

YASKAWA

MOTOMAN GP-series

Handling & General Application



Controlled by
YRC1000

Controlled by
**YRC1000
micro**

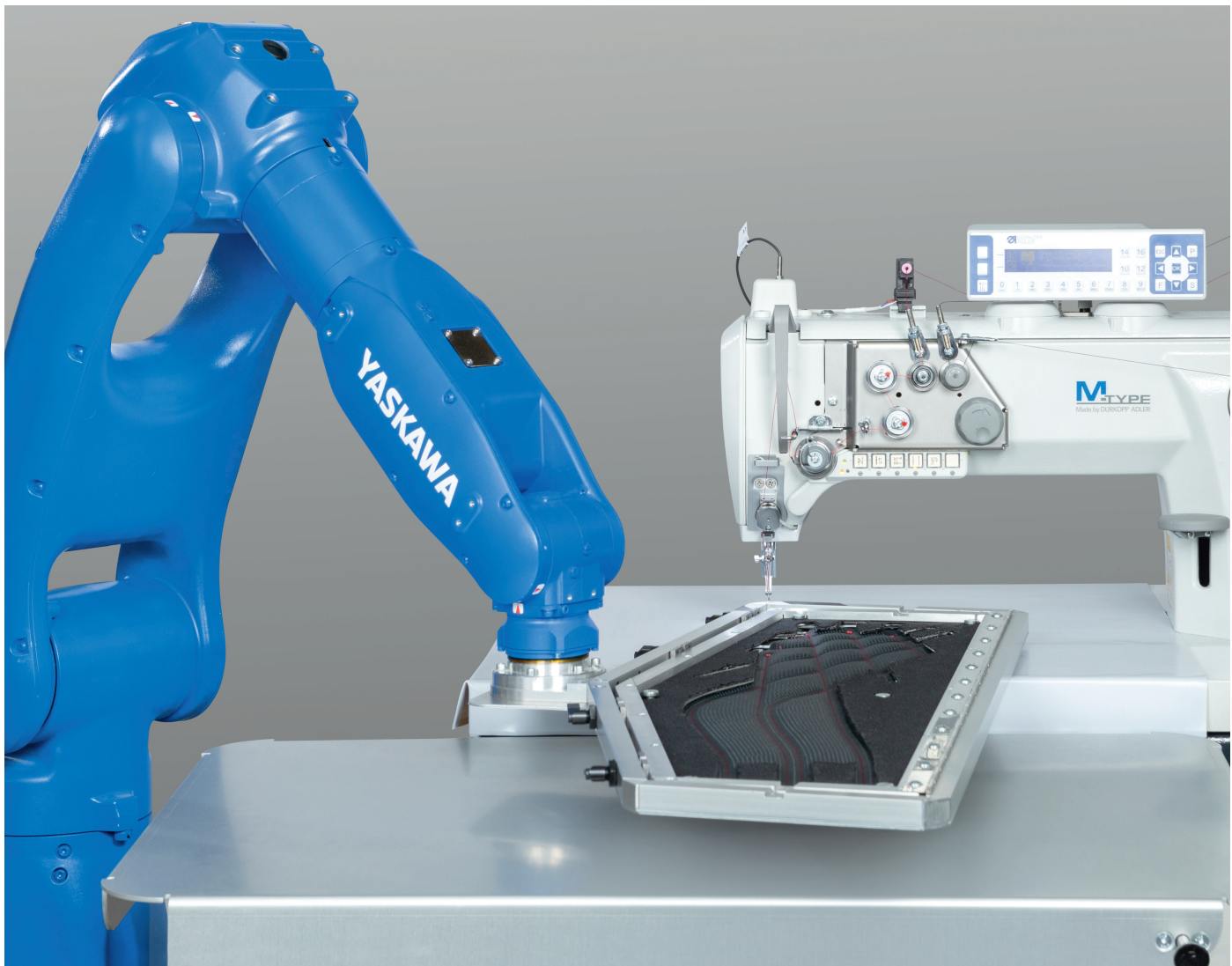
www.yaskawa.eu.com

MOTOMAN GP8



reddot award 2018
winner

Masters of Robotics, Motion and Control



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MOTOMAN YRC1000

Industrial Robot Controller



High Performance Controller YRC1000 for MOTOMAN Robots

The MOTOMAN YRC1000 is a compact, fast and flexible controller for MOTOMAN robots that combines high performance robot control in a small footprint cabinet with volume of 125 litres and a maximum weight of 70 kg.

Besides the typical YASKAWA controller functionality, the YRC1000 includes additional functional improvements. Speed of the controller has been increased by lowering a ladder scanning time.

Path accuracy improvement assures increased precision in trajectory performance independently on the motion speed.

User interface supports smartphone like touch operations and allows the user to 3D simulate robots motion on PP screen before and during execution of the real robot arm. Service staff can directly connect to the PP user interface for remote service purposes. Total programming pendant's weight was reduced to 730 grams which offers more convenient use by the operator. The new controller simplifies maintenance by offering preventive maintenance information and powerful software tools for analysis and notification.

KEY BENEFITS

- Compact, fast and flexible
- Global standardization (no transformer required)
- High path accuracy
- High efficiency

Optimal Industrial Design

- Volume: 125 liters



Programming Pendant (PHG) – ergonomical, light and easy





Specifications controller YRC1000

Dimensions	598 (W) x 490 (H) x 427 (D) mm (125 l without protrusion parts)
Weight	70 kg max. (possible to control three external axes)
Protection class	IP54
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 380–440 VAC (+10 %, -15 %), 50/60 Hz (±2 %)
Digital I/Os	Specialized signals: 19 inputs and 6 outputs / General signals: 40 inputs and 40 outputs
Programming capacity	JOB: 200,000 steps, 10,000 instructions / CIO ladder: 20,000 steps
Expansion slots	2 x PCIe or 2 x PCI or 1 x PCI/1 x PCIe
LAN (Connection to host)	2 (10BASE-T/100BASE-TX)
Interface	RS-232C/RS422: 1 ch (used by switching)

Common Size for use
in Japan, Asia, Europe, and the U.S.



Improved Programming Pendant



Specifications programming pendant

Dimensions	152 (W) x 299 (H) x 53 (D) mm
Weight	0.730 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, SD card interface device, USB port (1 port)
Display	5.7-inch color LCD, touch panel 640 x 480 pixels
IEC protection class	IP54



MOTOMAN YRC1000micro

Industrial Robot Controller
for small MOTOMAN Robots

The MOTOMAN YRC1000micro controller is a controller for small MOTOMAN robots. It provides high performance robot control in a small footprint cabinet. Its performance and functions are optimized for Pick & Place and assembly applications.

Besides the typical YASKAWA functionality, the MOTOMAN YRC1000micro controller includes easy connections to peripheral devices and new high speed and high precision motion control.

It is compatible with the optional "Functional Safety", which monitors motion range and speed limitations.



KEY BENEFITS

- Compact and lightweight
- High performance
- New motion control
- Minimum installation space
- Easy connections to peripheral devices
- Compatible with "Functional Safety"

Industrial Robot Controller

YRC1000micro

for small MOTOMAN Robots

Specifications Controller YRC1000micro	
Configuration	Open structure
Dimensions	425 (W) x 125 (H) x 280 (D) mm – excluding protrusions
Weight	10.5 kg (without top mount box)
Protection class	IP20
Cooling system	Direct cooling
Ambient temperature	During operation: 0°C to +40°C During storage: -10°C to +60°C
Relative humidity	90 % max. (non-condensing)
Power supply	Single-phase 200/230 VAC (+10 to -15%), 50/60 Hz (±2 %) ¹ ; three-phase 220/220 VAC (+10 to -15 %), 50/60 Hz (±2 %)
Digital I/Os	External IO (hardware, standard max): 8 inputs / 8 outputs (transistor 100 mA; number of points cannot be expanded) ² Standard signal allocation: General Purpose IO: 1 input / 1 output Specific IO: 7 inputs / 7 outputs
Programming capacity	JOB: 200,000 steps, 10,000 instructions; CIO ladder: 1,500 steps
Expansion slots	PCI express, 2 slots
LAN (Connections to host)	1 (10BASE-T/100BASE-TX)
Safety category	3, PLd

¹ Manipulators operated by single-phase power supply: MOTOMAN GP7, GP8, MotoMINI.

² If it is necessary to expand the number of points, a filed bus board is required

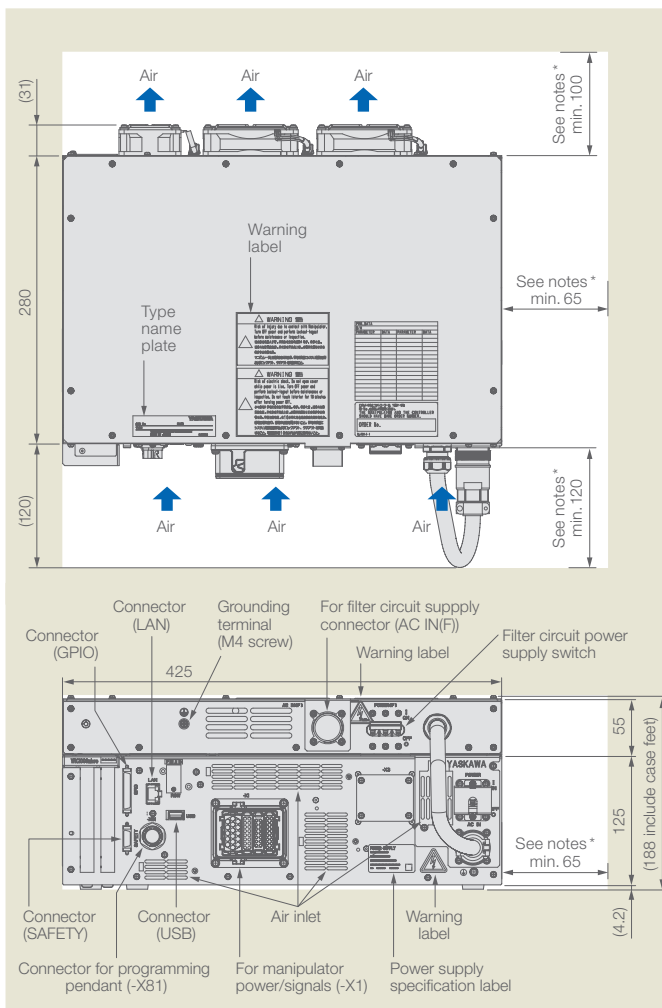
Specifications programming pendant	
Dimensions	152 (W) x 299 (H) x 53 (D) mm
Weight	0.730 kg
Material	Reinforced plastics
Operation device	Select keys, axis keys, numerical/application keys, mode selector switch with keys (mode: teach, play, and remote), emergency stop button, enable switch, SD card interface device, USB port (1 port)
Display	5.7-inch color LCD, touch panel 640 x 480 pixels
IEC Protection class	IP54

Programming Pendant (PHG) –
ergonomical, light and easy

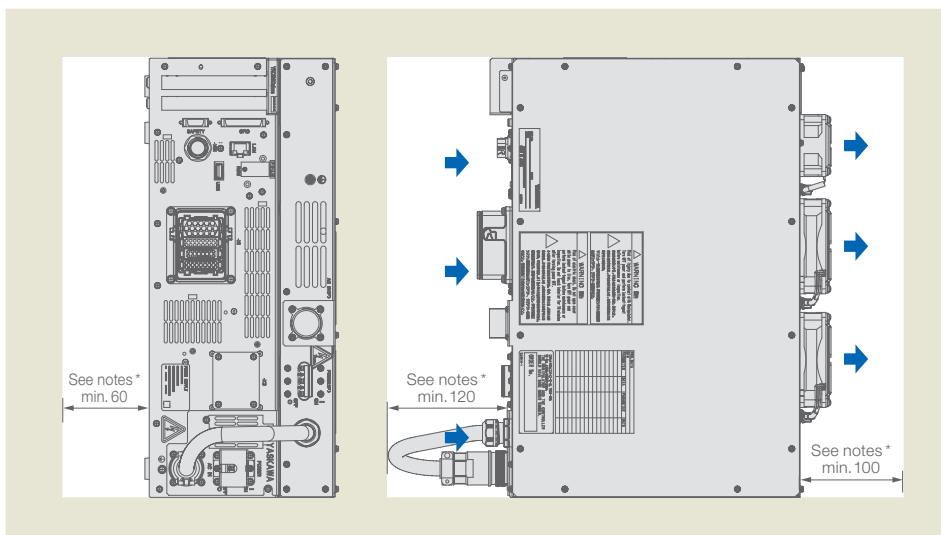


- Easy and fast programming
- Several user levels – from operator to safety mode
- Help function

Horizontally mounted ***

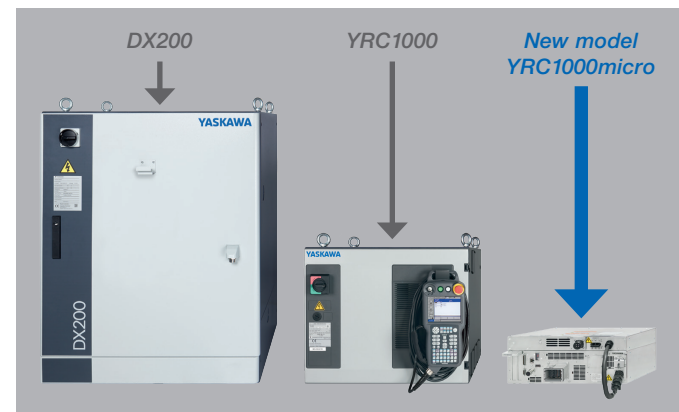


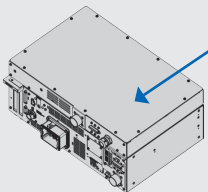
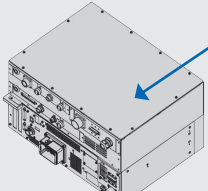
Vertically mounted ***

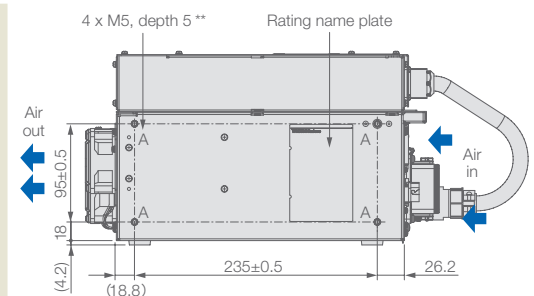


Optimal Industrial Design

- Volume: 21,5 l (GP7/8/12, MotoMini), 30 l (HC10DT)



Manipulator type		Region: Europa and Korea (EMC directive required)
Standard size: 425 (W) x 125 (H) x 280 (D) mm without additional boxes without EMV	GP7 GP8 GP12 MotoMINI	 Top mount box for CE noise filter: 55 (H) x 280 (D) mm Total litres: 21.5 l
	HC10	 Top mount box for CE noise filter PFL-Card: 125 (H) x 280 (D) mm Total litres: 30 l



- * Secure the dimensions stated in the placement space chart for cooling and maintenance.
- ** Use eight holes marked with the symbol "A" to fix the controller on the floor with fixing jigs and anchor bolts. When fixing the rack, use A hole (8 places).
- *** Values refer to version for GP7, GP8, GP12 und MotoMini).

YASKAWA

MOTOMAN GP8



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Smart Pendant

Quick and easy programming



The YASKAWA Smart Pendant is an innovative teach pendant with a large 10-inch touch screen and offers a newly thought-out operator control concept.

The tablet-based graphical user interface (GUI) enables the guided entry of commands, parameters, functions and program sequences. The central interface comprises the main and navigation menus, where entries are listed and switched in a specific, easily comprehensible order.

The Smart Pendant has a revolutionary patented coordinate system – the “Smart Frame” – that also supports rotation and inclination of the Smart Pendant. This means that the operator no longer has to convert motions or break them down into a coordinate space (X,Y,Z) when teaching them, and his line of vision relative to the robot is automatically taken into consideration by the system.

In the case of collaborative robots, the “Hand Guiding” function – guiding the robot manually to a desired position – is also supported.

The Smart Pendant is available for the following MOTOMAN robots with the YRC1000 and YRC1000micro controller generations:

- **MOTOMAN YRC1000:**
HC10, HC10DT, GP7 to GP600
- **MOTOMAN YRC1000micro:**
MotoMINI, HC10DT, GP7, GP8, GP12

KEY BENEFITS

- Large touch screen (10")
- Ergonomic design with low weight, diagonal side cable entry and integrated Emergency Stop
- Simple and intuitive operator control, short learning curve
- Ideal for users who need to carry out frequent reprogramming and thus appreciate simple operator control
- Supports many powerful functions of the MOTOMAN YRC1000
- Context-sensitive help and help menu offer many explanations

YRC1000

YRC1000
micro

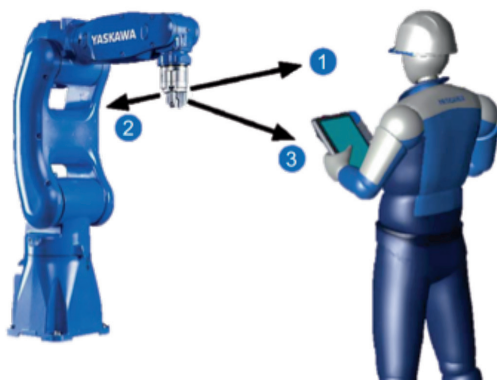
Smart Pendant



Main menu

Smart Frame

The patented technology of the "Smart Frame" determines the user's orientation relative to the robot. This eliminates the use of conventional coordinates (X, Y, Z) frames. The intuitive robot jogging by tilting the smart pendant makes it also easy to use.



Simplified Programming

Command Builder function enables various editing possibilities.

COMMAND BUILDER

What do you want to do? SET READ WAIT

This is the command that will be added to your job:

Set: B001 1 Add Command

☒ Set a Variable to a Constant Value
Variable: B001 Constant: 1

☐ Set a Variable to Another Variable

☐ Set a Digital Output to ON/OFF

☐ Set a Digital Output ON for a specified Time

Configuration enables fast TCP setup

The TCP is the offset from the Flange Center Point

Set the Tool Center Point (TCP)

X_F 0.000 mm

Y_F 0.000 mm

Z_F 10.000 mm

☐ Show without tool

Advanced Tool Settings (improves performance)

Center of Gravity		Moment of Inertia		Orientation of Tool Tip	
X _G	0.000 mm	I _x	0.000 kg·m ²	R _x	180.0000 deg
Y _G	0.000 mm	I _y	0.000 kg·m ²	R _y	0.0000 deg
Z _G	0.000 mm	I _z	0.000 kg·m ²	R _z	0.0000 deg

Simple tool

Hand Guiding

This function enables manual guidance of the robot to a desired position by hand.

Mode: Hand Guiding

Tool: #3: GRIPPER & PART

ALL JOINTS TOOL JOINTS XYZ+TOOL

TOGGLE TOOL

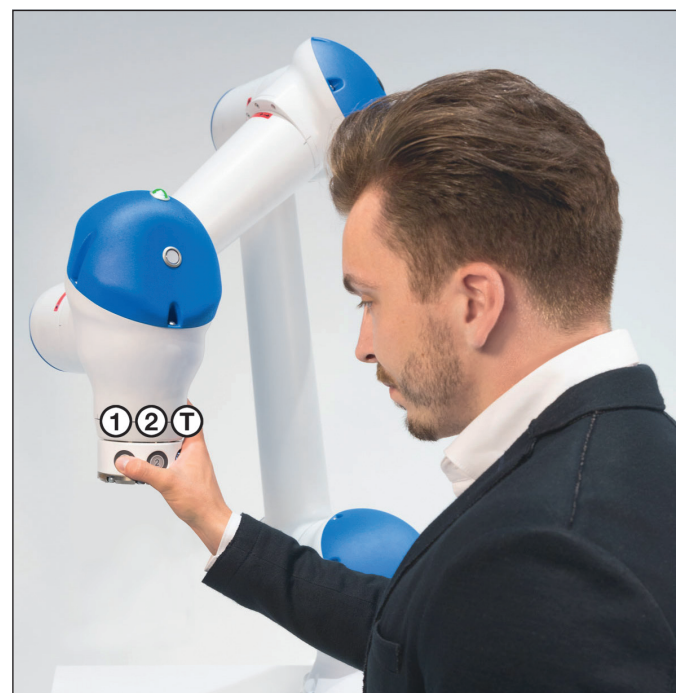
Speed: HIGH

GO TO POINT Motion Command Not Selected

ALL JOINTS: You can move any robot joint shown in green by hand

(S)wing	-1.41°
(L)ower Arm	7.68°
(U)pper Arm	89.40°
(R)otate	-7.02°
(B)end	-83.96°
(T)wist	37.08°

Direct Teach Settings



- ① Button replaces deadman switch
- ② Button is freely programmable (i.e. Open/Close gripper)
- Ⓣ Teach button to program current position



MOTOMAN GP7

Handling & General Applications
with the GP-series



The MOTOMAN GP7 is an extremely fast and precise 6-axis industrial robot with a payload capacity of up to 7 kg. With a reach of 927 mm and a high repeatability of ± 0.03 mm, it is ideally suited to assembly tasks, but also universal handling tasks, CNC machine tool tending or packaging. Its smooth and streamlined modern industrial design is attractive and minimizes the space requirements at the installation site.

Cable entry is optionally from the side at the pedestal or from underneath through the base plate, thus enabling space-saving and uncluttered integration into its environment, irrespective of the intended installation position. The prepared routing of the supply lines in the arm enables optimal integration of the grippers or sensor systems, often dispensing with the need for an external media package.

A world of possibilities is open to the MOTOMAN GP7 with the numerous functions of the MOTOMAN YRC1000 controller or the compact MOTOMAN YRC1000micro controller. In conjunction with the conventional teach pendant, this robot is a reliable mechanical engineering partner. With the innovative operator control concept of the SmartPendant, it provides an excellent point of entry into the world of robotics.

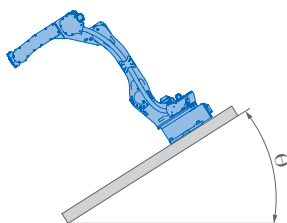
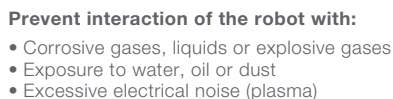
As standard, the MOTOMAN GP7 is designed with the high protection classification IP67 (wrist). Other variants (e.g. with food-compatible grease in the food industry, special anti-corrosion coating for applications in aggressive ambient conditions, or as a cleanroom version) are optionally available.

KEY BENEFITS

- Extremely fast and powerful
- Compact and flexible
- Large working range: 927 mm
- Reduced interference contours due to optimized design
- Simple commissioning and maintenance

Controlled by
YRC1000

Controlled by
**YRC1000
micro**



4 x M5, depth 8

45°

Ø 31,5

Ø 12 H7

Fitting depth

Ø 5 H7, depth 6

Internal user wiring connector
Matching connector

2 x Air inlet Rc 1/4
with pipe plug

Schutzklasse: IP67

* tilt with condition of angle – see table below

Robot installation angle Θ [deg.]	S-axis operating range [deg.]
$0 \leq \Theta \leq 30$	± 170 degrees or less (no limit)
$30 < \Theta \leq 35$	± 60 degrees or less
$35 < \Theta \leq 45$	± 45 degrees or less
$45 < \Theta$	± 30 degrees or less

* Conforms to ISO 9283 ** Varies in accordance with applications and motion patterns **Note:** SI units are used for specifications.

MOTOMAN GP8

Handling & General Applications
with the GP-series



The MOTOMAN GP8 is an extremely fast and precise 6-axis industrial robot with a payload capacity of up to 8 kg. With a reach of 727 mm and a high repeatability of ± 0.02 mm, it is ideally suited to assembly tasks, but also universal handling tasks, CNC machine tool tending or packaging. Its smooth, streamlined and award-winning modern industrial design is attractive and minimizes the space requirements at the installation site.

Cable entry is optionally from the side at the pedestal or from underneath through the base plate, thus enabling space-saving and uncluttered integration into its environment, irrespective of the intended installation position. The prepared routing of the supply lines in the arm enables optimal integration of the grippers or sensor systems, often dispensing with the need for an external media package.

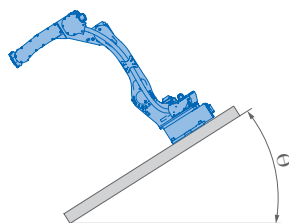
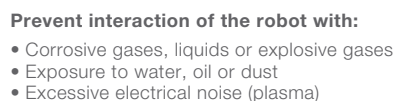
A world of possibilities is open to the MOTOMAN GP8 with the numerous functions of the MOTOMAN YRC1000 controller or the compact MOTOMAN YRC1000micro controller. In conjunction with the conventional teach pendant, this robot is a reliable mechanical engineering partner. With the innovative operator control concept of the SmartPendant, it provides an excellent point of entry into the world of robotics.

As standard, the MOTOMAN GP8 is designed with the high protection classification IP67 (wrist). Other variants (e.g. with food-compatible grease in the food industry, special anti-corrosion coating for applications in aggressive ambient conditions, or as a cleanroom version) are optionally available.

KEY BENEFITS

- Extremely fast and powerful
- Compact and flexible
- Large working range: 727 mm
- Reduced interference contours due to optimized design
- Simple commissioning and maintenance





The diagram illustrates the weight distribution of the 3D printing head. A 3D model of the head is shown on the left, with labels for the 'P-Punkt' (P-point), 'B-Achse Drehmittelpunkt' (B-axis rotation center), and 'T-Achse Drehmittelpunkt' (T-axis rotation center). The distance between the B and T axes is 80 mm. To the right, a coordinate system with 'LB' (Load) on the vertical axis and 'mm' on the horizontal axis shows weight distribution curves. The vertical axis has markings at 100, 127, 145, 200, 204, and 300. The horizontal axis has markings at 200, 216, 247, 300, 346, and 400. Three curves represent different weight distributions: 5 kg, 7 kg, and 8 kg.

4 x M5, depth 8

45°

Ø 31.5

Ø 12 H7

Fitting depth

Ø 5 H7, depth 6

Internal user wiring connector
Matching connector

2 x Air inlet Rc 1/4
with pipe plug

Schutzklasse: IP67

* tilt with condition of angle – see table below

Robot installation angle θ [deg.]	S-axis operating range [deg.]
$0 \leq \theta \leq 30$	± 170 degrees or less (no limit)
$30 < \theta \leq 35$	± 60 degrees or less
$35 < \theta \leq 45$	± 45 degrees or less
$45 < \theta$	± 30 degrees or less

* Conforms to ISO 9283 ** Varies in accordance with applications and motion patterns **Note:** SI units are used for specifications.

MOTOMAN GP12

Handling & General Applications
with the GP-series



The MOTOMAN GP12 is a fast and precise 6-axis industrial robot with a payload capacity of up to 12 kg. With a reach of 1440 mm and a high repeatability of ± 0.08 mm, it is ideally suited to assembly tasks, but also universal handling tasks, CNC machine tool tending or packaging. Its streamlined modern industrial design minimizes the space requirements at the installation site.

The prepared routing of the supply lines through the hollow arm enables optimal integration of the grippers or sensor systems, often dispensing with the need for an external media package. This reduces also interference contours.

With the MOTOMAN GP12 and numerous functions of the MOTOMAN YRC1000 controller or the compact MOTOMAN YRC1000 micro controller a wide range of applications can be realized. In conjunction with the conventional teach pendant, this robot is a reliable mechanical engineering partner. With the innovative operator control concept of the Smart Pendant, it provides an excellent point of entry into industrial automation.

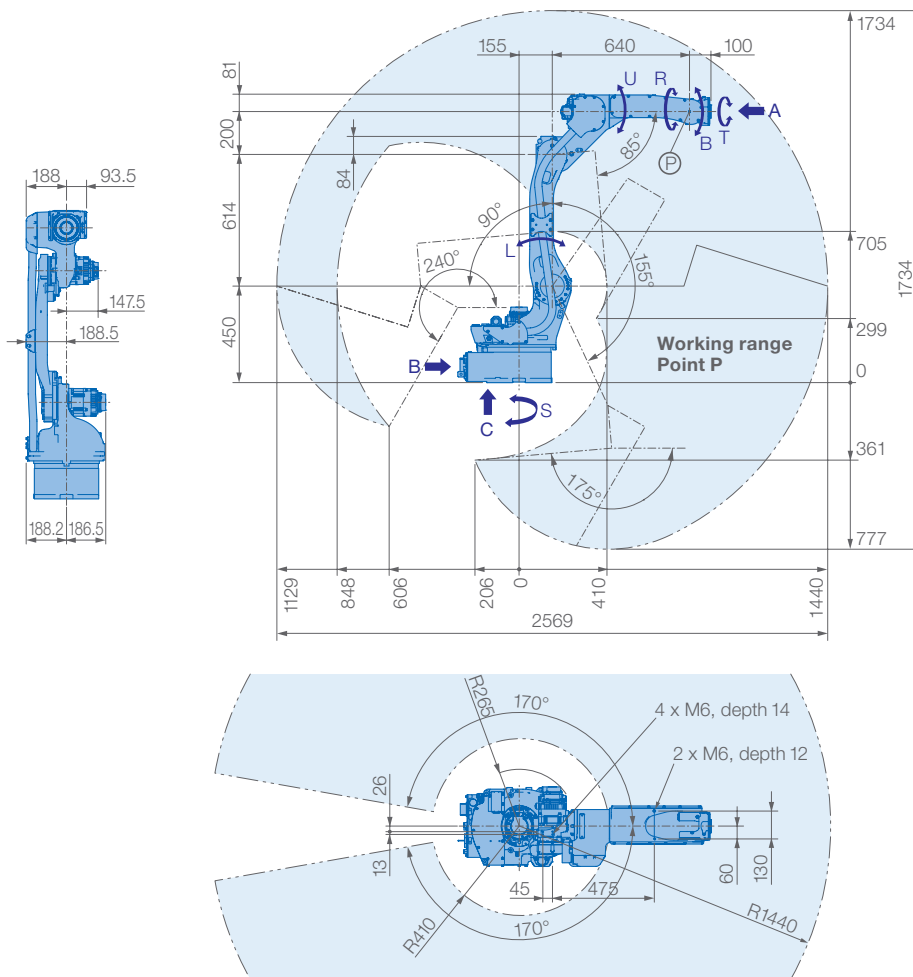
As standard, the MOTOMAN GP12 is designed with the high protection classification IP67 (wrist). Other variants (e.g. with food-compatible grease in the food industry, special anti-corrosion coating for applications in aggressive ambient conditions, or as a cleanroom version) are optionally available.

KEY BENEFITS

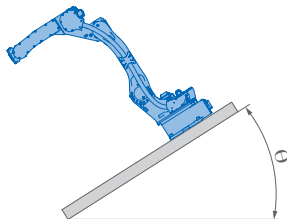
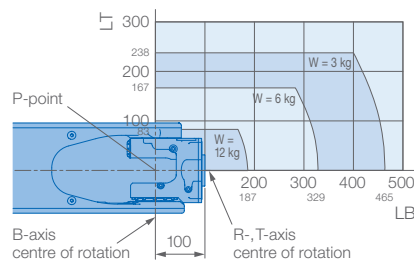
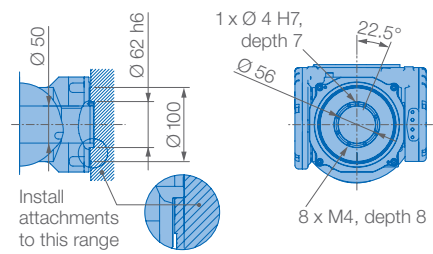
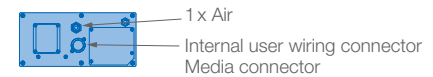
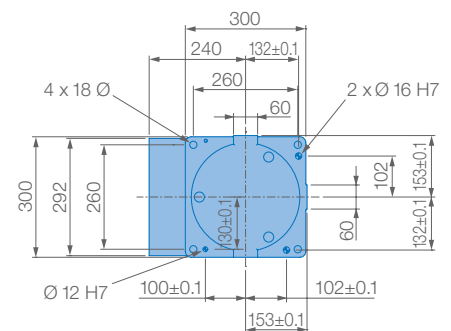
- Fast and powerful
- Compact and flexible
- Large working range: 1440 mm
- Reduced interference contours due to optimized design
- Simple commissioning and maintenance

Controlled by
YRC1000

Controlled by
**YRC1000
micro**

**Prevent interaction of the robot with:**

- Corrosive gases, liquids or explosive gases
- Exposure to water, oil or dust
- Excessive electrical noise (plasma)

**Allowable wrist load****View A****View B****View C**

Mounting options: Floor, ceiling, wall, tilt*

Protection class Version YR-1-25VXH12-A00
Standard: Main axes (S, L, U) IP54, wrist IP67

Protection Class Version YR-1-25VXH12-C00:
Main axes (S, L, U) IP65, wrist IP67

* tilt with condition of angle – see table below

Robot installation angle Θ [deg.]	S-axis operating range [deg.]
$0 \leq \Theta \leq 30$	± 170 degrees or less (no limit)
$30 < \Theta \leq 35$	± 60 degrees or less
$35 < \Theta \leq 45$	± 45 degrees or less
$45 < \Theta$	± 30 degrees or less

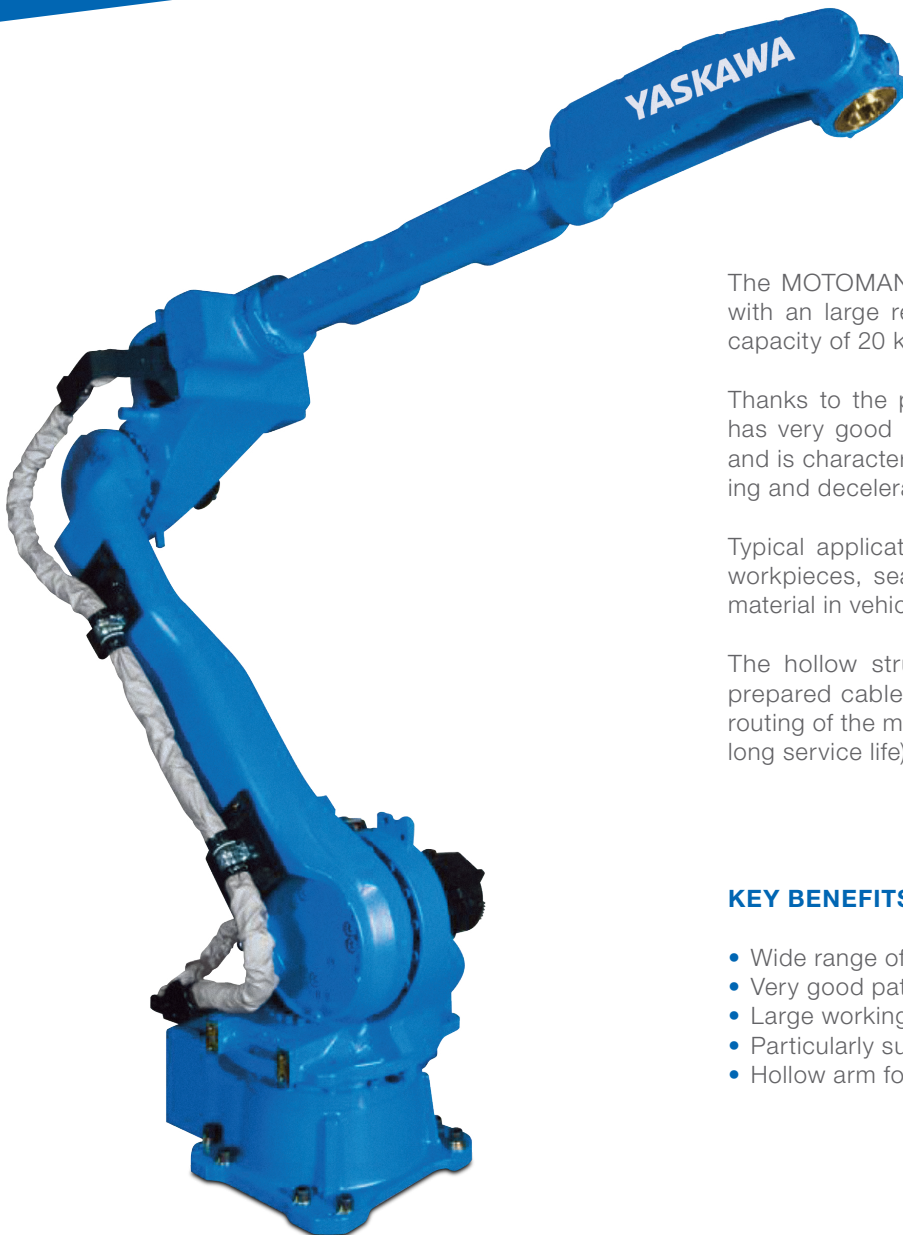
Specifications GP12

Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m ²]	Controlled axes	6
S	± 170	260	–	–	Max. payload [kg]	12
L	$+155/-90$	230	–	–	Repeatability [mm]	$\pm 0.06^*$
U	$+155/-85$	260	–	–	Max. working range R [mm]	1440
R	± 200	470	22	0.65	Temperature [°C]	0 to +45
B	± 150	470	22	0.65	Humidity [%]	20 – 80
T	± 455	700	9.8	0.17	Weight [kg]	150
					Power supply, average [KVA]	1.5**

* Conforms to ISO 9283 ** Varies in accordance with applications and motion patterns **Note:** SI units are used for specifications.

MOTOMAN GP20HL

Handling & General Applications
with the GP-series



The MOTOMAN GP20HL is a universally deployable robot with an large reach of 3,124 mm and a maximum payload capacity of 20 kg.

Thanks to the patented vibration control system, this robot has very good positioning accuracy and path performance, and is characterized by almost no oscillation when accelerating and decelerating in the fully extended position.

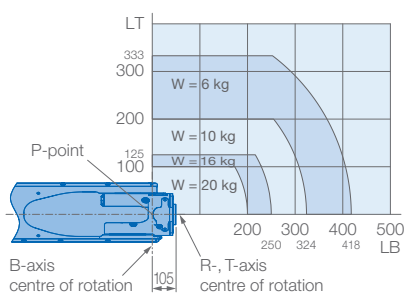
Typical applications for this robot is handling of very large workpieces, seam sealing, and the application of insulating material in vehicle body production.

The hollow structure of the wrist joint and a number of prepared cable and hose guides in the arm enable optimal routing of the media supply lines (high freedom of motion and long service life).

KEY BENEFITS

- Wide range of potential applications
- Very good path performance
- Large working range: 3,124 mm
- Particularly suitable for large and bulky workpieces
- Hollow arm for optimal media supply

Controlled by
YRC1000

[illegible]

* tilt with condition of angle – see table below

23.09.19 09:43

MOTOMAN GP25, GP25-12

Handling & Allgemeine Applikationen
mit der GP-Serie



Der MOTOMAN GP25 ist ein schneller und präziser 6-achsiger Industrieroboter mit einer Traglast von bis zu 25 kg. Mit einer Reichweite von 1730 mm und einer hohen Wiederholgenauigkeit von $\pm 0,06$ mm ist er für Montage-Aufgaben bestens geeignet, aber auch für universelle Handling-Aufgaben, CNC-Werkzeugmaschinenbeladung oder Verpackung. Der MOTOMAN GP25-12 bietet mit einer Traglast von 12 kg einen noch größeren Arbeitsbereich von 2010 mm bei einer Wiederholgenauigkeit von $\pm 0,08$ mm. Das moderne und schlanke Industriedesign minimiert den Platzbedarf am Einbauort.

Die Kabeleinführung, wahlweise seitlich am Sockel oder von unten durch die Bodenplatte, ermöglicht die platzsparende und aufgeräumte Integration in seine Umgebung, unabhängig von der vorgesehen Einbaulage. Die vorbereitete Medienführung im Arm ermöglicht eine optimale Integration der Greifer bzw. Sensortechnik und häufig kann auf ein externes Medienpaket verzichtet werden, wodurch auch Störkonturen vermindert werden.

Mit den zahlreichen Funktionen der MOTOMAN YRC1000-Steuerung steht den MOTOMAN GP25/GP25-12-Robotern eine Vielzahl an Einsatzmöglichkeiten offen. In Verbindung mit dem herkömmlichen Programmierhandgerät sind diese Roboter zuverlässige Partner im Maschinenbau. Mit dem innovativen Bedienkonzept des SmartPendant ist er ein sehr guter Einstieg in die industrielle Automation.

Der MOTOMAN GP25 und der GP25-12 sind standardmäßig in der hohen Schutzklasse IP67 (Handgelenk) ausgeführt. Weitere Varianten des MOTOMAN GP25 (z.B. mit lebensmiteltauglichem Fett für Aufgaben in der Lebensmittelindustrie, spezieller anti-korrosiver Beschichtung für Einsatzfälle unter aggressiven Umgebungsbedingungen oder in Reinraumausführung) sind optional erhältlich.

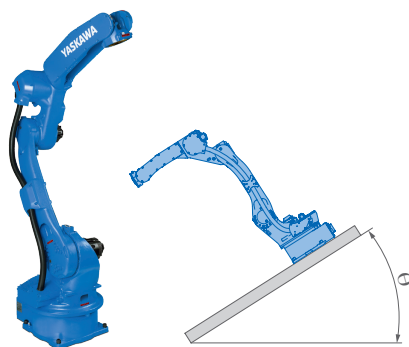
VORTEILE IM ÜBERBLICK

- Flexibel, schnell und kraftvoll
- Großer Arbeitsbereich: 1730 und 2010 mm
- Geringe Störkonturen durch optimiertes Design
- Einfache Inbetriebnahme und Wartung

Controlled by
YRC1000



- Corrosive gases, liquids or explosive gases
- Exposure to water, oil or dust
- Excessive electrical noise (plasma)



Technical drawing of a square flange. The drawing includes two views: a side view on the left and a top view on the right. The side view shows a flange with a central bore of diameter $\varnothing 50$ and a total height of $\varnothing 100$. The top view shows a square flange with a side length of 128 mm. The central bore has a diameter of $\varnothing 56$. There are four mounting holes, each with a diameter of $1 \times \varnothing 4$ H7 and a depth of 6 mm. The mounting holes are spaced 8 mm apart, with a depth of 8 mm. The flange has a chamfer with a 22.5° angle. The drawing is labeled with dimensions and annotations in blue.

Internal user wiring connector
Media connector

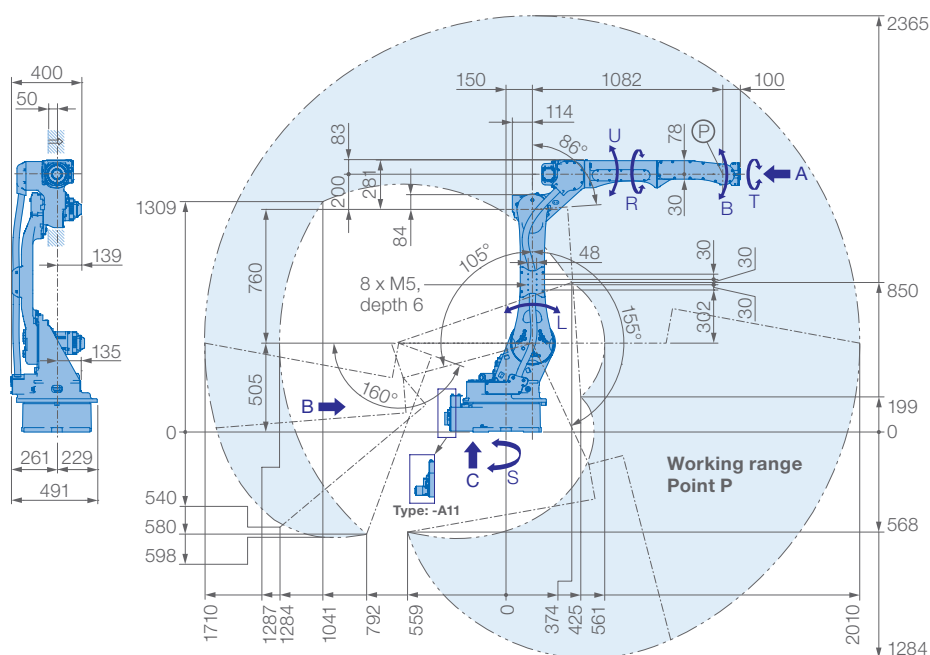
[illegible]

* tilt with condition of angle – see table below

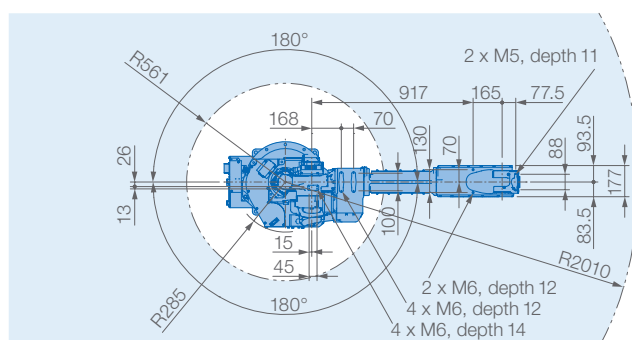
Robot installation angle Θ [deg.]	S-axis operating range [deg.]
$0 \leq \Theta \leq 30$	± 180 degrees or less (no limit)
$30 < \Theta \leq 35$	± 60 degrees or less
$35 < \Theta$	± 30 degrees or less

* Conforms to ISO 9283 ** Varies in accordance with applications and motion patterns **Note:** SI units are used for specifications.

All dimensions in mm



**Controlled by
YRC1000**

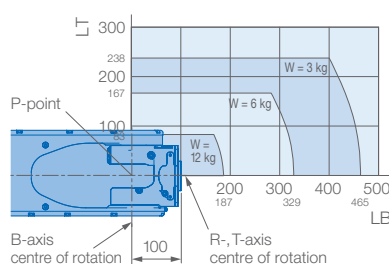


Prevent interaction of the robot with:

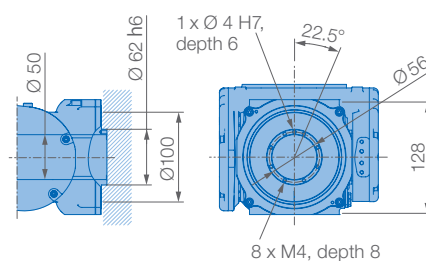
- Corrosive gases, liquids or explosive gases
- Exposure to water, oil or dust
- Excessive electrical noise (plasma)



Allowable wrist load



View A



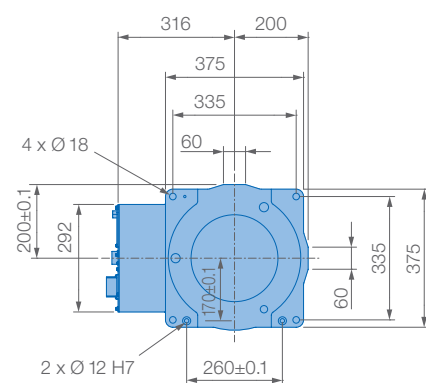
View B



— 1 x Air

Internal user wiring connector
Media connector

View C



Mounting options: Floor, ceiling, wall, tilt*

Protection class: Main axes (S, L, U) IP54
(option 65), wrist IP67

* tilt with condition of angle – see table below

Robot installation angle θ [deg.]	S-axis operating range [deg.]
$0 \leq \theta \leq 30$	± 180 degrees or less (no limit)
$30 < \theta \leq 35$	± 60 degrees or less
$35 < \theta$	± 30 degrees or less

Specifications GP25-12

Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m²]	Controlled axes	6
					Max. payload (on U-axis) [kg]	12 (9)
S	±180	210	–	–	Repeatability [mm]	±0.08*
L	+155/–105	210	–	–	Max. working range R [mm]	2010
U	+160/–86	220	–	–	Temperature [°C]	0 to +45
R	±200	435	22	0.65	Humidity [%]	20 – 80
B	±150	435	22	0.65	Weight [kg]	260
T	±455	700	9.8	0.17	Power supply, average [KVA]	2.0**

* Conforms to ISO 9283 ** Varies in accordance with applications and motion patterns **Note:** SI units are used for specifications.

All dimensions in mm



MOTOMAN GP35L

Handling & General Applications
with the GP-series

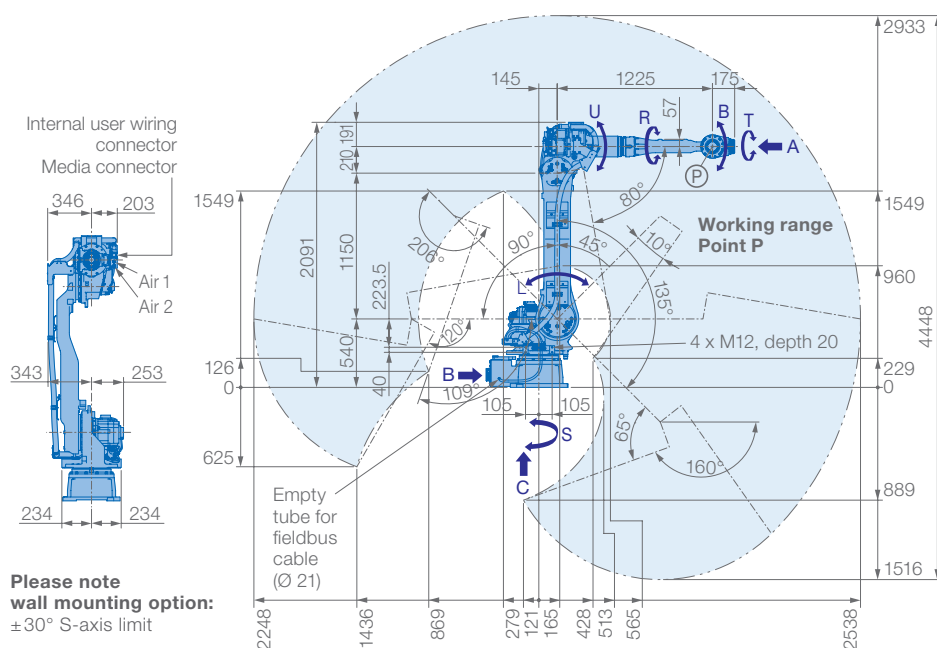


The MOTOMAN GP35L is a dynamic, high-speed robot featuring an extended reach for large parts. It offers superior performance in laser welding, coating, dispensing, gluing, material cutting and material handling applications.

KEY BENEFITS

- High repeatability: ± 0.07 mm
- Ideal for a variety of applications, multi-purpose robot
- Wide motion range
- Small interference radius reduces floorspace requirements
- Specifically designed for processing large parts
- Protection class IP54/67 as standard

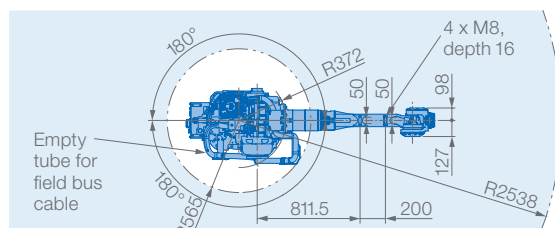
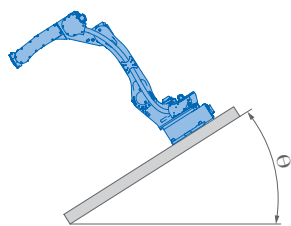
Controlled by
YRC1000



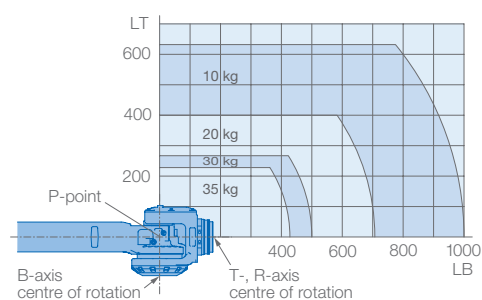
Please note wall mounting option:
±30° S-axis limit

Please note ceiling mounting option:
Please notice working range of B-axis

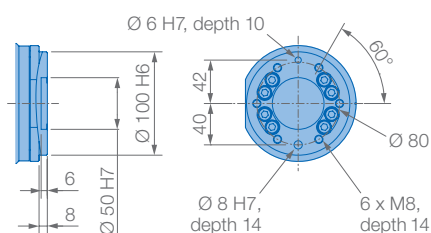
Please note tilted robot:
0°–90° limitation of S-axis, details on request



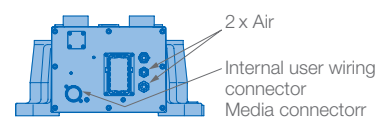
Allowable wrist load



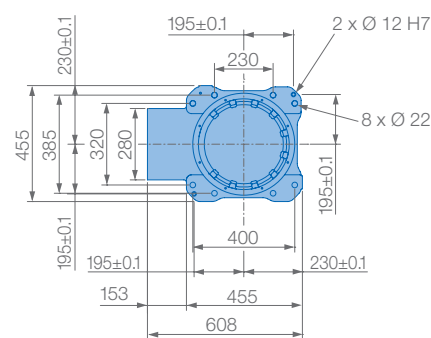
View A



View B



View C



Mounting options: Floor, ceiling, wall, tilt*

Protection class Version YR-1-06VXL35-A00
Standard: Main axes (S, L, U) IP54, wrist IP67

Protection Class Version YR-1-06VXL35-C00:
Main axes (S, L, U) IP65, wrist IP67

* tilt with condition of angle – see table below

Robot installation angle θ [deg.]	S-axis operating range [deg.]
$0 \leq \theta \leq 30$	±180 (Standard)
$30 < \theta \leq 35$	±60
$35 < \theta \leq 45$	±45
$45 < \theta$	±45

Wrist + U-arm in front	Up to 35 kg for attaching load mass including wrist load
U-arm behind	Up to 10 kg. 49 N · m (5 kgf · m) max. for increased moment amount of upper arm (floor-, ceiling-mounted type only)
S-axis below	Up to 30 kg (floor-, ceiling-mounted type only)

Specifications GP35L

Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m ²]	Controlled axes	
S	±180	180	–	–	Max. payload [kg]	35
L	+135/–90	140	–	–	Repeatability [mm]	±0.07
U	+206/–80	178	–	–	Max. working range R [mm]	2538
R	±360	250	147	10	Temperature [°C]	0 to +45
B	±125	250	147	10	Humidity [%]	20 – 80
T	±360	360	78	4	Weight [kg]	600
					Power supply, average [KVA]	4.0

MOTOMAN GP50

Handling & General Applications
with the GP-series



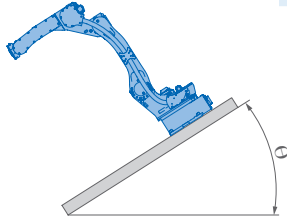
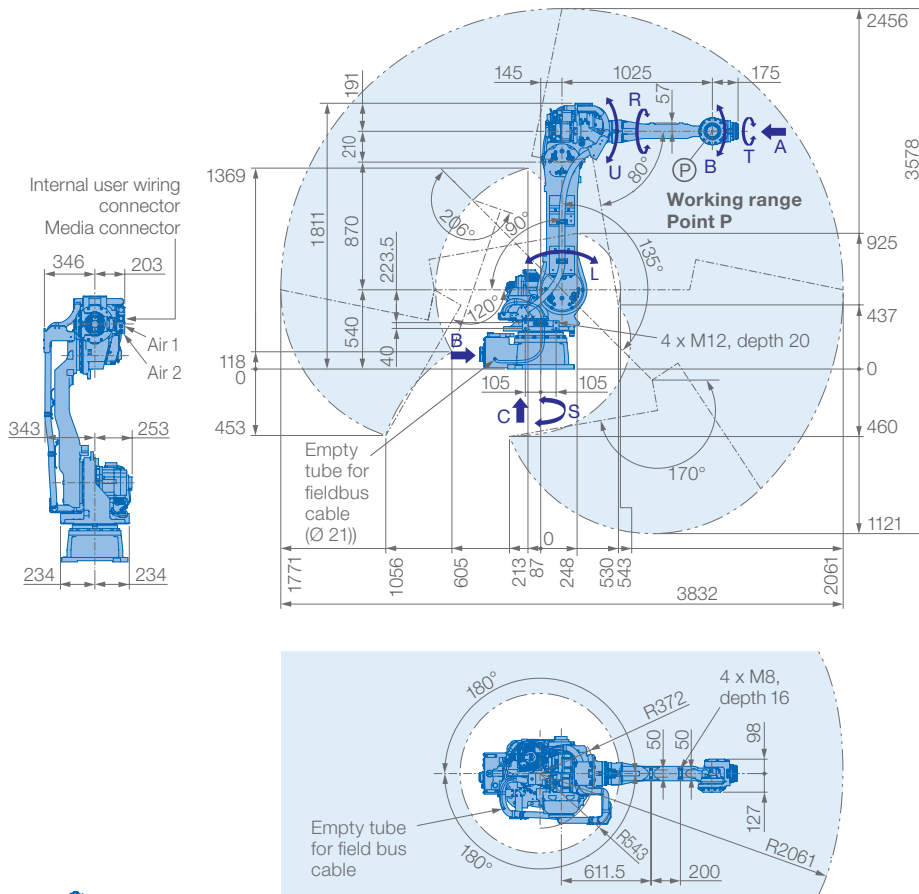
The MOTOMAN GP50 is a versatile, high speed 6-axis robot offering superior performance in material handling, machine tending, processing and dispensing applications.

Due to its compact design, the GP50 can be placed close to machines for loading and unloading of parts.

KEY BENEFITS

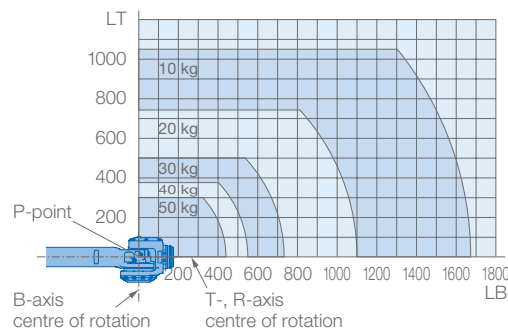
- Fast, flexible and reliable
- Ideal for a variety of applications, multi-purpose robot
- Robot with sleek design that requires minimal installation space
- 50 kg payload

Controlled by
YRC1000

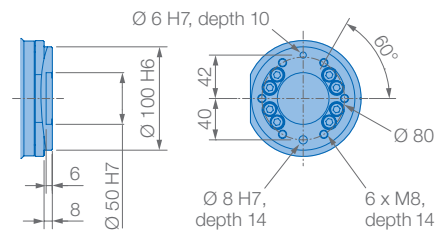


Robot installation angle θ [deg.]	S-axis operating range [deg.]
$0 \leq \theta \leq 30$	± 180 (Standard)
$30 < \theta \leq 35$	± 60
$35 < \theta \leq 45$	± 45
$45 < \theta$	± 30

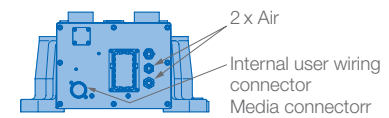
Allowable wrist load



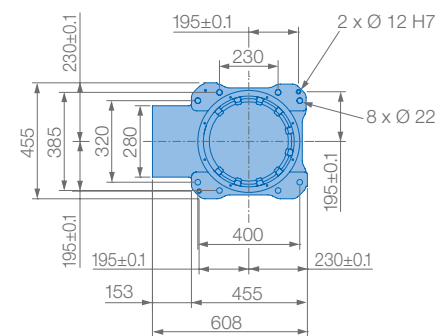
View A



View B



View C



Mounting options: Floor, ceiling, wall, tilt*

Protection class Version YR-1-06VX50-A00
Standard: Main axes (S, L, U) IP54, wrist IP67

Protection Class Version YR-1-06VX50-C00:
Main axes (S, L, U) IP65, wrist IP67

Please notice wall mounting option:
 $\pm 30^\circ$ S-axis limit

Please notice ceiling mounting option:
Please notice working range of B-axis

Please notice tilted robot:
 0° – 90° limitation of S-axis, details on request

* tilt with condition of angle – see table left side

Specifications GP50

Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m ²]	Controlled axes	
S	± 180	180	–	–	Max. payload [kg]	50
L	$+135/-90$	178	–	–	Repeatability [mm]	± 0.07
U	$+206/-80$	178	–	–	Max. working range R [mm]	2061
R	± 360	250	216	28	Temperature [°C]	0 to +45
B	± 125	250	216	28	Humidity [%]	20 – 80
T	± 360	360	147	11	Weight [kg]	570
					Power supply, average [KVA]	4.0

MOTOMAN GP88

Handling & General Applications
with the GP-series



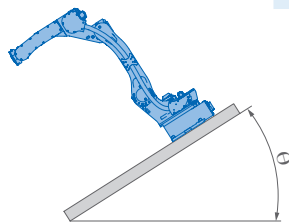
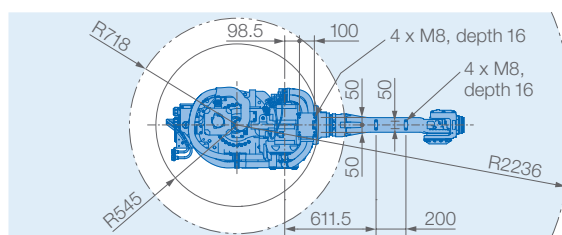
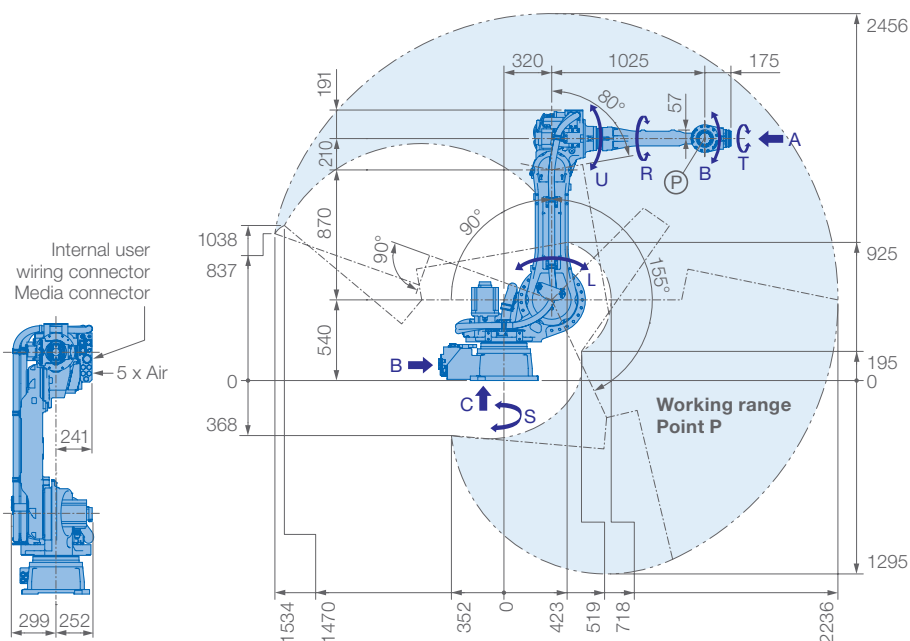
The MOTOMAN GP88 is a versatile high speed 6-axis robot, providing a high payload of up to 88 kg. It offers superior performance in material handling, machine tending, processing and dispensing applications.

Despite its slim body, the MOTOMAN GP88 features a wide work envelope with a small interference radius. Thereby it can be placed close to machines for loading and unloading of parts, which reduces the required floor space to a minimum.

KEY BENEFITS

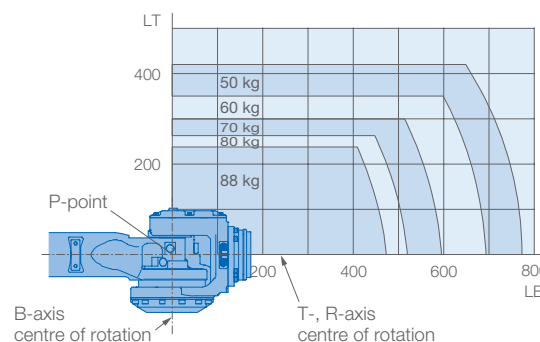
- Flexible and powerful (payload of 88 kg)
- High axis speeds
- Improved wrist ratings provide higher handling capacity
- Small interference radius reduces floor space requirements

Controlled by
YRC1000

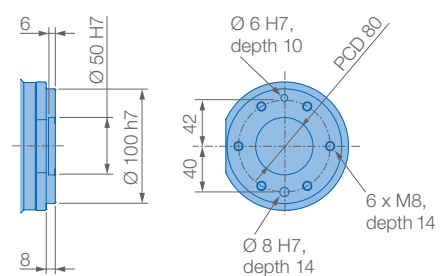


Robot installation angle θ [deg.]	S-axis operating range [deg.]
$0 \leq \theta \leq 30$	± 180 (Standard)
$30 < \theta \leq 35$	± 60
$35 < \theta \leq 45$	± 45
$45 < \theta$	± 30

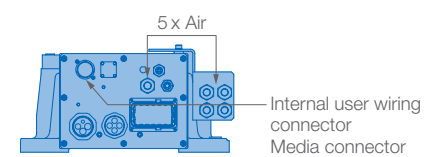
Allowable wrist load



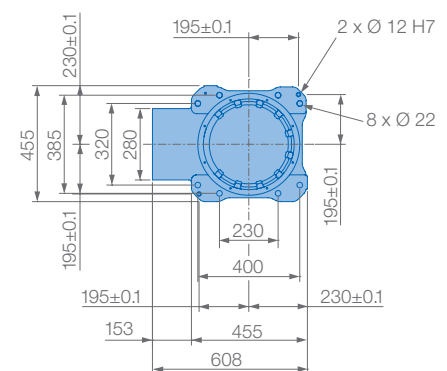
View A



View B



View C



Mounting options: Floor, ceiling, wall, tilt*

Protection class: IP54/67

Please notice: Just valid for body/wrist, connector base not protected

* tilt with condition of angle – see table left side

Specifications GP88

Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m ²]	Controlled axes	
S	± 180	170	–	–	Max. payload [kg]	88
L	+155/–90	140	–	–	Repeatability [mm]	± 0.07
U	+90/–80	160	–	–	Max. working range R [mm]	2236
R	± 360	230	408	30	Temperature [°C]	0 to +45
B	± 125	230	408	30	Humidity [%]	20 – 80
T	± 360	350	206	11	Weight [kg]	630
					Power supply, average [KVA]	4.0

MOTOMAN GP110

Handling & General Applications
with the GP-series



The 6-axis MOTOMAN GP110 is a versatile, high speed robot offering superior performance for a variety of applications, for example material handling, machine and press tending.

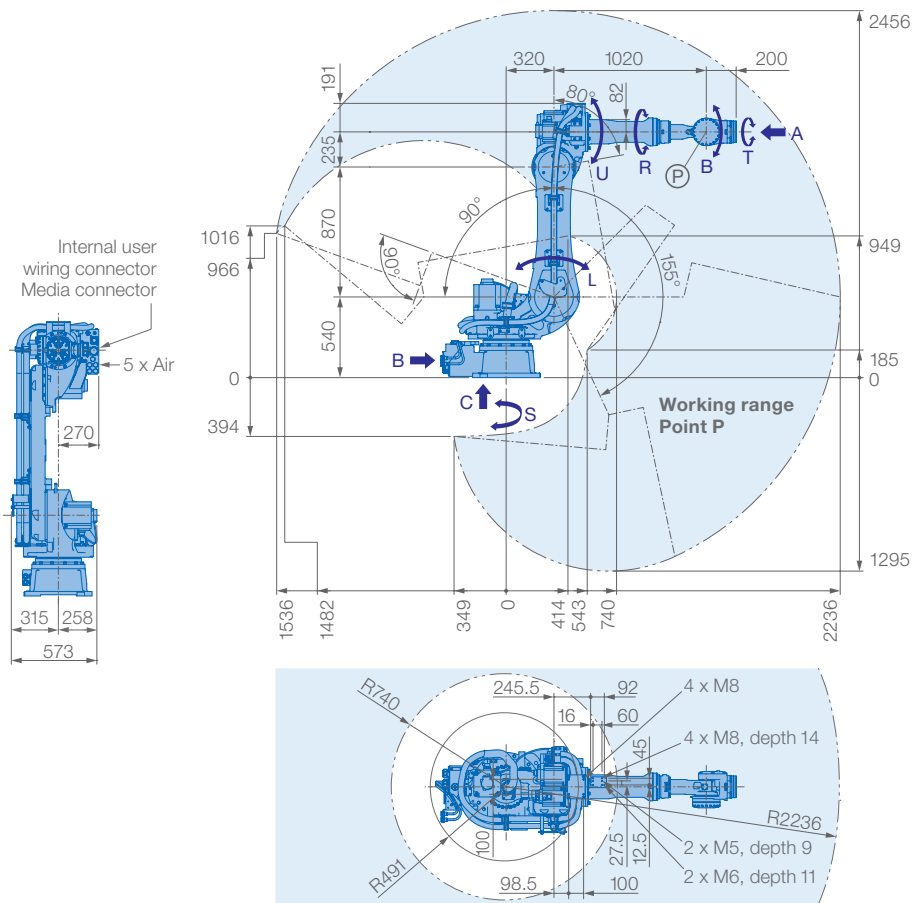
Despite of providing a wide motion range and high payload of 110 kg, the MOTOMAN GP110 has a streamlined design, which allows extremely close positioning of several robots. Also the slim cable inlet reduces the robots width, therefore valuable floor space can be saved.

The MOTOMAN GP110 is available with the PLd Category 3 Functional Safety Unit (FSU).

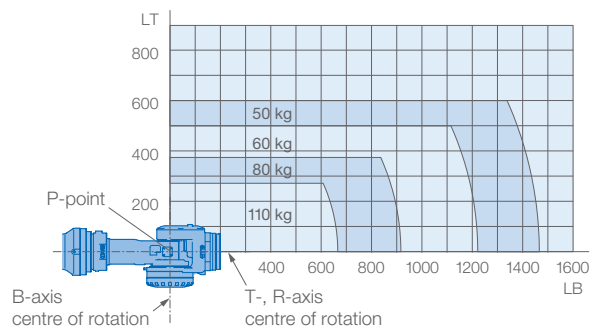
KEY BENEFITS

- Fast and flexible
- Wide motion range: 2236 mm
- High payload: 110 kg
- Compact design
- Slim cable inlet
- Enhanced safety functions

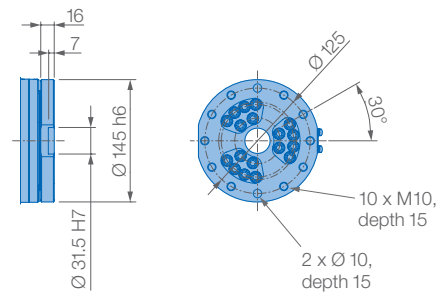
Controlled by
YRC1000



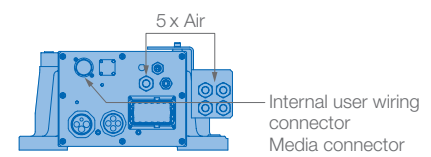
Allowable wrist load



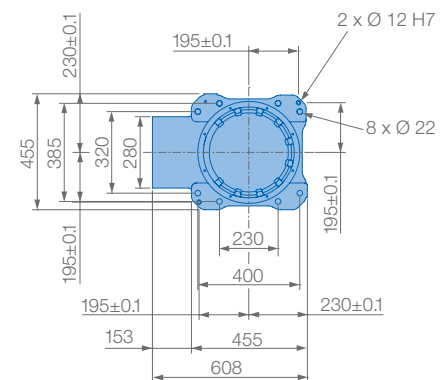
View A



View B



View C



Mounting options: Floor
Protection class: IP54/67

Specifications GP110

Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m ²]	Controlled axes	
S	±180	140	—	—	Max. payload [kg]	110
L	+155/−90	110	—	—	Repeatability [mm]	±0.07
U	+90/−80	130	—	—	Max. working range R [mm]	2236
R	±360	175	721	60	Temperature [°C]	0 to +45
B	±125	175	721	60	Humidity [%]	20 – 80
T	±360	255	294	33.7	Weight [kg]	660
					Power supply, average [KVA]	5.0

MOTOMAN GP180-120

Handling & General Applications
with the GP-series



This powerful six-axis handling robot features high speed motion which reduce cycle times.

High payload and increased moment and inertia ratings allows the MOTOMAN GP180-120 the handling of large and heavy payloads. Its streamlined upper arm design features a slim wrist profile and reduces robot width. This enables easier reach into confined spaces, improving application flexibility. Therefore the MOTOMAN GP180-120 can be mounted closer to machines and fixtures, making best use of valuable floor space.

Its cables and airlines are routed through the robot base to upper arm to increase cable life, enhance safety and reduce teaching time.

The cable installation tube in the base of the robot facilitates fieldbus routing to the robot upper arm and/or gripper. It is also pre-wired for servo gripper which allows a wider range of product handling.

The MOTOMAN GP180-120 has an IP67-rated wrist and an IP54 body standard.

KEY BENEFITS

- Small footprint and minimal interferences
- High inertia rating enables handling of huge work pieces
- Reduced cycle times by optimal design and high axes speed
- Versatile use in various applications
- High density spacing and reaching into confined spaces

Controlled by
YRC1000

MOTOMAN GP180

Handling & General Applications
with the GP-series



The 6-axis MOTOMAN GP180 is a versatile, high speed robot offering superior performance for a variety of applications, like material handling, machine and press tending.

Despite of providing a high payload of 180 kg and the wide motion range of 2702 mm, the MOTOMAN GP180 was designed with a width of 625 mm, therefore valuable floor space can be saved.

With the higher axis operation speed and speed reducer rigidity, a special vibration control system was developed. By reducing cycle times, this system realises high increases in productivity.

KEY BENEFITS

- Fast, flexible and powerful
- High payload: 180 kg
- Wide motion range: 2702 mm
- Maximum performance using minimal floor space

Controlled by
YRC1000

MOTOMAN GP215

Handling & General Applications
with the GP-series



The 6-axis MOTOMAN GP215 is a versatile, high speed robot offering superior performance for a variety of applications, like material handling, machine and press tending.

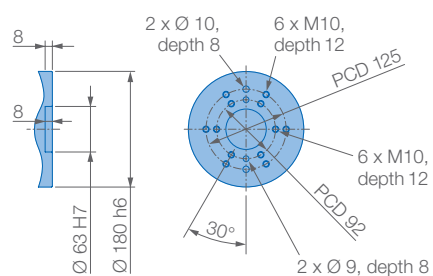
Despite of providing a high payload of 215 kg and the wide motion range of 2912 mm, the MOTOMAN GP215 was designed with a width of 816 mm, therefore valuable floor space can be saved.

The vibration control system uses higher axis operation speed and speed reducer rigidity to allow fast acceleration of short movements. By reducing cycle times, this system realises high increases in productivity.

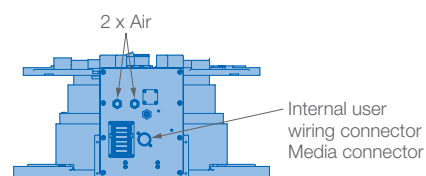
KEY BENEFITS

- Fast, flexible and powerful
- High payload: 215 kg
- Wide motion range: 2912 mm
- Maximum performance using minimal floor space

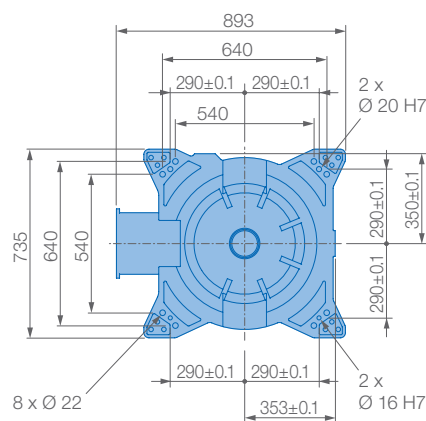
Controlled by
YRC1000



View B

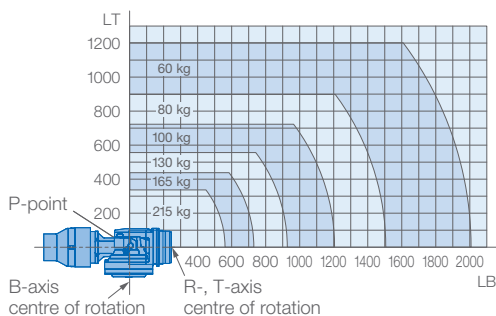


View C



Mounting option: Floor
Protection class: IP54/67

Allowable wrist load



23.09.19 09:43

MOTOMAN GP225

Handling & General Applications
with the GP-series



The 6-axis MOTOMAN MH225 is a versatile, high speed robot offering superior performance for a variety of applications, like material handling, machine and press tending.

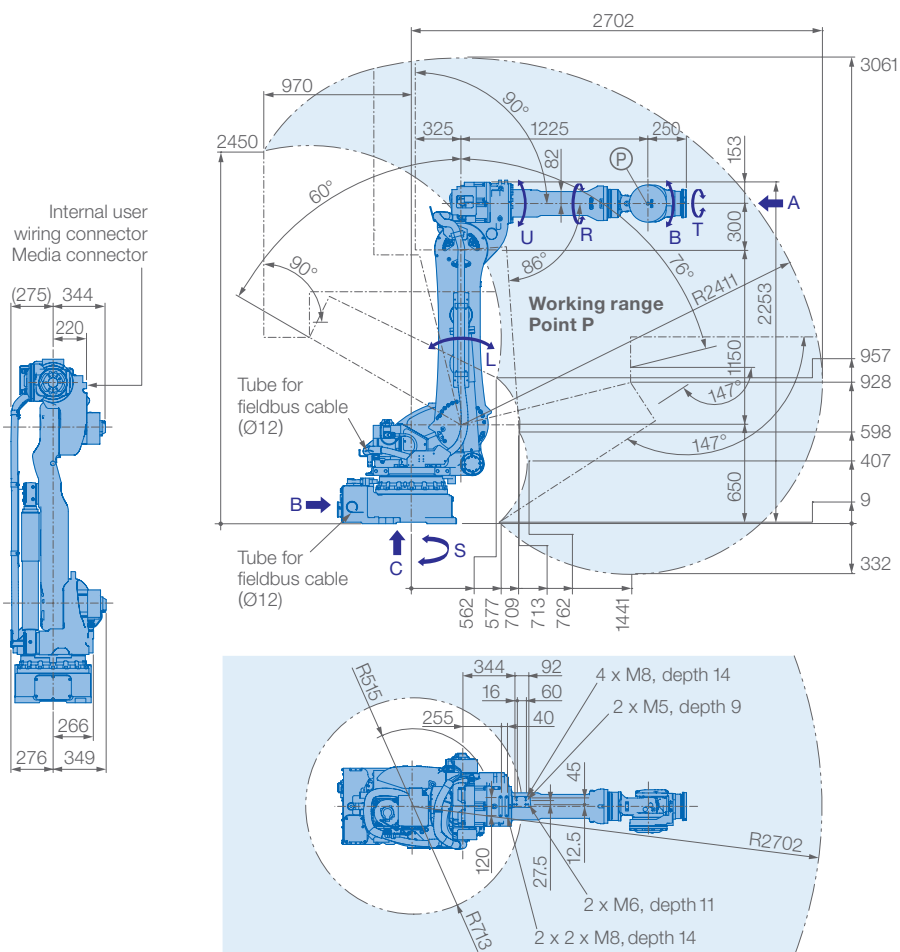
Despite of providing a high payload of 225 kg and the wide motion range of 2702 mm, the MOTOMAN GP225 was designed with a width of 625 mm, therefore valuable floor space can be saved.

With the higher axis operation speed and speed reducer rigidity, a special vibration control system was developed. By reducing cycle times, this system realises high increases in productivity.

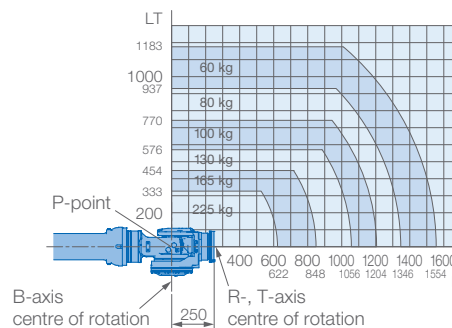
KEY BENEFITS

- Fast, flexible and powerful
- High payload: 225 kg
- Wide motion range: 2702 mm
- Maximum performance using minimal floor space

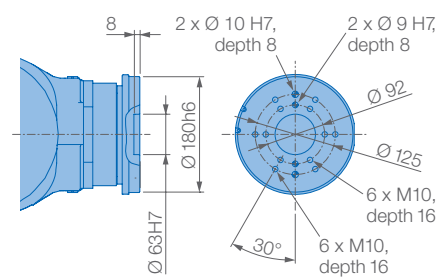
Controlled by
YRC1000



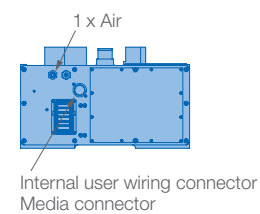
Allowable wrist load



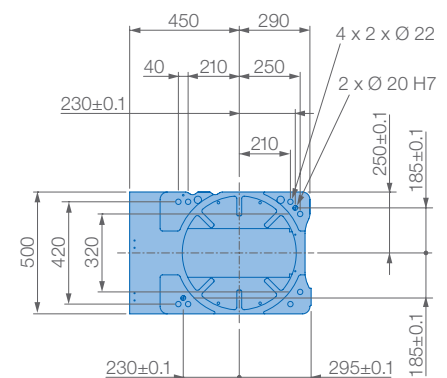
View A



View B



View C



Mounting option: Floor
Protection class: IP54/67

Specifications GP225

Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m²]	Controlled axes	6
S	±180	120	—	—	Max. payload [kg]	225
L	+76/-60	97	—	—	Repeatability [mm]	±0.05
U	+90/-86	115	—	—	Max. working range R [mm]	2702
R	±360	145	1372	145	Temperature [°C]	0 to +45
B	±125	145	1372	145	Humidity [%]	20 – 80
T	±360	220	735	84	Weight [kg]	1080
					Power supply, average [KVA]	5.0

MOTOMAN GP250

Handling & General Applications
with the GP-series



The 6-axis MOTOMAN GP250 is a versatile, high speed robot offering superior performance for a variety of applications, like material handling, machine and press tending.

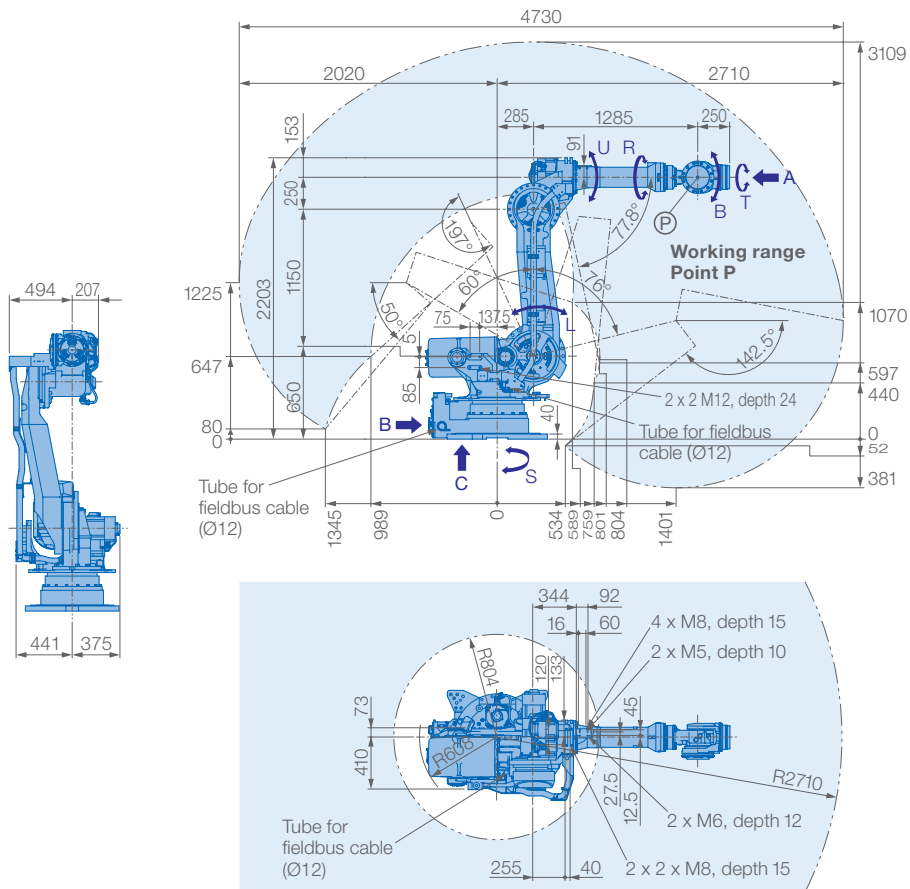
Despite of providing a high payload of 250 kg and the wide motion range of 2710 mm, the MOTOMAN GP250 was designed with a width of 816 mm, therefore valuable floor space can be saved.

The vibration control system uses higher axis operation speed and speed reducer rigidity to allow fast acceleration of short movements. By reducing cycle times, this system realises high increases in productivity.

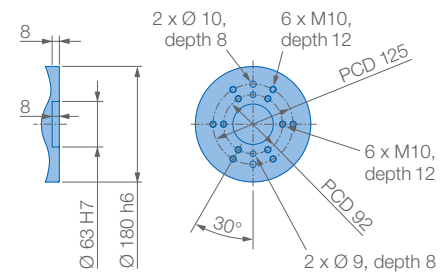
KEY BENEFITS

- Fast, flexible and powerful
- High payload: 250 kg
- Wide motion range: 2710 mm
- Maximum performance using minimal floor space

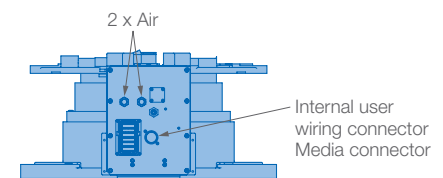
Controlled by
YRC1000



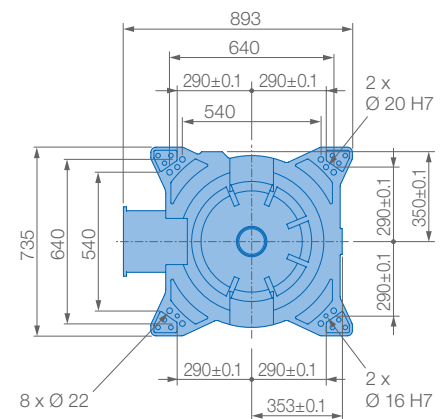
View A



View B

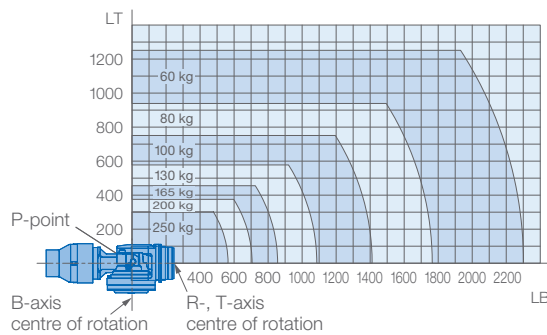


View C



Mounting option: Floor
Protection class: IP54/67

Allowable wrist load



Specifications GP250						
Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m ²]	Controlled axes	6
S	±180	100	—	—	Max. payload [kg]	250
L	+76/-60	90	—	—	Repeatability [mm]	±0.2
U	+197/-77.8	97	—	—	Max. working range R [mm]	2710
R	±360	120	1385	317	Temperature [°C]	0 to +45
B	±125	120	1385	317	Humidity [%]	20 – 80
T	±360	190	735	200	Weight [kg]	1345
					Power supply, average [KVA]	5.0

MOTOMAN GP280

Handling & General Applications
with the GP-series



The 6-axis MOTOMAN GP280 is a versatile, high speed robot offering superior performance for a variety of applications, like material handling, machine and press tending.

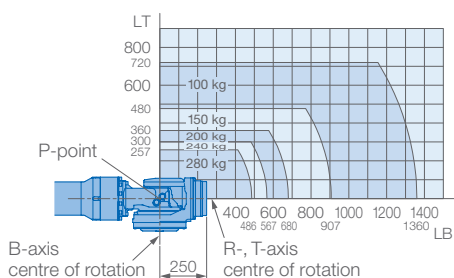
The GP280 offers a large work envelope of 2446 mm and a high moment of inertia ratings. Fast axial speeds and acceleration reduce cycle times and increase production output. The compact, slim design allows the robot to reach into confined spaces, improving system productivity.

The MOTOMAN GP280 is available with the PLd Category 3 Functional Safety Unit (FSU).

KEY BENEFITS

- Fast, flexible and powerful
- Compact design allows maximum performance using minimal floor space
- Max. payload of 280 kg
- Max. working range of 2446 mm
- Enhanced safety functions

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2 x Air

Internal user wiring connector

Media connector

Technical drawing of a circular mechanical part (flange) with the following dimensions and tolerances:

- Overall diameter: 893
- Inner diameter: 640
- Distance between mounting holes (center-to-center): 290 ± 0.1 (horizontal), 290 ± 0.1 (vertical)
- Distance between mounting holes (edge-to-edge): 540
- Mounting holes: 2 x $\varnothing 20 \text{ H7}$
- Overall height: 735
- Inner flange height: 640
- Distance between mounting holes (edge-to-edge) on the flange: 540
- Distance between mounting holes (center-to-center) on the flange: 290 ± 0.1 (horizontal), 290 ± 0.1 (vertical)
- Distance between mounting holes (edge-to-edge) on the flange: 350
- Mounting holes on the flange: 8 x $\varnothing 22$
- Distance between mounting holes (center-to-center) on the flange: 290 ± 0.1 (horizontal), 290 ± 0.1 (vertical)
- Distance between mounting holes (edge-to-edge) on the flange: 353
- Mounting holes on the flange: 2 x $\varnothing 16 \text{ H7}$

Mounting option: Floor
Protection class: IP54/67

23.09.19 09:44

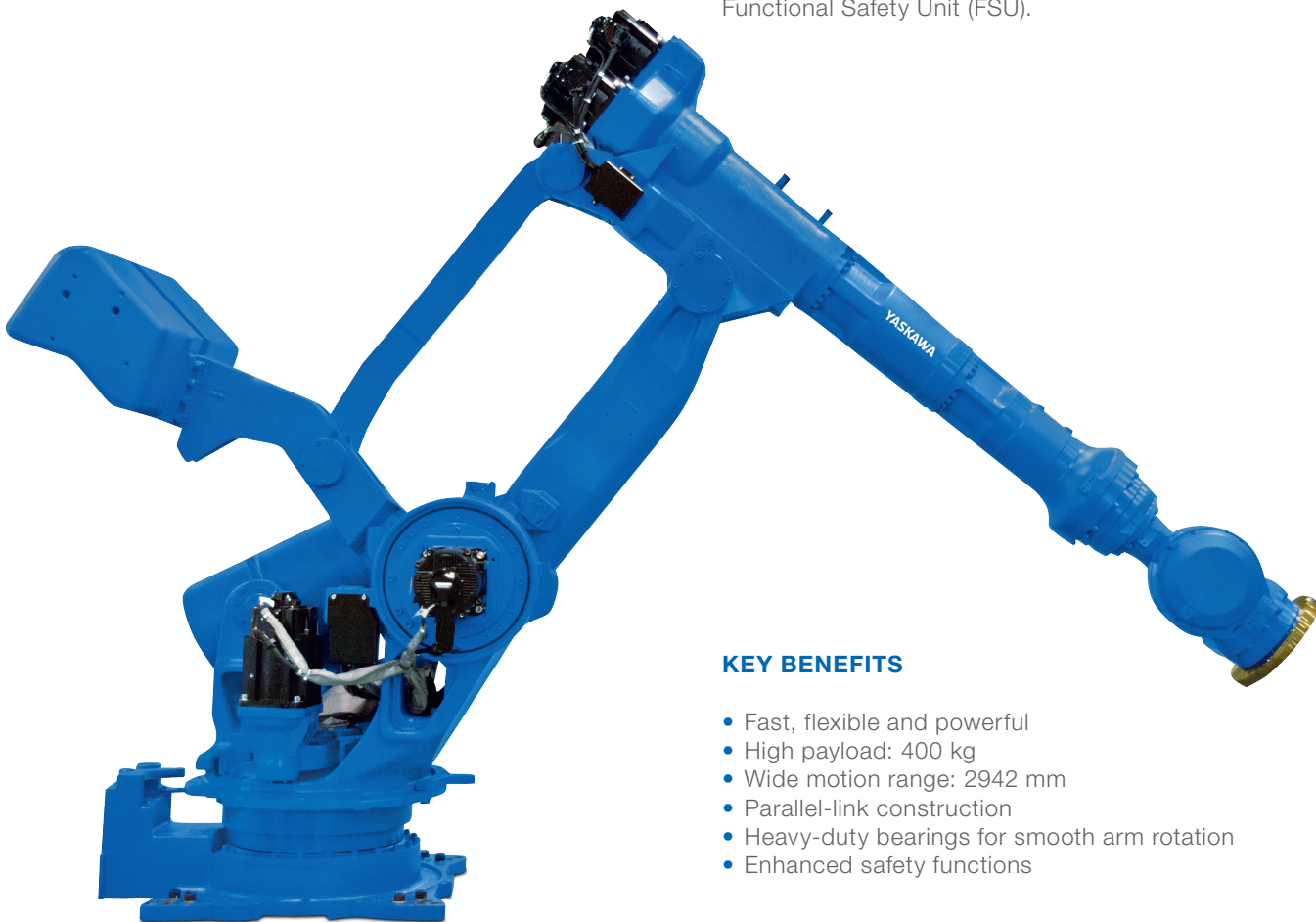
MOTOMAN GP400

Handling & General Applications
with the GP-series

The 6-axis MOTOMAN GP400 is a versatile, powerful robot offering superior performance for a variety of applications. It provides a high payload of 400 kg and a wide motion range, which especially enables the handling of large work pieces.

The robot features a parallel-link construction for strength, rigidity and stabilization of high moment and inertia loads. The GP400 also has heavy-duty bearings which provide a smooth arm rotation.

The MOTOMAN GP400 is available with the PLd Category 3 Functional Safety Unit (FSU).



KEY BENEFITS

- Fast, flexible and powerful
- High payload: 400 kg
- Wide motion range: 2942 mm
- Parallel-link construction
- Heavy-duty bearings for smooth arm rotation
- Enhanced safety functions

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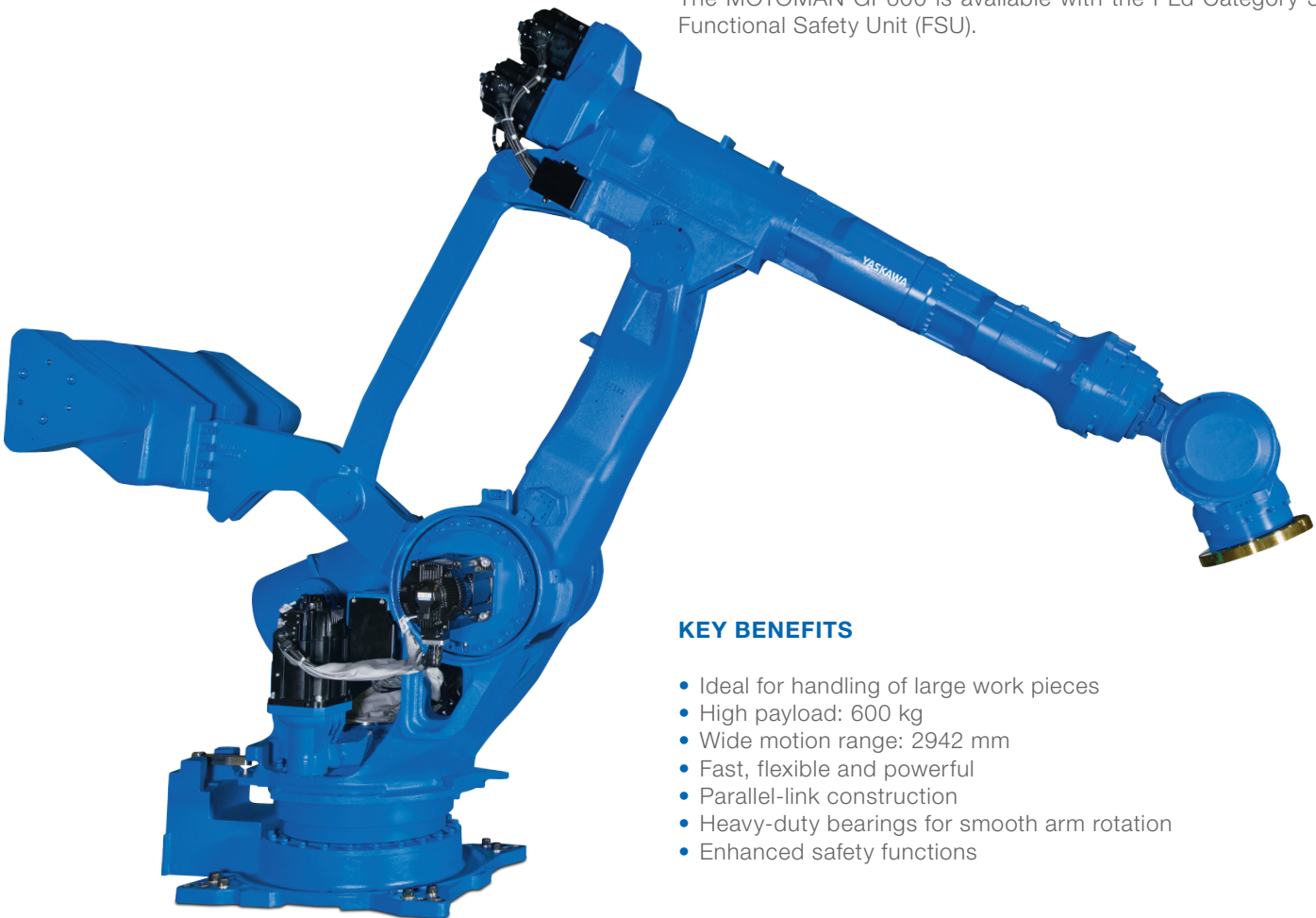
MOTOMAN GP600

Handling & General Applications
with the GP-series

The 6-axis MOTOMAN GP600 is a versatile, powerful robot offering superior performance for a variety of applications. It provides a high payload of 600 kg and a wide motion range, which especially enables the handling of large and heavy work pieces.

The robot features a parallel-link construction for strength, rigidity and stabilization of high moment and inertia loads. The GP600 also has heavy-duty bearings which provide a smooth arm rotation.

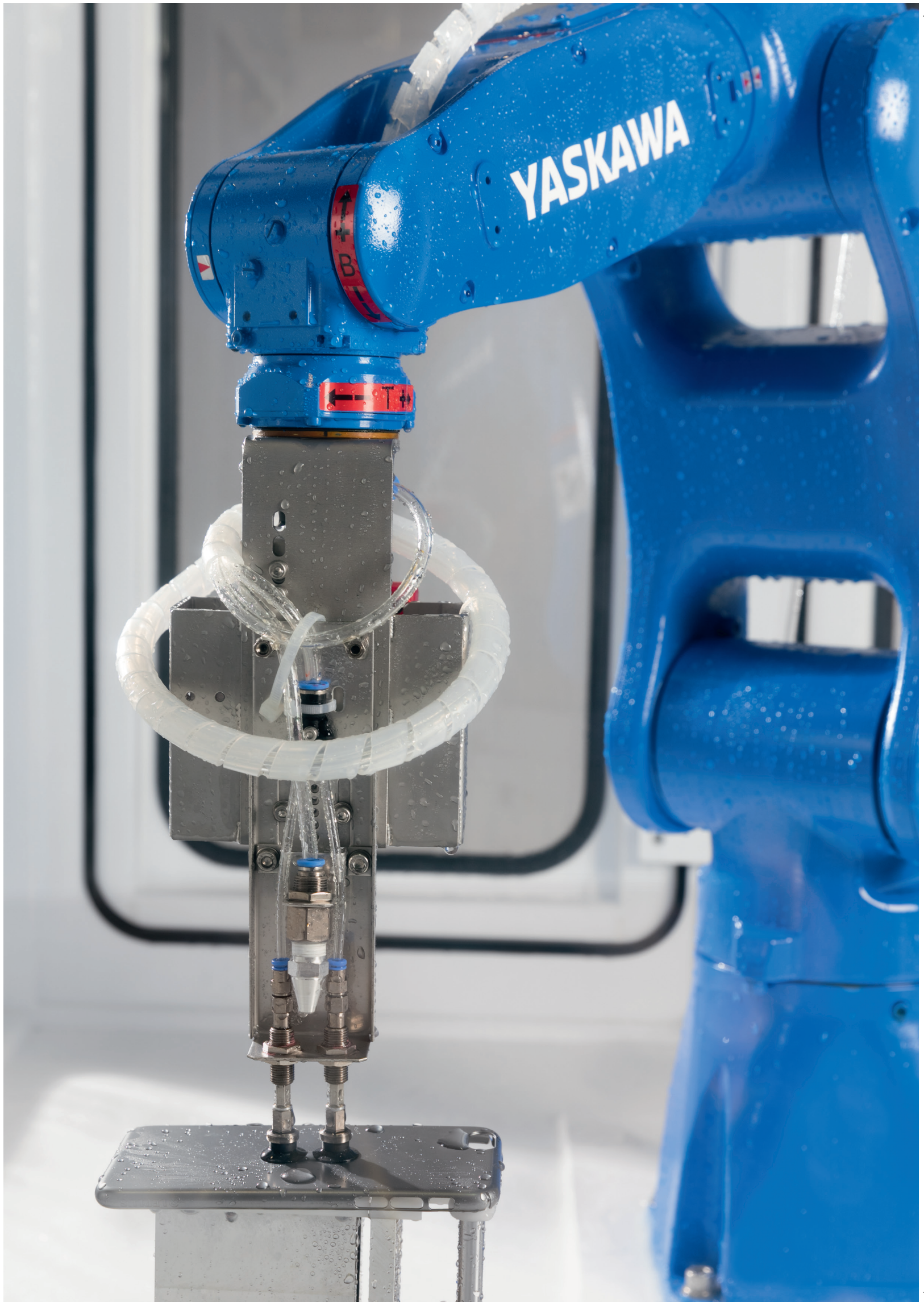
The MOTOMAN GP600 is available with the PLd Category 3 Functional Safety Unit (FSU).



KEY BENEFITS

- Ideal for handling of large work pieces
- High payload: 600 kg
- Wide motion range: 2942 mm
- Fast, flexible and powerful
- Parallel-link construction
- Heavy-duty bearings for smooth arm rotation
- Enhanced safety functions

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All drawing dimensions in mm.
Technical data may be subject to change without previous notice.
Please request detailed drawings at robotics@yaskawa.eu.com.

GP-series
I-09-2019, A-No. 180894

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