



MOTOMAN

New Type Robot Optimized for Painting

MOTOMAN-EPX2050/2700/2800/2800R/2900

Robot controller NX100



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YASKAWA ELECTRIC CORPORATION
Robotics Division
Business Planning Department



New Type Painting Robot MOTOMAN-EPX Series Contents

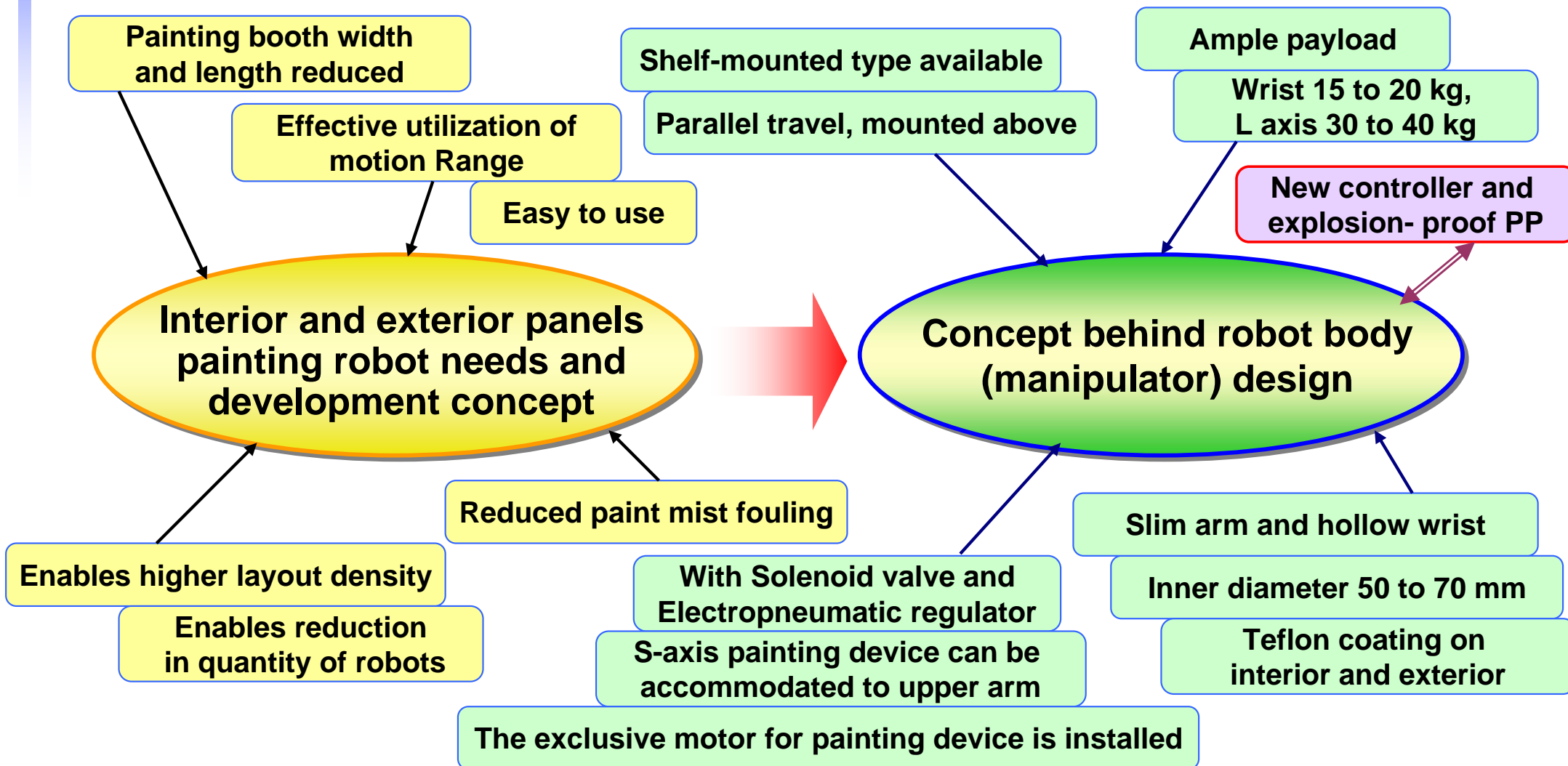
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1. New Type Robot Optimized for Painting: The MOTOMAN-EPX Series

(1) Painting Robot Needs and the Concept Behind the EPX Series





MOTOMAN

1. New Type Robot Optimized for Painting: The MOTOMAN-EPX Series

(2) New Type MOTOMAN-EPX Series Line-up

Automotive industry applications

Automobile bodies, bumpers, etc.

Large

General industrial applications

Heavy machinery, steel products, housing, etc.

Mobile telephones, reflectors, etc.

Small

Broad lineup for various applications from automobile panels to mobile phones



EPX2900



EPX2800R



EPX2700



EPX2750 *



EPX1250 *



EPX2800

*: For EPX2750, EPX2750(lemma wrist) and EPX1250 refer to (Business Planning Dept., Robotics Div.) management presentation material PJ-108 (indicated in CYBER)

EPX2050



Lemma wrist *



Hollow arm



2. Major Features and Specifications of the MOTOMAN-EPX Series

2.1 MOTOMAN-EPX2050 Features

[Hollow slim-arm type]

★ Optimum for painting automobile interior panels. Hollow slim-arm medium-capacity robot

■ PX2050

[Hollow slim-arm type]



■ EPX2050

[Hollow slim-arm type]



Successor to
the PX2050

- Improved reliability
- Improved usability
- Improved functionality

· Robot controller : YASNAC XRC

· Robot controller : NX100

1. Stain-resistant wrist by hollow slim-arm design
2. Painting devices and controllers can be mounted on arm (transmitted from PX2050)
3. Pressure monitoring function for pressurized enclosure enhanced (upper and lower limits), and mechanism sealing durability improved (speed reducer, etc.)
4. Function for synchronized conveyor painting enhanced

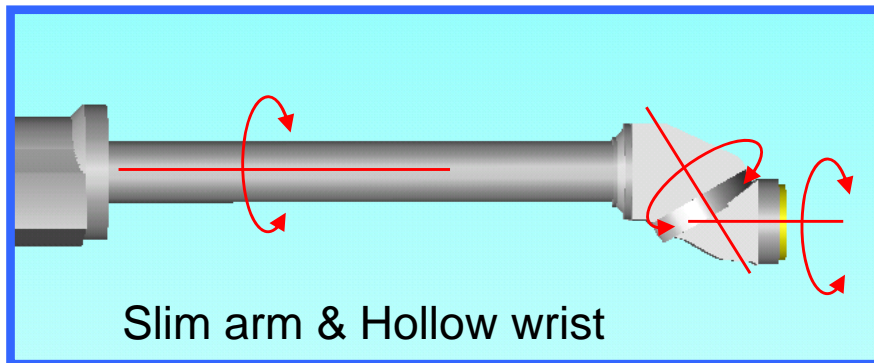
2. Major Features and Specifications of the MOTOMAN-EPX Series

2.1 MOTOMAN-EPX2050 Features

[Hollow slim-arm type]

(1) Hollow slim-arm ideal for painting automobile interior panels

[Hollow slim-arm and wrist structure]



– Ample payload –

- Wrist : 15 kg
- L-axis : 30 kg

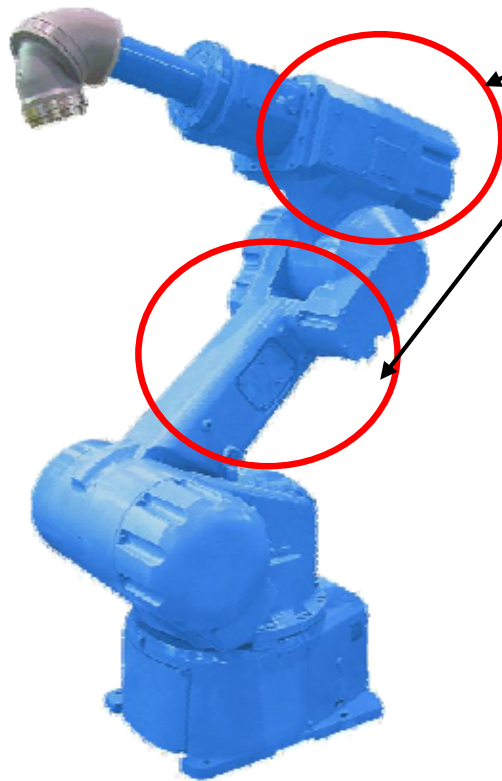
- ★ Hollow through the U arm and wrist (50 mm ID), making it possible to accommodate paint gun tube
- ★ Can approach through narrow spaces in workpieces, etc.
- ★ Stain-resistant wrist
 - Teflon coating on wrist interior and exterior surfaces
 - Exterior: Reduced stain of paint mist, etc.
 - Interior: Tube protection

2. Major Features and Specifications of the MOTOMAN-EPX Series

2.1 MOTOMAN-EPX2050 Features

[Hollow slim-arm type]

**(2) Painting device system can be made more compact and responsive
(painting devices can be mounted)**



■ Upper arm rear or lower arm side

Can mount 24-color painting CCV and FGP, washing valve unit, master valve, etc.



- ★ Painting devices and controllers can be mounted to make the system more compact and easier to use
- ★ Short tubing length improves paint gun responsiveness for optimal painting device control (high-quality painting)
- ★ When washing device and changing colors
Less paint and washer fluid remains in tubes, for reductions in cost and labor time



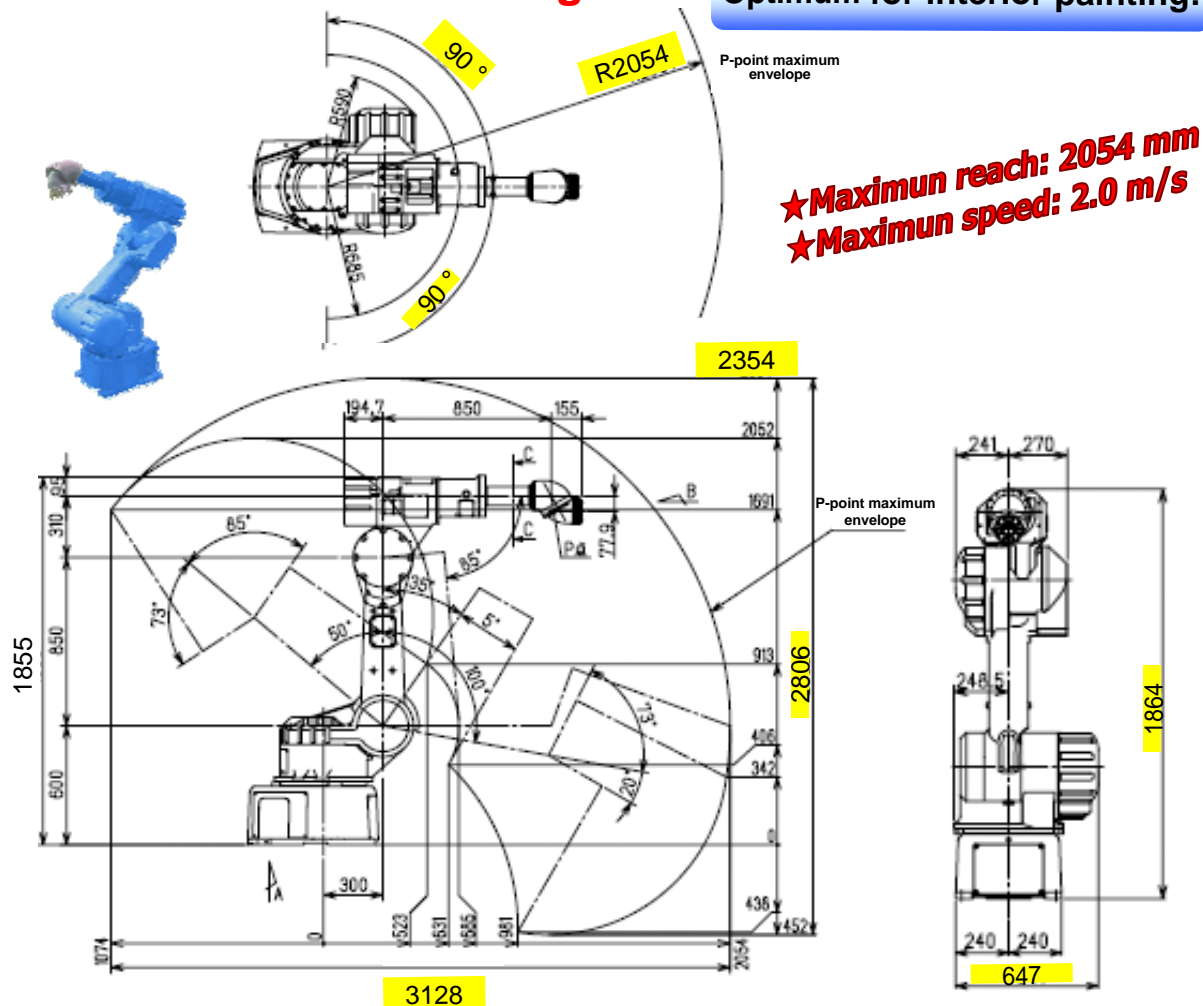
2. Major Features and Specifications of the MOTOMAN-EPX Series

2.2 MOTOMAN-EPX2050 Motion Range and Specifications

[Hollow slim-arm type]

■ EPX2050 motion range

Optimum for interior painting!



■ Standard specification of the EPX2050

Name		MOTOMAN - EPX2050	
Model ¹		YR-EPX2050-A5 (Japanese standard)	
Structure		6(Vertically articulated)	
Payload		15 kg	
Repeatability ²		±0.5 mm	
Range of Motion	S-axis(turning)	-90°- +90°	
	L-axis(lower arm)	-110°- +100°	
	U-axis(upper arm, relative angle of lower arm)	-163°- +5°	
	R-axis(wrist roll)	-360°- +360°	
	B-axis(wrist pitch/yaw)	-360°- +360°	
T-axis(wrist twist)		-360°- +360°	
Maximum Speed		2 m/s	
Hollow (H-type) wrist	Allowable Moment	R-axis(wrist roll)	45.8 N·m
		B-axis(wrist pitch/yaw)	33.8 N·m
		T-axis(wrist twist)	10.8 N·m
Inertia (GD ² /4)	Allowable	R-axis(wrist roll)	1.45 kg·m ²
		B-axis(wrist pitch/yaw)	0.79 kg·m ²
		T-axis(wrist twist)	0.10 kg·m ²
Mass		540 kg	
Power Requirements ³		5 KVA	

*1 Type is FM standard: YR-EPX2050-B5

*2 Conforms to JIS B 8432 *3 Varies in accordance with applications and motion patterns

2. Major Features and Specifications of the MOTOMAN-EPX Series

★ Wall-mounted type enables extremely short process

Smooth in shape

- Its smooth shape is best suited to painting operations.

Compact

- The hollow-shaft speed reducer makes the size of the S-axis and L-axis more compact.

Settable in locations best suited to painting

- R-type and L-type of EPX2700 are available.

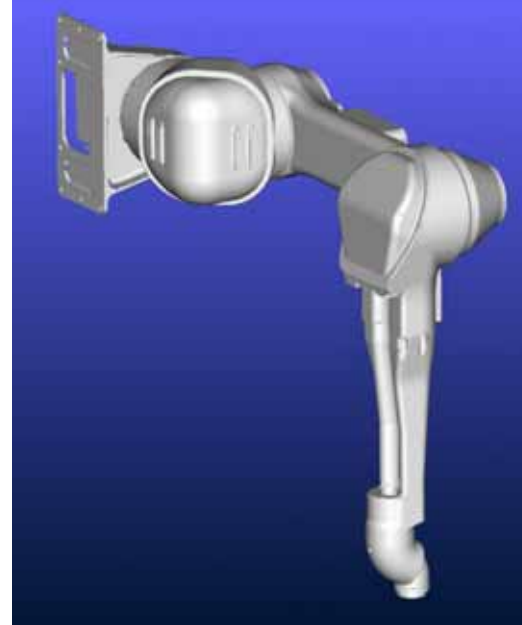
Flexible

- The solenoid valve units and electropneumatic regulators in the pressurized enclosure of the manipulator contribute to more compact and more responsive painting equipment.

Light-weight

- Approx. 40% lighter weight than the conventional type enables the reduction of the base strength when the manipulator is wall-mounted or mounted on the riser.

EPX2700-A0** (R-type)



EPX2700-A1** (L-type)

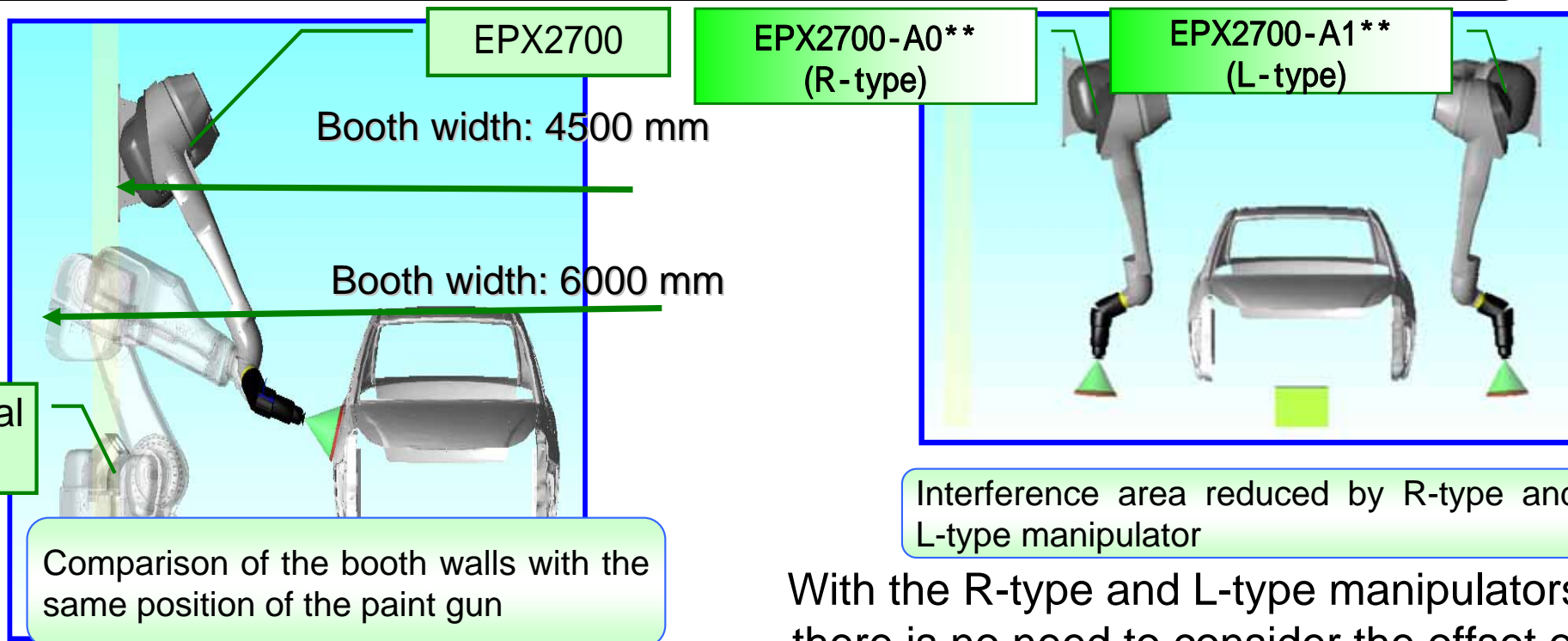


Its lighter weight makes it easier to mount it on the riser.

2. Major Features and Specifications of the MOTOMAN-EPX Series

2.3 MOTOMAN-EPX2700 Features

(1) Reduction in the booth width(1)



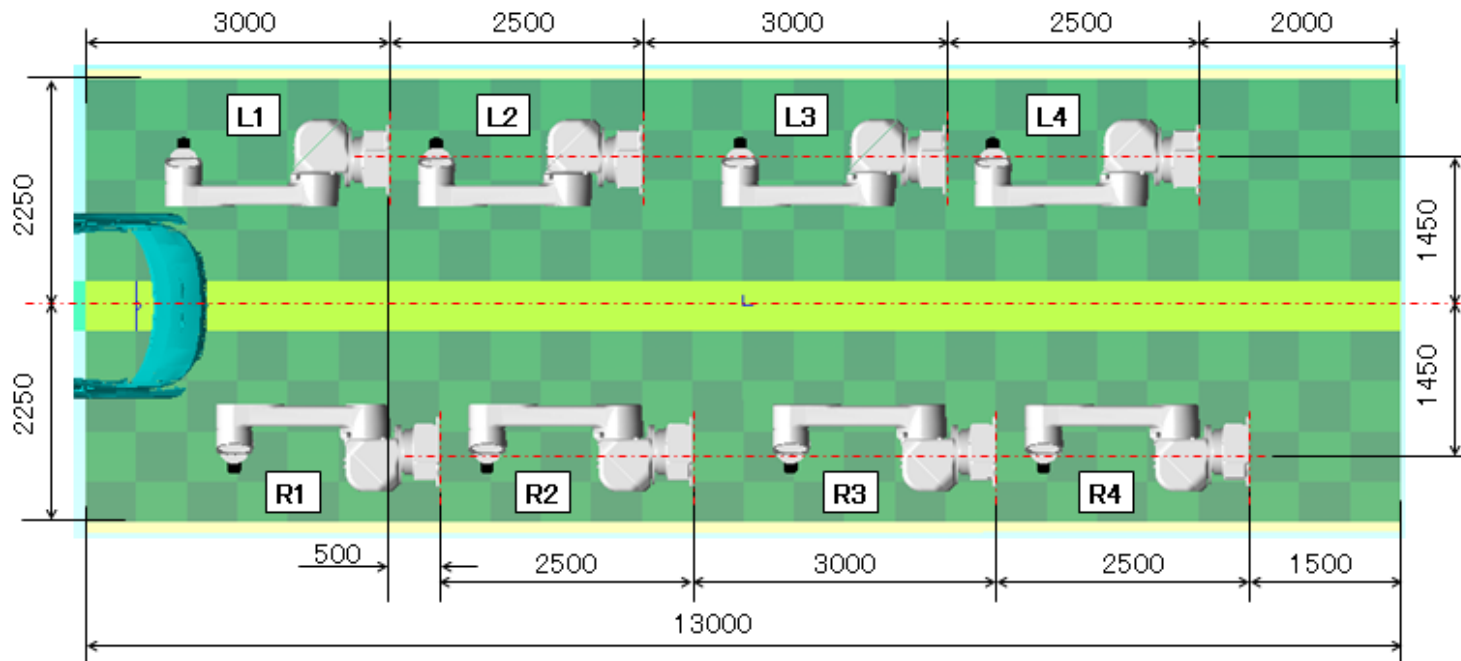
The wall-mounted type can be set over the car body. Thus it can be set closer to the car body than the conventional type, and the booth width is reduced.

With the R-type and L-type manipulators, there is no need to consider the offset of the L-arm, and the manipulators can be set on the same condition on the left and right sides of the car body. Thus they can be set in the compact booth.

2. Major Features and Specifications of the MOTOMAN-EPX Series

2.3 MOTOMAN-EPX2700 Features

(1) Reduction in the booth width(2)



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Space-saving performance with the booth width of 4500 mm and the distance between manipulators of 2500 mm

➔ **Reduction in the initial costs for painting equipment and the running costs of air-conditioning for painting equipment**

* For the conventional type, the interference between the booth wall and the manipulator made it difficult to provide the booth width of 6000 mm or less and the distance between manipulators of 3500 mm or less.

2. Major Features and Specifications of the MOTOMAN-EPX Series

2.3 MOTOMAN-EPX2700 Features

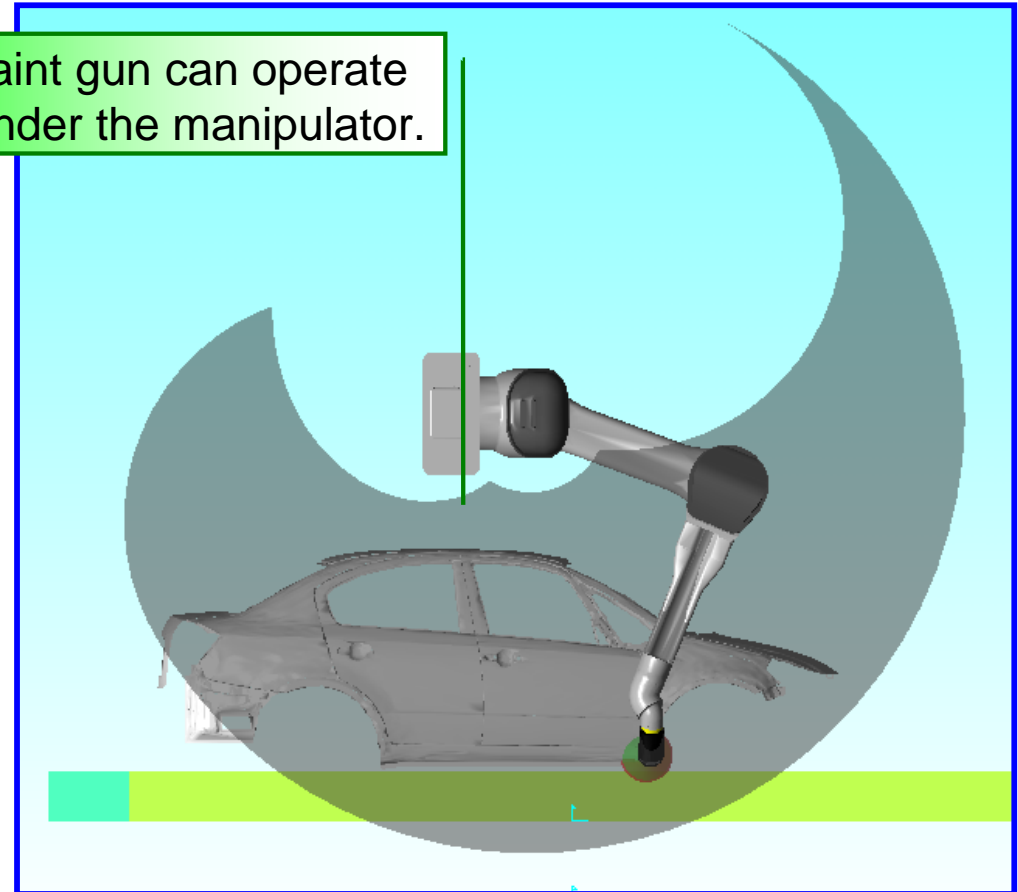
(2) Long-path movements(1)

With the wall-mounted installation, the manipulator's range of motion can be used effectively.

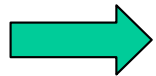
In paint operations, the manipulator moves effectively in its range of motion. This can eliminate wasteful waiting time before the car body moves to the area where paint operations can be done.

Shorter production line
with fewer manipulators

The paint gun can operate even under the manipulator.



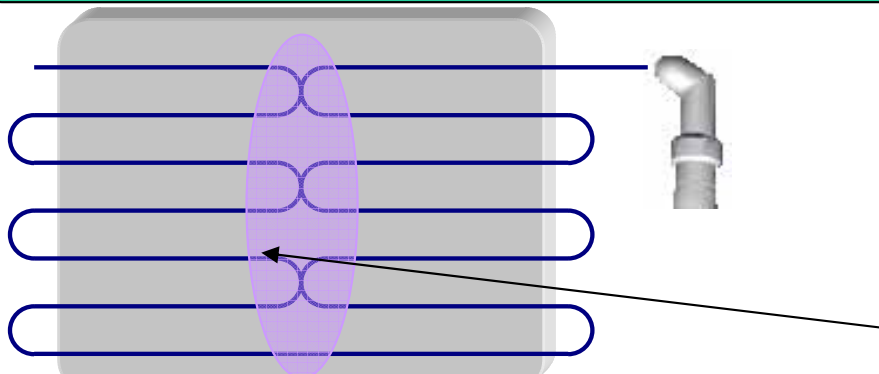
The manipulator's range of motion can be used effectively.



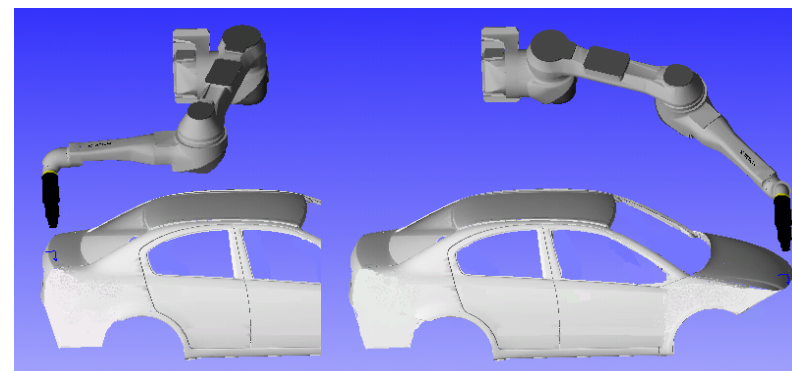
2. Major Features and Specifications of the MOTOMAN-EPX Series

2.3 MOTOMAN-EPX2700 Features

(2) Long-path movements(2)



With the conventional type, painting-speed changes at corners, resulting in thicker painting.



Its range of motion enables painting in wide ranges.

MOTOMAN-EPX2700 operates in wide ranges and allows continuous painting instead of divided painting (while moving over long paths)

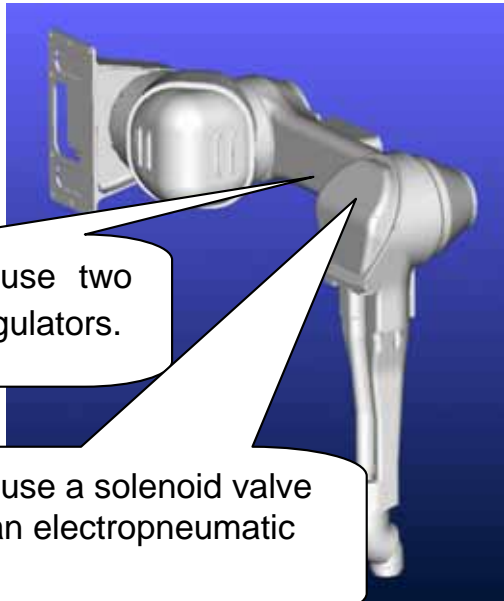
➡ Improved painting quality

- * Problem with the conventional type: When one robot paints a car body, its range of motion is insufficient, and the painting area must be divided. Thus the car body cannot be painted uniformly due to changes in the painting speed at corners of the paint path, which result in thicker painting.

2. Major Features and Specifications of the MOTOMAN-EPX Series

2.3 MOTOMAN-EPX2700 Features

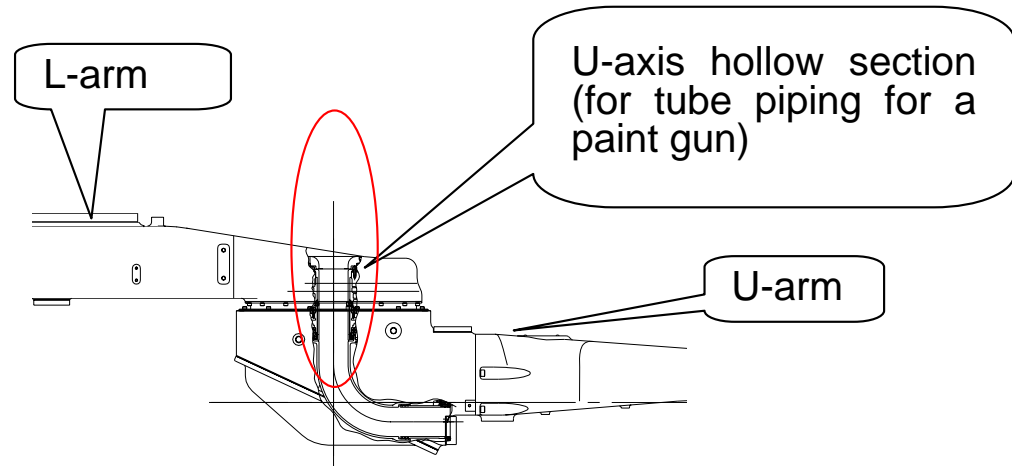
(3) Improved response of the painting device and built-in external tubes



The L-arm can house two electropneumatic regulators.

The casing can house a solenoid valve (16 stations) and an electropneumatic regulator

With pneumatic equipment in the L-arm and the casing, the response of the painting device is improved.



Details of U-axis

Tubes for the paint gun can be set in the hollow section of the U-axis, thus interference between the tubes and a workpiece is reduced.

2. Major Features and Specifications of the MOTOMAN-EPX Series

2.4 MOTOMAN-EPX2700 Motion Range and Specifications

Type	YR-EPX2700-A0**	
Structure	Vertically articulated (with 6 degrees of freedom)	
Payload	15 kg	
Repeatability ^{*1}	±0.15 mm	
Range of Motion	S-axis (turning)	+125° - -25°
	L-axis (lower arm)	+140° - -65°
	U-axis (upper arm)	+90° - -65°
	R-axis (wrist roll)	+360° - -360°
	B-axis (wrist pitch/yaw)	+360° - -360°
	T-axis (wrist twist)	+360° - -360°
Maximum Speed	2 m/s	
Allowable Moment	R-axis	45.8 N·m
	B-axis	33.8 N·m
	T-axis	10.8 N·m
Allowable Inertia (GD ² /4)	R-axis	1.45 kg·m ²
	B-axis	0.79 kg·m ²
	T-axis	0.10 kg·m ²
Approx. Mass	590 kg	
Explosion-proof Construction	Pressurized + Intrinsic safety	
Installation	Floor-mounted/Wall-mounted	
Power Requirements ^{*2}	5 kVA	

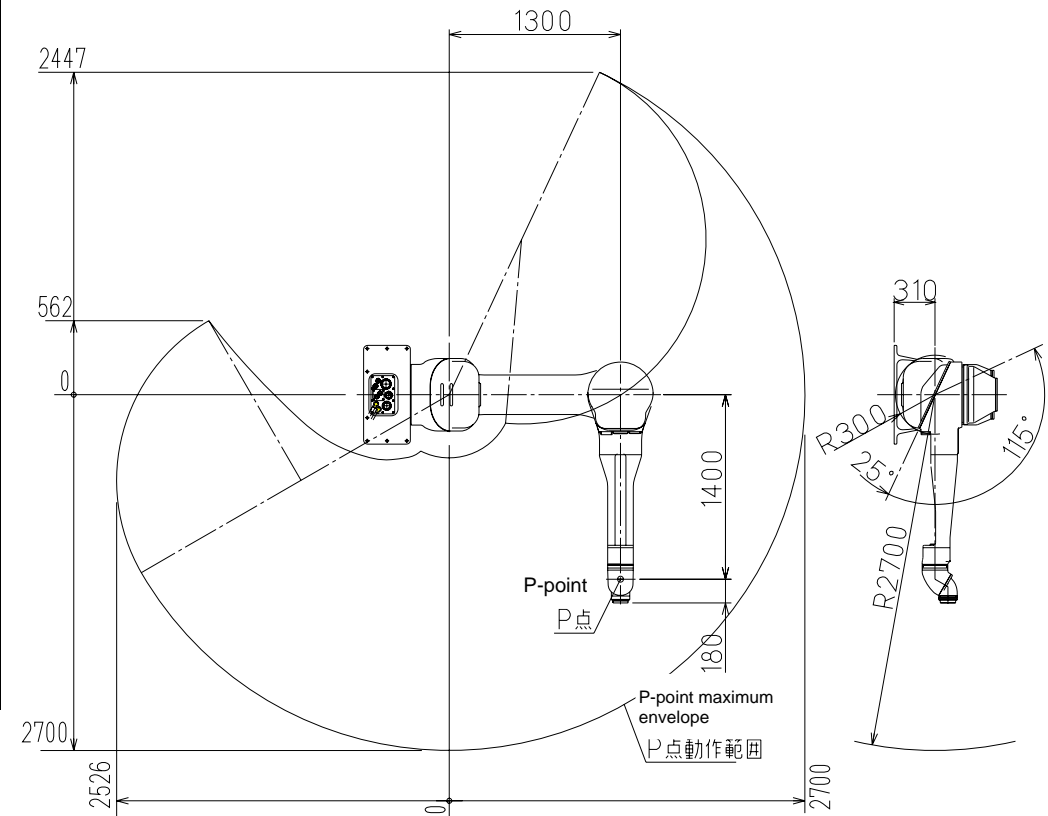
*1: Conformed to ISO9283.

*2: Differs depending on the motion pattern.

*3: The present specifications are temporary and may be subject to change.

*4: This manipulator is available in two types: EPX2700-A0** and EPX2700-A1**. The figure on the right-hand side is the outline view of EPX2700-A0**. For the outline view of EPX2700-A1**, please contact us.

Best suited to the painting of car-body outside plates! !



The world's largest range of motion in its class!!



2. Major Features and Specifications of the MOTOMAN-EPX Series

2.5 MOTOMAN-EPX2800/EPX2800R Features

[Hollow slim-arm type]

EPX2800: Floor-mounted type

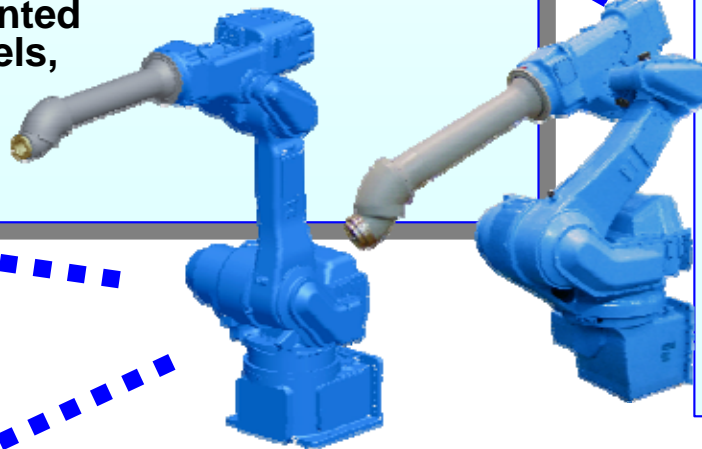
EPX2800R: Shelf-mounted type

★ A Line up of robots for both shelf-mounted and wall-mounted application!

1. Enables smaller painting booth, high-density layout

★ Robot can be mounted above workpiece

- Interference avoidance, effective utilization of motion range
- Multiple robots can be mounted above workpiece in two levels, upper and lower
- Reduced paint mist stain on the robot



2. Optimum for automobile body interior panel painting, and enabled to correspond to exterior panel painting

- Hollow slim-arm and wrist, making it possible to accommodate paint gun tube
- Stain-resistant slim arm and wrist
- Easy approach to narrow spaces (slim arm)
- Upper-arm can take reversed posture (reversed elbow posture)
- Reliable automobile door open/close action

3. Painting device system can be made more compact and responsive

- Solenoid valve and electropneumatic regulator can be mounted inside the pressurized enclosure



2. Major Features and Specifications of the MOTOMAN-EPX Series

2.5 MOTOMAN-EPX2800/EPX2800R Features

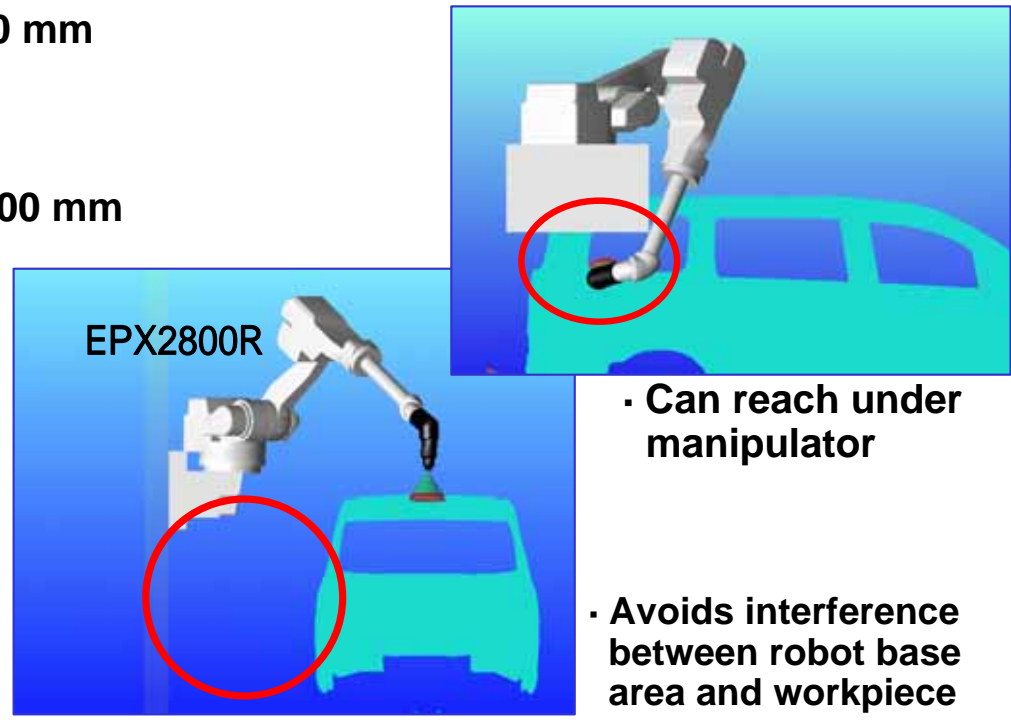
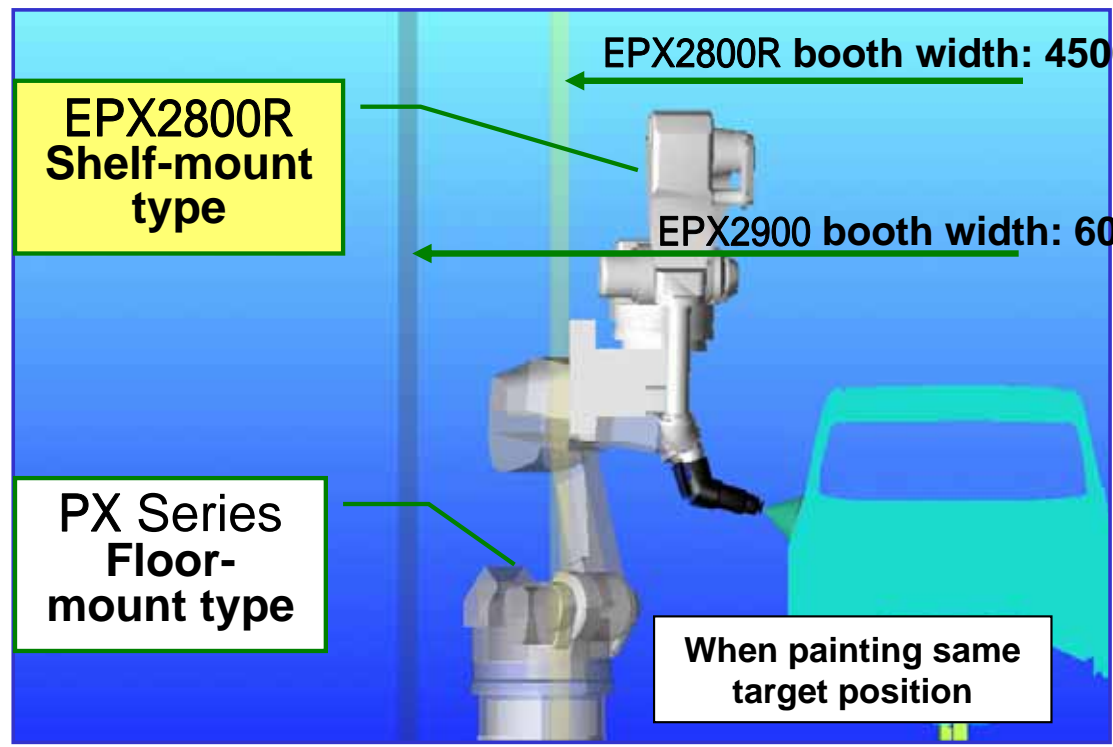
MOTOMAN-EPX2800R Features

(1) Enables smaller painting booth, high-density robot layout (1)

★ **Robot can be mounted above workpiece**

- Easy to avoid interference between robot and workpiece
- Effective utilization of robot lower motion range
- Booth space is smaller than for floor-mount types **(Width: about 25% less *1, length about 50% less *1, *2)**

*1 Varies with system *2 For interior panel painting



- Can reach under manipulator
- Avoids interference between robot base area and workpiece



2. Major Features and Specifications of the MOTOMAN-EPX Series

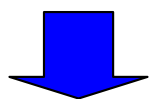
2.5 MOTOMAN-EPX2800/EPX2800R Features

■ MOTOMAN-EPX2800R Features

(1) Enables smaller painting booth, enables high-density robot layout (2)

★ Multiple robots can be mounted above workpiece

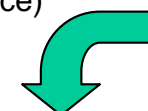
■ Multiple robots can be mounted above workpiece in two levels, upper and lower



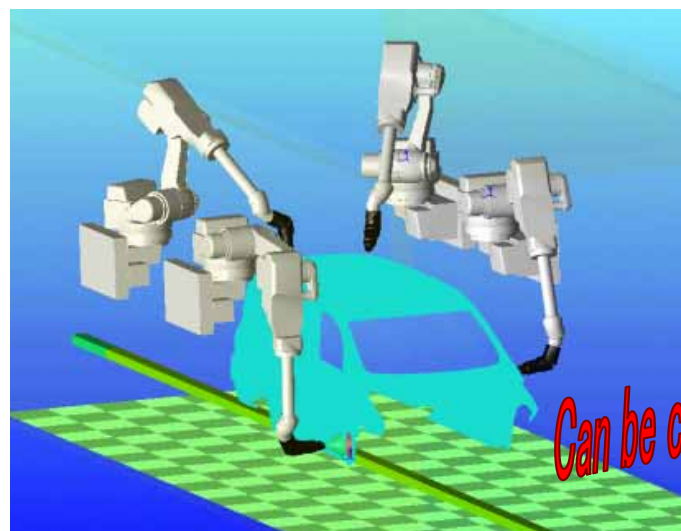
★ Avoids interference between robots for opening/closing doors and painting robots, allowing them to reverse relative positions

Enables small, compact painting booth and high-density layout

· Conventional interior panel painting layout (mounted on the same traverse device)



· Conventional exterior panel painting layout (floor-mounted)



· Painting robots can be mounted above workpiece

Can be combined with EPX2800!!



· Painting and door open/close robots can be mounted in two levels above workpiece, upper and lower



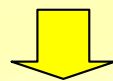
2. Major Features and Specifications of the MOTOMAN-EPX Series

2.5 MOTOMAN-EPX2800/EPX2800R Features

■ MOTOMAN-EPX2800R Features

(1) Enables smaller painting booth, enables high-density robot layout (3)

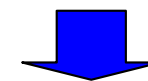
* When mounting robot under the workpiece (floor mounting type, etc.)



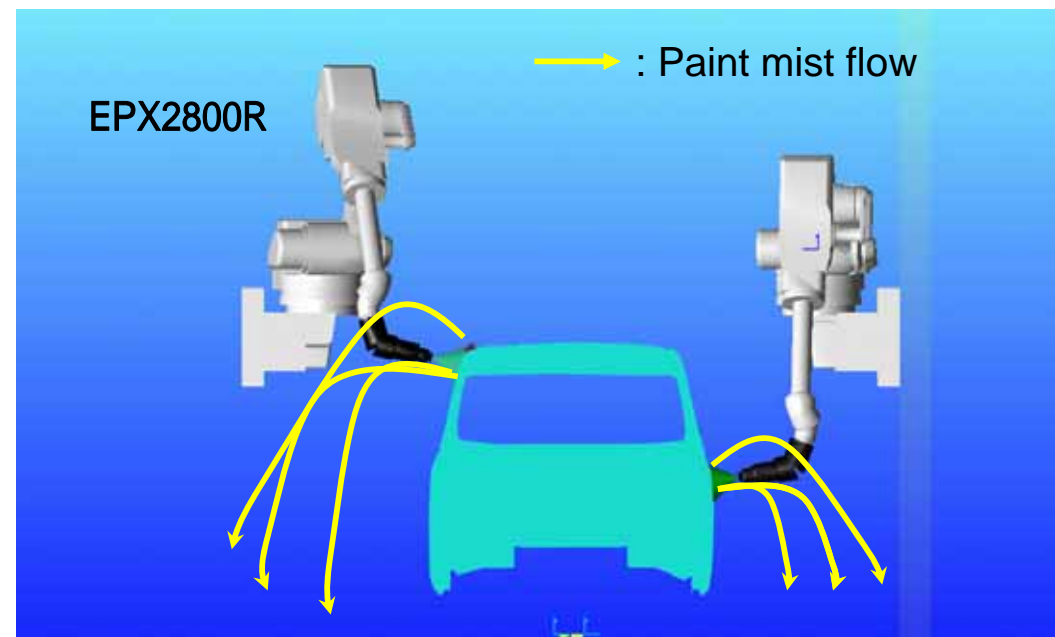
· Robot will get paint mist stain



★ Robot can be mounted above workpiece



Reduced paint mist stain on the robot



2. Major Features and Specifications of the MOTOMAN-EPX Series

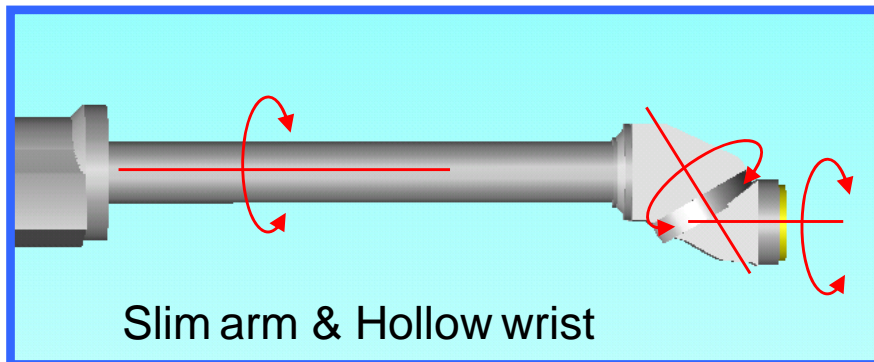
2.5 MOTOMAN-EPX2800/EPX2800R Features

■ Features common to MOTOMAN-EPX2800 and -EPX2800R

(2) Optimum for automobile body interior panel painting, and enabled to correspond to exterior panel painting (1)

■ Uses hollow slim-arm ideal for interior panel painting

[Hollow slim-arm and wrist structure]



– Ample payload –

· Wrist

EPX2800: 20kg

EPX2800R: 15kg

- ★ Hollow through the U arm and wrist making it possible to accommodate paint gun tube
- ★ Enlarged diameter (70 mm) made it possible to accommodate many tubes
 - : Enabled to correspond to exterior panel painting
- ★ Can approach through narrow spaces in workpieces, etc.
- ★ Stain-resistant slim arm and wrist
 - Inside and outside of hollow arm and wrist Teflon coated



2. Major Features and Specifications of the MOTOMAN-EPX Series

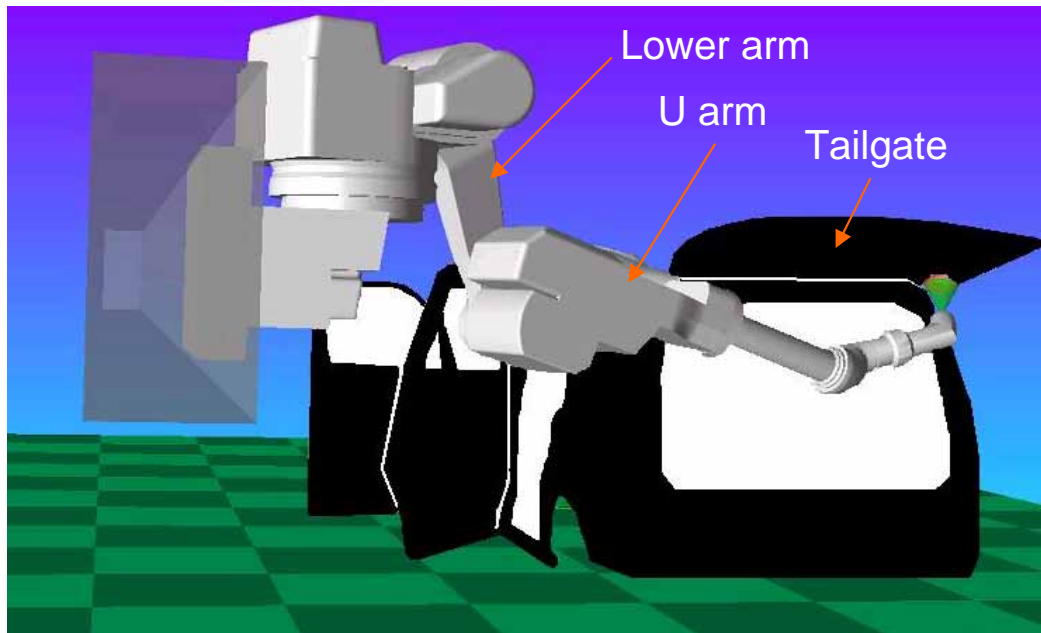
2.5 MOTOMAN-EPX2800/EPX2800R Features

■ MOTOMAN-EPX2800R Features

(2) Optimum for automobile body interior panel painting, and enabled to correspond to exterior panel painting (2)

- Operating functions ideal for interior panel painting
 - : Upper (U) arm can take reversed posture (reversed elbow posture)

★ Can easily paint engine hood or tailgate, too



· Posture with U arm reversed

★ Even when mounted overhead, reversed elbow posture simplifies maintenance





2. Major Features and Specifications of the MOTOMAN-EPX Series

2.5 MOTOMAN-EPX2800/EPX2800R Features

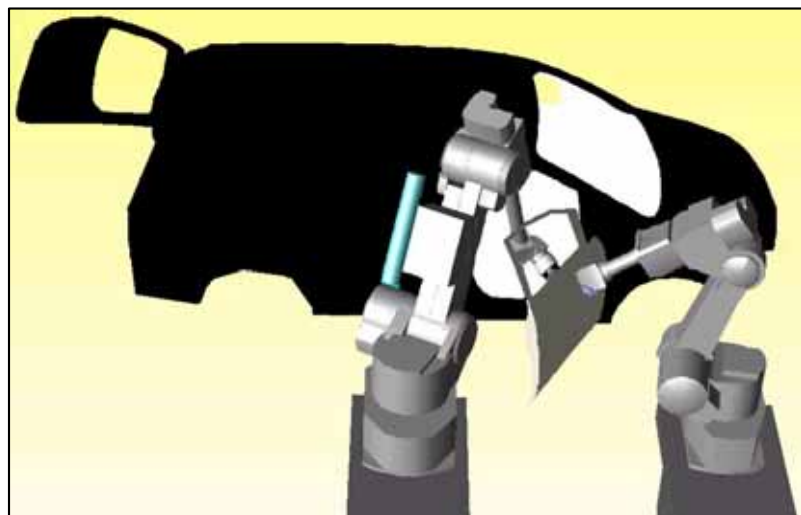
■ Features common to MOTOMAN-EPX2800 and -EPX2800R

(2) Optimum for automobile body interior panel painting, and enabled to correspond to exterior panel painting (3)

* Automobile doors and engine hood must be opened and closed when painting interior panels

■ Reliable, stable body door open/close action

★ Magnetic opener hand
Significant reduction in open/close errors, and ready to automate it



· Body door open and paint process



· Door open state Magnetic hand



2. Major Features and Specifications of the MOTOMAN-EPX Series

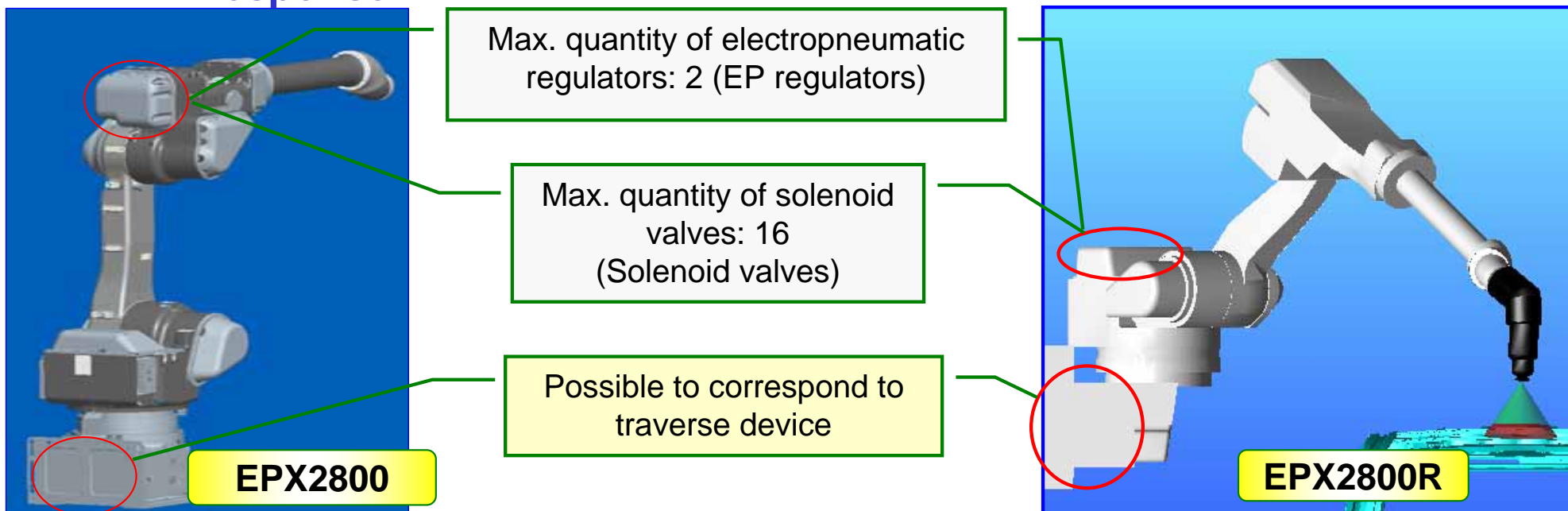
2.5 MOTOMAN-EPX2800/EPX2800R Features

■ Features common to MOTOMAN-EPX2800 and -EPX2800R

(3) Painting device system can be made more compact and responsive

■ Solenoid valve, electropneumatic regulator, etc. can be mounted inside the manipulator

- ★ Painting robot system is compact
- ★ Improved painting quality due to better painting device system response





2. Major Features and Specifications of the MOTOMAN-EPX Series

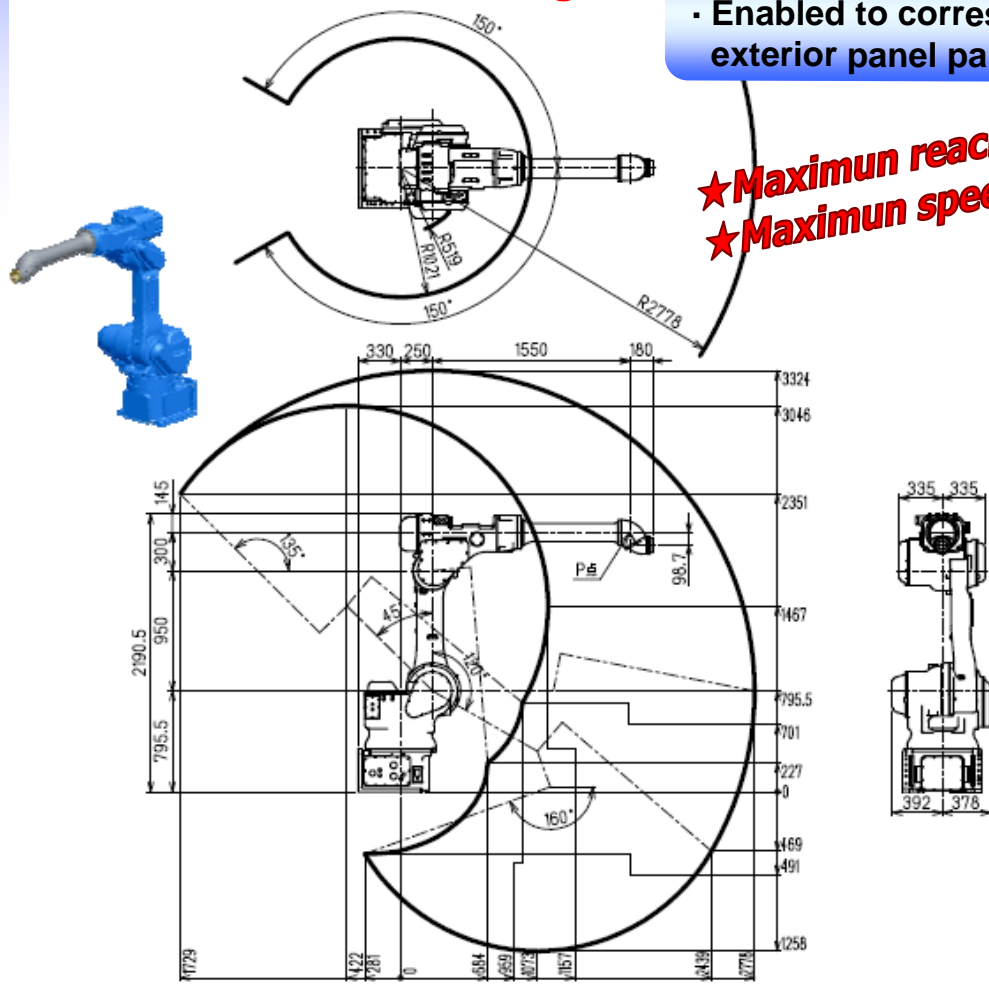
2.6 MOTOMAN-EPX2800 Motion Range and Specifications

[Hollow slim-arm type]
- Floor-mounted type -

■ EPX2800 motion range

- Optimum for interior painting!
- Enabled to correspond to exterior panel painting

★ Maximum reach: 2778 mm
★ Maximum speed: 2.0 m/s



■ Standard specification of the EPX2800

Name		MOTOMAN - EPX2800	
Model*1		YR-EPX2800-A0 0 (Japanese standard)	
Structure		6(Vertically articulated)	
Payload		20 kg	
Repeatability*2		±0.5 mm	
Range of Motion	S-axis(turning)	-150°- +150°	
	L-axis(lower arm)	-45°- +120°	
	U-axis(upper arm, relative angle of lower arm)	-85°- +90°	
	R-axis(wrist roll)	-360°- +360°	
	B-axis(wrist pitch/yaw)	-360°- +360°	
	T-axis(wrist twist)	-360°- +360°	
Maximum Speed		2 m/s	
Hollow (H-type) wrist	Allowable Moment	R-axis(wrist roll)	77.4 N·m
		B-axis(wrist pitch/yaw)	49.9 N·m
		T-axis(wrist twist)	19.6 N·m
Inertia (GD ² /4)	R-axis(wrist roll)	2.45 kg·m ²	
	B-axis(wrist pitch/yaw)	1.20 kg·m ²	
	T-axis(wrist twist)	0.20 kg·m ²	
Mass		650 kg	
Power Requirements*3		5 KVA	

*1 Type is FM standard: YR-EPX2800-B0 0, ATEX standard YR-EPX2800-C0 0
*2 Conforms to JIS B 8432 *3 Varies in accordance with applications and motion patterns



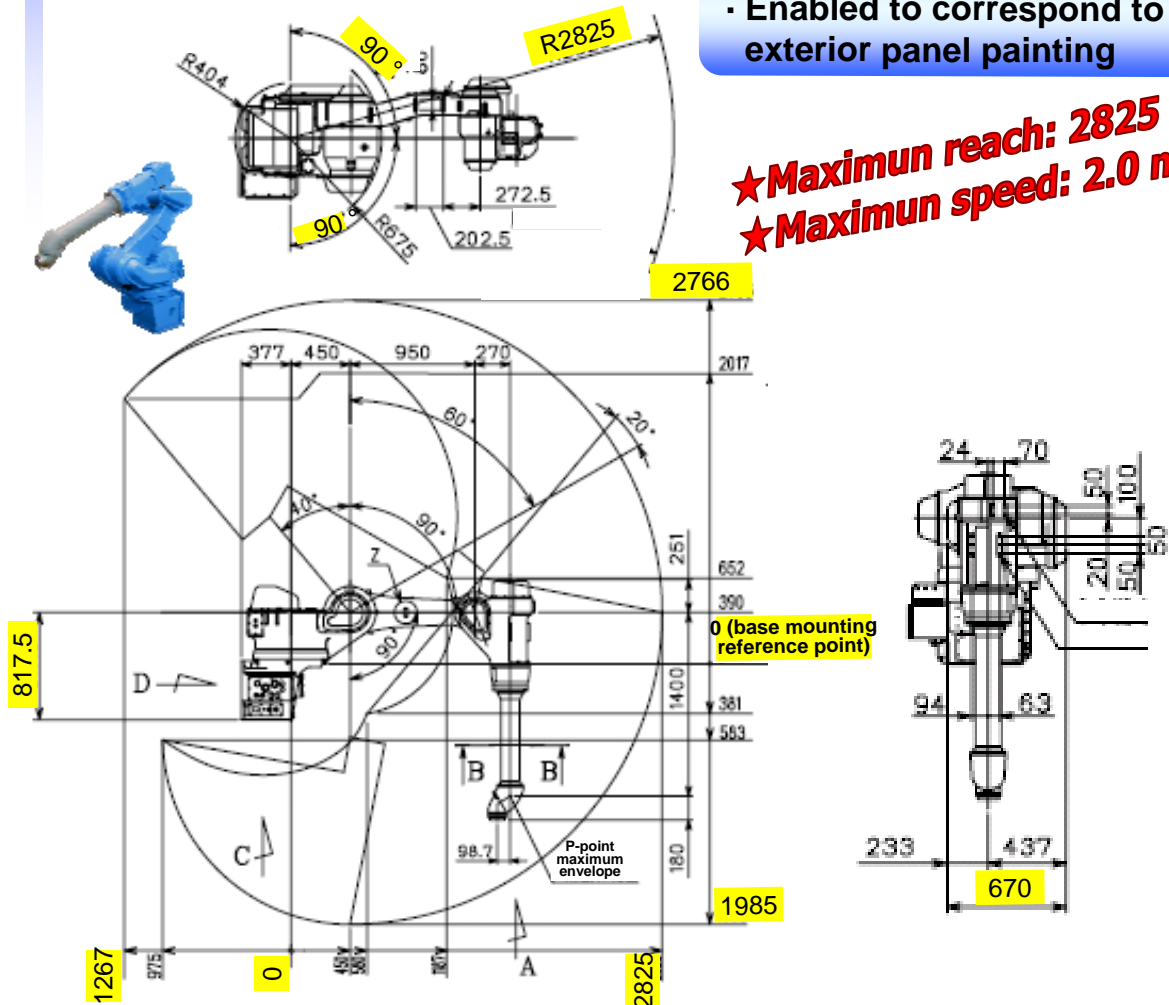
2. Major Features and Specifications of the MOTOMAN-EPX Series

2.6 MOTOMAN-EPX2800R Motion Range and Specifications [Hollow slim-arm type] – Shelf-mounted type –

■ EPX2800R motion range

- Optimum for interior painting!
- Enabled to correspond to exterior panel painting

★Maximum reach: 2825 mm
★Maximum speed: 2.0 m/s



■ Standard specification of the EPX2800R

Name		MOTOMAN - EPX2800R	
Model*1		YR-EPX2800R-A0 0 (Japanese standard)	
Structure		6(Vertically articulated)	
Payload		15 kg	
Repeatability*2		±0.5 mm	
Range of Motion	S-axis(turning)	±120° Without traverse axis	
	L-axis(lower arm)	+90° to -130°(S-axis ±90°)	
		+30° to -130°(S-axis +90° to +120°)	
	U-axis(upper arm, relative angle of lower arm)	+90° to -70°	
	R-axis(wrist roll)	±360°	
	B-axis(wrist pitch/yaw)	±360°	
T-axis(wrist twist)		±360°	
Maximum Speed		2 m/s	
Hollow (H-type) wrist	Allowable Moment	R-axis(wrist roll)	45.8 N-m
		B-axis(wrist pitch/yaw)	33.8 N-m
		T-axis(wrist twist)	10.8 N-m
	Allowable Inertia (GD ² /4)	R-axis(wrist roll)	1.45 kg-m ²
		B-axis(wrist pitch/yaw)	0.79 kg-m ²
		T-axis(wrist twist)	0.10 kg-m ²
Mass		820 kg	
Power Requirements*3		5 KVA	

*1 Type is FM standard: YR-EPX2800R-B0 0, ATEX standard YR-EPX2800R-C0 0

*2 Conforms to JIS B 8432 *3 Varies in accordance with applications and motion patterns



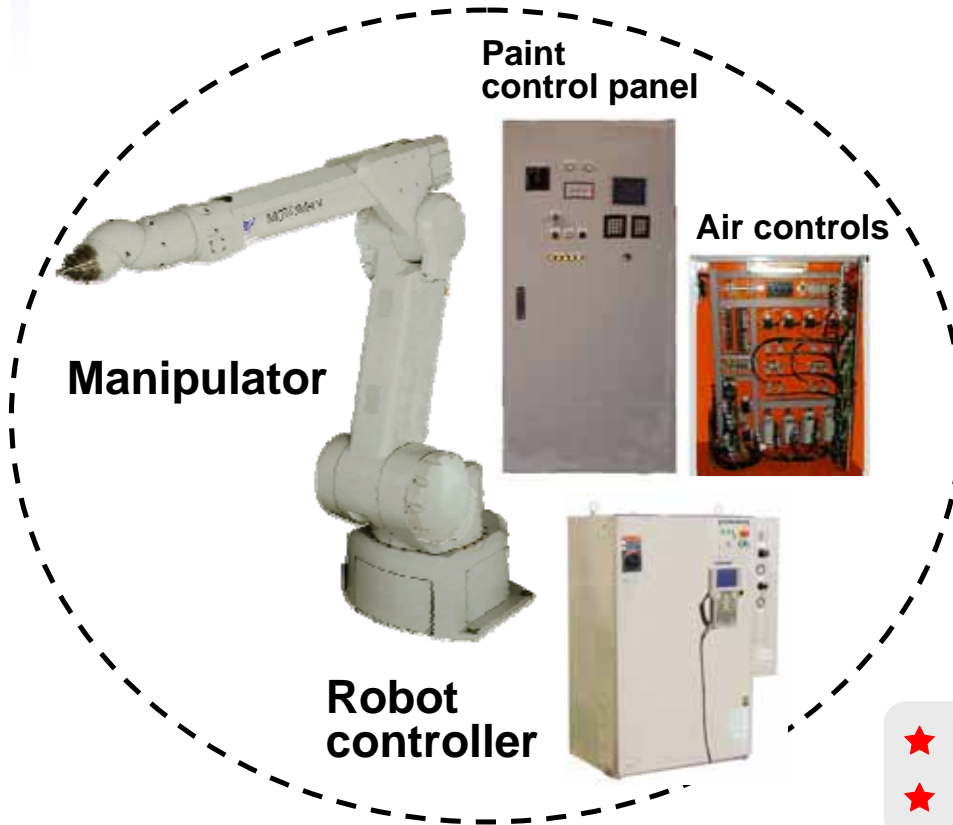
2. Major Features and Specifications of the MOTOMAN-EPX Series

2.7 MOTOMAN-EPX2900 Features

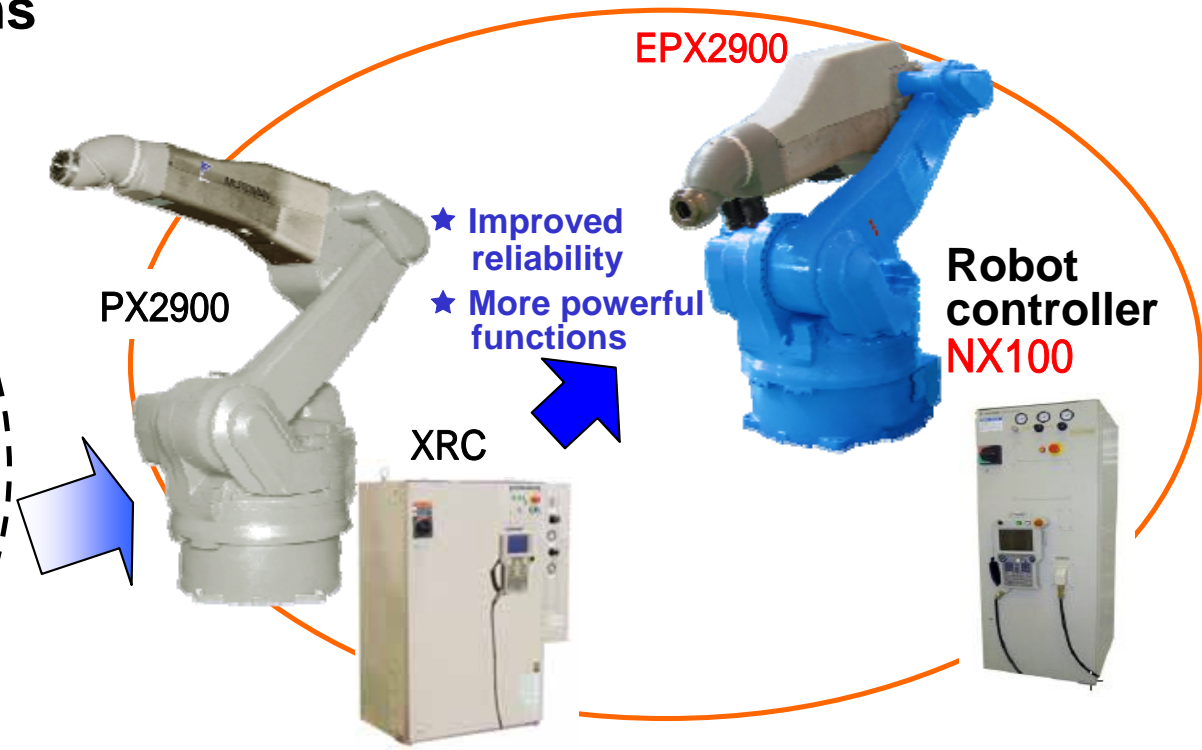
★ Painting pneumatic devices and painting devices can be accommodated to robot, for control by robot controller

Integrated painting systems and painting control functions, unified control by robot controller

■ Conventional painting systems



■ PX2900, EPX2900 painting systems



- ★ Improved reliability
- ★ More powerful functions

- ★ Improved painting quality
- ★ Lower initial cost
- ★ Improved functionality
- ★ Smaller space requirements



2. Major Features and Specifications of the MOTOMAN-EPX Series

2.7 MOTOMAN-EPX2900 Features

★ The optimal large-capacity robot for painting automobile exterior panels and large workpieces

■ PX2900



Successor to the PX2900

- Improved reliability
- Improved usability
- Improved functionality

· Robot controller : YASNAC XRC

■ EPX2900



· Robot controller : NX100

1. Painting devices and controllers can be accommodated in upper arm (transmitted from PX2900)
2. Solenoid valve unit and electropneumatic regulator can be accommodated inside the pressurized enclosure (transmitted from PX2900)
3. Stain-resistant wrist
4. Pressure monitoring function for pressurized enclosure enhanced (upper and lower limits), and mechanism sealing durability improved (speed reducer, etc.)
5. Function for synchronized conveyor painting enhanced



2. Major Features and Specifications of the MOTOMAN-EPX Series

2.7 MOTOMAN-EPX2900 Features

Painting devices and controllers can be accommodated in robot, improving painting quality, productivity and usability

Upper arm

Can mount tubes for paint and drive air, 24-color painting CCV and FGP, washing valve unit, master valve, etc.

– One of the largest for painting robots –
Payload

- Wrist : 20 kg
- Upper arm mounting limit : 30 kg

Wrist (hollow)

Teflon coating minimizes paint mist stain



Pressurized enclosure

- Solenoid valve unit (16-point solenoid valve, max. 3 sets)
- Electropneumatic regulator (max. 3) can be accommodated

- ★ Painting device system can be made more compact and easier to use
- ★ No stain by paint mist on wires or tubes, and no painting defects caused by drops or splatter
- ★ Short tubing length improves paint gun responsiveness to paint gun for optimal painting device control
- ★ When washing device and changing colors Less paint and washer fluid remains in tubes, for reductions in cost and labor time

3. Robot Controller NX100 and Standard Specifications

(1) Robot Controller NX100 (painting applications)

Utilizes high-performance NX100 and new explosion-proof programming pendant (PP)

■ EPX Series NX100 (painting applications)

Conventional type



- NX100 Conventional type Dimensions
800(W) · 600(D) · 1200(H) mm

To be Slim!

Slim-type



- NX100 Slim-type Dimensions
500(W) · 550(D) · 1400(H) mm

*1 FM (North America) specification controller size
is as same as conventional type



Standard type PP



Explosion-proof type PP

- 5.7-inch LCD touch panel ,
world's largest in its class
- Reduced 35% in
mass and volume



3. Robot Controller NX100 and Standard Specifications

(2) Standard specification of the NX100 (painting applications)

* : Specifications common to MOTOMAN-EPX2050, -2700, -2800, -2800R and -2900



Items	Specifications
Configuration	Dust proof
Dimensions	800 (W) · 600 (D) · 1200 (H) mm
Mass	200 kg max
Cooling System	Indirect cooling
Ambient Temperature	During operation: 0 °C to +40 °C During storage: -10 °C to +45 °C
Relative Humidity	90% max. (non-condensing)
Power Supply	Three-phase 200/220 VAC (+10% to -15%), 60Hz (Japan)
	Three-phase 200 VAC (+10% to -15%), 50Hz (Japan)
Grounding	Grounding resistance: 100 Ω or less
	Grounding 10 Ω or less for barrier of explosion-proof PP (option)
Digital I/Os	Specialized signals: 17 inputs and 3 outputs
	General signals : 40 inputs and 40 outputs
	Max. I/O (optional) : 1024 inputs and 1024 outputs
Positioning System	By serial encoder
Programming Capacity	JOB: 60,000 steps 10,000 instructions
	CIO ladder: 10,000 steps max.
Expansion Slots	PCI: 2 slots for main CPUs and 1 slot for servo CPU
LAN (Connection to Host)	1 (10BaseT/100BaseTX)
Interface	RS-232C: 1ch
Control Method	Software servo control
Drive Units	For robot axes: One drive unit for AC servo with 6 axes
	Time required for replacement: 5 minutes(One unit includes amplifiers for 6 axes)
	For external axes: Combined converter and amplifier per axis. (optional)
Painting Color	Munsell notation 5Y 7/1 (reference value)

[Standard type PP]

Items	Specifications
Dimensions	169 (W) · 314.5 (H) · 50 (D) mm
Mass	0.986kg
Material	Reinforced plastics
Operation Device	Select keys, axes keys, numerical/application keys, mode keys (mode: teach, play, and remote) emergency stop button, deadman switch, compact flash card interface device (compact flash is optional.)
Display	5.7-inch color LCD, touch panel 640 · 480 pixels(Alphanumeric characters, Chinese characters, Japanese letters, others)
IEC Protection Class	IP65
Cable Length	Standard: 8 m, Max.: 36 m (optional)

[Explosion-proof type PP]



Items	Specifications
Dimensions	235 (W) · 203 (H) · 78 (D) mm
Mass	1.25 kg
Material	Reinforced plastics
Operation Device	Select keys, axes keys, numerical/application keys, emergency stop button, enable switch
Display	5.7-inch monochrome LCD, white LED backlight, touch panel 320 · 240 (Alphanumeric characters, Chinese characters, Japanese letters, others)
IEC Protection Class	IP65
Cable Length	Standard: 8 m, Optional: 20 m, Max.: 50 m (with optional extension cable)