

# Multi-Purpose Robot MOTOMAN-MH12

12 kg Payload, 6-axis Vertically Articulated

***A new robot with the fastest motion speed in its class is born!***

## Fastest motion speed in 12 kg payload class

The 12 kg payload type is newly added to our product line as a multipurpose-applicable robot. By realizing the highest motion performance in its class, Yaskawa is contributing to the productivity development

## Cable-storable hollow-shaft arm structure

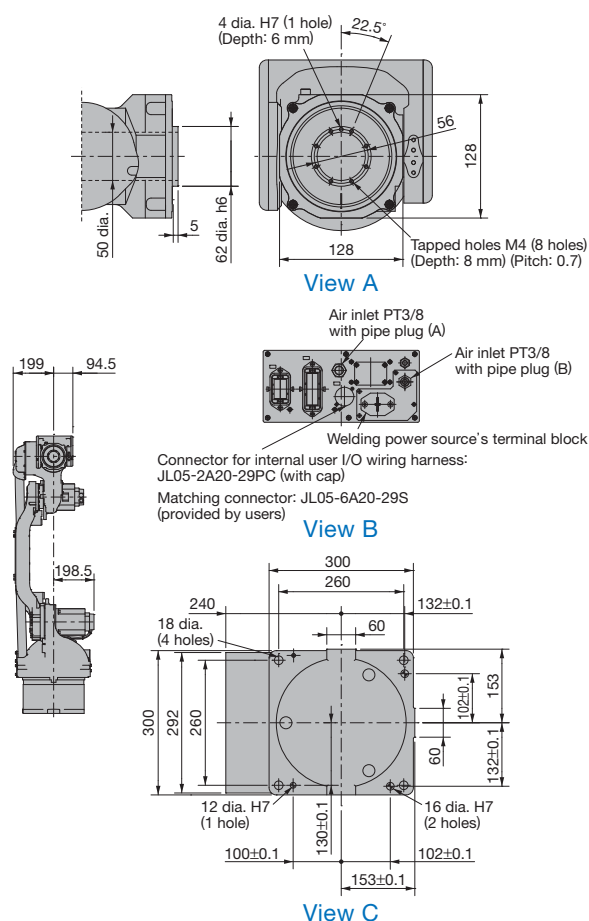
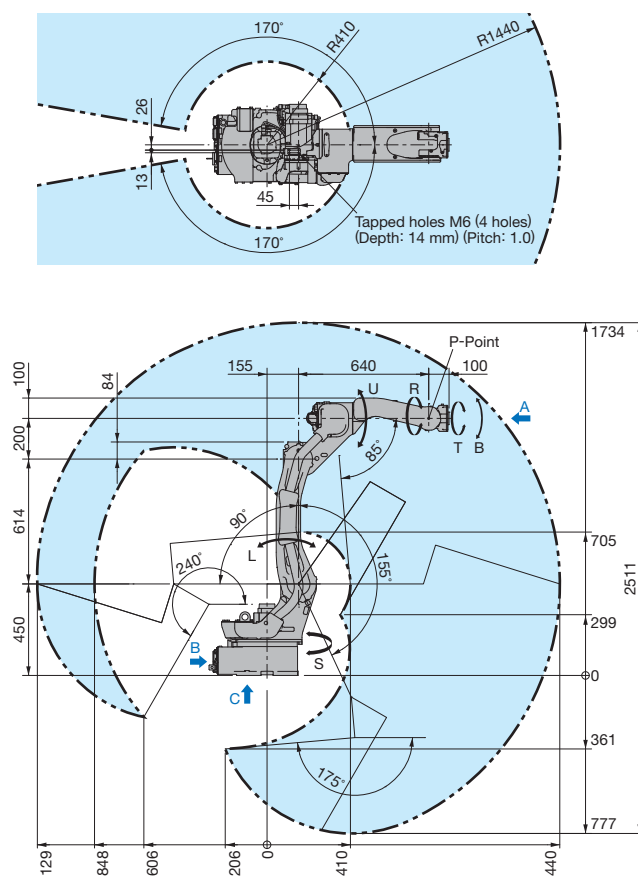
Hollow shaft structure is adopted to the upper-arm (U-arm). By storing the cables in the arm, operation restriction due to the cable interference is reduced. Therefore, maintainability such as simplifying of the robot teaching operation or eliminating of the cable disconnection problems, etc is improved.

## Stream-lined structure

Stream-lined structure adopted to the new type arc welding purpose robot is also applied to this multipurpose-applicable robot. And this adoption contributes to reduce the interference area between the jigs and workpieces. Superior performance can be delivered in handling operations which requires rotation of the large-sized workpiece, etc.



■ Dimensions    Units: mm    ■ : P-point Maximum Envelope



# MOTOMAN-MH12

## ■ Manipulator Specifications

Items		Specifications
Model		MOTOMAN-MH12
Type		YR-MA1440/MH12-A00
Controlled Axis		6 (Vertically articulated)
Payload		12 kg
Repeatability*1		±0.08 mm
Range of Motion	S-axis (turning)	−170° – +170°
	L-axis (lower arm)	−90° – +155°
	U-axis (upper arm)	−175° – +240°
	R-axis (wrist roll)	−180° – +180°
	B-axis (wrist pitch/yaw)	−135° – +135°
Maximum Speed	T-axis (wrist twist)	−360° – +360°
	S-axis (turning)	3.84 rad/s, 220°/s
	L-axis (lower arm)	3.49 rad/s, 200°/s
	U-axis (upper arm)	3.84 rad/s, 220°/s
	R-axis (wrist roll)	7.16 rad/s, 410°/s
Allowable Moment	B-axis (wrist pitch/yaw)	7.16 rad/s, 410°/s
	T-axis (wrist twist)	10.6 rad/s, 610°/s
	R-axis (wrist roll)	22 N·m
Allowable Inertia (GD <sup>2</sup> /4)	B-axis (wrist pitch/yaw)	22 N·m
	T-axis (wrist twist)	9.8 N·m
Approx. Mass	R-axis (wrist roll)	0.65 kg·m <sup>2</sup>
	B-axis (wrist pitch/yaw)	0.65 kg·m <sup>2</sup>
Ambient Conditions	T-axis (wrist twist)	0.17 kg·m <sup>2</sup>
	Temperature	130 kg
	Humidity	0°C to +45°C
	Vibration	20 to 80%RH (non-condensing)
Power Requirements*2	Others	4.9 m/s <sup>2</sup> or less
		<ul style="list-style-type: none"> <li>• Free from corrosive gasses or liquids, or explosive gasses</li> <li>• Free from exposure to water, oil, or dust</li> <li>• Free from excessive electrical noise (plasma)</li> </ul>
Power Requirements*2		1.5 kVA

\*1 : Conforms to ISO 9283.

\*2 : Varies in accordance with applications and motion patterns.

Note : SI units are used for specifications.

## ■ DX200 Controller Specifications

Items		Specifications
Configuration		Dust proof
Dimensions		600 (W)×520 (D)×730 (H) mm (Possible to control three external axes)
Mass		100 kg max.
Cooling System		Indirect cooling
Ambient Temperature		During operation : 0°C to +45°C During storage : −10°C to +60°C
Relative Humidity		90% max. (non-condensing)
Power Supply		Three-phase 200/220 VAC (+10%, −15%), 50/60 Hz (±2%)
Grounding		Grounding resistance : 100Ω or less
Digital I/Os		Specialized signals : 23 inputs and 5 outputs General signals : 40 inputs and 40 outputs Max. I/O (optional) : 4096 inputs and 4096 outputs
Positioning System		By serial encoder
Programming Capacity		JOB : 200,000 steps, 10,000 instructions CIO ladder : 20,000 steps
Expansion Slots		PCI : 2 slots
LAN (Connection to Host)		1 (10BASE-T/100BASE-TX)
Interface		RS-232C : 1ch
Control Method		Software servo control
Drive Units		SERVOPACK for AC servomotors (can control up to 9 axes)
Painting Color		Front panel : Light gray (Munsell notation N7.7 or equivalent) Body except front panel : Dark gray (Munsell notation N3 or equivalent)

## ■ Programming Pendant Specifications

Items		Specifications
Dimensions		169 (W)×314.5 (H)×50 (D) mm
Mass		0.998 kg
Material		Reinforced plastics
Operation Device		Select keys, axis keys, numerical/application keys, mode selector switch with keys (mode : teach, play, and remote), emergency stop button, enable 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 (with optional extension cable)

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YASKAWA ELECTRIC CORPORATION

In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply.

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