

Stealth

DIGI-ARC 160PFC MV

Part No. 9022H

OPERATOR'S MANUAL



SWP

IMPORTANT

Read this Owner's Manual completely before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions provided for your protection. Contact your distributor if you do not fully understand this manual.

CONTENTS

1	SAFETY	4
1.1	SIGNAL EXPLANATION	4
1.2	ARC WELDING DAMAGE	4
1.3	ELECTRIC AND MAGNETIC FIELDS INFORMATION	7
2	SUMMARY	8
2.1	BRIEF INTRODUCTION	8
2.2	WORKING PRINCIPLE	9
2.3	VOLT-AMPERE CHARACTERISTIC	9
3	INSTALLATION AND ADJUSTMENT	11
3.1	PARAMETERS	10
3.2	DUTY CYCLE AND OVER-HEATING	11
3.3	WELDING POLARITY CONNECTION	11
4	OPERATION – CONTROL AND CONNECTORS	13
4.1	MACHINE CONTROLS	13
4.2	WELDING CURRENT ADJUSTMENT	14
4.3	WELDING OPERATION	14
4.4	WELDING PARAMETERS	14
4.5	ARC WELDING DEFECT AND PREVENT METHOD	15
4.6	OPERATION ENVIRONMENT	17
4.7	OPERATION NOTICES	17
5	MAINTENANCE & TROUBLESHOOTING	18
5.1	MAINTENANCE	18
5.2	TROUBLESHOOTING	19
5.3	MAIN ELECTRICAL DIAGRAM	21
6	PARTS LIST	22

1 SAFETY



1.1 Signal Explanation

- The above icons mean Warning! Notice! Running and thermal parts or receiving an electric shock may harm you or others. The following precautions apply as a guide to working safely.

1.2 Arc Welding Damage

- The following icons explanations are to prevent accidents to you or others during the welding process.
- Only experienced personell can install, operate, maintain and repair the equipment.
- During the operation make sure those around you are properly protected.
- After turning off the machine power, please maintain and examine the equipment according to 5 due to DC voltage existing in the electrolytic capacitors.



ELECTRIC SHOCK CAN KILL

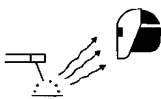
- Never touch live electrical parts.
- Wear dry, hole-free gloves and clothes to insulate yourself.
- Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.
- Take care when using the equipment in a confined space, on uneven surfaces and in damp conditions.
- Ensure the equipment is installed correctly and the work or metal is earthed according to the operation manual.
- The electrode and work (or ground) circuits are 'hot' when the machine is on. Do not touch these electrically 'hot' parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically 'hot'.
- Always ensure the work cable makes a good electrical connection and is as close as possible to the metal being welded.
- Ensure the electrode holder, work clamp, welding cable and welding machine are in good, safe operating condition. Replace any damaged insulation.
- Never dip the electrode in water for cooling.
- Never simultaneously touch electrically 'hot' parts of electrode holders connected to two machines as voltage between the two can be the total of the open circuit voltage of both welders.
- When working above floor level, use a safety belt to protect yourself from a fall should you receive an electric shock.



FUMES AND GASES CAN BE DANGEROUS

- Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases.

- When welding, keep your head out of fumes. 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 or 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 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.
- Do not weld in locations near chlorinated hydrocarbon vapours coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapours to form phosgene – a highly toxic gas – and other irritating products.
- Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to ensure breathing air is safe.
- Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet and follow your employer's safety practices.



ARC RAYS CAN BURN

- Use a shield with the correct filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding.
- Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- Protect nearby personnel with suitable, non-flammable screening and/or warn them to avert their eyes from the arc rays or expose themselves to hot spatter or metal.



SELF-PROTECTION

- 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.
- 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.



DO NOT add fuel near an open flame welding arc or when the engine is running. Stop the machine and allow it to cool before refuelling to prevent spilled fuel from vapourising 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.



WELDING SPARKS can cause fire or explosion

- 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.

- Where compressed gases are to be used at the job site, special precautions should be taken to prevent a hazardous situation.
- 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.
- Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to ensure that any flammable or toxic vapours have been eliminated from within. They can cause an explosion even though they have been 'cleaned'.
- Vent hollow castings or containers before heating, cutting or welding. They may ignite.
- Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuff less trousers, protective shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined space. Always wear safety glasses with side shields when in a welding area.
- Connect the work cable to the work as close to the welding area as practical. Keep work cables connected to the building framework or other locations away from the welding area.



Rotating parts may be dangerous

- 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.
- Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- Cylinders should be located:
 - Away 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.
- Never allow the electrode, electrode holder or any other electrically 'hot' parts to touch a cylinder.
- Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.

1.3 Electric and Magnetic Fields

- Electric current flowing through any conductor causes localised Electric and Magnetic Fields (EMF). The discussions of the effect of EMF is ongoing globally. Up to now, there is no material evidence that EMF has any adverse effects on health.

Minimise exposure to EMF as far as possible by applying the following procedures:

- Route the electrode and work cables together. Secure them with tape when possible.
- All cables should be stored away from the operator.
- Never coil the power cable around your body.
- Make sure welding machine and power cable are far enough away from the operator according to the working environment.
- Connect the work cable to the workpiece as close as possible to the area being welded.
- Personnel fitted with a heart-pacemaker should keep their distance from the welding area.

2 SUMMARY

2.1 Brief Introduction

The DIGI-ARC 160PFC MV welding machine features the latest Pulse Width Modulation (PWM) technology and Insulated Gate Bipolar Transistor (IGBT) power module, which can change work frequency to medium frequency so as to replace the traditional large transformer with a medium frequency transformer – making it smaller, portable lightweight and low consumption.

The DIGI-ARC 160PFC MV offers excellent performance with: constant current output for a stable welding arc; fast dynamic response speed to reduce impact from the arc length fluctuation to the current; accurate stepless current adjustment and pre-setting function.

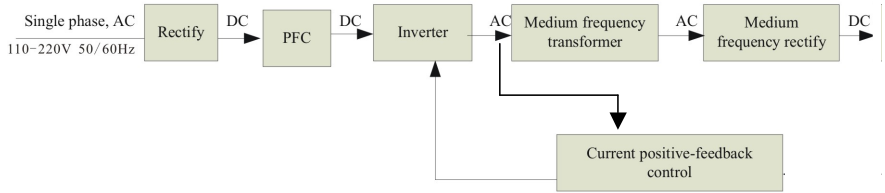
There are further automatic protection functions for under voltage, over-current, over-heat, etc. In the event of any failure, the alarm on the front panel lights and the output current is simultaneously cut off. This function provides for safe operation and can extend the working life of the machine.

In MMA operation, if the electrode touches a workpiece for over two seconds the welding current will automatically drop to the minimum current to protect the electrode. While in TIG operation, the minimum current will be output initially until the arc is ignited by lifting method. The output current rises to the preset value to protect the electrode. At the same time, the arc force and hot start will be provided with MMA operation.

- MMA** Manual Metal Arc welding
- PWM** Pulse-Width Modulation
- IGBT** Insulated Gate Bipolar Transistor
- TIG** Tungsten Insert Gas welding

2.2 Working Principle

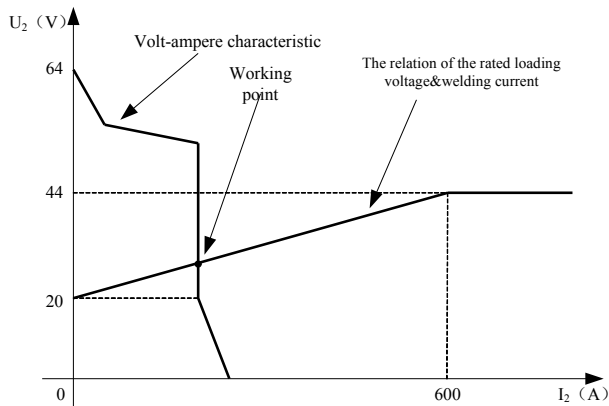
The working principle of the DIGI-ARC 160PFC welding machines is shown as follows: Single phase work frequency 110/220V (50/60 Hz) is converted to DC, then by PFC circuit DC (approx. 155/312V), then is converted to medium frequency AC (approx 50/40KHz) by inverter device (IGBT). After reducing voltage by medium transformer (the main transformer) and rectifying by medium frequency rectifier (fast recovery diode). The circuit adopts current feedback control technology to ensure a stable current output. Meanwhile, the welding current parameter can be adjusted continuously and steplessly to meet with the requirements of the welding craft.



2.3 Volt-Ampere Characteristic

The DIGI-ARC 160PFC welding machine has an excellent volt-ampere characteristic, as shown as the following graph. In MMA welding the relation between the rated loading voltage U_2 and the conventional welding current I_2 is as follows:

When $I_2 \leq 600A$, $U_2 = 20 + 0.04 I_2$ (V); When $I_2 > 600A$, $U_2 = 44$ (V).



3 INSTALLATION AND ADJUSTMENT

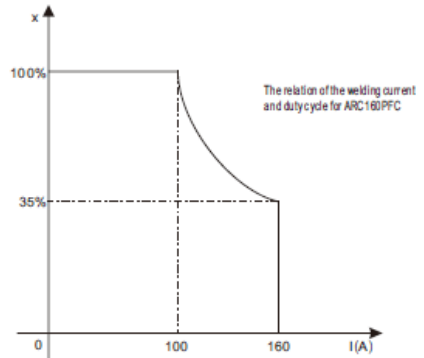
3.1 Parameters

DIGI-ARC 160 PFC MV				
Power Supply Voltage (V)	110		230	
Frequency (Hz)	50/60			
	TIG	MMA	TIG	MMA
Rated Input Current (A)	15.8	24.4	15.7	22.9
Rated Input Power (Kw)	2.0	2.9	3.6	5
Power Factor	0.99			
Welding Current Adjustment Range (A)	10~90		10~160	
Maximum No Load Voltage (V)	14.5			
Efficiency (%)	≥85			
Duty Cycle (40°C / 10 min)	40% 90A	40% 90A	40% 160A	40% 160A
	60% 75A	60% 75A	60% 135A	60% 135A
	100% 60A	100% 60A	100% 105A	100% 105A
Insulation Class	H			
Protection Class	IP23			
Net Weight (Kg)	6			
Dimensions (mm) L × W × H	390 × 146 × 278			

3.2 Duty Cycle and Over-heating

The letter 'X' stands for duty cycle, which is defined as the proportion of the time that a machine can work continuously within a certain time (10 minutes). The rated duty cycle means the proportion of the time that a machine can work continuously within 10 minutes when it outputs the rated welding current.

The relation between the duty cycle 'X' and the output welding current 'I' is shown as the figure on the right.

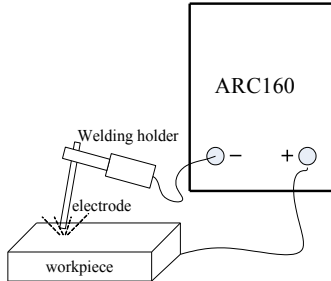


If the welder is over-heating, the IGBT over-heating protection unit inside will send a message to cut output welding current and illuminate the pilot lamp on the front panel.

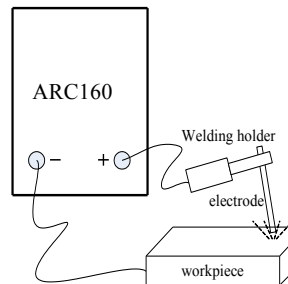
At this point, the machine should be turned off for 15 minutes to cool the fan. When operating the machine again, the welding output current or the duty cycle should be reduced.

3.3 Welding polarity connection

3.3.1 MMA



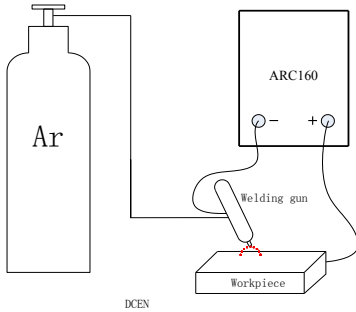
DCEN



DCEP

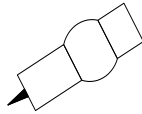
Choosing the connection of DCEN or DCEP is based on the arc stable burning condition. The different electrodes need different connections. Please refer to the electrode manual.

3.3.2 TIG

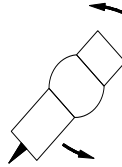


When in TIG operation, the shielded gas is fed directly into the welding gun in readiness for the lift arc process.

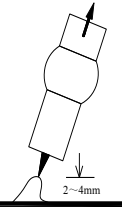
1. Place welding gun at an angle



2. Scrape the electrode with the workpiece



3. Lift arc



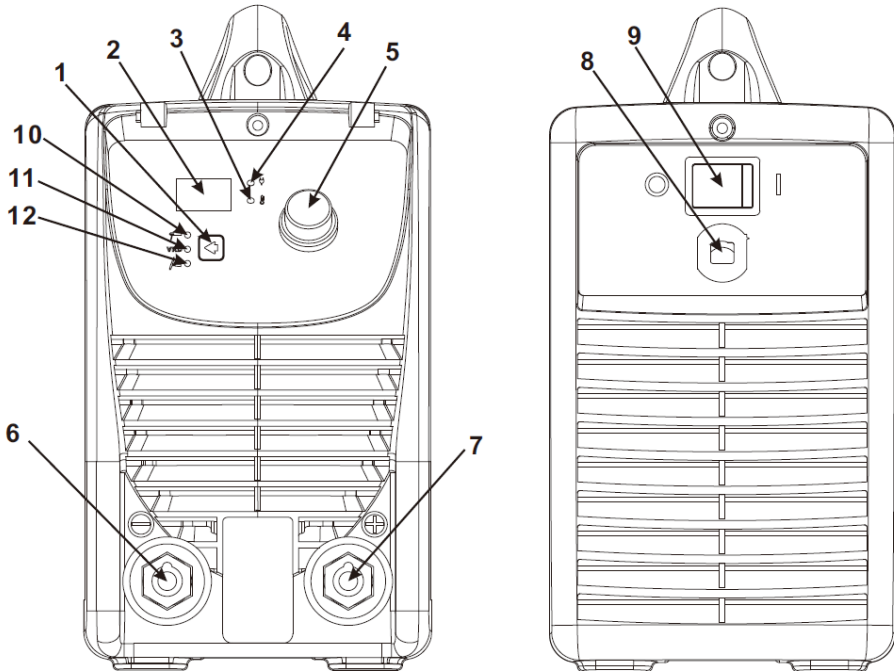
Steps of scraping arc

Striking arc of TIG operation:

When tungsten electrode touches the workpiece, the short-circuit current is only 28A. After generating arc, current can rise to the setting welding current. If the tungsten electrode touches the workpiece when welding, the current will drop to 5A within 2 seconds, which can further reduce the tungsten spoilage and extend the life of the tungsten electrode and prevent clipping.

4 OPERATION – CONTROL AND CONNECTORS

4.1 Machine Controls



- 1 Conversion switch: Select (up) – MMA
Select (middle) – VRD MMA
Select (down) – TIG
- 2 Current display: Displays when machine is working.
- 3 Alarm pilot lamp: When the machine loses voltage, over-current, or over-heat, the pilot light indicates that the protection of the machine has been activated.
- 4 Power pilot lamp: Lights when machine is on.
- 5 Welding current regulation: Set welding current.
- 6 Earth connection: Negative polarity output.
- 7 Welding connection: Positive polarity output.
- 8 Cable clamp: Connected to the mains cable.
- 9 Power switch: Select 'ON' for power on, select 'OFF' for power off.
- 10 MMA pilot lamp: Lights when MMA selected (up).
- 11 VRD MMA pilot lamp: Lights when VRD MMA selected (middle).
- 12 TIG pilot lamp: Lights when TIG selected (down).

4.2 Welding current adjustment

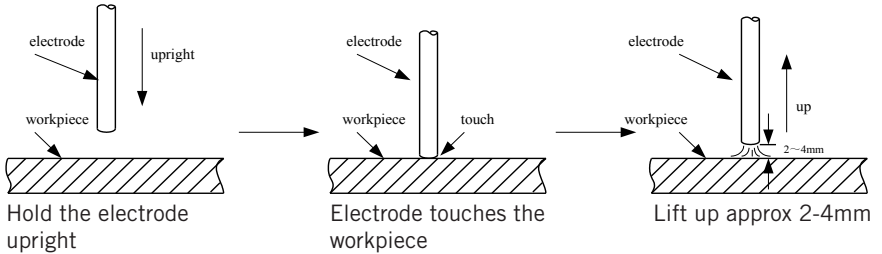
Welding current range is 10~160/200A.

The DIGI-ARC 160PFC MV has a welding current pre-setting function that displays the amperage and allows for accurate parameters and adjustment.

4.3 Welding operation

4.3.1 Striking arc

Knocking arc: Hold the electrode upright to contact with the workpiece. After forming a short circuit, quickly lift up about 2~4 mm, and arc will be ignited. This method is ideal for welding brittle or hard steel.



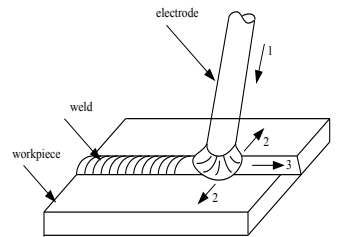
The lift arc process is used by gently scraping the tungsten electrode onto the work piece then lifting off once the arc is struck. Care should be taken not to put too much pressure on the tungsten when operating in this process.

4.3.2 Manipulation of electrode

With MMA welding there are three operations:

- 1 The electrode moves to the molten pool along axes
- 2 The electrode swings right and left
- 3 The electrode moves along welding way

The operator can select the appropriate operation based on welding joint shape, welding position, electrode spec welding current and operational skills etc.

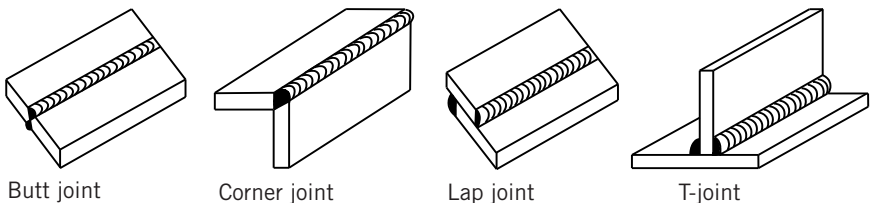


- 1 - Electrode movement.
- 2 - Electrode swings right and left.
- 3 - Electrode moves along weld.

4.4 Welding parameters

4.4.1 Joint form in MMA

The common basic joint forms are: butt joint, lap joint, corner joint and T-joint.



4.4.2 Electrode selection

Electrode diameter selection is based on the workpiece thickness, welding position, joint form, welding layer, etc. Please refer to the following table.

The welding current reference for different electrode diameter				
Electrode diameter/mm	1.6	2.0	2.5	3.2
Welding current/A	25~40	40~60	50~80	100~130
The relation between the welding current(I)' factor(K) & electrode diameter(d) ($I=K \times d$: Carbon electrode)				
Electrode diameter/mm	1.6	2~2.5	3.2	
Factor/K	20~25	25~30	30~40	

- Electrode should be drying according to user manual before using. For reducing the hydrogen of the molten pool and welding seam, and avoiding the blowhole and cold crack.
- In the welding process, the arc must not be too long otherwise it will cause unstable arc burning, large spatter, light penetration, undercut, blowhole, etc. If the arc is too short, it will cause electrode stick.
- In MMA welding the arc length is usually equal to 0.5~1.0 times of the electrode diameter. The basic electrode's arc length is not beyond the electrode diameter, it's better to choose the short arc welding; the acid electrode's arc length is equal to the electrode diameter.

4.5 Arc Welding Defect and Prevent Method

Defect name	Caused reasons	Prevent methods
Welding seam doesn't meet the requirement	The groove angle is not proper The root face and assembly gap is not equal Welding technics parameters are unreasonable The welder's operation skill is lower	Choosing the proper groove angle & assembly gap, improve the assembly quality Choosing the proper welding parameters Improve the operation skill of welders
Undercut	Over current Arc length is too long The electrode angle is wrong Manipulation of electrode is not proper	Choosing the proper welding current & speed The arc can't be drawn too long The electrode angle should be proper Manipulation of electrode should be correct
Incomplete penetration	The groove angle or gap is too small, the root face is too big Welding parameters are not suitable, or the assembly is not good The welder's operation skill is lower	Correctly to choose and process the groove size Correctly to assemble and ensure clearance Choosing the suitable welding current & speed Improve the operation skill of welders

Incomplete fusion	<p>The welding thermal input is too low</p> <p>The arc direction is lean</p> <p>There are rust & dust on the side of groove</p> <p>The slag between the layers is not cleared well</p>	<p>Correctly to choose the welding parameters</p> <p>Operation seriously</p> <p>Enhance the clearness of layers</p>
Overlap	<p>The temperature of molten pool is too high</p> <p>The liquid metal concretes slowly</p>	<p>Choosing parameters based on the welding different position</p> <p>Strictly to control the molten hole size</p>
Crater	<p>The crater time lasts too short</p> <p>Over current in the welding of thin plate</p>	<p>In the crater, electrode should be stayed for a short time or round to manipulate electrode after the molten pool is filled in by metal, take to the side for crater</p>
Blowhole	<p>There are some dust like oil, rust or water on the work piece surface and groove</p> <p>The coating of electrode is damped& is not drying</p> <p>Under current or over speed in the welding</p> <p>The arc is too long or lean burning, the molten pool protection is not good</p> <p>Over current, the coating of electrode falls off and lose protection</p> <p>Manipulation of electrode is not proper</p>	<p>Clear out the dust around groove for about 20~30mm</p> <p>Strictly to dry the electrode according to manual</p> <p>Correctly to choose parameters and to operate</p> <p>Using the short arc operation</p> <p>Welding operation in the field should have anti-wind protection</p> <p>Don't use the invalid electrode</p>
Inclusion & slag inclusion	<p>The slag clears bad in the middle layer in the welding process</p>	<p>Choosing the electrode of good slag detachability</p>
	<p>Under current or over speed in the welding</p> <p>Welding operation is not proper</p> <p>The welding material can not match the work piece</p> <p>The groove design & processing are not proper</p>	<p>Strictly to clear the slag in the layers</p> <p>Correctly to choose the welding parameters</p> <p>Adjusting the electrode angle and manipulation way</p>
Hot crack	<p>In the process of solidification, the inter crystal segregation is seriously caused. At the same time, with the effect of welding stress, the hot crack is formed.</p>	<p>Strictly control the percentage of S and P in welding material.</p> <p>Adjust the structure of welding material.</p> <p>Adopt the basic electrode.</p>
Cold crack	<p>Three reasons will cause cold crack:</p> <p>The structure turned from the marten site</p> <p>The residual stress caused by big restraint intensity</p> <p>The residual hydrogen in welding gap.</p>	<p>Adopt low hydrogen type basic electrode.</p> <p>Bake under the instruction before use.</p> <p>Remove the feculence before use, reduce the percentage of hydrogen</p> <p>Adopt appropriate parameters and heat input</p> <p>After welding, do dehydrogenation at once.</p>

4.6 Operation Environment

- Height above sea level below 1000m
- Operation temperature range: $-10^{\circ}\text{C}\sim+40^{\circ}\text{C}$
- Relative humidity below 90% ($+20^{\circ}\text{C}$)
- Preferably site the machine above floor level with the maximum angle not exceeding 15° .
- Protect the machine against heavy rain, hot environments and direct sunshine
- The content of dust, acid, corrosive gas in the surrounding air or substance should not exceed normal standards
- Take care that there is sufficient ventilation during welding and there is at least 30cm free distance between the machine and wall

4.7 Operation Notices

- Read all notes carefully before attempting to use this equipment
- Connect the ground wire with the machine directly
- If the power switch is accidentally closed, no-load voltage may be exported. Do not touch the output electrode with any part of your body
- Before operation ensure no other personnel is present without proper eye protection
- Ensure good ventilation of the machine to improve duty ratio.
- Turn off the engine when the operation finished to economize energy source.
- If the power switch shuts off accidentally, do not restart until the problem is resolved.
- If problems persist, contact your authorised supplier.

5 MAINTENANCE & TROUBLESHOOTING

5.1 Maintenance

In order to guarantee that an arc welding machine works efficiently and safely, it must be maintained regularly. Read and understand the maintenance methods and regularly carry out safety checks. Make any repairs as required in order to extend the service life of the welding machine. Maintenance items are detailed in the following tables.

- **Warning: Safely maintain the machine by shutting off the power supply and waiting for 5 minutes until the capacity voltage drops to a safe voltage of 36V.**

DATE	MAINTENANCE CHECKS
Daily examination	<p>Observe whether panel knob and switch in the front and at the back of arc welding machine are flexible and placed correctly. If the knob has not been correctly installed, please correct. If this is not possible, replace immediately.</p> <p>If the switch is not flexible or it cannot be correctly installed, please replace immediately. Contact your distributor if there are no parts to hand.</p> <p>After switching on power, watch and listen to check the arc welding machine is not shaking, whistling or giving out an unusual odour. If so, investigate and eliminate. If any problem persists please contact your distributor.</p> <p>Observe the LED is working correctly. If the number is not displayed, replace the LED. If it still does not work, maintain or replace the display PCB.</p> <p>Observe whether the min/max value on LED accords with the set value. If there is any difference and it has affected the normal welding process, adjust accordingly.</p> <p>Check fan for damage and correct rotation. If damaged, change immediately. If the fan does not rotate after the arc welding machine is overheated, check the blade is not obstructed. If the fan still does not rotate after eliminating the above, push the blade in the direction the fan rotates. If the fan rotates normally, the start capacitor should be replaced. If not, change the fan.</p> <p>Check whether the fast connector is loose or overheated. If so, it should be fastened or changed.</p> <p>Check the current output cable is not damaged. If so, it should be securely insulated or replaced.</p>

DATE	MAINTENANCE CHECKS
Monthly examination	<p>Use dry compressed air to clear the inside of arc welding machine. Pay particular attention to clear any dust on radiator, main voltage transformer, inductance, IGBT module, the fast recover diode and PCB, etc.</p> <p>Check the arc welding machine bolt. If loose, tighten. Replace if worn. Scrape off any rust to ensure it works efficiently.</p>
Quarterly examination	<p>Check the actual current accords with the displaying value. If not, they should be reconfigured. The actual current value can be measured by the adjusted plier-type ampere meter.</p>
Annual examination	<p>Measure the insulating impedance among the main circuit, PCB and case. If it is below $1M\Omega$, insulation may be damaged and should be repaired or replaced.</p>

5.2 Troubleshooting

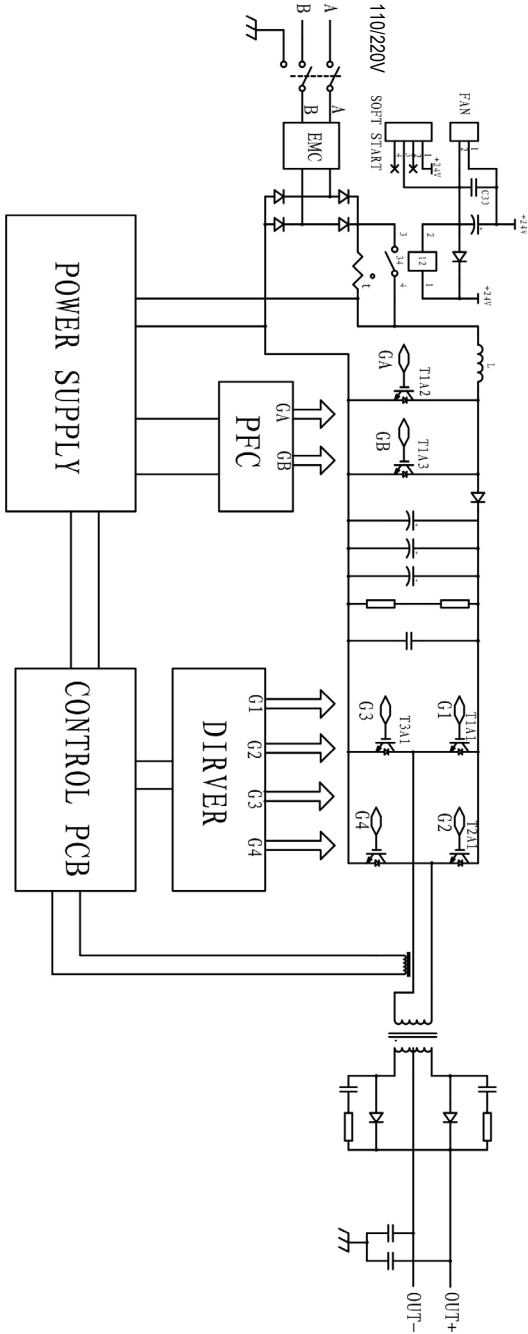
- Before arc welding machines are dispatched from the factory, they have already been carefully checked. Do not allow anyone unauthorised to make any alterations to the equipment.
- Maintenance work must be carefully undertaken. If any wire becomes loose or misplaced, it may be a potential danger to the user.
- Only authorised professional maintenance personnel should overhaul the machine.
- If a problem persists and no authorised professional maintenance personnel is available, contact your authorised supplier.

If there are minor problems with the DIGI-ARC160PFC MV welding machine, consult the following chart:

If there are minor problems with the DIGI-ARC160PFC MV welding machine, consult the following chart:

S/N	Troubles	Reasons	Solutions
1	Turn on the power source, and fan works, but the power light is not on.	The power light damaged or connection is not good	Test and repair the inside circuit of power light Pr3
		Power PCB failures	Repair or change power PCB Pr2
2	Turn on the power source, and the power light is on, but fan doesn't work	There is something in the fan	Clear out
		The fan motor damaged	Change fan motor
3	Turn on the power source, and the power light is not on, and fan doesn't work	No input voltage	Check whether there is input voltage
		Overvoltage (Input voltage is too much or not)	Check input voltage
4	No no-load voltage output	There is trouble inside the machine	Check the main circuit, Pr1 and Pr2
5	No current output in the welding	Welding cable is not connected with the two output of the welder.	Connect the welding cable to the welder's output
		Welding cable is broken	Wrap, repair or change the welding cable
		Earth cable is not connected or loosen	Check the earth clamp
6	Not easy to start arc in the welding, or easy to cause sticking	The plug loosen or connect not well	Check and tighten the plug
		Oil or dust covered the workpiece	Check and clear out
		MMA/TIG welding selection is wrong	Selecting the MMA welding
7	The arc is not stable in the welding process	The arc force is too small	Increase the arc force
8	The welding current can not be adjusted	The welding current potentiometer in the front panel connection not so good or damaged	Repair or change the potentiometer
9	The penetration of molten pool is not enough(MMA)	The welding current adjusted too low	Increase the welding current
		The arc force adjusted too small	Increase the arc force
10	Arc blow	Airflow disturbance	Use the shelter from airflow
		The electrode eccentricity	Adjust the electrode angle
			Change the electrode
		Magnetic effect	Incline the electrode to the opposite way of the magnetic blow
			Change the position of earth clamp or add earth cable in the two side of workpiece
Use the short arc operation			
11	The alarm light is on	Over heat protection	Over welding current Induce the welding current output Induce the duty cycle (interval work)
		Over current protection	Unusual current in the main circuit Test and repair the main circuit and drive PCB (Pr1)

5.3 Main Electrical Diagram



6 PARTS LIST

- 9022H-03 REAR PANEL – USE 9020H-07
- 9022H-04 ROCKER SWITCH – USE 9000H-07
- 9022H-08 FAN
- 9022H-09 FILTER PCB
- 9022H-24 KNOB – USE 9011H-21
- 9022H-25 CONTROL PCB
- 9022H-26 RECTIFIER – USE 9000H-40
- 9022H-28 FILTER PCB

