

**Panasonic**  
ideas for life

The Arc Welding Robot System  
**TAWERS** TA-WG Series

# The Arc Welding Robot System **TAWERS**

World  
First

**Robot fused with welding power source**  
- Robot directly controls welding waveforms -

Further evolution  
**SP-MAG II** welding process



# WG Series

Panasonic pursues "Only one" in welding.

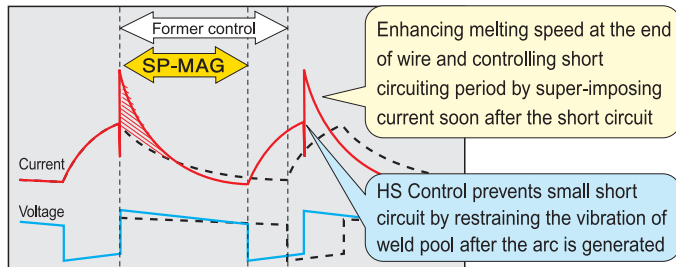
# Ideal Robot welding only "TAWERS" can do

**NEW SP-MAG II**

Further evolution of SP-MAG welding process created by TAWERS

## Ultra low spatter, less heat input, suitable for thin plate and gap welding

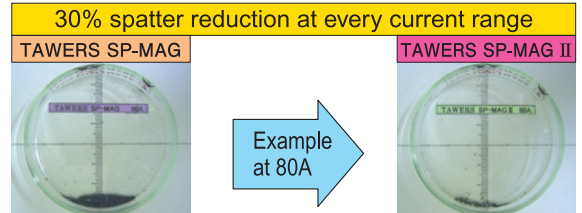
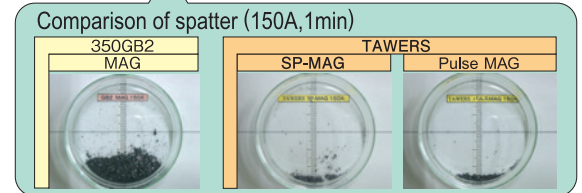
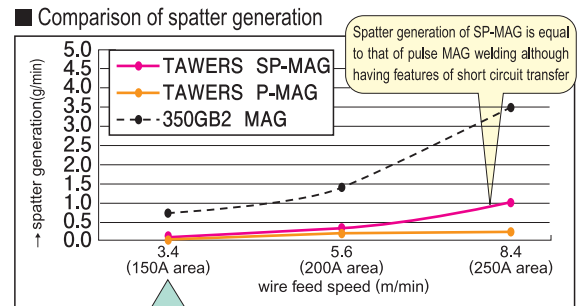
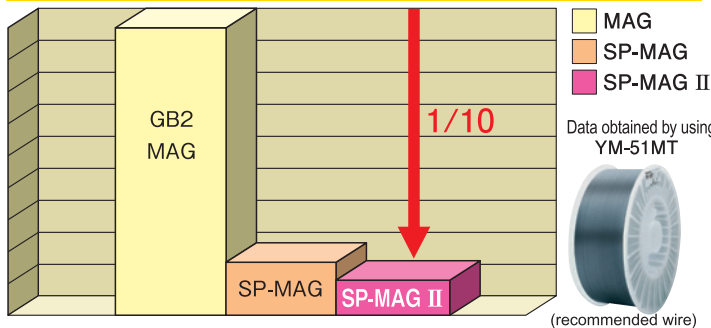
- SP-MAG II welding process realized less spatter by 30% than former SP-MAG process by the combination of newly added HS(Hyper Stabilization) control and Secondary Switching control.



■ SP: Super-imposition HS: Hyper Stabilization

- **Secondary switching control** decreases spatter by detecting the status of arc (short circuit / open) precisely.

Spatter generation has been reduced to one-tenth compare with 350GB2



Standard

## Lift Start / Lift End function

- **Drastically improved quality on start and end**

Robot lifts up welding torch quickly at start and end of weld coordinating with waveform control and wire feed control. It is much faster than wire retract start.

Software Option

## Auto extension control

- **For the teaching for odd shaped work or heat distortion.**

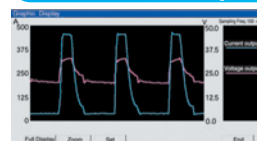
Robot detects wire extension change, and compensates automatically. No additional hardware, but only robot commands are required for the function.

## Arc monitor

- **Big progress in ideal production and quality control**

To collect welding parameters at every 100 micro seconds makes more precise monitoring or status/error output possible. Data can be saved in log files for using as quality control database.

## Waveform display function Option

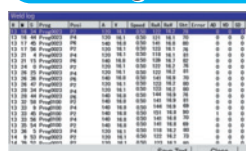


The data such as weld current, weld voltage and wire feed speed can be stored in the memory of robot controller.

## Weld monitor function Standard

This function monitors weld current, voltage, wire feed speed etc. constantly and indicates warning if defect occurs.

## Weld log function Option



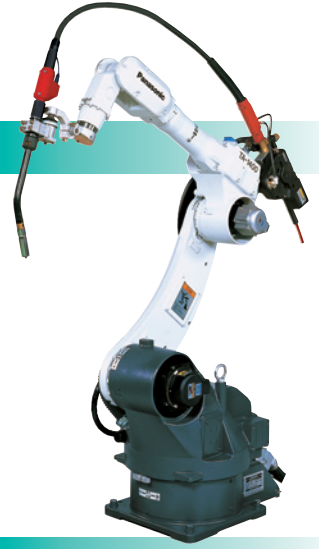
Log files of welding condition are processed automatically and can be stored in PC card.

Re-born for dedicating arc welding

# High performance manipulator

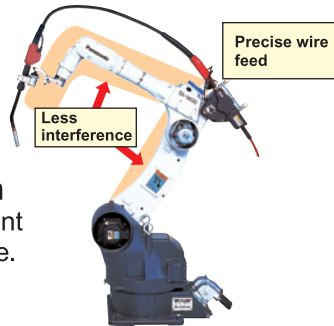
## Best-in-class high speed model

- **Higher performance on movement**  
Motor size and reduction gear capacity are bigger, better performance on movement in the class.
- **Sensitive collision guard function**  
Advanced servo control that arm-dynamics is thoroughly considered makes sensitive collision guard.  
"External force release control" absorbs the external impact.
- **High durability**

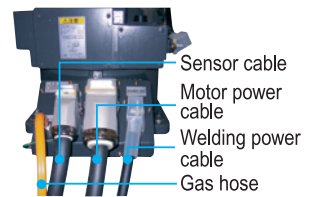


## Includes features specialized for welding

- **Dedicated wire feeder**  
AC servo motor is used for precise wire feed.
- **Less interference to robot it self**  
Unique wrist axis design, curved arm, etc.
- **Less connection cables, easy installation**  
The number of cables are much less than the current robots that includes accessory and connection cable.



Back side of manipulator



Simple wiring

## Further advanced "Full Digital"

# Welding power source exclusively designed for "TAWERS"

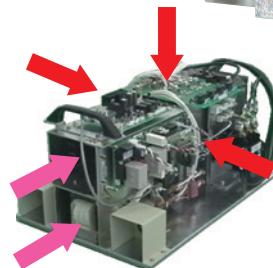
## World highest class waveform control and power unit

### Advanced software high speed waveform control technology

- "Active Feed-Forward" controls waveform every 10 micro seconds.
- "Software Voltage Control" has realized "reactor-less" so that pulse and CV can be switched without hardware change.
- Revolutionary short-arc waveform control process, "SP-MAG II process".

## Exclusive power unit realized amazing specification

- 100kHz super high speed inverter machine
- Power unit part is about 2/3 of size versus current model.
- Dust-proof cabinet with Center Tunnel cooling structure and high efficient cooling fin.
- Secondary Switching for lower spatter.



Rated output : 350A, Duty cycle : 80%(Pulse 60%)

# TA-WG series manipulators line up



Arm type	Short	Standard	Middle	Long	
Model	TA-1000WG	TA-1400WG	TA-1600WG	TA-1800WG	TA-1900WG
Max. reach	1068mm	1374mm	1598mm	1796mm	1895mm

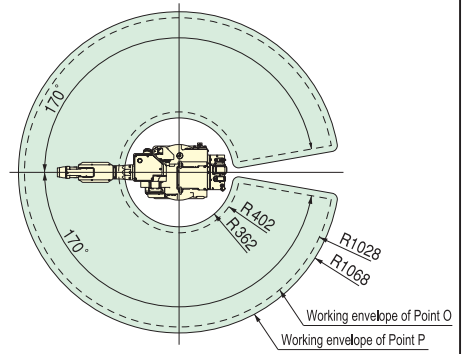
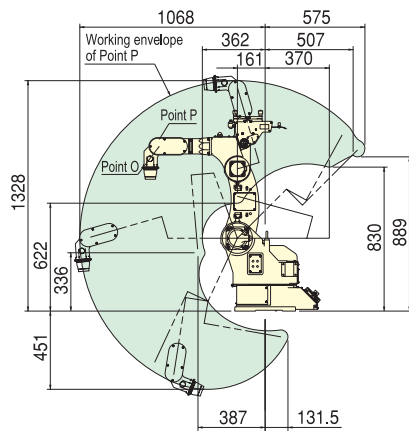
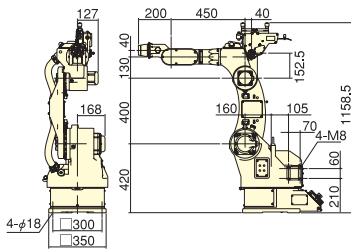
## Outside dimensions & Working envelope

< Manipulators >

### Short arm type

#### TA-1000WG

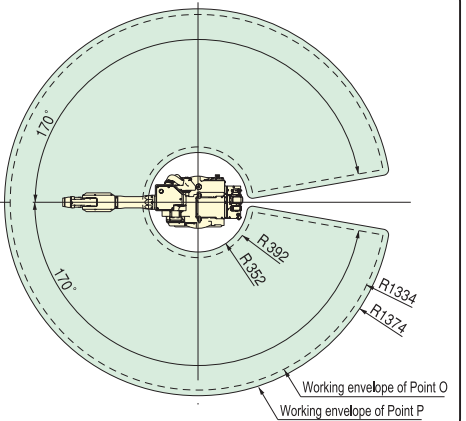
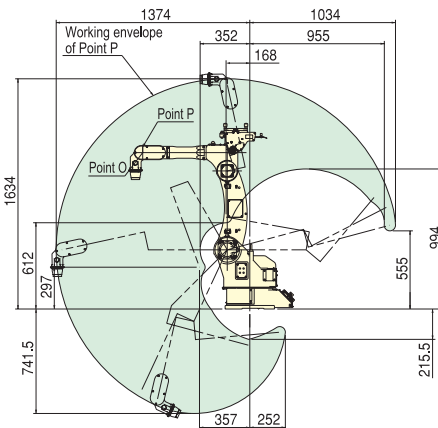
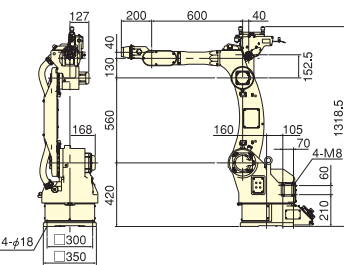
Max. Reach : 1068mm



### Standard arm type

#### TA-1400WG

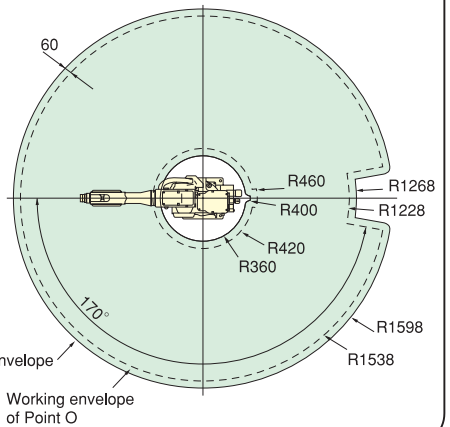
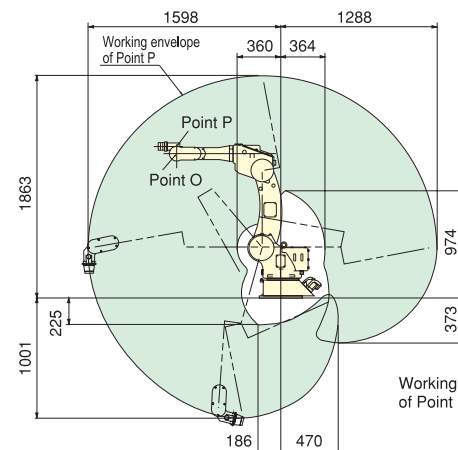
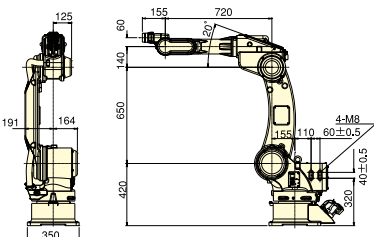
Max. Reach : 1374mm



### Middle arm type

#### TA-1600WG

Max. Reach : 1598mm



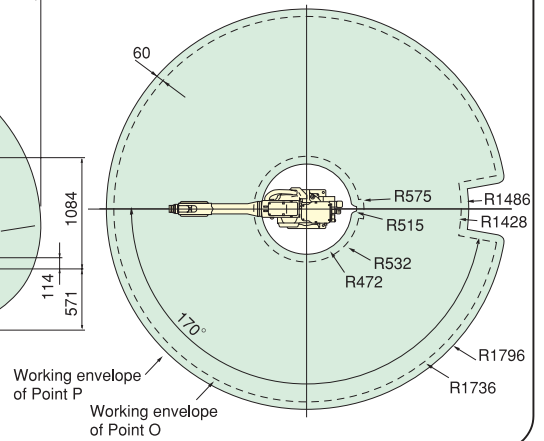
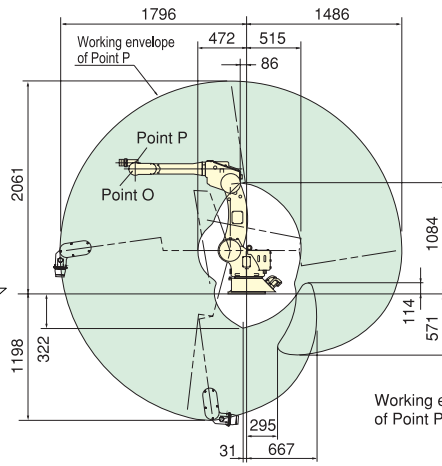
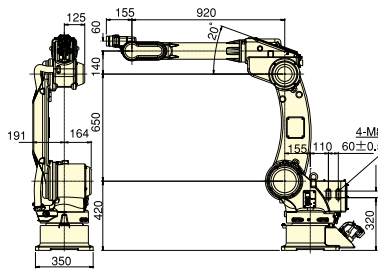
## Outside dimensions & Working envelope

## < Manipulators >

### Long arm type

### TA-1800WG

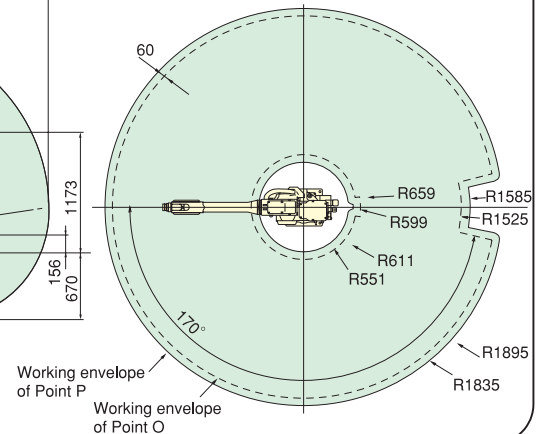
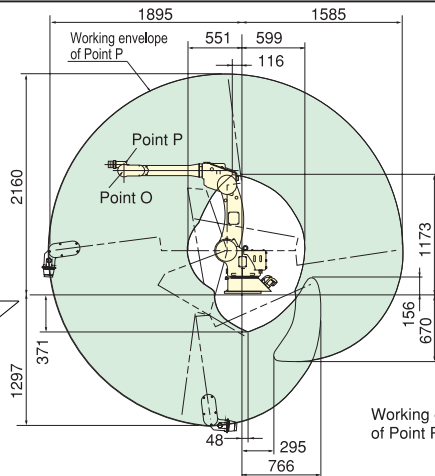
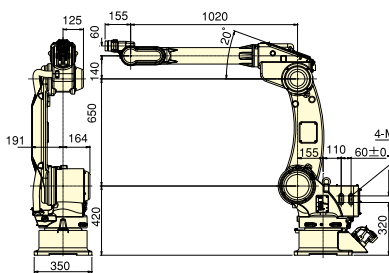
Max. Reach : 1796mm



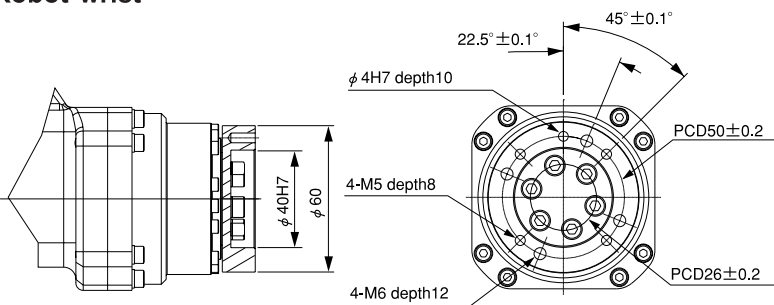
### Long arm type

### TA-1900WG

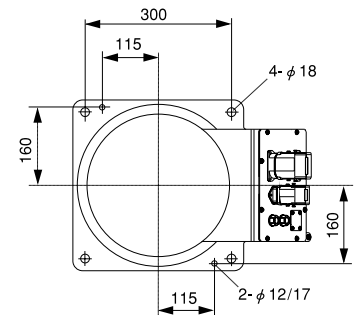
Max. Reach : 1895mm



### Robot wrist



### Robot base

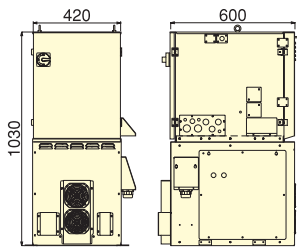


## Standard specifications

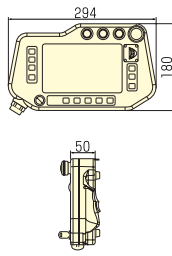
## < Manipulators >

Model		TA-1000WG	TA-1400WG	TA-1600WG	TA-1800WG	TA-1900WG
Type		Short arm	Standard arm	Middle arm	Long arm	
Structure		Independent articulated				
Axes		6				
Maximum allowable payload		6 kg		8 kg		6 kg
Robot working area	Maximum accessible distance	1,068 mm	1,374 mm	1,598 mm	1,796 mm	1,895 mm
	Minimum accessible distance	362 mm	352 mm	360 mm	472 mm	551 mm
Momentary maximum speed	Arm	Rotation (RT)	2.97 rad/sec (170° /sec)			
		Upper arm (UA)	3.32 rad/sec (190° /sec)		2.97 rad/sec (170° /sec)	
		Front arm (FA)	3.32 rad/sec (190° /sec)		3.05 rad/sec (175° /sec)	
	Wrist	Rotating (RW)	6.46 rad/sec (370° /sec)		6.28 rad/sec (360° /sec)	
		Bending (BW)	6.54 rad/sec (375° /sec)		6.11 rad/sec (350° /sec)	
		Twisting (TW)	10.5 rad/sec (600° /sec)		9.42 rad/sec (540° /sec)	
Positioning repetition precision		± 0.1mm or less				
Brake		All axis are provided with brakes				
Installation		Floor, Ceiling (factory option)				
Weight of manipulator		Approx. 145 kg	Approx. 161 kg	Approx. 180 kg	Approx. 185 kg	

**Controller  
(with power unit)**



**Teach pendant**



Structure and IP class	Closed box type, IP22 or equivalent
Cooling method	Indirect air cooling (circulating internal air) Direct air cooling (welding power supply)
Input power source	3 phase, AC200V±20V, 23kVA, 50/60Hz
Memory capacity	20,000 points 20,000 sequence
Position control method	Software servo control
External communication interface	TP : PCMCIA card slot, SD card slot, PS/2 port
The number of control axis	6 axes simultaneously
Welding method	CO <sub>2</sub> , MAG, Stainless steel MIG, Pulse MAG/MIG
Output current adjustable range	30 - 350 A
Output voltage adjustable range	12 - 36 V
Rated duty cycle	80% for GMAW and 60% for pulse GMAW
Connecting cable length	4m
Teach cable length	10m
Dimensions (WxDxH)	420 x 600 x 1030 mm
Weight	110kg (including TP and connecting cable)

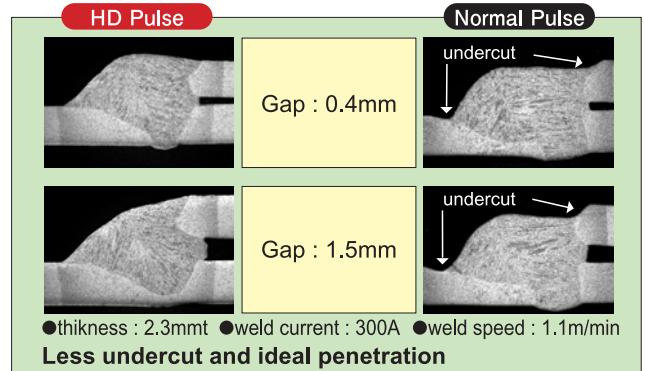
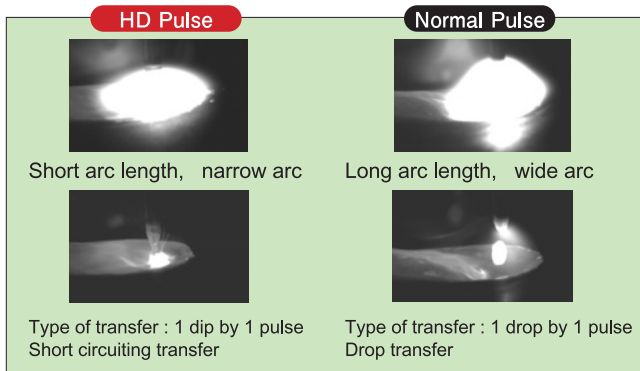
# HD-Pulse

## Hyper Dip Pulse Welding Method

Further evolution of Dip Pulse welding method

### Reducing heat input and minimizing spatter in pulse welding

- HD-Pulse realized lower spatter and ideal penetration in high current welding range.



- HD-Pulse has expanded the applicable scope of Pules MAG welding.
- Short arc length of HD-Pulse realizes stable arc. Especially it is effective in minimizing arc blow.



**Lead Free Solder**

Aiming for the earth-friendly company, Panasonic Welding Systems Co., Ltd. strives for the production of lead free products. All of our printed circuit board do not include lead solders.



**Safety precautions**

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

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