
PLASMA CUTTER



INSTRUCTION MANUAL

Contents

Warning	3
General Description	4
Block Diagram	4
Main Parameters	5
Circuit Diagram	5
Installation and Operation	6
Caution	6
Maintenance	7
Spare Parts List	8
Troubleshooting	8

EC DECLARATION OF CONFORMITY

We hereby declare that the following machine:

CUT40

corresponds to the following edicts and standards:

EMC Directives: 73/23/EEC and 89/336/EEC

European Standard: EN/IEC60974

Warning

Welding and cutting is dangerous to the operator, people in or near the working area, and the surrounding environment. Therefore, the performance of welding and cutting must only be done under the strict and comprehensive observation of all relevant safety regulations. Please read and understand this instruction manual carefully before installation and operation.

- Switching function modes during welding could potentially damage the equipment.
- Disconnect the electrode-holder cable from the equipment before welding.
- A safety switch is necessary to prevent the equipment from electric-leakage.
- Use only high quality welding tools and equipment with this Inverter.
- Operators should be suitably trained to use this equipment.

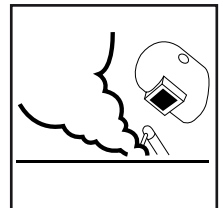
Electric Shock

- Connect the earth cable according to standard regulation.
- Avoid any contact with live components of the welding circuit, electrodes and wires with bare hands. The operator should wear suitable welding gloves while using this machine.
- The operator should keep the work piece insulated from himself/herself.



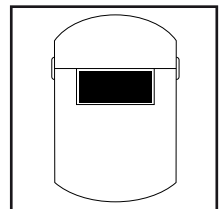
Smoke and Gas generated while welding or cutting

- Avoid breathing in smoke and gas from welding or cutting.
- Make sure the area you are working in is a well ventilated area.



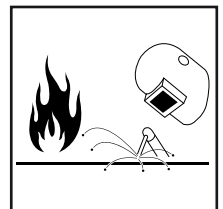
Arc light-emission

- Always wear a welding helmet and appropriate work clothes while welding.
- Measures should also be taken to protect people in or near the area you are working.



Fire hazard

- Sparks from welding may cause fire. Remove any flammable items from the immediate area before welding.
- Have a fire extinguisher nearby.



Noise

- Surface noise is generated while welding and cutting. Use suitable hearing protection.

Machine Fault

- Consult this instruction manual in the case of a fault.
- Contact your local dealer or supplier for further advice.

General Description

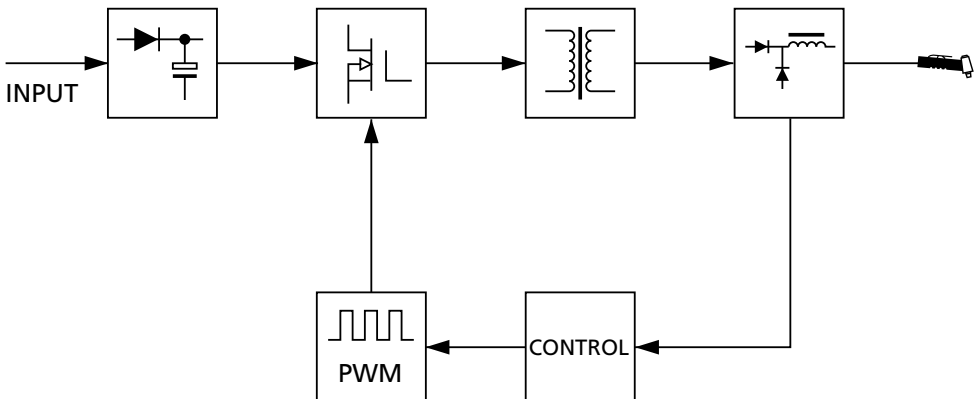
This welding machine is manufactured with advanced inverter technology. With power component MOSFET and PWM technology, the inverter converts DC voltage, which is rectified from input AC voltage, to high 100KHz frequency AC voltage; as a consequence, the voltage is transformed and rectified.

The CUT40 is portable, efficient, energy saving and stable, and can be widely employed in cutting carbon steel, stainless steel, alloy steel, copper and other nonferrous metals.

Warranty of maintenance for main components is one year. During the warranty period, all maintenance is free of charge, not including any deliberate damage or alteration to this welding equipment.

In the case of a fault with the inverter machine, only qualified electricians are authorized to carry out repairs.

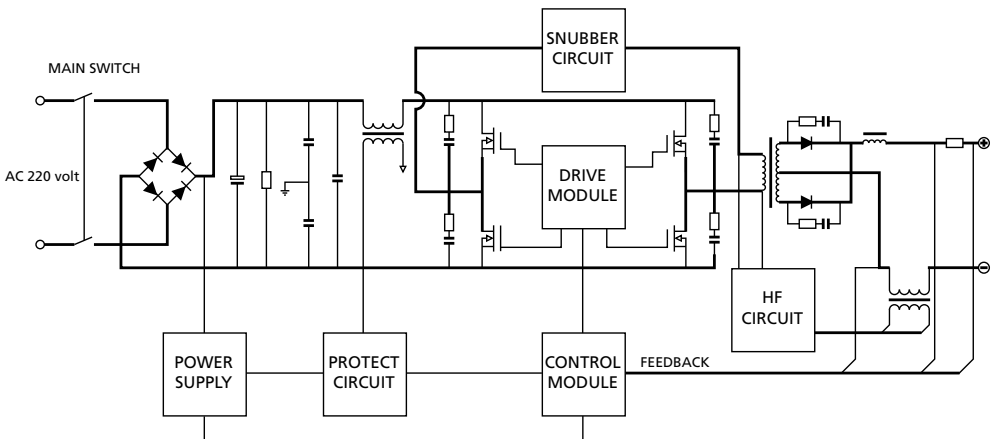
Block Diagram



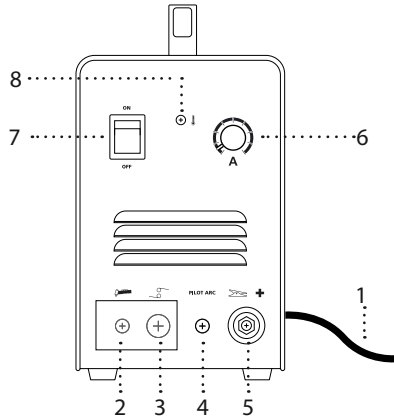
Main Parameters

	ARC120
Fuse Rating	16 amp
Generator Friendly	+ / - 15%
Input Power Voltage	AC 230 volt (single phase)
Rate Input Power Capacity	4.8 KVA
Input Voltage Frequency	50 / 60 Hz
Output Current Range	20 – 40 amps
Duty Cycle (25°C)	39 amps @ 60%
Weight	8.6 kg
Overall Dimensions	371 x 155 x 295 mm
Protection Class	Ip23
Max. Cutting Thickness	6 – 10 mm Cut (12 mm tear)

Circuit Diagram (single phase input)



Installation and Operation



- 1 : Mains Lead
- 2 : Torch Connection
- 3 : Torch Switch
- 4 : Pilot Arc Connection
- 5 : Earth Connection
- 6 : Current Output Control
- 7 : Mains On / Off Switch
- 8 : O.C. Warning Light

Caution

- 1.1 The location in which this welding equipment is installed should be free from dust, corrosive chemical gas, flammable gas.
- 1.2 Avoid the operation of cutting in the open air unless the working area is sheltered from the elements. The ambient temperature of the working environment should be maintained within -10°C to $+40^{\circ}\text{C}$.
- 1.3 Allow a distance of at least 300mm (12") between this machine and any walls.
- 1.4 Make sure the area you are working in is well ventilated.

2. Safety Tips

- 2.1 Maintain a minimum distance of 30cm (12") between the inverter machine and any other objects in or near the working area.
- 2.2 Do not operate this machine when the O.C. Light is lit.
A sudden halt may occur while the welding operation is carried out while this welding machine is in over-load status. Under this circumstance, it is unnecessary to restart this welding equipment. Keep the built-in fan working to bring down the temperature inside this welding equipment.
- 2.3 This welding equipment uses automatic voltage compensation, which enables the maintaining of the voltage range within the given range. In case the voltage of input power supply current exceeds the stipulated value, it is possibly damaging to the components of this welding equipment.
- 2.4 An earth terminal is available for this welding equipment. Connect the earth cable to avoid

static and electric shock.

2.5 DO NOT touch the output terminal when the welding operation is performed.

3. Important notes on Cutting

3.1 Before starting, hold the cutting torch on the workpiece, once the arc is ignited lift the torch away from the workpiece but maintain the arc. If the plasma arc is not available it may be necessary to reconnect the electrode and nozzle.

3.2 Press the button on the cutting torch. Perform the cutting at an even speed according to the thickness of the material.

3.3 Gradually reduce the cutting speed at the end of the cutting operation, then release button.

3.4 If there is slag on the nozzle the cooling efficiency reduces. Remove slag from the nozzle regularly.

3.5 The electrode and nozzle should be replaced if / when:

- The minimum thickness of the electrode is 1.5mm
- The nozzle is distorted
- The cutting speed declines
- You experience difficulty starting the arc
- There is an irregular cutting trace

3.6 During cutting, folding of the air pipe will damage the equipment.

3.7 After welding, remove the nozzle, electrode, and arc-maintaining cable, and press the button on the cutting torch to remove any dregs inside the gas output pipe. Keep the button depressed for at least 15 seconds.

Maintenance

1. Disconnect input and power plugs before conducting repairs on the machine.

2. Be sure machine is properly grounded.

3. Check whether inner gas/electricity connection is ok and tighten any loose connections. If there is oxidation, remove it with sand paper and then reconnect.

4. Keep hands, hairs, loose clothing and tools away from moving parts such as fans and wires.

5. Clear dust from machine at regular intervals with clean, dry compressed air. If the working environment is heavy with smoke and pollution the machine should be cleaned inside on a monthly basis.

6. Reduce the compressed air to the required pressure to avoid damage to smaller internal parts.

7. If the machine is not used for some time, store it in it's original packaging in a dry and dust free location.

Spare Parts List

Description		Part Number
		CUT40
A	Front Panel	
B	Cover	
C	Carrying Strap / Handle	
D	Dial	
E	Dinze Socket	
F	On / Off Switch	
G	Power Cable	
H	Internal Fan	
I	Bottom PCB	
J	Heat Sink	
K	Center PCB	
L	Rubber Feet	
M	Top PCB	



Troubleshooting

Please note: In the event of a fault with this inverter welding machine, only qualified electricians are authorised to undertake repairs.

Fault Symptoms	Reason
The power supply indicator is on; the built-in fan and the button of the cutting torch are unavailable	1. Machine may be in temporary shut-down mode. Turn off machine and allow time before restarting.
The power supply indicator is on, built-in fan is unavailable. When pressing cutting torch button, electromagnetic valve functions and red indicator diode is on.	1. Top PCB MOSFET is damaged and needs to be replaced. 2. Bottom PCB transformer is damaged and needs to be replaced. 3. Control module is damaged and needs to be replaced.
The power supply indicator is on, built-in fan is available. When pressing the button on the cutting torch the electromagnetic valve works, and the red indicator diode is on.	Possible fault with the arc-starting: 1. Incorrect connection of electricity release switch. Reconnect 2. Possible short circuit or invalid connection of primary coil of arc-leading transformer. Reconnect. 3. Rectifier diode is possibly damaged and needs to be replaced. 5. Relay is possibly damaged and needs to be replaced.
Arc-Starting is unavailable	1. Low input voltage. 2. Air compressor pressure not available.