YASKAWA

YASKAWA INDUSTRIAL ROBOT
MOTOMAN-HP SERIES

FOR MATERIAL HANDLING/ASSEMBLING/CUTTING

VERTICALLY ARTICULATED ROBOT

High-performance NX100 Controller

Slim Manipulator with High Payload

6.5-inch Color LCD

The HP Series, the Evolution of Technology

Certified for ISO9001 and ISO14001

JAB QS Accreditation R009

JQA-0813

JQA-EM0924

High Efficiency

MOTOMAN-HP series with a full lineup for improved system efficiency

You can choose the ideal robot from small to large in the MOTOMAN-HP series with improved levels of speed, accuracy, and reliability.
With a high-performance NX100 controller and a 6.5-inch color LCD on the programming pendant for improving operability, you can select the perfect fit for your robotic system with the MOTOMAN-HP series.

For Optimum Systems

Manipulators seeking excellence

Highest motion performance in its class

The MOTOMAN-HP series has a faster axis speed than conventional models.
This achievement, combined with a lightweight body and the NX100 controller with the high-accuracy path control and the vibration-suppression control, reduces residual vibration when starting up and stopping, resulting in shortened cycle times for common handling patterns.

The improved allowable motion and inertia enables the HP165 to be used for spot welding and handling large workpieces in a wider variety of applications.

Greater range of motion

Manipulators in the HP series offer you greater flexibility in system design with the longest stroke and the maximum and the minimum reach in each class.

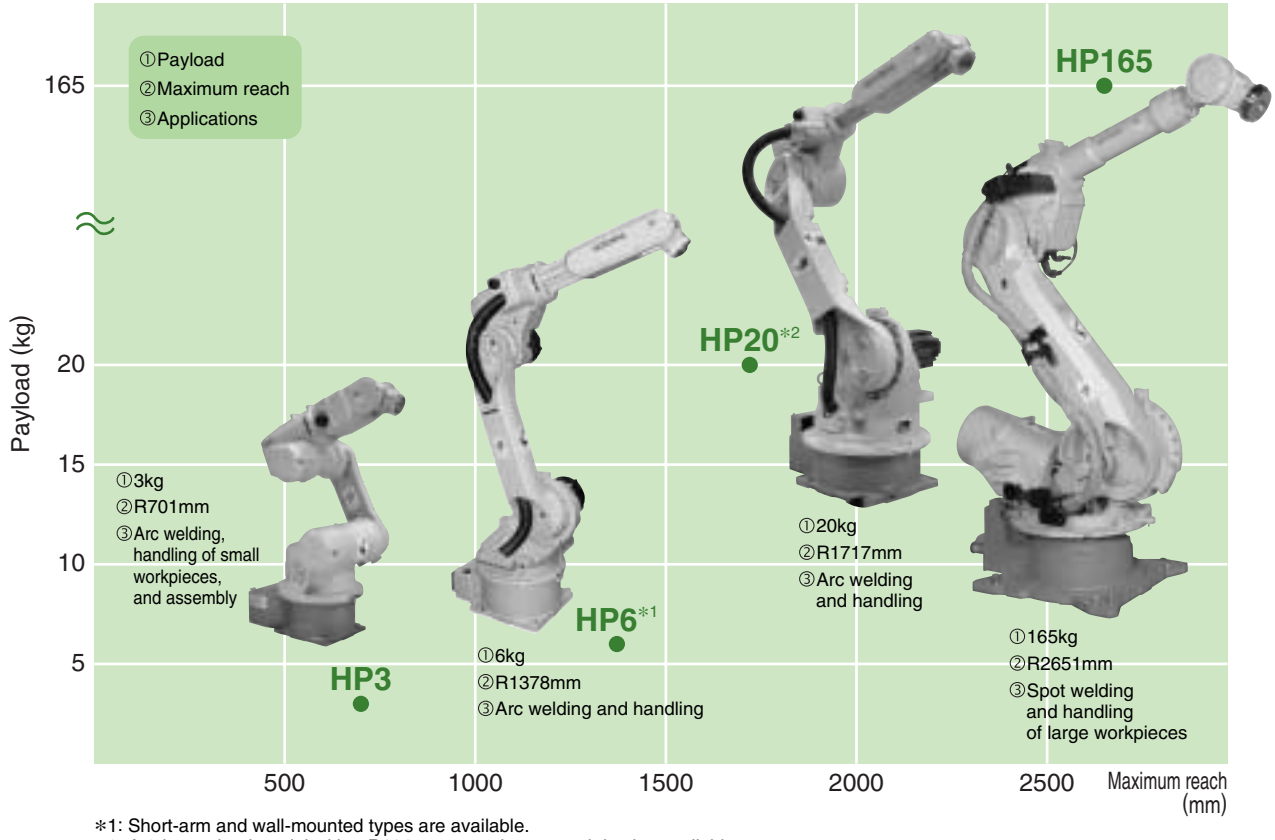
With an expanded range of motion in the rear side, HP3, HP6, and HP20 can handle a greater variety of applications and allow efficient installation of jigs such as wire cutters as well.

Enhanced water and dust resistance

The HP series has an IP67-rated waterproof and dustproof cover*1 for the wrist. This feature enables handling in adverse environments.

*1: Optional

Representative models in the MOTOMAN-HP series



*1: Short-arm and wall-mounted types are available.
*2: A 6-kg payload model with a R1915-mm maximum reach is also available.

For High-quality Systems

MOTOMAN-HP Series

Revolutionary controller NX100

Improved path accuracy and absolute-position accuracy

The lag time after a command is minimized with new algorithm for high-accuracy path control, which is one of the features of Yaskawa's unique Advanced Robot Motion (ARM) control. This results in an improvement of up to 50%*2 for the path accuracy of the robots.

The deflection compensation function (optional) increases the absolute-position accuracy by 2 to 5 times*2. This feature improves quality and reduces faulty operations related to the absolute positioning accuracy for all applications.

Coordinated control with 36 axes

The NX100 can control four manipulators (36 axes). This feature enables easy construction of a system for Jigless Coordinated Welding where one robot holds a workpiece while the other robots execute welding, and helps save space and reduce equipment cost.

The NX100 also helps reduce cycle time with a double processing speed*2.

*2: Compared to conventional models.

For User-friendly Systems

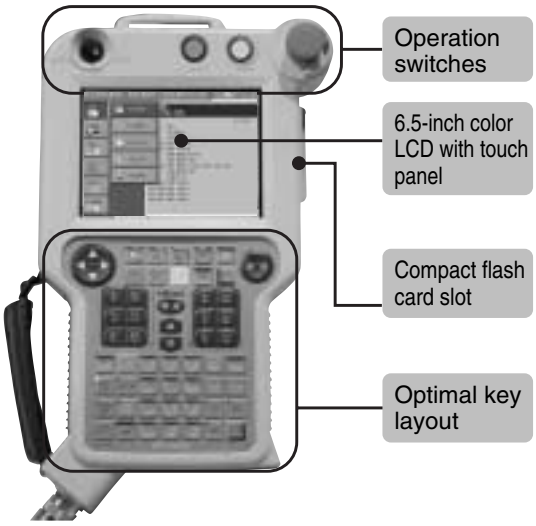
MOTOMAN-HP Series

Programming pendant filled with functions

Color display & touch panel

The programming panel required for teaching and maintenance has a 6.5-inch color LCD with a touch panel function of 640×480 pixels. Using icons, drawings, and operations similar to Windows, the operations are even easier than ever before. The on-screen Guidance Help Function allows you to confirm the program to operate the programming pendant.

Note: Windows is a registered trademark of Microsoft Corporation, U.S.A.



Enhanced ladder editing and monitoring function

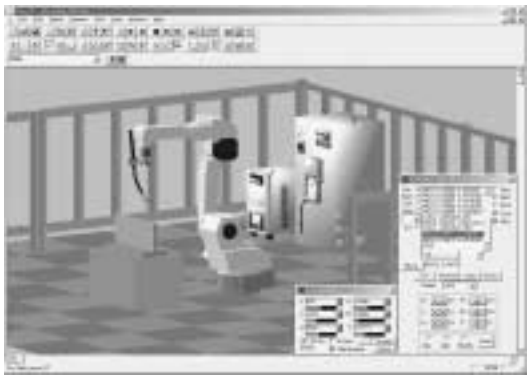
The programming pendant enables a remarkably increased debugging efficiency of I/O signals in setting up the system on site, allowing you to edit a ladder diagram on the screen. With an increased memory capacity of 10,000 steps, no external PLC is required. For arc welding, you can check the voltage and current during welding with the arc monitoring function (recommended option).

Easy pre-examination

For cell simulation, an easy pre-examination is available on your PC by optional high-speed 3D graphics ROTSY*3. It also supports ROBCAD and IGRIP for the line simulation.

*3: Robot Off-line Teaching System of YASKAWA

Note: ROBCAD is a registered trademark of Tecnomatix Technologies Ltd.
IGRIP is a registered trademark of DELMIA Corp.

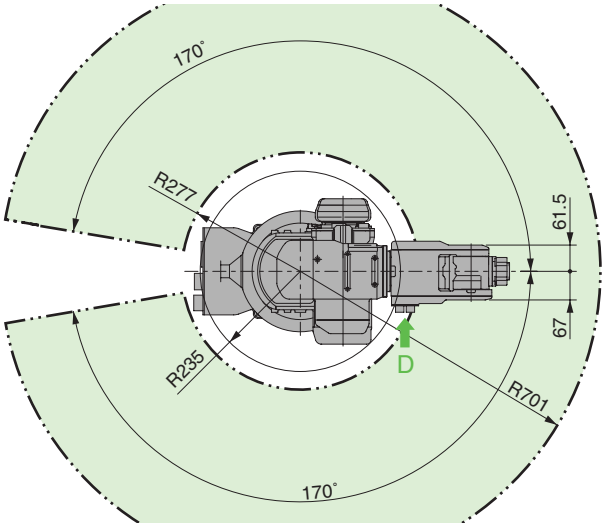


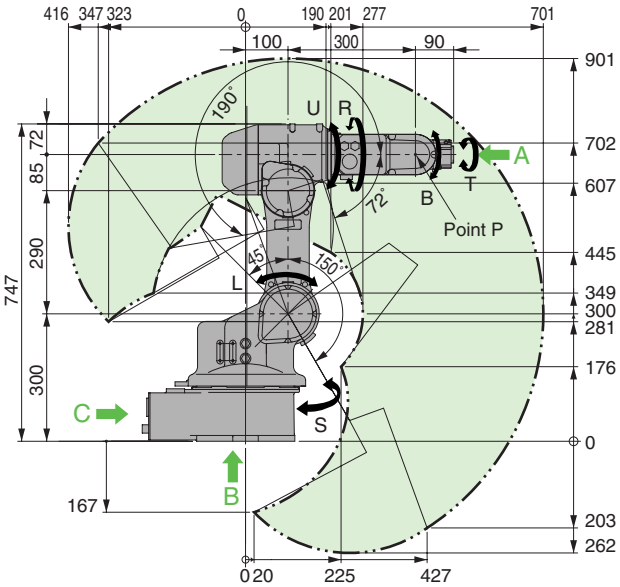
Operation Screen

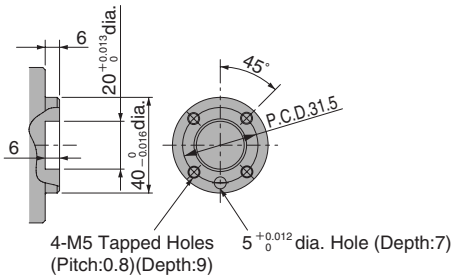
MOTOMAN-HP3

3 kg payload, R701 mm maximum reach

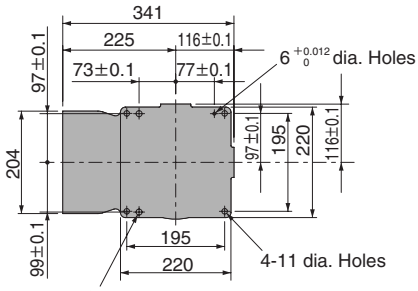
Dimensions Units : mm : P-point Maximum Envelope



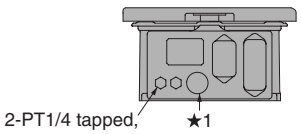




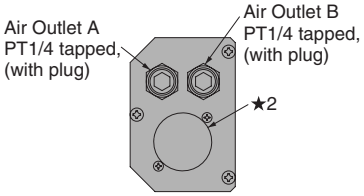
View A



View B



View C



View D

	Connector Type	Plug Type (Prepared by user)
★1	JL05-2A20-29PC	JL05-6A20-29S
★2	JL05-2A20-29SC	JL05-6A20-29P

Manipulator Specifications

Model		MOTOMAN-HP3
Type		YR-HP3-A00
Controlled Axis		6 (Verticaly articulated)
Payload		3 kg
Repetability*1		±0.03 mm
Range of Motion	S-axis (turning)	±170°
	L-axis (lower arm)	+150° to −45°
	U-axis (upper arm)	+210° to −152°
	R-axis (wrist roll)	±190°
	B-axis (wrist pitch/yaw)	±125°
	T-axis (wrist twist)	±360°
Maximum Speed	S-axis (turning)	3.66 rad/s, 210°/s
	L-axis (lower arm)	3.14 rad/s, 180°/s
	U-axis (upper arm)	3.93 rad/s, 225°/s
	R-axis (wrist roll)	6.54 rad/s, 375°/s
	B-axis (wrist pitch/yaw)	6.54 rad/s, 375°/s
	T-axis (wrist twist)	8.73 rad/s, 500°/s

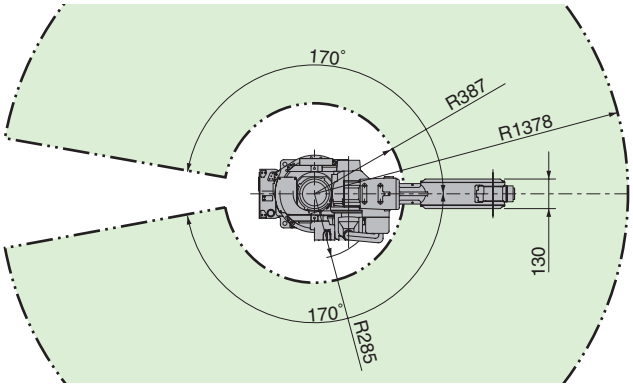
Allowable Moment	R-axis (wrist roll)	7.25 N · m
	B-axis (wrist pitch/yaw)	7.25 N · m
	T-axis (wrist twist)	5.21 N · m
Allowable Inertia ($GD^2/4$)	R-axis (wrist roll)	0.30 kg · m^2
	B-axis (wrist pitch/yaw)	0.30 kg · m^2
	T-axis (wrist twist)	0.1 kg · m^2
Mass		45 kg
Ambient Conditions	Temperature	0℃ to +45℃
	Humidity	20 to 80%RH (non-condensing)
	Vibration	Less than 4.9 m/s^2
	Others	・Free from corrosive gasses or liquids,or explosive gasses ・Clean and dry ・Free from excessive electrical noise (plasma)
Power Requirements *2		1 kVA

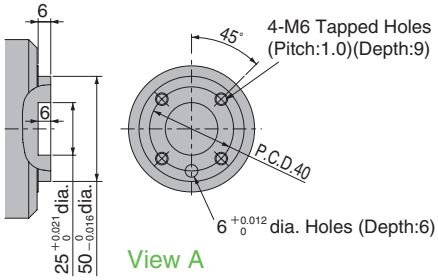
*1: Conforms to JIS B 8432.
*2: Varies in accordance with applications and motion patterns.
Note: SI units are used for specifications.

MOTOMAN-HP6

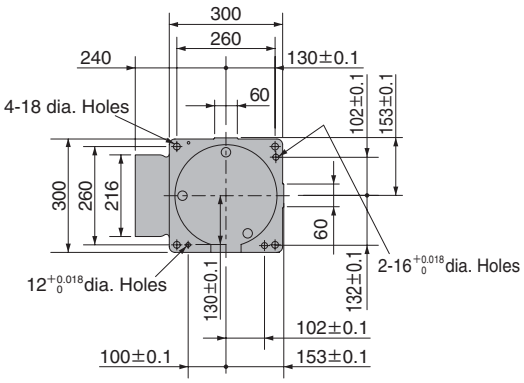
6 kg payload, R1378 mm maximum reach

■ Dimensions Units : mm : P-point Maximum Envelope

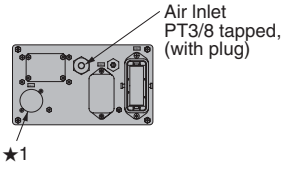




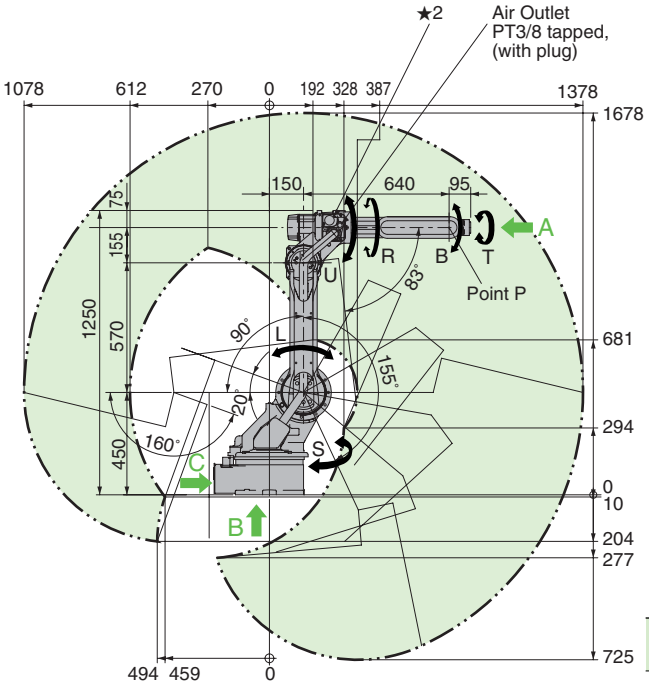
View A



View B



View C



	Connector Type	Plug Type (Prepared by user)
★1	JL05-2A20-29PC	JL05-6A20-29S
★2	JL05-2A20-29SC	JL05-6A20-29P

■ Manipulator Specifications

Model		MOTOMAN-HP6
Type		YR-HP6-A00
Controlled Axis		6 (Verticaly articulated)
Payload		6 kg
Repetability*1		±0.08 mm
Range of Motion	S-axis (turning)	±170°
	L-axis (lower arm)	+155° to −90°
	U-axis (upper arm)	+250° to −175°
	R-axis (wrist roll)	±180°
	B-axis (wrist pitch/yaw)	+225° to −45°
	T-axis (wrist twist)	±360°
Maximum Speed	S-axis (turning)	2.62 rad/s, 150°/s
	L-axis (lower arm)	2.79 rad/s, 160°/s
	U-axis (upper arm)	2.97 rad/s, 170°/s
	R-axis (wrist roll)	5.93 rad/s, 340°/s
	B-axis (wrist pitch/yaw)	5.93 rad/s, 340°/s
	T-axis (wrist twist)	9.08 rad/s, 520°/s

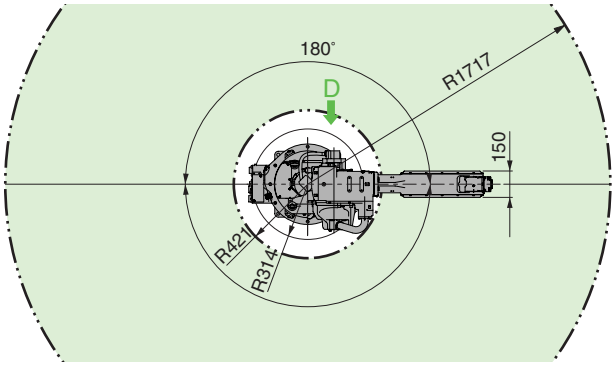
Allowable Moment	R-axis (wrist roll)	11.8 N · m
	B-axis (wrist pitch/yaw)	9.8 N · m
	T-axis (wrist twist)	5.9 N · m
Allowable Inertia ($GD^2/4$)	R-axis (wrist roll)	0.24 kg · m^2
	B-axis (wrist pitch/yaw)	0.17 kg · m^2
	T-axis (wrist twist)	0.06 kg · m^2
Mass		130 kg
Ambient Conditions	Temperature	0℃ to +45℃
	Humidity	20 to 80%RH (non-condensing)
	Vibration	Less than 4.9 m/s^2
	Others	・Free from corrosive gasses or liquids,or explosive gasses ・Clean and dry ・Free from excessive electrical noise (plasma)
Power Requirements *2		1.5 kVA

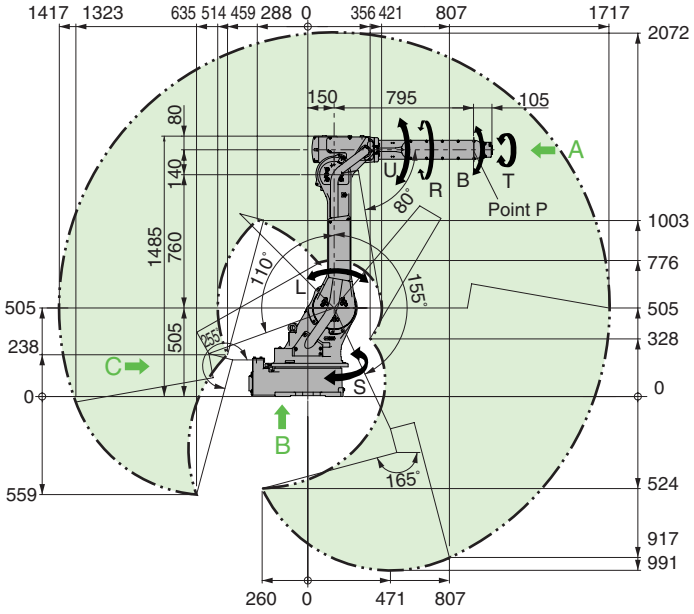
*1: Conforms to JIS B 8432.
*2: Varies in accordance with applications and motion patterns.
Note: SI units are used for specifications.

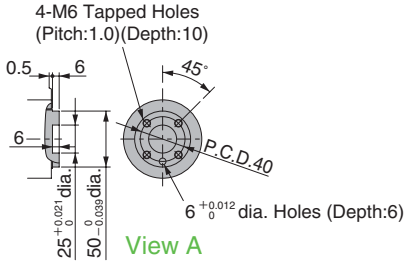
MOTOMAN-HP20

20 kg payload, R1717 mm maximum reach

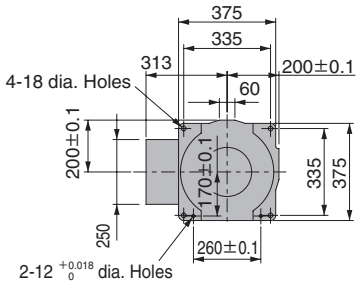
Dimensions Units : mm : P-point Maximum Envelope



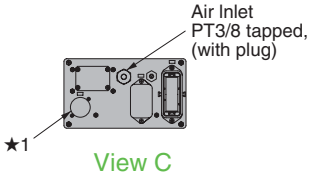




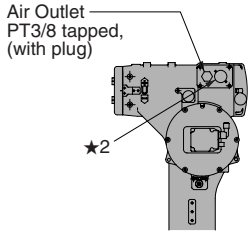
View A



View B



View C



View D

	Connector Type	Plug Type (Prepared by user)
★1	JL05-2A20-29PC	JL05-6A20-29S
★2	JL05-2A20-29SC	JL05-6A20-29P

Manipulator Specifications

Model		MOTOMAN-HP20
Type		YR-HP20-00
Controlled Axis		6 (Verticaly articulated)
Payload		20 kg
Repetability*1		±0.06 mm
Range of Motion	S-axis (turning)	±180°
	L-axis (lower arm)	+155° to −110°
	U-axis (upper arm)	+255° to −165°
	R-axis (wrist roll)	±200°
	B-axis (wrist pitch/yaw)	+230° to −50°
	T-axis (wrist twist)	±360°
Maximum Speed	S-axis (turning)	2.96 rad/s, 170°/s
	L-axis (lower arm)	2.96 rad/s, 170°/s
	U-axis (upper arm)	3.05 rad/s, 175°/s
	R-axis (wrist roll)	6.20 rad/s, 355°/s
	B-axis (wrist pitch/yaw)	6.02 rad/s, 345°/s
	T-axis (wrist twist)	9.16 rad/s, 525°/s

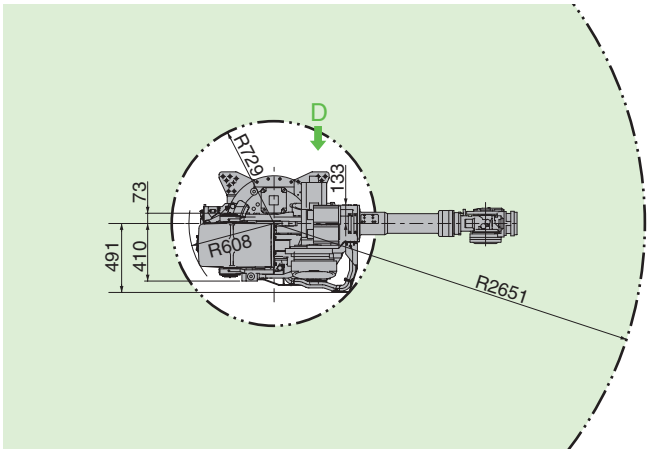
Allowable Moment	R-axis (wrist roll)	31.4 N · m
	B-axis (wrist pitch/yaw)	31.4 N · m
	T-axis (wrist twist)	15.7 N · m
Allowable Inertia ($GD^2/4$)	R-axis (wrist roll)	0.7 kg · m^2
	B-axis (wrist pitch/yaw)	0.7 kg · m^2
	T-axis (wrist twist)	0.2 kg · m^2
Mass		280 kg
Ambient Conditions	Temperature	0℃ to +45℃
	Humidity	20 to 80%RH (non-condensing)
	Vibration	Less than 4.9 m/s^2
	Others	・Free from corrosive gasses or liquids,or explosive gasses ・Clean and dry ・Free from excessive electrical noise (plasma)
Power Requirements *2		2.8 kVA

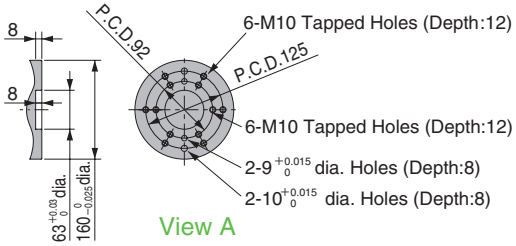
*1 : Conforms to JIS B 8432.
*2 : Varies in accordance with applications and motion patterns.
Note: SI units are used for specifications.

MOTOMAN-HP165

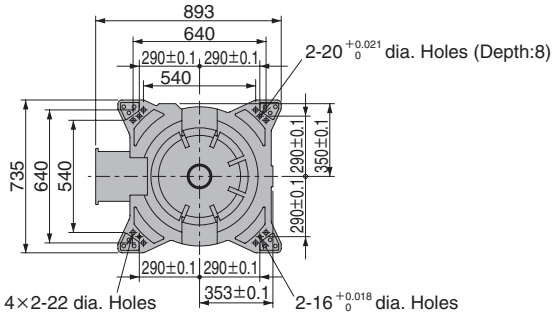
165 kg payload, R2651 mm maximum reach

Dimensions Units : mm : P-point Maximum Envelope

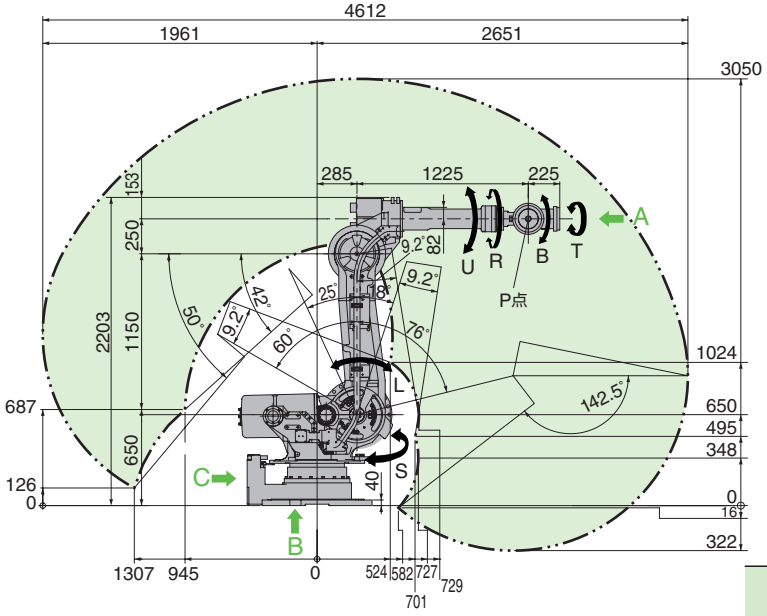


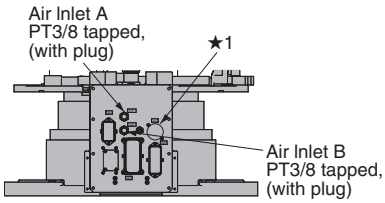


View A

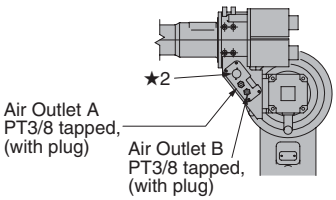


View B





View C



View D

	Connector Type	Plug Type (Prepared by user)
★1	JL05-2A24-28PC	JL05-6A24-28S
★2	JL05-2A24-28SC	JL05-6A24-28P

Manipulator Specifications

Model		MOTOMAN-HP165
Type		YR-HP165-A00
Controlled Axis		6 (Verticaly articulated)
Payload		165 kg
Repetability*1		±0.2 mm
Range of Motion	S-axis (turning)	±180°
	L-axis (lower arm)	+76° to −60°
	U-axis (upper arm)	+230° to −142.5°
	R-axis (wrist roll)	±360°
	B-axis (wrist pitch/yaw)	±130°
	T-axis (wrist twist)	±360°
Maximum Speed	S-axis (turning)	1.92 rad/s, 110°/s
	L-axis (lower arm)	1.92 rad/s, 110°/s
	U-axis (upper arm)	1.92 rad/s, 110°/s
	R-axis (wrist roll)	3.05 rad/s, 175°/s
	B-axis (wrist pitch/yaw)	2.53 rad/s, 145°/s
	T-axis (wrist twist)	4.19 rad/s, 240°/s

Allowable Moment	R-axis (wrist roll)	921 N · m
	B-axis (wrist pitch/yaw)	921 N · m
	T-axis (wrist twist)	490 N · m
Allowable Inertia ($GD^2/4$)	R-axis (wrist roll)	85 kg · m^2
	B-axis (wrist pitch/yaw)	85 kg · m^2
	T-axis (wrist twist)	45 kg · m^2
Mass		1100 kg
Ambient Conditions	Temperature	0℃ to +45℃
	Humidity	20 to 80%RH (non-condensing)
	Vibration	Less than 4.9 m/s^2
	Others	・Free from corrosive gasses or liquids,or explosive gasses ・Clean and dry ・Free from excessive electrical noise (plasma)
Power Requirements *2		7.5 kVA

*1 : Conforms to JIS B 8432.
*2 : Varies in accordance with applications and motion patterns.
Note: SI units are used for specifications.

MOTOMAN-HP SERIES

NX100 Specifications

Items		Specifications
Configuration		Dust proof
Dimensions	∗1	500(W)×500(D)×1200(H) mm (Possible to control 2 external axes.)
	∗2	600(W)×550(D)×1200(H) mm (Possible to control 2 external axes.)
Mass	∗1	100 kg max. (Possible to control 2 external axes.)
	∗2	150 kg max. (Possible to control 2 external axes.)
Cooling System		Indirect cooling
Ambient Temperature		During operation : 0℃ to +45℃ During storage : –10℃ to +60℃
Relative Humidity		90% max. (non-condensing)
Power Supply		Three-phase 200/220 VAC (+10% to –15%), 60 Hz (Japan) Three-phase 200 VAC (+10% to –115%), 50 Hz (Japan)
Grounding		Grounding resistance : 100Ω or less
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)
Safety Classification		Category IV

∗1 : For small size manipulator.
The MOTOMAN-HP3, HP6, and-HP20 are small size manipulators.
∗2 : For large size manipulator.
The MOTOMAN-HP165 is a large size manipulator.

Programming Pendant Specifications

Items	Specifications
Dimensions	199(W)×338(H)×60(D) mm
Mass	1.32 kg
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	6.5 -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)

Sales Department

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