

## USER'S MANUAL

Manual Plasma Cutting Machine  
with IGBT Inverter Technology

CUT **50 COM** PILOT

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# Introduction

First of all, thank you for choosing an IWELD welding or cutting machine!

Our mission is to support your work with the most up-to-date and reliable tools both for DIY and industrial application.

We develop and manufacture our tools and machines in this spirit.

All of our welding and cutting machines are based on advanced inverter technology, reducing the weight and dimensions of the main transformer.

Compared to traditional transformer welding machines the efficiency is increased by more than 30%.

As a result of the technology used and the use of quality parts, our welding and cutting machines are characterized by stable operation, impressive performance, energy efficient and environmentally friendly operation.

By activating the microprocessor control and welding support functions, it continuously helps maintain the optimum character of welding or cutting.

Read and use the manual instructions before using the machine please!

The user's manual describes the possible sources of danger during welding, includes technical parameters, functions, and provides support for handling and adjustment but keep in mind it doesn't contain the welding knowledge!

If the user's manual doesn't provide you with sufficient information, contact your distributor for more information!

In the event of any defect or other warranty event, please observe the „General Warranty Terms”.

The user manual and related documents are also available on our website at the product data sheet.

IWELD Kft.  
2314 Halásztelek  
II. Rákóczi Ferenc street 90/B  
Tel: +36 24 532 625  
info@iweld.hu  
www.iweld.hu

## WARNING!

Welding is a dangerous process! The operator and other persons in the working area must follow the safety instructions and are obliged to wear proper Personal Protection Items. Always follow the local safety regulations! Please read and understand this instruction manual carefully before the installation and operation!

- The switching of the machine under operation can damage the equipment.
- After welding always disconnect the electrode holder cable from the equipment.
- Always connect the machine to a protected and safe electric network!
- Welding tools and cables used with must be perfect.
- Operator must be qualified!

### **ELECTRIC SHOCK: may be fatal**

- Connect the earth cable according to standard regulation.
- Avoid bare hand contact with all live components of the welding circuit, electrodes and wires. It is necessary for the operator to wear dry welding gloves while he performs the welding tasks.
- The operator should keep the working piece insulated from himself/herself.

### **Smoke and gas generated while welding or cutting can be harmful to health.**

- Avoid breathing the welding smoke and gases!
- Always keep the working area good ventilated!

### **Arc light-emission is harmful to eyes and skin.**

- Wear proper welding helmet, anti-radiation glass and work clothes while the welding operation is performed!
- Measures also should be taken to protect others in the working area.

### **FIRE HAZARD**

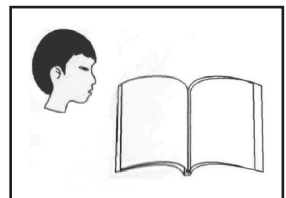
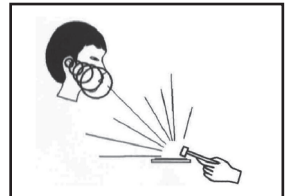
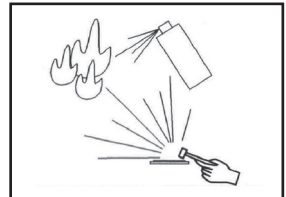
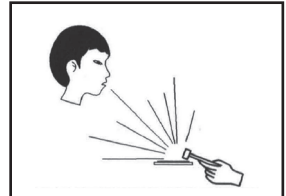
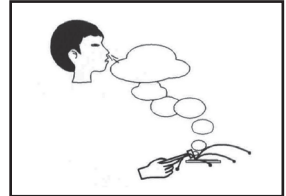
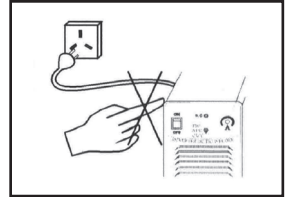
- The welding spatter may cause fire, thus remove flammable materials from the working area.
- Have a fire extinguisher nearby in your reach!

### **Noise can be harmful for your hearing**

- Surface noise generated by welding can be disturbing and harmful. Protect your ears if needed!

### **Malfunctions**

- Check this manual first for FAQs.
- Contact your local dealer or supplier for further advice.



# PRECAUTIONS TO ELECTROMAGNETIC COMPATIBILITY

## 1 General

Welding may cause electromagnetic interference.

The interference emission of arc welding equipment can be minimized by adopting proper installation method and correct use method.

The products described in this manual belong to the limit of class A equipment (applies to all occasions except the residential areas powered by public low-voltage power system).

**Warning:** Class A equipment does not apply to the residential areas powered by public low-voltage power system. Because the electromagnetic compatibility cannot be guaranteed in these areas owing to conducted and radiated disturbances.

## 2 Environmental assessment suggestions

Before installing the arc welding equipment, user shall assess the potential electromagnetic disturbance problems in the surrounding environment. The following matters shall be considered:

- Whether there are other service cables, control cables, signal and telephone wires, etc. above, under or around the welding equipment;
- Whether there are radio and television transmitting and receiving devices;
- Whether there are computers and other control equipment;
- Whether there are high-security level equipment, such as industrial protective equipment;
- Consider the health of staff at the site, for example, where there are workers wearing hearing aid or pacemaker;
- Whether there are equipment used for calibration or inspection;
- Pay attention to the noise immunity of other equipment around. The user should ensure that the equipment is compatible with the surrounding equipment, which may require extra protective measures;
- Time for welding or other activities;

The range of environment shall be determined according to the building structure and other possible activities, which may exceed the boundary of building.

## 3 Methods to reduce emission

### - Public power supply system

The arc welding equipment shall be connected to the public power supply system according to the method recommended by the manufacturer. If there is interference, additional preventive measures shall be taken, such as access with filter in the public power supply system. For fixed arc welding equipment, the service cables shall be shielded by metal pipe or other equivalent methods. However, the shield shall ensure electrical continuity and shall be connected with the case of welding source to ensure the good electrical contact between them.

### - Maintenance of arc welding equipment

The arc welding equipment must be regularly maintained according to the method recommended by the manufacturer. When the welding equipment is running, all entrances, auxiliary doors and cover plates shall be closed and properly tightened. The arc welding equipment shall not be modified in any form, unless the change and adjustment are permitted in the manual. Particularly, the spark gap of arc striker and arc stabilizer shall be adjusted and maintained according to the manufacturer's suggestions.

### - Welding cable

The welding cable shall be as short as possible and close to each other and to the ground line.

### - Equipotential bonding

Pay attention to the bonding of all metal objects in surrounding environment. The overlapping of metal object and workpiece can increase the risk of work, as operators may suffer from electric shock when touch the metal object and electrode simultaneously. Operators shall be insulated from all these metal objects.

### - Grounding of the workpiece

For electrical safety or workpiece location, size and other reasons, the workpiece may not be grounded, such as the hull or structural steelwork. Grounding of workpieces sometimes can reduce the emission, but it is not always the case. So be sure to prevent the increasing risk of electric shock or damage of other electrical equipment caused by grounded workpieces. When necessary, the workpiece should be directly connected with the ground. But direct grounding is forbidden in some countries. In such case, use appropriate capacitor in accordance with regulations of the country.

### - Shielding

Selectively shield the surrounding equipment and other cables to reduce the electromagnetic interference. For special applications, the whole welding area can be shielded.

# 1. The main parameters

		CUT 50 COM PILOT	
	Art. Nr.	800CUT50PTCOM	
FUNCTIONS	Inverter Type	IGBT	
	Arc Ignition	PILOT	
	THC - Torch Height Control	✘	
	Digital LED Display	✘	
	CNC Compatibility	✘	
	2T/4T	✘	
PARAMETERS	Accessories Plasma Torch	PT40	
	Max. cutting thickness (Scarp cutting) Carbon Steel	18 mm	
	Optimal cutting thickness (quality surface cutting)	Carbon Steel	14 mm
		Stainless Steel	12 mm
		Aluminum	10 mm
		Copper	7 mm
	Phase Number	1	
	Rated Input Voltage	230V AC±10% 50/60Hz	
	Max./eff. Input Voltage	34A / 15.2A	
	Power Factor (cos φ)	0.93	
	Efficiency	85 %	
	<b>Duty Cycle (10 min/40 °C)</b>	<b>40A @ 20% 20A @ 80%</b>	
	Cutting Current Range	20A - 40A	
	Cutting Voltage Range	88V - 96V	
	No-load Voltage	375V	
	Insulation	H	
	Protection Class	IP2IS	
Weight	18 kg		
Dimensions (LxWxH)	500 x 220 x 410 mm		

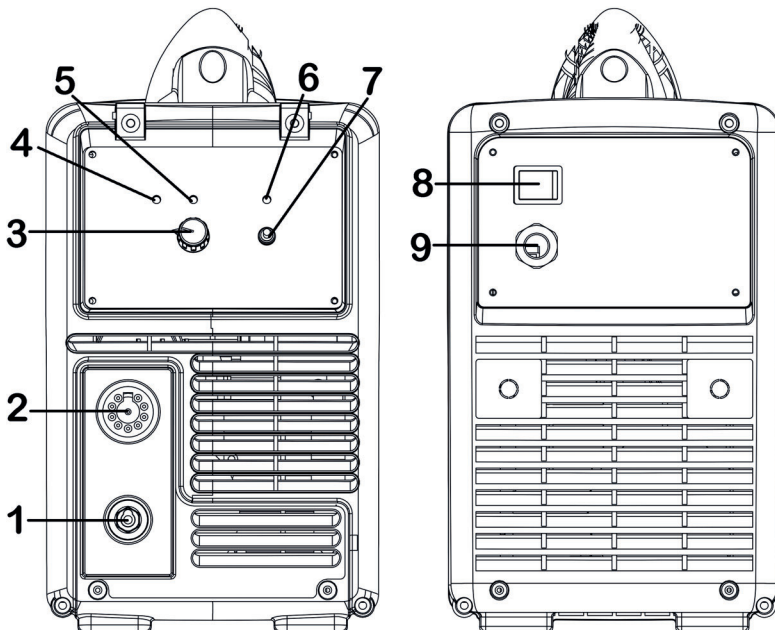
## 2. Installation

Be sure to use this welding machine with the specified cutting gun, earth clamp together; otherwise, it will affect the welding performance and may damage the machine.

- This device has a maintenance free built-in air compressor. The built-in compressor will supply the correct amount of air at proper pressure.
- Connect the copper nut on the cutting gun with the output terminal on the front of this machine, and tighten this nut clockwise (to prevent gas leakage); connect the rapid socket on the earth clamp with the positive output terminal on the front panel of the cutter and tighten the socket.
- Connect the switch plug on the cutting gun with the switch connector of the cutting gun on the panel. Screw the electrode into the cutting torch to the end, slightly tighten them with force and then properly install the nozzle and protection cover in a proper order.

## 3. Operation Instruction

### 3-1 Front Panel and connectors



- 1 Positive output cable: connected to the workpiece
- 2 Cutting gun connector: connected to the cutting machine
- 3 Cutting current regulator: it is used to regulate the current when cutting.
- 4 Power pilot lamp
- 5 Alarm pilot lamp (over-heat, over-current): This pilot lamp on, when the protection of the machine has been activated.
- 6 READY (DC indicator): indicator is ON when DC output circuit is active.
- 7 RUN/SET: when cutting the workpiece, turn to the "RUN"; when doing gas test, turn to the "SET".
- 8 Power switch: turn on or off the power source
- 9 Main cable: connected to the appropriate power supply

### 3-2. Operation steps of cutting

- After checking all connections, turn on the plasma cutting machine.
- Adjust the power to the thickness you intend to cut.
- Press the cutting switch on the torch, you shall have compressed air coming out of the nozzle: within 2 seconds the pilot arc will be ignited.
- Get closer to the material, then the pilot arc will be switched automatically to cutting arc.
- As you pull away the torch from the metal sheet, the cutting arc will be switched back to pilot arc again.
- Now the machine is ready to use for cutting.
- When you release the cutting switch the arc will be shut down immediately.
- After the arc stopped for about 30 sec you will still have air flow from the nozzle to cool the hot system elements.



### 3-3. Notices to Cutting

- When preparing for cutting, hold the cutting gun (the cutting gun does not contact the workpiece for a model of non-contact arc striking) and press the gun switch; at this time, plasma arc will eject from the nozzle hole, indicating the electrode, nozzle, etc., are installed correctly. If there is no plasma arc or only weak plasma arc ejected from the nozzle hole, it indicates the electrode and nozzle are installed improperly, so reinstallation is necessary after power-on.
- When cutting starts, the outer edge of the nozzle hole should be aligned to the edge of the workpiece. Press the cutting torch switch to strike the arc; if the arc is not struck, release the switch and press it again. After successful arc striking, move the cutting torch at a constant speed to conduct normal cutting (the moving speed should vary from different plate thicknesses; if the sparks upturn, it indicates the moving speed is too fast and the workpiece is not cut through, and the moving speed should be slower. If the sparks splash vertically to the workpiece, it indicates the moving speed is too slow and the adhering slags may increase, and the speed should be improved properly).
- At the end of the cutting, when the workpiece will be cut off, the cutting speed should be slowed down, release the cutting torch switch to complete the cutting.
- Splashes adhering to the nozzle surface will affect the cooling effect of the nozzle, so they should be removed in time, and dust and splashes on the cutting gun head should be removed regularly so as to maintain a good heat emission effect.
- The cutting torch rack ensures the distance from the nozzle to the plate. Never remove the cutting torch rack during cutting; otherwise the normal distance from the nozzle to the plate can not be guaranteed, thus causing the nozzle to touch the plate so as to lead to the gun burned.
- Replace the electrode and nozzle.

In case of the following cases, be sure to replace the electrode and nozzle in time.

- 1) above 1.5 mm electrode consumption depth;
- 2) irregularly deformed nozzle aperture;
- 3) obviously slower cutting speed and green flames occurring for arc
- 4) difficult arc striking;
- 5) Slanting kerf or widening kerf

# Precautions

## Workspace

1. Welding equipment free of dust, corrosive gas, non-flammable materials, up to 90% humidity for use!
2. Avoid welding outdoors unless protected from direct sunlight, rain, snow, work area temperature must be between -10 °C and +40°C.
3. Wall to position the device at least 30 inches away.
4. Well-ventilated area to perform welding.

## Safety requirements

Welding provides protection against overvoltage / overcurrent / overheating. If any of the above events occurs, the machine stops automatically. However, over-stress damage to the machine, keep the following guidelines :

1. Ventilation . When welding a strong current going through the machine, so the machine is not enough natural ventilation for cooling . The need to ensure adequate cooling, so the distance between the plane and any object around it at least 30 cm . Good ventilation is important to normal function and service life of the machine.
2. Continuously, the welding current does not exceed the maximum allowable value. Current overload may shorten its life or damage to the machine .
3. Surge banned ! Observance of tension range follow the main parameter table . Welding machine automatically compensates for voltage, allowing the voltage within permissible limits of law. If input voltages exceed the specified value, damaged parts of the machine .
4. The machine must be grounded! If you are operating in a standard, grounded AC pipeline in the event of grounding is provided automatically . If you have a generator or foreign, unfamiliar, non-grounded power supply using the machine, the machine is required for grounding connection point earth to protect against electric shock .
5. Suddenly stopping may be during welding when an overload occurs or the machine overheats . In this case, do not restart the computer, do not try to work with it right away, but do not turn off the power switch, so you can leave in accordance with the built-in fan to cool the welding machines .

## WARNING!

If the welding equipment is used with the welding parameters above 180 amperes, the standard 230V electrical socket and plug for 16 amp circuit breaker is not sufficient for the required current consumption, it is necessary to use the welding equipment with 20A, 25A or even to the 32A industrial fuses! In this case, both the plug and the plug socket fork have to be replaced to 32A single phase fuse socket in compliance with all applicable rules. This work may only be carried out by specialists!

## Maintenance

1. Remove power unit before maintenance or repair!
2. Ensure that proper grounding!
3. Make sure that the internal gas and electricity connections are perfect and tighten, adjust if necessary, if there is oxidation, remove it with sandpaper and then reconnect the cable.
4. Hands, hair, loose clothing should be kept away under electric parts, such as wires, fan.
5. Regularly dust from the machine clean, dry compressed air, a lot of smoke and polluted air to clean the machine every day!
6. The gas pressure is correct not to damage components of the machine.
7. If water would be, for example. rain, dry it in the machine and check the insulation properly! Only if everything is all right, go after the welding!
- 8 When not in use for a long time, in the original packaging in a dry place.

**CERTIFICATE OF EUROPEAN STANDARD**

Manufacturer: IWELD Ltd.  
2314 Halásztelek  
II. Rákóczi Ferenc street 90/B  
Tel: +36 24 532-625  
info@iweld.hu  
www.iweld.hu

Item: **CUT 50 COM PILOT**  
IGBT inverter technology  
plasma cutting power source

Applied Rules (1): EN 60204-1:2005  
EN 60974-10:2014,  
EN 60974-1:2013

(1) References to laws, rules and regulations are to be understood as related to laws, rules and regulations in force at present.  
Manufacturer declares that the above specified product is complying with all of the above specified rules and it also complying with the essential requirements as specified by the Directives 2014/35/EU, 2014/30/EU, 2006/42/EU and 2011/65/EU

Serial No.:



Halásztelek (Hungary),

14/09/18

  
Managing Director:  
András Bódi