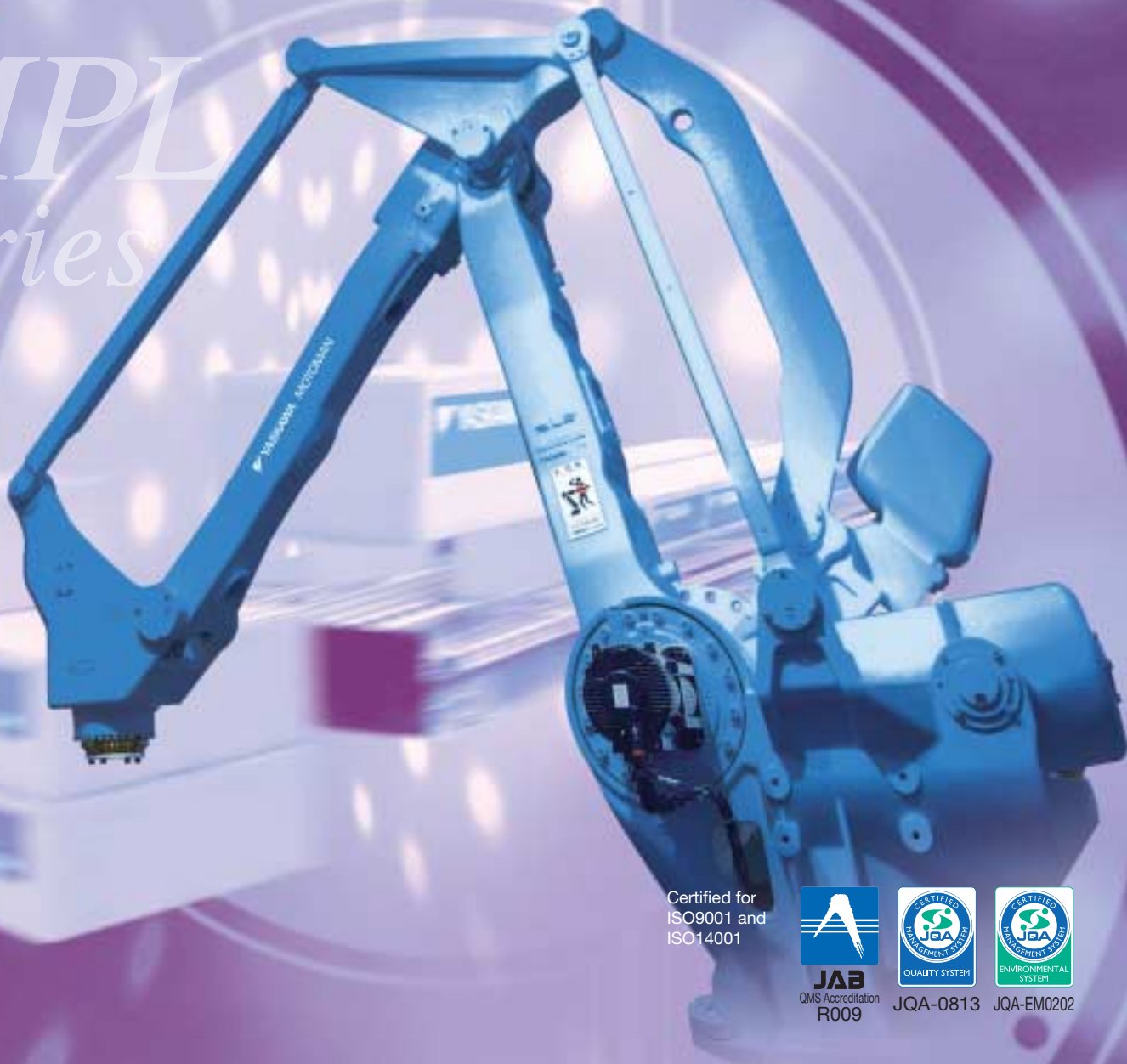


YASKAWA

Robot Optimized for Palletizing MOTOMAN-MPL Series

*MPL
Series*



Certified for
ISO9001 and
ISO14001



JAB
QMS Accreditation
R009



JQA
QUALITY SYSTEM
JQA-0813



JQA
ENVIRONMENTAL SYSTEM
JQA-EM0202

Complete Lineup to Help Build Optimum Palletizing System



Higher Productivity

Performance, design, and specialized software are optimized for palletizing and increase productivity.

Manipulator

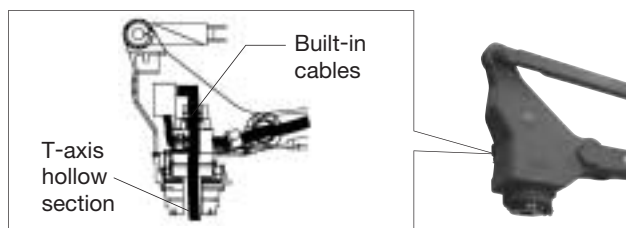
Improve productivity with high-speed motion and wider range of motion.

Low inertia AC servomotor with high-speed and high-speed motion brought by cutting-edge control technology have achieved reduced cycle time. Optimum length ratio of the L-arm and U-arm realizes the maximum stacking space in its class.

Eliminate Cable Problems with Hollow Wrist*1

The cables for the end-of-arm tool can be stored inside the hollow-shaft of the wrist (T-axis). This prevents wiring from becoming tangled and interfering with the tool or peripherals.

*1 : Excluding MOTOMAN-MPL80II, MPL100II.



MOTOPAL: Specially Designed Software for Palletizing

Optional

MOTOPAL is a software program that runs on the programming pendant and is designed to provide technical support for palletizing. MOTOPAL helps to reduce setup time and increase work efficiency because it can:

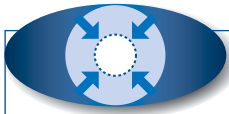
- Generate palletizing programs automatically.
- Make it easy to check stacking conditions.
- Make it easy to select and switch tasks.



Lineup of Robots Optimized for Palletizing

MOTOMAN-	MPL80II	MPL100II	MPL160II	MPL300II	MPL500II	MPL800II
Payload	80 kg	100 kg	160 kg	300 kg	500 kg	800 kg
Maximum Reach	2061 mm	2150 mm	3159 mm			
Handling Capacity*2 (Motion Patterns and Load Mass)	800 cycles/hour	1570 cycles/hour	1650 cycles/hour	1200 cycles/hour	750 cycles/hour	710 cycles/hour
● Motion Patterns 			● Transferable Weight Condition: Mass of transferred workpieces is equal to maximum payload.			
Maximum Stacking Height	1740 mm (on a pallet of 1100 mm × 1100 mm)	2440 mm (on a pallet of 1219 mm × 1219 mm)	2363 mm (on a pallet of 1600 mm × 1600 mm)			

*2 : Cycle time is different according to conditions such as work, hand, duty, etc.



Smaller Space

high-performance controller with optional functions reduces space required.

Robot Controller DX200

The DX200 is a low-floor robot controller developed with Yaskawa's expertise acquired through the development of products for various applications. The amplifier for three external axes and other options that previously required attachment tools can now be housed inside a standard cabinet, reducing the required space for installation by up to 50%. The safety functions have been strengthened by improving the safety performance of the speed limiting function and tool switching monitoring function.

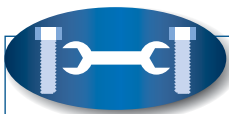
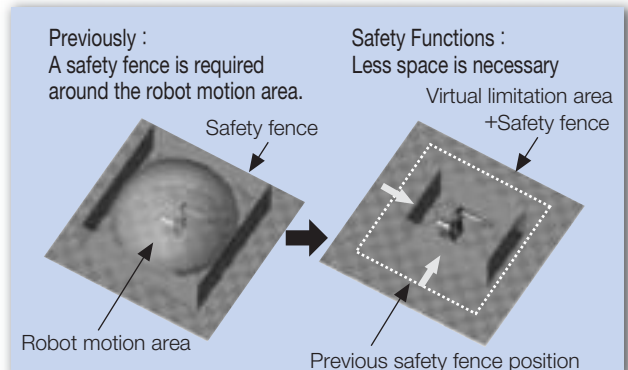
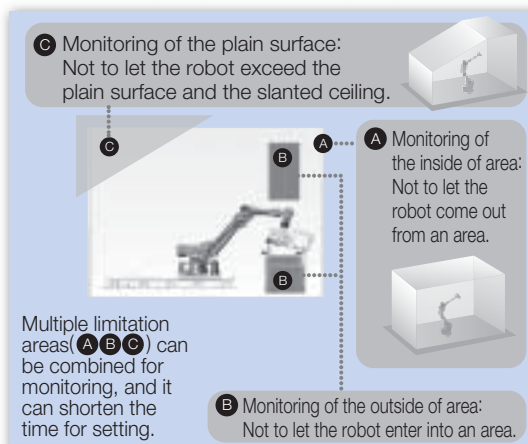
Installation space for the control panel is reduced by **50%**.



Minimized Safety Barrier

Optional

Movements of the robot can be limited within an optimal range for the attached tool by monitoring positions of the robot and tool with the functional safety module equipped with two CPUs. With this function, the safety fence can be installed for an area that is smaller than the motion range of the robot, which reduces the required installation space for production equipment.

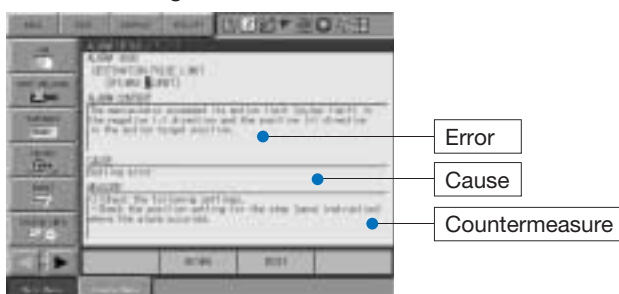


Quicker Maintenance

MOTOMAN continually strives to improve monitoring, troubleshooting, and design to reduce maintenance and recovery time from failures.

Troubleshooting

When an alarm occurs, the detail, cause, and countermeasure of the error are displayed on the Programming Pendant to provide measures for troubleshooting.



Reduced Replacement Time for Parts

We have reduced the time required to replace Controller parts to shorten recovery time when troubles do occur. (Required time for replacement: from 10 to 8 minutes: reduced by 20%) The encoder can be replaced with standard tools since it employs a unit style and thus the required time for replacement is reduced.

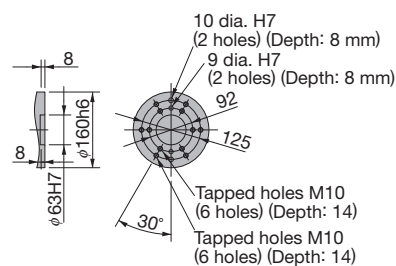
An optional zeroing function can be used to accurately and quickly reset the home position after replacing the motor or encoder.







■ Dimensions Units : mm : T-point Maximum Envelope



Technical drawing of a robotic arm with dimensions and labels. The drawing shows the arm's structure, including the base, joints, and end effector. Key dimensions and labels include:

- Dimensions:**
 - Horizontal dimensions: 75, 562, 577, 709, 713, 762, 1441, 2150, 2702.
 - Vertical dimensions: 2242, 325, 1225, 153, 2223, 300, 2553, 1150, 957, 598, 407, 9, 114, 332, 650.
 - Angles: 90° , 60° , 4° , 76° , 15° , 15° , 77.5° , 19° .
- Labels:**
 - P-Point:** A point on the arm's structure.
 - T:** A point on the arm's structure.
 - A:** A point on the arm's structure.
 - B:** A point on the arm's structure.
 - C:** A point on the arm's structure.
 - S:** A point on the arm's structure.
 - L:** A point on the arm's structure.
 - U:** A point on the arm's structure.
 - Tube For Field bus Cable (Inner dia. 12) (In protective tubing):** A label for the cable tube.
 - Tube For Field bus Cable (Inner dia. 12) (in base):** A label for the cable tube in the base.

Technical drawing of the robot arm showing dimensions and a flange for cabling. The drawing includes the following dimensions and labels:

- Top horizontal dimensions: (276) 344 and 220.
- Bottom horizontal dimensions: 276 and 430.
- Label: Flange for Cabling.

Air inlet(Rc3/8)
with pipe plug

harness (Base side):
JL05-2A24-28PC(with cap)

Matching connector:
JL05-6A24-28S(provided by users)

Technical drawing of a mechanical part (Fig. 10.10) showing dimensions and tolerances. The part is a cylindrical component with a central hole and two side holes. Dimensions include overall length 450, overall diameter 290, and various hole diameters and positions. Tolerances are specified for several dimensions.

Dimensions and Tolerances:

- Overall length: 450
- Overall diameter: 290
- Distance from left face to center of first hole: 500
- Distance from left face to center of second hole: 420
- Distance from left face to center of third hole: 320
- Distance from center of first hole to center of second hole: 230 ± 0.1
- Distance from center of second hole to center of third hole: 230 ± 0.1
- Distance from center of third hole to right face: 295 ± 0.1
- Distance from left face to center of fourth hole: 185 ± 0.1
- Distance from left face to center of fifth hole: 250 ± 0.1
- Hole diameters: 22 dia. (8 holes), 20 dia. H7 (2 holes)

■ Manipulator Specifications

- *1 : When flange or cables installed on robot.
- *2 : Conforms to ISO 9283.
- *3 : Motion range of the B-axis is the angle of the B-axis to the ground.
In some postures, the motion range of the B-axis may be limited depending on the relative angle to the upper arm.
- *4 : Varies in accordance with applications and motion patterns.

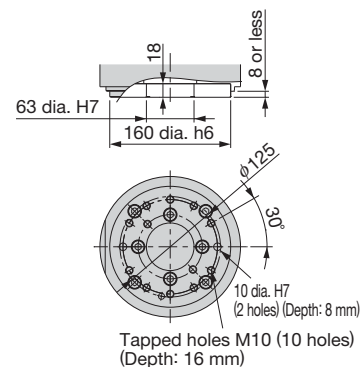
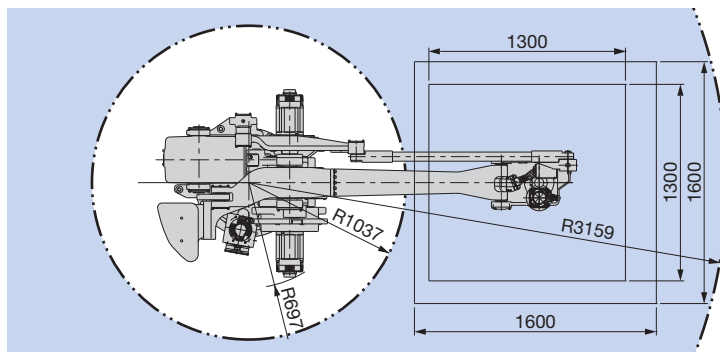
Note : SI units are used for specifications.



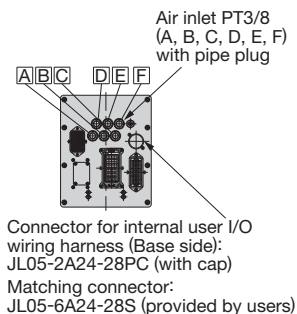
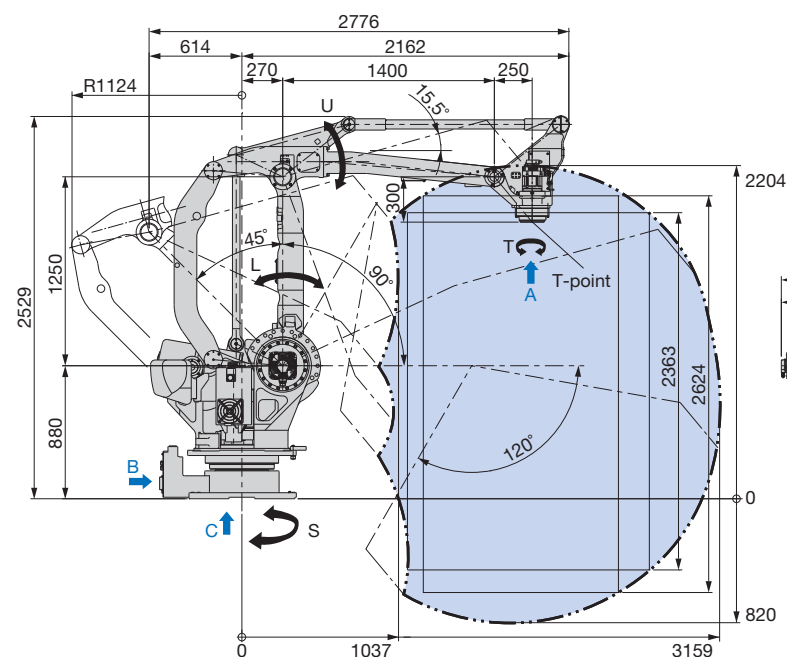
MOTOMAN-MPL160II

160 kg payload, R3159 mm maximum reach

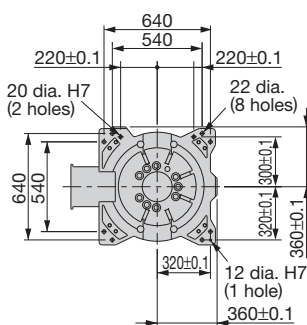
■ Dimensions Units : mm : T-point Maximum Envelope



View A



View B



View C

■ Manipulator Specifications

Model	MOTOMAN-MPL160II	
Type*1	YR-MPL0160-J00	
Controlled Axis	4 (Vertically articulated)	
Payload	160 kg	
Repeatability*2	±0.5 mm	
Range of Motion	S-axis (turning)	-180° - +180°
	L-axis (lower arm)	-45° - +90°
	U-axis (upper arm)	-120° - +15.5°
	T-axis (wrist twist)	-360° - +360°
Maximum Speed	S-axis (turning)	2.44 rad/s, 140°/s
	L-axis (lower arm)	2.44 rad/s, 140°/s
	U-axis (upper arm)	2.44 rad/s, 140°/s
	T-axis (wrist twist)	5.32 rad/s, 305°/s

Allowable Inertia (GD ² /4)	T-axis (wrist twist)	80 kg·m ²
Mass		1700 kg
Ambient Conditions	Temperature	0°C to +45°C
	Humidity	20 to 80%RH (non-condensing)
	Vibration	4.9 m/s ² or less
	Others	- Free from corrosive gasses or liquids, or explosive gasses - Free from exposure to water, oil, or dust - Free from excessive electrical noise (plasma)
Power Requirements*3		9.5 kVA

*1 : Conforms to ISO 9283.

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

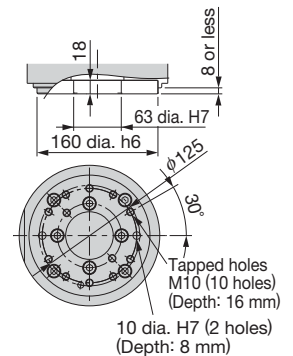
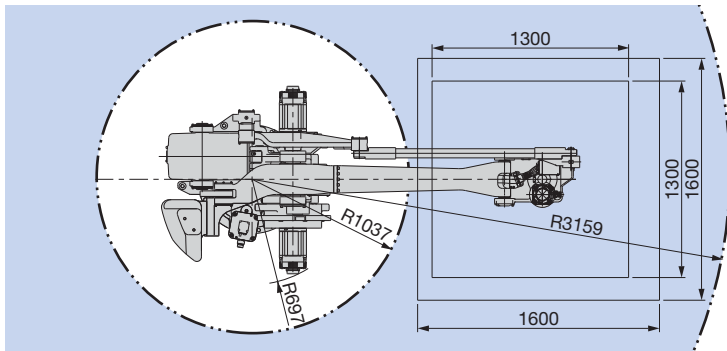
Note : SI units are used for specifications.



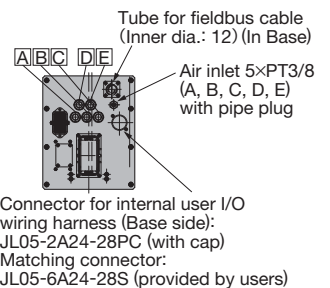
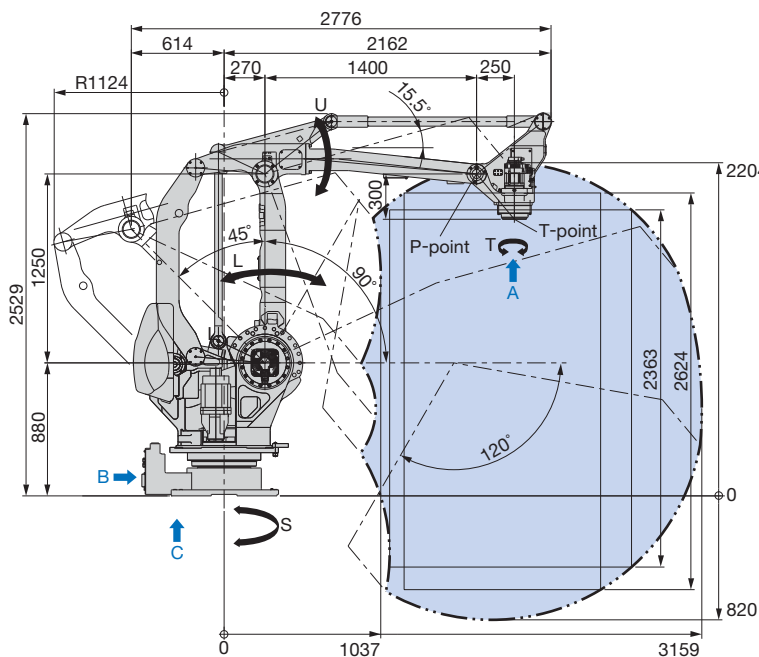
MOTOMAN-MPL300II

300 kg payload, R3159 mm maximum reach

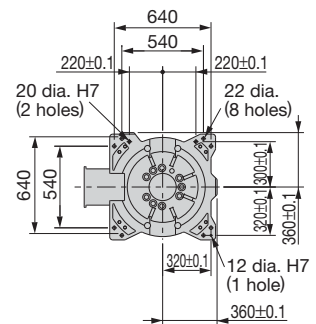
■ Dimensions Units : mm : T-point Maximum Envelope



View A



View B



View C

■ Manipulator Specifications

Model	MOTOMAN-MPL300II	
Type	YR-MPL0300-J00	
Controlled Axis	4 (Vertically articulated)	
Payload	300 kg	
Repeatability*1	±0.5 mm	
Range of Motion	S-axis (turning)	-180° - +180°
	L-axis (lower arm)	-45° - +90°
	U-axis (upper arm)	-120° - +15.5°
	T-axis (wrist twist)	-360° - +360°
Maximum Speed	S-axis (turning)	1.57 rad/s, 90°/s
	L-axis (lower arm)	1.75 rad/s, 100°/s
	U-axis (upper arm)	1.92 rad/s, 110°/s
	T-axis (wrist twist)	3.40 rad/s, 195°/s

Allowable Inertia (GD ² /4)	T-axis (wrist twist)	140 kg·m ²
Mass		1820 kg
Ambient Conditions	Temperature	0°C to +45°C
	Humidity	20 to 80%RH (non-condensing)
	Vibration	4.9 m/s ² or less
	Others	- Free from corrosive gasses or liquids, or explosive gasses - Free from exposure to water, oil, or dust - Free from excessive electrical noise (plasma)
Power Requirements*2		9.5 kVA

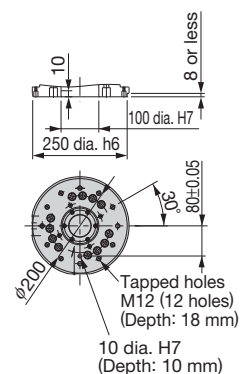
*1 : Conforms to ISO 9283.

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

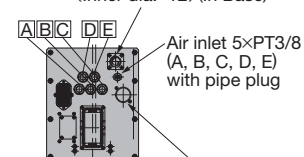
Note : SI units are used for specifications.

500 kg payload, R3159 mm maximum reach

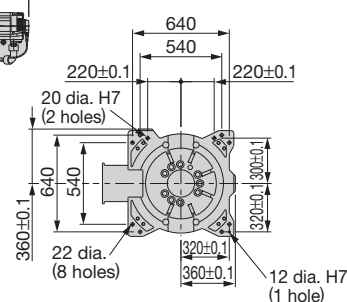
Technical drawing of the R3159 crane arm. The drawing includes a side view of the arm assembly and a detailed view of the end effector. Dimensions are provided in millimeters (mm). The main arm has a length of 1300 mm and a height of 1600 mm. The end effector has a width of 1300 mm and a height of 1600 mm. Callouts R773 and R1032 point to specific components of the arm assembly.



Tube for fieldbus cable
(Inner dia.: 12) (In Base)



Connector for internal user I/O wiring harness (Base side):
JL05-2A24-28PC (with cap)
Matching connector:
JL05-6A24-28S (provided by users)



View C

Model		MOTOMAN-MPL500II
Type		YR-MPL0500-J00
Controlled Axis		4 (Vertically articulated)
Payload		500 kg
Repeatability*1		±0.5 mm
Range of Motion	S-axis (turning)	-180° - +180°
	L-axis (lower arm)	-45° - +90°
	U-axis (upper arm)	-120° - +15.5°
	T-axis (wrist twist)	-360° - +360°
Maximum Speed	S-axis (turning)	1.48 rad/s, 85°/s
	L-axis (lower arm)	1.48 rad/s, 85°/s
	U-axis (upper arm)	1.48 rad/s, 85°/s
	T-axis (wrist twist)	3.40 rad/s, 195°/s

Allowable Inertia (GD ² /4)	T-axis (wrist twist)	200 kg·m ²
Mass		2300 kg
Ambient Conditions	Temperature	0°C to +45°C
	Humidity	20 to 80%RH (non-condensing)
	Vibration	4.9 m/s ² or less
	Others	• Free from corrosive gasses or liquids, or explosive gasses • Free from exposure to water, oil, or dust • Free from excessive electrical noise (plasma)
Power Requirements*2		9.5 kVA

* 1 : Conforms to ISO 9283.

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

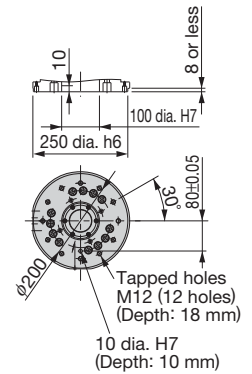
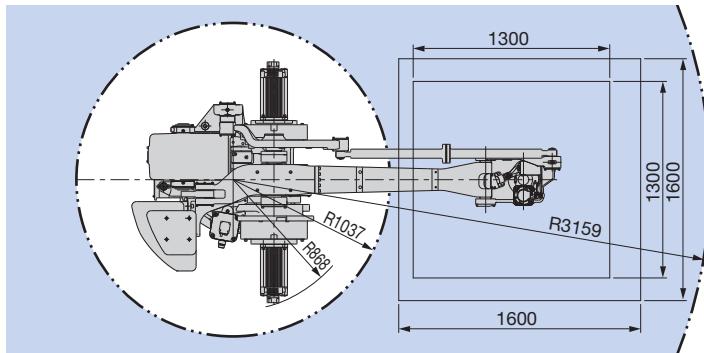
Note : SI units are used for specifications.



MOTOMAN-MPL800II

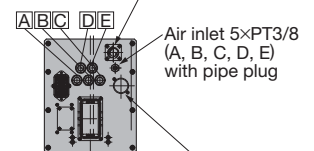
800 kg payload, R3159 mm maximum reach

Dimensions Units : mm : T-point Maximum Envelope



View A

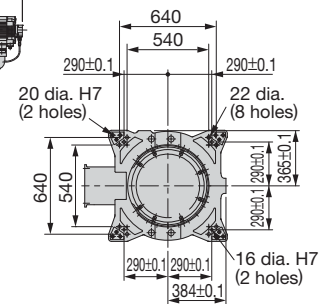
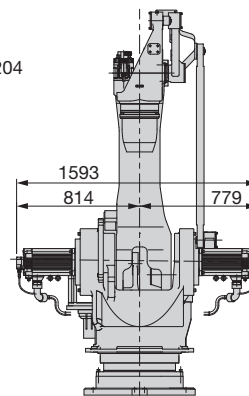
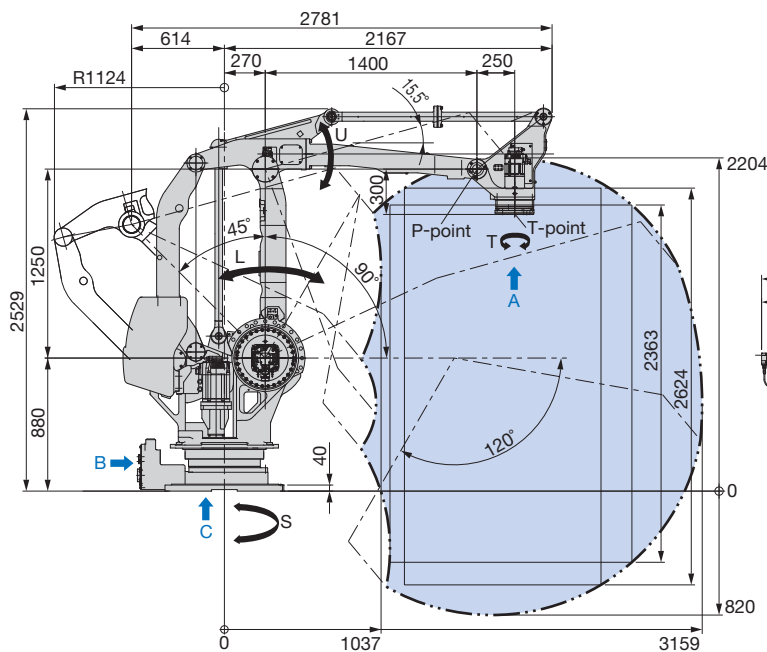
Tube for fieldbus cable
(Inner dia.: 12) (In Base)



Air inlet 5xPT3/8
(A, B, C, D, E)
with pipe plug

Connector for internal user I/O
wiring harness (Base side):
JL05-2A24-28PC (with cap)
Matching connector:
JL05-6A24-28S (provided by users)

View B



View C

Manipulator Specifications

Model		MOTOMAN-MPL800II		Allowable Inertia (GD ² /4)	T-axis (wrist twist)	550 kg·m ²	
Type		YR-MPL0800-J00					
Controlled Axis		4 (Vertically articulated)		Mass			
Payload		800 kg		Ambient Conditions	Temperature	0°C to +45°C	
Repeatability*1		±0.5 mm			Humidity	20 to 80%RH (non-condensing)	
					Vibration	4.9 m/s ² or less	
Range of Motion	S-axis (turning)	-180° - +180°			Others	• Free from corrosive gasses or liquids, or explosive gasses	
	L-axis (lower arm)	-45° - +90°				• Free from exposure to water, oil, or dust	
	U-axis (upper arm)	-120° - +15.5°		• Free from excessive electrical noise (plasma)			
	T-axis (wrist twist)	-360° - +360°					
Maximum Speed	S-axis (turning)	1.13 rad/s, 65°/s		Power Requirements*2			
	L-axis (lower arm)	1.13 rad/s, 65°/s		10 kVA			
	U-axis (upper arm)	1.13 rad/s, 65°/s					
	T-axis (wrist twist)	2.18 rad/s, 125°/s					

*1 : Conforms to ISO 9283.

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

*1 : Conforms to ISO 9283.

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

Note : SI units are used for specifications.

MOTOMAN-MPL Series

Robot Controller DX200 Specifications

Items	Specifications
Configuration	Dust proof IP54
Dimensions, Mass	MPL80II, MPL160II : 600 (W) × 520 (D) × 730 (H) mm* (Possible to control two external axes), 100 kg max.
	MPL100II, MPL300II, MPL500II : 600 (W) × 640 (D) × 730 (H) mm* (Possible to control two external axes), 110 kg max.
	MPL800II : 600 (W) × 520 (D) × 1230 (H) mm* (Possible to control two external axes), 160 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 VAC (+10%, -15%), 50/60 Hz (±2%) Three-phase 220 VAC (+10%, -15%), 60 Hz (±2%)
Grounding	Grounding resistance : 100Ω or less
Digital I/Os	Specialized signals : 28 inputs and 7 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)

* : Dimensions of the controller only. Does not include any attachments.

Programming Pendant Specifications

Items	Specifications
Dimensions	169 (W)×314.5 (H)×50 (D) mm
Mass	0.990 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.), USB port (1 port)
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

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. Specifications are subject to change without notice for ongoing product modifications and improvements.

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