



# WELDER INVERTER PLASMA CUTTER 4IN1 WELDING MACHINE AC/DC TIG/ARC STICK



## **WARRANTY**

This welding equipment for industrial and professional use is in the conformity with IEC 60974 International Safety Standard.

The machine is insured against damage upon shipping. If your machine is damaged in anyway when you receive it, you must retain all shipping meterials and packing . Call our Customer service and report the damage immediately.

Hereby we state that we provide one year of guarantee for this welding equipment since the date of purchase .Warranty coverage covers repair or replacement of damaged machine or damaged circuit board .The troch , power cable , clamps,air regulator,hoses,case& paint and consumables and cables are not covered under warranty.

This machine is designed to operate from 200-240v at 50-60Hz only . you must use dry gas in your machine and keep it indoors away from rain and moisture . Operating outside of limits will void warranty.

If you are going to return a machine to us for repairs, it must be well packed in original or better (with more than " 2 " of dense foam around the machine )and insured for full value.

Customers who own an out -of -warranty machine that require repairs should contact us for an estimate.

## **WARNINGS!**

You may be faced with dangers during the course of welding , so please be careful and read the manuals carefully before working.

### **A certain switch is needed to protect the machine from electricity-leaking.**

- Please use welding tools of good quality.
- The workers should be qualified for welding.

### **Electric-shock : it may be fatal to life.**

- Install the earth cable to the standard.
- No touching electric parts with bare hands, wet hands or wet clothes.
- Make sure that you and working pieces are in insulation circumstances.
- Make sure that your working is in safety.

### **Smoke:it may be harmful to your health.**

- Keep your head out of the smoke.
- When welding, make sure the air is flowing to avoid breathing in the smoke.

### **Arc-emission--may be harmful to your eyes and skin**

- Wear suitable welding mask and clothes to protect your eyes and skin.
- Use suitable screen or curtain to keep the look-ups from the emission.
- The welding spatter may cause fire, so make sure that there are no combustibles nearby the working place.

### **Noises-too much noise may be harmful to your hearing.**

- Please wear something to protect your ears from the noises.
- Warn the look-ups of the hidden harm the noise may cause.

### **Break-down :ask the professional for help**

- If you have any problems in setting up or operating , please first consult this manual
- If you still can not understand after reading this manual, please contact us to get professional help.

## BRIEF INTRODUCTION

d The SUPER series and AC/DC series are newly-developed Multipurpose TIG, plasma cutter(supers series only) and stick machine,whose main character is that it can not only weld steel,alloy steel ,carbon steel and other nonferrous metals with DC function , but also can weld aluminum, alloy aluminum and copper with AC function . for instance, for welding skateboard and bicycle made of aluminum. The total power exchange rate of the machine is over 85%, and they are energy-saving.

The use and development of inverter technology in welding benefits from the invention of high power electronic spare parts, esp .MOSFET, the employ of which greatly reduces the volume and weight of main parts ,e.g.transformer and anti-electricity,thus making our machine able to work undedr HF 100kHz.we also employ PWM(pulse width modulation) and MCU-control to make the welding current stable,accurate and easy to adjust;and the machines convenient to operate, and avoid the disturbance of electric magnetism.

AC/DC welders are made with inverter technology, and they are lighter, smarter and more efficient as compared with traditional ones; The most outstanding featture is the application of twice square waves inverter technology, enabling the pure square wave output, the arc stability, the energy focus, the better reverse cleaning capability, the wider clean width, and the arc sustaining, avails the excellent welding characteristice of this welding equipment.

The SUPER series and AC/DC series are equipped with foot switch, thus liberating the workers' hangs, and they can adjust the current with their foot freely. As a result, at the very beginning or wire-adding, we can speed up the current; while at the end slope down the current in order to form a good welding line. In a word, the use of foot switch helps raise the welding efficiency and reduces the welding difficulty as well as make sure of the welding quality. If you need pulse welding, we have foot-control switch with the function of pulse welding. Inverter welders are also equipped with TIG torch, and cable of suitable length. Besides, there are also other spare parts for torch, such as ceramic nozzle, tungsten pole clamp, current contact nozzle, short cap and long cap. The size and quantity of them can see in the enclosed packing list. If you need more spare parts, you can order separately . Following is Block Diagram of SUPER series and AC/DC series welding machine:

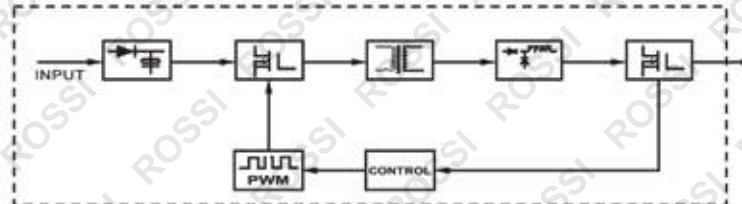


Fig .1Block Diagram of SUPER series and AC/DC series welding machine

## MAIN PARAMETERS

PARAMETERS.	MODEL	SUPER-160P	AC/DC-160P	SUPER-200P AC/DC-200P
Power voltage(V,Hz)		Single phase AC 220±15%,50/60		
Rated input current(A)		21	28	
Power capacitance(KVA)		3.3	4.6	
Range of output current(A)		5-160TIG 15-40CUT(SUPER series only)	10-200TIG 15-50CUT(SUPER series only)	
No-load voltage(V)		62TIG/240CUT	65TIG/260CUT	
Working voltage(V)		16.4TIG/90CUT	18TIG/100CUT	
Up-slope time(Sec.)		0-1	0-1	
AC Clean width (%)		20-80	20-80	
Down-slope time(Sec.)		0-10	0-10	
Pulse width(%)		10-90	10-90	
Range of pulse current(A)		20-160	20-200	
Range of pulse frequency(Hz)		0.5-200	0.5-200	
Post-gas time(Sec.)		1-10	1-10	
Remote control		YES	YES	
Arc-starting		HF vibration	HF vibration	
Efficiency(%)		85	85	
Max.weld thickness(mm)		0.1-6	0.1-8	
Rate duty cycle(%)		60	60	
Power factor		0.83	0.83	
Insulation class		F	F	
Protection grade		IP21	IP21	
Weight(kg)		23.5	24.5	
Dia.(mm)		520*330*375	520*330*375	

## FRONT PANEL INSTRUCTION

I.1 The front panel structure of SUPER series and AC/DC series welding machine is shown as Fig.2.

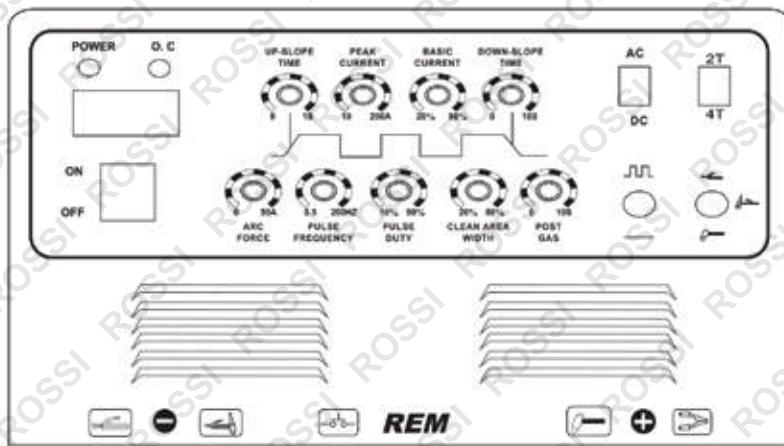


Fig .2 The front panel structure of SUPER (P) Series and AC/DC series welding machine

The function of each switch is shown as following:

### Panel Switch

#### ● Power switch

The machine can be turned on and off through this power switch . when this switch is Turned on, the meter indicates the set current value, and the fan begins to work.

#### ● ARC/TIG/CUT shift switch

Mode of "ARC" on ,MMA welding is available;

Mode of "TIG" on,AC/DC TIG welding is available;

Mode of "CUT" on ,air plasma cutting is available(SUPER series only).

#### ● AC/DC shift switch

Placing the switch on AC is AC Mode for welding aluminum,copper,brass,titanium, etc.

Placing the switch on DC is DC Mode for welding steel, iron, stainless, etc.

#### ● 2T/4T Mode switch

Mode of " 2T " :The first press down the switch of welding torch , welding process is initializes and for normal welding, and arc terminates when loosen the switch. You have to press the Switch down when you weld,so this mode is suitable for short period welding operation.

Mode of "4T": The first press down the switch of welding torch, welding arc is initialized and the welding operation keeps available for normal welding when loosen the switch; the current will attenuation and welding arc will terminate when press the switch again, and arc terminates when loosen the switch. You needn't keep switch pressed down when you weld, so this mode is suitable for long period welding operation.

❖ DC/PULSE

When the switch is at TIG mode, place the switch at DC, it is for normal welder; For thin welding plate, up-welding, or better welding performance, etc, place the switch at PULSE position.

**Regulate Knobs**

❖ Up-slope time

At the starting of welding, the current is better to increase gradually until it gets its required, and the up-slope time can be regulated by this switch.

❖ Peak current

Peak current is maximum current during welding process, which can be adjusted by this regulator at DC pulse mode for TIG welding.

❖ Base current

Base current is valley current, which can be adjusted by this regulator at DC pulse mode for TIG welding.

❖ Down-Slope time

At the ending of welding, the current is required to reduce gradually until it terminates, and the attenuation time can be regulated by this switch.

Re: If use "foot switch", this switch is adjusted to "0" in counter-clockwise direction.

❖ Arc force(Only suit for MMA mode)

The welding current will enlarge when the welding voltage is in low that keep off stick paste on the workpiece, but too big force current will cause big spatter.

❖ Pulse frequency(Only suit for TIG pulse Mode)

Pulse frequency is the times of from peak current to base current within 1 second. The pulse frequency can be regulated by this switch, from 0.5 to 200Hz, at TIG pulse mode.

❖ Pulse duty cycle(Only suit for TIG pulse Mode)

Pulse duty is the ratio between the peak current to one cycle time.

❖ Clear width control

In AC TIG welding , the current exchanges between positive and negative directions, when current is from tungsten to work piece, it' s positive direction and good for removing the oxidization coating on the surface of the work piece, but the tungsten may be easily damaged because of overheat. While if current is from work piece to tungsten, it' s negative and tungsten heats little , convenient for welding; This switch is for adjusting the current time between positive and negative. When it' s at the middle, the proportion is 50%; at the maximum is 80%; at the minimum is 20%. If in clockwise direction, the positive current time turns longer and negative one shorter; and vice versa.

❖ Post-flow time

The work piece may be oxidized because of heat, so needs to cool with the welding gas for 10 seconds, this knob is for adjusting the post-flow time.

### Pilot light

❖ Overheat indicator light

If the machine works continuously for long time under big current, it' s inner parts may get burned as a result of over-heat. To avoid this, we set the pilot light, when it' s on, please stop working, but do not turn off the machine, and it can recover after 2 or 3 minutes.

❖ Abnormal phenomenon indicator light

If the machine has abnormal phenomenon, the light will be on. Please turn off the power supply and restart the machine to see if it' s normal again; if not, please ask professionals or the manufacturer for help.

❖ Digital meter

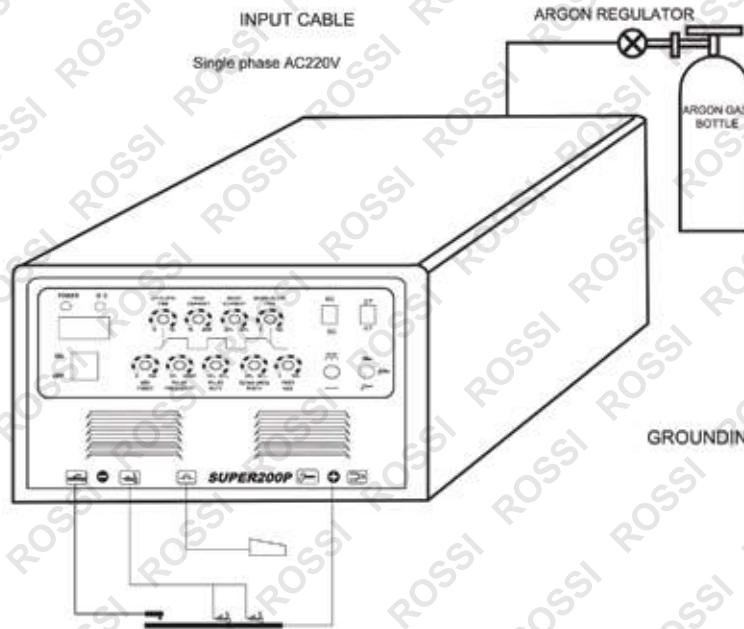
This meter display the set current before welding and display real current during welding process.

## INSTALLATION

This machine comes standard with an air regulator for use during plasma cutting mode or it can also be used during TIG welding mode to help regulate the argon gas flow into the torch. Use of an extended welding or ground cable may cause low quality welds unless you choose one with a thicker cable to reduce current losses.

- 1) Locate an electrical plug suitable for your outlet. It should be rated for your machine.
- 2) Primary cable is available for this welding equipment. Connect the primary cable with power supply of required input voltage.
- 3) Plug the three connector of the torch into the , "GAS", and "—" socket on the panel board, and fasten the screw, according to the drawing.
- 4) Plug the fast-plug of the cable to "+" of the socket on the panel board, and fasten it in the clockwise direction. Connect earth clamp with work piece.
- 5) Option: If the pedal control switch is in use, connect the pilot-plug of the pedal box to the  on the panel board and turn the current to its lowest setting to allow the foot pedal to adjust the current.

The connecting structure of SUPER series and AC/DC series welding machine is shown as following Fig.3.



**Fig.3 Connecting structure of SUPER series welding machine**

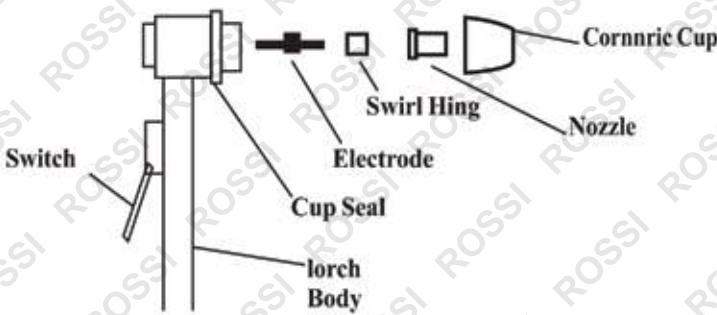
**Please check follow items before carry out welding:**

- 1) Connect your gas source. Air for plasma cutting and argon for TIG. Make sure your pressure is accurate for the type of material you are dealing with.
- 2) This machine is rated for 220v 1-phase input only. Do not attempt to use on 110 v power supply.
- 3) Set up your torch consumables for you work. Clamp the ground on your work.
- 4) TIG torch must be the type of separate model, that is to say gas and electronics are from different path, which as the torch equipped with the machine when you bought.
- 5) Adjust your knobs on the panel and switches to the correct settings based upon your work.
- 6) With automatic voltage fluctuation compensation, this welding equipment is function despite that the input voltage of power source exceeds up 15% of the normal voltage and reduces to 85% of normal voltage.
- 7) The increase of the cross section of leads is necessary according to the increase length of the leads. For possible machine trouble possibly occurs due to excessively length of the leads. Thus the recommended length and across section is optimal.
- 8) Make sure the gas supply is available. Connect the argon gas supply system. Make certain that the connection is available to prevent gas leakage.
- 9) Ground the frame of this welding equipment with cables of which the minimum cross section is 6mm<sup>2</sup> with the earth terminal.
- 10) Connect input and output cable as following drawing.
- 11) The welding operation is obtainable, in case the above procedures are completed.

If your machine comes with an air regulator/filter you will need to secure the bracket to the machine and then fasten the the regulator to the bracket. Locate the in and out labeled on the regulator body. Cut a section of hose long enough to bend around the back of the machine as pictured and secure it to the outlet on the regulator and the inlet to the machine. Next you will need to connect an air compressor to the inlet to the regulator. The air compressor should be set to a higher pressure than the machine requires.

Set the knob on the regulator to the specified pressure your machine requires. After each time of long duration usage you will need to push the water release button to release water from the water separator section of the regulator. It is designed to remove water from the air.

Assembly of the Torch Consumables for CUT Torch Head is as following Fig. 5 shows:



### **Fig.5 Assembly of Consumables for Cut Torch Head**

The torch shield cup is made of ceramic which is fire and heat resistant. Do not drop or strike anything with the torch. The on/off switch can be positioned on the top, side or bottom of the torch body to allow ease of the use. The assembly of the consumables is as picture . The electrode is inserted in first, then seat the ring on the electrode. The copper tip should be placed on the ring and it should seat well and flat. Last you will secure all parts in place by turning the ceramic cup clockwise until it is snug. Do not over tighten and make sure the tip seats properly under the cup.

## OPERATION OF TIG MODE

### INSTRUCTIONS TO ACT TIG

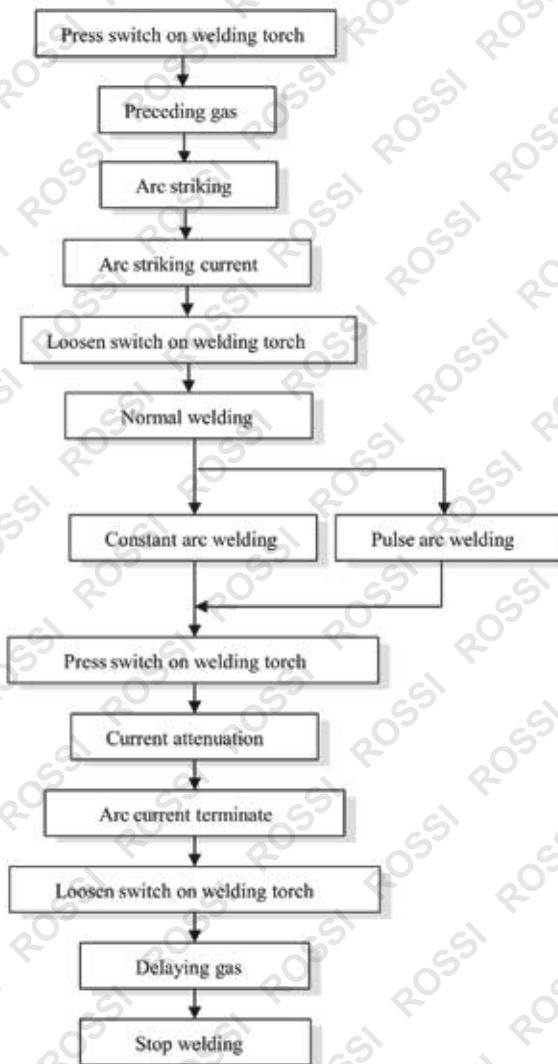
1. Opt "AC" mode.
2. PULSED/DC Switch, This function only suit for TIG pulse Mode machine, in case PULSED mode, the Base Current, Pulse Adjustment and Clear Whdth Adjustment are obtainable.
3. Switch on the power source, and the fan-on-demand is functioning.
4. Set the gas output (refer to Parameter).
5. Set the Clear Width according to the degree of oxidization of work pieces.
6. Switch on the welding torch, the eletromagnetic valves functions, HF electricity releasing is starting and gas output presents.

### Instructions to DCTIG Welding

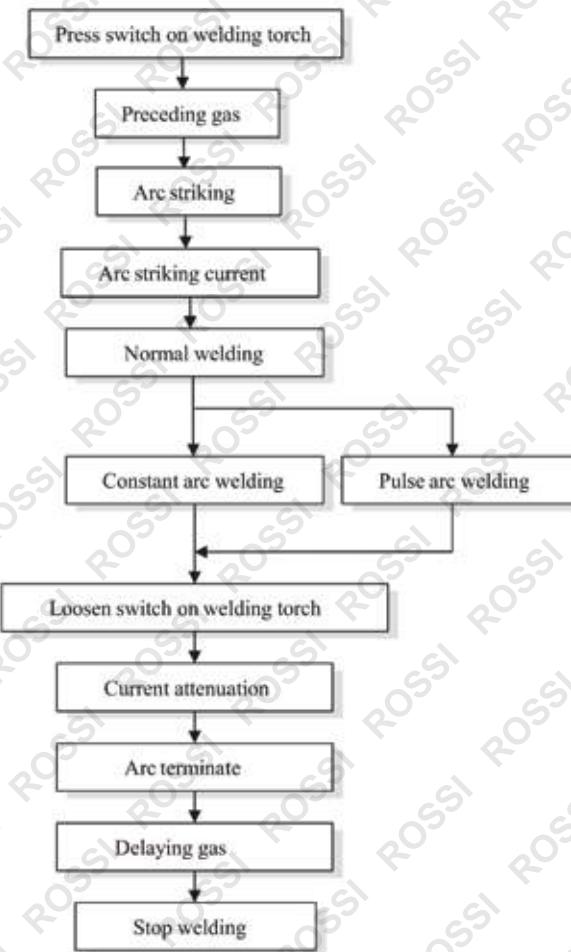
1. Opt "DC" mode.
2. PULSED/DC Switch which function only suit for TIG pulse Mode machine, in case of PULSED mode, the Base Current, Pulse Adjustment and Clear Whdth Adjustment are obtainable.
3. Switch on the power source, and the fan demand available.
4. Release the gas, and set the required value. Please refer to the parameter.
5. Switch on the welding torch, the eletromagnetic valves functions, HF electricity releasing is starting and gas output presents.

*Note: Please press the switch of the welding torch for several seconds, to completely exhaust the gas in the tube. Afterwards the welding operation is desirable. The welding is completed; there is still gas output for several seconds to protect the weld.*

## ❖ Operation procedure for four-stage TIG welding



## ❖ Operation procedure for tow-stage TIG welding



### NOTE:

If the welding machine works exceeding standard load duration rate, the machine may turn into protection state and stop working because of overheated. In the meantime, the red indicator on the front panel shines. In this case, you just keep the fan runing to cool the machine ,and need not to pull your power supply plug. It can restart to work after red indicator light shut off, which means the temperature declines to standard scope.

## **OPERATION OF CUTTING MODE**

- 1 Plug the machine to the electrical outlet, first masking sure the machine on/off switch is in the off position.
- 2 Connect the air compressor supply line to input side of the air regulator/filter (if applicable).
- 3 Turn the on/off switch of you cutter to the ON position. The cooling fan should come on and the ON indicator LED (if applicable) should comes on.
- 4 At this point your should already have your cables connected to your machine, if they are not then turn off your machine and to this now and start over.
- 5 Connect the ground clamp to your workpiece to be cut. Make sure there is no rust or paint creating an open circuit. You should clean the contact point on the workpiece to ensure a good electrical connection.
- 6 Make sure your protective clothing and eye protection is on before going any further. Work in a well ventilated area to avoid smoke.
- 7 Bring the torch tip into direct contact with your workpiece edge or over a pre-drilled pilot hole if
- 8 Cutting very thick material. See cutting Guideline table below for more details about cutting. Depress the button on your torch to start the arc and begin cutting.
- 9 After performing the desired cut you may need to clean off slag from the under part of the cut. Do this with a grinder or chisel.
- 10 When cutting thin material, you may start directly perpendicular to the workpiece, there is no need to angle or start on the edge as the arc will pass through quickly. When cutting medium material, you should angle the torch tip to avoid damaging the tip. Once the arc passes through the material you may begin cutting normal. When cutting thick material, you should drill a pilot hole to start your arc through or start on the edge of the workpiece.
- 11 Do not cut any material on a flat surface. The workpiece should be raised off the ground to avoid blow back which may burn you or cause fires.

## **TYPICAL STARTUP PROBLEMS TO AVOID**

1. Make sure you connect your plug to the input wires correctly. Green or Green with yellow stripe is always ground. The other two wires are for your 220v line in.
2. Make sure you have correct gas flow at rated pressure of the machine, Incorrect gas will not operate normally
3. Make sure you are using dry air; moisture in the air will cause malfunctions.
4. Make sure your cables are correct for the function you have chosen. TIG mode requires TIG torch, etc.
5. Make sure TIG torch is separate model, that is to say gas and electronics are from different path, which as the torch equipped with the machine when you bought.
6. Observe proper torch consumable assembly. Improper assembly of consumables will damage the machine.

# TROUBLE SHOOTING

<b>MALFUNCTION</b>	<b>SOLUTION</b>
Fan doesn't work,no digital display, no welding output.	<ol style="list-style-type: none"> <li>1.confirm the switch is good and connected</li> <li>2.confirm the output cable and the power supply is normal</li> <li>3.thermal resistance (2pcs)in the power supply board is damaged,which may caused by DC24V relay not close or the connect is not good)</li> <li>4.malfunction of power supply board,no DC310V voltage output</li> <li>5.malfunction of assistant power in the control board</li> <li>6.check frequency transformer which may be damaged</li> </ol>
Fan works,O.C.light off,no sound of HF discharge,no arc striking when scratch	<ol style="list-style-type: none"> <li>1.chenck each connection cable</li> <li>2.maybe control circuit has problem</li> <li>3.control cable in the welding torch is off</li> </ol>
O.C.light off, has sound HF discharge, no welding output	<ol style="list-style-type: none"> <li>1.welding torch cable is off</li> <li>2.earth cable is off or not connect to the welding workpiece</li> <li>3.cathode output terminal or welding torch gas output terminal is loose from the connection</li> </ol>
O.C. light is off, no sound of HF discharge	<ol style="list-style-type: none"> <li>1.connection between Primary circle of transformer and arc striking board is loose, please re-tighten</li> <li>2.discharge point is oxidized or the distance is too far, check the oxidized film of discharge point or adjust the distance between two discharge points about 1 mm</li> <li>3.check and replace component of HF arc striking circuit</li> </ol>
O.C. light on, no output	<ol style="list-style-type: none"> <li>1.maybe it is over-current protection,please turn off the machine, restart the machine after the O.C.light off.</li> <li>2.maybe malfunction of inverter of arc striking board, please unplugged the plug (VH-0.7) in the main transformer of MOS board, then restart.             <ol style="list-style-type: none"> <li>(1) indicator is still on, turn off the machine then unplugged the power of the arc board, then restart.</li> <li>a.O.C. light still on, some MOSFET is broken in the MOS board damaged, check and replace the same model parts.</li> <li>b.O.C. light off, maybe the transformer in arc striking board be damaged.</li> </ol> </li> <li>(2) please plug the power supply of the fault inverter, don't plug the power of the main transformer, then restart.</li> <li>a, if the O.C. light off, so the problem is at middle board, maybe the transformer be damaged,please use power bridge to measure every main transformer primary inductance and Q value.</li> <li>b. Maybe the middle board rectifier be damaged, check and replace the same model rectifier.</li> <li>3.maybe feedback circuit is short-circuit</li> </ol>

Tugsten pole is burned seriously	Duty cycle is too bid, please adjust it smaller
Couldn't break Oxidized Film when welding Aluminum	1.choose a wrong welding current 2.duty cycle is too small 3.MOSFET for second inverter maybe damaged
Welding Current is unstable	1.please check the power, maybe the power supply is untable 2.please check and replace, maybe the main control board is damaged
Welding Current can't be adjusted	1.please check and replace, maybe it is disconnection 2.please check and replace, maybe the main control board is disconnection. 3.please check and replace, maybe the remote control is disconnection.
No arc striking for cutter	1.check whether the earth cable is connected well 2. check whether has the HF 3. check the gas regulator and gas supply 4.check the tip and nozzle of the torch



**Some experts believe the incorrect or prolonged use of almost any product could cause serious injury or death. For information that may reduce your risk of serious injury or death consult the points below and additionally, the information available at [www.datastreamserver.com/safety](http://www.datastreamserver.com/safety)**

- Consult all documentation, packaging and product labelling before use. Note that some products feature online documentation which should be printed and kept with the product.
- Check product for loose / broken / damaged / missing parts, wear or leaks (if applicable) before each use. Never use a product with loose / broken / damaged / missing parts, wear or leaks (if applicable).
- Products must be inspected and serviced (if applicable) by a qualified specialist every 6 months assuming average residential use by a person of average weight and strength, above average technical aptitude, on a property matching average metropolitan specification. Intended use outside these guidelines could indicate the product is not suitable for intended use or may require more regular inspection or servicing.
- Ensure all possible users of the product have completed an industry recognised training course before being given access to the product.

- The product has been supplied by a general merchandise retailer that may not be familiar with your specific application or your description of the application. Be sure to attain third party approval for your application from a qualified specialist before use regardless of prior assurances by the retailer or its representatives.
- This product is not intended for use where fail-safe operation is required. As with any product (take an automobile, aircraft, computer or ball point pen for example) there is always a small chance of a technical issue that needs to be repaired or may require replacement of the product or a part. If the possibility of such failure and the associated time it takes to rectify could in any situation inconvenience the user, business or employee or could financially affect the user, business or employee then the product is not suitable for your requirements. This product is not for use where incorrect operation or a failure of any kind, including but not limited to a condition requiring product return, replacement, service by a technician or replacement of parts could cause a financial loss, loss of employee time or an inconvenience requiring compensation.
- If this item has been purchased in error considering the points above simply contact the retailer directly for details of their returns policies if required.

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