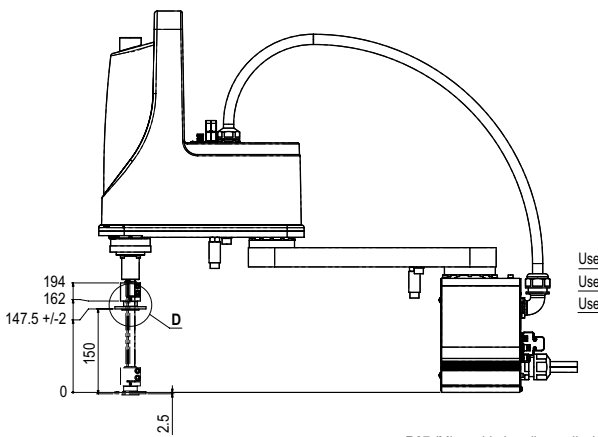
Option:  
 User wiring/tubing through spline type

Articulated robots YA	Linear conveyor modules LCM100	Motor-less single axis actuator Robonity	Compact single-axis robots TRANSEVO	Single-axis robots FLIP-X	Linear motor single-axis robots PHASER	Cartesian robots XY-X	SCARA robots YK-X	Pick & place robots YP-X	CLEAN	CONTROLLER INFORMATION	Orbit/Extra small type	Medium type	Large type	Wall mount/Inverse type	Dust-proof & drip-proof type
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YK600XGL Tool flange mount type



- Note that the robot cannot be used at a position where the base flange or robot cable interferes with the tool flange in the working envelope shown above.
- X-axis mechanical stopper position : 142°
- Y-axis mechanical stopper position : 146°



# YK600XG

Standard type: Medium type



- Arm length 600mm
- Maximum payload 10kg

## Ordering method

<b>YK600XG</b>				<b>RCX340-4</b>							
<b>Model</b>	<b>Z axis stroke</b> 200: 200mm 300: 300mm	<b>Tool flange</b> No entry: None F: With tool flange	<b>Cable</b> 3L: 3.5m 5L: 5m 10L: 10m	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	300 mm	300 mm	200 mm	300 mm
	<b>Rotation angle</b>	+/-130 °	+/-145 °	-	+/-360 °
<b>AC servo motor output</b>		400 W	200 W	200 W	200 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b> Speed reducer to output	Direct-coupled			
<b>Repeatability</b> <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		8.4 m/sec	2.3 m/sec	1.7 m/sec	1700 °/sec
<b>Maximum payload</b>		10 kg (Standard type), 9 kg (Tool flange mount type)			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.43 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		0.30 kgm <sup>2</sup>			
<b>User wiring</b>		0.2 sq × 20 wires			
<b>User tubing (Outer diameter)</b>		φ 6 × 3			
<b>Travel limit</b>		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		31 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

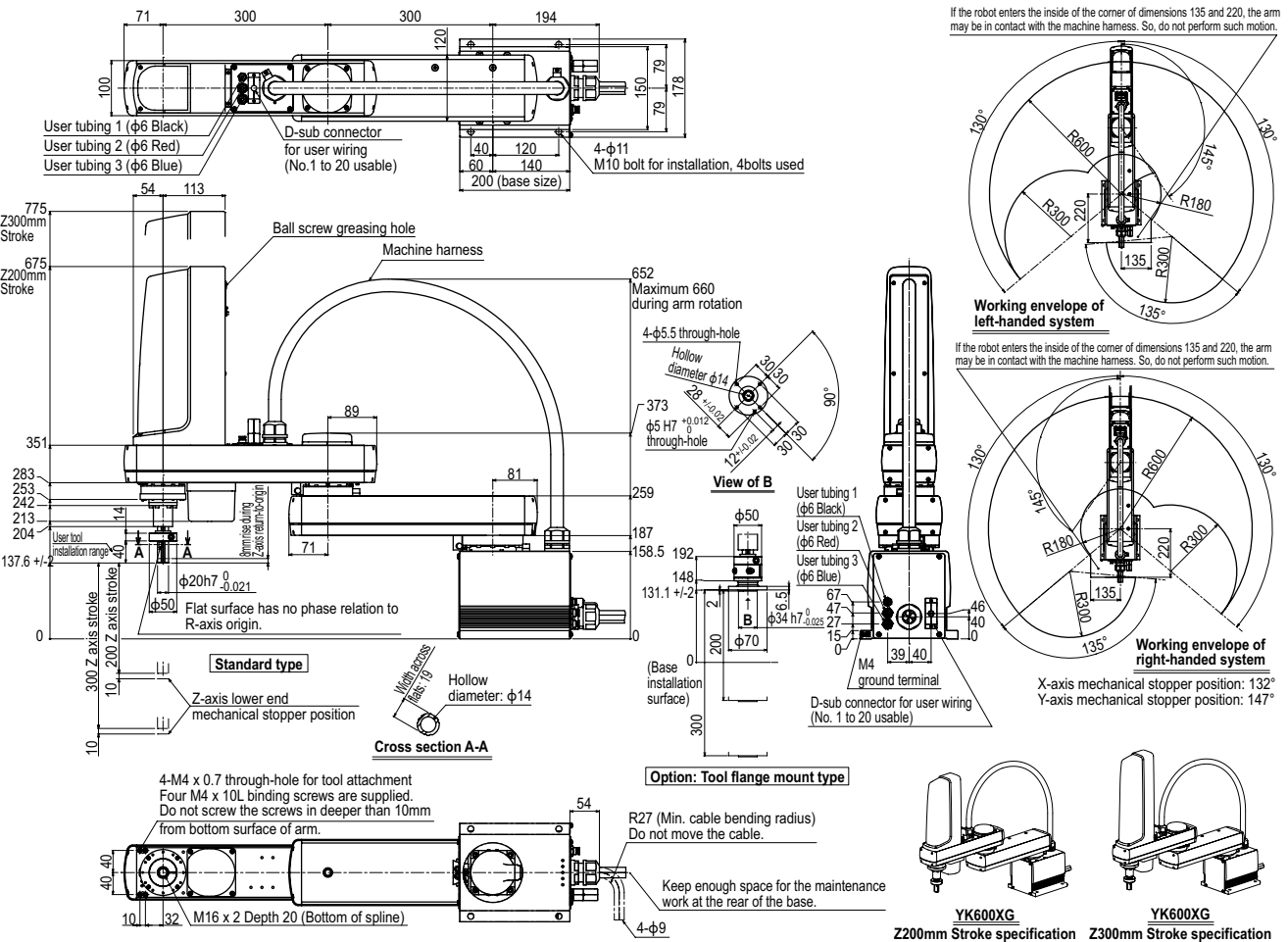
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.  
 Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK600XG





# YK710XE-10

Standard type: Large type

● LOW COST HIGH PERFORMANCE MODEL



- Arm length 710mm
- Maximum payload 10kg

## Ordering method

**YK710XE-10-200**

**RCX340-4**

Model	Maximum payload	Z axis stroke	Tool flange	Hollow shaft	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
			No entry: None F: With tool flange	No entry: None S: With hollow shaft	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

Note. The return-to-origin method is provided only in the sensor specifications, but not in the stroke end specifications.

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	435 mm	275 mm	200 mm	-
	Rotation angle	+/-134 °	+/-152 °	-	+/-360 °
AC servo motor output		400 W	200 W	200 W	200 W
Deceleration mechanism	Transmission method	Direct-coupled		Timing belt	
	Speed reducer to output	Direct-coupled		Timing belt	
Repeatability <sup>Note 1</sup>		+/-0.02 mm		+/-0.01 mm	+/-0.01 °
Maximum speed		9.5 m/sec		2 m/sec	2600 °/sec
Maximum payload		10 kg (Standard specification), 9 kg (Option specifications <sup>Note 4</sup> )			
Standard cycle time: with 2kg payload <sup>Note 2</sup>		0.42 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.3 kgm <sup>2</sup>			
User wiring		0.2 sq × 20 wires			
User tubing (Outer diameter)		φ 6 × 3			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		26 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)

Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions and performing the coarse positioning arch operation.

Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and offset amount for R-axis moment of inertia settings.

Note 4. Maximum payload of option specifications (with user wiring/tubing through spline type) is 9kg.

## Controller

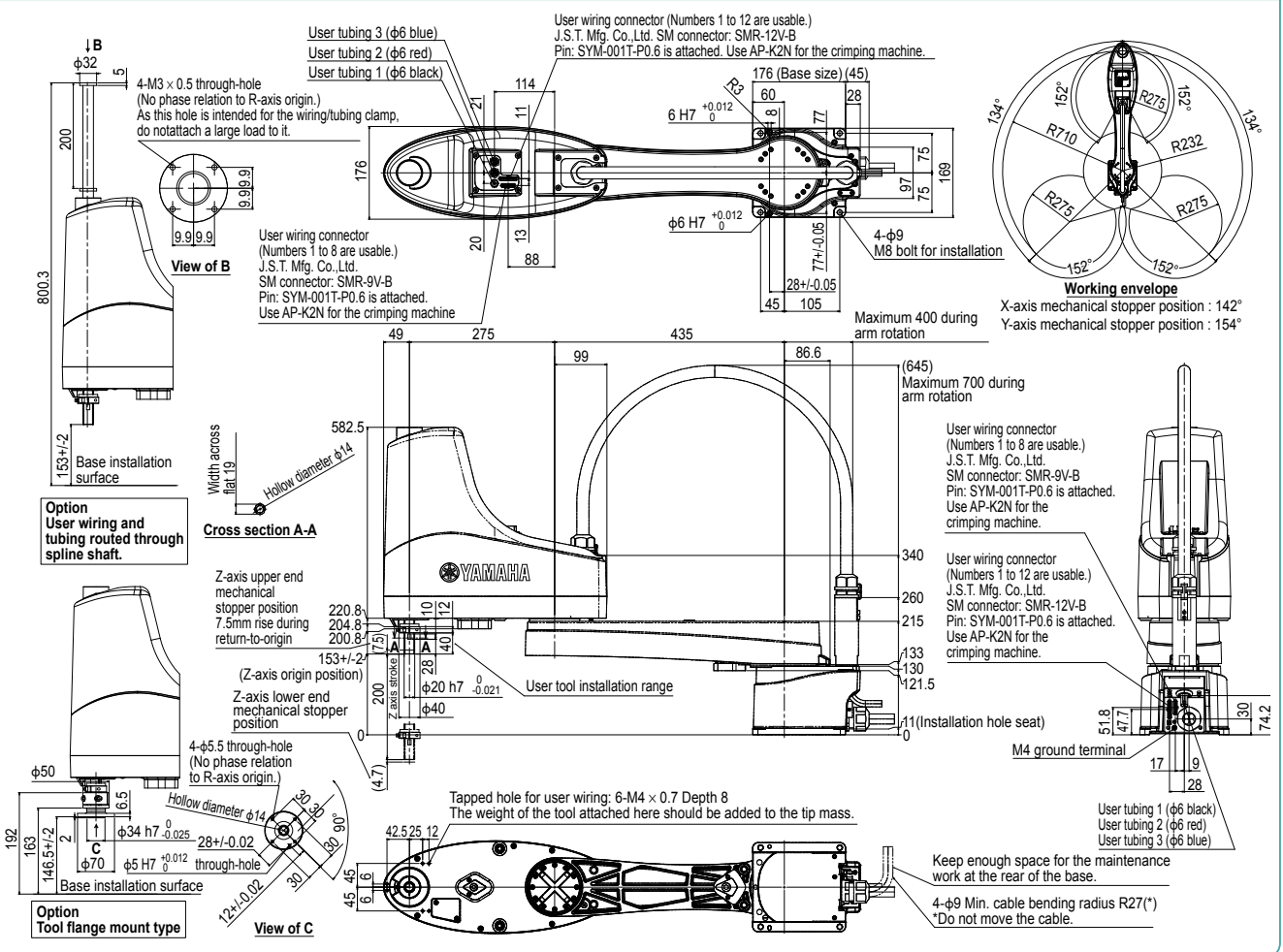
Controller	Power capacity (VA)	Operation method
RCX340	1700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.) See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK710XE-10











# YK800XG

Standard type: Large type

- Arm length 800mm
- Maximum payload 20kg



## Ordering method

**YK800XG**

<b>Z axis stroke</b>	<b>Tool flange</b>	<b>Cable</b>
200: 200mm 400: 400mm	No entry: None F: With tool flange	3L: 3.5m 5L: 5m 10L: 10m

**RCX340-4**

<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
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Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	400 mm	400 mm	200 mm 400 mm	—
	<b>Rotation angle</b>	+/-130 °	+/-150 °	—	+/-360 °
<b>AC servo motor output</b>		750 W	400 W	400 W	200 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b> <b>Speed reducer to output</b>	Direct-coupled			
<b>Repeatability</b> <sup>Note 1</sup>		+/-0.02 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		9.2 m/sec	2.3 m/sec	1.7 m/sec	920 °/sec
<b>Maximum payload</b>		20 kg (Standard type), 19 kg (Tool flange mount type)			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.48 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		1.0 kgm <sup>2</sup>			
<b>User wiring</b>		0.2 sq x 20 wires			
<b>User tubing (Outer diameter)</b>		φ 6 x 3			
<b>Travel limit</b>		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		Z axis 200 mm: 52 kg Z axis 400 mm: 54 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note. Please consult YAMAHA when connecting other tubes and cables to the self-supporting machine harness.

## Controller

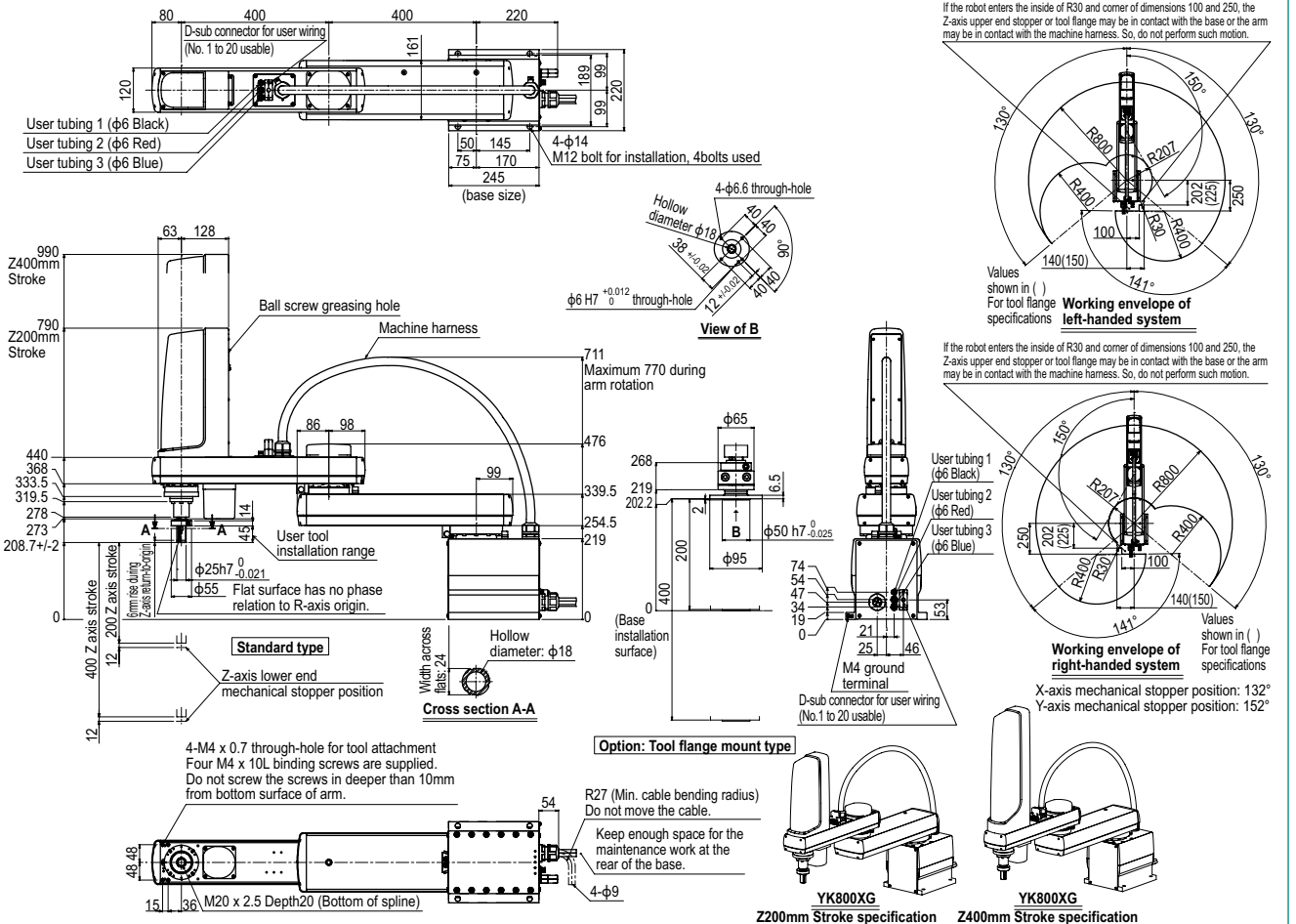
Controller	Power capacity (VA)	Operation method
RCX340	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.) See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
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## YK800XG





# YK1000XG

Standard type: Large type

- Arm length 1000mm
- Maximum payload 20kg



## Ordering method

**YK1000XG**

<b>Z axis stroke</b>	<b>Tool flange</b>
200: 200mm 400: 400mm	No entry: None F: With tool flange

**RCX340-4**

<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
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Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	600 mm	400 mm	200 mm	400 mm
	<b>Rotation angle</b>	+/-130 °	+/-150 °	-	+/-360 °
<b>AC servo motor output</b>		750 W	400 W	400 W	200 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b> <b>Speed reducer to output</b>	Direct-coupled			
<b>Repeatability</b> <sup>Note 1</sup>		+/-0.02 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		10.6 m/sec	2.3 m/sec	1.7 m/sec	920 °/sec
<b>Maximum payload</b>		20 kg (Standard type), 19 kg (Tool flange mount type)			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.49 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		1.0 kgm <sup>2</sup>			
<b>User wiring</b>		0.2 sq x 20 wires			
<b>User tubing (Outer diameter)</b>		φ 6 x 3			
<b>Travel limit</b>		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		Z axis 200 mm: 56 kg Z axis 400 mm: 58 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note. Please consult YAMAHA when connecting other tubes and cables to the self-supporting machine harness.

## Controller

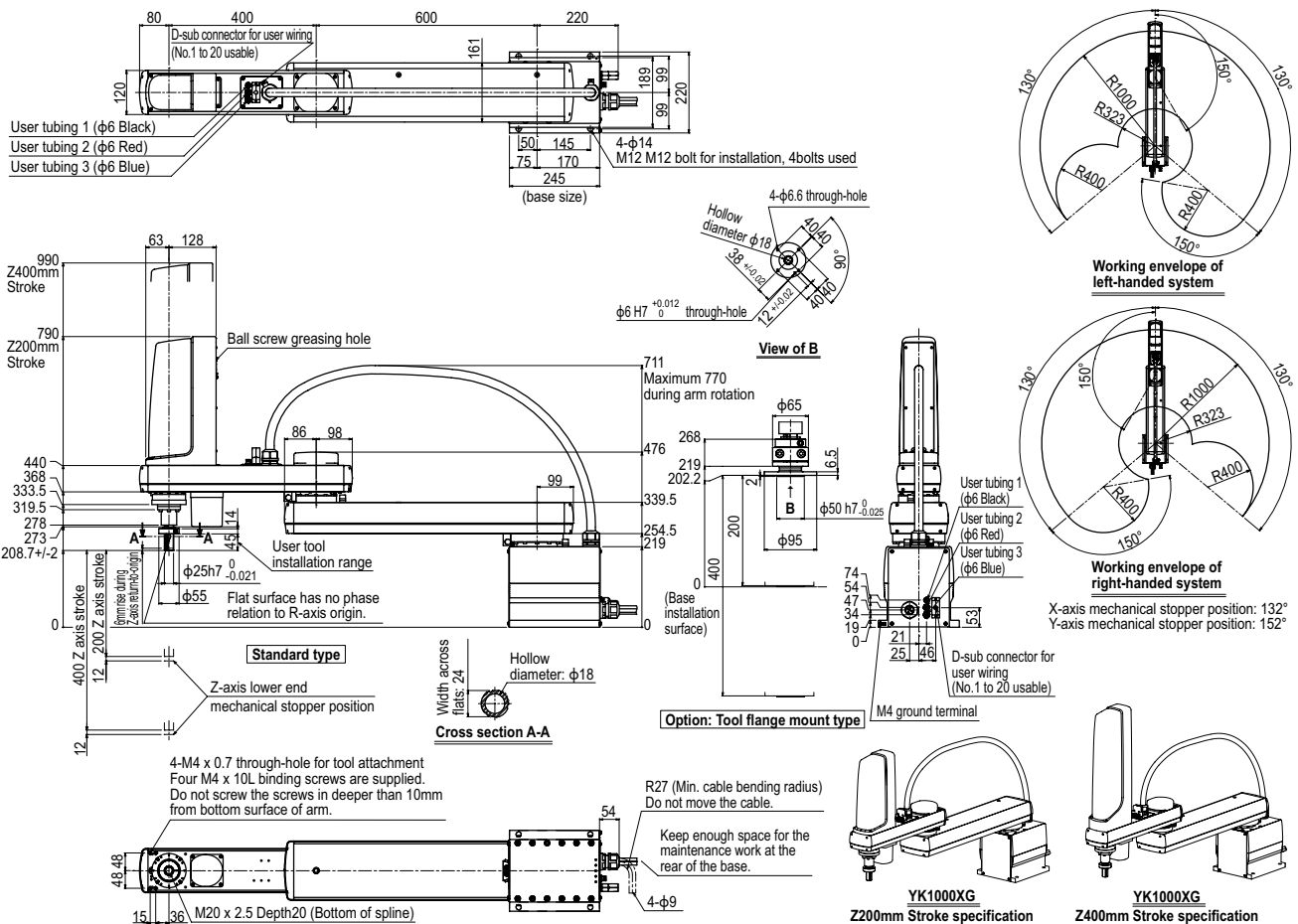
Controller	Power capacity (VA)	Operation method
RCX340	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK1000XG





# YK1200X

Standard type: Large type



- Arm length 1200mm
- Maximum payload 50kg

## Ordering method

**YK1200X - 400**

**RCX340-4**

Model	Z axis stroke	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
		3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	600 mm	600 mm	400 mm	-
	Rotation angle	+/-125 °	+/-150 °	-	+/-180 °
AC servo motor output		900 W	800 W	600 W	400 W
Deceleration mechanism	Transmission method	Direct-coupled		Timing belt transmission	Timing belt transmission
	Motor to speed reducer Speed reducer to output	Direct-coupled	Direct-coupled	Direct-coupled	Direct-coupled
Repeatability <sup>Note 1</sup>		+/-0.05 mm		+/-0.02 mm	+/-0.005 °
Maximum speed		7.4 m/sec		0.75 m/sec	600 °/sec
Maximum payload		50 kg			
Standard cycle time: with 2kg payload <sup>Note 2</sup>		0.91 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		2.45 kgm <sup>2</sup>			
User wiring		0.2 sq × 20 wires			
User tubing (Outer diameter)		φ 6 × 3			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		124 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)

Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.

Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

## Controller

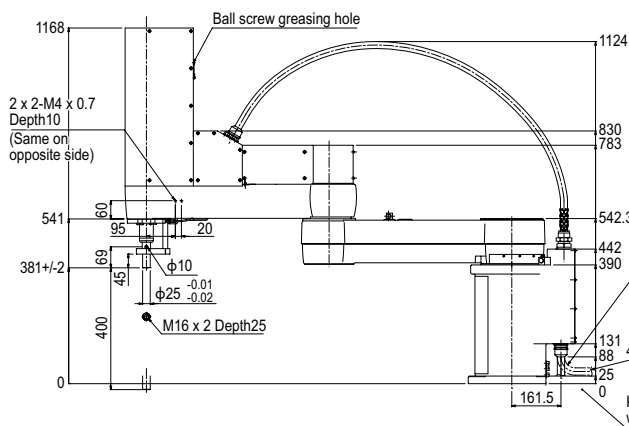
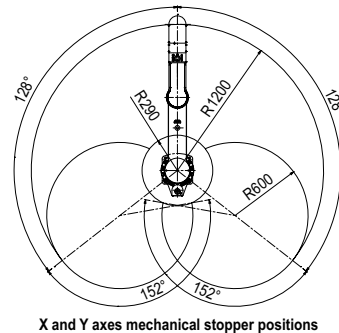
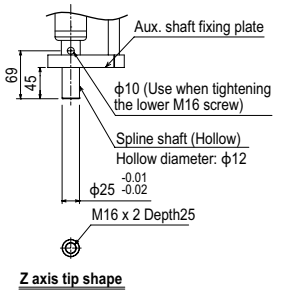
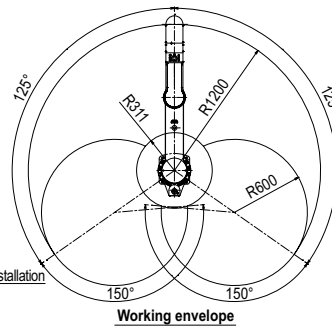
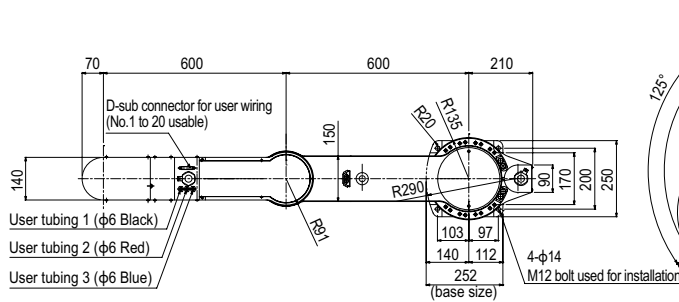
Controller	Power capacity (VA)	Operation method
RCX340	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)

See our robot manuals (installation manuals) for detailed information.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK1200X



# YK300XGS

Wall mount / inverse type

● Arm length 300mm ● Maximum payload 5kg Note. Built-to-order product. Contact us for the delivery period.

## Ordering method

**YK300XGS** **150** **RCX340-4**

<b>Model</b>	<b>Installation method</b> W: Wall mount (same as per external view) U: Inverse wall mount (upside down)	<b>Z axis stroke</b> 150: 150mm	<b>Tool flange</b> No entry: None F: With tool flange	<b>Hollow shaft</b> No entry: None S: With hollow shaft	<b>Cable</b> 3L: 3.5m 5L: 5m 10L: 10m	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
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Specify various controller setting items. RCX340 ▶ **P.566**

Note 1. When installing the robot, always follow the specifications.  
Do not install the ceiling-mount robot upside down or do not install the inverse type robot to a ceiling.  
Incorrect installation can cause trouble or malfunction.

## Specifications

	X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>				
Arm length	150 mm	150 mm	150 mm	-
Rotation angle	+/-120 °	+/-130 °	-	+/-360 °
<b>AC servo motor output</b>	200 W	150 W	50 W	100 W
<b>Deceleration mechanism</b>	Direct-coupled			
Transmission method	Direct-coupled			
Motor to speed reducer	Direct-coupled			
Speed reducer to output	Direct-coupled			
<b>Repeatability</b> <small>Note 1</small>	+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>	4.4 m/sec	1.0 m/sec	1020 °/sec (wall mount) 720 °/sec (inverse wall mount)	
<b>Maximum payload</b>	5 kg (Standard specification), 4 kg (Option specifications <small>Note 4</small> )			
<b>Standard cycle time: with 2kg payload</b> <small>Note 2</small>	0.49 sec			
<b>R-axis tolerable moment of inertia</b> <small>Note 3</small>	0.05 kgm <sup>2</sup>			
<b>User wiring</b>	0.2 sq × 10 wires			
<b>User tubing (Outer diameter)</b>	φ 4 × 3			
<b>Travel limit</b>	1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>	Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>	19.5 kg			

Note 1. This is the value at a constant ambient temperature.  
Note 2. When reciprocating 25mm horizontally and 300mm horizontally (with a 2kg payload in rough-positioning arch motion).  
Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
Note 4. Maximum payload of option specifications (with tool flange attached or with user wiring and tubing routed through spline shaft) is 4kg.

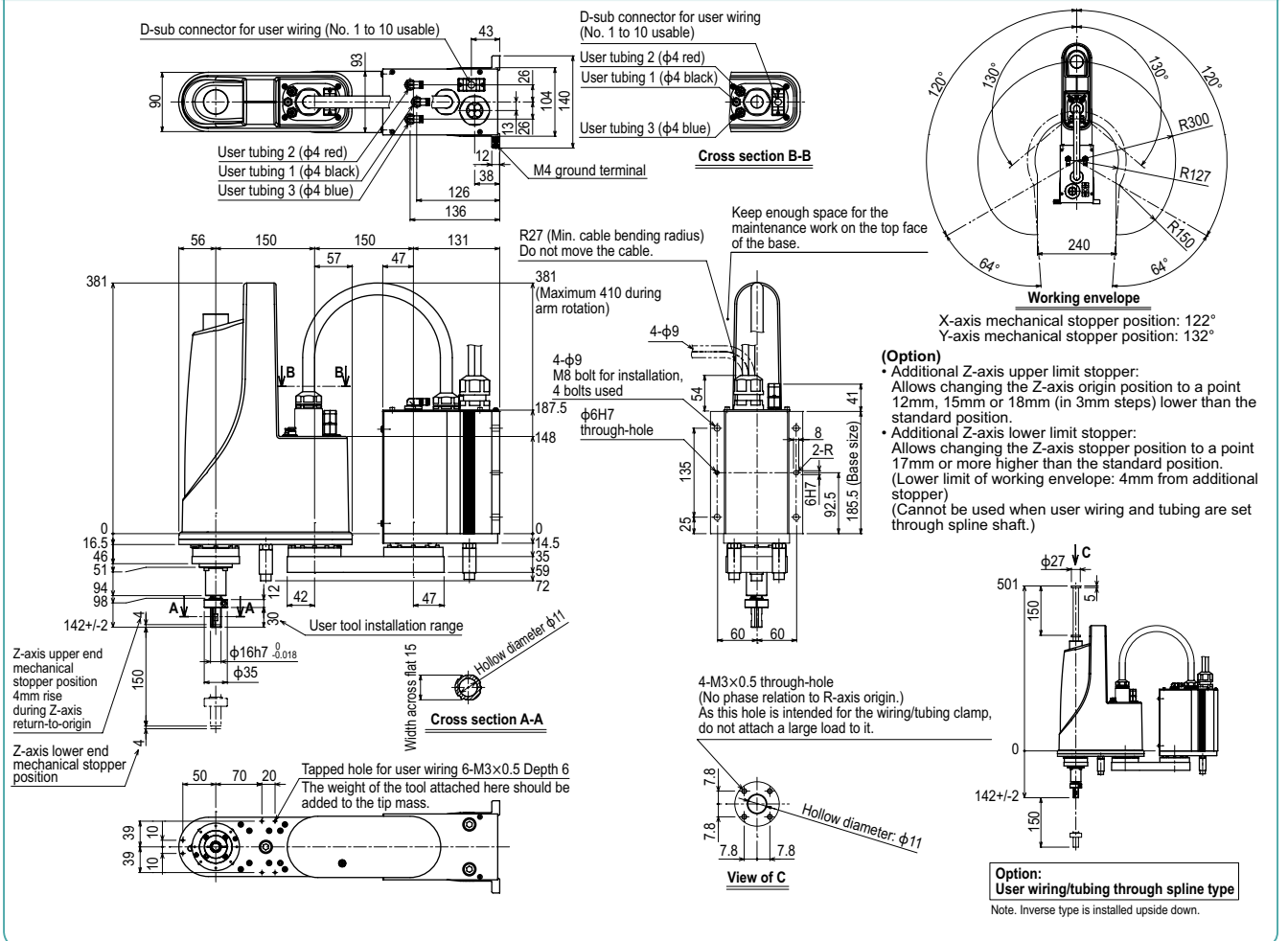
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the position of Y axis mechanical stopper. (The movement range is set to the maximum at the time of shipment.)  
See our robot manuals (installation manuals) for detailed information.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK300XGS



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-assisted single-axis robot  
Robonity  
Compact single-axis robots  
TRANSEURO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Ortho/Extra small type  
Small / Medium type  
Large type  
Wall mount / Inverse type  
Dust-proof & drip-proof type





# YK400XGS

Wall mount / inverse type

● Arm length 400mm ● Maximum payload 5kg Note. Built-to-order product. Contact us for the delivery period.

## Ordering method

**YK400XGS** **150** **RCX340-4**

Model	Installation method <sup>Note1</sup>	Z axis stroke	Tool flange	Hollow shaft	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	W: Wall mount (same as per external view) U: Inverse wall mount (upside down)	150: 150mm	No entry: None F: With tool flange	No entry: None S: With hollow shaft	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

Note 1. When installing the robot, always follow the specifications.  
Do not install the ceiling-mount robot upside down or do not install the inverse type robot to a ceiling.  
Incorrect installation can cause trouble or malfunction.

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	250 mm	150 mm	150 mm	-
	Rotation angle	+/-125 °	+/-144 °	-	+/-360 °
AC servo motor output		200 W	150 W	50 W	100 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer Speed reducer to output	Direct-coupled			
Repeatability <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
Maximum speed		6.1 m/sec	1.1 m/sec	1020 °/sec (wall mount) 720 °/sec (inverse wall mount)	
Maximum payload		5 kg (Standard specification), 4 kg (Option specifications <sup>Note 4</sup> )			
Standard cycle time: with 2kg payload <sup>Note 2</sup>		0.49 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.05 kgm <sup>2</sup>			
User wiring		0.2 sq × 10 wires			
User tubing (Outer diameter)		φ 4 × 3			
Travel limit		1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		20 kg			

Note 1. This is the value at a constant ambient temperature.  
Note 2. When reciprocating 25mm horizontally and 300mm horizontally (with a 2kg payload in rough-positioning arch motion).  
Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
Note 4. Maximum payload of option specifications (with tool flange attached or with user wiring and tubing routed through spline shaft) is 4kg.

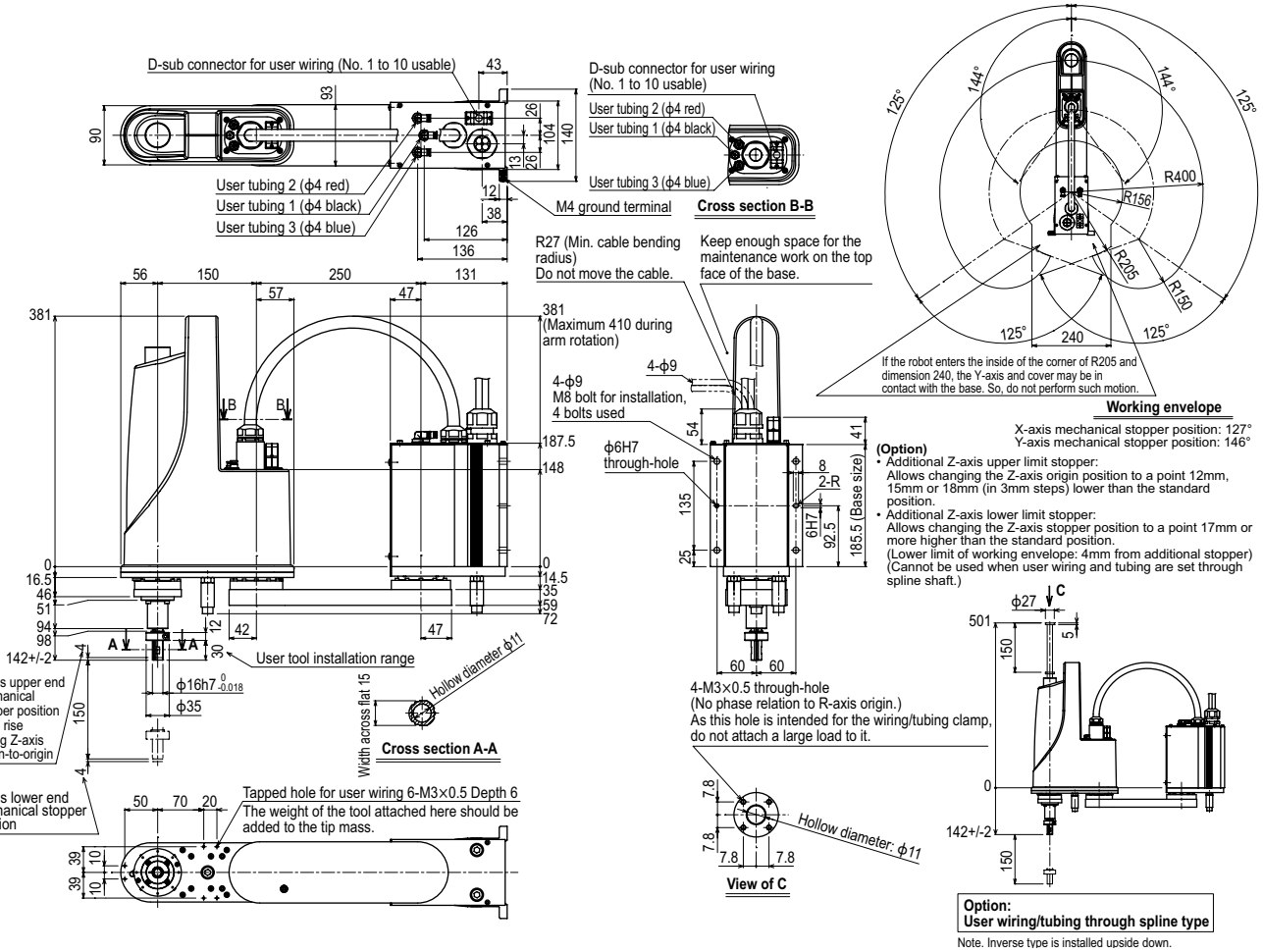
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the position of Y axis mechanical stopper. (The movement range is set to the maximum at the time of shipment.)  
See our robot manuals (installation manuals) for detailed information.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK400XGS



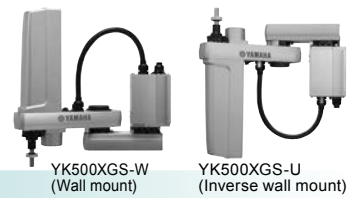
Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEURO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Oht/ Extra small type  
Small / Medium type  
Large type  
Wall mount / Inverse type  
Dust-proof & drip-proof type



# YK500XGS

Wall mount / inverse type

- Arm length 500mm
- Maximum payload 10kg



## Ordering method

**YK500XGS**

**RCX340-4**

Model	Installation method <sup>Note 1</sup>	Z axis stroke	Tool flange	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	W: Wall mount (same as per external view) U: Inverse wall mount (upside down)	200: 200mm 300: 300mm	No entry: None F: With tool flange	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

Note 1. When installing the robot, always follow the specifications.  
Do not install the ceiling-mount robot upside down or do not install the inverse type robot to a ceiling.  
Incorrect installation can cause trouble or malfunction.

## Specifications

Axis specifications	Arm length	X-axis	Y-axis	Z-axis	R-axis
	Rotation angle	200 mm	300 mm	200 mm / 300 mm	-
	AC servo motor output	+/-105 °	+/-125 °	-	+/-360 °
	Deceleration mechanism	400 W	200 W	200 W	200 W
	Transmission method	Direct-coupled			
	Motor to speed reducer	Direct-coupled			
	Speed reducer to output	Direct-coupled			
	Repeatability <sup>Note 1</sup>	+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
	Maximum speed	7.6 m/sec	2.3 m/sec	1.7 m/sec	1700 °/sec (wall mount) 800 °/sec (inverse wall mount)
	Maximum payload	10 kg (Standard type), 9 kg (Tool flange mount type)			
	Standard cycle time: with 2kg payload <sup>Note 2</sup>	0.45 sec			
	R-axis tolerable moment of inertia <sup>Note 3</sup>	0.30 kgm <sup>2</sup>			
	User wiring	0.2 sq × 20 wires			
	User tubing (Outer diameter)	φ 6 × 3			
	Travel limit	1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
	Robot cable length	Standard: 3.5 m Option: 5 m, 10 m			
	Weight	30 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.  
Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
Note. Please consult YAMAHA when connecting other tubes and cables to the self-supporting machine harness.

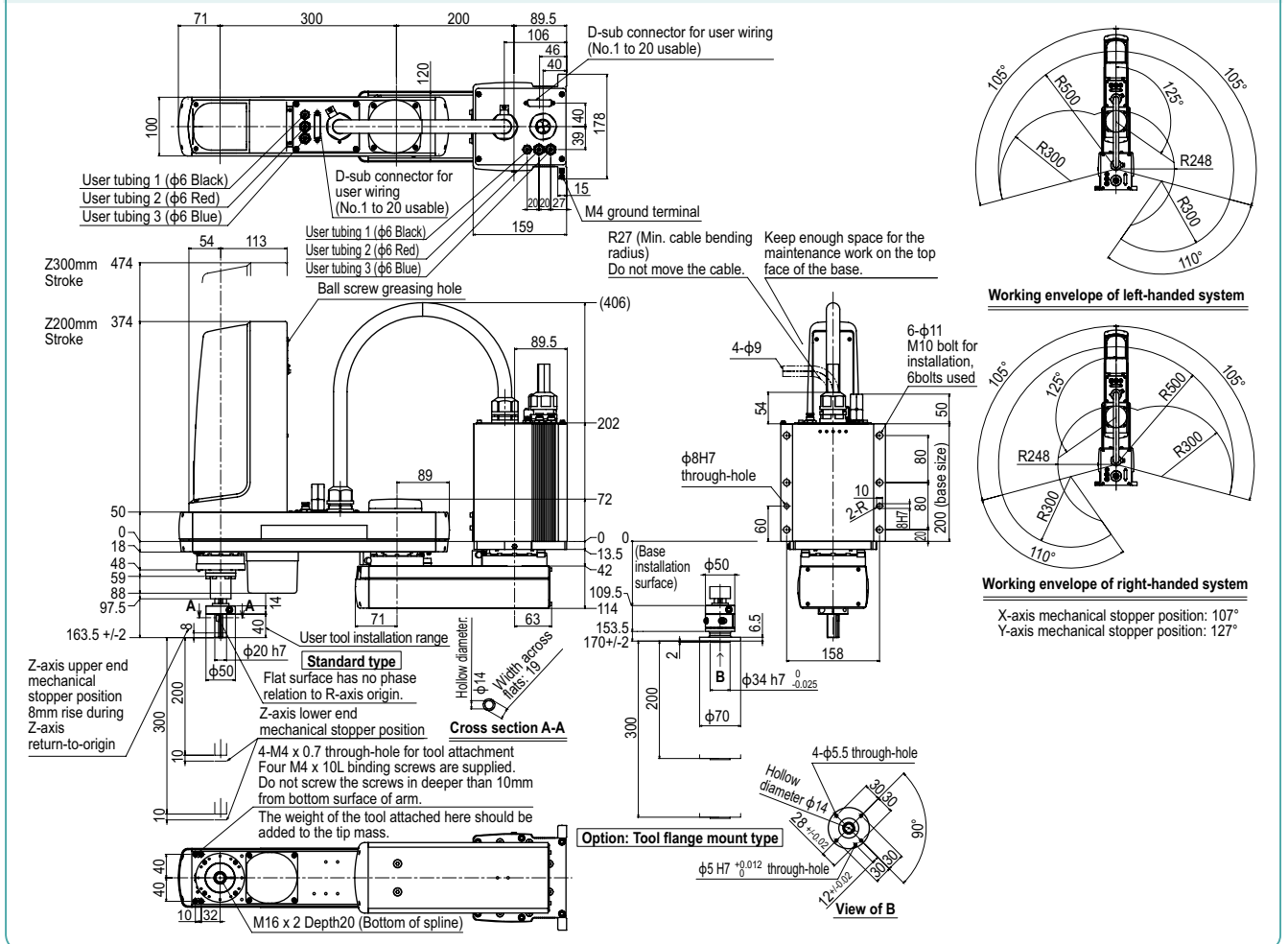
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
See our robot manuals (installation manuals) for detailed information.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK500XGS



# YK600XGS

Wall mount / inverse type



- Arm length 600mm
- Maximum payload 10kg

## Ordering method

<b>YK600XGS</b>				<b>RCX340-4</b>				YK600XGS-W (Wall mount)		YK600XGS-U (Inverse wall mount)		
Model	Installation method <sup>Note 1</sup>	Z axis stroke	Tool flange	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	W: Wall mount (same as per external view) U: Inverse wall mount (upside down)	200: 200mm 300: 300mm	No entry: None F: With tool flange	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

Note 1. When installing the robot, always follow the specifications.  
Do not install the ceiling-mount robot upside down or do not install the inverse type robot to a ceiling.  
Incorrect installation can cause trouble or malfunction.

## Specifications

Axis specifications	Arm length	X-axis	Y-axis	Z-axis	R-axis
	300 mm	300 mm	300 mm	200 mm/300 mm	-
	Rotation angle	+/-130 °	+/-145 °	-	+/-360 °
	AC servo motor output	400 W	200 W	200 W	200 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer	Direct-coupled			
	Speed reducer to output	Direct-coupled			
Repeatability <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.01 mm	+/-0.004 °
Maximum speed		8.4 m/sec	2.3 m/sec	1.7 m/sec	1700 °/sec (wall mount) 800 °/sec (inverse wall mount)
Maximum payload		10 kg (Standard type), 9 kg (Tool flange mount type)			
Standard cycle time: with 2kg payload <sup>Note 2</sup>		0.46 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.30 kgm <sup>2</sup>			
User wiring		0.2 sq × 20 wires			
User tubing (Outer diameter)		φ 6 × 3			
Travel limit		1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		31 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.  
Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
Note. Please consult YAMAHA when connecting other tubes and cables to the self-supporting machine harness.

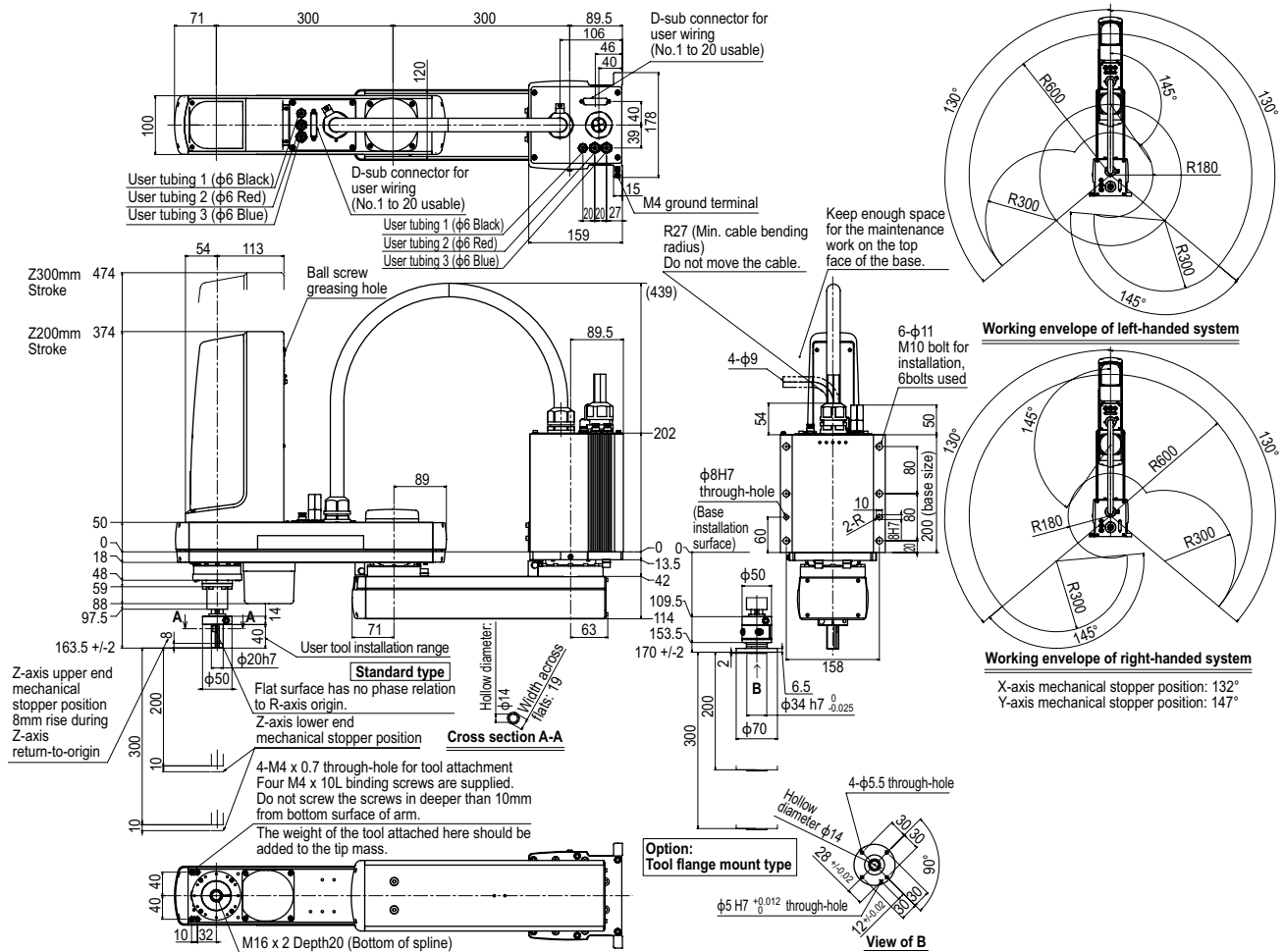
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
See our robot manuals (installation manuals) for detailed information.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK600XGS





# YK700XGS

Wall mount / inverse type

- Arm length 700mm
- Maximum payload 20kg

## Ordering method

<b>YK700XGS</b>					<b>RCX340-4</b>								
<b>Model</b>	<b>Installation method</b> <small>Note 1</small>	<b>Z axis stroke</b>	<b>Tool flange</b>	<b>Cable</b>	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>	
	W: Wall mount (same as per external view) I: Inverse wall mount (upside down)	200: 200mm 400: 400mm	No entry: None F: With tool flange	3L: 3.5m 5L: 5m 10L: 10m									

Specify various controller setting items. RCX340 ▶ **P.566**

Note 1. When installing the robot, always follow the specifications.  
Do not install the ceiling-mount robot upside down or do not install the inverse type robot to a ceiling.  
Incorrect installation can cause trouble or malfunction.

## Specifications

Axis specifications	Arm length	X-axis	Y-axis	Z-axis	R-axis
	<b>Rotation angle</b>	300 mm	400 mm	200 mm/400 mm	-
	<b>AC servo motor output</b>	+/-130 °	+/-130 °	-	+/-360 °
		750 W	400 W	400 W	200 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b>	Direct-coupled			
	<b>Speed reducer to output</b>	Direct-coupled			
<b>Repeatability</b> <small>Note 1</small>		+/-0.02 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		8.4 m/sec	2.3 m/sec	1.7 m/sec	920 °/sec (wall mount) 480 °/sec (inverse wall mount)
<b>Maximum payload</b>		20 kg (Standard type), 19 kg (Tool flange mount type)			
<b>Standard cycle time: with 2kg payload</b> <small>Note 2</small>		0.42 sec			
<b>R-axis tolerable moment of inertia</b> <small>Note 3</small>		1.0 kgm <sup>2</sup>			
<b>User wiring</b>		0.2 sq x 20 wires			
<b>User tubing (Outer diameter)</b>		φ 6 x 3			
<b>Travel limit</b>		1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		Z axis 200 mm: 50 kg Z axis 400 mm: 52 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.  
Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
Note. Please consult YAMAHA when connecting other tubes and cables to the self-supporting machine harness.

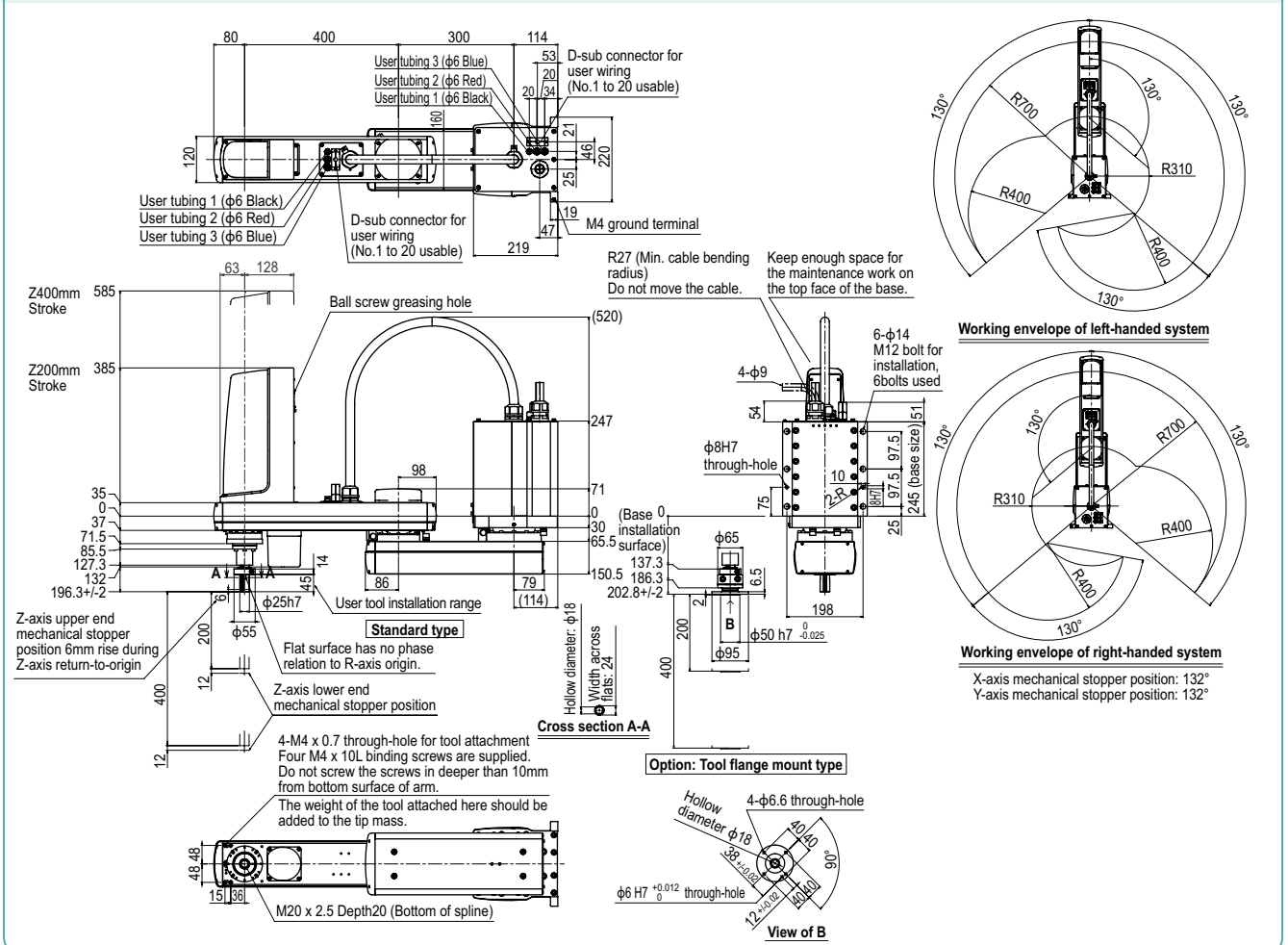
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
See our robot manuals (installation manuals) for detailed information.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK700XGS



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEURO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Extra small type  
Orbit/ Small / Medium type  
Large type  
Wall mount / Inverse type  
Dust-proof & drip-proof type



# YK800XGS

Wall mount / inverse type

- Arm length 800mm
- Maximum payload 20kg

## Ordering method

<b>YK800XGS</b>					<b>RCX340-4</b>										
<b>Model</b>	<b>Installation method</b> <small>Note 1</small>	<b>Z axis stroke</b>	<b>Tool flange</b>	<b>Cable</b>	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>			
	W: Wall mount (same as per external view) U: Inverse wall mount (upside down)	200: 200mm 400: 400mm	No entry: None F: With tool flange	3L: 3.5m 5L: 5m 10L: 10m											

Specify various controller setting items. RCX340 ▶ **P.566**

Note 1. When installing the robot, always follow the specifications.  
Do not install the ceiling-mount robot upside down or do not install the inverse type robot to a ceiling.  
Incorrect installation can cause trouble or malfunction.

## Specifications

Axis specifications	Arm length	X-axis	Y-axis	Z-axis	R-axis
<b>Rotation angle</b>		400 mm	400 mm	200 mm/400 mm	—
<b>AC servo motor output</b>		+/-130 °	+/-145 °	—	+/-360 °
<b>Deceleration mechanism</b>	<b>Transmission method</b>	750 W	400 W	400 W	200 W
	<b>Motor to speed reducer</b>	Direct-coupled			
	<b>Speed reducer to output</b>	Direct-coupled			
<b>Repeatability</b> <small>Note 1</small>		+/-0.02 mm		+/-0.01 mm	+/-0.004 °
<b>Maximum speed</b>		9.2 m/sec		2.3 m/sec 1.7 m/sec	920 °/sec (wall mount) 480 °/sec (inverse wall mount)
<b>Maximum payload</b>		20 kg (Standard type), 19 kg (Tool flange mount type)			
<b>Standard cycle time: with 2kg payload</b> <small>Note 2</small>		0.48 sec			
<b>R-axis tolerable moment of inertia</b> <small>Note 3</small>		1.0 kgm <sup>2</sup>			
<b>User wiring</b>		0.2 sq × 20 wires			
<b>User tubing (Outer diameter)</b>		φ 6 × 3			
<b>Travel limit</b>		1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		Z axis 200 mm: 52 kg Z axis 400 mm: 54 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions.  
Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
Note. Please consult YAMAHA when connecting other tubes and cables to the self-supporting machine harness.

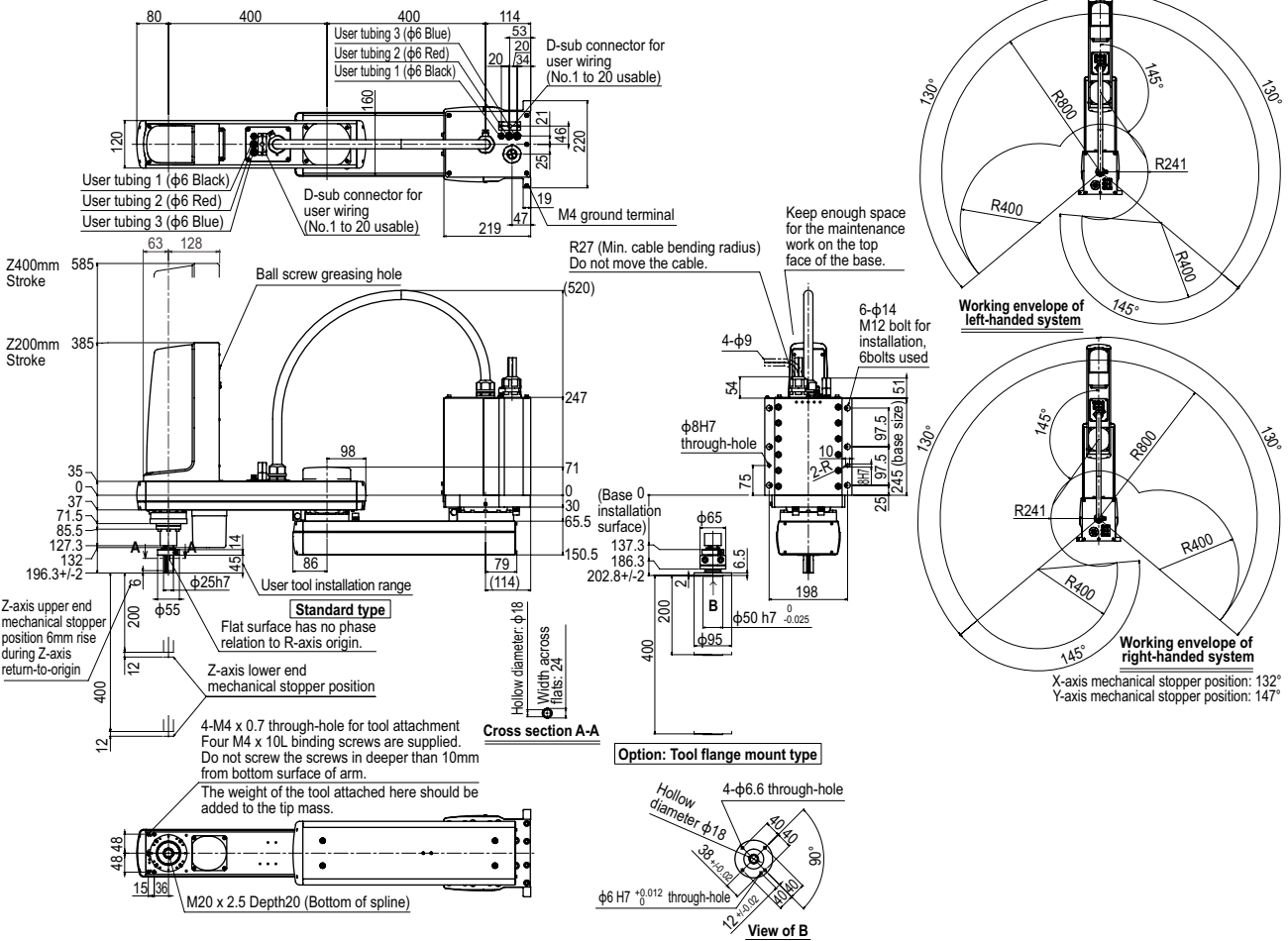
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
See our robot manuals (installation manuals) for detailed information.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK800XGS







# YK250XGP

Dust-proof & drip-proof type



- Arm length 250mm
- Maximum payload 4kg

## Ordering method

**YK250XGP - 150** **S** **RCX340-4**

Model	Z axis stroke	Tool flange	Hollow shaft	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	150: 150mm	No entry: None F: With tool flange	S: With hollow shaft	3L: 3.5m 5L: 5m 10L: 10m								

Specify various axes controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	100 mm	150 mm	150 mm	-
	Rotation angle	+/-129 °	+/-134 °	-	+/-360 °
AC servo motor output		200 W	150 W	50 W	100 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer Speed reducer to output	Direct-coupled			
Repeatability <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
Maximum speed		4.5 m/sec	1.1 m/sec	1020 °/sec	
Maximum payload		4 kg			
Standard cycle time: with 2kg payload <sup>Note 2</sup>		0.50 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.05 kgm <sup>2</sup>			
Protection class <sup>Note 4</sup>		Equivalent to IP65 (IEC 60529)			
User wiring		0.2 sq x 10 wires			
User tubing (Outer diameter)		φ 4 x 4			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		21.5 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)

Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).

Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

Note 4. Do not use robots where the bellows section is directly exposed to water jet. Contact our distributor for information on drip-proof structure preventing liquid other than water.

## Controller

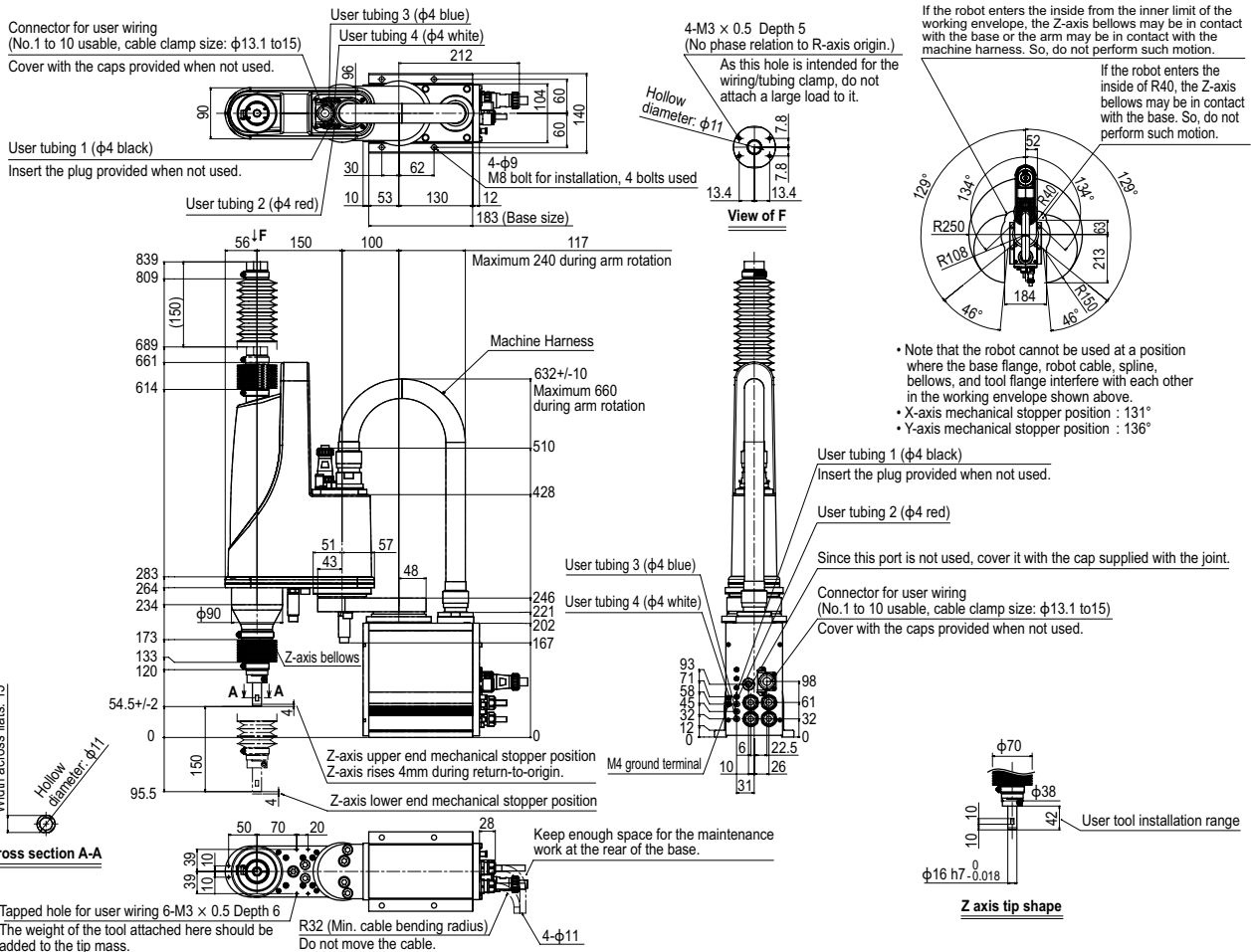
Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.) See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK250XGP







# YK350XGP

Dust-proof & drip-proof type

- Arm length 350mm
- Maximum payload 4kg

## Ordering method

**YK350XGP - 150** **S** **RCX340-4**

<b>Model</b>	<b>Z axis stroke</b> 150: 150mm	<b>Tool flange</b> No entry: None F: With tool flange	<b>Hollow shaft</b> S: With hollow shaft	<b>Cable</b> 3L: 3.5m 5L: 5m 10L: 10m	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
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Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	200 mm	150 mm	150 mm	-
	<b>Rotation angle</b>	+/-129 °	+/-134 °	-	+/-360 °
<b>AC servo motor output</b>		200 W	150 W	50 W	100 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b> <b>Speed reducer to output</b>	Direct-coupled			
<b>Repeatability</b> <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		5.6 m/sec	1.1 m/sec	1020 °/sec	
<b>Maximum payload</b>		4 kg			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.52 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		0.05 kgm <sup>2</sup>			
<b>Protection class</b> <sup>Note 4</sup>		Equivalent to IP65 (IEC 60529)			
<b>User wiring</b>		0.2 sq x 10 wires			
<b>User tubing (Outer diameter)</b>		φ 4 x 4			
<b>Travel limit</b>		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		22 kg			

- Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Do not use robots where the bellows section is directly exposed to water jet. Contact our distributor for information on drip-proof structure preventing liquid other than water.

## Controller

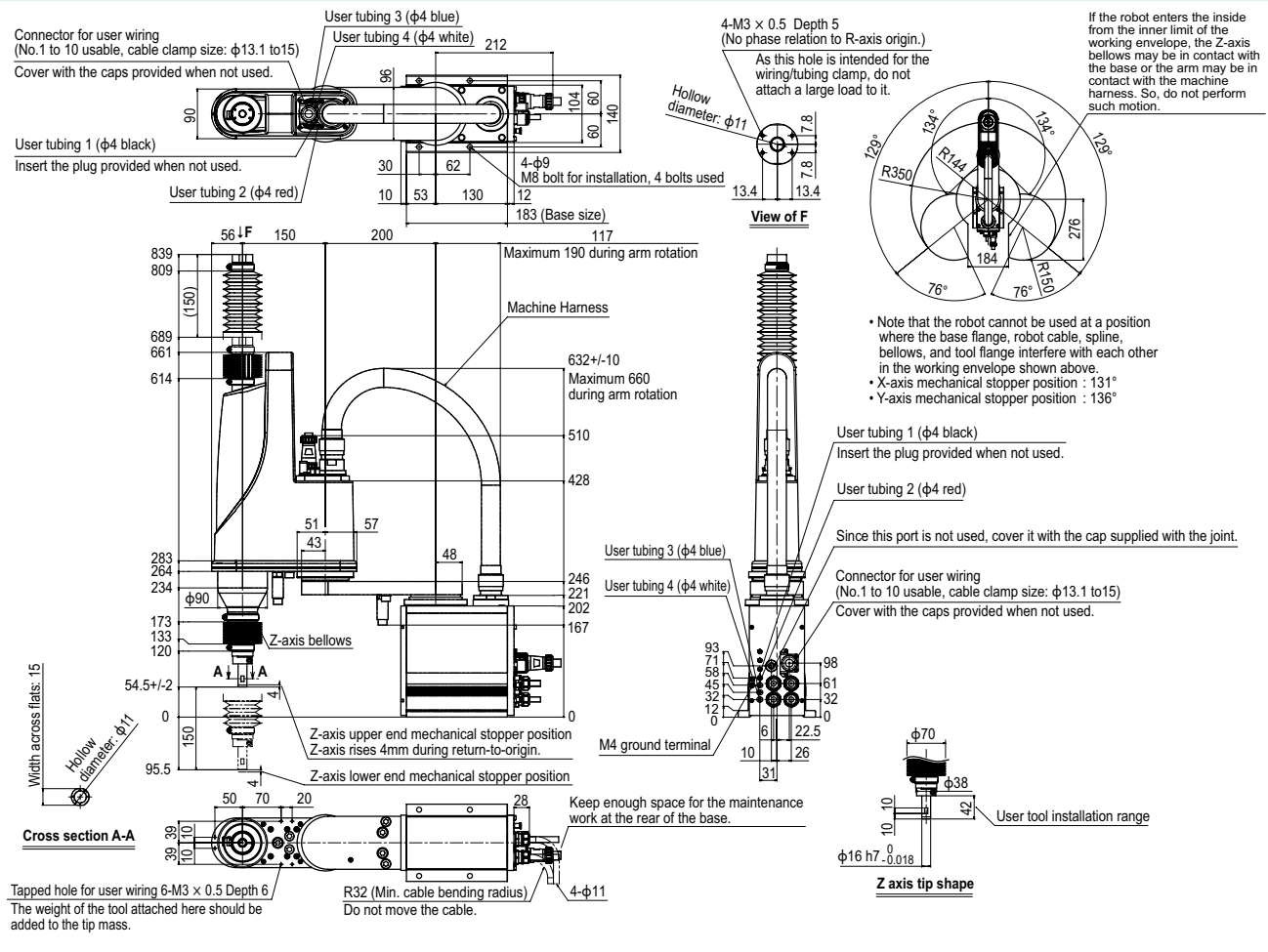
Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

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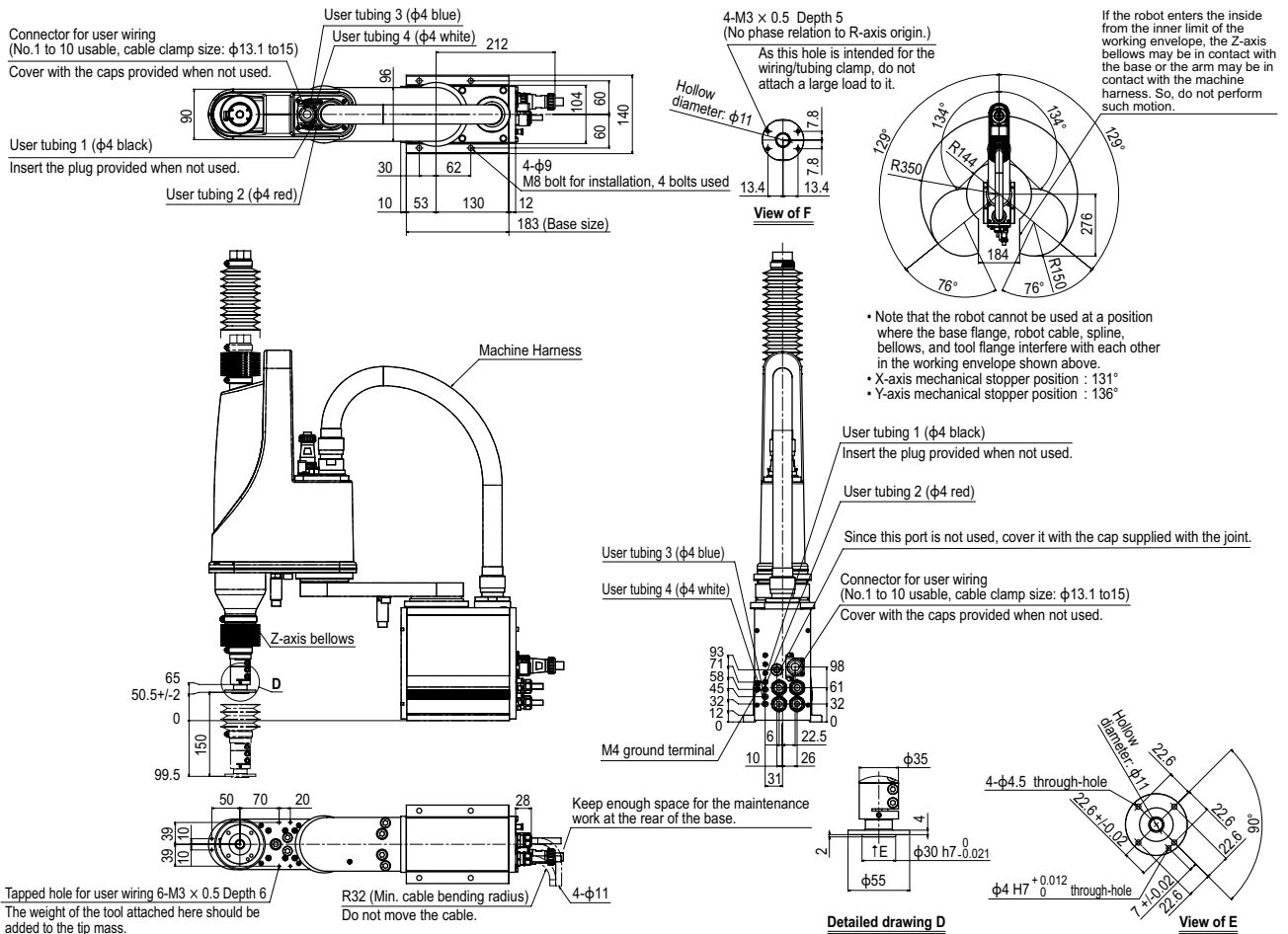
## YK350XGP



Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-assist single axis reducer  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER INFORMATION  
 Orbit/Extra small type  
 Small / Medium type  
 Large type  
 Wall mount / Inverse type  
 Dust-proof & drip-proof type



## YK350XGP Tool flange mount type



# YK400XGP

Dust-proof & drip-proof type



- Arm length 400mm
- Maximum payload 4kg

## Ordering method

**YK400XGP - 150** **S** **RCX340-4**

Model	Z axis stroke	Tool flange	Hollow shaft	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	150: 150mm	No entry: None F: With tool flange	S: With hollow shaft	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	250 mm	150 mm	150 mm	-
	Rotation angle	+/-129 °	+/-144 °	-	+/-360 °
AC servo motor output		200 W	150 W	50 W	100 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer Speed reducer to output	Direct-coupled			
Repeatability <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
Maximum speed		6.1 m/sec	1.1 m/sec	1020 °/sec	
Maximum payload		4 kg			
Standard cycle time: with 2kg payload <sup>Note 2</sup>		0.50 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.05 kgm <sup>2</sup>			
Protection class <sup>Note 4</sup>		Equivalent to IP65 (IEC 60529)			
User wiring		0.2 sq x 10 wires			
User tubing (Outer diameter)		φ 4 x 4			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		22.5 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Do not use robots where the bellows section is directly exposed to water jet. Contact our distributor for information on drip-proof structure preventing liquid other than water.

## Controller

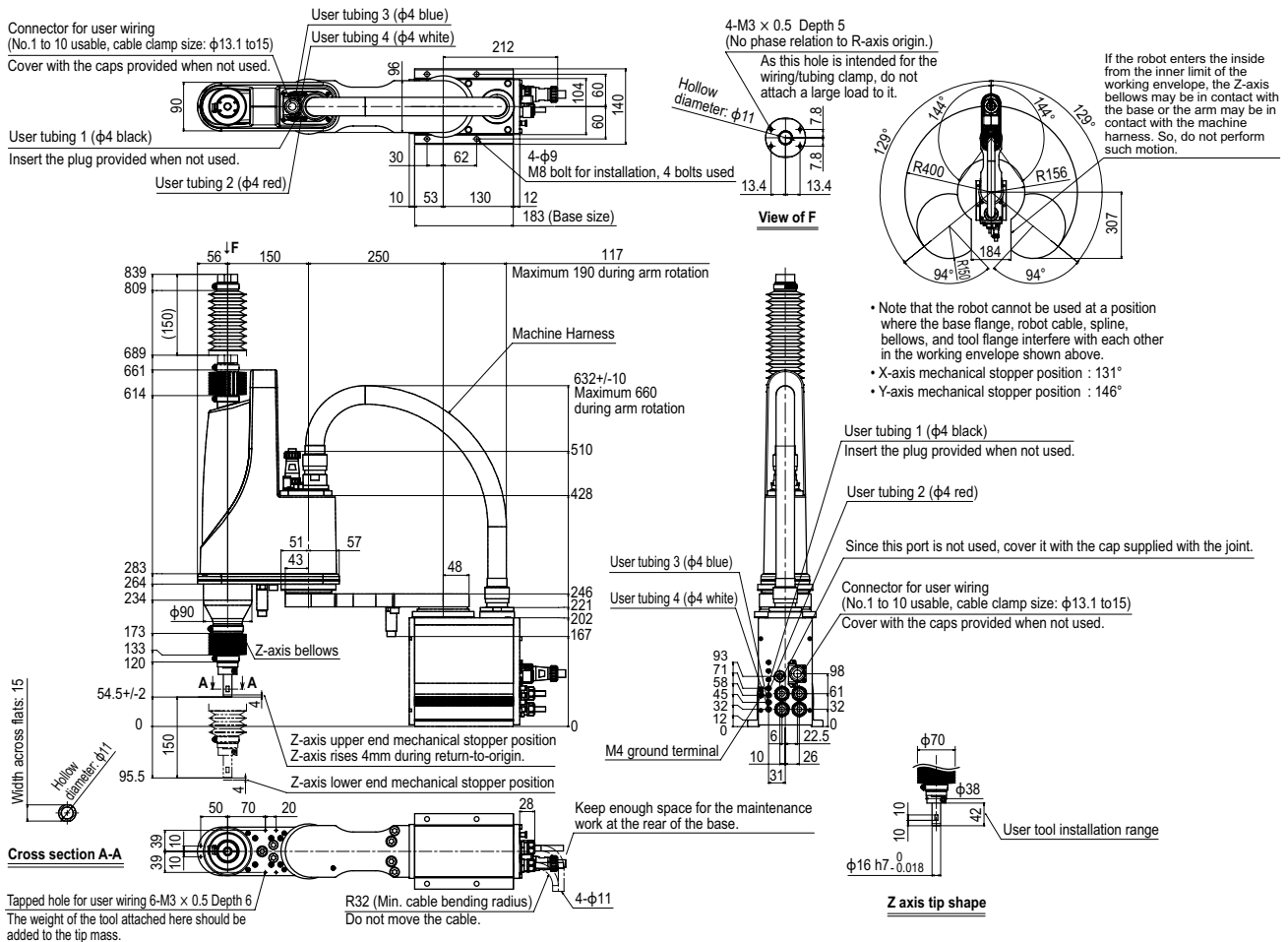
Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK400XGP



Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEURO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

Orbit/Extra small type

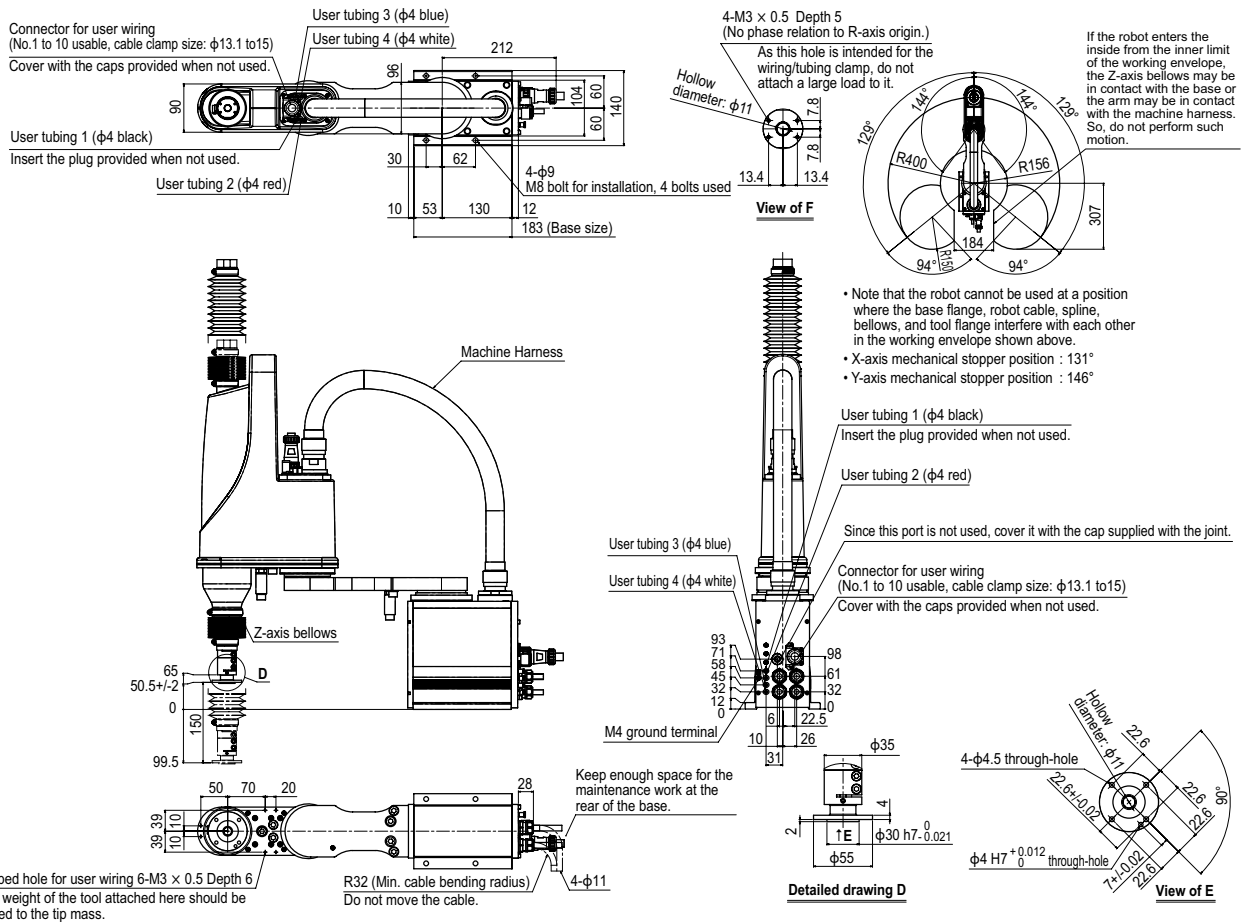
Small / Medium type

Large type

Wall mount / Inverse type

Dust-proof & drip-proof type

## YK400XGP Tool flange mount type



# YK500XGLP

Dust-proof & drip-proof type

- Arm length 500mm
- Maximum payload 4kg

## Ordering method

**YK500XGLP - 150** **S** **RCX340-4**

Model	Z axis stroke	Tool flange	Hollow shaft	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	150: 150mm	No entry: None F: With tool flange	S: With hollow shaft	3L: 3.5m 6L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	250 mm	250 mm	150 mm	-
	Rotation angle	+/-129°	+/-144°	-	+/-360°
AC servo motor output		200 W	150 W	50 W	100 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer Speed reducer to output	Direct-coupled			
Repeatability <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004°	
Maximum speed		5.1 m/sec	1.1 m/sec	1020 °/sec	
Maximum payload		4 kg			
Standard cycle time: with 2kg payload <sup>Note 2</sup>		0.66 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.05 kgm <sup>2</sup>			
Protection class <sup>Note 4</sup>		Equivalent to IP65 (IEC 60529)			
User wiring		0.2 sq x 10 wires			
User tubing (Outer diameter)		φ 4 x 4			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		25 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)

Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).

Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

Note 4. Do not use robots where the bellows section is directly exposed to water jet. Contact our distributor for information on drip-proof structure preventing liquid other than water.

## Controller

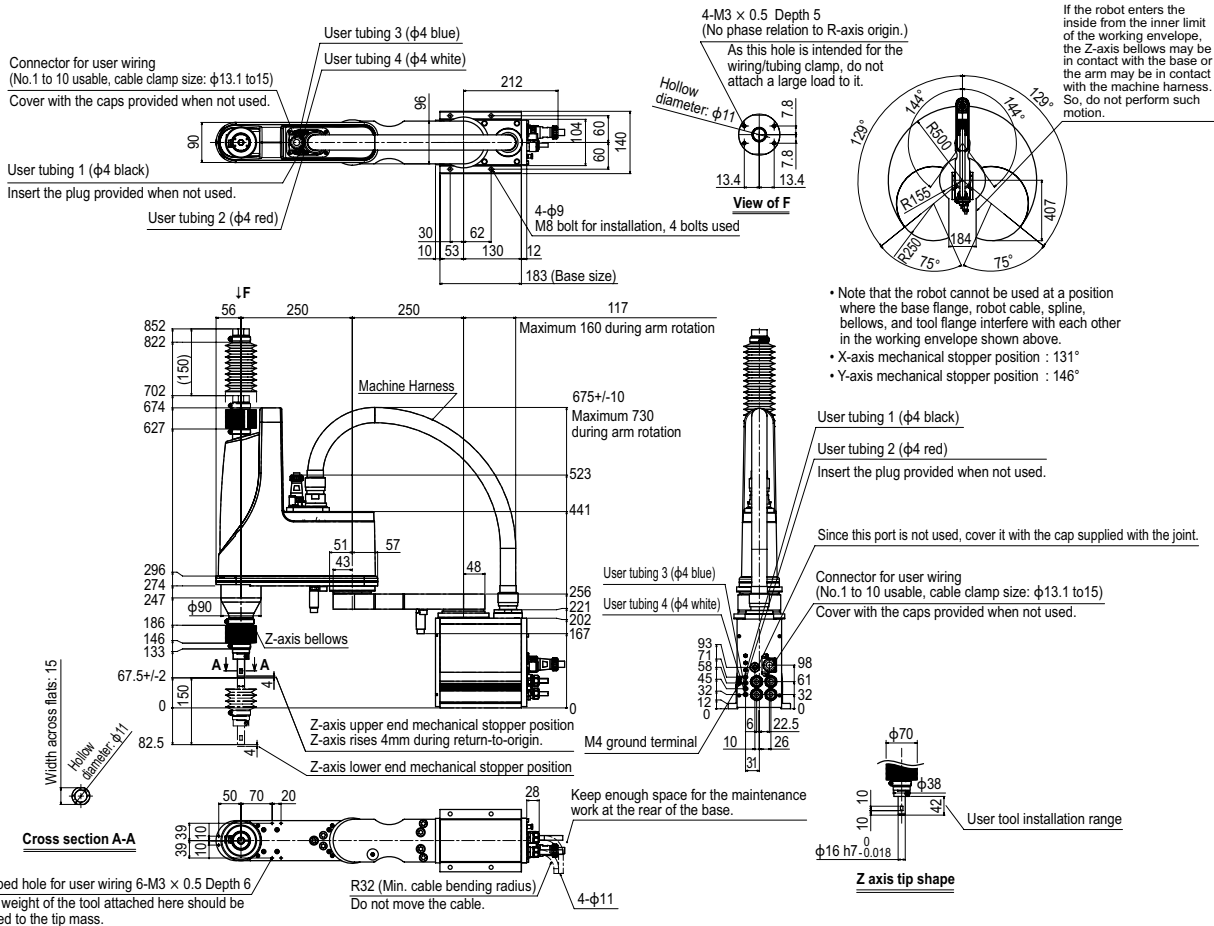
Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

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## YK500XGLP



Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis reducer  
Robonity

Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

Orbit/Extra small type

Small / Medium type

Large type

Wall mount / Inverse type

Dust-proof & drip-proof type

Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEURO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

Orbit/Extra small type

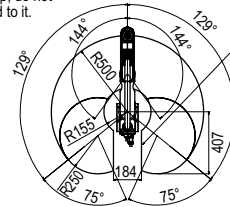
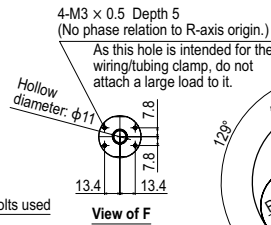
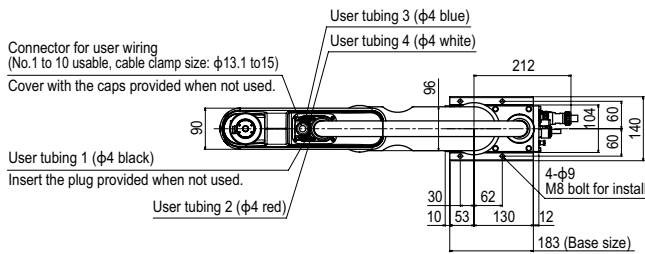
Small / Medium type

Large type

Wall mount / Inverse type

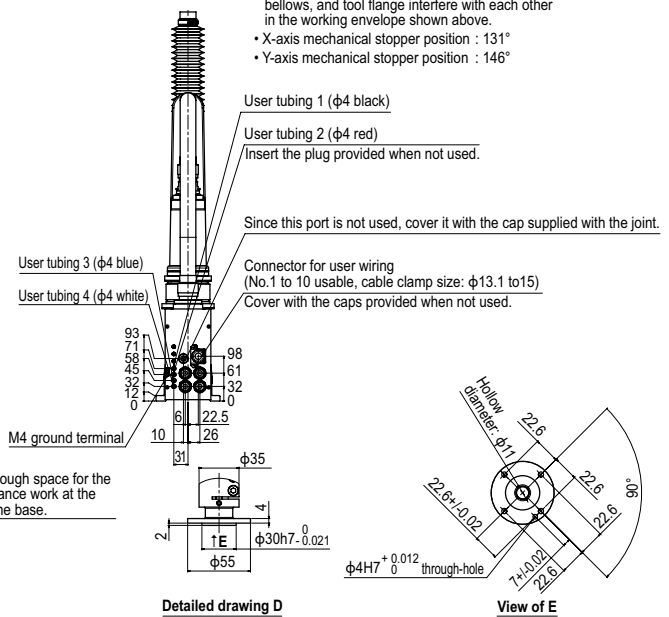
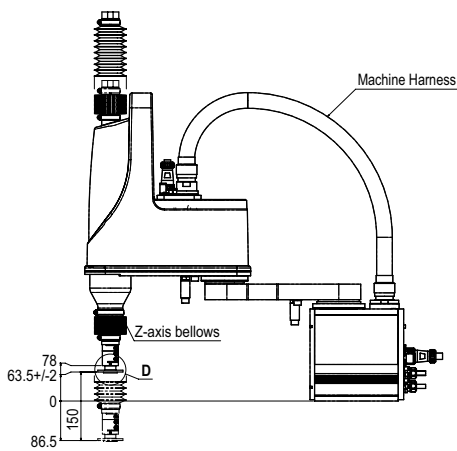
Dust-proof & drip-proof type

## YK500XGLP Tool flange mount type



If the robot enters the inside from the inner limit of the working envelope, the Z-axis bellows may be in contact with the base or the arm may be in contact with the machine harness. So, do not perform such motion.

- Note that the robot cannot be used at a position where the base flange, robot cable, spline, bellows, and tool flange interfere with each other in the working envelope shown above.
- X-axis mechanical stopper position :  $131^\circ$
- Y-axis mechanical stopper position :  $146^\circ$



Tapped hole for user wiring 6-M3 x 0.5 Depth 6  
The weight of the tool attached here should be added to the tip mass.

Keep enough space for the maintenance work at the rear of the base.

R32 (Min. cable bending radius)  
Do not move the cable.

4- $\phi 11$



# YK500XGP

Dust-proof & drip-proof type

- Arm length 500mm
- Maximum payload 10kg

## Ordering method

<b>YK500XGP</b>		<b>F</b>		<b>RCX340-4</b>							
<b>Model</b>	<b>Z axis stroke</b>	<b>Tool flange</b>	<b>Cable</b>	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
	200: 200mm 300: 300mm	F: With tool flange	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	200 mm	300 mm	200 mm / 300 mm	—
	<b>Rotation angle</b>	+/-130 °	+/-145 °	—	+/-360 °
<b>AC servo motor output</b>		400 W	200 W	200 W	200 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b> <b>Speed reducer to output</b>	Direct-coupled			
<b>Repeatability</b> <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		7.6 m/sec	2.3 m/sec / 1.7 m/sec	1700 °/sec	
<b>Maximum payload</b>		10 kg			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.55 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		0.3 kgm <sup>2</sup>			
<b>Protection class</b> <sup>Note 4</sup>		Equivalent to IP65 (IEC 60529)			
<b>User wiring</b>		0.2 sq × 20 wires			
<b>User tubing (Outer diameter)</b>		φ 6 × 3			
<b>Travel limit</b>		1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		Z axis 200 mm: 32 kg Z axis 300 mm: 33 kg			

- Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Do not use robots where the bellows section is directly exposed to water jet. Contact our distributor for information on drip-proof structure preventing liquid other than water.

## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

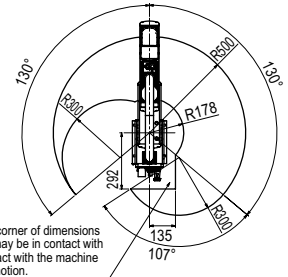
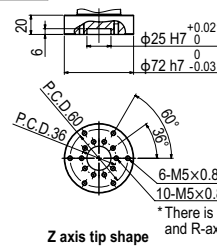
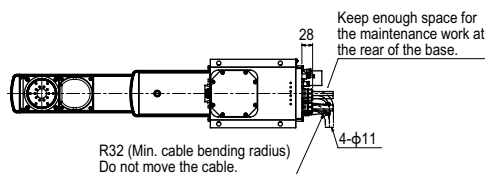
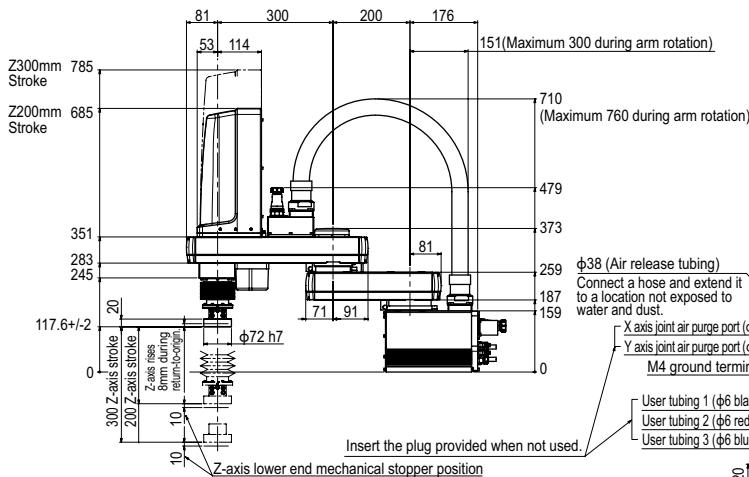
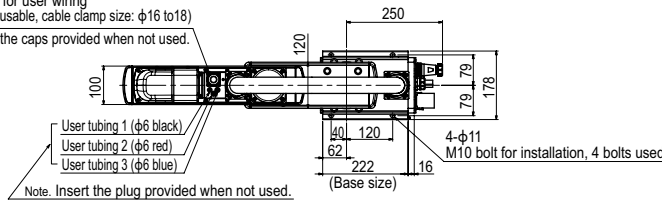
Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

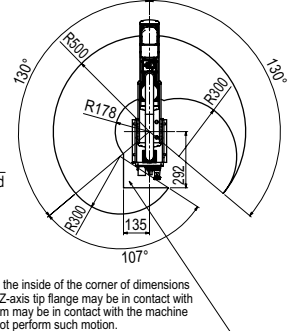
Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK500XGP

Connector for user wiring (No.1 to 20 usable, cable clamp size: φ16 to 18)  
 Cover with the caps provided when not used.



Working envelope of left-handed system



Working envelope of right-handed system

- Note that the robot cannot be used at a position where the base flange, robot cable, spline, and bellows interfere with each other in the working envelope shown above.
- X-axis mechanical stopper position : 132°
- Y-axis mechanical stopper position : 147°

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Oht/Extra small type  
Small / Medium type  
Large type  
Wall mount / Inverse type  
Dust-proof & drip-proof type

# YK600XGLP

Dust-proof & drip-proof type

- Arm length 600mm
- Maximum payload 4kg

## Ordering method

**YK600XGLP-150** **S** **RCX340-4**

Model	Z axis stroke	Tool flange	Hollow shaft	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	150: 150mm	No entry: None F: With tool flange	S: With hollow shaft	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	350 mm	250 mm	150 mm	-
	Rotation angle	+/-129 °	+/-144 °	-	+/-360 °
AC servo motor output		200 W	150 W	50 W	100 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer Speed reducer to output	Direct-coupled			
Repeatability <sup>Note 1</sup>		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
Maximum speed		4.9 m/sec	1.1 m/sec	1020 °/sec	
Maximum payload		4 kg			
Standard cycle time: with 2kg payload <sup>Note 2</sup>		0.71 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.05 kgm <sup>2</sup>			
Protection class <sup>Note 4</sup>		Equivalent to IP65 (IEC 60529)			
User wiring (sq × wires)		0.2 × 10			
User tubing (Outer diameter)		φ 4 × 4			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		26 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Do not use robots where the bellows section is directly exposed to water jet. Contact our distributor for information on drip-proof structure preventing liquid other than water.

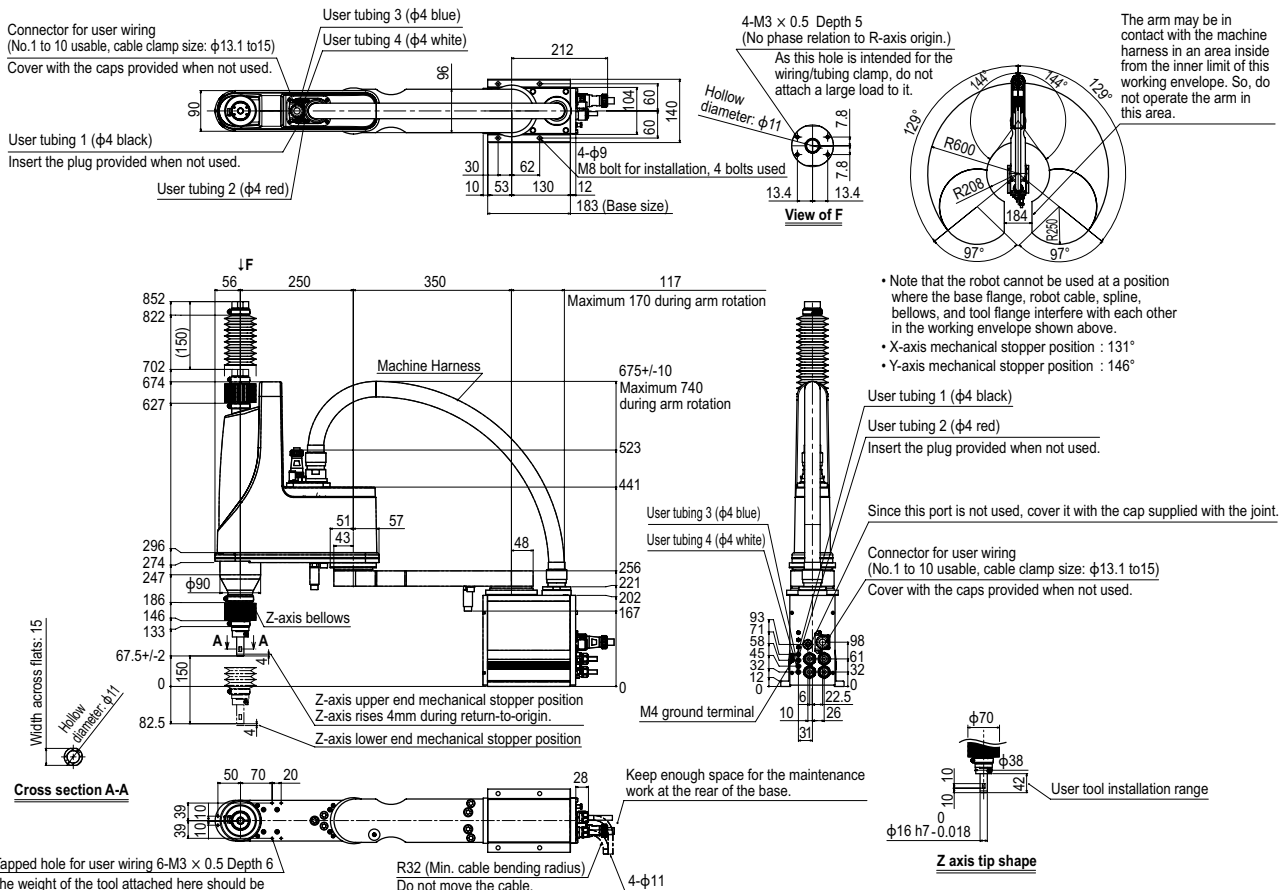
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.  
 Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

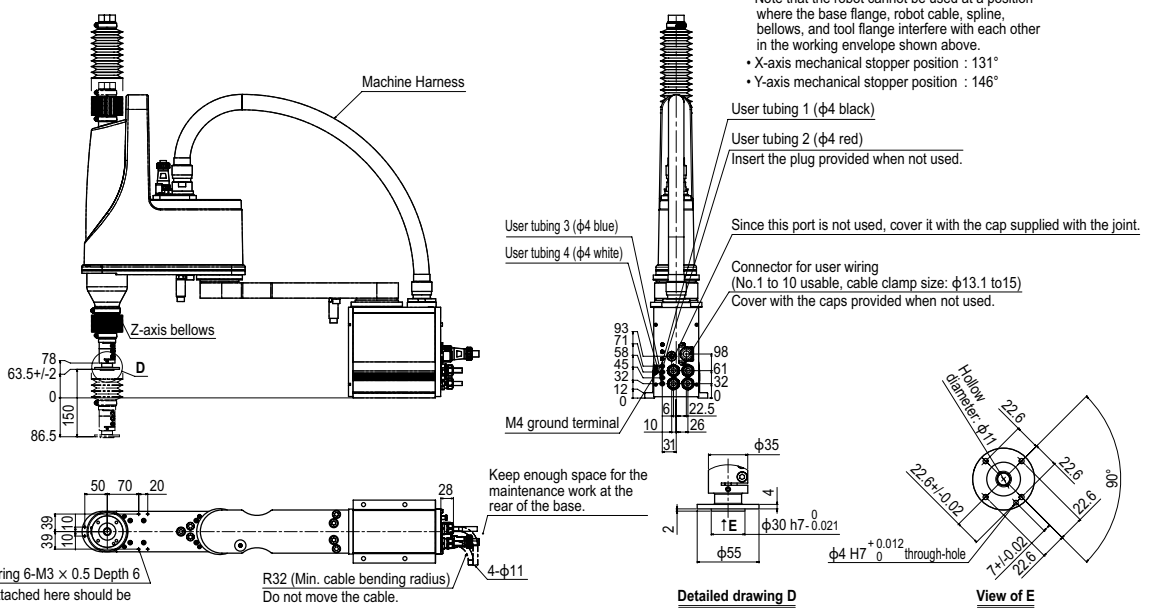
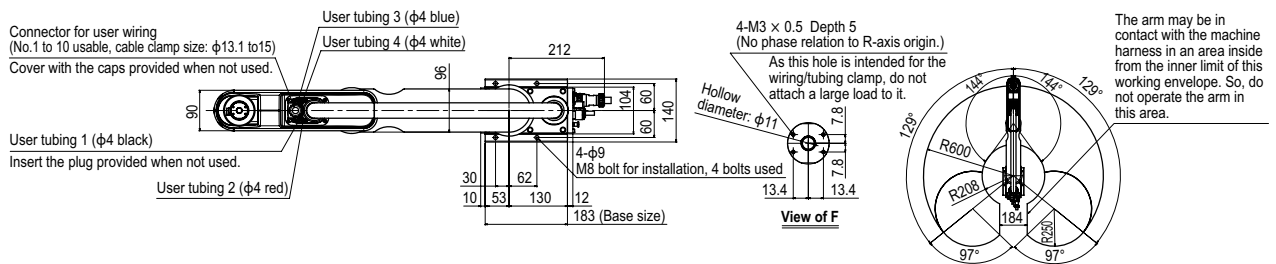
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## YK600XGLP



Articulated robots
YA
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SCARA robots
YK-X
Pick & place
YP-X
CLEAN
CONTROLLER INFORMATION
Orbit/ Extra small type
Small / Medium type
Large type
Wall mount / Inverse type
Dust-proof & drip-proof type

## YK600XGLP Tool flange mount type



# YK600XGP

Dust-proof & drip-proof type

- Arm length 600mm
- Maximum payload 10kg

## Ordering method

<b>YK600XGP</b>	<b>F</b>	<b>RCX340-4</b>									
<b>Model</b>	<b>Z axis stroke</b>	<b>Tool flange</b>	<b>Cable</b>	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
	200: 200mm 300: 300mm	F: With tool flange	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	300 mm	300 mm	200 mm / 300 mm	-
	<b>Rotation angle</b>	+/-130 °	+/-145 °	-	+/-360 °
<b>AC servo motor output</b>		400 W	200 W	200 W	200 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b>	Direct-coupled			
<b>Repeatability</b> <small>Note 1</small>	<b>Speed reducer to output</b>	Direct-coupled			
		+/-0.01 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		8.4 m/sec	2.3 m/sec	1.7 m/sec	1700 °/sec
<b>Maximum payload</b>		10 kg			
<b>Standard cycle time: with 2kg payload</b> <small>Note 2</small>		0.56 sec			
<b>R-axis tolerable moment of inertia</b> <small>Note 3</small>		0.3 kgm <sup>2</sup>			
<b>Protection class</b> <small>Note 4</small>		Equivalent to IP65 (IEC 60529)			
<b>User wiring (sq × wires)</b>		0.2 × 20			
<b>User tubing (Outer diameter)</b>		φ 6 × 3			
<b>Travel limit</b>		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		Z axis 200 mm: 33 kg Z axis 300 mm: 34 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Do not use robots where the bellows section is directly exposed to water jet. Contact our distributor for information on drip-proof structure preventing liquid other than water.

## Controller

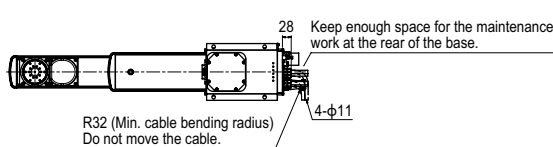
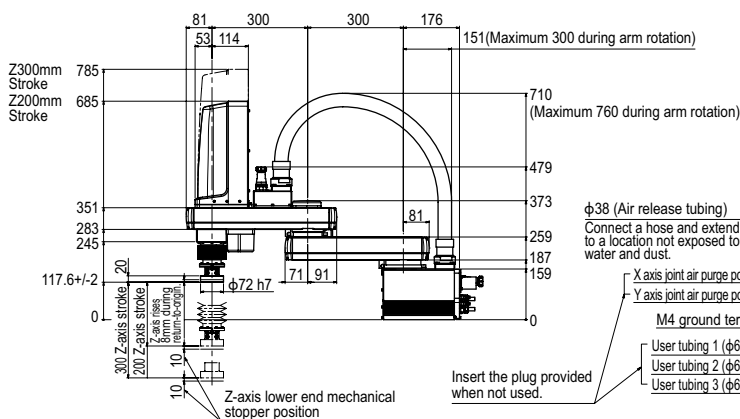
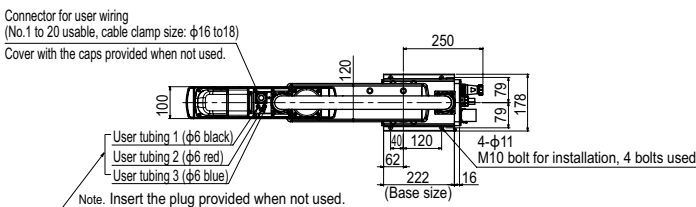
Controller	Power capacity (VA)	Operation method
RCX340	1700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

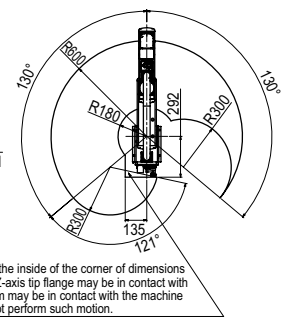
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## YK600XGP



If the robot enters the inside of the corner of dimensions 135 and 292, the Z-axis tip flange may be in contact with the base or the arm may be in contact with the machine harness. So, do not perform such motion.

### Working envelope of left-handed system



### Working envelope of right-handed system

- Note that the robot cannot be used at a position where the base flange, robot cable, spline, and bellows interfere with each other in the working envelope shown above.
- X-axis mechanical stopper position : 132°
- Y-axis mechanical stopper position : 147°

### Z axis tip shape





# YK700XGP

Dust-proof & drip-proof type



- Arm length 700mm
- Maximum payload 20kg

## Ordering method

<b>YK700XGP</b>		<b>F</b>		<b>RCX340-4</b>							
<b>Model</b>	<b>Z axis stroke</b>	<b>Tool flange</b>	<b>Cable</b>	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
	200: 200mm 400: 400mm	F: With tool flange	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	300 mm	400 mm	200 mm	400 mm
	<b>Rotation angle</b>	+/-130 °	+/-150 °	-	+/-360 °
<b>AC servo motor output</b>		750 W	400 W	400 W	200 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b>	Direct-coupled			
<b>Repeatability</b> <sup>Note 1</sup>	<b>Speed reducer to output</b>	Direct-coupled			
		+/-0.02 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		8.4 m/sec	2.3 m/sec	1.7 m/sec	920 °/sec
<b>Maximum payload</b>		20 kg			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.52 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		1.0 kgm <sup>2</sup>			
<b>Protection class</b> <sup>Note 4</sup>		Equivalent to IP65 (IEC 60529)			
<b>User wiring</b>		0.2 sq × 20 wires			
<b>User tubing (Outer diameter)</b>		φ 6 × 3			
<b>Travel limit</b>		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		Z axis 200 mm: 54 kg Z axis 400 mm: 56 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Do not use robots where the bellows section is directly exposed to water jet. Contact our distributor for information on drip-proof structure preventing liquid other than water.

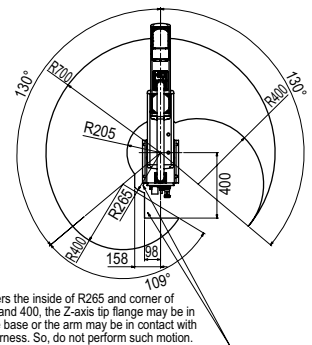
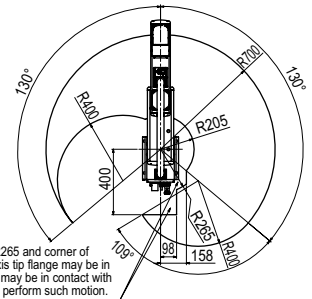
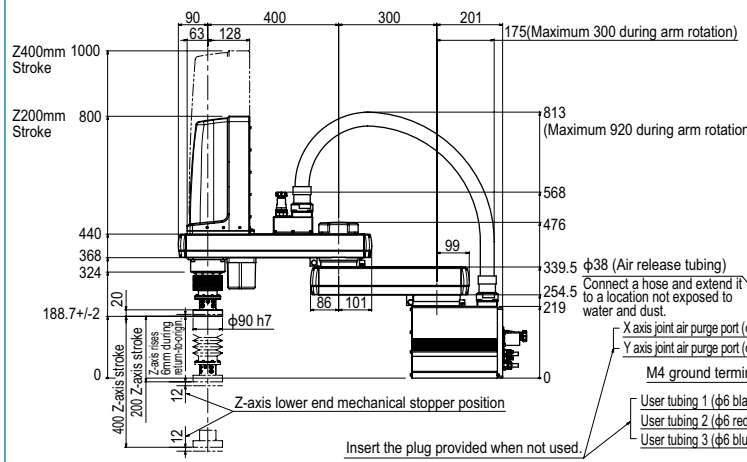
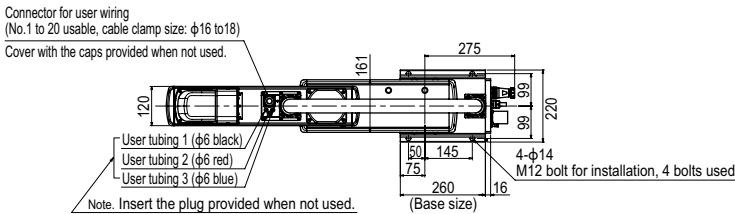
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

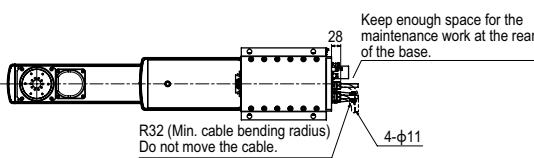
Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.  
 Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK700XGP



- Note that the robot cannot be used at a position where the base flange, robot cable, spline, and bellows interfere with each other in the working envelope shown above.
- X-axis mechanical stopper position : 132°
- Y-axis mechanical stopper position : 152°



# YK800XGP

Dust-proof & drip-proof type

- Arm length 800mm
- Maximum payload 20kg

## Ordering method

<b>YK800XGP</b>		<b>F</b>		<b>RCX340-4</b>							
<b>Model</b>	<b>Z axis stroke</b>	<b>Tool flange</b>	<b>Cable</b>	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
	200: 200mm 400: 400mm	F: With tool flange	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	400 mm	400 mm	200 mm / 400 mm	—
	<b>Rotation angle</b>	+/-130 °	+/-150 °	—	+/-360 °
<b>AC servo motor output</b>		750 W	400 W	400 W	200 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b> <b>Speed reducer to output</b>	Direct-coupled			
<b>Repeatability</b> <sup>Note 1</sup>		+/-0.02 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		9.2 m/sec	2.3 m/sec / 1.7 m/sec	920 °/sec	
<b>Maximum payload</b>		20 kg			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.58 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		1.0 kgm <sup>2</sup>			
<b>Protection class</b> <sup>Note 4</sup>		Equivalent to IP65 (IEC 60529)			
<b>User wiring</b>		0.2 sq × 20 wires			
<b>User tubing (Outer diameter)</b>		φ 6 × 3			
<b>Travel limit</b>		1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		Z axis 200 mm: 56 kg Z axis 400 mm: 58 kg			

- Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Do not use robots where the bellows section is directly exposed to water jet. Contact our distributor for information on drip-proof structure preventing liquid other than water.

## Controller

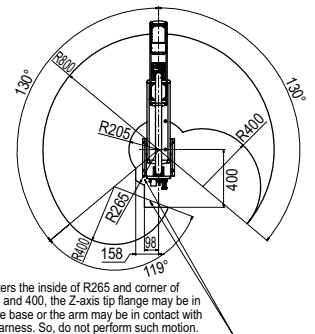
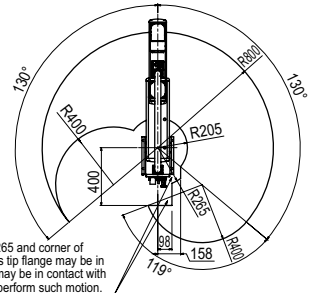
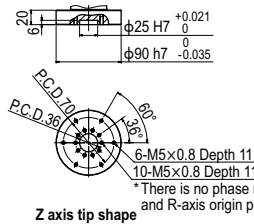
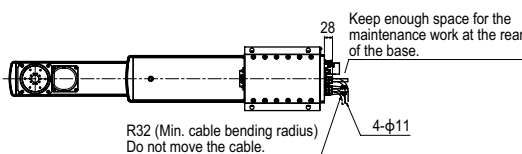
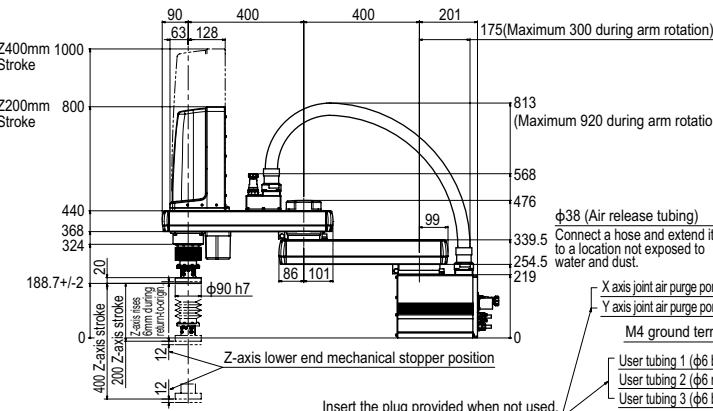
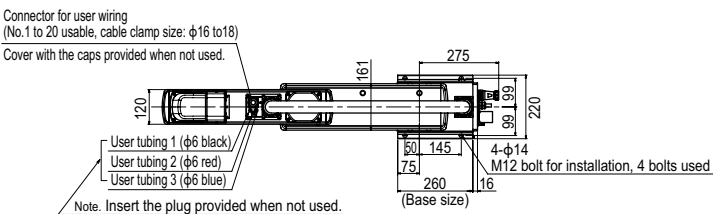
Controller	Power capacity (VA)	Operation method
RCX340	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK800XGP



- Working envelope of right-handed system**
- Note that the robot cannot be used at a position where the base flange, robot cable, spline, and bellows interfere with each other in the working envelope shown above.
  - X-axis mechanical stopper position : 132°
  - Y-axis mechanical stopper position : 152°

Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-assist single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER INFORMATION  
 Extra small type  
 Oht/ Medium type  
 Small / Large type  
 Inverse type  
 Wall mount / Inverse type  
 Dust-proof & drip-proof type

# YK900XGP

Dust-proof & drip-proof type

- Arm length 900mm
- Maximum payload 20kg

## Ordering method

**YK900XGP** **F** **RCX340-4**

Model	Z axis stroke	Tool flange	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	200: 200mm 400: 400mm	F: With tool flange	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	500 mm	400 mm	200 mm	400 mm
	Rotation angle	+/-130 °	+/-150 °	-	+/-360 °
AC servo motor output		750 W	400 W	400 W	200 W
Deceleration mechanism	Transmission method	Direct-coupled			
	Motor to speed reducer	Direct-coupled			
Repeatability	Speed reducer to output	Direct-coupled			
	Note 1	+/-0.02 mm	+/-0.01 mm	+/-0.004 °	
Maximum speed		9.9 m/sec	2.3 m/sec	1.7 m/sec	920 °/sec
Maximum payload		20 kg			
Standard cycle time: with 2kg payload		0.59 sec			
R-axis tolerable moment of inertia		1.0 kgm <sup>2</sup>			
Protection class		Equivalent to IP65 (IEC 60529)			
User wiring (sq × wires)		0.2 × 20			
User tubing (Outer diameter)		φ 6 × 3			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		Z axis 200 mm: 58 kg Z axis 400 mm: 60 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Do not use robots where the bellows section is directly exposed to water jet. Contact our distributor for information on drip-proof structure preventing liquid other than water.

## Controller

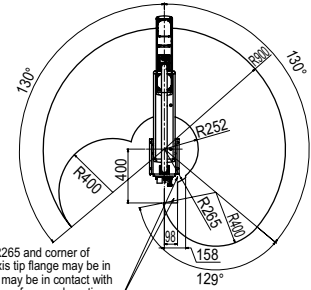
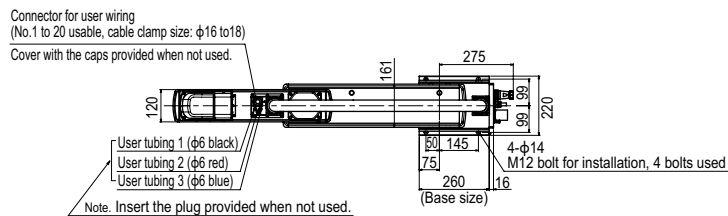
Controller	Power capacity (VA)	Operation method
RCX340	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.

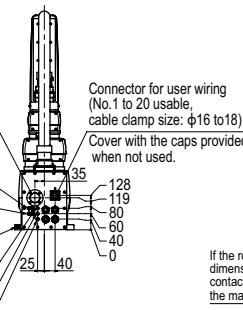
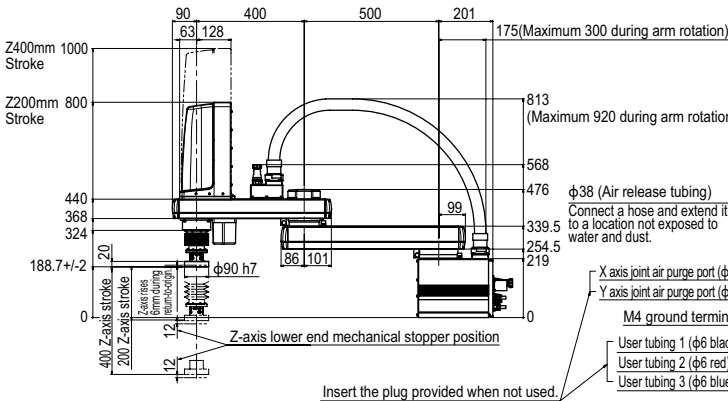
Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
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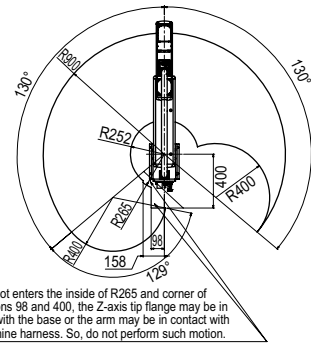
## YK900XGP



Working envelope of left-handed system



Z axis tip shape



Working envelope of right-handed system

- Note that the robot cannot be used at a position where the base flange, robot cable, spline, and bellows interfere with each other in the working envelope shown above.
- X-axis mechanical stopper position : 132°
- Y-axis mechanical stopper position : 152°

# YK1000XGP

Dust-proof & drip-proof type

- Arm length 1000mm
- Maximum payload 20kg

## Ordering method

<b>YK1000XGP</b>		<b>F</b>		<b>RCX340-4</b>							
<b>Model</b>	<b>Z axis stroke</b>	<b>Tool flange</b>	<b>Cable</b>	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
	200: 200mm 400: 400mm	F: With tool flange	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
<b>Axis specifications</b>	<b>Arm length</b>	600 mm	400 mm	200 mm	—
	<b>Rotation angle</b>	+/-130 °	+/-150 °	—	+/-360 °
<b>AC servo motor output</b>		750 W	400 W	400 W	200 W
<b>Deceleration mechanism</b>	<b>Transmission method</b>	Direct-coupled			
	<b>Motor to speed reducer</b> <b>Speed reducer to output</b>	Direct-coupled			
<b>Repeatability</b> <sup>Note 1</sup>		+/-0.02 mm	+/-0.01 mm	+/-0.004 °	
<b>Maximum speed</b>		10.6 m/sec	2.3 m/sec	1.7 m/sec	920 °/sec
<b>Maximum payload</b>		20 kg			
<b>Standard cycle time: with 2kg payload</b> <sup>Note 2</sup>		0.59 sec			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup>		1.0 kgm <sup>2</sup>			
<b>Protection class</b> <sup>Note 4</sup>		Equivalent to IP65 (IEC 60529)			
<b>User wiring (sq × wires)</b>		0.2 × 20			
<b>User tubing (Outer diameter)</b>		φ 6 × 3			
<b>Travel limit</b>		1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
<b>Robot cable length</b>		Standard: 3.5 m Option: 5 m, 10 m			
<b>Weight</b>		Z axis 200 mm: 60 kg Z axis 400 mm: 62 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)

Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).

Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

Note 4. Do not use robots where the bellows section is directly exposed to water jet. Contact our distributor for information on drip-proof structure preventing liquid other than water.

## Controller

Controller	Power capacity (VA)	Operation method
RCX340	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.) See our robot manuals (installation manuals) for detailed information.

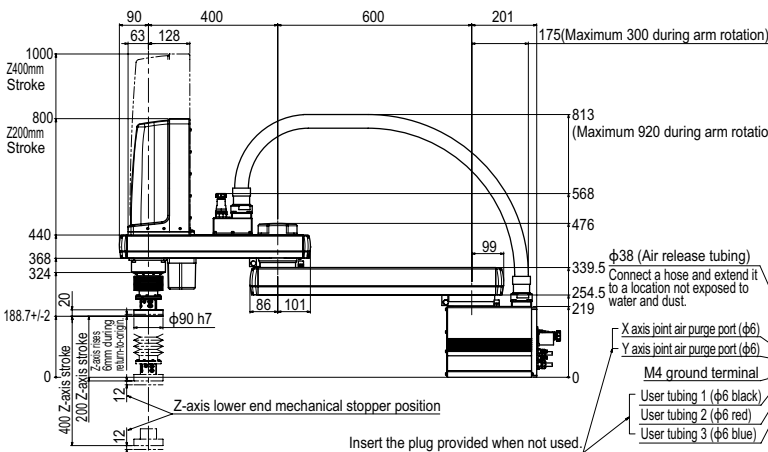
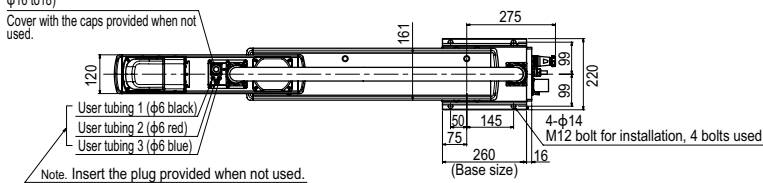
Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

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<https://global.yamaha-motor.com/business/robot/>

## YK1000XGP

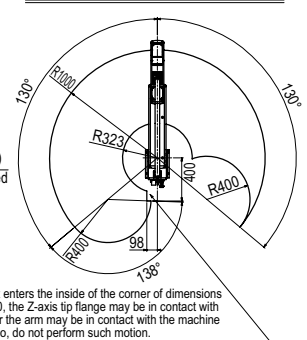
Connector for user wiring (No. 1 to 20 usable, cable clamp size: φ16 to 18)

Cover with the caps provided when not used.



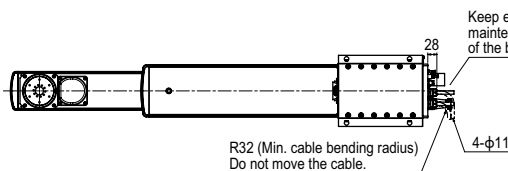
If the robot enters the inside of the corner of dimensions 98 and 400, the Z-axis tip flange may be in contact with the base of the arm may be in contact with the machine harness. So, do not perform such motion.

### Working envelope of left-handed system



### Working envelope of right-handed system

- Note that the robot cannot be used at a position where the base flange, robot cable, spline, and bellows interfere with each other in the working envelope shown above.
- X-axis mechanical stopper position : 132°
- Y-axis mechanical stopper position : 152°



### Z axis tip shape

Controller

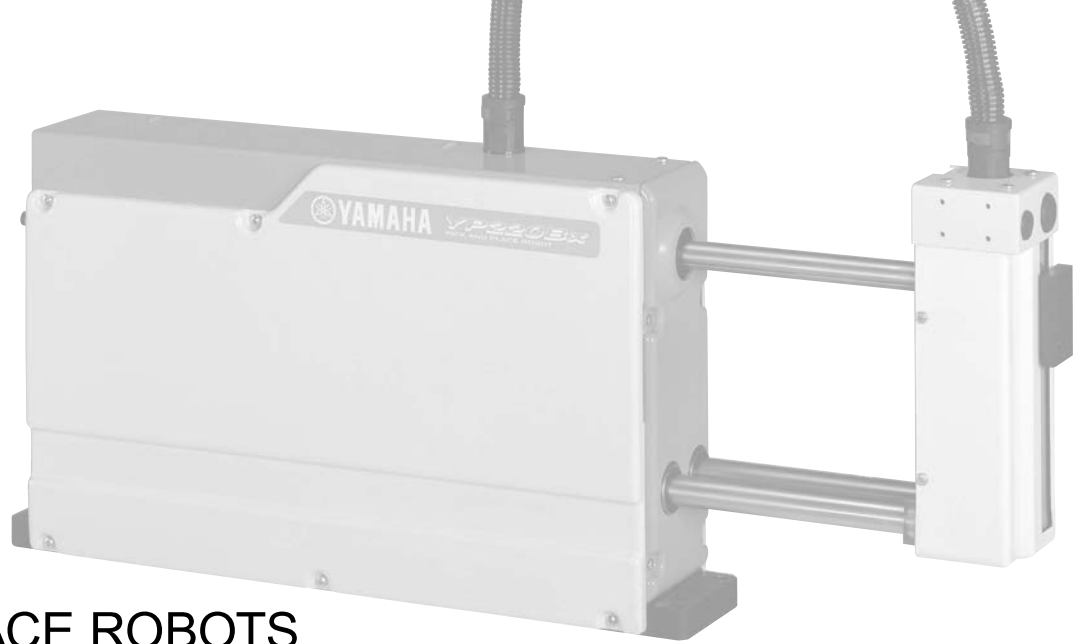
**RCX340 ▶ 566**

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-assist single axis reducer  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Orbit/ Extra small type  
Small / Medium type  
Large type  
Wall mount / Inverse type  
Dust-proof & drip-proof type

# MEMO

Articulated robots <b>YA</b>
Linear conveyor modules <b>LCM100</b>
Motor-less single axis actuator <b>Robonity</b>
Compact single-axis robots <b>TRANSERVO</b>
Single-axis robots <b>FLIP-X</b>
Linear motor single-axis robots <b>PHASER</b>
Cartesian robots <b>XY-X</b>
SCARA robots <b>YK-X</b>
Pick & place robots <b>YP-X</b>
<b>CLEAN</b>
<b>CONTROLLER</b>
<b>INFORMATION</b>
Obit/ Extra small type
Small / Medium type
Large type
Wall mount / Inverse type
Dust-proof & drip-proof type





## PICK & PLACE ROBOTS

# YP-X SERIES

## CONTENTS

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- Articulated robots  
YA
- Linear conveyor modules  
LCM100
- Motor-less single axis actuator  
Robonity
- Compact single-axis robots  
TRANSEVO
- Single-axis robots  
FLIP-X
- Linear motor single-axis robots  
PHASER
- Cartesian robots  
XY-X
- SCARA robots  
YK-X
- Pick & place robots  
YP-X
- CLEAN
- CONTROLLER
- INFORMATION
- 2-axes
- 3-axes
- 4-axes

# YP-X SPECIFICATION SHEET

Type	Model	Maximum payload (kg)	Cycle time (sec) <sup>Note 1</sup>	Structure		Moving range	Detailed info page
2-axes	YP220BX	3	0.45	X-axis	Belt	200mm	P.453
	YP320X	3	0.57	Z-axis	Belt	100mm	
3-axes	YP220BXR	1	0.62	X-axis	Belt	200mm	P.455
				Z-axis	Belt	100mm	
	YP320XR	1	0.67	X-axis	Ball screw	330mm	P.456
				Z-axis	Belt	100mm	
YP330X	3	0.57	R-axis	Rotation axis	+/-180°	P.457	
			X-axis	Ball screw	330mm		
4-axes	YP340X	1	0.67	Y-axis	Ball screw	150mm	P.458
				Z-axis	Belt	100mm	
				X-axis	Ball screw	330mm	
				R-axis	Rotation axis	+/-180°	

Note 1. Cycle time is the time required for moving back and forth 150mm (arch 50) and vertically 50mm (during rough-positioning motion with 1kg load).

## Robot ordering method description

In the order format for the YAMAHA pick & place robots YP-X series, the notation (letters/numbers) for the mechanical section is shown linked to the controller section notation.

### [Example]

#### ■ 2-axis specifications

##### ● Mechanical ▶ YP220BX

- Robot cable length ▶ 3.5m

##### ● Controller ▶ RCX320

#### ● Ordering method

**YP220BX-3L-RCX320-2-N-NS-2**

Mechanical section

Controller section

① Model	② Cable length	③ Controller	④ No. of controllable axes	⑤ Safety standards	⑥ Regenerative unit	⑦ Controller option A (OP.A)	⑧ Controller option B (OP.B)	⑨ Vision System	⑩ Absolute battery
YP220BX	3L 3.5m	RCX320							
YP320X	5L 5m 10L 10m								

To find detailed controller information see the controller page. [RCX320 ▶ P.548](#), [RCX222 ▶ P.558](#)

#### ■ 3 / 4 axis specifications

##### ● Mechanical ▶ YP340X

- Robot cable length ▶ 5m

##### ● Controller ▶ RCX340

#### ● Ordering method

**YP340X-5L-RCX340**

Mechanical section

Controller section

① Model	② Cable length	③ Controller	④ No. of controllable axes	⑤ Safety standards	⑥ Controller option A (OP.A)	⑦ Controller option B (OP.B)	⑧ Controller option C (OP.C)	⑨ Controller option D (OP.D)	⑩ Controller option E (OP.E)	⑪ Absolute battery
YP220BXR	3L 3.5m	RCX340								
YP320XR	5L 5m									
YP330X	10L 10m									
YP340X										

To find detailed controller information see the controller page. [RCX340 ▶ P.566](#)

## Robot ordering method terminology

① Model	Enter the robot unit model.
② Cable length	Select the length of the robot cable connecting the robot and controller. 3L: 3.5m      5L: 5m      10L: 10m
③ Controller	<b>2-axis specifications:</b> Select either the RCX320 or RCX222. <b>3 / 4 axis specifications:</b> Select the RCX340.

# YP220BX 2 axes



## Ordering method

### YP220BX

Model	Cable length
	3L: 3.5m
	5L: 5m
	10L: 10m

### RCX320-2

Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
--	-----------------	-----------------	-----------------	---------------	------------------

Specify various controller setting items. RCX320 ▶ **P.548**

### RCX222

Controller	Usable for CE	I/O selection 1	I/O selection 2
------------	---------------	-----------------	-----------------

Specify various controller setting items. RCX222 ▶ **P.558**

## Specifications

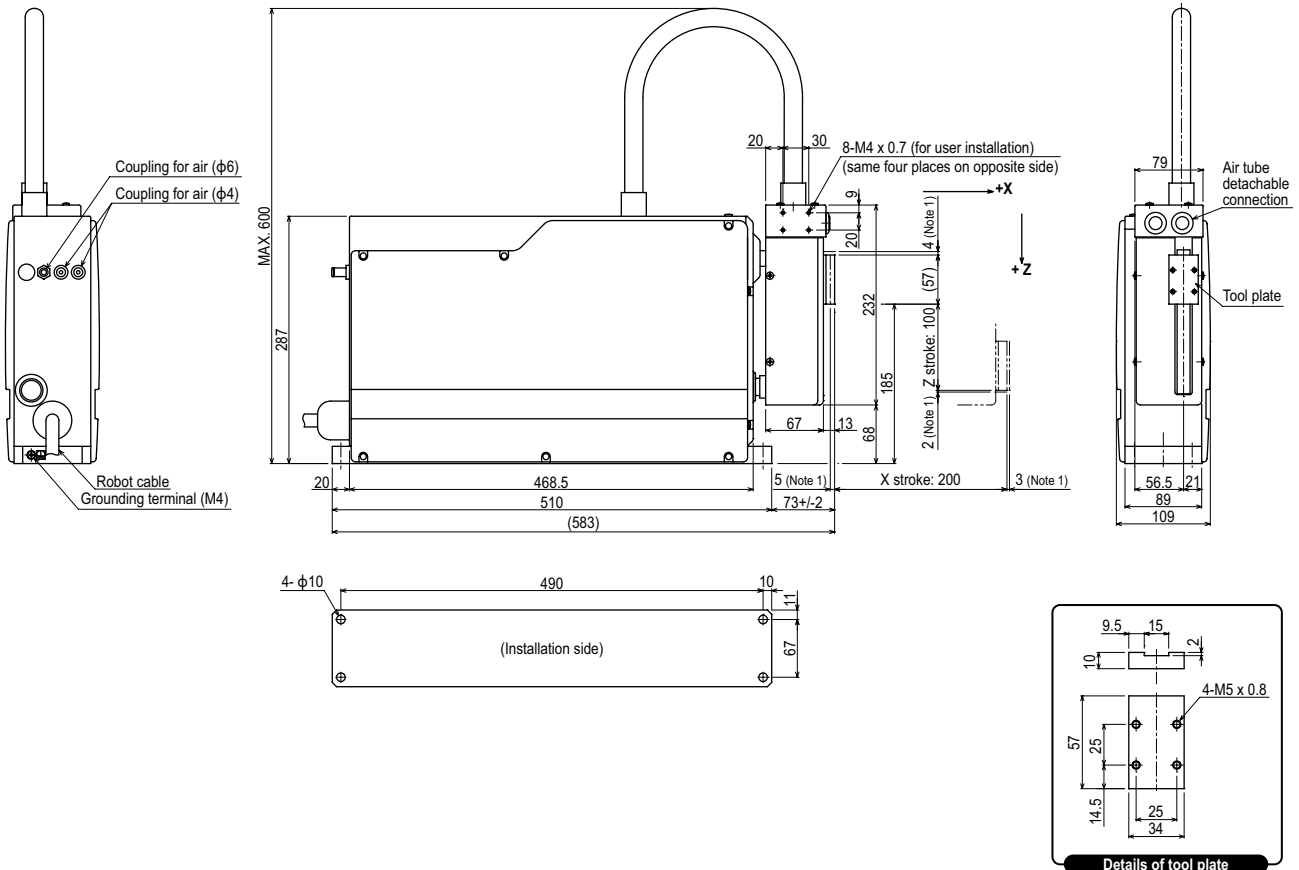
	X axis	Z axis
AC servo motor output (W)	200	200
Repeatability <sup>Note 1</sup> (mm)	+/-0.05	+/-0.05
Drive system	Timing belt	Timing belt
Deceleration ratio (mm)	Equivalent to lead 24	Equivalent to lead 20
Maximum speed <sup>Note 2</sup> (mm/sec)	1440	1200
Moving range (mm)	200	100
Cycle time (sec)	0.45 <sup>Note 3</sup>	
Maximum payload (kg)	3	
Robot cable length (m)	Standard: 3.5 Option: 5,10	
Weight (kg)	17	

Note 1. Positioning repeatability precision in a single swing when residual vibration is stabilized (variable depending on the load and stroke).  
 Note 2. When the moving stroke is short, the maximum speed may not be reached.  
 Note 3. Reciprocating time in vertical direction (50mm) and longitudinal direction (150mm) with the arch amount of 50 (when executing rough-positioning arch motion with 1kg load).

## Controller

Controller	Power consumption (VA)	Operating method
RCX320 RCX222	500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## YP220BX



Note 1. Distance to mechanical stopper.  
 Note 2. Return-to-origin on the YP220BX is by absolute reset. So the origin position must be set the first time (making initial settings) but after that is not required.

Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

2-axes

3-axes

4-axes

# YP320X 2 axes



## Ordering method

**YP320X**

Model

Cable length  
 3L: 3.5m  
 5L: 5m  
 10L: 10m

**RCX320-2**

Controller /  
Number of controllable axes

Safety  
standard

Option A  
(OP.A)

Option B  
(OP.B)

Vision  
System

Absolute  
battery

Specify various controller setting items. RCX320 ▶ **P.548**

**RCX222**

Controller

Usable for CE

I/O selection 1

I/O selection 2

Specify various controller setting items. RCX222 ▶ **P.558**

## Specifications

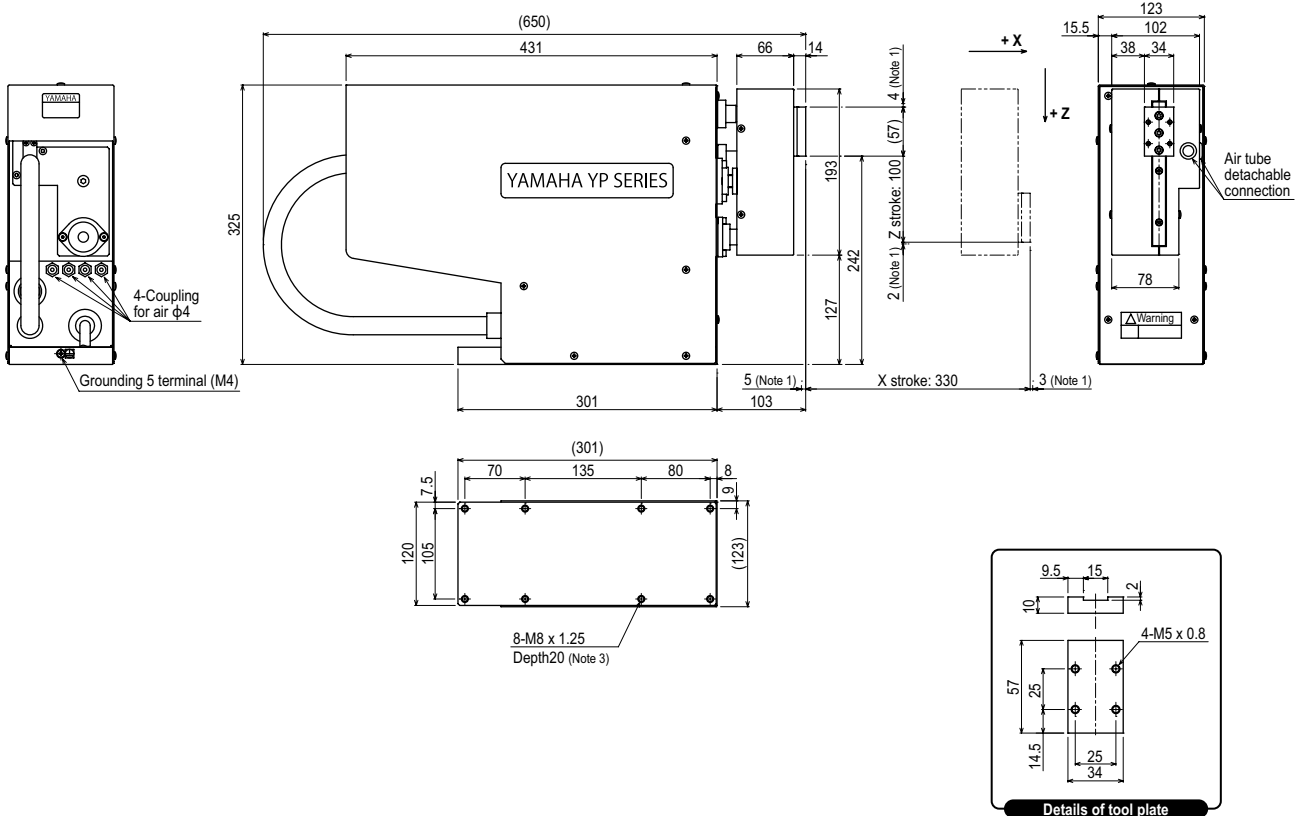
	X axis	Z axis
AC servo motor output (W)	200	200
Repeatability <sup>Note 1</sup> (mm)	+/-0.02	+/-0.05
Drive system	Ball screw φ15	Timing belt
Deceleration ratio (mm)	Equivalent to lead 20	Equivalent to lead 25
Maximum speed <sup>Note 2</sup> (mm/sec)	1500	1500
Moving range (mm)	330	100
Cycle time (sec)	0.57 <sup>Note 3</sup> , 0.78 <sup>Note 4</sup>	
Maximum payload (kg)	3	
Robot cable length (m)	Standard: 3.5 Option: 5,10	
Weight (kg)	21	

Note 1. Positioning repeatability precision in a single swing when residual vibration is stabilized (variable depending on the load and stroke).  
 Note 2. When the moving stroke is short, the maximum speed may not be reached.  
 Note 3. Reciprocating time in vertical direction (50mm) and longitudinal direction (150mm) with the arch amount of 50 (when executing rough-positioning arch motion with 1kg load).  
 Note 4. Reciprocating time in vertical direction (25mm) and longitudinal direction (300mm) with the arch amount of 25 (when executing rough-positioning arch motion with 1kg load).

## Controller

Controller	Power consumption (VA)	Operating method
RCX320 RCX222	500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## YP320X



Note 1. Distance to mechanical stopper.  
 Note 2. Return-to-origin on the YP320X is by absolute reset. So the origin position must be set the first time (making initial settings) but after that is not required.  
 Note 3. Do not use bolts longer than 20mm (robot bottom plate thickness).





# YP320XR 3 axes



## Ordering method

<b>YP320XR</b>		<b>RCX340-3</b>							
<b>Model</b>	<b>Cable length</b>	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

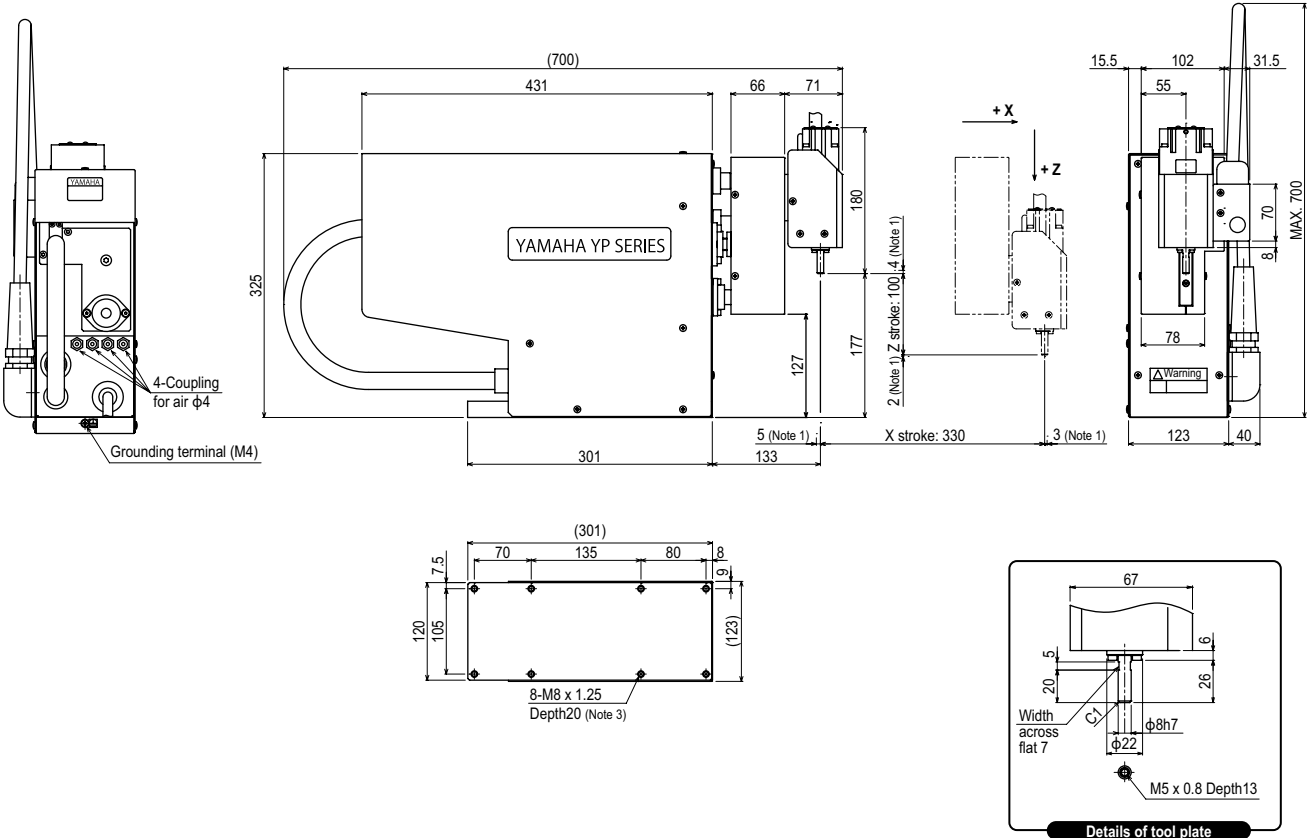
	X axis	Z axis	R axis
<b>AC servo motor output (W)</b>	200	200	60
<b>Repeatability<sup>Note 1</sup> (XZ: mm) (R: °)</b>	+/-0.02	+/-0.05	+/-0.1
<b>Drive system</b>	Ball screw φ15	Timing belt	Ball Reducer
<b>Deceleration ratio (mm)</b>	Equivalent to lead 20	Equivalent to lead 25	1/18
<b>Maximum speed<sup>Note 2</sup> (XZ: mm/sec) (R: °/sec)</b>	1500	1500	1000
<b>Moving range (XZ: mm) (R: °)</b>	330	100	+/-180
<b>Cycle time (sec)</b>	0.67 <sup>Note 3</sup> , 0.87 <sup>Note 4</sup>		
<b>Maximum payload (kg)</b>	1		
<b>R-axis allowable moment inertia (kgm<sup>2</sup>[kgfcm<sup>2</sup>])</b>	0.00098 [0.01]		
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5,10		
<b>Weight (kg)</b>	23		

Note 1. Positioning repeatability precision in a single swing when residual vibration is stabilized (variable depending on the load and stroke).  
 Note 2. When the moving stroke is short, the maximum speed may not be reached.  
 Note 3. Reciprocating time in vertical direction (50mm) and longitudinal direction (150mm) with the arch amount of 50 (when executing rough-positioning arch motion with 1kg load).  
 Note 4. Reciprocating time in vertical direction (25mm) and longitudinal direction (300mm) with the arch amount of 25 (when executing rough-positioning arch motion with 1kg load).

## Controller

Controller	Power consumption (VA)	Operating method
RCX340	700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## YP320XR



Note 1. Distance to mechanical stopper.  
 Note 2. Return-to-origin on the YP320XR is by absolute reset. So the origin position must be set the first time (making initial settings) but after that is not required.  
 Note 3. Do not use bolts longer than 20mm (robot bottom plate thickness).

# YP330X 3 axes



## Ordering method

### YP330X

### RCX340-3

Model	Cable length	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	3L: 3.5m 5L: 5m 10L: 10m	Specify various controller setting items. RCX340 ▶ <b>P.566</b>							

## Specifications

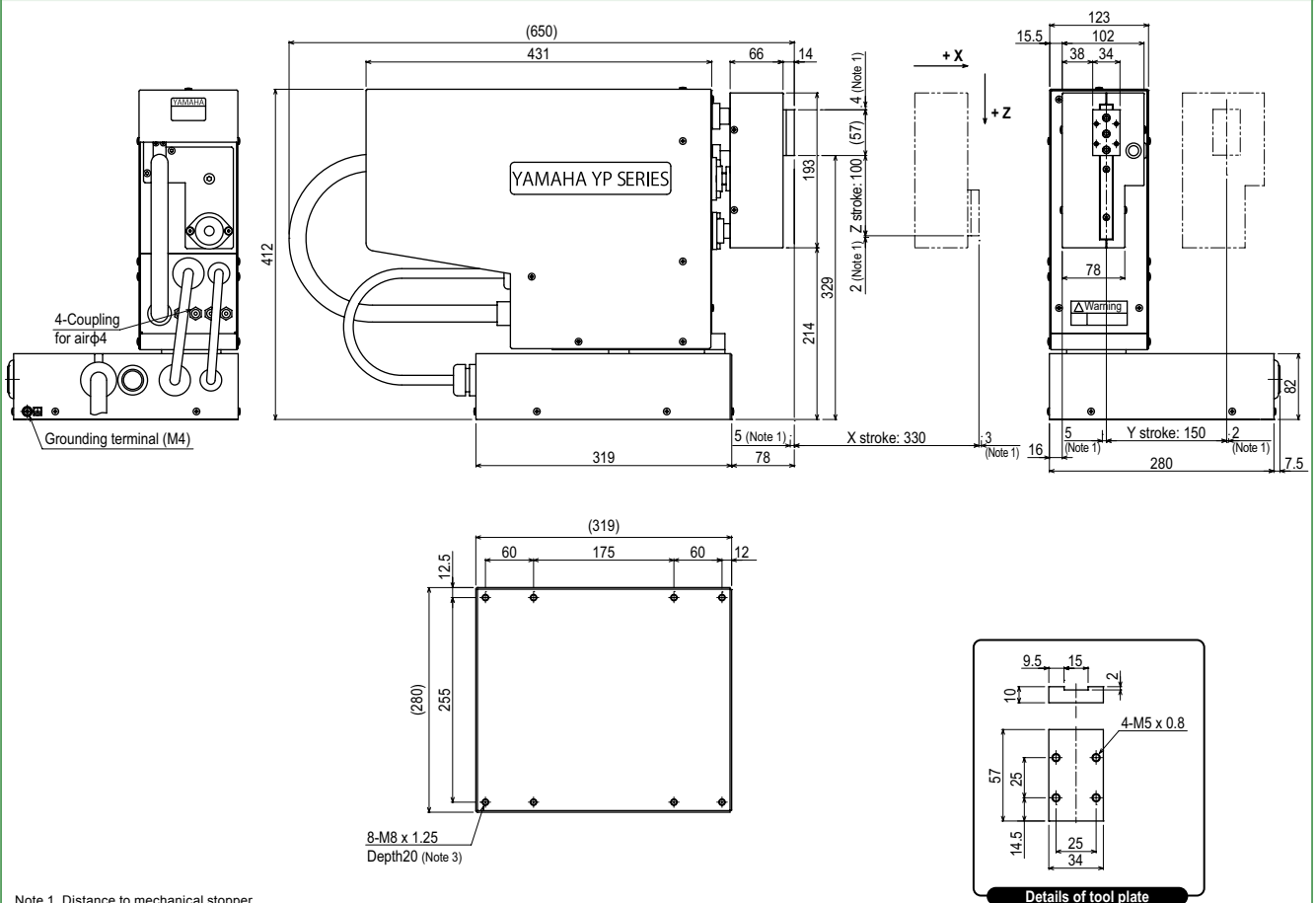
	X axis	Y axis	Z axis
AC servo motor output (W)	200	200	200
Repeatability <sup>Note 1</sup> (mm)	+/-0.02	+/-0.02	+/-0.05
Drive system	Ball screw φ15	Ball screw φ15	Timing belt
Deceleration ratio (mm)	Equivalent to lead 20	Equivalent to lead 20	Equivalent to lead 25
Maximum speed <sup>Note 2</sup> (mm/sec)	1500	1000	1500
Moving range (mm)	330	150	100
Cycle time (sec)	0.57 <sup>Note 3</sup> , 0.78 <sup>Note 4</sup>		
Maximum payload (kg)	3		
Robot cable length (m)	Standard: 3.5 Option: 5,10		
Weight (kg)	32		

Note 1. Positioning repeatability precision in a single swing when residual vibration is stabilized (variable depending on the load and stroke).  
 Note 2. When the moving stroke is short, the maximum speed may not be reached.  
 Note 3. Reciprocating time in vertical direction (50mm) and longitudinal direction (150mm) with the arch amount of 50 (when executing rough-positioning arch motion with 1kg load).  
 Note 4. Reciprocating time in vertical direction (25mm) and longitudinal direction (300mm) with the arch amount of 25 (when executing rough-positioning arch motion with 1kg load).

## Controller

Controller	Power consumption (VA)	Operating method
RCX340	700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## YP330X



Note 1. Distance to mechanical stopper.  
 Note 2. Return-to-origin on the YP330X is by absolute reset. So the origin position must be set the first time (making initial settings) but after that is not required.  
 Note 3. Do not use bolts longer than 20mm (robot bottom plate thickness).

Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XX-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

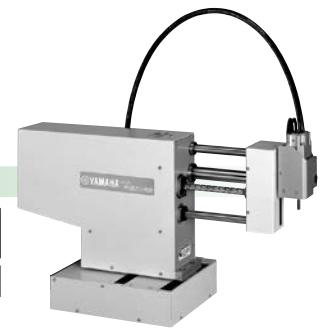
CONTROLLER INFORMATION

2-axes

3-axes

4-axes

# YP340X 4 axes



## Ordering method

**YP340X**   **RCX340-4**                

Model	Cable length	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Specifications

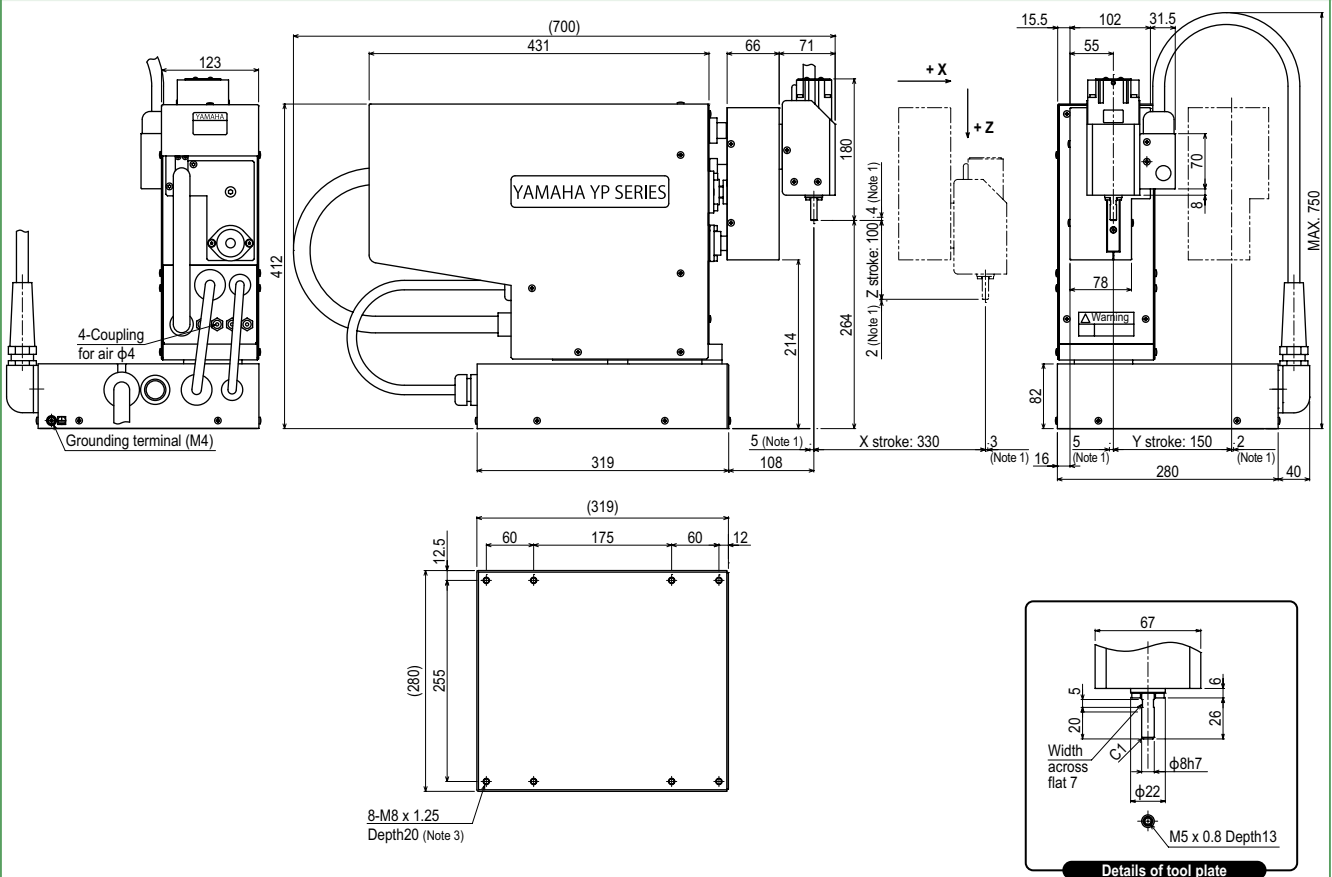
	X axis	Y axis	Z axis	R axis
AC servo motor output (W)	200	200	200	60
Repeatability <sup>Note 1</sup> (XYZ: mm)(R: °)	+/-0.02	+/-0.02	+/-0.05	+/-0.1
Drive system	Ball screw φ15	Ball screw φ15	Timing belt	Ball Reducer
Deceleration ratio (mm)	Equivalent to lead 20	Equivalent to lead 20	Equivalent to lead 25	1/18
Maximum speed <sup>Note 2</sup> (XYZ: mm/sec) (R: °/sec)	1500	1000	1500	1000
Moving range (XYZ: mm) (R: °)	330	150	100	+/-180
Cycle time (sec)	0.67 <sup>Note 3</sup> , 0.87 <sup>Note 4</sup>			
Maximum payload (kg)	1			
R-axis allowable moment inertia (kgm <sup>2</sup> [kgfcm <sup>2</sup> ])	0.00098 [0.01]			
Robot cable length (m)	Standard: 3.5 Option: 5,10			
Weight (kg)	34			

Note 1. Positioning repeatability precision in a single swing when residual vibration is stabilized (variable depending on the load and stroke).  
 Note 2. When the moving stroke is short, the maximum speed may not be reached.  
 Note 3. Reciprocating time in vertical direction (50mm) and longitudinal direction (150mm) with the arch amount of 50 (when executing rough-positioning arch motion with 1kg load).  
 Note 4. Reciprocating time in vertical direction (25mm) and longitudinal direction (300mm) with the arch amount of 25 (when executing rough-positioning arch motion with 1kg load).

## Controller

Controller	Power consumption (VA)	Operating method
RCX340	800	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## YP340X



Note 1. Distance to mechanical stopper.  
 Note 2. Return-to-origin on the YP340X is by absolute reset. So the origin position must be set the first time (making initial settings) but after that is not required.  
 Note 3. Do not use bolts longer than 20mm (robot bottom plate thickness).



Articulated robots YA
Linear conveyor modules LCM100
Motor-less single axis actuator Robonity
Compact single-axis robots TRANSERVO
Single-axis robots FLIP-X
Linear motor single-axis robots PHASER
Cartesian robots XY-X
SCARA robots YK-X
Pick & place robots YP-X
<b>CLEAN</b>
CONTROLLER
INFORMATION
Single-axis
Cartesian
SCARA

# CLEAN ROBOTS

# CLEAN

# TYPE

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# CLEAN ROBOTS SPECIFICATION SHEET

## Clean single-axis robots

### ●TRANSERVO

- Degree of cleanliness CLASS 10
- Intake air 15 to 80Nℓ/min

Model	Lead (mm)	Payload (kg)		Stroke (mm) and maximum speed (mm/sec)																Detailed info page		
		Horizontal	Vertical	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800			
SSC04	12	2	1	600																		P.463
	6	4	2	300																		
	2	6	4	100																		
SSC05	20	4	–	1000						933	833	733	633								P.464	
	12	6	1	600						560	500	440	380									
	6	10	2	300						280	250	220	190									
SSC05H	20	6	–	1000						933	833	733	633								P.465	
		8	–	600						560	500	440	380									
	–	2	500														440	380				
	12	–	300						280	250	220	190										
	6	–	4	250														220	190			

### ●FLIP-XC

- Degree of cleanliness C4L/C4LH/C5L/C5LH/C6L ..... ISO CLASS 3 (ISO14644-1) <sup>Note</sup>
- Models other than those shown above .... CLASS 10
- Note. Class 10 (0.1µm) equivalent to FED-STD-209D

- Intake air 20 to 90Nℓ/min

Model	AC servo motor output (W)	Repeatability (mm)	Lead (mm)	Payload (kg)		Stroke (mm) and maximum speed (mm/sec)																								
				Horizontal	Vertical	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950						
C4L / C4LH	30	+/-0.02	12	4.5	1.2	720																								
			6	6	2.4	360																								
			2	6	7.2	120																								
C5L / C5LH	30	+/-0.02	20	3	–	1000																								
			12	5	1.2	800																								
			6	9	2.4	400																								
C6L	60	+/-0.02	20	10	–	1000																								
			12	12	4	800																								
			6	30	8	400																								
C8	100	+/-0.02	20	12	–	1000						900	800	700	650															
			12	20	4	720						648	540	468	432	360														
			6	40	8	360						324	270	234	216	180														
C8L	100	+/-0.01	20	20	4	1000												900	800	700	650	600								
			10	40	8	600											510	450	390	360	330	300								
			5	50	16	300											255	225	195	180	165	150								
C8LH	100	+/-0.01	20	30	–	1000												900	800	700	650	600	550							
			10	60	–	600											510	450	390	360	330	300	270							
			5	80	–	300											255	225	195	180	165	150	135							
C10	100	+/-0.01	20	20	4	1000												950	750	600										
			10	40	10	500											475	375	300											
			5	60	20	250											237	187	150											
C14	100	+/-0.01	20	30	4	1000												950	750	600										
			10	55	10	500											475	375	300											
			5	80	20	250											237	187	150											
C14H	200	+/-0.01	20	40	8	1000												950	750	600										
			10	80	20	500											475	375	300											
			5	100	30	250											237	187	150											
C17	400	+/-0.01	20	80	15	1000														800										
			10	120	35	500														400										
C17L	600	+/-0.02	50	50	10																									
C20	600	+/-0.01	20	120	25	1000															800									
			10	–	45	500														400										

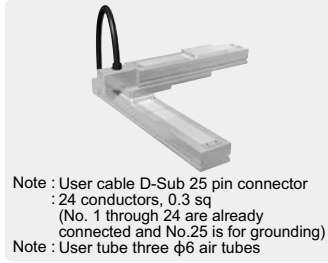
																					Detailed info page				
	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	1550	1600	1650	1700	1750	1800	1850	1900	1950	2000	2050			
																								C4L : <b>P.466</b> C4LH : <b>P.467</b>	
																									C5L : <b>P.468</b> C5LH : <b>P.469</b>
																									<b>P.470</b>
																									<b>P.471</b>
	550	500																							<b>P.472</b>
	270	240																							<b>P.473</b>
	135	120																							<b>P.474</b>
	500	450																							<b>P.475</b>
	240	210																							<b>P.476</b>
	120	105																							<b>P.477</b>
	600	500																							<b>P.478</b>
	300	250																							<b>P.479</b>
	150	125																							
	600	500																							
	300	250																							
	150	125																							
	600	500																							
	300	250																							
	150	125																							
	800	700	600	500																					
	400	350	300	250																					
				1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	900	800	800	800	800	800	800		
	800	700	600	500																					
	400	350	300	250																					



Clean cartesian robots

● XY-XC

- Degree of cleanliness CLASS 10
- Intake air 60 to 90Nℓ/min
- Aperture designed to minimal dimensions by use of stainless steel sheet
- Installed clean robot dedicated cable duct



**Arm variations**

Special model for clean rooms with moving Y-axis carriage installed upward.

Type	Model	Axis	Moving range	Maximum speed (mm/sec)	Maximum payload (kg)	Detailed info page
2 axes	SXYXC	X	150 to 1050mm	1000	20	P.480
		Y	150 to 650mm	1000		
3 axes	SXYXC (ZSC12)	X	150 to 1050mm	1000	3	P.482
		Y	150 to 650mm	1000		
		Z	150mm	1000		
	SXYXC (ZSC6)	X	150 to 1050mm	1000	5	P.482
		Y	150 to 650mm	1000		
		Z	150mm	500		
4 axes	SXYXC (ZRSC12)	X	150 to 1050mm	1000	3	P.484
		Y	150 to 650mm	1000		
		Z	150mm	1000		
		R	360°	1020°/sec		
	SXYXC (ZRSC6)	X	150 to 1050mm	1000	5	P.484
		Y	150 to 650mm	1000		
		Z	150mm	500		
		R	360°	1020°/sec		

Clean SCARA robots

● YK-XC/YK-XGC/YK-XGLC

- Degree of cleanliness YK-XC ..... CLASS 10  
YK-XGC/YK-XGLC... ISO CLASS 3 (ISO14644-1) <sup>Note</sup>  
Note. Class 10 (0.1μm) equivalent to FED-STD-209D
- Intake air 30 to 60Nℓ/min
- Harness placed completely on inside
- Bellows cover fitted in axial tip



Passed 20 million stroke durability test

Type	Model	Arm length (mm) and XY axis combined maximum speed (m/s)														Standard cycle time (sec)	Maximum payload (kg)	R axis tolerable moment of inertia (kgm <sup>2</sup> )	Detailed info page			
		120	150	180	220	250	300	350	400	500	600	700	800	900	1000					1200		
Extra small type	YK180XC	3.3m/s															0.42	1.0	0.01	P.486		
	YK220XC	3.4m/s																0.45	1.0	0.01	P.487	
Small type	YK250XGC	4.5m/s																0.50	4.0	0.05	P.488	
	YK350XGC	5.6m/s																0.52	4.0	0.05	P.490	
	YK400XGC	6.1m/s																0.50	4.0	0.05	P.492	
	YK500XGLC	5.1m/s																0.66	4.0	0.05	P.494	
Medium type	YK500XC	4.9m/s																0.53	10.0	0.12	P.496	
	YK600XGLC	4.9m/s																0.71	4.0	0.05	P.497	
	YK600XC	5.6m/s																0.56	10.0	0.12	P.499	
Large type	YK700XC	6.7m/s																0.57	20.0	0.32	P.500	
	YK800XC	7.3m/s																	0.57	20.0	0.32	P.501
	YK1000XC	8.0m/s																	0.60	20.0	0.32	P.502

# SSC04

## Slider type



- CE compliance
- Origin on the non-motor side is selectable

### Ordering method

<b>SSC04</b>		<b>S</b>						
<b>Model</b>	<b>Lead</b>	<b>Type</b>	<b>Brake</b>	<b>Direction of air coupler installation</b>	<b>Origin position</b>	<b>Stroke</b>	<b>Cable length</b> <sup>Note 2</sup>	
	12: 12mm 6: 6mm 2: 2mm	S: Straight	N: With no brake B: With brake	RJ: Right (Standard) LJ: Left	N: Standard <sup>Note 1</sup> Z: Non-motor side	50 to 400 (50mm pitch)	1L: 1m 3L: 3m 5L: 5m 10L: 10m	

<b>S2</b>	<b>I/O</b>	
<b>Robot positioner</b>	<b>I/O</b>	
S2: TS-S2 <sup>Note 3</sup>	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 4</sup>	
<b>SH</b>	<b>I/O</b>	<b>Battery</b>
<b>Robot positioner</b>	<b>I/O</b>	<b>Battery</b>
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 4</sup>	B: With battery (Absolute) N: None (Incremental)
<b>SD</b>	<b>I/O cable</b>	
<b>Robot driver</b>	<b>I/O cable</b>	
SD: TS-SD	1t: 1m	

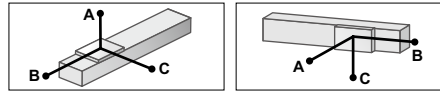
Note 1. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 2. The robot cable is flexible and resists bending.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

### Basic specifications

<b>Motor</b>	42 □ Step motor
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.02
<b>Deceleration mechanism</b>	Ball screw φ8
<b>Maximum motor torque (N·m)</b>	0.27
<b>Ball screw lead (mm)</b>	12    6    2
<b>Maximum speed (mm/sec)</b>	600    300    100
<b>Maximum payload (kg)</b>	<b>Horizontal</b> 2    4    6 <b>Vertical</b> 1    2    4
<b>Max. pressing force (N)</b>	45    90    150
<b>Stroke (mm)</b>	50 to 400 (50mm pitch)
<b>Overall length (mm)</b>	<b>Horizontal</b> Stroke+216 <b>Vertical</b> Stroke+261
<b>Maximum outside dimension of body cross-section (mm)</b>	W49 × H59
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10
<b>Degree of cleanliness</b>	CLASS 10 <sup>Note 2</sup>
<b>Intake air (Nl/min)</b>	<b>Lead 12</b> <b>Lead 6</b> <b>Lead 2</b> 50    30    15

Note 1. Positioning repeatability in one direction.  
 Note 2. Per 1cf (0.1µm base), when suction blower is used.

### Allowable overhang



Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)					
	A	B	C		A	B	C		A	C			
<b>Lead 12</b>	1kg	807	218	292	<b>Lead 12</b>	1kg	274	204	776	<b>Lead 12</b>	0.5kg	407	408
	2kg	667	107	152		2kg	133	93	611		1kg	204	204
<b>Lead 6</b>	2kg	687	116	169	<b>Lead 6</b>	2kg	149	102	656	<b>Lead 6</b>	1kg	223	223
	3kg	556	76	112		3kg	92	62	516		2kg	107	107
	4kg	567	56	84	<b>Lead 4</b>	4kg	63	43	507	<b>Lead 2</b>	2kg	118	118
<b>Lead 2</b>	4kg	869	61	92		4kg	72	48	829		4kg	53	53
	6kg	863	40	60	<b>Lead 2</b>	6kg	39	29	789				

Note. Distance from center of slider upper surface to conveyor center-of-gravity at a guide service life of 10,000 km (Service life is calculated for 400mm stroke models).

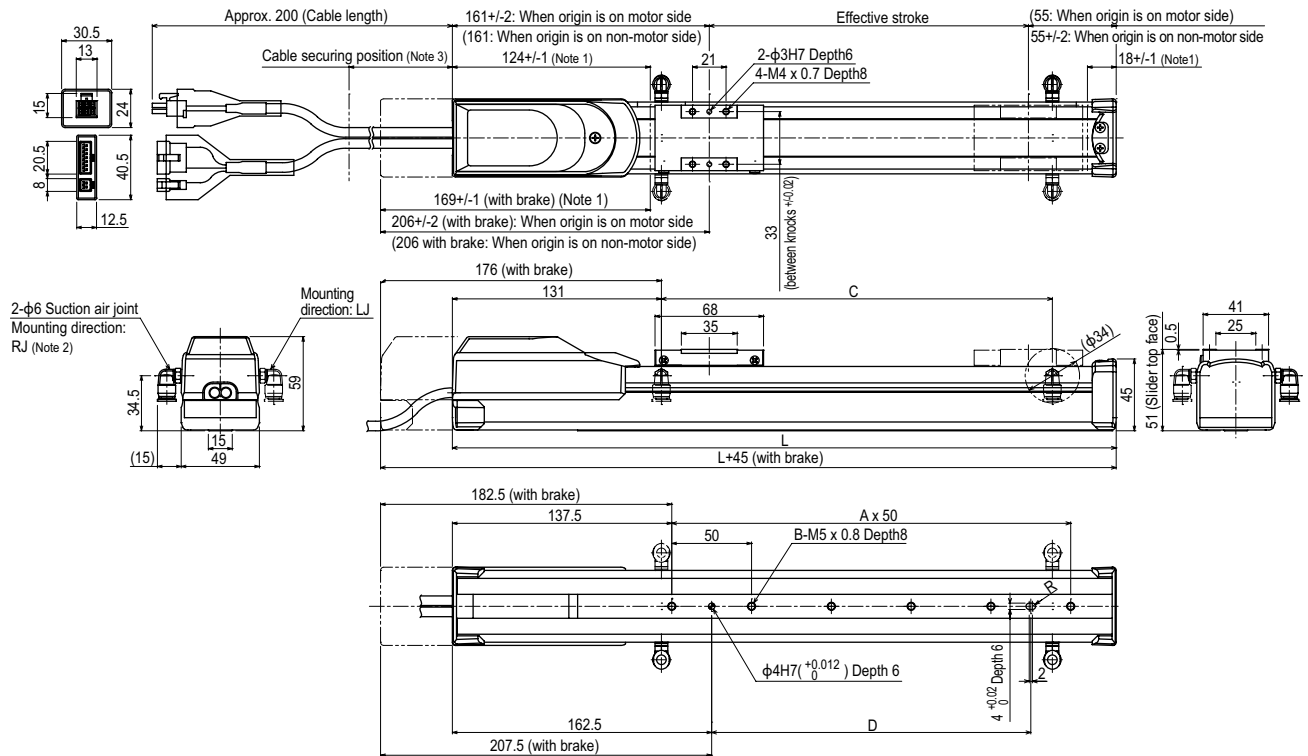
### Static loading moment

Static loading moment (Unit: N·m)		
MY	MP	MR
16	19	17

### Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

### SSC04



Effective stroke	50	100	150	200	250	300	350	400
<b>L</b>	266	316	366	416	466	516	566	616
<b>A</b>	2	3	4	5	6	7	8	9
<b>B</b>	3	4	5	6	7	8	9	10
<b>C</b>	50	100	150	200	250	300	350	400
<b>Weight (kg)</b> <sup>Note 5</sup>	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.3

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Either right or left can be selected for the suction air joint mounting direction. This drawing shows the RJ (standard) direction.  
 Note 3. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 4. The cable's minimum bend radius is R30.  
 Note 5. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.

Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single-axis actuator  
Robonity

Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

Single-axis  
Cartesian  
SCARA

# SSC05

Slider type



- High lead: Lead 20
- CE compliance
- Origin on the non-motor side is selectable

## Ordering method

<b>SSC05</b>	<b>S</b>						
Model	Lead	Type	Brake	Direction of air coupler installation	Origin position	Stroke	Cable length
	20: 20mm 12: 12mm 6: 6mm	S: Straight	N: With no brake B: With brake	RJ: Right (Standard) LJ: Left	N: Standard Z: Non-motor side	50 to 800 (50mm pitch)	1L: 1m 3L: 3m 5L: 5m 10L: 10m

<b>S2</b>		
Robot positioner	I/O	
S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	
<b>SH</b>		
Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)
<b>SD</b>	<b>1</b>	
Robot driver	I/O cable	
SD: TS-SD	t: 1m	

Note 1. Only the model with a lead of 12mm or 6mm can select specifications with brake.  
 Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 3. The robot cable is flexible and resists bending.  
 Note 4. See P.522 for DIN rail mounting bracket.  
 Note 5. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

<b>Motor</b>	42 □ Step motor
<b>Repeatability</b> (mm)	+/-0.02
<b>Deceleration mechanism</b>	Ball screw φ12
<b>Maximum motor torque (N·m)</b>	0.27
<b>Ball screw lead (mm)</b>	20    12    6
<b>Maximum speed (mm/sec)</b>	1000    600    300
<b>Maximum payload (kg)</b>	Horizontal: 4, 6, 10 Vertical: -    1    2
<b>Max. pressing force (N)</b>	27    45    90
<b>Stroke (mm)</b>	50 to 800 (50mm pitch)
<b>Overall length (mm)</b>	Horizontal: Stroke+230 Vertical: Stroke+270
<b>Maximum outside dimension of body cross-section (mm)</b>	W55 × H56
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10
<b>Degree of cleanliness</b>	CLASS 10
<b>Intake air (Nl/min)</b>	Lead 20: 80    Lead 12: 50    Lead 6: 30

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 650mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Per 1cf (0.1µm base), when suction blower is used.

## Allowable overhang

Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)			
	A	B	C		A	B	C	Lead 12	A	C	
Lead 20	2kg	413	139	218	2kg	192	123	372	0.5kg	578	579
Lead 12	4kg	334	67	120	4kg	92	51	265	1kg	286	286
Lead 6	4kg	347	72	139	4kg	109	57	300	1kg	312	312
Lead 12	6kg	335	47	95	6kg	63	31	263	2kg	148	148
Lead 6	4kg	503	78	165	4kg	134	63	496			
Lead 6	8kg	332	37	79	6kg	76	35	377			
Lead 6	10kg	344	29	62	8kg	47	22	355			

## Static loading moment

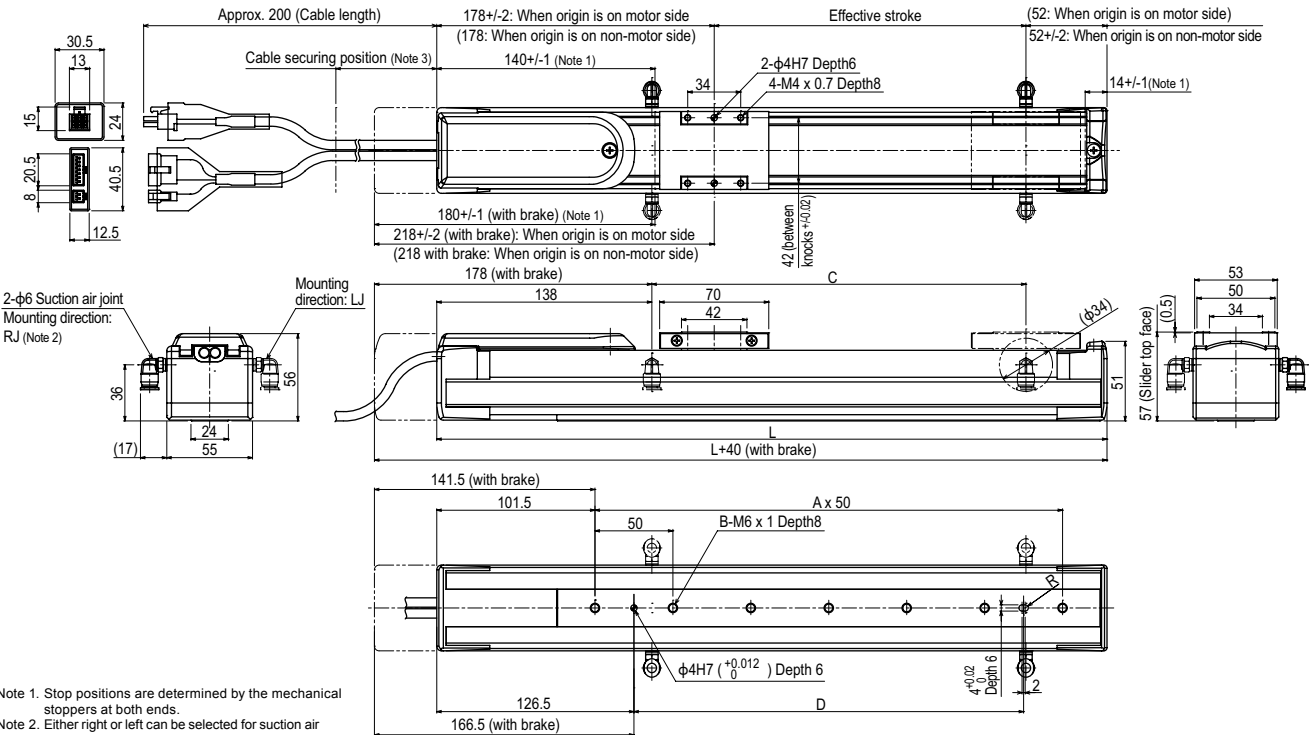
MY	MP	MR
25	33	30

## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

Note. Distance from center of slider upper surface to conveyor center-of-gravity at a guide service life of 10,000 km (Service life is calculated for 600mm stroke models).

## SSC05



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Either right or left can be selected for suction air joint mounting direction. This drawing shows the RJ (standard) direction.  
 Note 3. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 4. The cable's minimum bend radius is R30.  
 Note 5. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.  
 Note 6. When the stroke is longer than 650mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	280	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030
A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
Weight (kg)	2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0
Maximum speed for each stroke (mm/sec)	1000															
Lead 20	933															
Lead 12	600															
Lead 6	300															
	280	250	220	190												

# SSC05H

Slider type



- High lead: Lead 20
- CE compliance
- Origin on the non-motor side is selectable

## Ordering method

**SSC05H** - **S** - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

Model	Lead	Type	Brake	Direction of air coupler installation	Origin position	Stroke	Cable length	S2	I/O	Battery
	20: 20mm 12: 12mm 6: 6mm	S: Straight	N: With no brake B: With brake	R: Right (Standard) L: Left	N: Standard Z: Non-motor side	50 to 800 (50mm pitch)	1L: 1m 3L: 3m 5L: 5m 10L: 10m	Robot positioner S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)
								SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	
								SD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	

Note 1. Only the model with a lead of 12mm or 6mm can select specifications with brake.  
 Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 3. The robot cable is flexible and resists bending.  
 Note 4. See P.522 for DIN rail mounting bracket.  
 Note 5. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

Motor	42 □ Step motor	
Repeatability	±0.02 (mm)	
Deceleration mechanism	Ball screw φ12	
Maximum motor torque (N·m)	0.47	
Ball screw lead (mm)	20	12
Maximum speed (mm/sec)	Horizontal	1000
	Vertical	500
Maximum payload (kg)	Horizontal	6
	Vertical	2
Max. pressing force (N)	Stroke+286	36
	Stroke+306	60
Stroke (mm)	50 to 800 (50mm pitch)	
Overall length (mm)	Horizontal	Stroke+286
	Vertical	Stroke+306
Maximum outside dimension of body cross-section (mm)	W55 × H56	
Cable length (m)	Standard: 1 / Option: 3, 5, 10	
Degree of cleanliness	CLASS 10	
Intake air (Nl/min)	Lead 20	80
	Lead 12	50
	Lead 6	30

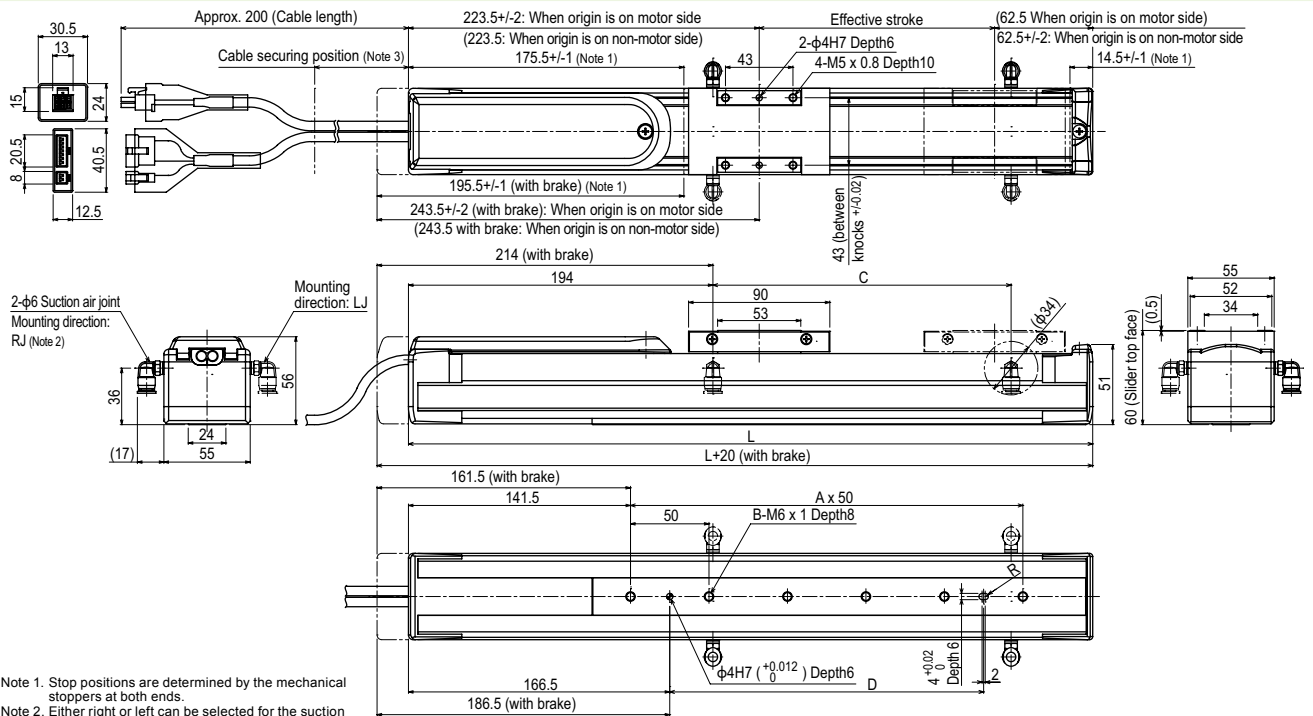
Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 650mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Per 1cf (0.1µm base), when suction blower is used.

## Allowable overhang

Horizontal installation (Unit: mm)	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)					
	A	B	C	A	B	C	A	C	C			
Lead 20	2kg	599	225	291	2kg	262	203	554	Lead 12	1kg	458	459
Lead 12	4kg	366	109	148	4kg	118	88	309	2kg	224	224	
Lead 6	6kg	352	71	104	6kg	71	49	262	4kg	244	245	
Lead 12	4kg	500	118	179	4kg	146	96	449	Lead 6	2kg	224	224
Lead 6	6kg	399	79	118	6kg	85	55	334	4kg	113	113	
Lead 12	8kg	403	56	88	8kg	55	34	305				
Lead 6	6kg	573	83	136	6kg	101	62	519				
Lead 12	8kg	480	61	100	8kg	64	39	413				
Lead 6	10kg	442	47	78	10kg	43	26	355				
Lead 6	12kg	465	39	64	12kg	28	17	338				

Note. Distance from center of slider upper surface to conveyor center-of-gravity at a guide service life of 10,000 km (Service life is calculated for 600mm stroke models).

## SSC05H



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Either right or left can be selected for the suction air joint mounting direction. This drawing shows the RJ (standard) direction.  
 Note 3. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 4. The cable's minimum bend radius is R30.  
 Note 5. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.  
 Note 6. When the stroke is longer than 650mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	336	386	436	486	536	586	636	686	736	786	836	886	936	986	1036	1086
A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
Weight (kg)	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.5	4.7	4.9	5.1	5.3
Maximum speed for each stroke (mm/sec)	Lead 20	1000														
	Lead 12 (Horizontal)	600														
	Lead 12 (Vertical)	500														
	Lead 6 (Horizontal)	300														
Lead 6 (Vertical)	250															

Controller

TS-S2 ▶ 514 TS-SH ▶ 514 TS-SD ▶ 524

# C4L

Origin on the non-motor side is selectable



## Ordering method

<b>C4L</b>							<b>ERCD</b>	
<b>Model</b>	<b>Lead designation</b>	<b>Brake</b>	<b>Direction of air coupler installation</b>	<b>Origin position change</b>	<b>Stroke</b>	<b>Cable length</b> <sup>Note 1</sup>	<b>Controller</b>	<b>I/O connector specification</b>
	12: 12mm 6: 6mm 2: 2mm	No entry: With no brake BK: With brake	L: Left (Standard) R: Right	None: Standard Z: Non-motor side	50 to 400 (50mm pitch)	1K: 1m 3K: 3.5m 5K: 5m 10K: 10m		CN1: I/O flat cable 1m (Standard) CN2: Twisted-pair cable 2m (pulse train function)

Note 1. The robot cable is flexible and resists bending. See P.614 for details on robot cable.

## Basic specifications

<b>AC servo motor output (W)</b>	30
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.02
<b>Deceleration mechanism</b>	Ball screw $\phi 8$
<b>Ball screw lead (mm)</b>	12    6    2
<b>Maximum speed (mm/sec)</b>	720    360    120
<b>Maximum payload (kg)</b>	<b>Horizontal</b> 4.5    6    6 <b>Vertical</b> 1.2    2.4    7.2
<b>Rated thrust (N)</b>	32    64    153
<b>Stroke (mm)</b>	50 to 400 (50mm pitch)
<b>Overall length (mm)</b>	<b>Horizontal</b> Stroke+205 <b>Vertical</b> Stroke+243
<b>Maximum outside dimension of body cross-section (mm)</b>	W45×H55
<b>Cable length (m)</b>	Standard: 3.5 / Option: 1.5, 10
<b>Degree of cleanliness</b>	ISO CLASS 3 (ISO14644-1) <sup>Note 2</sup>
<b>Intake air (N<math>\ell</math>/min)</b> <sup>Note 3</sup>	50    30    15

Note 1. Positioning repeatability in one direction.  
 Note 2. CLASS 10 (0.1 $\mu$ m) FED-STD-209D or equivalent when a suction blower is used.  
 Note 3. The necessary intake amount varies depending on the use conditions and environment.

## Allowable overhang

Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)		
	A	B	C		A	B	C	Lead 12	A	C
2kg	429	87	179	2kg	145	52	368	1.2kg	121	122
4.5kg	219	32	74	4.5kg	46	0	139	2.4kg	52	54
3kg	511	58	135	3kg	103	22	370	3kg	37	39
6kg	336	26	62	6kg	27	0	185	7.2kg	0	0
3kg	1571	58	142	3kg	109	23	1150			
6kg	751	27	66	6kg	27	0	420			

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
 Note. Service life is calculated for 300mm stroke models.

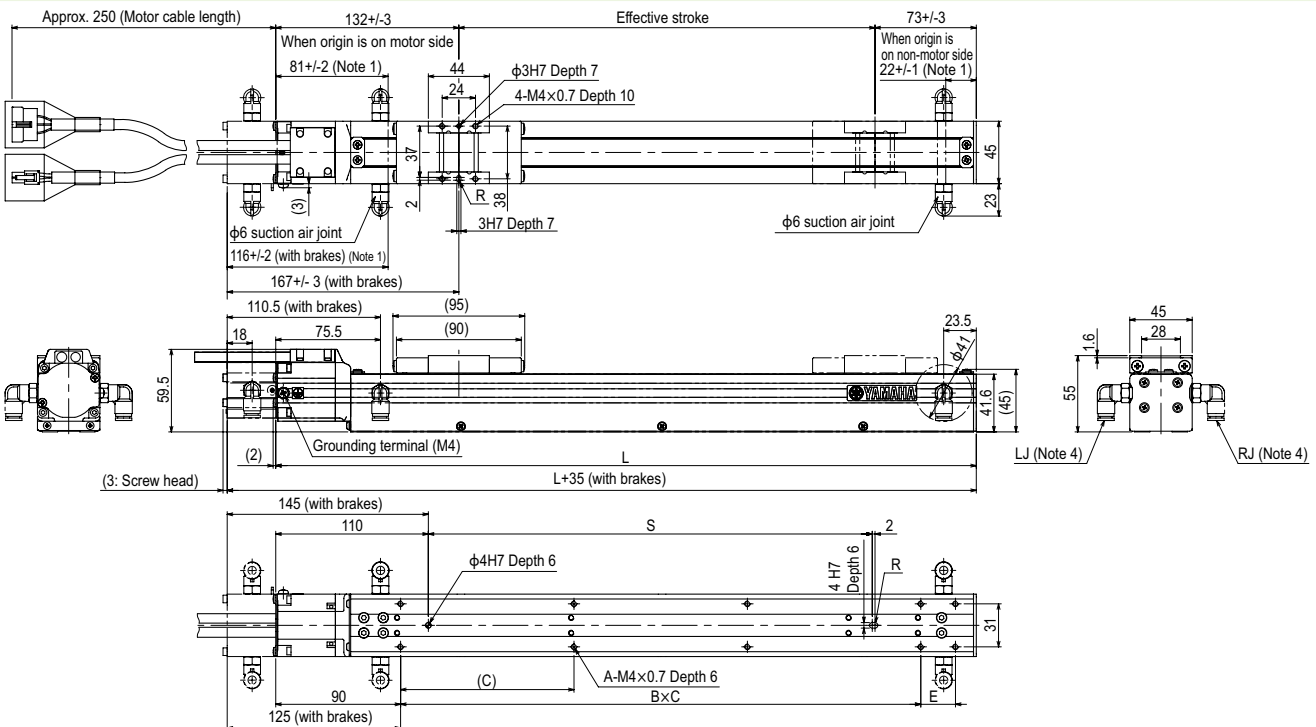
## Static loading moment

(Unit: N·m)		
MY	MP	MR
15	19	18

## Controller

Controller	Operation method
ERCD	Pulse train control / Programming / I/O point trace / Remote command / Operation using RS-232C communication

## C4L



Effective stroke	50	100	150	200	250	300	350	400
<b>L</b>	255	305	355	405	455	505	555	605
<b>A</b>	4	6	6	8	8	10	10	10
<b>B</b>	1	2	2	2	2	3	3	4
<b>C</b>	150	100	125	125	125	125	125	125
<b>E</b>	0	0	0	50	100	25	75	0
<b>S</b>	70	120	170	220	270	320	370	420
<b>Weight (kg)</b> <sup>Note 3</sup>	1.4	1.5	1.7	1.8	2	2.1	2.3	2.4
<b>Maximum speed for each stroke (mm/sec)</b>	<b>Lead 12</b>	720						
	<b>Lead 6</b>	360						
	<b>Lead 2</b>	120						

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Minimum bend radius of motor cable is R30.  
 Note 3. Weight of models with no brake. The weight of brake-attached models is 0.2 kg heavier than the models with no brake shown in the table.  
 Note 4. Either right or left can be selected for the installation direction for the  $\phi 6$  intake air joint. (The left side is the standard.)  
 Note 5. External view of C4LH is identical to C4L.









# C5LH

- High lead: Lead 20
- Origin on the non-motor side is selectable



## Ordering method

<b>C5LH</b>	<b>Model</b>	<b>Lead designation</b> 20: 20mm 12: 12mm 6: 6mm	<b>Brake</b> Note 1 No entry: With no brake BK: With brake	<b>Direction of air coupler installation</b> L: Left (Standard) R: Right	<b>Origin position change</b> None: Standard Z: Non-motor side	<b>Stroke</b> 50 to 800 (50mm pitch)	<b>Cable length</b> Note 2 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	<b>TSX</b>	<b>Positioner</b> Note 3 TS-X	<b>Driver: Power supply voltage / Power capacity</b> 105: 100V/100W or less 205: 200V/100W or less	<b>LCD monitor</b> No entry: None L: With LCD	<b>I/O selection</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board Note 4	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
	<b>SR1-X</b>	<b>05</b>						<b>Controller</b>	<b>Driver: Power capacity</b> 05: 100W or less	<b>Usable for CE</b> No entry: Standard E: CE marking	<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)	
	<b>RDV-X</b>	<b>2</b>						<b>Driver</b>	<b>Power supply voltage</b> 2: AC200V		<b>05</b>	<b>Driver: Power capacity</b> 05: 100W or less	

Note 1. The model with a lead of 20mm cannot select specifications with brake (vertical specifications).  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

AC servo motor output (W)	30
Repeatability Note 1 (mm)	+/-0.02
Deceleration mechanism	Ball screw $\phi$ 12
Ball screw lead (mm)	20 12 6
Maximum speed (mm/sec)	1000 800 400
Maximum payload (kg)	Horizontal: 3 5 9 Vertical: - 1.2 2.4
Rated thrust (N)	19 32 64
Stroke (mm)	50 to 800 (50mm pitch)
Overall length (mm)	Horizontal: Stroke+201.5 Vertical: Stroke+239.5
Maximum outside dimension of body cross-section (mm)	W55xH65
Cable length (m)	Standard: 3.5 / Option: 5, 10
Degree of cleanliness	ISO CLASS 3 (ISO14644-1) Note 2
Intake air (Nl/min) Note 3	80 50 30

Note 1. Positioning repeatability in one direction.  
 Note 2. CLASS 10 (0.1 $\mu$ m) FED-STD-209D or equivalent when a suction blower is used.  
 Note 3. The necessary intake amount varies depending on the use conditions and environment.

## Allowable overhang

	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	C	
Lead 20	1099	324	645	602	303	950	1.2kg	240	239
Lead 12	488	104	241	197	87	432	2.4kg	109	110
Lead 6	916	159	398	347	141	800			
Lead 6	436	60	152	119	44	355			
Lead 6	1194	105	294	3kg	259	87			
Lead 6	624	31	89	9kg	50	15			

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.  
 Note. Service life is calculated for 600mm stroke models.

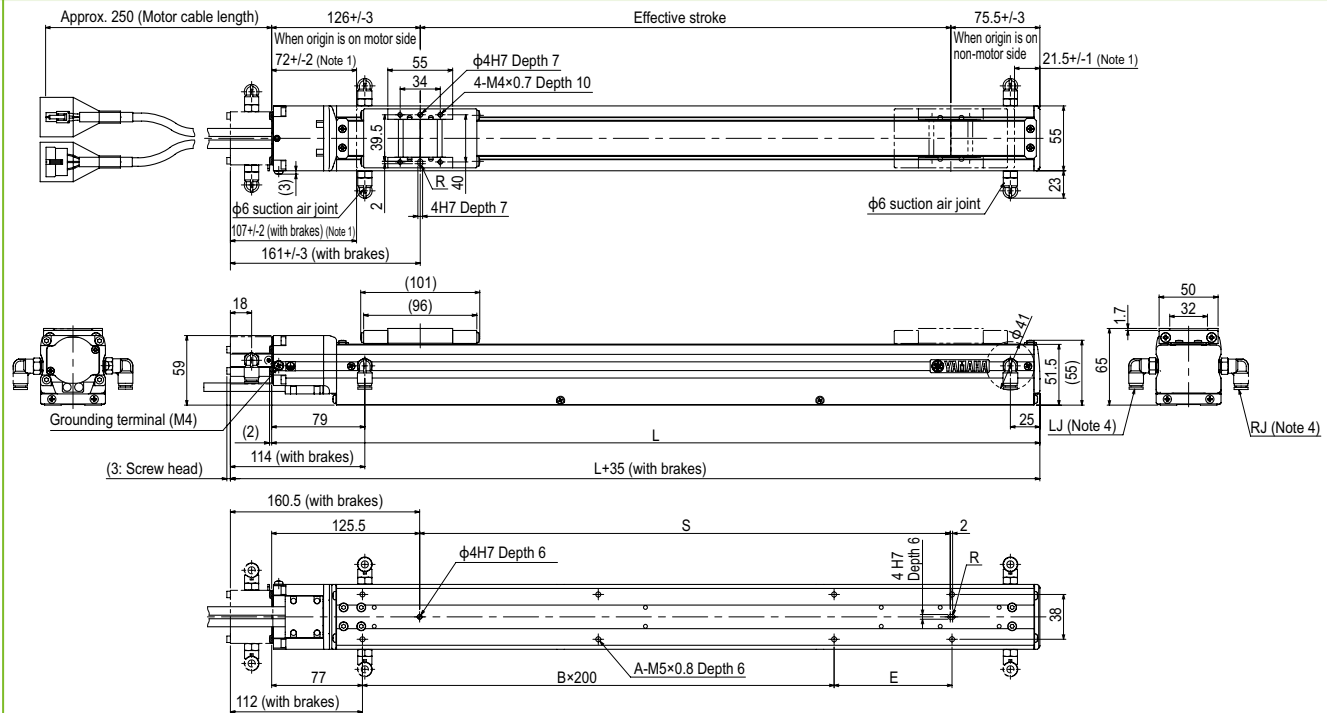
## Static loading moment

	MY	MP	MR
(Unit: N·m)	30	34	40

## Controller

Controller	Operation method
SR1-X05 RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X105	I/O point trace / Remote command
TS-X205	Remote command
RDV-X205	Pulse train control

## C5LH

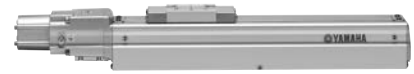


Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	251.5	301.5	351.5	401.5	451.5	501.5	551.5	601.5	651.5	701.5	751.5	801.5	851.5	901.5	951.5	1001.5
A	4	4	4	6	6	6	6	8	8	8	8	10	10	10	10	12
B	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4
E	100	200	200	100	100	200	200	100	100	200	200	100	100	200	200	100
S	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Weight (kg) Note 3	1.7	2.0	2.2	2.5	2.7	3.0	3.2	3.4	3.7	3.9	4.2	4.4	4.7	4.9	5.1	5.4
Maximum speed for each stroke (mm/sec)	1000															
Speed setting	900 800 700															
Lead 20	90% 80% 70%															
Lead 12	800															
Lead 6	400															
Speed setting	640 560 480 440															
	320 280 240 220															
	80% 70% 60% 55%															

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Minimum bend radius of motor cable is R30.  
 Note 3. Weight of models with no brake. The weight of brake-attached models is 0.2 kg heavier than the models with no brake shown in the table.  
 Note 4. Either right or left can be selected for the installation direction for the  $\phi$ 6 intake air joint. (The left side is the standard.)  
 Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.  
 Note 6. External view of C5LH is identical to C5L.

# C6L

- High lead: Lead 20
- Origin on the non-motor side is selectable



## Ordering method

**C6L**

<b>Model</b>	<b>Lead designation</b> 20: 20mm 12: 12mm 6: 6mm	<b>Brake</b> Note 1 No entry: With no brake BK: With brake	<b>Direction of air coupler installation</b> L: Left (Standard) R: Right	<b>Origin position change</b> None: Standard Z: Non-motor side	<b>Stroke</b> 50 to 800 (50mm pitch)	<b>Cable length</b> Note 2 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)
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**TSX**

<b>Positioner</b> Note 3 TS-X	<b>Driver: Power supply voltage / Power capacity</b> 105: 100V/100W or less 205: 200V/100W or less	<b>LCD monitor</b> No entry: None L: With LCD	<b>I/O selection</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board Note 4	<b>Battery</b> 3: With battery (Absolute) N: None (Incremental)
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**SR1-X**

<b>Controller</b> 05	<b>Driver: Power capacity</b> 05: 100W or less	<b>Usable for CE</b> No entry: Standard E: CE marking	<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	<b>Battery</b> 3: With battery (Absolute) N: None (Incremental)
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**RDV-X**

<b>Driver</b> 2	<b>Power supply voltage</b> 2: AC200V	<b>Driver: Power capacity</b> 05: 100W or less	<b>Regenerative unit</b> RBR1
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Notes:  
Note 1. The model with a lead of 20mm cannot select specifications with brake (vertical specifications).  
Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
Note 3. See P.522 for DIN rail mounting bracket.  
Note 4. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

<b>AC servo motor output (W)</b>	60
<b>Repeatability</b> Note 1 (mm)	+/-0.02
<b>Deceleration mechanism</b>	Ball screw $\phi$ 12
<b>Ball screw lead (mm)</b>	20 12 6
<b>Maximum speed (mm/sec)</b>	1000 800 400
<b>Maximum payload (kg)</b>	<b>Horizontal</b> 10 12 30 <b>Vertical</b> - 4 8
<b>Rated thrust (N)</b>	51 85 170
<b>Stroke (mm)</b>	50 to 800 (50mm pitch)
<b>Overall length (mm)</b>	<b>Horizontal</b> Stroke+247.5 <b>Vertical</b> Stroke+285.5
<b>Maximum outside dimension of body cross-section (mm)</b>	W65×H65
<b>Cable length (m)</b>	Standard: 3.5 / Option: 5, 10
<b>Degree of cleanliness</b>	ISO CLASS 3 (ISO14644-1) Note 2
<b>Intake air (Nl/min)</b> Note 3	80 50 30

- Note 1. Positioning repeatability in one direction.  
Note 2. CLASS 10 (0.1 $\mu$ m) FED-STD-209D or equivalent when a suction blower is used.  
Note 3. The necessary intake amount varies depending on the use conditions and environment.

## Allowable overhang

Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	C	
Lead 20	2kg 433	192	295	2kg 300	174	365	1kg 353	351	
	6kg 145	59	104	6kg 83	44	105	2kg 163	164	
	10kg 110	33	75	10kg 43	18	71	4kg 68	70	
Lead 12	3kg 622	125	336	3kg 291	96	317	2kg 169	170	
	8kg 271	41	121	8kg 87	13	110	4kg 71	73	
	12kg 214	24	76	12kg 41	0	126	8kg 21	24	
Lead 6	5kg 692	73	236	5kg 202	45	237			
	10kg 372	33	109	10kg 70	5	97			
	30kg 157	0	25	30kg 0	0	0			

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

Note. Service life is calculated for 600mm stroke models.

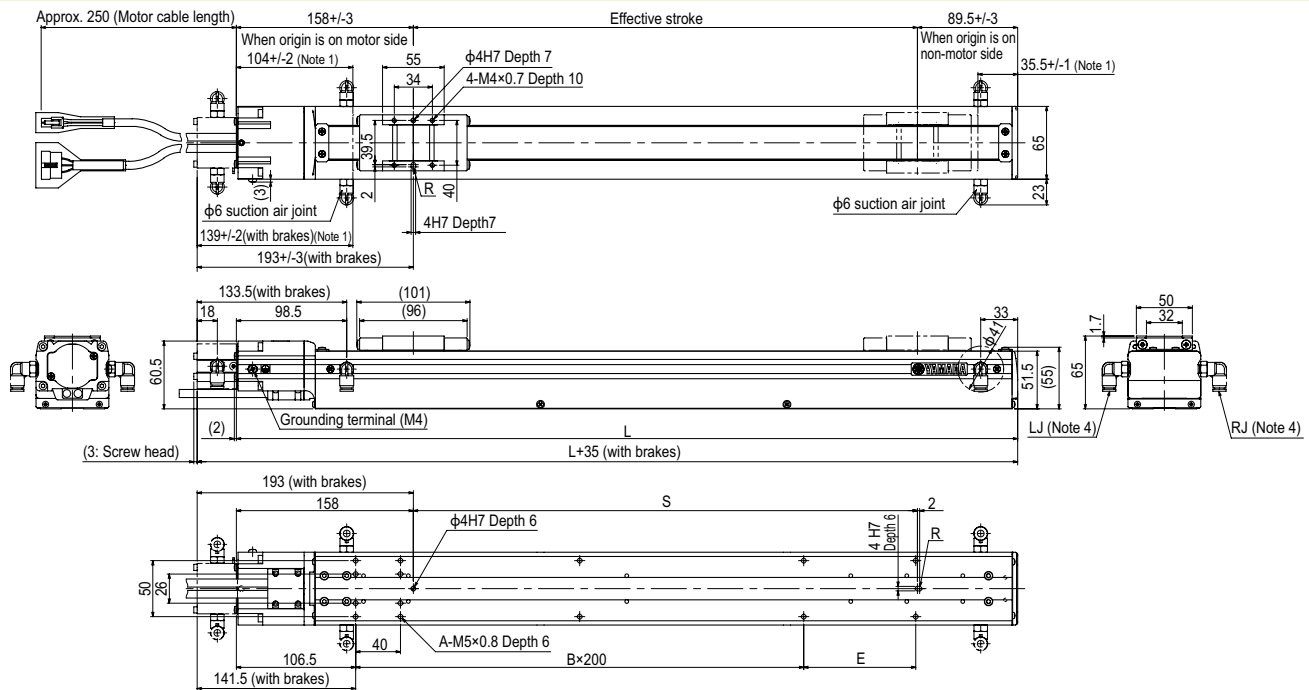
## Static loading moment

(Unit: N·m)		
MY	MP	MR
35	40	50

## Controller

Controller	Operation method
SR1-X05 RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X105	I/O point trace / Remote command
TS-X205	Remote command
RDV-X205-RBR1	Pulse train control

## C6L



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	297.5	347.5	397.5	447.5	497.5	547.5	597.5	647.5	697.5	747.5	797.5	847.5	897.5	947.5	997.5	1047.5
A	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18
B	0	0	0	1	1	1	1	2	2	2	2	3	3	3	3	4
E	150	200	200	100	100	200	200	100	100	200	200	100	100	200	200	100
S	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Weight (kg) Note 3	2.6	2.9	3.1	3.4	3.7	4.0	4.3	4.6	4.9	5.2	5.4	5.7	6.0	6.3	6.6	6.8
Maximum speed for each stroke Note 5 (mm/sec)	Lead 20	1000														
	Speed setting	-														
	Lead 12	800														
	Speed setting	-														
Lead 6	Lead 6	400														
	Speed setting	-														
	Speed setting	-														

- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Minimum bend radius of motor cable is R30.  
Note 3. Weight of models with no brake. The weight of brake-attached models is 0.2 kg heavier than the models with no brake shown in the table.  
Note 4. Either right or left can be selected for the installation direction for the  $\phi$ 6 intake air joint. (The left side is the standard.)  
Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

# C8

- High lead: Lead 20
- Origin on the non-motor side is selectable



## Ordering method

**C8**

Model	Lead	Brake <sup>Note 1</sup>	Option	Stroke	Cable length <sup>Note 2</sup>
	20: 20mm 12: 12mm 6: 6mm	No entry: With no brake BK: With brake	Origin position None: Standard Z: Non-change motor side	150 to 800 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

TSX	SR1-X	RDV-X
Positioner <sup>Note 3</sup> TS-X	Controller	Driver
Driver: Power-supply voltage / Power capacity 105: 100V/100W or less 205: 200V/100W or less	Driver: Power capacity 05: 100W or less	Power-supply voltage 2: AC200V
LCD monitor No entry: None L: With LCD	Usable for CE No entry: Standard E: CE marking	Driver: Power capacity 05: 100W or less
I/O selection NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 4</sup>	I/O selection N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	Regenerative unit RBR1
Battery B: With battery (Absolute) N: None (Incremental)	Battery B: With battery (Absolute) N: None (Incremental)	

Note 1. The model with a lead of 20mm cannot select specifications with brake (vertical specifications).  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

AC servo motor output (W)	100
Repeatability <sup>Note 1</sup> (mm)	+/-0.02
Deceleration mechanism	Ball screw $\phi 12$
Ball screw lead (mm)	20 12 6
Maximum speed (mm/sec)	1000 720 360
Maximum payload (kg)	Horizontal: 12 20 40 Vertical: - 4 8
Rated thrust (N)	84 141 283
Stroke (mm)	150 to 800 (50mm pitch)
Overall length (mm)	Horizontal: Stroke+320 Vertical: Stroke+355
Maximum outside dimension of body cross-section (mm)	W80 x H75
Cable length (m)	Standard: 3.5 / Option: 5, 10
Degree of cleanliness	CLASS 10 <sup>Note 3</sup>
Intake air (Nl/min)	30 to 90 <sup>Note 4</sup>

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Per 1cf (0.1um base), when suction blower is used.  
 Note 4. The necessary intake amount varies depending on the use conditions and environment.

## Allowable overhang <sup>Note</sup>

	Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)		
	Lead 20	A	B	C	Lead 20	A	B	C	Lead 12	A	C
5kg	245	85	146	121	71	211	121	440	442		
10kg	131	39	69	42	24	88	207	209			
12kg	115	31	57	29	16	66	130	132			
5kg	364	92	192	164	78	328	91	92			
10kg	207	43	92	106	62	158	237	238			
15kg	144	26	41	26	12	83	106	96			
20kg	112	18	40	7	4	32	62	62			
10kg	406	47	124	87	33	353	106	96			
20kg	225	20	54	18	6	127	62	62			
30kg	162	11	31	0	0	0	42	42			
40kg	168	7	20	0	0	0	34	40			

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

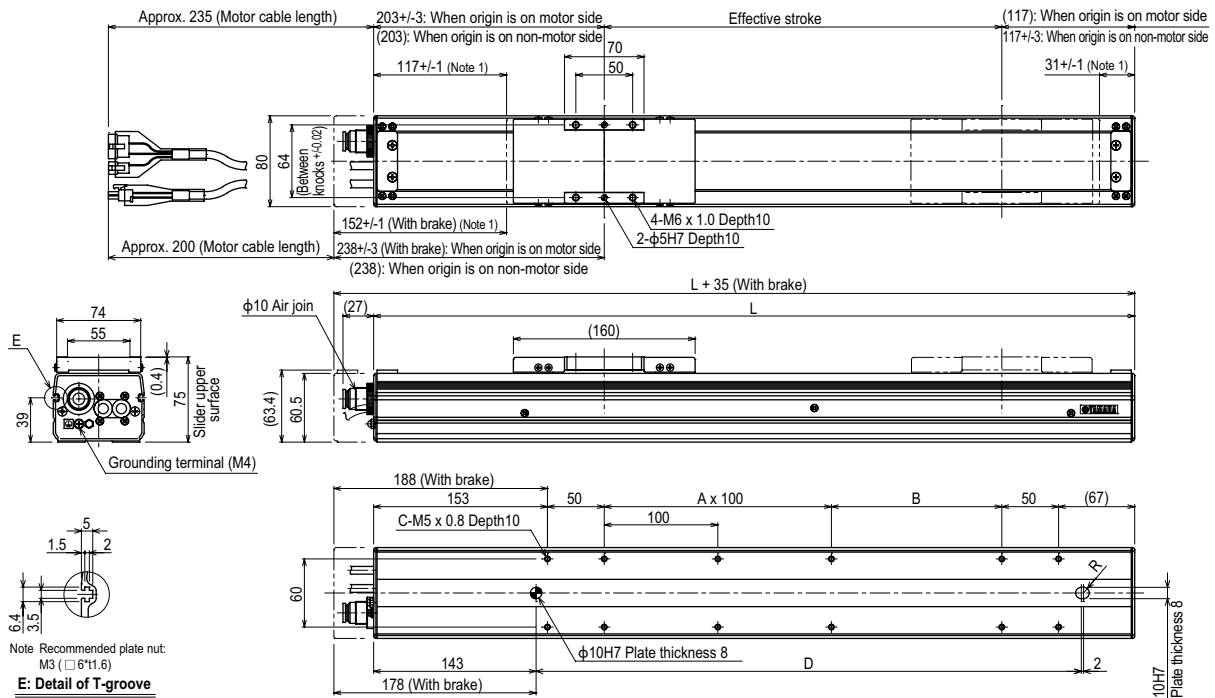
## Static loading moment

			(Unit: N·m)		
MY	MP	MR	MY	MP	MR
70	95	110	70	95	110

## Controller

Controller	Operation method
SR1-X05 RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X105	I/O point trace / Remote command
TS-X205	I/O point trace / Remote command
RDV-X205-RBR1	Pulse train control

## C8



Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800		
L	470	520	570	620	670	720	770	820	870	920	970	1020	1070	1120		
A	0	1	1	2	2	3	3	4	4	5	5	6	6	7		
B	150	100	150	100	150	100	150	100	150	100	150	100	150	100		
C	8	10	10	12	12	14	14	16	16	18	18	20	20	22		
D	280	330	380	430	480	530	580	630	680	730	780	830	880	930		
Weight (kg) <sup>Note 3</sup>	3.6	3.9	4.1	4.4	4.7	5.0	5.3	5.6	5.9	6.2	6.4	6.7	7.0	7.3		
Maximum speed <sup>Note 4</sup> (mm/sec)	Lead 20	1000										950	800	700	650	
	Speed setting	-										95%	80%	70%	65%	
	Lead 12	720										648	540	468	432	360
	Lead 6	360										324	270	234	216	180
Speed setting	-										90%	75%	65%	60%	50%	

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Minimum bend radius of motor cable is R50.  
 Note 3. Weight of models with no brake. The weight of brake-attached models is 0.3 kg heavier than the models with no brake shown in the table.  
 Note 4. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



# C8L

Origin on the non-motor side is selectable

## Ordering method

<b>C8L</b>	<b>Model</b>	<b>Lead</b> 20: 20mm 10: 10mm 5: 5mm	<b>Brake</b> No entry: With no brake BK: With brake	<b>Option</b> Origin position change None: Standard Z: Non-motor side	<b>Stroke</b> 150 to 1050 (50mm pitch)	<b>Cable length</b> <sup>Note 1</sup> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	<b>TSX</b>	<b>Positioner</b> <sup>Note 2</sup> TS-X	<b>Driver: Power-supply voltage / Power capacity</b> 105: 100V/100W or less 205: 200V/100W or less	<b>LCD monitor</b> No entry: None L: With LCD	<b>I/O selection</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
	<b>SR1-X</b>	<b>Controller</b>	<b>05</b>	<b>Driver: Power capacity</b> 05: 100W or less	<b>Usable for CE</b> No entry: Standard E: CE marking	<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)					
	<b>RDV-X</b>	<b>Driver</b>	<b>2</b>	<b>Power-supply voltage</b> 2: AC200V	<b>Driver: Power capacity</b> 05: 100W or less	<b>RBR1</b>	<b>Regenerative unit</b>					

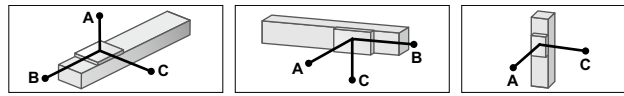
Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

AC servo motor output (W)	100
Repeatability <sup>Note 1</sup> (mm)	+/-0.01
Deceleration mechanism	Ball screw $\phi$ 15
Ball screw lead (mm)	20 10 5
Maximum speed <sup>Note 2</sup> (mm/sec)	1000 600 300
Maximum payload (kg)	Horizontal 20 40 50 Vertical 4 8 16
Rated thrust (N)	84 169 339
Stroke (mm)	150 to 1050 (50mm pitch)
Overall length (mm)	Horizontal Stroke+325 Vertical Stroke+360
Maximum outside dimension of body cross-section (mm)	W80 x H75
Cable length (m)	Standard: 3.5 / Option: 5, 10
Degree of cleanliness	CLASS 10 <sup>Note 3</sup>
Intake air (Nl/min)	30 to 90 <sup>Note 4</sup>

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Per 1cf (0.1um base), when suction blower is used.  
 Note 4. The necessary intake amount varies depending on the use conditions and environment.

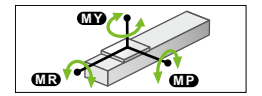
## Allowable overhang



Horizontal installation (Unit: mm)	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)				
	A	B	C	A	B	C	A	B	C		
Lead 20	5kg	259	122	179	5kg	147	100	220	2kg	255	260
	10kg	149	55	89	10kg	53	32	97	4kg	111	115
	15kg	100	33	56	15kg	17	10	39	2kg	300	302
	20kg	95	22	41	20kg	0	0	0	4kg	131	133
Lead 10	10kg	251	61	130	10kg	87	41	197	6kg	75	77
	20kg	127	25	55	20kg	10	4	37	8kg	47	49
	30kg	90	14	31	30kg	0	0	0	5kg	113	114
	40kg	69	8	18	40kg	0	0	0	10kg	37	38
Lead 5	20kg	256	29	76	20kg	24	9	152	15kg	12	12
	30kg	188	16	43	30kg	0	0	0	16kg	9	9
	40kg	96	10	28	40kg	0	0	0			
	50kg	33	6	18	50kg	0	0	0			

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

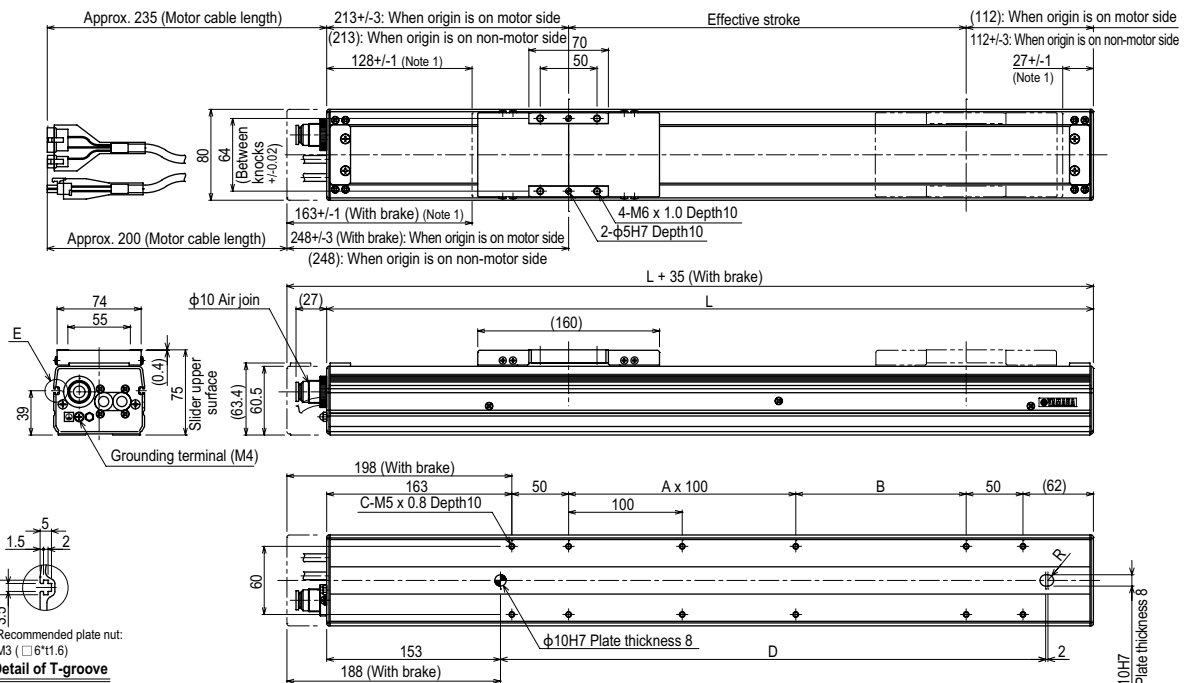


Static loading moment (Unit: N·m)		
MY	MP	MR
70	95	110

## Controller

Controller	Operation method
SR1-X05 RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X105	I/O point trace / Remote command
TS-X205	I/O point trace / Remote command
RDV-X205-RBR1	Pulse train control

## C8L



Note: Recommended plate nut: M3 (□6\*1.6)  
 E: Detail of T-groove

Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	
L	475	525	575	625	675	725	775	825	875	925	975	1025	1075	1125	1175	1225	1275	1325	1375	
A	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	
B	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	
C	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	26	
D	280	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030	1080	1130	1180	
Weight (kg) <sup>Note 3</sup>	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.0	6.4	6.7	7.0	7.3	7.6	7.9	8.2	8.5	8.8	9.2	9.5	
Maximum speed <sup>Note 4</sup> (mm/sec)	1000																			
	Speed setting	-																		
	Lead 10	600																		
	Lead 5	300																		
Speed setting	-																			
	85% 75% 65% 60% 55% 50% 45% 40%																			

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Minimum bend radius of motor cable is R50.  
 Note 3. Weight of models with no brake. The weight of brake-attached models is 0.3 kg heavier than the models with no brake shown in the table.  
 Note 4. When the stroke is longer than 700mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

# C8LH

Origin on the non-motor side is selectable

## Ordering method

**C8LH**

Model	Lead	Option	Stroke	Cable length <sup>Note 1</sup>	TSX	SR1-X	RDV-X
	20: 20mm 10: 10mm 5: 5mm	Origin position change None: Standard Z: Non-motor side	150 to 1050 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	Positioner <sup>Note 2</sup> TS-X Driver: Power supply voltage / Power capacity 105: 100V/100W or less 205: 200V/100W or less LCD monitor No entry: None L: With LCD	Controller 05 Driver: Power capacity 05: 100W or less Usable for CE No entry: Standard E: CE marking	Driver 2 Power supply voltage 2: AC200V 05 Driver: Power capacity 05: 100W or less Regenerative unit RBR1
					I/O selection NPN: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	I/O selection N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	
					Battery B: With battery (Absolute) N: None (Incremental)	Battery B: With battery (Absolute) N: None (Incremental)	

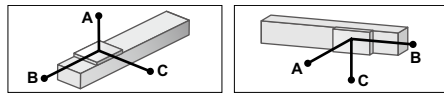
Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

AC servo motor output (W)	100
Repeatability <sup>Note 1</sup> (mm)	+/-0.01
Deceleration mechanism	Ball screw $\phi 15$
Ball screw lead (mm)	20 10 5
Maximum speed <sup>Note 2</sup> (mm/sec)	1000 600 300
Maximum payload (kg)	Horizontal 30 60 80
Rated thrust (N)	84 169 339
Stroke (mm)	150 to 1050 (50mm pitch)
Overall length (mm)	Stroke+389
Maximum outside dimension of body cross-section (mm)	W80 x H75
Cable length (m)	Standard: 3.5 / Option: 5, 10
Degree of cleanliness	CLASS 10 <sup>Note 3</sup>
Intake air (N $\ell$ /min)	30 to 90 <sup>Note 4</sup>

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 650mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Per 1cf (0.1um base), when suction blower is used.  
 Note 4. The necessary intake amount varies depending on the use conditions and environment.

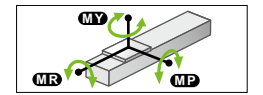
## Allowable overhang <sup>Note</sup>



	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)		
	A	B	C	A	B	C
Lead 20	10kg	687	274	200	163	225
	20kg	401	125	92	56	76
	30kg	338	76	57	20	27
Lead 10	20kg	622	137	111	74	90
	40kg	472	57	47	8	11
	60kg	375	30	25	-	-
Lead 5	20kg	1087	148	127	89	104
	40kg	844	63	54	15	18
	60kg	707	34	29	-	-
	80kg	594	20	17	-	-

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

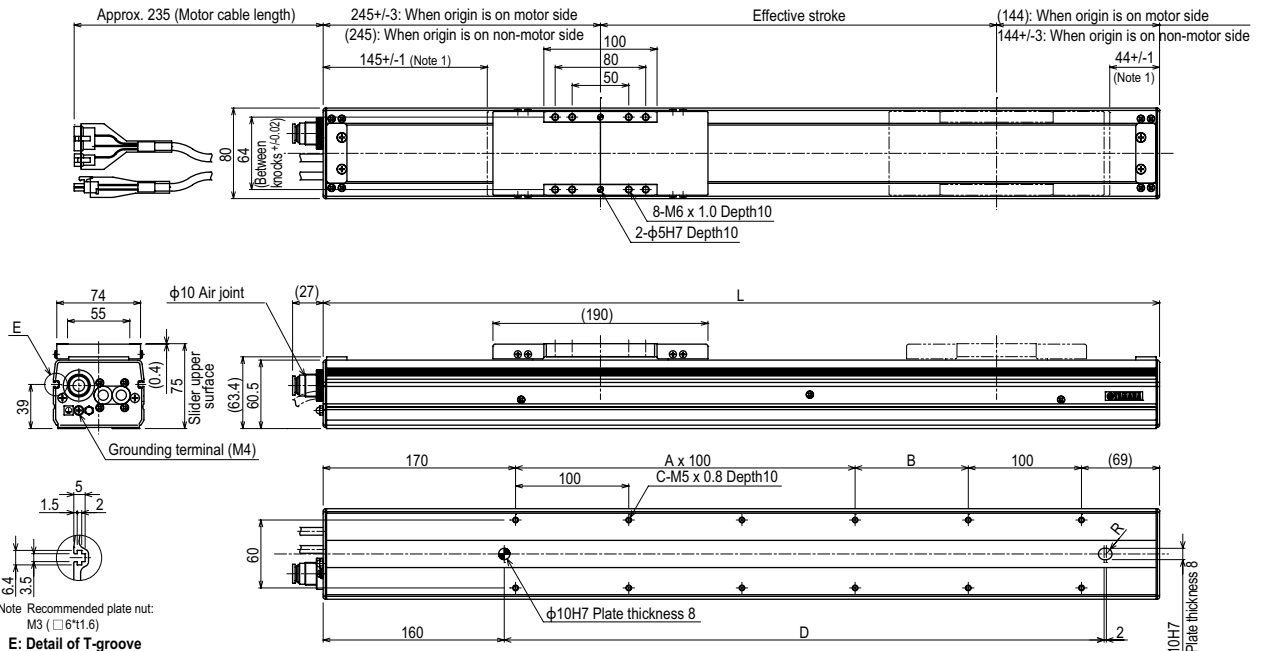


(Unit: N·m)		
MY	MP	MR
128	163	143

## Controller

Controller	Operation method
SR1-X05 RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X105	I/O point trace / Remote command
TS-X205	
RDV-X205-RBR1	Pulse train control

## C8LH



Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	
L	539	589	639	689	739	789	839	889	939	989	1039	1089	1139	1189	1239	1289	1339	1389	1439	
A	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	
B	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	150	100	
C	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24	26	
D	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030	1080	1130	1180	1230	
Weight (kg)	4.7	5.0	5.3	5.6	5.9	6.2	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.7	10.0	10.3	
Maximum speed <sup>Note 3</sup> (mm/sec)	Lead 20																			
	Speed setting																			
	Lead 10																			
	Lead 5																			
Speed setting																				

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Minimum bend radius of motor cable is R50.  
 Note 3. When the stroke is longer than 650mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



# C10

Origin on the non-motor side is selectable: Lead 20 • 10



## Ordering method

<b>C10</b>	<b>Model</b>	<b>Lead</b>	<b>Brake</b>	<b>Option</b>	<b>Stroke</b>	<b>Cable length</b> <sup>Note 2</sup>	<b>TSX</b>	<b>SR1-X</b>	<b>RDV-X</b>	<b>Battery</b>
		20: 20mm 10: 10mm 5: 5mm	No entry: With no brake BK: With brake	Origin position change None: Standard Z: Non-motor side <sup>Note 1</sup>	150 to 1050 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	<b>Positioner</b> <sup>Note 3</sup> TS-X Driver: Power-supply voltage / Power capacity 105: 100V/100W or less 205: 200V/100W or less Regenerative unit No entry: None R: With RGT LCD monitor No entry: None L: With LCD <b>I/O selection</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 4</sup> <b>Battery</b> B: With battery (Absolute) N: None (Incremental)	<b>Controller</b> 05 Driver: Power capacity 05: 100W or less Usable for CE No entry: Standard E: CE marking Regenerative unit No entry: None R: With RGT <b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS <b>Battery</b> B: With battery (Absolute) N: None (Incremental)	<b>Driver</b> 2 Power-supply voltage 2: AC200V 05 Driver: Power capacity 05: 100W or less <b>RBR1</b> Regenerative unit	

- Note 1. If selecting 5mm lead specifications then the origin point cannot be changed to the non-motor side.  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

AC servo motor output (W)	100
Repeatability <sup>Note 1</sup> (mm)	+/-0.01
Deceleration mechanism	Ball screw φ15
Ball screw lead (mm)	20 10 5
Maximum speed (mm/sec)	1000 500 250
Maximum payload (kg)	Horizontal 20 40 60 Vertical 4 10 20
Rated thrust (N)	84 169 339
Stroke (mm)	150 to 1050 (50mm pitch)
Overall length (mm)	Horizontal Stroke+283 Vertical Stroke+313
Maximum outside dimension of body cross-section (mm)	W104 × H85
Cable length (m)	Standard: 3.5 / Option: 5, 10
Degree of cleanliness	CLASS 10 <sup>Note 3</sup>
Intake air (Nl/min)	30 to 90 <sup>Note 4</sup>

- Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Per 1cf (0.1um base), when suction blower is used.  
 Note 4. The necessary intake amount varies depending on the use conditions and environment.

## Allowable overhang

Installation	Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)	
		A	B	C	A	B	C	A	C
Horizontal	Lead 20	5kg	1875	530	510	5kg	496	451	1826
		10kg	1079	247	242	10kg	218	168	1002
		20kg	628	106	107	20kg	78	27	497
	Lead 10	15kg	765	156	164	10kg	230	170	1036
		30kg	425	62	66	20kg	80	29	506
Wall	Lead 10	15kg	350	38	42	30kg	30	0	311
	Lead 5	30kg	960	63	68	10kg	234	170	2716
		50kg	565	25	28	20kg	82	29	1206
		60kg	470	16	17	30kg	31	0	711
	Lead 5	30kg	960	63	68	20kg	82	29	1206
Vertical	Lead 20	1kg	2461	2492	1kg	2461	2492		
		2kg	1213	1244	2kg	1213	1244		
		4kg	585	617	4kg	585	617		
	Lead 10	4kg	627	658	4kg	627	658		
		8kg	280	312	8kg	280	312		

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

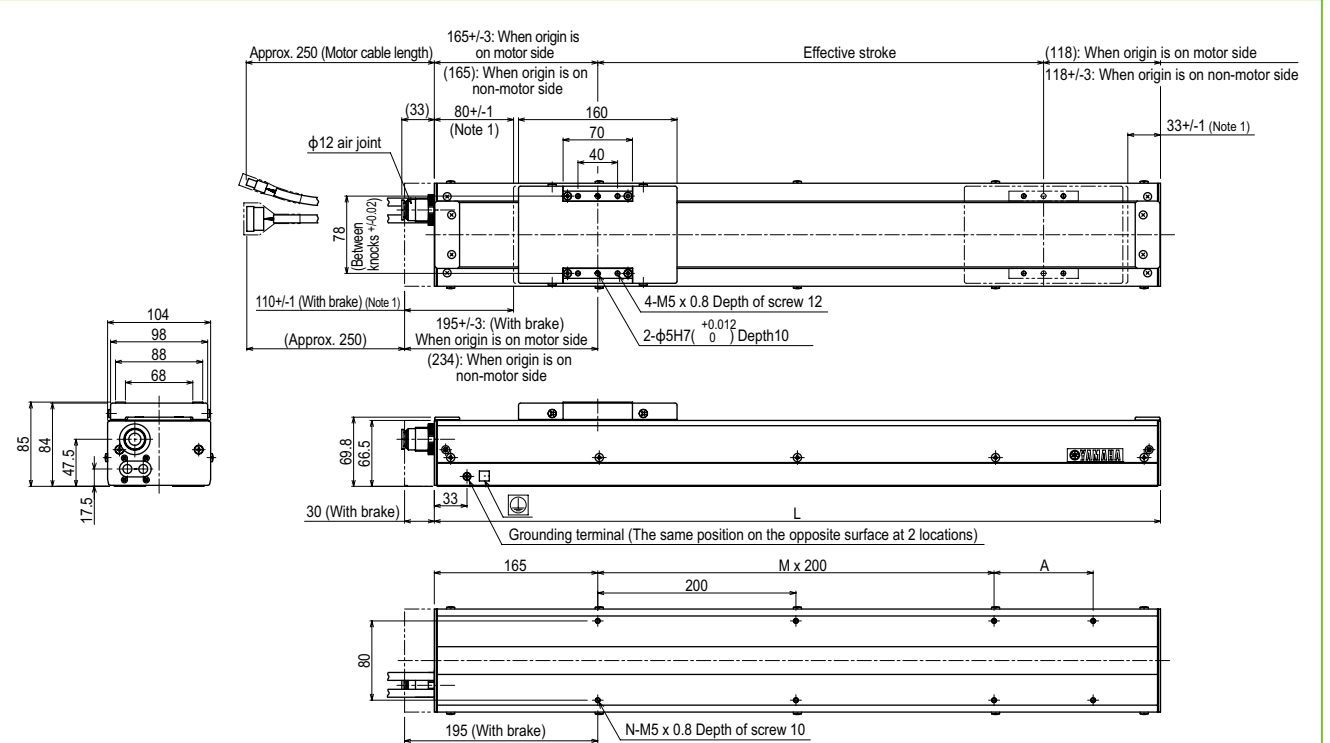
(Unit: N·m)		
MY	MP	MR
119	119	105

## Controller

Controller	Operation method
SR1-X05 <sup>Note</sup>	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX320	
RCX221/222	
RCX340	
TS-X105 <sup>Note</sup>	I/O point trace / Remote command
TS-X205 <sup>Note</sup>	
RDV-X205-RBR1	Pulse train control

Note. Regenerative unit is required when the models used vertically and with 700mm or larger stroke.

## C10



Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	
L	433	483	533	583	633	683	733	783	833	883	933	983	1033	1083	1133	1183	1233	1283	1333	
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	
N	4	6	6	6	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	
Weight (kg) <sup>Note 3</sup>	4.4	5.0	5.5	6.1	6.7	7.3	7.8	8.4	9.0	9.6	10.1	10.7	11.3	11.9	12.4	13.0	13.6	14.2	14.7	
Maximum speed <sup>Note 4</sup> (mm/sec)	Lead 20	1000																		
	Lead 10	500																		
	Lead 5	250																		
Speed setting	95% 95% 75% 75% 60% 60% 50%																			

- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Minimum bend radius of motor cable is R50.  
 Note 3. Weight of models with no brake. The weight of brake-attached models is 0.4 kg heavier than the models with no brake shown in the table.

Note 4. When the stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



# C14H

● Origin on the non-motor side is selectable: Lead 20 • 10



## Ordering method

**C14H**

Model	Lead	Brake	Option	Stroke	Cable length	TSX	SR1-X	RDV-X	Battery
	20: 20mm 10: 10mm 5: 5mm	No entry: With no brake BK: With brake	Origin position change None: Standard Z: Non-motor side	150 to 1050 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	Positioner TS-X Driver: Power-supply voltage / Power capacity 110: 100V/200W 210: 200V/200W Regenerative unit No entry: None R: With RGT LCD monitor No entry: None L: With LCD	Controller 10 Driver: Power capacity 10: 200W Usable for CE No entry: Standard E: CE marking Regenerative unit No entry: None R: With RG1	Driver 2 Power-supply voltage 2: AC200V 10 Driver: Power capacity 10: 200W or less	Battery B: With battery (Absolute) N: None (Incremental) I/O selection N: NPN P: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board I/O selection N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS Regenerative unit RBR1

Note 1. If selecting 5mm lead specifications then the origin point cannot be changed to the non-motor side.  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

AC servo motor output (W)	200
Repeatability (mm)	+/-0.01
Deceleration mechanism	Ball screw φ15
Ball screw lead (mm)	20 10 5
Maximum speed (mm/sec)	1000 500 250
Maximum payload (kg)	Horizontal 40 80 100 Vertical 8 20 30
Rated thrust (N)	170 341 683
Stroke (mm)	150 to 1050 (50mm pitch)
Overall length (mm)	Horizontal Stroke+349 Vertical Stroke+379
Maximum outside dimension of body cross-section (mm)	W136 × H96
Cable length (m)	Standard: 3.5 / Option: 5, 10
Degree of cleanliness	CLASS 10
Intake air (Nl/min)	30 to 90

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Per 1cf (0.1um base), when suction blower is used.  
 Note 4. The necessary intake amount varies depending on the use conditions and environment.

## Allowable overhang

Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	C	
Lead 20	10kg	2247	1675	987	1210	1678	4kg	2400	2008
	20kg	1397	855	497	548	958	6kg	1687	1358
	40kg	1037	445	247	217	598	8kg	1287	1033
Lead 10	30kg	1937	583	402	328	1238	10kg	1347	1088
	50kg	1637	364	227	152	878	15kg	887	718
	80kg	1717	242	119	74	678	20kg	657	538
Lead 5	60kg	2443	311	197	108	1308	20kg	747	608
	80kg	2193	242	127	53	1008	25kg	663	484
	100kg	2000	202	85	20	788	30kg	491	396

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

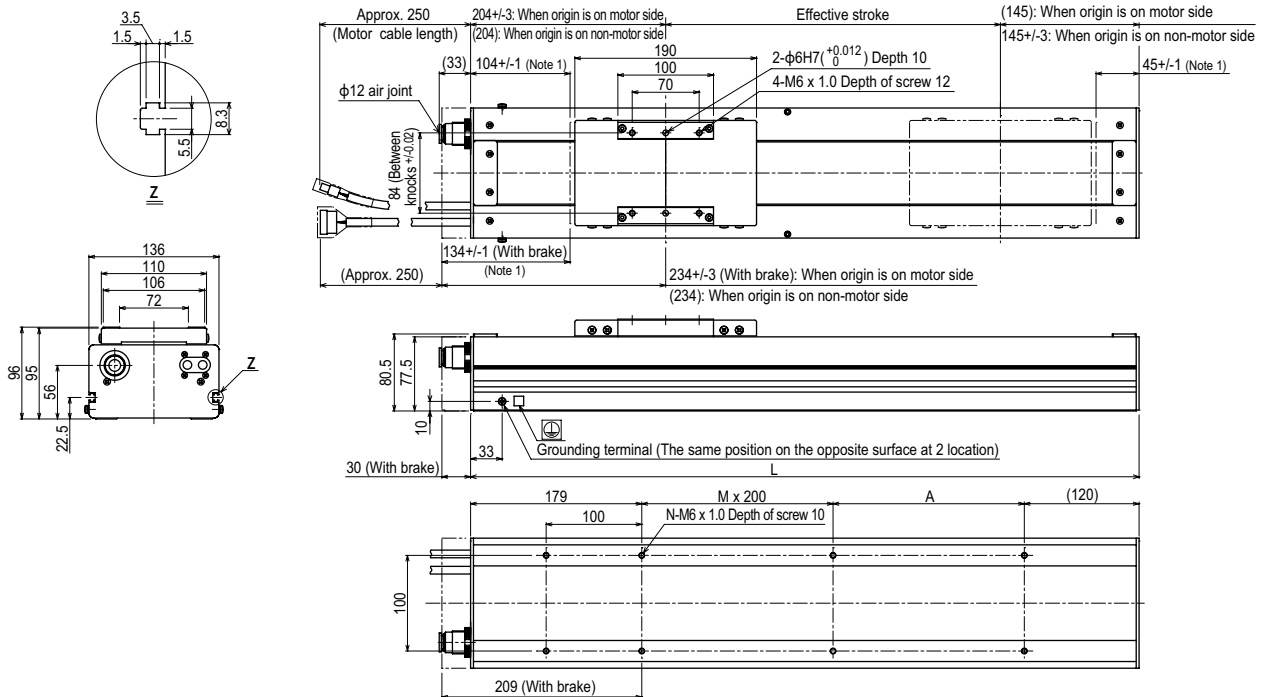
(Unit: N·m)		
MY	MP	MR
293	294	258

## Controller

Controller	Operation method
SR1-X10 Note	Programming / I/O point trace / Remote command
RCX320	Operation using RS-232C communication
RCX221/222	
RCX340	
TS-X110 Note	I/O point trace / Remote command
TS-X210 Note	
RDV-X210-RBR1	Pulse train control

Note. Regenerative unit is required when used vertically.

## C14H



Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
	L	499	549	599	649	699	749	799	849	899	949	999	1049	1099	1149	1199	1249	1299	1349
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5
N	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16
Weight (kg) Note 3	10.7	11.4	12.0	12.7	13.2	13.9	14.5	15.2	15.8	16.5	17.0	17.7	18.3	19.0	19.6	20.3	20.8	21.5	22.1
Maximum speed (mm/sec) Note 4	Lead 20	1000																	
	Lead 10	500																	
	Lead 5	250																	
	Speed setting	95% 95% 75% 75% 60% 60% 50%																	

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Minimum bend radius of motor cable is R50.  
 Note 3. Weight of models with no brake. The weight of brake-attached models is 0.4 kg heavier than the models with no brake shown in the table.  
 Note 4. When the stroke is longer than 750mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

# C17

Origin on the non-motor side is selectable



## Ordering method

**C17**

Model	Lead	Brake	Option	Stroke	Cable length	Positioner	220	Regenerative unit	LCD monitor	I/O selection	Battery
	20: 20mm 10: 10mm	No entry: With no brake BK: With brake	Origin position change None: Standard Z: Non-motor side	200 to 1250 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	TS-X	Driver: Power supply voltage / Power capacity 220: 200V/400 to 600W	No entry: None R: With RGT	No entry: None L: With LCD	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	N: None B: With battery (Absolute) I: Incremental
SR1-X						Controller	20	Usable for CE	Regenerative unit	I/O selection	
						Driver: Power capacity 20: 400 to 600W		No entry: Standard E: CE marking	No entry: None R: With RG1	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	B: With battery (Absolute) N: None I: Incremental
RDV-X						Driver	2		20	Regenerative unit	
						Power supply voltage 2: AC200V			Driver: Power capacity 20: 400W or less	RBR1 (Horizontal) RBR2 (Vertical)	

Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

AC servo motor output (W)	400
Repeatability (mm)	+/-0.01
Deceleration mechanism	Ball screw φ20
Ball screw lead (mm)	20      10
Maximum speed (mm/sec)	1000      600
Maximum payload (kg)	Horizontal: 80, 120 Vertical: 15, 35
Rated thrust (N)	339      678
Stroke (mm)	200 to 1250 (50mm pitch)
Overall length (mm)	Horizontal: Stroke+395 Vertical: Stroke+425
Maximum outside dimension of body cross-section (mm)	W168 × H114
Cable length (m)	Standard: 3.5 / OP: 5, 10
Degree of cleanliness	CLASS 10
Intake air (Nl/min)	30 to 90

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 950mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Per 1cf (0.1um base), when suction blower is used.  
 Note 4. The necessary intake amount varies depending on the use conditions and environment.

## Allowable overhang

Horizontal installation (Unit: mm)		Wall installation (Unit: mm)				Vertical installation (Unit: mm)			
		A	B	C		A	B	C	
Lead 20	30kg	2660	871	1040	Lead 20	30kg	1017	789	2576
	50kg	1911	508	615		50kg	583	426	1808
	80kg	1541	303	377		80kg	338	221	1380
	60kg	2443	418	580		60kg	525	336	2443
Lead 10	60kg	2000	237	330	Lead 10	100kg	271	155	2000
	100kg	1841	192	268		120kg	207	109	1841
	5kg	3000	3000			Lead 20	5kg	3000	3000
	10kg	2443	2443				10kg	2443	2443
					15kg	1633	1633		
					25kg	1013	1013		
					35kg	707	707		

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

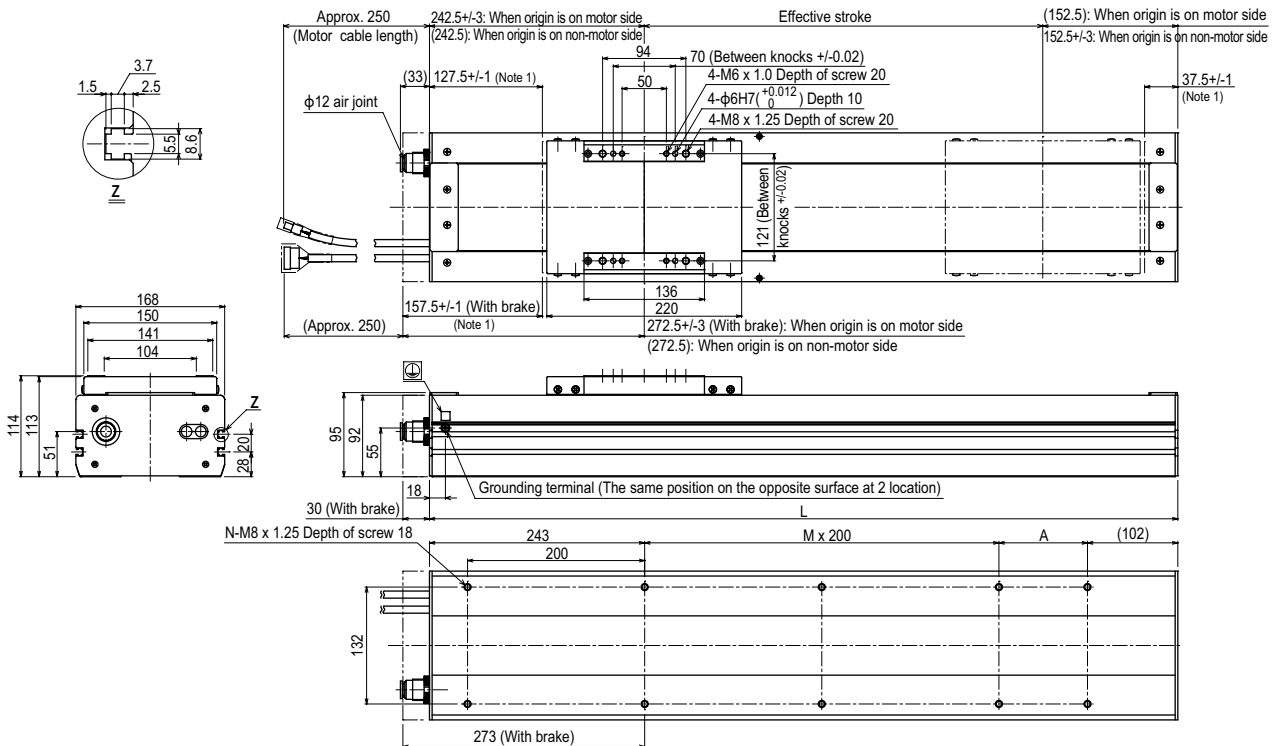
(Unit: N·m)		
MY	MP	MR
1032	1034	908

## Controller

Controller	Operation method
SR1-X20 RCX320, RCX221/222, RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X220	I/O point trace / Remote command
RDV-X220-RBR1 (Horizontal) RDV-X220-RBR2 (Vertical)	Pulse train control

Note. [The following arrangements require a regeneration unit] • Using in the upright position.

## C17



Effective stroke	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	
L	595	645	695	745	795	845	895	945	995	1045	1095	1145	1195	1245	1295	1345	1395	1445	1495	1545	1595	1645	
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	
M	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	
N	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18	
Weight (kg)	15.0	16.0	17.0	17.9	18.9	19.8	20.8	21.7	22.7	23.6	24.6	25.5	26.5	27.4	28.4	29.3	30.3	31.2	32.2	33.1	34.1	35.0	
Maximum speed (mm/sec)	Lead 20	1000																					
	Lead 10	500																					
Speed setting	Lead 20	-																					
	Lead 10	80%	80%	70%	70%	70%	60%	60%	50%														

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Minimum bend radius of motor cable is R50.  
 Note 3. Weight of models with no brake. The weight of brake-attached models is 1.5 kg heavier than the models with no brake shown in the table.  
 Note 4. When the stroke is longer than 950mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Controller

**SR1-X ▶ 540    TS-X ▶ 514    RDV-X ▶ 528**





# C20

● Origin on the non-motor side is selectable



## Ordering method

<b>C20</b>	<b>Model</b>	<b>Lead</b> 20: 20mm 10: 10mm	<b>Brake</b> No entry: With no brake BK: With brake	<b>Option</b> Origin position change None: Standard Z: Non-motor side	<b>Stroke</b> 200 to 1250 (50mm pitch)	<b>Cable length</b> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	<b>TSX</b> <b>Positioner</b> TS-X	<b>220</b> <b>Driver: Power-supply voltage / Power capacity</b> 220: 200V/400 to 600W	<b>Regenerative unit</b> No entry: None R: With RGT	<b>LCD monitor</b> No entry: None L: With LCD	<b>I/O selection</b> N: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
	<b>SR1-X</b> <b>Controller</b>	<b>20</b> <b>Driver: Power capacity</b> 20: 400 to 600W	<b>Usable for CE</b> No entry: Standard E: CE marking	<b>Regenerative unit</b> No entry: None R: With RG1	<b>I/O selection</b> N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)						
	<b>RDV-X</b> <b>Driver</b>	<b>2</b> <b>Power-supply voltage</b> 2: AC200V	<b>20</b> <b>Driver: Power capacity</b> 20: 400W or less	<b>Regenerative unit</b> RBR1 (Horizontal) RBR2 (Vertical)								

Note 1. Only the model with specifications with brake (vertical specifications) can select a lead of 10mm.  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Acceleration / deceleration is different depending the Positioner or Controller or Driver.  
 Note 5. Select this selection when using the gateway function. For details, see P.66.

## Basic specifications

AC servo motor output (W)	600
Repeatability (mm)	+/-0.01
Deceleration mechanism	Ball screw φ20
Ball screw lead (mm)	20 10
Maximum speed (mm/sec)	1000 500
Maximum payload (kg)	Horizontal 120 Vertical 25 45
Rated thrust (N)	510 1020
Stroke (mm)	200 to 1250 (50mm pitch)
Overall length (mm)	Horizontal Stroke+441 Vertical Stroke+471
Maximum outside dimension of body cross-section (mm)	W202 × H117
Cable length (m)	Standard: 3.5 / Option: 5, 10
Degree of cleanliness	CLASS 10
Intake air (Nl/min)	30 to 90

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 950mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 3. Per 1cf (0.1um base), when suction blower is used.  
 Note 4. The necessary intake amount varies depending on the use conditions and environment.

## Allowable overhang

Horizontal installation (Unit: mm)	Lead 20			
	50kg	2602	869	1145
Wall installation (Unit: mm)	Lead 20			
	50kg	1144	798	2602
Vertical installation (Unit: mm)	Lead 20			
	15kg	2711	2711	
	Lead 10			
	20kg	2045	2045	
	Lead 10			
	20kg	2182	2182	
	Lead 10			
	30kg	1437	1437	
	Lead 10			
	45kg	939	939	

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Static loading moment

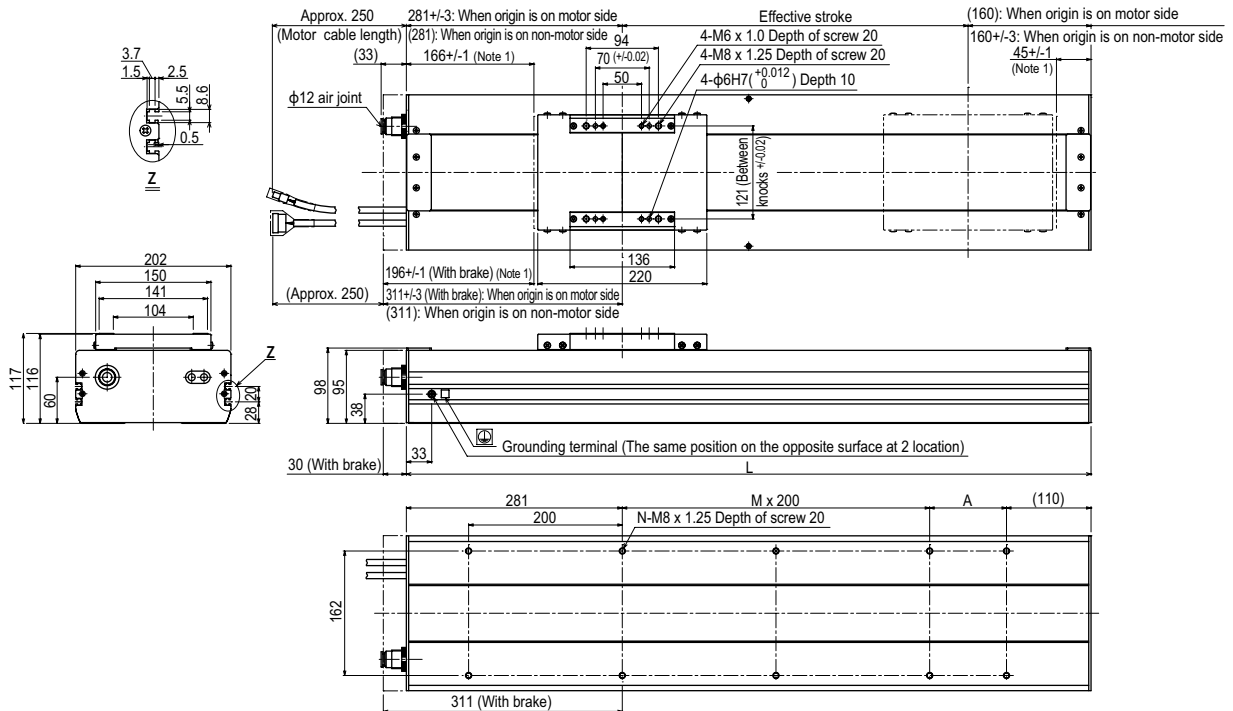
	(Unit: N·m)		
	MY	MP	MR
	1101	1103	968

## Controller

Controller	Operation method
SR1-X20 RCX320, RCX221/222, RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X220	I/O point trace / Remote command
RDV-X220-RBR1 (Horizontal) RDV-X220-RBR2 (Vertical)	Pulse train control

Note. [The following arrangements require a regeneration unit.]  
 • Using in the upright position.

## C20



Effective stroke	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
L	641	691	741	791	841	891	941	991	1041	1091	1141	1191	1241	1291	1341	1391	1441	1491	1541	1591	1641	1691
A	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100
M	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6
N	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	18	18
Weight (kg)	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0	45.0	46.0
Maximum speed (mm/sec)	Lead 20 1000												800									
	Lead 10 500												400									
Speed setting	-												80%									

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Minimum bend radius of motor cable is R50.  
 Note 3. Weight of models with no brake. The weight of brake-attached models is 2.0 kg heavier than the models with no brake shown in the table.  
 Note 4. When the stroke is longer than 950mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

Controller

**SR1-X ▶ 540 TS-X ▶ 514 RDV-X ▶ 528**

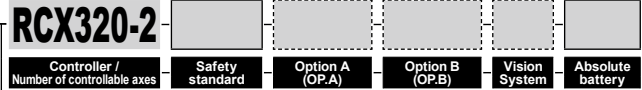
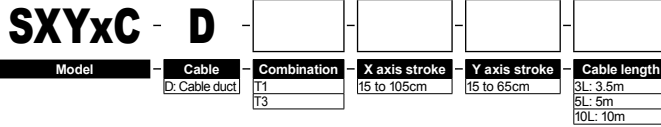


# SXYxC 2 axes

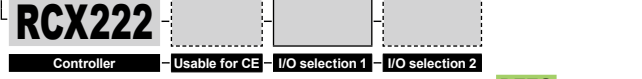
- Clean type
- Cable duct



## Ordering method



Specify various controller setting items. RCX320 ▶ **P.548**



Specify various controller setting items. RCX222 ▶ **P.558**

## Basic specifications

	X axis	Y axis
<b>Axis construction</b> <small>Note 1</small>	C14H	C14
<b>AC servo motor output (W)</b>	200	100
<b>Repeatability</b> <small>Note 2</small> (mm)	+/-0.01	+/-0.01
<b>Drive system</b>	Ball screw φ15	Ball screw φ15
<b>Ball screw lead</b> <small>Note 3</small> (Deceleration ratio) (mm)	20	20
<b>Maximum speed</b> <small>Note 4</small> (mm/sec)	1000	1000
<b>Moving range (mm)</b>	150 to 1050	150 to 650
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5, 10	
<b>Degree of cleanliness</b>	CLASS 10 <small>Note 5</small>	
<b>Intake air (Nℓ/min)</b>	60 <small>Note 6</small>	

Note 1. Use caution that the frame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 5. Per 1cf (0.1μm base), when suction blower is used.  
 Note 6. The necessary intake amount varies depending on the use conditions and environment.

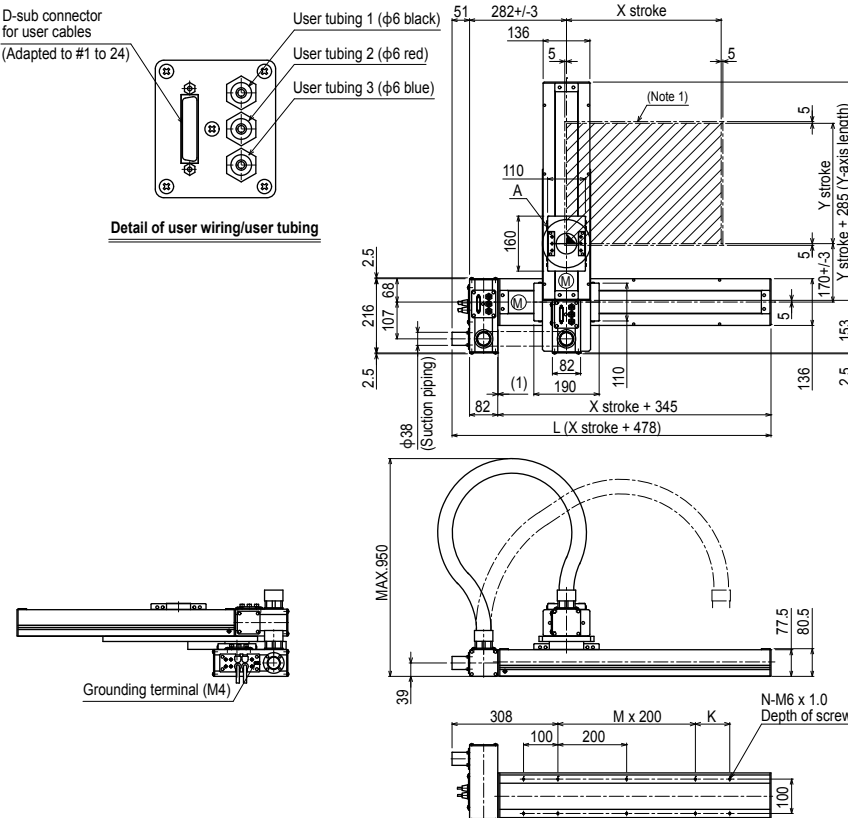
## Maximum payload (kg)

Y stroke (mm)	XY 2 axes
150	20
250	17
350	15
450	13
550	11
650	9

## Controller

Controller	Operation method
RCX320	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX222	

## SXYxC 2 axes T1



X stroke	150	250	350	450	550	650	750	850	950	1050	
	L	628	728	828	928	1028	1128	1228	1328	1428	1528
K	200	100	200	100	200	100	200	100	200	100	
M	0	1	1	2	2	3	3	4	4	5	
N	6	8	8	10	10	12	12	14	14	16	
Y stroke	150	250	350	450	550	650					
<b>Maximum speed for each stroke (mm/sec)</b> <small>Note 2</small>	1000						800	650	550		
<b>Speed setting</b>	-						80%	65%	55%		

Note 1. The moving range when returning to origin and the stop position when stopping by mechanical stopper.

Note 2. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



# SXYxC

3 axes / ZSC

- Clean type
- Cable duct
- Z-axis shaft vertical type

## Ordering method

**SXYxC - D** [ ] [ ] [ ] [ ] **15** [ ] **RCX340-3** [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Model	Cable	Combination	X axis stroke	Y axis stroke	ZR axis	Z axis stroke	Cable length	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	D: Cable duct	T1 T3	15 to 105cm	15 to 65cm	ZSC12 ZSC6		3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Basic specifications

	X axis	Y axis	Z axis: ZSC12	Z axis: ZSC6
<b>Axis construction</b> <sup>Note 1</sup>	C14H	C14		-
<b>AC servo motor output (W)</b>	200	100		60
<b>Repeatability</b> <sup>Note 2</sup> (mm)	+/-0.01	+/-0.01		+/-0.02
<b>Drive system</b>	Ball screw φ15	Ball screw φ15		Ball screw φ12
<b>Ball screw lead</b> <sup>Note 3</sup> (Deceleration ratio) (mm)	20	20	12	6
<b>Maximum speed</b> <sup>Note 4</sup> (mm/sec)	1000	1000	1000	500
<b>Moving range (mm)</b>	150 to 1050	150 to 650		150
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5, 10			
<b>Degree of cleanliness</b>	CLASS 10 <sup>Note 5</sup>			
<b>Intake air (Nℓ/min)</b>	90 <sup>Note 6</sup>			

Note 1. Use caution that the frame machining (installation holes, tap holes) differs from single-axis robots.  
 Note 2. Positioning repeatability in one direction.  
 Note 3. Leads not listed in the catalog are also available. Contact us for details.  
 Note 4. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.  
 Note 5. Per 1cf (0.1μm base), when suction blower is used.  
 Note 6. The necessary intake amount varies depending on the use conditions and environment.

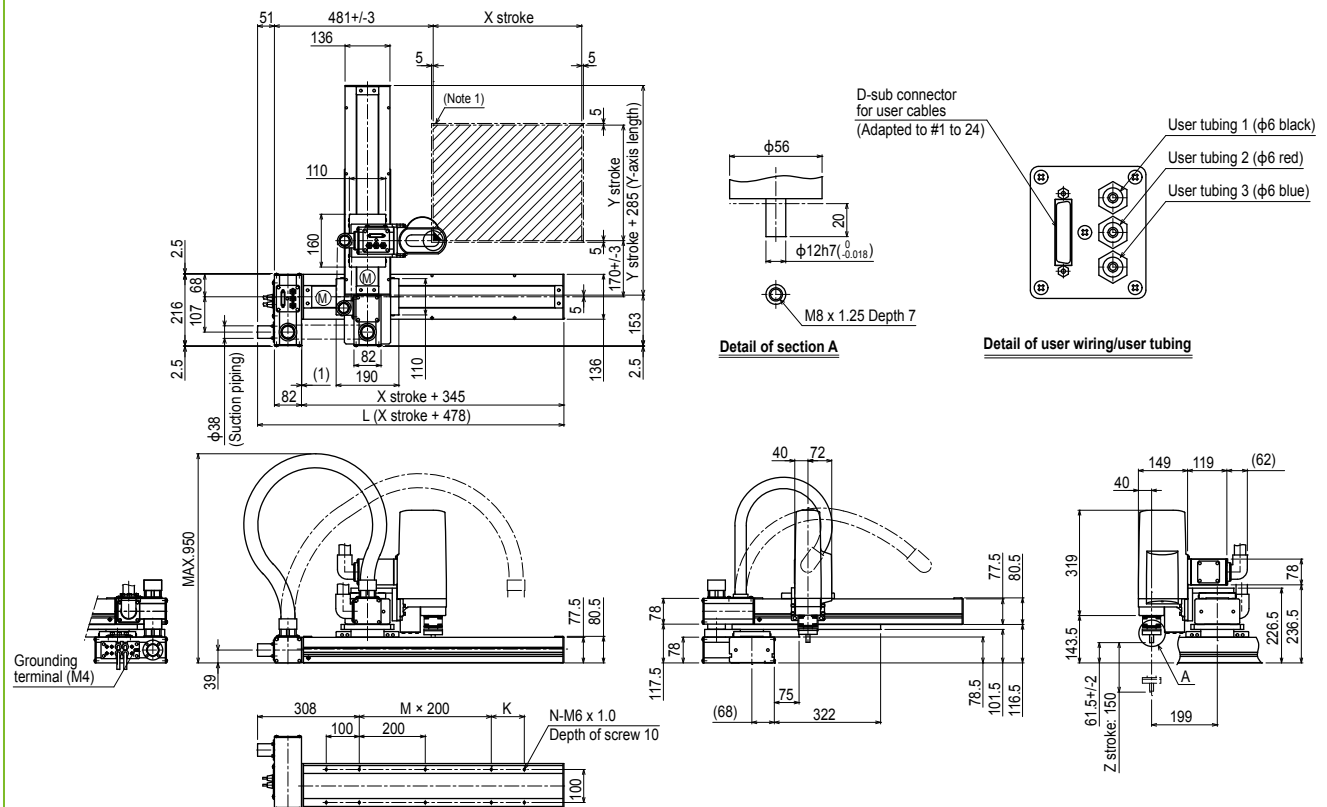
## Maximum payload (kg)

Y stroke (mm)	ZSC12	ZSC6
150 to 650	3	5

## Controller

Controller	Operation method
RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## SXYxC 3 axes / ZSC (T1)

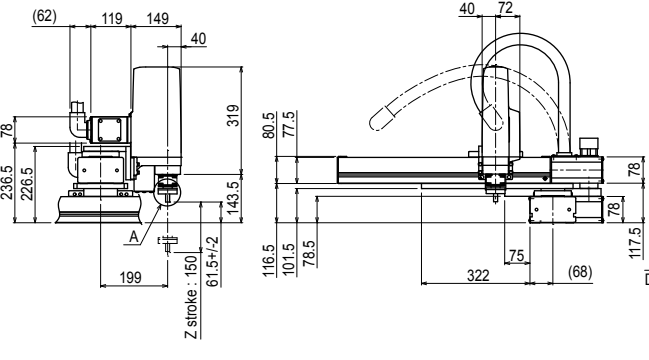
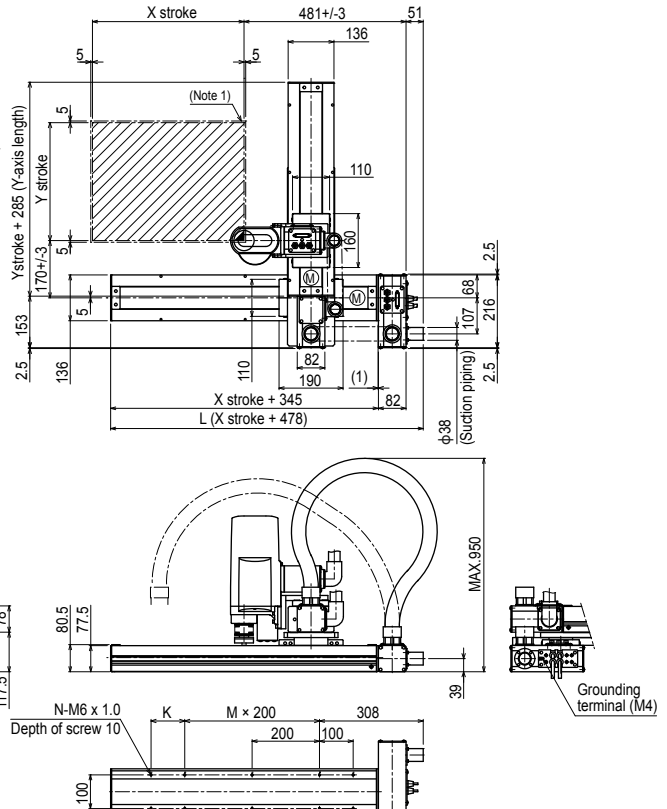
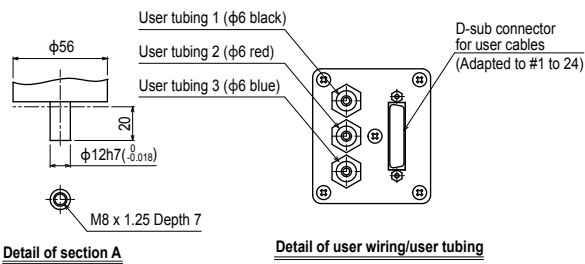


X stroke	150	250	350	450	550	650	750	850	950	1050
	L	628	728	828	928	1028	1128	1228	1328	1428
K	200	100	200	100	200	100	200	100	200	100
M	0	1	1	2	2	3	3	4	4	5
N	6	8	8	10	10	12	12	14	14	16
Y stroke	150	250	350	450	550	650				
Z stroke	150									
Maximum speed for each stroke (mm/sec) <sup>Note 2</sup>	X axis				1000			800	650	550
	Speed setting				-			80%	65%	55%

Note 1. The moving range when returning to origin and the stop position when stopping by mechanical stopper.

Note 2. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

SXYxC 3 axes / ZSC T3



X stroke	150	250	350	450	550	650	750	850	950	1050
L	628	728	828	928	1028	1128	1228	1328	1428	1528
K	200	100	200	100	200	100	200	100	200	100
M	0	1	1	2	2	3	3	4	4	5
N	6	8	8	10	10	12	12	14	14	16
Y stroke	150	250	350	450	550	650				
Z stroke	150									
Maximum speed for each stroke (mm/sec)	1000			800			650	550		
Speed setting	-			80%			65%	55%		

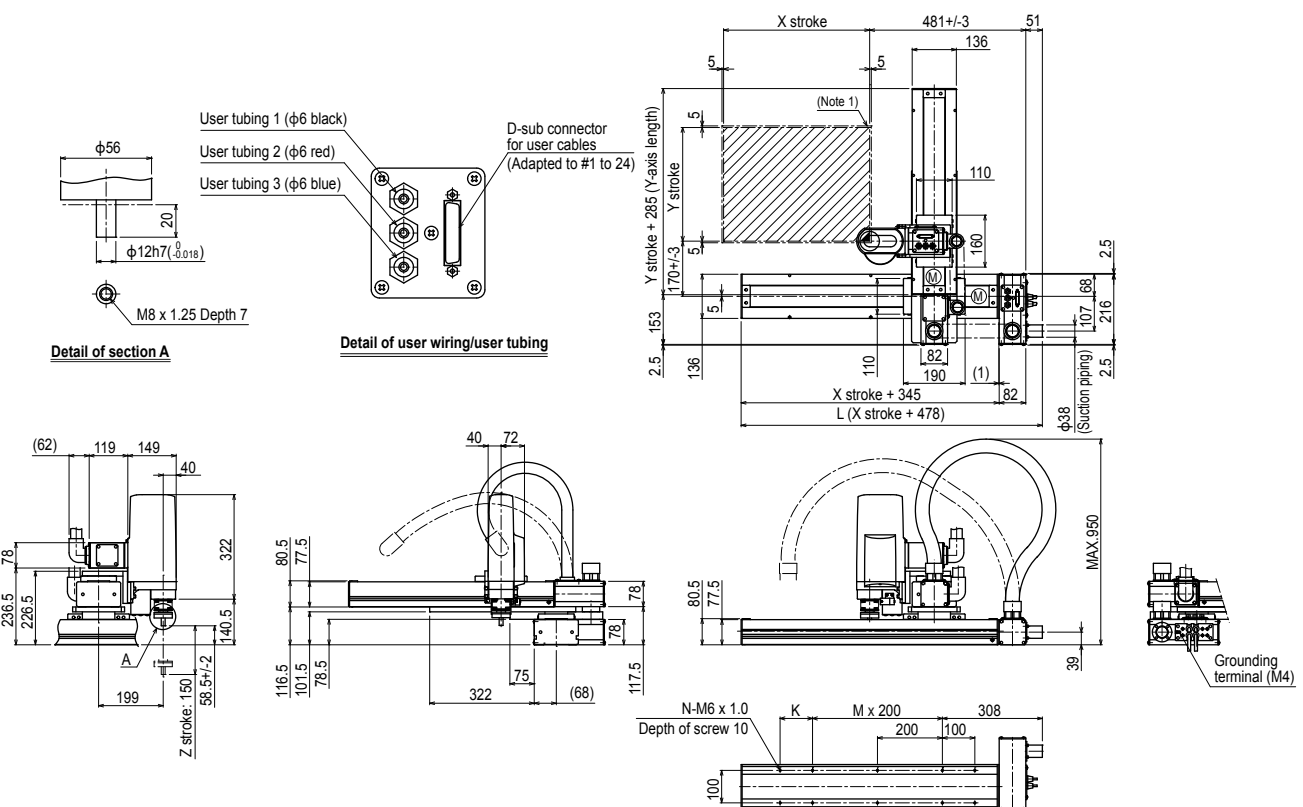
Note 1. The moving range when returning to origin and the stop position when stopping by mechanical stopper.

Note 2. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.





SXYxC 4 axes / ZRSC T3



X stroke	150	250	350	450	550	650	750	850	950	1050
L	628	728	828	928	1028	1128	1228	1328	1428	1528
K	200	100	200	100	200	100	200	100	200	100
M	0	1	1	2	2	3	3	4	4	5
N	6	8	8	10	10	12	12	14	14	16
Y stroke	150	250	350	450	550	650				
Z stroke	150									
Maximum speed for each stroke (mm/sec)	1000			800			650	550		
Speed setting	-			80%			65%	55%		

Note 1. The moving range when returning to origin and the stop position when stopping by mechanical stopper.

Note 2. When the X-axis stroke is longer than 850mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.



# YK220XC

Clean type: Extra small type

Note. Built-to-order product. Contact us for the delivery period.

- Arm length 220mm
- Maximum payload 1kg

## Ordering method

**YK220XC - 100**

**RCX340-4**

Model	Z axis stroke	Cable length	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	100: 100mm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Basic specifications

Axis specifications	Arm length (mm)	X axis	Y axis	Z axis	R axis
Rotation angle (°)		+/-120	+/-140	-	+/-360
AC servo motor output (W)		50	30	30	30
Repeatability <sup>Note 1</sup> (XYZ: mm) (R: °)		+/-0.01		+/-0.01	+/-0.004
Maximum speed (XYZ: m/sec) (R: °/sec)		3.4		0.7	1700
Maximum payload (kg)		1.0			
Standard cycle time: with 0.1kg payload <sup>Note 2</sup> (sec)		0.45			
R-axis tolerable moment of inertia <sup>Note 3</sup> (kgm <sup>2</sup> )		0.01			
User wiring (sq x wires)		0.1 x 8			
User tubing (Outer diameter)		φ3 x 2			
Travel limit		1.Soft limit, 2.Mechanical stopper (X, Y, Z axes)			
Robot cable length (m)		Standard: 3.5 Option: 5, 10			
Weight (kg) (Excluding robot cable) <sup>Note 4</sup>		6.5			
Robot cable weight		1.5kg (3.5m) 2.1kg (5m) 4.2kg (10m)			
Degree of cleanliness		CLASS 10 (0.1 μm base)			
Intake air (Nℓ/min)		30			

Note 1. This is the value at a constant ambient temperature.

Note 2. When reciprocating 100mm in horizontal and 25mm in vertical directions.

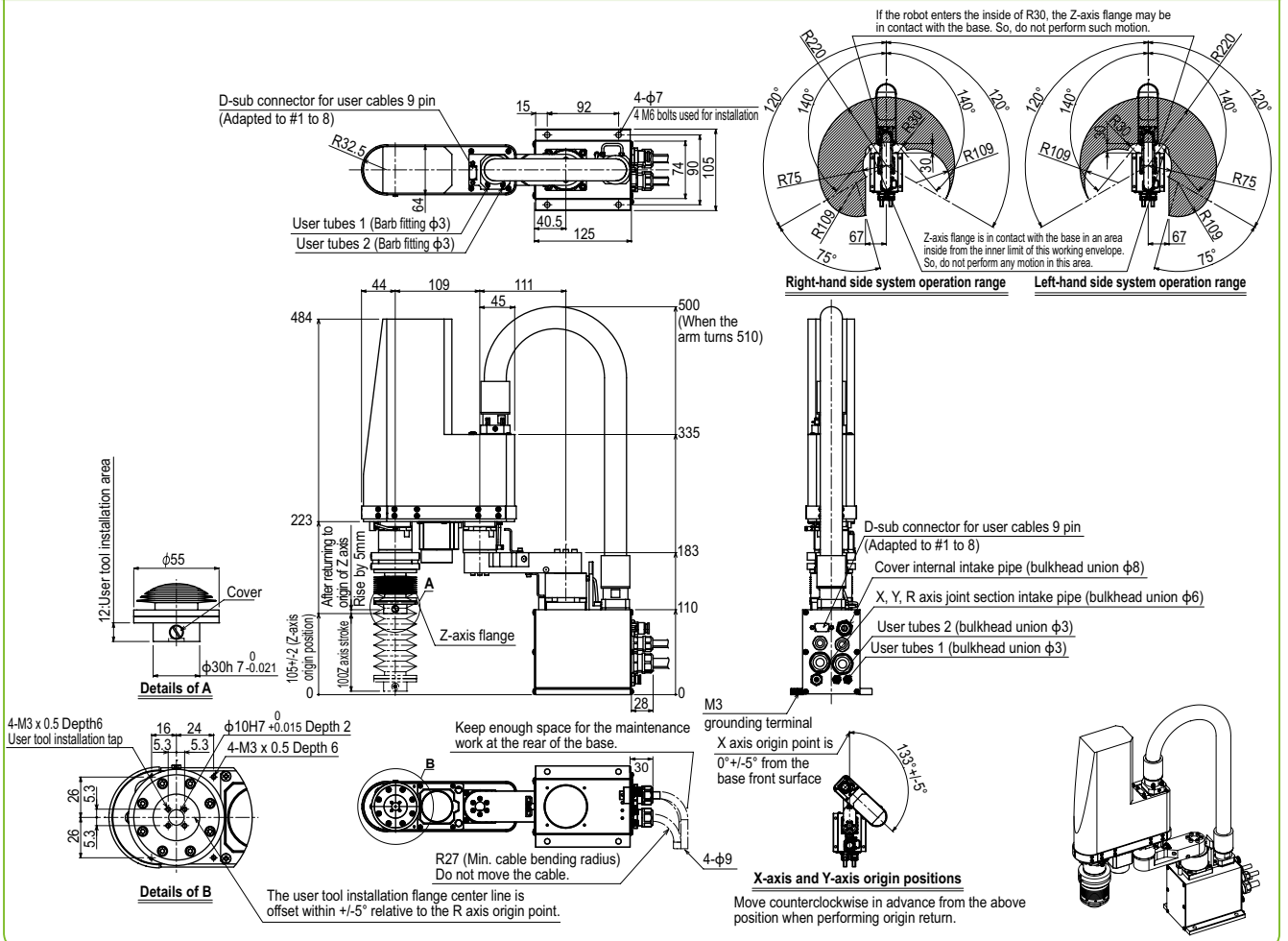
Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.

Note 4. The total robot weight is the sum of the robot body weight and the cable weight.

## Controller

Controller	Power capacity (VA)	Operation method
RCX340	500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

## YK220XC



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Single-axis  
Cartesian  
SCARA

# YK250XGC

Clean type: Small type



- Arm length 250mm
- Maximum payload 4kg

## Ordering method

**YK250XGC - 150** **S** **RCX340-4**

Model	Z axis stroke	Tool flange	Hollow shaft	Cable length	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	150, 150mm	No entry: None F: With tool flange	S: With hollow shaft	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Basic specifications

	X axis	Y axis	Z axis	R axis
<b>Axis specifications</b>				
Arm length (mm)	100	150	150	-
Rotation angle (°)	+/-129	+/-134	-	+/-360
<b>AC servo motor output (W)</b>	200	150	50	100
<b>Repeatability</b> <sup>Note 1</sup> (XYZ: mm) (R: °)	+/-0.01		+/-0.01	+/-0.004
<b>Maximum speed (XYZ: m/sec) (R: °/sec)</b>	4.5		1.1	1020
<b>Maximum payload (kg)</b>	4			
<b>Standard cycle time: with 2kg payload (sec)</b> <sup>Note 2</sup>	0.50			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup> (kgm <sup>2</sup> )	0.05			
<b>User wiring (sq × wires)</b>	0.2×10			
<b>User tubing (Outer diameter)</b>	φ4×4			
<b>Travel limit</b>	1.Soft limit, 2.Mechanical stopper (X, Y, Z axes)			
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5, 10			
<b>Weight (kg)</b>	21.5			
<b>Degree of cleanliness</b>	ISO CLASS 3 (ISO 14644-1) <sup>Note 4+ESD</sup> <sup>Note 5</sup>			
<b>Intake air (Nℓ/min)</b>	30 <sup>Note 6</sup>			

- Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Class 10 (0.1μm) equivalent to FED-STD-209D  
 Note 5. ESD (ElectroStatic Discharge) prevention is an option. Please contact our distributor.  
 Note 6. The necessary intake amount varies depending on the use conditions and environment.

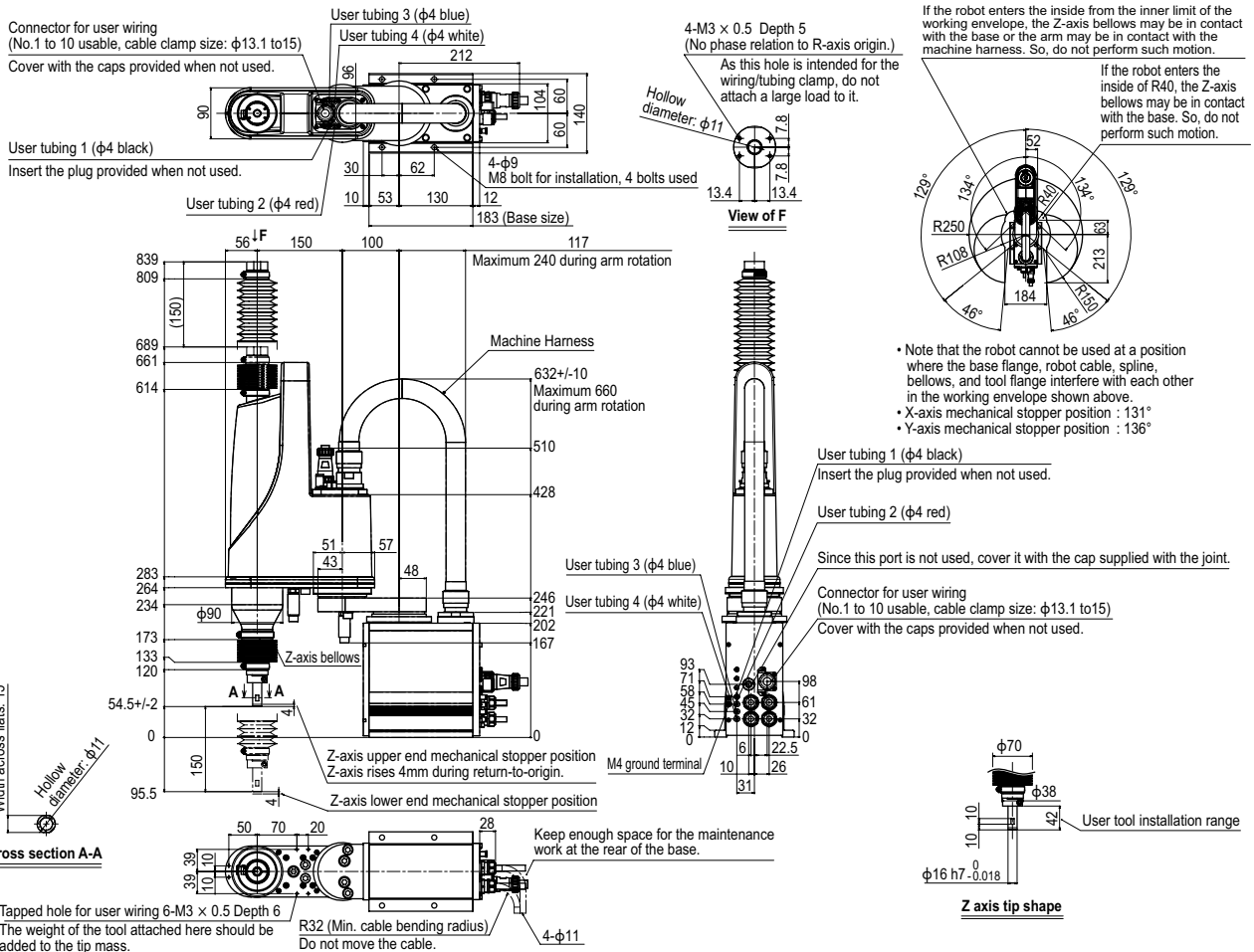
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

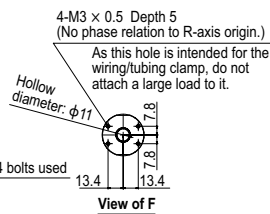
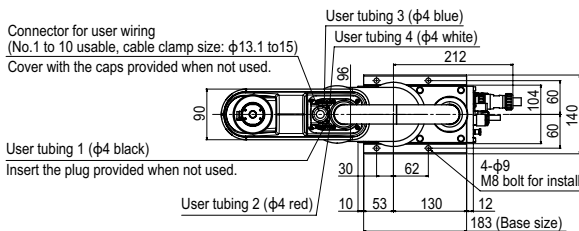
- Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.  
 Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK250XGC

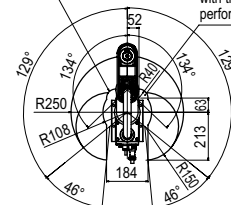


## YK250XGC Tool flange mount type

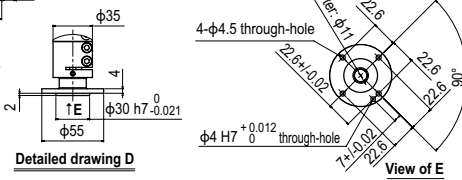
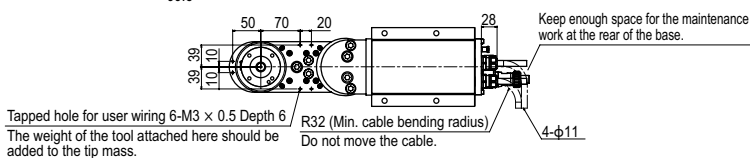
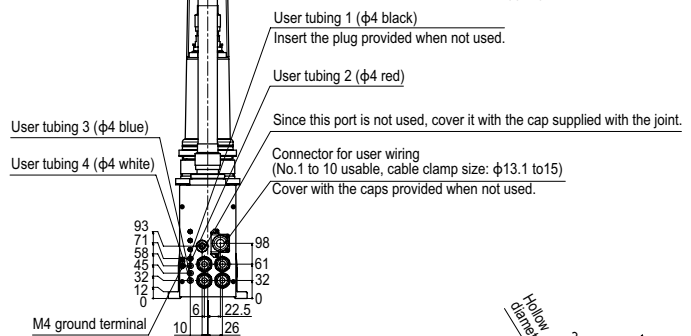
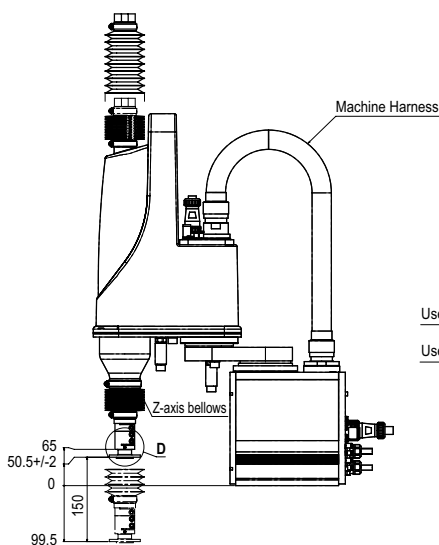


If the robot enters the inside from the inner limit of the working envelope, the Z-axis bellows may be in contact with the base or the arm may be in contact with the machine harness. So, do not perform such motion.

If the robot enters the inside of R40, the Z-axis bellows may be in contact with the base. So, do not perform such motion.



- Note that the robot cannot be used at a position where the base flange, robot cable, spline, bellows, and tool flange interfere with each other in the working envelope shown above.
- X-axis mechanical stopper position : 131°
- Y-axis mechanical stopper position : 136°



Detailed drawing D







# YK400XGC

Clean type: Small type



- Arm length 400mm
- Maximum payload 4kg

## Ordering method

**YK400XGC - 150** **S** **RCX340-4**

Model	Z axis stroke	Tool flange	Hollow shaft	Cable length	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	150: 150mm	No entry: None F: With tool flange	S: With hollow shaft	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P566**

## Basic specifications

	X axis	Y axis	Z axis	R axis
<b>Axis specifications</b>				
Arm length (mm)	250	150	150	-
Rotation angle (°)	+/-129	+/-144	-	+/-360
<b>AC servo motor output (W)</b>	200	150	50	100
<b>Repeatability</b> <sup>Note 1</sup> (XYZ: mm) (R: °)	+/-0.01		+/-0.01	+/-0.004
<b>Maximum speed (XYZ: m/sec) (R: °/sec)</b>	6.1		1.1	1020
<b>Maximum payload (kg)</b>	4			
<b>Standard cycle time: with 2kg payload (sec)</b> <sup>Note 2</sup>	0.50			
<b>R-axis tolerable moment of inertia</b> <sup>Note 3</sup> (kgm <sup>2</sup> )	0.05			
<b>User wiring (sq x wires)</b>	0.2x10			
<b>User tubing (Outer diameter)</b>	φ4x4			
<b>Travel limit</b>	1.Soft limit, 2.Mechanical stopper (X, Y, Z axes)			
<b>Robot cable length (m)</b>	Standard: 3.5 Option: 5, 10			
<b>Weight (kg)</b>	22.5			
<b>Degree of cleanliness</b>	ISO CLASS 3 (ISO 14644-1) <sup>Note 4+ESD</sup> <sup>Note 5</sup>			
<b>Intake air (Nℓ/min)</b>	30 <sup>Note 6</sup>			

- Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Class 10 (0.1μm) equivalent to FED-STD-209D  
 Note 5. ESD (ElectroStatic Discharge) prevention is an option. Please contact our distributor.  
 Note 6. The necessary intake amount varies depending on the use conditions and environment.

## Controller

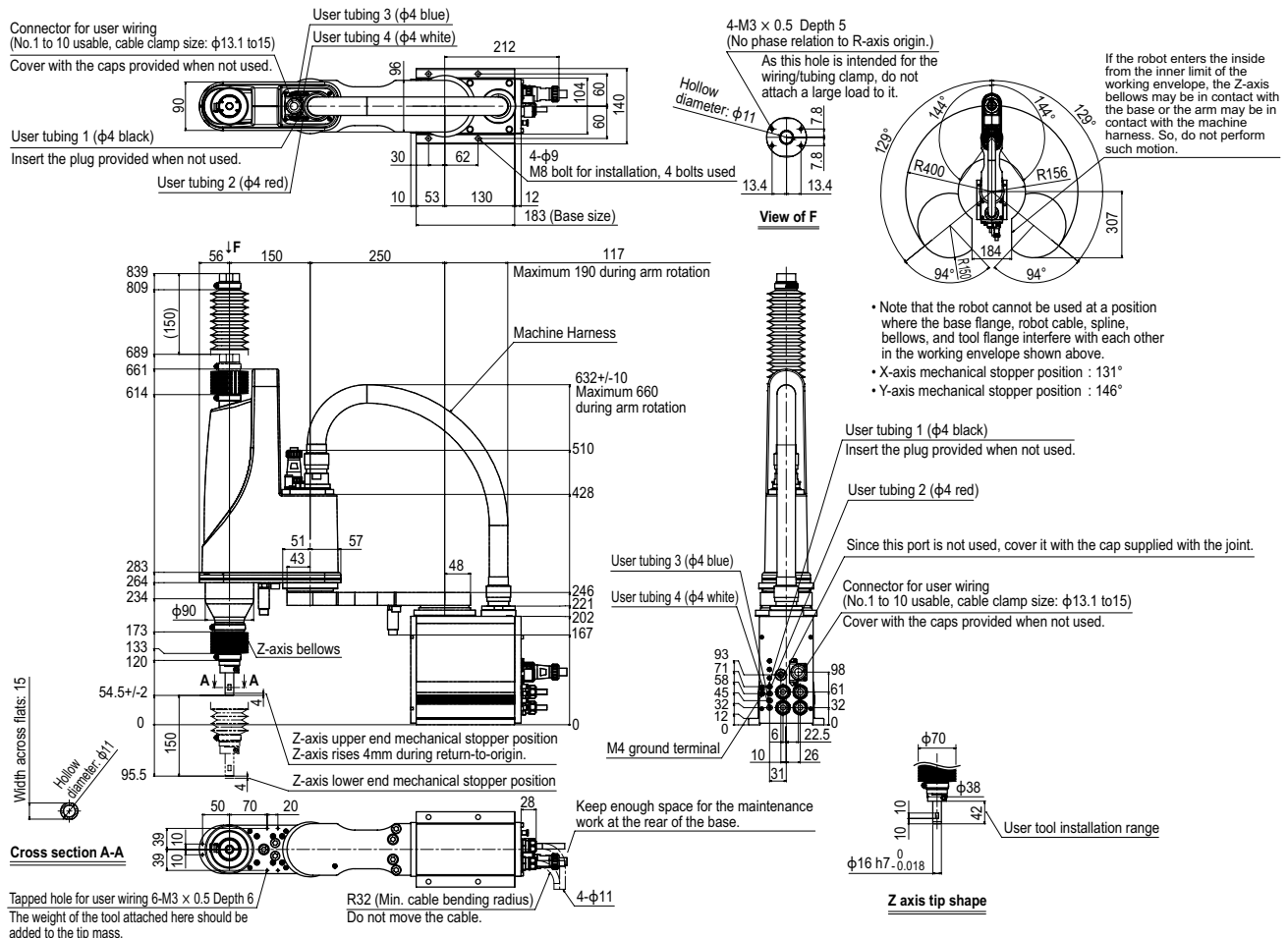
Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.

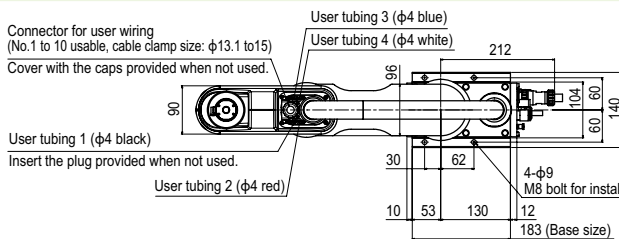
Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

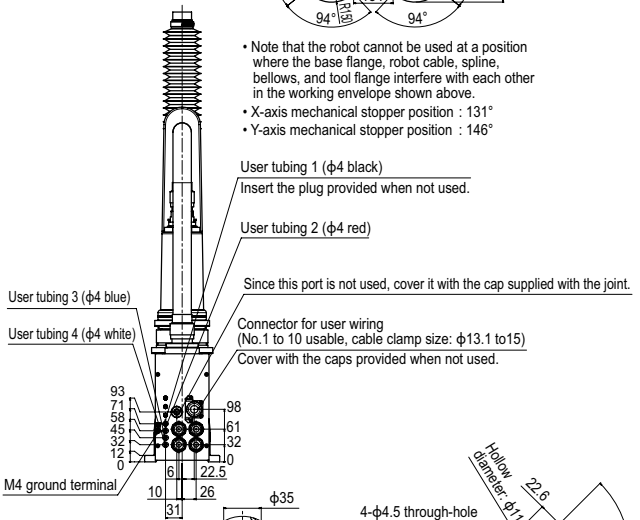
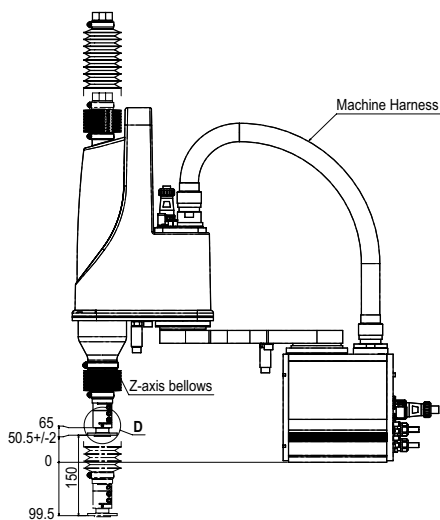
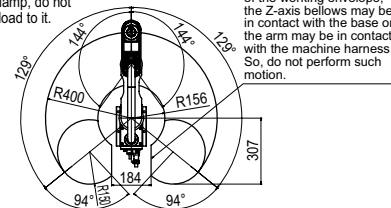
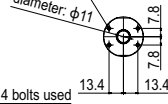
## YK400XGC



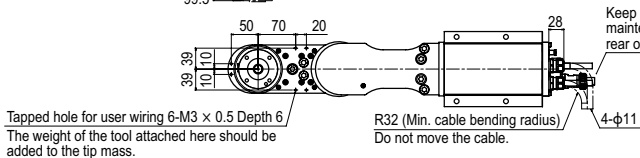
## YK400XGC Tool flange mount type



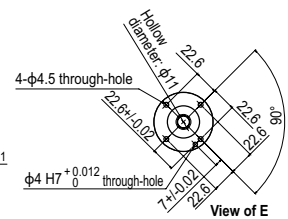
4-M3  $\times$  0.5 Depth 5  
(No phase relation to R-axis origin.)  
As this hole is intended for the wiring/tubing clamp, do not attach a large load to it.



- Note that the robot cannot be used at a position where the base flange, robot cable, spline, bellows, and tool flange interfere with each other in the working envelope shown above.
- X-axis mechanical stopper position :  $131^\circ$
- Y-axis mechanical stopper position :  $146^\circ$



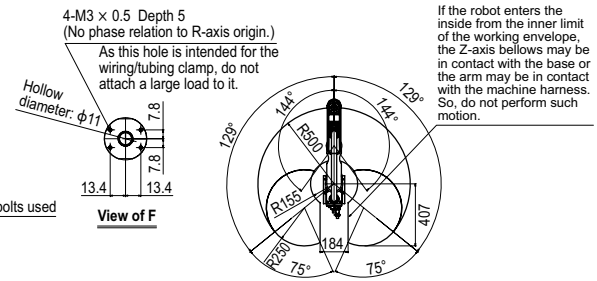
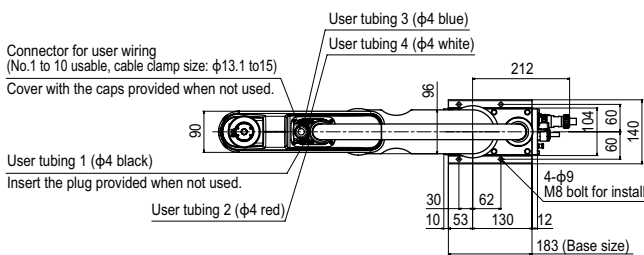
Detailed drawing D



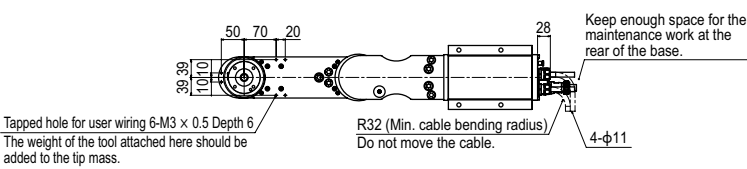
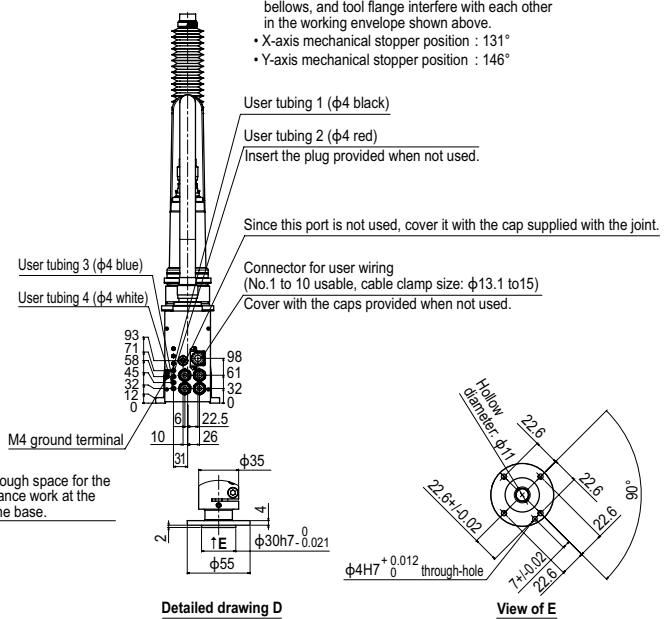
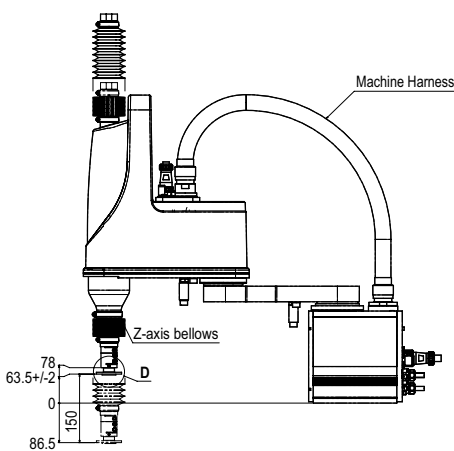




YK500XGLC Tool flange mount type



- Note that the robot cannot be used at a position where the base flange, robot cable, spline, bellows, and tool flange interfere with each other in the working envelope shown above.
- X-axis mechanical stopper position : 131°
- Y-axis mechanical stopper position : 146°



# YK500XC

Clean type: Medium type



- Arm length 500mm
- Maximum payload 10kg

## Ordering method

<b>YK500XC</b>			<b>RCX340-4</b>							
<b>Model</b>	<b>Z axis stroke</b>	<b>Cable length</b>	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>
	200: 200mm 300: 300mm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Basic specifications

Axis specifications	Arm length (mm)	X axis	Y axis	Z axis		R axis
		250	250	200	300	—
	Rotation angle (°)	+/-120	+/-142	—		+/-180
	AC servo motor output (W)	400	200	200	100	
	Repeatability <sup>Note 1</sup> (XYZ: mm) (R: °)	+/-0.02		+/-0.01	+/-0.005	
	Maximum speed (XYZ: m/sec) (R: °/sec)	4.9		1.7	876	
	Maximum payload (kg)	10				
	Standard cycle time: with 2kg payload (sec)	0.53				
	R-axis tolerable moment of inertia <sup>Note 2</sup> (kgm <sup>2</sup> )	0.12				
	User wiring (sq x wires)	0.2 x 20				
	User tubing (Outer diameter)	φ6 x 3				
	Travel limit	1.Soft limit, 2.Mechanical stopper (X, Y, Z axes)				
	Robot cable length (m)	Standard: 3.5 Option: 5, 10				
	Weight (kg)	31				
	Degree of cleanliness	CLASS 10 <sup>Note 3</sup>				
	Intake air (Nl/min)	60 <sup>Note 4</sup>				

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 3. Per 1cf (0.1μm base), when suction blower is used.  
 Note 4. The necessary intake amount varies depending on the use conditions and environment.

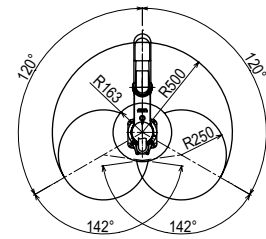
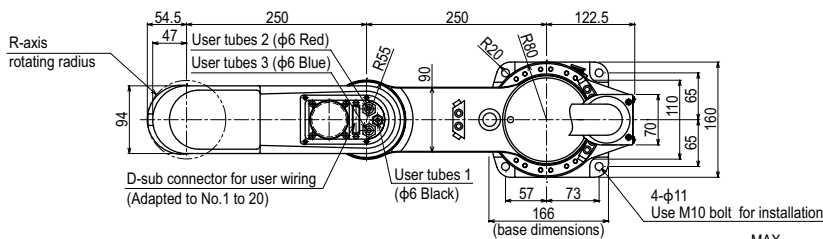
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

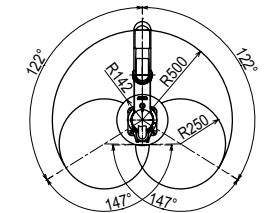
Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.) See our robot manuals (installation manuals) for detailed information.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

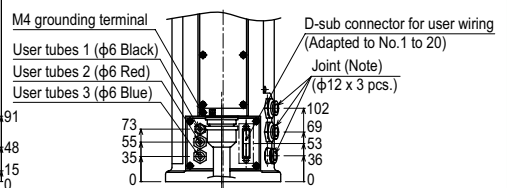
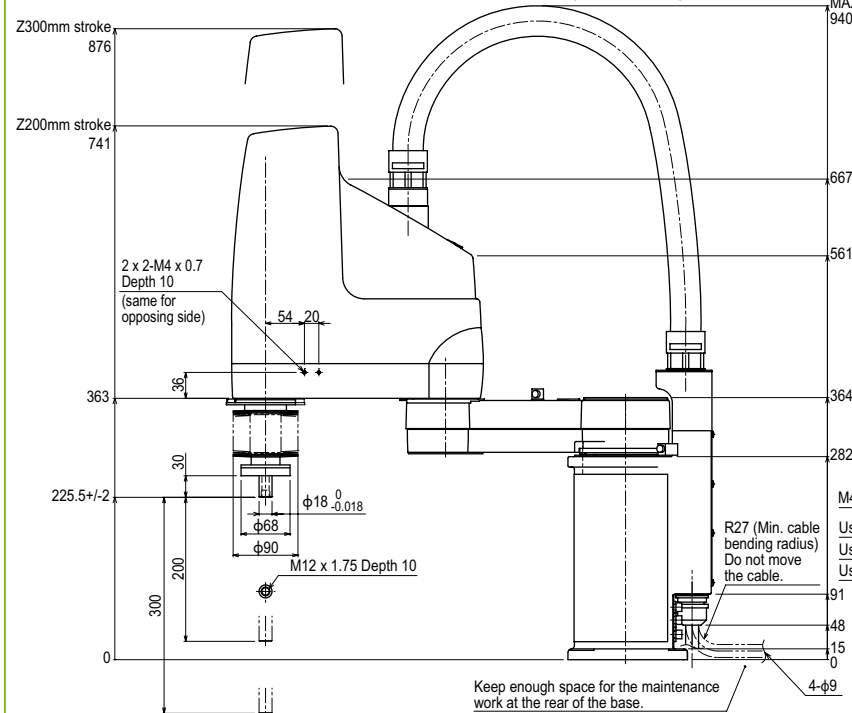
## YK500XC



Working envelope



X,Y axis mechanical stopper position



Note: For details about tubing work, refer to the User's Manual.

# YK600XGLC

Clean type: Medium type

- Arm length 600mm
- Maximum payload 4kg

## Ordering method

**YK600XGLC - 150** - **S** - **RCX340-4**

Model	Z axis stroke	Tool flange	Hollow shaft	Cable length	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
YK600XGLC - 150	150: 150mm	No entry: None F: With tool flange	S: With hollow shaft	3L: 3.5m 5L: 5m 10L: 10m	RCX340-4							

Specify various controller setting items. RCX340 ▶ **P.566**

## Basic specifications

Axis specifications	Arm length (mm)	X axis	Y axis	Z axis	R axis
Rotation angle (°)		+/-129	+/-144	-	+/-360
AC servo motor output (W)		200	150	50	100
Repeatability <sup>Note 1</sup> (XYZ: mm) (R: °)		+/-0.01		+/-0.01	+/-0.004
Maximum speed (XYZ: m/sec) (R: °/sec)		4.9		1.1	1020
Maximum payload (kg)		4			
Standard cycle time: with 2kg payload (sec) <sup>Note 2</sup>		0.71			
R-axis tolerable moment of inertia <sup>Note 3</sup> (kgm <sup>2</sup> )		0.05			
User wiring (sq x wires)		0.2x10			
User tubing (Outer diameter)		φ4x4			
Travel limit		1.Soft limit, 2.Mechanical stopper (X, Y, Z axes)			
Robot cable length (m)		Standard: 3.5 Option: 5, 10			
Weight (kg)		26			
Degree of cleanliness		ISO CLASS 3 (ISO 14644-1) <sup>Note 4</sup> +ESD <sup>Note 5</sup>			
Intake air (Nl/min)		30 <sup>Note 6</sup>			

- Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 25mm in vertical direction and 300mm in horizontal direction (rough-positioning arch motion).  
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 4. Class 10 (0.1µm) equivalent to FED-STD-209D  
 Note 5. ESD (ElectroStatic Discharge) prevention is an option. Please contact our distributor.  
 Note 6. The necessary intake amount varies depending on the use conditions and environment.

## Controller

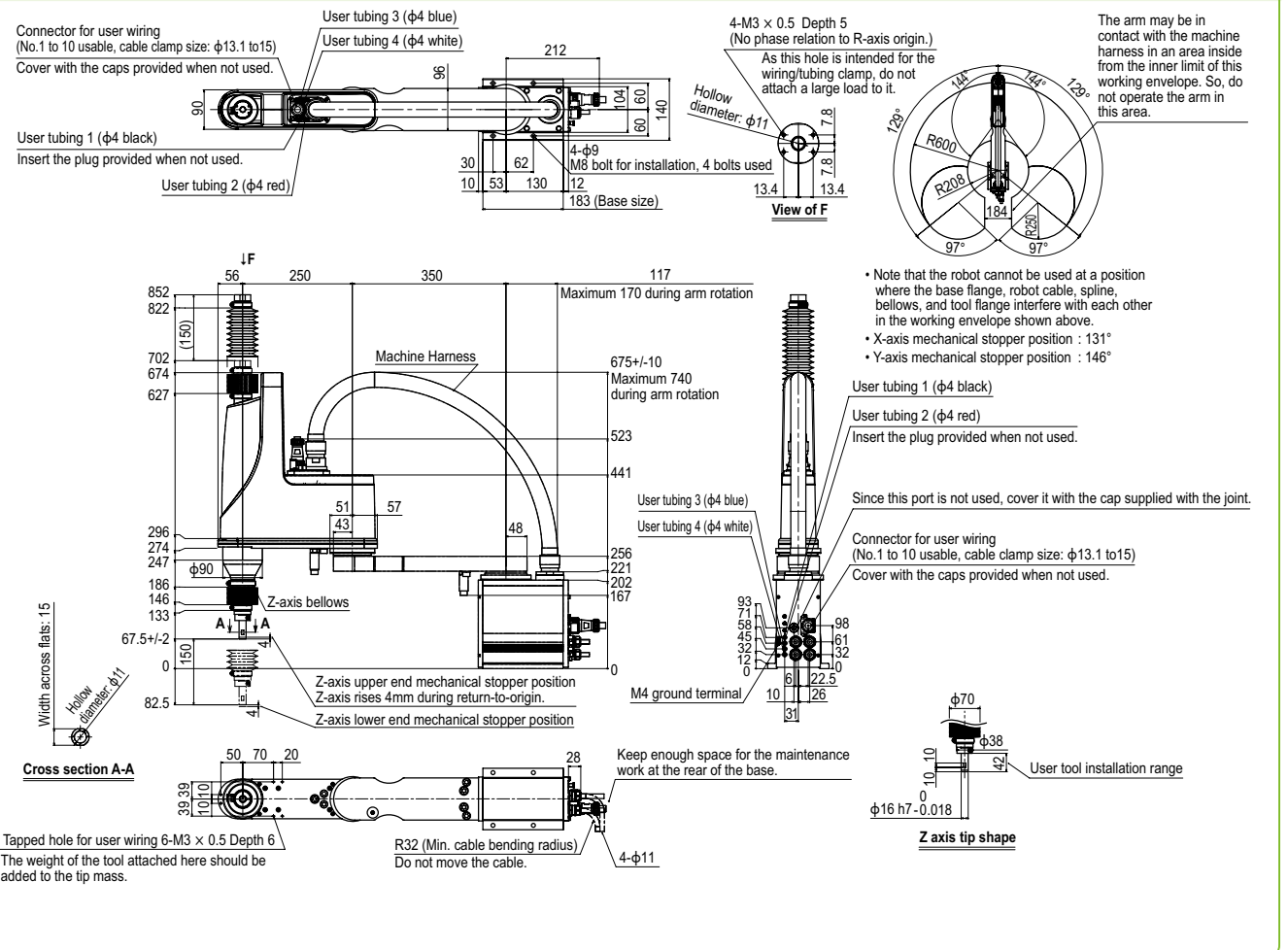
Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
 See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

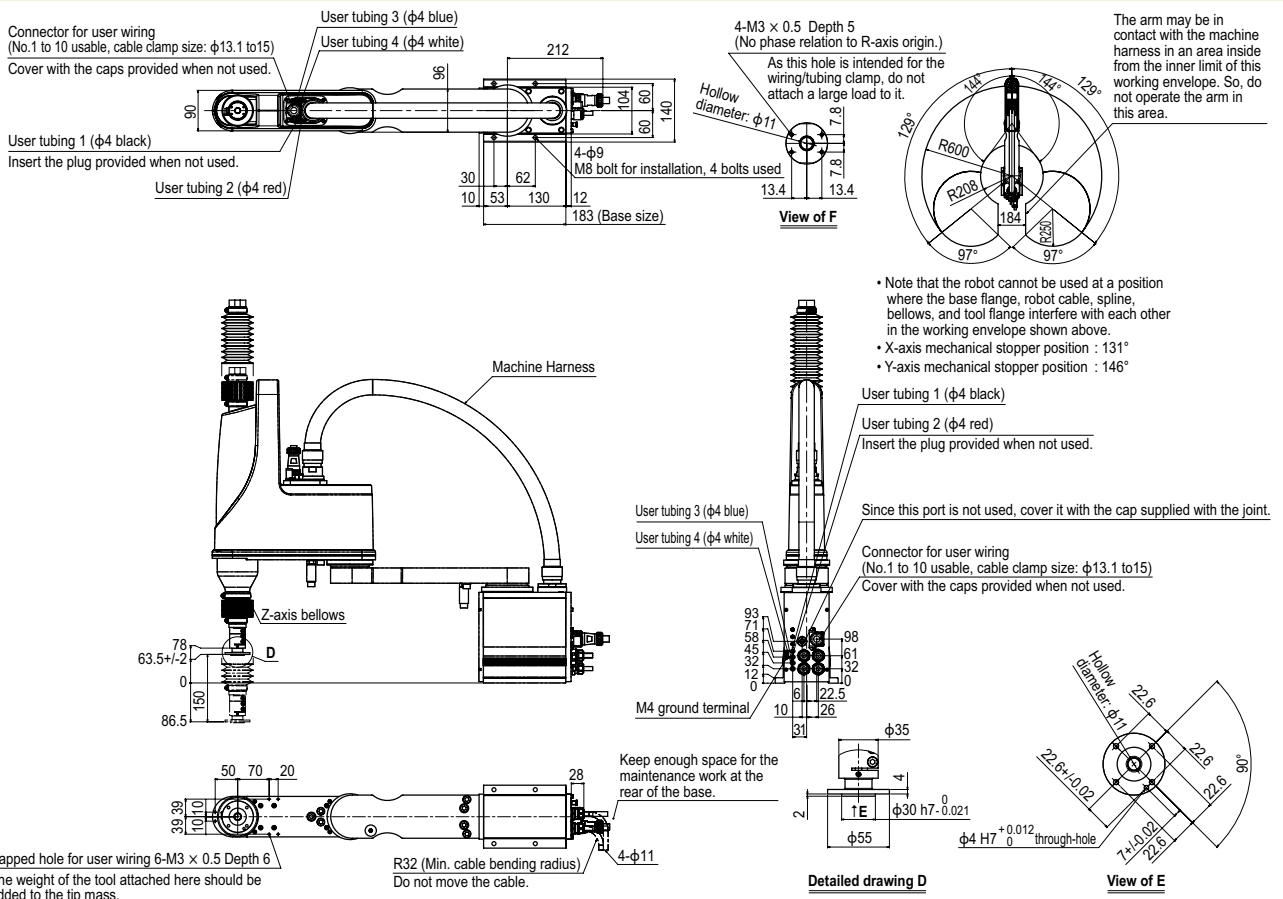
Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK600XGLC



Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER INFORMATION  
 Single-axis robots  
 Cartesian  
 SCARA

## YK600XGLC Tool flange mount type



# YK600XC

Clean type: Medium type



- Arm length 600mm
- Maximum payload 10kg

## Ordering method

<b>YK600XC</b>			<b>RCX340-4</b>							
Model	Z axis stroke	Cable length	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	200: 200mm 300: 300mm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P566**

## Basic specifications

Axis specifications	Arm length (mm)	X axis	Y axis	Z axis	R axis
Rotation angle (°)		+/-120	+/-145	-	+/-180
AC servo motor output (W)		400	200	200	100
Repeatability <sup>Note 1</sup> (XYZ: mm) (R: °)		+/-0.02		+/-0.01	+/-0.005
Maximum speed (XYZ: m/sec) (R: °/sec)		5.6		1.7	876
Maximum payload (kg)		10			
Standard cycle time: with 2kg payload (sec)		0.56			
R-axis tolerable moment of inertia <sup>Note 2</sup> (kgm <sup>2</sup> )		0.12			
User wiring (sq x wires)		0.2 x 20			
User tubing (Outer diameter)		φ6 x 3			
Travel limit		1.Soft limit, 2.Mechanical stopper (X, Y, Z axes)			
Robot cable length (m)		Standard: 3.5 Option: 5, 10			
Weight (kg)		33			
Degree of cleanliness		CLASS 10 <sup>Note 3</sup>			
Intake air (Nl/min)		60 <sup>Note 4</sup>			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 3. Per 1cf (0.1μm base), when suction blower is used.  
 Note 4. The necessary intake amount varies depending on the use conditions and environment.

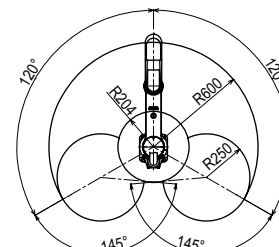
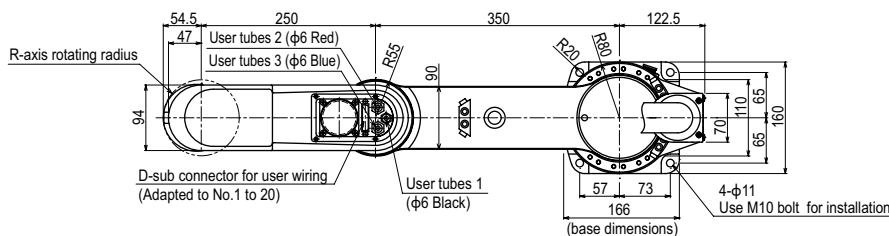
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

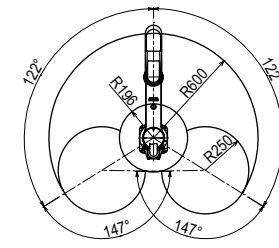
Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
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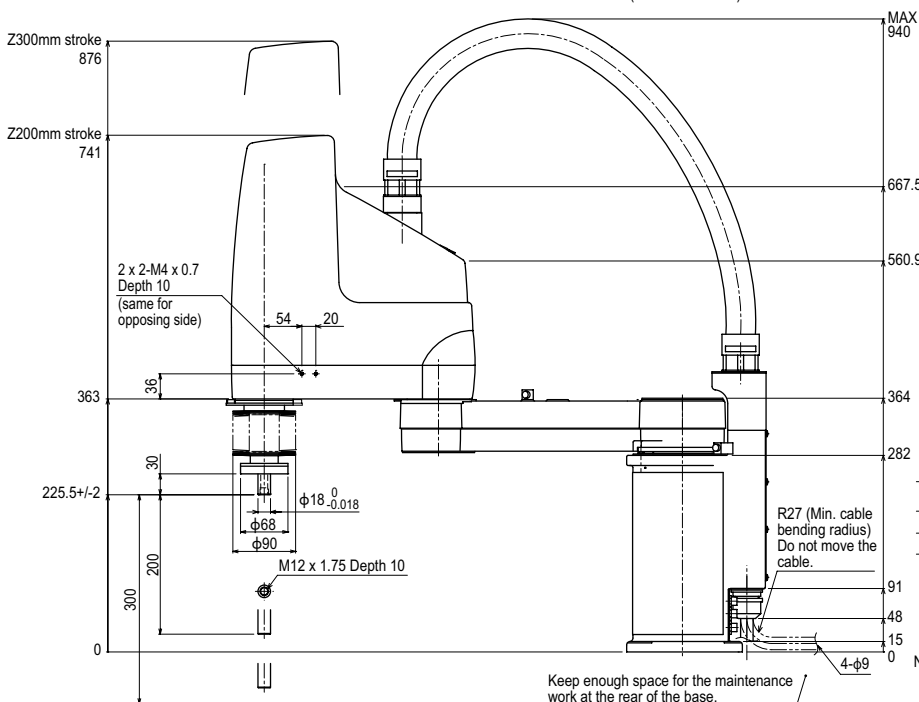
## YK600XC



Working envelope



X,Y axis mechanical stopper position



Note: For details about tubing work, refer to the User's Manual.



# YK700XC

Clean type: Large type



- Arm length 700mm
- Maximum payload 20kg

## Ordering method

<b>YK700XC</b>			<b>RCX340-4</b>								
<b>Model</b>	<b>Z axis stroke</b>	<b>Cable length</b>	<b>Controller / Number of controllable axes</b>	<b>Safety standard</b>	<b>Option A (OP.A)</b>	<b>Option B (OP.B)</b>	<b>Option C (OP.C)</b>	<b>Option D (OP.D)</b>	<b>Option E (OP.E)</b>	<b>Absolute battery</b>	
	200: 200mm 400: 400mm	3L: 3.5m 5L: 5m 10L: 10m									

Specify various controller setting items. RCX340 ▶ **P.566**

## Basic specifications

Axis specifications	Arm length (mm)	X axis	Y axis	Z axis	R axis
Rotation angle (°)		+/-120	+/-145	-	+/-180
AC servo motor output (W)		800	400	400	200
Repeatability <sup>Note 1</sup> (XYZ: mm) (R: °)		+/-0.02		+/-0.01	+/-0.005
Maximum speed (XYZ: m/sec) (R: °/sec)		6.7		1.7	600
Maximum payload (kg)		20			
Standard cycle time: with 2kg payload (sec)		0.57			
R-axis tolerable moment of inertia <sup>Note 2</sup> (kgm <sup>2</sup> )		0.32			
User wiring (sq x wires)		0.2 x 20			
User tubing (Outer diameter)		φ6 x 3			
Travel limit		1.Soft limit, 2.Mechanical stopper (X, Y, Z axes)			
Robot cable length (m)		Standard: 3.5 Option: 5, 10			
Weight (kg)		57			
Degree of cleanliness		CLASS 10 <sup>Note 3</sup>			
Intake air (Nl/min)		60 <sup>Note 4</sup>			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 3. Per 1cf (0.1μm base), when suction blower is used.  
 Note 4. The necessary intake amount varies depending on the use conditions and environment.

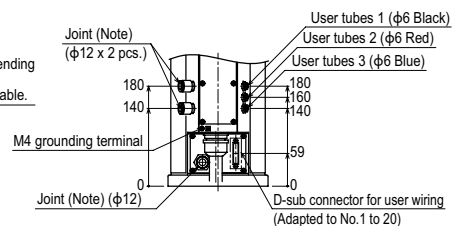
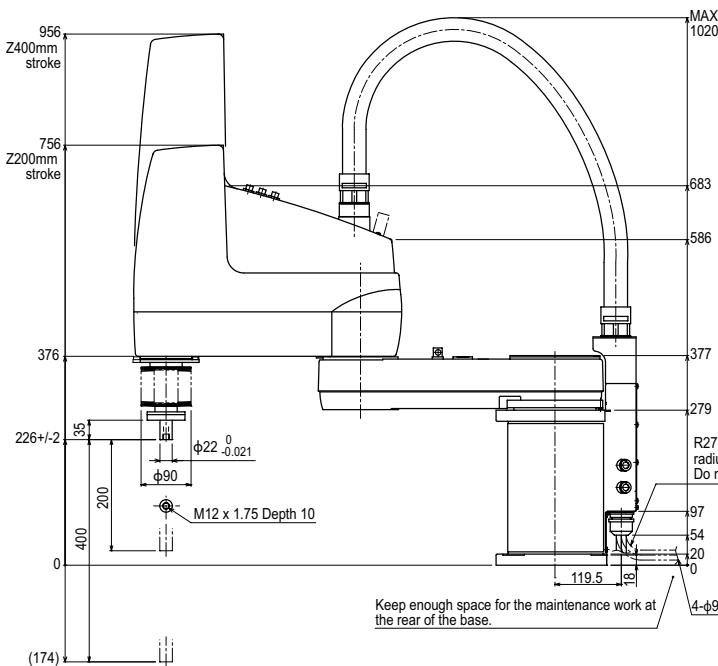
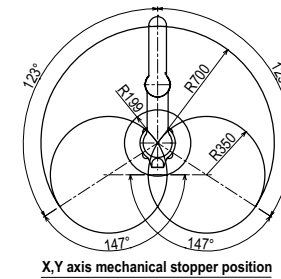
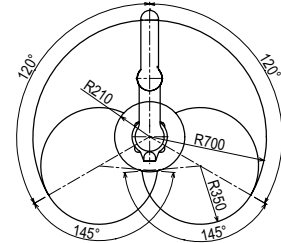
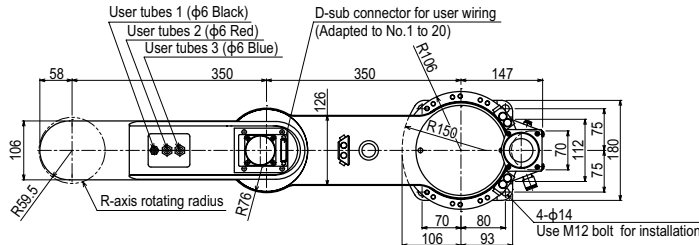
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	2000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
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## YK700XC



Note: For details about tubing work, refer to the User's Manual.

# YK800XC

Clean type: Large type

- Arm length 800mm
- Maximum payload 20kg



## Ordering method

**YK800XC**

**RCX340-4**

Model	Z axis stroke	Cable length	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
	200: 200mm 400: 400mm	3L: 3.5m 5L: 5m 10L: 10m								

Specify various controller setting items. RCX340 ▶ **P.566**

## Basic specifications

Axis specifications	Arm length (mm)	X axis	Y axis	Z axis	R axis
Rotation angle (°)		+/-120	+/-145	-	+/-180
AC servo motor output (W)		800	400	400	200
Repeatability <sup>Note 1</sup> (XYZ: mm) (R: °)		+/-0.02		+/-0.01	+/-0.005
Maximum speed (XYZ: m/sec) (R: °/sec)		7.3		1.7	600
Maximum payload (kg)		20			
Standard cycle time: with 2kg payload (sec)		0.57			
R-axis tolerable moment of inertia <sup>Note 2</sup> (kgm <sup>2</sup> )		0.32			
User wiring (sq x wires)		0.2 x 20			
User tubing (Outer diameter)		φ6 x 3			
Travel limit		1.Soft limit, 2.Mechanical stopper (X, Y, Z axes)			
Robot cable length (m)		Standard: 3.5 Option: 5, 10			
Weight (kg)		58			
Degree of cleanliness		CLASS 10 <sup>Note 3</sup>			
Intake air (Nl/min)		60 <sup>Note 4</sup>			

- Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. The acceleration coefficient is set automatically in accordance with the tip weight and R-axis moment of inertia settings.  
 Note 3. Per 1cf (0.1μm base), when suction blower is used.  
 Note 4. The necessary intake amount varies depending on the use conditions and environment.

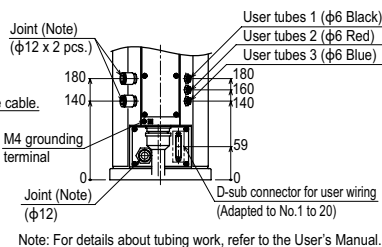
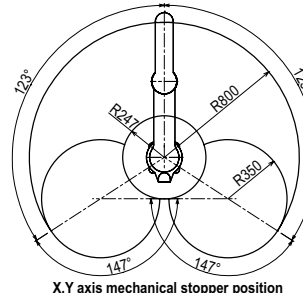
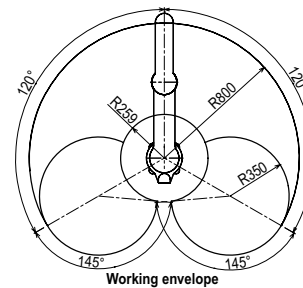
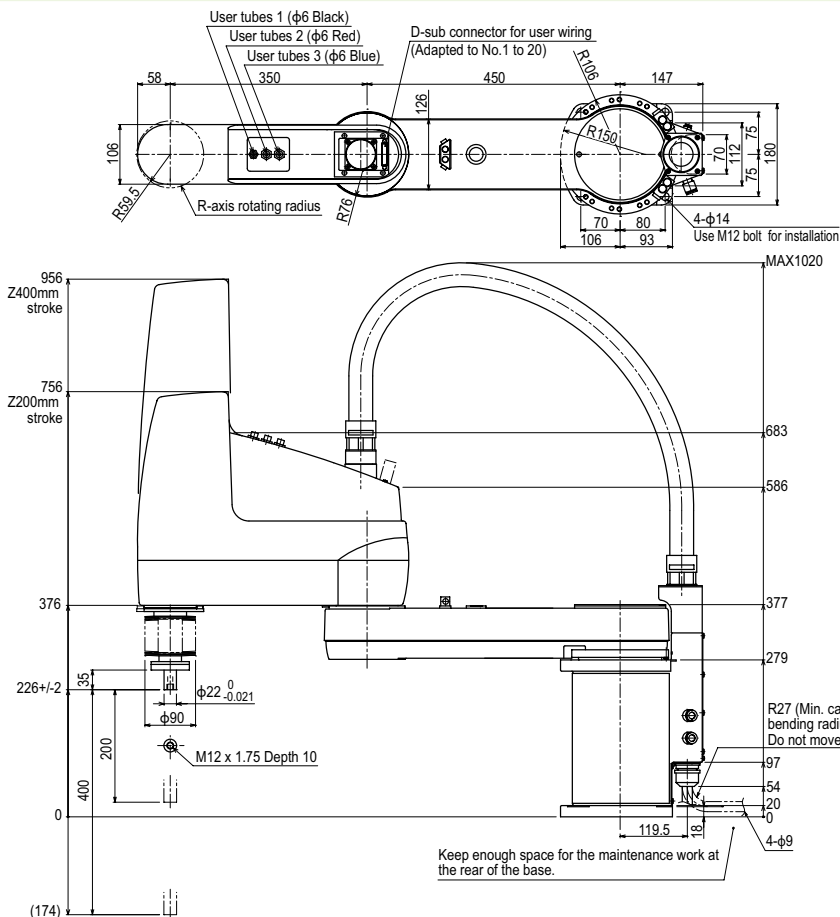
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	2000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)  
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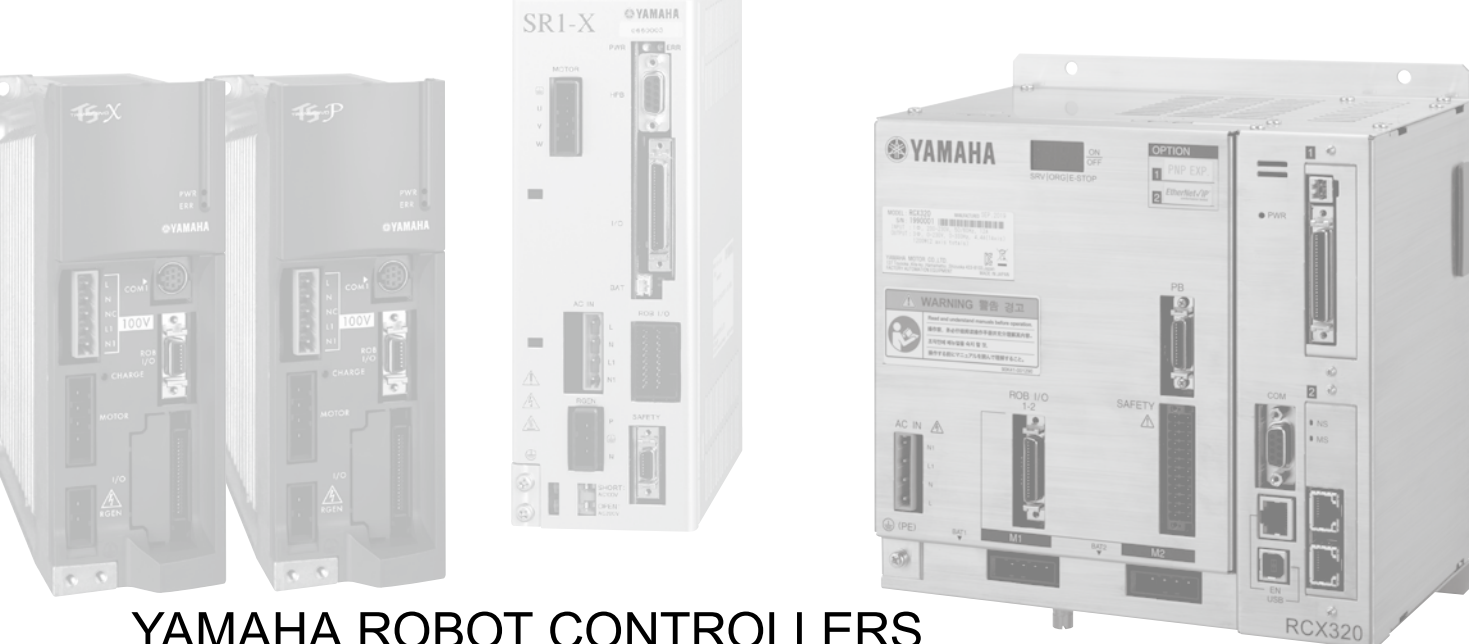
## YK800XC



Note: For details about tubing work, refer to the User's Manual.

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-assisted axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Single-axis  
Cartesian  
SCARA





## YAMAHA ROBOT CONTROLLERS

# CONTROLLER

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- Articulated robots  
YA
- Linear conveyor modules  
LCM100
- Motor-less single axis equator  
Robunity
- Compact single-axis robots  
TRANSEURO
- Single-axis robots  
FLIP-X
- Linear motor single-axis robots  
PHASER
- Cartesian robots  
XY-X
- SCARA robots  
YK-X
- Pick & place robots  
YP-X
- CLEAN
- CONTROLLER
- INFORMATION
- Robot positioner
- Pulse string driver
- Robot controller
- iVY2 Electric gripper
- Option

# CONTROLLER FEATURE DESCRIPTION

## Single-axis

### Dedicated robot controller for the LCM100

Linear conveyor module

## LCC140

Linear conveyor module ..... LCM100

**P.508**



Operating method	Programming/I/O point tracing/Remote command/Operation using RS-232C communication
Points	10,000 points
Input power	Single phase 200 to 230V AC +/-10% maximum (50/60Hz)
Origin search method	Incremental
Field networks	CC-Link, DeviceNet™, EtherNet/IP™

### Single-axis robot positioner

## TS-S2/TS-SH

Dedicated compact single-axis... TRANSERVO <sup>Note 1</sup>

**P.514**



Operating method	I/O point tracing/Remote command/Operation using RS-232C communication
Points	255 points
Input power	Main power supply DC24V +/-10% Control power supply DC24V +/-10%
Origin search method	TS-S2 : Incremental TS-SH : Absolute Incremental
Field networks	CC-Link, DeviceNet™, EtherNet/IP™, PROFIBUS

Note 1. SG07 is only applicable to TS-SH.

### Single-axis robot positioner

## TS-X/TS-P

Single-axis robot ..... FLIP-X  
Linear motor single-axis ..... PHASER

**P.514**



Operating method	I/O point tracing/Remote command/Operation using RS-232C communication
Points	255 points
Input power	AC100V/AC200V
Origin search method	TS-X : Absolute Incremental TS-P : Incremental Semi-absolute
Field networks	CC-Link, DeviceNet™, EtherNet/IP™, PROFIBUS

### Single-axis robot driver

## TS-SD

Dedicated compact single-axis... TRANSERVO

**P.524**



Operating method	Pulse train control
Input power	Main power supply DC24V +/-10% Control power supply DC24V +/-10%
Origin search method	Incremental
Field networks	Not supported

### Single-axis robot driver

## RDV-X/RDV-P

[RDV-X] Single-axis robot ..... FLIP-X  
[RDV-P] Linear motor single-axis ..... PHASER

**P.528**



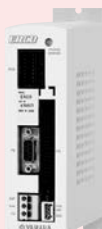
Operating method	Pulse train control
Input power	Main power supply Single phase/3-phase 200V to 230V Control power supply Single phase 200V to 230V
Origin search method	Incremental
Field networks	Not supported

### Single-axis robot controller

## ERCD

Single-axis robot ..... T4L/T5L  
Clean single-axis ..... C4L/C5L

**P.534**



Operating method	Pulse train control/Programming/I/O point tracing/Operation using RS-232C communication
Points	1000 points
Input power	DC24V +/-10% maximum
Origin search method	Incremental
Field networks	Not supported

### Single-axis robot controller

## SR1-X/SR1-P

Single-axis robot ..... FLIP-X  
Linear motor single-axis ..... PHASER

**P.540**











Operating method	Programming/I/O point tracing/Remote command/Operation using RS-232C communication
Points	1000 points
Input power	AC100V/AC200V
Origin search method	SR1-X : Absolute Incremental SR1-P : Incremental Semi-absolute
Field networks	CC-Link, DeviceNet™, PROFIBUS







# CONTROLLER SPECIFICATION SHEET

Category		Robot controller	Robot positioner				Robot driver		
Name		LCC140	TS-S2	TS-SH	TS-X	TS-P	TS-SD	RDV-X	RDV-P
External view									
Operating method		Programming/ I/O point tracing/ Remote command/ Operation using RS-232C communication	I/O point tracing/Remote command/ Operation using RS-232C communication				Pulse train control		
Applicable robot	LCM100	●	—	—	—	—	—	—	—
	TRANSERVO	—	● <sup>Note 2</sup>	●	—	—	●	—	—
	FLIP-X	T4L/T5L/C4L/C5L	—	—	—	—	—	—	—
		FLIP-X other than above	—	—	—	●	—	●	—
	PHASER	—	—	—	—	●	—	—	●
	XY-X	—	—	—	—	—	—	—	—
	YK-X	—	—	—	—	—	—	—	—
Input power	Main power supply	Single phase 200 to 230V AC +/-10% maximum (50/60Hz)	DC24V +/-10% maximum			● <b>AC100V specifications</b> <sup>Note 1</sup> (105 / 110 driver) Single phase 100 to 115V AC +/-10% maximum (50/60Hz)  ● <b>AC200V specifications</b> (205 / 210 / 220 driver) Single phase 200 to 230V AC +/-10% maximum (50/60Hz)	DC24V +/-10% maximum	Single phase / 3-phase 200 to 230V +10% to -15% (50/60Hz +/-5%)	
	Control power supply		DC24V +/-10% maximum				DC24V +/-10% maximum	Single phase 200 to 230V AC +10% to -15% (50/60Hz +/-5%)	
Number of controllable axes		Single-axis	Single-axis				Single-axis		
Origin search method		Incremental	Incremental	Absolute/ Incremental	Absolute/ Incremental	Incremental/ Semi-absolute	Incremental		
Maximum number of programs		100	(program not required)				—	—	
Maximum number of steps per program		999 steps	(program not required)				—	—	
Points		10,000 points	255 points				—	—	
Multitasks		4	—	—	—	—	—	—	
I/O points	Dedicated I/O	8 points/4 points	16 points/16 points	16 points/16 points	16 points/16 points	16 points/16 points	—	—	
	General I/O	16 points/16 points	—	—	—	—	—	—	
Field network support	CC-Link	●	●	●	●	●	—	—	—
	DeviceNet	●	●	●	●	●	—	—	—
	EtherNet/IP	●	●	●	●	●	—	—	—
	Ethernet	—	—	—	—	—	—	—	—
	PROFINET	—	—	—	—	—	—	—	—
	PROFINET	—	●	●	●	●	—	—	—
	EtherCAT	—	—	—	—	—	—	—	—
CE marking		—	●	●	●	●	●	●	●
Programming box		HPB / HPB-D (with enable switch)	HT1 / HT1-D (with enable switch)				—	—	
Support software for PC		POPCOM <sup>+</sup>	TS-Manager				TS-Manager	RDV-Manager	
Detailed info page		<b>P.508</b>	<b>P.514</b>				<b>P.524</b>	<b>P.528</b>	








Note 1. 20A specifications provide only 200V.

Note 2. Exclude SG07

Note 3. Exclude YK400XR

Note 4. Maximum number of general-purpose I/O points when a total of two option boards OP.1 and OP.2 (one each) are installed.

Note 5. Maximum number of general-purpose I/O points when option OP.DIO boards (4 boards) are installed.

Robot controller							
ERCDC	SR1-X	SR1-P	RCX320	RCX221 RCX221HP	RCX222 RCX222HP	RCX340	
							
Pulse train control/ Programming/ I/O point tracing/ Operation using RS-232C communication	Programming/I/O point tracing/ Remote command/ Operation using RS-232C communication		Programming/Remote command/ Operation using RS-232C communication				
—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
●	—	—	—	—	—	—	—
—	●	—	●	●	●	●	●
—	—	●	●	●	—	●	●
—	—	—	●	●	●	●	●
—	—	—	—	—	—	—	●
—	—	—	●	—	●	●	●
DC24V +/-10% maximum	<ul style="list-style-type: none"> <li>● <b>05 / 10 driver</b> Single phase 100 to 115V/200 to 230V AC +/-10% maximum (50/60Hz)</li> <li>● <b>20 driver</b> Single phase 200 to 230V AC +/-10% maximum (50/60Hz)</li> </ul>		Single phase 200 to 230V AC +/-10% maximum (50/60Hz)				
	Single-axis	Single-axis		2 axes maximum Max. number of robots 4	2 axes maximum	2 axes maximum	Max. number of robots 4 Max. number of controllable axes 16
Incremental	Absolute/ Incremental	Incremental/ Semi-absolute	Absolute/ Incremental/ Semi-absolute	Incremental/ Semi-absolute	Absolute/ Incremental	Absolute/ Incremental/ Semi-absolute	
100	100		100	100	100	100	
1024 steps	3000 steps		9999 steps	9999 steps	9999 steps	9999 steps	
1000 points	1000 points		30000 points	10000 points	10000 points	30000 points	
4	4		16	8	8	16	
8 points/3 points	8 points/4 points		8 points/9 points	10 points/12 points	10 points/12 points	8 points/9 points	
6 points/6 points	16 points/16 points		96 points/64 points (Max.) <sup>Note 5</sup>	40 points/24 points(Max.) <sup>Note 4</sup>	40 points/24 points(Max.) <sup>Note 4</sup>	96 points/64 points (Max.) <sup>Note 5</sup>	
—	●	●	●	●	●	●	●
—	●	●	●	●	●	●	●
—	—	—	●	—	—	●	●
—	—	—	●	●	●	●	●
—	●	●	●	●	●	●	●
—	—	—	●	—	—	●	●
—	—	—	●	—	—	●	●
—	●	●	●	●	●	●	●
HPB / HPB-D (with enable switch)			PBX / PBX-E (with enable switch)	RPB / RPB-E (with enable switch)		PBX / PBX-E (with enable switch)	
POPCOM <sup>†</sup>			RCX-Studio Pro	VIP <sup>†</sup>		RCX-Studio Pro	
<b>P.534</b>	<b>P.540</b>		<b>P.548</b>	<b>P.558</b>		<b>P.566</b>	

**Controller operating methods**

- Point trace : Host device specifies a binary point number and robot moves to the specified point when a start signal is input. Controller does not need a program and operates just by teaching point data.
- Remote command : Controller issues a wide range of commands and data to the robot via CC-Link or DeviceNet™ word functions. Host device can freely use robot controller functions as needed.
- Pulse train : Controller operates robot by pulse train from positioner unit. Controller needs no programs or point data. Pulse train operation is convenient to allow the host device to concentrate on robot control.
- Online instructions : PC can send various commands and data directly to the robot controller via RS232C or Ethernet and receive status information and data.

# LCC140

## Dedicated controller for LCM100

This is a dedicated controller for the LCM100 linear conveyor module. In addition to controlling movement, positioning, and input/output signals, it can also perform operations related to slider insertion and ejection.



LCC140

### Main functions ▶ P.15



Programming box  
▶ **HPB/HPB-D**  
**P.585**



Support software for PC  
▶ **POPCOM+**  
**P.578**

### Basic specifications

Item	LCC140	
Controllable robot	Linear conveyor module LCM series	
Power supply capacity	350 VA	
External dimensions	W:402.5 × H:229 × D:106.5 mm	
Weight	4.8 kg	
Control power supply input	Single-phase 200 to 230 V AC +/-10% (50/60 Hz)	
Main power supply input	Single-phase 200 to 230 V AC +/-10% (50/60 Hz)	
Control method	AC fully digital software servo	
Position detection method	Magnetic linear scale	
Emergency stop input	Normal close contact input	
Output signal	Contact output: MPRDY	
Communication	RS-232C 2ch (HPB/COM, RFID)	
Program	Max. 999 steps/single program, Max. 10000 steps/all programs, Max. 100 programs	
Points	10000 points	
System backup	Lithium battery	
Multitasking	Max. 4 tasks	
Usage temperature	0 to 40 °C	
Storage temperature	-10 to 65 °C	
Usage humidity	35 to 85%RH (no dewing)	
Noise resistance	IEC61000-4-4 level 3	
CC-Link unit	CC-Link compatible version	Ver. 1.10
	Remote station type	Remove device station
	Number of occupied stations	Fixed to 2 stations
	Station number	1 to 63 (Set from HPB)
	Communication speed	10M/5M/2.5M/625K/156Kbps (Set using HPB or POPCOM+.)
	Shortest length between stations	0.2 m or more
	Total length	100m/10Mbps, 160m/5Mbps, 4000m/2.5Mbps, 900m/625Kbps, 1200m/156Kbps
	Monitor LED	None
CC-Link I/O points	General-purpose input 32 points General-purpose output 32 points Dedicated input 16 points Dedicated output 16 points Input register 8 words Output register 8 words	

Controllable robot	<b>LCM100</b>	<b>P.126</b>
CE marking	—	Field networks
		CC-Link DeviceNet EtherNet/IP

Model Overview	
Name	LCC140
Controllable robot	Linear conveyor module LCM100
Power	Single-phase AC200 to 230V +/-10% or less (50/60Hz)
Operating method	Programming/I/O point tracing/Remote command/ Operation using RS-232C communication

**Ordering method**

**LCC140 - 10**

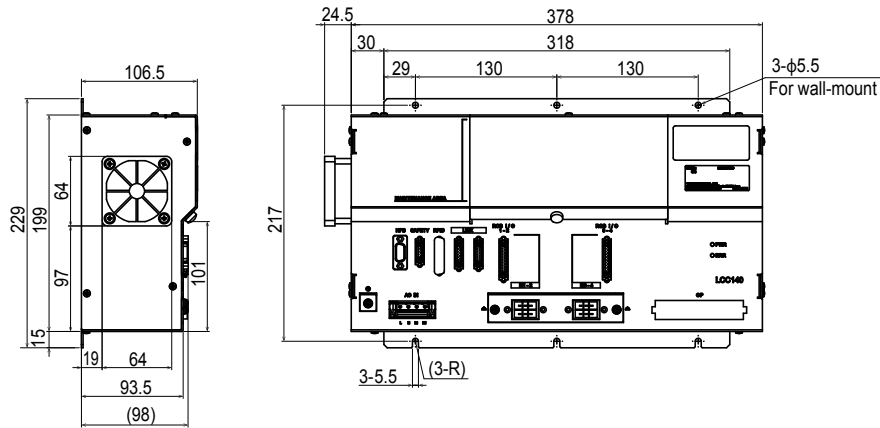
Controller	Current sensor	Network option <small>Note</small>
	10:10A	No entry: None
		CC: CC-Link
		DN: DeviceNet™
		EP: EtherNet/IP™

Note. For 2MT, be sure to select an appropriate network option.

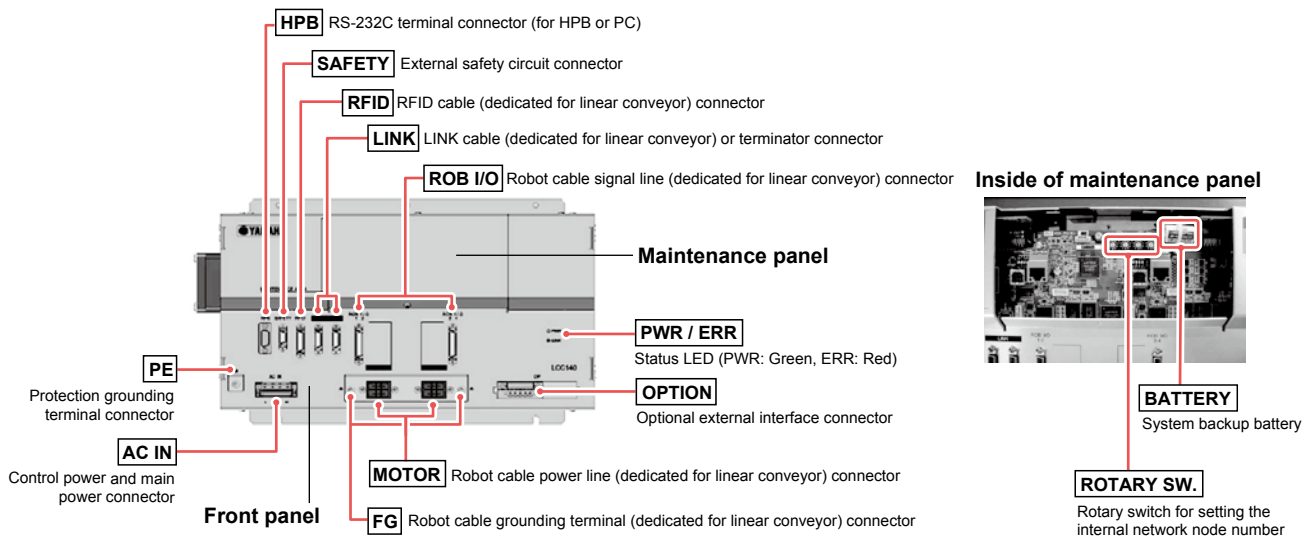
Item		LCC140		
DeviceNet™ unit	Applicable DeviceNet™ specifications	Volume 1 Release2.0, Volume 2 Release2.0		
	DeviceNet™ Conformance test	Compliant with CT24		
	Device profile/Device type number	Generic Device (keyable) / 2B Hex		
	Vendor name/Vendor ID	YAMAHA MOTOR CO.,LTD. / 636		
	Product code	21		
	Product revision	1.0		
	EDS file name	Yamaha_LCC1(DEV).eds		
	MAC ID setting	0 to 63 (Set using HPB or POPCOM+.)		
	Communication speed setting	500K/250K/125Kbps (Set using HPB or POPCOM+.)		
	Communication data	Predefined Master/Slave Connection Set: Group 2 only server Dynamic connection support (UCMM): None Support for divided transmission of explicit message: Yes		
	Network length	Total length	100m/500Kbps, 250m/250Kbps, 500m/125Kbps	
		Branch length	6m or less	
		Total branch length	39m or less/500Kbps, 78m or less/250Kbps, 156m or less/125Kbps	
Monitor LED	None			
Number of DeviceNet™ I/O points/number of occupied channels	General-purpose input 32 points	Input: 24byte		
	General-purpose output 32 points	Output: 24byte		
EtherNet/IP™ unit	Applicable software version	LCC140: Ver. 64.07 or higher HPB/HPB-D: Ver. 24.06 or higher POPCOM+: Ver. 2.1.0 or higher		
	Applicable EtherNet/IP™ specifications	Volume 1: Common Industrial protocol(CIP™) Edition 3.14 Volume 2: EtherNet/IP™ Adaptation of CIP™ Edition 1.15		
	EtherNet/IP™ Conformance test	Compliant with CT11		
	Device profile/Device type number	Generic Device (keyable) / 2B Hex		
	Vendor name/Vendor ID	YAMAHA MOTOR CO.,LTD. / 636		
	Product code	23		
	Product revision	1.1		
	EDS file name	Yamaha_LCC1(EIP2).eds		
	Communication speed	10Mbps / 100Mbps		
	Connector specifications	RJ-45 connector (8-pole modular connector), 2 ports		
	Applicable cable specifications	STP cable (double shield) with CAT 5e or higher		
	Maximum cable length	100m		
	Monitor LED	Module Status(MS), Network Status(NS), Link/Activity:Port1-2		
Number of EtherNet/IP™ I/O points/number of occupied channels	General-purpose input 32 points	Input: 24byte		
	General-purpose output 32 points	Output: 24byte		
	Dedicated input 16 points			
	Dedicated output 16 points			
	Input register 8 words			
	Output register 8 words			

- Articulated robots  
YA
- Linear conveyor modules  
LCM100
- Motor-less single axis actuator  
Robonity
- Compact single-axis robots  
TRANSEVO
- Single-axis robots  
FLIP-X
- Linear motor single-axis robots  
PHASER
- Cartesian robots  
XY-X
- SCARA robots  
YK-X
- Pick & place robots  
YP-X
- CLEAN
- CONTROLLER
- INFORMATION
- Robot positioner
- Pulse string driver
- Robot controller
- IVZ Electric gripper
- Option

## ■ Dimensions

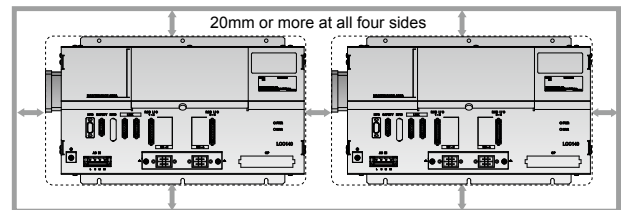


## ■ Part names



## ■ Installation conditions

- Reserve a space for the controller in the vicinity of the module.
- Install the controller perpendicularly to the wall.
- Reserve enough margins around the controller (20 mm or more on each side) and ensure sufficient ventilation. (See fig. at right.)
- Environmental temperature: 0 to 40°C
- Environmental humidity: 35 to 85%RH (no condensation)



## ■ Reference for power supply capacity and heat generation quantity

The power capacity and heat generation quantity required for the linear conveyor may vary depending on the module type or operation duty. Prepare the power supply and investigate the control panel size, controller layout, and cooling method while referring to the table below.

### ● Reference values for actual operation (per LCC140 controller)

Module type	Number of motors	Power supply capacity			Heat generation quantity (during operation)
		Control power supply	During waiting	During slider operation	During slider operation
LCM100-4M	4	35VA	60VA	350VA	20W
LCM100-3M	3	35VA	54VA	271VA	16W
LCM100-2MT	2	35VA	48VA	193VA	11W

The power capacity and heat generation quantity values stated in the table show the maximum values of LCC140 and they do not exceed these values. Since the operation duty of each motor of the linear conveyor is low due to operating characteristics, the power capacity required for actual operation becomes about 1/4 to 1/3 of the maximum capacity value.

### ● Maximum capacity values (per LCC140 controller)

Model	Power supply capacity	Heat generated
LCM100	1200VA	70W

# Option parts

## LCC140

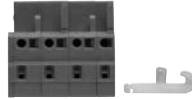


### Options

- LCC140
- TS-X
- TS-P
- SR1-X
- SR1-P
- RCX320
- RCX221
- RCX222
- RCX340

#### ● Power connector + wiring connection lever

One set of parts per LCC140 is required.



Model	KAS-M5382-00
-------	--------------

#### ● HPB dummy connector

When performing the operation with the programming box HPB removed, connect this dummy connector to the HPB connector. One connector per LCC140 is required.

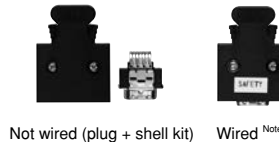


Model	KDK-M5163-00
-------	--------------

- LCC140
- SR1-X
- SR1-P

#### ● SAFETY connector

One connector per LCC140 is required.



Model	Not wired	KDK-M5370-10
	Wired <sup>Note</sup>	KDK-M5370-00

Note. The wired connector is that the wiring for the emergency stop cancel was performed inside the connector. Select this model when performing the operation check or debugging with single linear conveyor.

LCC140

#### ● LINK cable

([Number of modules] - 1) cables per line are required.



Model	1m	KDK-M5361-10
	3m	KDK-M5361-30
	5m	KDK-M5361-50

LCC140

#### ● Terminator connector

When connecting modules, two connectors per line are required.



Model	KDK-M5361-00
-------	--------------

LCC140

#### ● Dust cover (for LINK connector)

This dust cover is attached to the insertion port, into which the the LINK cable terminator connector is not inserted. When using only one module without connections, two dust covers are required.



Model	KDK-M658K-00 (for MDR20 pin)
-------	------------------------------

Note. The dust cover is essential for the 2MT.

LCC140

#### ● Programming box HPB/HPB-D

P.585

All operations, such as robot manual operation, program input or edit, teaching, and parameter setting can be performed with this programming box.



	HPB	HPB-D
Model	KBB-M5110-01	KBB-M5110-21
Enable switch	—	3-position
CE marking	Not supported	Applicable

- LCC140
- ERCD
- SR1-X
- SR1-P

#### ● Support software for PC POPCOM+

P.578

POPCOM is a simple to use application software that makes tasks such as robot operation, writing-editing programs, and point teaching easy to visually understand.



Model	KBG-M4966-00
-------	--------------

- LCC140
- ERCD
- SR1-X
- SR1-P

#### ● POPCOM+ environment

OS	Windows XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.2.1.1 or later)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk	50MB of available space required on installation drive.
Disk operation	RS-232C
Applicable controllers	SRCX to SR1, DRCX, TRCX, ERCX, ERCD, LCC140 <sup>Note 1</sup>

Note 1. LCC140 is applicable to Ver. 2.1.1 or later.

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

Continues on next page

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
VY2  
Electric gripper  
Option



## Options

### Data cables

Communication cable for POPCOM+. Select from USB cable or D-sub cable.



Model	USB type (5m)	KBG-M538F-00
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10

Note. This USB cable supports Windows 2000/XP or later.  
 Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro.  
 Note. USB driver for communication cable can also be downloaded from our website.

- LCC140**
- ERCD**
- SR1-X**
- SR1-P**
- RCX320**
- RCX221**
- RCX222**
- RCX340**

## RFID

### RFID (manufactured by BALLUFF GmbH)

Reader/writer cable



Model	KDK-M6300-00
-------	--------------

Note. Whether or not the RFID system can be used may vary depending on the destination place (country). Before selecting a RFID system, please contact YAMAHA.

### RFID (manufactured by OMRON)

Antenna amplifier controller cable



Model	KDK-M6300-A0
-------	--------------

Note. Whether or not the RFID system can be used may vary depending on the destination place (country). Before selecting a RFID system, please contact YAMAHA.

### Dust cover (for RFID)

This cover is attached to the insertion port if RFID is not used. (Included as standard)



Model	KDK-M658K-10 (for MDR26 pin)
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Note. Whether or not the RFID system can be used may vary depending on the destination place (country). Before selecting a RFID system, please contact YAMAHA.

## Maintenance parts

### Robot cable for LCM100



Model	KDJ-M4751-30 (3m×1 pc.)	<b>LCC140</b>
	KDJ-M4751-50 (5m×1 pc.)	
	KDJ-M4755-30 (Flexible cable 3m×1 pc.)	
	KDJ-M4755-50 (Flexible cable 5m×1 pc.)	

### Lithium battery for system backup



Model	KDK-M4252-00	<b>LCC140</b>
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### Replacement filter for LCC140 (5 pcs. in package)



Model	KDK-M427G-00	<b>LCC140</b>
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- Articulated robots YA
- Linear conveyor modules LCM100
- Motor-less single axis actuator Robonity
- Compact single-axis robots TRANSEURO
- Single-axis robots FLIP-X
- Linear motor single-axis robots PHASER
- Cartesian robots XY-X
- SCARA robots YK-X
- Pick & place robots YP-X
- CLEAN
- CONTROLLER
- INFORMATION
- Robot positioner
- Pulse string driver
- Robot controller
- IVY2 Electric gripper
- Option

Articulated robots <b>YA</b>
Linear conveyor modules <b>LCM100</b>
Motor-less single axis actuator <b>Robonity</b>
Compact single-axis robots <b>TRANSERVO</b>
Single-axis robots <b>FLIP-X</b>
Linear motor single-axis robots <b>PHASER</b>
Cartesian robots <b>XY-X</b>
SCARA robots <b>YK-X</b>
Pick & place robots <b>YP-X</b>
<b>CLEAN</b>
<b>CONTROLLER</b>
<b>INFORMATION</b>
Robot positioner
Pulse string driver
Robot controller
iVY2 Electric grripper
Option

# TS-S2/TS-SH/TS-X/TS-P

## ● CE compliance

**TS series are positioner type controllers that only performs point trace. No program is needed. Operation is simple. After setting point data, specify the point number and enter a START signal from host controller such as a PLC. Positioning or pushing operation then begins.**

## Main functions ▶ P.64



Handy terminal  
▶ HT1/HT1-D  
P.584



Support software for PC  
▶ TS-Manager  
P.576



TS-S2

TS-SH

TS-X

TS-P

## Basic specifications

### TS-S2/TS-SH

Item	Model	TS-S2	TS-SH	
Basic specifications	Number of controllable axes	Single-axis		
	Controllable robots	TRANSERVO series		
	Current consumption	2.5A (Rating) 4.5A (Max.)	3.5A (Rating) 6.5A (Max.)	
	Dimensions	W30 × H162 × D82mm	W30 × H162 × D123mm	
Weight		Approx. 0.2kg		
		Approx. 0.3kg		
Input power supply	Control power supply	DC24V +/-10%		
	Motor power supply	DC24V +/-10%		
Control method		Closed loop vector control method		
Axis control	Operating method	I/O point tracing (Positioning operation by specifying point number) / Remote command		
	Operation types	Positioning, merge-positioning, push, and jog operations		
	Position detection method	Resolver	Resolver with multi-turn absolute function	
	Resolution	20480 pulses/rev. or 4096 pulses/rev. depending on the robot		
Points	Origin search method	Incremental	Absolute / Incremental	
	Points	255 points		
	Point type setting	(1) Standard setting: Set speed and acceleration in percent of the respective maximum settings. (2) Custom setting: Set speed and acceleration in SI units.		
Point teaching method	Manual data input (coordinates input), Teaching, Direct teaching			
External input/output	I/O interface	Selectable from the following: NPN, PNP, CC-Link, DeviceNet™, EtherNet/IP™, PROFINET		
	Input	Servo ON (SERVO), reset (RESET), start (START), interlock (/LOCK) origin search (ORG), manual mode (MANUAL), jog motion - (JOG-), jog motion + (JOG+), Point number selection (PIN0 to PIN7)		
	Output	Servo status (SRV-S), alarm (/ALM), operation end (END), operation in-progress (BUSY), control outputs (OUT0 to 3), Point number output 0 to 7 (POUT0 to POUT7)		
	External communications	RS-232C 1CH		
Options	Safety circuit	Emergency stop input, emergency stop contact output (1 system: When the HT1 is used.)		
	Handy terminal	HT1, HT1-D (with enable switch)		
General specifications	Support software for PC	TS-Manager		
	Operating temperature / Operating humidity	0°C to 40°C, 35% to 85%RH (non-condensing)		
	Storage temperature/ Storage humidity	-10°C to 65°C, 10% to 85%RH (non-condensing)		
	Atmosphere	Indoor location not exposed to direct sunlight. No corrosive, flammable gases, oil mist, or dust particles		
	Anti-vibration	All XYZ directions 10 to 57Hz unidirectional amplitude 0.075mm 57 to 150Hz 9.8m/s <sup>2</sup>		
Protective functions	Position detection error, temperature error, overload, overvoltage, low voltage, excessive position deviation, overcurrent, motor current error, motor cable faulty wiring, Excitation power failure error <sup>Note 1</sup>			

Note 1. The excitation power failure error is a protection function that is available only in TS-SH.

Controllable robot	<b>TS-S2/TS-SH ▶ TRANSERVO P.151</b>	<b>TS-X ▶ FLIP-X P.193</b>	<b>TS-P ▶ PHASER P.239</b>
CE marking	Field networks <b>CC-Link DeviceNet EtherNet/IP</b>		

## Model Overview

Name		TS-S2	TS-SH	TS-X/TS-P
Controllable robot		Dedicated compact single-axis TRANSERVO		
Input power	Main power supply	DC24V +/-10%	TS-X: Single-axis robot FLIP-X TS-P: Linear motor single-axis PHASER ● AC100V specifications Main power supply AC100 to 115V+/-10% Control power supply AC100 to 115V+/-10%	
	Control power supply	DC24V +/-10%	● AC200V specifications Main power supply AC200 to 230V+/-10% Control power supply AC200 to 230V+/-10%	
Operating method		I/O point tracing / Remote command / Operation using RS-232C communication		
Maximum number of controllable axes		Single-axis		
Origin search method		Incremental	Absolute / Incremental	TS-X: Absolute / Incremental TS-P: Absolute / Semi-absolute

## Ordering method

### TS-S2/TS-SH (TRANSERVO)

Robot positioner	Type	I/O	Battery Note 1
S2: TS-S2	No entry: Standard	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: With no I/O board	B: With battery (Absolute model) N: None (Incremental model)
SH: TS-SH	S: Sensor		

Note 1. Battery can only be selected for TS-SH. (Not provided for TS-S2).

### TS-X/TS-P (FLIP-X/PHASER)

Controller	Driver: Power-supply voltage/ Power capacity	Regenerative unit	LCD monitor	Input/Output Selection	Battery Note 2
TSX: TS-X TSP: TS-P	105: 100V / 100W more less 110: 100V / 200W 205: 200V / 100W more less 210: 200V / 200W 220: 200V / 400 to 600W	No entry: None R: With RGT R: With RGU-2	No entry: None L: With LCD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: With no I/O board	B: With battery (Absolute model) N: None (Incremental model)

Note 2. Battery can only be selected for TS-X. (Not provided for TS-P).

## TS-X/TS-P

Item	Model	TS-X / TS-P				
		100V AC input		200V AC input		
Driver model		TS-X105 / TS-P105	TS-X110 / TS-P110	TS-X205 / TS-P205	TS-X210 / TS-P210	TS-X220 / TS-P220
Number of controllable axes		Single-axis				
Controllable robots		TS-X: Single-axis robot FLIP-X series				TS-P: Linear motor single-axis robot PHASER series
Power capacity		400VA	600VA	400VA	600VA	1400VA
Dimensions		W58 × H162 × D131mm				W70 × H162 × D131mm
Weight		Approx. 0.9kg				Approx. 1.1kg
Input power supply	Control power supply	Single phase AC100 to 115V +/-10% 50/60Hz		Single phase AC200 to 230V +/-10% 50/60Hz		
	Motor power supply	Single phase AC100 to 115V +/-10% 50/60Hz		Single phase AC200 to 230V +/-10% 50/60Hz		
Control method		Closed loop vector control method				
Operating method		I/O point tracing (Positioning operation by specifying point number) / Remote command				
Operation types		Positioning, merge-positioning, push, and jog operations				
Position detection method		TS-X: Resolver with multi-rotation absolute function				TS-P: Magnetic type linear scale
Resolution		TS-X: 16384 pulses/rev.				TS-P: 1μm
Origin search method		TS-X: Absolute / Incremental				TS-P: Incremental / Semi-absolute
Number of points		255 points				
Point type setting		(1) Standard setting: Set speed and acceleration in percent of the respective maximum settings. (2) Custom setting: Set speed and acceleration in SI units.				
Point teaching method		Manual data input (coordinates input), Teaching, Direct teaching				
I/O interface		Selectable from the following: NPN, PNP, CC-Link, DeviceNet™, EtherNet/IP™, PROFINET				
Input		Servo ON (SERVO), reset (RESET), start (START), interlock (/LOCK) origin search (ORG), manual mode (MANUAL), jog motion - (JOG-), jog motion + (JOG+), Point number selection (PIN0 to PIN7)				
Output		Servo status (SRV-S), alarm (/ALM), operation end (END), operation in-progress (BUSY), control outputs (OUT0 to 3), Point number output 0 to 7 (POUT0 to POUT7)				
External communications		RS-232C 1CH				
Power supply for brake		DC24V +/-10% 300mA (prepared by the customer)				
Safety circuit		Emergency stop input, main power input ready output, emergency stop contact output (1 system: When the HT1 is used.)				
Handy terminal		HT1, HT1-D (with enable switch)				
Support software for PC		TS-Manager				
Operating temperature / Operating humidity		0°C to 40°C, 35% to 85%RH (non-condensing)				
Storage temperature / Storage humidity		-10°C to 65°C, 10% to 85%RH (non-condensing)				
Atmosphere		Indoor location not exposed to direct sunlight. No corrosive, flammable gases, oil mist, or dust particles				
Anti-vibration		All XYZ directions 10 to 57Hz unidirectional amplitude 0.075mm 57 to 150Hz 9.8m/s <sup>2</sup>				
Protective functions		Position detection error, power module error, temperature error, overload, overvoltage, low voltage, excessive position deviation, overcurrent, motor current error				
Protective structure		IP20				

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-assisted axis actuator  
Robonity  
Compact single-axis robots  
TRANSERVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
Electric gripper  
Option

## TS-X / TS-P specification selection table

Some specifications are automatically determined by the robot model.

### TS-X

		T4LH/ C4LH	T5LH/ C5LH	T6L/ C6L	T9	T9H	F8/ C8	F8L/ C8L	F8LH/ C8LH	F10/ C10	F10H	F14/ C14	F14H/ C14H	GF14XL	F17/ C17	F17L/ C17L	GF17XL	F20/ C20	F20N	N15/ N15D	N18/ N18D	B10	B14	B14H	R5	R10	R20
Power supply voltage / Current sensor	TS-X	105	●	●	●		●	●	●	●		●		●								●	●	●	●	●	
		110				●					●			●													●
		205	●	●	●	●	●	●	●	●	●		●										●	●	●	●	●
		210				●					●			●													●
	220										●		●	●					●	●							
Regenerative unit	No entry (None)				(1)	(2)				(1)	(2)	(1)	(2)	●	(3)		(6)	(3)	(4)		●	●			(5)		
	R (RGT)				(1)	(2)				(1)	(2)	(1)	(2)	●	(3)	●	(6)	(3)	(4)	●	●			(5)			

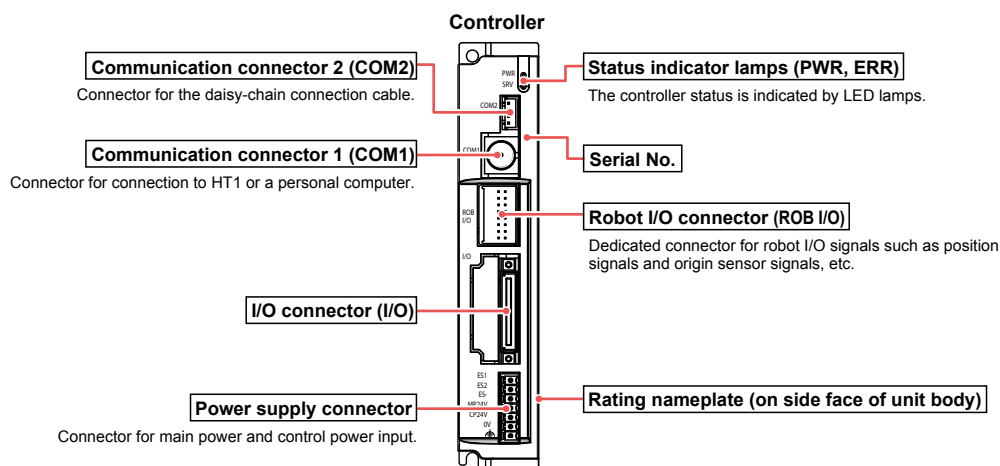
- (1) Regenerative unit is needed if using in a perpendicular position and movement stroke is 700mm or more.  
 (2) Regenerative unit is needed if using in a perpendicular position.  
 (3) [The following arrangements require a regeneration unit.]  
 • Using in the upright position.  
 • To move at a speed exceeding 1,000 mm/sec horizontally.  
 • High lead (40) used horizontally.  
 (4) Regenerative unit is needed if using at maximum speeds exceeding 1000mm per second.  
 (5) Regenerative unit is needed if using at maximum speeds exceeding 1250mm per second.  
 (6) Regenerative unit is needed if using at maximum speeds exceeding 750mm per second.

### TS-P

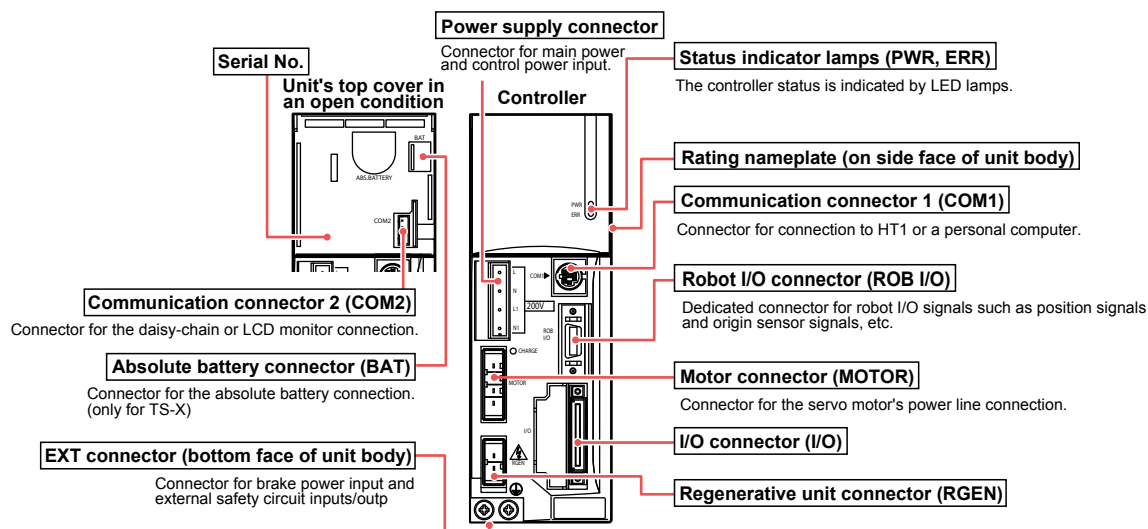
		MF7/7D	MF15/15D	MF20/20D	MF30/30D	MF75/75D
Power supply voltage / Current sensor	TS-P	105				
		110	●		●	
		205				
		210	●		●	
	220				●	●
Regenerative unit	No entry (None)		●			
	R (RGT)				●	
	R (RGU-2)					●

## Part names

### TS-S2/TS-SH



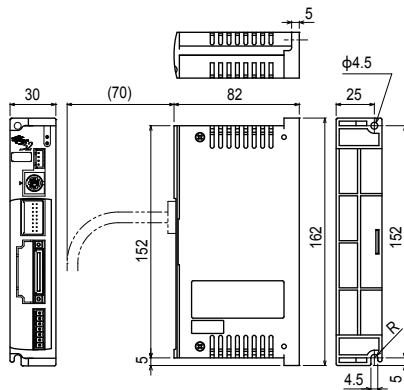
### TS-X/TS-P



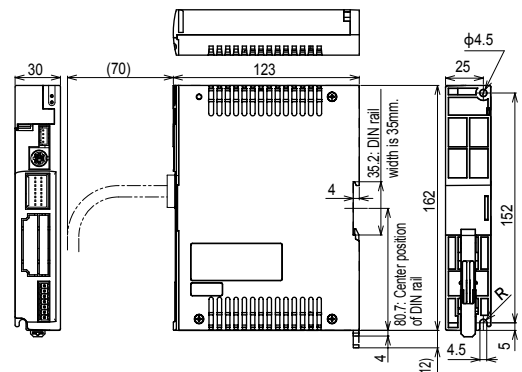


## Dimensions

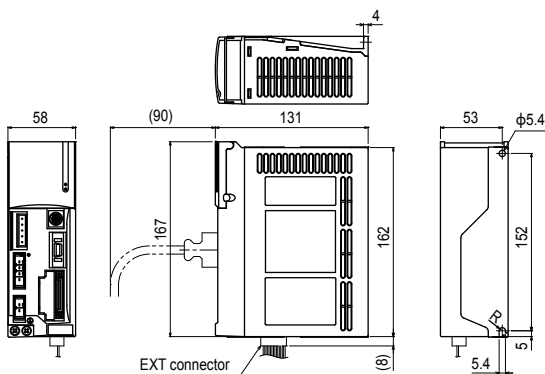
### TS-S2



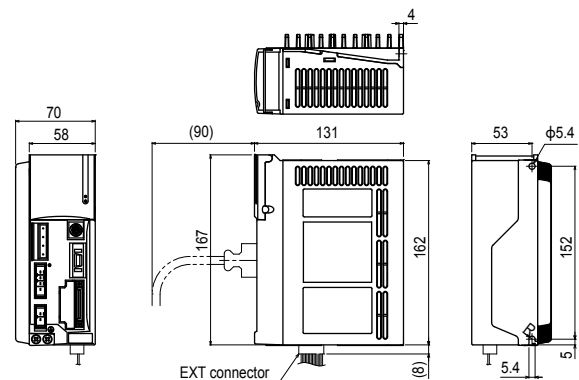
### TS-SH



### TS-X/TS-P (105/110/205/210)



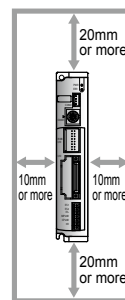
### TS-X/TS-P (220)



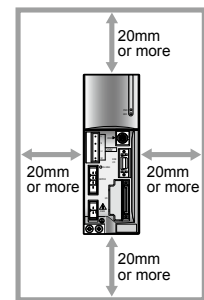
## Installation conditions

- Install the TS-S2/TS-SH/TS-X/TS-P inside the control panel.
- Install the TS-S2/TS-SH/TS-X/TS-P on a vertical wall.
- Install the TS-S2/TS-SH/TS-X/TS-P in a well ventilated location, with space on all sides of the TS-S2/TS-SH/TS-X/TS-P (See fig. at right.).
- Ambient temperature : 0 to 40°C
- Ambient humidity : 35 to 85% RH (no condensation)

### TS-S2/TS-SH



### TS-X/TS-P



## Cautions on TS-S2 / TS-SH

For the RF type sensor specifications, the controllers "TS-S2" and "TS-SH" become "TS-S2S" and "TS-SHS", respectively.

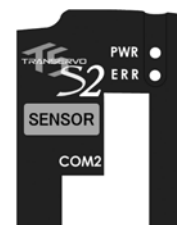
### TS-S2 / TS-SH (Standard specifications)

"BK" label is affixed to the front of the controller.



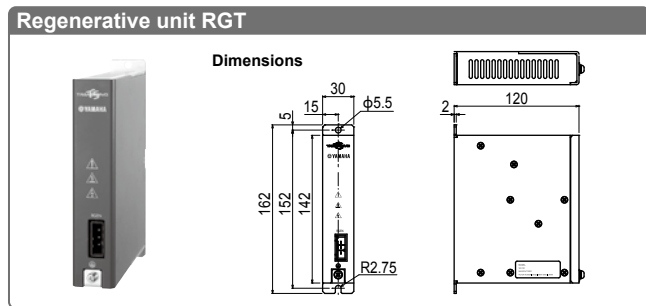
### TS-S2S / TS-SHS (Sensor specifications)

"SENSOR" label is affixed to the front of the controller.  
 (Be aware that "TS-S2S" is affixed to the front of the controller.)



Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSERVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER  
 INFORMATION  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 IVY2 Electric gripper  
 Option

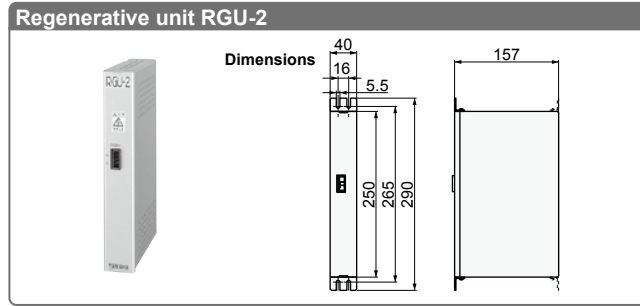
## Regenerative unit RGT/RGU-2



### Basic specifications

Item	RGT
Model	KCA-M4107-0A (including cable supplied with unit)
Dimensions	W30 × H142 × D118mm (Not including installation stay)
Weight	470g
Regenerative voltage	Approx. 380V or more
Regenerative stop voltage	Approx. 360V or less
Accessory	Cable for connection with controller (300mm)

Note. Always leave an empty space (gap of about 20mm) between this unit and the adjacent controller.  
Also, always use the dedicated cable when connecting the controller.



### Basic specifications

Item	RGU-2 (TS-P)
Model	KCA-M4107-2A (including cable supplied with unit)
Dimensions	W40 × H250 × D157mm
Weight	0.9kg
Regenerative voltage	Approx. 380V or more
Regenerative stop voltage	Approx. 360V or less
Accessory	Cable for connection with controller (300mm)

Note. Always leave an empty space (gap of about 20mm) between this unit and the adjacent controller. Also, always use the dedicated cable when connecting the controller.

## Data overview

Point data and parameter data settings must be specified in order to operate a robot from a TS series controller.

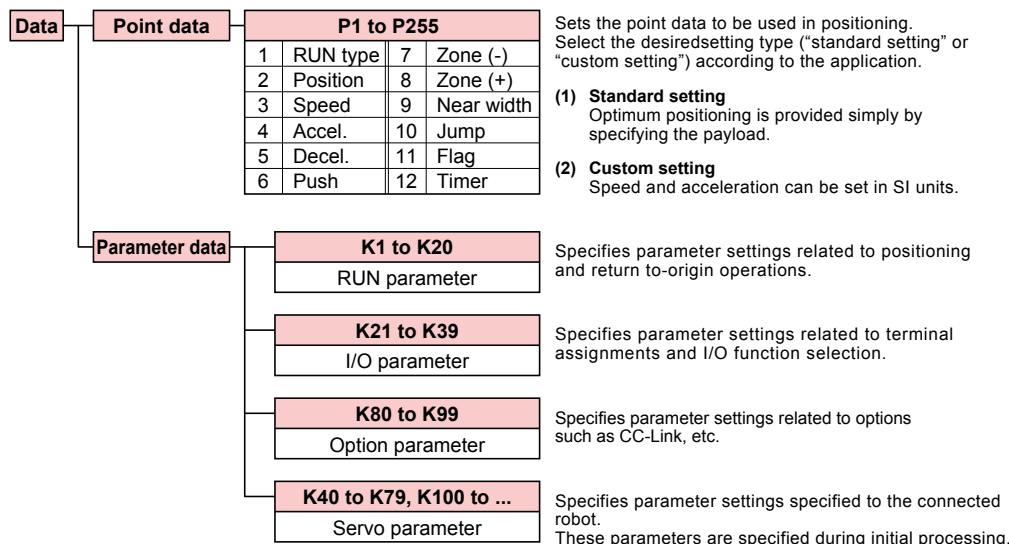
### Point data

The point data used in positioning operations includes items such as the "RUN type", "Position", and "Speed", etc. Up to 255 points (P1 to P255) can be registered. There are two point data setting types: "Standard setting" type that automatically defines optimal positioning simply by specifying the payload and "Custom setting" type that allows setting the speed (mm/s) and acceleration (m/s<sup>2</sup>) in SI units. Select the desired setting type according to the application.

### Parameter data

Parameter data is divided into the following categories: "RUN parameters", "I/O parameters", "option parameters", and "servo parameters".

### Data structure



## Point data

### Point data item list

P1 to P255		
Item		Description
1	RUN type	Specifies the positioning operation pattern.
2	Position	Specifies the positioning target position or movement amount.
3	Speed	Specifies the positioning speed.
4	Accel.	Specifies the positioning acceleration.
5	Decel.	Specifies the positioning deceleration (as a percentage of the acceleration).
6	Push	Specifies the electrical current limit value for "Push" operations.
7	Zone (-)	Specifies the "personal zone" output range.
8	Zone (+)	
9	Near width	Specifies the "near width" zone (distance tolerance relative to target position).
10	Jump	Specifies the next movement destination, or the next merge operation merge destination point No. following positioning completion.
11	Flag	Specifies other information related to the positioning operation.
12	Timer	Specifies the waiting time (delay) after positioning completion.

### "Standard setting" and "custom setting"

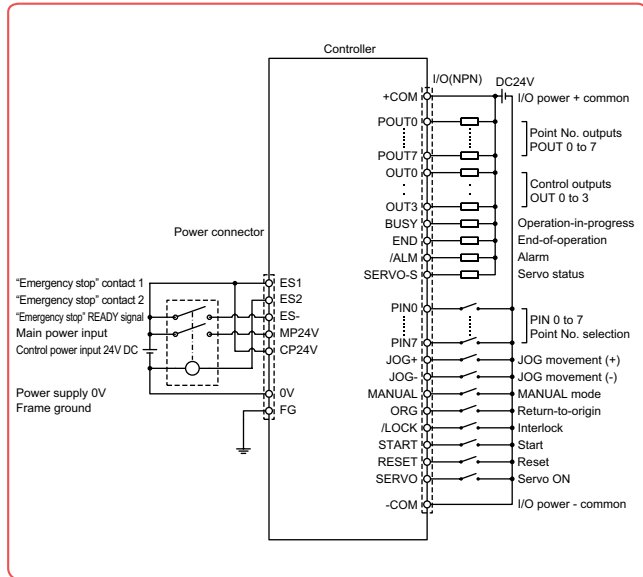
There are 2 setting types for point data ("standard setting" or "custom setting"). Select the desired setting type according to the application.

The maximum number of setting points for both setting types is 255 points (P1 to P255).

Setting Type	Description
Standard setting	Optimum positioning is provided simply by specifying the payload. This setting type is well-suited to assembly and transport applications.
Custom setting	Allows changing the speed and acceleration in SI units so the desired positioning operation can be set. This setting type is suited for machining and inspection systems.

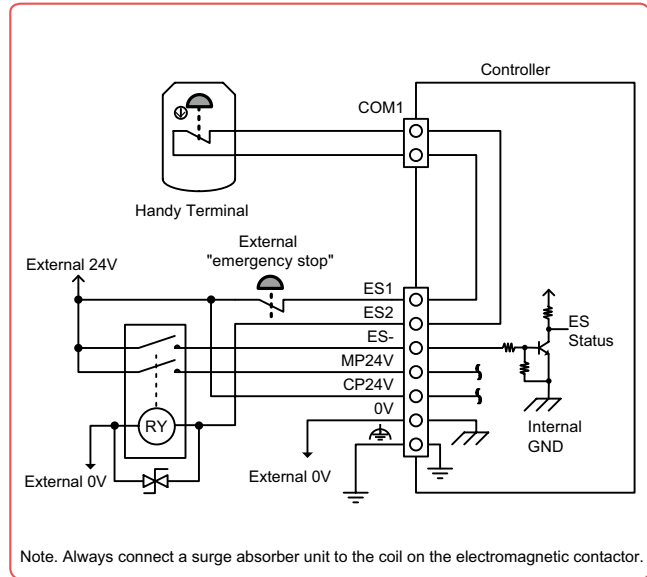
## NPN type input / output wiring diagram

### TS-S2/TS-SH



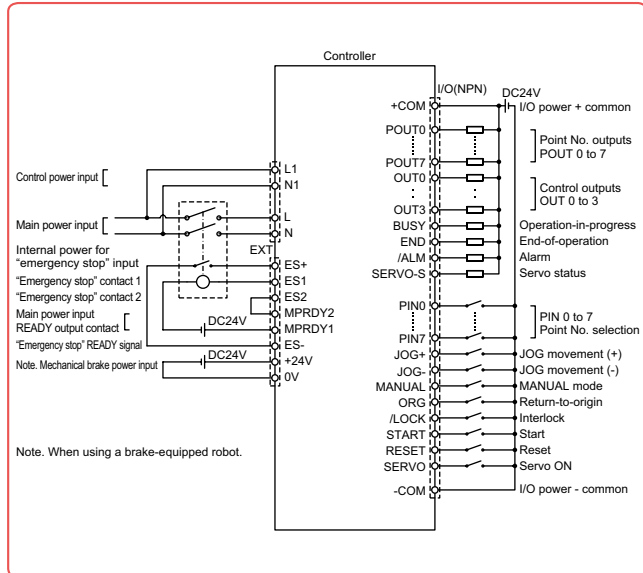
## Emergency stop circuit example

### TS-S2/TS-SH (power connector and host unit connection example)

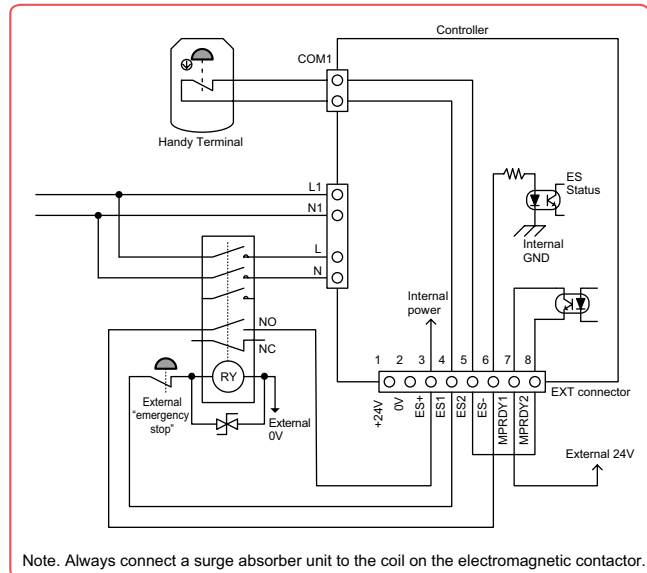


Note. Always connect a surge absorber unit to the coil on the electromagnetic contactor.

### TS-X

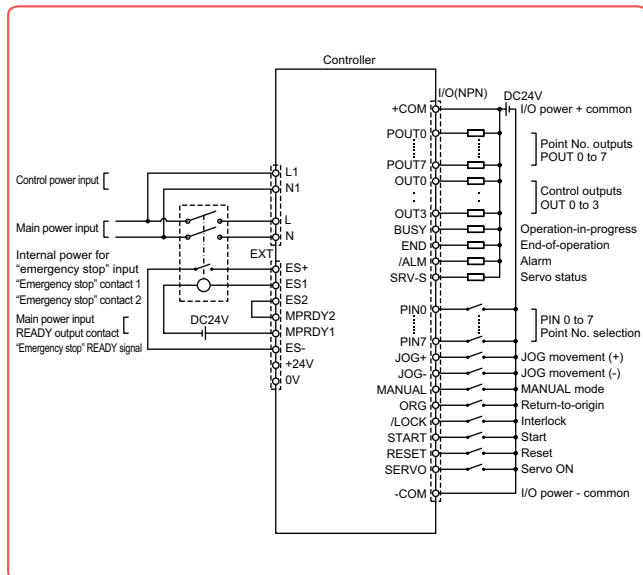


### TS-X/TS-P (EXT connector and host unit connection example)



Note. Always connect a surge absorber unit to the coil on the electromagnetic contactor.

### TS-P



Installing an external safety circuit will satisfy safety category class 4 standards. See P.645 for more information.

## I/O Specifications

Item	Description
NPN	Input 16 points, 24VDC +/-10%, 5.1mA/point, positive common Output 16 points, 24VDC +/-10%, 50mA/point, sink type
PNP	Input 16 points, 24VDC +/-10%, 5.5mA/point, minus common Output 16 points, 24VDC +/-10%, 50mA/point, source type
CC-Link	CC-Link Ver.1.10 compatible, Remote station device (1 node)
DeviceNet™	DeviceNet™ Slave 1 node
EtherNet/IP™	EtherNet/IP™ adapter (2 ports)
PROFINET	PROFINET Slave 1 node

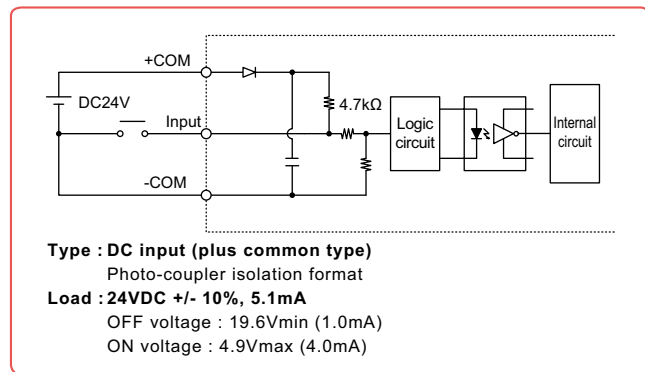
Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
Electric gripper  
Option

## I/O signals (NPN / PNP)

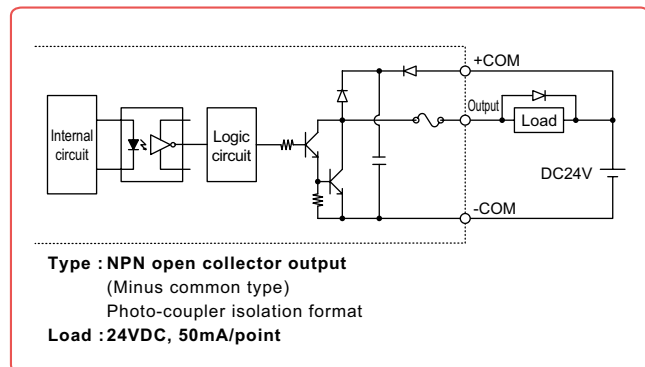
No.	Signal Name	Description	No.	Signal Name	Description
A1	+COM	I/O power input, positive common (24VDC +/-10%)	B1	POUT0	Point No. outputs
A2			B2	POUT1	
A3	NC	No connection	B3	POUT2	
A4			B4	POUT3	
A5	PIN0	Point No. select	B5	POUT4	
A6			B6	POUT5	
A7			B7	POUT6	
A8			B8	POUT7	
A9			B9	OUT0	
A10			B10	OUT1	
A11			B11	OUT2	
A12			B12	OUT3	
A13	JOG+	JOG movement (+ direction)	B13	BUSY	Operation-in-progress
A14	JOG-	JOG movement (- direction)	B14	END	Operation-end
A15	MANUAL	MANUAL mode	B15	/ALM	Alarm
A16	ORG	Return-to-origin	B16	SRV-S	Servo status
A17	/LOCK	Interlock	B17	NC	No connection
A18	START	Start	B18	NC	
A19	RESET	Reset	B19	-COM	I/O power input, negative common (0V)
A20	SERVO	Servo ON	B20		

### NPN type I/O circuit details

#### Input circuit

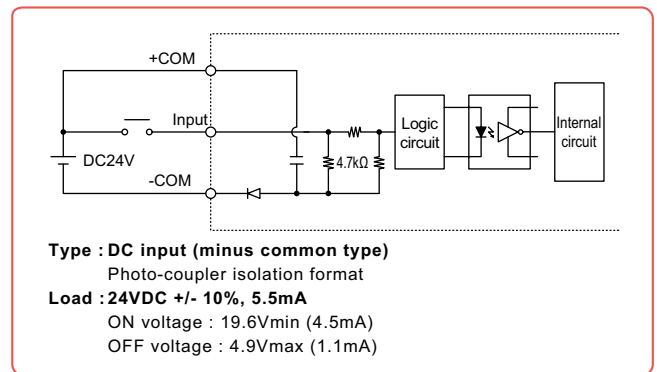


#### Output circuit

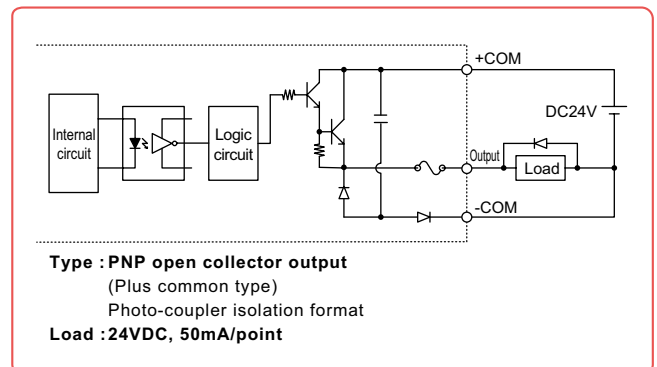


### PNP type I/O circuit details

#### Input circuit



#### Output circuit



# Accessories and part options

## TS-S2/TS-SH/TS-X/TS-P



### Standard accessories

#### Power connector

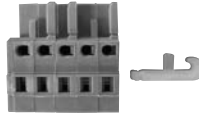


Model KCC-M4421-00

TS-S2  
TS-SH  
TS-SD

#### Power connector (AC100V specifications)

Included when 100V model is purchased

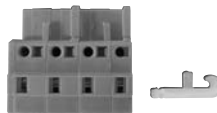


Model KCA-M5382-00

TS-X  
TS-P

#### Power connector (AC200V specifications)

Included when 200V model is purchased



Model KAS-M5382-00

LCC140  
TS-X  
TS-P  
SR1-X  
SR1-P  
RCX320  
RCX221  
RCX222  
RCX340

#### EXT connector

For braking power and safety circuit connections.



Model KCA-M5370-00

TS-X  
TS-P

#### Dummy connector



Model KCA-M5163-00

TS-S2  
TS-SH  
TS-X  
TS-P

#### I/O cables (2m/20-core×2)



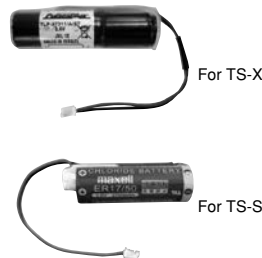
Model KCA-M4421-20

TS-S2  
TS-SH  
TS-X  
TS-P

#### Absolute battery

##### Absolute battery basic specifications

Item	For TS-X	For TS-SH
Battery type	Lithium metallic battery	
Battery capacity	3.6V / 1,650mAh	3.6V / 2,750mAh
Data holding time	About 1 year (in state with no power applied)	
Dimensions	φ18 × L60mm	φ17 × L53mm
Weight	24g	22g



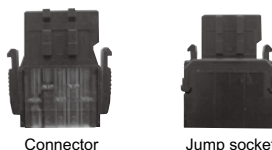
Model KCA-M53G0-10 (For TS-X)  
KCA-M53G0-01 (For TS-SH)

Note. The absolute battery is subject to wear and requires replacement. If trouble occurs with the memory then remaining battery life is low so replace the absolute battery. The battery replacement period depends on usage conditions. But generally you should replace the battery after about 1 year counting the total time after connecting to the controller and left without turning on the power.

TS-X  
TS-SH  
RCX320  
RCX340

#### CC-Link connector (CC-Link specifications)

Included when CC-Link model is purchased



Model Connector<sup>Note.</sup> KCA-M4872-00  
Jump socket KCA-M4873-00

Note. This is a single connector type. (Insert two connectors into a branching socket.)

TS-S2  
TS-SH  
TS-X  
TS-P

See next page for optional parts

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuators  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
IVZ Electric gripper  
Option

## Options

### ● Handy terminal HT1/HT1-D

P.584



		HT1	HT1-D
Model	3.5m	KCA-M5110-0J	KCA-M5110-1J
	10m	KCA-M5110-6J	KCA-M5110-7J
Enable switch		–	3-position
CE marking		Not supported	Applicable

- TS-S2
- TS-SH
- TS-X
- TS-P

### ● Support software TS-Manager

P.576



Model	
	KCA-M4966-0J (Japanese)
	KCA-M4966-0E (English)

- TS-S2
- TS-SH
- TS-X
- TS-P
- TS-SD

### ● TS-Manager environment

OS	Windows 2000, XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.1.4.5 or later)
CPU	Exceeding the environment recommended by the OS being used
Memory	Exceeding the environment recommended by the OS being used
Hard disk	Vacant capacity of more than 20MB in the installation destination drive
Communication port	Serial (RS-232C), USB
Applicable controllers	TS series

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

### ● Data cables

Communication cable for TS-Manager. Select from USB cable or D-sub cable.



Model	USB type (5m)	D-Sub type (5m)
	KCA-M538F-A0	KCA-M538F-01

Note. USB driver for communication cable can also be downloaded from our website.

- TS-S2
- TS-SH
- TS-X
- TS-P
- TS-SD

### ● Daisy chain and gateway connection cable



Model	
	KCA-M532L-00 (300mm)

- TS-S2
- TS-SH
- TS-X
- TS-P
- TS-SD

### ● CC-Link termination connector (CC-Link specifications)



Model	
	KCA-M4874-00

- TS-S2
- TS-SH
- TS-X
- TS-P

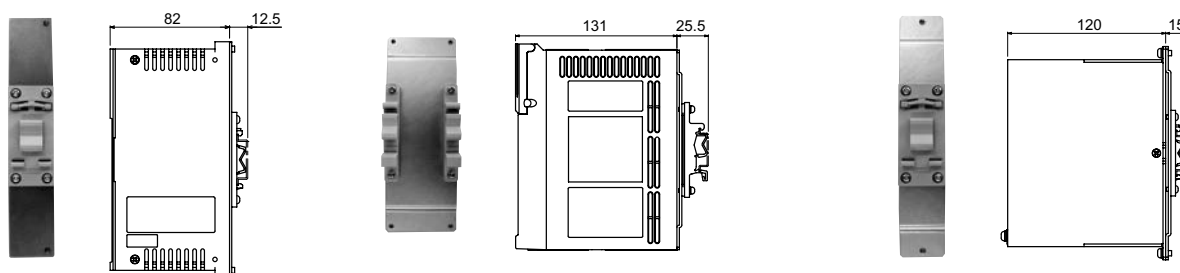
### ● TS-Monitor (LCD monitor) P.588



Model	For TS-X	For TS-P
	KCA-M5119-00	KCA-M5119-10

- TS-X
- TS-P

### ● DIN rail mounting bracket (This bracket is provided in TS-SH as standard equipment.)



Model	For TS-S2
	KCC-M499A-00

TS-S2

Model	For TS-X / TS-P
	KCA-M499A-00

TS-X  
TS-P

Model	For TS-X / TS-P with RGT
	KCA-M499A-10

TS-X  
TS-P



Articulated robots  
**YA**

Linear conveyor  
modules  
**LCM100**

Motor-less single  
axis actuator  
**Robonity**

Compact  
single-axis robots  
**TRANSERVO**

Single-axis robots  
**FLIP-X**

Linear motor  
single-axis robots  
**PHASER**

Cartesian  
robots  
**XY-X**

SCARA  
robots  
**YK-X**

Pick & place  
robots  
**YP-X**

**CLEAN**

**CONTROLLER**

**INFORMATION**

Robot  
positioner

Pulse string  
driver

Robot  
controller

iVY2  
Electric  
grripper

Option

# TS-SD

- CE compliance
- Only for pulse train control
- Dedicated for TRANSERVO

The TS-SD is a high-performance robot driver specifically designed for the TRANSERVO series that supports pulse train command input.

## Main functions ▶ P.63



Support software for PC

▶ TS-Manager

P.576



TS-SD

## Basic specifications

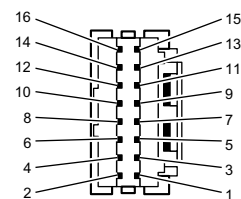
Item	Model	TS-SD	
Number of controllable axes	Single-axis		
Controllable robots	TRANSERVO series <sup>Note</sup>		
Current consumption	3A (Rating) 4.5A (Max.)		
Dimensions	W30 × H162 × D82mm		
Weight	Approx. 0.2kg		
Input power supply	Control power supply	DC24V +/-10%	
	Main power supply	DC24V +/-10%	
Operating method	Pulse train control		
Control method	Closed loop vector control method		
Position detection method	Resolver		
Resolution	20480 P/rev, 4096 P/rev		
Origin search method	Incremental		
External input/output	Pulse train command input	Line driver method : 500 kpps or less Open collector method : 100 kpps or less (DC5 to 24V +/-10%)	
	Input	Servo ON (SERVO), reset (RESET) origin search (ORG)	
	Output	Servo status (SRV-S), alarm (/ALM), positioning completion (IN-POS), return-to-origin end status (ORG-S)	
	External communications	RS-232C 1CH	
Options	Support software for PC	TS-Manager	
	Operating temperature	0°C to 40°C	
General specifications	Storage temperature	-10°C to 65°C	
	Operating humidity	35% to 85%RH (non-condensing)	
	Storage humidity	10% to 85%RH (non-condensing)	
	Atmosphere	Indoor location not exposed to direct sunlight. No corrosive, flammable gases, oil mist, or dust particles	
	Anti-vibration	All XYZ directions 10 to 57Hz unidirectional amplitude 0.075mm 57 to 150Hz 9.8m/s <sup>2</sup>	
	Protective functions	Position detection error, overheat, overload, overvoltage, low voltage, position deviation, control power voltage drop, overcurrent, motor current error, CPU error, motor line disconnection, command speed over, pulse frequency over	


Note. Except for RF type sensor specifications and STH type vertical specifications.

## I/O signal table

No.	Signal Name	Description
1	+COM	I/O power supply input (DC 24V +/- 10%)
2	OPC	Open collector power supply input
3	PULS1	Command pulse input 1
4	PULS2	Command pulse input 2
5	DIR1	Command direction input 1
6	DIR2	Command direction input 2
7	ORG	Return-to-origin
8	NC	Prohibited to use this signal.
9	RESET	Reset
10	SERVO	Servo ON
11	ORG-S	Return-to-origin end status
12	IN-POS	Positioning completion
13	/ALM	Alarm
14	SRV-S	Servo status
15	-COM	I/O power supply input (0V)
16	FG	Ground

## I/O connector



Controllable robot	<b>TRANSERVO P151</b>
CE marking	
Field networks	—

**Model Overview**

Name		TS-SD
Controllable robot		Dedicated compact single-axis TRANSERVO
Input power	Main power supply	DC24V +/-10% maximum
	Control power supply	DC24V +/-10% maximum
Operating method		Pulse train control
Maximum number of controllable axes		Single-axis
Origin search method		Incremental

**Ordering method**

**Controller only**      **Robot + Controller**

**TS-SD** Note

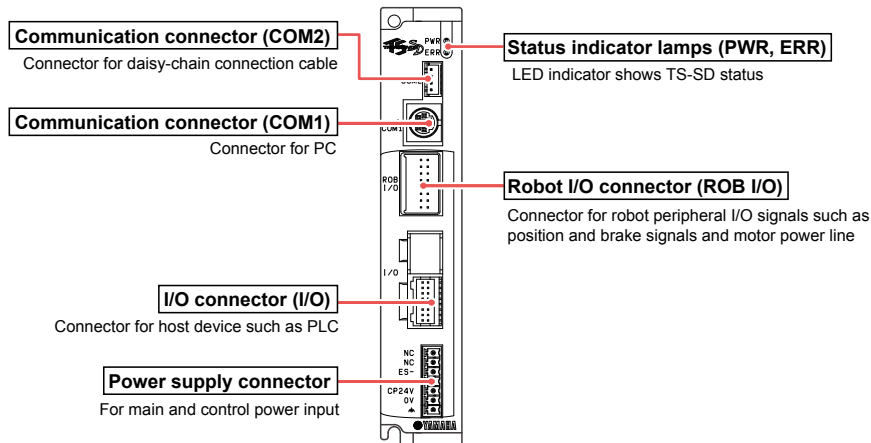
Controller      Robot model      Cable length      Controller      I/O cable

TRANSERVO Series      1L: 1 meter  
3L: 3 meters  
5L: 5 meters  
10L: 10 meters  
(flexible cables)

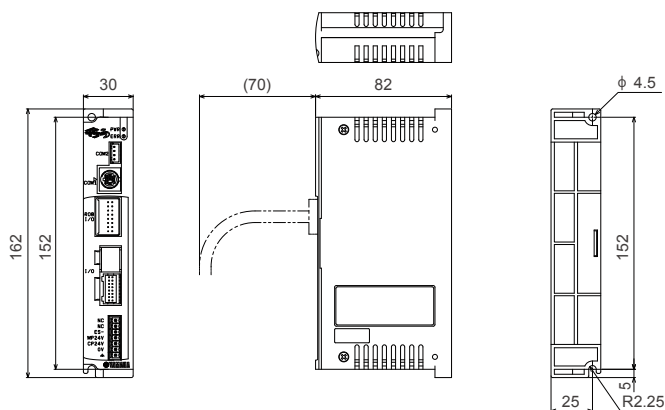
**SD 1**

Note. I/O cable (1 meter) comes supplied with unit.

**Part names**



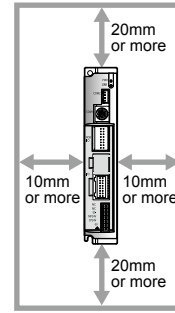
**Dimensions**



- Articulated robots  
**YA**
- Linear conveyor modules  
**LCM100**
- Motor-less single axis actuator  
**Robonity**
- Compact single-axis robots  
**TRANSERVO**
- Single-axis robots  
**FLIP-X**
- Linear motor single-axis robots  
**PHASER**
- Cartesian robots  
**XY-X**
- SCARA robots  
**YK-X**
- Pick & place robots  
**YP-X**
- CLEAN**
- CONTROLLER**
- INFORMATION**
- Robot positioner
- Pulse string driver
- Robot controller
- EV2 Electric gripper
- Option

## Installation conditions

- Install the TS-SD inside the control panel.
- Install the TS-SD on a vertical wall.
- Install the TS-SD in a well ventilated location, with space on all sides of the TS-SD (See fig. at right.).
- Ambient temperature : 0 to 40°C
- Ambient humidity : 35 to 85% RH (no condensation)

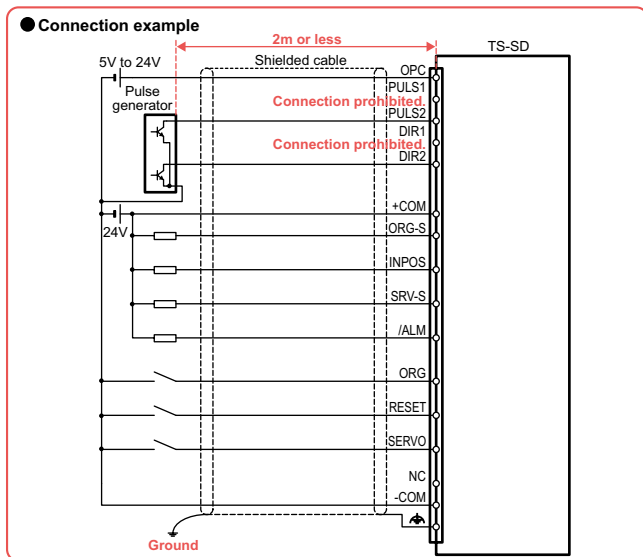


## I/O signal list

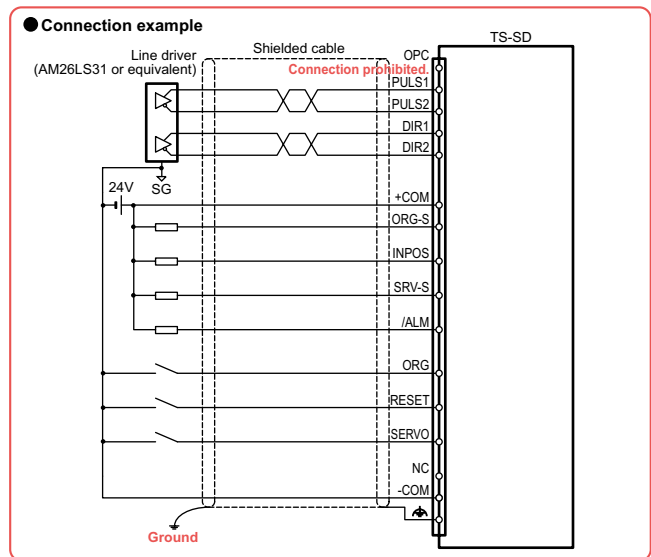
Type	Signal Name	Open collector	Line driver	Description
Inputs	OPC	Open collector power supply input	(Connection prohibited. <sup>Note 2</sup> )	Input the power supply for the open collector. (DC5 to 24V +/- 10%)
	PULS1	(Connection prohibited. <sup>Note 1</sup> )	Command pulse input (+)	Input terminal for pulse train input commands. Select from 3 command forms by changing parameters.
	DIR1	(Connection prohibited. <sup>Note 1</sup> )	Command direction input (+)	
	PULS2	Command pulse input	Command pulse input (-)	• Phase A/Phase B input
	DIR2	Command direction input	Command direction input (-)	• Pulse/Sign input
	ORG	Return-to-origin	←	Starts return-to-origin when ON and stops it when OFF.
	RESET	Reset	←	Alarm reset
Outputs	SREVO	Servo ON	←	ON: servo on; OFF: servo off.
	ORG-S	Return-to-origin end status	←	ON at return-to-origin end.
	IN-POS	Positioning completion	←	ON when accumulated pulse in deviation counter are within specified value range.
	/ALM	Alarm	←	ON when normal. OFF when alarm occurs.
	SRV-S	Servo status	←	ON when servo is on.

Note 1. When using the open collector specifications, do not connect any signal to the PULS1 and DIR1 terminals. Doing so may cause the driver to malfunction or breakdown.  
 Note 2. When using the line driver specifications, do not connect any signal to the OPC terminal. Doing so may cause the driver to malfunction or breakdown.

## Input / output signal connection diagram [open collector]



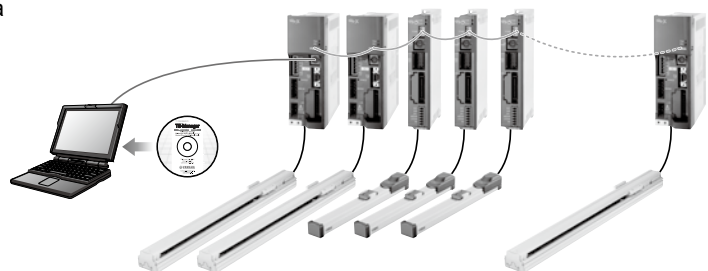
## Input / output signal connection diagram [line driver]



## Daisy chain function

Connecting two or more TS series controllers and drivers in a daisy chain allows editing data on any one unit from a PC.

- Up to 16 units connectable
- Requires daisy chain coupler cables.





# Accessories and part options

## TS-SD

### Standard accessories

#### ● Power connector



Model KCC-M4421-00

TS-S2  
TS-SH  
TS-SD

#### ● I/O cables (1m)



Model KCC-M5362-00

TS-SD

### Options

#### ● Support software TS-Manager

P.576



Model KCA-M4966-0J (Japanese)  
KCA-M4966-0E (English)

TS-S2  
TS-SH  
TS-X  
TS-P  
TS-SD

#### ● TS-Manager environment

OS	Windows 2000, XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.1.4.5 or later)
CPU	Exceeding the environment recommended by the OS being used
Memory	Exceeding the environment recommended by the OS being used
Hard disk	Vacant capacity of more than 20MB in the installation destination drive
Communication port	Serial (RS-232C), USB
Applicable controllers	TS series

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

#### ● Data cables

Communication cable for TS-Manager. Select from USB cable or D-sub cable.



Model USB type (5m) KCA-M538F-A0  
D-Sub type (5m) KCA-M538F-01

Note. USB driver for communication cable can also be downloaded from our website.

TS-S2  
TS-SH  
TS-X  
TS-P  
TS-SD

#### ● Daisy chain and gateway connection cable



Model KCA-M532L-00 (300mm)

TS-S2  
TS-SH  
TS-X  
TS-P  
TS-SD

# RDV-X/RDV-P

● Only for pulse train control

These are high-performance robot drivers for the FLIP-X series and PHASER series which support pulse train command input.



RDV-X

RDV-P

## Main functions ▶ P.62



Support software for PC

▶ RDV-Manager

P.582

## Basic specifications

Item		RDV-X			RDV-P				
Model		RDV-X205	RDV-X210	RDV-X220	RDV-P205	RDV-P210	RDV-P220	RDV-P225	
Driver model		RDV-X205	RDV-X210	RDV-X220	RDV-P205	RDV-P210	RDV-P220	RDV-P225	
Number of controllable axes		Single-axis							
Controllable robots		Single-axis robot FLIP-X			Linear motor single-axis robot PHASER				
Basic specifications	Capacity of the connected motor	200V 100W or less	200V 200W or less	200V 600W or less	200V 100W or less	200V 200W or less	200V 400W or less	200V 750W or less	
	Maximum power consumption	0.3kVA	0.5kVA	0.9kVA	0.3kVA	0.5kVA	0.9kVA	1.3kVA	
	Dimensions	W40×H160×D140mm			W40×H160×D170mm	W40×H160×D140mm		W40×H160×D170mm	
	Weight	0.7kg			1.1kg	0.7kg		1.2kg	
Input power supply	Control power supply	Single phase 200 to 230V +10%, -15%, 50/60Hz +/-5%							
	Motor power supply	Single phase / 3-phase 200 to 230V +10%, -15%, 50/60Hz +/-5%							
Axis control	Position detection method	Resolver			Magnetic linear scale				
	Control system	Sine-wave PWM (pulse width modulation)							
	Control mode	Position control							
	Maximum speed <sup>Note 1</sup>	5000rpm				3.0m/s			
Input/output related function	Position command input	Line driver signal (2M pps or less) (1) Forward pulse + reverse pulse (2) Sign pulse + Command pulse (3) 90-degree phase difference 2-phase pulse command One of (1) to (3) is selectable.							
	Input signal	24V DC contact point signal input (usable for sink/source) (24V DC power supply incorporated) (1) Servo ON (2) Alarm reset (3) Torque limit (4) Forward overtravel (5) Reverse overtravel (6) Origin sensor <sup>Note 3</sup> (7) Return-to-origin (8) Pulse train input enable (9) Deviation counter clear							
	Output signal	Open collector signal output (usable for sink/source) (1) Servo ready (2) Alarm (3) Positioning completed (4) Return-to-origin complete							
	Relay output signal	Braking cancel signal (24V 375mA)				-			
	Position output	Phase A, B signal output: Line driver signal output Phase Z signal output: Line driver signal output / open collector signal output N/8192 (N=1 to 8191), 1/N (N=1 to 64) or 2/N (N=3 to 64)							
Monitor output	Selectable items: 2ch, 0 to +/-5V voltage output, speed detection value, torque command, etc.								
Internal function	Display	5-digit number indicator, Control power LED							
	External operator	PC software "RDV-Manager" monitoring function, parameter setting function, operation tracing function, trial operation function, etc. USB2.0 is used. Windows Vista / 7 / 8 / 8.1 personal computer can be connected.							
	Regenerative braking circuit	Included (but without braking resistor)							
	Dynamic brake <sup>Note 4</sup>	Included (Operation conditions can be set.) (No DB resistor, connection: 2-phase short circuit)							
	Protective function <sup>Note 2</sup>	Semi-enclosure type (IP20)							
Protective functions	Over-current, overload, braking resistor overload, main circuit overvoltage, memory error, etc.								



Controllable robot	<b>RDV-X ▶ FLIP-X</b> <sup>Note 1</sup> <b>P.193</b>	<b>RDV-P ▶ PHASER</b> <b>P.239</b>
CE marking		Field networks

Note 1. Exclude T4 / T5 / C4 / C5 / YMS

## Model Overview

Name		RDV-X	RDV-P
Controllable robot		Single-axis robot FLIP-X <sup>Note 1</sup>	Linear motor single-axis robot PHASER
Input power	Main power supply	Single phase / 3-phase 200 to 230V +10% to -15% (50/60Hz +/-5%)	
	Control power supply	Single phase 200 to 230V +10% to -15% (50/60Hz +/-5%)	
Operating method		Pulse train control	
Maximum number of controllable axes		Single-axis	
Origin search method		Incremental	

## Ordering method

### RDV-X

Note. Driver selection and regenerative unit selection depend on the robot type. See the selection table on the next page for selecting the driver/regenerative circuit.

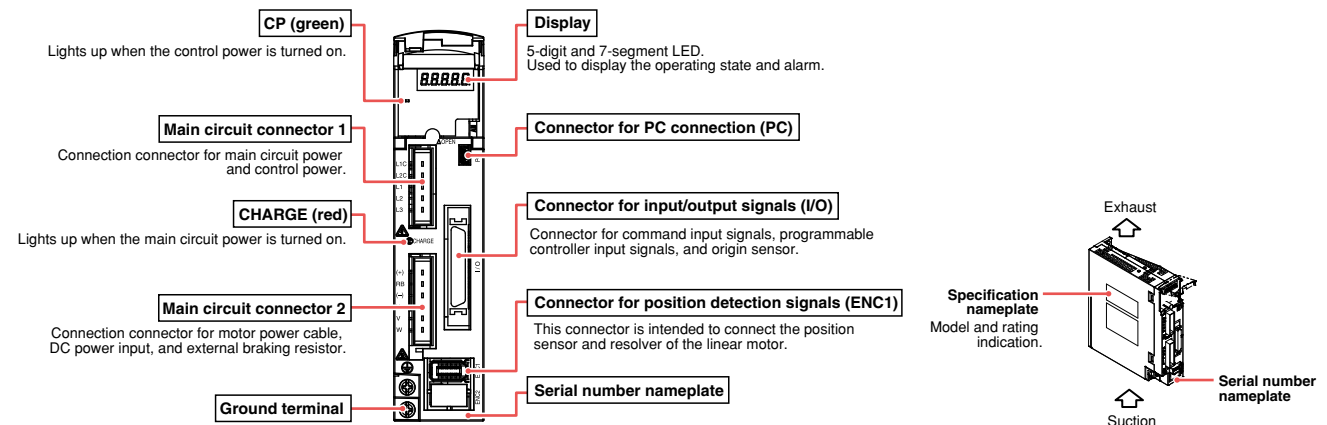
### RDV-P

Note. Driver selection and regenerative unit selection depend on the robot type. See the selection table on the next page for selecting the driver/regenerative circuit.

Item		RDV-X			RDV-P			
Driver model		RDV-X205	RDV-X210	RDV-X220	RDV-P205	RDV-P210	RDV-P220	RDV-P225
Options	Support software for PC	RDV-Manager						
General specifications	Operating temperature	0°C to +55°C						
	Storage temperature <sup>Note 5</sup>	-10°C to +70°C						
	Operating humidity	20% to 90%RH (non-condensing)						
	Vibration <sup>Note 6</sup>	5.9m/s <sup>2</sup> (0.6G) 10 to 55Hz						

Note 1. These data are parameters and calculation range in controlling the robot driver and do not indicate the capacity of the robot at the maximum speed.  
 Note 2. JIS C 0920 (IEC60529) is used as the base for the protection method.  
 Note 3. GXL-8FB (made by SUNX) or FL7M-1P5B6-Z (made by YAMATAKE) is used for the origin sensor. The power consumption of the origin sensor is 15mA or less (at open output) and only 1 unit of the origin sensor is connected to each robot driver. (future specification)  
 Note 4. Use the dynamic brake for emergency stop. Note that the braking may be less effective depending on the robot model.  
 Note 5. The storage temperature is the temperature in the non-energized state including transportation.  
 Note 6. The JIS C 60068-2-6:2010 (IEC 60068-2-6:2007) test method is uses as the base.

## Part names

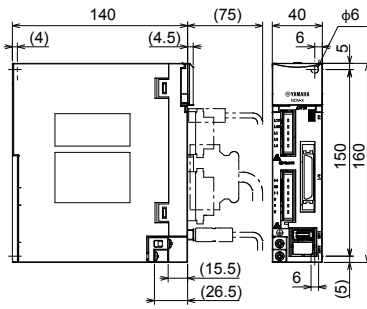


Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuators  
 Robonity  
 Compact single-axis robots  
 TRANSERVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER  
 INFORMATION  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 IVZ  
 Electric gripper  
 Option

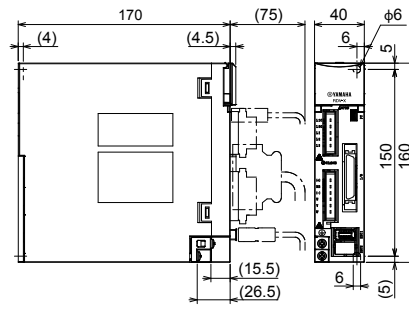
# RDV-X/RDV-P

## ■ Dimensions

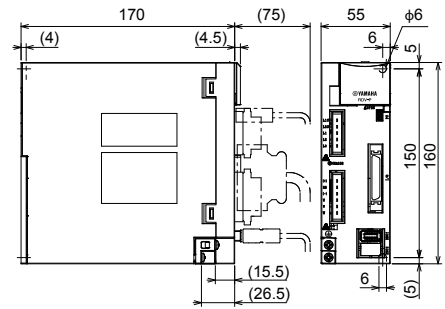
### RDV-X205/210 RDV-P205/210



### RDV-X220 RDV-P220



### RDV-P225



## ■ Driver / regenerative unit selection table

### RDV-X

		FLIP-X																												
		T4LH/C4LH	T5LH/C5LH	T6L/C6L	T9	T9H	F8/C8	F8L/C8L	F8LH/C8LH	F10/C10	F10H	F14/C14	F14H/C14H	GF14XL	F17/C17	F17L/C17L	GF17XL	F20/C20	F20N	N15	N18	N15D	N18D	B10	B14	B14H	R5	R10	R20	
Driver selection	RDV-X 05	●	●	●	●		●	●	●	●		●																		
	RDV-X 10					●					●		●												●	●		●	●	
	RDV-X 20													●	●	●	●	●	●	●	●	●	●	●					●	
Regenerative unit	No entry (None)	●	●																											
	RBR1			●	●	●	●	●	●	●	●	●	●	●	①	①		①	●	●	●	●	●	●	●	●	●	●	●	
	RBR2														①	①		①												

① If placed horizontally the RBR1 is required, if placed vertically then RBR2 is required.

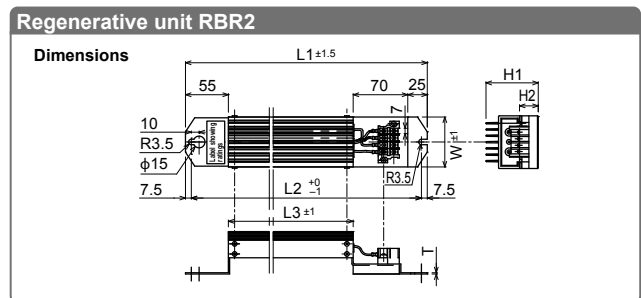
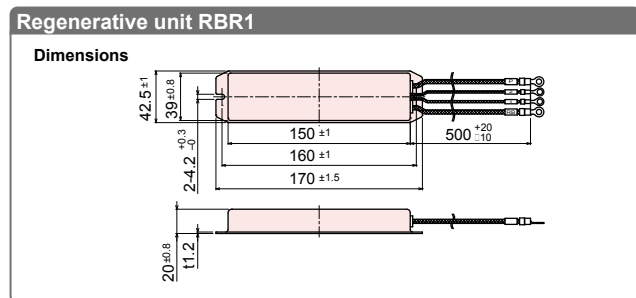
### RDV-P

		PHASER				
		MF7/MF7D	MF15/MF15D	MF20/MF20D	MF30/MF30D	MF75/MF75D
Driver selection	RDV-P 05					
	RDV-P 10	●	●	●		
	RDV-P 20				●	
	RDV-P 25					●
Regenerative unit	No entry (None)					
	RBR1	●	●	●	●	
	RBR2					●

## ■ Regenerative unit RBR1 / RBR2 dimensions

The regenerative unit is a device that converts the braking current generated when the motor decelerates into heat.

Regenerative unit is required for specified Yamaha models and for operation with loads having large inertia.



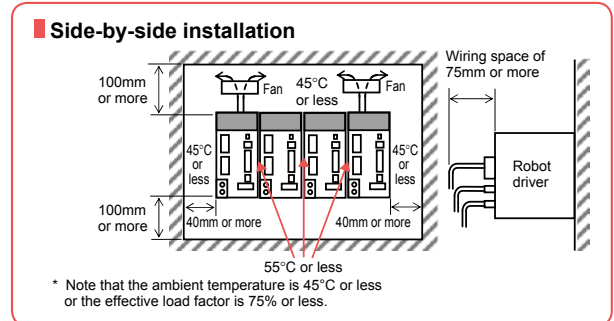
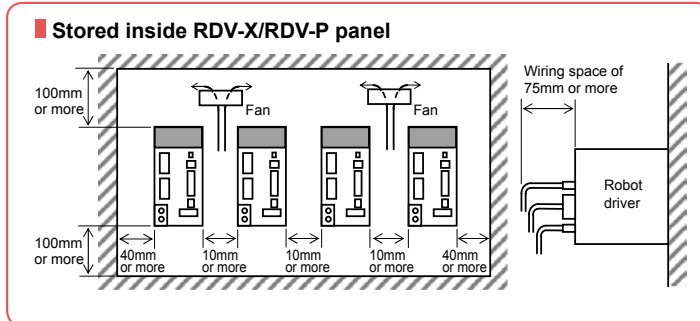
### ● Regenerative unit RBR1 / RBR2 basic specifications

Item	RBR1	RBR2
Model	KBH-M5850-00	KBH-M5850-10
Capacity type	120W	200W
Resistance value	100Ω	100Ω
Permissible braking frequency	2.5%	7.5%
Permissible continuous braking time	12 sec.	30 sec.
Weight	0.27kg	0.97kg

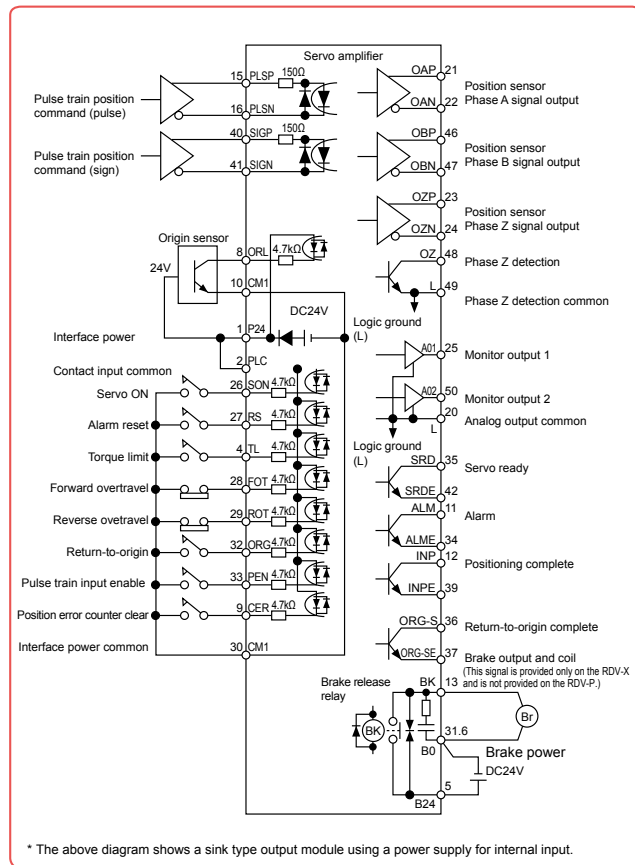
Note. The internal thermal contact point capacity is AC250V, 2A max. ON (b contact point) in the normal state.  
 Note. The built-in thermal fuse prevents abnormal heat generation which occurs by an erroneous use. (not resettable)  
 Note. When the thermal relay has worked, reduce the regeneration energy by either stopping the servo amplifier or making the deceleration time longer.  
 Note. With the regenerative unit, specifications and whether or not required may vary depending on each robot and its operation conditions.

## Installation conditions

- Install the RDV-X/RDV-P on a vertical metal wall.
- Install the RDV-X/RDV-P in a well ventilated location, with space on all sides of the RDV-X/RDV-P.
- Ambient temperature: 0 to 55°C
- Ambient humidity: 20 to 90% RH (no condensation)
- When placing two or more robot drivers in one operating panel, install them as shown in the figure below.



## Input / output signal connection diagram



## List of RDV-P / RDV-X terminal functions

Type	Terminal symbol	Terminal name	Description
Input signal	P24	Interface power	Supplies 24V DC for contact inputs. Connecting this signal to the PLC terminal allows using the internal power supply. Use this terminal only for contact input. Do not use for controlling external equipment connected to the driver, such as brakes.
	CM1	Interface power common	This is a ground signal for the power supply connected to P24. If using the internal power supply then input a contact signal between this signal and the contact-point signal.
	PLC	Intelligent input common	Connect this signal to the power supply common contact input. Connect an external supply or internal power supply (P24).
	SON	Servo ON	Setting this signal to ON turns the servo on (supplies power to motor to control it). Additionally, this signal is also used for estimating magnetic pole position when FA-90 is set to oFF4, oFF5.
	RS	Alarm reset	After an alarm has tripped, inputting this signal cancels the alarm. But before inputting this reset signal, first set the SON terminal to OFF and eliminate the cause of the trouble.
	TL	Torque limit	When this signal is ON, the torque limit is enabled.
	FOT	Forward overtravel	When this signal is OFF, the robot will not run in forward direction. (Forward direction limit signal)
	ROT	Reverse overtravel	When this signal is OFF, the robot will not run in reverse direction. (Reverse direction limit signal)
	ORL	Origin sensor	Input an origin limit switch signal showing the origin area.
	ORG	Return-to-origin	Inputting this signal starts return-to-origin operation.
Output signal	PEN	Pulse train input enable	When this signal is turned on, the pulse train position command input is enabled.
	CER	Position error counter clear	Inputting this signal clears the position deviation (position error) counter. (Position command value is viewed as current position.)
	SRD	Servo ready	This signal is output when the servo is ready to turn on (with main power supply turned on and no alarms tripped)
	SRDE	Servo ready	This signal is output when an alarm has tripped. (This signal is ON in normal state and OFF when an alarm has tripped.)
	ALM	Alarm	This signal is output when the deviation between the command position and current position is within the preset positioning range.
	ALME	Alarm	This signal is output when the deviation between the command position and current position is within the preset positioning range.
	INP	Positioning complete	This signal is output when the deviation between the command position and current position is within the preset positioning range.
Relay output	INPE	Positioning complete	This signal is output when the deviation between the command position and current position is within the preset positioning range.
	ORG-S	Return-to-origin complete	This signal is output when the return-to-origin is completed successfully.
	ORG-SE	Return-to-origin complete	This signal is output when the return-to-origin is completed successfully.
Monitor output	BK (B24) <sup>Note 1</sup>	Brake release relay output	When the servo is ON, this terminal outputs a signal to allow releasing the brake. (FLIP-X series only)
	AO1	Monitor output 1	Outputs speed detection values, torque commands, etc. as analog signal voltages for monitoring. Signals to output are selected by setting parameters. These signals are only for monitoring. Do not use for control.
	AO2	Monitor output 2	Outputs speed detection values, torque commands, etc. as analog signal voltages for monitoring. Signals to output are selected by setting parameters. These signals are only for monitoring. Do not use for control.
Position command	L	Monitor output common	This is the ground for the monitor signal.
	PLSP	Position command pulse (pulse signal)	Select one of the following signal forms as the pulse-train position command input.
	PLSN	Position command pulse (pulse signal)	1. Command pulse + direction signal
Position sensor monitor	SIGP	Position command pulse (sign signal)	2. Forward direction pulse train + reverse direction pulse train
	SIGN	Position command pulse (sign signal)	3. Phase difference 2-phase pulse
	OAP	Position sensor Phase A signal	Outputs monitor signal obtained by dividing "phase A" signal of position sensor.
	OAN	Position sensor Phase A signal	Outputs monitor signal obtained by dividing "phase A" signal of position sensor.
	OBP	Position sensor Phase B signal	Outputs monitor signal obtained by dividing "phase B" signal of position sensor.
	OBN	Position sensor Phase B signal	Outputs monitor signal obtained by dividing "phase B" signal of position sensor.
	OZP	Position sensor Phase Z signal	Outputs monitor signal for position sensor "phase Z" signal.
OZN	Position sensor Phase Z signal	Outputs monitor signal for position sensor "phase Z" signal.	
Braking power input	OZ	Phase Z detection	Outputs monitor signal for position sensor "phase Z" signal.
	L	Phase Z detection common	Outputs monitor signal for position sensor "phase Z" signal.
Braking power input	B24 <sup>Note 1</sup>	Brake power input	Input 24V DC brake power to this terminal.
	B0 <sup>Note 1</sup>	Brake power common	Common terminal input for brake power.

Note 1. B24, B0 and BK are available only with RDV-X, and not with RDV-P.

## Accessories and part options

### RDV-X/RDV-P



#### Standard accessories

- I/O connector (no brake wiring)



Model KBH-M4420-00

RDV-X  
RDV-P

- I/O connector (with brake wiring)



Model KBH-M4421-00

RDV-X  
RDV-P

- Power supply connector



Model KEF-M4422-00

RDV-X  
RDV-P

#### Options

- Support software RDV-Manager

P.582



Model KEF-M4966-00

RDV-X  
RDV-P

#### Environment

OS	Windows Vista SP1 (32bit) <sup>Note 1</sup> , 7, 8 / 8.1
CPU	Pentium4 1.8GHz or more (Recommend)
Memory	1GB or more
Hard disk	1GB of available space required on installation drive.
Disk operation	USB
Applicable controllers	RDV series

Note 1. SP1 (service pack 1) or higher.

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

- Communication cable

Communication cable to connect PC and a controller.



Model KEF-M538F-00

RDV-X  
RDV-P

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact  
TRANSEMO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
IVY2 Electric gripper  
Option

Articulated robots  
YA

Linear conveyor  
modules  
LCM100

Motor-less single  
axis actuator  
Robonity

Compact  
single-axis robots  
TRANSERVO

Single-axis robots  
FLIP-X

Linear motor  
single-axis robots  
PHASER

Cartesian  
robots  
XY-X

SCARA  
robots  
YK-X

Pick & place  
robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Robot  
positioner

Pulse string  
driver

Robot  
controller

iVY2  
Electric  
grripper

Option

# ERCD

● Dedicated for T4L / T5L / C4L / C5L

**Low price and compact in size.**  
**In addition to the conventional functions, a pulse train function is added for a wider application range.**  
**This is a dedicated controller for the FLIP-X series models T4L, T5L, C4L, and C5L.**

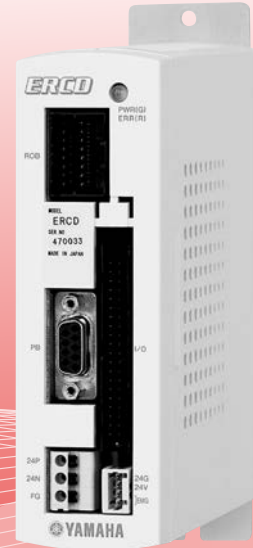
Main functions ▶ P.68



Programming box  
 ▶ HPB/HPB-D  
 P.585



Support software for PC  
 ▶ POPCOM+  
 P.578



ERCD

## Basic specifications

Item	Model	ERCD	
Number of controllable axes		Single-axis	
Controllable robots		Single-axis robot FLIP-X series T4L / T5L / C4L / C5L	
Capacity of the connected motor		DC24V 30W or less	
Dimensions		W44 × H166 × D117mm	
Weight		0.45kg	
Input power supply		DC24V +/-10% maximum 3A to 4.5A (Variable depending on robots in use.)	
Drive method		AC full-digital software servo	
Position detection method		Resolver	
Operating method		Normal mode: point trace movement, program operation, operation using RS-232C communication Pulse Train mode: operation by pulse train input	
Position indication units		mm (millimeters)	
Speed setting		1% to 100% (Setting by 1% unit)	
Acceleration setting		1. Automatic speed setting per robot No. and payload 2. Setting based on acceleration and deceleration parameter 1% to 100% (Setting by 1% unit)	
Resolution		16384 P/rev	
Origin search method		Incremental	
Program language		YAMAHA SRC	
Multitasks		4 tasks	
Point-data input method		Manual data input (coordinates input), Direct teaching, Remote teaching	
RAM		32 Kbytes with lithium battery backup (5-year life) Retains programs, point data, parameters and alarm history	
Programs		100 programs (Maximum program number) 255 steps per program 1024 steps / total or less	
Points		1000 points (256 when point tracing)	
External input/output	Normal mode <sup>Note 1</sup>	Sequence input	Dedicated input 8 points, General input 6 points
		Sequence output	Dedicated input 3 points, General input 6 points, Open collector output
	Pulse train mode <sup>Note 1</sup>	Sequence input	Dedicated input 5 points, General input 6 points
		Sequence output	Dedicated input 3 points, General input 6 points, Open collector output
		Command pulse input	Type
	Mode		Line driver (+5V)
	Frequency		Maximum 2 Mpps
	Feedback pulse output	Terminal name	PA+, PA-, PB+, PB-, PZ+, PZ-
		Type	Phase A / phase B / phase Z
		Mode	Line driver (+5V)
Number of pulse		16 to 4096 P/rev	
Power supply for sequence I/O		External DC +24V input	
Emergency stop input		Normal close contact point input	
Brake output		Relay output (for 24V/300mA brake) 1CH	
External communications		RS-232C 1CH (For communication with HPB or PC)	



Controllable robot	<b>FLIP-X Dedicated for T4L/T5L P.198</b>	<b>Dedicated for C4L/C5L P.466</b>
CE marking	—	Field networks —

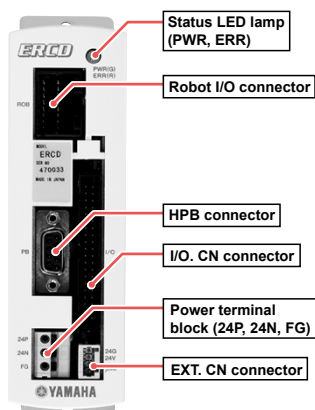
Model Overview	
Name	ERCD
Controllable robot	Dedicated for T4L / T5L / C4L / C5L
Input power	DC24V +/-10% maximum 3A to 4.5A (Variable depending on robots in use.)
Operating method	Pulse train control / Programming / I/O point tracing / Operation using RS-232C communication
Maximum number of controllable axes	Single-axis
Origin search method	Incremental

Ordering method	
<b>ERCD</b>	Controller
	I/O connector specification
	CN1: I/O flat cable 1m (Standard) CN2: Twisted-pair cable 2m (pulse train function)

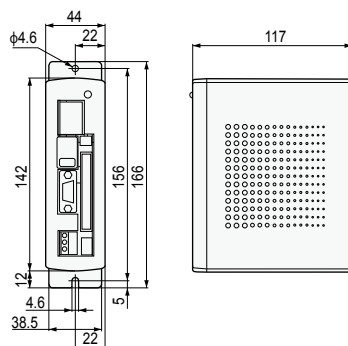
Item	Model	ERCD
Options	Programming box	HPB, HPB-D (with enable switch)
	Support software for PC	POPCOM+
General specifications	Operating temperature	0°C to 40°C
	Storage temperature	-10°C to 65°C
	Operating humidity	35% to 85%RH (non-condensing)
	Noise resistance capacity	IEC61000-4-4 Level 2
	Protective functions	Overload, overvoltage, voltage drop, resolver wire breakage, runaway detection, etc.

Note 1. Switching between the normal mode and pulse train mode is done by use of the parameter.

**Part names**

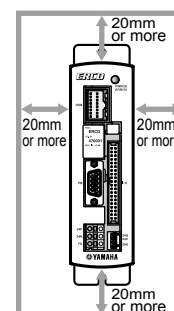


**Dimensions**



**Installation conditions**

- Install the ERCD inside the control panel.
- Install the ERCD on a vertical wall.
- Install the ERCD in a well ventilated location, with space on all sides of the ERCD (See fig. below).
- Ambient temperature : 0 to 40°C
- Ambient humidity : 35 to 85% RH (no condensation)



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
I/V2 Electric gripper  
Option

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
IVYZ Electric gripper  
Option

## Connector I/O signals

Terminal number	Signal name	Function
A-1	ABS-PT	Move the point from the origin position
B-1	INC-PT	Move the point from the current position
A-2	AUTO-R	Start automatic operation
B-2	STEP-R	Start step operation
A-3	ORG-S	Return to the origin
B-3	RESET	Reset
A-4	SERVO	Return to servo on
B-4	LOCK	Interlock
A-5	DI 0	General input 0
B-5	DI 1	General input 1
A-6	DI 2	General input 2
B-6	DI 3	General input 3
A-7	DI 4	General input 4
B-7	DI 5	General input 5
A-8	(SVCE)	Service mode input
B-8	DO 5	General output 5
A-9	DO 0	General output 0
B-9	DO 1	General output 1
A-10	DO 2	General output 2
B-10	DO 3	General output 3
A-11	DO 4	General output 4
B-11	END	End normal execution
A-12	BUSY	Executing the command
B-12	READY	Ready for operation
A-13	FG	Frame ground
B-13	FG	Frame ground
A-14	GND	Signal ground
B-14	GND	Signal ground
A-15	NC	Reserved (use inhibited)
B-15	NC	Reserved (use inhibited)
A-16	NC	Reserved (use inhibited)
B-16	NC	Reserved (use inhibited)
A-17	PA+	Feedback pulse output
B-17	PA-	Feedback pulse output
A-18	PB+	Feedback pulse output
B-18	PB-	Feedback pulse output
A-19	PZ+	Feedback pulse output
B-19	PZ-	Feedback pulse output
A-20	NC	Reserved (use inhibited)
B-20	NC	Reserved (use inhibited)

## Pulse train I/O connector signals

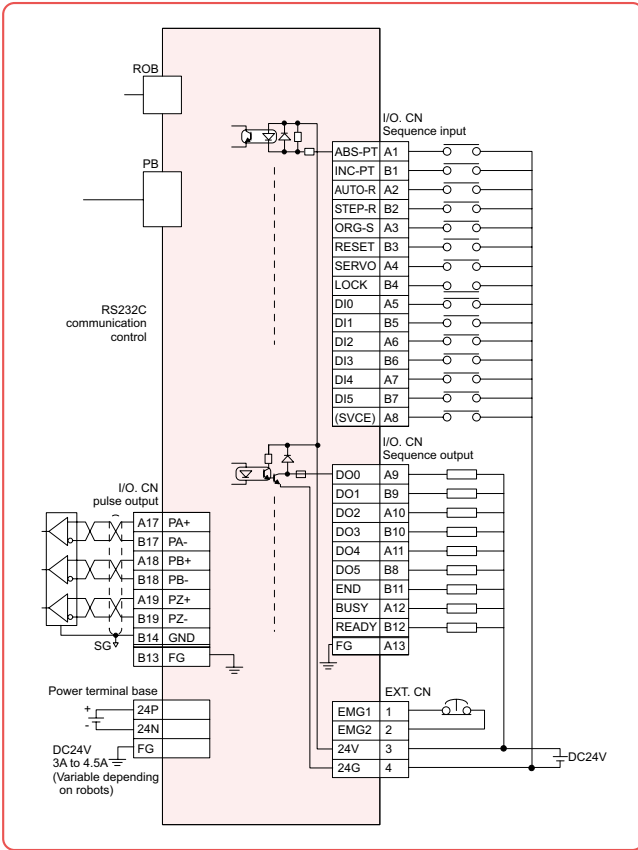
Terminal number	Signal name	Function
A-1	NC	Reserved (use inhibited)
B-1	NC	Reserved (use inhibited)
A-2	NC	Reserved (use inhibited)
B-2	PCLR	Differential clear input
A-3	ORG-S	Return to the origin input
B-3	RESET	Alarm reset input
A-4	SERVO	Servo-ON input
B-4	INH	Command pulse inhibition input
A-5	DI 0	General input 0
B-5	DI 1	General input 1
A-6	DI 2	General input 2
B-6	DI 3	General input 3
A-7	DI 4	General input 4
B-7	DI 5	General input 5
A-8	NC	Reserved (use inhibited)
B-8	DO 5	General output 5
A-9	DO 0	General output 0
B-9	DO 1	General output 1
A-10	DO 2	General output 2
B-10	DO 3	General output 3
A-11	DO 4	General output 4
B-11	IN-POS	In-position output
A-12	SRDY	Servo ready output
B-12	ALM	Alarm output
A-13	FG	Frame ground
B-13	FG	Frame ground
A-14	GND	Signal ground
B-14	GND	Signal ground
A-15	PULS+	Command pulse input
B-15	PULS-	Command pulse input
A-16	DIR+	Command direction input
B-16	DIR-	Command direction input
A-17	PA+	Feedback pulse output
B-17	PA-	Feedback pulse output
A-18	PB+	Feedback pulse output
B-18	PB-	Feedback pulse output
A-19	PZ+	Feedback pulse output
B-19	PZ-	Feedback pulse output
A-20	NC	Reserved (use inhibited)
B-20	NC	Reserved (use inhibited)

## Robot Language Table

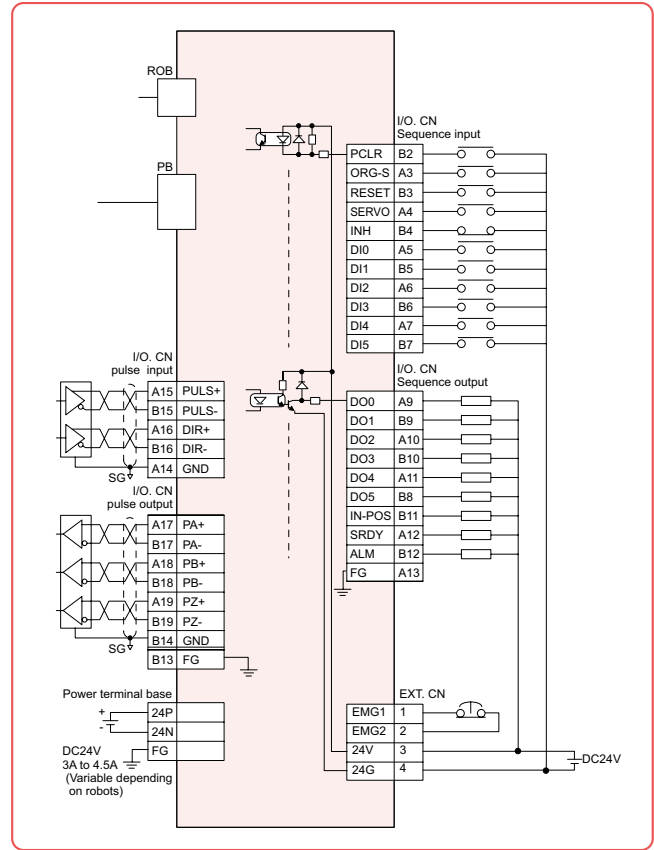
Command	Description
MOVA	Moves to a point data position.
MOVI	Moves from current position by amount of point data.
MOVF	Moves until a specified DI input is received.
JMP	Jumps to a specified label in the specified program.
JMPF	Jumps to a specified label in a specified program according to the input condition.
JMPB	Jumps to a specified label when general-purpose input or memory input is in the specified state.
L	Defines the jump destination for a JMP or JMPF statement, etc.
CALL	Runs another program.
DO	Turns general-purpose output or memory output on or off.
WAIT	Waits until general-purpose input or memory input is in the specified state.
TIMR	Waits the specified amount of time before advancing to the next step.
P	Defines point variable.
P+	Adds 1 to point variable.
P-	Subtracts 1 from point variable.
SRVO	Turns servo on or off.
STOP	Temporarily stops program execution.
ORGN	Performs return-to-origin.
TON	Runs a specified task.
TOFF	Stops a specified task.

Command	Description
JMPP	Jumps to a specified label when the axis position condition meets the specified conditions.
MAT	Defines a matrix.
MSEL	Specifies a matrix to move.
MOVm	Moves to a specified pallet work position on matrix.
JMPC	Jumps to a specified label when the counter array variable C equals the specified value.
JMPD	Jumps to a specified label when the counter variable D equals the specified value.
CSEL	Specifies an array element for counter array variable C.
C	Defines counter array variable C.
C+	Adds a specified value to counter array variable C.
C-	Subtracts a specified value from counter array variable C.
D	Defines counter variable D.
D+	Adds a specified value to counter variable D.
D-	Subtracts a specified value from counter variable D.
SHFT	Shifts the coordinate position by amount of specified point data.
IN	Stores bit information on specified general-purpose input or memory input into counter variable D.
OUT	Outputs the value of counter variable D to specified generalpurpose output or memory output.
LET	Assigns the value of a specified variable to another variable.
TORQ	Defines the maximum torque command value.

**Input / output wiring diagram**



**Pulse train input / output wiring diagram**



**Pulse train input form**

Logic	Command pulse form	CW direction	CCW direction
Positive logic	Phase A / phase B		
	Pulse / code		
	CW / CCW		

Logic	Command pulse form	CW direction	CCW direction
Positive logic	Phase A / phase B		
Negative logic	Pulse / code		
	CW / CCW		

Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis actuator  
**Robonity**  
 Compact single-axis robots  
**TRANSERVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian XY-X  
 SCARA robots  
**YK-X**  
 Pick & place  
**YP-X**  
**CLEAN**  
**CONTROLLER**  
**INFORMATION**  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 IY2 Electric gripper  
 Option

# Accessories and part options

## ERCD



### Standard accessories

- **24V power connector (for EXT. CN)**



Model	KAU-M4422-00	ERCD
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- **I/O flat cable (CN1): 1m**

Connects the standard parallel I/O to an external device. The end of the cable is cut and left as it is.



Model	KAU-M4421-00	ERCD
-------	--------------	------

- **I/O twisted-pair cable (CN2): 2m**

Connects the parallel I/O to an external device. The end of the cable is cut and left as it is.



Model	KAU-M4421-10	ERCD
-------	--------------	------

Note. Select CN2 when using the pulse train input equipment.

### Options

- **Support software for PC P.578**  
**POPCOM+**

POPCOM+ is a simple to use application software that makes tasks such as robot operation, writing-editing programs, and point teaching easy to visually understand.



Model	KBG-M4966-00	LCC140	ERCD	SR1-X	SR1-P
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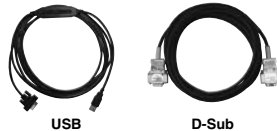
#### Environment

OS	Windows XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.2.1.1 or later)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk	50MB of available space required on installation drive.
Disk operation	RS-232C
Applicable controllers	SRCX to SR1, DRCX, TRCX, ERCX, ERCD, LCC140 <sup>Note 1</sup>

Note 1. LCC140 is applicable to Ver. 2.1.1 or later.  
Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

- **Data cables**

Communication cable for POPCOM+. Select from USB cable or D-sub cable.



Model	USB type (5m)	KBG-M538F-00	LCC140
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10	ERCD
Note. This USB cable supports Windows 2000/XP or later.			SR1-X
Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro.			SR1-P
Note. USB driver for communication cable can also be downloaded from our website.			RCX320
			RCX221
			RCX222
			RCX340

- **Programming box P.585**  
**HPB/HPB-D**

This device can perform all operations such as manual robot operation, program entry and edit, teaching and parameter settings.



	HPB	HPB-D	LCC140
Model	KBB-M5110-01	KBB-M5110-21	ERCD
Enable switch	-	3-position	SR1-X
CE marking	Not supported	Applicable	SR1-P

Articulated robots  
YA

Linear conveyor  
modules  
LCM100

Motor-less single  
axis actuator  
Robonity

Compact  
single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor  
single-axis robots  
PHASER

Cartesian  
robots  
XY-X

SCARA  
robots  
YK-X

Pick & place  
robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Robot  
positioner

Pulse string  
driver

Robot  
controller

iVY2  
Electric  
grripper

Option

# SR1-X/SR1-P

● Robot controller with advanced functions

**Compact design with high performance.**  
**Although with one axis, functions of upper class controllers.**



Main functions ▶ P.68

Programming box  
 ▶ **HPB/HPB-D**  
 P.585

Support software for PC  
 ▶ **POPCOM+**  
 P.578

## Basic specifications

Item	Model	SR1-X			SR1-P			
Driver model		SR1-X05	SR1-X10	SR1-X20	SR1-P05	SR1-P10	SR1-P20	
Applicable motor output		200V 100W or less	200V 200W or less	200V 600W or less	200V 100W or less	200V 200W or less	200V 600W or less	
Number of controllable axes		Single-axis						
Controllable robots		Single-axis robot FLIP-X (exclude T4L, T5L)			Linear motor single-axis robot PHASER			
Maximum power consumption		400VA	600VA	1400VA	400VA	600VA	1400VA	
Capacity of the connected motor		100W	200W	600W	100W	200W	600W	
Dimensions		W74 × H210 × D146mm			W74 × H210 × D146mm		W99 × H210 × D146mm	
Weight		1.54kg			1.92kg		1.92kg	
Input power supply	Control power supply	Single phase AC100 to 115/200 to 230V +/-10% maximum 50/60Hz						
	Motor power supply	Single phase AC100 to 115/200 to 230V +/-10% maximum 50/60Hz		Single phase AC200 to 230V +/-10% maximum 50/60Hz	Single phase AC100 to 115/200 to 230V +/-10% maximum 50/60Hz		Single phase AC200 to 230V +/-10% maximum 50/60Hz	
Drive method		AC full-digital software servo						
Position detection method		Multi-turn resolver with data backup function			Magnetic linear scale			
Operating method		Programming, I/O point tracing, Remote command, Operation using RS-232C communication						
Position indication units		mm (millimeters), deg (degrees)						
Speed setting		1% to 100% (Setting by 1% unit)						
Acceleration setting		1. Automatic speed setting per robot No. and payload 2. Setting based on acceleration and deceleration parameter (Setting by 1% unit)						
Resolution		16384 P/rev				1μm		
Origin search method		Absolute, Incremental			Incremental, Semi-absolute			
Program language		YAMAHA SRC						
Multitasks		4 tasks maximum						
Point-data input method		Manual data input (coordinate value input), Direct teaching, Teaching playback						
Memory	Programs	100 programs 255 steps / 1 programs 3000 steps / total						
	Points	1000 points						
External input/output	STD.DIO	I/O input	Dedicated input 8 points, General input 16 points					
		I/O output	Dedicated Output 4 points, General output 16 points					
	SAFETY	Emergency stop input (Normal close contact point input), service mode input						
	Brake output	Relay contact					-	
	Origin sensor input	Connectable to DC 24V normally-closed contact sensor						
	External communications	RS-232C: 1CH (For communication with HPB / HPB-D or PC)						
	Analog input/output	Input 1ch (0 to +10V) Output 2ch (0 to +10V)						
		Slots	1					
	Options	Type	NPN/PNP: Dedicated input 8 points, Dedicated Output 4 points, General input 16 points, General output 16 points					
			CC-Link: Dedicated input 16 points, Dedicated Output 16 points, General input 32 points, General output 32 points					
DeviceNet™: Dedicated input 16 points, Dedicated Output 16 points, General input 32 points, General output 32 points								
PROFIBUS: Dedicated input 16 points, Dedicated Output 16 points, General input 32 points, General output 32 points								



Controllable robot	<b>SR1-X ▶ FLIP-X P.193</b>	<b>SR1-P ▶ PHASER P.239</b>
CE marking		Field networks 

## Model Overview

Name	SR1-X	SR1-P
Controllable robot	Single-axis robot FLIP-X	Linear motor single-axis robot PHASER
Input power	05 / 10 driver Single phase 100 to 115V/200 to 230V +/-10% maximum (50/60Hz)	20 driver Single phase 200 to 230V +/-10% maximum (50/60Hz)
Operating method	Programming / I/O point tracing / Remote command / Operation using RS-232C communication	
Maximum number of controllable axes	Single-axis	
Origin search method	Absolute/Incremental	Incremental/Semi-absolute

## Ordering method

### SR1-X

**SR1-X** [ ] [ ] [ ] [ ] [ ] [ ]

Controller	Driver	Usable for CE	Regenerative unit <sup>Note1</sup>	Input/Output Selection	Battery
	05: 100W or less 10: 200W 20: 400 to 600W	No entry: Standard E: CE marking	No entry: None R: RG1	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS YC: YC-Link <sup>Note2</sup>	No entry: None (Incremental specification) B: Battery (Absolute specification)

Note 1. Driver selection and regenerative unit selection depends on the robot type. See the selection table on the next page for selecting the driver/regenerative circuit.  
 Note 2. Available only for the slave.

### SR1-P

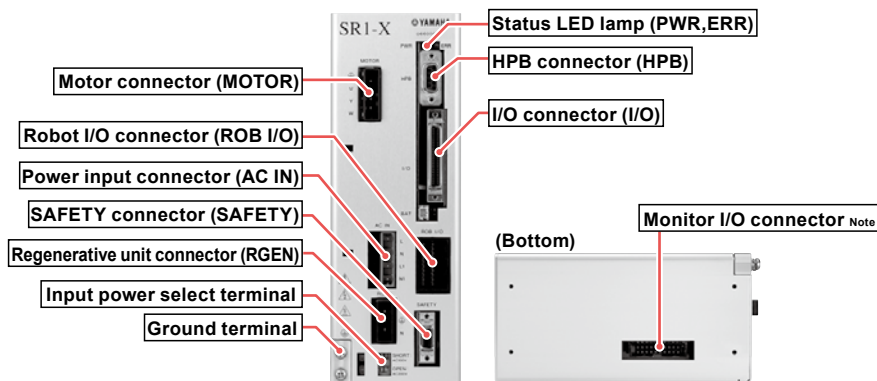
**SR1-P** [ ] [ ] [ ] [ ] [ ] [ ]

Controller	Driver	Usable for CE	Regenerative unit <sup>Note1</sup>	Input/Output Selection
	05: 100W or less 10: 200W 20: 400 to 600W	No entry: Standard E: CE marking	No entry: None R: RG1	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS YC: YC-Link <sup>Note2</sup>

Note 1. Driver selection and regenerative unit selection depends on the robot type. See the selection table on the next page for selecting the driver/regenerative circuit.  
 Note 2. Available only for the slave.

Item	Model	SR1-X	SR1-P
Options	Programming box	HPB, HPB-D (with enable switch)	
	Support software for PC	POPCOM+	
	Operating temperature	0°C to 40°C	
General specifications	Storage temperature	-10°C to 65°C	
	Operating humidity	35% to 85%RH (non-condensing)	
General specifications	Absolute backup battery	Lithium metallic battery	
	Absolute data backup period	1 year (in state with no power applied)	
	Noise immunity	IEC61000-4-4 Level 3	

## Part names



Note. Cable for monitor I/O (option) is required when using this connector.

Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single-axis actuators  
 Robonity  
 Compact single-axis robots  
 TRANSERVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER  
 INFORMATION  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 IVY2 Electric gripper  
 Option

## Driver / regenerative unit selection table

### SR1-X

		FLIP-X																										
		T4LH/C4LH	T5LH/C5LH	T6L/C6L	T9	T9H	F8/C8	F8L/C8L	F8LH/C8LH	F10/C10	F10H	F14/C14	F14H/C14H	GF14XL	F17/C17	F17L/C17L	GF17XL	F20/C20	F20N	N15/N15D	N18/N18D	B10	B14	B14H	R5	R10	R20	
Driver selection	SR1-X 05	●	●	●	●		●	●	●	●		●										●	●	●	●	●		
	SR1-X 10					●					●		●	●														●
	SR1-X 20																											
Regenerative unit	No entry (None)	●	●	●	①	②	●	●	●	①	②	①	②	●	③		⑥	③	④				●	●	⑤	●	●	●
	R (RG1)				①	②				①	②	①	②		③	●	⑥	③	④		●	●		⑤				

- ① Regenerative unit is needed if using in a perpendicular position and movement stroke is 700mm or more.
- ② Regenerative unit is needed if using in a perpendicular position.
- ③ Regenerative unit is needed if using in a perpendicular position, using at maximum speeds exceeding 1000mm per second, or if using high leads (40).

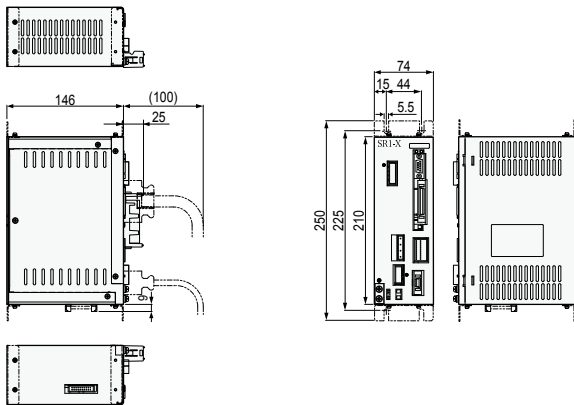
- ④ Regenerative unit is needed if using at maximum speeds exceeding 1000mm per second.
- ⑤ Regenerative unit is needed if using at maximum speeds exceeding 1250mm per second.
- ⑥ Regenerative unit is needed if using at maximum speeds exceeding 750mm per second.

### SR1-P

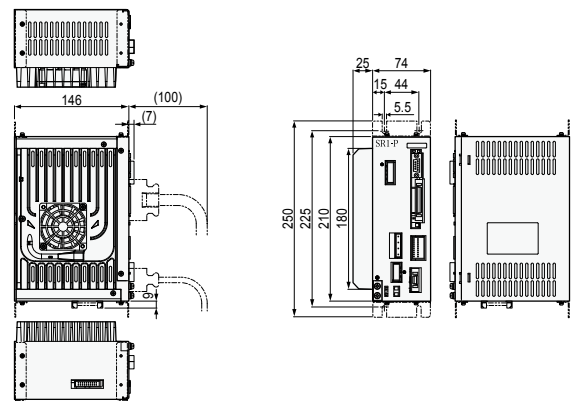
		PHASER								
		MR16/MR16D	MR16H/MR16HD	MR20/MR20D	MR25/MR25D	MF7/MF7D	MF15/MF15D	MF20/MF20D	MF30/MF30D	MF75/MF75D
Driver selection	SR1-P 05	●								
	SR1-P 10		●		●	●	●	●		
	SR1-P 20			●					●	●
Regenerative unit	No entry (None)	●	●	●	●	●	●			
	R (RG1)							●	●	
	R (RGU-2)									●

## Dimensions

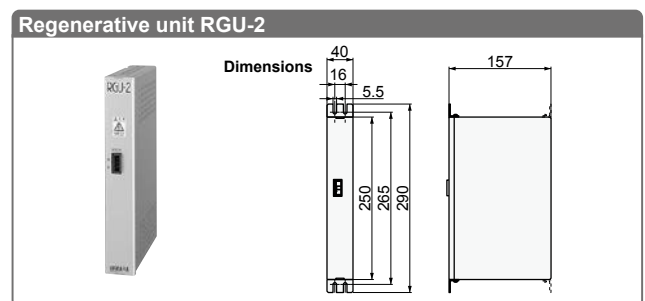
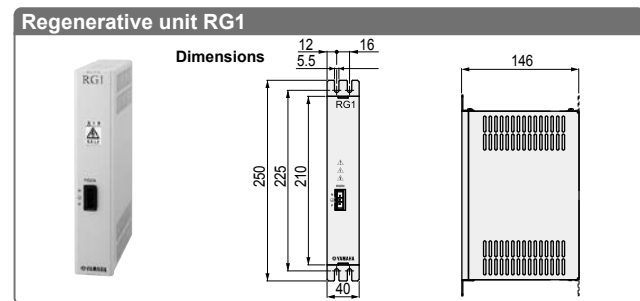
### SR1-X/SR1-P 05 - 10



### SR1-X/SR1-P 20



## Regenerative unit RG1 / RGU-2



### Basic specifications

Item	RG1
Model	KBG-M4107-0A (Including accessory)
Dimensions	W40 × H210 × D146mm
Weight	0.8kg
Regenerative voltage	Approx. 380V or more
Regenerative stop voltage	Approx. 360V or less
Accessory	Cable for connection with controller (300mm)

Note. Always leave an empty space (gap of about 20mm) between this unit and the adjacent controller. Also, always use the dedicated cable when connecting the controller.

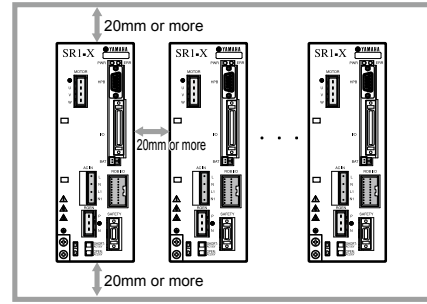
### Basic specifications

Item	RGU-2
Model	KS5-M4107-0A (Including accessory)
Dimensions	W40 × H250 × D157mm
Weight	0.9kg
Regenerative voltage	Approx. 380V or more
Regenerative stop voltage	Approx. 360V or less
Accessory	Cable for connection with controller (300mm)

Note. Always leave an empty space (gap of about 20mm) between this unit and the adjacent controller. Also, always use the dedicated cable when connecting the controller.

## Installation conditions

- Install the SR1-X/SR1-P inside the control panel.
- Install the SR1-X/SR1-P on a vertical wall.
- Install the SR1-X/SR1-P in a well ventilated location, with space on all sides of the SR1-X/SR1-P (See fig. at right.).
- Ambient temperature : 0 to 40°C
- Ambient humidity : 35 to 85% RH (no condensation)



## [NPN, PNP type] Input/Output list

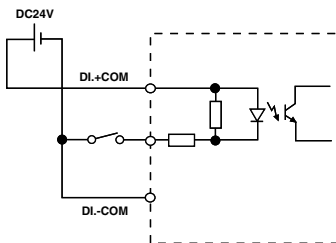
Terminal number	Signal name	Function
1	DI.+COM	Input supply+common
2	SERVO	Return to servo on
3	INC-PT	Relative point transfer
4	ABS-PT	Absolute point transfer
5	STEP-R	Step run
6	DI 0	General input 0
7	DI 1	General input 1
8	DI 2	General input 2
9	DI 3	General input 3
10	DI 4	General input 4
11	DI 5	General input 5
12	DI 6	General input 6
13	DI 7	General input 7
14	DO.+COM	Output supply+common
15	DO.+COM	Output supply+common
16	END	Execution result (Execution complete)
17	BUSY	Executing the command
18	DO 0	General output 0
19	DO 1	General output 1
20	DO 2	General output 2
21	DO 3	General output 3
22	DO 4	General output 4
23	DO 5	General output 5
24	DO 6	General output 6
25	DO 7	General output 7

Terminal number	Signal name	Function
26	DI.-COM	Input supply-common
27	AUTO-R	Auto run
28	RESET	Reset
29	ORG-S	Return to the origin
30	ALMRST	Alarm reset
31	DI 8	General input 8
32	DI 9	General input 9
33	DI 10	General input 10
34	DI 11	General input 11
35	DI 12	General input 12
36	DI 13	General input 13
37	DI 14	General input 14
38	DI 15	General input 15
39	DO.-COM	Output supply-common
40	DO.-COM	Output supply-common
41	READY	Available to operate (Ready for operation)
42	UTL	Utility output
43	DO 8	General output 8
44	DO 9	General output 9
45	DO 10	General output 10
46	DO 11	General output 11
47	DO 12	General output 12
48	DO 13	General output 13
49	DO 14	General output 14
50	DO 15	General output 15

## NPN type input/output circuit

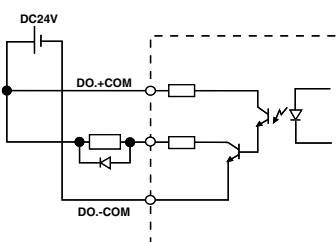
### Input circuit

- Form : DC input (positive common type)  
Photo coupler insulation type
- Input power supply : 5mA/point
- Answering time : 30ms or less



### Output circuit

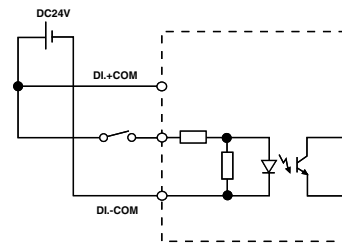
- Form : NPN open collector output (negative common type)  
Photo coupler insulation type
- Load : 50mA/point
- Answering time : 1ms or less



## PNP type input/output circuit

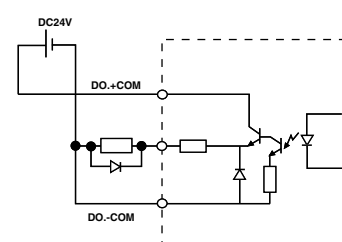
### Input circuit

- Form : DC input (negative common type)  
Photo coupler insulation type
- Input power supply : 5mA/point
- Answering time : 30ms or less



### Output circuit

- Form : PNP open collector output (positive common type)  
Photo coupler insulation type
- Load : 50mA/point
- Answering time : 1ms or less



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
IVZ  
Electric gripper  
Option

## SAFETY connector signals

Terminal number	Signal name	Meaning
1	DI.COM	Input supply common
2	LOCK	Interlock
3	SVCE	SERVICE mode
4	DO.COM	Output supply common
5	MPRDY	Main power ready
6	NC	NC
7	NC	NC
8	NC	NC
9	NC	NC
10	NC	NC
11	EMG1	Emergency stop 1
12	EMG2	Emergency stop 2
13	NC	NC
14	NC	NC

## Robot Language Table

Command	Description
MOVA	Moves to a point data position.
MOVI	Moves from current position by amount of point data.
MOVF	Moves until a specified DI input is received.
JMP	Jumps to a specified label in the specified program.
JMPF	Jumps to a specified label in a specified program according to the input condition.
JMPB	Jumps to a specified label in a specified program when general-purpose input or memory input is in the specified state.
L	Defines the jump destination for a JMP or JMPF statement.
CALL	Runs another program.
DO	Turns general-purpose output or memory output on or off.
WAIT	Waits until general-purpose input or memory input is in the specified state.
TIMR	Waits the specified amount of time before advancing to the next step.
P	Defines point variable.
P+	Adds 1 to point variable.
P-	Subtracts 1 from point variable.
SRVO	Turns servo on or off.
STOP	Temporarily stops program execution.
ORGN	Performs return-to-origin.
TON	Runs a specified task.
TOFF	Stops a specified task.
JMPP	Jumps to a specified label when the axis position condition meets the specified conditions.
MAT	Defines a matrix.
MSEL	Specifies a matrix to move.
MOVM	Moves to a specified pallet work position on matrix.
JMPC	Jumps to a specified label when the counter array variable C equals the specified value.
JMPD	Jumps to a specified label when the counter variable D equals the specified value.
CSEL	Specifies an array element for counter array variable C.
C	Defines counter array variable C.
C+	Adds a specified value to counter array variable C.
C-	Subtracts a specified value from counter array variable C.
D	Defines counter variable D.
D+	Adds a specified value to counter variable D.
D-	Subtracts a specified value from counter variable D.
SHFT	Shifts the coordinate position by amount of specified point data.
IN	Stores bit information on specified general-purpose input or memory input into counter variable D.
OUT	Outputs the value of counter variable D to specified general-purpose output or memory output.
LET	Shifts the coordinate position by amount of specified point data.

# Accessories and part options

## SR1-X/SR1-P



### Standard accessories

● **Power connector + wiring connection lever**



Model KAS-M5382-00

- LCC140
- TS-X
- TS-P
- SR1-X
- SR1-P
- RCX320
- RCX221
- RCX222
- RCX340

● **Safety connector**



Connector plug model KBG-M4424-00  
 Connector cover model KBG-M4425-00

- SR1-X
- SR1-P

● **HPB dummy connector**

Attach this to the HPB connector during operation with the programming box HPB removed.



Model KDK-M5163-00

- LCC140
- SR1-X
- SR1-P

● **NPN / PNP connector**



Connector plug model KBH-M4424-00  
 Connector cover model KBH-M4425-00

- SR1-X
- SR1-P
- RCX320
- RCX340

● **L type stay**

Use to install the controller.



Model KBG-M410H-00

Note. Model No. is for a single bracket (L type stay).

- SR1-X
- SR1-P

● **Absolute battery**

Battery for absolute data back-up.  
 (Not included with the SR1-P)

● **Basic specifications**

Item	Absolute battery
Battery type	Lithium metallic battery
Battery capacity	3.6V/2,750mAh
Data holding time	About 1 year (in state with no power applied)
Dimensions	φ17 × L53mm
Weight <sup>Note1</sup>	22g



Model KAS-M53G0-11

Note 1. Weight of battery itself.

Note. The absolute battery is subject to wear and requires replacement.

If trouble occurs with the memory then remaining battery life is low so replace the absolute battery. The battery replacement period depends on usage conditions. But generally you should replace the battery after about 1 year counting the total time after connecting to the controller and left without turning on the power.

- SR1-X
- RCX222

● **Battery case**

This is the absolute battery holder.



Model KBG-M5395-00

- SR1-X
- RCX222

See next page for optional parts

Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSERVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER  
 INFORMATION  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 I/YZ Electric gripper  
 Option

## Options

### ● Cable for monitor I/O

Cable to connect I/O connector of SR1 monitor. The cable is 1.5m long with its end cut and left as it is. Required when using analog input / output and feedback pulse output.



Model KBG-M4421-00

SR1-X  
SR1-P

### ● Support software for PC **P.578** POPCOM+

POPCOM+ is a simple to use application software that makes tasks such as robot operation, writing-editing programs, and point teaching easy to visually understand.



Model KBG-M4966-00

LCC140  
ERCD  
SR1-X  
SR1-P

### ● Environment

OS	Windows XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.2.1.1 or later)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk	50MB of available space required on installation drive.
Disk operation	RS-232C
Applicable controllers	SRCX to SR1, DRCX, TRCX, ERCX, ERCD, LCC140 <sup>Note 1</sup>

Note 1. LCC140 is applicable to Ver. 2.1.1 or later.

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

### ● Data cables

Communication cable for POPCOM+. Select from USB cable or D-sub cable.



Model	USB type (5m)	KBG-M538F-00
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10

Note. This USB cable supports Windows 2000/XP or later. Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro.

Note. USB driver for communication cable can also be downloaded from our website.

LCC140  
ERCD  
SR1-X  
SR1-P  
RCX320  
RCX221  
RCX222  
RCX340

### ● Programming box **P.585** HPB/HPB-D

This device can perform all operations such as manual robot operation, program entry and edit, teaching and parameter settings.



	HPB	HPB-D
Model	KBB-M5110-01	KBB-M5110-21
Enable switch	-	3-position
CE marking	Not supported	Applicable

LCC140  
ERCD  
SR1-X  
SR1-P

### ● YC-Link board (with connection cable)

Model KBG-M4400-60

SR1-X  
SR1-P

Note. Use the converter cable if changing to the SR1-X, SR1-P from a system using SRCX, SRCP. (See P.623).

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEMO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
IVY2 Electric gripper  
Option



Articulated robots  
YA

Linear conveyor  
modules  
LCM100

Motor-less single  
axis actuator  
Robonity

Compact  
single-axis robots  
TRANSERVO

Single-axis robots  
FLIP-X

Linear motor  
single-axis robots  
PHASER

Cartesian  
robots  
XY-X

SCARA  
robots  
YK-X

Pick & place  
robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Robot  
positioner

Pulse string  
driver

Robot  
controller

iVY2  
Electric  
grripper

Option

# RCX320

● Robot controller with advanced functions

A 2-axis model of the RCX340 controller has been launched finally.  
The high-level equipment construction such as simultaneous control of multiple robots is achieved by the advanced functionality and flexible expandability.



RCX320

## Main functions ▶ P.72



Programming box  
▶ **PBX/PBX-E**  
**P.587**



Support software for PC  
▶ **RCX-Studio Pro**  
**P.583**

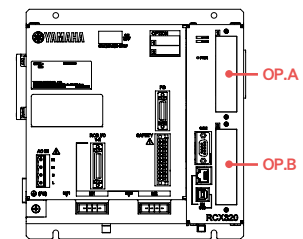
## Ordering method

<b>RCX320</b>							
<b>Controller</b>	<b>No. of controllable axes</b> 2: 2 axes 1: 1 axes	<b>Safety standards</b> N: Normal E: CE	<b>Regenerative unit</b> Note 8 No entry: None R: YHX-RU1	<b>Controller option A (OP.A)</b> No entry: Non-selection NS : STD.DIO(NPN) Note 1 Note 4 NE : EXP.DIO(NPN) Note 1 Note 4 PS : STD.DIO(PNP) Note 1 Note 4 PE : EXP.DIO(PNP) Note 2 Note 4 GR: Gripper TR: Tracking Note 5 YM1 : YC-Link/E master Note 6 YS2 to 4: YC-Link/E slave Note 6 EP : EtherNet/IP™ Note 7 PB : PROFIBUS Note 7 CC : CC-Link Note 7 DN : DeviceNet™ Note 7 PT : PROFINET Note 7 ES : EtherCAT Note 7	<b>Controller option B (OP.B)</b> No entry: Non-selection --- Note 3 NE : EXP.DIO(NPN) Note 2 Note 4 --- Note 3 PE : EXP.DIO(PNP) Note 2 Note 4 GR: Gripper TR: Tracking Note 5 YM1 : YC-Link/E master Note 6 YS2 to 4: YC-Link/E slave Note 6 EP : EtherNet/IP™ Note 7 PB : PROFIBUS Note 7 CC : CC-Link Note 7 DN : DeviceNet™ Note 7 PT : PROFINET Note 7 ES : EtherCAT Note 7	<b>Vision System</b> No entry: Non-selection VY: iVY2 without light VL: iVY2 with light	<b>Absolute battery</b> 2: 2 pcs. 1: 1 pc. 0: 0 pc.

Please select desired selection items from the upper portion of the controller option A in order.

- Note 1. [STD.DIO] Parallel I/O board standard specifications  
Dedicated input 8 points, dedicated output 9 points, general-purpose input 16 points, general-purpose output 8 points  
Do not mix with field bus (CC/DN/PB/EP/PT/ES).
- Note 2. [EXP.DIO] Parallel I/O board expansion specifications  
General-purpose input 24 points, general-purpose output 16 points
- Note 3. Only one DIO STD specification board can be selected. Therefore, this board cannot be selected in OP.B to OP.D.
- Note 4. Select either NPN or PNP in DIO.
- Note 5. Only one tracking board can be selected.
- Note 6. Select only one master or slave board for YC-Link/E. For details, refer to "YC-Link/E ordering explanation" below.
- Note 7. Select only one fieldbus in a controller (CC/DN/PB/EP/PT/ES).
- Note 8. The regenerative unit (option) is required when operating a model designated by YAMAHA or a load with a large inertia.

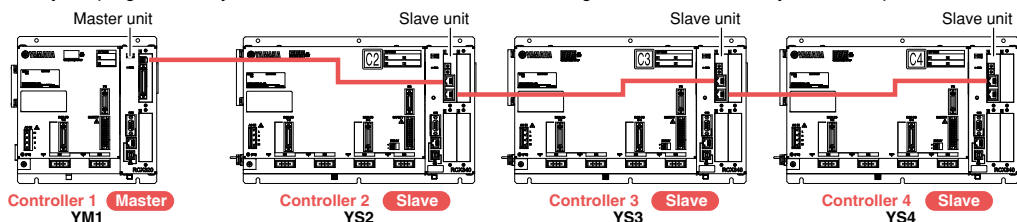
### Controller option board position



## YC-Link/E explanation

Using the inter-controller communication "YC-Link/E", the RCX320 and RCX340 are connected and up to 14 axes (4 robots) can be expanded. The YC-Link/E can be executed by the program of only the master controller. This contributes to great reduction of the system startup time.

Example of YC-Link/E connections



- The "RCX320" and "RCX340" controllers support both the master and slave specifications.
- Up to four "RCX320" and "RCX340" controllers can be connected.
- The network board is inserted into only the master controller (YM1).

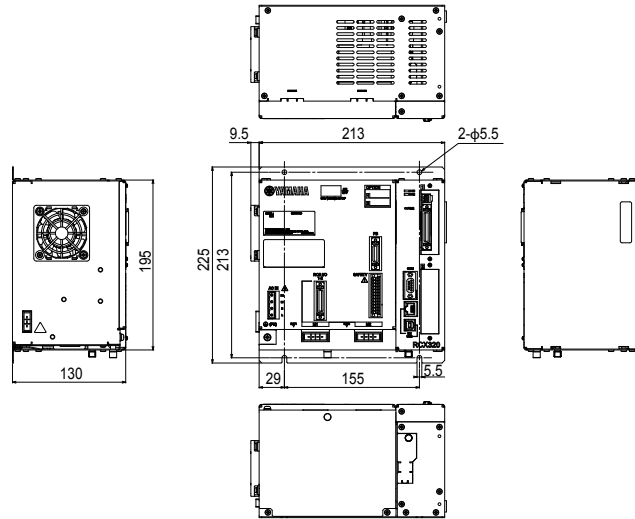
Controllable robot	<b>XY-X P.261</b>	<b>FLIP-X P.193</b>	<b>PHASER P.239</b>	<b>YP-X P.451</b>					
CE marking		Field networks	CC-Link	DeviceNet	EtherNet/IP	Ethernet			EtherCAT

## Basic specifications

Item		RCX320	
Basic specifications	Applicable robots	YAMAHA single-axis robots, linear single-axis robots, P&P robots	
	Connected motor capacity	1200W or less (in total for 2 axes)	
	Power capacity	2400VA	
	Dimensions	W213 × H195 × D130mm (main unit only)	
	Weight	3.6kg (main unit only)	
Input power supply	Control power supply	Single-phase 200 to 230V AC +/-10% 50/60Hz	
	Main power supply	Single-phase 200 to 230V AC +/-10% 50/60Hz	
Axis control	No. of controllable axes	Max. 2 axes Up to four units of the RCX320 and RCX340 can be connected using the inter-controller communication "YC-Link/E".	
	Drive method	AC full digital servo	
	Position detection method	Resolver or magnetic linear scale	
	Control method	PTP motion (point to point), ARCH motion, linear interpolation, circular interpolation	
	Coordinate systems	Joint coordinates, Cartesian coordinates	
	Position display units	Pulses, mm (1/1000 steps), degree (1/1000 steps)	
	Speed setting	0.01 to 100% (below 1% can be changed by programming)	
Acceleration/deceleration setting		Optimized by robot model and tip weight parameter Setting by acceleration coefficient and deceleration rate parameters (1% steps) * Can be changed by programming. Zone control (For SCARA robots only, optimized according to arm posture)	
Programming	Program language	YAMAHA BASIC II conforming to JIS B8439 (SLIM language)	
	Multi-task	Max. 16 tasks	
	Sequence program	1 program	
	Memory capacity	2.1MB (Total of program and point data) (Available capacity for program when the maximum number of points is used: 300KB)	
	Program	100 programs (maximum number of programs) 9999 lines (maximum number of lines per program)	
	Point	30000 points (maximum number of points)	
	Point teaching method	MDI (coordinate data input), direct teaching, teaching playback, offline teaching (data input from external unit)	
	System backup (Internal memory backup)	Lithium battery (service life about 4 years at 0 to 40°C)	
	Internal flash memory	512 KB	
External I/O	SAFETY	Input	Emergency stop ready input, 2 systems Auto mode input, 2 systems (Enabled only when the global specifications are used.)
		Output	Emergency stop contact output, 2 systems Enable contact output, 2 systems (Enabled only when the PBX-E is used.) Motor power ready output, 2 systems
	Brake output	Transistor output (PNP open collector)	
	Origin sensor input	Connectable to 24V DC B-contact (normally closed) sensor	
	External communications	RS-232C: 1CH (D-SUB 9-pin (female)) Ethernet: 1CH (In conformity with IEEE802.3u/IEEE802.3) 100Mbps/10Mbps (100BASE-TX/10BASE-T) Applicable to Auto Negotiation RS-422: 1CH (Dedicated to PBX)	
General specifications	Operating temperature	0 to 40°C	
	Storage temperature	-10 to 65°C	
	Operating humidity	35 to 85% RH (no condensation)	
	Atmosphere	Indoor location not exposed to direct sunlight. *No corrosive, flammable gases, oil mist, or dust particles	
	Anti-vibration	All XYZ directions 10 to 57Hz unidirectional amplitude 0.075mm 57 to 150Hz 9.8m/s <sup>2</sup>	
	Protective functions	Position detection error, power module error, temperature error, overload, overvoltage, low voltage, excessive position deviation, overcurrent, motor current error	
	Noise immunity	Conforms to IEC61000-4-4 Level 3	
	Protective structure	IP20	
Appliance classes	Class I		
Options	Parallel I/O board	Standard specifications	Dedicated input 8 points, dedicated output 9 points General-purpose input 16 points, general-purpose output 8 points NPN/PNP specifications are selected. (maximum 1 board)
		Expansion specifications	General-purpose input 24 points, general-purpose output 16 points NPN/PNP specifications are selected. (maximum 4 boards)
	Option board	CC-Link board Ver1.1/2.0	Remote I/O
		DeviceNet™ board	Dedicated input/output: 16 points each General-purpose input/output: 96 points each
		EtherNet/IP™ board	
		PROFIBUS board	Remote register Input/output: 16 words each
		PROFINET board	
	EtherCAT board		
	YC-Link/E board (master/slave)	Communication cycle: 1 ms, control cycle: minimum 1 ms / maximum 8 ms, maximum number of robot units: four units Maximum number of control axes: total 14 axes (including two master controller axes), maximum 12 axes for slaves only Position detection method: optical rotary encoder, minimum setting distance: 0.01 mm Speed setting: 20 to 100% relative to the maximum parameter speed, number of connected gripper units: maximum two units Drive power: DC 24V +/-10%, 1.0A Max	
	YRG (gripper) board		
Tracking board	Number of connected encoders: maximum two units, supported encoders: 26LS31/26C31 equivalent line driver (RS422 compliant) Encoder power supply: DC5V (2 counter (ch) total 500 mA or less) (supplied from controller)		
iVY2 unit	Camera pixels: maximum 5 million pixels, number of registered models: 254 models, number of connected cameras: maximum two units Power supply: DC24V +/-10% 1.5A Max		
Programming box	PBX, PBX-E		
Absolute battery	3.6V 2750mAH / axis Backup retention time: About 1 year		
Support software for personal computer	RCX-Studio Pro		

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-assisted single-axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
iVY2 Electric gripper  
Option

## ■ Dimensions



## ■ Power supply capacity and heat emission

The required power supply capacity and heat emission will vary depending on the robot type and number of axes.

Using the following table as a general guide consider the required power supply preparation and control panel size, controller installation, and cooling method.

### ● When connected to 2 axis (Cartesian robot and/or multi-axis robot)

Axial current sensor value		Power capacity (VA)	Generated heat amount (W)
X axis	Y axis		
05	05	500	53
10	05	700	58
20	05	1500	78
10	10	900	63
20	10	1700	83
20	20	2400	100

### Motor capacity vs. current sensor table

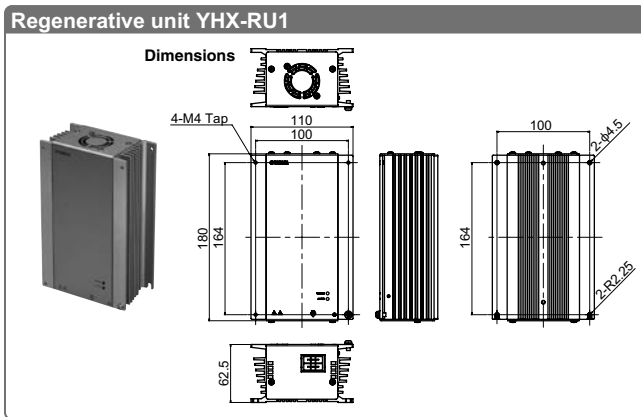
Connected motor capacity	Current sensor
100W or less	05
200W	10
400W or more	20

Note. Motor output of the B14H is 200W but the current sensor is 05.

## Conditions where regenerative unit is needed on multi robots

- Motor capacity exceeds a total of 450W.
- Motor capacity for perpendicular axis exceeds a total of 240W.
- The following conditions apply when perpendicular axis capacity is 240W or less.
  - perpendicular axis is 200W.
  - perpendicular axis is 100W and stroke is 700mm or more.
  - there are 2 perpendicular axes at 100W, and includes leads of 5mm.
- B14H which maximum speed exceeds 1250mm per second.

## ■ Regenerative unit YHX-RU1



### ● Basic specifications

Item	YHX-RU1	
Model	KEK-M4107-0A (including cable supplied with unit)	
Dimensions	W62.5×H180×D110mm	
Weight	1.45kg	
Absorbable electric power	100 W (Equivalent to RGU 3) * 200 W when 2 are connected	
Power Supply	Input: 254 to 357 V DC (Controller DCBUS Connecting)	
Connector	Regenerative unit connector (for unit connection and extension)	
Installation Environment	Working Temperature	0 to 40 °C
	Working Humidity	35 to 85% RH (No Condensation)
	Location of Use	Altitude 2,000 m or lower and indoor (free from corrosive gases and dust)
	Storage Temperature	-10 to 65 °C
	Vibration Withstanding	1G
Protective Construction / Rating	IP20 / Class 1	
Accessory	Cable for connection with controller (500mm)	

### ● Regenerative unit selection table

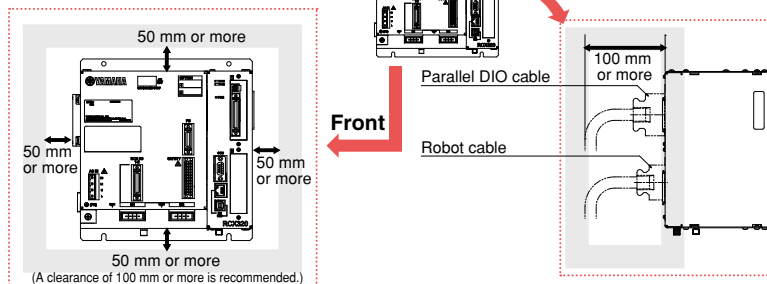
Whether the regenerative unit is needed is automatically determined by the robot model.

Regenerative unit	PHASER		FLIP-X		XY-X												YP-X	Clean									
	MF7D	MF15D	MF20D	MF30D	MF50D	MF75D	N15D	N18D	PXYx	FXyX	FXyBx	SXYx	SXYBx	NXy	MXyX	HXYx	HXYLx	SXYx (ZF)	SXYx (ZFL20)	SXYBx (ZF)	SXYBx (ZFL20)	MXyX	HXYx	YP220BX	YP320X	SXYxC	
No entry (None)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
R (YHX-RU1)	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

● : Applicable ○ : Select per conditions

## Installation conditions

- Use the screws to secure the controller to the installation plate inside the control panel so that it is in a horizontal position. Be sure to use the metallic installation plate.
- Install the RCX320 in a well ventilated location, with space on all sides of the RCX320 (See fig. at right.).
- Ambient temperature : 0 to 40°C
- Ambient humidity : 35 to 85% RH (no condensation)



## Standard specification I/O connector signal list

Pin	I/O No.	Signal name	Remarks
1	DI 01	Dedicated input: Servo ON input	
2	DI 10	Dedicated input: Sequence control	
3	DI 03	Spare	Do not use.
4	CHK 1	Check signal 1	Short-circuit with CHK2.
5	DI 05	Spare	Do not use.
6	DI 06	Dedicated input: Stop	
7	DI 07	Spare	Do not use.
8	DI 20	General-purpose input 20	
9	DI 21	General-purpose input 21	
10	DI 22	General-purpose input 22	
11	DI 23	General-purpose input 23	
12	DI 24	General-purpose input 24	
13	DI 25	General-purpose input 25	
14	DI 26	General-purpose input 26	
15	DI 27	General-purpose input 27	
16	DO 00	Spare	Do not use.
17	DO 01	Dedicated output CPU OK	
18	DO 10	Dedicated output AUTO mode output	
19	DO 11	Dedicated output Return-to-origin complete	
20	DO 12	Dedicated output Sequence program-in-progress	
21	DO 13	Dedicated output Robot program-in-progress	
22	DO 14	Dedicated output Program reset status output	
23	DO 15	Dedicated output Warning output	
24	DO 16	Spare	Do not use.
25	DO 17	Spare	Do not use.
26	DI 12	Dedicated input: Automatic operation start	
27	DI 13	Spare	Do not use.
28	DI 14	Dedicated input: Return-to-origin (for INC axis)	
29	DI 15	Dedicated input: Program reset input	
30	DI 16	Dedicated input: Alarm reset input	
31	DI 17	Dedicated input: Return-to-origin (for ABS axis)	
32	DI 30	General-purpose input 30	
33	DI 31	General-purpose input 31	
34	DI 32	General-purpose input 32	
35	DI 33	General-purpose input 33	
36	DI 34	General-purpose input 34	
37	DI 35	General-purpose input 35	
38	DI 36	General-purpose input 36	
39	DI 37	General-purpose input 37	
40	CHK 2	Check signal 2	Short-circuit with CHK1.
41	DO 02	Dedicated output: Servo ON output	
42	DO 03	Dedicated output: Alarm output	
43	DO 20	General-purpose output 20	
44	DO 21	General-purpose output 21	
45	DO 22	General-purpose output 22	
46	DO 23	General-purpose output 23	
47	DO 24	General-purpose output 24	
48	DO 25	General-purpose output 25	
49	DO 26	General-purpose output 26	
50	DO 27	General-purpose output 27	

## Expanded specification I/O connector signal list

Pin	I/O No. (ID=1)	I/O No. (ID=2)	I/O No. (ID=3)	I/O No. (ID=4)	Signal name
1	---	---	---	---	Reserved
2	DI 10	DI 40	DI 70	DI 120	General-purpose input 10,40,70,120
3	---	---	---	---	Reserved
4	DI 11	DI 41	DI 71	DI 121	General-purpose input 11,41,71,121
5	---	---	---	---	Reserved
6	---	---	---	---	Reserved
7	---	---	---	---	Reserved
8	DI 20	DI 50	DI 100	DI 130	General-purpose input 20,50,100,130
9	DI 21	DI 51	DI 101	DI 131	General-purpose input 21,51,101,131
10	DI 22	DI 52	DI 102	DI 132	General-purpose input 22,52,102,132
11	DI 23	DI 53	DI 103	DI 133	General-purpose input 23,53,103,133
12	DI 24	DI 54	DI 104	DI 134	General-purpose input 24,54,104,134
13	DI 25	DI 55	DI 105	DI 135	General-purpose input 25,55,105,135
14	DI 26	DI 56	DI 106	DI 136	General-purpose input 26,56,106,136
15	DI 27	DI 57	DI 107	DI 137	General-purpose input 27,57,107,137
16	---	---	---	---	Reserved
17	---	---	---	---	Reserved
18	DO 10	DO 30	DO 50	DO 70	General-purpose output 10,30,50,70
19	DO 11	DO 31	DO 51	DO 71	General-purpose output 11,31,51,71
20	DO 12	DO 32	DO 52	DO 72	General-purpose output 12,32,52,72
21	DO 13	DO 33	DO 53	DO 73	General-purpose output 13,33,53,73
22	DO 14	DO 34	DO 54	DO 74	General-purpose output 14,34,54,74
23	DO 15	DO 35	DO 55	DO 75	General-purpose output 15,35,55,75
24	DO 16	DO 36	DO 56	DO 76	General-purpose output 16,36,56,76
25	DO 17	DO 37	DO 57	DO 77	General-purpose output 17,37,57,77
26	DI 12	DI 42	DI 72	DI 122	General-purpose input 12,42,72,122
27	DI 13	DI 43	DI 73	DI 123	General-purpose input 13,43,73,123
28	DI 14	DI 44	DI 74	DI 124	General-purpose input 14,44,74,124
29	DI 15	DI 45	DI 75	DI 125	General-purpose input 15,45,75,125
30	DI 16	DI 46	DI 76	DI 126	General-purpose input 16,46,76,126
31	DI 17	DI 47	DI 77	DI 127	General-purpose input 17,47,77,127
32	DI 30	DI 60	DI 110	DI 140	General-purpose input 30,60,110,140
33	DI 31	DI 61	DI 111	DI 141	General-purpose input 31,61,111,141
34	DI 32	DI 62	DI 112	DI 142	General-purpose input 32,62,112,142
35	DI 33	DI 63	DI 113	DI 143	General-purpose input 33,63,113,143
36	DI 34	DI 64	DI 114	DI 144	General-purpose input 34,64,114,144
37	DI 35	DI 65	DI 115	DI 145	General-purpose input 35,65,115,145
38	DI 36	DI 66	DI 116	DI 146	General-purpose input 36,66,116,146
39	DI 37	DI 67	DI 117	DI 147	General-purpose input 37,67,117,147
40	---	---	---	---	Reserved
41	---	---	---	---	Reserved
42	---	---	---	---	Reserved
43	DO 20	DO 40	DO 60	DO 100	General-purpose output 20,40,60,100
44	DO 21	DO 41	DO 61	DO 101	General-purpose output 21,41,61,101
45	DO 22	DO 42	DO 62	DO 102	General-purpose output 22,42,62,102
46	DO 23	DO 43	DO 63	DO 103	General-purpose output 23,43,63,103
47	DO 24	DO 44	DO 64	DO 104	General-purpose output 24,44,64,104
48	DO 25	DO 45	DO 65	DO 105	General-purpose output 25,45,65,105
49	DO 26	DO 46	DO 66	DO 106	General-purpose output 26,46,66,106
50	DO 27	DO 47	DO 67	DO 107	General-purpose output 27,47,67,107

Note. The IDs are set using the parameter.

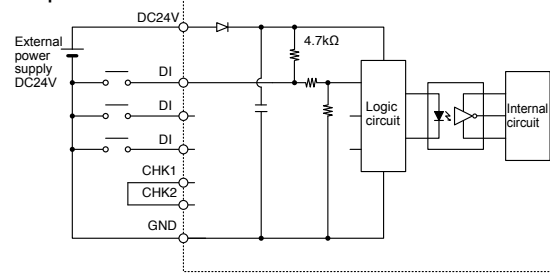


## Standard specification I/O connector pin assignment lists

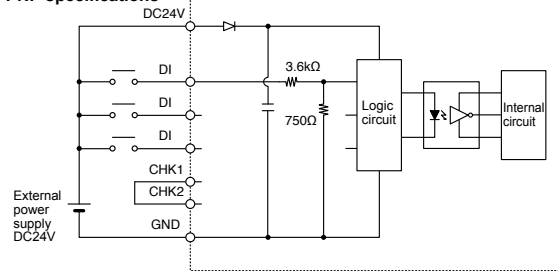
Pin	I/O No.	Name
1	DI01	Servo ON
2	DI10	SEQ enable
3	DI03	(Spare)
4	CHK1	Check input 1
5	DI05	(Spare)
6	DI06	STOP
7	DI07	(Spare)
8	DI20	General-purpose input
9	DI21	General-purpose input
10	DI22	General-purpose input
11	DI23	General-purpose input
12	DI24	General-purpose input
13	DI25	General-purpose input
14	DI26	General-purpose input
15	DI27	General-purpose input
16	DO00	(Spare)
17	DO01	CPUOK
18	DO10	AUTO
19	DO11	ORGOK
20	DO12	SEQRUN
21	DO13	RUN
22	DO14	RESET
23	DO15	WARNING
24	DO16	(Spare)
25	DO17	(Spare)
26	DI12	RUN
27	DI13	(Spare)
28	DI14	ORIGIN (for INC axis)
29	DI15	RESET
30	DI16	ALMRST
31	DI17	ORIGIN(for ABS axis)
32	DI30	General-purpose input
33	DI31	General-purpose input
34	DI32	General-purpose input
35	DI33	General-purpose input
36	DI34	General-purpose input
37	DI35	General-purpose input
38	DI36	General-purpose input
39	DI37	General-purpose input
40	CHK2	Check input 2
41	DO02	SERVO
42	DO03	ALARM
43	DO20	General-purpose output
44	DO21	General-purpose output
45	DO22	General-purpose output
46	DO23	General-purpose output
47	DO24	General-purpose output
48	DO25	General-purpose output
49	DO26	General-purpose output
50	DO27	General-purpose output

## Typical input signal connection

### NPN specifications

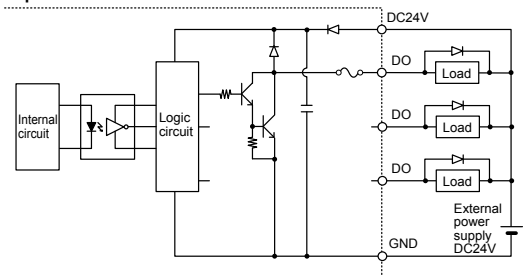


### PNP specifications

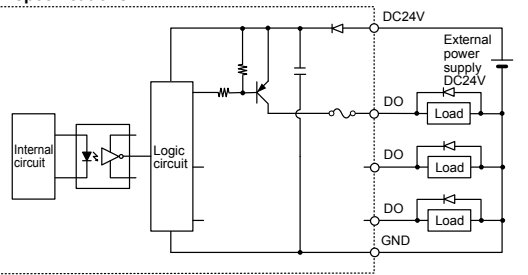


## Typical output signal connection

### NPN specifications



### PNP specifications



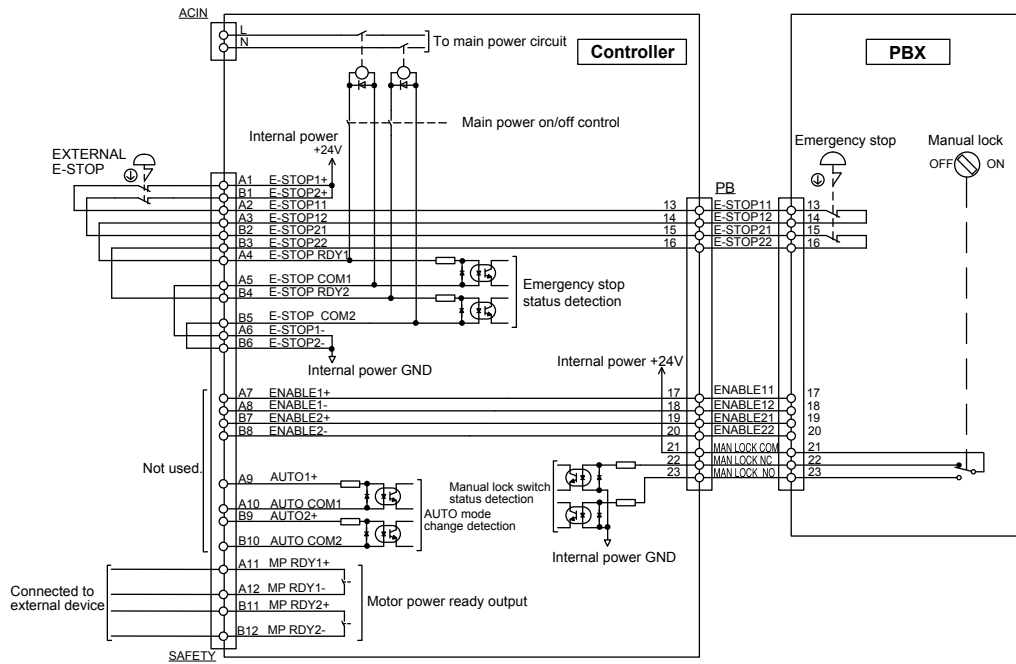
## Basic functions

Function	Description
<b>Operation modes</b>	AUTO mode (Major functions: program creation, program execution, step execution, etc.) MANUAL mode (Major functions: jog movement, point data teaching, parameter editing, etc.)
<b>Commands</b>	Array declaration commands (DIM statement) Assignment commands (Numeric assignment, character string assignment, point definition statements, etc.) Movement commands (MOVE, DRIVE, PMOVE statements, etc.) Conditional branching commands (IF, FOR, WHILE statements, etc.) External output commands (DO, MO, LO, TO, SO statements) Parameter commands (ACCEL, OUTPOS, TOLE statements, etc.) Condition wait command (WAIT statement) Task related commands (START, SUSPEND, CUT statements, etc.) etc.
<b>Functions</b>	Arithmetic functions (SIN, COS, TAN functions, etc.) Character string functions (STR\$, LEFT\$, MID\$, RIGHT\$ functions, etc.) Point functions (WHERE, JTOXY, XYTOJ functions, etc.) Parameter functions (ACCEL, OUTPOS, TOLE statements, etc.) etc.
<b>Variables</b>	Simple variables (integer variables, real variables, character variables) Array variables (integer variables, real variables, character variables) Point variables Shift variables I/O variables etc.
<b>Arithmetic operation</b>	Arithmetic operators (+, -, *, /, MOD) Logic operators (AND, OR, XOR) Relational operators (=, <, >, <=>, >=)
<b>Monitor</b>	I/O status monitor (200 ms intervals)
<b>Online commands</b>	Program operation commands (RUN, STOP, RESET, STEP, etc.) Utility commands (COPY, ERA, INIT, etc.) Data handling commands (READ, WRITE, etc.) Robot language commands (independent-executable commands)
<b>Data files</b>	Program, point, parameter, shift, hand, all, error history etc.
<b>Internal timer</b>	Timer count variable (TCOUNTER), 1 ms interval
<b>Program break points</b>	Max. 32 points

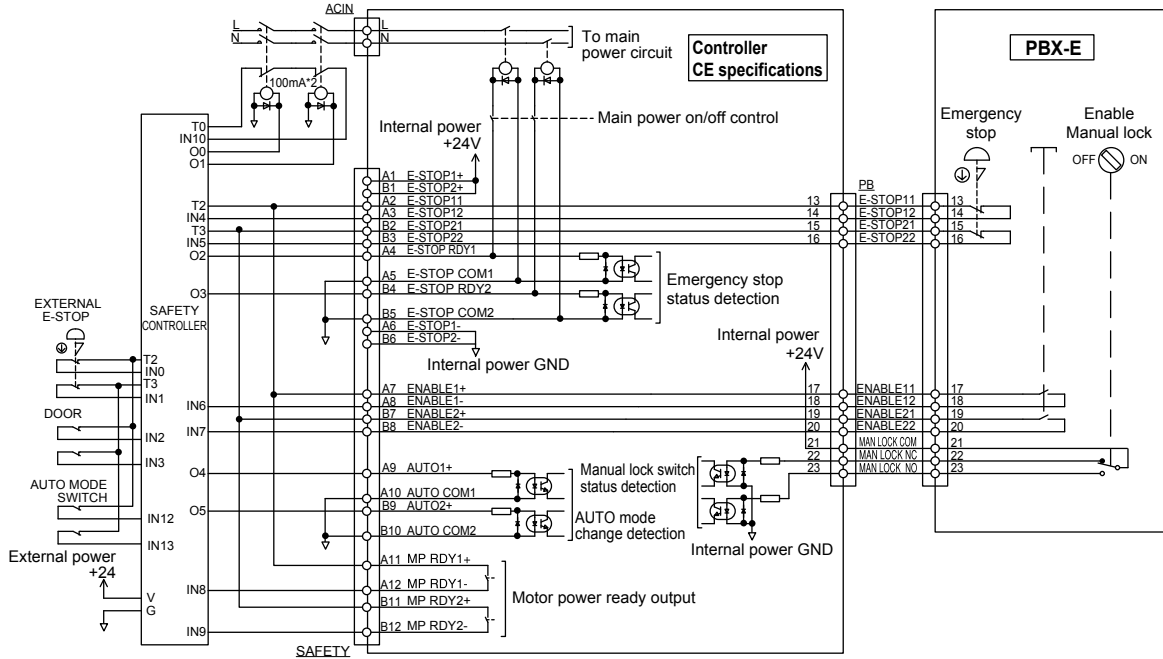


**Emergency input signal connections**

**Connection example of controller with normal specifications and PBX**



**Connection example of controller with CE specifications and PBX-E**



Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis reducer  
 Robonity  
 Compact single-axis robots  
 TRANSSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER INFORMATION  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 IVY2 Electric gripper  
 Option

## Robot Language Table

### General commands

Command	Description
DIM	Declares the array variable name and the number of elements.
LET	Executes a specified assignment statement.
REM	Expresses a comment statement.

### Arithmetic commands

Command	Description
ABS	Acquires the absolute value of a specified value.
ATN	Acquires the arctangent of the specified value.
ATN2	Acquires the arctangent of the specified X-Y coordinates.
COS	Acquires the cosine value of a specified value.
DEGRAD	Converts a specified value to radians (↔RADDEG).
DIST	Acquires the distance between 2 specified points.
INT	Acquires an integer for a specified value by truncating all decimal fractions.
LSHIFT	Shifts a value to the left by the specified bit count. (↔RSHIFT)
RADDEG	Converts a specified value to degrees. (↔DEGRAD)
RSHIFT	Shifts a value to the right by the specified bit count. (↔LSHIFT)
SIN	Acquires the sine value for a specified value.
SQR	Acquires the square root of a specified value.
TAN	Acquires the tangent value for a specified value.

### Date / time

Command	Description
DATE \$	Acquires the date as a "yy/mm/dd" format character string.
TCOUNTER	Outputs count-up values at 1ms intervals starting from the point when the TCOUNTER variable is reset.
TIME \$	Acquires the current time as an "hh:mm:ss" format character string.
TIMER	Acquires the current time in seconds, counting from midnight.

### Character string operation

Command	Description
CHR \$	Acquires a character with the specified character code.
LEFT \$	Extracts a character string comprising a specified number of digits from the left end of a specified character string.
LEN	Acquires the length (byte count) of a specified character string.
MID \$	Extracts a character string of a desired length from a specified character string.
ORD	Acquires the character code of the first character in a specified character string.
RIGHT \$	Extracts a character string comprising a specified number of digits from the right end of a specified character string.
STR \$	Converts a specified value to a character string (↔VAL).
VAL	Converts the numeric value of a specified character string to an actual numeric value. (↔STR\$)

### Point, coordinates, shift coordinates

Command	Description
CHANGE	Switches the hand of a specified robot.
HAND	Defines the hand of a specified robot.
JTOXY	Converts joint coordinate data to Cartesian coordinate data of a specified robot. (↔XYTOJ)
LEFTY	Sets the hand system of a specified robot to the left-handed system.
LOCx	Specifies/acquires point data for a specified axis or shift data for a specified element.
PATH	Sets the movement path.
Pn	Defines points within a program.
PPNT	Creates point data specified by a pallet definition number and pallet position number.
RIGHTY	Sets the hand system of a specified robot to the right-handed system.
Sn	Defines the shift coordinates within the program.
SHIFT	Sets the shift coordinate for a specified robot by using the shift data specified by a shift variable.
XYTOJ	Converts the point variable Cartesian coordinate data to the joint coordinate data of a specified robot. (↔JTOXY).

### Branching commands

Command	Description
EXIT FOR	Terminates the FOR to NEXT statement loop.
FOR to NEXT	Executes the FOR to NEXT statement repeatedly until a specified value is exceeded.
GOSUB to RETURN	Jumps to a subroutine with the label specified by GOSUB statement, and executes that subroutine.
GOTO	Unconditionally jumps to the line specified by a label.
IF	Allows control flow to branch according to conditions.
ON to GOSUB	Jumps to a subroutine with labels specified by a GOSUB statement in accordance with the conditions, and executes that subroutine.
ON to GOTO	Jumps to label-specified lines in accordance with the conditions.
SELECT CASE to END SELECT	Allows control flow to branch according to conditions.
WHILE to WEND	Controls repeated operations.

### Error control

Command	Description
ERR / ERL	Acquires the error code number of an error which has occurred / the line number where an error occurred.
ON ERROR GOTO	This command allows the program to jump to the error processing routine specified by the label without stopping the program, or it stops the program and displays the error message.
RESUME	Resumes program execution after error recovery processing.

### Program control

Command	Description
CALL	Calls a sub-procedure.
HALT	Stops the program and performs a reset.
HALTALL	Stops and resets all programs.
HOLD	Temporarily stops the program.
HOLDALL	Temporarily stops all programs.
PGMTSK	Acquires the task number in which a specified program is registered.
PGN	Acquires the program number from a specified program name.
SGI	Assigns/acquires the value to a specified integer type static variable.
SGR	Assigns/acquires the value to a specified real type static variable.
SWI	Switches the program being executed, then begins execution from the first line.
TSKPGM	Acquires the program number which is registered in a specified task.

### Task control

Command	Description
CHGPRI	Changes the priority ranking of a specified task.
CUT	Terminates another task currently being executed or temporarily stopped.
EXIT TASK	Terminates its own task which is in progress.
RESTART	Restarts another task during a temporary stop.
START	Specifies the task number and priority ranking of a specified program, and starts that program.
SUSPEND	Temporarily stops another task which is being executed.

### Robot operations

Command	Description
DRIVE	Moves a specified axis of a specified robot to an absolute position.
DRIVEI	Moves a specified axis of a specified robot to a relative position.
MOTOR	Controls the motor power status.
MOVE	Performs absolute movement of all axes of a specified robot.
MOVEI	Performs relative movement of all axes of a specified robot.
MOVET	Performs relative movement of all axes of a specified robot when the tool coordinate is selected.
ORIGIN	Performs return-to-origin.
PMOVE	Executes the pallet movement command of a specified robot.
PUSH	Executes a pushing operation in the axis unit.
SERVO	Controls the servo ON/OFF of a specified axis or all axes of a specified robot.

● Status acquisition

Command	Description
ABSRPOS	Acquires the machine reference value for specified robot axes. (Valid only for axes whose return-to-origin method is set as "mark".)
ARMCND	Acquires the current arm status of a specified robot.
ARMSEL	Specifies/acquires the current "hand system" setting of a specified robot.
ARMTYP	Specifies/acquires the "hand system" setting of a specified robot.
CURTQST	Acquires the current torque value ratio of a specified axis to the rated torque.
MCHREF	Acquires the return-to-origin or absolute-search machine reference value for specified robot axes. (Valid only for axes whose return-to-origin method is set as "sensor" or "stroke-end".)
MTRDUTY	Acquires the motor load factor of the specified axis.
PSHRSLT	Acquires the status at the end of the PUSH statement.
PSHSPD	Specifies/acquires the push speed parameter.
PSHTIME	Specifies/acquires the push time parameter.
WAIT ARM	Waits until the axis operation of a specified robot is completed.
WHERE	Reads out the current position of the arm of a specified robot in joint coordinates (pulse).
WHRXY	Reads out the current position of the arm of a specified robot as Cartesian coordinates (mm, degrees).

● Status change

Command	Description
ACCEL	Specifies/acquires the acceleration coefficient parameter of a specified robot.
ARCHP1	Specifies/acquires the arch position 1 parameter of a specified robot.
ARCHP2	Specifies/acquires the arch position 2 parameter of a specified robot.
ASPEED	Specifies/acquires the AUTO movement speed of a specified robot.
AXWGHT	Specifies/acquires the axis tip weight parameter of a specified robot.
CHANGE	Switches the hand of a specified robot.
DECEL	Specifies/acquires the deceleration rate parameter of a specified robot.
HAND	Defines the hand of a specified robot.
LEFTY	Sets the hand system of a specified robot to the left-handed system.
ORGORD	Specifies/acquires the axis sequence parameter for performing return-to-origin and an absolute search operation in a specified robot.
OUTPOS	Specifies/acquires the "OUT position" parameter of a specified robot.
PDEF	Defines the pallet used to execute pallet movement commands.
PSHFRC	Specifies/acquires the "Push force" parameter.
PSHJGSP	Specifies/acquires the push judge speed threshold parameter.
PSHMTD	Specifies/acquires the push method parameter.
RIGHTY	Sets the hand system of a specified robot to the right-handed system.
SETGEP	Sets the General Ethernet Port.
SPEED	Changes the program movement speed of a specified robot.
TOLE	Specifies/acquires the tolerance parameter of a specified robot.
WEIGHT	Specifies/acquires the tip weight parameter of a specified robot.

● PATH control

Command	Description
PATH	Specifies the PATH motion path.
PATH END	Ends the path setting for PATH motion.
PATH SET	Starts the path setting for PATH motion.
PATH START	Starts the PATH motion.

● Torque control

Command	Description
CURTQST	Acquires the current torque value ratio of a specified axis to the rated torque.
CURTRQ	Acquires the current torque value of the specified axis of a specified robot.
PUSH	Executes a pushing operation in the axis unit.
TORQUE	Specifies/acquires the maximum torque command value which can be set for a specified axis of a specified robot.

● Input/output control

Command	Description
DELAY	Waits for the specified period (units: ms).
DO	Outputs a specified value to the DO port or acquires the DO status.
LO	Outputs a specified value to the LO port to enable/disable axis movement or acquires the LO status.
MO	Outputs a specified value to the MO port or acquires the MO status.
OUT	Turns ON the bits of the specified output ports and terminates the command statement.
RESET	Turns the bit of a specified output port OFF.
SET	Turns the bit at the specified output port ON.
SI	Acquires a specified SI status.
SID	Acquires a specified serial input's double-word information status.
SIW	Acquires a specified serial input's word information status.
SO	Outputs a specified value to the SO port or acquires the SO status.
SOD	Outputs a specified serial output's double-word information or acquires the output status.
SOW	Outputs a specified serial output's word information or acquires the output status.
TO	Outputs a specified value to the TO port or acquires the TO status.
WAIT	Waits until the conditions of the DI/DO conditional expression are met (with time-out).

● Communication control

Command	Description
CLOSE	Close the specified General Ethernet Port.
ETHSTS	Acquires the Ethernet port status.
GEPSTS	Acquires the General Ethernet Port status.
OFFLINE	Sets a specified communication port to the "offline" mode.
ONLINE	Sets the specified communication port to the "online" mode.
OPEN	Opens the specified General Ethernet Port.
SEND	Sends a file.

Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis actuators  
**Robonity**  
 Compact single-axis robots  
**TRANSEVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XY-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
**CLEAN**  
**CONTROLLER INFORMATION**  
 Robot positioner  
 Pulse string driver  
**Robot controller**  
 I/Y2 Electric gripper  
 Option

## Accessories and part options

### RCX320



#### Standard accessories

- LCC140
- TS-X
- TS-P
- SR1-X
- SR1-P
- RCX320
- RCX221
- RCX222
- RCX340

#### ● Power connector + wiring connection lever



Model KAS-M5382-00

#### ● Safety connector



Model KCX-M5370-00

- RCX320
- RCX340

#### ● PBX terminator (dummy connector)

Attach this to the PBX connector during operation with the programming box PBX removed.



Model KFR-M5163-00

- RCX320
- RCX221
- RCX222
- RCX340

#### ● NPN / PNP connector



Connector plug model KBH-M4424-00  
Connector cover model KBH-M4425-00

- SR1-X
- SR1-P
- RCX320
- RCX340

#### ● Absolute battery

Battery for absolute data back-up.

##### ● Basic specifications

Item	Absolute battery
Battery type	Lithium metallic battery
Battery capacity	3.6V/2,750mAh
Data holding time	About 1 year (in state with no power applied)
Dimensions	φ17 × L53mm
Weight <sup>Note1</sup>	22g



Model KCA-M53G0-01

Note 1. Weight of battery itself.  
Note. The absolute battery is subject to wear and requires replacement.  
If trouble occurs with the memory then remaining battery life is low so replace the absolute battery. The battery replacement period depends on usage conditions. But generally you should replace the battery after about 1 year counting the total time after connecting to the controller and left without turning on the power.

- RCX320
- RCX340
- TS-SH

#### Important Absolute battery installation conditions

1 batteries are required for each 1 axes.  
● 1 battery, .....Data storage time of approximately 6 months (with no power applied)  
Note. No absolute battery is required for the incremental or semi-absolute axis.

#### ● Dust cover for COM connector

Model KR7-M5395-10

- RCX320
- RCX340

#### ● Dust cover for LAN connector

Model KCX-M658K-10

- RCX320
- RCX340

#### ● Dust cover for USB connector

Model KCX-M658K-00

- RCX320
- RCX340

## Options

### ● Programming box PBX/PBX-E

P.587

This device can perform all operations such as manual robot operation, program entry and edit, teaching and parameter settings.



PBX

Type	Language	Cable length	Model
PBX	Japanese	5m	KCX-M5110-1J
		12m	KCX-M5110-3J
	English	5m	KCX-M5110-1E
		12m	KCX-M5110-3E
	Chinese	5m	KCX-M5110-1C
		12m	KCX-M5110-3C
PBX-E (with enable switch)	Japanese	5m	KCX-M5110-0J
		12m	KCX-M5110-2J
	English	5m	KCX-M5110-0E
		12m	KCX-M5110-2E
	Chinese	5m	KCX-M5110-0C
		12m	KCX-M5110-2C

Model	
Display language switching USB for PBX	KCX-M6498-00
USB cable	KCX-M657E-00

RCX320  
RCX340

### ● Support software for PC RCX-Studio Pro

P.583

This is support software for operating the RCX320 / RCX340 controller. A USB key is supplied to the RCX-Studio Pro to prevent robot operation mistakes.



RCX-Studio Pro Note. This software is only downloaded from the website.



USB key (Dongle)

Model	RCX-Studio Pro (USB key)	KCX-M4990-20

RCX320  
RCX340

Note. Although it is possible to install this software on multiple PCs, the functionality is limited if there is no USB key (see table below). Additional USB keys (additional licenses) are available at a special price. Please contact Yamaha for details.

### ● Environment

OS	Windows XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.2.1.3 or later)
CPU	Intel® Core™ 2 Duo 2 GHz or higher is recommended
Memory	1 GB or more is recommended
Hard disk	80MB or more free space in the RCX-Studio Pro installation destination
Communication port	Communication cable: serial communication port, Ethernet, or USB port USB key: USB port (one port)
Display	1024×768 or higher resolution, 256 colors or higher
Other	CD-ROM drive Dedicated communication cable (for D-Sub or for USB) Ethernet cable (category 5 or higher)
Applicable robot controllers	RCX320 / RCX340

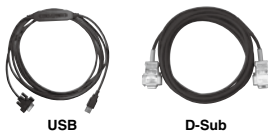
Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries. Other company names and product names listed in this manual may be the trademarks or registered trademarks of their respective companies.

### ■ Functional limitations depending on USB key presence

Function	USB key present	USB key absent
Connecting to the controller	○	×
Saving the file data	○	×
Emulator function	○	○
Real Time Trace	○	△ Emulator only
Cycletime Calculator	○	×
iVY2 editor	○	×
Data Difference	○	△ Except data saving

### ● Data cables

Communication cable for RCX-Studio Pro. Select from USB cable or D-sub cable.



USB

D-Sub

Model	USB type (5m)	KBG-M538F-00
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10

Note. This USB cable supports Windows 2000/XP or later. Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro. Note. USB driver for communication cable can also be downloaded from our website.

LCC140  
ERCD  
SR1-X  
SR1-P  
RCX320  
RCX221  
RCX222  
RCX340

### ● YC-Link/E master board

Model	KCX-M4400-M0

RCX320  
RCX340

### ● YC-Link/E slave board

Model	KCX-M4400-S0

RCX320  
RCX340

### ● YC-Link/E cable (1m)

Model	KCX-M6479-10

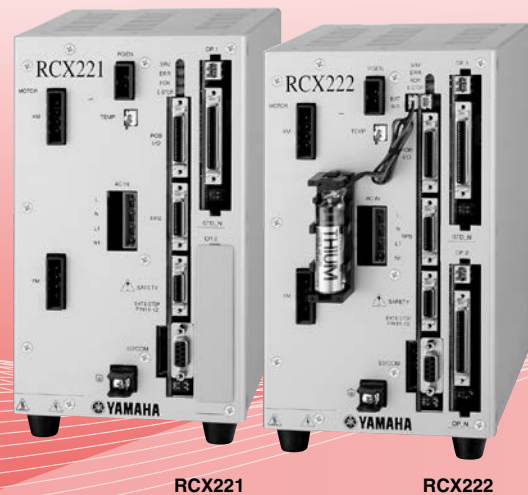
RCX320  
RCX340



# RCX221/RCX222

## Robot controller with advanced functions

**A 2-axis robot controller with a full range of advanced functions in a compact, space-saving size. Very easy to use.**



RCX221

RCX222

### Main functions ▶ P.70



Programming box  
▶ RPB/RPB-E  
P.586



Support software for PC  
▶ VIP+  
P.580

### Basic specifications

Item	Model	RCX221	RCX221HP	RCX222	RCX222HP
Basic specifications	Number of controllable axes	2 axes maximum			
	Controllable robots	Single-axis robot FLIP-X, Linear motor single-axis robot PHASER, Cartesian robot XY-X, Pick & place robot YP-X		Single-axis robot FLIP-X, Cartesian robot XY-X, Pick & place robot YP-X	
	Connected motor capacity	2 axes total: 800W or less	2 axes total: 900W to 1200W	2 axes total: 800W or less	2 axes total: 900W to 1200W
	Maximum power consumption	1700VA	2400VA	1700VA	2400VA
	Dimensions	W130 × H210 × D158mm			
Weight		Approx. 2.9kg	Approx. 3.1kg	Approx. 2.9kg	Approx. 3.1kg
	Input power supply	Single phase AC200 to 230V +/-10% maximum (50/60Hz)			
	Control power supply	Single phase AC200 to 230V +/-10% maximum (50/60Hz)			
	Motor power	Single phase AC200 to 230V +/-10% maximum (50/60Hz)			
Axis control	Drive method	AC full-digital software servo			
	Position detection method	Resolver, Magnetic linear scale		Multi-turn resolver with data backup function	
	Operating method	PTP (Point to Point), Linear interpolation, Circular interpolation, Arch motion			
	Coordinate system	Joint coordinates, Cartesian coordinates			
	Position indication units	Pulses, mm (millimeters), deg (degrees)			
	Speed setting	1% to 100% (In units of 1%. However speed is in units of 0.01% during single-axis operation by DRIVE statement.)			
	Acceleration setting	1. Automatic acceleration setting based on robot model type and end mass parameter 2. Setting based on acceleration and deceleration parameter (Setting by 1% unit)			
Program	Resolution	1μm		16384 P/rev	
	Origin search method	Incremental / Semi-absolute		Absolute / Incremental	
	Program language	YAMAHA BASIC (Conforming to JIS B8439 SLIM Language)			
	Multitasks	8 tasks maximum			
Memory	Sequence program	1 program			
	Point-data input method	Manual data input (coordinate value input), Direct teaching, Teaching playback			
	Memory capacity	364KB (total capacity of program and points) (available program capacity during use of maximum number of points is 84KB)			
Programs	100 program 9,999: maximum lines per program 98KB: maximum capacity per program				
Points	10,000 points : maximum numbers of points				
Memory Backup battery	Lithium metallic battery (service life 4 years at 0°C to 40°C)				
Internal flash memory	512KB (ALL data only)				
External memory backup	SD memory card				



Controllable robot	<b>RCX221 ▶ XY-X <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">P.261</span>, FLIP-X <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">P.193</span>, PHASER <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">P.239</span>, YP-X <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">P.451</span></b>
	<b>RCX222 ▶ XY-X <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">P.261</span>, FLIP-X <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">P.193</span>, YP-X <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">P.451</span></b>
CE marking	
Field networks	

■ Model Overview		
Name	RCX221/RCX221HP	RCX222/RCX222HP
Controllable robot	Cartesian robot XY-X / Single-axis robot FLIP-X / Linear motor single-axis robot PHASER/ Pick & place robot YP-X	Cartesian robot XY-X / Single-axis robot FLIP-X / Pick & place robot YP-X
Power	Single phase: AC200V to 230V +/-10% maximum (50/60Hz)	
Operating method	Programming / Remote command / Operation using RS-232C communication	
Maximum number of controllable axes	2 axes maximum	
Origin search method	Incremental/Semi-absolute	Absolute/Incremental

### ■ Ordering method

#### RCX221/RCX221HP

Controller <sup>Note 1</sup>	Usable for CE	Regenerative unit <sup>Note 2</sup>	Input/Output Selection 1	Input/Output Selection 2
RCX221	No entry: Standard E: CE marking	No entry: None R: RG2	N: NPN P: PNP CC: CC-Link DN: DeviceNet <sup>TM</sup> PB: PROFIBUS YC: YC-Link <sup>Note 3</sup>	No entry: None N1: OP.DIO24/16 (NPN) P1: OP.DIO24/16 (PNP)
RCX221HP	No entry: Standard E: CE marking	No entry: None R: RG2	N: NPN P: PNP CC: CC-Link DN: DeviceNet <sup>TM</sup> PB: PROFIBUS YC: YC-Link <sup>Note 3</sup>	No entry: None N1: OP.DIO24/16 (NPN) P1: OP.DIO24/16 (PNP)

Note 1. Driver selection and regenerative unit selection depends on the robot type. See Specification selection table on following page.  
 Note 2. The regenerative unit (option) is required when operating a model designated by YAMAHA or a load with a large inertia.  
 Note 3. Available only for the master.

#### RCX222/RCX222HP

Controller <sup>Note 1</sup>	Usable for CE	Regenerative unit <sup>Note 2</sup>	Input/Output Selection 1	Input/Output Selection 2
RCX222	No entry: Standard E: CE marking	No entry: None R: RG2	N: NPN P: PNP CC: CC-Link DN: DeviceNet <sup>TM</sup> PB: PROFIBUS YC: YC-Link <sup>Note 3</sup>	No entry: None N1: OP.DIO24/16 (NPN) P1: OP.DIO24/16 (PNP)
RCX222HP	No entry: Standard E: CE marking	No entry: None R: RG2	N: NPN P: PNP CC: CC-Link DN: DeviceNet <sup>TM</sup> PB: PROFIBUS YC: YC-Link <sup>Note 3</sup>	No entry: None N1: OP.DIO24/16 (NPN) P1: OP.DIO24/16 (PNP)

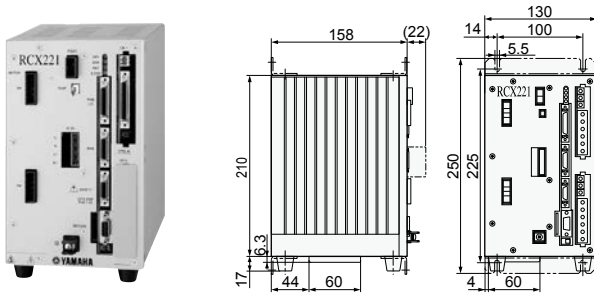
Note 1. Driver selection and regenerative unit selection depends on the robot type. See Specification selection table on following page.  
 Note 2. The regenerative unit (option) is required when operating a model designated by YAMAHA or a load with a large inertia.  
 Note 3. Available only for the master.

Item	Model	RCX221	RCX221HP	RCX222	RCX222HP	
External input/output	STD.DIO	I/O input	Dedicated input 10 points, General input 16 points			
		I/O output	Dedicated Output12 points, General output 8 points			
	SAFETY	Emergency stop input (Relay contact), Service mode input (NPN/PNP specification is set according to STD. DIO setting)				
	Brake output	Relay contact				
	Origin sensor input	Connectable to DC 24V normally-closed contact sensor				
	External communications	RS232C: 1CH D-SUB9 (female) RS422 : 1CH (RPB)				
	Options	Slots	2 (inc.STD.DIO)			
		Type	STD.DIO (NPN/PNP): Dedicated input 10 points, Dedicated output 12 points, General input 16 points, General output 8 points Optional input/output (NPN/PNP): General input 24 points / General output 16 points			
			CC-Link: Dedicated input 16 points, Dedicated output 16 points, General input 96 points, General output 96 points (4 nodes occupied)			
			DeviceNet <sup>TM</sup> : Dedicated input 16 points, Dedicated output 16 points, General input 96 points, General output 96 points			
PROFIBUS: Dedicated input 16 points, Dedicated output16 points, General input 96 points, General output 96 points						
Ethernet: IEEE802.3 10Mbps (10BASE-T)						
Options	Programming box	RPB, RPB-E (with enable switch)				
	Support software for PC	VIP+ / VIP				
General specifications	Operating temperature	0°C to 40°C				
	Storage temperature	-10°C to 65°C				
	Operating humidity	35% to 85%RH (non-condensing)				
	Absolute backup battery	-			Lithium metallic battery 3.6V 5400mAh (2700nAH × 2)	
	Absolute data backup period	-			1 year (in state with no power applied)	
	Noise immunity	IEC61000-4-4 Level3				
Protecting structure	IP10					

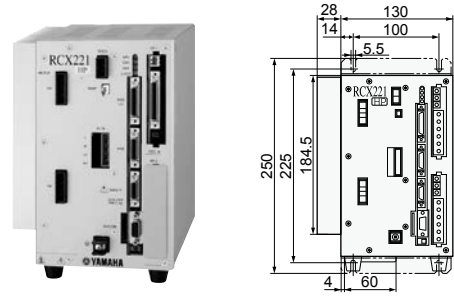
Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis actuator  
**Robonity**  
 Compact single-axis robots  
**TRANSERVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XY-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
**CLEAN**  
**CONTROLLER INFORMATION**  
 Robot positioner  
 Pulse string driver  
 Robot controller  
**IVY2**  
 Electric gripper  
 Option

## Dimensions

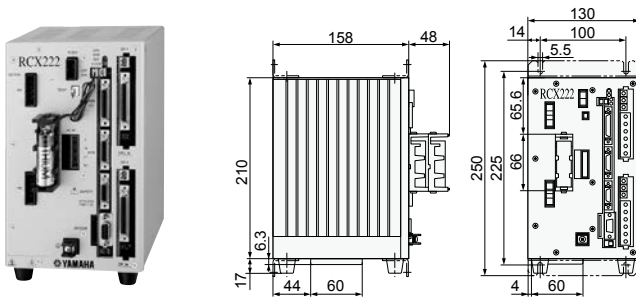
### RCX221



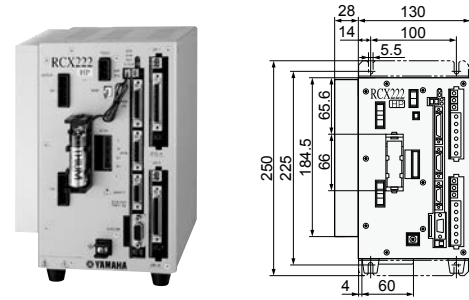
### RCX221HP



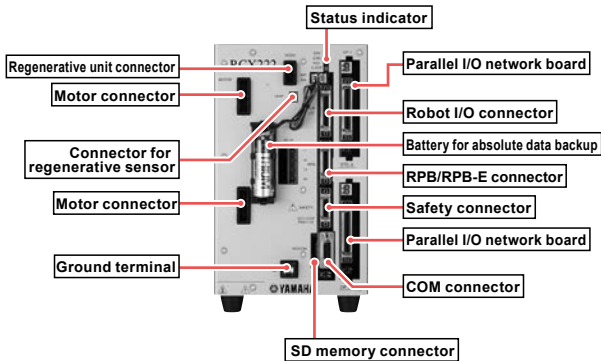
### RCX222



### RCX222HP

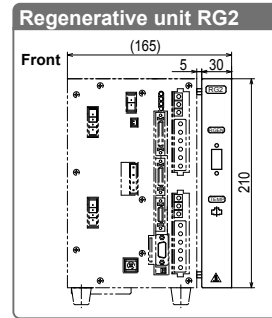


## Part names



Note. Photograph shows RCX222. The component names on the RCX221 are the same but it does not come with an absolute backup battery.

## Regenerative unit RG2



Note. Depth (D) is 158mm. Installs on the right side of the RCX221 (HP), RCX222 (HP). Cannot be installed as a separate unit.

## Basic specifications

Item	RG2
Model	KAS-M4130-00 (including cable supplied with unit)
Dimensions	W35 × H210 × D158mm
Weight	0.8kg
Regenerative voltage	Approx. 380V or more
Regenerative stop voltage	Approx. 360V or less
Accessory	Cable for connection with controller (300mm)

Note. Installs on the right side of the RCX221 (HP), RCX222 (HP). Cannot be installed as a separate unit.

## Specification selection table

The robot type automatically determines the normal specifications or HP specifications.

### RCX221/RCX221HP

	PHASER					
	MF7D	MF15D	MF20D	MF30D	MF50D	MF75D
RCX221	●	●	●	●	●	●
RCX221HP	●	●	●	●	●	●
Regenerative unit R (RG2)	●	●	●	●	●	●

● : Applicable

### RCX222/RCX222HP

	FLIP-X	XY-X												YP-X	Clean					
		Arm type, Gantry type, Moving arm type, Pole type						XZ type												
		PXYx	FXYx	FXyBx	SXYx	SXYBx	NXY	MXyX	HXYx	HXYLx	SXYx (ZF)	SXYx (ZFL20)	SXYBx (ZF)	SXYBx (ZFL20)	MXyX	HXYx	YP220BX	YP320X	SXYxC	
RCX222	N15D	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
RCX222HP	N18D	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Regenerative unit R (RG2)		●	●	●	●	●	○	●	●	●	●	●	●	●	●	●	●	●	●	●

● : Applicable ○ : Select per conditions

## Power capacity

Required power supply capacity varies according to the robot type and number of axes. Prepare a power supply using the following table as a general guide.

### When connected to 2 axes (Cartesian robot or multi-axis robot)

Axial current sensor value		Power capacity (VA)
X axis	Y axis	
05	05	500
10	05	700
10	10	900
20	05	1500
20	10	1700
20	20	2000
20	20	2400 (HP)

Note. Even if axial current sensor values for each axis are interchanged no problem will occur.

### Motor capacity vs. current sensor table

Connected motor capacity	Current sensor
100W or less	05
200W	10
400W or more	20

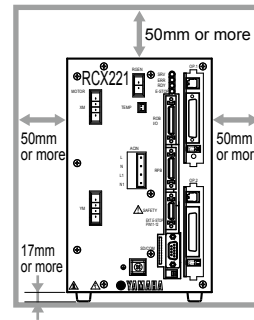
Note. Motor output of the B14H is 200W but the current sensor is 05.

## Conditions where regenerative unit is needed on multi robots

- Motor capacity exceeds a total of 450W.
- Motor capacity for perpendicular axis exceeds a total of 240W.
- The following conditions apply when perpendicular axis capacity is 240W or less.
  - perpendicular axis is 200W.
  - perpendicular axis is 100W and stroke is 700mm or more.
  - there are 2 perpendicular axes at 100W, and includes leads of 5mm.
- B14H which maximum speed exceeds 1250mm per second.

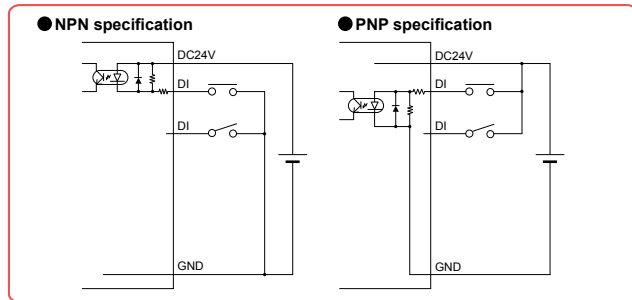
## Installation conditions

- Install the RCX221/RCX222 inside the control panel.
- Install the RCX221/RCX222 on a flat, level surface.
- Install the RCX221/RCX222 in a well ventilated location, with space on all sides of the RCX221/RCX222 (See fig. at right.).
- Do not block the heat-sink on the side panel.
- Do not block the fan on the bottom of the controller.
- Ambient temperature : 0 to 40°C
- Ambient humidity : 35 to 85% RH (no condensation)

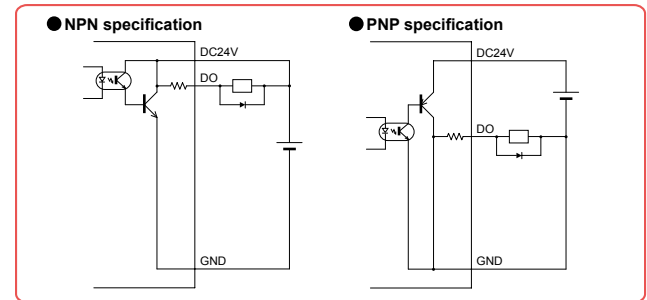


\*Provide the same space dimensions for RCX222.

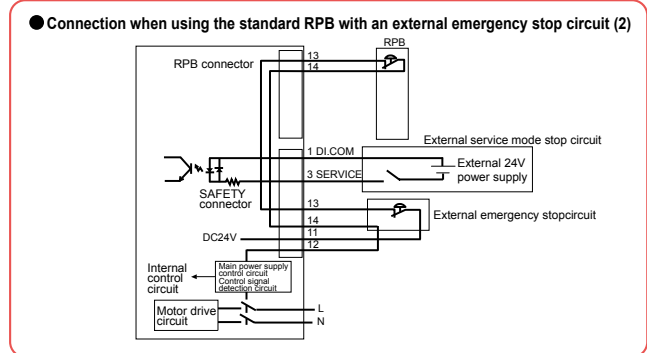
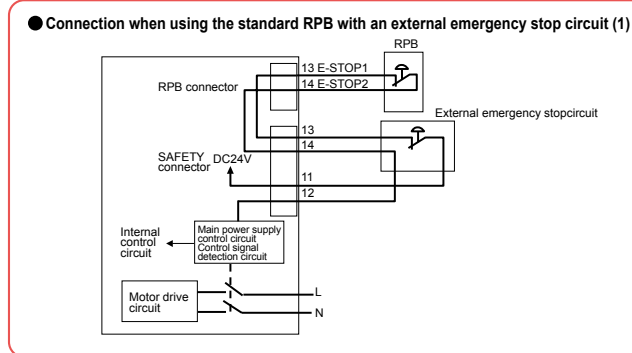
## Example of input signal connection



## Example of output signal connection



## Emergency input signal connections



## SAFETY connector signals

Terminal number	I/O No.	Name
1	DI.COM	Dedicated input common
2	INTERLOCK	Interlock signal
3	SERVICE	SERVICE mode input
4	DO.COM	Dedicated output common
5	MPRDY	Main power supply ready
6	SERVO OUT	Servo-on state output
7	NC	No connection
8	KEY1	RPB key switch contact
9	KEY2	RPB key switch contact
10	24VGND	EMG 24V, GND

Terminal number	I/O No.	Name
11	EMG24V	Power supply for emergency stop input
12	EMGRDY	Emergency stop ready signal
13	EMGIN1	Emergency stop input 1
14	EMGIN2	Emergency stop input 2
15	EMGIN3	Emergency stop input 3
16	EMGIN4	Emergency stop input 4
17	LCKIN1	Enable switch input 1
18	LCKIN2	Enable switch input 2
19	LCKIN3	Enable switch input 3
20	LCKIN4	Enable switch input 4

Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-assist single axis actuator  
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 Compact single-axis robots  
 TRANSERVO  
 Single-axis robots  
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 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
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 Pick & place robots  
 YP-X  
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 Option

## ■ Standard I/O [connector name: STD. DIO] signal table

Terminal number	Signal name	Name	
		RCX221	RCX222
1	DI01	Servo ON	
2	DI10	Sequence program control	
3	DI03	Step run	
4	CHK1	Check input 1	
5	DI05	I/O command run	
6	DI06	Spare <sup>Note 1</sup>	
7	DI07	Spare <sup>Note 1</sup>	
8	DI20	General input 20	
9	DI21	General input 21	
10	DI22	General input 22	
11	DI23	General input 23	
12	DI24	General input 24	
13	DI25	General input 25	
14	DI26	General input 26	
15	DI27	General input 27	
16	DO00	EMG monitor (emergency stop monitor)	
17	DO01	CPU OK	
18	DO10	AUTO mode	
19	DO11	Return-to-origin complete	
20	DO12	Sequence program in progress	
21	DO13	Auto operation in progress	
22	DO14	Program reset output	
23	DO15	Battery alarm output <sup>Note 2</sup>	
24	DO16	END	
25	DO17	BUSY	
26	DI12	Auto operation start	
27	DI13	AUTO mode switching	
28	DI14	ABS reset (Not in use normally)	Return-to-origin <sup>Note 3</sup>
29	DI15	Program reset	
30	DI16	MANUAL mode	
31	DI17	Return-to-origin (In use normally)	ABS reset <sup>Note 4</sup>
32	DI30	General input 30	
33	DI31	General input 31	
34	DI32	General input 32	
35	DI33	General input 33	
36	DI34	General input 34	
37	DI35	General input 35	
38	DI36	General input 36	
39	DI37	General input 37	
40	CHK2	Check input 2	
41	DO02	Servo-on state	
42	DO03	Alarm	
43	DO20	General output 20	
44	DO21	General output 21	
45	DO22	General output 22	
46	DO23	General output 23	
47	DO24	General output 24	
48	DO25	General output 25	
49	DO26	General output 26	
50	DO27	General output 27	

Note 1. Use of DI06, DI07 is prohibited.

Note 2. DO15 is a memory backup battery voltage drop alarm output.

Note 3. Set origin return for axes using incremental specifications and axes using semi-absolute specifications.

Note 4. Set origin return on axes using absolute specifications.

Area check output can be assigned to DO20 to DO157.

(Area check output assignment differs depending on the controller software version. See the user's manual for details.)

## ■ Option I/O [connector name: OP. DIO] signal table

Terminal number	Signal name	Name
1	–	Spare
2	DI40	General input
3	–	Spare
4	DI41	General input
5	–	Spare
6	–	Spare
7	–	Spare
8	DI50	General input
9	DI51	General input
10	DI52	General input
11	DI53	General input
12	DI54	General input
13	DI55	General input
14	DI56	General input
15	DI57	General input
16	–	Spare
17	–	Spare
18	DO30	General output
19	DO31	General output
20	DO32	General output
21	DO33	General output
22	DO34	General output
23	DO35	General output
24	DO36	General output
25	DO37	General output
26	DI42	General input
27	DI43	General input
28	DI44	General input
29	DI45	General input
30	DI46	General input
31	DI47	General input
32	DI60	General input
33	DI61	General input
34	DI62	General input
35	DI63	General input
36	DI64	General input
37	DI65	General input
38	DI66	General input
39	DI67	General input
40	–	Spare
41	–	Spare
42	–	Spare
43	DO40	General output
44	DO41	General output
45	DO42	General output
46	DO43	General output
47	DO44	General output
48	DO45	General output
49	DO46	General output
50	DO47	General output

Articulated robots  
YALinear conveyor  
modules  
LCM100Motor-less single  
axis actuator  
RobonityCompact  
single-axis robots  
TRANSEUROSingle-axis robots  
FLIP-XLinear motor  
single-axis robots  
PHASERCartesian  
robots  
XY-XSCARA  
robots  
YK-XPick & place  
robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Robot  
positionerPulse string  
driverRobot  
controllerIVY2  
Electric  
gripper

Option

## Robot Language Table

### General commands

Language	Function
DECLARE	Declares that a label or sub-procedure is in an external program.
DEF FN	Defines a function that is available to the user.
DIM	Declares the name of an array variable and the number of elements.
EXIT FOR	Terminates a FOR statement to NEXT statement loop.
FOR to NEXT	Controls repetitive operations
GOSUB to RETURN	Jumps to a subroutine with the label specified by a GOSUB statement and executes the subroutine.
GOTO	Unconditionally jumps to the line specified by a label.
HALT	Stops a program and resets it.
HOLD	Pauses a program.
IF	Allows control flow to branch according to conditions.
LET	Executes a specified assignment statement.
ON to GOSU	Jumps to a subroutine with each label specified by a GOSUB statement according to conditions and executes the subroutine.
ON to GOTO	Jumps to each line specified by a label according to conditions.
REM	All characters that follow REM or an apostrophe (') are viewed as comments.
SELECT CASE to END SELECT	Allows control flow to branch according to conditions.
SWI	Switches the currently executed program to a specified program, and executes from the first line after compiling.
WHILE to WEND	Controls repetitive operations.
Label statement	Defines "labels" in program lines.

### Robot operation

Language	Function
ABSRST	Performs return-to-origin along robot absolute motor axes.
DRIVE	Performs an absolute movement of each axis in the main group.
DRIVEI	Performs a relative movement of each axis in the main group.
MOVE	Performs an absolute movement of the main robot axes.
MOVEI	Performs a relative movement of the main robot axes.
ORIGIN	Performs return-to-origin on an incremental mode axis or absolute search on a semi-absolute mode axis.
PMOVE	Performs a pallet movement of the main robot axes.
SERVO	Controls the servo ON/OFF of the specified axes in the main group or all axes (in main group and sub group).

### I/O control

Language	Function
DELAY	Waits for the specified length of time (ms).
DO	Outputs the specified value to the DO ports.
LO	Outputs the specified value to the LO port to prohibit axis movement or permit axis movement.
MO	Outputs the specified value to the MO ports.
OUT	Turns ON the bits of the specified output ports and the command statement ends.
RESET	Turns OFF the bits of the specified output ports.
SET	Turns ON the bits of the specified output ports
SO	Outputs the specified value to the SO port.
TO	Outputs the specified value to the TO port.
WAIT	1. Waits until the condition in DI/DO conditional expression are met. 2. Waits until positioning on the robot axes is complete (within the tolerance range).

### Coordinate control

Language	Function
CHANGE	Switches the hand of the main robot.
HAND	Defines the hand of the main robot.
RIGHTY / LEFTY	Selects whether the main robot will be "right-handed" or "left-handed" when moving to a point specified on a Cartesian coordinate system.
SHIFT	Sets the shift coordinates for the main robot by using the shift data specified by a shift variable.

### Condition change

Language	Function
ACCEL	Changes the acceleration coefficient parameter of the main group.
ARCH	Changes the arch position parameter of the main group.
ASPEED	Changes the automatic movement speed of the main group.
AXWGHT	Changes the axis tip weight parameter of the main group.
DECEL	Changes the deceleration rate parameter of the main group.
ORGORD	Sets the axis sequence parameter to perform return-to-origin and absolute search in the main group.
OUTPOS	Changes the OUT position parameter of the main group.
PDEF	Defines the pallet used to execute a pallet movement command.
SPEED	Changes the program speed for the main group.
TOLE	Changes the tolerance parameter of the main group.
WEIGHT	Changes the tip weight parameter of the main robot.

### Communication control

Language	Function
ONLINE / OFFLINE	Changes communication mode and initialize the communication port.
SEND	Sends the read file data into a write file.

### Screen control

Language	Function
PRINT	Displays the value of specified variable on the MPB/RPB screen.

### Key control

Language	Function
INPUT	Assigns a value to the variable specified from the MPB/RPB.

### Procedure

Language	Function
CALL	Calls up sub-procedures defined by the SUB and END SUB statements.
EXIT SUB	Terminates the sub-procedure defined by the SUB and END SUB statements.
SHARED	Does not permit variables declared with a program written outside a subprocedure (SUB to END SUB) to be passed on as dummy arguments, but allows them to be referred to with a sub-procedure.
SUB to END SUB	Defines a sub-procedure.

### Task control

Language	Function
CHGPRI	Changes the priority of the specified task.
CUT	Terminates a task currently being executed or temporarily stopped.
EXIT TASK	Terminates its own task currently being executed.
RESTART	Restarts a task that is temporarily stopped.
START	Sets the task number and priority of the specified task and starts that task.
SUSPEND	Temporarily stops another task being executed.

### Error control

Language	Function
ON ERROR GOTO	If an error occurs during program execution, this command allows the program to jump to the error processing routine specified by the label without stopping the program, or stops the program and displays the error message.
RESUME	Resumes the program execution after recovery from an error. This command is used in the error processing routine.
ERL	Gives the line number where an error occurred.
ERR	Gives the error code number when an error occurred.

### PATH control

Language	Function
PATH	Sets the PATH motion on the main robot axis.
PATH END	Terminates the path setting for PATH motion.
PATH SET	Starts the path setting for PATH motion.
PATH START	Starts the PATH motion.

### Torque control

Language	Function
DRIVE (with torque limit option)	Executes an absolute movement command on each axis in the main group.
TORQUE	Changes the maximum torque instruction for the specified main group axis.
TRQTIME	Sets the current limit time-out period on the specified main group axis when using a torque limit setting option in the DRIVE statement.
TRQTIME	Sets the current limit time-out period on the specified main group axis when using a torque limit setting option in the DRIVE statement.

Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis robot  
**Robonity**  
 Compact single-axis robots  
**TRANSERVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XY-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
**CLEAN**  
**CONTROLLER**  
**INFORMATION**  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 IVZ Electric gripper  
 Option



## Accessories and part options

### RCX221/RCX222



#### Standard accessories

- LCC140
- TS-X
- TS-P
- SR1-X
- SR1-P
- RCX320
- RCX221
- RCX222
- RCX340

● **Power connector + wiring connection lever**



Model KAS-M5382-00

● **Safety connector**



Model KAS-M5370-00

- RCX221
- RCX222

● **RPB terminator (dummy connector)**

Attach this to the RPB connector during operation with the programming box RPB removed.



Model KFR-M5163-00

- RCX320
- RCX221
- RCX222
- RCX340

● **Standard I/O (STD.DIO) connector**



Model KAS-M533G-00

- RCX221
- RCX222

● **Option I/O (OP.DIO) connector**



Model KAS-M533G-10

- RCX221
- RCX222

● **L type stay (for installing front side, rear side.)**

Use to install the controller.



Model KAS-M410H-00

Note. Model No. is for a single bracket (L type stay).  
(Two are required to install one controller.)

- RCX221
- RCX222

● **Absolute battery**

Battery for absolute data back-up.  
(Not included with the RCX221)

● **Basic specifications**

Item	Absolute battery
Battery type	Lithium metallic battery
Battery capacity	3.6V/2,750mAh
Data holding time	About 1 year <sup>Note1</sup> (in state with no power applied)
Dimensions	φ17 × L53mm
Weight <sup>Note2</sup>	22g



Model KAS-M53G0-11

Note 1. When using 2 batteries.  
Note 2. Weight of battery itself.

Note. The absolute battery is subject to wear and requires replacement.

If trouble occurs with the memory then remaining battery life is low so replace the absolute battery. The battery replacement period depends on usage conditions. But generally you should replace the battery after about 1 year counting the total time after connecting to the controller and left without turning on the power.

- SR1-X
- RCX222

**Important**

**Absolute battery installation conditions**

1 to 2 batteries are required for each 2 axes.  
● 1 battery.....Data storage time of approximately 6 months (with no power applied)  
● 2 batteries....Data storage time of approximately 1 year (with no power applied)  
Note. Absolute battery is not required for either of the 2 axes if using incremental or semi-absolute specifications.

● **Battery case**

This is the absolute battery holder.



Model KBG-M5395-00

- SR1-X
- RCX222



## Options

### ● Programming box RPB/RPB-E

**P.586**

This device can perform all operations such as manual robot operation, program entry and edit, teaching and parameter settings.



	RPB	RPB-E
Model	KBK-M5110-10	KBK-M5110-00
Enable switch	–	3-position
CE marking	Not supported	Applicable

**RCX221**  
**RCX222**

### ● Support software for PC VIP+

**P.580**

VIP+ is a simple to use application software that makes tasks such as robot operation, writing-editing programs, and point teaching easy to visually understand.



VIP+ software model	KX0-M4966-00
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**RCX221**  
**RCX222**

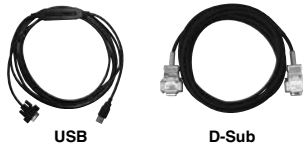
### ● Environment

OS	Windows 2000, XP (32bit), Vista, 7, 10 (Supported version: V.2.8.4 or later)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk	40MB of available space required on installation drive.
Communication method	RS-232C, Ethernet Note. For Ethernet communication, Ethernet unit for RCX series controller is required.
Applicable robot controllers	RCX22x / 240

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.  
 Note. ADOBE and ADOBE READER are registered trademarks of Adobe Systems Incorporated.  
 Note. Ethernet is a registered trademark of Xerox Corporation.

### ● Data cables

Communication cable for VIP+.  
 Select from USB cable or D-sub cable.



Model	USB type (5m)	KBG-M538F-00
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10

Note. This USB cable supports Windows 2000/XP or later.  
 Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro.  
 Note. USB driver for communication cable can also be downloaded from our website.

**LCC140**  
**ERCD**  
**SR1-X**  
**SR1-P**  
**RCX320**  
**RCX221**  
**RCX222**  
**RCX340**

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSERVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
I/VZ Electric gripper  
Option

# RCX340

## Robot controller with advanced functions

Next generation controller, all functions of which were reviewed to further improve the functions of conventional controllers.

This controller provides the features to achieve the high functionalities that can construct the equipment at high level.



RCX340

### Main functions ▶ P.72



Programming box  
▶ **PBX/PBX-E**  
**P.587**



Support software for PC  
▶ **RCX-Studio Pro**  
**P.583**

### Basic specifications

Item		RCX340
Basic specifications	Applicable robots	YAMAHA single-axis robots, linear single-axis robots, Cartesian robots, SCARA robots (except for YK120X and YK150X), P&P robots
	Connected motor capacity	1600W or less (in total for 4 axes)
	Power capacity	2500VA
	Dimensions	W355 × H195 × D130mm (main unit only)
	Weight	6.2kg (main unit only)
	Input power supply	Single-phase 200 to 230V AC +/-10% maximum, 50/60Hz
Axis control	No. of controllable axes	Max. 4 axes (simultaneous control: 6 axes) Expandable to a maximum of 16 axes (four robots) via controller link
	Drive method	AC full digital servo
	Position detection method	Resolver or magnetic linear scale
	Control method	PTP motion (point to point), ARCH motion, linear interpolation, circular interpolation
	Coordinate systems	Joint coordinates, Cartesian coordinates
	Position display units	Pulses, mm (1/1000 steps), degree (1/1000 steps)
	Speed setting	0.01 to 100% (below 1% can be changed by programming)
	Acceleration/deceleration setting	Optimized by robot model and tip weight parameter Setting by acceleration coefficient and deceleration rate parameters (1% steps) * Can be changed by programming. Zone control (For SCARA robots only, optimized according to arm posture)
Programming	Program language	YAMAHA BASIC II conforming to JIS B8439 (SLIM language)
	Multi-task	Max. 16 tasks
	Sequence program	1 program
	Memory capacity	2.1MB (Total of program and point data) (Available capacity for program when the maximum number of points is used: 300KB)
	Program	100 programs (maximum number of programs) 9999 lines (maximum number of lines per program)
	Point	30000 points (maximum number of points)
	Point teaching method	MDI (coordinate data input), direct teaching, teaching playback, offline teaching (data input from external unit)
	System backup (Internal memory backup)	Lithium battery (service life about 4 years at 0 to 40°C)
	Internal flash memory	512 KB
	SAFETY	Input Emergency stop ready input, 2 systems Auto mode input, 2 systems (Enabled only when the global specifications are used.) Output Emergency stop contact output, 2 systems Enable contact output, 2 systems (Enabled only when the PBX-E is used.) Motor power ready output, 2 systems
External I/O	Brake output	Transistor output (PNP open collector)
	Origin sensor input	Connectable to 24V DC B-contact (normally closed) sensor
	External communications	RS-232C: 1CH (D-SUB 9-pin (female)) Ethernet: 1CH (In conformity with IEEE802.3u/IEEE802.3) 100Mbps/10Mbps (100BASE-TX/10BASE-T) Applicable to Auto Negotiation
		RS-422: 1CH (Dedicated to PBX)

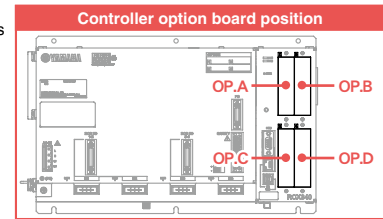
Controllable robot	<b>XY-X P261</b>	<b>YK-X P389</b>	<b>FLIP-X P193</b>	<b>PHASER P239</b>	<b>YP-X P451</b>
CE marking	Field networks				

## Ordering method

<b>RCX340</b>								
<b>Controller</b>	<b>No. of control-able axes</b>	<b>Safety standards</b>	<b>Controller option A (OP.A)</b>	<b>Controller option B (OP.B)</b>	<b>Controller option C (OP.C)</b>	<b>Controller option D (OP.D)</b>	<b>Controller option E (OP.E)</b>	
	4: 4 axes 3: 3 axes 2: 2 axes	N: Normal E: CE K: KCs	No entry: Non-selection NS: STD.DIO(NPN) Note 1 Note 4 NE: EXP.DIO(NPN) Note 2 Note 4 PS: STD.DIO(PNP) Note 1 Note 4 PE: EXP.DIO(PNP) Note 2 Note 4 GR: Gripper TR: Tracking Note 5 YM1: YC-Link/E master Note 6 YS2 to 4: YC-Link/E slave Note 6 EP: EtherNet/IP™ Note 7 PB: PROFIBUS Note 7 CC: CC-Link Note 7 DN: DeviceNet™ Note 7 PT: PROFINET Note 7 ES: EtherCAT Note 7	No entry: Non-selection NE: EXP.DIO(NPN) Note 2 Note 4 PE: EXP.DIO(PNP) Note 2 Note 4 GR: Gripper TR: Tracking Note 5 YM1: YC-Link/E master Note 6 YS2 to 4: YC-Link/E slave Note 6 EP: EtherNet/IP™ Note 7 PB: PROFIBUS Note 7 CC: CC-Link Note 7 DN: DeviceNet™ Note 7 PT: PROFINET Note 7 ES: EtherCAT Note 7	No entry: Non-selection NE: EXP.DIO(NPN) Note 2 Note 4 PE: EXP.DIO(PNP) Note 2 Note 4 GR: Gripper TR: Tracking Note 5 YM1: YC-Link/E master Note 6 YS2 to 4: YC-Link/E slave Note 6 EP: EtherNet/IP™ Note 7 PB: PROFIBUS Note 7 CC: CC-Link Note 7 DN: DeviceNet™ Note 7 PT: PROFINET Note 7 ES: EtherCAT Note 7	No entry: Non-selection NE: EXP.DIO(NPN) Note 2 Note 4 PE: EXP.DIO(PNP) Note 2 Note 4 GR: Gripper TR: Tracking Note 5 YM1: YC-Link/E master Note 6 YS2 to 4: YC-Link/E slave Note 6 EP: EtherNet/IP™ Note 7 PB: PROFIBUS Note 7 CC: CC-Link Note 7 DN: DeviceNet™ Note 7 PT: PROFINET Note 7 ES: EtherCAT Note 7	No entry: Non-selection VY: iVY2 without light VL: iVY2 with light	<b>Absolute battery</b> 4: 4 pcs. 3: 3 pcs. 2: 2 pcs. 1: 1 pc. 0: 0 pc.

Please select desired selection items from the upper portion of the controller option A in order.

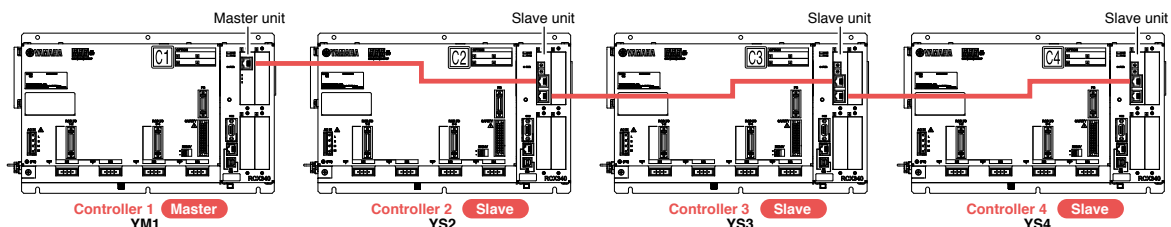
- Note 1. [STD.DIO] Parallel I/O board standard specifications  
Dedicated input 8 points, dedicated output 9 points, general-purpose input 16 points, general-purpose output 8 points  
Do not mix with field bus (CC/DN/PB/EP/PT/ES).
- Note 2. [EXP.DIO] Parallel I/O board expansion specifications  
General-purpose input 24 points, general-purpose output 16 points
- Note 3. Only one DIO STD specification board can be selected. Therefore, this board cannot be selected in OP.B to OP.D.
- Note 4. Select either NPN or PNP in DIO.
- Note 5. Only one tracking board can be selected.
- Note 6. Select only one master or slave board for YC-Link/E.  
For details, refer to "YC-Link/E ordering explanation" below.  
Additionally, when ordering YC-Link/E, please specify what robot is connected to what number controller.
- Note 7. Select only one fieldbus in a controller (CC/DN/PB/EP/PT/ES).



Item		RCX340	
General specifications	Operating temperature	0 to 40°C	
	Storage temperature	-10 to 65°C	
	Operating humidity	35 to 85% RH (no condensation)	
	Noise immunity	Conforms to IEC61000-4-4 Level 3	
	Protective structure	IP20	
	Appliance classes	Class I	
Options	Parallel I/O board	Standard specifications	Dedicated input 8 points, dedicated output 9 points General-purpose input 16 points, general-purpose output 8 points NPN/PNP specifications are selected. (maximum 1 board)
		Expansion specifications	General-purpose input 24 points, general-purpose output 16 points NPN/PNP specifications are selected. (maximum 4 boards)
	Option board	CC-Link board Ver1.1/2.0	Remote I/O
		DeviceNet™ board	Dedicated input/output: 16 points each General-purpose input/output: 96 points each
		EtherNet/IP™ board	
		PROFIBUS board	
		PROFINET board	Remote register
	EtherCAT board	Input/output: 16 words each	
	YC-Link/E board (master/slave)	Communication cycle: 1 ms, control cycle: minimum 1 ms / maximum 8 ms, maximum number of robot units: four units Maximum number of control axes: total 16 axes (including four master controller axes), maximum 12 axes for slaves only	
	YRG (gripper) board	Position detection method: optical rotary encoder, minimum setting distance: 0.01 mm Speed setting: 20 to 100% relative to the maximum parameter speed, number of connected gripper units: maximum four units Drive power: DC 24V +/-10%, 1.0A Max	
Tracking board	Number of connected encoders: maximum two units, supported encoders: 26LS31/26C31 equivalent line driver (RS422 compliant) Encoder power supply: DC5V (2 counter (ch) total 500 mA or less) (supplied from controller)		
iVY2 unit	Camera pixels: maximum 5 million pixels, number of registered models: 254 models, number of connected cameras: maximum two units Power supply: DC24V +/-10% 1.5A Max		
Programming box	PBX, PBX-E		
Absolute battery	3.6V 2750mAh / axis Backup retention time: About 1 year		
Support software for personal computer	RCX-Studio Pro		

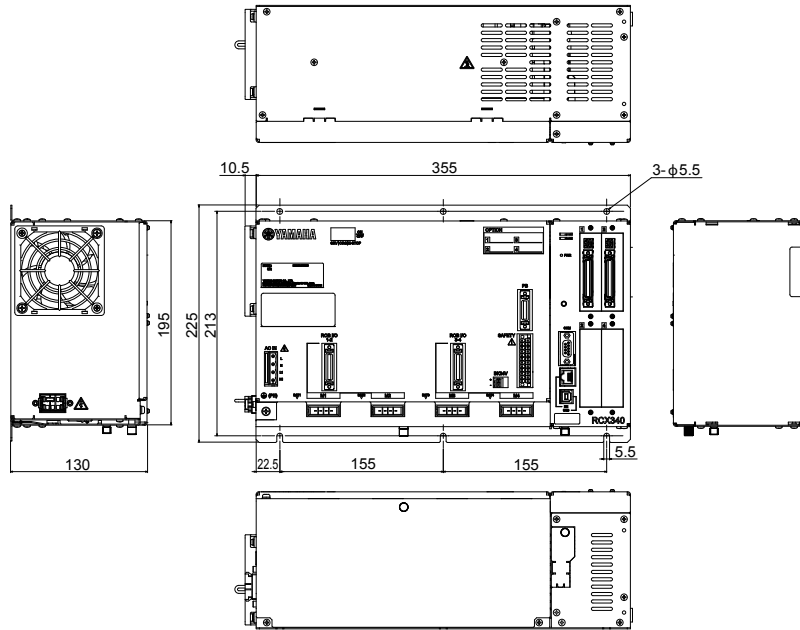
Note. There are four slots in which option boards can be installed.

## YC-Link/E ordering explanation



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single-axis reducer  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
iVY2 Electric gripper  
Option

## ■ Dimensions



## ■ Power supply capacity and heat emission

The required power supply capacity and heat emission will vary depending on the robot type and number of axes.

Using the following table as a general guide consider the required power supply preparation and control panel size, controller installation, and cooling method.

### (1) When connected to SCARA robot

Robot type					Power capacity (VA)	Generated heat amount (W)
Standard type	Clean type	Dust-proof & drip-proof type	Ceiling-mount	Wall-mount / Inverse type		
YK120XG, YK150XG	-	-	-	-	300	58
YK180XG, YK180X YK220X	YK180XC, YK220XC	-	-	-	500	63
YK250XG, YK350XG YK400XG, YK500XGL YK600XGL, YK400XE-4	YK250XCH, YK350XCH YK400XCH, YK250XGC YK350XGC, YK400XGC YK500XGLC, YK600XGLC	YK250XGP, YK350XGP YK400XGP, YK500XGLP YK600XGLP	-	YK300XGS, YK400XGS	1000	75
-	YK500XC, YK600XC	-	-	-	1500	88
YK500XG, YK610XE-10 YK600XG, YK710XE-10 YK700XGL	-	YK500XGP, YK600XGP	-	YK500XGS, YK600XGS	1700	93
-	YK700XC, YK800XC YK1000XC	-	-	-	2000	100
YK600XGH, YK700XG YK800XG, YK900XG YK1000XG, YK1200X	-	YK600XGHP, YK700XGP YK800XGP, YK900XGP YK1000XGP	YK350TW YK500TW	YK700XGS, YK800XGS YK900XGS, YK1000XGS	2500	113

### (2) When connected to 2 axis (Cartesian robot and/or multi-axis robot)

Axial current sensor value <sup>Note</sup>		Power capacity (VA)	Generated heat amount (W)
X axis	Y axis		
05	05	600	65
10	05	800	70
20	05	1100	78
10	10	1000	75
20	10	1300	83
20	20	1700	93

### (3) When connected to 3 axis (Cartesian robot and/or multi-axis robot)

Axial current sensor value <sup>Note</sup>			Power capacity (VA)	Generated heat amount (W)
X axis	Y axis	Z axis		
05	05	05	700	68
10	05	05	900	73
20	05	05	1200	80
10	10	05	1000	75
20	10	05	1300	83
20	20	05	1600	90
10	10	10	1200	80
20	10	10	1500	88
20	20	10	1800	95
20	20	20	2000	100

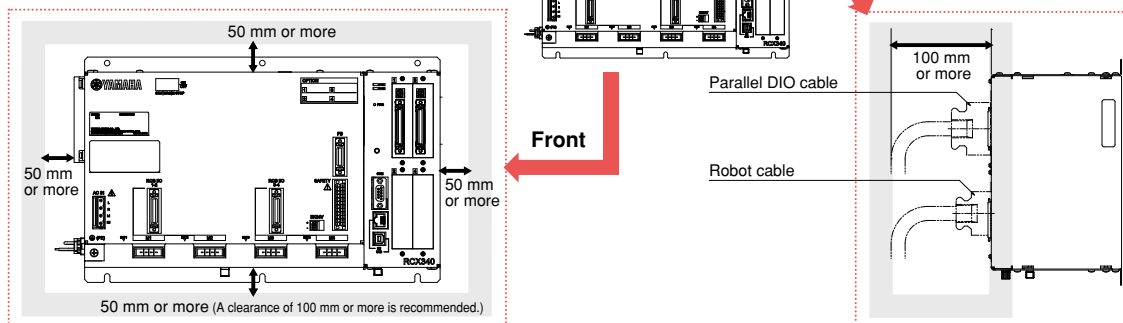
### (4) When connected to 4 axis (Cartesian robot and/or multi-axis robot)

Axial current sensor value <sup>Note</sup>				Power capacity (VA)	Generated heat amount (W)
X axis	Y axis	Z axis	R axis		
05	05	05	05	800	70
10	05	05	05	1000	75
20	05	05	05	1200	80
10	10	05	05	1100	78
20	10	05	05	1400	85
20	20	05	05	1600	90
10	10	10	05	1300	83
20	10	10	05	1500	88
20	20	10	05	1800	95
20	20	20	05	2100	103
10	10	10	10	1400	85
20	10	10	10	1700	93
20	20	10	10	2000	100
20	20	20	10	2200	105
20	20	20	20	2500	113

Note. Even if axial current sensor values for each axis are interchanged no problem will occur.

## Installation conditions

- Use the screws to secure the controller to the installation plate inside the control panel so that it is in a horizontal position. Be sure to use the metallic installation plate.
- Install the RCX340 in a well ventilated location, with space on all sides of the RCX340 (See fig. at right.).
- Ambient temperature : 0 to 40 °C
- Ambient humidity : 35 to 85% RH (no condensation)



## Standard specification I/O connector signal list

Pin	I/O No.	Signal name	Remarks
1	DI 01	Dedicated input: Servo ON input	
2	DI 10	Dedicated input: Sequence control	
3	DI 03	Spare	Do not use.
4	CHK 1	Check signal 1	Short-circuit with CHK2.
5	DI 05	Spare	Do not use.
6	DI 06	Dedicated input: Stop	
7	DI 07	Spare	Do not use.
8	DI 20	General-purpose input 20	
9	DI 21	General-purpose input 21	
10	DI 22	General-purpose input 22	
11	DI 23	General-purpose input 23	
12	DI 24	General-purpose input 24	
13	DI 25	General-purpose input 25	
14	DI 26	General-purpose input 26	
15	DI 27	General-purpose input 27	
16	DO 00	Spare	Do not use.
17	DO 01	Dedicated output CPU OK	
18	DO 10	Dedicated output AUTO mode output	
19	DO 11	Dedicated output Return-to-origin complete	
20	DO 12	Dedicated output Sequence program-in-progress	
21	DO 13	Dedicated output Robot program-in-progress	
22	DO 14	Dedicated output Program reset status output	
23	DO 15	Dedicated output Warning output	
24	DO 16	Spare	Do not use.
25	DO 17	Spare	Do not use.
26	DI 12	Dedicated input: Automatic operation start	
27	DI 13	Spare	Do not use.
28	DI 14	Dedicated input: Return-to-origin (for INC axis)	
29	DI 15	Dedicated input: Program reset input	
30	DI 16	Dedicated input: Alarm reset input	
31	DI 17	Dedicated input: Return-to-origin (for ABS axis)	
32	DI 30	General-purpose input 30	
33	DI 31	General-purpose input 31	
34	DI 32	General-purpose input 32	
35	DI 33	General-purpose input 33	
36	DI 34	General-purpose input 34	
37	DI 35	General-purpose input 35	
38	DI 36	General-purpose input 36	
39	DI 37	General-purpose input 37	
40	CHK 2	Check signal 2	Short-circuit with CHK1.
41	DO 02	Dedicated output: Servo ON output	
42	DO 03	Dedicated output: Alarm output	
43	DO 20	General-purpose output 20	
44	DO 21	General-purpose output 21	
45	DO 22	General-purpose output 22	
46	DO 23	General-purpose output 23	
47	DO 24	General-purpose output 24	
48	DO 25	General-purpose output 25	
49	DO 26	General-purpose output 26	
50	DO 27	General-purpose output 27	

## Expanded specification I/O connector signal list

Pin	I/O No. (ID=1)	I/O No. (ID=2)	I/O No. (ID=3)	I/O No. (ID=4)	Signal name
1	---	---	---	---	Reserved
2	DI 10	DI 40	DI 70	DI 120	General-purpose input 10,40,70,120
3	---	---	---	---	Reserved
4	DI 11	DI 41	DI 71	DI 121	General-purpose input 11,41,71,121
5	---	---	---	---	Reserved
6	---	---	---	---	Reserved
7	---	---	---	---	Reserved
8	DI 20	DI 50	DI 100	DI 130	General-purpose input 20,50,100,130
9	DI 21	DI 51	DI 101	DI 131	General-purpose input 21,51,101,131
10	DI 22	DI 52	DI 102	DI 132	General-purpose input 22,52,102,132
11	DI 23	DI 53	DI 103	DI 133	General-purpose input 23,53,103,133
12	DI 24	DI 54	DI 104	DI 134	General-purpose input 24,54,104,134
13	DI 25	DI 55	DI 105	DI 135	General-purpose input 25,55,105,135
14	DI 26	DI 56	DI 106	DI 136	General-purpose input 26,56,106,136
15	DI 27	DI 57	DI 107	DI 137	General-purpose input 27,57,107,137
16	---	---	---	---	Reserved
17	---	---	---	---	Reserved
18	DO 10	DO 30	DO 50	DO 70	General-purpose output 10,30,50,70
19	DO 11	DO 31	DO 51	DO 71	General-purpose output 11,31,51,71
20	DO 12	DO 32	DO 52	DO 72	General-purpose output 12,32,52,72
21	DO 13	DO 33	DO 53	DO 73	General-purpose output 13,33,53,73
22	DO 14	DO 34	DO 54	DO 74	General-purpose output 14,34,54,74
23	DO 15	DO 35	DO 55	DO 75	General-purpose output 15,35,55,75
24	DO 16	DO 36	DO 56	DO 76	General-purpose output 16,36,56,76
25	DO 17	DO 37	DO 57	DO 77	General-purpose output 17,37,57,77
26	DI 12	DI 42	DI 72	DI 122	General-purpose input 12,42,72,122
27	DI 13	DI 43	DI 73	DI 123	General-purpose input 13,43,73,123
28	DI 14	DI 44	DI 74	DI 124	General-purpose input 14,44,74,124
29	DI 15	DI 45	DI 75	DI 125	General-purpose input 15,45,75,125
30	DI 16	DI 46	DI 76	DI 126	General-purpose input 16,46,76,126
31	DI 17	DI 47	DI 77	DI 127	General-purpose input 17,47,77,127
32	DI 30	DI 60	DI 110	DI 140	General-purpose input 30,60,110,140
33	DI 31	DI 61	DI 111	DI 141	General-purpose input 31,61,111,141
34	DI 32	DI 62	DI 112	DI 142	General-purpose input 32,62,112,142
35	DI 33	DI 63	DI 113	DI 143	General-purpose input 33,63,113,143
36	DI 34	DI 64	DI 114	DI 144	General-purpose input 34,64,114,144
37	DI 35	DI 65	DI 115	DI 145	General-purpose input 35,65,115,145
38	DI 36	DI 66	DI 116	DI 146	General-purpose input 36,66,116,146
39	DI 37	DI 67	DI 117	DI 147	General-purpose input 37,67,117,147
40	---	---	---	---	Reserved
41	---	---	---	---	Reserved
42	---	---	---	---	Reserved
43	DO 20	DO 40	DO 60	DO 100	General-purpose output 20,40,60,100
44	DO 21	DO 41	DO 61	DO 101	General-purpose output 21,41,61,101
45	DO 22	DO 42	DO 62	DO 102	General-purpose output 22,42,62,102
46	DO 23	DO 43	DO 63	DO 103	General-purpose output 23,43,63,103
47	DO 24	DO 44	DO 64	DO 104	General-purpose output 24,44,64,104
48	DO 25	DO 45	DO 65	DO 105	General-purpose output 25,45,65,105
49	DO 26	DO 46	DO 66	DO 106	General-purpose output 26,46,66,106
50	DO 27	DO 47	DO 67	DO 107	General-purpose output 27,47,67,107

Note. The IDs are set using the parameter.

Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSERVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER INFORMATION  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 IVZ Electric gripper  
 Option

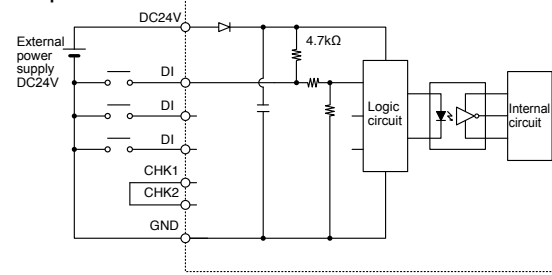


## Standard specification I/O connector pin assignment lists

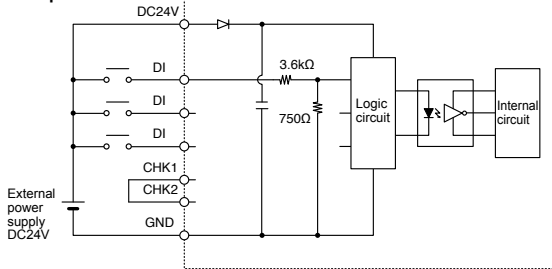
Pin	I/O No.	Name
1	DI01	Servo ON
2	DI10	SEQ enable
3	DI03	(Spare)
4	CHK1	Check input 1
5	DI05	(Spare)
6	DI06	STOP
7	DI07	(Spare)
8	DI20	General-purpose input
9	DI21	General-purpose input
10	DI22	General-purpose input
11	DI23	General-purpose input
12	DI24	General-purpose input
13	DI25	General-purpose input
14	DI26	General-purpose input
15	DI27	General-purpose input
16	DO00	(Spare)
17	DO01	CPUOK
18	DO10	AUTO
19	DO11	ORGOK
20	DO12	SEQRUN
21	DO13	RUN
22	DO14	RESET
23	DO15	WARNING
24	DO16	(Spare)
25	DO17	(Spare)
26	DI12	RUN
27	DI13	(Spare)
28	DI14	ORIGIN (for INC axis)
29	DI15	RESET
30	DI16	ALMRST
31	DI17	ORIGIN(for ABS axis)
32	DI30	General-purpose input
33	DI31	General-purpose input
34	DI32	General-purpose input
35	DI33	General-purpose input
36	DI34	General-purpose input
37	DI35	General-purpose input
38	DI36	General-purpose input
39	DI37	General-purpose input
40	CHK2	Check input 2
41	DO02	SERVO
42	DO03	ALARM
43	DO20	General-purpose output
44	DO21	General-purpose output
45	DO22	General-purpose output
46	DO23	General-purpose output
47	DO24	General-purpose output
48	DO25	General-purpose output
49	DO26	General-purpose output
50	DO27	General-purpose output

## Typical input signal connection

### NPN specifications

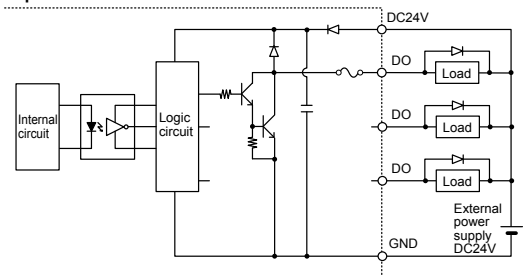


### PNP specifications

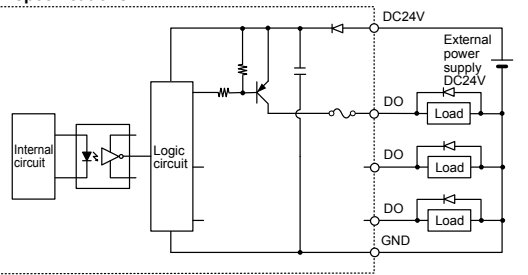


## Typical output signal connection

### NPN specifications



### PNP specifications



## Basic functions

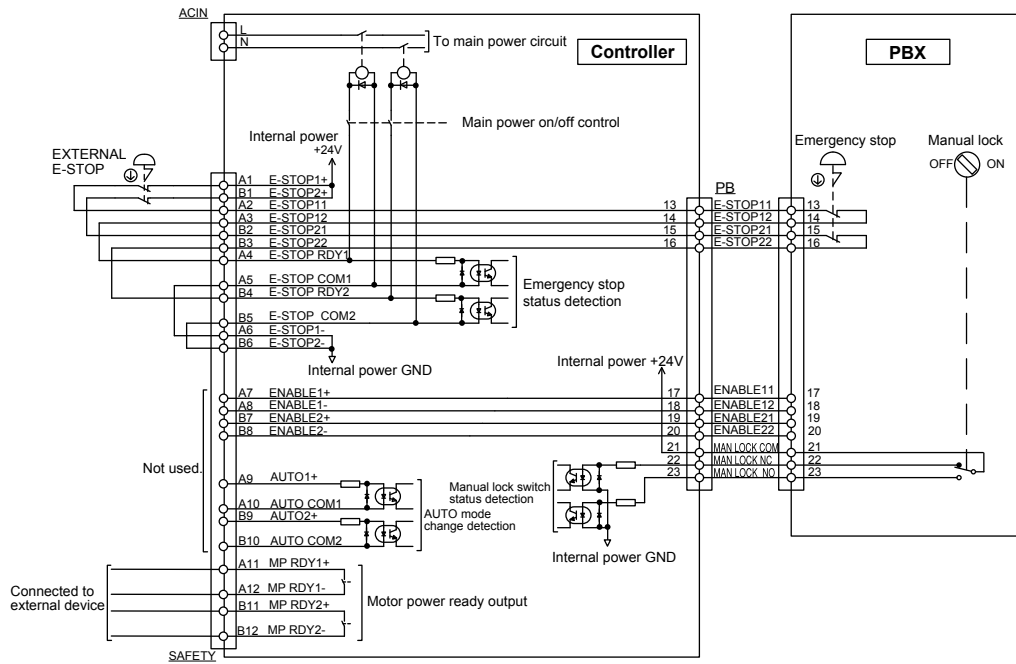
Function	Description
<b>Operation modes</b>	AUTO mode (Major functions: program creation, program execution, step execution, etc.) MANUAL mode (Major functions: jog movement, point data teaching, parameter editing, etc.)
<b>Commands</b>	Array declaration commands (DIM statement) Assignment commands (Numeric assignment, character string assignment, point definition statements, etc.) Movement commands (MOVE, DRIVE, PMOVE statements, etc.) Conditional branching commands (IF, FOR, WHILE statements, etc.) External output commands (DO, MO, LO, TO, SO statements) Parameter commands (ACCEL, OUTPOS, TOLE statements, etc.) Condition wait command (WAIT statement) Task related commands (START, SUSPEND, CUT statements, etc.) etc.
<b>Functions</b>	Arithmetic functions (SIN, COS, TAN functions, etc.) Character string functions (STR\$, LEFT\$, MID\$, RIGHT\$ functions, etc.) Point functions (WHERE, JTOXY, XYTOJ functions, etc.) Parameter functions (ACCEL, OUTPOS, TOLE statements, etc.) etc.
<b>Variables</b>	Simple variables (integer variables, real variables, character variables) Array variables (integer variables, real variables, character variables) Point variables Shift variables I/O variables etc.
<b>Arithmetic operation</b>	Arithmetic operators (+, -, *, /, MOD) Logic operators (AND, OR, XOR) Relational operators (=, <, >, <=>, >=)
<b>Monitor</b>	I/O status monitor (200 ms intervals)
<b>Online commands</b>	Program operation commands (RUN, I/OP, STOP, RESET, STEP, etc.) Utility commands (COPY, ERA, INIT, etc.) Data handling commands (READ, WRITE, etc.) Robot language commands (independent-executable commands)
<b>Data files</b>	Program, point, parameter, shift, hand, all, error history etc.
<b>Internal timer</b>	Timer count variable (TCOUNTER), 1 ms interval
<b>Program break points</b>	Max. 32 points



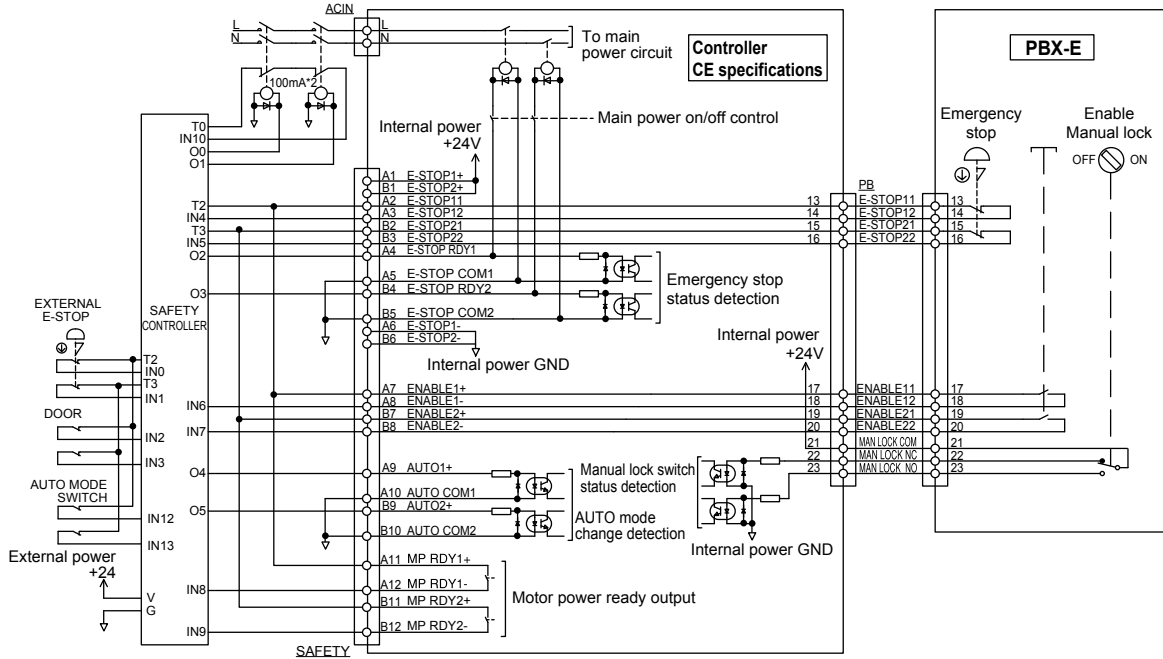
**Emergency input signal connections**

Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis reducer  
**Robonity**  
 Compact single-axis robots  
**TRANSERVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XY-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
**CLEAN**  
**CONTROLLER INFORMATION**  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 I/V2 Electric gripper  
 Option

● Connection example of controller with normal specifications and PBX



● Connection example of controller with CE specifications and PBX-E



## Robot Language Table

### General commands

Command	Description
DIM	Declares the array variable name and the number of elements.
LET	Executes a specified assignment statement.
REM	Expresses a comment statement.

### Arithmetic commands

Command	Description
ABS	Acquires the absolute value of a specified value.
ATN	Acquires the arctangent of the specified value.
ATN2	Acquires the arctangent of the specified X-Y coordinates.
COS	Acquires the cosine value of a specified value.
DEGRAD	Converts a specified value to radians (↔RADDEG).
DIST	Acquires the distance between 2 specified points.
INT	Acquires an integer for a specified value by truncating all decimal fractions.
LSHIFT	Shifts a value to the left by the specified bit count. (↔RSHIFT)
RADDEG	Converts a specified value to degrees. (↔DEGRAD)
RSHIFT	Shifts a value to the right by the specified bit count. (↔LSHIFT)
SIN	Acquires the sine value for a specified value.
SQR	Acquires the square root of a specified value.
TAN	Acquires the tangent value for a specified value.

### Date / time

Command	Description
DATE \$	Acquires the date as a "yy/mm/dd" format character string.
TCOUNTER	Outputs count-up values at 1ms intervals starting from the point when the TCOUNTER variable is reset.
TIME \$	Acquires the current time as an "hh:mm:ss" format character string.
TIMER	Acquires the current time in seconds, counting from midnight.

### Character string operation

Command	Description
CHR \$	Acquires a character with the specified character code.
LEFT \$	Extracts a character string comprising a specified number of digits from the left end of a specified character string.
LEN	Acquires the length (byte count) of a specified character string.
MID \$	Extracts a character string of a desired length from a specified character string.
ORD	Acquires the character code of the first character in a specified character string.
RIGHT \$	Extracts a character string comprising a specified number of digits from the right end of a specified character string.
STR \$	Converts a specified value to a character string (↔VAL).
VAL	Converts the numeric value of a specified character string to an actual numeric value. (↔STR\$)

### Point, coordinates, shift coordinates

Command	Description
CHANGE	Switches the hand of a specified robot.
HAND	Defines the hand of a specified robot.
JTOXY	Converts joint coordinate data to Cartesian coordinate data of a specified robot. (↔XYTOJ)
LEFTY	Sets the hand system of a specified robot to the left-handed system.
LOCx	Specifies/acquires point data for a specified axis or shift data for a specified element.
PATH	Sets the movement path.
Pn	Defines points within a program.
PPNT	Creates point data specified by a pallet definition number and pallet position number.
RIGHTY	Sets the hand system of a specified robot to the right-handed system.
Sn	Defines the shift coordinates within the program.
SHIFT	Sets the shift coordinate for a specified robot by using the shift data specified by a shift variable.
XYTOJ	Converts the point variable Cartesian coordinate data to the joint coordinate data of a specified robot. (↔JTOXY).

### Branching commands

Command	Description
EXIT FOR	Terminates the FOR to NEXT statement loop.
FOR to NEXT	Executes the FOR to NEXT statement repeatedly until a specified value is exceeded.
GOSUB to RETURN	Jumps to a subroutine with the label specified by GOSUB statement, and executes that subroutine.
GOTO	Unconditionally jumps to the line specified by a label.
IF	Allows control flow to branch according to conditions.
ON to GOSUB	Jumps to a subroutine with labels specified by a GOSUB statement in accordance with the conditions, and executes that subroutine.
ON to GOTO	Jumps to label-specified lines in accordance with the conditions.
SELECT CASE to END SELECT	Allows control flow to branch according to conditions.
WHILE to WEND	Controls repeated operations.

### Error control

Command	Description
ERR / ERL	Acquires the error code number of an error which has occurred / the line number where an error occurred.
ON ERROR GOTO	This command allows the program to jump to the error processing routine specified by the label without stopping the program, or it stops the program and displays the error message.
RESUME	Resumes program execution after error recovery processing.

### Program control

Command	Description
CALL	Calls a sub-procedure.
HALT	Stops the program and performs a reset.
HALTALL	Stops and resets all programs.
HOLD	Temporarily stops the program.
HOLDALL	Temporarily stops all programs.
PGMTSK	Acquires the task number in which a specified program is registered.
PGN	Acquires the program number from a specified program name.
SGI	Assigns/acquires the value to a specified integer type static variable.
SGR	Assigns/acquires the value to a specified real type static variable.
SWI	Switches the program being executed, then begins execution from the first line.
TSKPGM	Acquires the program number which is registered in a specified task.

### Task control

Command	Description
CHGPRI	Changes the priority ranking of a specified task.
CUT	Terminates another task currently being executed or temporarily stopped.
EXIT TASK	Terminates its own task which is in progress.
RESTART	Restarts another task during a temporary stop.
START	Specifies the task number and priority ranking of a specified program, and starts that program.
SUSPEND	Temporarily stops another task which is being executed.

### Robot operations

Command	Description
DRIVE	Moves a specified axis of a specified robot to an absolute position.
DRIVEI	Moves a specified axis of a specified robot to a relative position.
MOTOR	Controls the motor power status.
MOVE	Performs absolute movement of all axes of a specified robot.
MOVEI	Performs relative movement of all axes of a specified robot.
MOVET	Performs relative movement of all axes of a specified robot when the tool coordinate is selected.
ORIGIN	Performs return-to-origin.
PMOVE	Executes the pallet movement command of a specified robot.
PUSH	Executes a pushing operation in the axis unit.
SERVO	Controls the servo ON/OFF of a specified axis or all axes of a specified robot.

● **Status acquisition**

Command	Description
ABSRPOS	Acquires the machine reference value for specified robot axes. (Valid only for axes whose return-to-origin method is set as "mark".)
ARMCND	Acquires the current arm status of a specified robot.
ARMSEL	Specifies/acquires the current "hand system" setting of a specified robot.
ARMTYP	Specifies/acquires the "hand system" setting of a specified robot.
CURTQST	Acquires the current torque value ratio of a specified axis to the rated torque.
MCHREF	Acquires the return-to-origin or absolute-search machine reference value for specified robot axes. (Valid only for axes whose return-to-origin method is set as "sensor" or "stroke-end".)
MTRDUTY	Acquires the motor load factor of the specified axis.
PSHRSLT	Acquires the status at the end of the PUSH statement.
PSHSPD	Specifies/acquires the push speed parameter.
PSHTIME	Specifies/acquires the push time parameter.
WAIT ARM	Waits until the axis operation of a specified robot is completed.
WHERE	Reads out the current position of the arm of a specified robot in joint coordinates (pulse).
WHRXY	Reads out the current position of the arm of a specified robot as Cartesian coordinates (mm, degrees).

● **Status change**

Command	Description
ACCEL	Specifies/acquires the acceleration coefficient parameter of a specified robot.
ARCHP1	Specifies/acquires the arch position 1 parameter of a specified robot.
ARCHP2	Specifies/acquires the arch position 2 parameter of a specified robot.
ASPEED	Specifies/acquires the AUTO movement speed of a specified robot.
AXWGHT	Specifies/acquires the axis tip weight parameter of a specified robot.
CHANGE	Switches the hand of a specified robot.
DECEL	Specifies/acquires the deceleration rate parameter of a specified robot.
HAND	Defines the hand of a specified robot.
LEFTY	Sets the hand system of a specified robot to the left-handed system.
ORGORD	Specifies/acquires the axis sequence parameter for performing return-to-origin and an absolute search operation in a specified robot.
OUTPOS	Specifies/acquires the "OUT position" parameter of a specified robot.
PDEF	Defines the pallet used to execute pallet movement commands.
PSHFRC	Specifies/acquires the "Push force" parameter.
PSHJGSP	Specifies/acquires the push judge speed threshold parameter.
PSHMTD	Specifies/acquires the push method parameter.
RIGHTY	Sets the hand system of a specified robot to the right-handed system.
SETGEP	Sets the General Ethernet Port.
SPEED	Changes the program movement speed of a specified robot.
TOLE	Specifies/acquires the tolerance parameter of a specified robot.
WEIGHT	Specifies/acquires the tip weight parameter of a specified robot.

● **PATH control**

Command	Description
PATH	Specifies the PATH motion path.
PATH END	Ends the path setting for PATH motion.
PATH SET	Starts the path setting for PATH motion.
PATH START	Starts the PATH motion.

● **Torque control**

Command	Description
CURTQST	Acquires the current torque value ratio of a specified axis to the rated torque.
CURTRQ	Acquires the current torque value of the specified axis of a specified robot.
PUSH	Executes a pushing operation in the axis unit.
TORQUE	Specifies/acquires the maximum torque command value which can be set for a specified axis of a specified robot.

● **Input/output control**

Command	Description
DELAY	Waits for the specified period (units: ms).
DO	Outputs a specified value to the DO port or acquires the DO status.
LO	Outputs a specified value to the LO port to enable/disable axis movement or acquires the LO status.
MO	Outputs a specified value to the MO port or acquires the MO status.
OUT	Turns ON the bits of the specified output ports and terminates the command statement.
RESET	Turns the bit of a specified output port OFF.
SET	Turns the bit at the specified output port ON.
SI	Acquires a specified SI status.
SID	Acquires a specified serial input's double-word information status.
SIW	Acquires a specified serial input's word information status.
SO	Outputs a specified value to the SO port or acquires the SO status.
SOD	Outputs a specified serial output's double-word information or acquires the output status.
SOW	Outputs a specified serial output's word information or acquires the output status.
TO	Outputs a specified value to the TO port or acquires the TO status.
WAIT	Waits until the conditions of the DI/DO conditional expression are met (with time-out).

● **Communication control**

Command	Description
CLOSE	Close the specified General Ethernet Port.
ETHSTS	Acquires the Ethernet port status.
GEPSTS	Acquires the General Ethernet Port status.
OFFLINE	Sets a specified communication port to the "offline" mode.
ONLINE	Sets the specified communication port to the "online" mode.
OPEN	Opens the specified General Ethernet Port.
SEND	Sends a file.

Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis robot  
**Robonity**  
 Compact single-axis robots  
**TRANSERVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XY-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
**CLEAN**  
**CONTROLLER INFORMATION**  
 Robot positioner  
 Pulse string driver  
**Robot controller**  
 I/Y2 Electric gripper  
 Option

## Accessories and part options

### RCX340



#### Standard accessories

- LCC140
- TS-X
- TS-P
- SR1-X
- SR1-P
- RCX320
- RCX221
- RCX222
- RCX340

#### ● Power connector + wiring connection lever



Model KAS-M5382-00

#### ● Safety connector



Model KCX-M5370-00

- RCX320
- RCX340

#### ● PBX terminator (dummy connector)

Attach this to the PBX connector during operation with the programming box PBX removed.



Model KFR-M5163-00

- RCX320
- RCX221
- RCX222
- RCX340

#### ● NPN / PNP connector



Connector plug model KBH-M4424-00  
Connector shell model KBH-M4425-00

- SR1-X
- SR1-P
- RCX320
- RCX340

#### ● Absolute battery

Battery for absolute data back-up.

##### ● Basic specifications

Item	Absolute battery
Battery type	Lithium metallic battery
Battery capacity	3.6V/2,750mAh
Data holding time	About 1 year (in state with no power applied)
Dimensions	φ17 × L53mm
Weight <sup>Note1</sup>	22g



Model KCA-M53G0-01

Note 1. Weight of battery itself.  
Note. The absolute battery is subject to wear and requires replacement.  
If trouble occurs with the memory then remaining battery life is low so replace the absolute battery. The battery replacement period depends on usage conditions. But generally you should replace the battery after about 1 year counting the total time after connecting to the controller and left without turning on the power.

- RCX320
- RCX340
- TS-SH

#### Important Absolute battery installation conditions

1 batteries are required for each 1 axes.  
● 1 battery.....Data storage time of approximately 6 months (with no power applied)  
Note. No absolute battery is required for the incremental or semi-absolute axis.

#### ● Dust cover for COM connector

Model KR7-M5395-10

- RCX320
- RCX340

#### ● Dust cover for LAN connector

Model KCX-M658K-10

- RCX320
- RCX340

#### ● Dust cover for USB connector

Model KCX-M658K-00

- RCX320
- RCX340

Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSERVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Robot positioner

Pulse string driver

Robot controller

IVY2 Electric gripper

Option

## Options

- External 24V power supply connector for brake + wiring lever



Model	KCX-M6500-10	<b>RCX340</b>
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- Programming box PBX/PBX-E

**P.587**

This device can perform all operations such as manual robot operation, program entry and edit, teaching and parameter settings.



Type	Language	Cable length	Model	<b>RCX320</b>	<b>RCX340</b>
PBX	Japanese	5m	KCX-M5110-1J		
		12m	KCX-M5110-3J		
	English	5m	KCX-M5110-1E		
		12m	KCX-M5110-3E		
PBX-E (with enable switch)	Chinese	5m	KCX-M5110-1C		
		12m	KCX-M5110-3C		
	Japanese	5m	KCX-M5110-0J		
		12m	KCX-M5110-2J		
English	5m	KCX-M5110-0E			
	12m	KCX-M5110-2E			
Chinese	5m	KCX-M5110-0C			
	12m	KCX-M5110-2C			
			Model		
Display language switching USB for PBX			KCX-M6498-00		
USB cable			KCX-M657E-00		

- Support software for PC RCX-Studio Pro

**P.583**

This is support software for operating the RCX340 controller. A USB key is supplied to the RCX-Studio Pro to prevent robot operation mistakes.



**RCX-Studio Pro** Note.  
Note. This software is only downloaded from the website.



USB key (Dongle)

Model	RCX-Studio Pro (USB key)	KCX-M4990-20	<b>RCX320</b>	<b>RCX340</b>
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Note. Although it is possible to install this software on multiple PCs, the functionality is limited if there is no USB key (see table below). Additional USB keys (additional licenses) are available at a special price. Please contact Yamaha for details.

- Environment

OS	Windows XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.2.1.3 or later)
CPU	Intel® Core™ 2 Duo 2 GHz or higher is recommended
Memory	1 GB or more is recommended
Hard disk	80MB or more free space in the RCX-Studio Pro installation destination
Communication port	Communication cable: serial communication port, Ethernet, or USB port USB key: USB port (one port)
Display	1024×768 or higher resolution, 256 colors or higher
Other	CD-ROM drive Dedicated communication cable (for D-Sub or for USB) Ethernet cable (category 5 or higher)
Applicable robot controllers	RCX340

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries. Other company names and product names listed in this manual may be the trademarks or registered trademarks of their respective companies.

### Functional limitations depending on USB key presence

Function	USB key present	USB key absent
Connecting to the controller	○	×
Saving the file data	○	×
Emulator function	○	○
Real Time Trace	○	△ Emulator only
Cycletime Calculator	○	×
iVY2 editor	○	×
Data Difference	○	△ Except data saving

- Data cables

Communication cable for RCX-Studio Pro. Select from USB cable or D-sub cable.



USB

D-Sub

Model	USB type (5m)	KBG-M538F-00	<b>LCC140</b>
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10	<b>ERCD</b>
			<b>SR1-X</b>
			<b>SR1-P</b>
			<b>RCX320</b>
			<b>RCX221</b>
			<b>RCX222</b>
			<b>RCX340</b>

Note. This USB cable supports Windows 2000/XP or later. Note. Data cable jointly used for POPCOM\*, VIP\*, RCX-Studio Pro. Note. USB driver for communication cable can also be downloaded from our website.

- YC-Link/E master board

Model	KCX-M4400-M0	<b>RCX320</b>
		<b>RCX340</b>

- YC-Link/E slave board

Model	KCX-M4400-S0	<b>RCX320</b>
		<b>RCX340</b>

- YC-Link/E cable (1m)

Model	KCX-M6479-10	<b>RCX320</b>
		<b>RCX340</b>



Support software for PC

# TS-Manager

Besides basic functions, such as point data edit and backup, this support software TS-Manager incorporates various convenient functions to efficiently process the system debugging and analysis. The TS-Manager helps you in every scene from the system setup to the maintenance.



▼Applicable controllers

- TS-S2
- TS-SH P.514
- TS-X
- TS-P

---

- TS-SD P.524

■ Features

1 Basic functions

Detailed settings by point, such as the position information, operation pattern, speed, acceleration, and deceleration settings, and robot parameter settings can be set, edited, and backed up. Additionally, the basic operation of the robot, such as JOG movement or inching operation can also be controlled through the TS-Manager.

Only clicking relevant icon will show the operation panel or I/O monitor.

JOG movement, inching operation, and current position acquisition buttons.

Turns ON or OFF the operation point monitoring.

Shows the data in easy-to-read tabular format. Exchanging data with a spreadsheet application, such as Excel is also easy.

Shows the servo or emergency stop status, and operation mode.

Shows the current position at real-time.

Operation panel for servo status, brake ON/OFF, and stop.

Note. Excel is a registered trademark of Microsoft Corporation in the United States and/or other countries.

2 Real-time trace

This function traces the current position, speed, load factor, current value, and voltage value at real-time. Additionally, as trigger conditions are set, data can be automatically obtained when these conditions are satisfied. Furthermore, as a zone is specified from the monitor results, the maximum value, minimum value, and average value can be calculated. These values are useful for the analysis if a trouble occurs.

Real-time traceable items (up to four items)		
• Voltage value	• Commanded position	• Current position
• Command speed	• Current speed	• Internal temperature
• Command current value	• Present current value	• Motor load factor
• Input/output I/O status	• Input pulse count *1	• Movement pulse count *1
• Word input/output status*2		

\*1: Only on TS-SD \*2: Only on TS controllers

Specify a zone for calculation.

Calculates the maximum value, minimum value, average value, and root mean square value in a specified zone.

Traces data at real-time.

3 Various monitor functions and detailed error logs

The robot operation status (operation mode or servo status) and I/O status can be monitored.

Additionally, the Alarm Log screen also displays the input/output I/O status in addition to the carrier position, speed, operation status, current value, and voltage value in case of an alarm. This greatly contributes to the status analysis.

I/O status monitor panel

Detailed status monitor panel

4 Operation simulation

As the operation condition data or point data is input, a period of time necessary for operation is simulated.

Use of this function makes it possible to select an optimal model before purchase and simulate the speed and acceleration/deceleration settings without use of actual machine. It is also possible to link this operation simulation function with the TS-Manager main software. This easily affects the point data you have edited in the actual machine.

Point data list

Operation setting list

Result display list

Displays the detailed simulation results graphically.



## ■ TS-Manager



Model	KCA-M4966-0J (Japanese)
	KCA-M4966-0E (English)

## ■ TS-Manager environment

OS	Windows 2000, XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.1.4.5 or later)
CPU	Exceeding the environment recommended by the OS being used
Memory	Exceeding the environment recommended by the OS being used
Hard disk	Vacant capacity of more than 20MB in the installation destination drive
Communication port	Serial (RS-232C), USB
Applicable controllers	TS series

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

## ■ Data cables (5m)

Communication cable for TS-Manager.  
Select from USB cable or D-sub cable.



- TS-S2
- TS-SH
- TS-X
- TS-P
- TS-SD

Model	USB type (5m)	KCA-M538F-A0
	D-Sub type (5m)	KCA-M538F-01

Note. USB driver for communication cable can also be downloaded from our website.

Articulated robots	YA
Linear conveyor modules	LCM100
Motor-less single axis actuator	Robonity
Compact single-axis robots	TRANSEVO
Single-axis robots	FLIP-X
Linear motor single-axis robots	PHASER
Cartesian robots	XY-X
SCARA robots	YK-X
Pick & place robots	YP-X
CLEAN	
CONTROLLER	
INFORMATION	
Robot positioner	
Pulse string driver	
Robot controller	
iVY2 Electric gripper	
Option	

Support software for PC

# POPCOM+

POPCOM+ is an easy to operate application software that makes tasks such as robot operation, writing-editing programs, and point teaching easy to visually understand.



▼Applicable controllers

LCC-140 **P508**

ERCD **P534**

SR1-X **P540**  
SR1-P

■ Features

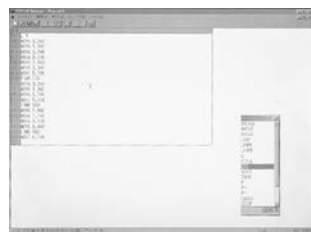
**1 Easy to use**

All items necessary for robot operation are displayed on single screen. There is no need to remember the menu structure so that it can be easily operated with mouse control by anybody.



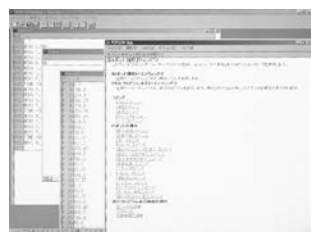
**2 Program editing**

Edit amendment, cut, copy, paste, syntax check and program entry can be performed efficiently with function keys.



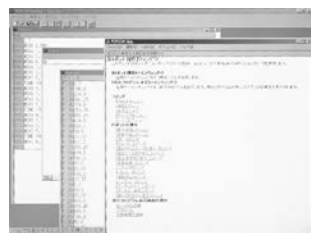
**3 Point editing**

Edit amendment, cut, copy, paste, syntax check, teach and trace functions are provided.



**4 Help function**

If you need some detailed information, robot language etc. during operation, operate [F1] key or [HELP] key to recall useful information on the screen.



**5 Robot operation**

By connecting between a computer and the controller with a communication cable, the controller can control the robot in the same way as a HPB / HPB-D (programming box).

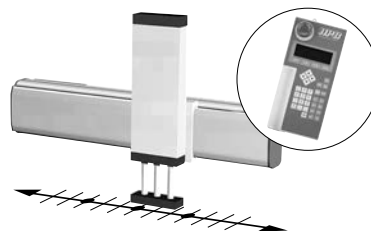


**6 Creating point data**

There are three methods available for creating the point data.

● MDI (Manual Data Input) teaching

The numeric keyboard is used to enter position coordinate data directly.



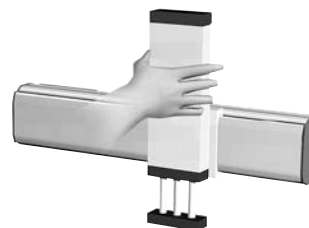
● Remote teaching

The robot arm is actually moved to the target position using the keys for point data registration.



● Direct teaching

The robot arm is manually moved to the target position with the servo motors off for point data registration.



PC supporting software POPCOM+



POPCOM+ software model | KBG-M4966-00

POPCOM+ environment

OS	Windows XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.2.1.1 or later)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk	50MB of available space required on installation drive.
Disk operation	RS-232C
Applicable controllers	SRCX to SR1, DRCX, TRCX, ERCX, ERCD, LCC140 <sup>Note 1</sup>

Note 1. LCC140 is applicable to Ver. 2.1.1 or later.  
 Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

Data cables (5m)

Communication cable for POPCOM+.  
 Select from USB cable or D-sub cable.



	USB	D-Sub
Model	USB type (5m) D-Sub type 9pin-9pin (5m)	KBG-M538F-00 KAS-M538F-10

LCC140	ERCD
SR1-X	SR1-P
RCX320	RCX221
RCX222	RCX340

Note. This USB cable supports Windows 2000/XP or later.  
 Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro.  
 Note. USB driver for communication cable can also be downloaded from our website.

9Pin-25Pin converter adapter

This is an adapter for converting the female D-sub25Pin to a female D-sub9Pin.  
 This adapter is needed if using the ERCX and DRCX.



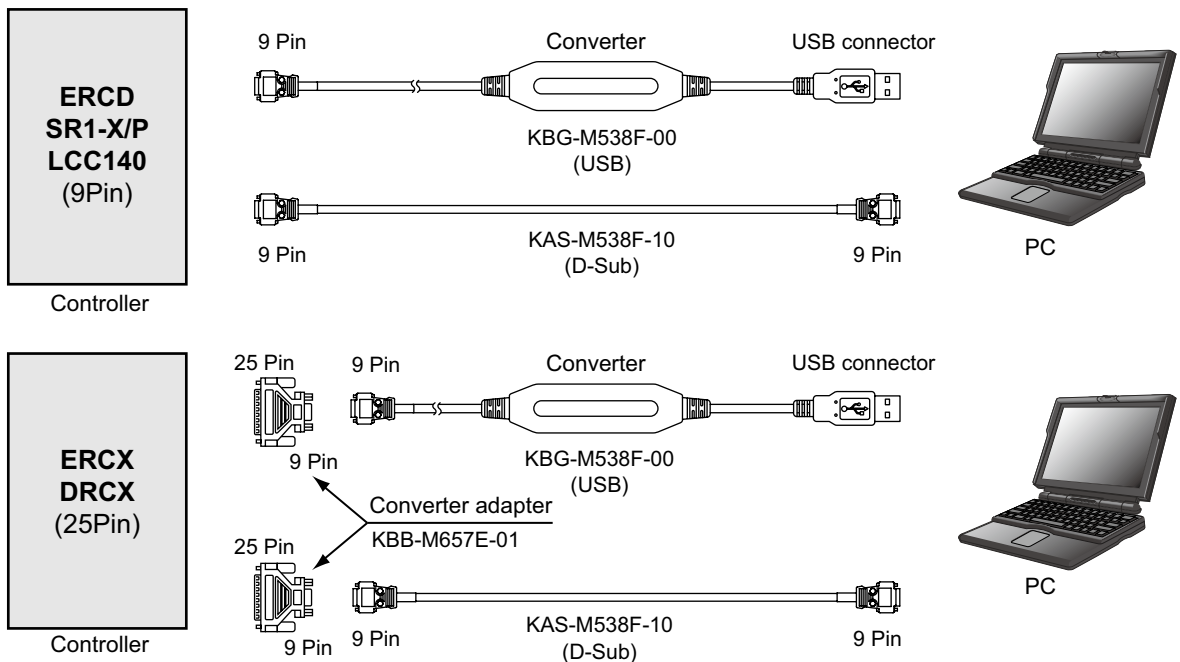
Model | KBB-M657E-01

Note. It is unnecessary when using ERCD or SR1-X, SR1-P.

Controller & data cable / converter adapter matchup table

Controller	ERCD SR1-X/SR1-P LCC140 (9Pin)	ERCX DRCX (25Pin)
Data cables		
[9Pin-9Pin cable] • KAS-M538F-10 (SSC-2-5L)	Needs no converter adapter	9Pin-25Pin converter adapter KBB-M657E-01

Controller and data cable connection diagrams



Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER  
 INFORMATION  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 IVZ Electric gripper  
 Option

## Support software for PC

# VIP+ Windows

Visual Integrated Programming

▼Applicable controllers

RCX221  
RCX222

P.558

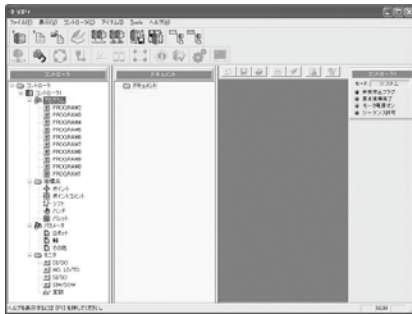
VIP+ is an easy to operate application software that makes tasks such as robot operation, writing-editing programs, and point teaching easy to visually understand.



### Features

#### 1 GUI updated for enhanced usability

The user interface has been improved with the VIP Windows function kept as it is so as to achieve more ease of use.



#### 2 Data displayed in the tree view form

The data included in the controller is displayed legibly.



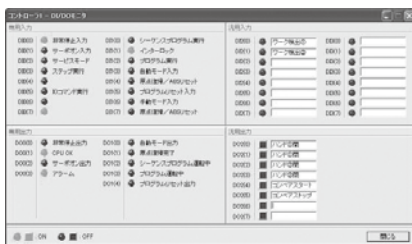
#### 3 Fully equipped tool bar

Each of various functions can be executed by simple one click on the tool bar.



#### 4 Expanded monitor function

The I/O conditions and variables in the controller can be monitored at real time. In the advanced mode, it is also possible to attach any label (Note) to general purpose input/output and others.



Note. The label is stored in PC.

#### 5 Data operation using the new drag & drop function

The data can be stored easily by using the drag & drop function. Likewise, the stored data can be restored to the controller by operating the mouse only.



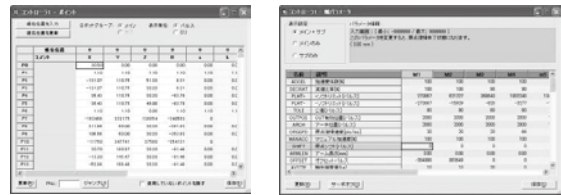
Select the data to be stored.

Drag the selected data to the document window and drop it there.

Specify the file name and this completes the storage procedure.

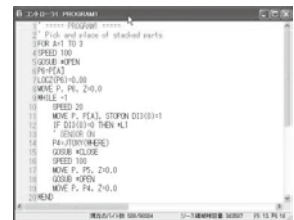
#### 6 Input the data in the work sheet form (Parameter, Point data)

It is also possible to copy and paste the data from the other spread sheet (chart calculation software).



#### 7 Syntax coloring when editing the program

When reserved words (character string reserved as the robot language) are inputted, they are colored automatically, making them noted at one glance for easier program editing.



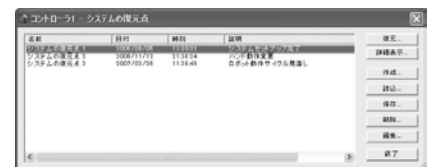
#### 8 Program execution monitor

The step being performed during the program execution can be monitored. Thus, it is possible to check which step is performed without stopping the program, thereby debugging of the program is made much easier.



#### 9 List appointing (point where the system is restored)

It is possible to create the system restoration point at any timing. By doing so at important points in the system constructing process when, for example, something faulty is found after the system was changed, the system can be returned to the state before such change easily.

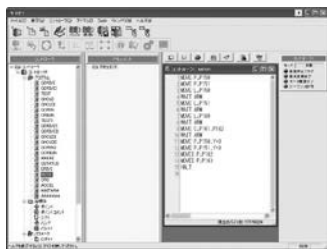


Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
VP-X  
CLEAN  
CONTROLLER  
INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
IVYZ  
Electric gripper  
Option

VIP PLUS function

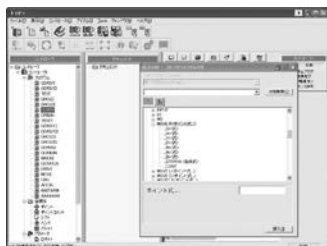
1 Easy to use

With a number of robot operation items provided on one screen, any operator can operate easily without memorizing the menu construction.



2 Programming editing

The program, point, parameter, shift, and hand can be edited on the PC alone. Equipped with the function selector having the command searching function which enables to input the robot language with ease.



3 Data check function

Provided with the equivalent data check function to that of a robot controller, it is possible to correct data errors before operation.



4 Help function

When more information is needed during operation, press the [F1] or [HELP] key, and the help screen will appear.



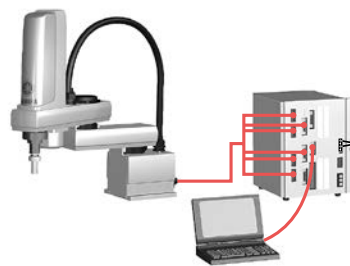
5 Robot operation

By connecting PC and controller with communication cable, robot operation will be available by the on-line command.



6 On-line editing

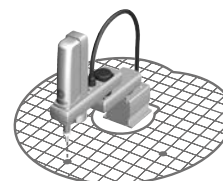
Connecting a PC and the controller with a communication cable enable to edit data from robot controllers just as with RPB / RPB-E.



7 Creating point data There are three methods available for creating the point data.

● MDI (Manual Data Input) teaching

The numeric keyboard is used to enter position coordinate data directly.



● Remote teaching

The robot arm is actually moved to the target position using the keys for point data registration.



● Direct teaching

The robot arm is manually moved to the target position with the servo motors off for point data registration.

Support software for PC VIP+



Model	KX0-M4966-00
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Data cables (5m)

Communication cable for VIP+. Select from USB cable or D-sub cable.



Model	USB type (5m)	KBG-M538F-00
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10

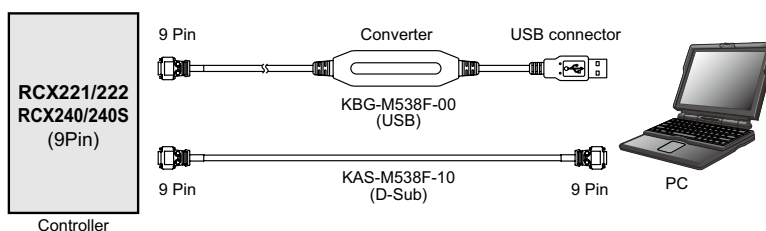
Note. This USB cable supports Windows 2000/XP or later.  
 Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro.  
 Note. USB driver for communication cable can also be downloaded from our website.

Environment

OS	Windows 2000, XP (32bit), Vista, 7, 10 (Supported version: V.2.8.4 or later)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk	40MB of available space required on installation drive.
Communication method	RS-232C, Ethernet Note. For Ethernet communication, Ethernet unit for RCX series controller is required.
Applicable robot controllers	RCX22x / 240

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.  
 Note. ADOBE and ADOBE READER are registered trademarks of Adobe Systems Incorporated.  
 Note. Ethernet is a registered trademark of Xerox Corporation.

Controller and data cable connection diagrams



Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 VP-X  
 CLEAN  
 CONTROLLER  
 INFORMATION  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 IVZ Electric gripper  
 Option



## Option details

### Support software for PC

# RDV-Manager

▼Applicable controllers

RDV-X  
RDV-P

P.528

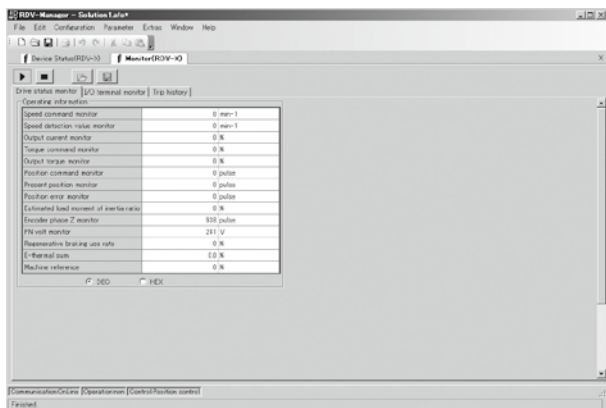
RDV-Manager is software for RDV-X/RDV-P. Using the Windows operating computer, it is possible to set parameters, to monitor the position, speed and torque and to have graphics displayed, assuring pleasant and easy operation in the Windows Vista, Windows 7 or Windows 8 / Windows 8.1 environment.



## Features

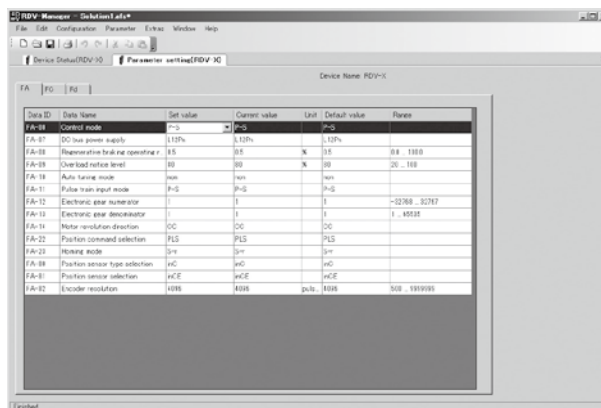
### 1 Monitoring function

It is possible to monitor the operation condition and output state in real time. Additionally, the terminal can be operated forcibly to check the operation.



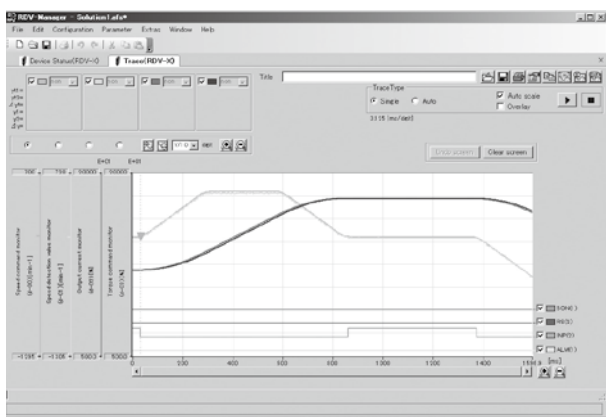
### 2 Setting parameters

It is possible to set, change, print and store the parameters.



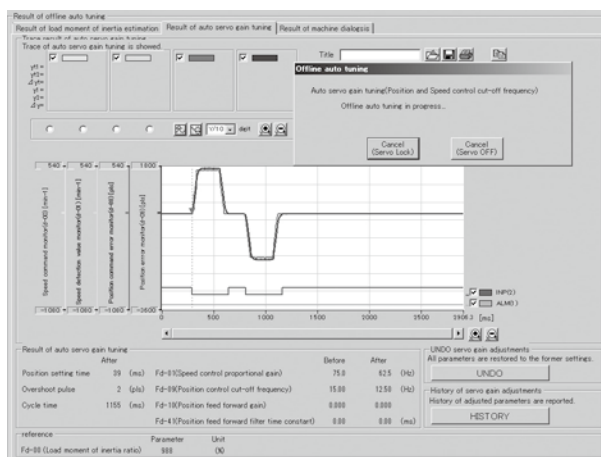
### 3 Operation tracing function

It is possible to have the servo motor speed and electric current displayed in the form of graphics.



### 4 Offline auto tuning function

The load moment of inertia can be estimated and the automatic servo gain can be adjusted.



## Support software RDV-Manager

RDV-Manager is RDV-X / RDV-P dedicated software.



Model KEF-M4966-00

## Environment

OS	Windows Vista SP1 (32bit) Note 1, 7, 8 / 8.1
CPU	Pentium4 1.8GHz or more (Recommend)
Memory	1GB or more
Hard disk	1GB of available space required on installation drive.
Disk operation	USB
Applicable controllers	RDV series

Note 1. SP1 (service pack 1) or higher.

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

## Communication cable for PC supporting software RDV-Manager (3m)

Communication cable to connect PC and a controller.



Model KEF-M538F-00



Support software for PC

# RCX-Studio Pro

▼Applicable controllers	
RCX320	P.548
RCX340	P.566

This is dedicated support software for the RCX320/RCX340 controller. It is a further advance in ease-of-use over the previous RCX-Studio. Emulator functionality is also provided, contributing to full-scale system startup.



## Features

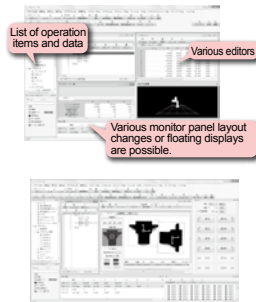
### 1 Evaluation

- **Emulator function provided**  
By operating the controller on a PC, programs can be created and debugged even without a controller. Cycle time can also be calculated, greatly reducing the time for software design.
- **Cycle time calculator**  
Cycle time between two points can be easily calculated in two steps. Choosing a model is easily done; simply select a model and enter the position.



### 2 Design

- **Easy-to-use operation allows speedy setup**  
Program entry support functionality is provided. Program editing and data editing.
- **Inter-operation with other manufacturer's line simulators**  
Software made by other companies can be connected to the emulator of the RCX-Studio Pro, allowing checking for interference between robots in the facility.  
Note. Software made by other companies is provided by the customer.
- **iVY2 editor provided**  
Integration of iVY2 Studio makes it unnecessary to switch between software; this improves productivity.



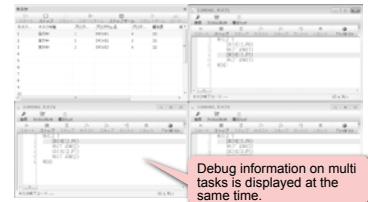
### 3 After installation

- **Realtime trace**  
Continuous output of the controller's internal data allows the status to be checked at any time. Even if no measuring device is present, the current waveform can be obtained for peace of mind.



- **Application debugging function**

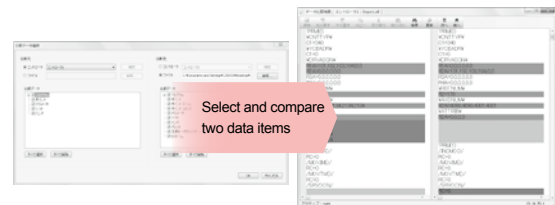
Debugging information for multiple tasks can be displayed simultaneously.



Debug information on multi tasks is displayed at the same time.

### 4 Maintenance

- **Data comparison tool**  
Two specified data items can be compared, and the difference shown. Comparison of entire ALL files and comparison of individual programs is also possible. Direct comparison with online data is also possible, greatly shortening the time required for maintenance tasks.



## RCX-Studio Pro software



USB key (Dongle)

RCX-Studio Pro Note.  
Note. This software is only downloaded from the website.

Model	RCX-Studio Pro (USB key)	KCX-M4990-20
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Note. Although it is possible to install this software on multiple PCs, the functionality is limited if there is no USB key (see P.575). Additional USB keys (additional licenses) are available at a special price. Please contact Yamaha for details.

## Environment

OS	Windows XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.2.1.3 or later)
CPU	Intel® Core™ 2 Duo 2 GHz or higher is recommended
Memory	1 GB or more is recommended
Hard disk	80MB or more free space in the RCX-Studio Pro installation destination
Communication port	Communication cable: serial communication port, Ethernet, or USB port USB key: USB port (one port)
Display	1024×768 or higher resolution, 256 colors or higher
Other	CD-ROM drive Dedicated communication cable (for D-Sub or for USB) Ethernet cable (category 5 or higher)
Applicable robot controllers	RCX320/RCX340

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries. Other company names and product names listed in this manual may be the trademarks or registered trademarks of their respective companies.

## Data cables (5m)

Communication cable for RCX-Studio Pro. Select from USB cable or D-sub cable.



USB



D-Sub

Model	USB type (5m)	KBG-M538F-00
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10

Note. This USB cable supports Windows 2000/XP or later.  
Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro.  
Note. USB driver for communication cable can also be downloaded from our website.

LCC140	ERCD
SR1-X	SR1-P
RCX320	RCX221
RCX222	RCX340

Handy terminal

# HT1/HT1-D



▼Applicable controllers

TS-S2  
TS-SH  
TS-X  
TS-P

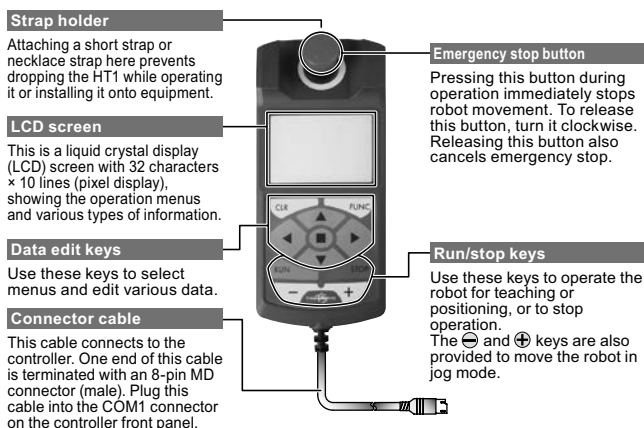
P.514

This Handy Terminal is a device that can perform any operation such as robot manual operation, point data edit, teaching, and parameter setting, etc. Has graphic LCD display with backlight for easy viewing.

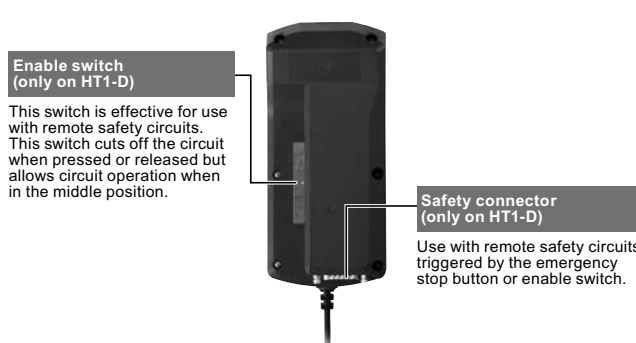
■ HT1 / HT1-D basic specifications

Name		HT1	HT1-D
External view			
Applicable controllers		TS-S2 / TS-SH / TS-X / TS-P	
Model	Japanese specifications	KCA-M5110-0J(3.5m) KCA-M5110-6J(10m)	KCA-M5110-1J(3.5m) KCA-M5110-7J(10m)
	English specifications	KCA-M5110-0E(3.5m) KCA-M5110-6E(10m)	KCA-M5110-1E(3.5m) KCA-M5110-7E(10m)
Display		Dot matrix monochrome display (with backlighting) 32 characters × 10 lines	
Operation keys		Mechanical switch	
Emergency stop button		Normally closed contact point (with lock function)	
Enable switch		-	3-position
Safety connector		-	15 pin D-sub connector (male)
CE marking		Not supported	Applicable
Operating temperature		0°C to 40°C	
Operating humidity		35% to 85%RH (non-condensing)	
Dimensions		W88 × H191 × D45mm (Emergency stop button not included.)	
Weight		260g (not including cable)	300g (not including cable)
Cable length		3.5m / 10m	

■ Part names and function



■ HT1-D rear side





**Programming box**

# HPB/HPB-D


▼Applicable controllers	
LCC140	<b>P.508</b>
ERCD	<b>P.534</b>
SR1-X SR1-P	<b>P.540</b>

All operations can be performed from this device including manual robot operation, programming entry and editing, teaching and setting parameters. The display works interactively with the operator so even an absolute beginner can easily learn how to use programming box.

■ HPB / HPB-D basic specifications


Name		HPB	HPB-D
External view			
Model	Using with ERCD, SR1-X, SR1-P	KBB-M5110-01 (without a conversion adaptor)	KBB-M5110-21 (without a conversion adaptor)
	Using with ERCX, SRCP30, DRCX	KBB-M5110-0A (with a conversion adaptor)	KBB-M5110-2A (with a conversion adaptor)
Display		LCD (20characters × 4 lines)	
Emergency stop button		Normally closed contact point (with lock function)	
Enable switch		-	3-position
CE marking		Not supported	Applicable
Memory back-up device		SD Memory card	
Operating temperature		0°C to 40°C	
Operating humidity		35% to 85%RH (non-condensing)	
Dimensions		W107 × H230 × D53mm (Strap holder, emergency stop button not included.)	
Weight		650g	
Cable length		3.5m	

■ Part names and function



- Emergency stop button**  
Performs a robot emergency stop when pressed during robot operation. Release the button lock (locks when pressed) by turning the button in the CW direction. After releasing the button, a servo recovery must be performed from the HPB (or by I/O operation) in order to recover from the emergency stop status.
- Liquid crystal display**  
This is a 20-character, 4-line LCD screen. The operation menu and other information are displayed here.
- Connector cable**  
Connects the HPB to the controller. A D-Sub 9-pin connector (male) is provided at one end of the cable.
- Strap hole**  
Attaching a short strap or necklace strap here prevents dropping the HPB while operating it or installing it onto equipment.
- SD memory card connector**  
An SD memory card can be inserted here. SD memory cards are provided by the customer.
- Operation keys**  
These keys are used to operate the robot and to enter programs and data, etc. The keys are divided into 2 main groups: function keys and data entry/operation keys. (For operation key details, see Chapter 3, "Basic operations".)

■ HPB-D rear side



- Safety connector (HPB-D only)**  
Use this connector with the emergency stop or enable switch to configure an external safety circuit. Attaching the supplied 15-pin D-sub connector (KS9-M532A-01 female) directly to this safety connector enables the emergency stop button only.
- 3-position enable switch (HPB-D only)**  
This switch is effective for use with an external safety circuit. This switch opens (cuts off) the circuit when pressed or released. Pressing it to mid-position connects the circuit. Use this switch as the enable switch in Service mode, so that the external safety circuit triggers emergency stop on the robot when this switch is pressed or released.

■ A conversion adapter for HPB

The adapter converts from 25 pins to 9 pins. If the HPB was ordered along with a converter adapter then this adapter comes packed along with the unit.



Model	KBB-M657E-01
Note. It is unnecessary when using ERCD or SR1-X, SR1-P.	

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEURO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
IVZ Electric gripper  
Option

**Programming box**

# RPB/RPB-E



▼Applicable controllers

**RCX221**  
**RCX222** **P.558**

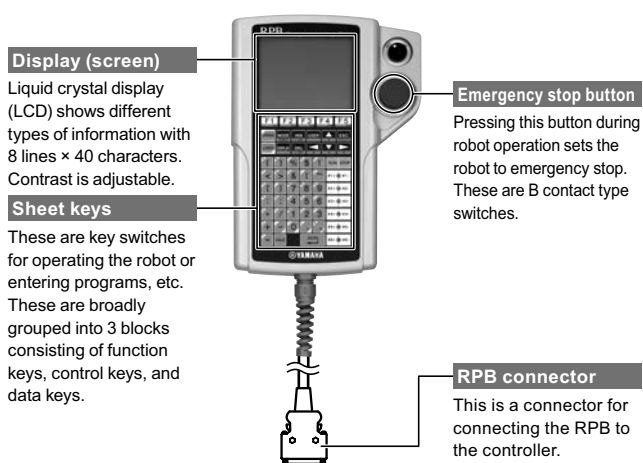
**RCX240**  
**RCX240S** **P.658**

All operations can be performed from this device including manual robot operation, programming entry and editing, teaching and setting parameters. The display works interactively with the operator so even an absolute beginner can easily learn how to use programming box.

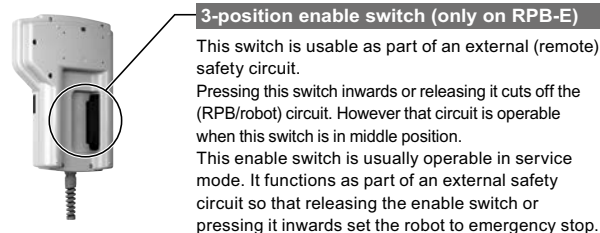
■ RPB / RPB-E basic specifications

Name	RPB	RPB-E
External view		
Applicable controllers	RCX221 / RCX222 / RCX240 / RCX240S	
Model	KBK-M5110-10	KBK-M5110-00
Display	LCD (40characters 8 lines)	
Emergency stop button	Normally closed contact point (with lock function)	
Enable switch	–	3-position
CE marking	Not supported	Applicable
Operating temperature	0°C to 40°C	
Operating humidity	35% to 85%RH (non-condensing)	
Dimensions	W180 × H250 × D50mm (Strap holder, emergency stop button not included.)	
Weight	600g	
Cable length	5m (Standard), 12m (Options)	

■ Part names and function



■ RPB-E rear side



## Programming box

## PBX/PBX-E

## ▼Applicable controllers



RCX320 P.548

RCX340 P.566

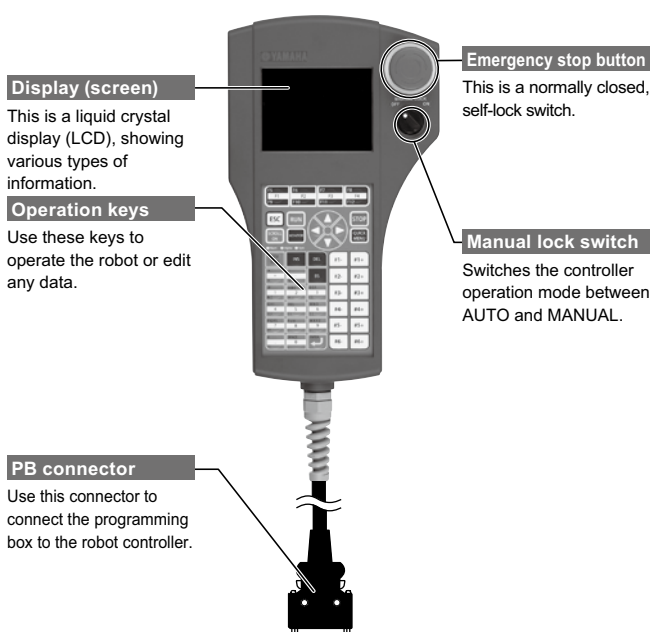
This programming box is applicable to three languages, “Japanese”, “English”, and “Chinese”. Use of a color display makes it possible to improve the visibility. Work to add or edit functions becomes easy, allowing even personnel without programming skill to operate this programming box.

A function to save the controller data into the USB memory is incorporated.

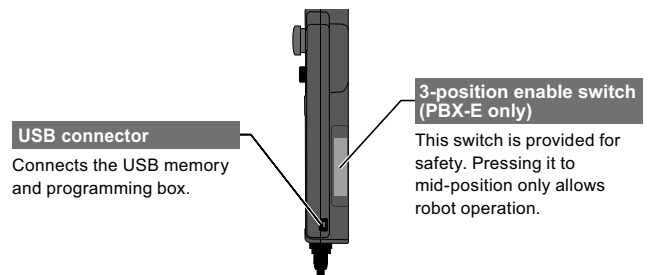
## ■ PBX/PBX-E basic specifications

Name	PBX	PBX-E	
External view			
Applicable controllers	RCX320 / RCX340		
Model	Japanese language model	KCX-M5110-1J (5m) KCX-M5110-3J (12m)	KCX-M5110-0J (5m) KCX-M5110-2J (12m)
	English language model	KCX-M5110-1E (5m) KCX-M5110-3E (12m)	KCX-M5110-0E (5m) KCX-M5110-2E (12m)
	Chinese language model	KCX-M5110-1C (5m) KCX-M5110-3C (12m)	KCX-M5110-0C (5m) KCX-M5110-2C (12m)
Display screen	Color LCD (320 × 240 dot)		
Emergency stop button	Normally-closed contact (with lock function)		
Enable switch	Not provided	3-position type	
Manual lock selector switch	90°, 2-notch		
Power	+12 V DC		
Operating environment	Ambient temperature for use: 0 to 40 °C, Ambient temperature for storage: -10 to 60 °C Humidity: 35 to 80% (no condensation)		
Dimensions (mm)	W141 × H245 × D45 (excluding projecting parts)		
Cable length	5 m or 12 m (Select either)		
Weight	440 g (excluding the cable)	460 g (excluding the cable)	

## ■ Part names and function



## ■ PBX-E rear side



## ■ Display language switching USB for PBX

	Model
Display language switching USB for PBX	KCX-M6498-00
USB cable	KCX-M657E-00



## Option details

### LCD Monitor option

# TS-Monitor

#### ▼Applicable controllers

TS-X  
TS-P

P514



Integrated into the controller unit, the TS-monitor needs no connections to the handy terminal or PC and checks operation status, current position, error information, etc. The TS-monitor even allows the operator on the scene or service personnel to easily check the controller status. Total operating time is also displayed which is convenient to schedule maintenance periods.

Note. The TS-Monitor cannot be installed on the controller when using a daisy-chain connection or when using a gateway connection.

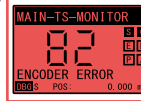
### The TS Monitor Advantage

#### Before installing TS Monitor



Without a handy terminal "HT1" and PC software "TS-Manager", the operator does not know what caused the alarm and it takes a time to find out the cause.

#### After installing TS-Monitor



- Operator instantly knows various information without hooking to a handy terminal or PC.
- During errors the backlit display turns red and operator can see what error occurred on what controller at a glance.
- Display shows total operating time, so scheduling maintenance periods is easy.
- Backlit display is bright and easy to read even on dark panels.

### Features

#### MAIN screen

**Shows basic info**  
Displays optional name or character string.

**Error**

Desired character string specified by the user.

Simple status display  
■ ON / □ OFF

Run mode

Current position  
DBG S POS: 0.000 mm

#### MAIN screen

**Easy to see error messages**  
Red backlit display appears during alarms.

**Alarm occurs.**

Error or warning alarm number

Alarm name

DBG S POS: 0.000 mm

Display	Meaning
S	Servo status
E	Emergency stop
P	Main power failure
O	Return-to-origin completion status
L	Interlock status
A	Alarm

Run mode	Meaning
NRM	Normal mode
MON	Monitor mode
DBG	Debug mode

#### I/O screen

**Shows I/O status**  
Displays input/output bit states.

IN: F E D C B A 9 8  
7 6 5 4 3 2 1 0

OUT: F E D C B A 9 8  
7 6 5 4 3 2 1 0

Input signal status  
\* Displays the status of input bit 0 to 15.

Output signal status  
\* Displays the status of output bit 0 to 15.

Bit signal correspondence table															
	F	E	D	C	B	A	9	8							
IN	SERVO	RESET	START	LOCK	ORG	MANUAL	JOG	JOG+							
	7	6	5	4	3	2	1	0							
OUT	F	E	D	C	B	A	9	8							
	SRV-S	ALM	END	BUSY	OUT3	OUT2	OUT1	OUT0							
	7	6	5	4	3	2	1	0							
	POU17	POU16	POU15	POU14	POU13	POU12	POU11	POU10							

#### INFORMATION screen

**Shows machine info**  
Displays the connected robot and version.

CONT: TS-X-10A  
VER: 1.03.105  
ROBOT: F14-20  
P.TYP: CUSTOM

Controller name

Controller software version

Robot name

Point type

#### STATUS screen

**Shows status info**  
Info such as error status or movement status is all at a glance.

SRV-S □ E-STOP  
ORGSEN □ P-BLK  
TLM-S □ ORG-S  
MOVE □ WARN

Status display  
■ ON, □ OFF

Display	Meaning
SRV-S	Servo status
ORGSEN	Origin sensor
TLM-S	Push status
MOVE	Move status
E-STOP	Emergency stop
P-BLK	Main power failure
ORG-S	Return-to-origin completion status
WARN	Warning output

#### CHECK screen

**Shows operating status**  
Displays total drive distance (helpful for preventive maintenance).

VOLT: 270.0 V  
TEMP: 36 °C  
TIME: 4:01:23  
DIST: 15.827 km

Internal voltage of controller

Temperature inside controller

Total startup time of controller (Day : Hour : Minute)

Total movement distance of robot

#### RUN screen

**Shows operation status and data**  
Info includes position, speed, load factors and run type.

POS: 500.000 mm  
SPD: 600.00 mm/s  
LOAD: 69 %

Run type

Robot current position

Run point

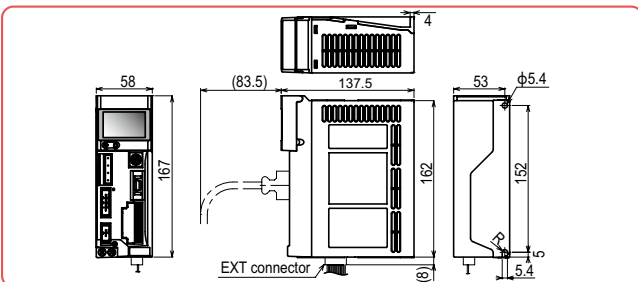
Robot operation speed

Load rate

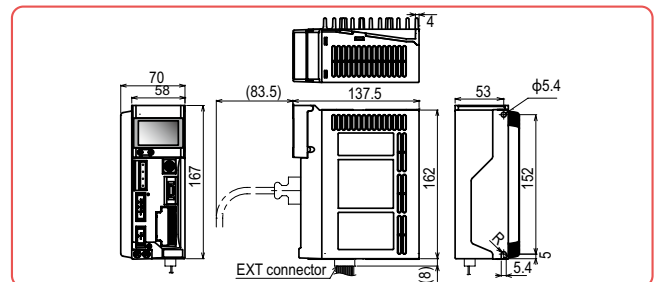
Display	Meaning
HOLD	Servo is off or robot is stopping
ABS	ABS
INC	INC
ABS MERGE	ABS merge operation
INC MERGE	INC merge operation
ABS PUSH	ABS push operation
INC PUSH	INC push operation
ABS-PUSH	ABS deceleration push operation
INC-PUSH	INC deceleration push operation
ORG	Return-to-origin

### TS-X/TS-P dimensions (with TS-Monitor)

#### ● TS-X/TS-P (105/110/205/210) with TS-Monitor



#### ● TS-X/TS-P (220) with TS-Monitor



### TS-Monitor basic specifications

Model	TS-X	KCA-M5119-00
	TS-P	KCA-M5119-10
Effective display size	W40.546 × H25.63mm	
Screen display	Graphic monochrome LCD	

Backlight	Blue and red, 2-color LCD
Contrast adjustment	5 steps
Number of display dots	128 × 64 dots



Touch operator interface

# Pro-face GP4000 series

▼Applicable controllers

**TS-S2**  
**TS-SH**  
**TS-X**  
**TS-P**

**P.514**

Connecting GP4000 Series made by Pro-face to Robot Positioner, TS-S2, TS-SH, TS-X, TS-P enables you to use a lot of functions as well as basic operations on Touch Operator Interface.

Free download of the program file from the Pro-face home page  
<https://www.proface.com>

■ Features

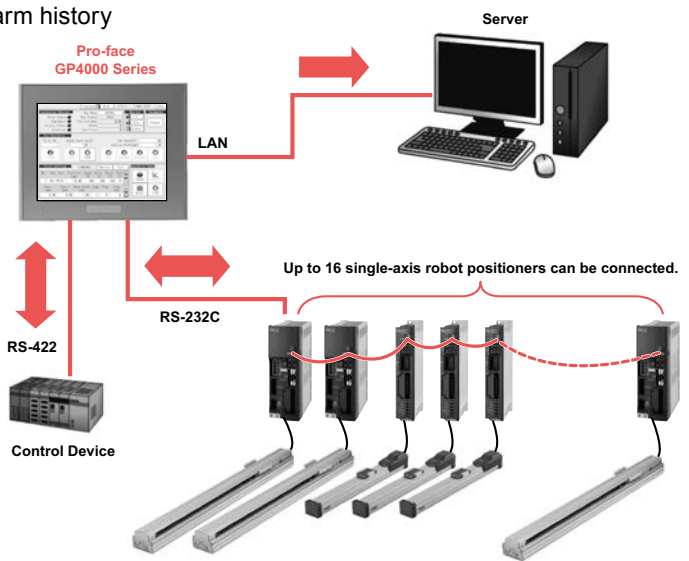
## 1 Can easily check a state and change settings.

- Check the status (the current position, speed etc)
- Basic operations such as Jog operation, inching operation, return to origin, error reset etc.
- Set, edit, or back up point data and parameters
- Check triggered alarms and detailed descriptions of alarm history

## 2 Supports 3 languages

- Supports Japanese, English, and Chinese (simplified, traditional)

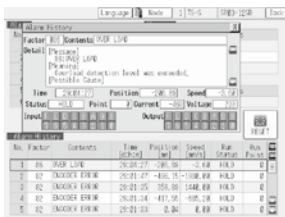
Without opening the control panel, you can check the status and change the settings on Touch Operator Interface alone.



■ Screen details

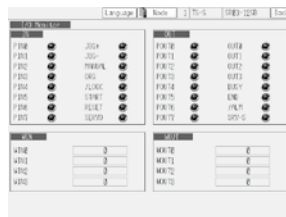
### Diagnostic Screen

When a problem occurs, you can check the detailed descriptions of the alarm history, so you can understand easily what the cause is.



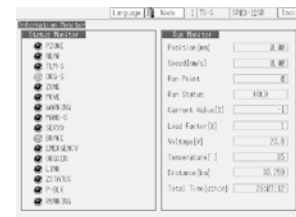
### I/O Monitor Screen

Displays both general I/O and dedicated I/O together. You can quickly check the I/O status.



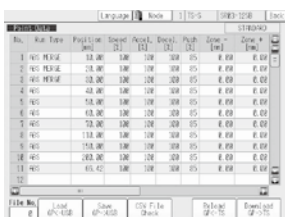
### Information Monitor Screen

The screen can display the robot status and the operation status. You can check immediately the robot condition.



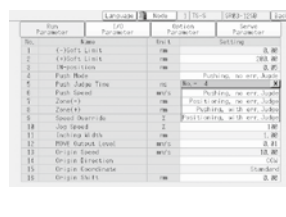
### Position Data Editing Screen

You can edit and back up point data (255 points).  
Note. Settings for it and a USB storage required.



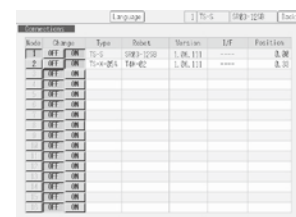
### Parameter Editing Screen

While checking parameters of robot positioners in the list, you can set them with the pull-down menu.



### Connecting Selection Screen

You can connect up to 16 robot positioners simultaneously with GP-Pro EX Ver.3.0 multi-axis feature.



Contact; Pro-face web site (Schneider Electric Japan Holdings Ltd)  
<https://www.proface.com>

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis reducer  
Robinity  
Compact single-axis robots  
TRANSEURO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
Robot positioner  
Pulse string driver  
Robot gripper  
IVZ  
Option

Option details

Field network system with minimal wiring

# NETWORK

## LCC140

Each field path setting file can be downloaded from the website.  
<https://global.yamaha-motor.com/business/robot/download/fieldbus/>

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### CC-Link Basic specifications for network modules

Item	Network modules CC-Link
Applicable controllers	LCC140
CC-Link compatible version	Ver. 1.10
Remote station type	Remove device station
Number of occupied stations	Fixed to 2 stations
Station number	1 to 63 (Set from HPB)
Communication speed	10M/5M/2.5M/625K/156Kbps (Set using HPB or POPCOM+.)
Shortest length between stations	0.2 m or more
Total length	100m/10Mbps, 160m/5Mbps, 4000m/2.5Mbps, 900m/625Kbps, 1200m/156Kbps
Monitor LED	None
CC-Link I/O points	General-purpose input 32 points, General-purpose output 32 points Dedicated input 16 points, Dedicated output 16 points Input register 8 words Output register 8 words

### DeviceNet Basic specifications for network modules

Item	Network modules DeviceNet™
Applicable controllers	LCC140
Applicable DeviceNet™ specifications	Volume 1 Release2.0 Volume 2 Release2.0
DeviceNet™ Conformance test	Compliant with CT24
Device profile / Device type number	Generic Device (keyable) / 2B Hex
Vendor name/Vendor ID	YAMAHA MOTOR CO.,LTD. / 636
Product code	21
Product revision	1.0
EDS file name	Yamaha_LCC1(DEV).eds
MAC ID setting	0 to 63 (Set using HPB or POPCOM+.)
Communication speed setting	500K/250K/125Kbps (Set using HPB or POPCOM+.)
Communication data	Predefined Master/Slave Connection Set: Group 2 only server Dynamic connection support (UCMM): None Support for divided transmission of explicit message: Yes
Network length	Total length: 100m/500Kbps, 250m/250Kbps, 500m/125Kbps Branch length/Total branch length: 6m or less/39m or less, 6m or less/78m or less, 6m or less/156m or less
Monitor LED	None
Number of DeviceNet™ I/O points/ number of occupied channels	General-purpose input 32 points, General-purpose output 32 points Dedicated input 16 points, Dedicated output 16 points Input register 8 words Output register 8 words

### EtherNet/IP Basic specifications for network modules

Item	Network modules EtherNet/IP™
Applicable controllers	LCC140
Applicable software version	LCC140: Ver. 64.07 or higher HPB/HPB-D: Ver. 24.06 or higher POPCOM+: Ver. 2.1.0 or higher
Applicable EtherNet/IP™ specifications	Volume 1: Common Industrial protocol(CIP™) Edition 3.14 Volume 2: EtherNet/IP™ Adaptation of CIP™ Edition 1.15
EtherNet/IP™ Conformance test	Compliant with CT11
Device profile/Device type number	Generic Device (keyable) / 2B Hex
Vendor name/Vendor ID	YAMAHA MOTOR CO.,LTD. / 636
Product code	23
Product revision	1.1
EDS file name	Yamaha_LCC1(EIP2).eds
Communication speed	10Mbps / 100Mbps
Connector specifications	RJ-45 connector (8-pole modular connector), 2 ports
Applicable cable specifications	STP cable (double shield) with CAT 5e or higher
Maximum cable length	100m
Monitor LED	Module Status(MS), Network Status(NS), Link/Activity: Port1-2
Number of EtherNet/IP™ I/O points/ number of occupied channels	General-purpose input 32 points, General-purpose output 32 points Dedicated input 16 points, Dedicated output 16 points Input register 8 words Output register 8 words

## Field network system with minimal wiring

## NETWORK

Each field path setting file can be downloaded from the website.  
<https://global.yamaha-motor.com/business/robot/download/fieldbus/>

## TS-S2/TS-SH/TS-X/TS-P

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### CC-Link Basic specifications for network modules

Item	Network modules CC-Link
Applicable controllers	TS-S2 / TS-SH / TS-X / TS-P
Version supporting CC-Link	Ver. 1.10
Remote node type	Remote device node
Number of occupied nodes	1 node
Node number setting	1 to 64
Communication speed setting	10Mbps, 5Mbps, 2.5Mbps, 625Kbps, 156Kbps
No. of CC-Link inputs/outputs	Input 16 points, Output 16 points
Shortest distance between nodes <sup>Note1</sup>	0.2m or more
Overall extension distance <sup>Note1</sup>	100m/10Mbps, 160m/5Mbps, 400m/2.5Mbps, 900m/625Kbps, 1200m/156Kbps
Monitor LED	L RUN, L ERR, SD, RD

Note 1. These values apply when a cable that supports CC-Link Ver.1.10 is used.

### DeviceNet Basic specifications for network modules

Item	Network modules DeviceNet™	
Applicable controllers	TS-S2 / TS-SH / TS-X / TS-P	
Applicable DeviceNet™ specifications	Volume 1 Release2.0/Volume 2 Release2.0	
Device type	Generic Device (device number 0)	
Number of occupied CH	Input 6ch, Output 6ch	
MAC ID setting	0 to 63	
Communication speed setting	500Kbps, 250Kbps, 125Kbps	
DeviceNet™ inputs/outputs	Input 16 points, Output 16 points	
Network length	Overall extension distance	100m/500Kbps, 250m/250Kbps, 500m/125Kbps
	Branch length	6m or less
	Overall branch length	39m or less/500Kbps, 78m or less/250Kbps, 156m or less/125Kbps
Monitor LED	Module, Network	

### EtherNet/IP Basic specifications for network modules

Item	Network modules EtherNet/IP™
Applicable controllers	TS-S2 / TS-SH / TS-SH / TS-X / TS-P <sup>Note</sup>
Applicable EtherNet/IP™ specifications	Volume1: Common Industrial Protocol (CIP™) Edition 3.8 Volume2: EtherNet/IP™ Adaptation Edition 1.9
Device type	Generic Device (device number 43)
Number of occupied CH	Input 6ch, Output 6ch
Ethernet interface	10BASE-T/100BASE-TX
Network length	100m
Monitor LED	MS, NS, Activity, Link

Note. Supported by controller software version V1.10.121 or later. Necessary parameters can be set with the support tool, HT-1 (V1.13 or later) and TS-Manager (V1.3.3 or later).

### PROFINET Basic specifications for network modules

Item	Network modules PROFINET
Applicable controllers	TS-S2 / TS-SH / TS-X / TS-P <sup>Note</sup>
Network specification conformance	PROFINET IO V2.2
Conformance class	Conformance Class B / IO Device
Input/output data size	Input 6 words, output 6 words
Transmission speed	100Mbps(Auto-negotiation)
Network length	100m
Monitor LED	MS, NS, Activity, Link

Note. Supported by controller software version V1.14.136 or later. Necessary parameters can be set with the support tool, HT-1 (V1.16 or later) and TS-Manager (V1.4.4 or later).

## Field network system with minimal wiring

## NETWORK

## SR1-X/SR1-P

Each field path setting file can be downloaded from the website.  
<https://global.yamaha-motor.com/business/robot/download/fieldbus/>

P.540

### CC-Link Basic specifications for network modules

Item	Network modules CC-Link
Applicable controllers	SR1-X / SR1-P
Version supporting CC-Link	Ver. 1.10
Remote node type	Remote device node
Number of occupied nodes	Two nodes fixed
Node number setting	1 to 63
Communication speed setting	10Mbps, 5Mbps, 2.5Mbps, 625Kbps, 156Kbps
No. of CC-Link I/O <sup>Note1</sup>	General input 32 points, General output 32 points, Dedicated input 16 points, Dedicated Output 16 points
Parallel external I/O (ERCX, SRCP30, DRCX only)	All points usable as parallel external I/O for controller. Each point controllable from master station sequencer (PLC) by emulated serialization, regardless of robot program.
Shortest distance between nodes <sup>Note2</sup>	0.2m or more
Overall length <sup>Note2</sup>	100m/10Mbps, 160m/5Mbps, 400m/2.5Mbps, 900m/625Kbps, 1200m/156Kbps
Monitor LED	RUN, ERR, SD, RD

Note 1. Controller I/Os are updated every 10ms.

Note 2. These values apply when a cable that supports CC-Link Ver 1.10 is used.

### DeviceNet Basic specifications for network modules

Item	Network modules DeviceNet™
Applicable controllers	SR1-X / SR1-P
Applicable DeviceNet™ specifications	Volume 1 Release2.0/Volume 2 Release2.0
Device type	Generic Device (device number 0)
Number of occupied CH	Input 2ch <sup>Note1</sup> , Output 2ch <sup>Note1</sup>
MAC ID setting	0 to 63
Communication speed setting	500Kbps, 250Kbps, 125Kbps
DeviceNet™ I/O <sup>Note2</sup>	General input 16 points <sup>Note3</sup> , General output 16 points <sup>Note3</sup> , Dedicated input 16 points, Dedicated Output 16 points
Parallel external I/O (ERCX, SRCP30, DRCX only)	All points usable as parallel external I/O for controller. Each point controllable from master station sequencer (PLC) by emulated serialization, regardless of robot program.
Network length	Overall length <sup>Note4</sup> Branch length/Overall branch length
Monitor LED	Module, Network

Note 1. Inputs / Outputs are 12ch each when using SR1-P / SR1-X with extension model.

Note 2. Controller I/Os are updated every 10ms.

Note 3. General Inputs / Outputs are 32 each when using SR1-P / SR1-X with extension model.

Note 4. These values apply when a thick cable is used. The distance is less when a fine cable is used or when thick and fine cables are mixed in use.

### PROFIBUS Basic specifications for network modules

Item	Network modules PROFIBUS
Applicable controllers	SR1-X / SR1-P
Communication profile	PROFIBUS-DP slave
Number of occupied nodes	1 node
Setting of station address	0 to 126
Communication speed setting	9.6Kbps, 19.2Kbps, 93.75Kbps, 187.5Kbps, 500Kbps, 1.5Mbps, 3Mbps, 6Mbps, 12Mbps (automatic recognition)
PROFIBUS I/O <sup>Note</sup>	General input 32 points, General output 32 points, Dedicated input 16 points, Dedicated Output 16 points
Parallel external I/O (ERCX / DRCX only)	All points usable as parallel external I/O for controller. Each point controllable from master station sequencer (PLC) by emulated serialization, regardless of robot program.
Overall length	100m/12Mbps, 200m/1.5Mbps, 400m/500Kbps, 1000m/187.5Kbps, 1200m/9.6K · 19.2K · 93.75Kbps

Note. The shortest I/O update interval of the controller is 10ms but the actual I/O update time varies depending on the update time with the master station.

### Ethernet Basic specifications for network modules

Item	Network modules Ethernet
Applicable controllers	SR1-X / SR1-P
Network specification	As specified for Ethernet (IEEE802.3)
Connector specification	RJ-45 connector (8-pole modular connector) 1 port
Baud rate / Communication mode	10Mbps (10BASE-T) / Half Duplex (Half-duplex)
Network protocol	Application layer: TELNET / Transport layer: TCP / Network layer: IP, ICMP, ARP / Data link layer: CSMA/CD / Physical layer: 10BASE-T
Number of simultaneous log inputs	1
Setting of IP address, etc.	Set from HPB / HPB-D
Monitor LED	Run, Collision, Link, Transmit, Receive

## Field network system with minimal wiring

## NETWORK

Each field path setting file can be downloaded from the website.  
<https://global.yamaha-motor.com/business/robot/download/fieldbus/>

**RCX320** **P.548** **RCX221/RCX222** **P.558** **RCX340** **P.566**

## CC-Link Basic specifications for network modules

Item	Network modules CC-Link
Applicable controllers	RCX320 / RCX221 / RCX222 / RCX340
Version supporting CC-Link	Ver. 1.10
Remote station type	Remote device node
Number of occupied stations	Fixed to 4 stations
Station number setting	1 to 61 RCX320/RCX221/RCX222 (Set from the rotary switch on the board) RCX340 (Set from the programming box or support software)
Communication speed setting	10Mbps, 5Mbps, 2.5Mbps, 625Kbps, 156Kbps (set from the Rotary switch on board)
No. of CC-Link I/O <sup>Note1</sup>	General input 96 points, General output 96 points, Dedicated input 16 points, Dedicated output 16 points
Parallel external I/O <sup>Note2</sup>	A function that simulates serial communication enables individual control of the various points from a master sequencer, regardless of the robot program.
Shortest distance between nodes <sup>Note3</sup>	0.2 m or more
Overall length <sup>Note3</sup>	100m/10Mbps, 150m/5Mbps, 200m/2.5Mbps, 600m/625Kbps, 1200m/156Kbps
Monitor LED	RUN, ERR, SD, RD

Note 1. In case of RCX320/RCX221/RCX222, the controller I/Os are updated every 10ms.

For RCX 340, the controller I/Os are updated every 5ms for the shortest. The actual update time changes depending on the communication cycle of the master unit.

Note 2. With RCX 141/142, the exclusive input of the parallel I/O cannot be used other than the interlock input. With RCX221 / 222, the exclusive input of the parallel I/O cannot be used. (The interlock input terminal is located on the SAFETY connector side.)

Note 3. These values apply when a cable that supports CC-Link Ver.1.10 is used.

## DeviceNet Basic specifications for network modules

Item	Network modules DeviceNet™
Applicable controllers	RCX320 / RCX221 / RCX222 / RCX340
Applicable DeviceNet™ specifications	Volume 1 Release2.0 / Volume 2 Release2.0
Device Profile Name	Generic Device (device number 0)
Number of occupied CH <sup>Note1</sup>	Normal: Input/output 24ch each, Compact: Input/output 2ch each
MAC ID setting	0 to 63
Transmission speed setting	500Kbps, 250Kbps, 125Kbps (set using DIP switch on board)
DeviceNet™ I/O <sup>Note2</sup>	Normal: General input 96 points, General output 96 points, Dedicated input 16 points, Dedicated output 16 points Compact: General input 16 points, General output 16 points, Dedicated input 16 points, Dedicated output 16 points
Parallel external I/O <sup>Note3</sup>	The master module and up to four ports can be controlled regardless of the robot program by using the pseudoserialization function.
Network length	Overall length <sup>Note4</sup> : 100m/500Kbps, 250m/250Kbps, 500m/125Kbps Branch length / Overall branch length: 6m max./39m max., 6m max./78m max., 6m max./156m max.
Monitor LED	MS (Module Status), NS (Network Status)

Note 1. Use the robot parameter to select Normal or Compact. However, with the controllers earlier than Ver.9.08 of RCX221 / 222, this selection is not available and the setting remains the same as Normal.

Note 2. In case of RCX320/RCX221/RCX222, the controller I/Os are updated every 10ms.

For RCX 340, the controller I/Os are updated every 5ms for the shortest. The actual update time changes depending on the communication cycle of the master unit.

Note 3. With RCX221 / 222, the exclusive input of the parallel I/O cannot be used. (The interlock input terminal is located on the SAFETY connector side.)

Note 4. These values apply when a thick cable is used. The distance is less when a fine cable is used or when thick and fine cables are mixed in use.

## PROFIBUS Basic specifications for network modules

Item	Network modules PROFIBUS
Applicable controllers	RCX320 / RCX221 / RCX222 / RCX340
Communication profile	PROFIBUS-DP slave
Number of occupied nodes	1 node
Setting of station address	1 to 99 (set using Rotary switch on board)
Setting of communication speed	9.6Kbps, 19.2Kbps, 93.75Kbps, 187.5Kbps, 500Kbps, 1.5Mbps, 3Mbps, 6Mbps, 12Mbps (automatic recognition)
PROFIBUS I/O <sup>Note1</sup>	General input 96 points, General output 96 points, Dedicated input 16 points, Dedicated output 16 points
Parallel external I/O <sup>Note2</sup>	The master module and up to four ports can be controlled regardless of the robot program by using the pseudoserialization function.
Overall length	100m/3M-6M-12Mbps, 200m/1.5Mbps, 400m/500Kbps, 1000m/187.5Kbps, 1200m/9.6K-19.2K-93.75Kbps
Monitor LED	RUN, ERR, SD, RD, DATA-EX

Note 1. In case of RCX320/RCX221/RCX222, the shortest I/O update interval of the controller is 10ms but the actual I/O update time varies depending on the update time with the master station.

For RCX 340, the controller I/Os are updated every 5ms for the shortest. The actual update time changes depending on the communication cycle of the master unit.

Note 2. With RCX221 / 222, the exclusive input of the parallel I/O cannot be used. (The interlock input terminal is located on the SAFETY connector side.)

## Ethernet Basic specifications for network modules

Item	Network modules Ethernet
Applicable controllers	RCX320 / RCX340
Network specification	As specified for Ethernet (IEEE802.3)
Connector specification	RJ-45 connector (8-pole modular connector) 1 port
Baud rate	10Mbps (10BASE-T)
Communication mode	Half Duplex (Half-duplex)
Network protocol	Application layer: TELNET / Transport layer: TCP / IP Network layer: IP, ICMP, ARP / Data link layer: CSMA/CD / Physical layer: 10BASE-T
Number of simultaneous log inputs	1
Setting of IP address, etc.	Set from RPB
Monitor LED	Run, Collision, Link, Transmit, Receive

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
Robot positioner  
Pulse string driver  
Robot controller  
IVZ  
Electric gripper  
Option



## Option details

### Field network system with minimal wiring

# NETWORK

Each field path setting file can be downloaded from the website.  
<https://global.yamaha-motor.com/business/robot/download/fieldbus/>

# RCX320 P.548 RCX340 P.566

## EtherNet/IP™ Basic specifications for network modules

Item	Network modules EtherNet/IP™		
Controller model	RCX320 / RCX340		
Network specifications	Conforms to Ethernet (IEEE 802.3).		
Applicable EtherNet/IP™ specifications	Volume 1 : Common Industrial protocol (CIP™) Edition 3.14 Volume 2 : EtherNet/IP™ Adaptation Edition 1.15		
Device type	Generic Device (Device No. 43)		
Data size	48 bytes each for input/output		
Transmission speed	10 Mbps/100 Mbps		
Connector specifications	RJ-45 connector (8-pole modular connector) 2 port		
Cable specifications	Refer to "2.1 LAN cable" in Chapter 2 of this user's manual.		
Max. cable length	100 m		
EtherNet/IP™ input/output points <small>Note</small>	Input (48 bytes in total)	byte 0-3	Dedicated word input : 2 words
		byte 4-31	General purpose word input : 14 words
	Output (48 bytes in total)	byte 32-33	Dedicated bit input : 16 points
		byte 34-47	General-purpose bit input : 96 points
EtherNet/IP™ input/output points <small>Note</small>	Input (48 bytes in total)	byte 0-3	Dedicated word output : 2 words
		byte 4-31	General-purpose word output : 14 words
	Output (48 bytes in total)	byte 32-33	Dedicated bit output : 16 points
		byte 34-47	General-purpose bit output : 96 points
Parallel external input	Regardless of the robot program, the master module and up to four ports can be controlled using the emulated serialization function.		
Settings, such as IP address	The settings are made with the programming box (PBX) or RCX-Studio Pro.		
Monitor LEDs	Network Status, Module Status		

Note. The controller I/Os are updated every 5ms for the shortest. The actual update time changes depending on the communication cycle of the master unit.

## PROFINET® Basic specifications for network modules

Item	Network modules PROFINET		
Applicable controllers	RCX320 / RCX340		
Supported software versions	RCX320 / RCX340 : V1.21 or later PBX/PBX-E : V1.08 or later RCX-Studio : V1.0.1 or later RCX-Studio Pro : V2.0.0 or later		
Network specification conformance	PROFINET IO V2.2		
Conformance class	Conformance Class B / IO Device		
Vendor Name / Vendor_ID	YAMAHA MOTOR CO.,LTD. / 0x02D5		
Station Type / Device_ID	YAMAHA RCX3 PROFINET / 0x0001		
Product revision	1.00		
Transmission speed	100 Mbps (Auto-negotiation)		
Connector specifications	RJ-45 connector (8-pole modular connector) 2 ports		
Conforming cable specifications	CAT 5e or higher STP cable (double shield)		
Max. cable length	100 m		
Monitor LEDs	Module Status(MS), Network Status(NS), Link/Activity:Port1-2		
Input/output data size <small>Note</small>	Input : 48bytes	Dedicated word input 2 words (4 bytes)	
		General-purpose word input 14 words (28 bytes)	
		Dedicated bit input 16 bits (2 bytes)	
		General-purpose bit input 96 bits (12 bytes)	
	Output : 48bytes	Reserved area 2 bytes	
		Dedicated word output 2 words (4 bytes)	
		General-purpose word output 14 words (28 bytes)	
		Dedicated bit output 16 bits (2 bytes)	
Output : 48bytes	General-purpose bit output 96 bits (12 bytes)		
	Reserved area 2 bytes		

Note. The controller I/Os are updated every 5ms for the shortest. The actual update time changes depending on the communication cycle of the master unit.



## Field network system with minimal wiring

## NETWORK

Each field path setting file can be downloaded from the website.  
<https://global.yamaha-motor.com/business/robot/download/fieldbus/>

# RCX320 P.548 RCX340 P.566

## EtherCAT® Basic specifications for network modules

Item	Network modules EtherCAT	
Applicable controllers	RCX320 / RCX340	
Supported software versions	RCX320 / RCX340 : V1.62 or later PBX/PBX-E : V1.13 or later RCX-Studio Pro : V2.1.9 or later	
ESI file name	YAMAHA RCX340 EtherCAT 1_00.xml	
Transmission speed	100 Mbps (Auto-negotiation)	
Connector specifications	RJ-45 connector (8-pole modular connector) 2 ports	
Conforming cable specifications	CAT 5e or higher STP cable (double shield)	
Max. cable length	100 m	
Monitor LEDs	RUN, ERROR, Link/Activity:Port1-2	
Input/output data size <small>Note</small>	Input : 48bytes	Dedicated word input 2 words (4 bytes)
		General-purpose word input 14 words (28 bytes)
		Dedicated bit input 16 bits (2 bytes)
		General-purpose bit input 96 bits (12 bytes)
		Reserved area 2 bytes
	Output : 48bytes	Dedicated word output 2 words (4 bytes)
		General-purpose word output 14 words (28 bytes)
		Dedicated bit output 16 bits (2 bytes)
		General-purpose bit output 96 bits (12 bytes)
		Reserved area 2 bytes

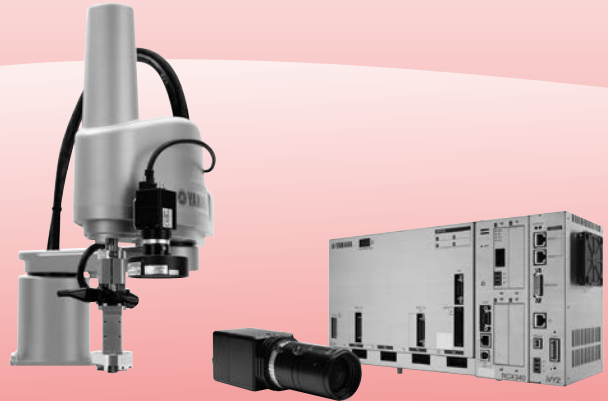
Note. The controller I/Os are updated every 5ms for the shortest. The actual update time changes depending on the communication cycle of the master unit.

# iVY2 System

Applicable controllers ▶ RCX320 / RCX340

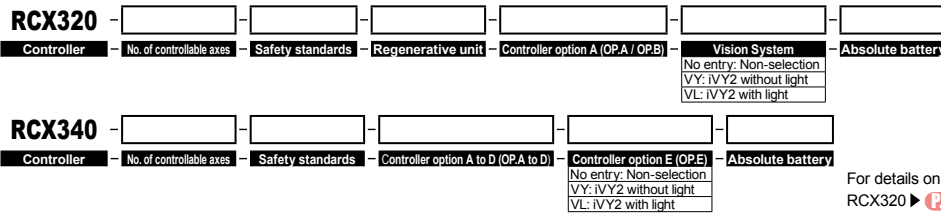
● Robot with image processing functions

**Integrated Robot Vision System with “plug-and-play” simplicity.**  
**Basic specifications have been dramatically enhanced while retaining the current iVY system’s ease of use.**



Main functions ▶ P.78

■ Ordering method



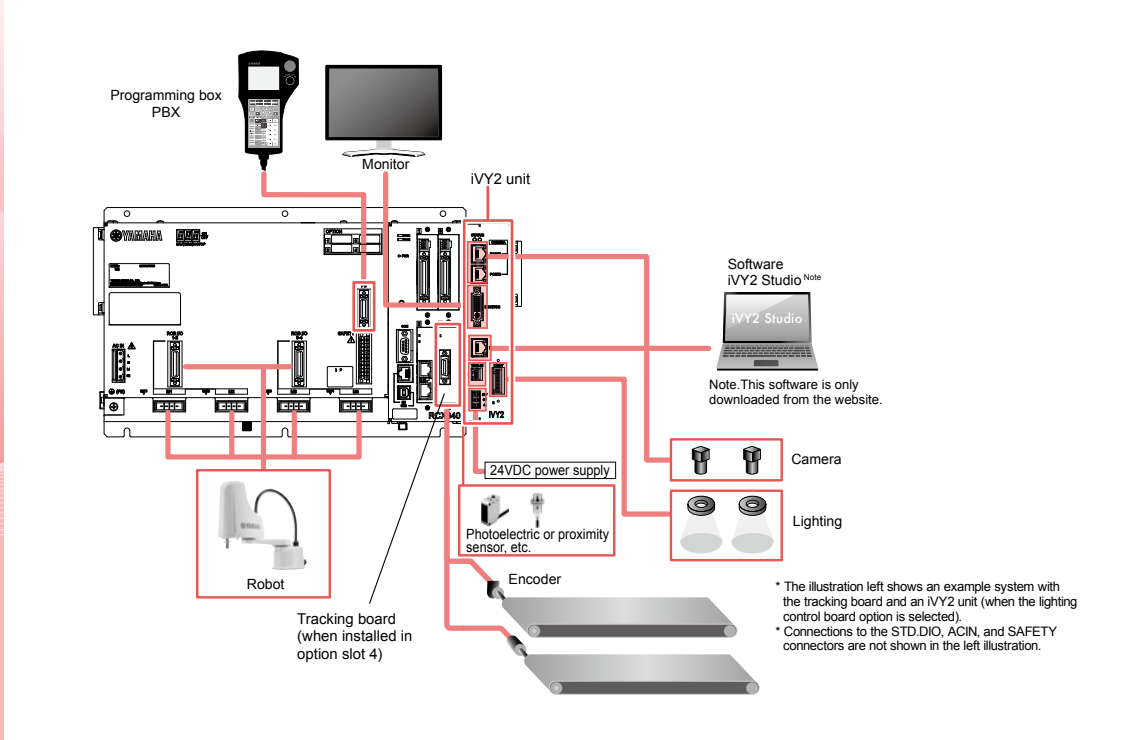
For details on the various selection items  
 RCX320 ▶ P.548 RCX340 ▶ P.566

■ Basic specifications

● Robot vision basic specifications

Item		iVY2 unit
Basic specifications	Applicable controllers	RCX320 / RCX340
	Number of screen pixels	648(H) × 494(V) (300,000 pixels, VGA) 1280(H) × 966(V) (1,300,000 pixels, SXGA) 1624(H) × 1236(V) (2,000,000 pixels, UXGA) 2592(H) × 1944(V) (5,000,000 pixels, QSXGA)
	Model setting capacity	254 models
	Number of connectable cameras	Max. 2 cameras
	Connectable camera	GigE camera (VGA, SXGA, UXGA) PoE: IEEE802.3af 1 ch up to 7W
	External interface	Ethernet (1000BASE-T) Note. For setting and monitor operations
	External monitor output	DVI-I Note. Also usable with an analog monitor by using a conversion adaptor. Monitor resolution: 1024 × 768
	Power supply	DC24V +/-10% 1.5A Max.
	Dimensions	W45 × H195 × D130 (iVY2 unit only)
	Weight	0.8kg (iVY2 unit only, when the lighting control board option is selected)
Search method	Edge search (correlated edge filter, Sobel filter)	
Image capturing	Trigger mode	S/W trigger, H/W trigger
	External trigger input	2 points
Function	Position detection, automatic point data generation	
Camera installation position	Fixed to the fixed camera (up, down) or robot (Y-axis, Z-axis). Perpendicular to the workpiece to be captured.	
Setting support function	Calibration, image save function, model registration <sup>Note</sup> , fiducial mark registration <sup>Note</sup> , monitor function <sup>Note</sup> Note. iVY2 Studio function (requires a Windows PC)	
Lighting control options	Number of connectable lighting units	Max. 2 lighting units
	Modulated light format	PWM modulated light control (0 to 100%), PWM frequency switchable 62.5 kHz/125 kHz Continuous light, strobe light (follows camera exposure)
	Lighting power input	12VDC or 24VDC (external supply shared by both channels)
	Lighting output	For 12VDC supply: Total of less than 40W for both channels. For 24VDC supply: Total of less than 80W for both channels.

## System configuration illustration

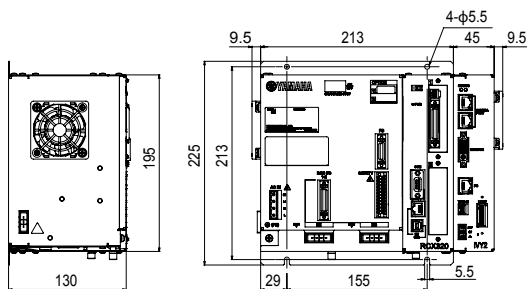


## Tracking board basic Specifications

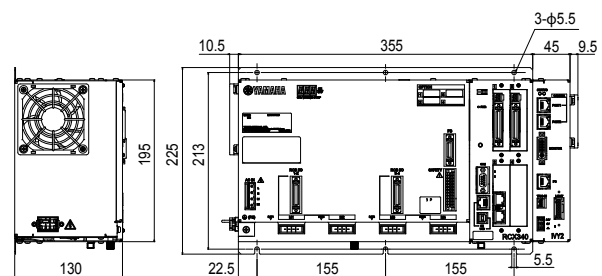
Item		Tracking board
Basic specifications	Applicable controllers	RCX320 / RCX340
	Number of connected encoders	Up to 2 units.
	Encoder power supply	5VDC (2 counters total 500 mA or less) (Supplied from controller)
	Applicable encoder	26LS31/26C31 or equivalent line driver (RS-422 compliance).
	Input phase	A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$
	Max. response frequency	2MHz or less
	Counter	0 to 65535
	Multiplier	4x
Other	With disconnection detection function	

## Dimensional outlines

### RCX320+iVY2



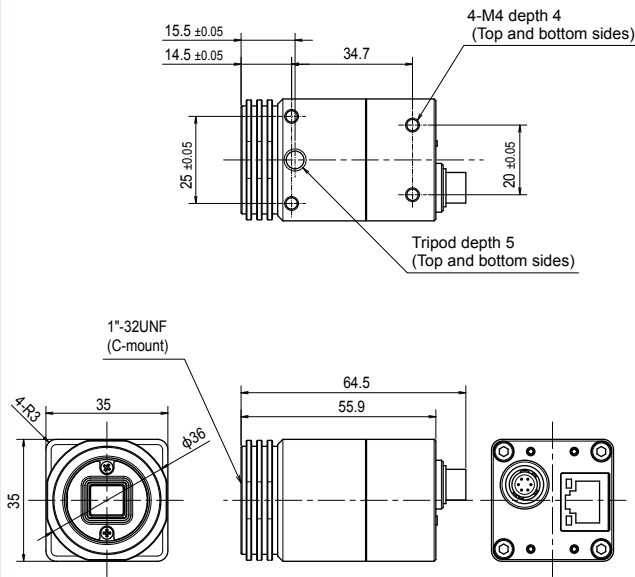
### RCX340+iVY2



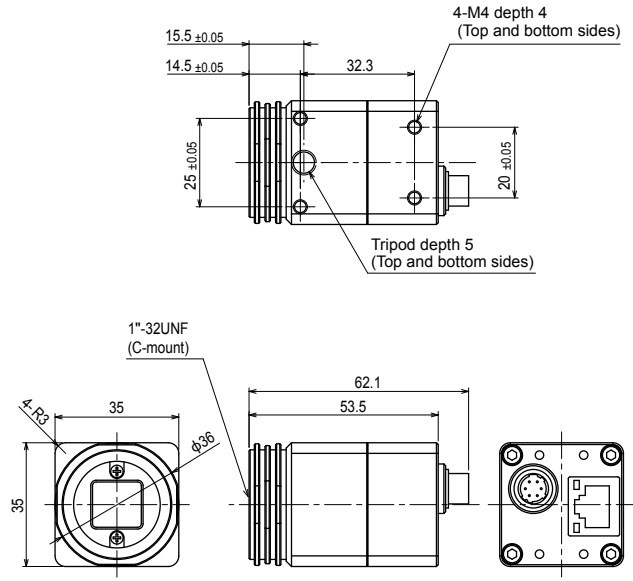
Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis actuator  
**Robonity**  
 Compact single-axis robots  
**TRANSERVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XY-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
**CLEAN**  
**CONTROLLER**  
**INFORMATION**  
 Robot positioner  
 Pulse string driver  
 Robot controller  
**iVY2**  
 Option

## Dimensional outlines

### ● CCD camera (300,000 pixels • 1,300,000 pixels • 2,000,000 pixels)

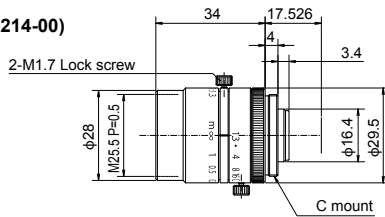


### ● CMOS camera (5,000,000 pixels)

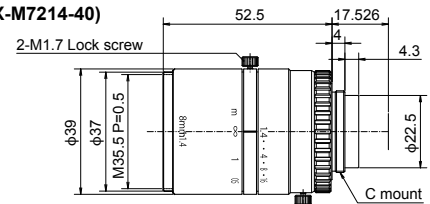


## Lenses

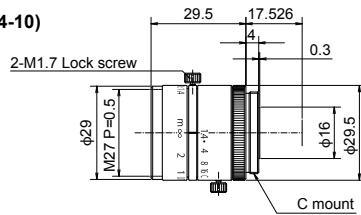
### ● 8mm lens (Model No. : KCX-M7214-00)



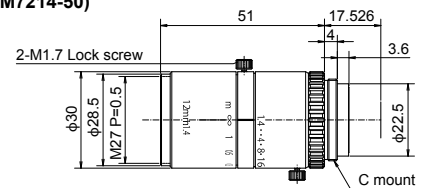
### ● 8mm lens (megapixel support) (Model No. : KCX-M7214-40)



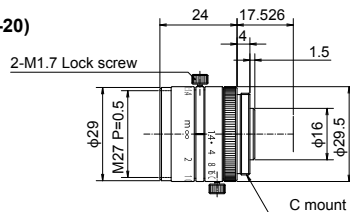
### ● 12mm lens (Model No. : KCX-M7214-10)



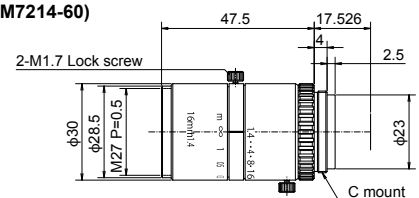
### ● 12mm lens (megapixel support) (Model No. : KCX-M7214-50)



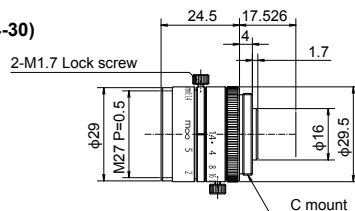
### ● 16mm lens (Model No. : KCX-M7214-20)



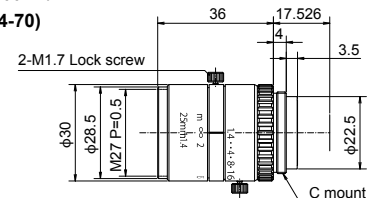
### ● 16mm lens (megapixel support) (Model No. : KCX-M7214-60)



### ● 25mm lens (Model No. : KCX-M7214-30)



### ● 25mm lens (megapixel support) (Model No. : KCX-M7214-70)



**■ Lens characteristics**

Lens	Model	Focal length [mm]	Aperture value [F No.]	Angle-of-view (degrees)		Angle-of-view (degrees)		Closest approach distance [m]
				With 1/3 inch sensor		With 1/1.8 inch sensor		
				KCX-M6541-00 (300,000 pixel camera)		KCX-M6541-20 (2,000,000 pixel camera)		
8mm	KCX-M7214-00	8	F1.3-CLOSE	25.21	33.2	37.08	47.59	0.2
12mm	KCX-M7214-10	12	F1.4-CLOSE	16.48	21.86	24.51	31.88	0.3
16mm	KCX-M7214-20	16	F1.4-CLOSE	12.57	16.71	18.77	24.51	0.4
25mm	KCX-M7214-30	25	F1.4-CLOSE	8.18	10.89	12.25	16.06	0.5
8mm (megapixel support)	KCX-M7214-40	8	F1.4-F16	25.36	33.4	37.3	47.86	0.1
12mm (megapixel support)	KCX-M7214-50	12	F1.4-F16	16.65	22.08	24.76	32.2	0.1
16mm (megapixel support)	KCX-M7214-60	16	F1.4-F16	12.68	16.85	18.92	24.72	0.1
25mm (megapixel support)	KCX-M7214-70	25	F1.4-F16	8.24	10.97	12.33	16.16	0.15

Note. This table shows the angle-of-view for Yamaha's standard lenses. If the angle-of-view is greater, there might be more distortion at the edge of the image.

**■ Angle-of-view size, WD, and magnification when close-up ring is used**

Close-up ring [mm]		WD [mm]	Lens							
			8 mm KCX-M7214-00		12 mm KCX-M7214-10		16 mm KCX-M7214-20		25 mm KCX-M7214-30	
None	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)	200	96.2 × 126.2	300	91.4 × 119.9	400	91.4 × 119.9	500	71.7 × 94.1
		KCX-M6541-10 (1,300,000 pixels)		95.4 × 126.4		90.6 × 120		90.6 × 120		71.1 × 94.2
		KCX-M6541-20 (2,000,000 pixels)		143.2 × 188.1		136 × 178.7		136 × 178.7		106.7 × 140.1
		KCX-M6541-30 (5,000,000 pixels)		112.6 × 150.1		106.9 × 142.6		106.9 × 142.6		83.9 × 111.9
		Optical magnification		0.038		0.040		0.040		0.051
0.5	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)	69.5	36.6 × 48	118.6	45.7 × 60	222	524.1	358.5	1269.4
		KCX-M6541-10 (1,300,000 pixels)		59 × 77.4		91.4 × 119.9		118 × 154.7		182.8 × 239.8
		KCX-M6541-20 (2,000,000 pixels)		87.8 × 115.3		136 × 178.7		175.5 × 230.5		271.9 × 357.3
		KCX-M6541-30 (5,000,000 pixels)		69 × 92		106.9 × 142.6		138 × 184		213.8 × 285.1
		Optical magnification		0.100	0.062	0.080	0.040	0.071	0.031	0.071
1.0	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)	38.7	22.6 × 29.6	53.8	30.5 × 40	152	257.1	280.8	635.9
		KCX-M6541-10 (1,300,000 pixels)		29.3 × 38.7		45.7 × 60		60 × 78.7		91.4 × 119.9
		KCX-M6541-20 (2,000,000 pixels)		43.9 × 57.7		68 × 89.4		89.2 × 117.2		136 × 178.7
		KCX-M6541-30 (5,000,000 pixels)		34.5 × 46		53.5 × 71.3		70.1 × 93.5		106.9 × 142.6
		Optical magnification		0.162	0.124	0.120	0.080	0.101	0.061	0.091
1.5	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)			65.4	30.3 × 39.7	114.5	168.1	230.9	424.7
		KCX-M6541-10 (1,300,000 pixels)				30 × 39.7		39.8 × 52.2		61 × 80
		KCX-M6541-20 (2,000,000 pixels)				45 × 59.1		59.2 × 77.7		90.7 × 119.1
		KCX-M6541-30 (5,000,000 pixels)				35.4 × 47.2		46.5 × 62		71.3 × 95.1
		Optical magnification			0.161	0.121	0.132	0.092	0.111	0.060
2.0	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)			50	22.8 × 29.8	91.2	123.6	196.3	319.1
		KCX-M6541-10 (1,300,000 pixels)				22.8 × 29.8		30 × 39.4		46.3 × 60.7
		KCX-M6541-20 (2,000,000 pixels)				33.8 × 44.4		44.6 × 58.6		68.9 × 90.5
		KCX-M6541-30 (5,000,000 pixels)				26.6 × 35.5		35.1 × 46.8		54.2 × 72.2
		Optical magnification			0.201	0.161	0.162	0.122	0.130	0.079
5.0	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)							104.2	129
		KCX-M6541-10 (1,300,000 pixels)							14.7 × 19.2	18.4 × 24.1
		KCX-M6541-20 (2,000,000 pixels)							14.5 × 19.2	18.3 × 24.2
		KCX-M6541-30 (5,000,000 pixels)							21.8 × 28.6	27.4 × 36
		Optical magnification							0.250	0.199

Note. WD is the lens tip reference.

Close-up ring [mm]		WD [mm]	Lens					
			8 mm lens for megapixel KCX-M7214-40	12 mm lens for megapixel KCX-M7214-50	16 mm lens for megapixel KCX-M7214-60	25 mm lens for megapixel KCX-M7214-70		
None	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)	100	52.3 × 68.5	100	26.9 × 35.3	150	24.6 × 32.2
		KCX-M6541-10 (1,300,000 pixels)		51.8 × 68.6		26.7 × 35.3		24.4 × 32.3
		KCX-M6541-20 (2,000,000 pixels)		77.7 × 102.1		40 × 52.6		36.5 × 48
		KCX-M6541-30 (5,000,000 pixels)		61.1 × 81.5		31.5 × 42		28.7 × 38.3
		Optical magnification		0.070	0.100	0.136	0.149	
0.5	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)	46	27.7 × 36.4	283.2	77.8	130.3	1232.2
		KCX-M6541-10 (1,300,000 pixels)		58.1 × 76.2		118 × 154.7		21.7 × 28.4
		KCX-M6541-20 (2,000,000 pixels)		86.4 × 113.5		175.5 × 230.5		271.9 × 357.3
		KCX-M6541-30 (5,000,000 pixels)		67.9 × 90.6		138 × 184		213.8 × 285.1
		Optical magnification		0.132	0.063	0.166	0.031	0.169
1.0	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)			47.2	62.6	114.6	607.2
		KCX-M6541-10 (1,300,000 pixels)				24.4 × 24.4		19.4 × 25.4
		KCX-M6541-20 (2,000,000 pixels)				87.8 × 115.3		28.8 × 37.9
		KCX-M6541-30 (5,000,000 pixels)				69 × 92		22.7 × 30.2
		Optical magnification			0.185	0.081	0.197	0.062
1.5	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)			35.2	51.5	102	398.9
		KCX-M6541-10 (1,300,000 pixels)				39.4 × 51.6		17.5 × 23
		KCX-M6541-20 (2,000,000 pixels)				58.5 × 77.5		26.1 × 34.2
		KCX-M6541-30 (5,000,000 pixels)				46 × 61.4		20.5 × 27.3
		Optical magnification			0.225	0.112	0.228	0.093
2.0	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)			26.9	43	91.5	294.7
		KCX-M6541-10 (1,300,000 pixels)				29.8 × 39		16 × 21
		KCX-M6541-20 (2,000,000 pixels)				44.3 × 58.1		23.8 × 31.3
		KCX-M6541-30 (5,000,000 pixels)				34.8 × 46.4		18.7 × 24.9
		Optical magnification			0.266	0.163	0.259	0.123
5.0	Angle-of-view size X × Y [mm]	KCX-M6541-00 (300,000 pixels)					53.9	107.2
		KCX-M6541-10 (1,300,000 pixels)					10.5 × 13.8	18.3 × 24
		KCX-M6541-20 (2,000,000 pixels)					15.6 × 20.5	27.2 × 35.8
		KCX-M6541-30 (5,000,000 pixels)					12.3 × 16.4	21.4 × 28.6
		Optical magnification					0.349	0.200

Note. The above table shows the field of view when the standard lens and close-up ring are used. (Closest distance value is shown in No Close-up Ring column).

Note. If a close-up ring is not used, a WD less than the value shown in this table cannot be used.

Note. If a close-up ring is used, only WD in the region of this value can be used.

Note. Values in this table are for reference only; Actual values may vary.

Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single-axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSERVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER  
 INFORMATION  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 iVY2  
 Option

## Accessories and part options

### iVY2 System

#### Standard accessories

##### ● iVY2 unit

The iVY2 unit adds robot vision to the RCX320 / RCX340 robot controller.



Model	No lighting	KCX-M4400-V0
	With lighting	KCX-M4400-L0

##### ● iVY2 unit accessories

Name	Individual model
Camera trigger input cable connector	KX0-M657K-00
24V power supply connector	KCF-M5382-00

##### ● Support software for PC iVY2 Studio

iVY2 Studio is support software for the iVY2 system that allows registering part types and reference marks as well as monitoring the work search status during automatic robot operation by connecting to the robot controller. When the iVY2 unit is purchased, iVY2 Studio is supplied with it.



Note. This software is only downloaded from the website.

##### ● Environment

Software model	KCX-M4988-10
OS	Windows XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.2.01.01.00 or later)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk capacity	30MB of available space required on installation drive. * Additional vacant space is required for saving images and data.
Display	800 x 600 dot, or higher, 32768 colors (16bit High Color) or higher (recommended)
Communication Port	Ethernet Port of TCP/IP

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

Articulated robots  
YALinear conveyor modules  
LCM100Motor-less single axis actuator  
RobonityCompact single-axis robots  
TRANSEVOSingle-axis robots  
FLIP-XLinear motor single-axis robots  
PHASERCartesian robots  
XY-XSCARA robots  
YK-XPick & place robots  
YP-X

CLEAN

CONTROLLER

INFORMATION

Robot positioner

Pulse string driver

Robot controller

iVY2

Option



**Options**

Articulated robots  
**YA**  
 Linear conveyor modules  
**LCM100**  
 Motor-less single axis actuator  
**Robonity**  
 Compact single-axis robots  
**TRANSEVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor single-axis robots  
**PHASER**  
 Cartesian robots  
**XY-X**  
 SCARA robots  
**YK-X**  
 Pick & place robots  
**YP-X**  
**CLEAN**  
**CONTROLLER INFORMATION**  
 Robot positioner  
 Pulse string driver  
 Robot controller  
**iVY2**  
 Option

● **Camera**



CCD camera	300,000 pixel	648×494 (VGA)	KCX-M6541-00
	1,300,000 pixel	1280×966 (SXGA)	KCX-M6541-10
	2,000,000 pixel	1624×1236 (UXGA)	KCX-M6541-20
CMOS camera	5,000,000 pixel	2592×1944 (QSXGA)	KCX-M6541-30

● **Lens**



Model	8mm	KCX-M7214-00
	12mm	KCX-M7214-10
	16mm	KCX-M7214-20
	25mm	KCX-M7214-30
	8mm (megapixel support)	KCX-M7214-40
	12mm (megapixel support)	KCX-M7214-50
	16mm (megapixel support)	KCX-M7214-60
	25mm (megapixel support)	KCX-M7214-70

● **Close-up ring**



Model	0.5mm	KX0-M7215-00
	1.0mm	KX0-M7215-10
	2.0mm	KX0-M7215-20
	5.0mm	KX0-M7215-30

● **Lighting control board**

This board adds lighting control functionality to the iVY2 system. (Installed in the iVY2 unit when shipped)

Model	KCX-M4403-L0
● <b>Lighting control board accessories</b>	
Name	Model
Lighting power cable connector	KX0-M657K-10

● **Tracking board**

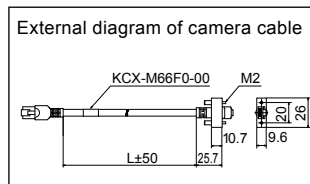
This board adds conveyor tracking functionality to the RCX320 / RCX340 controller.

Model	KCX-M4400-T0
● <b>Tracking board accessories</b>	
Name	Single unit model
AB phase input cable connector	KX0-M657K-20
● <b>Recommended option cable</b> <sup>Note</sup>	
Name	Single unit model
AB phase input cable (10 m, only for counter 1)	KX0-M66AF-00

Note. Not included.  
 We can provide an option that is pre-wired to the AB phase input cable connector.

● **Camera cable**

Cable for connecting the camera to the iVY2 board.



Model	5m	KCX-M66F0-00
	10m	KCX-M66F0-10
	15m	KCX-M66F0-20

● **LAN cable with shield cloth (5 m)**



Model	KX0-M55G0-00
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● **Tracking encoder cable (10m)**

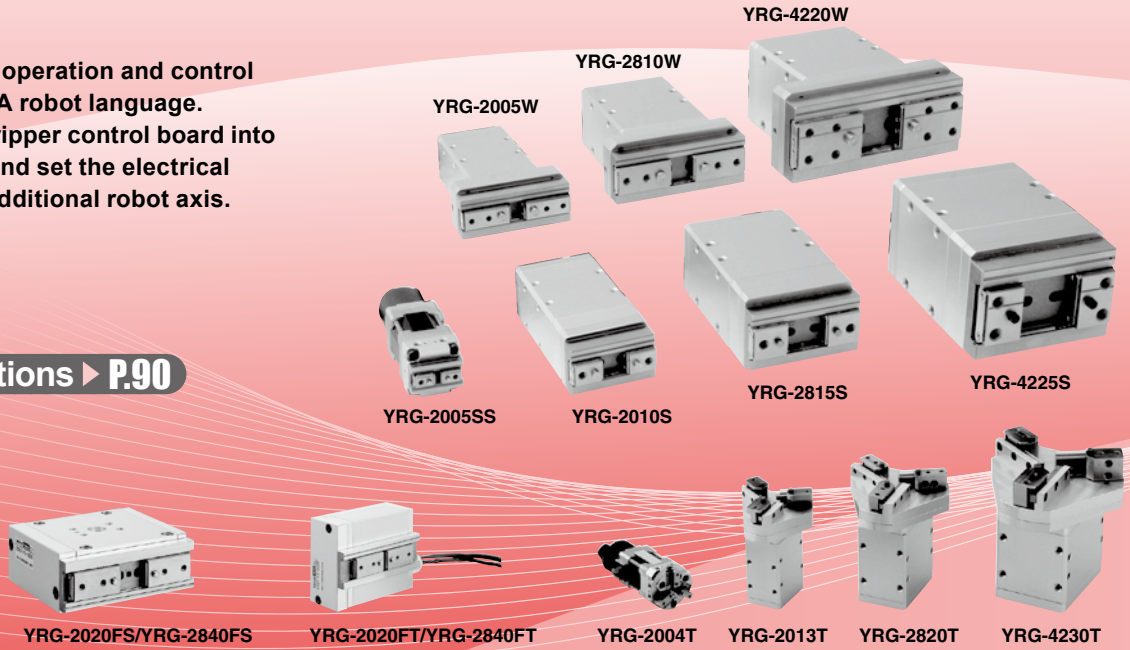


Model	KX0-M66AF-00
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# YRG Series

Simple gripper operation and control via the YAMAHA robot language. Just install a gripper control board into the controller and set the electrical gripper as an additional robot axis.

## Main functions ▶ P.90



### Structure

● Single cam structure



Unique cam structure is simple and compact. The fingers work due to external force since no self-locking is used.

● Double cam structure



Unique double cam structure with gear. Simple design gives high gripping power yet body is compact.

● Ball screw structure



Belt-driven ground ball screw delivers a long stroke with high efficiency and high precision.

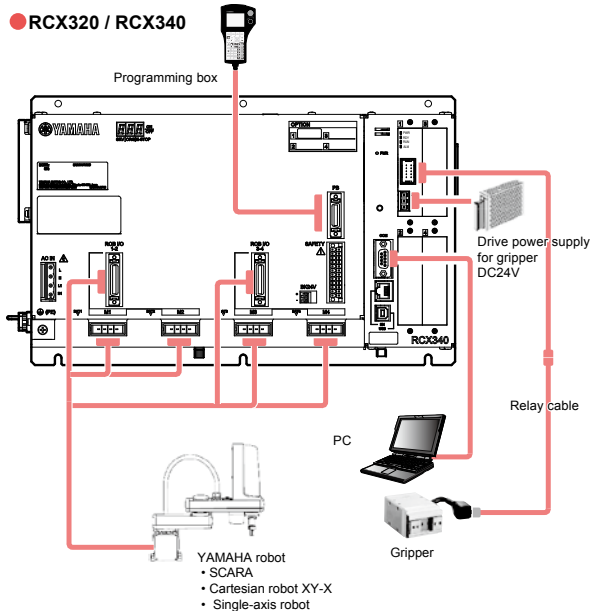
● Compact ball guide structure



Use of special cams provides light weight and compactness. Ideal for grasping and moving a round workpiece made of glass or similar material.

### System configuration illustration

● RCX320 / RCX340



Compact single cam type

# YRG-2005SS



## Basic specifications

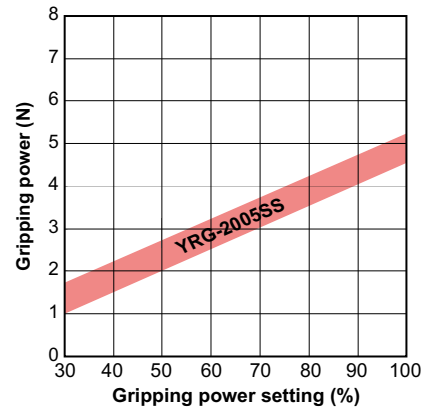
Model name		YRG-2005SS
Model number		KCF-M2010-A0
Holding power	Max. continuous rating (N)	5
	Min. setting (% (N))	30 (1.5)
	Resolution (% (N))	1 (0.05)
Open/close stroke (mm)		3.2
Speed	Max. rating (mm/sec)	100
	Min. setting (% (mm/sec))	20 (20)
	Resolution (% (mm/sec))	1 (1)
	Holding speed (Max.) (%)	50
Repetitive positioning accuracy (mm)		+/-0.02
Guide mechanism		Linear guide
Max. holding weight <sup>Note 1</sup> (kg)		0.05
Weight (g)		90

- Holding power control: 30 to 100% (1% steps)
- Speed control: 20 to 100% (1% steps)
- Acceleration control: 1 to 100% (1% steps)
- Multipoint position control: 10,000 max.

Note. Design the finger as short and lightweight as possible.  
 Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.  
 Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.  
 Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

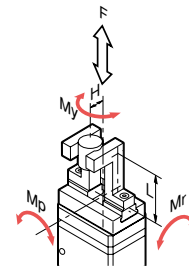
## Gripping power vs. gripping power setting (%)



- Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

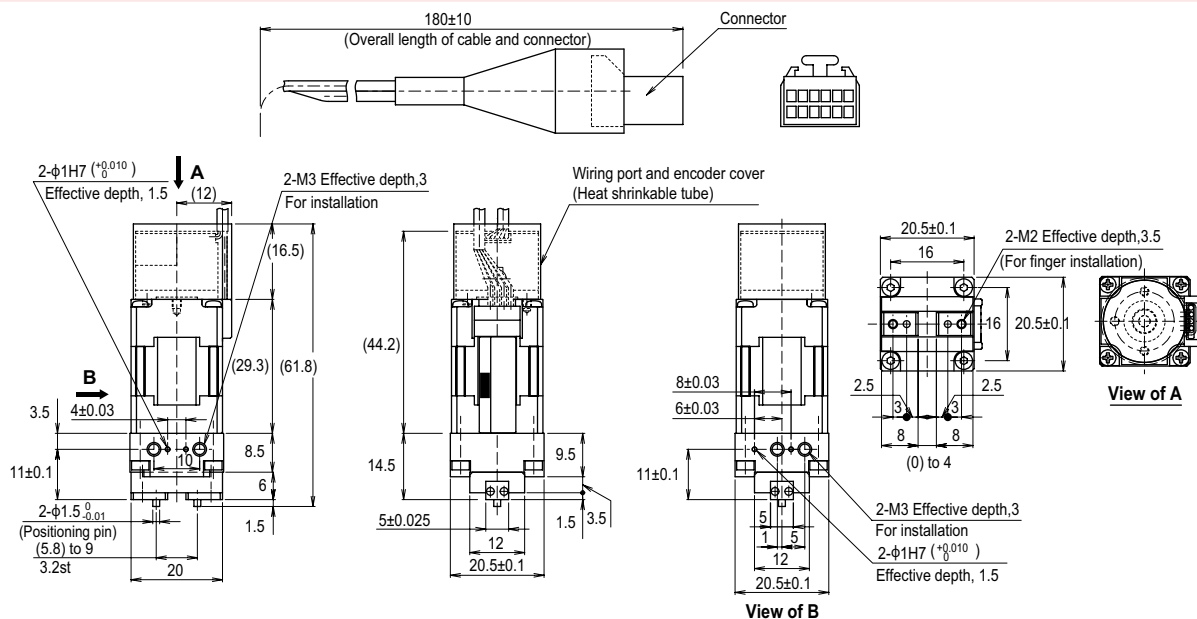
## Allowable load and load moment

		YRG-2005SS		
Guide	Allowable load	F	N	12
	Allowable pitching moment	Mp	N·m	0.04
	Allowable yawing moment	My	N·m	0.04
	Allowable rolling moment	Mr	N·m	0.08
Finger	Max. weight (1 pair)		g	10
	Max. holding position	L	mm	20
	Max. overhang	H	mm	20



- Mount the finger so that the allowable load and load moment of the guide do not exceed the values stated in the table above.
- Make the adjustment so that the finger weight, holding length (L) from the installation surface to the holding point, and overhang (H) do not exceed the values stated in the table above.
- Please contact your YAMAHA sales dealer for further information on combination of L and H.

## YRG-2005SS



Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER  
 INFORMATION  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 Electric gripper  
 Option

# YRG Series

Single cam type

# YRG-2010S/2815S/4225S



## Basic specifications

Model name	YRG-2010S	YRG-2815S	YRG-4225S	
Model number	KCF-M2011-A0	KCF-M2011-B0	KCF-M2011-C0	
Holding power	Max. continuous rating (N)	6	22	40
	Min. setting (% (N))	30 (1.8)	30 (6.6)	30 (12)
	Resolution (% (N))	1 (0.06)	1 (0.22)	1 (0.4)
Open/close stroke (mm)	7.6	14.3	23.5	
Speed	Max. rating (mm/sec)	100		
	Min. setting (% (mm/sec))	20 (20)		
	Resolution (% (mm/sec))	1 (1)		
	Holding speed (Max.) (%)	50		
Repetitive positioning accuracy (mm)	+/-0.02			
Guide mechanism	Linear guide			
Max. holding weight <sup>Note 1</sup> (kg)	0.06	0.22	0.4	
Weight (g)	160	300	580	

- Holding power control : 30 to 100% (1% steps) • Speed control : 20 to 100% (1% steps)
- Acceleration control : 1 to 100% (1% steps) • Multipoint position control : 10,000 max.

Note. Design the finger as short and lightweight as possible.

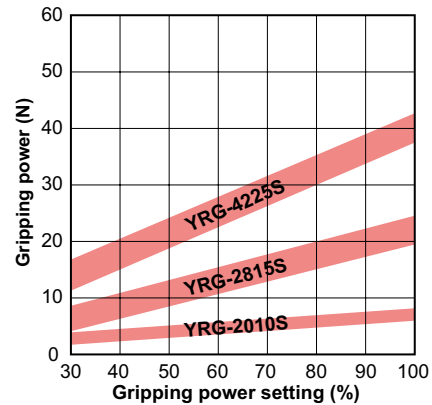
Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.

Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.

Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

## Gripping power vs. gripping power setting (%)

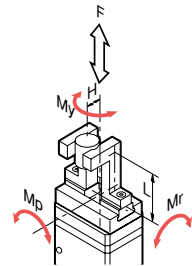


- Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

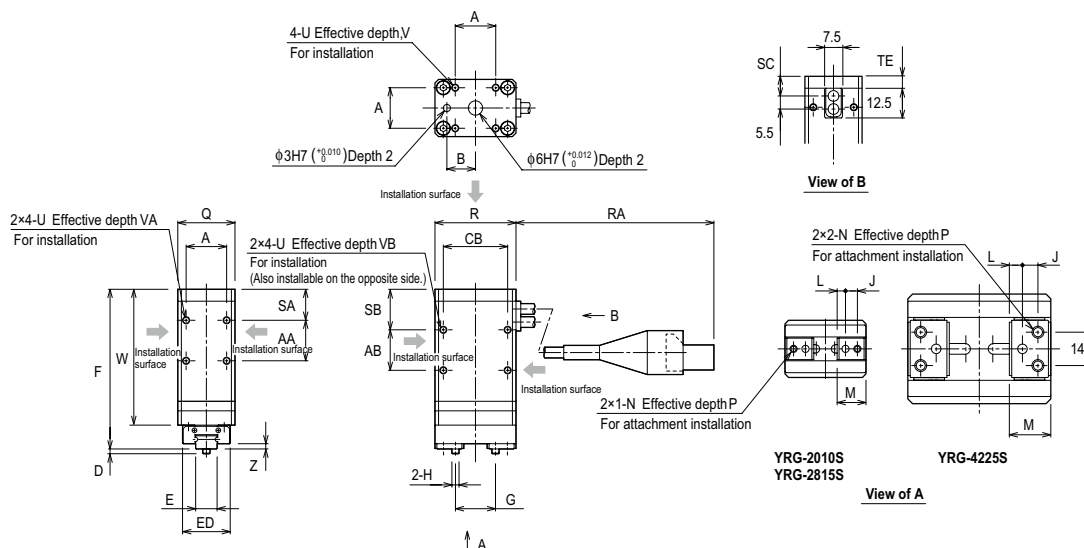
## Allowable load and load moment

			YRG-2010S	YRG-2815S	YRG-4225S
Guide	Allowable load	F N	450	350	600
	Allowable pitching moment	Mp N•m	0.7	0.5	1.1
	Allowable yawing moment	My N•m	0.8	0.6	1.3
	Allowable rolling moment	Mr N•m	2.3	2.8	8.6
Finger	Max. weight (1 pair)	g	15	30	50
	Max. holding position	L mm	20	20	25
	Max. overhang	H mm	20	25	30

- Mount the finger so that the allowable load and load moment of the guide do not exceed the values stated in the table above.
- Make the adjustment so that the finger weight, holding length (L) from the installation surface to the holding point, and overhang (H) do not exceed the values stated in the table above.
- Please contact your YAMAHA sales dealer for further information on combination of L and H.



## YRG-2010S/2815S/4225S



	A	AA	AB	B	CB	D	E	ED	F	G	H	J	L
YRG-2010S	17	17	17	12	27	2	9 <sup>0</sup> <sub>-0.05</sub>	20	71	8.4 to 16	φ3 <sup>0</sup> <sub>-0.01</sub>	5	3.5
YRG-2815S	24	24	14	15	38	2	14 <sup>0</sup> <sub>-0.05</sub>	25	78	9.6 to 23.9	φ3 <sup>0</sup> <sub>-0.01</sub>	6	4.3
YRG-4225S	36	25	13	20	50	3	24 <sup>0</sup> <sub>-0.05</sub>	40	86	12 to 35.5	φ4 <sup>0</sup> <sub>-0.012</sub>	6.5	5.5

	M	N	P	Q	R	RA	SA	SB	SC	TE	U	V	VA	VB	W	Z
YRG-2010S	12.1	M3	5	24	34	165+/-10	13	17	8.3	5	M3	5	6	6	61	2.2
YRG-2815S	15	M4	5	32	46	140+/-10	16	21	9.3	6	M4	6	8	8	69	2
YRG-4225S	17.4	M5	8	46	60	235+/-10	18	24	10.8	7.5	M5	7.5	8	10	72	3

Double cam type

# YRG-2005W/2810W/4220W



## Basic specifications

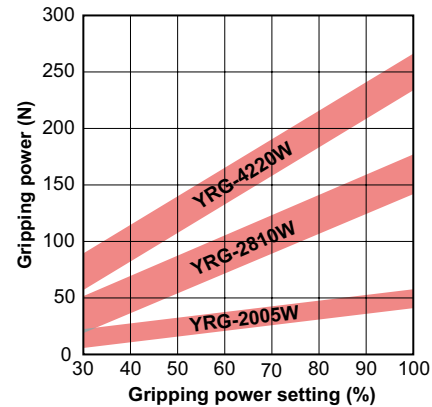
Model name	YRG-2005W	YRG-2810W	YRG-4220W	
Model number	KCF-M2012-A0	KCF-M2012-B0	KCF-M2012-C0	
Holding power	Max. continuous rating (N)	50	150	250
	Min. setting (% (N))	30 (15)	30 (45)	30 (75)
	Resolution (% (N))	1 (0.5)	1 (1.5)	1 (2.5)
Open/close stroke (mm)	5	10	19.3	
Speed	Max. rating (mm/sec)	60	60	45
	Min. setting (% (mm/sec))	20 (12)	20 (12)	20 (9)
	Resolution (% (mm/sec))	1 (0.6)	1 (0.7)	1 (0.45)
	Holding speed (Max.) (%)	50		
Repetitive positioning accuracy (mm)	±0.03			
Guide mechanism	Linear guide			
Max. holding weight <sup>Note 1</sup> (kg)	0.5	1.5	2.5	
Weight (g)	200	350	800	

- Holding power control : 30 to 100% (1% steps)
- Speed control : 20 to 100% (1% steps)
- Acceleration control : 1 to 100% (1% steps)
- Multipoint position control : 10,000 max.

Note. Design the finger as short and lightweight as possible.  
 Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.  
 Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.  
 Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

## Gripping power vs. gripping power setting (%)

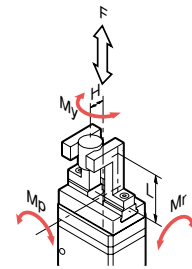


- Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

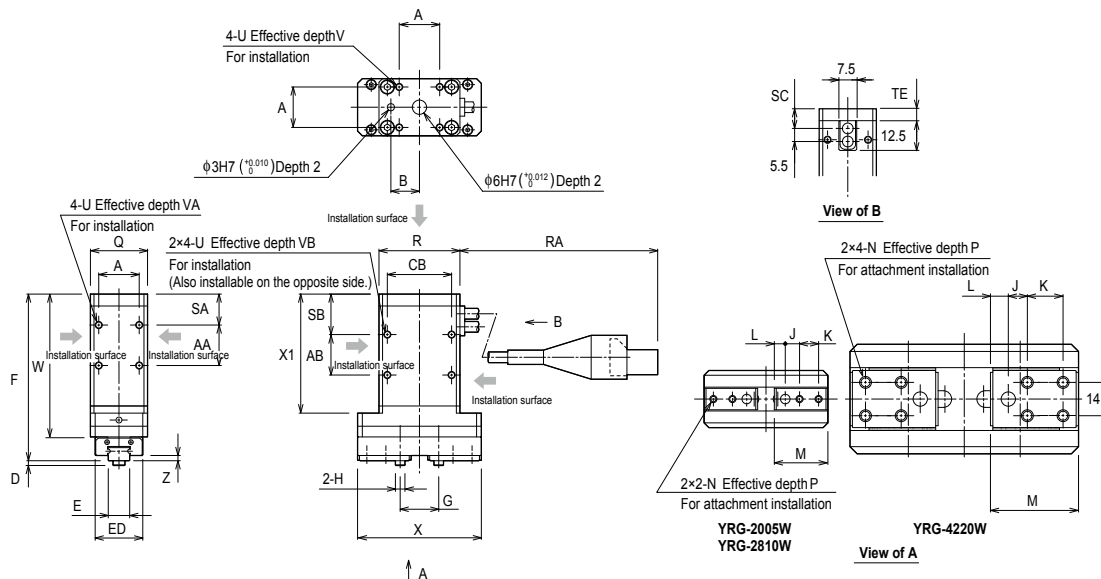
## Allowable load and load moment

				YRG-2005W	YRG-2810W	YRG-4220W
Guide	Allowable load	F	N	1000	1000	2000
	Allowable pitching moment	Mp	N·m	6.7	8.1	20.1
	Allowable yawing moment	My	N·m	4	4.8	12
	Allowable rolling moment	Mr	N·m	5.1	7.8	25.9
Finger	Max. weight (1 pair)		g	40	80	200
	Max. holding position	L	mm	30	30	50
	Max. overhang	H	mm	20	20	30

- Mount the finger so that the allowable load and load moment of the guide do not exceed the values stated in the table above.
- Make the adjustment so that the finger weight, holding length (L) from the installation surface to the holding point, and overhang (H) do not exceed the values stated in the table above.
- Please contact your YAMAHA sales dealer for further information on combination of L and H.



## YRG-2005W/2810W/4220W



	A	AA	AB	B	CB	D	E	ED	F	G	H	J	K	L
YRG-2005W	17	17	17	12	27	2	9 <sup>0</sup> <sub>-0.05</sub>	20	74	10.6 to 15.6	φ4 <sup>0</sup> <sub>-0.012</sub>	6	8	4.6
YRG-2810W	24	24	14	15	38	2	14 <sup>0</sup> <sub>-0.05</sub>	25	80	12.6 to 22.6	φ5 <sup>0</sup> <sub>-0.012</sub>	7	10	5.65
YRG-4220W	36	25	13	20	50	3	24 <sup>0</sup> <sub>-0.05</sub>	40	90	17.0 to 36.3	φ6 <sup>0</sup> <sub>-0.012</sub>	8	15	7.5

	M	N	P	Q	R	RA	SA	SB	SC	TE	U	V	VA	VB	W	X	X1	Z
YRG-2005W	22.5	M3	5	24	34	165±/10	13	17	8.3	5	M3	5	6	6	64	52	54	2.2
YRG-2810W	27.5	M4	5	32	46	140±/10	16	21	9.3	6	M4	6	8	8	71	67	61	2
YRG-4220W	37	M5	8	46	60	235±/10	18	24	10.8	7.5	M5	7.5	8	10	76	96	63	3



# YRG Series

Screw type straight style

# YRG-2020FS/2840FS



## Basic specifications

Model name	YRG-2020FS	YRG-2840FS
Model number	KCF-M2013-A0	KCF-M2013-B0
Holding power	Max. continuous rating (N)	50
	Min. setting (% (N))	30 (15)
	Resolution (% (N))	1 (0.5)
Open/close stroke (mm)	Max. rating (mm/sec)	50
	Min. setting (% (mm/sec))	20 (10)
	Resolution (% (mm/sec))	1 (0.5)
	Holding speed (Max.) (%)	50
	Repetitive positioning accuracy (mm)	+/-0.01
Guide mechanism	Linear guide	
Max. holding weight <sup>Note 1</sup> (kg)	0.5	1.5
Weight (g)	420	880

- Holding power control : 30 to 100% (1% steps)
- Speed control : 20 to 100% (1% steps)
- Acceleration control : 1 to 100% (1% steps)
- Multipoint position control : 10,000 max.

Note. Design the finger as short and lightweight as possible.

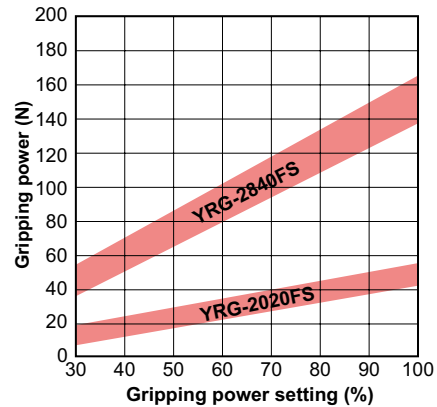
Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.

Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.

Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

## Gripping power vs. gripping power setting (%)

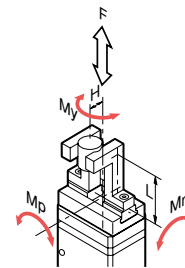


- Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

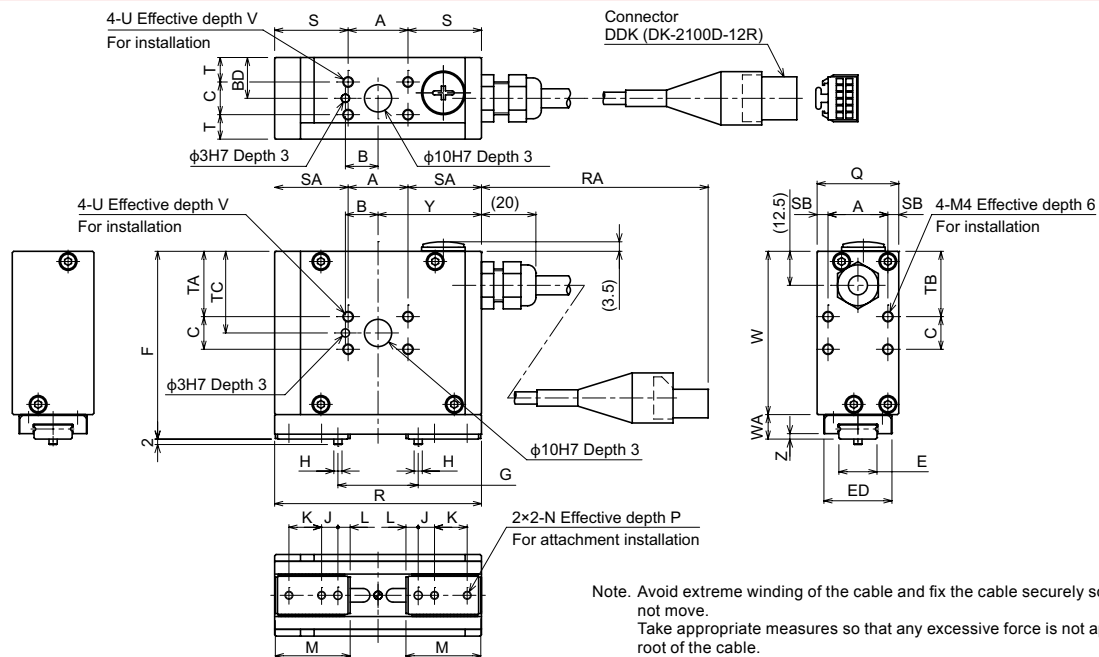
## Allowable load and load moment

			YRG-2020FS	YRG-2840FS
Guide	Allowable load	F N	1000	1300
	Allowable pitching moment	Mp N•m	3.5	5
	Allowable yawing moment	My N•m	4.2	6
	Allowable rolling moment	Mr N•m	7.3	12.7
Finger	Max. weight (1 pair)	g	40	80
	Max. holding position	L mm	30	30
	Max. overhang	H mm	20	20

- Mount the finger so that the allowable load and load moment of the guide do not exceed the values stated in the table above.
- Make the adjustment so that the finger weight, holding length (L) from the installation surface to the holding point, and overhang (H) do not exceed the values stated in the table above.
- Please contact your YAMAHA sales dealer for further information on combination of L and H.



## YRG-2020FS/2840FS



Note. Avoid extreme winding of the cable and fix the cable securely so that it does not move. Take appropriate measures so that any excessive force is not applied to the root of the cable.

	A	B	BD	C	D	E	ED	F	G	H	J	K	L	M	N
YRG-2020FS	22	12	15	12	2	14 <sup>0</sup> <sub>-0.05</sub>	25	69	10.5 to 29.5	φ3 <sup>0</sup> <sub>-0.01</sub>	6	12	4.5	27.5	M3
YRG-2840FS	30	15	20	16	2	18 <sup>0</sup> <sub>-0.05</sub>	30	84	13 to 51	φ4 <sup>0</sup> <sub>-0.012</sub>	8	14	5.5	34.5	M4

	P	Q	R	RA	S	SA	SB	T	TA	TB	TC	TD	U	V	W	WA	Y	Z
YRG-2020FS	5	30	76	175+/-10	27	27	4	9	24	24	30	12.5	M4	6	60	9	38	2
YRG-2840FS	7.5	40	110	135+/-10	40	40	5	12	28	28	36	14	M5	7.5	72	12	55	3



Screw type "T" style

# YRG-2020FT/2840FT



## Basic specifications

Model name	YRG-2020FT	YRG-2840FT
Model number	KCF-M2014-A0	KCF-M2014-B0
Holding power	Max. continuous rating (N)	50
	Min. setting (% (N))	30 (15)
	Resolution (% (N))	1 (0.5)
Open/close stroke (mm)	19	38
Speed	Max. rating (mm/sec)	50
	Min. setting (% (mm/sec))	20 (10)
	Resolution (% (mm/sec))	1 (0.5)
	Holding speed (Max.) (%)	50
Repetitive positioning accuracy (mm)	+/-0.01	+/-0.01
Guide mechanism	Linear guide	
Max. holding weight <sup>Note 1</sup> (kg)	0.5	1.5
Weight (g)	420	890

• Holding power control: 30 to 100% (1% steps) • Speed control: 20 to 100% (1% steps)  
 • Acceleration control : 1 to 100% (1% steps) • Multipoint position control: 10,000 max.

Note. Design the finger as short and lightweight as possible.  
 Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.  
 Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.  
 Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

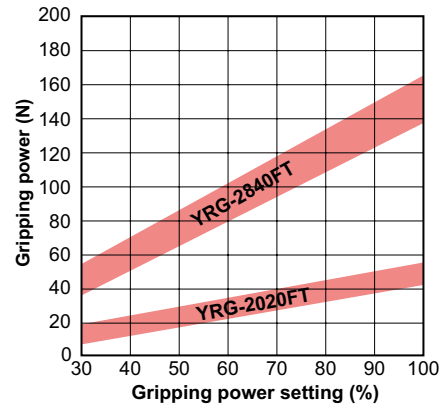
Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

## Allowable load and load moment

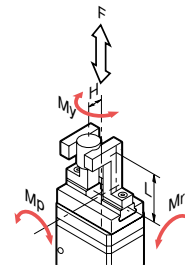
Guide		YRG-2020FT		YRG-2840FT	
		F	N		
Guide	Allowable load			1000	1300
	Allowable pitching moment	Mp	N·m	3.5	5
	Allowable yawing moment	My	N·m	4.2	6
	Allowable rolling moment	Mr	N·m	7.3	12.7
Finger	Max. weight (1 pair)		g	40	80
	Max. holding position	L	mm	30	30
	Max. overhang	H	mm	20	20

- Mount the finger so that the allowable load and load moment of the guide do not exceed the values stated in the table above.
- Make the adjustment so that the finger weight, holding length (L) from the installation surface to the holding point, and overhang (H) do not exceed the values stated in the table above.
- Please contact your YAMAHA sales dealer for further information on combination of L and H.

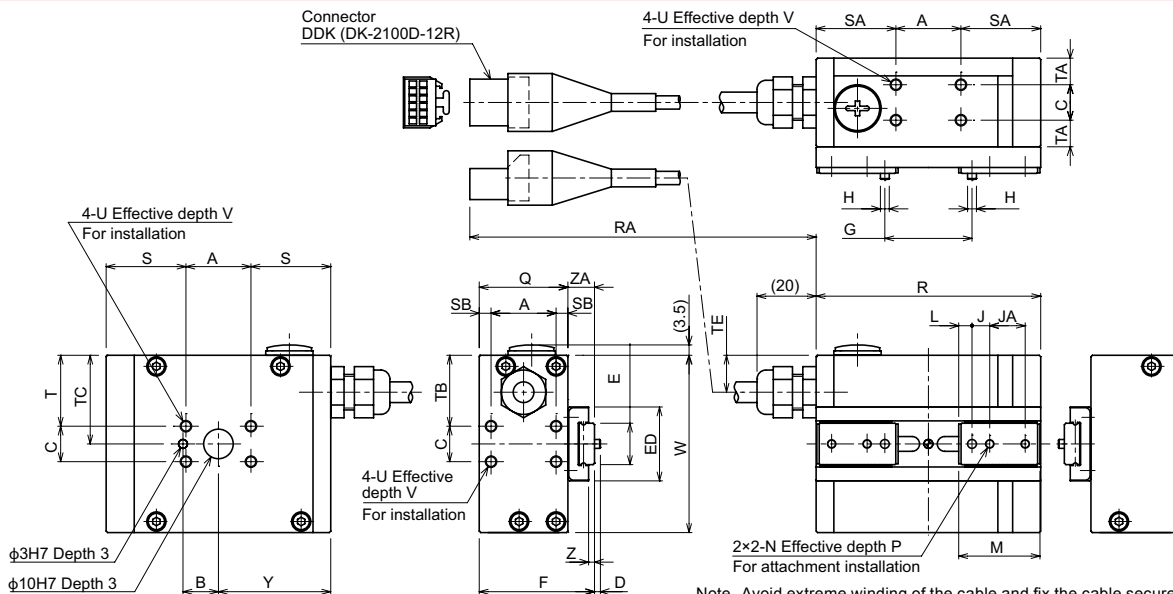
## Gripping power vs. gripping power setting (%)



• Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.



## YRG-2020FT/2840FT



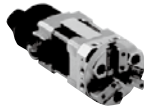
Note. Avoid extreme winding of the cable and fix the cable securely so that it does not move.  
 Take appropriate measures so that any excessive force is not applied to the root of the cable.

	A	B	C	D	E	ED	F	G	H	J	JA	K	L	M	N	P		
YRG-2020FT	22	12	12	2	14 <sub>0-0.05</sub>	25	39	10.5 to 29.5	φ3 <sub>0-0.01</sub>	6	12	12	4.5	27.5	M3	5		
YRG-2840FT	30	15	16	2	18 <sub>0-0.05</sub>	30	52	13 to 51	φ4 <sub>0-0.012</sub>	8	14	14	5.5	34.5	M4	7.5		
	Q	R	RA	S	SA	SB	T	TA	TB	TC	TD	TE	U	V	W	Y	Z	ZA
YRG-2020FT	30	76	175+/-10	27	27	4	24	9	24	30	12.5	12.5	M4	6	60	38	2	9
YRG-2840FT	40	110	135+/-10	40	40	5	28	12	28	36	14	14	M5	7.5	72	55	3	12

# YRG Series

Three fingers type

# YRG-2004T



## Basic specifications

Model name	YRG-2004T	
Model number	KCF-M2015-A0	
Holding power	Max. continuous rating (N)	2.5
	Min. setting (% (N))	30 (0.75)
	Resolution (% (N))	1 (0.025)
Open/close stroke (mm)	3.5	
Speed	Max. rating (mm/sec)	100
	Min. setting (% (mm/sec))	20 (20)
	Resolution (% (mm/sec))	1 (1)
	Holding speed (Max.) (%)	50
Repetitive positioning accuracy (mm)	+/-0.03	
Guide mechanism	Linear guide	
Max. holding weight <sup>Note 1</sup> (kg)	0.02	
Weight (g)	90	

- Holding power control : 30 to 100% (1% steps) • Speed control : 20 to 100% (1% steps)
- Acceleration control : 1 to 100% (1% steps) • Multipoint position control : 10,000 max.

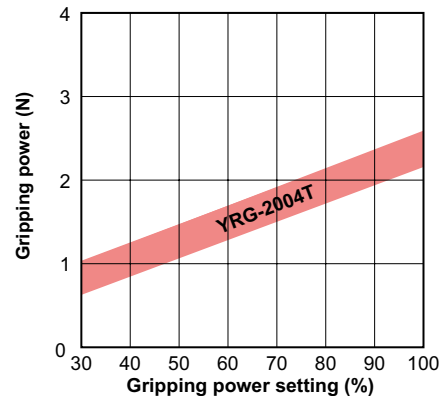
Note. Design the finger as short and lightweight as possible.  
 Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.

Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.

Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

## Gripping power vs. gripping power setting (%)



• Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.

## Allowable load and load moment

		YRG-2004T	
Finger	Allowable load	N	6
	Allowable pitching moment	N·m	0.02
	Max. weight (1 pair)	g	10
	Max. holding position	L mm	15

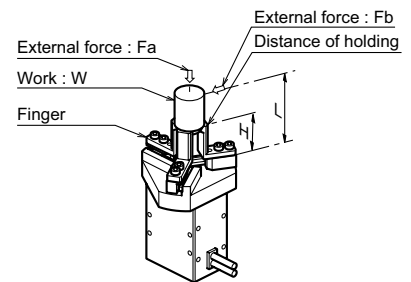
• When the external forces  $F_a$  and  $F_b$  are applied to a portion the distance (L) apart from the finger installation surface, the load (F) and moment (M) are calculated from the formulas shown below.

$$F = F_a + W \times g$$

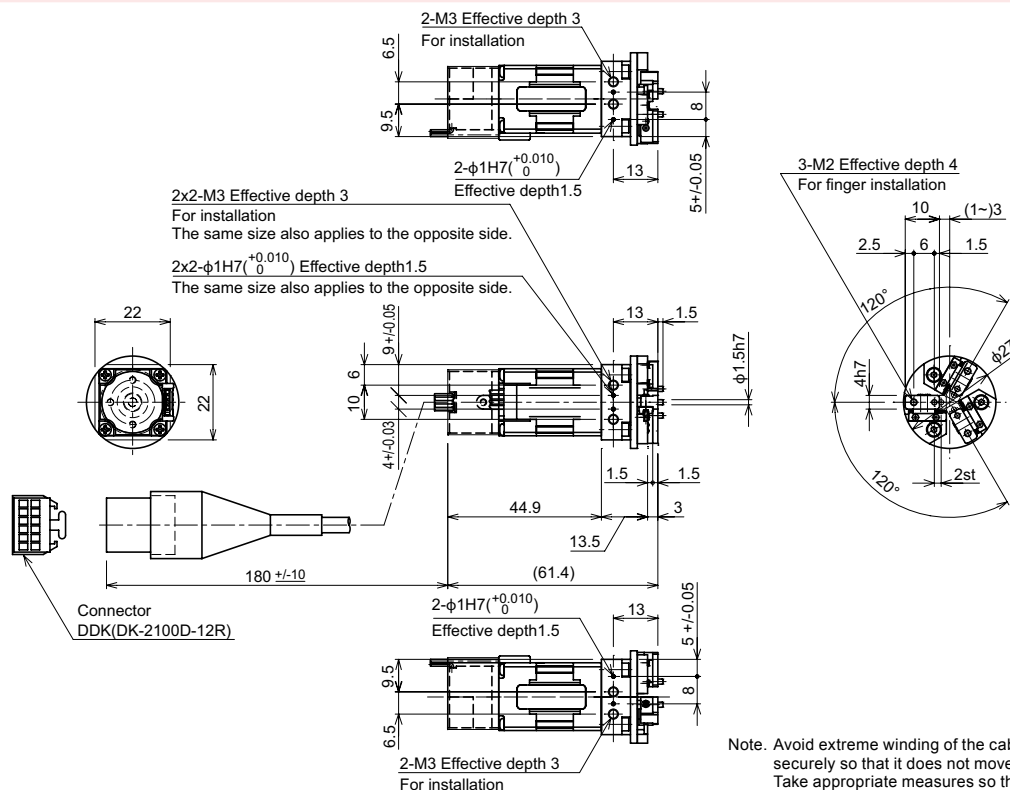
$$M = F_b \times L$$

$F_a$  : External force [N]  
 $F_b$  : External force [N]  
 $W$  : Workpiece weight [Kg]  
 $g$  : Gravity acceleration [m/s<sup>2</sup>]  
 $L$  : Distance of holding point [m]

$F$  : Load [N]  
 $M$  : Moment [N·m]  
 $L$  : Distance of point of external force application [m]



## YRG-2004T



Note. Avoid extreme winding of the cable and fix the cable securely so that it does not move. Take appropriate measures so that any excessive force is not applied to the root of the cable.

Three fingers type

# YRG-2013T/2820T/4230T



## Basic specifications

Model name	YRG-2013T	YRG-2820T	YRG-4230T	
Model number	KCF-M2015-B0	KCF-M2015-C0	KCF-M2015-D0	
Holding power	Max. continuous rating (N)	2	10	20
	Min. setting (% (N))	30 (0.6)	30 (3)	30 (6)
	Resolution (% (N))	1 (0.02)	1 (0.1)	1 (0.2)
Open/close stroke (mm)	13	20	30	
Speed	Max. rating (mm/sec)	100		
	Min. setting (% (mm/sec))	20 (20)		
	Resolution (% (mm/sec))	1 (1)	1 (1)	1 (1)
	Holding speed (Max.) (%)	50	50	50
Repetitive positioning accuracy (mm)	±0.03			
Guide mechanism	Linear guide			
Max. holding weight <sup>Note 1</sup> (kg)	0.02	0.1	0.2	
Weight (g)	190	340	640	

• Holding power control: 30 to 100% (1% steps) • Speed control: 20 to 100% (1% steps)  
 • Acceleration control : 1 to 100% (1% steps) • Multipoint position control : 10,000 max.

Note. Design the finger as short and lightweight as possible.

Note. Set the parameters and holding power (%) of the holding movement command so that any excessive shock is not applied to the finger during operation.

Note. When installing or uninstalling the finger, tighten the bolts while the finger is being held securely so that any excessive force or shock is not applied to the guide block.

Note. Workpiece weight that is able to be held may greatly vary depending on the material, shape, and/or holding surface conditions of the finger.

Note 1. Design the weight of a workpiece to be held so that it is approximately 1/10 to 1/20 of the holding power. (Consider further allowance when moving and swinging the gripper that keeps holding a workpiece.)

## Allowable load and load moment

Finger			YRG-2013T	YRG-2820T	YRG-4230T
			Allowable load	N	20
	Allowable pitching moment	N·m	0.1	0.2	0.4
	Max. weight (1 pair)	g	20	30	50
	Max. holding position	L mm	20	30	40

• When the external forces Fa and Fb are applied to a portion the distance (L) apart from the finger installation surface, the load (F) and moment (M) are calculated from the formulas shown below.

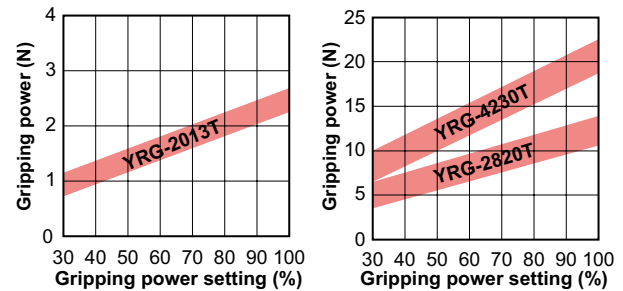
$$F = Fa + W \times g$$

$$M = Fb \times L$$

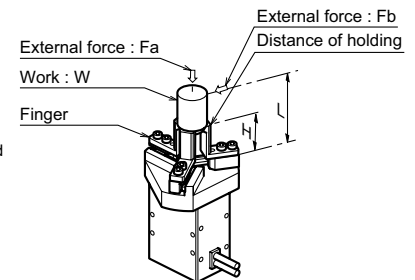
Fa : External force [N]  
 Fb : External force [N]  
 W : Workpiece weight [Kg]  
 g : Gravity acceleration [m/s<sup>2</sup>]  
 H : Distance of holding point [m]

F : Load [N]  
 M : Moment [N·m]  
 L : Distance of point of external force application [m]

## Gripping power vs. gripping power setting (%)



• Graph shows a general guide to gripping power versus gripping power setting (%). Variations will appear in the actual gripping power.



## YRG-2013T/2820T/4230T

Note. Avoid extreme winding of the cable and fix the cable securely so that it does not move. Take appropriate measures so that any excessive force is not applied to the root of the cable.

	A	B	C	D	E	F	G	H	HA	HB	J	K	L	N
YRG-2013T	50	19	34	24	50	19	42	17	13	13	17	M3	6	17
YRG-2820T	58	19	46	32	66	25	40	24	16	16	24	M4	8	14
YRG-4230T	59	25	60	46	86	34	45	25	18	18	36	M5	8	13

	NA	NB	P	Q	R	S	T	U	V	W	WA	AA	BA
YRG-2013T	17	72	27	M3	6	17	17	M3	5	11.4 to 4.6	6.8st	12	10 <sup>0</sup> <sub>-0.02</sub>
YRG-2820T	21	80	38	M4	8	24	24	M4	6	15.9 to 5.6	10.3st	15	10 <sup>0</sup> <sub>-0.02</sub>
YRG-4230T	24	88	50	M5	10	36	36	M5	7.5	21.9 to 6.6	15.3st	20	14 <sup>0</sup> <sub>-0.02</sub>

	BB	BC	BD	BE	BF	BG	BH	BJ	BK	BL
YRG-2013T	16	2.5	10	***	3x1-M3	8	2	φ3 <sup>0</sup> <sub>-0.01</sub>	165±/10	8.3
YRG-2820T	19.5	2.5	6	8	3x2-M3	6	2	φ3 <sup>0</sup> <sub>-0.01</sub>	140±/10	9.3
YRG-4230T	22.5	2.5	6	10	3x2-M4	8	3	φ4 <sup>0</sup> <sub>-0.012</sub>	235±/10	10.8

Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuators  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XY-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER INFORMATION  
 Robot positioner  
 Pulse string driver  
 Robot controller  
 Electric gripper  
 Option

## Electric gripper basic specifications

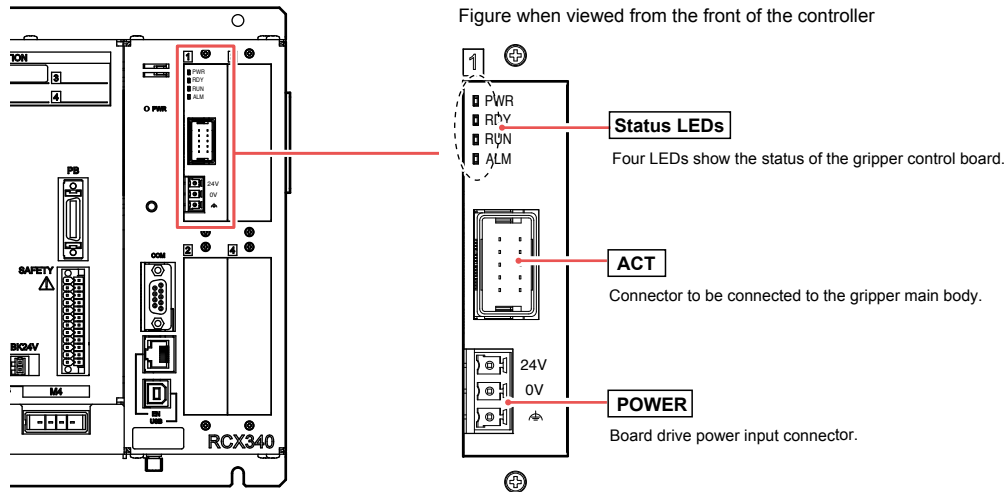
Item		Specifications
Basic specifications	Applicable controller	RCX320 / RCX340
	Number of connection grippers	Max. 4 units
Axis control	Control method	PTP motion
	Min. setting unit	0.01mm
	Position indication unit	Pulses, mm (millimeters)
	Speed setting	20 to 100% (in 1% steps, Changeable by the program.)
Programming	Acceleration setting	1 to 100% (in 1% steps, Setting by the acceleration parameter)
	Teaching	MDI (coordinate data input), direct teaching, teaching playback, offline teaching (data input from external unit)

## Gripper control board specifications

Item		Specifications
Axis control	No. of axes	1 axis
	Position detection method	Optical rotary encoder
	Min. setting distance	0.01mm
	Speed setting	Set in the range of 20 to 100% to the max. parameter speed.
Protective alarm		Overcurrent, overload, voltage failure, system failure, position deviation over, feedback error, etc.
LED status indication		POWER (Green), RUN (Green), READY (Yellow), ALARM (Red)
Power supply	Drive power	DC 24V +/-10% 1.0A Max.

## Part names and functions

### RCX320 / RCX340



# Accessories and part options

## YRG Series



### Standard accessories

● **Gripper control board**

Model **KCX-M4400-G0**

**RCX320**

Note. This board includes a 24V supply connector.

**RCX340**

● **Robot (for gripper) cable**



Model	3.5m	KCF-M4751-31
	5m	KCF-M4751-51
	10m	KCF-M4751-A1

**RCX320**

**RCX340**

Note. Be sure to adjust the total length of the robot (for gripper) cable and relay cable to 14m or less.

● **Relay cable**



Model	0.5m	KCF-M4811-11
	1m	KCF-M4811-21
	1.5m	KCF-M4811-31
	2m	KCF-M4811-41
	2.5m	KCF-M4811-51
	3m	KCF-M4811-61
	3.5m	KCF-M4811-71
	4m	KCF-M4811-81

**RCX320**

**RCX340**

● **Connector for 24V power supply**



Model **KCF-M5382-00**

**RCX320**

**RCX340**

- Articulated robots  
YA
- Linear conveyor modules  
LCM100
- Motor-less single axis actuators  
Robonity
- Compact single-axis robots  
TRANSEVO
- Single-axis robots  
FLIP-X
- Linear motor single-axis robots  
PHASER
- Cartesian robots  
XY-X
- SCARA robots  
YK-X
- Pick & place robots  
YP-X
- CLEAN
- CONTROLLER
- INFORMATION
- Robot positioner
- Pulse string driver
- Robot controller
- Electric gripper
- Option

# MEMO

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Articulated robots  
**YA**

Linear conveyor  
modules  
**LCM100**

Motor-less single  
axis actuator  
**Robonity**

Compact  
single-axis robots  
**TRANSERVO**

Single-axis robots  
**FLIP-X**

Linear motor  
single-axis robots  
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Cartesian  
robots  
**XY-X**

SCARA  
robots  
**YK-X**

Pick & Place  
robots  
**YP-X**

**CLEAN**

**CONTROLLER**

**INFORMATION**

Robot  
positioner

Pulse string  
driver

Robot  
controller

IVY2  
Electric  
gripper

Option





Articulated robots <b>YA</b>
Linear conveyor modules <b>LCM100</b>
Motor-less single axis actuator <b>Robonity</b>
Compact single-axis robots <b>TRANSERVO</b>
Single-axis robots <b>FLIP-X</b>
Linear motor single-axis robots <b>PHASER</b>
Cartesian robots <b>XY-X</b>
SCARA robots <b>YK-X</b>
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<b>DISCONTINUED</b>

# ALL TYPES OF INFORMATION

# INFORMATION

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# Robot cable table

The robot cable is a cable joining the robot to the controller.

## Single-axis robot cable

### TS-S/TS-S2/TS-SD cable

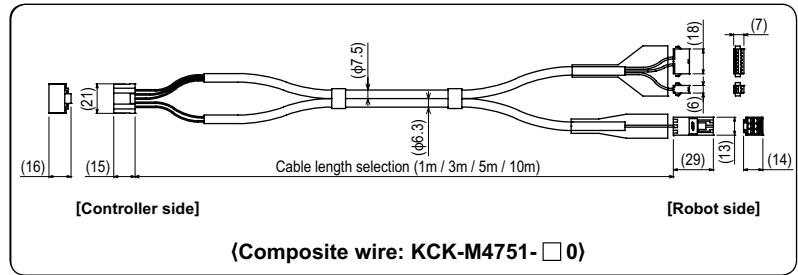
#### [Flexible cable]

Connected robot ▷ **TRANSERVO**

Set	Single item	
-	Composite wire	KCK-M4751- □ 0

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
1	1m
3	3m
5	5m
A	10m



### TS-S2S cable

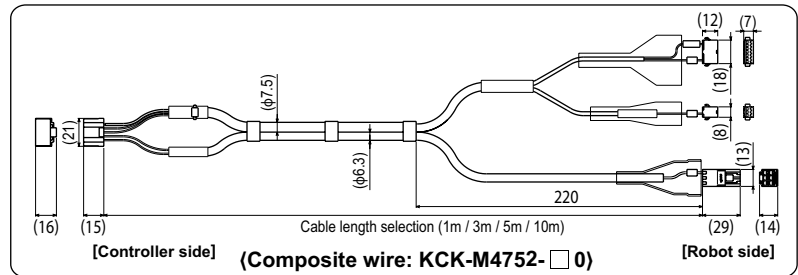
#### [Flexible cable]

Connected robot ▷ **TRANSERVO**  
(RF Type Sensor specification)

Set	Single item	
-	Composite wire	KCK-M4752- □ 0

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
1	1m
3	3m
5	5m
A	10m



### TS-X cable

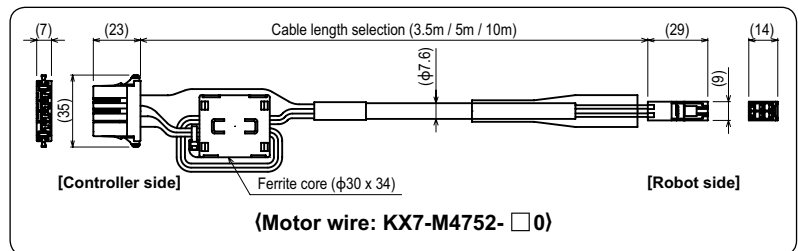
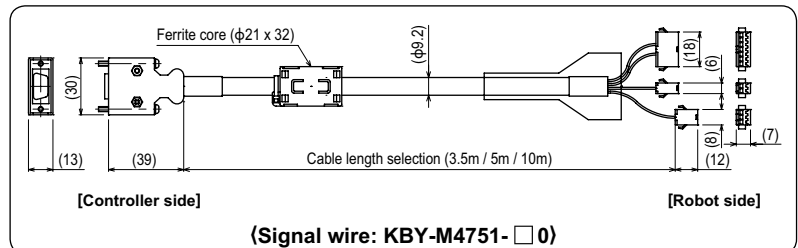
#### [Standard cable]

Connected robot ▷ **FLIP-X**

Set	Single item	
KBY-M4710- □ 0	Signal wire	KBY-M4751- □ 0
	Motor wire	KX7-M4752- □ 0

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



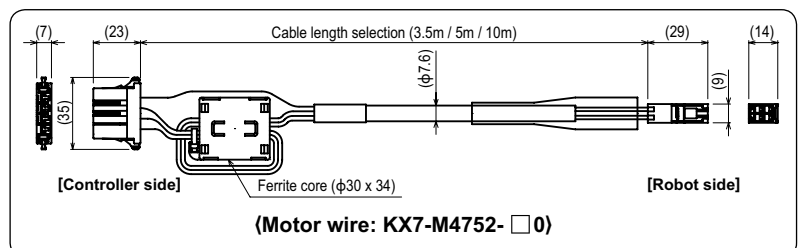
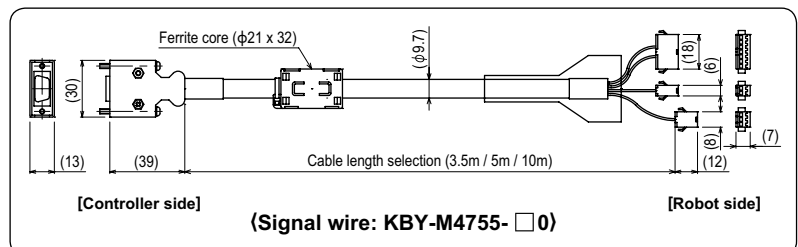
#### [Flexible cable]

Connected robot ▷ **FLIP-X**

Set	Single item	
KBY-M4720- □ 0	Signal wire	KBY-M4755- □ 0
	Motor wire	KX7-M4752- □ 0

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XX-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
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**TS-P cable**

**[Standard cable]**

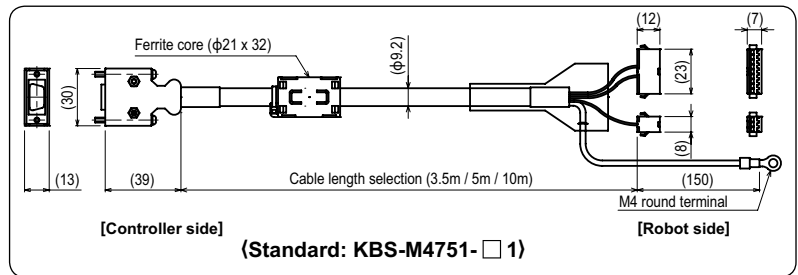
Connected robot ▷ PHASER

Set	Single item
KBS-M4710-□ 0	Signal wire KBS-M4751-□ 1
	Motor wire KAU-M4752-□ 1

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m

**[Signal wire]**



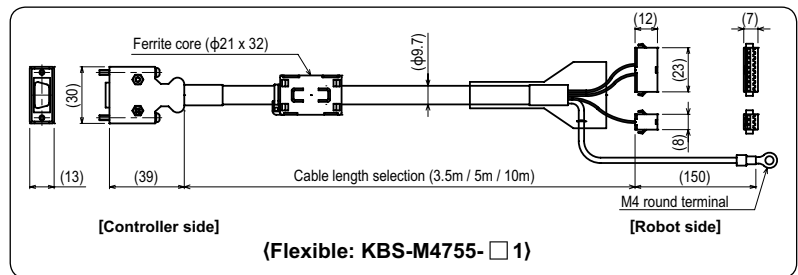
**[Flexible cable]**

Connected robot ▷ PHASER

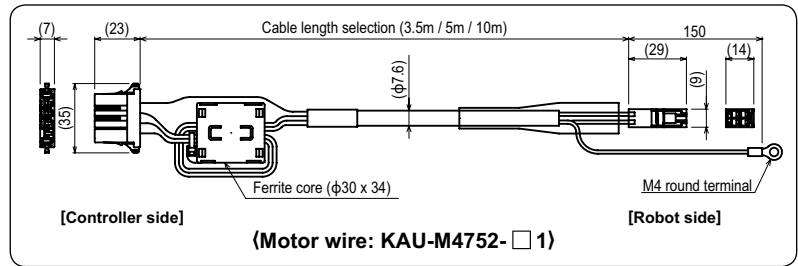
Set	Single item
KBS-M4720-□ 0	Signal wire KBS-M4755-□ 1
	Motor wire KAU-M4752-□ 1

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



**[Motor wire]**



**RDV-X cable (No-brake specifications)**

**[Standard cable]**

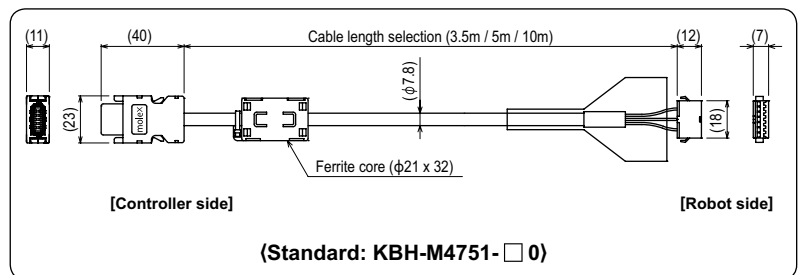
Connected robot ▷ FLIP-X

Set	Single item
KEF-M4710-□ 0	Signal wire KBH-M4751-□ 0
	Motor wire KEF-M4752-□ 0
	I/O connector KBH-M4420-00

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m

**[Signal wire]**



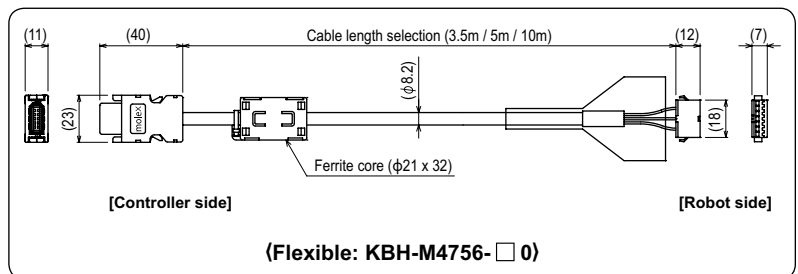
**[Flexible cable]**

Connected robot ▷ FLIP-X

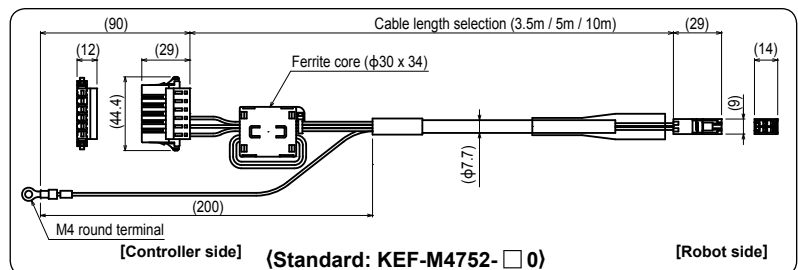
Set	Single item
KEF-M4730-□ 0	Signal wire KBH-M4756-□ 0
	Motor wire KEF-M4752-□ 0
	I/O connector KBH-M4420-00

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



**[Motor wire]**



# Robot cable table

## RDV-X cable (models with brake and sensor)

### [Standard cable]

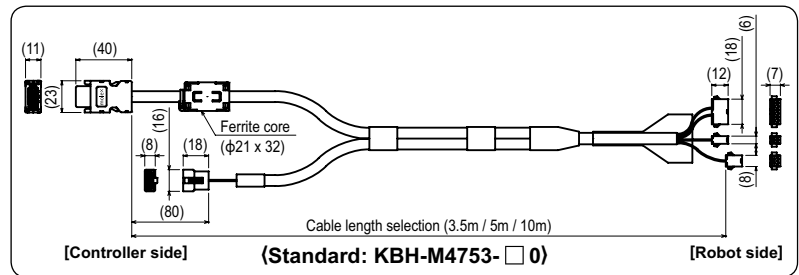
Connected robot ▷ **FLIP-X**

Set	Single item
KEF-M4720-□ 0	Signal wire KBH-M4753-□ 0
	Motor wire KEF-M4752-□ 0
	ORG, BK wires KBH-M4421-00

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m

### [Signal wire]



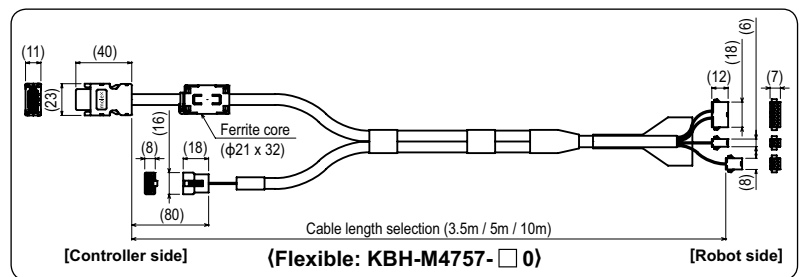
### [Flexible cable]

Connected robot ▷ **FLIP-X**

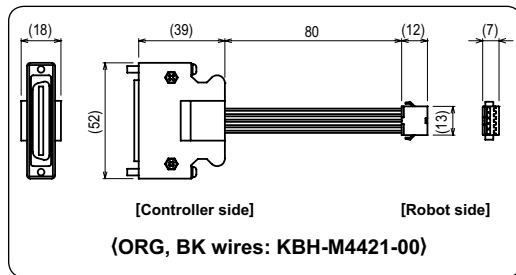
Set	Single item
KEF-M4740-□ 0	Signal wire KBH-M4757-□ 0
	Motor wire KEF-M4752-□ 0
	ORG, BK wires KBH-M4421-00

Note. Notation within slot in model types is as shown at right.

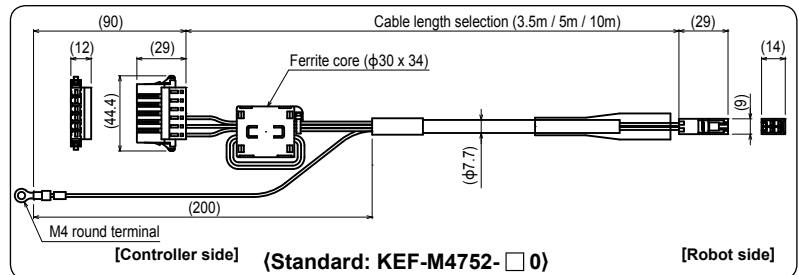
Within □	Cable length
3	3.5m
5	5m
A	10m



### [ORG, BK wires]



### [Motor wire]



## RDV-P cable

### [Standard cable]

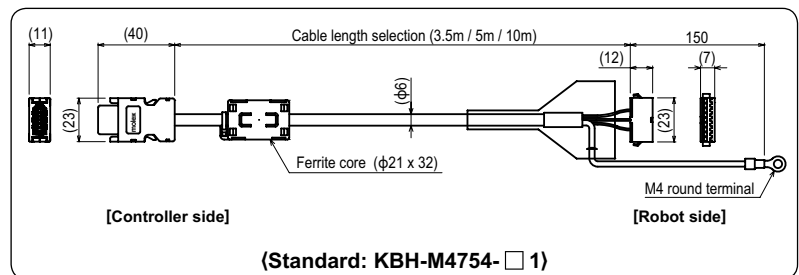
Connected robot ▷ **PHASER**

Set	Single item
KEF-M4711-□ 0	Signal wire KBH-M4754-□ 1
	Motor wire KEF-M4755-□ 0
	I/O connector KBH-M4420-00

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m

### [Signal wire]



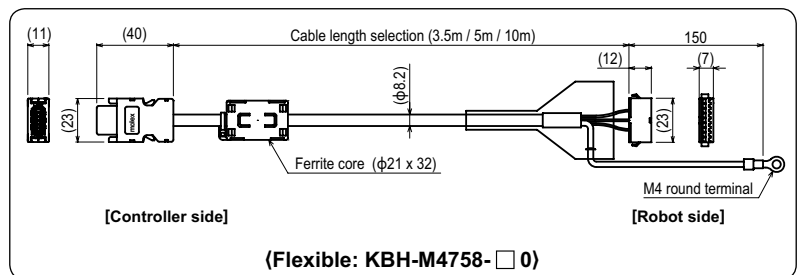
### [Flexible cable]

Connected robot ▷ **PHASER**

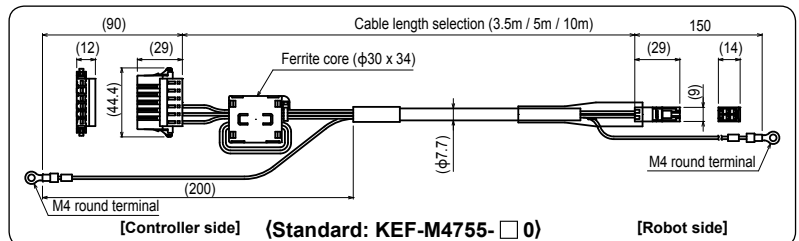
Set	Single item
KEF-M4712-□ 0	Signal wire KBH-M4758-□ 0
	Motor wire KEF-M4755-□ 0
	I/O connector KBH-M4420-00

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



### [Motor wire]



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
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Linear motor single-axis robots  
PHASER  
Cartesian robots  
XX-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
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**SR1-X cable**

**[Standard cable]**

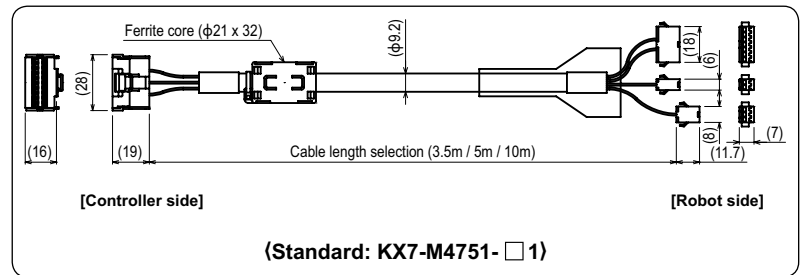
Connected robot ▷ **FLIP-X**

Set	Single item	
KX7-M4710-□ 0	Signal wire	KX7-M4751-□ 1
	Motor wire	KX7-M4752-□ 0

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m

**[Signal wire]**



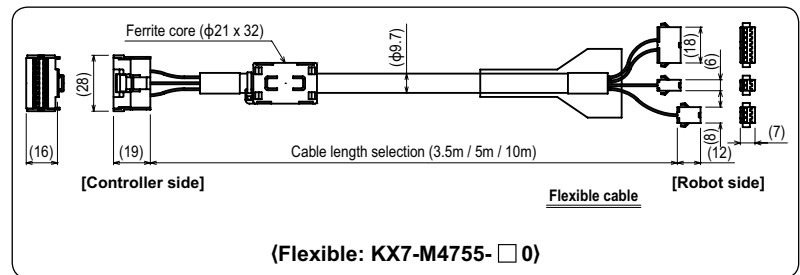
**[Flexible cable]**

Connected robot ▷ **FLIP-X**

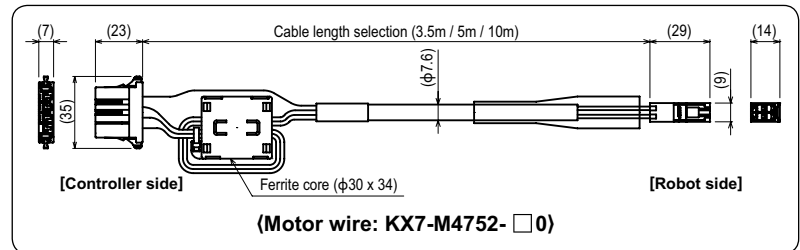
Set	Single item	
KX7-M4720-□ 0	Signal wire	KX7-M4755-□ 0
	Motor wire	KX7-M4752-□ 0

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



**[Motor wire]**



**SR1-P cable**

**[Standard cable]**

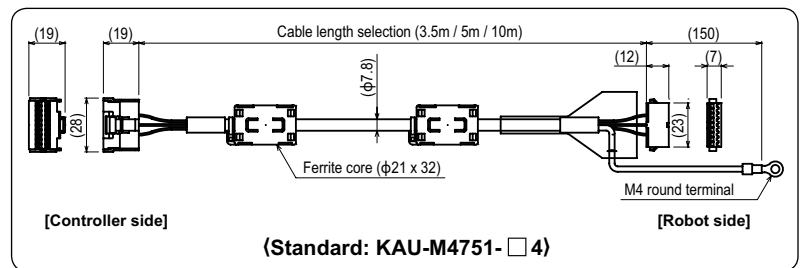
Connected robot ▷ **PHASER**

Set	Single item	
KAU-M4710-□ 0	Signal wire	KAU-M4751-□ 4
	Motor wire	KAU-M4752-□ 1

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m

**[Signal wire]**



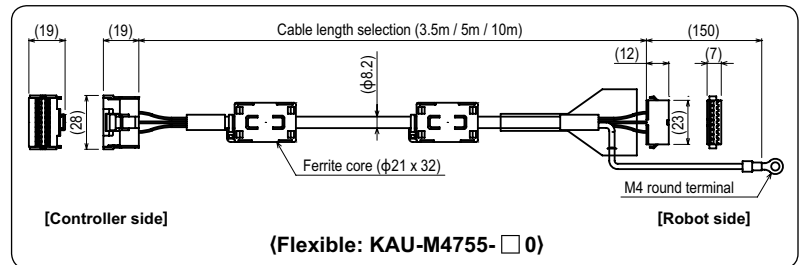
**[Flexible cable]**

Connected robot ▷ **PHASER**

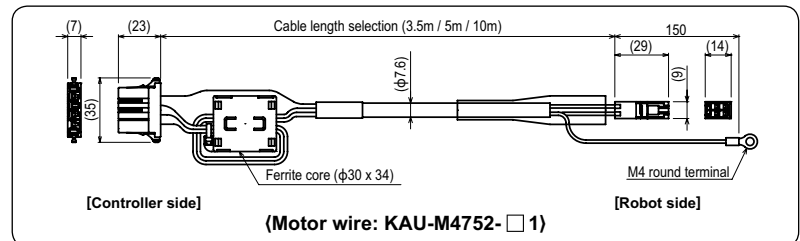
Set	Single item	
KAU-M4720-□ 0	Signal wire	KAU-M4755-□ 0
	Motor wire	KAU-M4752-□ 1

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



**[Motor wire]**



# Robot cable table

## ERCD / ERCX cable

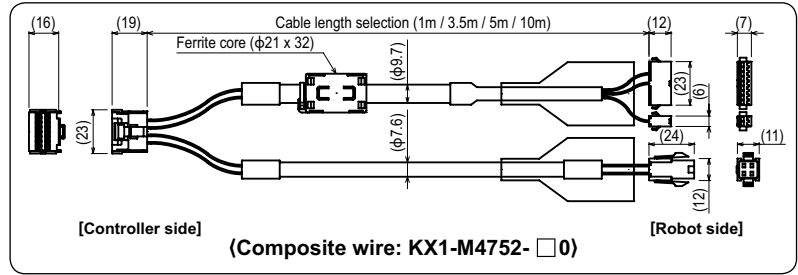
### [Flexible cable]

Connected robot ▷ **FLIP-X**

Set	Single item
-	Composite wire KX1-M4752- □ 0

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
1	1m
3	3.5m
5	5m
A	10m



## Multi-robot cable

### Single axis multi-robot cable

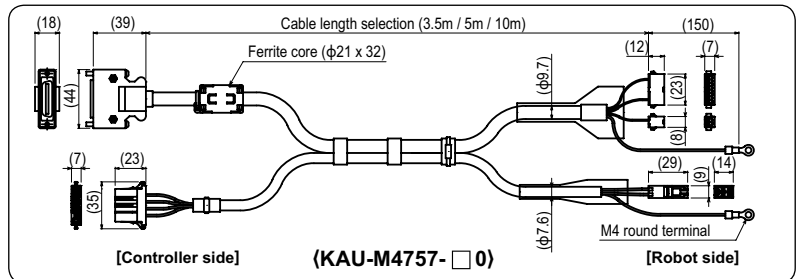
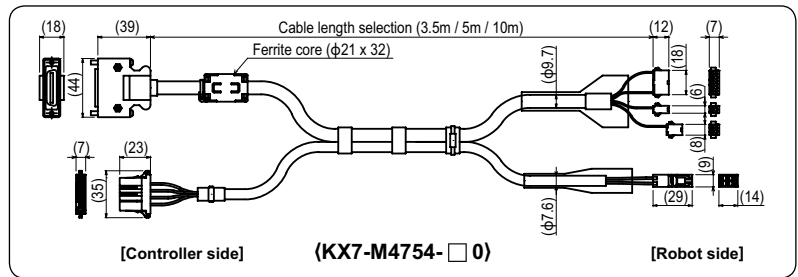
### [Flexible cable]

Connected controller ▷ **RCX240**

Robot	Cable type
FLIP-X	KX7-M4754- □ 0
PHASER	KAU-M4757- □ 0

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m





2-axes multi-robot cable

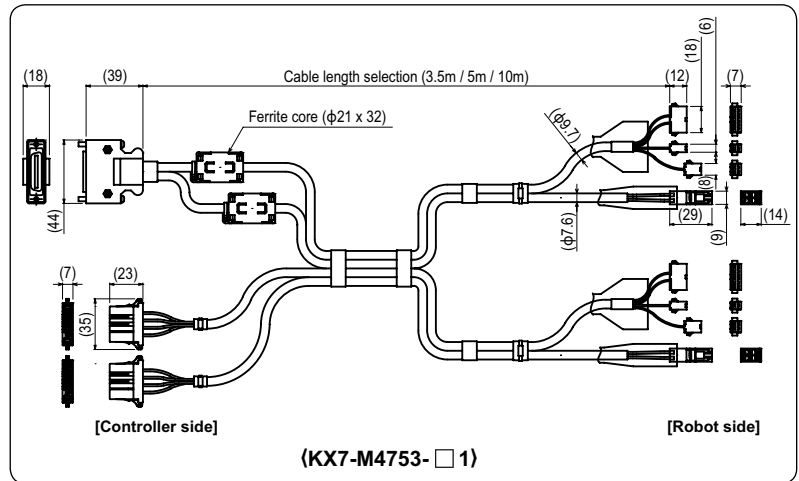
[Flexible cable]

Connected controller ▷ • RCX221 / RCX222  
 • RCX240 / RCX320 / RCX340  
 • DRCX

Robot combinations		Cable type
First axis	Second axis	
FLIP-X	FLIP-X	KX7-M4753-□ 1

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



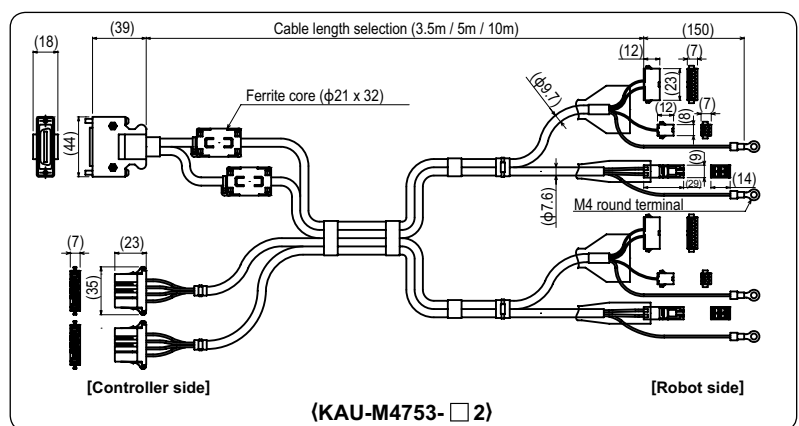
[Flexible cable]

Connected controller ▷ RCX221 / RCX240

Robot combinations		Cable type
First axis	Second axis	
PHASER	PHASER	KAU-M4753-□ 2

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



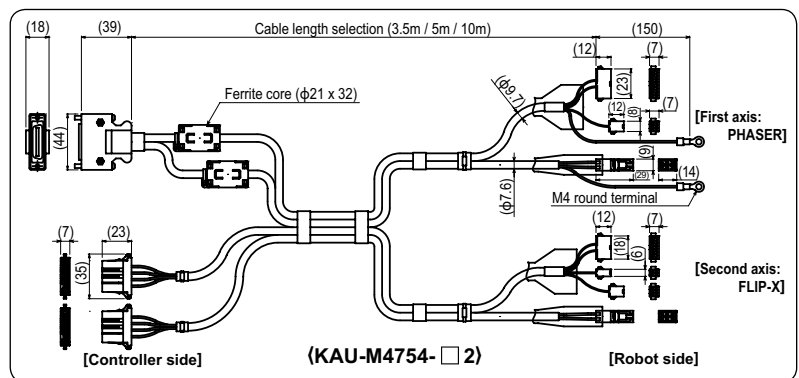
[Flexible cable]

Connected controller ▷ RCX221 / RCX240

Robot combinations		Cable type
First axis	Second axis	
PHASER	FLIP-X	KAU-M4754-□ 2

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



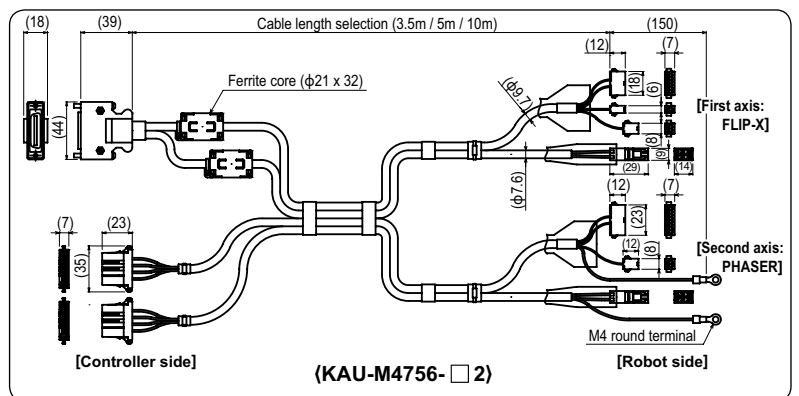
[Flexible cable]

Connected controller ▷ RCX221 / RCX240

Robot combinations		Cable type
First axis	Second axis	
FLIP-X	PHASER	KAU-M4756-□ 2

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XX-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER INFORMATION  
 CABLE  
 TECHNICAL INFORMATION  
 DISCONTINUED

## Cartesian robot cable

### Cartesian 2-axes cable

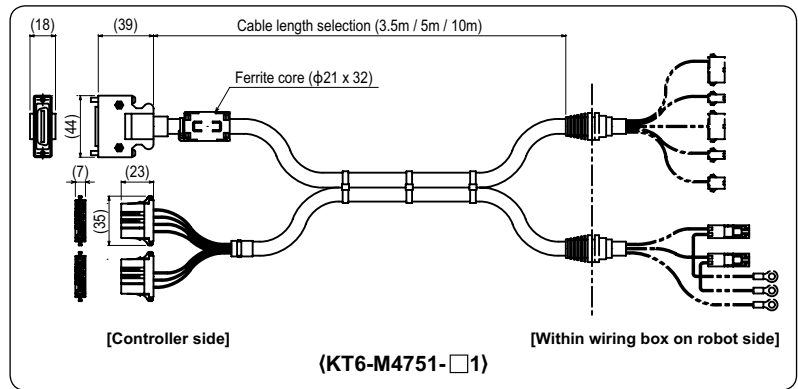
**[Standard cable]**

Connected controller ▷ **DRCX / RCX222 / RCX320 / RCX340**

<b>Type</b>	KT6-M4751-□ 1
-------------	---------------

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



### Cartesian 3-axes cable

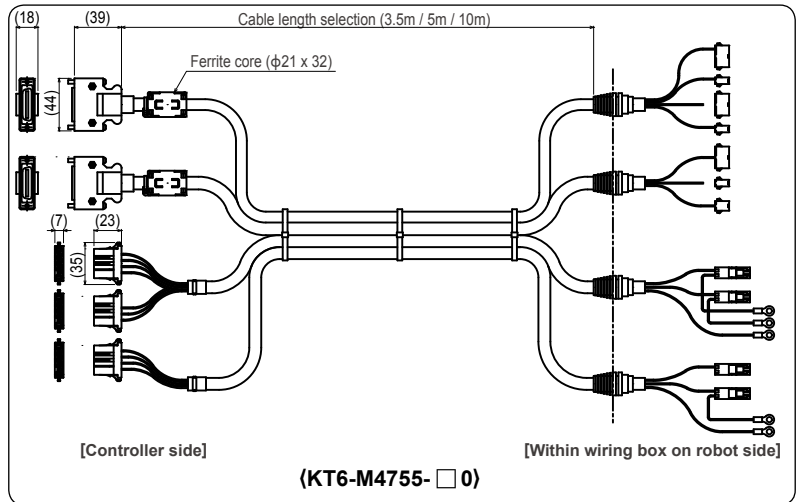
**[Standard cable]**

Connected controller ▷ **RCX142 / RCX240 / RCX340**

<b>Type</b>	KT6-M4755-□ 0
-------------	---------------

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



### Cartesian 4-axes cable

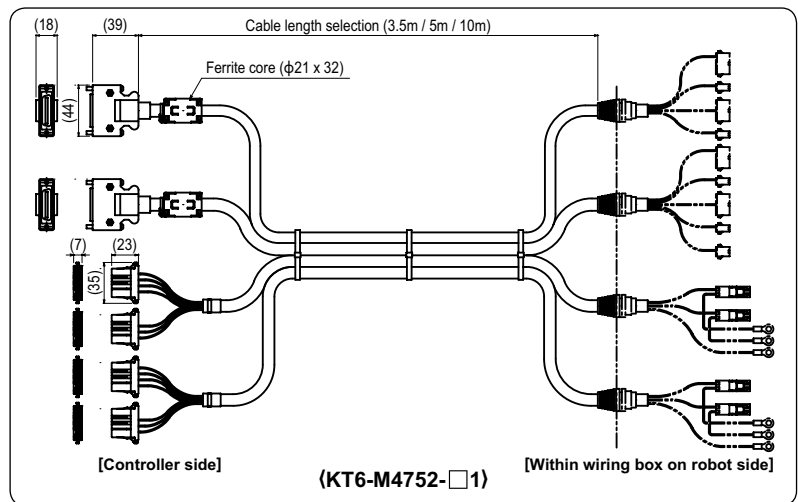
**[Standard cable]**

Connected controller ▷ **RCX142 / RCX240 / RCX340**

<b>Type</b>	KT6-M4752-□ 1
-------------	---------------

Note. Notation within slot in model types is as shown at right.

Within □	Cable length
3	3.5m
5	5m
A	10m



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
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DISCONTINUED

# SCARA robot cable

Note. SCARA robot cables all use the same size connectors but different models use different cables.

## [Standard cable]

Connected robot ▷ • **YK-XG (No including YK120XG / YK150XG / YK180XG)**

- YK-XGS
- YK-TW
- YK400XR / YK-XE

Cable length	Type
3.5m	KBF-M6211-00
5m	KBF-M6211-10
10m	KBF-M6211-20

Connected robot ▷ • **YK120XG**  
• **YK150XG**  
• **YK180XG**

Cable length	Type
2m	KCB-M6211-31
3.5m	KCB-M6211-01
5m	KCB-M6211-11
10m	KCB-M6211-21

Connected robot ▷ • **YK-XGP**  
• **YK-XGC**

Cable length	Type
3.5m	KDP-M6211-00
5m	KDP-M6211-10
10m	KDP-M6211-20

Connected robot ▷ • **YK-XC (Large type)**  
• **YK-XS**  
• **YK-XP**

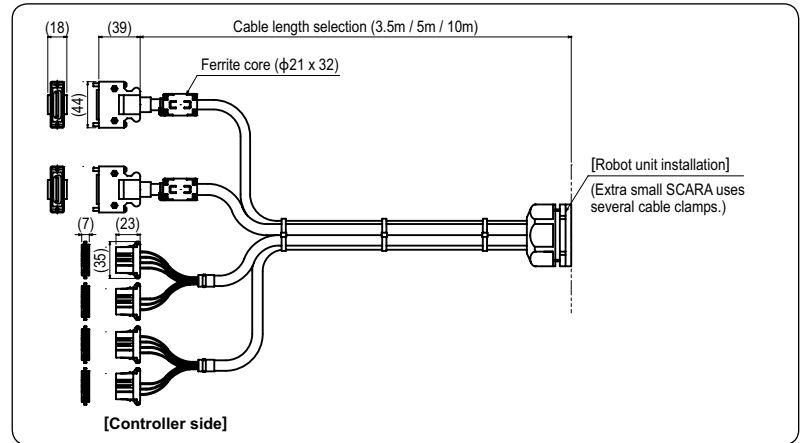
Cable length	Type
3.5m	KN3-M6211-00
5m	KN3-M6211-10
10m	KN3-M6211-20

Connected robot ▷ • **YK1200X**

Cable length	Type
3.5m	KN6-M6211-00
5m	KN6-M6211-10
10m	KN6-M6211-20

Connected robot ▷ • **YK180X**  
• **YK220X**  
• **YK180XC**  
• **YK220XC**

Cable length	Type
3.5m	KBE-M6211-00
5m	KBE-M6211-10
10m	KBE-M6211-20



# Gripper cable

Note. Be sure to adjust the total length of the robot (for gripper) cable and relay cable to 14m or less.

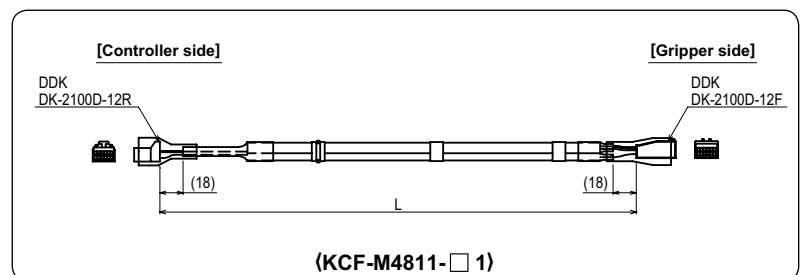
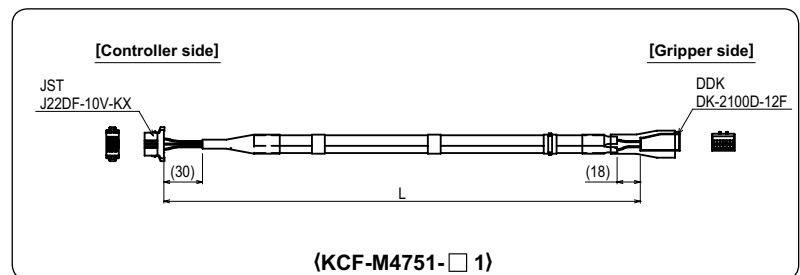
## ● Robot cable [Flexible cable]

Cable length	Type
3.5m	KCF-M4751-31
5m	KCF-M4751-51
10m	KCF-M4751-A1

## ● Relay cable [Flexible cable]

Type	KCF-M4811-□ 1
------	---------------

Within □	1	2	3	4	5	6	7	8
Length (mm)	0.5	1	1.5	2	2.5	3	3.5	4



Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
CABLE  
TECHNICAL INFORMATION  
DISCONTINUED

# Cable terminal table

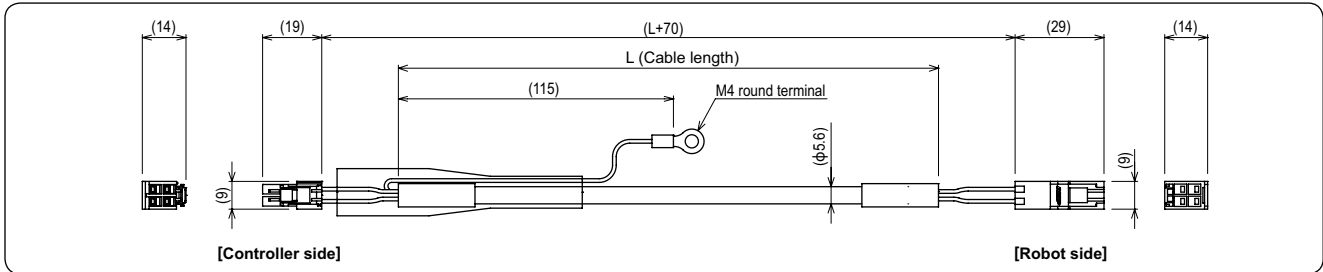
This is a relay cable used between the robot body and the robot cable such as cable carrier wiring, etc.

## PHASER relay cable

Motor wire (350mm to 1450mm) Note. Common to MR types and MF types

Type	KAU-M4813-□ 0
------	---------------

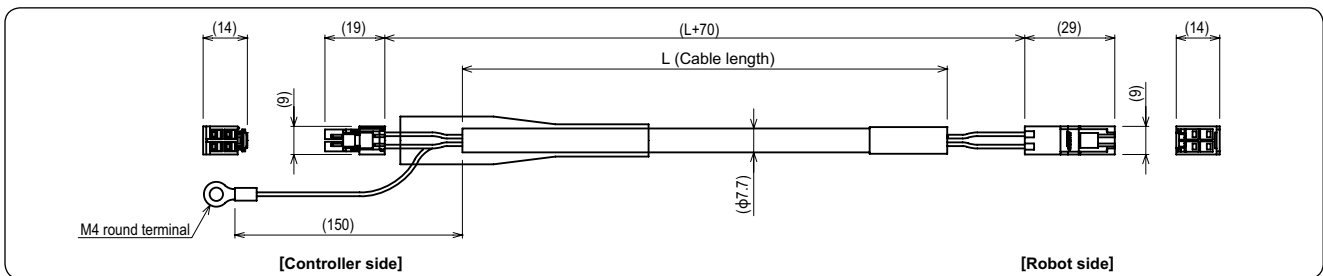
Within □	1	2	3	4	5	6	7	8	9	A	B	C
Length (mm)	350	450	550	650	750	850	950	1050	1150	1250	1350	1450



Motor wire (1500mm to 2600mm) Note. Not usable on MR type

Type	KBD-M4813-□ 0
------	---------------

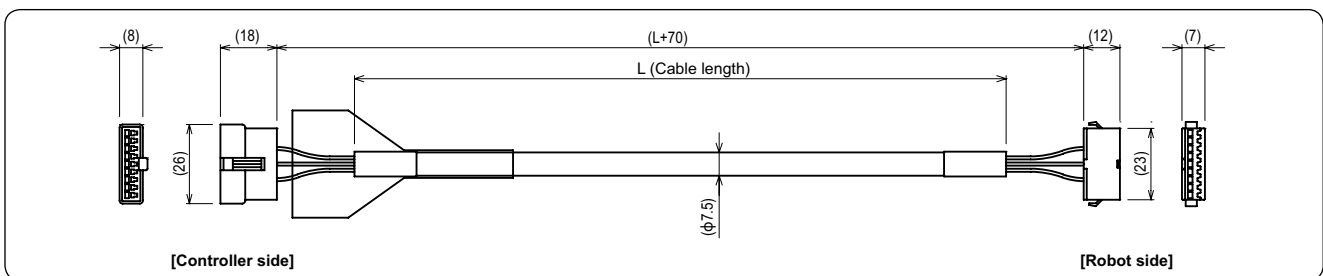
Within □	6	7	8	9	A	B	C	D	E	F	G	M
Length (mm)	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600



Signal cable (350mm to 1450mm) Note. Common to MR types and MF types

Type	KAU-M4812-□ 1
------	---------------

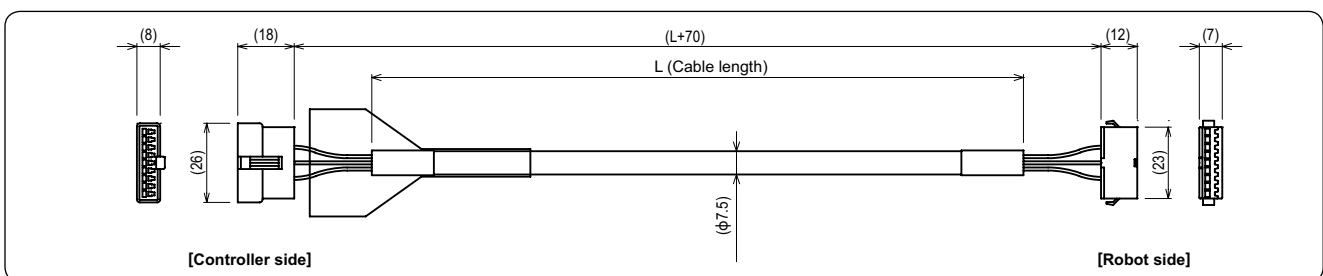
Within □	1	2	3	4	5	6	7	8	9	A	B	C
Length (mm)	350	450	550	650	750	850	950	1050	1150	1250	1350	1450



Signal cable (1500mm to 2600mm) Note. Common to MR types and MF types

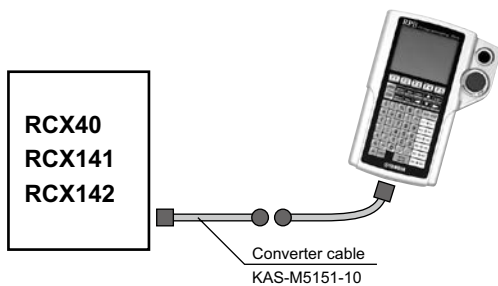
Type	KBD-M4812-□ 1
------	---------------

Within □	6	7	8	9	A	B	C	D	E	F	G	J
Length (mm)	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500	2600



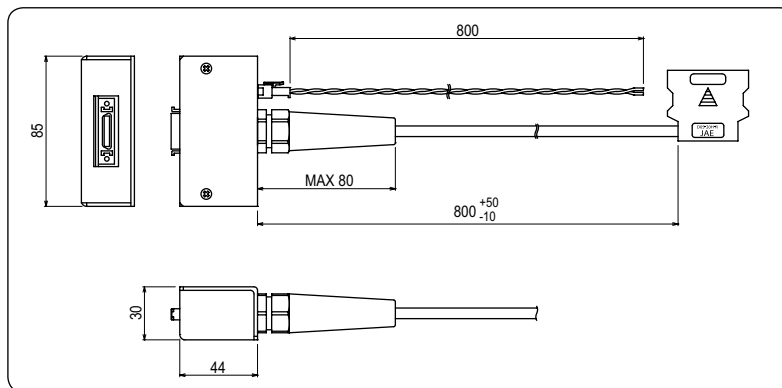
# Connector converter cable

## Programming box converter cable

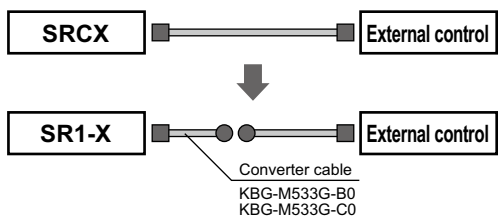


Converter cable for operating the RCX40, RCX141, RCX142 by RPB.

**Type** KAS-M5151-10

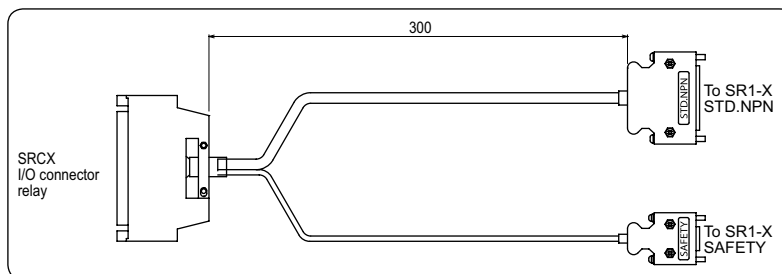


## I/O control converter cable



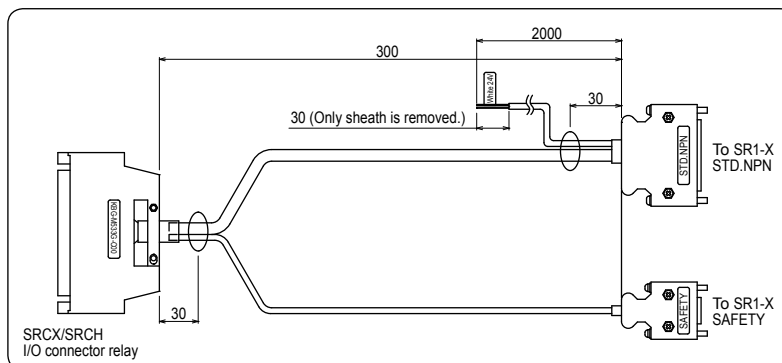
Converter cable allows connecting to the SRCX connector when system using the SRCX was changed to the SR1-X.

**External power supply is used for the I/O power supply.**



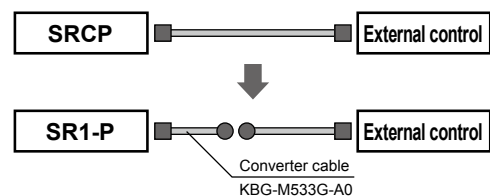
**Type** KBG-M533G-B0

**Internal power supply of the SRCX is used for the I/O power supply.**

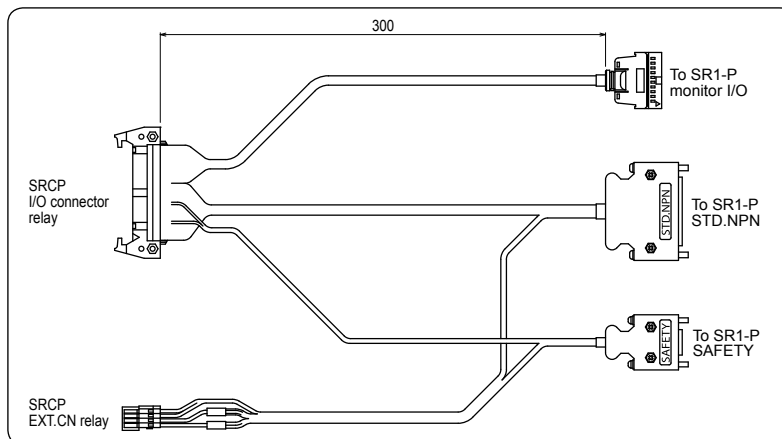


Note. It is necessary to input the 24V-power supply from the outside.

**Type** KBG-M533G-C0



Converter cable allows connecting to the SRCP connector when system using the SRCP was changed to the SR1-P.



**Type** KBG-M533G-A0

# Robonity Acceleration/Deceleration and Inertia Moment

## Acceleration/Deceleration

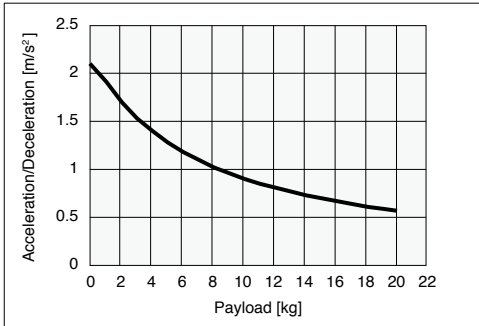
### LBAS04

Model	LBAS04 -6	LBAS04 -6	LBAS04 -12	LBAS04 -12
	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical
Payload [kg]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]
0	2.1	2.1	4.2	3.6
1	1.91	2.1	3.84	2.4
2	1.7	1.64	2.99	1.8
3	1.53	1.34	2.45	
4	1.4	1.14	2.07	
5	1.28	0.99	1.8	
6	1.18		1.58	
7	1.1		1.42	
8	1.02		1.28	
9	0.96		1.17	
10	0.9		1.08	
11	0.85		1	
12	0.81		0.93	
13	0.77			
14	0.73			
15	0.7			
16	0.67			
17	0.64			
18	0.61			
19	0.59			
20	0.57			

## Payload – Acceleration/Deceleration Graph (Estimate)

### LBAS04-6

Horizontal/  
Wall hanging

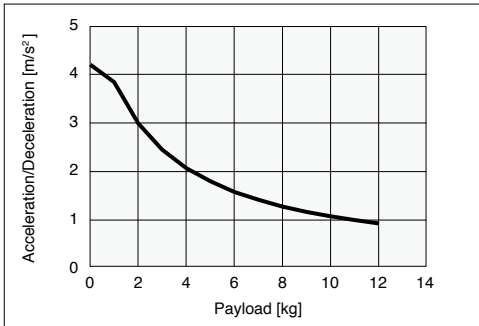


Vertical

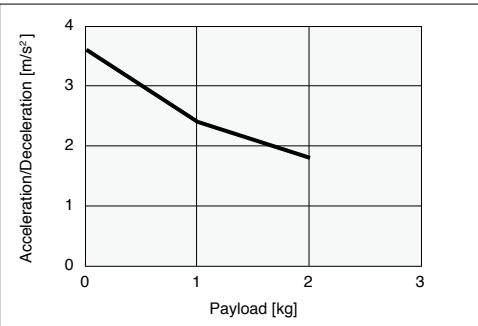


### LBAS04-12

Horizontal/  
Wall hanging



Vertical



## Inertia Moment

### LBAS04

Model	Effective stroke [mm]															
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
LBAS04-6	0.060	0.063	0.067	0.071	0.075	0.079	0.083	0.087	0.090	0.094	0.098	0.102	0.106	0.110	0.114	0.117
LBAS04-12	0.069	0.072	0.076	0.080	0.084	0.088	0.092	0.096	0.099	0.103	0.107	0.111	0.115	0.119	0.123	0.126



# Robonity Acceleration/Deceleration and Inertia Moment (Basic model)

## Acceleration/Deceleration

### LBAS05

Model	LBAS05-2	LBAS05-2	LBAS05-5	LBAS05-5	LBAS05-10	LBAS05-10	LBAS05-20	LBAS05-20
	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical
Payload [kg]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]
0	1.3	1	3.04	3.34	4.64	4.86	7.44	7.44
1	1.27	0.95	2.97	3.18	4.44	4.56	7.44	6.99
2	1.24	0.91	2.91	3.03	4.25	4.3	7.44	5.65
3	1.22	0.86	2.85	2.88	4.07	4.06	7.44	3.42
4	1.19	0.82	2.79	2.73	3.9	3.85	7.44	
5	1.17	0.77	2.73	2.58	3.73	3.66	7.44	
6	1.14	0.73	2.67	2.43	3.57	3.49	6.64	
7	1.11	0.68	2.61	2.28	3.41		6	
8	1.09	0.64	2.55	2.13	3.27		5.47	
9	1.06	0.59	2.49	1.98	3.12		5.02	
10	1.04	0.55	2.43	1.83	2.99		4.65	
11	1.01	0.5	2.37	1.68	2.86		4.32	
12	0.98	0.46	2.31	1.53	2.74		4.04	
13	0.96	0.41	2.24		2.62			
14	0.93	0.37	2.18		2.51			
15	0.91	0.32	2.12		2.41			
16	0.88		2.06		2.31			
17	0.85		2		2.22			
18	0.83		1.94		2.14			
19	0.8		1.88		2.06			
20	0.78		1.82		1.99			
21	0.75		1.76		1.93			
22	0.72		1.7		1.87			
23	0.7		1.64		1.82			
24	0.67		1.58		1.77			
25	0.65		1.52					
26	0.62		1.45					
27	0.59		1.39					
28	0.57		1.33					
29	0.54		1.27					
30	0.52		1.21					
31	0.49		1.15					
32	0.46		1.09					
33	0.44		1.03					
34	0.41		0.97					
35	0.39		0.91					
36	0.36		0.85					
37	0.33		0.79					
38	0.31		0.72					
39	0.28		0.66					
40	0.26		0.6					
41	0.23							
42	0.2							
43	0.18							
44	0.15							
45	0.13							

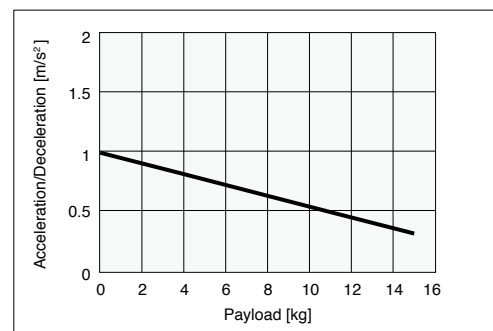
## Payload – Acceleration/Deceleration Graph (Estimate)

### LBAS05-2

Horizontal/  
Wall hanging

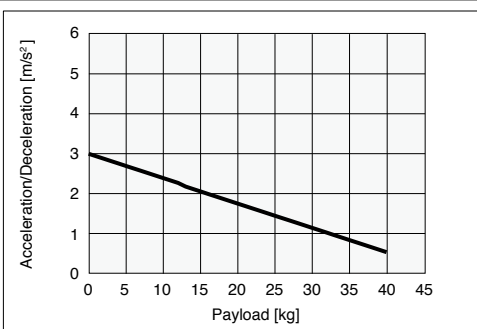


Vertical

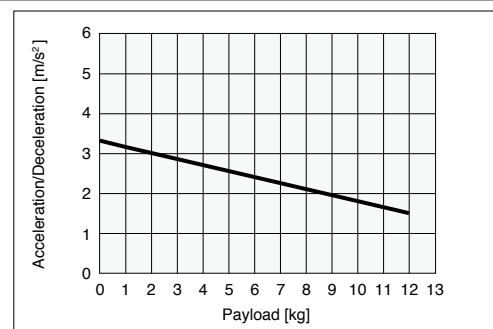


### LBAS05-5

Horizontal/  
Wall hanging



Vertical



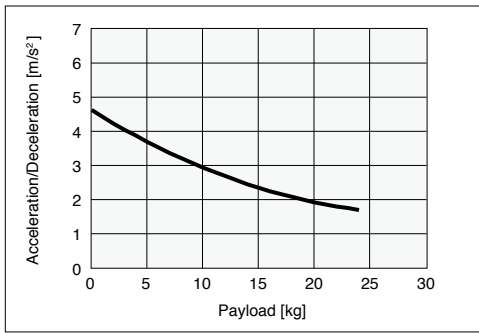
Articulated robots  
YA  
Linear conveyor  
modules  
LCM100  
Motor-less single  
axis actuator  
Robonity  
Compact  
single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor  
single-axis robots  
PHASER  
Cartesian  
robots  
XY-X  
SCARA  
robots  
YK-X  
Pick & place  
robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
CABLE  
TECHNICAL  
INFORMATION  
DISCONTINUED

# Robonity Acceleration/Deceleration and Inertia Moment (Basic model)

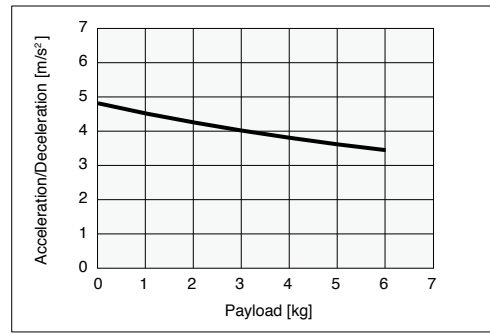
## ■ Payload – Acceleration/Deceleration Graph (Estimate)

### LBAS05-10

Horizontal/  
Wall hanging



Vertical

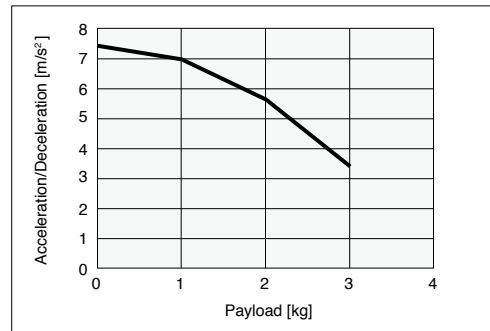


### LBAS05-20

Horizontal/  
Wall hanging



Vertical



## ■ Inertia Moment

### LBAS05

[kg·m <sup>2</sup> ·10 <sup>-4</sup> ]	Effective stroke [mm]															
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
LBAS05-2	0.082	0.090	0.098	0.106	0.114	0.122	0.130	0.138	0.146	0.154	0.162	0.170	0.178	0.186	0.194	0.202
LBAS05-5	0.085	0.093	0.101	0.109	0.117	0.125	0.133	0.141	0.149	0.157	0.165	0.173	0.181	0.189	0.197	0.205
LBAS05-10	0.097	0.105	0.113	0.121	0.129	0.137	0.145	0.153	0.161	0.169	0.177	0.185	0.193	0.201	0.209	0.217
LBAS05-20	0.145	0.153	0.161	0.169	0.177	0.185	0.193	0.201	0.209	0.217	0.224	0.232	0.240	0.248	0.256	0.264

# Robonity Acceleration/Deceleration and Inertia Moment (Basic model)

## Acceleration/Deceleration

### LBAS08

Model	LBAS08 -5 Horizontal/ Wall hanging	LBAS08 -5 Vertical	LBAS08 -10 Horizontal/ Wall hanging	LBAS08 -10 Vertical	LBAS08 -20 Horizontal/ Wall hanging	LBAS08 -20 Vertical
Payload [kg]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]
0	1.65	1.65	6.09	4.79	8.51	8.5
1	1.63	1.62	5.97	4.54	8.2	7.39
2	1.62	1.59	5.86	4.31	7.9	6.42
3	1.6	1.57	5.74	4.09	7.61	5.59
4	1.59	1.54	5.63	3.88	7.33	4.89
5	1.58	1.51	5.52	3.68	7.05	4.33
6	1.56	1.49	5.42	3.5	6.77	3.91
7	1.55	1.46	5.31	3.32	6.51	3.62
8	1.54	1.44	5.21	3.16	6.24	3.46
9	1.52	1.41	5.1	3.01	5.99	
10	1.51	1.38	5	2.87	5.74	
11	1.5	1.36	4.9	2.74	5.5	
12	1.49	1.33	4.8	2.62	5.26	
13	1.47	1.3	4.7	2.52	5.03	
14	1.46	1.28	4.61	2.42	4.8	
15	1.45	1.25	4.51	2.34	4.58	
16	1.43	1.23	4.42	2.27	4.37	
17	1.42	1.2	4.33	2.21	4.16	
18	1.41	1.17	4.24	2.16	3.96	
19	1.4	1.15	4.15	2.13	3.76	
20	1.38	1.12	4.06	2.1	3.57	
21	1.37	1.09	3.98		3.38	
22	1.36	1.07	3.89		3.21	
23	1.35	1.04	3.81		3.03	
24	1.34	1.02	3.73		2.87	
25	1.32	0.99	3.65		2.71	
26	1.31	0.96	3.57		2.55	
27	1.3	0.94	3.49		2.4	
28	1.29	0.91	3.42		2.26	
29	1.28	0.88	3.34		2.13	
30	1.26	0.86	3.27		1.99	
31	1.25		3.2		1.87	
32	1.24		3.13		1.75	
33	1.23		3.06		1.64	
34	1.22		2.99		1.53	
35	1.21		2.93		1.43	
36	1.19		2.86		1.34	
37	1.18		2.8		1.25	
38	1.17		2.74		1.16	
39	1.16		2.68		1.09	
40	1.15		2.62		1.02	
41	1.14		2.57			
42	1.13		2.51			
43	1.12		2.46			
44	1.11		2.41			
45	1.09		2.36			
46	1.08		2.31			
47	1.07		2.26			
48	1.06		2.21			
49	1.05		2.17			
50	1.04		2.12			
51	1.03		2.08			
52	1.02		2.04			
53	1.01		2			
54	1		1.96			
55	0.99		1.93			
56	0.98		1.89			
57	0.97		1.86			
58	0.96		1.83			
59	0.95		1.8			
60	0.94		1.77			
61	0.93		1.74			
62	0.92		1.72			
63	0.91		1.69			
64	0.9		1.67			
65	0.89		1.65			
66	0.88		1.63			
67	0.87		1.61			
68	0.86		1.59			
69	0.85		1.57			
70	0.84		1.56			
71	0.84		1.55			
72	0.83		1.54			
73	0.82		1.53			
74	0.81		1.52			
75	0.8		1.51			
76	0.79		1.51			
77	0.78		1.5			
78	0.77		1.5			
79	0.76		1.5			
80	0.76		1.5			
81	0.75					
82	0.74					
83	0.73					
84	0.72					
85	0.71					
86	0.71					
87	0.7					
88	0.69					
89	0.68					

Model	LBAS08 -5 Horizontal/ Wall hanging	LBAS08 -5 Vertical	LBAS08 -10 Horizontal/ Wall hanging	LBAS08 -10 Vertical	LBAS08 -20 Horizontal/ Wall hanging	LBAS08 -20 Vertical
Payload [kg]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]
90	0.67					
91	0.67					
92	0.66					
93	0.65					
94	0.64					
95	0.63					
96	0.63					
97	0.62					
98	0.61					
99	0.6					
100	0.6					

Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

CABLE

TECHNICAL INFORMATION

DISCONTINUED

# Robonity Acceleration/Deceleration and Inertia Moment (Basic model)

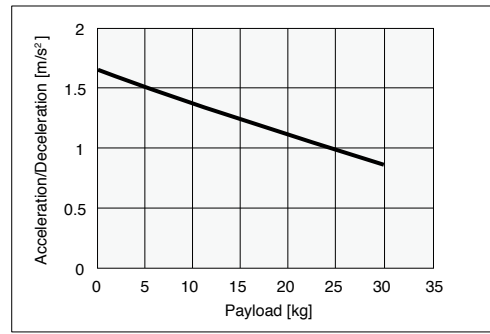
## ■ Payload – Acceleration/Deceleration Graph (Estimate)

### LBAS08-5

Horizontal/  
Wall hanging

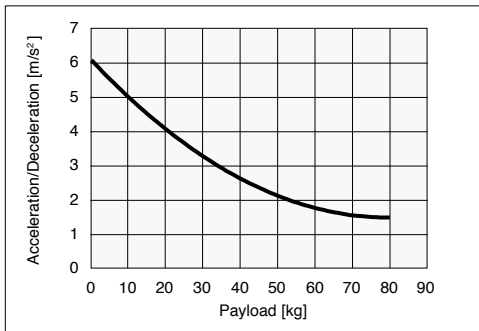


Vertical

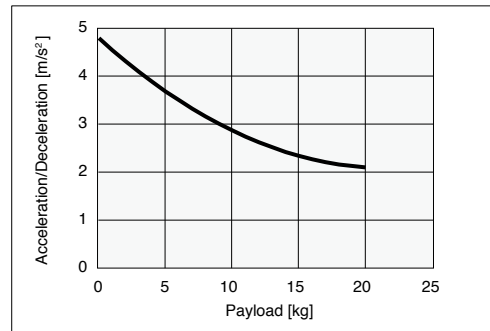


### LBAS08-10

Horizontal/  
Wall hanging

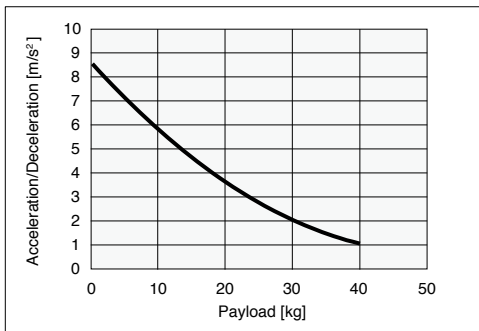


Vertical

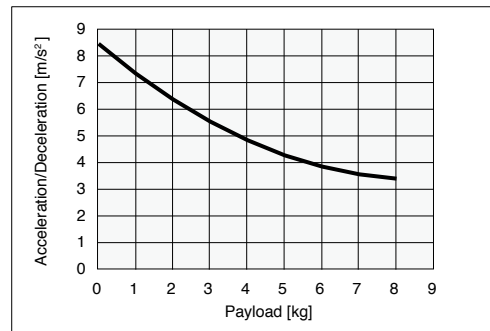


### LBAS08-20

Horizontal/  
Wall hanging



Vertical



## ■ Inertia Moment

### LBAS08

[kg·m <sup>2</sup> ·10 <sup>-4</sup> ]	Effective stroke [mm]																					
Model	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
LBAS08-5	0.160	0.168	0.176	0.184	0.192	0.200	0.208	0.216	0.224	0.232	0.240	0.248	0.256	0.263	0.271	0.279	0.287	0.295	0.303	0.311	0.319	0.327
LBAS08-10	0.190	0.198	0.206	0.214	0.222	0.230	0.238	0.246	0.254	0.261	0.269	0.277	0.285	0.293	0.301	0.309	0.317	0.325	0.333	0.341	0.349	0.357
LBAS08-20	0.309	0.317	0.325	0.333	0.341	0.349	0.357	0.365	0.373	0.381	0.389	0.397	0.405	0.413	0.421	0.429	0.437	0.445	0.453	0.461	0.469	0.477

## Acceleration/Deceleration

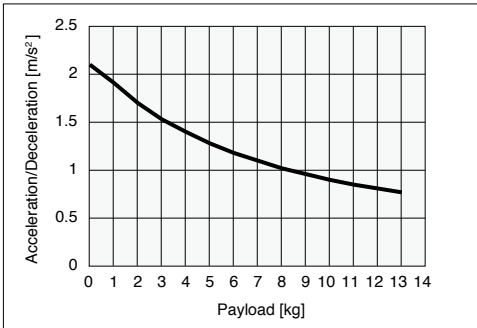
### LGXS05

Model	LGXS05-5 Horizontal/ Wall hanging	LGXS05-5 Vertical	LGXS05-10 Horizontal/ Wall hanging	LGXS05-10 Vertical	LGXS05-20 Horizontal/ Wall hanging	LGXS05-20 Vertical
Payload [kg]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]
0	2.1	2.1	4.2	3.6	5.3	5.3
1	1.91	2.1	3.84	2.4	5.3	5.3
2	1.7	1.64	2.99	1.8	3.98	3.98
3	1.53	1.34	2.45	1.44	3.19	
4	1.4	1.14	2.07	1.2	2.66	
5	1.28	0.99	1.8		2.28	
6	1.18	0.87	1.58			
7	1.1	0.78	1.42			
8	1.02	0.7	1.28			
9	0.96					
10	0.9					
11	0.85					
12	0.81					
13	0.77					

## Payload – Acceleration/Deceleration Graph (Estimate)

### LGXS05-5

Horizontal/  
Wall hanging

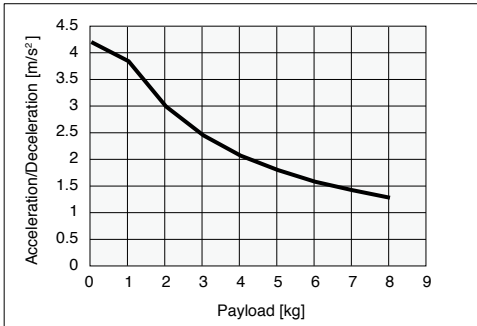


Vertical

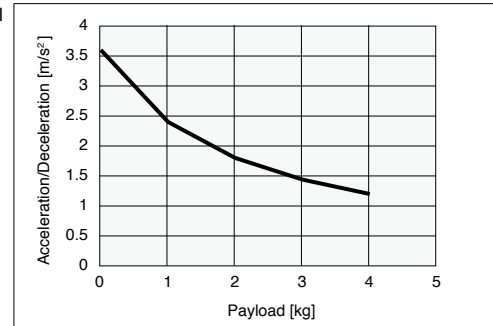


### LGXS05-10

Horizontal/  
Wall hanging

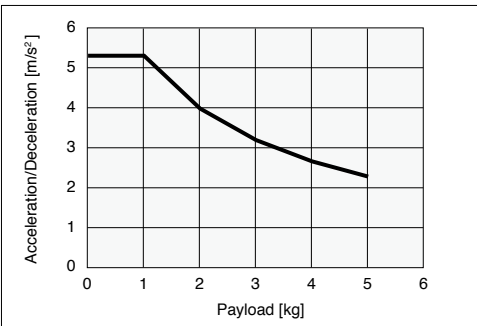


Vertical

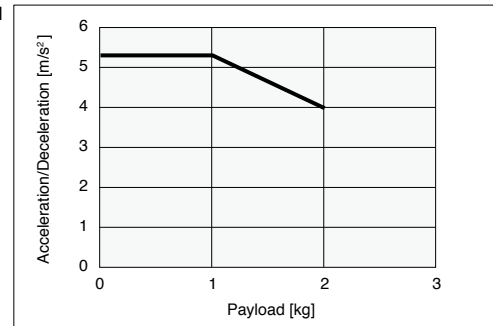


### LGXS05-20

Horizontal/  
Wall hanging



Vertical



## Inertia Moment

### LGXS05

[kg·m <sup>2</sup> ·10 <sup>-4</sup> ]	Effective stroke [mm]																
	Model	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
LGXS05-5	0.139	0.147	0.155	0.163	0.171	0.179	0.187	0.195	0.203	0.211	0.219	0.227	0.235	0.243	0.251	0.259	
LGXS05-10	0.146	0.154	0.162	0.170	0.178	0.186	0.194	0.202	0.210	0.218	0.226	0.234	0.242	0.250	0.258	0.266	
LGXS05-20	0.177	0.185	0.193	0.201	0.209	0.217	0.225	0.233	0.241	0.249	0.257	0.265	0.273	0.281	0.289	0.297	

Articulated robots  
**YA**  
 Linear conveyor  
 modules  
**LCM100**  
 Motor-less single  
 axis actuator  
**Robonity**  
 Compact  
 single-axis robots  
**TRANSEVO**  
 Single-axis robots  
**FLIP-X**  
 Linear motor  
 single-axis robots  
**PHASER**  
 Cartesian  
 robots  
**XY-X**  
 SCARA  
 robots  
**YK-X**  
 Pick & place  
 robots  
**YP-X**  
**CLEAN**  
**CONTROLLER**  
**INFORMATION**  
**CABLE**  
**TECHNICAL**  
**INFORMATION**  
**DISCONTINUED**

# Robonity Acceleration/Deceleration and Inertia Moment (Advanced model)

## Acceleration/Deceleration

### LGXS05L

Model	LGXS05L -5		LGXS05L -10		LGXS05L -20	
	Horizontal/Wall hanging	Vertical	Horizontal/Wall hanging	Vertical	Horizontal/Wall hanging	Vertical
Payload [kg]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]
0	3.04	3.34	4.26	4.86	5.07	5.07
1	2.97	3.18	4.08	4.56	4.86	4.86
2	2.91	3.03	3.9	4.3	4.66	4.66
3	2.85	2.88	3.74	4.06	4.46	4.46
4	2.79	2.73	3.58	3.85	4.25	
5	2.73	2.58	3.42	3.66	4.05	
6	2.67	2.43	3.28	3.49	3.85	
7	2.61	2.28	3.13		3.65	
8	2.55	2.13	3		3.44	
9	2.49	1.98	2.87		3.24	
10	2.43	1.83	2.74		3.04	
11	2.37	1.68	2.62		2.83	
12	2.31	1.53	2.51		2.63	
13	2.24		2.41			
14	2.18		2.3			
15	2.12		2.21			
16	2.06		2.12			
17	2		2.04			

Model	LGXS05L -5		LGXS05L -10		LGXS05L -20	
	Horizontal/Wall hanging	Vertical	Horizontal/Wall hanging	Vertical	Horizontal/Wall hanging	Vertical
Payload [kg]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]
18	1.94		1.96			
19	1.88		1.89			
20	1.82		1.83			
21	1.76		1.77			
22	1.7		1.72			
23	1.64		1.67			
24	1.58		1.63			
25	1.52					
26	1.45					
27	1.39					
28	1.33					
29	1.27					
30	1.21					
31	1.15					
32	1.09					

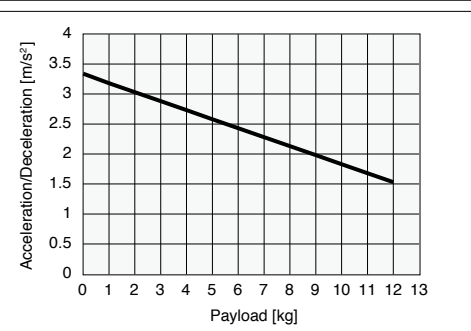
## Payload – Acceleration/Deceleration Graph (Estimate)

### LGXS05L-5

Horizontal/Wall hanging



Vertical

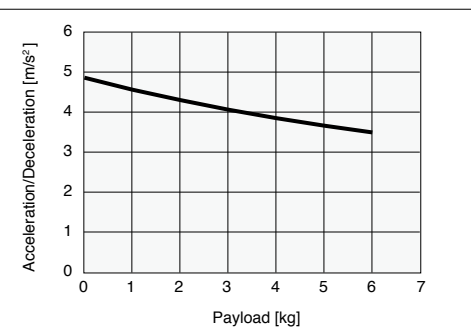


### LGXS05L-10

Horizontal/Wall hanging

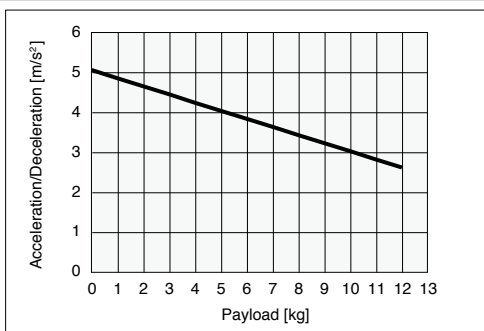


Vertical

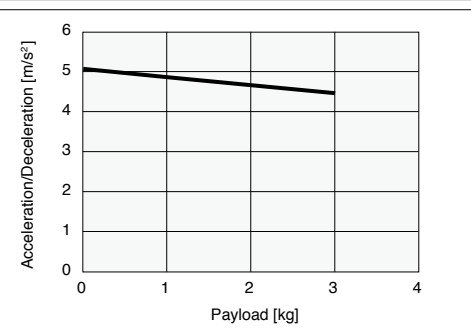


### LGXS05L-20

Horizontal/Wall hanging



Vertical



## Inertia Moment

### LGXS05L

Model	Effective stroke [mm]															
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
LGXS05L-5	0.144	0.152	0.160	0.168	0.176	0.184	0.192	0.200	0.208	0.216	0.224	0.232	0.240	0.248	0.256	0.264
LGXS05L-10	0.153	0.161	0.169	0.177	0.185	0.193	0.201	0.209	0.217	0.225	0.233	0.241	0.249	0.257	0.265	0.273
LGXS05L-20	0.192	0.200	0.208	0.216	0.224	0.232	0.240	0.248	0.256	0.264	0.271	0.279	0.287	0.295	0.303	0.311



## Acceleration/Deceleration

### LGXS07

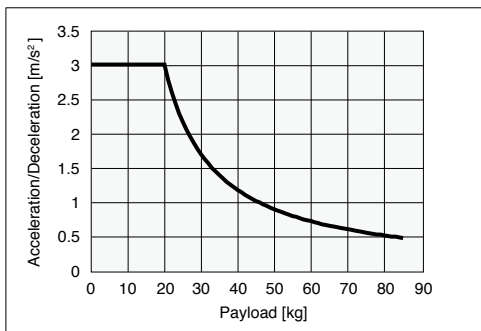
Model	LGXS07-5 Horizontal/ Wall hanging	LGXS07-5 Vertical	LGXS07-10 Horizontal/ Wall hanging	LGXS07-10 Vertical	LGXS07-20 Horizontal/ Wall hanging	LGXS07-20 Vertical	LGXS07-30 Horizontal/ Wall hanging	LGXS07-30 Vertical
Payload [kg]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]
0	3.04	2.53	6.08	5.57	7.09	6.08	6.99	6.99
1	3.04	2.47	5.68	5.29	6.74	5.57	6.64	6.64
2	3.04	2.42	5.33	5.02	6.4	5.15	6.31	6.31
3	3.04	2.37	5.02	4.75	6.07	4.78	5.98	
4	3.04	2.32	4.75	4.5	5.75	4.47	5.67	
5	3.04	2.27	4.5	4.24	5.44		5.36	
6	3.04	2.22	4.28	3.99	5.14		5.06	
7	3.04	2.17	4.08	3.75	4.85		4.78	
8	3.04	2.12	3.89	3.52	4.57		4.5	
9	3.04	2.07	3.73		4.3		4.24	
10	3.04	2.02	3.57		4.04		3.98	
11	3.04	1.97	3.43		3.79			
12	3.04	1.92	3.3		3.55			
13	3.04	1.87	3.18		3.32			
14	3.04	1.82	3.07		3.09			
15	3.04	1.77	2.96		2.88			
16	3.04	1.72	2.86		2.68			
17	3.04		2.77		2.49			
18	3.04		2.69		2.31			
19	3.04		2.6		2.14			
20	3.04		2.53		1.98			
21	2.82		2.46		1.83			
22	2.64		2.39		1.69			
23	2.48		2.32		1.56			
24	2.33		2.26		1.44			
25	2.21		2.21		1.32			
26	2.09		2.15					
27	1.99		2.1					
28	1.9		2.05					
29	1.81		2					
30	1.73		1.96					
31	1.66		1.91					
32	1.6		1.87					
33	1.53		1.83					
34	1.48		1.79					
35	1.43		1.76					
36	1.38		1.72					
37	1.33		1.69					
38	1.29		1.66					
39	1.25		1.63					
40	1.21		1.6					
41	1.18		1.57					
42	1.14		1.54					
43	1.11		1.51					
44	1.08		1.49					
45	1.05		1.46					

Model	LGXS07-5 Horizontal/ Wall hanging	LGXS07-5 Vertical	LGXS07-10 Horizontal/ Wall hanging	LGXS07-10 Vertical	LGXS07-20 Horizontal/ Wall hanging	LGXS07-20 Vertical	LGXS07-30 Horizontal/ Wall hanging	LGXS07-30 Vertical
Payload [kg]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]
46	1.03							
47	1							
48	0.98							
49	0.95							
50	0.93							
51	0.91							
52	0.89							
53	0.87							
54	0.85							
55	0.83							
56	0.82							
57	0.8							
58	0.78							
59	0.77							
60	0.76							
61	0.74							
62	0.73							
63	0.71							
64	0.7							
65	0.69							
66	0.68							
67	0.67							
68	0.66							
69	0.65							
70	0.64							
71	0.63							
72	0.62							
73	0.61							
74	0.6							
75	0.59							
76	0.58							
77	0.57							
78	0.56							
79	0.56							
80	0.55							
81	0.54							
82	0.53							
83	0.53							
84	0.52							
85	0.51							

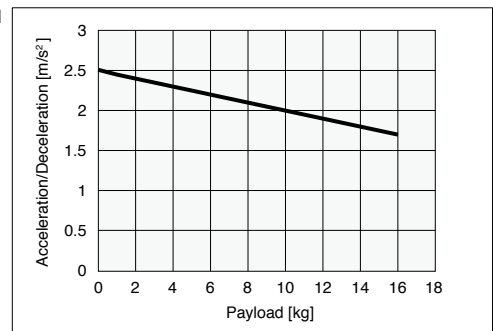
## Payload – Acceleration/Deceleration Graph (Estimate)

### LGXS07-5

Horizontal/  
Wall hanging

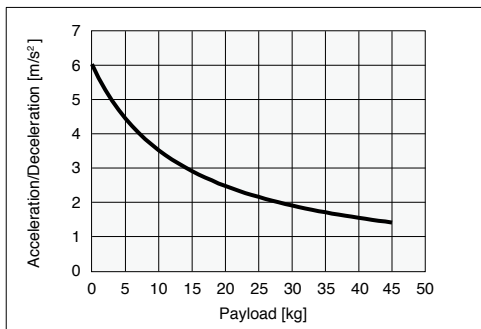


Vertical



### LGXS07-10

Horizontal/  
Wall hanging



Vertical



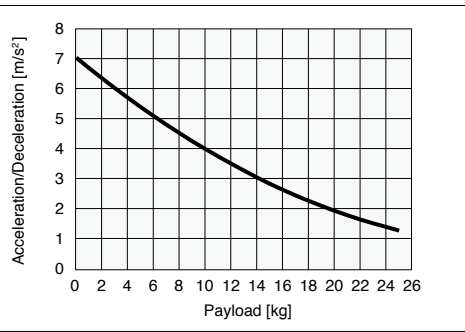
Articulated robots  
YA  
Linear conveyor  
modules  
LCM100  
Motor-less single  
axis actuator  
Robonity  
Compact  
single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor  
single-axis robots  
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Cartesian  
robots  
XY-X  
SCARA  
robots  
YK-X  
Pick & place  
robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
CABLE  
TECHNICAL  
INFORMATION  
DISCONTINUED

# Robonity Acceleration/Deceleration and Inertia Moment (Advanced model)

## ■ Payload – Acceleration/Deceleration Graph (Estimate)

### LGXS07-20

Horizontal/  
Wall hanging



Vertical

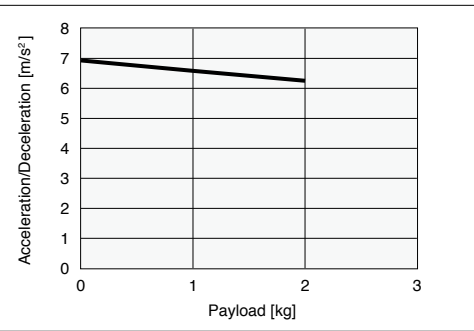


### LGXS07-30

Horizontal/  
Wall hanging



Vertical



## ■ Inertia Moment

### LGXS07

Model	Effective stroke [mm]																					
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
LGXS07-5	0.623	0.643	0.662	0.682	0.701	0.721	0.740	0.760	0.779	0.799	0.818	0.838	0.857	0.877	0.896	0.916	0.935	0.955	0.974	0.994	1.013	1.033
LGXS07-10	0.644	0.663	0.683	0.702	0.722	0.741	0.761	0.780	0.800	0.819	0.839	0.858	0.878	0.897	0.917	0.936	0.956	0.975	0.995	1.014	1.034	1.053
LGXS07-20	0.728	0.747	0.767	0.787	0.806	0.826	0.845	0.865	0.884	0.904	0.923	0.943	0.962	0.982	1.001	1.021	1.040	1.060	1.079	1.099	1.118	1.138
LGXS07-30	0.885	0.905	0.924	0.944	0.963	0.983	1.002	1.022	1.041	1.061	1.080	1.100	1.119	1.139	1.158	1.178	1.197	1.217	1.236	1.256	1.275	1.295

# Robonity Acceleration/Deceleration and Inertia Moment (Advanced model)

## Acceleration/Deceleration

### LGXS10

Model	LGXS10 -5 Horizontal/ Wall hanging	LGXS10 -5 Vertical	LGXS10 -10 Horizontal/ Wall hanging	LGXS10 -10 Vertical	LGXS10 -20 Horizontal/ Wall hanging	LGXS10 -20 Vertical	LGXS10 -30 Horizontal/ Wall hanging	LGXS10 -30 Vertical
Payload [kg]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]
0	2.27	1.9	6.89	3.29	6.59	8.11	9.75	9.75
1	2.25	1.87	6.78	3.27	6.54	7.86	9.75	9.75
2	2.23	1.85	6.67	3.24	6.49	7.6	9.75	9.75
3	2.21	1.82	6.56	3.22	6.44	7.35	9.75	9.75
4	2.19	1.8	6.46	3.2	6.39	7.09	9.75	9.75
5	2.17	1.77	6.35	3.17	6.34	6.84	9.75	
6	2.15	1.75	6.25	3.15	6.29	6.59	9.75	
7	2.13	1.72	6.14	3.13	6.24	6.33	9.75	
8	2.11	1.7	6.04	3.1	6.18	6.08	9.75	
9	2.09	1.67	5.94	3.08	6.13		9.01	
10	2.07	1.65	5.84	3.05	6.08		8.38	
11	2.05	1.62	5.74	3.03	6.03		7.83	
12	2.03	1.6	5.64	3	5.98		7.34	
13	2.01	1.57	5.54	2.97	5.93		6.91	
14	1.99	1.55	5.44	2.95	5.88		6.53	
15	1.97	1.52	5.34	2.92	5.83		6.19	
16	1.95	1.5	5.25	2.89	5.78		5.89	
17	1.93	1.47	5.16	2.87	5.73		5.61	
18	1.91	1.45	5.06	2.84	5.68		5.36	
19	1.9	1.42	4.97	2.81	5.63		5.13	
20	1.88	1.39	4.88	2.78	5.58		4.91	
21	1.86	1.37	4.79		5.53		4.72	
22	1.84	1.34	4.7		5.48		4.54	
23	1.82	1.32	4.61		5.42		4.37	
24	1.8	1.29	4.52		5.37		4.22	
25	1.79	1.27	4.44		5.32		4.07	
26	1.77	1.24	4.35		5.27			
27	1.75	1.22	4.27		5.22			
28	1.74	1.19	4.18		5.17			
29	1.72	1.17	4.1		5.12			
30	1.7	1.14	4.02		5.07			
31	1.68		3.94		5.02			
32	1.67		3.86		4.97			
33	1.65		3.78		4.92			
34	1.63		3.7		4.87			
35	1.62		3.62		4.82			
36	1.6		3.55		4.77			
37	1.59		3.47		4.71			
38	1.57		3.4		4.66			
39	1.55		3.32		4.61			
40	1.54		3.25		4.56			
41	1.52		3.18					
42	1.51		3.11					
43	1.49		3.04					
44	1.48		2.97					
45	1.46		2.91					
46	1.45		2.84					
47	1.43		2.77					
48	1.42		2.71					
49	1.41		2.65					
50	1.39		2.58					
51	1.38		2.52					
52	1.36		2.46					
53	1.35		2.4					
54	1.34		2.34					
55	1.32		2.29					
56	1.31		2.23					
57	1.3		2.17					
58	1.28		2.12					
59	1.27		2.06					
60	1.26		2.01					
61	1.25		1.96					
62	1.23		1.91					
63	1.22		1.86					
64	1.21		1.81					
65	1.2		1.76					
66	1.18		1.72					
67	1.17		1.67					
68	1.16		1.62					
69	1.15		1.58					
70	1.14		1.54					
71	1.13		1.49					
72	1.12		1.45					
73	1.11		1.41					
74	1.09		1.37					
75	1.08		1.33					
76	1.07		1.3					
77	1.06		1.26					
78	1.05		1.23					
79	1.04		1.19					
80	1.03		1.16					
81	1.02							
82	1.01							
83	1							
84	0.99							
85	0.99							
86	0.98							
87	0.97							
88	0.96							
89	0.95							

Model	LGXS10 -5 Horizontal/ Wall hanging	LGXS10 -5 Vertical	LGXS10 -10 Horizontal/ Wall hanging	LGXS10 -10 Vertical	LGXS10 -20 Horizontal/ Wall hanging	LGXS10 -20 Vertical	LGXS10 -30 Horizontal/ Wall hanging	LGXS10 -30 Vertical
Payload [kg]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]
90	0.94							
91	0.93							
92	0.92							
93	0.92							
94	0.91							
95	0.9							
96	0.89							
97	0.89							
98	0.88							
99	0.87							
100	0.86							

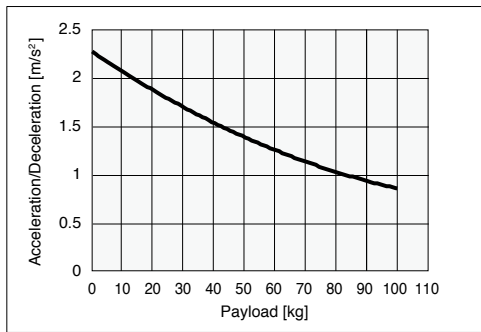
Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
CABLE  
TECHNICAL INFORMATION  
DISCONTINUED

# Robonity Acceleration/Deceleration and Inertia Moment (Advanced model)

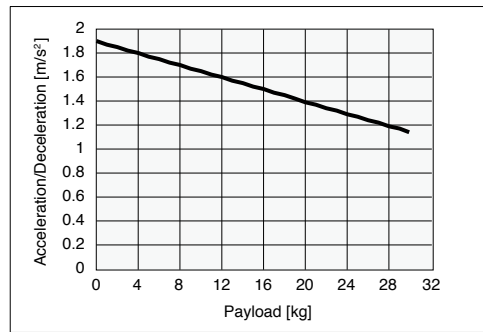
## ■ Payload – Acceleration/Deceleration Graph (Estimate)

### LGXS10-5

Horizontal/  
Wall hanging

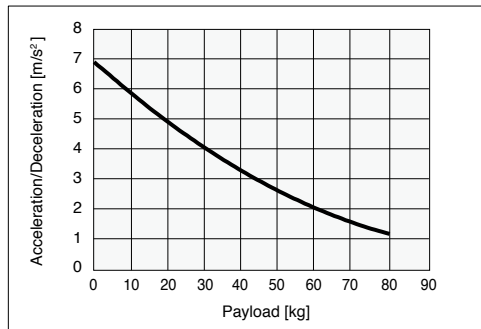


Vertical

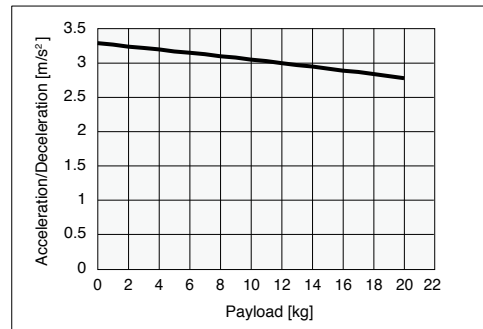


### LGXS10-10

Horizontal/  
Wall hanging

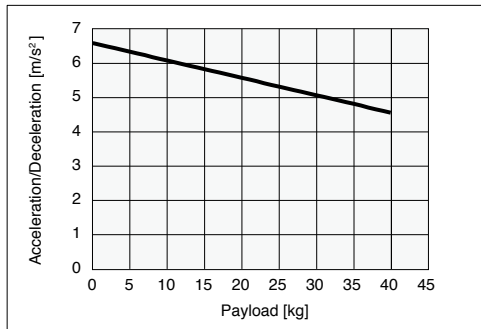


Vertical

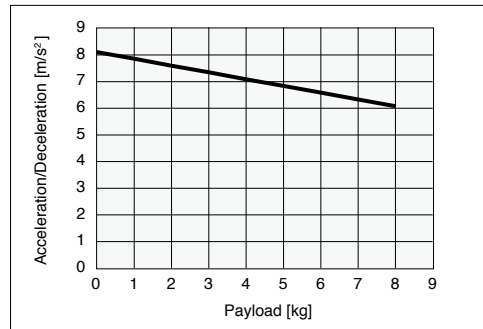


### LGXS10-20

Horizontal/  
Wall hanging

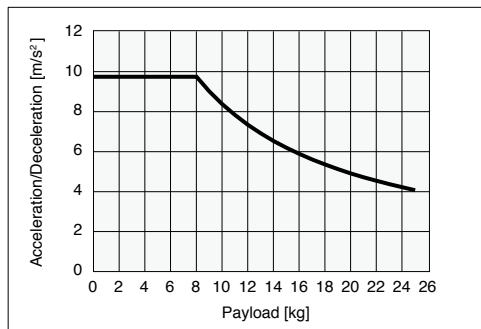


Vertical

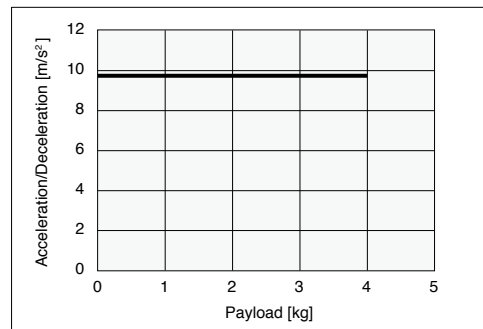


### LGXS10-30

Horizontal/  
Wall hanging



Vertical



## ■ Inertia Moment

### LGXS10

[kg·m <sup>2</sup> ·10 <sup>-4</sup> ]	Effective stroke [mm]																								
Model	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250
LGXS10-5	-	0.686	0.706	0.726	0.745	0.765	0.784	0.804	0.823	0.843	0.862	0.882	0.901	0.921	0.940	0.960	0.979	0.999	1.018	1.038	1.057	1.077	1.096	1.116	1.135
LGXS10-10	-	0.707	0.726	0.746	0.765	0.785	0.804	0.824	0.843	0.863	0.882	0.902	0.921	0.941	0.960	0.980	0.999	1.019	1.038	1.058	1.077	1.097	1.116	1.136	1.155
LGXS10-20	-	0.789	0.809	0.828	0.848	0.867	0.887	0.906	0.926	0.945	0.965	0.984	1.004	1.023	1.043	1.062	1.082	1.101	1.121	1.140	1.160	1.179	1.199	1.218	1.238
LGXS10-30	-	0.944	0.963	0.983	1.002	1.022	1.041	1.061	1.080	1.100	1.119	1.139	1.158	1.178	1.197	1.217	1.236	1.256	1.275	1.295	1.314	1.334	1.353	1.373	1.392

# Robonity Acceleration/Deceleration and Inertia Moment (Advanced model)

## Acceleration/Deceleration

### LGXS12

Model	LGXS12	LGXS12	LGXS12	LGXS12	LGXS12	LGXS12	LGXS12	LGXS12
	-5 Horizontal/ Wall hanging	-5 Vertical	-10 Horizontal/ Wall hanging	-10 Vertical	-20 Horizontal/ Wall hanging	-20 Vertical	-30 Horizontal/ Wall hanging	-30 Vertical
Payload [kg]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]
0	2.27	1.9	8.61	3.29	9.73	8.11	9.75	9.75
1	2.24	1.87	8.47	3.26	9.53	7.85	9.75	9.75
2	2.22	1.84	8.33	3.24	9.35	7.6	9.75	9.75
3	2.2	1.82	8.2	3.22	9.16	7.34	9.75	9.75
4	2.18	1.79	8.06	3.19	8.98	7.09	9.75	9.75
5	2.16	1.77	7.93	3.17	8.8	6.84	9.75	9.75
6	2.14	1.74	7.8	3.15	8.62	6.58	9.75	9.75
7	2.12	1.72	7.67	3.12	8.45	6.33	9.75	9.75
8	2.1	1.69	7.54	3.1	8.28	6.07	9.75	9.75
9	2.08	1.67	7.41	3.07	8.11	5.82	9.01	
10	2.06	1.64	7.29	3.05	7.95	5.57	8.37	
11	2.04	1.62	7.16	3.02	7.79	5.31	7.82	
12	2.02	1.59	7.04	3	7.63	5.06	7.34	
13	2	1.57	6.92	2.97	7.48	4.81	6.91	
14	1.98	1.54	6.79	2.94	7.33	4.55	6.53	
15	1.96	1.52	6.67	2.92	7.18	4.3	6.19	
16	1.95	1.49	6.56	2.89	7.03		5.88	
17	1.93	1.47	6.44	2.86	6.89		5.6	
18	1.91	1.44	6.32	2.83	6.75		5.35	
19	1.89	1.41	6.21	2.81	6.61		5.12	
20	1.87	1.39	6.09	2.78	6.48		4.91	
21	1.85	1.36	5.98	2.75	6.35		4.71	
22	1.84	1.34	5.87	2.72	6.22		4.53	
23	1.82	1.31	5.76	2.69	6.1		4.37	
24	1.8	1.29	5.65	2.66	5.98		4.21	
25	1.78	1.26	5.54	2.63	5.86		4.07	
26	1.76	1.24	5.43		5.74		3.93	
27	1.75	1.21	5.32		5.63		3.81	
28	1.73	1.19	5.22		5.52		3.69	
29	1.71	1.16	5.12		5.41		3.58	
30	1.7	1.14	5.01		5.31		3.47	
31	1.68	1.11	4.91		5.21		3.37	
32	1.66	1.09	4.81		5.11		3.28	
33	1.65	1.06	4.72		5.02		3.19	
34	1.63	1.04	4.62		4.93		3.11	
35	1.61	1.01	4.52		4.84		3.03	
36	1.6	0.99	4.43		4.76			
37	1.58	0.96	4.33		4.67			
38	1.57	0.93	4.24		4.6			
39	1.55	0.91	4.15		4.52			
40	1.53	0.88	4.06		4.45			
41	1.52	0.86	3.97		4.38			
42	1.5	0.83	3.88		4.31			
43	1.49	0.81	3.8		4.25			
44	1.47	0.78	3.71		4.19			
45	1.46	0.76	3.63		4.13			
46	1.44		3.54		4.07			
47	1.43		3.46		4.02			
48	1.42		3.38		3.97			
49	1.4		3.3		3.93			
50	1.39		3.22		3.89			
51	1.37		3.15					
52	1.36		3.07					
53	1.35		3					
54	1.33		2.92					
55	1.32		2.85					
56	1.3		2.78					
57	1.29		2.71					
58	1.28		2.64					
59	1.27		2.58					
60	1.25		2.51					
61	1.24		2.44					
62	1.23		2.38					
63	1.22		2.32					
64	1.2		2.26					
65	1.19		2.2					
66	1.18		2.14					
67	1.17		2.08					
68	1.16		2.02					
69	1.14		1.97					
70	1.13		1.92					
71	1.12		1.86					
72	1.11		1.81					
73	1.1		1.76					
74	1.09		1.71					
75	1.08		1.66					
76	1.07		1.62					
77	1.06		1.57					
78	1.05		1.53					
79	1.04		1.48					
80	1.03		1.44					
81	1.02		1.4					
82	1.01		1.36					
83	1		1.32					
84	0.99		1.29					
85	0.98		1.25					
86	0.97		1.22					
87	0.96		1.18					
88	0.95		1.15					
89	0.94		1.12					

Model	LGXS12	LGXS12	LGXS12	LGXS12	LGXS12	LGXS12	LGXS12	LGXS12
	-5 Horizontal/ Wall hanging	-5 Vertical	-10 Horizontal/ Wall hanging	-10 Vertical	-20 Horizontal/ Wall hanging	-20 Vertical	-30 Horizontal/ Wall hanging	-30 Vertical
Payload [kg]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]	Acceleration/Deceleration [m/s <sup>2</sup> ]
90	0.94		1.09					
91	0.93		1.06					
92	0.92		1.03					
93	0.91		1.01					
94	0.9		0.98					
95	0.9		0.96					
96	0.89							
97	0.88							
98	0.87							
99	0.87							
100	0.86							
101	0.85							
102	0.84							
103	0.84							
104	0.83							
105	0.82							
106	0.82							
107	0.81							
108	0.81							
109	0.8							
110	0.79							
111	0.79							
112	0.78							
113	0.78							
114	0.77							
115	0.77							

Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XY-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

CLEAN

CONTROLLER INFORMATION

CABLE

TECHNICAL INFORMATION

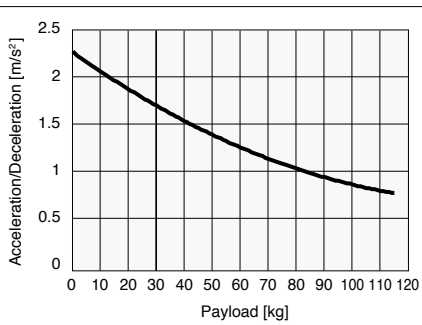
DISCONTINUED

# Robonity Acceleration/Deceleration and Inertia Moment (Advanced model)

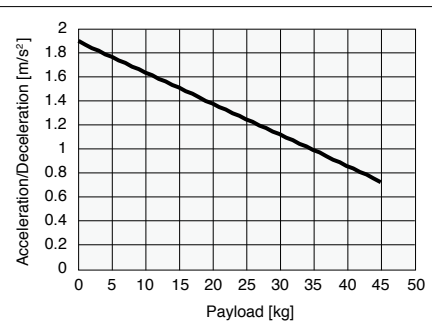
## ■ Payload – Acceleration/Deceleration Graph (Estimate)

### LGXS12-5

Horizontal/  
Wall hanging

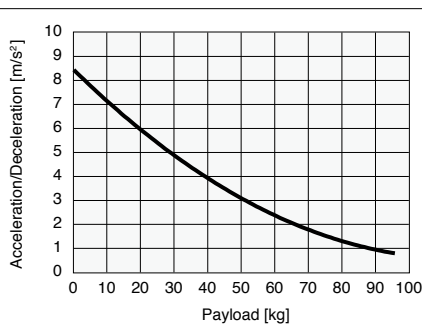


Vertical

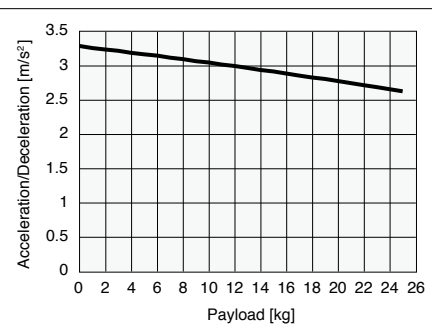


### LGXS12-10

Horizontal/  
Wall hanging

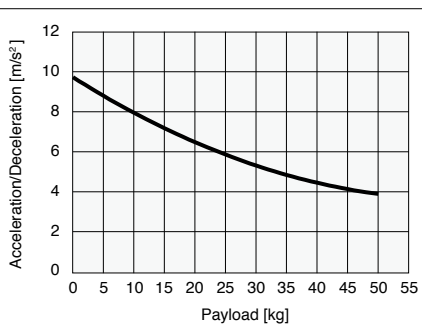


Vertical

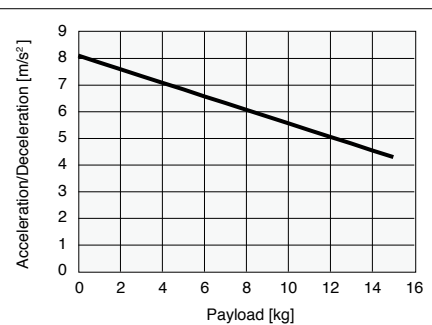


### LGXS12-20

Horizontal/  
Wall hanging

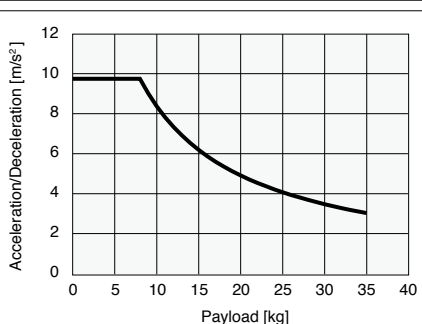


Vertical

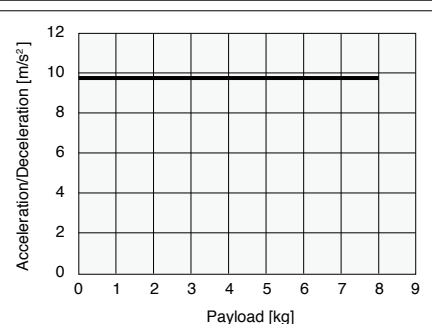


### LGXS12-30

Horizontal/  
Wall hanging



Vertical



## ■ Inertia Moment

### LGXS12

[kg·m <sup>2</sup> ×10 <sup>-4</sup> ]	Effective stroke [mm]																								
	Model	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
LGXS12-5	-	0.702	0.721	0.741	0.761	0.780	0.800	0.819	0.839	0.858	0.878	0.897	0.917	0.936	0.956	0.975	0.995	1.014	1.034	1.053	1.073	1.092	1.112	1.131	1.151
LGXS12-10	-	0.733	0.753	0.772	0.792	0.811	0.831	0.850	0.870	0.889	0.909	0.928	0.948	0.967	0.987	1.006	1.026	1.045	1.065	1.085	1.104	1.124	1.143	1.163	1.182
LGXS12-20	-	0.862	0.881	0.901	0.920	0.940	0.959	0.979	0.998	1.018	1.037	1.057	1.076	1.096	1.115	1.135	1.154	1.174	1.193	1.213	1.232	1.252	1.271	1.291	1.310
LGXS12-30	-	1.092	1.111	1.131	1.150	1.170	1.189	1.209	1.228	1.248	1.267	1.287	1.306	1.326	1.345	1.365	1.384	1.404	1.423	1.443	1.462	1.482	1.501	1.521	1.540



# Robonity Acceleration/Deceleration and Inertia Moment (Advanced model)

## Acceleration/Deceleration

### LGXS16

Model	LGXS16 -10	LGXS16 -10	LGXS16 -20	LGXS16 -20	LGXS16 -40	LGXS16 -40
	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical
Payload [kg]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]
0	5.07	3.8	7.6	7.99	9.6	9.6
1	5.04	3.74	7.48	7.73	9.6	9.02
2	5.01	3.69	7.36	7.47	9.6	8.45
3	4.99	3.64	7.25	7.22	9.6	7.87
4	4.96	3.59	7.14	6.97	9.6	7.3
5	4.94	3.54	7.03	6.72	9.6	6.74
6	4.91	3.49	6.93	6.47	9.6	6.17
7	4.89	3.44	6.83	6.22	9.6	5.61
8	4.86	3.39	6.73	5.97	9.6	5.04
9	4.84	3.34	6.64	5.73	9.6	4.48
10	4.81	3.29	6.55	5.48	9.6	3.92
11	4.79	3.24	6.46	5.24	9.18	3.36
12	4.76	3.19	6.37	5	8.8	2.81
13	4.74	3.14	6.29	4.76	8.45	
14	4.71	3.09	6.2	4.53	8.13	
15	4.68	3.04	6.12	4.29	7.83	
16	4.66	2.99	6.05	4.05	7.55	
17	4.63	2.94	5.97	3.82	7.3	
18	4.61	2.89	5.9	3.59	7.05	
19	4.58	2.83	5.82	3.36	6.83	
20	4.56	2.78	5.75	3.13	6.62	
21	4.53	2.73	5.68	2.9	6.42	
22	4.51	2.68	5.62	2.68	6.23	
23	4.48	2.63	5.55	2.45	6.05	
24	4.46	2.58	5.49	2.23	5.88	
25	4.43	2.53	5.42	2.01	5.73	
26	4.41	2.48	5.36	1.79	5.58	
27	4.38	2.43	5.3	1.57	5.43	
28	4.36	2.38	5.24	1.35	5.3	
29	4.33	2.33	5.19		5.17	
30	4.3	2.28	5.13		5.05	
31	4.28	2.23	5.08		4.93	
32	4.25	2.18	5.02		4.82	
33	4.23	2.13	4.97		4.71	
34	4.2	2.08	4.92		4.61	
35	4.18	2.03	4.87		4.51	
36	4.15	1.98	4.82		4.42	
37	4.13	1.93	4.77		4.33	
38	4.1	1.87	4.72		4.24	
39	4.08	1.82	4.67		4.16	
40	4.05	1.77	4.63		4.08	
41	4.03	1.72	4.58		4	
42	4	1.67	4.54		3.93	
43	3.97	1.62	4.5		3.86	
44	3.95	1.57	4.46		3.79	
45	3.92	1.52	4.41		3.72	
46	3.9	1.47	4.37			
47	3.87	1.42	4.33			
48	3.85	1.37	4.29			
49	3.82	1.32	4.26			
50	3.8	1.27	4.22			
51	3.77	1.22	4.18			
52	3.75	1.17	4.14			
53	3.72	1.12	4.11			
54	3.7	1.07	4.07			
55	3.67	1.02	4.04			
56	3.65		4			
57	3.62		3.97			
58	3.59		3.94			
59	3.57		3.9			
60	3.54		3.87			
61	3.52		3.84			
62	3.49		3.81			
63	3.47		3.78			
64	3.44		3.75			
65	3.42		3.72			
66	3.39		3.69			
67	3.37		3.66			
68	3.34		3.63			
69	3.32		3.61			
70	3.29		3.58			
71	3.27		3.55			
72	3.24		3.53			
73	3.21		3.5			
74	3.19		3.47			
75	3.16		3.45			
76	3.14		3.42			
77	3.11		3.4			
78	3.09		3.38			
79	3.06		3.35			
80	3.04		3.33			
81	3.01		3.31			
82	2.99		3.28			
83	2.96		3.26			
84	2.94		3.24			
85	2.91		3.22			
86	2.88		3.19			
87	2.86		3.17			
88	2.83		3.15			
89	2.81		3.13			

Model	LGXS16 -10	LGXS16 -10	LGXS16 -20	LGXS16 -20	LGXS16 -40	LGXS16 -40
	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical
Payload [kg]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]
90	2.78				3.11	
91	2.76				3.09	
92	2.73				3.07	
93	2.71				3.05	
94	2.68				3.03	
95	2.66				3.01	
96	2.63					
97	2.61					
98	2.58					
99	2.56					
100	2.53					
101	2.5					
102	2.48					
103	2.45					
104	2.43					
105	2.4					
106	2.38					
107	2.35					
108	2.33					
109	2.3					
110	2.28					
111	2.25					
112	2.23					
113	2.2					
114	2.18					
115	2.15					
116	2.12					
117	2.1					
118	2.07					
119	2.05					
120	2.02					
121	2					
122	1.97					
123	1.95					
124	1.92					
125	1.9					
126	1.87					
127	1.85					
128	1.82					
129	1.79					
130	1.77					

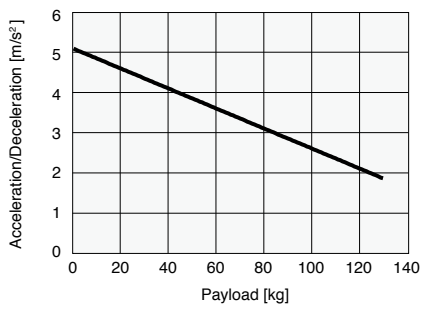
Articulated robots  
YA  
Linear conveyor  
modules  
LCM100  
Motor-less single  
axis actuator  
Robonity  
Compact  
single-axis robots  
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Single-axis robots  
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Pick & place  
robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
CABLE  
TECHNICAL  
INFORMATION  
DISCONTINUED

# Robonity Acceleration/Deceleration and Inertia Moment (Advanced model)

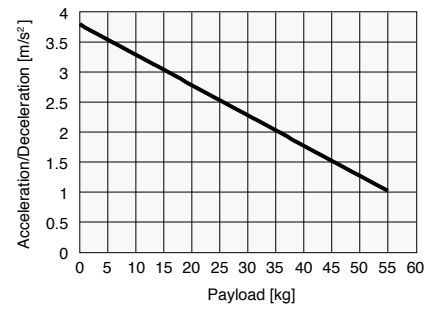
## ■ Payload – Acceleration/Deceleration Graph (Estimate)

### LGXS16-10

Horizontal/  
Wall hanging

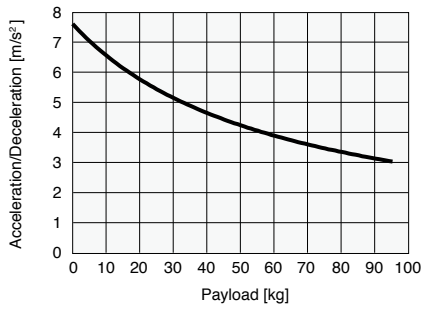


Vertical

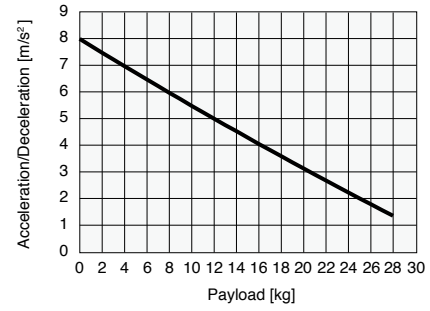


### LGXS16-20

Horizontal/  
Wall hanging

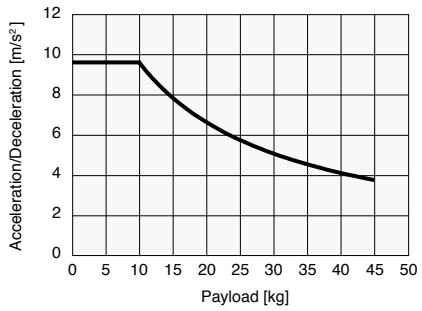


Vertical



### LGXS16-40

Horizontal/  
Wall hanging



Vertical



## ■ Inertia Moment

### LGXS16

Model	Effective stroke [mm]																												
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450
LGXS16-10	-	2.433	2.495	2.557	2.618	2.680	2.742	2.803	2.865	2.927	2.988	3.050	3.112	3.173	3.235	3.297	3.358	3.420	3.482	3.543	3.605	3.667	3.728	3.790	3.851	3.913	3.975	4.036	4.098
LGXS16-20	-	2.653	2.715	2.777	2.838	2.900	2.961	3.023	3.085	3.146	3.208	3.270	3.331	3.393	3.455	3.516	3.578	3.640	3.701	3.763	3.825	3.886	3.948	4.010	4.071	4.133	4.195	4.256	4.318
LGXS16-40	-	3.624	3.685	3.747	3.809	3.870	3.932	3.994	4.055	4.117	4.179	4.240	4.302	4.364	4.425	4.487	4.548	4.610	4.672	4.733	4.795	4.857	4.918	4.980	5.042	5.103	5.165	5.227	5.288

# Robonity Acceleration/Deceleration and Inertia Moment (Advanced model)

## Acceleration/Deceleration

### LGXS20

Model	LGXS20 -10	LGXS20 -10	LGXS20 -20	LGXS20 -20	LGXS20 -40	LGXS20 -40
	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical
Payload [kg]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]
0	2.5	3.8	7.8	9.95	9.61	9.61
1	2.5	3.74	7.7	9.67	9.61	9.12
2	2.5	3.69	7.61	9.4	9.61	8.64
3	2.5	3.64	7.52	9.13	9.61	8.16
4	2.5	3.59	7.43	8.86	9.61	7.68
5	2.5	3.54	7.34	8.59	9.61	7.2
6	2.5	3.49	7.25	8.32	9.61	6.72
7	2.5	3.44	7.16	8.05	9.61	6.24
8	2.5	3.39	7.07	7.78	9.61	5.76
9	2.5	3.34	6.98	7.51	9.61	5.28
10	2.5	3.29	6.89	7.24	9.2	4.8
11	2.5	3.24	6.81	6.97	8.83	4.32
12	2.5	3.19	6.72	6.7	8.48	3.84
13	2.5	3.14	6.64	6.43	8.17	3.36
14	2.5	3.09	6.55	6.16	7.87	2.88
15	2.5	3.04	6.47	5.89	7.6	2.4
16	2.5	2.99	6.39	5.62	7.34	
17	2.5	2.94	6.31	5.35	7.1	
18	2.5	2.89	6.23	5.08	6.88	
19	2.5	2.83	6.15	4.81	6.67	
20	2.5	2.78	6.07	4.54	6.47	
21	2.5	2.73	5.99	4.27	6.28	
22	2.5	2.68	5.91	4	6.11	
23	2.5	2.63	5.83	3.73	5.94	
24	2.5	2.58	5.76	3.46	5.78	
25	2.5	2.53	5.68	3.19	5.63	
26	2.5	2.48	5.6	2.92	5.49	
27	2.5	2.43	5.53	2.65	5.36	
28	2.5	2.38	5.46	2.38	5.23	
29	2.5	2.33	5.38	2.11	5.11	
30	2.5	2.28	5.31	1.84	4.99	
31	2.5	2.23	5.24	1.57	4.88	
32	2.5	2.18	5.17	1.3	4.77	
33	2.5	2.13	5.1	1.03	4.67	
34	2.5	2.08	5.03	0.76	4.57	
35	2.5	2.03	4.96	0.5	4.48	
36	2.44	1.98	4.89		4.39	
37	2.38	1.93	4.82		4.3	
38	2.33	1.87	4.76		4.22	
39	2.28	1.82	4.69		4.14	
40	2.23	1.77	4.63		4.06	
41	2.18	1.72	4.56		3.99	
42	2.14	1.67	4.5		3.91	
43	2.09	1.62	4.43		3.85	
44	2.05	1.57	4.37		3.78	
45	2.01	1.52	4.31		3.71	
46	1.97	1.47	4.25		3.65	
47	1.94	1.42	4.19		3.59	
48	1.9	1.37	4.13		3.53	
49	1.87	1.32	4.07		3.48	
50	1.83	1.27	4.01		3.42	
51	1.8	1.22	3.95		3.37	
52	1.77	1.17	3.9		3.32	
53	1.74	1.12	3.84		3.27	
54	1.71	1.07	3.79		3.22	
55	1.68	1.02	3.73		3.17	
56	1.66	0.96	3.68		3.13	
57	1.63	0.91	3.63		3.08	
58	1.61	0.86	3.57		3.04	
59	1.58	0.81	3.52		3	
60	1.56	0.76	3.47		2.96	
61	1.53	0.71	3.42		2.92	
62	1.51	0.66	3.37		2.88	
63	1.49	0.61	3.32		2.84	
64	1.47	0.56	3.27		2.8	
65	1.45	0.51	3.23		2.77	
66	1.43		3.18			
67	1.41		3.13			
68	1.39		3.09			
69	1.37		3.04			
70	1.35		3			
71	1.34		2.96			
72	1.32		2.92			
73	1.3		2.87			
74	1.29		2.83			
75	1.27		2.79			
76	1.26		2.75			
77	1.24		2.72			
78	1.23		2.68			
79	1.21		2.64			
80	1.2		2.6			
81	1.18		2.57			
82	1.17		2.53			
83	1.16		2.5			
84	1.14		2.46			
85	1.13		2.43			
86	1.12		2.4			
87	1.11		2.37			
88	1.1		2.34			
89	1.08		2.31			

Model	LGXS20 -10	LGXS20 -10	LGXS20 -20	LGXS20 -20	LGXS20 -40	LGXS20 -40
	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical	Horizontal/ Wall hanging	Vertical
Payload [kg]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]	Acceleration/ Deceleration [m/s <sup>2</sup> ]
90	1.07		2.28			
91	1.06		2.25			
92	1.05		2.22			
93	1.04		2.19			
94	1.03		2.17			
95	1.02		2.14			
96	1.01		2.12			
97	1		2.09			
98	0.99		2.07			
99	0.98		2.05			
100	0.97		2.02			
101	0.96		2			
102	0.95		1.98			
103	0.94		1.96			
104	0.94		1.94			
105	0.93		1.92			
106	0.92		1.9			
107	0.91		1.89			
108	0.9		1.87			
109	0.9		1.86			
110	0.89		1.84			
111	0.88		1.83			
112	0.87		1.81			
113	0.87		1.8			
114	0.86		1.79			
115	0.85		1.78			
116	0.84		1.77			
117	0.84		1.76			
118	0.83		1.75			
119	0.82		1.74			
120	0.82		1.73			
121	0.81		1.72			
122	0.8		1.72			
123	0.8		1.71			
124	0.79		1.71			
125	0.79		1.7			
126	0.78		1.7			
127	0.77		1.69			
128	0.77		1.69			
129	0.76		1.69			
130	0.76		1.69			
131	0.75					
132	0.75					
133	0.74					
134	0.74					
135	0.73					
136	0.73					
137	0.72					
138	0.72					
139	0.71					
140	0.71					
141	0.7					
142	0.7					
143	0.69					
144	0.69					
145	0.68					
146	0.68					
147	0.67					
148	0.67					
149	0.66					
150	0.66					
151	0.66					
152	0.65					
153	0.65					
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155	0.64					
156	0.64					
157	0.63					
158	0.63					
159	0.62					
160	0.62					

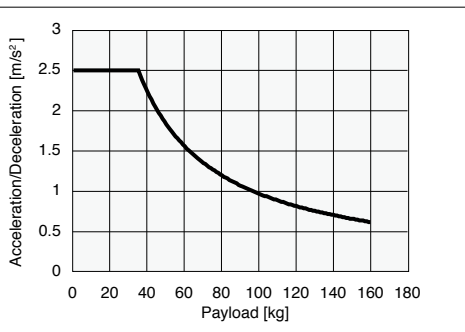
Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
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Single-axis robots  
FLIP-X  
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CLEAN  
CONTROLLER  
INFORMATION  
CABLE  
TECHNICAL INFORMATION  
DISCONTINUED

# Robonity Acceleration/Deceleration and Inertia Moment (Advanced model)

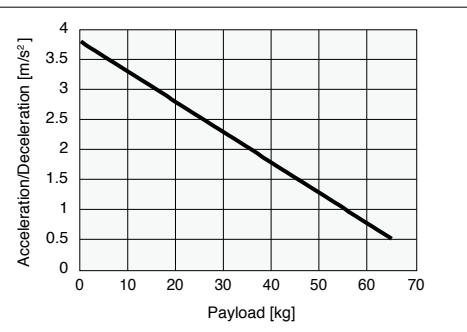
## ■ Payload – Acceleration/Deceleration Graph (Estimate)

### LGXS20-10

Horizontal/  
Wall hanging

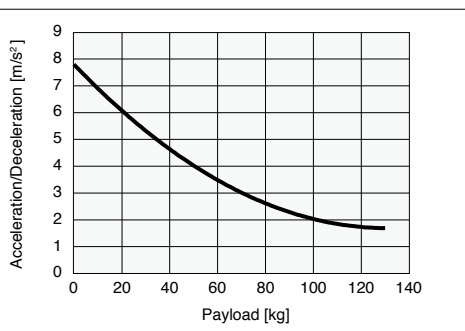


Vertical

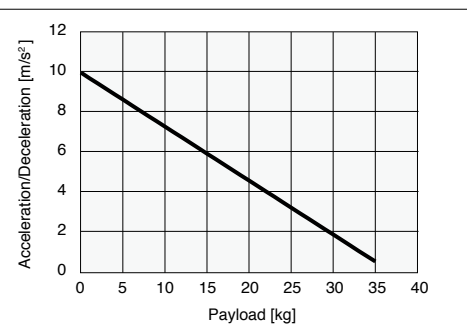


### LGXS20-20

Horizontal/  
Wall hanging

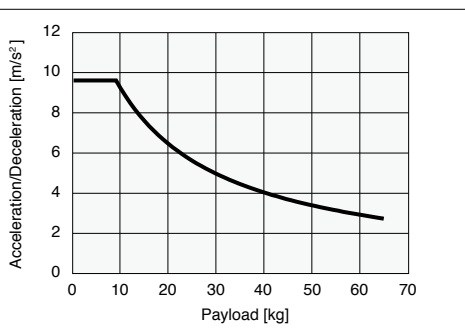


Vertical

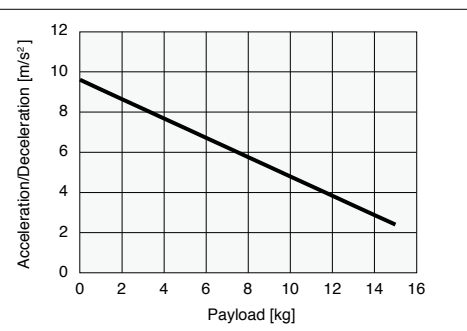


### LGXS20-40

Horizontal/  
Wall hanging



Vertical



## ■ Inertia Moment

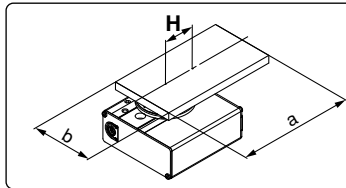
### LGXS20

Model	Effective stroke [mm]																												
	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450
LGXS20-10	-	2.524	2.585	2.647	2.709	2.770	2.832	2.894	2.955	3.017	3.079	3.140	3.202	3.264	3.325	3.387	3.448	3.510	3.572	3.633	3.695	3.757	3.818	3.880	3.942	4.003	4.065	4.127	4.188
LGXS20-20	-	2.863	2.924	2.986	3.048	3.109	3.171	3.232	3.294	3.356	3.417	3.479	3.541	3.602	3.664	3.726	3.787	3.849	3.911	3.972	4.034	4.096	4.157	4.219	4.281	4.342	4.404	4.466	4.527
LGXS20-40	-	4.309	4.371	4.433	4.494	4.556	4.618	4.679	4.741	4.803	4.864	4.926	4.988	5.049	5.111	5.173	5.234	5.296	5.357	5.419	5.481	5.542	5.604	5.666	5.727	5.789	5.851	5.912	5.974

# TRANSERVO RF type model selection

## Selecting a model

### Operating conditions



Rotary type: RF03  
 Installation posture: Horizontal  
 Kind of load: Inertial load  $T_a$   
 Shape of load: 150 mm x 80 mm  
 (rectangular plate)  
 Oscillating angle  $\theta$ : 180°

Acceleration/deceleration  $\dot{\omega}$ : 1,000 °/sec<sup>2</sup>  
 Speed  $\omega$ : 420 °/sec  
 Load mass  $m$ : 2.0 kg  
 Distance between shaft and center of gravity  $H$ : 40 mm

### Step 1 Moment of inertia Acceleration/deceleration

- Calculating the moment of inertia.
- Checking the moment of inertia vs. acceleration/deceleration. Select an appropriate model from the moment of inertia vs. acceleration/deceleration while referring to the moment of inertia vs. acceleration/deceleration graph.

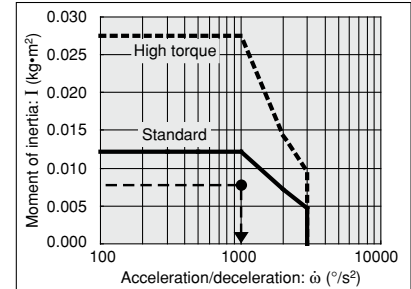
#### Calculation formula

$$I = m \times (a^2 + b^2) / 12 + m \times H^2$$

#### Selection example

$$I = 2.0 \times (0.15^2 + 0.08^2) / 12 + 2.0 \times 0.04^2 = 0.00802 \text{ kg} \cdot \text{m}^2$$

RF03



### Step 2 Selecting a torque

- Kinds of loads
  - Static load:  $T_s$
  - Resistance load:  $T_f$
  - Inertial load:  $T_a$
- Checking the effective torque  
 Check that the speed can be controlled by the effective torque by the speed while referring to the effective torque vs. speed graph.

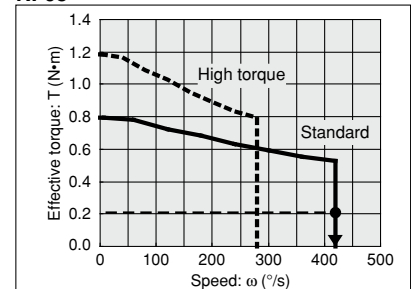
#### Calculation formula

$$\begin{aligned} \text{Effective torque} &\geq T_s \\ \text{Effective torque} &\geq T_f \times 1.5 \\ \text{Effective torque} &\geq T_a \times 1.5 \end{aligned}$$

#### Selection example

$$\begin{aligned} \text{Inertial load: } T_a \\ T_a \times 1.5 &= I \times \dot{\omega} \times 2\pi / 360 \times 1.5 \\ &= 0.00802 \times 1,000 \times 0.0175 \times 1.5 \\ &= 0.21 \text{ N} \cdot \text{m} \end{aligned}$$

RF03



### Step 3 Allowable load

- Checking the allowable load
  - Radial load
  - Thrust load
  - Moment

#### Calculation formula

$$\begin{aligned} \text{Allowable thrust load} &\geq m \times 9.8 \\ \text{Allowable moment} &\geq m \times 9.8 \times H \end{aligned}$$

#### Selection example

$$\begin{aligned} \text{Thrust load} \\ 2.0 \times 9.8 &= 19.6 \text{ N} < \text{Allowable load OK} \\ \text{Allowable moment} \\ 2.0 \times 9.8 \times 0.04 &= 0.784 \text{ N} \cdot \text{m} < \text{Allowable moment OK} \end{aligned}$$

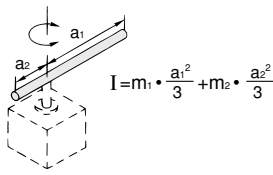
Articulated robots  
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# List of moment of inertia calculation formulas (Calculation of moment of inertia I)

I: Moment of inertia m: Load mass

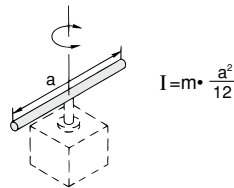
## 1 Thin rod

Position of rotation axis:  
Passes through one end perpendicularly to the rod.



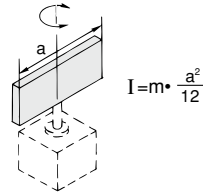
## 2 Thin rod

Position of rotation axis:  
Passes through the center of gravity of the rod.



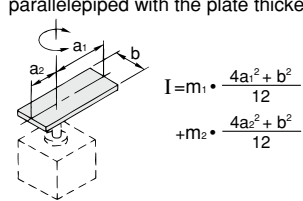
## 3 Thin rectangular plate (rectangular parallelepiped)

Position of rotation axis:  
Passes through the center of gravity of the rod.



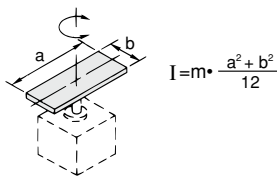
## 4 Thin rectangular plate (rectangular parallelepiped)

Position of rotation axis:  
Passes through one end perpendicularly to the plate.  
(Same position for the rectangular parallelepiped with the plate thickened.)



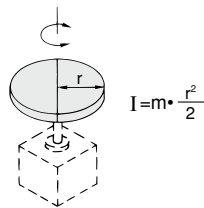
## 5 Thin rectangular plate (rectangular parallelepiped)

Position of rotation axis:  
Passes through one end perpendicularly to the plate.  
(Same position for the rectangular parallelepiped with the plate thickened.)



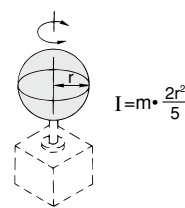
## 6 Cylinder (including thin disc)

Position of rotation axis:  
Central axis



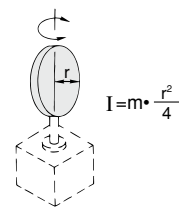
## 7 Solid ball

Position of rotation axis:  
Diameter

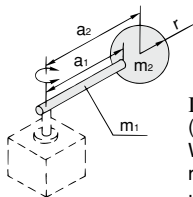


## 8 Thin disc

Position of rotation axis:  
Diameter

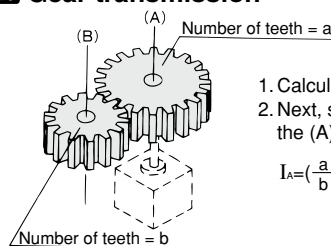


## 9 Load at lever tip



$I = m_1 \cdot \frac{a_1^2}{3} + m_2 \cdot a_2^2 + K$   
(Example)  
When the shape of  $m_2$  is a ball, refer to [7] to obtain the following.  
 $K = m_2 \cdot \frac{2r^2}{5}$

## 10 Gear transmission



1. Calculate the moment of inertia  $I_B$  around the (B) axis.
2. Next, substitute  $I_B$  for the moment of inertia around the (A) axis to calculate  $I_A$  as follows.

$$I_A = \left(\frac{a}{b}\right)^2 \cdot I_B$$

# Kinds of loads

Kinds of loads		
Static load: Ts	Resistance load: Tf	Inertial load: Ta
Only push force is needed (clamp, etc.).	Gravity or friction force applies in the rotation direction.	Load with inertia needs to be rotated.
	<p>&lt;Gravity applies.&gt; </p> <p>&lt;Friction force applies.&gt; </p>	<p>&lt;Rotation center matches to the gravity of the load.&gt; </p> <p>&lt;Rotation axis is in the vertical direction.&gt; </p>
$T_s = F \cdot L$ Ts : Static load (N·m) F : Clamp force (N) L : Distance from oscillating center to clamp position (m)	<p>Gravity applies in the rotation direction.  <math>T_f = m \cdot g \cdot L</math></p> <p>Friction force applies in the rotation direction.  <math>T_f = \mu \cdot m \cdot g \cdot L</math></p> <p>Tf : Resistance load (N·m)                      m : Mass of load (kg)                      g : Gravity acceleration 9.8 (m/s<sup>2</sup>)                      L : Distance from oscillating center to gravity or friction force action point (m)                      μ : Friction coefficient</p>	$T_a = I \cdot \dot{\omega} \cdot 2\pi / 360$ $(T_a = I \cdot \dot{\omega} \cdot 0.0175)$ Ta: Inertial load (N·m) I : Moment of inertia (kg·m <sup>2</sup> ) ω̇ : Acceleration/deceleration (°/sec <sup>2</sup> ) ω : Speed (°/sec)
Required torque T = Ts	Required torque T = Tf × 1.5 Note 1)	Required torque T = Ta × 1.5 Note 1)
<p>• Load becomes the resistance load.  <b>Gravity or friction force applies in the rotation direction.</b>                      Example 1) The rotation center of the rotation axis does not match to the center of gravity of the load in the horizontal direction.                      Example 2) The load slips on the floor to move it.                      The required torque is the total of the resistance load and inertial load.  <math>T = (T_f + T_a) \times 1.5</math></p> <p>• Load does not become the resistance load.  <b>Gravity or friction force does not apply in the rotation direction.</b>                      Example 1) The rotation axis is vertical.                      Example 2) The rotation center of the rotation axis does not match to the center of gravity of the load in the horizontal direction.                      The required torque is only the inertial load.  <math>T = T_a \times 1.5</math>                      Note 1) An allowance is required for Tf and Ta to make the speed adjustment.</p>		



# R-axis tolerable moment of inertia and acceleration coefficient

## How to find the inertia moment

The tool and work are not usually a simple shape so calculating the inertia moment is not easy.

As a method, the load is replaced with several factors that resemble a simple form for which the moment of inertia can be calculated. The total of the moment of inertia for these factors is then obtained. The objects and equations often used for the calculation of the moment of inertia are shown below. Incidentally, there is the following relation:  $J \text{ (kgfcmsec}^2\text{)} = I \text{ (kgm}^2\text{)} \times 10.2$

### [1] Moment of inertia for material particle

The equation for the moment of inertia for a material particle that has a rotation center such as shown in Fig. ①

① is as follows: This is used as an approximate equation when  $x$  is larger than the object size.

$$I = mx^2 \text{ (kgm}^2\text{)}$$

$$J = \frac{Wx^2}{g} \text{ (kgfcmsec}^2\text{)} \quad \dots (3.1)$$

$g$  : Gravitational acceleration (cm/sec<sup>2</sup>)  
 $m$  : Mass of material particle (kg)  
 $W$  : Weight of material particle (kgf)

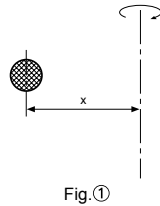


Fig.①

### [2] Moment of inertia for cylinder (part 1)

The equation for the moment of inertia for a cylinder that has a rotation center such as shown in Fig. ② is given below.

$$I = \frac{\rho \pi D^4 h}{32} = \frac{mD^2}{8} \text{ (kgm}^2\text{)}$$

$$J = \frac{\rho \pi D^4 h}{32g} = \frac{WD^2}{8g} \text{ (kgfcmsec}^2\text{)} \quad \dots (3.2)$$

$\rho$  : Density (kg/m<sup>3</sup>, kg/cm<sup>3</sup>)  
 $g$  : Gravitational acceleration (cm/sec<sup>2</sup>)  
 $m$  : Mass of cylinder (kg)  
 $W$  : Weight of cylinder (kgf)

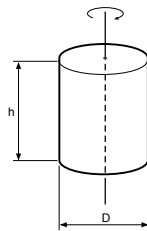


Fig.②

### [3] Moment of inertia for cylinder (part 2)

The equation for the moment of inertia for a cylinder that has a rotation center such as shown in Fig. ③ is given below.

$$I = \frac{\rho \pi D^3 h}{16} \left( \frac{D^2}{4} + \frac{h^2}{3} \right) = \frac{m}{4} \left( \frac{D^2}{4} + \frac{h^2}{3} \right) \text{ (kgm}^2\text{)}$$

$$J = \frac{\rho \pi D^3 h}{16g} \left( \frac{D^2}{4} + \frac{h^2}{3} \right) = \frac{W}{4g} \left( \frac{D^2}{4} + \frac{h^2}{3} \right) \text{ (kgfcmsec}^2\text{)} \quad \dots (3.3)$$

$\rho$  : Density (kg/m<sup>3</sup>, kg/cm<sup>3</sup>)  
 $g$  : Gravitational acceleration (cm/sec<sup>2</sup>)  
 $m$  : Mass of cylinder (kg)  
 $W$  : Weight of cylinder (kgf)

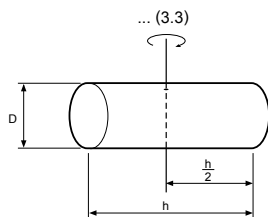


Fig.③

### [4] Moment of inertia for prism

The equation for the moment of inertia for a prism that has a rotation center as shown in Fig. ④ is given as follows.

$$I = \frac{\rho abc (a^2 + b^2)}{12} = \frac{m (a^2 + b^2)}{12} \text{ (kgm}^2\text{)}$$

$$J = \frac{\rho abc (a^2 + b^2)}{12g} = \frac{W (a^2 + b^2)}{12g} \text{ (kgfcmsec}^2\text{)} \quad \dots (3.4)$$

$\rho$  : Density (kg/m<sup>3</sup>, kg/cm<sup>3</sup>)  
 $g$  : Gravitational acceleration (cm/sec<sup>2</sup>)  
 $m$  : Mass of prism (kg)  
 $W$  : Weight of prism (kgf)

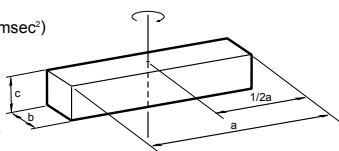


Fig.④

### [5] When the object's center line is offset from the rotation center

The equation for the moment of inertia, when the center of the cylinder is offset by the distance "x" from the rotation center as shown in Fig. ⑤, is given as follows.

$$I = \frac{\rho \pi D^4 h}{32} + \frac{\rho \pi D^2 h x^2}{4} = \frac{mD^2}{8} + mx^2 \text{ (kgm}^2\text{)}$$

$$J = \frac{\rho \pi D^4 h}{32g} + \frac{\rho \pi D^2 h x^2}{4g}$$

$$= \frac{WD^2}{8g} + \frac{Wx^2}{g} \text{ (kgfcmsec}^2\text{)} \quad \dots (3.5)$$

$\rho$  : Density (kg/m<sup>3</sup>, kg/cm<sup>3</sup>)  
 $g$  : Gravitational acceleration (cm/sec<sup>2</sup>)  
 $m$  : Mass of cylinder (kg)  
 $W$  : Weight of cylinder (kgf)

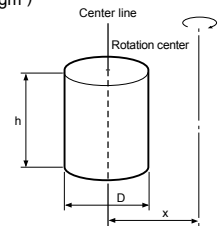


Fig.⑤

In the same manner, the moment of inertia of a cylinder as shown in Fig. ⑥ is given by

$$I = \frac{\rho \pi D^3 h}{16} \left( \frac{D^2}{4} + \frac{h^2}{3} \right) + \frac{\rho \pi D^2 h x^2}{4} = \frac{m}{4} \left( \frac{D^2}{4} + \frac{h^2}{3} \right) + mx^2 \text{ (kgm}^2\text{)}$$

$$J = \frac{\rho \pi D^3 h}{16g} \left( \frac{D^2}{4} + \frac{h^2}{3} \right) + \frac{\rho \pi D^2 h x^2}{4g}$$

$$= \frac{W}{4g} \left( \frac{D^2}{4} + \frac{h^2}{3} \right) + \frac{Wx^2}{g} \text{ (kgfcmsec}^2\text{)} \quad \dots (3.6)$$

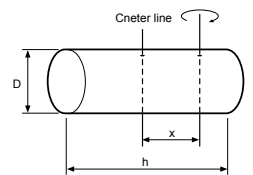


Fig.⑥

In the same manner, the moment of inertia of a prism as shown in Fig. ⑦ is given by

$$I = \frac{\rho abc (a^2 + b^2)}{12} + \rho abc x^2 = \frac{m (a^2 + b^2)}{12} + mx^2 \text{ (kgm}^2\text{)}$$

$$J = \frac{\rho abc (a^2 + b^2)}{12g} + \frac{\rho abc x^2}{g}$$

$$= \frac{W (a^2 + b^2)}{12g} + \frac{Wx^2}{g} \text{ (kgfcmsec}^2\text{)} \quad \dots (3.7)$$

$m$  : Mass of prism (kg)  
 $W$  : Weight of prism (kgf)

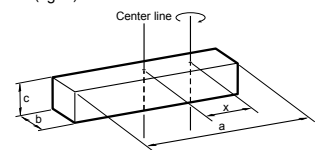


Fig.⑦

Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEMO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XX-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER INFORMATION  
 CABLE  
 TECHNICAL INFORMATION  
 DISCONTINUED

## Example of moment of inertia calculation

Let's discuss an example in which the chuck and workpiece are at a position offset by 10cm from the R-axis by a stay, as shown in Fig. ⑧. The moment of inertia is calculated with the following three factors, assuming that the load material is steel and its density  $\rho$  is  $0.0078\text{kg/cm}^3$ .

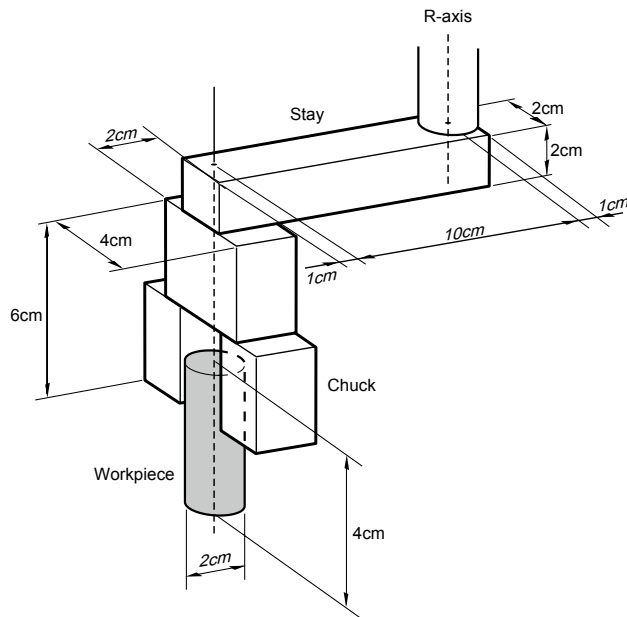


Fig. ⑧

### [1] Moment of inertia of the stay

From Fig. ⑨, the weight of the stay ( $W_s$ ) is given as follows :

$$W_s = \rho abc = 0.0078 \times 12 \times 2 \times 2 = 0.37 \text{ (kgf)}$$

The moment of inertia of the stay ( $J_s$ ) is then calculated from Eq. 3-7.

$$J_s = \frac{0.37 \times (12^2 + 2^2)}{12 \times 980} + \frac{0.37 \times 5^2}{980} = 0.014 \text{ (kgfcmsec}^2\text{)}$$

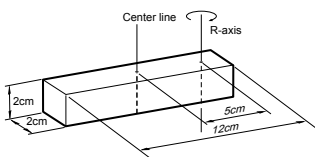


Fig. ⑨

### [4] Total weight

$$W = W_s + W_c + W_w = 0.84 \text{ (kgf)}$$

### [5] Total moment of inertia

$$J = J_s + J_c + J_w = 0.062 \text{ (kgfcmsec}^2\text{)}$$

### [2] Moment of inertia of the chuck

When the chuck form resembles that shown in Fig. ⑩, the weight of the chuck ( $W_c$ ) is

$$W_c = 0.0078 \times 2 \times 4 \times 6 = 0.37 \text{ (kgf)}$$

The moment of inertia of the chuck ( $J_c$ ) is then calculated from Eq. 3-7.

$$J_c = \frac{0.37 \times (2^2 + 4^2)}{12 \times 980} + \frac{0.37 \times 10^2}{980} = 0.038 \text{ (kgfcmsec}^2\text{)}$$

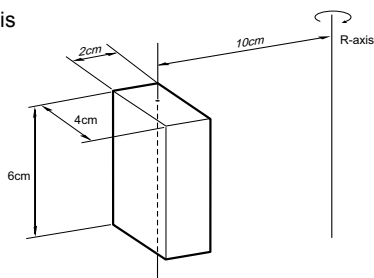


Fig. ⑩

### [3] Moment of inertia of workpiece

When the workpiece form resembles that shown in Fig. ⑪, the weight of the workpiece ( $W_w$ ) is

$$W_w = \frac{\rho \pi D^2 h}{4} = \frac{0.0078 \pi \times 2^2 \times 4}{4} = 0.098 \text{ (kgf)}$$

The moment of inertia of the workpiece ( $J_w$ ) is then calculated from Eq. 3-5.

$$J_w = \frac{0.097 \times 2^2}{8 \times 980} + \frac{0.097 \times 10^2}{980} = 0.010 \text{ (kgfcmsec}^2\text{)}$$

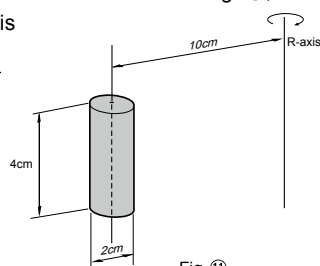


Fig. ⑪

# External safety circuit examples

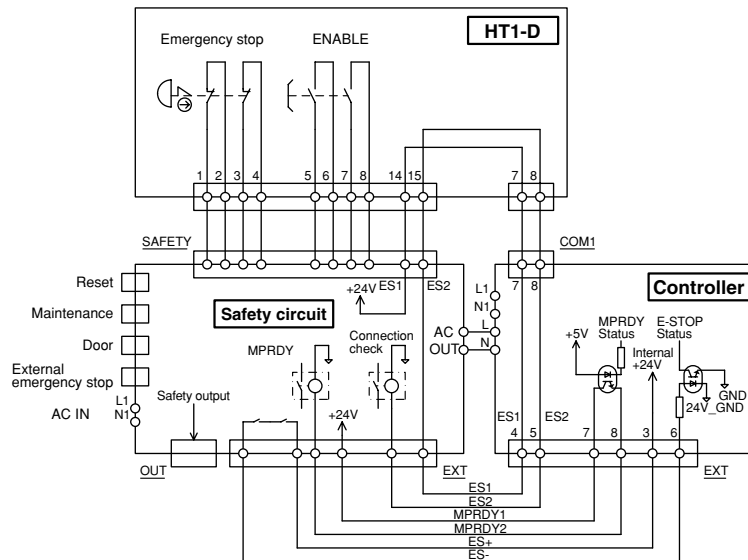
To ensure safe use of the robot, we request the customers make a risk assessment of their end equipment to decide what performance level is needed from safety circuits at the point. Customer should then install a safety circuit at the required performance level.

Here we show examples of category 4 circuits for the TS-X/TS-P, SR1 and RCX240 controllers using a programming box with an enable switch.

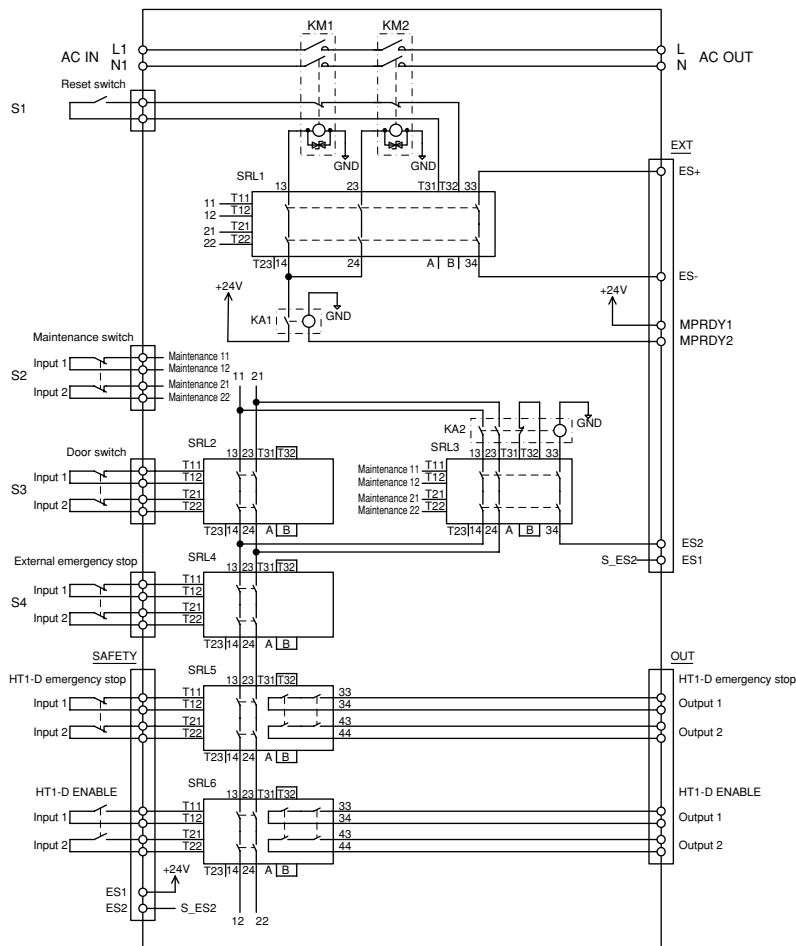
Safety circuits for other categories are described in the user's manuals, so download them from our website if needed.

## Circuit configuration examples (TS-X/TS-P)

### General connection diagram



### Category 4



Articulated robots  
YA

Linear conveyor modules  
LCM100

Motor-less single axis actuator  
Robonity

Compact single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor single-axis robots  
PHASER

Cartesian robots  
XX-X

SCARA robots  
YK-X

Pick & place robots  
YP-X

Linear motor  
CLEAN

CONTROLLER INFORMATION

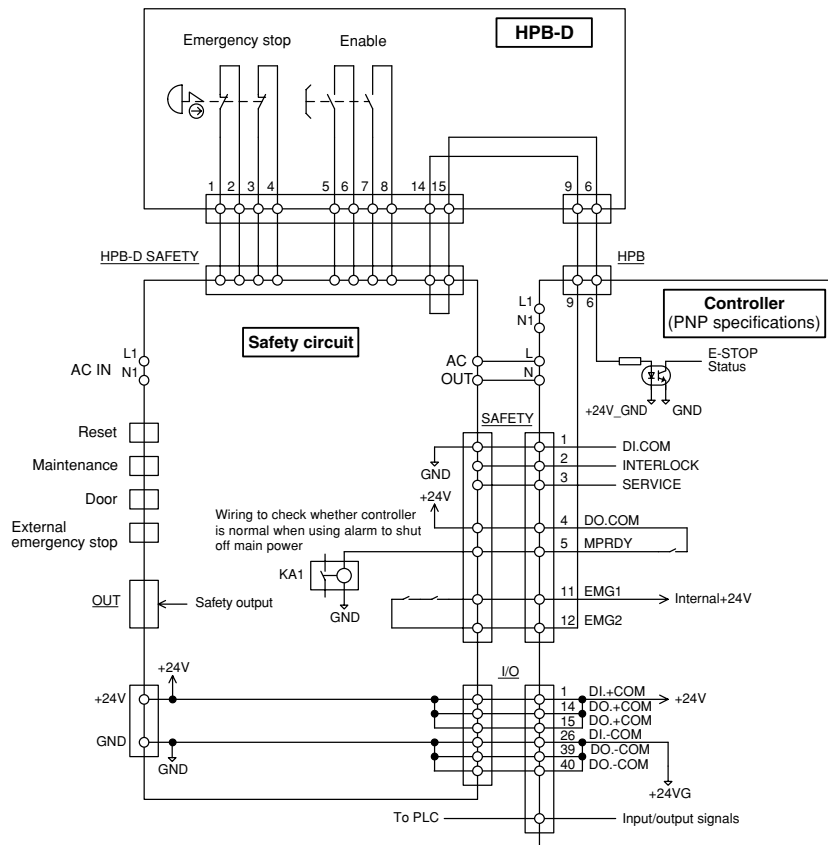
CABLE

TECHNICAL INFORMATION

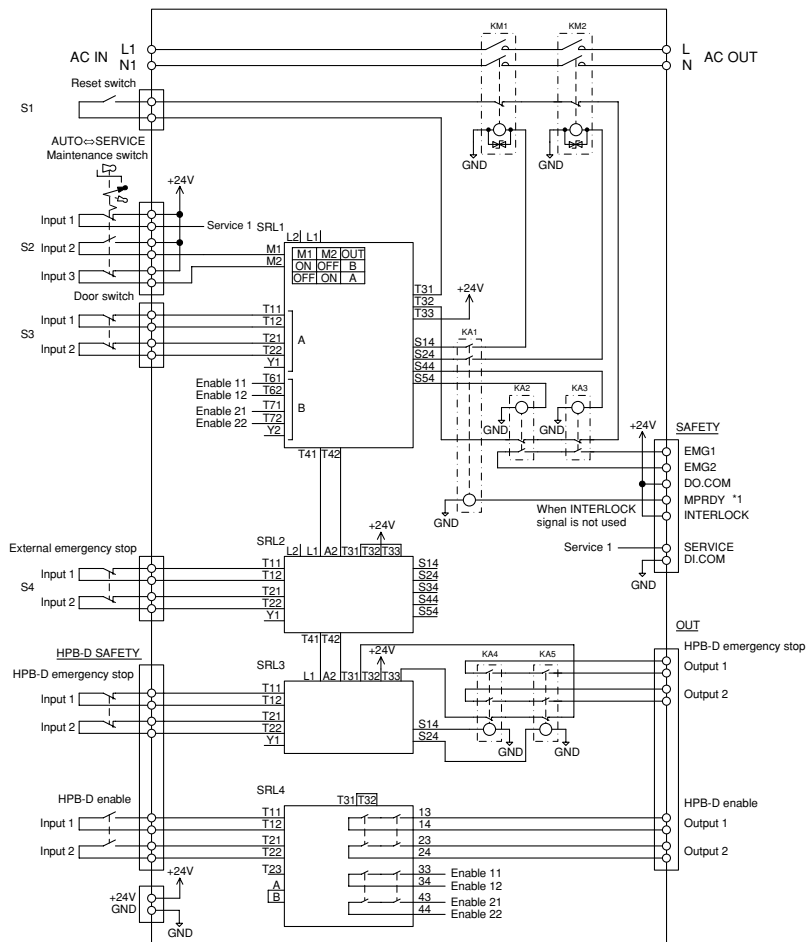
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# ■ Circuit configuration examples (SR1)

## General connection diagram



## Category 4



\*1: Wiring to check whether the controller is normal when using an alarm to shut off the main power



# Cautions regarding CE specifications

## ■ CE marking

The YAMAHA robot (robot and controller) is one component that is incorporated into the customer's system (built-in equipment), and we declare that the YAMAHA robots conform to the EC Directives only within the scope of built-in equipment (semi-finished product). So, no CE marks are affixed to the YAMAHA robot products.

## ■ Cautions regarding compliance with EC Directives

The YAMAHA robot (robot and controller) is not, in itself, a robot system. The YAMAHA robot-series product is one component that is incorporated into the customer's system (built-in equipment), and we declare that the YAMAHA robots conform to the EC Directives only within the scope of built-in equipment. Just incorporating the YAMAHA robot does not guarantee that the customer's system conforms to the EC Directives. However, combining the YAMAHA robot that is a semi-finished product with other device or circuit that is designed and manufactured appropriately makes it possible to conform the finished system to the EC Directives. The customer who incorporates YAMAHA robot products into the customer's final system, which will be shipped to or used in European region, should verify that the overall system conforms to the EC Directives.

## ■ Installation of external safety circuits

To comply with EC directives, customers using YAMAHA robots must always build and install their own external safety circuits after selecting product components (safety relays, etc.) according to performance levels and safety categories required by the customer equipment.

For details about examples of external safety circuits, the user's manual should be referred to.

## ■ Compliance with EMC Directives

In order to conform to the EMC Directives, the customer should evaluate the final system (overall system) and take necessary countermeasures. As examples of EMC countermeasures for single YAMAHA robot product are described in the user's manual, these descriptions should be referred to.

## ■ Cautions regarding official language of EU countries

Only English which is the official language of the EU is utilized in the manuals, warning labels, operating screens, and the Declaration of Incorporation for this product.

If warning text appears on the warning label, then Japanese may also sometimes be listed along with the English.

Articulated robots  
YA

Linear conveyor  
modules  
LCM100

Motor-less single  
axis actuator  
Robonity

Compact  
single-axis robots  
TRANSEVO

Single-axis robots  
FLIP-X

Linear motor  
single-axis robots  
PHASER

Cartesian  
robots  
XY-X

SCARA  
robots  
YK-X

Pick & place  
robots  
YP-X

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# Cautions on KCs (Korean Certificate Safety) specifications

## About KCs

KCs is a system that conforms to Korean Industrial Safety and Health Act and self-regulatory safety confirmation declaration of hazardous machines and devices. For machines specified in this system, the KCs mark needs to be indicated after conducting the forced certification or self-regulatory safety confirmation declaration. Industrial robots that have manipulators with 3 or more axes are specified as machines needing the self-regulatory safety confirmation declaration in South Korea's Ministry of Employment and Labor Notification No. 1201-46. Its safety standards are defined in separate table 2 of this notification.

## About measures for KCs

For some YAMAHA robot models, this self-regulatory safety confirmation declaration is conducted to register these models. Additionally, the KCs mark is indicated on the robots that have been declared. When you investigate to purchase a robot to be used in South Korea, check whether or not this robot conforms to KCs and order it with the KCs specifications specified.

The YAMAHA robot is a unit that is incorporated into the customer's system. Therefore, when the customer incorporates the robot into the customer's system, additional safety measures need to be taken. For details, see "Safety standards application guide reference manual".

## List of robots subject to KCs

Robot products may not be applicable to KCs depending on the customer's applications, operating conditions, or environments. Consult YAMAHA before purchasing a product.

Since a self-regulatory safety declaration has not been made for inapplicable models, these models cannot be used in Korea. Special-order robots are also unavailable. For details, please contact YAMAHA.

As of October, 2019  
 ○ : subject to KCs  
 - : not subject to KCs

Product	Type	Model name	KCs registration	
			RCX240 (S)	RCX340
Cartesian robot	FXYx	3 axes	○	○
		4 axes	○	○
	SXYx	3 axes	○	○
		4 axes	○	○
	SXYBx	3 axes	○	○
		4 axes	○	○
	MXYx	3 axes	○	○
		4 axes	○	○
	HXYx	3 axes	○	○
		4 axes	○	○
	NXY	3 axes	-	-
		4 axes	-	-
6 axes		-	-	
SXYxC	3 axes	-	-	
	4 axes	-	-	
Pick & place robot	YP Series	3 axes	-	-
		4 axes	-	-
SCARA robot	YK180X		-	-
	YK220X		-	-
	YK120XG		-	-
	YK150XG		-	-
	YK180XG		-	-
	YK250XG		-	-
	YK350XG		○	○
	YK400XG		-	-
	YK400XR		-	○
	YK400XE		-	-
	YK500XGL		○	○
	YK600XGL		-	○
	YK700XGL		-	-
	YK500XG		-	-
	YK600XG		-	-
	YK600XGH		-	-
	YK700XG		○	○
	YK800XG		-	-
	YK900XG		-	-
	YK1000XG		-	-
YK1200X		-	-	
YK180XC		-	-	
YK220XC		-	-	

▶ Continues to the next page.

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XX-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
CABLE  
TECHNICAL INFORMATION  
DISCONTINUED

# Cautions on KCs (Korean Certificate Safety) specifications

Product	Type	Model name	KCs registration	
			RCX240 (S)	RCX340
SCARA robot		YK250XGC		
		YK350XGC		
		YK400XGC	○	-
		YK500XGLC		
		YK600XGLC		
		YK300XGS	-	○
		YK400XGS		
		YK500XGS		
		YK600XGS		
		YK700XGS		
		YK800XGS	○	○
		YK900XGS		
		YK1000XGS		
		YK250XGP		
		YK350XGP		
		YK400XGP		
		YK500XGLP		
		YK600XGLP		
		YK500XGP	○	-
		YK600XGP		
		YK600XGHP		
		YK700XGP		
		YK800XGP		
	YK900XGP			
	YK1000XGP			
	YK350TW	-	○	
	YK500TW	○	○	

- Articulated robots  
YA
- Linear conveyor  
models  
LCM100
- Motor-less single  
axis actuator  
Robonity
- Compact  
single-axis robots  
TRANSEVO
- Single-axis robots  
FLIP-X
- Linear motor  
single-axis robots  
PHASER
- Cartesian  
robots  
XY-X
- SCARA  
robots  
YK-X
- Pick & place  
robots  
YP-X
- CLEAN
- CONTROLLER
- INFORMATION
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# Cautions on Korean EMC specifications

## About Korean KC

KC is a system based on the radio regulations of Korea. Devices specified by this system must certify compliance or register compliance, and indicate compliance. Applicable devices are defined by public announcement from the Korean National Radio Research Agency (NRRRA).

## About Korean KC compliance

Some models of YAMAHA robot (robots and controllers) are registered with the Korean National Radio Research Agency (NRRRA) by self-test compliance registration. YAMAHA robots that have already been registered display the KC mark.

If you are considering the purchase of robots to be used in Korea, please check the table below for compliance before ordering the applicable product.

YAMAHA robots are devices for inclusion in a system; therefore, if you, the customer, build a complete system that includes robots, and ship that system as a final product to Korea or use it within Korea, you yourself must verify EMC compliance.

For TS series and TS-SD units, check "Examples of EMC countermeasures" within the user's manual; for other controllers, check this section within the "Safety standards application guide reference manual".

## List of KC compliant robots

- \* Please consult with YAMAHA before purchase, since compliance might not be possible depending on your application, conditions of use, and environment.
- \* In the case of 3-axis or greater Cartesian robots and SCARA robots, the robot must be compliant with both KC and KCs. In conjunction with this table, refer also to the list of KCs compliant robots.

As of October 2019

Product	Model name	Registration number
Controller	ERCD	MSIP-REM-Y3M-ERCD
	TS-S2	MSIP-REM-Y3M-TSS
	TS-SD	MSIP-REM-Y3M-TSSD
	TS-SH	MSIP-REM-Y3M-TSSH
	TS-X	MSIP-REM-Y3M-TSX
	TS-P	MSIP-REM-Y3M-TSP
	RDV-X	MSIP-REM-Y3M-RDVX
	RDV-P	MSIP-REM-Y3M-RDVP
	SR1-X	MSIP-REM-Y3M-SR1X
	SR1-P	MSIP-REM-Y3M-SR1P
	RCX221	MSIP-REM-Y3M-X221
	RCX222	MSIP-REM-Y3M-X222
	RCX320	R-R-GYM-RCX320
	RCX240(S)	MSIP-REM-Y3M-X240
	RCX340	MSIP-REM-Y3M-X340
LCC140	MSIP-REM-Y3M-C140	
Robot	TRANSERVO series	MSIP-REM-Y3M-TR
	FLIP-X series	MSIP-REM-Y3M-FXL
		MSIP-REM-Y3M-FX
	PHASER series	MSIP-REM-Y3M-PH
	XY-X series	MSIP-REM-Y3M-XY
YK series	MSIP-REM-Y3M-YK	
Linear conveyor	LCC100	MSIP-REM-Y3M-M100

## About non-compliant models

The following robots are subject to the KC system; however, since self-test compliance registration has not been done at the present time, they cannot be used in Korea. Additionally, special-order robots are also not compliant with the KC system.

Even for the various series listed in the table, some new models might not have been registered.

(Contact YAMAHA for details.)

Pick and place robots: YP-X series

Articulated robots  
YA  
Linear conveyor models  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSERVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER  
INFORMATION  
CABLE  
TECHNICAL  
INFORMATION  
DISCONTINUED

# Warranty

For information on the warranty period and terms, please contact our distributor where you purchased the product.

## ■ This warranty does not cover any failure caused by:

1. Installation, wiring, connection to other control devices, operating methods, inspection or maintenance that does not comply with industry standards or instructions specified in the YAMAHA manual;
2. Usage that exceeded the specifications or standard performance shown in the YAMAHA manual;
3. Product usage other than intended by YAMAHA;
4. Storage, operating conditions and utilities that are outside the range specified in the manual;
5. Damage due to improper shipping or shipping methods;
6. Accident or collision damage;
7. Installation of other than genuine YAMAHA parts and/or accessories;
8. Modification to original parts or modifications not conforming to standard specifications designated by YAMAHA, including customizing performed by YAMAHA in compliance with distributor or customer requests;
9. Pollution, salt damage, condensation;
10. Fires or natural disasters such as earthquakes, tsunamis, lightning strikes, wind and flood damage, etc;
11. Breakdown due to causes other than the above that are not the fault or responsibility of YAMAHA;

## ■ The following cases are not covered under the warranty:

1. Products whose serial number or production date (month & year) cannot be verified.
2. Changes in software or internal data such as programs or points that were created or changed by the customer.
3. Products whose trouble cannot be reproduced or identified by YAMAHA.
4. Products utilized, for example, in radiological equipment, biological test equipment applications or for other purposes whose warranty repairs are judged as hazardous by YAMAHA.

THE WARRANTY STATED HEREIN PROVIDED BY YAMAHA ONLY COVERS DEFECTS IN PRODUCTS AND PARTS SOLD BY YAMAHA TO DISTRIBUTORS UNDER THIS AGREEMENT. ANY AND ALL OTHER WARRANTIES OR LIABILITIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXPRESSLY DISCLAIMED BY YAMAHA. MOREOVER, YAMAHA SHALL NOT BE HELD RESPONSIBLE FOR CONSEQUENTIAL OR INDIRECT DAMAGES IN ANY MANNER RELATING TO THE PRODUCT.

This manual does not serve as a guarantee of any industrial property rights or any other rights and does not grant a license in any form. Please acknowledge that we bear no liability whatsoever for any problems involving industrial property rights which may arise from the contents of this manual.

# Repeatability positioning accuracy

The “repeatability positioning accuracy” cannot be guaranteed for the accuracy conditions listed below.

## (1) Factors involving absolute accuracy

- Under conditions requiring accuracy between the robot controller internal coordinate position (command position) and real space position (movement position).

## (2) Operating pattern factors

- Under conditions including a motion approaching close to a teaching point (position) from different directions during repeating operation.
- Under conditions where power was turned off or operation was stopped, even when approaching a teaching position from same direction.
- Under conditions where movement to a teaching position uses a hand system (left-handed or right-handed system) different from that during teaching. (SCARA robots)

## (3) Temperature factors

- Under conditions subject to drastic changes in ambient temperature.
- Under conditions where temperature of robot unit fluctuates.

## (4) Fluctuating load factors

- Under conditions where load conditions fluctuate during operation (load fluctuates due to workpiece or no workpiece).

# Discontinued sales models and repair coverage limits

## MR12/MR12D

● Can be used for wall-mount

Sales end date	End of December 2019
Repair coverage	End of December 2026

### Ordering method

#### Single carriage model

**MR12**

Model	Cable carrier entry location	Optional cable carrier for users	Origin position change	Grease type	Stroke	Cable length	TSP	Positioner	Driver: Power supply voltage / Power capacity	LCD monitor	I/O selection
MR12: Incremental MR12A: Semi-absolute <sup>Note 1</sup>	RH: Horizontal, right LH: Horizontal, left RW: Wall mounted, right LW: Wall mounted, left	No entry: None S: S type M: M type	No entry: L side (Standard) Z: R side No entry: R side (Standard) Z: L side	No entry: Standard GC: Clean	50 to 1050 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 3</sup>	TS-P	<sup>Note 4</sup> TS-P	105: 100V/100W or less 205: 200V/100W or less	No entry: None L: With LCD	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ GW: No I/O board <sup>Note 5</sup>

Note 1. For the details of the semi-absolute model, please refer to P.39. RDV-P has an incremental model only.  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. If a flexible cable is needed for the SR1-P, TS-P, or RDV-P, then select 3K/5K/10K. On the RCX221, the standard cable is a flexible cable, so enter 3L/5L/10L when ordering.  
 Note 4. These controllers can be mounted on DIN rails. See P.522 for details.  
 Note 5. Select this selection when using the gateway function. For details, see P.66.  
 Note. It is possible to provide the model without a cable carrier. To find information on wiring (cable terminals) within the cable carrier see P.622.

**SR1-P**

Controller	Driver: Power capacity	Usable for CE	I/O selection
05	05: 100W or less	No entry: Standard E: CE marking	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS

**RDV-P**

Driver	Power-supply voltage	Driver: Power capacity
2	2: AC200V	05: 100W or less

#### Double carriage model

**MR12D**

Model	Installing direction	Optional cable carrier for users	Grease type	Stroke	Cable length	Controller	Usable for CE	I/O selection 1	I/O selection 2
MR12D: Incremental MR12AD: Semi-absolute <sup>Note 1</sup>	H: Horizontal installation W: Wall mounted installation	No entry: None S: S type M: M type	No entry: Standard GC: Clean	50 to 1050 (100mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable) <sup>Note 3</sup>	RCX221 SR1-P (2 units) TS-P (2 units) RDV-P (2 units)	No entry: Standard E: CE marking	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS EN: Ethernet	No entry: None Nt: OPDIO24/16 (NPN) Pt: OPDIO24/17 (PNP) EN: Ethernet

**RCX221**

### Specifications <sup>Note</sup>

Model	MR12	MR12D
Driving method / Shaft diameter	Shaft motor / $\phi 12$	
Repeatability ( $\mu\text{m}$ )	+/-5 or less	
Scale ( $\mu\text{m}$ )	Magnetic type: resolution of 1	
Maximum speed <sup>Note 1</sup> (mm/sec)	2500	
Rated thrust (N)	18	
Maximum payload <sup>Note 2</sup> (kg)	5	
Stroke (mm)	50 to 1050 (50mm pitch)	
Linear guide	4 rows of circular arc grooves $\times$ 2 rail	
Maximum cross-section outside dimensions (mm)	W60 $\times$ H90 (except the cable carrier section)	
Total length (mm)	Stroke+288	Stroke+488
Cable length (m)	Standard: 3.5 / Option: 5.10	

Note. A vertical model (with brake) is not available with the PHASER series.  
 Note. The basic specifications of semi-absolute model are the same as those of the incremental model.  
 Note 1. Maximum speed may not be obtained depending on operating conditions.  
 Note 2. Maximum payload per carriage.

### Allowable overhang <sup>Note</sup>

	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)		
	A	B	C	A	B	C
1kg	600	600	600	1kg	600	600
2kg	1200	1200	598	2kg	529	1200
3kg	1800	1800	406	3kg	323	1800
5kg	3000	1561	241	5kg	162	589

Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

### Static loading moment

MY	MP	MR
107	107	89

(Unit: N·m)

### Controller

Controller	Operating method
SR1-P05	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX221 RCX240/340	Operation using RS-232C communication
TS-P105	I/O point trace / Remote command
TS-P205	Remote command
RDV-P205	Pulse train control

### Cable carrier entry location

Note. Be sure to install in the direction as specified (in cable carrier take-out direction drawing and various specification drawings) individually. Installation in any other way will cause a failure. For requirement of installation in any way other than the above standard installation, please consult YAMAHA as special arrangement will be available.

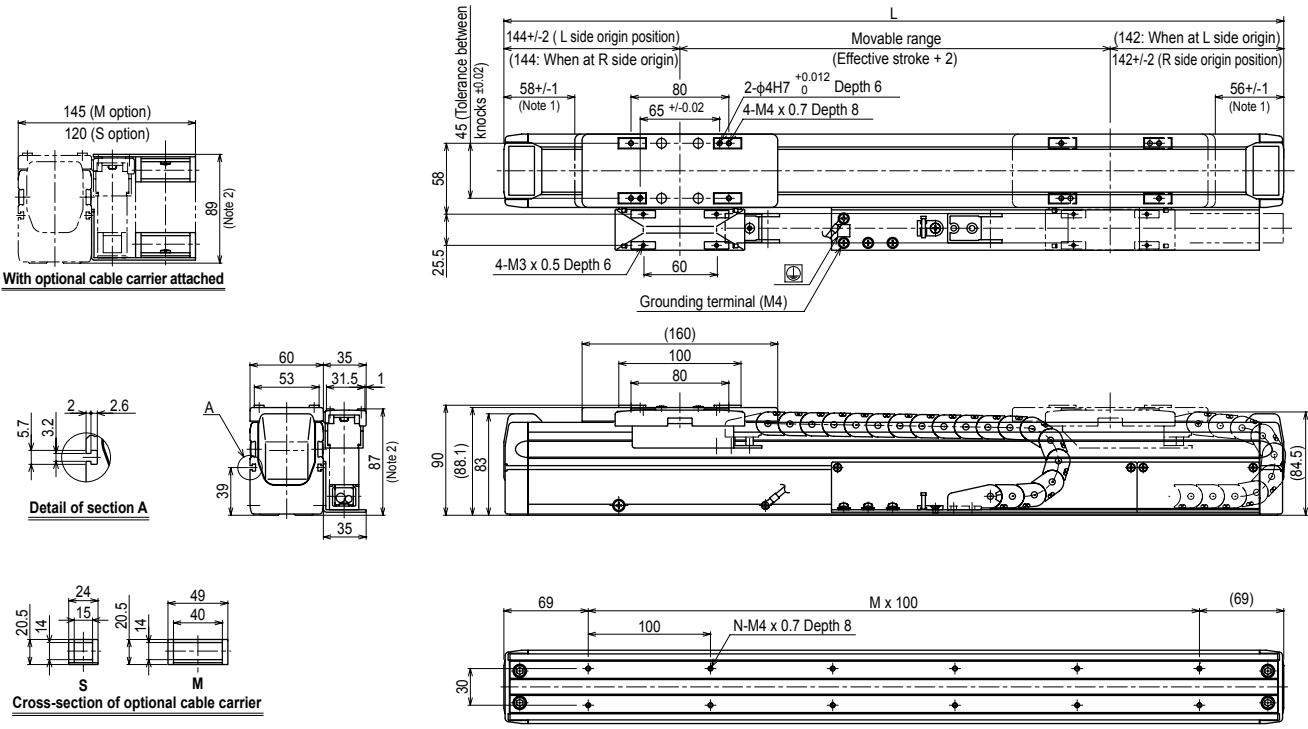
### Optional cable carrier for users

Space for optional cable for users

Note. The cable and air hoses should take up less than 30% of the space when storing them inside the cable carrier. Lay out the cables and air hoses in rows inside the cable carrier so they do not cross each other.

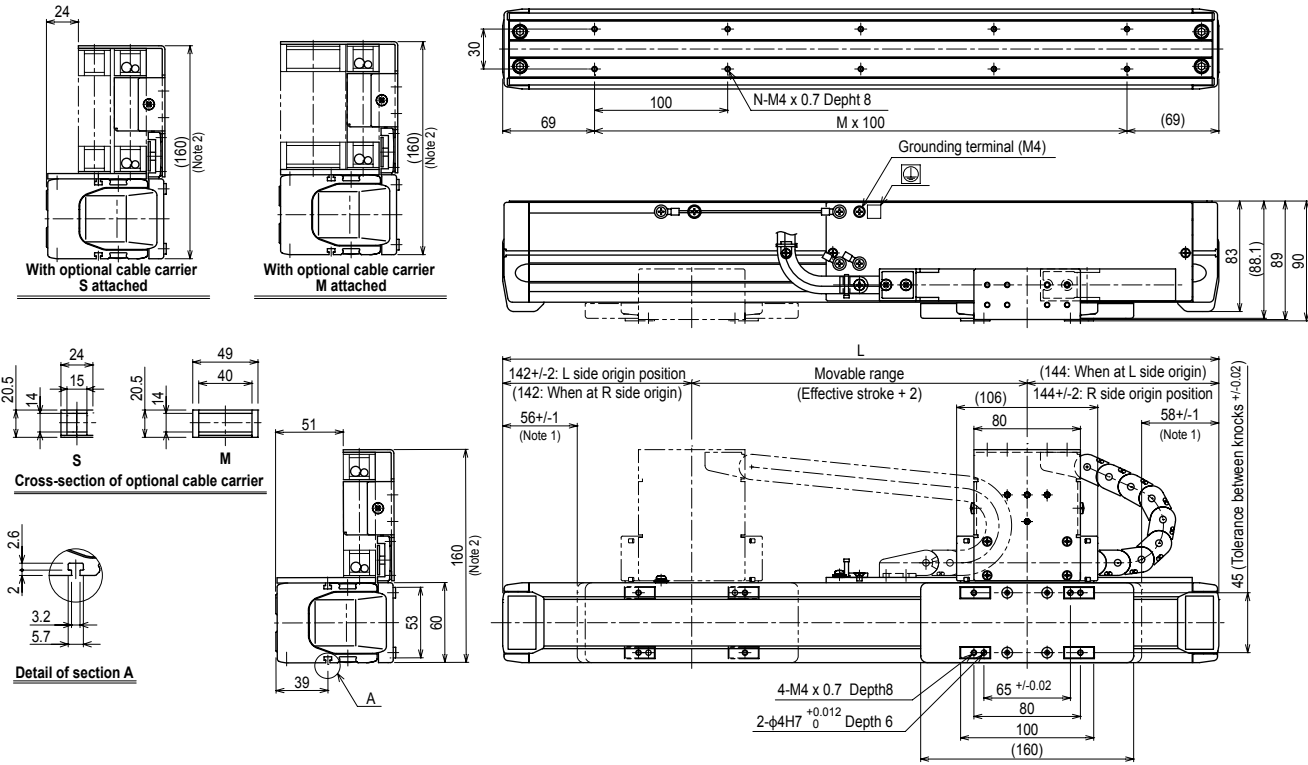


## MR12 single carriage horizontal mount model **RH**



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.  
Note. The origin is set on the L side at the time of shipment. It can be changed to the R side by parameter setting.

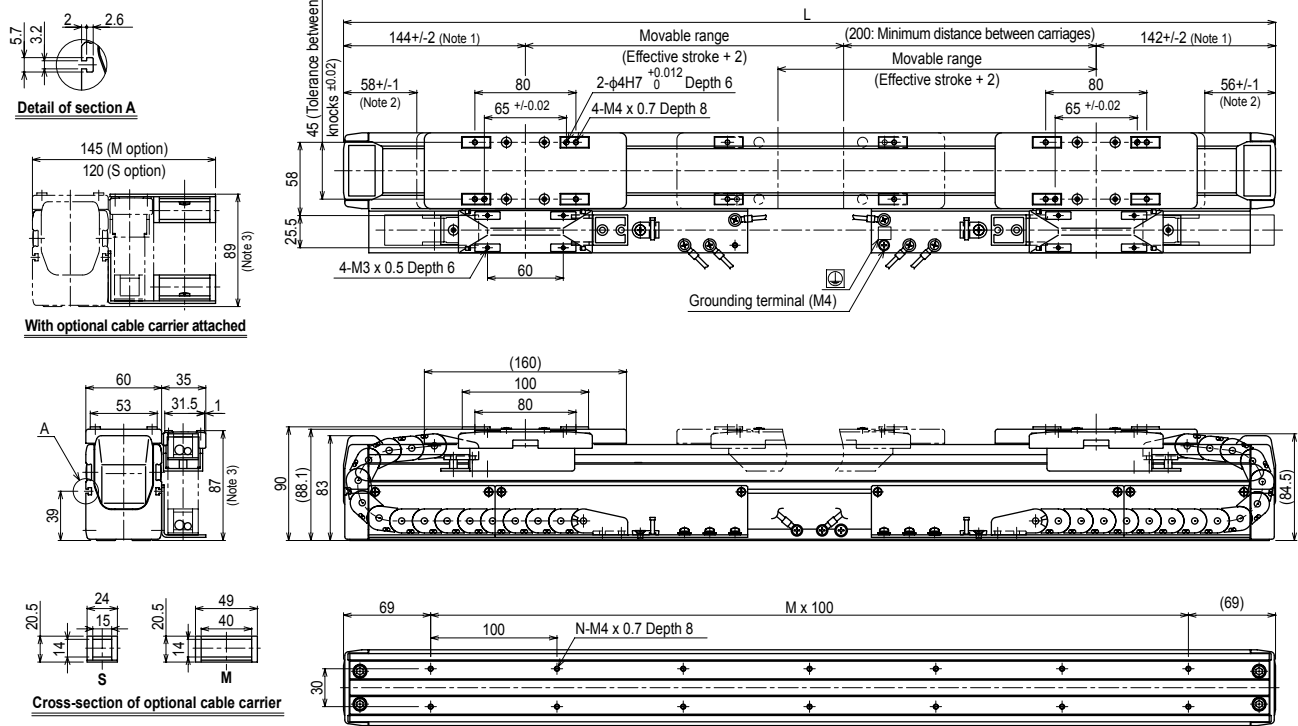
## MR12 single carriage wall mount model **RW**



Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.  
Note. The origin is set on the R side at the time of shipment. It can be changed to the L side by parameter setting.

# MR12/MR12D

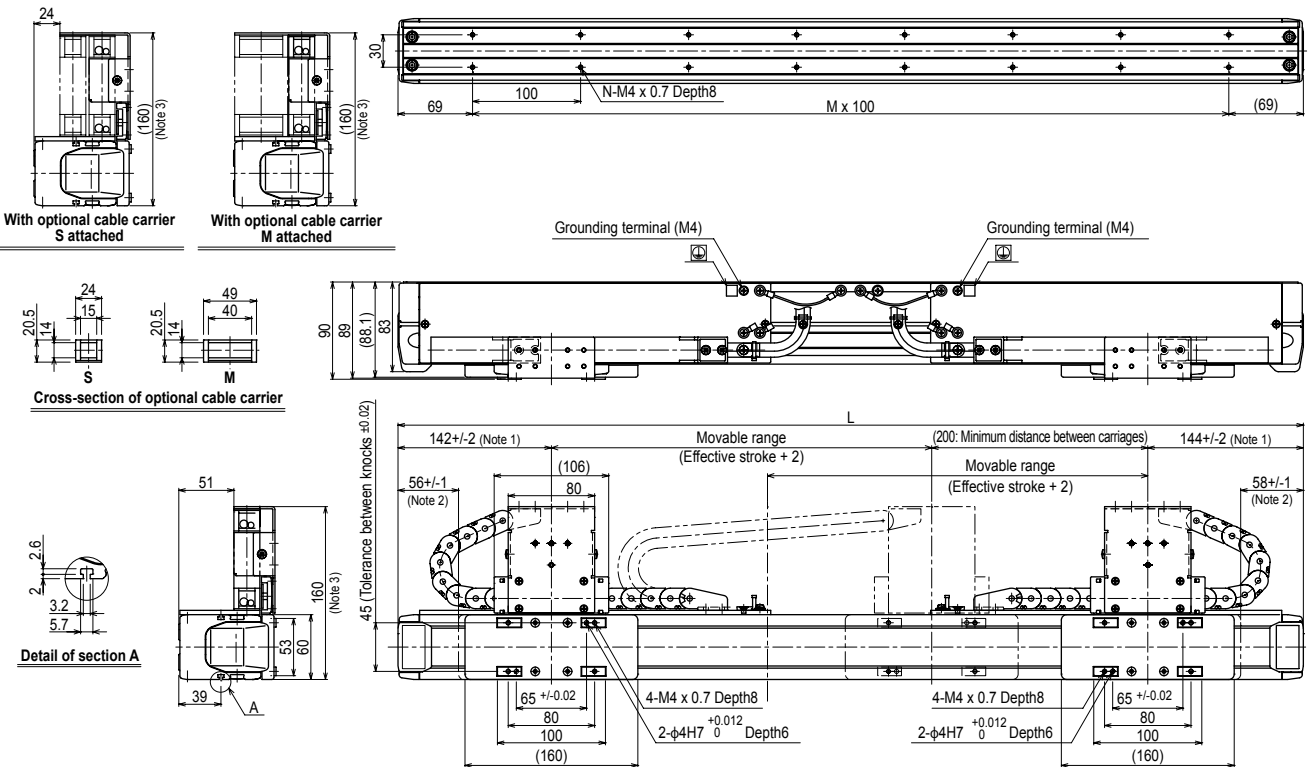
## MR12D double carriage horizontal mount model **(H)**



Effective stroke	50	150	250	350	450	550	650	750	850	950	1050
<b>L</b>	538	638	738	838	938	1038	1138	1238	1338	1438	1538
<b>M</b>	4	5	6	7	8	9	10	11	12	13	14
<b>N</b>	10	12	14	16	18	20	22	24	26	28	30
<b>Weight (kg)</b>	5.7	6.3	6.8	7.3	8.0	8.6	9.1	9.7	10.2	10.8	11.3

Note 1. Position of the table slider when returned to the origin.  
 Note 2. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 3. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

## MR12D double carriage wall mount model **(W)**



Effective stroke	50	150	250	350	450	550	650	750	850	950	1050
<b>L</b>	538	638	738	838	938	1038	1138	1238	1338	1438	1538
<b>M</b>	4	5	6	7	8	9	10	11	12	13	14
<b>N</b>	10	12	14	16	18	20	22	24	26	28	30
<b>Weight (kg)</b>	5.7	6.3	6.8	7.3	8.0	8.6	9.1	9.7	10.2	10.8	11.3

Note 1. Position of the table slider when returned to the origin.  
 Note 2. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 3. Depending on the stroke and the operating conditions, the cable carrier bending radius might be larger, making it higher than the dimensions shown in the diagram.

# YK400XR

Standard type: Small type

Sales end date	End of June 2020
Repair coverage	End of June 2027

LOW COST HIGH PERFORMANCE MODEL

- Arm length 400mm
- Maximum payload 3kg



## Ordering method

**YK400XR** - **150** - **RCX340-4**

Model	Return-to-origin method S: Sensor T: Stroke end	Z axis stroke	Hollow shaft No entry: None S: With hollow shaft	Cable 3L: 3.5m 5L: 5m 10L: 10m	Controller / Number of controllable axes	Safety standard	Option A (OPA)	Option B (OPB)	Option C (OPC)	Option D (OPD)	Option E (OPE)	Absolute battery
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Specify various controller setting items. RCX340 ▶ P.566

## Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	225 mm	175 mm	150 mm	-
	Rotation angle	+/-132°	+/-150°	-	+/-360°
AC servo motor output		200 W	100 W	100 W	100 W
Deceleration mechanism	Transmission method	Direct-coupled		Timing belt	
	Motor to speed reducer Speed reducer to output	Direct-coupled		Timing belt	
Repeatability <sup>Note 1</sup>		+/-0.01 mm		+/-0.01 mm	+/-0.01°
Maximum speed		6 m/sec		1.1 m/sec	2600 °/sec
Maximum payload		3 kg (Standard specification), 2 kg (Option specifications <sup>Note 4</sup> )			
Standard cycle time: with 2kg payload <sup>Note 2</sup>		0.45 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>		0.05 kgm <sup>2</sup> (0.5 kgfcm <sup>2</sup> )			
User wiring		0.2 sq × 10 wires			
User tubing (Outer diameter)		φ 4 × 3			
Travel limit		1. Soft limit 2. Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		17 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)  
 Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions and performing the coarse positioning arch operation.  
 Note 3. It is necessary to input the moment of inertia in the actual operating environment.  
 Note 4. Maximum payload of option specifications (with user wiring/tubing through spline type) is 2kg.

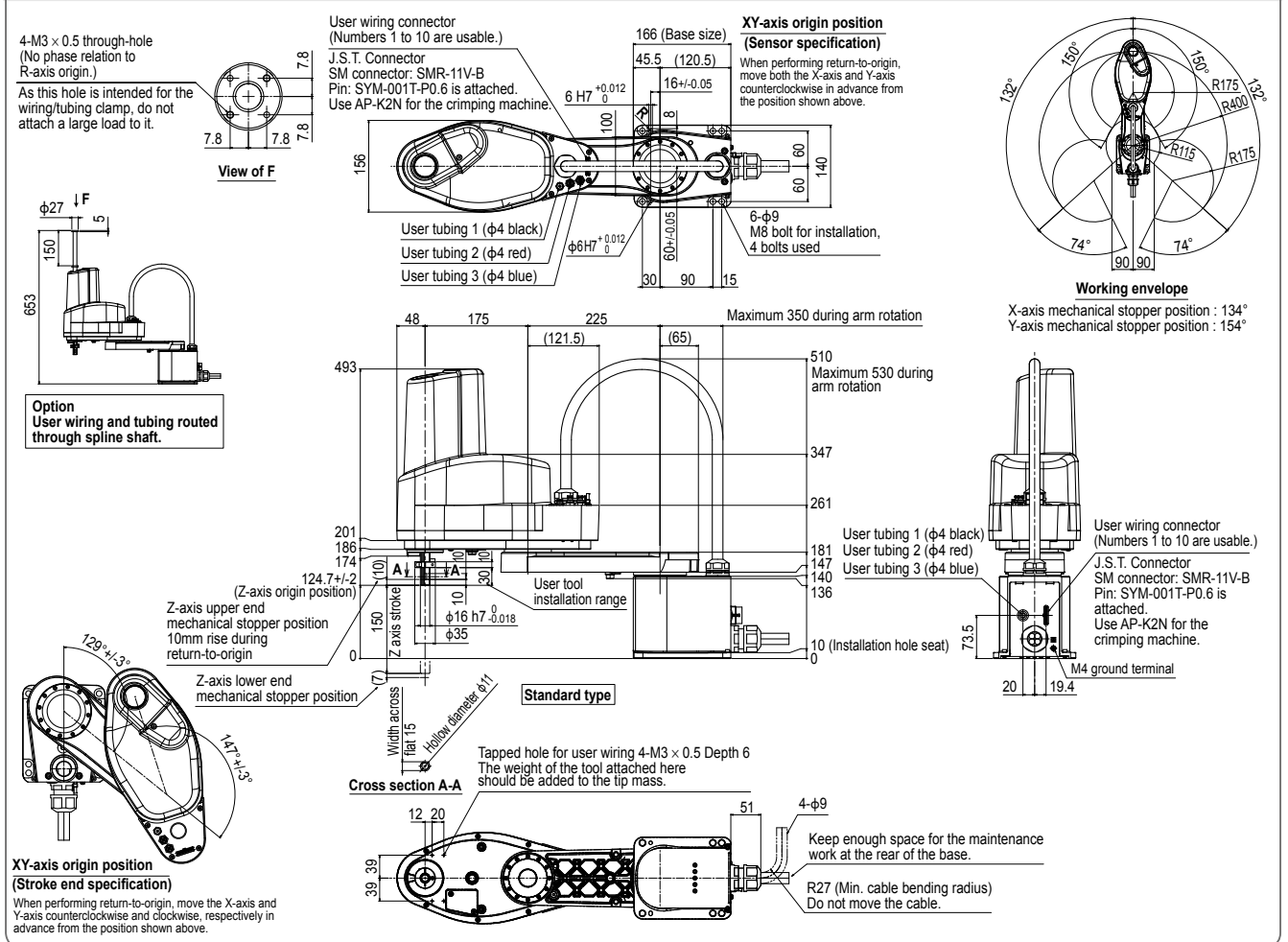
## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / Remote command / Operation using RS-232C communication

Note. The movement range can be restricted by adding the X- and Y-axis mechanical stoppers. (The maximum movement range was set at shipment.)  
 See our robot manuals (installation manuals) for detailed information.  
 Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
<https://global.yamaha-motor.com/business/robot/>

## YK400XR



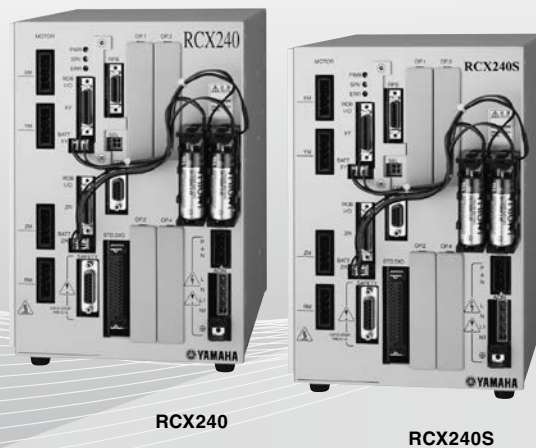
Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XX-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
 YP-X  
 CLEAN  
 CONTROLLER INFORMATION  
 CABLE  
 TECHNICAL INFORMATION  
 DISCONTINUED

# RCX240/RCX240S

Sales end date	End of December 2019
Repair coverage	End of December 2026

## ● Robot controller with advanced functions

An advanced multi-axial controller newly developed based on long years of actual results! Along with a full range of functions, great engineering also makes it extremely easy to use.



Programming box  
▶ RPB/RPB-E  
P.586



Support software for PC  
▶ VIP+  
P.580

## ■ Basic specifications

Item	Model	RCX240 / RCX240S
Basic specifications	Number of controllable axes	4 axes maximum (Control simultaneously: 4 axes)
	Controllable robots	Single-axis robot FLIP-X, Linear motor single-axis robot PHASER, Cartesian robot XY-X, SCARA robot YK-XG, Pick & place robot YP-X
	Maximum power consumption	2500VA (RCX240) / 1500VA (RCX240S)
	Capacity of the connected motor	1600W (RCX240) / 800W (RCX240S)
	Dimensions	W180 × H250 × D235mm
Weight		6.5kg
	Input power supply	Control power supply: Single phase AC200 to 230V +/-10% maximum (50/60Hz) Motor power supply: Single phase AC200 to 230V +/-10% maximum (50/60Hz)
Axis control	Drive method	AC full-digital software servo
	Position detection method	Multi-turn resolver with data backup function, Magnetic linear scale
	Operating method	PTP (Point to Point), Linear interpolation, Circular interpolation, ARCH
	Coordinate system	Joint coordinates, Cartesian coordinates
	Position indication units	Pulses, mm (millimeters), deg (degrees)
	Speed setting	1% to 100% (In units of 1%. However speed is in units of 0.01% during single-axis operation by DRIVE statement.)
	Acceleration setting	1. Automatic acceleration setting based on robot model type and end mass parameter 2. Setting based on acceleration and deceleration parameter (Setting by 1% unit)
Program	Origin search method	Incremental, Absolute, Semi-absolute
	Program language	YAMAHA BASIC (Conforming to JIS B8439 SLIM Language)
	Multitasks	8 tasks maximum
	Sequence program	1 program
Memory	Point-data input method	Manual data input (coordinate value input), Direct teaching, Teaching playback
	Memory capacity	364KB (total capacity of program and points) (available program capacity during use of maximum number of points is 84KB)
	Programs	100 program (Max.) 9,999: maximum lines per program 98KB: maximum capacity per program
	Points	10,000 points: maximum numbers of points
	Memory Backup battery	Lithium metallic battery (service life 4 years at 0°C to 40°C)
	Internal flash memory	512KB (ALL data only)

Controllable robot	<b>XY-X P261</b>	<b>YK-X P389</b>	<b>FLIP-X P193</b>	<b>PHASER P239</b>	<b>YP-X P451</b>
CE marking		Field networks			

## Model Overview

Name	RCX240/RCX240S
Controllable robot <sup>Note1</sup>	Cartesian robot XY-X / SCARA robot YK-X / Single-axis robot FLIP-X / Linear motor single-axis robot PHASER / Pick & place robot YP-X
Input power	Single phase : AC200V to 230V +/-10% maximum (50/60Hz)
Operating method	Programming / Remote command / Operation using RS-232C communication
Maximum number of controllable axes	4 axes maximum
Origin search method	Incremental/Absolute

Note. For details, please refer to the controller model selection table on the next page.

## Ordering method

<b>RCX240</b> <b>RCX240S</b>								
<b>Controller</b> <sup>Note1</sup>	<b>Usable for CE</b>	<b>Regenerative unit</b> <sup>Note2</sup>	<b>Option I/O</b>	<b>Network Option</b>	<b>iVY System Option board</b>	<b>Light/Tracking</b>	<b>Gripper</b>	<b>Battery</b>
RCX240: Standard model RCX240S: Low capacity model	No entry: Standard E: CE marking K: KCs	No entry: None R: RGU-2 R3: RGU-3 <sup>Note3</sup>	N, P: Standard I/O 16/8 N1, P1: 40/24 points N2, P2: 64/40 points N3, P3: 88/56 points N4, P4: 112/72 points	No entry: None CC: CC-Link DN: DeviceNet™ PB: PROFIBUS EN: Ethernet EP: EtherNet/IP™ YC: YC-Link <sup>Note5</sup>	No entry: None VY: iVY (VISION)	No entry: None TR: Light+Tracking LC: Light	No entry: None GR: Gripper	No entry: None <sup>Note6</sup> B: 2pcs <sup>Note7</sup> BB: 4pcs <sup>Note8</sup>

Note 1. The RCX240S controller is limited to use with robots that handles 200W or lower on each axis. Check the following controller selection table to find the matching model.

Note 2. The regenerative unit (option) is required when operating a model designated by YAMAHA or a load with a large inertia. Please refer to the following regenerative unit selection table.

Note 3. YK500XG to YK1000XG are for RGU-3.

Note 4. Use N to N4 when NPN is selected on the I/O board, and P to P4 when PNP is selected.

Note 5. Available only for the master. (The YC-Link system controls an SR1 series single-axis controller in accordance with communications received from an RCX series multi-axis controller. Using the YC-Link system allows control of up to 8 axes (or up to 6 axes with synchronous control)).

Note 6. Use battery-less model if connecting to all-axis linear motor, or to incremental models.

Note 7. If any or Single-axis among the XY axes are absolute specifications then 2 batteries are required.

Note 8. If any or Single-axis among the ZR axes are absolute specifications then 2 batteries are required.

☆ Please note that:

The current sensor on the RCX240S cannot be set to 20A.

As a controller stocked for maintenance, please order an RCX240 that can be set to any of 05A, 10A and 20A.

Item	Model	RCX240 / RCX240S		
External input/output	STD.DIO	I/O input	Dedicated input 10 points, General input 16 points (NPN / PNP specifications selectable)	
		I/O output	Dedicated output 11 points, General output 8 points	
	SAFETY		Emergency stop input (Relay contact), Service mode input (NPN/PNP specification is set according to STD. DIO setting), Enabling switch input (Enabled only when the RPB-E is used.)	
	Brake output		Relay contact	
	Origin sensor input		Connectable to DC 24V normally-closed contact sensor	
	External communications		RS-232C: 1CH D-SUB9 (female) RS-422: 1CH (Dedicated RPB)	
	Regenerative unit connection		RGEN connector	
	Options	Slots	Type	4
			Optional input/output (NPN/PNP)	General input 24 points, General output 16 points
			CC-Link	Dedicated input 16 points, Dedicated Output 16 points, General input 96 points, General output 96 points (4 nodes occupied)
			DeviceNet™	Dedicated input 16 points, Dedicated Output 16 points, General input 96 points, General output 96 points
			PROFIBUS	Dedicated input 16 points, Dedicated Output 16 points, General input 96 points, General output 96 points
			Ethernet	IEEE802.3 10Mbps (10BASE-T)
			EtherNet/IP™	Dedicated input 16 points, dedicated output 16 points, General-purpose input 96 points, general-purpose output 96 points Conforms to Ethernet (IEEE 802.3) 10Mbps/100Mbps.
iVY			Camera input (2ch), camera trigger input, PC connection input	
Tracking			AB phase input, lighting trigger input, lighting power supply input/output	
Lighting control			Lighting trigger input, lighting power supply input/output	
Gripper control	No. of axes: 1 axis, Position detection method: Optical rotary encoder, Min. setting distance: 0.01mm			
Options	Programming box		RPB, RPB-E (with enable switch)	
	Support software for PC		VIP+	
	Regenerative unit		RGU-2, RGU-3	
General specifications	Operating temperature		0°C to 40°C	
	Storage temperature		-10°C to 65°C	
	Operating humidity		35% to 85%RH (non-condensing)	
	Absolute backup battery		Lithium metallic battery 3.6V 5400mAH (2700mAH × 2)	
	Absolute data backup period		1 year (in state with no power applied)	
	Noise immunity		IEC61000-4-4 Level 3	
Protective structure		IP10		

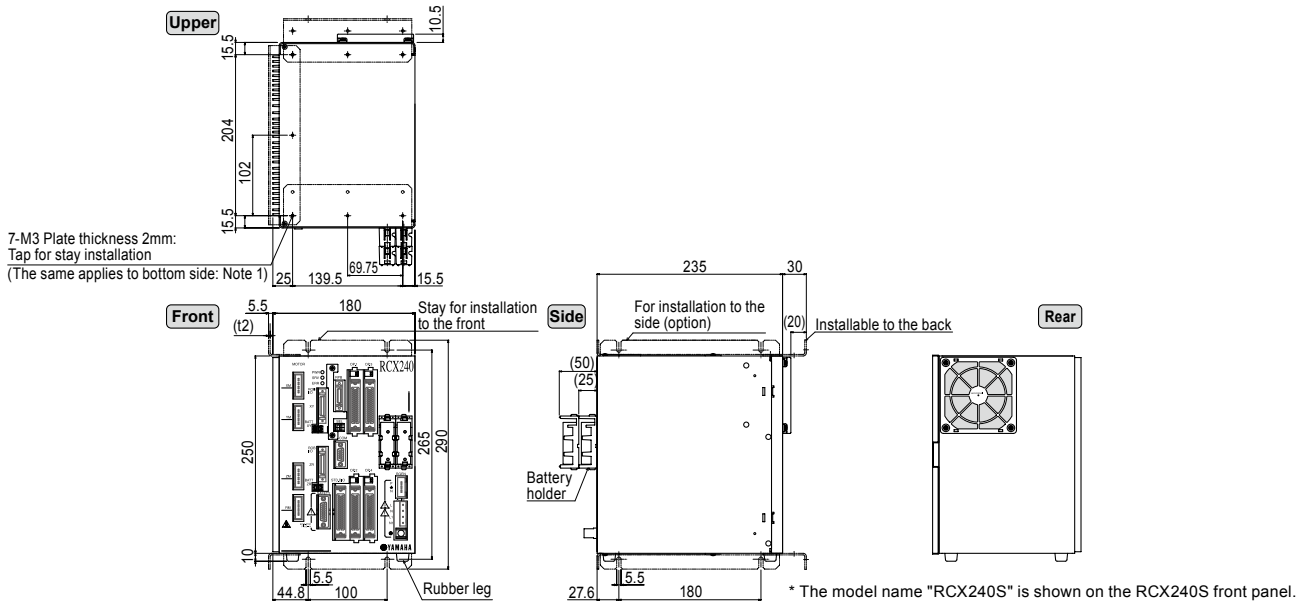
Articulated robots  
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Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
CABLE  
TECHNICAL INFORMATION  
DISCONTINUED







## ■ Dimensions



## ■ Power supply capacity and heat emission

The required power supply capacity and heat emission will vary depending on the robot type and number of axes.

Using the following table as a general guide consider the required power supply preparation and control panel size, controller installation, and cooling method.

### (1) When connected to SCARA robot

Standard type	Robot type			Power capacity (VA)	Generated heat amount (W)	
	Clean type	Dust-proof & drip-proof type	Wall-mount / Ceiling-mount / inverse type			
YK180X, 220X	—	—	—	500	63	
YK250XG, 350XG, 400XG, 500XGL, 600XGL	YK250XGC, 350XGC, 400XGC, 500XGLC, 600XGLC	YK250XGP, 350XGP, 400XGP, 500XGLP, 600XGLP	YK300XGS, 400XGS	1000	75	
—	YK500XC, 600XC	—	—	1500	88	
YK550X, 500XG, 600XG	—	YK500XGP, 600XGP	YK500XGS, 600XGS	1700	93	
—	YK700XC, 800XC, 1000XC	—	—	2000	100	
YK600XGH, 700XG, 800XG, 900XG, 1000XG, 1200X	—	YK600XGHP, 700XGP, 800XGP, 900XGP, 1000XGP	YK700XGS, 800XGS, 900XGS, 1000XGS	YK350TW, YK500TW	2500	113

### (2) When connected to 2 axis (Cartesian robot and/or multi-axis robot)

Axial current sensor value <sup>Note</sup>		Power capacity (VA)	Generated heat amount (W)
X axis	Y axis		
05	05	600	65
10	05	800	70
10	10	1000	75
20	05	1100	78
20	10	1300	83
20	20	1700	93

### (3) When connected to 3 axis (Cartesian robot and/or multi-axis robot)

Axial current sensor value <sup>Note</sup>			Power capacity (VA)	Generated heat amount (W)
X axis	Y axis	Z axis		
05	05	05	700	68
10	05	05	900	73
10	10	05	1000	75
10	10	10	1200	80
20	05	05	1200	80
20	10	05	1300	83
20	10	10	1500	88
20	20	05	1600	90
20	20	10	1800	95
20	20	20	2000	95

### (4) When connected to 4 axis (Cartesian robot and/or multi-axis robot)

Axial current sensor value <sup>Note</sup>				Power capacity (VA)	Generated heat amount (W)
X axis	Y axis	Z axis	R axis		
05	05	05	05	800	70
10	05	05	05	1000	75
10	10	05	05	1100	78
10	10	10	05	1300	83
10	10	10	10	1400	85
20	05	05	05	1200	80
20	10	05	05	1400	85
20	10	10	05	1500	88
20	10	10	10	1700	93
20	20	05	05	1600	90
20	20	10	05	1800	95
20	20	10	10	2000	100
20	20	20	05	2100	103
20	20	20	10	2200	105
20	20	20	20	2500	113

Note. Even if axial current sensor values for each axis are interchanged no problem will occur.

Note. Motor capacity vs. current sensor table

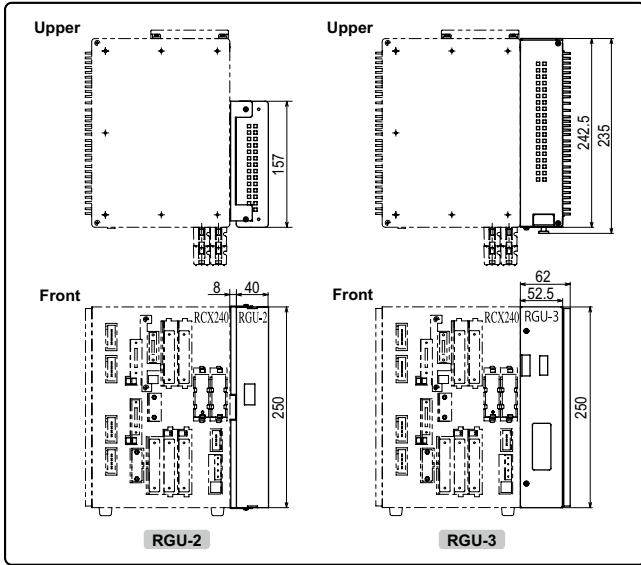
Connected motor capacity	Current sensor
100W or less	05
200W	10
400W or more	20

Note. Motor output of the B14H is 200W but the current sensor is 05.

# RCX240/RCX240S

Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
CABLE  
TECHNICAL INFORMATION  
DISCONTINUED

## Regenerative unit



## RGU-2 basic specifications



Item	RGU-2
Model	KX0-M4107-20 (including cable supplied with unit)
Dimensions	W40 × H250 × D157mm
Weight	0.9kg
Regenerative voltage	Approx. 380V or more
Regenerative stop voltage	Approx. 360V or less
Accessory	Cable for connection with controller (300mm)

Note. Always leave an empty space (gap of about 20mm) between this unit and the adjacent controller. Also, always use the dedicated cable when connecting the controller.

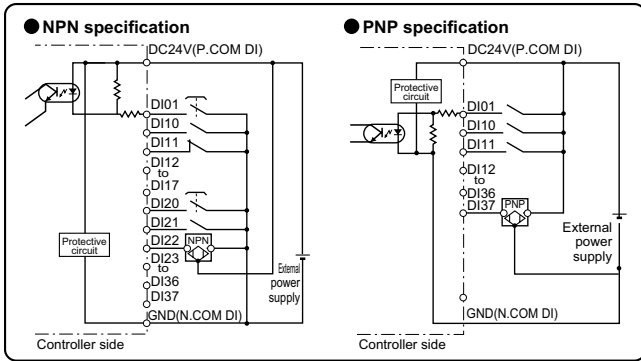
## RGU-3 basic specifications



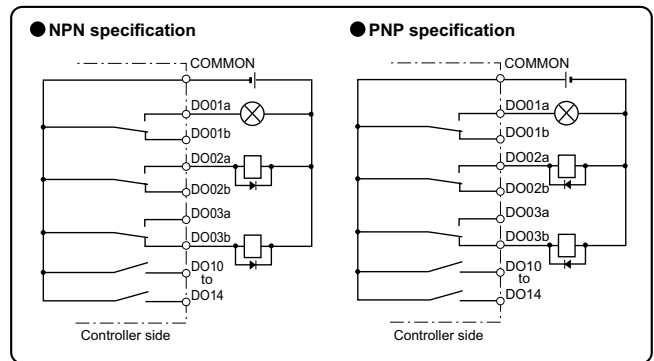
Item	RGU-3
Model	KX0-M4107-30 (including cable supplied with unit)
Dimensions	W62 × H250 × D242.5mm
Weight	3.7kg
Regenerative voltage	Approx. 380V or more
Regenerative stop voltage	Approx. 360V or less
Accessory	Cable for connection with controller (300mm)

Note. Cannot be installed as a separate unit.

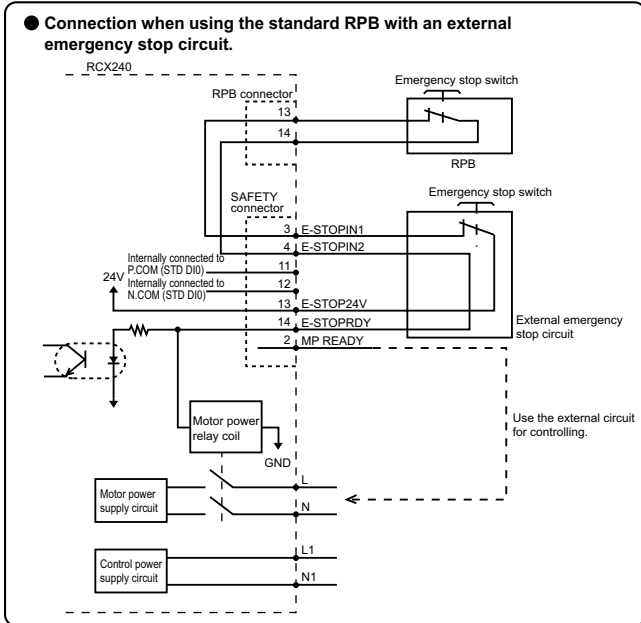
## Example of input signal connection



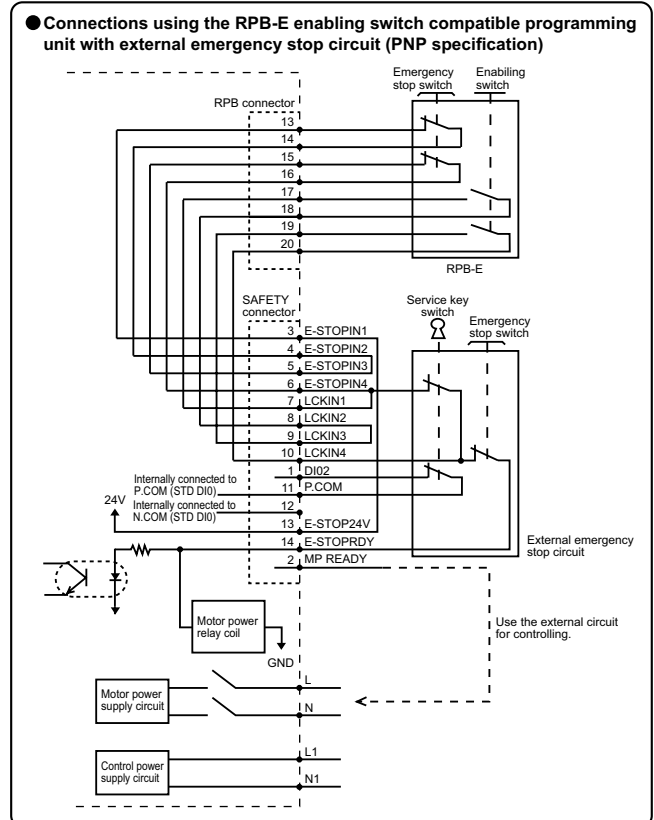
## Example of output signal connection



## Emergency input signal connections



Installing an external safety circuit will satisfy safety category class 4 standards. See P.647 for more information.



## ■ Connector input / output signals

PIN	I/O No.	Name	Note	PIN	I/O No.	Name	Note
1	DI05	I/O command execution trigger input		27	COMMON	Relay common	
2	DI01	Servo ON input		28	DO01b	CPU_OK (B contact)	
3	DI10	Sequence control		29	DO01a	CPU_OK (A contact)	
4	DI11	Interlock		30	DO02b	Servo ON output (B contact)	(Relay output)
5	DI12	Program start		31	DO02a	Servo ON output (A contact)	Maximum capacity of each terminal (resistance load)
6	DI13	AUTO mode input		32	DO03b	Alarm (B contact)	: DC 24V 0.5A
7	DI14	Return-to-origin		33	DO03a	Alarm (A contact)	Common terminal
8	DI15	Program reset		34	DO10	AUTO mode output	: COMMON
9	DI16	MANUAL mode input		35	DO11	Return-to-origin complete	
10	DI17	Absolute reset / Return-to-origin	Common terminal	36	DO12	Sequence program in-progress	
11	DI20	General input 20	: P.COMDI	37	DO13	Robot program in-progress	
12	DI21	General input 21	: N.COMDI	38	DO14	Program reset	
13	DI22	General input 22		39	DO20	General output 20	
14	DI23	General input 23	(Photo-coupler input) NPN specification	40	DO21	General output 21	(Transistor output)
15	DI24	General input 24	: Source type	41	DO22	General output 22	NPN specification or PNP specification
16	DI25	General input 25	PNP specification	42	DO23	General output 23	Maximum capacity of each terminal (resistance load): 0.1A
17	DI26	General input 26	: Sink type	43	DO24	General output 24	+Common terminal: DC+24V
18	DI27	General input 27		44	DO25	General output 25	- Common terminal: GND
19	DI30	General input 30		45	DO26	General output 26	
20	DI31	General input 31		46	DO27	General output 27	
21	DI32	General input 32		47	DC24V	DC+24V (P.COMDI)	External power supply input
22	DI33	General input 33		48			
23	DI34	General input 34		49	GND	GND (N.COMDI)	
24	DI35	General input 35		50			
25	DI36	General input 36					
26	DI37	General input 37					

Note. When using the CC-Link, DeviceNetTM, EtherNet/IP™, or PROFIBUS, the dedicated inputs other than the interlock signal (DI11) of the STD.DIO that are provided on the RCX240 controller are disabled.  
 Additionally, when the external 24V monitor control of the system parameters is set disabled, the interlock signal (DI11) becomes disabled.

## ■ SAFETY connector signals

Terminal number	RPB connected		RPB-E connected	
	I/O No.	Name	I/O No.	Name
1	DI02	SERVICE mode	DI02	SERVICE mode
2	MP READY	Motor power ready signal	MP READY	Motor power ready signal
3	E-STOPIN 1	Emergency stop input 1	E-STOPIN 1	Emergency stop input 1
4	E-STOPIN 2	Emergency stop input 2	E-STOPIN 2	Emergency stop input 2
5	NC	NC	E-STOPIN 3	Emergency stop input 3
6	NC	NC	E-STOPIN 4	Emergency stop input 4
7	NC	NC	LCKIN 1	Enabling switch input 1
8	NC	NC	LCKIN 2	Enabling switch input 2
9	NC	NC	LCKIN 3	Enabling switch input 3
10	NC	NC	LCKIN 4	Enabling switch input 4
11	P.COM	DC+24V (P.COM DI)	P.COM	DC+24V (P.COM DI)
12	N.COM	GND (N.COM DI)	N.COM	GND (N.COM DI)
13	E-STOP 24V	Emergency stop input supply	E-STOP 24V	Emergency stop input supply
14	E-STOPRDY	Emergency stop READY signal	E-STOPRDY	Emergency stop READY signal
15	NC	NC	NC	NC

## ■ Standard functions of the controller

Function	Description
<b>Operation mode</b>	Automatic mode (main task: execution of program, execution of step), Program mode (main task: creation of program), Manual mode (main task: jog movement, point teaching), System mode (main task: parameter editing, data initialization), Utility mode (main task: operation of motor power source)
<b>Command</b>	Array declarator command (DIM statement), Assignment command (numeric value assignment statement, character string assignment statement, point definition statement), Movement related command (MOVE statement, DRIVE statement, PMOVE statement), Condition branching command (IF statement, FOR statement, WHILE statement), External output command (DO statement, MO statement, LO statement, TO statement, SO statement), Parameter command (ACCEL statement, OUTPOS statement, TOLE statement), Task related command (START statement, SUSPEND statement, CUT statement), Condition wait command (WAIT statement), etc.
<b>Function</b>	Arithmetic function (SIN function, COS function, TAN function), Character string function (STR\$ function, LEFT\$ function, MID\$ function, RIGHT\$ function), Point function (WHERE function, JTOXY function, XYTOJ function), Parameter function (ACCEL statement, OUTPOS statement, TOLE statement), etc.
<b>Variable</b>	Simple variable (integer type variable, real number type variable, character string type variable), Array variable (integer type variable, real number type variable, character string type variable), Point variable, Shift variable, Element variable (point element variable, shift element variable), Input/output variable, etc.
<b>Operator</b>	Arithmetic operator (+, -, *, /, MOD), Logical operator (AND, OR, XOR), Comparison operator (=, <, >, <>, <=, >=)
<b>Monitor</b>	Monitor of input/output (200ms interval)
<b>On-line command</b>	Key operation command (AUTO, RUN, RESET, STEP), Data handling command (READ, WRITE, ?VER, ?CONFIG), Utility command (COPY, ERA, INIT), Robot language command (independently executable command)
<b>Data file</b>	Program, Point, Parameter, Shift, Hand, All, Error history, etc.
<b>Internal timer</b>	10ms interval
<b>Program break point</b>	4 points at maximum

Articulated robots  
 YA  
 Linear conveyor modules  
 LCM100  
 Motor-less single axis actuator  
 Robonity  
 Compact single-axis robots  
 TRANSEVO  
 Single-axis robots  
 FLIP-X  
 Linear motor single-axis robots  
 PHASER  
 Cartesian robots  
 XX-X  
 SCARA robots  
 YK-X  
 Pick & place robots  
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## Robot Language Table

### ● General commands

Language	Function
DECLARE	Declares that a label or sub-procedure is in an external program.
DEF FN	Defines a function that is available to the user.
DIM	Declares the name of an array variable and the number of elements.
EXIT FOR	Terminates a FOR statement to NEXT statement loop.
FOR to NEXT	Controls repetitive operations
GOSUB to RETURN	Jumps to a subroutine with the label specified by a GOSUB statement and executes the subroutine.
GOTO	Unconditionally jumps to the line specified by a label.
HALT	Stops a program and resets it.
HOLD	Pauses a program.
IF	Allows control flow to branch according to conditions.
LET	Executes a specified assignment statement.
ON to GOSU	Jumps to a subroutine with each label specified by a GOSUB statement according to conditions and executes the subroutine.
ON to GOTO	Jumps to each line specified by a label according to conditions.
REM	All characters that follow REM or an apostrophe (') are viewed as comments.
SELECT CASE to END SELECT	Allows control flow to branch according to conditions.
SWI	Switches the currently executed program to a specified program, and executes from the first line after compiling.
WHILE to WEND	Controls repetitive operations.
Label statement	Defines "labels" in program lines.

### ● Robot operation

Language	Function
ABSRST	Performs return-to-origin along robot absolute motor axes.
DRIVE	Performs an absolute movement of each axis in the main group.
DRIVEI	Performs a relative movement of each axis in the main group.
MOVE	Performs an absolute movement of the main robot axes.
MOVEI	Performs a relative movement of the main robot axes.
ORIGIN	Performs return-to-origin on an incremental mode axis or absolute search on a semi-absolute mode axis.
PMOVE	Performs a pallet movement of the main robot axes.
SERVO	Controls the servo ON/OFF of the specified axes in the main group or all axes (in main group and sub group).

### ● I/O control

Language	Function
DELAY	Waits for the specified length of time (ms).
DO	Outputs the specified value to the DO ports.
LO	Outputs the specified value to the LO port to prohibit axis movement or permit axis movement.
MO	Outputs the specified value to the MO ports.
OUT	Turns ON the bits of the specified output ports and the command statement ends.
RESET	Turns OFF the bits of the specified output ports.
SET	Turns ON the bits of the specified output ports
SO	Outputs the specified value to the SO port.
TO	Outputs the specified value to the TO port.
WAIT	1. Waits until the condition in DI/DO conditional expression are met. 2. Waits until positioning on the robot axes is complete (within the tolerance range).

### ● Coordinate control

Language	Function
CHANGE	Switches the hand of the main robot.
HAND	Defines the hand of the main robot.
RIGHTY / LEFTY	Selects whether the main robot will be "right-handed" or "left-handed" when moving to a point specified on a Cartesian coordinate system.
SHIFT	Sets the shift coordinates for the main robot by using the shift data specified by a shift variable.

### ● Condition change

Language	Function
ACCEL	Changes the acceleration coefficient parameter of the main group.
ARCH	Changes the arch position parameter of the main group.
ASPEED	Changes the automatic movement speed of the main group.
AXWGHT	Changes the axis tip weight parameter of the main group.
DECCEL	Changes the deceleration rate parameter of the main group.
ORGORD	Sets the axis sequence parameter to perform return-to-origin and absolute search in the main group.
OUTPOS	Changes the OUT position parameter of the main group.
PDEF	Defines the pallet used to execute a pallet movement command.
SPEED	Changes the program speed for the main group.
TOLE	Changes the tolerance parameter of the main group.
WEIGHT	Changes the tip weight parameter of the main robot.

### ● Communication control

Language	Function
ONLINE / OFFLINE	Changes communication mode and initialize the communication port.
SEND	Sends the read file data into a write file.

### ● Screen control

Language	Function
PRINT	Displays the value of specified variable on the MPB/RPB screen.

### ● Key control

Language	Function
INPUT	Assigns a value to the variable specified from the MPB/RPB.

### ● Procedure

Language	Function
CALL	Calls up sub-procedures defined by the SUB and END SUB statements.
EXIT SUB	Terminates the sub-procedure defined by the SUB and END SUB statements.
SHARED	Does not permit variables declared with a program written outside a subprocedure (SUB to END SUB) to be passed on as dummy arguments, but allows them to be referred to with a sub-procedure.
SUB to END SUB	Defines a sub-procedure.

### ● Task control

Language	Function
CHGPRI	Changes the priority of the specified task.
CUT	Terminates a task currently being executed or temporarily stopped.
EXIT TASK	Terminates its own task currently being executed.
RESTART	Restarts a task that is temporarily stopped.
START	Sets the task number and priority of the specified task and starts that task.
SUSPEND	Temporarily stops another task being executed.

### ● Error control

Language	Function
ON ERROR GOTO	If an error occurs during program execution, this command allows the program to jump to the error processing routine specified by the label without stopping the program, or stops the program and displays the error message.
RESUME	Resumes the program execution after recovery from an error. This command is used in the error processing routine.
ERL	Gives the line number where an error occurred.
ERR	Gives the error code number when an error occurred.

### ● PATH control

Language	Function
PATH	Sets the PATH motion on the main robot axis.
PATH END	Terminates the path setting for PATH motion.
PATH SET	Starts the path setting for PATH motion.
PATH START	Starts the PATH motion.

### ● Torque control

Language	Function
DRIVE (with torque limit option)	Executes an absolute movement command on each axis in the main group.
TORQUE	Changes the maximum torque instruction for the specified main group axis.
TRQTIME	Sets the current limit time-out period on the specified main group axis when using a torque limit setting option in the DRIVE statement.
TRQTIME	Sets the current limit time-out period on the specified main group axis when using a torque limit setting option in the DRIVE statement.



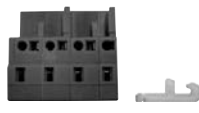
## Accessories and part options

### RCX240/RCX240S

#### Standard accessories

- LCC140
- TS-X
- TS-P
- SR1-X
- SR1-P
- RCX221
- RCX222
- RCX240/S
- RCX340

#### ● Power connector + wiring connection lever



Model KAS-M5382-00

#### ● Safety connector



Model KX0-M5163-00 RCX240/S

#### ● RPB terminator (dummy connector)

Attach this to the RPB connector during operation with the programming box RPB removed.



Model KAS-M5163-30 RCX221  
RCX222  
RCX240/S

#### ● Standard I/O (STD.DIO) connector



Model KX0-M533G-00 RCX240/S

#### ● L type stay (for installing front side, rear side.)

Use to install the controller.



Model KX0-M410H-00 RCX240/S  
Note. Model No. is for a single bracket (L type stay).  
(Two are required to install one controller.)

#### ● Absolute battery

Battery for absolute data back-up.

##### ● Basic specifications

Item	Absolute battery
Battery type	Lithium metallic battery
Battery capacity	3.6V/2,750mAh
Data holding time	About 1 year <sup>Note1</sup> (in state with no power applied)
Dimensions	φ17 × L53mm
Weight <sup>Note2</sup>	22g



Model KAS-M53G0-11 SR1-X  
RCX222  
RCX240/S  
Note 1. When using two batteries for each two axes.  
Note 2. Weight of battery itself.  
Note. The absolute battery is subject to wear and requires replacement.  
If trouble occurs with the memory then remaining battery life is low so replace the absolute battery.  
The battery replacement period depends on usage conditions. But generally you should replace the battery after about 1 year counting the total time after connecting to the controller and left without turning on the power.

#### Important

**Absolute battery installation conditions**  
 1 to 2 batteries are required for each 2 axes.  
 ● 1 battery.....Data storage time of approximately 6 months (with no power applied)  
 ● 2 batteries...Data storage time of approximately 1 year (with no power applied)  
 Note. Absolute battery is not required for either of the 2 axes if using incremental or semi-absolute specifications.

#### ● Battery case

This is the absolute battery holder.



Model KBG-M5395-00 SR1-X  
RCX222  
RCX240/S

See next page for optional parts



# RCX240/RCX240S

## Options

### L type stay (for side surface installation)

Use to install the controller.



Model	KX0-M410H-10	RCX240/S
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Note. Model No. is for a single bracket (L type stay).

### Programming box RPB/RPB-E

P.586

This device can perform all operations such as manual robot operation, program entry and edit, teaching and parameter settings.



	RPB	RPB-E	
Model	KBK-M5110-10	KBK-M5110-00	RCX221
Enable switch	-	3-position	RCX222
CE marking	Not supported	Applicable	RCX240/S

### Support software for PC VIP+

P.580

VIP+ is a simple to use application software that makes tasks such as robot operation, writing-editing programs, and point teaching easy to visually understand.



VIP+ software model	KX0-M4966-00	RCX221
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RCX222  
RCX240/S

### Environment

OS	Windows 2000, XP (32bit), Vista, 7, 10 (Supported version: V.2.8.4 or later)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk	40MB of available space required on installation drive.
Communication method	RS-232C, Ethernet Note. For Ethernet communication, Ethernet unit for RCX series controller is required.
Applicable robot controllers	RCX14x / 22x / 240

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.  
Note. ADOBE and ADOBE READER are registered trademarks of Adobe Systems Incorporated.  
Note. Ethernet is a registered trademark of Xerox Corporation.

### Data cables

Communication cable for VIP+.  
Select from USB cable or D-sub cable.



Model	USB type (5m)	KBG-M538F-00	LCC140
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10	ERCD

Note. This USB cable supports Windows 2000/XP or later.  
Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro.

Note. USB driver for communication cable can also be downloaded from our website.

SR1-X  
SR1-P  
RCX221  
RCX222  
RCX240/S  
RCX340

### YC-Link board

Model	KX0-M4400-A1	RCX240/S
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Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
YP-X  
CLEAN  
CONTROLLER INFORMATION  
CABLE  
TECHNICAL INFORMATION  
DISCONTINUED



Articulated robots  
**YA**

Linear conveyor  
modules  
**LCM100**

Motor-less single  
axis actuator  
**Robonity**

Compact  
single-axis robots  
**TRANSERVO**

Single-axis robots  
**FLIP-X**

Linear motor  
single-axis robots  
**PHASER**

Cartesian  
robots  
**XY-X**

SCARA  
robots  
**YK-X**

Pick & place  
robots  
**YP-X**

**CLEAN**

**CONTROLLER**

**INFORMATION**

**CABLE**

**TECHNICAL**

**INFORMATION**

**DISCONTINUED**

# iVY System

Sales end date	End of December 2019
Repair coverage	End of December 2026

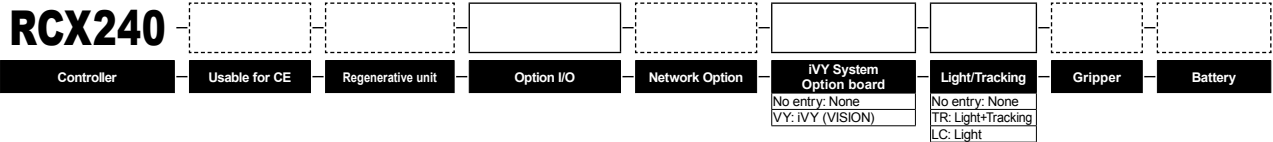
Applicable controllers ▶ RCX240/RCX240S

● Robot with image processing functions

“SEARCH and TAKE” “CHECK POSITION and ASSEMBLE”  
**YAMAHA offers a whole new production line concept that eliminates time-consuming teaching and positioning tasks with “iVY-system”.**



■ Ordering method



Note. For details on the various selection items, refer to P.659

■ Basic specifications

● iVY board

Item	iVY board	
Basic specifications	Applicable controllers	RCX240 / RCX240S
	Pixels	640 (H) × 480 (V) (300,000 pixels, VGA)
	Settable part types	40 part types
	Connectable cameras	Maximum 2 units Note. Note. If connecting 2 units, then must be the same model
	Camera types	Double speed compatible analog camera
	Memory	128MB SDRAM, 256MB miniSD card
	External I/F	Ethernet (100BASE-TX)
Search method	Edge search (Correlative edge filter, Sobel filter)	
Image input	Trigger	S/W trigger, H/W trigger, Camera internal synch
	External trigger input	2 points
Functions	Search function	Position offset, Auto registry of point data
	ID recognition (usage planned)	QR-Code [Model2], DataMatrix
Setup support functions	Calibration, image save function, model registration <sup>Note</sup> , fiducial mark registration <sup>Note</sup> , monitor function <sup>Note</sup>	

Note. Requires Windows PC.

● Lighting control board (option)

Item	Lighting control board (option)	
Basic specifications	Applicable controllers	RCX240 / RCX240S
	Number of lighting connected units	Up to 2 units
	Light adjusting system	PWM control (0 to 100%) (Cycle 60kHz) Stroboscopic light (10 to 33000us)
	Trigger	S/W trigger, H/W trigger
	External trigger input	2 points
	Lighting power input	12VDC or 24VDC (Supplied from outside commonly to 2 channels)
	Lighting output	When DC12V is supplied: Less than 30W with 2 channels totaled When DC24V is supplied: Less than 60W with 2 channels totaled

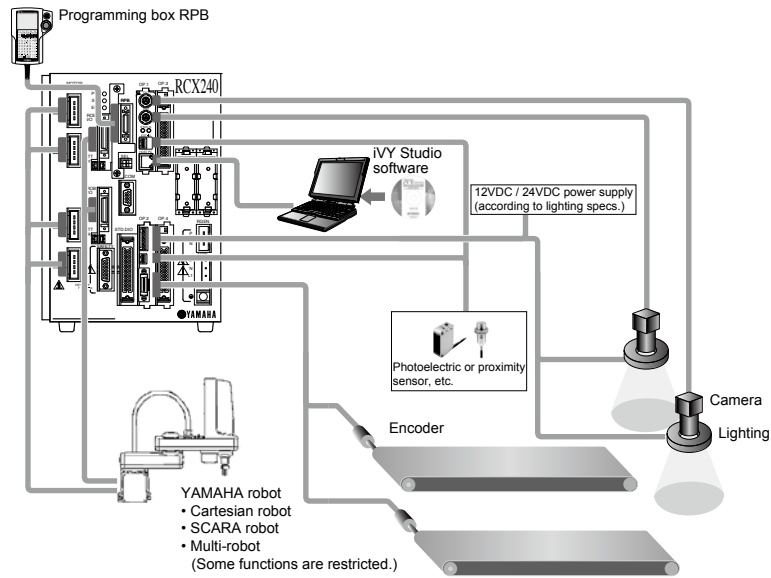
● Tracking board (Options)

Item	Tracking board (option)		
Basic specifications	Applicable controllers	RCX240 / RCX240S	
	Lighting control section	Light adjusting system	Up to 2 units
		Light adjusting system	PWM control (0 to 100%) (Cycle 60kHz) Stroboscopic light (10 to 33000us)
		Trigger	S/W trigger, H/W trigger
		External trigger input	2 points
	Pulse input section	Lighting power input	12VDC or 24VDC (Supplied from outside commonly to 2 channels)
		Lighting output	When DC12V is supplied: Less than 30W with 2 channels totaled When DC24V is supplied: Less than 60W with 2 channels totaled
		Number of encoder connected units	Up to 2 units
		Encoder power source	DC5V (Less than 500mA with 2 channels totaled) (Supplied from controller)
		Applicable encoder	Line driver equivalent to 26LS31 / 26C31 (Conforming to RS-422)
Input phase		A, $\bar{A}$ , B, $\bar{B}$ , Z, $\bar{Z}$	
Maximum response frequency	2MHz		
Counter / Step-up multiplication	0 to 65535 / Double, quadruple		
Other	Provided with broken wire detect function		

Note. The tracking board is required when using the tracking function.

Articulated robots  
YA  
Linear conveyer modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
TRANSEVO  
Single-axis robots  
FLIP-X  
Linear motor single-axis robots  
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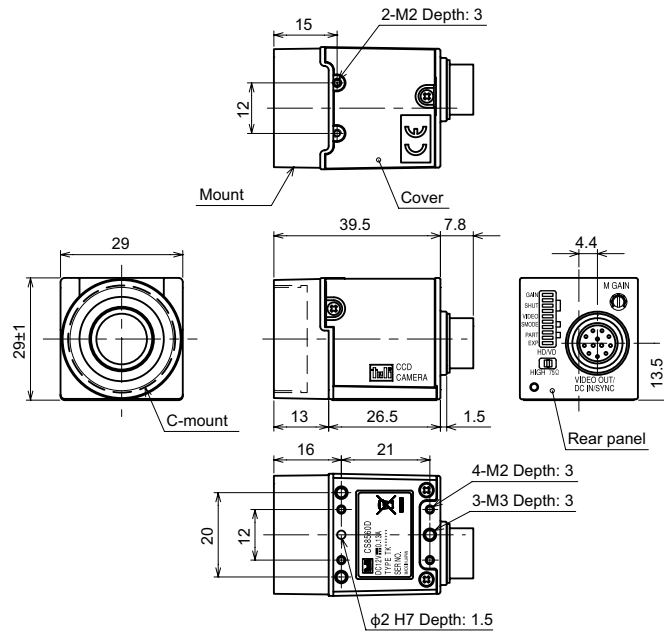
## System configuration illustration



\* The above configuration example shows a system where the iVY board and tracking board are used.  
 \* Connections to the STD.DIO, ACIN, and SAFETY connectors is not shown in the above illustration.

## Dimensional outlines CCD camera

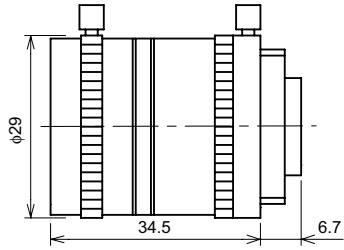
### CCD camera dimensions (Model No. : KX0-M7913-00)



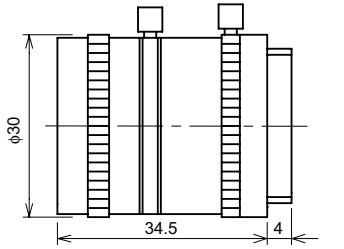
- Articulated robots  
YA
- Linear conveyor modules  
LCM100
- Motor-less single axis actuator  
Robonity
- Compact single-axis robots  
TRANSEVO
- Single-axis robots  
FLIP-X
- Linear motor single-axis robots  
PHASER
- Cartesian robots  
XX-X
- SCARA robots  
YK-X
- Pick & place robots  
YP-X
- CLEAN
- CONTROLLER INFORMATION
- CABLE
- TECHNICAL INFORMATION
- DISCONTINUED

## Lenses

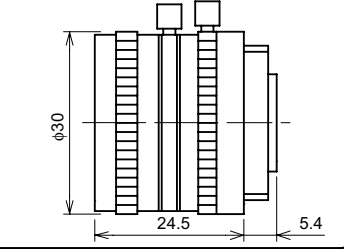
- **8mm lens [ML-0813]**  
(Model No. : KM7-M7214-60)



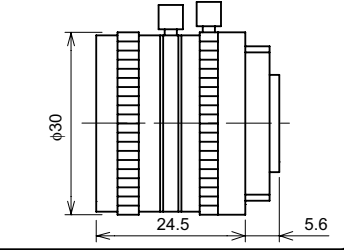
- **12mm lens [ML-1214]**  
(Model No. : KM7-M7214-40)



- **16mm lens [ML-1614]**  
(Model No. : KM7-M7214-30)



- **25mm lens [ML-2514]**  
(Model No. : KM7-M7214-20)



## Standard lens angle-of-view table

	Focal length (mm)	Aperture value (F No.)	Angle-of-view (degrees)		Closest approach distance (m)
			Vertical	Horizontal	
8mm lens [ML-0813]	8	F1.3-CLOSE	45.0	57.8	0.2
12mm lens [ML-1214]	12	F1.4-CLOSE	21.9	29.0	0.3
16mm lens [ML-1614]	16	F1.4-CLOSE	23.0	30.4	0.4
25mm lens [ML-2514]	25	F1.4-CLOSE	21.6	28.5	0.5

Note. Field-of-view table for our standard lenses. As the field-of-view widens, distortion on image edges may increase.

## Viewing angle, WD, and magnification when using close-up ring

Close-up ring (mm)	8mm lens [ML-0813]				12mm lens [ML-1214]			
	Viewing angle (mm×mm)		WD (mm)	Magnification	Viewing angle (mm×mm)		WD (mm)	Magnification
	Vertical	Horizontal			Vertical	Horizontal		
None	72	96	148	0.05	77	103	248	0.05
	32	43	59	0.11	41	55	125	0.09
0.5	57	77	115	0.06	89	119	289	0.04
	21	27	34	0.18	28	38	80	0.13
1	29	38	52	0.13	45	59	136	0.08
	26	34	22	0.24	21	29	57	0.17
1.5	19	26	31	0.19	30	40	85	0.12
	-	-	-	-	17	23	42	0.21
2	-	-	-	-	22	30	59	0.16
	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-

Close-up ring (mm)	16mm lens [ML-1614]				25mm lens [ML-2514]			
	Viewing angle (mm×mm)		WD (mm)	Magnification	Viewing angle (mm×mm)		WD (mm)	Magnification
	Vertical	Horizontal			Vertical	Horizontal		
None	82	109	358	0.04	65	87	458	0.06
	48	64	206	0.07	48	64	338	0.08
0.5	117	156	515	0.03	181	242	1270	0.02
	34	45	143	0.11	38	50	269	0.10
1	58	78	252	0.06	91	121	637	0.12
	26	35	108	0.14	31	42	223	0.12
1.5	39	52	164	0.09	60	81	425	0.06
	22	29	86	0.17	27	36	191	0.13
2	29	39	120	0.12	45	60	320	0.08
	10	14	35	0.35	14	19	103	0.25
5	12	16	42	0.31	18	24	130	0.20

### Notes

- This table shows viewing angles when using the standard lens and close-up ring. (If no close-up ring this is closest approach.)
- If not using a close-up ring, then a WD smaller than the value in this table cannot be used.
- If using a close-up ring, then only a WD close to this value can be used.
- The values in this table are at most only a reference and do not signify an absolute index.
- To find viewing angle and WD other than for our standard lens, visit our website at: <http://www.moritex.co.jp/products/>.

# Accessories and part options

## iVY System

### Standard accessories



Model	Without power supply harness	KX0-M4402-10
	With power supply harness	KX0-M4402-00

Note. If newly adding an iVY, choose the model with harness.

- **iVY board**

- **iVY board accessories**

Name	Single unit model	Set Model
Camera trigger input cable connector	KX0-M657L-00	KX0-M657K-00
Custom tool	KX0-M657M-00	

- **Support software for PC**  
**iVY Studio**

iVY Studio is support software for the iVY system that allows registering part types and reference marks as well as monitoring the work search status during automatic robot operation by connecting to the robot controller.



- **Environment**

Software model	KX0-M4988-00
OS	Windows 2000, XP (32bit), Vista, 7 Note. The 64 bit version is not subject to the operation warranty.
CPU	Exceeding the environment recommended by the OS being used
Memory	64MB or more (Recommend)
Hard disk	Vacant capacity of more than 40MB in the installation destination drive Note. Besides the above, also requires memory space for storing images and data.
Display	800 × 600 dots or more, 32768 colors (16bit High Color) or more (recommended)
Network	TCP/IP Ethernet port × 1

Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

## Options

### ● Lighting control board

Model	KX0-M4400-G0
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#### ● Required options for the lighting control board

Name	Single unit model	Set Model
Lighting power cable connector	KX0-M657L-10	KX0-M657K-10
Wiring lever	KX0-M657M-10	
Lighting input trigger cable connector	KX0-M657L-00	KX0-M657K-00
Custom tool	KX0-M657M-00	

### ● Tracking board

Model	KX0-M4400-E0
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#### ● Required options for the tracking board

Name	Single unit model	Set Model
Lighting power cable connector	KX0-M657L-10	KX0-M657K-10
Wiring lever	KX0-M657M-10	
Lighting input trigger cable connector	KX0-M657L-00	KX0-M657K-00
Custom tool	KX0-M657M-00	
AB phase input cable connector	KX0-M657L-20	KX0-M657K-20
AB phase input cable connector case	KX0-M657M-20	

### ● Camera cable

Cable for connecting the camera to the iVY board.



Model	3.5m	KX0-M66F3-00
	6m	KX0-M66F3-10
	9.5m (relay 3.5m+6m)	KX0-M66F0-20
	Relay cable 3.5m	KX0-M66F4-00
	7m (relay 1m+6m)	KX0-M66F0-30
	Relay cable 1m	KX0-M66F4-10

Note. When installing a camera cable in a moving section, use a relay cable so that it can be easily replaced if needed.

### ● CCD camera



Model	KX0-M7913-00
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### ● Lens



Model	8mm	KM7-M7214-60 (ML-0813)
	12mm	KM7-M7214-40 (ML-1214)
	16mm	KM7-M7214-30 (ML-1614)
	25mm	KM7-M7214-20 (ML-2514)

### ● Close-up ring



Model	0.5mm	KX0-M7215-00
	1.0mm	KX0-M7215-10
	2.0mm	KX0-M7215-20
	5.0mm	KX0-M7215-30

### ● LAN cable with shield cloth (5m)



Model	KX0-M55G0-00
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### ● Tracking encoder cable (10m)



Model	KX0-M66AF-00
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# MEMO

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**CLEAN**

**CONTROLLER**

**INFORMATION**

**CABLE**

**TECHNICAL**

**INFORMATION**

**DISCONTINUED**





**Robotics Operations FA Section**

127 Toyooka, Kita-ku, Hamamatsu, Shizuoka 433-8103, Japan  
Tel. +81-53-525-8350 Fax. +81-53-525-8378

**URL** <https://global.yamaha-motor.com/business/robot/>  
**E-MAIL** [robotn@yamaha-motor.co.jp](mailto:robotn@yamaha-motor.co.jp)

● Specifications and appearance are subject to change without prior notice.

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