

# 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.

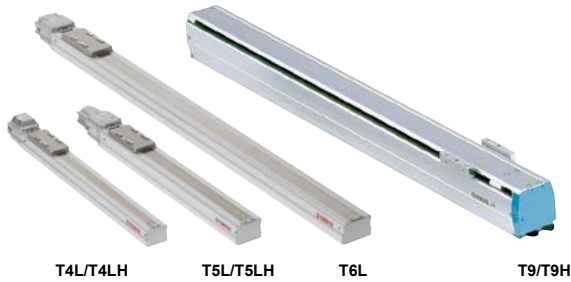


**Various custom specifications are also supported.**

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

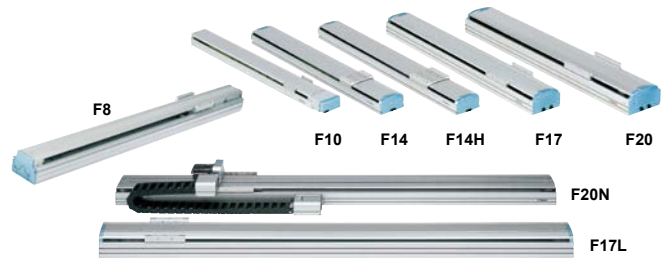
# Six types with high reliability and durability

## 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



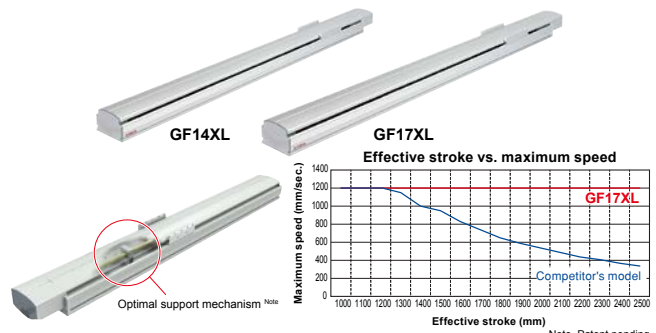
- Tolerable load moment is large and highly resistant to the offset load.
- Suitable for Cartesian robots needing rigid arm or moving arms that move the entire axis.

## 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.

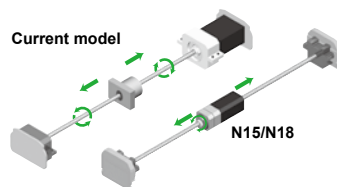
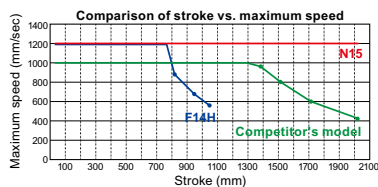
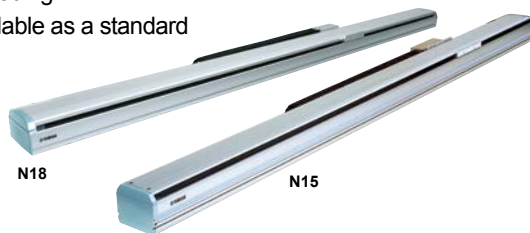
## GF type Long stroke model with high rigidity frame P.214



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

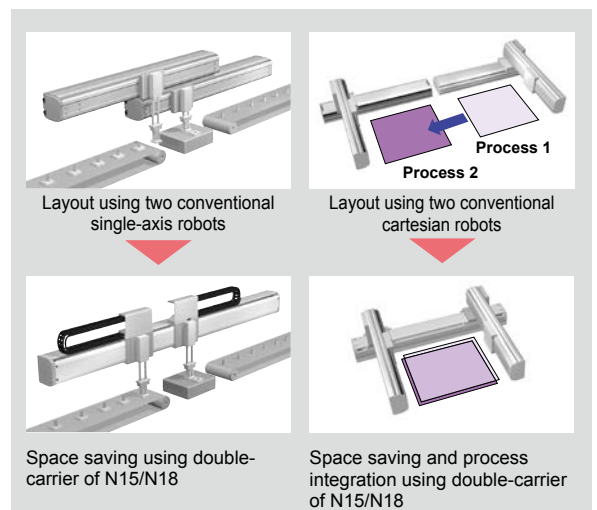
## N type Nut rotation type model P.222

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

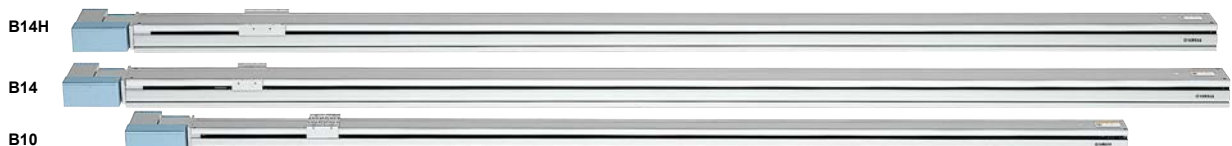


Critical speed is not restricted and high-speed transfer is possible.  
Stroke: 2500 mm  
Maximum speed: 1200 mm/sec.

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

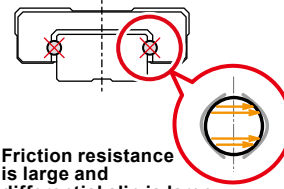
**4-row circular arc groove type 2-point contact guide that is resistant to large moment load is adopted.** <sup>Note 1</sup>



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

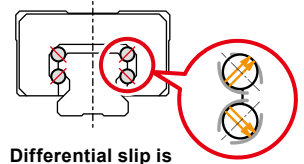
**2-row gothic arch groove type 4-point contact guide**



**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**

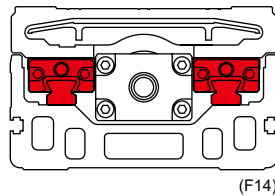


**Differential slip is small and self-centering function is high.**

- 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.

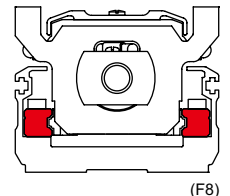


(F14)

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

**F8 series**

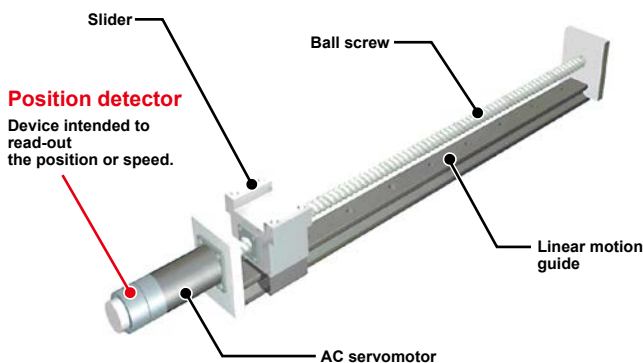
The F8 series uses a newly developed module guide to greatly reduce the cross-sectional area (70 % when compared to F10). The rail is laid out in the full width of the frame to ensure the high rigidity even with compact design. Of course, this series also uses the 4-row circular arc groove type 2-point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

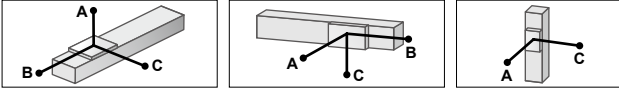
A resolver is used for the position detector. The resolver has a simple and rigid structure without using electronic components and optical elements. Detection problems due to electronic component breakdown, dew condensation on or oil sticking to the disk that may occur in optical encoders do not occur 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

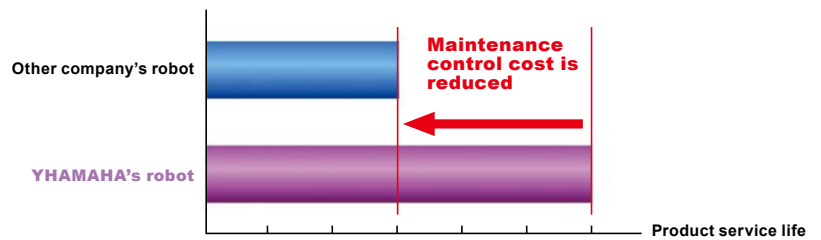


Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)				
	A	B	C		A	B	C		A	C		
Lead 30	5kg	864	501	383	5kg	348	384	776	Lead 20	1kg	600	600
	15kg	491	156	140	15kg	87	40	306		2kg	1098	1098
Lead 20	5kg	1292	505	462	5kg	416	388	1186	Lead 10	4kg	545	545
	15kg	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			
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			
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

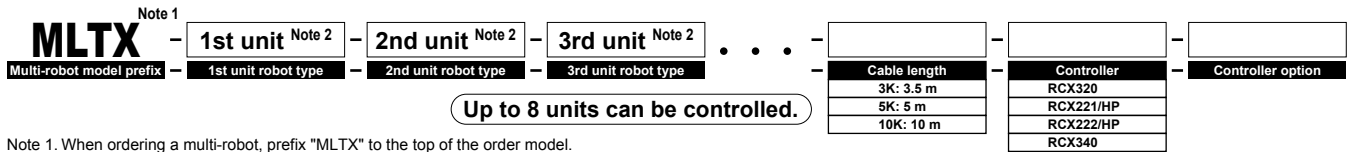
MULTI-FLIP/MULTI-PHASER

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)			
<b>T type</b> 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)	150 to 1050	30			
			20			
			10			
5						
T9H (High thrust)	150 to 1050	30				
		20				
		10				
		5				
<b>F type</b> Model with high rigidity frame	F8	20	150 to 800			
		12				
		6				
	F8L	150 to 1050	30			
			20			
			10			
			5			
	F8LH	150 to 1050	20			
			10			
			5			
	F10 (Standard)	150 to 1050	30			
			20			
10						
5						
F10H (High thrust)	150 to 1000	30				
		20				
		10				
		5				
F14 (Standard)	150 to 1050	30				
		20				
		10				
		5				
F14H (High thrust)	150 to 1050	30				
		20				
		10				
F17L	1100 to 2050	50				
		40				
		20				
F17	200 to 1450	20				
		10				
		5				
F20	200 to 1450	40				
		20				
		10				
F20N	1150 to 2050	20				
		20				
		20				
<b>GF type</b>	GF14XL	20	750 to 2000			
				GF17XL	20	850 to 2500
N15 (Single-carrier)	250 to 1750					
		N18 (Single-carrier)	500 to 2500			
N18D (Double-carrier)	250 to 2250					
		<b>B type</b> Timing belt drive model	Belt drive	150 to 2550		
B14 (Standard)	Belt drive					
					B14H (High thrust)	Belt drive
<b>R type</b> Rotation axis model	R5	-	360 °			
				R10		
					R20	

Type	Model	Lead (mm)	Stroke (mm)
<b>C type</b> Clean room model	C4L C4LH	12	50 to 400
		6	
		2	
	C5L C5LH	50 to 800	20
			12
			6
	C6L	50 to 800	20
			12
			6
	C8	150 to 800	20
			12
			6
C8L	150 to 1050	20	
		10	
		5	
C8LH	150 to 1050	20	
		10	
		5	
C10	150 to 1050	20	
		10	
		5	
C14	150 to 1050	20	
		10	
		5	
C14H	150 to 1050	20	
		10	
		5	
C17	250 to 1250	20	
		10	
C17L	1150 to 2050	50	
		20	
C20	250 to 1250	20	
		10	

### MULTI-PHASER

Type	Model	Carrier	Stroke (mm)
<b>MF type</b> 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

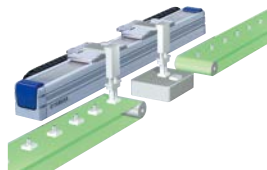
## Robot settings

### 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.

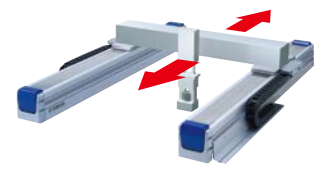


### Main auxiliary axis setting





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.



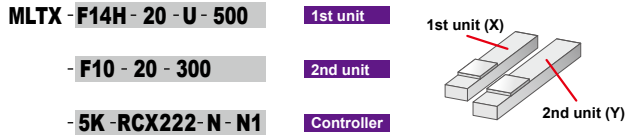
## Applicable controllers

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

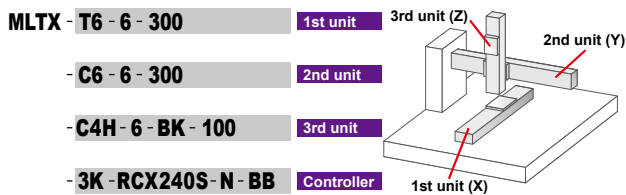
### Separate single axes

<Example> F14H and F10 are installed separately.



### 2 axes + 1 axis

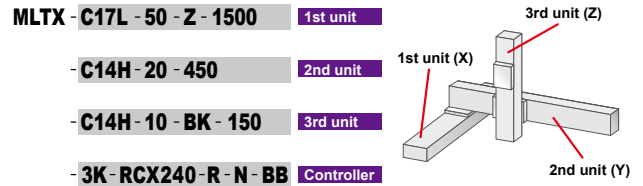
<Example> T6 is installed on the base for the 1st axis, C6 is secured to the upper portion for the 2nd axis, and CH4 is secured to the upper portion for the 3rd axis to assemble the C6 and C4H to the XZ. (Either 2 axes + 1 axis or 3 axes simultaneous control can be made by the setting.)



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.

### 3 axes combination

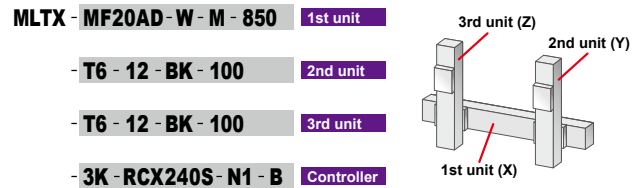
<Example> C17L, C14H, and C14H are used for the X-axis, Y-axis, and Z-axis, respectively to form a 3-axis XYZ combination.



### 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.

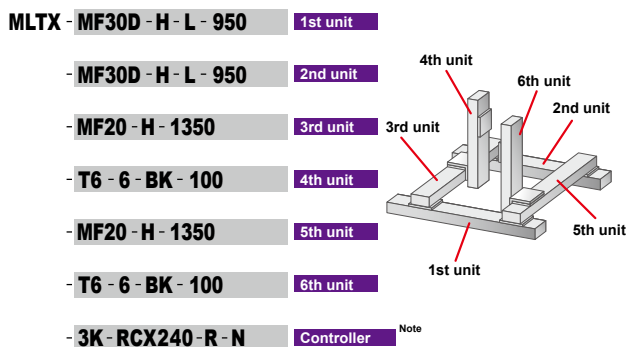


Note. For the double-carrier, since one robot occupies two axes of the controller, the number of robots may differ from the number of controllable axes.

### 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.

## 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

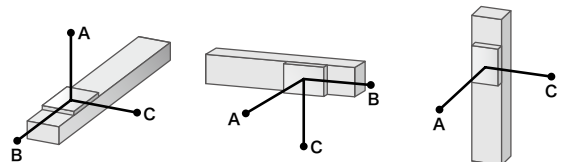
This term indicates the maximum weight that can be loaded on the slider and transferred. Select an appropriate model so that the total weight of the customer's tools (air cylinder or chuck) and workpiece is less than this data. When the center of gravity of the tool or workpiece is offset from the center 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

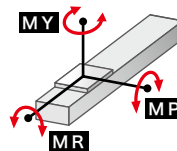
This term indicates an allowable overhang of an object to be transferred. In the specification data, this indicates the distance from the center of the top face of the slider to the center of gravity of an object to be transferred by the weight. This value is determined according to the service life 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.)



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

## CONTENTS

■ **FLIP-X SPECIFICATION SHEET** ..... 194

■ **Robot ordering method description** ..... 196

■ **Robot ordering method terminology** ..... 197

### T TYPE FRAME-LESS STRUCTURE MODEL

T4L ..... 198  
 T4LH ..... 199  
 T5L ..... 200  
 T5LH ..... 201  
 T6L ..... 202  
 T9 ..... 203  
 T9H ..... 204

### F TYPE / GF TYPE HIGH RIGIDITY FRAME MODEL

F8 ..... 205  
 F8L ..... 206  
 F8LH ..... 208  
 F10 ..... 209  
 F10H ..... 210  
 F14 ..... 212  
 F14H ..... 213  
 GF14XL ..... 214  
 F17 ..... 215

F17L ..... 217  
 GF17XL ..... 218  
 F20 ..... 219  
 F20N ..... 221

### N TYPE NUT ROTATION TYPE MODEL

N15 ..... 222  
 N15D ..... 224  
 N18 ..... 226  
 N18D ..... 228

### B TYPE TIMING BELT DRIVE MODEL

B10 ..... 230  
 B14 ..... 232  
 B14H ..... 234

### R TYPE ROTATION AXIS TYPE MODEL

R5 ..... 236  
 R10 ..... 237  
 R20 ..... 238

# FLIP-X SPECIFICATION SHEET

Type	Model	Motor output (W)	Repeat-ability (mm)	Lead (mm)	Payload (kg)		Stroke (mm) and maximum speed (mm/s)																					
					Horizontal	Vertical	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	-																						
	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																						
	270																						
	135																						
																							<b>P.210</b>
	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>
																							<b>P.230</b>
																							<b>P.232</b>
																							<b>P.234</b>

- Articulated robots  
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- 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

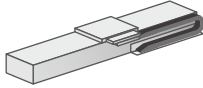
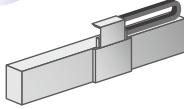
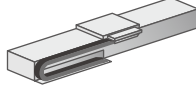
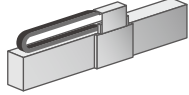
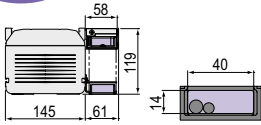
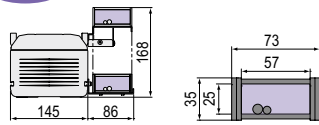
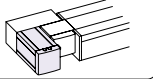
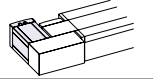
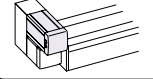
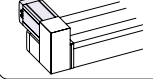
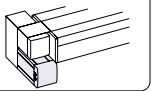
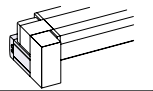
### ● B type

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
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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



# T4L

Origin on the non-motor side is selectable

Controller: 24V



## Ordering method

<b>T4L</b>							<b>ERC</b>	
<b>Model</b>	<b>Lead designation</b>	<b>Brake</b>	<b>Origin position change</b>	<b>Grease type</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 Z: 2mm	No entry: No brakes BK: Brakes provided	None: Standard Z: Non-motor side	None: Standard GC: Clean	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.

## 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+198		
	<b>Vertical</b>		
	Stroke+236		
<b>Maximum dimensions of cross section of main unit (mm)</b>	W45 x H53		
<b>Cable length (m)</b>	Standard: 3.5 / Option: 1.5, 10		
<b>Linear guide type</b>	2 rows of gothic arch grooves x 1 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)				Vertical installation (Unit: mm)					
Lead	Weight	A	B	Lead	Weight	A	B	Lead	Weight	C			
Lead 12	2kg	433	87	180	Lead 12	2kg	149	54	Lead 12	1.2kg	125	125	
	4.5kg	223	33	75		4.5kg	50	1		148	Lead 6	2.4kg	56
Lead 6	3kg	515	58	135	Lead 6	3kg	107	24	380	Lead 6		3kg	41
	6kg	340	26	62		6kg	31	0	195		Lead 2	7.2kg	0
Lead 2	3kg	1585	58	142	Lead 2	3kg	113	24	1180				
	6kg	755	27	66		6kg	32	0	440				

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.

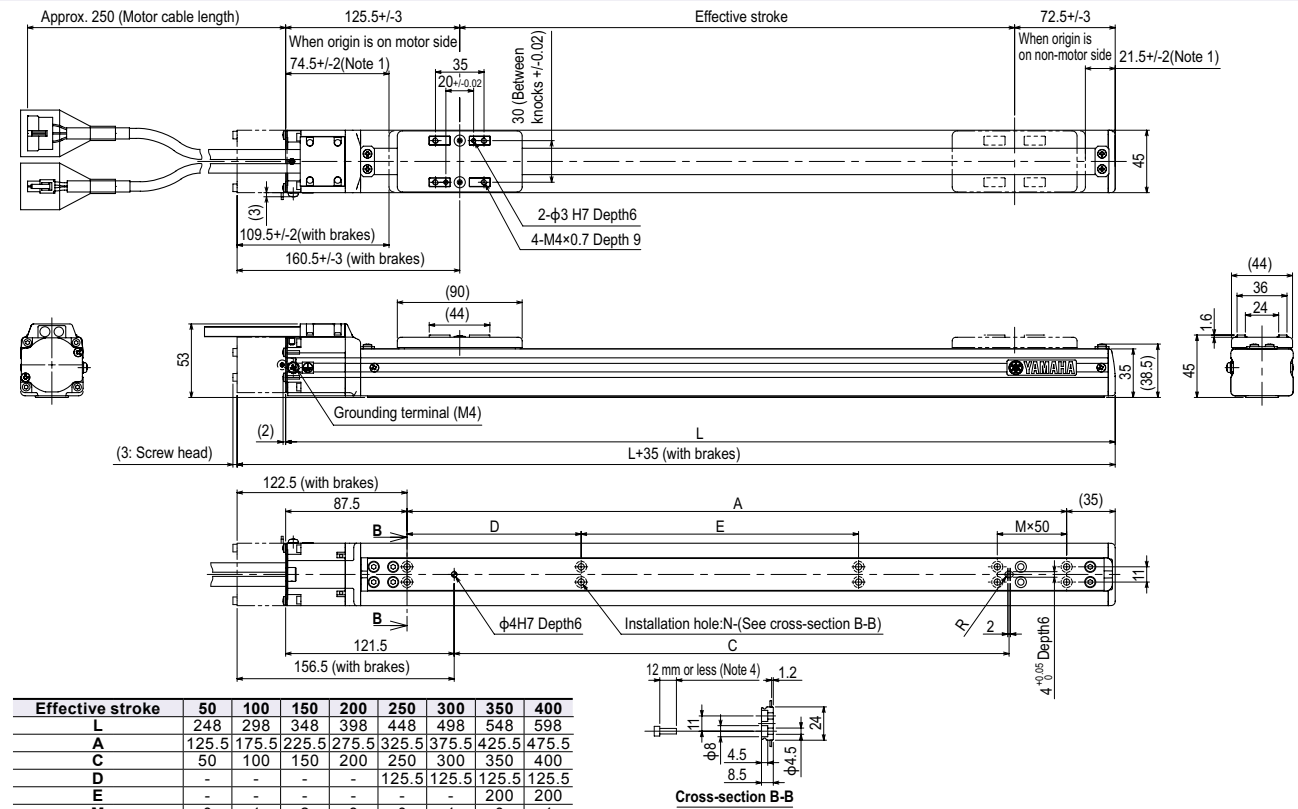
## Static loading moment

(Unit: N·m)		
MY	MP	MR
15	19	18

## Controller

Controller	Operation method
ERC	Pulse train control / Programming / I/O point trace / Remote command / Operation using RS-232C communication

## T4L



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 12mm or less.

Note 5. External view of T4LH is identical to T4L.

# 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	05	Usable for CE	I/O selection	Battery
	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
	Power-supply voltage 2: AC200V	Driver: Power capacity 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)			
Lead	A	B	C	Lead	A	B	C	Lead	A	C	
Lead 12	2kg: 341	90	174	Lead 12	2kg: 140	73	300	Lead 12	1.2kg	122	121
Lead 6	4.5kg: 172	37	72	Lead 6	4.5kg: 47	22	119	Lead 6	2.4kg	56	57
Lead 2	3kg: 355	58	134	Lead 2	3kg: 105	42	260	Lead 2	3kg	41	42
Lead 2	6kg: 235	27	62	Lead 2	6kg: 31	11	135	Lead 2	7.2kg	0	0
Lead 2	3kg: 1105	59	142	Lead 2	3kg: 113	42	810				
Lead 2	6kg: 520	27	66	Lead 2	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.

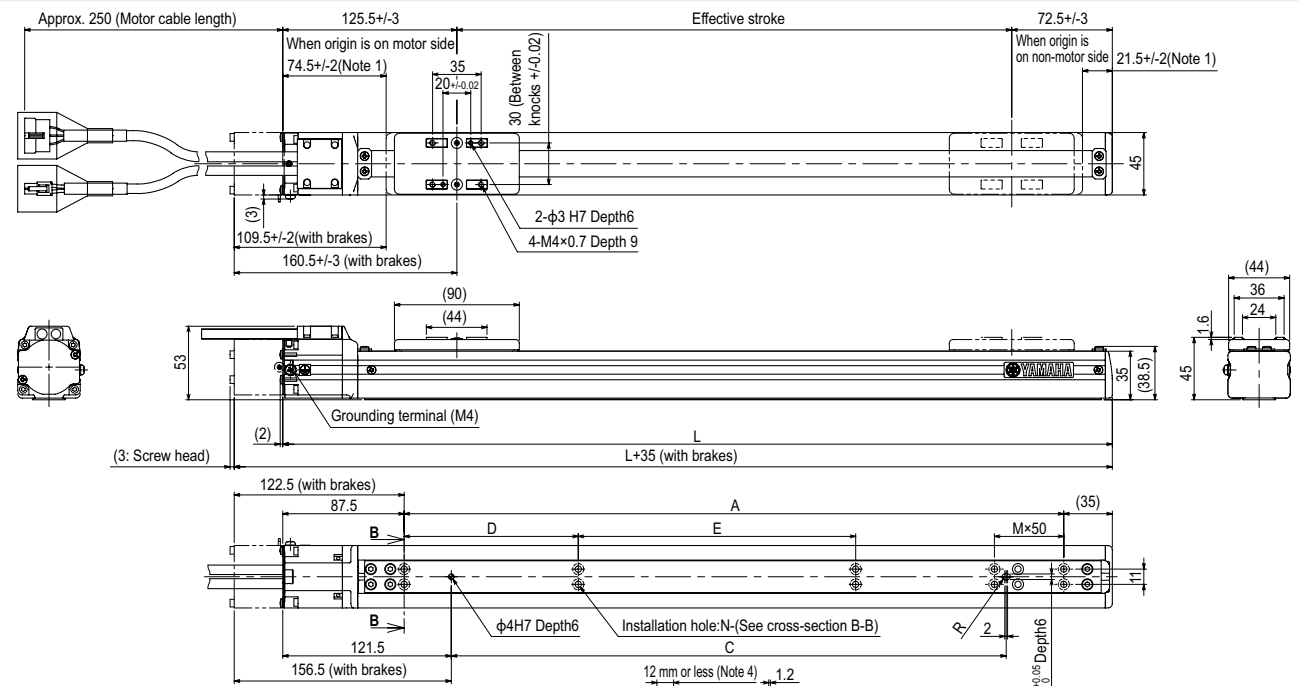
## Static loading moment

(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>	Horizontal 3 5 9 Vertical - 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>	Horizontal Stroke+201.5 Vertical 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	A	C
<b>Lead 20</b>	1kg 600	323	683	1kg 600	291	600	1.2kg 242	240
<b>Lead 12</b>	3kg 675	103	247	3kg 215	73	589	2.4kg 113	113
<b>Lead 6</b>	2kg 1170	159	406	2kg 368	127	1082		
<b>Lead 6</b>	5kg 555	59	155	5kg 127	30	449		
<b>Lead 6</b>	3kg 1498	104	294	3kg 263	73	970		
<b>Lead 6</b>	9kg 628	31	89	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.

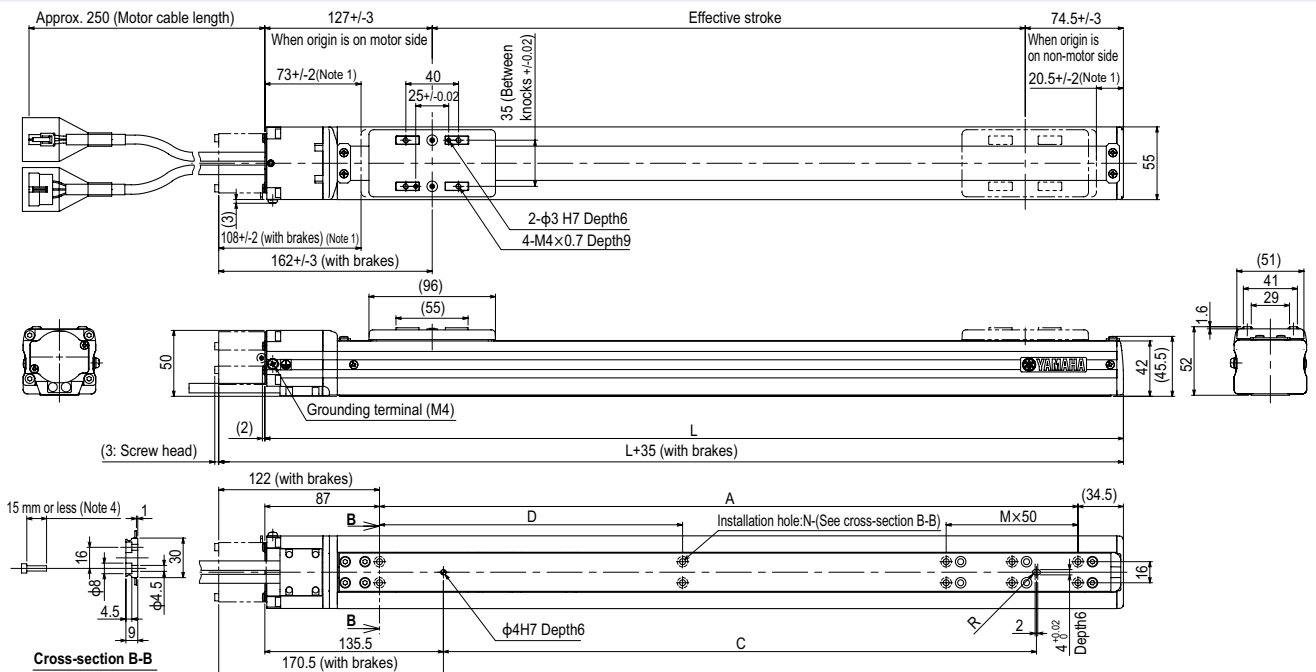
## Static loading moment

(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)												960	840	720	660	
<b>Speed setting</b>												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. 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.

# T5LH

- High lead: Lead 20
- Origin on the non-motor side is selectable
- Controller: 100V / 200V



## Ordering method

### T5LH

Model	Lead designation	Brake	Origin position change	Grease type	Stroke	Cable length
	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)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)

### TSX

Positioner	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	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 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

AC servo motor output (W)	30
Repeatability (mm)	+/-0.02
Deceleration mechanism	Ball screw φ12
Ball screw lead (mm)	20 12 6
Maximum speed (mm/sec)	1200 800 400
Maximum payload (kg)	Horizontal 3 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 dimensions of cross section of main unit (mm)	W55×H52
Cable length (m)	Standard: 3.5 / Option: 5,10
Linear guide type	2 rows of gothic arch 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.  
 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)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C
Lead 20	1kg 967	324	598	1kg 551	304	925
Lead 12	3kg 429	104	226	3kg 185	89	378
Lead 6	2kg 916	159	398	2kg 347	141	800
Lead 12	5kg 436	60	152	5kg 119	44	355
Lead 6	3kg 1194	105	294	3kg 259	87	950
Lead 12	9kg 624	31	89	9kg 50	15	385

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.

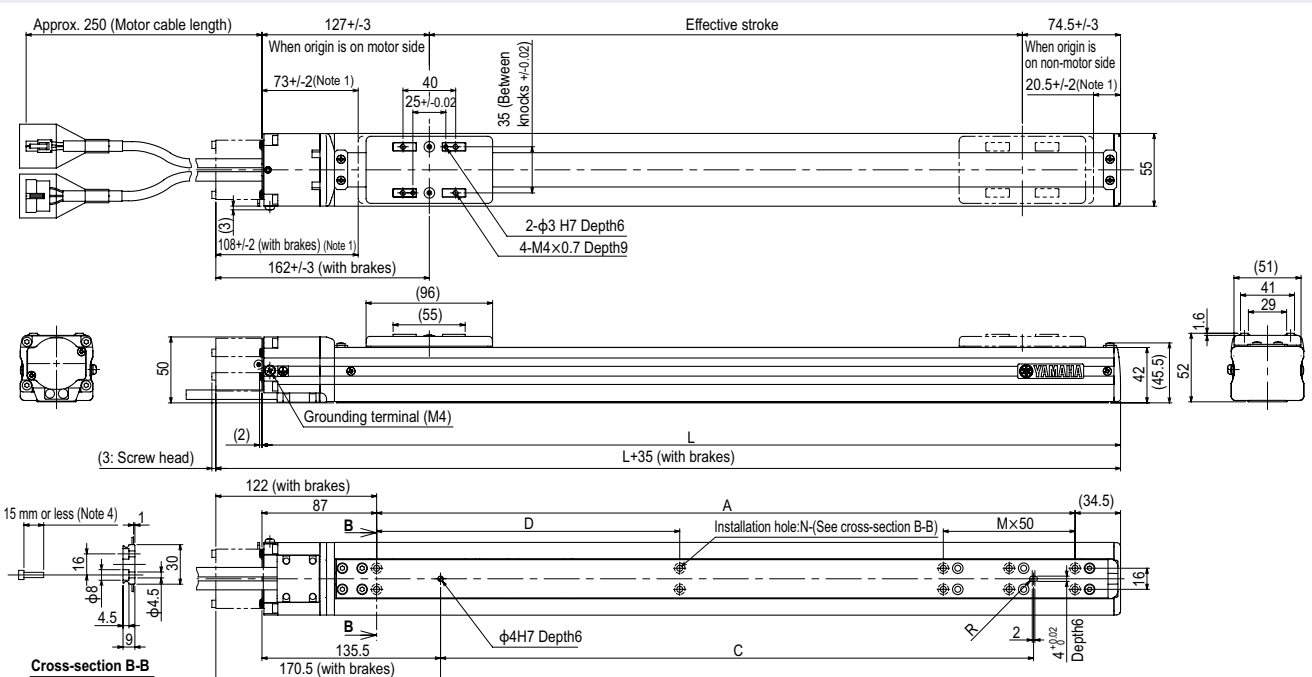
## Static loading moment

(Unit: N·m)		
MY	MP	MR
30	34	40

## Controller

Controller	Operation method
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

## T5LH



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	6	7	8	9	10	11	12	13	14	15
N	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
Weight (kg)	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
Maximum speed for each stroke (mm/sec)	Lead 20	1200														
	Lead 12	800														
	Lead 6	400														
Speed setting		-														
		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. 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

### T6L

Model	Lead designation	Brake	Origin position change	Grease type	Stroke	Cable length
	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)	3L: 3.5m 5L: 5m 10L: 10m 5K/5K/10K (Flexible cable)

### TSX

Positioner	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	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	Regenerative unit
2	2: AC200V	05: 100W or less	RBR1

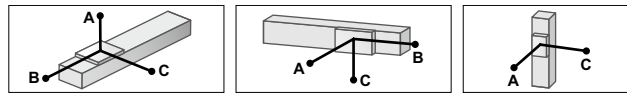
- Note 1. The model with a lead of 20mm cannot select specifications with brake (vertical specifications).  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	60
Repeatability (mm)	+/-0.02
Deceleration mechanism	Ball screw $\phi 12$
Ball screw lead (mm)	20 12 6
Maximum speed (mm/sec)	1333 800 400
Maximum payload (kg)	Horizontal: 10 12 30 Vertical: - 4 8
Rated thrust (N)	51 85 170
Stroke (mm)	50 to 800 (50mm pitch)
Overall length (mm)	Horizontal: Stroke+247.5 Vertical: Stroke+285.5
Maximum dimensions of cross section of main unit (mm)	W65×H56
Cable length (m)	Standard: 3.5 / Option: 5,10
Linear guide type	2 rows of gothic arch 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.  
 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.

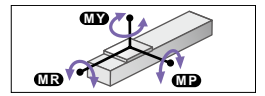
## Allowable overhang



Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	B	C
Lead 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

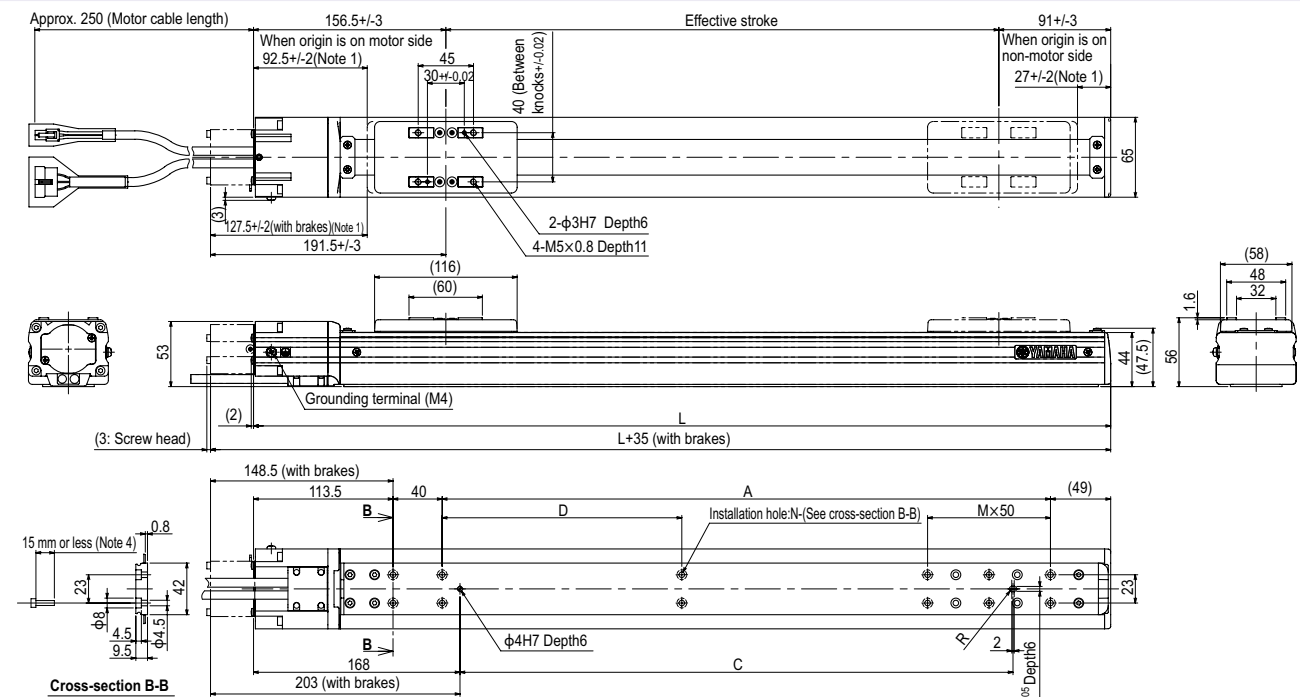


(Unit: N·m)		
MY	MP	MR
35	40	50

## 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	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)	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 (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

<b>T9</b>	<b>Model</b>	<b>Lead designation</b> 30: 30mm 20: 20mm 10: 10mm 5: 5mm	<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 <sup>Note 2</sup>	<b>Grease type</b> None: Standard GC: Clean	<b>Stroke</b> Lead 20-10-5: 150 to 1050 (50mm pitch) Lead 30: 150 to 1250 (50mm pitch)	<b>Cable length</b> <sup>Note 3</sup> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	<b>TSX</b>	<b>Positioner</b> <sup>Note 4</sup> TS-X	<b>Driver: Power-supply voltage</b> Power capacity 105: 100V/100W or less 205: 200V/100W or less	<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> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 5</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>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>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 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

<b>AC servo motor output (W)</b>	100
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.01
<b>Deceleration mechanism</b>	Ball screw $\phi$ 15
<b>Ball screw lead (mm)</b>	30 20 10 5
<b>Maximum speed</b> <sup>Note 2</sup> (mm/sec)	1800 1200 600 300
<b>Maximum payload (kg)</b>	<b>Horizontal</b> 15 30 55 80 <b>Vertical</b> - 4 10 20
<b>Rated thrust (N)</b>	56 84 169 339
<b>Stroke (mm)</b>	150 to 1250 <sup>Note 3</sup> (50mm pitch)
<b>Overall length (mm)</b>	<b>Horizontal</b> Stroke+259 <b>Vertical</b> Stroke+289
<b>Maximum dimensions of cross section of main unit (mm)</b>	W94 x H98
<b>Cable length (m)</b>	Standard: 3.5 / Option: 5.10
<b>Linear guide type</b>	4 rows of circular arc grooves x 1 rail
<b>Position detector</b>	Resolvers <sup>Note 4</sup>
<b>Resolution (Pulse/rotation)</b>	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

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

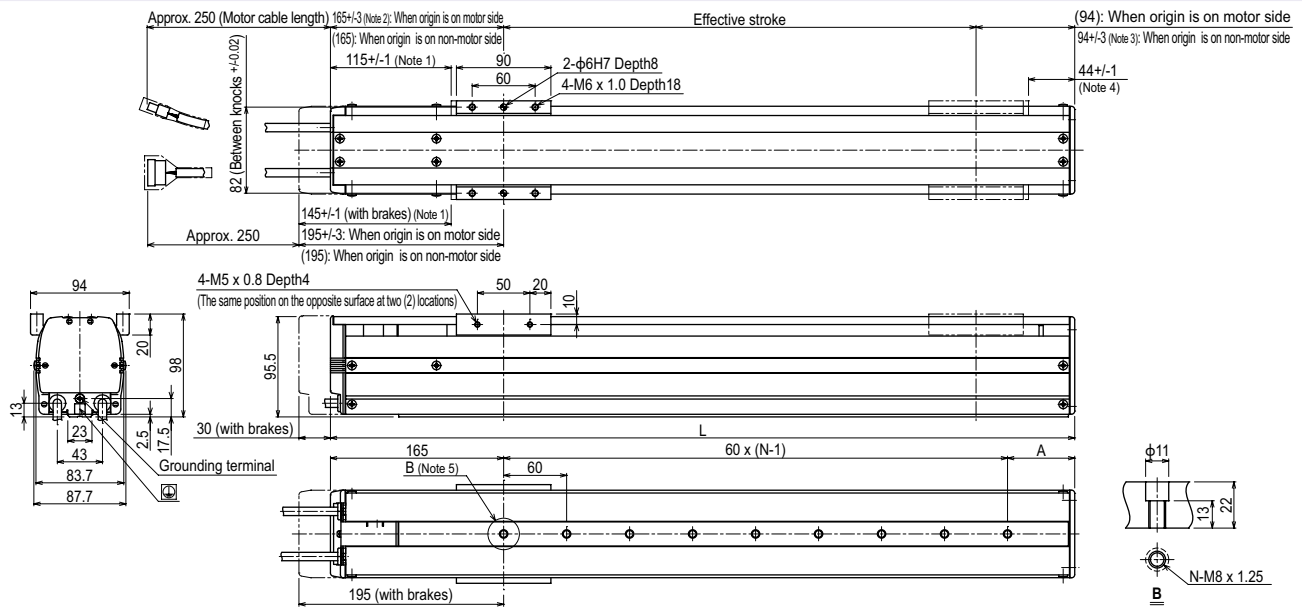
	MY	MP	MR
(Unit: N·m)	86	133	117

## 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.

## T9



- 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. 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  $\phi$ 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 <sup>Note 9</sup>	1150 <sup>Note 9</sup>	1200 <sup>Note 9</sup>	1250 <sup>Note 9</sup>
	<b>L</b>	409	459	509	559	609	659	709	759	809	859	909	959	1009	1059	1109	1159	1209	1259	1309	1359	1409	1459
<b>A</b>	64	54	44	94	84	74	64	54	44	94	84	74	64	54	44	94	84	74	64	54	44	94	84
<b>N</b>	4	5	6	6	7	8	9	10	11	11	12	13	14	15	16	16	17	18	19	20	21	21	22
<b>Weight (kg)</b> <sup>Note 7</sup>	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
<b>Maximum speed</b> <sup>Note 8</sup> (mm/sec)	<b>Lead 30</b>	1800																					
	<b>Lead 20</b>	1200																					
	<b>Lead 10</b>	600																					
	<b>Lead 5</b>	300																					
<b>Speed setting</b>	-																						

- 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
T9H	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	515
Lead 20	20kg 270	105	93	20kg 41	0	123	6kg 334	334	334
	10kg 667	244	225	10kg 170	128	549	8kg 244	244	244
Lead 10	20kg 330	112	107	20kg 46	0	182	10kg 217	217	217
	40kg 162	42	47	40kg 0	0	0	15kg 133	133	133
Lead 5	30kg 392	75	81	20kg 52	0	335	20kg 90	90	90
	50kg 297	40	44	25kg 24	0	235	15kg 135	135	135
Lead 3	80kg 265	21	24	30kg 0	0	108	20kg 92	92	92
	60kg 477	22	37	20kg 54	0	710	30kg 49	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

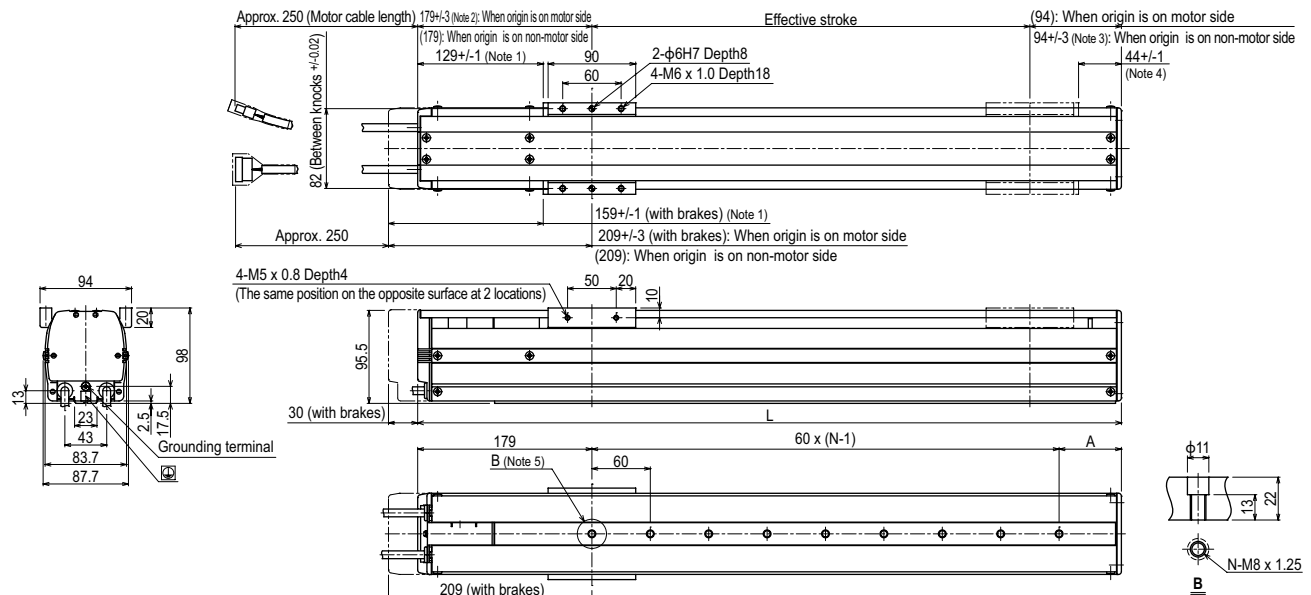
MY	MP	MR
86	133	117

## Controller

Controller	Operation method
SR1-X10	Programming / I/O point trace
RXC320	Remote command / Operation using RS-232C communication
RXC221/222	Remote command / Operation using RS-232C communication
RCX340	Remote command / Operation using RS-232C communication
TS-X110	I/O point trace / Remote command
TS-X210	Remote command
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±0.4 when the high lead specification (Lead 30) is used.  
 Note 3. 94±0.4 when the high lead specification (Lead 30) is used.  
 Note 4. 41.5±0.1 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.

# F8

- High lead: Lead 20
- Origin on the non-motor side is selectable



## Ordering method

**F8**

Model	Lead designation	Brake	Origin position change	Grease type	Stroke	Cable length	TSX	SR1-X	RDV-X
20: 20mm 12: 12mm 6: 6mm	No entry: No brakes BK: Brakes provided	None: Standard Z: Non-motor side	None: Standard Z: Non-motor side	None: Standard GC: Clean	150 to 800 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	<b>Positioner</b> 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	<b>Controller</b> 05 Driver: Power capacity 05: 100W or less Usable for CE No entry: Standard E: CE marking	<b>Driver</b> 2 Power supply voltage 2: AC200V 05 Driver: Power capacity 05: 100W or less <b>RBR1</b> Regenerative unit
							<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>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)

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

AC servo motor output (W)	100
Repeatability (mm)	+/-0.02
Deceleration mechanism	Ball screw $\phi$ 12
Ball screw lead (mm)	20 12 6
Maximum speed (mm/sec)	1200 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+286 Vertical Stroke+316
Maximum dimensions of cross section of main unit (mm)	W80 x H65
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 550mm, 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 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

Note

Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)									
	A	B	C	A	B	C	A	C								
Lead 20	5kg	197	76	120	5kg	104	67	174	10kg	37	23	72	12kg	27	15	55
	10kg	100	32	54	5kg	171	81	340	10kg	69	32	172	15kg	33	15	100
	12kg	85	25	43	10kg	94	36	369	20kg	15	6	55	20kg	15	6	55
Lead 12	5kg	364	89	188	10kg	94	36	369	20kg	15	6	55	30kg	140	6	20
	10kg	203	39	87	20kg	25	9	157	40kg	113	0	8				
	15kg	139	22	51												
Lead 6	10kg	403	43	113												
	20kg	214	16	43												
	30kg	140	6	20												

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

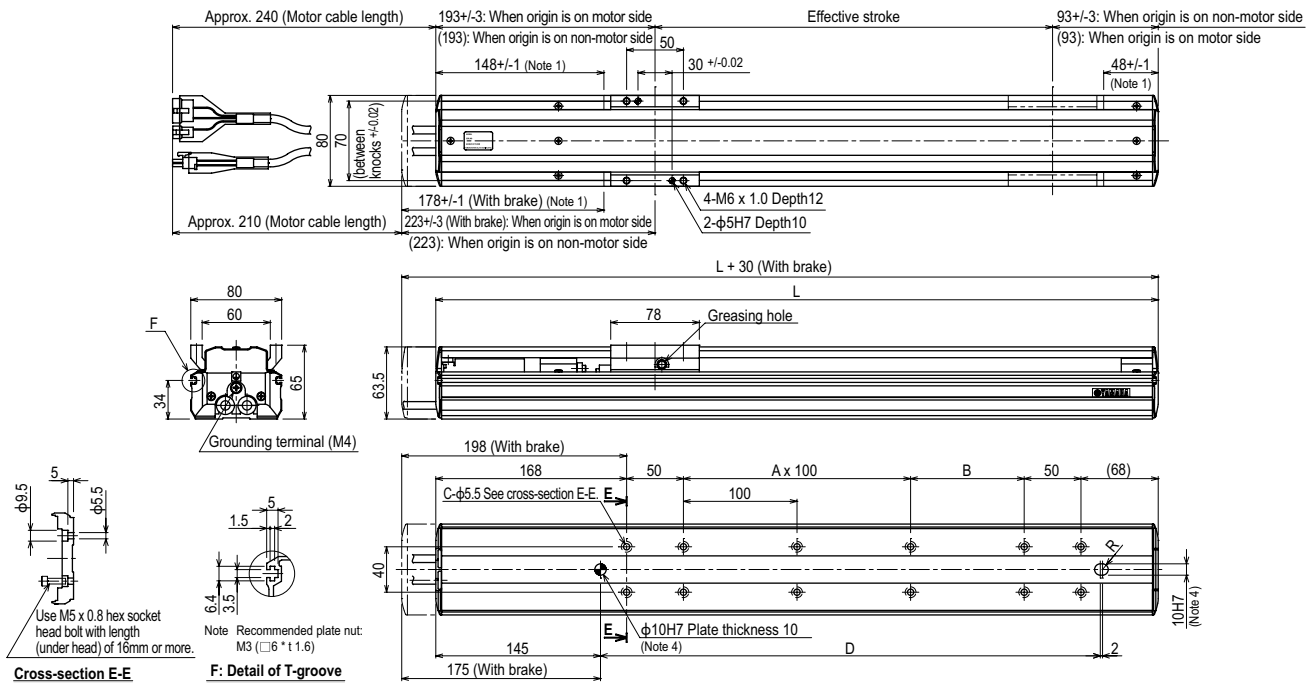
## Static loading moment

(Unit: N·m)		
MY	MP	MR
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 TS-X205	I/O point trace / Remote command
RDV-X205-RBR1	Pulse train control

## F8



Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
L	436	486	536	586	636	686	736	786	836	886	936	986	1036	1086	
A	0	0	1	1	2	2	3	3	4	4	5	5	6	6	
B	100	150	100	150	100	150	100	150	100	150	100	150	100	150	
C	8	8	10	10	12	12	14	14	16	16	18	18	20	20	
D	240	290	340	390	440	490	540	590	640	690	740	790	840	890	
Weight (kg)	3.6	3.9	4.2	4.4	4.7	5.0	5.3	5.6	5.9	6.2	6.4	6.7	7.0	7.3	
Maximum speed (mm/sec)	Lead 20	1200													
	Lead 12	720													
	Lead 6	360													
	Speed setting	90% 75% 65% 60% 50%													

- 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  $\phi$ 10 knock-pin hole to position the robot body, the knock-pin must not protrude more than 10mm inside the robot body.  
Note 5. 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 6. When the stroke is longer than 550mm, 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.

# F8L

- High lead: Lead 30
- Origin on the non-motor side is selectable

## Ordering method

<b>F8L</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>
	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	150 to 1050 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/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>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>	

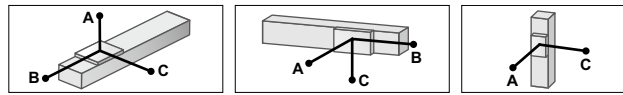
Note 1. The model with a lead of 30mm cannot select specifications with brake (vertical specifications).  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.66.

## Specifications

<b>AC servo motor output (W)</b>	100			
<b>Repeatability</b> <sup>Note 1</sup> (mm)	±0.01			
<b>Deceleration mechanism</b>	Ball screw φ15			
<b>Ball screw lead (mm)</b>	30	20	10	5
<b>Maximum speed</b> <sup>Note 2</sup> (mm/sec)	1800	1200	600	300
<b>Maximum payload (kg)</b>	<b>Horizontal</b>	7	20	40
	<b>Vertical</b>	-	4	8
<b>Rated thrust (N)</b>	<b>Horizontal</b>	56	84	169
	<b>Vertical</b>	-	48	98
<b>Stroke (mm)</b>	150 to 1050 (50mm pitch)			
<b>Overall length (mm)</b>	<b>Horizontal</b>	Stroke+300		
	<b>Vertical</b>	Stroke+322		
<b>Maximum dimensions of cross section of main unit (mm)</b>	W80 × H65			
<b>Cable length (m)</b>	Standard: 3.5 / Option: 5.10			
<b>Linear guide type</b>	4 rows of circular arc 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 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. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

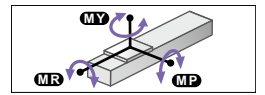
## Allowable overhang<sup>Note</sup>



Installation	Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)				
		A	B	C	A	B	C	A	B	C		
Horizontal	Lead 30	5kg	112	80	80	5kg	55	57	77	2kg	236	240
	7kg	78	43	49	7kg	21	19	34	4kg	106	110	
	5kg	211	108	147	5kg	119	89	176	2kg	310	311	
	10kg	116	45	69	10kg	38	26	69	4kg	141	143	
	15kg	76	24	39	15kg	7	0	16	6kg	85	86	
Wall	Lead 20	20kg	58	14	26	20kg	0	0	0	8kg	57	58
	10kg	251	56	122	10kg	85	39	202	5kg	123	124	
	20kg	121	20	46	20kg	7	0	30	10kg	47	48	
	30kg	74	8	20	30kg	0	0	0	15kg	22	22	
	40kg	35	0	6	40kg	0	0	0	16kg	19	19	
Vertical	Lead 10	20kg	249	23	62	20kg	19	7	140			
	30kg	170	10	29	30kg	0	0	0				
	40kg	138	4	12	40kg	0	0	0				
	50kg	51	0	0	50kg	0	0	0				
	Lead 5											

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

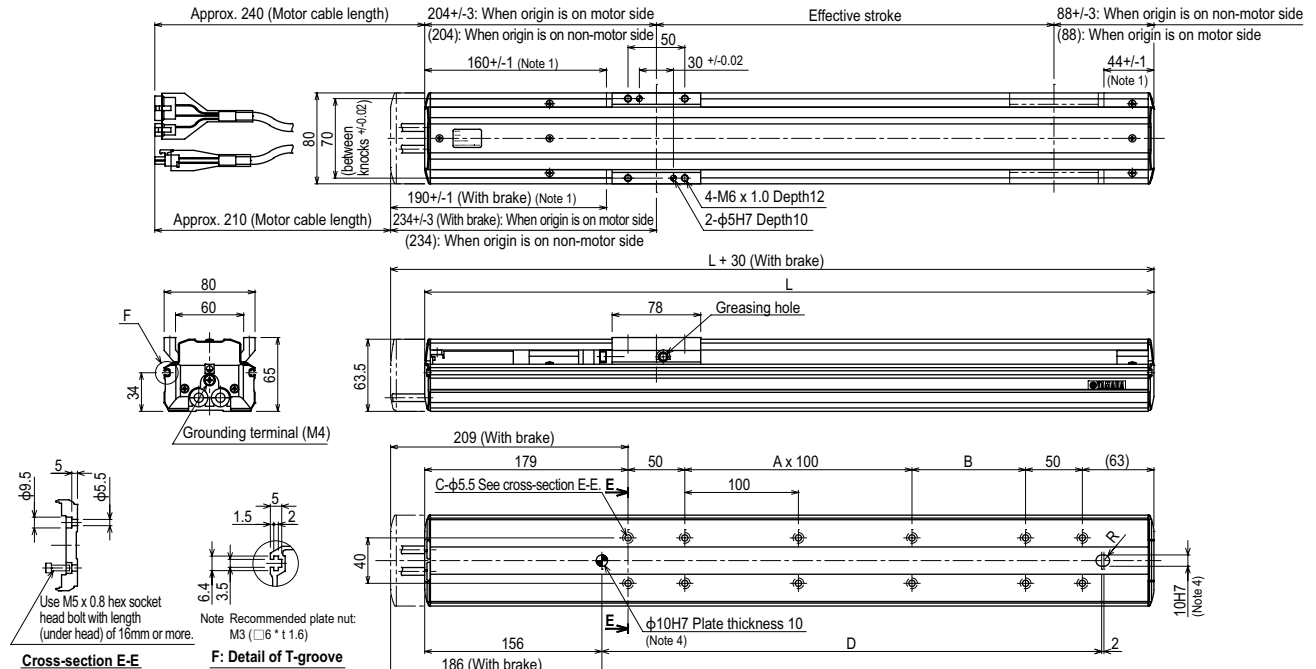


(Unit: N·m)		
MY	MP	MR
70	95	110

## 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	Remote command
RDV-X205-RBR1	Pulse train control

## F8L

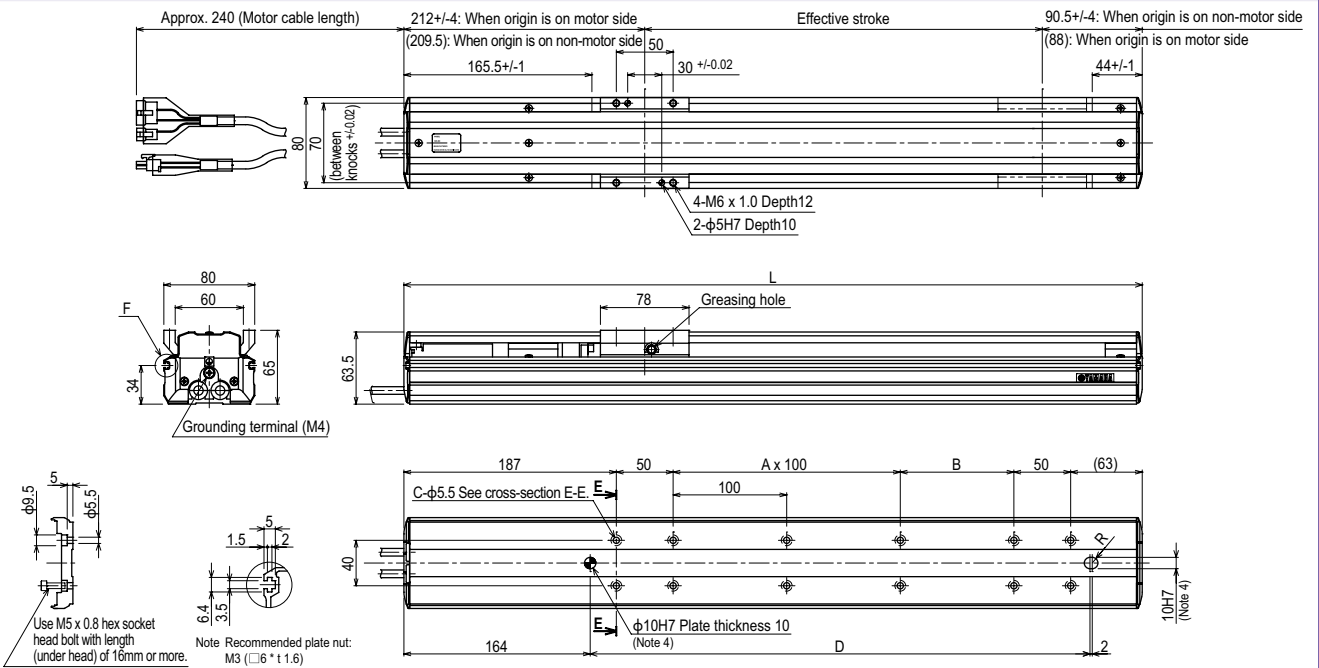


Effective stroke	Cross-section E-E																		
	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050
L	442	492	542	592	642	692	742	792	842	892	942	992	1042	1092	1142	1192	1242	1292	1342
A	0	0	1	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9
B	100	150	100	150	100	150	100	150	100	150	100	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) <sup>Note 5</sup>	Lead 20	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
	Lead 10																		
Maximum speed <sup>Note 6</sup> (mm/sec)	Lead 5																		
	Speed setting																		

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 knock-pin hole to position the robot body, the knockpin must not protrude more than 10mm inside the robot body.  
 Note 5. Weight of models with no brake.  
 Note 6. The weight of brake-attached models is 0.3 kg heavier than the models with no brake shown in the table.

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 above.

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.

# F8LH

Origin on the non-motor side is selectable

## Ordering method

F8LH				TSX				SR1-X				RDV-X							
Model	Lead designation	Origin position change	Grease type	Stroke	Cable length <sup>Note 2</sup>	Positioner <sup>Note 2</sup>	Driver: Power supply voltage / Power capacity	LCD monitor	I/O selection	Battery	Controller	Driver: Power capacity	Usable for CE	I/O selection	Battery	Driver	Power supply voltage	Driver: Power capacity	Regenerative unit
	20: 20mm 10: 10mm 5: 5mm	None: Standard Z: Non-motor side	None: Standard GC: Clean	150 to 1050 (50mm pitch)	3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	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)	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)	2	2: AC200V	05: 100W or less	RBR1

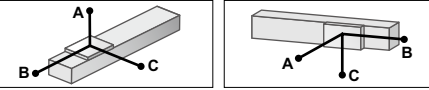
Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.  
See P.614 for details on robot cable.  
Note 2. See P.522 for DIN rail mounting bracket.  
Note 3. Select this selection when using the gateway function. For details, see P.66.

## Specifications

AC servo motor output (W)	100			
Repeatability <sup>Note 1</sup> (mm)	±0.01			
Deceleration mechanism	Ball screw φ15			
Ball screw lead (mm)	20	10	5	
Maximum speed <sup>Note 2</sup> (mm/sec)	1200	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)	Horizontal	Stroke+368		
Maximum dimensions of cross section of main unit (mm)	W80 × H65			
Cable length (m)	Standard: 3.5 / Option: 5.10			
Linear guide type	4 rows of circular arc grooves × 1 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 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. Position detectors (resolvers) are common to incremental and absolute specifications. If the controller has a backup function then it will be absolute specifications.

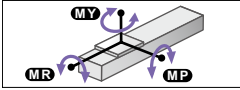
## Allowable overhang<sup>Note</sup>



	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)				
	A	B	C	A	B	C		
Lead 20	10kg	573	256	176	10kg	147	215	515
	20kg	334	116	81	20kg	53	75	255
	30kg	279	70	50	30kg	20	29	160
Lead 10	20kg	629	137	111	20kg	80	99	545
	20kg	479	57	47	40kg	15	19	270
	60kg	382	30	25	60kg	-	-	-
Lead 5	20kg	1094	148	127	20kg	96	112	1005
	40kg	851	63	54	40kg	22	26	604
	60kg	714	34	29	60kg	-	-	-
	80kg	601	20	17	80kg	-	-	-

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

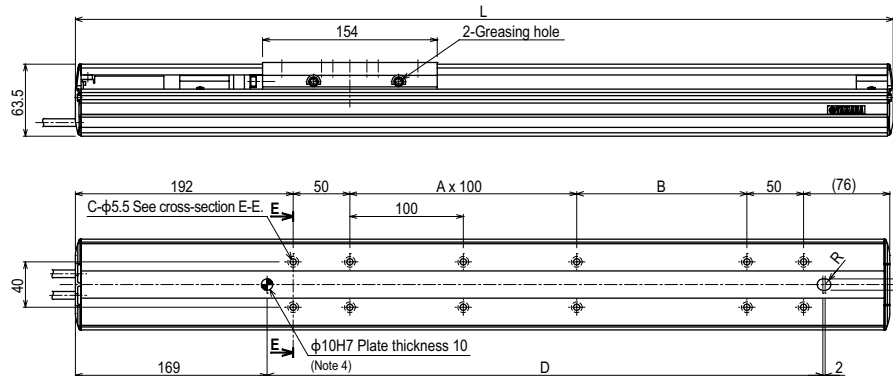
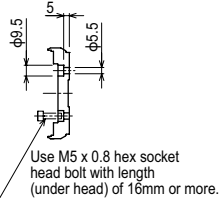
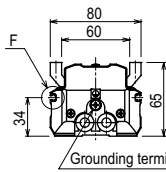
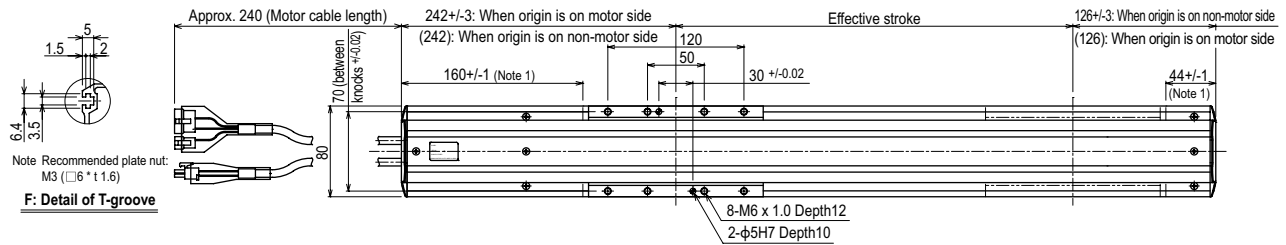


(Unit: N·m)		
MY	MP	MR
128	163	143

## 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	Remote command
RDV-X205-RBR1	Pulse train control

## F8LH



## Cross-section E-E

Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	
L	518	568	618	668	718	768	818	868	918	968	1018	1068	1118	1168	1218	1268	1318	1368	1418	
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	290	340	390	440	490	540	590	640	690	740	790	840	890	940	990	1040	1090	1140	1190	
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 5</sup> (mm/sec)	Lead 20	1200									1020	900	780	720	660	600	540	480	420	
	Lead 10	600									510	450	390	360	330	300	270	240	210	
	Lead 5	300									255	225	195	180	165	150	135	120	105	
	Speed setting	-									85%	75%	65%	60%	55%	50%	45%	40%	35%	

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 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.



# 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 (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	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 φ15
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 × 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 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	20kg: 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	20kg: 25	66	
Lead 5	40kg: 106	0	0	30kg: 0	0	0			
	30kg: 419	19	20	10kg: 107	54	1410			
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

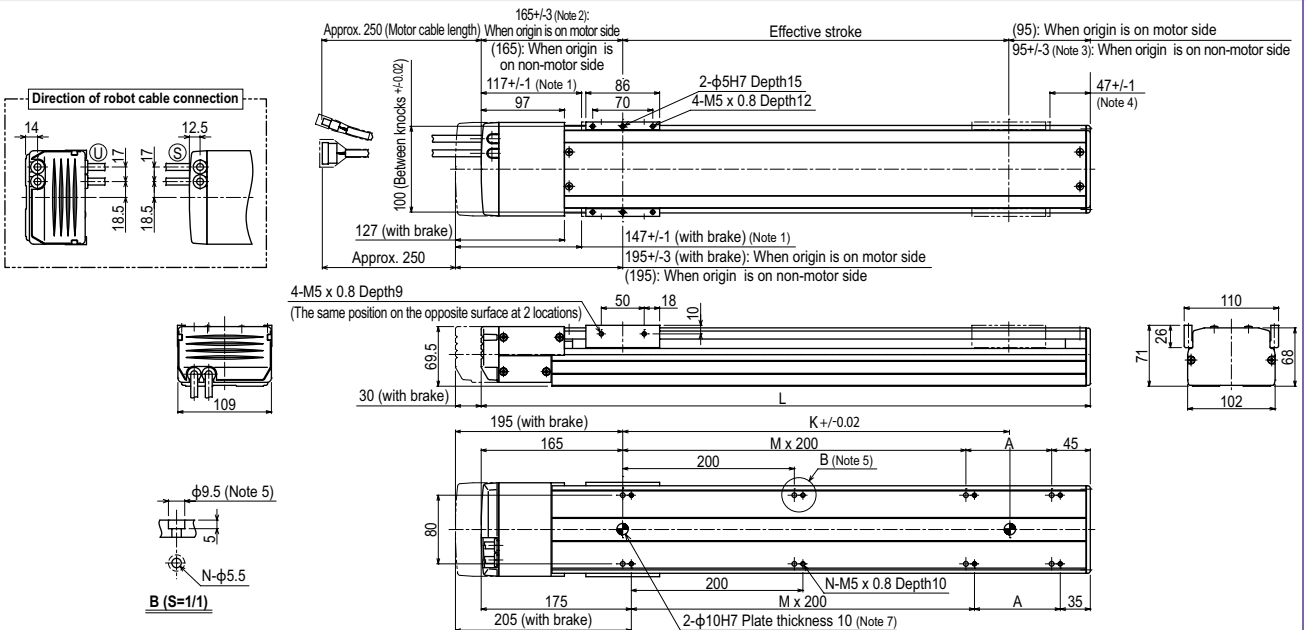
	(Unit: N·m)		
	MY	MP	MR
	131	131	115

## Controller

Controller	Operation method
SR1-X05 Note 5	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RX320	
RX221/222	
RX340	
TS-X105 Note 5	I/O point trace / Remote command
TS-X205 Note 5	
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 φ9.5 counter bore hole.  
 Note 6. Minimum bend radius of motor cable is R50.  
 Note 7. When using this φ10 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%																					
	50%																						
	45%																						

- 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	

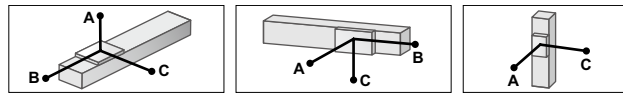
- Note 1. The model with a lead of 30mm cannot select specifications with brake (vertical specifications).  
 Note 2. If selecting 5mm lead specifications then the origin point cannot be changed to the non-motor side.  
 Note 3. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible 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	25	40
	Vertical	8	20
Rated thrust (N)	113	170	341
Stroke (mm)	150 to 1000		
Overall length (mm)	Horizontal	Stroke+355	
	Vertical	Stroke+385	
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 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.

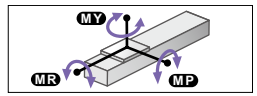
## Allowable overhang



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



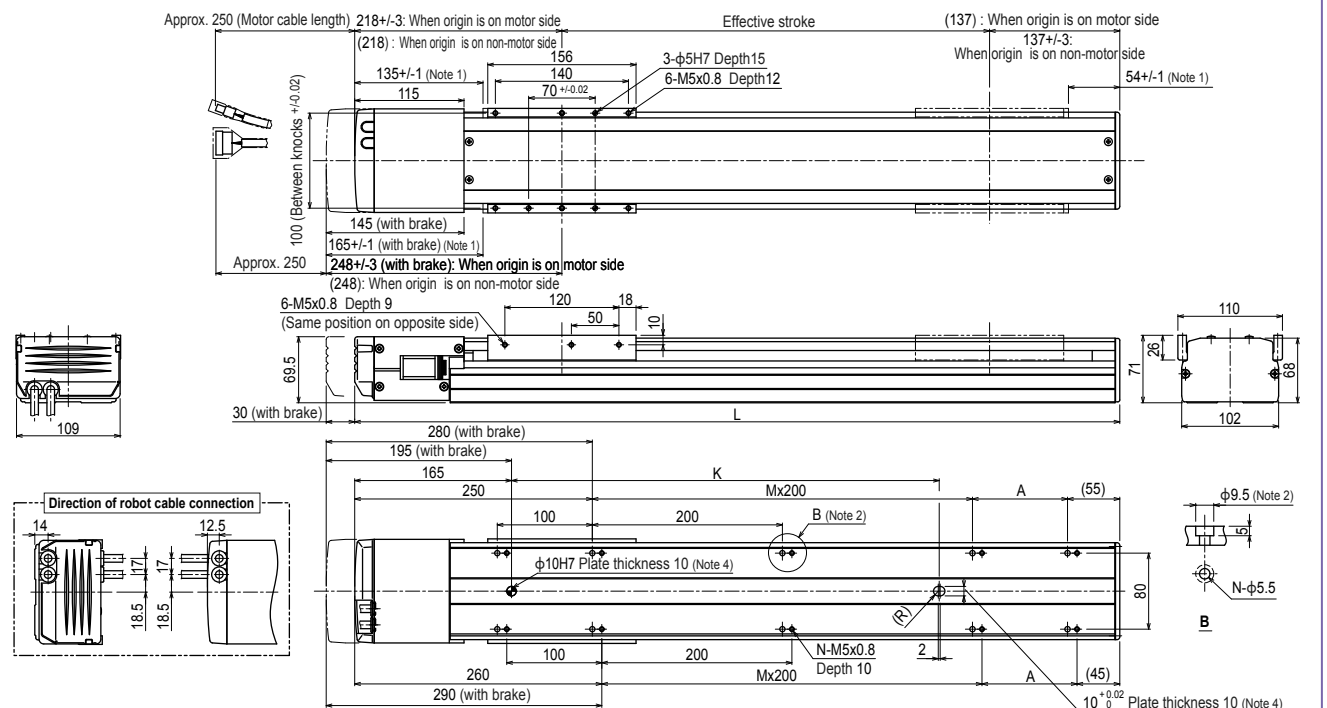
	MY	MP	MR
(Unit: N·m)	348	348	160

## 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

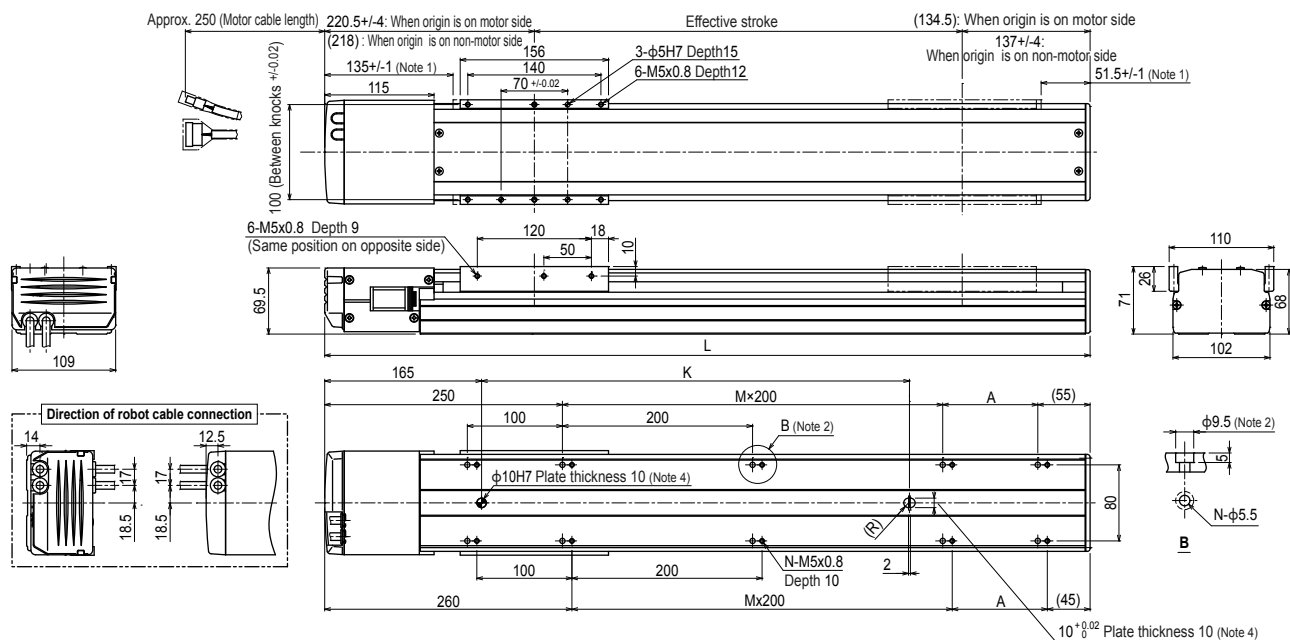


Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
L	505	555	605	655	705	755	805	855	905	955	1005	1055	1105	1155	1205	1255	1305	1355
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50
M	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5
N	6	8	8	8	8	10	10	10	10	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.

## F10H High lead type: Lead 30



Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
<b>L</b>	505	555	605	655	705	755	805	855	905	955	1005	1055	1105	1155	1205	1255	1305	1355
<b>A</b>	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	200	50
<b>M</b>	0	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5
<b>N</b>	6	8	8	8	8	10	10	10	10	12	12	12	12	14	14	14	14	16
<b>K</b>	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
<b>Weight (kg)</b>	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
<b>Maximum speed (mm/sec)</b> <small>Note 5</small>	<b>Lead 30</b>											1440	1260	1080	900	720	630	
	<b>Lead 20</b>											960	840	720	600	480	420	
	<b>Lead 10</b>											480	420	360	300	240	210	
	<b>Lead 5</b>											240	210	180	150	120	105	
	<b>Speed setting</b>											80%	70%	60%	50%	40%	35%	

Note 1. Stop positions are determined by the mechanical stoppers at both ends.

Note 2. When installing the unit, washers, etc., cannot be used in the φ9.5 counter bore hole.

Note 3. Minimum bend radius of motor cable is R50.

Note 4. 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 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 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 BK/5K/10K (Flexible cable)

Positioner	Driver: Power supply voltage	Regenerative unit	LCD monitor	I/O selection	Battery
TSX 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: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)
Controller	Driver: Power capacity	Usable for CE	Regenerative unit	I/O selection	Battery
SR1-X 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)
Driver	Power supply voltage	Driver: Power capacity	Regenerative unit		
RDV-X 2	2: AC200V	05: 100W or less	RBR1		

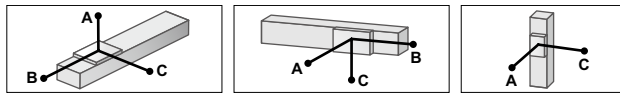
- Note 1. The model with a lead of 30mm cannot select specifications with brake (vertical specifications).  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 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 φ15		
Ball screw lead (mm)	30	20	10
Maximum speed (mm/sec)	1800	1200	600
Maximum payload (kg)	Horizontal	Vertical	
	15	30	55
Rated thrust (N)	56	84	169
Stroke (mm)	150 to 1250 (50mm pitch)		
Overall length (mm)	Stroke+255		
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.

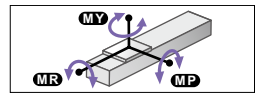
## Allowable overhang



Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)				
	A	B	C	A	B	C	A	B	C		
Lead 30	5kg	1756	1364	863	5kg	951	969	1286	5kg	600	600
Lead 20	15kg	1236	467	438	15kg	408	277	803	2kg	1200	1200
Lead 10	5kg	2153	1366	980	5kg	1066	974	1578	4kg	1154	895
Lead 5	15kg	1193	465	430	15kg	402	276	775	10kg	423	956
	30kg	1266	245	294	30kg	219	105	678	8kg	634	492
	20kg	1132	353	361	20kg	312	189	690	10kg	499	387
	40kg	872	183	218	40kg	140	57	402	10kg	587	456
	55kg	946	140	184	55kg	92	0	345	15kg	383	297
	50kg	1575	158	222	30kg	246	107	1095	20kg	281	218
	60kg	1493	135	194	40kg	167	64	798			
	80kg	1466	107	159	60kg	88	20	508			

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



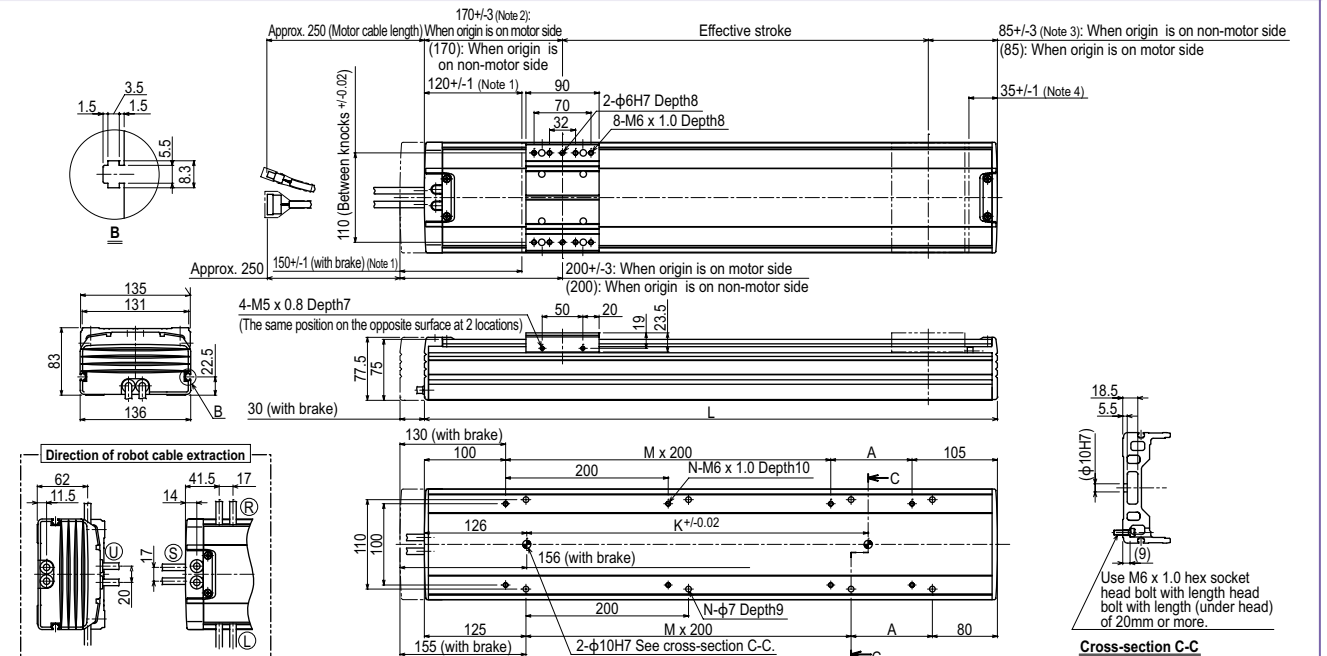
(Unit: N·m)		
MY	MP	MR
232	233	204

## Controller

Controller	Operation method
SR1-X05	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RDX-X205-RBR1	I/O point trace / Remote command / 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	1505
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												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.

# 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 RGT	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	Vertical
	25 40 80 100	- 8 20 30
Rated thrust (N)	113	170 341 683
Stroke (mm)	150 to 1250 (50mm pitch)	
Overall length (mm)	Horizontal	Vertical
	Stroke+320	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	
	25kg 1847	691	533	25kg 482	426	1257	6kg 1699	1364	
Lead 20	10kg 2265	1674	961	10kg 999	1220	1711	8kg 1301	1051	
	20kg 1402	855	537	20kg 515	558	987	10kg 1370	1106	
Lead 10	40kg 1047	445	324	40kg 263	227	635	15kg 906	732	
	30kg 1953	583	485	30kg 419	338	1282	20kg 678	548	
	50kg 1655	365	328	50kg 240	162	934	20kg 767	619	
	80kg 1720	242	238	80kg 134	62	756	25kg 612	494	
Lead 5	60kg 2443	311	317	60kg 209	117	1398	30kg 503	407	
	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

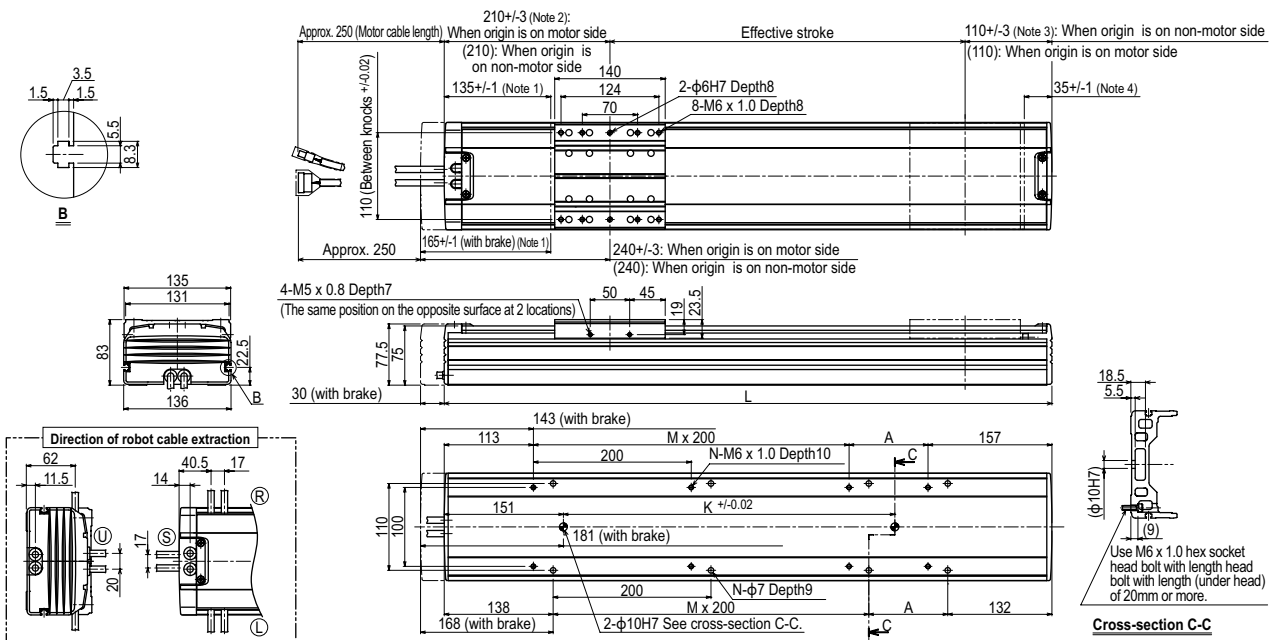
(Unit: N·m)		
MY	MP	MR
551	552	485

## 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.  
 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.

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
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	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																						
Lead 20	1200																						
Lead 10	600																						
Lead 5	300																						
Speed setting	-																						
Maximum speed (mm/sec)	-																						
	80%																						
	65%																						
	50%																						
	45%																						

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	SR1-X	RDV-X	RBR1
Positioner <sup>Note 2</sup> TS-X	Controller	Driver	Regenerative unit
Driver: Power-supply voltage Power capacity 110: 100V/200W 210: 200V/200W	Driver: Power capacity 10: 200W	Power-supply voltage 2: AC200V	Driver: Power capacity 20: 600W or less
LCD monitor No entry: None L: With LCD	Usable for CE No entry: Standard E: CE marking		
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>	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.

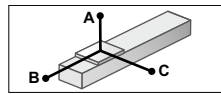
- [Cautions after purchase]
- When changing the origin position, contact us since the adjustment is needed.
  - When changing the cable entry location, contact us since necessary parts may vary depending on the cable entry location.
  - Do not install the robot with the horizontal installation specifications 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.

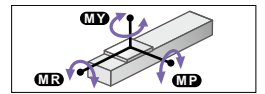
## Allowable overhang <sup>Note</sup>



Horizontal installation (Unit: mm)	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

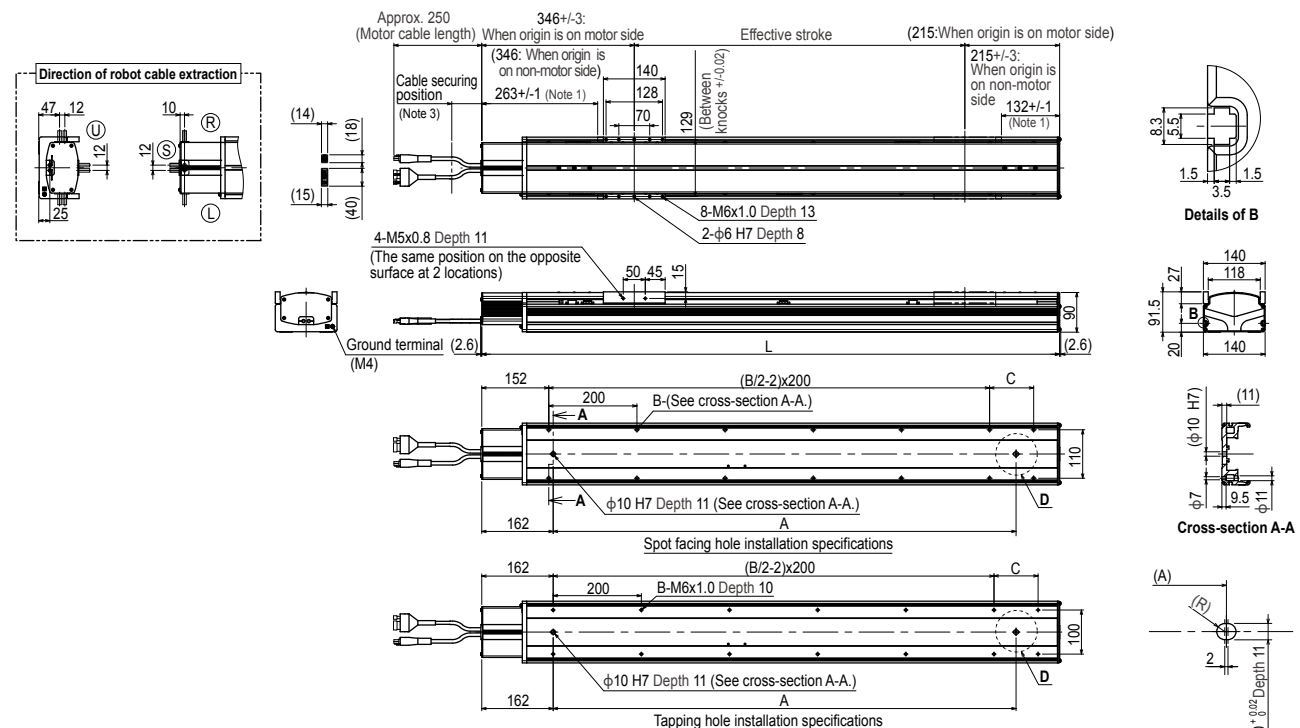


(Unit: N·m)		
MY	MP	MR
551	552	485

## 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	Regenerative unit	LCD monitor	I/O selection	Battery
Positioner 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	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	N: None I: With battery A: Absolute I: Incremental
SR1-X	20	Usable for CE	Regenerative unit	I/O selection	Battery
Controller	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 A: Absolute I: Incremental
RDV-X	2	20	Regenerative unit		
Driver	Power-supply voltage 2: AC200V	Driver: Power capacity 20: 600W or less	No entry: None RBR1 (Horizontal) RBR2 (Vertical)		

- 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)
Maximum payload (kg)	Horizontal	Vertical
	40	80 120
Rated thrust (N)	169	339 678
Stroke (mm)	200 to 1450 (50mm pitch)	
Overall length (mm)	Horizontal	Vertical
	Stroke+375	Stroke+395
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

Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	B	C
Lead 40	10kg 3540	20kg 2541	2753 1999	10kg 2022	20kg 1202	2670 2483	5kg 3000	10kg 2447	3000 2447
Lead 20	40kg 2639	60kg 2647	661 736	40kg 752	60kg 987	587 2516	15kg 1650	25kg 1782	30kg 1782
Lead 10	80kg 1770	100kg 1391	521 312	50kg 574	80kg 342	447 1263	25kg 1054	35kg 742	1054 742
Lead 5	120kg 2443	150kg 2000	430 326	60kg 535	100kg 283	355 2443			
Lead 2	180kg 1841	240kg 1841	197 264	120kg 220	180kg 123	1841			

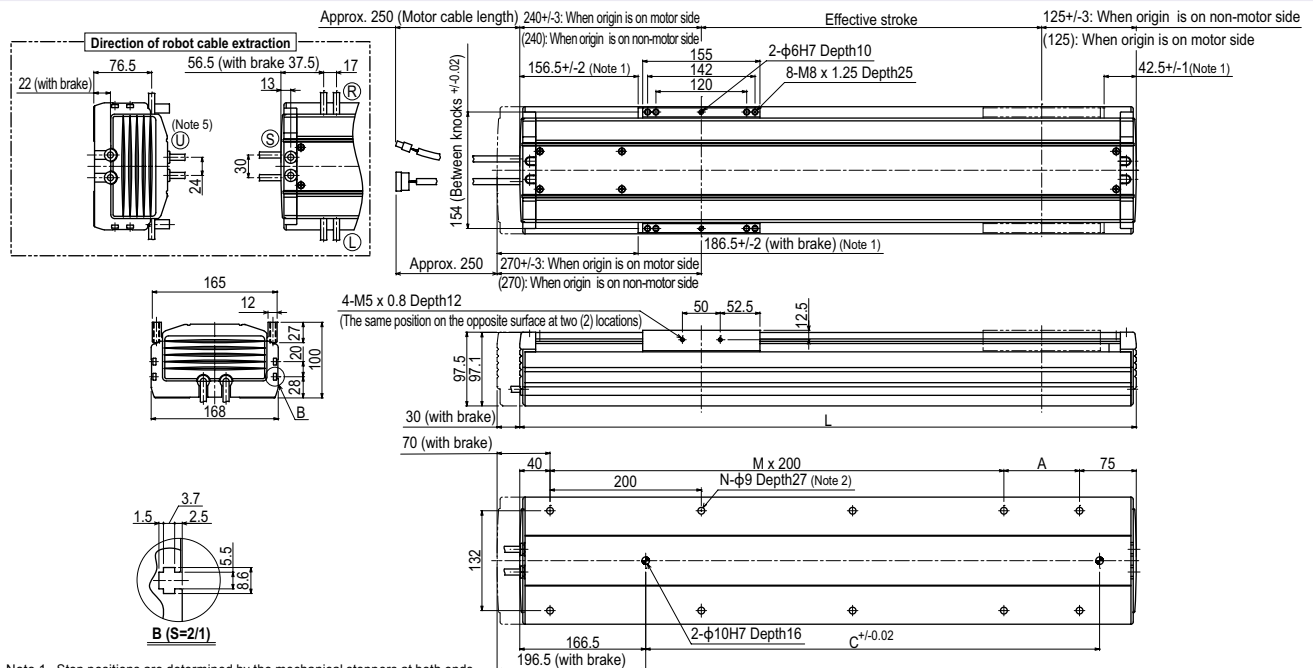
Note. Distance from center of slider top to center of gravity of object being carried at a guide service life of 10,000 km.

## Controller

Controller	Operation method
SR1-X20	Programming / I/O point trace / Remote command / Operation using RS-232C communication
RCX320, RCX221/222, RCX340	I/O point trace / Remote command
TS-X220	Pulse train control
RDV-X220-RBR1 (Horizontal)	
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



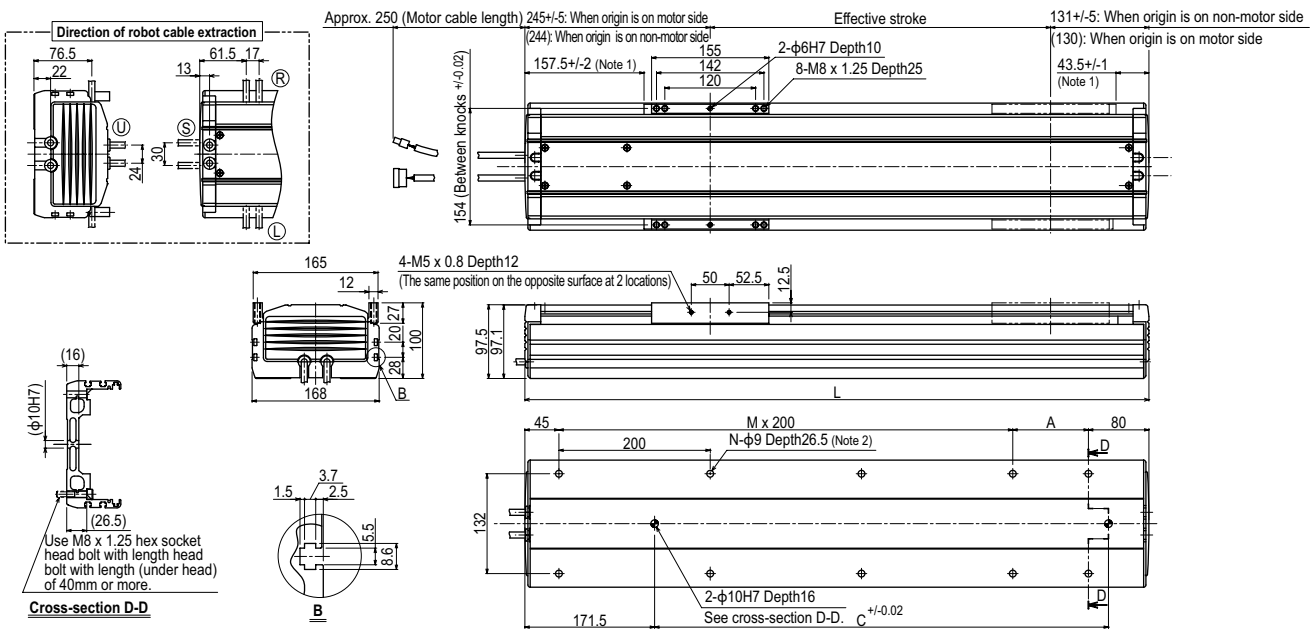
- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. When installing the robot, do not use washers inside the robot body.  
 Note 3. Minimum bend radius of motor cable is R50.  
 Note 4. Weight of models with no brake. The weight of brake-attached models is 1.2 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	14	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	600												80%	70%	60%	50%	40%							



- Articulated robots  
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- 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
<b>L</b>	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
<b>A</b>	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>M</b>	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
<b>N</b>	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
<b>C</b>	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
<b>Weight (kg)</b>	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
<b>Maximum speed</b> <sup>Note 4</sup> (mm/sec)	<b>Lead 40</b>	2400													1920	1680	1440	1200	960	840	720					
	<b>Speed setting</b>	-													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: PROFIBUS 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)

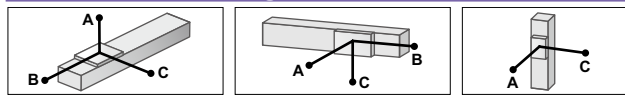
- Note 1. Upper robot cable (U) on models equipped with brake is a special-order item.  
 Note 2. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 3. See P.522 for DIN rail mounting bracket.  
 Note 4. Acceleration / deceleration 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.

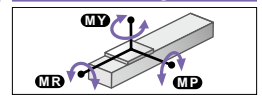
## Allowable overhang <sup>Note</sup>



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

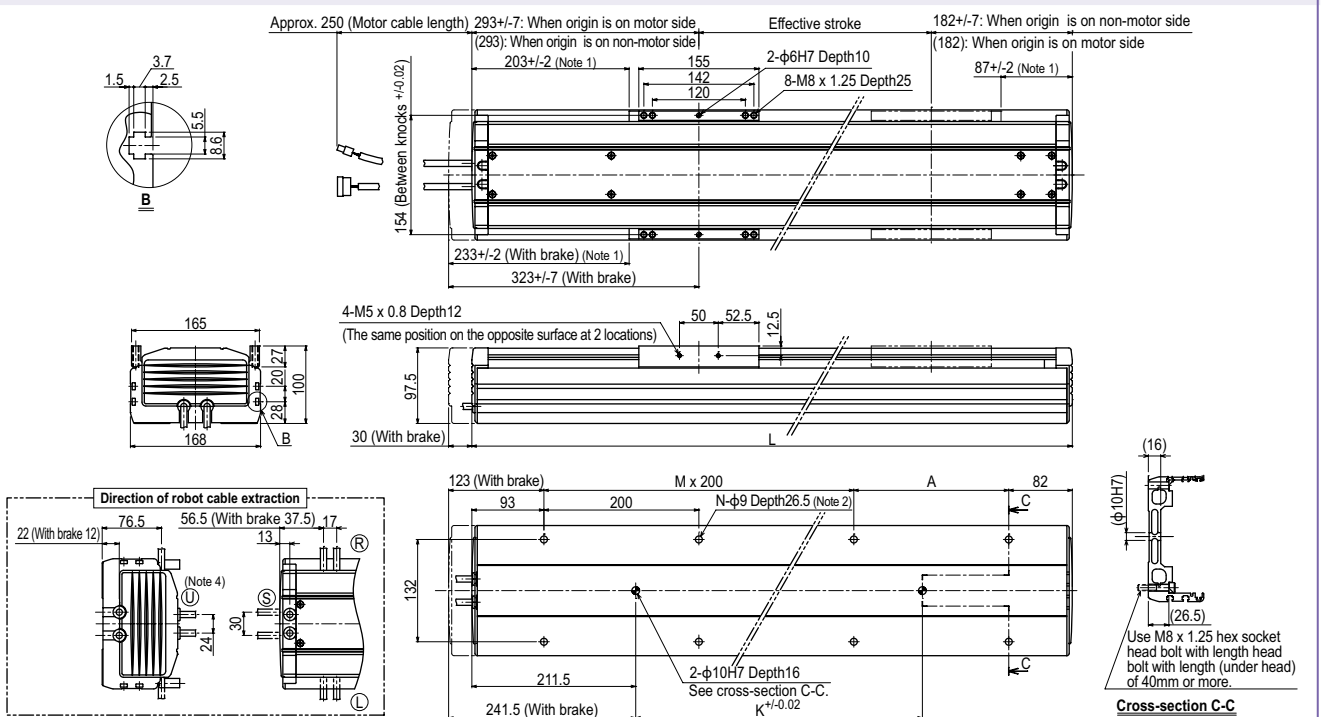


(Unit: N·m)		
MY	MP	MR
1032	1034	908

## 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	None: 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)

TSX	220				
Positioner Note 2 TS-X	Driver: Power-supply voltage / Power capacity 220: 200V/400 to 600W	Regenerative unit No entry: None 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	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 No entry: None R: With RGT	I/O selection N: NPN P: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ 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. 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.

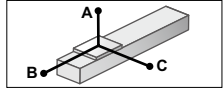
- [Cautions after purchase]  
 • When changing the origin position, contact us since the adjustment is needed.  
 • When changing the cable entry location, contact us since necessary parts may vary depending on the cable entry location.  
 • Do not install the robot with the horizontal installation specifications 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

- Note 1. Positioning repeatability in one direction.  
 Note 2. To operate the unit at a speed exceeding 750 mm/sec. (Max. speed), a regeneration unit is required.  
 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.

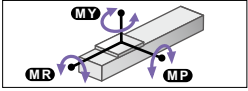
## Allowable overhang<sup>Note</sup>



Horizontal installation (Unit: mm)			
	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



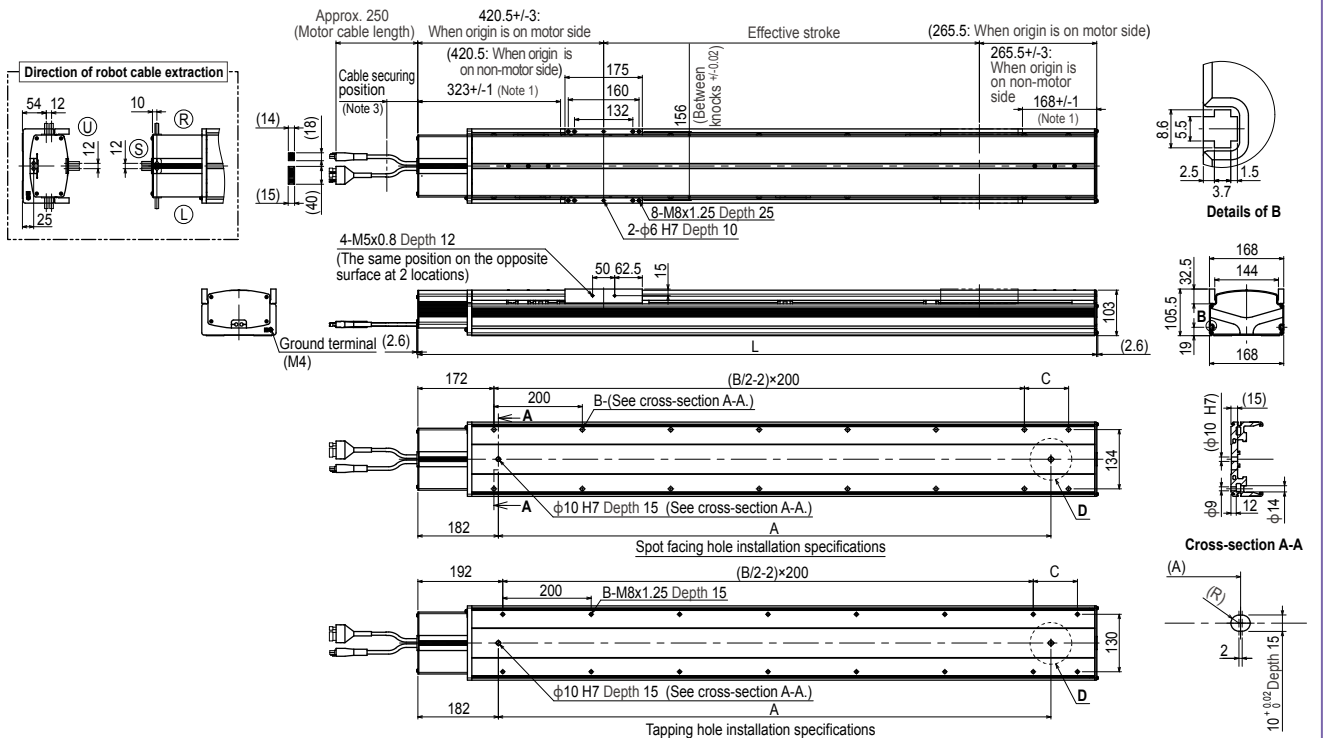
(Unit: N·m)		
MY	MP	MR
1032	1034	908

## 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 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
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
10kg	4000	4000	3450	3571	4000	4000
20kg	3397	2235	2073	2118	2164	3397
60kg	2443	718	977	1000	648	2443
50kg	2602	869	1083	1097	799	2602
80kg	2193	528	703	708	458	2193
120kg	1841	339	505	468	268	1841

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

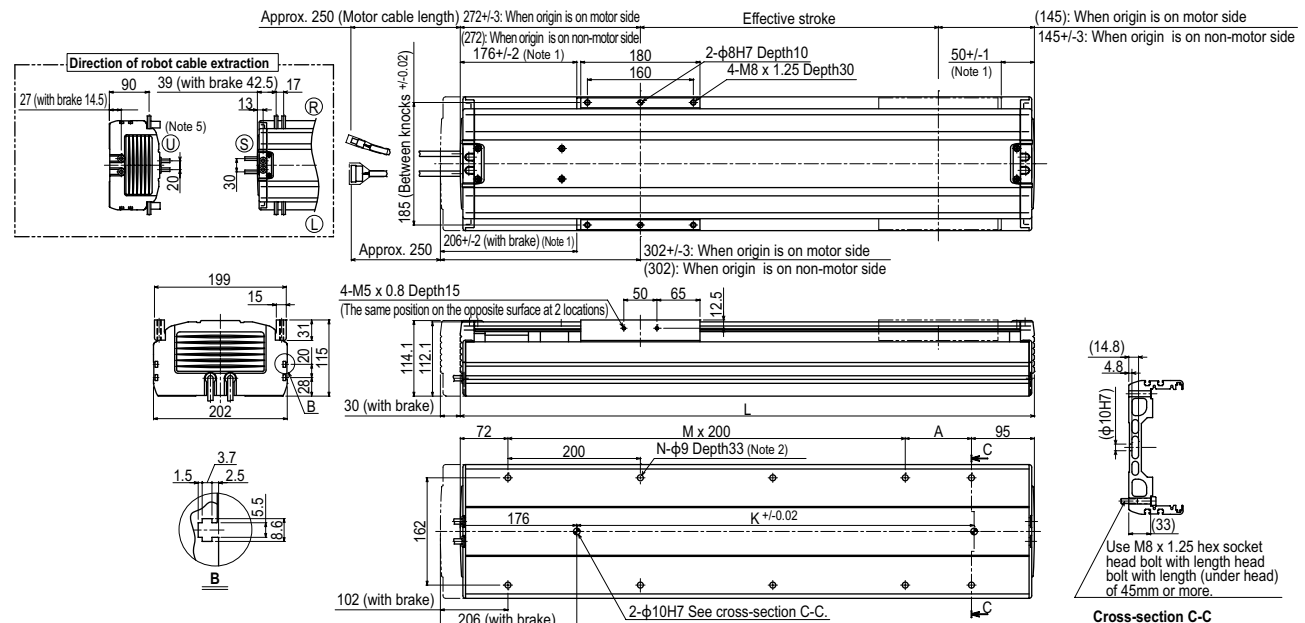
(Unit: N·m)		
MY	MP	MR
1196	1199	1052

## Controller

Controller	Operation method
SR1-X20 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.  
 • To move at a speed exceeding 1,000 mm/sec horizontally.  
 • High lead (40) used horizontally.

## F20



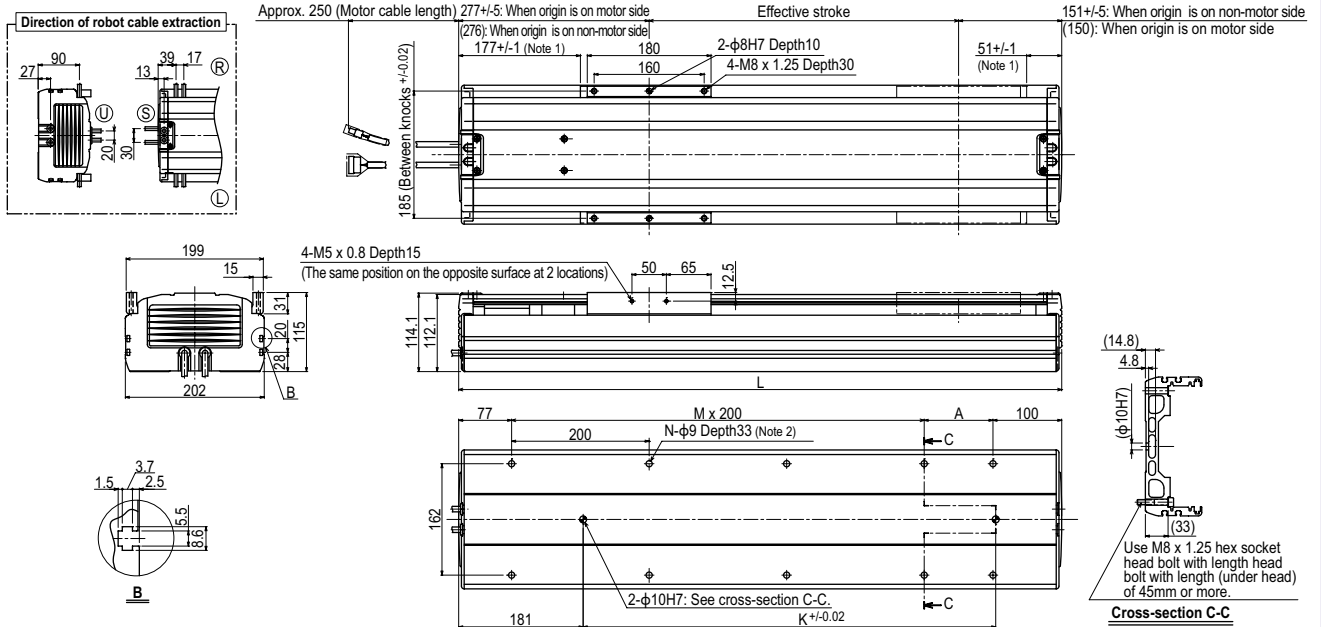
- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. When installing the robot, do not use washers inside the robot body.  
 Note 3. Minimum bend radius of motor cable is R50.  
 Note 4. Weight of models with no brake. The weight of brake-attached models is 1.5 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	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	14	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 (mm/sec)	1000 (1200)										960		840		720		600		480		480	
Speed setting	-										80%		70%		60%		50%		40%		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.

- 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

## F20 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	627	677	727	777	827	877	927	977	1027	1077	1127	1177	1227	1277	1327	1377	1427	1477	1527	1577	1627	1677	1727	1777	1827	1877
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	6	6	6	6	7	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
K	420	420	420	420	600	600	600	600	780	780	780	780	960	960	960	960	1140	1140	1140	1320	1320	1320	1320	1320	1320	1320
Weight (kg)	21.2	22.2	23.1	24.0	25.0	25.9	26.8	27.7	28.7	29.6	30.5	31.4	32.3	33.2	34.2	35.1	36.0	36.9	37.9	38.8	39.7	40.6	41.5	42.4	43.3	44.2
Maximum speed <sup>Note 4</sup> (mm/sec)	<b>Lead 40</b>		2400																							
	<b>Speed setting</b>		-																							
			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.  
Note 5. Longer than 1250mm stroke can be handled by the high lead specification (Lead 40) only.



# 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			

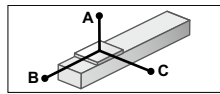
Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

## 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.

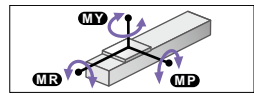
## Allowable overhang<sup>Note</sup>



<b>Horizontal installation</b> (Unit: mm)			
	<b>A</b>	<b>B</b>	<b>C</b>
<b>20kg</b>	3397	2332	2683
<b>40kg</b>	2795	1144	1361
<b>60kg</b>	2443	749	914
<b>80kg</b>	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

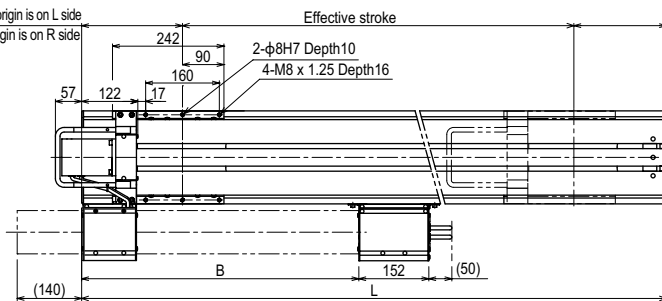
## Controller

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 / Pulse train control
RDV-X220-RBR1	

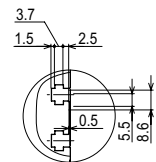
Note. When the unit is operated at a speed exceeding the maximum speed of 1,000mm/sec., a regeneration unit is required.

## F20N

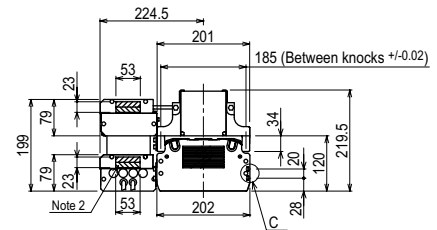
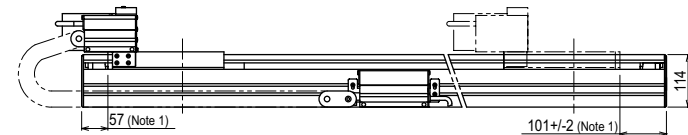
219+/-3: When origin is on L side  
 (219: When origin is on R side)



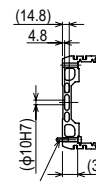
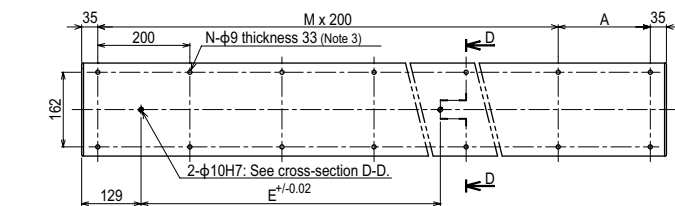
201+/-3: When origin is on R side  
 (201: When origin is on L side)



C section detailed chart



Cross section of cable guide



Cross-section D-D

Use M8 x 1.25 hex socket head bolt with length head bolt with length (under head) of 45mm or more.

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 C: Cable carrier 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 RG1	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)			
Lead	A	B	C	Lead	A	B	C
20	10kg 3048	2322	1259	20	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.

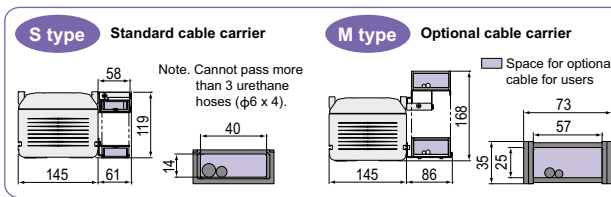
## Static loading moment

(Unit: N·m)		
MY	MP	MR
691	692	608

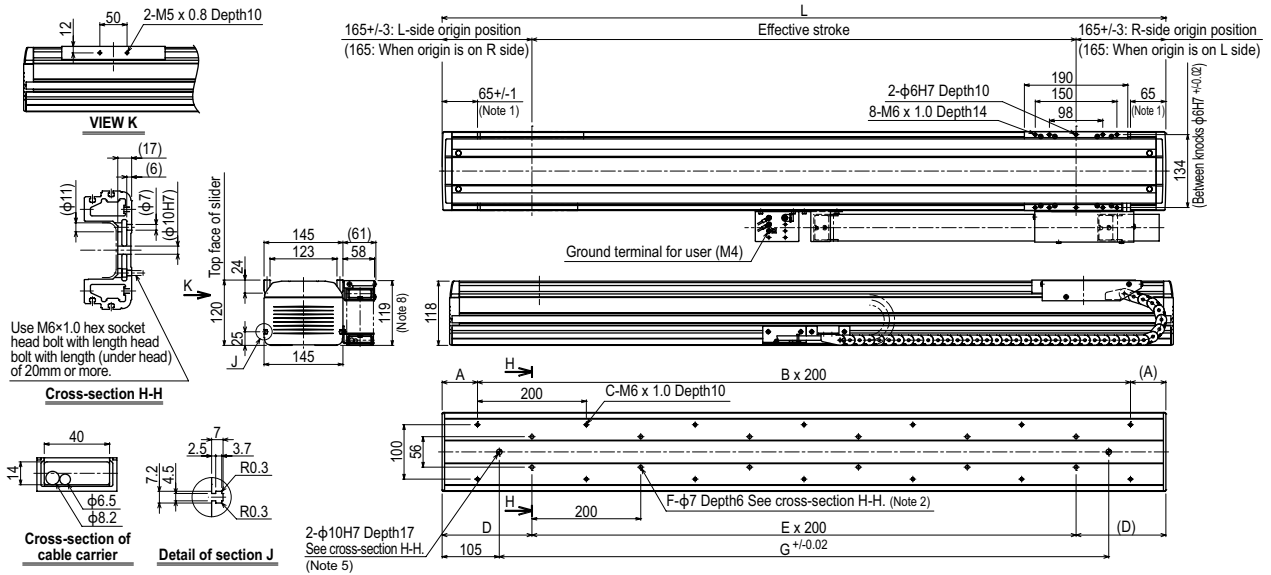
## Controller

Controller	Operation method
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

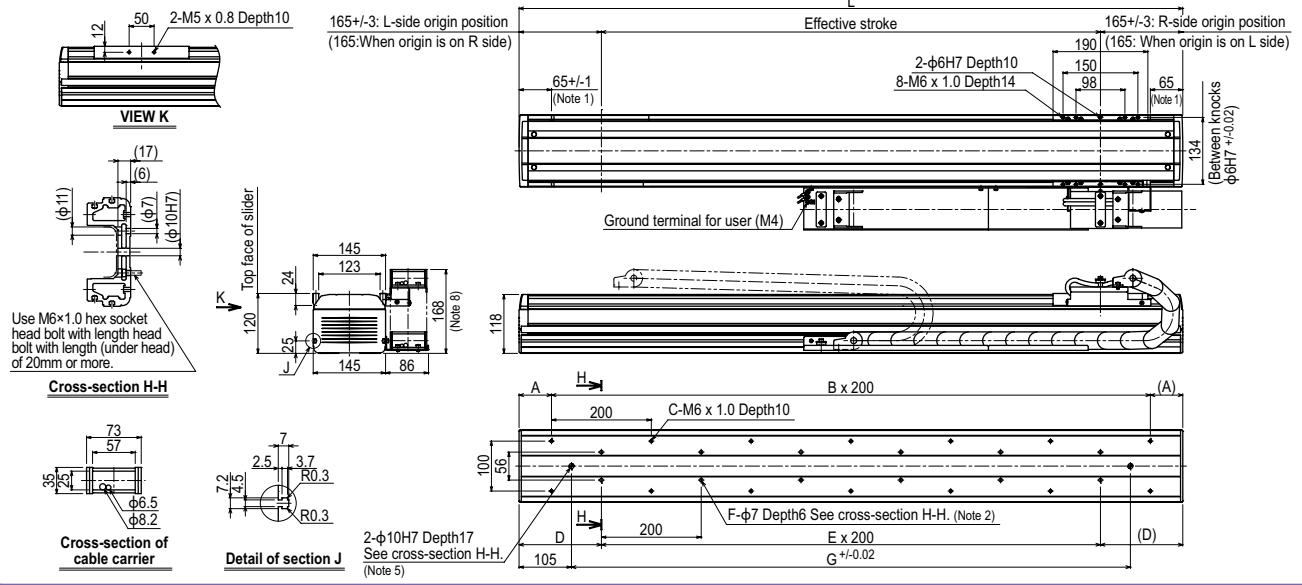


Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. When using  $\phi$ 7 holes for installation, do not use a washer, spring washer, etc. in the main unit.  
 Note 3. When shipped from the factory, the horizontal model has the origin on the right side and the wall 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 x 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.

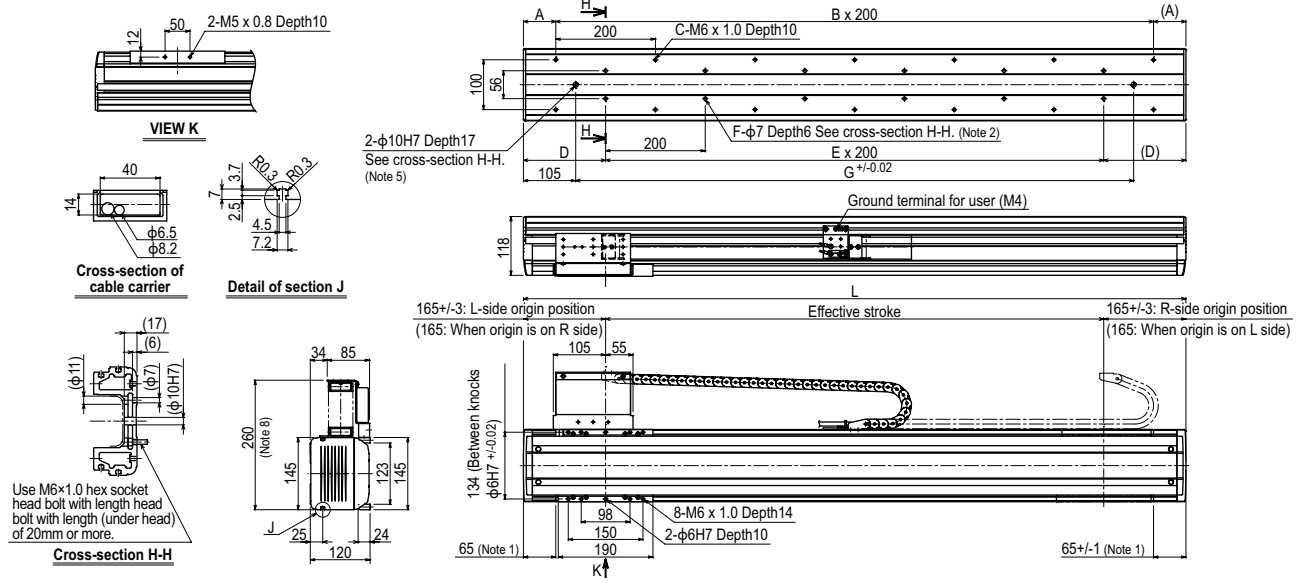
Effective stroke	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
L	830	930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
A	15	65	15	65	15	65	15	65	15	65	15	65	15	65	15	65
B	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
C	10	10	12	12	14	14	16	16	18	18	20	20	22	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



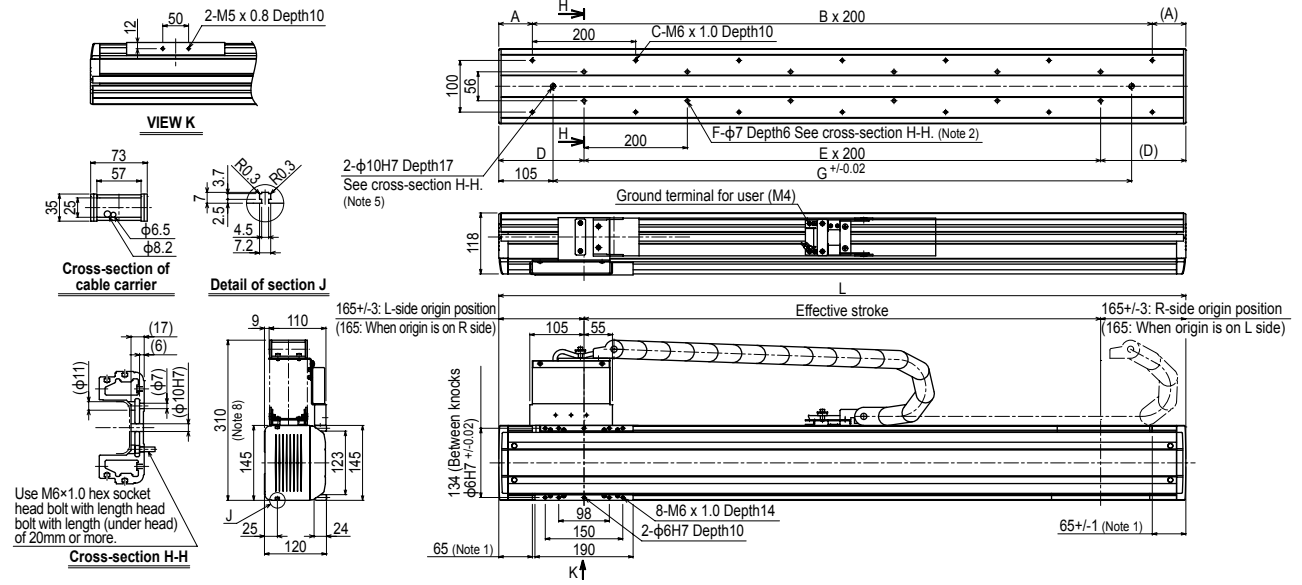
N15: Horizontal installation / Optional Cable carrier specification **RH**



N15: Wall installation / Standard Cable carrier specification **RW**



N15: 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

B/R type

# N15D

● Double carriage

## Ordering method

<b>N15D-20</b>							
<b>Model</b>	<b>Lead designation</b>	<b>Installation direction</b>	<b>Cable carrier specification</b>	<b>Option</b>	<b>Stroke</b>	<b>Cable length</b>	<b>Controller</b> <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>

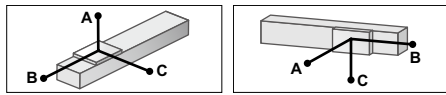
Note 1. To find controller selection options, see the ordering method on each controller page.  
 Note 2. 2 units are required when using SR1-X, TS-X or RDV-X.  
 Note 3. If a flexible cable is needed for the SR1-X, TS-X, or RDV-X, then select 3K/5K/10K. On the RCX320/RCX222HP, the standard cable is a flexible cable, so enter 3L/5L/10L when ordering.

## Specifications

<b>AC servo motor output (W)</b>	400
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.01
<b>Deceleration mechanism</b>	Ball screw $\phi 15$
<b>Ball screw lead (mm)</b>	20
<b>Maximum speed</b> <sup>Note 2</sup> (mm/sec)	1200
<b>Maximum payload (kg)</b>	50
<b>Rated thrust (N)</b>	339
<b>Stroke (mm)</b>	250 to 1750 (100mm pitch)
<b>Overall length (mm)</b>	Stroke+330
<b>Maximum dimensions of cross section of main unit (mm)</b>	W145 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. 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.

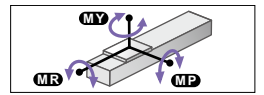
## Allowable overhang<sup>Note</sup>



Horizontal installation (Unit: mm)	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)		
	A	B	C	A	B	C
Lead 20	10kg	3048	2322	1259		
	30kg	1489	841	500		
	50kg	1278	544	344		
Lead 20	10kg	1258	1823	2449		
	30kg	428	545	1039		
	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



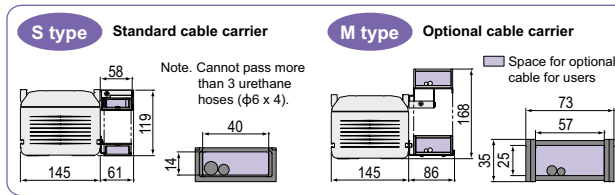
(Unit: N·m)		
MY	MP	MR
691	692	608

## Controller

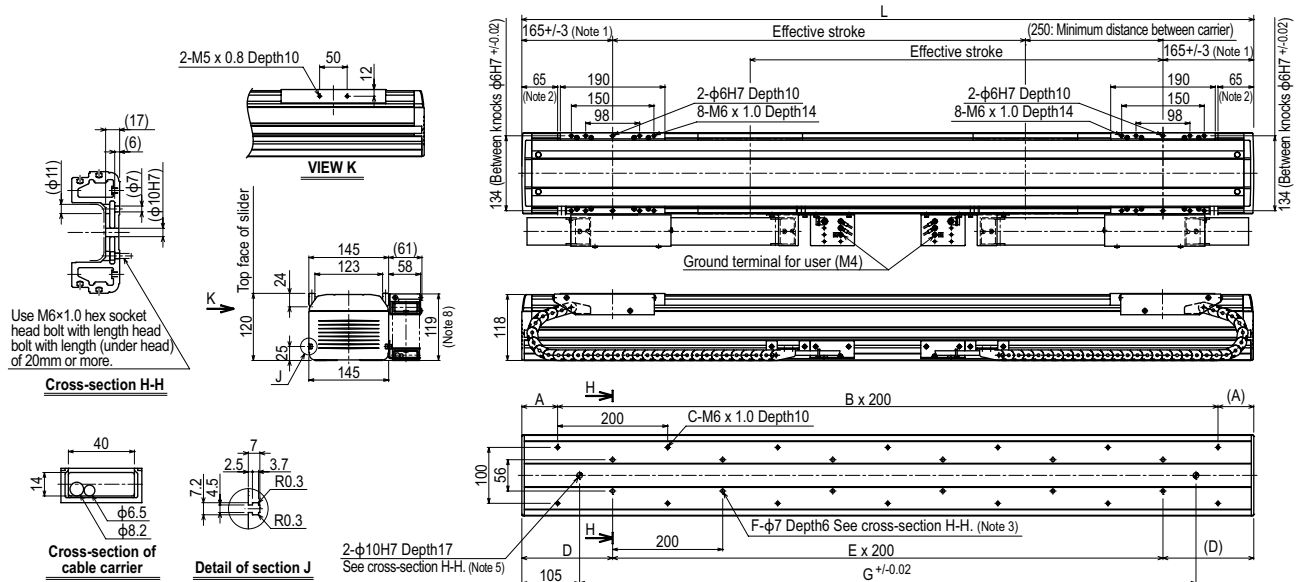
Controller	Operation method
RCX320-R RCX222HP-R	Programming / I/O point trace / Remote command / Operation using RS-232C communication
SR1-X20-R <sup>Note</sup>	I/O point trace / Remote command
TS-X220-R <sup>Note</sup>	I/O point trace / Remote command
RDV-X20-RBR1 <sup>Note</sup>	Pulse train control

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

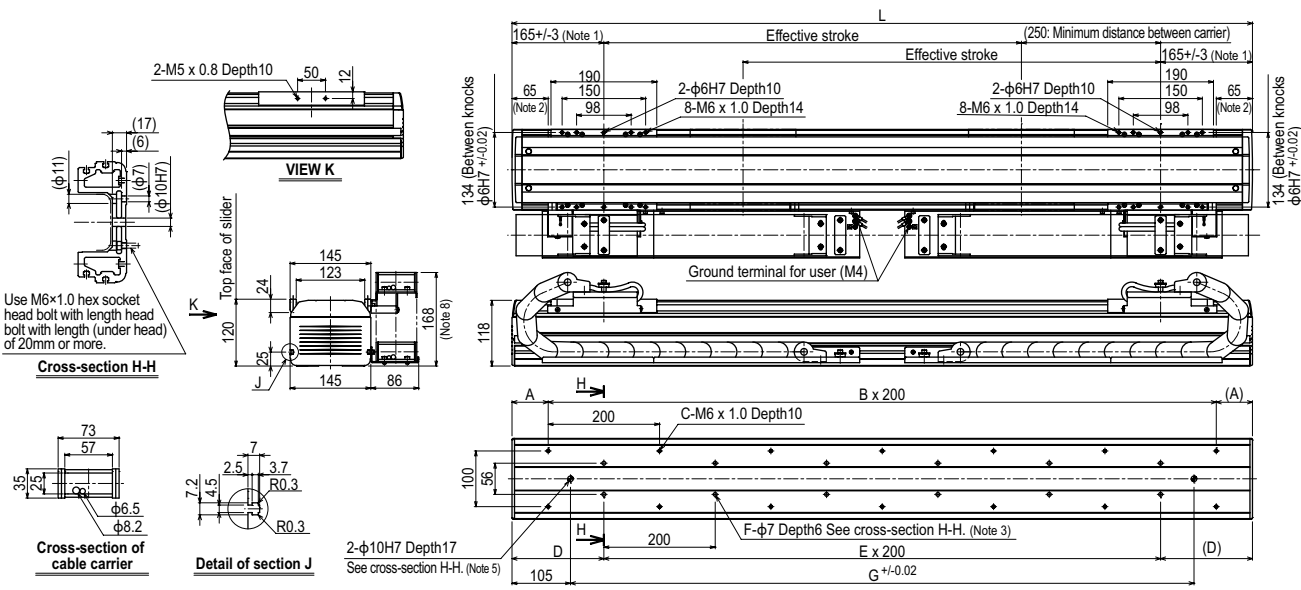


Note 1. Position of table carriage when searched to the origin.  
 Note 2. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 3. When using  $\phi 7$  holes for installation, do not use a washer, spring washer, etc. in the main unit.  
 Note 4. If the model is a standard cable 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.

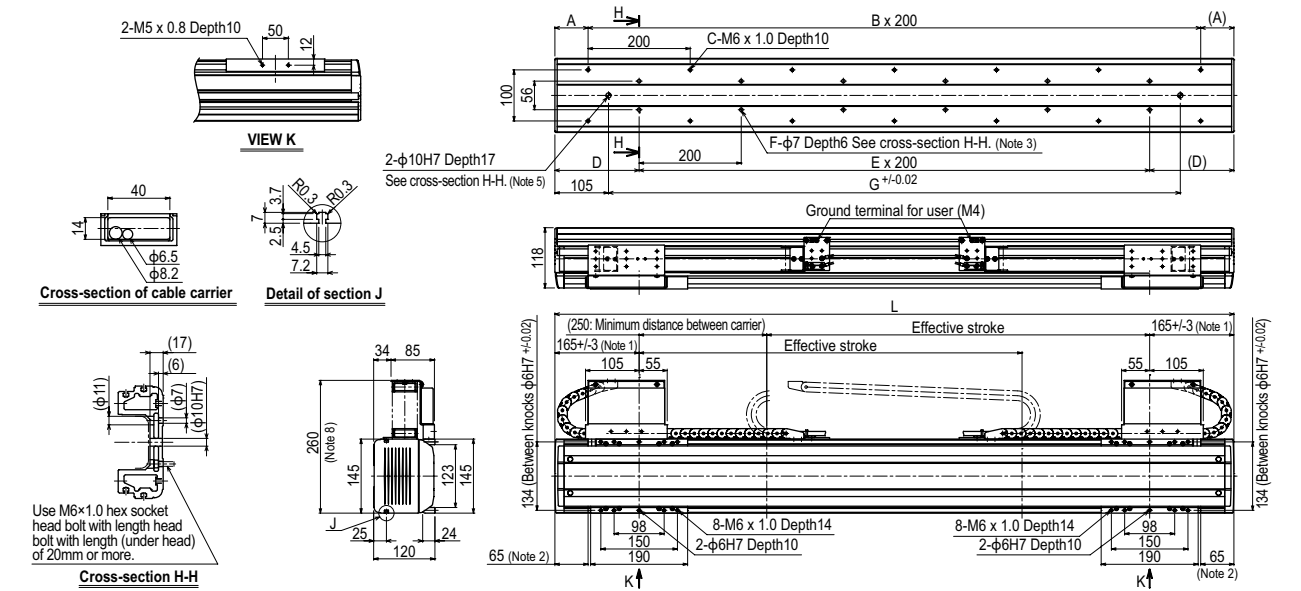
Effective stroke	250	350	450	550	650	750	850	950	1050	1150	1250	1350	1450	1550	1650	1750
<b>L</b>	830	930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
<b>A</b>	15	65	15	65	15	65	15	65	15	65	15	65	15	65	15	65
<b>B</b>	4	4	5	5	6	6	7	7	8	8	9	9	10	10	11	11
<b>C</b>	10	10	12	12	14	14	16	16	18	18	20	20	22	22	24	24
<b>D</b>	115	165	115	165	115	165	115	165	115	165	115	165	115	165	115	165
<b>E</b>	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10	10
<b>F</b>	8	8	10	10	12	12	14	14	16	16	18	18	20	20	22	22
<b>G</b>	620	720	820	920	1020	1120	1220	1320	1420	1520	1620	1720	1820	1920	2020	2120
<b>Weight (kg)</b> <sup>Note 7</sup>	24	26	27	29	30	32	33	35	36	38	39	40	42	43	45	46

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

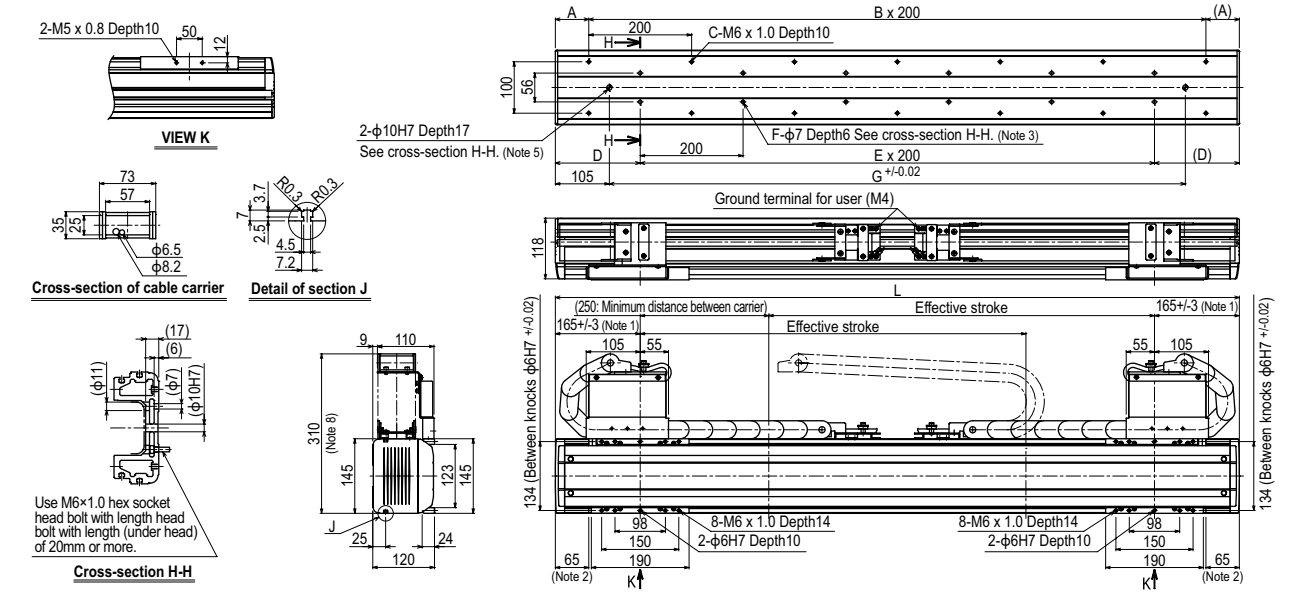
N15D: Horizontal installation / Optional Cable carrier specification



N15D: Wall installation / Standard Cable carrier specification



N15D: Wall installation / Optional Cable carrier specification



# 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> <sup>Note 2</sup> 3L: 3.5m 5L: 5m 10L: 10m 3K/5K/10K (Flexible cable)	<b>Positioner</b> <sup>Note 3</sup> 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 <sup>Note 4</sup>	<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	1902	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.

## 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 height, φ6.5mm hole, φ8.2mm hole.

**Detail of section F**  
 Dimensions: 7mm total width, 2.5mm hole, 3.7mm hole, R1, R0.3.

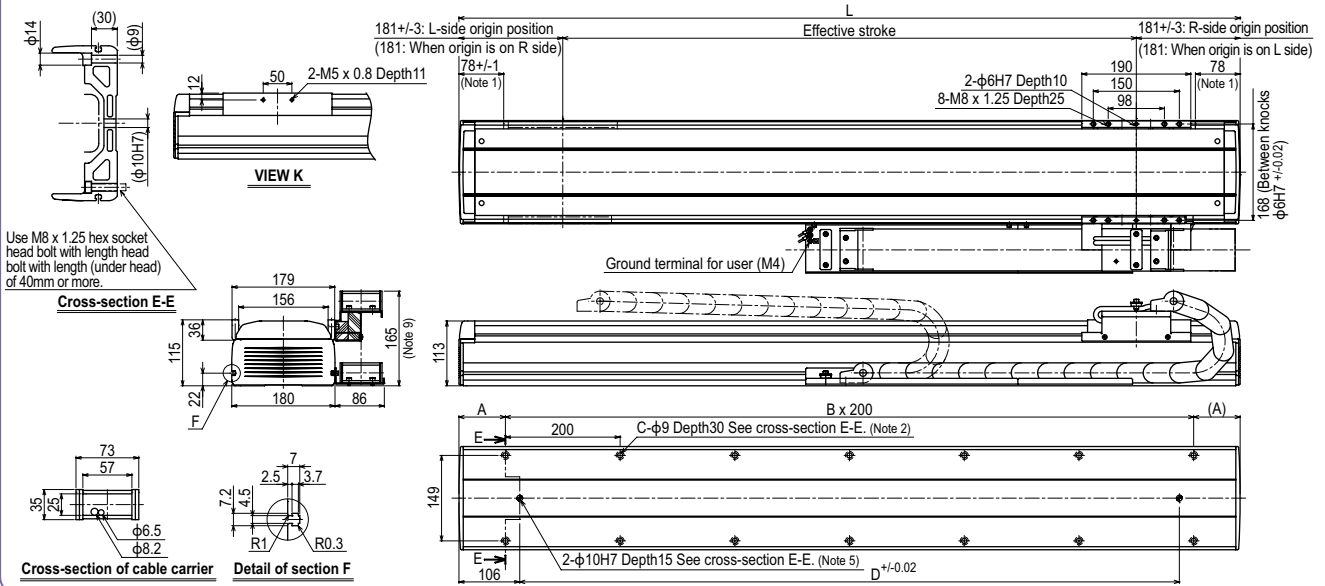
**Main View**  
 Effective stroke L. 181±/3: L-side origin position (181: When origin is on R side). 78±/1 (Note 1). 181±/3: R-side origin position (181: When origin is on L side). 2-φ6H7 Depth10, 8-M8 x 1.25 Depth25. 190mm, 150mm, 98mm, 78mm (Note 1), 168mm (Between knobs φ6H7 +0.02). Ground terminal for user (M4). (Note 7). 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.

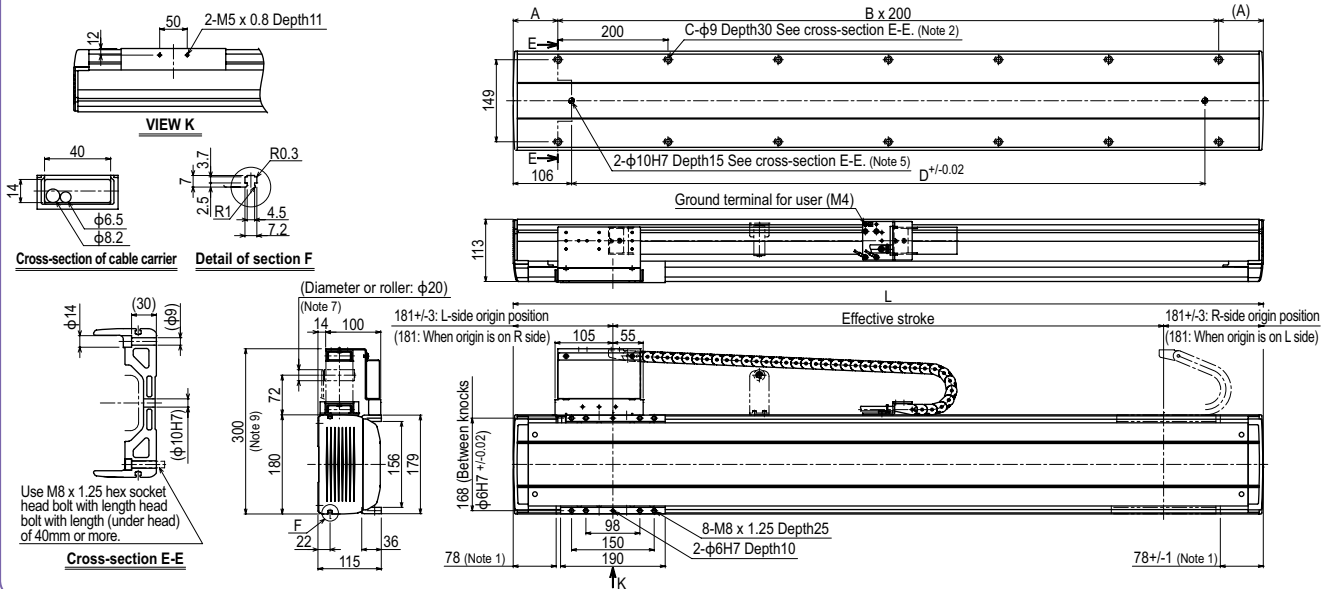
Effective stroke	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500
L	862	962	1062	1162	1262	1362	1462	1562	1662	1762	1862	1962	2062	2162	2262	2362	2462	2562	2662	2762	2862
A	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131	81	131
B	3	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

Articulated robots  
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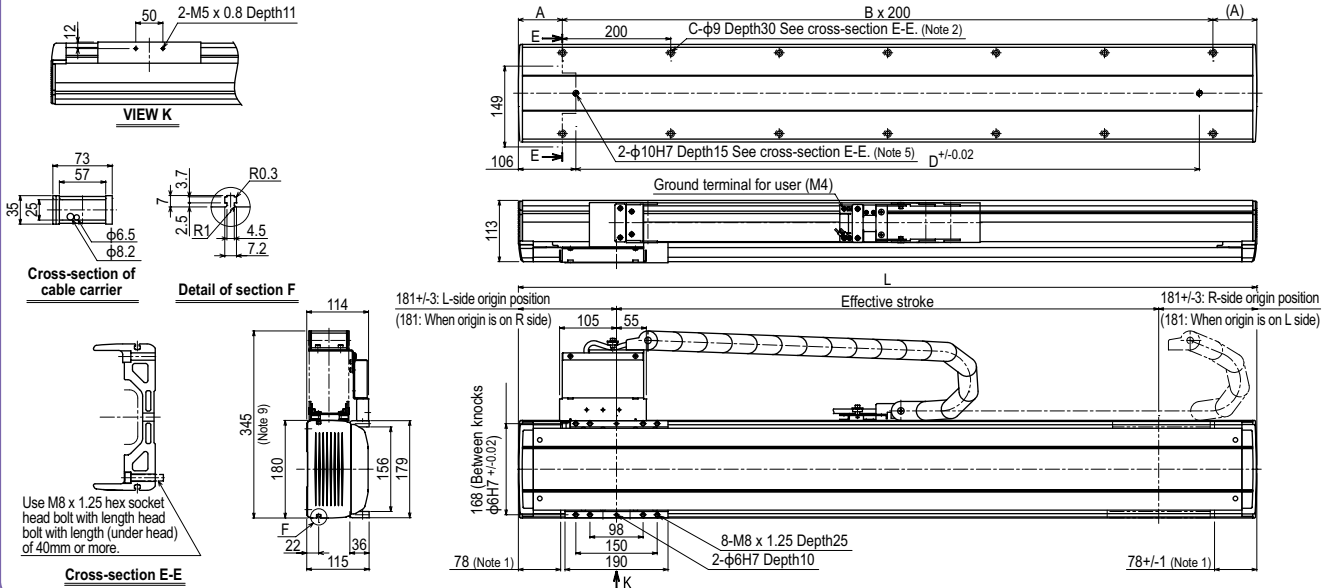
N18: Horizontal installation / Optional Cable carrier specification **RH**



N18: Wall installation / Standard Cable carrier specification **RW**



N18: Wall installation / Optional Cable carrier specification **RW**





# N18D

Double carriage

## Ordering method

<b>N18D - 20</b>							
<b>Model</b>	<b>Lead designation</b>	<b>Installation direction</b>	<b>Cable carrier specification</b>	<b>Option</b>	<b>Stroke</b>	<b>Cable length</b>	<b>Controller</b> <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

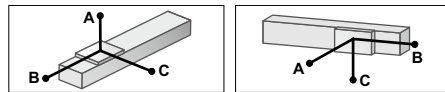
AC servo motor output (W)	400
Repeatability <sup>Note 1</sup> (mm)	+/-0.01
Deceleration mechanism	Ball screw $\phi 20$
Ball screw lead (mm)	20
Maximum speed <sup>Note 2</sup> (mm/sec)	1200
Maximum payload (kg)	80
Rated thrust (N)	339
Stroke (mm)	250 to 2250 (100 pitch)
Overall length (mm)	Stroke+362
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.

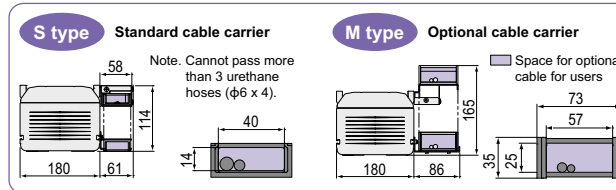
## Allowable overhang<sup>Note</sup>



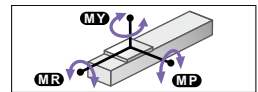
Horizontal installation (Unit: mm)	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)	Wall installation (Unit: mm)		
	A	B	C		A	B	C
Lead 20	30kg 3045	1629	1902	Lead 20	30kg 1928	1553	3045
	50kg 2602	961	1150		50kg 1157	885	2602
	80kg 2193	586	716		80kg 707	509	2193

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



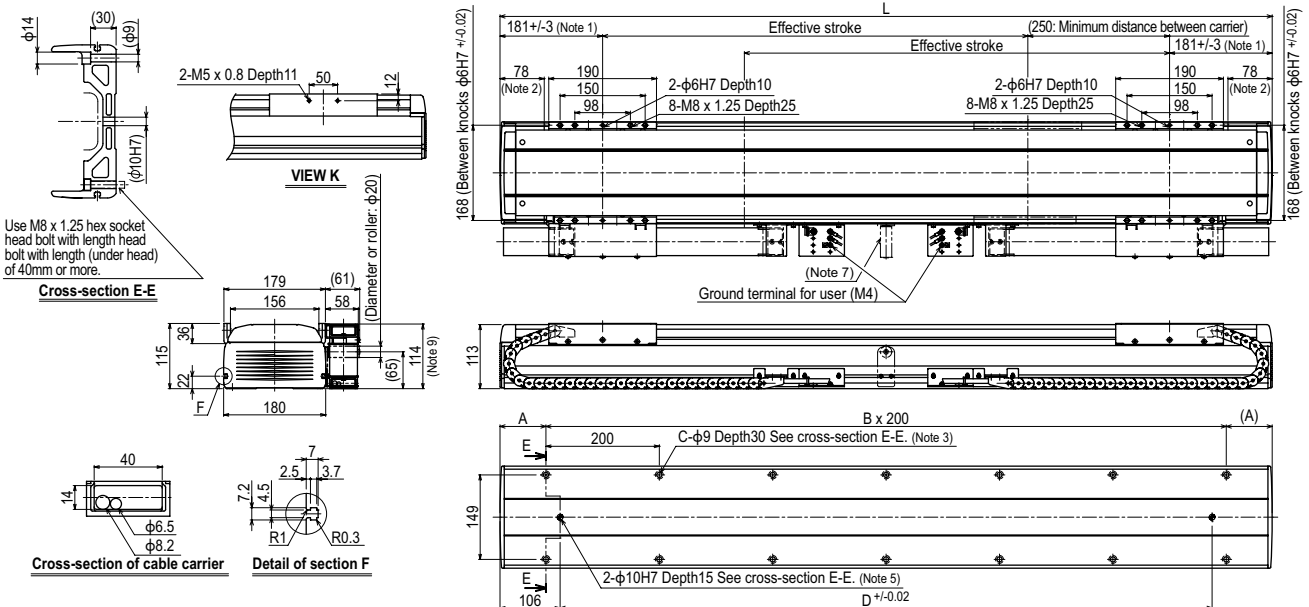
(Unit: N·m)		
MY	MP	MR
1161	1163	1021

## 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



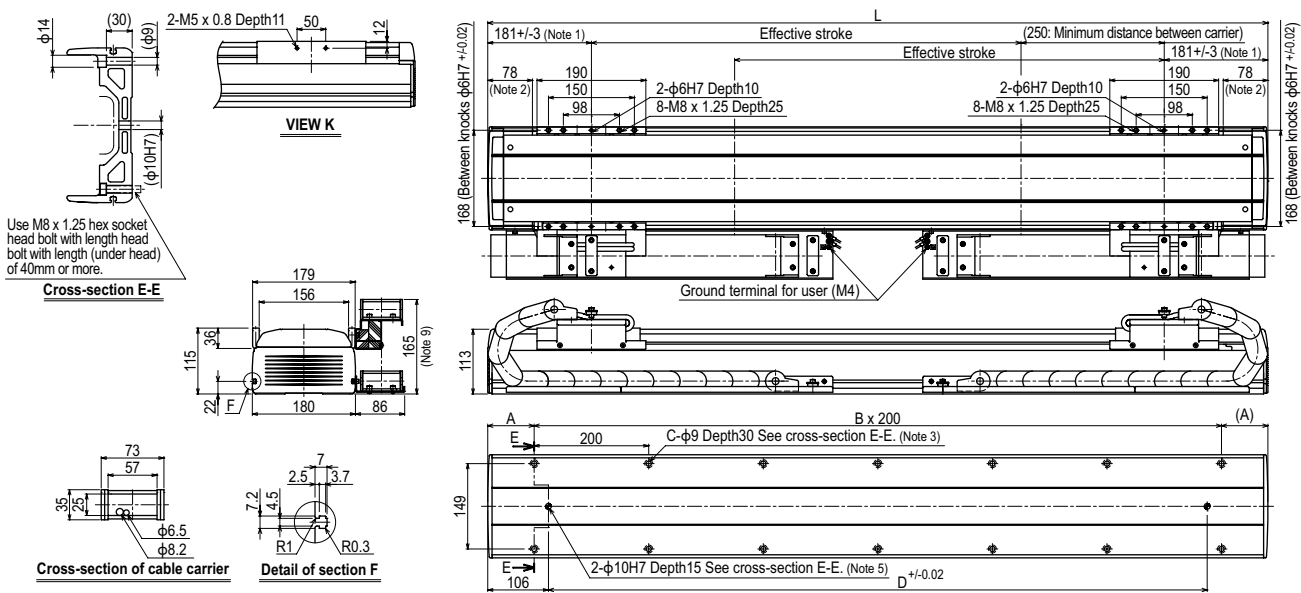
- Note 1. Position of table carriage when searched to the origin.
- Note 2. Stop positions are determined by the mechanical stoppers at both ends.
- Note 3. When using  $\phi 9$  holes for installation, do not use a washer, spring washer, etc. in the main unit.
- Note 4. If the model is a standard cable 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

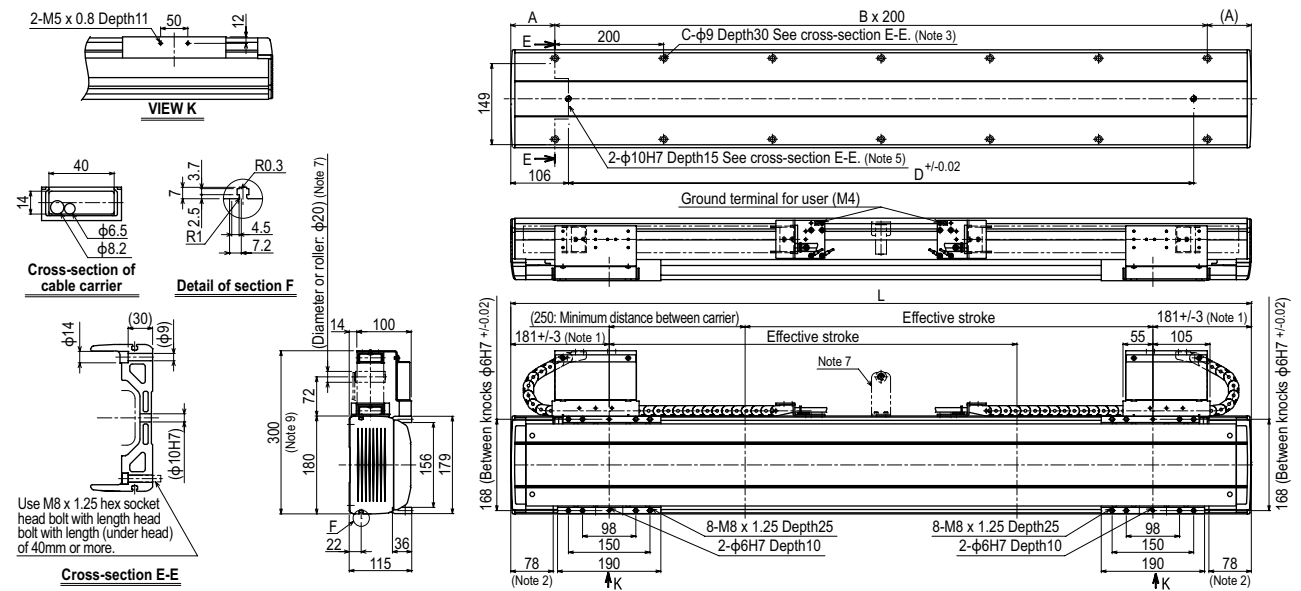


Articulated robots  
YA  
Linear conveyor modules  
LCM100  
Motor-less single axis actuator  
Robonity  
Compact single-axis robots  
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Single-axis robots  
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Linear motor single-axis robots  
PHASER  
Cartesian robots  
XY-X  
SCARA robots  
YK-X  
Pick & place robots  
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CLEAN  
CONTROLLER INFORMATION  
T type  
F type  
GF type  
N type  
BR type

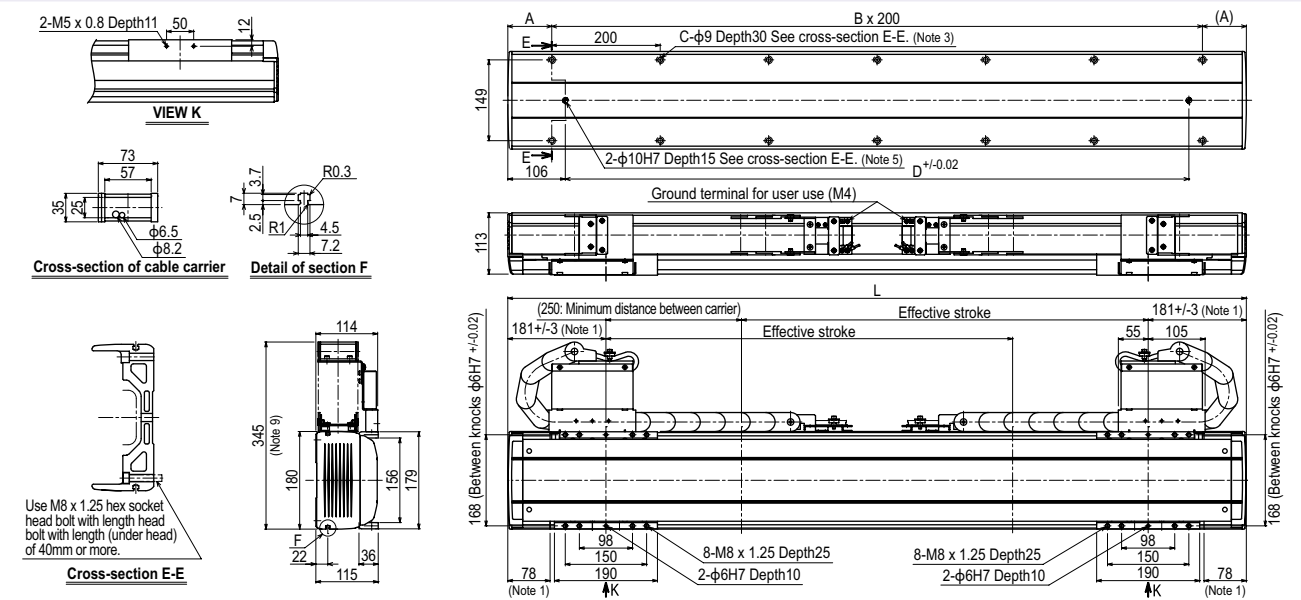
N18D: Horizontal installation / Optional Cable carrier specification



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

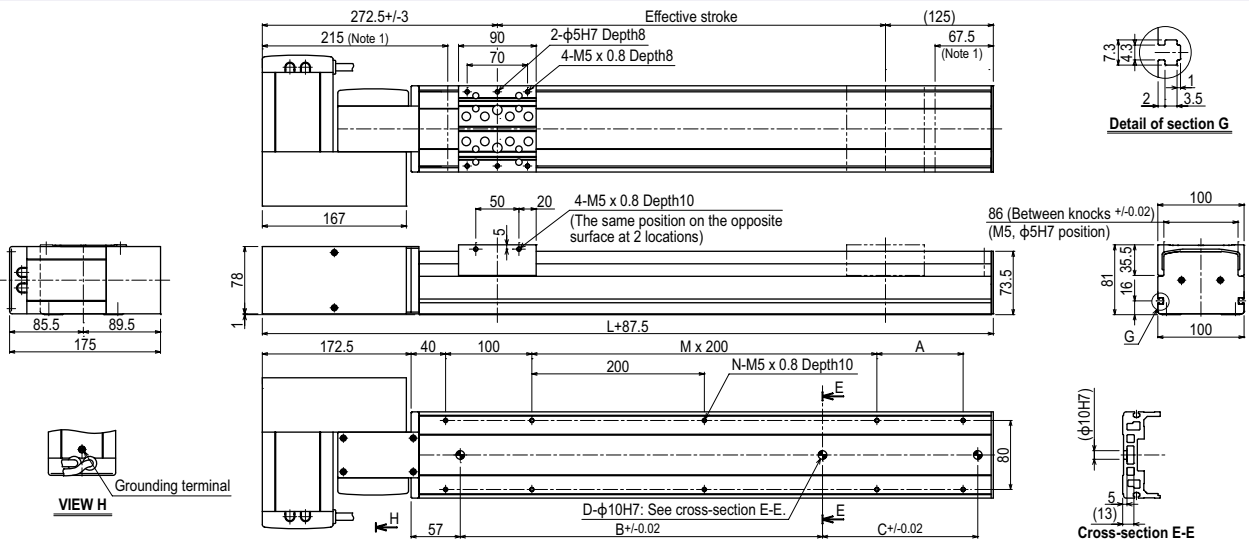
## Controller

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)



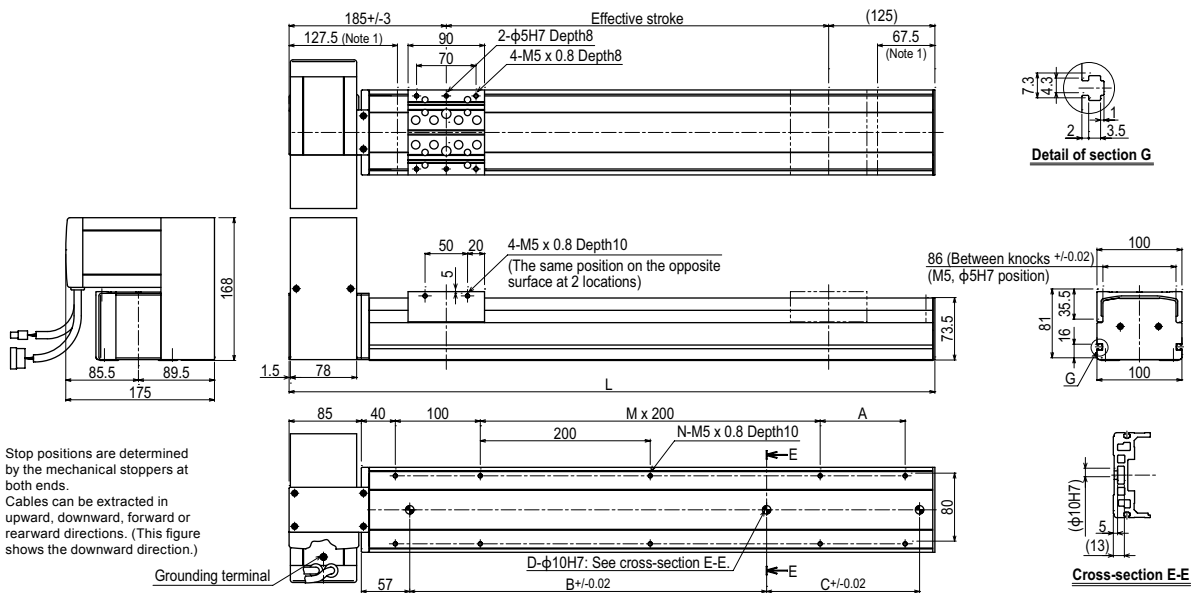
Effective stroke	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350
L	460	510	560	610	660	710	760	810	860	910	960	1010	1060	1110	1160	1210	1260	1310	1360	1410	1460	1510	1560	1610	1660
A	200	50	100	150	200	50	100	150	200	50	100	150	200	50	100	150	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	4	5	5	5	5	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

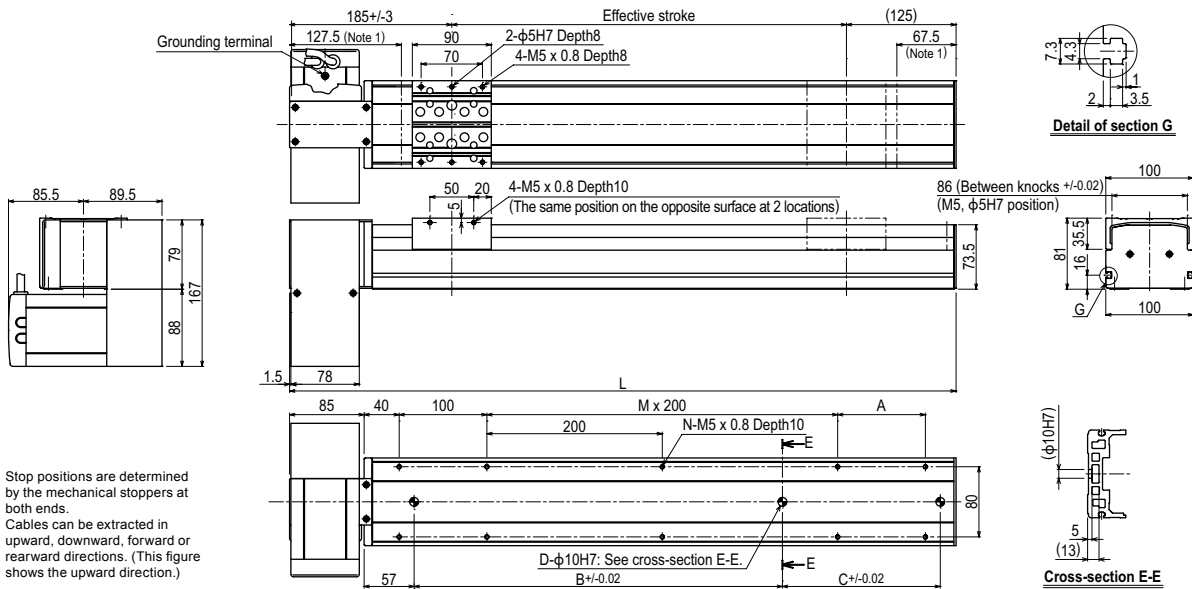
Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the forward direction.)

B10 RU type (Motor rightward, upper position)



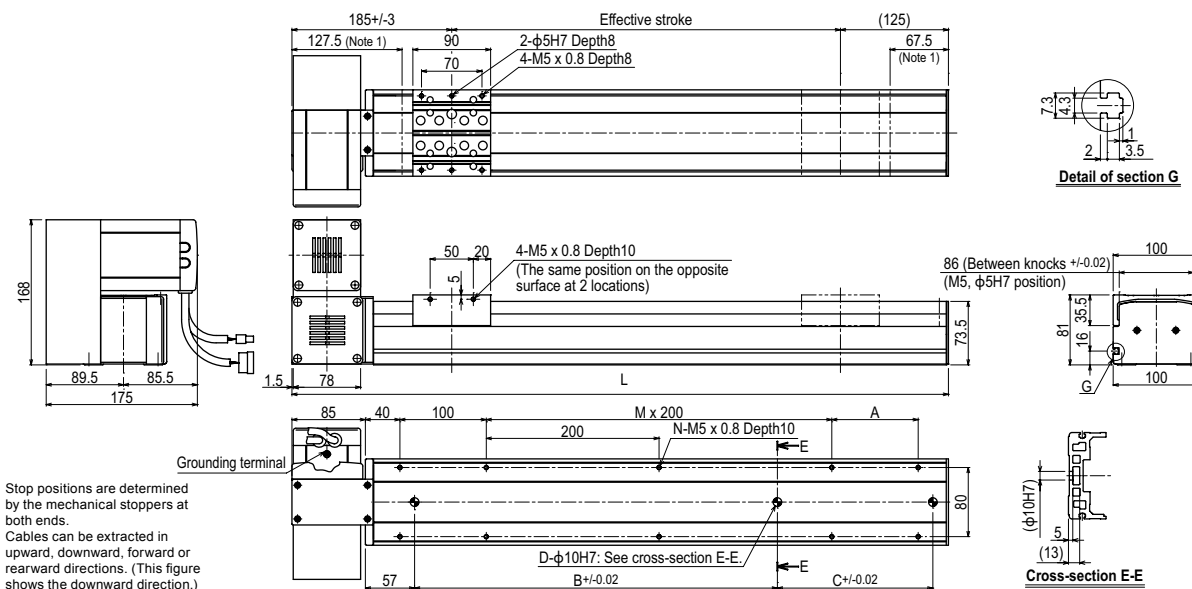
Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the downward direction.)

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

### B14

<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>Driver</b>	<b>Power-supply voltage</b> 2: AC200V	<b>05</b>	<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

<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

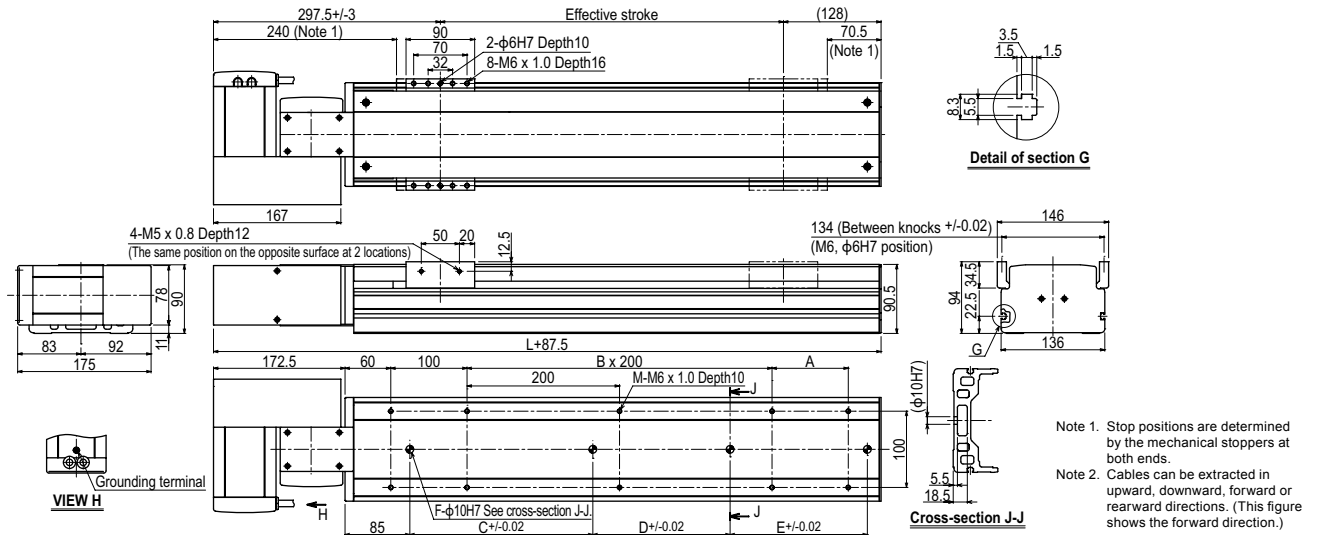
Controller	Operation method
SR1-X05 RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X105 TS-X205	I/O point trace / Remote command
RDV-X205-RBR1	Pulse train control

## 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)



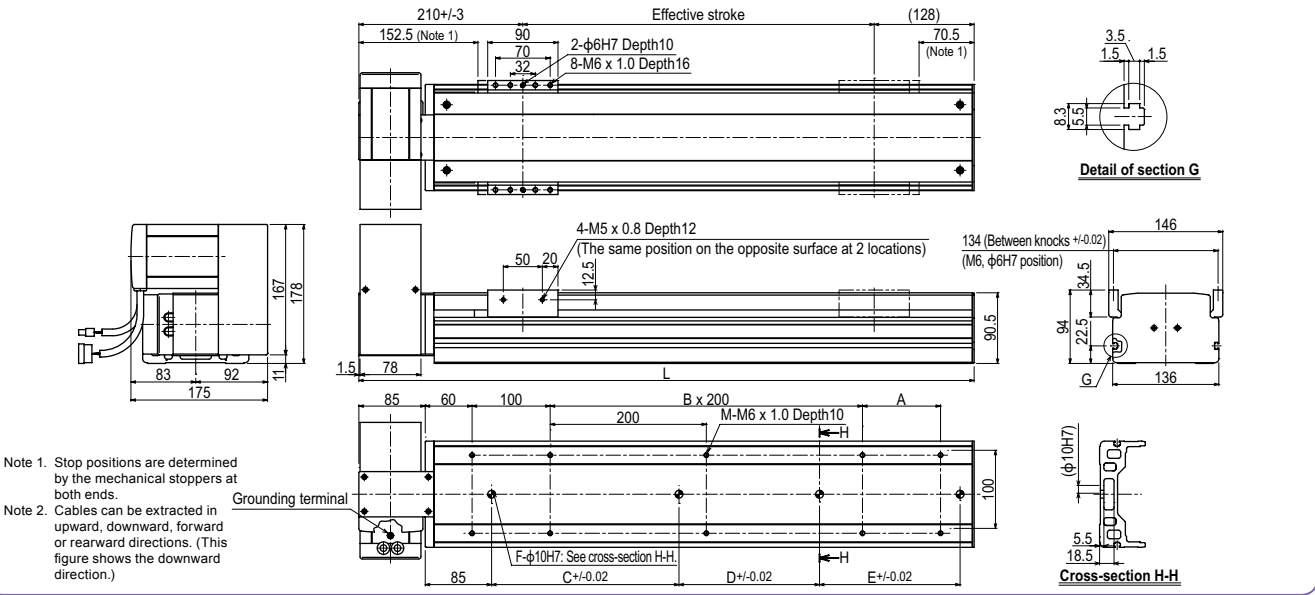
Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the forward direction.)

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	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	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	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	2	2	2	2	2
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

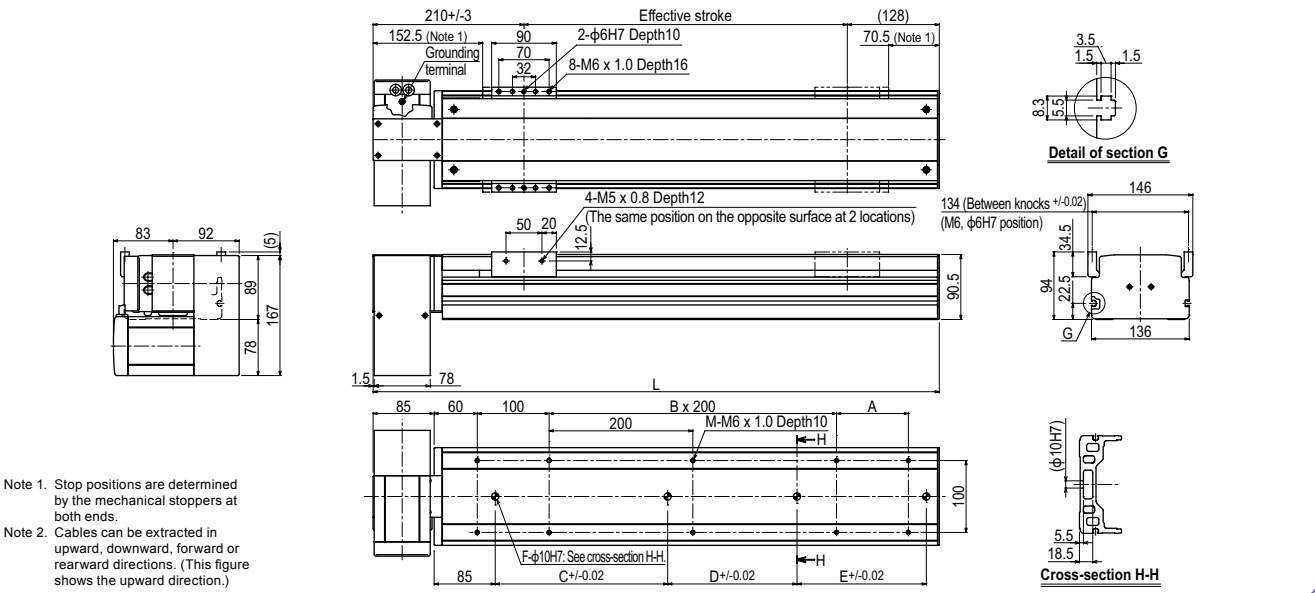
  

Effective stroke	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950	3000	3050	
L	1988	2038	2088	2138	2188	2238	2288	2338	2388	2438	2488	2538	2588	2638	2688	2738	2788	2838	2888	2938	2988	3038	3088	3138	3188	3238	3288	3338	3388	
M	22	22	22	24	24	24	24	26	26	26	26	28	28	28	28	30	30	30	30	32	32	32	32	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	12	13	13	13	13	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	3	3	3	3	3	3	3	3	3	3	3	3	3	3
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	

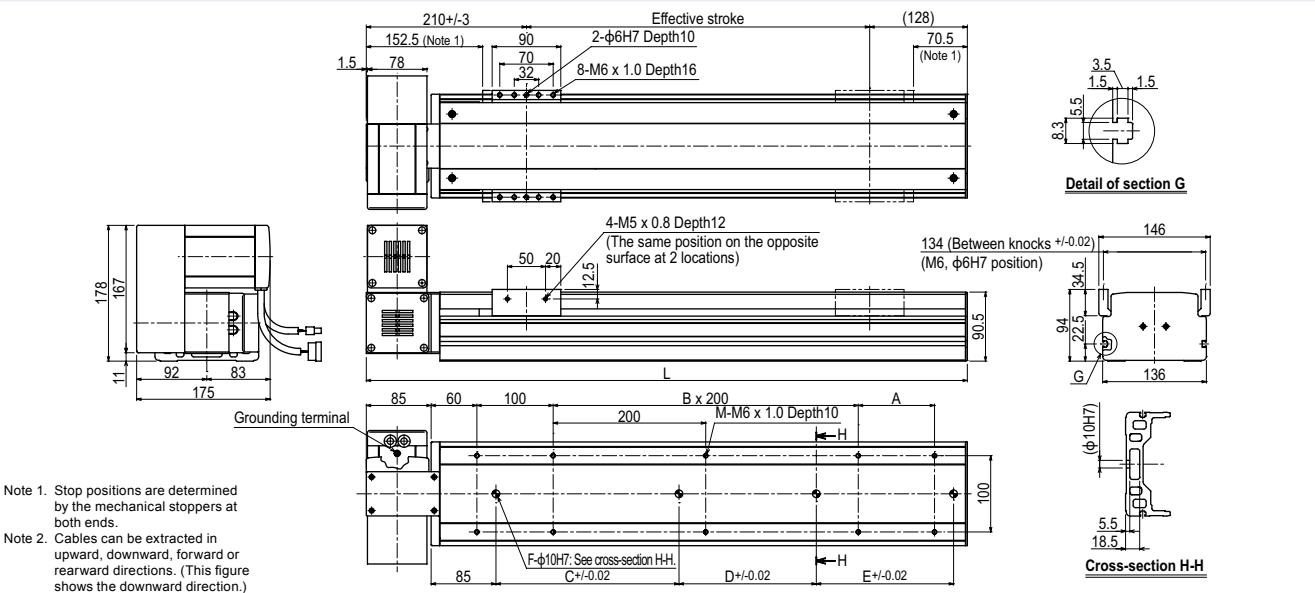
B14 RU type (Motor rightward, upper position)



B14 RD type (Motor rightward, lower position)



B14 LU type (Motor leftward, upper position)



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
T type
F type
GF type
N type
B type



# B14H



## Ordering method

<b>B14H</b>	<b>Model</b>	<b>Motor installation direction</b>	<b>Option</b>	<b>Stroke</b>	<b>Cable length (mm)</b>	<b>TSX</b>	<b>R</b>	<b>LCD monitor</b>	<b>I/O selection</b>	<b>Battery</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	Grease type None: Standard GC: Clean	150 to 3050 (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	Regenerative unit R: With RGT	No entry: None L: With LCD	N: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFIBUS GW: No I/O board <sup>Note 3</sup>	B: With battery (Absolute) N: None (Incremental)
						<b>SR1-X</b>	<b>05</b>	<b>R</b>	<b>I/O selection</b>	<b>Battery</b>
						Controller	Driver: Power capacity 05: 100W or less	Usable for CE No entry: Standard E: CE marking	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>10</b>	<b>RBR1</b>	
						Driver	Power-supply voltage 2: AC200V	Driver: Power capacity 10: 200W 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)	200
Repeatability <sup>Note 1</sup> (mm)	+/-0.04
Belt (mm)	Equivalent to lead 25mm
Maximum speed (mm/sec)	1250 (1875 <sup>Note 2</sup> )
Maximum payload (kg)	30
Stroke (mm)	150 to 3050(100mm pitch)
Overall length (mm)	Motor installation L/R type Stroke+475.5 Another Stroke+388
Maximum dimensions of cross section of main unit (mm)	W146 x H94
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. A regenerative unit is needed if using the SR1-X, TS-X at maximum speeds exceeding 1250mm/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>

	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)		
	A	B	C	A	B	C
5kg	3000	3000	1941	2074	2585	3000
10kg	2742	1697	1064	1087	1236	2071
20kg	2158	867	651	604	561	1512
30kg	1708	590	466	397	336	1106

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
610	555	488

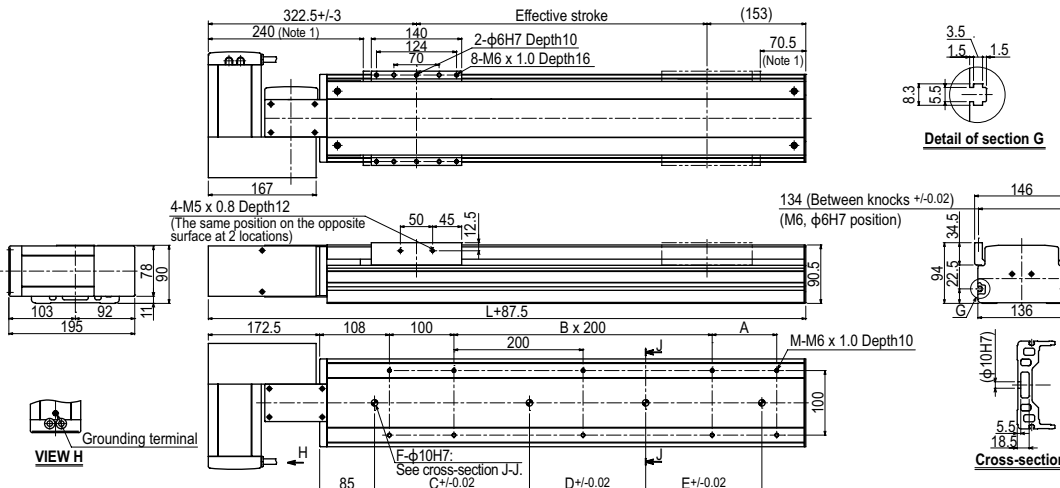
## Controller

Controller	Operation method
SR1-X05 <sup>Note</sup> RCX320 RCX221/222 RCX340	Programming / I/O point trace / Remote command / Operation using RS-232C communication
TS-X105 <sup>Note</sup> TS-X205 <sup>Note</sup>	I/O point trace / Remote command
RDV-X210-RBR1	Pulse train control

Note. A regenerative unit is needed if using the SR1-X, TS-X at maximum speeds exceeding 1250mm/sec.

## Motor installation The line-up consisting of six models of deferent motor installation position as follows.

### B14H R type (Motor rightward, horizontal position)



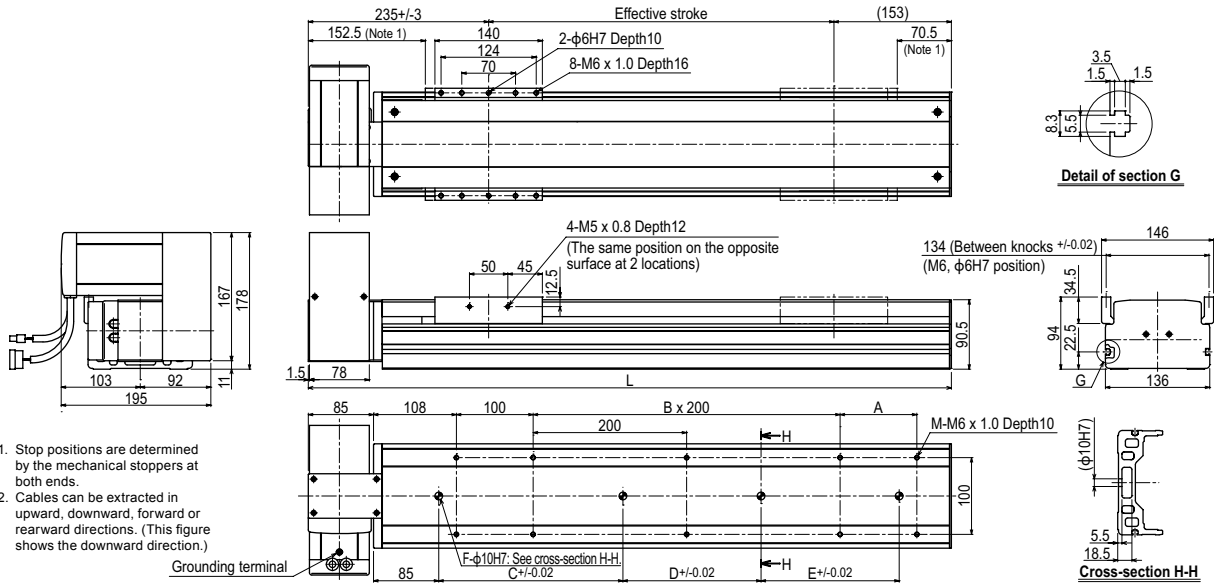
Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Cables can be extracted in upward, downward, forward or rearward directions. (This figure shows the forward direction.)

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	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	1988
M	6	8	8	8	8	10	10	10	12	12	12	12	14	14	14	14	16	16	16	16	16	18	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	4	4	4	4	5	5	5	5	6	6	6	6	7	7	7	7	8	
C	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	1140
D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	240	240	240	420	420	420	600	600
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F	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	3
Weight (kg)	10.9	11.5	12.1	12.7	13.2	13.9	14.4	15.0	15.6	16.2	16.7	17.4	17.9	18.5	19.1	19.7	20.2	20.9	22.0	22.1	22.6	23.3	23.8	24.4	24.9	25.6	26.1	26.8	27.3	27.9

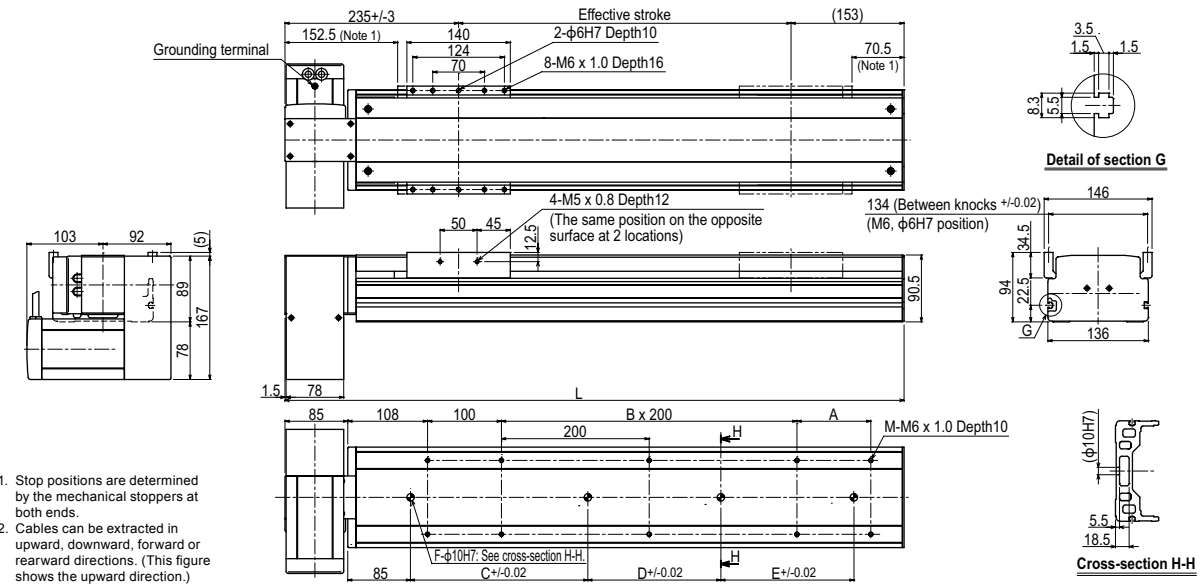
  

Effective stroke	1650	1700	1750	1800	1850	1900	1950	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450	2500	2550	2600	2650	2700	2750	2800	2850	2900	2950	3000	3050	
L	2038	2088	2138	2188	2238	2288	2338	2388	2438	2488	2538	2588	2638	2688	2738	2788	2838	2888	2938	2988	3038	3088	3138	3188	3238	3288	3338	3388	3438	
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	36	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	12	13	13	13	13	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	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	1140	1140
E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	240	240	420	420	420	420	420	600	600	600	780	780	960	
F	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	4	
Weight (kg)	28.4	29.1	29.6	30.3	30.8	31.4	31.9	32.6	33.1	33.8	34.3	35.0	35.5	36.1	36.6	37.3	37.8	38.5	39.0	39.6	40.1	40.8	41.3	42.0	42.5	43.1	43.6	44.3	45.4	

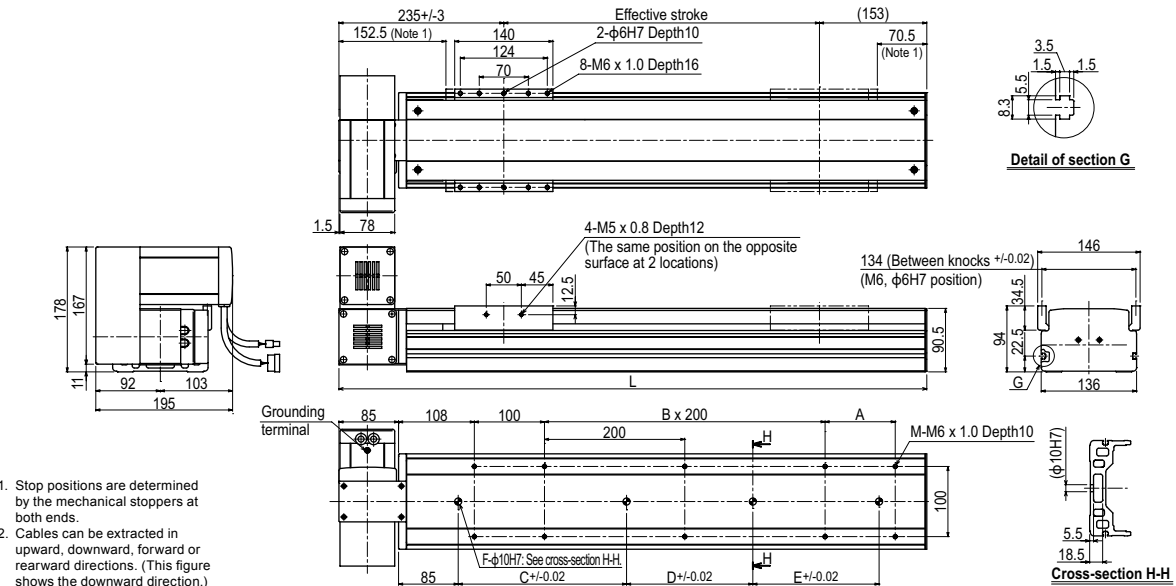
## B14H RU type (Motor rightward, upper position)



## B14H RD type (Motor rightward, lower position)



## B14H LU type (Motor leftward, upper position)



# R5



## Ordering method

### R5

<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>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>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: PROFINET	<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>	

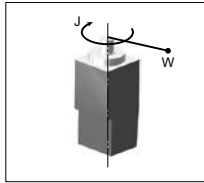
Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable. See P.614 for details on robot cable.  
 Note 2. See P.522 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.66.

## Specifications

<b>AC servo motor output (W)</b>	50
<b>Repeatability (°)</b>	+/-0.0083
<b>Maximum speed (°/sec)</b>	360
<b>Maximum allowable moment inertia (kgm<sup>2</sup>[kgfcm<sup>2</sup>])</b>	0.12 [1.2]
<b>Rated torque (Nm[kgfm])</b>	5.29 [0.54]
<b>Speed reduction ratio</b>	1/50
<b>Rotation range (°)</b>	360
<b>Cable length (m)</b>	Standard: 3.5 / Option: 5.10
<b>Speed reducer type</b>	Harmonic drive
<b>Position detector</b>	Resolvers
<b>Resolution (Pulse/rotation)</b>	16384

## Maximum allowable moment inertia

Payload parameters W (kg)	1	2	3	4	5	6	7	8	9	10
<b>Maximum allowable moment inertia J (kgfcm<sup>2</sup>)</b>	0.12	0.24	0.36	0.48	0.60	0.72	0.84	0.96	1.08	1.20



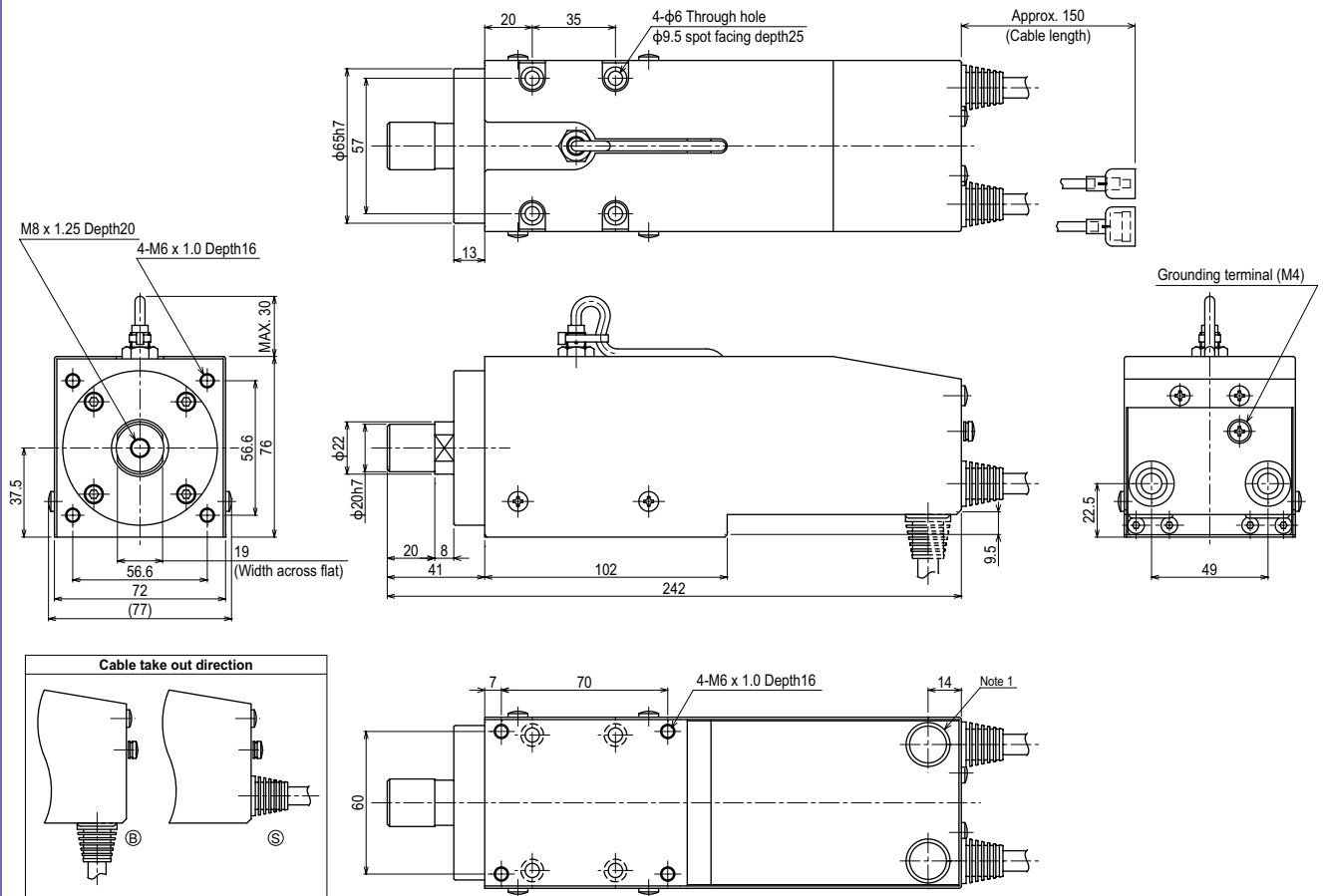
Note. When the weight of a tool or workpiece attached to the shaft R5 is W (kg), its moment of inertia (J) must be smaller than the values shown in the table above. (For example, enter 4kg if W is 3kg and J is 0.48kgf cm sec<sup>2</sup>). Enter the above mass parameter value for the controller, and optimum 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

## R5



**Weight (kg)** 3.0 Note 1. The cable extraction port can be changed.

# 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>	

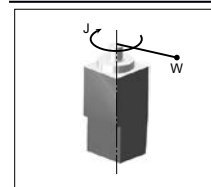
Note 1. The robot cable is standard cable (3L/5L/10L), but can be changed to flexible cable.  
See P.614 for details on robot cable.  
Note 2. See P.522 for DIN rail mounting bracket.  
Note 3. Select this selection when using the gateway function. For details, see P.66.

## 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					



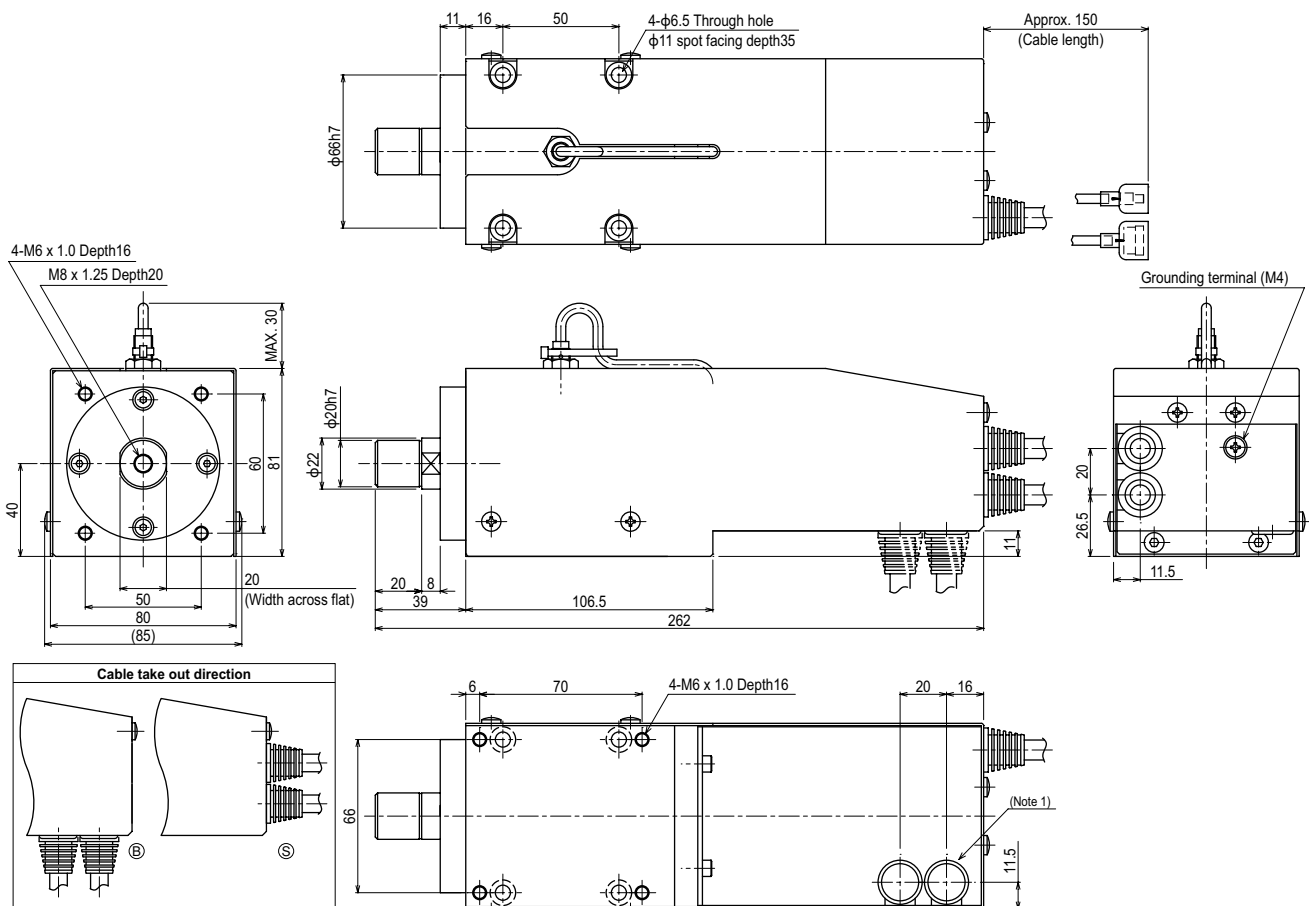
Note. When the weight of a tool or workpiece attached to the shaft R10 is W (kg), its moment of inertia (J) must be smaller than the values shown in the table above. (For example, enter 4kg if W is 3kg and J is 0.99kgf cm sec<sup>2</sup>.) Enter the above mass parameter value for the controller, and 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>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

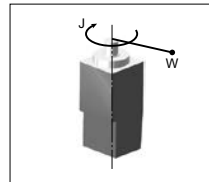
<b>AC servo motor output (W)</b>	200
<b>Repeatability (°)</b>	+/-0.0083
<b>Maximum speed (°/sec)</b>	360
<b>Maximum allowable moment inertia (kgm<sup>2</sup>[kgfcm<sup>2</sup>])</b>	1.83 [18.7]
<b>Rated torque (Nm[kgfm])</b>	21.46 [2.19]
<b>Speed reduction ratio</b>	1/50
<b>Rotation range (°)</b>	360
<b>Cable length (m)</b>	Standard: 3.5 / Option: 5,10
<b>Speed reducer type</b>	Harmonic drive
<b>Position detector</b>	-
<b>Resolution (Pulse/rotation)</b>	16384

## Maximum allowable moment inertia

Payload parameters W (kg)	1	2	3	4	5	6	7	8	9	10
<b>Maximum allowable moment inertia J (kgfcm<sup>2</sup>)</b>	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
<b>Maximum allowable moment inertia J (kgfcm<sup>2</sup>)</b>	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

