Pro-Tech TOOLS

Inverter MMA welder



Instructions for use

Translation of the original instructions

SAFETY WARNING !

Injury can occur when welding or cutting. Take care to protect yourself during operation. For more detailed information, please refer to the Safety Operating Manual, which is in accordance with the Preventive manufacturer's requirements.

Electric shock - can lead to death !!!

- Set the earthing fitting according to the applicable standard.
- It is forbidden to touch electrical parts and electrodes when the skin is bare in wet gloves or clothes.
- Make sure you are isolated from the ground and the workshop.
- Make sure you are in a safe position.

Gas - can be harmful to health!

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

Arctic radiation - harmful to the eyes and burns the skin.

- Wear a suitable helmet and light filter, wear protective clothing to protect eyes and body.
- Use a suitable helmet or sling to protect the observer.

Fire

- Welding sparks can cause fire, make sure there are no flammable substances around the welding area.

Noise - extreme noise damages hearing.

- Wear hearing protection or other means of hearing protection.
- Warning that noise is harmful to hearing if an observer is nearby.

Malfunction - when a problem occurs, contact the experts.

- If problems occur during installation and operation, follow these instructions to check.
- If you do not fully understand the operating instructions or if you fail to solve the problem by instructions, you should contact our service centre for expert assistance.



ATTENTION !

When using the machine, a protective switch against creeping current should be installed!!!

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About the machine

The welding machine uses the latest inverter technology.

The development of inverter welding equipment in shielding gas benefits from the development of theory and components
inverter power supply. The inverter welding power supply in the shielding gas uses high-power IGBT components to transmit 50/60Hz, then reduces the voltage and commutates and transmits high-power voltage through PWM technology... Due to the large reduction in weight and volume of the main transformer, the efficiency is increased by 30%. The emergence of inverter welding equipment is considered a revolution for welding
Industry.

The welding source can offer a stronger, more concentrated and stable arc. When the rod and workpiece are shortened, it reacts faster. This means it is easier to design it into a welding machine with different dynamic characteristics and can even be adjusted for specialists to make the arc softer or harder.

The MMA welder has the following characteristics: efficient, energy-saving, compact, stable arc, good welding effect, high no-load tension, good force compensation ability and multiple use.
It can weld stainless steel, alloy steel, carbon steel, copper and other non-ferrous metals. It can be used on electrodes of various specifications and materials including acid, alkaline and fiber. It can be used in high altitude, open area, and indoor and outdoor decorations. Compared with the same products at home and abroad, it is compact in volume, light in weight, easy to install and operate.

ATTENTION !

The machine is mainly used in industry. It will produce radio waves, so the worker should fully prepare for protection.

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Parameters

Model Parameters	MMA-100	MMA-120
Power voltage (V)	220	220
Frequency (Hz)	50/60	50/60
No load voltage (V)	65	65
Retrieved from current (A)	10-I 00(220V)	10-120(220V)
Rated input power Capacity (KVA)	4,2	5,1
Duty cycle (%)	0,3	0,3
Effectiveness	85	85
Insulation class	F	F
Electrode diameter	1.6-3.2mm	1.6-3.2mm

Installation

The machine is equipped with a power supply voltage compensation device. When the supply voltage varies within ±15% of the rated voltage, it can still operate normally.

When using a long cable, it is recommended to use a cable with a larger cross section to prevent voltage drop. If the cable is too long, it may affect the performance of the power system. Therefore, we recommend that you use
configured length.

1. Make sure that the machine's intake is not blocked or obstructed to allow the cooling system to function properly.
2. Use an inductive cable with a cross section of at least 6 mm2 to connect the enclosure to ground. The method is from the grounding connection screw on the back to the grounding device.
3. Connect the arc burner or bracket correctly. Make sure that the cable, bracket and fixing plug have been connected to the ground. Insert the fixing plug into the fixing socket at polarity "-" and fix it clockwise.
4. Insert the cable fixing plug into the fixing socket with polarity "+" on the front panel, fix it clockwise, and the grounding clamp on the other clamp will clamp the working piece.
5. Pay attention to the polarity of the connection, the DC welding machine has two ways of connection: positive connection and negative connection. Positive connection: the holder connects with polarity "-", while the workpiece with polarity "+". Negative connection: workpiece with polarity "-", holder with polarity "+". Select the appropriate method according to the working requirements.
   An inappropriate choice will cause an unstable arch, more splashes and sticking. If such problems occur reverse the polarity of the fixing plug.
6. According to the input voltage class, connect the power cord to the power box of the corresponding voltage class. Make sure that there is no mistake and make sure that the voltage difference is within the permit range. Once all the above work has been carried out, the installation is complete and welding can commence.

If the distance between the workpiece and the machine is too large (50-100 m) and the cables (torch cable and ground cable) are too long, select a cable with a larger cross-section to minimize the voltage reduction.

Operation

I. Open the switch, the screen will display the current volume and the fan will start to rotate.

2. Adjust the welding current and arc knobs to ensure that the welding function meets the requirements.

3. Generally, the welding current is adequate to the welding electrode according to the following:

Specification <l:J				
Current 70- l00A	110-140A	l 70-220A	230-280A	290-350A

4. The arc strike control knob is used to adjust the welding function, especially for low current, which is set in cooperation with the welding current adjustment knob, can adjust the arc strike current and be out of the control of the welding current adjustment knob. Thus, the machine can obtain strong energy, and the pressure current can achieve the goal of higher efficiency.

5. If the welding machine has been coordinated with a remote control device:

   1) Before operation, make sure of the position of the remote control switch. If the switch is in the "OFF" position, which is outside the remote control. The switch is in the "ON" position, it is
   uses a remote control device.

   2) Insert the remote control plug properly into the remote control socket and tighten it firmly to prevent poor contact.

   3) If the remote control is not used, make sure the switch is in the "OFF" position, otherwise the panel will not be able to adjust the welding current.

Warning!

Make sure all power is turned off before connecting. The correct sequence is to first connect the welding cable and ground cable to the machine and make sure they are firmly connected, and then connect the mains plug to the power source.

I . Power switch - switches on or off the electric current for the welder.

2. Welding current adjustment POT - Welding current adjustment.

3. Power indication light - lights up when power is turned on and turns off when power is turned off.

4. Abnormal status indicator light - when the machine is working abnormally, the indicator light is on. Under overheating and low voltage, the machine can reset itself after the fault is removed, under overcurrent, the machine should shut down and restart after the fault is removed.

5. Welding machine output positive pole - when using the basic electrode, the positive pole should connect the ground, and when using the acid electrode, connect the electrode holder.

6. Welding output negative pole - when using a basic electrode, the negative pole should be connected to the electrode holder, and when using an acid electrode, the ground should be connected.

Notes or precautions

1. Environment

1) The machine can operate in an environment where dry conditions are present with a maximum humidity of 90%.
2) The ambient temperature ranges from 10 to 40 degrees Celsius.
3) Avoid welding in the sun or rain.
4) Do not use the machine in an environment where the air is polluted with conductive dust or corrosive gas.
5) Avoid gas welding in environments with strong air flow.

2. Safety standards

The welder has a surge, current and heat protection circuit installed. When the voltage, output current and temperature of the machine exceed the standard, the welder will automatically stop working. Because this will result in
damage to the welder, the user must pay attention to the following.

1) **The working area is sufficiently ventilated !**

The welding machine is a powerful machine, high current is generated during its operation, and the natural wind will not satisfy the cooling requirements of the machine. Therefore, there is a fan in the intermediate room to cool the machine. Make sure that the inlet is not blocked or covered. The user should ensure that the work area is adequately ventilated. This is important for the performance and life of the machine.

2) Machine overload !

The operator should remember to monitor the maximum operating current (response to the selected duty cycle). Ensure that the welding current does not exceed the maximum duty cycle current. Excessive current will damage and burn the machine.

3) No surge !

An automatic voltage compensation circuit ensures that the welding current is kept within the permissible arrangement. If the supply voltage exceeds the permissible limit, it will damage the machine components. The operator should understand the situation and take precautions

4) Behind the welder, there is a grounding screw with a grounding mark. The sheath must be reliably grounded with a cable with a cross section of over 6 millimeters square to prevent atatic electricity and leakage.

5) If the welding time exceeds the limited duty cycle, the welder stops working for protection.
Because the machine is overheated, the temperature control switch is in the "ON" position and the indicator light is red. In this situation, you do not need to pull the plug, let the machine cool down with the fan. When the indicator light goes out and the temperature drops to the standard range, it can be welded again.

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Issues that arise during welding

Fittings, welding materials, environmental factor, power forces may have something to do with welding. The user must try to improve the welding environment.

1. Arc punches are heavy and easy to pause

1) Make sure the quality of the tungsten electrode is high.

2) If the electrode is not dried, it causes an unstable arc, increases the welding error and reduces the quality.

3) If you use a very long cable, the output voltage will be reduced, so shorten the cable.

2. Output current does not reach rated value

When the supply voltage deviates from the rated value, it will cause the output current not to match the rated value; when the voltage is lower than the rated value, the maximum output current may be lower than the rated value.

3. Current is not stable when the machine is in operation

This is due to many factors:

I) The mains voltage of the power line has been changed.

2) There is harmful interference from power lines or other equipment.

4. There is too much spatter when welding with MMA

1) Maybe the current is too large and the rod diameter too small.

2) The connection of the polarity of the output terminal is incorrect, in the normal technique, the reverse polarity should be used, which means that the rod should be connected with the negative polarity of the power source, and the workpiece should be connected with the positive polarity. Therefore, reverse the polarity.

5. Black spot welding

If oxidation of the welding site is not prevented, the user can check:

l) Make sure the argon cylinder valve is open and its pressure is sufficient. If the pressure of the argon cylinder is less than 0.5 MPa, it must be refilled to sufficient pressure.

2) Check that the flow meter is open and has sufficient flow. The user can choose a different flow rate according to the welding current to save gas. However, too little flow rate may cause black welding spot because the preventive gas is too short to cover the welding spot. We recommend that the argon flow rate should be min SL/min.

3) Check that the burner is in the block.

4) If the gas circuit is not airtight or the gas is not clean, the welding quality may be reduced.

5) If there is a strong air flow in the welding environment, this can reduce the welding quality.

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Maintenance

1. Periodically remove dust with dry and clean compressed air, if the welding machine is working in an environment that is polluted by smoke and air pollutants, the machine must be cleaned every time.

2. The pressure of the compressed air must be within a reasonable arrangement to prevent damage to small components in the machine.

3. Periodically check the mutual circuit of the welder and make sure that the cable circuit is properly connected and the connectors are firmly connected. If the connections are loose, clean them and then reconnect them firmly.

4. Prevent water and steam from entering the intermediate machine, if the machine is wet, dry the intermediate machine, and then check the insulation of the machine.

5. If the welder will not be used for a long time, it must be put in a box and stored in a dry environment.

Fault control

Notes: to operate the machines according to these instructions, the user must be a worker in the specific field of electrical power and safety and have the appropriate certification to demonstrate his/her skills and knowledge. As part of the warranty, it is recommended to contact our company to obtain a certificate.

l. Main control items

Failure	Reason
Cannot generate an arc	The burner switch fails, the burner connection cable is damaged.
	A fuse blows or a switch in the control cabinet fails.
	The workpiece connection cable is poorly connected.
	The burner cable is broken.
Cannot hit the arc, or the arc is not stable.	The cable connection is loose.
	The shielding gas is mixed with air.
The welded surface is bad or not good.	The burner is leaking water.
	Gas flow .
	Any dirt or grease on the workpiece.
	The tungsten surface is dirty.
Tungsten wears out too quickly.	The current is set too high.
	The shielding gas is mixed with air.
	The burner and ground are connected in reverse.
	Tungsten is too small.

2. The main points of correction

Abnormal		Reason	Method of repair
Power on, digital meter does not display value, fan does not rotate, no output for welding.		The delivered power lacks phase	Find out the reason for the missing phase
Power on, digital meter does not display value, fan does not rotate, with output..		The fan is broken	Replace it
		The fan is blocked by something	Remove things that block the fan
Abnormal indication light is on	Overheating	Overload	Use by duty cycle 60%
		The fan is broken.	Replace it
	Overcurrent	IGBT, or main trans. is high current	Replace the fan.
Overcurrent, no welding outlet for welding.		MOSFET current, or the main transformation is high	Contact Service

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