YP-X
Series

Product Lineup

PICK & PLACE ROBOTS

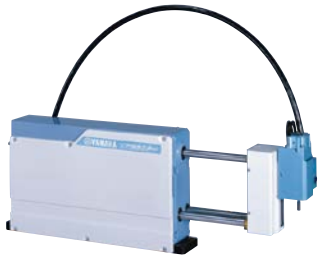
Ideal for small components high-speed pick & place work.
Positioning is made by servo control, so no complex mechanical adjustments are needed.

Full lineup of 6 models in all from 2 axes to 4 axes

2 axes type

YP220BX/YP320X

3 axes type



YP220BXR/YP320XR/YP330X

4 axes type

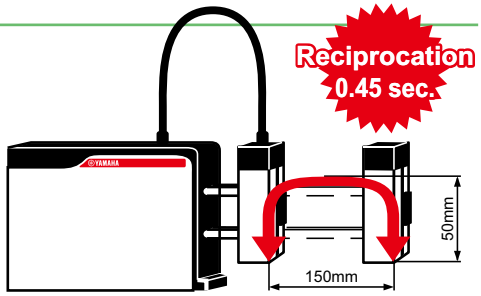
YP340X

Model	Axis	Structure				Maximum payload (kg)	Cycle time (sec.)
		X-axis	Y-axis	Z-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

POINT 1

High speed

Super high-speed pick & place operation with a standard cycle time of 0.45 sec. (YP220BX with up/down 50 mm, back/forth 150 mm, arch amount 50, load 1 kg) greatly contributes to improvement of the productivity. Since it is possible to output a signal to turn on/off any external equipment from any position while the axis is moving, the actual production cycle time is further improved.



POINT 2

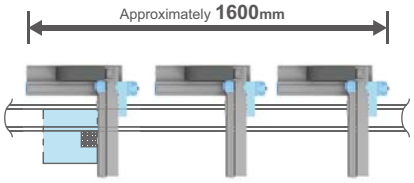
Compact

Use of a compact size with an overall with of 109 mm (YP220BX) makes it possible to make the production line compact and simple. The moving arm structure with less interference with surroundings contributes to space saving.

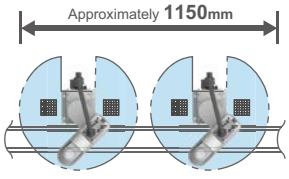
Reference examples of robot layout comparisons

The compactness can be checked by comparing the occupied spaces when the YP-X series and YAMAHA's Cartesian/SCARA robots are laid out.

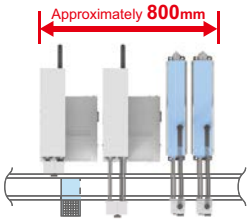
■ Line using YAMAHA's compact Cartesian robot PXYx
X-axis stroke: 250 mm
Y-axis stroke: 250 mm



■ Line using YAMAHA's compact SCARA robot YK250XG



■ Line using pick & place utilizing space saving



POINT 3

High accuracy

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

POINT 4

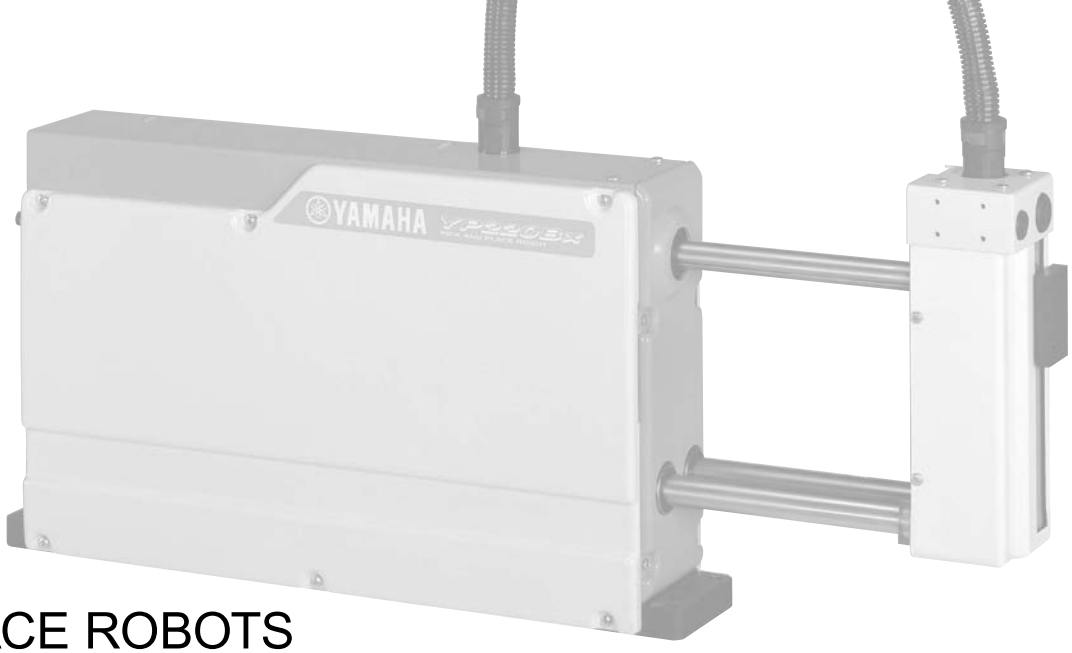
Complete absolute position system

As the complete absolute position system is used, no return-to-origin operation is needed.

POINT 5

Versatility

Use of YAMAHA's unique servo system makes it possible to freely program the stop point and operation pattern settings. This robot is applicable to production of many models in small quantities that cannot be supported by the cam type robot.



PICK & PLACE ROBOTS

YP-X SERIES

CONTENTS

YP-X SPECIFICATION SHEET

Type	Model	Maximum payload (kg)	Cycle time (sec) Note 1	Structure		Moving range	Detailed info page
2-axes	YP220BX	3	0.45	X-axis	Belt	200mm	P.507
				Z-axis	Belt	100mm	
	YP320X	3	0.57	X-axis	Ball screw	330mm	P.508
				Z-axis	Belt	100mm	
3-axes	YP220BXR	1	0.62	X-axis	Belt	200mm	P.509
				Z-axis	Belt	100mm	
				R-axis	Rotation axis	+/-180°	
	YP320XR	1	0.67	X-axis	Ball screw	330mm	P.510
				Z-axis	Belt	100mm	
				R-axis	Rotation axis	+/-180°	
	YP330X	3	0.57	X-axis	Ball screw	330mm	P.511
				Y-axis	Ball screw	150mm	
				Z-axis	Belt	100mm	
4-axes	YP340X	1	0.67	X-axis	Ball screw	330mm	P.512
				Y-axis	Ball screw	150mm	
				Z-axis	Belt	100mm	
				R-axis	Rotation axis	+/-180°	

Note 1. Cycle time is the time required for moving back and forth 150mm (arch 50) and vertically 50mm (during rough-positioning motion with 1kg load).

Robot ordering method description

In the order format for the YAMAHA pick & place robots YP-X series, the notation (letters/numbers) for the mechanical section is shown linked to the controller section notation.

[Example]

■ 2-axis specifications

● **Mechanical ▶ YP220BX**
- Robot cable length ▷ 3.5m

● **Controller ▶ RCX320**

● **Ordering method**

YP220BX-3L-RCX320-2-N-NS-2

Mechanical section — Controller section

①Model	②Cable length	③Controller	④No. of controllable axes	⑤Safety standards	⑥Controller option A (OP.A)	⑦Controller option B (OP.B)	⑧Vision System	⑨Absolute battery
YP220BX YP320X	3L 3.5m 5L 5m 10L 10m	RCX320						

To find detailed controller information see the controller page. **RCX320 ▶** P.626

■ 3 / 4 axis specifications

● **Mechanical ▶ YP340X**
- Robot cable length ▷ 5m

● **Controller ▶ RCX340**

● **Ordering method**

YP340X-5L-RCX340

Mechanical section — Controller section

①Model	②Cable length	③Controller	④No. of controllable axes	⑤Safety standards	⑥Controller option A (OP.A)	⑦Controller option B (OP.B)	⑧Controller option C (OP.C)	⑨Controller option D (OP.D)	⑩Controller option E (OP.E)	⑪Absolute battery
YP220BXR YP320XR YP330X YP340X	3L 3.5m 5L 5m 10L 10m	RCX340								

To find detailed controller information see the controller page. **RCX340 ▶** P.636

Robot ordering method terminology

① Model	Enter the robot unit model.
② Cable length	Select the length of the robot cable connecting the robot and controller. **3L**: 3.5m **5L**: 5m **10L**: 10m
③ Controller	**2-axis specifications:** Select the RCX320. **3 / 4 axis specifications:** Select the RCX340.

YP220BX 2 axes

Ordering method

YP220BX – [ ] – **RCX320-2** – [ ] – [ ] – [ ] – [ ] – [ ] – [ ]

Model	Cable length	Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Vision System	Absolute battery
YP220BX	3L: 3.5m 5L: 5m 10L: 10m	RCX320-2					

Specify various controller setting items. RCX320 ▶ P.626

Specifications

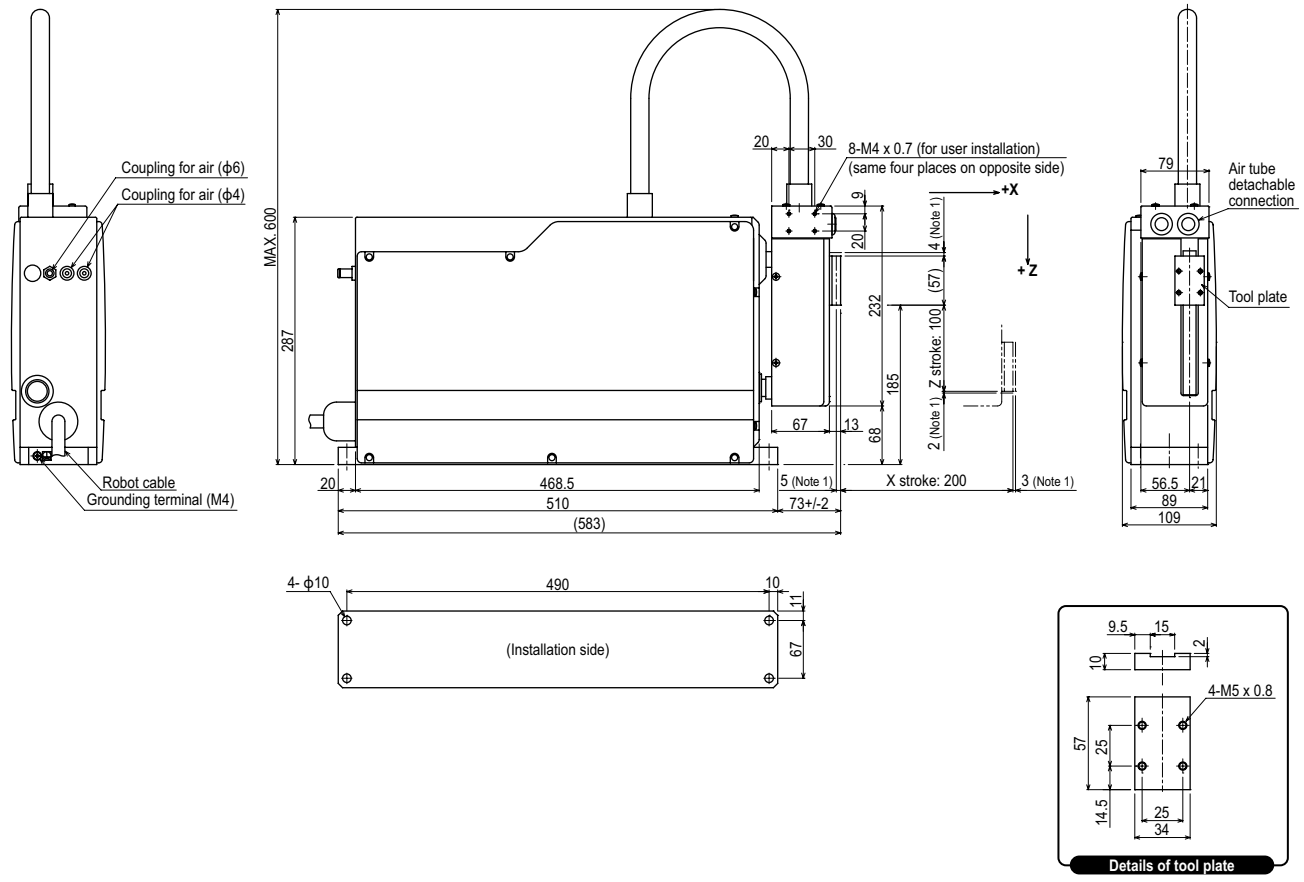
	X axis	Z axis
AC servo motor output (W)	200	200
Repeatability Note 1 (mm)	+/-0.05	+/-0.05
Drive system	Timing belt	Timing belt
Deceleration ratio (mm)	Equivalent to lead 24	Equivalent to lead 20
Maximum speed Note 2 (mm/sec)	1440	1200
Moving range (mm)	200	100
Cycle time (sec)	0.45 Note 3	
Maximum payload (kg)	3	
Robot cable length (m)	Standard: 3.5 Option: 5,10	
Weight (kg)	17	

Note 1. Positioning repeatability precision in a single swing when residual vibration is stabilized (variable depending on the load and stroke).
Note 2. When the moving stroke is short, the maximum speed may not be reached.
Note 3. Reciprocating time in vertical direction (50mm) and longitudinal direction (150mm) with the arch amount of 50 (when executing rough-positioning arch motion with 1kg load).

Controller

Controller	Power consumption (VA)	Operating method
RCX320	500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

YP220BX



Note 1. Distance to mechanical stopper.
Note 2. Return-to-origin on the YP220BX is by absolute reset. So the origin position must be set the first time (making initial settings) but after that is not required.

Controller RCX320 ▶ 626

YP320X 2 axes

Ordering method

YP320X	-		-	RCX320-2						
Model		Cable length 3L: 3.5m 5L: 5m 10L: 10m		Controller / Number of controllable axes	Safety standard	Option A (OP.A)	Option B (OP.B)	Vision System		Absolute battery

Specify various controller setting items. RCX320 ▶ P.626

Specifications

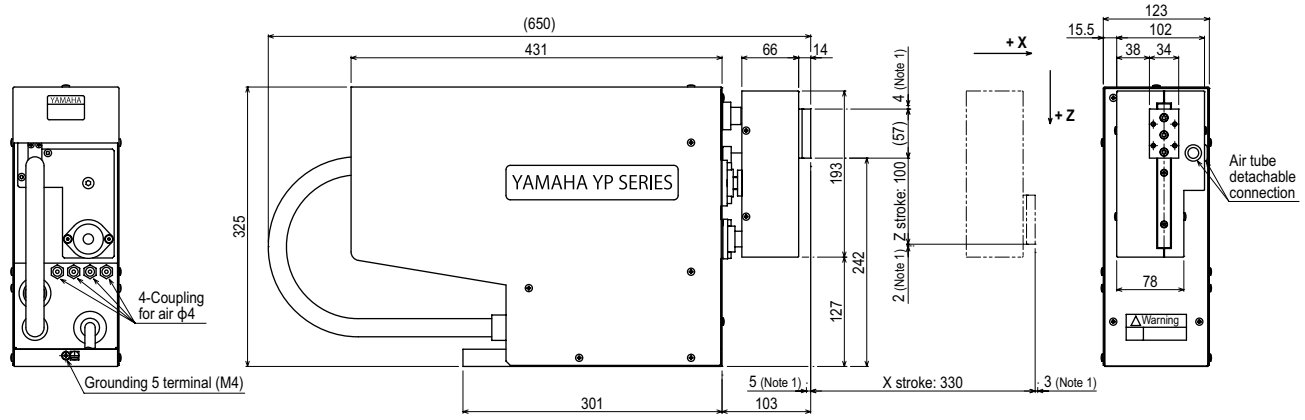
	X axis	Z axis
AC servo motor output (W)	200	200
Repeatability Note 1 (mm)	+/-0.02	+/-0.05
Drive system	Ball screw ϕ15	Timing belt
Deceleration ratio (mm)	Equivalent to lead 20	Equivalent to lead 25
Maximum speed Note 2 (mm/sec)	1500	1500
Moving range (mm)	330	100
Cycle time (sec)	0.57 Note 3, 0.78 Note 4	
Maximum payload (kg)	3	
Robot cable length (m)	Standard: 3.5 Option: 5,10	
Weight (kg)	21	

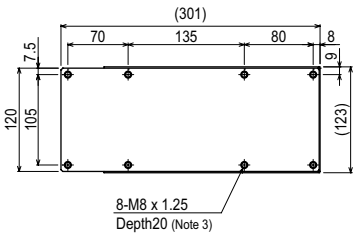
Note 1. Positioning repeatability precision in a single swing when residual vibration is stabilized (variable depending on the load and stroke).
Note 2. When the moving stroke is short, the maximum speed may not be reached.
Note 3. Reciprocating time in vertical direction (50mm) and longitudinal direction (150mm) with the arch amount of 50 (when executing rough-positioning arch motion with 1kg load).
Note 4. Reciprocating time in vertical direction (25mm) and longitudinal direction (300mm) with the arch amount of 25 (when executing rough-positioning arch motion with 1kg load).

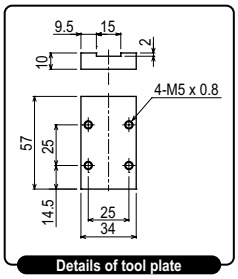
Controller

Controller	Power consumption (VA)	Operating method
RCX320	500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

YP320X







Note 1. Distance to mechanical stopper.
Note 2. Return-to-origin on the YP320X is by absolute reset. So the origin position must be set the first time (making initial settings) but after that is not required.
Note 3. Do not use bolts longer than 20mm (robot bottom plate thickness).

YP220BXR 3 axes

Ordering method

YP220BXR - [ ] - **RCX340-3** - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

Model	Cable length	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
YP220BXR	3L: 3.5m 5L: 5m 10L: 10m	RCX340-3							

Specify various controller setting items. RCX340 ▶ P.636

Specifications

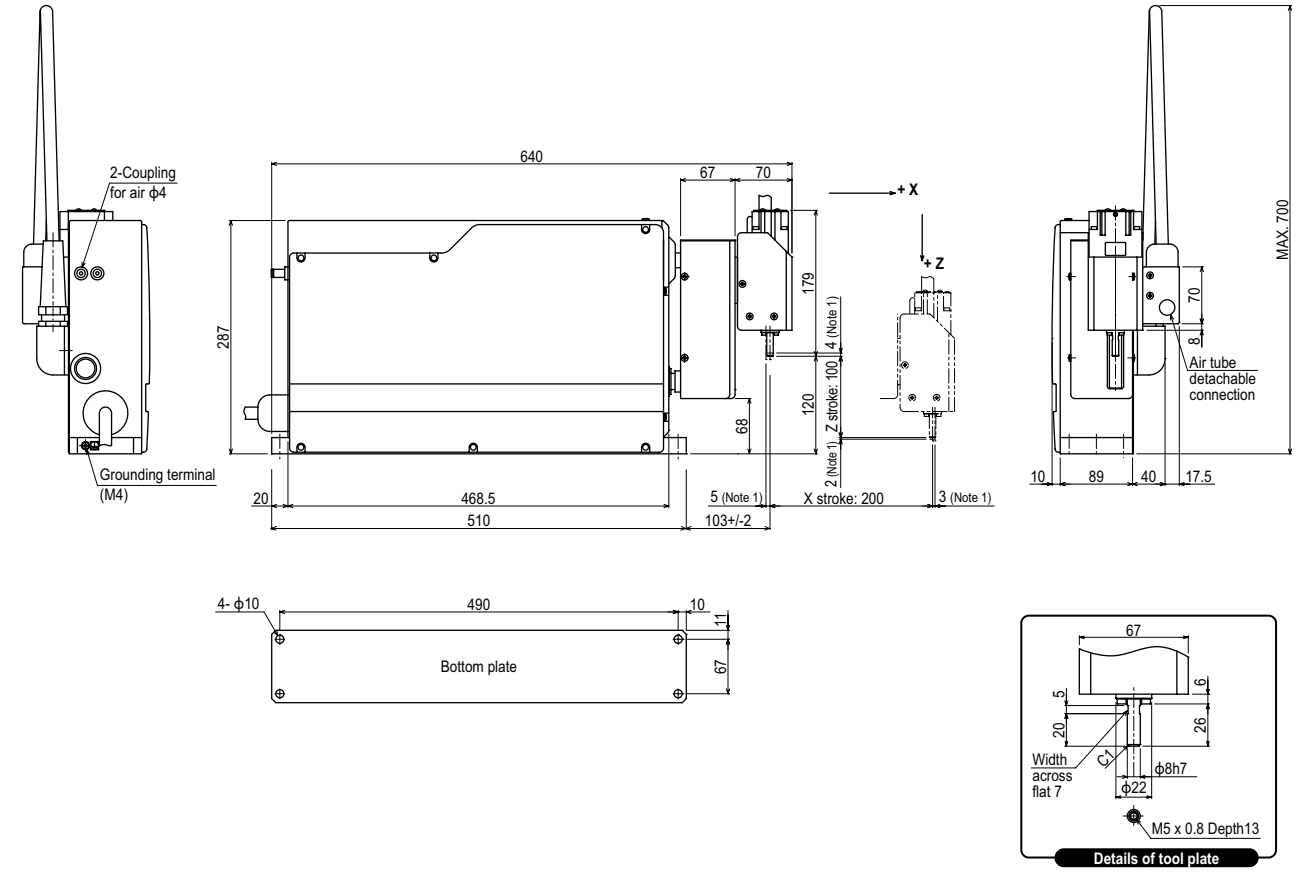
	X axis	Z axis	R axis
AC servo motor output (W)	200	200	60
Repeatability Note 1 (mm)	+/-0.05	+/-0.05	+/-0.1
Drive system	Timing belt	Timing belt	Ball Reducer
Deceleration ratio (mm)	Equivalent to lead 24	Equivalent to lead 20	1/18
Maximum speed Note 2 (XZ: mm/sec) (R: °/sec)	1440	1200	1000
Moving range (XZ: mm) (R: °)	200	100	+/-180
Cycle time (sec)	0.62 Note 3		
Maximum payload (kg)	1		
R-axis allowable moment inertia (kgm^2[$kgfcms^2$])	0.00098 [0.01]		
Robot cable length (m)	Standard: 3.5 Option: 5,10		
Weight (kg)	19		

Note 1. Positioning repeatability precision in a single swing when residual vibration is stabilized (variable depending on the load and stroke).
Note 2. When the moving stroke is short, the maximum speed may not be reached.
Note 3. Reciprocating time in vertical direction (50mm) and longitudinal direction (150mm) with the arch amount of 50 (when executing rough-positioning arch motion with 1kg load).

Controller

Controller	Power consumption (VA)	Operating method
RCX340	700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

YP220BXR



Note 1. Distance to mechanical stopper.
Note 2. Return-to-origin on the YP220BXR is by absolute reset. So the origin position must be set the first time (making initial settings) but after that is not required.

Controller RCX340 ▶ 636

YP320XR 3 axes

Ordering method

YP320XR -	[ ]	- RCX340-3 -	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Model	Cable length	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

Cable length: 3L: 3.5m, 5L: 5m, 10L: 10m

Specify various controller setting items. RCX340 ▶ P.636

Specifications

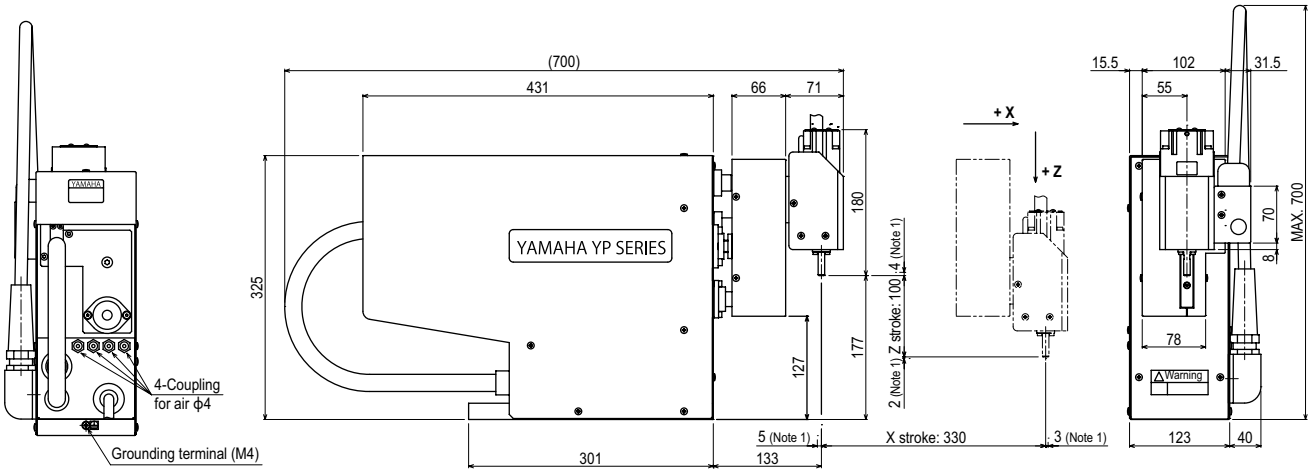
	X axis	Z axis	R axis
AC servo motor output (W)	200	200	60
Repeatability Note 1 (XZ: mm) (R: °)	+/-0.02	+/-0.05	+/-0.1
Drive system	Ball screw ϕ15	Timing belt	Ball Reducer
Deceleration ratio (mm)	Equivalent to lead 20	Equivalent to lead 25	1/18
Maximum speed Note 2 (XZ: mm/sec) (R: °/sec)	1500	1500	1000
Moving range (XZ: mm) (R: °)	330	100	+/-180
Cycle time (sec)	0.67 Note 3, 0.87 Note 4		
Maximum payload (kg)	1		
R-axis allowable moment inertia (kgm²[kgfcms²])	0.00098 [0.01]		
Robot cable length (m)	Standard: 3.5 Option: 5,10		
Weight (kg)	23		

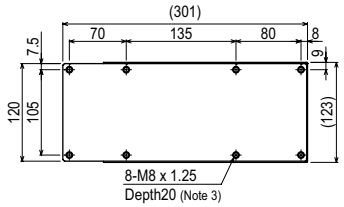
Note 1. Positioning repeatability precision in a single swing when residual vibration is stabilized (variable depending on the load and stroke).
Note 2. When the moving stroke is short, the maximum speed may not be reached.
Note 3. Reciprocating time in vertical direction (50mm) and longitudinal direction (150mm) with the arch amount of 50 (when executing rough-positioning arch motion with 1kg load).
Note 4. Reciprocating time in vertical direction (25mm) and longitudinal direction (300mm) with the arch amount of 25 (when executing rough-positioning arch motion with 1kg load).

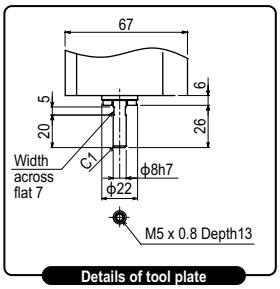
Controller

Controller	Power consumption (VA)	Operating method
RCX340	700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

YP320XR







Note 1. Distance to mechanical stopper.
Note 2. Return-to-origin on the YP320XR is by absolute reset. So the origin position must be set the first time (making initial settings) but after that is not required.
Note 3. Do not use bolts longer than 20mm (robot bottom plate thickness).

YP330X 3 axes

Ordering method

YP330X -		- RCX340-3 -								
Model	Cable length 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	

Specify various controller setting items. RCX340 ▶ P.636

Specifications

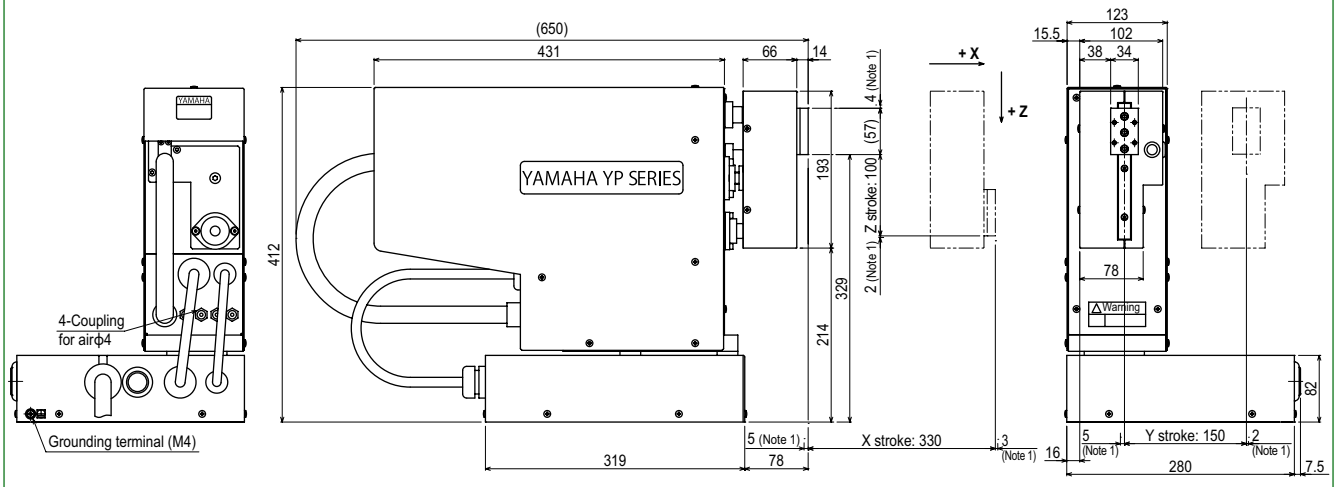
	X axis	Y axis	Z axis
AC servo motor output (W)	200	200	200
Repeatability Note 1 (mm)	+/-0.02	+/-0.02	+/-0.05
Drive system	Ball screw ϕ15	Ball screw ϕ15	Timing belt
Deceleration ratio (mm)	Equivalent to lead 20	Equivalent to lead 20	Equivalent to lead 25
Maximum speed Note 2 (mm/sec)	1500	1000	1500
Moving range (mm)	330	150	100
Cycle time (sec)	0.57 Note 3, 0.78 Note 4		
Maximum payload (kg)	3		
Robot cable length (m)	Standard: 3.5 Option: 5,10		
Weight (kg)	32		

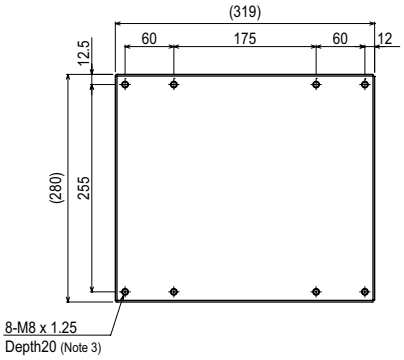
Note 1. Positioning repeatability precision in a single swing when residual vibration is stabilized (variable depending on the load and stroke).
Note 2. When the moving stroke is short, the maximum speed may not be reached.
Note 3. Reciprocating time in vertical direction (50mm) and longitudinal direction (150mm) with the arch amount of 50 (when executing rough-positioning arch motion with 1kg load).
Note 4. Reciprocating time in vertical direction (25mm) and longitudinal direction (300mm) with the arch amount of 25 (when executing rough-positioning arch motion with 1kg load).

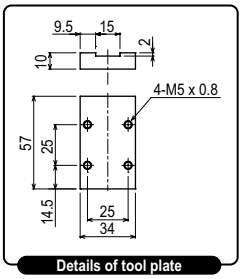
Controller

Controller	Power consumption (VA)	Operating method
RCX340	700	Programming / I/O point trace / Remote command / Operation using RS-232C communication

YP330X







Details of tool plate

Note 1. Distance to mechanical stopper.
Note 2. Return-to-origin on the YP330X is by absolute reset. So the origin position must be set the first time (making initial settings) but after that is not required.
Note 3. Do not use bolts longer than 20mm (robot bottom plate thickness).

Controller RCX340 ▶ 636

YP340X 4 axes

Ordering method

YP340X		RCX340-4							
Model	Cable length 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

Specify various controller setting items. RCX340 ▶ P.636

Specifications

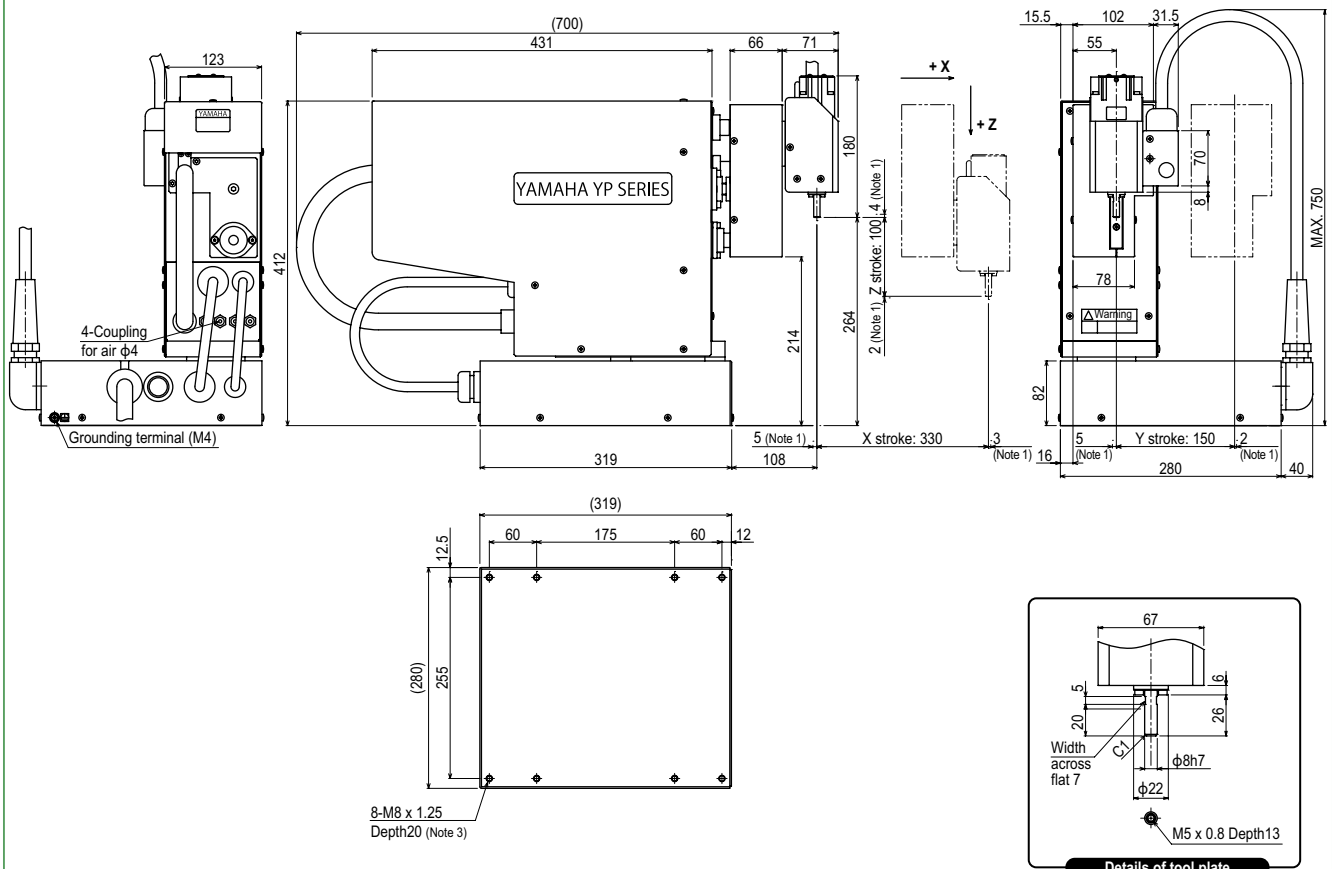
	X axis	Y axis	Z axis	R axis
AC servo motor output (W)	200	200	200	60
Repeatability Note 1 (XYZ: mm)(R: °)	+/-0.02	+/-0.02	+/-0.05	+/-0.1
Drive system	Ball screw ϕ15	Ball screw ϕ15	Timing belt	Ball Reducer
Deceleration ratio (mm)	Equivalent to lead 20	Equivalent to lead 20	Equivalent to lead 25	1/18
Maximum spee Note 2 (XYZ: mm/sec) (R: °/sec)	1500	1000	1500	1000
Moving range (XYZ: mm) (R: °)	330	150	100	+/-180
Cycle time (sec)	0.67 Note 3, 0.87 Note 4			
Maximum payload (kg)	1			
R-axis allowable moment inertia (kgm²[kgfcms²])	0.00098 [0.01]			
Robot cable length (m)	Standard: 3.5 Option: 5,10			
Weight (kg)	34			

Note 1. Positioning repeatability precision in a single swing when residual vibration is stabilized (variable depending on the load and stroke).
Note 2. When the moving stroke is short, the maximum speed may not be reached.
Note 3. Reciprocating time in vertical direction (50mm) and longitudinal direction (150mm) with the arch amount of 50 (when executing rough-positioning arch motion with 1kg load).
Note 4. Reciprocating time in vertical direction (25mm) and longitudinal direction (300mm) with the arch amount of 25 (when executing rough-positioning arch motion with 1kg load).

Controller

Controller	Power consumption (VA)	Operating method
RCX340	800	Programming / I/O point trace / Remote command / Operation using RS-232C communication

YP340X



Note 1. Distance to mechanical stopper.
Note 2. Return-to-origin on the YP340X is by absolute reset. So the origin position must be set the first time (making initial settings) but after that is not required.
Note 3. Do not use bolts longer than 20mm (robot bottom plate thickness).