YAMAHA

YAMAHA ROBOT LINE UP CATALOG

YAMAHA
ROBOTICS

260-747-3482
www.yamaharobotics.com

YAMAHA ROBOT
History and approach

30 years of proven reliability

YAMAHA's robot development was introduced as a motorcycle 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 focused to develop and improve the market. This is a testament to YAMAHA's reliability.

Technical development based on the original technologies and focused on the needs of the market

"Control technology" is 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 extreme environmental conditions.
Rigidity, durability, and operability are features of YAMAHA's products base on Coretechnologies* .

*Control boards, linear motors, and linear scales (position detectors), etc.

Evaluation system provides high reliability

YAMAHA continues to evaluate technology to assure product reliability.
In the product development phase the evaluation test at anechoic chamber* (YAMAHA's equipment) was developed to ensure the high reliability and quality.

*Anechoic chamber: This equipment is intended to synthetically develop the EMC (Electro-Magnetic Compatibility) technologies for YAMAHA Group products and to share the developed technologies. This equipment can evaluate the compliance with each country's regulation in conformity with the international standards.

YAMAHA quality ensuring safety

Manufacturing, sales, and technology integrated system is utilized at its maximum level to establish a system that consistently performs a series of processes: inspection, manufacture, assembly, inspection, and shipping. This can provide the customers with high quality, low price, and short delivery time.
Key components are manufactured through in-house processing and machining. YAMAHA as a robot manufacturer builds the components to the highest quality level.
Furthermore, the quality control based on the highest standards achieves superior craftsmanship.

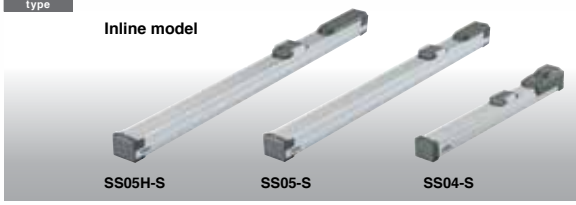
TRANSER
STEPPING MOTOR SINGLE-AXIS ROBOTS

Quick selection table ▶▶ P16

Compact & economical single-axis rob having excellent characteristics of bot

SS type **Slide type**

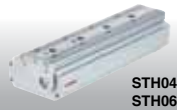
Inline model



STH type **Slide table type**

Inline model

Foldback model



New control method combines the best features of servo and stepping motors

Stepping motors provide great benefits such as low cost, yet they have a drastic drop in torque 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.

Stepping Motors	○	•Simple design & low cost •No vibration when it stops	× ·High-pitched operating noise ·Drop in torque at high-speed ·Heavy current consumption when stopped.
Servo Motors	○	•Smooth movement •Constant torque at all speed range •Energy saver	× ·Tiny vibrations when it stops ·Cost is high

TRANSERVO combines the best features of both types

The position detector is a resolver

The position detector is a resolver. The resolver has a simple yet strong structure using non-electronic components or elements and so has great features such as being extremely tough in harsh environments as well as a low breakdown rate. The resolver structure has none of the detection problems that occur in other detectors such as optical encoders whose electronic components breakdown or suffer from moisture or oil that sticks to the disk.

260-747-3482
www.yamaharobotics.com

VO Series

ots, TRANSERVO series,
h the stepping motor and servo motor.

Foldback model (Slide type)

SS05H-R(L) SS05-R(L) SS04-R(L)

SR type Rod type

Standard model

SR05 SR04 SR03

Model with support guide

SRD05 SRD04 SRD03

RF type Rotary type

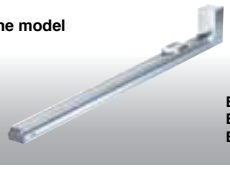
Standard model

High rigidity model

RF02
RF03
RF04

BD type Belt type

Inline model



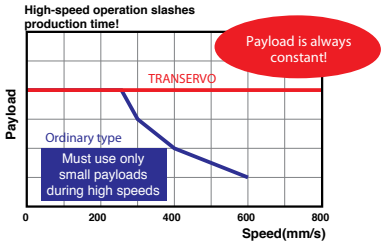
BD04
BD05
BD07

SS type Features & Benefits

High-speed operation slashes production time

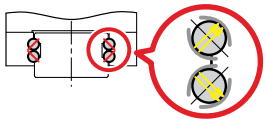
Making maximum use of advantages offered by the vector control method, the TRANSERVO maintains a constant payload even in the high-speed range. This helps to drastically cut down on the tact time. By combining this feature with high-lead ball screws, the TRANSERVO has achieved a maximum speed of 1 meter per second[Note] which is as fast as single-axis servo motors in the same category.

Note : SS05/SS05H/SSC05/SSC05H (Lead20mm)



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

The 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. The rugged design ensures that breakdowns from problems like abnormal wear will seldom occur.



SR type Features & Benefits

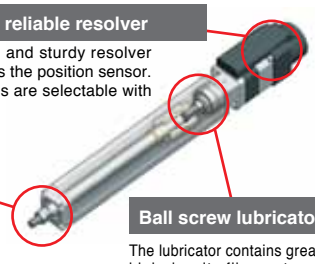
Long-term maintenance free

A lubricator used in the ball screw and a contact scraper provides long-life and maintenance-free operation.maintenance free operation.

- **Needs no maintenance for long periods**
- **Grease-saving lubrication system**
- **Prevents contaminant particles**

Highly reliable resolver

A rugged and sturdy resolver is used as the position sensor. All models are selectable with a brake.



Layered contact scraper

The dual-layer scraper prevents micro-contaminants adhering to the rod from penetrating to the inside. This is also effective in suppressing looseness or vibration in the rod.

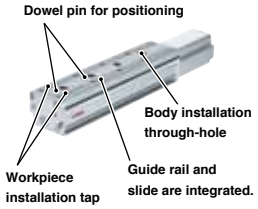
Ball screw lubricator

The lubricator contains grease in a high-density fiber net so that it supplies just the right amount of grease where needed with no waste.

STH type Features & Benefits

Use of a circulation type linear guide makes it possible to provide high rigidity and accuracy

Maximum. pressing force 180N, Repeatability±0.05mm. Integration of the guide rail and slide ensures less deflection. The circulation type linear guide makes it possible to provide high rigidity and accuracy. STH06 provides an allowable overhang that exceeds T9 of the FLIP-X series. Also available in foldback models with the side mounted motor built into the body. The STH type is optimal for precise assembly.

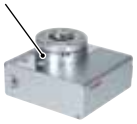


RF type Features & Benefits

TRANSERVO series first rotation axis model

Maximum speed 420°/sec, Repeatability±0.05°.The RF type is a thin and electric rotary type actuator. The two model types, standard type and high rigidity type, can be selected as the optimal applications. The RF type has very easy-to-use specifications that allow easy installation of the workpiece on the table and installation on the base frame. This type can be used for the rotation transfer after chucking or the vertical rotation operation by combining it with the gripper.

Use of high rigidity type bearing makes it possible to reduce the movement amount in the radial and thrust directions of the table.

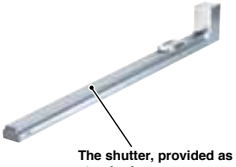


High rigidity model

BD type Features & Benefits

Belt type applicable to long stroke

Maximum stroke 2000mm, Maximum speed 1500mm/sec.This type is applicable to a long stroke of up to 2000 mm. The maximum transfer speed is 1500 mm/sec., ensuring high-speed operation. The main body can be conveniently installed without removing exterior parts, such as the cover. Additionally, the shutter is provided as standard accessory. It covers the guide and belt securely to prevent grease from scattering and to block entry to external foreign objects. This type is optimal for workpiece positioning or long-distance transfer.



The shutter, provided as standard accessory, protects the internal mechanisms.

FLIP-X Series

SINGLE-AXIS ROBOTS

Quick selection table ▶▶ P17

This single-axis robot series includes many models, 5 types and 27 variations for a wide range of applications.

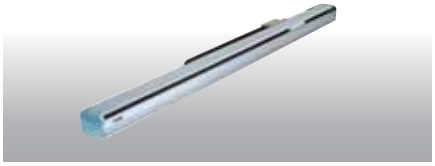
T type — Frame-less structure model

T4L/T4LH, T5L/T5LH, T6L, T9/T9H

Double appeal of a compact body and low price.
Ideal in applications as an actuator directly installed on a mount.

N type — Nut rotation type model

N15/N15D, N18/N18D



The operation can be made even at a long stroke while keeping the maximum speed without being affected by the critical speed. Double carrier specifications are also available as a standard.

F type — High rigidity frame model

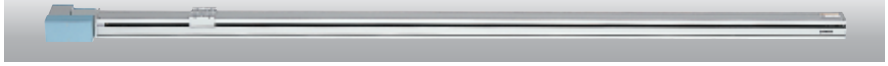
F8/F8L/F8LH, F10, F14/F14H, F17/F17L, F20/F20N

Highly rigid aluminum frame is used, allowable load moment is 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 moving arm that moves the overall axis.

B type — Timing belt drive model

B10, B14/B14H

Maximum stroke length of 3050mm. Allows long distance transport between job processes.



R type — Rotation axis type model

R5, R10, R20

Position repeatability accuracy of +/-30 seconds (0.0083°).
The R type can be used as the rotation axis when combined with other robots, or utilized for a wide range of applications such as index tables.
Harmonic drive delivers high-strength and high-accuracy.

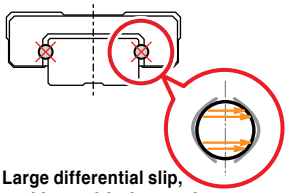
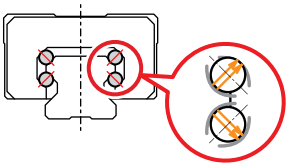
Resolver with excellent environmental resistance is adopted.

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

Optical encoder	Resolver
	
● Optical ● Electronics parts are required and structure is complicated. ● Electronics part trouble, disc dew condensation, or oil sticking occurs easily.	● Magnetic type ● Simple structure with only the iron core and winding ensures less potential failure. ● Highly resistant to impact and electric noise.
Risk of detection failure	**High reliability**

4-row circular-groove 2-point contact guide to support larger moment loads

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 rolling motion even when a large moment load is applied or the installation surface accuracy is poor, and has characteristics that are difficult to produce a malfunction, such as unusual wear.

2-row gothic arch groove 4-point contact guide	4-row circular arc groove 2-point contact guide
	
Large differential slip, and large friction resistance	**Small differential slip and good self-centering**
● Very susceptible to effects from poor installation precision, friction and elastic deformation ● Might break even within the calculated service life.	● Highly resistant to alignment fluctuations and moment loads ● Resistant to breakage

Custom order specifications for each model are available

We gladly accept special orders for all models such as for double sliders or wide sliders. Please consult with our sales office for more information.

Long-service life reduces the maintenance and control costs greatly.

As YAMAHA's robot adopts the highly rigid ball screw or guide, it has excellent durability. This can greatly contribute to reduction of the customer's maintenance and control costs.

PHASER Series

LINEAR MOTOR SINGLE-AXIS ROBOTS

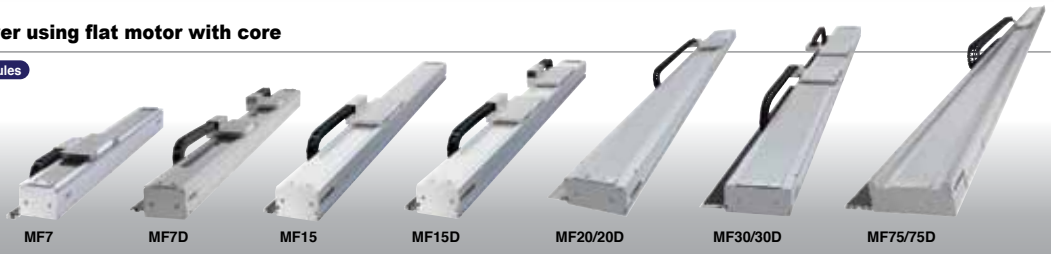
Quick selection table ▶▶ P16

No limit on critical speed even when using a maximum of 4m long stroke. Delivers superb performance during long distance conveyance.

MF type **Long stroke & high-power using flat motor with core**

Double Carriges Standard on all Modules

- Maximum stroke : 4050mm
- Maximum speed : 2500mm/s
- Repeated positioning accuracy :±5μm
- Maximum payload : 7 to 160kg



MR type **Shaft motor drive with the advantages of a light-weight ·compact body · minimal cogging**

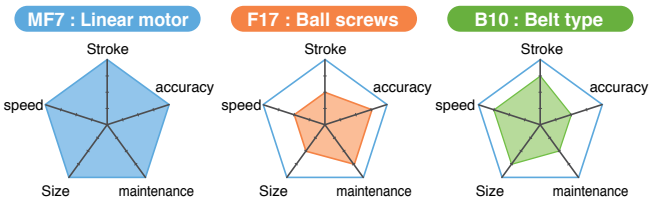
Double Carriges Standard on all Modules

- Maximum stroke : 1050mm
- Maximum speed : 2500mm/s
- Repeated positioning accuracy : ±5μm
- Maximum payload : 5kg

Low cost is achieved as YAMAHA manufactures major 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 workpiece a long distance at a high speed, selecting the linear motor type will reduce the cost.



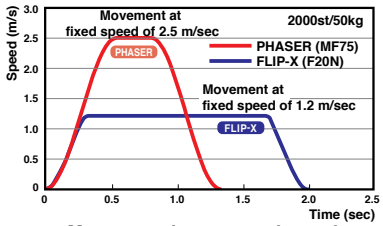
Comparison of single-axis robot models

Model	Appl ication Cost[Note1]	Maximum speed (mm/sec)	Payload (kg)	Repeated positioning accuracy (μm)	Maximum stroke (mm)	Size[Note2] (mm)
MF7-1500		2500	10(7)[Note3]	±5	4000	W85×H80
F17-40-145		720[Note4]	40	±10	1450	W168×H100
B10-1450		1850	10	±40	2550	W100×H81

Note 1 : Comparisons when using the strokes shown above Note2 : No flexible cable guide is included. Note 3 : This value becomes 7kg when the maximum speed is 2500mm/s (2100mm/s when transferring 10kg).
Note 4 : This value considers the critical speed when the stroke is 1450mm.

High speed, Long Travel

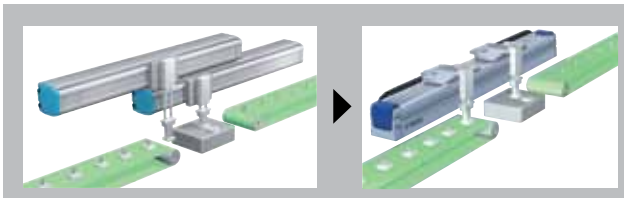
The ultimate appeal of linear motor single-axis robots is that there is no critical speed limits such as with ball screws. There is no reduction in the maximum speed even when traveling long distances. Moreover, the maximum stroke is a standard setting of up to 2m on the MR type and to 4m on the MF type.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



Movement time comparison of linear single-axis PHASER and single-axis robot FLIP-X

Double carrier is available as a standard that enables a system configuration with 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.)



Layout using 2 units of ball screw type single axis robots

Space saving layout using a double carriage

High Payload on MF type Maximum payload : 160kg

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

Quiet with a long service life

Unlike 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.

260-747-3482
www.yamaharobotics.com

XY-X Series

CARTESIAN ROBOTS

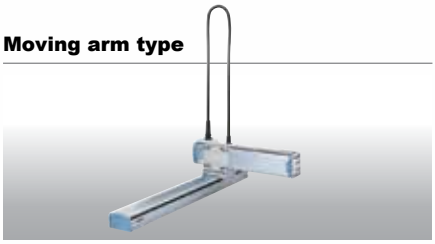
Quick selection table ▶▶ P16

Offering a full lineup of Cartesian robots that come with just the right performance and size to match user needs & ideal for diverse spectrum of job tasks.

Arm type

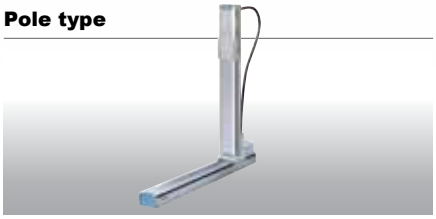
Gantry type

Moving arm type



XZ type

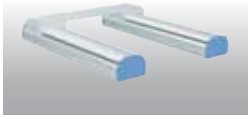
Pole type



Dual-synchronous drive

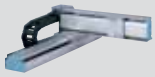
Equipped with the dual drive function to control 2 axis in synchronization, which is of effective use for carrying heavy items and long stroke operation with the Cartesian robot.

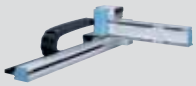
Note. For the dual drive function, custom order arrangement is required.



Multiple variations

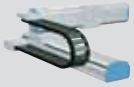

PXYx


FXYx


FXYBx


SXYx


MXYx


SXYBx


NXY


NXY-W


HXYx


HXYLx

Models with 3 or more axes can be selected from:
- **Z-axis clamped base and moving table type**
- **Z-axis clamped table and moving base type**

Tough & highly reliable resolver

The position detector is a resolver. The resolver has a simple yet strong structure using non-electronic components or elements and has great benefits such as being extremely tough in harsh environments as well as a low breakdown rate. The resolver structure has none of the detection problems that occur in other detectors such as optical encoders whose electronic components breakdown or suffer from moisture or oil that sticks to the disk. Moreover, mechanical specifications for both absolute and incremental are common to all controllers so one can switch to either absolute or incremental specifications just by setting a parameter.

Also even if the absolute battery is completely worn down, the XY-X can operate on incremental specifications so in the unlikely event of trouble one can feel secure knowing that there will be no need to stop the production line. The backup circuit has been completely renovated and now has a backup period extending to 1 year.

Lower price

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 finally eliminate the “absolute units are expensive” idea. Moreover, the mechanical components are the same regardless of whether incremental or absolute unit specifications are used.

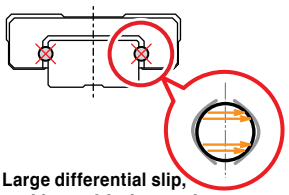
Streamlined maintenance tasks

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.

Uses a 4-row 2-point groove guide rail for superb durability

4-row circular-arc-groove 2-point contact guide with less differential slip is adopted. When compared to the 2-row gothic-arch-groove 4-point contact guide, the 4-row circular-arc-groove 2-point contact guide has characteristics that the differential slip of the ball is small due to its structure and excellent rolling motion is maintained even when a large moment load is applied or the installation surface accuracy is poor. So this guide is difficult to produce a malfunction, such as unusual wear.

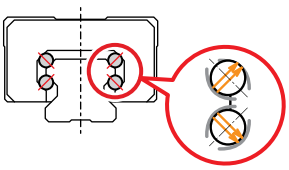
2-row gothic arch groove 4-point contact guide



Large differential slip, and large friction resistance

- Very susceptible to effects from poor installation precision, friction and elastic deformation
- Might break even within the calculated service life.

4-row circular arc groove 2-point contact guide



Small differential slip and good self-centering

- Highly resistant to alignment fluctuations and moment loads
- Resistant to breakage

260-747-3482
www.yamaharobotics.com

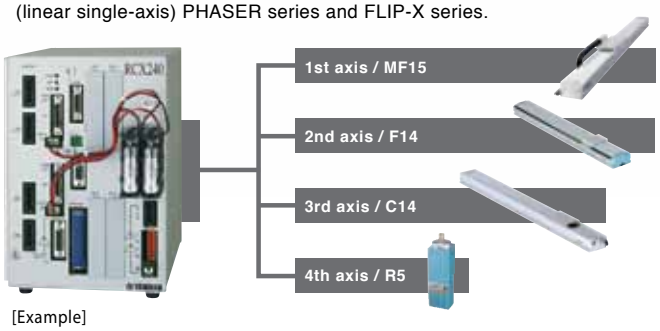
MULTI-FLIP / MULTI-PHASER

MULTI ROBOT

Operation where one controller runs 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 RCX221/RCX240 provide mixed control of the (linear single-axis) PHASER series and FLIP-X series.



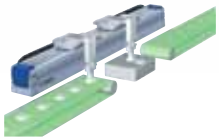
[Example]
4 axes controller

Robot settings

2-unit robot setting:
Using a multi-task program along with this 2-unit setting allows asynchronous independent operation.
Using this along with an auxiliary axis setting allows even more freedom in assigning axes to tasks.

Double carrier:
This 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) FLIP-X series.

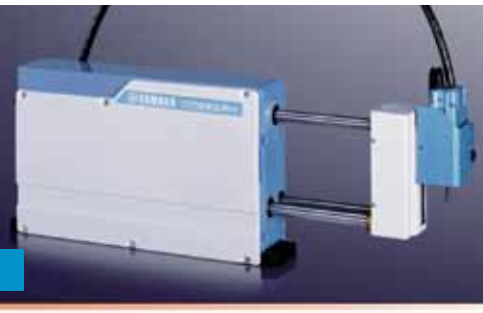
Main auxiliary axis setting:
Use this auxiliary axis setting when simultaneous movement with the MOVE command is impossible. An axis set for the main auxiliary axis moves only by the DRIVE command (axis separate movement command) and cannot operate from the MOVE command. Using this setting is recommended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



Dual setting:
Make this setting when operating dual -drive (2-axis simultaneous control). Use this 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.

YP-X Series

PICK & PLACE ROBOTS

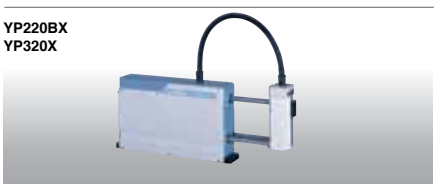


Quick selection table ▶▶ P17

Ideal for high-speed pick & place tasks using small parts.
Positioning is by servo control so no complex mechanical adjustments are needed.

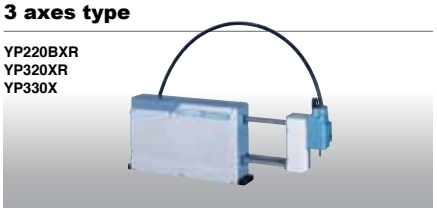
2 axes type

YP220BX
YP320X



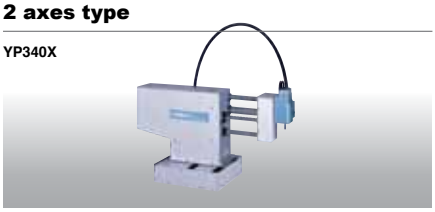
3 axes type

YP220BXR
YP320XR
YP330X



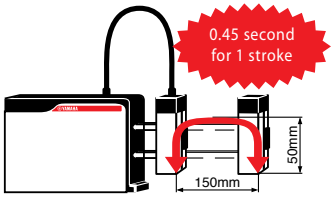
2 axes type

YP340X



High speed

High speed pick & place operation contributes largely to higher productivity.YP220BX under operation conditions of 50mm in vertical direction, 150mm in longitudinal direction, 50 in arch volume and 1kg load can achieve a total cycle time or .45 seconds.



High precision

Both extremely high-speed performance and high precision of +/-0.02mm (YP320X, YP320XR, YP330X, YP340X) are assured.

Compact size

Compact size with an overall length of 109mm (YP220BX) and moving arm mechanism enable construction of a space saving production line with less interference with surroundings.

260-747-3482
www.yamaharobotics.com

YK-XG Series

SCARA ROBOTS

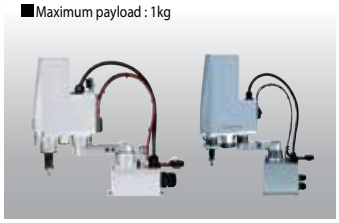
Quick selection table ▶▶ P18

Arm length of 120mm to 1200mm. Full-selection lineup is top in the world. Completely beltless structure pushing the SCARA robot to its limits.

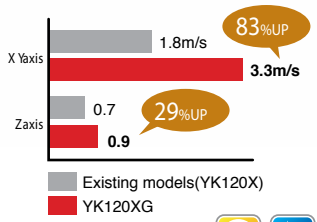
Extra small type SCARA model

YK120XG, YK150XG
YK180XG, YK180X
YK220X

- Arm length : 120mm to 220mm
- Maximum payload : 1kg



Utilizing a completely beltless structure exclusively in this class, even our ultra-small model achieves high rigidity and high accuracy. By increasing the maximum motor rpm, the maximum speed is improved remarkably when compared to the conventional model.



Medium type

YK500XGL / XG
YK600XGL / XG/XGH
YK700XG, YK800XG
YK900XG
YK1000XG

- Arm length : 500mm to 1000mm
- Maximum payload : 10kg to 20kg

Medium type

YK250XG
YK350XG
YK400XG

- Arm length : 250mm to 400mm
- Maximum payload : 5kg

Large type

YK1200X

- Arm length : 1200mm
- Maximum payload : 50kg

Wall-mount / inverse model

YK300XGS, YK400XGS
YK500XGS, YK600XGS
YK700XGS, YK800XGS
YK900XGS,
YK1000XGS

- Arm length : 300mm to 1000mm
- Maximum payload : 20kg

Wall-mount type
Type where the robot body is installed in the wall.

Inverse type
Type where wall-mount type is mounted upside down.

Dust-proof & drip-proof model

YK250XGP, YK350XGP
YK400XGP, YK500XGP
YK500XGLP, YK600XGP
YK600XGLP, YK700XGP
YK800XGP, YK900XGP
YK1000XGP,

- Arm length : 250mm to 1000mm
- Maximum payload : 20kg

Plays active part in an environment with much water or dust (protection class equivalent to IP65).
• Please consult us for anti-droplet moisture protection for anything other than water.
Note: YK700XGP/YK800XGP/YK1000XGP will be manufactured on order.
So, contact YAMAHA for further information on delivery time.

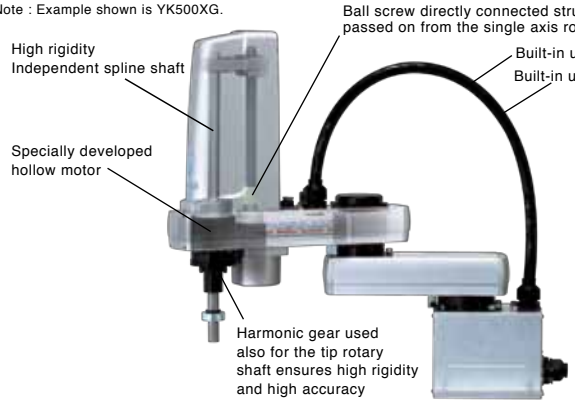
History of 30 years

The first YAMAHA robots were SCARA robots. Since the first SCARA robot called “CAME” was produced in 1979, some 30 years of SCARA robot innovations have continually appeared. These SCARA robots have undergone countless modifications in an ever-changing marketplace and amassed a hefty record of successful products making them an essential part of the YAMAHA robot lineup.

1979
<YK7000>

Internal structure designed for optimal operation

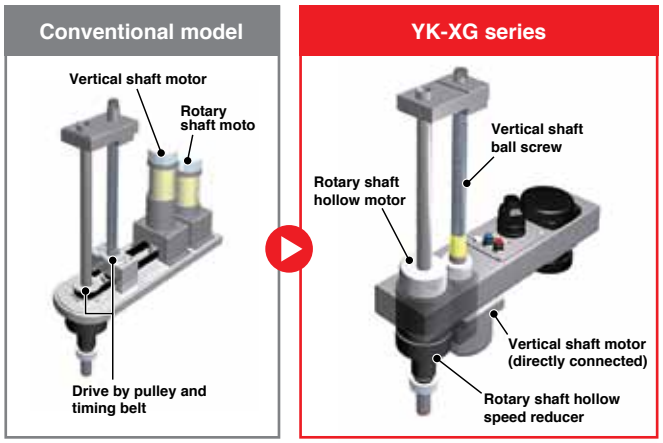
Note : Example shown is YK500XG.



260-747-3482
www.yamaharobotics.com

Completely beltless structure

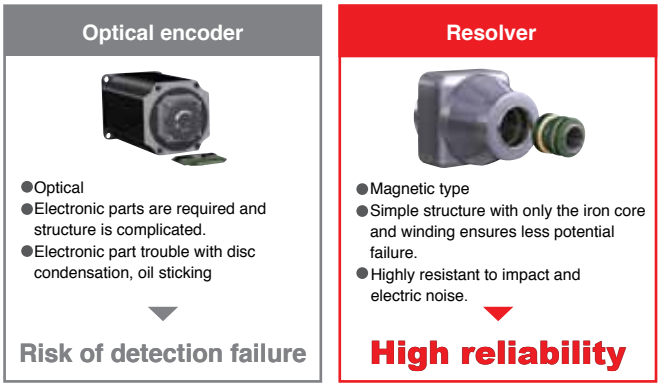
A totally beltless structure was achieved by using a ZR axis direct coupling structure. This direct drive structure drastically reduces wasted motion. It also maintains high accuracy over a long period of time. It ensures maintenance-free usage for extended periods without concern of belt breakage, stretching or deterioration with age (feature applies to all XG series models and the YK180X/YK220X).



Environmentally rugged resolver provides closed loop control

The position detector is a resolver. The resolver has a simple yet strong structure using non-electronic components or elements. So these great features make the structure extremely tough in harsh environments as well as a low breakdown rate. The resolver structure has none of the detection problems that occur in other detectors such as optical encoders whose electronic components breakdown or suffer from moisture or oil that sticks to the disk. Moreover, mechanical specifications for both absolute and incremental are common to all controllers so one can switch to either absolute or incremental specifications just by setting a parameter.
If the absolute battery is completely worn down, the SCARA can operate on incremental specifications. In the unlikely event of trouble one can feel secure knowing that there will be no need to stop the production line. The backup circuit has been completely renovated and now has a backup period extending to 1 year.

Note : The resolver has a simple structure not using electronic components at all. It is highly resistant to low and high temperatures, impacts, electrical noise, dust particles, oil, etc. and is used in automobiles, trains, and airplanes.



Robot R 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. All 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.

YK120XG
(R axis allowable moment inertia: 0.1kgfcm ²)

If the tip load weight is 1kg, it is possible to operate at about 100mm offset.

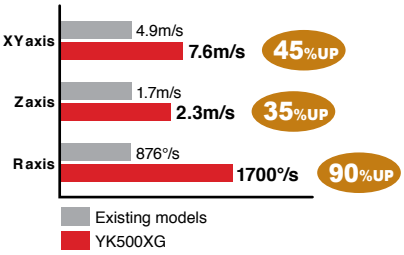
●R axis allowable inertia moment: Comparing YK120XG with competitor's models

Figures when using 1kg load	○ Operation OK × Operation deviates from allowable range of catalog values	
Offset (mm)	Inertia (kgfcm²)	Operation
		YK120XG / A Corp.
0	0.0039	○ / ○
45	0.025	○ / ×
97	0.1	○ / ×

◆R axis allowable inertia moment: YK120XG 0.1kgfcms²
A Corp. 0.0039kgfcms²

High speed cycle

The standard cycle time is fast of course but the YAMAHA design also stresses tact time in the actual usage region. A drastic improvement in maximum speed was made by changing the gear ratio and maximum motor rpm. This also resulted in a better tact time during long distance movement.



Hollow shaft and tool flange options

Useful options include a hollow shaft for easy wiring to the tip tool and a tool flange for tool clamping.

Note : YK250XG/YK350XG/YK400XG/YK500XGL/YK600XGL

Hollow shaft option for easy routing of air tubes and harness wires

Tool flange option for easy mounting of a tool to the tip

Improved maintenance features

The covers on the YAMAHA SCARA robot YK-XG series can be removed from the front or upwards. The cover is separate from the cable so maintenance tasks are easy.
On ordinary robots replacing the grease on the harmonic gear takes a great deal of time and trouble because the gear must be disassembled and position deviations might occur. On YAMAHA SCARA robots however the harmonic gear is the grease-sealed type so no grease replacement is needed (YK-500XG to YK1000XG).

Features of wall-mount / inverse type

Completely beltless structure ensures high rigidity

As the conventional ceiling-mount type was changed to the wall-mount type, the flexibility of the system design is improved. This enables downsizing of the production equipment. Additionally, as the inverse type allowing upward operation is added to the lineup, the flexibility of the work direction becomes wide. The completely beltless structure achieves a maximum payload of 20kg and a R-axis allowable inertia moment of 1kgm²* that is the maximum level in this class. A large hand offset can also be installed. This robot is suitable for heavy load work.

※Note: YK700XGS to YK1000XGS

Features of dust-proof and drip-proof type

Up/down bellows structure improves the dust-proof and drip-proof performance.

The conventional robot was renewed to a dust-proof and drip-proof type. It's completely beltless structure that can be used in a work environment where water droplets or dust particles scatter.
Belt deterioration is eliminated and the robot is highly resistant to harsh environments. The use of up/down bellows structure makes it possible to improve the dust-proof and drip-proof performance.

Note: YK250XGP to YK600XGLP

•Equivalent to protection grade IP65(IEC60529)
•Dust-proof and drip-proof connector for user wiring is available as a standard.

YK400XR

ECONOMY SCARA ROBOT

New YK400XR SCARA robot gives the high quality, high performance and superior value.

Fastest cycle time in this class

A standard cycle time of 0.45 sec. is achieved by drawing out the robot performance at its maximum level.

Superior cost performance

The robot is provided at the least expensive price in YAMAHA's similar robot class without changing its conventional functions.

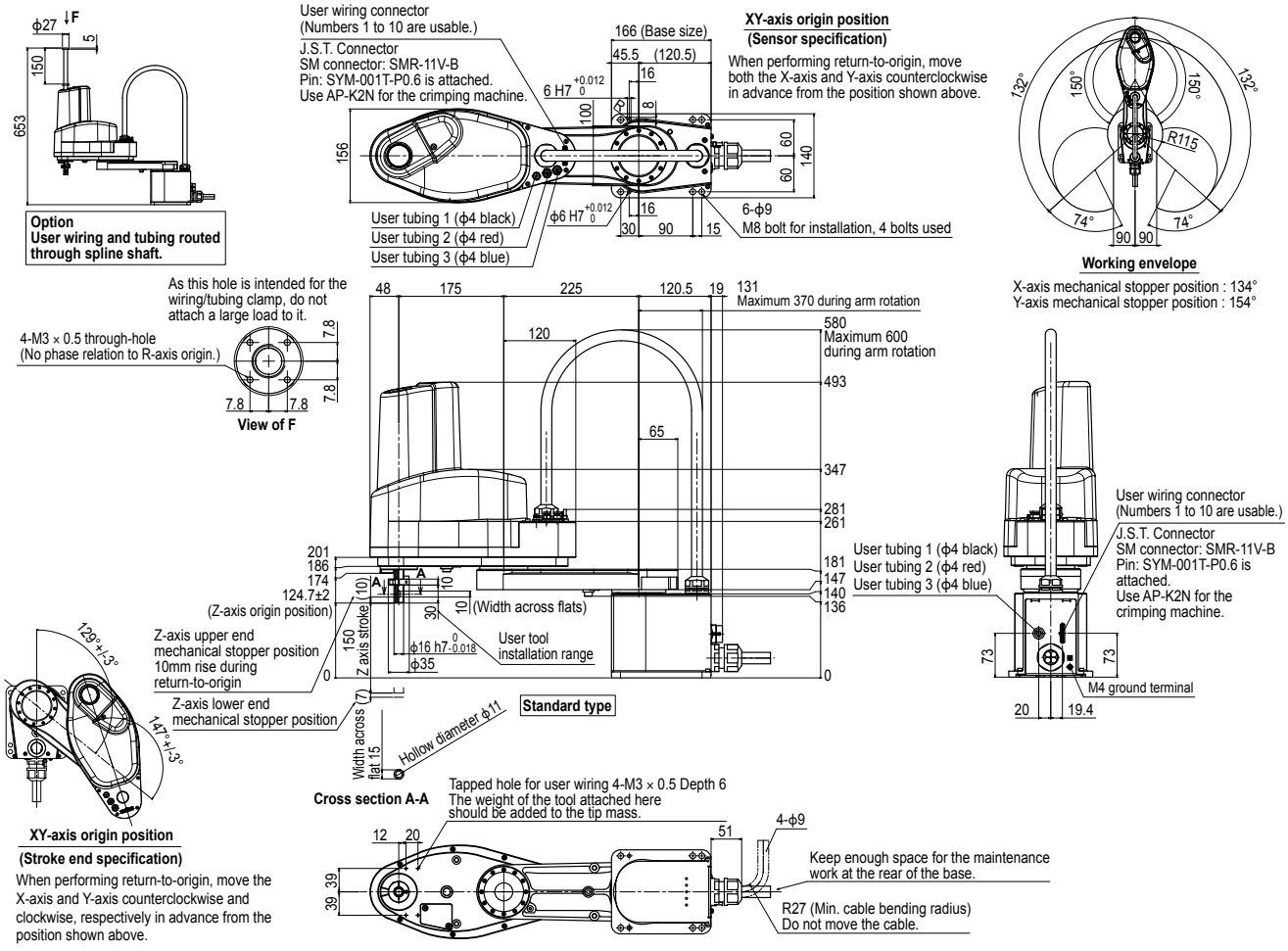
Versatile and high performance controls can be made by combining with a new controller.

When connecting the robot to a new controller that has features, such as a link function, that can control up to 16 axes and improvement of connectability with various field networks.

Basic specification

Axis	X-axis	Y-axis	Z-axis	R-axis
Arm length	225mm	175mm	—150mm	—-
Rotation angle	±132°	±150°	-	±360°
Maximum speed	6m/s	6m/s	1.1m/s	2600°/s
Payload	3kg			
Standard cycle time	0.45sec			
Tolerable moment of inertia	0.05kgm^2 (without offset)			
Repeatability	±0.01mm	±0.01mm	±0.01mm	0.01°
User wiring	0.2sq x 10			
User tubing	ϕ4x3			
Travel limit	1. Soft limit 2. Mechanical stopper (X, Y, Z-axis)			
Robot cable	Standard: 3.5m Option: 5m, 10m			

External view



260-747-3482
www.yamaharobotics.com

YK500TW

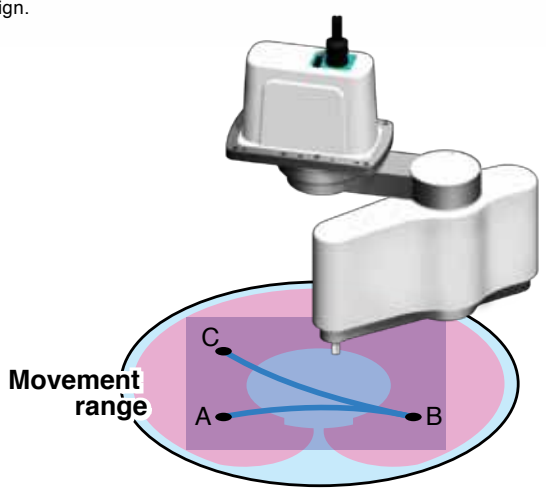
ORBIT TYPE SCARA ROBOT

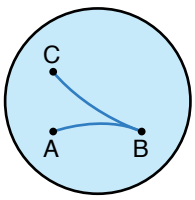
Quick selection table ▶▶ P18

Achieving high-speed cycle time, optimum movement with ceiling-mount structure and rotating arm.

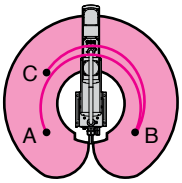
Fully accesses the entire 360° area below the robot unit

Ceiling (overhead) mount installation and wide arm rotation angle cover the full 360° area below the robot unit. This delivers a 120% improvement in the operating surface area compared to our current SCARA robot models with 500mm arm length. Dead space in the center of the motion range has been eliminated to achieve a cylindrical working envelope of 1000mm in diameter ×130mm in height. The cylindrical working envelope ensures there are no restrictions on pallet and conveyor installation directions and also increases the degree of freedom for the system layout design.

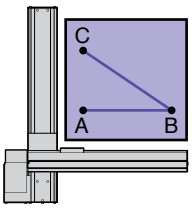




Orbit type SCARA robot
YK500TW

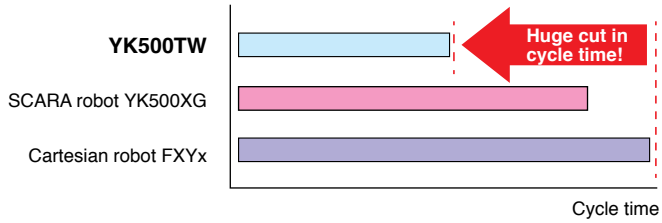


Standard type SCARA robot
YK500XG



Cartesian type robot FXYx

Cycle time compared by robot type



Compact unit with low overall height

The overall height is also low as 392mm and the center of gravity position of the overall equipment can be lowered. Therefore, it is possible to downsize the equipment without using rigid frames. As the production equipment is made small, a period of time necessary to transfer a workpiece can be shortened.

High-speed operation reduces cycle time

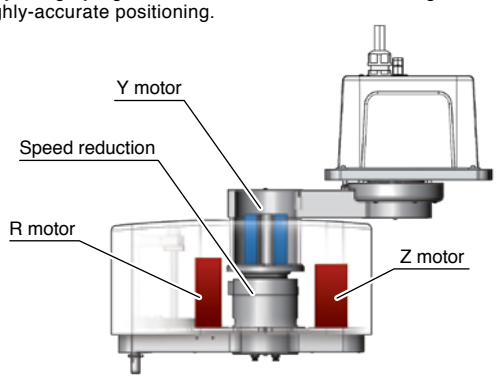
Delivers high-speed movement between points along optimum movement since the horizontally articulated structure allows the secondary arm (Y-axis) to pass below the primary arm (X-axis). This drastically reduces cycle time on low-load conveyor processes such as on electronic assembly or food-stuff production lines.

Standard cycle time of 0.29 seconds

The YK500TW shrinks the standard cycle time 36% compared to our current robot models when moving a 1 kg load back and forth 300mm horizontally and 25mm vertically.

High mechanical rigidity ensures high-speed and highly accurate positioning

Optimal weight balance was achieved by meticulous redesign of the internal robot structure. The mounted motors are optimally tuned for the lightweight yet highly rigid arms of the YK500TW, allowing both high-speed and highly-accurate positioning.



Harness can be routed through hollow

The Y motor and speed reduction gear have a hollow structure that allows the harness to be routed through it.

Gives a full 360° rotation!!

Heavy parts are arranged near center

The R motor and Z motor are arranged on the left and right near the center to ensure optimum weight balance.

Lowers the inertia for high-speed operation!!

Uses resolver as position sensor

The resolver is a magnetic position sensor. Its structure is simple since no electronic and optical components are used. One great feature is that there are few parts to fail or break down compared to ordinary optical encoders. Because of its ruggedness, durability, and low failure rate, a large number of resolvers are used in fields where reliability is important such as airplanes and cars.

CLEANROOM Type

CLEANROOM ROBOTS

Quick selection table ▶▶ P18-19

Suitable for electronic part, food or medical device related work inside clean rooms. Highly sealed structure achieves dust prevention and air-intake efficiency improvement to establish both high cleanliness and high performance.

YK-XGC/XC type — Cleanroom SCARA robots

- Arm length: 180mm to 1000mm
- Intake air: 30 to 60N/min
- Degree of cleanliness: CLASS ISO3 (ISO14644-1) CLASS10 (FED-STD-209D)
- Maximum payload: 20kg

YK250XGC YK400XGC

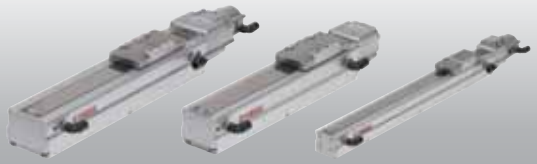
The Z-axis spline is covered with bellows made of materials with lower dust emission and other sliding parts are sealed completely. The harness is also completely built-in and the suction inside the robot is performed from the rear of the base to prevent dust emission.

Up/down bellows structure improves the reliability of the clean performance.

FLIP-XC type — Cleanroom Single-axis robots

- Stroke: 50 to 2050mm
- Intake air: 15 to 90N/min
- Degree of cleanliness: CLASS10
- Maximum payload: 120kg (Horizontal installation)

Note: C4L/C4LH, C5L/C5LH, and C6L conform to CLASS ISO3 (ISO14644-1).



C6L C5L C4L

Clean room specifications of “FLIP-X series”. An appropriate model suitable for the application can be selected from 14 models ranging from lightweight and compact model to large model with a maximum payload of 120 kg. A suction air joint is available as a standard, low dust emission grease is used, and stainless steel sheet with excellent durability is mounted on the slide table surface to achieve high cleanliness.

Completely beltless structure improves the rigidity.

SSC type — Cleanroom Single-axis robots (TRANSERVO)

- Stroke: 50 to 800mm
- Intake air: 15 to 80N /min
- Degree of cleanliness: CLASS10
- Maximum payload: 12kg (Horizontal installation)

SSC04 SSC05 SSC05H

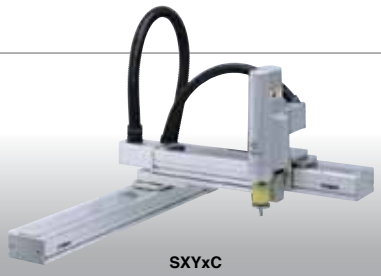
Clean room specifications of “TRANSERVO series”. Use of a newly developed vector control system with adoption of stepping motor makes it possible to achieve the functions and performances similar to the servomotor at a low cost.
A suction air joint is available as a standard, low dust emission grease is used, and stainless steel sheet with excellent durability is mounted on the slide table surface to achieve high cleanliness.

Improved maintenance features

XY-XC type — Cleanroom cartesian robots

- Intake air: 60 to 90N/min
- Degree of cleanliness: CLASS10
- Maximum payload: 20kg
- Maximum speed: 1000mm/sec

Note: User cable D-Sub 25 pin connector 24 conductors, 0.3 sq.
Note: User tube three 6 air tubes.



SXYxC

Clean room applicable type of “Cartesian robot”. Use of stainless steel sheets with excellent durability makes it possible to design the opening at its minimum level. The robot is applicable to CLASS10 with less suction amount. Furthermore, as a super-high speed unit of the SCARA robot is used for the ZR-axis of SXYxC, the cycle time is greatly shortened.

260-747-3482
www.yamaharobotics.com

CONTROLLERS

CONTROLLERS, POSITIONERS & DRIVES

High performance controller supporting YAMAHA robots. Select the ideal controller from various command input formats. Servo parameters and acceleration patterns optimized for each robot are pre-stored, so you can start operating the robot right away without troublesome setups.

		TRANSERVO	FLIP-X		PHASER
		Stepping motor	[T4L/T5L] Small servo (24V・30W)	General-purpose servo (30 to 600W)	Linear motor
1 axis	● I/O point trace ● Remote command	P TS-S2		P TS-X	P TS-P
	● Pulse train	D TS-SD	C ERCD	D RDX	D RDP
	● Program (YAMAHA SRC language) ● I/O point trace ● Remote command ● Online instructions			C SR1-X	C SR1-P
2 axes	● Program (YAMAHA BASIC language) ● I/O point trace ● Remote command ● Online instructions			C RCX222	C RCX221
3, 4 axes	● Program (YAMAHA BASIC language) ● I/O point trace ● Remote command ● Online instructions			C RCX240 RCX240S C RCX340	
5 to 8 axes	**YC-LINK couples single-axis controllers to a 4-axis controller** Note: Up to four SR1 series controllers can be connected to the RCX series controller.				

P Robot positioner

Simple operation only by specifying point number data

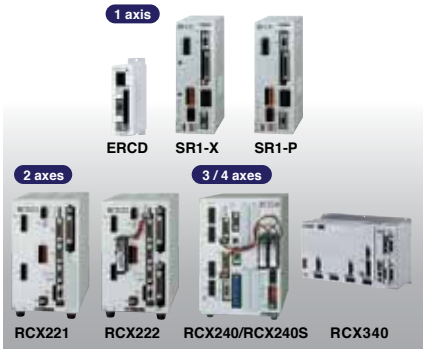
The TS series are robot positioners that operate just by specifying a point No. and entering a START signal.These can do positioning or push operations without having to write a program. Speed changes can be made during movement by carrying out linked operation.

D Robot driver

Pulse train input driver for single-axis robot

As the operation with the robot language is omitted and the driver is dedicated to the pulse train input, the driver can be easily built into the automatic machine unit as a compact control unit.
In addition to the RDX and RDP drivers that are applicable to the conventional single-axis FLIP-X series and PHASER series, the TS-SD driver applicable to the TRANSERVO series is also added to the lineup.

C Robot controllers



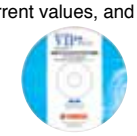
Diverse command methods

Select an optimal method from the different command methods including program operation, point trace, remote command, and on-line command. Program uses the YAMAHA SRC language resembling BASIC. Use it to execute a variety of operations ranging from simple tasks to I/O output and conditional branching, etc.

Powerful support software

The low-cost and high-performance TS-Manager was newly developed for the TS series. This single axis robot software performs all operations such as point data settings, editing, backup and teaching tasks. It also comes loaded with real-time trace functions such as current values, speed, load factors, current values, and voltage values.


TS-Manager


VIP+


iVY Studio

260-747-3482
www.yamaharobotics.com

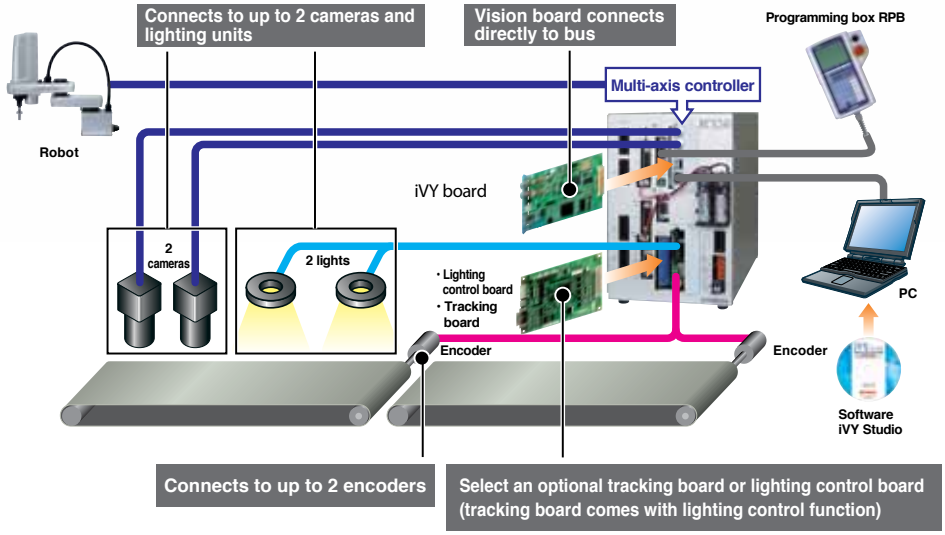
iVY System

ROBOT VISION

Simple to use and cuts the number of job steps. “Finds and Takes” without teaching tasks.

iVY system layout

Gives you a ready-to-go robot controller equipped with an image processing function by just setting an iVY board in your 4-axis robot controller RCX240 or RCX240S. Putting “eyes” in your robot allows you to search and locate workpieces, find deviations in workpiece position and make corrections even in the case of large errors, expanding the range of applications.

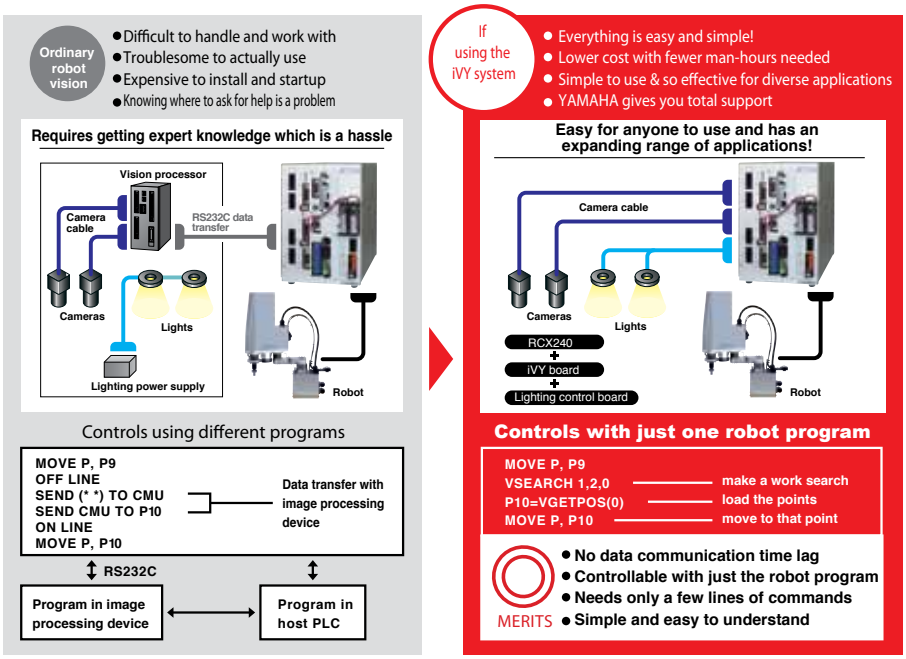


Options

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

Unified operation with integrated controller

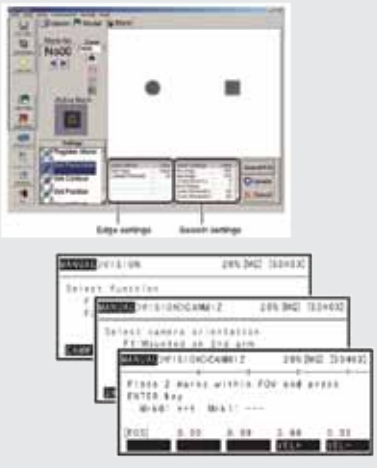
Other machine vision products on the market use different formats, so a coordinate conversion program had to be written into the controller.
The iVY system has an integrated controller so robot point data is stored in one easy step. Camera control and lighting control are handled by an integrated operation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



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 “calibration” 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 finishes 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 Scara robot Y arm.

Just follow instructions on the Wizard!



260-747-3482
www.yamaharobotics.com

YRG Series

ELECTRIC GRIPPER

Quick selection table ▶▶ P18

Electric grippers for the RCX240 controller.
Easy to operate since YAMAHA robot language gives unified control.

Gripping power control	Measuring	Speed control	Multi-point Control	Workpiece check function
Adjustable in 1% units from 30 to 100%.	Measures a workpiece by position sensing.	Adjustable as needed in 1% units from 20 to 100% for speed and 1 to 100% for acceleration.	A maximum of 10,000 positioning points can be set.	Utilizes the HOLD output signal to check if the gripper fails to grip a workpiece or drops it, without using a sensor.

S type Single cam type

Lightweight, compact, high-speed

YRG-2005SS YRG-2010S YRG-2815S YRG-4225S

W type Double cam type

High gripping force

YRG-2005W YRG-2810W YRG-4220W

Screw type

Strait style
High precision, long stroke

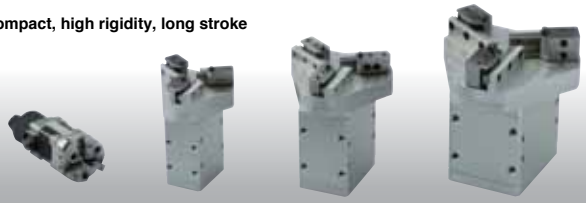
YRG-2020FS/YRG-2840FS

"T" style

YRG-2020FT/YRG-2840FT

Three fingers type

Compact, high rigidity, long stroke



YRG-2004T YRG-2013T YRG-2820T YRG-4230T

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

YRG delivers gripping power control, speed and acceleration control, multi-point positioning and measuring of workpieces, which have been difficult for air-driven devices. The YRG proves to be a flexible solution for a wide range of applications.

Gripping power control

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

Pneumatic control

Fine adjustment of the regulator is difficult.

Electric control

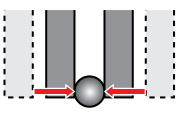
Gripping force can be set in a range of 30% to 100% in 1% increments.

Multi-point Control

The finger position can be set to a desired position corresponding to the workpiece size. This contributes to efficiency improvement of the line with workpiece size and material mixed or the line needing frequent setup.

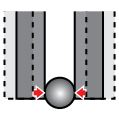
Pneumatic control

Stroke loss is produced.



Electric control

Stroke loss is not produced due to optimal positioning accuracy.



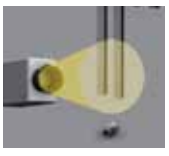
Contributes to tact-up.

Workpiece presence check function

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

Pneumatic control

Workpiece miss-gripping or drop is judged by the sensor or image processing.



Electric control

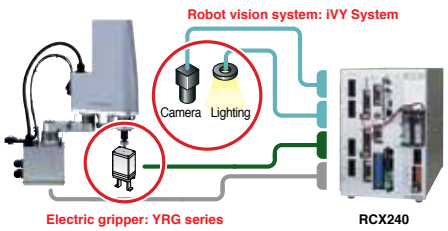
Workpiece drop can be judged. No external sensor is needed.

Single Controller

One multi-axis controller RCX240 unit can control all robot operations including a gripper (using a control board installed in the RCX240). Needs no data exchange with the host device such as PLC, so set-up and start-up are amazingly simple.

Combination with a vision system supports a wide range of applications

Even sophisticated systems can be easily configured by using the YRG series gripper in combination with a controller-integrated robot vision "iVY system".



260-747-3482
www.yamaharobotics.com

TRANSERVO STEPPING MOTOR SINGLE-AXIS ROBOTS

Type	Size (mm) Note 1	Model	Lead (mm)	Maximum payload(kg) Note 2			Maximum speed (mm/sec) Note 3	Stroke (mm)
				Horizontal	Vertical			
					SR	SRD		
SS type (Slide type) Inline model/ Foldback model	W49 × H59	SS04-S SS04-R(L)	12	2	1		600	50 to 400
			6	4	2		300	
			2	6	4		100	
	W55 × H56	SS05-S SS05-R(L)	20	4	-		1000	50 to 800
			12	6	1		600	
			6	10	2		300	
	W55 × H56	SS05H-S SS05H-R(L)	20	6	-		1000	50 to 800
			12	8	2		600 (Horizontal) 500 (Vertical)	
			6	12	4		300 (Horizontal) 250 (Vertical)	
SR type (Rod type) Standard model/ Model with support guide	W48 × H56.5	SR03 SRD03	12	10	4	3.5	500	50 to 200
	W105 × H56.5		6	20	8	7.5	250	
	W48 × H58	SR04 SRD04	12	25	5	4	500	50 to 300
			6	40	12	11	250	
	W135 × H58		2	45	25	24	80	
	W56.4 × H71	SR05 SRD05	12	50	10	8.5	300	50 to 300
			6	55	20	18.5	150	
	W157 × H71		2	60	30	28.5	50	
STH type (Slide type) Inline model/ Foldback model	W45 × H46	STH04-S Note 4	5	6	2		200	50 to 100
	W73 × H51	STH04-R(L)	10	4	1		400	
	W61 × H65	STH06	8	9	2		150	50 to 150
	W106 × H70	STH06-R(L)	16	6	4		400	

Type	High(mm)	Model	Torque type	Rotational torque (N/m)	Maximum pushing torque (N/m)	Maximum speed (mm/sec) Note 3	Rotation range (°)
STH type (Rotary type) Standard/High rigidity	42(Standard) 49(High rigidity)	RF02-N RF02-S	N:Standard	0.22	0.11	420	310(RF02-N) 360(RF02-S)
			H:High torque	0.32	0.16	280	
	53(Standard) 62(High rigidity)	RF03-N RF03-S	N:Standard	0.8	0.4	420	320(RF03-N) 360(RF03-S)
			H:High torque	1.2	0.6	280	
	68(Standard) 78(High rigidity)	RF04-N RF04-S	N:Standard	6.6	3.3	420	320(RF04-N) 360(RF04-S)
			H:High torque	10	5	280	

Type	Size (mm) Note 1	Model	Lead (mm)	Maximum payload(kg) Note 2		Maximum speed (mm/sec) Note 3	Stroke (mm)
				Horizontal	Vertical		
BD type (Belt type)	W40 × H40	BD04	48	1	-	1100	300~1000
	W58 × H48	BD05	48	5	-	1400	300~2000
	W70 × H60	BD07	48	14	-	1500	300~2000

Note 1. Size is the approximate cross sectional size. Note 2. Maximum speed varies with the payload. See the SR type page for more details.
Note 3. Maximum speed decreases due to ball screw critical speed when the stroke is long. See the SR type page for more details. Note 4. STH04-R (L) with 50st brake is not available.

■ **Allowable ambient temperature for robot installation** SS/SR type: 0 to 40°C STH/RF/BD type: 5 to 40°C

PHASER LINEAR MOTOR SINGLE-AXIS ROBOTS

Type	Size (mm) Note 1	Model	Carriage	Maximum payload(kg)	Maximum speed (mm/sec)	Stroke (mm)
MF type Steel cored linear motor with falt magnet	W85 × H80	MF7	Single	10 (7) Note 2	2500	100 to 4000
		MF7D	Double			100 to 3800
	W100 × H80	MF15	Single	30 (15) Note 2		300 to 4000
		MF15D	Double			100 to 3800
	W150 × H80	MF20	Single	40 (20) Note 2		150 to 4050
		MF20D	Double			150 to 3850
		MF30	Single	60 (30) Note 2		100 to 4000
		MF30D	Double			150 to 3750
	W210 × H100	MF75	Single	160 (75) Note 2		1000 to 4000
		MF75D	Double			680 to 3680
MF type Shaft type linear	W60 × H90	MR12	Single	5		50 to 1050
		MR12D	Double			50 to 1050

Note 1. Size is the approximate cross sectional size. Note 2. If using at maximum speed then the payload will be as shown in the ( ).

XY-X CARTESIAN ROBOTS

Model	Arm variations					Number of axes	Maximumpayload (kg)	Maximum stroke (mm)	
	Arm	Gantry	Moving arm	Pole	XZ			X axis	Y axis
PXYx	●	-	-	-	-	2 axes	4.5	150 to 650	50 to 300
FXYx	●	-	-	-	-	2 axes / 3 axes	12	150 to 1050	150 to 550
FXYBx	●	-	-	-	-	2 axes	7	150 to 2450	150 to 550
SXYx	●	-	●	●	●	2 axes / 3 axes / 4 axes	20	150 to 1050	150 to 650
SXYBx	●	-	-	-	●	2 axes / 3 axes / 4 axes	14	150 to 3050	150 to 550
MXYx	●	●	●	●	●	2 axes / 3 axes / 4 axes	30	250 to 1250	150 to 650
NXY	●	-	-	-	-	2 axes / 3 axes	25	500 to 2000	150 to 650
NXY-W	●	-	-	-	-	4 axes / 6 axes	25	250 to 1750	150 to 650
HXYx	●	●	●	●	●	2 axes / 3 axes / 4 axes	40	250 to 1250	250 to 650
HXYLx	●	●	-	-	-	2 axes	40	1150 to 2050	250 to 650

Note. The above maximum payloads are maximum stroke lengths are values when using arm type/cable carrier specifications.

YP-X PICK & PLACE ROBOTS

Model	Axes	Structure				Maximum payload (kg)	Cycle time (sec)
		X axis	Y axis	Y axis	R axis		
YP220BX	2 axes	Belt	-	Belt	-	3	0.45
YP320X		Ball screw	-	Belt	-	3	0.57
YP220BXR	3 axes	Belt	-	Belt	Rotation axis	1	0.62
YP320XR		Ball screw	-	Belt	Rotation axis	1	0.67
YP330X		Ball screw	Ball screw	Belt	-	3	0.57
YP340X	4 axes	Ball screw	Ball screw	Belt	Rotation axis	1	0.67

FLIP-X SINGLE-AXIS ROBOTS

Type	Size (mm)[Note 1]	Model	Lead (mm)	Maximum payload (kg)		Maximum speed (mm/sec)	Stroke (mm)
				Horizontal	Vertical		
T type Frame-less structure model	W45 × H53	T4L/T4LH	12	4.5	1.2	720	50 to 400
			6	6	2.4	360	
			2	6	7.2	120	
	W55 × H52	T5L/T5LH	20	3	-	1200	50 to 800
			12	5	1.2	800	
			6	9	2.4	400	
	W65 × H56	T6L	20	10	-	1333	50 to 800
			12	12	4	800	
			6	30	8	400	
	W94 × H98	T9 (Standard)	30	15	-	1800	150 to 1050
			20	30	4	1200	
			10	55	10	600	
			5	80	20	300	
		T9H (High thrust)	30	25	-	1800	150 to 1050
			20	40	8	1200	
			10	80	20	600	
			5	100	30	300	
F type High rigidity frame model	W80 × H65	F8	20	12	-	1200	150 to 800
			12	20	4	720	
			6	40	8	360	
	W80 × H65	F8L	30	7	-	1800	150 to 1050
			20	20	4	1200	
			10	40	8	600	
			5	50	16	300	
	W80 × H65	F8LH	20	30	-	1200	150 to 1050
			10	60	-	600	
			5	80	-	300	
	W110 × H71	F10	30	15	-	1800	150 to 1050
			20	20	4	1200	
			10	40	10	600	
			5	60	20	300	
	W136 × H83	F14 (Standard)	30	15	-	1800	150 to 1050
			20	30	4	1200	
			10	55	10	600	
			5	80	20	300	
		F14H (High thrust)	30	25	-	1800	
			20	40	8	1200	
			10	80	20	600	
			5	100	30	300	
	W168 × H100	F17L	50	50	10	2200	1100 to 2050
		F17	40	40	-	2400	200 to 1450
			20	80	15	1200	200 to 1250
			10	120	35	600	
	W202 × H115	F20	40	60	-	2400	200 to 1450
			20	120	25	1200	200 to 1250
			10	-	45	600	
	W202 × H120	F20N	20	80	-	1200	1150 to 2050
N type Nut rotation type mode	W145 × H120	N15 (Single carriage)	20	50	-	1200	500 to 2000
		N15D(Double carriage)					250 to 1750
	W180 × H115	N18 (Single carriage)		80	-		500 to 2500
		N18D (Double carriage)					250 to 2250
B type Timing belt drive model	W100 × H81	B10	Belt drive	10	-	1875	150 to 2550
	W146 × H94	B14(Standard)	Belt drive	20	-	1875	150 to 3050
		B14H(High thrust)	Belt drive	30	-	1875	
R type Rotation axis type model	-	R5	-	0.12kgm^2	-	360°/sec	360°
		R10		0.36kgm^2	-		
		R20		1.83kgm^2	-		

Note 1. Size is the approximate cross sectional size.

YK-XG/YK-XR/YK-TW/YK-XGS/YK-XGP SCARA ROBOTS

Type		Model	Arm length (mm)	Maximum payload (kg)	Standard cycle time (sec)※Note 1
Standard	Tiny type	YK120XG	120	1.0	0.33
		YK150XG	150		
		YK180XG	180		
		YK180X	180		0.39
		YK220X	220		0.42
	Small type	YK250XG	250	5.0	0.49
		YK350XG	350		
		YK400XG	400		
		YK400XR	400	3.0	0.45
	Medium type	YK500XGL	500	5.0※Note 2	0.59
		YK500XG	500	10.0	0.45
		YK600XGL	600	5.0※Note 2	0.63
		YK600XG	600	10.0	0.46
		YK600XGH	600	20.0	0.47
		YK700XG	700		0.42
		YK800XG	800		0.48
		YK900XG	900		0.49
		YK1000XG	1000		
	Large type	YK1200X	1200	50	0.91
Wall-mount / inverse type		YK300XGS	300	5.0※Note 2	0.49
		YK400XGS	400		
		YK500XGS	500	10.0	0.45
		YK600XGS	600		0.46
		YK700XGS	700	20.0	0.42
		YK800XGS	800		0.48
		YK900XGS	900		0.49
		YK1000XGS	1000		0.6
Dust-proof & drip-proof type		YK250XGP	250	5.0	0.49
		YK350XGP	350		
		YK400XGP	400		
		YK500XGLP	500	4.0	0.74
		YK500XGP	500	8.0	0.55
		YK600XGLP	600	4.0	0.74
		YK600XGP	600	8.0	0.56
		YK600XGHP	600	18.0	0.57
		YK700XGP	700	18.0	0.52
		YK800XGP	800		0.58
		YK900XGP	900		0.59
		YK1000XGP	1000		0.59
Orbit type		YK500TW	500	4.0※Note 3	0.29

Note 1. Ultra-small type: Maximum payload: 0.1kg (100mm in the horizontal direction, 25mm-reciprocating in the vertical direction, coarse positioning) Orbit type. Maximum payload: 1kg (300mm in the horizontal direction, 25mm-reciprocating in the reciprocating 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. Tool flange specifications are 3 kg.

YRG ELECTRIC GRIPPER

Type	Model	Holding power (N)	Open/close stroke (mm)	Maximum speed (mm/sec)	Repeatability (mm)	Weight (g)
Compact single cam	YRG-2005SS	5	3.2	100	±0.02	90
Single cam	YRG-2010S	6	7.6	100	±0.02	160
	YRG-2815S	22	14.3	100	±0.02	300
	YRG-4225S	40	23.5	100	±0.02	580
Double cam	YRG-2005W	50	5	60	±0.03	200
	YRG-2810W	150	10	60	±0.03	350
	YRG-4220W	250	19.3	45	±0.03	800
Screw type straight style	YRG-2020FS	50	19	50	±0.01	420
	YRG-2840FS	150	38	50	±0.01	880
Screw type “T” style	YRG-2020FT	50	19	50	±0.01	420
	YRG-2840FT	150	38	50	±0.01	890
Three fingers	YRG-2004T	2.5	3.5	100	±0.03	90
	YRG-2013T	2	13	100	±0.03	190
	YRG-2820T	10	20	100	±0.03	340
	YRG-4230T	20	30	100	±0.03	640

- Holding power control: 30 to 100% (1% steps)
- Speed control: 20 to 100% (1% steps)
- Acceleration control: 1 to 100% (1% steps)
- Multipoint position control: 10,000 max.
- Workpiece size judgment: 0.01 mm units (by ZON signal)

CLEANROOM SCARA ROBOTS

Type	Model	Arm length (mm)	Maximum payload (kg)	Standard cycle time (sec)※Note	Beltless structure
Tiny type	YK180XC	180	1	0.42	○
	YK220XC	220	1	0.45	○
Small type	YK250XGC	250	4	0.57	○
	YK350XGC	350	4	0.57	○
	YK400XGC	400	4	0.57	○
Medium type	YK500XC	500	10	0.53	-
	YK500XGLC	500	4	0.74	○
	YK600XC	600	10	0.56	-
	YK600XGLC	600	4	0.74	○
	YK700XC	700	20	0.57	-
	YK800XC	800	20	0.57	-
	YK1000XC	1000	20	0.60	-

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)

CLEANROOM SINGLE-AXIS ROBOTS

Type	Model	Size (mm) Note	Lead (mm)	Maximum payload (kg)		Maximum speed (mm/sec)	Stroke (mm)
				Horizontal	Vertical		
FLIP-XC type	C4L C4LH	W45xH55	12	4.5	1.2	720	50 to 400
			6	6	2.4	360	
			2	6	7.2	120	
	C5L C5LH	W55xH65	20	3	-	1000	50 to 800
			12	5	1.2	800	
			6	9	2.4	400	
	C6L	W65xH65	20	10	-	1000	50 to 800
			12	12	4	800	
			6	30	8	400	
	C8	W80xH75	20	12	-	1000	150 to 800
			12	20	4	720	
			6	40	8	360	
	C8L	W80xH75	20	20	4	1000	150 to 1050
			10	40	8	600	
			5	50	16	300	
	C8LH	W80xH75	20	30	-	1000	150 to 1050
			10	60	-	600	
			5	80	-	300	
	C10	W104xH85	20	20	4	1000	150 to 1050
			10	40	10	500	
			5	60	20	250	
	C14	W136xH96	20	30	4	1000	150 to 1050
			10	55	10	500	
			5	80	20	250	
	C14H	W136xH96	20	40	8	1000	150 to 1050
			10	80	20	500	
			5	100	30	250	
	C17	W168xH114	20	80	15	1000	250 to 1250
			10	120	35	600	
	C17L	W168xH114	50	50	10	1000	1150 to 2050
	C20	W202xH117	20	120	25	1000	250 to 1250
			10	-	45	500	
SSC type (TRANSERVO)	SSC04	W49xH59	12	2	1	600	50 to 400
			6	4	2	300	
			2	6	4	100	
	SSC05	W55xH56	20	4	-	1000	50 to 800
			12	6	1	600	
			6	10	2	300	
	SSC05H	W55xH56	20	6	-	1000	50 to 800
			12	8	2	600(Horizontal)/ 500(Vertical)	
			6	12	4	300(Horizontal)/ 250(Vertical)	

Note. Size is the approximate cross sectional size.

CLEANROOM CARTESIAN ROBOTS

Type	Model	Axes	Moving range (mm)	Maximum speed (mm/sec)	Maximum payload (kg)
2 axes	SXYxC	X	150 to 1050mm	1000	20
		Y	150 to 650mm	1000	
3 axes	SXYxC (ZSC12)	X	150 to 1050mm	1000	3
		Y	150 to 650mm	1000	
		Z	150mm	1000	
	SXYxC (ZSC6)	X	150 to 1050mm	1000	5
		Y	150 to 650mm	1000	
		Z	150mm	500	
4 axes	SXYxC (ZRSC12)	X	150 to 1050mm	1000	3
		Y	150 to 650mm	1000	
		Z	150mm	1000	
		R	360°	1020°/sec	
	SXYxC (ZRSC6)	X	150 to 1050mm	1000	5
		Y	150 to 650mm	1000	
		Z	150mm	500	
		R	360°	1020°/sec	

YAMAHA MOTOR CO., LTD.

IM Operations

882 Soude, Naka-ku, Hamamatsu, Shizuoka 435-0054, Japan
Tel 81-53-460-6103 Fax 81-53-460-6811

URL http://global.yamaha-motor.com/business/robot/
E-mail robotn@yamaha-motor.co.jp

DISTRIBUTED BY

9105 Clubridge Drive • Fort Wayne, IN 46809
PO Box 9218 • Fort Wayne, IN 46899-9218
Phone: 260-747-3482 • Fax: 260-747-3832
www.yamaharobotics.com

201402-AE