

OWNER'S MANUAL

CUT-40K LCD (BCUT40)



CUT SERIES INVERTER PLASMA CUTTER

CONTENTS

1. Safety warning.....	1
2. Machine description.....	2
3. Technical parameters table.....	3
4. Panel function instruction.....	5
5. Installation instruction.....	6
6. Notes or preventive measures.....	7
7. Questions to be run into during cutting.....	8
8. Maintenance.....	9
9. Notes before checking.....	9
10. Troubleshooting and fault finding.....	10
11. Explosion drawing	11

1.SAFETY WARNING



On the process of welding or cutting, there will be possibility of injury, so please take protection into consideration during operation. For more details please review the Operator Safety Guide, which complies with the preventive requirements of the manufacturer.

Electric shock——May lead to death ! !

- Set the earth fitting according to applying standard.
- Forbidden to touch the bare electric parts and electrode with uncovered skin, wet gloves or clothes.
- Make sure you are insulated from the ground and the workshop.
- Make sure you are in safe position.

Gases and fumes——May be harmful to health!

- Keep your head out of the gases and fumes.
- When arc welding, ventilators or air extractors should be used to avoid breathing gases.

Arc rays——Harmful to your eyes, burn your skin.

- Wear suitable protective mask, light filter and protective garment to protect eyes and body.
- Prepare suitable protective mask or curtain to protect looker-on.

Fire

- Welding spark may cause fire, make sure there is no tinder stuff around the welding area.

Noise——Excessive noises will be harmful to hearing.

- Use ear protector or others means to protect ear.
- Warn looker-on that noise is harmful to hearing.
-

Malfunction——When trouble happens, contact with authorized professionals.

- If trouble happens during installation and operation, please follow this manual instruction to check up.
- If you fail to fully understand the manual, or fail to solve the problem with the instruction, you should contact the suppliers or the service center for professional help.



WARNING !

Electric leakage protecting switch should be added when using the machine ! ! !

2.MACHINE DESCRIPTION

The welding machines are rectifiers adopting the most advanced inverter technology, which can apply in plasma cutting system of using pressing air.

The development of inverter welding equipment benefits from the development of the inverter power supply theory and components.

Inverter cutting machine CUT 40, firstly transfers the working voltage of 50/60Hz to high frequency (above 42-50KHz) via high-power device IGBT, then reduces the voltage and adjusts the current, delivers high-power cutting current via PWM technology,

Plasma Cutting Machine series can product the stronger, the more concentrated and the more stable arc. The arc is pressed fiercely by the quickly flowing air and the temperature can be up to 10000-15000 centigrade degree. That forms the electrolyte estate and then form strong plasma arc. It has the functions of arc initiation current, arc stop current, welding current, basic value current, current ascending time, current descending time, gas delay time, continuous adjustment. What's more, pulse frequency and pulse duty can also be adjusted independently. It has the characteristics of automatic control of arc initiation, arc stop and stable arc, which make the best result for shape and inner quality of the welding surface. Its exclusive design is especially suitable for bicycle industry.

Compared with the others cutting machine, the cutting machine series are using the advanced electron circuit to supply the quick power and control it. Moreover they have top-ranking cutting operation and the extremely high transfer efficiency.

The welding machine series can easily design into different cutting power, and the output current is constant and adjustable as well as excellent operation performance. In common situation its transfer efficiency is above 85%.

The machine is used widely; it is easier to design into welding machine with different dynamic characteristics. And it can weld stainless steel, carbon steel, copper and other color metal, and also can be used for traditional electric welding.

Thanks for purchasing our products and hope for your precious advice. We will be dedicated to produce the best products and offer the best service.



WARNING !

The machine is mainly used in industry. It will produce radio wave, so the worker should make fully preparation for protection.

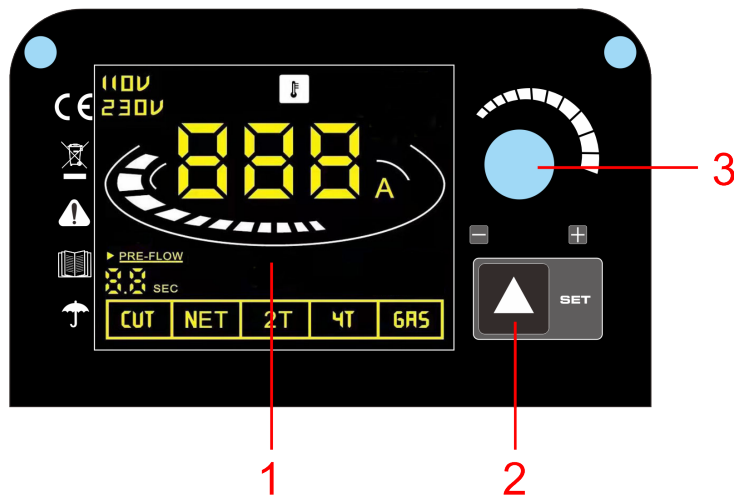
3. TECHNICAL PARAMETERS TABLE

Model Parameters	CUT-40K LCD	
Input voltage (V)	AC110V±10%	AC220V±10%
Rate input current (A)	45	31
No-load voltage (V)	290	290
Current Range (A)	20-30	20-40
Rate output voltage (V)	88-92	88-96
Duty cycle (%)	30	
Efficiency (%)	77	
Power factor	0.73	
Insulation Class	H	
Housing Protection Class	IP21S	
Arcing Way	NON Touch	
Pressure of air compressor (MPa)	0.3-0.45	
Nozzle Inside Hole (mm)	0.9	
Thickness (mm)	1-8	1-16
Grid	YES	
Rated power	4.9	6.8
Weight (kg)	6.2	
Dimensions (mm)	425X130X245	

4. PANELFUNCTION INSTRUCTION

Front Panel Instruction of CUT 40

- 4.1 Turn on the switch on the back panel, while at the meantime, the digital display lights up and the fan runs
- 4.2 open the gas valve, adjust the gas pressure and gas flow to rated standard. (refer to “technical parameter table)
- 4.3 Press the Torch switch, the pilot arc will be ignited from the nozzle
- 4.4 setting the suitable current according to the workpiece thickness and process requirements



1	LCD display: voltage, post flow time, current, 2T/4T, cutting mode and gas check
2	Function Select Button: gas check, 2t/4t switch
3	Knob: 1) Adjust welding current 2) Press button one time to adjust the post flow time. 3) Press button two times and rotate the knob to switch to grid cutting mode.

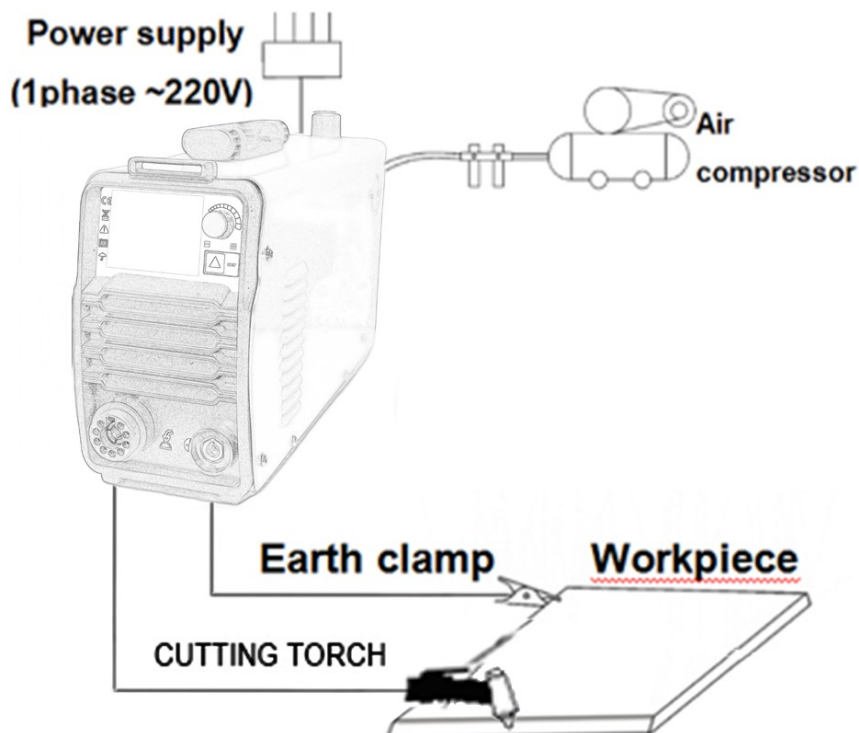
5. INSTALLATION INSTRUCTION

The machine is equipped with power voltage compensation device. When the power voltage fluctuates between $\pm 15\%$ of rated voltage, it still can work normally.

When the machine is used with long cables, in order to prevent voltage from going down, bigger section cable is suggested. If the cable is too long, it may have great influence on the arc-striking or other performance of cutting system, e.g. the HF arc-striking performance get weak or the system work abnormally. So cables of configured length are suggested.

1. Make sure intake of the machine is not blocked or covered to avoid malfunction of cooling system.
2. Ground the cables with section area no less than 6mm^2 to the housing, the way is connecting screw in the back of the power source to ground device, or make sure ground terminal of power socket is firmly connected. Both ways can be used for absolute safety.
3. Use pressure-resisting air pipe to connect the air intake and compressed air source, tight the joint with hoop or other ways in case of gas leaking. Dry gas with suitable pressure and flow should be supplied. If your air source cannot meet above requirements, you should consider using sole compressor with enough power and air-decompressing filter to ensure the machine work normally.
4. Put cable plug to the socket on the panel and fix it clockwise. On the other hand, clamp the work piece with earth clamp.
5. According to input voltage grade, connect power cable with power supply box of relevant voltage grade. Make sure there is no mistake and the voltage of power supply does not exceed permission range.
6. Connect the cabled following the right schematic, next steps can be performed then.

Machine Installation Instruction:



6. NOTES OR PREVENTIVE MEASURES

1. Environment

- 1) The machine can perform in environment where conditions are dry with a dampness level of max 90%.
- 2) Ambient temperature is between -10 to 40 degrees centigrade.
- 3) Avoid welding in sunshine or drippings. Do not let water enter the gas.
- 4) Avoid welding in dust area or the environment with corrosive gas.
- 5) Avoid gas welding in the environment with strong airflow.

2. Safety norms

Our welding machine has installed protection circuit of over voltage, over current and over heat. When voltage, output current and temperature of machine are exceeding the rate standard, welding machine will stop working automatically. Because that will be damage to welding machine, user must pay attention to following.

1) **The working area is adequately ventilated !**

Our welding machine is powerful machine, when it is being operated, it generated by high currents, and natural wind can't be satisfied with machine cool demands. So there is a fan in inter-machine to cool down machine. Make sure the intake is not in block or covered, it is 0.3 meter from welding machine to objects of environment. User should make sure the working area is adequately ventilated. It is important for the performance and the longevity of the machine.

2) **Do not over load !**

The operator should remember to watch the max duty current (Response to the selected duty cycle). Keep welding current is not exceed max duty cycle current. Over-load current will damage and burn up machine.

3) **No over voltage !**

Power voltage can be found in diagram of main technical data. Automatic compensation circuit of voltage will assure that welding current keeps in allowable range. If power voltage is exceeding allowable range limited, it is damaged to components of machine. The operator should understand this situation and take preventive measures.

- 4) If welding time is exceeded duty cycle limited, welding machine will stop working for protection. Because machine is overheated, temperature control switch is on "ON" position and -E2 Error Code will be shown on digital display. In this situation, you don't have to pull the plug, in order to let the fan cool the machine. When the indicator light is off, and the temperature goes down to the standard range, it can weld again.

7. QUESTIONS TO BE RUN INTO DURING CUTTING

Fittings, welding materials, environment factor, supply powers maybe have something to do with welding. User must try to improve welding environment.

A、 Cutting surface is rough, poor cutting result:

The machine may be not well operated. You can check it as follow:

1. Make sure the compressed air supply has enough pressure which is not less than 0.3MPa ($3\text{Kg}/\text{cm}^2$), and its range is $\pm 0.05\text{Mpa}$.
2. Electrode and nozzle are not matched with current. Check as follow:

Current	10-30A	30-40A	60-100A	100-120A
Nozzle	$\varnothing 1.0\text{mm}$	$\varnothing 1.2\text{mm}$	$\varnothing 1.3\text{mm}$	$\varnothing 1.4\text{mm}$

B、 Arc-striking is difficult and easy to pause:

1. Make sure quality of tungsten electrode is high.
2. Cutting current is too small and air flow is too big. And if cooling effect is too strong, it will lead to arc pause.
3. Power net voltage is low and input cable is too long.

C、 Output current is not up to the rated value:

When power voltage departs from the rated value, it will make the output current not matched with rated value; when voltage is lower than rated value, the max output may be also lower than rated value.

D、 Current is not stabilizing when machine is being operated:

It has something to do with factors as following:

1. Electric wire net voltage has been changed.
2. There is harmful interference from electric wire net or other equipment.

E、 Electrode or nozzle burnt often:

1. Current is too big or nozzle is too small.
2. Air pressure is low and cooling effect is weak and nozzle is too hot.

F、 Arc can not cut into the steel plate fully, or too much spatter:

1. Maybe the machine capacity can not meet the demand of that thickness, please use bigger machine.
2. Electrode or nozzle is burnt, please change it.



For normal operation you should cut from the edge of the work piece, in this way you can protect the torch from damage by spatter conglutination.

8.MAINTENANCE



WARNING:

Power must be turned off for all checking and maintenance, before opening the housing, make sure the power plug is disconnected.

1. Remove dust by dry and clean compressed air regularly, if welding machine is operating in environment where is polluted with smokes and pollution air, the machine need removing dust everyday.
2. Pressure of compressed air must be inside the reasonable arrangement in order to prevent damaging to small components of inter-machine.
3. Check inter circuit of welding machine regularly and make sure the cable circuit is connected correctly and connectors are connected tightly (especially insert connector and components). If scale and loose are found, please give a good polish to them, then connect them again tightly.
4. Avoid water and steam enter into inter-machine, if they enter into machine, please dry inter-machine then check insulation of machine.
5. If welding machine will not be operated long time, it must be put into packing box and store in dry environment.
6. When wire machine operates for every 300 hours, the electric carbon brush and armature rectifier should be polished, the reducer should be cleaned.

9.NOTES BEFORE CHECKING



WARNING

Blind experiment and careless repair may lead to more problems and make formal check and repair more difficult. When the machine is electrified, the bared parts contain life-threatening voltage. Any direct and indirect touch will cause electric shock, and severe electric shock will lead to death.



NOTICE: In the period of guarantee maintenance, if user makes wrong check and repair for malfunction of welding/cutting machines without our permission, the free maintenance guarantee offered will be invalid

10.TROUBLESHOOTING AND FAULT FINDING



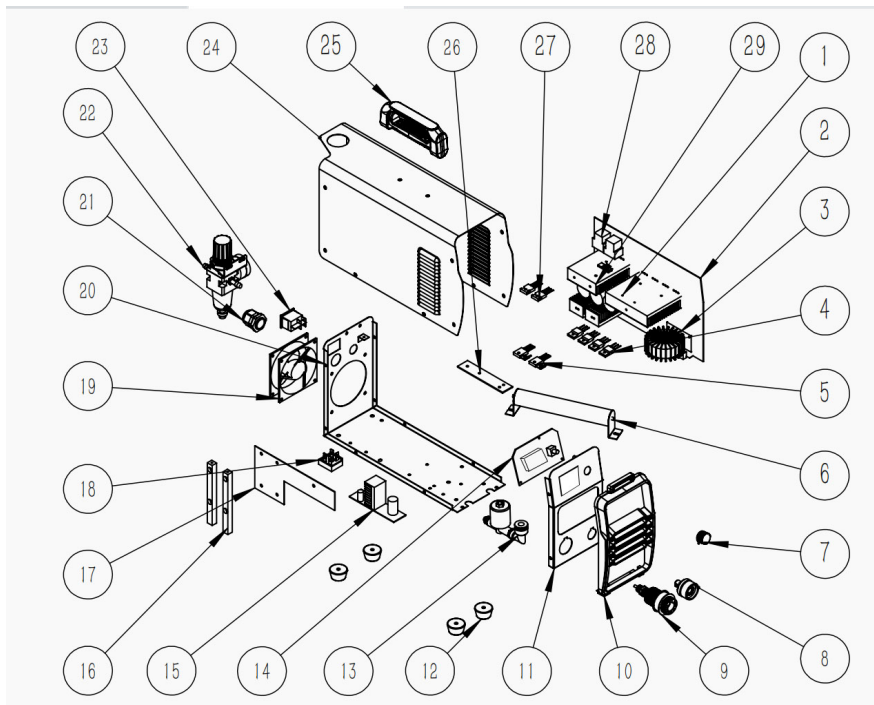
Notes: The following operations must be performed by qualified electricians with valid certifications. Before maintenance, please contact with us for professional suggestion.

Fault symptom and solutions of CUT40

Fault symptom	Remedy
Digital Display meter is on, fan is not working and control knob is out of work.	1. Over voltage protection is working. Turn off machine then Turn on it again after several minutes.
Digital Display meter is on, fan is running, but torch doesn't work when torch trigger is pressed	1. Check if torch is open circuit. 2. Check if control knob of torch is damaged.
E2 Error Code is displayed, while fan is still running	1、 Machine is over-heated, let the machine cool down for several mins until overheat LED indicator automatically turns off
Fan is running, Digital display meter is on, solenoid valve works, but there's no arc ignition	1、 There' s problem to arc ignition part. 2、 Flyback transformer is damaged 3、 There' s problem to control circuit

If after checking and adjustment it still can not work normally, please contact the local distributor or our service center.

11.Expllosion drawing



NO	Name	consumables	NO	Name	consumables
1	Radiator 1		16	Stand	
2	Main Board	YES	17	Insulating Plate	
3	Reactance		18	Rectifier Bridge	YES
4	Rectifier diode	YES	19	Fan	YES
5	IGBT	YES	20	Base Plate	
6	Glazed resistance		21	Buckle	
7	Knob		22	Reducing Valve	
8	European Type Quick Connector		23	Power Switch	YES
9	European Type Torch connector		24	Machine Cover	
10	Plastic Front Panel		25	Plastic Handle	
11	Front Panel		26	Insulating Plate	
12	Rubber Foot		27	IGBT	YES
13	Solenoid Valve		28	Relay	
14	Control Board	YES	29	Radiator 2	
15	Pilot Arc Switch board	YES	30		