

# RF02-N

## Rotary type / Limit rotation specification



- CE compliance
- Rotation range : 310°

### Ordering method

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

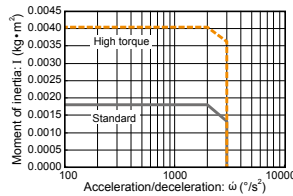
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.634 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.96.

### Basic specifications

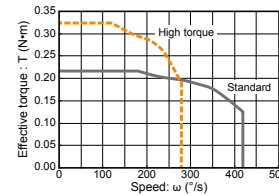
<b>Motor</b>	□ <input type="checkbox"/> Step motor	
<b>Resolution (Pulse/rotation)</b>	4096	
<b>Repeatability</b> <small>Note 1</small> (°)	±0.05	
<b>Drive method</b>	Special worm gear + belt	
<b>Torque type</b>	Standard	High torque
<b>Maximum speed</b> <small>Note 2</small> (°/sec)	40	280
<b>Rotating torque (N·m)</b>	2	8
<b>Max. pushing torque (N·m)</b>	1	4
<b>Backlash (°)</b>	±0.5	
<b>Max. moment of inertia</b> <small>Note 3</small> (kg·m <sup>2</sup> )	0.018	0.04
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10	
<b>Rotation range (°)</b>	310	

Note 1. Positioning repeatability in one direction.  
 Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the "Moment of inertia vs. Acceleration/deceleration" graph and the "Effective torque vs. speed" graph (reference).  
 Note 3. For moment of inertia and effective torque details, see P.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	107	2.4	2.9	

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

### Controller

Controller	Operation method
TS-S2	I/O point trace / Remote command
TS-SH	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]<sup>3</sup>

Origin mark

Origin<sup>2</sup>  
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.

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.

Approx. 170

(Motor cable exit direction: Exit from left side)

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

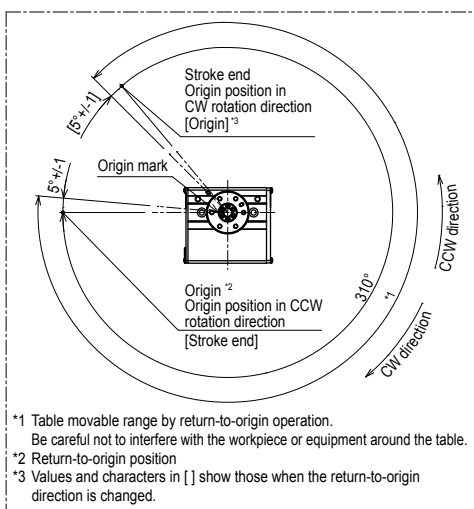
φ43h8<sup>+0.039</sup><sub>0</sub>

φ42h8<sup>+0.039</sup><sub>0</sub>

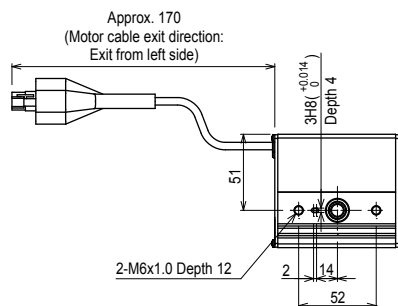
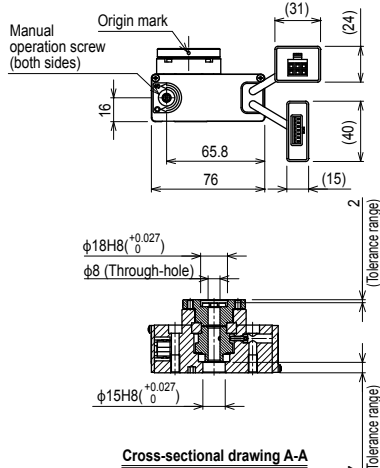
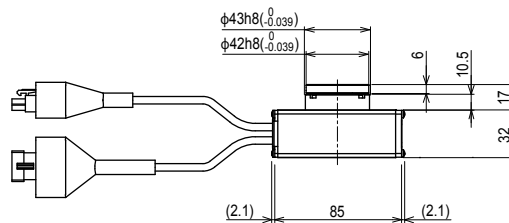
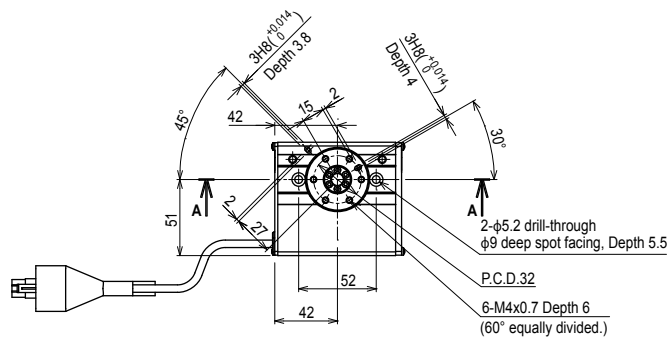
3H8<sup>+0.014</sup><sub>0</sub> Depth 4

2-M6x1.0 Depth 12

RF02-NH Limit rotation specification – High rigidity model



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



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

# RF02-S

## Rotary type / Sensor specification



- CE compliance
- Limitless rotation

### Ordering method

**RF02-S-L**

<b>Model</b>	<b>Return-to-origin method</b> S: Sensor (Limitless rotation)	<b>Bearing</b> N: Standard H: High rigidity	<b>Torque</b> N: Standard torque H: High torque	<b>Cable entry location</b> L: From the left	<b>Rotation direction</b> N: CCW Z: CW	<b>Cable length</b> <small>Note 1</small> 1K: 1m 3K: 3m 5K: 5m 10K: 10m
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<b>S2S</b>	<b>Robot positioner</b> S2S: TS-S2S <small>Note 2</small>	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 3</small>
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<b>SHS</b>	<b>Robot positioner</b> SHS: TS-SHS	<b>I/O</b> NP: NPN PN: PNP CC: CC-Link DN: DeviceNet™ EP: EtherNet/IP™ PT: PROFINET GW: No I/O board <small>Note 3</small>	<b>Battery</b> B: With battery (Absolute) N: None (Incremental)
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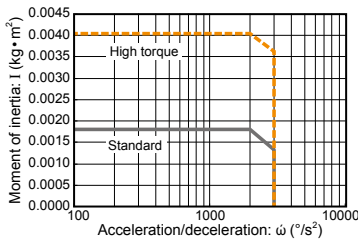
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.634 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.96.

### Basic specifications

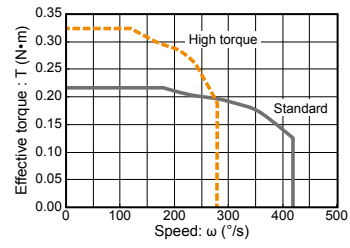
<b>Motor</b>	20 □ Step motor
<b>Resolution (Pulse/rotation)</b>	4096
<b>Repeatability</b> <small>Note 1</small> (°)	+/-0.05
<b>Drive method</b>	Special warm gear + belt
<b>Torque type</b>	Standard High torque
<b>Maximum speed</b> <small>Note 2</small> (°/sec)	420 280
<b>Rotating torque (N•m)</b>	0.22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

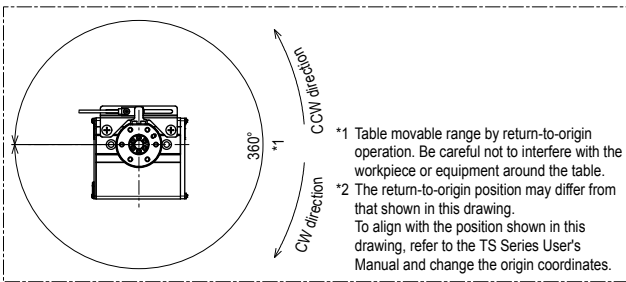
	(a)	(b)	
	↑ ↓	↑ ↓	↻
<b>Allowable radial load (N)</b>	<b>Allowable thrust load (N)</b>		<b>Allowable moment (N•m)</b>
Standard model	Standard model (a)	Standard model (b)	Standard model
High rigidity model	High rigidity model	High rigidity model	High rigidity model
78	74	78	2.4
86	107	107	2.9

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.

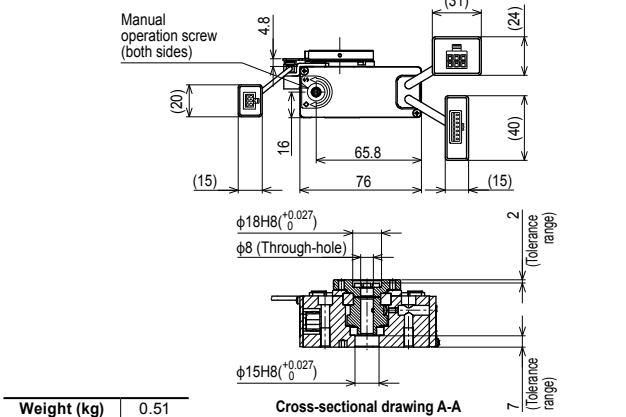
### Controller

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

### RF02-SN Sensor specification – Standard model

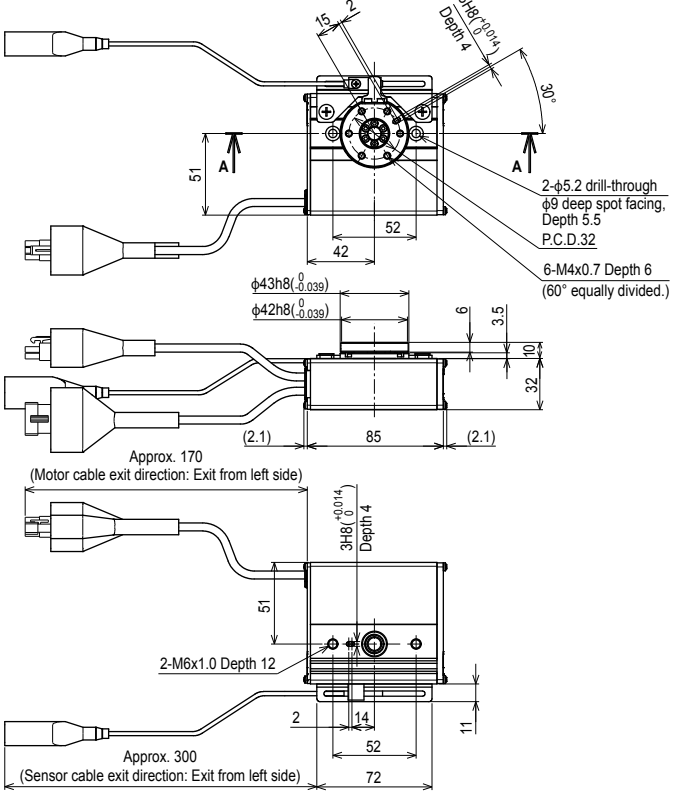


\*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.  
 \*2 The return-to-origin position may differ from that shown in this drawing. To align with the position shown in this drawing, refer to the TS Series User's Manual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

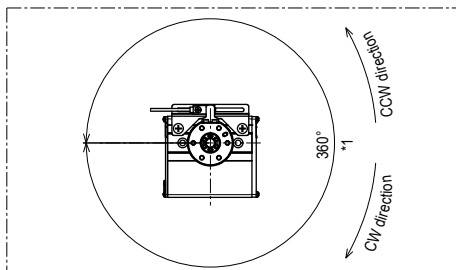


**Weight (kg)** 0.51

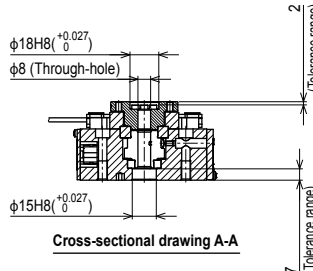
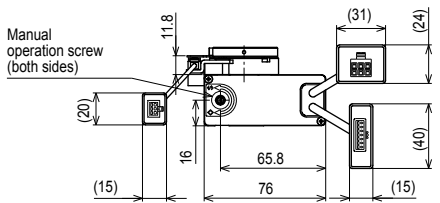
Note 1. This drawing is output under the conditions below.  
 Bearing ..... Standard  
 Torque ..... Standard/High torque  
 Note 2. The minimum bending radii of the motor cable and sensor cable are R30.  
 Note 3. The motor cable exit direction is only the left side.



RF02-SH Sensor specification – High rigidity model

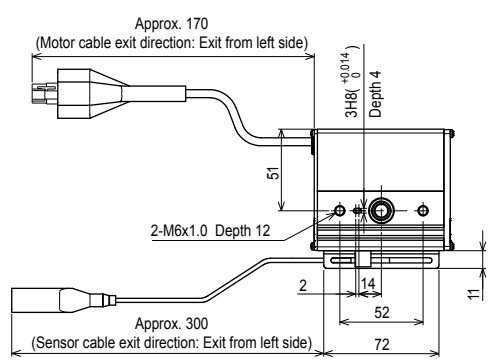
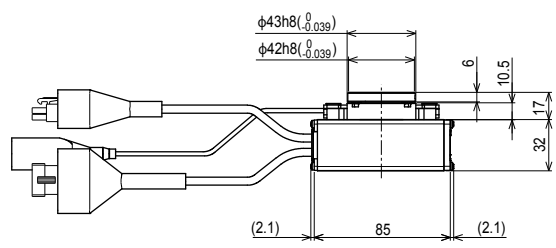
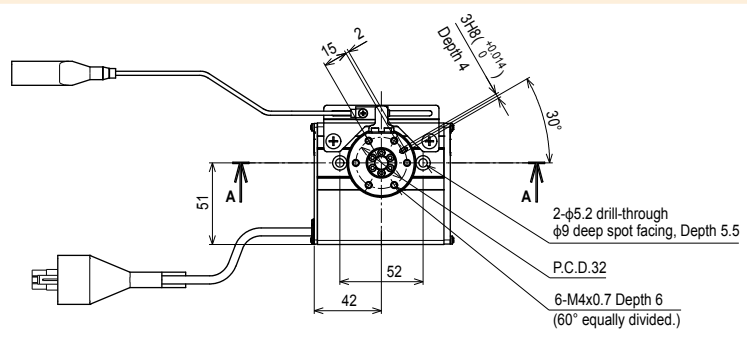


\*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.  
 \*2 The return-to-origin position may differ from that shown in this drawing. To align with the position shown in this drawing, refer to the TS Series User's Manual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



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



# RF03-N

## Rotary type / Limit rotation specification

- CE compliance
- Rotation range : 320°

### Ordering method

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

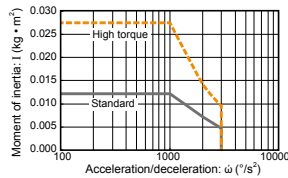
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.634 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.96.

### Basic specifications

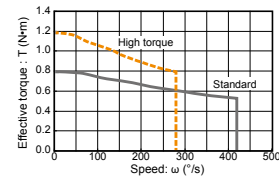
<b>Motor</b>	28 □ Step motor	
<b>Resolution (Pulse/rotation)</b>	4096	
<b>Repeatability</b> <sup>Note 1</sup> (°)	±0.05	
<b>Drive method</b>	Special warm gear + belt	
<b>Torque type</b>	Standard	High torque
<b>Maximum speed</b> <sup>Note 2</sup> (°/sec)	420	280
<b>Rotating torque (N·m)</b>	0.8	1.2
<b>Max.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

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

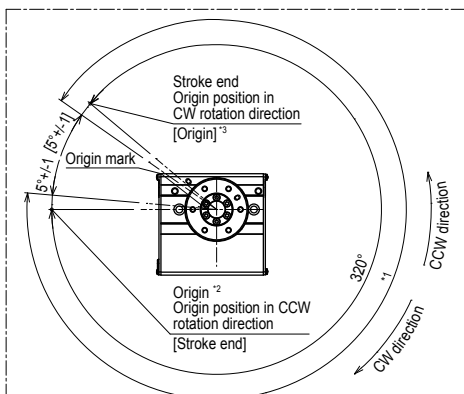
\*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.  
 \*2 Return-to-origin position  
 \*3 Values and characters in [ ] show those when the return-to-origin direction is changed.

**Cross-sectional drawing A-A**

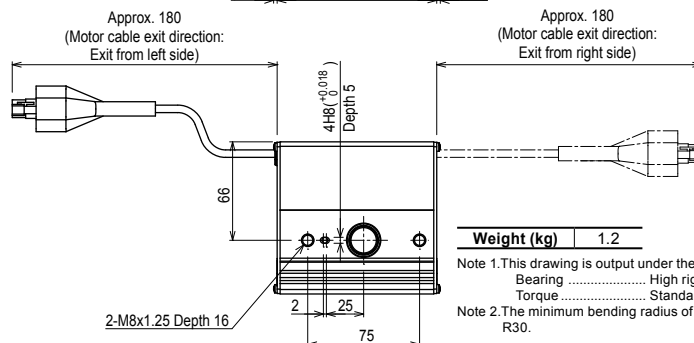
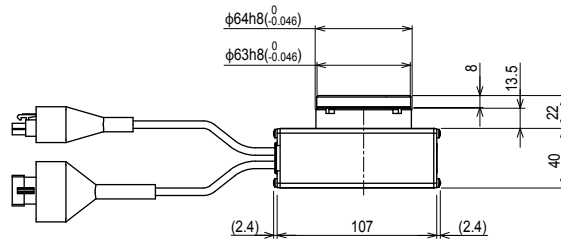
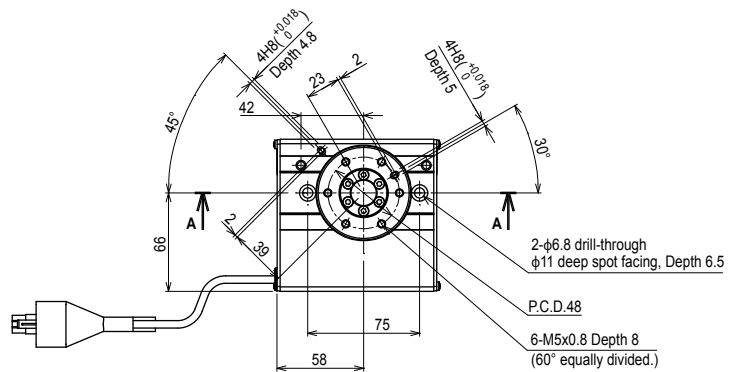
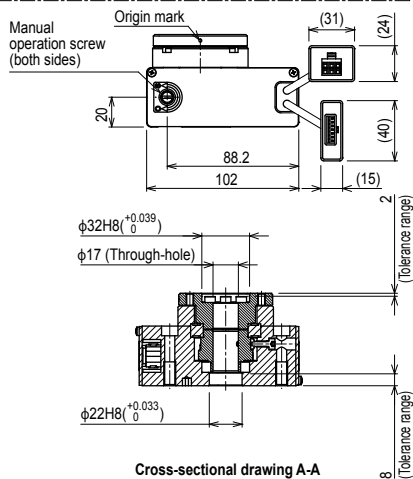
<b>Weight (kg)</b>	1.1
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Note 1. This drawing is output under the conditions below.  
 Bearing... Standard  
 Torque... Standard/High torque  
 Note 2. The minimum bending radius of the motor cable is R30.

RF03-NH Limit rotation specification – High rigidity model



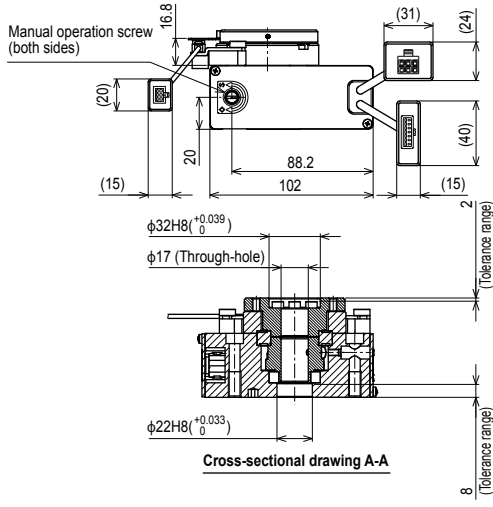
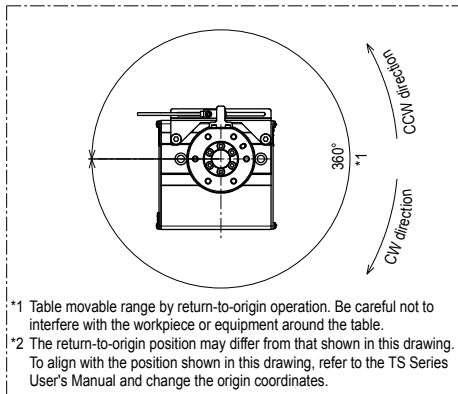
- \*1 Table movable range by return-to-origin operation.  
Be careful not to interfere with the workpiece or equipment around the table.
- \*2 Return-to-origin position
- \*3 Values and characters in [ ] show those when the return-to-origin direction is changed.





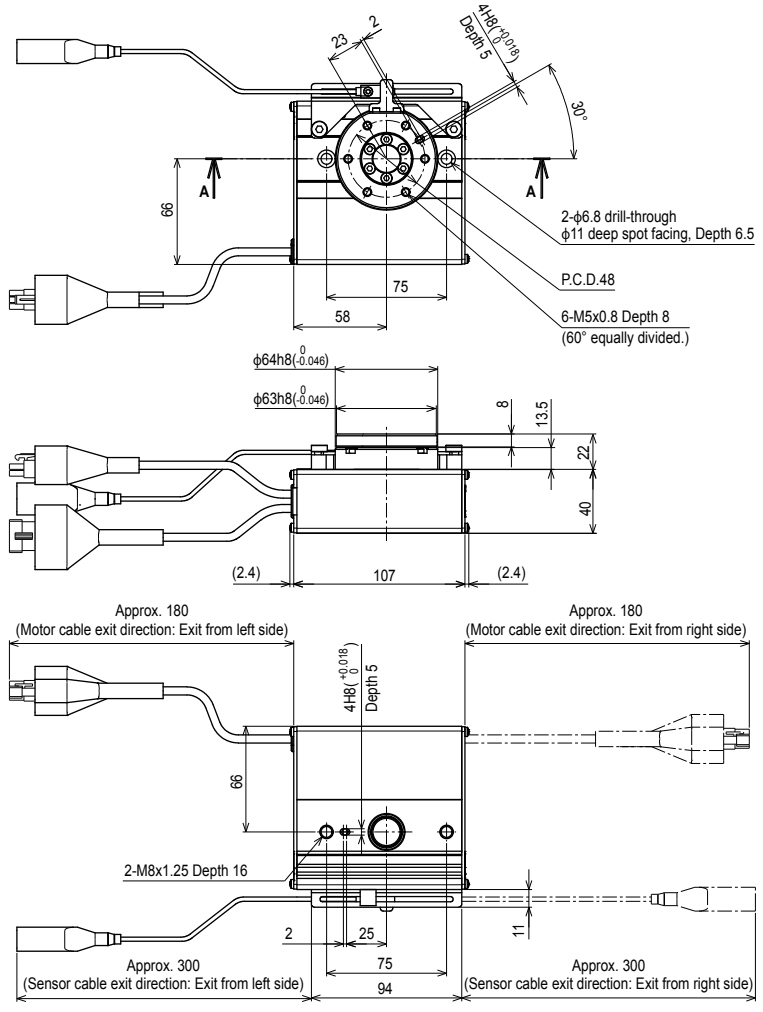


RF03-SH Sensor specification – High rigidity model



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

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

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

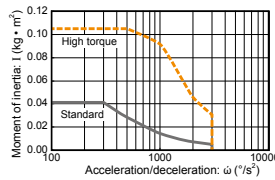
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.634 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.96.

### Basic specifications

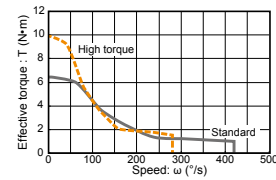
<b>Motor</b>	42 □ Step motor
<b>Resolution (Pulse/rotation)</b>	20480
<b>Repeatability</b> <sup>Note 1</sup> (°)	+0.05
<b>Drive method</b>	Special worm gear + belt
<b>Torque type</b>	Standard High torque
<b>Maximum speed</b> <sup>Note 2</sup> (°/sec)	420 280
<b>Rotating torque (N·m)</b>	6.6 10
<b>Max. pushing torque (N·m)</b>	33 5
<b>Backlash (°)</b>	+0.5
<b>Max. moment of inertia</b> <sup>Note 3</sup> (kg·m <sup>2</sup> )	0.04 0.1
<b>Cable length (m)</b>	Standard: 1 / Option: 3, 5, 10
<b>Rotation range (°)</b>	320

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

### Moment of inertia Acceleration/deceleration



### Effective torque vs. speed



### Allowable load

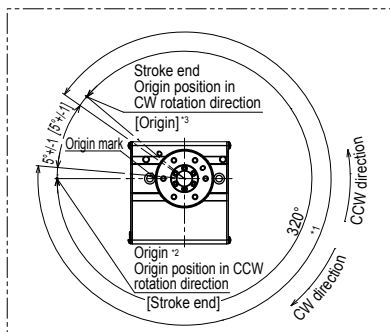
<b>Allowable radial load (N)</b>	<b>Allowable thrust load (N)</b>		<b>Allowable moment (N·m)</b>
Standard model	(a) Standard model	(b) Standard model	Standard model
High rigidity model	High rigidity model	High rigidity model	High rigidity model
314	296	398	9.7
378	517	517	12.0

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.

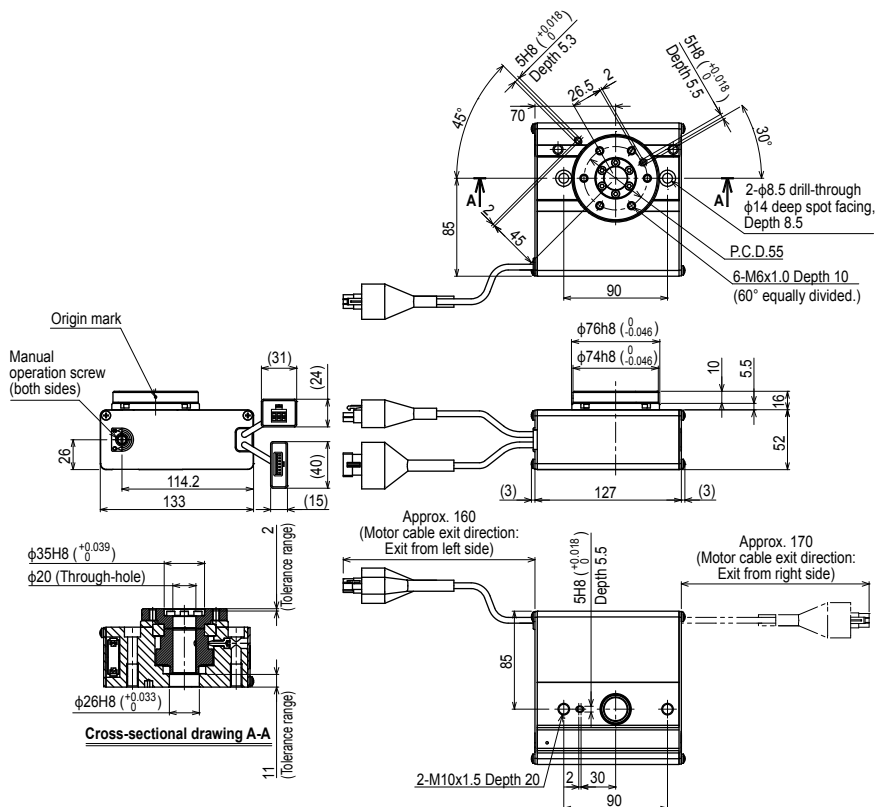
### Controller

<b>Controller</b>	<b>Operation method</b>
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



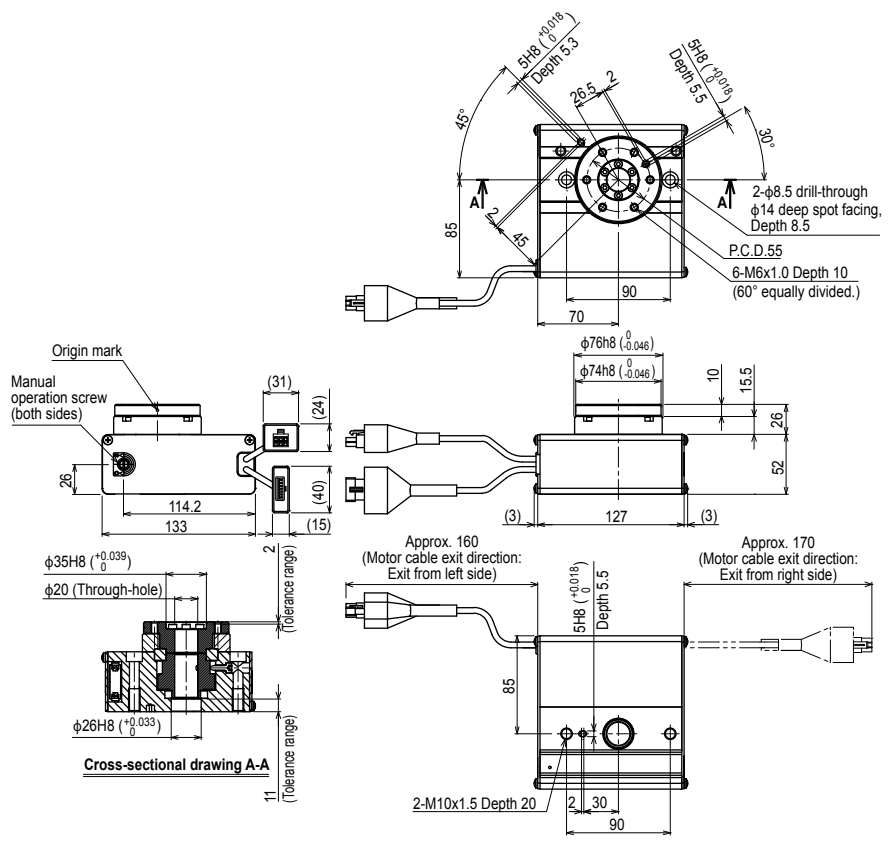
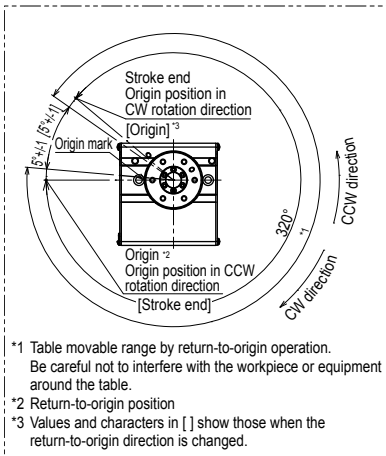
\*1 Table movable range by return-to-origin operation. Be careful not to interfere with the workpiece or equipment around the table.  
 \*2 Return-to-origin position  
 \*3 Values and characters in [ ] show those when the return-to-origin direction is changed.



**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



# RF04-S

## Rotary type / Sensor specification

- CE compliance
- Limitless rotation

### Ordering method

# RF04

# S

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

# S2S

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

# SHS

Robot positioner	I/O	Battery
S2S: 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)

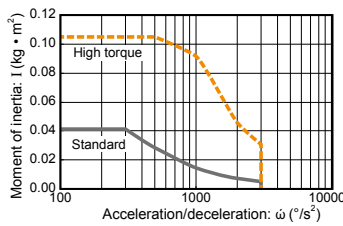
Note 1. The robot cable is flexible and resists bending.  
 Note 2. See P.634 for DIN rail mounting bracket.  
 Note 3. Select this selection when using the gateway function. For details, see P.96.

### Basic specifications

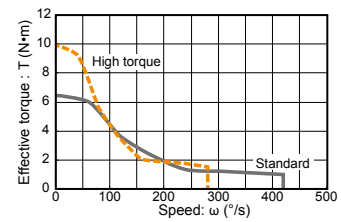
Motor	42 □ Step motor
Resolution (Pulse/rotation)	20480
Repeatability Note 1 (°)	+/-0.05
Drive method	Special worm gear + belt
Torque type	Standard    High torque
Maximum speed Note 2 (°/sec)	420                      280
Rotating torque (N·m)	6.6                        10
Max. pushing torque (N·m)	3.3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

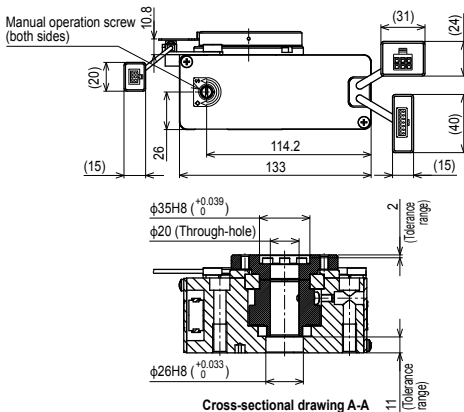
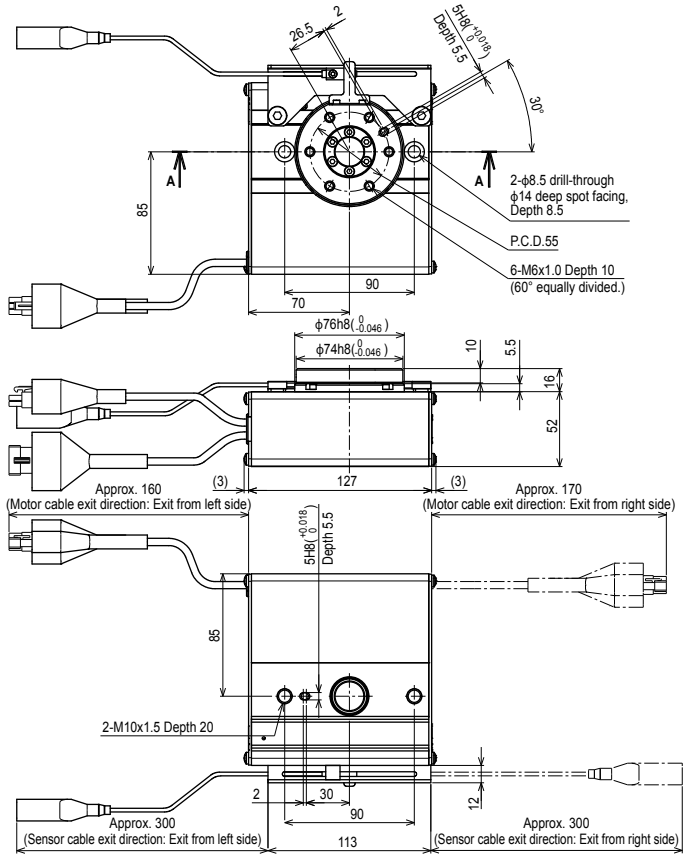
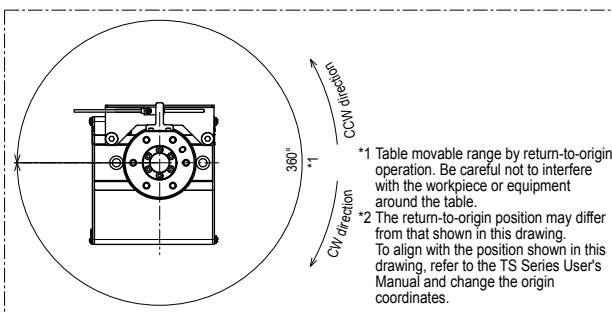
Allowable radial load (N)	Allowable thrust load (N)				Allowable moment (N·m)	
	Standard model	High rigidity model	(a) Standard model	(b) High rigidity model	Standard model	High rigidity model
314	378	296	398	9.7	12.0	

### Controller

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

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

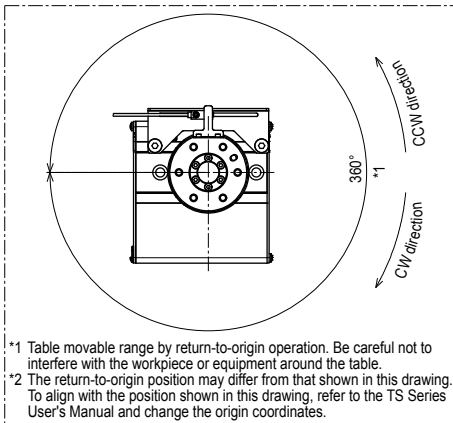
### RF04-SN Sensor specification – Standard model



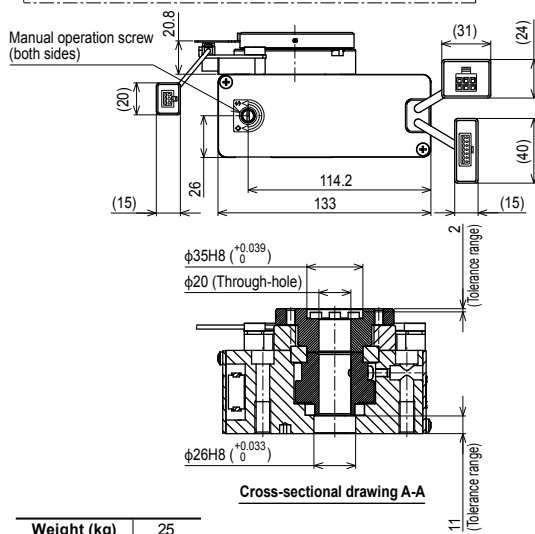
Weight (kg)	2.3
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Note 1. This drawing is output under the conditions below.  
 Bearing ..... Standard  
 Torque ..... Standard/High torque  
 Note 2. The minimum bending radii of the motor cable and sensor cable are R30.

RF04-SH Sensor specification – High rigidity model



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



Weight (kg)	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.

