



New product information

Efficiency In Production



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.



YK400XE-4

YK510XE-10

YK610XE-10

YK710XE-10



Robotics Operations FA Section

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Efficiency and reliability in production at affordable price

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.



► **Optimal for transfer and assembly of automotive parts**

Maximum payload **10kg**

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

Providing Efficiency and Quality in production with Affordable price.

► **Improvement of productivity by high-speed operation**

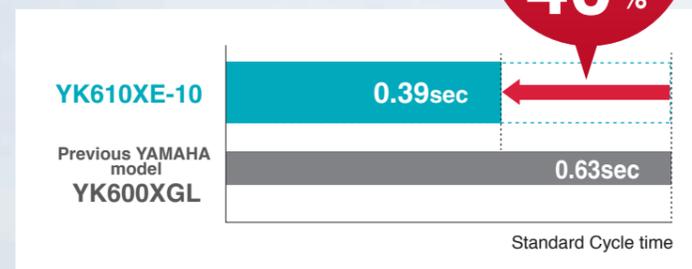
By reviewing the arm structure, the vibration is reduced and the motion is optimized to shorten the standard cycle time.

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

Reduced by approx. **40%**

Standard cycle time **0.39sec**

* 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 ² |
| NEW 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 |

YK-XE series



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

- Assembly
- Packaging
- Palletizing
- Sorting
- Inspection
- Labelling
- Soldering

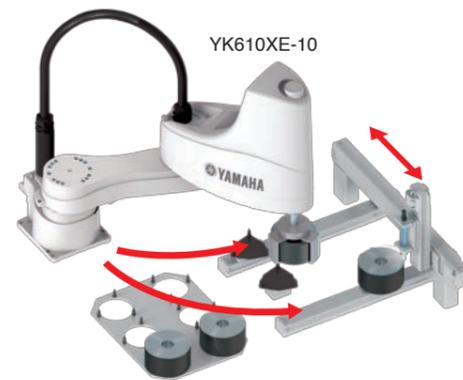
The models support a wide variety of fields such as assembly work that requires a high precision or food sorting work that requires a high-speed operation. As the maximum payload is 10 kg, heavy workpieces such as automotive parts can also be supported.

► Application Examples

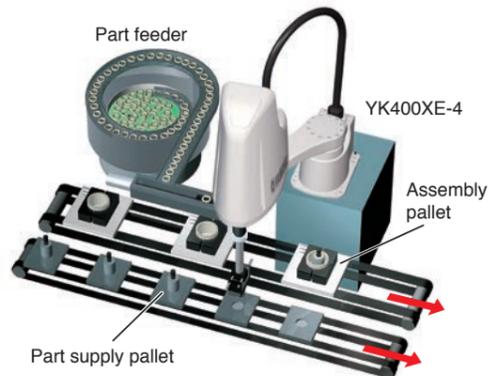
Palletizing



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

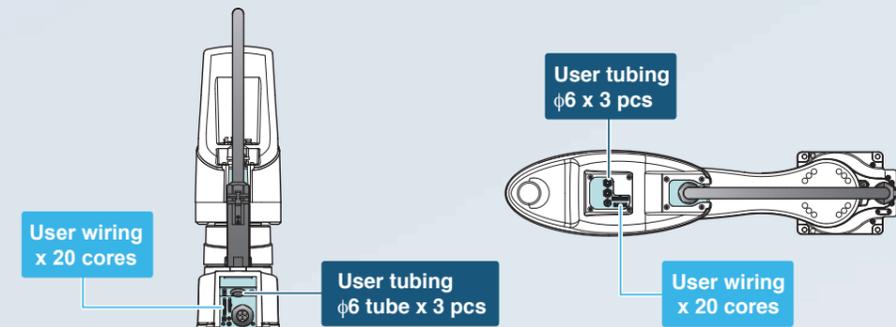
YK510XE-10

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

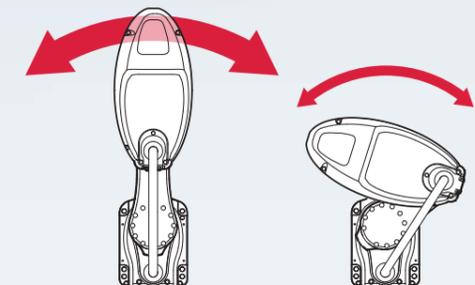
The optimal acceleration and deceleration are automatically selected from the arm posture at the time of operation start and the arm posture at the time of operation end.

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

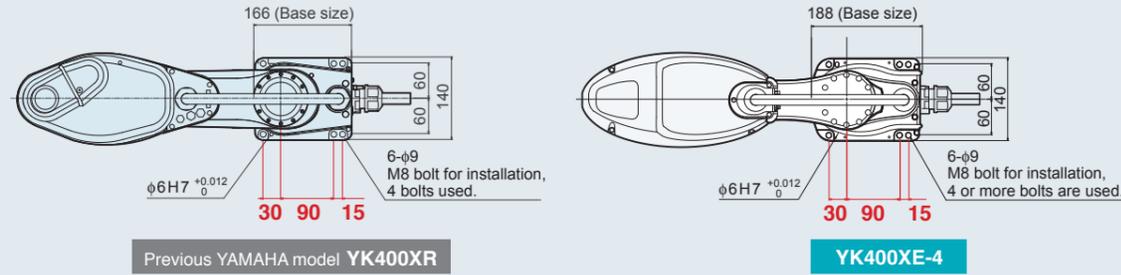


This optimization feature helps:

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

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.



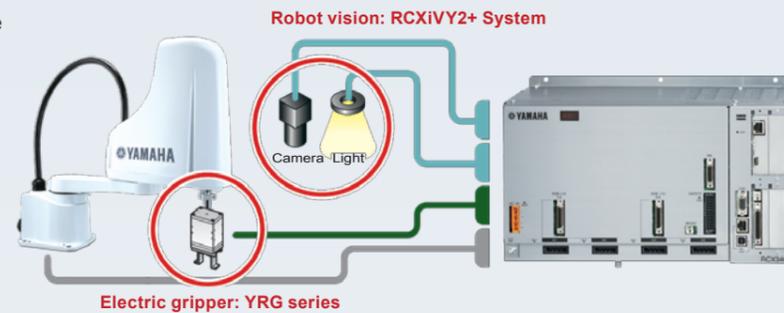
Easier operation in combination with the RCX340 controller

RCX340 comprehensive controller brings out maximum potential of YK400XE robot system. Optional integrated vision system "RCXiVY2+" 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 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

| | | | | | | | | | | | | | | | | | | | |
|--|--|-----|----------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Model | YK400XE-4 | 150 | RCX340-4 | | | | | | | | | | | | | | | | |
| Maximum payload | 4 | 150 | RCX340-4 | | | | | | | | | | | | | | | | |
| Return-to-origin method | S: Sensor T: Stroke end | | | | | | | | | | | | | | | | | | |
| Z axis stroke | | | | | | | | | | | | | | | | | | | |
| Hollow shaft | No entry: None S: With hollow shaft | | | | | | | | | | | | | | | | | | |
| Cable | 3L: 3.5m 5L: 5m 10L: 10m | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | |

Note. For details about controller, refer to the RCX340 catalog or view YAMAHA's website.

Specifications

| Axis specifications | X-axis | Y-axis | Z-axis | R-axis |
|---|--|----------------|-------------|-------------|
| 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 | Direct-coupled | | Timing belt |
| Speed reducer to output | Direct-coupled | | Timing belt | |
| | Timing belt | | Timing belt | |
| Repeatability ^{Note 1} | +/-0.01 mm | | +/-0.01 mm | |
| Maximum speed | 6 m/sec | | 1.1 m/sec | |
| Maximum payload | 4 kg (Standard specification), 3 kg (Option specifications ^{Note 4}) | | | |
| Standard cycle time: with 2kg payload ^{Note 2} | 0.41 sec | | | |
| R-axis tolerable moment of inertia ^{Note 3} | 0.05 kgm ² (0.5 kgfcm 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 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

