

AIR PLASMA CUTTING MACHINE MANUAL



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Air plasma cutting equipment with all accessories

Specification

Input Supply Voltage	415 V AC, 3 Phase, 50Hz/60 Hz
Output Current Range	30-100 Amp
Enclosure Class	IP23C
Duty Cycle	60% (Output Current - 100 Amps); 100% (Output Current - 70 Amps)
Maximum Cut	Up to 45 mm
Torch Length	Up to 6.0 Mtr.

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2. Installation

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

When use long cable, in order to prevent voltage from going down, bigger section cable is suggested. If cable is too long, it may affect the performance of the power system. So we suggest you to use configured length.

1. Make sure the vent is not plugged; otherwise the air-cooling system will be out of work.
2. Connecting the grounding device and the screw join on the back of the cutter.
3. Connecting the pressure proof air tube with the air inlet and compressed air source on the back of the cutter. Make sure the air source can supply suitable pressure, enough current and should be dry.
4. Installing the air and temperature meter to the join of the front panel, then fasten it clockwise with wrench. Connecting the aviation plug on the cutting torch with the matching join on the front panel, fasten the screw.
5. Inserting the plug of the loop cable in the socket on the front panel. Fasten clockwise. Gripping the work piece with the earth cable.

3. Operation for the Air Reducing Valve

1. Tightening up the seal tape of the copper air nipple to IN and OUT.
2. Tightening up the seal tape of the head of the meter.
3. Fixing the connector with screw nut to the position of the pressure reducing valve on the back of the cutter.
4. Screwing out the rubber screw nut, fixing the pressure reducing value on the connector.
5. Turn on the air pressure switch, uplift the pressure regulation knob. turn the air pressure to the required level, then press down the pressure regulation knob,
6. Turning on the water drain valve to drain the water when there is too much water in the air filter.

4. Operation

1. Turn on the power button on the front panel, the working indicator will light, the fan will turn.
2. Turn on the air valve, switch the pressure and air flow rate to the rated standard.
3. After pressing down the switch of the cutting torch, the solenoid valve switching on. You could hear the sound of HF spark discharge. Meanwhile, air flowing to the torch nipple.

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4. Adjusting the cutting current according to the thickness and technological requirements of the work piece.

5. Keep the tungsten electrode and the work piece at a distance of 1-2mm, press the torch, I-IF spark discharge will appear. After lighting the arc, the I-IF spark discharge will disappear and it can cut.

5. Attention and protection

1. Condition

- 1) To be used in a dry condition, the air moisture should not be over 90%.
- 2) The ambient temperature should keep between -10°C—40°C.
- 3) Avoid cutting in the daylight or under the rain, do not let the water or the rain infiltrate into the machine.
- 4) Avoid cutting in a dusty place or in an environment with corrosive gas.

2. Security

This machine is with protection circuit of over voltage, over current and over-heating. When the voltage, the output current and the machine inside temperature exceed the setting standard, it will stop working. Overusing of the machine may also lead to fault of it. So there are something need to be paid attention to.

- 1) To be a good condition of ventilation.
- 2) No over-loading.
- 3) No over-high voltage.
- 4) Before using, select a wire over 6mm², connecting the case grounding in order to release static electricity or avoid accident due to leakage of electricity.
- 5) If the machine exceeds the standard duty cycle while working, it may suddenly be in protection mode and stop working. This means the machine has exceeded the standard duty cycle, over thermal energy triggers the temperature controlled switch, and the machine stops working. Meanwhile, the indicator light on the front panel lights. You don't need to detach the plug in this case, or the air-cooling fan will not help to cool the cutter. After the red indicator light extinguishing, the temperature be to the standard level, the machine can work again.

6. Problems May be Came Across

A. The cutting surface is not smooth.

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This means the function of the cutter has not been exerted, you can check as follows:

1. Make sure the air source of the air compressor is stable and with enough pressure. Usually the air pressure inserted the cutter should not be less 0.3MPA (about 3kg/cm²).
2. The electrode and the diameter of the nozzle is not matched. The matching.

Current	10-30A	30-40A	60-100A
Diameter of Nozzle	1.0mm	1.2mm	1.3 mm

B. Difficult for arc starting, easy for arc breaking.

1. Make the electrode you use is with good quality.
2. The cutting current is too low and the air flow rate is too high. The strong cooling effect leads to arc breaking.
3. The voltage of the power system is too low or the input line is too long may lead to high pressure drop of the circuit.

C. The output current could not reach to the rating.

1. The power supply voltage diverge the rating.
2. The power supply voltage is below the rating.

D. The current is not stable while cutting.

1. The voltage of the power system has changed.
2. Interfered by the power system or other electrical equipment.

E. The burning loss of the electrode or the nozzle is too fast.

1. The current is too high while the caliber of the nozzle is too small.
2. The air pressure is too low, the cooling function weakens, and the nozzle electrode is over-heating.

F. The arc can't through the steel plate, or the kerf is with bonded slag.

1. The current of the machine may be too low to cut the plate.
2. The electrode or the nozzle may have be damaged.

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7. Check Fault

Faults	Resolvable Methods
Power indicator is not lit, fan does not work and no cutting output.	<ol style="list-style-type: none"> i . Power switch is out of work. 2.Check if electricity wire net (which is connected to input cable) is in work. 3.Check if input cable is out of circuit
Power indicator lights, fan doesn't cutting output	<ol style="list-style-type: none"> 1 . Maybe connect wrong to 380v power that machine is in protection circuit, connect to 220v power and operate machine again. 2.220v power is not stable, (input cable is too slender)or input cable is connected to electrify wire net cause machine is in protection circuit Add the section of cable and tighten input connector firmly; Close machine 2-3 minutes then open it again. 3.Cable-is loosed from switch to power panel. tighten them again. 4.Open and close power switch constantly in short time cause machine is in protection circuit Close machine 2-3 minutes then open it again . 5.Main circuit 24v relay of power panel is not close or has damaged. Check 24V power source and relay. If relay has damaged replace it with same model.
Fan is working indicator is not lit and sound of HF arc- striking can not be heard, wiping cutting can not strike arc.	<ol style="list-style-type: none"> 1.Positive and negative electrodes of VH-07 insert component voltage should be about DC308v from power panel to MOS board. 2.There is a green indicator in auxiliary power of MOS board,- if it is not on, auxiliary power is out of work .Check fault spot and connect with setter. 3.Check if connector is poor contact. 4.Check control circuit and find out reasons or connect with seller. 5.Check if control cable of torch is broken.
Abnormal indicator is not on, sound of	<ol style="list-style-type: none"> 1.Check if torch cable is broken.

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HF arc- striking can be heard, but there is no cutting output	<ol style="list-style-type: none"> 2. Check if grounding cable is broken or not connected to welding piece. 3. Output terminal of positive electrode of torch electrify is loosed from inter-machine.
Abnormal indicator is not lit, sound of HF arc- striking can not be heard, wiping cutting can strike arc.	<ol style="list-style-type: none"> 1. Primary cable of arc-striking transformer is not connected to power panel firmly, tighten it again. 2. Arc-striking tip is oxidized or too far, give a good polish to it or change it is about 1 mm between arc-striking tip. 3. Switch (sticking/argon-arc welding) is damaged, replace it.
Output current is not stable or out of potentiometer control	<ol style="list-style-type: none"> 1. 1K potentiometer is damage, replace it. 2. All kinds of connectors are poor specially insects etc. please check it.
Fan does not work and numerical screen is not indicating, there no cutting output	<ol style="list-style-type: none"> 1. Make sure air switch is closed. 2. Make sure electrify Wire net of output cable can supply power. 3. Some of heat-variable resistors (four) of power panel is damaged, when it happen, general DC24v relay is open or connectors is poor contact. 4. Power panel (bottom board) is damaged, DC537v voltage can be output. 5. Auxiliary power of corn panel is in fault.
Fan is working indicator is not lit and sound of HF arc- striking can not be heard, wiping cutting can not strike arc.	<ol style="list-style-type: none"> 1. Positive and negative electrodes of VH-07 insert component voltage should be about DC308v from power panel to MOS board. 2. There is a green indicator in auxiliary power of MOS board,- if it is not on, auxiliary power is out of work .Check fault spot and connect with setter. 3. Check if connector is poor contact. 4. Check control circuit and find out reasons or connect with seller. 5. Check if control cable of torch is broken.
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Output current is not stable or out of potentiometer control.	<ol style="list-style-type: none"> 1. 1K potentiometer is damage, replace it. 2. All kinds of connectors are poor specially insects etc. please check it
Fan does not work and numerical screen is not indicating, there no cutting output	<ol style="list-style-type: none"> 1. Make sure air switch is closed. 2. Make sure electrify Wire net of output cable can supply power. 3. Some of heat-variable resistors (four) of power panel is damaged, when it happen, general DC24v relay is open or connectors is poor contact. 4. Power panel (bottom board) is damaged, DC537v voltage can be output. 5. Auxiliary power of corn panel is in fault.
Fan works, abnormal indicator is not lit, wiping arc cannot strike arc.	<ol style="list-style-type: none"> 1. Check If all kinds of cables of inter-machine are poor contact. 2. There is some fault in control panel, find out reason and connect with seller. 3. Control cable of torch is broken..
Abnormal indicator is not lit, torch nozzle has air, can not cut.	<ol style="list-style-type: none"> 1. Torch cable is broken. 2. Grounding cable is broken or not connected to welding piece. 3. Positive electrode terminal or torch electrify term final is loosed from inter-machine.
Abnormal indicator is lit but there is no cutting output.	<ol style="list-style-type: none"> 1. Maybe it is overheated protection. please close machine, then open the machine again after abnormal indicator is out. 2. Maybe it is overheated protection. wait for 2-

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	<p>3 minutes (argon-arc welding does not has overheated protection function.)</p> <p>3. Maybe inverter circuit is in fault, please pull up the supply power plug of main transformer which is on MOS board (VH-07 insert which is near the fan) then open the machine again,</p> <p>1) If abnormal indicator is still lit, close machine and pull up supply power plug of HF arc-striking power source (which is near the VN-07 insert of fan then open machine:</p> <p>a.If abnormal indicator is still lit, some of fieldistor of MOS board is damaged, find out and replace it with same model.</p> <p>b.If abnormal indicator is not lit, rise transformer of HF arc-striking circuit is damaged, replace it. 2) If abnormal indicator S not lit :</p> <p>a.Maybe transformer of middle board is damage, measure inductance volume and Q volume of main transformer by inductance bridge (L=O.g-1.6mH Q>35) . if volume is too low, please replace it.</p> <p>b. Maybe secondary rectifier tube of transformer is damaged, find out faults and replace rectifier tube with same model.</p> <p>4. Maybe feedback circuit is broken.</p>
<p>Lit , Abnormal indicator is not there is no sound of arc-striking , wipe welding strike can arc.</p>	<p>1. Primary cable of arc-striking transformer is not connected to arc-striking panel reliably, tighten it again.</p> <p>2. Arc-striking tip is oxidized or too far, give a good polish to it or change it is about 1 mm between arc-striking tip.</p> <p>3. Switch(sticking/argon-arc welding) is damaged, replace it .</p> <p>4. Some of HF arc-striking circuit components are damaged find out and replace it</p>

8. Maintenance

1 . Pressure of compressed air must be inside the reasonable arrangement in order to prevent damaging to small components of inter-machine.

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2. Remove dust by dry and clean compressed air regularly, if cutting machine is operating in environment where is polluted with smokes and pollution air, the machine need remove dust everyday.

3. Check inter circuit of cutting machine regularly and make sure the 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 them 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. Notice information everyday:

(1)Check whether it has abnormal quake, sound, smell. (2)Check whether it has abnormal heating on the connector.

(3)Whether the fan is turning normally when turning on the switch.

(4)Check whether the switch is poorly connected.

(5)Check if there is anything wrong with the connection of cable.

(6)Check whether the cable is broken or not.

7. Testing for every 3-6 months.

(1) Clearing the inside of the machine regularly, every 5-6 months once. When clearing, the power must be cut off.

(2) The cable need to be checked regularly to make sure the insulation is not damaged. If damaged, repair or replace it in time.

9. Safety Caution!

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

Electric shock—may lead to death !!

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- Set the earth fitting according to applying standard.
- It is forbidden to touch the electric parts and electrode when the skin is naked, wearing wet gloves or clothes.
- Make sure you are insulated from the ground and the workshop.
- Make sure you are in safe position.

Gas—may be harmful to health!

- Keep your head out of the gas.
- When arc welding, air extractor should be used to prevent from breathing gas.

Arc radiation—Harmful to your eye and burn your skin.

- ⌋ Use suitable helmet and light filter, wear protective garment to protect eye and body.
- ⌋ Use suitable helmet or curtain to protect looker-on.

Fire

- ⌋ Welding spark may cause fire, make sure the welding area no tinder around

Noise—extreme noise harmful to ear.

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

Malfunction—When be in trouble, count on the professionals

- If trouble in installation and operation, please follow this manual instruction to check up.

If fail to fully understand the manual, or fail to solve the problem with the instruction, you should contact the suppliers or our service center for professional help

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