

**YASKAWA**

# Packaging & Palletizing

Robot Program



Yaskawa's palletizing and packaging robots are designed for speed, durability and cost savings – complemented by application-specific software and vision features that help you achieve more than ever before. Discover our advanced solutions in this brochure.



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## Packaging & Palletizing

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YASKAWA

# MOTOMAN SG400

Picking, Packing & Handling  
with the SG-series

The robust MOTOMAN SG400 scara-robot features a wide motion range due to its compact design.

It is particularly suitable for application when high speed and accuracy is required, for example picking and packing, dispensing and feeding. Small interference contours allow the robots working together in confined spaces. Internal cabling enables a reliable workflow and saves extensive maintenance.

The SG400 is driven by the compact and lightweight YRC-1000micro controller.



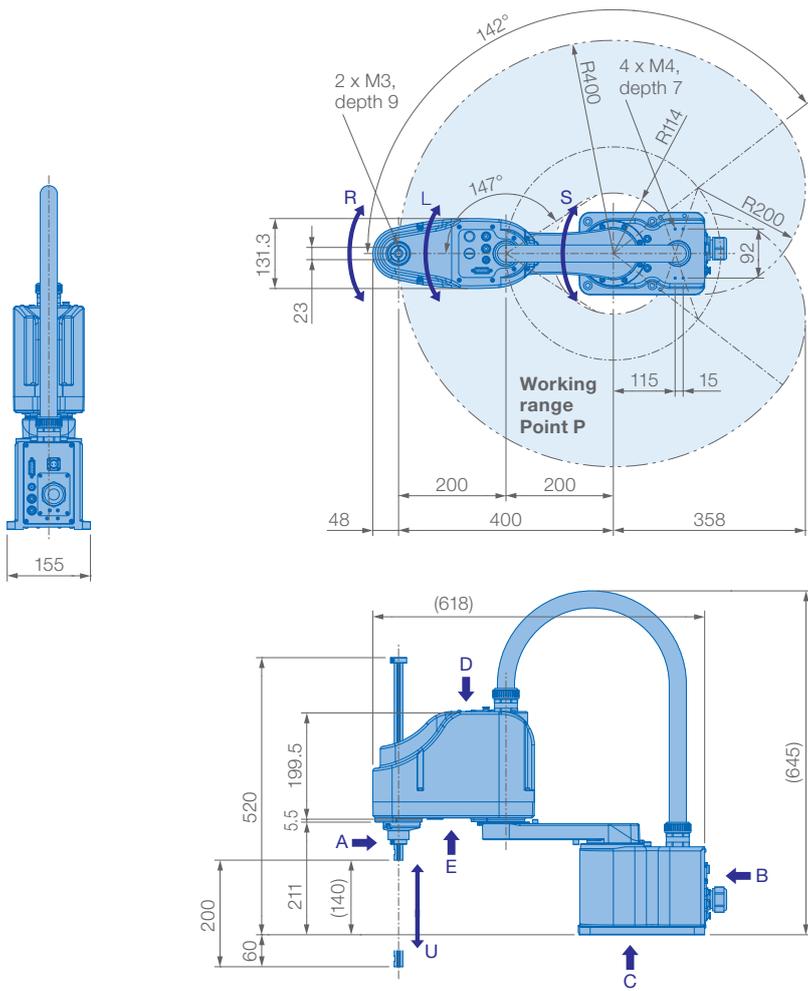
## KEY BENEFITS

- Fast, powerful and reliable
- Wide motion range
- Compact and robust design
- Internal cabling
- High repeatability and accuracy
- Ideal for applications in confined spaces
- Easy integration and high dynamics
- Easy maintenance

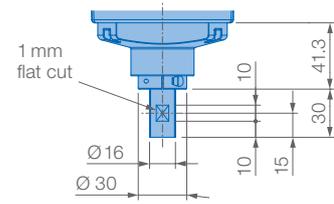


Max. payload  
**3 kg**

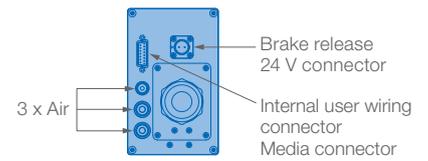
Controlled by  
**YRC1000  
micro**



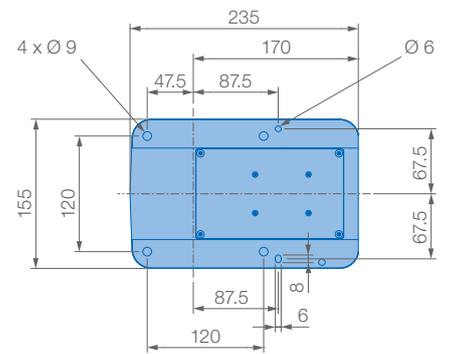
View A



View B



View C



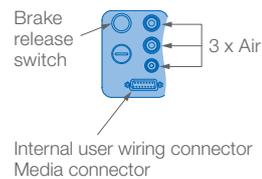
Mounting option: Floor

**Maximum payload of the wrist axis and the R-axis allowable inertia**

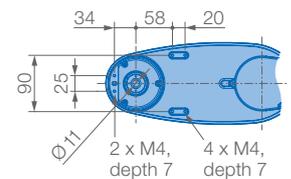
Please make sure that the load (total amount of hand and workpiece) does not exceed the values in the table.

Max. Payload [kg]	3
R-axis allowable inertia [kg · m <sup>2</sup> ]	0.06
Max. allowable eccentric distance of the mass center point [mm]	150

View D



View E



Specifications SG400						
Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes	
S	±142	740	-	-	4	
L	±147	800	-	-	Max. payload [kg]	3
U	+200	1200 mm/sec.	-	-	Repeatability [mm]	±0.01
R	±360	3000	-	0.06	Max. working range R [mm]	400
					Temperature [°C]	0 to +40
					Humidity [%]	20 – 80
					Weight [kg]	14
					Power supply, average [KVA]	1

# MOTOMAN SG650

Picking, Packing & Handling  
with the SG-series

The robust MOTOMAN SG650 scara-robot features a wide motion range due to its compact design.

It is particularly suitable for application when high speed and accuracy is required, for example picking and packing, dispensing and feeding. Small interference contours allow the robots working together in confined spaces. Internal cabling enables a reliable workflow and saves extensive maintenance.

The SG650 is driven by the compact and lightweight YRC1000micro controller.

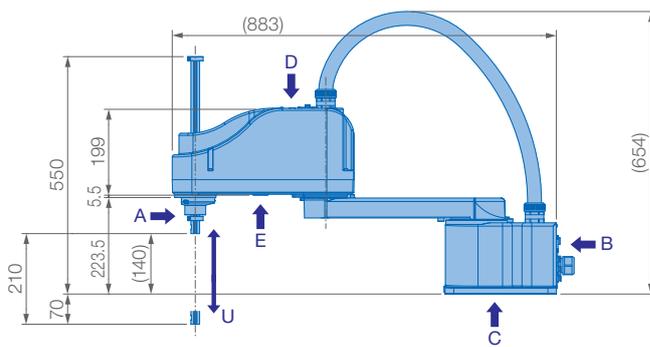
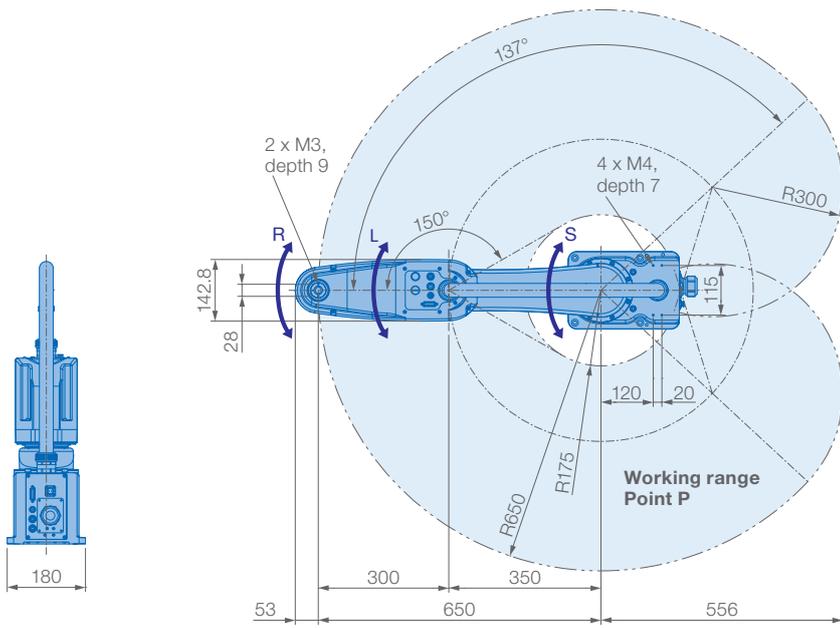
## KEY BENEFITS

- Fast, powerful and reliable
- Wide motion range
- Compact and robust design
- Internal cabling
- High repeatability and accuracy
- Ideal for applications in confined spaces
- Easy integration and high dynamics
- Easy maintenance

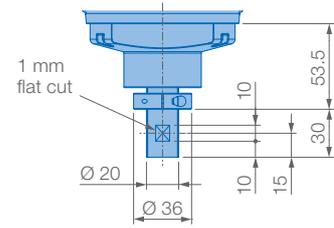


Max. payload  
6 kg

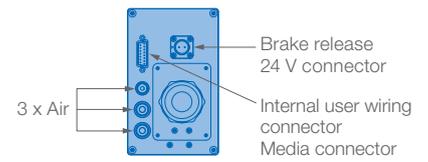
Controlled by  
YRC1000  
micro



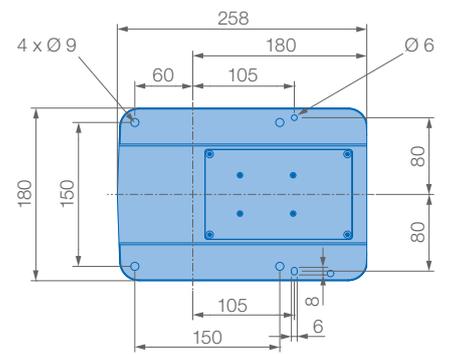
View A



View B



View C



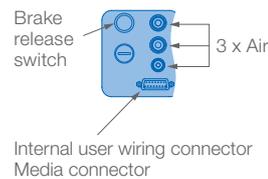
Mounting option: Floor

**Maximum payload of the wrist axis and the R-axis allowable inertia**

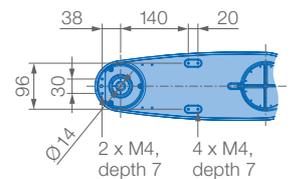
Please make sure that the load (total amount of hand and workpiece) does not exceed the values in the table.

Max. Payload [kg]	6
R-axis allowable inertia [kg · m <sup>2</sup> ]	0.12
Max. allowable eccentric distance of the mass center point [mm]	150

View D



View E



Specifications SG650						
Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes	
S	±137	450	-	-	4	
L	±150	730	-	-	Max. payload [kg]	6
U	+210	1300 mm/sec.	-	-	Repeatability [mm]	±0.01
R	±360	2500	-	0.12	Max. working range R [mm]	650
					Temperature [°C]	0 to +40
					Humidity [%]	20 – 80
					Weight [kg]	19
					Power supply, average [KVA]	1

# MOTOMAN MPK2F

Handling, Picking & Packing  
with the MPK-series



The MOTOMAN MPK2F is a five-axis, high-speed robot that is particularly suitable in the following areas: order-picking, high-speed handling, picking-packing-palletizing and many other handling applications.

With its Wash-Down paintwork, the MPK2F has been developed especially for use in the food industry and in environments with strict cleanliness requirements.

Thanks to its compact and streamlined design, the robot can operate even in confined workspaces. The hollow-wrist design of the MPK2F allows integrated supply lines for energy, fluids and air – all the way from the robot base to the tool.

This high-speed robot, with a payload of 2 kg, is characterized by its very high velocity and acceleration. With a maximum of 133 cycles/minute, this robot combines performance and reliability in all handling applications.

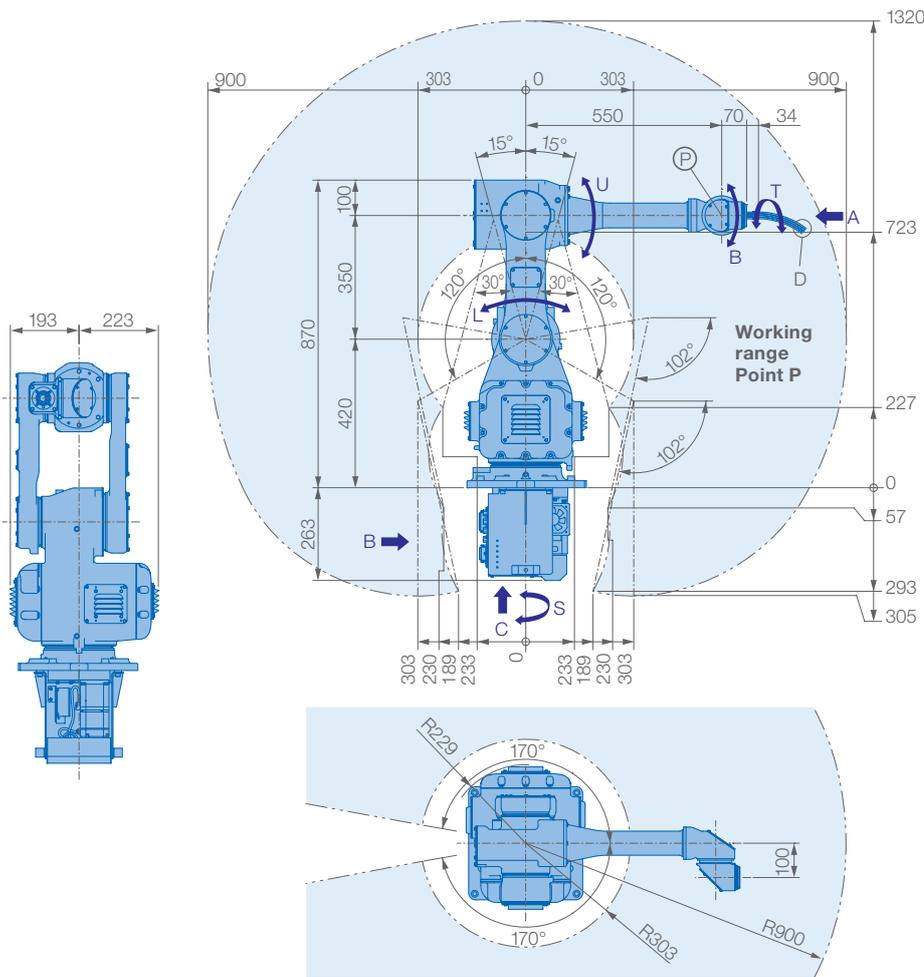
This allround-robot is driven by the MOTOMAN FS100 compact controller.

## KEY BENEFITS

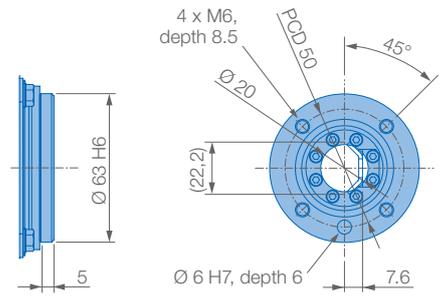
- "Wash-down-painting" for maximum hygiene
- Minimal footprint
- Fast acceleration, high speed increase productivity
- Integrated supply lines for energy, fluids and air facilitates integration
- Optional vision and conveyor tracking for maximum flexibility
- Mounting options: Floor, ceiling, wall to suit cell integration

Max. payload  
**2 kg**

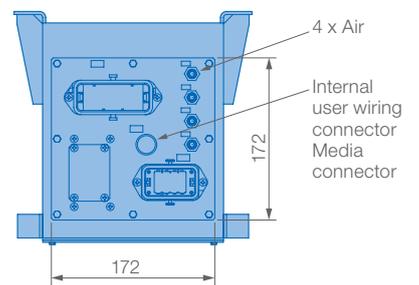
Controlled by  
**FS100**



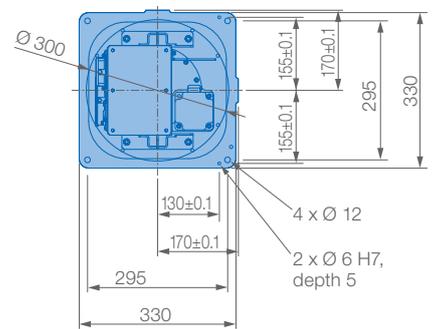
View A



View B

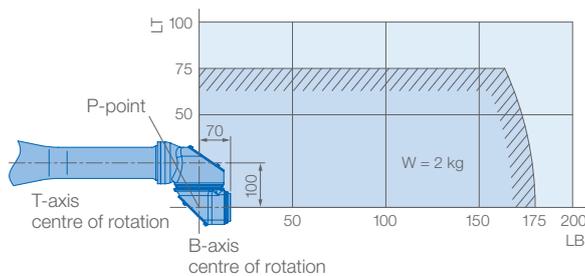


View C



Mounting options: Floor, ceiling, wall

Allowable wrist load



Specifications MPK2F						
Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes	5
S	±170	90	-	-	Max. payload [kg]	2
L	±120	80	-	-	Repeatability [mm]	±0.5
U	+282/-102	90	-	-	Max. working range R [mm]	900
B	±150	380	3.5	0.065	Temperature [°C]	0 to +40
T	±270	2000	1.5	0.012	Humidity [%]	20 - 80
Optional accessory: Wash down cover – Order number 151915					Weight [kg]	72
					Power supply, average [KVA]	2.0

# MOTOMAN MPP3H

Handling, Picking & Packing  
with the MPP-series



The MOTOMAN MPP3H 4-axis high-speed robot with parallel kinematic system combines the speed of the delta design with a high payload capacity and a large working range. Due to the high torque of the fourth axis, the so-called wrist axis, the MOTOMAN MPP3H moves payloads of up to 3 kg at unprecedented speeds. This delta robot was developed for a wide spectrum of industries, such as food and beverage, pharmaceutical and the automotive sector.

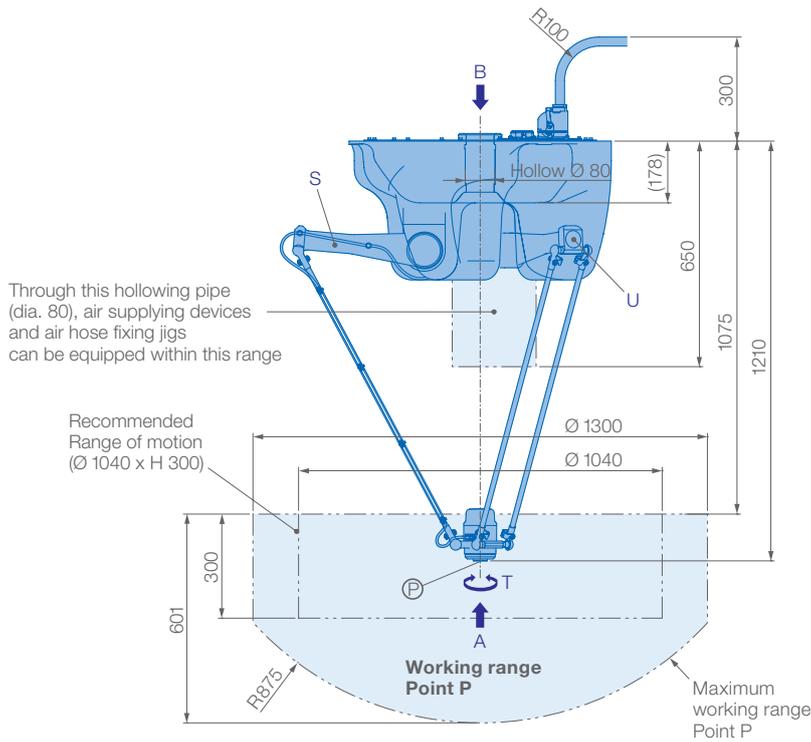
The MPP3H is driven by Yaskawas compact FS100 controller and is available with advanced technologies such as MotoSight, MotoPick and conveyor tracking.

## KEY BENEFITS

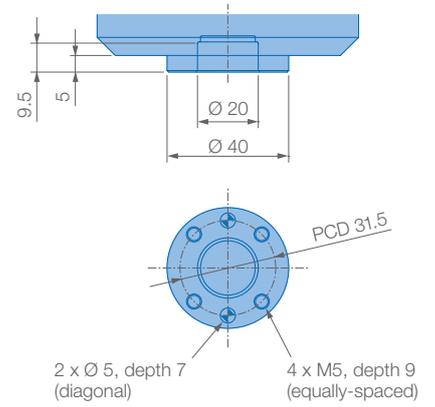
- Protection classification IP67
- Cleanroom class ISO 5 (with 50 and 100 % speed)
- Payloads with unprecedented speed:
  - 150 cycles per minute with 3 kg payload
  - 185 cycles per minute with 1 kg payload
- Total stroke of 500 mm with a working range of 1300 mm
- High-precision, high-speed conveyor tracking
- Maximum machine accuracy
- Compact installation space: 684 mm diameter

Max. payload  
**3 kg**

Controlled by  
**FS100**

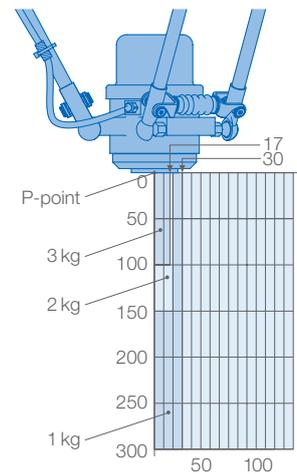


**View A**

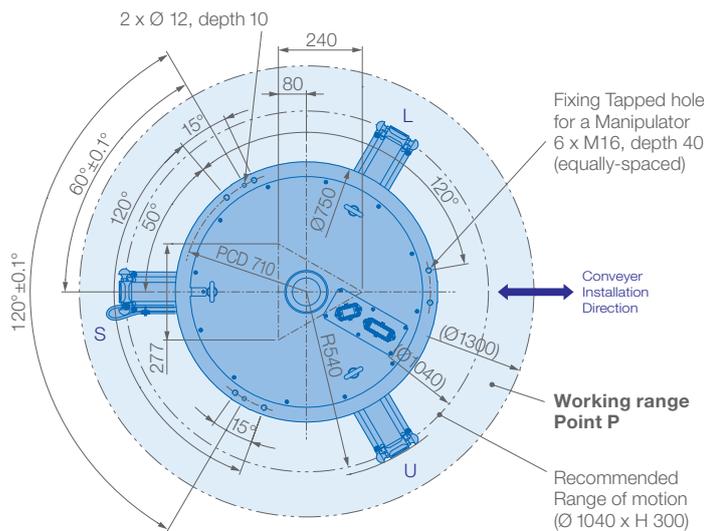


Mounting option: Ceiling  
Protection class: IP67

**Allowable wrist load**



For planning Multi-Robot-Systems please refer to your Yaskawa sales contact.



**Specifications MPP3H**

Plattern	Payload [kg]	CPM *	Payload [kg]	CPM *	Controlled axes	
					Max. payload [kg]	
25-305-25	1	230	3	170	Repeat. pos. accuracy [mm]	
300-400-100	1	100	3	80	Repeat. rotational accuracy of T-axis [arc x min -1]	
70-700-70	1	130	3	95	Max. working range R [mm]	
	Conveyor speed ** [mm/s]		Conveyor position repeat accuracy ** [mm]		Temperature [°C]	
					Humidity [%]	
	800		1.0		Weight [kg]	
	1300		1.5		Power supply, average [KVA]	
	2000		3.0		IP class	
					IPA cleanroom class	

\* Cycle time without picking time and product. \*\* Values determined under test conditions, differences possible depending on application.

# MOTOMAN MPP3S

Handling, Picking & Packing  
with the MPP-series



The MOTOMAN MPP3S 4-axis high-speed robot with parallel kinematic system combines the speed of the delta design with a high payload capacity and a large working range. Due to the high torque of the fourth axis, the so-called wrist axis, the MOTOMAN MPP3S moves payloads of up to 3 kg at unprecedented speeds. This delta robot was developed for a wide spectrum of industries, such as food and beverage, pharmaceutical and the automotive sector.

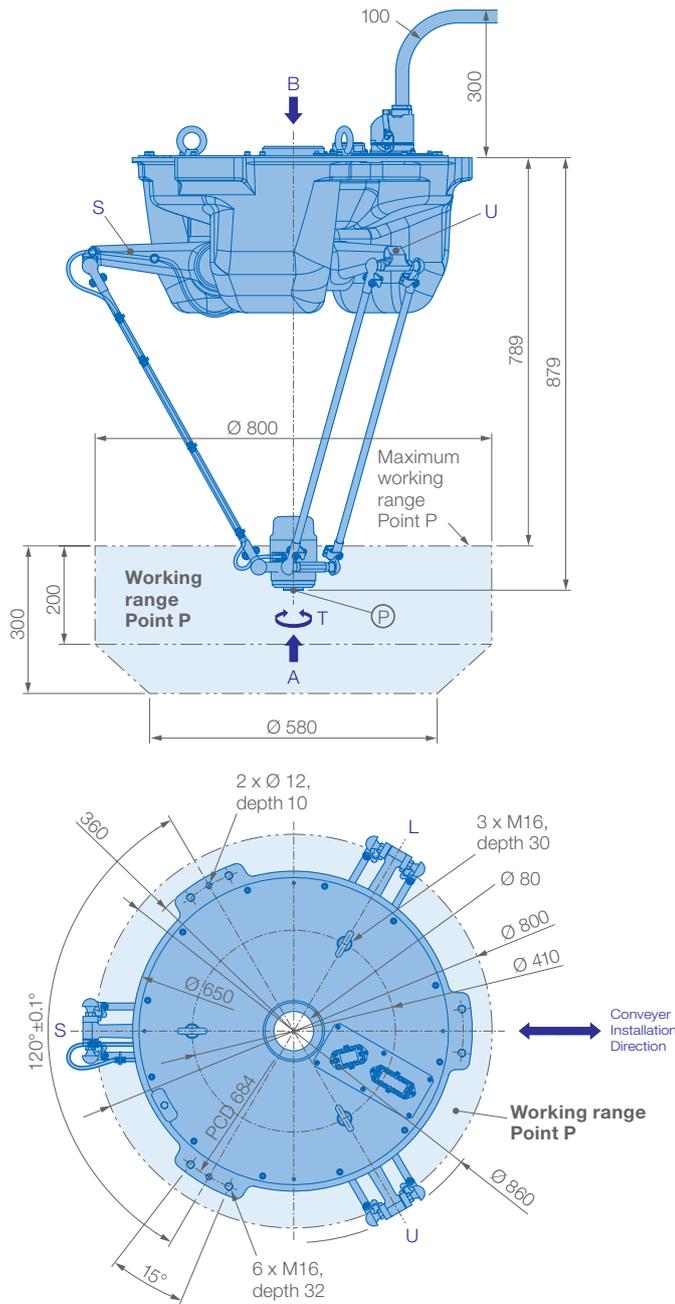
The MPP3S is driven by Yaskawas compact FS100 controller and is available with advanced technologies such as MotoSight, MotoPick and conveyor tracking.

## KEY BENEFITS

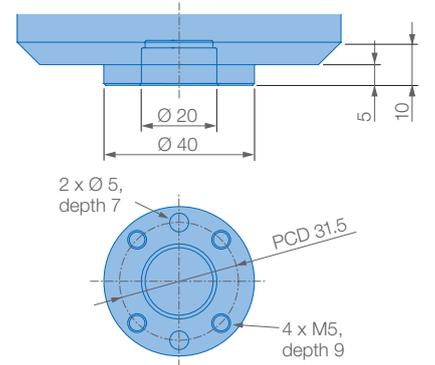
- Protection classification IP67
- ISO class 4 (with 50 % speed), clean room rated
- ISO class 5 (with 100 % speed), clean room rated
- Payloads with unprecedented speed:
  - 150 cycles per minute with 3 kg payload
  - 185 cycles per minute with 1 kg payload
- Total stroke of 300 mm with a working range of 800 mm
- High-precision, high-speed conveyor tracking
- Maximum machine accuracy
- Compact installation space: 684 mm diameter

Max. payload  
**3 kg**

Controlled by  
**FS100**

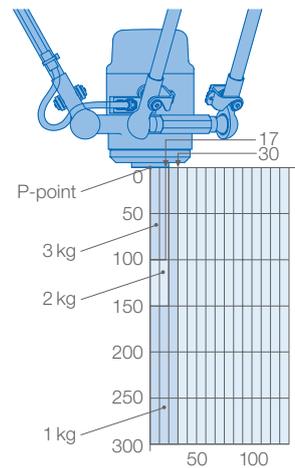


**View A**



Mounting option: Ceiling  
Protection class: IP67

**Allowable wrist load**



Bitte kontaktieren Sie bei Planung eines Multi-Robot-Systems Ihren zuständigen Yaskawa-Vertriebsmitarbeiter.

**Specifications MPP3S**

Plattern	Payload [kg]	CPM*	Payload [kg]	CPM*	Controlled axes	
					Max. payload [kg]	
25-305-25	1	230	3	170	Repeat. pos. accuracy [mm]	±0.1
300-400-100	1	100	3	80	Repeat. rotational accuracy of T-axis [arc x min -1]	±1
70-700-70	1	130	3	95	Max. working range R [mm]	800
	Conveyor speed** [mm/s]		Conveyor position repeat accuracy** [mm]		Temperature [°C]	0 to +40
	800		1,0		Humidity [%]	20 – 80
	1300		1,5		Weight [kg]	95
	2000		3,0		Power supply, average [KVA]	1.5
					IP class	IP67
				IPA cleanroom class	4/5***	

\* Cycle time without picking time and product. \*\* Values determined under test conditions, differences possible depending on application. \*\*\* ISO 4 with 50 % speed, ISO 5 with 100 % speed.

# MOTOMAN MPK2F-5

Handling, Picking & Packing  
with the MPK-series



The MOTOMAN MPK2F-5 is a five-axis, high-speed robot that is particularly suitable in the following areas: order-picking, high-speed handling, picking-packing-palletizing and many other handling applications.

With its Wash-Down paintwork, the MPK2F-5 has been developed especially for use in the food industry and in environments with strict cleanliness requirements.

Thanks to its compact and streamlined design, the robot can operate even in confined workspaces. The hollow-wrist design of the MPK2F-5 allows integrated supply lines for energy, fluids and air – all the way from the robot base to the tool.

This high-speed robot, with a payload of 5 kg, is characterized by its very high velocity and acceleration. With a maximum of 133 cycles/minute, this robot combines performance and reliability in all handling applications.

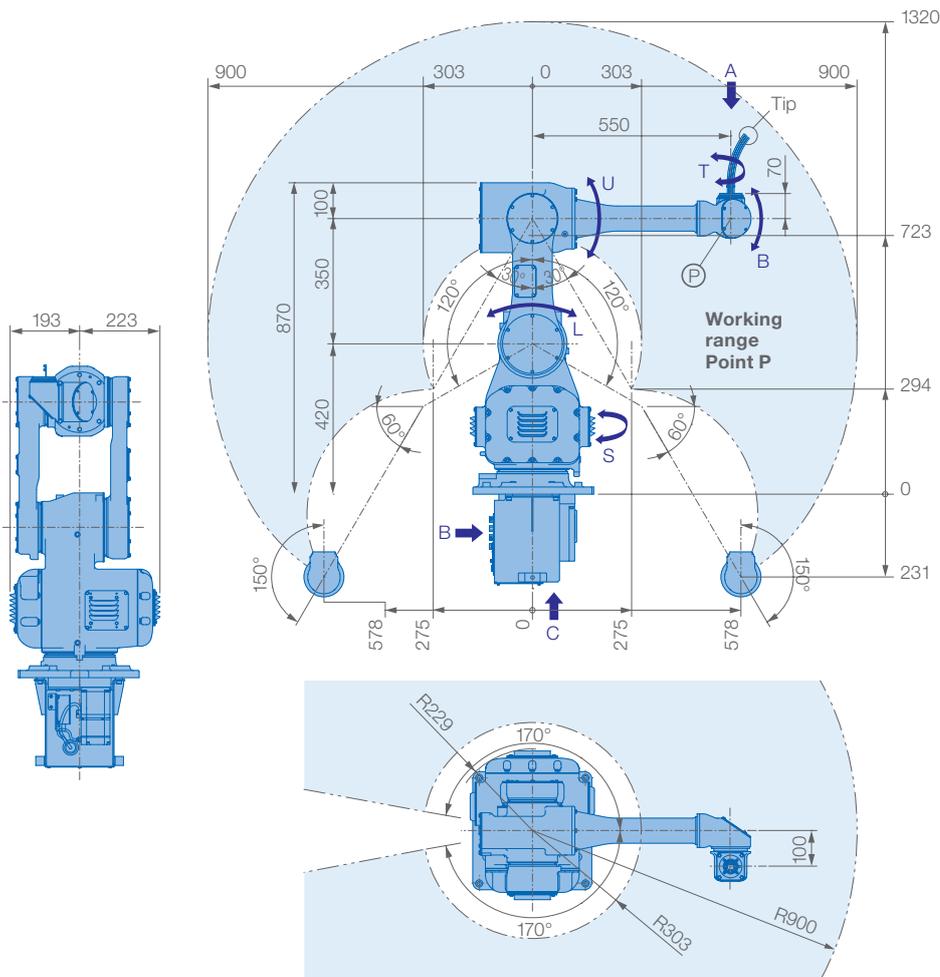
This allround-robot is driven by the MOTOMAN FS100 compact controller.

## KEY BENEFITS

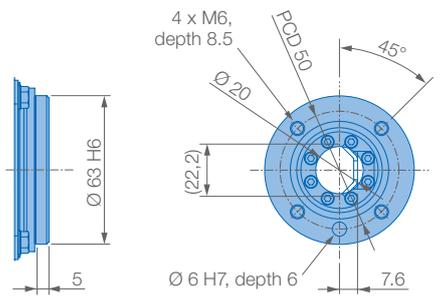
- "Wash-down-painting" for maximum hygiene
- Minimal footprint
- Fast acceleration, high speed increase productivity
- Integrated supply lines for energy, fluids and air facilitates integration
- Optional vision and conveyor tracking for maximum flexibility
- Mounting options: Floor, ceiling, wall to suit cell integration

Max. payload  
**5 kg**

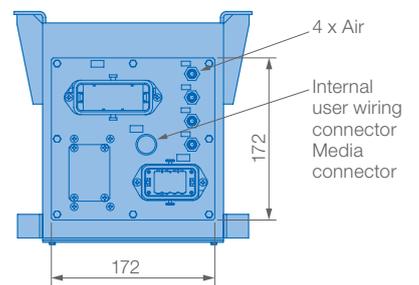
Controlled by  
**FS100**



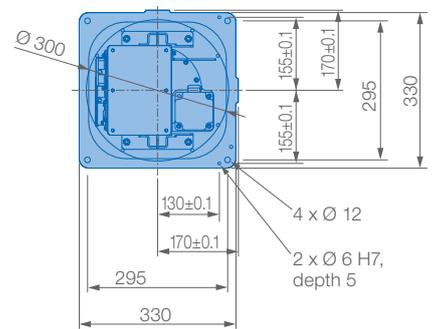
View A



View B

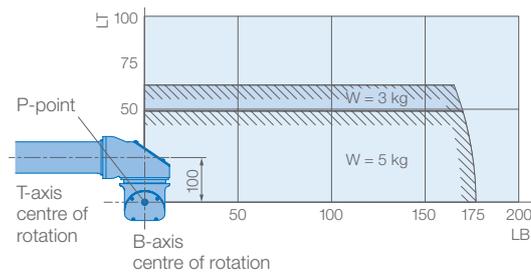


View C



Mounting options: Floor, ceiling, wall

Allowable wrist load



Specifications MPK2F-5						
Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes	5
S	±170	320	-	-	Max. payload [kg]	5
L	±120	330	-	-	Repeatability [mm]	±0.5
U	+240/-60	330	-	-	Max. working range R [mm]	900
B	±15	380	3.5	0.065	Temperature [°C]	0 to +40
T	±270	2000	1.5	0.012	Humidity [%]	20 - 80
Optional accessory: Wash down cover – Order number 151915					Weight [kg]	72
					Power supply, average [KVA]	1.5

# MOTOMAN HC20DTP

## Human-Collaborative Robot 6 integrated Sensors



The MOTOMAN HC20DTP is the largest cobot of the HC product family, with a remarkable payload of 20 kg, an enormous max. reach of 1,900 mm and outstanding repeatability. This makes the robot an ideal choice for fenceless palletizing tasks, such as in end-of-line packaging applications. However, applications in harsh environments, e.g. machine tool loading, are also possible without any problems thanks to its resistant surface coating and IP67 protection class against coolants and dust. The food-grade grease also opens up further applications in the food and pharmaceutical industries. Thanks to the integrated torque sensors in each joint, the robot can be used in human-robot collaboration without any protection fence. A connection flange common in the cobot world and configuration wizard software simplify the connection of grippers.

The MOTOMAN HC robot series from Yaskawa was developed for easy entry into robotic automation. In addition to the simple programming philosophy with hand guidance/operator buttons on the robot's wrist, online tutorials and application builders on the web make it easier to take the first steps in robot automation. The convenient tablet-based Smart Pendant guides you intuitively through the individual steps – from programming to safety configuration, simple menus provide the perfect overview of your application. Simply set up the cobot, after connecting the robot and all components, you're ready to start programming the task. Many compatible accessories – supplied either by Yaskawa or ecosystem partners – make it easy to set up robot installations for many applications.

Controlled by  
**YRC1000**

Controlled by  
**YRC1000  
micro**

Max. payload  
**20 kg**

### KEY BENEFITS

#### Easy-to-use

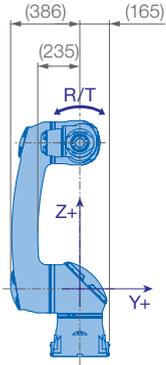
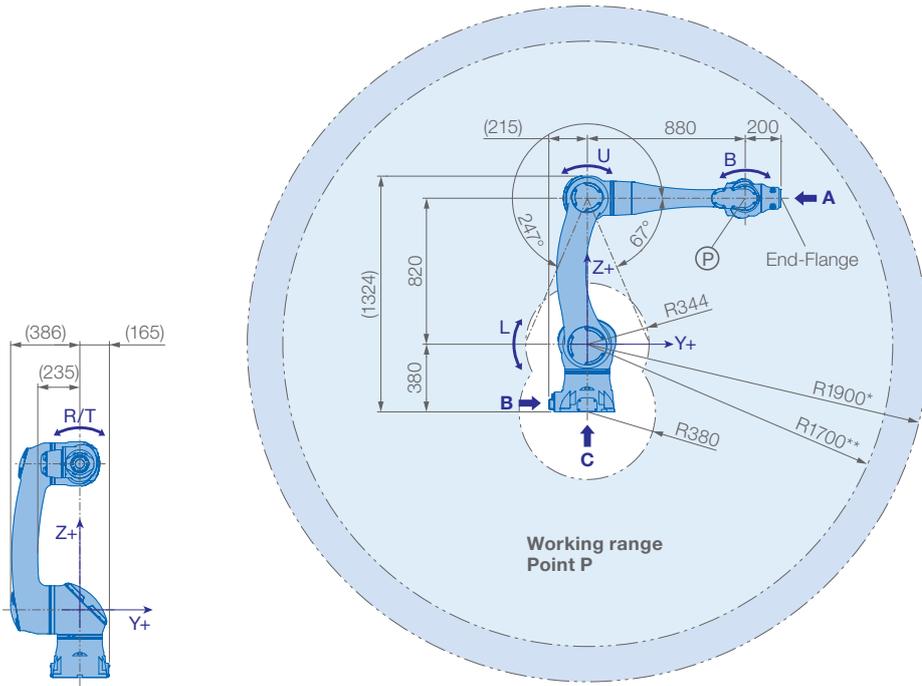
- Simple programming with Smart Pendant incl. Smart Frame and hand guiding
- Complex programming with Teach Pendant
- Pendants with standard 3-position enabling switch
- Wizard programming for applications and accessories
- Ecosystem of Plug & Play partner products
- ISO flange for easy connection of accessories
- Yaskawa simulation software MotoSim EG VRC

#### Smart safety

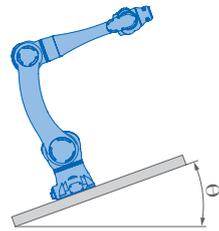
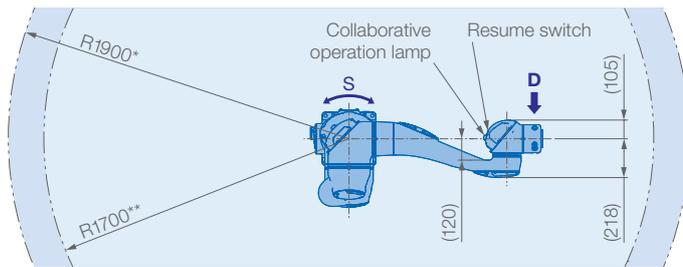
- PL d Cat. 3 certification with 25 safety-related hardware and software functions
- High-resolution torque sensors in each joint
- Easy configuration of the safety unit, such as definition of ranges, plains and precise envelopes for manipulator and gripper
- Two retract movements: Retract & Clamp Release function
- Pushback function for pushing the robot away during operation

#### Industrial design for hybrid operation

- High payload and reach
- IP67 protection class with high-quality seals
- Food grade grease
- Robust aluminium cast in lightweight design
- Powerful Yaskawa 200 V servo drives
- Internal media routing
- Automatic calibration
- Fast axis speeds
- Industrial control options YRC1000 and YRC1000micro

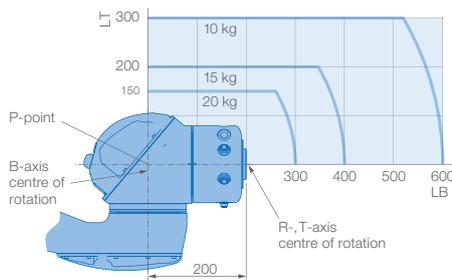


\* Absolute reach: S/L-Axis center of rotation to R/T-Axis center of rotation  
 \*\* Effective reach: S/L-Axis center of rotation to Point P

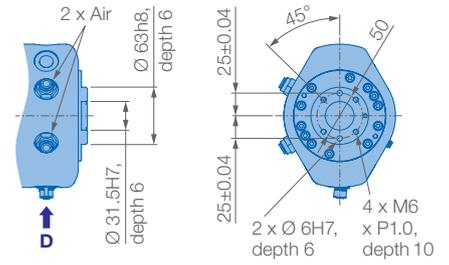


Robot installation angle $\theta$ [deg.]	S-axis operating range [deg.]
$0 \leq \theta \leq 30$	$\pm 180$ max. (no limit)
$30 < \theta \leq 35$	$\pm 60$ max.
$35 < \theta \leq 45$	$\pm 45$ max.
$45 < \theta$	$\pm 30$ max.

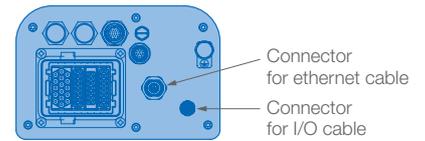
**Allowable wrist load**



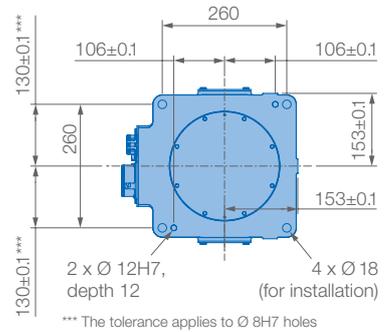
**View A**



**View B**



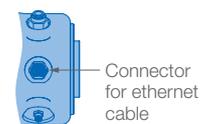
**View C**



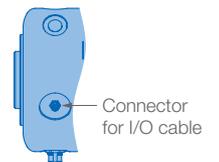
Mounting options: Floor, ceiling, wall, tilt\*  
 IP Protection: IP67

\* S Axis motion limits – see table left side

**View D**



**View E**



Specifications HC20DTP					
Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes
S	$\pm 210$	80	–	–	6
L	$\pm 180$	80	–	–	Max. payload [kg]
U	+247/–67	120	–	–	Repeatability [mm]
R	$\pm 210$	130	58.8	4.0	Max. working range R [mm]
B	$\pm 180$	180	58.8	4.0	Temperature [°C]
T	$\pm 210$	180	29.4	2.0	Humidity [%]
					Weight [kg]
					Power supply, average [kVA]

\* Absolute reach: S/L-Axis center of rotation to R/T-Axis center of rotation    \*\* Effective reach: S/L-Axis center of rotation to Point P

**NEW**

# MOTOMAN HC30PL

## Human-Collaborative Robot 6 integrated Sensors

The MOTOMAN HC30PL is the largest cobot of the HC product family, with a remarkable payload of 30 kg, a maximum reach of 1,700 mm and outstanding repeatability. This makes the cobot an ideal choice for fenceless palletizing tasks, such as in end-of-line packaging applications. The food-grade grease also opens up further applications in the food and pharmaceutical industries. Due to the integrated torque sensors, the cobot can be used in human-robot collaboration without any protection fence. Plug&Play installation of grippers is facilitated by the ISO flange and configuration wizards on the Smart Pendant.

The MOTOMAN HC cobot series from Yaskawa was developed for easy entry into robotic automation. Besides the easy programming philosophy with hand guiding and direct teach buttons on the cobot's wrist, online tutorials and the application builder assists you in your robot automation journey. The convenient tablet-based Smart Pendant guides you intuitively through the individual steps – from programming to safety configuration, simple menus provide the perfect overview of your application. Simply set up the cobot, connect the manipulator with controller and peripherals, and you are ready to start programming. Various compatible and Plug&Play products – supplied by Yaskawa or partners of the Yaskawa Ecosystem – enable a fast and easy cobot installation in different application fields.



Max. payload  
**30 kg**

Controlled by  
**YRC1000**

Controlled by  
**YRC1000  
micro**

### KEY BENEFITS

#### Easy-to-use

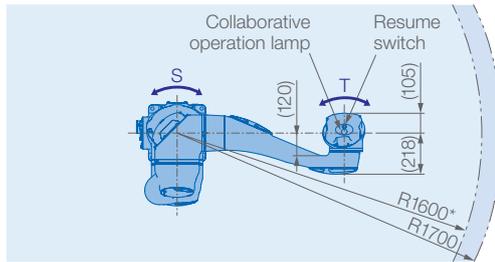
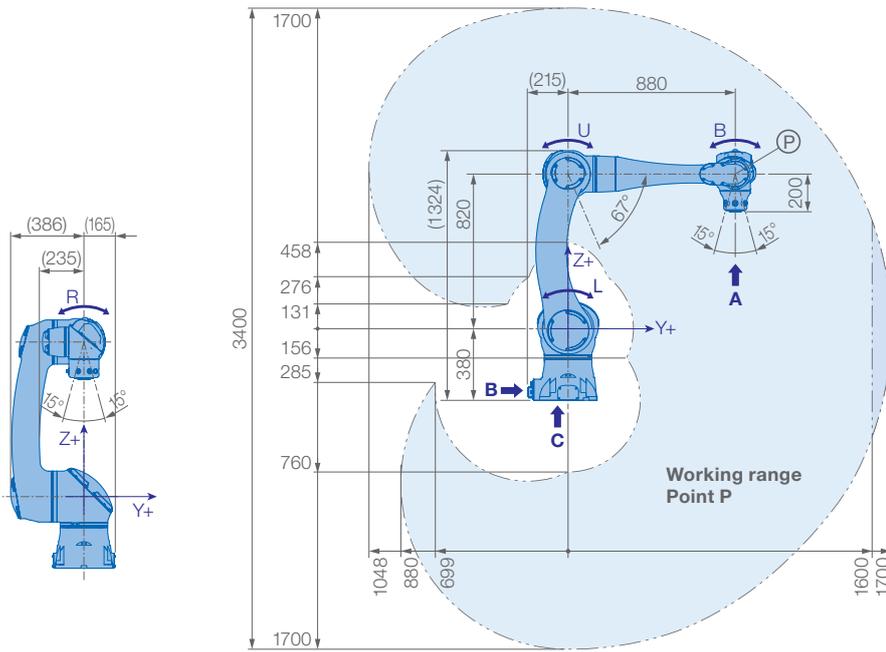
- Simple programming with Smart Pendant incl. Smart Frame and hand guiding
- Complex programming with Teach Pendant
- Pendants with standard 3-position enabling switch
- Wizard programming for applications and accessories
- Ecosystem of Plug&Play partner products
- ISO flange for easy connection of accessories
- Yaskawa simulation software MotoSim EG VRC

#### Smart safety

- PL d Cat. 3 certification with 25 safety-related hardware and software functions
- High-resolution torque sensors in each joint
- Easy configuration of the safety unit, such as definition of ranges, plains and precise envelopes for manipulator and gripper
- Two retract movements: Retract & Clamp Release function
- Pushback function for pushing the cobot away during operation

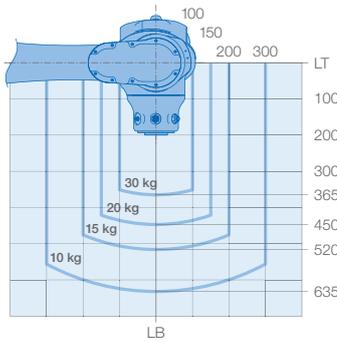
#### Industrial design for hybrid operation

- High payload and reach
- IP67 protection class with high-quality seals
- Food grade grease
- Robust aluminium cast in lightweight design
- Powerful Yaskawa 200 V servo drives
- Internal media routing
- Automatic calibration possible
- High speeds of up to 2,000 m/s
- Industrial control options YRC1000 and YRC1000micro

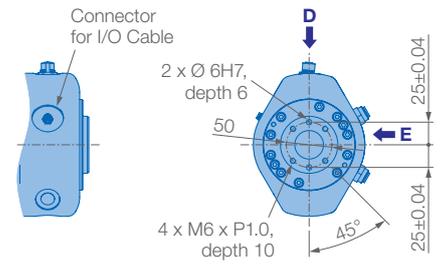


\* for over 27 kg payload

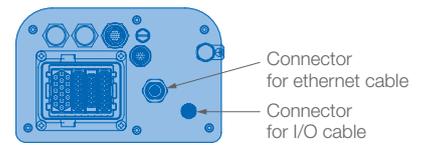
**Allowable wrist load**



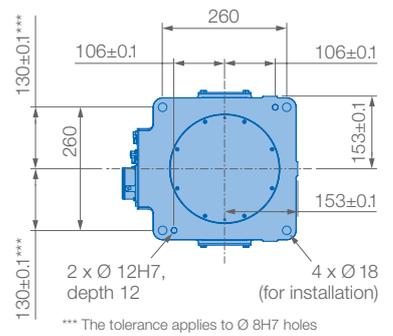
**View A**



**View B**

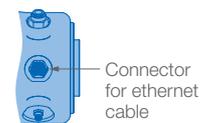


**View C**

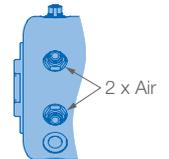


Mounting options: Floor  
IP Protection: IP67

**View D**



**View E**



Specifications HC30PL						
Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes	6
S	±210	80	-	-	Max. payload [kg]	30
L	±180/-154	80	-	-	Repeatability [mm]	±0.05
U	+247/-67	120	-	-	Max. working range R [mm]	1700/1600*
R	±15	112	-	-	Temperature [°C]	0 to +40
B	±15	132	-	-	Humidity [%]	20 - 80
T	±210	180	-	2.0	Weight [kg]	140
					Power supply, average [kVA]	1.5

\* for over 27 kg payload

# MOTOMAN PL80

Palletizing with the PL-series



The smallest palletizing robot in the MOTOMAN PL-series offers top performance with its 5 axes for box, carton and pack palletizing in end-of-line packaging and logistics applications.

The extended vertical reach of 3,291 mm ensures high palletizing heights, in combination with its horizontal reach of 2,061 mm, this enables a wide range of applications. The compact MOTOMAN PL80 guarantees high palletizing loads of up to 80 kg and impresses with its low overall height, slim design and small footprint.

The MOTOMAN PL80 is equipped with the latest Yaskawa Sigma7 Drive Technology and the compact YRC1000 high performance controller.

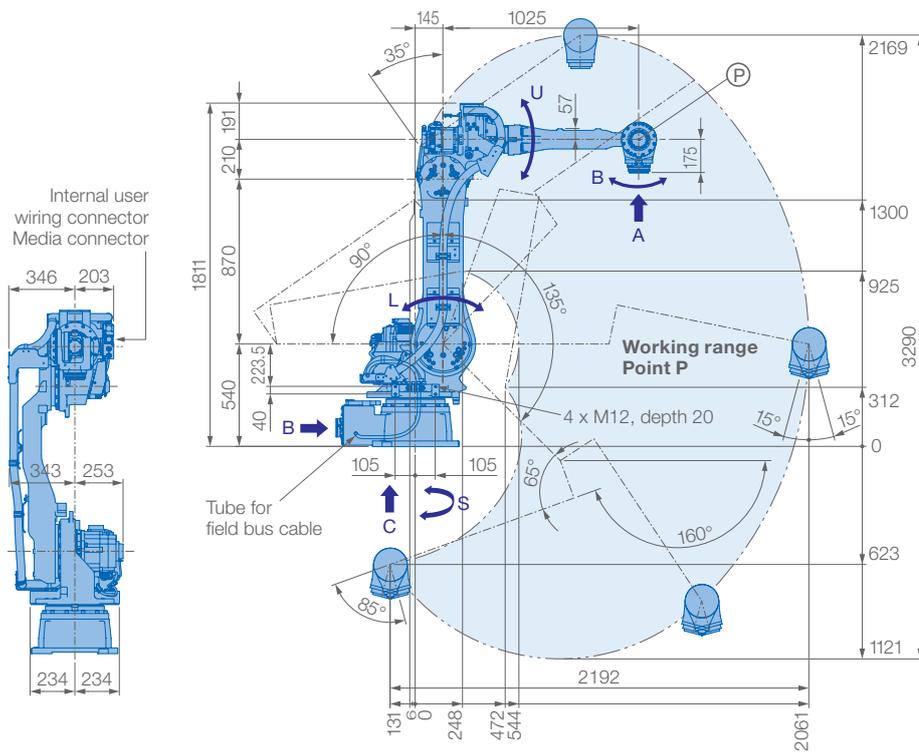
Ideal is the combination with the optional Functional Safety Unit (FSU) for safeguarding compact working areas, or with MotoLogix® for easy programming of the robot via PLC function blocks.

## KEY BENEFITS

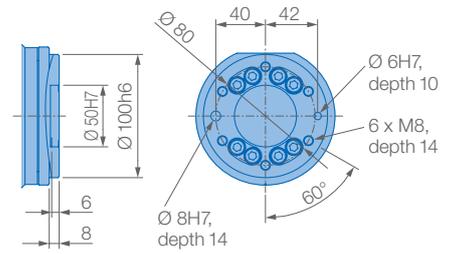
- New Sigma7 servo motors → high accelerations, speed, energy efficiency
- High payload: max. 80 kg
- Large working range: 2,061 mm
- Compact and slim design
- Advanced functional safety (FSU) with YRC1000 controller
- Programmable by PLC function blocks via MotoLogix software interface
- Dust and liquid proof wrist design (IP54/67)

Max. payload  
**80 kg**

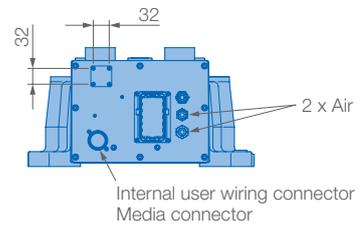
Controlled by  
**YRC1000**



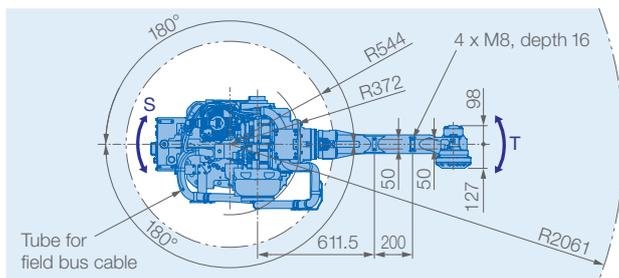
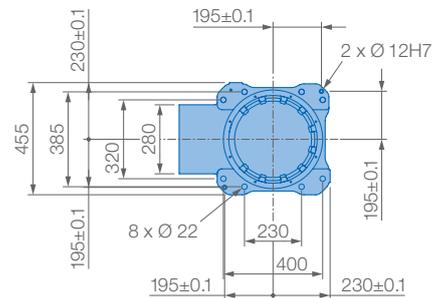
View A



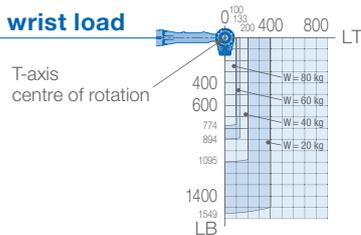
View B



View C



Allowable wrist load



Mounting option: Floor  
IP Protection: IP54 (body), IP67 (wrist)

Specifications PL80						
Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes	5
S	±180	180	-	-	Max. payload [kg]	80
L	+135/-90	180	-	-	Repeatability [mm]	±0,03
U	+35/-160	180	-	-	Max. working range R [mm]	2061
R	-	-	-	-	Temperature [°C]	0 to +45
B	±15	180	78.5	48	Humidity [%]	20 - 80
T	±360	500	20.5	25	Weight [kg]	565
					Max. connected load [kVA]	4.5

# MOTOMAN PL190-100

## Palletizing & Handling with the PL-series



The fast 4-axis MOTOMAN PL190-100 achieves top performance with over 2000 cycles per hour for box, carton and pack palletizing in final packaging and logistics.

The special parameterization of the motors and the fine-tuned kinematics ensure highest accelerations for even faster cycle times with a high payload of 100 kg. The large working area with a maximum reach of 3,159 mm and an achievable stacking height of over 2,600 mm allows versatile use for all palletizing tasks. The MOTOMAN PL190-100 robot is very compact and no longer requires a heavy counterweight. It also features a low overall height, slim design and small footprint.

The media cables for grippers can be routed through all axes and its hollow wrist in a protected and collision-free manner.

The MOTOMAN PL190-100 uses energy-saving Yaskawa Sigma-7 generation servo motors and the compact YRC1000 high-performance controller.

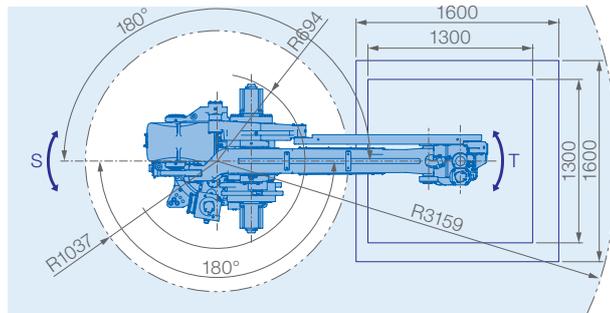
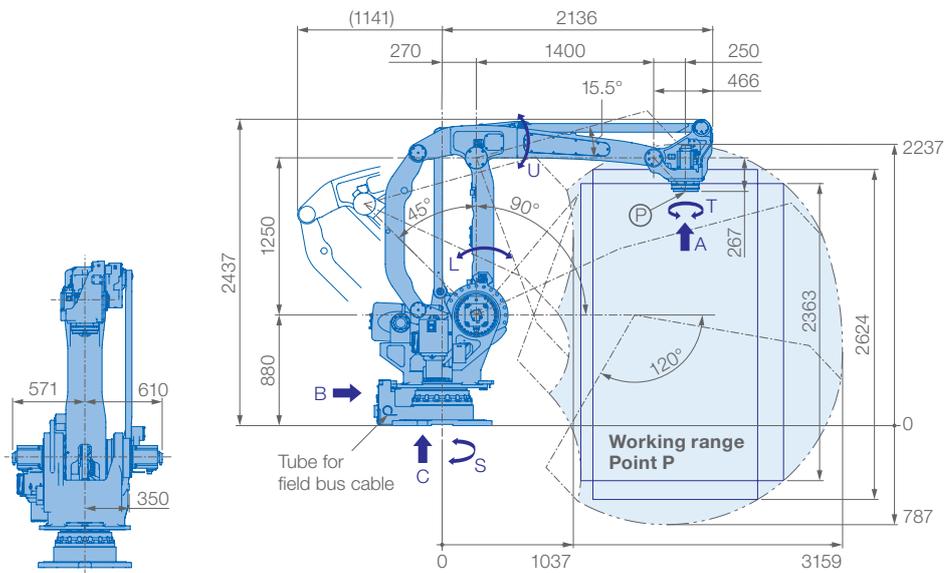
The perfect combination is offered with the optional Functional Safety Controller (FSU) for safeguarding compact work areas, or with MotoLogix® for easy programming of the robot via PLC function blocks.

### KEY BENEFITS

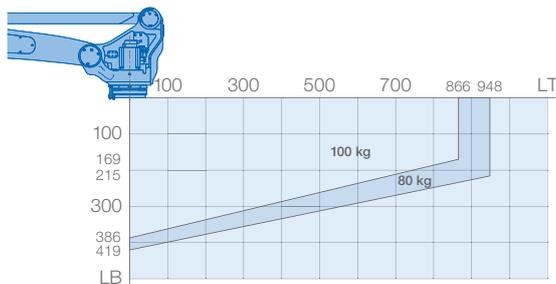
- High cycle time performance: > 2000 cycles/hour with full payload (400 mm – 2000 mm – 400 mm motion pattern)
- New Sigma-7 servo motors → high accelerations, speed, energy efficiency
- High payload: max. 100 kg
- Large working range: 3,159 mm
- Compact and slim design, no counterweight balancer
- Internal cable and wire routing, hollow wrist
- Advanced functional safety (FSU) with YRC1000 controller
- Programmable by PLC function blocks via MotoLogix software interface
- Dust and liquid proof wrist design (IP54/67)

Max. payload  
**100 kg**

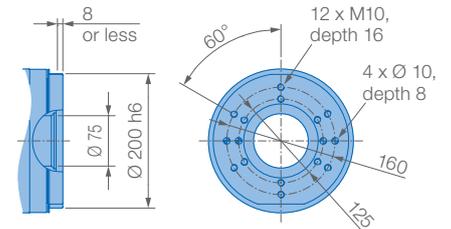
Controlled by  
**YRC1000**



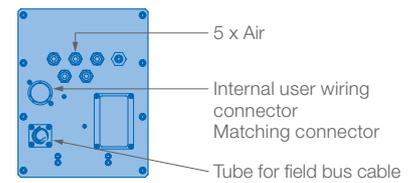
**Allowable wrist load**



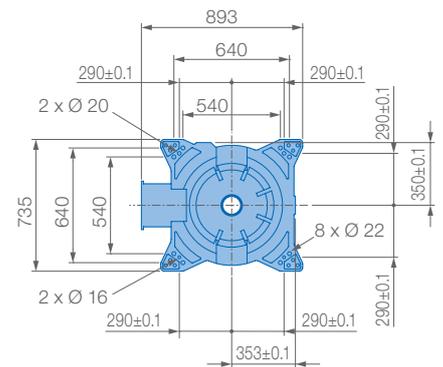
**View A**



**View B**



**View C**



Mounting option: Floor  
IP Protection: IP54 (body), IP67 (wrist)

Specifications PL190-100						
Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes	4
S	±180	140	-	-	Max. payload [kg]	100
L	+90/-45	145	-	-	Repeatability [mm]	±0.05
U	+15.5/-120	145	-	-	Max. working range R [mm]	3159
R	-	-	-	-	Temperature [°C]	0 to +45
B	-	-	-	-	Humidity [%]	20 - 80
T	±360	420	-	48	Weight [kg]	1680
					Max. connected load [kVA]	9.5

# MOTOMAN PL190

## Palletizing & Handling with the PL-series



With over 1700 cycles per hour, the fast and powerful 4-axis MOTOMAN PL190 robot offers top performance for box, carton and bag palletizing for end-of-line packaging and logistics applications.

The optimized kinematic structure of the PL190 provides even better stability and higher max. payload capacity of 190 kg compared to the predecessor model. The superior working range with a maximum reach of 3,159 mm and an achievable stacking height of over 2,600 mm is perfect for all kinds of palletizing tasks. The MOTOMAN PL190 is very compact, has a slim small footprint design, and does not require a heavy counterweight balancer.

Media cables for grippers can be routed – protected and collision-free – through all axes and the hollow wrist.

The MOTOMAN PL190 is equipped with the latest Yaskawa Sigma-7 Drive Technology and the compact YRC1000 high-performance controller.

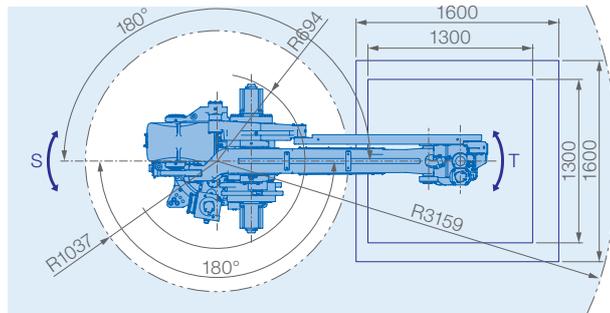
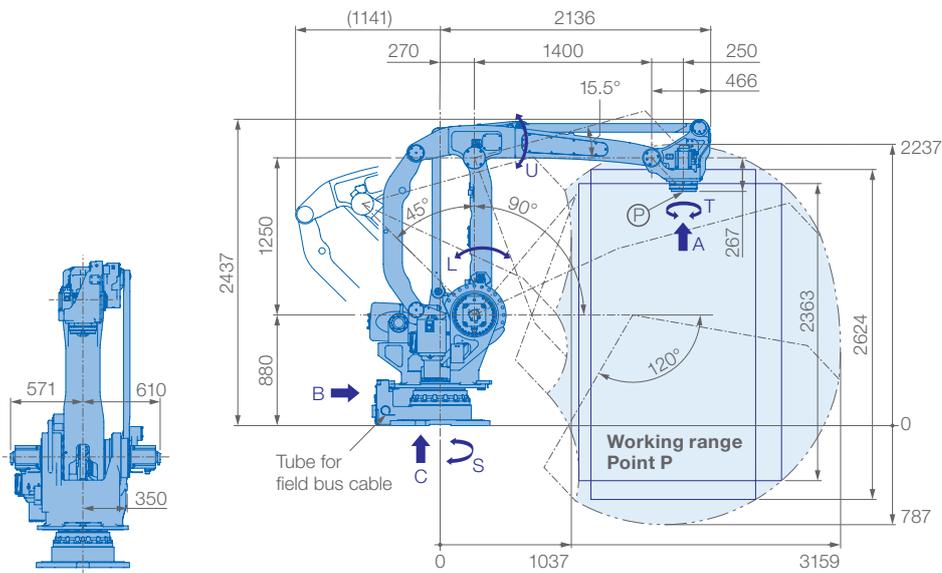
Ideal is the combination with the optional Functional Safety Unit (FSU) for safeguarding compact working areas, or with MotoLogix® for easy programming of the robot via PLC function blocks.

### KEY BENEFITS

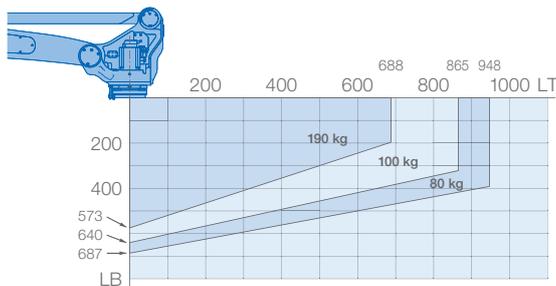
- High cycle time performance: >1700 cycles/hour with full payload (400 mm – 2000 mm – 400 mm motion pattern)
- New Sigma-7 servo motors → high accelerations, speed, energy efficiency
- High payload: max. 190 kg
- Large working range: 3159 mm
- Compact and slim design, no counterweight balancer
- Internal cable and wire routing
- Advanced functional safety (FSU) with YRC1000 controller
- Programmable by PLC function blocks via MotoLogix software interface
- Dust and liquid proof wrist design (IP54/67)

Max. payload  
**190 kg**

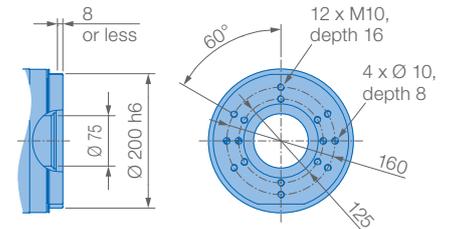
Controlled by  
**YRC1000**



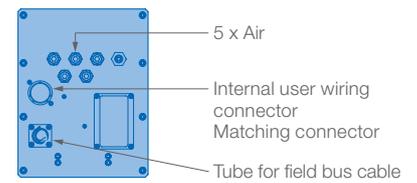
**Allowable wrist load**



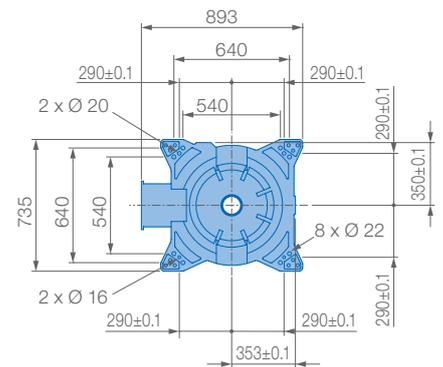
**View A**



**View B**



**View C**



Mounting option: Floor  
IP Protection: IP54 (body), IP67 (wrist)

**Specifications PL190**

Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes	
S	±180	140	-	-	Max. payload [kg]	4
L	+90/-45	145	-	-	Repeatability [mm]	±0.05
U	+15.5/-120	145	-	-	Max. working range R [mm]	3159
R	-	-	-	-	Temperature [°C]	0 to +45
B	-	-	-	-	Humidity [%]	20 - 80
T	±360	420	-	90	Weight [kg]	1680
					Max. connected load [kVA]	9.5

# MOTOMAN PL320

## Palletizing & Handling with the PL-series



With over 1400 cycles per hour, the fast and powerful 4-axis MOTOMAN PL320 robot offers top performance for box, carton and bag palletizing for end-of-line packaging and logistics applications.

The optimized kinematic structure of the PL320 provides even better stability and higher max. payload capacity of 320 kg compared to the predecessor model. The superior working range with a maximum reach of 3,159 mm and an achievable stacking height of over 2,600 mm is perfect for all kinds of palletizing tasks. The MOTOMAN PL320 is very compact, has a slim small footprint design, and does not require a heavy counterweight balancer.

Media cables for grippers can be routed – protected and collision-free – through all axes and the hollow wrist.

The MOTOMAN PL320 is equipped with the latest Yaskawa Sigma7 Drive Technology and the compact YRC1000 high-performance controller.

Ideal is the combination with the optional Functional Safety Unit (FSU) for safeguarding compact working areas, or with MotoLogix® for easy programming of the robot via PLC function blocks.

### KEY BENEFITS

- High cycle time performance: >1400 cycles/hour with full payload (400 mm – 2000 mm – 400 mm motion pattern)
- New Sigma7 servo motors → high accelerations, speed, energy efficiency
- High payload: max. 320 kg
- Large working range: 3159 mm
- Compact and slim design, no counterweight balancer
- Internal cable and wire routing
- Advanced functional safety (FSU) with YRC1000 controller
- Programmable by PLC function blocks via MotoLogix software interface
- Dust and liquid proof wrist design (IP54/67)

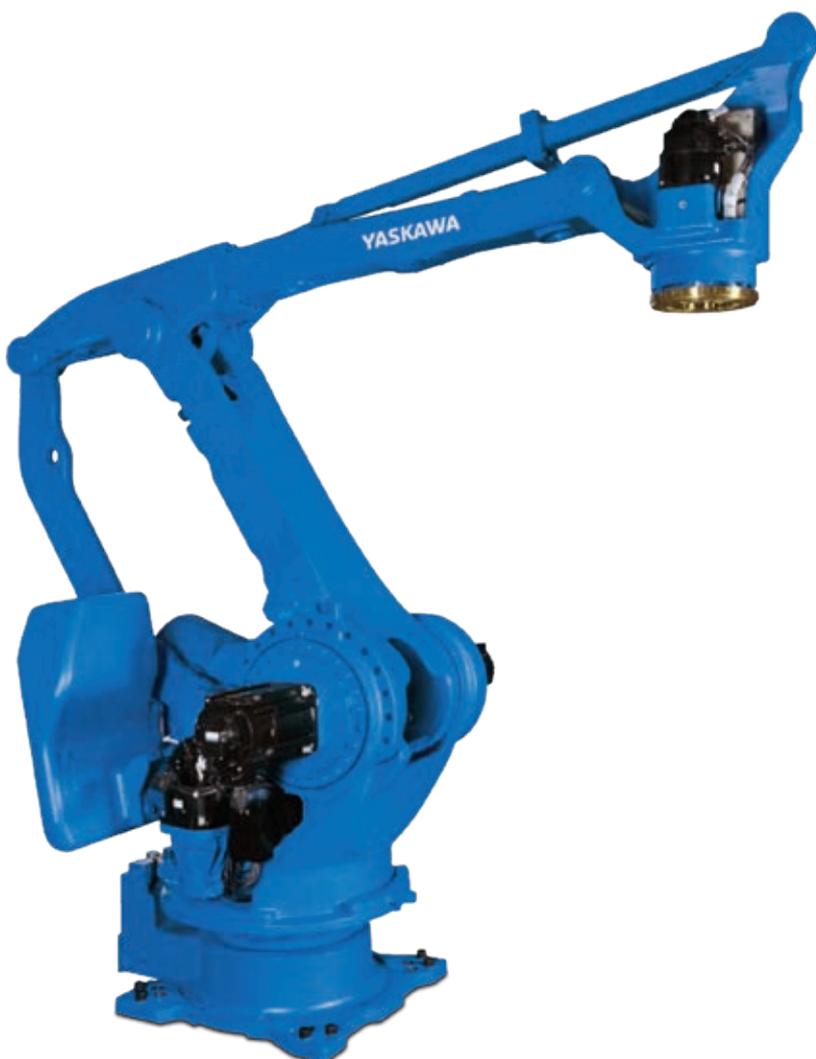
Max. payload  
**320 kg**

Controlled by  
**YRC1000**



# MOTOMAN PL500

Palletizing with the PL-series



The versatile and powerful 4-axis MOTOMAN PL500 robot provides high performance in box palletizing, case palletizing and many further logistical tasks for end-of-line or distribution center automation.

Its extensive vertical reach of 3024 mm combined with 3159 mm horizontal reach enables high palletizing loads. The internal wiring from the base to U-axis maximizes system reliability.

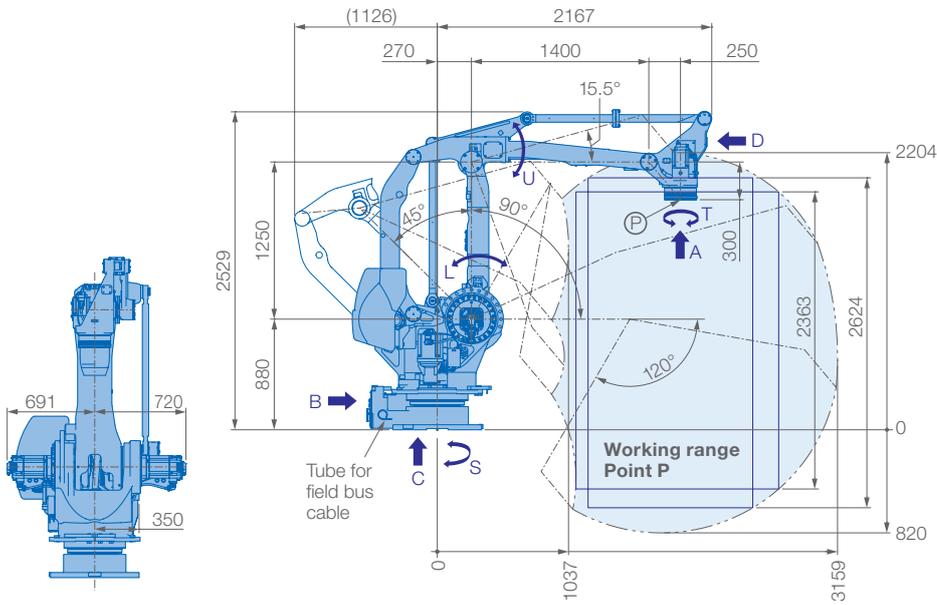
The PL500 is driven by the high-performance YRC1000 controller which is available with the optional Category 3 Functional Safety Unit (FSU), providing a variety of new safety functions.

## KEY BENEFITS

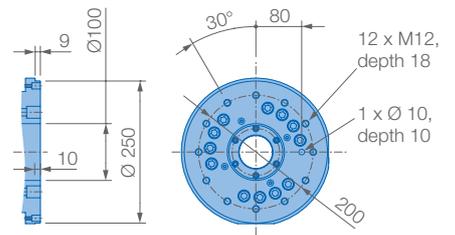
- Compact, flexible and powerful
- High acceleration and speed:  
Up to 1200 cycles/h palletizing capa, suitable for box palletizing
- High Payload: 500 kg
- Large motion range:
  - 2624 mm square reach (on pallet 1300 x 1300 mm)
  - 2363 mm stack height (on pallet 1600 x 1600 mm)
- Maximum reliability, empty tube for internally routed airlines and cables
- Enhanced Safety Functions for YRC1000 Functional Safety Controller (FSU)
- IP Protection: IP54

Max. payload  
**500 kg**

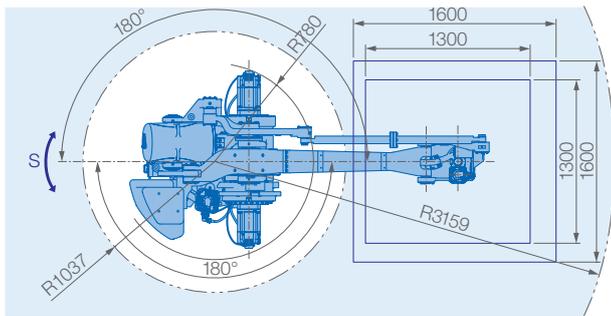
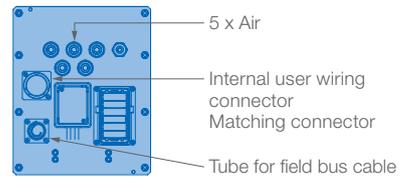
Controlled by  
**YRC1000**



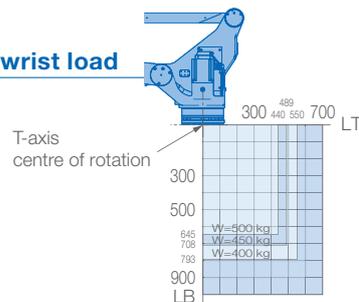
View A



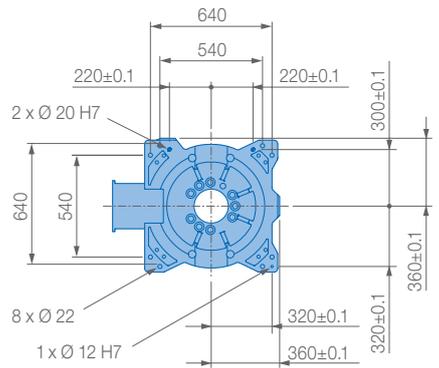
View B



Allowable wrist load



View C



Mounting option: Floor  
IP Protection: IP54

Specifications PL500

Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes	4
S	±180	85	-	-	Max. payload [kg]	500
L	+90/-45	85	-	-	Repeatability [mm]	±0.05
U	+15.5/-120	85	-	-	Max. working range R [mm]	3159
R	-	-	-	-	Temperature [°C]	0 to +45
B	-	-	-	-	Humidity [%]	20 - 80
T	±360	195	-	200	Weight [kg]	2390
					Power supply, average [kVA]	8.0

# MOTOMAN PL800

## Palletizing & Handling with the PL-series



The most powerful 4-axis robot of the PL-series is the MOTOMAN PL800 with a payload of 800 kg. This palletizer offers high performance for box, carton and pack palletizing in versatile end-of-line packaging and logistics applications. The large working range with a maximum reach of 3159 mm and an achievable stacking height of over 2624 mm allows versatile use across all palletizing applications.

Media cables for grippers can be routed – protected and collision-free – through all axes and the hollow wrist.

The MOTOMAN PL800 is equipped with the latest energy-saving Yaskawa Sigma7 Drive Technology and the compact YRC1000 high-performance controller.

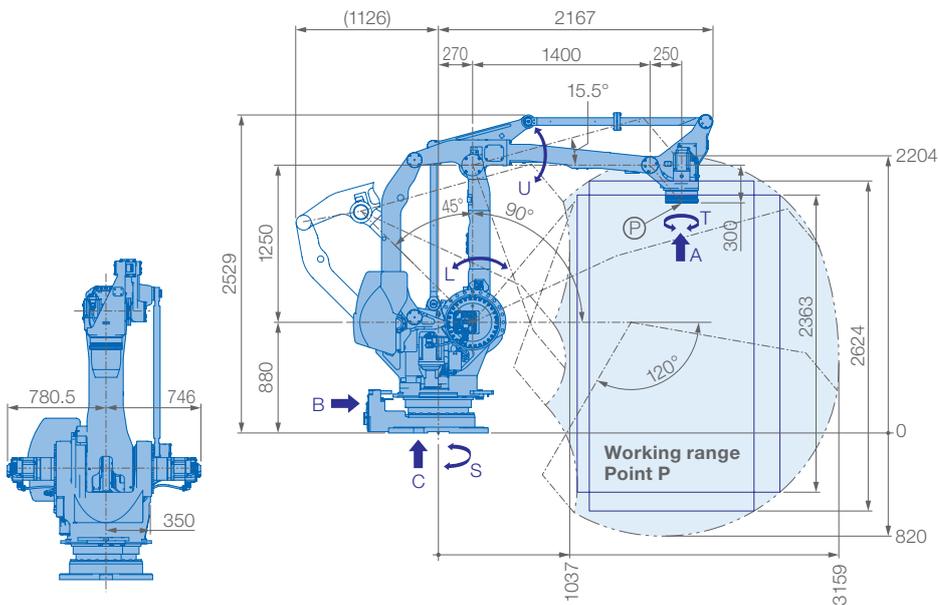
Ideal is the combination with the optional Functional Safety Unit (FSU) for safeguarding compact working areas, or with MotoLogix for easy programming of the robot via PLC function blocks.

### KEY BENEFITS

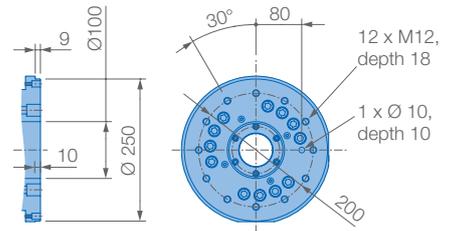
- Strongest robot in the PL series: 800 kg payload
- New Sigma7 servo motors → high accelerations, speed, energy efficiency
- Large working range: 3159 mm
- Robust and flexible
- Compact and slim design
- Identical footprint as other robots of the PL-series
- Internal cable and wire routing
- Advanced functional safety (FSU) with YRC1000 controller
- Programmable by PLC function blocks via MotoLogix software interface

Max. payload  
**800 kg**

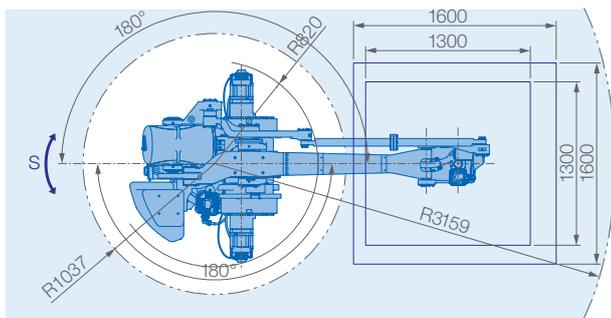
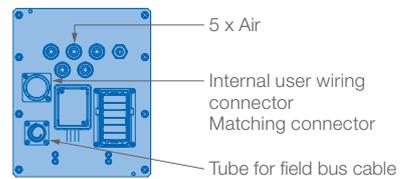
Controlled by  
**YRC1000**



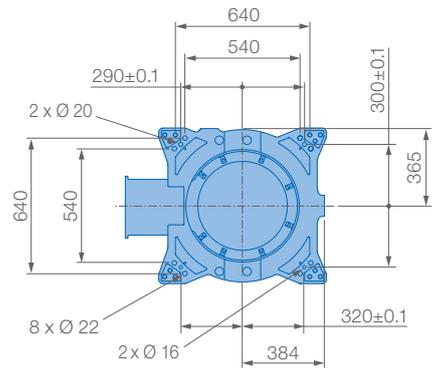
View A



View B

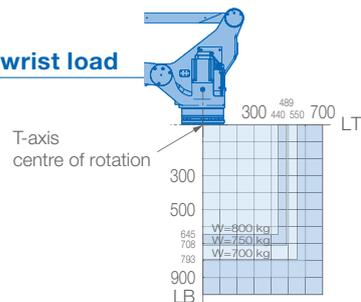


View C



Mounting option: Floor  
IP Protection: IP54

Allowable wrist load



Specifications PL800						
Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes	4
S	±180	65	-	-	Max. payload [kg]	800
L	+90/-45	65	-	-	Repeatability [mm]	±0,05
U	+15.5/-120	65	-	-	Max. working range R [mm]	3159
R	-	-	-	-	Temperature [°C]	0 to +45
B	-	-	-	-	Humidity [%]	20 - 80
T	±360	125	-	550	Weight [kg]	2560
					Power supply, average [kVA]	8.0



YASKAWA

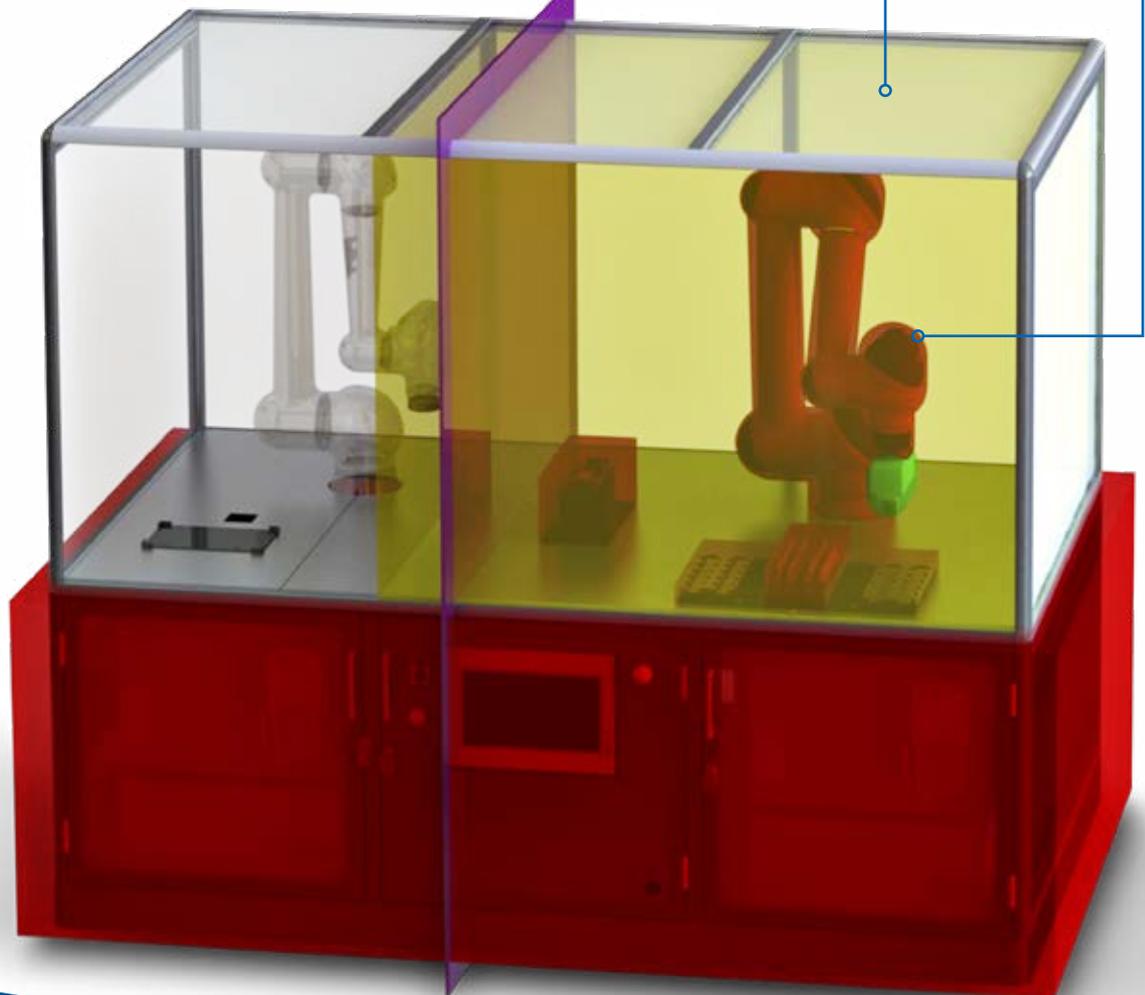
# Safety Controller & Offline Simulation

The powerful Functional Safety Unit monitors the robot's movements and sensors and is the control centre of your safety settings. With the simple interface, speed levels and 3D safety areas are quickly defined.

## 3D Area and Plane Definition

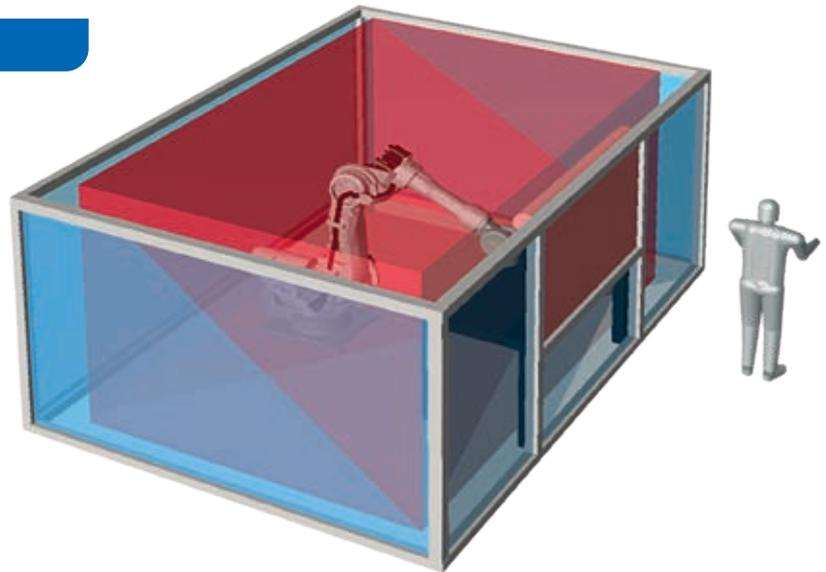
Create safe working areas and individual speed levels:

- Yellow areas to limit the robot's movement area
- Orange areas to reduce the robot operating speed
- Red areas to ensure collision-free operation
- Planes to lock robots to each other

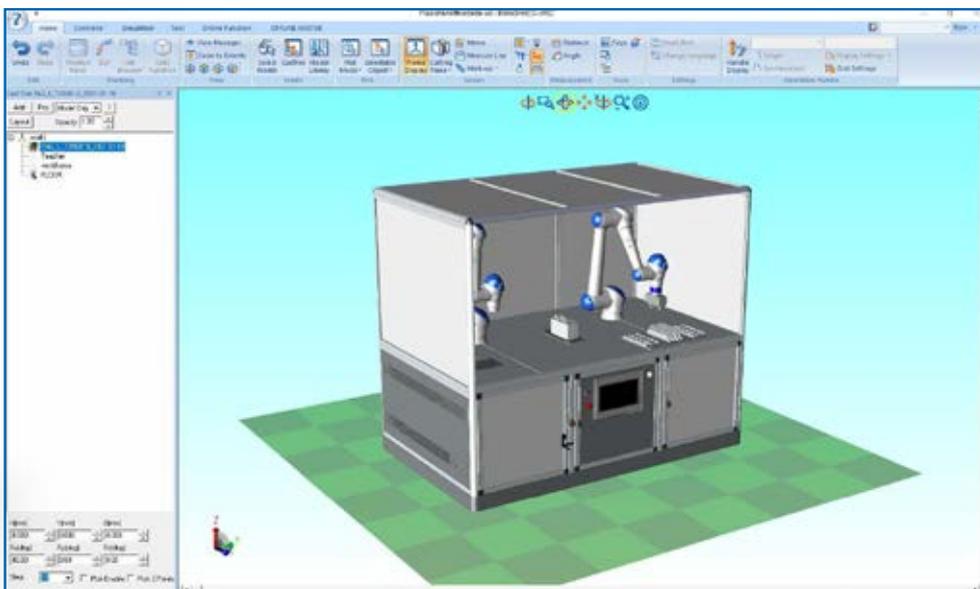


## High-precision Envelope Curves

The robot and tool envelope can be designed very exactly using multiple geometrical elements. This enlarges the available operating space of the robot and increases the safety of the whole application.



Offline programming, 3D simulation and Virtual Robot Control all make it easy to build and simulate a robotic cell without ever installing a robot. Yaskawa provides MotoSim EG-VRC and MotoSize for building and simulating your robot cell.



Main features are:

- Offline programming of your whole robot cell
- Minimisation of setup, non-productive and commissioning times
- Full control functionality and simulation of the Yaskawa product family, including robots, gantries, tracks and positioners

# Software and Functions



## PalletBuilder

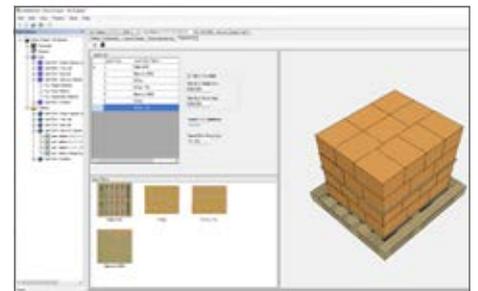


Designed to facilitate fast deployment of palletizing cells, the easy-to-use PalletBuilder extension app features an intuitive user interface that enables quick development and optimization of palletizing jobs. The included product database

is scalable to meet your business needs, with guided prompts for cell configuration as well as pallet pattern setup and programming. This no-code platform is ideal for enterprises with little to no programming experience.



## PalletSolver



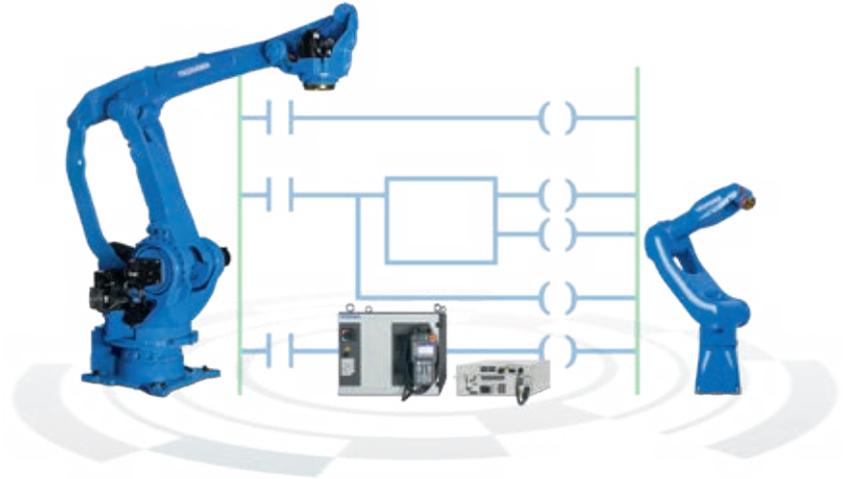
PalletSolver is a palletizing software suite for MOTOMAN robots. This feature-rich software is designed for homogeneous palletizing. It is characterized by the intuitive user interface with step-by-step guided generation of patterns as well as almost unlimited product variety.

It features export/import cell and gripper database that can be shared between projects. PalletSolver maps 2D layer and 3D build pictures generated to help with drop box recovery. Pattern Generation Tools such as Label Positioning, Snap, Placement Spread, Auto Gaps, Pallet Overhang/Underhang, Centering, Calculated Weight and Height of Build make the PalletSolver an indispensable companion in the palletizing process.

Pallet Solver supports all common gripper types and offers dynamic gripper zone configuration changeable for each cycle.



# MotoLogix



## Interface for MOTOMAN Robot Programming and Control via PLC

MotoLogix is a software interface for teaching and programming MOTOMAN robots using PLC function blocks.

No Teach Pendant or Yaskawa-specific robotics knowledge is required to program, test or operate the robot. All code remains in the PLC environment together with the line PLC programs, even all backups. In the background, the robot control hardware (without the TeachPendant) is still there, but just for motion planning and keeping the Servo and Power supply hardware in one cabinet. This is why the motion quality and speed performance keeps untouched in case of PLC-based programming.

## Supported platforms:

YASKAWA  
PROFINET

B&R  
POWERLINK

SIEMENS  
TIA S7-300  
PROFINET

Rockwell  
EtherNet/IP

SIEMENS  
TIA S7-1500  
PROFINET

CODESYS  
EtherCAT

SIEMENS  
SIMOTION  
PROFINET

CODESYS  
EtherNet/IP

Beckhoff  
EtherCAT

CODESYS  
PROFINET

## KEY BENEFITS

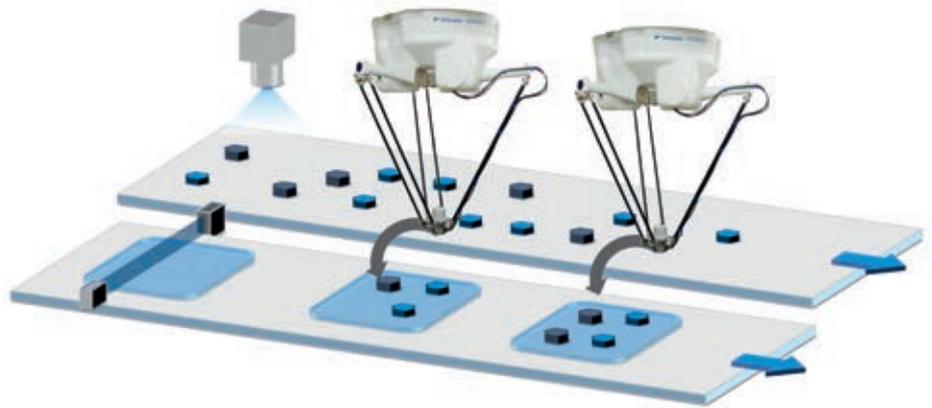
- Robot programming carried out in PLC language – unified for the whole system
- Connects all peripheral devices (sensor, camera, conveyor) through PLC
- Robot completely integrated in the PLC and HMI environment
- Testing of the complete PLC/HMI robot application using virtualization (MotoSim)
- Assurance of a YASKAWA path accuracy (calculation in MOTOMAN controller)
- Data stored in the PLC, not in the robot controller
- Control up to 4 robots over one MotoLogix interface

## Typical applications for Motologix are:

- EOL packaging lines, for integration of Pick&Place, Pick&Pack and Palletizing robots
- Automation around CNC and injection moulding machines, such as loading/unloading
- Quality assurance (measuring and testing, inspection)
- Collaborative robot installations, e.g. smart palletizing
- Palletizing tasks in the food and beverage industry
- Palletizing tasks in consumer goods supply chains and warehouses



# MotoPick



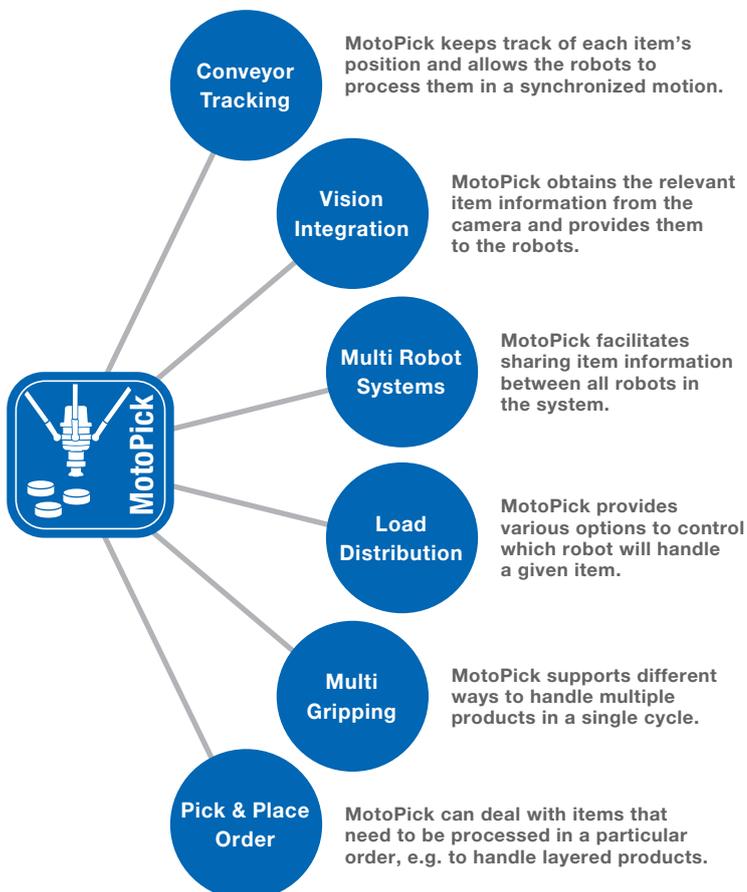
## Order-picking Software for controlling Picking Processes

MotoPick is a highly advanced, user-friendly no-code software solution to realize conveyor-based Pick & Place robot solutions. No coding is required – all features are configured via the MotoPick PC Software Tool. Motopick Runtime runs on the robot controllers – no need for additional control hardware.

MotoPick empowers operators to setup custom pick & place applications to achieve critical cycle rates for high-speed picking applications. The MotoPick package provides building blocks to create optimal solutions for up to 16 robots, 6 conveyors and 16 tables. This powerful software can synchronize multiple robots equipped with vision to pick fast moving products off a conveyor and place it on an outfeed tray or box in an organized arrangement. It also offers pattern-based distribution of product and dynamic load balancing among multiple robots.

### KEY BENEFITS

- Greatly simplified setup of pick & place systems
- No need for complex and expensive DIY solutions
- Advanced mechanisms for performance optimization
- Time-proven features for highly reliable systems
- No need for additional control hardware



## Supported Systems:

**MotoPick supports a wide range of systems with**

- up to 16 robots per system
- up to 16 in-feeds and out-feeds per robot
- up to 6 of which can be conveyors
- up to 16 robots per conveyor
- a camera and/ or sensor per feed
- up to 8 tools per robot for multi-gripping
- up to 32 different product types
- up to 255 different variants of formats

## No programming required

All features are configured via the MotoPick PC Tool.

# 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

**5.7" LCD colour display**  
**Touch screen**  
**Option: Windows operating system**

**Operation keys start/stop emergency off**

**Cursor key**

**USB-Connection and SD-card slot (reverse side)**

**Main axes keys**

**Additional axes keys**

**3 position dead man switch in compliance with DIN EN ISO 10218-1**

**Display can be individually set for applications:**  
– Shielded Arc Welding  
– Spot Welding  
– General Applications

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



#### Specifications controller YRC1000

<b>Dimensions</b>	598 (W) x 490 (H) x 427 (D) mm (125 l without protrusion parts)
<b>Weight</b>	70 kg max. (possible to control three external axes)
<b>Protection class</b>	IP54
<b>Cooling system</b>	Indirect cooling
<b>Ambient temperature</b>	During operation: 0°C to +45°C / During storage: -10°C to +60°C
<b>Relative humidity</b>	90 % max. (non-condensing)
<b>Power supply</b>	Three-phase 380–440 VAC (+10 %, -15 %), 50/60 Hz (±2 %)
<b>Digital I/Os</b>	Specialized signals: 19 inputs and 6 outputs / General signals: 40 inputs and 40 outputs
<b>Programming capacity</b>	JOB: 200,000 steps, 10,000 instructions / CIO ladder: 20,000 steps
<b>Expansion slots</b>	2 x PCIe or 2 x PCI or 1 x PCI/1 x PCIe
<b>LAN (Connection to host)</b>	2 (10BASE-T/100BASE-TX)
<b>Interface</b>	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

<b>Dimensions</b>	152 (W) x 299 (H) x 53 (D) mm
<b>Weight</b>	0.730 kg
<b>Material</b>	Reinforced plastics
<b>Operation device</b>	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)
<b>Display</b>	5.7-inch color LCD, touch panel 640 x 480 pixels
<b>IEC protection class</b>	IP54



# 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, HC20DT, GP7 to GP600
- **MOTOMAN YRC1000micro:**  
MotoMINI, HC10DT, HC20DT, GP7, GP8, GP12

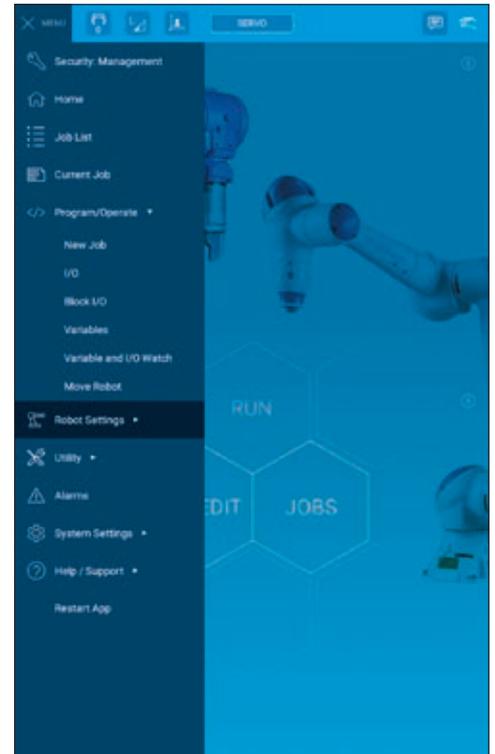
## KEY BENEFITS

- 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

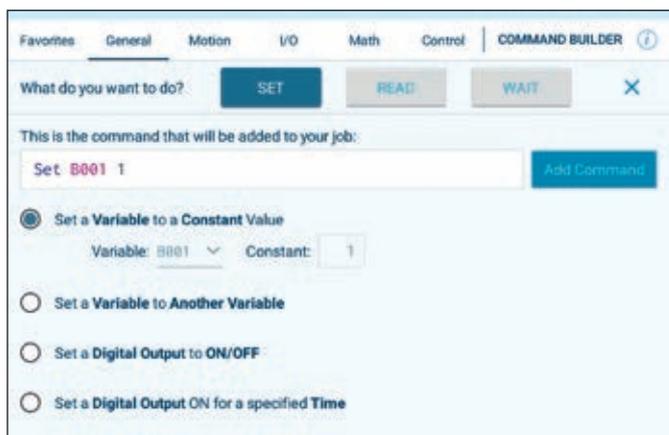
## Smart Frame

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.

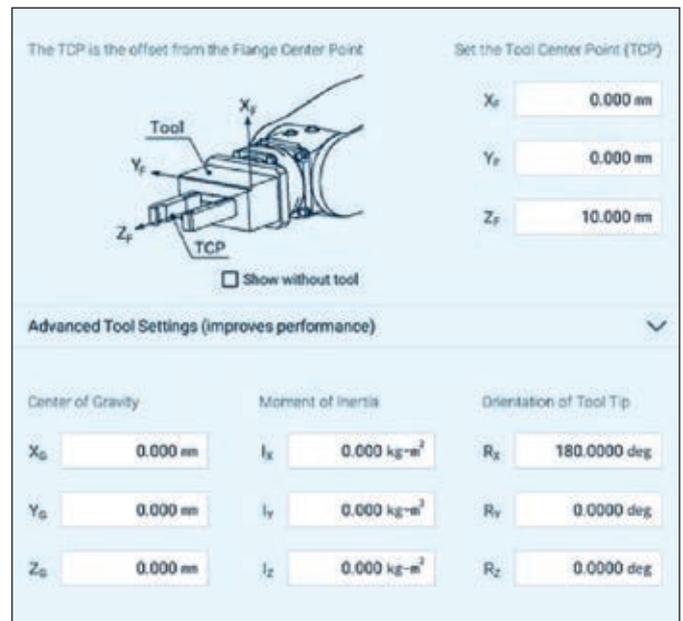


## Simplified Programming

Command Builder function enables various editing possibilities.



Configuration enables fast TCP setup



Simple tool

## Hand Guiding

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



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

# Ecosystem Partner Program

Yaskawa has partnered with industry leaders to provide interfaces to several robot accessories and total robotic solutions. By this, Yaskawa helps customers – that are new to robotics – to start their automation story today, as well as robot experts to find new possibilities of intelligent robotic systems.



1. Receive your ready-to-install Package



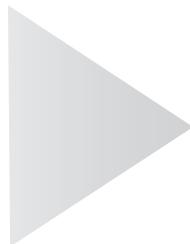
2. Install the Gripper on your Robot



3. Configure on the Smart Pendant



**Join our  
Ecosystem**







# 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 %) <sup>1</sup> ; 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) <sup>2</sup> 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	4, PLd

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

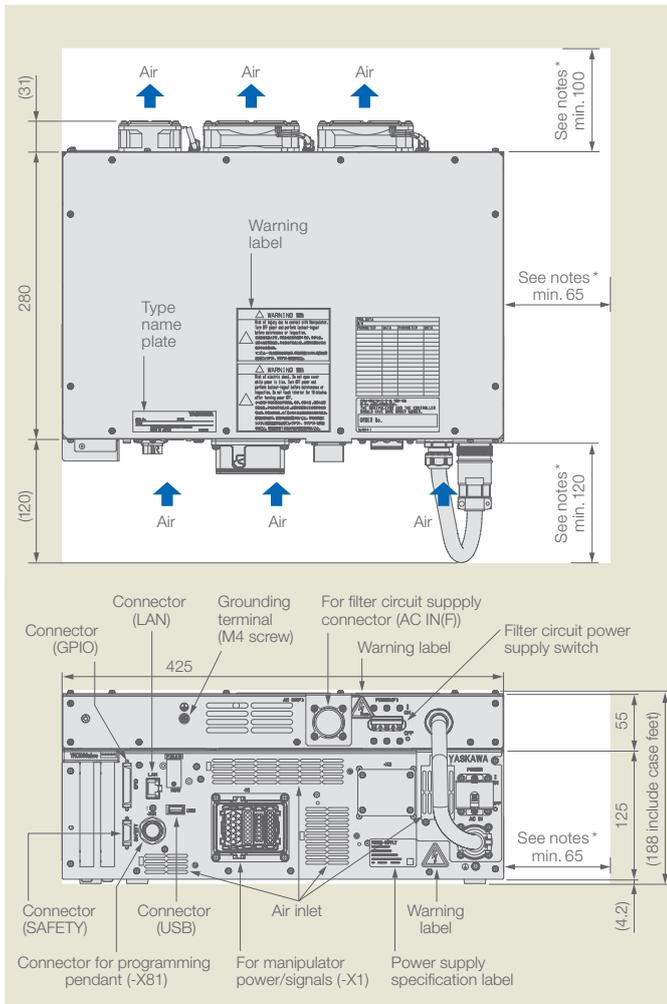
<sup>2</sup> If it is necessary to expand the number of points, a filed bus board is required

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

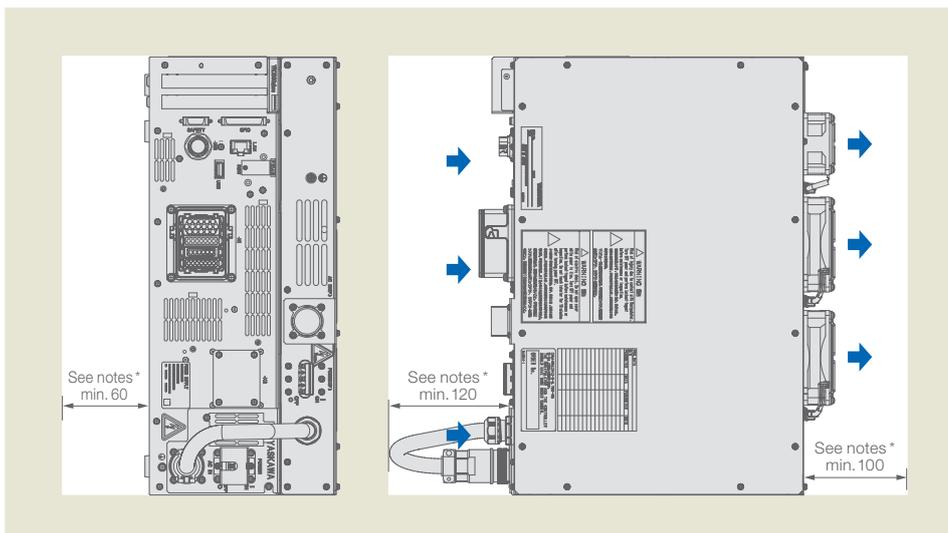
## Programming Pendant (PHG) – ergonomical, light and easy



**Horizontally mounted \*\*\***



**Vertically mounted \*\*\***

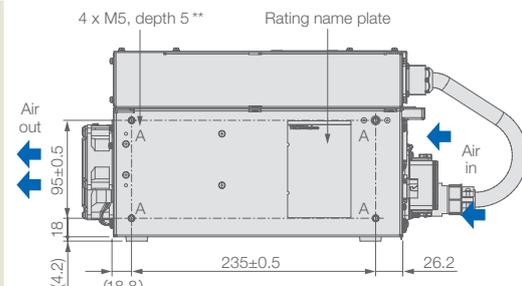


**Optimal Industrial Design**

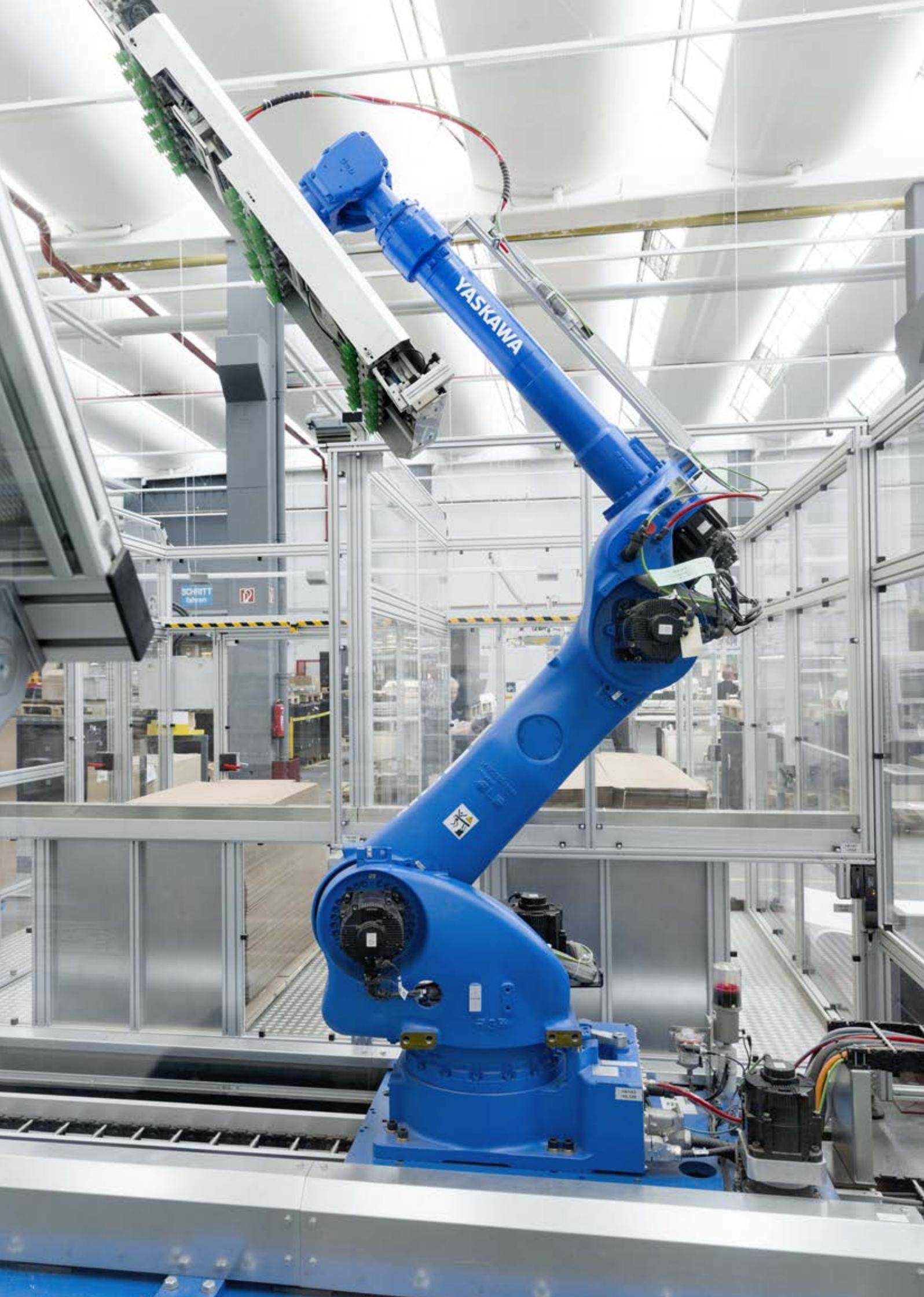
- Volume: 21.5 l (GP7/8/12, MotoMini), 33.5 l (HC10DT)



Manipulator type		Region: Europa and Korea (EMC directive required)
Standard size: 425 (W) x 125 (H) x 280 (D) mm	<b>GP7 GP8 GP12 MotoMINI</b>	<p>Top mount box for CE noise filter: 55 (H) x 280 (D) mm</p> <p>Total litres: 21.5 l</p>
without additional boxes	<b>HC10</b>	<p>Top mount box for CE noise filter PFL-Card: 125 (H) x 280 (D) mm</p> <p>Total litres: 33.5 l</p>
without EMV		



\* 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).



# MOTOMAN FS100

## Industrial Robot Controller



The Yaskawa FS100 controller generation has been specially developed for the Picking and Packing sectors and for further handling applications. The development goal was “Fast, safe, open, small”.

Real-time processing of sensor signals, reactions to camera information and other high-speed applications are thus made possible.

All in all, the FS100 thus exploits its superlative performance capabilities to the full in applications where high flexibility is required.

Another modern feature is the open concept of the controller which enables users to access robot interfaces and motions externally via a PC or PLC and also to develop their own applications. Interfaces such as MotoPlus allow the controller to function as a slave of the higher-level controller in a line; this means that it is programmed in your customary PLC language.

The streamlined and compact design requires little space for installation, thereby saving valuable production space. The FS100 thus offers particular advantages for line builders.

### KEY BENEFITS

- High flexibility for variable packaging solutions
- Safe and fast
- Space-saving, streamlined and compact
- Energy-saving

# High Performance Controller FS100 for MOTOMAN Robots

## Open Controller

Connection of FS100 to the existing overall system with the Yaskawa software solutions

- MOTOPlus
- MOTO GSI
- Windows operating system

## Advanced Robot Motion Function (ARM)

Dynamic calculation of torque and loads on the robot axes

- Extremely high path accuracy
- Optimal robot motion and velocity
- Vibration control
- Highly sensitive collision detection

## Communication

Ethernet, Web (FTP, OPC) Server options and all common fieldbus systems

- Easy integration into existing networks
- Remote monitoring and diagnosis of robot systems

Programming pendant	
Dimensions	169 (W) x 314.5 (H) x 50 (D)
Touchscreen display	5.7" colour LCD (640 x 480 pixels)
Weight	0.986 kg
Coordinate system	Joint, Rectangular/cylindrical, Tool, User-coordinates
Speed adjustment	Fine adjustment possible during operation or teach mode
Shortcuts	Direct access keys and user selectable screen keys possible
Language	Mostly spoken languages available (worldwide)
Interface	Compact Flash card slot, USB port
Operating system	Windows CE

Programming	
Programming language	INFORM III
Robot motion control	Joint motion, linear, circular, spline interpolation
Speed adjustment	Joint motion (% of maximum) Interpolation (mm/sec; cm/min; inch/min) Angular velocity (°/sec)

## Additional Benefits

- Multitasking (free of extra charge)
- Integrated PLC
- Highest performance due
- Boot time: max. 50 sec.
- MTTR (Mean Time To Repair): < 5 min.

## Programming Pendant (PHG) – ergonomical, light and easy

The diagram shows the Programming Pendant (PHG) with the following labeled features:

- 5.7" LCD colourdisplay**: Touch screen, Windows operating system.
- Operation keys**: start/stop, emergency off.
- Flash card slot**: Located on the right side.
- USB-Connection**: (reverse side).
- Main axes keys**: X+, X-, Y+, Y-, Z+, Z-, U+, U-.
- Additional axes keys**: W+, W-, R+, R-, T+, T-, B+, B-.
- Cursor key**: Located below the main axes keys.
- 3 position dead man switch**: (rear side – not visible).
- Display can be individually set**: for each application.

The screen displays the following text:

```

JOB CONTENT
JOB TEST01
CONTROL GROUP:R1
8:0000
TOOL: #1
Tool: #001
0001 SET BOSS #1
0002 SET BOSS #1
0003 MOVJ VJ=80.00
0004 MOVJ VJ=80.00
0005 DISOUT C(T)O CN
0006 TIMER T(L)O
0007 MOVJ VJ=80.00
0008 MOVJ VJ=80.00
0009 MOVJ VJ=100.00
0010 MOVJ VJ=100.00
0011 MOVJ VJ=100.00
MOVJ VJ=0.78
Main Menu Short Cut Turn on servo power
    
```

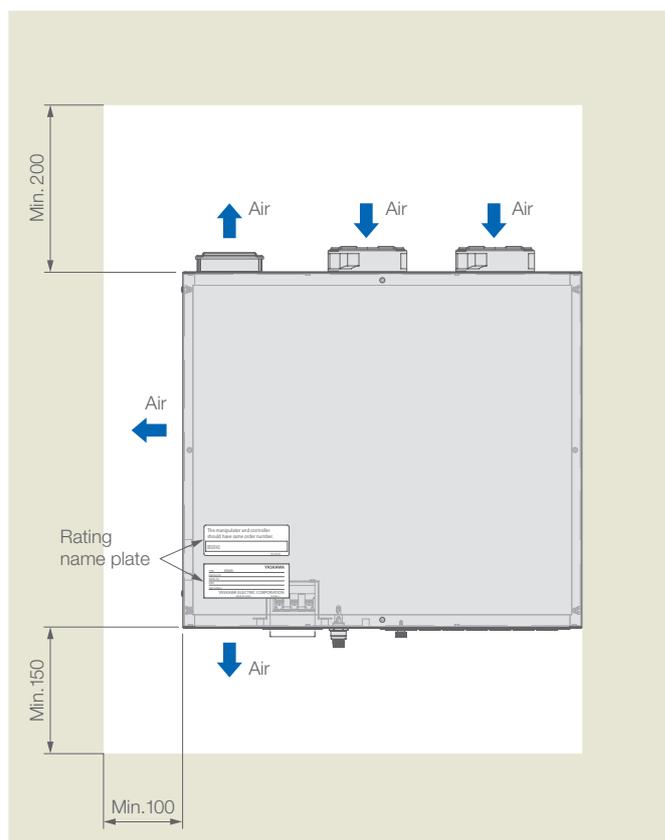
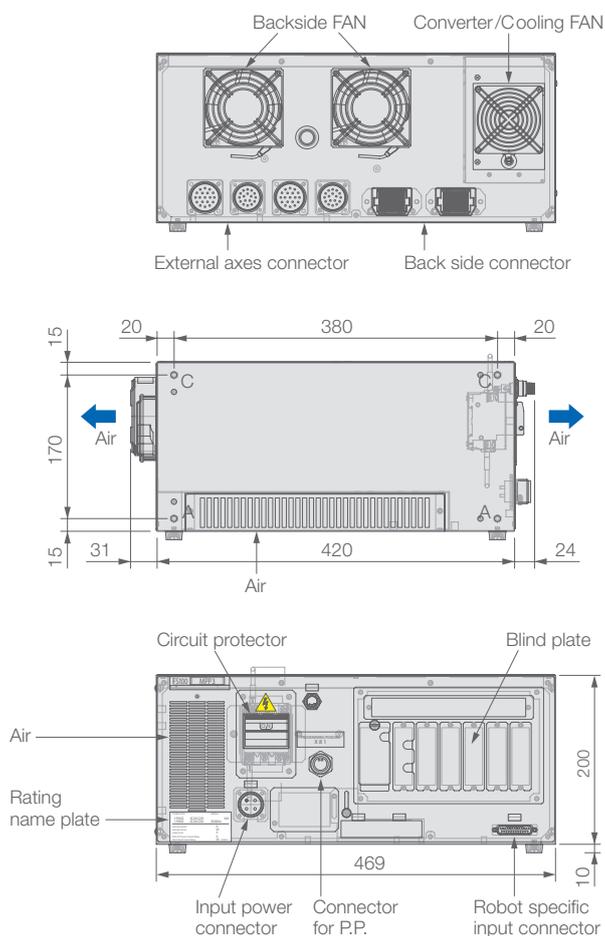
- Easy and fast programming
- Several user levels – from operator to safety mode
- Help function

Maintenance	
Functions	System monitor, internal maintenance clocks (e.g. Servo power-on time)
Self-diagnosis	Classifies errors and major/minor alarms and displays the data
User alarm display	Alarm messages for peripheral devices
Alarm display	Alarm messages and alarm history
I/O diagnosis	Simulated enable/disable outputs
TCP calibration	Automatic calibration of TCP (Tool Center Point)

Safety features	
Specifications	Dual-channel safety system (Emergency stop, safety interlock), 3-position Dead-man's switch, European safety standards
Collision avoidance	Collision avoidance zones and radial interference zones
Collision detection	Monitors robot axes' torque levels

Control cabinet	
Dimensions	470 (W) x 200 (H) x 420 (D)
Weight	Approx. 20 kg
Protection class	IP20
Cooling system	Direct cooling
Ambient temperature	0° to +40°C (operation) -10° to +60°C (transport and storage)
Relative humidity	Max. 90 % non-condensating
Power supply (depends on type of manipulator)	<b>1-phase:</b> 230 VAC at 50/60 Hz <b>With optional trafo 3-phase:</b> 200/220 VAC at 50/60 Hz
Digital I/O	Card 1: 16 standard/12 system – Expandable to 1024 inputs/1024 outputs Card 2: 28 inputs/28 outputs (option)
Program memory	10.000 steps, 1.000 instructions and 1.500 PLC steps
Interface	Profibus (Slave), Ethernet IP (Master/Slave), DeviceNet (Master/Slave), CC-Link (Slave), Profinet (Master/Slave)
Color	Similar RAL7016, RAL9006

**Option**  
Transformer available in similar housing design



## YASKAWA GROUP

- AT Yaskawa Austria  
Schwechat/Wien  
+43(0)1-707-9324-15
- CZ Yaskawa Czech s.r.o.  
Rudná u Prahy +420-257-941-718
- DK Yaskawa Danmark  
Løsning +45 7022 2477
- ES Yaskawa Ibérica, S.L.  
Viladecans/Barcelona +34-93-6303478
- FR Yaskawa France SARL  
Le Bignon +33-2-40131919
- FI Yaskawa Finland Oy  
Turku +358-(0)-403000600
- GB Yaskawa UK Ltd.  
Newton Aycliffe +44-330-678-1990
- IT Yaskawa Italia s.r.l.  
Torino +39-011-9005833
- IL Yaskawa Europe Technology Ltd.  
Rosh Ha'ayin +972-3-9004114
- LVA Yaskawa Latvia  
Riga +371-2-2467570
- NL Yaskawa Benelux B.V.  
Eindhoven +31-40-2895500
- PL Yaskawa Polska Sp. z o.o.  
Wrocław +48-71-7928670
- SE Yaskawa Nordic AB  
Torsås +46-480-417-800
- SI Yaskawa Slovenia  
Ribnica +386-1-8372-410
- TR Yaskawa Turkey Elektrik  
Ticaret Ltd. Sti.  
İstanbul +90-216-5273450
- ZA Yaskawa Southern Africa (PTY) Ltd  
Johannesburg +27-11-6083182

## DISTRIBUTORS

- BG ATRI ROBOTICS Ltd.  
Stara Zagora +359 899 625 160  
Kammarton Bulgaria Ltd.  
Sofia +359-02-926-6060
- EE RKR Seadmed OÜ  
Tallinn/Estonia +372-68-35-235
- GR Gizelis Robotics  
Schimatari Viotias +30-2262057199
- HU Flexman Robotics Kft  
Budapest +36 1 259 0981
- LT Profibus UAB  
Panevezys +370-45-518575
- NO Skala Robotech AS  
Lierstranda +47-32240600
- PT ROBOPLAN Lda  
Aveiro +351-234 943 900
- RO NORMANDIA S.R.L.  
Braşov +40 268 549 236



## Yaskawa Headquarters

Yaskawa Europe GmbH  
Robotics Division  
Yaskawastraße 1  
85391 Allershausen, Germany  
Tel. +49 (0) 8166/90-0  
Fax +49 (0) 8166/90-103

## Yaskawa Academy and sales office Frankfurt

Yaskawa Europe GmbH  
Philipp-Reis-Straße 6  
65795 Hattersheim am Main, Germany  
Tel. +49 (0) 6196/77725-0  
Fax +49 (0) 6196/77725-39

All drawing dimensions in mm.  
Technical data may be subject to change without previous notice.  
Please request detailed drawings at [robotics@yaskawa.eu](mailto:robotics@yaskawa.eu).

Packaging & Palletizing  
D-06-2023, A-No. 175200