

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.626

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:



Note. SG07 is only applicable to TS-SH.



TS-S2 TS-SH

Robot driver TS-SD

P.636

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:



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



TS-SD

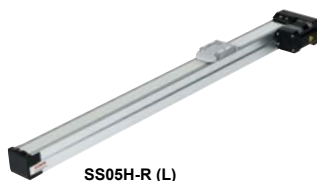
Newly developed vector control method provides functions and performance similar to servomotors.

SS type (Slider type)

Straight model P.256



Space-saving model (Side mounted motor model) P.257



SG type (Slider type)

Straight model P.262



SR type (Rod type standard)

Straight model P.263



Space-saving model (Side mounted motor model) P.264



SR type (Rod type with support guide)

Straight model P.266



Space-saving model (Side mounted motor model) P.267



Type	Model	Size (mm) ^{Note 1}	Lead (mm)	Maximum payload (kg) ^{Note 2}		Maximum speed (mm/sec.) ^{Note 3}	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.256
			6	4	2	300		
			2	6	4	100		SS04-R (L): P.257
	SS05-S SS05-R (L)	W55 × H56	20	4	-	1000	50 to 800	SS05-S: P.258
			12	6	1	600		SS05-R (L): P.259
			6	10	2	300		
	SS05H-S SS05H-R (L)	W55 × H56	20	6	-	1000	50 to 800	SS05H-S: P.260
			12	8	2	600 (Horizontal) 500 (Vertical)		
			6	12	4	300 (Horizontal) 250 (Vertical)		SS05H-R (L): P.261
SG type (Slider type)	SG07	W65 × H64	20	36	4	1200	50 to 800	SG07: P.262
			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.263
			6	20	8	250		SR03-R (L): P.264
			2	45	25	80		SR03-U: P.265
	SR04-S SR04-R (L)	W48 × H58	12	25	5	500	50 to 300	SR04-S: P.268
			6	40	12	250		SR04-R (L): P.269
			2	45	25	80		
	SR05-S SR05-R (L)	W56.4 × H71	12	50	10	500	50 to 300	SR05-S: P.272
			6	55	20	150		SR05-R (L): P.273
			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.266
			6	20	7.5	250		SRD03-U: P.267
			2	45	24	80		
	SRD04-S SRD04-U	W135 × H58	12	25	4	500	50 to 300	SRD04-S: P.270
			6	40	11	250		SRD04-U: P.271
			2	45	24	80		
	SRD05-S SRD05-U	W157 × H71	12	50	8.5	300	50 to 300	SRD05-S: P.274
			6	55	18.5	150		SRD05-U: P.275
			2	60	28.5	50		

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

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

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

■ Allowable ambient temperature for robot installation

SS/SR type 0 to 40 °C

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

STH type (Slide table type)

Straight model

P.276

Space-saving model

P.277



STH04-S
STH06-S



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

Type	Model	Size (mm) ^{Note 1}	Lead (mm)	Maximum payload (kg) ^{Note 2}		Maximum speed (mm/sec.) ^{Note 3}	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.276
	STH04-R (L) ^{Note 4}	W73 × H51	10	4	1	400		STH04-R (L): P.277
	STH06	W61 × H65	8	9	2	150	50 to 150	STH06: P.278
	STH06-R (L)	W106 × H70	16	6	4	400		STH06-R (L): P.279

RF type (Rotary type)

Standard model

P.280

High rigidity model

P.281



RF02
RF03
RF04

Type	Model	Height (mm)	Torque type	Rotation torque (N · m)	Maximum pushing torque (N · m)	Maximum speed (mm/sec.) ^{Note 3}	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.280
	RF02-S	49 (High rigidity)	H: High torque	0.32	0.16	280	360 (RF02-S)	RF02-S: P.283
	RF03-N	53 (Standard)	N: Standard	0.8	0.4	420	320 (RF03-N)	RF03-N: P.284
	RF03-S	62 (High rigidity)	H: High torque	1.2	0.6	280	360 (RF03-S)	RF03-S: P.287
	RF04-N	68 (Standard)	N: Standard	6.6	3.3	420	320 (RF04-N)	RF04-N: P.288
	RF04-S	78 (High rigidity)	H: High torque	10	5	280	360 (RF04-S)	RF04-S: P.291

BD type (Belt type)

Straight model

P.292



BD04
BD05
BD07

Type	Model	Size (mm) ^{Note 1}	Lead (mm)	Maximum payload (kg) ^{Note 2}		Maximum speed (mm/sec.) ^{Note 3}	Stroke (mm)	Page
				Horizontal	Vertical			
BD type (Belt type)	BD04	W40 × H40	48	1	-	1100	300 to 1000	BD04: P.292
	BD05	W58 × H48	48	5	-	1400	300 to 2000	BD05: P.293
	BD07	W70 × H60	48	14	-	1500	300 to 2000	BD07: P.294

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

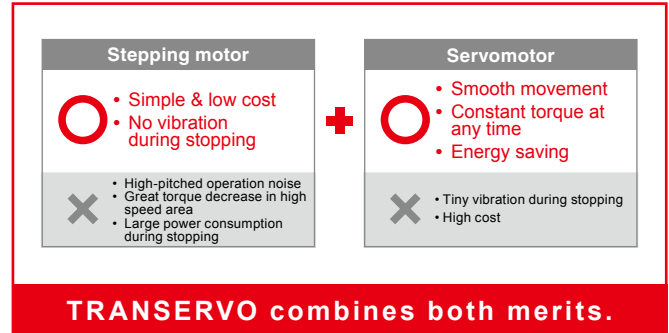
STH/RF/BD type 5 to 40 °C

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 CO₂ 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.

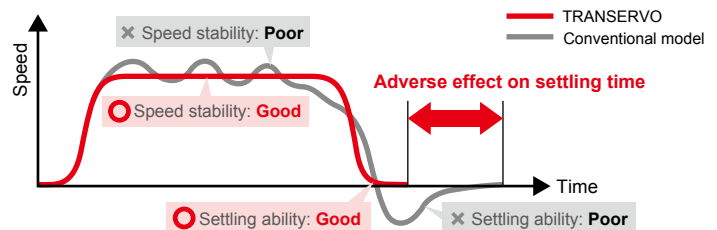
This resolver is a magnetic position detector. The resolver features a simple structure without using electronic components and optical elements, and less potential failure factors when compared to general optical encoders. The resolver has **high environment resistance and low failure ratio**, and is used in a wide variety of fields aiming at reliability such as automobile or aircraft industry.



POINT 3

Excellent controllability

Use of a high resolution (4096, 20480 pulse/rev) 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. (SG type is only applicable to TS-SH.)



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

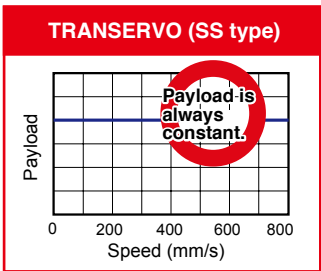
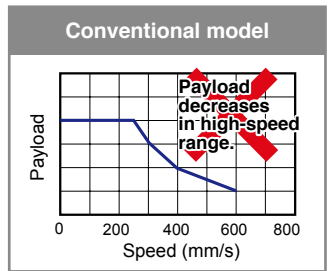
Differential slip is small due to its structure and service life is long.

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.^{Note} 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

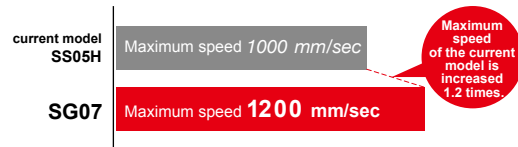
Maximum payload 46 kg

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^{Note}.

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

Highly reliable resolver is used.

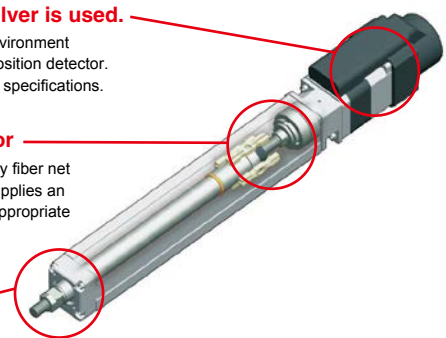
A resolver with excellent environment resistance is used for the position detector. All models can select brake specifications.

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

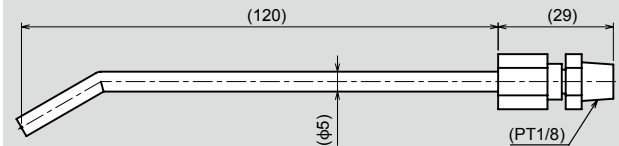
The dual-layer scraper is in contact with the front of the rod to ensure excellent fine contaminant particle removal performance. The scraper removes fine contaminant particles sticking to the rod through multi steps to prevent them from entering the inside and troubles caused by foreign objects. Additionally, 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.

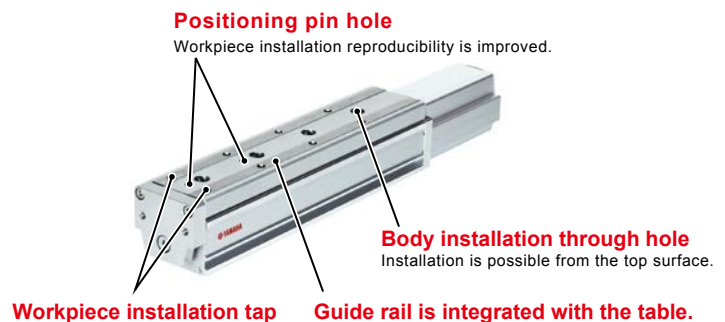


STH type (Slide table type) Straight model/Space-saving model

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.

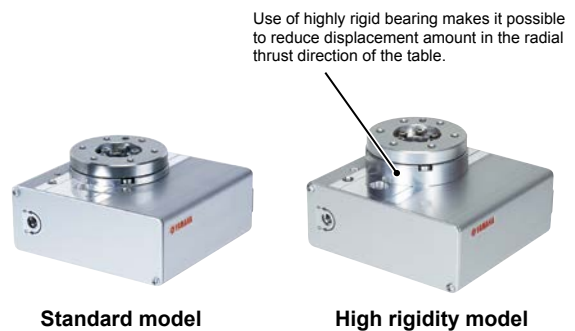


RF type (Rotary type) Standard model/High rigidity model

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.



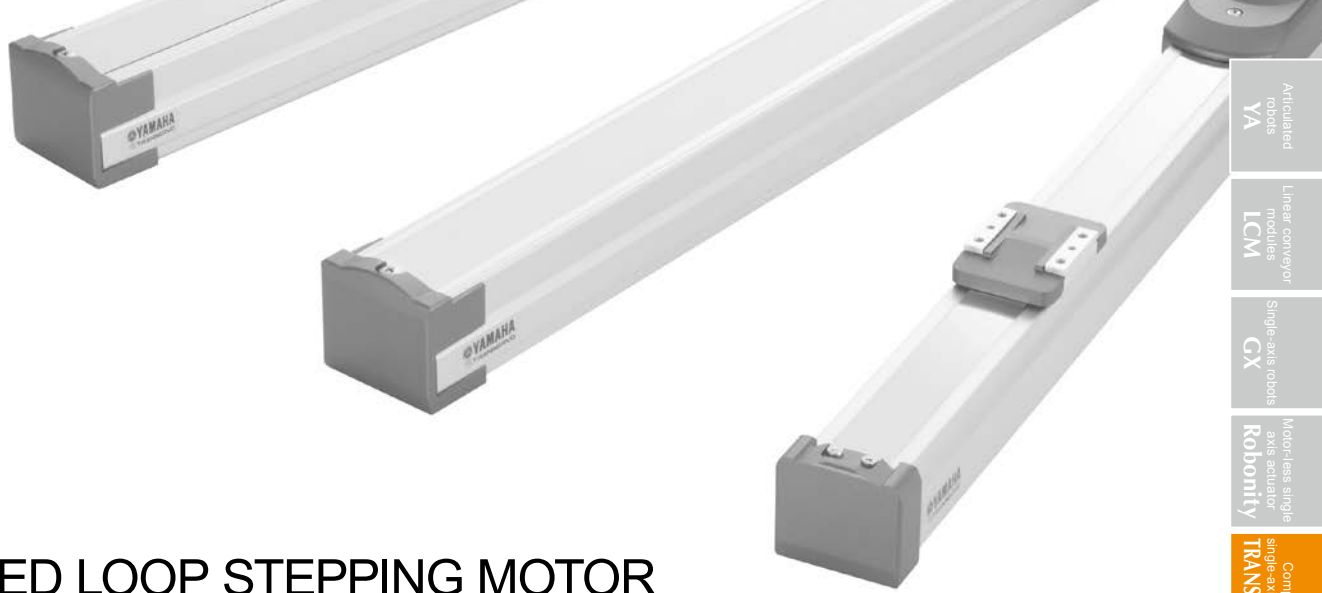
BD type (Belt type) Straight model

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.





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

CLOSED LOOP STEPPING MOTOR SINGLE-AXIS ROBOTS

TRANSERVO SERIES

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TRANSERVO SPECIFICATION SHEET

Type	Model	Size (mm) ^{Note 1}	Lead (mm)	Maximum payload (kg) ^{Note 2}		Maximum speed (mm/sec) ^{Note 3}	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.256 - P.257
			6	4	2	300		
			2	6	4	100		
	SS05-S SS05-R (L)	W55 × H56	20	4	-	1000	50 to 800	P.258 - P.259
			12	6	1	600		
			6	10	2	300		
SS05H-S SS05H-R (L)	W55 × H56	20	6	-	1000	50 to 800	P.260 - P.261	
		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.262
			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.263 - P.265
			6	20	8	250		
			12	25	5	500		
	SR04-S SR04-R (L)	W48 × H58	6	40	12	250	50 to 300	P.268 - P.269
			2	45	25	80		
			12	50	10	300		
SR05-S SR05-R (L)	W56.4 × H71	6	55	20	150	50 to 300	P.272 - P.273	
		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.266 - P.267
			12	25	4	500		
			6	40	11	250		
	SRD04-S SRD04-U	W135 × H58	2	45	24	80	50 to 300	P.270 - P.271
			12	50	8.5	300		
			6	55	18.5	150		
SRD05-S SRD05-U	W157 × H71	2	60	28.5	50	50 to 300	P.274 - P.275	
		6	55	18.5	150			
		12	10	3.5	500			
STH Type (Slide table type) Straight model/ Space-saving model	STH04-S	W45 × H46	5	6	2	200	50 to 100	P.276 - P.277
	STH04-R (L) ^{Note 4}	W73 × H51	10	4	1	400		
	STH06	W61 × H65	8	9	2	150	50 to 150	P.278 - P.279
	STH06-R (L)	W106 × H70	16	6	4	400		

Type	Model	High (mm)	Torque type	Rotational torque (N · m)	Maximum pushing torque (N · m)	Maximum speed (mm/sec) ^{Note 3}	Rotation range (°)	Detailed info page
RF Type (Rotary type) Standard model/ High rigidity model	RF02-N	42 (Standard)	N:Standard	0.22	0.11	420	310 (RF02-N)	P.280 - P.283
	RF02-S	49 (High rigidity)	H:High torque	0.32	0.16	280	360 (RF02-S)	
	RF03-N	53 (Standard)	N:Standard	0.8	0.4	420	320 (RF03-N)	P.284 - P.287
	RF03-S	62 (High rigidity)	H:High torque	1.2	0.6	280	360 (RF03-S)	
	RF04-N	68 (Standard)	N:Standard	6.6	3.3	420	320 (RF04-N)	P.288 - P.291
	RF04-S	78 (High rigidity)	H:High torque	10	5	280	360 (RF04-S)	

Type	Model	Size (mm) ^{Note 1}	Lead (mm)	Maximum payload (kg) ^{Note 2}		Maximum speed (mm/sec) ^{Note 3}	Stroke (mm)	Detailed info page
				Horizontal	Vertical			
BD Type (Belt type)	BD04	W40 × H40	48	1	-	1100	300 to 1000	P.292
	BD05	W58 × H48	48	5	-	1400	300 to 2000	P.293
	BD07	W70 × H60	48	14	-	1500	300 to 2000	P.294

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	5	200	80
2	432	86	2	250	100	1	500	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	4.5	200	80
1.5	432	86	1.5	250	100	1.5	250	100

SR04

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

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

SRD04

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

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

SR05

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

Vertical			Lead 12			Lead 6			Lead 2		
Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%	Payload (kg)	Speed (mm/sec)	%
10	69	23	20	48	32	30	30	60	28.5	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	6.5	102	68	5	50	100	5	50	100
0.5	300	100	0.5	150	100	0.5	150	100	0.5	150	100

STH04

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

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

STH06

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

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

Robot ordering method description

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

[Example]

● Mechanical ▶ SS05

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

● Controller ▶ TS-S2

- Input /Output selection ▷ NPN

● Ordering Method

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

Mechanical section

Controller section

To find detailed controller information see the controller page.

TS-S2 ▶ [P.626](#), TS-SH ▶ [P.626](#), TS-SD ▶ [P.636](#)

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

● 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)

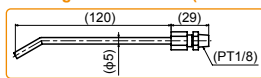
Type	Model No.
Feet (2 plates per set)*	KCW-M223F-00
Flange (1 piece)	KCW-M224F-00

* 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)

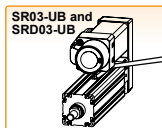


Model KCU-M3861-00

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.

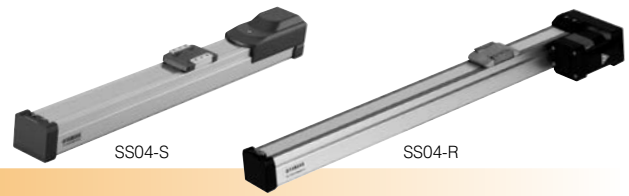
Model	SR04-02SB, Vertical mount, 25 kg payload
Life distance	500 km → Life time : Approx. 3 years
Operating conditions	100mm back-and-forth movement, shuttle time 16 seconds (duty: 20%)
Word conditions	16 hours per day
Work days	240 days per year

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
	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: 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	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

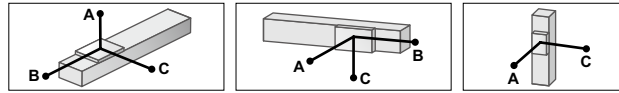
- Note 1. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.
 Note 2. The robot cable is flexible and resists bending.
 Note 3. See P.634 for DIN rail mounting bracket.
 Note 4. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

Motor	42 □ Step motor		
Resolution (Pulse/rotation)	20480		
Repeatability (mm)	±0.02		
Deceleration mechanism	Ball screw φ8		
Maximum motor torque (N·m)	0.27		
Ball screw lead (mm)	12	6	2
Maximum speed (mm/sec)	600	300	100
Maximum payload (kg)	Horizontal 2	4	6
	Vertical 1	2	4
Max. pressing force (N)	45	90	150
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

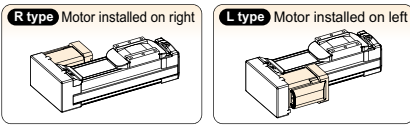


Horizontal installation (Unit: mm)				Wall installation (Unit: mm)				Vertical installation (Unit: mm)			
	A	B	C		A	B	C		A	C	
Lead 12	1kg	807	218	292	1kg	274	204	776	0.5kg	407	408
	2kg	667	107	152	2kg	133	93	611	1kg	204	204
Lead 6	2kg	687	116	169	2kg	149	102	656	1kg	223	223
	3kg	556	76	112	3kg	92	62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

Static loading moment

Static loading moment (Unit: N·m)		
MY	MP	MR
16	19	17

Motor installation (Space-saving model)

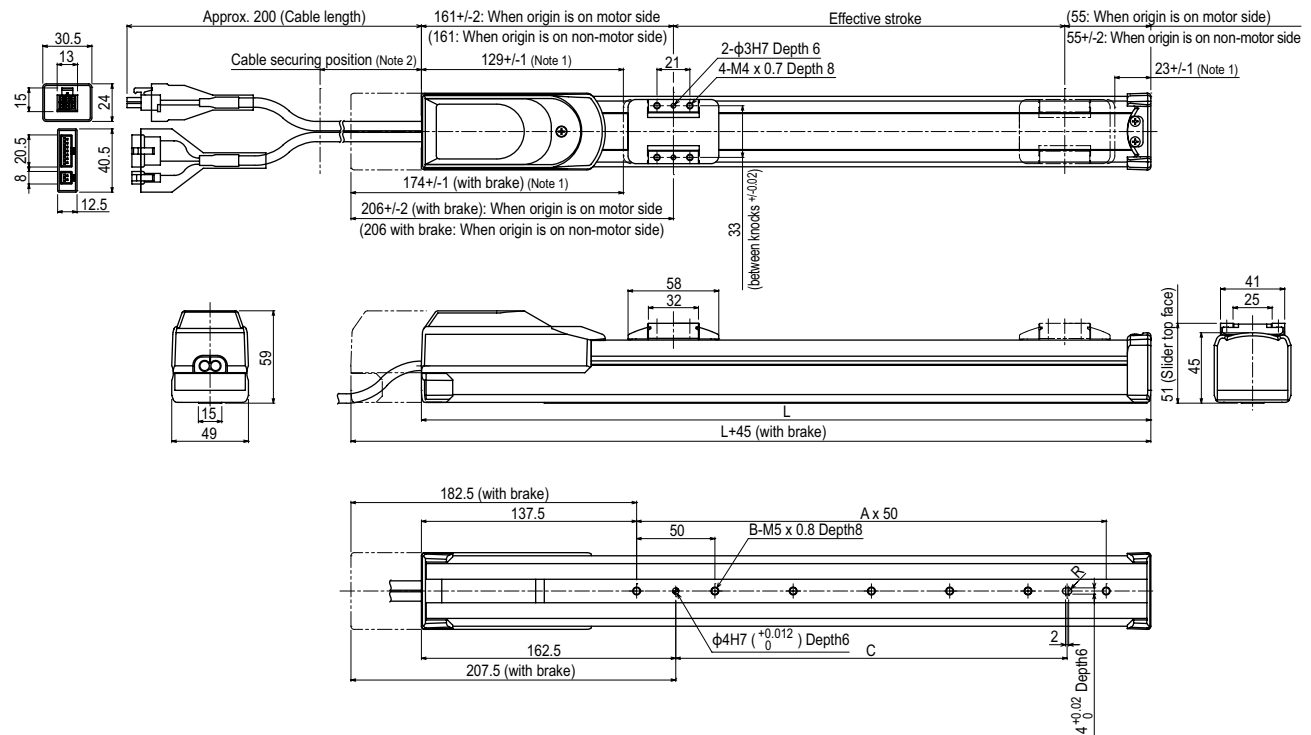


Note. Distance from center of slider upper surface to carrier center-of-gravity at a guide service life of 10,000 km (Service life is calculated for 400mm stroke models).

Controller

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

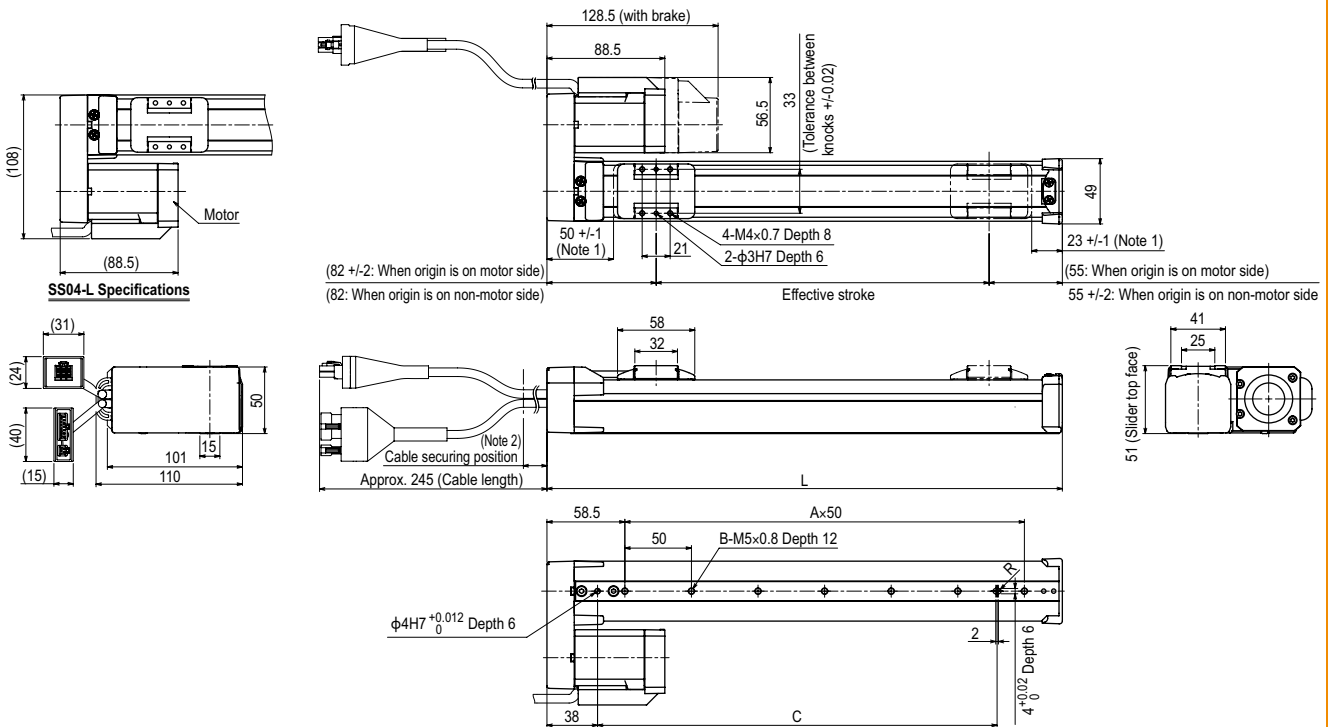
SS04 Straight model S



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)	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
L	187	237	287	337	387	437	487	537
A	2	3	4	5	6	7	8	9
B	3	4	5	6	7	8	9	10
C	100	150	200	250	300	350	400	450
Weight (kg) ^{Note 4}	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)	N: With no brake B: With brake	N: Standard Z: Non-motor side	N: Standard grease C: Clean room grease	50 to 800 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

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

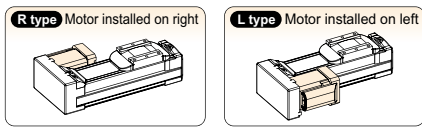
- Note 1. Brake-equipped models can be selected only when the lead is 12mm or 6mm.
 Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.
 Note 3. The robot cable is flexible and resists bending.
 Note 4. See P.634 for DIN rail mounting bracket.
 Note 5. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

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

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

Motor installation (Space-saving model)



Allowable overhang

Horizontal installation (Unit: mm)	A			B			C		
	2kg	4kg	4kg	2kg	4kg	4kg	2kg	4kg	4kg
Lead 20	413	334	347	139	92	109	218	123	139
Lead 12	413	334	347	139	92	109	218	123	139
Lead 6	413	334	347	139	92	109	218	123	139
Lead 20	413	334	347	139	92	109	218	123	139
Lead 12	413	334	347	139	92	109	218	123	139
Lead 6	413	334	347	139	92	109	218	123	139
Lead 20	413	334	347	139	92	109	218	123	139
Lead 12	413	334	347	139	92	109	218	123	139
Lead 6	413	334	347	139	92	109	218	123	139

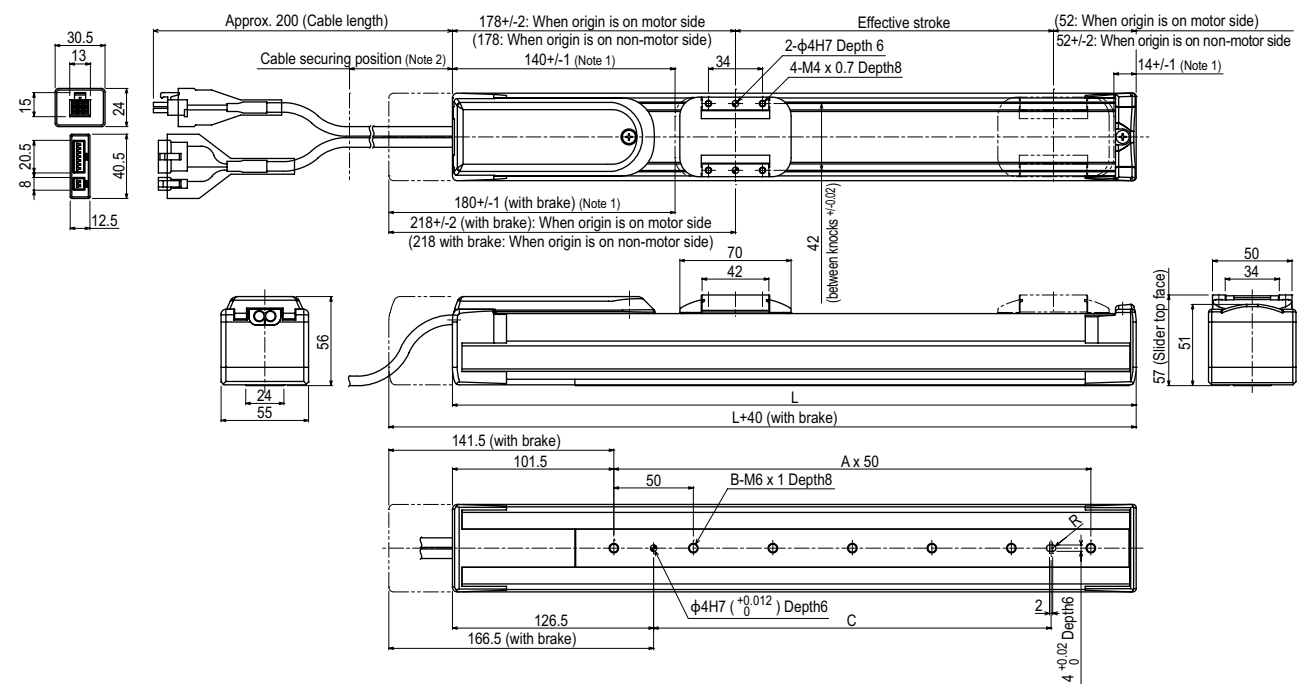
Static loading moment

Static loading moment (Unit: N·m)	MY			MP			MR		
	0.5kg	1kg	1kg	0.5kg	1kg	1kg	0.5kg	1kg	1kg
Lead 20	578	286	286	578	286	286	25	33	30
Lead 12	578	286	286	578	286	286	25	33	30
Lead 6	578	286	286	578	286	286	25	33	30

Controller

Controller	Operation method
T\$2	IO point trace / Remote command
T\$H	Remote command
T\$D	Pulse train control

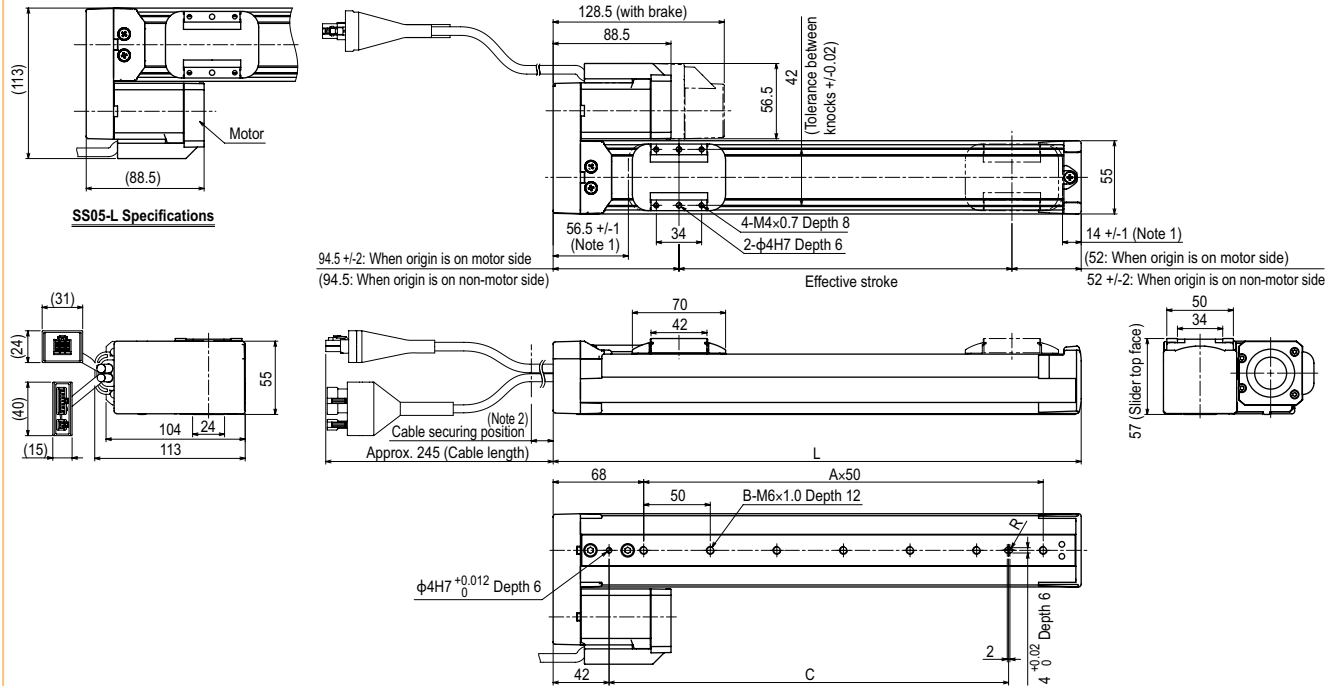
SS05 Straight model



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)	Lead 20	1000										933	833	733	633	
	Lead 12	600										560	500	440	380	
	Lead 6	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
L	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
A	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
B	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
C	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
Weight (kg) ^{Note 4}	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
Maximum speed for each stroke ^{Note 5} (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 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

SS05H

Model	Lead	Model	Brake ^{Note 1}	Origin position	Grease option	Stroke	Cable length ^{Note 3}
	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 ^{Note 2} Z: Non-motor side	N: Standard grease C: Clean room grease	50 to 800 (50mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m

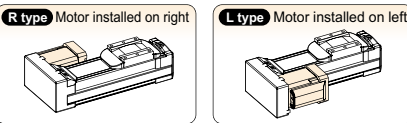
Note 1. Brake-equipped models can be selected only when the lead is 12mm or 6mm.
 Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.
 Note 3. The robot cable is flexible and resists bending.
 Note 4. See P.634 for DIN rail mounting bracket.
 Note 5. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

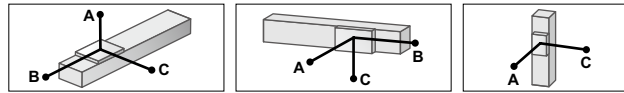
Motor	42 □ Step motor		
Resolution (Pulse/rotation)	20480		
Repeatability ^{Note 1} (mm)	±0.02		
Deceleration mechanism	Ball screw φ12		
Maximum motor torque (N·m)	0.47		
Ball screw lead (mm)	20	12	6
Maximum speed ^{Note 2} (mm/sec)	Horizontal	1000	600
	Vertical	-	500
Maximum payload (kg)	Horizontal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

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

Motor installation (Space-saving model)



Allowable overhang



Horizontal installation (Unit: mm)	A			B			C					
	20	12	6	20	12	6	20	12	6			
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	4kg	244	245		
4kg	500	118	179	4kg	146	96	449	2kg	113	113		
6kg	399	79	118	6kg	85	55	334	4kg				
8kg	403	56	88	8kg	55	34	305					
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					

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).

S2

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

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 ^{Note 5}	B: With battery (Absolute) N: None (Incremental)

SD

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

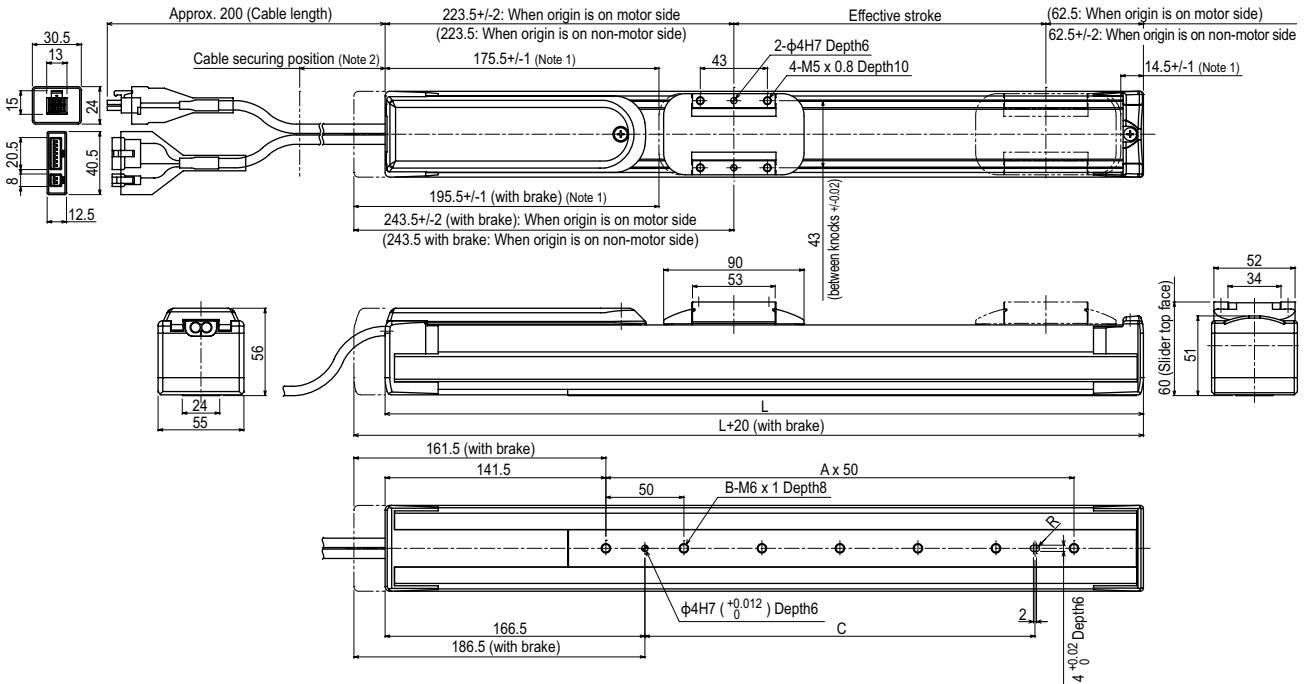
Static loading moment

(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

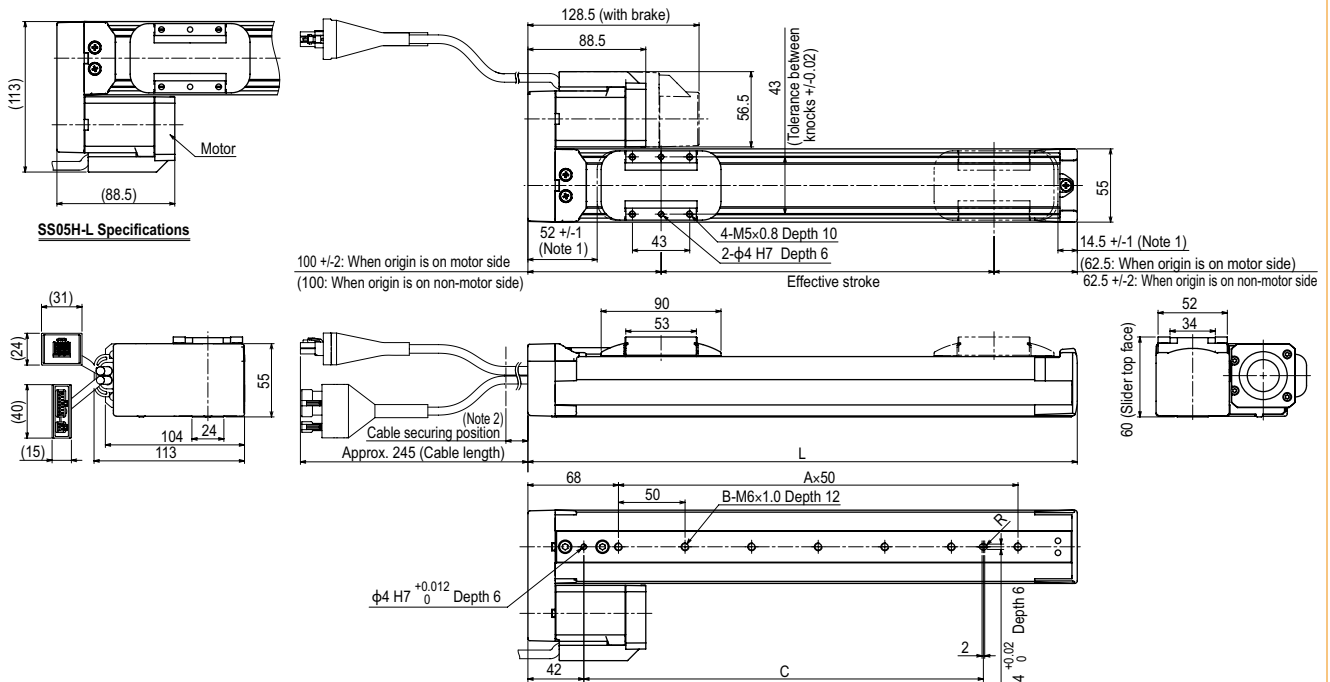
SS05H Straight model S



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
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) ^{Note 4}	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.5	4.7	4.9	5.1	5.3
Maximum speed for each stroke ^{Note 5} (mm/sec)	Lead20	1000														
	Lead12 (Horizontal)	600														
	Lead12 (Vertical)	500														
	Lead6 (Horizontal)	300														
	Lead6 (Vertical)	250														
Speed setting	-															
													93%	83%	73%	63%

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

SS05H Space-saving model **R** **L**



SS05H-L Specifications

100 +/-2: When origin is on motor side
 (100: When origin is on non-motor side)
 Effective stroke
 14.5 +/-1 (Note 1)
 (62.5: When origin is on motor side)
 62.5 +/-2: When origin is on non-motor side

Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	212.5	262.5	312.5	362.5	412.5	462.5	512.5	562.5	612.5	662.5	712.5	762.5	812.5	862.5	912.5	962.5
A	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
B	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
C	100	150	200	250	300	350	400	450	500	500	500	500	500	500	500	500
Weight (kg) ^{Note 4}	1.7	1.9	2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.4	4.6
Maximum speed for each stroke ^{Note 5} (mm/sec)	Lead20	1000														
	Lead12 (Horizontal)	600														
	Lead12 (Vertical)	500														
	Lead6 (Horizontal)	300														
	Lead6 (Vertical)	250														
Speed setting	-															
													93%	83%	73%	63%

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

SG07 Slider type

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



Ordering method

SG07									SH		
Model	Lead	Model	Brake	Origin position	Grease option	Stroke	Cable length ^{Note 2}	Robot positioner	I/O	Battery	
	20: 20mm 12: 12mm 06: 6mm	S: Straight model	N: With no brake B: With brake	N: Standard ^{Note 1} Z: Non-motor side	N: Standard grease C: Clean room grease	50 to 800 (60mm pitch)	1K: 1m 3K: 3m 5K: 5m 10K: 10m	SH: TS-SH	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board ^{Note 3}	B: With battery (Absolute) N: None (Incremental)	

Note 1. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.
 Note 2. The robot cable is flexible and resists bending.
 Note 3. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

Motor	56 □ Step motor
Resolution (Pulse/rotation)	20480
Repeatability ^{Note 1} (mm)	+/-0.02
Deceleration mechanism	Ball screw φ12
Ball screw lead (mm)	20 12 6
Maximum speed ^{Note 2, Note 3} (mm/sec)	1200 800 350
Maximum payload (kg)	Horizontal 36 43 46 Vertical 4 12 20
Max. pressing force (N)	60 100 225
Stroke (mm)	50 to 800 (50pitch)
Overall length (mm)	Horizontal Stroke+288 Vertical Stroke+328
Maximum outside dimension of body cross-section (mm)	W65×H64
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.
 Note 3. It is necessary to change the maximum speed according to the payload. For details, see the "Speed vs. payload" graph shown below.
 Note. Position detectors (resolvers) are common to incremental and absolute specifications.
 If the controller has a backup function then it will be absolute specifications.

Allowable overhang ^{Note}

Horizontal installation (Unit: mm)	Wall installation (Unit: mm)	Vertical installation (Unit: mm)	
Lead 20	Lead 20	Lead 20	
10kg 3572 458 486	10kg 450 402 3261	2kg 2303 2303	
25kg 2971 220 245	25kg 117 155 2943	4kg 1147 1147	
36kg 3150 140 160	36kg 98 85 2520	4kg 1386 1386	
15kg 3703 363 406	15kg 351 307 3403	12kg 442 442	
Lead 12	Lead 12	Lead 12	
30kg 1962 172 196	30kg 134 117 1663	4kg 781 781	
43kg 1430 114 131	43kg 68 59 1070	20kg 252 252	
15kg 3853 363 414	15kg 353 307 3541		
Lead 6	Lead 6	Lead 6	
30kg 2105 172 197	30kg 134 117 1752		
46kg 1500 106 122	46kg 58 50 1100		

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

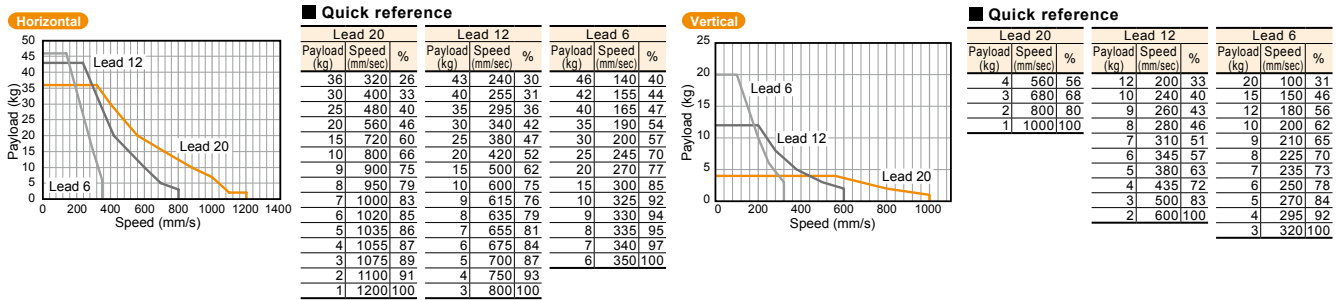
Static loading moment

	(Unit: N·m)	
MY	MP	MR
101	114	101

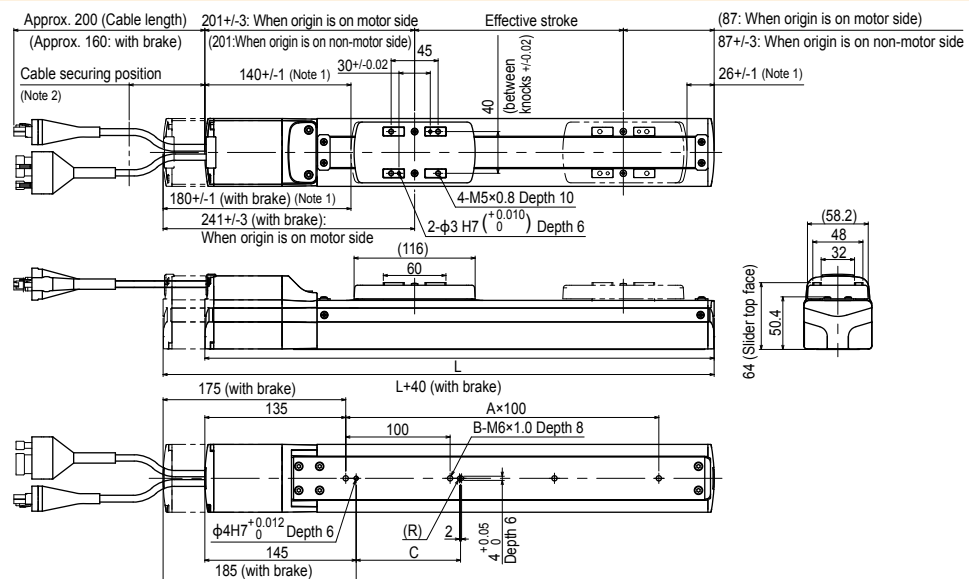
Controller

Controller	Operation method
TS-SH	I/O point trace / Remote command

Speed vs. payload



SG07 Straight model **S**



Effective stroke	50	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
L	338	388	438	488	538	588	638	688	738	788	838	888	938	988	1038	1088
A	1	2	2	3	3	4	4	5	5	6	6	7	7	8	8	9
B	2	3	3	4	4	5	5	6	6	7	7	8	8	9	9	10
C	100	100	100	100	100	100	400	400	400	400	400	400	700	700	700	700
Weight (kg) ^{Note 4}	2.9	3.2	3.4	3.6	3.9	4.1	4.3	4.6	4.8	5.0	5.3	5.5	5.7	5.9	6.1	6.3
Maximum speed for each stroke ^{Note 5} (mm/sec)	Lead20 (Horizontal)	1200														
	Lead20 (Vertical)	1000														
	Lead12 (Horizontal)	800														
	Lead12 (Vertical)	600														
	Lead6 (Horizontal)	350														
Lead6 (Vertical)	320															
Speed setting	-															

Note 1. Stop positions are determined by the mechanical stoppers at both ends.
 Note 2. Secure the cable with a tie-band 100mm or less from unit's end face to prevent the cable from being subjected to excessive loads.
 Note 3. The cable's minimum bend radius is R30.
 Note 4. These are the weights without a brake. The weights are 0.7kg heavier when equipped with a brake.
 Note 5. When the stroke is longer than 600mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table at the below.

SR03 Rod type

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



Ordering method

SR03

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

Note 1. See P.255 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.634 for DIN rail mounting bracket.
Note 5. Select this selection when using the gateway function. For details, see P.96.

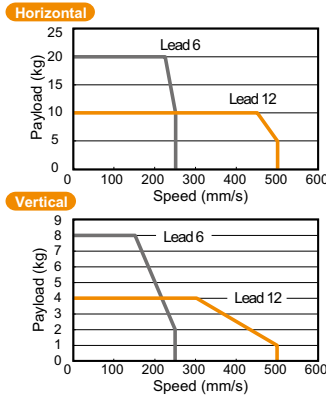
S2	I/O
Robot positioner S2: TS-S2	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board
SH	Battery
Robot positioner SH: TS-SH	B: With battery (Absolute) N: None (Incremental)
SD	I/O cable
Robot driver SD: TS-SD	t: 1m

Basic specifications

Motor	42 □ Step motor
Resolution (Pulse/rotation)	20480
Repeatability (mm)	+/-0.02
Deceleration mechanism	Ball screw φ8
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

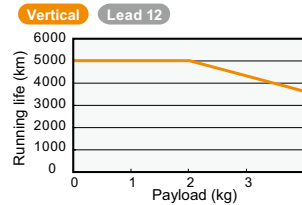
Note 1. The maximum speed needs to be changed in accordance with the payload.
See the "Speed vs. payload" graph shown on the right.
For details, see P. 254.

Speed vs. payload



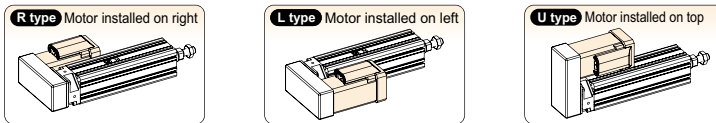
Running life

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.255 for running life distance to life time conversion example.

Motor installation (Space-saving model)

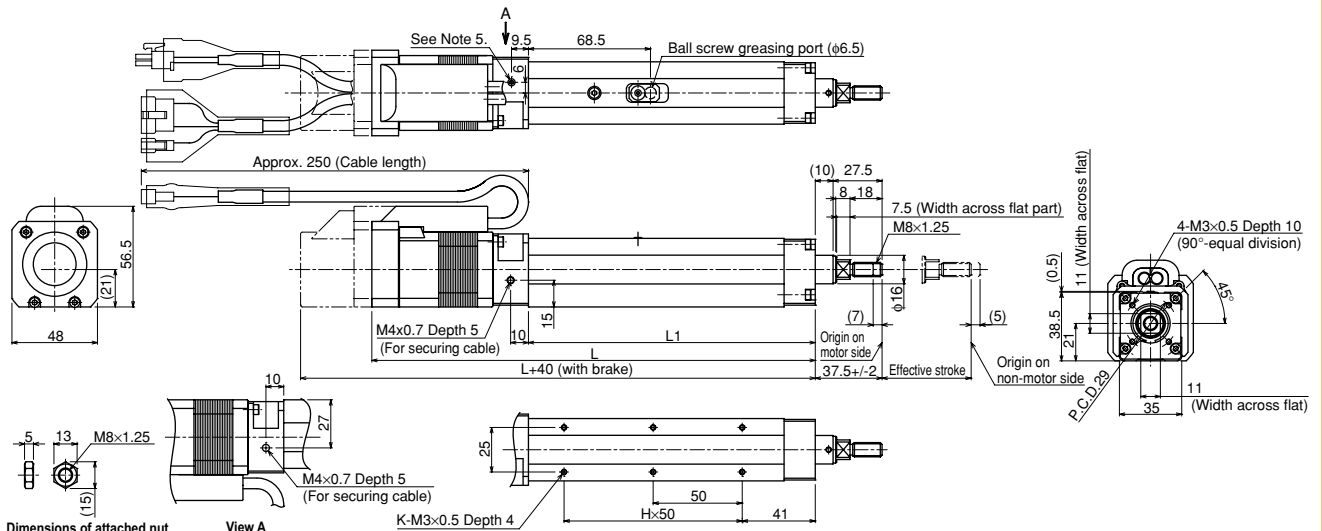


Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	

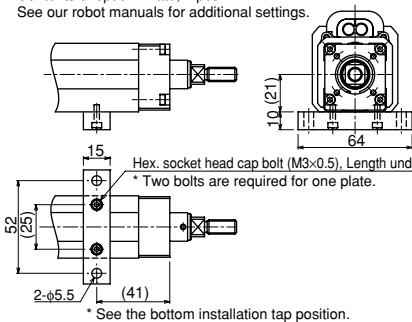
Controller	Operation method
TS-SD	Pulse train control

SR03 Straight model S

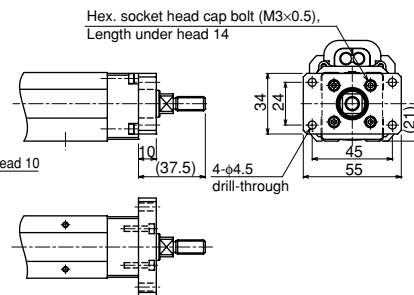


Option: Horizontal installation plate (foot)

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



Option: Vertical installation plate (flange)



Effective stroke	50	100	150	200
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 right) **R**

Option: Horizontal installation plate (foot)

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

Hex. socket head cap bolt (M3×0.5),
Length under head 10
* Two bolts are required for one plate.

Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M3×0.5),
Length under head 14

4-φ4.5 drill-through

K-M3×0.5 Depth 4

M4×0.7 Depth 5 (For securing cable)

H×50

50

41

2.5

M8×1.25

φ16

7.5

11 (Width across flat part)

4-M3×0.5 Depth 10 (90°-equal division)

11 (Width across flat)

38.5 (0.5)

21

97

20

53

45°

48

56.5

35

48

Effective stroke	50	100	150	200
L1	161	211	261	311
L	204	254	304	354
H	2	3	4	5
K	6	8	10	12
Weight (kg) ^{Note 7}	1.3	1.5	1.6	1.8

Note 1. It is possible to apply only the axial load.
Use the external guide together so that any radial load is not applied to the rod.

Note 2. The orientation of the width across flat part is undefined to the base surface.

Note 3. Use the support guide together to maintain the straightness.

Note 4. When running the cables, secure cables so that any load is not applied to them.

Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)

Note 6. The cable's minimum bend radius is R30.

Note 7. Models with a brake will be 0.2kg heavier.

Note 8. Distance to mechanical stopper.

SR03 Space-saving model (motor installed on left) **L**

Option: Horizontal installation plate (foot)

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

Hex. socket head cap bolt (M3×0.5),
Length under head 10
* Two bolts are required for one plate.

Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M3×0.5),
Length under head 14

4-φ4.5 drill-through

K-M3×0.5 Depth 4

M4×0.7 Depth 5 (For securing cable)

H×50

50

41

2.5

M8×1.25

φ16

7.5

11 (Width across flat part)

4-M3×0.5 Depth 10 (90°-equal division)

11 (Width across flat)

38.5 (0.5)

21

97

20

53

45°

48

56.5

35

48

Effective stroke	50	100	150	200
L1	161	211	261	311
L	204	254	304	354
H	2	3	4	5
K	6	8	10	12
Weight (kg) ^{Note 7}	1.3	1.5	1.6	1.8

Note 1. It is possible to apply only the axial load.
Use the external guide together so that any radial load is not applied to the rod.

Note 2. The orientation of the width across flat part is undefined to the base surface.

Note 3. Use the support guide together to maintain the straightness.

Note 4. When running the cables, secure cables so that any load is not applied to them.

Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)

Note 6. The cable's minimum bend radius is R30.

Note 7. Models with a brake will be 0.2kg heavier.

Note 8. Distance to mechanical stopper.

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

View A
 M4×0.7 Depth 5 (For securing cable) 10
 27

Approx. 245 (Cable length)

111.5

Ball screw greasing port (φ6.5)

37.5±2 Effective stroke (5>Note 8)

7(Note 8)

Origin on motor side

Origin on non-motor side

M8×1.25 13 5

Dimensions of attached nut

15

128 (with brake)

88

94

1

42

15

(40)

(24)

(31)

56.5

48

21

48

38.5 (0.5)

11 (Width across flat)

11 (Width across flat)

35

M8×1.25

φ16

7.5

8

18

(10) 27.5

4-M3×0.5 Depth 10 (90°-equal division)

11 (Width across flat)

35

11 (Width across flat)

M4×0.7 Depth 5 (For securing cable) 10

15

6

50

41

H×50

L1

K-M3×0.5 Depth 4

M4×0.7 Depth 5 (For securing cable) 10

Option: Horizontal installation plate (foot)

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

Hex. socket head cap bolt (M3×0.5), Length under head 10

* Two bolts are required for one plate.

2-φ5.5 drill-through (41)

* See the bottom installation tap position.

Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M3×0.5), Length under head 14

34

24

45

55

4-φ4.5 drill-through (37.5)

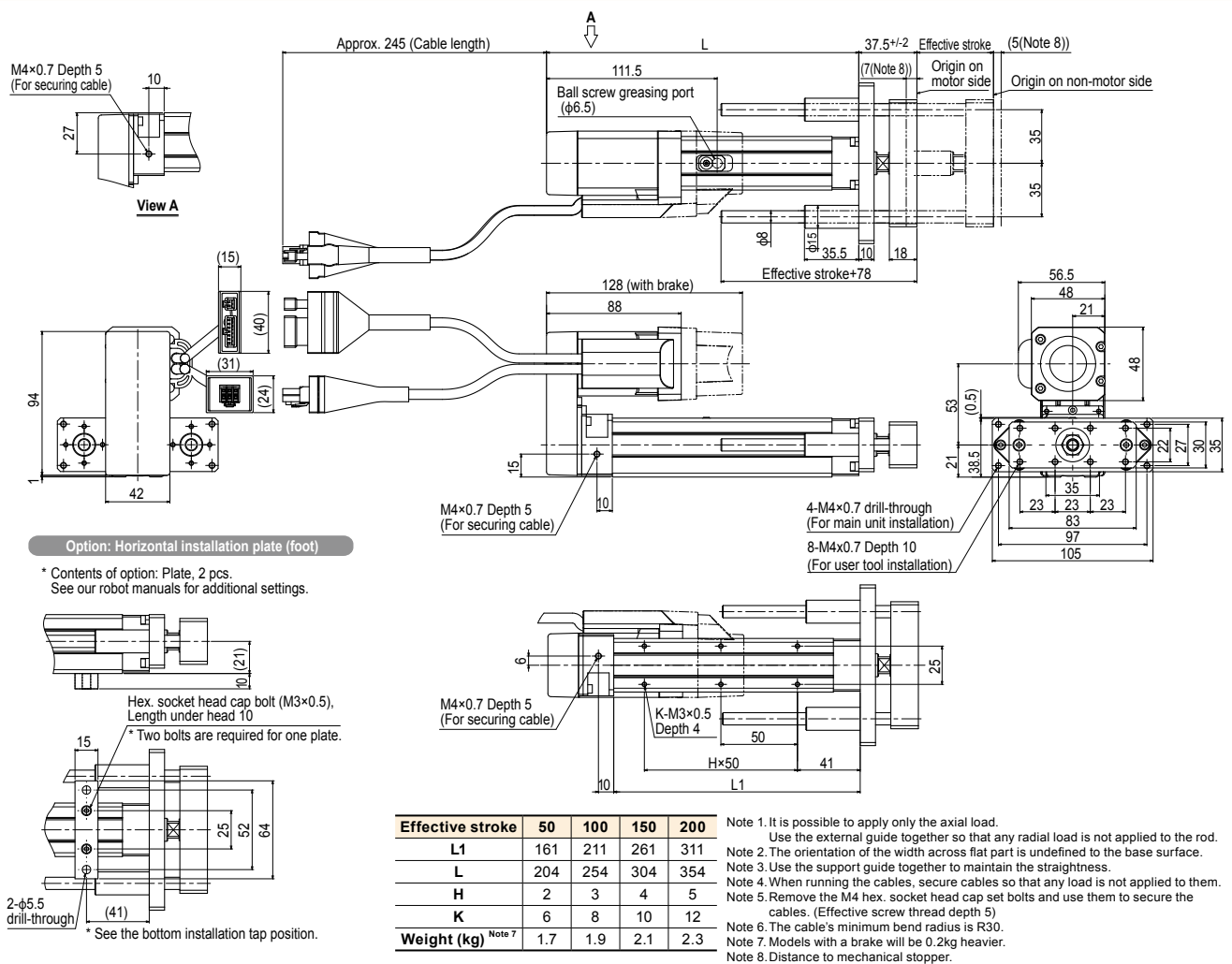
21

21

Effective stroke	50	100	150	200
L1	161	211	261	311
L	204	254	304	354
H	2	3	4	5
K	6	8	10	12
Weight (kg) ^{Note 7}	1.3	1.5	1.6	1.8

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.

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



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

Approx. 245 (Cable length)

Effective stroke (5)(Note 8)

42.5⁺² (7)(Note 8)

152 (with brake)
112

Origin on motor side

Origin on non-motor side (Note 9)

5.8
3.3
1.5

M10x1.25
17
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)

14

45

25

14 (Width across flat)

45

48

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

102.5

48

1.5

Option: Horizontal installation plate (foot)

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

Option: Vertical installation plate (flange)

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

2-φ6.6 drill-through

20

10

22.5

71

Option: Vertical installation plate (flange)

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

73

4-φ6.6 drill-through

60

34

45

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) ^{Note 7}	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⁺² (7)(Note 8)

152 (with brake)
112

Origin on motor side

Origin on non-motor side (Note 9)

5.8
3.3
1.5

M10x1.25
17
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)

14

45

25

14 (Width across flat)

45

48

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

102.5

48

1.5

Option: Horizontal installation plate (foot)

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

Option: Vertical installation plate (flange)

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

2-φ6.6 drill-through

20

10

22.5

71

Option: Vertical installation plate (flange)

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

73

4-φ6.6 drill-through

60

34

45

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) ^{Note 7}	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

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 (60mm pitch)	Note 4 1K: 1m 3K: 3m 5K: 5m 10K: 10m

S2

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

SH

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

SD

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

Note 1. See P.255 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.

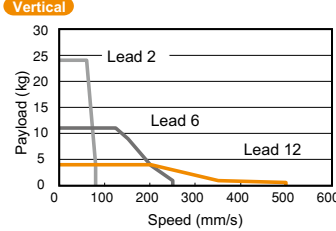
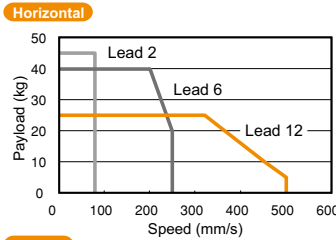
Note 4. The robot cable is flexible and resists bending.
 Note 5. See P.634 for DIN rail mounting bracket.
 Note 6. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

Motor	42 □ Step motor	
Resolution (Pulse/rotation)	20480	
Repeatability (mm)	+/-0.02	
Deceleration mechanism	Ball screw φ8	Ball screw φ10
Ball screw lead (mm)	12 6 2	
Maximum speed (mm/sec)	500 250 80	
Maximum payload (kg)	Horizontal: 25 40 45	Vertical: 4 11 24
Max. pressing force (N)	150 300 600	
Stroke (mm)	50 to 300 (50pitch)	
Lost motion	0.1mm or less	
Rotating backlash (°)	+/-0.05	
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	

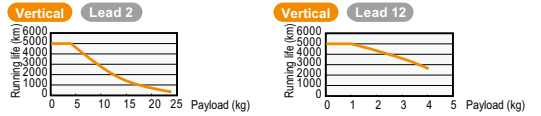
Note 1. The maximum speed needs to be changed in accordance with the payload. See the "Speed vs. payload" graph shown on the right. For details, see P. 254. Additionally, when the stroke is long, the maximum speed is decreased due to the critical speed of the ball screw. See the maximum speed table shown 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.

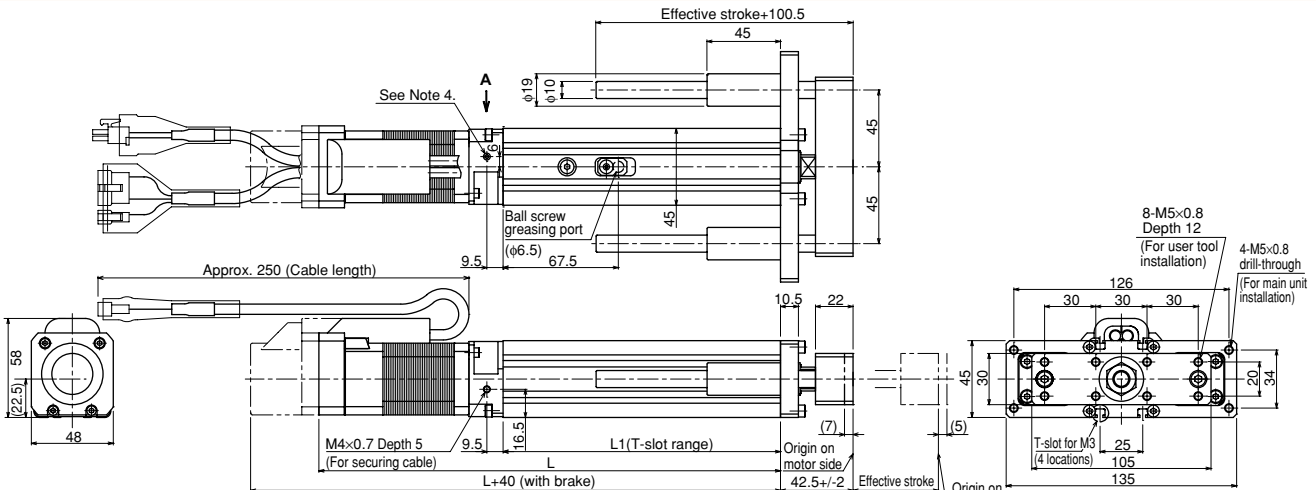


Note. See P.255 for running life distance to life time conversion example.

Controller

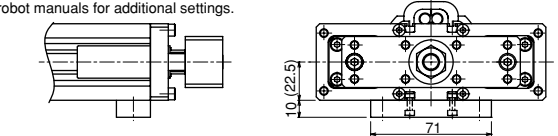
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control

SRD04 Straight model S



Option: Horizontal installation plate (foot)

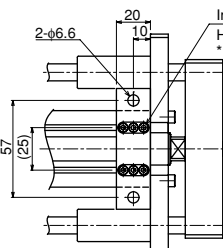
* Contents of option: Plate, 2 pcs., Nut, 12 pcs. See our robot manuals for additional settings.



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

Details of T-slot

View A



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.

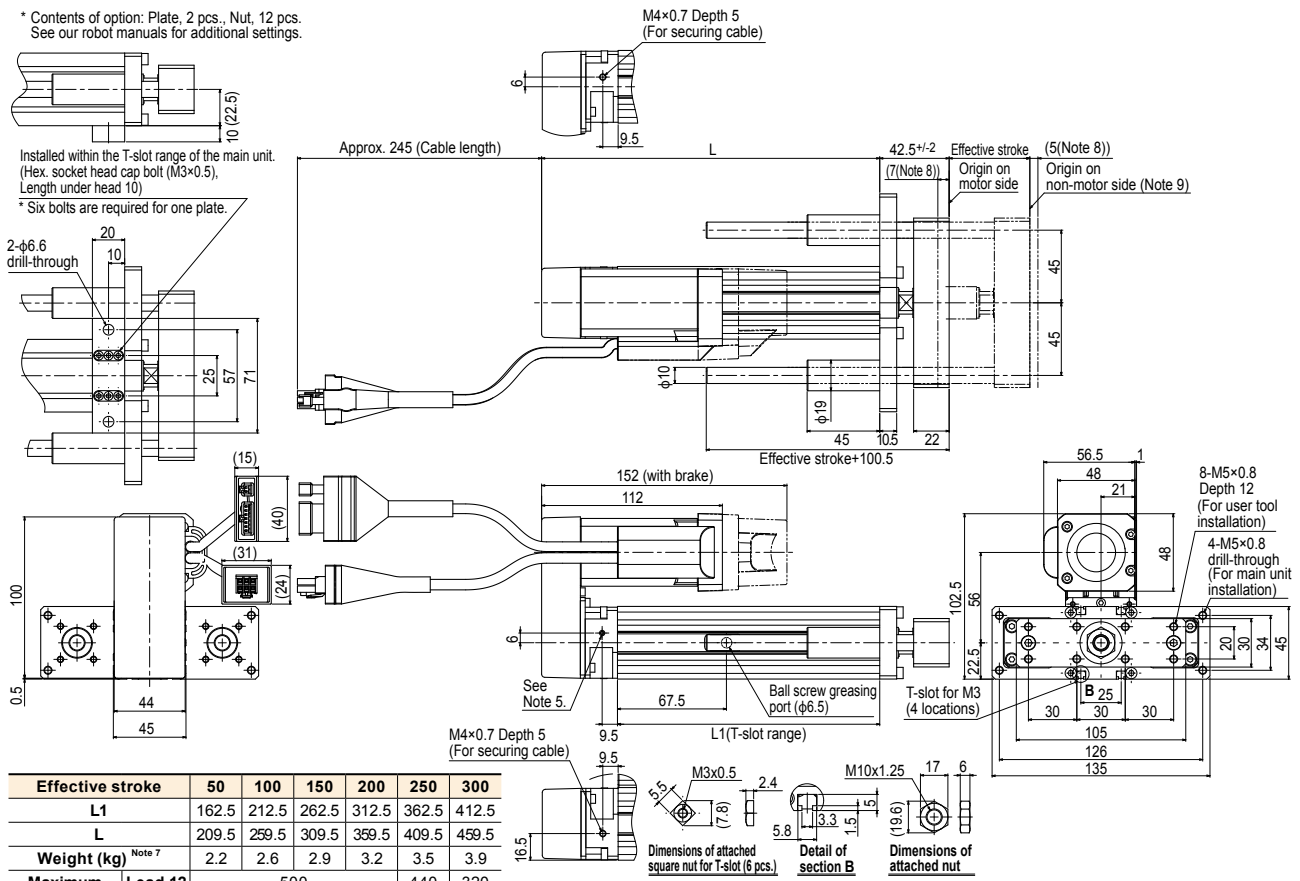
Effective stroke	50	100	150	200	250	300
	L1	162.5	212.5	262.5	312.5	362.5
L	270.5	320.5	370.5	420.5	470.5	520.5
Weight (kg)	Note 6					
	2.0	2.4	2.7	3.0	3.3	3.7
Maximum speed for each stroke (mm/sec)	Lead 12	500			440	320
	Lead 6	250			220	160
	Lead 2	80			72	53

Note 1. It is possible to apply only the axial load. 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.



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.255 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.634 for DIN rail mounting bracket.
 Note 6. Select this selection when using the gateway function. For details, see P.96.

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

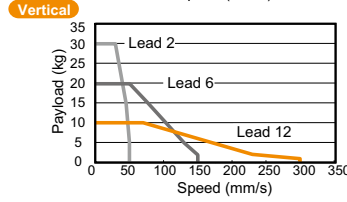
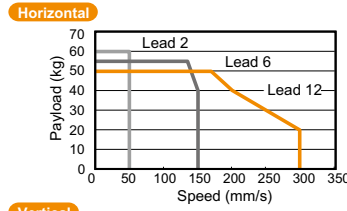
Robot driver	I/O cable
SD: TS-SD	1: 1m

Basic specifications

Motor	56 □ Step motor
Resolution (Pulse/rotation)	20480
Repeatability (mm)	+/-0.02
Deceleration mechanism	Ball screw φ12
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

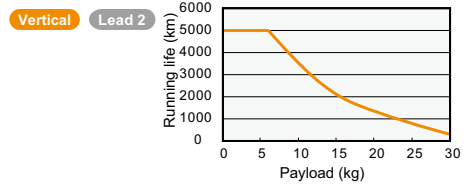
Note 1. The maximum speed needs to be changed in accordance with the payload.
 See the "Speed vs. payload" graph shown on the right.
 For details, see P. 254.

Speed vs. payload

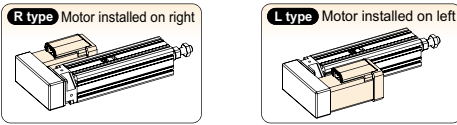


Running life

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.255 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

Technical drawing of the SR05 Straight model S showing dimensions, mounting options, and component details.

Option: Horizontal installation plate (foot)

Option: Vertical installation plate (flange)

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

Effective stroke	50	100	150	200	250	300
L1	183	233	283	333	383	433
L	280.5	330.5	380.5	430.5	480.5	530.5

Weight (kg)

L1	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. Use the support guide together to maintain the straightness.
 Note 4. For lead 2mm specifications, the origin on the non-motor side cannot be set.
 Note 5. When the lead is 2mm, this dimension is 27mm.
 Note 6. When running the cables, secure cables so that any load is not applied to them.
 Note 7. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)
 Note 8. The cable's minimum bend radius is R30.
 Note 9. Take great care as the outer case of the motor projects from the bottom of the main unit.
 Note 10. Models with a brake will be 0.2kg heavier.
 Note 11. Distance to mechanical stopper.

SR05 Space-saving model (motor installed on right) **R**

Approx. 245 (Cable length)

146 (with brake)
106

45.5^{+/-2} Effective stroke (5)(Note 8, Note 12)
(7)(Note 8)

Origin on motor side

Origin on non-motor side (Note 9)

M4x0.7 (9.9)

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

Ball screw greasing port (φ6.5)

9.5

78

L1(T-slot range)

4-M5x0.8 Depth 10 (90°-equal division)

T-slot for M4 (8 locations)

Detail of section B

Dimensions of attached nut

M12x1.25 19 7 (21.9)

7.3 4.3 1.5 6

28.5 70

56.5 71

30 55

9.5 (Width across flat part)

17 (Width across flat)

10 24 17 (Width across flat)

(10) 35.5

Option: Horizontal installation plate (foot)

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

M4x0.7 Depth 5 (For securing cable)

M4x0.7 Depth 5 (For securing cable)

Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M5x0.8), Length under head 14

2-φ6.6 drill-through

Installed within the T-slot range of the main unit. (Hex. socket head cap bolt (M4x0.7), Length under head 12)

* Four bolts are required for one plate.

4-φ6.6 drill-through

Effective stroke	50	100	150	200	250	300
L1	183	233	283	333	383	433
L	227.5	277.5	327.5	377.5	427.5	477.5
Weight (kg) ^{Note 7}	2.4	2.8	3.2	3.5	3.9	4.3

Note 1. It is possible to apply only the axial load.
Use the external guide together so that any radial load is not applied to the rod.
Note 2. The orientation of the width across flat part is undefined to the base surface.
Note 3. Use the support guide together to maintain the straightness.
Note 4. When running the cables, secure cables so that any load is not applied to them.
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)
Note 6. The cable's minimum bend radius is R30.
Note 7. Models with a brake will be 0.2kg heavier.
Note 8. Distance to mechanical stopper.
Note 9. For lead 2mm specifications, the origin on the non-motor side cannot be set.
Note 10. This unit can be installed with the motor facing up (turned 90 degrees from the position in this drawing).
Note 11. Take great care as the outer case of the motor and cover belt projects from the bottom of the main unit.
Note 12. When the lead is 2mm, this dimension is 27mm.

SR05 Space-saving model (motor installed on left) **L**

Approx. 245 (Cable length)

106

146 (with brake)

45.5^{+/-2} Effective stroke (5)(Note 8, Note 12)
(7)(Note 8)

Origin on motor side

Origin on non-motor side (Note 9)

M4x0.7 (9.9)

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

Ball screw greasing port (φ6.5)

9.5

78

L1(T-slot range)

4-M5x0.8 Depth 10 (90°-equal division)

T-slot for M4 (8 locations)

Detail of section B

Dimensions of attached nut

M12x1.25 19 7 (21.9)

7.3 4.3 1.5 6

28.5 70

56.5 71

30 55

9.5 (Width across flat part)

17 (Width across flat)

10 24 17 (Width across flat)

(10) 35.5

Option: Horizontal installation plate (foot)

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

M4x0.7 Depth 5 (For securing cable)

M4x0.7 Depth 5 (For securing cable)

Option: Vertical installation plate (flange)

Hex. socket head cap bolt (M5x0.8), Length under head 14

2-φ6.6 drill-through

Installed within the T-slot range of the main unit. (Hex. socket head cap bolt (M4x0.7), Length under head 12)

* Four bolts are required for one plate.

4-φ6.6 drill-through

Effective stroke	50	100	150	200	250	300
L1	183	233	283	333	383	433
L	227.5	277.5	327.5	377.5	427.5	477.5
Weight (kg) ^{Note 7}	2.4	2.8	3.2	3.5	3.9	4.3

Note 1. It is possible to apply only the axial load.
Use the external guide together so that any radial load is not applied to the rod.
Note 2. The orientation of the width across flat part is undefined to the base surface.
Note 3. Use the support guide together to maintain the straightness.
Note 4. When running the cables, secure cables so that any load is not applied to them.
Note 5. Remove the M4 hex. socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)
Note 6. The cable's minimum bend radius is R30.
Note 7. Models with a brake will be 0.2kg heavier.
Note 8. Distance to mechanical stopper.
Note 9. For lead 2mm specifications, the origin on the non-motor side cannot be set.
Note 10. This unit can be installed with the motor facing up (turned 90 degrees from the position in this drawing).
Note 11. Take great care as the outer case of the motor and cover belt projects from the bottom of the main unit.
Note 12. When the lead is 2mm, this dimension is 27mm.

SRD05

Rod type (With support guide)



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

Ordering method

SRD05

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

S2

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

SH

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

SD

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

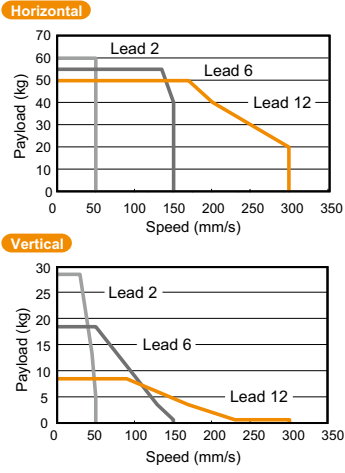
Note 1. See P.255 for grease gun nozzles.
 Note 2. When "2mm lead" is selected, the origin position cannot be changed (to non-motor side).
 Note 3. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

Note 4. The robot cable is flexible and resists bending.
 Note 5. See P.634 for DIN rail mounting bracket.
 Note 6. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

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

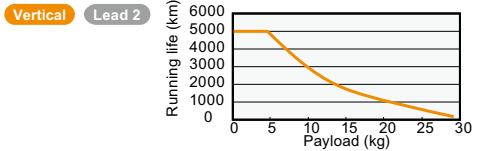
Speed vs. payload



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. 254.

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.

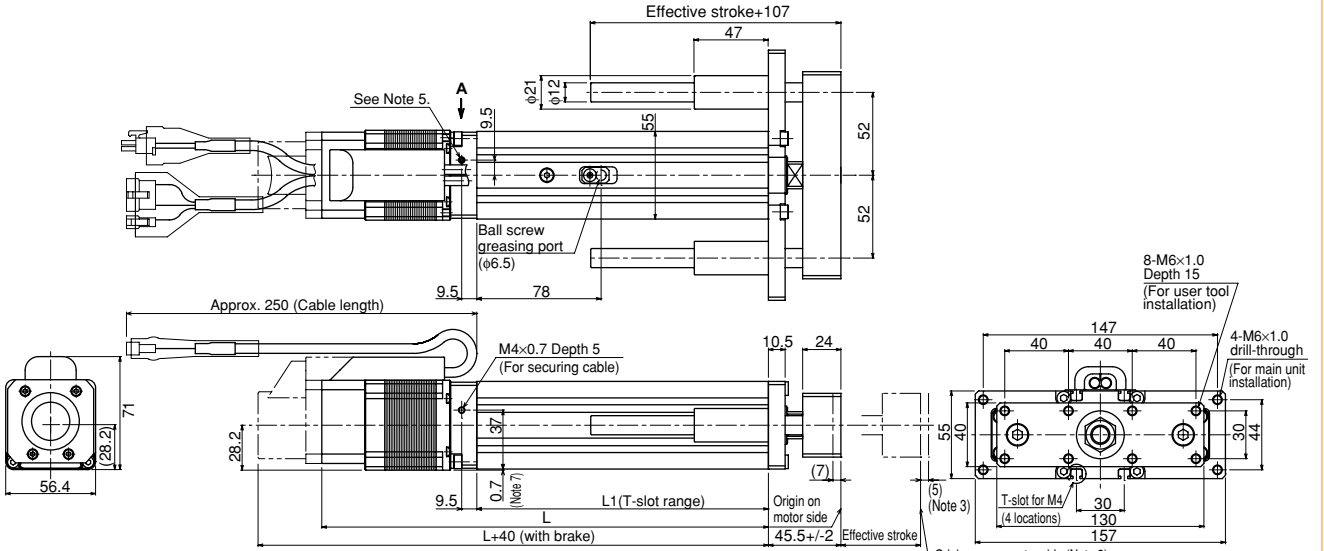


Note. See P.255 for running life distance to life time conversion example.

Controller

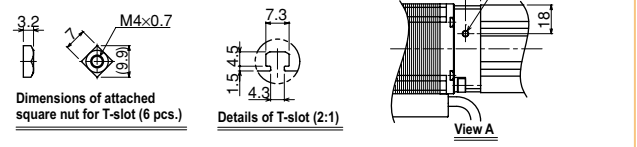
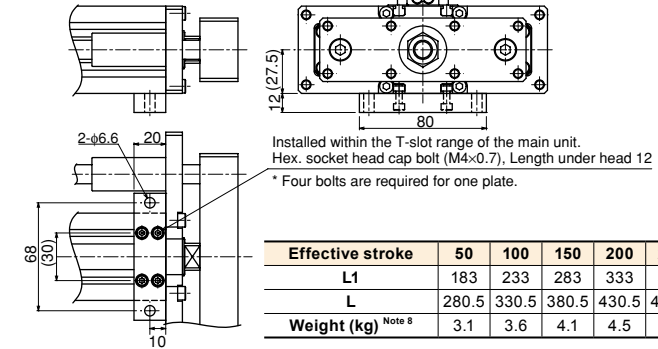
Controller	Operation method	Controller	Operation method
TS-S2	I/O point trace / Remote command	TS-SD	Pulse train control

SRD05 Straight model S



Option: Horizontal installation plate (foot)

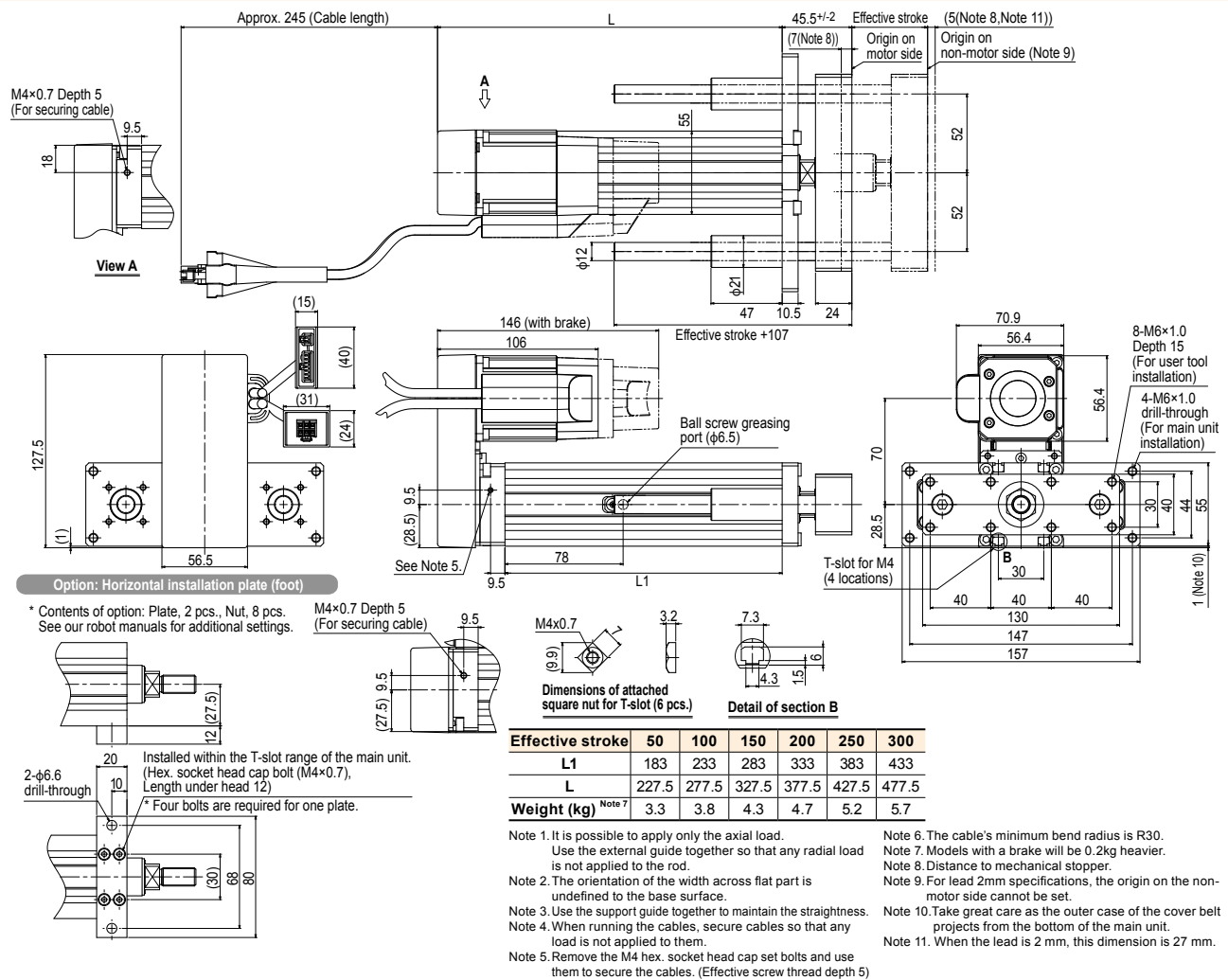
* Contents of option: Plate, 2 pcs., Nut, 8 pcs.
 See our robot manuals for additional settings.



Note 1. It is possible to apply only the axial load.
 Note 2. Use the external guide together so that any radial load is not applied to the rod.
 Note 3. For lead 2mm specifications, the origin on the non-motor side cannot be set.
 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.

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)	3.1	3.6	4.1	4.5	5.0	5.5

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

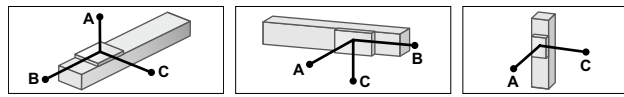
- Note 1. For the space saving models (R and L), the specifications with brake are applicable to only 100mm strokes.
 Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.
 Note 3. Space-saving models (R and L) with the plate cannot be selected.
 Note 4. The robot cable is flexible and resists bending.
 Note 5. See P.634 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.96.

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. 254.

Allowable overhang



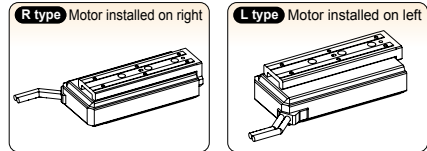
Horizontal installation (Unit: mm)	A B C			Wall installation (Unit: mm)	A B C			Vertical installation (Unit: mm)	A C			
	2kg	3kg	4kg		2kg	3kg	4kg		0.5kg	0.75kg	1kg	1.5kg
Lead 10	1534	611	415	Lead 10	435	595	1504	Lead 10	2000	2000		
Lead 5	949	374	255	Lead 5	263	359	920	Lead 5	1558	1558		
	656	255	175		177	241	629		1165	1164		
	1534	611	415		435	595	1504		1165	1164		
	656	255	175		177	241	629		771	771		
	364	137	95		91	123	337		574	574		

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

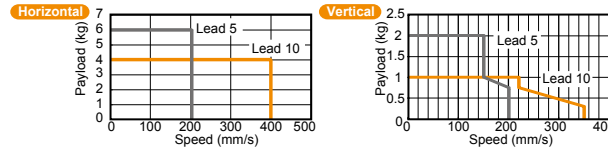
Static loading moment

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

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

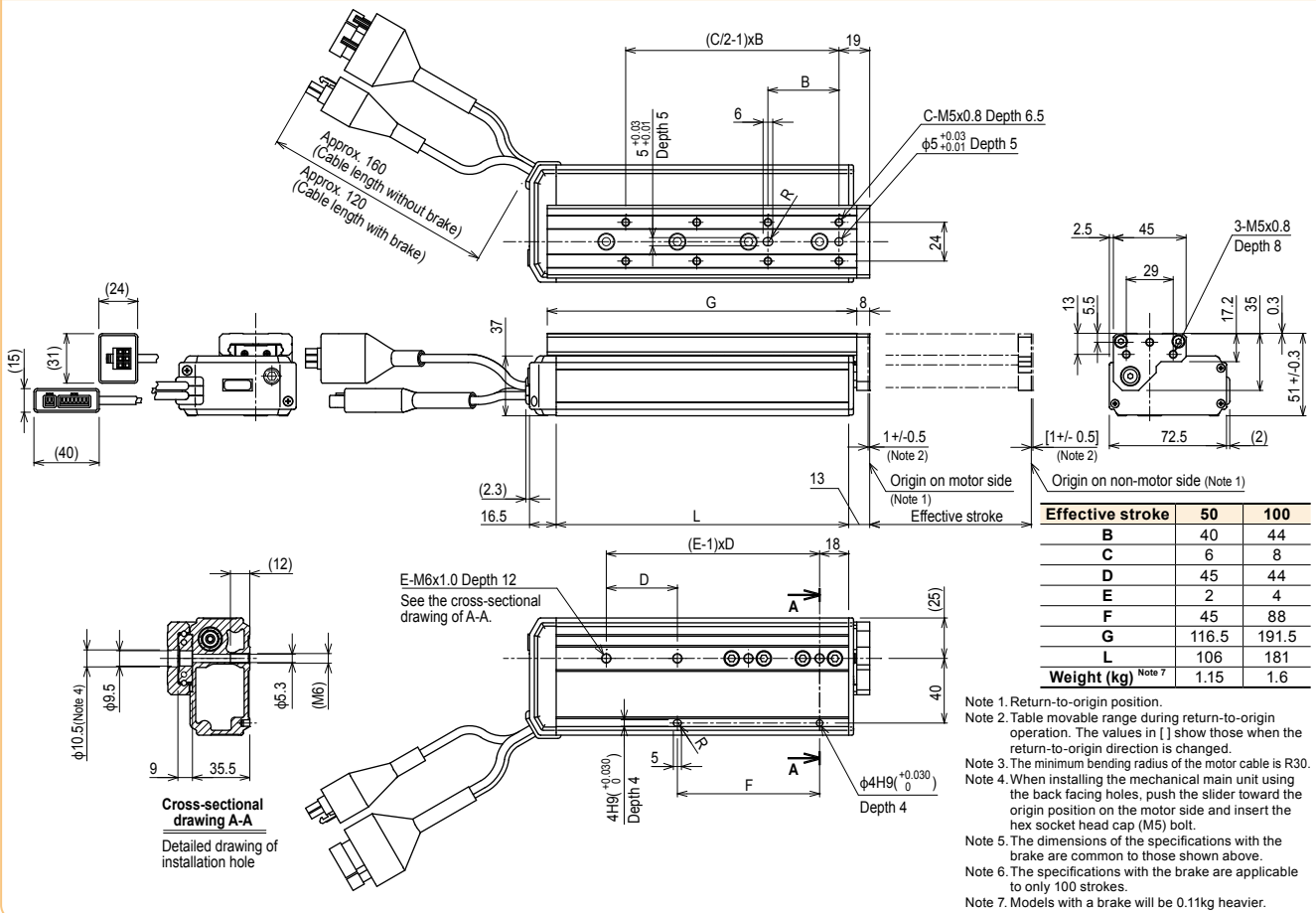
Effective stroke	50	100
B	40	44
C	6	8
D	116.5	191.5
E	65	85
G	39.5	88.5
L	122	191
Weight (kg)	1.25	1.7

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

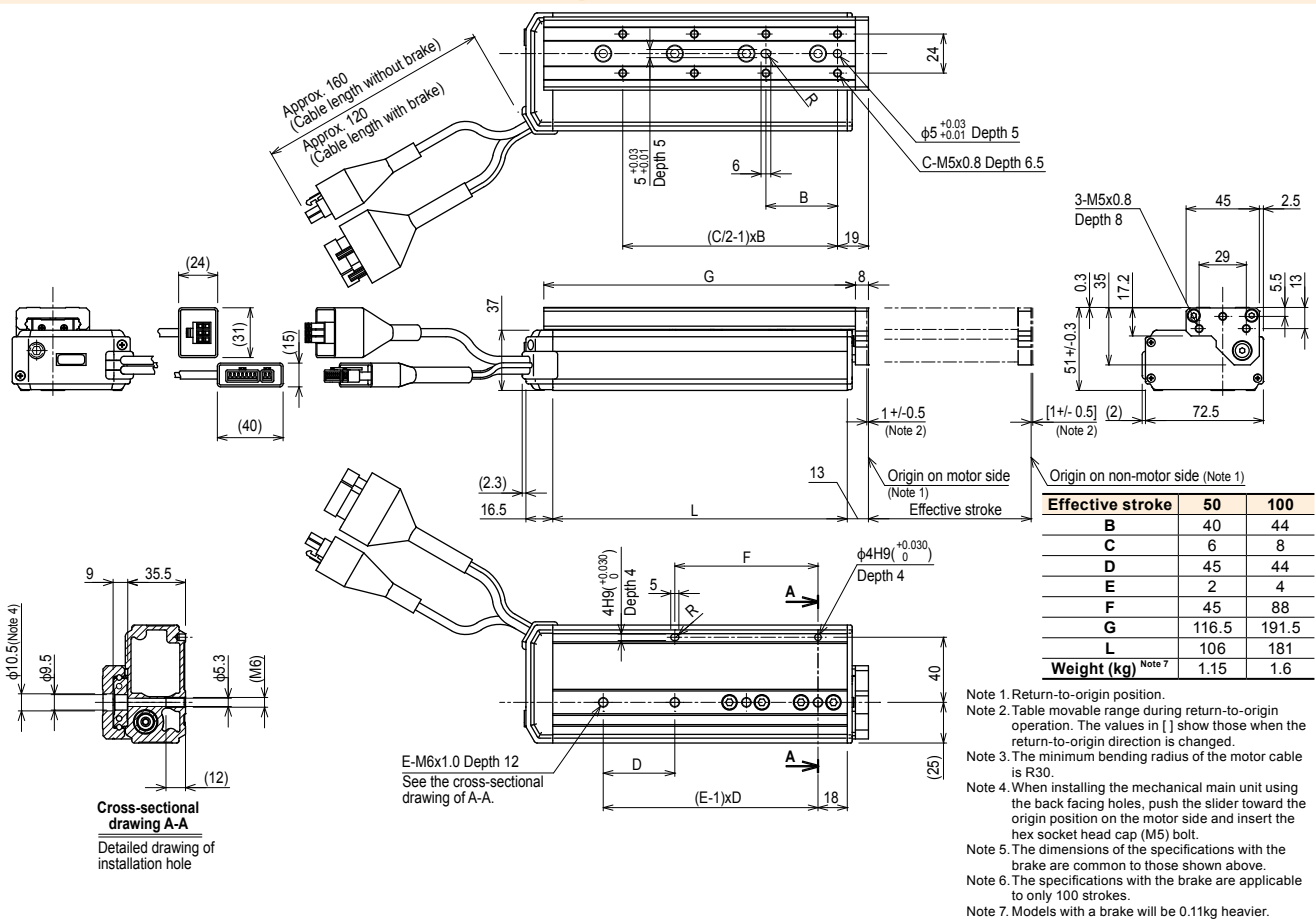
Cross-sectional drawing A-A
 Detailed drawing of installation hole

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.

STH04 Space-saving model (motor installed on right) **R**



STH04 Space-saving model (motor installed on left) **L**



STH06

Slide table type



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

Ordering method

STH06

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

S2

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

SH

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

SD

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

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

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

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

Note 4. See P.634 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.96.

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. 254.

Allowable overhang

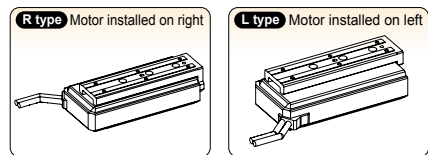
Lead	Horizontal installation (Unit: mm)			Wall installation (Unit: mm)			Vertical installation (Unit: mm)		
	A	B	C	A	B	C	A	B	C
Lead 16	2kg 3000	2123	1436	2kg 1500	2091	3000	1kg 3000	3000	3000
Lead 8	4kg 2493	1001	680	4kg 710	975	2443	1.5kg 2458	2457	2457
	6kg 1571	627	428	6kg 440	603	1524	2kg 1837	1837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

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

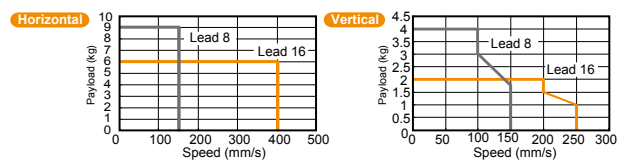
Static loading moment

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.

Cross-sectional drawing A-A
 Detailed drawing of installation hole

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**

Approx. 150 (Cable length without brake)
Approx. 110 (Cable length with brake)

Effective stroke

Origin on motor side (Note 1)
Origin on non-motor side (Note 1)

Effective stroke	50	100	150
B	75	48	65
C	4	8	8
D	80	44	66
E	2	4	4
F	80	88	132
G	143	207	285
L	132	196	274
Weight (kg) ^{Note 6}	25	33	426

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, push the slider toward the origin position on the motor side and insert the hex socket head cap (M6) bolt.
Note 5. The dimensions of 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 left) **L**

Approx. 150 (Cable length without brake)
Approx. 110 (Cable length with brake)

Effective stroke

Origin on motor side (Note 1)
Origin on non-motor side (Note 1)

Effective stroke	50	100	150
B	75	48	65
C	4	8	8
D	80	44	66
E	2	4	4
F	80	88	132
G	143	207	285
L	132	196	274
Weight (kg) ^{Note 6}	2.5	3.3	4.26

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, push the slider toward the origin position on the motor side and insert the hex socket head cap (M6) bolt.
Note 5. The dimensions of the specifications with the brake are common to those shown above.
Note 6. Models with a brake will be 0.34kg heavier.

Articulated robots
YA

Linear conveyor modules
LCM

Single-axis robots
CX

Motor-less single axis actuator
Robotomy

Compact single-axis robots
TRANSEVO

Single-axis robots
FLIP-X

Linear motor single-axis robots
PHASER

Cartesian robots
XY-X

SCARA robots
YK-X

Pick & place robots
YP-X

CLEAN

CONTROLLER

INFORMATION

RF02-N

Rotary type / Limit rotation specification



- CE compliance
- Rotation range : 310°

Ordering method

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

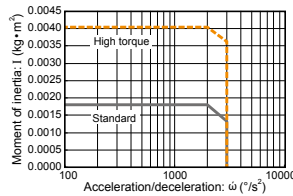
Note 1. The robot cable is flexible and resists bending.
 Note 2. See P.634 for DIN rail mounting bracket.
 Note 3. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

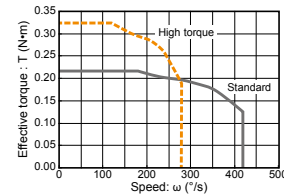
Motor	□ <input type="checkbox"/> Sep motor	
Resolution (Pulse/rotation)	4096	
Repeatability <small>Note 1</small> (°)	±0.05	
Drive method	Special worm gear + belt	
Torque type	Standard	High torque
Maximum speed <small>Note 2</small> (°/sec)	40	280
Rotating torque (N·m)	2	3
Max. pushing torque (N·m)	1	1.5
Backlash (°)	±0.5	
Max. moment of inertia <small>Note 3</small> (kg·m ²)	0.018	0.03
Cable length (m)	Standard: 1 / Option: 3, 5, 10	
Rotation range (°)	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.74.

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	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	I/O point trace / Remote command
TS-SD	Pulse train control

RF02-NN Limit rotation specification – Standard model

Stroke end
Origin position in CW rotation direction [Origin]³

Origin mark

Origin²
Origin position in CCW rotation direction [Stroke end]

310°

CCW direction

CW direction

Manual operation screw (both sides)

*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.

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

φ18H8^{+0.027}₀
φ8 (Through-hole)

φ15H8^{+0.027}₀

2-M6x1.0 Depth 12

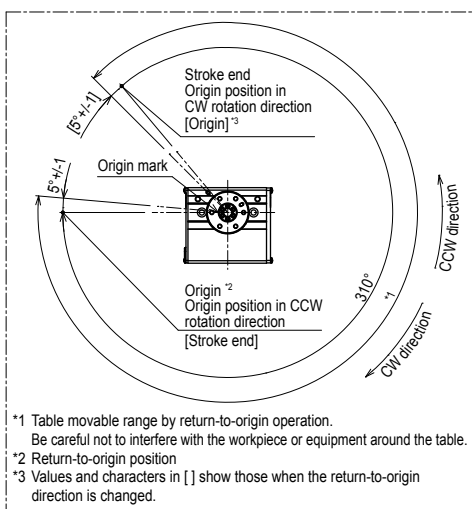
Approx. 170

(Motor cable exit direction: Exit from left side)

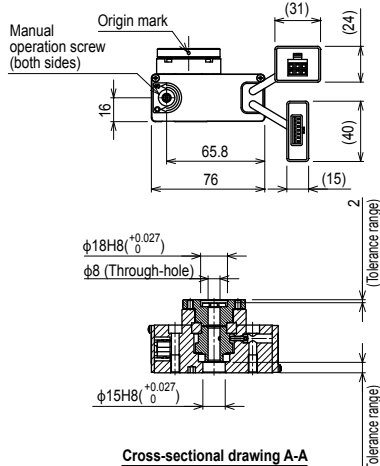
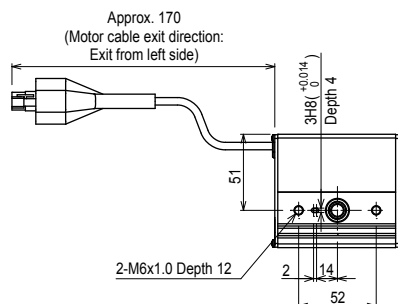
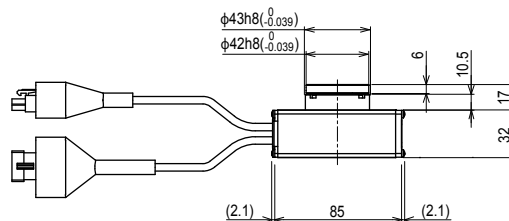
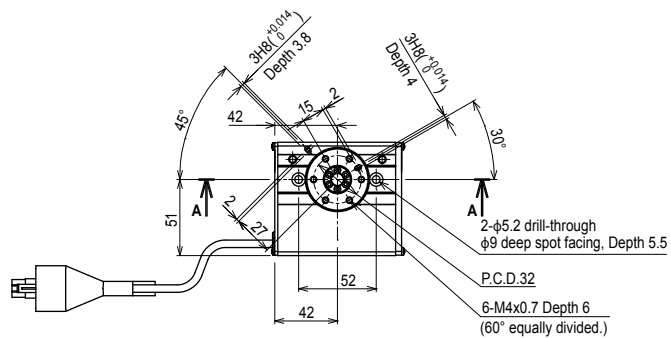
Weight (kg)	0.49
--------------------	------

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.



Weight (kg)	0.52
--------------------	------

Note 1. This drawing is output under the conditions below.
Bearing High rigidity
Torque Standard/High torque
Note 2. The minimum bending radius of the motor cable is R30.
Note 3. The motor cable exit direction is only the left side.

RF02-S

Rotary type / Sensor specification



- CE compliance
- Limitless rotation

Ordering method

RF02-S-L

Model	Return-to-origin method	Bearing	Torque	Cable entry location	Rotation direction	Cable length ^{Note 1}
S	S: Sensor (Limitless rotation)	N: Standard H: High rigidity	N: Standard torque H: High torque	L: From the left	N: CCW Z: CW	1K: 1m 3K: 3m 5K: 5m 10K: 10m

Robot positioner	I/O
S2S: TS-S2S ^{Note 2}	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board ^{Note 3}

Robot positioner	I/O	Battery
SHS: TS-SHS	NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board ^{Note 3}	B: With battery (Absolute) N: None (Incremental)

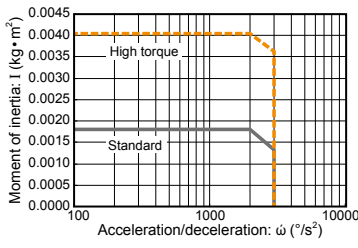
Note 1. The robot cable is flexible and resists bending.
 Note 2. See P.634 for DIN rail mounting bracket.
 Note 3. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

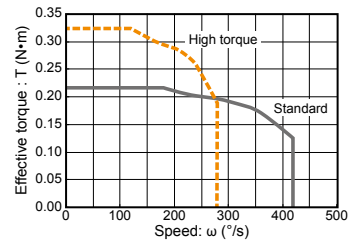
Motor	20 □ Step motor
Resolution (Pulse/rotation)	4096
Repeatability ^{Note 1} (°)	+/-0.05
Drive method	Special warm gear + belt
Torque type	Standard High torque
Maximum speed ^{Note 2} (°/sec)	420 280
Rotating torque (N•m)	0.22 0.32
Max. pushing torque (N•m)	0.11 0.16
Backlash (°)	+/-0.5
Max. moment of inertia ^{Note 3} (kg•m ²)	0.0018 0.004
Cable length (m)	Standard: 1 / Option: 3, 5, 10
Rotation range (°)	360

Note 1. Positioning repeatability in one direction.
 Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the "Moment of inertia vs. Acceleration/deceleration" graph and the "Effective torque vs. speed" graph (reference).
 Note 3. For moment of inertia and effective torque details, see P.744.

Moment of inertia Acceleration/deceleration



Effective torque vs. speed



Allowable load

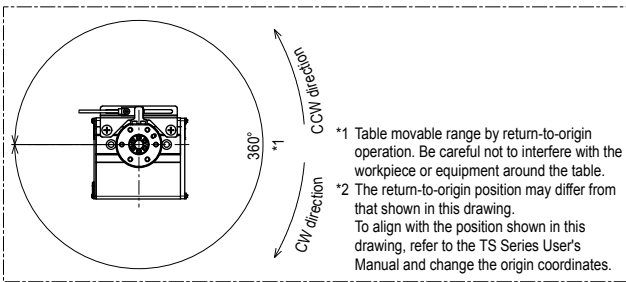
Allowable radial load (N)		Allowable thrust load (N)		Allowable moment (N•m)	
Standard model	High rigidity model	(a) Standard model	(b) High rigidity model	Standard model	High rigidity model
78	86	74	107	2.4	2.9

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.

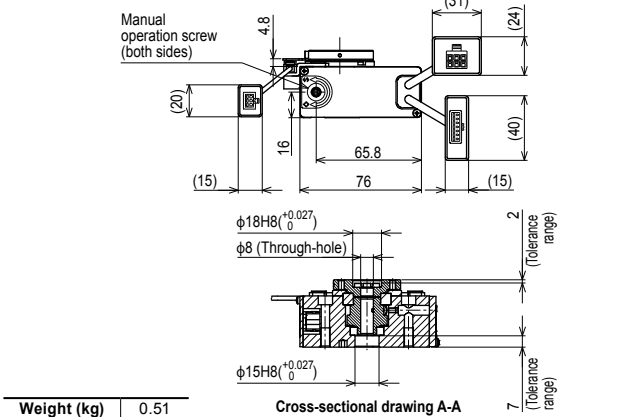
Controller

Controller	Operation method
TS-S2S	I/O point trace / Remote command
TS-SHS	Remote command

RF02-SN Sensor specification – Standard model

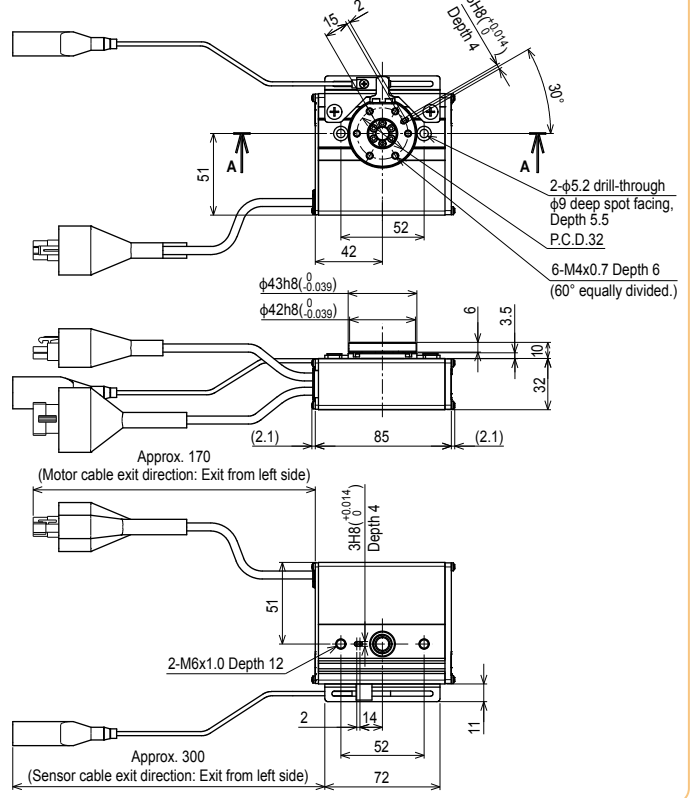


*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.
 *2 The return-to-origin position may differ from that shown in this drawing. To align with the position shown in this drawing, refer to the TS Series User's Manual and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

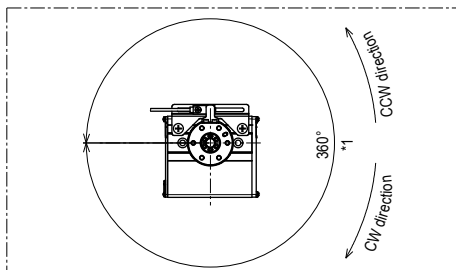


Weight (kg) 0.51

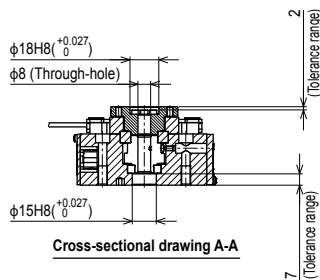
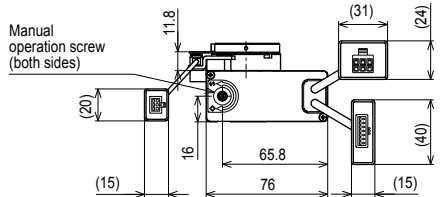
Note 1. This drawing is output under the conditions below.
 Bearing Standard
 Torque Standard/High torque
 Note 2. The minimum bending radii of the motor cable and sensor cable are R30.
 Note 3. The motor cable exit direction is only the left side.



RF02-SH Sensor specification – High rigidity model

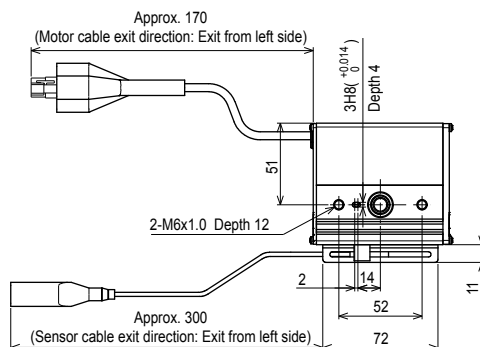
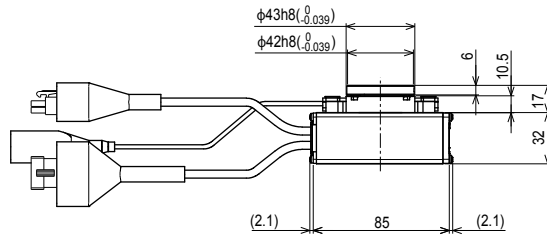
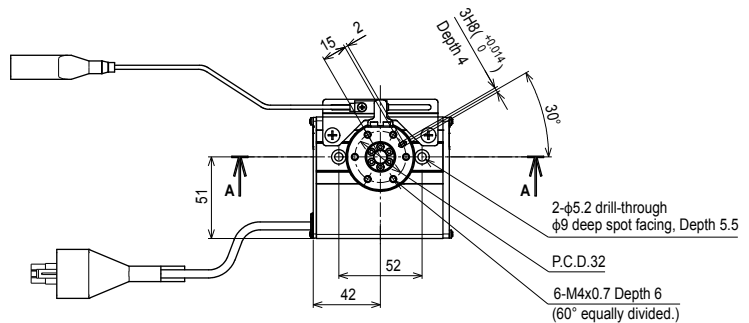


*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.
 *2 The return-to-origin position may differ from that shown in this drawing. To align with the position shown in this drawing, refer to the TS Series User's Manual and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



Weight (kg)	0.55
-------------	------

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



RF03-N

Rotary type / Limit rotation specification

- CE compliance
- Rotation range : 320°

Ordering method

RF03	N						S2	
Model	Return-to-origin method N: Stroke end (Limit rotation)	Bearing N: Standard H: High rigidity	Torque N: Standard torque H: High torque	Cable entry location R: From the right L: From the left	Rotation direction N: CCW Z: CW	Cable length ^{Note 1} 1K: 1m 3K: 3m 5K: 5m 10K: 10m	Robot positioner S2: TS-S2 ^{Note 2}	I/O NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board ^{Note 3}
							SH	
							Robot positioner SH: TS-SH	I/O NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board ^{Note 3}
							SD	1
							Robot driver SD: TS-SD	I/O cable t: 1m

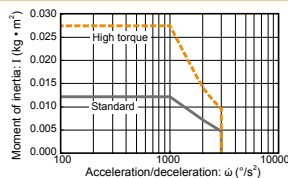
Note 1. The robot cable is flexible and resists bending.
 Note 2. See P.634 for DIN rail mounting bracket.
 Note 3. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

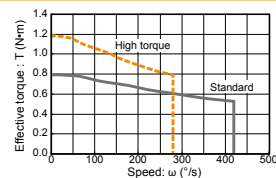
Motor	28 □ Step motor	
Resolution (Pulse/rotation)	4096	
Repeatability ^{Note 1} (°)	±0.05	
Drive method	Special warm gear + belt	
Torque type	Standard	High torque
Maximum speed ^{Note 2} (°/sec)	420	280
Rotating torque (N·m)	0.8	1.2
Max. pushing torque (N·m)	0.4	0.6
Backlash (°)	±0.5	
Max. moment of inertia ^{Note 3} (kg·m ²)	0.012	0.027
Cable length (m)	Standard: 1 / Option: 3, 5, 10	
Rotation range (°)	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.744.

Moment of inertia Acceleration/deceleration



Effective torque vs. speed



Allowable load

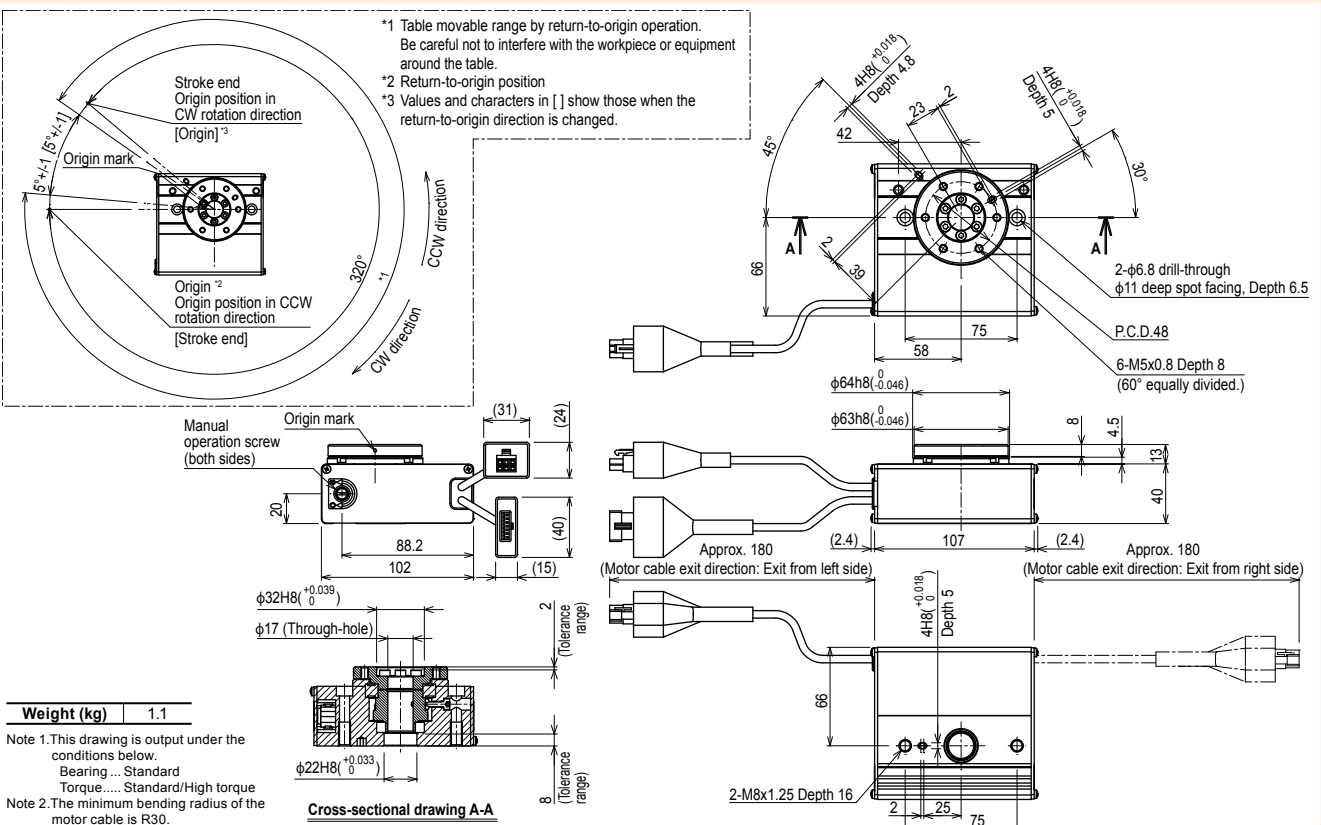
Standard model	High rigidity model	Allowable thrust load (N)		Standard model	High rigidity model	Allowable moment (N·m)	
		(a)	(b)			Standard model	High rigidity model
196	233	197	363	5.3	6.4		

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.

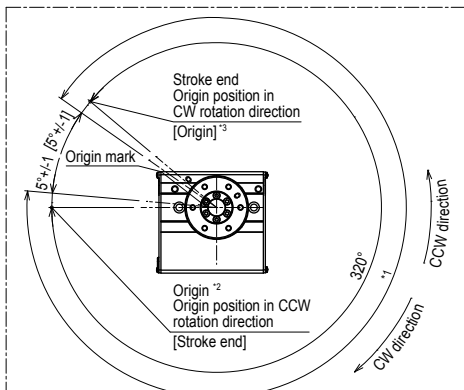
Controller

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

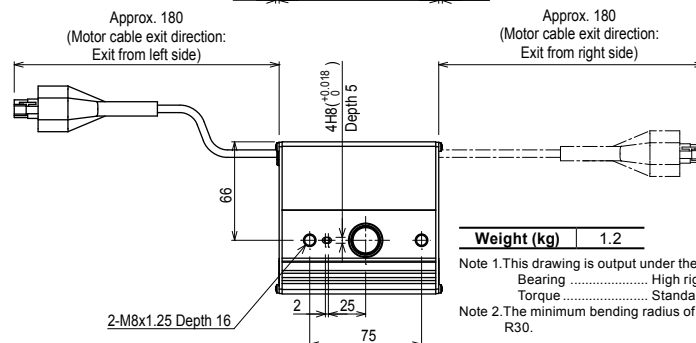
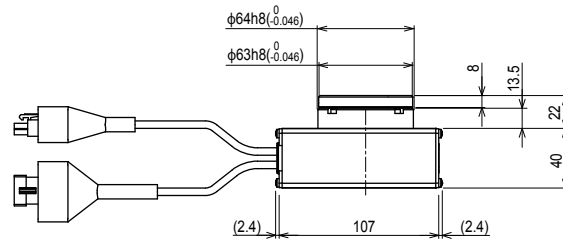
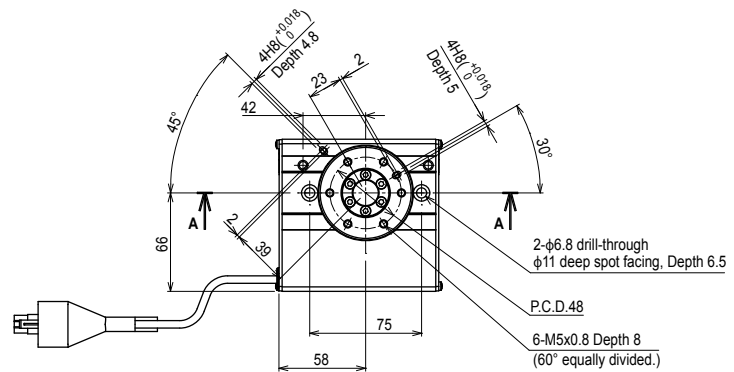
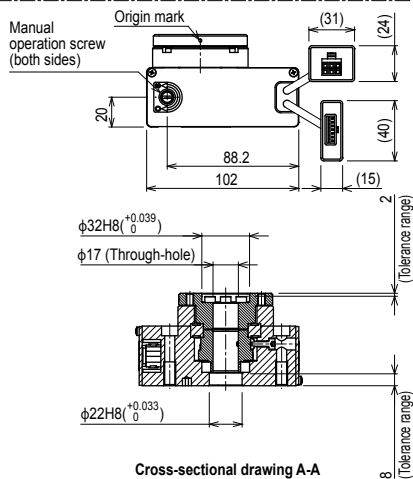
RF03-NN Limit rotation specification – Standard model



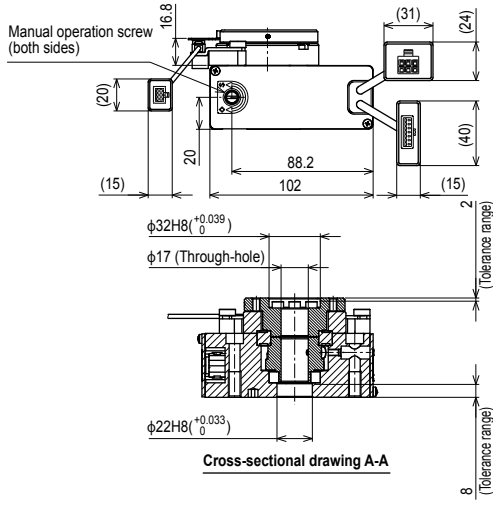
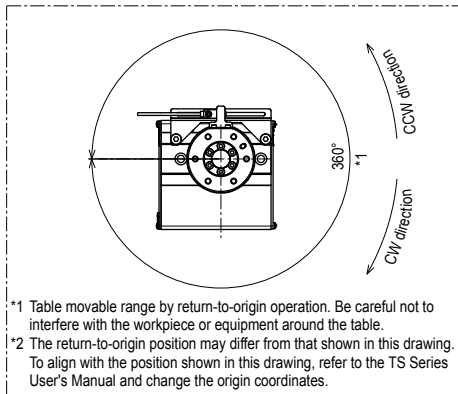
RF03-NH Limit rotation specification – High rigidity model



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

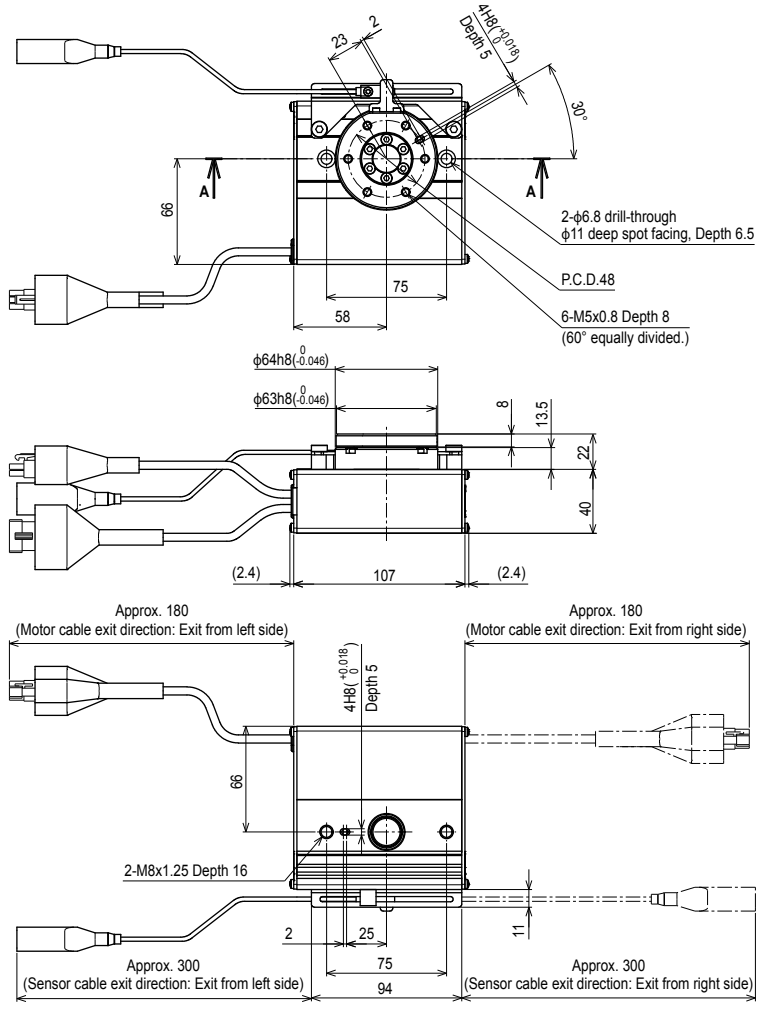


RF03-SH Sensor specification – High rigidity model



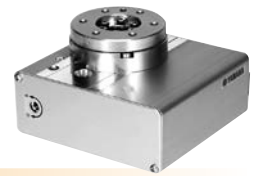
Weight (kg)	13
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Note 1. This drawing is output under the conditions below.
 Bearing High rigidity
 Torque Standard/High torque
 Note 2. The minimum bending radii of the motor cable and sensor cable are R30.



RF04-N

Rotary type / Limit rotation specification



- CE compliance
- Rotation range : 320°

Ordering method

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

S2	I/O
Robot positioner S2: TS-S2 ^{Note 2}	I/O NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board ^{Note 3}
SH	Battery
Robot positioner SH: TS-SH	I/O NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board ^{Note 3}
SD	1
Robot driver SD: TS-SD	I/O cable t: 1m

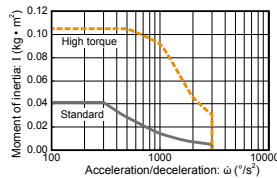
Note 1. The robot cable is flexible and resists bending.
 Note 2. See P.634 for DIN rail mounting bracket.
 Note 3. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

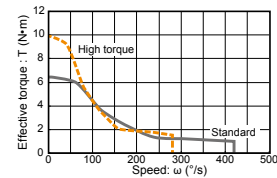
Motor	42 □ Step motor
Resolution (Pulse/rotation)	20480
Repeatability ^{Note 1} (°)	+0.05
Drive method	Special worm gear + belt
Torque type	Standard High torque
Maximum speed ^{Note 2} (°/sec)	420 280
Rotating torque (N·m)	6.6 10
Max. pushing torque (N·m)	33 5
Backlash (°)	+0.5
Max. moment of inertia ^{Note 3} (kg·m ²)	0.04 0.1
Cable length (m)	Standard: 1 / Option: 3, 5, 10
Rotation range (°)	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.744.

Moment of inertia Acceleration/deceleration



Effective torque vs. speed



Allowable load

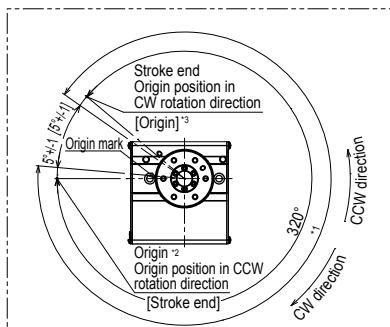
Allowable radial load (N)	Allowable thrust load (N)		Allowable moment (N·m)
Standard model	(a) Standard model	(b) Standard model	Standard model
High rigidity model	High rigidity model	High rigidity model	High rigidity model
314	296	398	9.7
378	517	517	12.0

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

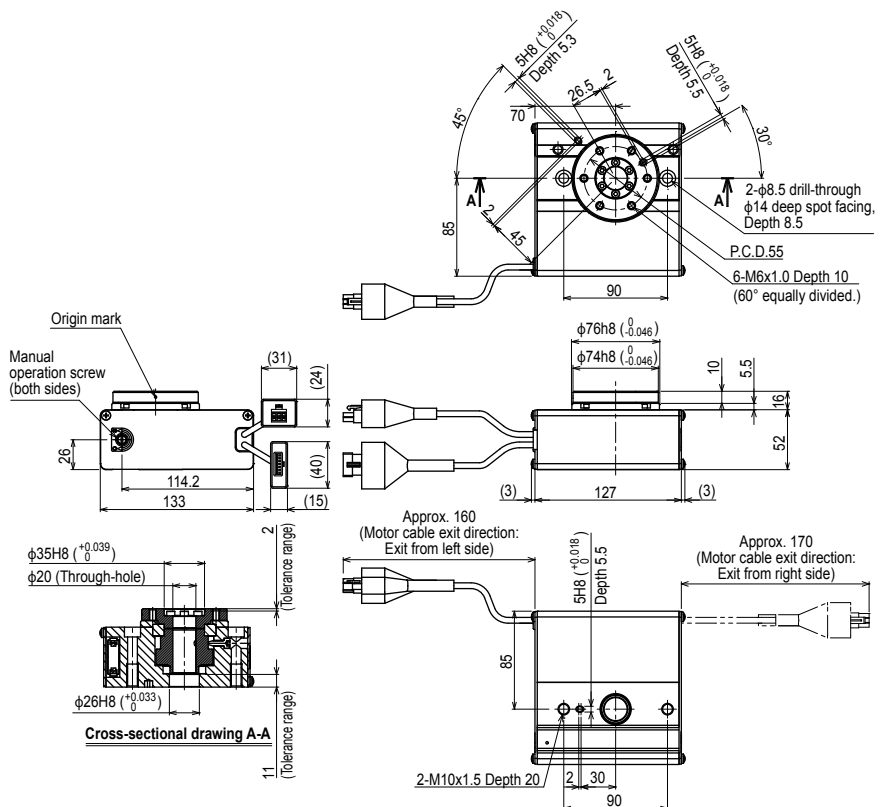
Controller

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

RF04-NN Limit rotation specification – Standard model



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

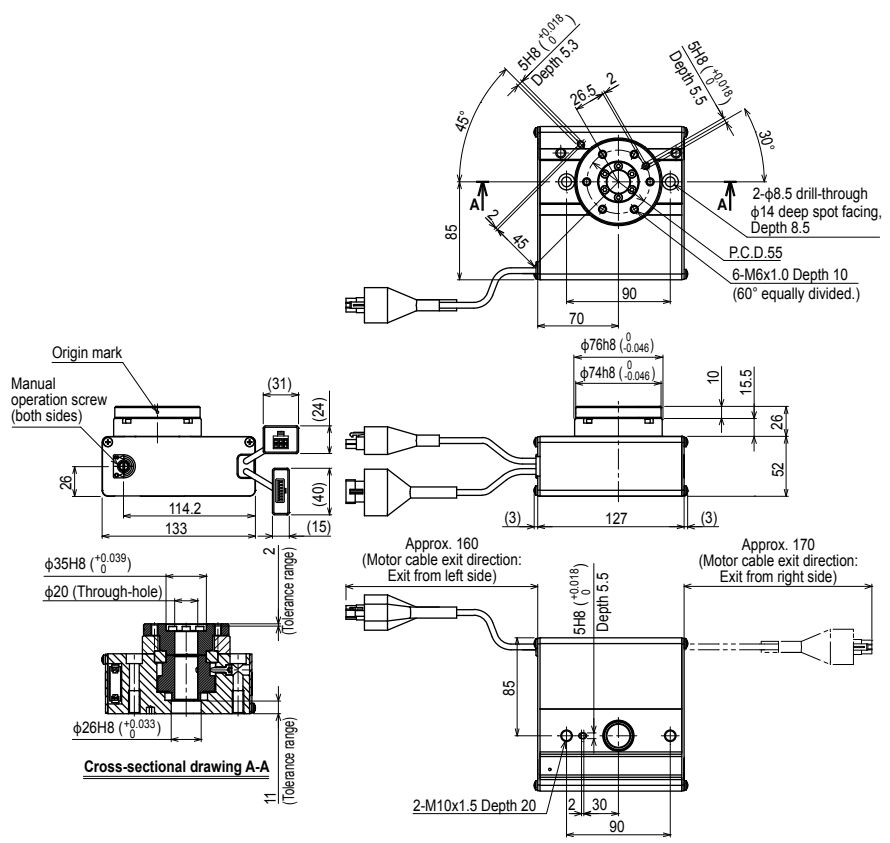
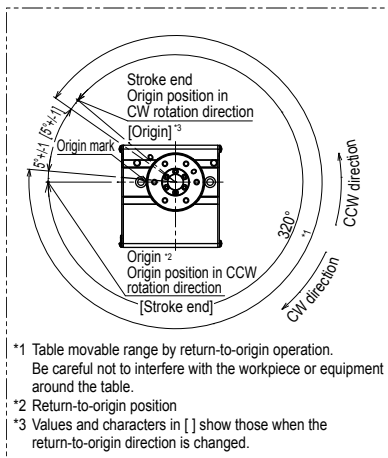


Weight (kg) 2.2

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

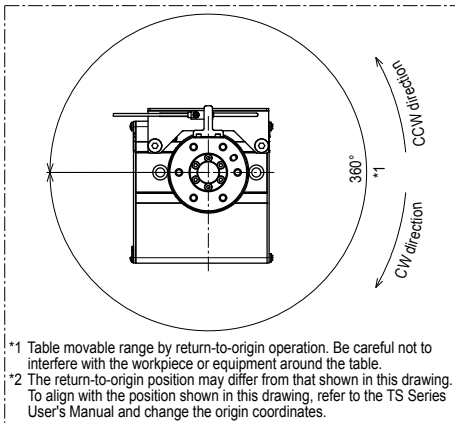
Note 2. The minimum bending radius of the motor cable is R30.

RF04-NH Limit rotation specification – High rigidity model

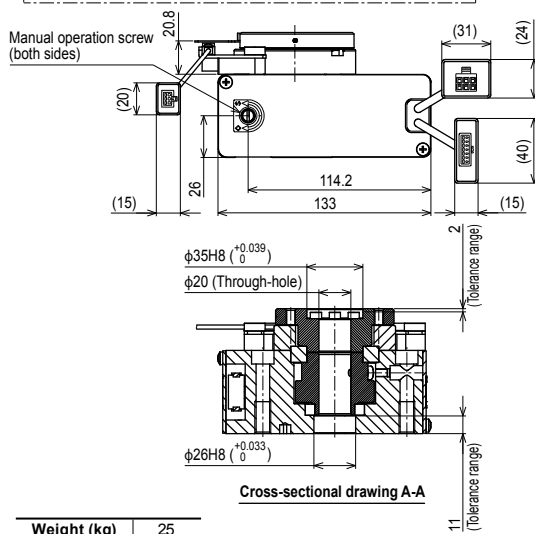


Note 1. This drawing is output under the conditions below.
Bearing..... High rigidity
Torque..... Standard/High torque
Note 2. The minimum bending radius of the motor cable is R30.

RF04-SH Sensor specification – High rigidity model



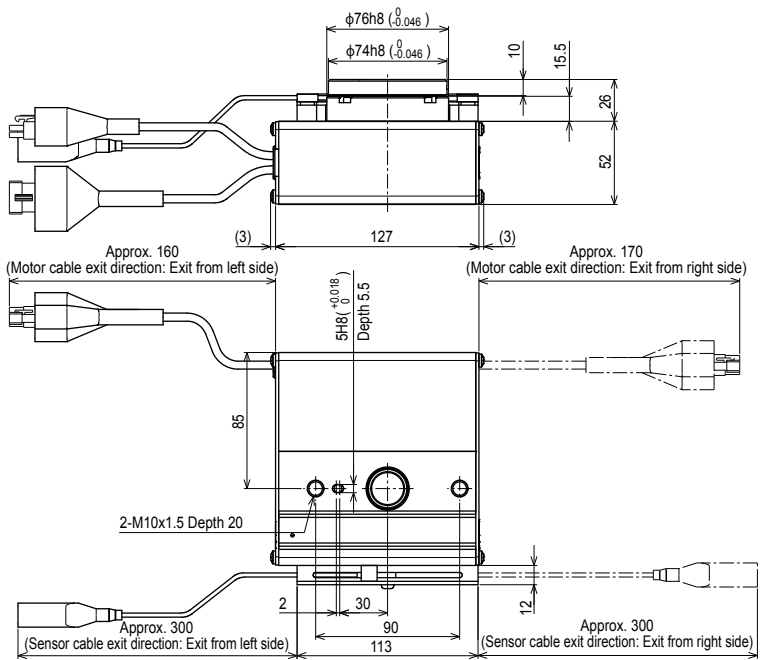
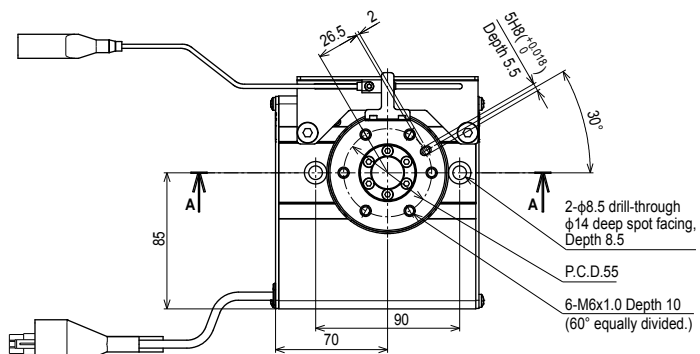
*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.
 *2 The return-to-origin position may differ from that shown in this drawing. To align with the position shown in this drawing, refer to the TS Series User's Manual and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



Cross-sectional drawing A-A

Weight (kg)	25
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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.



BD04

Belt type

CE compliance

Ordering method

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

Note 1. The robot cable is flexible and resists bending.
 Note 2. See P.634 for DIN rail mounting bracket.
 Note 3. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

Motor	28 □ Step motor
Resolution (Pulse/rotation)	4096
Repeatability <small>Note 1</small> (mm)	+ΔD
Drive method	Belt
Equivalent lead (mm)	φ
Maximum speed <small>Note 2</small> (mm/sec)	100
Maximum payload (kg)	1
Stroke (mm)	300 500 600 700 800 900 1000
Overall length (mm) (Horizontal installation)	Stroke + 195
Maximum outside dimension of body cross-section (mm)	W40 × H39
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.

Allowable overhang

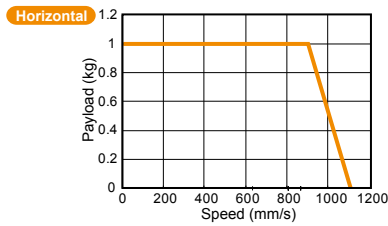
Horizontal installation (Unit: mm)				Wall installation (Unit: mm)			
	A	B	C		A	B	C
0.5kg	8036	1950	1504	0.5kg	1614	1942	8013
1kg	3933	968	747	1kg	798	961	3969

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

Static loading moment

(Unit: N·m)		
MY	MP	MR
10	10	20

Speed vs. payload

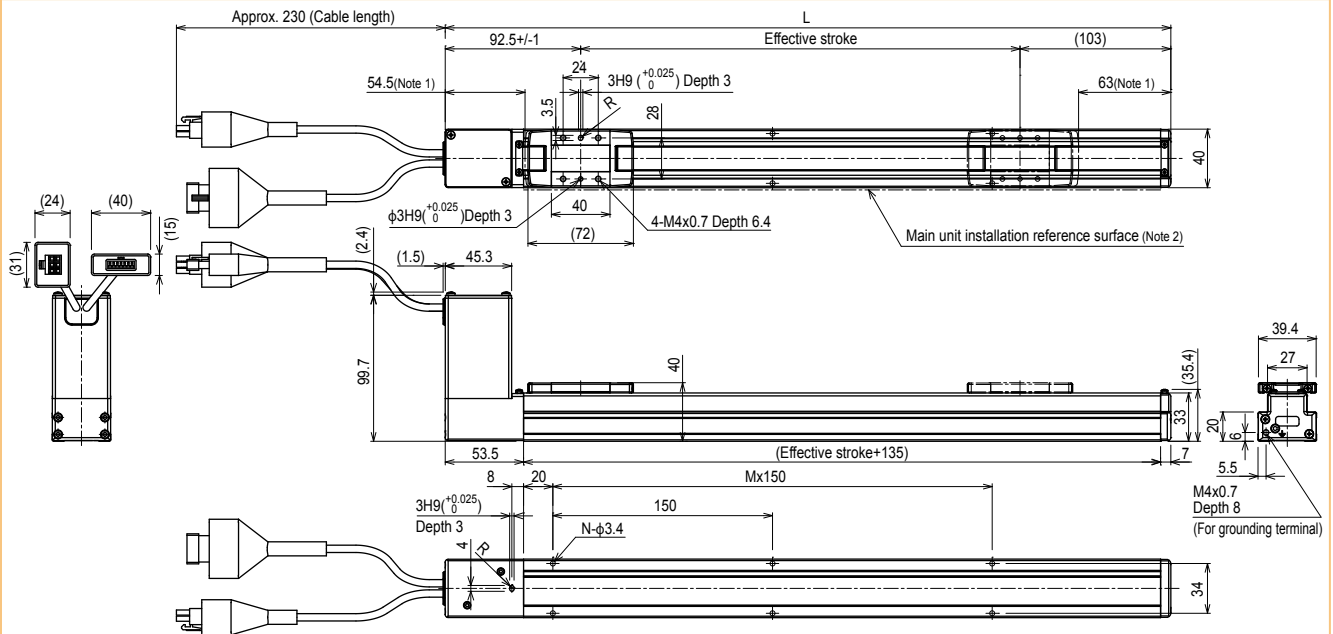


Quick reference		
Payload (kg)	Speed (mm/sec)	%
1	900	90
0.5	1000	95
0	1100	100

Controller

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

BD04



Effective stroke	300	500	600	700	800	900	1000
L	495.5	695.5	795.5	895.5	995.5	1095.5	1195.5
M	2	4	4	5	6	6	7
N	6	10	10	12	14	14	16
Weight (kg)	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

BD07	48	N	N		
Model	Lead	Brake	Origin position	Stroke	Cable length <small>Note 1</small>
	48: 48mm	N: With no brake	N: Standard	300: 300mm 500: 500mm 600: 600mm 700: 700mm 800: 800mm 900: 900mm 1000: 1000mm 1200: 1200mm 1500: 1500mm 1800: 1800mm 2000: 2000mm	1K: 1m 3K: 3m 5K: 5m 10K: 10m

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

Note 1. The robot cable is flexible and resists bending.
 Note 2. See P.634 for DIN rail mounting bracket.
 Note 3. Select this selection when using the gateway function. For details, see P.96.

Basic specifications

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

Allowable overhang

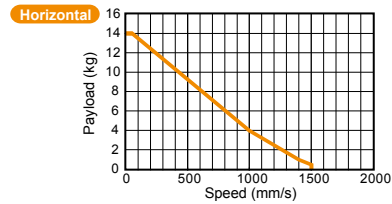
Horizontal installation (Unit: mm)				Wall installation (Unit: mm)			
	A	B	C		A	B	C
3kg	5767	1353	1247	3kg	1324	1354	5588
8kg	1839	399	458	8kg	474	399	1658
14kg	829	154	254	14kg	255	151	643

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

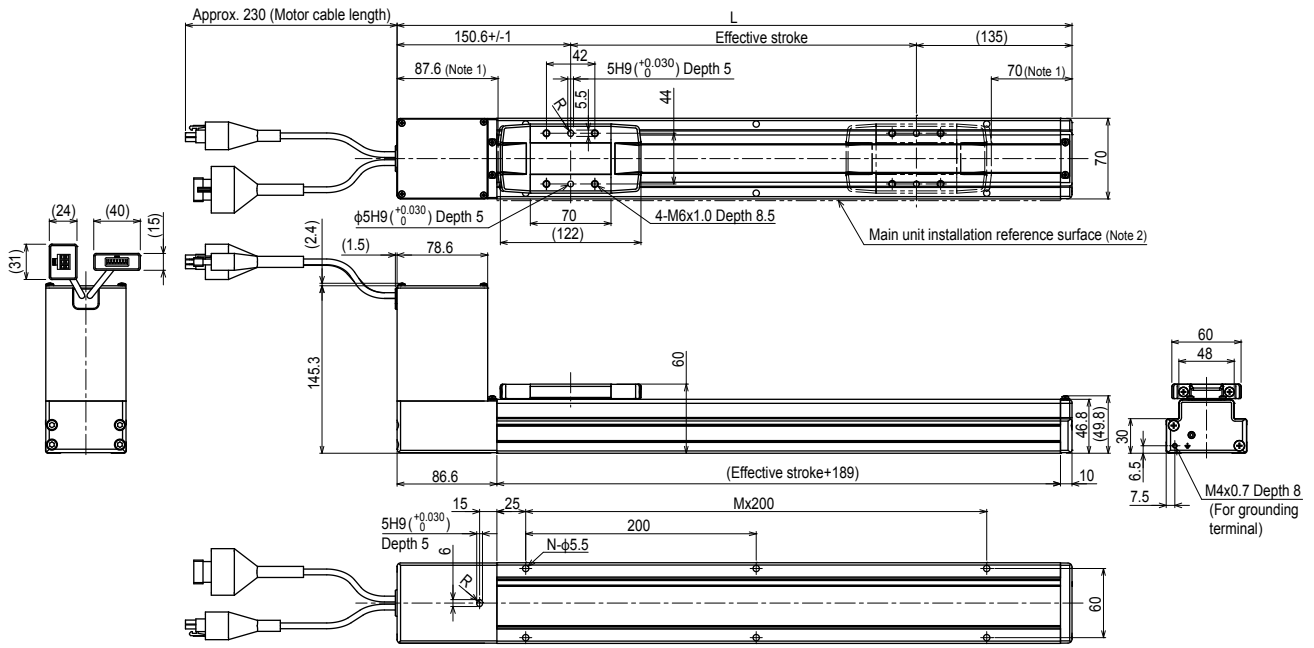
Speed vs. payload



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
L	585.6	785.6	885.6	985.6	1085.6	1185.6	1285.6	1485.6	1785.6	2085.6	2285.6
M	2	3	3	4	4	5	5	6	8	9	10
N	6	8	8	10	10	12	12	14	18	20	22
Weight (kg)	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.