

Two new additions to  
YK-XE SCARA Robot series

Increased maximum  
payload capacity  
10 kg

High performance



Durability



Economy

**Efficiency In Production**



Efficiency and reliability in production at affordable price

YAMAHA SCARA ROBOTS  
LOW COST HIGH PERFORMANCE MODEL

YK400XE-4 / YK610XE-10 / YK710XE-10

**YK-XE** series

### New addition of higher payload models to YK-XE series.

In addition to existing 400 mm horizontal arm reach YK400-XE, models with 10 kg payload capacity and 610 mm and 710 mm arm reach are added to YK-XE lineup.

#### Optimal for transfer and assembly of automotive parts

Maximum payload **10kg**<sup>Note</sup>

Note. For YK610XE-10 and YK710XE-10



Providing Efficiency and Quality in production with Affordable price.

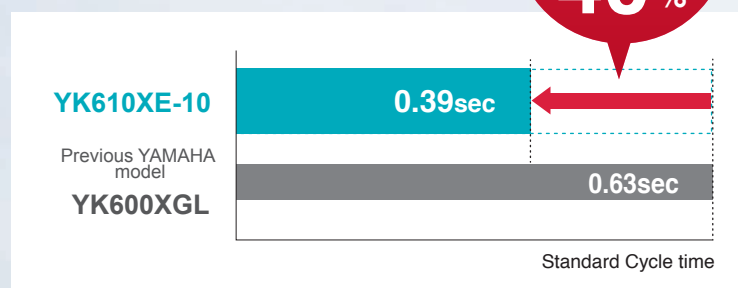
#### Improvement of productivity by high-speed operation

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.

Standard cycle time **0.39sec**<sup>Note</sup>

Note. For YK610XE-10



Model	Arm length	Maximum payload	Standard cycle time	R-axis tolerable moment of inertia
YK400XE-4	400mm	4kg	0.41sec	0.05kgm <sup>2</sup>
<b>NEW</b> YK610XE-10	610mm	10kg	0.39sec	0.3kgm <sup>2</sup>
<b>NEW</b> YK710XE-10	710mm	10kg	0.42sec	0.3kgm <sup>2</sup>



## YK-XE series



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

Assembly Packaging Palletizing Sorting Inspection Labelling Soldering

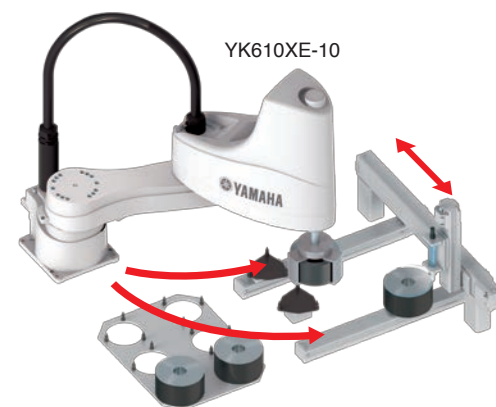
The models support a wide variety of fields such as assembly work that requires a high precision or food sorting work that requires a high-speed operation. As the maximum payload is 10 kg, heavy workpieces such as automotive parts can also be supported.

### ► Application Examples

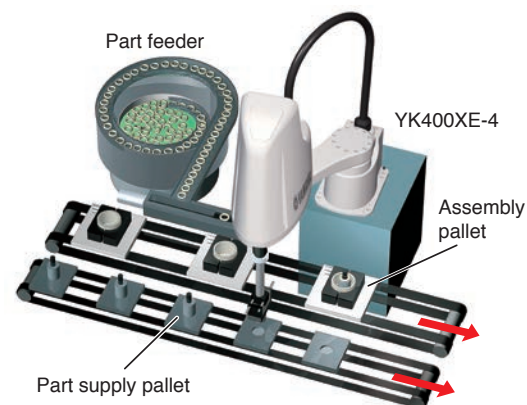
#### Palletizing



#### 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

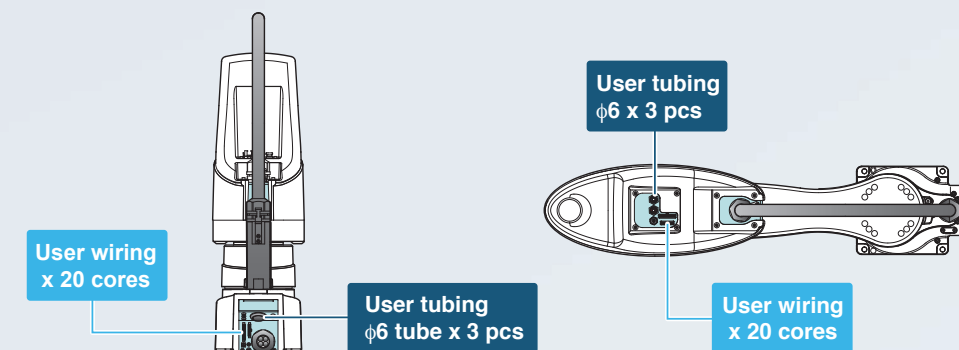
YK610XE-10

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  $\phi 4 \times 3$  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\*.

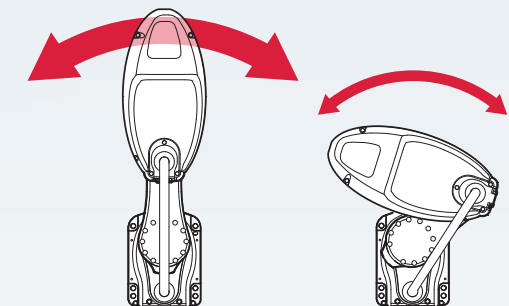
The full power of the motor is always output to maintain the high acceleration/deceleration.

\* 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

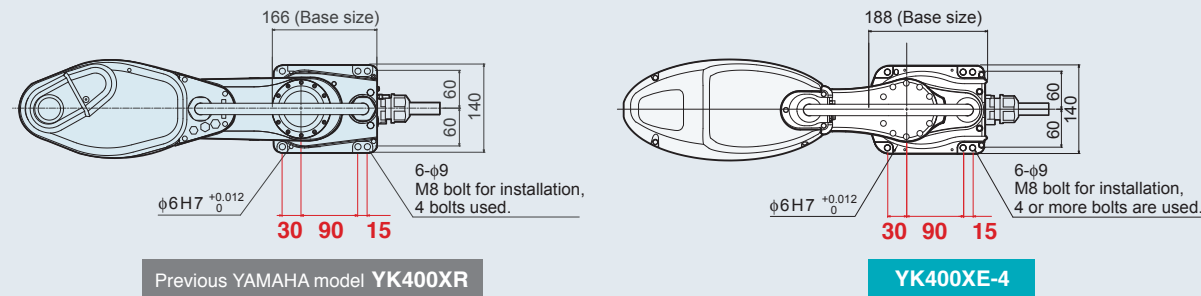
This optimization feature helps:

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



- **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.



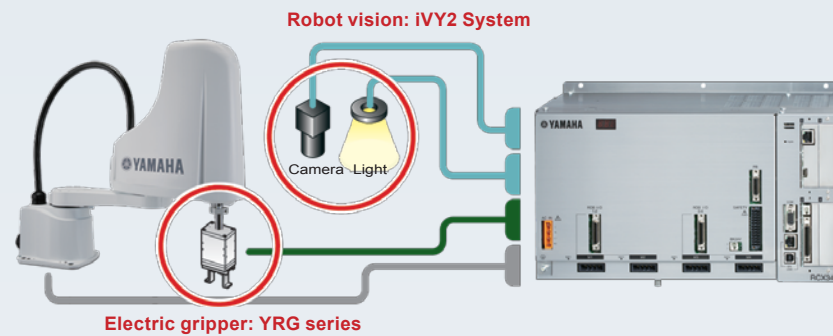
➤ **Easier operation in combination with the RCX340 controller**

RCX340 comprehensive controller brings out maximum potential of YK400XE robot system. Optional integrated vision system "iVY2" provides simplified image processing. Choice of PC Programming Software or Teaching Pendant available.



➤ **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 43-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 43 years in various fields.

\* The product release was 1984.



# YK400XE-4

**Standard type: Small type**

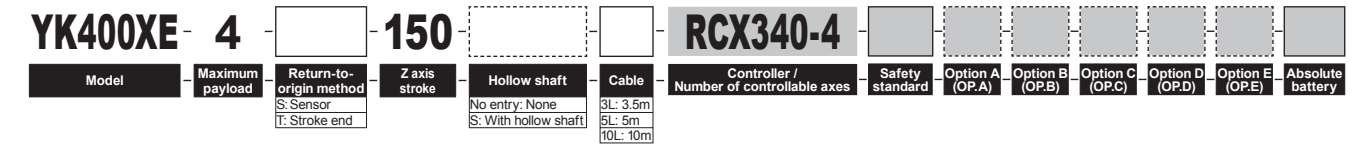
● **LOW COST HIGH PERFORMANCE MODEL**



● Arm length 400mm

- Maximum payload 4kg

### Ordering method



Note. 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	Motor to speed reducer	Direct-coupled		Timing belt	
		Speed reducer to output	Direct-coupled			
Repeatability <sup>Note 1</sup>			+/-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), 3 kg (Option specifications) <sup>Note 4)</sup>			
Standard cycle time: with 2kg payload <sup>Note 2</sup>			0.41 sec			
R-axis tolerable moment of inertia <sup>Note 3</sup>			0.05 kgm <sup>2</sup> (0.5 kgfcm <sup>2</sup> )			
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 option specifications (with user wiring/tubing through spline type) is 3kg.

#### Controller

Controller	Power capacity (VA)	Operation method
RCX340	1000	Programming / 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.

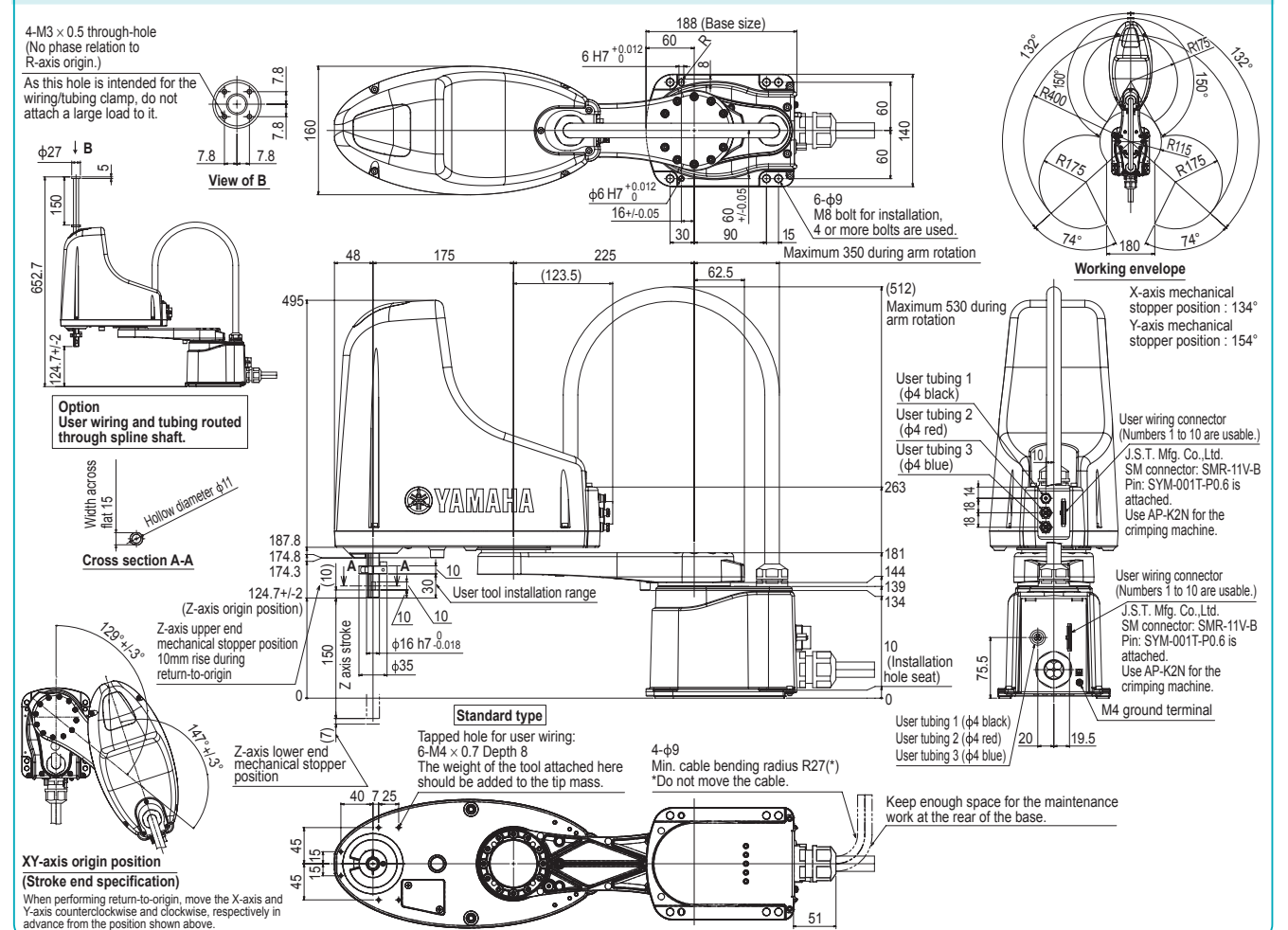
Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

Our robot manuals (installation manuals) can be downloaded from our website at the address below:  
**<https://global.yamaha-motor.com/business/robot/>**

## YK400XE-4

4-M3  $\times$  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.





# 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	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
			No entry: None F: With tool flange	No entry: None S: With hollow shaft	3L: 3.5m 6L: 5m 10L: 10m								

Note. 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

Axis specifications	Arm length	X-axis	Y-axis	Z-axis	R-axis
	Rotation angle	335 mm	275 mm	200 mm	-
		+/-134 °	+/-152 °	-	+/-360 °
AC servo motor output		400 W	200 W	200 W	200 W
Deceleration mechanism	Transmission method	Motor to speed reducer	Direct-coupled	Timing belt	
		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), 9 kg (Option specifications)		Note 4
Standard cycle time: with 2kg payload	Note 2		0.39 sec		
R-axis tolerable moment of inertia	Note 3		0.3 kgm <sup>2</sup>		
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 option specifications (with user wiring/tubing through spline type) is 9kg.

## Controller

Controller	Power capacity (VA)	Operation method
RCX340	1700	Programming / 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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# YK710XE-10

Standard type: Large type

● LOW COST HIGH PERFORMANCE MODEL



● Arm length 710mm ● Maximum payload 10kg

## Ordering method

YK710XE - 10 - 200

Model	Maximum payload	Z axis stroke	Tool flange	Hollow shaft	Cable	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Option C (OP.C)	Option D (OP.D)	Option E (OP.E)	Absolute battery
			No entry: None F: With tool flange	No entry: None S: With hollow shaft	3L: 3.5m 6L: 5m 10L: 10m								

Note. 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

Axis specifications	Arm length	X-axis	Y-axis	Z-axis	R-axis
	Rotation angle	435 mm	275 mm	200 mm	-
		+/-134 °	+/-152 °	-	+/-360 °
AC servo motor output		400 W	200 W	200 W	200 W
Deceleration mechanism	Transmission method	Motor to speed reducer	Direct-coupled	Timing belt	
		Speed reducer to output	Direct-coupled	Timing belt	
Repeatability	Note 1		+/-0.02 mm	+/-0.01 mm	+/-0.01 °
Maximum speed			9.5 m/sec	2 m/sec	2600 °/sec
Maximum payload			10 kg (Standard specification), 9 kg (Option specifications)		Note 4
Standard cycle time: with 2kg payload	Note 2		0.42 sec		
R-axis tolerable moment of inertia	Note 3		0.3 kgm <sup>2</sup>		
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			26 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 option specifications (with user wiring/tubing through spline type) is 9kg.

## Controller

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

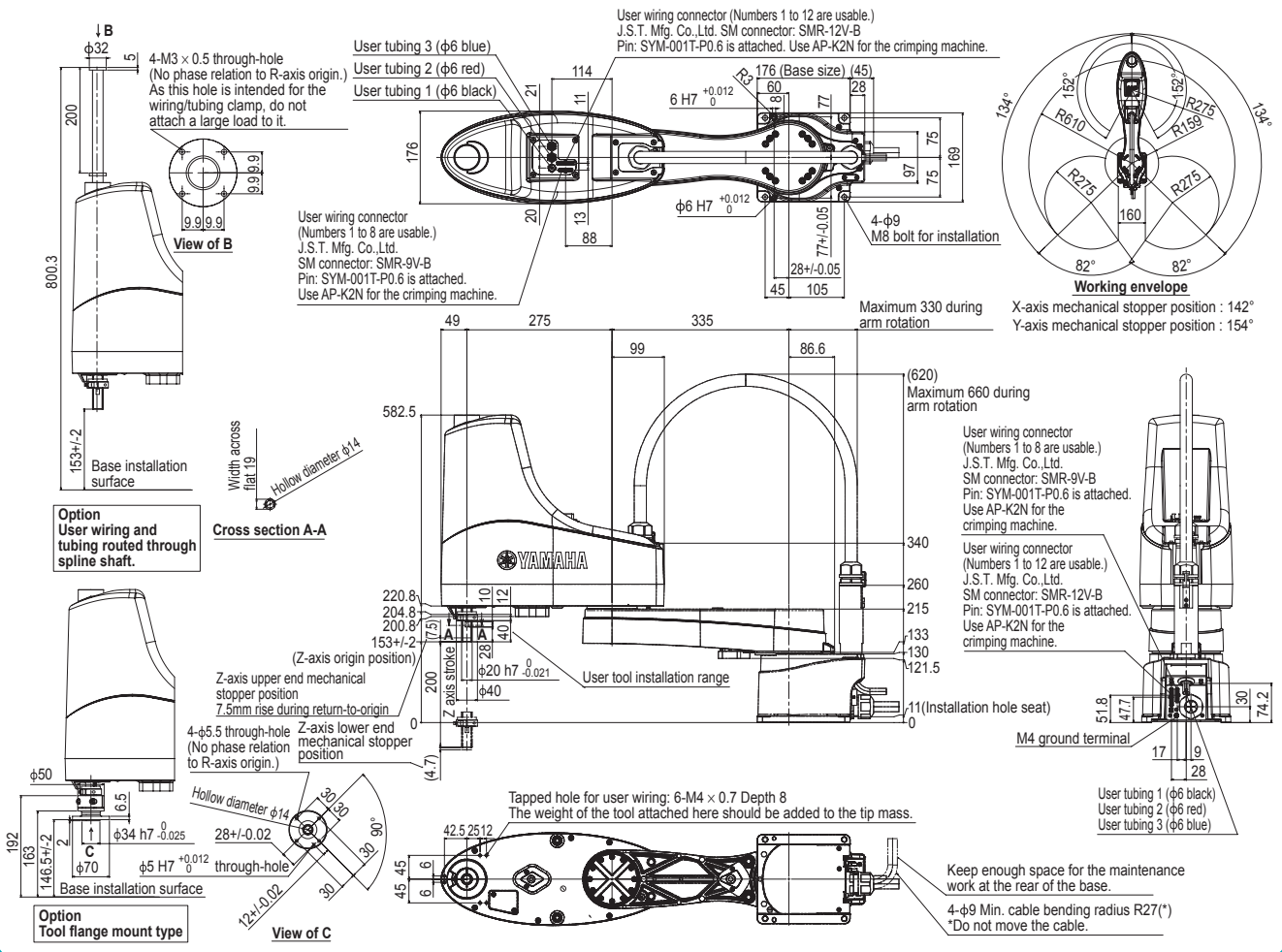
Note. The movement range can be limited by changing the positions of X and Y axis mechanical stoppers. (The movement range is set to the maximum at the time of shipment.)

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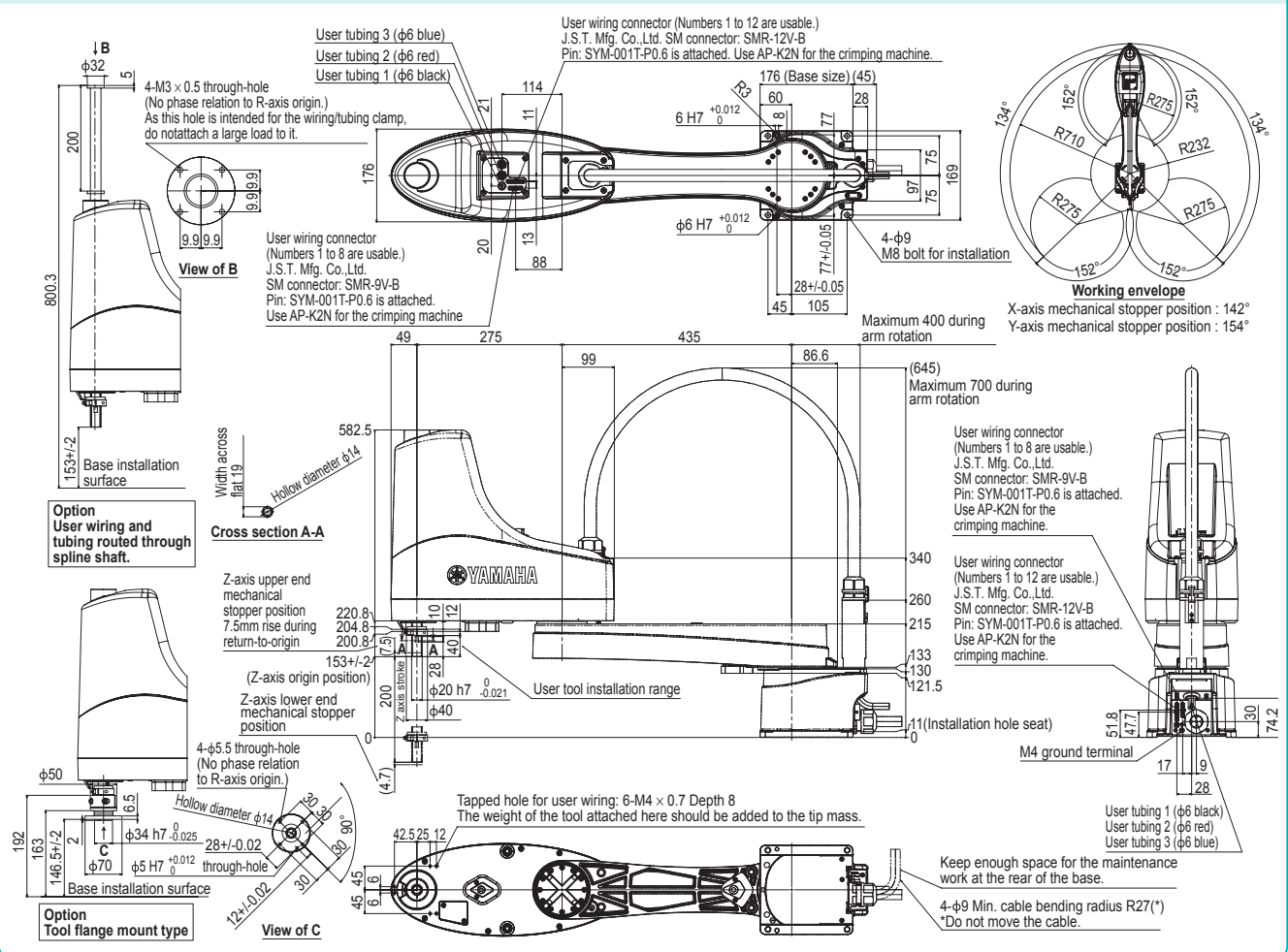
Note. To set the standard coordinates with high accuracy, use a standard coordinate setting jig (option). Refer to the user's manual (installation manual) for more details.

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## YK610XE-10



## YK710XE-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) <small>Note 1</small>	Maximum payload (kg)	R-axis tolerable moment of inertia (kgm <sup>2</sup> )	Completely beltless structure <small>Note 2</small>		
		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	●		
	Medium type	YK500XGL	5.1																0.48	5.0	0.05	●	
		YK500XG	7.6																0.42	10.0	0.30	●	
		YK610XE-10	8.6																0.39	10.0	0.30		
YK600XGL		4.9																0.54	5.0	0.05	●		
YK600XG		8.4																0.43	10.0	0.30	●		
YK600XGH		7.7																0.47	20.0	1.0	●		
Large type		YK710XE-10	9.5																0.42	10.0	0.30		
		YK700XGL	9.2																0.50	10.0	0.30	●	
	YK700XG	8.4																0.42	20.0	1.0	●		
	YK800XG	9.2																0.48	20.0	1.0	●		
	YK900XG	9.9																0.49	20.0	1.0	●		
	YK1000XG	10.6																0.49	20.0	1.0	●		
Wall mount / inverse type	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	●		
	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 resultant maximum speed (m/s)															Standard cycle time (sec)	Maximum payload (kg)	R-axis tolerable moment of inertia (kgm <sup>2</sup> )	
		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
	YK600XC	5.6m/s																0.56	10.0	0.12
Large type	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

MEMO