

Efficiency In Production

NEW Option specifications have been added.

- Through-shaft/through-cap
- Brake release switch



YAMAHA SCARA ROBOTS LOW COST HIGH PERFORMANCE MODEL

YK-XE series

High performance × Durability × Economy

Maximum payload

10kg

Heavy workpieces are also supported.

Suitable for transfer or assembly process of automotive parts.



Efficiency and reliability in production at affordable price

YK-XE series

Low cost high performance models that achieve both the high operation performance and affordable price

510mm arm length model YK510XE-10 has been newly added. Now, the YK-XE series provide four models with an arm length ranging from 400 mm to 710 mm.

Easy to use arm length and maximum payload contribute to optimization of the customer's production equipment and cost reduction of the equipment investment.



YK400XE-4

▶ Optimal for transfer and assembly of automotive parts

Maximum payload **10kg***

* YK510XE-10, YK610XE-10, YK710XE-10

Providing Efficiency

▶ Improvement of productivity by high-speed operation

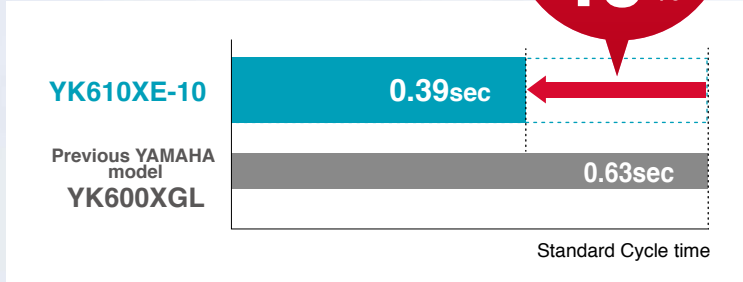
By reviewing the arm structure, the vibration is reduced and the motion is optimized to shorten the standard cycle time.

High-speed, less-vibration, and agile operation contributes to improvement of the productivity.

Reduced by approx. **40%**

Standard cycle time **0.39sec***

* For YK610XE-10



Efficiency In Production



Efficiency and Quality in production with Affordable price.

Model	Arm length	Maximum payload	Standard cycle time	R-axis tolerable moment of inertia
YK400XE-4	400mm	4kg	0.41sec	0.05kgm ²
YK510XE-10	510mm	10kg	0.38sec	0.3kgm ²
YK610XE-10	610mm	10kg	0.39sec	0.3kgm ²
YK710XE-10	710mm	10kg	0.42sec	0.3kgm ²

► **For a wide variety of applications** **Maximum payload 4kg to 10kg**

Assembly

Packaging

Palletizing

Sorting

Inspection

Labelling

Soldering

The models support a wide variety of fields such as assembly work that requires a high precision or food sorting work that requires a high-speed operation. As the maximum payload is 10 kg, heavy workpieces such as automotive parts can also be supported.

► **Application Examples**

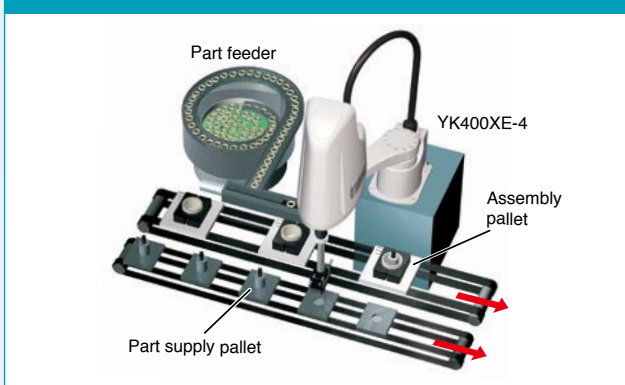
Palletizing



Loading and unloading



Assembly (or Pick & Place)



Inspection



► **Affordable Price and Improved Performance**

Both the high operation performance and affordable price are achieved. Production equipment with high cost performance can be constructed.



YK400XE-4



YK510XE-10



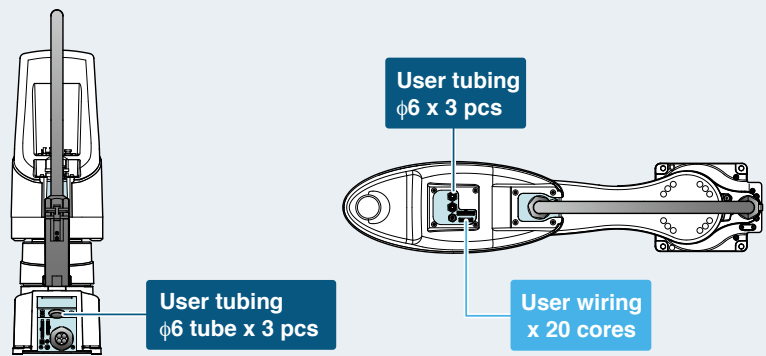
YK610XE-10



YK710XE-10

▶ Improved User Interface

Enhanced size and numbers of air tubes and user I/O for end effectors.
Tubes and wires are positioned for easy layout and reduced risk of disconnection.
(YK610XE-10 and YK710XE-10)



* YK400XE-4 provides the user wiring x 10 cores and the User tubing φ4 x 3 pcs.

▶ In Yamaha YK-XE series Acceleration/Deceleration is optimized automatically

The optimal acceleration and deceleration are automatically selected from the arm posture at the time of operation start and the arm posture at the time of operation end.

The motor peak torque or the tolerable peak torque of the speed reducer is not exceeded by inputting only three parameters*.

The full power of the motor is always output to maintain the high acceleration/deceleration.

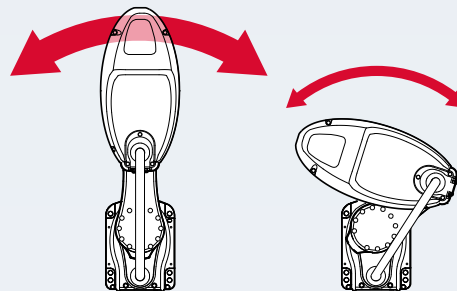
* Payload, R-axis moment of inertia, and offset amount of R-axis moment of inertia

Inertia of extended arm can be as high as 5 times of that of folded arm



This optimization feature helps:

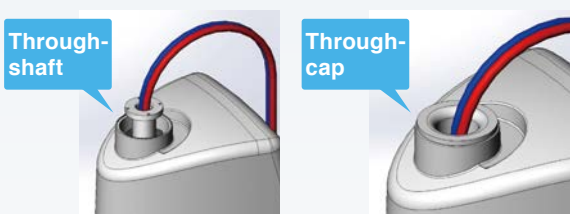
- Extends service/maintenance period
- Minimizes vibration during operation
- Controllability in motion
- Keeps peak torque within a tolerance to prevent premature failure



▶ Through-shaft and through-cap have been added. NEW

Option specifications

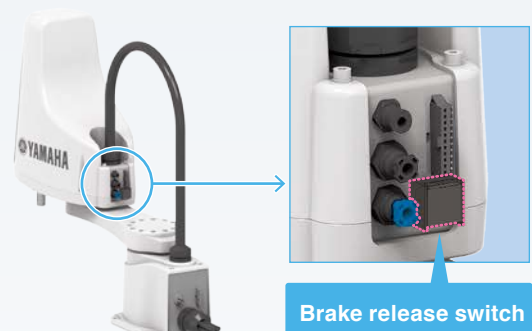
“Through-shaft” or “through-cap” option for wiring and tubing that is convenient to run the air tubing and wiring can be selected. The wiring and tubing routes can be investigated easily without designing and manufacturing a stay for installing the wiring and tubing. In addition, by passing the wiring and tubing through the inside of the main body, worries about wire breakage or disconnection are reduced during operation. (Only through-shaft is available in YK400XE-4.)



▶ Brake release switch is selectable. NEW

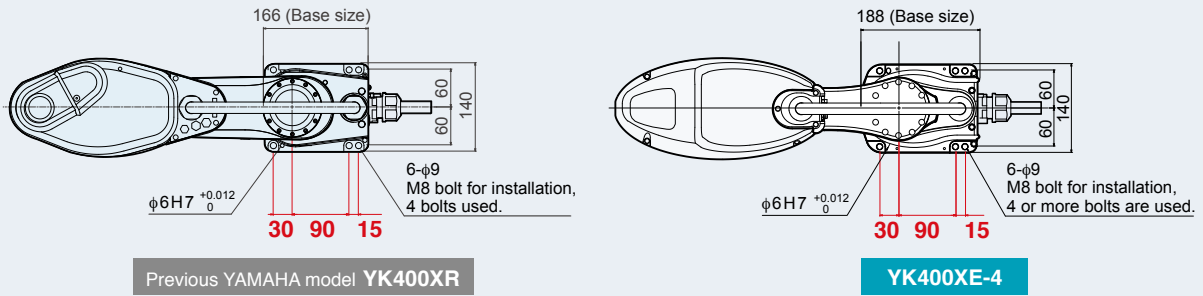
Option specifications

In the emergency stop state, the Z-axis brake is released and the Z-axis can be moved up or down while the brake release switch is held down. Releasing the switch applies the brake to the Z-axis. This improves the convenience during installation adjustment.



► Drop-In upgrade by common platform design

The installation position of the YK400XE-4 is fully compatible with that of the conventional model YK400XR. This ensures easy replacement work.



Previous YAMAHA model YK400XR

YK400XE-4

► Easier operation in combination with the RCX340 controller

RCX340 comprehensive controller brings out maximum potential of YK400XE robot system. Optional integrated vision system "RCXiVY2+" provides simplified image processing. Choice of PC Programming Software or Teaching Pendant available.



Robot vision
[RCXiVY2+]



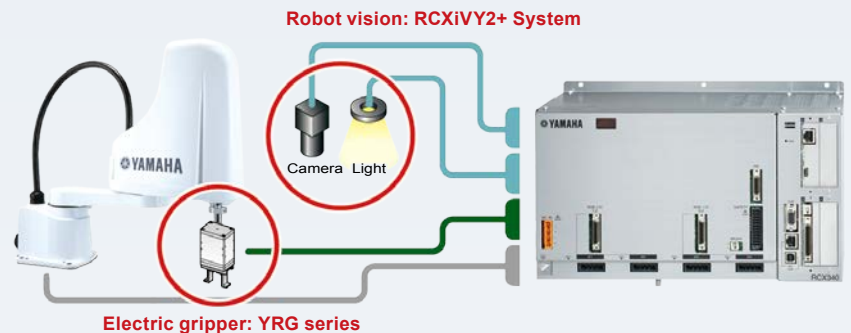
Programming box
[PBX]



Support software
[RCX-Studio 2020]

► Simple and Easy integration of Vision System

Robot controller with vision and gripper interface



► Compatible with various field networks

The robot is compatible with full field networks such as CC-Link, EtherNet/IP™, DeviceNet™, PROFIBUS, PROFINET, and EtherCAT.



► Reliability backed by 44-year experience of SCARA robot development

Originally developed in-house to provide durable and accurate motion control in harsh environment of motorcycle manufacturing, Yamaha SCARA robot has been "road tested" and proven over 44 years in various fields.

* The product release was 1984.



YK400XE-4

Standard type: Small type

LOW COST HIGH PERFORMANCE MODEL



Arm length 400mm Maximum payload 4kg

Ordering method

YK400XE-4	150						RCX340-4			
Model	Maximum payload	Return-to-origin method S: Sensor T: Stroke end	Z axis stroke	Hollow shaft No entry: None S: With hollow shaft	Brake release switch No entry: None BS: With brake release switch	Cable 3L: 3.5m 5L: 5m 10L: 10m	Controller / Number of controllable axes	Safety standard	Option A to E (OP.A to E)	Absolute battery

Specify various controller setting items.
* For details about controller, refer to the RCX340 catalog or view YAMAHA's website.

Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	225 mm	175 mm	150 mm	-
	Rotation angle	+/-132 °	+/-150 °	-	+/-360 °
AC servo motor output		200 W	100 W	100 W	100 W
Deceleration mechanism	Transmission method	Direct-coupled		Timing belt	
	Motor to speed reducer Speed reducer to output	Direct-coupled		Timing belt	
Repeatability ^{Note 1}		+/-0.01 mm	+/-0.01 mm	+/-0.01 °	
Maximum speed		6 m/sec	1.1 m/sec	2600 °/sec	
Maximum payload		4 kg (Standard specification, Option specifications ^{Note 4}), 3 kg (Option specifications ^{Note 5})			
Standard cycle time: with 2kg payload ^{Note 2}		0.41 sec			
R-axis tolerable moment of inertia ^{Note 3}		0.05 kgm ²			
User wiring		0.2 sq × 10 wires			
User tubing (Outer diameter)		φ 4 × 3			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		17 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)
Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions and performing the coarse positioning arch operation.
Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and offset amount for R-axis moment of inertia settings.
Note 4. Maximum payload of the standard or option specifications (brake release switch type) is 4 kg.
Note 5. Maximum payload of the option specifications (user wiring/tubing through shaft type) is 3 kg.

Controller

Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

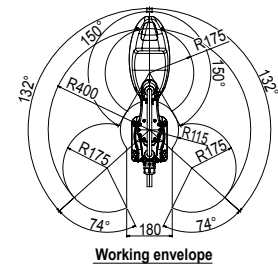
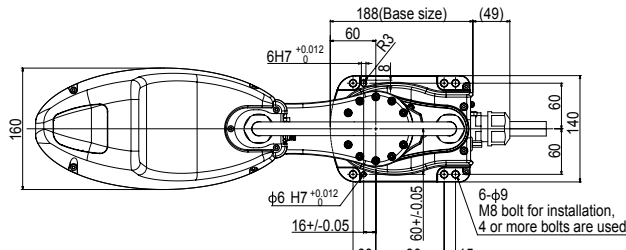
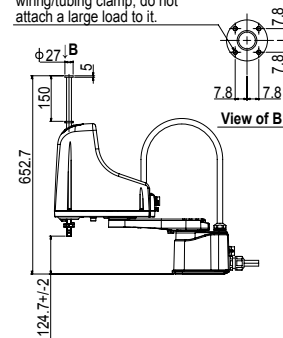
Note. The movement range can be restricted by adding the X- and Y-axis mechanical stoppers. (The maximum movement range was set at shipment.)
See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

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YK400XE-4

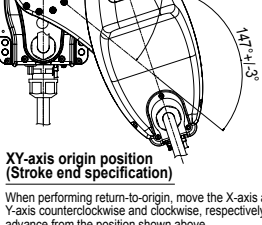
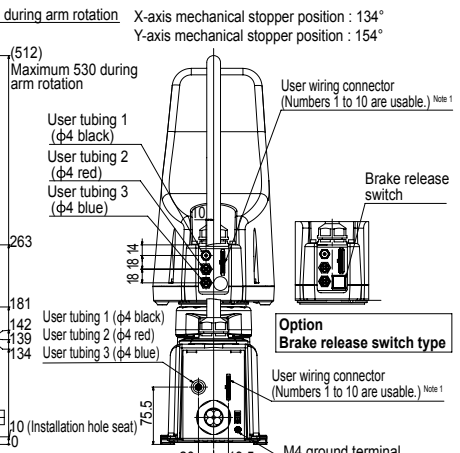
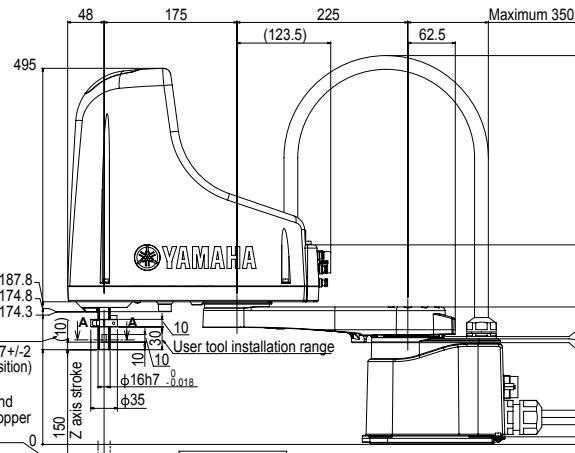
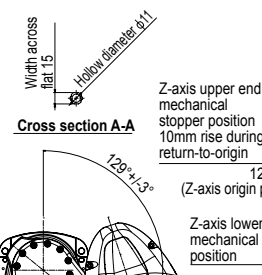
4-M3 × 0.5 through-hole (No phase relation to R-axis origin.)
As this hole is intended for the wiring/tubing clamp, do not attach a large load to it.



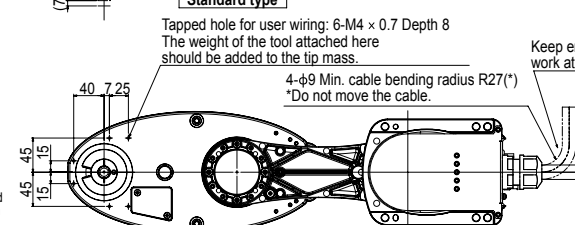
Working envelope

X-axis mechanical stopper position : 134°
Y-axis mechanical stopper position : 154°

Option User wiring/tubing through shaft type



When performing return-to-origin, move the X-axis and Y-axis counterclockwise and clockwise, respectively in advance from the position shown above.



Note 1: J.S.T. Mfg. Co., Ltd.
SM connector: SMR-11V-B
Pin: SYM-001T-P0.6 is attached.
Use AP-K2N for the crimping machine.

YK510XE-10

Standard type: Medium type

● LOW COST HIGH PERFORMANCE MODEL



- Arm length 510mm
- Maximum payload 10kg

Ordering method

YK510XE-10-200

RCX340-4

Model	Maximum payload	Z axis stroke	Tool flange	Hollow shaft/cap ^{Note 1}	Brake release switch	Cable	Controller / Number of controllable axes	Safety standard	Option A to E (OP.A to E)	Absolute battery
			No entry: None F: With tool flange	No entry: None S: With hollow shaft C: With hollow cap	No entry: None BS: With brake release switch	3L: 3.5m 5L: 5m 10L: 10m				

Specify various controller setting items.
* For details about controller, refer to the RCX340 catalog or view YAMAHA' s website.

Note. The return-to-origin method is provided only in the sensor specifications, but not in the stroke end specifications.

Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	235 mm	275 mm	200 mm	-
	Rotation angle	+/-134 °	+/-152 °	-	+/-360 °
AC servo motor output		400 W	200 W	200 W	200 W
Deceleration mechanism	Transmission method	Direct-coupled		Timing belt	
	Motor to speed reducer Speed reducer to output	Direct-coupled		Timing belt	
Repeatability ^{Note 1}		+/-0.01 mm		+/-0.01 mm	+/-0.01 °
Maximum speed		7.8 m/sec		2 m/sec	2600 °/sec
Maximum payload		10 kg (Standard specification, Option specifications ^{Note 4}), 9 kg (Option specifications ^{Note 5})			
Standard cycle time: with 2kg payload ^{Note 2}		0.38 sec			
R-axis tolerable moment of inertia ^{Note 3}		0.3 kgm ²			
User wiring		0.2 sq × 20 wires			
User tubing (Outer diameter)		φ 6 × 3			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		25 kg			

Controller

Controller	Power capacity (VA)	Operation method
RCX340	1700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

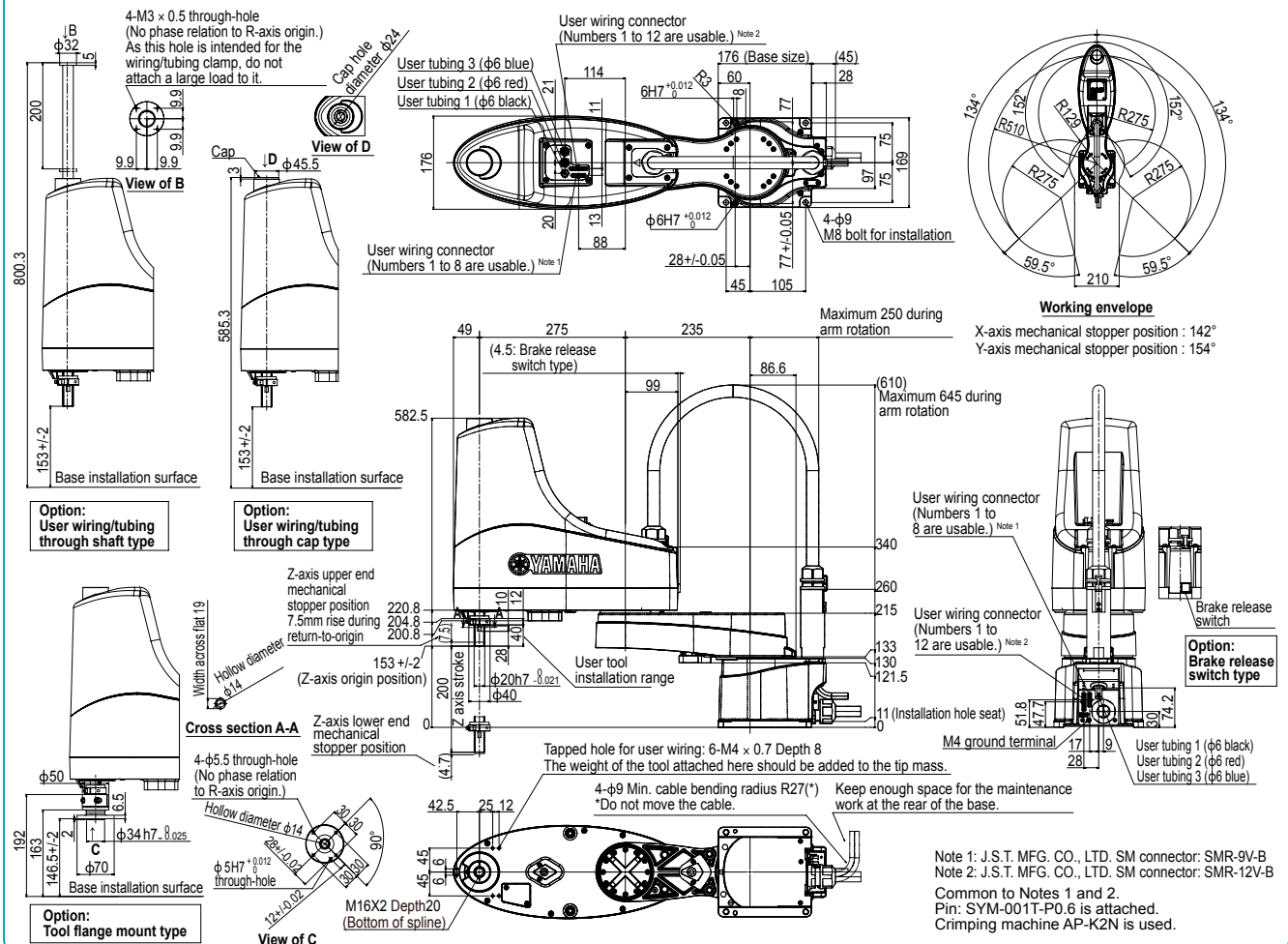
Note. The movement range can be restricted by adding the X- and Y-axis mechanical stoppers. (The maximum movement range was set at shipment.)
See our robot manuals (installation manuals) for detailed information.

Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

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Note 1. This is the value at a constant ambient temperature. (X,Y axes)
Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions and performing the coarse positioning arch operation.
Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and offset amount for R-axis moment of inertia settings.
Note 4. Maximum payload of the standard or option specifications (brake release switch type, user wiring/tubing through cap type) is 10 kg.
Note 5. Maximum payload of the option specifications (tool flange mount type, user wiring/tubing through shaft type) is 9 kg.

YK510XE-10



YK610XE-10

Standard type: Medium type

● LOW COST HIGH PERFORMANCE MODEL



- Arm length 610mm
- Maximum payload 10kg

Ordering method

YK610XE - 10 - 200

Model	Maximum payload	Z axis stroke	Tool flange	Hollow shaft/cap ^{Note 1}	Brake release switch	Cable	Controller / Number of controllable axes	Safety standard	Option A to E (OPA to E)	Absolute battery
			No entry: None F: With tool flange	No entry: None S: With hollow shaft C: With hollow cap	No entry: None BS: With brake release switch	3L: 3.5m 5L: 5m 10L: 10m	RCX340-4			

Specify various controller setting items.
* For details about controller, refer to the RCX340 catalog or view YAMAHA' s website.

Note. The return-to-origin method is provided only in the sensor specifications, but not in the stroke end specifications.

Specifications

		X-axis	Y-axis	Z-axis	R-axis
Axis specifications	Arm length	335 mm	275 mm	200 mm	-
	Rotation angle	+/-134 °	+/-152 °	-	+/-360 °
AC servo motor output		400 W	200 W	200 W	200 W
Deceleration mechanism	Transmission method	Direct-coupled		Timing belt	
	Motor to speed reducer Speed reducer to output	Direct-coupled		Timing belt	
Repeatability ^{Note 1}		+/-0.01 mm		+/-0.01 mm	+/-0.01 °
Maximum speed		8.6 m/sec		2 m/sec	2600 °/sec
Maximum payload		10 kg (Standard specification, Option specifications ^{Note 4}), 9 kg (Option specifications ^{Note 5})			
Standard cycle time: with 2kg payload ^{Note 2}		0.39 sec			
R-axis tolerable moment of inertia ^{Note 3}		0.3 kgm ²			
User wiring		0.2 sq × 20 wires			
User tubing (Outer diameter)		φ 6 × 3			
Travel limit		1.Soft limit 2.Mechanical stopper (X,Y,Z axis)			
Robot cable length		Standard: 3.5 m Option: 5 m, 10 m			
Weight		25 kg			

Note 1. This is the value at a constant ambient temperature. (X,Y axes)
 Note 2. When reciprocating 300mm in horizontal and 25mm in vertical directions and performing the coarse positioning arch operation.
 Note 3. The acceleration coefficient is set automatically in accordance with the tip weight and offset amount for R-axis moment of inertia settings.
 Note 4. Maximum payload of the standard or option specifications (brake release switch type, user wiring/tubing through cap type) is 10 kg.
 Note 5. Maximum payload of the option specifications (tool flange mount type, user wiring/tubing through shaft type) is 9 kg.

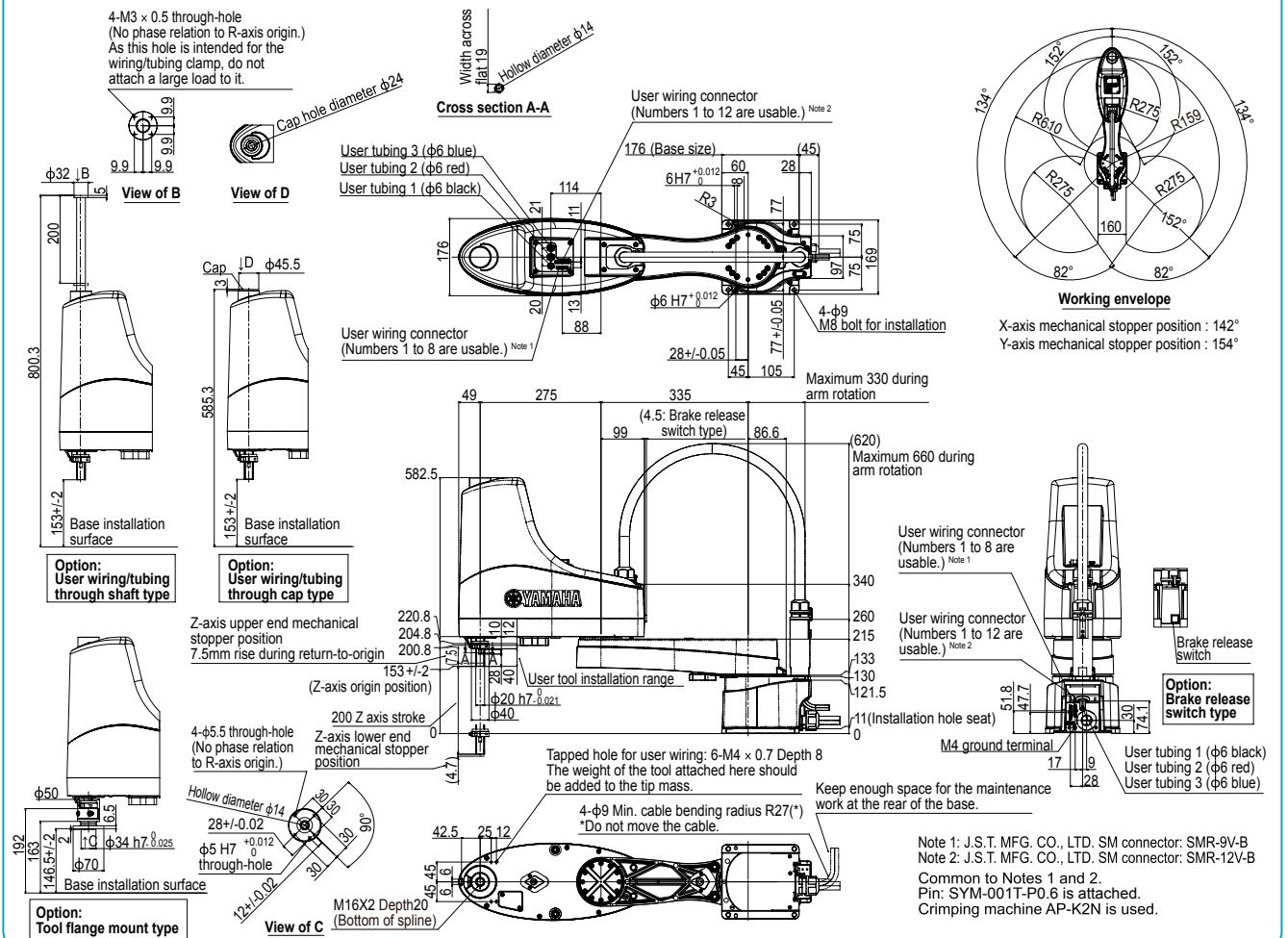
Controller

Controller	Power capacity (VA)	Operation method
RCX340	1700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Note. The movement range can be restricted by adding the X- and Y-axis mechanical stoppers. (The maximum movement range was set at shipment.)
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 Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

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YK610XE-10



YAMAHA SCARA ROBOTS LINEUP

Wide variation of models with an arm length ranging from 120 mm to 1200 mm.
Wall hanging, dust/drip proof, and clean room specifications are also supported.

■ Standard type / Wall mount • inverse type / Dust-proof & drip-proof type

Type	Model	Arm length (mm) and XY axis resultant maximum speed (m/s)													Standard cycle time (sec) ^{Note 1}	Maximum payload (kg)	R-axis tolerable moment of inertia (kgm ²)	Completely beltless structure ^{Note 2}				
		120	150	180	220	250	300	350	400	500	600	700	800	900					1000	1200		
Orbit type	YK350TW	5.6													0.32	5.0	0.005 (Rated) 0.05 (Maximum)					
	YK500TW	6.8													0.29	5.0	0.005 (Rated) 0.05 (Maximum)					
Standard type	Extra small type	YK120XG	3.3															0.33	1.0	0.01	●	
		YK150XG	3.4															0.33	1.0	0.01	●	
		YK180XG	3.3															0.33	1.0	0.01	●	
		YK180X	3.3															0.39	1.0	0.01	●	
		YK220X	3.4															0.42	1.0	0.01	●	
	Small type	YK250XG	4.5																0.43	5.0	0.05	●
		YK350XG	5.6																0.44	5.0	0.05	●
		YK400XE-4	6.0																0.41	4.0	0.05	●
		YK400XG	6.1																0.45	5.0	0.05	●
		YK500XGL	5.1																0.48	5.0	0.05	●
	Medium type	YK500XG	7.6																0.42	10.0	0.30	●
		YK510XE-10	7.8																0.38	10.0	0.30	●
		YK600XGL	4.9																0.54	5.0	0.05	●
		YK600XG	8.4																0.43	10.0	0.30	●
		YK610XE-10	8.6																0.39	10.0	0.30	●
	Large type	YK600XGH	7.7																0.47	20.0	1.0	●
		YK700XGL	9.2																0.50	10.0	0.30	●
		YK710XE-10	9.5																0.42	10.0	0.30	●
		YK700XG	8.4																0.42	20.0	1.0	●
		YK800XG	9.2																0.48	20.0	1.0	●
Wall mount / inverse type	YK900XG	9.9																0.49	20.0	1.0	●	
	YK1000XG	10.6																0.49	20.0	1.0	●	
	YK1200X	7.4															0.91	50.0	2.45	●		
	YK300XGS	4.4																0.49	5.0	0.05	●	
	YK400XGS	6.1																0.49	5.0	0.05	●	
	YK500XGS	7.6																0.45	10.0	0.3	●	
	YK600XGS	8.4																0.46	10.0	0.3	●	
	YK700XGS	8.4																0.42	20.0	1.0	●	
	YK800XGS	9.2																0.48	20.0	1.0	●	
	YK900XGS	9.9																0.49	20.0	1.0	●	
Dust-proof & drip-proof type	YK1000XGS	10.6																0.49	20.0	1.0	●	
	YK250XGP	4.5																0.50	4.0	0.05	●	
	YK350XGP	5.6																0.52	4.0	0.05	●	
	YK400XGP	6.1																0.50	4.0	0.05	●	
	YK500XGLP	5.1																0.66	4.0	0.05	●	
	YK500XGP	7.6																0.55	10.0	0.3	●	
	YK600XGLP	4.9																0.71	4.0	0.05	●	
	YK600XGP	8.4																0.56	10.0	0.3	●	
	YK600XGHP	7.7																0.57	18.0	1.0	●	
	YK700XGP	8.4																0.52	20.0	1.0	●	
Large type	YK800XGP	9.2																0.58	20.0	1.0	●	
	YK900XGP	9.9																0.59	20.0	1.0	●	
	YK1000XGP	10.6																0.59	20.0	1.0	●	

Note 1. The standard cycle time is measured under the following conditions.
 • During back and forth movement 25mm vertically and 100mm horizontally (extra small type)
 • During back and forth movement 25mm vertically and 300mm horizontally (small type / medium type / large type)
 Note 2. Maintains high accuracy over long periods because the beltless structure drastically cuts down on wasted motion.
 Operation is also nearly maintenance-free for long periods with no worries about belt breakage, stretching or deterioration over time.

■ CLEAN type

Type	Model	Arm length (mm) and XY axis combined maximum speed (m/s)													Standard cycle time (sec)	Maximum payload (kg)	R axis tolerable moment of inertia (kgm ²)			
		120	150	180	220	250	300	350	400	500	600	700	800	900				1000	1200	
Extra small type	YK180XC	3.3m/s																0.42	1.0	0.01
	YK220XC	3.4m/s																0.45	1.0	0.01
Small type	YK250XGC	4.5m/s																0.50	4.0	0.05
	YK350XGC	5.6m/s																0.52	4.0	0.05
	YK400XGC	6.1m/s																0.50	4.0	0.05
Medium type	YK500XGLC	5.1m/s																0.66	4.0	0.05
	YK500XC	4.9m/s																0.53	10.0	0.12
	YK600XGLC	4.9m/s																0.71	4.0	0.05
Large type	YK600XC	5.6m/s																0.56	10.0	0.12
	YK700XC	6.7m/s																0.57	20.0	0.32
	YK800XC	7.3m/s																0.57	20.0	0.32
	YK1000XC	8.0m/s																0.60	20.0	0.32



Safety Precautions

Read the instruction manual thoroughly to operate the robot in a correct manner.

● Specifications and appearance are subject to change without prior notice.

202208-EE



YAMAHA

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