ZIKA

OWNER`S MANUAL

Mini 160

SAFETY WARNING

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

Electric shock——May lead to death ！！

- Set the earth fitting according to applying standard.
- Forbidden to touch the bare electric parts and electrode with uncovered skin, wet gloves or clothes.
- Make sure you are insulated from the ground and the workshop.
- Make sure you are in safe position.

Gases and fumes——May be harmful to health!

- Keep your head out of the gases and fumes.
- When arc welding, ventilators or air extractors should be used to avoid breathing gases.

Arc rays——Harmful to your eyes, burn your skin.

- Wear suitable protective mask, light filter and protective garment to protect eyes and body.
- Prepare suitable protective mask or curtain to protect looker-on.

Fire

- Welding spark may cause fire, make sure there is no tinder stuff around the welding area.

Noise——Excessive noises will be harmful to hearing.

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

Malfunction——When trouble happens, contact with authorized professionals.

- If trouble happens during installation and operation, please follow this manual instruction to check up.
- If you fail to fully understand the manual, or fail to solve the problem with the instruction, you should contact the suppliers or the service center for professional help.

WARNING！

Creepage-protecting switch should be added when using the machine！！！

MACHINE DESCRIPTION

The welding machine is a rectifier adopting the most advanced inverter technology.

The development of inverter welding equipment profits from the development of the inverter power supply theory and components. Inverter welding power utilizes high-power component MOSFET to transfer 50/60Hz frequency up to 100 KHz, then reduce the voltage and commutate, and output high-power voltage via PWM technology. Because of the great reduce of the main transformer's weight and volume; the efficiency increases by 30%. The appearance of inverter welding equipment is considered to be a revolution for welding industry.

The welding power source can offer stronger, more concentrated and more stable arc. When stick and work piece get short, its response will be quicker. It means that it is easier to design into welding machine with different dynamic characteristics, and it even can be adjusted for specialty to make arc softer or harder.

MMA welding machine has the following characteristics: effective, power saving, compact, stable arc, good welding pool, high no-load voltage, good capacity of force compensation and multi-use. It can weld stainless steel, alloy steel, carbon steel, copper and other color metal. It can apply to electrode of different specifications and materials, including acidity, alkalescency, and fibre. It can apply in high altitude, the open air and inside and outside decoration. Compared with the same products of home and abroad, it is compact in volume, light in weight, easy to install and operate.

Thanks for purchasing our product and hope for your precious advice. We will dedicate to produce the best products and offer the best service.

WARNING！

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

TECHNICAL PARAMETERS TABLE

Model / Parameters	Mini 160
Power voltage（V）	1phase AC220V±15%
Frequency （Hz）	50/60
Rated input current（A）	23.9 (MAX)
No-load voltage（V）	65
Output current（A）	30-160
Rated output voltage（V）	26.4
Duty cycle （%）	60
No-load loss （W）	40
Efficiency	80
Power factor	0.73
Insulation grade	F
Housing protection grade	IP21
Weight （kg）	4.7
Dimensions （mm）	290×132×203

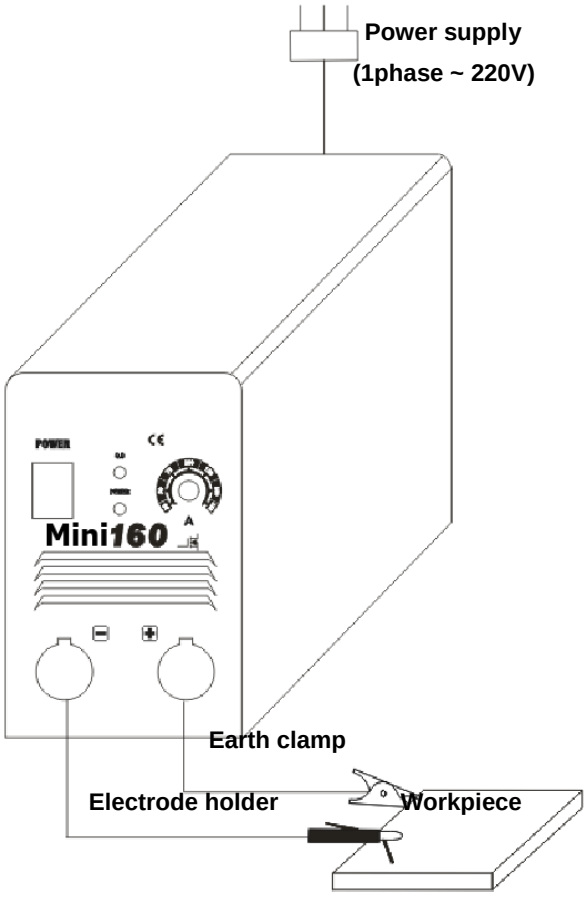
INSTALLATION INSTRUCTION

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

When use long cable, in order to prevent voltage form 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 intake of the machine not blocked or covered, lest cooling system could not work.
2. Use inducting cable whose section is not less than 6 mm² to connect the housing to the ground. The way is from the ground-connecting screw at the back to the earth device.
3. Correctly connect the arc torch or holder according to the sketch. Make sure the cable, holder and fastening plug have been connected with the ground. Put the fastening plug into the fastening socket at the "-"polarity and fasten it clockwise.
4. Put the fastening plug of the cable to fastening socket of "+" polarity at the front panel, fasten it clockwise, and the earth clamp at the other terminal clamps the work piece.
5. Please pay attention to the connecting polarity, DC welding machine has two connecting ways: positive connection and negative connection. Positive connection: holder connects with "-" polarity, while work piece with the "+"polarity. Negative connection: work piece with the "-" polarity, holder with the "+" polarity. Choose suitable way according to working demands. If unsuitable choice, it will cause unstable arc, more spatters and conglutination. If such problems occur, please change the polarity of the fastening plug.
6. According to input voltage grade, connect power cable with power supply box of relevant voltage grade. Make sure so mistake and make sure the voltage difference among permission range. After the above job, installment is finished and welding is available.

Mini 160 Installation Instruction:



If distance of work piece and machine is too far (500-100m), and the cables (torch cable and earth cable) are too long, please choose cable of bigger section to minimize the reduction of the voltage.

OPERATION INSTRUCTION

1. Open the power switch, screen will show set current volume and ventilator is beginning to revolve.
2. Adjust knobs of welding current and arc-striking push, make welding function complies with demands.
3. Generally, welding current is adequate to welding electrode according with as following:

Specification	ϕ2.5	ϕ3.2	ϕ4.0	ϕ5.0
Current	70-100A	110-140A	170-220A	230-280A

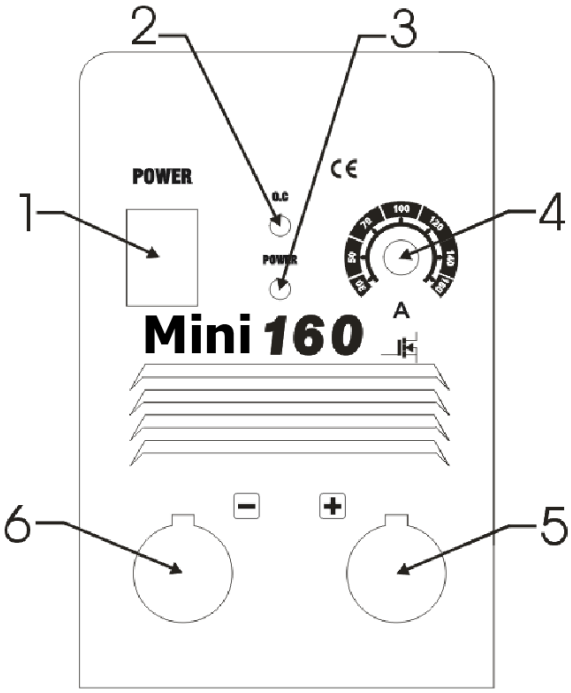
4. Knob of arc-striking drive is use to adjust welding function, specially in low current arrange, that is cooperated with knob of welding current adjustment, they may adjust current of arc striking and be out of control of knob of welding current adjustment .So machine can grain powerful energy and push current can achieve effect that may .
5. If welding machine has been coordinated remote control device:
   1) Make sure the switch position of remote control device before operation .If switch is on “OFF” Position that is out of remote control. Switch is on “ON” position that is using remote control device.
   2) Insert plug of remote control in socket of remote control correctly and tighten firmly in order to prevent poor contact.
   3) If remote control device is not be used, make sure the switch is on “OFF” position, or welding current will not be adjusted on panel.

WARNING!

Before connecting operation please make sure all the power is turned off. The right order is to connect the welding cable and ground cable to the machine first, and make sure they are firmly connected and then put the power plug to the power source.

PANEL FUNCTION INSTRUCTION

Front Panel Instruction Of Mini 160:



1	Power switch
2	Abnormal indicator
3	Power indicator
4	Welding current adjustment
5	Positive output terminal
6	Negative output terminal

The panel picture above is for reference only. If any difference with the real machine, please follow with the real machine.

NOTES OR PREVENTIVE MEASURES

1. Environment

1） The machine can perform in environment where conditions are dry with a dampness level of max 90%.

2） Ambient temperature is between -10 to 40 degrees centigrade.

3） Avoid welding in sunshine or drippings. Do not let water enter the gas

4） Avoid welding in dust area or the environment with corrosive gas.

5） Avoid gas welding in the environment with strong airflow.

2. Safety norms

Our welding machine has installed protection circuit of over voltage, over current and over heat. When voltage, output current and temperature of machine are exceeding the rated standard, welding machine will stop working automatically. Because this will be damage to welding machine, user must pay attention to following.

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

Our welding machine is powerful machine, when it is being operated, it generated high currents, and natural wind cannot satisfy with machine cool demands. So there is a fan inside the machine for its cooling demands. Make sure the intake is not in block or covered, There should be 0.3 meter distance from welding machine to objects of environment. User should make sure the working area is adequately ventilated. It is important for the performance and the longevity of the machine.

2） Do not over load！

The operator should remember to watch the max duty current (Response to the selected duty cycle) Welding current should not exceed max duty cycle current. Over-load current will damage and burn up the machine.

3） No over voltage！

Power voltage can be found in diagram of main technical data. Automatic compensation circuit of voltage will assure that welding current keeps is in allowable range. If power voltage is exceeding allowable range limits, it can damage the components of machine. The operator should understand this situation and take preventive measures.

4） There is a grounding screw behind welding machine, with a grounding marker on it. Before operation, welding crust must be grounded reliably with cable which section is over 6 square millimeter, in order to prevent from static electricity, and accidents because of electricity leaking.

5） If welding time is exceeding duty cycle limited, welding machine will stop working for protection. Because machine is overheated, temperature control switch is on “ON’’ position and the indicator light is red. In this situation, you don’t have to pull the plug, let the fan cool the machine. When the indicator light is off, and the temperature goes down to the standard range, it can weld again.

QUESTIONS TO BE RUN INTO DURING WELDING

Fittings, welding materials, environment factor, supply powers maybe have some impact in welding. User must try to improve welding environment.

A. Arc-striking is difficult and easy to pause:

1. Make sure quality of tungsten electrode is high.
2. If the electrode is not dried, it will cause unstable arc, welding defect increases and the quality is down.
3. If use extra-long cable, the output voltage will decrease, so please shorten the cable.

B. Output current not to rated value:

When power voltage departs from the rated value, it will make the output current not matched with rated value; When voltage is lower than rated value, the max output may lower than rated value.

C. Current is not stabilizing when machine is being operated:

It has something with factors as following:

1. Electric wire net voltage has been changed.
2. There is harmful interference from electric wire net or other equipment.

D. When use MMA welding, too much spatter:

1. Maybe current is too big and stick's diameter is too small.
2. Output terminal polarity connection is wrong, it should apply the opposite polarity at the normal technique, which means that the stick should be connected with the negative polarity of power source, and work piece should be connected with the positive polarity. So please change the polarity.

MAINTENANCE

1. Remove dust by dry and clean compressed air regularly, if welding machine is operating in environment where is polluted with smokes and pollution air, the machine need remove dust everyday.
2. Pressure of compressed air must be inside the reasonable arrangement in order to prevent damaging to small components of inner-machine.
3. Check inter circuit of welding machine regularly and make sure the cable 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 inner-machine, if them enter into machine, please dry inner-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.

TROUBLESHOOTING AND FAULT FINDING

Notes: The following operations must be performed by qualified electricians with valid certifications. Before maintenance,please contact with us for professional suggestion.

Mini 160 fault symptom and solutions:

Fault symptom	Solutions
Indicator of power switch is not lit, fan is not working and there is not welding output.	A. Make sure power switch is close. B. Make sure electrify wire net (which is connected to input cable) is in work.
Power indicator is lit, fan does not work and there is no welding output.	A. Maybe be connected wrong to 380V power cause machine is in protection circuit, connect to 220V power and restart the machine. B. 220V power is not stabilizing (input cable is too slender) or input cable is connected to electrify wire net cause machine is in protection circuit. Increase the section of input cable and tighten input connector firmly. Close machine 2-3 minutes then restart it. C. Open and close power switch continuously cause protection circuit is working. Close machine and restart it after 2-3 minutes. D. Cables are relaxed between power switch and power source board, tighten them again.
Fan is working, welding current is not stabilizing or out of potential control, current is sometimes low and sometimes high.	A. Quality of 1K potential is bad, replace it. B. Terminal of output is broken circuit or poor connect.
Fan is working and abnormal indicator is not lit, there is no welding output.	A. Check if components are poor connects. B. Check if connector of output terminal is break circuit and poor connect. C. Check voltage between power source board and MOS board (VH-07) is about DC 308v. D. If green indicator is not lit in assistant power of MOS board, please connect with seller or our company and replace it. E. If there is some question in control circuit, please connect with seller or our company and replace it.
Fan is working and abnormal indicator is lit, but there is no welding output.	B. Maybe over-current protection is working, please close machine and waiting. Restart it after abnormal indicator is off. C. Maybe overheated protection is working, wait for 2-3 minutes. D. Maybe inverter circuit is in fault; please pull up the power plug of main transformer (near VH-07 fan), which is on MOS board, then restart the machine. (1) If abnormal indicator is still lit, some of MOS board is damaged, check and replace it. (2) If abnormal indicator is not lit: i. Maybe transformer of middle board is damaged, measure primary inductance volume and Q value of main transformer by inductance bridge. ii. Primary value is parallel circuit, L=1.2-2.0Mh, Q>40, If inductance value and Q value is low, replace it. iii. Maybe some of secondary rectifier tube of transformer is broken, check and replace rectifier tube. E. Maybe feedback circuit is in fault.