

# RAZORWELD

RW250di

MIG/TIG/STICK MULTI-SYSTEM

250AMP MTS MULTI-SYSTEM

**3** YEAR  
PRODUCT  
WARRANTY



C

US

**INSTRUCTION MANUAL**

**RW250di**

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**Thank you for selecting this new JASIC welding equipment!**

This operating manual contains important information on the use and maintenance of this product, as well as safe handling of the product. Please refer to technical parameters of the equipment in Technical Parameter section in this manual, and read the manual carefully before using the equipment for the first time. For your own safety and that of your working environment, please pay particular attention to the safety instructions in the manual and operate the equipment according to the instructions.

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1. While every effort has been made to ensure that the information contained in this manual is accurate and complete, no liability will be accepted for any errors or omissions due to the operation not according to this manual.
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## Thank you for your purchase of your RAZORWELD Welding/Cutting Machine.

We are proud of our range of welding equipment that has a proven track record of innovation, performance and reliability. Our product range represents the latest developments in Inverter technology put together by our professional team of highly skilled engineers. The expertise gained from our long involvement with inverter technology has proven to be invaluable towards the evolution and future development of our equipment range. This experience gives us the inside knowledge on what the arc characteristics, performance and interface between man and machine should be. Within our team are specialist welders that have a proven history of welding knowledge and expertise, giving vital input towards ensuring that our machines deliver control and performance to the utmost professional level. We employ an expert team of professional sales, marketing and technical personnel that provide us with market trends, market feedback and customer comments and requirements. Secondly they provide a customer support service that is second to none, thus ensuring our customers have confidence that they will be well satisfied both now and in the future.

RAZORWELD welders are manufactured and compliant with - CAN/CSA E60974-1 & ANSI/IEC 60974-1, guaranteeing you electrical safety and performance.



## California Proposition 65

**WARNING:** This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm) (California Health and Safety Code Section 25249.5 et seq.)

**WARNING:** This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer (California Health and Safety Code Section 25249.5 et seq.).


### INFORMATION SOURCES

- California Health and Safety Code, Section 25249.4 through 25249.13.
- The California Office of Environmental Health Hazard Assessment, 301 Capitol Mall, Sacramento, CA 95814; telephone 916-445-6900.
- California Proposition 65 website: [www.oehha.ca.gov/prop65.html](http://www.oehha.ca.gov/prop65.html).
- American National Standards Institute (ANSI). Product Safety Signs And Labels (ANSI Z535.4), available from ANSI, 25 West 43rd Street, New York, NY 10036; telephone: 212-642-4900; web site: [www.ansi.org](http://www.ansi.org).

## WARRANTY

- 3 Years from date of purchase.
- JASIC Technologies America Inc Ltd warranties all goods as specified by the manufacturer of those goods.
- This Warranty does not cover freight or goods that have been interfered with.
- All goods in question must be repaired by an authorised repair agent as appointed by this company.
- Warranty does not cover abuse, mis-use, accident, theft, general wear and tear.
- New product will not be supplied unless JASIC Technologies America Inc has inspected product returned for warranty and agree to replace product.
- Product will only be replaced if repair is not possible
- Please view full Warranty term and conditions supplied with machine or at [www.razorweld.com](http://www.razorweld.com) or at the back of this manual.



For your safety, please read this manual carefully before installing and operating this JASIC equipment.  
 Pay extra attention to all content marked with   
 All operations must be carried out by professional, suitably qualified persons!

# 1. Safety precautions

## 1.1. General safety



### SAFETY INSTRUCTION

These general safety norms cover both arc welding machines and plasma cutting machines unless otherwise noted.

It is important that users of this equipment protect yourselves and others from harm or even death.

The equipment must only be used for the purpose it was designed for. Using it in any other way could result in damage or injury and in breach of the safety rules.



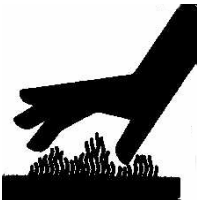

Only suitably trained and competent persons should use the equipment.

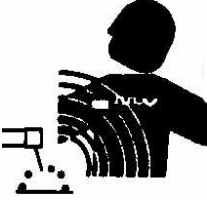


Pacemaker wearers should consult your doctor prior to using this equipment

PPE and workplace safety equipment must be compatible for the application of work involved. Always carry out a risk assessment before any welding or cutting activity.

	<p><b>Only qualified personnel should operate this machine!</b>          Always use the appropriate personal protective equipment.          Always pay attention to the safety of other persons around the working zone          Do not carry out any maintenance with the power on the machine</p>
	<p><b>Electric shock—May cause serious injury or even death!</b>          The equipment should be installed by a qualified person and in accordance with current standards in operation. It is the user's responsibility to ensure that the equipment is connected to a suitable power supply. Consult with your utility supplier if required. Do not use the equipment with the covers removed.          Do not touch live electrical parts or parts, which are electrically charged.          Turn off all equipment when not in use.</p>
	<p><b>Fumes and gases—May be hazardous to your health.</b>          Locate the equipment in a well-ventilated position and keep your head out of the fume.          Do not breathe the fume.          Ensure the working zone is well ventilated and provision should be made for suitable local fume extraction system to be in place.          If ventilation is poor, wear an approved air fed welding helmet or respirator.          Read and understand the Material Safety Data Sheets (MSDS s) and the manufacturer s instructions for metals, consumable, coatings, cleaners and de-greasers.          Do not work in locations near any de-greasing, cleaning or spraying operations.          Be aware that heat and rays of the arc can react with vapours to form highly toxic and irritating gases.</p>

**DO NOT USE EXTENSION LEADS ON INVERTER WELDING AND CUTTING EQUIPMENT\***

	<p><b>Arc rays—May injure the eyes and burn the skin.</b></p> <p>The arc rays from all processes produce intense, visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin.</p> <p>Wear an approved welding helmet fitted with an appropriate shade of filter lens to protect your face and eyes when working or watching.</p> <p>Wear approved safety glasses with side shields under your helmet.</p> <p>Never use broken or faulty welding helmets.</p> <p>Always ensure there are adequate protective screens or barriers to protect others from flash, glare and sparks from the working area.</p> <p>Ensure that there are adequate warnings that welding or cutting is taking place.</p> <p>Wear suitable protective flame resistant clothing, gloves and footwear.</p>
	<p><b>Precautions against fire and explosion</b></p> <p>Avoid causing fires due to sparks and hot waste or molten metal.</p> <p>Ensure that appropriate fire safety devices are available near the welding and cutting area.</p> <p>Remove all flammable and combustible materials from the welding, cutting and surrounding areas.</p> <p>Do not weld or cut fuel and lubricant containers, even if empty. These must be carefully cleaned before they can be welded or cut.</p> <p>Always allow the welded or cut material to cool before touching it or placing it in contact with combustible or flammable material.</p> <p>Do not work in atmospheres with high concentrations of combustible fumes, flammable gases and dust.</p> <p>Always check the work area half an hour after cutting to make sure that no fires have begun.</p> <p>Take care to avoid accidental contact of electrode to metal objects. This could cause arcs, explosion, overheating or fire.</p>
	<p><b>Risks due to hot material</b></p> <p>The process will create hot metal, sparks and drips of molten metal, so it's very important to ensure the operator is equipped with full PPE and to always ensure there are adequate protective screens or barriers to protect others from flash, glare and sparks from the working area. Hot surfaces will create fires and will burn any exposed skin.</p> <p>Always protect your eyes and body. Use the correct welding screen and filter lens and wear full PPE protective clothing.</p> <p>Do not touch any hot surfaces or parts bare handed.</p> <p>Always allow hot surfaces and parts to cool down first before touching or moving.</p> <p>If you are required to move hot parts, ensure you use proper tools and insulated welding gloves (PPE) to prevent burns to your hands and arms.</p>
	<p><b>Noise—Excessive noise may be harmful to hearing</b></p> <p>Protect your ears by ear shields or other hearing protectors.</p> <p>Give warning to nearby personnel that noise may be potentially hazardous to hearing.</p>

	<p><b>Risks due to magnetic fields</b></p> <p>The magnetic fields created by high currents may affect the operation of pacemakers or electronically controlled medical equipment.</p> <p>Wearers of vital electronic equipment should consult their physician before beginning any arc welding, cutting, gouging or spot welding operations.</p> <p>Do not go near welding equipment with any sensitive electronic equipment as the magnetic fields may cause damage.</p> <p>Keep the torch cable and work return cable as close to each other as possible throughout their length, this can help minimize your exposure to harmful magnetic fields.</p> <p>Do not wrap the cables around the body.</p>
	<p><b>Protection from moving parts</b></p> <p>When the machine is in operation keep away from moving parts such as motors and fans.</p> <p>Moving parts, such as the fan, may cut fingers and hands and snag garments.</p> <p>Protections and coverings may be removed for maintenance and controls only by qualified personnel after first disconnecting the power supply cable.</p> <p>Replace the coverings and protections and close all doors when the intervention is finished and before starting the equipment.</p> <p>Take care to avoid getting fingers trapped when loading and feeding wire during set up and operation.</p> <p>When feeding wire be careful to avoid pointing it at other people or towards your body.</p> <p>Always ensure machine covers and protective devices are in operation.</p>
	<p><b>Troubleshooting</b></p> <p>Before the machines are dispatched from the factory, they have already been checked thoroughly. The machine should not be tampered with or altered.</p> <p>Maintenance must be carried out carefully. If any wire becomes loose or is misplaced, it maybe potentially dangerous to user!</p> <p>Only professional maintenance personnel should repair the machine!</p> <p>Ensure the power is disconnected before working on the machine. Always wait 5 minutes after power switch off before removing the panels.</p> <p>If you still do not fully understand or cannot solve the problem after reading the instructions in this manual, you should contact the supplier or JASIC's service center immediately for professional help.</p>

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## 1.2. Other precautions



### **Warning! Location**

The machine should be located in a suitable position and environment. Care should be taken to avoid moisture, dust, steam, oil or corrosive gases. Place on a secure level surface and ensure that there is adequate clearance around the machine to ensure natural airflow.



**Warning!** The handle or strap on the machine is only suitable for manual lifting of the machine. If mechanical equipment such as crane is used to lift the machine, please ensure the machine is secured with suitable lifting equipment.



### **Warning!**









#### **Input connection**

Before connecting the machine, you should ensure that the correct supply is available. Details of the machine requirements can be found on the data plate of the machine or in the technical parameters shown in the manual. The equipment should be connected by a suitably qualified competent person. Always ensure the equipment has a proper grounding.

**Never connect the machine to the mains supply with the panels removed.**

- 1) When the operator's movement is limited by the surroundings (for example, the operator can only bend his knees, barefoot, or lie down during operation), the operator shall practice proper insulation and avoid direct contact with conductive parts on the equipment.
- 2) Do not use the machine in closed containers in narrow spaces where conductive components cannot be removed.
- 3) Do not use the machine in humid environments where the operator is prone to the risk of electric shock.
- 4) Do not use the machine in sunlight or rain, and no water or rainwater shall seep into the machine.
- 5) Do not perform gas shielded welding in an environment with strong air flow.
- 6) Avoid welding or cutting in dusty area or environment with corrosive chemical gas.
- 7) The ambient temperature must be between -10 C and 40 C (14F - 105F) during operation and between -25 C and 50 C during storage (-13 - 122F).
- 8) Welding or cutting shall be carried out in a relatively dry environment, and the air humidity shall not exceed 90%.
- 9) The inclination of the machine shall not exceed 10.
- 10) Ensure that the input power supply voltage does not exceed 15% of the rated voltage of the machine.
- 11) Beware of falling when welding or cutting at heights.

## 2. Description of symbols

	Warning! Read the Manual
	Electric shock risk warning
	WEEE tag
<b>A</b>	Current unit "A"
<b>Inches/Min</b>	Wire feed speed unit "Inches/Min"
<b>MATERIAL THICKNESS</b>	Thickness of welding base metal
<b>V</b>	Voltage unit "V"
<b>INDUCTANCE /ARC FORCE</b>	"Inductance" of MIG / "Arc force" of MMA
<b>BURN BACK</b>	MIG burn back time unit "ms"
	Overheat protection indicator
	Overcurrent protection indicator
	VRD function indicator
<b>MMA</b>	MMA mode
<b>MIG</b>	MIG mode
<b>TIG</b>	Lift TIG mode
	Welding mode selector
<b>STEEL Ar75% CO<sub>2</sub>25%</b>	Mixed gas welding (75%Ar+ 25%CO <sub>2</sub> ) of carbon steel
<b>STEEL CO<sub>2</sub>100%</b>	Mixed gas welding (100%CO <sub>2</sub> ) of flux-cored carbon steel
<b>SELF-SHIELDED FLUX-CORED</b>	Self-shielded welding of carbon steel
<b>STAINLESS STEEL Ar95% CO<sub>2</sub>5%</b>	Mixed gas welding (95% argon + 5% CO <sub>2</sub> ) of stainless steel
<b>STAINLESS STEEL He90% Ar7.5% CO<sub>2</sub>2.5%</b>	Mixed gas welding (90% He + 7.5% argon + 2.5% CO <sub>2</sub> ) of stainless steel
<b>ALUMINUM Ar100%</b>	100% argon shielding of aluminum magnesium alloy
	Welding type selection: welding base metal and gas selection

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**0.030**  
**0.035**  
**0.045**

Welding wire diameter

**2T**  
**4T**

MIG/Lift TIG 2T operation

MIG/Lift TIG 4T operation

**STANDARD**  
**MIG**

MIG push torch

**PUSH**  
**PULL**  
**GUN**

MIG push-pull torch

**SPOOL**  
**GUN**

MIG spool torch



Other function switching



Remote control function



Synergic MIG function



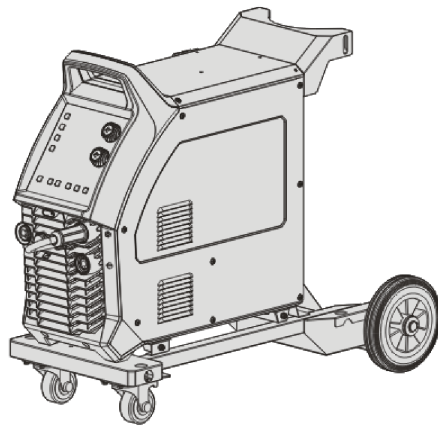
Inching function



Gas check function

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### 3. Product overview



#### MIG250 series

This series are digital multi-process inverter DC MIG welders featuring advanced technology with excellent performance. They can be used to weld carbon steel, low-alloy steel, aluminum magnesium alloy and stainless steel, etc. The MIG mode of the welder features preset wire feed speed and welding voltage. The welders also have a built-in "Synergic" expert parameter library for welding wires of different diameters under different shielding gases and base metals. After setting the welding wire diameter, shielding gases and base metal through the panel, the operator sets one of the welding current, wire feed speed and plate thickness, and the welder automatically finds the corresponding welding voltage to achieve good welding results. With adjustable arc-force in MMA and torch-control Lift TIG modes, these welders have wider applications.

These inverter welders support **DC MIG**, **DC STICK** and **Lift TIG** welding modes and can be widely used to weld various metals. The unique electrical structure and zoning diversion-type air passage design inside the machine increases the heat dissipation efficiency, thus improving its duty cycle. Benefiting from the unique air passage design, the machine effectively prevents damage to the power device and control circuits from dust drawn in by the fan, thus greatly improving its reliability.

The main functions include: MIG, ARC(MMA) AND LIFT TIG

- ◆ In MIG mode, the user can preset the wire feed speed, welding voltage, adjust welding inductance and burn back time.
- ◆ Supports selection of gas check, inching and wire diameter selection.
- ◆ "Synergic" function: The welder automatically matches the parameters according to the welding wire diameter, gas and base metal after setting the current, wire feed speed, and plate thickness, making it easier to use.
- ◆ MIG supports common push torch, numeric key push torch, push-pull torch and spool torch.
- ◆ In MMA mode, the user can preset the current and arc force current, which makes the current adjustment more accurate in MMA.
- ◆ MMA anti-stick function: Prevents the welding electrode from sticking to the workpiece during welding.
- ◆ MMA hot start function: Makes MMA arc ignition easier and more reliable.

- 
- ◆ Lift TIG is controlled by the torch switch.
  - ◆ On-demand fan: Prolongs the fan lifespan and reduces internal dust accumulation.
  - ◆ Parameters are automatically saved before shutdown, and the settings are restored after starting again.
  - ◆ Supports factory reset function.
  - ◆ Standby function: In MIG and Lift TIG mode, the machine automatically enters standby state if it is not used for a long time.
  - ◆ Optional wired handheld remote controller and wireless remote controller.

**Note: The standard HD digital screen version does not support numeric key-type push torch, push-pull torch and spool torch functions; no remote control function.**

**NOTES:**



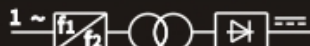


# RAZOR

CSA 247362  
C US

RAZORMIG250di

MIG/MAG inverter welder



CAN/CSA-E60974-1  
ANSI/IEC 60974-1

## WELDING OUTPUT

		U <sub>1</sub>	230V			115V		
	 U <sub>0</sub> 70V		30A/15.5V~250A/26.5V			30A/15.5V~150A/21.5V		
		X	30%	60%	100%	30%	60%	100%
		I <sub>2</sub>	250A	177A	137A	150A	106A	82A
		U <sub>2</sub>	26.5V	22.9V	20.9V	21.5V	19.3V	18.1V
	 U <sub>0</sub> 70V U <sub>r</sub> 11V		20A/20.8V~220A/28.8V			20A/20.8V~125A/25V		
		X	30%	60%	100%	30%	60%	100%
		I <sub>2</sub>	220A	156A	121A	125A	89A	69A
		U <sub>2</sub>	28.8V	26.2V	24.8V	25V	23.6V	22.8V
	 U <sub>0</sub> 70V U <sub>r</sub> 11V		5A/10.2V~250A/20V			5A/10.2V~160A/16.4V		
		X	30%	60%	100%	30%	60%	100%
		I <sub>2</sub>	250A	177A	137A	160A	113A	88A
		U <sub>2</sub>	20V	17V	15.5V	16.4V	14.5V	13.5V

## ENERGY INPUT

		U <sub>1</sub>		I <sub>1max</sub>	I <sub>1eff</sub>	
	1 ~ 50/60Hz	230V	MIG	38.9A	18.5A	
			MMA	32.2A	17.6A	
			TIG	26.5A	14.5A	
	1 ~ 50/60Hz	115V	MIG	38.9A	19.0A	
			MMA	33.0A	18.1A	
			TIG	29.1A	15.9A	
Forced Air-Cooled/Refroidi par air forcé				Insulation: Transformer Insulation Class B		
Enclosure Class/Classe de clôture: IP21S				Isolation: Classe d'isolation de transformateur B		

MADE IN CHINA

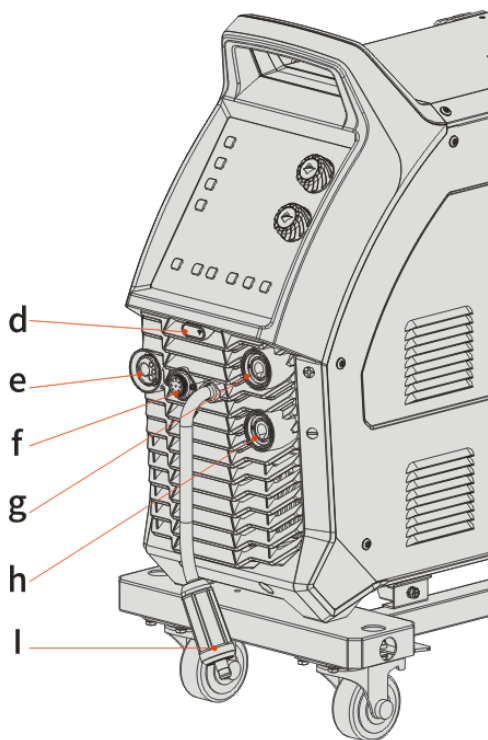
FABRIQUÉ EN CHINE

## 5. Installation

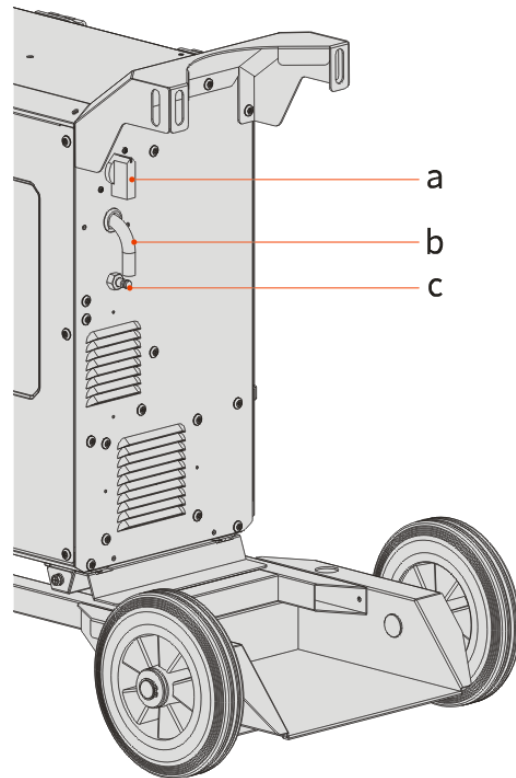


**Warning!** All connections shall be made with the power supply is turned off.  
**Warning!** Electric shock may cause death; after power failure, there is still a high voltage on the equipment, do not touch the live parts on the equipment.  
**Warning!** Incorrect input voltage may damage the equipment.  
**Warning!** This product meets the requirements of Class A equipment in EMC requirements and is not to be connected to a residential low-voltage power supply grid.

### 5.1. External interface description



(Front panel view)



(Rear panel view)

- a. Power switch
- b. Input power cord
- c. Gas valve inlet nozzle
- d. Wireless receiver module (optional)
- e. Euro MIG welding torch interface
- f. 9-pin aviation socket (plus) / plastic cover (standard)
- g. Positive polarity
- h. Negative polarity
- i. Polarity changeover connector

## 5.2. Power installation

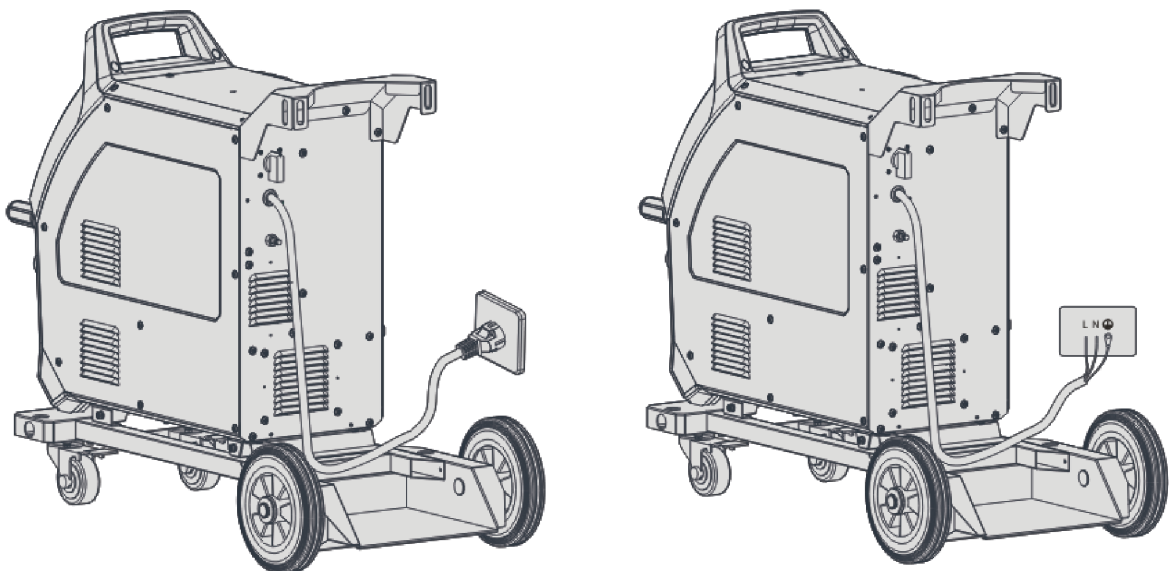


**Warning! The electrical connection of equipment shall be carried out by suitably qualified personnel.**

**Warning! All connections shall be made after the power supply is off.**

**Warning! Incorrect voltage may damage the equipment.**

- 1) Ensure the input voltage value is within the specified input voltage range.
- 2) Ensure that the power switch is turned off.
- 3) Connect the input power cord to the input terminal or plug the power cord into the corresponding socket (if any) and ensure a good contact.
- 4) Ground the power supply well. (As shown in the diagram, the European plug has a grounding terminal, so no additional grounding is required.)



### **NOTE!**

**If the input cable needs to be extended, please use a cable with larger cross-sectional area to reduce the voltage drop, 3x2.5mm<sup>2</sup> or more is recommended.**

THE USE OF EXTENSION CORDS  
ARE NOT RECOMMENDED

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### 5.3. MIG welding torch and earth cable connection

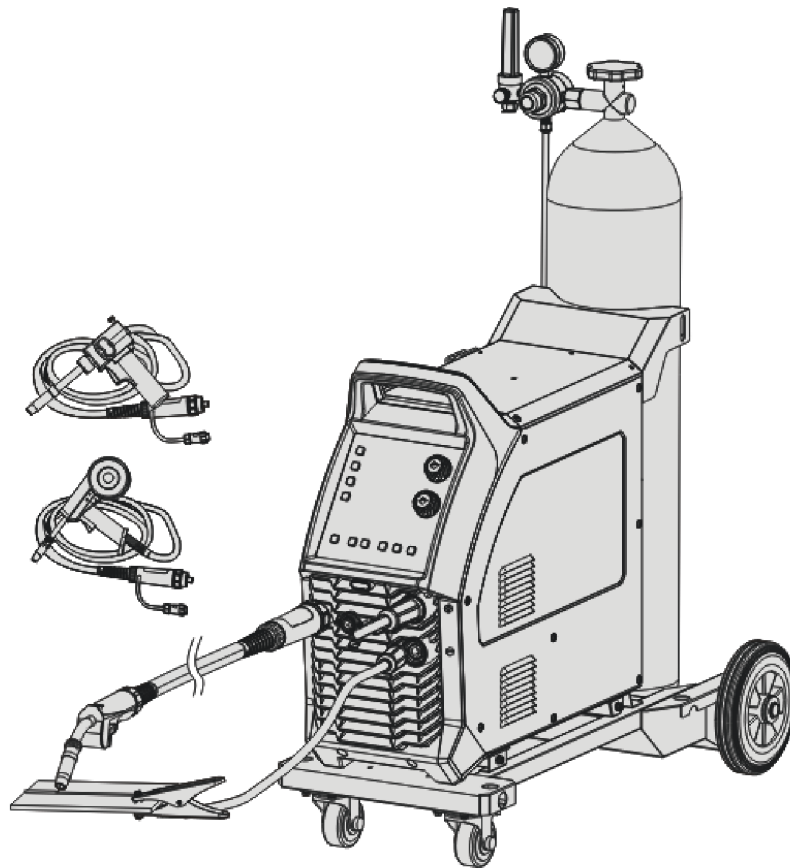
Pay attention to the polarity of the wiring before MIG. Generally, there are two wiring methods for DC welder: DCEP and DCEN.

DCEP: The polarity changeover connector is connected to the positive polarity, and the workpiece is connected to the negative polarity;

DCEN: The polarity changeover connector is connected to the negative polarity, and the workpiece is connected to the positive polarity.

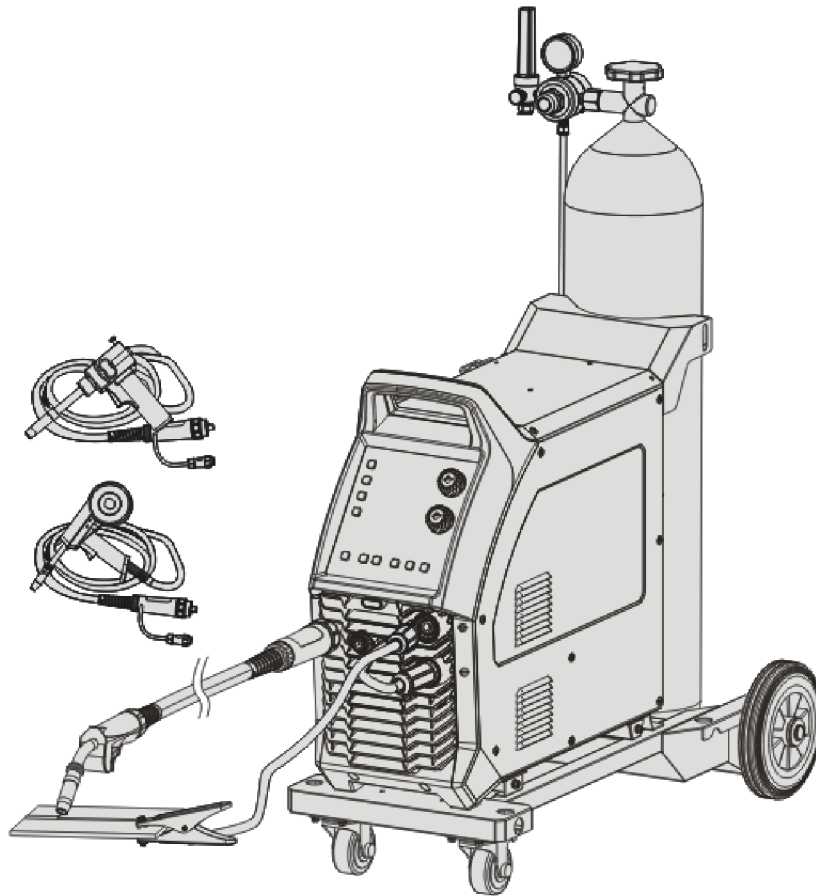
**If MIG is selected, except for carbon steel flux-cored self-shielded welding, which uses DCEN, this series of welders generally use DCEP for other gas-shielded welding types.**

#### 5.3.1 DCEP



- 1) Ensure that the welder power switch is turned off.
- 2) Insert the torch plug into the Euro MIG torch interface on the front panel of the welder and tighten it clockwise.
- 3) Insert the cable plug with earth clamp into the negative polarity socket on the front panel of the welder and tighten it clockwise.
- 4) Insert the polarity changeover connector into the positive polarity socket on the front panel of the welder and tighten it clockwise.
- 5) Connect one end of the gas hose to the gas valve inlet on the rear panel of the welder, and the other end to the gas regulator outlet, and secure it with a clamp.

### 5.3.2 DCEN

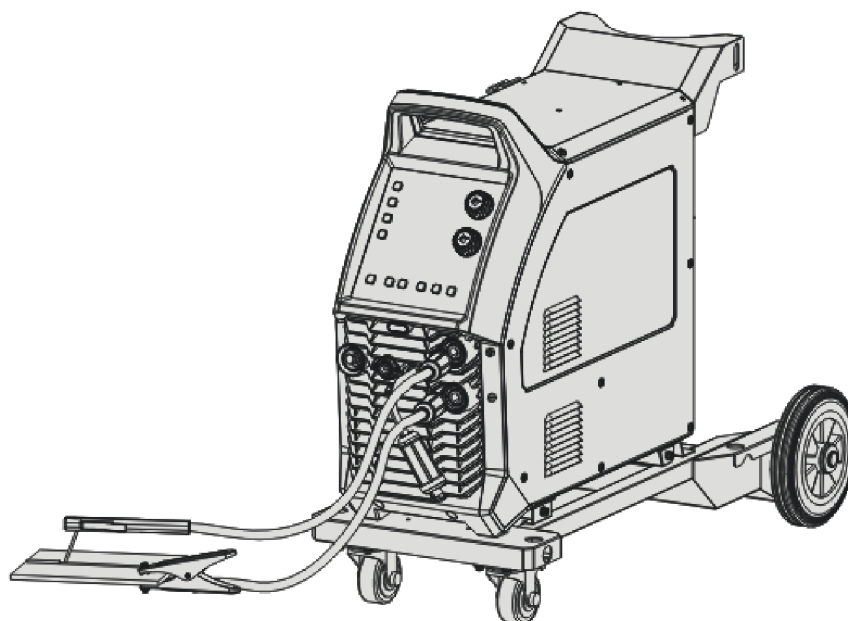


- 1) Ensure that the welder power switch is turned off.
- 2) Insert the torch plug into the central socket on the front panel of the welder and tighten it clockwise.
- 3) Insert the cable plug with earth clamp into the positive polarity socket on the front panel of the welder and tighten it clockwise.
- 4) Insert the polarity changeover connector into the negative polarity socket on the front panel of the welder and tighten it clockwise.
- 5) Connect one end of the gas hose to the gas valve inlet on the rear panel of the welder, and the other end to the gas regulator outlet, and secure it with a clamp.

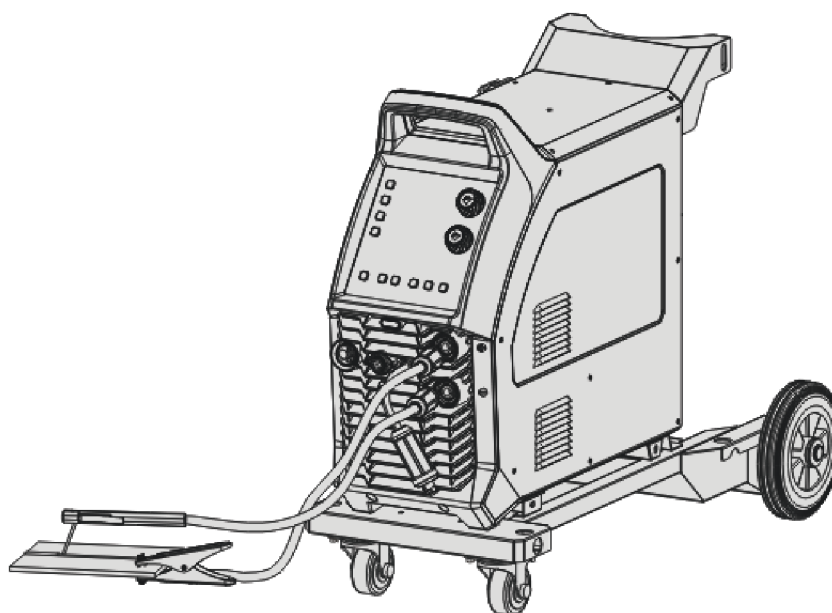
**NOTE! When performing carbon steel flux-cored self-shielded welding, please replace with dedicated knurling wire feed roller and use "DCEN".**  
**When performing aluminum magnesium alloy welding, please replace with U-groove wire feed roller, contact tip, and 2.0 mm diameter Teflon liner for aluminum welding, and use "DCEP".**

Please note pictorial diagrams may differ from actual equipment

## 5.4. STICK electrode holder and earth cable connection



(MMA wiring diagram: DCEP)



(MMA wiring diagram: DCEN)

Pay attention to the polarity of the wiring before MMA. Generally, there are two wiring methods for DC welder: DCEP and DCEN.

DCEP: The electrode holder is connected to the positive polarity, and the workpiece is connected to the negative polarity;

DCEN: The electrode holder is connected to the negative polarity, and the workpiece is connected to the positive polarity.

The operator can also choose connection method based on the base metal and electrode.



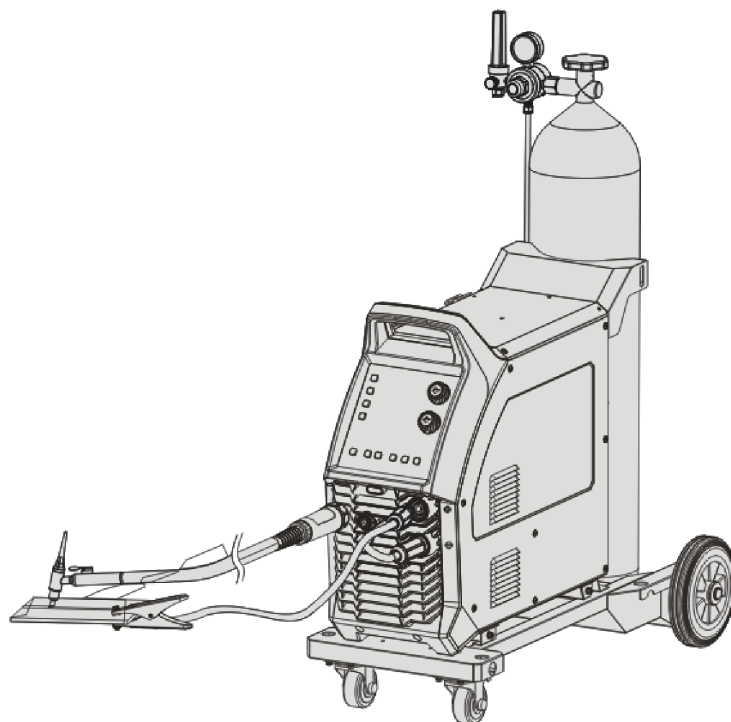
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Generally speaking, DCEP is recommended for basic electrodes, while no special provisions are made for acid electrodes.

- 1) Ensure that the welder power switch is turned off.
- 2) Insert the cable plug with electrode holder into the corresponding socket on the front panel of the welder and tighten it clockwise.
- 3) Insert the cable plug with earth clamp into the corresponding socket on the front panel of the welder and tighten it clockwise.

**NOTE! If you want to use long secondary cables (electrode holder cable and earth cable), you must ensure that the cross-sectional area of the cable is increased appropriately in order to reduce the voltage drop due to the cable length.**

## 5.5. Lift TIG welding torch and earth cable connection



(Lift TIG wiring diagram: DCEN)

- 1) Ensure that the welder power switch is turned off.
- 2) Insert the torch plug into the central socket on the front panel of the welder and tighten it clockwise.
- 3) Insert the cable plug with earth clamp into the positive polarity socket on the front panel of the welder and tighten it clockwise.
- 4) Insert the polarity changeover connector into the negative polarity socket on the front panel of the welder and tighten it clockwise.

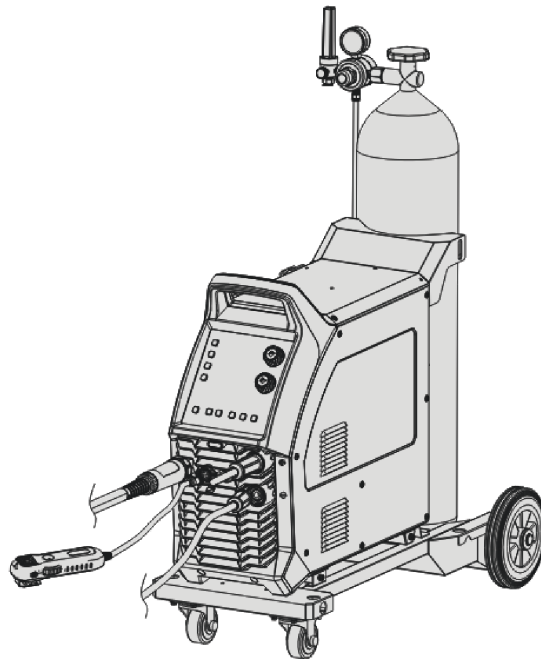
**NOTE! The positive and negative polarities should not be reversed as this will prevent normal welding operation.**

- 5) Connect one end of the gas hose to the gas valve inlet on the rear panel of the welder, and the other end to the gas regulator outlet, and secure it with a clamp.

**NOTE! If you want to use long secondary cables (Lift TIG torch cable and earth cable),**

you must ensure that the cross-sectional area of the cable is increased appropriately in order to reduce the voltage drop due to the cable length.

## 5.6. Wired handheld remote controller/foot pedal controller connection (optional)

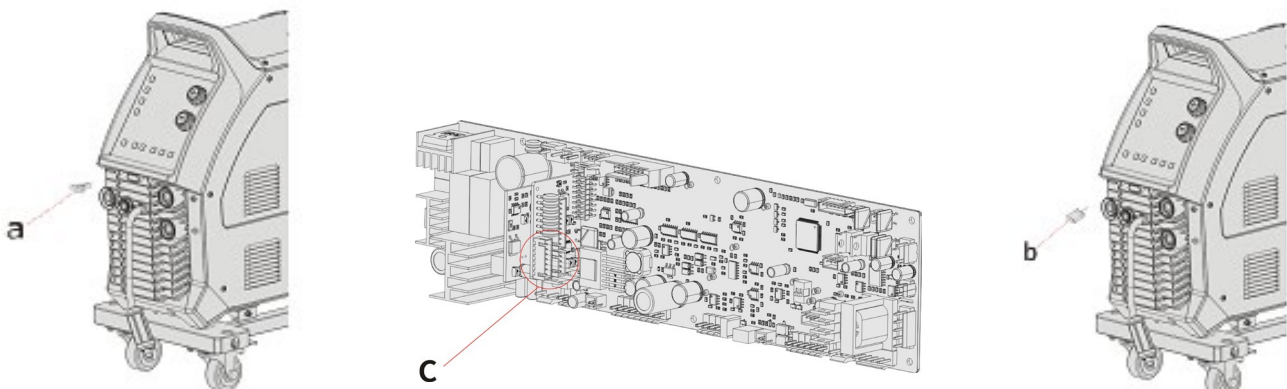


(Wiring diagram of wired remote controller)

Insert the 9-pin aviation plug of the handheld remote controller/foot pedal controller directly into the corresponding 9-pin aviation socket of the machine.

**NOTE! The standard version does not support the remote controller. Please check that the machine supports wired handheld remote controller before installation.**

## 5.7. Installation of wireless receiver module (optional)



(Installation of wireless receiver module)

- 1) Remove the **wireless remote controller plug cover** shown in the above left figure (a). Refit into the wireless receiver module shown in the above right figure (b).
- 2) Remove the screws on the left side cover of the machine and remove the side panel.
- 3) Connect the cable of the wireless module to the 7P terminal block CN3 of the control board PCB2 (Figure c).

**NOTE!**

**\* WIRELESS OPTION NOT PROVIDED WITH THIS MACHINE MODEL**

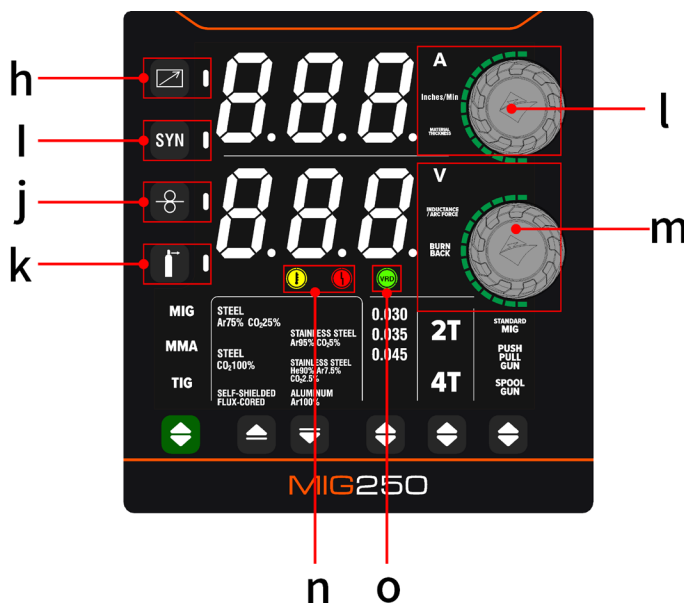
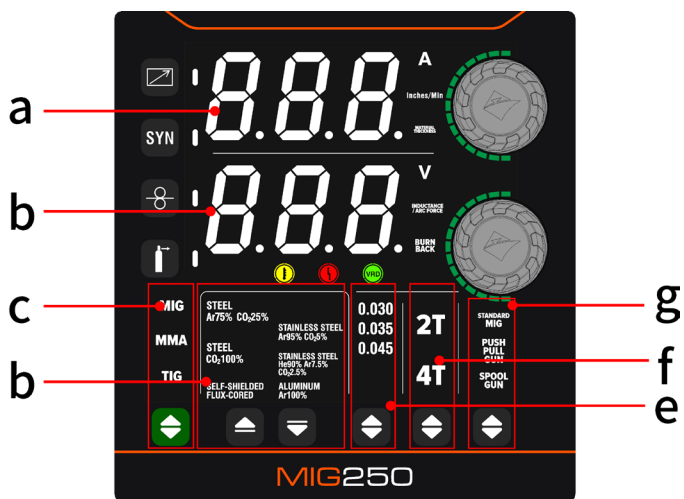


## 6. Control panel

The operation panel for this series of models supports HD digital screen and touchless LCD screen, which can be selected or replaced as needed, without needing to replace the main program of the welder.

### 6.1. HD digital screen

#### 6.1.1 Overview



(HD digital screen operation panel)

- a.Parameter display a
- b.Parameter display b
- c.Welding mode selector
- d.Welding wire type and gas selector
- e.Welding wire diameter selector
- f.MIG/Lift TIG operation mode selector
- g.Push/push-pull/spool torch selector
- h.Remote control function
- i.Synergic
- j.Inching
- k.Gas check
- l.Parameter adjustment knob A
- m.Parameter adjustment knob B
- n.Alarm/protection indicator
- o.VRD function indicator

### a. Parameter display a



"Parameter display a" is used to display the current, welding speed, plate thickness and error code.

- 1) When not welding, the preset value of current parameter will be displayed. If no operation is performed for a long time, the default parameters are displayed.
- 2) When welding, the actual output current value is displayed.
- 3) When the factory settings are reset, the countdown is displayed.
- 4) When the barcode queried, the machine barcode is displayed.
- 5) When the product is not working correctly, an error code is displayed.

In Synergic MIG mode, MMA mode or Lift TIG mode, current is displayed by default. If Synergic is disabled in MIG mode, the wire feed speed is displayed by default.

### b. Parameter display b



"Parameter display b" is used to display the voltage, arc length, inductance/arc force, and burn back time.

- 1) When not welding, the preset value of current parameter will be displayed. If no operation is performed for a long time, the default parameters are displayed.
  - 2) When welding, the actual output voltage is displayed.
- The voltage is displayed by default in all welding modes.


### c. Selection of welding mode

**MIG**

**MMA**

**TIG**



Before welding, press the "Welding Mode Selection" key  to switch among MIG, MMA and Lift TIG, and select the corresponding mode based on the user's needs.



- 1) If the indicator **MIG** is on, it indicates that MIG/MAG mode has been selected.
- 2) If the indicator **MMA** is on, it indicates that MMA mode has been selected.
- 3) If the indicator **TIG** is on, it indicates that Lift TIG mode has been selected.

**NOTE! When the machine is in welding mode or the torch trigger is pressed, the switching function is unavailable.**

#### d. Selection of MIG welding wire type and gas

<b>STEEL</b> Ar75% CO <sub>2</sub> 25%	<b>STAINLESS STEEL</b> Ar95% CO <sub>2</sub> 5%
<b>STEEL</b> CO <sub>2</sub> 100%	<b>STAINLESS STEEL</b> He90% Ar7.5% CO <sub>2</sub> 2.5%
<b>SELF-SHIELDED FLUX-CORED</b>	<b>ALUMINUM</b> Ar100%




- 1) In MIG mode, press the keys   to select the welding wire type and gas.
- 2) If the corresponding indicator is on, it indicates that the welding wire type and gas has been selected.

#### e. Selection of MIG welding wire diameter

**0.030**  
**0.035**  
**0.045**






- 1) In MIG mode, press the corresponding function switching key  to select an optional welding wire diameter for the welding type.
- 2) If the corresponding welding wire diameter indicator is on, it indicates that the welding wire diameter has been selected.

#### f. Selection of 2T/4T operating mode

**2T**

**4T**



- 1) In MIG or Lift TIG mode, press the corresponding function switching key  to select 2T or 4T operating mode.
- 2) If the indicator  is on, it indicates that the machine is in 2T operating mode.
- 3) If the indicator  is on, it indicates that the machine is in 4T operating mode.

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## g. Selection of push/push-pull/spool torch

STANDARD  
MIG

PUSH  
PULL  
GUN

SPOOL  
GUN




In MIG mode, press the corresponding function switching key  to select the push torch or spool torch.


- 1) If the indicator **STANDARD MIG** is on, it indicates that the MIG is in push torch state.
- 2) If the indicator **PUSH PULL GUN** is on, it indicates that the MIG is in push-pull torch state.
- 3) If the indicator **SPOOL GUN** is on, it indicates that the MIG is in spool torch state.

## h. Selection of remote control function



### 1) Enable/disable remote control function

(1) Before welding, press the remote control function key  to enable/disable the remote control function.

(2) If the indicator  is on, it indicates that the remote control function has been enabled. If it is off, it indicates that the remote control function has been disabled.



### 2) Wired remote control and wireless remote control


The remote control function is divided into wired remote control and wireless remote control. Setting method: Enter the Welding Engineer Mode (see section 6.4 for details), set the "F09" parameter value, "1" indicating wired remote control and "0" indicating wireless remote control.



### 3) Connect/disconnect wireless remote controller

(1) Connect wireless remote controller

When not welding and the wireless remote control function has been enabled, press and hold

the remote control function key  on the panel and the pairing key  of the wireless remote controller at the same time for 2s to pair the wireless remote controller. During pairing,

the blue indicator  of the wireless receiver module will flash. After successful pairing, the

remote control mode indicator  will be on, the blue indicator  on wireless receiver




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module will remain on and the welder display window will display "OK".

After successful pairing, the parameters can be adjusted by the wireless remote controller.

#### (2) Disconnect wireless remote controller


After the remote controller has been successfully paired, press and hold the remote control

function key  on the panel or the pairing key  on the wireless remote controller for 2s, and the connection of the wireless remote controller will be disconnected. After disconnecting, the display window of the welder will display "FAL", and the green indicator  of the wireless receiver module will remain on.

### i. Selection of Synergic MIG function



1) In MIG mode, press the "Synergic" function key  to enable or disable the function.


2) If the indicator  is on, it indicates that the "Synergic" function is enabled. If it is off, it indicates that the function is disabled, and MIG is in separate mode.


3) In "Synergic" mode, the machine automatically matches the welding voltage (arc length) and inductance according to the welding type and welding wire diameter selected and the set current (or wire feed speed, plate thickness), and the user can adjust the voltage or inductance as required.

(4) In separate mode, the wire feed speed, voltage and inductance can be set separately.

### j. Inching function




1) In MIG mode, press the inching key  to start wire feeding and release the key to stop wire feeding.



2) If the indicator  is on, it indicates that the inching is enabled to start wire feeding, and the wire feed speed depends on the preset value.

### k. Gas check function



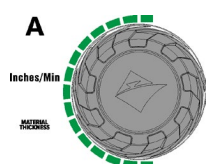
1) In MIG or Lift TIG mode, press the gas check function key  to start gas supply and press the key again in 20s to stop gas supply;

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2) If the indicator  is on, it indicates that the gas check function is enabled and the gas valve is open; if the indicator  is off, it indicates that the gas check function is disabled and the gas valve is closed.

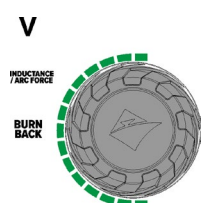
**Note: The gas check function automatically stops after 20s to avoid gas waste.**

### I. Parameter adjustment knob A




- 1) In MIG mode, if the "Synergic" function is disabled, rotate the knob to set the wire feed speed; if the function is enabled, rotate the knob to switch display of current, wire feed speed and plate thickness for configuration.
- 2) In MMA or Lift TIG mode, rotate the knob to set the current parameter.
- 3) Rotating the adjusting knob clockwise increases the parameter value, and rotating it counterclockwise decreases the value.
- 4) When the adjustment knob is rotated, the adjusted parameter is displayed in the parameter display area.

### m. Parameter adjustment knob B





- 1) In MIG mode, press the knob to switch the display of voltage, arc length, inductance, and burn back time, rotate the knob for configuration.
- 2) In MMA mode, press the knob to switch to arc force and rotate the knob for configuration.
- 3) Rotating the knob clockwise increases the parameter value, and rotating it counterclockwise decreases the value.
- 4) When the adjustment knob is rotated, the adjusted parameter is displayed in the parameter display area.

### n. Protection/alarm indicators

If the overheat indicator  is on, it indicates that the main circuit temperature of the welder is too high, and the welder has automatically entered overheat protection and stopped output. **Do not turn off the machine. Wait for a while, and then continue welding after the overheat indicator turns off.**

## 6.2. Barcode display\*

1) Before welding, press and hold the "Welding Mode Selection"  and "Parameter key

Adjustment Knob  for 3s at the same time, and the machine barcode will be "A" displayed.

2) Press any key or wait for 20s to exit the barcode display.

3) The barcode is displayed in nine groups of data in the "Parameter Display A" area, including "1.XY", "2.XY"..... to "9.XY", where X and Y are figures from 0-9. Refer to the following table for details:


Data displayed	Meaning
1.XY	X and Y represent the 1 <sup>st</sup> and 2 <sup>nd</sup> digits/letters of the digital barcode respectively
2.XY	XY represents the 3 <sup>rd</sup> digit/letter of the digital barcode, and YX is from 11-45, corresponding to the barcode D-Z and representing the year
3.XY	XY represents the 4 <sup>th</sup> digit/letter of the digital barcode, and YX is from 01-12, corresponding to the barcode 0-C and representing the month
4.XY	XY represents the 5 <sup>th</sup> digit/letter of the digital barcode, and YX is from 01-31, corresponding to the barcode 0-V and representing the date
5.XY	X and Y represent the 6 <sup>th</sup> and 7 <sup>th</sup> digits/letters of the digital barcode respectively
6.XY	X and Y represent the 8 <sup>th</sup> and 9 <sup>th</sup> digits/letters of the digital barcode respectively
7.XY	X and Y represent the 10 <sup>th</sup> and 11 <sup>th</sup> digits/letters of the digital barcode respectively
8.XY	X and Y represent the 20 <sup>th</sup> and 21 <sup>st</sup> digits/letters of the digital barcode respectively
9.XY	X and Y represent the 22 <sup>nd</sup> and 23 <sup>rd</sup> digits/letters of the digital barcode respectively

The 12<sup>th</sup>-19<sup>th</sup> digits in the digital barcode are the company's internal fixed numbers, which are not displayed in the window.

Read the nine groups of data and arrange them in order from left to right, skipping the 12<sup>th</sup>-19<sup>th</sup> digits, to get the barcode of the machine.


**\*barcode display is not standard on some machines**

## 6.3. Restore factory settings



1) Before welding, press and hold the "Welding Mode Selection" key  for 5 seconds to restore factory settings.

2) After pressing and holding for 5 seconds, the display window will count down from 3. When the countdown ends, the factory settings are restored. If the button is released before the countdown ends, the factory restore will not take place.

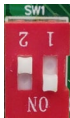

3) The factory settings are as shown in the following table:

If the overcurrent indicator  is on, it indicates that the main circuit device of the welder is abnormal, and the welder has entered overcurrent protection and stopped output. **Please turn off and restart the machine. If this phenomenon persists, please contact professional maintenance personnel of the company.**



**o. VRD function indicator**

- 1) The VRD function only works in MMA mode. When the VRD function is not enabled, the VRD indicator is off.
- 2) When the VRD function is enabled and no welding is performed, the VRD indicator displays green , indicating that the VRD function is normal.
- 3) When the VRD function is enabled and no welding is performed, the VRD indicator light displays red , indicating that the VRD function is abnormal.
- 4) When the VRD function is enabled, the VRD indicator is not on during welding.

**Note: The VRD switch is the "SW1-1" on the main control panel (PK-476) inside the**

**machine, "ON"  indicating VRD enabled, and "OFF"  indicating VRD disabled.**

**6.1.2 Barcode display**

1) Before welding, press and hold the "Welding Mode Selection" key  and "Parameter Adjustment Knob A"  for 3s at the same time, and the machine barcode will be displayed.

- 2) Press any key or wait for 20s to exit the barcode display.
- 3) The barcode is displayed in nine groups of data in the "Parameter display a" area, including "1.XY", "2.XY"..... to "9.XY", where X and Y are figures from 0-9. Refer to the following table for details:

Data displayed	Meaning
1.XY	X and Y represent the 1st and 2nd digits/letters of the digital barcode respectively
2.XY	XY represents the 3rd digit/letter of the digital barcode, and XY is from 11-45, corresponding to the barcode D-Z and representing the year
3.XY	XY represents the 4th digit/letter of the digital barcode, and XY is from 01-12, corresponding to the barcode 0-C and representing the month
4.XY	XY represents the 5th digit/letter of the digital barcode, and XY is from 01-31, corresponding to the barcode 0-V and representing the date
5.XY	X and Y represent the 6th and 7th digits/letters of the digital barcode respectively




6.XY	X and Y represent the 8th and 9th digits/letters of the digital barcode respectively
7.XY	X and Y represent the 10th and 11th digits/letters of the digital barcode respectively
8.XY	X and Y represent the 20th and 21st digits/letters of the digital barcode respectively
9.XY	X and Y represent the 22nd and 23rd digits/letters of the digital barcode respectively

The 12th-19th digits in the digital barcode are the company's internal fixed numbers, which are not displayed in the window.

Read the nine groups of data and arrange them in order from left to right, skipping the 12th-19th digits, to get the barcode of the machine.

### 6.1.3 Factory reset

- 1) Before welding, press and hold the "Welding Mode Selection" key  for 5 seconds to reset factory settings.
- 2) After pressing and holding for 5 seconds, the display window will count down from 3. When the countdown ends, the factory settings are reset. If the button is released before the countdown ends, the factory reset will not take place.
- 3) The factory settings are as shown in the following table:

Item	Parameter Name	Reset Value	Remarks
Synergic MIG parameters	Material & gas	Steel Ar75% CO <sub>2</sub> 25%	
	Welding wire diameter	0.030	
	Welding current	80 A	
	Welding arc length	0.0 V	
MIG parameters	Welding speed	197Inch/min	
	Welding voltage	19.0V	
General MIG parameters	Burn back time	0.2S	
	Burn back voltage	13.0V	
	Welding torch selection	Push torch	
	Operation method	2T	
	Inductance	0	
	Pre-flow time	0.1S	
MMA parameters	Post-flow time	0.5S	
	Welding current	80A	
	Arc force current	40A	
	Hot start current	30A	

Lift TIG parameters	Welding current	100A	
	Pre-flow time	0.5S	
	Post-flow time	5.0S	
	TIG downslope time	0.5S	

#### 6.1.4 Welding engineer mode function

The Welding Engineer Mode function allows users to set/modify the default parameters /functions as follows:

- 1) Press and hold "Parameter Adjustment Knob A" for 5s in startup state.
- 2) After pressing and holding the "Parameter Adjustment Knob" for 2s, the machine will count down from 3s; at the end of the countdown, "Parameter Display A" on the display window will display a parameter number, such as "F01". "Parameter Display B" on the display window will display the value corresponding to that number.
- 3) Rotate "Parameter Adjustment Knob A" to select the parameter number to set the back-end parameter/function.
- 4) Rotate "Parameter Adjustment Knob B" to set the value corresponding to that parameter number.
- 5) Press "Parameter Adjustment Knob A" to save the new value.
- 6) After setting the value, press "Welding Method Selection" key to exit the Welding Engineer Mode.
- 7) Refer to the following table for the parameter numbers, function definitions and configuration values

Background parameter/ function	Parameter No.	Default value	Function definition
Standby response time	F01	10	Can be set to four values: "0", "5", "10" or "15". 1) "0" indicates that the standby function is disabled and the machine will not enter standby state. 2) "5", "10" and "15" indicate that the standby function is enabled and the machine will enter the standby state after the corresponding time (unit: minutes).
Input overvoltage/ undervoltage protection	F02	0	Can be set to "0" or "1". 1) "0" indicates that the overvoltage/undervoltage protection function is disabled. 2) "1" indicates that the overvoltage/undervoltage protection function is enabled. <b>Note: The standard version only supports overvoltage protection function.</b>

Pre-flow time	F03	MIG: 0.1 Lift TIG: 0.5	Set the MIG/Lift TIG welding parameters based on the "Welding Mode" when in Welding Engineer Mode.  1) If the "Welding Mode" is MIG, set the MIG pre-flow time, with range of 0-2.0, accuracy of 0.1, and unit of seconds. If the "Welding Mode" is Lift TIG, set the Lift TIG pre-flow time, with range of 0-5.0, accuracy of 0.5, and unit of seconds.
Post-flow time	F04	MIG: 0.5 Lift TIG: 5.0	Set the MIG/TIG welding parameters according to the "Welding Mode" when in Welding Engineer Mode. 2) If the "Welding Mode" is MIG, set the MIG post-flow time, with range of 0-5.0, accuracy of 0.5, and unit of seconds. 2) If the "Welding Mode" is Lift TIG, set the Lift TIG post-flow time, with range of 0-10.0, accuracy of 0.5, and unit of seconds.
Lift TIG downslope time	F05	0.5	Set the Lift TIG downslope time, with range of 0-5, accuracy of 0.5, and unit of second.
Burn back voltage	F06	13.0	Set the MIG burn back voltage, with range of 10.0-20.0, accuracy of 0.1, and unit of voltage.
MMA hot start current	F07	30	Set the MMA hot start current, with range of 0-60, accuracy of 1, and unit of ampere.
Slow wire feed speed	F08	3	Set the slow wire feed speed of MIG; can be set to "0", "1", "2" or "3". 1)"0" indicates that the slow wire feed function is disabled. 2)"1" and "2" indicate that the slow wire feed speed is 1/3 or 1/2 of the current set speed, respectively. 3)"3" indicates that the current slow wire feed speed is 118Inch/min.
Remote control mode	F09	0	Can be set to "0" or "1" to use wired or wireless remote controller. 1) "0" indicates wireless remote controller. 2) "1" indicates wired remote controller.

**NOTE! If entering the Welding Engineer Mode from different "Welding Mode" states, the functional definition corresponding to the background parameters/functions may be also different!**

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## 7. Welding function operation



**Warning!** Before turning on the power supply make sure that the equipment is disconnected to the output. Otherwise, an unexpected arc may be started when the power is turned on. This can cause damage to the work piece and to personnel.



**Warning!** Be sure to wear appropriate protective equipment during welding or cutting operation. Arcs, spatter, smoke, and high temperatures produced in the process may cause injury to personnel.

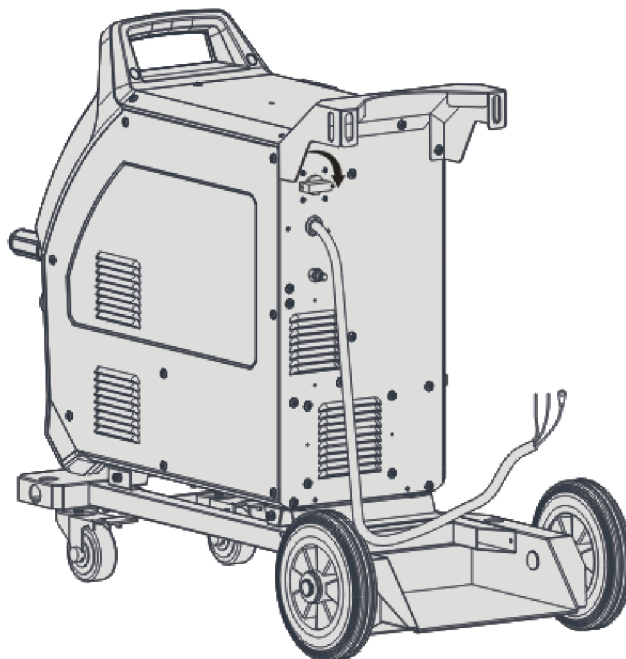


**Warning!** After the power supply is turned off, the output voltage of the machine may continue for a period and then drop slowly. Please do not touch the conductive part of the output before the panel is extinguished.

### 7.1. MIG operation

**NOTE!** Some models are equipped with the smart fan function. When the power supply is turned on for a period before welding or cutting, the fan will automatically stop running. It will run automatically when welding or cutting begins.

#### 7.1.1 Turn on the power switch



The power switch is located at the rear panel of the machine; set it in the "ON" position; then the panel indicator will light up, the fan will start to rotate, and the welder will start to work normally.

## 7.1.2 Select MIG mode

HD digital screen:



- 1) Press the "Welding Mode Selection" key to select MIG mode.
- 2) Use the corresponding function switching key to select the welding type, wire diameter, operation method and welding torch type.
- 3) Enable/disable the "Synergic" function.
- 4) Use "Parameter Adjustment Knob A/B" to set the welding parameters.

## 7.1.3 Set welding parameters with "Synergic" disabled

HD digital screen:



(Setting wire feed speed and voltage)      (Setting inductance)      (Setting burn back)

- 1) Use "Parameter Adjustment Knob A" to set the "Wire Feed Speed".
- 2) Use "Parameter Adjustment Knob B" to set the "Welding Voltage".
- 3) Press "Parameter Adjustment Knob B" to switch display of "Welding Voltage", "Welding Inductance", and "Burn Back Time" and set the parameter values.

In "Non-synergic" MIG mode, the parameters that can be set on the panel and their ranges are as follows:

SN	Parameter Name	Parameter options or range (Input 230VAC)
		MIG250
1	Wire feed speed (Inch/min)	79~709
2	Welding voltage (V)	11~30
3	Inductance	-10~10
4	Burn back time (ms)	0~800
5	Burn back voltage (V)	10.0~20.0

SN	Parameter Name	Parameter options or range (Input 115VAC)
		MIG250
1	Wire feed speed (Inch/min)	79~551
2	Welding voltage (V)	11~25
3	Inductance	-10~10
4	Burn back time (ms)	0~800
5	Burn back voltage (V)	10.0~20.0

### 7.1.4 Set welding parameters with "Synergic" enabled

HD digital screen:



(Setting welding current)



(Setting wire feed speed)



(Setting plate thickness)

1) Press "Parameter Adjustment Knob A" to switch display of "Welding Current", "Wire Feed Speed", and "Plate Thickness"; set one parameter and the other two parameters will also change.

2) The welder automatically matches the voltage and inductance according to the built-in Synergic expert library to achieve good welding results.

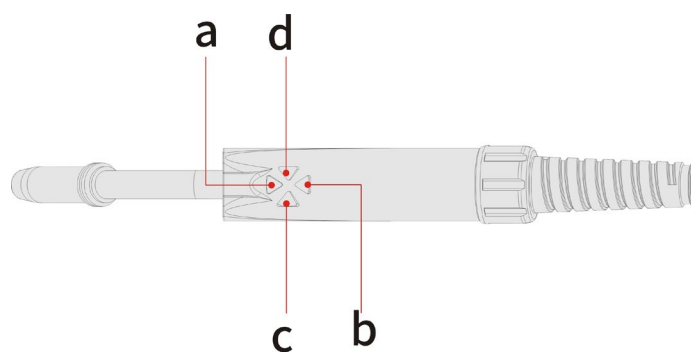
3) Press "Parameter Adjustment Knob B" to switch display of "Welding Voltage", "Welding Inductance", and "Burn Back Time" and adjust the parameter values.

### 7.1.5 Use of digital gun or spool gun

In addition to the common push torch, these inverter welders also support numeric key-type push torch, push-pull torch and spool torch. The parameters are adjusted through the keys on the digital torch or the adjustment knob on the push-pull torch and spool torch.

**Note: The standard HD digital screen version does not support numeric key-type push torch, push-pull torch and spool torch functions.**

1) Digital torch



a. Increase the "Wire Feed Speed"/"Welding Current".

b. Decrease the "Wire Feed Speed"/"Welding Current".

The "Wire Feed Speed"/"Welding Current" adjustment key adjusts "Wire Feed Speed" when the "Synergic" is disabled, and "Welding Current" when it is enabled.

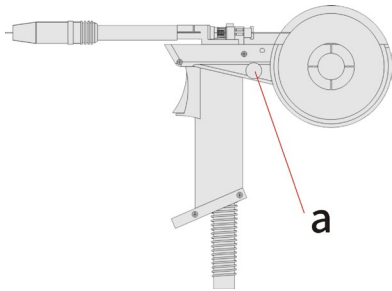
c. Increase the "Welding Voltage".

d. Decrease the "Welding Voltage".

After connecting the digital torch with the welder and the remote control indicator turning on, use the keys on the digital torch to adjust the "Wire Feed Speed"/"Welding Current" and "Welding Voltage". For details about panel operations, see sections 7.12-7.14.

**NOTE! If the digital torch is used, select the welding torch type of "Spool torch". The parameters can be adjusted by both the adjustment knobs on the operation panel and adjustment keys on the digital torch. During welding, the adjustment keys on the digital torch cannot be used to adjust the parameters.**

## 2) Spool torch



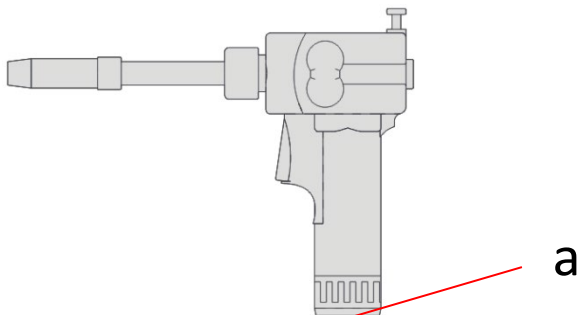
a. "Wire Feed Speed "adjustment potentiometer: Rotate the potentiometer clockwise to increase the "Wire Feed Speed", and counterclockwise to decrease the speed.



(Select spool torch on HD digital screen)

The welding can only select spool torch in "Non-synergic" MIG mode.

## 3) Push-pull torch



Please Note: Spool Gun Models vary from images

4) a. "Wire Feed Speed "adjustment potentiometer: Rotate the potentiometer clockwise to increase the "Wire Feed Speed", and counterclockwise to decrease the speed.

The push-pull torch cannot adjust the parameters.





(Select spool torch on HD digital screen)

The welder can select push-pull torch in both "Non-synergic" and "Synergic" MIG modes.

### 7.1.6 Start welding

#### Description of MIG 2T/4T operation

##### 2T operating mode

Step 1: Press the torch trigger to start welding.

Step 2: Release the torch trigger to stop welding.

##### 4T operating mode

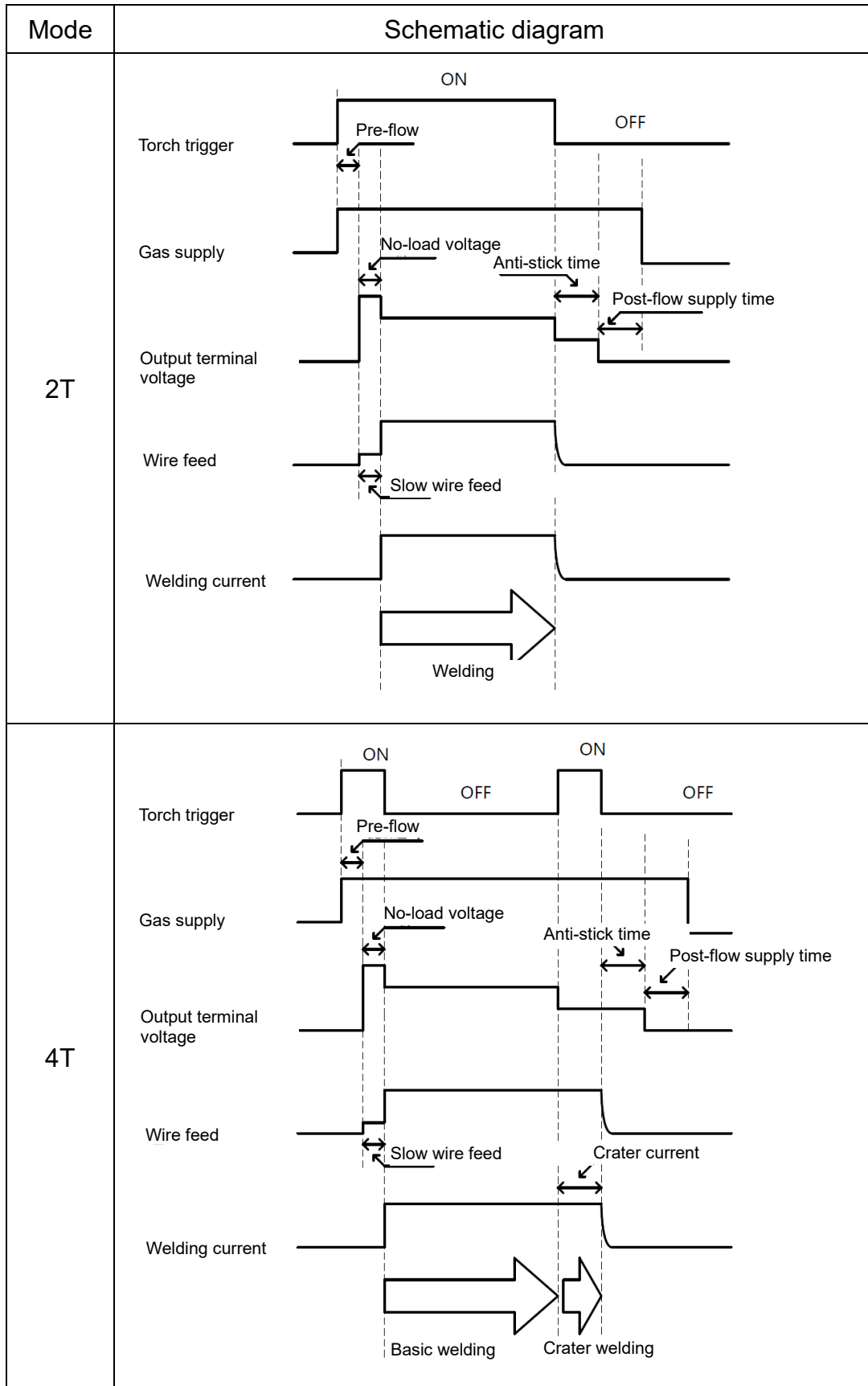
Step 1: Press the torch trigger for the first time to start welding.

Step 2: Release the torch trigger for the first time to continue welding.

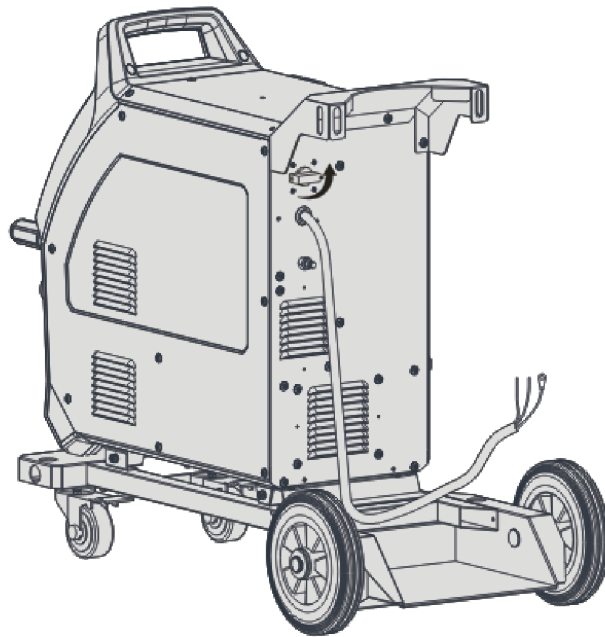
Step 3: Press the torch trigger for the second time to resume welding.

Step 4: Release the torch trigger for the second time to stop welding.

## Welding sequence of MIG 2T/4T operation



### 7.1.7 Turn off the power supply after welding



The power switch is located on the rear panel of the machine and set it to the "OFF" position. After a time delay, the panel indicator is off and the welder stops working.

## 7.2. MMA operation

### 7.2.1 Turn on the power switch

(Same as section 7.1.1)

### 7.2.2 Select welding mode

For HD digital screen, use the "Welding Mode Selection" key to select MMA mode.



(Select MMA mode in HD digital screen)

### 7.2.3 Set MMA parameters

1) For HD digital screen, use the "Parameter Adjustment Knob A" to set the "Welding Current"; (as shown in above figure)

Welding current: Set by the user based on the type and diameter of the welding electrode and the process requirements. Refer to the following table:

SN	Electrode	Electrode	Welding
	diameter (mm)	diameter (mm)	current (A)
1	1.6	1.6	25~40
2	2.0~3.2 5/64" - 1/8"	2.0	40~65
		2.5	50~80
		3.2	100~130
3	3.2~4.0 18"-5/32"	3.2	100~130
		4.0	160~210
3	≥4 13/64"	5.0	200~270
		6.0	220~300

**NOTE! The operator should set the functions that meet the welding requirements. If the selections are incorrect this may lead to problems such as an unstable arc, spatter, or sticking of the welding rod to the work piece.**

2) For HD digital screen, use the "Parameter Adjustment Knob B" to set the "Arc Force".



(Select arc force in HD digital screen)

**Arc force:** The arc force value should be determined according to electrode diameter, current setting, and process requirements. With large arc force current, the metal transfers quickly and the droplets don't stick, but excessive force increases spatter; low arc force leads to small spatter and good weld seam formation, but sometimes the arc is soft, or causes droplets to stick. In particular, thick electrodes with low current welding require increased arc force. Generally, the arc force is 30~50A when welding.

3) Hot start current: Stronger hot start current is conducive to arc start and reduces sticking between the welding electrode and workpiece during arc start.

SN	Parameter Name	Setting range of "Arc Force" and "Hot Start Current"	Remarks
		MIG250	HD digital screen
1	Arc force	0~100A	Adjustable on the panel
2	Hot start current	0~60A	Adjustable on user menu

## 7.2.4 Start welding

During DC welding, the heat on the positive and negative polarities of the welding arc is different. When welding using DC power supply, there are DCEP and DCEN connections. The DCEP connection refers to the welding electrode connected to the positive polarity of the power supply and the workpiece connected to the negative polarity of the power supply. In this mode, the workpiece receives less heat, resulting in low temperature, shallow penetration, and less penetration. This is suitable for welding thin parts. The DCEN connection refers to the welding electrode connected to the negative polarity of the power supply and the workpiece connected to the positive polarity of the power supply. In this mode, the workpiece receives more heat, resulting in high temperature, deep penetration, and easy to weld through. This is suitable for welding thick parts.

### NOTE!

**(1) This unit has anti-stick function by default. In the welding process, if short circuit occurs for 2s, it will automatically enter anti-stick function. At this time, the welding electrode shall be separated from the workpiece, and the arc shall be restarted for welding;**

**(2) Anti-stick process: When the VRD function is disabled, the welding current will automatically drop to 20A; and when the VRD function is enabled, the current output will change to 0A.**

## 7.2.5 Turn off power supply after welding

(Same as section 7.1.7)

## 7.3. Lift TIG operation

### 7.3.1 Turn on the power switch

(Same as section 7.1.1)

### 7.3.2 Select Lift TIG welding mode

For HD digital screen, use the "Welding Mode Selection" key to select Lift TIG mode.



(Select Lift TIG mode in HD digital screen)

### 7.3.3 Set welding parameters

For HD digital screen, use the "Parameter Adjustment Knob A" to set the "Welding Current"; (as shown in above figure)

Choose the appropriate welding current, tungsten electrode and shielding gas flow based on the actual situation. For details, refer to the following data.

Selection of parameters for manual TIG welding – stainless steel plate

Tungsten diameter (mm/Inch)	Stainless steel plate thickness (mm/Inch)	Maximum current (A)	Maximum argon flow rate (l/min/CFH)
1~2 3/64"-5/64"	1~3 3/64"-1/8"	50	5/10.6
		50~80	6/12.7
2~4 5/64"-5/32"	3~6 1/8"-1/4"	80~120	7/15
		121~160	8/17
		161~200	9/19
		201~300	10/21

### 7.3.4 Start welding

Description of MIG 2T/4T operation

2T operating mode

Step 1: Press the torch trigger to start welding.

Step 2: Release the torch trigger to stop welding.

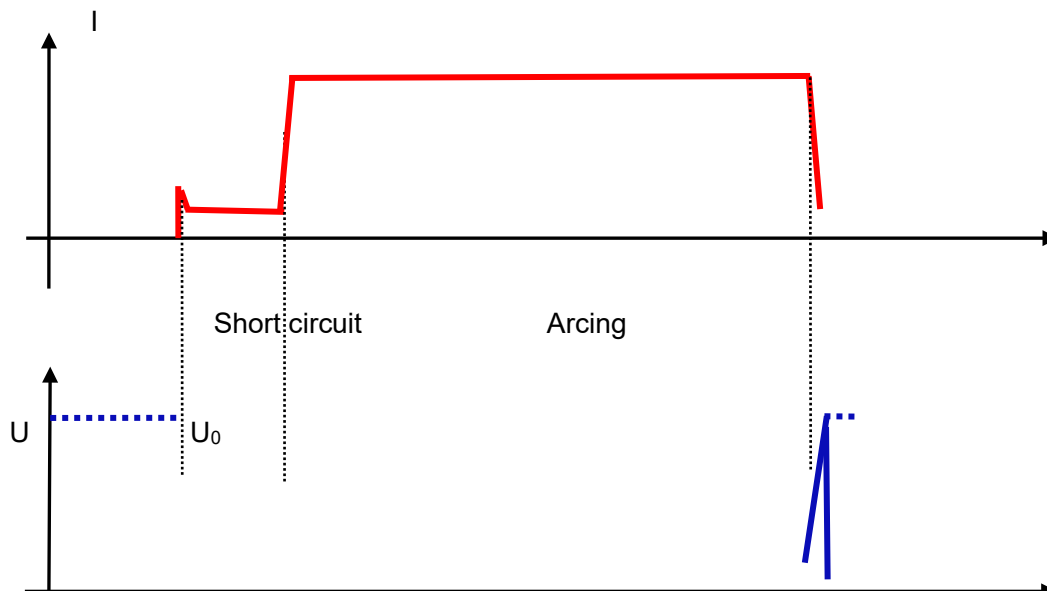
4T operating mode

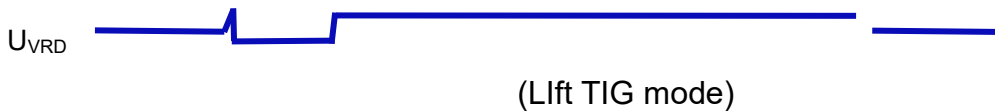
Step 1: Press the torch trigger for the first time to start welding.

Step 2: Release the torch trigger for the first time to continue welding.

Step 3: Press the torch trigger for the second time to resume welding.

Step 4: Release the torch trigger for the second time to stop welding.





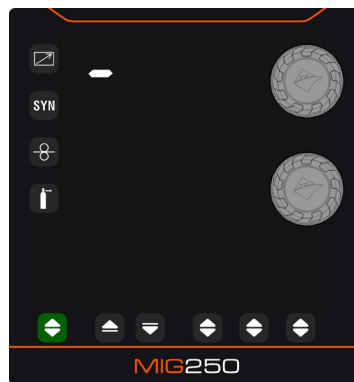
**NOTE!** When starting the arc if the short-circuit time exceeds 2 seconds the welder turns off the output current. Lift the welding torch clear of the work piece. Restart the process as above (7.3.2) to start the arc again.

**NOTE!** During welding, if there is short circuit between tungsten electrode and the work piece, the welder will immediately reduce the output current; if the short circuit exceeds 1 second, the welder will turn off the output current. If this happens, the arc will need to be restarted as above (7.3.2). and the welding torch needs to be lifted to start the arc again.

### 7.3.4 Turn off the power supply after welding

(Same as section 7.1.7)

## 7.4. Standby



(Standby state interface in HD digital screen)

- 1) Enter standby state: In both MIG and Lift TIG modes, the machine will enter standby state and close the display window in the operation panel if there are no welding or panel operations for a long time. The default standby response time is 10 minutes.
- 2) Exit standby state: In standby state, any operation on the welder will cause it to exit standby state, including welding, key/knob operation, pressing the torch trigger, or operating the paired and valid remote controller, etc.
- 3) For safety and convenience, the machine will not enter standby state in MMA mode.

## 7.5. Functions and use of wireless/wired remote controller

If the machine supports the remote control function and is equipped with a remote controller and accessories, the user can use the handheld remote controller or foot pedal controller to perform simple welding parameter adjustments at a distance after basic configuration on the

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## 8. Maintenance



### Warning!

The following operation requires sufficient professional knowledge on electric aspects and comprehensive safety knowledge. Make sure the input cable of the machine is disconnected from the electricity supply and wait for 5 minutes before removing the machine covers.

Please note: The following should only be carried out by an authorised electrical technician.

### 8.1. Power supply maintenance

In order to guarantee that the machine works efficiently and in safety, it must be maintained regularly. Operators should understand the maintenance methods and means of the machine operation. This guide should enable customers to carry out simple examination and safeguarding by oneself, try to reduce the fault rate and repair times of the machine, so as to lengthen service life of the machines.

<u>Period</u>	<u>Maintenance item</u>
Daily examination	Check the condition of the machine, mains cables, welding or cutting cables and connections. Check for any warnings LEDs and machine operation.
Monthly examination	Disconnect from the mains supply and wait for at least 5 minutes before removing the cover. Check internal connections and tighten if required. Clean the inside of the machine with a soft brush and vacuum cleaner. Take care not to remove any cables or cause damage to components. Ensure that ventilation grills are clear. Carefully replace the covers and test the unit. <b>This work should be carried out by a suitably qualified competent person.</b>
Yearly examination	Carry out an annual service to include a safety check in accordance with the manufacturers standard (EN 60974-1). <b>This work should be carried out by a suitably qualified competent person.</b>



## 9. Troubleshooting



**Warning! Before machines are dispatched from the factory, they have already been checked thoroughly. The machine should not be tampered with or altered. Maintenance must be carried out carefully. If any wire becomes loose or is misplaced, it maybe potentially dangerous to user! Only professional maintenance personnel should repair the machine!**

**Ensure the power is disconnected before working on the machine. Always wait 5 minutes after power switch off before removing the panels.**

### 9.1. Common malfunction analysis and solution



**The symptoms listed here may be related to the accessories, gas, environmental factors, and power supply you use. Please try to improve the environment and avoid such situations.**

#### Elimination of general problems in MIG

Symptom		Reasons	Troubleshooting
After startup, the fan does not turn or the wire feeding speed is abnormal		The ambient temperature is too low or the fan has been damaged	If the temperature is too low, let the machine work for a period of time, and the temperature in standby will rise and it will rotate normally. If it is still not working, replace the fan
<b>MIG</b>	The welder has no current output and has no error code display	The welding circuit has failed A component inside the welder has failed	Check the welding circuit and repair it Contact the customer-service personnel and seek professional assistance
	After pressing the torch trigger to supply gas, there is current output but no wire feeding	The wire feeder is stuck The wire feeding motor has failed The control board inside the welder has failed	Loosen the wire feeder Replace the wire feeding motor Replace the control board

	The welding current is unstable and the current fluctuates	<p>The torque knob of the wire feeder is not adjusted properly</p> <p>The wire feed roller and welding wire are configured differently</p> <p>The contact tip is seriously worn out</p> <p>The liner in the welding torch is seriously worn out</p> <p>The welding wire is of poor quality</p>	<p>Properly adjust the torque knob of the wire feeder</p> <p>Match the wire feed roller with the welding wire</p> <p>Replace the contact tip of the welding torch</p> <p>Replace the liner in the welding torch</p> <p>Replace with qualified welding wire</p>
Other faults		Please contact the maintenance personnel of JASIC Technologies America Inc	

### Elimination of general problems in MMA/STICK

Symptom		Reasons	Troubleshooting
After startup, the fan does not turn, or the speed is abnormal		The air temperature is too low, or the fan is damaged	When the temperature is too low, leave the machine work for a while. The temperature in standby will rise the fan and resume normal operation. If it is still not working, it is necessary to replace the fan.
<b>MMA (STICK)</b>	Cannot start normal arc	The power cord is not connected properly	Connect the power cord check <b>not using an extension cord</b>
	Welding slag is difficult to remove	Low arc force	Increase the arc force
	Hot electrode holder	The rated current of the electrode holder is too low	Change the electrode holder with a higher current one
	Arc is easily interrupted	Low mains voltage	Use after the mains power is normal
Other faults		Please contact the maintenance personnel of JASIC Technologies America Inc	


### Elimination of general problems in Lift TIG

Symptom		Reasons	Troubleshooting
After startup, the fan does not turn or the speed is abnormal		The ambient temperature is too low or the fan has been damaged	When the temperature is too low, leave the machine to work for a while. The temperature in standby will rise the fan and resume normal operation. If it is still not working, it is necessary to replace the fan.
<b>TIG</b>	No current output when torch trigger is pressed	Some Lift TIG modes allow welding to end when the torch trigger is pressed	Release the torch trigger and start over
		Welding circuit is open	Check the welding circuit and reconnect it
	Rapid tungsten electrode burnout	Welding torch is connected to the wrong polarity	Switch the two plug positions
	Blackening of solder joints	Welds are not effectively protected and oxidized	(1) Ensure that the valve of argon cylinder is open and there is enough pressure. Generally, if the cylinder pressure is lower than 0.5 MPa, it must be refilled. (2) Check whether the argon flow rate is normal. You can select the flow rate according to the welding current condition, but too low a flow rate may lead to insufficient shielding gas to cover all weld joints. It is suggested that the argon flow rate be no less than 12CFH, no matter how small the current. (3) Check whether the gas path is leaking, or whether the gas purity is too low. (4) Check whether there is strong ambient air flow in the environment.
	Arc is hard to start and easily interrupted	Poor quality or serious oxidation of tungsten electrode	Replace tungsten grade with better quality. Grind off the tungsten oxide layer.

	Unstable current in welding process	The voltage of the power grid fluctuates seriously or the joint contact with the power grid is poor. Serious interference from other electrical equipment.	Check whether the power grid is normal and connect the power connector. Use different power cords to connect equipment that could seriously interfere with welder.
Other faults			Please contact the maintenance personnel of JASIC Technologies America Inc

**The use of extension leads is not recommended for Inverter Welding and Cutting Machines due to Voltage drop.**

## 9.2. Alarm and solutions

Error code	Category	Possible cause	Countermeasure
E10	Overcurrent protection	Continuously output the maximum capacity current of welder	Restart the welder. If it is still in overcurrent protection, contact the after-sales department of the company.
E31	Undervoltage protection	Input network voltage is too low	Turn it off and on again. If this the alarm cannot be eliminated and the grid voltage remains too low, check the power grid voltage and wait for the grid to be normal before welding. If the grid voltage is normal and the alarm persists, contact professional maintenance personnel.
E32	Overvoltage protection	Input network voltage is too high	Turn it off and on again. If the alarm cannot be eliminated and the grid voltage remains too high, check the power grid voltage and wait for the grid to be normal before welding. If the grid voltage is normal and the alarm persists, contact professional maintenance personnel.
E34	Undervoltage protection	Undervoltage in the driver	Turn it off and on again. If the alarm cannot be eliminated, contact professional maintenance personnel.
E60	Overheat	Inverter IGBT temperature is too high	Do not turn off the machine. Wait for a while, and then continue welding after the indicator goes out.
E61	Overheat	Output rectifier diode is too hot	Do not turn off the machine. Wait for a while, and then continue welding after the indicator goes out.
	Abnormal VRD	No-load voltage is too high	Turn it off and on again. If the alarm cannot be eliminated, contact professional maintenance personnel.

**Note! After applying the above countermeasures, the alarm still cannot be lifted or reappears after lifting. Please contact professional maintenance personnel.**

### 9.3. Common MIG malfunction

When the welding conditions do not meet the requirements, the phenomena described in the following table will occur:

**Table 9.3 Common MIG malfunction**

Unsuitable Welding Condition	Result	Unsuitable Welding Condition	Result
The wire stick-out is too long	The arc is unstable, resulting in welding spatter.	The arc voltage is too high	The arc is too long and the fusion spatter increases.
	The bead becomes narrow.		The welding bead becomes wider.
	The gas protection result is reduced, resulting in gas pores.		The arc is unstable.
The wire stick-out is too short	The nozzle is blocked, resulting in gas pores.	The arc voltage is too low	The arc is broken, the wire wanders, and welding spatter is generated.
	It affects the line of sight, making it difficult to observe the penetration.		The welding bead becomes narrow and the electrode is not melted.
	The thin base metal is easily burned through.		More excess weld metal and weld flushes.
The welding current is too high	The welding spatter increases.	The wire feeding speed is too high	The welding bead becomes narrow.
	The depth of penetration and excess weld metal increase and weld formation is poor.		The depth of penetration and excess weld metal decreases.
	The base metal is easy to burn through.		
Wire extension: refers to the distance between the contact tip of welding torch and workpiece to be welded			

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## 10. Packaging, transportation, storage and waste disposal

### 10.1. Transportation requirements

In the process of handling the equipment, it should be handled with care, and should not be dropped or severely impacted. Avoid moisture and rain during transportation.

### 10.2. Storage conditions

Storage temperature: -25 °C ~ + 50 °C ( -13F - 122F)

Storage humidity: relative humidity ≤ 90%

Storage period: 12 months

Storage site: indoors with no corrosive gas and air circulation

### 10.3. Waste disposal

#### **Disposal**

The equipment is manufactured with materials, which do not contain any toxic or poisonous materials dangerous to the operator.

When the equipment is scrapped, it should be dismantled separating components according to the type of materials.

Do not dispose of the equipment with normal waste. The European Directive 2002/96/EC on Waste Electrical and Electronic Equipment states the electrical equipment that has reached its end of life must be collected separately and returned to an environmentally compatible recycling facility.

In order to comply with WEEE regulations in your country you should contact your supplier.

#### **RoHS Compliance Declaration**

We herewith confirm, that the above mentioned product does not contain any of the restricted substances as listed in EU Directive 2011/65/EC in concentrations above the limits as specified therein.

**Disclaimer:** Please note that this confirmation is given to the best of our present knowledge and belief. Nothing herein represents and/or may be interpreted as warranty within the meaning of the applicable warranty law.

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## **11. After-sales service**

### **11.1. Warranty card**

Each welder includes a warranty card. Please fill in the relevant information. Read and keep the warranty card carefully.

### **11.2. Maintenance**

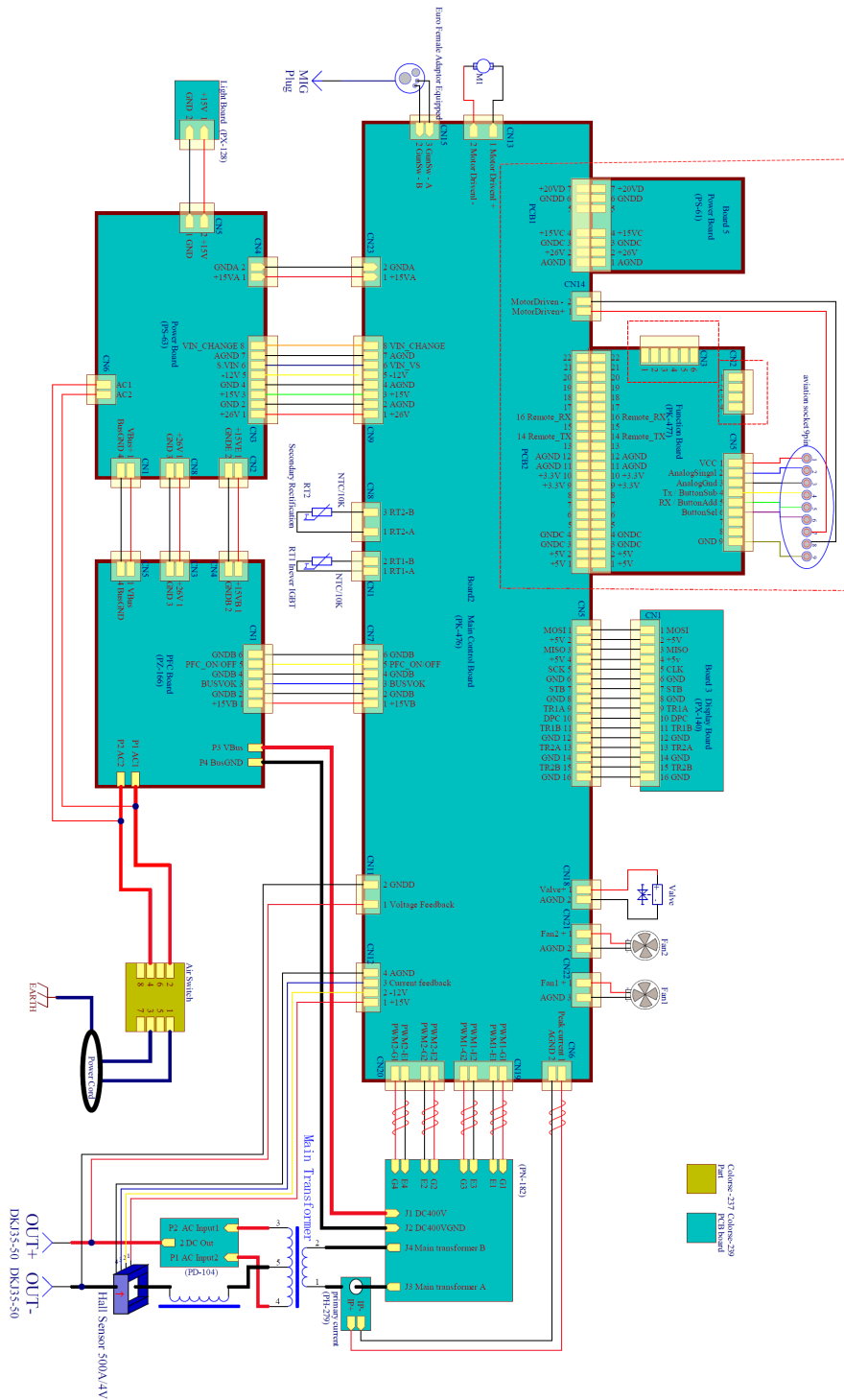
Perform preliminary troubleshooting or record faults according to the common malfunction analysis and solution checklist. To repair or replace the device, contact a local dealer. Please use accessories or consumables provided by JASIC Technologies America Inc. The warranty of this machine is subject to the date of sale on the warranty card or sales contract. Any faults caused by irregular or unreasonable use are not covered by the warranty and will be charged for repair.



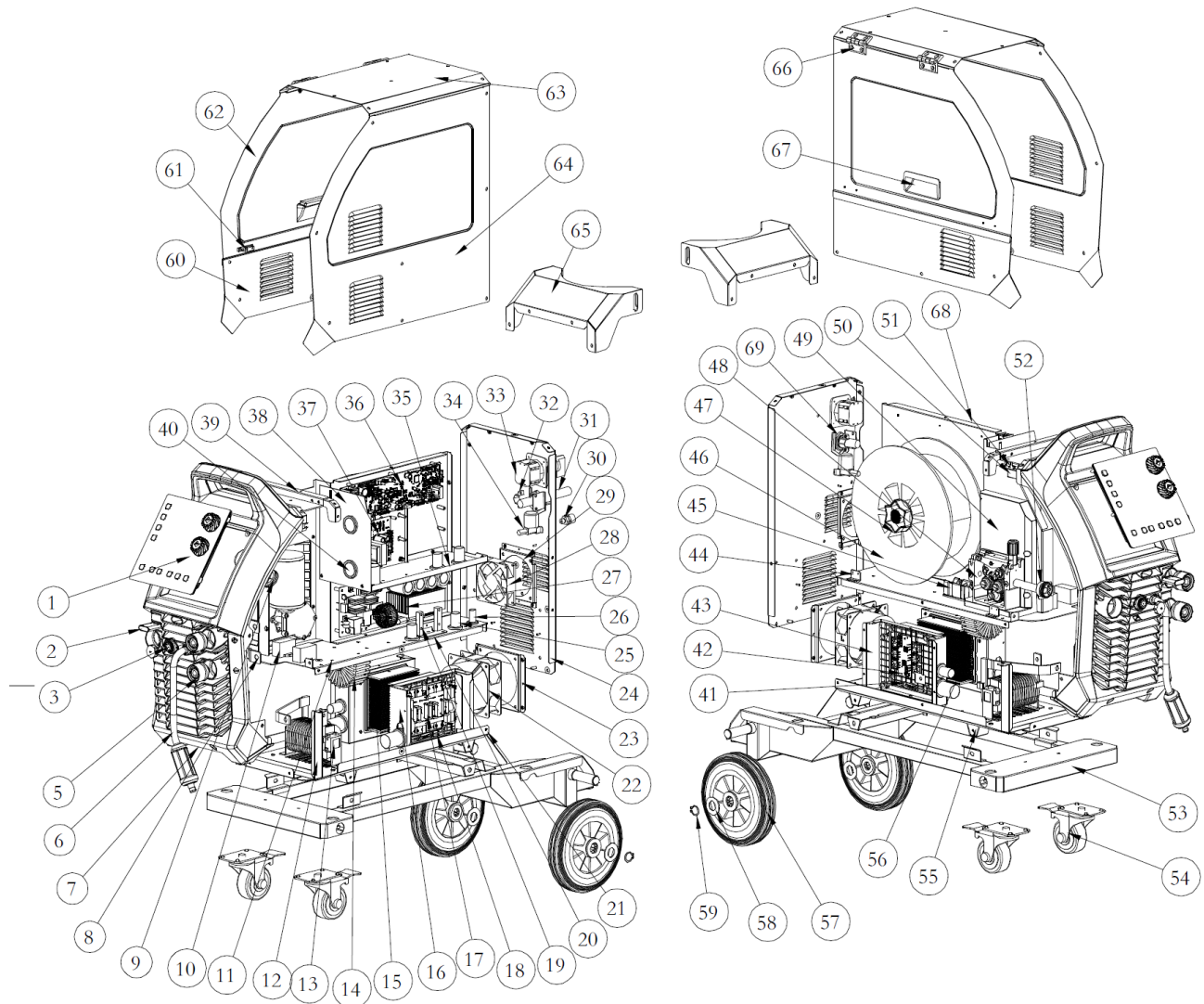
# Appendixes

## Appendix 1: Wiring diagram

### Wiring diagram 1 - MIG250



## Appendix 2: List of common spare parts



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**List of spare parts**

SN	Name	Quantity	Material Code
			MIG250
1	HD digital screen components	1	51004648
2	Wireless receiver module	1	/
3	9-pin aviation socket and cable	1	51001110
5	Euro quick socket	2	51002374
13	Reactor	1	51001513
14	HF transformer	1	51001668
17	Inverter board	1	51001594
22	Large fan	1	51002483
27	PFC board	1	51001140
28	Small fan	1	51001180
30	Gas valve	1	10016405
33	Power switch	1	10084286
36	Main control panel	1	51004655
37	Auxiliary power board	1	51001143
42	Secondary rectifier board	1	51001583
47	Spool holder	1	51000453
48	Wire feeder	1	51002586
50	Lighting board	1	51001033
54	Caster	2	51002230
57	Directional wheel	2	51002367

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## Appendix 3. Packaging and parts

### General packaging

SN	Material code	Name	Quantity
1	User Manual of RAZORMIG Welder (English)	Pcs	1
2	Product certificate	Pcs	1
3	Warranty card	Pcs	1
4	Desiccant	Pcs	1
5	Spare Roller	Pcs	1
6	Welder	Pcs	1
7	Earth Lead	Pcs	1
8	MIG Welding Torch	Pcs	1
9	Regulator	Pcs	1
10	ARC Lead set	Pcs	1
11	Argon Gas hose	Pcs	1
12	Clamp	Pcs	1

# Spare Parts for Tweco 2 style torches and Spool gun



Torch Model			
Description	Part Number	EAN CODE	
15 FT Welding Torch <b>Classic</b> Style	TWC2-15FTE	0680474943777	
10 FT Welding Torch <b>Euro</b> Style Handle	TWC2-10FTE	0680474944095	

TWC2 Contact Tips			
Part Number	Description	QTY	EAN CODE
PRW14-30	Contact tip 0.8mm / 0.030"	<b>QTY x5</b>	0680474943920
PRW14-35	Contact tip 0.9mm / 0.035"	<b>QTY x5</b>	0680474943937
PRW14-40	Contact tip 1.0mm / 0.040"	<b>QTY x5</b>	0680474944033
PRW14-45	Contact tip 1.2mm / 0.045"	<b>QTY x5</b>	0680474944040

TWC2 Contact Tips H/D			
Part Number	Description	QTY	EAN CODE
PRW14H-30	Contact H/D tip 0.8mm / 0.030"	<b>QTY x5</b>	0680474944057
PRW14H-35	Contact H/D tip 0.9mm / 0.035"	<b>QTY x5</b>	0680474944064
PRW14H-40	Contact H/D tip 1.0mm / 0.040"	<b>QTY x5</b>	0680474944071
PRW14H-45	Contact H/D tip 1.2mm / 0.045"	<b>QTY x5</b>	0680474944088

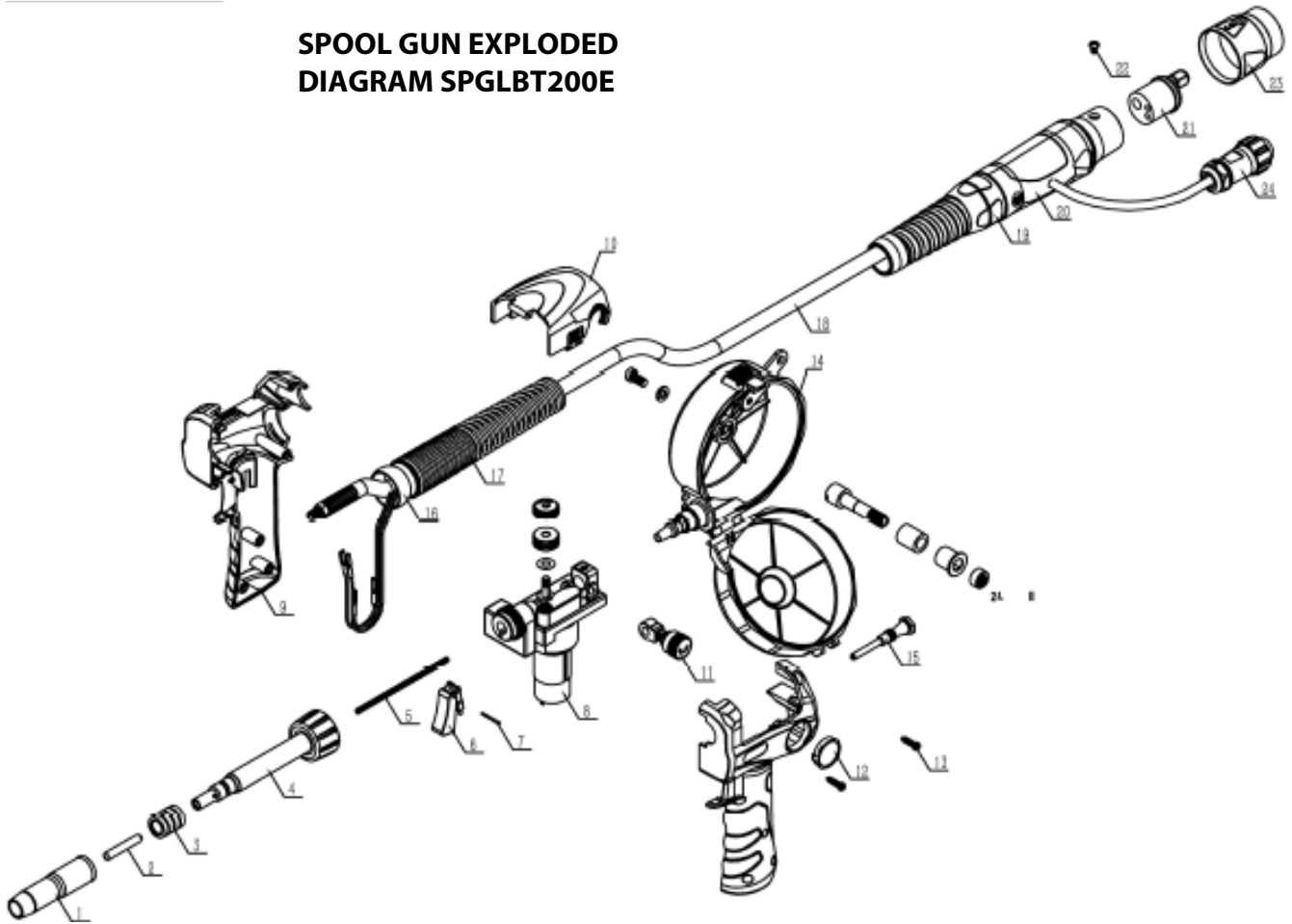
TWC2 Gas Diffuser			
Part Number	Description	QTY	EAN CODE
PRW52	Gas Diffuser	<b>QTY x 2</b>	0680474943975

TWC2 Gas Insulator			
Part Number	Description	QTY	EAN CODE
PRW32	Insulator	<b>QTY x 2</b>	0680474943999

TWC2 Torch Nozzle			
Part Number	Description	QTY	EAN CODE
PRW22-50	Nozzle Adjustable 13mm / (33/67)	<b>QTY x2</b>	0680474943951
PRW22-62	Nozzle Adjustable 16mm / (5/8)	<b>QTY x2</b>	0680474943968

TWC2 Liners			
Part Number	Description	QTY	EAN CODE
PRW42-3035-15	Liner 15 ft 0.8 - 0.9mm / 0.030" - 0.035"	<b>QTY x1</b>	0680474944002
PRW42-4045-15	Liner 15ft 1.0 - 1.2mm / 0.040" - 0.0457"	<b>QTY x1</b>	0680474944101
PRW42N-3035-15	Liner 15ft 0.8- 0.9mm / 0.030" - 0.035" Alloy	<b>QTYx 1</b>	0680474944118

**SPOOL GUN EXPLODED  
DIAGRAM SPGLBT200E**



PART#	CODE	DESCRIPTION	PACK QTY
1	22-50	Gas nozzle suit tweco 2 style Swan necks	2
2	14-XX	Contact tips to suit Tweco 2 style torch	5
3	32	Gas Insulator	2
4	ICZ0686	Swan Neck 180 degree	1
5	IIC0711	Liner	1
6	IHQ0070	Switch	1
7	IFT8151	Switch Pin	1
8	IZH0710	Spool Gun Frame (Includes motor)	1
9	ICV0600	Handle	1
10	IHJ0515	Clear Gun Cover	1
11	IHJ0837	Pressure Assembly	1
12	IHJ0511	Blank Cover	1
13	IFT0552	Handle Screw	7
14	IHJ0189	Wire Holder	1
15	ITC1012-01	Wire Guide	1
16	IHJ0777	Ball Joint	1
17	IFT8944	Strain Relief Support	1
18	ICN0941-xx	Coaxial Cable- xx = length	1
19	IFT0960	Rear End Spring Support	1
20	IHJ0940	Euro Housing Sleeve	1
21	ITB0059	Euro Connector	1
22	IFT0063	Screw	1
23	IHJ0097	Connection Nut	1
24	IHJ09326	Plug	1
25	U0.30R	Spool Gun Roller 0.030- U Groove	1
	U0.35R	Spool Gun Roller 0.035 U Groove	1
	U0.40R	Spool Gun Roller 0.040 U Groove	1
26	15-NZ12	Sb15 Nozzle	2
27	15-XX	SB 15 Contact Tip XX = Size	5
28	RWLBT150	SB 15 spool gun swan neck 180 degrees	1

NOTES:



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