TRANSEVO Series

CLOSED LOOP STEPPING SINGLE-AXIS ROBOTS

YAMAHA ROBOT Line Up

Compact & economical single-axis with cost of the stepping motor and robot, TRANSEVO series, function of servo motor.

Closed-loop control for position feedback

Stepping motors provide great features such as low cost, yet they have a drastic drop in performance at high speeds and heavy current consumption when stopped. The TRANSERVO by YAMAHA eliminates all these problems by adopting an innovative vector control method. In effect, the TRANSERVO delivers the same functions of a servo motor while using a lower cost stepping motor.

YAMAHA ROBOT History and approach

30 years of proven reliability.

YAMAHA’s robot development started as it was introduced in our motorcycles production line more than 30 years ago. Since then, YAMAHA’s industrial robots have supported production equipment in a wide variety of industries, such as assembly of electronic products, transfer of in-vehicle components, and manufacture of large-scale LCD panels. Over the years, YAMAHA has strived to develop and improve the market and this is a testament to YAMAHA’s reliability.

Technical development based on the originally developed technologies and focusing on the needs of the market

“Motor control technology” absolutely necessary for precise and high-speed operation “Controller development technology” is based on the highest evaluation standards and Signal processing technology allowing stable operation even under severe environmental conditions. Rigidity, durability, and operability are features of YAMAHA’s products based on “Core technologies”.

Evaluation system provides high reliability

YAMAHA continues to adapt technology to assure product quality in the production process as well as in the production development phase. It is a system which includes feedback “development checking” (YAMAHA’s equipment) which determines performance, rigidity and quality of the system. The quality is continuously monitored and the results are reported to all necessary departments.

YAMAHA quality ensuring safety

Manufacturing, sales, and technology integration system is utilized at the maximum level to establish a system that consistently perform a serial of feedbacks.iggins checking system, relay checking system, etc. The quality is continuously monitored and the results are reported to all necessary departments.

SG type (Slider type) Features & Benefits

Dynamic payload capacity of 46 kg (horizontal) and 20 kg (vertical) A rigid guide with aluminum alloy material are adopted. The payload is increased greatly. The maximum payload of 46 kg is achieved with the use of the roller table and 20 kg is achieved with the use of the slider table. This provides a high quality, low price, and short delivery.

As the bearing type is integrated through in-house processing and machining, YAMAHA is able to manufacture the body of the table with high accuracy. Furthermore, the quality control based on the severe standards achieves the craftsmanship with high quality.

Maximum speed is 1200 mm/sec.

The maximum speed is made in 1.2 times faster than that of the current model (SS05H). The fast back up of the equipment can be achieved.

SS type (Slider type) Features & Benefits

High-speed operation slashes production time

Repeating vector control maintains the current vector. It maintains a constant payload even in the high-speed range. This helps to drastically cut down the tact time. By combining this feature with high-load ball screws, the TRANSERVO has achieved a maximum speed of 1 meter per second which is as fast as an single-axis servo motor in the same category.

Ideal 4-row circular groove 2-point contact guide provides longer service life

The guide maintains a satisfactory sliding movement with minimal ball differential, even if a large moment load is applied or the installation surface accuracy (fineness) is low. The rugged design ensures that breakdowns from problems like abrasion wear will seldom occur.

SR type (Rod type) Features & Benefits

Long-term maintenance free

A lubricator used in the ball screw and a contact switch provides long-life and longer maintenance operation freedom.

Uses highly reliable resolver

A rugged and sturdy resolver is standardized to provide accuracy. The encoder is selectable with stroke.

Layered contact switch

The ball screw structure provides a high reliability by making it difficult for resin particle to fall on the resolver.

Ball screw lubricator

Repeatability±0.05°. The RF type is a thin and compact model that can be used as a position sensor. The RF type has very easy-to-use specifications that allow easy installation of the workspace on the table and installation on the base frame. This type can be used for the rotation transfer after clamping or the vertical rotation operation by combining it with the proper.

RF type (Rotary type) Features & Benefits

First rotation axis model in TRANSEVO series

Maximum stroke 1500 mm/sec. Maximum speed 1500mm/sec. The RF type is a thin and compact model that can be used as a position sensor. The RF type has very easy-to-use specifications that allow easy installation of the workspace on the table and installation on the base frame. This type can be used for the rotation transfer after clamping or the vertical rotation operation by combining it with the proper.

BD type (Belt type) Features & Benefits

For long stroke applications

Maximum stroke 2000mm. Maximum speed 1500mm/sec. The BD type is applicable for the long stroke applications. The maximum transfer speed is 1500 mm/sec., ensuring high speed operation. The main body can be completely installed without removing exterior parts, such as the cover. Additionally, the encoder is protected inside the cover. The encoder and belt securely prevent grease from seeping in and dirt to enter the belt and gears of the system.

High rigidity model

The encoder and belt are covered inside the cover to prevent grease from seeping in and dirt to enter the belt and gears of the system.
Single-axis robot series include 6 types and 29 variations for a wide range of selections.

**Resolver with excellent environmental resistance capability**

Resolver with high reliability is adopted to detect the motor position. This enables stable position detection even in a harsh environment where powder particles or oil mist exist. Additionally, a high resolution of 20480 pulses per revolution is provided.

**4-row circular-graoue 2-point contact guide to support large moment load.**

4-row circular groove 2-point contact guide with less differential slip is adopted. According to its structure, the differential slip of the ball is small when compared to the 2-row gothic arch groove 4-point contact guide. This guide maintains excellent rigidity even when large moment load is applied or the installation surface accuracy is poor, and its characteristics that are difficult to produce a malfunction, such as unusual wear.

**High rigidity model**

High rigidity model is suitable for the Cartesian robot that needs the rigidity for the arm large, and resistance to the offset load is provided. This model is suitable for the Cartesian robot that needs the rigidity for the arm and the swinging arm that moves in the central axis.

**Low cost by YAMAHA’s in-house design components.**

YAMAHA originally developed the magnetic scale and still manufactures it. As YAMAHA also manufactures other major components, large cost reduction is achieved. Today is an era that the linear is not a special mechanism and can be appropriately selected in comparison to the ball screw. Particularly, when transferring a lightweight workspace a long distance at a high speed, selecting the linear motor type will reduce the cost.

**High speed, Long travel**

The ultimate appeal of linear motor single-axis robots is that there is no critical speed limits such as with ball screws. There is no reduction in the maximum speed even when traveling long distances. Moreover, the maximum stroke is a standard setting of up to 2m on the MF type and 4m on the DF type. The circular motion conveyance has been drastically improved.

**Standard double carrier set-up for space saving and high efficiency.**

Cost and space are reduced when compared to the use of two single-axis robots. Additionally, the axis alignment is not needed and the tools can also be made common. This shortens the setup time. (When using the RCX series controller, the anti-collision control function can be used.)

**160 kg maximum payload capacity of MF Series**

The MF series robot adopts the flat type magnet. It can transfer a heavy object at a high speed with a high accuracy.

**Lower noise level and longer life**

Comparing with ball screw type robots, there are few sliding and rotating sections so the operation is amazingly quiet. Moreover the coil and magnet do not make contact so there is no wear and the robot can be used for extended periods.

**Resolver**

- Double side resolver (compact body and low price)
- Ideal in applications as an encoder directly installed on a mount
- Dual carrier specifications are also available as a standard

**Resolver with excellent environmental resistance capability**

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Wide variety of pre-configured multi-axis systems to choose from.
From compact economical light duty to Large heavy duty systems.

Durable and Reliable Position

Detection: Resolver
The position detector is a resolver. The resolver has a simple yet strong mechanical structure and mechanical components are the same regardless of whether incremental or absolute specifications are used. Also, even if the absolute battery is completely worn down, the XY-X can operate on incremental specifications just by setting a parameter. Also, when high-thrust is needed with high loads.

Economy Solution
We achieved an even lower price by cutting down the number of parts while boosting basic performance. Using a resolver in the structure helped to produce a malfunction, such as unusual wear. The resolver structure has none of the detection problems that occur in other detectors such as optical encoders where electronic components break down or suffer from moisture or oil that stick to linear components.

Field Serviceable Structure
Even though it uses a built-in structure, components such as the motor and ball screw can be replaced individually so maintenance tasks are smooth and simple.

One controller for multiple single-axis robots.

The advantage of multi-axis controller operation
- Sequence control is simple. System upgrades are inexpensive.
- More compact and saves more space than when operating multiple single-axis controllers.
- Allows more sophisticated control.
- Multi-axis controllers RK2201/RK240 provide mixed control of the [linear single-axis] PHASER series and FLIP-X series.

Robot set-up
2-unit robot setting: Using a multi-task program along with this 2-unit setting allows asynchronous pick & place operation. Using this setting on an auxiliary axis setting allows more freedom in operating an axis that is not synchronized with the main robot.

Synchronized double carrier: The setting allows adding 2 motors to 1 axis on robot types where the motor unit runs separately such as the linear motor single-axis PHASER series or the N-type (nut rotation type) PHASER series.

Main auxiliary axis setting: Use the auxiliary axis setting when simultaneous movement with the MOVE command is impossible. An axis set for the main auxiliary axis moves only by the DRIVE command (axis separate movement command) and cannot operate from the MOVE command. Using this setting is recommended for operating on an axis that is not synchronized with the main robot.

Synchronized dual setting: Make this setting when operating dual drive (2-axis simultaneous control). Use the dual-drive setting on gantry type Cartesian robots having a long Y axis stroke when stabilizing at high acceleration/deceleration or when high thrust is needed with high loads.

Ideal for high-speed pick & place tasks of small parts.
Positioning by servo control to eliminate mechanical adjustment.

High speed
High speed pick & place operation contributes largely to higher productivity. Under conditions of 50mm in vertical direction, 150mm in longitudinal direction, 35mm in arch motion and 10gfs load, a total cycle time of 0.45 seconds.
Arm length of 120mm to 1200mm. Widest selection in industry. High-speed high-precision operation contributes to increased productivity.

**Tiny type SCARA model**

<table>
<thead>
<tr>
<th>Model</th>
<th>YK120XG</th>
<th>YK150XG</th>
<th>YK200XG</th>
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<tr>
<td>Arm length</td>
<td>120mm</td>
<td>150mm</td>
<td>200mm</td>
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<tr>
<td>Minimum payload</td>
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<td>1.5kg</td>
<td>2kg</td>
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**Medium type**

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<tbody>
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<td>600mm</td>
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<td>8kg</td>
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<td>15kg</td>
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**Wall-mount / inverse model**

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<th>YK150XG</th>
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<td>6kg</td>
<td>8kg</td>
<td>10kg</td>
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</tr>
</tbody>
</table>

**Dust-proof & drip-proof model**

<table>
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<th>Model</th>
<th>YK120XG</th>
<th>YK150XG</th>
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<td>Maximum payload</td>
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<td>10kg</td>
<td>15kg</td>
<td>20kg</td>
<td>25kg</td>
<td>30kg</td>
</tr>
</tbody>
</table>

**Internal structure designed for optimal operation**

- High rigidity (independent x-axis shaft)
- Built-in motor (reducing backlash and high accuracy)
- Built-in ball screw (increasing positioning accuracy)
- Hollow motor

**Features of wall-mount / inverse type**

- Wall-mount type
- Inverse type
- Tool flange option for easy mounting of a tool

**Superior rotary axis inertia moment capacity**

SCARA robot performance is not limited to just standard cycle time. Actual work situations include a diverse range of heavy work pieces as well as work with large offsets. Using a low R axis inertia moment in those cases will help drastically cut the cycle time. At YAMAHA SCARA robots have a speed reducer directly coupled to the tip of the rotating axis. The R axis produces an extremely high allowable inertia moment which delivers high speed operation compared to structures where positioning is usually done by a belt after decelerating.

**Optical encoder**

- Magnetic type
- Magnetic type with only the inner core and magnetic rings can be used for electric noise resistance

**Resistor**

- High resistance to electric noise

**High reliability**

- Magnetic type

**Dust-proof and drip-proof type**

- Bellows improved dust/drip-proof capability

- Equivalent to protection grade IP65 (IEC60529)
- Dust-proof and drip-proof connector for user wiring is available as a standard.
Superior Positioning Accuracy and High Speed Enables a smaller equipment footprint by eliminating the dead space at the center of the movement range.

**YK-TW** can move anywhere through the full \(1000 \text{mm}^2\) work envelope. Featuring a ceiling-mount configuration with a wide arm rotation angle, the YK-TW can access any point within the full \(1000 \text{mm}^2\) downward range. This eliminates all motion-related restrictions with regard to pallet and conveyor placement operations, while dramatically reducing the equipment footprint.

**YK-TW** offers a repeated positioning accuracy of \(\pm 0.01 \text{mm}^* (XY \text{ axes})\). Higher repeated positioning accuracy than that of received by a parallel-link robot. This was accomplished by optimizing the robot's weight balance through an extensive re-design of its internal construction. The lightweight yet highly rigid arm has also been fitted with optimally tuned motors to enable high accuracy positioning.

**YK-TW** offers both a lower profile and a smaller footprint. **YK-TW** height is only 392 mm. This compact size enables more freedom in the equipment layout design.

**Bellows on vertical axis improves reliability of the clean performance.**

**FLIP-XC** Clean room Single-axis robots

- Stroke : 30 to 2050mm
- Intake air : 15 to 90N\text{\textcircled{m}} \text{\textsc{m}}\text{\textsc{m}}/min
- Cleanliness rating : CLASS 10
- Maximum payload : 120kg (Horizontal installation)

**Completely beltless structure improves rigidity.**

**SSC** Clean room Single-axis robots (TRANSEVO)

- Stroke : 30 to 900mm
- Intake air : 15 to 90N\text{\textcircled{m}} \text{\textsc{m}}\text{\textsc{m}}/min
- Cleanliness rating : CLASS 10
- Maximum payload : 12kg (Horizontal installation)

Improved maintenance features

**XY-XC** Clean room cartesian robots

- Stroke : 60 to 600mm
- Intake air : 15 to 90N\text{\textcircled{m}} \text{\textsc{m}}\text{\textsc{m}}/min
- Cleanliness rating : CLASS 10
- Maximum payload : 20kg
- Maximum speed : 1000mm/sec
- Cable : User cable D-Sub 25 pin connector 24 conductors, 0.3 sq mm

**CLEAN ROOM Type CLEAN ROBOTS**

Class 10 rating sealed structure reduces particle generation, and air-intake efficiency improvement to establish both high cleanliness and high performance.

**YK-XGC/XC** Clean room SCARA robots

- Arm length : 1000mm to 1000mm
- Intake air : 30 to 50N\text{\textcircled{m}} \text{\textsc{m}}\text{\textsc{m}}/min
- Degree of cleanliness : CLASS ISO3 (ISO14644-1)
- Maximum payload : 20kg
Wide range of control systems to choose from. From single axis positioner to multi-axis comprehensive absolute controller covering DC Stepping Motor, AC Servo Motor, and Linear Motor.

**IVY System**

**ROBOT VISION FOR THE RCX240**

Simple "plug-and-play" set up with conveyor tracking features in one

**IVY system layout**

- Lighting control board
- Tracking board
- CCD camera
- LAN cable (Shield crossing)
- Camera cable
- Lens
- Close-up ring

**Seamlessly integrated vision system in robot controller**

Other machine vision products on the market use different formats, so a coordinate conversion program had to be written into the controller. The IVY system has an integrated controller so robot point data is stored in one easy step. Camera control and lighting control are handled by an integrated operation within the robot controller with an easy to understand operation that reduces the man-hours needed for equipment setup.

- Super simple calibration (Coordinate matching alignment tasks)
  Conventional equipment combining “image processing equipment + robot” requires an extreme amount of time and trouble due to the task of “calibra-” that aligns the camera coordinates with the robot coordinates. On the IVY system however the operator only has to follow conversation-type instructions from the programming box so operation is simple and finished in a short time.
  The IVY system also automatically corrects these coordinates even if the robot installation position has changed during tasks such as clamping upward, clamping downward, clamping robot Z axis, and clamping the frame robot Z axis.

**Powerful support software**

The low-cost and high-performance TS-Manager was newly developed for this product series. The user can easily control the robot task including tracking and lighting control, and can perform automated teach-in or teach-out tasks. It also comes loaded with real-time trace functions such as current values, speed, load factors, vibration, current values, and voltage values.

**Controllable with just one robot program**

- No data communication time lag
- Controllers will not kill robot program
- insists only the time of commands simple and easy to understand
A robot-integrated vision system means simplicity, high functionality, and reliability. Ease of original iVY, with greatly improved performance.

Supporting five-megapixel cameras
(Choose from 300,000 pixel, 1.3 megapixel, 2 megapixel and 5 megapixel)

System configuration illustration iVY2

Approximately double the search speed
Compared to previous model!

Supporting five-megapixel cameras
(Choose from 300,000 pixel, 1.3 megapixel, 2 megapixel and 5 megapixel)

Easy operation by YAMAHA’s robot language.

Conveyor tracking capability up to 100 CPM.
The vision camera detects the position and orientation of parts on moving conveyor for pick & place application.

Control multiple robots for additional increase in productivity.

254 types can be registered
Setup changes require only that part numbers be changed.

With monitor output
Monitor the vision status while making calibration settings or during automatic operation.

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Electric gripper for high-precision gripping force, positioning, and speed control.

Electric gripper: YRG series

Gripping force control
The gripping force can be set in 1% increments. A fragile or deformable workpiece, such as glass or paper, can also be gripped. The gripping force is constant even when the finger position is changed.

Multi-point Control
The finger position can be set to a desired position corresponding to the workspace size. This contributes to efficiency improvement of the line with workspace size and material treated or the line needing frequent setup.

Contactable with a single controller
The gripper can be controlled with a single controller. Since there’s no need for interchange with a PLC or other hard device, setup and startup is drastically simpler.

Combination with a vision system supports a wide range of applications
As the YRG series is combined with the robot-integrated vision system “iVY2 System,” the operations from the positioning using the camera to workpiece handling can be controlled in the batch mode using the RCK340 controller. Sophisticated systems can be easily configured.

* Can also be used with the RCK340 controller.

Easy operation by YAMAHA’s robot language.

Electric gripper:

YRG-2005S YRG-2810S YRG-4220W
YRG-2010S YRG-2840W YRG-4225S
YRG-2020FS/YRG-2840FS
YRG-2020FT/YRG-2840FT
YRG-2020ST/YRG-2840ST
YRG-2030S YRG-2850S YRG-4230S
YRG-2030ST/YRG-2850ST

S type Single cam type
Lightweight, compact, high-speed

W type Double cam type
High gripping force

Screw type
Straight style
High precision, long stroke
“T” style

Three fingers type
Compact, high rigidity, long stroke

Workpiece presence check function
The gripper outputs the HOLD signal. Missing workpiece gripping and workpiece drop during transfer can be checked. No external sensor is needed.

Robot vision system: iVY2 System

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Lightweight, compact, high-speed

W type Double cam type
High gripping force

Screw type
Straight style
High precision, long stroke
“T” style

Three fingers type
Compact, high rigidity, long stroke
YAMAHA ROBOT LINE UP

17

LINEAR CONVEYOR MODULES

From "simple flow" to "controlled move"
Construct a rapid-throughput line for increased profitability.

Module system for easy line layout change
A transfer line is configured by connecting the number of necessary modules as required. Of course, new line configuration and line change can be started at any time without any preparatory work. In addition, since shortening of the line, diversion of robots to other line, and storing of excess modules for the maintenance can be performed speedily. Additionally, operations, such as using pitch-feed for the same processes in one-time processes while transferring three workpieces at the same time, is as high speed in long-time processes.

Efficient move between tasks in line
- Narrow pitch movement is possible.
- Movement time can be reduced by combining the use of different movements, such as using pitch-feed for the same processes in one-time processes while transferring three workpieces at the same time, as a high speed in long-time processes.

High-speed movement and smooth deceleration stop using servo control prevent mechanical stopper collision.
Smooth deceleration stop by servo control. Since workpiece deviation by stopper collision or damage is eliminated, the high-speed movement is possible.

Performing tasks directly on the conveyor
- Has to retract the work from the pallet to the work table.
- Work space can be eliminated on the work table.
- Can perform work on the work table.

Freedom in line configuration using flexible slider movement.
LCM100 can flexibly change the forward movement, back-end movement, acceleration, and deceleration. As flexible operations, such as stopping at any position, PWM to control the speed of the linear slider is possible. Since the movement direction can be changed, the line can be designed with a higher flexibility. Since the movement direction can be changed, the line can be designed with a higher flexibility. Since the movement direction can be changed, the line can be designed with a higher flexibility.

High-speed operation reduces cycle time
Thanks to high-speed, low-inertia AC servo motors, an arm designed for light weight, and the latest control technology, these robots achieve an operating speed that is 22% higher than that of our previous models. In addition, since shortened cycle time, the line can be designed with a higher flexibility.

High-speed movement
V-100
- High-speed movement
- Smooth deceleration
- Accurate stop

LCM100
- High-speed movement
- Round corner move
- Removable slider
- Narrow pitch movement

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- Removable slider
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### T R A N S E R V O

**CLOSED LOOP STEPPING MOTOR SINGLE-AXIS ROBOTS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Size (mm) Note 1</th>
<th>Model</th>
<th>Load (mm)</th>
<th>Maximum payload (kg) <strong>Note 2</strong></th>
<th>Minimum speed (mm/sec) <strong>Note 3</strong></th>
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<tr>
<td>SS40-S40-SL</td>
<td>25 4 1</td>
<td>1000</td>
<td>50 to 400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS40-S</td>
<td>6 10 2</td>
<td>500</td>
<td>50 to 400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS40-S40-SL</td>
<td>6 10 2</td>
<td>500</td>
<td>50 to 400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS40-S</td>
<td>20 4 1</td>
<td>600 (horizontal) 500 (vertical)</td>
<td>50 to 400</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SS40-S40-SL</td>
<td>20 4 1</td>
<td>600 (horizontal) 500 (vertical)</td>
<td>50 to 400</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note 1.** Size is the approximate cross sectional size. **Note 2.** Maximum payload varies with the payload configuration. Refer to the table for details. **Note 3.** Speeds are approximate and may vary depending on the load and other factors. 

### XY-X CARTESIAN ROBOTS

<table>
<thead>
<tr>
<th>Model</th>
<th>Number of axes</th>
<th>Maximum payload (kg)</th>
<th>Maximum stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W45 + H53</td>
<td>2</td>
<td>4.5</td>
<td>100 to 380</td>
</tr>
<tr>
<td>W55 + H52</td>
<td>2</td>
<td>5.0</td>
<td>100 to 380</td>
</tr>
<tr>
<td>W55 + H65</td>
<td>2</td>
<td>6.0</td>
<td>100 to 380</td>
</tr>
<tr>
<td>W55 + H65</td>
<td>2</td>
<td>6.0</td>
<td>100 to 380</td>
</tr>
<tr>
<td>W55 + H65</td>
<td>2</td>
<td>6.0</td>
<td>100 to 380</td>
</tr>
<tr>
<td>W55 + H65</td>
<td>2</td>
<td>6.0</td>
<td>100 to 380</td>
</tr>
<tr>
<td>W55 + H65</td>
<td>2</td>
<td>6.0</td>
<td>100 to 380</td>
</tr>
<tr>
<td>W55 + H65</td>
<td>2</td>
<td>6.0</td>
<td>100 to 380</td>
</tr>
<tr>
<td>W55 + H65</td>
<td>2</td>
<td>6.0</td>
<td>100 to 380</td>
</tr>
<tr>
<td>W55 + H65</td>
<td>2</td>
<td>6.0</td>
<td>100 to 380</td>
</tr>
</tbody>
</table>

**Note 1.** Refer to the manufacturer's specifications for more details on payload and stroke capacities.
**YK-XG/YK-XR/YK-TW/YK-XGS/YK-XGP SCARA ROBOTS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Arm length (mm)</th>
<th>Maximum payload (kg)</th>
<th>Standard cycle time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tiny type</td>
<td>YK100</td>
<td>100</td>
<td>1.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK150</td>
<td>150</td>
<td>2.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK200</td>
<td>200</td>
<td>3.0</td>
<td>0.50</td>
</tr>
<tr>
<td>Small type</td>
<td>YK250</td>
<td>250</td>
<td>4.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK300</td>
<td>300</td>
<td>5.0</td>
<td>0.50</td>
</tr>
<tr>
<td>Medium type</td>
<td>YK350</td>
<td>350</td>
<td>6.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK400</td>
<td>400</td>
<td>7.0</td>
<td>0.50</td>
</tr>
<tr>
<td>Large type</td>
<td>YK450</td>
<td>450</td>
<td>8.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK500</td>
<td>500</td>
<td>9.0</td>
<td>0.50</td>
</tr>
<tr>
<td>Wall-mount/Inverse type</td>
<td>YK550</td>
<td>550</td>
<td>10.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK600</td>
<td>600</td>
<td>11.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK650</td>
<td>650</td>
<td>12.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK700</td>
<td>700</td>
<td>13.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK750</td>
<td>750</td>
<td>14.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK800</td>
<td>800</td>
<td>15.0</td>
<td>0.50</td>
</tr>
</tbody>
</table>

**Note 1:** Maximum payload: 0.1kg (100mm in the horizontal direction, 25mm-reciprocating in the vertical direction, coarse positioning). Other type: Maximum payload: 2kg (300mm in the horizontal direction, 25mm-reciprocating in the reciprocating direction, coarse positioning).

**Note 2:** Maximum payload of option specifications (with tool flange attached or with user wiring and tubing routed through spline shaft) is 4kg.

**Note 3:** Values in parentheses ( ) apply for tool flange specifications.

**Note 4:** Maximum speed: 250°/sec (360°/sec). Other type: Maximum speed: 1000°/sec (2000°/sec).

---

**YK-XG ELECTRIC GRIPPER**

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Holding power (N)</th>
<th>Open/close stroke (mm)</th>
<th>Maximum speed (mm/sec)</th>
<th>Repeatability (mm)</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compact single-cam</td>
<td>YK-250G1</td>
<td>250</td>
<td>13.0</td>
<td>150</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td>Single cam</td>
<td>YK-350G1</td>
<td>350</td>
<td>12.0</td>
<td>150</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td></td>
<td>YK-450G1</td>
<td>450</td>
<td>12.0</td>
<td>150</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td></td>
<td>YK-550G1</td>
<td>550</td>
<td>12.0</td>
<td>150</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td></td>
<td>YK-650G1</td>
<td>650</td>
<td>12.0</td>
<td>150</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td>Double cam</td>
<td>YK-250F1</td>
<td>250</td>
<td>15.0</td>
<td>150</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td></td>
<td>YK-350F1</td>
<td>350</td>
<td>15.0</td>
<td>150</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td></td>
<td>YK-450F1</td>
<td>450</td>
<td>15.0</td>
<td>150</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td></td>
<td>YK-550F1</td>
<td>550</td>
<td>15.0</td>
<td>150</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td></td>
<td>YK-650F1</td>
<td>650</td>
<td>15.0</td>
<td>150</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td>Screw type Straight style</td>
<td>YK-250W1</td>
<td>250</td>
<td>12.0</td>
<td>120</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td>Screw type &quot;T&quot; style</td>
<td>YK-250PT</td>
<td>250</td>
<td>12.0</td>
<td>120</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td>Three fingers</td>
<td>YK-250FT</td>
<td>250</td>
<td>12.0</td>
<td>120</td>
<td>±0.01</td>
<td>950</td>
</tr>
<tr>
<td></td>
<td>YK-250FT1</td>
<td>250</td>
<td>12.0</td>
<td>120</td>
<td>±0.01</td>
<td>950</td>
</tr>
</tbody>
</table>

**Note:** Holding power control: 30 to 100% (1% step). Speed control: 25 to 100% (1% step). Acceleration control: 1 to 100% (1% step).

---

**CLEAN ROOM SCARA ROBOTS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Arm length (mm)</th>
<th>Maximum payload (kg)</th>
<th>Standard cycle time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tiny type</td>
<td>YK100</td>
<td>100</td>
<td>1.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK200</td>
<td>200</td>
<td>2.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK300</td>
<td>300</td>
<td>3.0</td>
<td>0.50</td>
</tr>
<tr>
<td>Small type</td>
<td>YK400</td>
<td>400</td>
<td>4.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK500</td>
<td>500</td>
<td>5.0</td>
<td>0.50</td>
</tr>
<tr>
<td>Medium type</td>
<td>YK600</td>
<td>600</td>
<td>6.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK700</td>
<td>700</td>
<td>7.0</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>YK800</td>
<td>800</td>
<td>8.0</td>
<td>0.50</td>
</tr>
</tbody>
</table>

**Note:** Ultra-small type: Maximum payload: 0.1kg (100mm in the horizontal direction, 25mm-reciprocating in the vertical direction, coarse positioning). Other type: Maximum payload: 2kg (300mm in the horizontal direction, 25mm-reciprocating in the reciprocating direction, coarse positioning).
### YAMAHA ROBOT LINE UP

<table>
<thead>
<tr>
<th>Model</th>
<th>Axes</th>
<th>Structure</th>
<th>Maximum payload (kg)</th>
<th>Cycle time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>YP220BX</td>
<td>2</td>
<td>Belt -</td>
<td>3</td>
<td>0.45</td>
</tr>
<tr>
<td>YP320X</td>
<td>3</td>
<td>Ball screw -</td>
<td>3</td>
<td>0.57</td>
</tr>
<tr>
<td>YP220BXR</td>
<td>3</td>
<td>Belt - Belt Rotation axis</td>
<td>1</td>
<td>0.62</td>
</tr>
<tr>
<td>YP320XR</td>
<td>3</td>
<td>Ball screw - Belt Rotation axis</td>
<td>1</td>
<td>0.67</td>
</tr>
<tr>
<td>YP330X</td>
<td>3</td>
<td>Ball screw Ball screw Belt Rotation axis</td>
<td>3</td>
<td>0.57</td>
</tr>
<tr>
<td>YP340X</td>
<td>4</td>
<td>Ball screw Ball screw Belt Rotation axis</td>
<td>1</td>
<td>0.67</td>
</tr>
</tbody>
</table>

### LCM100 Linear conveyor module

| Model      | Drive method                      | Bearing method                                      | Max. speed | Max. payload | Module length | Max. number of sliders | Min. pitch between sliders | Mutual height difference between sliders | Max. external size of body cross-section |
|------------|-----------------------------------|-----------------------------------------------------|------------|--------------|---------------|------------------------|----------------------------------------|-----------------------------------------|
| LCM100-4M/3M/2MT | Moving magnet type, Linear motor with flat core | 1 guide rail / 2 blocks (with retainer) | 560mm/sec  | 14kg         | 640mm (4M) / 480mm (3M) / 400mm (for 2MT circulation) | 16 (when 16 modules are combined) | 420mm                                  | 0.08mm                                  | W136.5 mm × H155 mm (including slider) |

### LCC140 Controller

<table>
<thead>
<tr>
<th>Basic specifications</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controllable robot</td>
<td>LCM100-4M/LCM100-3M/LCM100-2MT</td>
</tr>
<tr>
<td>Outside dimensions</td>
<td>W402.5×H229×D106.5mm</td>
</tr>
<tr>
<td>Main body weight</td>
<td>4.8kg</td>
</tr>
<tr>
<td>Input power voltage</td>
<td>Single-phase AC200 to 230V +/-10% or less (50/60Hz)</td>
</tr>
<tr>
<td>Maximum power consumption</td>
<td>350VA (LCM100-4M: 1 slider is driven.)</td>
</tr>
<tr>
<td>External input/output</td>
<td>SAFETY</td>
</tr>
<tr>
<td>Network option</td>
<td>CC-Link Ver. 1.10 compatible, Remote device station (2 stations)</td>
</tr>
<tr>
<td>Programming box</td>
<td>DeviceNet&lt;sup&gt;S&lt;/sup&gt; Slave 1 node</td>
</tr>
<tr>
<td></td>
<td>EtherNet/IP&lt;sup&gt;S&lt;/sup&gt; adapter 2 ports</td>
</tr>
</tbody>
</table>

### LCM100 Belt module

<table>
<thead>
<tr>
<th>Basic specifications</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive method</td>
<td>LCM100-4B/3B</td>
</tr>
<tr>
<td>Bearing method</td>
<td>1 guide rail / 2 blocks (with retainer)</td>
</tr>
<tr>
<td>Max. speed</td>
<td>560mm/sec</td>
</tr>
<tr>
<td>Max. payload</td>
<td>1.4kg</td>
</tr>
<tr>
<td>Module length</td>
<td>640mm (4B) / 480mm (3B)</td>
</tr>
<tr>
<td>Max. number of sliders</td>
<td>1 slider / 1 module</td>
</tr>
</tbody>
</table>

### YA Vertically articulated robots

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
<th>Application</th>
<th>Number of axes</th>
<th>Payload (kg)</th>
<th>Vertical reach (mm)</th>
<th>Horizontal reach (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-axis</td>
<td>YA-RJ</td>
<td>Handling (general)</td>
<td>6-axis</td>
<td>1 kg (max. 2 kg*)</td>
<td>909</td>
<td>545</td>
</tr>
<tr>
<td></td>
<td>YA-R3F</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>532</td>
</tr>
<tr>
<td></td>
<td>YA-R5F</td>
<td></td>
<td></td>
<td>5</td>
<td>1193</td>
<td>706</td>
</tr>
<tr>
<td></td>
<td>YA-R5L</td>
<td></td>
<td></td>
<td>5</td>
<td>1560</td>
<td>895</td>
</tr>
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<td></td>
<td>YA-R6F</td>
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<td></td>
<td>6</td>
<td>2486</td>
<td>1422</td>
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<tr>
<td></td>
<td>YA-U5F</td>
<td>Assembly / Placement</td>
<td>7-axis</td>
<td>5</td>
<td>1007</td>
<td>559</td>
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<tr>
<td></td>
<td>YA-U10F</td>
<td></td>
<td></td>
<td>10</td>
<td>1203</td>
<td>720</td>
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<tr>
<td></td>
<td>YA-U20F</td>
<td></td>
<td></td>
<td>20</td>
<td>1498</td>
<td>910</td>
</tr>
</tbody>
</table>

* When a load is more than 1 kg, the motion range is reduced. Use the robot within the recommended motion range.