

Welding
Arc

YASKAWA

Arc Welding Application

| MOTOMAN-AR Series |

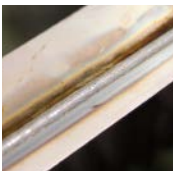
Compatible with YRC1000 Robot Controller



Robot System Solutions

MOTOMAN-AR Series

Find smart solutions for your production site with YASKAWA's cutting-edge robot systems.



YASKAWA has the answer

We can meet our customers' diverse needs with a wide range of functions and components.

Application examples

Large and long workpieces, automobile suspensions, construction machines, agricultural equipment, shipbuilding, steel beams, etc.
See application examples on page 4 and 5.

AR Series Manipulators

● See Solution 1



MOTOPOS Series Positioner

● See Solution 4



YRC1000 Robot Controller

● See Solution 2



MOTOMAN-AR Series Total Solution

MOTOPAC Series Welding Package

● See Solution 3



YASKAWA's extensive know-how in robotics technologies can meet the requirements of a wide range of systems.

Welding of small parts

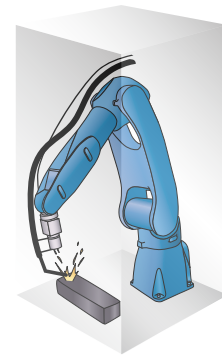
Executed in minimum installation space

Our MOTOMAN robots achieve high-quality welding of small parts in a compact cell. By using welding robots with a 700-mm reach, small parts can be welded in minimum installation space.

The layout of each cell can be changed easily by installing a robot controller and a welding power source inside the cell.



High-quality welding of small parts in a compact cell

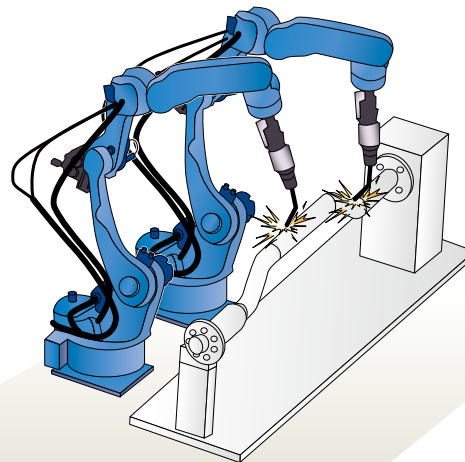


Welding of long parts (ex. exhaust system parts)

High productivity and high-quality welding

By combining two MOTOMAN robots with welding positioner MOTOPOS, it is possible to execute station twin coordinated welding. This enables high productivity and high-quality welding even for long exhaust system parts.

The positioner first adjusts the workpiece's angle and position. Next, the two robots weld the workpiece by coordinating their movements with the movements of the positioner.



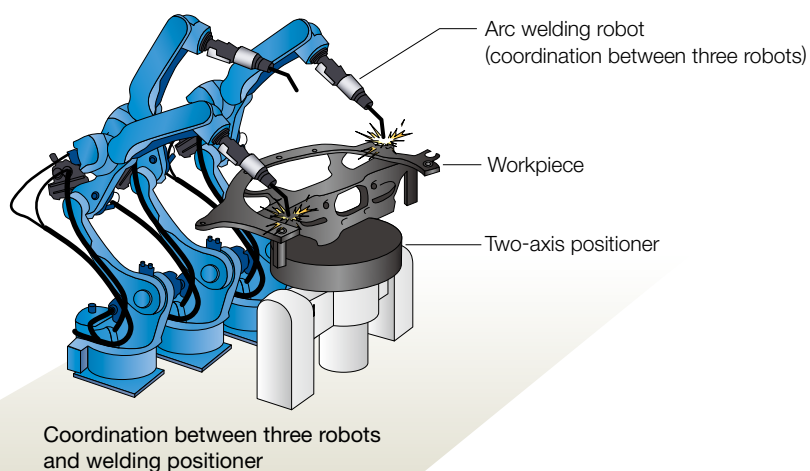
Station twin coordinated welding

High-density welding of automotive parts (underbody parts, etc.)

High productivity and high-quality welding

By combining three MOTOMAN robots with the welding positioner MOTOPOS for coordinated motion, it is possible to achieve high-density, high-quality welding of automotive parts. Moreover, it leads to shorter cycle time as three robots weld simultaneously.

The positioner holds the workpiece at an optimum position and angle, as it coordinates its movements with the movements of the robots to achieve high-speed and high-quality welding.

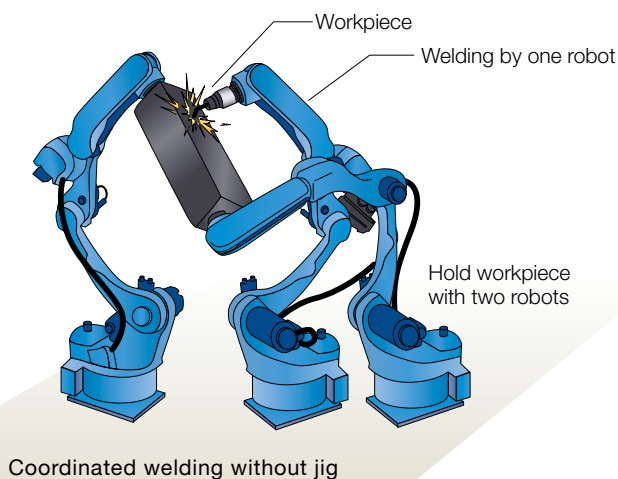


Welding of construction machinery parts

Simplification of transfer equipment and high-quality welding

Construction machinery parts can be welded efficiently using three MOTOMAN robots that operate in coordination with one another. The two handling robots pick up the workpiece to transfer to optimum welding position. This enables to weld at optimum position, securing steady welding quality. The robots transfer the workpiece upon completion of welding, which simplifies transfer equipment.

To achieve high-quality welding, two robots are used to hold a workpiece and another robot is used to weld.



MOTOMAN-AR Series Robot : AR700 and AR900, Compact and High Speed



Increase productivity

Achieve high productivity with number 1 payloads and speeds in their classes

- A wide range of sensors and torches can be mounted with 7 kg/8 kg payloads (class number 1) and 38% greater allowable moment.
- Speeds of all axes have been increased by 39% (max.).
- Acceleration/deceleration control has been improved to achieve maximum reduction of acceleration/deceleration times for all robot postures.

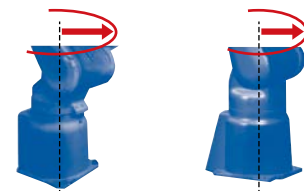


Make equipment compact

Slim and easy to use body and arm structure enabling efficient installation space

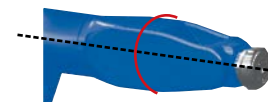
- Slim manipulator body requires minimum installation space (minimizes L and U axis offset).
- Power cable can be connected at the bottom section, which reduces interference with walls when compared with cable connections on the side of the manipulator.
- Increased maximum reach and horizontal reach enables manipulator to operate in wider work areas.
- Slim, straight, and symmetrical arm design minimize interference with peripheral devices, even in small spaces.

■ Reduced interference radius when S-axis is turning



Former model: MH5(L)SII Interference radius 182 mm
New model: AR700 and AR900 Interference radius 140 mm

■ Reduced interference radius when the wrist is turning



Former model: MH5(L)SII Interference radius 73 mm
New model: AR700 and AR900 Interference radius 67 mm



Power cable connection on the side and bottom (optional) of the manipulator



Improve equipment installation, operation, and maintenance

Easy maintenance

- Zero position data can be saved without the need to connect to a battery when replacing wire harness.
- Number of cables and connectors have been reduced for better work efficiency.

Easy-to-clean design

- Manipulator surface is designed to prevent adherence of dust.



Rounded shape and smooth surface

Reduced wiring time

- Power cable is reduced to one cable, which reduces wiring time.

MOTOMAN-AR Series Robot : AR1440, AR1440E, AR1730, and AR2010, World's Highest Speed in their Classes



Increase productivity

Achieve high productivity with number 1 payload and speed in its class

- Productivity of customers' equipment can be improved significantly with the robot's high payload and high speed.
- Acceleration/deceleration control has been improved to achieve maximum reduction of acceleration/deceleration times for all robot postures.
- Various sensors and servo torches can be mounted with its high payload.



Reduced air-cut time

The maximum speed of AR1730 has increased by 30% (max.) compared with the former model.

*: The maximum speed of AR1440 and AR2010 has increased by 15% (max.) and the maximum speed of AR1440E has increased by 18% (max.) compared with former models.



Make equipment compact

Hollow arm structure enabling internal/external cable storage

- Hollow arm structure to store cables reduces operation restriction due to cable interference, simplifies teaching, and eliminates cable disconnection caused by interference.
- Either an internally mounted or externally mounted torch cable can be selected. We provide the optimum cable installation for your workpieces and equipment.
- Welding power cables can be stored in the S-axis, which enables smart external cabling.

■ Hollow arm



R-axis hollow arm: 50 mm dia.

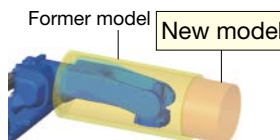


T-axis hollow arm: 50 mm dia.

Best accessibility in its class

- Slim and hollow arm design minimizes interference with peripheral devices even in small spaces.
- Arm design minimizes interference with surrounding equipment.

■ Reduced interference area



Minimized interference radius of the wrist

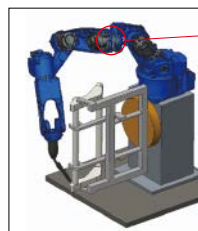
Former model:	New model:
MA1440 136 mm	AR1440 120 mm
VA1400II 131 mm	AR1440E 120 mm
MA2010 136 mm	AR1730 138 mm
	AR2010 120 mm

AR1440E

Less interference and higher flexibility in robot position due to 7-axis configuration

- Achieves high-quality welding by securing an optimal welding position with less interference
- Allows jigs and dedicated devices to be combined with the AR1440E, closer installation layouts to be constructed, and saving space.
- Enables a high-density layout with less interference

■ Achieve high-quality welding by securing the optimal welding position



Seventh axis

Payload doubled

Former model: VA1400II payload 3 kg
New model : AR1440E payload 6 kg

* Images shown are for illustrative purposes only



Improve equipment installation, operation, and maintenance

Easy maintenance

- Zero position data can be saved without the need to connect to a battery when replacing wire harness.
- Number of cables and connectors have been reduced for better work efficiency.

Reduced wiring time

- Power cable is reduced to one cable, which reduces wiring time.

AR700

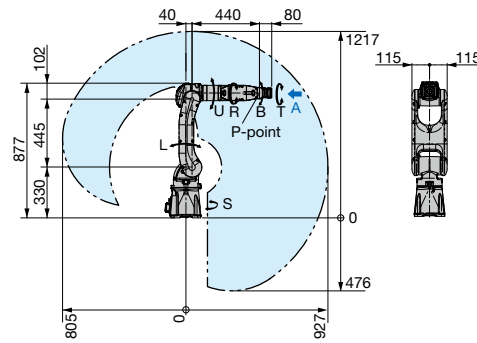
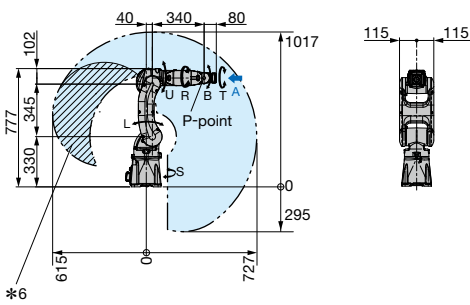
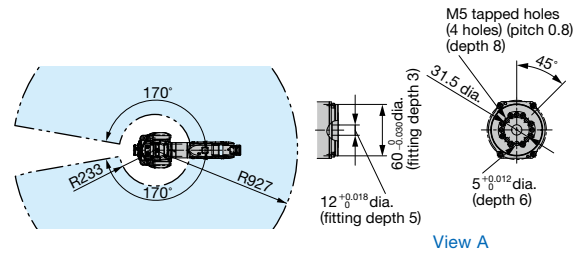
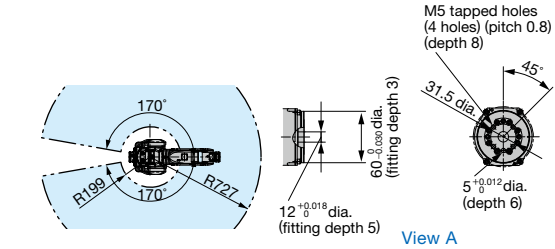


AR900



■ Dimensions Units: mm □: P-point Maximum Envelope

Note: Refer to individual dimension diagrams for detailed dimensions and specifications of the following models.



Model		MOTOMAN-AR700	MOTOMAN-AR900
Type		YR-1-06VX8-A00	YR-1-06VX7-A00
Controlled Axis		6 (vertically articulated)	6 (vertically articulated)
Payload	Wrist	8 kg	7 kg
	U -arm*1	1 kg	1 kg
Maximum Reach		727 mm	927 mm
Repeatability*2		0.01 mm	0.01 mm
Range of Motion	S -axis (turning)	-170° - +170°	-170° - +170°
	L -axis (lower arm)	-65° - +145°	-65° - +145°
	U -axis (upper arm)	-70° - +190°	-70° - +190°
	R -axis (wrist roll)	-190° - +190°	-190° - +190°
	B -axis (wrist pitch/yaw)	-135° - +135°	-135° - +135°
	T -axis (wrist twist)	-360° - +360°	-360° - +360°
Maximum Speed*3	S -axis (turning)	7.94 rad/s, 455°/s	6.54 rad/s, 375°/s
	L -axis (lower arm)	6.72 rad/s, 385°/s	5.50 rad/s, 315°/s
	U -axis (upper arm)	9.07 rad/s, 520°/s	7.15 rad/s, 410°/s
	R -axis (wrist roll)	9.59 rad/s, 550°/s	9.59 rad/s, 550°/s
	B -axis (wrist pitch/yaw)	9.59 rad/s, 550°/s	9.59 rad/s, 550°/s
	T -axis (wrist twist)	17.45 rad/s, 1000°/s	17.45 rad/s, 1000°/s
Allowable Moment	R -axis (wrist roll)	17 N·m	17 N·m
	B -axis (wrist pitch/yaw)	17 N·m	17 N·m
	T -axis (wrist twist)	10 N·m	10 N·m
Allowable Inertia (GD ² /4)	R -axis (wrist roll)	0.5 kg·m ²	0.5 kg·m ²
	B -axis (wrist pitch/yaw)	0.5 kg·m ²	0.5 kg·m ²
	T -axis (wrist twist)	0.2 kg·m ²	0.2 kg·m ²
Approx. Mass		35 kg	37 kg
IEC Protection Class		IP67	
Ambient Conditions	Temperature	0 °C to +45 °C	
	Humidity	20% to 80%RH (non-condensing)	
	Vibration	4.9 m/s ² (0.5 G) or less	
	Altitude	1000 m or less	
Power Requirements*4		1.0 kVA	
Mounting*5		Floor, ceiling, wall, tilt	

*1: The mountable load on the U-arm will vary depending on the load mass of the wrist part.

*2: Repeatability conforms to ISO 9283.

*3: The maximum speed in this table is the available maximum value and will vary depending on the load, posture, or range of motion.

*4: The power requirement value is obtained using Yaskawa's in-house measurement conditions and will vary depending on the load, motion pattern, or cycle time.

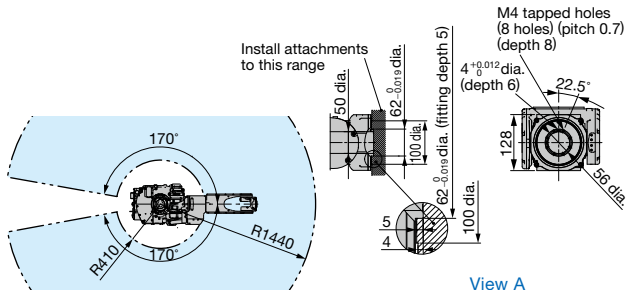
*5: When wall- or tilt-mounted, the S-axis motion range is limited.

*6: When using air, an optional solenoid valve, or a mating connector, the arm cannot be moved in the shaded area because it interferes with the connector.

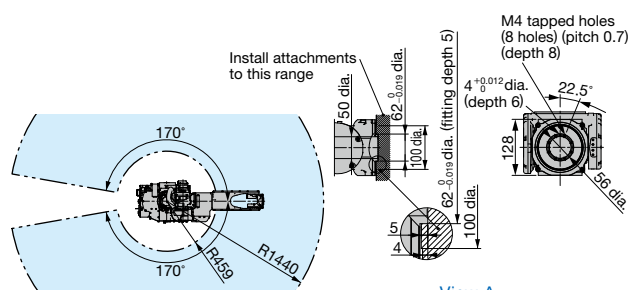
AR1440



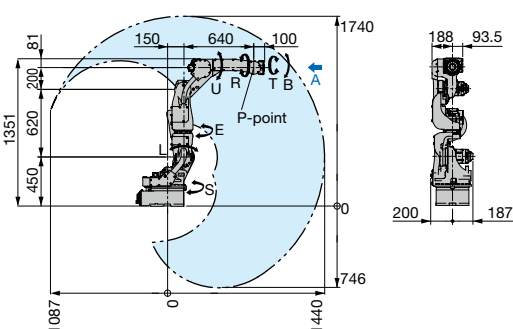
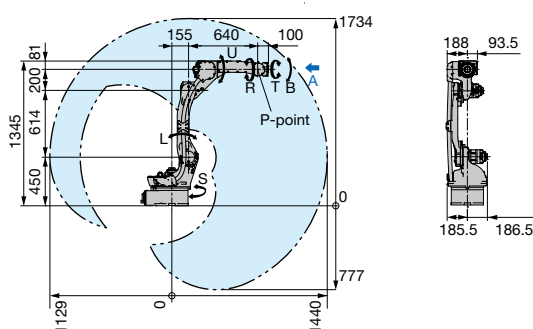
AR1440E



View A



View A



Model	MOTOMAN-AR1440	MOTOMAN-AR1440E
Type	YR-1-06VXH12-A01	YR-1-07VXE6-A00
Controlled Axis	6 (vertically articulated)	7 (vertically articulated)
Payload	Wrist U -arm*1	Wrist U -arm*1
	12 kg 10 kg	6 kg 10 kg
Maximum Reach	1440 mm	1440 mm
Repeatability*2	0.02 mm	0.06 mm
Range of Motion	S -axis (turning) L -axis (lower arm) E -axis (middle arm) U -axis (upper arm) R -axis (wrist roll) B -axis (wrist pitch/yaw) T -axis (wrist twist)	S -axis (turning) L -axis (lower arm) E -axis (middle arm) U -axis (upper arm) R -axis (wrist roll) B -axis (wrist pitch/yaw) T -axis (wrist twist)
	-170° - +170° - 90° - +155°	-170° - +170° - 70° - +148° - 90° - + 90° - 85° - +150° (- 85° - +140°)*6 -200° - +200° (- 150° - +150°)*6 -150° - +150° (- 135° - + 90°)*6*7 -455° - +455° (- 210° - +210°)*6
Maximum Speed*3	S -axis (turning) L -axis (lower arm) E -axis (middle arm) U -axis (upper arm) R -axis (wrist roll) B -axis (wrist pitch/yaw) T -axis (wrist twist)	S -axis (turning) L -axis (lower arm) E -axis (middle arm) U -axis (upper arm) R -axis (wrist roll) B -axis (wrist pitch/yaw) T -axis (wrist twist)
	4.53 rad/s, 260°/s 4.01 rad/s, 230°/s 4.53 rad/s, 260°/s 4.53 rad/s, 260°/s 8.20 rad/s, 470°/s 8.20 rad/s, 470°/s 12.2 rad/s, 700°/s	4.53 rad/s, 260°/s 4.01 rad/s, 230°/s 4.53 rad/s, 260°/s 4.53 rad/s, 260°/s 8.20 rad/s, 470°/s 8.20 rad/s, 470°/s 12.2 rad/s, 700°/s
Allowable Moment	R -axis (wrist roll) B -axis (wrist pitch/yaw) T -axis (wrist twist)	R -axis (wrist roll) B -axis (wrist pitch/yaw) T -axis (wrist twist)
	22 N·m 22 N·m 9.8 N·m	12.5 N·m 12.5 N·m 6.0 N·m
Allowable Inertia (GD ² /4)	R -axis (wrist roll) B -axis (wrist pitch/yaw) T -axis (wrist twist)	R -axis (wrist roll) B -axis (wrist pitch/yaw) T -axis (wrist twist)
	0.65 kg·m ² 0.65 kg·m ² 0.17 kg·m ²	0.40 kg·m ² 0.40 kg·m ² 0.08 kg·m ²
Approx. Mass	150 kg	190 kg
IEC Protection Class	Body: IP54, Wrist: IP67	
Ambient Conditions	Temperature Humidity Vibration Altitude	Temperature Humidity Vibration Altitude
	0 °C to +45 °C 20% to 80%RH (non-condensing) 4.9 m/s ² (0.5 G) or less 1000 m or less	
Power Requirements*4	1.5 kVA	
Mounting*5	Floor, ceiling, wall, tilt	Floor

*1: The mountable load on the U-arm will vary depending on the load mass of the wrist part.
*2: Repeatability conforms to ISO 9283.
*3: The maximum speed in this table is the available maximum value and will vary depending on the load, posture, or range of motion.
*4: The power requirement value is obtained using Yaskawa's in-house measurement conditions and will vary depending on the load, motion pattern, or cycle time.

*5: When wall- or tilt-mounted, the S-axis motion range is limited.
*6: The value in the parenthesis is the motion range when the manipulator is used together with MOTOPAC.
*7: The plus and minus values will be switched when the manipulator is mounted on the ceiling and used together with MOTOPAC.

AR1730

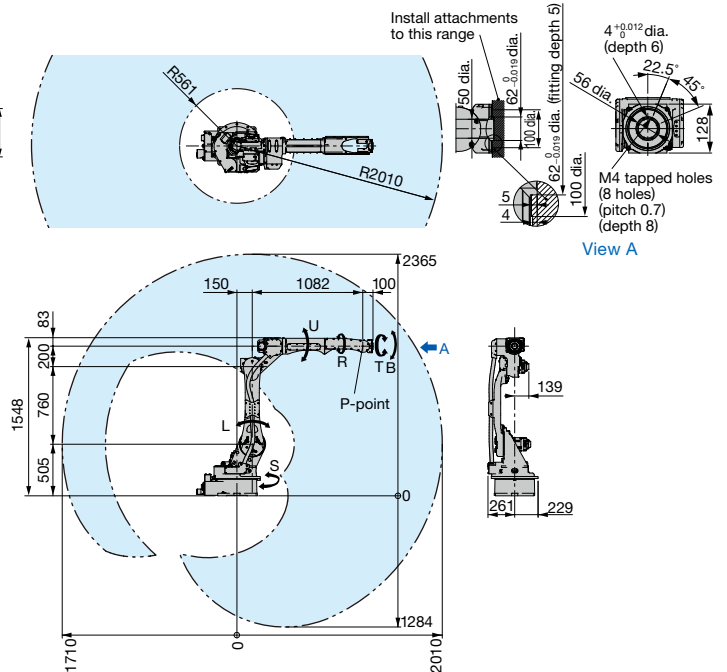
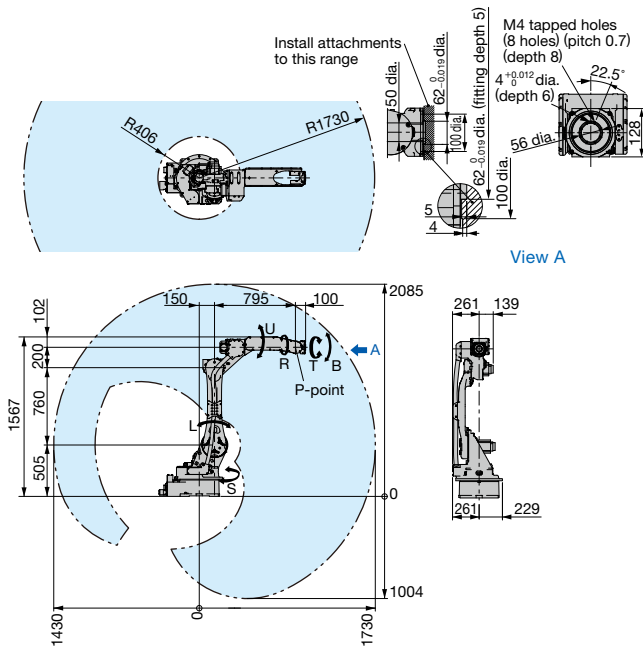


AR2010



■ Dimensions Units: mm □: P-point Maximum Envelope

Note: Refer to individual dimension diagrams for detailed dimensions and specifications of the following models.



Model		MOTOMAN-AR1730	MOTOMAN-AR2010
Type		YR-1-06VXH25-A01	YR-1-06VXH25-A11
Controlled Axis		6 (vertically articulated)	6 (vertically articulated)
Payload	Wrist	25 kg	12 kg
	U-arm *1	12 kg	9 kg
Maximum Reach		1730 mm	2010 mm
Repeatability*2		0.02 mm	0.03 mm
Range of Motion	S-axis (turning)	-180° - +180°	-180° - +180°
	L-axis (lower arm)	-105° - +155°	-105° - +155°
	U-axis (upper arm)	-86° - +160°	-86° - +160°
	R-axis (wrist roll)	-200° - +200° (-150° - +150°)*6	-200° - +200° (-150° - +150°)*6
	B-axis (wrist pitch/yaw)	-150° - +150° (-135° - +90°)*6*7	-150° - +150° (-135° - +90°)*6*7
	T-axis (wrist twist)	-455° - +455° (-210° - +210°)*6	-455° - +455° (-210° - +210°)*6
Maximum Speed*3	S-axis (turning)	3.67 rad/s, 210°/s	3.67 rad/s, 210°/s
	L-axis (lower arm)	3.67 rad/s, 210°/s	3.67 rad/s, 210°/s
	U-axis (upper arm)	4.63 rad/s, 265°/s	3.84 rad/s, 220°/s
	R-axis (wrist roll)	7.33 rad/s, 420°/s	7.59 rad/s, 435°/s
	B-axis (wrist pitch/yaw)	7.33 rad/s, 420°/s	7.59 rad/s, 435°/s
	T-axis (wrist twist)	15.44 rad/s, 885°/s	12.2 rad/s, 700°/s
Allowable Moment	R-axis (wrist roll)	52 N·m	22 N·m
	B-axis (wrist pitch/yaw)	52 N·m	22 N·m
	T-axis (wrist twist)	32 N·m	9.8 N·m
Allowable Inertia (GD ² /4)	R-axis (wrist roll)	2.3 kg·m ²	0.65 kg·m ²
	B-axis (wrist pitch/yaw)	2.3 kg·m ²	0.65 kg·m ²
	T-axis (wrist twist)	1.2 kg·m ²	0.17 kg·m ²
Approx. Mass		250 kg	260 kg
IEC Protection Class		Body: IP54, Wrist: IP67	
Ambient Conditions	Temperature	0 °C to +45 °C	
	Humidity	20% to 80%RH (non-condensing)	
	Vibration	4.9 m/s ² (0.5 G) or less	
	Altitude	1000 m or less	
Power Requirements*4		2.0 kVA	
Mounting*5		Floor, ceiling, wall, tilt	

*1: The mountable load on the U-arm will vary depending on the load mass of the wrist part.
 *2: Repeatability conforms to ISO 9283.
 *3: The maximum speed in this table is the available maximum value and will vary depending on the load, posture, or range of motion.
 *4: The power requirement value is obtained using Yaskawa's in-house measurement conditions and will vary depending on the load, motion pattern, or cycle time.

*5: When wall- or tilt-mounted, the S-axis motion range is limited.
 *6: The value in the parenthesis is the motion range when the manipulator is used together with MOTOPAC.
 *7: The plus and minus values will be switched when the manipulator is mounted on the ceiling and used together with MOTOPAC.

YRC1000 Robot Controller



Programming Pendant

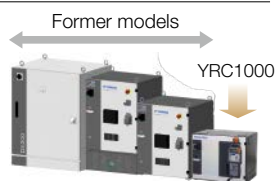
YRC1000 Robot Controller



Make equipment compact

Smallest size in the world reduces installation space

This 125 L compact size controller does not require a transformer and has built-in external axis amplifiers for three axes.*



Realized this size by building in three external axes* and eliminating the need for a transformer.



Standardization of equipment

Global standardization (Universal size)

- Common size for use in Japan and overseas.
- Overseas models do not require a transformer to adapt to the required power supply voltage.



Improve work efficiency

New motion control (high precision and high speed)

- Cycle time improved by max. 10% (compared with the former model) due to optimized acceleration/deceleration control (depends on conditions).
- Significantly reduces error in path accuracy caused by differences in motion speed (improved by 80% compared with the former model).

Lighter programming pendant with better operability

- Weighs only 730 g, the lightest programming pendant in its class, with improved cable installation.
- Can confirm robot positions and postures on the 3D robot model display.
- Touch screen allows intuitive operation to easily move the cursor and scroll.

■ YRC1000 Robot Controller Specifications

Items	Specifications
Configuration	Dust proof IP54 structure (area of backside duct fan: IP2X)
Dimensions	598 (W)×427 (D)×490 (H) mm. 125 L
Approx. Mass	70 kg max. (External axis amplifiers for up to three axes can be built in.)*
Cooling System	Indirect cooling
Ambient Temperature	During operation: 0°C to +45°C, During storage: -10°C to +60°C
Relative Humidity	90% max. (non-condensing)
Altitude	2000 m (with temperature derating) Derating condition of over 1000 m: max. ambient temperature decreases 1% per 100 m.
Power Supply	Japan: three-phase 200 VAC to 240 VAC (+10% to -15%), 50/60 Hz (±2%) Asia and Europe: three-phase 380 VAC to 440 VAC (+10% to -15%), 50/60 Hz (±2%) (neutral grounding) North America: three-phase 380 VAC to 480 VAC (+10% to -15%), 50/60 Hz (±2%) (neutral grounding)
Grounding	Grounding resistance: 100 Ω or less for 200-V class, 10 Ω or less for 400-V class
Digital I/Os	Specialized signals: 19 inputs and 6 outputs General signals: 40 inputs and 40 outputs (32 transistor outputs, 8 relay outputs)
Positioning System	Serial communications (absolute encoder)
Programming Capacity	JOB: 200,000 steps, 10,000 instructions CIO ladder: 20,000 steps max.
Expansion Slots	PCI express: 2 slots
LAN (Connection to Host)	2 (10BASE-T/100BASE-TX)
Interface	RS-232C: 1ch
Control Method	Software servo control
Drive Units	SERVOPACK for AC servomotors

■ Programming Pendant Specifications

Items	Specifications
Dimensions	152 (W)×49.5 (D)×300 (H) mm
Approx. Mass	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, compact flash card interface device (compact flash is optional.), USB port (USB 2.0, 1 port)
Display	5.7-inch TFT color LCD, touch panel VGA 640×480 pixels (alphanumeric characters, Chinese characters, Japanese letters, and others)
IEC Protection Class	IP54
Cable Length	Standard: 8 m, max.: 36 m (with optional extension cable)

*: External axis amplifiers for two axes can be built in for AR1440E.
Note: The controller features and specifications on this page are for the manipulators described in this catalog.

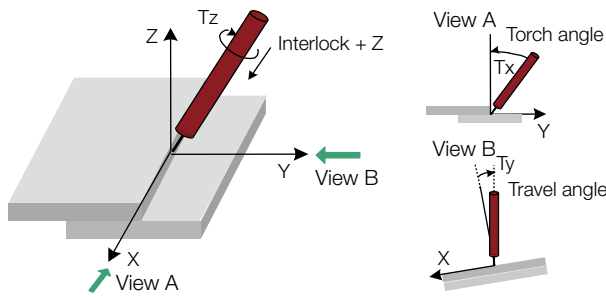
YRC1000's Optimized Functions for Arc Welding



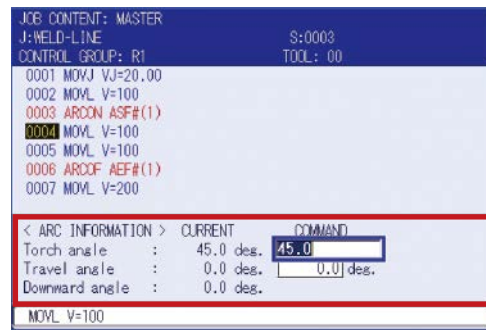
Simple settings to achieve accurate welding angles

Welding Line Coordinate System Jog Operation Function: Torch Angle Display

The YRC1000 allows jog operation in a direction based on the welding line (welding line coordinate system) during teaching. Also, the torch angle, which is important for welding quality, is displayed on the programming pendant. The manipulator can be moved by inputting the torch angle and travel angle in the ARC INFORMATION.



Angle display



Simple settings to adjust welding conditions

Welding Conditions Guide Function (Optional)

The YRC1000 allows the automatic calculation of welding conditions without having to actually weld. Firstly, this simplifies the setting of welding power source conditions. Secondly, you can set the calculation result to the welding start conditions file with one click of a button. Finally, the time taken to set welding conditions can be reduced.

Pressing "Calculate" calculates the current value and voltage value.

Pressing "Write" sets the calculated current value and voltage value to the welding start conditions file.

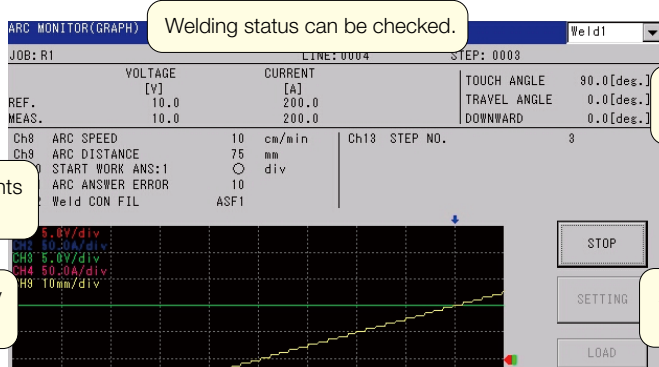
Parameter	Value	Range
V1: CURRENT	200	A(30~500)
V2: VOLTAGE	20.0	V(12.0~45.0)



Improve welding quality

Graphical arc monitor function (Optional)

You can check the welding conditions, job information, and robot motion information of the YRC1000, displayed on the programming pendant. You can also automatically back up welding-related data to an external memory device. This allows to check welding conditions, manage data, and investigate the cause of welding defects.



- You can monitor welding conditions and job information in wave or number form, and check the welding status.
- Measurement can be triggered by a signal or an arc interruption, and the cause of welding defects can be analyzed.
- You can manage data by automatically backing up welding conditions, job, signal, and register information to an external memory device.



Check welding conditions quickly

Check welding conditions and other information, and make changes for teaching, all on the same display.

With the YRC1000, you can check and correct welding conditions, as well as other information on just one display. Moreover, you can easily make changes to welding commands and robot motion information for multiple welding segments, using table format as shown below. You can also improve welding quality by checking in real-time, actual welding condition values while welding is in progress.

Weld Control Sheet Job: ARC_1 L : 0004 S : 0003										
Weld locations: 3										
Total welding length: 905 mm Total welding time: 372.2 s Predicted total welding length: 900 mm Total welding time: 372.2 s										
Welding line No.	Line No.	Welding conditions					Actual value			
		File No.	Current A	Voltage V	User file No.	Weld method No.	Speed cm/min	Current A	Voltage V	Weld length mm
1	004	1	150	100	1	17	30.0	152	9.5	202
	005	-	-	-	-	-	45.0	153	9.3	205
2	009	-	100	100	-	-	60.0	103	9.6	110
3	013	113	200	100	3	22	60.0	202	9.3	112
	015	114	150	90	4	17	60.0	148	9.1	135
	016	-	-	-	-	-	45.0	148	9.6	140

Check welding conditions and other information and make changes for teaching, on just one display.

Confirmation is possible only for welding segments.

Welding status can be confirmed simultaneously for the current robot execution step.

Welding Power Source and Welding Package



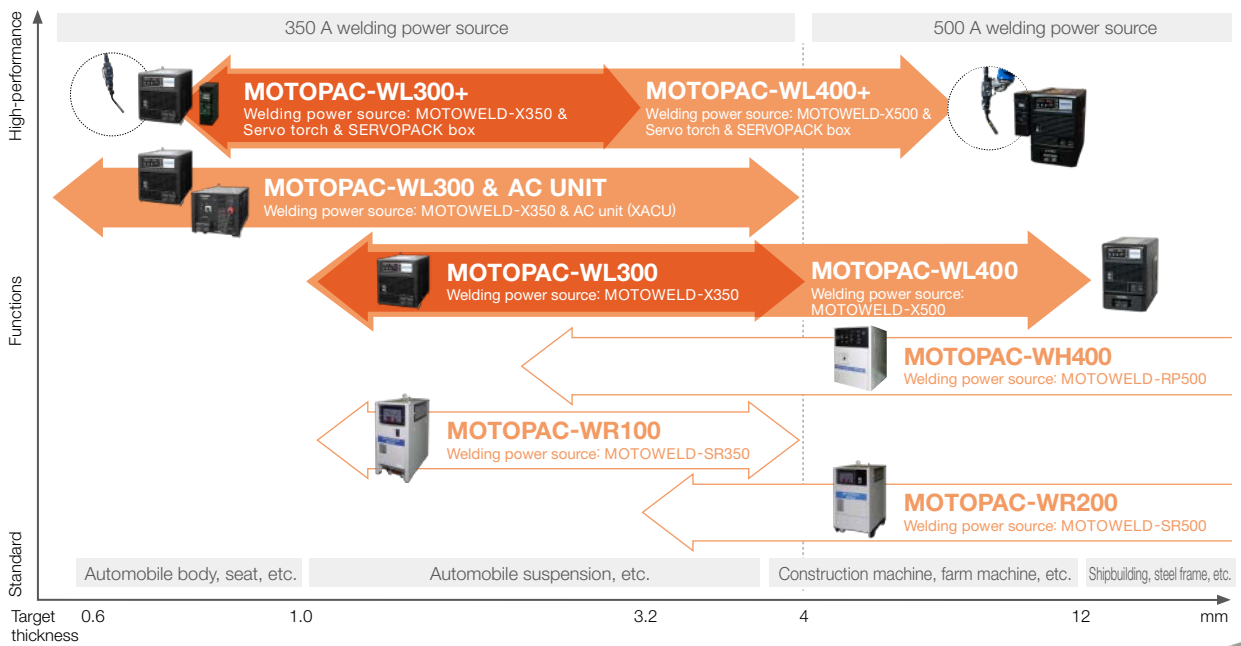
Easy Setup

A robotic system can be easily installed using the MOTOPAC, a welding package with an optimal combination of devices that are tailored to specific workpieces and welding methods. Yaskawa offers a full range of services to support your production site.

Achieve High-quality Welding

High-quality welding can be achieved by combining MOTOMAN robots with the latest digitally controlled welding power source (MOTOWELD). This enables optimum welding control for a wide variety of welding methods.

Lineup of Arc Welding Packages



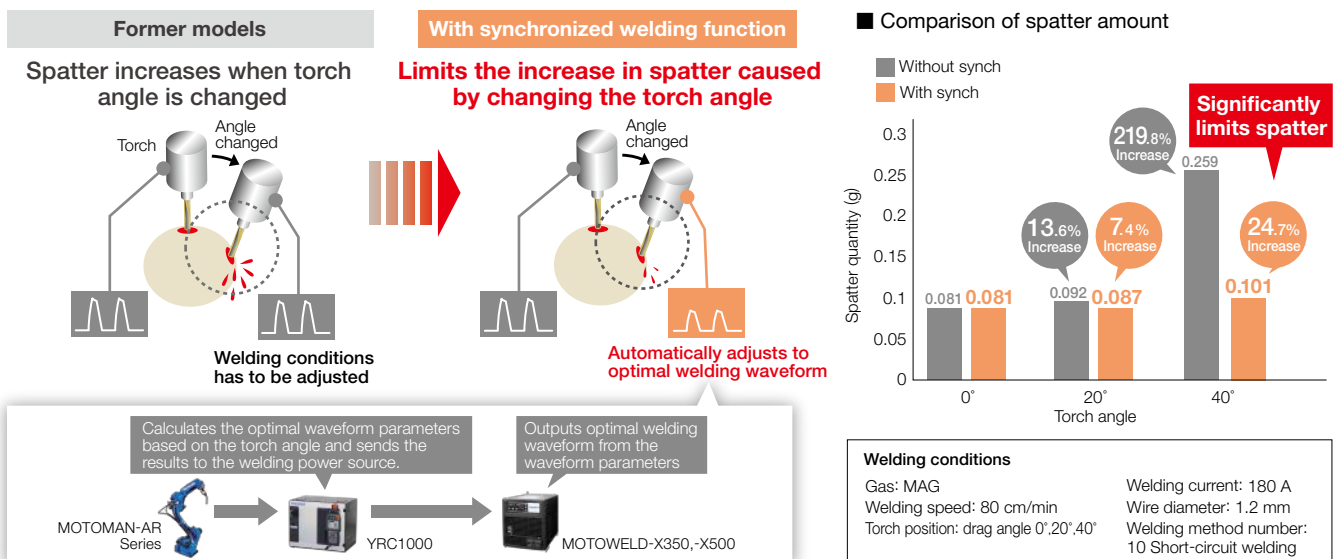
Welding power source MOTOWELD-X350, -X500



Synchronized Welding Function

Automatically limits the increase in spatter caused by changing the torch angle

The new synchronized welding function allows the welding power source to automatically adjust the welding waveform according to the torch angle. Improves welding quality and reduces time required to change welding conditions as spatter caused by changing the torch angle can be controlled.



Achieve lower spatter amount

Welding package for ultra-low spatter **MOTOPAC-WL300+, -WL400+**



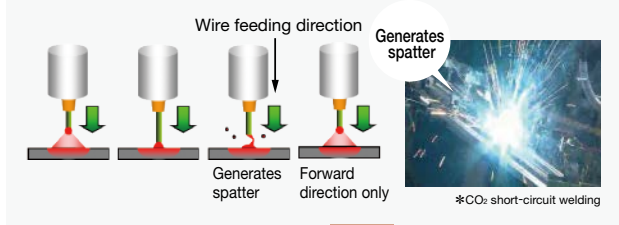
EAGL Method*

Significantly reduces spatter with forward and reverse control of welding wire

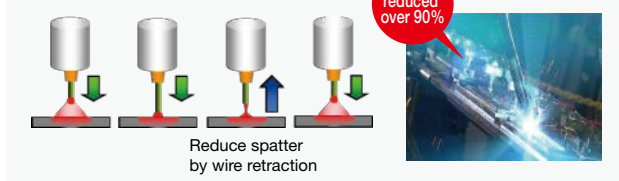
Spatter is usually caused at the time of short-circuit opening for conventional short-circuit welding. The EAGL Method* can limit spatter significantly by forcing a short circuiting transfer where the wire is fed forward and backward in sync with the welding waveform.

*EAGL Method: Enhanced Arc weldinG for Low spatter. This is a technology to reduce spatter greatly.

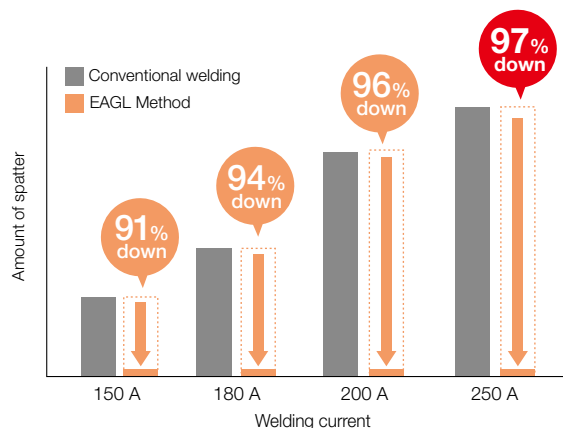
Conventional MIG, MAG, and CO₂ short-circuit welding



EAGL Method



Comparison of spatter amount (when using WL300+)



Welding conditions

Gas: CO₂
Welding speed: 80 cm/min
Torch position: perpendicular to panel
Welding current: 150 A, 180 A, 200 A, 250 A
Wire diameter: 1.2 mm

Achieve high-quality welding of thin sheets

AC welding package **MOTOPAC-WL300 & AC UNIT**

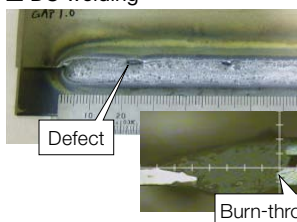


High-quality welding of thin sheets can be achieved by using the MOTOPAC-WL300 welding package (used with MOTOWELD-X350) in combination with the AC unit (XACU).

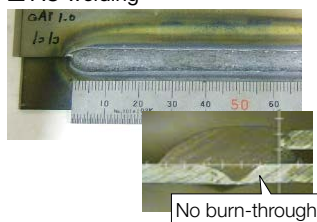
Feature 1 Faster welding and lower weld defect rates

AC welding increases welding volume and suppresses heat input, which improves welding quantity, increases welding speed, and reduces defect rates.

DC welding



AC welding



Stainless steel Sheet thickness: 1 mm Gap: 1 mm Speed: 100 cm/min

Feature 2 Better aluminum bead appearance

Smut reduced by 50% for aluminum welding to create smooth beads and ripples.

Suppressing smut



Creates smooth beads and ripples



Feature 3 Select the ideal device for your needs

When the workpiece you want to weld changes, or the adjustment of welding conditions becomes too difficult, you can attach the AC unit (XACU) to the MOTOWELD-X350. This removes the need to buy a new welding power source.

A Complete Lineup of Welding Packages

MOTOPAC-WL300



MOTOPAC-WL300+



MOTOPAC-WL300 & AC UNIT



MOTOPAC-WL400



Welding Power Source	MOTOWELD-X350	MOTOWELD-X350	MOTOWELD-X350	MOTOWELD-X500
Package Components	—	Servo torch SERVOPACK box	AC unit (XACU)	—
Feature	This package uses the MOTOWELD-X350 welding power source. The secondary switching circuit installed in the welding power source reduces spatter caused by short circuiting and enables high-quality welding.	This package uses the MOTOWELD-X350 welding power source that supports EAGL Method. The EAGL Method reduces spatter and enables high-quality welding. *: Cannot be used in combination with the AC unit (XACU).	This package uses the MOTOWELD-X350 welding power source and the AC unit (XACU). This combination of the existing welding method and AC welding can enhance the performance of the complicated welding process of thin sheets.	This package uses the MOTOWELD-X500 welding power source. The secondary switching circuit installed in the welding power source reduces spatter caused by short circuiting and enables high-quality welding. Operation rate of 100 % for continuous welding operation is available when 380 A.
Dimension Diagram		● X350 (with SERVOPACK box) 	● AC unit (XACU) 	
Specifications	For Japan and other Asian countries	← Refer to the specifications of MOTOPAC-WL300	← Refer to the specifications of MOTOPAC-WL300	For Japan and other Asian countries
Model	YWE-X350-CC0 (compliant with China Compulsory Certification)	←	←	YWE-X500-CC0 (compliant with China Compulsory Certification)
Rated Input Voltage	Three-phase 200 - 220 VAC ± 10% Three-phase 380 - 400 VAC ± 10% (Voltage selectable at the back terminal)	←	←	Three-phase 200 - 220 VAC ± 10% Three-phase 380 - 400 VAC ± 10% (Voltage selectable at the back terminal)
Rated Frequency	50/60 Hz	←	←	50/60 Hz
Rated Input	18 kVA / 15 kW	←	←	31 kVA / 26 kW
Rated Output Current	30 A to 350 A	←	←	30 A to 500 A
Rated Output Voltage	12 V to 36 V	←	←	12 V to 45 V
Rated Operation Rate	60% (for 10 minutes)	←	←	When 500 A: 60% (for 10 minutes) When 380 A: 100% (for 10 minutes)
Applicable Welding Method	Pulsed MAG welding Pulsed MIG welding Low spatter CO ₂ short-circuit welding Low spatter MAG short-circuit welding Low spatter MIG short-circuit welding	Pulsed MAG welding Pulsed MIG welding Ultra-low spatter CO ₂ short-circuit welding Ultra-low spatter MAG short-circuit welding Ultra-low spatter MIG short-circuit welding	AC Pulsed MAG welding AC Pulsed MIG welding AC CO ₂ short-circuit welding AC MAG short-circuit welding AC MIG short-circuit welding	Pulsed MAG welding Pulsed MIG welding Low spatter CO ₂ short-circuit welding Low spatter MAG short-circuit welding Low spatter MIG short-circuit welding
Applicable Wire Diameter	0.8 mm/0.9 mm/1.0 mm/1.2 mm	0.8 mm/0.9 mm/1.0 mm/1.2 mm	0.8 mm/0.9 mm/1.0 mm/1.2 mm	0.8 mm/0.9 mm/1.0 mm/1.2 mm
Applicable Welding Material*1	Iron, stainless steel, aluminum	Iron, stainless steel, aluminum	Iron, stainless steel, aluminum	Iron, stainless steel, aluminum
Dimensions*2	385 (W) × 653 (D) × 475 (H) mm	←	←	385 (W) × 647 (D) × 618 (H) mm
Approx. Mass	50 kg	←	←	68 kg

*1: When welding aluminum, the torch and torch cable set and conduit cables for aluminum welding must be used.
*2: Does not include projecting parts such as eyebolts or screws.

MOTOPAC-WL400+



MOTOPAC-WH400



MOTOPAC-WR100



MOTOPAC-WR200



Welding Power Source	MOTOWELD-X500	MOTOWELD-RP500	MOTOWELD-SR350	MOTOWELD-SR500
Package Components	Servo torch SERVOPACK box	-	-	-
Feature	This package uses the MOTOWELD-X500 welding power source that supports EAGL Method. The EAGL Method reduces spatter and enables high-quality welding.	This package uses the MOTOWELD-RP500 welding power source. The operation rate of 100% enables prolonged continuous welding operation. *: A water-cooled torch is required for continuous welding operations with a high operation rate.	This package uses the MOTOWELD-SR350 welding power source.	This package uses the MOTOWELD-SR500 welding power source. Use this package when the required current and operation rate cannot be obtained with a 350 A welding power source.
Dimension Diagram				
Specifications	← Refer to the specifications of MOTOPAC-WL400	For Japan and other Asian countries	For Japan and other Asian countries	For Japan and other Asian countries
Model	←	YWE-RP500-AJ0 (not compliant with China Compulsory Certification) YWE-RP500-CC0 (compliant with China Compulsory Certification)	YWE-SR350-AJ0 (not compliant with China Compulsory Certification) YWE-SR350-AJ0-CCC (compliant with China Compulsory Certification)	YWE-SR500-AJ0 (not compliant with China Compulsory Certification) YWE-SR500-CC0 (compliant with China Compulsory Certification)
Rated Input Voltage	←	Three-phase 200 - 220 VAC ± 10% Three-phase 380 - 415 VAC ± 10%	Three-phase 200 - 220 VAC ± 10% Three-phase 380 - 415 VAC ± 10%	Three-phase 200 - 220 VAC ± 10% Three-phase 380 - 415 VAC ± 10%
Rated Frequency	←	50/60 Hz	50/60 Hz	50/60 Hz
Rated Input	←	27 kVA / 24.3 kW	20 kVA / 15 kW	29 kVA / 26 kW
Rated Output Current	←	30 A to 500 A	30 A to 350 A	30 A to 500 A
Rated Output Voltage	←	12 V to 45 V	12 V to 36 V	12 V to 45 V
Rated Operation Rate	←	100% (for 10 minutes)	60% (for 10 minutes)	80% (for 10 minutes)
Applicable Welding Method	Pulsed MAG welding Pulsed MIG welding Ultra-low spatter CO ₂ short-circuit welding Ultra-low spatter MAG short-circuit welding Ultra-low spatter MIG short-circuit welding	Pulsed MAG welding Pulsed MIG welding CO ₂ short-circuit welding MAG short-circuit welding MIG short-circuit welding	Pulsed MAG welding Pulsed MIG welding CO ₂ short-circuit welding MAG short-circuit welding MIG short-circuit welding	Pulsed MAG welding Pulsed MIG welding CO ₂ short-circuit welding MAG short-circuit welding MIG short-circuit welding
Applicable Wire Diameter	0.8 mm/0.9 mm/1.0 mm/1.2 mm	0.8 mm/0.9 mm/1.0 mm 1.2 mm/1.4 mm/1.6 mm	0.8 mm/0.9 mm/1.0 mm/1.2 mm	1.0 mm/1.2 mm/1.4 mm/1.6 mm
Applicable Welding Material*1	Iron, stainless steel, aluminum	Iron, stainless steel, aluminum	Iron only	Iron only
Dimensions*2	←	370 (W) × 825 (D) × 600 (H) mm	250 (W) × 450 (D) × 630 (H) mm	350 (W) × 500 (D) × 680 (H) mm
Approx. Mass	←	75 kg	45 kg	60 kg

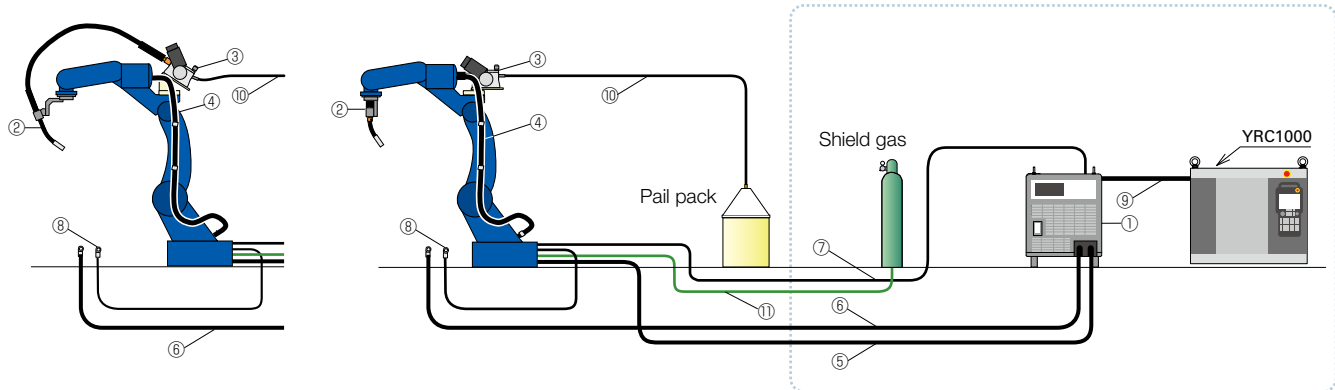
*1: When welding aluminum, the torch and torch cable set and conduit cables for aluminum welding must be used.
*2: Does not include projecting parts such as eyebolts or screws.

MOTOPAC Package Components

MOTOPAC Standard Package Components

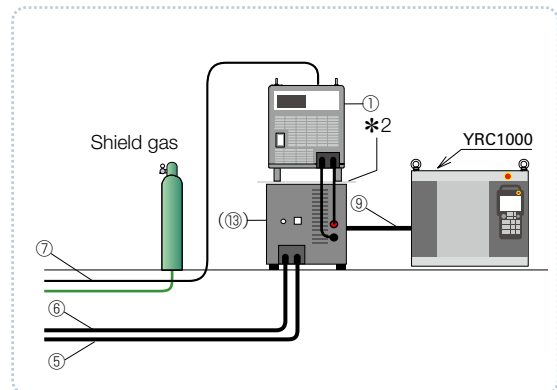
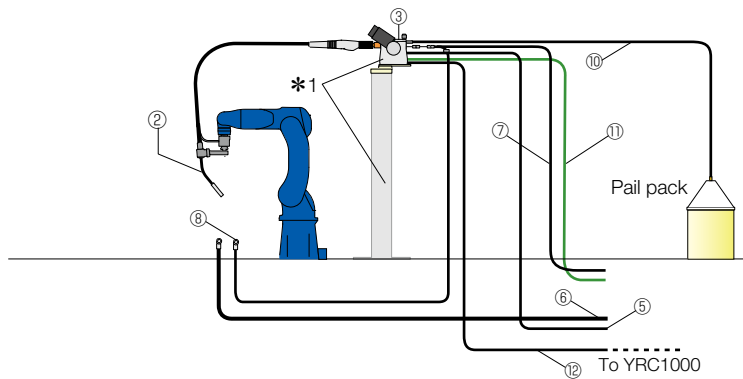
Note: Contact your Yaskawa representative for details on the package components for AR1440E.

- For MOTOMAN-AR1440, -AR1730, -AR2010 with externally mounted torch cable
- For MOTOMAN-AR1440, -AR1730, -AR2010 with internally mounted torch cable



- For MOTOMAN-AR700, -AR900

- When using AC unit



List of MOTOPAC Standard Package Components

No	Package Components	350-A Class	500-A Class
①	Welding Power Source (MOTOWELD)	Select from X350 or SR350	Select from X500, RP500, or SR500
②	Torch Set	Internally mounted: YMSA-300R/YMSA-308R Externally mounted: SRCT-308R Externally mounted (For AR700 and AR900): TK-308RR	Internally mounted: YMSA-500R/YMSA-508R Externally mounted: SRCT-508R Externally mounted (For AR700 and AR900): TK-508RR
③	Wire Feeder Set*1	YWE-WFR42DX2	
④	Installation Parts for S-axis	60 sq power cable	80 sq power cable
⑤	Positive (+) Power Cable	5 m (60 sq)	5 m (80 sq)
⑥	Negative (-) Power Cable	5 m (60 sq)	5 m (80 sq)
⑦	Cable for Wire Feeder Control	5 m	
⑧	Negative (-) Cable for Voltage Detection	5 m (This cable is not included when using MOTOWELD-SR350 or -SR500)	
⑨	Welding I/F Cable	5 m (LAN cable: X350, X500, RP500)/ 4 m (Analog cable: SR350, SR500)	
⑩	Conduit Cable	3 m (N35)	
⑪	Gas Hose	10 m (SLD hose)	
⑫	Shock Sensor Cable	10 m (used only when AR700 or AR900 is selected)	
⑬	AC Unit (Optional)*2	XACU (For X350)	

*1: The wire feeder cannot be placed on the manipulator when using the AR700 or AR900. Users must prepare a stand for the wire feeder.

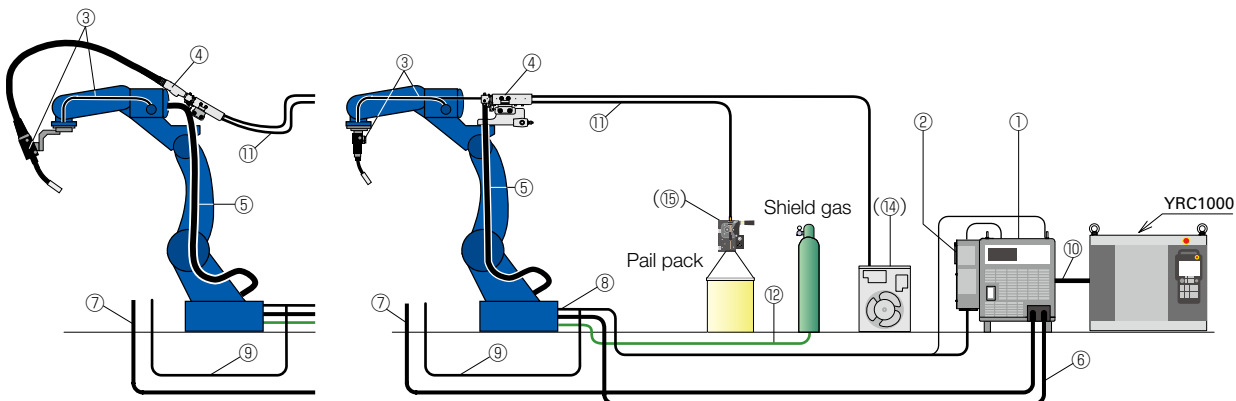
*2: An optional joint component should be used when stacking the AC unit and the X350.

Note: The above list shows the standard package components. Refer to page 20 and 21 for detailed specifications that can be changed, such as types of torches and cable length.

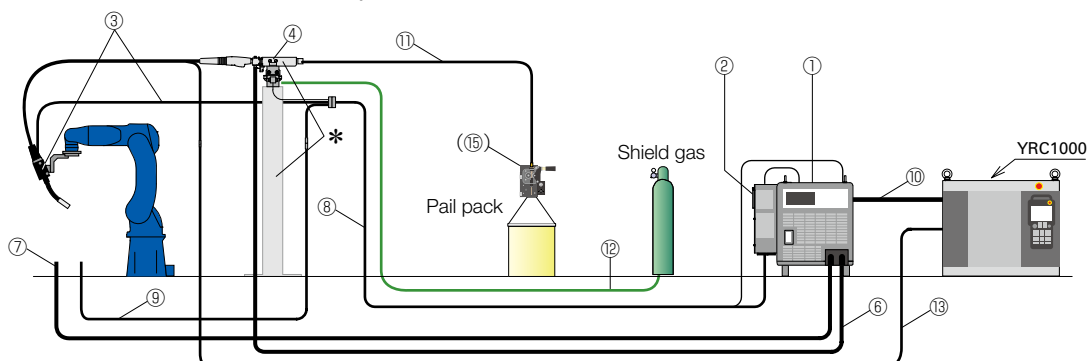
Package Components for MOTOPAC-WL300+, -WL400+

Note: Contact your Yaskawa representative for details on the package components for AR1440E.

- For MOTOMAN-AR1440, -AR1730, -AR2010 with externally mounted torch cable
- For MOTOMAN-AR1440, -AR1730, -AR2010 with internally mounted torch cable



- For MOTOMAN-AR700, -AR900 (Can be used only with WL300+)



List of MOTOPAC Standard Package Components

No	Package Components	Package WL300+	WL400+	WL300AL+ (Aluminum)
①	Welding Power Source (MOTOWELD)	X350	X500	X350
②	SERVOPACK Box	Installation on the side of the welding power source or standalone installation		
③	Servo Torch Set	Air-cooled Torch	Internally or externally mounted: WFE2WD-TSS300R /WFE2WD-TSS308R	Internally or externally mounted: WFE2WD-TSS500R /WFE2WD-TSS508R
		Water-cooled Torch		Internally or externally mounted: WFE2WD-TSS500W /WFE2WD-TSS508W
④	Shoulder Unit*	With gas valve	With gas valve and forced air-cooled valve	With gas valve and resin guide specification
⑤	Installation Parts for S-axis	60 sq power cable	80 sq power cable	60 sq power cable
⑥	Positive (+) Power Cable	5 m (60 sq)	5 m (80 sq)	5 m (60 sq)
⑦	Negative (-) Power Cable	5 m (60 sq)	5 m (80 sq)	5 m (60 sq)
⑧	Cable for Wire Feeder Control	5 m		
⑨	Negative (-) Cable for Voltage Detection	5 m		
⑩	Welding I/F Cable	5 m (LAN cable)		
⑪	Conduit Cable	3 m (Smart-Glide)		3 m (Teflon)
⑫	Gas Hose	10 m (SLD hose)		10 m (SUPER DRYTUBE)
⑬	Shock Sensor Cable	10 m (used only when AR700 or AR900 is selected)		
⑭	Water Circulator (Optional)		WR100 (used only when water-cooled torch is selected)	
⑮	Wire Feed Assist (Optional)	YWE-WAF-AE0		

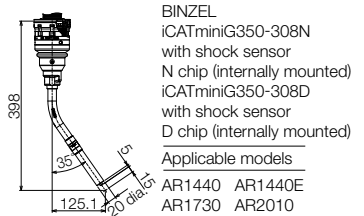
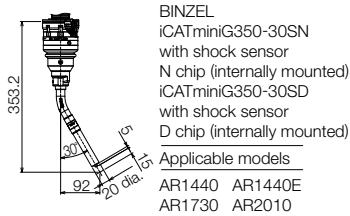
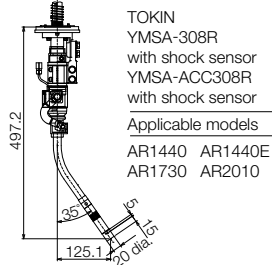
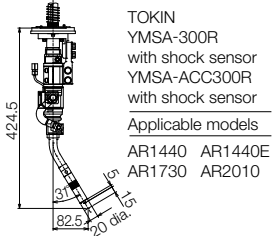
*: The shoulder unit cannot be placed on the manipulator when using the AR700 or AR900. Users must prepare a stand for the shoulder unit.

Note: The above list shows the standard package components. Refer to page 20 and 21 for detailed specifications that can be changed, such as types of torches and cable length.

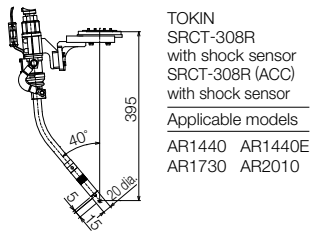
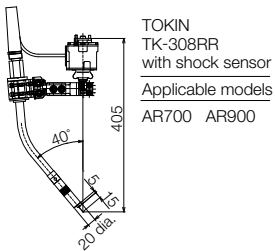
MOTOPAC Components and Devices

Standard Package

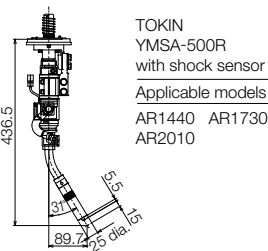
Internally Mounted Torch Cable for 350 A



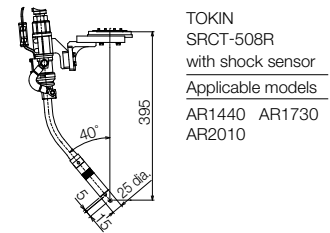
Externally Mounted Torch Cable for 350 A



Internally Mounted Torch Cable for 500 A

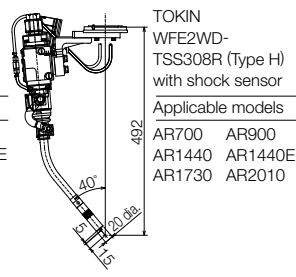
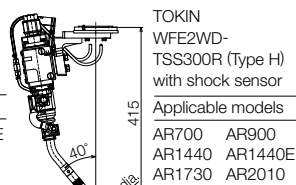
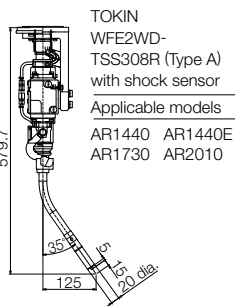
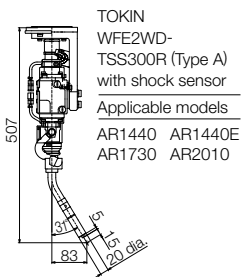


Externally Mounted Torch Cable for 500 A



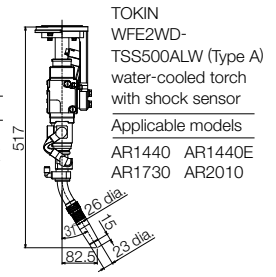
WL300+ Package

Internally Mounted Torch Cable for 350 A



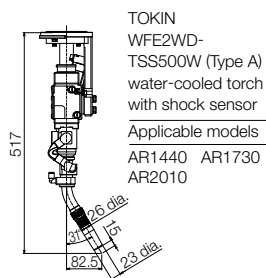
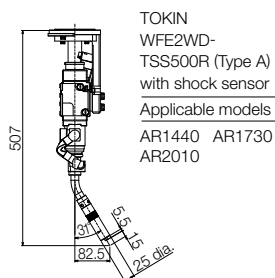
WL300AL+(Aluminum) Package

Internally Mounted Torch Cable for 350 A

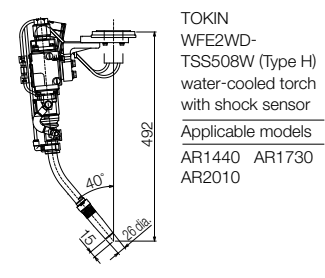
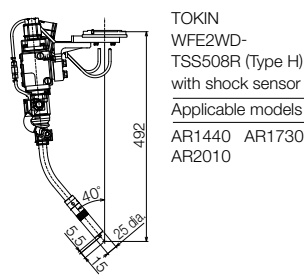


WL400+ Package

Internally Mounted Torch Cable for 500 A










Externally Mounted Torch Cable for 500 A



Note: Contact your Yaskawa representative for details on other torches.

<p>Power Cable</p> 	<p>This cable can be used as a positive (+) power cable (between a manipulator and a welding power source) as well as a negative (-) power cable (between a welding power source and a welding jig). Different lengths of cable can be ordered as needed, depending on the installation layout of the devices. This positive (+) power cable must be the same length as the wire feeder control cable.</p> <p>[Selectable specifications] Material: WCT or E-WCT Thickness: 60 sq, 80 sq, or 100 sq Length: 5 m (standard), 10 m, 15 m, or 20 m Note: Cables are also available in 1-m increments.</p>	<p>Wire Feeder Control Cable</p>  <p>This signal cable connects a manipulator with a welding power source and controls the wire feeder. Different lengths of cable can be ordered as needed, depending on the installation layout of the devices. If you change the length of this cable, the length of the positive (+) power cable must also be changed.</p> <p>[Selectable specifications] Without an encoder signal conversion unit: 5 m (standard), 7 m, or 10 m With an encoder signal conversion unit: 10 m, 15 m, or 20 m</p>
<p>Negative (-) Cable for Voltage Detection</p> 	<p>This cable connects a manipulator with a welding jig and detects welding voltage. Different lengths of cable can be ordered as needed, depending on the installation layout of the devices. If you change the length of this cable, the length of the negative (-) power cable must also be changed.</p> <p>[Selectable specifications] Length: 5 m (standard), 10m, 15 m, or 20 m</p>	<p>Welding I/F Cable (LAN Cable)</p>  <p>This signal cable connects a robot controller with a welding power source and controls the welding power source. This cable is used with the MOTOWELD-X350 or -X500, or MOTOWELD-RP500 with digital controls.</p> <p>[Selectable specifications] Length: 5 m (standard), 10 m, 15 m, or 20 m</p>
<p>Welding I/F Cable (Analog Cable)</p> 	<p>This signal cable connects a robot controller with a welding power source and controls the welding power source. This cable is used with the MOTOWELD-SR350 or -SR500, or MOTOWELD-RP500 with analog controls.</p> <p>[Selectable specifications] Length: 4 m (standard), 5 m, 10 m, 15 m, or 20 m Note: The YWE-AIF-001 must be ordered separately when using the RP500 with analog controls.</p>	<p>Conduit Cable</p>  <p>This cable connects a manipulator with a pail pack and feeds welding wire.</p> <p>[Selectable specifications] [from TOKIN CORPORATION] Length: · N35 [3 m (standard), 5 m, or 10 m] · N55 [3 m, 5 m, 10 m, or 15 m] · Simplified type [3 m, 5 m, 10 m, 15 m, or 20 m] · Smart-Glide [3 m, 4 m, or 5 m] · Teflon [2 m, 3 m, 4 m, 5 m, or 6 m]</p> <p>N35</p>
<p>Gas Hose</p> 	<p>This hose connects a manipulator and a gas cylinder.</p> <p>[Selectable specifications] · For steel and stainless: SLD hose [10 m (standard), 20 m, or 30 m] · For aluminum: SUPER DRYTUBE [5 m, 10 m (standard), 20 m, or 30 m]</p>	

Optional Devices

<p>Wire Feed Assist</p> 	<p>This device is attached to the upper side of the pail pack and assists the wire feeder during the welding process. This device minimizes welding defects caused by problems with feedability and extends the feeding distance.</p> <p>Single-phase 200-VAC type (YWE-WAF-AE0) [from YASKAWA] [Conduit cable specifications] · For steel and stainless: Simplified type [5 m to 20 m] · For 4000 series aluminum alloy: Teflon [2 m to 6 m] · For 5000 series aluminum alloy: Teflon [3 m to 6 m]</p>	<p>Feeder Roller</p>  <p>This is a set of optional rollers for the wire feeder (YWE-WFR42DX2). Be sure to order the correct size rollers for your wires. (A set of rollers for 1.2-mm dia. and 1.0-mm dia. wires is installed in the wire feeders when shipped.)</p> <p>[Selectable specifications] [from TOKIN CORPORATION] Supported wire diameter: 0.8 mm dia., 0.9 mm dia., 1.4 mm dia., or 1.6 mm dia. Note: Offered in a set of two (for one feeder).</p>
<p>Air Valve Unit</p> 	<p>This valve unit is used to supply air to a welding torch with a wire clamp.</p> <p>[Selectable specifications] Signal cable length: 10 m or 20 m</p>	<p>Gas Regulator</p>  <p>This gas regulator controls the pressure of shield gas contained in the gas cylinder that can be used for both CO₂ and MAG welding. When using it for CO₂, an antifreeze heater can be used by connecting the heater to a 100-VAC power source.</p>
<p>Water Circulator</p> 	<p>This is a water circulation device for water-cooled torches. A single-phase 200 VAC must be used for this device.</p> <p>[Selectable specifications] WR100 [from TOKIN CORPORATION] Water hose length: 10 m, 15 m, or 20 m</p>	<p>Cable Stands and Reel Units</p> <p>■ Cable Stands</p>  <p>■ Reel Units</p> <p>[Selectable specifications] ① Mounted on cable stand [from YASKAWA] ② Mounted on floor [from TOKIN CORPORATION]</p> 

Welding Positioner

MOTOPOS is a welding positioner that is exclusive for MOTOMAN robots. It supports high-quality welding by securing optimal welding postures.

Wide Variety of Products

Our product lineup features one-axis positioners and two-axis positioners with a wide range of payloads, as well as turntables. We can recommend optimal positioners for each customer's system, depending on the type of application.

High Precision

A robot controller can conduct highly accurate and coordinated operations with the use of a control system that has been specially designed for MOTOMAN robots and MOTOPOS.

Coordinated welding with MOTOPAC-W series* arc welding package and MOTOPOS

The robot and MOTOPOS weld in coordination at a constant speed, allowing the workpiece and the torch to keep the best posture at all times. This reduces partial penetration and distortion, and greatly improves welding quality.



*: The MOTOPAC-W series is a welding package that includes a robot, a welding power source, and a torch.

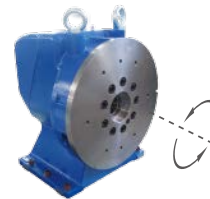
MOTOPOS Lineup

We have an extensive lineup, including models with a payload of 250 kg to 5000 kg and models with one or two axes. Choose an optimum turntable and positioner for your production line to improve welding quality and efficiency.

One-axis positioner

MOTOPOS-S series

- ▶ One-axis (rotation) cantilever type positioner
- ▶ Payload: 500 kg, 1000 kg



Two-axis positioner

MOTOPOS-D series

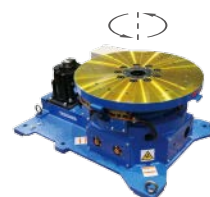
- ▶ Two-axis (rotation, tilt) positioner
- ▶ Payload: 250 kg to 700 kg



One-axis turntable

MOTOPOS-T series

- ▶ One-axis turntable for heavy loads
- ▶ Can combine to form a unit with several 1/2-axis positioners and a turntable
- ▶ Payload: 2000 kg, 5000 kg



MOTOPOS Series Specifications

Note: Refer to the MOTOPOS Series catalog (KAE-C945-431) or individual dimension diagrams for dimensions of the following models.

One-axis Positioners ■ Payload 500/1000 kg

Model	MOTOPOS-S500F	MOTOPOS-S500E	MOTOPOS-S1000F
Type	YR-MPS500F-A00	YR-MPS500E-A00	YR-MPS1000F-A00
Controlled Axis	1 degree of freedom	1 degree of freedom	1 degree of freedom
Payload	500 kg	500 kg	1000 kg
Repeatability	0.05 mm (R=250 mm)	0.1 mm (R=250 mm)	0.05 mm (R=250 mm)
Range of Motion	-200° - +200°*2	-370° - +370°*2	-200° - +200°*2
Maximum Speed	3.32 rad/s (190°/s)	4.71 rad/s (270°/s)	2.62 rad/s (150°/s)
Allowable Moment	509.6 N·m	509.6 N·m	2450 N·m
Allowable Inertia (GD ² /4)	35 kg·m ²	35 kg·m ²	200 kg·m ²
Equipment	Communications	Not-equipped (Can be added as options.)	Not-equipped (Can be added as options.)
	Air	Not-equipped (Can be added as options.)	Not-equipped (Can be added as options.)
Mass	150 kg	150 kg	255 kg
Power Requirements*1	0.3 kVA	0.5 kVA	0.8 kVA

Two-axis Positioners ■ Payload 250/500/700 kg

Model	MOTOPOS-D250F	MOTOPOS-D500F	MOTOPOS-D700F
Type	YR-MPD250F-A00	YR-MPD500F-A00	YR-MPD700F-A00
Controlled Axis	2 degrees of freedom	2 degrees of freedom	2 degrees of freedom
Payload	250 kg	500 kg	700 kg
Repeatability	0.08 mm (R=250 mm)	0.08 mm (R=250 mm)	0.08 mm (R=250 mm)
Tilting Axis	Range of Motion	-135° - +135°	-110° - +110°
	Maximum Speed	3.14 rad/s (180°/s)	2.27 rad/s (130°/s)
	Allowable Moment	539 N·m	1274 N·m
Rotary Axis	Range of Motion	-200° - +200°*2	-200° - +200°*2
	Maximum Speed	3.32 rad/s (190°/s)	3.32 rad/s (190°/s)
	Allowable Moment	196 N·m	509.6 N·m
Equipment	Communications	Not-equipped (Can be added as options.)	Not-equipped (Can be added as options.)
	Air	Not-equipped (Can be added as options.)	Not-equipped (Can be added as options.)
Mass	265 kg	280 kg	345 kg
Power Requirements*1	0.4 kVA	0.6 kVA	1.1 kVA

One-axis Turntable ■ Payload 2000/5000 kg

Model	MOTOPOS-T2000F	MOTOPOS-T2000E	MOTOPOS-T5000F
Type	YR-MPT2000F-A00	YR-MPT2000E-A00	YR-MPT5000F-A00
Controlled Axis	1 degree of freedom	1 degree of freedom	1 degree of freedom
Payload	2000 kg	2000 kg	5000 kg
Repeatability	0.2 mm (R=1000 mm)	0.3 mm (R=1000 mm)	0.2 mm (R=1000 mm)
Range of Motion	0° - +270°	0° - +360°	0° - +270°
Maximum Speed	1.75 rad/s (100°/s)	2.82 rad/s (162°/s)	1.4 rad/s (80°/s)
Allowable Moment	6125 N·m	29106 N·m	7350 N·m
Allowable Inertia (GD ² /4)	2250 kg·m ²	650 kg·m ²	4500 kg·m ²
Equipment	Communications	Not-equipped (Can be added as options.)	Not-equipped (Can be added as options.)
	Air	Not-equipped (Can be added as options.)	Not-equipped (Can be added as options.)
Mass	335 kg	850 kg	770 kg
Power Requirements*1	0.8 kVA	1.2 kVA	0.8 kVA
Mounting	Floor mount only	Floor mount only	Floor mount only

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

*2: Set before shipping and can be changed by users.
Endless rotation is available as a software option.

MOTOMAN-AR Series

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YASKAWA**YASKAWA ELECTRIC CORPORATION**

In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply. Specifications are subject to change without notice for ongoing product modifications and improvements.

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