CUT-65DS

AIR PLASMA CUTTER

Mar, 2023

OPERATOR'S MANUAL

YESWELDER®

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⚠ WARNING

⚠ CALIFORNIA PROPOSITION 65 WARNINGS ⚠

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

The Above For Diesel Engines

FOR ENGINE powered equipment

1.a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.

1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.

1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

1.d. Keep all equipment safety guards, covers and devices in position and in good repair.Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

The Above For Gasoline Engines

1.h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.

ELECTRIC AND MAGNETIC FIELDS may be dangerous

2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines.

2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.

2.c. Exposure to EMF fields in welding may have other health effects which are now not known.

2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

2.d.1. Route the electrode and work cables together - Secure them with tape when possible.

2.d.2. Never coil the electrode lead around your body.

2.d.3. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.

2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.

2.d.5. Do not work next to welding power source.

ELECTRIC SHOCK can kill

3.a. The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:

- **Semiautomatic DC Constant Voltage (Wire) Welder.**
- **DC Manual (Stick) Welder.**
- **AC Welder with Reduced Voltage Control.**

3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.

3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.

3.e. Ground the work or metal to be welded to a good electrical (earth) ground.

3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.

3.g. Never dip the electrode in water for cooling.

3.h. Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.

3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.

3.j. Also see Items 6.c. and 8.

ARC RAYS can burn.

4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87. I standards.

4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.

4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

FUMES AND GASES can be dangerous

5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone.

When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and below Threshold Limit Values (TLV) using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.

5.b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.

5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.

5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

5.e. Read and understand the manufacturer’s instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer’s safety practices. MSDS forms are available from your welding distributor or from the manufacturer.

5.f. Also see item 1.b.

WELDING and CUTTING SPARKS can cause fire or explosion.

6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.

6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.

6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).

6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.

6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.

6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

6.h. Also see item 1.c.

6.I. Read and follow NFPA 51B " Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park,PO box 9101, Quincy, Ma 022690-9101.

6.j. Do not use a welding power source for pipe thawing.

CYLINDER may explode if damaged.

7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.

7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.

7.c. Cylinders should be located:
- way from areas where they may be struck or subjected to physical damage.
- A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.

7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.

7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.

7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.

7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-I, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association 1235 Jefferson Davis Highway, Arlington, VA 22202.

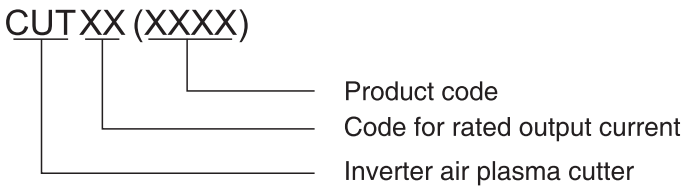
FOR ELECTRICALLY powered equipment.

8.a. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.

8.b. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

GENERAL DESCRIPTION

MODEL CODING



TECHNICAL PARAMETERS

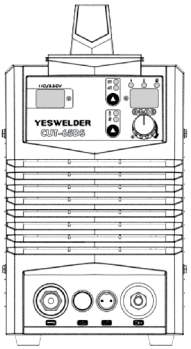
General technical parameters

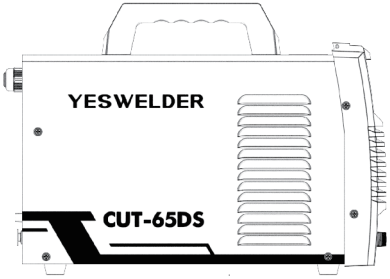
	CUT-65DS	
Rated Input Power Supply	Single-phase AC110V 50Hz	Single-phase AC220V 50Hz
Rated Input Capacity (KVA)	7.4	4.6
Power Factor	0.7	0.7
Rated Output (AV)	65/106	45/98
Rated Duty Cycle(%)	60	60
No-load Voltage(V)	265	265
Output current range (A)	15-65	
Arc Ignition Mode	Non HF	
Post-flow Time (S)	10	
Gas Pressure Range (Mpa)	0.5	
Insulation Grade	F	
Cooling Mode	Air Cooling	
Enclosure Ingress Protection	IP21S	
Efficiency (%)	85%	

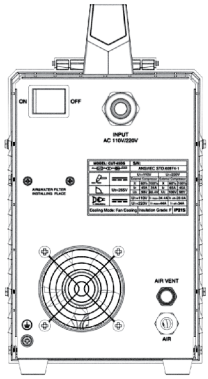
SIZE AND WEIGHT

Overall size and weight of the machine

Model	CUT-65DS
Overall size(LXWXH)	407X160X280 mm(16*6.3*11 in)
Weight(Kg)	7.8KG(17.2lb)



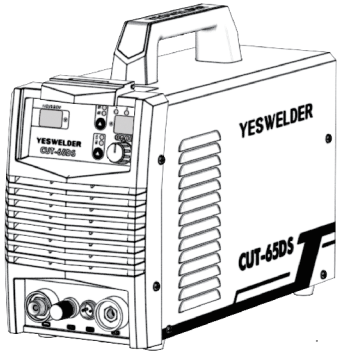




Appearance and size of the machine (Unit: mm)

COMPOSITION AND CONFIGURATION OF THE CUTTING MACHINE SYSTEM

Composition



Composition of the cutting machine system

FUNCTIONS AND CHARACTERISTICS OF THE CUTTING MACHINE

This is a digital plasma cutting machine with perfect function, high performance and advanced technology. CUT 65SD is an ultra-portable plasma cutting system suitable for a variety of application requirements. It can be used in handheld cutting and robot cutting as well. CUT 65DS can cut conductive metal, such as low carbon steel, stainless steel and aluminum. The cutting thickness can reach up to 25 mm and perforating thickness can reach up to 16 mm.

The forward-looking design concept of this machine and the application of a large number of advanced and mature technologies can protect user's investment to the greatest extent.

Advanced digital control mode

Plasma cutting machine CUT-65DS adopts international leading MCU intelligent digital control technology, and all its major parts are performed through software. It is a digital control plasma cutting machine, improved a lot in its function and performance when compared with the traditional plasma cutting machine.

Advanced inverter technology

With PWM technology and high power component IGBT, it inverts the DC voltage, which is rectified from 50Hz/60Hz input AC voltage, to 30K~100KHz AC high voltage. Then the voltage is dropped and rectified to output the high power DC power supply for cutting. The machine adopts switching power supply inverter technology, greatly reducing the volume and weight of the plasma cutter, and obviously enhancing the conversion efficiency. Switching frequency is beyond audiorange, which almost eliminates the noise pollution.

Good consistency and stable performance

Generally speaking, for a cutting machine with analogue circuit control or with analogue circuit & digital circuit control, the performance characteristics are decided by the parameters of various components. Cutting performance of the machines differ as a result of the inconsistent parameters of the components, so even for the cutting machines of the same brand, their parameters often differ from each other. In addition, cutting performance of the machine may change on some extent, since parameters of the components may vary according to the environment such as temperature and humidity, etc.

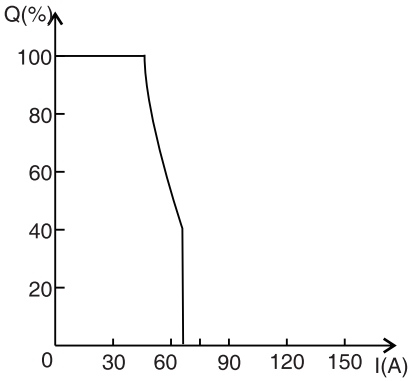
One of the characteristics of digital control is that it is not sensitive to the change of parameters; the performance of cutting machine will not be affected by the change of the parameters of certain parts. Therefore, the consistency and stability of digital control cutter is better than that of traditional cutter.

Powerful cutting performance

This machine is economic and practical since it can cut metals by adopting compressed air as the plasma gas source. The cutting speed has increased by 1.8 times when compared with oxyacetylene cutting. It can cut thick steel plates such as stainless steel, copper, cast iron and aluminum conveniently and quickly. It is easy to ignite arc by adopting HF arc ignition mode, and post-flow function is available. With simple operation and high cutting speed, smooth cutting surface can be obtained, and polishing is unnecessary.

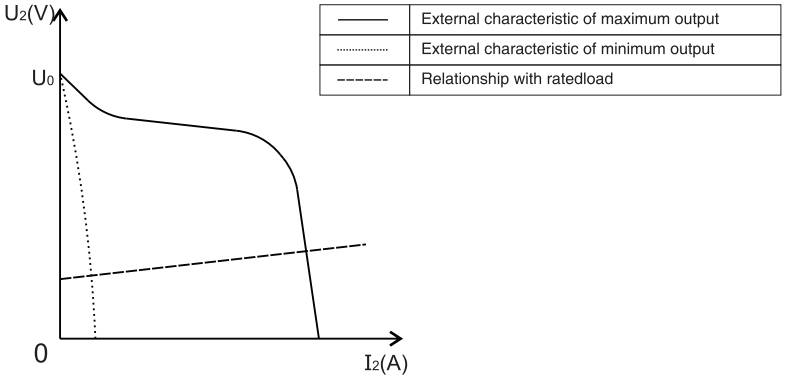
Duty cycle

Rated duty cycle refers to the percentage of the normal work time of the machine under rated maximum current holding in the period when taking 10 minutes as a period. The rated duty cycle of this machine is 35%. Using the cutting machine continuously overrunning the rated load may lead to overheating of the machine, and frequently using the machine overrunning the rated load may accelerate the aging of the machine or even burn the machine.



Duty cycle

Output characteristics



Output characteristic curves

INSTALLATION AND CONNECTION

INSTALLATION REQUIREMENTS

Connection of input cable

To ensure personal safety and avoid electric shock, please insert the power supply into the grounding device, reliable grounding protection.

A primary power supply cable is available for this cutting machine. Connect the power supply cable to the rated input power. The primary cable should be tightly connected to the correct socket to avoid oxidization. Check whether the voltage value varies in acceptable range with a multi-meter.

The cross section of the leads used in the switching box should meet the requirements of the maximum input capacity of the machine.

CUT-65DS should be located close to the corresponding power socket.

Line disconnecting switch

Install a line disconnecting switch at each power supply, so that the power supply can be cut off immediately in case of an emergency. The disconnecting value of the switch should be equal to or greater than the continuous rating of the fuse. In addition, the switch should have the following feature:

• The power is cut off when the switch is at “OFF” position.

Connection of output cable

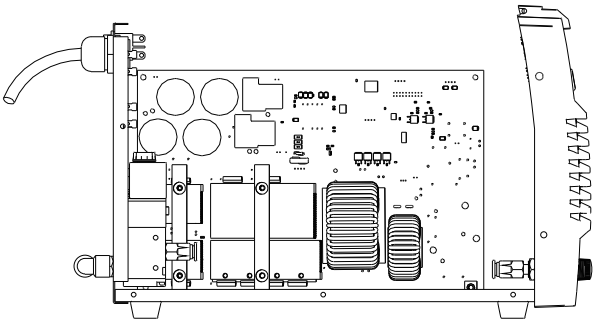
Connection of cutting torch

Connect the center plug on the cutting torch to the center socket of the power supply, and tighten it clockwise to avoid gas leakage.

Connection of earth cable

Insert the quick plug on the earth cable into the output terminal “+” on the front panel of the machine, and tighten it clockwise.

Operation of the reducer valve



Embedded filter reducer

The embedded filter reducer is properly set when leaving factory, and users do not need to set it themselves in general.

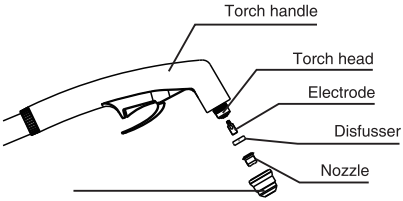
If users need to set the embedded filter reducer, the machine cover should be opened as shown in the above figure. Steps are as follows: start the gas flow; lift the pressure control knob upward; adjust the gas pressure to the desired value by rotating the knob (rotate to "+" direction to increase gas pressure; rotate to "-" direction to reduce gas pressure); press down the pressure control knob to get the knob locked. The water can be drained automatically for auto-drain function is available for the embedded filter reducer.

Installation of the cutting torch

Insert one end of the electrode into the torch head. Insert the other end of the electrode into the distributor.

Connect the nozzle with the electrode and distributor.

Connect the protective sleeve with the nozzle, screw it into the torch head, and tighten it.



Installation of cutting torch head

PRECAUTIONS

1) Make sure the place to install the machine can bear the weight of the cutting machine.

2) Do not install the machine at places where water droplet splash may be produced, such as near water pipes.

3) Cutting should be carried out in dry environment with humidity of 90% or less.

4) The temperature of the working environment should be between -10°C and 40°C.

5) Avoid cutting in the open air unless sheltered from sunlight and rain. Keep it dry at all times and do not place it on wet ground or in puddles.

6) Avoid cutting in dusty area or environment with corrosive chemical gas.

7) Do not carry out cutting with the cutting machine placed on a platform with a pitch greater than 10°.

Over current/over voltage/over heating protection circuit is installed in this machine. When the mains voltage, output current or inner temperature exceeds the set standard, the machine will stop automatically. However, excessive use (e.g. too high voltage) of machine may also damage the machine, so please note:

⚠ Good ventilation

This cutting machine can create powerful cutting current and has strict cooling requirements that cannot be met with natural ventilation. Therefore the built-in fan is very important in enabling the machine to work stable with effective cooling. The operator should make sure that the louvers be uncovered and unblocked. The minimum distance between the machine and nearby objects should be 25cm.

⚠ Over voltage is forbidden

This machine is of automatic mains voltage compensation, which ensures that the cutting current varies within the given range. In case that the input mains voltage exceeds the tolerance value, it would possibly damage the machine. The operator should understand this circumstance fully and adopt relevant precautions.

⚠ Over load is forbidden

Remember to observe the max load current at any moment (refer to the corresponding duty cycle). Make sure that the cutting current should not exceed the maximum load current. Overload could obviously shorten the machine's lifespan, or even damage the machine.

A sudden halt may occur with the yellow LED on the front panel on while the machine is of over-load status. Under this circumstance, it is unnecessary to restart the machine. Keep the built-in fan working to lower the temperature inside the machine. Cutting can be continued after the inner temperature falls into the standard range and the yellow LED is off.

OPERATION

PANEL FUNCTIONS OF CUT-65DS

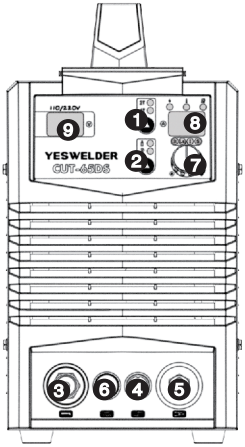


Figure 3-1: Front panel

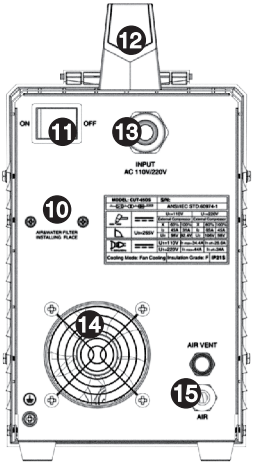


Figure 3-2: Back panel

NO.	Part name	Function
1	2T/4T key	Two-step and Four-step Welding Mode Conversion
2	Mode select	Top for gas checking, bottom for cut
3	Gas-electric connector	Connect the cutting torch
4	Torch switch	Connect the control of cutting torch
5	Quick socket	Connect the earth cable
6	Pilot arc	Connect the pilot wire of torch
7	Current control knob	Adjust: adjust the value of output Press: switch the parameter of o-utput
8	A display	Output current display
9	V display	Input voltage display
10	Install screws	for air filter
11	Power switch	To control the ON/OFF of the input power of the machine.
12	Handle	Handle the machine
13	Power cable	To connect the power supply.
14	Cooling fan	Air cooling
15	air connector	connector for input cutting air

OPERATION OF DIGITAL PANEL CUT-65DS

1) power on the machine then power indicator on front panel will on, A display meter will show the preset output current.

2) check the display of machine ok or not, and select “2T” “4T” mode.

3) press the cutting torch switch, solenoid valve will act and torch will have pilot arc.

4) preset the cutting current according to the thickness of workpicec. keep distance 2~5mm between the torch and workpiece and cutting from the edge then press torch switch to start the plasma cutting.

NO.	Symbol	Function
1		Power indicator: It illuminates when the machine is powered on, and it glitters after arc is successfully ignited.
2		Overheating indicator: It illuminates when the working temperature of the IGBT is overly high. Meanwhile, the machine stops working.
3		Torch protection indicator: It illuminates when the consumable parts of the machine are not well installed or the torch head is shorted. Meanwhile the machine stops working.
4		adjust the value of 4 parameters
5	2T	2T indicator: It illuminates when the machine is under 2T status.
6	4T	4T indicator: It illuminates when the machine is under 4T status.
7		Gas-check indicator: It illuminates when the machine is under gas-check status. At this moment, the machine cannot cut.
8		Metal mesh cutting indicator: The machine can cut metal mesh when this indicator illuminates.
9		Max. pilot arc time led: 12~20s
10		Pilot arc current led: 12~25A
11		Plasma cutting current led: 10~65A
12		Postflow time led: 5~20s

OPERATION METHOD

1) Turn on the power switch of the machine, and the power indicator illuminates.

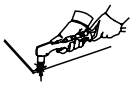
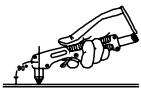
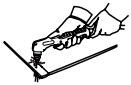
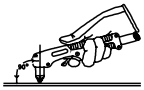
2) Select proper working mode and proper function. There are two working modes available on the machine panel: 2T and 4T. There are two functions available: normal cutting and metal mesh cutting. The electrode and nozzle are more easily to wear out in metal mesh cutting.

3) Push the torch trigger on the cutting torch, the cutting machine works.

4) Set cutting current according to the thickness of workpiece.

5) Bring the copper nozzle of the cutting torch into contact with the workpiece (For models with pilot arc function, keep a distance of about 2mm between the copper nozzle of the torch and the workpiece.), and then push the torch trigger. After the arc is ignited and started, raise the cutting torch to the position about 1 mm above the workpiece, and start cutting.

NOTES FOR CUTTING OPERATION

	• It is recommended not to ignite the arc in the air if not necessary, for it will shorten the lifespan of the electrode and nozzle of the torch.
	• It is recommended to initiate the cutting from the edge of workpiece, unless penetration is needed.
	• Ensure spatters fly from the bottom of workpiece while cutting. If spatters fly from the top of workpiece, it indicates that the workpiece can not be fully cut because the cutting torch is moved too fast or the cutting current is too low.
	• Keep the nozzle slightly touching the workpiece or keep a short distance between the nozzle and workpiece. If the torch is pressed against the workpiece, the nozzle may stick to the workpiece, and smooth cutting is unavailable.
	• For cutting round workpiece or to meet precise cutting requirement, molding board or other assistant tools are needed.
	• It is recommended to pull the cutting torch while cutting.
	• Keep the nozzle of cutting torch upright over the workpiece, and check if the arc is moving with the cutting line. If the space is not enough, don't bend the cable too much, step on or press upon the cable to avoid suffocating of gas flow. The cutting torch may be burned because the gas flow is too small. Keep the cutting cable away from edge tools.
	• Clean up the spatters on the nozzle timely, for it will affect the cooling effect of the nozzle. Clean up the dust and spatters on the torch head after using everyday to ensure good cooling effect.

The workpiece is not cut fully. This may be caused by:

• The cutting current is too low.
• The cutting speed is too high.
• The electrode and nozzle of the torch are burned.
• The workpiece is too thick.

Molten slag drops from the bottom of workpiece. This may be caused by:

• The cutting speed is too low.
• The electrode and nozzle of the torch are burned.
• The cutting current is too high.

CUTTING PARAMETERS TABLE

Select proper current according to the cutting parameters table, workpiece material, cutting thickness and cutting speed, etc. (The figure in the below table is an approximation.)

Cutting speed (m/min) when cutting current is 65A

Cutting thickness (mm)	0.1	1	2	3	4	5	6	7	8	9
Mild steel		8		1.5			0.4			
Galvanized steel		8		1.5			0.4			
Stainless steel		8		1.5			0.4			
Aluminum		8		1.5						
Brass		0.75								
Red copper		0.75								

REPLACEMENT OF ELECTRODE AND NOZZLE

When the phenomena below occur, the electrode and nozzle should be replaced. Otherwise, there will be strong arc in the nozzle, which will break down the electrode and the nozzle, or even burn the torch. Nozzles of different models are different, so ensure the nozzle is of the same model when replacing it.

• Electrode wear > 1.5mm
• Distortion of the nozzle
• Cutting speed declining, arc with green flame
• Difficult in arc ignition
• Irregular cut

MAINTENANCE

DAILY MAINTENANCE

⚠ WARNING

The power of the switching box and the cutting machine should be shut down before daily checking (except appearance checking without contacting the conductive body) to avoid personal injury accidents such as electric shock and burns.

Tips:

1) Daily checking is very important in keeping the high performance and safe operation of this cutting machine.
2) Do daily checking according to the table below, and clean or replace components when necessary.
3) In order to ensure the high performance of the machine, please choose components provided or recommended when replacing components.

Daily checking of the cutting machine

Items	Checking requirements	Remarks
Front panel	Whether any of the components are damaged or loosely connected; Whether the output quick sockets are tightened; Whether the abnormity indicator illuminates.	If unqualified, check the interior of the machine, and tighten or replace the components.
Back panel	Whether the input power cable and buckle are in good condition; Whether the air intake is unobstructed.	
Cover	Whether the bolts are loosely connected.	If unqualified, tighten or replace the components.
Chassis	Whether the screws are loosely connected.	
Routine	Whether the machine enclosure has color fading or overheating problems; Whether the fan sounds normal when the machine is running; Whether there is abnormal smell, abnormal vibration or noise when the machine is running .	If abnormal, check the interior of the machine.

Daily checking of the cables

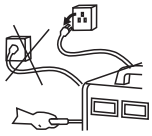
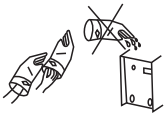
Items	Checking requirements	Remarks
Earth cable	Whether the grounding wires (including workpiece GND wire and cutting machine GND wire) break off.	If unqualified, tighten or replace the components.
Cutting cable	Whether the insulating layer of the cable is worn, or the conductive part of the cable is exposed; Whether the cable is drawn by an external force; Whether the cable connected to the workpiece is well connected.	Use appropriate methods according to the work site situation to ensure safety and normal cutting.

PERIODIC CHECK

⚠ WARNING

Periodic check should be carried out by qualified professionals to ensure safety. The power of the switching box and the cutting machine should be shut down before periodic check to avoid personal injury accidents such as electric shock and burns. Due to the discharge of capacitors, checking should be carried out 5 minutes after the machine is powered off.

Tips:

	**Safety** All maintenance and checking should be carried out after the power is completely cut off. Make sure the power plug of the machine is pulled out before uncovering the cutting machine. When the machine is powered on, keep hands, hair and tools away from the moving parts such as the fan to avoid personal injury or machine damage.
	**Periodic check** Check periodically whether inner circuit connection is in good condition (esp. plugs). Tighten the loose connection. If there is oxidization, remove it with sandpaper and then reconnect. Check periodically whether the insulating layer of all cables is in good condition. If there is any dilapidation, rewrap it or replace it.
	**Beware of static** In order to protect the semiconductor components and PCBs from the static damage, please wear antistatic device or touch the metal part of the enclosure to remove static in advance before contacting the conductors and PCBs of the machine internal wiring.
	**Keep it dry** Avoid rain, water and vapor infiltrating the machine. If there is, dry it and check the insulation of the cutting machine (including that between the connections and that between the connection and the enclosure) with an ohmmeter. Only when there are no abnormal phenomena anymore, can the machine be used. Put the machine into the original packing in dry location if it is not to be used for a long time.
	**Pay attention to maintenance** Periodic check should be carried out to ensure the long-term normal use of the machine. Be careful when doing the periodic check, including the inspection and cleaning of the machine interior. Generally, periodic check should be carried out every 6 months, and it should be carried out every 3 months if the cutting environment is dusty or with heavy oily smoke.
	**Beware of corrosion** Please clean the plastic parts with neutral detergent.

TROUBLESHOOTING

The abnormity indicator on the front panel would illuminate in case of any failures inside the cutting machine.

Malfunction Phenomena	Cause and Solution
Turn on the machine, the power indicator illuminates, the control PCB keys do not function, and there is no response when pushing the torch trigger.	The cutting machine crashes: Shut down the machine, and restart it.
Turn on the machine, the power indicator illuminates, the control PCB keys work normally, but there is no response when pushing the torch trigger.	1) The LED1 on the main board is on: The control PCB is damaged. 2) The LED1 on the main board is off: Check the torch trigger and torch trigger wire.
Turn on the machine, the power indicator illuminates, and the fan works. When pushing the torch trigger, the solenoid valve functions, but there is no HF discharge rustling.	The arc ignition part fails 1) The interelectrode distance of the discharge nozzle is too long. 2) There is leakage of the HF capacitor 102/10KV. 3) The relay is damaged. 4) The input voltage is too low.
Arc can not be ignited.	The air pressure is overly high or overly low.

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