The TRANSERVO by YAMAHA!
Stepping motor single-axis robots
that break all the old rules!
Thanks for taking the time to check out our catalog!

You are probably using single-axis robots for all kinds of applications with functions like positioning and push aren’t you? Well, the TRANSERVO is a new type of compact single-axis robot that combines the best features of stepping motors and servomotors.

In recent years, automated machinery is being subjected to ever tougher demands in terms of specifications, costs, and deadlines of delivery, which call for nearly superhuman efforts from designers.

Well the TRANSERVO will prove the answer to all those design problems.

### 1. New control method combines the best features of servo and stepping motors!

Stepping motors have great features such as a low cost and no tiny vibrations while stopped. Yet they also have drawbacks such as a drastic drop in torque at high speeds and heavy current consumption while stopped.

The TRANSERVO by YAMAHA eliminates all these problems by adopting an innovative vector control method. In effect, the TRANSERVO delivers the same functions and low cost of a servomotor while using a stepping motor.

**High-speed operation slashes production time!**

TRANSERVO moves even a heavy workpiece quickly because the payload is constant up to its maximum speed. On ordinary equipment, with conventional control the upper model has to be selected to match the high-speed range, but now one model can do it all!

**Energy saver! Perfect stop!**

Control is basically the same as a servomotor so power consumption is kept to a minimum, which saves energy and helps cut down on CO₂ emissions. Also perfect stop can be achieved as the same as with ordinary stepping motors so choose this setting if needed.

**Quiet operation – Just like a servo motor!**

Robots using ordinary stepping motors have a characteristic “shriil” or high-pitched noise during operation. TRANSERVO operation, however, is extremely quiet, just like a servo motor!

### 2. Environmentally rugged resolver provides closed loop control

Of course “no step-out”. The resolver used here for detecting the motor position is the same well-known and reliable resolver as used in our high-level robots. It offers stable position detection even in harsh environments containing dust or oil, etc. Moreover, it boasts a high resolving power of 20480 pulses per rotation.

![Resolver](image)

The resolver is a magnetic position detector. Its structure is simple with no electronic component and no optical elements. One great feature compared to ordinary optical encoders is that there are very few points where a failure might occur. Vast quantities of resolvers are used in fields like aviation and the automobile industry where reliability is essential and also because they are highly tough in harsh environments with a low failure rate.

### 3. Ideal 4-line circular-groove 2-point contact guide gives longen service life

A newly developed module guide is employed, and a 4-line circular-groove 2-point contact guide, which has been used for high-level models, was built into a body that is just as compact as the previous models.

Guide maintains a satisfactory rolling movement with minimal ball differential slip, even if a large momentum load is applied or the installation surface accuracy (flatness) is bad. Rugged design ensures that breakdowns from problems like abnormal wear will seldom occur.

![Circular-groove guide](image)
In recent years, automated machinery is being subjected to ever tougher demands in terms of performance and cost. Stepping motors have great features such as a low cost and no drop in torque at high-speed. However, they also have drawbacks such as a drastic drop in torque at high speeds and heavy tiny vibrations while stopped. Yet, they are quieter than servomotors during operation. TRANSERVO helps cut down on CO2 emissions. Also, perfect stop can be realized from designers.

The TRANSERVO will prove the answer to all those design problems. TRANSERVO delivers the same functions and low cost of a servo motor, while using a stepping motor. Quiet operation – Just like a servo motor! Energy saver! Perfect stop!

Well the TRANSERVO will prove the answer to all those design problems.
Dedicated Robot Positioner TS-S

TS-S is a positioner type controller that only performs point trace. No program is needed. Operation is simple. After setting point data, specify the point number and enter a START signal a from host controller such as a PLC. Positioning or pushing operation then begins.

Main operation patterns

<table>
<thead>
<tr>
<th>Normal operation</th>
<th>Merge operation</th>
<th>Output pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS (absolute) operation</td>
<td>Merge operation</td>
<td>Output pattern</td>
</tr>
<tr>
<td>Moves to the target position relative to the origin point and completes positioning.</td>
<td>Moves the target position of the positioner in increments.</td>
<td>Zone output for each point.</td>
</tr>
<tr>
<td>Moves to a specified coordinate position.</td>
<td>Moves from the current position just by a distance specified in point data and completes positioning.</td>
<td>Zone output can be set for each point.</td>
</tr>
<tr>
<td>Pushing operation</td>
<td>Pushing after decelerating</td>
<td>Zone for external I/O output can be set for each point.</td>
</tr>
<tr>
<td>Pushes at a fixed thrust.</td>
<td>Accelerates and then pushes.</td>
<td>“Near width” output zone can be set for each point.</td>
</tr>
<tr>
<td>Moves while pushing at a preset push force.</td>
<td>Pushing starts after decelerating at a distance equal to “Near width (N)” from the target position.</td>
<td>Zone output is ON for the specified output zone to be output.</td>
</tr>
</tbody>
</table>

TS series main functions

Detailed data can be set for each point

Settings such as acceleration, deceleration, zone output range, and position margin zone can be set for each point. Different operations can be easily specified by combining these settings with the above operation patterns.

Setting items

<table>
<thead>
<tr>
<th>Setting item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run type</td>
<td>Specifies operation pattern such as ABS, INC, positioning, push, and point-to-point link.</td>
</tr>
<tr>
<td>Position</td>
<td>Specifies position or distance to move.</td>
</tr>
<tr>
<td>Speed</td>
<td>Specifies maximum speed during operation.</td>
</tr>
<tr>
<td>Accel.</td>
<td>Specifies acceleration during operation.</td>
</tr>
<tr>
<td>Decel.</td>
<td>Specifies deceleration during operation (Percentage of acceleration)</td>
</tr>
<tr>
<td>Push</td>
<td>Specifies motor current limitation during pushing operation.</td>
</tr>
<tr>
<td>Zone (-)</td>
<td>Specifies upper and lower limits of “personal zone” for each point data.</td>
</tr>
<tr>
<td>Zone (+)</td>
<td>Specifies position margin zone where “near width” output should turn on.</td>
</tr>
<tr>
<td>Near width</td>
<td>Specifies next movement destination after positioning or linked destination for point-to-point operation.</td>
</tr>
<tr>
<td>Jump</td>
<td>Specifies step mode and others.</td>
</tr>
<tr>
<td>Flag</td>
<td>Specifies stop mode and others.</td>
</tr>
</tbody>
</table>

Note: Acceleration and deceleration can be set in easy-to-understand (％) units (standard setup) or in SI units (custom setup) which make it easy to calculate the cycle time.

Maximum acceleration auto setting

Acceleration is a critical parameter that determines how long the robot can continue operating (or service life). In worst cases, setting the acceleration too high may cause the robot to breakdown after a short time. On the TS series, the maximum acceleration is finely set by taking into account the service life span of the motor output and the guide for each robot model and payload. This eliminates any worry about setting the acceleration too high by mistake.

Full range of monitor functions

The TS-Manager software was developed exclusively for the TS series. Besides data write and edit, data backup, and parameter settings, it has a cycle time simulator and various types of monitor functions. A run distance monitor is also included as a standard feature, which helps determine maintenance schedules. Design stresses easy use and friendly operation.

Supports various field networks

Select from the following I/O types to match the host controller specifications. All hardware is built into the positioner unit so cabling and wire hookups are easy.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPN</td>
<td>Input: 16 points, 24VDC ± 10%, 5.ma/kpoint, positive common, Output: 16 points, 24VDC ± 10%, 50mA/kpoint, sink type</td>
</tr>
<tr>
<td>PNP</td>
<td>Input: 16 points, 24VDC ± 10%, 5.ma/kpoint, negative common, Output: 16 points, 24VDC ± 10%, 50mA/kpoint, source type</td>
</tr>
<tr>
<td>CC-Link</td>
<td>Supports CC-Link Ver. 1.10, remote device station (1 station)</td>
</tr>
<tr>
<td>DeviceNet</td>
<td>DeviceNet slave node</td>
</tr>
</tbody>
</table>
Connection to Peripheral Units

### Input signal

<table>
<thead>
<tr>
<th>Signal name</th>
<th>Meaning</th>
<th>Description</th>
</tr>
</thead>
</table>
| PIN0 to PIN7 | Point number selection | • Point number used to perform positioning operation  
• Point number to teach current position |
| JOG+ | Jog (+) | Jogs in plus (+) direction when ON. |
| JOG- | Jog (-) | Jogs in plus (-) direction when ON. |
| MANUAL | Manual mode | ON: manual mode |
| ORG | Return-to-origin | Starts return-to-origin. |
| /LOCK | Interlock | ON: Movement possible, OFF: Movement impossible |
| START | Start | Starts moving to position specified by point number. |
| TEACH | Teach | Teaches current position to specified point number. |
| RESET | Reset | • Resets alarm.  
• Resets point number output.  
• Clears remaining distance in relative positioning operation. |
| SERVO | Servo ON | ON: Servo ON, OFF: Servo OFF |

### Output signal

<table>
<thead>
<tr>
<th>Signal name</th>
<th>Meaning</th>
<th>Description</th>
</tr>
</thead>
</table>
| POUT0 to POUT7 | Point number selection | • Point number used to perform positioning operation  
• Alarm number when alarm has occurred |
| OUT0 | Control output 0 | Allocate the following outputs to OUT0 to OUT3. |
| OUT1 | Control output 1 | • Zone output  
• Personal zone output |
| OUT2 | Control output 2 | • Manual mode status  
• Return-to-origin status |
| OUT3 | Control output 3 | • Near width output  
• Movement-in-progress output  
• Push status  
• Warning output |
| ZONE | Zone output | Turns ON while at the zone specified by parameter. |
| PZONE | Personal zone output | Turns ON while at the zone specified by point setting. |
| MANU-S | Manual mode status | Turns ON when in manual mode. |
| ORG-S | Return-to-origin status | Turns ON when return-to-origin is complete. |
| TLM-S | Push status | Turns ON during push in pushing operation. |
| /WARN | Warning output | Turns ON when warning is issued. |
| NEAR | Near width output | Turns ON when near width (position margin zone) is entered. |
| MOVE | Movement in progress | Turns ON during movement. |
| BUSY | Operation in progress | Outputs ON during operation. |
| END | Operation complete | Outputs operation result.  
Turns ON when operation has ended normally. |
| /ALM | Alarm | Turns ON when operation is normal.  
Turns OFF when alarm has occurred. |
| SRV-S | Servo status | Outputs ON at serve-on. |

TS Series Options (for all TS series models)

#### Handy Terminal: HT1
- Has graphic LCD display with backlight for easy viewing.
- Model: HT1 (standard)  
  - KCA-M5110-0E  
  - KCA-M5110-1E
- HT1-D (enable switch)  
  - KCA-M538F-00 (D-sub)  
  - KCA-M538F-A0 (USB)

#### TS-Manager (support software)
- Besides data writing, editing and backup functions, the TS-Manager also offers cycle time simulation and various types of monitor functions.
- Model: KCA-M4966-00

#### Data cables
- TS-Manager data cable
  - Select from USB cable or D-sub cable.
  - Model: KCA-M538F-00 (D-sub)  
  - KCA-M538F-A0 (USB)

#### I/O cables (for maintenance tasks)
- NPN or PNP I/O cables
  - Color-coded flat cables.
  - Lattice type, 20 conductors × 2
  - Total length 2 meters, one end un terminated.
  - (This cable is supplied with NPN and PNP units)
- Model: KCA-M4427-20

TRANSERVO robot cable (flexible cable) (Cable specifically designed to connect TS-S to SS04/SS05/SS05H/SSC04/SSC05/SSC05H)

- Cable length selectable (1m / 3m / 5m / 10m)
- Model: KCK-M4751-10 (1m)  
  - KCK-M4751-30 (3m)  
  - KCK-M4751-50 (5m)  
  - KCK-M4751-A0 (10m)

Note: The standard units of the TRANSERVO series robots and positioners are CE compliant.
<table>
<thead>
<tr>
<th>Basic specifications</th>
<th>Allowable overhang*</th>
<th>Static loading moment</th>
</tr>
</thead>
</table>

### Ordering Method

<table>
<thead>
<tr>
<th>SS04</th>
<th></th>
</tr>
</thead>
</table>

- **Robot**: Lead at 12mm, Stroke 140mm
- **Type**: Standard origin position
- **Brake**: Standard brake
- **Origin position**: Standard origin position
- **Grease option**: Standard grease
- **Stroke**: 50 to 400 mm
- **Cable length**: S: 1m, T: 10m

### Basic specifications

- **Motor**: 42 Step motor
- **Repetitive positioning accuracy**: ±0.02 mm
- **Deceleration mechanism**: Ball screw (Class C10)
- **Maximum speed (mm/sec)**: 600, 300, 100
- **Max. pressing force (N)**: 45, 90, 150
- **Stroke (mm)**: 50 to 400 (50 pitch)
- **Overall length (mm)**: 8
- **Cable length (m)**: Standard: 1, Option: 3, 5, 10

*1: Positioning repeatability in one direction.

### Allowable overhang*

#### Horizontal installation (Unit: mm)

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1kg</td>
<td>80</td>
<td>218</td>
<td>292</td>
</tr>
<tr>
<td>2kg</td>
<td>667</td>
<td>107</td>
<td>152</td>
</tr>
<tr>
<td>3kg</td>
<td>687</td>
<td>116</td>
<td>169</td>
</tr>
<tr>
<td>4kg</td>
<td>506</td>
<td>76</td>
<td>112</td>
</tr>
<tr>
<td>5kg</td>
<td>696</td>
<td>61</td>
<td>92</td>
</tr>
<tr>
<td>6kg</td>
<td>863</td>
<td>40</td>
<td>60</td>
</tr>
</tbody>
</table>

#### Vertical installation (Unit: mm)

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1kg</td>
<td>274</td>
<td>204</td>
<td>776</td>
</tr>
<tr>
<td>2kg</td>
<td>133</td>
<td>93</td>
<td>611</td>
</tr>
<tr>
<td>3kg</td>
<td>149</td>
<td>102</td>
<td>656</td>
</tr>
<tr>
<td>4kg</td>
<td>83</td>
<td>49</td>
<td>207</td>
</tr>
<tr>
<td>5kg</td>
<td>72</td>
<td>48</td>
<td>207</td>
</tr>
<tr>
<td>6kg</td>
<td>39</td>
<td>39</td>
<td>789</td>
</tr>
</tbody>
</table>

### Static loading moment

#### Controller

- **Controller Operation method**: TS-S: Point trace

#### Motor (Unit: N.m)

<table>
<thead>
<tr>
<th></th>
<th>MY</th>
<th>MP</th>
<th>MR</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>19</td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>

### Effective stroke

- **Effective stroke**: 50, 100, 150, 200, 250, 300, 350, 400

### Weight (kg) (See note 4)

<table>
<thead>
<tr>
<th></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>286</td>
<td>316</td>
<td>366</td>
<td>416</td>
<td>466</td>
<td>516</td>
<td>566</td>
<td>616</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>10</td>
</tr>
<tr>
<td>C</td>
<td>50</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
<td>300</td>
<td>350</td>
<td>400</td>
</tr>
</tbody>
</table>

*1: The robot cable is flexible and resists bending.

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

*3: The cable’s minimum bend radius is R30.

*4: These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.

Note 1. Stop positions are determined by the mechanical stoppers at both ends. Secure the cable with a tie-band 100mm or less from unit’s end face to prevent the cable from being subjected to excessive loads.

Note 2. The cable’s minimum bend radius is R30.

Note 3. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.

Note 4. Stop positions are determined by the mechanical stoppers at both ends.
### SS05

**High lead: Lead 20**
- CE compliance

### Basic specifications

<table>
<thead>
<tr>
<th>Motor</th>
<th>42</th>
<th>Step motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeated positioning accuracy*1 (mm)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Deceleration mechanism</td>
<td>Ball screw 912 (Class C10)</td>
<td></td>
</tr>
<tr>
<td>Ball screw lead (mm)</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Maximum speed (mm/sec)*1</td>
<td>1000</td>
<td>600</td>
</tr>
<tr>
<td>Maximum payload (kg)</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Horizontal installation</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Vertical installation</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>50 to 800 (50 pitch)</td>
<td></td>
</tr>
<tr>
<td>Overall length (mm)</td>
<td>Horizontal installation: Stroke+230</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vertical installation: Stroke+275</td>
<td></td>
</tr>
<tr>
<td>Power cable dimension (mm)*2</td>
<td>955+966mm</td>
<td></td>
</tr>
<tr>
<td>Cable length (m)</td>
<td>Standard: 1 / Option: 3, 5, 10</td>
<td></td>
</tr>
</tbody>
</table>

*1: Positioning repeatability in one direction.
*2: When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, reduce the speed by referring to the maximum speeds shown in the table under the dimensional drawing.

### Allowable overhang*

- Horizontal installation (Unit: mm)  
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2kg</td>
<td>4kg</td>
<td>334</td>
</tr>
<tr>
<td>4kg</td>
<td>347</td>
<td></td>
</tr>
</tbody>
</table>
- Vertical installation (Unit: mm)  
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2kg</td>
<td>4kg</td>
<td>192</td>
</tr>
<tr>
<td>4kg</td>
<td>2kg</td>
<td>92</td>
</tr>
</tbody>
</table>
- Wall installation (Unit: mm)  
<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2kg</td>
<td>4kg</td>
<td>123</td>
</tr>
<tr>
<td>4kg</td>
<td>1kg</td>
<td>51</td>
</tr>
</tbody>
</table>

### Static loading moment

- MY | MP | MR |
- 25 | 33 | 30 |

### Controller

- Controller: Operation method  
  - 15 - 18: Point trace

### Ordering Method

**SS05**

- S
- C
- Cable length*2
- Controller

**Origin position**

- B: With brake
- N: Standard origin position
- A: Without brake

**Grease option**

- N: DeviceNet
- C: CC-Link
- CC: CC-Link

**Lead**

- 3.8
- 2.5

**Operation method**

- MR
- MP
- MY

### Notes

1. *Brake-equipped models can be selected only when the lead is 12mm or 6mm.
2. The robot cable is flexible and resists bending.

**Effective stroke**

- L  
  - 50: 280
  - 100: 330
  - 150: 380
  - 200: 430
  - 250: 480
  - 300: 530
  - 350: 580
  - 400: 630
  - 450: 680
  - 500: 730
  - 550: 780
  - 600: 830
  - 650: 880
  - 700: 930
  - 750: 980
  - 800: 1030

- Weight (kg)  
  - 2kg: 2.1
  - 4kg: 2.3
  - 8kg: 2.5
  - 15kg: 2.7

- Maximum speed for each stroke (mm/sec)  
  - 20: 3.0
  - 12: 2.2
  - 6: 2.4

- Lead 20
  - 1000
- Lead 12
  - 600
- Lead 6
  - 300
- Speed setting
  - 15%
  - 20%
  - 30%
  - 40%
  - 50%
  - 60%
  - 70%

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

**Note 2.** Secure the cable with a tie-band 100mm or less from unit’s end face to prevent the cable from being subjected to excessive loads.

**Note 3.** The cable’s minimum bend radius is R30.

**Note 4.** These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.

**Note 5.** When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, adjust to reduce the speed on the program and adjust to reduce the speed on the program. The maximum speeds shown in the table at the left.
**SS05H**

**Ordering Method**

<table>
<thead>
<tr>
<th>Robot</th>
<th>Lead</th>
<th>Type</th>
<th>Brake</th>
<th>Origin position</th>
<th>Grease option</th>
<th>Stroke</th>
<th>Cable length</th>
<th>Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1/standard origin</td>
<td>Standard grease</td>
<td>20 to 800 (6mm pitch)</td>
<td>19.2</td>
<td></td>
</tr>
</tbody>
</table>

**Basic specifications**

- **Motor**: 42-Φ Step motor
- **Repeated positioning accuracy**: ±0.02
- **Deceleration mechanism**: Ball screw 412 (Class C10)

**Allowable overhang**

<table>
<thead>
<tr>
<th>Horizontal installation (Unit: mm)</th>
<th>Wall installation (Unit: mm)</th>
<th>Vertical installation (Unit: mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>2kg</td>
<td>509</td>
<td>225</td>
</tr>
<tr>
<td>4kg</td>
<td>363</td>
<td>180</td>
</tr>
<tr>
<td>6kg</td>
<td>352</td>
<td>171</td>
</tr>
</tbody>
</table>

**Static loading moment**

- **Controller**: Operation method: TS-S / Point trace

**Controller**

- **Operation method**: TS-S / Point trace
- **Controller**: Operation method: TS-S / Point trace

**Note 5.** When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, reduce the speed by referring to the maximum speeds shown in the table at the underdrawing.

**SS05H**

**Approx. 200 (Cable length)**

- **Effective stroke**: 223.5±2: When origin is on motor side
  - (223.5±2: When origin is on non-motor side)
  - 175.5±1 (Note 1)

- **Effective stroke**: 62.5±2: When origin is on motor side
  - (62.5±2: When origin is on non-motor side)
  - 14.5±1 (Note 1)

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

**Note 2.** Secure the cable with a tie-band 100mm or less from unit’s end face to prevent the cable from being subjected to excessive loads.

**Note 3.** The cable’s minimum bend radius is R30.

**Note 4.** These are the weights without a brake.

**Note 5.** When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, adjust to reduce the speed on the program by referring to the maximum speeds shown in the table at the left.

**Maximum speed for each stroke (mm/sec) (Note 5)**

<table>
<thead>
<tr>
<th>L</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
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<th>750</th>
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<tbody>
<tr>
<td>A</td>
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<td>1086</td>
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<tr>
<td>B</td>
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<td>650</td>
<td>700</td>
<td>750</td>
<td>800</td>
<td></td>
</tr>
</tbody>
</table>

**Maximum speed (mm/sec)**

- **Lead 20**: 1000
- **Lead 12 (Horizontal)**: 650
- **Lead 12 (Vertical)**: 500
- **Lead 6 (Horizontal)**: 300
- **Lead 6 (Vertical)**: 250

**Note**: Maximum speeds are shown in the table at the left.

**Note 1.** When origin is on motor side

**Note 2.** Secure the cable with a tie-band 100mm or less from unit’s end face to prevent the cable from being subjected to excessive loads.

**Note 3.** The cable’s minimum bend radius is R30.

**Note 4.** These are the weights without a brake.

**Note 5.** When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, adjust to reduce the speed on the program by referring to the maximum speeds shown in the table at the left.
### Ordering Method

<table>
<thead>
<tr>
<th>SSC04</th>
<th>Lead Type</th>
<th>Brake</th>
<th>Direction of air coupler installation</th>
<th>Origin position</th>
<th>Stroke</th>
<th>Cable length</th>
<th>Controller</th>
<th>ID</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S</td>
<td>Yes</td>
<td>Left</td>
<td>Non-motor side</td>
<td>2-4</td>
<td>3L: 3m</td>
<td>TS-S</td>
<td>1D</td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

*1: The robot cable is flexible and resists bending.

### Basic specifications

<table>
<thead>
<tr>
<th>Motor</th>
<th>42</th>
<th>Stop motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeated positioning accuracy (mm)</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Maximum speed (mm/sec)</td>
<td>600</td>
<td>300</td>
</tr>
<tr>
<td>Maximum payload (kg)</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Horizontal installation</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Stroke (mm)</td>
<td>50</td>
<td>400</td>
</tr>
<tr>
<td>Overall length (mm)</td>
<td>Stroke+216</td>
<td></td>
</tr>
<tr>
<td>Axial stability in static cross-sectional moments</td>
<td>W49×193mm</td>
<td></td>
</tr>
<tr>
<td>Cable length (m)</td>
<td>Standard: 1</td>
<td>Option: 3, 5</td>
</tr>
<tr>
<td>Cleanliness class</td>
<td>CLASS 10*</td>
<td></td>
</tr>
<tr>
<td>Suction amount Air</td>
<td>Lead 12</td>
<td>Lead 6</td>
</tr>
</tbody>
</table>

### Allowable overhang*

**Horizontal installation (Unit: mm)**
- **A**: 160 ± 2
- **B**: 141 ± 1
- **C**: 166 ± 2

**Vertical installation (Unit: mm)**
- **A**: 124 ± 1 (Note 1)
- **B**: 120 ± 1
- **C**: 126 ± 1

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

### Static loading moment

**My** | 16 | 19 | 17 |
**Mp** | 2 |
**Mr** | 2 |

### Controller

Controller Operation method
- TS-S: Point trace

### Notes

1. Positioning repeatability in one direction.
2. Per 1 cf (0.1μm base), when suction blower is used.
3. Secure the cable with a tie-band 100mm or less from unit’s end face to prevent the cable from being subjected to excessive loads.
4. The cable’s minimum bend radius is R30.
5. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.
### Ordering Method

#### Basic specifications

- **Motor**: 42 [ ] Step motor
- **Repeatability accuracy** (pitch mm): 1000 600 300
- **Maximum motor torque**: 0.27
- **Ball screw lead (mm)**: 20 12 6
- **Maximum speed (mm/sec)**: 1000 600 300
- **Maximum payload (kg)**: 2kg 1kg 0.5kg
- **Max. pressing force (N)**: 27 45 90
- **Stroke (mm)**: 50 to 800 (50 pitch)
- **Overall length (mm)**: Stroke+230
- **Maximum dimension of body cross-section**: W55×H56 mm
- **Cable length (m)**: Standard: 1 / Option: 3, 5
- **Cleanliness class**: CLASS 10*
- **Suction amount Air**: Lead 20 Lead 6 Lead 2

*1: Positioning repeatability in one direction.
*2: When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, adjust to reduce the speed on the program by referring to the maximum speeds shown in the table under the dimensional drawing.
*3: Secure the cable with a tie-band 100mm or less subject to excessive loads.
*4: The cable’s minimum bend radius is 930.
*5: These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.
*6: Either right or left can be selected for the installation direction of 6 suction air coupler.

#### Allowable overhang

- **Horizontal installation**: (Unit: mm)
  - A: 109
  - B: 63
  - C: 26

- **Wall installation**: (Unit: mm)
  - A: 162
  - B: 76
  - C: 37

- **Vertical installation**: (Unit: mm)
  - A: 162
  - B: 76
  - C: 37

- **Effective stroke**: 52: When origin is on motor side

**Note**: 1. Stop positions are determined by the mechanical stoppers at both ends.
2. Either right or left can be selected for the installation direction of 6 suction air coupler.
3. Secure the cable with a tie-band 100mm or less subject to excessive loads.
4. The cable’s minimum bend radius is 930.
5. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.
6. When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed).

**Diagram**

- **Cable securing position**: (Note 1)
- **Effective stroke**: 52: When origin is on motor side

**Note**: 1. Stop positions are determined by the mechanical stoppers at both ends.
2. Either right or left can be selected for the installation direction of 6 suction air coupler.
3. Secure the cable with a tie-band 100mm or less subject to excessive loads.
4. The cable’s minimum bend radius is 930.
5. These are the weights without a brake. The weights are 0.2kg heavier when equipped with a brake.
6. When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed).
### Ordering Method

<table>
<thead>
<tr>
<th>Robot</th>
<th>Lead</th>
<th>Type</th>
<th>Brake</th>
<th>Direction of air coupler installation</th>
<th>Origin position</th>
<th>Stroke</th>
<th>Cable length</th>
<th>Controller</th>
<th>ID</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>High borne</td>
<td>Non-motor side</td>
<td>800</td>
<td>85</td>
<td>TS S</td>
<td>32</td>
</tr>
</tbody>
</table>

### Basic specifications

- **Motor**: 42 (Step motor)
- **Repeatability accuracy** (mm): ±0.02
- **Deceleration mechanism**: Ball screw (Class C10)
- **Maximum motor torque**: 0.47
- **Ball screw lead (mm)**: 20 12 6
- **Maximum speed (mm/sec)**: 360 250 100
- **Maximum payload (kg)**: 6 8
- **Max. pressing force (N)**: 36 60 120
- **Stroke (mm)**: 50 to 900 (50 pitch)
- **Overall length (mm)**:
  - Horizontal installation: Stroke-θ+62
  - Vertical installation: Stroke-θ+331
- **Maximum outside dimension of body cross-section (mm)**:
  - Lead6: 291 x 224 x 500
  - Lead12:
    - 250 x 366 x 500
    - 336 x 458 x 500
  - Lead20: 380 x 458 x 500
- **Allowable overhang (mm)**:
  - Horizontal installation: 235.5±2: When origin is on motor side
  - Vertical installation: 195.5±1 (with brake) (Note 1)
- **Continuous rating torque (N.m)**: 2.4 2.6 2.8 3.0 3.2 3.4 3.6 3.8 4.0 4.2 4.4 4.5 4.7 4.9 5.1 5.3
- **Motor speed (r/min)**:
  - 1L : 500
  - 3L : 386
  - 5L : 291
- **Maximum speed for each stroke (mm/sec)** (Note 6):
  - Lead 20: 1000
  - Lead 12: 800
  - Lead 5: 300
- **Hole frame (mm)**:
  - 1L: 50 x 50
  - 3L: 80 x 80
  - 5L: 120 x 120

### Static loading moment

- **Static loading moment (N.m)**: 15 12 9

### Controller

- **Controller**: TS S
- **Operation method**: Point trace

### Note

1. Stop positions are determined by the mechanical stoppers at both ends.
2. Either right or left can be selected for the installation direction for the suction air coupler. This drawing shows the R5 (standard) type (Note 2).
3. Secure the cable with a tie-band 100mm or less from unit’s end face to prevent the cable from being subjected to excessive loads.
4. The cable’s minimum bend radius is R50. Those are the weights without a brake.
5. The weights are 0.2kg heavier when equipped with a brake.
6. When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, adjust to reduce the speed on the program by referring to the maximum speeds shown in the table under the dimensional drawing.

---

*1: The robot cable is flexible and resists bending.

*2: When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, reduce the speed by referring to the maximum speeds shown in the table under the dimensional drawing.

*3: Per 1cf (0.1μm base), when suction blower is used.

*4: The cable's minimum bend radius is R30.

*5: When the stroke is longer than 650mm, the ball screw may resonate depending on the moving range (critical speed). In that case, adjust to reduce the speed on the program by referring to the maximum speeds shown in the table under the dimensional drawing.

---

### Diagram

- **SSC05H**
  - Approx. 200 (Cable length)
  - Effective stroke
  - 243.5±2: When origin is on motor side
  - 243.5±2: When origin is on non-motor side
  - 195.5±1 (with brake)
  - 214 (with brake)
  - Cable securing position (Note 3)

---

### Table

<table>
<thead>
<tr>
<th>Effective stroke</th>
<th>50</th>
<th>100</th>
<th>150</th>
<th>200</th>
<th>250</th>
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<tbody>
<tr>
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<td>700</td>
<td>800</td>
<td>900</td>
<td>1000</td>
<td>1100</td>
</tr>
</tbody>
</table>

### Note

- **Effective stroke**
  - 243.5±2: When origin is on motor side
  - 243.5±2: When origin is on non-motor side
  - 195.5±1 (with brake)
  - 214 (with brake)

- **Maximum speed for each stroke (mm/sec)** (Note 6)
  - Lead 20: 1000
  - Lead 12 (Horizontal): 800
  - Lead 5 (Horizontal): 300
  - Lead 5 (Vertical): 250

---

### Legend

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

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### Dimensions

- **Mounting direction**: LJ (standard)
In consideration of environment, this catalogue is made of recycled paper.

Specifications and appearance are subject to change without prior notice.