

Continuously Evolving TAWERS!

The Arc Welding Robot System

TAWERS



TS series

Separate Type

Through-Arm Type

External Type

TM series

TL series

Torch type selectable to fit your application!

WGIII/WGHI

TM-1400WGIII

TM series



Separate Type

Superior wire feedability and reduced cable interference



Through-Arm Type

Focused on reducing cable interference



External Type

Focused on wire feedability

TM
1100
1400
1600
1800
2000

Space saving & high payload!

TS-950

WGIII/WGHI

TS series



External Type

Through-Arm Type

TS
800
950

Payload

8 kg

TS-800/950

Long-arm & high payload!

WGIII/WGHI

TL series



External Type

TL
1800
2000

Payload

TL-1800: **8 kg**

TL-2000: **6 kg**

Manipulator Lineup (as of January 2020)

	TS series		TM series					TL series	
	800	950	1100	1400	1600	1800	2000	1800	2000
Separate	—	—	○	○	○	○	○	—	—
Through-Arm	○	○	○	○	○	○	○	—	—
External	○	○	○	○	—	—	—	○	○
Payload	8 kg		6 kg		4 kg	6 kg		8 kg	6 kg

Rated Welding Output:

WGIII: 350 A @ 80 % duty cycle (CV). 350 A @ 60 % duty cycle (pulse).

WGHI: 450 A @ 100 % duty cycle (CV/pulse)

A variety of features specialized for arc welding

Feature 1 (TM/TL) Enhanced Basic Performance

Increased Motion Speed

TM-1400: Speed of main 3 axes increased by 22 % on average.
(approx. 42°/s more than TA type)

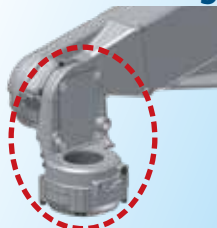
Extended Reach

TM-1400: 1 437 mm (63 mm more than TA type)

Feature 2 (TS/TM) Arm Specialized for Welding

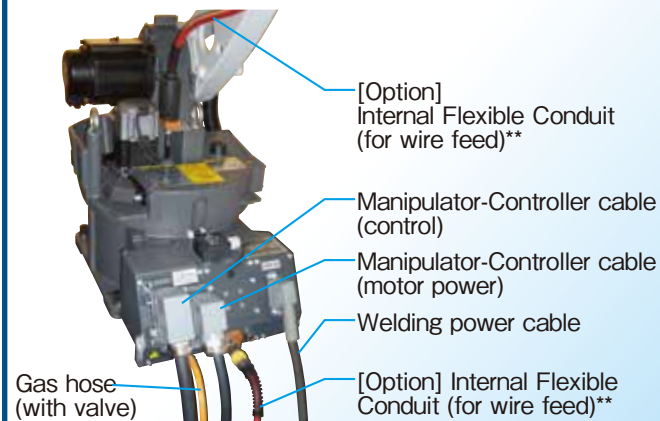
Cantilever Structure

makes arm compact and improves accessibility to workpieces.



Feature 3 (TM/TL) Structure Specialized for Welding

Clean Cable Management!



**For use with drum packing wire only.

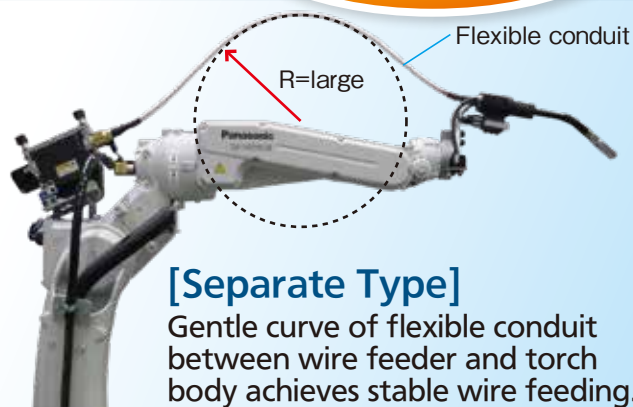
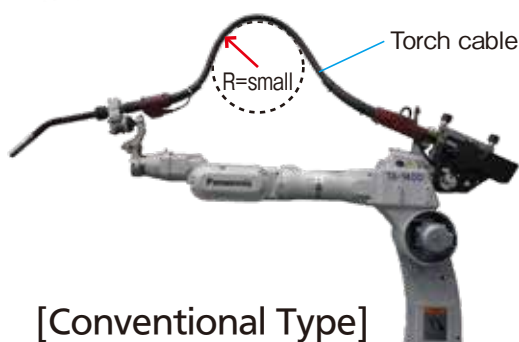
In addition to Through-Arm Type and External Type,

A third choice—Separate Type (TM series)

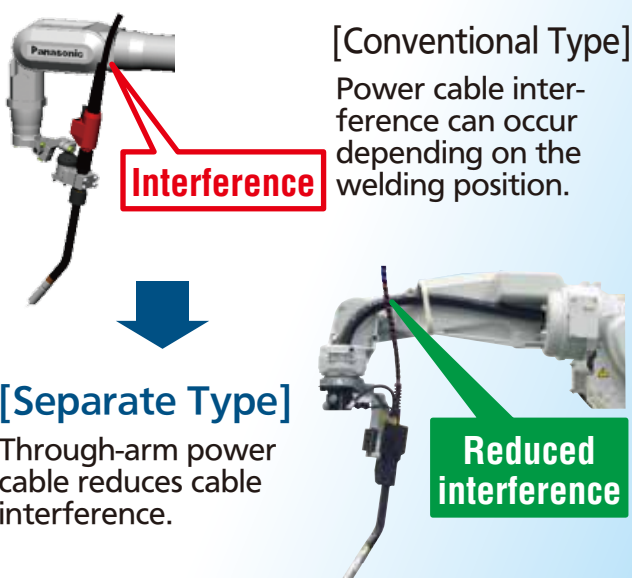
Revolutionary new type of arc welding robot with advantages of both Through-Arm Type and External Type.

High Wire Feedability
Less Cable Interference

Feature 1 External Flexible Conduit

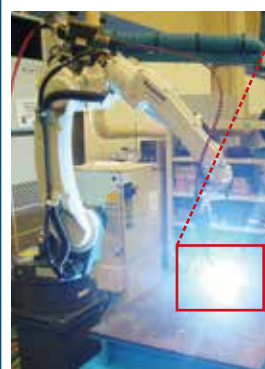


Feature 2 Through-Arm Power Cable



An example of circumferential welding

Suppresses twist of wire!



Reduces target position error at weld start and end points!

New type welding robot achieves even higher quality welds.

"Weld Navigation" allows easy parameter setting

Standard



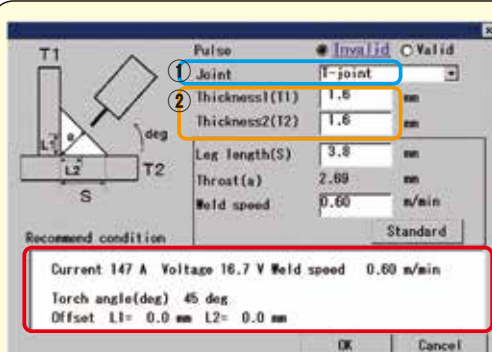
Easy setting with Teach Pendant



Note: Screens are subject to change without notice.

Rich welding parameter database developed through our long experience

"Weld Navigation" reduces parameter setting time.



Note: Torch angle and aiming point also calculated

Two Easy Steps:

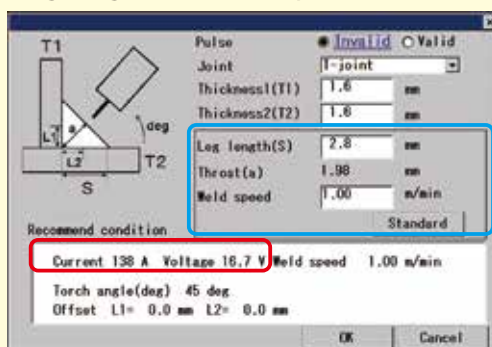
1. Select weld joint. The figure changes according to the joint.



2. Select plate thicknesses. That's all!

The right parameters automatically

Leg length and weld speed are also adjustable.



Weld Navigation recalculates weld current and voltage according to the changes.

Notes: •Parameters by Weld Navigation are guideline only and do not guarantee welding result.
•Consult us for material and processes available with Weld Navigation.

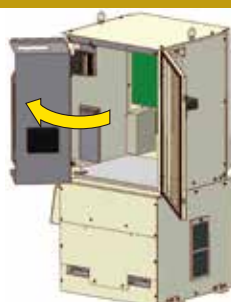
WGIII controller with high performance

- Compared to the conventional model, 6 times faster main CPU and 4 times more memory capacity reduce start-up time by 50 % to **about 30 seconds.**

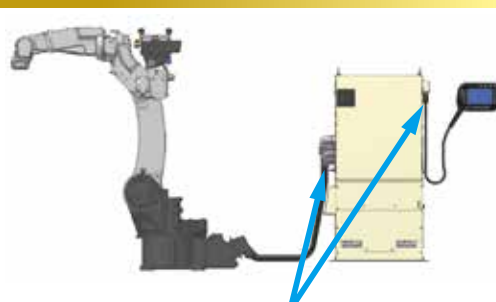


Improved maintainability

- Swivel rack in the case makes maintenance easy and saves space.
- Cables with connectors on both ends reduce Cable exchange time.



Swivel rack

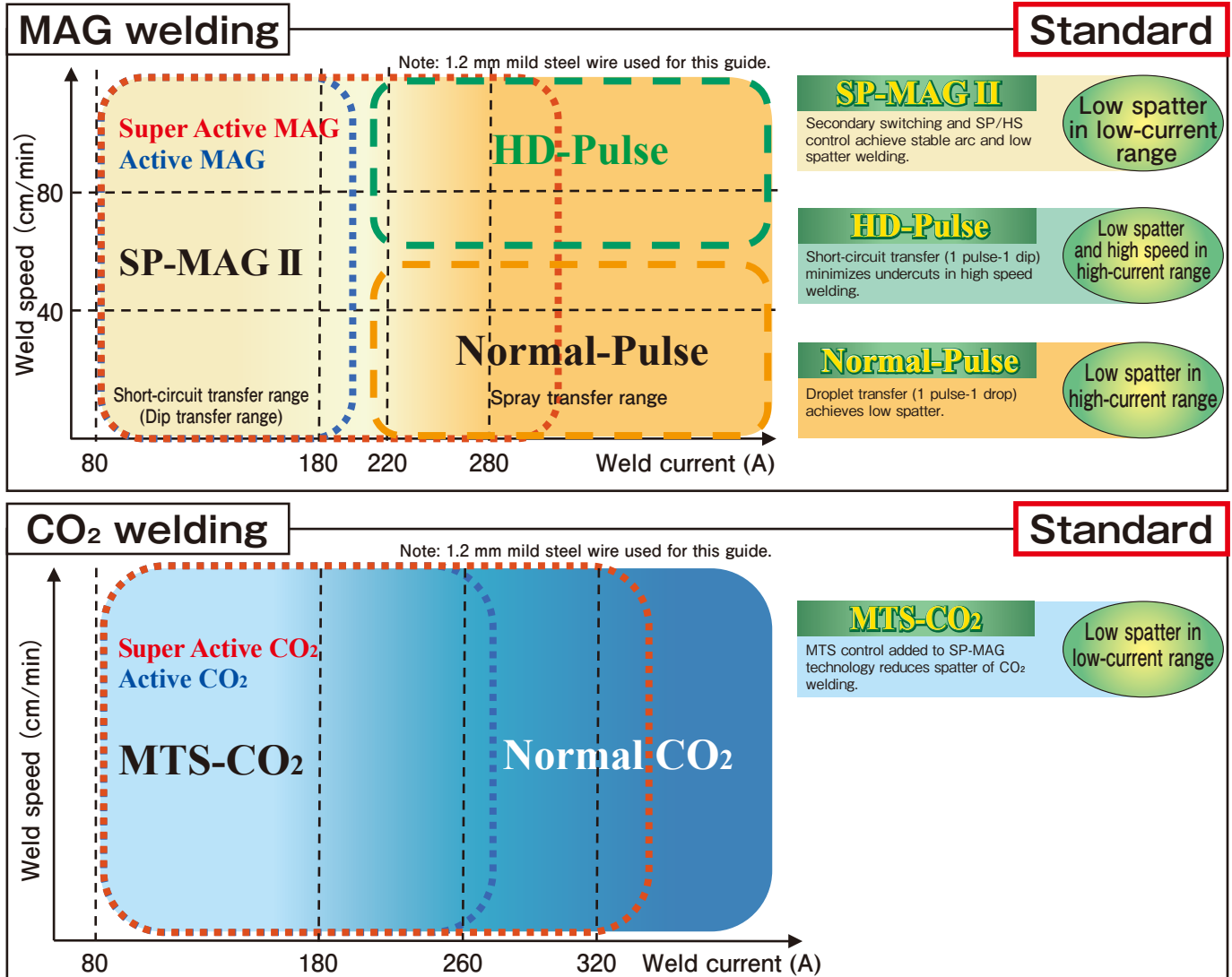


Cables with connectors on both ends

TAWERS Technology— Various Welding Processes

- **SP-MAGII** for short-circuit mixed gas welding on thin plates
- **HD-Pulse** for high-speed and low-spatter in high-current pulsed mixed gas welding
- **MTS-CO₂** for CO₂ welding

TAWERS Welding Process Guide



APPLICATION TYPE

Super Active TAWERS

Super Active Wire Feed Process

Achieves even lower spatter with high-precision control of wire feed speed.

Super Active MAG
Super Active CO₂



See the page of "Super Active TAWERS" for details.

TAWERS WGII/WGHI

TAWERS Technology— Various Welding Processes

- **SP-MAGII** for short-circuit mixed gas welding on thin plates
- **MTS-CO₂** for CO₂ welding

SP-MAG II

(Super-imposition Control)

Greatly reduces spatter in mixed gas (MAG) welding on thin plates

Welding waveform control achieves low spatter in short-circuit transfer range.

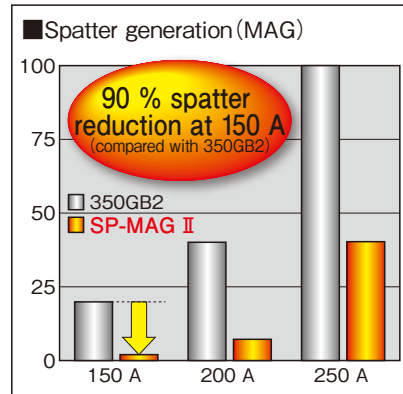
■ Spatter comparison (1 minute at 200 A)

Conventional welder (350GB2)

TAWERS (SP-MAG II)



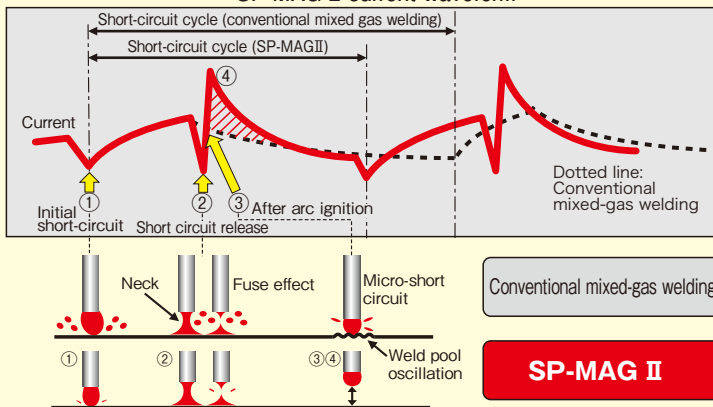
Spatter reduction



Recommended Panasonic wire YM-50MT used.



SP-MAG II current waveform



- ① **Initial short-circuit control**
Detects initial short-circuit and then the secondary switching* circuit reduces weld current rapidly to prevent micro-short circuit that causes spatter.
- ② **Neck control**
Detects a neck of the droplet and then the secondary switching* circuit reduces weld current rapidly to prevent fuse effect that causes spatter.
- ③ **HS control**
Suppresses weld pool oscillation and prevents micro-short circuit that causes spatter.
- ④ **SP control**
Superimposes the current immediately after a short-circuit release and allows for higher wire-melting speed. This makes the next short circuit smooth and also makes the short-circuit cycle shorter.

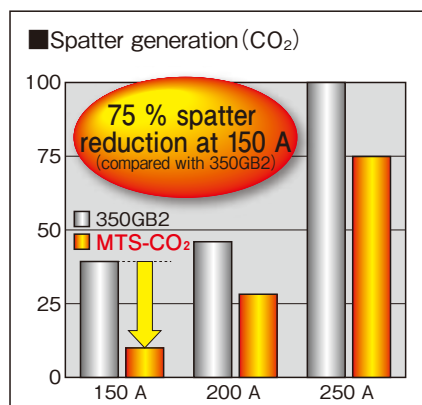
*Secondary switching is the spatter reduction process that rapidly reduces weld current immediately before and after short-circuit and allows for smooth transitions between arc and short circuit.

MTS-CO₂

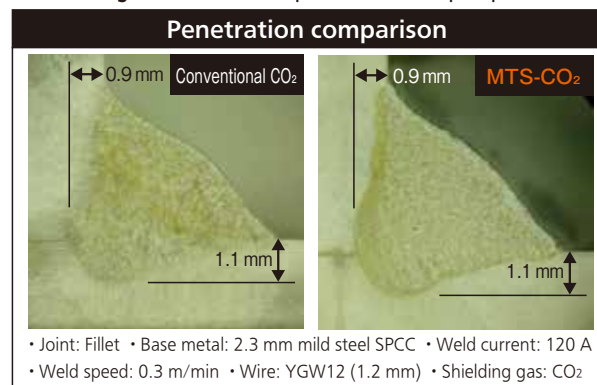
(Metal Transfer Stabilization Control)

Reduces spatter by up to 75 % using inexpensive CO₂ gas

MTS control added to SP-MAG technology reduces spatter of CO₂ welding.



CO₂ welding delivers uniform pan-bottom shaped penetration.



Conventional CO₂ process (350GB2)



MTS-CO₂



- Normal pulse for ultra-low spatter welding
- HD-Pulse for high-speed and low-spatter welding

HD-Pulse

(Hyper Dip-Pulse Control)

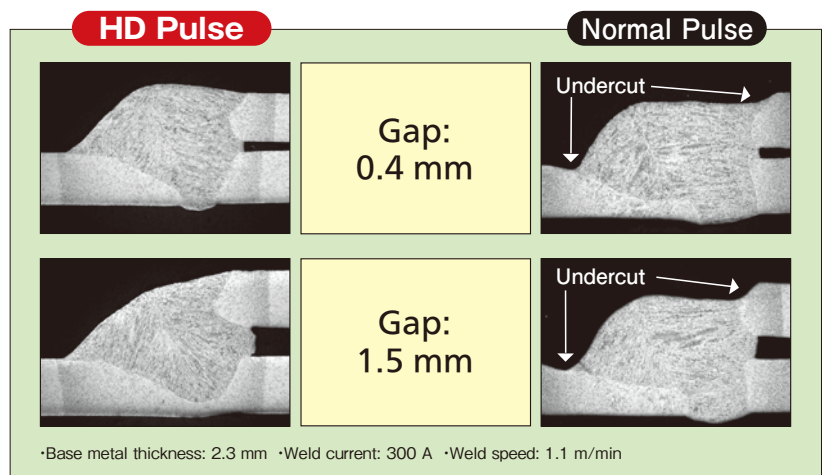
Achieves high-speed pulsed welding

Short and narrow arc prevents undercuts during high-speed welding.

■ HD-Pulse advantages:

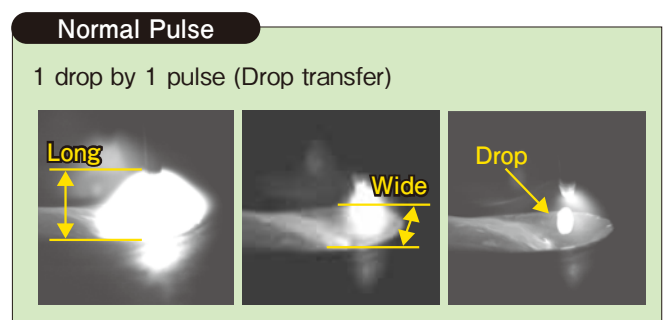
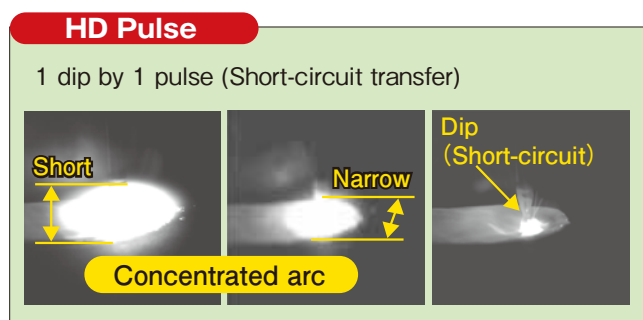
- Preventing undercuts during high speed welding.
- Dip (Short circuit) transfer enabling lower heat input with better gap handling capability.
- Precisely controlled dip timing reducing spatter.

■ High speed welding



Preventing undercuts with ideal penetration!

■ Type of the droplet transfer



■ Spray transfer range: 280 A or more

Weld process	SP-MAG II	Normal-Pulse	HD-Pulse
Weld speed	good	good	excellent
Spatter	good-fair	excellent	good
Penetration pattern	fair	good-fair	excellent
Undercut	fair	fair	excellent
Heat input	fair	fair	good
Gap handling	fair	fair	good
Overall	fair	fair	excellent

- SP-MAG II disadvantage:
Spatter in high-current range.
- Normal-pulse disadvantage:
Undercuts in high-speed welding.

**HD-Pulse process is ideal for
high-current and high-speed welding.**

TAWERS WGII/WGHI

Standard Features

External Communication (Ethernet)

Production and Quality Control on LAN

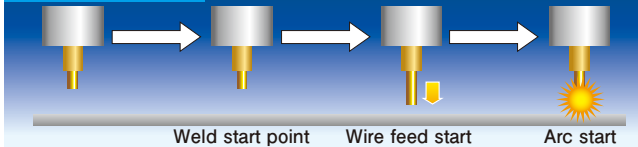
The LAN connection allows you to share welding data with other robots and improve production and quality control.



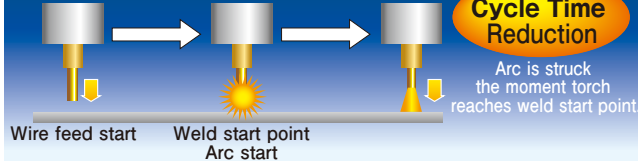
Flying Start

Executes arc-on/off programs a little before the torch reaches the weld start/end point to reduce cycle times.

Standard Arc Start

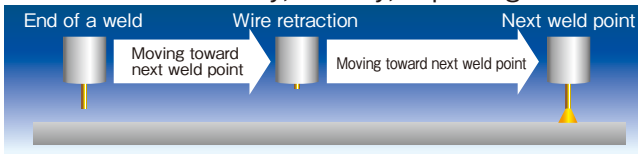


Flying Start



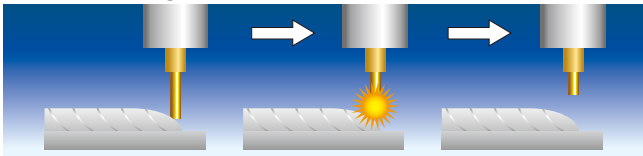
Wire Auto Retract

As the robot moves to weld start points, the wire is retracted automatically; thereby, improving arc start.



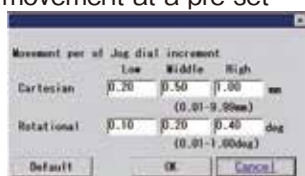
Wire Stick Auto Release (for CO₂/MAG)

Automatically detects a wire stuck at the end of a weld and re-ignites the arc to release the wire.



Pitch Movement ("Jog settings")

This function enables robot movement at a pre-set distance by every click of the jog dial. This is useful when working in narrow, constricted spaces or in fine-tuning robot position.

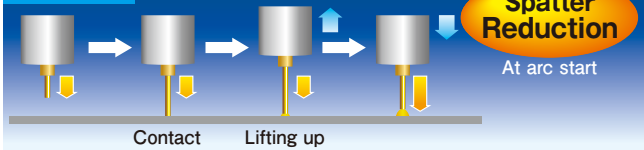


Lift Start / Lift End

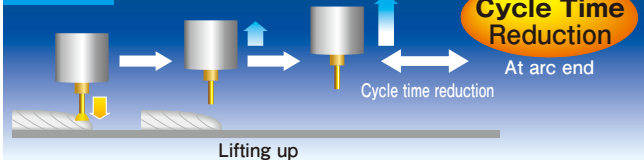
Quality Weld Starts and Ends. Spatter and Cycle Time Reduction.

The robot lifts up the welding torch quickly at the start and end of the weld. By coordinating the robot motion with the welding waveform and wire feed control, quality and cycle time are improved. (Much quicker than wire retraction.)

Lift Start

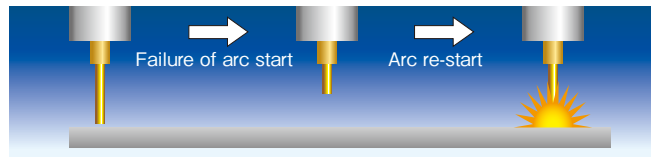


Lift End



Arc Start Retry (for CO₂/MAG)

Detecting a failure of arc start, the robot automatically starts arc ignition again.



Torch Angle Display (Teach Pendant)

Torch angle is displayed on the screen, making it possible to reduce teaching time and obtain consistent bead appearance.



Program Test

In Teach mode, operator can safely verify taught program including welding without switching to Auto mode.



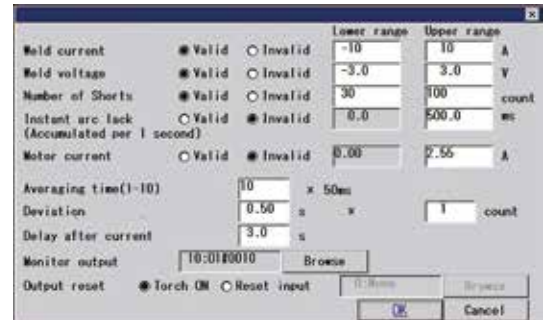
Weld Data Management

Big progress toward ideal production and quality control.
Samples weld data with a interval of up to 50 micro seconds, allowing high-precision monitoring and status/error output. The data can be stored and used for quality control.

Weld Monitor

Standard

Monitors data such as weld current, voltage and wire feed speed constantly and warns when abnormality is detected.



Weld Data Management

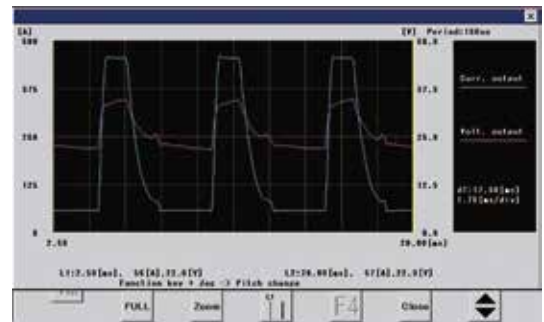
Optional Software

● Weld Monitoring (Expanded function)

Up to 50 weld monitoring conditions can be defined.

● Weld Data Logging/Recording

Data such as weld current, voltage and wire feed speed can be logged according to the preset triggers. The log data can be graphed on the teach pendant and recorded on SD memory card.



Welding Data Log

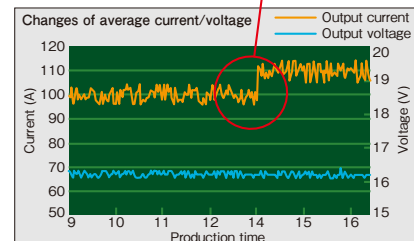
Optional Software

Logs data of weld sections. The log data can be saved for analysis.

Section	Post	A	V	Speed	Back	Roll	Err	Error	AD	VD	UD
13 14 44 Prog002	P4	120	18.1	0.50	120	18.1	0	0	0	0	0
13 17 45 Prog002	P4	140	18.8	0.50	140	18.8	0	0	0	0	0
13 17 56 Prog002	P2	120	18.1	0.50	120	18.1	0	0	0	0	0
13 21 4 Prog002	P4	120	18.1	0.50	120	18.1	0	0	0	0	0
13 21 15 Prog002	P4	140	18.8	0.50	140	18.8	0	0	0	0	0
13 34 5 Prog002	P2	120	18.1	0.50	120	18.1	0	0	0	0	0
13 36 25 Prog002	P4	120	18.1	0.50	120	18.1	0	0	0	0	0
13 36 36 Prog002	P4	140	18.8	0.50	140	18.8	0	0	0	0	0
13 36 47 Prog002	P2	120	18.1	0.50	120	18.1	0	0	0	0	0
13 36 54 Prog002	P4	120	18.1	0.50	120	18.1	0	0	0	0	0
13 36 44 Prog002	P4	140	18.8	0.50	140	18.8	0	0	0	0	0
13 33 58 Prog002	P2	140	18.8	0.50	140	18.8	0	0	0	0	0
13 33 9 Prog002	P4	140	18.8	0.50	140	18.8	0	0	0	0	0
13 33 45 Prog002	P2	140	18.8	0.50	140	18.8	0	0	0	0	0
13 33 56 Prog002	P4	140	18.8	0.50	140	18.8	0	0	0	0	0
13 35 54 Prog002	P2	140	18.8	0.50	140	18.8	0	0	0	0	0
13 36 5 Prog002	P4	120	18.1	0.50	120	18.1	0	0	0	0	0
14 9 13 Prog002	P2	120	18.1	0.50	120	18.1	0	0	0	0	0
14 9 14 Prog002	P2	120	18.1	0.50	120	18.1	0	0	0	0	0

Example of log data analysis

Wire target position misalignment caused by production lot change



Available for defect rate reduction

More advanced welding system available

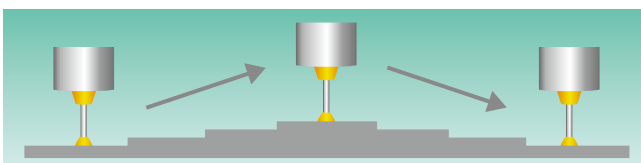
Utilize features such as external communication and large capacity memory.

Auto Extension Control

Optional Software

Compensates heat distortion or teaching error of odd-shaped work.

Robots detects changes in wire extension and compensates automatically.



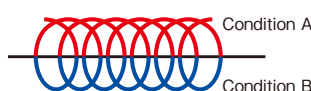
Cooperative Multi-Robot Control

Allows cooperative control between two robots.

Synchronous Weaving Low Pulse (Spiral Weaving Included)

【Spiral weaving movement】

Torch movement



Weld current



Wire feed speed



•Synchronizes weld current, wire feed speed and weaving completely.

•Alternates condition A/B during weaving, which is ideal for welding of different thickness plates. (One for thin plate, the other for thick plate)

Super Active TAWERS WGIII

APPLICATION TYPE

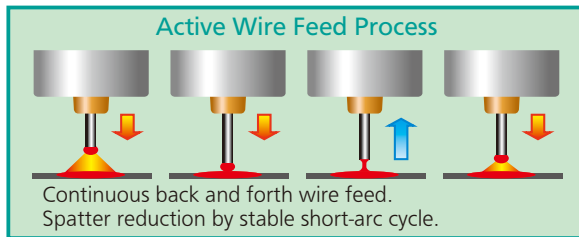
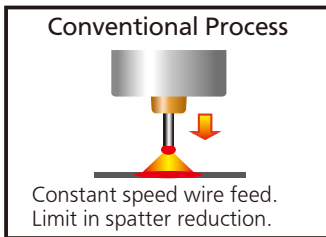
The robot with integrated welding power source has evolved further.
High Speed Welding and Ultra Low Spatter.

Super Active Wire Feed Process (S-AWP)

(Super Active Wire Feed Process)

Wider current range and precise wire feed

- High speed and low spatter welding increases productivity.
- 100 % duty cycle at 310 A !
(when using 1.2 mm mild steel solid wire, CO₂ gas, and air-cooling unit)



WGIII

TS	TM	TL
800	1100	1800
950	1400	2000
	1600	
	1800	
	2000	

- TS: Through-Arm, External
- TM: Separate, Through-Arm
(Only separate type supports high voltage touch sensor.)
- TL: External



System for both high speed low spatter welding

S-AWP servo pull torch

Wire booster

S-AWP software

Air-cooling unit



Contact us for details.

High speed welding

- Improved productivity at 100 cm/min or higher
- Beautiful and wide bead

Weld conditions: Joint: Lap Gas: CO₂
Weld current: 320 A
Weld speed: 110 cm/min
Plate thicknesses: 3.2 mm x 3.2 mm

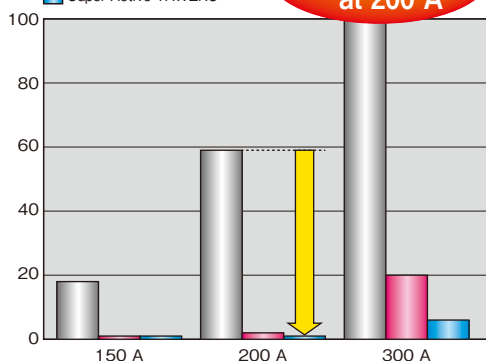
Example of mild steel SPCC



Max. 99 % spatter reduction! (compared to conventional model)

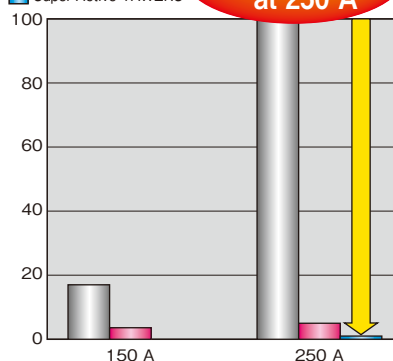
CO₂ gas welding

- Full digital welding machine
- Active TAWERS
- Super Active TAWERS



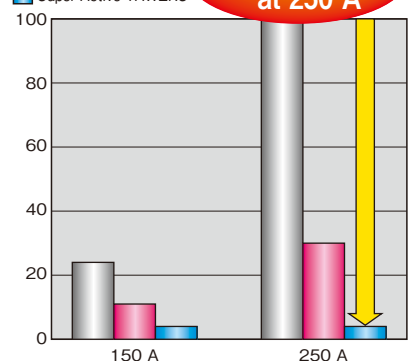
MAG welding

- Full digital welding machine
- Active TAWERS
- Super Active TAWERS



Stainless steel MIG welding

- Full digital welding machine
- Active TAWERS
- Super Active TAWERS



Precautions for use of Super Active servo pull torch

1. Use a copper-coated pail-pack wire.
2. Set the wire cast diameter to between 1000 mm and 1200 mm.

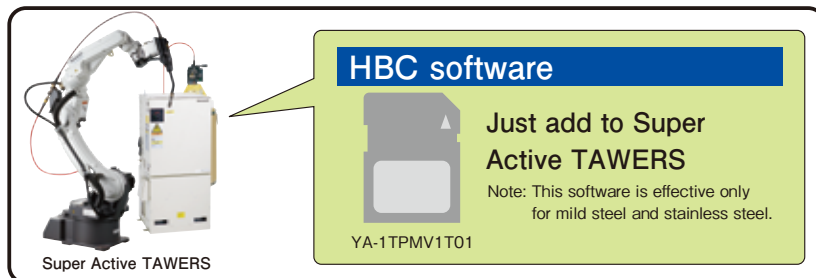
Super Active TAWERS WGIII

APPLICATION^{TYPE}

Burn-through prevention, higher gap tolerance, and better bead appearance for wider applications.

Super Active Wire Feed Process (optional: for thin plate, gap)

HBC (Heat Balance Control) process supports welding of high-tensile steel plates that are becoming thinner.



WGIII		
TS	TM	TL
800	1100	1800
950	1400	2000
	1600	
	1800	
	2000	

- TS: Through-Arm, External
- TM: Separate, Through-Arm
- TL: External

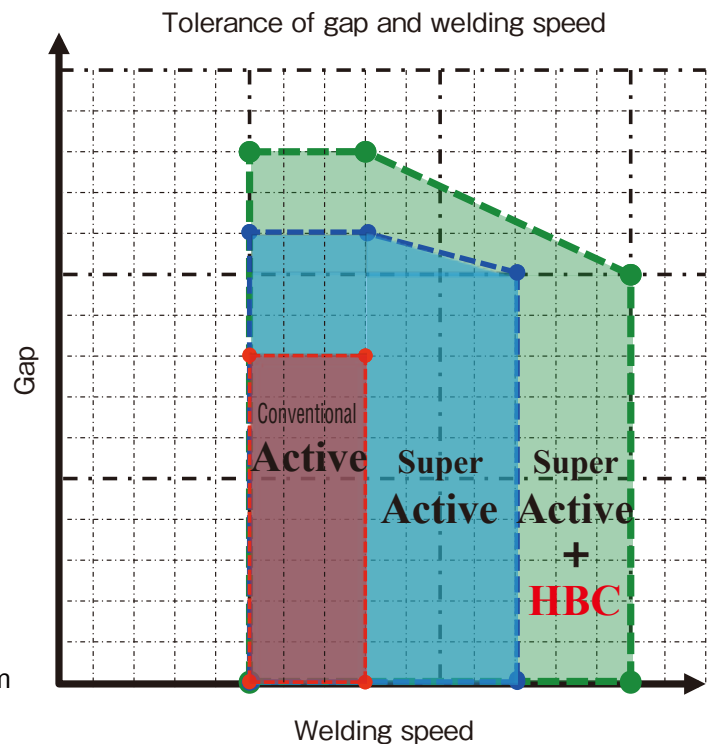
HBC process (optional) prevents burn-through in thin plate welding.

- Low heat input control greatly increases weld speed and gap tolerance.
- Capable to weld thin high-tensile steel that is prone to burn-through.

Example of high tensile steel (980 MPa)



Weld conditions: Joint: Lap Gas: MAG
 Weld current: 150 A
 Weld speed: 100 cm/min
 Plate thicknesses: 0.8 mm x 0.8 mm
 Gap: 1 mm



Hot Active Wire Feed Process (Hot-AWP)

Hot-AWP (Hot-Active Wire Feed Process)

Optional software for Active TAWERS (Hot Active Wire Feed Process) is included in S-AWP standard software (YA-1TPMV1).

Precautions for use of Super Active servo pull torch

1. Use a copper-coated pail-pack wire.
2. Set the wire cast diameter to between 1000 mm and 1200 mm.

Zinc-Coated Steel Welding Technology

**Solution to Reduce
Spatter and Blowholes**

Zinc-Coated Steel Welding Solution Using Solid Wire!

Reduce Spatter and Blowholes with TAWERS Zi-Tech.

Super Zi-Active TAWERS Zi-Pulse

WGIII			WGIII/WGHI		
TS	TM	TL	TS	TM	TL
800	1100	1800	800	1100	1800
950	1400	2000	950	1400	2000
	1600			1600	
	1800			1800	
	2000			2000	

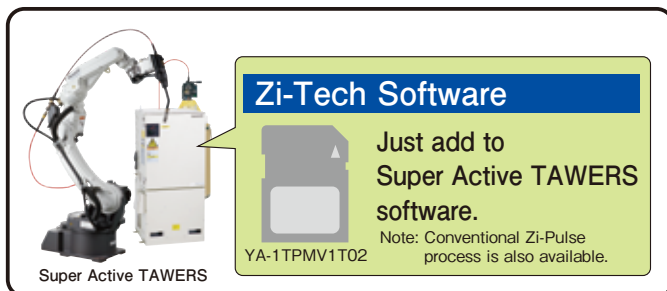
• TS: Through-Arm, External
• TM: Separate or Through-Arm
• TL: External

Effective for welding zinc-coated welding. Greatly reduced spatter and blowholes!

Super Zi-Active

—Solution Using Super Active TAWERS

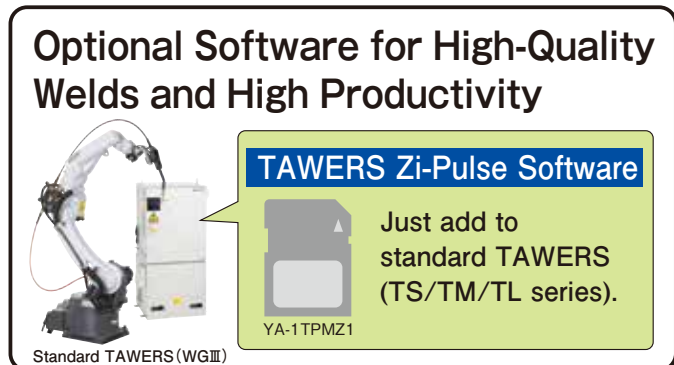
- Uses standard welding wire. (1.2 mm solid wire)
- Supports MAG welding in addition to CO₂ welding.
- Effective on a wide range of coating weight.
 - 100 % CO₂: 45 to 190 g/m²
 - 80 % argon and 20 % CO₂: 45 to 60 g/m²
 - 90 % argon and 10 % CO₂: 45 to 60 g/m²



TAWERS Zi-Pulse

—Solution Using Standard TAWERS

- Uses standard welding wire. (1.2 mm solid wire)
- Uses mixed gas of 90 % Argon and 10 % CO₂. (HD-Pulse Weld Process)
- Effective on a wide range of coating weight from 45 to 60 g/m².



75 to 95 % Spatter Reduction Compared with Conventional CO₂ Process

	Coating Weight: 190 g/m ²	
	Conventional CO ₂	Super Zi-Active
Bead Appearance	 A lot of spatter adhesion	 Little spatter adhesion
X-Ray Image	 A lot of blowholes	 Few blowholes

Weld Conditions: •Wire: YM-50 (1.2 mm) •Joint: Lap •Gas: CO₂
•Weld Current: 250 A •Weld Speed: 80 cm/min
•Plate Thicknesses: 2.3 mm x 2.3 mm

Precautions for use of Super Active servo pull torch

1. Use a copper-coated pail-pack wire.
2. Set the wire cast diameter to between 1000 mm and 1200 mm.

30 to 60 % Spatter Reduction Compared with Mixed Gas of 80 % Ar+20 % CO₂

	Coating Weight: 45 g/m ²	
	80 % Argon/20 % CO ₂	90 % Argon/10 % CO ₂ (Zi-Pulse)
Bead Appearance	 A little spatter adhesion	 Little spatter adhesion
X-Ray Image	 A lot of blowholes	 Few blowholes

Weld Conditions: •Wire: YM-50MT (1.2 mm) •Joint: Lap •Weld Current: 230 A
•Weld Speed: 80 cm/min
•Plate Thicknesses: 2.0 mm x 2.0 mm

Super Active TAWERS WGHIII

APPLICATION TYPE

Super Active Wire Feed Process (S-AWP)
Also Available on High Power (450 A)

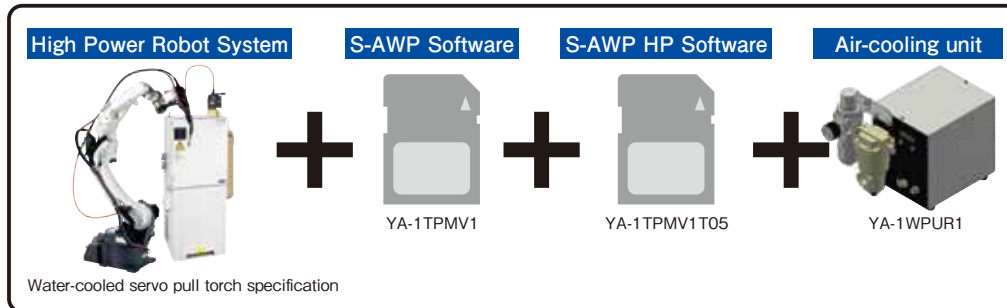
Super Active TAWERS HP

WGHIII

TS	TM	TL
800	1100	1800
950	1400	
	1600	
	1800	

• TS: External
• TM: Separate
• TL: External

Introducing High-Power for even higher speed welding and thick plate welding



Consult us for details.



Even higher-speed welding

Min. 50 % speed increase (Compared to conventional model)

Super Active Wire HP

High-speed welding
(Downward angle: 30°)

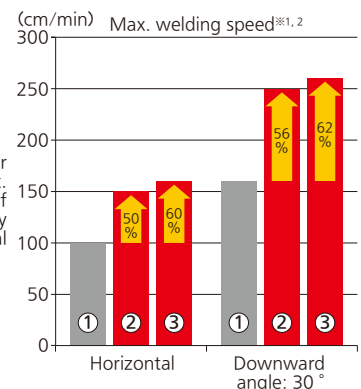


Vertical lap welding
SPCC(1.6 mm), 380 A
YM-50 (1.2 dia.), CO₂

- ① Super Active TAWERS Standard:
300 A (1.2 dia)
- ② Super Active TAWERS HP:
380 A (1.2 dia)
- ③ Super Active TAWERS HP:
400 A (1.4 dia)

※1 Measurements tested under our company's test environment. When you consider purchase of the equipment, check applicability of your work at our FA technical center.

※2 Common welding condition:
Horizontal lap welding
SPCC (3.2 mm), YM-50
(1.2 dia./1.4 dia.), CO₂



Thick Plate Welding

Min. 60 % spatter reduction (Compare to conventional model)

Super Active Wire HP thick

Low-spatter welding



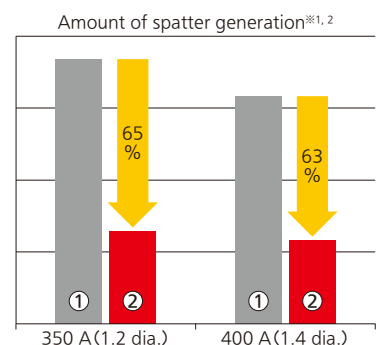
Flat fillet welding
YM-50(1.2 dia.), CO₂

※SUS-MIG: Applicable only to 350 A or less
MAG with S-AWP: Applicable only to 350 A or less

- ① Conventional High Power TAWERS
- ② Super Active TAWERS HP

※1 Measurements tested under our company's test environment. When you consider purchase of the equipment, check applicability of your work at our FA technical center.

※2 Common welding condition:
BOP, SPHC (6.0 mm), 100 cm/min,
YM-50 (1.2 dia. / 1.4 dia.), CO₂



Precautions for use of Super Active servo pull torch

1. Use a copper-coated pail-pack wire.
2. Set the wire cast diameter to between 1000 mm and 1200 mm.

Super Active TAWERS WGIII

APPLICATION TYPE

Super Active Wire Feed
Process (S-AWP)
Also Available on Aluminum

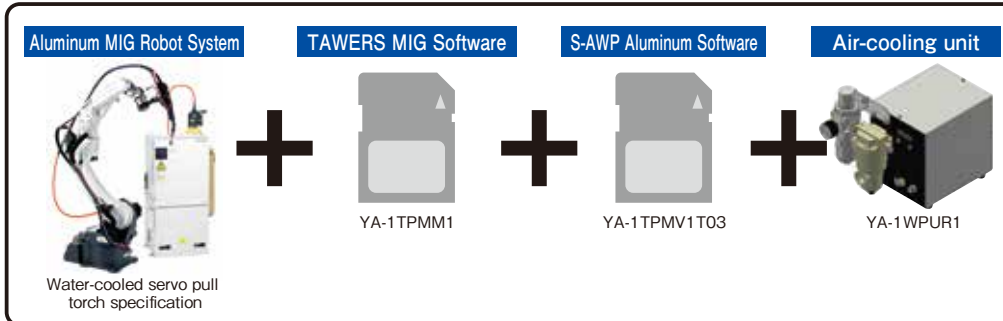
Super Active TAWERS Aluminum

Super Active TAWERS's very low-spatter performance is applied to aluminum MIG.

WGIII

TS	TM	TL
800	1100	1800
950	1400	2000
	1600	
	1800	
	2000	

• TS: External
• TM: Separate
• TL: External



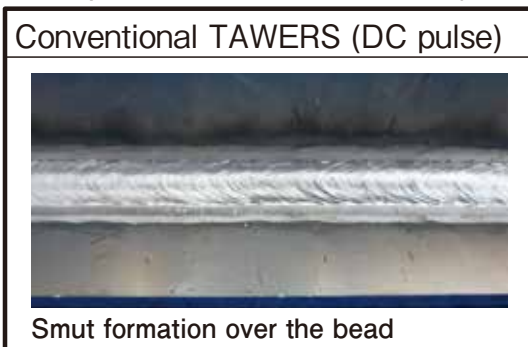
Consult us for details.



Super Active Wire Feed Process for aluminum MIG! Less spatter and smut!

- S-AWP's low-spatter performance proven in mild steel is applied to aluminum.
- Wider current range (40 to 180 A) allows higher welding speed and welding of thinner and thicker plates.

Example of medium thickness (30 mm) plate



Reduction of
Spatter and Smut



Weld conditions: •Base metal: A5052 •Joint: Fillet
•Weld current: 155 A •Weld speed: 60 cm/min
•Plate thickness: 3.0 mm

Great for thin aluminum welding!

Example of 0.6 mm thin plate welding



Weld conditions: •Base metal: A5052 •Joint: Butt •Weld current: 50 A
•Weld speed: 150 cm/min •Plate thickness: 0.6 mm

APPLICATION TYPE

Pull AC-MIG System

AC Unit

AC control and stable wire feed for high quality aluminum MIG welding.

Powerful output for various welding.
AC Unit increases applications of aluminum MIG welding.

Note: This system cannot be used in combination with TAWERS Aluminum function. YX-350AC1

350 A rated output Thin to thick plates

Supports both delicate thin aluminum AC welding and powerful thick plate welding. (Output current: 22 A to 350 A)



Weld conditions:
• Joint: Flat fillet welding
• Base metal: A5052
• Plate thickness: 15.0 mm
• Wire: A5356WY (1.2 mm)
• Weld speed: 40 cm/min
• Weld current:
280 A DC for one pass,
250 A DC for two or three passes.

TAWERS WGIII

APPLICATION TYPE

Hot wire allows high-deposition and high-speed welding!

TAWERS-TIG

WGIII

TS	TM	TL
800	1100	1800
950	1400	

- TS: External
- TM: External
- TL: External

High-frequency start!



TAWERS-TIG Start Unit

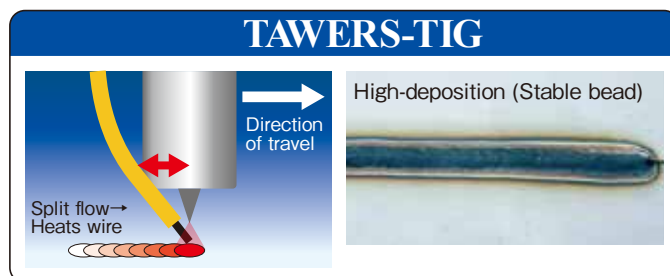
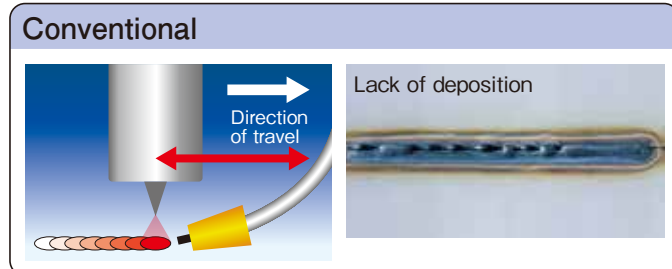
An excellent arc start
Allows to improve welding
quality and reduce
cycle time.



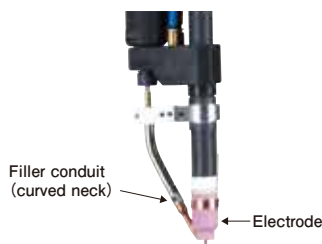
Aluminium is not applicable

Closer electrode-to-filler distance improves pre-heating of the filler.

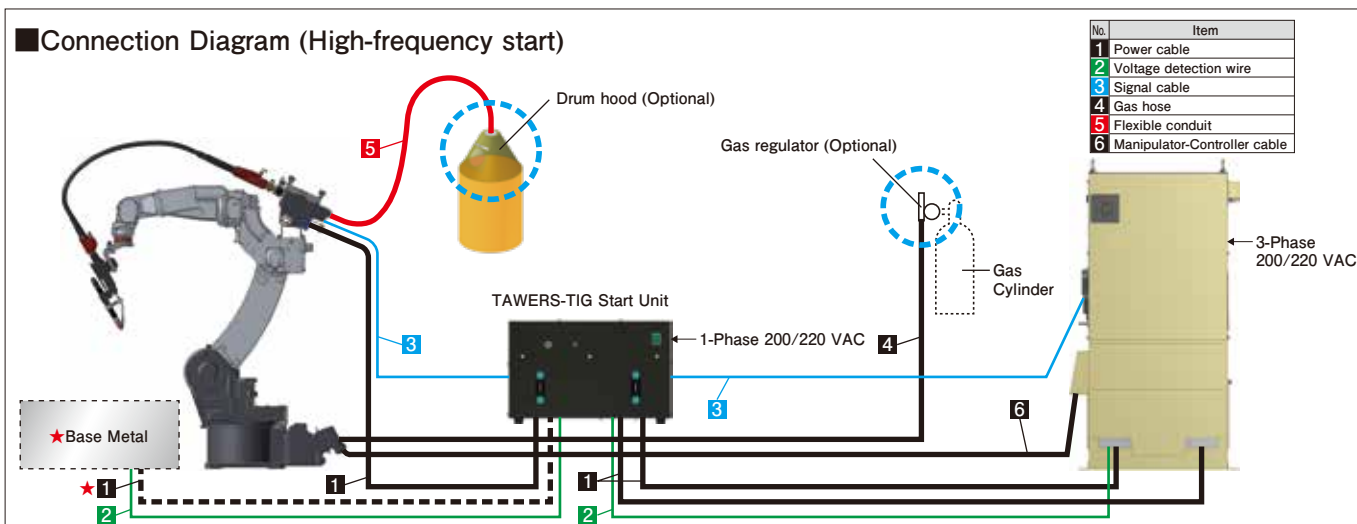
Example of high-speed welding (80 cm/min, Stainless steel)



Curved neck filler conduit!



Stable filler wire feeding
Allows to improve welding quality and limit deviation of aiming point.



★ Customer supplied items

Consult us for details.

High-Power Model for Medium and Thick Plates

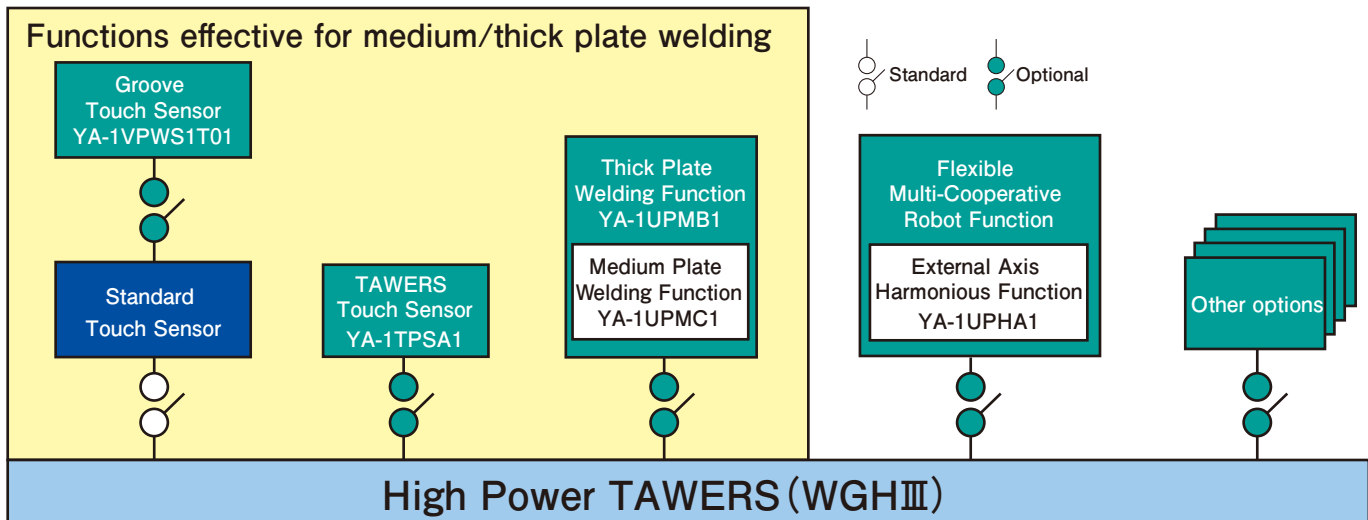
TAWERS for Medium and Thick Plates

WGHIII

TS	TM	TL
800	1100	1800
950	1400	2000
	1600	
	1800	
	2000	

Various functions for various applications

Select necessary options.



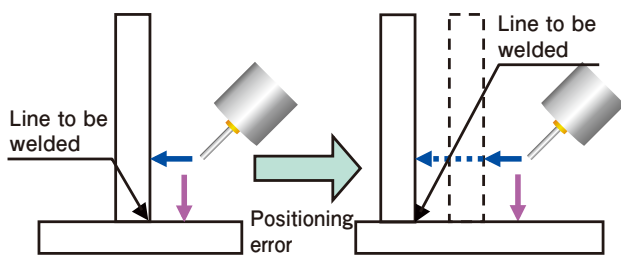
Note: Touch Sensor Software and Wire Clamp Unit are supplied with TAWERS for Medium and Thick Plates.

Examples

How Touch Sensor works

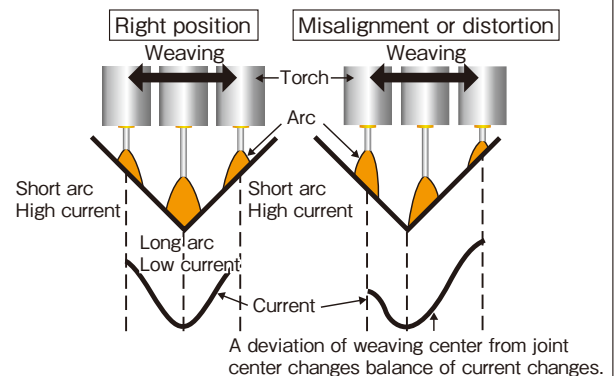
Touches base metal and determines line to be welded.

Detects positioning error and determines line to be welded again.



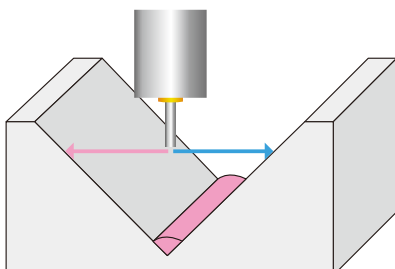
How Arc Sensor works

Detects misalignment or distortion and compensates it.



Groove Touch Sensor Function

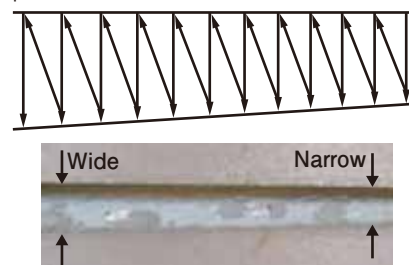
Senses groove width and center, and compensates misalignment.



Variable Weaving Function Thick Plate Welding Function (YA-1UPMB1)

Supports changes of groove width.

Controls deposited metal amount and maintains uniform bead height.



Small Type Arc Welding Robots

T-S Series

Payload:
8 kg
TS-800/950



TS-800

TS-950

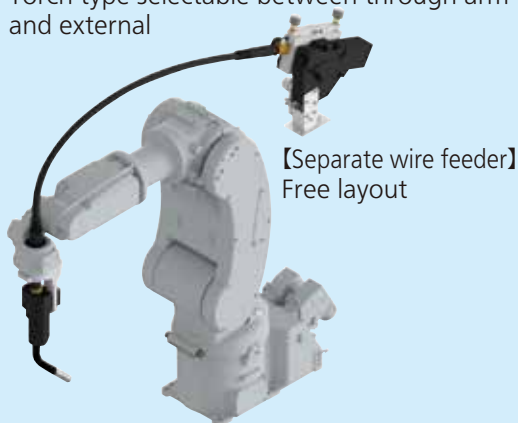
Succeed TAWERS' welding performance

● Various welding styles

Super Active TAWERS / TAWERS-TIG / TAWERS or others

【TW axis: Hollow arm】

Torch type selectable between through-arm and external



【Separate wire feeder】
Free layout

Improve small work productivity

● Space saving

48 % smaller footprint

(example of one customer, compared with our TM-1100)

Floor/Wall/Ceiling mount

(Ceiling mount type is special specification.)

● High speed despite 8 kg payload

Maximum motion speed: 540°/s

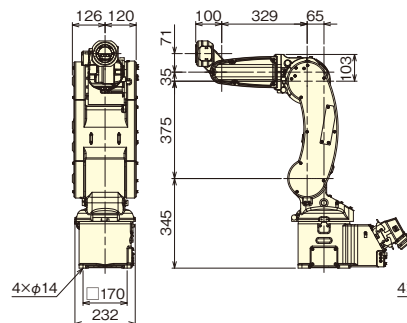
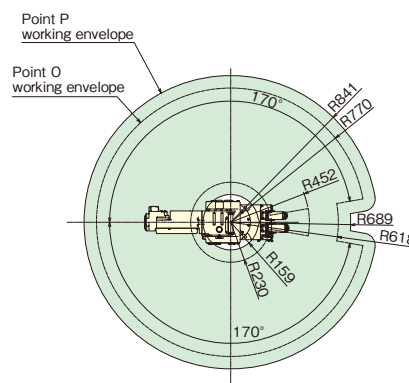
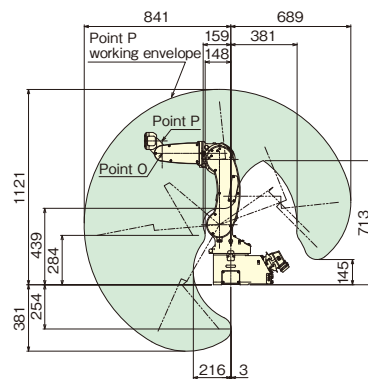
(average for all axes)

Dimensions & Work Envelope

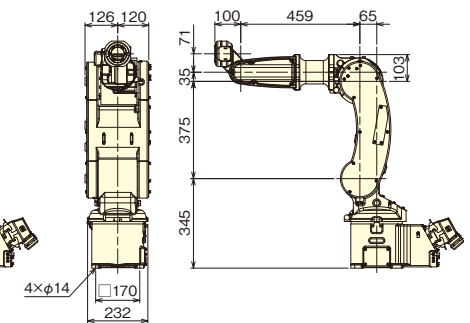
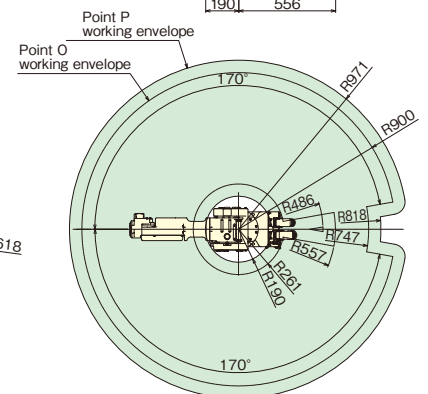
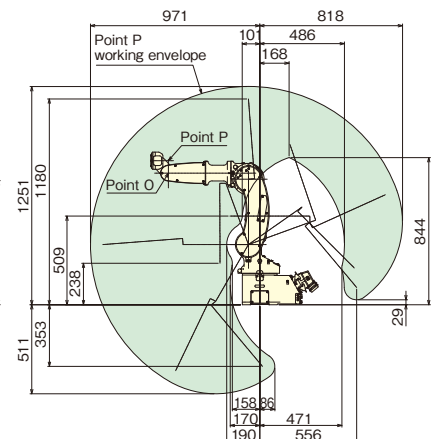
For working envelope of point O, consult us.

(Unit: mm)

Short Type TS-800



Short Type TS-950



Manipulator General Specifications

Model	TS-800	TS-950
Type	Short arm	Short arm
Structure	6 axis articulated	
Payload	8 kg	
Maximum Reach	841 mm	971 mm
Minimum Reach	159 mm	190 mm
Working Range	682 mm	781 mm
Max. Motion Speed	RT (Rotating Trunk)	326°/s
	UA (Upper Arm)	326°/s
	FA (Forearm)	510°/s
	RW (Rotating Wrist)	518°/s
	BW (Bending Wrist)	518°/s
	TW (Twisting Wrist)	1 040°/s
Position Repeatability	±0.05 mm	
Motors	Total Power	2 100 W
	Brakes	All axes
Mounting	Floor/Ceiling*1/Wall*2	
Weight	55 kg	56 kg

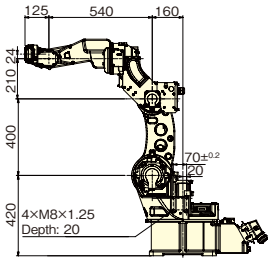
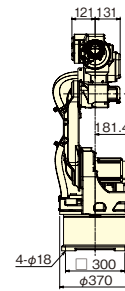
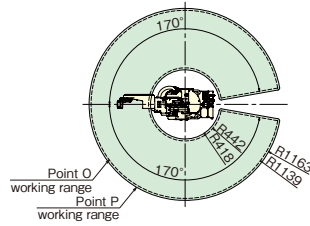
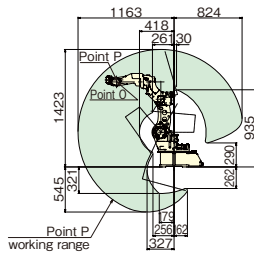
*1: Ceiling mount type is factory optional.

*2: •Setting by service personnel is necessary. •Working range of RT axis is limited.

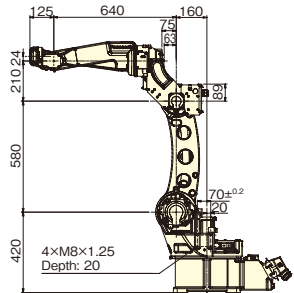
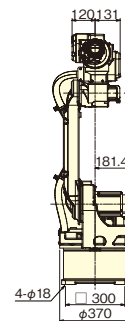
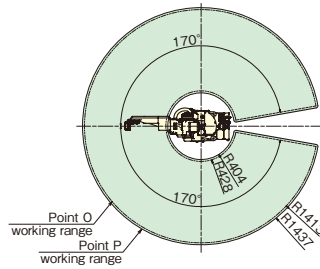
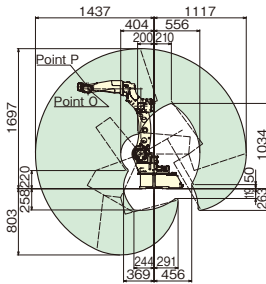
Dimensions & Work Envelope

(Unit: mm)

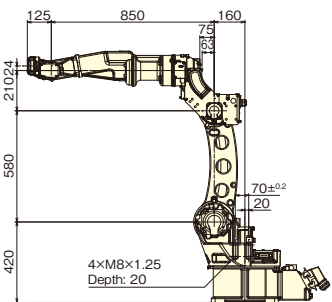
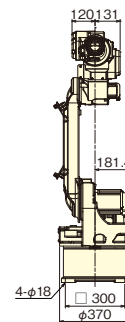
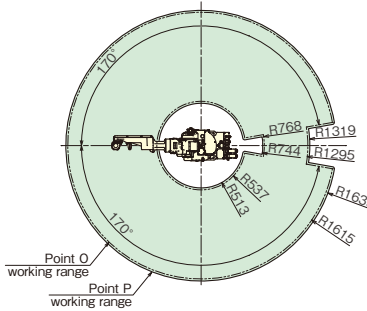
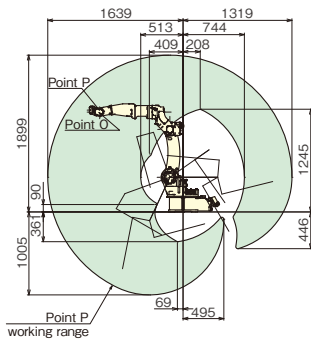
Short Type TM-1100



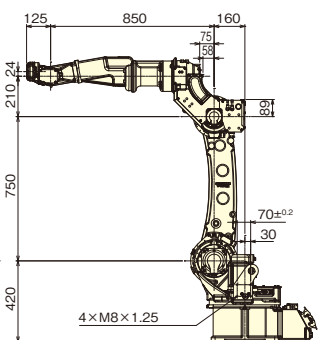
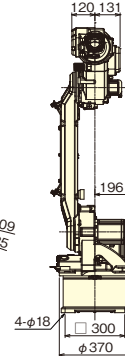
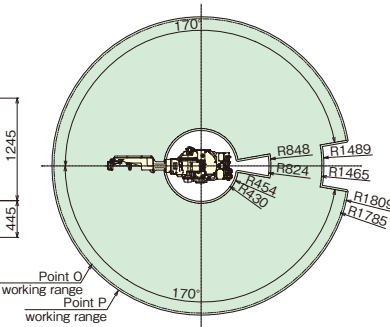
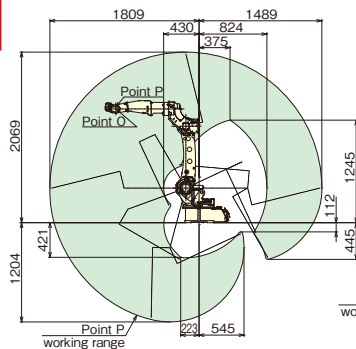
Standard Type TM-1400



Middle Type TM-1600



Long Type TM-1800



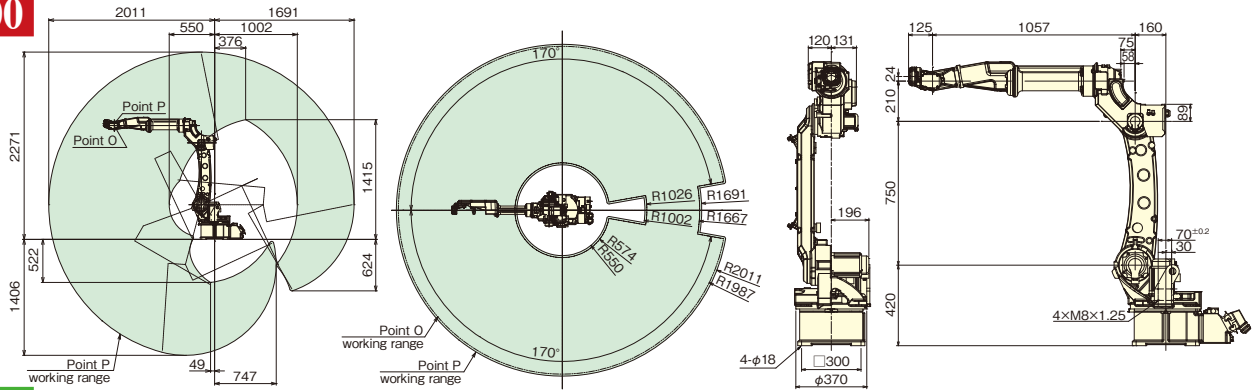
Manipulator General Specifications

Model		TM-1100	TM-1400	TM-1600	TM-1800	TM-2000	TL-1800	TL-2000
Type		Short arm	Standard arm	Middle arm	Long arm	Long arm	Long arm	Long arm
Structure		6 axis articulated						
Payload		6 kg		4 kg	6 kg		8 kg	6 kg
Maximum Reach		1 163 mm	1 437 mm	1 639 mm	1 809 mm	2 011 mm	1 801 mm	1 999 mm
Minimum Reach		418 mm	404 mm	513 mm	430 mm	550 mm	383 mm	491 mm
Working Range		745 mm	1 033 mm	1 126 mm	1 379 mm	1 461 mm	1 418 mm	1 508 mm
Max. Motion Speed	RT (Rotating trunk)	225°/s		210°/s	195°/s		195°/s	
	UA (Upper arm)	225°/s		210°/s	197°/s		197°/s	
	FA (Forearm)	225°/s		215°/s	205°/s		205°/s	
	RW (Rotating wrist)	425°/s		425°/s	425°/s		385°/s	
	BW (Bending wrist)	425°/s		425°/s	425°/s		375°/s	
	TW (Twisting wrist)	629°/s		629°/s	629°/s		624°/s	
Position Repeatability		±0.08 mm				±0.10 mm	±0.08 mm	±0.15 mm
Motors	Total Power	3 400 W			4 700 W		5 050 W	
	Brakes	All axes						
Mounting		Floor / Ceiling*						
Weight		156 kg	170 kg	180 kg	215 kg	217 kg	215 kg	216 kg

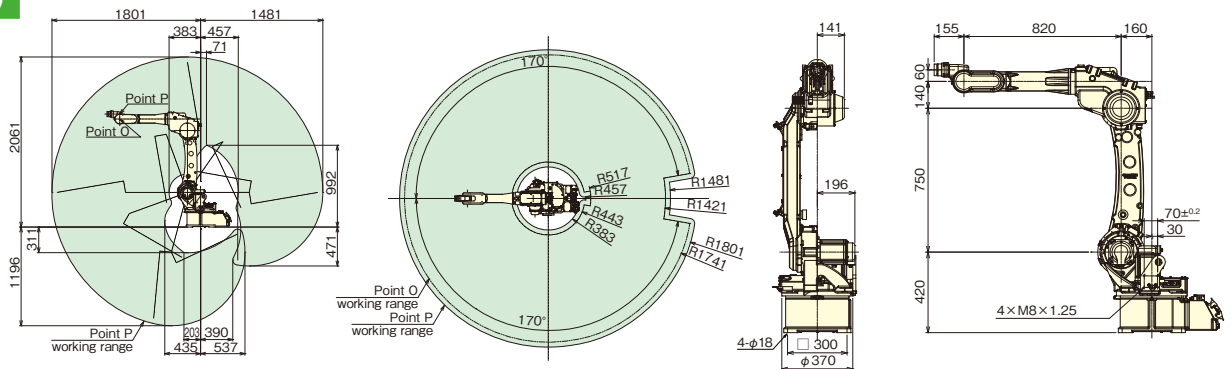
Dimensions & Work Envelope

(Unit: mm)

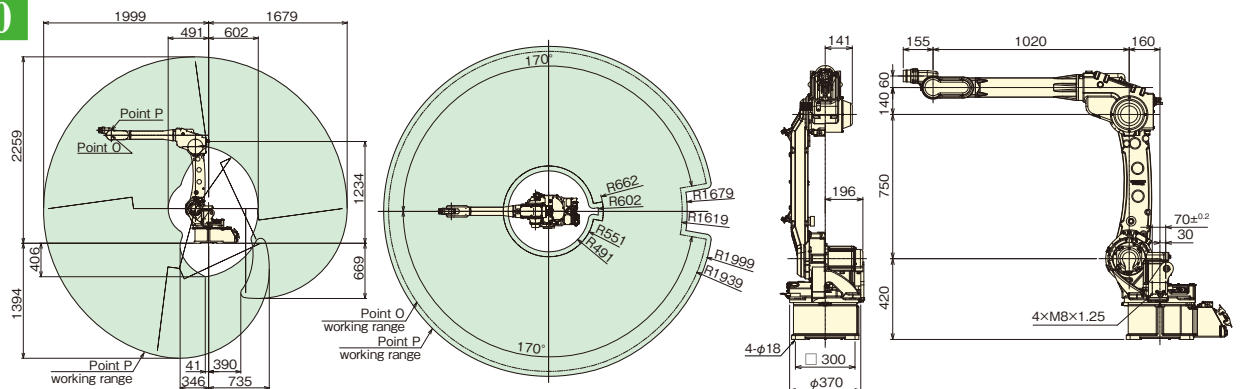
Long Type TM-2000



Long Type TL-1800



Long Type TL-2000



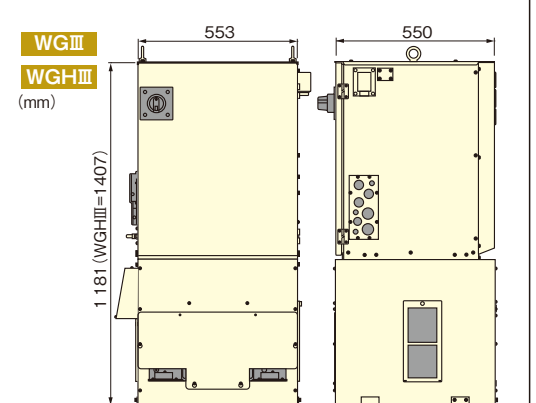
Controller / Welder Technical Specifications

Model	WGIII	WGHIII
Dimensions*	W 553 mm x D 550 mm x H 1181 mm	W 553 mm x D 550 mm x H 1407 mm
Weight**	135 kg	171 kg
Memory Capacity	40 000 points	
Position Control	Software servo control	
External Memory	Teach Pendant: one SD memory card slot, two USB 2.0 ports (USB 2.0. Hi-Speed not supported)	
Control Axes	6 axes simultaneously (Max. 27 axes)	
Input and Output	Input: 40 points (Optionally expandable up to 2048 points) Output: 40 points (Optionally expandable up to 2048 points)	
Input Power	3 phase, 200 V AC±20 V AC, 22 kVA, 50/60 Hz	3 phase, 200 V AC±20 V AC, 30.5 kVA, 50/60 Hz
	50/60 Hz (Max. current at servo on: 246 A/5.6 ms)	
Welding Process	CO ₂ / MAG / Stainless steel MIG / Pulse MAG / Stainless pulse MIG	
Output Current Range	30 to 350 A DC	30 to 450 A DC
Output Voltage Range	12 to 36 V DC	12 to 42 V DC
Duty Cycle	CV: 80 % @ 350 A Pulse: 60 % @ 350 A	100 %

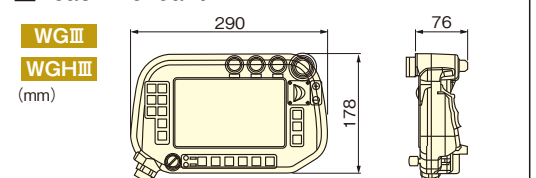
*Protruding portions not included. **Teach pendant and connection cable not included.

Note: For details on the power connection, refer to "Connecting primary power source" in the arc welding robot controller manual.

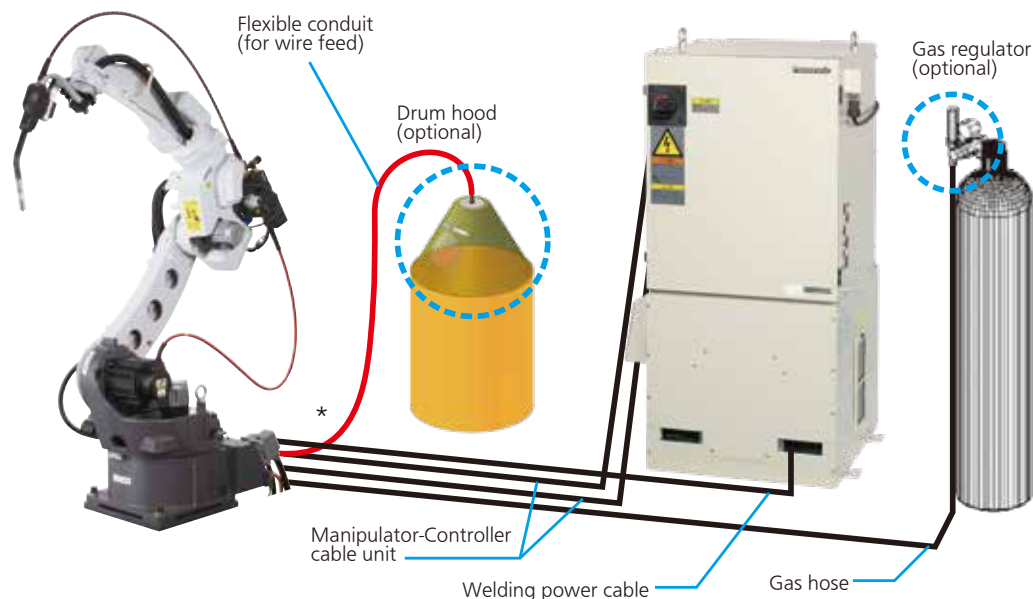
Controller (with power unit)



Teach Pendant



TM-1400WGIII (Separate Type)



Large Robot Series (GIII Controller)

Great material handling capability!

Coordinated multi-robot movement for flexible system without jig.



● Coordinated movement with WGIII/GIII robot(s)



Allows to build flexible system without jig.

Maximum configuration:
 • Arc welding robot x 2
 • Large robot x 1

● GIII controller for large robots

Same operation, maintenance and options as conventional robots

■ Manipulator General Specifications

Model			YS-080GⅢ	HS-220GⅢ
Type			6 axis articulated robot	
Payload			80 kg	220 kg
Working Range	RT (Rotating trunk)		±180 °	±178 °
	UA (Upper arm)		-80 ° ~ +155 °	-65 ° ~ +80 °
	FA (Forearm)	Referenced from Horizontal	-140 ° ~ +230 °	-130 ° ~ +230 °
		Referenced from upper arm	-80 ° ~ +180 °	-73 ° ~ +190 °
	RW (Rotating wrist)		±360 °	±360 °
	BW (Bending wrist)		±125 °	±128 °
Max. Motion Speed	TW (Twisting wrist)		±360 °	±360 °
	RT (Rotating trunk)		170°/s	120°/s
	UA (Upper arm)		140°/s	105°/s
	FA (Forearm)		160°/s	110°/s
	RW (Rotating wrist)		230°/s	145°/s
	BW (Bending wrist)		230°/s	145°/s
TW (Twisting wrist)		350°/s	220°/s	
Position Repeatability			±0.15 mm	
Weight			645 kg	955 kg

Medium Type Multi-purpose Robot LA-1800



Payload
26 kg
LA-1800



LA-1800GIII

High payload capacity

High class performance *1 >

26 kg payload

High-speed operation

High class performance *1 >

Maximum motion speed: **370°/s** (average for all axes)

Wide working range

High class performance *1 >

Maximum working range **1 801 mm**

*1 Available to the medium type material handling robot with the payload capacity 15 kg or more and fewer than 30 kg. (according to our research as of February 2019)

Various applications

● Materials handling style

- Transport/Assembly/Processing work
- Collaboration with welding robots

● Welding style *2

- TAWERS (WGIII/WGHIII)
- External welding machine

● Hybrid style *2

- Simultaneously installed tool & torch
- Fixed torch

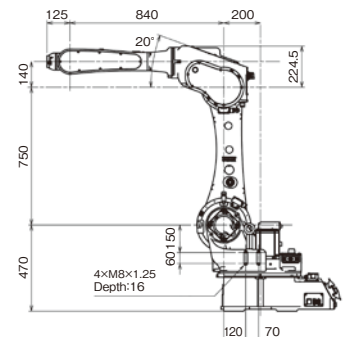
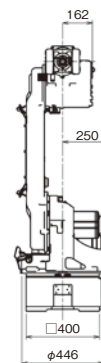
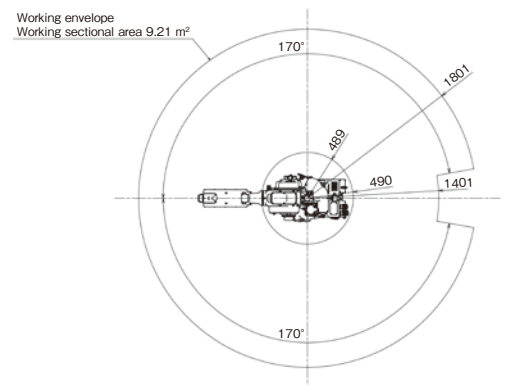
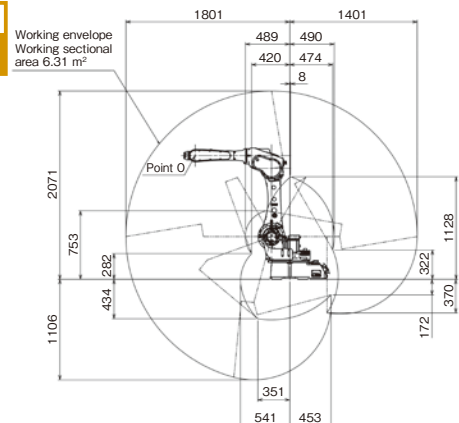
*2 Not all of the styles we can produce, depending on the application or welding method etc., please consult us for details.



Hybrid style
(tool & torch)

Dimensions & Working Envelope (Unit: mm)

Long Type LA-1800



Manipulator General Specifications

Model	LA-1800	
Type	Multi-purpose Medium Type	
Structure	6 axis articulated	
Payload	26 kg	
Maximum Reach	1 801 mm	
Minimum Reach	489 mm	
Working Range	1 312 mm	
Max. Motion Speed	RT (Rotating Trunk)	201°/s
	UA (Upper Arm)	199°/s
	FA (Forearm)	218°/s
	RW (Rotating Wrist)	434°/s
	BW (Bending Wrist)	450°/s
Position Repeatability	±0.07 mm	
	TW (Twisting Wrist)	
Motors	Total Power	6 600 W
	Brakes	All axes
Mounting	Floor/Ceiling*	
Weight	320 kg	

*Ceiling mount type is factory optional.

Tilt-Rotate Positioners High-Speed Type **R Series**



Two types available: 300 kg and 500 kg payload

- 1.8 times faster maximum speed compared with the conventional models.
- Smallest-in-class footprint of 780 × 500 mm. (300 kg payload model)
- Easier installation with three selectable cable outlet positions.

Specifications

Name		Positioner unit	
Model		YA-1RJC62	YA-1RJC72
Applicable Robot		Panasonic robots TS/TM/TL series with GIII/WGIII controller	
Payload		300 kg	500 kg
Max. Speed	Rotation	190.0°/s (31 r/min)	165.0°/s (27 r/min)
	Tilt	125.5°/s (20 r/min)	90.0°/s (15 r/min)
Operating Range	Rotation	-3 600 ° to +3 600 ° (with multi-rotation data reset function)	
	Tilt	-135 ° to +135 °	
Allowable Moment	Rotation	323 N·m	392 N·m
	Tilt	882 N·m	1 274 N·m
Position Repeatability		±0.05 mm (R=250 mm)	
Hollow Shaft Diameter		55 mm	
Allowable Welding Current		500 A @ 60 % duty cycle	
Weight		285 kg	
Applicable Welding Process		CO ₂ /MAG/MIG/TIG	
External Axis Controller Type		Internal/External	

Single-axis positioners

Payload: 250/500 kg

Payload: 1 000 kg

RJB 12/22



RJB 32



RJR 42



RJR 52



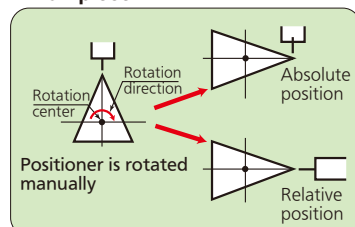
Specifications

Name		Positioner unit		
Model		YA-1RJB12	YA-1RJB22	YA-1RJB32
Applicable Robot		Panasonic robots TS/TM/TL series with GIII/WGIII controller		
Payload		250 kg	500 kg	1 000 kg
Max. Rotational Speed		190°/s (31.6 r/min)	120°/s (20 r/min)	120°/s (20 r/min)
Operating Range		-3 600 ° to +3 600 ° (with multi-rotation data reset function)		
Allowable Torque		196 N·m	490 N·m	1 470 N·m
Allowable Moment		1 470 N·m	1 470 N·m	6 125 N·m
Position Repeatability		±0.05 mm (R=250)		
Hollow Shaft Diameter		55 mm	55 mm	75 mm
Brakes		Provided		
Allowable Welding Current		500 A @ 60 % duty cycle		
Weight		125 kg		255 kg
Applicable Welding Process		CO ₂ /MAG/MIG/TIG		
External Axis Controller Type		Internal/External		External

Harmonizer

Simple teaching

Teaching example of complicated workpiece



Easy welding speed settings.

Welding speed can be set directly from robot regardless of pipe diameters. It eliminates complicated calculation and reduces teaching time.

Greatly reduced teaching points. (compared with conventional systems)

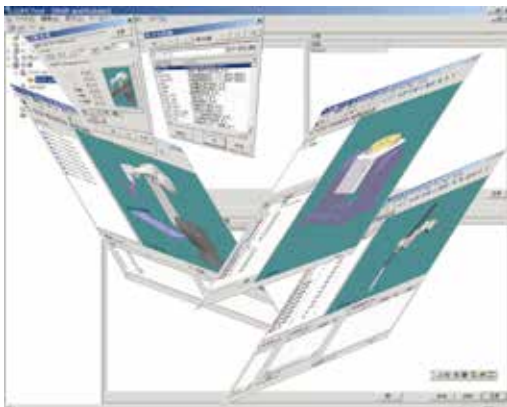
Linear, circular interpolations and weaving movement are now available while rotating work with the positioner. This allows easy torch positioning for complicated workpieces and high precision welding with minimum teaching points.

Optimum welding position.

Optimum torch angle for the best bead shape is ensured by specifying the torch position to the workpiece from either absolute or relative position.

Easy system settings.

System can be set on site and adjustable by the user.



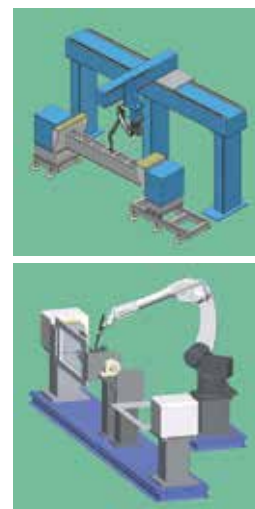
Editing and simulation of robot program on PC

DTPS is a program simulation software developed exclusively for Panasonic robots. With this software, users can create and edit robot programs and verify robot motion offline.

<Features>

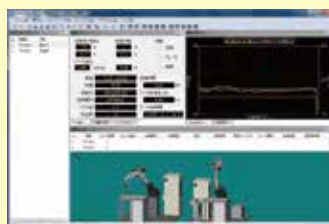
- Useful edit function (batch conversion, shifting, etc.)
- Highly-accurate movement simulation
- 3D graphics
- Identical to robot operation
- Simple CAD function for workpiece shape creation
- Graphic import function (standard)
- Multiple robot control

DTPS III System requirements: Windows 8.1 / Windows 10
Recommended specification: Consult us.



Production Management Function Real-Time Monitoring on PC.

Effective for Monitoring Robot Operation and Production Progress.



Robot operation monitoring

Monitors robot movement and welding waveform in real time, which allows to improve welding posture and conditions.



Remote TP Viewer

Monitors Teach Pendant (TP) screen in real time, which allows to share information away from welding site.

Notes:

- An optional license is necessary for each robot.
- The network environment and devices (including PC) must be prepared by the customer.
- Up to 10 robots can be connected to one PC.
- It is not possible to connect to the external network (e.g., connection from factory LAN to the Internet).
- WG III, WGH III, and G III controllers of software version 20.00 or later are applicable.
(TIG is not supported.)

FA Technical Centers

Feel the excellent performance of TAWERS



● Other FATC : Wuhan, Queretaro, Bowin, Jakarta, Hanoi, Detroit, Columbus, Sao Paulo

Process Development



Process verification prior to system installation.

- Case Examples:
- New factory weld processing
 - Improvement of existing processes
 - Develop new welding solutions

Consulting



Welding and Robot College



We support development of highly skilled welding operators.

Workshops:

- Robot
- MAG/MIG
- TIG
- Special training

Professional staff offer technical solutions.

Qualifications:

- Welding coordination personnels (including first class)
- JIS qualified welding operators
- Metal materials inspectors
- International welding license holders



We provide products that are friendly to the environment.

As an earth-friendly company, Panasonic Corporation discourages the use of hazardous substances in our products. The products of Panasonic Corporation comply with the European RoHS directive.



Safety precautions

- Before attempting to use any welding product always read the manual to ensure correct use.

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