

KeyGree

CUT Series User's Manual

MODELS:

CUT-80 / CUT-100 / CUT-120 / CUT-130
CUT-160 / CUT-200 / CUT-300



PREFACE

Dear users, thank you for using KEYGREE inverter welder. For your correct operation of our product, please read this manual carefully before use and keep it properly for future reference.

SPECIAL NOTICE

1. When the welder is placed on an inclined plane, care should be taken to prevent it from tipping over;
2. As the protection level of this welder series is IP21S, it is not suitable for use in the rain;
3. The product conforms to GB15579 standard.

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SAFETY PRECAUTIONS

Precautions for Installation

	<p>ELECTRIC SHOCK!!!</p> <ul style="list-style-type: none">● Install the earthing device according to the applicable standard.● Do not touch live parts while bare skin or wearing wet gloves or clothes.● Insure you to insulate appearance with the ground and the work piece.● The cover plate must be covered before power on, otherwise it may cause electric shock.● Make sure that your workstation is in a safe state.
	<p>FIRE!!!</p> <ul style="list-style-type: none">● Please install the product on non-combustible objects, otherwise there is a risk of fire.● Do not put combustible materials nearby, otherwise there is a risk of fire.
	<p>EXPLOSION HAZARD!!!</p> <ul style="list-style-type: none">● Do not install the product in an environment containing explosive gas, otherwise there is a risk of an explosion.



Replacing parts and components may cause danger

- Only professionals can replace the parts.
- Do not drop foreign objects such as thread ends, screws, gaskets and metal bars into the welder when replacing parts.
- After replacing the circuit board, the internal connection of the welder shall be correct before the welder can be operated, otherwise there is a risk of property damage.

Precautions for Use

Fume/smoke dust — It may be harmful to health.

- Welding would produce lots of gases and fumes that are harmful to the body. Avoid inhalation into the respiratory tract.
- Keep your head away from fumes while welding. Adopt adequate ventilation or exhaust facilities to keep smoke and gas away from the breathing area, and maintain good ventilation in the working environment.

Arc radiation — It may damage your eyes and burn your skin.

- Use an appropriate welding mask and wear protective clothing to protect your eyes and body.
- Use an appropriate mask or curtain to protect bystanders from harm.

Magnetic field will affect pacemakers.

- The electric current from any conductor will produce electromagnetic fields. Welding operators with cardiac pacemakers should consult a doctor before welding.
- Stay away from power sources as much as possible to minimize the impact of electromagnetic fields.

Improper use and operation may cause fire or explosion.

- Sparks from welding may cause fire. Please confirm that there is no flammable material near the welding station and pay attention to fire safety.
- Ensure that there is a fire extinguishing device nearby and a trained person who can use fire extinguishers proficiently.
- Do not weld sealed containers.
- Do not use the welder for thawing pipelines.

Hot workpiece may cause severe burns

- Do not touch hot workpieces with bare hands.
- Let the welding gun cool down for a while after continuous operation.

Noise — Excessive noise is harmful to hearing.

- Protect your ears. Use ear shields or other hearing protectors.
- Warn bystanders of the potential damage to their hearing caused by noise.

Moving parts may cause personal injury

- Avoid moving parts (such as fans).
- Protective devices such as doors, panels, covers and baffles must be tightly closed and put in the right place.

Fault — Seek professional help when in trouble.

- If you encounter difficulties during installation and operation, please follow relevant contents of this manual for troubleshooting.
- If you do not fully understand it after reading, or if you cannot solve the problem according to the guidelines in this manual, you should contact your supplier immediately and seek professional help.

Precautions for Scrapping

When scrapping the welder, please note:

- The electrolytic capacitor of the main circuit and the electrolytic capacitor on the printed board may explode when burned.
- The plastic parts such as front panels will produce toxic gas when burned.
- Please dispose of it as industrial waste.

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Chapter I Product Overview

1.1 Model explanation



Figure 1-1 Model Explanation

1.2 Product features

CUT series inverter air plasma cutting machine — our latest product — has the following advantages:

- IGBT inverter technology, high reliability, high efficiency and light weight;
- Preset current function, accurate preset cutting current, stepless regulation, suitable for workpieces of different thicknesses; Low current for thin plates and high current for thick plates to ensure cutting quality and save energy;
- Significantly outperforming leakage reactance cutters in terms of external and dynamic characteristics, high arc generating success rate, stable cutting current, good arc stiffness, clean cut, and excellent technological property;
- Fully digital architecture and program-adjustable parameters;
- The current rising slowly during arc-start cutting, which can effectively extend the life of the electrode and the contact tube of the cutting torch;
- Models 120 or above suitable for CNC automatic cutting and have CNC required signal output;
- Suitable for cutting a variety of metals such as carbon steel, stainless steel and aluminum alloy.

1.3 System composition

1) Composition

Figure 1-1 For Hand Use

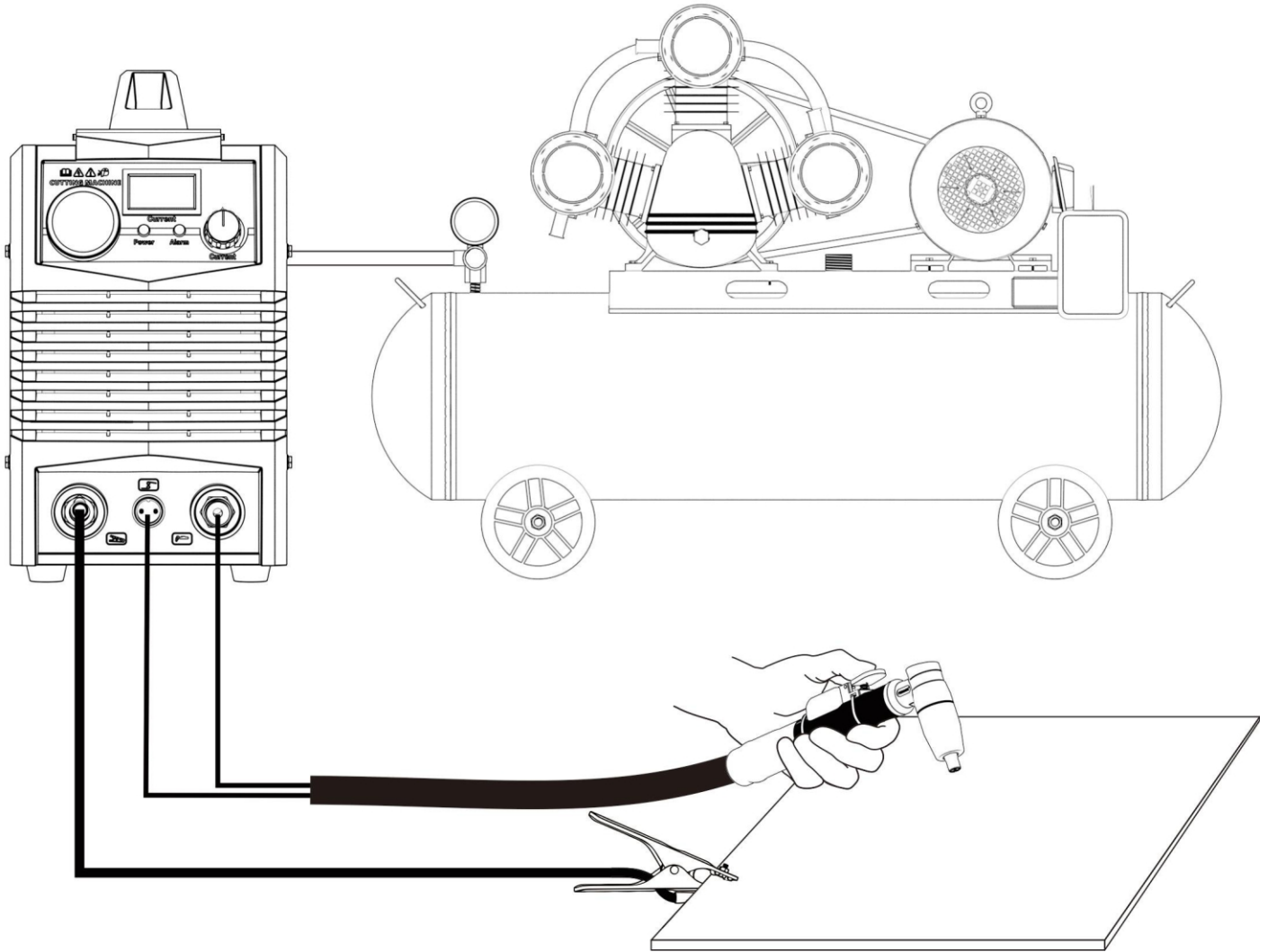
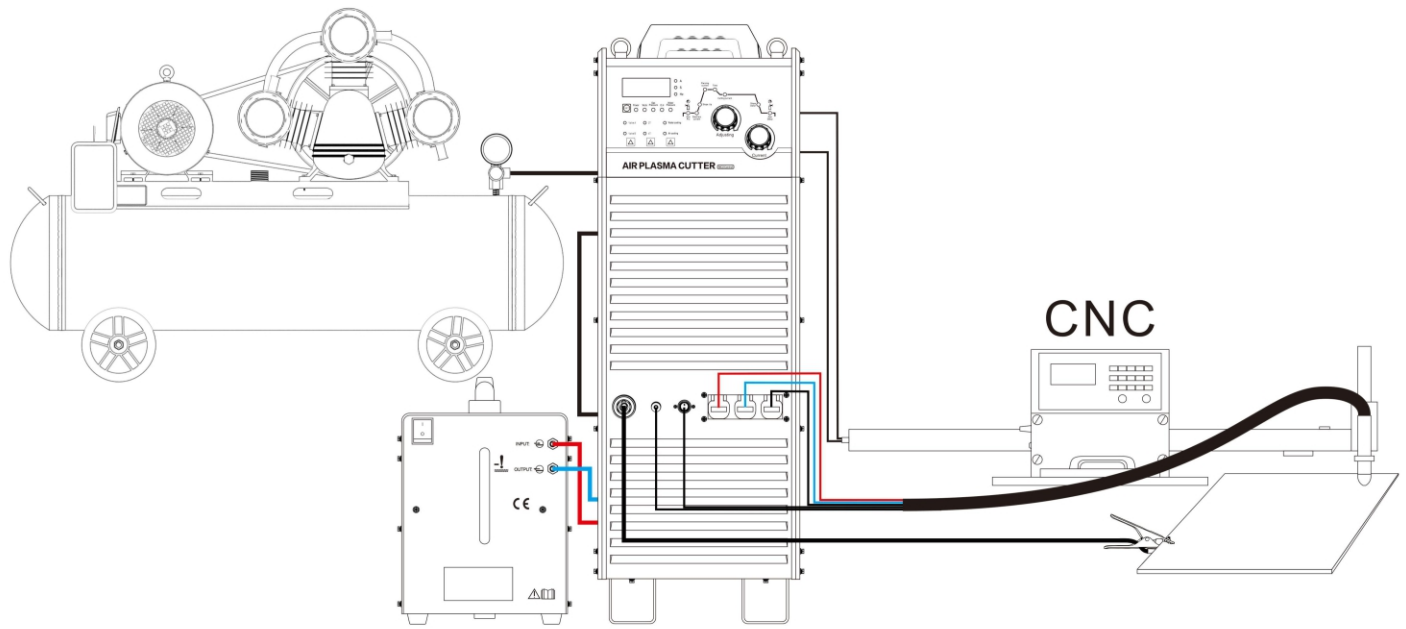
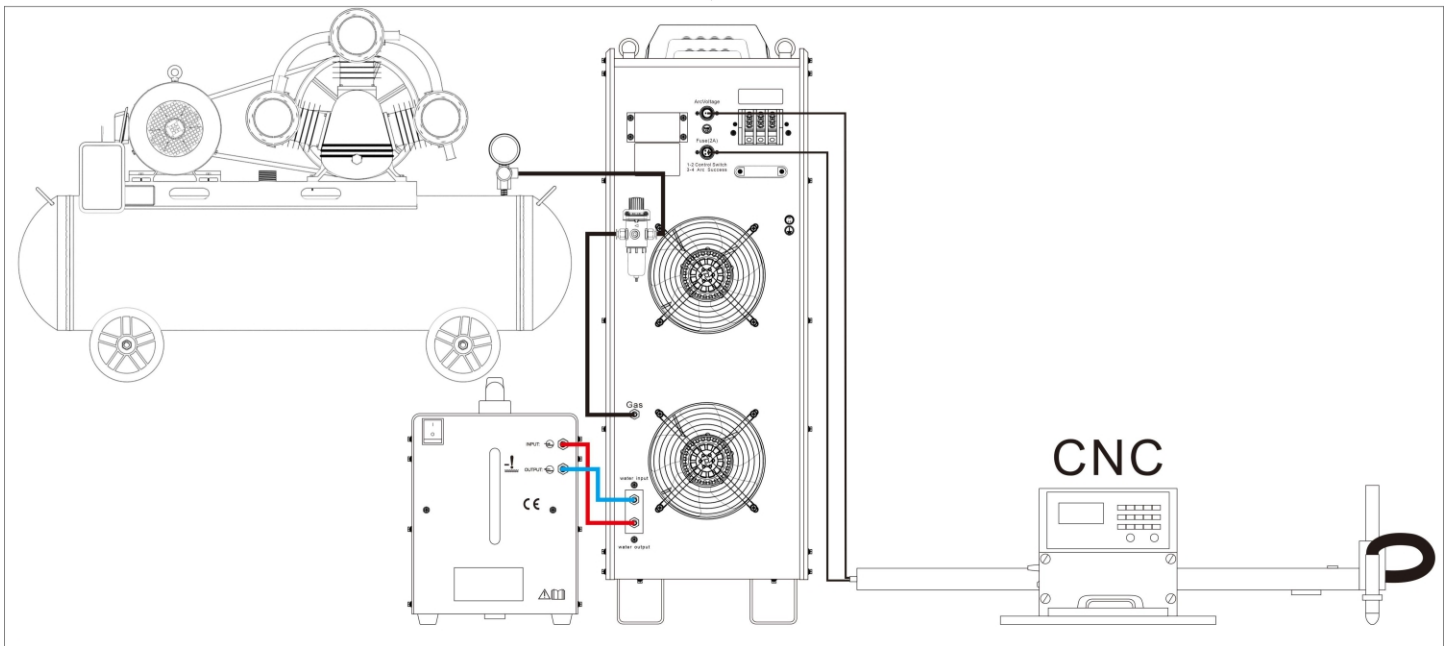


Figure 1-2 For Machine Use



Back Connection



1.4 General technical parameters

Table 1-1 General Technical Parameters

MODEL	CUT-80	CUT-100	CUT-120
Rated Input Voltage(VAC)	3P-AC380V±15% 50Hz		
Rated Input Power(KVA)	12.4	16.7	21.3
Max Input Current(A)	18.9	25.3	32.4
Duty Cycle(%)	60		
No-Load Voltage(V)	310	320	320
Adjustable Current Range(A)	30-80	30-100	30-120
Arc Ignition Mode	HF, NO touch		
Gas Pressure Range(Mpa)	0.3-0.5		
Quality manual Cutting Thickness(MM)	7/stainless steel 15/carbon steel	10/stainless steel 20/carbon steel	12/stainless steel 25/carbon steel
Quality CNC Cutting Thickness(MM)	/	/	10/carbon steel 6/stainless steel
MAX Manual Cutting Thickness(MM)	25	40	50
Efficiency (%)	80	85	90
Net Weight(KG)	21	26	32
Machine Dimensions(MM)	505×245×445	535×265×490	570×285×520

MODEL	CUT-130	CUT-160	CUT-200	CUT-300
Rated Input Voltage(VAC)	3P-AC380V±15% 50Hz			
Rated Input Power(KVA)	23.8	32	41.7	66.7
Max Input Current(A)	36.2	48.6	63.3	101.3
Duty Cycle(%)	60		80	
No-Load Voltage(V)	320	320	320	325
Adjustable Current Range(A)	20-130	20-160	20-200	20-300
Arc Ignition Mode	HF, NO touch			
Gas Pressure Range(Mpa)	0.4-0.5	0.45-0.55	0.45-0.6	
Quality manual Cutting Thickness(MM)	12/stainless steel 25/carbon steel	15/stainless steel 30/carbon steel	17/stainless steel 35/carbon steel	23/stainless steel 45/carbon steel
Quality CNC Cutting Thickness(MM)	16/carbon steel 10/stainless steel	20/stainless steel 16/carbon steel	25/stainless steel 20/carbon steel	32/carbon steel 25/stainless steel
MAX Manual Cutting Thickness(MM)	50	55	70	90
Net Weight(KG)	47	49	95	105
Machine Dimensions(MM)	645×340×590		690×335×960	

1.5 Plasma gas requirements

- Working pressure range: 0.4-0.6 MPa
- Gas supply pipe pressure: ≥ 1 MPa
- Inner diameter of gas supply pipe: $\geq \varnothing 8$
- Gas supply flow rate: ≥ 180 L/min
- IMPORTANT: The water content in gas must be filtered out before sending it into the cutting machine.

1.6 Configuration

Table 1-2 CUT Series Configuration List

Instruction manual×1

Quick plug×1

Allen wrench×1

CNC package accessories (model 120 or above)

Two-pin plug×1

Four-pin plug×1

PTFE tape×1

Clamping band×4

1.7 System characteristics

This cutter series has a steep-dipping static external characteristic with a duty cycle of 60%. The rated duty cycle refers to the percentage of the cutter's working time at the maximum output current under normal service environment in a 10-minute duty cycle. Using the cutter beyond the rated duty cycle will overheat the cutter. Frequent overloading will accelerate aging or even damage the cutter.

Chapter II Installation and Wiring

2.1 Installation requirements

Environmental requirements: When selecting the installation environment, the following should be noted:

- Avoid installation in places with much dust and metal powder;
- Strictly prohibited to install in places with corrosive and explosive gases;
- Ambient temperature range: working: -10 to +40°C; transportation and storage state: -25 to +55°C;
- Do not place the welder on a table top with an inclination greater than 15°;
- Put the welder at a dry and ventilated location and protect it from direct sunlight or rain;
- Keep the welding site from wind, and use wind shield when necessary in case of affecting the welding technology.

Installing Space Requirements

The welder is at least 20 cm away from the wall, and two welders should be placed side by side at a distance of more than 30 cm.

2.2 Electrical connection

(Triangular Exclamation Mark) Attention

- 1) Please have the connection performed by a qualified professional electrical operator.
- 2) Electrical connection must be performed with the switch of the distribution box disconnected to ensure safety.
- 3) Do not touch the live parts with wet objects.
- 4) Do not place heavy objects on the cable.
- 5) Tap water pipes and building steel reinforcement are likely to be inadequately grounded. Do not use them for connecting protective earth wires.

2.2.1 Installation and commissioning

1) Installation of power cord

IMPORTANT: First turn off the power supply switch, then connect the power input line from the rear panel of the cutting machine to the distribution box that meets the requirements. Note that the connection must be correct and reliable.

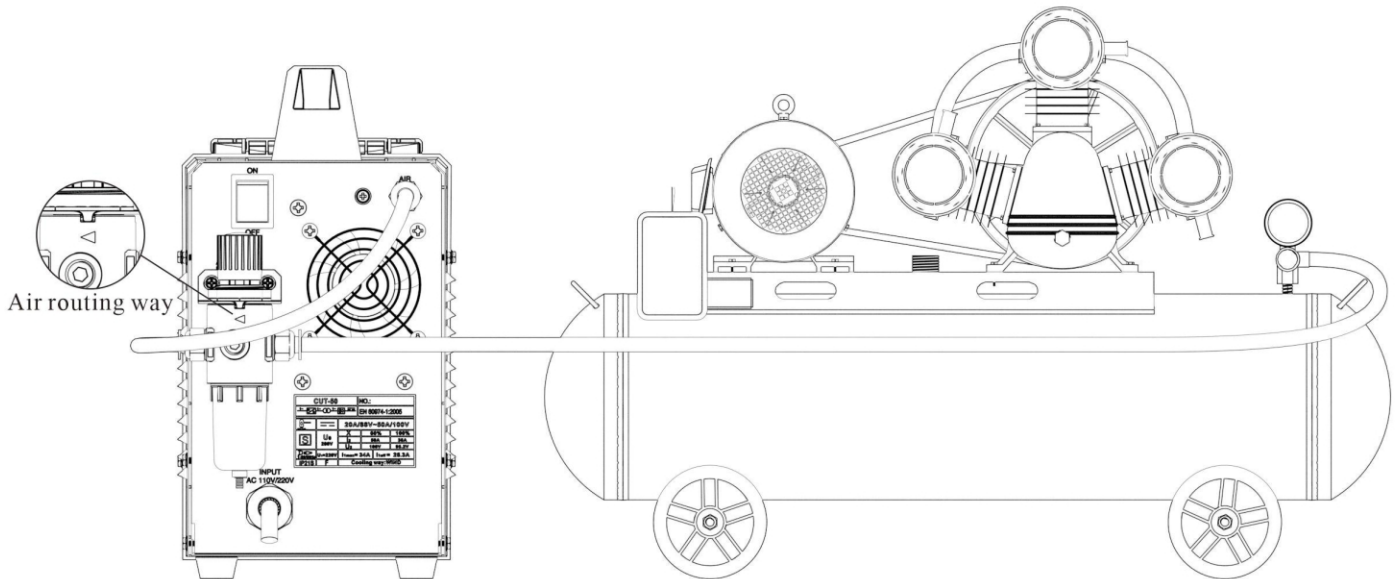
Table 2-1 Electric Power Conductor Cross-Section, Earth Wire Cross-Section, and Air Switch

Item	CUT-80	CUT-100	CUT-120	CUT-130
Air switch	63	100	100	100
Input power copper conductor cross-section (mm ²)	≥4	≥6	≥6	≥6
Input earth wire copper conductor cross-section (mm ²)	≥4	≥4	≥4	≥4

Item	CUT-160	CUT-200	CUT-260	CUT-300	CUT-400
Air switch	100	100	125	150	150
Input power copper conductor cross-section (mm ²)	≥6	≥10	≥16	≥16	≥25
Input earth wire copper conductor cross-section (mm ²)	≥6	≥6	≥10	≥10	≥16

2) Connection of compressed air and use of pressure reducing valve (see the figure below for the function of pressure reducing valve)

Picture of pressure reducing valve



Compressed air must comply with paragraph 1.5 of Chapter I. Connect the air hose to the pressure reducing valve inlet nozzle on the rear panel of the cutting machine and tighten it with a clamping band. Use of pressure reducing valve: When adjusting the pressure, first pull up the gas pressure adjusting valve knob, then rotate left to reduce the outlet air pressure and right to increase the outlet air pressure. After the pressure is adjusted, pull down the pressure reducing valve knob to fix it.

Regularly drain the water inside the pressure reducing valve. Note: when the water level reaches two-thirds of the water filter cup, water must be discharged; otherwise, the cut quality will be affected. Close the air supply valve when draining, select the air check function on panel. When the air pressure value of the pressure reducing valve indicates zero, the water will flow out of the drain. The connection of the air-cooled torch is shown in Figure 2-1: First, connect the torch inlet cable connector M16 nut to the copper nozzle reading "electrogas output" on the front lower panel of the cutting machine and tighten the nut; then, connect the torch arc striking lead to the wiring terminal marked with "arc strike" on the front lower panel of the cutting machine and tighten the nut; finally, connect the torch control plug to the "control" socket on the front lower panel of the cutting machine and tighten the plug nut;

The connection of water-cooled torch is detailed in Figure 2-2: First, connect the torch air inlet M16 nut, water inlet M14 nut, and water return M12 nut to the copper nozzles printed with "electrogas output", "water-electricity output" and "water return" on the front and rear panels of the cutting machine respectively, and tighten the nut; then, connect the torch arc striking lead to the "arc strike" wiring terminal on the front and rear panels of the cutting machine, and tighten the nut; finally, connect the torch control plug to the socket marked with "control" on the front and rear panels of the cutting machine, and tighten the plug and nut; when used with CNC machines, the torch control plug and arc voltage output are connected to the CNC communication interface. First connect the quick coupling end of the cutting earth wire to the coupling holder marked with "earth clamp" on the front lower panel

of the cutting machine and tighten it clockwise, then connect the other end of the cutting earth wire to the workpiece reliably.

5) Connection of CNC communication signals described in Figure 2-3

Two-pin socket: arc voltage output, 1 pin for positive, 2 pins is negative

Four-pin socket: switch control signal output, 1 pin and 2 pins for switch start/stop signals respectively, 3 pins and 4 pins for arc generating success signals.

Figure 2-1 Air-cooled Torch Connection

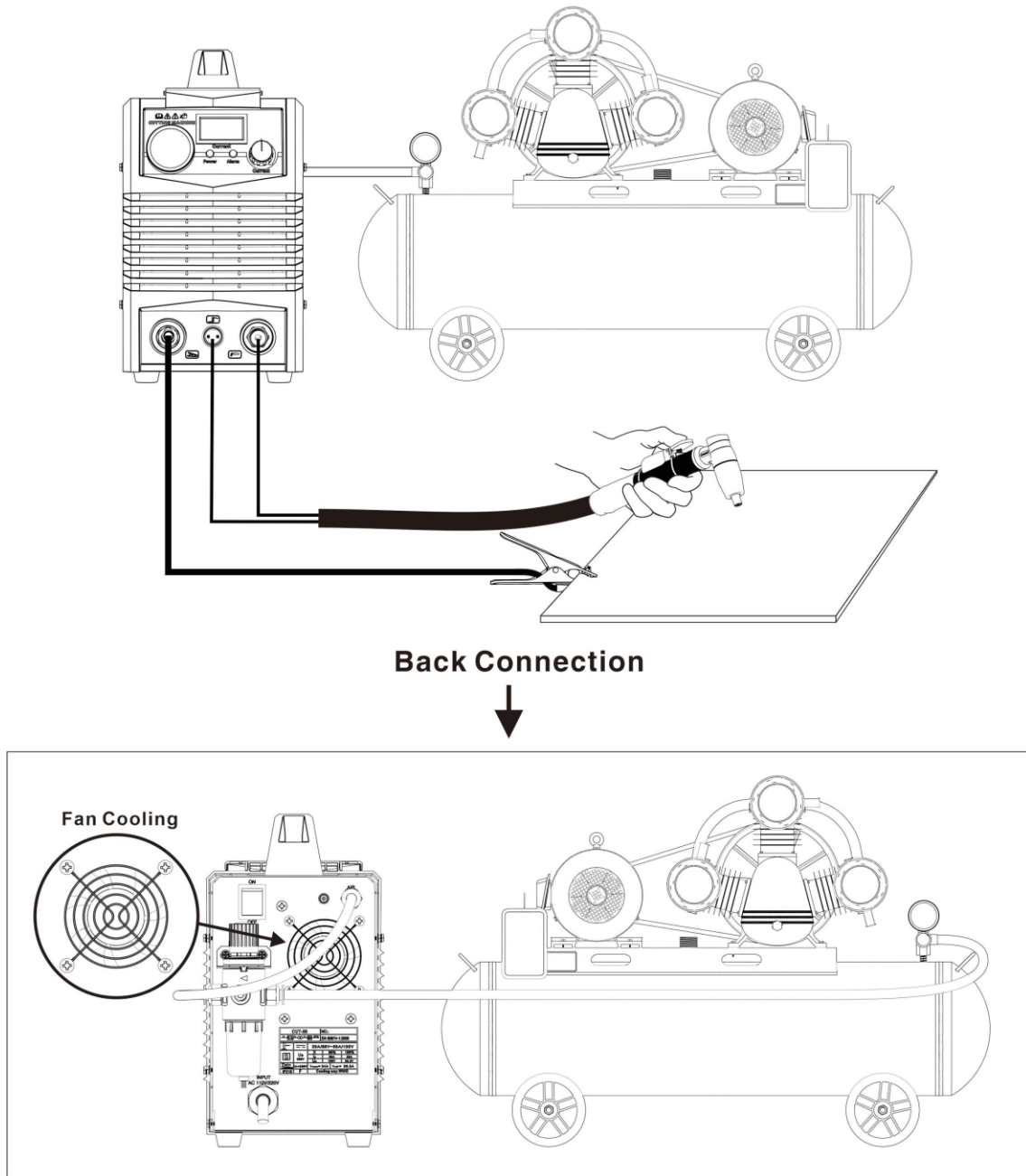


Figure 2-2 Water-cooled Torch Connection

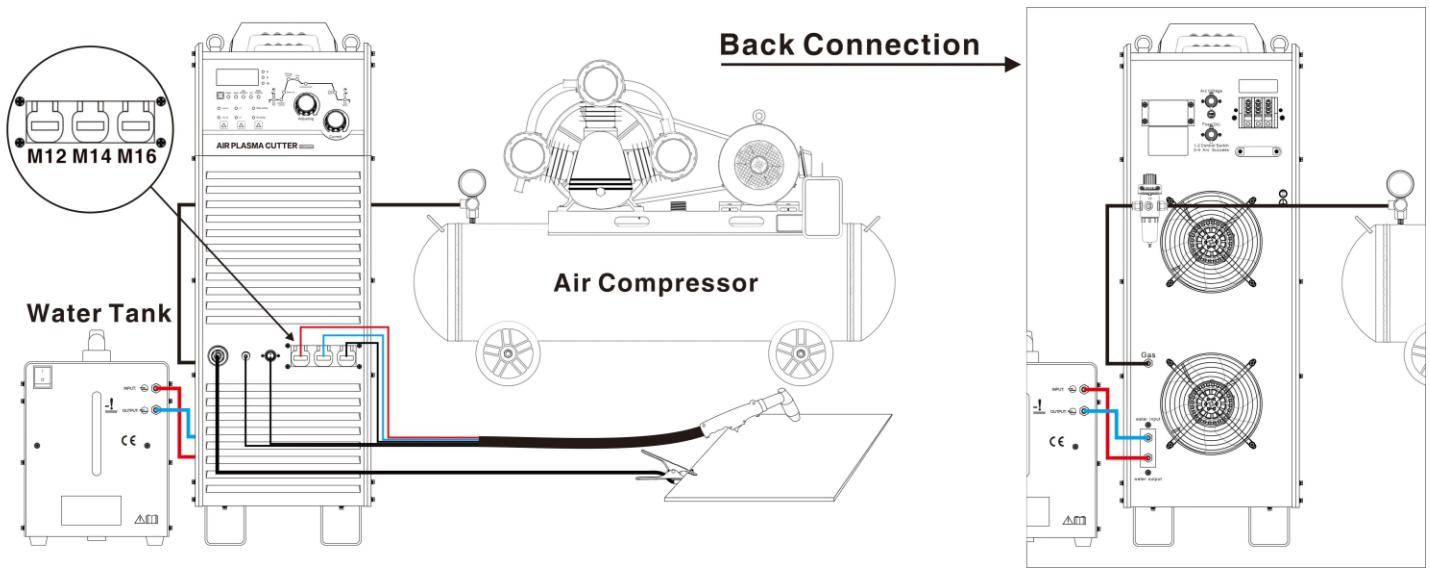
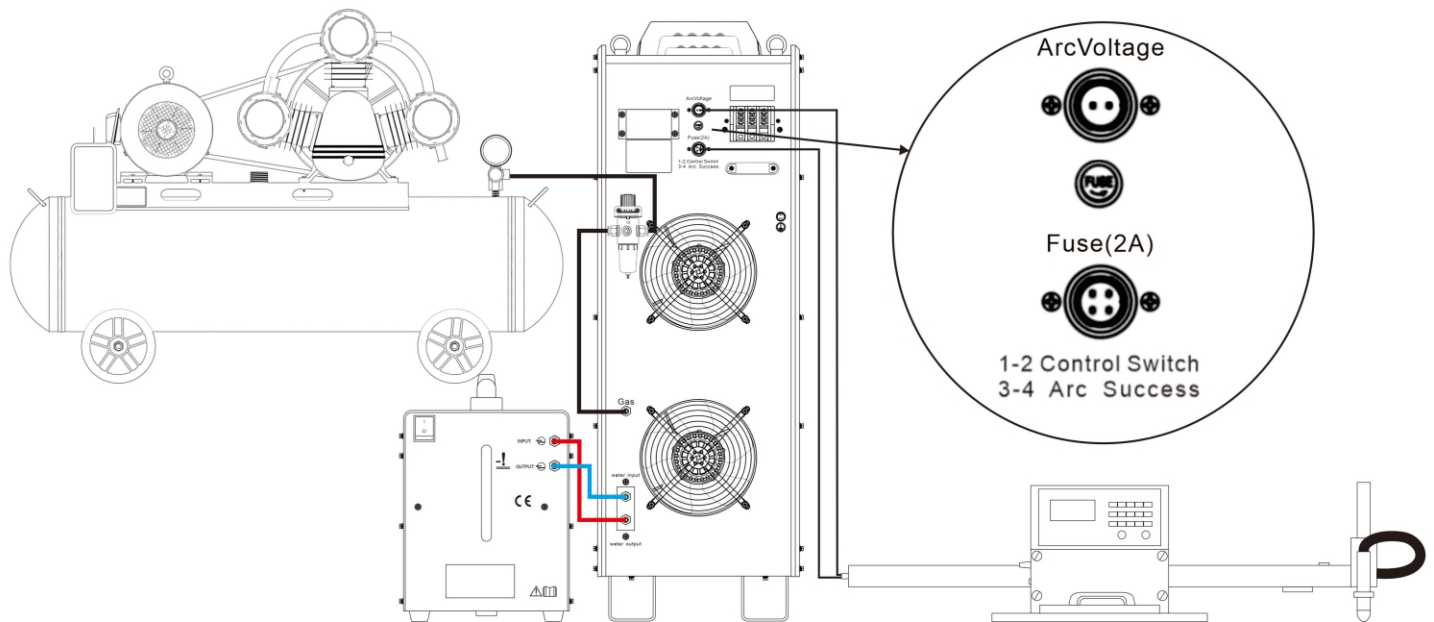


Figure 2-3 Connection of CNC Communication Signal



2.3 Welding preparations

Safety precautions

- To prevent gas poisoning and asphyxiation, dust poisoning and other hazards, please use exhaust equipment or respiratory protection gears as required.
- When welding or supervising welding, use safety goggles or protective gears with sufficient light shade.
- To protect your eyes from spatter and welding slag, wear protective spectacles.
- Wear leather gloves, long-sleeved clothes, foot protectors, aprons, and other protective gears.
- Set up a protective barrier around the welding place to prevent the arc light from injuring others.

- When the noise is loud, please use sound insulation apparatus.
- Use ventilation fan to change the air or take wind protection measures when it is windy outside to prevent the wind from blowing directly on the electric arc to cause poor welding.

2.4 Do's and don'ts

- 1) The installation area should be firm enough to support the welder.
- 2) It is forbidden to install the welder in places where water splashes may be generated, such as water pipes.
- 3) Welding operations must be performed in a relatively dry environment where the air humidity is normally not greater than 90%.
- 4) The ambient temperature shall be between -10°C and $+40^{\circ}\text{C}$.
- 5) Do not perform welding in dusty or corrosive gas-containing areas.
- 6) Do not place the welder on a table top with an inclination greater than 15° .

The welder has been installed with overvoltage, overcurrent and overheating protective circuits. When the grid voltage, output current and internal temperature exceed the set standards, the welder will stop working automatically; but excessive use (such as excessive voltage) will still cause damage to the welder, so the following matters shall be noticed:

- **Ensure good ventilation**

When the welder is in operation, there is a large working current passing through, and natural ventilation cannot meet the cooling requirements of the welder, so there is a fan inside to effectively cool the welder to make it work smoothly. Check whether the ventilated place is covered or blocked. Make sure the distance between the welder and surrounding objects is less than 0.3 m.

- **Prohibit excessive voltage**

In general, the automatic voltage compensation circuit inside the welder will ensure that the welding current is kept within the allowable range. If the supply voltage exceeds the allowable value, it will damage the welder.

- **Prohibit overload**

Operators shall use the welder according to its allowable load duration rate and maintain the welding current within the maximum allowable load current. Current overload will remarkably shorten the life of the welder or even burn it.

If the welder exceeds the standard load duration rate in working, it may suddenly enter the protection state and stop working. This indicates that once the standard load duration rate is overtaken, it will heat up to trigger the temperature control switch to stop the welder, and the yellow indicator light on the front panel is on at the same time. In this case, do not pull out the power plug. Let the fan cool down the welder. When the yellow indicator light is off and the temperature drops to the standard range, start welding.

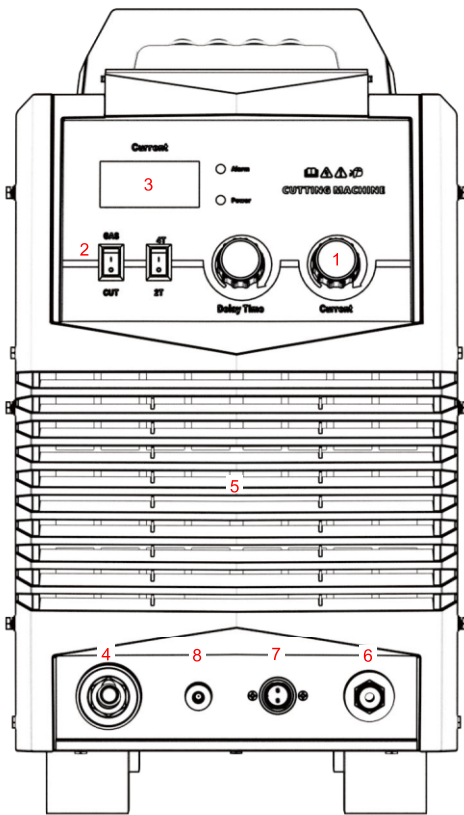
Chapter III Operating Instructions

3.1 Operating method

- 1) After correct installation, turn on the power switch and push the power switch in the "ON" position. Then, the power indicator light will be on and the fan inside the welder will start rotating.
- 2) Start the gas supply equipment, turn on the gas supply switch, open the panel "gas check" switch, and adjust the pressure reducing valve knob on the rear panel so that the output pressure and flow rate can meet the use requirements. After that, rotate the switch to the "cutting" position.
- 3) Select the panel operation mode to control the switch position. When the switch is in the "non-self-locking" position, the torch switch must be pressed all the time throughout cutting, because once the switch is released it will stop cutting; when the torch switch is in the "self-locking" position, press and release the torch switch to start cutting, then press it again to stop cutting. It is subject to user habits.

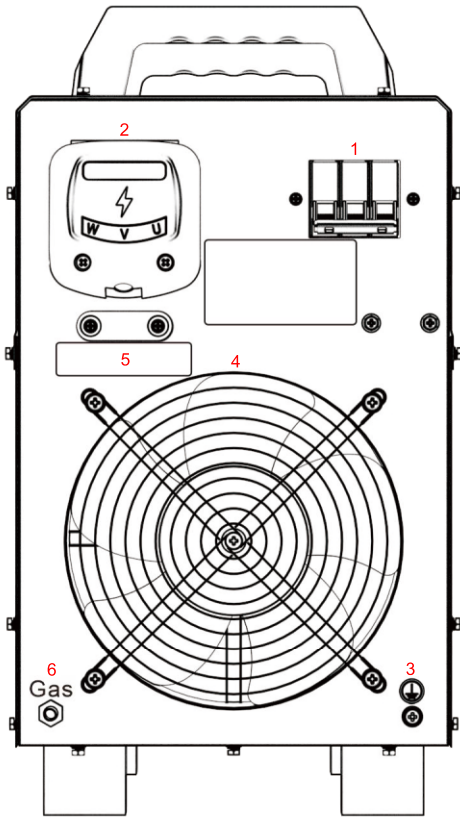
3.2 Panel functions

- 1) CUT manual type front panel (taking CUT-100 as an example) shown in Figure 3-1



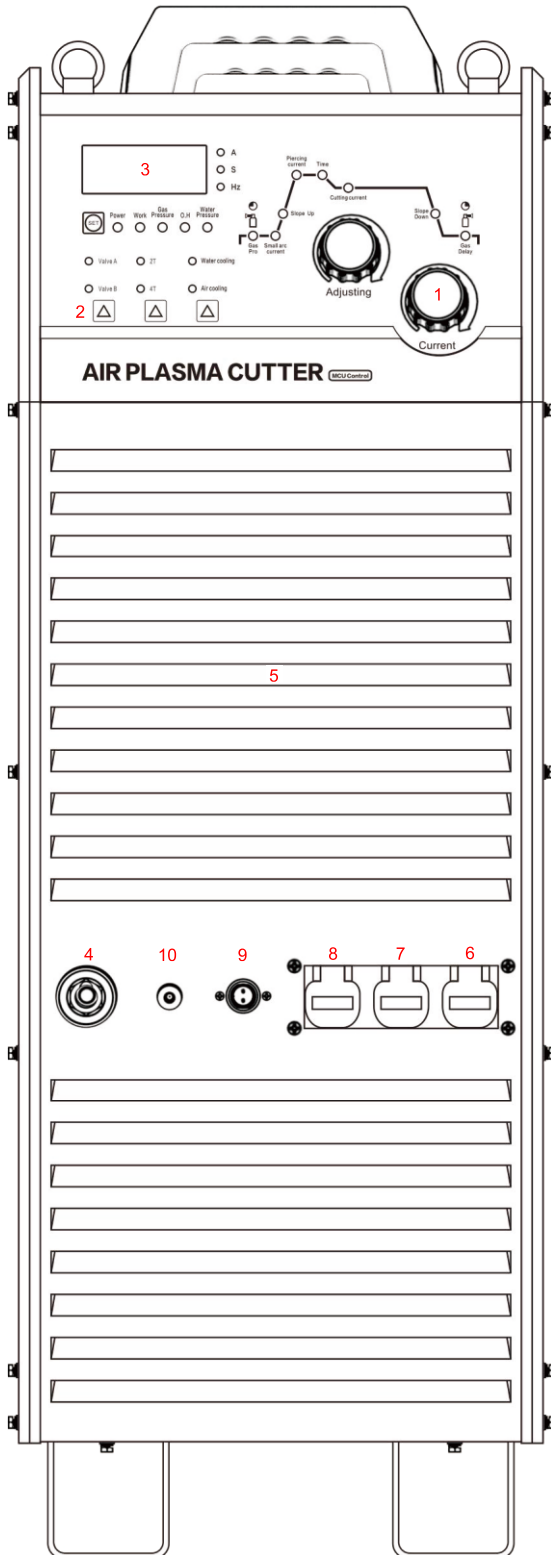
Item	Part Name	Part Function
1	Current control knob	Adjusting the output current magnitude
2	Function button area	Adjusting various function parameters
3	Current digital meter	Displaying cutting current
4	Earth wire interface	Connecting the earth wire
5	Shutter	Air duct outlet for ventilation and heat dissipation
6	Electrogas output connector	Connecting the torch cable and air inlet
7	Control socket	Connecting torch control switching jack
8	Arc strike wiring terminal	Connecting the torch arc striking line

2) CUT manual type rear panel (taking CUT-100 as an example) shown in Figure 3-2



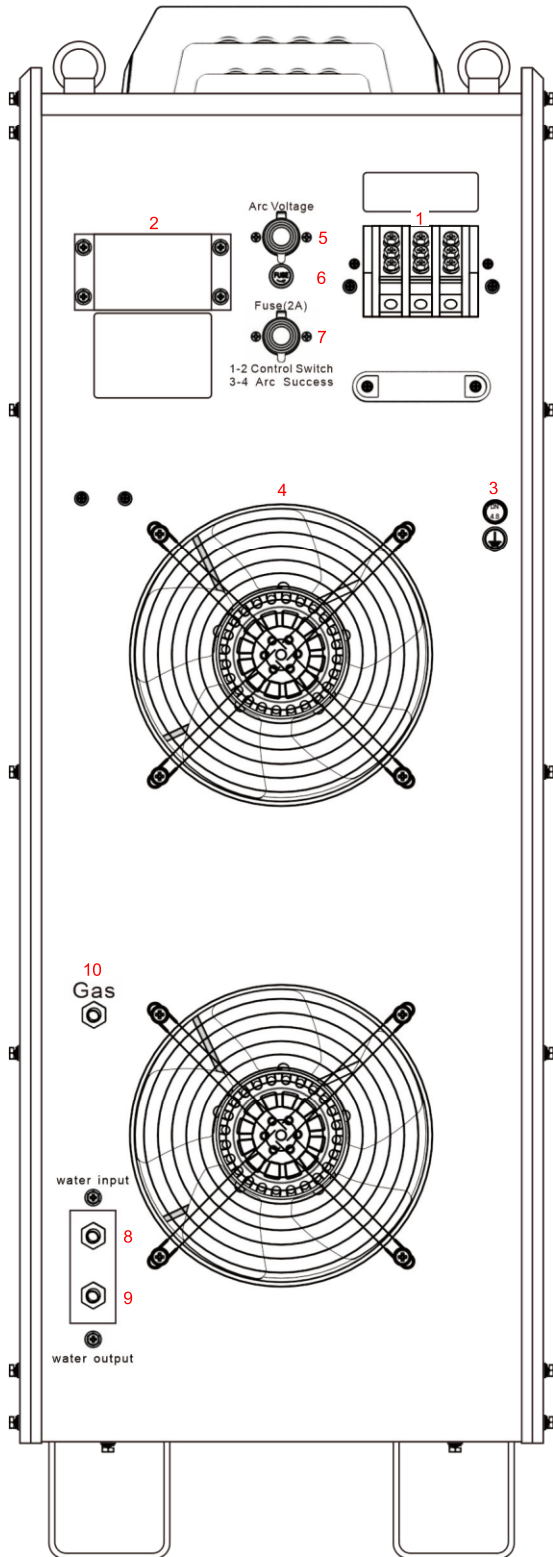
Item	Part Name	Part Function
1	Power switch	Controlling input power ON and OFF
2	Junction box	Protecting the base plate and supporting the machine
3	Earthing screw	Connecting the power cord earth wire
4	Fan guard	Air duct inlet to protect the fan
5	Input sign	Power input
6	Inlet interface	Connecting gas tube

3) CUT double-movement front panel (taking CUT-200 as an example) shown in Figure 3-3



Item	Part Name	Part Function
1	Current control knob	Adjusting the output current magnitude
2	Function button area	Adjusting various function parameters
3	Current digital meter	Displaying cutting current
4	Earth wire interface	Connecting the earth wire
5	Shutter	Air duct outlet for ventilation and heat dissipation
6	Electrogas output connector	Connecting torch cable air inlet
7	Water-electricity output connector	Connecting torch cable water inlet
8	Water return	Connecting torch water return pipe
9	Control socket	Connecting torch control switching jack
10	Arc strike wiring terminal	Connecting the torch arc striking line

4) CUT double-movement rear panel (taking CUT-200 as an example) shown in Figure 3-4



Item	Part Name	Part Function
1	Power switch	Controlling input power ON and OFF
2	Junction box	Protecting the base plate and supporting the machine
3	Earthing screw	Connecting the power cord earth wire
4	Fan guard	Air duct inlet to protect the fan
5	Output arc voltage signal	1 pin for positive and 2 pins for negative
6	Fuse holder	Arc voltage fuse
7	Start/stop control signal Arc generating success signal	Connecting CNC start/stop switch (12 pins) Arcing generating success signal (34 pins)
8	Water inlet	Connecting water tank outlet connector
9	Water return	Connecting water tank return connector
10	Air inlet	Connecting the air outlet connector of pressure reducing valve

5) Instructions for how to use the buttons in the CUT machine-use front panel function area and parameter setting as shown in Figures 3-5 and 3-6

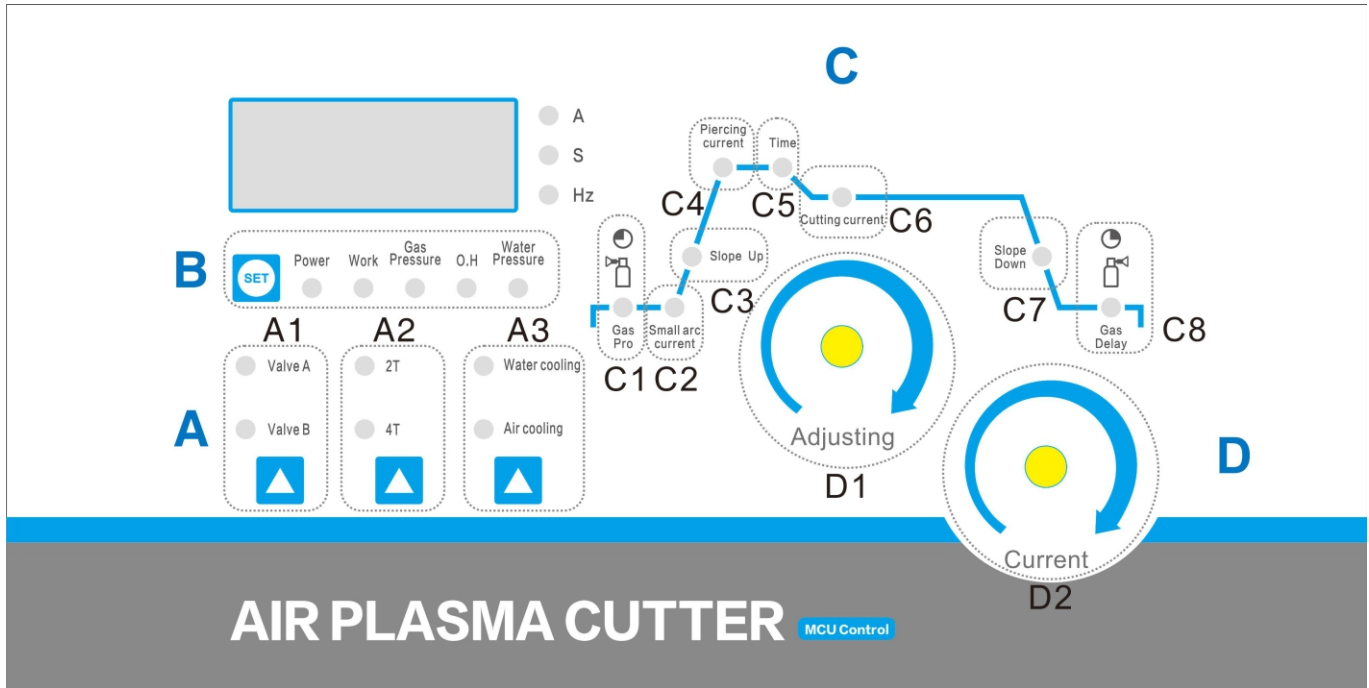


Figure 3-5 Panel Parameter Setting

Function	Unit of Regulation	Range of Regulation	Default Value
Front gas time	0.1	0.1-5s	0.3s
Small arc current	1	10A-45A	25-30A
Ramp up time	0.01	0.01-5s	0.5s
Perforation current ratio	1%	60%-150%	120-130%
Perforation current time	0.1	0.1-3s	1.0-1.5s
Cutting current	1	20A-300A	100A
Ramp down time	0.01	0.01-5s	0.5s
Rear gas time	0.1	0.1-60s	3-5s

The actual parameters can be flexibly selected according to the actual cutting workpiece thickness and technology.

Figure 3-6 Function Area Operating Description

Parameter Item	Operation and Display	
Area A	A1: Gas check button. Manually check gas valves A and B while adjusting the pressure reducing valve to the appropriate air pressure.	A2: Working switch button: non-self-locking (2 steps) and self-locking (4 steps).
	A3: Cooling switch button: select air cooling and water cooling modes according to the torch.	
Area B	B1: Setting key: press to select the job number from 0 to 9, capable of storing 10 groups of parameters; long press for 5 seconds to enter the program setting state, then press to exit.	
Area C	C1: front air indicator light for setting front air time	C2: small arc current indicator light for setting the small arc current
	C3: ramp up/slow rise indicator light for setting the time between small arc current and perforation current	C4: perforation current indicator light for setting the perforation current limit (percentage)
	C5: perforation current time indicator light for setting the perforation current maintaining time	C6: cutting current indicator light for indicating current during normal cutting
	C7: ramp down/slow drop indicator light for setting the cutting current to current stop or the fall time of arc stopping current	C8: rear gas indicator light for setting the rear gas time. When the cutting state ends, the rear gas is maintained to protect the cutting contact tube, and second startup is not allowed during the rear gas period.
Area D	D1: function conversion encoder: in normal mode, rotate for function conversion; in setting mode, rotate for channel switching.	D2: current regulation encoder: in normal mode, rotate for current parameter adjustment; in setting mode, rotate for present parameter adjustment.

Fault Code	Cause
E01	Lack of air protection, insufficient air pressure or air pressure switch not closed
E02	Lack of water protection, insufficient water pressure or water pressure switch not closed
E03	Overheat protection, temperature too hot or the temperature switch disconnected
E04	Excessively high auxiliary arc current, alarming after loosened

3.3 Precautions for cutting process

Table 3-3 Precautions for Cutting Process

1	If not necessary, do not light the auxiliary arc (commonly known as small arc) in the air frequently, which will significantly reduce the life of the torch electrode and nozzle.
2	It is best to start cutting on the edge part of the workpiece, unless you are going to do piercing work on the workpiece.
3	If the spatter is coming from the top of the workpiece, it suggests that you are cutting too fast or the cutting current you have chosen is too low to cut through the workpiece.
4	Keep the cutting torch nozzle 2 to 5 mm from the workpiece. If the nozzle is too close to the surface of the workpiece, it is easy to damage the nozzle.
5	In hand cutting process, it is much easier to "pull" than to "push" in the walking direction.
6	Keep the nozzle perpendicular to the workpiece and observe whether the arc moves along the line shape to be cut. If space does not allow, do not fold the dog leg, and also do not step on or squeeze the air tube for it may block the airflow to burn the cutting torch. Cutting cable should avoid contact with sharp objects, so as not to cause breakage and affect normal use.
7	The splatter covering the nozzle surface will affect the cooling effect of the nozzle, so it should be removed in time. The dust and splatter on the head of the torch should also be wiped off regularly to ensure heat dissipation. Clean up once a day after use.

3.4 Torch nozzle selection and cutting technology

1) See Table 3-4 for torch nozzle selection

Cutting nozzle aperture (mm)	1.1	1.3	1.5	1.7	1.9	2.1	2.3
Recommended current (A)	30-40	50-80	70-100	80-120	90-150	130-180	170-220

Electrode and nozzle should be replaced when the following occurs:

- When the electrode consumption depth is above 1.5 mm
- Irregular deformation of nozzle aperture
- Noticeably slower cutting, green flame on the electric arc
- Difficulty in arc starting
- Skewed or widened cut

2) Cutting current and arc voltage

As the thickness of the metal being cut increases, the effect of the arc current on the cutting speed becomes less effective. However, the burnout extent of the electrode and nozzle will increase with the current. So, when cutting thick metal workpieces, it is generally to increase the cutting speed by boosting the arc voltage.

3) Gas flow

When gas flow increases, the arc voltage, arc power, and cutting speed, cutting capacity, and cutting quality also increase. Because the arc compression degree raises, energy is more concentrated, the arc column temperature rising sharply, arc jet speed accelerating, and arc impact force boosting. Too much gas flow can cause plasma arc instability, and even blow out the auxiliary arc, resulting in arc striking failure.

4) Cutting speed

Cutting speed is the result of the combined effect of various parameters. The main parameters that determine the cutting speed depend on workpiece thickness, cutting current, gas flow, nozzle aperture, etc.

5) Cut burr

A normal cut surface is bright and beautiful. If the cutting technological parameters are not properly selected and the electrode is not well aligned, burrs (molten slag) may be formed on the cut surface.

Molten slag is formed by the cut molten metal and its oxide which are attached to the lower edge of the cut and not free from the substrate. This is because the adhesion of the cut molten metal and the substrate is greater than the sum of the gravity of the metal oxide and its blowing force.

In the cutting process of stainless steel, due to the poor mobility of molten metal, it is not easily blown off by the airflow; because of the poor thermal conductivity of stainless steel, the bottom of the cut is easy to overheat, and the molten metal not blown off and the cut are fused together, thus forming a very tough burr not easy to remove.

On the contrary, when copper, aluminum and its alloy whose thermal conductivity is good are cut, the bottom of the cut is not easy to re-fuse with the molten metal, and the burr is "hung" under the cut and comes off at a touch.

Factors affecting the burr:

- ① Too low power supply and poor plasma arc compression;
- ② Excessive drag when cutting thick plates;
- ③ Extremely slow cutting;
- ④ Insufficient airflow blowing force.

Chapter IV Maintenance

4.1 Routine maintenance

ATTENTION: Routine inspection must be carried out after switching off the power supply of the distribution box and the welder (except for visual inspection that does not require contact with the conductor) to avoid personal injury like electric shock and burn.

Notice for Use

- 1) Routine inspection is vital for the high use performance and safe operation of this welding machine.
- 2) The routine inspection shall be conducted according to items in the table below, and cleaning or replacement shall be conducted if necessary.
- 3) To ensure the high performance of this machine, please use the parts provided or recommended by our company for replacement.

Table 4-1 Routine Inspection Contents of the Welder

Item	Inspection Requirements	Remarks
Front panel	Check whether parts and components are damaged or loose; Check whether the quick output socket is tightened; Observe whether the indicator light is on.	The quick outlet terminal on the front panel is the item of regular inspection. In case of nonconformity, the interior of the welder shall be checked, the fastener replenished, or the part and component replaced.
Rear panel	Check whether the input power cord and the buckle are intact and whether the air inlet is clear and free of foreign objects.	
Upper cover	Check whether the bolt is loose.	In case of nonconformity, the fastener shall be replenished or the part and component replaced.
Base plate	Check whether the screws on the bottom plate are loose.	
Routine inspection	Check whether there is color fading or overheating; Check whether the sound of the fan is normal when the welder is working; Check whether there is odor, abnormal vibration and noise when welding.	In case of abnormality, check the inside of the welder.



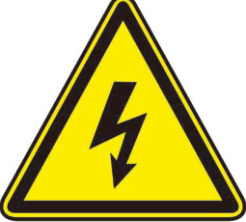



Table 4-2 Routine Inspection Contents of the Cable

Item	Inspection Requirements	Remarks
Earth wire	Check whether the safety earth wire falls off, including the working earth wire and the welder earth wire.	In case of nonconformity, the fastener shall be replenished or the part and component replaced.
Welding cable	Check whether the insulation layer of the cable is worn or damaged or whether the live parts are exposed; Check whether the cable is stretched by abnormal external force; Check whether the cable is firmly connected with the workpiece.	To ensure safe and normal welding, appropriate methods should be used for comparison inspection according to the conditions on the job site.

4.2 Regular inspection

ATTENTION: To ensure safety, regular inspections must be carried out by professionals. Regular inspection must be carried out after the power supply of the distribution box and the unit are turned off to avoid causing electric shock, burns and other personal injuries. Because of the capacitor discharge, it is necessary to cut off the power supply of the welder and wait for 5 minutes before inspection.

Operating Instructions

	<p>CAUTION</p> <p>All maintenance and repair work must be done with the power completely disconnected. Please make sure the power is unplugged before opening the housing. When the welder is energized, keep your hands, hair and tools away from the live parts inside such as fan in case of personal injury or damaging the welder.</p>
	<p>PERIODICAL INSPECTION</p> <p>Check the internal circuit connection of the welder regularly to make sure that the circuit connection is correct and the connection head is firm (especially the insert connector or component). If rust or looseness is found, sand paper should be used to grind off the rust layer or oxidation film, reconnect it and tighten it. Check all cable insulated leathers regularly for any breakage, or else bind up or replace the cable.</p>
	<p>BEWARE OF STATIC ELECTRICITY</p> <p>To avoid electrostatic damage to semiconductor components and circuit boards, please wear anti-static devices, or by touching the metal parts of the case to remove static electricity beforehand touching the wiring conductor and circuit board inside the welder.</p>
	<p>KEEP DRY</p> <p>Avoid water or water vapor entering the welder. Dry it if damped inside. Then, measure the insulation of the welder with an ohmmeter (between the connection nodes and between the connection point and the housing). Be aware that continuous welding is performed only when no abnormalities are found. If the welder is idle for a long time, put it in the original packaging case and stored in a dry environment.</p>
	<p>PAY ATTENTION TO MAINTENANCE</p> <p>To ensure the long-term normal use of the equipment, regular inspection must be carried out. Regular inspection should be meticulous, including internal inspection and cleaning of the equipment. Regular inspection is usually carried out once every 6 months, but if the welding site is full of dust or oily fumes, it is shortened to once every 3 months.</p>
	<p>BEWARE OF CORROSION</p> <p>Please use neutral detergent when cleaning plastic parts</p>

Chapter V Troubleshooting

5.1 Welding machine failure

Table 5-1 CUT Series Failure and Problems in Welding Technology

Fault	Troubleshooting
The power indicator light/meter does not light up; the fan refuses to work; there is no output at idle.	a.Check whether the power network pressure is normal. b.Check for reliable connection between the input cable and the power switch. c.Check for normal ON/OFF of the power switch.
The power indicator light/gauge is on. The fan does not rotate and there is output at idle.	a.The panel switch is in the gas check position. b.The control panel is damaged. c.The rectifier diode is damaged. d.The electrode and nozzle are short-circuited.
The torch switch is free from auxiliary arc.	a.The cutting machine is free from no-load voltage. b.The high frequency board is damaged. c.Gas pressure is too high. d.The electrode and torch nozzle are short-circuited. e.The auxiliary arc plate is damaged. f.The control panel is damaged.
Poor cutting quality	a.Excessively high or low air pressure b.Extremely thick workpiece c.The electrode and nozzle are damaged. d.The plasma arc is not perpendicular to the workpiece. e.Too fast or too slow cutting
The service life of the electrode and nozzle is too short.	a.Gas pressure is too low. b.The nozzle is too close to the workpiece (<2 mm).

If a fault that cannot be handled is encountered, please notify our local agent of it for maintenance and treatment.

5.2 After-sales service

Warranty card: Please read the warranty card carefully, fill it out, and keep it properly.

Maintenance: Please refer to Table 5.1 for welder failure and problems in welding technology, or contact your local dealer.

Our company promises users a one-year warranty on the product. The warranty period is based on the purchase time recorded on the warranty card or purchase invoice. If the damage is caused due to abnormal use, it is beyond the scope of warranty but can be handled in a maintenance way.