

# Full Digital Heavy Duty IGBT CO<sub>2</sub>/MAG/MMA Carrier Intelligent Multifunctional Inverter Welder

## User Manual

Version: V1.4

No.: R33010063

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Shenzhen Megmeet Electric Co., Ltd. provides comprehensive technical support for customers, covering but not limited to, CAN communication, welder network monitors, robot collaboration, welding process database software upgrade, and after-sale service. Users can contact the nearest Megmeet's offices or customer service centers, or directly contact Megmeet headquarters.

Shenzhen Megmeet Electric Co., Ltd.

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Shenzhen Megmeet Electric Co., Ltd.

Address: 5th Floor Block B, Ziguang Information Harbor, Langshan Road, Shenzhen, 518057,  
China

Zip code: 518057

Website: [www.megmeet.com](http://www.megmeet.com)

Customer service hotline: 4006662163

Email: [Welder.4S@megmeet.com](mailto:Welder.4S@megmeet.com)

## **Preface**

Thank you for choosing Megmeet's full digital heavy duty IGBT CO<sub>2</sub>/MAG/MMA carrier intelligent multifunctional inverter welder (hereinafter referred to as the welder).

This document covers the precautions on installation and cabling, parameter setup, troubleshooting, and daily maintenance. To ensure that the welder is installed and operated properly and can achieve its optimal performance, read this user manual before installation. This document must be kept properly and delivered to users of the welder.

# Safety Precautions

## Safe Definition



Follow instructions to perform operations. Failing to do so may result in death or serious injuries.



Follow instructions to perform operations. Failing to do so may result in medium or slight injuries or property damages.

- Read this document before using the welder to ensure proper use.
- Although this welder is designed and manufactured with safety considerations, pay attention to the precautions specified in this document when using the welder, so as to ensure the safety of you and related personnel and prevent serious accidents.
- Misuse of this welder may cause injuries.

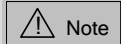
## Safety Precautions



- Before moving the welder, cut off the input power of the distribution box.
- When using a crane to move the welder, make sure that the hoist ring has been tightened and the housing and cover plates of the welder have been installed.
- If a crane is required to move the welder, use two lifting belts and the included angle of each lifting belt and the vertical direction must be less than 15 degrees.
- Do not lift the welder and other objects at the same time.
- Install the welder on non-inflammable objects to prevent fire risks.
- Do not place inflammable objects near the welder; failing to do so may result in fires.
- Do not install the welder in an environment with explosive gas; failing to do so may result in explosion risks.
- Cabling must be performed by certified personnel; failing to do so may result in electric shock.
- Before cabling, make sure that the power input has been disconnected completely; failing to do so may result in electric shock.
- Before connecting the power supply, connect the grounding terminal of the welder properly; failing to do so may result in electric shock.
- Before connecting the power supply, install the cover plate; failing to do so may result in electric shock.
- Do not touch terminals when the power supply is connected; failing to do so may result in electric shock.
- Do not operate the welder with wet hands; failing to do so may result in electric shock.



- Perform maintenance 5 minutes only after the power supply is disconnected, the power indicator is completely off, and the voltage of the positive and negative bus bars is lower than 36 V; failing to do so may result in electric shock.
- Parts can be replaced only by professionals. Do not leave cable stubs or metal objects in the welder; failing to do so may result in fires.
- After replacing the control board, set the parameters correctly before using the welder; failing to do so may result in property damages.
- Use insulation tapes to wrap the copper noses that connect to cables; failing to do so may result in electric shock.



- Do not impose force on the control panel and cover plates when moving the welder; failing to do so may cause the control panel and cover plates to fall off and lead to damages of properties.
- When moving the welder using a forklift truck, fix the casters of the welder.
- Install the welder only at the place where the welder can be held stably. Otherwise, falling of the welder may result in injuries or property damages.
- Do not install the welder at the place where water spray may occur; failing to do so may result in property damages.
- Prevent bolts, washers, or metal rods from dropping into the welder. They may result in fires and property damages.
- If the welder is damaged or incomplete, do not install or use it; failing to do so may result in fires and injuries.
- Firmly connect the main loop terminal to the copper nose; failing to do so may result in property damages.

## Usage Precautions

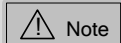


- To ensure safety, welding must be performed by personnel who understand safe operations and possess welding skills.
- Do not use the welder for purposes other than welding.
- Installation, commissioning, and maintenance of the welder can only be performed by professional personnel.
- People using heart pacemakers are not allowed to get close to the welder and welding sites without doctors' permission.
- Do not touch the live parts; failing to do so may result in electric shock.
- Do not use cables with insufficient cross-sectional areas, cables with exposed conductors, and

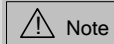


cables with damages.

- Do not remove the housing or cover plates when the welder is in use.
- Wear insulation gloves with good insulation performance and without damages.
- Take safety measures when doing tasks at high places.
- Disconnect the power supplies of the welder and distribution box when the welder is not used.
- When performing welding in narrow or confined space, adopt supervision and ensure good ventilation or use respiratory protection tools; failing to do so may result in asphyxia due to hypoxia.
- Hazardous smoke, dust, and gas may be generated during welding. Ensure good ventilation or use respiratory protection tools; failing to do so may result in injuries.
- Do not weld pressure vessels that contain gas, such as air pipes and seal pots.
- Do not move hot workpieces close to combustible materials.
- Do not perform welding near combustible materials.
- Deploy fire extinguishers near welding sites.
- Fix gas cylinders using only dedicated stands; failing to do so may result in injuries when the gas cylinders fall down.
- Do not connect electrodes with gas cylinders.
- Follow instructions to correctly use pressure reducing valves.
- Only professional personnel are allowed to disassemble and repair pressure reducing valves.
- Do not touch the rotating parts such as the fan and wire feeder when the welder is in use; failing to do so may result in injuries.
- When performing or supervising welding, use protective equipment with sufficient shading degree to prevent arc from harming eyes or skin.
- Use protection gears, such as welding-dedicated protection leather gloves, clothes with long sleeves, foot protection, aprons, and goggles, to protect against arc, spatters, and welding slag.
- Set up protective barriers around welding sites to prevent arc from injuring others.
- Use soundproof devices to prevent noise hazards.



- Do not use this welder for tasks other than welding.
- Do not place heavy objects on the welder.
- Do not seal or block the air vents of the welder.
- Place the welder at places where metal objects such as spatters are unable to enter the welder.
- Keep the welder at least 30 cm away from walls and other welder.
- Use screens to prevent wind from directly blowing against arc.



- Fix the casters to prevent the welder from sliding.
- To prevent electromagnetic hazards, implement electromagnetic shielding for cables and welding sites.
- The slope of the surface must be less than 15 degrees to prevent the welder from falling down.
- The protection class of the welder is IP23S and is applicable in the following conditions:  
Operating temperature range: -10°C- +40°C  
Transportation and storage temperature range: -40°C - +70°C  
Operating humidity range: ≤ 75% RH at 40°C; ≤ 95% RH at 20°C  
Altitude: ≤ 2000 m  
The operating environment must not have significant mechanical vibration or mechanical impact.  
The welder must not be tilted more than 15°.  
The content of dust, metal dust, and corrosive gas must not exceed the normal level.  
Avoid the welder from rain and prevent the fan from taking in rain.

## Scrapping Precautions

Pay attention to the following when scrap the welder:

- The electrolytic capacitors on the main circuit and the PCB may explode when getting burnt.
- Toxic gases may be emitted when plastic parts such as the front panel are burnt.
- Dispose the welder as industrial waste.

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# Chapter 1 Product Overview

This chapter describes the model, appearance, dimensions, system components, system configuration, technical specifications, and system features of the Ehave full digital heavy duty IGBT CO<sub>2</sub>/MAG/MMA carrier intelligent multifunctional inverter welder.

## 1.1 Model Description

Figure 1-1 describes the welder model code format.

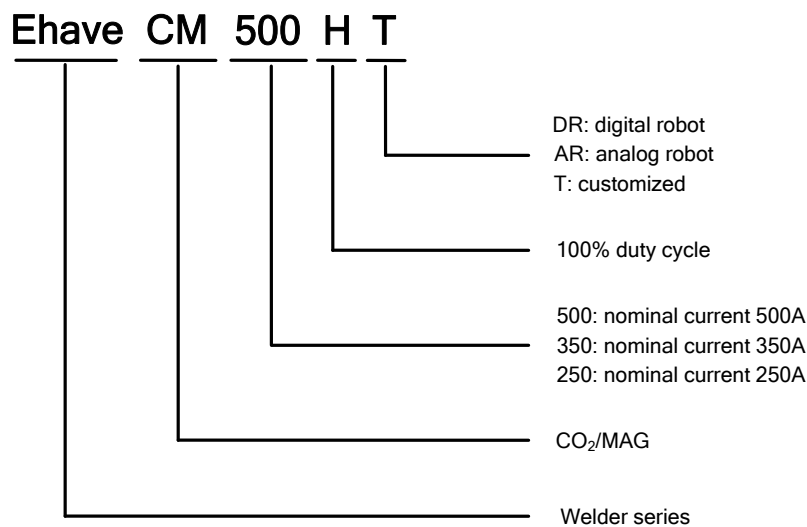


Figure 1-1 Model description




## 1.2 Technical Specifications

Table 1-1 describes the welder technical specifications.

Table 1-1 Technical specifications

Item		Description	
		Ehave CM250/350	Ehave CM500/500H
Input	Rated voltage/frequency	Three-phase without neutral line, 380 V 50 Hz	Three-phase without neutral line, 380 V 50 Hz
	Working voltage range	Voltage: 285 V - 475 V; voltage unbalance rate: < ±5%; frequency: 30 – 80 Hz	Voltage: 285 V - 475 V; voltage unbalance rate: < ±5%; frequency: 30 – 80 Hz
	Static tolerant input voltage	Phase-to-phase voltage 520 V AC	Phase-to-phase voltage 520 V AC
	Rated input power factor	0.94	0.93

Item		Description	
		Ehave CM250/350	Ehave CM500/500H
Output	Rated open circuit voltage	63.7 V	73.3 V(Ehave CM500)/75 V(Ehave CM500H)
	Rated output current/voltage for gas shielded welding	30 A/15.5 V - (250) 350 A/(26.5) 31.5 V	30 A/15.5 V – 500 A/39 V
	Rated output current/voltage for manual welding	30 A/21.2 V - (250) 350 A/(30) 34 V	30 A/21.2 V – 500 A/40 V
	Rated duty cycle	350 (250) A @ 60% @ 40°C / 271 (193) A @ 100% @ 40°C 350 (250) A @ 100% @ 25°C	Ehave CM500: 500 A @ 60% @ 40°C / 390 A @ 100% @ 40°C 500 A @ 100% @ 25°C Ehave CM500H: 500 A @ 100% @ 40°C
	Change rate of rated output voltage	< ±5% (cold and hot states; 10% input voltage fluctuation)	< ±5% (cold and hot states; 10% input voltage fluctuation)
	Line regulation	5%	5%
	Output characteristics	CV/CC	CV/CC
	Output voltage range	Adjustment range: 12 - (34) 38 V	Adjustment range: 12 – 45 V
	Output current range	Adjustment range: CO <sub>2</sub> /MAG: 30 - (300) 400A MMA: 30 - (300) 400A Instant short-circuit peak current: > 550 A	Adjustment range: CO <sub>2</sub> /MAG: 30 – 500 A MMA: 30 – 500 A Instant short-circuit peak current: > 550 A
	Adjustment range of ending arc voltage	Adjustment range: 12 - (34) 38 V; step: 0.1 V	Adjustment range: 12 – 45 V; step: 0.1 V
	Adjustment range of ending arc current	Adjustment range: 30 - (300) 400 A; step: 1 A	Adjustment range: 30 – 500 A; step: 1 A
Total positive and negative output cable length	Rated input; 15m/35mm <sup>2</sup> ; (250) 350 A 60% normal operation/(193) 271 A 100% normal operation	Ehave CM500: rated input; 30m/50mm <sup>2</sup> ; 500 A 60% normal operation/ 390 A 100% normal operation Ehave CM500H: rated input; 30m/50mm <sup>2</sup> ; 500 A 100% normal operation	
Main control functions	LED screen	Sets welding voltage and current values, and displays welding voltage and current values and error codes.	Sets welding voltage and current values, and displays welding voltage and current values and error codes.

Item	Description	
	Ehave CM250/350	Ehave CM500/500H
Gas type	CO <sub>2</sub> ; MAG	CO <sub>2</sub> ; MAG
Wire type	Solid wire, flux-cored wire, and electrode	Solid wire, flux-cored wire, and electrode
Output control	Synergic/Manual	Synergic/Manual
Wire diameter	0.8; 1.0; 1.2	1.0; 1.2; 1.6
Welding control	Welding with ending arc Welding without ending arc Spot welding Welding with repeated ending arc	Welding with ending arc Welding without ending arc Spot welding Welding with repeated ending arc
Gas detection	Checks before welding whether a shielding gas is used.	Checks before welding whether a shielding gas is used.
Wire inching	Inches wire before welding.	Inches wire before welding.
Current and voltage setup	In synergic mode, the current ranges from 30 A to (300) 400 A and the voltage knob is used to finely tune the voltage within the range of $\pm 9$ V.  In manual mode, the current and voltage are set independently, with the current ranging from 30 A - (300) 400 A and the voltage ranging from 12 V - (34) 38 V.	In synergic mode, the current ranges from 30 A to 500A and the voltage knob is used to finely tune the voltage within the range of $\pm 9$ V.  In manual mode, the current and voltage are set independently, with the current ranging from 30 A – 500 A and the voltage ranging from 12 V - 45 V.
Arc dynamic	The knob on the control panel can be used to set the value within the range of -9 to +9, where -9 indicates the softest arc and +9 indicates the hardest arc.	The knob on the control panel can be used to set the value within the range of -9 to +9, where -9 indicates the softest arc and +9 indicates the hardest arc.
Spot welding time	In spot welding mode, the spot welding time can be set on the control panel within the range of 0.1 s - 10.0 s.	In spot welding mode, the spot welding time can be set on the control panel within the range of 0.1 s - 10.0 s.
Ending arc voltage	The voltage can be set using the knob on the control panel within the range of 12 V - (34) 38 V.	The voltage can be set using the knob on the control panel within the range of 12 V – 45 V.
Ending arc current	The current can be set using the knob on the control panel within the range of 30 A - (300) 400 A.	The current can be set using the knob on the control panel within the range of 30 A – 500 A.
Current setup for manual welding	The current can be set using the knob on the control panel within the range of 30 A - (300) 400 A.	The current can be set using the knob on the control panel within the range of 30 A - 500A.
ENTER  , LOAD  , and SAVE  buttons	They are used to confirm, save, load, and lock welding parameters.	They are used to confirm, save, load, and lock welding parameters.

Item		Description	
		Ehave CM250/350	Ehave CM500/500H
Protection function		Phase loss protection Phase unbalance protection Input overvoltage protection Input undervoltage protection Output overvoltage protection Overheat protection Overcurrent protection Overload protection	Phase loss protection Phase unbalance protection Input overvoltage protection Input undervoltage protection Output overvoltage protection Overheat protection Overcurrent protection Overload protection
Environment	Application site	The content of dust, acid, and corrosive gas or substance in the surrounding atmosphere must not exceed the normal level (except those generated during welding).	The content of dust, acid, and corrosive gas or object in the surrounding atmosphere must not exceed the normal level (except those generated during welding).
	Altitude	≤2000m	≤2000m
	Ambient temperature	-10°C - +40°C (Perform derating when the ambient temperature ranges between 40°C and 50°C.)	-10°C - +40°C (Perform derating when the ambient temperature ranges between 40°C and 50°C.)
	Humidity	< 95% RH without condensation	< 95% RH without condensation
	Vibration	< 200 Hz; < 1.0 m <sup>2</sup> /s <sup>3</sup>	< 200 Hz; < 1.0 m <sup>2</sup> /s <sup>3</sup>
	Storage temperature	-40°C - +70°C	-40°C - +70°C
Structure	Protection class	IP23S	IP23S
	Cooling mode	Forced air cooling with fan control	Forced air cooling with fan control
Efficiency		Rated: 87%	Rated: 87%
Insulation class		H	H

Note: The preceding values in parentheses are dedicated to Ehave CM250. Ehave CM350AR and Ehave CM500AR have the same specifications as Ehave CM350 and Ehave CM500 respectively.

### 1.3 External Dimensions and Gross Weight

Figure 1-2 shows the dimensions of the welder. Table 1-2 lists the gross weights of the welder and its accessories.

Table 1-2 Gross weights of the welder and its accessories

Component	Gross Weight		
	Ehave CM250/350	Ehave CM500	Ehave CM500H
Welder	49 kg	52 kg	55 kg
Wire feeder	10 kg	10 kg	10 kg
Welding torch	3 kg	3.5 kg	3.5 kg

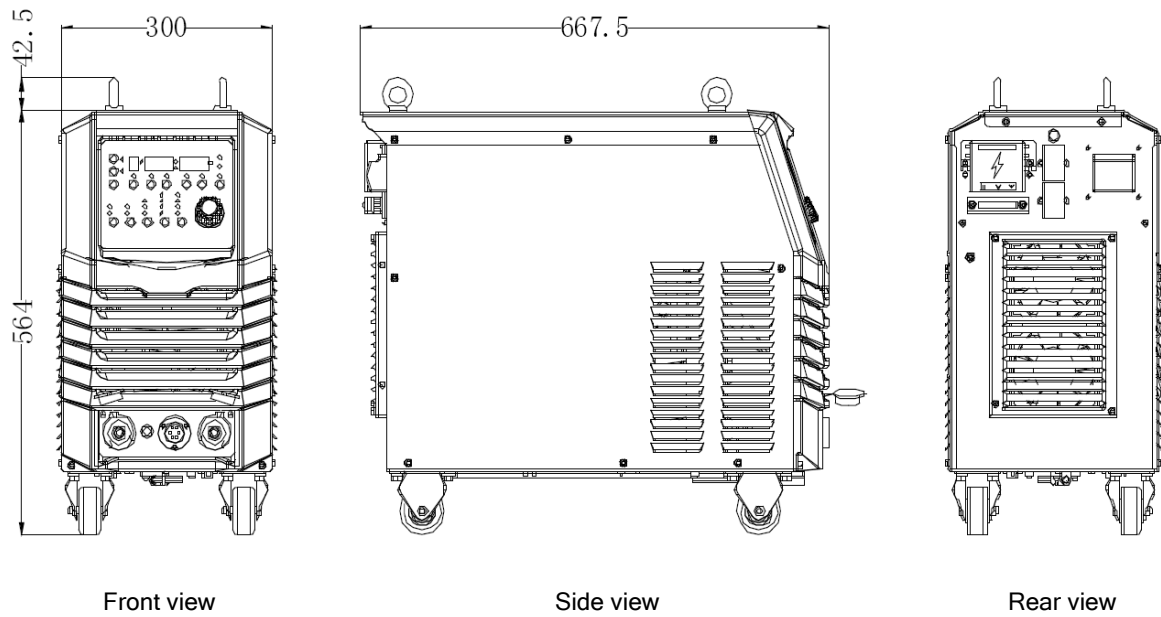


Figure 1-2 Welder dimensions (unit: mm)

## 1.4 System Components and Configuration

### 1.4.1 System Components

Figure 1-3 shows the components of the welding system.

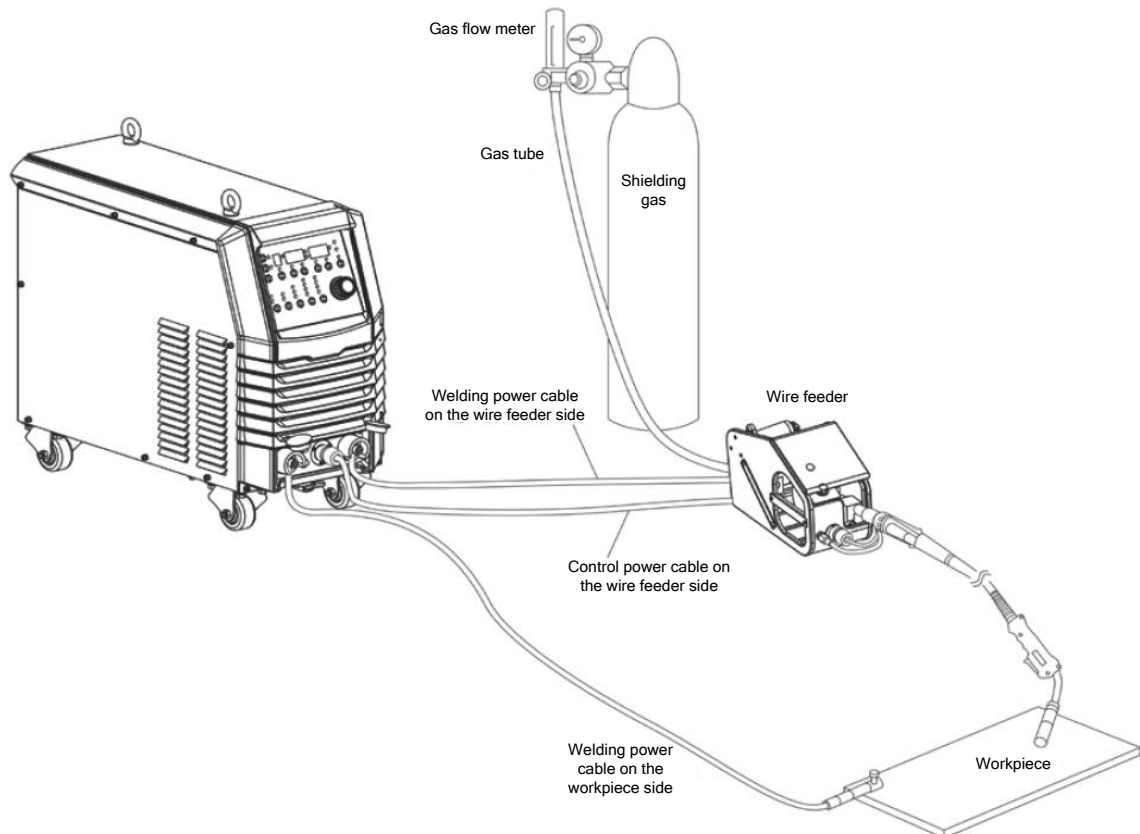


Figure 1-3 System components

Figure 1-4 shows the structure of the welder.

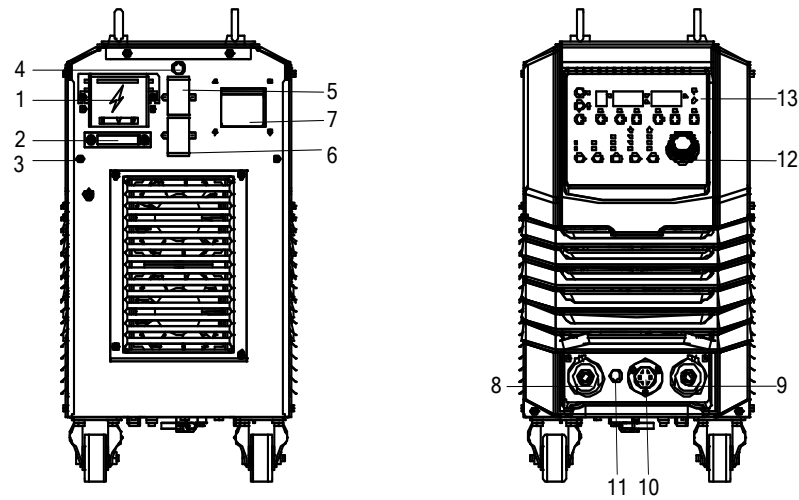


Figure 1-4 Welder structure

SN	Name	Function
1	Input connector	Connects to the AC power supply.
2	Power cable clip	Fastens the AC power input cable.
3	M6 grounding stub	Connects to the grounding cable.
4	Fuse holder of the electrically-heated gas regulator	Provide an 8 A fuse tube capacity.
5	Socket of the electrically-heated gas regulator	Provides a 36 V AC power supply for the electrically-heated gas regulator.
6	Communication connector	Facilitates communication with a computer.
7	Power switch	Connects or disconnects the AC power supply.
8	Negative output terminal	Connects to the welding material power cable.
9	Positive output terminal	Connects to the wire feeder power cable.
10	7-core aviation jack	Connects to the wire feeder control cable.
11	Fuse holder of the wire feeder	Provide an 8 A fuse tube capacity.
12	Parameter adjustment knob	Adjusts welding parameters. For details, see the operation description.
13	Control panel	Adjusts the welding mode. For details, see the operation description.

## 1.4.2 Configuration

Table 1-3, Table 1-4, and Table 1-5 show the configuration lists of welders.

Table 1-3 Ehave CM250/350 configuration list

Name	Specifications	Quantity	Remarks
250 A/350 A power supply	Ehave CM250/350	1	Standard
Wire feeder compliant with Japanese standards	PML/ WF2-35GA-MC/WF2-35GA-MD	1	Standard
Welding torch compliant with Japanese standards	Ehave CM250:KR-200/QTB-200A Ehave CM350:KR-350/QTB-350A	1	Either type of welding torch is provided. By default, a welding torch compliant with Japanese standards is provided.
Welding torch compliant with European standards	Ehave CM250:MB 24 KD/N24 Ehave CM350:MB 36 KD/N36	1	
User manual	Ehave series welder user manual	1	Standard
Hex key	/	1	Standard
Bundle of output cables	3 m – 30 m (optional)	1	Either type of cables is provided. By default, the cable bundle component box is provided.
Cable bundle component box	/	1	
Welding power cable on the workpiece side	1.8 m	1	Standard
Electrically-heated gas regulator	GH-257-36/394C-25L-36	1	Optional
Welder caster	/	4	Optional
Welder tractor	29140008	1	Optional
Wire feeder caster	/	4	Optional
European-style adapter	ZK-HQ-C1-000	1	Optional

Table 1-4 EhaveCM500/500Hconfiguration list

Name	Specifications	Quantity	Remarks
500 A power supply	Ehave CM500/500H	1	Standard
Wire feeder compliant with Japanese standards	PML/WF2-50GA-MC/WF2-50GA-MD	1	Standard
Welding torch compliant with Japanese standards	KR-500/QTB-500A	1	Either type of welding torch is provided. By default, a welding torch compliant with Japanese standards is provided.
Welding torch compliant with European standards	MB 36 KD/N36	1	

Name	Specifications	Quantity	Remarks
User manual	Ehave series welder user manual	1	Standard
Hex key	/	1	Standard
Bundle of output cables	3 m – 50 m (optional)	1	Either type of cables is provided. By default, the cable bundle component box is provided.
Cable bundle component box	/	1	
Welding power cable on the workpiece side	1.8 m	1	Standard
Electrically-heated gas regulator	GH-257-36/394C-25L-36	1	Optional
Welder caster	/	4	Optional
Welder tractor	29140008	1	Optional
Wire feeder caster	/	4	Optional
European-style adapter	ZK-HQ-C1-000	1	Optional

Table 1-5 Ehave CM350AR/500AR configuration list

Name	Specifications	Quantity	Remarks
350 A/500 A power supply	Ehave CM350AR/500AR	1	Standard
Robotic wire feeder	/	1	Standard
User manual	Ehave series welder user manual	1	Standard
Hex key	/	1	Standard
Bundle of output cables	7 m (optional)	1	Either type of cables is provided. By default, the cable bundle component box is provided.
Analog communication cable	3 m	1	Standard
Wire guide nozzle for the robotic wire feeder		1	Optional
Nut for the robotic wire feeder		1	Optional



Name	Specifications	Quantity	Remarks
Bottom plate for installation of the robotic wire feeder	WF1-50P_R-0iA	1	Optional
Bottom plate for installation of the robotic wire feeder	WF1-50P_M-10iA, M-20iA	1	Optional
Welding power cable on the workpiece side	50 m <sup>2</sup> /1.8 m	1	Standard
Electrically-heated gas regulator	GH-257-36/394C-25L-36	1	Optional
Welder caster	/	4	Optional
Welder tractor	29140008	1	Optional

You must prepare the following:

### Shielding Gas

Prepare CO<sub>2</sub> or a mixed gas. (Refer to Section 2.7.6 "Welding Conditions".)

CO<sub>2</sub>: The purity must be at least 99.5% and the moisture must be less than 0.005%.

MAG: Ar (80%) and CO<sub>2</sub> (20%)

### Welding Wire

Refer to Section 2.7.6 "Welding Conditions."

## 1.5 System Features

### Duty Cycle

Rated duty cycle refers to the percentage of the time when the welder generates the rated output in the 10-minute unit time. The rated duty cycle of Ehave CM250/350/350AR/500/500AR is 60%. See Figure 1-5, which shows the duty cycle of Ehave CM500 as an example. The rated duty cycle of Ehave CM500H is 100%. See Figure 1-6. The duty cycle of Ehave CM250 is 100% with the load lighter than 193 A. The duty cycle of Ehave CM350/350AR is 100% with the load lighter than 271 A. The duty cycle of Ehave CM500/500AR is 100% with the load lighter than 390 A.

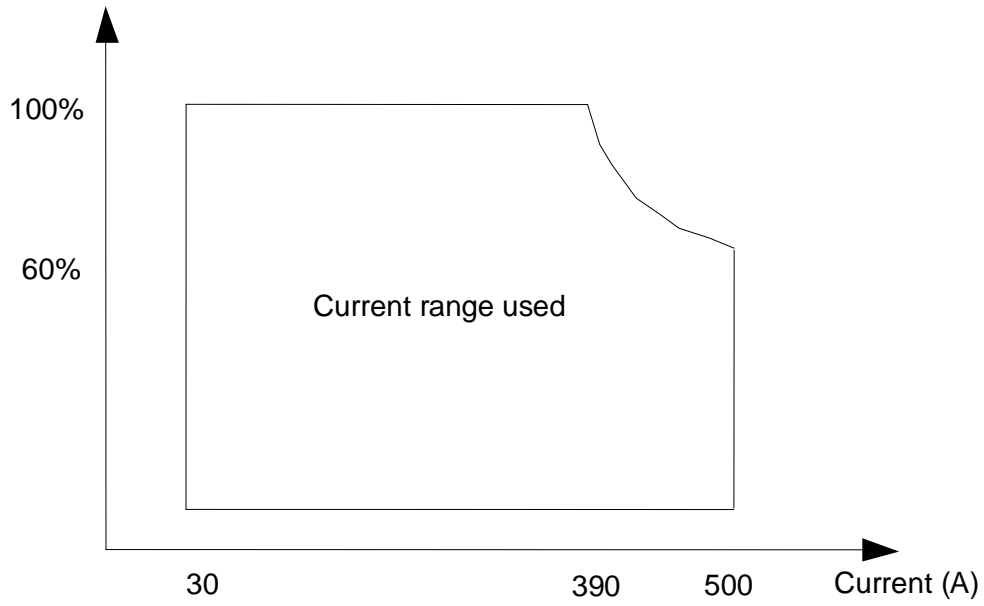


Figure 1-5 Schematic diagram of the duty cycle of Ehave CM500

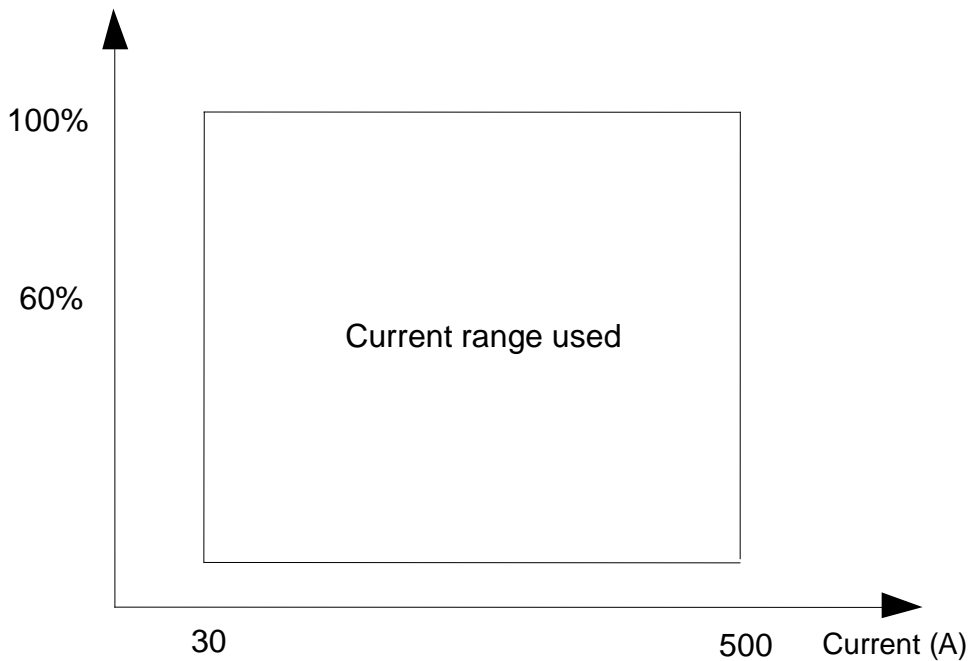


Figure 1-6 Schematic diagram of the duty cycle of Ehave CM500H

If the welder exceeds its rated duty cycle for a long time, the welder will become overheated, resulting in aging or even damages of the welder.

If this welder is used along with other parts such as welding torches, the lowest duty cycle of the parts must be applied to the entire set of device.

## Static and External Characteristics

The welder in CO<sub>2</sub>/MAG mode uses a constant-voltage welding power source and its characteristics are shown in Figure 1-7. The welder in electrode mode uses constant-current welding power source and its characteristics are shown in Figure 1-8.

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### Note

Ehave CM500/500H is used as an example.

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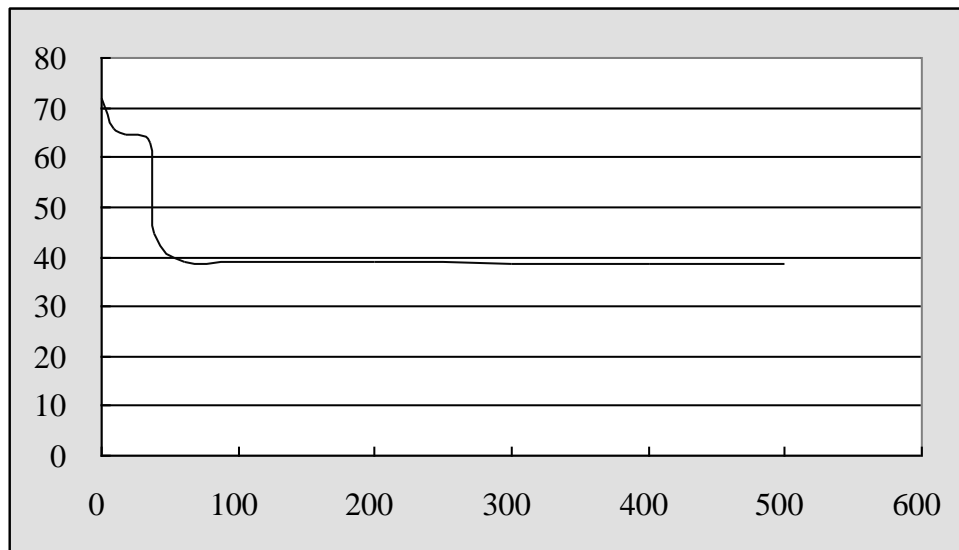


Figure 1-7 Schematic diagram of the constant-voltage welding power source (39 V)

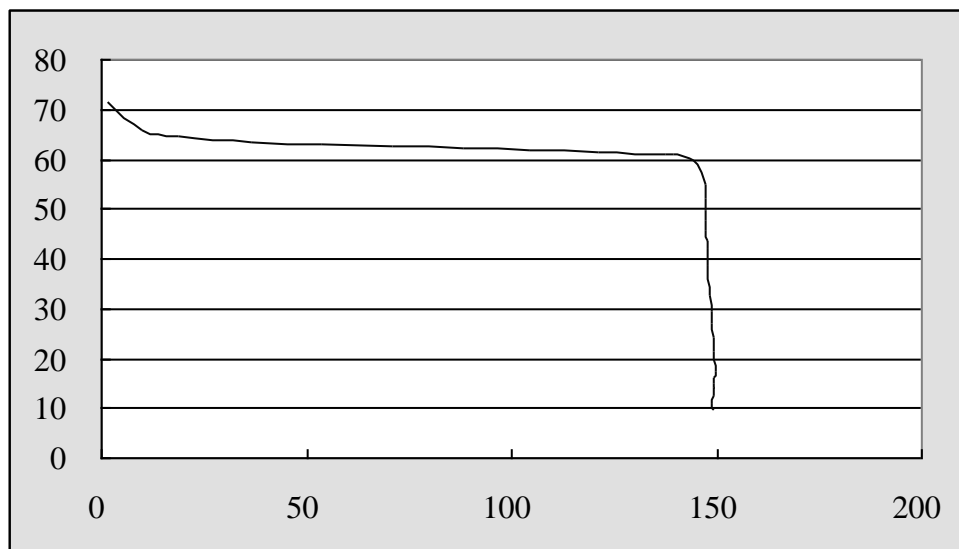


Figure 1-8 Schematic diagram of the constant-current welding power source (150 A)

# Chapter 2 Installation and Cabling

This chapter describes the welder installation requirements, installation procedure, and precautions.

## 2.1 Installation Requirements

### Environment Requirements

Pay attention to the following when selecting the installation environment:

The installation site must have good ventilation and vibration must be less than  $5.9 \text{ m/s}^2$  (0.6g).

Do not install it at a site with lots of dust or metal dust.

Do not install it at a site with corrosive or explosive gas.

The ambient temperature must range from  $-10^\circ\text{C}$  to  $+40^\circ\text{C}$ . When the temperature exceeds  $40^\circ\text{C}$ , forced external cooling or temperature derating is required.

The humidity must be lower than 95% without condensation.

When necessary, use windbreak at the welding site to prevent wind from affecting the welding quality.

If you have special installation requirements, perform prior consultation and confirmation.

### Installation Space Requirements

The welder must be at least 20 cm away from walls. If there are multiple welders, they must be at least 30 cm away from each other. You are recommended to reserve space for the welders as specified in Table 2-1.

Table 2-1 Space required for welder installation

	Front	Top	Left	Right	Back
Space required	$\geq 20 \text{ cm}$	$\geq 10 \text{ cm}$	$\geq 20 \text{ cm}$	$\geq 20 \text{ cm}$	$\geq 20 \text{ cm}$

## 2.2 Transportation Precautions

1. Before moving the welder, cut off the input power of the distribution box.
2. When using a crane to move the welder, make sure that the hoist ring has been tightened and the housing and cover plates of the welder have been installed.
3. If a crane is required to move the welder, use hoist rings and two lifting belts, and the included angle of each lifting belt and the vertical direction must be less than 15 degrees. See Figure 2-1.

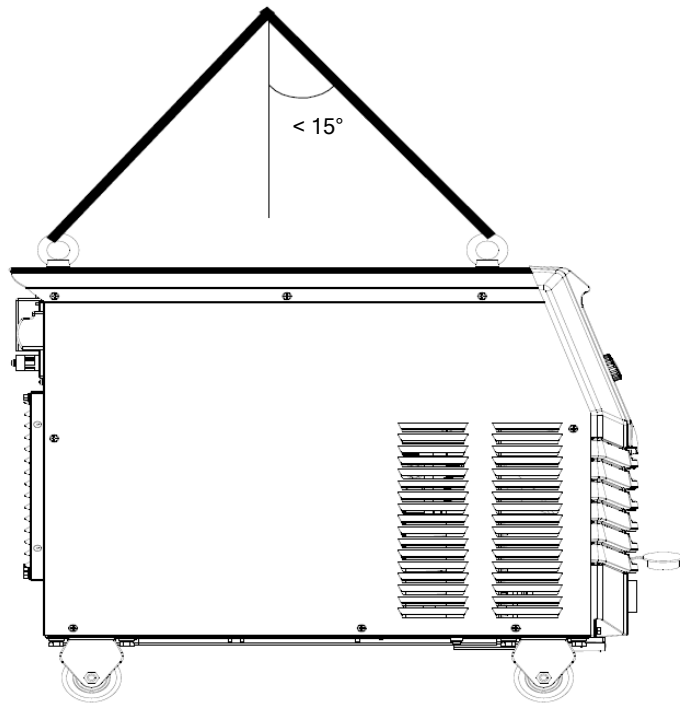


Figure 2-1 Schematic diagram of moving the welder using a crane

4. Do not lift the welder and other objects at the same time.
5. When moving the welder using a forklift truck, fix the casters of the welder.

## 2.3 Power Supply Specifications

Table 2-2 provides the power supply specifications.

Table 2-2 Power supply specifications

Item		Description	
		Ehave CM250/350/350AR	Ehave CM500/500H/500AR
<b>Power supply feature</b>		Three-phase 380 V AC 50 Hz/60 Hz	Three-phase 380 V AC 50 Hz/60 Hz
<b>Power device capacity</b>	<b>Grid</b>	20 kVA or greater	30 kVA or greater
	<b>Generator</b>	30 kVA or greater	50 kVA or greater
<b>Input protection device (distribution box)</b>	<b>Air circuit breaker</b>	Grade C and 40 A or greater	Grade C and 63 A or greater
<b>Power cable</b>	<b>Input on the welder side</b>	10 mm <sup>2</sup> or greater	16 mm <sup>2</sup> or greater
	<b>Output on the welder side</b>	35 mm <sup>2</sup> or greater	50 mm <sup>2</sup> or greater
	<b>Housing grounding cable</b>	≥ power supply cable	≥ power supply cable

** Safety Warning**

When the operating site is wet and the welder is used on an iron plate or frame, install a ground fault circuit interrupter (GFCI).

---

## 2.4 Open-Package Inspection

When opening the package, perform the following inspection carefully:

1. Check whether the product is broken or damaged.
2. Check whether the rated values on the label are consistent with your order.

The product and its package have been carefully checked before delivery. If you identify a problem, contact us or your supplier as soon as possible.

You can open the package and perform inspection only after the product arrives at the installation site. Product inspection must be performed jointly by the user's representatives and Megmeet's representatives.

The inspection procedure is as follows:

1. Open the package to which the packing list is attached.
2. Take out the packing list.
3. Check the parts against the packing list.
4. Check the quantities and SNs specified on the package.
5. Check whether all the expected parts are delivered.
6. Check the quantities and types of accessories.
7. Check whether the product is intact.

## 2.5 Preparing the Cable Bundle

** Note**

1. Connect this welder only to the matching or specified wire feeders, welding torches, and gas regulators. Otherwise, the welding performance and quality will be affected.
  2. If you need to extend a power cable, use the power cables and gas tubes specified in this user manual.
  3. If the cable bundle will be dragged with force, the force must be imposed on both ends of the short power cables, so as to protect the 7-core control cable.
- 

### 2.5.1 Packing List for the Cable Bundle Component Box

Table 2-3 and Table 2-4 provide packing lists of cable bundle component boxes.

Table 2-3 Packing list for the cable bundle component box of Ehave CM250/350/350AR

Name	Specifications	Quantity	Remarks
Bare crimp terminal	GTNR35-10/GRNT35-10	2	Both ends of the power cable
Bare crimp terminal	GTNR50-10/GRNT50-10	2	Both ends of the power cable
7-core aviation plug	SX-07-CT/MT25A7P	2	Both ends of the control cable
Protective sleeve for the 7-core cable	/	2	Both ends of the control cable
Hose clamp	Fastening range 8 -12 mm	2	Both ends of the gas tube
Heat shrink tubing	VW-1 (18.0) in black	15cm	Ring-shaped non-insulated terminal
User manual	Cable bundle preparation manual for Ehave series welders	1	Preparation manual

Table 2-4 Packing list for the cable bundle component box of Ehave CM500/500H/500AR

Name	Specifications	Quantity	Remarks
Bare crimp terminal	GTNR50-10/GRNT50-10	2	Both ends of the power cable
Bare crimp terminal	GTNR70-10/GRNT70-10	2	Both ends of the power cable
7-core aviation plug	SX-07-CT/MT25A7P	2	Both ends of the control cable
Protective sleeve for the 7-core cable	/	2	Both ends of the control cable
Hose clamp	Fastening range 8 -12 mm	2	Both ends of the gas tube
Heat shrink tubing	VW-1 (25.0) in black	15cm	Ring-shaped non-insulated terminal
User manual	Cable bundle preparation manual for Ehave series welders	1	Preparation manual

## 2.5.2 Cable Bundle Preparation Description

1. The cable bundle consists of the power cable, 7-core control cable, and gas tube. When preparing the cable bundle, make sure that the 7-core control cable is 0.3 m longer than the power cable and the gas tube is 1.5 m longer than the power cable.
2. The cross-sectional area of the power cable depends on the length. For Ehave CM250/350/350AR, if the power cable length ranges from 0 m to 15 m (included), the default cross-sectional area is 35 mm<sup>2</sup>, while if the power cable length ranges from 15 m to 30 m, the default cross-sectional area is 50 mm<sup>2</sup>. For Ehave CM500/500H/500AR, if the power cable length ranges from 0 m to 30 m (included), the default cross-sectional area is 50 mm<sup>2</sup>, while if the power cable length ranges from 30 m to 50 m, the default cross-sectional area is 70 mm<sup>2</sup>. Use the bare crimp terminals matching the cable.

3. Remove 20 mm of the insulation layer from both ends of the power cable, insert the cable into the rearend sleeves of the bare crimp terminals, use the crimping pliers to tighten the sleeves, and use heat shrink tubing to insulate the bare crimp terminals.
4. Use a screw driver to remove the protective cover of the aviation plug, remove 5 mm of the insulation layer of the 7 cores, use a soldering iron to connect the 7 cores of the control cable to the 7 pins of the aviation plug, use heat shrink tubing to insulate the bare parts, install the protective sleeves of the 7-core control cable, and restore the protective cover of the aviation plug.
5. Insert the gas tube through the two hose clamps and use a screw driver to fix each of them at 100 mm away from each end of the tube.
6. Use cable ties to tie the cables and tube together at every 600 mm. At the end connected to the wire feeder, the 7-core control cable must be 110 mm longer than the power cable and the gas tube must be 110 mm longer than the power cable. At the end connected to the welder, the excessive lengths of the control cable and gas tube are not handled. Figure 2-2 shows the way to tie the cables and tube.

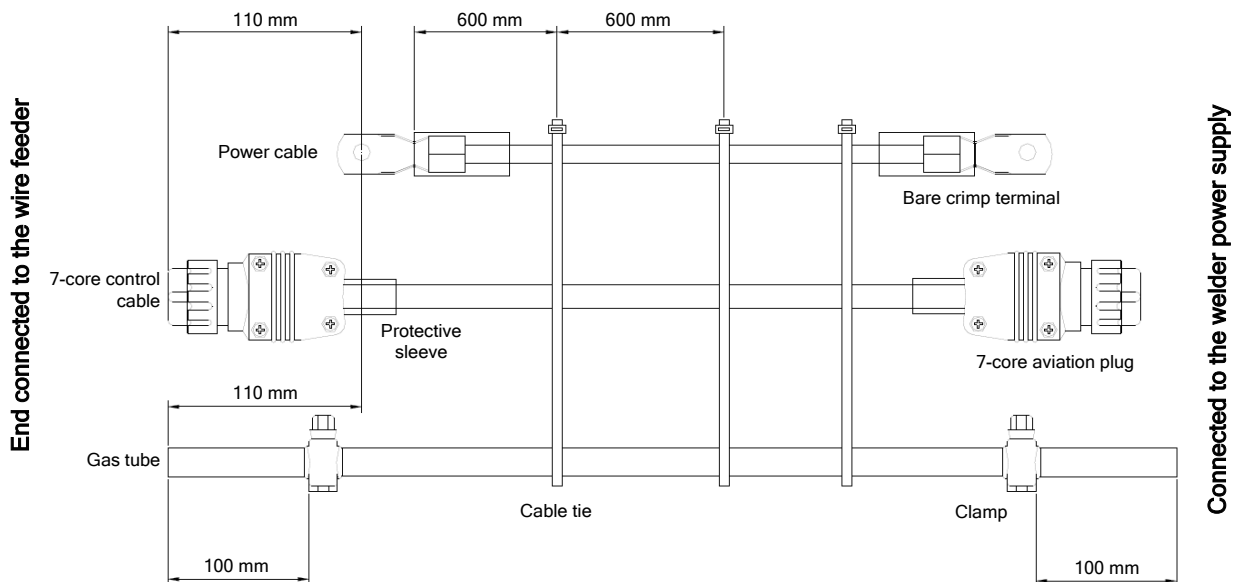


Figure 2-2 Schematic diagram of tying cables and tube

## 2.6 Electric Connections

### Safety Warning

1. Connections must be set up by certified professional electric device operators.
2. Electric connections can be set up only after the distribution box is switched off and necessary safety measures are taken.
3. Use specified cables.
4. Do not touch electric connections with wet hands.
5. Do not place heavy objects on the power cables.
6. Running water pipes and reinforcing bars of houses may not be adequately grounded. Do not connect grounding cables to them.
7. Each welder is equipped with one air circuit breaker or fused switch.



## 2.6.1 Welder Output Cables

The procedure for connecting the positive and negative output terminals with the welding power cables of the wire feeder and workpiece is as follows:

1. Remove the protective cover of the output terminals. (See Figure 2-3.)
2. Take out the hex key from the bottom of the welder. See Figure 2-3.

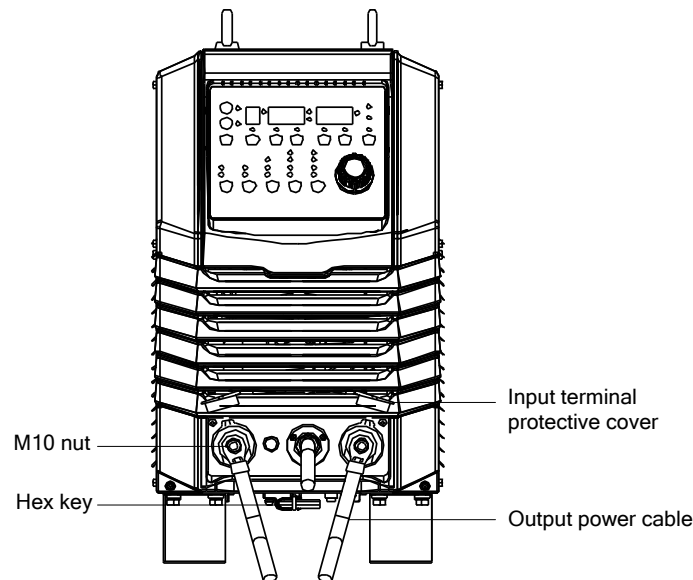


Figure 2-3 Schematic diagram of connecting the positive and negative output terminals with the welding power cables of the wire feeder and workpiece

3. Remove the M10 nuts of the output terminals.
4. Fasten the power cable in the cable bundle and the M10 ring terminal of the welding power cable of the workpiece to the positive output terminal and negative output terminal respectively.
5. Use the hex key to fasten the M10 nuts and put the hex key back.

The procedure for connecting the 7-core jack of the wire feeder to the 7-core control cable of the wire feeder is as follows:

1. Connect the 7-core aviation plug of the cable bundle to the 7-core jack on the welder.
2. Rotate the screw cap of the plug clockwise to fasten it.
3. Figure 2-4 shows the cable connections.

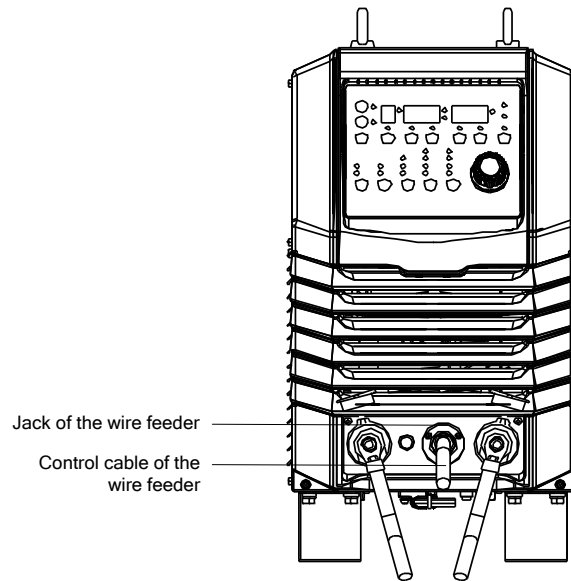


Figure 2-4 Schematic diagram of connecting the 7-core jack of the wire feeder to the 7-core control cable of the wire feeder

## 2.6.2 Connecting the Gas Cylinder

### Safety Warning

1. Connections must be set up by certified professional electric device operators.
2. Before connection, read the user manual for the electrically-heated CO<sub>2</sub> regulator.

The procedure for connecting to the gas cylinder is as follows:

1. Use installation nuts to mount the electrically-heated CO<sub>2</sub> regulator (see Figure 2-5) to the gas outlet of the gas cylinder, and fasten the regulator.
2. Connect one end of the gas tube to the gas tube connector of the regulator and use a fastener to fasten the connection. Connect the other end to the wire feeder.

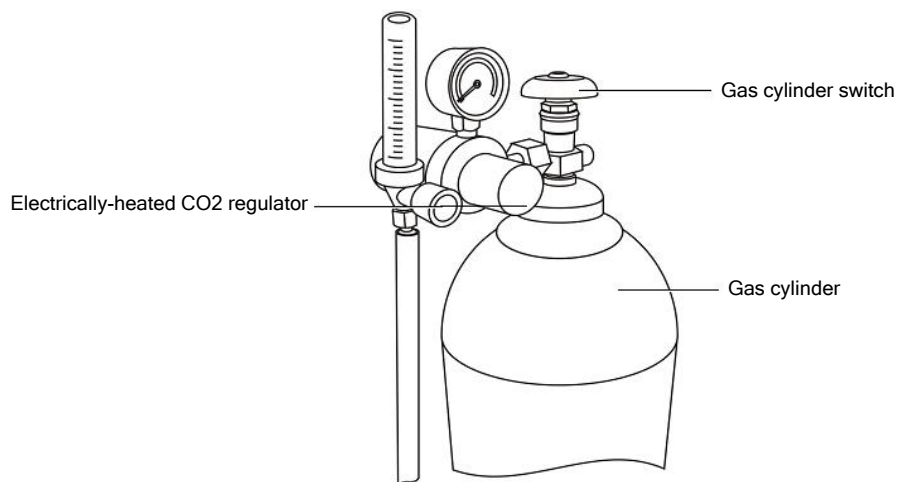


Figure 2-5 Position of the electrically-heated CO<sub>2</sub> regulator

3. If CO<sub>2</sub> is used as the shielding gas, connect the heating power cable to the 36 V AC power jack of regulator on the rear of the welder.
4. Connect the grounding cable to implement reliable grounding. Figure 2-6 shows the cable connections.

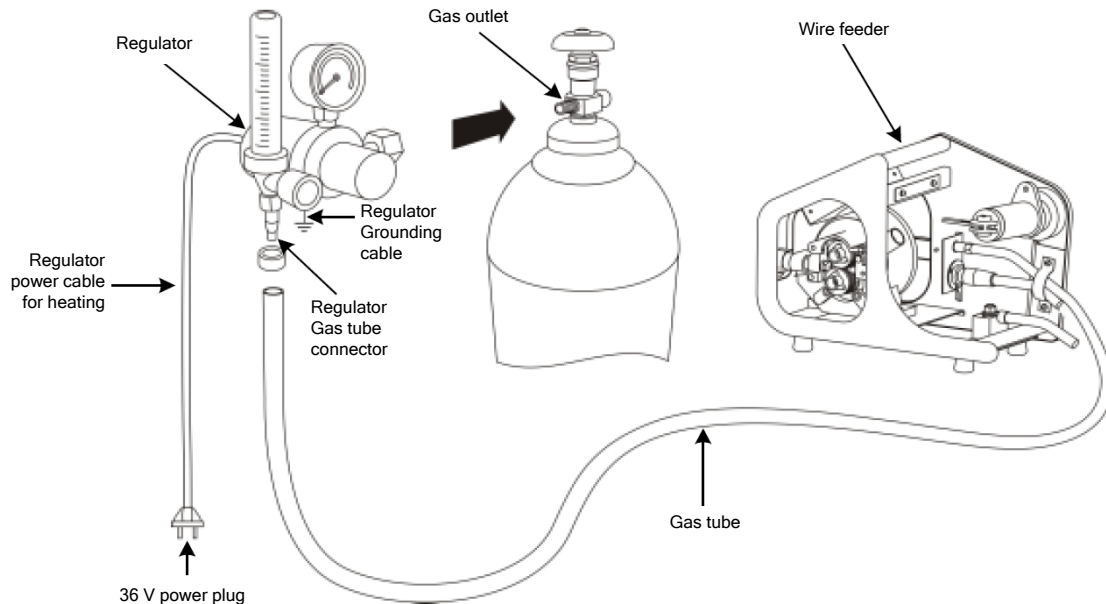


Figure 2-6 Schematic diagram of connecting the gas tube

### Gas Usage Notes

1. If the welder works in the CO<sub>2</sub> welding mode, use CO<sub>2</sub> as the shielding gas.
2. If the welder works in the MAG welding mode, use the mixed gas, which consists of CO<sub>2</sub> (5% - 10%) and Ar (purity > 99.9%), as the shielding gas.
3. If two types of gas must be mixed, use a gas mixer and ensure that the gases are mixed evenly.

### 2.6.3 Connecting the Wire Feeder

The procedure for connecting the wire feeder is as follows:

1. Fix the 7-core control cable, gas tube, and positive output welding cable with the clamp at the rear of the wire feeder. See Figure 2-7.

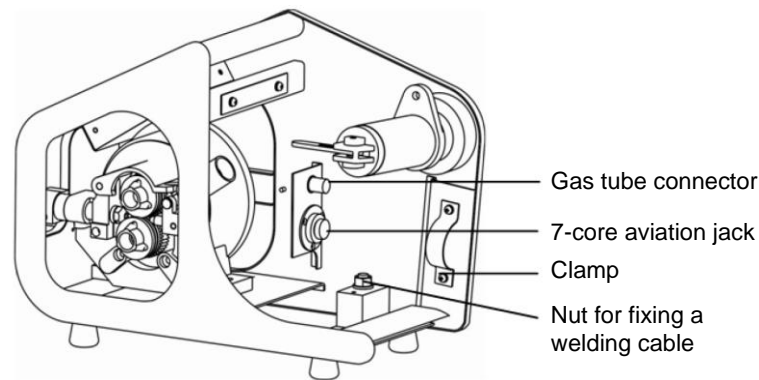


Figure 2-7 Schematic diagram of connecting the wire feeder

2. Connect the 7-core aviation plug of the control cable to the 7-core aviation jack on the fixing plate of the wire feeder, and fix the cable.
3. Connect the gas tube to the copper connector on the fixing plate of the wire feeder and fasten the hose clamp of the gas tube.
4. Connect the positive output welding cable to the threaded rod on the bottom plate of the wire feeder, and use an adjustable wrench to fasten the nut.
5. Figure 2-8 shows the cable connections.

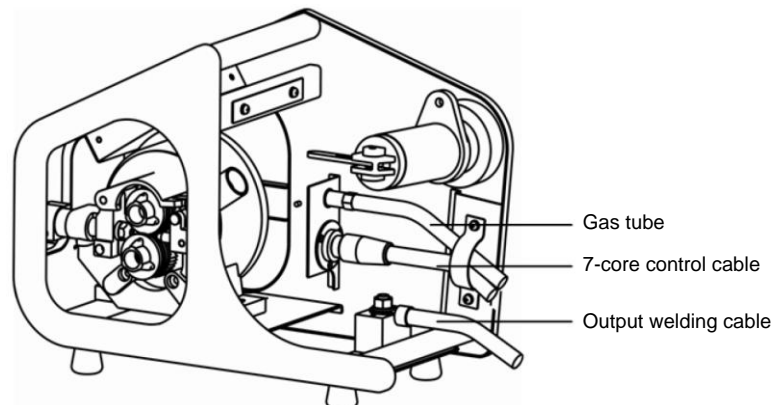


Figure 2-8 Schematic diagram of connecting the wire feeder

### 2.6.4 Connecting the Welding Torch

After cabling for the wire feeder is complete, refer to the wire feeder user manual and welding torch user manual to connect the welding torch to the wire feeder. Figure 2-9 shows the connection.

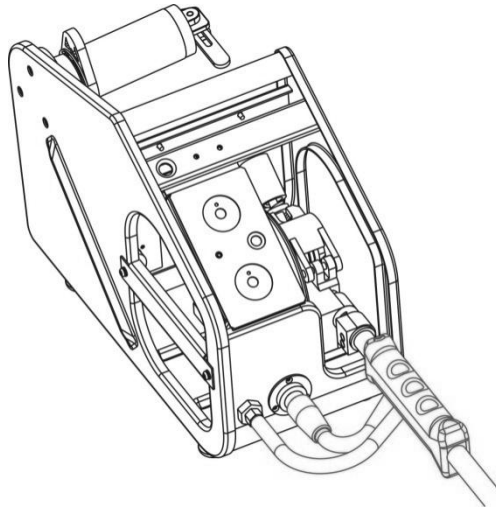


Figure 2-9 Schematic diagram of connecting the welding torch to the wire feeder

### 2.6.5 Connecting the Welding Power Cable (Grounding Cable) on the Workpiece Side

On the workpiece side, connect one end of the welding power cable to the workpiece and ground the workpiece properly with a cable.

### 2.6.6 Connecting the Power Cable on the Power Input Side

1. Turn off the power switch of the distribution box (user equipment).
2. Remove the input terminal cover. See Figure 2-10.
3. Connect one end of the input power cable to the power input terminal and use the power cable clamp to fix the cable on the rear plate of the welder. Connect the grounding cable to the M6 grounding threaded rod on the housing of the welder.

---

 **Note**

The welder has no special requirement for the phase sequence of the three-phase power supply from the grid. The cross-sectional area of the input power cable for Ehave CM250/350/350AR must be at least 10 mm<sup>2</sup>. The cross-sectional area of the input power cable for Ehave CM500/500H/500AR must be at least 16 mm<sup>2</sup>.

---

4. Install the input terminal cover.
5. Connect the other end of the input power cable to the output terminal of the power switch of the distribution box.

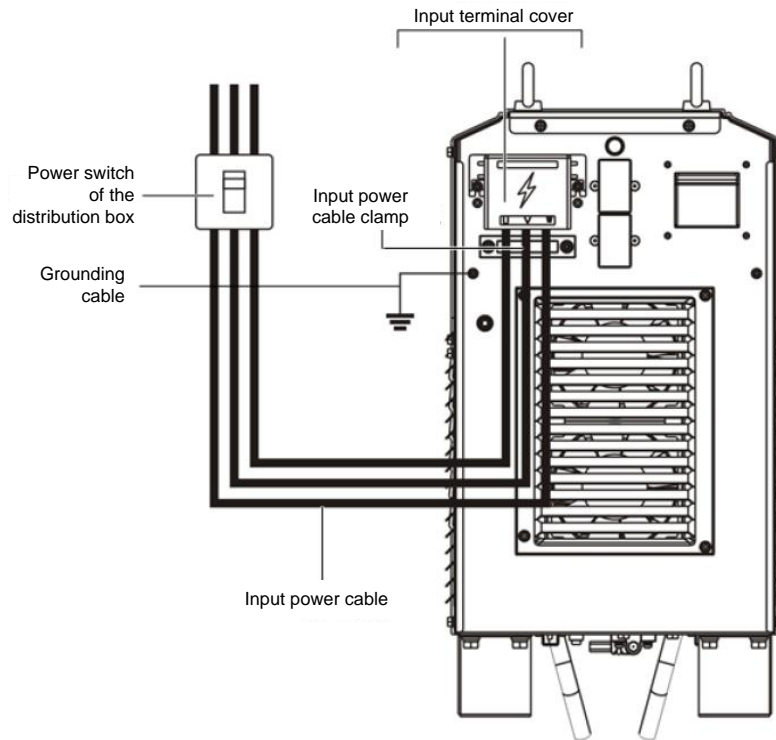


Figure 2-10 Schematic diagram of connecting the power cable on the power input side

## 2.7 Welding Preparation

### 2.7.1 Safety Measures

#### Protection Tools

- Use ventilation devices or respiratory protection tools according to regulations to prevent gas poisoning, hypoxia, and dust poisoning.
- When performing or supervising welding, use protection tools or wear goggles with sufficient shading degree.
- Wear goggles to prevent spatters or welding slag from injuring your eyes.
- Use protection gears such as welding-dedicated protection leather gloves, clothes with long sleeves, foot protection, and aprons.
- Set up protective barriers around welding sites to prevent arc from injuring others.
- Use soundproof devices to prevent noise hazards.
- Use windbreak at the welding site to prevent wind from affecting the welding quality if a ventilator is used or the outdoor welding environment is windy.

For selection of light filters for the CO<sub>2</sub>/MAG welding mask, see Table 2-5.

Table 2-5 Selection of light filters for the GB-T3609-1994 welding mask

Shading Numeral	Arc Welding and Cutting Task
1.2	Protection against sidelight and stray light
1.4	
1.7	

Shading Numeral	Arc Welding and Cutting Task
1.2	
3 4	Supportive task
5 6	Arc welding task with a 30 A or lower current
7 8	Arc welding task with a 30 A to 75 A current
9 10 11	Arc welding task with a 75 A to 200 A current
12 13	Arc welding task with a 200 A to 400 A current
14	Arc welding task with a 400 A or higher current

### Cable Connection Inspection

Fix the welder: Place the welder on a dry and level welding post with good ventilation.

Check cable connections: Refer to Section 2.6 "Electric Connections" to check the connections.

1. Check whether the grounding cable, input power cable, workpiece power cable, and workpiece (1) are connected correctly.
2. Check whether the wire feeder and welder are connected correctly.
3. Check whether the welding torch and wire feeder are connected correctly.
4. Check whether the gas cylinder, gas regulator, and wire feeder are connected correctly.

### Other Inspection Items

Check the shielding gas, welding conditions, and extended cables.

## 2.7.2 Installing the Welding Wire

Refer to the *User Manual for CO<sub>2</sub>/MAG Wire Feeder*.

## 2.7.3 Turning on the Power Switch

1. Turn on the switch of the distribution box and connect the three-phase 380 V power supply.
2. Turn the switch of the welder to the **ON** position. See Figure 1-4.

---

**📖 Safety Warning**

Keep fingers, hair, and clothes away from the rotating parts such as the cooling fan and the wire inching roll of the wire feeder.

---

## 2.7.4 Adjusting the Gas Flow

1. Turn on the switch of the gas cylinder. (See Figure 2-11.)
2. Turn on the flow adjusting knob.

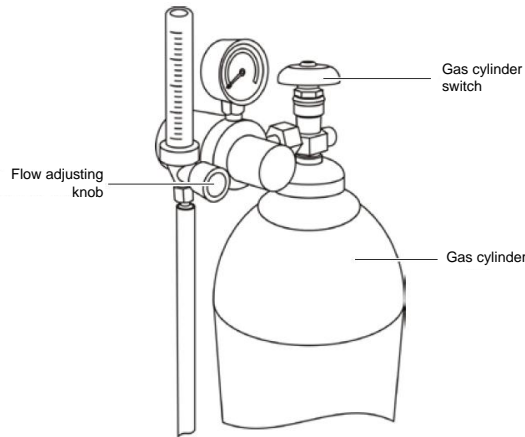


Figure 2-11 Position of the flow adjusting knob

3. Press the gas detection button on the control panel and rotate the knob to set the gas flow to an appropriate level.

## 2.7.5 Wire Inching

Stretch the welding torch and hold down the wire inching button (see Figure 2-12). The related LED indicator turns on. When the welding wire is extended beyond the tip by about 10 mm, release the button to stop wire inching. The LED indicator turns off. When you hold down the button, you can use the current adjusting knob on the remote control box of the wire feeder to change the wire inching speed. You can also use the wire inching button on the remote control box of the wire feeder to inch wire and use the current adjusting knob to change the wire inching speed.



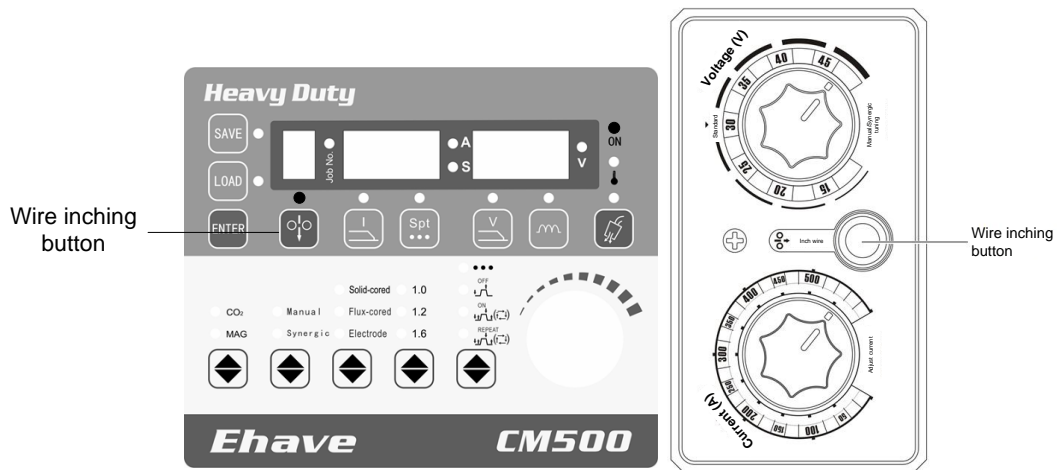


Figure 2-12 Position of the wire inching button

### Usage Notes

1. The wire inching roll must match the wire diameter and selection of the wire inching roll does not depend on the welding wire type.
2. Use the wire inching pressure lever to adjust the pressure of the wire inching roll according to the wire diameter. For details, see the wire feeder user manual.
3. If you use a flux-cored wire, use the lever to reduce the pressure to slightly lower than that for a solid wire.

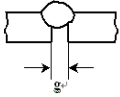
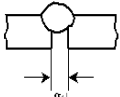
### Safety Warning

1. Do not check at a short distance whether the wire has been extended through the tip; otherwise, the wire may injure your eyes or skin.
2. When you use a welding torch with a resin wire inching tube to manually inch wire, stretch the power cable of the welding torch and set the wire inching speed (current) to less than half of the rated value, so as to prevent the wire from piercing the wire inching tube and welding torch power cable in case that the welding torch power cable is excessively bent.
3. Upon finding a crack in the welding torch power cable or wire inching tube, replace the damaged cable or tube.

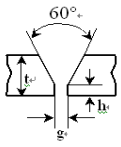
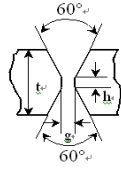
## 2.7.6 Welding Conditions

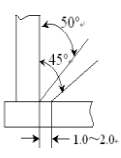
Under the standard welding conditions, the welding parameters in the following tables are applicable, including the common parameters for CO<sub>2</sub> welding (solid wire), MAG welding (solid wire; Ar 80% + CO<sub>2</sub> 20%), and flux-cored wire. In actual welding projects, modify the parameters according to the workpiece materials, workpiece shapes, and welding positions. If high welding quality is required, you are recommended to determine the optimal welding process parameters through tests. The wire diameter adopted for the actual welder shall prevail.

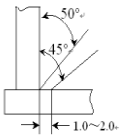
**CO<sub>2</sub> welding (solid wire)**

Type	Plate Thickness (mm)	Wire Diameter $\Phi$ (mm)	Root Gap g(mm)	Welding Current (A)	Welding Voltage (V)	Welding Speed (cm/min)	Tip-Workpiece Distance (mm)	Gas Flow (L/min)
I-shaped butt welding (Low speed) 	0.8	0.8	0	60 - 70	16 - 16.5	50 - 60	10	10
	1.0	0.8	0	75 - 85	17 - 17.5	50 - 60	10	10 - 15
	1.2	0.8	0	80 - 90	17 - 18	50 - 60	10	10 - 15
	1.6	0.8	0	95 - 105	18 - 19	45 - 50	10	10 - 15
		1.0	0 - 0.5	120 - 130	19 - 20	50 - 60	10	10 - 20
	2.0	1.0, 1.2	0 - 0.5	110 - 120	19 - 19.5	45 - 50	10	10 - 15
	2.3	1.0, 1.2	0.5 - 1.0	120 - 130	19.5 - 20	45 - 50	10	10 - 15
		1.2	0.8 - 1.0	130 - 150	20 - 21	45 - 55	10	10 - 20
	3.2	1.0, 1.2	1.0 - 1.2	140 - 150	20 - 21	45 - 50	10 - 15	10 - 15
		1.2	1.0 - 1.5	130 - 150	20 - 23	30 - 40	10 - 15	10 - 20
	4.5	1.0, 1.2	1.0 - 1.2	170 - 185	22 - 23	45 - 50	15	15
		1.2	1.0 - 1.5	150 - 180	21 - 23	30 - 35	10 - 15	10 - 20
	6	1.2	1.2 - 1.5	230 - 260	24 - 26	45 - 50	15	15 - 20
			1.2 - 1.5	200 - 230	24 - 25	30 - 35	10 - 15	10 - 20
8	1.2	0 - 1.2	300 - 350	30 - 35	30 - 40	15 - 20	10 - 20	
	1.6	0 - 0.8	380 - 420	37 - 38	40 - 50	15 - 20	10 - 20	
9	1.2	1.2 - 1.5	320 - 340	32 - 34	45 - 50	15	15 - 20	
12	1.6	0 - 1.2	420 - 480	38 - 41	50 - 60	20 - 25	10 - 20	
I-shaped butt welding (High speed) 	0.8	0.8	0	85 - 95	16 - 17	115 - 125	10	15
	1.0	0.8	0	95 - 105	16 - 18	115 - 125	10	15
	1.2	0.8	0	105 - 115	17 - 19	115 - 125	10	15
	1.6	1.0, 1.2	0	155 - 165	18 - 20	115 - 125	10	15
	2.0	1.0, 1.2	0	170 - 190	19 - 21	75 - 85	15	15
	2.3	1.0, 1.2	0	190 - 210	21 - 23	95 - 105	15	20
	3.2	1.2	0	230 - 250	24 - 26	95 - 105	15	20

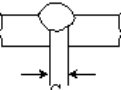
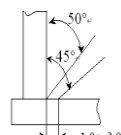
Type	Plate Thickness (mm)	Wire Diameter $\Phi$ (mm)	Root Gap g (mm)	Root Face H (mm)	Layer and Welding Current (A)	Welding Voltage (V)	Welding Speed (cm/min)	Gas Flow (L/min)	
V-shaped butt welding	12	1.2	0 - 0.5	4 - 6	External 1	300 - 350	32 - 35	30 - 40	20 - 25
					Internal 1	300 - 350	32 - 35	45 - 50	20 - 25
		1.6			External 1	380 - 420	36 - 39	35 - 40	20 - 25

Type	Plate Thickness (mm)	Wire Diameter $\Phi$ (mm)	Root Gap g (mm)	Root Face H (mm)	Layer and Welding Current (A)		Welding Voltage (V)	Welding Speed (cm/min)	Gas Flow (L/min)
					Internal	External			
	16	1.2	0 - 0.5	4 - 6	Internal 1	380 - 420	36 - 39	45 - 50	20 - 25
					External 1	300 - 350			
		Internal 1			300 - 350				
		External 1			380 - 420				
		Internal 1			380 - 420				
X-shaped butt welding 	16	1.2	0	4 - 6	External 1	300 - 350	32 - 35	30 - 35	20 - 25
		1.6			Internal 1	300 - 350			
					External 1	380 - 420			
		1.6			Internal 1	380 - 420			
	External 1		380 - 420						
	19	1.6	0	5 - 7	External 1	400 - 450	36 - 42	25 - 30	20 - 25
					Internal 1	400 - 450			
		1.6			External 1	400 - 420			
					Internal 2	400 - 420			
	25	1.6	0	5 - 7	External 1	400 - 420	36 - 39	40 - 45	20 - 25
					Internal 2	420 - 450			

Type	Plate Thickness (mm)	Wire Diameter $\Phi$ (mm)	Leg Size (mm)	Welding Current (A)	Welding Voltage (V)	Welding Speed (cm/min)	Tip-Welding Material Distance (mm)	Gas Flow (L/min)	Welding Angle
T-shaped horizontal fillet welding (Low speed) 	1.0	0.8	2.5 - 3	70 - 80	17 - 18	50 - 60	10	10 - 15	45°
	1.2	1.0	3 - 3.5	85 - 90	18 - 19	50 - 60	10	10 - 15	45°
	1.6	1.0,1.2	3 - 3.5	100 - 110	18 - 19.5	50 - 60	10	10 - 15	45°
	2.0	1.0,1.2	3 - 3.5	115 - 125	19.5 - 20	50 - 60	10	10 - 15	45°
	2.3	1.0,1.2	3 - 3.5	130 - 140	19.5 - 21	50 - 60	10	10 - 15	45°
	3.2	1.0,1.2	3.5 - 4	150 - 170	21 - 22	45 - 50	15	15 - 20	45°
	4.5	1.0,1.2	4.5 - 5	180 - 220	21 - 23	40 - 45	15	15 - 20	45°
		1.2	5 - 5.5	200 - 250	24 - 26	40 - 50	10 - 15	10 - 20	45°

Type	Plate Thickness (mm)	Wire Diameter $\Phi$ (mm)	Leg Size (mm)	Welding Current (A)	Welding Voltage (V)	Welding Speed (cm/min)	Tip-Welding Material Distance (mm)	Gas Flow (L/min)	Welding Angle	
	6	1.2	5 - 5.5	230 - 260	25 - 27	40 - 45	20	15 - 20	45°	
			6	220 - 250	25 - 27	35 - 45	13 - 18	10 - 20	45°	
			4 - 4.5	270 - 300	28 - 31	60 - 70	13 - 18	10 - 20	45°	
	8, 9	1.2, 1.6	6 - 7	270 - 380	29 - 35	40 - 45	25	20 - 25	50°	
	8	1.2	5 - 6	270 - 300	28 - 31	55 - 60	13 - 18	10 - 20	45°	
			7 - 8	260 - 300	26 - 32	25 - 35	15 - 20	10 - 20	50°	
			1.6	6.5 - 7	300 - 330	30 - 34	30 - 35	15 - 20	10 - 20	50°
	12	1.2, 1.6	7 - 8	270 - 380	27 - 35	27 - 40	20 - 25	20 - 25	50°	
			1.2	7 - 8	260 - 300	26 - 32	25 - 35	15 - 20	10 - 20	50°
			1.6	6.5 - 7	300 - 330	30 - 34	30 - 35	15 - 20	10 - 20	50°
T-shaped horizontal fillet welding (High speed) 	1.0	0.8	2 - 2.5	130 - 150	19 - 20	140 - 145	10	15	45°	
	1.2	1.0	3	130 - 150	19 - 20	105 - 115	10	15	45°	
	1.6	1.0, 1.2	3	170 - 190	22 - 23	105 - 115	10	15 - 20	45°	
	2.0	1.2	3.5	200 - 220	23 - 25	105 - 115	15	20	45°	
	2.3	1.2	3.5	220 - 240	24 - 26	95 - 105	20	25	45°	
	3.2	1.2	3.5	250 - 270	26 - 28	95 - 105	20	25	45°	
	4.5	1.2	4.5	270 - 290	29 - 31	75 - 85	20	25	50°	
	6	1.2	5.5	290 - 310	32 - 34	65 - 75	25	25	50°	

**MAG welding (solid wire; Ar 80% + CO<sub>2</sub> 20%)**

Type	Plate Thickness (mm)	Wire Diameter $\Phi$ (mm)	Root Gap (mm)	Welding Current (A)	Welding Voltage (V)	Welding Speed (cm/min)	Tip-Welding Material Distance (mm)	Gas Flow (L/min)
I-shaped butt welding 	1.2	0.8	0	60 - 70	15 - 16	30 - 50	10	10 - 15
	1.6	0.8	0	100 - 110	16 - 17	40 - 60	10	10 - 15
	3.2	0.8, 1.2	1.0 - 1.5	120 - 140	16 - 17	25 - 30	15	10 - 15
	4.0	1.0, 1.2	1.5 - 2.5	150 - 160	17 - 18	20 - 30	15	10 - 15
T-shaped horizontal fillet welding 	0.6	0.8	2	70 - 80	17 - 18	50 - 60	10	10 - 15
	1.0	1.0	2 - 2.5	85 - 90	18 - 19	50 - 60	10	10 - 15
	1.6	1.0, 1.2	3	100 - 110	18 - 19.5	50 - 60	10	10 - 15
	2.4	1.0, 1.2	3.5	115 - 125	19.5 - 20	50 - 60	10	10 - 15
	3.2	1.0, 1.2	4	130 - 140	19.5 - 21	50 - 60	15	10 - 15

## Common parameters for the flux-cored wire

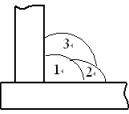
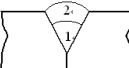
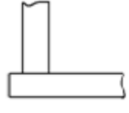
Flux-Cored Wire Type	Welding Position	Wire Diameter $\Phi$ (mm)	Leg Size (mm)	Number of Beads	Welding Current (A)	Welding Voltage (V)	Welding Speed (cm/min)	Weaving		
Metal		1.2	4	1	240 - 260	26 - 28	48 - 53	No		
		1.4		1	320 - 340	28 - 30	95 - 105	No		
		1.6		1	340 - 360	30 - 32	100 - 110	No		
		1.2	5	1	260 - 280	28 - 30	48 - 53	No		
		1.4		1	330 - 340	29 - 31	85 - 95	No		
		1.6		1	360 - 380	32 - 34	85 - 95	No		
		1.2	6	1	260 - 280	27 - 29	40 - 45	No		
		1.4		1	320 - 340	30 - 32	75 - 85	No		
		1.6		1	370 - 390	33 - 35	75 - 85	No		
		1.2	7	1	270 - 290	29 - 31	38 - 43	No		
		1.4		1	340 - 360	31 - 33	48 - 53	No		
		1.6		1	370 - 390	33 - 35	60 - 70	No		
			12	1.4	9	1	260 - 280	27 - 29	22 - 26	Yes
					1	320 - 340	30 - 32	38 - 42	No	
		2			320 - 340	30 - 32	40 - 44	No		
					3	320 - 340	29 - 31	48 - 52	No	
			1.2	9	1	260 - 280	27 - 29	23 - 27	No	
				12	1	290 - 310	30 - 32	33 - 37	No	
	2				290 - 310	30 - 32	27 - 31	Yes		
Titania	Vertical angle welding	1.2	4	-	170 - 190	21 - 23	48 - 52	-		
			6	-	190 - 210	22 - 24	48 - 52	-		
			8	-	210 - 230	22 - 24	43 - 47	-		
Titania		1.2	4	-	210 - 230	26 - 28	68 - 72	-		
			6	-	260 - 280	28 - 30	48 - 52	-		
			8	-	290 - 310	29 - 31	33 - 37	-		
		1.4	4	-	250 - 270	27 - 29	68 - 72	-		
			6	-	310 - 330	30 - 32	48 - 52	-		
			8	-	340 - 360	32 - 34	33 - 37	-		

Table 2-6 describes the issues that occur when the welding conditions are abnormal.

Table 2-6 Abnormal welding conditions

Abnormal Welding Condition	Result
Wire stick-out is excessive.	The arc is lengthened.
	The bead is widened.
	The protection performance of the gas decreases.
Wire stick-out is inadequate.	The arc is shortened.
	Spatters occur.
The arc voltage is excessively high.	The arc is lengthened.
	The bead is widened.
	The fusion depth and reinforcement are reduced.
The arc voltage is excessively low.	Wire sticking and spatters occur.
	The bead is narrowed.
	The fusion depth and reinforcement are reduced.
The welding current is excessively high.	The bead is widened.
	The fusion depth and reinforcement are increased.
The welding speed is excessively high.	The bead is narrowed.
	The fusion depth and reinforcement are reduced.
Wire stick-out: distance between the tip and the workpiece to be welded	

## 2.8 Post-welding Tasks

Turn off the main switch of the gas cylinder and then turn off the power switch.

Turn off the power supply of the welder and then the power supply of the distribution box.

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### Note

Do not turn off the power supply of the welder until 3 to 5 minutes after welding is complete. This facilitates internal cooling of the welder.

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# Chapter 3 Welder Operation Description

## 3.1 Welder Control Panel Structure

### 3.1.1 Front Control Panel

Figure 3-1 shows the front control panel of the welder and the buttons on the control panel.

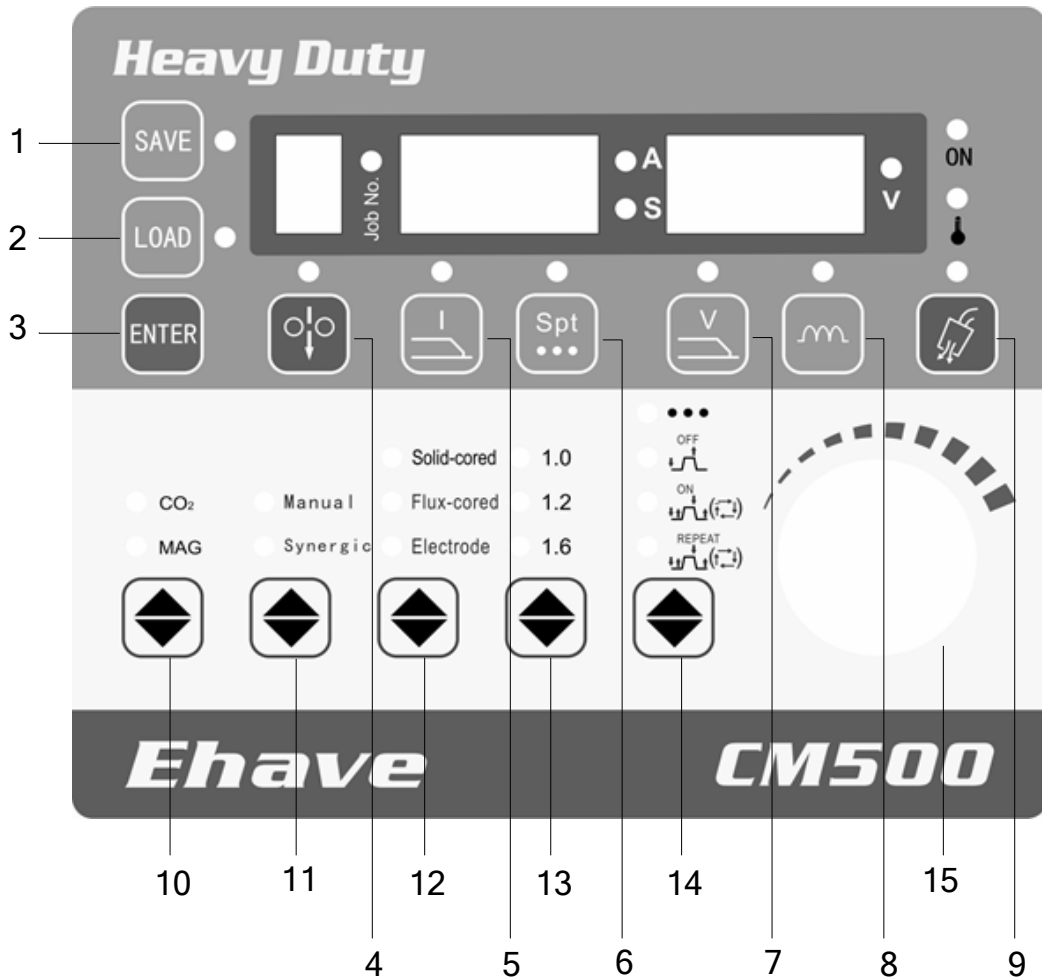

















Figure 3-1 Front control panel

#### Note

The preceding figure shows the front control panel of Ehave CM500, which is the same as those of Ehave CM500H/500AR. On the front control panels of Ehave CM250/350/350AR, the wire diameters are 0.8, 1.0, and 1.2.

SN	Name	Function
1	SAVE 	1. Saves selected welding parameters.2. Sets a password when the locking function is used.
2	LOAD 	1. Loads saved welding parameters.2. Implements password-based locking.
3	ENTER 	1. Confirms loading of and saves welding parameter settings.2. Implements common control panel locking.
4	Inch wire 	Quickly inches wire without gas flow, reducing gas usage.
5	Ending arc current 	Adjusts the ending arc current in the mode of welding with ending arc and the mode of welding with repeated ending arc.
6	Spot welding time 	Sets the time for spot welding.
7	Ending arc voltage 	Adjusts the ending arc voltage in the mode of welding with ending arc and the mode of welding with repeated ending arc.
8	Arc dynamic 	Sets the hardness of arc.
9	Detect gas 	Detects gas flow.
12	Gas type 	Selects the type of the shielding gas. MAG indicates the mixed gas consisting of 80% Ar and 20% CO <sub>2</sub> .
11	Output control 	<b>Manual</b> indicates that the current and voltage can be set independently. <b>Synergic</b> indicates that the voltage varies with the current and the voltage can only be 9 V more or less than the system-defined value. In synergic mode, rotate the voltage adjusting knob on the control panel of the wire feeder to select the standard range.
12	Wire type 	Selects the type of the welding wire. If <b>Gas type</b> is set to <b>MAG</b> , the system disables the <b>Flux-cored wire</b> option. If <b>Wire type</b> is set to <b>Electrode</b> , the system enters the manual arc welding mode.
13	Wire diameter 	Selects the diameter of the welding wire. If <b>Wire type</b> is set to <b>Flux-cored wire</b> , the system allows only the wire diameters 1.2 mm and 1.6 mm.
14	Welding control 	Selects the welding control mode.



SN	Name	Function
15	Value adjusting knob 	Manually adjusts the current for manual arc welding, the ending arc voltage, ending arc current, spot welding time, arc dynamic, and locking password for gas shielded arc welding, and the current and voltage within specified ranges.

### 3.1.2 Remote Control Box of the Wire Feeder

The remote control box of the wire feeder consists of the current adjusting knob, voltage adjusting knob, and wire inching button. See Figure 3-2.

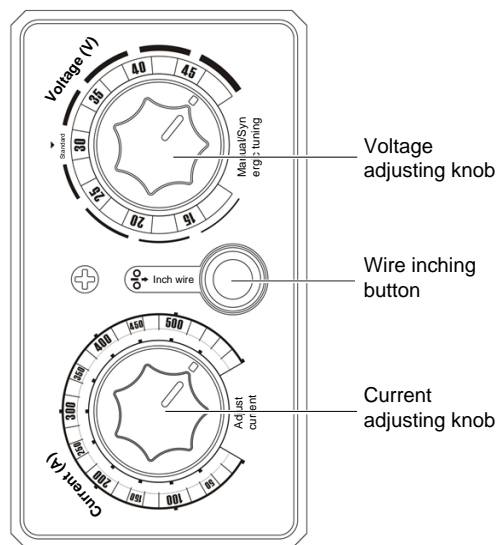


Figure 3-2 Remote control box of the wire feeder

#### Note

The preceding figure shows the remote control box for Ehave CM500/500H. The current and voltage scales for Ehave CM250/350 are different from those shown on the preceding figure.

## 3.2 Buttons and Knobs

The buttons can be pressed or hold down. The hold-down operation on a button is responded only after the button is held down for three seconds.

Rotating a knob counter-clockwise reduces a value, while rotating a knob clockwise increases a value. Figure 3-3 shows the positions of buttons and knobs.

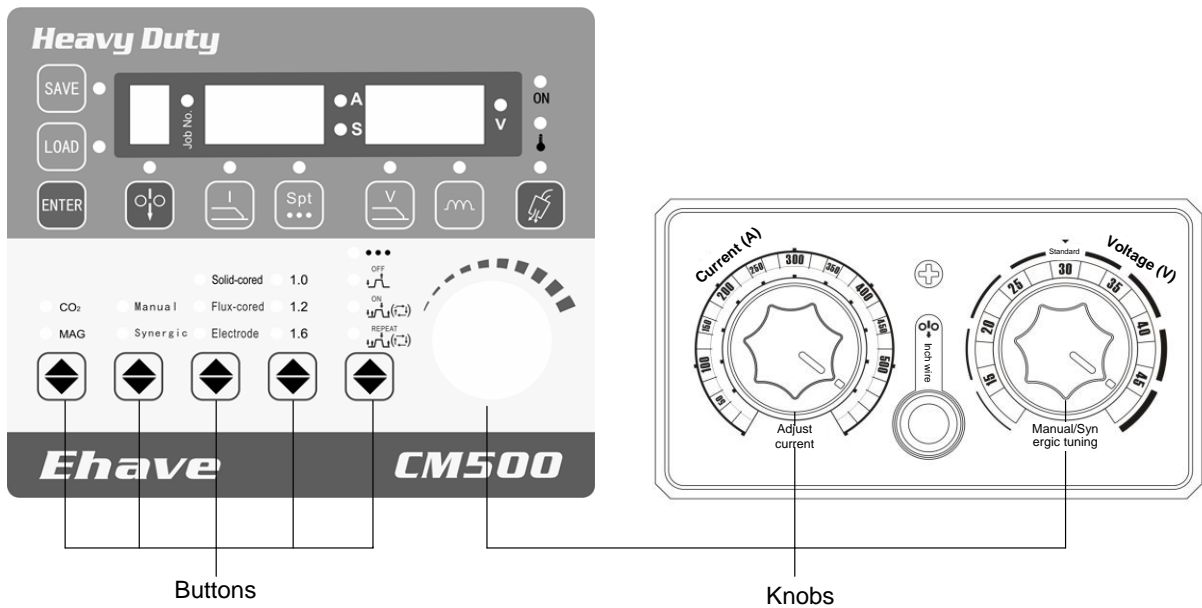


Figure 3-3 Positions of buttons and knobs

### 3.3 Screens and LED Indicators

Figure 3-4 shows the screens and LED indicators.

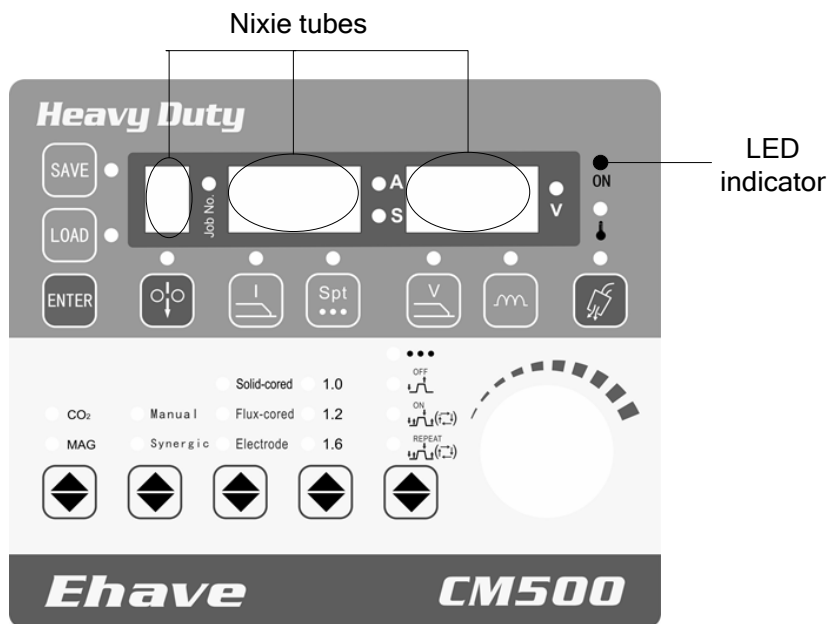


Figure 3-4 Positions of screens and LED indicators

The left screen displays the numbers of saved or loaded channels and the locking state. When the saving or loading function is used, the **Job No.** indicator turns on and the left screen displays the number of the active channel which ranges from 0 to 9. When the locking function is used, the left screen displays **L**, indicating common locking and password change. Meanwhile, the **Job No.** indicator flashes, indicating parameter value range locking.

The middle screen displays a current value, a spot welding time, or a code. When the current indicator **A** turns on, it displays a current value. When the spot welding time indicator **S** turns

on, it displays a spot welding time. In locking mode or when a fault occurs, it displays a corresponding code.

The right screen displays a voltage, an arc dynamic value, or a code. When the voltage indicator **V** turns on, it displays a voltage value. When the arc dynamic is adjusted, it displays an arc dynamic value (adjustable within the range of -9 to +9.) In locking mode or when a fault occurs, it displays a corresponding code.

## 3.4 Control Panel Functions

### Note

The control panel of Ehave CM500 is used as an example to describe the functions. Usage of the functions is the same as that for Ehave CM250/350/350AR/500H/500AR.

### 3.4.1 Gas Shielded Arc Welding

Set **Gas type**, **Wire type**, and **Wire diameter** according to the welding process requirements. Table 3-1 lists the allowed settings of this welder.

Table 3-1 Parameter settings for gas shielded arc welding

Gas Type	Wire Type	Ehave CM250/350/350AR	Ehave CM500/500H/500AR
		Wire Diameter (mm)	Wire Diameter (mm)
CO <sub>2</sub>	Solid wire	0.8	1.0
		1.0	1.2
		1.2	1.6
	Flux-cored wire	1.2	1.2
		/	1.6
MAG	Solid wire	0.8	1.0
		1.0	1.2
		1.2	1.6


### 3.4.2 Spot Welding

Spot welding is mainly used for tack welding, short-time welding, and thin-plate welding. Two steps must be performed, including turning on and turning off the welding torch.

The procedure is as follows:

1. Use the current and voltage adjusting knobs on the wire feeder to set the welding current and voltage.

2. Press the **Welding control**  button and switch to the spot welding mode.

3. Press the **Spot welding time**  button and use the knob on the control panel to set the welding time, which ranges from 0.1 s to 10 s. The time is displayed on the middle screen. Figure 3-5 shows the control panel where the spot welding time has been set.

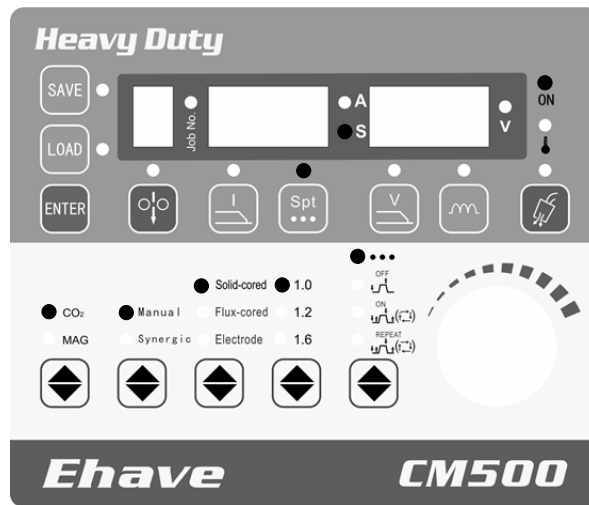


Figure 3-5 Setting the spot welding time

4. Press the **Spot welding time**  button to stop setting the time.

Note: Adjust the arc dynamic as required during welding.

After parameters are set, turn on the welding torch to perform spot welding. When the switch of the welding torch is turned to **ON**, an arc is generated. When the switch of the welding torch is turned to **OFF**, welding stops.

If the switch is kept at the **ON** position, arc generation stops after the preset time. When the switch is turned to **OFF** before the preset time expires, spot welding ends. See Figure 3-6.

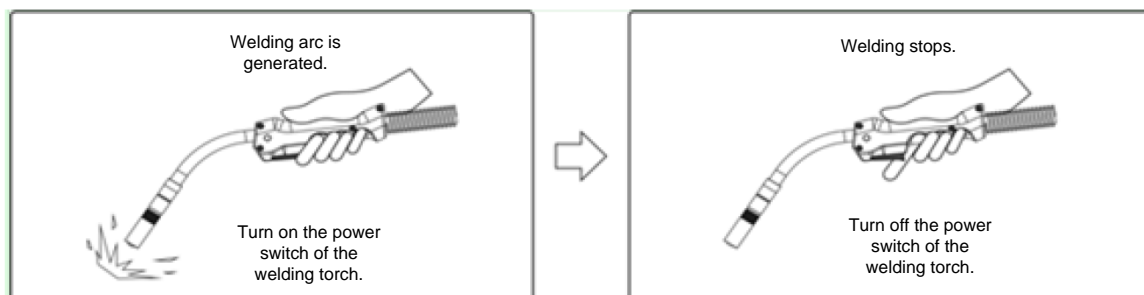


Figure 3-6 Schematic diagram of spot welding

Figure 3-7 shows the welding logic.

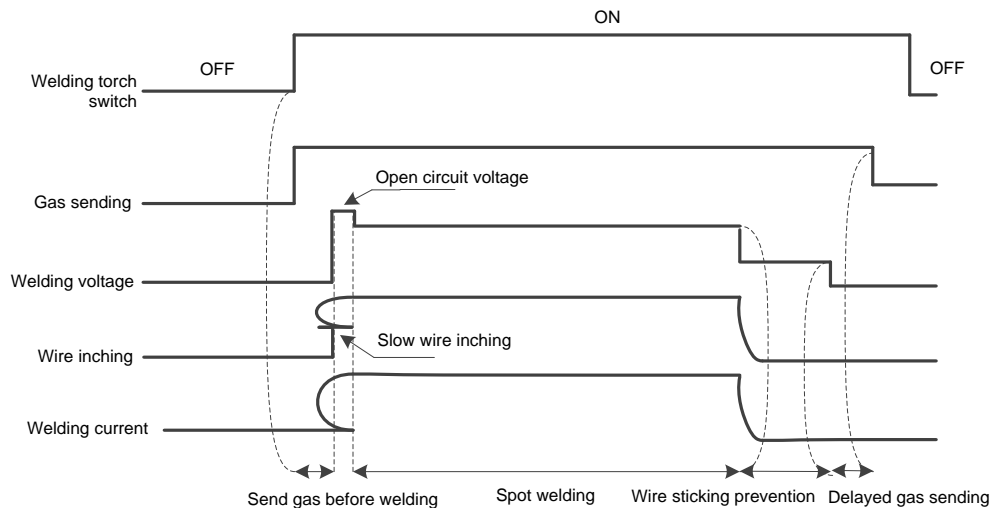



Figure 3-7 Spot welding logic

### 3.4.3 Welding Without Ending Arc

You can perform welding directly in the mode of welding without ending arc. Two steps must be performed, including turning on and turning off the welding torch.

The procedure is as follows:

1. Press the **Welding control**  button and switch to the mode of welding without ending arc.
2. Use the current and voltage adjusting knobs on the wire feeder to set the welding current and voltage.
3. Perform welding after parameters are set. See Figure 3-8.

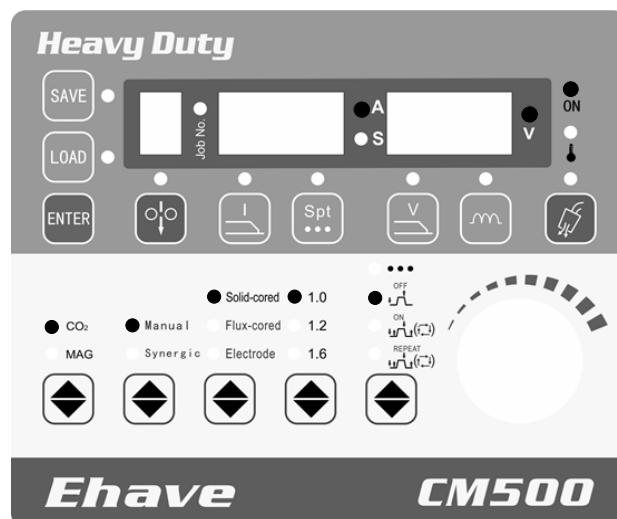


Figure 3-8 Selecting the mode of welding without ending arc

When the switch of the welding torch is turned to **ON**, an arc is generated. When the switch of the welding torch is turned to **OFF**, welding stops. See Figure 3-6.

Figure 3-9 shows the welding logic.

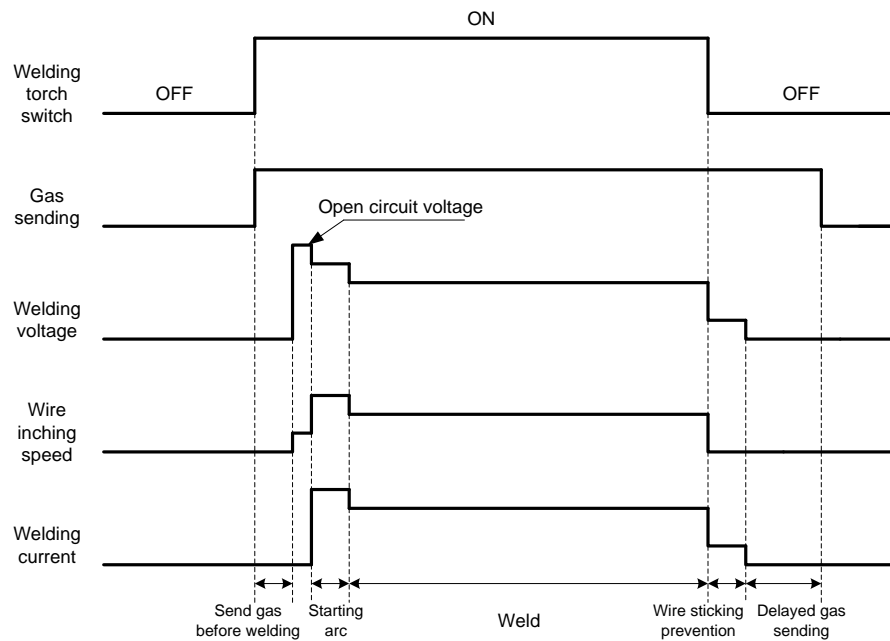





Figure 3-9 Logic for welding without ending arc

### 3.4.4 Welding with Ending Arc

After welding, you can use ending arc to fill up the craters and arc holes created during welding. Four steps must be performed, including turning on and turning off the welding torch.

The procedure is as follows:

1. Press the **Welding control**  button and switch to the mode of welding with ending arc.
2. Use the current and voltage adjusting knobs on the wire feeder to set the welding current and voltage.
3. Press the **Ending arc current**  and **Ending arc voltage**  buttons, and use the knob on the control panel to set the ending arc current and ending arc voltage.
4. Figure 3-10 shows the control panel where the parameters have been set.

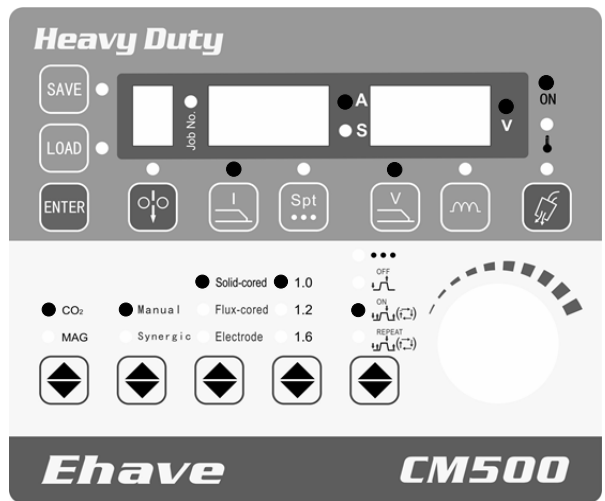


Figure 3-10 Selecting the mode of welding with ending arc

When the switch of the welding torch is turned to **ON**, an arc is generated. When the switch of the welding torch is turned to **OFF**, welding arc generation is locked. When the switch is turned to **ON** again, the ending arc is generated. When the switch is turned to **OFF** again, welding stops. See Figure 3-11.

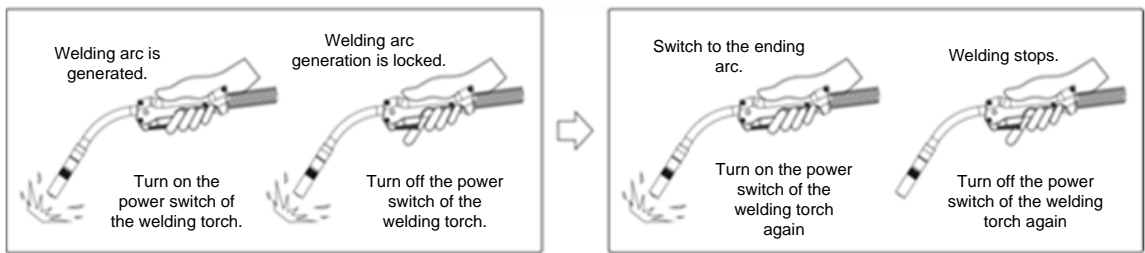


Figure 3-11 Schematic diagram of welding with ending arc

Figure 3-12 shows the welding logic.

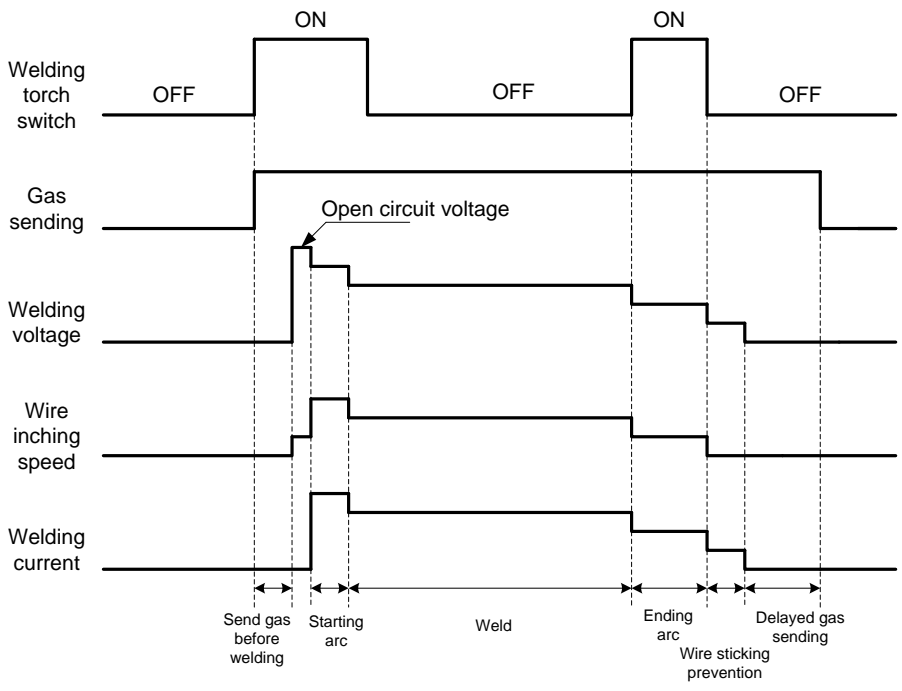





Figure 3-12 Logic for welding with ending arc

### 3.4.5 Welding with Repeated Ending Arc

Welding with repeated ending arc is mainly used to fill up the craters and arc holes created by ending arc. Four steps must be performed, including turning on and turning off the welding torch.

The procedure is as follows:

1. Press the **Welding control**  button and switch to the mode of welding with repeated ending arc.
2. Use the current and voltage adjusting knobs on the wire feeder to set the welding current and voltage.
3. Press the **Ending arc current**  and **Ending arc voltage**  buttons, and use the knob on the control panel to set the ending arc current and ending arc voltage.
4. Figure 3-13 shows the control panel where the parameters have been set.

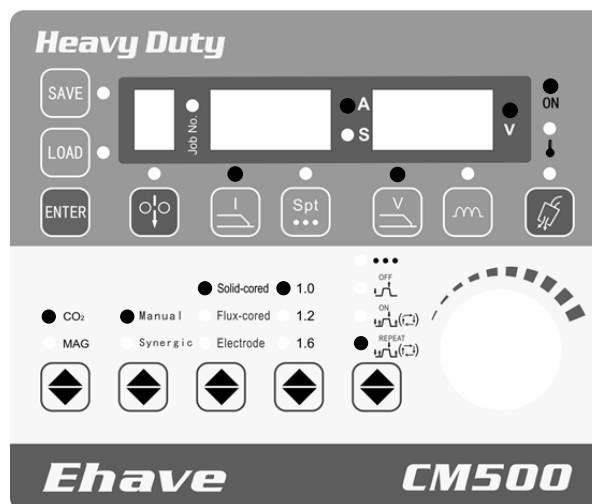


Figure 3-13 Selecting the mode of welding with repeated ending arc

When the switch of the welding torch is turned to **ON** after parameters are set, an arc is generated. When the switch of the welding torch is turned to **OFF**, welding arc generation is locked. When the switch is turned to **ON** again, the ending arc is generated using the ending arc voltage and current. When the switch is turned to **OFF** again, welding stops. If the welding torch is not used within 2 seconds, welding with repeated ending arc stops. If the power switch is turned on within 2 seconds, welding with repeated ending arc is performed again. This procedure repeats when you repeat the preceding operation. Figure 3-14 shows the welding procedure.



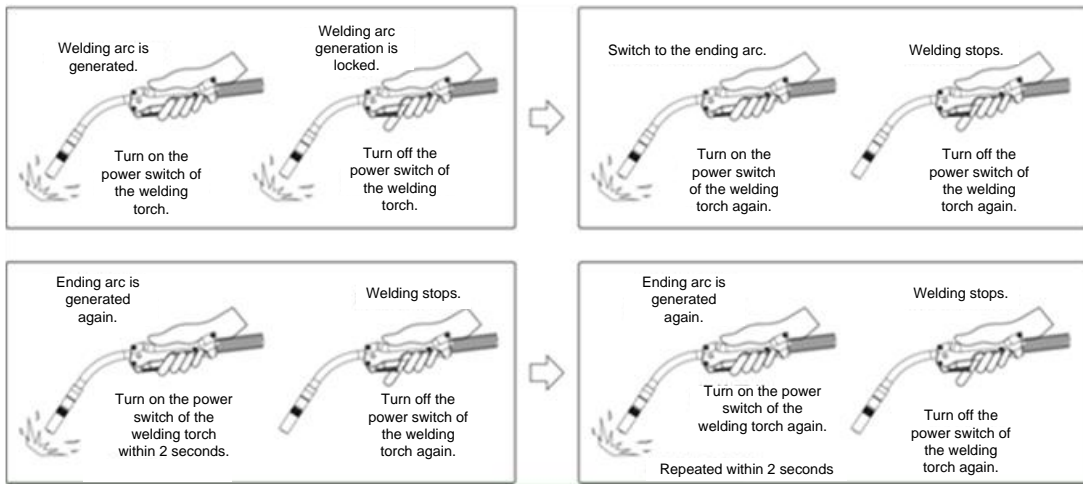


Figure 3-14 Schematic diagram of welding with repeated ending arc

Figure 3-15 shows the welding logic.

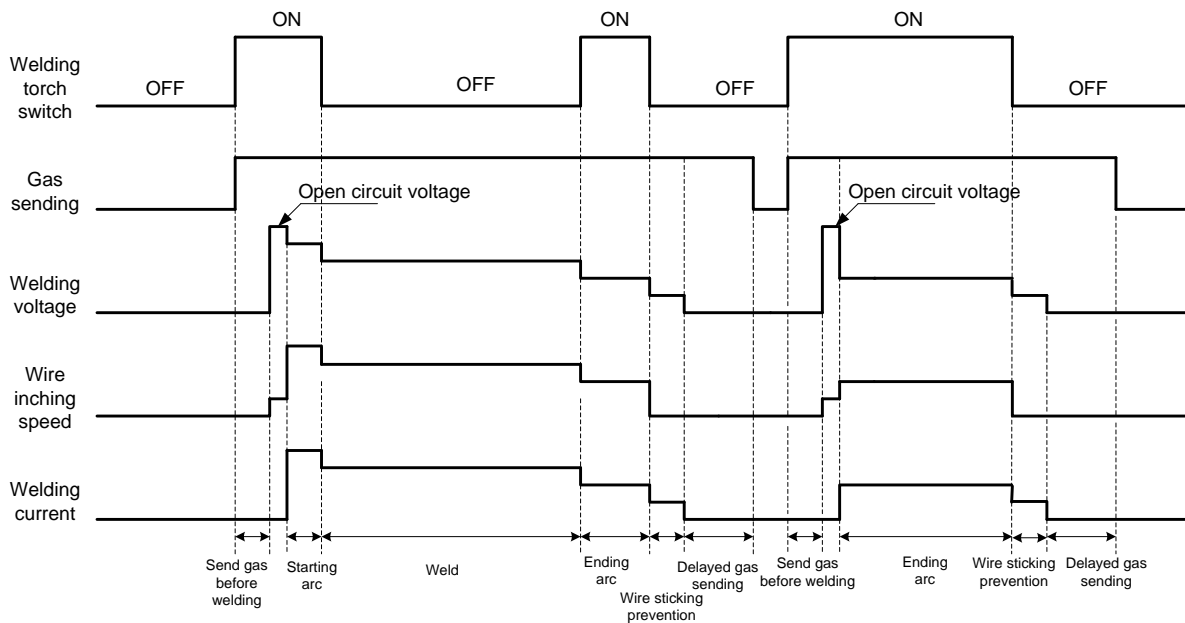




Figure 3-15 Logic for welding with repeated ending arc

### 3.4.6 Synergic/Manual

#### Synergic

The welding voltage varies with the welding current. The procedure is as follows:


1. Press the **Manual**  button on the control panel and rotate the voltage adjusting knob on the wire feeder to set the standard voltage to 30 V.
2. Press the **Synergic**  button on the control panel and perform welding in synergic mode.

 **Note**

1. In synergic mode, you can rotate the knob counter-clockwise to reduce the voltage and rotate it clockwise to increase the voltage within the range of  $30\text{ V} \pm 9\text{ V}$ .
2. In synergic mode, the welding voltage must be finely tuned according to the plate thickness.


### Manual

The welding current and welding voltage are adjusted independently. The procedure is as follows:

1. Press the **Manual**  button on the control panel.
2. Rotate the current adjusting knob to adjust the current and the voltage adjusting knob to adjust the voltage.

### 3.4.7 Arc Dynamic

Arc dynamic is used to set the arc hardness. The procedure is as follows:

1. Press the **Arc dynamic**  button on the control panel.
2. Use the knob to adjust the arc hardness.
3. Figure 3-16 shows the control panel where the parameters have been set.

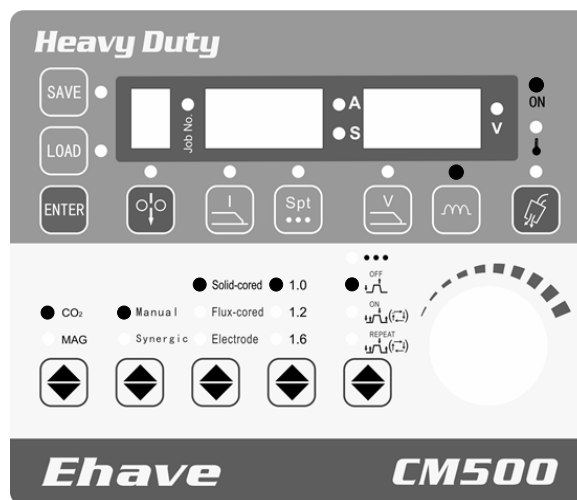


Figure 3-16 Setting arc dynamic

Note:

Arc hardness can be adjusted within the range of -9 to +9. Rotating the knob clockwise increases the hardness, while rotating the knob counter-clockwise reduces the hardness. Table 3-2 and Figure 3-17 describe the arc dynamic.

Table 3-2 Arc dynamic

Arc Dynamic	Function
0	It indicates the default arc dynamic and is commonly used.
Hard arc: 0 to 9	The welding seam fusion depth is high and it can easily achieve weld penetration. It is suitable for full welding and high-speed welding. It can ensure arc stability when the power cable is extended.
Soft arc: 0 to -9	The welding seam fusion depth is low and it is not easy to achieve weld penetration. It is suitable for welding thin plates.

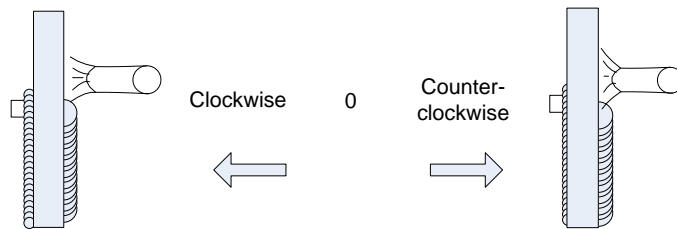




Figure 3-17 Schematic diagram of arc dynamic

### 3.4.8 Detect Gas

It is used to check whether a shielding gas is used. The procedure is as follows:

1. Press the **Detect gas**  button to check for gas flow.
2. Press the **Detect gas**  button again to stop the checking.
3. Figure 3-18 shows the control panel where the parameters have been set.

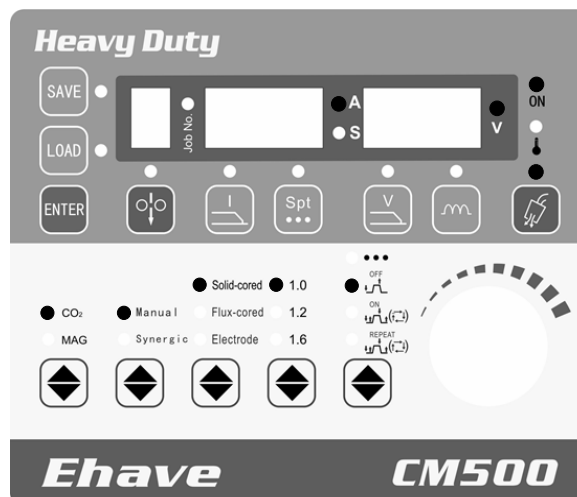





Figure 3-18 Setting gas detection

Note: If you do not manually stop gas detection, it stops automatically after 30 seconds.

### 3.4.9 Wire Inching

Method 1: Use the **Wire Inching**  button on the control panel of the welder to inch wire. The procedure is as follows:

1. Hold down the **Wire Inching**  button on the control panel to enable the wire feeder to inch wire directly.
2. Release the **Wire Inching**  button and wire inching stops.
3. Figure 3-19 shows the control panel where the parameters have been set.

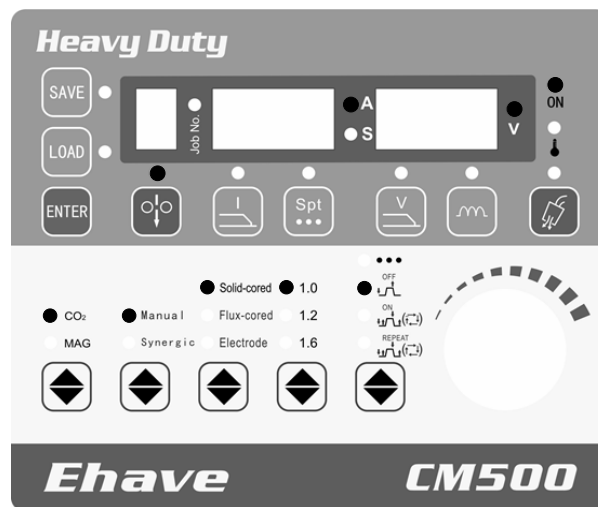





Figure 3-19 Setting wire inching

Method 2: Use the **Wire Inching**  button on the remote control box of the wire feeder (see Figure 3-20) to inch wire. The procedure is as follows:

1. Hold down the **Wire Inching**  button on the remote control box of the wire feeder to enable the wire feeder to inch wire directly.
2. Release the **Wire Inching**  button and wire inching stops.

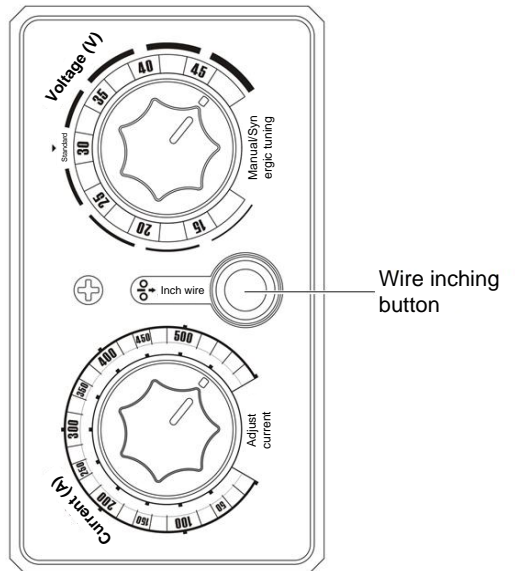


Figure 3-20 Remote control box of the wire feeder

Note:




The wire inching speed depends on the preset current. A higher preset current results in a higher wire inching speed, while a lower preset current results in a lower wire inching speed.

### 3.4.10 SAVE and LOAD

#### SAVE

It is used to save parameter settings. The following provides two methods of saving parameter settings.

The procedure for method 1 is as follows:

1. Press the **SAVE**  button. The **Job No.** indicator turns on and the **SAVE**  indicator flashes.
2. Use the knob to select a channel number (0 - 9).
3. Select the welding parameter settings to be saved. Figure 3-18 shows the control panel where the parameter settings are saved.
4. Press the **ENTER**  button to save the parameter settings. After the parameter settings are saved, the indicators turn off.

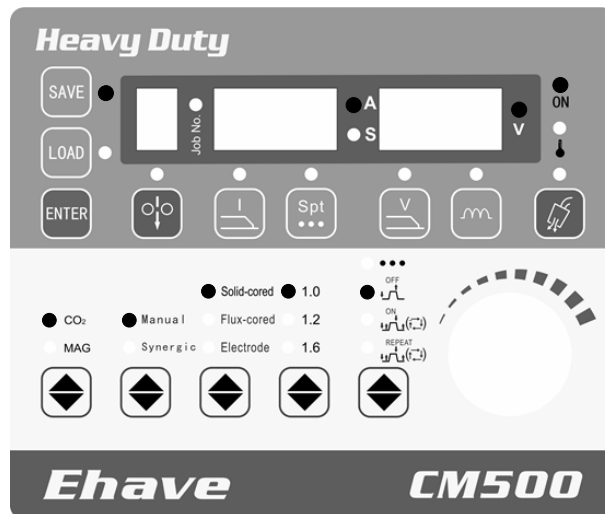






Figure 3-21 Saving parameter settings


The procedure for method 2 is as follows:

1. Select the parameter settings to be saved.
2. Press the **SAVE**  button. The **Job No.** indicator turns on and the **SAVE**  indicator flashes.
3. Use the knob to select a channel number (0 - 9). See Figure 3-21.
4. Press the **ENTER**  button to save the parameter settings. After the parameter settings are saved, the indicators turn off.

Note:

If you want to abort the saving operation during the procedure, press the **SAVE**  button again.


#### Note

1. If you set **Wire type**  during the procedure, **Electrode** cannot be selected.
2. When a channel is selected for data storage, the original data of the channel is overwritten.
3. When the factory settings of the welder are restored, the saved parameter settings are not deleted.

## LOAD

The procedure is as follows:

1. Press the **LOAD**  button. The **Job No.** indicator turns on and the **LOAD**  indicator flashes.

2. Use the knob to select a channel number (0 - 9) and the parameter settings saved to the channel appear.
3. Press the **ENTER**  button to load the parameter settings. To view parameter settings, directly press the corresponding function buttons.
4. Figure 3-22 shows the control panel where the parameter settings are loaded.

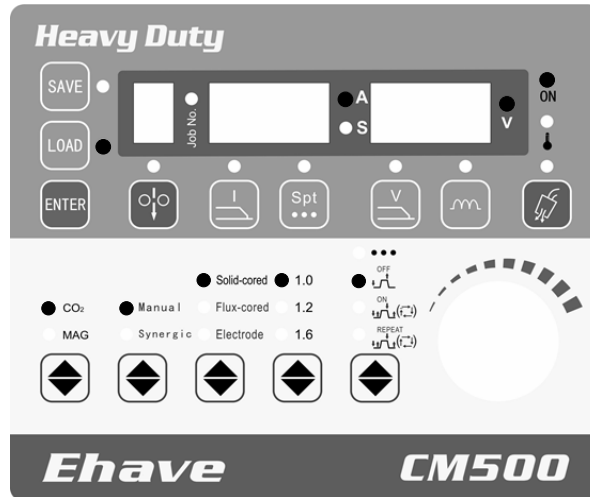



Figure 3-22 Loading parameter settings

Note:

To abort the loading operation during the procedure, press the **LOAD**  button.


### 3.4.11 Lock

#### Safety Warning

1. If you set a lock password, it is not deleted when the factory settings of the welder are restored.
2. Keep your password properly. If you forget your lock password, the welder cannot be unlocked. In this case, contact the manufacturer or supplier.

Parameter locking can be implemented with the common lock or password lock.

#### Purposes of the locking function:






1. The common lock only prevents the parameter settings completed on the control panel of the welder from being changed. You can press and hold the **ENTER**  button to unlock.

#### Note

In common lock mode, all the buttons and knobs (except the **SAVE** , **LOAD** , **ENTER** , **Inch wire** , and **Detect gas**  buttons) on the control panel of the welder cannot be used.

- The password lock enables welding administrators to effectively ensure welding process regulation compliance. After parameters are locked, they can be adjusted only within preset ranges. You can unlock only with a correct password.

**Note**

In password lock mode, the current and voltage adjusting knobs on the wire feeder can be used, and all the buttons and knobs (except the **SAVE** , **LOAD** , **ENTER** , **Inch wire** , and **Detect gas**  buttons) on the control panel of the welder cannot be used.

**Common Lock**

The procedure is as follows:


- Set welding parameters. Press and hold the **ENTER**  button. When the left screen displays **L**, the common lock function is enabled. See Figure 3-23.



Figure 3-23 Enabling the common lock


- Press and hold the **ENTER**  button. The common lock function is disabled, and the parameters are unlocked. See Figure 3-24.



Figure 3-24 Disabling the common lock

Figure 3-25 shows the procedure for using the common lock.



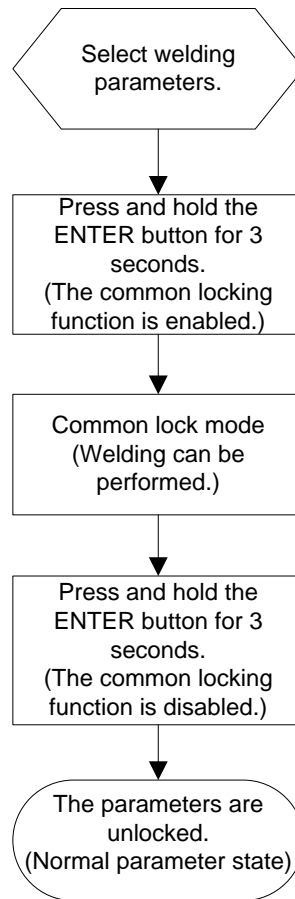


Figure 3-25 Procedure for using the common lock

### Password Lock

The password lock involves password setting and parameter range locking.

#### Note

In password lock mode, the current and voltage adjusting knobs on the wire feeder can be used, and all the buttons and knobs (except the **SAVE** , **LOAD** , **ENTER** , **Inch wire** , and **Detect gas** ) buttons) on the control panel of the welder cannot be used.

### Setting a password

The procedure is as follows:




1. Press and hold the **ENTER**  button. When the left screen displays **L**, the common lock function is enabled. See Figure 3-23.
2. Press and hold the **SAVE**  button. When the first screen displays **o**, the middle and right screens display -, use the knob on the control panel to enter the original 6-character password according to the flashing indication on the screens and press the **LOAD**  button. See Figure 3-26.



Figure 3-26 Entering the original password

**Note:**

The initial password set before delivery is **000000**. After it is changed, use the new password as the original password.

3. If the original password is entered correctly, the screens display **1 good**. See Figure 3-27. The screens flash and the UI for entering a new password is displayed.



Figure 3-27 Message indicating that the original password is entered correctly

If the original password is not entered correctly, the screens display **o FAIL**. See Figure 3-28. The UI for entering the original password is displayed.



Figure 3-28 Message indicating that the original password is not entered correctly

4. On the UI for entering a new password, the first screen displays **1**, and the middle and right screens display **-**. See Figure 3-29. Use the knob on the control panel to enter a 6-character new password and press the **LOAD** button.



Figure 3-29 Entering a new password

5. After the new password is entered correctly, the screens display **2 good**. See Figure 3-30. The UI for confirming the new password is displayed.



Figure 3-30 Message indicating that a new password is entered correctly

6. On the UI for confirming the new password, the first screen displays **2**, and the middle and right screens display **-**. See Figure 3-31. Use the knob on the control panel to enter the 6-character new password and press the **LOAD** button.



Figure 3-31 Confirming the new password

7. If the new password and confirm password entered are the same, the screens display **good**. See Figure 3-32. The common lock function is disabled.



Figure 3-32 Message indicating that a new password is set successfully

8. If the new password and confirm password entered are different, the screens display **2 FAIL**. See Figure 3-33. The UI for confirming the new password is displayed. See Figure 3-31. Enter the new password correctly and the screens display **good**. See Figure 3-32.



Figure 3-33 Message indicating that the confirm password is different from the new password

Note:



1. If you press and hold the **ENTER**  button on the UI for entering the original password, the UI for entering a new password, or the UI for confirming a new password to enter the common lock UI, the original password is not changed. You can press and hold the **ENTER**  button again to disable the common lock function.
2. If the welder is restarted when displaying the UI for entering the original password, the UI for entering a new password, or the UI for confirming a new password, the common lock UI is displayed after restarting is complete and the original password is not changed.

Figure 3-34 shows the procedure for changing a password.

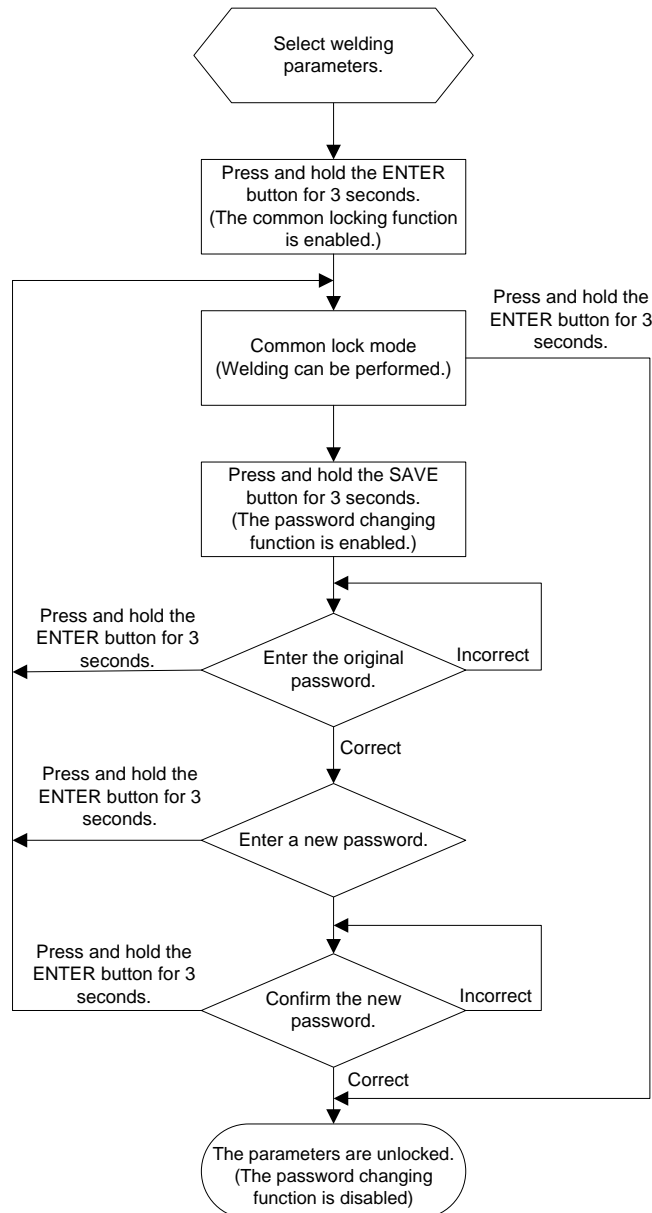





Figure 3-34 Procedure for changing a password

### Locking a parameter range

The procedure is as follows:

#### a. Enable the parameter range locking function.


1. Press and hold the **ENTER**  button. When the left screen displays **L**, the common lock function is enabled. See Figure 3-23.
2. Press and hold the **LOAD**  button. The lock password UI shown in Figure 3-26 is displayed. When the first screen displays **o**, the middle and right screens display **-**, use the knob on the control panel to enter the 6-character lock password according to the flashing indication on the screens and press the **LOAD**  button.

3. If the lock password is entered correctly, the screens display **L good**. See Figure 3-35. The screens flash and the UI for locking the current adjustment range is displayed.



Figure 3-35 Message indicating that the lock password is entered correctly

If the lock password is not entered correctly, the screens display **o FAIL**. See Figure 3-28. The UI for entering the lock password is displayed. See Figure 3-26.

4. On the UI for locking the current adjustment range, the middle screen flashes. See Figure 3-36. Use the knob on the control panel of the welder to set the current adjustment range and press the **LOAD**  button. The UI for locking the voltage adjustment range is displayed. The default range is  $\pm 15$  A.

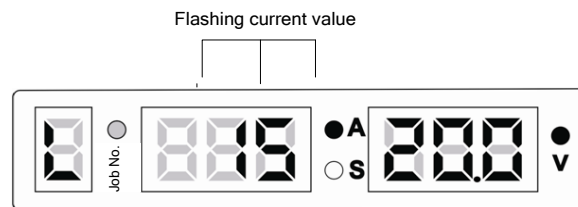



Figure 3-36 UI for locking the current adjustment range

5. On the UI for locking the voltage adjustment range, the right screen flashes. See Figure 3-37. Use the knob on the control panel of the welder to set the voltage adjustment range and press the **LOAD**  button. The welder enters the state where the welding parameter adjustment ranges are locked. The default range is  $\pm 1.5$  V.

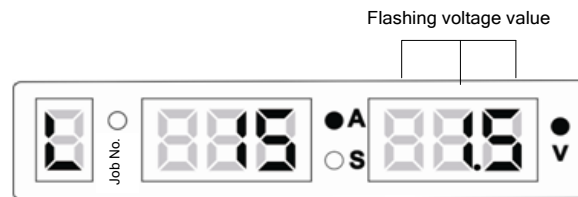


Figure 3-37 UI for locking the voltage adjustment range

6. In the state where parameters are locked, the **Job No.** indicator flashes. See Figure 3-38. The current and voltage adjustment ranges are locked. In the state, you can perform welding and adjust the current and voltage within the specified ranges.

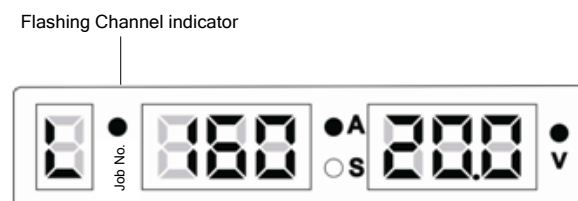




Figure 3-38 UI indicating that welding parameter adjustment ranges are locked

**b. Disable the parameter range locking function.**

1. Press and hold the **ENTER**  button. The UI for entering the lock password is displayed. See Figure 3-26. Use the knob on the control panel of the welder to enter a 6-character lock password, and press the **LOAD**  button.
2. If the lock password is entered correctly, the screens display **good**. See Figure 3-32. The welder enters the state where the welding parameter adjustment ranges are unlocked.

If the lock password is not entered correctly, the screens display **o FAIL**. See Figure 3-28. The UI for entering the lock password is displayed. Enter the correct lock password and the screens display **good**. See Figure 3-32.

Note:




1. If parameter adjustment range locking is not completed on the welder when it is restarted, the welder enters the common lock state after restarting is complete. If parameter adjustment range locking is complete when it is restarted, the welder enters the state where welding parameter adjustment ranges are locked after restarting is complete.
2. If you press and hold the **ENTER**  button on the UI for entering the lock password, the UI for locking the current adjustment range, or the UI for locking the voltage adjustment range, the common lock UI is displayed. You can press and hold the **ENTER**  button again to disable the common lock function. If you press and hold the **ENTER**  button to unlock welding parameter adjustment ranges, the UI for entering the lock password is displayed. Enter the lock password to disable the function.

Figure 3-39 shows the procedure for locking the welding parameter adjustment ranges.

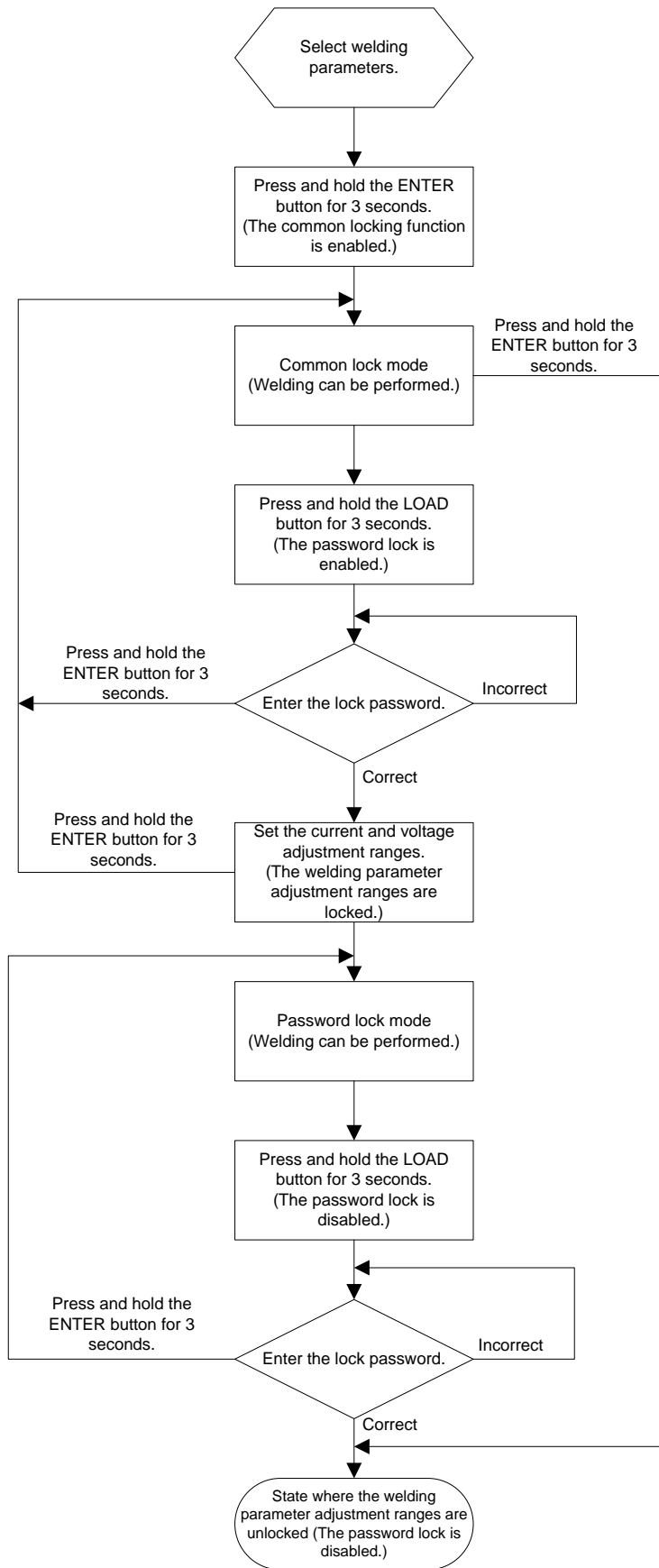


Figure 3-39 Procedure for locking the welding parameter adjustment ranges

### 3.4.12 Internal Menu










1. In the parameter setup mode, you can press the **SAVE**  and **LOAD**  buttons at the same time to access the internal menu. In this case, the **Job No.** indicator flashes. In the internal menu, you can press the **SAVE**  and **LOAD**  buttons at the same time to exit from the internal menu. In this case, the **Job No.** indicator turns off.
2. In the internal menu, you can use the knob to switch among menus at the same level and adjust parameter values.
3. In the internal menu, you can press the **SAVE**  button to go to the previous menu item and the **LOAD**  button to go to the next menu item.
4. In the internal menu, you can press the **ENTER**  button to select a parameter. Before adjusting a parameter, press the **ENTER**  button to select the parameter. When the parameter is selected, it flashes. Then, use the knob to change the value of the parameter and press the **ENTER**  button to confirm the change.

Figure 3-40 describes the internal menu.








  Select menu levels.  Adjust parameters.  Confirm parameter settings.					
   Access the menu.					
Code	Description	Level-2 Menu	Level-3 Menu	Level-4 Menu	Factory settings
F01	Restore factory settings				
F02	CO <sub>2</sub> /MAG setup	21PP Starting arc parameter	211P Wire inching speed		1.4 meter/minute
			212P Send gas before welding		0.2 second
			213P Hot arc starting	2131 Starting arc voltage	20.0 V
			2132 Starting arc current	160 A	
			2133 Hot arc starting time	0.0 second	
		22PP Ending arc parameter	221P Burn-back voltage		12.0 V
	222P Burn-back time		0.00 second		
		223P Clear ball time		0.25 second	
		224P Delayed gas sending time		2.0 second	
F03	Welding electrode setup	31PP Starting arc current			300 A
		32PP Hot startup current			50 A
		33PP Thrust current			30 A
F05	Reverse switch for arc starting success of welding robot				Factory setting: OFF

Figure 3-40 Internal menu description




### 3.4.13 Welder Network Monitors

Refer to the *Welder Network Monitors User Manual*.

## 3.5 Welding Electrode

The welding electrode function facilitates manual arc welding and enables you to use an electrode holder and a welding electrode to perform welding. This welder allows manual DC arc welding.

The procedure is as follows:

1. Press the **Wire type**  button and select **Electrode**, the system enters the manual arc welding mode.
2. Use the knob on the control panel to adjust the current.
3. Perform welding after the parameters are set. See Figure 3-41.

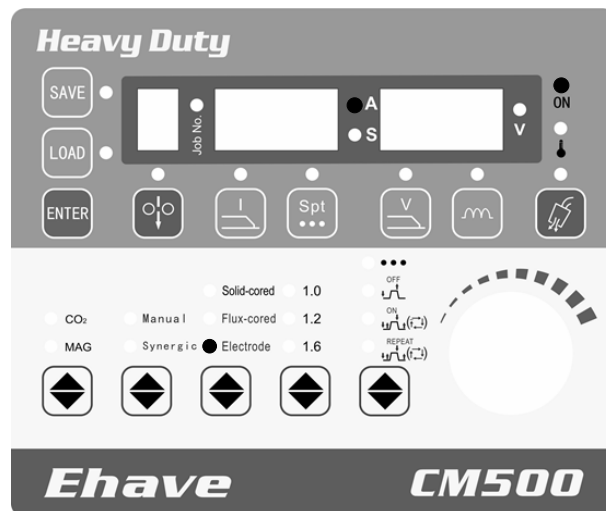


Figure 3-41 Selecting the mode of manual arc welding

## 3.6 Intelligent Function Description

### 3.6.1 Energy Conservation Function of the Fan

- The fan starts working when the power switch is turned on, and stops working if no operation is performed within 10 minutes.
- On Ehave CM250/350/350AR, it rotates at a low speed when the welding current is lower than 200 A, and rotates at a high speed when the welding current is higher than 200 A. On CM500/500H/500AR, it rotates at a low speed when the welding current is lower than 300 A, and rotates at a high speed when the welding current is higher than 300 A.
- It stops working 10 minutes after welding is ended.

### 3.6.2 Safety Protection Function for the Welding Torch

After startup, if the welding torch is turned on but is not used within 10 seconds, the main power output is disabled. This ensures safe usage.

### 3.6.3 Slow Wire Inching

In the period between startup of slow wire inching and starting arc generation, the wire inching speed is slower than that in the welding period. Slow wire inching aims to increase the starting arc generation success rate and reduce fusion problems in the arc welding startup section of a weld.

---

 **Note**

Slow wire inching can be customized based on user requirements.

---

### 3.6.4 Connecting a Robot

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 **Note**

The standard configuration of the Ehave series does not allow connection to robots. If you need to connect the welder to a robot, you must purchase Ehave CM350AR/500AR or other series dedicated to automatic welding.

---

Ehave CM350AR/500AR can be connected through the DB15 communication terminal on the rear panel to the analog interface of a welding robot. Figure 3-48 show the pins of the DB15 connector. Table 3-3 describes the pins.

Table 3-3 Definition of the pins of the DB15 connector

Pin Number	Signal Name	Function	Remarks
1	24 V power supply	Power signal provided by a welding robot to the welder.	Note 1
2	Starting arc generation signal	I/O signal provided by a welding robot to the welder to control the welder power output. When it is set to <b>OFF</b> , it is effective in case of a low level. When it is set to <b>ON</b> , it is effective in case of a high level.	Note 2
3	Reverse wire inching signal	I/O signal provided by a welding robot to the welder to reverse the wire inching motor. It is effective in case of a low level.	Note 2
4	Starting arc generation success signal	I/O signal provided by the welder to a welding robot to indicate starting arc generation success. It is effective in case of a low level.	Note 3
5	Reserved	Reserved	
6	Common grounding signal of analog signals	Common grounding for the analog signals of pins 7, 13, 14, and 15.	
7	Welding current signal	Analog signal provided by the welder to the robot to indicate the actual welding current value.	Note 4
8	Common grounding for	Common grounding for the I/O signals of pins	

Pin Number	Signal Name	Function	Remarks
	I/O signals	1, 2, 3, 4, 9, and 11.	
9	Wire inching signal (forward wire inching)	I/O signal provided by a welding robot to the welder to enable the wire inching motor to perform forward wire inching. It is effective in case of a low level.	Note 2
10	Reserved	Reserved	
11	Gas detection signal	I/O signal provided by a welding robot to the welder to control the gas solenoid valve. It is effective in case of a low level.	Note 2
12	Reserved	Reserved	
13	Preset voltage signal	Analog signal provided by the robot to the welder to indicate the preset voltage value.	Note 5
14	Preset current signal	Analog signal provided by the robot to the welder to indicate the preset current value.	Note 6
15	Welding voltage signal	Analog signal provided by the welder to the robot to indicate the actual welding voltage value.	Note 7

Note 1: The robot provides a 24 V power supply for the welder. It must range from 20 V to 30 V.

Note 2: Figure 3-42 shows the equivalent circuit for I/O signal transmission from the robot to the welder. It is effective when the level is low. As shown in the figure, if the voltage between the positive and negative terminals for the I/O signals ranges from 0 V to 5 V, the level is low and the robot performs operations. If the voltage ranges from 18 V to 24 V, the level is high and the robot does not perform operations. The voltage for I/O signals ranges from 0 V to 30 V.

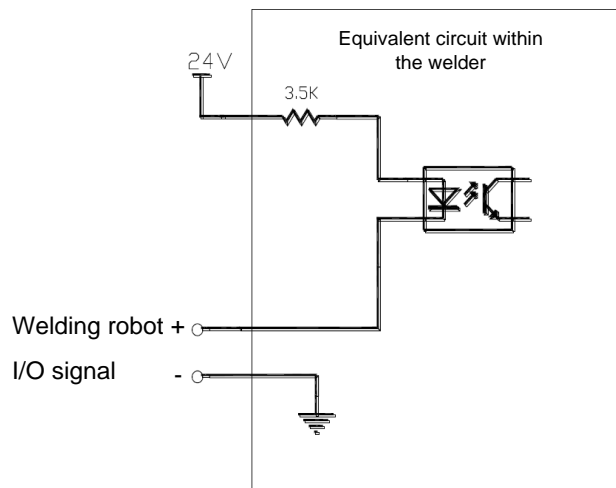


Figure 3-42 Equivalent circuit for I/O signal transmission from the robot to the welder

Note 3: Figure 3-43 shows the equivalent circuit for starting arc generation success I/O signal transmission from the welder to the robot. It is effective when the level is low. That is, when the optocoupler in the circuit shown in the figure is disconnected and I/O signals are transmitted at a low level, starting arc generation is successful. When the optocoupler is connected and I/O signals are transmitted at a high level, arc is not started. The loading capability of the I/O signal ranges from 0 mA to 15 mA.

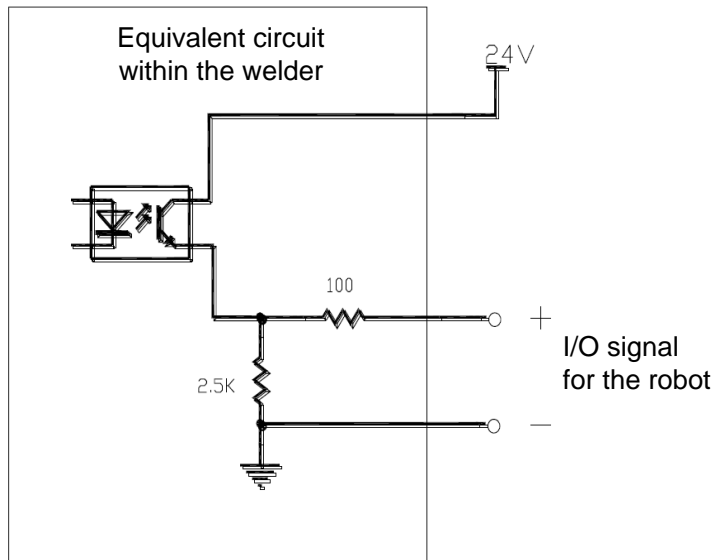


Figure 3-43 Equivalent circuit for I/O signal transmission from the welder to the robot

Note 4: The relationship between the welding current signal value  $V_{curr}$  provided by the welder to the robot and the welder's actual welding current value  $I_{real}$  is  $V_{curr} = I_{real}/75$ . See Figure 3-44. That is, when the actual current is 300 A, the welding current signal value is 4 V.

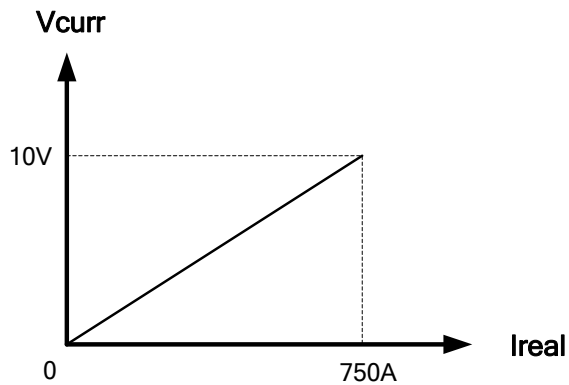


Figure 3-44 Relationship between  $V_{curr}$  and  $I_{real}$

Note 5: The relationship between the preset voltage signal value  $V_{av}$  provided by the robot to the welder and the welder's actual preset voltage value  $V_{ref}$  is  $V_{av} = 0.303 V_{ref} - 3.636$ . See Figure 3-45. That is, when the actual preset voltage is 30 V, the preset voltage signal value is 5.455 V.

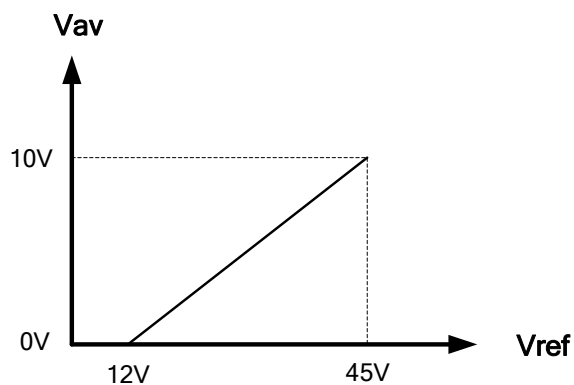


Figure 3-45 Relationship between  $V_{av}$  and  $V_{ref}$

Note 6: The relationship between the preset current signal value  $V_{ai}$  provided by the robot to the welder and the welder's actual preset current value  $I_{ref}$  is  $V_{ai} = 0.02128 I_{ref} - 0.6383$ . See Figure 3-46. That is, when the actual preset current is 300 A, the preset current signal value is 5.7457 V.

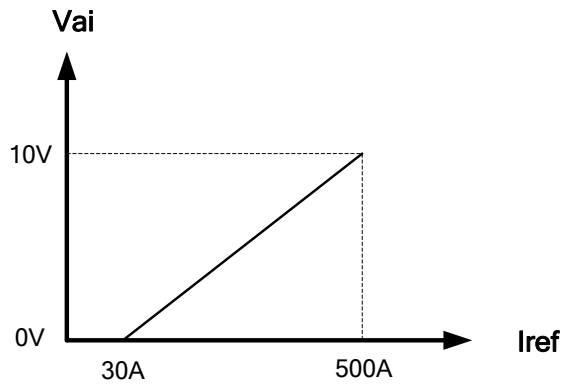


Figure 3-46 Relationship between  $V_{ai}$  and  $I_{ref}$

Note 7: The relationship between the welding voltage signal value  $V_{volt}$  provided by the welder to the robot and the welder's actual welding voltage value  $V_{real}$  is  $V_{volt} = 0.13333 V_{real} + 0.55$  V. See Figure 3-47. That is, when the actual voltage is 30 V, the welding voltage signal value is 4.55 V.

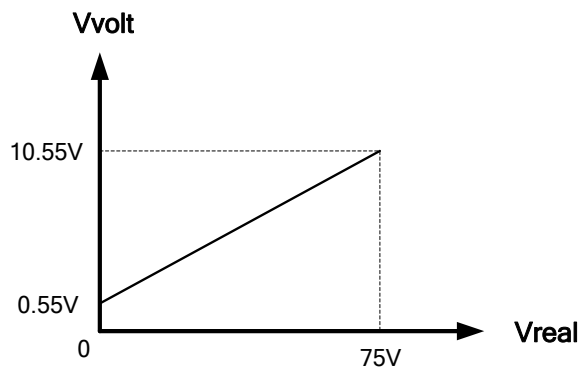


Figure 3-47 Relationship between  $V_{volt}$  and  $V_{real}$

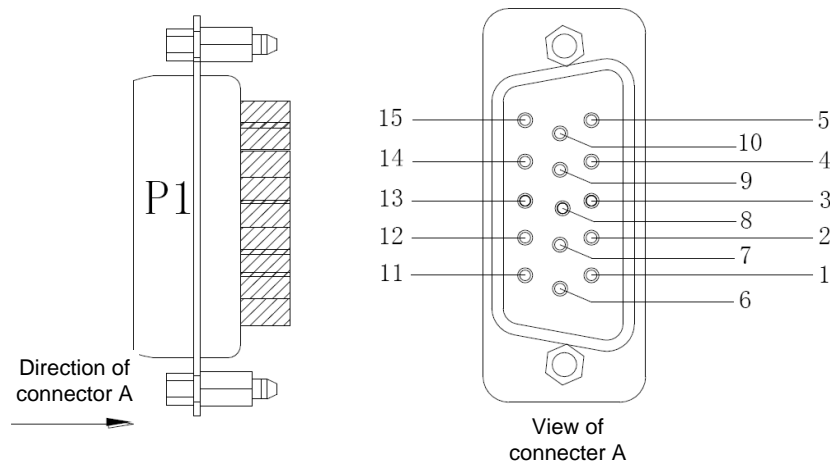





Figure 3-48 Pin numbers of the DB15 connector

### 3.7 Restoring Factory Settings

Press the **SAVE**  and **LOAD**  buttons at the same time. The middle screen displays **F01**. Press the **ENTER**  button. The factory settings are restored. See Figure 3-49.

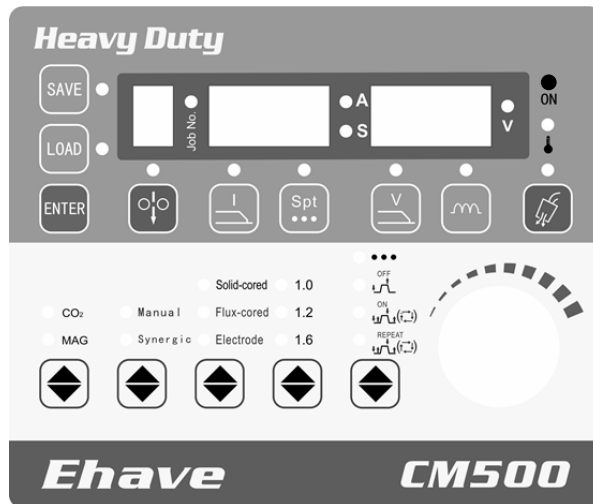


Figure 3-49 Restoring the factory settings

#### Note

1. When the factory settings of the welder are restored, the parameters saved to channels are not deleted.
2. When the factory settings of the welder are restored, the lock password is not deleted.

# Chapter 4 Maintenance

## 4.1 Daily Inspection

### Safety Warning

Daily inspection (except for appearance inspection that does not require contact of electrical conductors) can be performed only after the distribution box power supply and welder power supply are turned off. This aims to prevent injuries such as electric shocks and burns.

### Usage Notes

1. Daily inspection is key to ensuring high performance and operation safety of the welder.
2. Perform daily inspection based on the items specified in the following table. Perform cleaning and component replacement when needed.
3. To ensure high performance of the welder, use only the components provided or recommended by Megmeet when replacing components.

### Welder

Table 4-1 Daily inspection on the welder

Item	Check Content	Remarks
Front panel	Check whether the mechanical components are damaged or loose. Check whether the cables at the lower part are fastened. Check whether the fault indicators flash.	Regularly check the components under the terminal cover at the lower part. If an issue is detected, perform internal inspection on the welder, and fasten or replace components.
Rear panel	Check whether the power supply terminal cover is intact. Check whether the air vent is blocked.	
Top plate	Check whether the hoist ring bolts and the other bolts are loose.	If an issue is detected, fasten or replace components.
Base plate	Check whether the casters are damaged or loose.	
Side panel	Check whether the side panels are loose.	
General	Check whether the appearance shows decolorization or is overheated. Check whether the sound emitted by the fan when the welder is operational is normal. Check whether a peculiar smell or unexpected vibration or noises are detected when the welder is operational.	If an exception is detected, perform internal inspection on the welder.

## Power Cables

Table 4-2 Daily inspection on power cables

Item	Check Content	Remarks
Grounding cable	Check whether the grounding cables are disconnected, including the workpiece grounding cable and welder grounding cable.	If an issue is detected, fasten or replace components.
Welding cables	Check whether the insulation layer or other parts of the cable are damaged and whether the conductor is exposed. Check whether the cable is extended by unexpected external forces. Check whether the workpiece power cable and the workpiece are connected firmly.	To ensure safe and proper welding, take appropriate measures to perform inspection according to the site situations.

## Other Components

Table 4-3 Daily inspection on the other components

Item	Check Content	Remarks
Welding torch	Follow the user manual of the welding torch to perform daily inspection.	/
Wire feeder	Follow the user manual of the wire feeder to perform daily inspection.	/
Electrically-heated CO <sub>2</sub> regulator	Follow the user manual of the electrically-heated CO <sub>2</sub> regulator to perform daily inspection.	/
Gas tube	Check whether the gas tube is connected firmly and whether the soft clamps (if any) are loose. Check whether the tube are damaged or leaky.	If an issue is detected, fasten or replace the tube.

## 4.2 Regularly Inspection

### Safety Warning

1. To ensure safety, regular inspection must be performed by certified personnel.
2. It can be performed only after the power supplies of the distribution box and the welder are turned off, so as to prevent injuries such as electric shocks and burns.
3. It can only be performed 5 minutes after the welder is powered off because of capacitor discharge.

### Operation Notes:

1. To prevent static electricity from damaging semiconductors and PCBs, take ESD measures or touch the metal parts of the housing with your hand to discharge static electricity before touching the conductors of internal cables and the PCBs of the welder.
2. Do not use the solution other than neutral detergents for household use to clean the plastic parts.



## Regular Inspection Plan

1. Perform regular inspection to ensure a long service life of this welder.
2. Perform regular inspection carefully, including checking and cleaning the interior of the welder.
3. Generally, regular inspection must be performed every 6 months. However, if the site is dusty or has heavy oily smoke, perform regular inspection every 3 months.
4. Table 4-4 provides a recommended regular inspection plan.

Table 4-4 Regular inspection plan (year: xxxx)

SN	Planned Inspection Date	Actual Inspection Date	Inspected By
1	2012-03-15		
2	2012-06-15		
3	2012-09-15		
...	...		

## Regular Inspection Items

(You can add inspection items to the following items according to the actual situations.)

1. Remove dust from inside the welder.

Remove the top plate and side plates of the welder. Use dry compressed air to blow off the spatters and dust from inside the welder. Then, remove the dirt and unexpected objects from inside the welder.

---

### Note

Heavy dust on the radiator affects cooling and may easily cause over-temperature protection.

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2. Check the welder.

Remove the top plate and side plates of the welder. Check for signs of peculiar smells, discoloration, or damages caused by excessive heat. Check whether the connections are loose.

3. Check the power cables and gas tube.

In addition to daily inspection, check the grounding cables, power cables, and gas tubes more carefully and regularly resolve fastening issues.

## Voltage-Resistance Test and Insulation Test

The tests can performed only by Megmeet's after-sale service personnel or professional personnel with knowledge on electric devices and welders.

The procedure is as follows:

1. Turn off the distribution box power supply.
2. Disconnect all the grounding cables of the housing.
3. Remove all peripherals including the wire feeder from the welder.
4. Connect the three input terminals of the input busbar to create a short circuit.
5. Turn the switch of the welder to the **ON** position.
6. Connect the positive output terminal, negative output terminal, and pin 7 of 7-core aviation plug using cables to create a short circuit.
7. Connect pins 1 - 6 of the 7-core aviation plug and pins 3 and 8 of the communication connector using cables to create a short circuit.
8. The models of the cables used to create short circuits must be the same and the cross-sectional area of each cable must not be smaller than 1.25 mm<sup>2</sup>.

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 **Note**

All changes and alteration performed for the voltage resistance test must be removed after the test.


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## 4.3 Troubleshooting

### 4.3.1 Welder Fault Indicator

When an internal fault of the welder occurs, the red indicator on the control panel of the welder turns on.

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 **Note**

During welding, differences between the current and voltage displayed on the LED screens and the preset current and voltage do not necessarily indicate a fault. The differences may be caused by the used gas, welding wire, wire stick-out, and welding method.

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### 4.3.2 Welder Error Codes and Solutions

Figure 4-1 shows the screens and indicators.

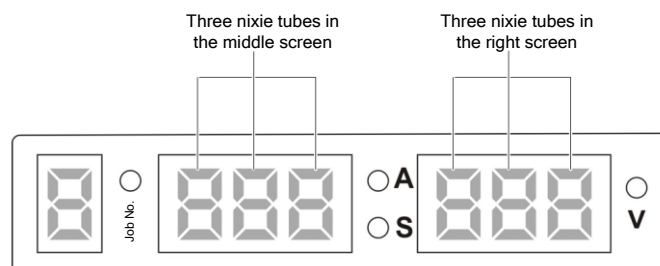


Figure 4-1 Schematic diagram of screens

Table 4-5 describes the welder error codes as well as causes and solutions.

Table 4-5 Welder faults, causes, and solutions

Error Code	Displayed Content		Fault	Cause	Solution
	Three Nixie Tubes in the Middle Screen	Three Nixie Tubes in the Right Screen			
F00	F00	None	Power-on self-test	/	/
E1	E 1	None	Welding torch fault	When the welder is turned on, the welding torch power switch is on. The switch is broken.	Turn off the switch. Replace the welding torch.
E2	E 2	None	Output terminal over-temperature	The output terminal and power cable are disconnected or the screw is not fastened. The copper cross-sectional area of the output power cable is too small. The output cable terminal fails to meet the specification requirement. The fan does not work or slows down.	Reliably fasten the output terminal. Use cables with greater cross-sectional areas. Select suitable cable terminals. Verify that the fan works properly.
E3	E 3	None	Abnormal input power	The input power cable is not connected properly. Input power overvoltage occurs. Input power undervoltage occurs. Input power phase imbalance occurs. The input power frequency exceeds the range.	Verify that the input cables are connected properly. Verify that the input power is normal.
E4	E 4	None	IGBT or diode over-temperature	The rated duty cycle is exceeded. The air vent of the housing is blocked. The radiator is covered with heavy dust. The fan does not work or slows down. The IGBT or diode current is excessively high.	Ensure that the welder works within the rated duty cycle range. Verify that the air vent of the welder is not blocked. Remove dust from the radiator. Verify that the fan works properly. Verify that the main power board and output diode module are normal.
E5	E 5	1 - 14	Button error	A button is jacked up. A button does not rebound after being pressed.	Check the buttons corresponding to the numbers (displayed on the right screen) shown in Figure 3-1.

Error Code	Displayed Content		Fault	Cause	Solution
	Three Nixie Tubes in the Middle Screen	Three Nixie Tubes in the Right Screen			
E6	E 6	None	Output overcurrent	The output is short-circuited or the current is too high. The output diode module is broken.	Verify that the output is not short-circuited. Verify that the output diode module is not broken.
E7	E 7	None	Communication fault	The input power cable is not connected properly. Input power phase loss or phase imbalance occurs. DSP is not powered on. No program is written into DSP or DSP is broken. Communication open circuit exists.	Verify that the input cables are connected properly. Verify that the input power is normal. Verify that the wire inching control board connection is normal. Verify that the display board connection is normal. Verify that the wire inching control board works properly.
E8	E 8	None	Output overvoltage	The input voltage is too high. The main transformer is broken. The output cables are not connected correctly.	Verify that the input voltage is normal. Verify that the main transformer is not broken. Verify that the output cables are connected correctly.
E9	E 9	None	Primary side overcurrent	IGBT is broken. The primary side diode is broken. The main transformer is broken. The secondary output diode module is broken.	Verify that the main power board is not broken. Verify that the main transformer is not broken. Verify that the output diode module is not broken.
E10	E10	None	Primary side overvoltage	The input power is insufficient. The input voltage is too high.	Verify that the input power is normal. Verify that the input voltage is normal.
E11	E11	None	Current Hall connector disconnection	The current Hall connector is disconnected.	Verify that the connector is connected.
E12	E12	None	Disconnection of the input voltage detection connector	The input voltage detection connector is not connected or the ring terminal of the connection cable is not connected. The input voltage detection cable is broken.	Verify that the input voltage detection connector is connected and the ring terminal of the connection cable is connected. Verify that the input voltage detection cable is normal.
E20	E20	None	PCB not registered	The PCB is not certified.	Purchase the PCB certified by the Megmeet.

### 4.3.3 Rectifying Welder Faults and Welding Process Issues

When the welder is faulty or fails to perform self-identification, perform the checks specified in Table 4-6.

Table 4-6 Welder fault symptoms

Starting arc generation failure	Gas sending failure	Wire inching failure	Improper arc starting	Unstable arc	Rough weld edge	Sticking between wire and workpiece	Sticking between wire and tip	Porosity	Fault Symptom	Related Component or Environment
									Check Content	
○	○	○							The switch is not turned on or is tripped. The fuse is blown. Phase loss occurs on the three-phase power supply. The connection is loose.	Distribution box
○	○	○							The cable is disconnected. The connection is loose.	Input power cable
○	○	○							The switch is not turned on or is tripped. The fuse is blown.	Welder
	○			○				○	The main valve of the gas cylinder is not opened. The gas volume is insufficient. The gas purity does not meet the requirement.	Gas cylinder
	○			○				○	The gas flow control by the regulator is inappropriate. The connection to the gas tube or gas cylinder is loose.	Electrically-heated CO <sub>2</sub> regulator
	○			○				○	The gas tube is broken. The connection to the regulator or wire feeder is loose.	Gas tube
		○	○	○	○			○	The wire inching roll and wire liner do not match the wire diameter. The wire inching roll is broken or the groove is blocked. The force imposed by the strut bar of the wire inching roll is insufficient. The inlet of the wire liner is blocked.	Wire feeder
○	○	○		○		○			The welder power cable or welding torch power cable is broken. The connection to the wire feeder is loose. The cables are damaged.	Welder power cable and welding torch power cable
		○	○	○	○			○	Excessive roll-up or bending occurs.	
		○	○	○	○			○	The tip and wire liner do not match the welding wire. The tip or wire liner is worn out, blocked, or deformed.	Welding torch

Starting arc generation failure	Gas sending failure	Wire inching failure	Improper arc starting	Unstable arc	Rough weld edge	Sticking between wire and workpiece	Sticking between wire and tip	Porosity	Fault Symptom	Related Component or Environment
									Check Content	
				○	○			○	The tip, nozzle, or welding torch pipe is not connected firmly. The connection to the wire feeder is loose.	
○			○	○	○				The cross-sectional area of the power cable is too small. The connection is loose. The workpiece conductivity is poor.	Welding power cable on the workpiece side
			○	○	○			○	The surface is covered with oil stain, impurities, or paint.	Workpiece surface
			○	○	○	○			The cross-sectional area of the power cable is too small. The power cable is excessively bent.	Extended power cable
			○	○	○	○	○		The current, voltage, welding torch angle, welding speed, or wire stick-out length is inappropriate. The difference between the controlled waveform and the standard waveform is excessively large.	Welding conditions

Note: ○ indicates that the check must be performed.

## 4.4 After-Sale Service

### Warranty Card

Each welder has a warranty card. Fill in the form on the card.

Read the information on the card and maintain the card properly.

### Repair

Refer to Section 4.3.2 "Error Codes of the Welder and Solutions" and Section 4.3.3 "Rectifying Welder Faults and Welding Process Issues" to perform preliminary troubleshooting or record fault information.

Contact the local reseller when components must be repaired or replaced. Use only the components or accessories provided or recommended by Megmeet.

Megmeet provides a one-year repair service for the welder. The service is available from the purchase time recorded on the warranty card or invoice for the welder.

The warranty does not cover a product damage caused when the product is not used properly by the user. However, such damage can be handled in the repair process.

# Appendix I Technical Specifications

Table 1 describes the technical specifications.

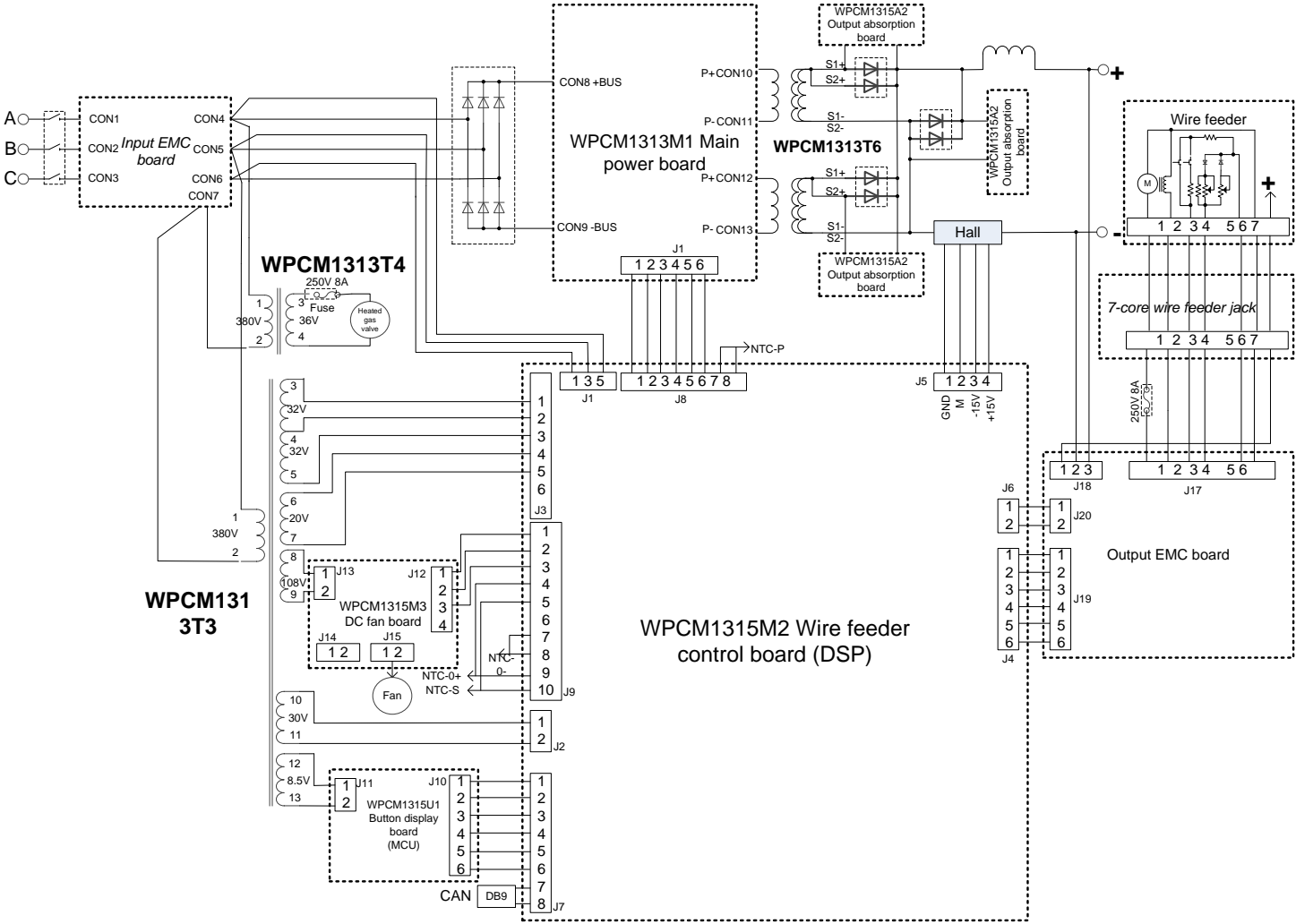
Table 1 Technical specifications

Welder	Unit	Ehave CM250/350 (The values in parentheses are specifications of Ehave CM250. Ehave CM350AR and Ehave CM350 have the same technical specifications.)	Ehave CM500/500H (Ehave CM500AR and Ehave CM500 have the same technical specifications.)
Control mode	-	Full Digital	Full Digital
Input voltage	-	Three-phase 380 V AC	Three-phase 380 V AC
Input frequency	Hz	50/60	50/60
Input capacity	kVA/kW	(8.1) 13.5/(7.7) 12.7	24/22.3
Power factor	-	0.94	0.93
Output characteristics	-	CV; CC	CV; CC
Output current	A	(250) 350	500
Output voltage	V	(26.5) 31.5	39
Rated duty cycle	%	(250) 350 A @ 60% @ 40°C / (193) 271 A @ 100% @ 40°C (250) 350 A @ 100% @ 25°C	500 A @ 60% @ 40°C (CM500) / 500 A @ 100% @ 40°C (CM500H) 500 A @ 100% @ 25°C (CM500)
Rated open-circuit voltage	V	63.7	73.3 (CM500)/75 (CM500H)
Rated output current	A	30 - (300) 400	30 - 500
Rated output voltage	V	12 - (34) 38	12 - 45
Current and voltage adjustment method	-	Synergic/Manual	Synergic/Manual
Protection class	-	IP23S	IP23S
Insulation class	-	H	H
Cooling mode	-	Intelligent cooling	Intelligent cooling
Wire type	-	Solid wire/flux-cored wire	Solid wire/flux-cored wire
Wire diameter	mm	0.8/1.0/1.2	1.0/1.2/1.6
Wire material	-	Carbon steel wire (MS); carbon steel - flux-cored wire (MS-FCW)	Carbon steel wire (MS); carbon steel - flux-cored wire (MS-FCW)
Shielding gas	-	CO <sub>2</sub> : 100%; MAG: Ar 80% + CO <sub>2</sub> 20%	CO <sub>2</sub> : 100%; MAG: Ar 80% + CO <sub>2</sub> 20%
Spot welding time	s	0.1 - 10	0.1 - 10
Dimensions (L x W x H)	mm	667.5 x 300 x 564	667.5 x 300 x 564
Weight	kg	49	52

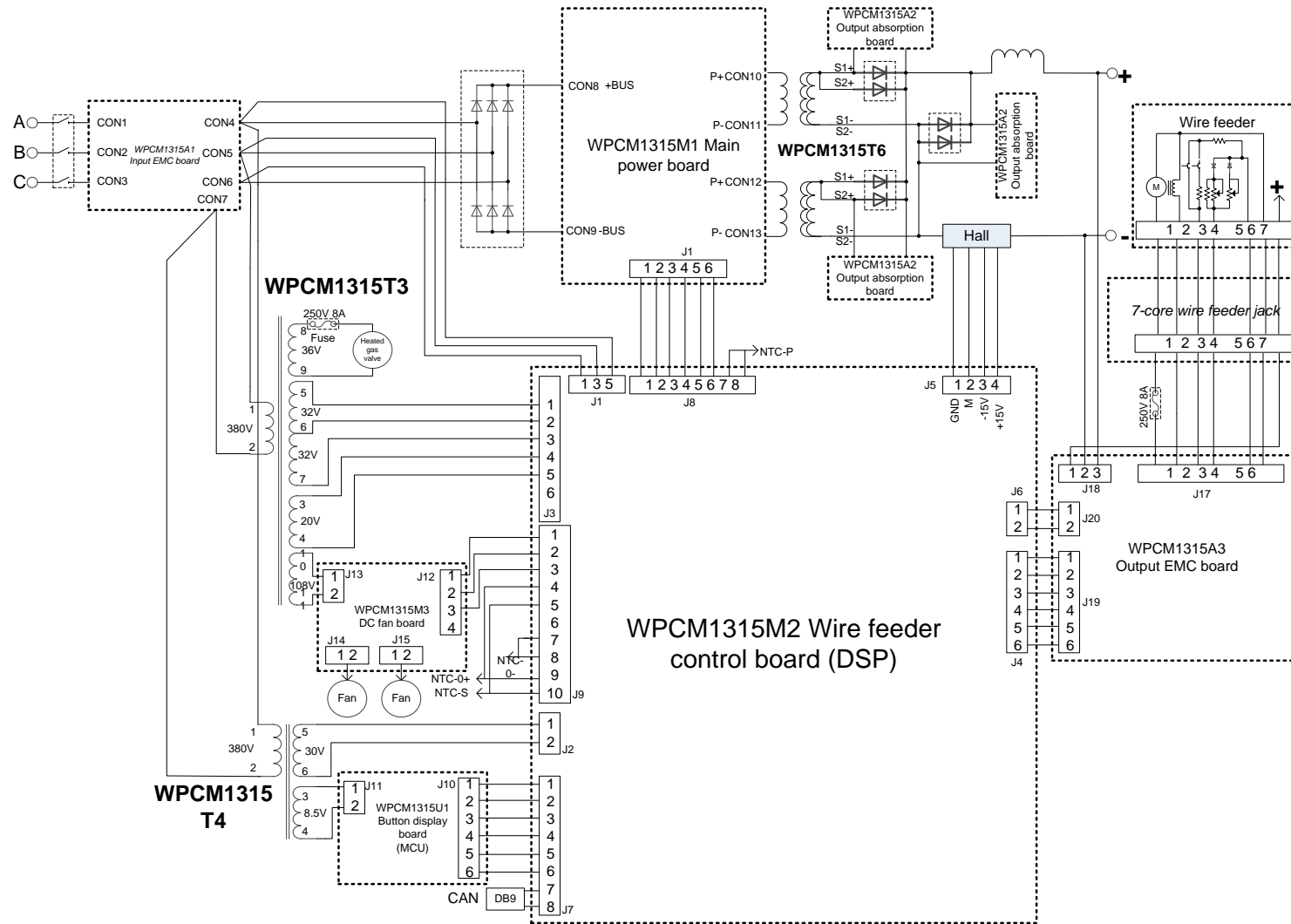
<b>Welder</b>	<b>Unit</b>	<b>Ehave CM250/350</b> (The values in parentheses are specifications of Ehave CM250. Ehave CM350AR and Ehave CM350 have the same technical specifications.)	<b>Ehave CM500/500H</b> (Ehave CM500AR and Ehave CM500 have the same technical specifications.)
Wire feeder model	-	WF2-35GA-MC(MD)	WF2-50GA-MC(MD)
Welding torch model	-	QTB-(200) 350K	QTB-500K
Rated current	A	(250) 350	500
Length of the welding torch power cable	m	3	3
Length of the control cable	m	3 m - 30 m (optional)	3 m - 50 m (optional)
Length of the welder power cable	m	3 m - 30 m (optional)	3 m - 50 m (optional)
Cross-sectional area of the welder power cable	mm <sup>2</sup>	35 or greater	50 or greater
Length of the power cable on the welding material side	m	1.8	1.8
Cross-sectional area of the power cable on the welding material side	mm <sup>2</sup>	35 or greater	50 or greater
Electrically-heated CO <sub>2</sub> regulator	-	GH-257-36/394C-25L-36	GH-257-36/394C-25L-36
Gas tube	m	3 m - 30 m (optional)	3 m - 50 m (optional)



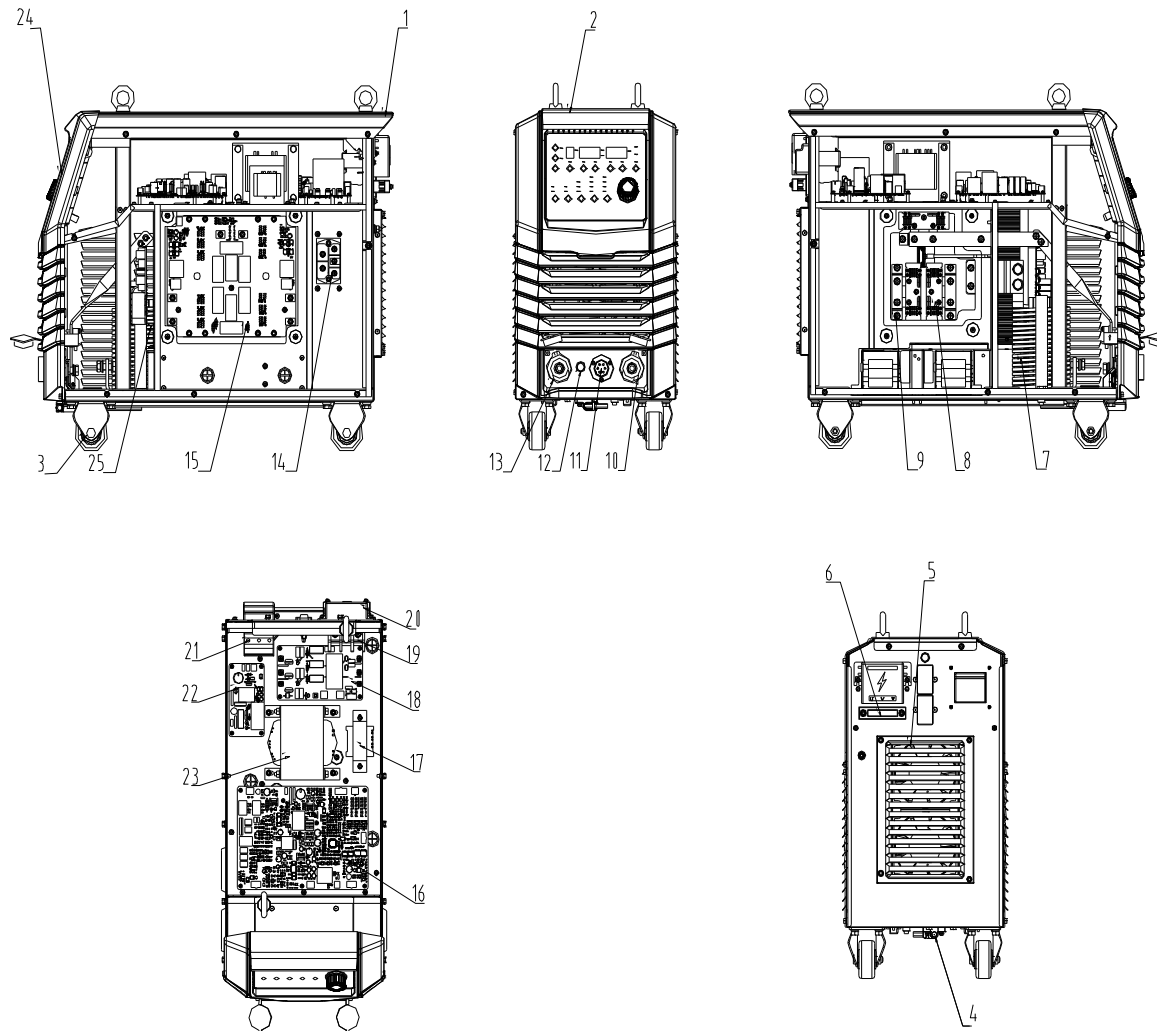
# Appendix II Electric Connections of Ehave CM250/350



# Appendix III Electric Connections of Ehave CM500/500H



## Appendix IV Components



25	Output EMC board
24	Display board
23	Large line-frequency transformer
22	Fan control board
21	Air circuit breaker
20	Cable terminal cover
19	Cable terminal block
18	Input EMC board
17	Small line-frequency transformer
16	Wire inching control board
15	Main power board
14	3-phase rectifier bridge
13	Negative output terminal
12	Fuse base
11	7-core aviation plug
10	Positive output terminal
9	Diode
8	Output absorption board
7	Inductor
6	Cable terminal block
5	Fan
4	Hex key
3	Caster
2	Plastic panel
1	ZA chassis without load

Figure 1 Components

# Appendix V Detailed Component List

Table 2 Detailed component list

Component	Ehave CM250/350/350AR		Ehave CM500/500H/500AR	
	Quantity	Code	Quantity	Code
Output EMC board	1	R11110645	1	R11110091
Display board	1	R11100236	1	R11100057
Line-frequency transformer T3	1	R23011079	1	R23010893
Fan control board	1	R11110087	1	R11110087
Air circuit breaker	1	R34010054	1	R30040897
Cable terminal cover	1	30040908	1	30040908
Cable terminal block	1	30040907	1	30040907
Input EMC board	1	R11110089	1	R11110089
Line-frequency transformer T4	1	R23011077	1	R23010894
Wire inching control board	1	R11100235	1	R11100056
Main power board	1	R11110644	1	R11110085
3-phase rectifier bridge	1	R26060164	1	R26060164
Negative output terminal	1	30040912	1	30040912
Fuse	2	R27010154	2	R27010154
7-core aviation jack	1	R30040896	1	R30040896
Positive output terminal	1	30040911	1	30040911
Diode	3	R26020129	3	R26020100
Output absorption board	1	R11110090	1	R11110090
Inductor	1	R22011204	1	R23010895
Cable terminal block	1	30040910	1	30040910
Fan	1	R34020011	2	R34020011
Hex key	1	R29120011	1	R29120011
Caster	4, Optional	R29120012	4, Optional	R29120012
Plastic panel	1	R29060228	1	R29060228
ZA chassis without load	1	R29140023	1	R29140001

**MEGMEET** Shenzhen Megmeet Electric Co., Ltd.

## Welder Warranty Card

Company:	
Address:	
Zip code:	Contact person:
Tel:	Fax:
Machine model:	
Power:	Machine ID:
Contract ID:	Purchase date:
Service provider:	
Contact person:	Tel:
Repaired by:	Tel:
Repaired on:	
Service quality rating: <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Normal <input type="checkbox"/> Poor	
Other comments: User's signature (year) (month) (day)	
Return visit of customer service center: <input type="checkbox"/> By call <input type="checkbox"/> By mail	
Others: Signature of technical support engineer: (year) (month) (day)	

**Note: This card is voided when it is unable to pay a user return visit.**

**MEGMEET** Shenzhen Megmeet Electric Co., Ltd.

## Welder Warranty Card

Company:	
Address:	
Zip code:	Contact person:
Tel:	Fax:
Machine model:	
Power:	Machine ID:
Contract ID:	Purchase date:
Service provider:	
Contact person:	Tel:
Repaired by:	Tel:
Repaired on:	
Service quality rating: <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Normal <input type="checkbox"/> Poor	
Other comments: User's signature (year) (month) (day)	
Return visit of customer service center: <input type="checkbox"/> By call <input type="checkbox"/> By mail	
Others: Signature of technical support engineer: (year) (month) (day)	

**Note: This card is voided when it is unable to pay a user return visit.**

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## User Notice

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1. The warranty covers only the welder.
2. The warranty period is 12 months. Welder faults or damages caused during normal usage within the period will be fixed by Megmeet free of charge.
3. The warranty service is effective from the delivery date of the welder. The warranty period can be determined against only the welder ID. If the welder does not have an ID, it is handled in the same way as a welder whose warranty period has expired.
4. Megmeet will charge a fee for resolving the following issues even in the warranty period:
  - Welder fault resulting in a failure to comply with the user manual
  - Welder damage caused by a fire, flood, or voltage exception
  - Damage caused when the welder is used for purposes for which it is not intended
5. Megmeet will charge the service fee that incurs, unless otherwise stipulated in the contract.
6. Keep this card and present it to the maintenance organization when requesting the warranty service.
7. If you have any questions, contact the reseller or Megmeet.

Shenzhen Megmeet Electric Co., Ltd.  
Customer Service Center

Address: 5th Floor Block B, Ziguang Information Harbor, Langshan Road,  
Shenzhen, 518057, China  
Zip code: 518057  
Customer service hotline: 4006662163

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