CLOSED LOOP STEPPING MOTOR SINGLE-AXIS ROBOTS

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

Robot positioner TS-S2/TS-SH P.514

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

Applicable models:

<table>
<thead>
<tr>
<th>SS</th>
<th>SR</th>
<th>RF</th>
<th>BD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-S2</td>
<td>TS-SH</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. SG07 is only applicable to TS-SH.

Robot driver TS-SD P.524

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

Applicable models:

<table>
<thead>
<tr>
<th>SS</th>
<th>SR</th>
<th>STH</th>
<th>RF</th>
<th>BD</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-SD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Except for STH vertical specifications and RF sensor specifications.
Newly developed vector control method provides functions and performance similar to servomotors.

### SS type (Slider type)

<table>
<thead>
<tr>
<th>Model</th>
<th>Size (mm)</th>
<th>Lead (mm)</th>
<th>Maximum payload (kg)</th>
<th>Maximum speed (mm/sec.)</th>
<th>Stroke (mm)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS04-S</td>
<td>W49 × H59</td>
<td>12 6 4</td>
<td>2 2</td>
<td>600</td>
<td>50 to 400</td>
<td>P.154</td>
</tr>
<tr>
<td>SS04-R (L)</td>
<td></td>
<td>12 6 4</td>
<td>- 2</td>
<td>100</td>
<td>50 to 400</td>
<td>P.155</td>
</tr>
<tr>
<td>SS05-S</td>
<td>W55 × H56</td>
<td>12 6 4</td>
<td>1 2</td>
<td>600</td>
<td>50 to 800</td>
<td>P.156</td>
</tr>
<tr>
<td>SS05-R (L)</td>
<td></td>
<td>12 6 4</td>
<td>- 2</td>
<td>100</td>
<td>50 to 800</td>
<td>P.157</td>
</tr>
<tr>
<td>SS05H-S</td>
<td>W55 × H56</td>
<td>12 6 8</td>
<td>2 2</td>
<td>600 (Horizontal) 500 (Vertical)</td>
<td>50 to 800</td>
<td>P.158</td>
</tr>
<tr>
<td>SS05H-R (L)</td>
<td></td>
<td>12 6 8</td>
<td>- 2</td>
<td>100</td>
<td>50 to 800</td>
<td>P.159</td>
</tr>
<tr>
<td>SG07</td>
<td>W65 × H64</td>
<td>12 6 4</td>
<td>12 4</td>
<td>1200</td>
<td>50 to 800</td>
<td>P.160</td>
</tr>
</tbody>
</table>

### SR type (Rod type standard)

<table>
<thead>
<tr>
<th>Model</th>
<th>Size (mm)</th>
<th>Lead (mm)</th>
<th>Maximum payload (kg)</th>
<th>Maximum speed (mm/sec.)</th>
<th>Stroke (mm)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR03-S</td>
<td>W48 × H56</td>
<td>12 6 10</td>
<td>4 8</td>
<td>500</td>
<td>50 to 200</td>
<td>P.161</td>
</tr>
<tr>
<td>SR03-R (L)</td>
<td></td>
<td>12 6 10</td>
<td>- 8</td>
<td>100</td>
<td>50 to 200</td>
<td>P.162</td>
</tr>
<tr>
<td>SR03-U</td>
<td></td>
<td>12 6 10</td>
<td>- 8</td>
<td>500</td>
<td>50 to 200</td>
<td>P.163</td>
</tr>
<tr>
<td>SR04-S</td>
<td>W48 × H58</td>
<td>12 6 25</td>
<td>5 12</td>
<td>500</td>
<td>50 to 300</td>
<td>P.164</td>
</tr>
<tr>
<td>SR04-R (L)</td>
<td></td>
<td>12 6 25</td>
<td>- 12</td>
<td>100</td>
<td>50 to 300</td>
<td>P.165</td>
</tr>
<tr>
<td>SR04-U</td>
<td></td>
<td>12 6 25</td>
<td>- 12</td>
<td>500</td>
<td>50 to 300</td>
<td>P.166</td>
</tr>
<tr>
<td>SR05-S</td>
<td>W56.4 × H71</td>
<td>12 6 50</td>
<td>10 20</td>
<td>500</td>
<td>50 to 300</td>
<td>P.167</td>
</tr>
<tr>
<td>SR05-R (L)</td>
<td></td>
<td>12 6 50</td>
<td>- 20</td>
<td>100</td>
<td>50 to 300</td>
<td>P.168</td>
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<tr>
<td>SR05-U</td>
<td></td>
<td>12 6 50</td>
<td>- 20</td>
<td>500</td>
<td>50 to 300</td>
<td>P.169</td>
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</table>

### SR type (Rod type with support guide)

<table>
<thead>
<tr>
<th>Model</th>
<th>Size (mm)</th>
<th>Lead (mm)</th>
<th>Maximum payload (kg)</th>
<th>Maximum speed (mm/sec.)</th>
<th>Stroke (mm)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRD03-S</td>
<td>W105 × H56.5</td>
<td>12 6 10</td>
<td>3.5 7.5</td>
<td>500</td>
<td>50 to 200</td>
<td>P.164</td>
</tr>
<tr>
<td>SRD03-U</td>
<td></td>
<td>12 6 10</td>
<td>- 7.5</td>
<td>100</td>
<td>50 to 200</td>
<td>P.165</td>
</tr>
<tr>
<td>SRD04-S</td>
<td>W135 × H58</td>
<td>12 6 25</td>
<td>4 11</td>
<td>500</td>
<td>50 to 300</td>
<td>P.166</td>
</tr>
<tr>
<td>SRD04-U</td>
<td></td>
<td>12 6 25</td>
<td>- 11</td>
<td>100</td>
<td>50 to 300</td>
<td>P.167</td>
</tr>
<tr>
<td>SRD05-S</td>
<td>W157 × H71</td>
<td>12 6 50</td>
<td>8.5 15</td>
<td>500</td>
<td>50 to 300</td>
<td>P.168</td>
</tr>
<tr>
<td>SRD05-U</td>
<td></td>
<td>12 6 50</td>
<td>- 15</td>
<td>100</td>
<td>50 to 300</td>
<td>P.169</td>
</tr>
</tbody>
</table>

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.
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)

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Size (mm)</th>
<th>Lead (mm)</th>
<th>Maximum payload (kg)</th>
<th>Maximum speed (mm/sec.)</th>
<th>Stroke (mm)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>STH type (Slide table type)</td>
<td>STH04-S</td>
<td>W45 × H46</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>200</td>
<td>50 to 100</td>
</tr>
<tr>
<td>STH04-R (L)</td>
<td>W73 × H51</td>
<td>10</td>
<td>4</td>
<td>1</td>
<td>400</td>
<td>STH04-RL: P.175</td>
<td></td>
</tr>
<tr>
<td>STH06</td>
<td>W61 × H65</td>
<td>8</td>
<td>9</td>
<td>2</td>
<td>150</td>
<td>STH06: P.176</td>
<td></td>
</tr>
<tr>
<td>STH06-R (L)</td>
<td>W106 × H70</td>
<td>16</td>
<td>6</td>
<td>4</td>
<td>400</td>
<td>STH06-RL: P.177</td>
<td></td>
</tr>
</tbody>
</table>

### RF type (Rotary type)

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Height (mm)</th>
<th>Torque type</th>
<th>Rotation torque (N • m)</th>
<th>Maximum pushing torque (N • m)</th>
<th>Maximum speed (mm/sec.)</th>
<th>Rotation range (°)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF type (Rotary type)</td>
<td>RF02-N</td>
<td>42 (Standard)</td>
<td>N: Standard</td>
<td>0.22</td>
<td>0.11</td>
<td>420</td>
<td>310 (RF02-N)</td>
<td>RF02-N: P.178</td>
</tr>
<tr>
<td></td>
<td>RF02-S</td>
<td>49 (High rigidity)</td>
<td>H: High torque</td>
<td>0.32</td>
<td>0.16</td>
<td>280</td>
<td>360 (RF02-S)</td>
<td>RF02-S: P.181</td>
</tr>
<tr>
<td>RF03-N</td>
<td>53 (Standard)</td>
<td>8</td>
<td>N: Standard</td>
<td>0.8</td>
<td>0.4</td>
<td>420</td>
<td>320 (RF03-N)</td>
<td>RF03-N: P.182</td>
</tr>
<tr>
<td>RF03-S</td>
<td>62 (High rigidity)</td>
<td>1.2</td>
<td>H: High torque</td>
<td>0.6</td>
<td>0.6</td>
<td>280</td>
<td>360 (RF03-S)</td>
<td>RF03-S: P.185</td>
</tr>
<tr>
<td>RF04-N</td>
<td>68 (Standard)</td>
<td>6.6</td>
<td>N: Standard</td>
<td>10</td>
<td>5</td>
<td>280</td>
<td>320 (RF04-N)</td>
<td>RF04-N: P.186</td>
</tr>
<tr>
<td>RF04-S</td>
<td>78 (High rigidity)</td>
<td>3.3</td>
<td>H: High torque</td>
<td>5</td>
<td>5</td>
<td>280</td>
<td>360 (RF04-S)</td>
<td>RF04-S: P.189</td>
</tr>
</tbody>
</table>

### BD type (Belt type)

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Size (mm)</th>
<th>Lead (mm)</th>
<th>Maximum payload (kg)</th>
<th>Maximum speed (mm/sec.)</th>
<th>Stroke (mm)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>BD type (Belt type)</td>
<td>BD04</td>
<td>W40 × H40</td>
<td>48</td>
<td>1</td>
<td>1100</td>
<td>300 to 1000</td>
<td>BD04: P.190</td>
</tr>
<tr>
<td></td>
<td>BD05</td>
<td>W58 × H48</td>
<td>48</td>
<td>5</td>
<td>1400</td>
<td>300 to 2000</td>
<td>BD05: P.191</td>
</tr>
<tr>
<td></td>
<td>BD07</td>
<td>W70 × H60</td>
<td>48</td>
<td>14</td>
<td>1500</td>
<td>300 to 2000</td>
<td>BD07: P.192</td>
</tr>
</tbody>
</table>

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**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.

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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.

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.

High resolution (4096, 20480 pulse/rev)

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

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.
**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.

**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, 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.

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

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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.
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.

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.
CLOSED LOOP STEPPING MOTOR
SINGLE-AXIS ROBOTS

TRANSERVO
SERIES

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### TRANSERVO SPECIFICATION SHEET

#### Type: Articulated robots

- **Model:** S50-S, S50-S (L)
- **Size (mm):** W49 × H69
- **Lead (mm):** 12, 8, 4, 2
- **Maximum payload (kg):**
  - **Horizontal:** 300
  - **Vertical:** 100
- **Maximum speed (mm/sec):**
  - **Horizontal:** 500
  - **Vertical:** 300
- **Stroke (mm):** 50 to 400

#### Type: Linear conveyor modules

- **Model:** LCM100
- **Size (mm):** 12, 8, 4, 2
- **Maximum payload (kg):** 1000
- **Maximum speed (mm/sec):**
  - **Horizontal:** 1000
  - **Vertical:** 300
- **Stroke (mm):** 50 to 800

#### Type: Compact single-axis robots

- **Model:** TRANSERVO
- **Size (mm):** 6, 8, 4, 2
- **Maximum payload (kg):** 600 (Horizontal), 600 (Vertical)
- **Maximum speed (mm/sec):**
  - **Horizontal:** 250
  - **Vertical:** 250
- **Stroke (mm):** 50 to 800

#### Type: Motor-less single-axis robots

- **Model:** PHASER
- **Size (mm):** 6, 8, 4, 2
- **Maximum payload (kg):** 600 (Horizontal), 600 (Vertical)
- **Maximum speed (mm/sec):**
  - **Horizontal:** 250
  - **Vertical:** 250
- **Stroke (mm):** 50 to 800

#### Type: Cartesian robots

- **Model:** XY-X
- **Size (mm):** 6, 8, 4, 2
- **Maximum payload (kg):** 600 (Horizontal), 600 (Vertical)
- **Maximum speed (mm/sec):**
  - **Horizontal:** 250
  - **Vertical:** 250
- **Stroke (mm):** 50 to 800

#### Type: Pick & place robots

- **Model:** YP-X
- **Size (mm):** 6, 8, 4, 2
- **Maximum payload (kg):** 600 (Horizontal), 600 (Vertical)
- **Maximum speed (mm/sec):**
  - **Horizontal:** 250
  - **Vertical:** 250
- **Stroke (mm):** 50 to 800

### 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.

### 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 (STR/BD type) 5 to 40 °C

### Type: SR/SRD/STH type

#### Speed vs. payload table

<table>
<thead>
<tr>
<th>Model</th>
<th>Size (mm)</th>
<th>Lead (mm)</th>
<th>Maximum payload (kg)</th>
<th>Maximum speed (mm/sec)</th>
<th>Stroke (mm)</th>
<th>Detailed info page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SR03</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead 12</td>
<td>500</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead 6</td>
<td>500</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SRD03</strong></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead 12</td>
<td>500</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead 6</td>
<td>500</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SR04</strong></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead 12</td>
<td>500</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead 6</td>
<td>500</td>
<td>100</td>
<td></td>
<td></td>
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<tr>
<td><strong>SRD04</strong></td>
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<tr>
<td></td>
<td></td>
<td>Lead 12</td>
<td>500</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead 6</td>
<td>500</td>
<td>100</td>
<td></td>
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<tr>
<td><strong>SR05</strong></td>
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<tr>
<td></td>
<td></td>
<td>Lead 12</td>
<td>500</td>
<td>100</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead 6</td>
<td>500</td>
<td>100</td>
<td></td>
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<tr>
<td><strong>SRD05</strong></td>
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<td></td>
<td>Lead 12</td>
<td>500</td>
<td>100</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Lead 6</td>
<td>500</td>
<td>100</td>
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</tbody>
</table>
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**

<table>
<thead>
<tr>
<th>Type</th>
<th>Model No.</th>
<th>Feet (2 plates per set)</th>
<th>Flange (1 piece)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR03-UB</td>
<td>KCU-M223F-00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SR04-02SB</td>
<td>KCV-M223F-00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Controller section**

<table>
<thead>
<tr>
<th>Type</th>
<th>Model No.</th>
<th>Feet (2 plates per set)</th>
<th>Flange (1 piece)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR04-02SB</td>
<td>KCW-M223F-00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Rod type: Bracket plates**

<table>
<thead>
<tr>
<th>Type</th>
<th>Model No.</th>
<th>Feet (2 plates per set)</th>
<th>Flange (1 piece)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR03/SRD03</td>
<td>KCU-M223F-00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SR04/SRD04</td>
<td>KCV-M223F-00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SR05/SRD05</td>
<td>KCW-M223F-00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

When greasing the ball screw in the SR03-UB or SR04-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)**

<table>
<thead>
<tr>
<th>Model</th>
<th>KCU-M3861-00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td></td>
</tr>
<tr>
<td>Feet (1 piece)</td>
<td></td>
</tr>
</tbody>
</table>

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

**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.

<table>
<thead>
<tr>
<th>Model</th>
<th>SR04-02SB, Vertical mount, 25 kg payload</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life distance</td>
<td>500 km → Life time : Approx. 3 years</td>
</tr>
<tr>
<td>Operating conditions</td>
<td>1000mm back-and-forth movement, shuttle time 16 seconds (duty: 20%)</td>
</tr>
<tr>
<td>Word conditions</td>
<td>16 hours per day</td>
</tr>
<tr>
<td>Work days</td>
<td>240 days per year</td>
</tr>
</tbody>
</table>

Note: Make sure that the rod is not subjected to a radial load.
### SS04

#### Ordering method

<table>
<thead>
<tr>
<th>SS04</th>
<th>Lead</th>
<th>Model</th>
<th>Model</th>
<th>Brake</th>
<th>Origin position</th>
<th>Grease option</th>
<th>Stroke</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Basic specifications

- **Motor**: 42V 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 8 6 2
- **Maximum speed (mm/sec)**: 600 300 100
- **Maximum payload (kg)**: H: 1 2 4 6 8 9 10 11 12 15
- **Max. pressing force (N)**: 10 15 20 25 32 40 50
- **Stroke (mm)**: 50 to 400 (50mm pitch)
- **Overall length (mm)**: Stroke+210
- **Vertical Stroke**: Stroke+210
- **Maximum outside dimension of body cross-section (mm)**: W49 × H59
- **Cable length (m)**: Standard: 1 / Option: 3, 5, 10

#### Allowable overhang

- **Horizontal installation (mm)**:
  - A: 138 156 174 192 210 228 246 264 282 306
- **Wall installation (mm)**:
  - B: 206 216 226 236 246 256 266 276 286 296
- **Vertical installation (mm)**:
  - C: 146 156 166 176 186 196 206 216 226 236

#### Motor installation (Space-saving model)

- **Type A**: Motor installed on right
- **Type B**: Motor installed on left

#### Static loading moment

- **MY**: 16
- **MP**: 19
- **MR**: 17

#### Controller

- **Operation method**
  - TS-S2: PO point trace / Remote command
  - TS-SH: Pulse train control
  - TS-SD: Pulse train control

#### SS04 Straight model

- **Approx. 200 (Cable length)**
- **Effective stroke**
  - (55: When origin is on motor side) 50+15:2
  - (55: When origin is on non-motor side) 50+15:2

#### Notes

- 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. The cable's minimum bend radius is R30.
- Note 4. Select this selection when using the gateway function. For details, see P.66.

---

**Controller**

| **TS-S2** | **514** | **TS-SH** | **514** | **TS-SD** | **524** |
SS04 Space-saving model

SS04-L Specifications

<table>
<thead>
<tr>
<th>Effective stroke</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>187</td>
<td>237</td>
<td>287</td>
<td>337</td>
<td>387</td>
<td>437</td>
<td>487</td>
<td>537</td>
</tr>
<tr>
<td>A</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>C</td>
<td>190</td>
<td>150</td>
<td>200</td>
<td>250</td>
<td>300</td>
<td>350</td>
<td>400</td>
<td>450</td>
</tr>
</tbody>
</table>

Weight (kg) [Note 1]

- 1.2
- 1.4
- 1.6
- 1.7
- 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.

Controller

- TS-S2 > 514
- TS-SH > 514
- TS-SD > 524
**Ordering method**

### SS05

**Model**

- Motor type: 42 (Step motor)
- Resolution (Pulse/rotation): 1650
- Repeatability (mm): ±0.02
- Deceleration mechanism: Ball screw Ø12
- Maximum motor torque (kNm): 0.23
- Ball screw load (N): 20 / 120
- Maximum speed (mm/sec): 1000 / 600 / 300
- Maximum payload (kg): 4 / 6
- Max. pressing force (N): 270 / 450 / 300
- Static loading moment
- Grease option
- Origin position
- Stroke
- Cable length (m)

**Robot positioner**

- Robot positioner: L: Standard / T: Option 1 / S: Option 2

**Controller**

- Controller: TS-S2 / TS-SH / TS-SD
- Remote control: TS-S2 / TS-SH / TS-SD

**CE compliance**

- Origin on the non-motor side is selectable

**Basic specifications**

- Motor type: 42 (Step motor)
- Resolution (Pulse/rotation): 1650
- Repeatability (mm): ±0.02
- Deceleration mechanism: Ball screw Ø12
- Maximum motor torque (kNm): 0.23
- Ball screw load (N): 20 / 120
- Maximum speed (mm/sec): 1000 / 600 / 300
- Maximum payload (kg): 4 / 6
- Max. pressing force (N): 270 / 450 / 300
- Static loading moment
- Grease option
- Origin position
- Stroke
- Cable length (m)

**Allowable overhang**

- Horizontal installation (mm)
- Wall installation (mm)
- Vertical installation (mm)

**Motor installation (Space-saving model)**

- B type: Motor installed on right
- L type: Motor installed on left

**Static loading moment**

- Load (N): 2kg / 4kg / 8kg
- Horizontal installation (mm)
- Vertical installation (mm)

**Controller**

- Controller: TS-S2 / TS-SH / TS-SD
- Remote control: TS-S2 / TS-SH / TS-SD

**SS05 Straight model S**

- Approx. 200 (Cable length)
- 17H+2: When origin is on motor side
- 17H: When origin is on non-motor side
- Effective stroke
- Motor type: Lead20
- Weight (kg): 21
- Maximum speed for each stroke (mm/sec): Lead20
- 1000

**Note**

1. Brake-equipped models can be selected only when the lead is 12mm or 6mm.
2. When changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.
3. The robot cable is flexible and resists bending.
4. See P.522 for DIN rail mounting bracket.
5. Select this selection when using the gateway function. For details, see P.66.
SS05 Space-saving model

Motor

Effective stroke

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
<th>400</th>
<th>450</th>
<th>500</th>
<th>550</th>
<th>600</th>
<th>650</th>
<th>700</th>
<th>750</th>
<th>800</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (kg)</td>
<td>1.6</td>
<td>1.8</td>
<td>2.0</td>
<td>2.2</td>
<td>2.4</td>
<td>2.6</td>
<td>2.8</td>
<td>3.0</td>
<td>3.2</td>
<td>3.4</td>
<td>3.6</td>
<td>3.8</td>
<td>4.0</td>
<td>4.2</td>
<td>4.4</td>
<td>4.6</td>
</tr>
</tbody>
</table>

Maximum speed for each stroke (mm/sec)

| Lead20 | 1000 |
| Lead12 | 600  |
| Lead6  | 300  |

Controller

TS-S2

TS-SH

TS-SD

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

Note 2. Secure the cable with a tie-band 83mm 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. The weights are without a brake. The weights are 0.3kg 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.
**SS05H Slider type**

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

### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead</th>
<th>Resolution (Pulse/rotation)</th>
<th>Brake***</th>
<th>Origin position &amp; standard</th>
<th>Grease option &amp; standard</th>
<th>Stroke (mm)</th>
<th>Cable length (m)</th>
<th>Robot positioner I/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS05H-R</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note 1. Brake-equipped models can be selected only when the lead is 12mm or 6mm.

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

Note 4. The robot cable is flexible and resists bending.

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.

- **Controller Operation method**
  - TS-S2: 2 point trace / Remote command
  - TS-SH: Pulse train control

### Basic specifications

- **Motor**
  - 42: Step motor
  - **Resolution (Pulse/rotation)**
  - **Repeatability (mm)**

- **Deceleration mechanism**
  - Ball screw 0.12

- **Ball screw lead (mm)**
  - Horizontal: 1000
  - Vertical: 500

- **Maximum motor torque (Nm)**
  - Horizontal: 250
  - Vertical: 300

- **Maximum load (kg)**
  - Horizontal: 10
  - Vertical: 12

- **Maximum pressing force (N)**
  - Horizontal: 110
  - Vertical: 115

- **Grease option**
  - High lead: Lead 20

- **Allowable overhang**

- **Static loading moment**

### SS05H Straight model

- **Effective stroke**
  - L: 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800

- **Weight (kg)**
  - A: 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
  - B: 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
  - C: 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800

- **Maximum speed for each stroke*** (mm/sec)
  - Lead6 (Horizontal): 1000
  - Lead6 (Vertical): 250

- **Controller**
  - TS-S2 > 514
  - TS-SH > 514
  - TS-SD > 524
**Articulated robots**

- **YA**
- **Linear conveyor modules**
  - LCM100
- **Compact single-axis robots**
  - TRANSERVO
    - Motor-less single axis actuator
- **Robonity Single-axis robots**
  - FLIP-X
- **Linear motor single-axis robots**
  - PHASER
- **Cartesian robots**
  - XY-X
- **SCARA robots**
  - YK-X
- **Pick & place robots**
  - YP-X

---

### SS05H Specifications

<table>
<thead>
<tr>
<th>Effective stroke (mm)</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
<th>300</th>
<th>350</th>
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<th>500</th>
<th>550</th>
<th>600</th>
<th>650</th>
<th>700</th>
<th>750</th>
<th>800</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>12.5</td>
<td>12.5</td>
<td>12.5</td>
<td>12.5</td>
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<td>B</td>
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<td>200</td>
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<td>400</td>
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<td>550</td>
<td>600</td>
<td>650</td>
<td>700</td>
<td>750</td>
<td>800</td>
<td></td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>1.7</td>
<td>1.9</td>
<td>2.1</td>
<td>2.3</td>
<td>2.5</td>
<td>2.8</td>
<td>3.1</td>
<td>3.4</td>
<td>3.6</td>
<td>3.8</td>
<td>4.0</td>
<td>4.2</td>
<td>4.4</td>
<td>4.6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Maximum speed for each stroke (mm/sec)

- **Lead20 (Horizontal)**: 1000
- **Lead12 (Horizontal)**: 600
- **Lead12 (Vertical)**: 500
- **Lead6 (Horizontal)**: 300
- **Lead6 (Vertical)**: 250

### Speed setting

- **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 800mm, resonance of the ball screw may occur depending on the operation conditions (critical speed). In this case, reduce the speed setting on the program by referring to the maximum speeds listed 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

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead 6</th>
<th>Lead 12</th>
<th>Lead 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>SG07</td>
<td>600</td>
<td>1050</td>
<td>1386</td>
</tr>
</tbody>
</table>

### Basic specifications

- **Motor**: 56 | Step motor
- **Resolution (Positioning)**: 1/1024
- **Repeatability (mm)**: ±0.02
- **Deceleration mechanism**: Ball screw Ø12
- **Maximum speed (mm/sec)**: 1050
- **Max. pressing force (N)**: 2000
- **Overall length (mm)**: 780
- **Maximum outside dimension of body cross-section (mm)**: 85 x 100

### Allowable overhang

- **Horizontal installation (mm)**: 1200
- **Vertical installation (mm)**: 1200

### Speed vs. payload

<table>
<thead>
<tr>
<th>Payload (kg)</th>
<th>Speed (mm/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>200</td>
</tr>
<tr>
<td>20</td>
<td>1000</td>
</tr>
<tr>
<td>30</td>
<td>1400</td>
</tr>
<tr>
<td>40</td>
<td>1700</td>
</tr>
<tr>
<td>50</td>
<td>2000</td>
</tr>
<tr>
<td>60</td>
<td>2300</td>
</tr>
</tbody>
</table>

### Static loading moment

- **Controller**: TS-SH
- **I/O point trace / Remote command**

### Controller specifications

- **Key specification**
  - MR
  - MP

### Effective stroke

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>2.9</td>
</tr>
<tr>
<td>100</td>
<td>3.2</td>
</tr>
<tr>
<td>150</td>
<td>3.4</td>
</tr>
<tr>
<td>200</td>
<td>3.6</td>
</tr>
</tbody>
</table>

### Maximum speed for each stroke (mm/sec)

- **Lead20 (Horizontal)**: 1200
- **Lead20 (Vertical)**: 1000
- **Lead12 (Horizontal)**: 600
- **Lead12 (Vertical)**: 578
- **Lead6 (Horizontal)**: 350
- **Lead6 (Vertical)**: 298

### Speed setting

- **85%**: 1000
- **75%**: 750
- **65%**: 570

### 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.

2. The robot cable is flexible and resists bending.

3. It is necessary to change the maximum speed according to the stroke. In this case, reduce the speed setting on the program by referring to the maximum speeds shown in the table above.
SR03 Rod type

Ordering method

SR03

Motor
Resolution (Pulse/rotation) 421 1Step motor
Repeatability (mm) +/-0.02
Deceleration mechanism Ball screw P8
Ball screw lead (mm) 12 8
Maximum speed (mm/sec) 500 250
Maximum Horizontal 10 20
Vertical 8 10
Maximum pressure force (N) 75 100
Stroke (mm) 50 to 200 (05pitch)
Lost motion 0.1mm or less

Basic specifications

Note 1. See P.153 for grease gun nozzles.
Note 2. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

Motor installation (Space-saving model)

Motor installed on right
Motor installed on left
Motor installed on top

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 1. It is possible to apply only the axial load. Note 2. Use the external guide together so that any radial load is not applied to the rod. Note 3. The orientation of the width across flat part is undefined to the base surface. Note 4. Use the support guide together to maintain the straightness. Note 5. When running the cables, secure cables so that any load is not applied to them. Note 6. Remove the M4 hex socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)

Controller

Controller Operation method Controller Operation method
TS-S2 TS-SH Remote command TS-SD Pulse train control

Controller Information

Note. See P.153 for running life distance to life time conversion example.

Effective stroke

<table>
<thead>
<tr>
<th>Payload (kg)</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>161</td>
<td>211</td>
<td>261</td>
<td>311</td>
</tr>
<tr>
<td>L</td>
<td>249</td>
<td>299</td>
<td>349</td>
<td>399</td>
</tr>
<tr>
<td>H</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>K</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>1.1</td>
<td>1.3</td>
<td>1.4</td>
<td>1.6</td>
</tr>
</tbody>
</table>

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

Motor-less single-axis robots
TRANSERVO

Lead Model Brake
Bracket plate
Ball screw greasing port
Battery
27.5 (25)
Effective stroke
M8
Origin on non-motor side
Speed vs. payload
Cable length
Robot positioner

Note 4. See P.522 for DIN rail mounting bracket.
Note 5. Select this option when using the gateway function. For details, see P.66.

Note 1. It is possible to apply only the axial load. Note 2. Use the external guide together so that any radial load is not applied to the rod. Note 3. The orientation of the width across flat part is undefined to the base surface. Note 4. Use the support guide together to maintain the straightness. Note 5. When running the cables, secure cables so that any load is not applied to them. Note 6. Remove the M4 hex socket head cap set bolts and use them to secure the cables. (Effective screw thread depth 5)
Note 7. The cable’s minimum bend radius is R30.
Note 8. Distance to mechanical stopper.
SR03 Space-saving model (motor installed on top)

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
Two bolts are required for one plate.

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 Straight model

Effective stroke: 78

Approx. 250 (Cable length)

Ball screw grasing port (M4x0.7 Depth 5) (For securing cable)

Effective stroke: 35.5

L:40 (with brake)

See Note 3.

View A

K: M3x0.5 Depth 4

K: M4x0.7 Depth 5 (For securing cable)

4-M4x0.7 Depth 10

6-M4x0.7 Depth 10

8-M4x0.7 Depth 10

(For main unit installation)

(For securing tool installation)

Use the external guide together so that any radial load is not applied to the rod.

Note 3 When running the cables, secure the cables so that any load is not applied to them.

Note 3 Remove the M4 hex. socket head cap set bolts and use them to secure the cables.

Effective screw thread depth 5

Note 4 The cable’s minimum bend radius is R30.

Note 5 Models with a brake are 0.2kg heavier.

Note 6 Distance to mechanical stopper.

Effective stroke: 50 100 150 200

50 100 150 200

1.5 1.7 1.9 2.1

Weight (kg)

K 6 8 10 12

H 2 3 4 5

L 105 93 83 75

G 97 87 77 67

G 23 23 23 23

D 41 41 41 41

D 27 27 27 27

D 105 105 105 105

D 87 87 87 87

D 23 23 23 23

D 41 41 41 41

D 27 27 27 27

D 10 10 10 10

M4x0.7 Depth 5 (For securing cable)

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

Note 2 Contents of option: Plate, 2 pcs.

See our robot manuals for additional settings.

6 8 10 12
SR04 Rod type

Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead</th>
<th>Model</th>
<th>Brake</th>
<th>Motor position</th>
<th>Origin position</th>
<th>Speed vs. payload</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>S2</td>
<td>SH</td>
<td>SD</td>
<td>L+40 (with brake)</td>
<td>L+40 (with brake)</td>
<td>Horizontal</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>L1 (T-slot range)</td>
<td>L1 (T-slot range)</td>
<td>Vertical</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>M4+0.7 Depth 5. (For securing cable)</td>
<td>M4+0.7 Depth 5. (For securing cable)</td>
<td>Speed vs. Payload</td>
</tr>
</tbody>
</table>

Note 1. See P.153 for grease gun nozzles.
Note 2. When “2mm lead” is selected, the origin position cannot be changed (on 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.

Basic specifications

- Motor installed on left
- Motor installed on right

Motor installation (Space-saving model)

- Option: Horizontal installation plate (foot)
- Option: Vertical installation plate (flange)

Controller

<table>
<thead>
<tr>
<th>Controller</th>
<th>Operation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-S2</td>
<td>I/O point trace / Remote command</td>
</tr>
<tr>
<td>TS-SH</td>
<td>I/O point trace / Remote command</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Payload (kg)</th>
<th>0 20 40 60 80 100 200 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running life</td>
<td>Vertical</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Payload (kg)</th>
<th>0 250 500 1000 2500 5000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running life</td>
<td>Vertical</td>
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</table>

Note. See P.153 for running life distance to life time conversion example.

Controller

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Robot positioner I/O cable

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<td>TS-SH</td>
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Robot positioner I/O board

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Robot positioner I/O board (flange)

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<th>Robot positioner I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-SH</td>
</tr>
</tbody>
</table>

Robot positioner I/O board (foot)

<table>
<thead>
<tr>
<th>Robot positioner I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-S2</td>
</tr>
</tbody>
</table>

Robot positioner I/O board (foot)

<table>
<thead>
<tr>
<th>Robot positioner I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-SH</td>
</tr>
</tbody>
</table>

Robot positioner I/O board (foot)

<table>
<thead>
<tr>
<th>Robot positioner I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-S2</td>
</tr>
</tbody>
</table>

Robot positioner I/O board (foot)

<table>
<thead>
<tr>
<th>Robot positioner I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-SH</td>
</tr>
</tbody>
</table>

Robot positioner I/O board (foot)

<table>
<thead>
<tr>
<th>Robot positioner I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-S2</td>
</tr>
</tbody>
</table>

Robot positioner I/O board (foot)

<table>
<thead>
<tr>
<th>Robot positioner I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-SH</td>
</tr>
</tbody>
</table>

Robot positioner I/O board (foot)

<table>
<thead>
<tr>
<th>Robot positioner I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-S2</td>
</tr>
</tbody>
</table>

Robot positioner I/O board (foot)

<table>
<thead>
<tr>
<th>Robot positioner I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-SH</td>
</tr>
</tbody>
</table>

Robot positioner I/O board (foot)

<table>
<thead>
<tr>
<th>Robot positioner I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-S2</td>
</tr>
</tbody>
</table>

Robot positioner I/O board (foot)

<table>
<thead>
<tr>
<th>Robot positioner I/O board</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-SH</td>
</tr>
</tbody>
</table>
SR04 Space-saving model (motor installed on right)

Approx. 245 (Cable length)

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

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

2-4.6 drill-through

Installed within the T-slot range of the main unit. (Hex. socket head cap bolt (M4×0.7), Length under head 10)

* Six bolts are required for one plate.

M4×0.7 Depth 5 (For securing cable)

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

Effective stroke 50 100 150 200 250 300

<table>
<thead>
<tr>
<th>L1</th>
<th>162.5</th>
<th>212.5</th>
<th>262.5</th>
<th>312.5</th>
<th>362.5</th>
<th>412.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>209.5</td>
<td>259.5</td>
<td>309.5</td>
<td>359.5</td>
<td>409.5</td>
<td>459.5</td>
</tr>
</tbody>
</table>

Weight (kg)

<table>
<thead>
<tr>
<th>Maximum speed for each stroke (mm/min)</th>
<th>Lead 12</th>
<th>500</th>
<th>440</th>
<th>320</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead 6</td>
<td>250</td>
<td>220</td>
<td>160</td>
<td></td>
</tr>
</tbody>
</table>

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: When running the cables, secure cables so that any radial load is not applied to the rod.

Note 8: Distance to mechanical stopper.

Note 9: For 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).

Option: Vertical installation plate (flange)

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

2-4.6 drill-through

Installed within the T-slot range of the main unit. (Hex. socket head cap bolt (M4×0.7), Length under head 14

* Six bolts are required for one plate.

M4×0.7 Depth 5 (For securing cable)

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

Effective stroke 50 100 150 200 250 300

<table>
<thead>
<tr>
<th>L1</th>
<th>162.5</th>
<th>212.5</th>
<th>262.5</th>
<th>312.5</th>
<th>362.5</th>
<th>412.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>209.5</td>
<td>259.5</td>
<td>309.5</td>
<td>359.5</td>
<td>409.5</td>
<td>459.5</td>
</tr>
</tbody>
</table>

Weight (kg)

<table>
<thead>
<tr>
<th>Maximum speed for each stroke (mm/min)</th>
<th>Lead 12</th>
<th>500</th>
<th>440</th>
<th>320</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead 6</td>
<td>250</td>
<td>220</td>
<td>160</td>
<td></td>
</tr>
</tbody>
</table>

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: When running the cables, secure cables so that any radial load is not applied to the rod.

Note 8: Distance to mechanical stopper.

Note 9: For 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)**

### Ordering method

**SRD04**

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead</th>
<th>Model</th>
<th>Lead</th>
<th>Brake</th>
<th>Model-Position</th>
<th>Bracket plate</th>
<th>Stroke</th>
<th>Cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note 1. See P.153 for grease gun nozzles.
Note 2. When "2mm lead" is selected, the origin position cannot be changed (to non-motor side).
Note 3. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

### Basic specifications

**Motor**
- 421: Step motor

**Deceleration mechanism**
- Ball screw φ6 (ball screw φ7)

**Maximum speed (mm/min)**
- Horizontal: 500, 250, 80
- Vertical: 40, 45

**Max. pressing force (N)**
- Horizontal: 150, 300, 600

**Stroke (mm)**
- 50 to 300 (50/50)

**Lost motion**
- 6 mm or less

### 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.

### Running life

5000 km on models other than shown below.

Running life of only the model shown below decreases to less than 5000 km depending on the payload, so check the running life curve.

### Controller

**Controller**

- TS-S2
- TS-SH
- TS-SD

**Operation method**

- Remote command
- Pulse train control

---

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

---

**SRD04 Straight model S**

<table>
<thead>
<tr>
<th>Option: Horizontal installation plate (foot)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installed within the T-slot range of the main unit.</td>
</tr>
<tr>
<td>Hex. socket head cap bolt (M3×0.5), Length under head 10</td>
</tr>
<tr>
<td>Six bolts are required for one plate.</td>
</tr>
</tbody>
</table>

**Effective stroke+100.5**

### Details of T-slot

- M4×0.7 Depth 5 (For securing cable)

### Dimensions of attached square nut for T-slot (6 holes)

- M3×0.5

### Notes

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

---

**Controller**

- TS-S2
- TS-SH
- TS-SD

---

**EP: EtherNet/IP TM**

**PT: PROFINET**

**DN: DeviceNet TM**

**CC: CC-Link**

**GW: No I/O board**

See Note 6. Select this selection when using the gateway function. For details, see P.66.
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.

Installed within the T-slot range of the main unit  (Hex. socket head cap bolt (M5×0.8), Length under head 15)
* Six bolts are required for one plate

2-4ф6 drill-through 2ф22

### Effective stroke

<table>
<thead>
<tr>
<th>Stroke</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
<th>300</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1</td>
<td>162.5</td>
<td>212.5</td>
<td>262.5</td>
<td>312.5</td>
<td>362.5</td>
<td>412.5</td>
</tr>
<tr>
<td>L2</td>
<td>209.5</td>
<td>259.5</td>
<td>309.5</td>
<td>359.5</td>
<td>409.5</td>
<td>459.5</td>
</tr>
</tbody>
</table>

### Weight (kg)  

| Lead 2 | 2.2 | 2.6 | 2.9 | 3.2 | 3.5 | 3.9 |

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 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**

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead</th>
<th>Model</th>
<th>Brake</th>
<th>Origin position</th>
<th>Bracket plate</th>
<th>Stroke</th>
<th>Cable length</th>
<th>Robot positions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Motor installation (Space-saving model)**

- **R type** Motor installed on right
- **L type** Motor installed on left

Note 1. See P.153 for grease gun nozzles.

Note 2. When "2mm-lead" is selected, the origin position cannot be changed to (non-motor-side).

Note 3. If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, refer to the manual.

### Basic specifications

**Motor**
- 50* Step motor
- Resolution (Pulse/rotation) 2048
- Repeatability (mm) ±0.02
- Deceleration mechanism: Ball screw 0.12
- Maximum speed (rpm) 300
- Maximum payload (kg) 10
- Max. pressing force (N) 20
- Overall length (mm) 355
- Vertical: Motor length 171
- Horizontal: Motor length 171

**Lost motion**
- 0.1mm or less

**Rotating backlash (°)**
- ±0.02

**Maximal outer diameter of body cross-section (mm)**
- W56.4 × H71

**Note 1**. The maximum speed needs to be changed in accordance with the payload. See the "Speed vs. payload" graph shown on the right. For details, see P. 152.

**Speed vs. payload**

#### Horizontal

<table>
<thead>
<tr>
<th>Speed (mm/s)</th>
<th>Payload (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>70</td>
<td>30</td>
</tr>
<tr>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>90</td>
<td>50</td>
</tr>
<tr>
<td>100</td>
<td>60</td>
</tr>
</tbody>
</table>

#### Vertical

<table>
<thead>
<tr>
<th>Speed (mm/s)</th>
<th>Payload (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>60</td>
<td>20</td>
</tr>
<tr>
<td>70</td>
<td>30</td>
</tr>
<tr>
<td>80</td>
<td>40</td>
</tr>
<tr>
<td>90</td>
<td>50</td>
</tr>
<tr>
<td>100</td>
<td>60</td>
</tr>
</tbody>
</table>

**Motor installation**

- **Option 1** Horizontal installation plate (foot)
- **Option 2** Vertical installation plate (flange)

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

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Effective stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>50 100 150 200 250 300</td>
</tr>
<tr>
<td>L1</td>
<td>163.2 232.2 302.2 352.2 402.2 452.2</td>
</tr>
<tr>
<td>L2</td>
<td>70.5 115.6 170.7 220.6 275.6 330.7</td>
</tr>
</tbody>
</table>

**Effective stroke**
- 50 100 150 200 250 300

**Weight (kg)**
- 2.2 2.6 3.0 3.3 3.7 4.1

**Controller**

- **TS-S2** I/O point trace / Remote command
- **TS-SH** I/O point trace / Remote command
- **TS-SD** Pulse train control

**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.

**Controller**

- **Controller** I/O cable
- **Operation method** I/O point trace / Remote command
SR05 Space-saving model (motor installed on right) R

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

Effective stroke

Weight (kg)

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**

**Ordering method**

**Basic specifications**

- **Motor**: 56 [Step motor]
- **Resolution (Pulse/rotation)**: 20480
- **Repeatability (mm)**: +/-0.02
- **Deceleration mechanism**: Ball screw x12
- **Ball screw lead (mm)**: 12, 6, 2
- **Maximum speed (mm/sec)**: 300, 150, 50
- **Maximum payload (kg)**: 50, 55, 60
- **Maximum pressing force (N)**: 28, 25, 10
- **Max. pressing force (N)**: Lead 12
- **Max. pressing force (N)**: Lead 2
- **Electrical connection**: 50 to 300 (50pitch)
- **Horizontal stroke (mm)**: 12, 6, 2
- **Vertical stroke (mm)**: Stroke+276, Stroke+316
- **Stepper motor**: 8.5, 18.5, 28.5

**Speed vs. payload**

- **Payload (kg)** vs. Speed (mm/s) graph

**Running life**

- **5000 km on models other than shown below.**

**Controller**

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

---

**Note 1.** When lead is specified, the origin position cannot be changed (to non-motor side).

**Note 2.** For lead 2mm specifications, the origin on the non-motor side cannot be selected.

**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.** Use the external guide together so that any radial load is not applied to the rod.

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

**Note 7.** Take great care as the outer case of the motor projects from the bottom of the main unit.

**Note 8.** Models with a brake will be 0.2kg heavier.

**Note 9.** Distance to mechanical stopper.

---

**SRD05 Straight model S**

- **Effective stroke**: +107
- **Ball screw greasing port**: Standard: 1/Option: 3, 5, 10
- **Motor side**: 147
- **Non-motor side**: 9.5

**Dimensions of attached square nut for 4 M8 (6 pcs.)**

**Details of T-slot (1)**

- **Effective stroke**: 50, 100, 150, 200, 250, 300
- **Weight (kg)**: 3.1, 3.6, 4.1, 4.5, 5.0, 5.5
**STH04 Slide table type**

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

### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead (mm)</th>
<th>Model</th>
<th>Speed (mm/sec)</th>
<th>Stroke (mm)</th>
<th>Cable length (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S2</td>
<td>100</td>
<td>S2</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>SH</td>
<td>500</td>
<td>SH</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
</tbody>
</table>

### Basic specifications

- **Motor**: 28 steps motor
- **Resolution (Pulse/rotation)**: 4096
- **Repeatability** (+/-0.05)
- **Drive method**: Straight (Space-saving) Slide screw (Space-saving)
- **Ball screw lead (mm)**: 5, 10
- **Maximum speed** (+/-0.05 mm/sec): 200, 400
- **Maximum payload (kg)**: 6, 4
- **Max. pressing force (N)**: 1558
- **Cable length (m)**: 50

### Allowable overhang

- **Note**: 1. Positioning repeatability in one direction.
- **Note**: 2. The maximum speed needs to be changed in accordance with the payload. See the "Speed vs. payload" graph shown on the right. For details, see P.152.

### Speed vs. payload

- **Note**: 1. Return-to-origin position.
- **Note**: 3. Table movable range during return-to-origin operation. The values in [ ] show those when the return-to-origin direction is changed.
- **Note**: 4. Table movable range during return-to-origin operation. The values in [ ] show those when the return-to-origin direction is changed.
- **Note**: 5. The robot with the brake cannot use the TS-SD.
- **Note**: 6. The robot with the brake cannot use the TS-SD.
- **Note**: 7. Select this selection when using the gateway function. For details, see P.66.

### Controller

- **Operation method**: TS-S2, TS-SH
- **Remote command**: TS-SD
- **Pulse train control**: TS-SD

**Note**: The robot with the brake cannot use the TS-SD.
### Basic specifications

- **Motor**: 42 step motor
- **Resolution (Pulse/rotation)**: 20480
- **Repeatability (mm)**: +/-0.05
- **Drive method**: Straight or Slide screw
- **Ball screw lead (mm)**: 8, 10
- **Maximum speed (mm/sec)**: 150, 400
- **Maximum payload (kg)**: 9, 6
- **Max. pressing force (N)**: 180, 100
- **Stroke (mm)**: 50/100/150
- **Minimum bend radius of motor cable**: R30
- **Controller**: 1/3/5/10
- **Robot driver**: TS-S2

#### Motor installation (Space-saving model)

- **Type A**: Motor installed on right
- **Type B**: Motor installed on left

#### Allowable overhang

<table>
<thead>
<tr>
<th>Payload (kg)</th>
<th>Horizontal</th>
<th>Vertical</th>
</tr>
</thead>
<tbody>
<tr>
<td>2kg</td>
<td>2123 x 1436</td>
<td>3000 x 100</td>
</tr>
<tr>
<td>4kg</td>
<td>2493 x 1001</td>
<td>3000 x 100</td>
</tr>
<tr>
<td>6kg</td>
<td>1517 x 627</td>
<td>3000 x 100</td>
</tr>
</tbody>
</table>

#### Steel loading moment

<table>
<thead>
<tr>
<th>Stroke (mm)</th>
<th>MY</th>
<th>MP</th>
<th>MR</th>
</tr>
</thead>
<tbody>
<tr>
<td>50mm</td>
<td>9</td>
<td>77</td>
<td>146</td>
</tr>
<tr>
<td>100mm</td>
<td>112</td>
<td>112</td>
<td>177</td>
</tr>
<tr>
<td>150mm</td>
<td>155</td>
<td>155</td>
<td>152</td>
</tr>
</tbody>
</table>

#### Speed vs. payload

<table>
<thead>
<tr>
<th>Payload (kg)</th>
<th>Horizontal</th>
<th>Vertical</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>10 x 300</td>
<td>10 x 300</td>
</tr>
<tr>
<td>1.5</td>
<td>10 x 300</td>
<td>10 x 300</td>
</tr>
<tr>
<td>2.5</td>
<td>10 x 300</td>
<td>10 x 300</td>
</tr>
<tr>
<td>3.5</td>
<td>10 x 300</td>
<td>10 x 300</td>
</tr>
</tbody>
</table>

#### Motor installation (Space-saving model)

- **Type A**: Motor installed on right
- **Type B**: Motor installed on left

#### Controller

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

#### Note 1.

- Positioning repeatability in one direction.
- If changing from the origin position at the time of purchase, the machine reference amount must be reset. For details, see P.152.
- Service life is calculated for 100mm stroke models.
STH06  Space-saving model (motor installed on right)

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

Effective stroke

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)

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

Effective stroke

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.
RF02-N  Rotary type / Limit rotation specification

- **CE compliance**
- **Rotation range : 310°**

### Ordering method

- **RF02**
  - N: Return-to-origin method
  - L: Linear conveyor modules
  - S2: Robot positioner

### Basic specifications

- **Motor**: 20 [ ] Step motor
- **Resolution (Pulse/rotation)**: 4096
- **Repeatability**: +/-0.05
- **Drive method**: Special warm gear + belt
- **Torque type**: Standard
- **Maximum speed**: 420 [ ] 320 [ ] 280 [ ]
- **Rotating torque**: 2.22 [ ] 2.22 [ ] 2.32 [ ]
- **Max. pushing torque**: 0.11 [ ] 0.11 [ ] 0.10 [ ]
- **Backlash**: +/-0.5
- **Max. moment of inertia**: 0.0015 [ ] 0.004 [ ]
- **Cable length (m)**: Standard: 1 / Option: 3, 5, 10
- **Rotation range**: 310°

#### Note
1. The robot cable is flexible and resists bending.
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).
3. For moment of inertia and effective torque details, see P.641.

### Moment of inertia Acceleration/deceleration

#### Effective torque vs. speed

### Allowable load

- **Allowable radial load (N)**
  - Standard model: 78
  - High rigidity: 99

- **Allowable thrust load (N)**
  - Standard model: 78
  - High rigidity: 107

- **Allowable moment (N•m)**
  - Standard model: 2.4
  - High rigidity: 2.9

### Controller

- **Controller Operation method**
  - TS-S2: PG point trace / Remote command
  - TS-SH: Pulse train control
  - TS-SD: Pulse train control

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

- **Weight (kg)**: 0.48

#### Note
1. This drawing is output under the conditions below.
2. Be careful not to interfere with the workpiece or equipment around the table.
3. To change the return-to-origin direction, check the maximum speed while referring to the “Moment of inertia vs. Acceleration/Deceleration” graph.
4. For details, please refer to the TRANSERVO Series User’s Manual.

- **Controller**
  - TS-S2 514
  - TS-SH 514
  - TS-SD 524

---

*Cross-sectional drawing A-A*

*Manual operation screw (both sides)*

*Approx. 170° (Motor cable exit direction: Exit from left side)*

*Note 1. When purchasing the product, set the controller acceleration while carefully checking the “Moment of inertia vs. Acceleration/Deceleration” and “Effective torque vs. Speed” graphs.*

*Note 2. The minimum bending radius of the motor cable is R36.*

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

---

*Note 1.* This drawing is output under the conditions below.

- **Motor cable exit direction**: Motor cable exit direction
- **Origin**: Origin position in CCW rotation direction
- **Origin**: Origin position in CW rotation direction
- **Cross-sectional drawing A-A**
- **Robot driver I/O cable**
- **Robot positioner**
- **Robot positioner**
- **Controller**
- **Controller**
- **Controller**
- **Controller**

*Battery Note 3. Select this selection when using the gateway function. For details, see P.66.*
RF02-N  Limit rotation specification – High rigidity model

1) Table movable range by return-to-origin operation.
2) Return-to-origin position
3) Values and characters in [ ] show those when the return-to-origin direction is changed.

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.

Cross-sectional drawing A-A
RF02-S

Rotary type / Sensor specification

Ordering method

Model

Motor

20 [ ] Step motor

Resolution (Pulse/rotation)

4000

Repeatability RMS (*1)

+/- 0.05

Drive method

Special warm gear + belt

Torque type

Standard High torque

Maximum speed [m/sec] (sec)

420 280

Rotating torque (Nm)

0.22 0.32

Max. pushing torque (Nm)

0.11 0.16

Backlash (°)

+/- 0.5

Max. moment of inertia (kgm²) 0.0015 0.004

Cable length (m)

Standard: 1 / Option: 3, 5, 10

Note 1. Positioning repeatability in one direction.

Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the “Moment of inertia vs. Acceleration/Deceleration” graph and the “Effective torque vs. Speed” graph (reference).

Note 3. For moment of inertia and effective torque details, see P.641.

Basic specifications

Motor

20 [ ] Step motor

Resolution (Pulse/rotation)

4000

Repeatability RMS (*1)

+/- 0.05

Drive method

Special warm gear + belt

Torque type

Standard High torque

Maximum speed [m/sec] (sec)

420 280

Rotating torque (Nm)

0.22 0.32

Max. pushing torque (Nm)

0.11 0.16

Backlash (°)

+/- 0.5

Max. moment of inertia (kgm²) 0.0015 0.004

Cable length (m)

Standard: 1 / Option: 3, 5, 10

Note 1. Positioning repeatability in one direction.

Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the “Moment of inertia vs. Acceleration/Deceleration” graph and the “Effective torque vs. Speed” graph (reference).

Note 3. For moment of inertia and effective torque details, see P.641.

Note 1. The robot cable is flexible and resists bending. Note 2. See P.52 for DIN rail mounting bracket. Note 3. Select this selection when using the gateway function. For details, see P.66.

Effective torque vs. speed

Moment of inertia Acceleration/deceleration

Effective torque vs. speed

Controller

Controller Operation method

TS-S2S / TS-SHS

I/O point trace / Remote command

Controller

Operation method

TS-S2S / TS-SHS

I/O point trace / 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.

RF02-SN Sensor specification – Standard model

Note 1. This drawing is output under the conditions below.

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.

Weight (kg) 0.51

Cross-sectional drawing A-A

Note 1. This drawing is output under the conditions below.

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

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.

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

<table>
<thead>
<tr>
<th>Model</th>
<th>RF03</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return-to-origin method</td>
<td>R to L and L to R rotation</td>
<td></td>
</tr>
<tr>
<td>Bearing</td>
<td>Standard</td>
<td></td>
</tr>
<tr>
<td>Torque</td>
<td>High torque</td>
<td></td>
</tr>
<tr>
<td>Cable entry location</td>
<td>From the right</td>
<td></td>
</tr>
<tr>
<td>Rotation direction</td>
<td>CW</td>
<td></td>
</tr>
<tr>
<td>Cable length</td>
<td>Note 1</td>
<td></td>
</tr>
</tbody>
</table>
| Robot positioner | Note 2. The maximum speed may vary depending on the
| | Note 3. For moment of inertia and effective torque details, see P.641. |

### Note 1. The robot cable is flexible and resists bending. Note 2. See P.522 for DIN rail mounting bracket. Note 3. Select this selection when using the gateway function. For details, see P.66.

### Basic specifications

- **Motor**
  - 28 Step motor
- **Resolution (Pulse/rotation)**
  - 4096
- **Repeatability**
  - +/-0.05m
- **Drive method**
  - Special warm gear + belt
- **Maximum speed**
  - 420°/sec
- **Rotating torque**
  - 0.8 Nm
- **Max. pushing torque**
  - 0.6 Nm
- **Backlash**
  - +/-0.5°
- **Max. moment of inertia**
  - 0.012 kgm²
- **Cable length**
  - 320m

### Note 1. Positioning repeatability in one direction. Note 2. The maximum speed may vary depending on the moment of inertia. Check the maximum speed while referring to the "Moment of inertia vs. Acceleration/Deceleration" graph and the "Effective torque vs. Speed" graph (reference). Note 3. For moment of inertia and effective torque details, see P.641.

### Moment of inertia Acceleration/deceleration

- **Motor**
  - Standard model
  - High rigidity model
- **Acceleration/deceleration**
  - Standard model
  - High rigidity model
- **Effective torque vs. speed**
  - Standard model
  - High rigidity model

### Allowable load

- **Allowable radial load (N)**
  - Standard model
  - High rigidity model
- **Allowable thrust load (N)**
  - Standard model
  - High rigidity model
- **Allowable moment (kgm)**
  - Standard model
  - High rigidity model

### Controller

- **Controller**
  - TS-S2
  - TS-SH
  - Remote command
  - Pulse train control

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

- **Cross-sectional drawing A-A**
- **Weight (kg)**
  - 1.1

Note 1: The 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.

For details, please refer to the TRANSERVO Series User’s Manual.
RF03-S  Rotary type / Sensor specification

### Ordering method

- **Model:** RF03
- **Type:** S
- **Configuration:**
  - Linear conveyor modules
  - Compact single-axis robots
  - Linear motor
  - Single-axis robots
  - Cartesian robots
  - SCARA robots
  - XY-X
  - YK-X
  - Pick & place robots
  - YP-X

### Basic specifications

- **Motor:** 28 [°/s] Step motor
- **Resolution (Pulse/rotation):** 4096
- **Repeatability:** ±0.05
- **Drive method:** Special warm gear + belt
- **Torque type:** Standard
- **Maximum speed:** 4.20 [°/sec]
- **Rotating torque:** 0.8 [N•m]
- **Max. pushing torque:** 0.4 [N•m]
- **Backlash:** ±0.05
- **Max. moment of inertia:** 0.012 [kg•m²]
- **Cable length:** 360 [m]

### Moment of inertia Acceleration/deceleration

- **Standard model**
  - Standard: 1000
  - High torque: 1000

### Effective torque vs. speed

- **Graphs:**
  - High torque
  - Standard

### Allowable load

- **Allowable radial load (N):**
  - Standard model: 196
  - High rigidity model: 254

- **Allowable thrust load (N):**
  - Standard model: 100
  - High rigidity model: 140

- **Allowable moment:**
  - Standard model: 360
  - High rigidity model: 420

### Controller

- **Operation method:**
  - Remote command

### Notes:

1. The robot cable is flexible and resists bending.
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.
3. For details, please refer to the TRANSERVO Series User’s Manual.

---

**RF03-SN Sensor specification – Standard model**

- **Weight:** 1.2 [kg]
- **Cross-sectional drawing A-A**

---

**Controller**

- **Model:** TS-S2 514 TS-SH 514
**RF03-S**  
**Sensor 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 radii of the motor cable and sensor cable are R30.  

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

---

**Manual operation screw (both sides)**

| Table movable range by return-to-origin operation. Be careful not to interfere with the workplace 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.

---

**Controller** TS-S2 ▶ 514 TS-SH ▶ 514
## Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>RF04-N</th>
<th>Return-to-origin method</th>
<th>Bearing</th>
<th>Torque type</th>
<th>Cable entry location</th>
<th>Rotation direction</th>
<th>Cable length</th>
<th>Robot positioner</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S2</td>
<td>Return-to-origin method</td>
<td>Standard</td>
<td>Standard torque</td>
<td>From the right</td>
<td>CW</td>
<td>7m</td>
<td>SH</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>Return-to-origin method</td>
<td>Standard</td>
<td>High torque</td>
<td>From the left</td>
<td>CCW</td>
<td>7m</td>
<td>SD</td>
</tr>
</tbody>
</table>

## Basic specifications

<table>
<thead>
<tr>
<th>Motor</th>
<th>42</th>
<th>Step motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution (Pulse/rotation)</td>
<td>20480</td>
<td></td>
</tr>
<tr>
<td>Repeatability (*)</td>
<td>±0.05</td>
<td></td>
</tr>
<tr>
<td>Drive method</td>
<td>Special warm gear + belt</td>
<td></td>
</tr>
<tr>
<td>Torque type</td>
<td>Standard/High torque</td>
<td></td>
</tr>
<tr>
<td>Maximum speed (m/sec)</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>Rotating torque (N-m)</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Max. pushing torque (N-m)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Backlash (*)</td>
<td>±0.5</td>
<td></td>
</tr>
<tr>
<td>Max. moment of inertia (kg-m²)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Cable length (m)</td>
<td>Standard/Option: 3, 5, 10</td>
<td></td>
</tr>
<tr>
<td>Rotation range (*)</td>
<td>320</td>
<td></td>
</tr>
</tbody>
</table>

Note 1. Positioning repeatability in one direction.
Note 2. The maximum speed may vary depending on the moment of inertia. Please check the "Moment of inertia vs. Acceleration Deceleration" graph for details.
Note 3. For moment of inertia and effective torque details, see P.41.

## Moment of inertia Acceleration/deceleration

<table>
<thead>
<tr>
<th>Model</th>
<th>High rigidity model</th>
<th>High rigidity model</th>
<th>High rigidity model</th>
<th>High rigidity model</th>
</tr>
</thead>
<tbody>
<tr>
<td>314</td>
<td>376</td>
<td>314</td>
<td>376</td>
<td>314</td>
</tr>
</tbody>
</table>

## Effective torque vs. speed

- **Graph**: Depicts the relationship between effective torque and speed.
- **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.

## Allowable load

<table>
<thead>
<tr>
<th>Model</th>
<th>High rigidity model</th>
<th>High rigidity model</th>
<th>High rigidity model</th>
<th>High rigidity model</th>
</tr>
</thead>
<tbody>
<tr>
<td>314</td>
<td>376</td>
<td>314</td>
<td>376</td>
<td>314</td>
</tr>
</tbody>
</table>

## Controller

- **Controller**: TS-S2
- **Operation method**: Remote command
- **Robot driver I/O cable**: TS-SH
- **Robot positioner I/O**: TS-SD
- **Remote command**: Pulse train control

- **Controller**: TS-SH
- **Operation method**: Remote command
- **Robot driver I/O cable**: TS-SH
- **Robot positioner I/O**: TS-SD
- **Remote command**: Remote command

- **Controller**: TS-SD
- **Operation method**: Remote command
- **Robot driver I/O cable**: TS-SD
- **Robot positioner I/O**: TS-SD
- **Remote command**: Pulse train control

## RF04-NN Limit rotation specification – Standard model

- **Weight (kg)**: 2.2
- **Origin mark**: Manual operation screw (both sides)
- **Cross-sectional drawing A-A**: View of the connector side

*Note: This drawing is output under the conditions below.
1. Be careful not to interfere with the workpiece or equipment around the table.
2. Values and characters in [ ] show those when the return-to-origin direction is changed.
RF04-NH  Limit rotation specification – High rigidity model

Note 1. This drawing is output under the conditions below.
Note 2. The minimum bending radius of the motor cable is R30.

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.

Stroke end
Origin position in CW rotation direction
(stroke end)

Origin mark
Manual operation screw (both sides)

Cross-sectional drawing A-A

Approx. 160
(Motor cable exit direction: Exit from left side)

Approx. 170
(Motor cable exit direction: Exit from right side)

Weight (kg) 2.4

Controller TS-S2  514 TS-SH  514 TS-SD  524
RF04-S Rotary type / Sensor specification

### Ordering method

**RF04-S**

<table>
<thead>
<tr>
<th>Model</th>
<th>Return-to-origin method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard (Limitless rotation)</td>
</tr>
</tbody>
</table>

**S2S**

Robot positioner

<table>
<thead>
<tr>
<th>Robot positioner</th>
<th>PET-01</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET-01P</td>
<td></td>
</tr>
</tbody>
</table>

**SHS**

Robot positioner

<table>
<thead>
<tr>
<th>Robot positioner</th>
<th>TS-SH</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-SH1</td>
<td></td>
</tr>
</tbody>
</table>

Note 1. The robot cable is flexible and resists bending. Note 2. See P.522 for DIN rail mounting bracket. Note 3. Select this selection when using the gateway function. For details, see P.66.

### Basic specifications

<table>
<thead>
<tr>
<th>Motor</th>
<th>42 [ ] Step motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution (Pulse/rotation)</td>
<td>20480</td>
</tr>
<tr>
<td>Repeatability (°)</td>
<td>±0.05</td>
</tr>
<tr>
<td>Drive method</td>
<td>Special warm gear + belt</td>
</tr>
<tr>
<td>Maximum speed (°/sec)</td>
<td>420 280</td>
</tr>
<tr>
<td>Rotating torque (Nm)</td>
<td>6.6 10</td>
</tr>
<tr>
<td>Max. pushing torque (Nm)</td>
<td>3.3 5</td>
</tr>
<tr>
<td>Backlash (°)</td>
<td>+0.05</td>
</tr>
<tr>
<td>Max. moment of inertia (kgm²)</td>
<td>0.04 0.1</td>
</tr>
<tr>
<td>Cable length (m) Standard: 1/ Option: 3, 5, 10</td>
<td></td>
</tr>
<tr>
<td>Rotation range (°)</td>
<td>360</td>
</tr>
</tbody>
</table>

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. Note 3. For moment of inertia and effective torque details, see P.641.

### Moment of inertia/Acceleration/deceleration

<table>
<thead>
<tr>
<th>Standard model</th>
<th>High rigidity model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moment of inertia (kgm²)</td>
<td>314 378</td>
</tr>
</tbody>
</table>

### Effective torque vs. speed

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.

### Allowable load

<table>
<thead>
<tr>
<th>Standard model</th>
<th>High rigidity model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowable radial load (N)</td>
<td>396 398</td>
</tr>
<tr>
<td>Allowable moment (Nm)</td>
<td>9.7 12.0</td>
</tr>
</tbody>
</table>

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**

---

**Controller**

**TS-S2**

TS-S2S

<table>
<thead>
<tr>
<th>TS-S2S</th>
<th>TS-SHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET</td>
<td>PET</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TS-S2S</th>
<th>TS-SHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES: EtherCAT EP: EtherNet/IP TM</td>
<td></td>
</tr>
<tr>
<td>PN: PNP</td>
<td></td>
</tr>
<tr>
<td>CC: CC-Link</td>
<td></td>
</tr>
<tr>
<td>CC: CC-Link</td>
<td></td>
</tr>
<tr>
<td>DN: DeviceNet TM</td>
<td></td>
</tr>
<tr>
<td>DN: DeviceNet TM</td>
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</table>

**Controller Operation method**

<table>
<thead>
<tr>
<th>Controller</th>
<th>Operation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-S2S</td>
<td>TS-SHS</td>
</tr>
<tr>
<td>TS-S2S</td>
<td>TS-SHS</td>
</tr>
</tbody>
</table>

**Remote command**

<table>
<thead>
<tr>
<th>Remote command</th>
<th>1/0 point trace</th>
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**TS-S2S**

<table>
<thead>
<tr>
<th>TS-S2S</th>
<th>TS-SHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES: EtherCAT EP: EtherNet/IP TM</td>
<td></td>
</tr>
<tr>
<td>PN: PNP</td>
<td></td>
</tr>
<tr>
<td>CC: CC-Link</td>
<td></td>
</tr>
<tr>
<td>CC: CC-Link</td>
<td></td>
</tr>
<tr>
<td>DN: DeviceNet TM</td>
<td></td>
</tr>
<tr>
<td>DN: DeviceNet TM</td>
<td></td>
</tr>
</tbody>
</table>

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**Controller**

**TS-SH**

TS-SHS

<table>
<thead>
<tr>
<th>TS-S2S</th>
<th>TS-SHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES: EtherCAT EP: EtherNet/IP TM</td>
<td></td>
</tr>
<tr>
<td>PN: PNP</td>
<td></td>
</tr>
<tr>
<td>CC: CC-Link</td>
<td></td>
</tr>
<tr>
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<td>DN: DeviceNet TM</td>
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<td></td>
</tr>
</tbody>
</table>

**Controller Operation method**

<table>
<thead>
<tr>
<th>Controller</th>
<th>Operation method</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS-S2S</td>
<td>TS-SHS</td>
</tr>
<tr>
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<td>TS-SHS</td>
</tr>
</tbody>
</table>

**Remote command**

<table>
<thead>
<tr>
<th>Remote command</th>
<th>1/0 point trace</th>
</tr>
</thead>
</table>

**TS-SH**

TS-SHS

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**Controller Operation method**

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<td>TS-SHS</td>
</tr>
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<td>TS-SHS</td>
</tr>
</tbody>
</table>

**Remote command**

<table>
<thead>
<tr>
<th>Remote command</th>
<th>1/0 point trace</th>
</tr>
</thead>
</table>

---

**Controller**

**514**

**TS-S2**

TS-S2S

<table>
<thead>
<tr>
<th>TS-S2S</th>
<th>TS-SHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES: EtherCAT EP: EtherNet/IP TM</td>
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</tr>
<tr>
<td>PN: PNP</td>
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<tr>
<td>CC: CC-Link</td>
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<td>TS-SHS</td>
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<td>TS-S2S</td>
<td>TS-SHS</td>
</tr>
</tbody>
</table>

**Remote command**

<table>
<thead>
<tr>
<th>Remote command</th>
<th>1/0 point trace</th>
</tr>
</thead>
</table>
RF04-S  Sensor specification – High rigidity model

1. Table movable range by return-to-origin operation. Be careful not to interfere with the workplace 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) 2.5

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

Note 2. The minimum bending radii of the motor cable and sensor cable are R30.
BD04 Belt type

### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Lead (mm)</th>
<th>Brake</th>
<th>Origin position</th>
<th>Stroke (mm)</th>
<th>Cable length (mm)</th>
<th>Robot positioner</th>
<th>I/O</th>
<th>Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>BD04</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Basic specifications

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

### Allowable overhang

<table>
<thead>
<tr>
<th>Payload (kg)</th>
<th>Speed (mm/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>1100</td>
</tr>
<tr>
<td>1</td>
<td>900</td>
</tr>
</tbody>
</table>

### Speed vs. payload

- **Maximum speed (mm/sec)**: 1100
- **Maximum payload (kg)**: 1
- **Stroke (mm)**: 300/500/600/700/800/900/1000

### Controller

- **Controller Operation method**: Remote command
- **I/O point trace**: 7

### Static loading moment

<table>
<thead>
<tr>
<th>Payload (kg)</th>
<th>Moment (N.mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>0.5</td>
<td>10</td>
</tr>
<tr>
<td>0</td>
<td>20</td>
</tr>
</tbody>
</table>

Note 1. The robot cable is flexible and resists bending.
Note 2. See P.522 for DIN rail mounting bracket.
Note 3. Select this selection when using the gateway function. For details, see P.66.
BD05  
Belt type

CE compliance

Ordering method

**BD05**

- **Model**: 48
- **N**: Linear motor
- **N**: Compact single-axis robots

**S2**

- **Robot position**: SM-TS-SH
- **V0**: Step motor
- **BA**: Linear conveyor modules
- **LCM100**: TRANSERVO
- **MP**: Motor-less single-axis robots
- **PHASER**: TRANSERVO
- **Cartesian robots**: XY-X
- **SCARA robots**: YK-X
- **Pick & place robots**: YP-X

**SH**

- **Robot position**: SM-TS-SH
- **V0**: Step motor
- **BA**: Linear conveyor modules
- **LCM100**: TRANSERVO
- **MP**: Motor-less single-axis robots
- **PHASER**: TRANSERVO
- **Cartesian robots**: XY-X
- **SCARA robots**: YK-X
- **Pick & place robots**: YP-X

**SD**

- **Robot driver**: TS-SD
- **I/O cable**: 1.0m

Note 1. The robot cable is flexible and resists bending.

Note 2. Select this selection when using the gateway function. For details, see P.66.

Note 3. Select this selection when using the gateway function. For details, see P.66.

Basic specifications

- **Motor**: 42 [Step motor]
- **Resolution (Pulse/rotation)**: 20480
- **Repeatability (mm)**: +/-0.1

Drive method

- **Equivalent lead (mm/ sec)**: 1400

Maximum payload (kg)

- **500**: 5.0 kg
- **1000**: 10.0 kg
- **1500**: 15.0 kg
- **2000**: 20.0 kg

**Overall length (mm)**

- **Wall installation (Unit: mm)**: 280 (1.5) 424 (4.0) 568 (6.5) 712 (8.0)

- **Horizontal installation (Unit: mm)**: 105 (1.5) 210 (4.0) 315 (6.5) 420 (8.0)

Note 1. Positioning repeatability in one direction. See the “Speed vs. payload” graph shown on the right.

Allowable overhang

- **Horizontal installation (Hard)**: 105 (1.5) 210 (4.0) 315 (6.5) 420 (8.0)

- **Wall installation (Hard)**: 105 (1.5) 210 (4.0) 315 (6.5) 420 (8.0)

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

**Static loading moment**

- **MY**: 27
- **MP**: 27
- **MR**: 52

**Controller**

- **Controller**: TS-S2, TS-SH, TS-SD
- **Operation method**: Remote command

- **I/O point trace**: TS-S2
- **Remote command**: TS-SH
- **Pulse train control**: TS-SD

**Specification**

- **Effective stroke**: 300, 500, 600, 700, 800, 900, 1000, 1200, 1500, 1800, 2000

- **Stroke**: 105 (1.5) 210 (4.0) 315 (6.5) 420 (8.0)

- **Main unit installation reference surface (Note 2)**: 50 (5.0) 170 (17.0)

- **Effective stroke**: 105 (1.5) 210 (4.0) 315 (6.5) 420 (8.0)

- **N**: 6, 8, 10, 12, 14, 16, 20, 24, 26

- **Weight (kg)**: 2.39, 2.85, 3.08, 3.31, 3.54, 3.77, 4.46, 5.15, 5.84, 6.3

Note 1. Positioning repeatability in one direction. See the “Speed vs. payload” graph shown on the right.

Note 2. When installing using the main unit installation reference surface, make the mating or positioning height 2mm or more than the reference surface since the R-chamfering is provided on the main unit.

Note 3. The minimum bending radius of the motor cable is R30.
### Ordering method

<table>
<thead>
<tr>
<th>Model</th>
<th>Motor (Unit: N.m)</th>
<th>Resolution (Pulse/rotation)</th>
<th>Lead (mm)</th>
<th>Origin position</th>
<th>Stroke</th>
<th>Equivalent lead (mm)</th>
<th>Maximum payload (kg)</th>
<th>Max speed (mm/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BD07</td>
<td>Robonity 48</td>
<td>20480</td>
<td>48</td>
<td>5N76</td>
<td>500</td>
<td>1500</td>
<td>14</td>
<td>1400</td>
</tr>
</tbody>
</table>

| Note 1. Positioning repeatability in one direction. Note 2. The maximum speed needs to be changed in accordance with the payload. | 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) |

### Basic specifications

- **Motor**: Step motor
- **Resolution (Pulse/rotation)**: 20480
- **Repeatability (mm)**: +/-0.1
- **Drive method**: Belt
- **Equivalent lead (mm)**: 48
- **Maximum speed (mm/sec)**: 1500
- **Maximum payload (kg)**: 14
- **Stroke (mm)**: 300/500/600/700/800/900/1000/1200/1500/1800/2000

### Allowable overhang

<table>
<thead>
<tr>
<th>Payload (kg)</th>
<th>Speed (mm/sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1000</td>
</tr>
<tr>
<td>9</td>
<td>525</td>
</tr>
<tr>
<td>14</td>
<td>35</td>
</tr>
<tr>
<td>16</td>
<td>93</td>
</tr>
<tr>
<td>0.5</td>
<td>900</td>
</tr>
<tr>
<td>10</td>
<td>1500</td>
</tr>
</tbody>
</table>

### Static loading moment

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.)

### Controller

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

### Quick reference

<table>
<thead>
<tr>
<th>Payload (kg)</th>
<th>Speed (m/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>630</td>
</tr>
<tr>
<td>9</td>
<td>360</td>
</tr>
<tr>
<td>14</td>
<td>240</td>
</tr>
<tr>
<td>16</td>
<td>180</td>
</tr>
<tr>
<td>0.5</td>
<td>1500</td>
</tr>
<tr>
<td>10</td>
<td>1000</td>
</tr>
</tbody>
</table>

### Speed vs. Payload

- **Horizontal**: 5767 1353 1247 1482 458 3kg 8kg 14kg
- **Vertical**: 1839 458 3kg 8kg 14kg 1500 399 1658 1324 1354 1658 4kg 7kg 10kg 3kg 8kg 14kg 16kg

### Controller

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

---

**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.