

# TRANSERVO Series

Product Lineup

## CLOSED LOOP STEPPING MOTOR SINGLE-AXIS ROBOTS

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



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

P.490

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

Applicable models:

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



TS-S2 TS-SH

Note. SG07 is only applicable to TS-SH.

### Robot driver TS-SD

P.500

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

Applicable models:

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



TS-SD

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

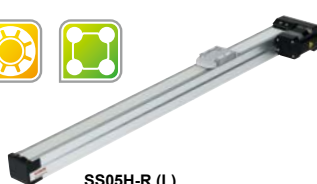
# Newly developed vector control method provides functions and performance similar to servomotors.

## SS type (Slider type)

**Straight model** P.130



**Space-saving model (Side mounted motor model)** P.131



## SG type (Slider type)

**Straight model** P.136



## SR type (Rod type standard)

**Straight model** P.137



**Space-saving model (Side mounted motor model)** P.138



## SR type (Rod type with support guide)

**Straight model** P.140



**Space-saving model (Side mounted motor model)** P.141



Type	Model	Size (mm) <sup>Note 1</sup>	Lead (mm)	Maximum payload (kg) <sup>Note 2</sup>		Maximum speed (mm/sec.) <sup>Note 3</sup>	Stroke (mm)	Page
				Horizontal	Vertical			
SS type (Slider type) Straight model/ Space-saving model	SS04-S SS04-R (L)	W49 × H59	12	2	1	600	50 to 400	SS04-S: P.130
			6	4	2	300		
			2	6	4	100		
	SS05-S SS05-R (L)	W55 × H56	20	4	-	1000	50 to 800	SS05-S: P.132
			12	6	1	600		SS05-R (L): P.133
			6	10	2	300		
SS05H-S SS05H-R (L)	W55 × H56	20	6	-	1000	50 to 800	SS05H-S: P.134	
		12	8	2	600 (Horizontal) 500 (Vertical)		SS05H-R (L): P.135	
SG type (Slider type)	SG07	W65 × H64	20	36	4	1200	50 to 800	SG07: P.136
			12	43	12	800		
			6	46	20	350		
SR type (Rod type standard) Straight model/ Space-saving model	SR03-S SR03-R (L) SR03-U	W48 × H56.5	12	10	4	500	50 to 200	SR03-S: P.137
			6	20	8	250		SR03-R (L): P.138
								SR03-U: P.139
	SR04-S SR04-R (L)	W48 × H58	12	25	5	500	50 to 300	SR04-S: P.142
			6	40	12	250		SR04-R (L): P.143
			2	45	25	80		
	SR05-S SR05-R (L)	W56.4 × H71	12	50	10		50 to 300	SR05-S: P.146
			6	55	20	150		SR05-R (L): P.147
			2	60	30	50		
SR type (Rod type with support guide) Straight model/ Space-saving model	SRD03-S SRD03-U	W105 × H56.5	12	10	3.5	500	50 to 200	SRD03-S: P.140
			6	20	7.5	250		SRD03-U: P.141
			12	25	4	500		SRD04-S: P.144
	SRD04-S SRD04-U	W135 × H58	6	40	11	250	50 to 300	SRD04-S: P.144
			2	45	24	80		SRD04-U: P.145
			12	50	8.5	300		SRD05-S: P.148
	SRD05-S SRD05-U	W157 × H71	6	55	18.5	150	50 to 300	SRD05-S: P.148
			2	60	28.5	50		SRD05-U: P.149

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

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

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

■ Allowable ambient temperature for robot installation

SS/SR type 0 to 40 °C

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

### STH type (Slide table type)

Straight model

P.150

Space-saving model

P.151



Type	Model	Size (mm) <sup>Note 1</sup>	Lead (mm)	Maximum payload (kg) <sup>Note 2</sup>		Maximum speed (mm/sec.) <sup>Note 3</sup>	Stroke (mm)	Page
				Horizontal	Vertical			
STH type (Slide table type) Straight model/ Space-saving model	STH04-S	W45 × H46	5	6	2	200	50 to 100	STH04-S: P.150
	STH04-R (L) <sup>Note 4</sup>	W73 × H51	10	4	1	400		STH04-R (L): P.151
	STH06	W61 × H65	8	9	2	150	50 to 150	STH06: P.152
	STH06-R (L)	W106 × H70	16	6	4	400		STH06-R (L): P.153

### RF type (Rotary type)

Standard model

P.154

High rigidity model

P.155



Type	Model	Height (mm)	Torque type	Rotation torque (N · m)	Maximum pushing torque (N · m)	Maximum speed (mm/sec.) <sup>Note 3</sup>	Rotation range (°)	Page
RF type (Rotary type) Standard/High rigidity	RF02-N	42 (Standard)	N: Standard	0.22	0.11	420	310 (RF02-N)	RF02-N: P.154
	RF02-S	49 (High rigidity)	H: High torque	0.32	0.16	280	360 (RF02-S)	RF02-S: P.157
	RF03-N	53 (Standard)	N: Standard	0.8	0.4	420	320 (RF03-N)	RF03-N: P.158
	RF03-S	62 (High rigidity)	H: High torque	1.2	0.6	280	360 (RF03-S)	RF03-S: P.161
	RF04-N	68 (Standard)	N: Standard	6.6	3.3	420	320 (RF04-N)	RF04-N: P.162
	RF04-S	78 (High rigidity)	H: High torque	10	5	280	360 (RF04-S)	RF04-S: P.165

### BD type (Belt type)

Straight model

P.166



Type	Model	Size (mm) <sup>Note 1</sup>	Lead (mm)	Maximum payload (kg) <sup>Note 2</sup>		Maximum speed (mm/sec.) <sup>Note 3</sup>	Stroke (mm)	Page
				Horizontal	Vertical			
BD type (Belt type)	BD04	W40 × H40	48	1	-	1100	300 to 1000	BD04: P.166
	BD05	W58 × H48	48	5	-	1400	300 to 2000	BD05: P.167
	BD07	W70 × H60	48	14	-	1500	300 to 2000	BD07: P.168

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

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

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

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

■ Allowable ambient temperature for robot installation

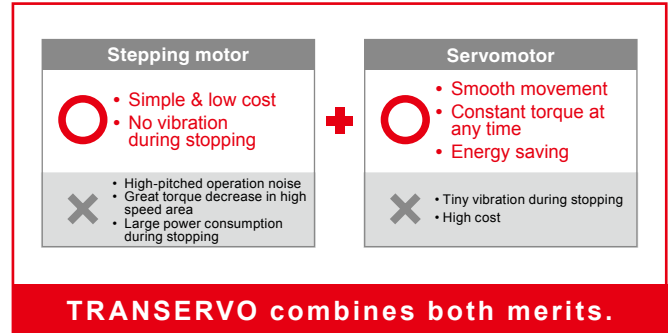
STH/RF/BD type 5 to 40 °C

# Common features of TRANSRVO Series

## POINT 1

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

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



### Energy saving

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

### No hunting during stopping

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

## POINT 2

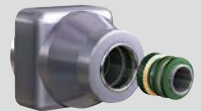
### Closed loop control using excellent environment resistant resolver

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



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

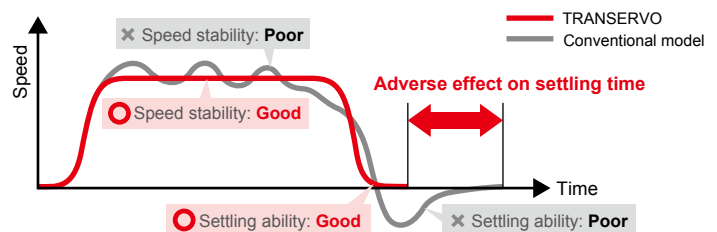
The resolver has **high environment resistance and low failure ratio**, and is used in a wide variety of fields aiming at reliability such as automobile or aircraft industry.



## POINT 3

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

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



## POINT 4

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

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

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

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



TS-SH

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

**POINT**

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



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

**Conventional model**

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

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

**TRANSERVO (SS type)**

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

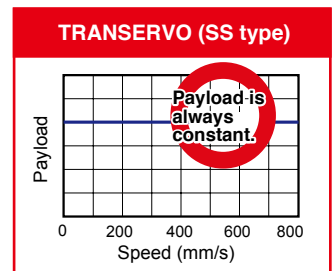
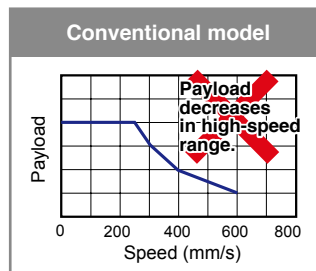
Differential slip is small due to its structure and service life is long.

**POINT**

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

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

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



**SG type (Slider type)**

**POINT**

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

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

**SS05H**

Maximum payload 12 kg

**SG07**

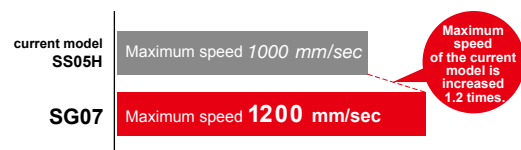
Maximum payload 46 kg

Red arrow pointing right: **Payload is increased about 4 times.**

**POINT**

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

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



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

**POINT**

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

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

**Maintenance interval is greatly extended.**

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

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

**Highly reliable resolver is used.**

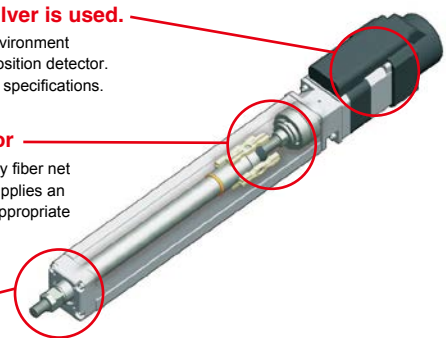
A resolver with excellent environment resistance is used for the position detector. All models can select brake specifications.

**Ball screw lubricator**

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

**Laminated type contact scraper**

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



## Environment-friendly lubrication system

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

## Prevention of foreign object entry

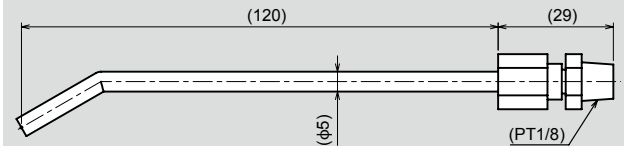
The dual-layer scraper is in contact with the front of the rod to ensure excellent fine contaminant particle removal performance. The scraper removes fine contaminant particles sticking to the rod through multi steps to prevent them from entering the inside and troubles caused by foreign objects. Additionally,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

### Tip nozzle for grease application

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

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

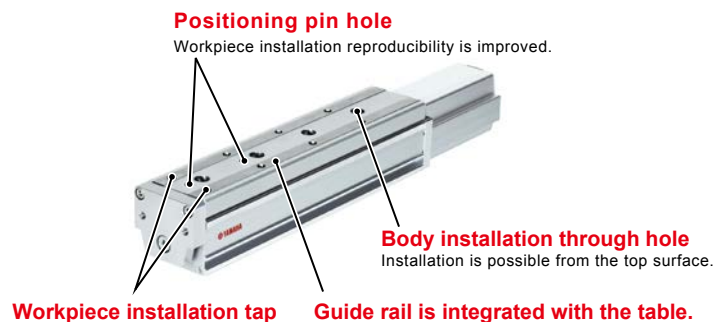


## STH type (Slide table type) Straight model/Space-saving model

### POINT

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

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

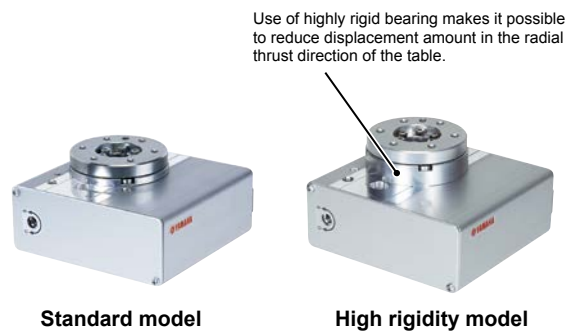


## RF type (Rotary type) Standard model/High rigidity model

### POINT

### Rotation axis model, first in TRANSERVO series

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



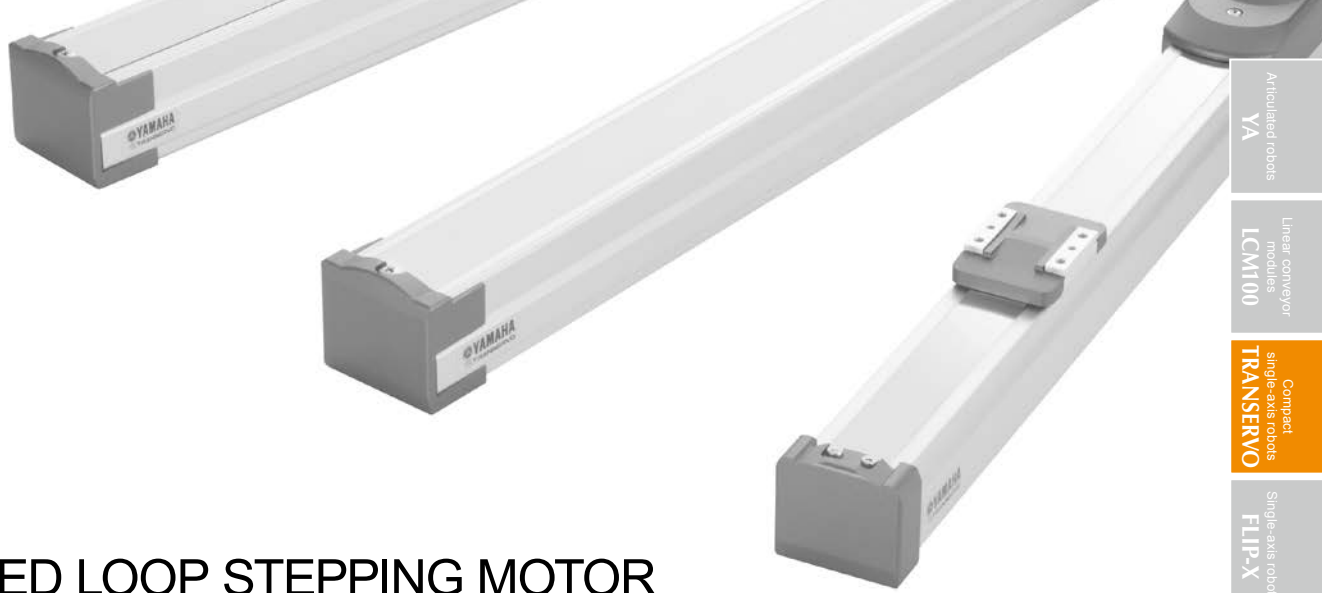
## BD type (Belt type) Straight model

### POINT

### Belt type applicable to long stroke

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





## CLOSED LOOP STEPPING MOTOR SINGLE-AXIS ROBOTS

# TRANSERVO SERIES

- Articulated robots  
YA
- Linear conveyor modules  
LCM100
- Compact single-axis robots  
TRANSERVO
- 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

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# TRANSERVO SPECIFICATION SHEET

Type	Model	Size (mm) <sup>Note 1</sup>	Lead (mm)	Maximum payload (kg) <sup>Note 2</sup>		Maximum speed (mm/sec) <sup>Note 3</sup>	Stroke (mm)	Detailed info page	
				Horizontal	Vertical				
SS type (Slide type) Straight model/ Space-saving model	SS04-S SS04-R (L)	W49 × H59	12	2	1	600	50 to 400	P.130 - P.131	
			6	4	2	300			
			2	6	4	100			
	SS05-S SS05-R (L)	W55 × H56	20	4	-	1000	50 to 800	P.132 - P.133	
			12	6	1	600			
			6	10	2	300			
SS05H-S SS05H-R (L)	W55 × H56	W55 × H56	20	6	-	1000	50 to 800	P.134 - P.135	
			12	8	2	600 (Horizontal) 500 (Vertical)			
			6	12	4	300 (Horizontal) 250 (Vertical)			
SG type (Slide type)	SG07	W65 × H64	20	36	4	1200	50 to 800	P.136	
			12	43	12	800			
			6	46	20	350			
SR Type (Rod type) Straight model/ Space-saving model	SR03-S SR03-R (L) SR03-U	W48 × H56.5	12	10	4	500	50 to 200	P.137 - P.139	
			6	20	8	250			
			12	25	5	500			
	SR04-S SR04-R (L)	W48 × H58	W48 × H58	6	40	12	250	50 to 300	P.142 - P.143
				2	45	25	80		
				12	50	10	300		
SR05-S SR05-R (L)	W56.4 × H71	W56.4 × H71	6	55	20	150	50 to 300	P.146 - P.147	
			2	60	30	50			
			12	10	3.5	500			
SR Type (Rod type with support guide) Straight model/ Space-saving model	SRD03-S SRD03-U	W105 × H56.5	6	20	7.5	250	50 to 200	P.140 - P.141	
			12	25	4	500			
			6	40	11	250			
	SRD04-S SRD04-U	W135 × H58	W135 × H58	2	45	24	80	50 to 300	P.144 - P.145
				12	50	8.5	300		
				6	55	18.5	150		
SRD05-S SRD05-U	W157 × H71	W157 × H71	2	60	28.5	50	50 to 300	P.148 - P.149	
			6	55	18.5	150			
			12	25	4	500			
STH Type (Slide table type) Straight model/ Space-saving model	STH04-S STH04-R (L) <sup>Note 4</sup>	W45 × H46 W73 × H51	5	6	2	200	50 to 100	P.150 - P.151	
			10	4	1	400			
	STH06	W61 × H65 W106 × H70	8	9	2	150	50 to 150	P.152 - P.153	
			16	6	4	400			

Type	Model	High (mm)	Torque type	Rotational torque (N · m)	Maximum pushing torque (N · m)	Maximum speed (mm/sec) <sup>Note 3</sup>	Rotation range (°)	Detailed info page
RF Type (Rotary type) Standard model/ High rigidity model	RF02-N RF02-S	42 (Standard)	N:Standard	0.22	0.11	420	310 (RF02-N)	P.154 - P.157
		49 (High rigidity)	H:High torque	0.32	0.16	280	360 (RF02-S)	
	RF03-N RF03-S	53 (Standard)	N:Standard	0.8	0.4	420	320 (RF03-N)	P.158 - P.161
		62 (High rigidity)	H:High torque	1.2	0.6	280	360 (RF03-S)	
	RF04-N RF04-S	68 (Standard) 78 (High rigidity)	N:Standard	6.6	3.3	420	320 (RF04-N)	P.162 - P.165
			H:High torque	10	5	280	360 (RF04-S)	

Type	Model	Size (mm) <sup>Note 1</sup>	Lead (mm)	Maximum payload(kg) <sup>Note 2</sup>		Maximum speed (mm/sec) <sup>Note 3</sup>	Stroke (mm)	Detailed info page
				Horizontal	Vertical			
BD Type (Belt type)	BD04	W40 × H40	48	1	-	1100	300 to 1000	P.166
	BD05	W58 × H48	48	5	-	1400	300 to 2000	P.167
	BD07	W70 × H60	48	14	-	1500	300 to 2000	P.168

Note 1. The size shows approximate maximum cross sectional size.  
 Note 2. The payload may vary depending on the operation speed. For details, refer to the detailed page of relevant model.  
 Note 3. The maximum speed may vary depending on the transfer weight or stroke length. For details, refer to the detailed page of relevant model.  
 Note 4. STH04-R (L) with 50-stroke and brake is not supported.

### ⚠ Precautions for use

- **Handling**  
Fully understand the contents stated in the "TRANSERVO User's Manual" and strictly observe the handling precautions during operation.
- **Allowable installation ambient temperature**  
[SS/SR type] 0 to 40 °C  
[STH/RF/BD type] 5 to 40 °C

## SR/SRD/STH type Speed vs. payload table

### SR03

Horizontal			Lead 12			Lead 6		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
10	450	90	20	225	90	20	225	90
5	500	100	15	237.5	95	10	250	100

Vertical			Lead 12			Lead 6		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
4	300	60	8	150	60	8	150	60
2	432	86	5	200	80	2	250	100
1	500	100	2	250	100	2	250	100

### SRD03

Horizontal			Lead 12			Lead 6		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
10	450	90	20	225	90	20	225	90
5	500	100	15	237.5	95	10	250	100

Vertical			Lead 12			Lead 6		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
3.5	300	60	7.5	150	60	7.5	150	60
1.5	432	86	4.5	200	80	4.5	200	80
0.5	500	100	1.5	250	100	1.5	250	100

### SR04

Horizontal			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
25	320	64	40	200	80	45	80	100	45	80	100
20	363	72	30	225	90	30	225	90	30	225	90
15	407	81	20	250	100	20	250	100	20	250	100
5	500	100	5	500	100	5	500	100	5	500	100

Vertical			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
5	200	40	12	125	50	25	60	75	24	60	75
2	350	70	5	200	80	5	80	100	14	70	87
1	500	100	2	250	100	2	250	100	4	80	100

### SRD04

Horizontal			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
25	320	64	40	200	80	45	80	100	45	80	100
20	363	72	30	225	90	30	225	90	30	225	90
15	407	81	20	250	100	20	250	100	20	250	100
5	500	100	5	500	100	5	500	100	5	500	100

Vertical			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
4	200	40	11	120	48	24	60	75	24	60	75
3	250	50	4	200	80	14	70	87	14	70	87
0.5	500	100	1	250	100	4	80	100	4	80	100

### SR05

Horizontal			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
50	168	56	55	135	90	60	50	100	60	50	100
40	198	66	40	150	100	40	150	100	40	150	100
30	249	83	30	249	83	30	249	83	30	249	83
20	300	100	20	300	100	20	300	100	20	300	100

Vertical			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
10	69	23	20	48	32	30	30	60	5	30	60
5	168	56	15	75	50	5	50	100	5	50	100
1	300	100	2	150	100	2	150	100	2	150	100

### SRD05

Horizontal			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
50	168	56	55	135	90	60	50	100	60	50	100
40	198	66	40	150	100	40	150	100	40	150	100
30	249	83	30	249	83	30	249	83	30	249	83
20	300	100	20	300	100	20	300	100	20	300	100

Vertical			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
8.5	90	30	18.5	48	32	28.5	30	60	28.5	30	60
5.5	138	46	8.5	102	68	5	50	100	5	50	100
0.5	300	100	0.5	150	100	0.5	150	100	0.5	150	100

### STH04

Horizontal			Lead 10			Lead 5		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
4	400	100	6	200	100	6	200	100
2	400	100	3	200	100	3	200	100
1	400	100	1	200	100	1	200	100

Vertical			Lead 10			Lead 5		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
1	220	62	2	150	75	2	150	75
0.75	220	62	1	150	75	1	150	75
0.3	350	100	0.5	200	100	0.5	200	100

### STH06

Horizontal			Lead 16			Lead 8		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
6	400	100	9	150	100	9	150	100
3	400	100	5	150	100	5	150	100
1	400	100	1	150	100	1	150	100

Vertical			Lead 16			Lead 8		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
2	200	80	4	100	66	4	100	66
1.5	200	80	3	100	66	3	100	66
1	250	100	2	140	93	2	140	93
			1	150	100			



# Robot ordering method description

In the order format for the YAMAHA single-axis robots TRANSERVO series, the notation (letters/numbers) for the mechanical section is shown linked to the controller section notation.

## [Example]

### ● Mechanical ▶ SS05

- Lead ▷ 6mm
- Model ▷ Straight
- Brake ▷ Yes
- Origin position ▷ Standard
- Grease ▷ Standard
- Stroke ▷ 600mm
- Cable length ▷ 1m

### ● Controller ▶ TS-S2

- Input /Output selection ▷ NPN

### ● Ordering Method

**SS05-06SB-NN-600-1K-S2NP**

Mechanical section

Controller section

To find detailed controller information see the controller page.

TS-S2 ▶ **P.490**, TS-SH ▶ **P.490**, TS-SD ▶ **P.500**

### ● SS type / SG type (Slider type)

Model	Lead	Model	Brake	Origin position	Grease option	Stroke	Cable length
SS04	02 2mm	S Straight model	N With no brake	N Standard	N Standard grease		1K 1m
SS05	06 6mm	R Space-saving model (motor installed on right)	B With brake	Z No-motor side	C Clean room grease		3K 3m
SS05H	12 12mm						5K 5m
SG07	20 20mm	L Space-saving model (motor installed on left)					10K 10m

### ● SR type (Rod type)

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
SR03	02 2mm	S Straight model	N With no brake	N Standard	N No plate		1K 1m
SRD03	06 6mm	R Space-saving model (motor installed on right)	B With brake	Z No-motor side	H With plate		3K 3m
SR04	12 12mm				V With flange		5K 5m
SRD04		L Space-saving model (motor installed on left)					10K 10m
SR05							
SRD05		U Space-saving model (motor installed on top)					

### ● STH Type (Slide table type)

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
STH04	05 5mm	S Straight model	N With no brake	N Standard	N No plate		1K 1m
STH06	08 8mm	R Space-saving model (motor installed on right)	B With brake	Z No-motor side	H With plate		3K 3m
	10 10mm						5K 5m
	16 16mm	L Space-saving model (motor installed on left)					10K 10m

### ● RF Type (Rotary type / Limit rotation specification, Rotary type / Sensor specification)

Model	Return-to-origin method	Bearing	Torque	Cable entry location	Rotation direction	Cable length
RF02-N	N Stroke end (Limit rotation)	N Standard	N Standard torque	R From the right	N CCW	1K 1m
RF02-S	S Sensor (Limitless rotation)	R High rigidity	R High torque	L From the left	Z CW	3K 3m
RF03-N						5K 5m
RF03-S						10K 10m
RF04-N						
RF04-S						

### ● BD Type (Belt type)

Model	Lead	Brake	Origin position	Stroke	Cable length
BD04	48 48mm	N With no brake	N Standard		1K 1m
BD05					3K 3m
BD07					5K 5m
					10K 10m

## ■ Rod type: Bracket plates

### SR03/SRD03 bracket plates



Feet (horizontal mount) Flange (vertical mount)

Type	Model No.
Feet (2 plates per set)	KCU-M223F-00
Flange (1 piece)	KCU-M224F-00

### SR04/SRD04 bracket plates



Feet (horizontal mount) Flange (vertical mount)

Type	Model No.
Feet (2 plates per set)*	KCV-M223F-00
Flange (1 piece)	KCV-M224F-00

\* Comes with 12 mounting nuts for feet.

### SR05/SRD05 bracket plates



Feet (horizontal mount) Flange (vertical mount)

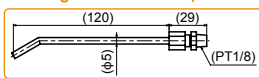
Type	Model No.
Feet (2 plates per set)*	KCW-M223F-00
Flange (1 piece)	KCW-M224F-00

\* Comes with 8 mounting nuts for feet.

## ■ Rod type: Grease gun nozzle tube for space-saving models

When greasing the ball screw in the SR03-UB or SRD03-UB (motor installed on top / with brake), use a grease gun with a bent nozzle tube as shown below.

### ■ Grease gun nozzle tube (YAMAHA recommended nozzle tube)

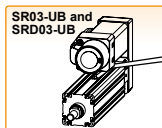


Model KCU-M3861-00

Note. This nozzle tube can be attached to a commercially available ordinary grease gun.

This nozzle tube is even usable when there is little space around the grease port.

For example, when the SR04 or SR05 space-saving model is used with the motor facing up, the grease port is positioned on the side of the robot body. This may make it difficult to refill grease depending on the positions of other robots or peripheral units.



## ■ Rod type: Running life distance to life time conversion example

This is an example of life time converted from the running life distance listed on each model page for the SR type.

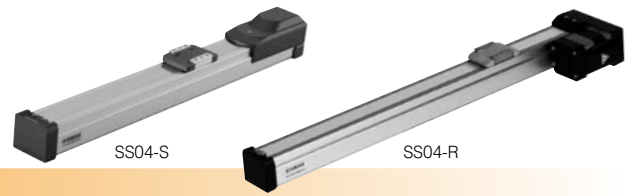
Model	SR04-02SB, Vertical mount, 25 kg payload
Life distance	500 km → Life time : Approx. 3 years
Operating conditions	100mm back-and-forth movement, shuttle time 16 seconds (duty: 20%)
Word conditions	16 hours per day
Work days	240 days per year

Note. Make sure that the rod is not subjected to a radical load.

# SS04

Slider type

- CE compliance
- Origin on the non-motor side is selectable



## Ordering method

### SS04

Model	Lead	Model	Brake	Origin position	Grease option	Stroke	Cable length <sup>Note 2</sup>
	12: 12mm 06: 6mm 02: 2mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard <sup>Note 1</sup> Z: Non-motor side	N: Standard grease C: Clean room grease	50 to 400 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

### S2

Robot positioner	I/O
S2: TS-S2 <sup>Note 3</sup>	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 4</sup>

### SH

Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 4</sup>	B: With battery (Absolute) N: None (Incremental)

### SD

Robot driver	I/O cable
SD: TS-SD	1: 1m

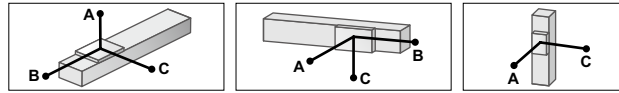
Note 1. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 2. The robot cable is flexible and resists bending.  
 Note 3. See P.498 for DIN rail mounting bracket.  
 Note 4. Select this selection when using the gateway function. For details, see P.60.

## Basic specifications

Motor	42 □ Step motor	
Resolution (Pulse/rotation)	20480	
Repeatability <sup>Note 1</sup> (mm)	±0.02	
Deceleration mechanism	Ball screw φ8 (Class C10)	
Maximum motor torque (N·m)	0.27	
Ball screw lead (mm)	12	6
Maximum speed (mm/sec)	600	300
Maximum payload (kg)	Horizontal: 2 Vertical: 1	4 2
Max. pressing force (N)	45	90
Stroke (mm)	50 to 400 (50mm pitch)	
Overall length (mm)	Horizontal: Stroke+216 Vertical: Stroke+261	
Maximum outside dimension of body cross-section (mm)	W49 × H59	
Cable length (m)	Standard: 1 / Option: 3, 5, 10	

Note 1. Positioning repeatability in one direction.

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

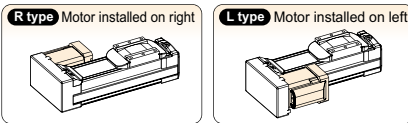


	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	C	
Lead 12	1kg: 807	218	292	1kg: 274	204	776	0.5kg: 407	408	
	2kg: 667	107	152	2kg: 133	93	611	1kg: 204	204	
Lead 6	2kg: 687	116	169	2kg: 149	102	656	1kg: 223	223	
	3kg: 556	76	112	3kg: 92	62	516	2kg: 107	107	
Lead 2	4kg: 567	56	84	4kg: 63	43	507	2kg: 118	118	
	4kg: 869	61	92	4kg: 72	48	829	4kg: 53	53	
Lead 2	6kg: 863	40	60	6kg: 39	29	789			

## Static loading moment

(Unit: N·m)		
MY	MP	MR
16	19	17

## Motor installation (Space-saving model)

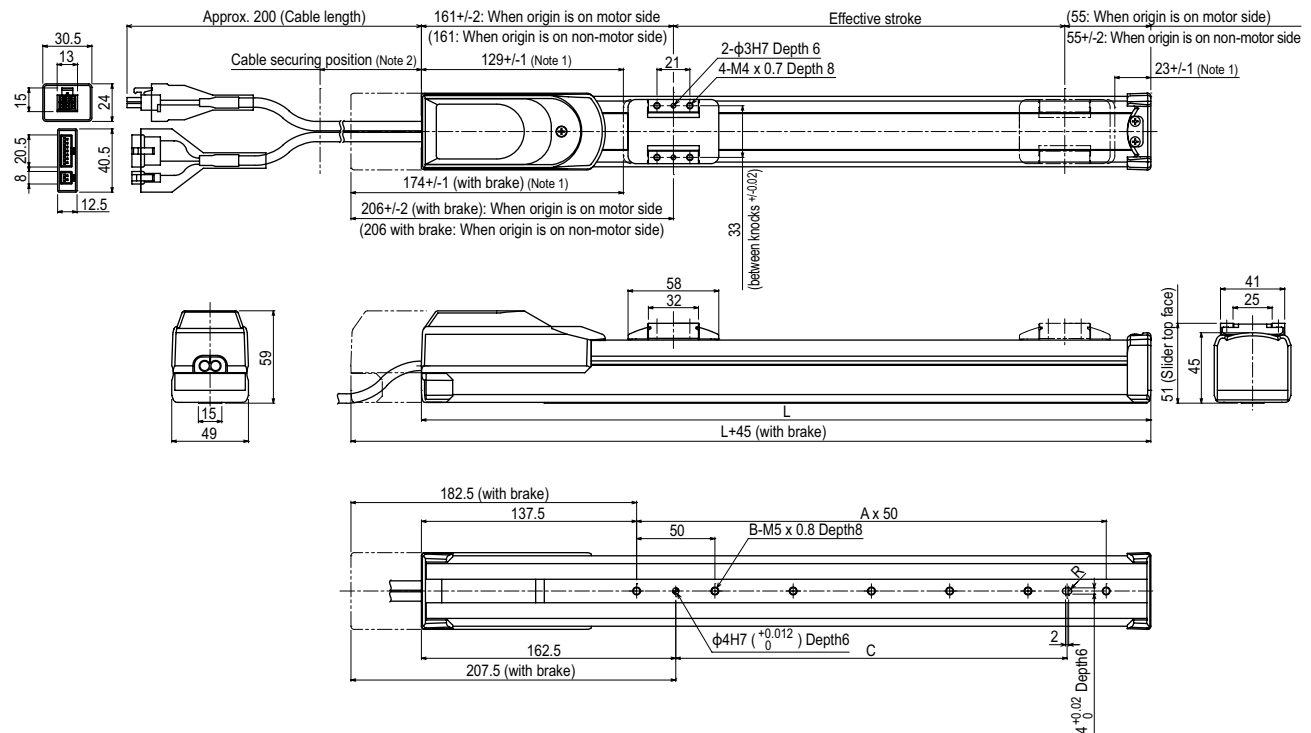


Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000 km (Service life is calculated for 400mm stroke models).

## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	I/O point trace / Remote command
TS-SD	Pulse train control

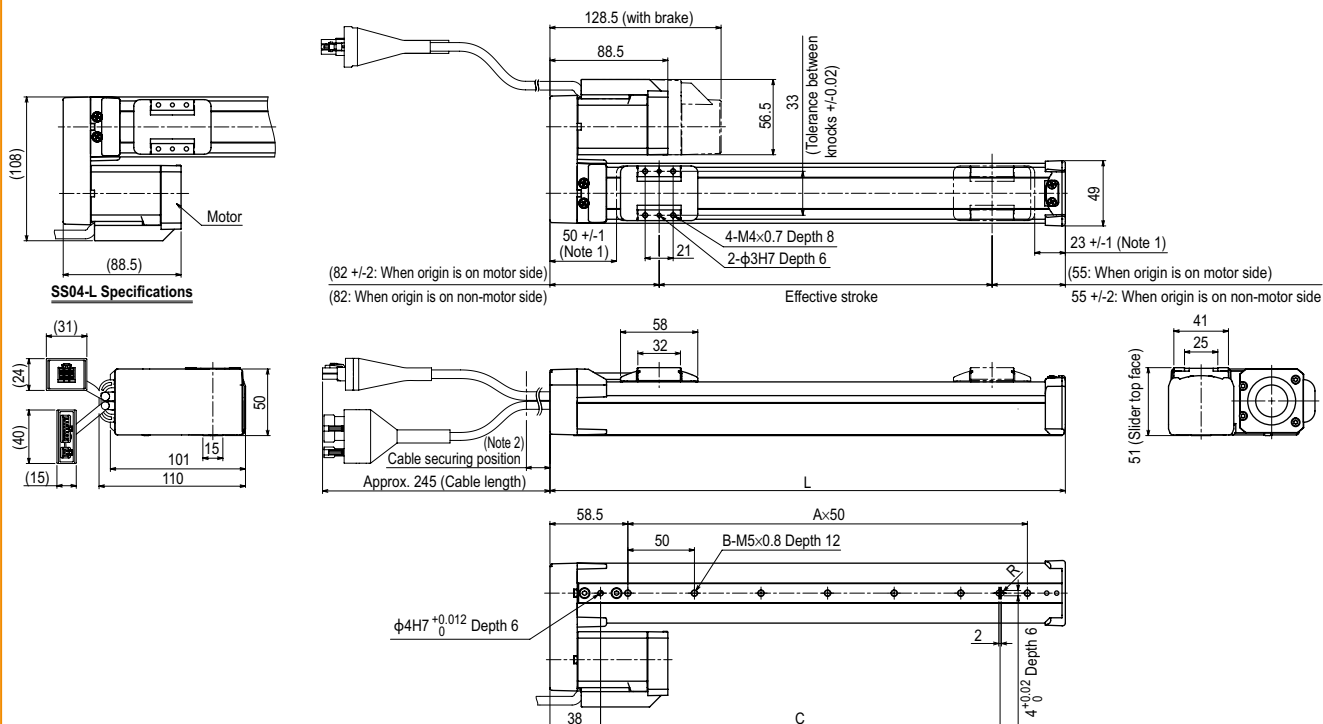
## SS04 Straight model S



Effective stroke	50	100	150	200	250	300	350	400
L	266	316	366	416	466	516	566	616
A	2	3	4	5	6	7	8	9
B	3	4	5	6	7	8	9	10
C	50	100	150	200	250	300	350	400
Weight (kg) <sup>Note 4</sup>	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.3

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 3. The cable's minimum bend radius is R30.  
 Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.

SS04 Space-saving model **R** **L**



SS04-L Specifications

Effective stroke	50	100	150	200	250	300	350	400
<b>L</b>	187	237	287	337	387	437	487	537
<b>A</b>	2	3	4	5	6	7	8	9
<b>B</b>	3	4	5	6	7	8	9	10
<b>C</b>	100	150	200	250	300	350	400	450
<b>Weight (kg)</b> <sup>Note 4</sup>	1.2	1.4	1.5	1.6	1.7	1.8	1.9	2.1

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Secure the cable with a tie-band 80mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 3. The cable's minimum bend radius is R30.  
 Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.  
 Note 5. The belt cover's left and right sides are asymmetrical. Therefore, if the motor mounting orientation is changed, the cover cannot be attached.

# SS05

## Slider type

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



### Ordering method

## SS05

Model	Lead	Model	Brake	Origin position	Grease option	Stroke	Cable length
	20: 20mm 12: 12mm 06: 6mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	Note 1 N: With no brake B: With brake	Note 2 N: Standard Z: Non-motor side	N: Standard grease C: Clean room grease	50 to 800 (50mm pitch)	Note 3 1K: 1m 3K: 3m 5K: 5m 10K: 10m

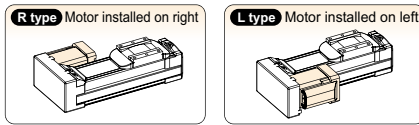
- Note 1. Brake-equipped models can be selected only when the lead is 12mm or 6mm.  
 Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 3. The robot cable is flexible and resists bending.  
 Note 4. See P.498 for DIN rail mounting bracket.  
 Note 5. Select this selection when using the gateway function. For details, see P.60.

### Basic specifications

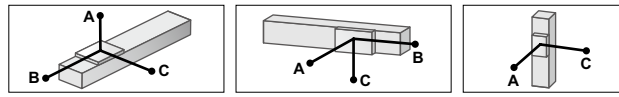
Motor	42 □ Step motor
Resolution (Pulse/rotation)	20480
Repeatability (mm)	+/-0.02
Deceleration mechanism	Ball screw φ12 (Class C10)
Maximum motor torque (N·m)	0.27
Ball screw lead (mm)	20 12 6
Maximum speed (mm/sec)	1000 600 300
Maximum payload (kg)	Horizontal 4 6 10 Vertical - 1 2
Max. pressing force (N)	27 45 90
Stroke (mm)	50 to 800 (50mm pitch)
Overall length (mm)	Horizontal Stroke+230 Vertical Stroke+270
Maximum outside dimension of body cross-section (mm)	W55 × H56
Cable length (m)	Standard: 1 / Option: 3, 5, 10

- Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

### Motor installation (Space-saving model)



### Allowable overhang



Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)					
	A	B	C	A	B	C	A	C				
Lead 20	2kg	413	139	218	2kg	192	123	372	Lead 12	0.5kg	578	579
	4kg	334	67	120	4kg	92	51	265		1kg	286	286
	4kg	347	72	139	4kg	109	57	300		1kg	312	312
Lead 12	6kg	335	47	95	6kg	63	31	263	Lead 6	2kg	148	148
	4kg	503	78	165	4kg	134	63	496				
	8kg	332	37	79	6kg	76	35	377				
Lead 6	10kg	344	29	62	8kg	47	22	355				

Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000 km (Service life is calculated for 600mm stroke models).

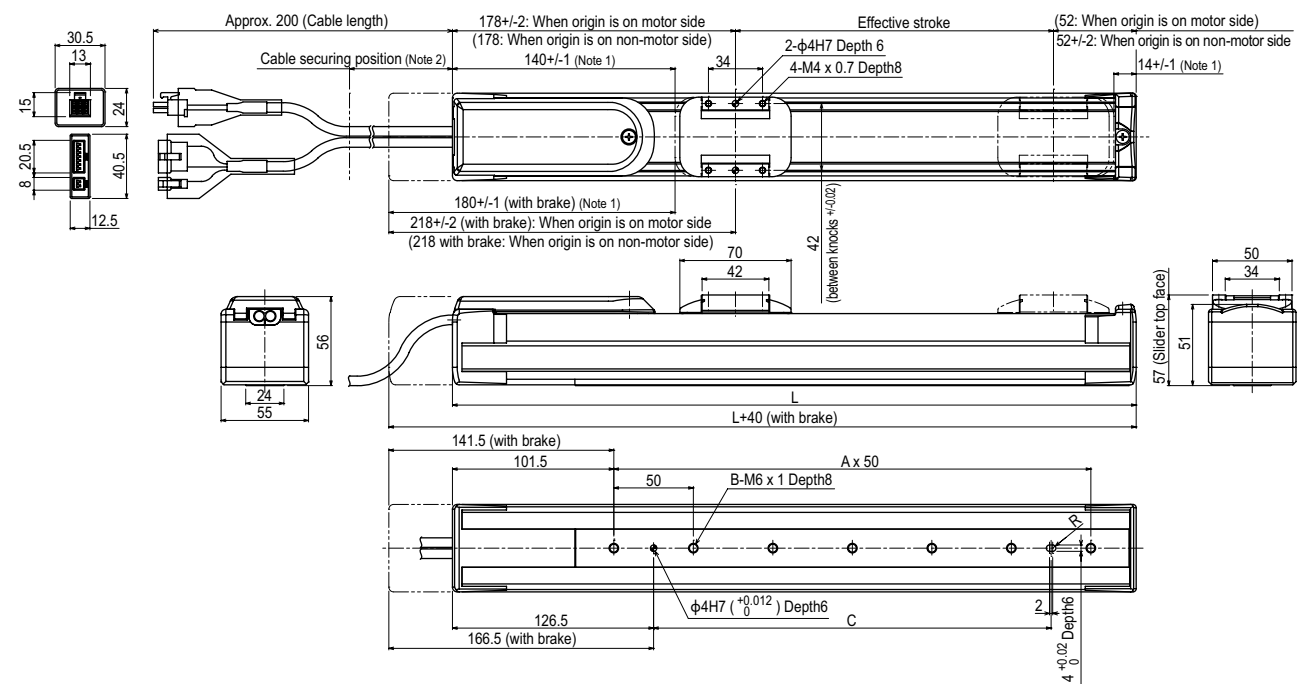
### Static loading moment

(Unit: N·m)		
MY	MP	MR
25	33	30

### Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

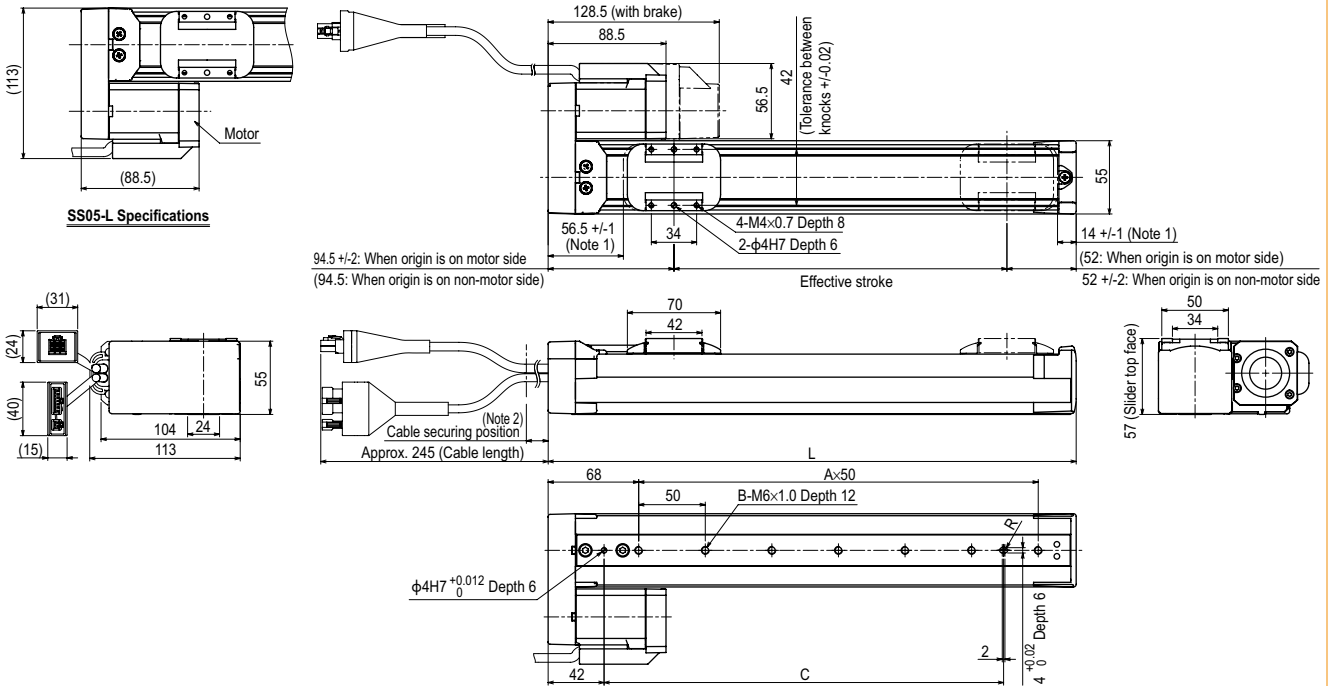
### SS05 Straight model S



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	280	330	380	430	480	530	580	630	680	730	780	830	880	930	980	1030
A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
Weight (kg)	2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6	4.8	5.0
Maximum speed for each stroke (mm/sec)	Lead20	1000										933	833	733	633	
	Lead12	600										560	500	440	380	
	Lead6	300										280	250	220	190	
	Speed setting	-										93%	83%	73%	63%	

- Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 3. The cable's minimum bend radius is R30.  
 Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.  
 Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.

SS05 Space-saving model **R** **L**



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	
<b>L</b>	196.5	246.5	296.5	346.5	396.5	446.5	496.5	546.5	596.5	646.5	696.5	746.5	796.5	846.5	896.5	946.5	
<b>A</b>	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
<b>B</b>	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
<b>C</b>	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500	
<b>Weight (kg)</b> <sup>Note 4</sup>	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.1	4.3	4.5	
<b>Maximum speed for each stroke</b> <sup>Note 5</sup> (mm/sec)	<b>Lead20</b>												1000	933	833	733	633
	<b>Lead12</b>												600	560	500	440	380
	<b>Lead6</b>												300	280	250	220	190
<b>Speed setting</b>												-	93%	83%	73%	63%	

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Secure the cable with a tie-band 80mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 3. The cable's minimum bend radius is R30.  
 Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.  
 Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.  
 Note 6. The belt cover's left and right sides are asymmetrical. Therefore, if the motor mounting orientation is changed, the cover cannot be attached.

# SS05H

Slider type



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

## Ordering method

<b>SS05H</b>							
<b>Model</b>	<b>Lead</b>	<b>Model</b>	<b>Brake</b> <sup>Note 1</sup>	<b>Origin position</b>	<b>Grease option</b>	<b>Stroke</b>	<b>Cable length</b> <sup>Note 3</sup>
	20: 20mm 12: 12mm 06: 6mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard <sup>Note 2</sup> Z: Non-motor side	N: Standard grease C: Clean room grease	50 to 800 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

<b>S2</b>	<b>I/O</b>
<b>Robot positioner</b> S2: TS-S2 <sup>Note 4</sup>	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 5</sup>
<b>SH</b>	<b>Battery</b>
<b>Robot positioner</b> SH: TS-SH	B: With battery (Absolute) N: None (Incremental)
<b>SD</b>	<b>1</b>
<b>Robot driver</b> SD: TS-SD	I/O cable 1: 1m

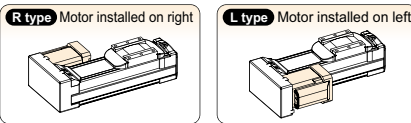
Note 1. Brake-equipped models can be selected only when the lead is 12mm or 6mm.  
 Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 3. The robot cable is flexible and resists bending.  
 Note 4. See P.498 for DIN rail mounting bracket.  
 Note 5. Select this selection when using the gateway function. For details, see P.60.

## Basic specifications

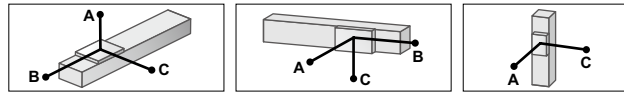
<b>Motor</b>	42 □ Step motor
<b>Resolution (Pulse/rotation)</b>	20480
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.02
<b>Deceleration mechanism</b>	Ball screw φ12 (Class C10)
<b>Maximum motor torque (N·m)</b>	0.47
<b>Ball screw lead (mm)</b>	20    12    6
<b>Maximum speed</b> <sup>Note 2</sup> (mm/sec)	<b>Horizontal</b> 1000    600    300 <b>Vertical</b> -    500    250
<b>Maximum payload (kg)</b>	<b>Horizontal</b> 6    8    12 <b>Vertical</b> -    2    4
<b>Max. pressing force (N)</b>	36    60    120
<b>Stroke (mm)</b>	50 to 800 (50pitch)
<b>Overall length (mm)</b>	<b>Horizontal</b> Stroke+286 <b>Vertical</b> Stroke+306
<b>Maximum outside dimension of body cross-section (mm)</b>	W55 × H56
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10

Note 1. Positioning repeatability in one direction.  
 Note 2. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table below.

## Motor installation (Space-saving model)



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



Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)				
	A	B	C		A	B	C		A	C		
Lead 20	2kg	599	225	291	2kg	262	203	554	Lead 12	1kg	458	459
	4kg	366	109	148	4kg	118	88	309		2kg	224	224
	6kg	352	71	104	6kg	71	49	262		2kg	244	245
Lead 12	4kg	500	118	179	4kg	146	96	449	Lead 6	2kg	244	245
	6kg	399	79	118	6kg	85	55	334		4kg	113	113
	8kg	403	56	88	8kg	55	34	305				
Lead 6	6kg	573	83	136	6kg	101	62	519				
	8kg	480	61	100	8kg	64	39	413				
	10kg	442	47	78	10kg	43	26	355				
	12kg	465	39	64	12kg	28	17	338				

## Static loading moment

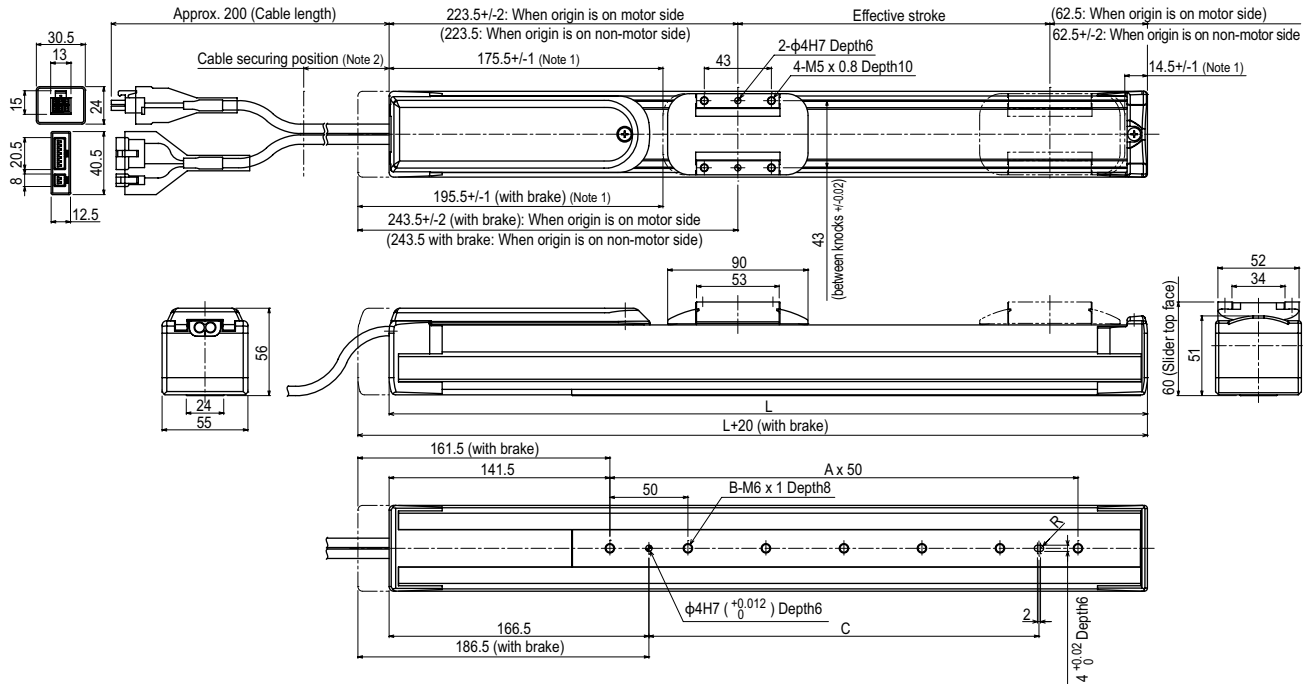
(Unit: N·m)		
MY	MP	MR
32	38	34

## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000 km (Service life is calculated for 600mm stroke models).

## SS05H Straight model **S**



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	336	386	436	486	536	586	636	686	736	786	836	886	936	986	1036	1086
A	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
B	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
C	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
<b>Weight (kg)</b> <sup>Note 4</sup>	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.5	4.7	4.9	5.1	5.3
<b>Maximum speed for each stroke</b> <sup>Note 5</sup> (mm/sec)	Lead20	1000														
	Lead12 (Horizontal)	600														
	Lead12 (Vertical)	500														
	Lead6 (Horizontal)	300														
	Lead6 (Vertical)	250														
<b>Speed setting</b>	-															
													93%	83%	73%	63%

Note 1. Stop positions are determined by the mechanical stoppers at both ends.  
 Note 2. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.  
 Note 3. The cable's minimum bend radius is R30.  
 Note 4. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.  
 Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the left.







# SR03 Rod type

- CE compliance
- Origin on the non-motor side is selectable



## Ordering method

### SR03

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
	12: 12mm 06: 6mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left) U: Space-saving model (motor installed on top)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: No plate H: With plate V: With flange	50 to 200 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

Note 1. See P.129 for grease gun nozzles.  
Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

Note 3. The robot cable is flexible and resists bending.  
Note 4. See P.498 for DIN rail mounting bracket.  
Note 5. Select this selection when using the gateway function. For details, see P.60.

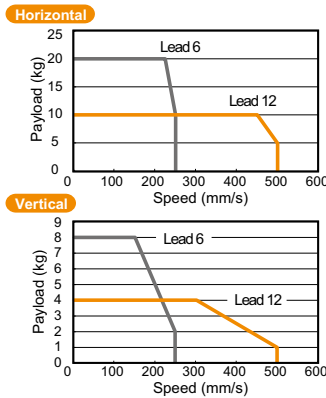
S2	SH	SD
Robot positioner S2: TS-S2	Robot positioner SH: TS-SH	Robot driver SD: TS-SD
I/O NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	I/O NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	I/O cable t: 1m
	Battery B: With battery (Absolute) N: None (Incremental)	

## Basic specifications

Motor	42 □ Step motor
Resolution (Pulse/rotation)	20480
Repeatability (mm)	+/-0.02
Deceleration mechanism	Ball screw φ8 (Class C10)
Ball screw lead (mm)	12
Maximum speed (mm/sec)	500
Maximum payload (kg)	Horizontal: 10 Vertical: 4
Max. pressing force (N)	75
Stroke (mm)	50 to 200 (50pitch)
Lost motion	0.1mm or less
Rotating backlash (°)	+/-1.0
Overall length (mm)	Horizontal: Stroke+236.5 Vertical: Stroke+276.5
Maximum outside dimension of body cross-section (mm)	W48 × H56.5
Cable length (m)	Standard: 1 / Option: 3, 5, 10

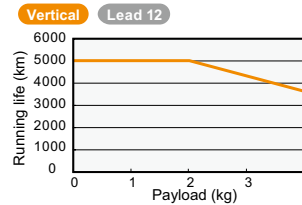
Note 1. The maximum speed needs to be changed in accordance with the payload.  
See the "Speed vs. payload" graph shown on the right.  
For details, see P. 128.

## Speed vs. payload



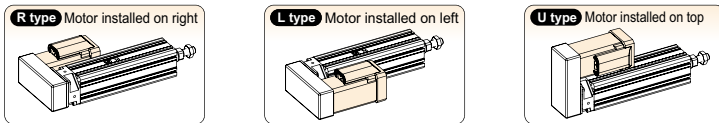
## Running life

5000 km on models other than shown below.  
Running life of only the model shown below becomes shorter than 5000 km depending on the payload, so check the running life curve.



Note. See P.129 for running life distance to life time conversion example.

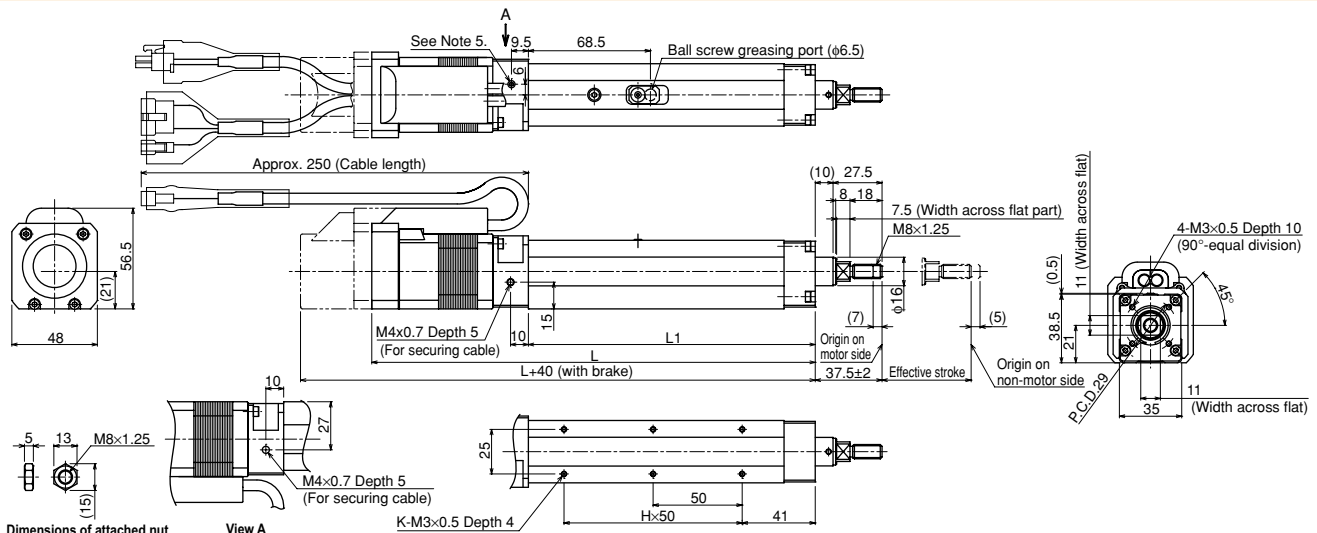
## Motor installation (Space-saving model)



## Controller

Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control

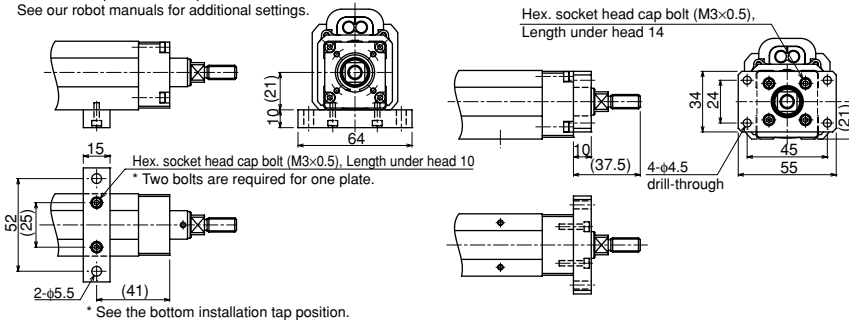
## SR03 Straight model S



Option: Horizontal installation plate (foot)

Option: Vertical installation plate (flange)

\* Contents of option: Plate, 2 pcs.  
See our robot manuals for additional settings.

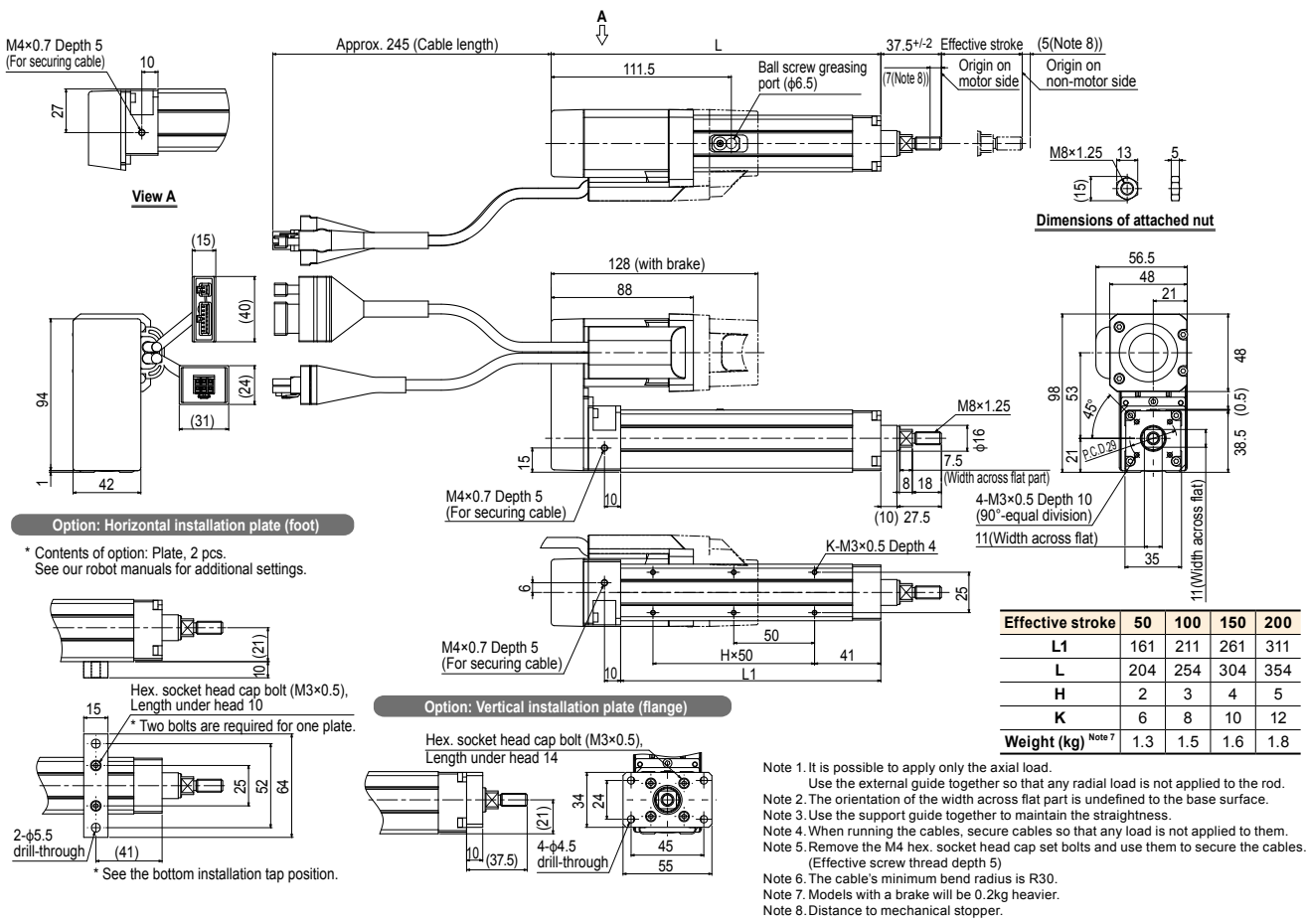


Effective stroke	50	100	150	200
L1	161	211	261	311
L	249	299	349	399
H	2	3	4	5
K	6	8	10	12
Weight (kg)	1.1	1.3	1.4	1.6

Note 1. It is possible to apply only the axial load.  
Note 2. The orientation of the width across flat part is undefined to the base surface.  
Note 3. Use the support guide together to maintain the straightness.  
Note 4. When running the cables, secure cables so that any load is not applied to them.  
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 6. The cable's minimum bend radius is R30.  
Note 7. Models with a brake will be 0.2kg heavier.  
Note 8. Distance to mechanical stopper.

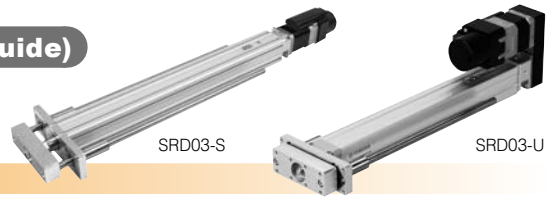


SR03 Space-saving model (motor installed on top) U



# SRD03

## Rod type (With support guide)



- CE compliance
- Origin on the non-motor side is selectable: Lead 6, 12

### Ordering method

#### SRD03

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length <sup>Note 3</sup>
	12: 12mm 06: 6mm	S: Straight model U: Space-saving model <sup>Note 1</sup> (motor installed on top)	N: With no brake B: With brake	N: Standard <sup>Note 2</sup> Z: Non-motor side	N: No plate H: With plate	50 to 200 (60mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

#### S2

Robot positioner	I/O
S2: TS-S2 <sup>Note 4</sup>	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 5</sup>

#### SH

Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 5</sup>	B: With battery (Absolute) N: None (Incremental)

#### SD 1

Robot driver	I/O cable
SD: TS-SD	1: 1m

Note 1. See P.129 for grease gun nozzles.  
Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

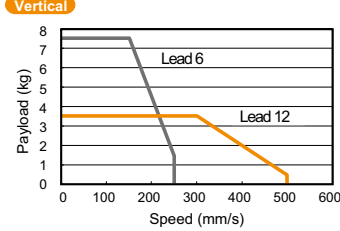
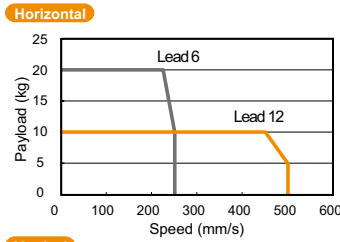
Note 3. The robot cable is flexible and resists bending.  
Note 4. See P.498 for DIN rail mounting bracket.  
Note 5. Select this selection when using the gateway function. For details, see P.60.

### Basic specifications

Motor	42 □ Step motor
Resolution (Pulse/rotation)	20480
Repeatability (mm)	+/-0.02
Deceleration mechanism	Ball screw φ8 (Class C10)
Ball screw lead (mm)	12      6
Maximum speed <sup>Note 1</sup> (mm/sec)	500      250
Maximum payload (kg)	Horizontal: 10, 20 Vertical: 3.5, 7.5
Max. pressing force (N)	75      100
Stroke (mm)	50 to 200 (50pitch)
Lost motion	0.1mm or less
Rotating backlash (°)	+/-0.05
Overall length (mm)	Horizontal: Stroke+236.5 Vertical: Stroke+276.5
Maximum outside dimension of body cross-section (mm)	W48 × H56.5
Cable length (m)	Standard: 1 / Option: 3, 5, 10

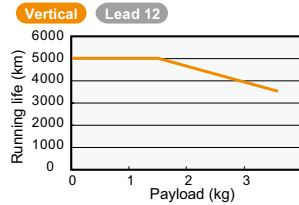
Note 1. The maximum speed needs to be changed in accordance with the payload.  
See the "Speed vs. payload" graph shown on the right. For details, see P. 128.

### Speed vs. payload



### Running life

5000 km on models other than shown below. Running life of only the model shown below becomes shorter than 5000 km depending on the payload, so check the running life curve.

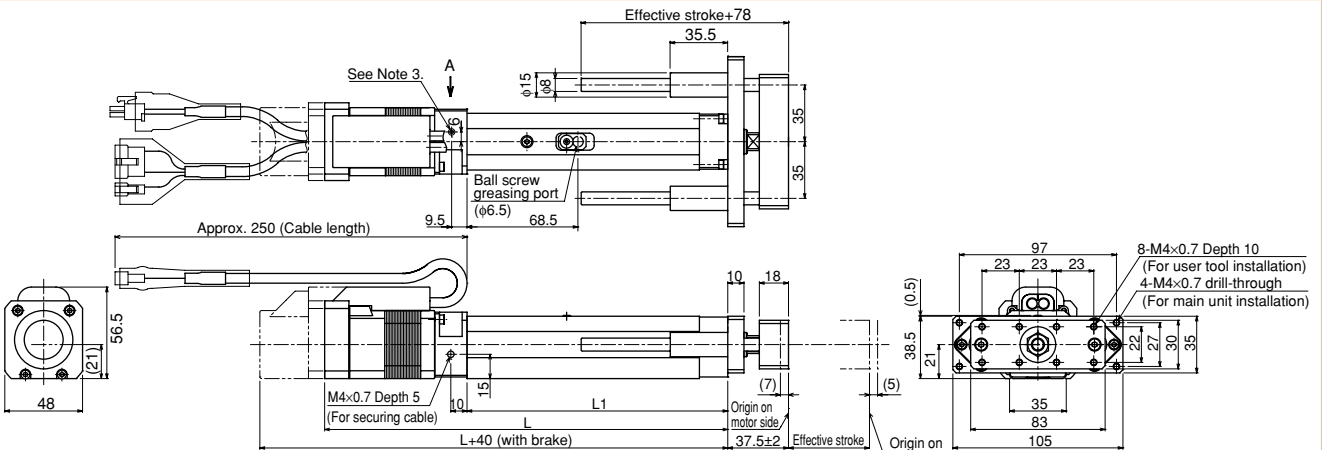


Note. See P.129 for running life distance to life time conversion example.

### Controller

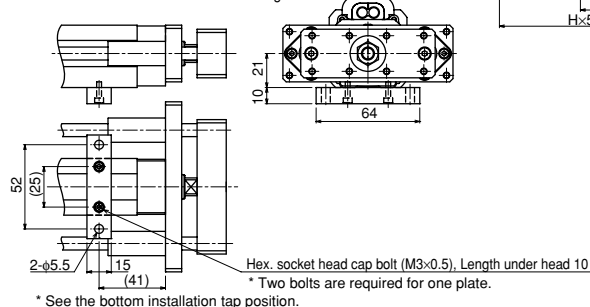
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control
TS-SH			

### SRD03 Straight model S



#### Option: Horizontal installation plate (foot)

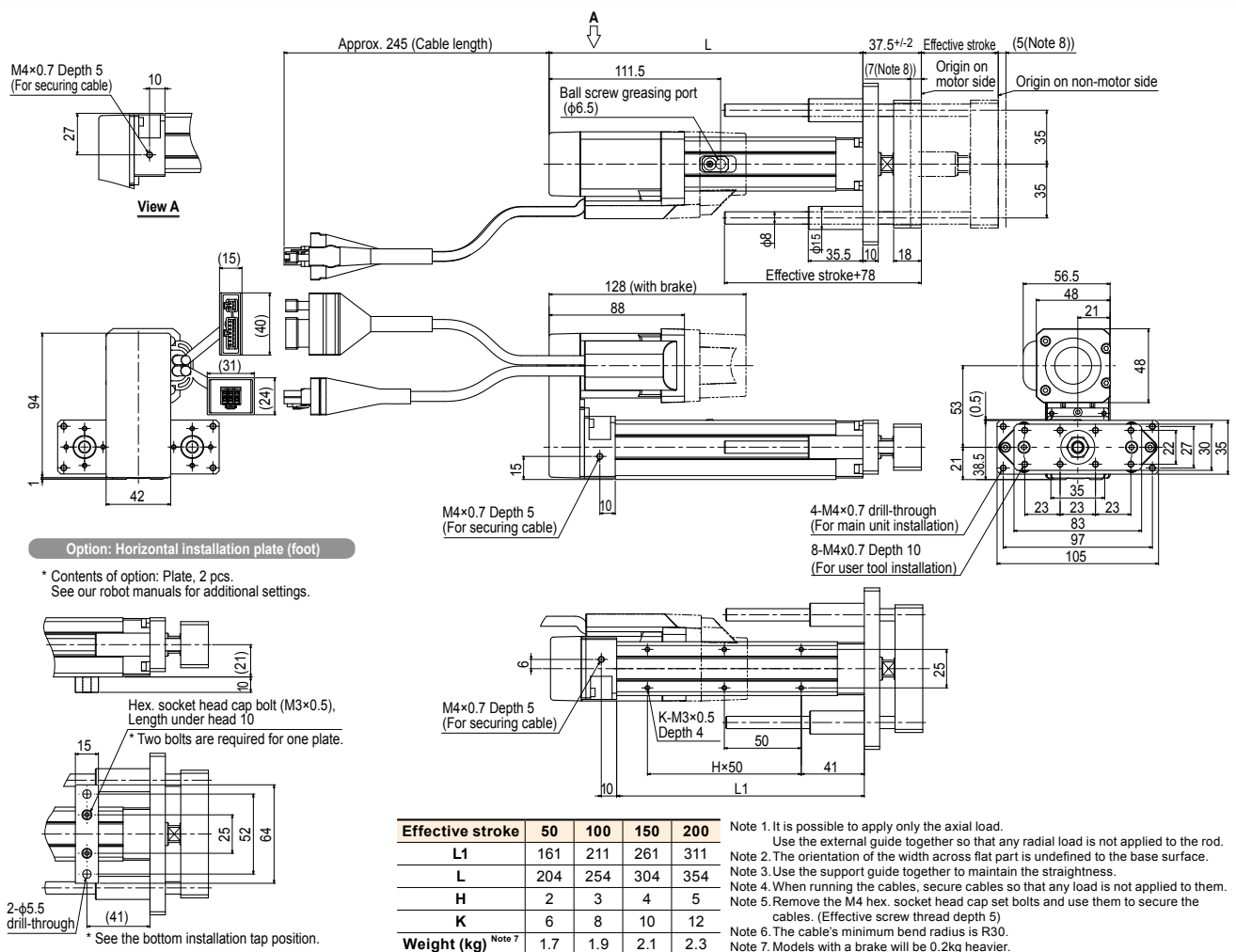
\* Contents of option: Plate, 2 pcs.  
See our robot manuals for additional settings.



Effective stroke	50	100	150	200
L1	161	211	261	311
L	249	299	349	399
H	2	3	4	5
K	6	8	10	12
Weight (kg) <sup>Note 5</sup>	1.5	1.7	1.9	2.1

Note 1. It is possible to apply only the axial load.  
Use the external guide together so that any radial load is not applied to the rod.  
Note 2. When running the cables, secure cables so that any load is not applied to them.  
Note 3. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 4. The cable's minimum bend radius is R30.  
Note 5. Models with a brake will be 0.2kg heavier.  
Note 6. Distance to mechanical stopper.

SRD03 Space-saving model (motor installed on top) **U**



# SR04 Rod type

- CE compliance
- Origin on the non-motor side is selectable: Lead 6, 12



## Ordering method

### SR04

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
	12: 12mm 06: 6mm 02: 2mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: No plate H: With plate V: With flange	50 to 300 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

### S2

Robot positioner	I/O
S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board

### SH

Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

### SD

Robot driver	I/O cable
SD: TS-SD	1: 1m

Note 1. See P.129 for grease gun nozzles.  
 Note 2. When "2mm lead" is selected, the origin position cannot be changed (to non-motor side).  
 Note 3. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

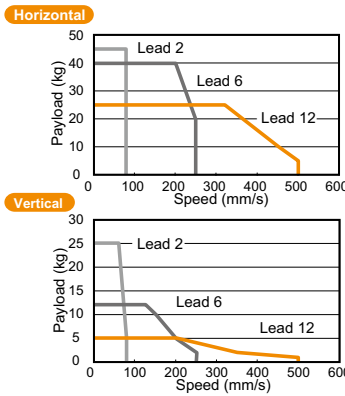
Note 4. The robot cable is flexible and resists bending.  
 Note 5. See P.498 for DIN rail mounting bracket.  
 Note 6. Select this selection when using the gateway function. For details, see P.60.

## Basic specifications

Motor	42 Step motor	
Resolution (Pulse/rotation)	20480	
Repeatability (mm)	±0.02	
Deceleration mechanism	Ball screw φ8 (Class C10)	Ball screw φ10 (Class C10)
Ball screw lead (mm)	12	6
Maximum speed (mm/sec)	500	250
Maximum payload (kg)	Horizontal: 25 Vertical: 5	Horizontal: 40 Vertical: 12
Max. pressing force (N)	150	300
Stroke (mm)	50 to 300 (50pitch)	
Lost motion	0.1mm or less	
Rotating backlash (°)	±1.0	
Overall length (mm)	Horizontal	Stroke+263
	Vertical	Stroke+303
Maximum outside dimension of body cross-section (mm)	W48 × H58	
Cable length (m)	Standard: 1 / Option: 3, 5, 10	

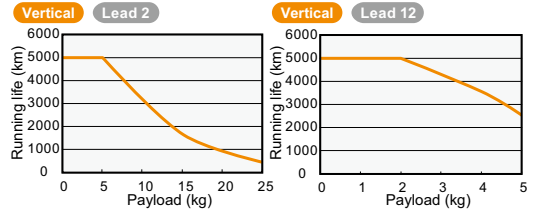
Note 1. The maximum speed needs to be changed in accordance with the payload. See the "Speed vs. payload" graph shown on the right. For details, see P. 128. Additionally, when the stroke is long, the maximum speed is decreased due to the critical speed of the ball screw. See the maximum speed table shown at the lower portion of the drawing.

## Speed vs. payload



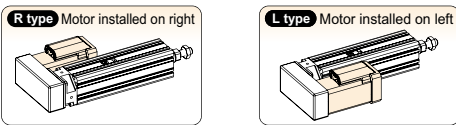
## Running life

5000 km on models other than shown below. Running life of only the model shown below becomes shorter than 5000 km depending on the payload, so check the running life curve.



Note. See P.129 for running life distance to life time conversion example.

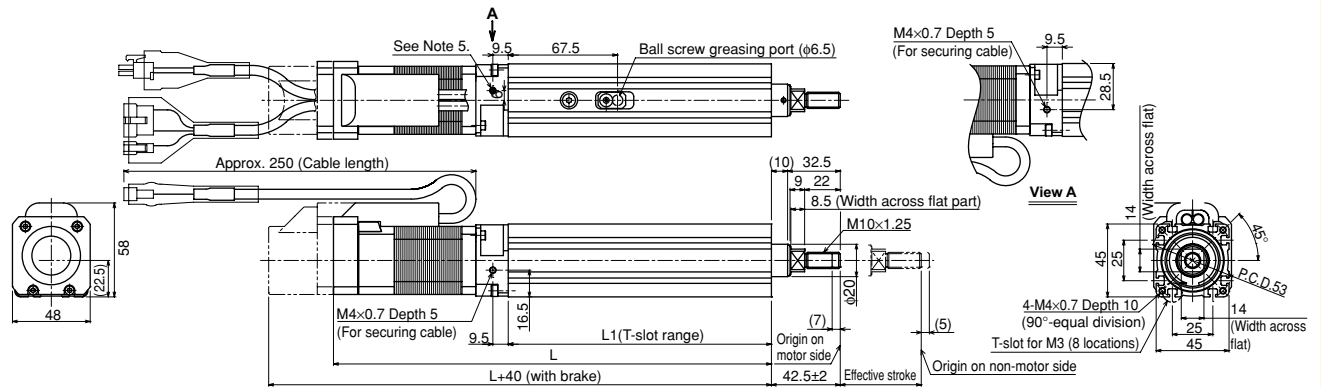
## Motor installation (Space-saving model)



## Controller

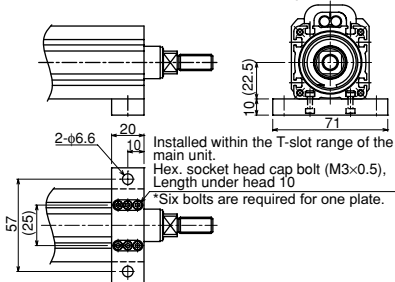
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control
TS-SH			

## SR04 Straight model S



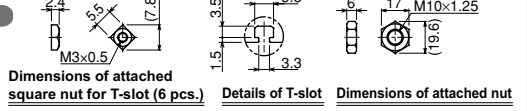
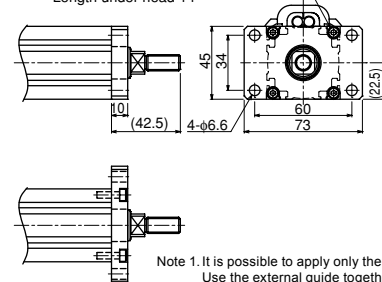
### Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 12 pcs. See our robot manuals for additional settings.



### Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M4×0.7). Length under head 14



Effective stroke	50	100	150	200	250	300
L1	162.5	212.5	262.5	312.5	362.5	412.5
L	270.5	320.5	370.5	420.5	470.5	520.5
Weight (kg)	1.4	1.7	1.9	2.2	2.4	2.7
Maximum speed for each stroke (mm/sec)	Lead 12	500		440	320	
	Lead 6	250		220	160	
	Lead 2	80		72	53	

Note 1. It is possible to apply only the axial load.  
 Note 2. Use the external guide together so that any radial load is not applied to the rod.  
 Note 3. The orientation of the width across flat part is undefined to the base surface.  
 Note 4. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
 Note 5. When running the cables, secure cables so that any load is not applied to them.  
 Note 6. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth is)  
 Note 7. The cable's minimum bend radius is R30.  
 Note 8. Models with a brake will be 0.2kg heavier.  
 Note 9. Distance to mechanical stopper.

SR04 Space-saving model (motor installed on right) **R**

Approx. 245 (Cable length)

Effective stroke (5)(Note 8)

42.5<sup>+2</sup> (7)(Note 8)

152 (with brake)  
112

Origin on motor side

Origin on non-motor side (Note 9)

5.8  
3.3  
1.5  
17  
6  
M10x1.25  
(19.6)

Detail of section B

Dimensions of attached nut

67.5

Ball screw greasing port (φ6.5)

L1(T-slot range)

9.5

16.5

M4×0.7 Depth 5 (For securing cable)

9.5

M10×1.25

φ20

8.5

9 22 (Width across flat part)

(10) 32.5

14

14 (Width across flat)

45

25

45

48

4-M4×0.7 Depth 10 (90°-equal division)

102.5

Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 12 pcs.  
See our robot manuals for additional settings.

2-φ6.6 drill-through

20

10

Installed within the T-slot range of the main unit.  
(Hex. socket head cap bolt (M3×0.5), Length under head 10)  
\* Six bolts are required for one plate.

Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M4×0.7), Length under head 14

73

4-φ6.6 drill-through

60

45

34

Dimensions of attached square nut for T-slot (6 pcs.)

Effective stroke	50	100	150	200	250	300
L1	162.5	212.5	262.5	312.5	362.5	412.5
L	209.5	259.5	309.5	359.5	409.5	459.5
Weight (kg) <sup>Note 7</sup>	1.6	1.9	2.1	2.4	2.6	2.9
Maximum speed for each stroke (mm/sec)	Lead 12	500		440		320
	Lead 6	250		220		160
	Lead 2	80		72		53

Note 1. It is possible to apply only the axial load.  
Use the external guide together so that any radial load is not applied to the rod.  
Note 2. The orientation of the width across flat part is undefined to the base surface.  
Note 3. Use the support guide together to maintain the straightness.  
Note 4. When running the cables, secure cables so that any load is not applied to them.  
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 6. The cable's minimum bend radius is R30.  
Note 7. Models with a brake will be 0.2kg heavier.  
Note 8. Distance to mechanical stopper.  
Note 9. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
Note 10. This unit can be installed with the motor facing up (turned 90 degrees from the position in this drawing).

SR04 Space-saving model (motor installed on left) **L**

Approx. 245 (Cable length)

Effective stroke (5)(Note 8)

42.5<sup>+2</sup> (7)(Note 8)

Origin on motor side

Origin on non-motor side (Note 9)

5.8  
3.3  
1.5  
17  
6  
M10x1.25  
(19.6)

Detail of section B

Dimensions of attached nut

67.5

Ball screw greasing port (φ6.5)

L1(T-slot range)

9.5

16.5

M4×0.7 Depth 5 (For securing cable)

9.5

M10×1.25

φ20

8.5

9 22 (Width across flat part)

(10) 32.5

14

14 (Width across flat)

45

25

45

48

4-M4×0.7 Depth 10 (90°-equal division)

102.5

Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 12 pcs.  
See our robot manuals for additional settings.

2-φ6.6 drill-through

20

10

Installed within the T-slot range of the main unit.  
(Hex. socket head cap bolt (M3×0.5), Length under head 10)  
\* Six bolts are required for one plate.

Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M4×0.7), Length under head 14

73

4-φ6.6 drill-through

60

45

34

Dimensions of attached square nut for T-slot (6 pcs.)

Effective stroke	50	100	150	200	250	300
L1	162.5	212.5	262.5	312.5	362.5	412.5
L	209.5	259.5	309.5	359.5	409.5	459.5
Weight (kg) <sup>Note 7</sup>	1.6	1.9	2.1	2.4	2.6	2.9
Maximum speed for each stroke (mm/sec)	Lead 12	500		440		320
	Lead 6	250		220		160
	Lead 2	80		72		53

Note 1. It is possible to apply only the axial load.  
Use the external guide together so that any radial load is not applied to the rod.  
Note 2. The orientation of the width across flat part is undefined to the base surface.  
Note 3. Use the support guide together to maintain the straightness.  
Note 4. When running the cables, secure cables so that any load is not applied to them.  
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 6. The cable's minimum bend radius is R30.  
Note 7. Models with a brake will be 0.2kg heavier.  
Note 8. Distance to mechanical stopper.  
Note 9. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
Note 10. This unit can be installed with the motor facing up (turned 90 degrees from the position in this drawing).

# SRD04

## Rod type (With support guide)



- CE compliance
- Origin on the non-motor side is selectable: Lead 6, 12

### Ordering method

#### SRD04

<b>Model</b>	<b>Lead</b>	<b>Model</b>	<b>Brake</b>	<b>Origin position</b> <small>Note 2</small>	<b>Bracket plate</b>	<b>Stroke</b>	<b>Cable length</b> <small>Note 4</small>
	12: 12mm 06: 6mm 02: 2mm	S: Straight model J: Space-saving model <small>Note 1</small> (motor installed on top)	N: With no brake B: With brake	N: Standard <small>Note 3</small> Z: Non-motor side	N: No plate H: With plate	50 to 300 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

#### S2

<b>Robot positioner</b>	<b>I/O</b>
S2: TS-S2 <small>Note 5</small>	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 6</small>

#### SH

<b>Robot positioner</b>	<b>I/O</b>	<b>Battery</b>
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 6</small>	B: With battery (Absolute) N: None (Incremental)

#### SD

<b>Robot driver</b>	<b>I/O cable</b>
SD: TS-SD	f: 1m

Note 1. See P.129 for grease gun nozzles.  
 Note 2. When "2mm lead" is selected, the origin position cannot be changed (to non-motor side).  
 Note 3. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

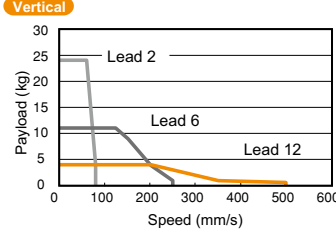
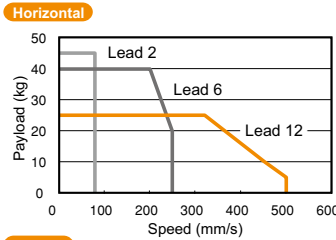
Note 4. The robot cable is flexible and resists bending.  
 Note 5. See P.498 for DIN rail mounting bracket.  
 Note 6. Select this selection when using the gateway function. For details, see P.60.

### Basic specifications

<b>Motor</b>	42 □ Step motor	
<b>Resolution (Pulse/rotation)</b>	20480	
<b>Repeatability (mm)</b>	+/-0.02	
<b>Deceleration mechanism</b>	Ball screw φ8 (Class C10)	Ball screw φ10 (Class C10)
<b>Ball screw lead (mm)</b>	12	6
<b>Maximum speed (mm/sec)</b>	500	250
<b>Maximum payload (kg)</b>	Horizontal: 25 Vertical: 4	Horizontal: 40 Vertical: 11
<b>Max. pressing force (N)</b>	150	300
<b>Stroke (mm)</b>	50 to 300 (50pitch)	
<b>Lost motion</b>	0.1mm or less	
<b>Rotating backlash (°)</b>	+/-0.05	
<b>Overall length (mm)</b>	Horizontal: Stroke+263	Vertical: Stroke+303
<b>Maximum outside dimension of body cross-section (mm)</b>	W48 × H58	
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10	

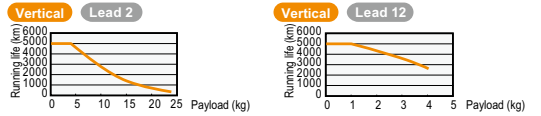
Note 1. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right. For details, see P. 128.  
 Additionally, when the stroke is long, the maximum speed is decreased due to the critical speed of the ball screw.  
 See the maximum speed table shown at the lower portion of the drawing.

### Speed vs. payload



### Running life

5000 km on models other than shown below.  
 Running life of only the model shown below becomes shorter than 5000 km depending on the payload, so check the running life curve.

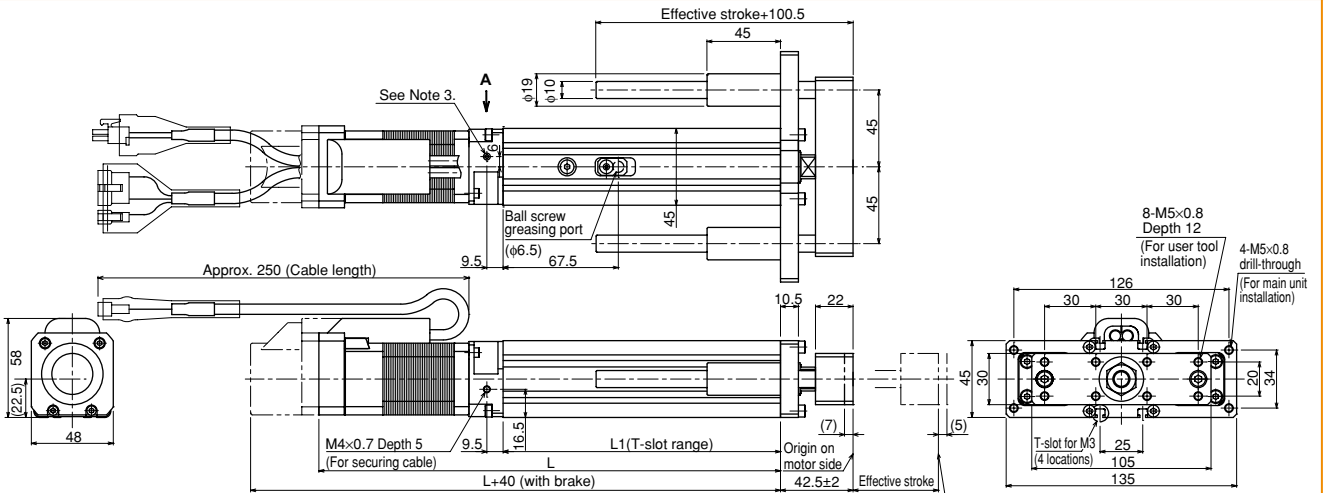


Note. See P.129 for running life distance to life time conversion example.

### Controller

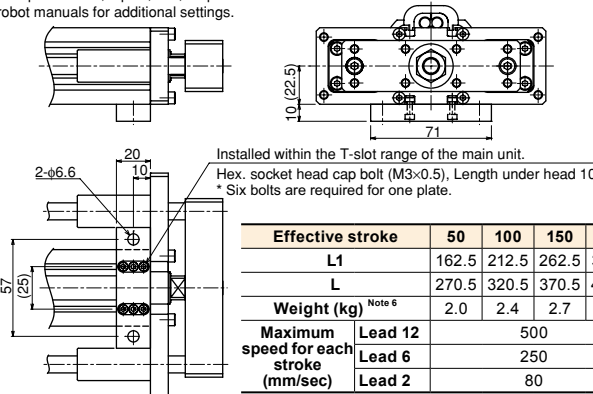
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control

### SRD04 Straight model S



#### Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 12 pcs.  
 See our robot manuals for additional settings.



Effective stroke	50	100	150	200	250	300
L1	162.5	212.5	262.5	312.5	362.5	412.5
L	270.5	320.5	370.5	420.5	470.5	520.5
<b>Weight (kg)</b> <small>Note 6</small>	2.0	2.4	2.7	3.0	3.3	3.7
<b>Maximum speed for each stroke (mm/sec)</b>						
Lead 12	500			440		
Lead 6	250			220		
Lead 2	80			72		

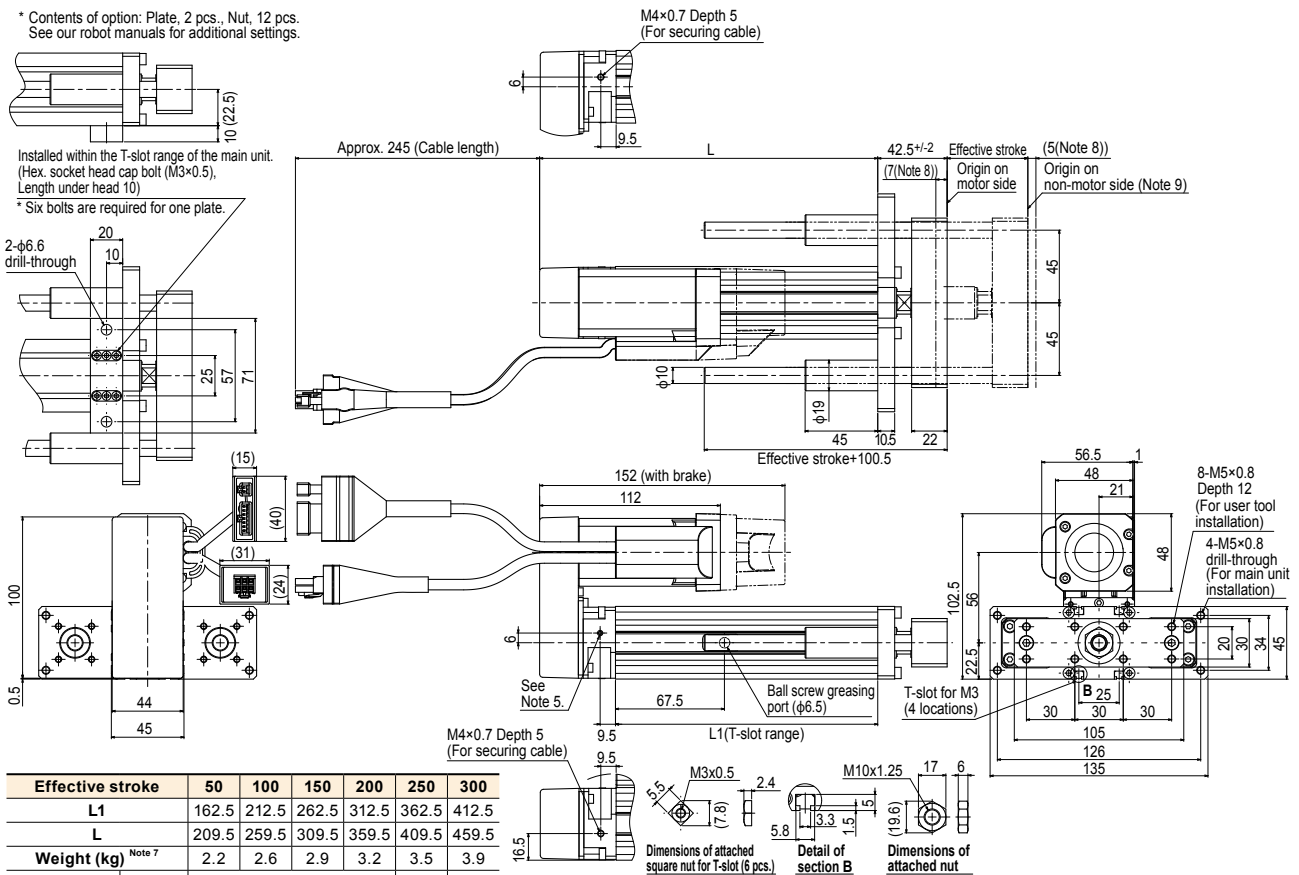
Note 1. It is possible to apply only the axial load.  
 Use the external guide together so that any radial load is not applied to the rod.  
 Note 2. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
 Note 3. When running the cables, secure cables so that any load is not applied to them.  
 Note 4. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
 Note 5. The cable's minimum bend radius is R30.  
 Note 6. Models with a brake will be 0.2kg heavier.  
 Note 7. Distance to mechanical stopper.



SRD04 Space-saving model (motor installed on top) **U**

Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 12 pcs.  
See our robot manuals for additional settings.



Effective stroke	50	100	150	200	250	300
L1	162.5	212.5	262.5	312.5	362.5	412.5
L	209.5	259.5	309.5	359.5	409.5	459.5
Weight (kg) <sup>Note 7</sup>	2.2	2.6	2.9	3.2	3.5	3.9
Maximum speed for each stroke (mm/sec)	Lead 12	500		440	320	
	Lead 6	250		220	160	
	Lead 2	80		72	53	

Note 1. It is possible to apply only the axial load.  
Use the external guide together so that any radial load is not applied to the rod.  
Note 2. The orientation of the width across flat part is undefined to the base surface.

Note 3. Use the support guide together to maintain the straightness.  
Note 4. When running the cables, secure cables so that any load is not applied to them.  
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
Note 6. The cable's minimum bend radius is R30.  
Note 7. Models with a brake will be 0.2kg heavier.  
Note 8. Distance to mechanical stopper.  
Note 9. For lead 2mm specifications, the origin on the non-motor side cannot be set.

# SR05 Rod type

● CE compliance ● Origin on the non-motor side is selectable: Lead 6, 12



## Ordering method

### SR05

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
	12: 12mm 06: 6mm 02: 2mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: No plate H: With plate V: With flange	50 to 300 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

Note 1. See P.129 for grease gun nozzles.  
 Note 2. When "2mm lead" is selected, the origin position cannot be changed (to non-motor side).  
 Note 3. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 4. The robot cable is flexible and resists bending.  
 Note 5. See P.498 for DIN rail mounting bracket.  
 Note 6. Select this selection when using the gateway function. For details, see P.60.

### S2

Robot positioner	I/O
S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board

### SH

Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

### SD

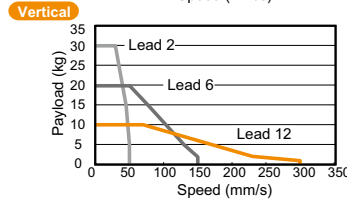
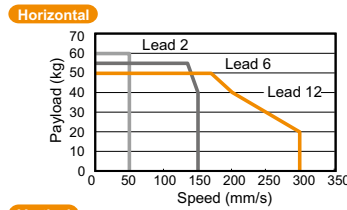
Robot driver	I/O cable
SD: TS-SD	1: 1m

## Basic specifications

Motor	56 □ Step motor
Resolution (Pulse/rotation)	20480
Repeatability (mm)	+/-0.02
Deceleration mechanism	Ball screw φ12 (Class C10)
Ball screw lead (mm)	12    6    2
Maximum speed (mm/sec)	300    150    50
Maximum payload (kg)	Horizontal    50    55    60 Vertical    10    20    30
Max. pressing force (N)	250    550    900
Stroke (mm)	50 to 300 (50pitch)
Lost motion	0.1mm or less
Rotating backlash (°)	+/-1.0
Overall length (mm)	Horizontal    Stroke+276 Vertical    Stroke+316
Maximum outside dimension of body cross-section (mm)	W56.4 × H71
Cable length (m)	Standard: 1 / Option: 3, 5, 10

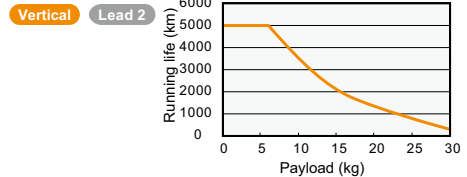
Note 1. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right.  
 For details, see P. 128.

## Speed vs. payload

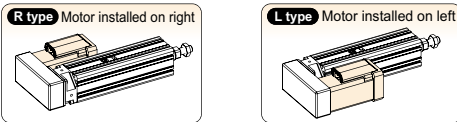


## Running life

5000 km on models other than shown below.  
 Running life of only the model shown below becomes shorter than 5000 km depending on the payload, so check the running life curve.



## Motor installation (Space-saving model)

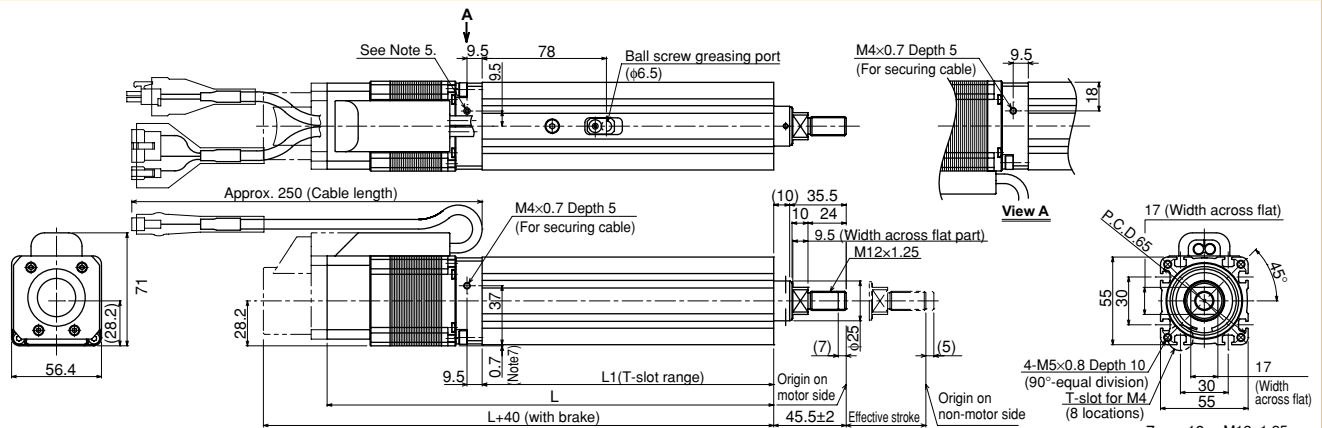


Note. See P.129 for running life distance to life time conversion example.

## Controller

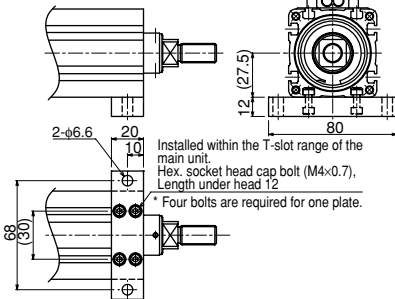
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control

## SR05 Straight model S



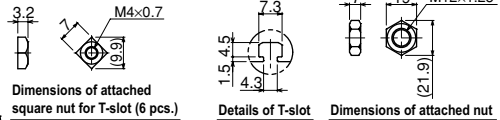
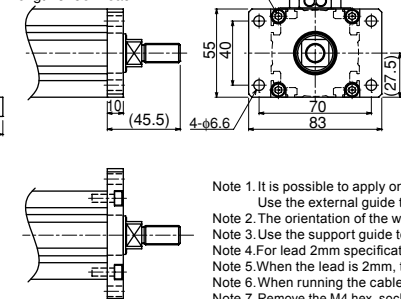
### Option: Horizontal installation plate (foot)

\* Contents of option: Plate, 2 pcs., Nut, 8 pcs.  
 See our robot manuals for additional settings.



### Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M5×0.8), Length under head 14



Effective stroke	50	100	150	200	250	300
L1	183	233	283	333	383	433
L	280.5	330.5	380.5	430.5	480.5	530.5
Weight (kg)	2.2	2.6	3.0	3.3	3.7	4.1

Note 1. It is possible to apply only the axial load.  
 Note 2. Use the external guide together so that any radial load is not applied to the rod.  
 Note 3. The orientation of the width across flat part is undefined to the base surface.  
 Note 4. Use the support guide together to maintain the straightness.  
 Note 5. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
 Note 6. When the lead is 2mm, this dimension is 27mm.  
 Note 7. When running the cables, secure cables so that any load is not applied to them.  
 Note 8. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
 Note 9. The cable's minimum bend radius is R30.  
 Note 10. Models with a brake will be 0.2kg heavier.  
 Note 11. Distance to mechanical stopper.



# SRD05

## Rod type (With support guide)



- CE compliance
- Origin on the non-motor side is selectable: Lead 6, 12

### Ordering method

#### SRD05

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
	12: 12mm 06: 6mm 02: 2mm	S: Straight model J: Space-saving model (motor installed on top)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: No plate H: With plate	50 to 300 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

#### S2

Robot positioner	I/O
S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board

#### SH

Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

#### SD

Robot driver	I/O cable
SD: TS-SD	f: 1m

Note 1. See P.129 for grease gun nozzles.  
 Note 2. When "2mm lead" is selected, the origin position cannot be changed (to non-motor side).  
 Note 3. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

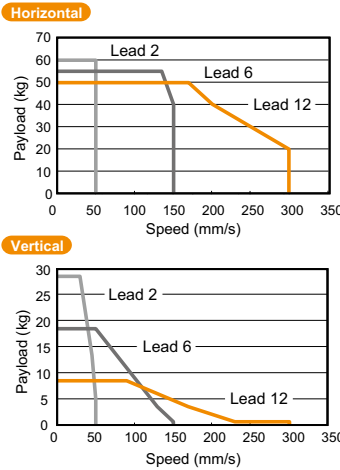
Note 4. The robot cable is flexible and resists bending.  
 Note 5. See P.498 for DIN rail mounting bracket.  
 Note 6. Select this selection when using the gateway function. For details, see P.60.

### Basic specifications

<b>Motor</b>	56 □ Step motor
<b>Resolution (Pulse/rotation)</b>	20480
<b>Repeatability (mm)</b>	+/-0.02
<b>Deceleration mechanism</b>	Ball screw φ12 (Class C10)
<b>Ball screw lead (mm)</b>	12    6    2
<b>Maximum speed<sup>Note 1</sup> (mm/sec)</b>	300    150    50
<b>Maximum payload (kg)</b>	<b>Horizontal</b> 50    55    60 <b>Vertical</b> 8.5    18.5    28.5
<b>Max. pressing force (N)</b>	250    550    900
<b>Stroke (mm)</b>	50 to 300 (50pitch)
<b>Lost motion</b>	0.1mm or less
<b>Rotating backlash (°)</b>	+/-0.05
<b>Overall length (mm)</b>	<b>Horizontal</b> Stroke+276 <b>Vertical</b> Stroke+316
<b>Maximum outside dimension of body cross-section (mm)</b>	W56.4 × H71
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10

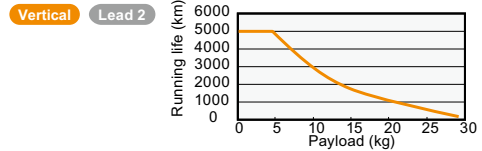
Note 1. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right.  
 For details, see P. 128.

### Speed vs. payload



### Running life

5000 km on models other than shown below.  
 Running life of only the model shown below becomes shorter than 5000 km depending on the payload, so check the running life curve.

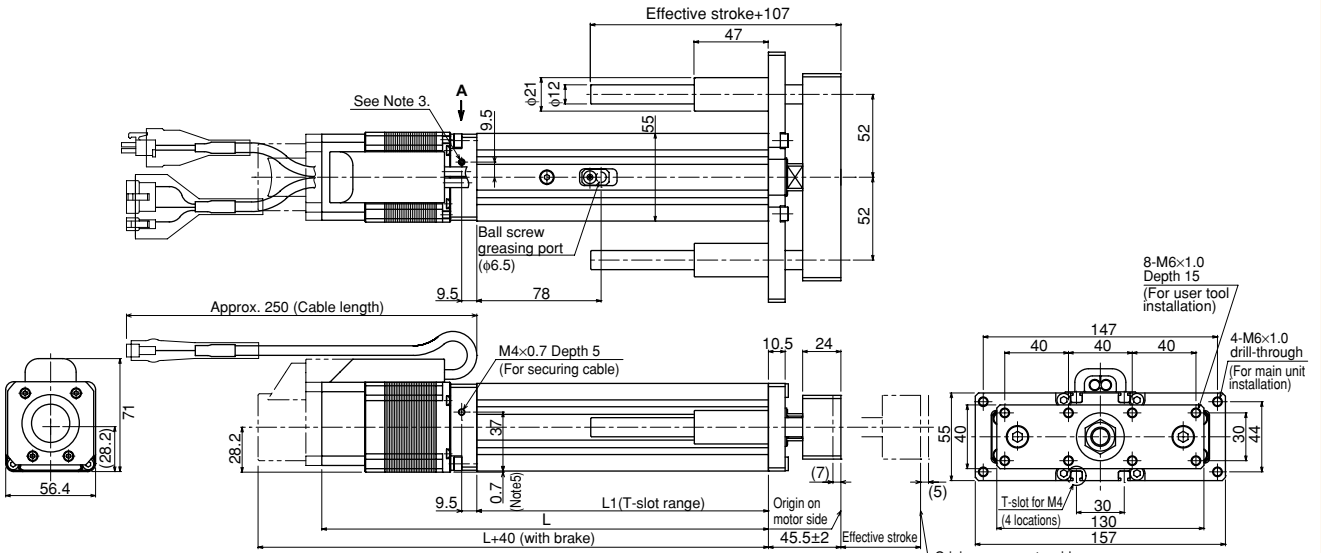


Note. See P.129 for running life distance to life time conversion example.

### Controller

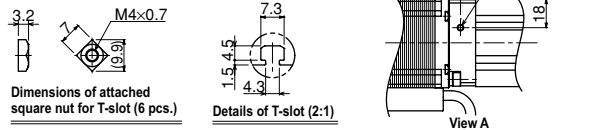
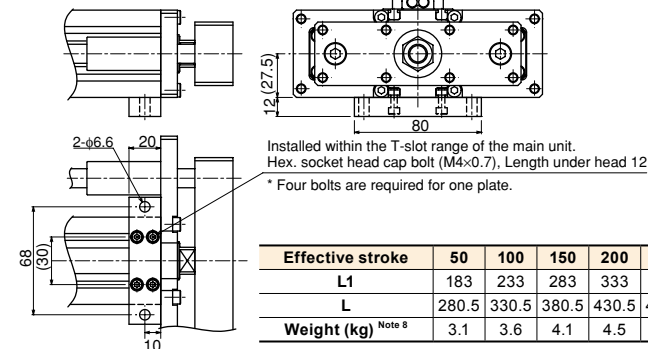
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control
TS-SH			

### SRD05 Straight model S



#### Option: Horizontal installation plate (foot)

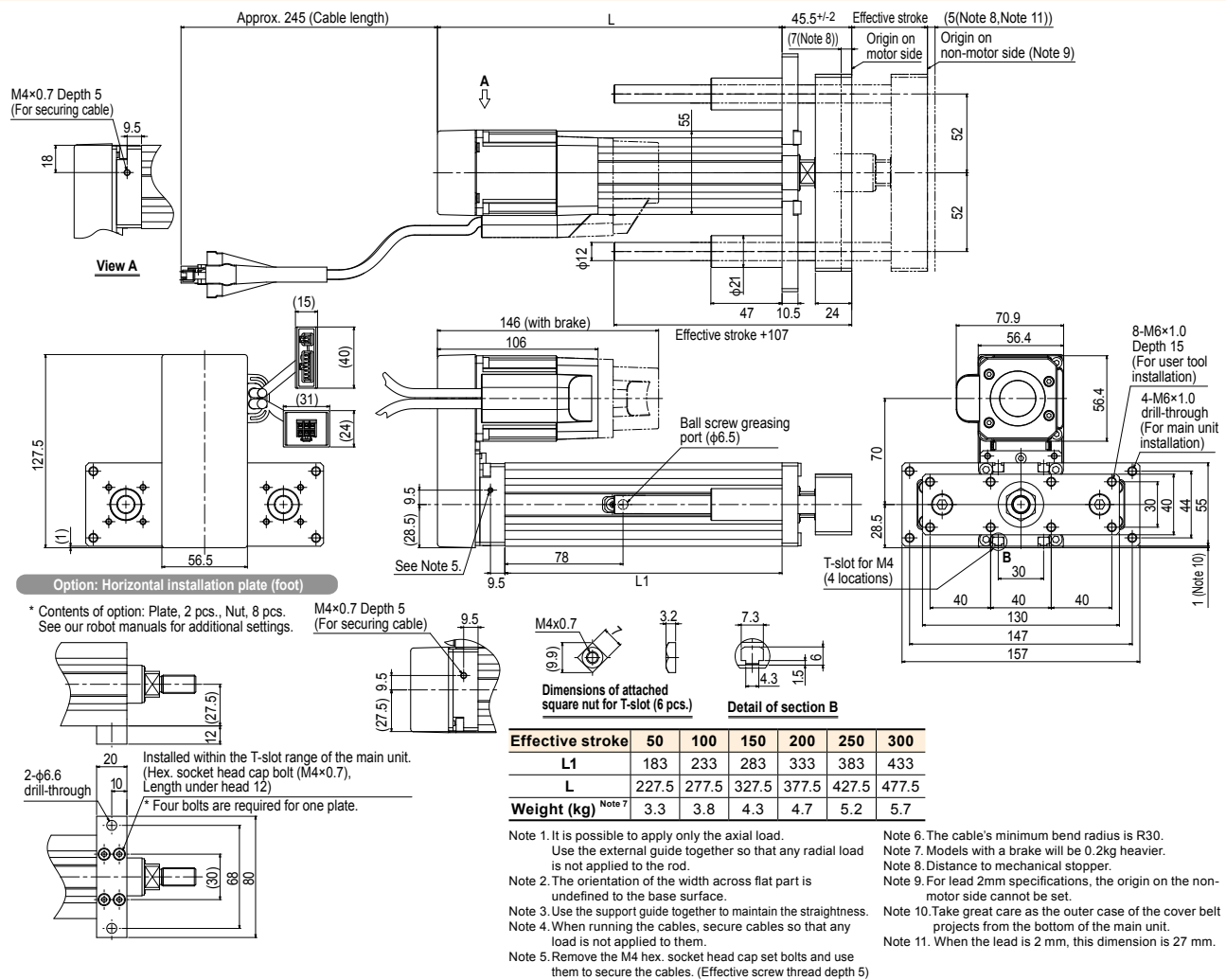
\* Contents of option: Plate, 2 pcs., Nut, 8 pcs.  
 See our robot manuals for additional settings.



Effective stroke	50	100	150	200	250	300
<b>L1</b>	183	233	283	333	383	433
<b>L</b>	280.5	330.5	380.5	430.5	480.5	530.5
<b>Weight (kg)</b> <sup>Note 8</sup>	3.1	3.6	4.1	4.5	5.0	5.5

Note 1. It is possible to apply only the axial load.  
 Use the external guide together so that any radial load is not applied to the rod.  
 Note 2. For lead 2mm specifications, the origin on the non-motor side cannot be set.  
 Note 3. When the lead is 2mm, this dimension is 27mm.  
 Note 4. When running the cables, secure cables so that any load is not applied to them.  
 Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)  
 Note 6. The cable's minimum bend radius is R30.  
 Note 7. Take great care as the outer case of the motor projects from the bottom of the main unit.  
 Note 8. Models with a brake will be 0.2kg heavier.  
 Note 9. Distance to mechanical stopper.

**SRD05 Space-saving model (motor installed on top) U**



# STH04

Slide table type

- CE compliance
- Origin on the non-motor side is selectable

## Ordering method

### STH04

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
	05: 5mm 10: 10mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: No plate H: With plate	50: 50mm 100: 100mm	1K: 1m 3K: 3m 5K: 5m 10K: 10m

### S2

Robot positioner	I/O
S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board

### SH

Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

### SD

Robot driver	I/O cable
SD: TS-SD	1: 1m

- Note 1. For the space saving models (R and L), the specifications with brake are applicable to only 100mm strokes.  
 Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.  
 Note 3. Space-saving models (R and L) with the plate cannot be selected.  
 Note 4. The robot cable is flexible and resists bending.  
 Note 5. See P.498 for DIN rail mounting bracket.  
 Note 6. The robot with the brake cannot use the TS-SD.  
 Note 7. Select this selection when using the gateway function. For details, see P.60.

## Basic specifications

Motor	28 □ Step motor	
Resolution (Pulse/rotation)	4096	
Repeatability (mm)	+/-0.05	
Drive method	Straight	Slide screw
	Space-saving	Slide screw + belt
Ball screw lead (mm)	5      10	
Maximum speed (mm/sec)	200    400	
Maximum payload (kg)	Horizontal	6      4
	Vertical	2      1
Max. pressing force (N)	55      30	
Stroke (mm)	50/100	
Maximum outside dimension of body cross-section (mm)	Straight	W45 × H46
	Space-saving	W74.5 × H51
Cable length (m)	Standard: 1 / Option: 3, 5, 10	

- Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right. For details, see P. 128.

## Allowable overhang

Horizontal installation (Unit: mm)	Note		
	A	B	C
Lead 10	2kg 1534	611	415
Lead 5	3kg 949	374	255
Lead 10	4kg 656	255	175
Lead 5	2kg 1534	611	415
Lead 10	4kg 656	255	175
Lead 5	6kg 364	137	95

Wall installation (Unit: mm)	Note		
	A	B	C
Lead 10	2kg 435	595	1504
Lead 5	3kg 263	359	920
Lead 10	4kg 177	241	629
Lead 5	2kg 435	595	1504
Lead 10	4kg 177	241	629
Lead 5	6kg 91	123	337

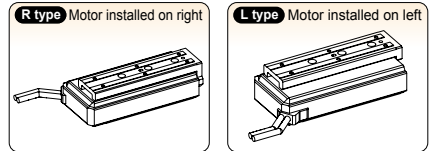
Vertical installation (Unit: mm)	Note	
	A	C
Lead 10	0.5kg 2000	2000
Lead 5	0.75kg 1558	1558
Lead 10	1kg 1165	1164
Lead 5	1kg 1165	1164
Lead 10	1.5kg 771	771
Lead 5	2kg 574	574

- Note. Overhang at travelling service life of 3000km.  
 (Service life is calculated for 75mm stroke models.)

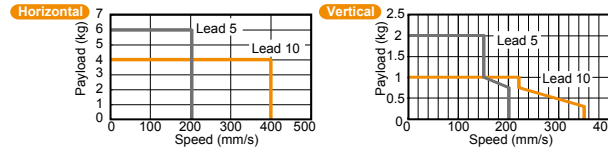
## Static loading moment

Stroke	Note			MR
	MY	MP	MR	
50mm	26	26	48	
100mm	43	43	48	

## Motor installation (Space-saving model)



## Speed vs. payload



## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

- Note. The robot with the brake cannot use the TS-SD.

## STH04 Straight model S

Effective stroke	50	100
B	40	44
C	6	8
D	116.5	191.5
E	65	85
G	39.5	88.5
L	122	191
Weight (kg)	1.25	1.7

Note 1. Return-to-origin position.  
 Note 2. Table movable range during return-to-origin operation. The values in [ ] show those when the return-to-origin direction is changed.  
 Note 3. The minimum bending radius of the motor cable is R30.  
 Note 4. When installing the mechanical main unit using the back facing holes, use the hex socket head cap M5 bolts.  
 Note 5. The installation hole positions of the main unit with the specifications with the brake are common to those shown above.  
 Note 6. Models with a brake will be 0.11kg heavier.



# STH06

Slide table type



- CE compliance
- Origin on the non-motor side is selectable

## Ordering method

### STH06

Model	Lead	Model	Brake	Origin position	Bracket plate	Stroke	Cable length
	08: 8mm 16: 16mm	S: Straight model R: Space-saving model (motor installed on right) L: Space-saving model (motor installed on left)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: No plate H: With plate	50: 50mm 100: 100mm 150: 150mm	1K: 1m 3K: 3m 5K: 5m 10K: 10m

### S2

Robot positioner	I/O
S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board

### SH

Robot positioner	I/O	Battery
SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board	B: With battery (Absolute) N: None (Incremental)

### SD

Robot driver	I/O cable
SD: TS-SD	1: 1m

Note 1. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

Note 2. Space-saving models (R and L) with the plate cannot be selected.

Note 3. The robot cable is flexible and resists bending.

Note 4. See P.498 for DIN rail mounting bracket.

Note 5. The robot with the brake cannot use the TS-SD.

Note 6. Select this selection when using the gateway function. For details, see P.60.

## Basic specifications

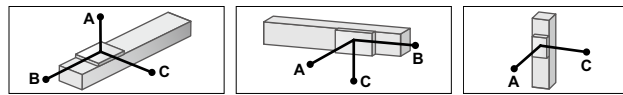
Motor	42 □ Step motor	
Resolution (Pulse/rotation)	20480	
Repeatability (mm)	+/- 0.05	
Drive method	Straight	Slide screw
	Space-saving	Slide screw + belt
Ball screw lead (mm)	8 16	
Maximum speed (mm/sec)	150 400	
Maximum payload (kg)	Horizontal	9 6
	Vertical	4 2
Max. pressing force (N)	180 100	
Stroke (mm)	50/100/150	
Maximum outside dimension of body cross-section (mm)	Straight	W61 × H65
	Space-saving	W108 × H70
Cable length (m)	Standard: 1 / Option: 3, 5, 10	

Note 1. Positioning repeatability in one direction.

Note 2. The maximum speed needs to be changed in accordance with the payload.

See the "Speed vs. payload" graph shown on the right. For details, see P. 128.

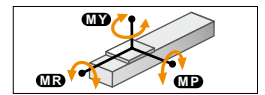
## Allowable overhang



Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	B	C
Lead 16	2kg 3000	2123	1436	2kg 1500	2091	3000	1kg 3000	3000	3000
4kg	2493	1001	680	4kg 710	975	2443	1.5kg 2458	2457	
6kg	1571	627	428	6kg 440	603	1524	2kg 1837	1837	
Lead 8	3kg 3000	1375	932	3kg 979	1347	3000	2kg 1837	1837	
6kg	1571	627	428	6kg 440	603	1524	3kg 1217	1216	
9kg	956	378	260	9kg 260	355	912	4kg 907	906	

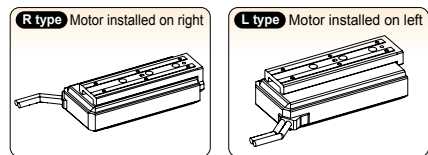
Note. Overhang at travelling service life of 3000km. (Service life is calculated for 100mm stroke models.)

## Static loading moment

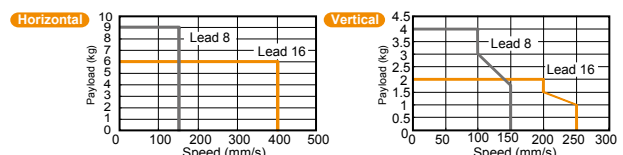


Stroke	(Unit: N-m)			
	MY	MP	MR	
50mm	77	77	146	
100mm	112	112	177	
150mm	155	155	152	

## Motor installation (Space-saving model)



## Speed vs. payload



## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

Note. The robot with the brake cannot use the TS-SD.

## STH06 Straight model S

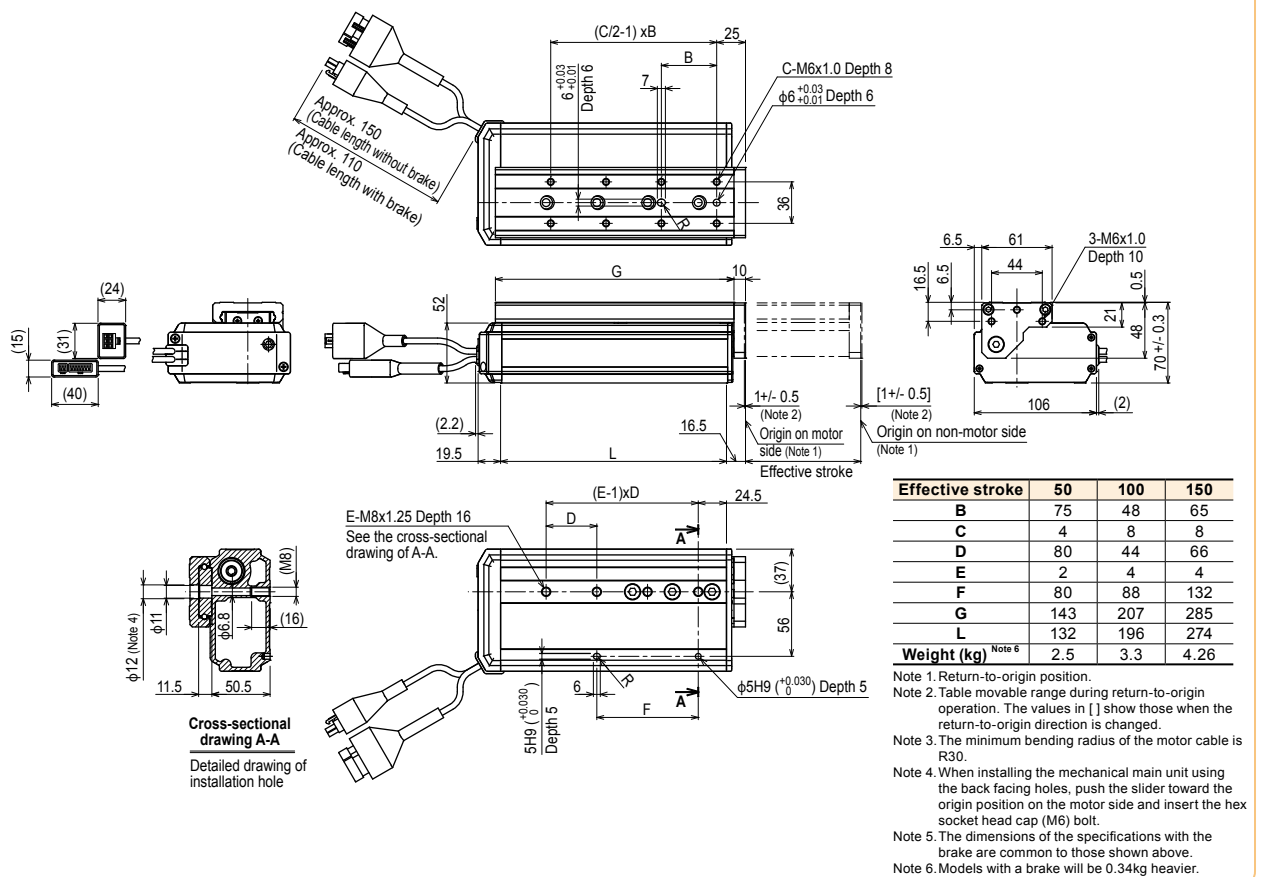
Effective stroke	50	100	150
B	75	48	65
C	4	8	8
D	143	207	285
E	84	98.5	126.5
F	4	4	6
G	40.5	88	69
L	144.5	206.5	284.5
Weight (kg)	2.52	3.27	3.6

**Option: Installation plate**  
 Contents of option: Plate, 4 pcs.  
 \* For additional settings, contact your distributor.

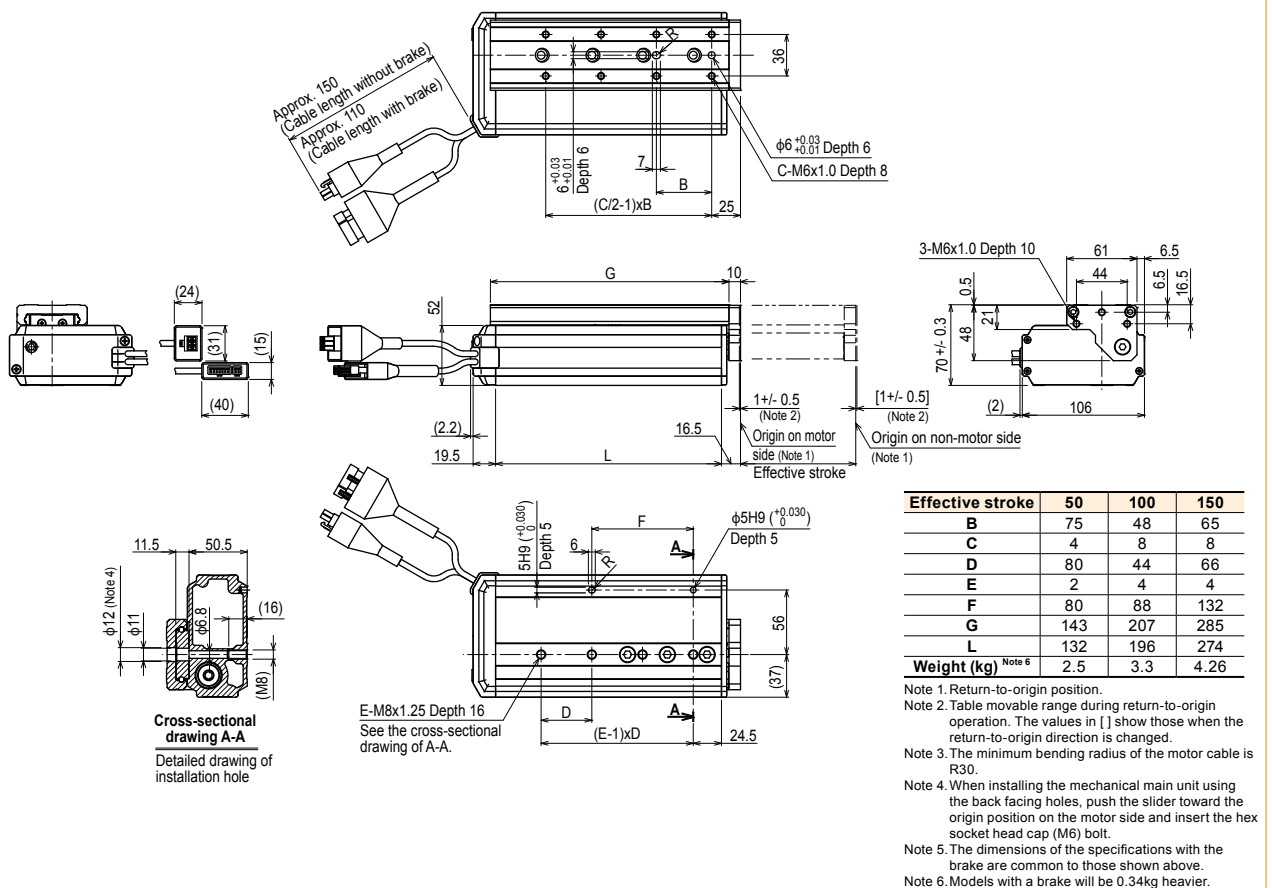
Note 1. Return-to-origin position.  
 Note 2. Table movable range during return-to-origin operation. The values in [ ] show those when the return-to-origin direction is changed.  
 Note 3. The minimum bending radius of the motor cable is R30.  
 Note 4. When installing the mechanical main unit using the back facing holes, use the hex socket head cap M6 bolts.  
 Note 5. The installation hole positions of the main unit with the specifications with the brake are common to those shown above.  
 Note 6. Models with a brake will be 0.34kg heavier.



STH06 Space-saving model (motor installed on right) **R**



STH06 Space-saving model (motor installed on left) **L**



# RF02-N

## Rotary type / Limit rotation specification

- CE compliance
- Rotation range : 310°

### Ordering method

<b>RF02</b>	<b>N</b>			<b>L</b>			<b>S2</b>	
<b>Model</b>	<b>Return-to-origin method</b> N: Stroke end (Limit rotation)	<b>Bearing</b> N: Standard H: High rigidity	<b>Torque</b> N: Standard torque H: High torque	<b>Cable entry location</b> L: From the left	<b>Rotation direction</b> N: CCW Z: CW	<b>Cable length</b> <small>Note 1</small> 1K: 1m 3K: 3m 5K: 5m 10K: 10m	<b>Robot positioner</b> S2: TS-S2 <small>Note 2</small>	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 3</small>
							<b>SH</b>	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
							<b>SD</b>	<b>1</b>
							<b>Robot driver</b> SD: TS-SD	<b>I/O cable</b> t: 1m

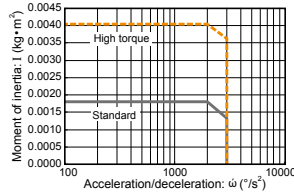
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.498 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.60.

### Basic specifications

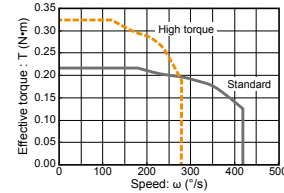
<b>Motor</b>	20 □ Step motor	
<b>Resolution (Pulse/rotation)</b>	4096	
<b>Repeatability</b> <small>Note 1</small> (°)	±0.05	
<b>Drive method</b>	Special warm gear + belt	
<b>Torque type</b>	Standard	High torque
<b>Maximum speed</b> <small>Note 2</small> (°/sec)	420	280
<b>Rotating torque (N·m)</b>	0.22	0.32
<b>Max. pushing torque (N·m)</b>	0.11	0.16
<b>Backlash (°)</b>	±0.5	
<b>Max. moment of inertia</b> <small>Note 3</small> (kg·m <sup>2</sup> )	0.0018	0.004
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10	
<b>Rotation range (°)</b>	310	

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the "Moment of inertia vs. Acceleration/deceleration" graph and the "Effective torque vs. speed" graph (reference).  
 Note 3. For moment of inertia and effective torque details, see P.604.

### Moment of inertia Acceleration/deceleration



### Effective torque vs. speed



### Allowable load

Allowable radial load (N)		Allowable thrust load (N)				Allowable moment (N·m)	
		(a)		(b)			
Standard model	High rigidity model	Standard model	High rigidity model	Standard model	High rigidity model	Standard model	High rigidity model
78	86	74	78	107	2.4	2.9	

Note. When purchasing the product, set the controller acceleration while carefully checking the "Moment of inertia vs. Acceleration/Deceleration" and "Effective torque vs. Speed" graphs.  
 For details, please refer to the TRANSERVO Series User's Manual.

### Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	
TS-SD	Pulse train control

### RF02-NN Limit rotation specification – Standard model

Stroke end  
Origin position in CW rotation direction [Origin]<sup>3</sup>

Origin mark

Origin<sup>2</sup>  
Origin position in CCW rotation direction [Stroke end]

310°

CCW direction

CW direction

\*1 Table movable range by return-to-origin operation.  
Be careful not to interfere with the workpiece or equipment around the table.

\*2 Return-to-origin position

\*3 Values and characters in [ ] show those when the return-to-origin direction is changed.

Manual operation screw (both sides)

Origin mark

31

24

16

65.8

76

15

40

2

φ18H8 (+0.027/0)

φ8 (Through-hole)

φ15H8 (+0.027/0)

Cross-sectional drawing A-A

45°

51

42

15

2

21

52

42

2-φ5.2 drill-through  
φ9 deep spot facing,  
Depth 5.5  
P.C.D.32  
6-M4x0.7 Depth 6  
(60° equally divided.)

φ43h8 (+0.039/0)

φ42h8 (+0.039/0)

6

3.5

32

10

85

(2.1)

(2.1)

Approx. 170

(Motor cable exit direction: Exit from left side)

3H8 (+0.014/0)

Depth 4

51

2

14

52

2-M6x1.0 Depth 12

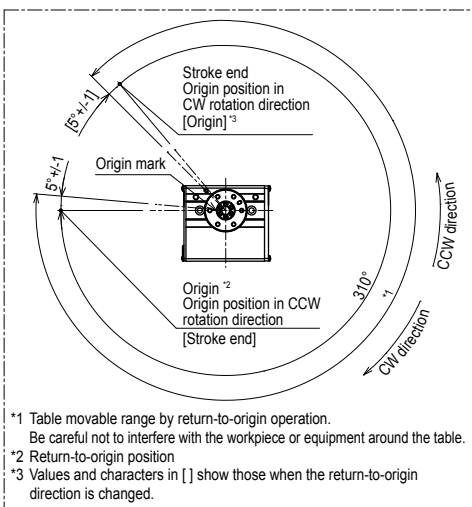
**Weight (kg)** 0.49

Note 1. This drawing is output under the conditions below.  
 Bearing ..... Standard  
 Torque ..... Standard/High torque

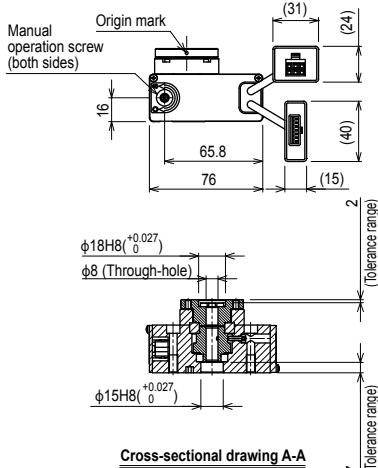
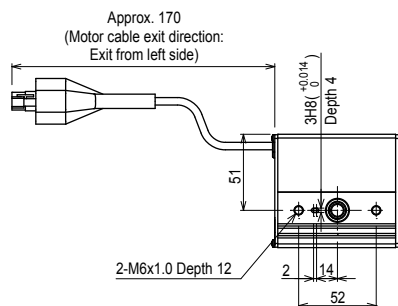
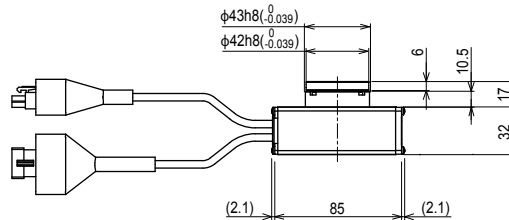
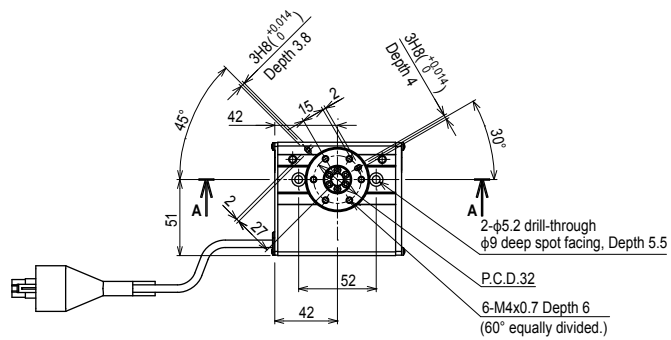
Note 2. The minimum bending radius of the motor cable is R30.

Note 3. The motor cable exit direction is only the left side.

RF02-NH Limit rotation specification – High rigidity model



- \*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.
- \*2 Return-to-origin position
- \*3 Values and characters in [ ] show those when the return-to-origin direction is changed.

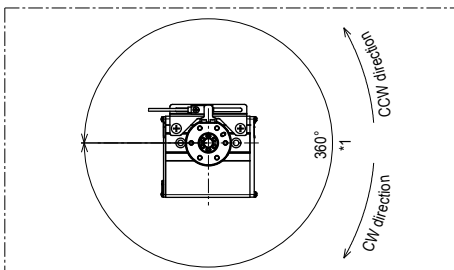


<b>Weight (kg)</b>	0.52
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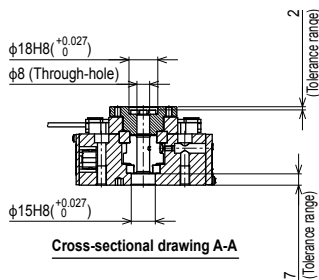
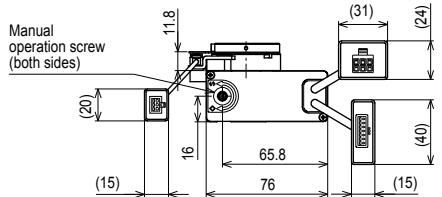
- Note 1. This drawing is output under the conditions below.  
Bearing ..... High rigidity  
Torque ..... Standard/High torque
- Note 2. The minimum bending radius of the motor cable is R30.
- Note 3. The motor cable exit direction is only the left side.



RF02-SH Sensor specification – High rigidity model

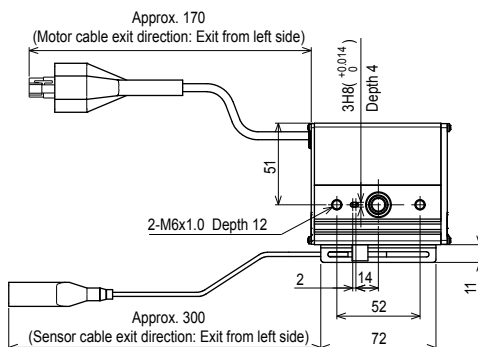
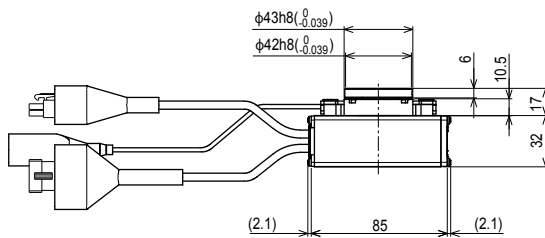
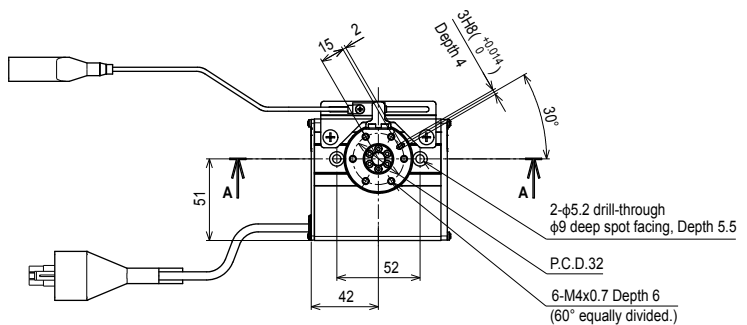


\*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.  
\*2 The return-to-origin position may differ from that shown in this drawing. To align with the position shown in this drawing, refer to the TS Series User's Manual and change the origin coordinates.



Weight (kg)	0.55
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Note 1. This drawing is output under the conditions below.  
Bearing..... High rigidity  
Torque..... Standard/High torque  
Note 2. The minimum bending radii of the motor cable and sensor cable are R30.  
Note 3. The motor cable exit direction is only the left side.



# RF03-N

## Rotary type / Limit rotation specification

● CE compliance    ● Rotation range : 320°

### Ordering method

<b>RF03</b>	<b>N</b>					
<b>Model</b>	<b>Return-to-origin method</b> N: Stroke end (Limit rotation)	<b>Bearing</b> N: Standard H: High rigidity	<b>Torque</b> N: Standard torque H: High torque	<b>Cable entry location</b> R: From the right L: From the left	<b>Rotation direction</b> N: CCW Z: CW	<b>Cable length</b> <sup>Note 1</sup> 1K: 1m 3K: 3m 5K: 5m 10K: 10m

<b>S2</b>	<b>SH</b>	<b>SD</b>
<b>Robot positioner</b> S2: TS-S2 <sup>Note 2</sup>	<b>Robot positioner</b> SH: TS-SH	<b>Robot driver</b> SD: TS-SD
<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>	<b>I/O cable</b> t: 1m
	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)	

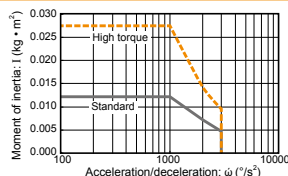
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.498 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.60.

### Basic specifications

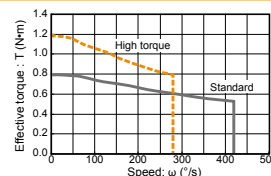
<b>Motor</b>	28 □ Step motor	
<b>Resolution (Pulse/rotation)</b>	4096	
<b>Repeatability</b> <sup>Note 1</sup> (°)	±0.05	
<b>Drive method</b>	Special warm gear + belt	
<b>Torque type</b>	Standard	High torque
<b>Maximum speed</b> <sup>Note 2</sup> (°/sec)	420	280
<b>Rotating torque (N·m)</b>	0.8	1.2
<b>Max. pushing torque (N·m)</b>	0.4	0.6
<b>Backlash (°)</b>	±0.5	
<b>Max. moment of inertia</b> <sup>Note 3</sup> (kg·m <sup>2</sup> )	0.012	0.027
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10	
<b>Rotation range (°)</b>	320	

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the "Moment of inertia vs. Acceleration/deceleration" graph and the "Effective torque vs. speed" graph (reference).  
 Note 3. For moment of inertia and effective torque details, see P.604.

### Moment of inertia Acceleration/deceleration



### Effective torque vs. speed



### Allowable load

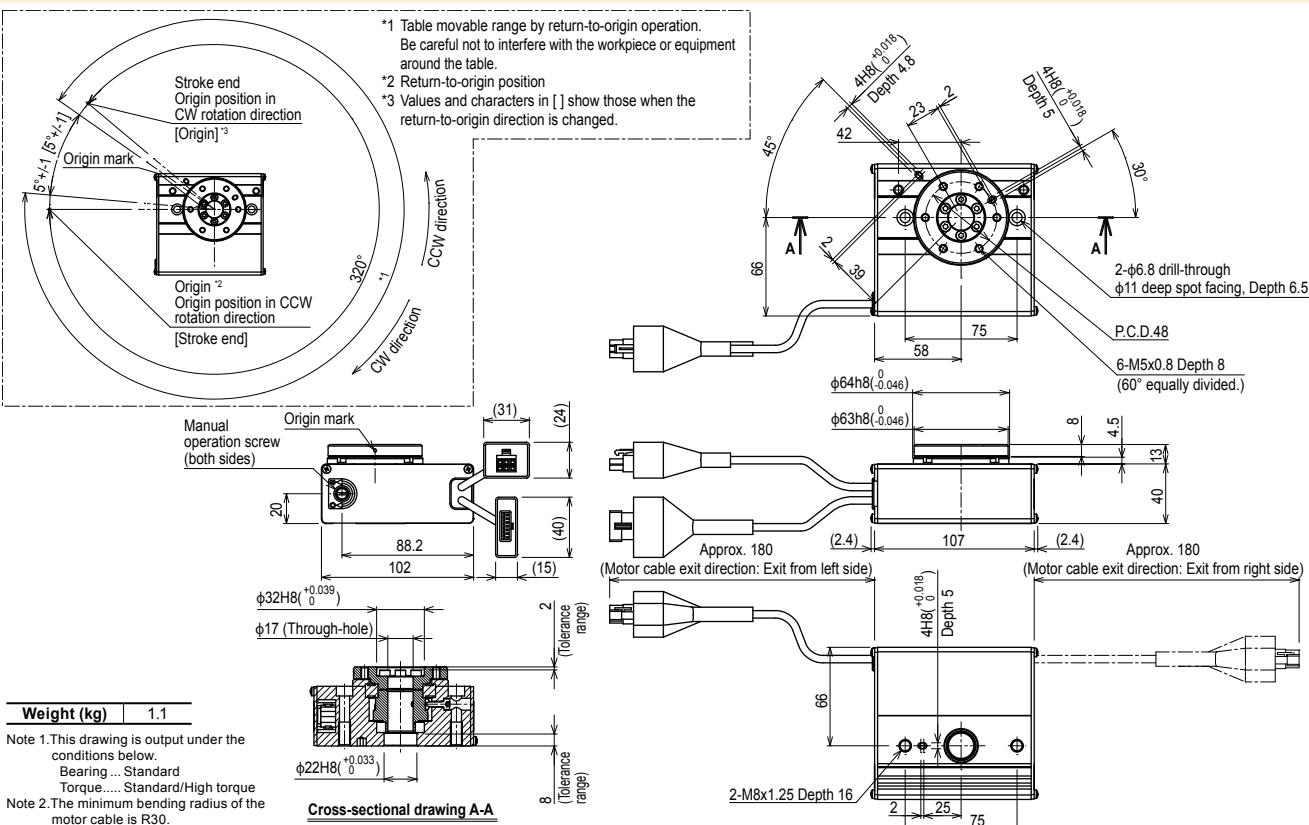
Allowable radial load (N)	Allowable thrust load (N)				Allowable moment (N·m)	
	Standard model	High rigidity model	(a) Standard model	(b) High rigidity model	Standard model	High rigidity model
196	233	197	363	5.3	6.4	

Note. When purchasing the product, set the controller acceleration while carefully checking the "Moment of inertia vs. Acceleration/Deceleration" and "Effective torque vs. Speed" graphs. For details, please refer to the TRANSERVO Series User's Manual.

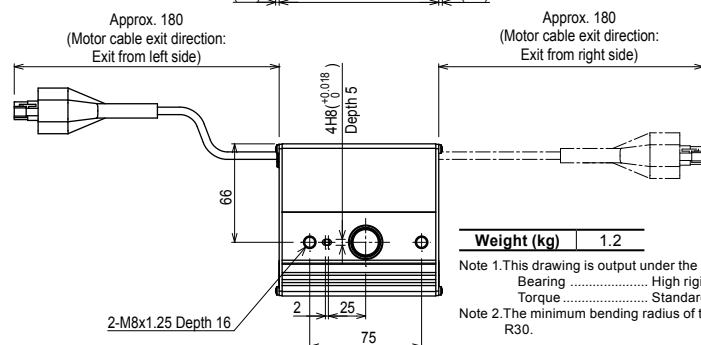
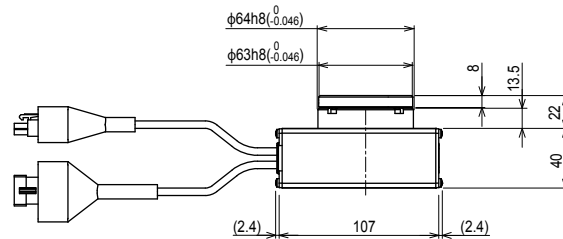
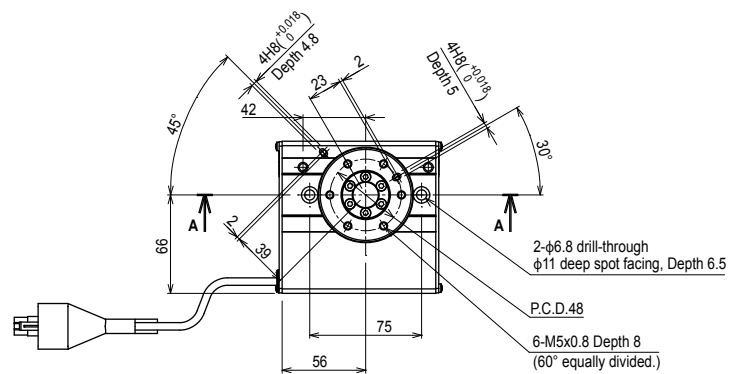
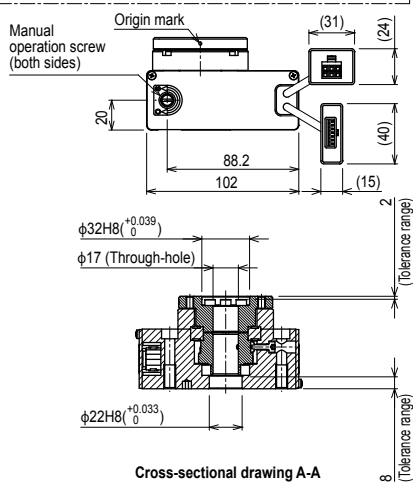
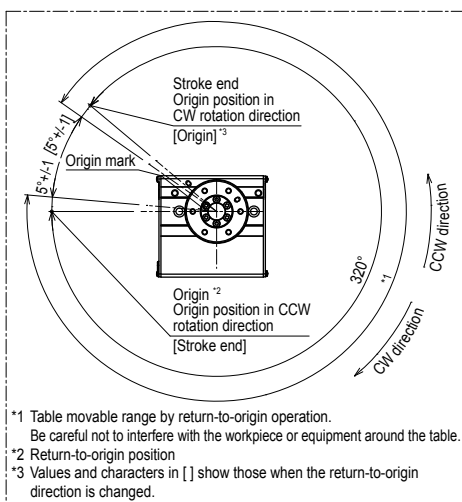
### Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Pulse train control
TS-SD	Pulse train control

### RF03-NN Limit rotation specification – Standard model



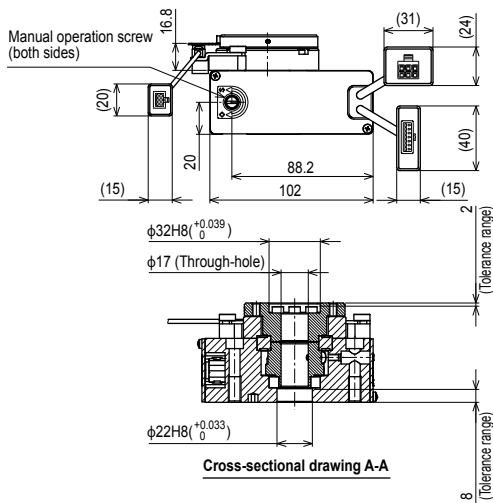
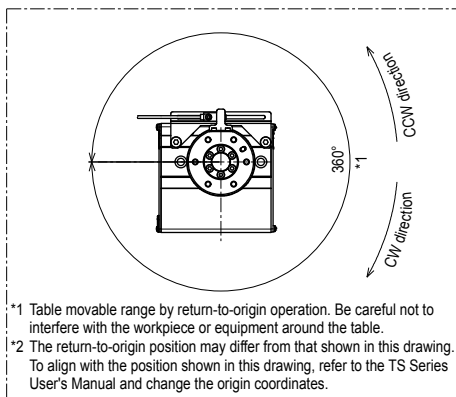
RF03-NH Limit rotation specification – High rigidity model





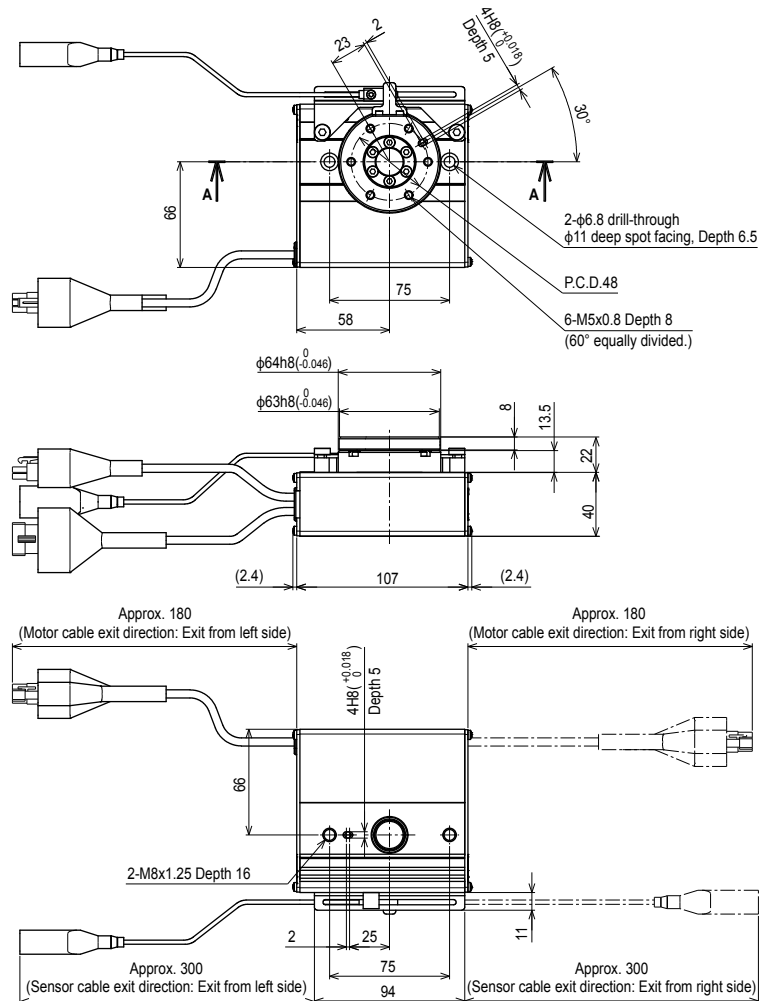


RF03-SH Sensor specification – High rigidity model



Weight (kg)	1.3
-------------	-----

Note 1. This drawing is output under the conditions below.  
 Bearing ..... High rigidity  
 Torque ..... Standard/High torque  
 Note 2. The minimum bending radii of the motor cable and sensor cable are R30.



# RF04-N

## Rotary type / Limit rotation specification



- CE compliance
- Rotation range : 320°

### Ordering method

<b>RF04</b>	<b>N</b>					
<b>Model</b>	<b>Return-to-origin method</b> N: Stroke end (Limit rotation)	<b>Bearing</b> N: Standard H: High rigidity	<b>Torque</b> N: Standard torque H: High torque	<b>Cable entry location</b> R: From the right L: From the left	<b>Rotation direction</b> N: CCW Z: CW	<b>Cable length</b> <sup>Note 1</sup> 1K: 1m 3K: 3m 5K: 5m 10K: 10m

<b>S2</b>	<b>I/O</b>
<b>Robot positioner</b> S2: TS-S2 <sup>Note 2</sup>	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>
<b>SH</b>	<b>Battery</b>
<b>Robot positioner</b> SH: TS-SH	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
<b>SD</b>	<b>1</b>
<b>Robot driver</b> SD: TS-SD	<b>I/O cable</b> t: 1m

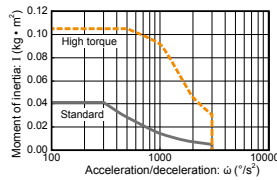
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.498 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.60.

### Basic specifications

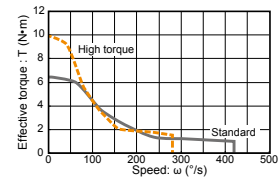
<b>Motor</b>	42 □ Step motor	
<b>Resolution (Pulse/rotation)</b>	20480	
<b>Repeatability</b> <sup>Note 1</sup> (°)	+/-0.05	
<b>Drive method</b>	Special warm gear + belt	
<b>Torque type</b>	Standard	High torque
<b>Maximum speed</b> <sup>Note 2</sup> (°/sec)	420	280
<b>Rotating torque (N·m)</b>	6.6	10
<b>Max. pushing torque (N·m)</b>	3.3	5
<b>Backlash (°)</b>	+/-0.5	
<b>Max. moment of inertia</b> <sup>Note 3</sup> (kg·m <sup>2</sup> )	0.04	0.1
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10	
<b>Rotation range (°)</b>	320	

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the "Moment of inertia vs. Acceleration/deceleration" graph and the "Effective torque vs. speed" graph (reference).  
 Note 3. For moment of inertia and effective torque details, see P.604.

### Moment of inertia Acceleration/deceleration



### Effective torque vs. speed



### Allowable load

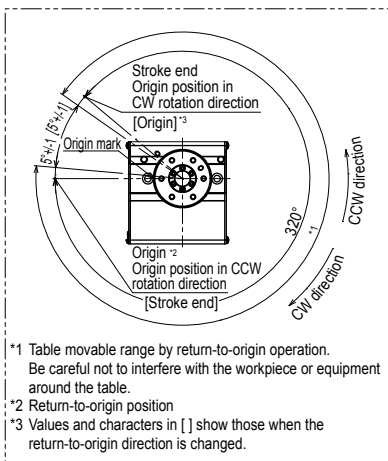
<b>Allowable radial load (N)</b>	<b>Allowable thrust load (N)</b>				<b>Allowable moment (N·m)</b>		
Standard model	High rigidity model	(a) Standard model	(a) High rigidity model	(b) Standard model	(b) High rigidity model	Standard model	High rigidity model
314	378	296	398	517	9.7	12.0	

Note. When purchasing the product, set the controller acceleration while carefully checking the "Moment of inertia vs. Acceleration/Deceleration" and "Effective torque vs. Speed" graphs.  
 For details, please refer to the TRANSERVO Series User's Manual.

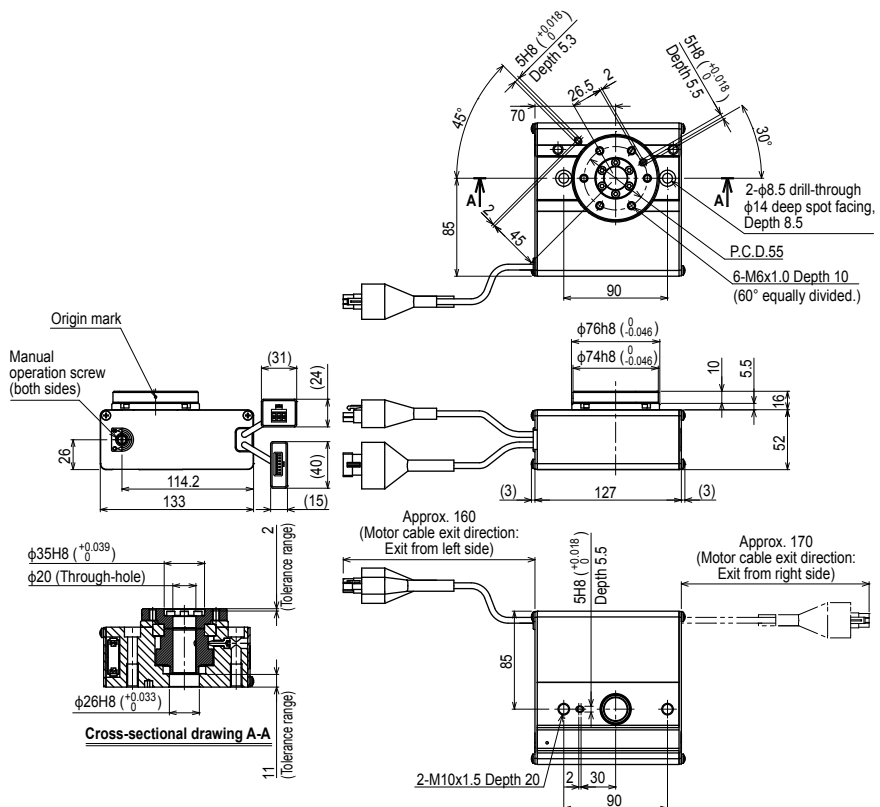
### Controller

<b>Controller</b>	<b>Operation method</b>
TS-S2	I/O point trace / Remote command
TS-SH	Pulse train control
TS-SD	

### RF04-NN Limit rotation specification – Standard model



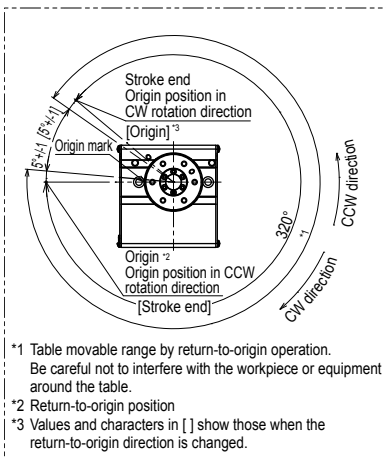
\*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.  
 \*2 Return-to-origin position  
 \*3 Values and characters in [ ] show those when the return-to-origin direction is changed.



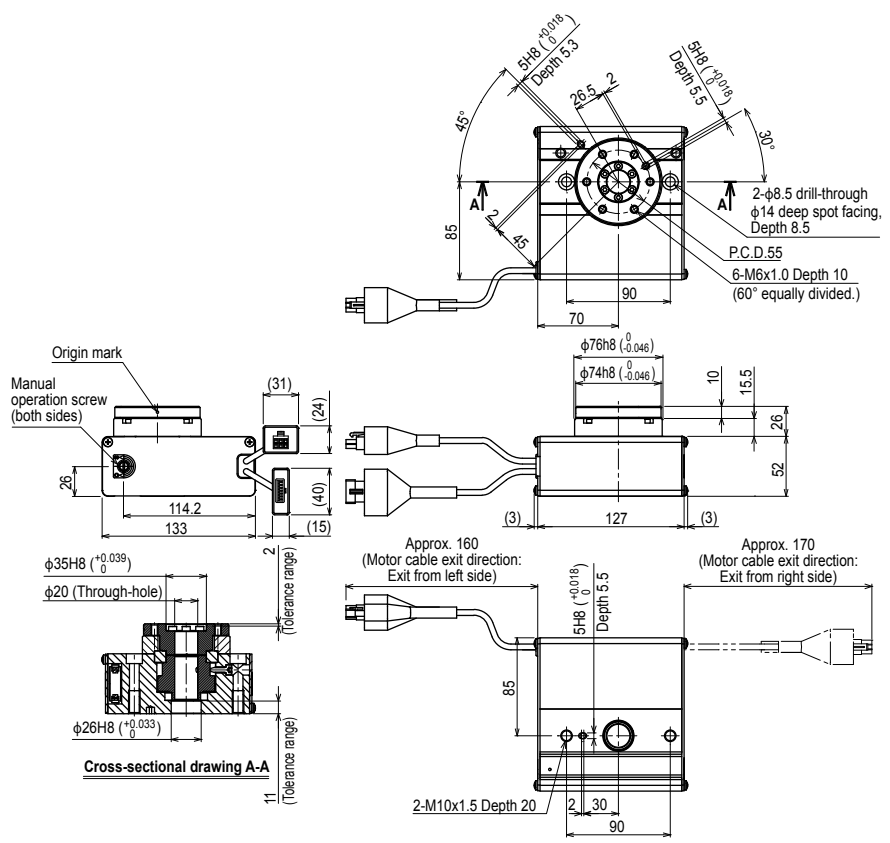
<b>Weight (kg)</b>	2.2
--------------------	-----

Note 1. This drawing is output under the conditions below.  
 Bearing: Standard  
 Torque: Standard/High torque  
 Note 2. The minimum bending radius of the motor cable is R30.

RF04-NH Limit rotation specification – High rigidity model



- \*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.
- \*2 Return-to-origin position
- \*3 Values and characters in [ ] show those when the return-to-origin direction is changed.



Weight (kg)	2.4
-------------	-----

Note 1. This drawing is output under the conditions below.  
 Bearing..... High rigidity  
 Torque..... Standard/High torque  
 Note 2. The minimum bending radius of the motor cable is R30.





# BD04

Belt type

CE compliance

## Ordering method

<b>BD04</b>	<b>48</b>	<b>N</b>	<b>N</b>			<b>S2</b>		
<b>Model</b>	<b>Lead</b> 48: 48mm	<b>Brake</b> N: With no brake	<b>Origin position</b> N: Standard	<b>Stroke</b> 300: 300mm 500: 500mm 600: 600mm 700: 700mm 800: 800mm 900: 900mm 1000: 1000mm	<b>Cable length</b> <small>Note 1</small> 1K: 1m 3K: 3m 5K: 5m 10K: 10m	<b>Robot positioner</b> S2: TS-S2 <small>Note 2</small>	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 3</small>	
						<b>SH</b>		
						<b>Robot positioner</b> SH: TS-SH	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 3</small>	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
						<b>SD</b>	<b>1</b>	
						<b>Robot driver</b> SD: TS-SD	<b>I/O cable</b> t: 1m	

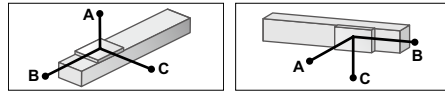
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.498 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.60.

## Basic specifications

<b>Motor</b>	28 □ Step motor
<b>Resolution (Pulse/rotation)</b>	4096
<b>Repeatability</b> <small>Note 1</small> (mm)	+/-0.1
<b>Drive method</b>	Belt
<b>Equivalent lead (mm)</b>	48
<b>Maximum speed</b> <small>Note 2</small> (mm/sec)	1100
<b>Maximum payload (kg)</b>	1
<b>Stroke (mm)</b>	300/500/600/700/800/900/1000
<b>Overall length (mm) (Horizontal installation)</b>	Stroke + 195.5
<b>Maximum outside dimension of body cross-section (mm)</b>	W40 × H101.9
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right.

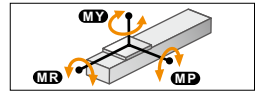
## Allowable overhang Note



Horizontal installation (Unit: mm)				Wall installation (Unit: mm)			
	A	B	C		A	B	C
0.5kg	8036	1950	1504	0.5kg	1614	1942	8013
1kg	3933	968	747	1kg	798	961	3969

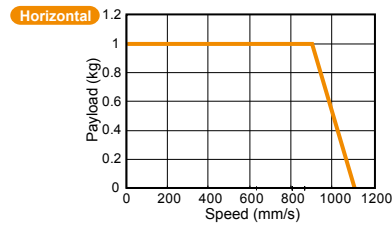
Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000km (This does not warrant the service life of the product.). (Service life is calculated for 600mm stroke models.)

## Static loading moment



(Unit: N·m)		
MY	MP	MR
10	10	20

## Speed vs. payload

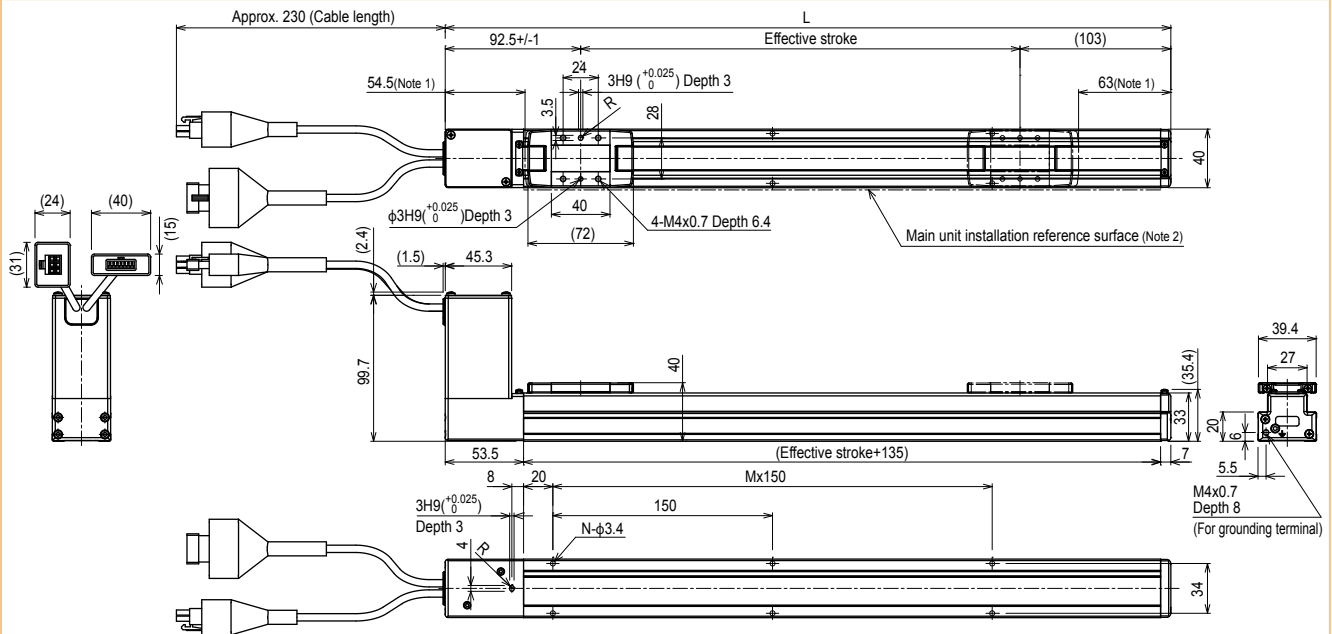


Quick reference		
Payload (kg)	Speed (mm/sec)	%
1	900	90
0.5	1000	95
0	1100	100

## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

## BD04



Effective stroke	300	500	600	700	800	900	1000
<b>L</b>	495.5	695.5	795.5	895.5	995.5	1095.5	1195.5
<b>M</b>	2	4	4	5	6	6	7
<b>N</b>	6	10	10	12	14	14	16
<b>Weight (kg)</b>	1.19	1.45	1.58	1.71	1.84	1.97	2.1

Note 1. Position from both ends to the mechanical stopper. (Movable range during return-to-origin)  
 Note 2. When installing using the main unit installation reference surface, make the mating or positioning height 2mm or more higher than the reference surface since the R-chamfering is provided on the main unit. (Recommended height, 5mm)  
 Note 3. The minimum bending radius of the motor cable is R30.



# BD07

Belt type



CE compliance

## Ordering method

<b>BD07</b>	<b>48</b>	<b>N</b>	<b>N</b>			<b>S2</b>	
<b>Model</b>	<b>Lead</b> 48: 48mm	<b>Brake</b> N: With no brake	<b>Origin position</b> N: Standard	<b>Stroke</b>	<b>Cable length</b> <sup>Note 1</sup>	<b>Robot positioner</b> S2: TS-S2 <sup>Note 2</sup>	<b>I/O</b>
				300: 300mm 500: 500mm 600: 600mm 700: 700mm 800: 800mm 900: 900mm 1000: 1000mm 1200: 1200mm 1500: 1500mm 1800: 1800mm 2000: 2000mm	1K: 1m 3K: 3m 5K: 5m 10K: 10m		NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <sup>Note 3</sup>
						<b>SH</b>	
						<b>Robot positioner</b> SH: TS-SH	<b>I/O</b>
							<b>Battery</b>
							B: With battery (Absolute) N: None (Incremental)
						<b>SD</b>	<b>1</b>
						<b>Robot driver</b> SD: TS-SD	<b>I/O cable</b>
							t: 1m

Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.498 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.60.

## Basic specifications

<b>Motor</b>	56 □ Step motor
<b>Resolution (Pulse/rotation)</b>	20480
<b>Repeatability</b> <sup>Note 1</sup> (mm)	+/-0.1
<b>Drive method</b>	Belt
<b>Equivalent lead (mm)</b>	48
<b>Maximum speed</b> <sup>Note 2</sup> (mm/sec)	1500
<b>Maximum payload (kg)</b>	14
<b>Stroke (mm)</b>	300/500/600/700/800/900/ 1000/1200/1500/1800/2000
<b>Overall length (mm) (Horizontal installation)</b>	Stroke + 285.6
<b>Maximum outside dimension of body cross-section (mm)</b>	W70 × H147.5
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed needs to be changed in accordance with the payload.  
 See the "Speed vs. payload" graph shown on the right.

## Allowable overhang

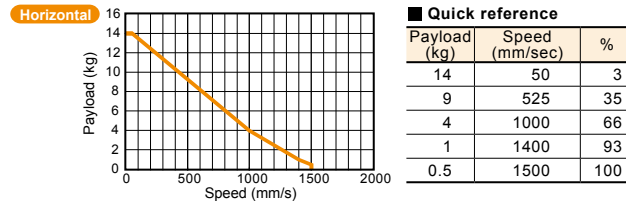
Horizontal installation (Unit: mm)				Wall installation (Unit: mm)			
	A	B	C		A	B	C
<b>3kg</b>	5767	1353	1247	<b>3kg</b>	1324	1354	5588
<b>8kg</b>	1839	399	458	<b>8kg</b>	474	399	1658
<b>14kg</b>	829	154	254	<b>14kg</b>	255	151	643

Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000km (This does not warrant the service life of the product.). (Service life is calculated for 600mm stroke models.)

## Static loading moment

(Unit: N·m)		
MY	MP	MR
46	46	101

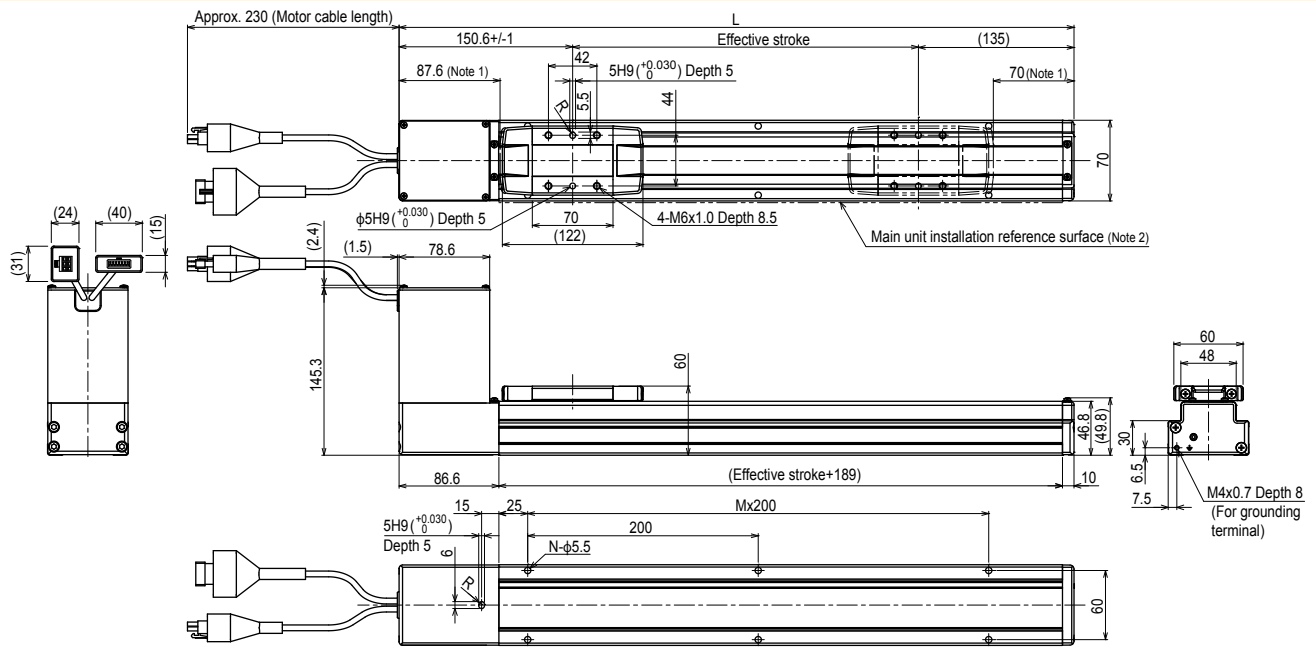
## Speed vs. payload



## Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	Remote command
TS-SD	Pulse train control

## BD07



Effective stroke	300	500	600	700	800	900	1000	1200	1500	1800	2000
<b>L</b>	585.6	785.6	885.6	985.6	1085.6	1185.6	1285.6	1485.6	1785.6	2085.6	2285.6
<b>M</b>	2	3	3	4	4	5	5	6	8	9	10
<b>N</b>	6	8	8	10	10	12	12	14	18	20	22
<b>Weight (kg)</b>	4.12	4.8	5.14	5.48	5.82	6.16	6.5	7.18	8.2	9.22	9.9

Note 1. Position from both ends to the mechanical stopper. (Movable range during return-to-origin)  
 Note 2. When installing using the main unit installation reference surface, make the mating or positioning height 2mm or more higher than the reference surface since the R-chamfering is provided on the main unit. (Recommended height, 5mm)  
 Note 3. The minimum bending radius of the motor cable is R30.