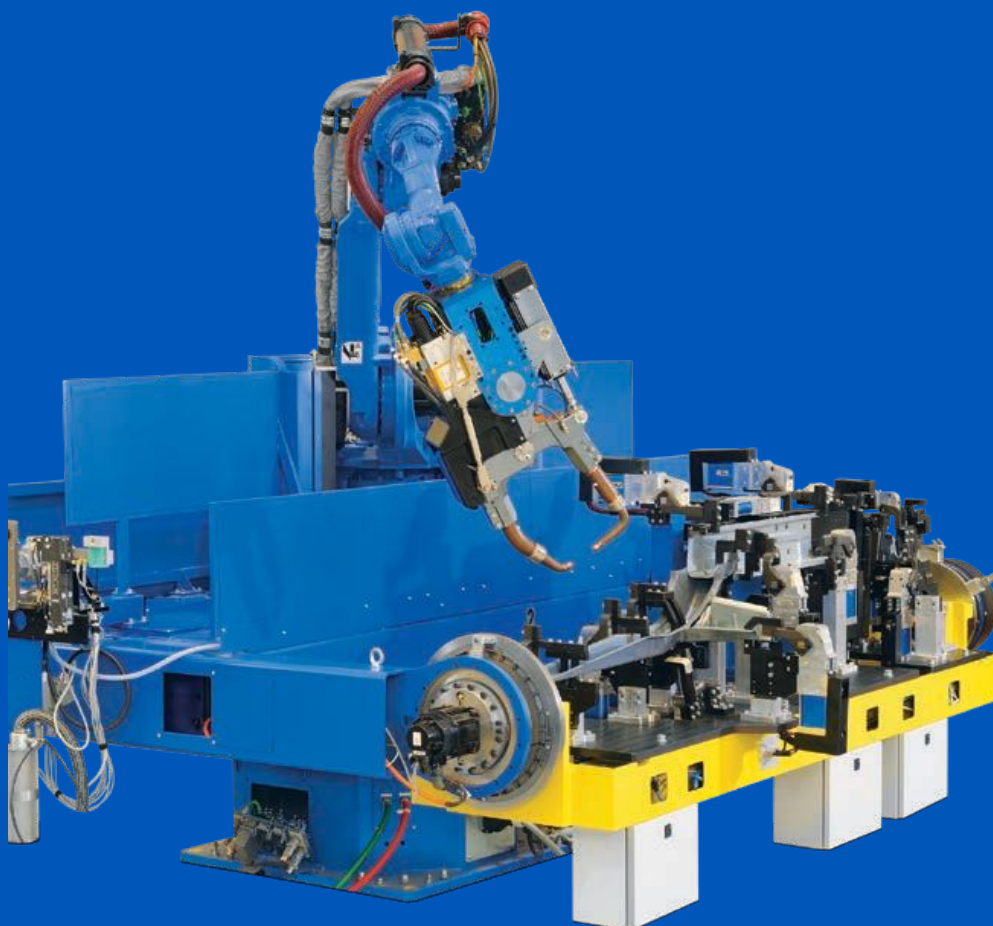


# MOTOMAN-SP Series

MOTOMAN spot welding solutions

## Технические характеристики



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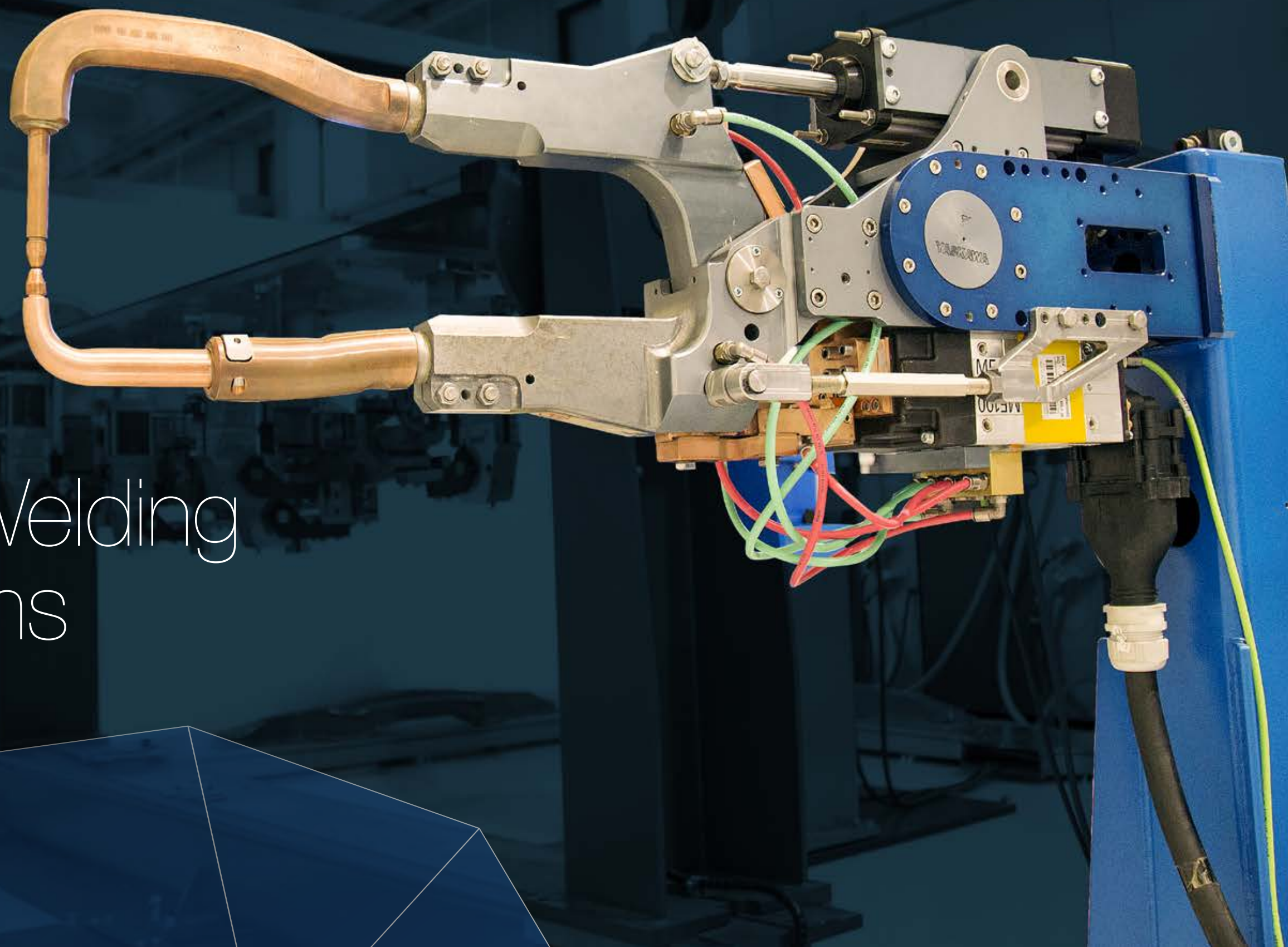
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# Spot Welding Systems

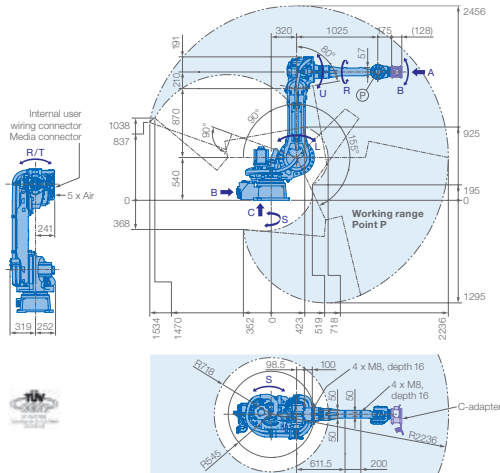




SP80



Controlled by  
YRC1000



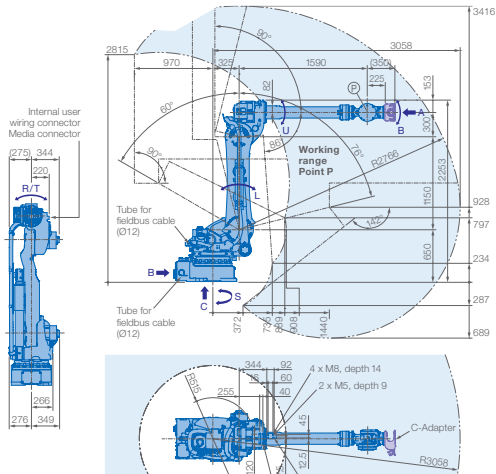
Specifications SP80					
Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes
					6
S	±180	170	–	–	Max. payload [kg]
L	+155/–90	140	–	–	80 (88°)
U	+90/–80	160	–	–	Repeatability [mm]
R	±205 (±360°)	230	389 (408°)	28 (30°)	±0.03
B	±120 (±125°)	230	389 (408°)	28 (30°)	Max. working range R [mm]
T	±180 (±360°)	350	206	10.3 (11°)	2236
					Temperature [°C]
					0 to +45
					Humidity [%]
					20 – 80
					Weight [kg]
					630
					Power supply, average [kVA]
					4.0

\* without C-adapter

SP165-105



Controlled by  
YRC1000



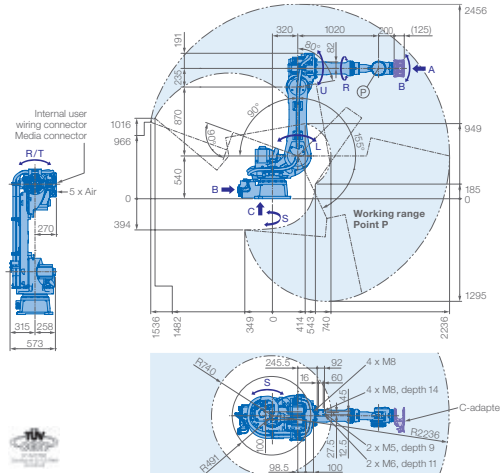
Specifications SP165-105					
Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes
					6
S	±180	125	–	–	Max. payload [kg]
L	+76/–60	115	–	–	105 (120°)
U	+90/–86	125	–	–	Repeatability [mm]
R	±210 (±360°)	182	834 (883°)	77 (79°)	±0.05
B	±125 (±130°)	175	834 (883°)	77 (79°)	Max. working range R [mm]
T	±210 (±360°)	265	520	40	3058
					Temperature [°C]
					0 to +45
					Humidity [%]
					20 – 80
					Weight [kg]
					1090
					Power supply, average [kVA]
					5.0

\* Without C-Adapter

SP100



Controlled by  
YRC1000



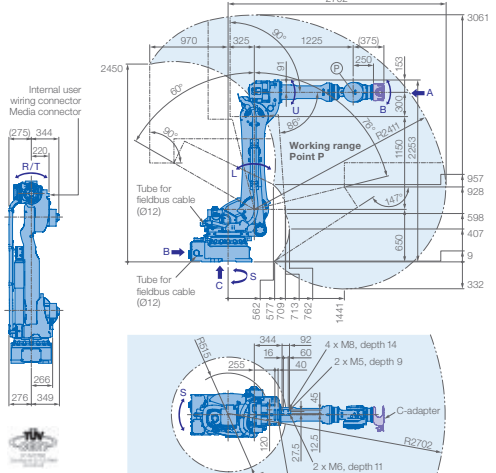
Specifications SP100					
Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes
					6
S	±180	140	–	–	Max. payload [kg]
L	+155/–90	110	–	–	100 (110°)
U	+90/–80	130	–	–	Repeatability [mm]
R	±205 (±360°)	175	696 (721°)	58 (60°)	±0.03
B	±120 (±125°)	175	696 (721°)	58 (60°)	Max. working range R [mm]
T	±205 (±360°)	255	294	33 (33.7°)	2236
					Temperature [°C]
					0 to +45
					Humidity [%]
					20 – 80
					Weight [kg]
					660
					Power supply, average [kVA]
					5.0

\* without C-adapter

SP210



Controlled by  
YRC1000



Specifications SP210					
Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes
					6
S	±180	120	–	–	Max. payload [kg]
L	+76/–60	97	–	–	210 (225°)
U	+90/–86	115	–	–	Repeatability [mm]
R	±210 (±360°)	145	1323 (1372°)	143 (145°)	±0.05
B	±125 (±130°)	145	1323 (1372°)	143 (145°)	Max. working range R [mm]
T	±210 (±360°)	220	735	84	2702
					Temperature [°C]
					0 to +45
					Humidity [%]
					20 – 80
					Weight [kg]
					1080
					Power supply, average [kVA]
					5.0

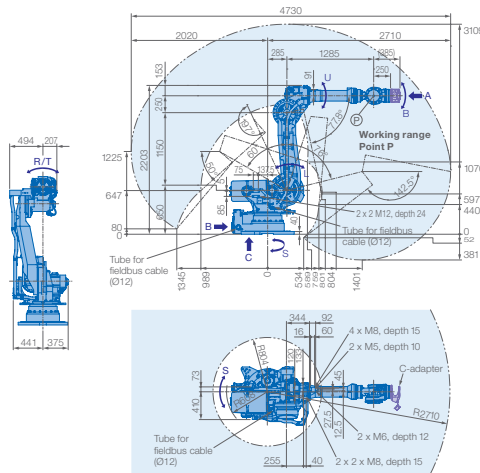
\* without C-adapter

# Spot Welding Gun Range

## SP235



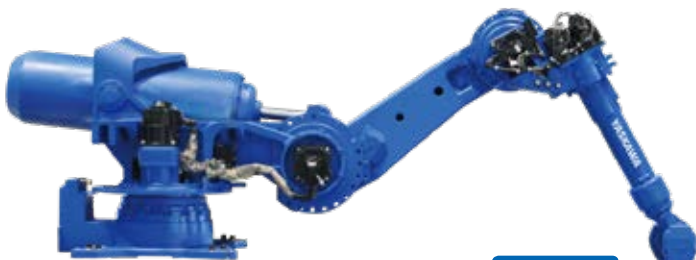
Controlled by  
YRC1000



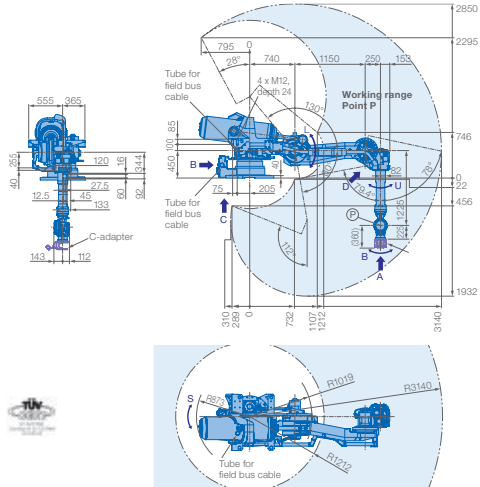
Specifications SP235					
Axes	Maximum motion range [°]	Maximum speed [°/sec.]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes
					6
S	±180	100	—	—	Max. payload [kg]
L	+76/-60	90	—	—	235 (250*)
U	+197/-77.8	97	—	—	Repeatability [mm]
R	±205 (±360°)	120	1333 (1385°)	315 (317°)	±0.05
B	±120 (±125°)	120	1333 (1385°)	315 (317°)	Max. working range R [mm]
T	±180 (±360°)	190	735	200	2710
					Temperature [°C]
					0 to +45
					Humidity [%]
					20 – 80
					Weight [kg]
					1345
					Power supply, average [KVA]
					5.0

\* without C-adapter

## SP150R // SP185R

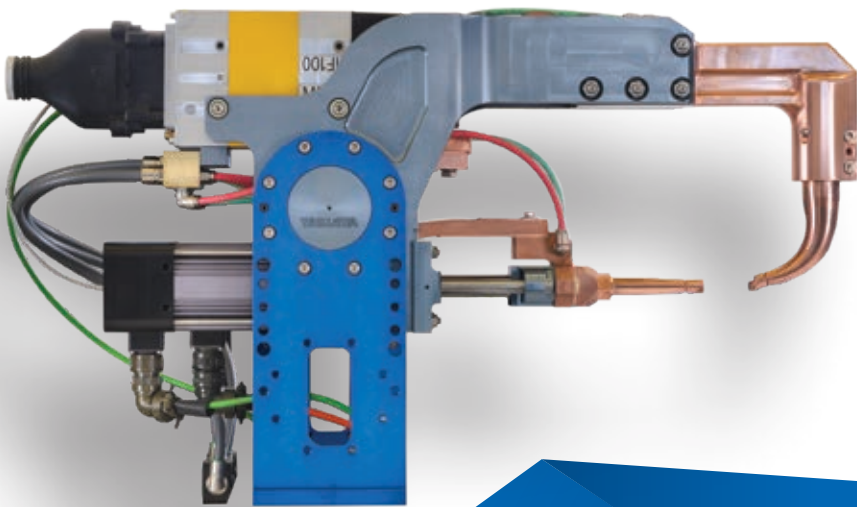
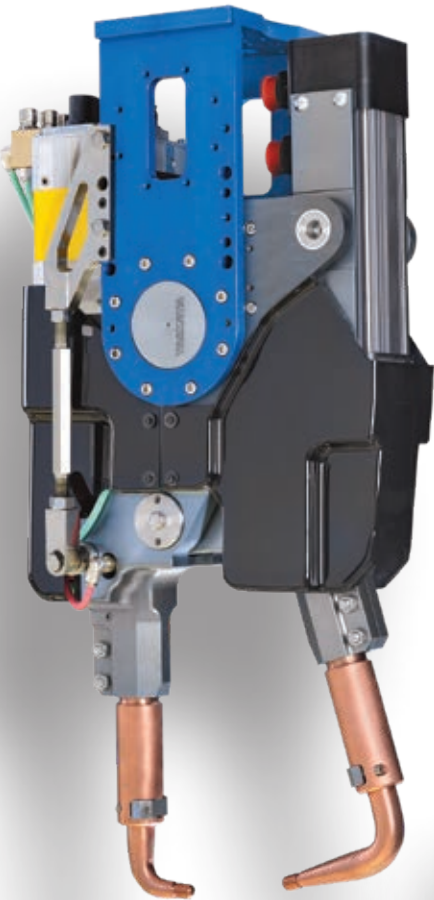


Controlled by  
YRC1000



Specifications SP150R					
Axes	Maximum motion range [°]	Maximum speed [°/s]	Allowable moment [Nm]	Allowable moment of inertia [kg · m <sup>2</sup> ]	Controlled axes
					6
S	±180	105	—	—	Max. payload [kg]
L	+130/-80	105	—	—	151.5 (165°)
U	+78/-79.4	105	—	—	Repeatability [mm]
R	±205 (±360°)	175	868 (921°)	83 (85°)	±0.05
B	±120 (±130°)	150	868 (921°)	83 (85°)	Max. working range R [mm]
T	±180 (±360°)	240	490	45	3140
					Temperature [°C]
					0 to +45
					Humidity [%]
					20 – 80
					Weight [kg]
					1760
					Power supply, average [kVA]
					5.0

\* without C-adapter



The new range of spot welding guns was developed by Yaskawa and has an extremely low weight. Carefully designed down to the smallest detail, it allows you to use robot with lower capacity.

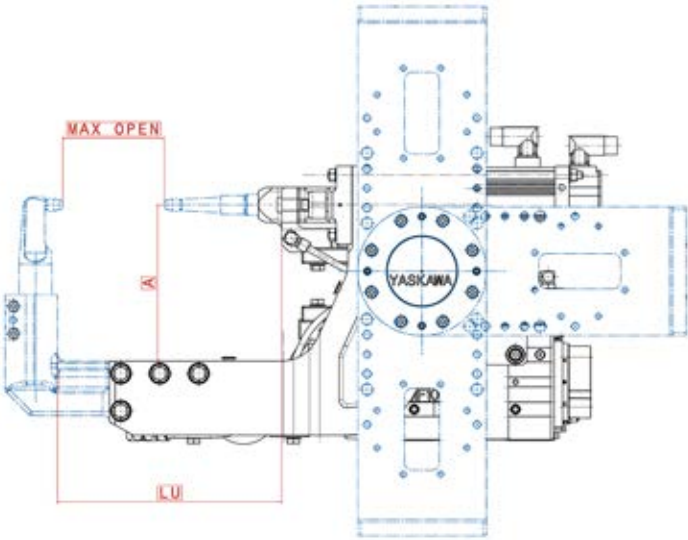
These features allow us to make a wide range of guns with different openings, reach and wrist mounting, depending on the item to be welded.

### KEY BENEFITS

- No pneumatic system
- It consists of three components (gun body, transformer and motor) for maximum simplicity of the structure
- The cables can be connected sideways to ensure better rotation of the wrist of the robot
- Lower energy consumption
- Can be mounted on a robot with lower weight
- Easier to install
- Standardization of the gun with greater customization options starting from the standard solution



# Gun C

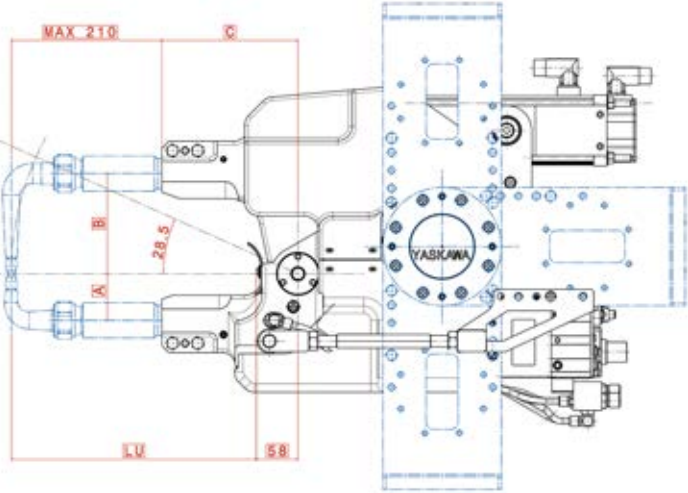


Arm center distance		
A	200	300

LU Usabele opening [mm]	Electrode force Max. load [daN]	Max. opening Max. open [mm]
250	450	130
300	450	130
350	450	130

Possible combinations (family size)	
Gun	A
BGJ-200	200
BGJ-300	300

# Gun X

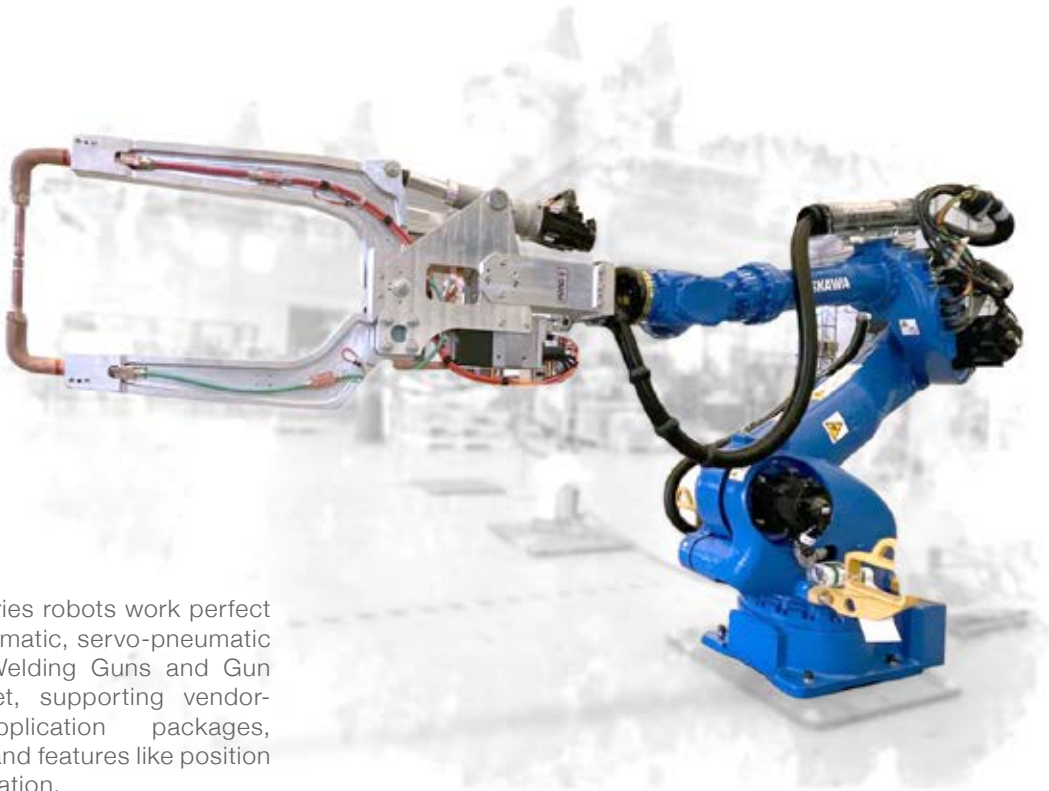


LU Usabele opening [mm]	Electrode force Max. load [daN]		Max. opening Max. open [mm]
250	530 (C = 190)	N.O. (C = 290)	144
300	500 (C = 190)	N.O. (C = 290)	167
350	450 (C = 190)	500 (C = 290)	190
400	380 (C = 190)	450 (C = 290)	214
450	320 (C = 190)	380 (C = 290)	238

Arm center distance and length			
A	64	125	150
B	100	140	250
C	190	290	—

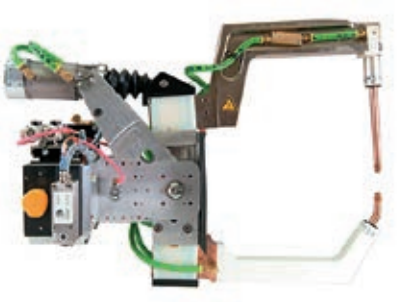
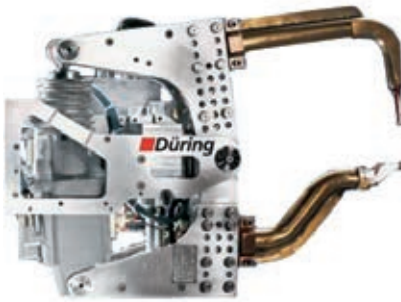
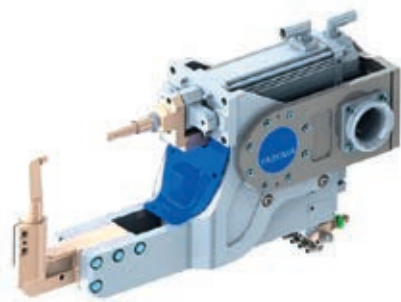
Possible combinations (family size)			
Gun	A	B	C
BGX-65-100-190 BGX-65-100-290	65	100	190 / 290
BGX-65-140-190 BGX-65-140-290	65	140	190 / 290
BGX-65-250-190 BGX-65-250-290	65	250	190 / 290
BGX-125-100-190 BGX-125-100-290	125	100	190 / 290
BGX-125-140-190 BGX-125-140-290	125	140	190 / 290
BGX-125-250-190 BGX-125-250-290	125	250	190 / 290
BGX-150-100-190 BGX-150-100-290	150	100	190 / 290
BGX-150-140-190 BGX-150-140-290	150	140	190 / 290
BGX-150-250-190 BGX-150-250-290	150	250	190 / 290

# 3rd Party Spot Welding Guns

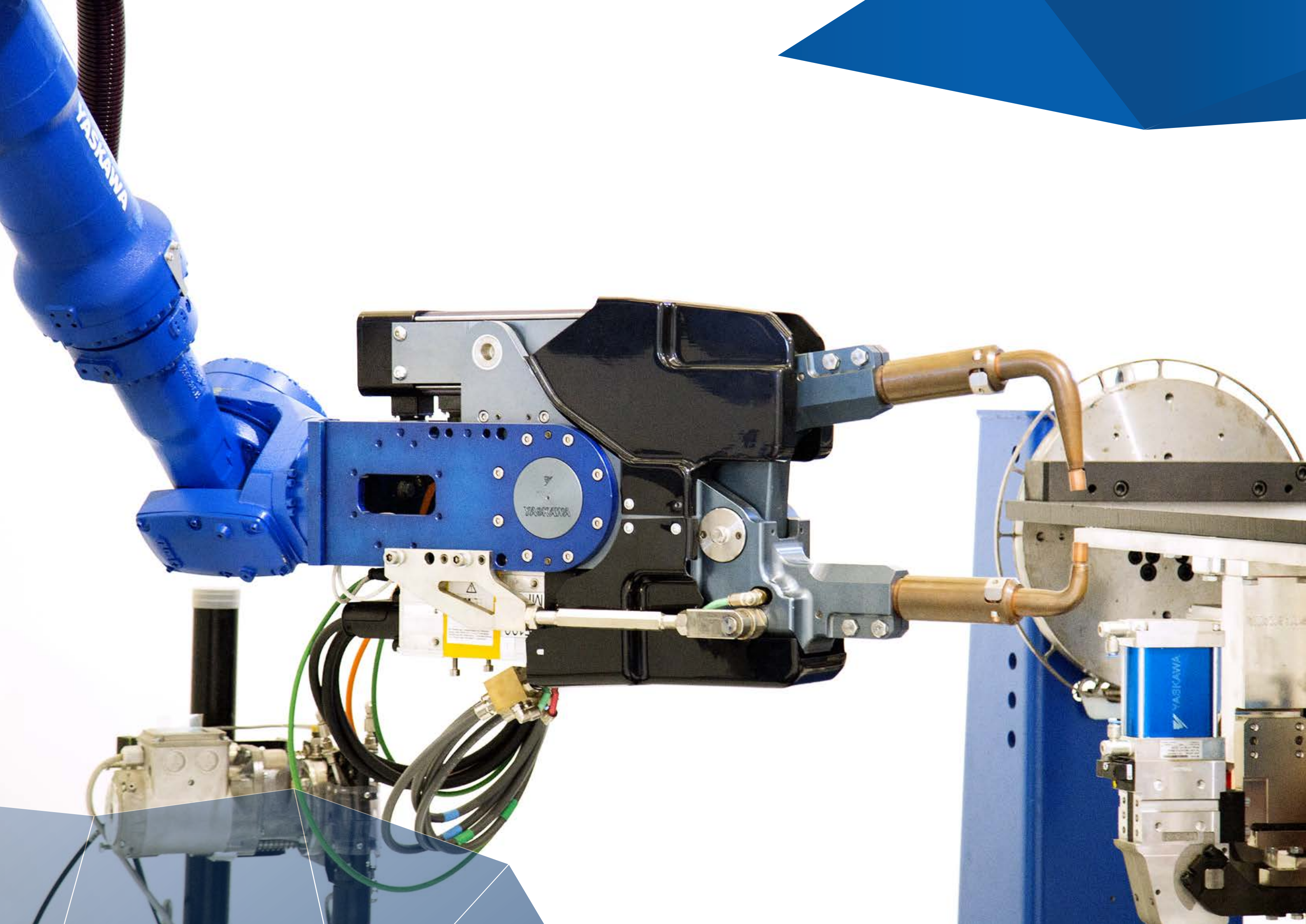


MOTOMAN GP and SP Series robots work perfect with a large variety of pneumatic, servo-pneumatic and servo-electric Spot Welding Guns and Gun Controllers on the market, supporting vendor-specific functions, application packages, communication interfaces and features like position and arm bending compensation.

Please ask for more details.









# Dresspack

- Spot Welding gun wiring from robot base to wrist – 35 mm² power cord, water pipe PUR 12, motor, encoder, signal cables
- Spot Welding connection from robot base to YRC1000 controller (length 10 metres) – 2 pipes PUR 12, power cord 35 mm²
- Various dresspack suppliers available

# YRC1000 Cabinet and Welding Box

- For Motoman YRC1000 Controller
- Force and Stroke parametrization with robot teach pendant
- BOSCH PSI6000 Middel frequency inverter 1000Hz in additional cabinet YRC1000
- BOS6000 user interface
- System I/O and spot signal will be managed by VIPA module inside spot box
- Max. weld current 36kA

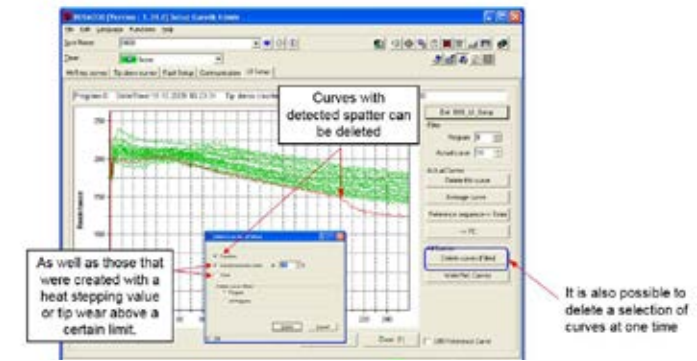
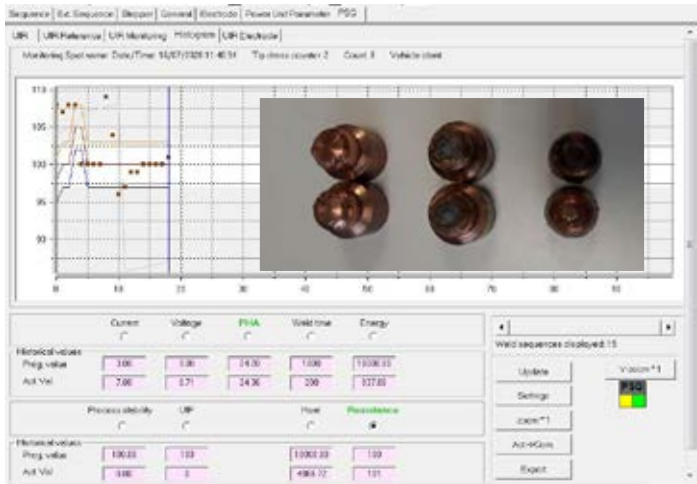
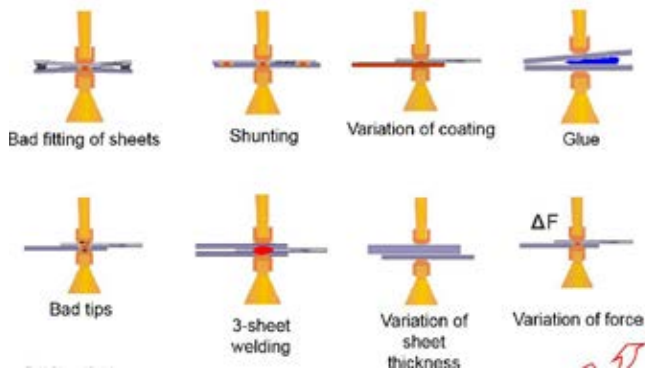


# UIR Quality Controls with BOSCH (Software Bos6000)

Thanks to the installation of the PSQ Option Function with relative activation of the “Check Resistance” it is possible to avoid the execution of waste pieces following wrong dressing positions, breakage of the electrode holder, even partial breakage of the RAVITEX cutter.

Thanks to the installation of the PSQ Option Function with its Micro SD Card, to the recording of the optimal curves following the factory quality controls, it is possible to activate the welding quality control adaptation, thus being able to control the nominal and minimum diameter of the weld core.

UIR: Compensation of Disturbances



# Motorgun Software

Communication software for the welding timer and the gun motor guarantees a high quality welding process due to integration and complete dialogue between all items managed as a unique Yaskawa brand product.

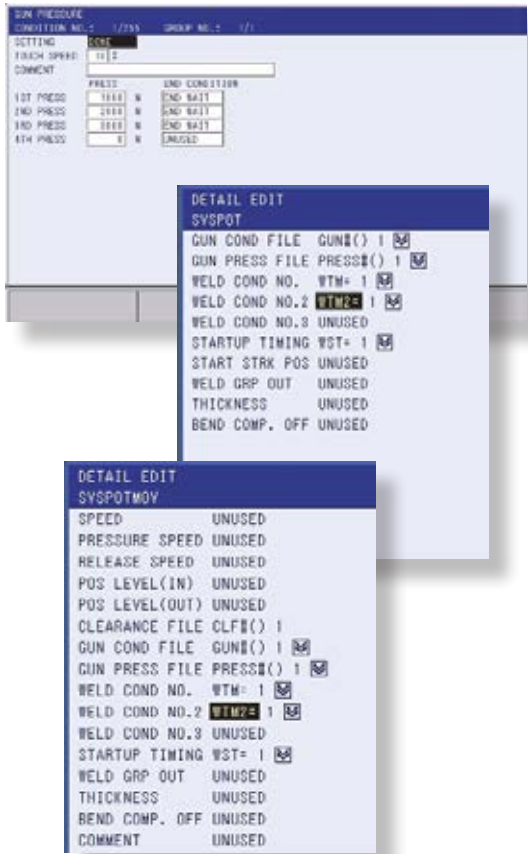
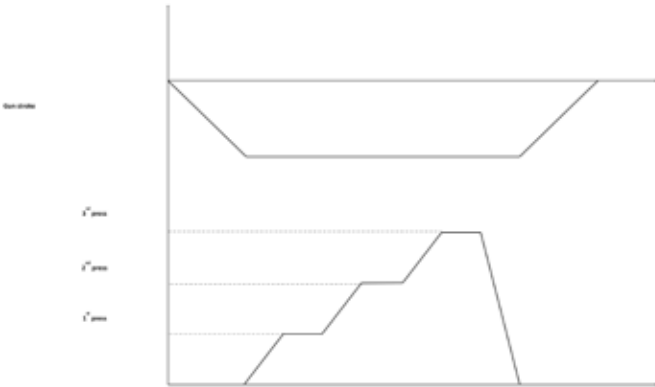
- Easy to set up: a few steps to configure communication with the welding timer
- Easy to set calibration, configuration page dedicated to calibration of gun and motor
- Contains functions that enable self-learning



# Multi Step Pressure Function

The multistep pressure function is an extension of the conventional welding commands SVSPOT / SVSPOTMOV. After the gun is closed, the power source can be started up to four times with different pressure values and welding conditions, enabling high quality spot welding.

- Multiple pressure values (and welding conditions) during one spot welding operation can be applied
- Enhanced welding process control



# Gun Teaching Position Correction Function

Correction of previously taught gun positions (SVSPOTMOV instruction) by "workpiece search motion" with moveable electrode. The function can be used to automatic correction of workpiece misalignment in the tool coordinate Z axis direction.

- Reduction of teaching time
- Improvement of weld quality





# Type of configurations

## 800510-10 - GUN ON FLOOR

Configuration component:

- ROBOT HANDLING + YRC1000
- WELDING BOX
- GUN FLOOR
- INVERTER
- OSCILLATING TIP DRESSER
- Mediapannel

Configuration particularly suitable in cases where it is not possible to complete the sequence of points on the equipment due to the clutter of the locks. In this case, the robot equipped with a gripper, which has reduced dimensions compared to the equipment, picks up the element from the tool and brings it under the SPOT gun fixed on the ground column, which completes the sequence of points.



## 800510-20 - GUN ON ROBOT

Configuration component:

- ROBOT SPOT+YRC1000-
- WELDING BOX
- GUN ON ROBOT
- INVERTER-
- TIP DRESSER

Classical configuration for a standard cell where the robot equipped with SPOT gun welds the elements that are loaded on equipment which can be fixed on a workbench, rotating base or positioner

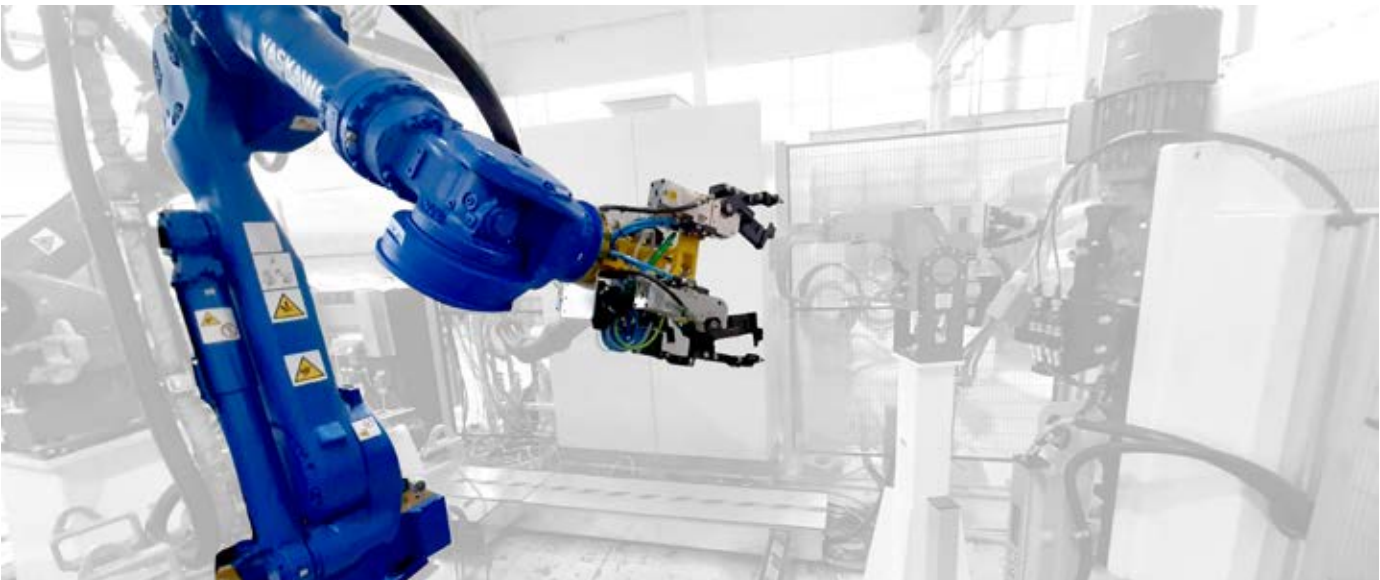
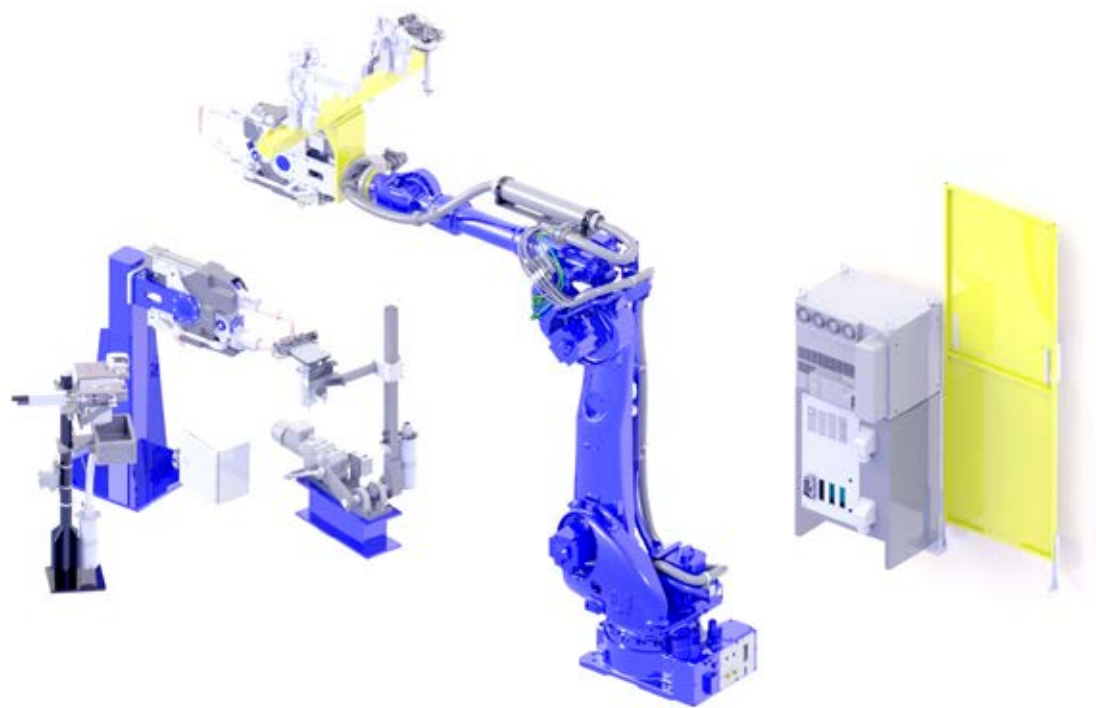




# 800150-30 - GUN ON FLOOR+GUN ON ROBOT

- Configuration component:
- ROBOT SPOT/HANDLING+YRC1000
  - WELDING BOX
  - GUN ON ROBOT
  - GUN FLOOR
  - INVERTER
  - TIP DRESSER
  - OSCILLATING TIP DRESSER

Complete configuration that groups the two previous ones in a single solution. The robot, equipped with SPOT gun and gripper, welds the elements that are loaded on equipment that can be fixed on a workbench, rotating base or positioner. At the end of this cycle, the same robot with the gripper picks up the element from the tool and brings it under the fixed SPOT gun on the ground column, which completes the sequence of points.



# RECOVERY SYSTEM

Water recovery system for cups change



The recovery system is a device that creates a vacuum inside the cooling circuit of the clamp to avoid water leakage and flooding during the electrode change, whether it is done manually or automatically. It is placed between the cooling water supply and return pipes, coming from the factory, and the panel at the base of the robot where the fittings leading to the internal cooling circuit of the clamp are located.

Suggested with automatic cups changer

The automatic cups changer, is used in case of a fully automated workstation, where the electrode change is performed automatically. The electrodes are placed in a magazine next to the dressing unit and the electrodes on the gun are replaced by an automatic extraction and replacement system.





# Customer Service and Support.

## From the Initial Concept to the Turnkey System.

# Total Customer Support

With more than 40 years of experience in system development and engineering, and wide-ranging expertise in robot technology, Yaskawa offers an all-round package tailored to your needs. Consulting also receives high priority: even if you have only a vague notion of how your workpiece is to be welded, Yaskawa will draw up a concept for you, integrate the required components and present you with a solution that will fire your imagination.



**Consulting**

- In-process engineering services



**Testing**

- 3D simulation
- Prototyping and pre-series production on test systems
- Performance of welding trials
- Quality control by macrosections



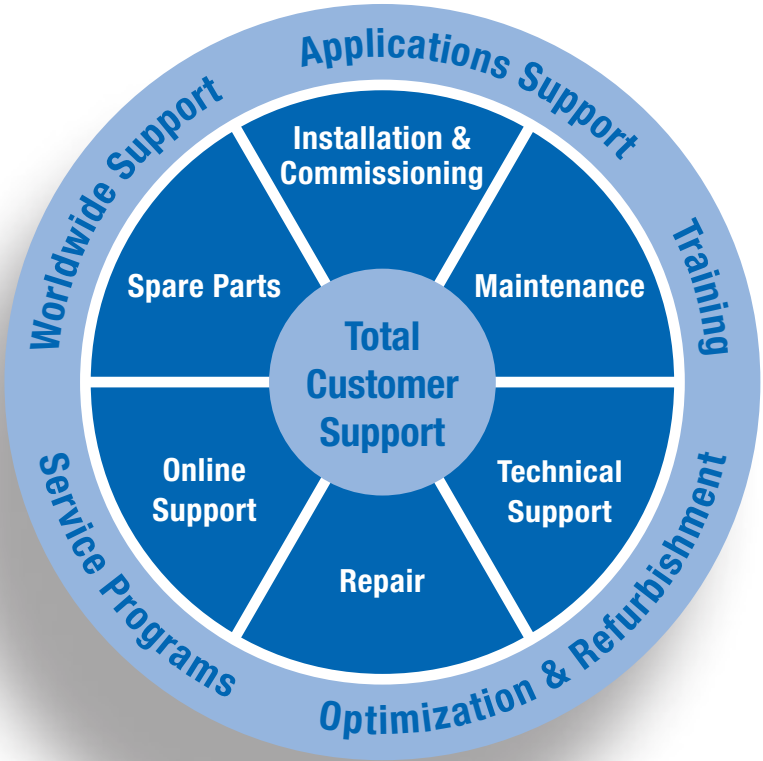
**Training**

- Operator training on site or in our Academies
- Welding training



**Service**

- Maintenance and repair
- Overhauls and refurbishments



-  Process Optimization & Product Modernization
-  Support for Product Application
-  Installation & Implementation
-  Service, Warranty & Maintenance Contracts
-  Preventive Maintenance
-  Training
-  Repair
-  Detailed Reporting
-  Spare Parts
-  Inventory & Logistics Programm
-  Error Analysis & Troubleshooting

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The 360° all around support, the TOTAL CUSTOMER SUPPORT, not only refers to the Yaskawa products and systems but also to your applications and processes.

Through our global service network, Yaskawa is always close to you to ensure your success, because ...

**... customer satisfaction is our top priority!**

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