

ISO 9001 Registered



smart  
tough

# Welbee

## Welbee Inverter

**NEW**

### Be Smarter and Tougher Welding will Advance to the Next Stage

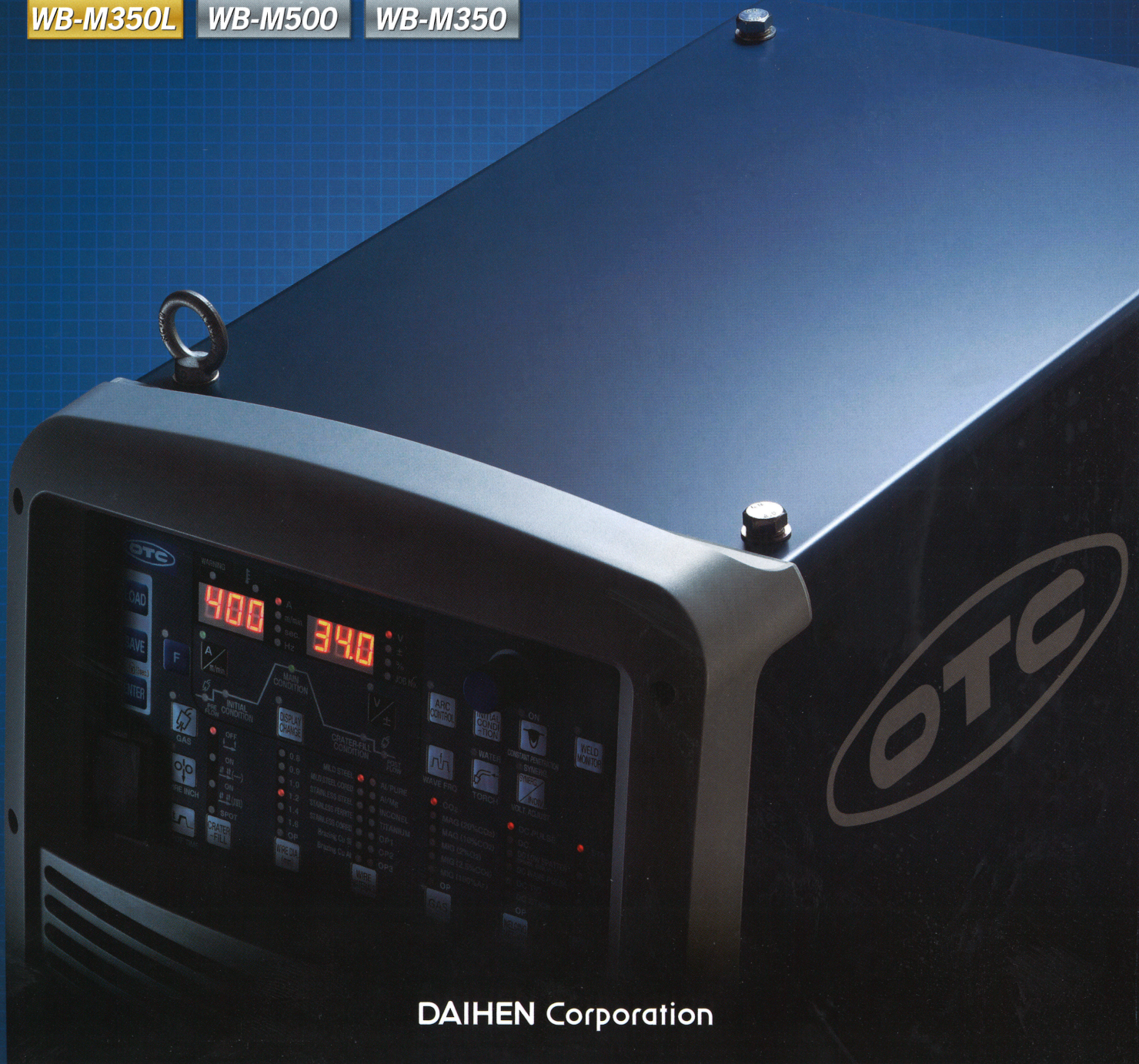
**WB-P500L**

**WB-P400**

**WB-M350L**

**WB-M500**

**WB-M350**



DAIHEN Corporation

# Welding Best Electronic Engine

## Welding control using LSI **Welbee**



Welding control using LSI “Welbee,”  
which can realize a significant improvement  
in welding performance and in enhancement of IT

Evolution to nanotechnology can be attained by introducing “Welbee,” a unique system developed by OTC.

“Welbee” can perform precise waveform control by faithfully providing feedback of the ultrahigh-speed sampled welding current and voltage, realizing high-precision and high-quality welding. In addition, you can also perform smart welding control over USB or LAN.

### be smart

#### Significant improvement in welding performance

Realization of a flat and beautiful  
weld bead appearance

Reduction in number of production man-hours  
required by realizing low-spatter generation

#### Smart quality control realized by introducing IT

Welding conditions and work results  
can be easily controlled over USB.



Improvement in traceability by mounting  
the expansion board (Optional)

### be tough






#### Pursuing durability and maintainability

High dust resistance

Easy maintenance

Easy connection to an external unit

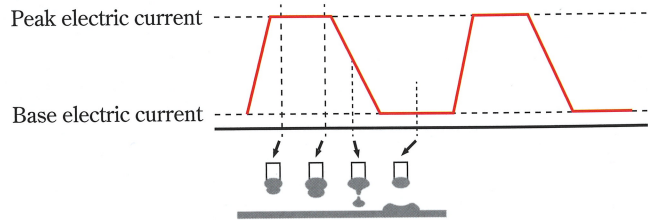


Model	Main features	Welding modes
 <p><b>WB-P500L</b></p>	<p>The high-end model achieving optimum welding performance for the welding of steel, stainless, and aluminum</p> <ul style="list-style-type: none"> <li>•Significant reduction in spatter generation in the range of low to high electric currents</li> <li>•Realization of high-quality pulse welding by performing optimized waveform control according to various types of materials</li> </ul>	<p>Pulse MAG</p> <p>Pulse MIG</p> <p>Low-spatter CO<sub>2</sub>/MAG</p> <p>Low-spatter SUS-MIG</p> <p>CO<sub>2</sub>    MAG</p> <p>AL-MIG    SUS-MIG</p>
 <p><b>WB-P400</b></p>	<p>All-round model available for welding of iron, stainless, and aluminum within a single unit!</p> <ul style="list-style-type: none"> <li>•Realization of high-quality pulse welding by performing optimized waveform control according to various types of materials</li> <li>•The arc stability is perfect even during high-speed welding</li> </ul>	<p>Pulse MAG</p> <p>Pulse MIG</p> <p>Low-spatter CO<sub>2</sub>/MAG</p> <p>Low-spatter SUS-MIG</p> <p>CO<sub>2</sub>    MAG</p> <p>AL-MIG    SUS-MIG</p>
 <p><b>WB-M350L</b></p>	<p>Low-spatter welding model realizing high productivity by reducing spatter generation</p> <ul style="list-style-type: none"> <li>•Significant reduction in spatter generation in the range of low to high electric currents</li> <li>•Realization of high-quality welding even during high-speed welding by reducing spatter generation</li> </ul>	<p>Pulse MAG</p> <p>Pulse MIG</p> <p>Low-spatter CO<sub>2</sub>/MAG</p> <p>Low-spatter SUS-MIG</p> <p>CO<sub>2</sub> (cored)    MAG</p> <p>AL-MIG    SUS-MIG</p>
 <p><b>WB-M500</b></p>	<p>Standard welding model realizing high-quality welding in any situation</p> <ul style="list-style-type: none"> <li>•Significant improvement in arc stability in the range of low to high electric currents</li> <li>•Realization of beautiful weld bead appearance with uniform weld bead end and less voltage fluctuation even during high-speed welding</li> </ul>	<p>Pulse MAG</p> <p>Pulse MIG</p> <p>Low-spatter CO<sub>2</sub>/MAG</p> <p>Low-spatter SUS-MIG</p> <p>CO<sub>2</sub>    MAG</p> <p>AL-MIG    SUS-MIG</p>
 <p><b>WB-M350</b></p>	<p>Standard welding model realizing high-quality welding in any situation</p> <ul style="list-style-type: none"> <li>•Significant improvement in arc stability in the range of low to high electric currents</li> <li>•Realization of beautiful weld bead appearance with uniform weld bead end and less voltage fluctuation even during high-speed welding</li> </ul>	<p>Pulse MAG</p> <p>Pulse MIG</p> <p>Low-spatter CO<sub>2</sub>/MAG</p> <p>Low-spatter SUS-MIG</p> <p>CO<sub>2</sub>    MAG</p> <p>AL-MIG    SUS-MIG</p>

## Offering highest welding performance for the

### What is pulse welding?

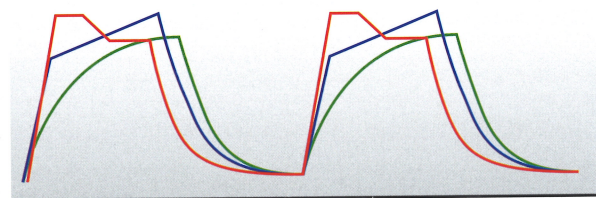
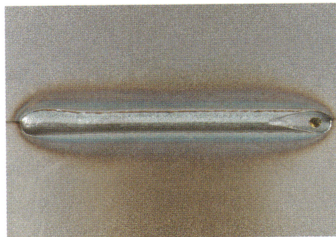
Pulse welding is a technique in which high (peak) electric current and low (base) electric current are applied at intervals to break away a droplet formed at the tip of a wire using the electromagnetic pinch force generated by the pulse electric current.



### OTC's pulse waveform control to realize high-quality welding

The Welbee inverter series affords the following advantages for performing optimum waveform control depending on the type of welding material.

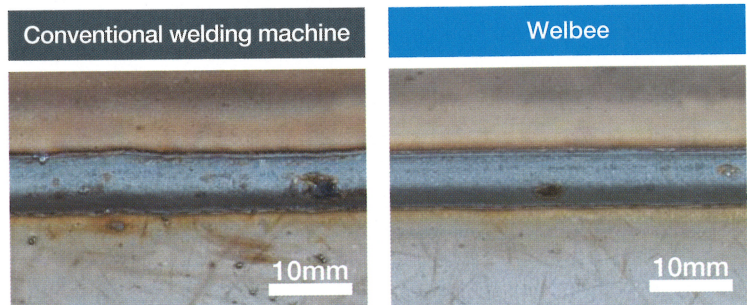
- You can realize an arc with less spatter generation in the range of low to high electric currents.
- You can realize good welding for surface-treated steel materials including galvanized sheet iron.
- You can increase the amount of melted wire and easily achieve a desired bead width even during high-speed welding.



- MAG pulse waveform for soft steels (WB-P500L)
- MIG pulse waveform for stainless steels
- MIG pulse waveform for aluminum

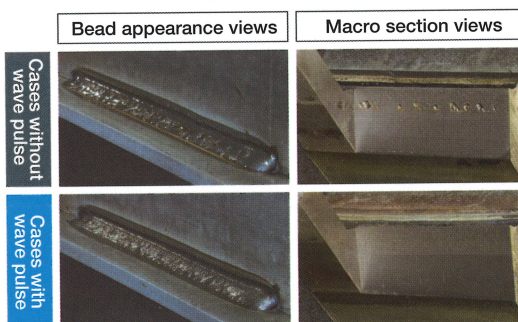
### Improving the welding quality of galvanized sheet iron

Even if a strong upwash of zinc vapor occurs when welding galvanized sheet iron, the novel optimized intelligent filter will enable you to perform stable welding. In addition, you can easily realize an even bead with a uniform end.



·Welding electric current:230A ·Welding voltage:23.5V ·Shield gas:80%Ar+20%CO<sub>2</sub>  
 ·Welding base material:Galvanized sheet iron:45g/m<sup>2</sup>,2.3mm ·Welding speed:100cm/min  
 ·Wire diameter:φ1.2mm ·Welded joint:Overlapped fillet welding

Even for galvanized sheet iron, in which blow holes are likely to be formed, you can reduce the number of blow holes by shaking a molten weld pool using the wave pulse welding method.

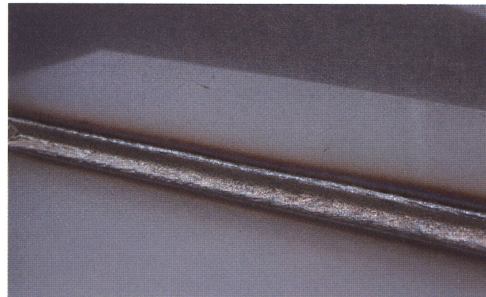


·Welding electric current:200A  
 ·Welding voltage:25V  
 ·Thickness of galvanized sheet iron:9mmt  
 ·Wire diameter:φ1.2mm  
 ·Welding speed:30cm/min  
 ·Wave frequency:3Hz

# welding of iron, stainless, and aluminum!

## Easy high-speed welding of thin stainless steel sheet

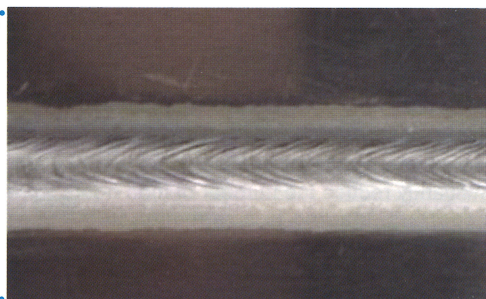
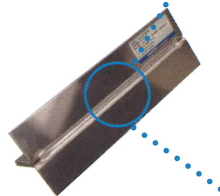
You can obtain a good bead even during high-speed welding of a stainless steel sheet because the pulse waveform control, which is exclusive for stainless steels and is unique to OTC, can securely realize droplet transfer even for a highly viscous stainless steel wire.



- Welding electric current:145A
- Welding voltage:23V
- Sheet thickness:2.0mmt
- Wire diameter:φ1.2mm
- Welding speed:100cm/min

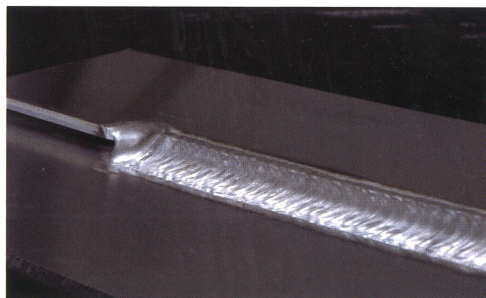
## Beautiful bead appearance using the aluminum MIG pulse waveform

You can significantly reduce the generation of dust-like spatter, which is problematic during aluminum welding, by employing OTC's original and novel pulse waveform control in which the electric current is changed moderately.



- Welding electric current:280A
- Welding voltage:21V
- Sheet thickness:1.5mmt
- Wire diameter:φ1.2mm
- Welding speed:160cm/min

In addition, you can easily realize a beautiful bead appearance with modulation equivalent to that of TIG welding by controlling the arc length and the wire feeding speed using the wave pulse welding method.

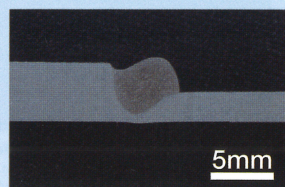
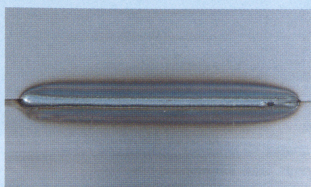


- Welding electric current:120A
- Welding voltage:16V
- Sheet thickness:3.0mmt
- Wire diameter:φ1.2mm
- Welding speed:50cm/min
- Wave frequency:2.5Hz

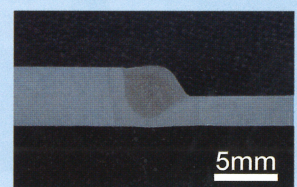
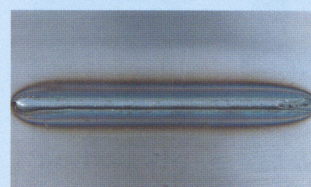
## High-speed pulse mode (For ALMEGA)

In combination with the ALMEGA PREMIUM Friendly series, you can optimize the performance of Welbee. You can perform high-speed pulse welding by setting an optimum waveform by interlocking with the speed information specified from the teaching pendant.

### [Standard mode]



### [High-speed mode]



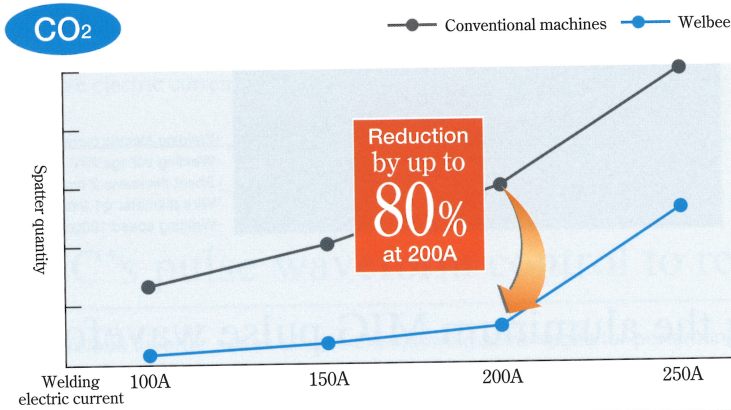
·Welding electric current:300A ·Welding voltage:22V ·Sheet thickness:3.2mmt ·Wire diameter:φ1.2mm ·Welding speed:150cm/min ·Wire feeding speed:11.0m/min ·Protrusion:15mm

WB-P500L

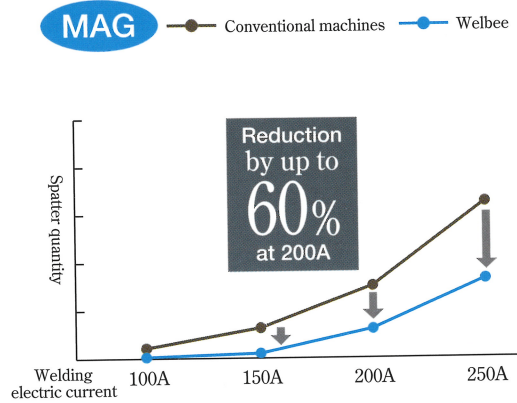
WB-M350L

## Improving the productivity by significantly reducing spatter generation!

Significant reduction of spatter generation not only in a low electric current range but also in mid and high electric current ranges

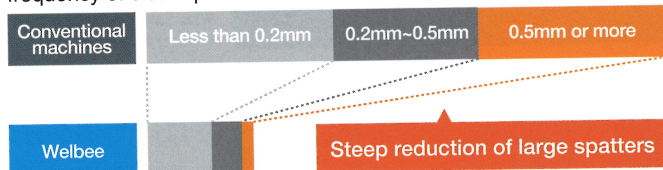


Realization of low-spatter generation equivalent to MAG welding even using CO<sub>2</sub> welding



Reducing spatters to the utmost limit even by MAG welding

Furthermore, the adhesion of generated spatters to a base material or a jig can be reduced owing to the small particle forms. As a result, you can significantly reduce the number of man-hours required for removing spatters, leading to a reduction in the frequency of cleanup work of the nozzle.



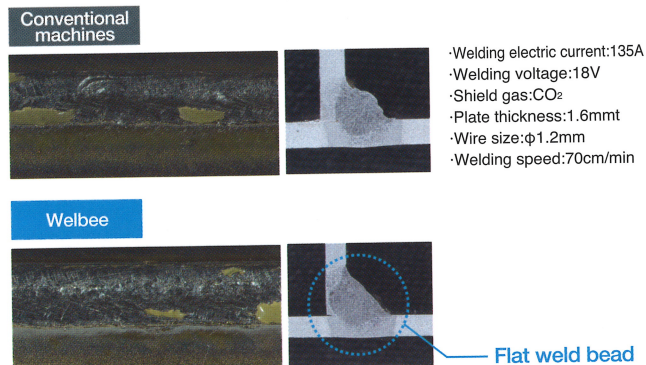
Spatter particle size	Less than 0.2mm	0.2~0.5mm	0.5mm or more
Influence on a base material or a jig	Spatters that do not adhere	Spatters that can be removed easily even when they adhere	Spatters that require a chisel for their removal after they have adhered
Conventional machines			
Welbee			

·Welding electric current:200A ·Welding speed:50cm/min ·Wire size:φ1.2mm  
·Shield gas:CO<sub>2</sub> ·Welding time:2.5min

Reduction of number of production man-hours required

## Realization of a flat and beautiful weld bead appearance

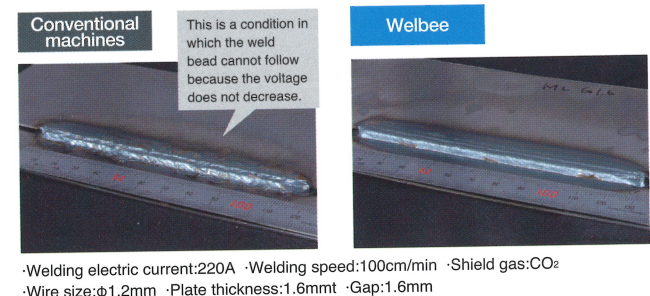
A molten pool becomes moderate via short circuit in a fixed cycle, realizing a flat weld bead with a uniform weld bead end.



Realization of a flat weld bead appearance with excellent heat input and deep molten status

## Realization of a further increase in speed owing to expansion of the conditional tolerance

The tolerance of the lower limit voltage is expanded and spatter generation is reduced even during high-speed welding, realizing high-quality welding.



Reduction in frequency of undercut occurrence and humping during high-speed welding

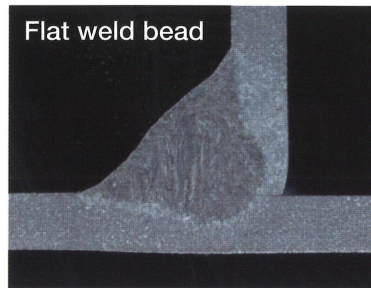
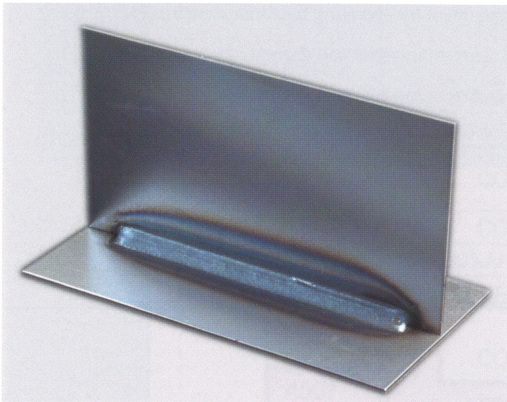
WB-M500

WB-M350

## Standard welding model realizing high-quality welding in every situation

### Significant improvement in the arc stability in the range from low to high electric currents

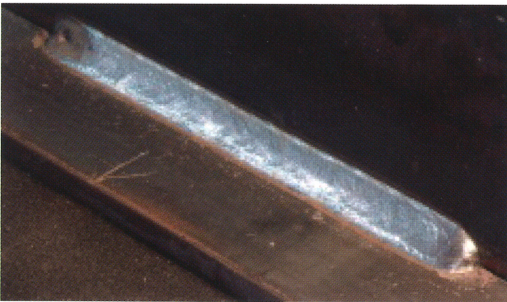
High-performance welding for a wide range from semi-automatic to automatic machines can be realized by performing optimal and fine waveform control according to carefully divided applications (standard/high speed/extension).



- Welding electric current:130A
- Welding voltage:16.5V
- Shield gas:MAG
- Plate thickness:1.6mmt

Uniform and beautiful weld bead appearance with a small amount of spatter

A stable arc is realized even for a change in the protruding length or in weaving welding for a single-V groove joint.

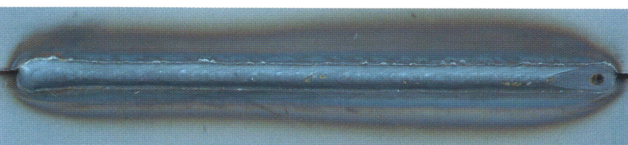


- Welding electric current:300A
- Welding voltage:30V
- Wire size:φ1.2mm, Mild steel flux cored
- Plate thickness:9mmt
- Weaving frequency:2.5Hz Oscillation:±1.5mm

Realization of a flat weld bead appearance with fewer uneven sections on the surface

### A further increase in speed is realized by mounting a high-speed welding mode

A beautiful weld bead appearance and less voltage fluctuations are realized even during high-speed welding in which a minute fluctuation of the arc is likely to cause a defect in the weld bead appearance.

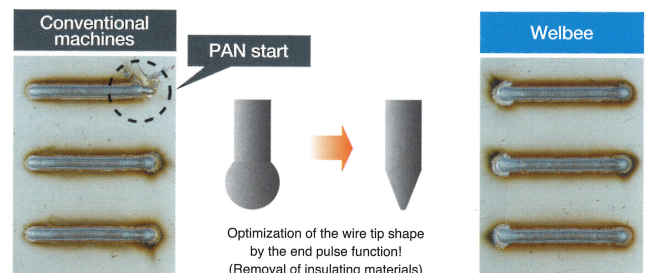


- Welding electric current:250A
- Welding voltage:25V
- Welding speed:100cm/min
- Wire size:φ1.2mm

You can easily widen the weld bead width and expand the target tolerance shift.

### The startup performance is improved by an evolved digital start.

The startup performance in the stainless mode is significantly improved by the digital turbo start and the end pulse function unique to OTC, which can optimize the wire tip shape.



Optimization of the wire tip shape by the end pulse function!  
(Removal of insulating materials)

Material:Stainless

Significant reduction of PAN start and prevention of weld bead chips at a start section

## Smart functions to improve the productivity

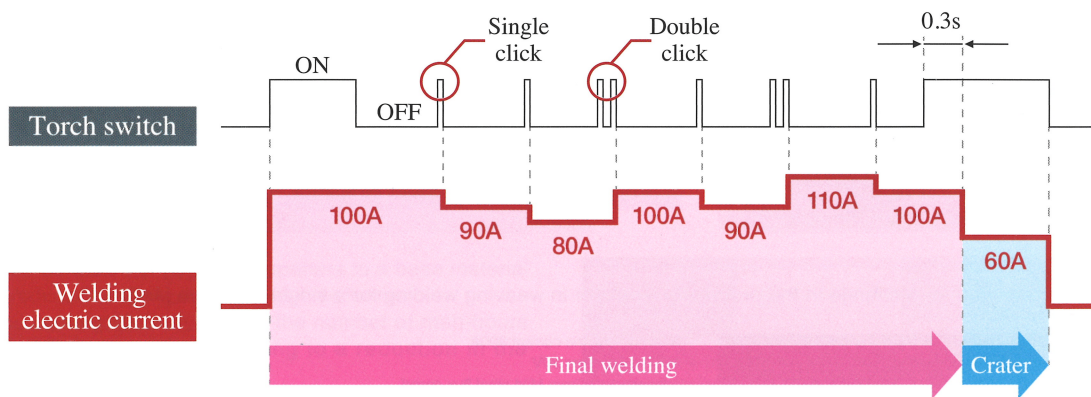
### Adjusting the welding electric current by clicking

You can increase or decrease the output electric current by any preset amount of change by operating the torch switch (single click/double click). If you want to change the input heat during welding in accordance with sheet-thickness changes, you can change the welding conditions without suspending your welding work.

[Example]

< Conditions >

- Crater setting:Existence
- Function No.[48] (Electric current adjustment by operating the torch switch):ON
- Initial conditions:Non-existence
- Function No.[49] (Amount of electric-current increase and decrease by single click):-10
- Welding electric current:100A
- Function No.[50] (Amount of electric-current increase and decrease by double click):20
- Crater electric current:60A

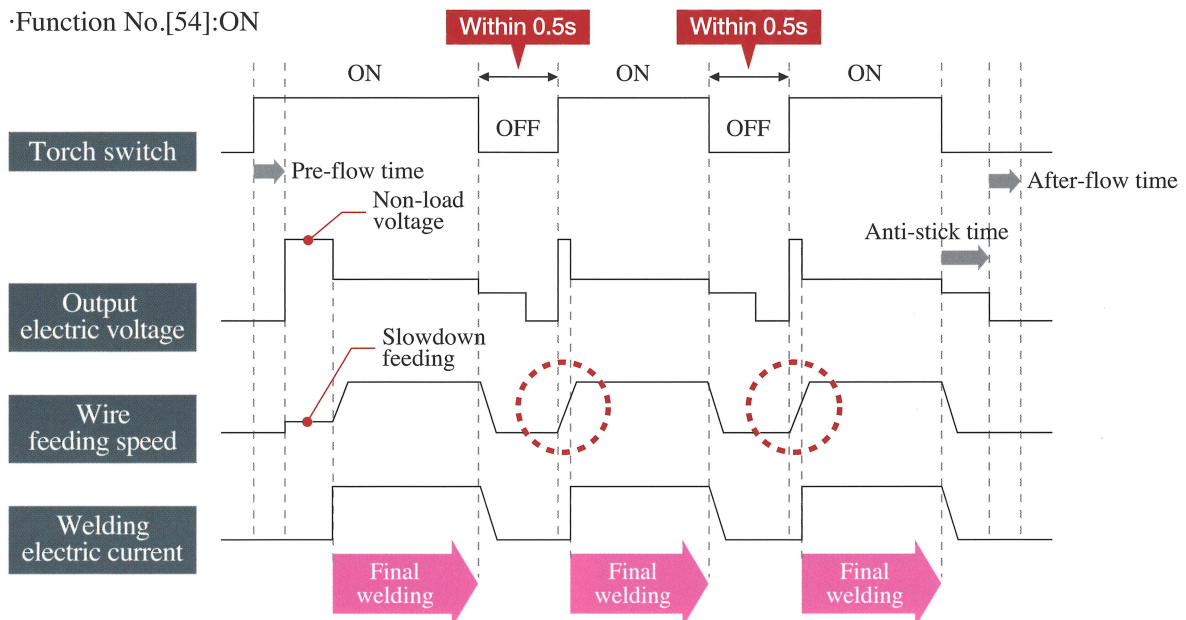


\*You cannot use this function when the analog remote controller is connected.

### High-speed tack start

You can use settings such that the welding machine starts skipping the slowdown feeding operation when the torch switch is pressed again within 0.5s after completing the welding work.

You can realize satisfactory tack welding, resulting in a reduction in the number of working hours.



## Abundant welding modes

Model	Welding process	Gas	Wire	Wire size (mmφ)						
				0.8	0.9	1.0	1.2	-	-	
WB-M350	Direct current	CO <sub>2</sub>	Soft steel solid	0.8	0.9	1.0	1.2	-	-	
			Soft steel flux cored	-	-	-	1.2	1.4	-	
			Stainless flux cored	-	0.9	-	1.2	-	-	
		MAG[80%Ar+20%CO <sub>2</sub> ]	Soft steel solid	0.8	0.9	1.0	1.2	-	-	
		MIG[98%Ar+2%O <sub>2</sub> ]	Stainless steel solid	0.8	0.9	1.0	1.2	-	-	
WB-M500	Direct current	CO <sub>2</sub>	Soft steel solid	-	-	-	1.2	1.4	1.6	
			Soft steel flux cored	-	-	-	1.2	1.4	1.6	
			Stainless flux cored	-	-	-	1.2	-	1.6	
		MAG[80%Ar+20%CO <sub>2</sub> ]	Soft steel solid	-	-	-	1.2	1.4	1.6	
		MIG[98%Ar+2%O <sub>2</sub> ]	Stainless steel solid	-	-	-	1.2	-	1.6	
WB-M350L	Direct current	CO <sub>2</sub>	Soft steel flux cored	-	-	-	1.2	1.4	-	
			Stainless flux cored	-	0.9	-	1.2	-	-	
	Direct current low spatter	CO <sub>2</sub>	Soft steel solid	0.8	0.9	1.0	1.2	-	-	
			MAG[80%Ar+20%CO <sub>2</sub> ]	Soft steel solid	0.8	0.9	1.0	1.2	-	-
			MIG[98%Ar+2%O <sub>2</sub> ]	Stainless steel solid	0.8	0.9	1.0	1.2	-	-
WB-P400	Direct current	CO <sub>2</sub>	Soft steel solid	0.8	0.9	1.0	1.2	-	-	
			Soft steel flux cored	-	-	-	1.0	1.2	-	-
			Stainless steel flux cored	-	0.9	-	1.2	-	-	
		MAG[80%Ar+20%CO <sub>2</sub> ]	Soft steel solid	0.8	0.9	1.0	1.2	-	-	
		MIG[98%Ar+2%O <sub>2</sub> ]	Stainless steel solid	0.8	0.9	1.0	1.2	-	-	
		MIG[Ar]	Hard aluminum	-	-	-	1.0	1.2	-	1.6
	Direct current pulse	MAG[80%Ar+20%CO <sub>2</sub> ]	Soft steel solid	-	0.9	1.0	1.2	-	-	
			MIG[98%Ar+2%O <sub>2</sub> ]	Stainless steel solid	-	0.9	1.0	1.2	-	-
		MIG[Ar]	Hard aluminum	-	-	-	1.0	1.2	-	1.6
			Soft aluminum	-	-	-	1.2	-	1.6	
	Direct current wave pulse	MAG[80%Ar+20%CO <sub>2</sub> ]	Soft steel solid	-	0.9	1.0	1.2	-	-	
			MIG[98%Ar+2%O <sub>2</sub> ]	Stainless steel solid	-	0.9	1.0	1.2	-	-
MIG[Ar]		Hard aluminum	-	-	-	1.0	1.2	-	1.6	
		Soft aluminum	-	-	-	1.2	-	1.6		
WB-P500L	Direct current	CO <sub>2</sub>	Soft steel solid	0.8	0.9	1.0	1.2	1.4	1.6	
			Soft steel flux cored	-	-	-	1.0	1.2	1.4	1.6
			Stainless steel flux cored	-	0.9	-	1.2	-	1.6	
		MAG[80%Ar+20%CO <sub>2</sub> ]	Soft steel solid	0.8	0.9	1.0	1.2	1.4	1.6	
		MIG[98%Ar+2%O <sub>2</sub> ]	Stainless steel solid	0.8	0.9	1.0	1.2	-	1.6	
		MIG[Ar]	Hard aluminum	-	-	-	1.0	1.2	-	1.6
			Soft aluminum	-	-	-	1.2	-	1.6	
		Direct current low spatter	CO <sub>2</sub>	Soft steel solid	0.8	0.9	1.0	1.2	-	-
	MAG[80%Ar+20%CO <sub>2</sub> ]			Soft steel solid	0.8	0.9	1.0	1.2	-	-
	MIG[98%Ar+2%O <sub>2</sub> ]		Stainless steel solid	0.8	0.9	1.0	1.2	-	-	
			Ferrite-system stainless steel solid	0.8	0.9	1.0	1.2	-	-	
	Direct current pulse	MAG[80%Ar+20%CO <sub>2</sub> ]	Soft steel solid	0.8	0.9	1.0	1.2	1.4	1.6	
			Stainless steel solid	0.8	0.9	1.0	1.2	-	1.6	
		MIG[98%Ar+2%O <sub>2</sub> ]	Ferrite-system stainless steel solid	0.8	0.9	1.0	1.2	-	-	
			Hard aluminum	-	-	-	1.0	1.2	-	1.6
		MIG[Ar]	Soft aluminum	-	-	-	1.2	-	1.6	
			Hard aluminum	-	-	-	1.0	1.2	-	1.6
	Direct current wave pulse	MAG[80%Ar+20%CO <sub>2</sub> ]	Soft steel solid	0.8	0.9	1.0	1.2	1.4	1.6	
			Stainless steel solid	0.8	0.9	1.0	1.2	-	1.6	
		MIG[98%Ar+2%O <sub>2</sub> ]	Ferrite-system stainless steel solid	0.8	0.9	1.0	1.2	-	-	
			Hard aluminum	-	-	-	1.0	1.2	-	1.6
		MIG[Ar]	Soft aluminum	-	-	-	1.2	-	1.6	
			Hard aluminum	-	-	-	1.0	1.2	-	1.6

\*Welding modes may be changed for your area.

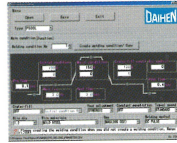
## Quality control by introducing IT and its expansibility

You can easily edit the "Welding condition memory function" or its backup data using your PC because the USB port is equipped as standard.

Welding condition edit

Welding condition copy

Welding condition backup



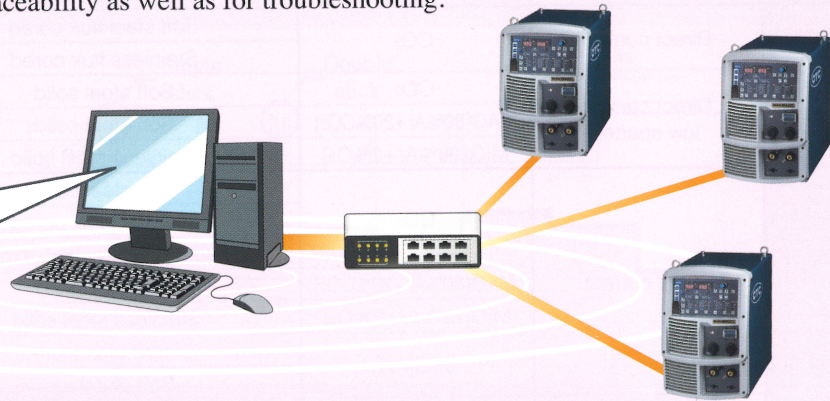
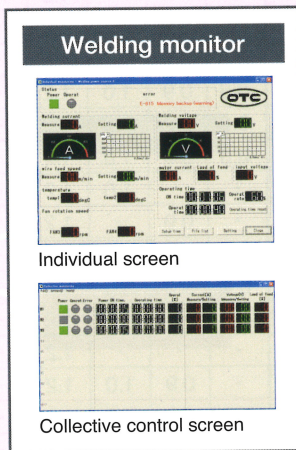
PC edit screen



\*You can download it from OTS's website free of charge. (<http://www.daihen.co.jp/yosetsu/other/download.html>)

### Welding monitor (Optional)

In addition, you can collect large amounts of detailed data over USB or LAN by mounting the expansion board. Accordingly, you can verify detailed information about what happened and when, and then utilize this for improving quality control through traceability as well as for troubleshooting.



#### Hardware requirements

- For Windows 7/Vista: Pentium 4, 1 GHz or more/RAM, 1 GB or more/Screen resolution, 1024x768 or larger
- For Windows XP, 2000: Pentium M, 1 GHz or more/RAM, 512 MB or more/Screen resolution: 1024x768 or larger
- \*A LAN connector (fixed cable) is necessary.

#### Parameters in which data can be saved

Welding electric current (Setup)	Welding voltage (Setup)	Welding electric current (Measured value)	Welding voltage (Measured value)
Feeding speed	Startup signals	Input voltage at the primary side	Motor electric current
Inching signals	Power supply internal temperature	FAN revolution	

\*Refer to the attached standard specifications for details.

## Manufacturing products based on future perspectives

WB-M350L  
WB-P500L

Reduction of spatter generation  
by up to **80%**

This welding machine can reduce the amount of spatter generated in the mid and high electric current ranges by up to 80% if compared with conventional digital inverter welding machines. You can also reduce the amount of industrial waste and therefore contribute to environmental protection.

**80% reduction**

WB-M350

Reduction of energy loss by **~10%**

Using OTC's unique inverter technology, you can reduce the energy loss by ~10% if compared with conventional machines. (Rated power consumption of 15kW → 13.6kW)



Compatible with **RoHS** standards

From the viewpoint of protecting the environment, this welding machine is compatible with Europe's RoHS directive that regulates limitations on the use of environmentally hazardous substances.



# Durability/maintainability and easy connection operation

Dust penetration into the precision parts is reduced by ~98%!!

## Welbee side flow structure

### • High dust resistance

Improvement in reliability is realized by adopting a separation structure that prevents dust from entering into the area in which electronic components etc. are mounted.

### • Easy maintenance

By controlling the revolutions of the cooling fan according to its usage rate or ambient air temperature, this welding machine can prevent dust from entering to the maximum extent possible. In addition, you can easily clean up dirt and dust by air-blowing them without opening the case.

Precision part area



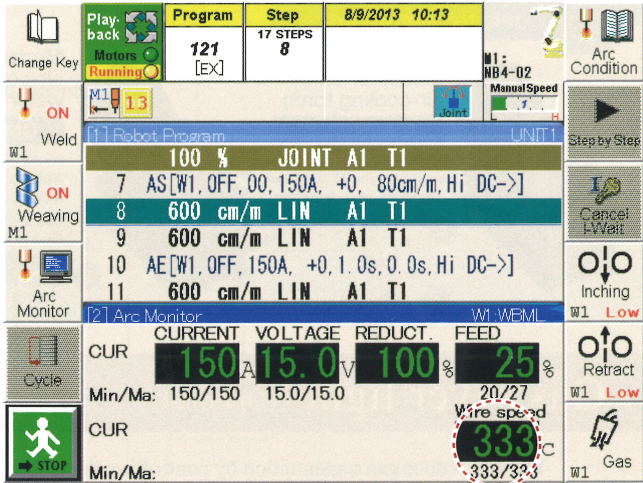
## Easy connection to external equipment

The machine's capability is maximized by making a connection to the ALMEGA Friendly series.

- You can easily make a connection to the ALMEGA Friendly series because an interface board is equipped as standard.



- You can easily set up conditions on the Welbee special screen.
- You can easily confirm the welding status on the arc monitor screen.

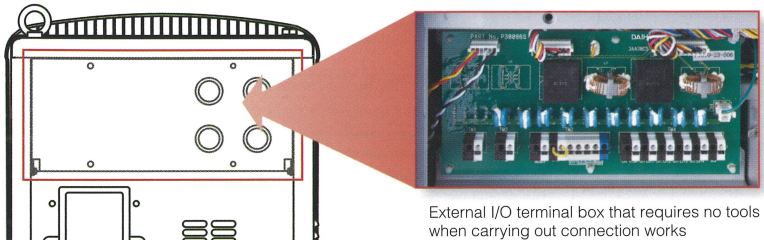


Displayed example of the arc monitor screen

- You can also monitor the wire feeding speed.
- The required monitoring items are arranged in an easy-to-see way by mounting the customization function.

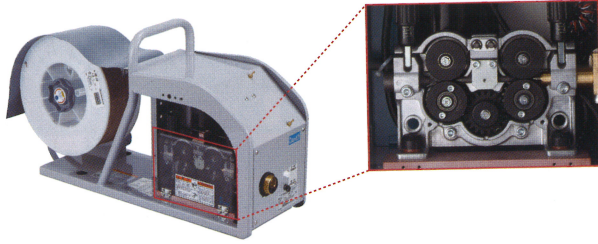
## Easy connection to external equipment using the connection terminal box that requires no tools

You can connect this welding machine with external equipment only by opening a small window on its rear surface.



External I/O terminal box that requires no tools when carrying out connection works

## New wire feeder unit for achieving high reliability and safety



Two-drive-and-two-driven feeding system and encoder feedback control that realize reliable wire feeding (Models for aluminum: Four-drive system, Models for iron and stainless steels: Two-drive-and-two-driven system)

### Durability

The feeding motor has a dust- and drip-proof structure that prevents dust or fumes from entering inside.

### Maintainability

The outlet guide can be mounted or dismantled without using any tools.

### Safety

A protective cover to prevent one's hand from carelessly entering the rotation section is equipped as standard.

### Weight saving

Weight saving is realized by adopting an open frame structure. (Weight reduction of 1 kg if compared with conventional machines) [In the case of the models for steel and stainless]

## Numerous lineups applicable to various wire materials and welding conditions!

### Models for iron and stainless



**Model for an air-cooling torch**  
**CM-7402**

Central connection system enabling you to carry out attaching and detaching works by one operation



**Model for an air-cooling torch**  
**CMV-7402**

Feeder for a model of a low spatter generation at a point near the voltage detection wire



**Model for a water-cooling torch**  
**CMW-742**

Responding to a torch type for a large electric current/high duty cycle

### Models for aluminum



**Model for an air-cooling torch**  
**CMA-7402**

Central connection system enabling you to carry out attaching and detaching works by one operation



**Model for an air-cooling torch/water-cooling torch**  
**CMAW-7402**

You can attach or detach a water-cooling torch without using a tool and also connect it to an air-cooling torch  
Applicable water-cooling torch: WTAW 400-SD



**Model for a water-cooling torch**  
**CMAW-742**

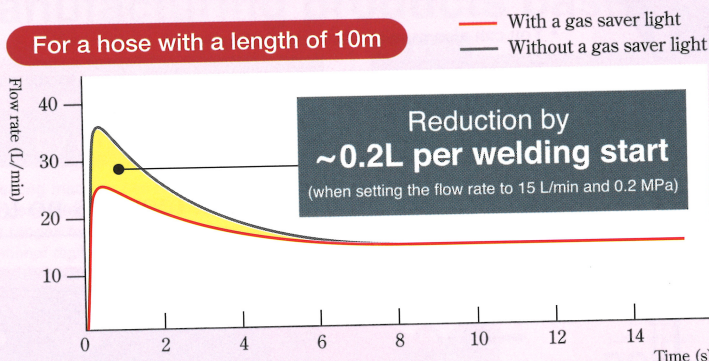
Applicable to a torch type for a large electric current/high duty cycle



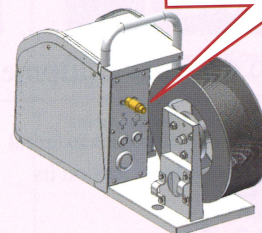
Adopting a new wire reel cover that has superior dust-proof and rainproof performance and strength

## Gas saver light (Optional) <Parts No.: K5808 A00>

You can reduce gas consumption by controlling the rush current at the time of starting your welding work. The more similar the start count is to that in the case of tack welding, the more economical it will be!



Attach Gas saver light to a gasfitting!



The above graph shows the experimental results obtained in our company's experimental environment. The results may differ according to the operating conditions.

### Precautions

- The effects may become smaller when the length of your hose decreases.
- You should use the following gas flow rate regulators depending on the gases used (when setting it to 0.2 MPa or more).  
For CO<sub>2</sub>: AU-888, NP-201 For CO<sub>2</sub>/MAG/MIG: FCR-226

# Adoption of a digital meter that has excellent visibility even in a dark place

You can confirm not only the electric current and voltage during the welding operation but also the average electric current and voltage after completing the welding operation.

In addition, you can easily take measures against errors by referring to the error code display.



**1 Welding condition memory function (100 conditions)**

One-touch memory/regeneration function for welding conditions according to work pieces is available. Improvement in the workability and repeatability of the welding conditions is realized.

**2 Function key**

Operators can easily set up a desired special function, because functions that were set up using the internal switches for the welding power supply in the past can be set up on the front panel.

**3 Selection of welding modes**

A desired welding process and wire size can be easily set up on the touch panel. Taking a glance at the LED display will allow you to confirm all the present settings.

**4 Easy condition setup using a dial**

The repeatability is also excellent because precise setup in units of 1 A or 0.1 V is possible.

**5 Arc characteristics**

You can set up a desired arc freely. According to the usage environments, you can set up the optimal arc status.

**6 Various types of function settings**

You can also easily set up various types of functions using the touch panel to achieve high-quality welding.

**7 Optional modes**

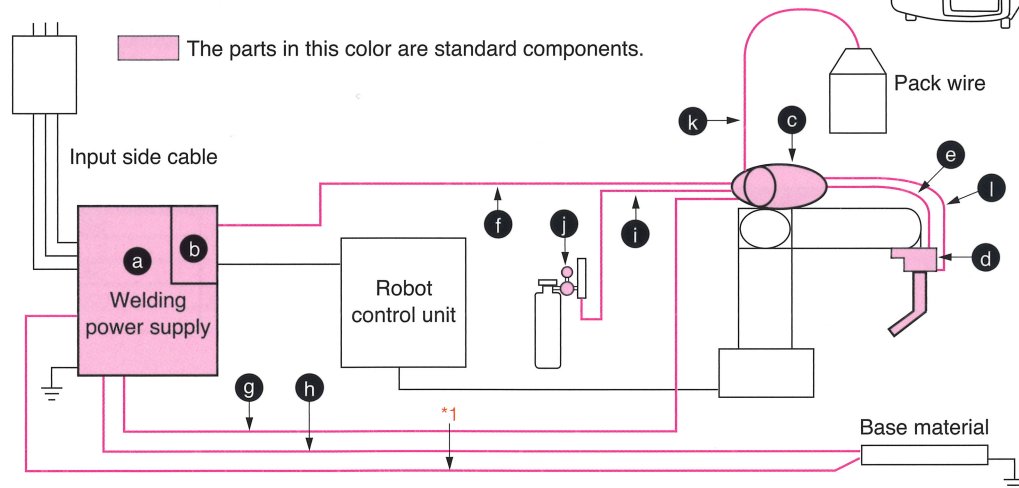
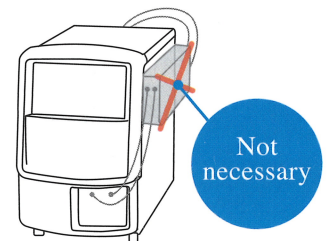
This welding machine can easily cope with welding for special materials by installing software as an optional mode to satisfy various customer requirements.

## Combination with a robot manufactured by another company (If a 10m cable comes as a set)

Reduction in external wiring works is realized because you only have to install an optional welding machine built-in type interface and special software in order to make a connection to a robot manufactured by another company.

This diagram shows only the main structure components of the CO<sub>2</sub>/MAG specifications.

When making a connection to a robot manufactured by another company or to an automatic machine, you have to confirm the detailed specifications separately.



Product name	Model	Model	Model	Model	Model
a Welding power supply	WB-P500L	WB-P400	WB-M400L	WB-M500	WB-M400
b Interface			IFR-101WB		
c Wire feeder unit			CMRE-741		
d Welding torch			K2331-type curved torch		
e Single-line-type power cable			K5369(1.1m),K5370(1.2m)		
f Feeder unit side control cable (10cores)			*2 BKCPJ-1010		
g Feeder unit side power cable	*2 BKPT-6012	*2 BKPDT-6012	*2 BKPDT-6012	*2 BKPT-6012	*2 BKPDT-3812
h Base material side power cable	*2 BKPT-6012	*2 BKPDT-6012	*2 BKPDT-6012	*2 BKPT-6012	*2 BKPDT-3812
i Gas hose			*2 BKGG-0610		
f Gas regulator			FCR-226 [Manufactured by Yutaka Co., Ltd.]		
k Conduit			*3 Z318P50 (9/16-18UNF is used for the mounting section of the guide adaptor.)		
l Voltage detection cable (Torch side)	*4 K5416P00(3m)	-	*4 K5416P00(3m)	-	-

\*1. The length of the K5791G00 cable attached to the welding power supply unit is 5 m. If you need a cable longer than 5 m, please use an optional one.

\*2. Select a cable or a gas hose with a desired length from among 5, 10, 15, and 20 m.

\*3. When using the 7/16-20UNF conduit, you have to use the L7810D04 guide adaptor separately.

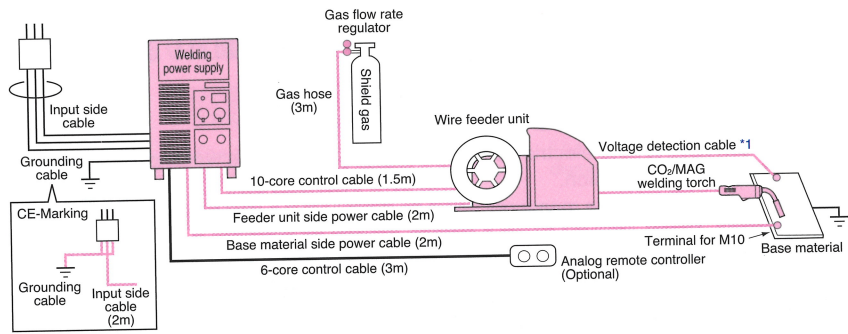
\*4. This is the wiring for detecting the voltage at the tip of a torch. Please use this wiring after cutting it to a desired length. If the voltage cannot be detected from the tip of the torch, the welding quality will worsen.

## Connection diagram

The parts in this color are standard components.  
(CO<sub>2</sub>/MAG air cooling specification)

\*1 Use the K5791G00 voltage detection cable (5m) attached to the welding power supply unit. (Only for Low spatter model)

The voltage detection cable is not necessary when you do not use the low-spatter-generation type.



## • Welding power supply

General name		Welbee Inverter M350L [M400L]	Welbee Inverter M350[M400]	Welbee Inverter M500
•Welding Power Supply	Unit form	WB-M350L[M400L]		WB-M500
Rated input voltage	V	400±15%(Common to both 50and60Hz)		400±15%(Common to both 50and60Hz)
Number of phases	-	Three phases		Three phases
Rated input voltage	kVA	14.7[18.2](13.6[17.0]kW)		25.4[24.4](23.1[23.3]kW)
Rated usage rate	%	60[50]		100
Rated output electric current	A	350[400]		500
Rated load voltage	V	31.5[34]		39
Output electric current range	A	30~350[30~400]		30~500
Output voltage range	V	12~36[12~34]		15.5~39[12~39]
Maximum no-load voltage	V	70		70
Outside dimension(WxDxH)	mm	395×710×640[592](Excluding eyebolts)		395×710×810[762](Excluding eyebolts)
Mass	kg	62		77[80]

		WB-M350L	WB-M350	WB-M500
•Feeder unit side power cable	Unit form	BKPDT-6002	BKPDT-3802	BKPT-6002
Cable size	mm <sup>2</sup>	60	38	60
•Base material side power cable	Unit form	BKPDT-6002	BKPDT-3802	BKPT-6002
Cable size	mm <sup>2</sup>	60	38	60

		CMV-7402	CM-7402	CM-7402
•Wire feeder unit	Unit form	CMV-7402	CM-7402	CM-7402
*Suitable wire diameter	mm	(0.8),0.9,1.0,1.2,(1.4),(1.6)	(0.8),0.9,1.0,1.2,(1.4),(1.6)	(0.8),0.9,1.0,1.2,(1.4),(1.6)
Wire used	-	A solid wire and flux wire	A solid wire and flux wire	A solid wire and flux wire
Wire feeding speed	m/min	22(Maximum)	22(Maximum)	22(Maximum)
Outside dimension(WxDxH)	mm	207×588×372	207×588×372	207×588×372
Mass	kg	13	13	13

		WT3500V-SD	WT3510V-SD	WT3500-SD	WT3510-SD	WT5000-SD
•Welding Torch	Unit form	WT3500V-SD	WT3510V-SD	WT3500-SD	WT3510-SD	WT5000-SD
Rated electric current	A	350(CO <sub>2</sub> )/200(MAG)	350(CO <sub>2</sub> )/300(MAG)	350(CO <sub>2</sub> )/200(MAG)	350(CO <sub>2</sub> )/300(MAG)	500(CO <sub>2</sub> )/450(MAG)
*Suitable wire diameter	mm	(0.9),(1.0),1.2	(0.9),(1.0),1.2,(1.4)	(0.9),(1.0),1.2	(0.9),(1.0),1.2,(1.4)	(1.2),1.4,(1.6)
Usage rate	%	30(CO <sub>2</sub> )/30(MAG)	60(CO <sub>2</sub> )/30(MAG)	30(CO <sub>2</sub> )/30(MAG)	60(CO <sub>2</sub> )/30(MAG)	60(CO <sub>2</sub> )/30(MAG)
Cooling system	-	Air cooling	Air cooling	Air cooling	Air cooling	Air cooling
Cable length	m	3,(4,5,6)	3,(4,5,6)	3,(4,5,6)	3,(4,5,6)	3,(4,5,6)

[ ] CE-Marking

\*When using a wire with the diameter indicated in the parentheses, an optional part is necessary.

## • CE-Marking specification

		CM-7402-D	CMA-7402-D
•Wire feeder unit	Unit form	CM-7402-D	CMA-7402-D
Suitable wire diameter	mm	(0.8),0.9,1.0,1.2,(1.6)	1.0,1.2,(1.6)
Wire used	-	A solid wire and flux wire	Hard aluminum and soft aluminum
Wire feeding speed	m/min	22(Maximum)	22(Maximum)
Outside dimension(WxDxH)	mm	214×805×429	214×805×429
Mass	kg	17	17

		WT230-SED	WT280-SED	WT330-SED	WT400-SED	WTW401-SED
•CO <sub>2</sub> /MAG Welding Torch	Unit form	WT230-SED	WT280-SED	WT330-SED	WT400-SED	WTW401-SED
Rated electric current	A	230(CO <sub>2</sub> )/200(MAG)	280(CO <sub>2</sub> )/250(MAG)	330(CO <sub>2</sub> )/300(MAG)	400(CO <sub>2</sub> )/350(MAG)	400(CO <sub>2</sub> )/350(MAG)
Suitable wire diameter	mm	(1.0),1.2	(1.0),1.2	1.2,(1.6)	1.2,(1.6)	1.2,(1.6)
Usage rate	%	60	60	60	60	100
Cooling system	-	Air cooling	Air cooling	Air cooling	Air cooling	Water cooling
Cable length	m	3,(4,5)	3,(4,5)	3,(4,5)	3,(4,5)	3,(4,5)

		WTAW350-SED
•Aluminum MIG Welding Torch	Unit form	WTAW350-SED
Rated electric current	A	350
Suitable wire diameter	mm	1.2,(1.6)
Usage rate	%	100
Cooling system	-	Water cooling
Cable length	m	3

• Input Power Capacity and Cable Specifications

Items	Model Name	WB-M350L[M400L]	WB-M350[M400]	WB-M500	WB-P400	WB-P500L
Primary input voltage	V	400±15%	400±15%	400±15%	400±15%	400±15%
phase	-	Three phases	Three phases	Three phases	Three phases	Three phases
Input Power Capacity	kVA	16 [19] or more	16 [18] or more	26 [24] or more	20 or more	26 or more
Fuse / Breaker Capacity	Fuse	A	40	50	40	50
	*1 Breaker	A	40	40	50	40
*2 Input side cable	mm <sup>2</sup>	6 or more to 38 or less	6 or more to 38 or less	10 or more to 38 or less	6 or more to 38 or less	10 or more to 38 or less
Base Metal / Feeder Power Cable	mm <sup>2</sup>	60	38	60	60	60
*2 Earth Ground cable	mm <sup>2</sup>	6 or more	6 or more	10 or more	6 or more	10 or more

[ ] CE-Marking

\*1 When using a no-fuse breaker, use a motor breaker

\*2 Numerical value in a parenthesis indicates the size of the welding machine side pressure terminal.

CE-Marking welding power supplies are equipped with an input cable and a ground cable.

Welbee Inverter P400		Welbee Inverter P500L	
WB-P400		WB-P500L	
400±15%(Common to both 50and60Hz)		400±15%(Common to both 50and60Hz)	
Three phases		Three phases	
19.2(18.3kW)		25.0(24.2kW)	
50		60(Direct current)/80(Pulse)	
400		500(Direct current)/400(Pulse)	
34		39(Direct current)/34(Pulse)	
30~400		30~500(Direct current)/30~400(Pulse)	
12~34		12~39(Direct current)/12~34(Pulse)	
80		80	
395×710×640[592](Excluding eyebolts)		395×710×810[762](Excluding eyebolts)	
62		83	

WB-P400		WB-P500L	
BKPDT-6002		BKPDT-6002	
60		60	
BKPDT-6002		BKPDT-6002	
60		60	

CM-7402	CMA-7402	CMAW-7402	CM-7402	CMV-7402	CMW-742	CMA-7402	CMAW-742
(0.8),0.9,1.0,1.2,(1.4),(1.6)	1.0,1.2,(1.6)	(1.0),1.2,1.6	(0.8),0.9,1.0,1.2,(1.4),(1.6)	(0.8),0.9,1.0,1.2,(1.4),(1.6)	(1.2),1.4,1.6,(2.0)	1.0,1.2,(1.6)	(1.0),1.2,1.6,(2.0),(2.4)
A solid wire and flux wire	Hard aluminum and soft aluminum	Hard aluminum and soft aluminum	A solid wire and flux wire	A solid wire and flux wire	A solid wire and flux wire	A solid wire and flux wire	Hard aluminum and soft aluminum
22(Maximum)	22(Maximum)	22(Maximum)	22(Maximum)	22(Maximum)	22(Maximum)	22(Maximum)	22(Maximum)
207×588×372	248×766×429	248×778×429	207×588×372	207×588×372	207×602×372	248×766×429	248×780×429
13	15	16	13	13	13	15	15

WT3510-SD	WTA300-SD	WTAW400-SD	WT5000-SD	WT3510V-SD	WTCW-5001	WTA300-SD	WTCW-5002(Standard)
350(CO <sub>2</sub> )/300(MAG)	300	400	500(CO <sub>2</sub> )/450(MAG)	350(CO <sub>2</sub> )/300(MAG)	500	300	500
(0.9),(1.0),1.2,(1.4)	(1.0),1.2,(1.6)	1.2,(1.6)	(1.2),1.4,(1.6)	(0.9),(1.0),1.2,(1.4)	(1.0),1.2,(1.6)	(1.0),1.2,(1.6)	1.2,1.6
60(CO <sub>2</sub> )/30(MAG)	50	100	60(CO <sub>2</sub> )/30(MAG)	60(CO <sub>2</sub> )/30(MAG)	70	50	70
Air cooling	Air cooling	Water cooling	Air cooling	Air cooling	Water cooling	Air cooling	Water cooling
3,(4,5,6)	3	3	3,(4,5,6)	3,(4,5,6)	3	3	3

•Wire Feeder Control Cable(10-pin) Choose cable from the following.	2m	5m	10m
Standard Cable	BKCPP-1002	BKCPP-1007	BKCPP-1012

•Wire Feeder Power Cable Choose cable from the following.	2m	5m	10m	15m	20m
38mm <sup>2</sup>	BKPDJ-3802	BKPDJ-3807	BKPDJ-3812	BKPDJ-3817	BKPDJ-3822
60mm <sup>2</sup>	BKPDJ-6002	BKPDJ-6007	BKPDJ-6012	BKPDJ-6017	BKPDJ-6022
80mm <sup>2</sup>	BKPDJ-8002	BKPDJ-8007	BKPDJ-8012	BKPDJ-8017	BKPDJ-8022

•Base Metal Power Cable Choose cable from the following.	2m	5m	10m	15m	20m
38mm <sup>2</sup>	BKPDJ-3802	BKPDJ-3807	BKPDJ-3812	BKPDJ-3817	BKPDJ-3822
60mm <sup>2</sup>	BKPDJ-6002	BKPDJ-6007	BKPDJ-6012	BKPDJ-6017	BKPDJ-6022
80mm <sup>2</sup>	BKPDJ-8002	BKPDJ-8007	BKPDJ-8012	BKPDJ-8017	BKPDJ-8022
60mm <sup>2</sup> for WB-M500	BKPT-6002	BKPT-6007	BKPT-6012	BKPT-6017	BKPT-6022
80mm <sup>2</sup> for WB-M500	-	-	-	BKPT-8017	BKPT-8022

• **Optional accessories**

• **Extension cables**

		5m	10m	15m	20m
Wire Feeder Power cable / Base Metal Power Cable	WB-M350 (38mm <sup>2</sup> )	BKPDT-3807	BKPDT-3812	BKPDT-3817	BKPDT-3822
	WB-M350L (60mm <sup>2</sup> )	BKPDT-6007	BKPDT-6012	BKPDT-6017	BKPDT-6022
	WB-P400 (80mm <sup>2</sup> )	BKPDT-8007	BKPDT-8012	BKPDT-8017	BKPDT-8022
	WB-P500L (60mm <sup>2</sup> )	BKPT-6007	BKPT-6012	BKPT-6017	BKPT-6022
	WB-M500 (80mm <sup>2</sup> )	-	-	BKPT-8017	BKPT-8022
Gas Hose		BKGG-0605	BKGG-0610	BKGG-0615	BKGG-0620
Wire Feeder Control Cable(10pins)		BKCPJ-1005	BKCPJ-1010	BKCPJ-1015	BKCPJ-1020
Control cable for the analog remote control box(6cores)		BKCPJ-0605	BKCPJ-0610	BKCPJ-0615	BKCPJ-0620
Water Hose		BKWR-0605	BKWR-0610	BKWR-0615	BKWR-0620

\* In the case of using the extension cable, the standard power cable(2m) is not necessary.  
 \* In the case that this welding machine is used for an automatic machine or is used with an electric current value close to current rating, use a cable whose size is larger by one rank.

• **Voltage detection cable**

	5m	10m	15m	20m
Voltage detection cable	K5791G00	K5416N00	-	K5791E00

\* K5791G00 is included with WB-M350L and WB-P500L

• **Welding Torch**

• Stainless MIG Welding Torch

Product name	Unit form	*1 WTS300-SD	*2 WTCW-5002
Rated electric current	A	300	500
Suitable wire diameter	mm	(0.9),(1.0),1.2	1.2,1.6
Usage rate	%	50	70
Cooling system	-	Air cooling	Water cooling
Cable length	m	3	3

\*1 U5365P00 is necessary for WB-M350L and WB-P500L.  
 \*2 Compliant wire feeder is CMW-742.

• **Interface and wire feeder for robot manufactured by another company**

Product name	Product number
Interface box	IFR-101WB
Wire feeder	CMRE-741

\* When connect to robot manufactured by another company, please contact us for details.

Wire feeder	Unit form	CMRE-741
*Suitable wire diameter	mm	(0.8),0.9,1.0,1.2,(1.4),(1.6)
Wire used	-	A solid wire and flux wire
Wire feeding speed	m/min	22
Outside dimension(WxDxH)	mm	195x275x248(Excluding cables)
Mass	kg	7

\* In the case of using a wire with the diameter indicated in the parenthesis, an optional part is necessary.

• **Remote control Box**

• Analog Remote Controller

Product name	Product number
Analog remote control box(3m)	K5416Z00



• Digital Remote Controller (Following three parts are necessary.)

Product name	Product number
Digital remote control box	E-2454
Control cable	BKCAN-0405(5m) BKCAN-0410(10m)
Converter cable	K5810B00

\* Software update is necessary.  
 Please contact your dealer for details.

• **Voltage detection adaptor kit (for CE-Marking)**

Product name	Product number
Voltage detection adaptor kit	K5870W00

\* Necessary in modifying CM-7402-D and compliant welding torch for low spatter mode.  
 Please contact your dealer for details.

• **Setting for water-cooled torch(WB-M500)**

• **Water-cooled kit**

Product name	Product number
Water-cooled kit	K5848A00

\* When connect a water-cooled kit, please order your dealer by all means.

• **Wire feeder unit**

Product name	Unit form	CMW-742
Suitable wire diameter	mm	(1.2),1.4,(1.6)
Wire used	-	A solid wire and flux wire
Wire feeding speed	m/min	22(Maximum)
Outside dimension(WxDxH)	mm	207x602x372
Mass	kg	13

• **Welding torch**

Product name	Unit form	WTCW-5001
Rated electric current	A	500
Suitable wire diameter	mm	(1.2),1.4,1.6
Usage rate	%	70
Cooling system	-	Water cooling
Cable length	m	3

• **Water-cooler**

Product name	Product number
Water cooler	PU-301
Hose	BBPU-3002

In accordance with DAIHEN's policy to make continuing improvements, design and/or specifications are subject to change without notice and without any obligation on the part of manufacturer.

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