

INSTRUCTION SHEET OF ZX7 SEIRES

PORTABLE INVERTER MMA WELDER

USER'S MANUAL

**MODEL: ZX7-100, ZX7-140, ZX7-160,
ZX7-160, ZX7-200**

**PLEASE READ THE INSTRUCTION SHEET CAREFULLY
BEFORE USING!**

1. Description of the product

ZX7 SERIES WELDER uses advanced contravariant technique, of which contravariant power

uses high power device that is V-MOS field-effect transistor. It changes 50 Hz of operation frequency into high frequency, and then decompress and rectify, and outputs high power direct supply through pulse-width modulation technique to reduce weigh and volume of the machine to a large degree and increase efficiency by 30%.

The feature of the SERIES WELDER:

(1) Volume is small, weigh is light, which is convenient to carry and suitable for mobile operation.

(2) High power utilization, no-load loss is small, so that it saves energy.

(3) Performance is stable, it can operate continuously, no electromagnetic noise.

During welding, arc is stable, little spatter, Liquid-bath is easy to control, good weld appearance, quality is excellent.

(4) High open-circuit voltage and good energy thrust compensation, which is being applied to

Welding varied acid and basic electrode, so that its application is widespread, which can be applied to aloft work, field work, indoor and outdoors decoration etc. installation is simple and easy to operate.

2.Safety commonsense



Important mention:

- You can't shift function switch during welding in case damaging machine.
- Before welding, you should take out fast plug adapter which connect with holder in order to make sure holder disconnect with the machine in case of electric shock.
- You should install earth leakage protection switch for using the equipment.

Electric shock can cause seriously hurt!

- Install earth device well according to application standard.
- Forbid to touch live parts or welding rod when your skin is naked, wear wet gloves or wet clothes.
- Make sure of insulated condition when you are on the ground and in the operation room.
- Make sure your operation location is under safe condition.

Smoke can be harmful to your health!

- keep your head at the place of smoke.
- Uses air-cooling or gas-bleed device during welding in case of inhaling smoke.
- Arc radiation can hurt your eyes and burn your skin!
- Use suitable welding facepiece and filter lens, wear protection suit in order to protect your eyes and body.
- Use suitable facepiece or curtains to protect spectator from hurt.

• **Conflagration-welding spark can cause conflagration. Make sure welding operation location nearby has no inflammable things. Please take care with safety fireproof.**

Noise-Overnoise is harmful to your ear.

- Protect your ear. Use earplug or wear other ear protection things.
- Warning spectator: noise can cause potential hurt to your audition.

Failure-Please ask for help from expert when you meet difficulty.

- Please check according to related content of the manual when you meet difficulty on installation and operation.
- If you still not understand completely after reading or solve problem according to the manual, you should contact your supplier immediately or ask for help from experts.

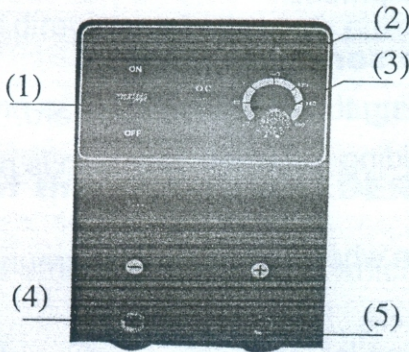
Power indicator

Power indication lamp lights which indicates power-on.

Abnormal indicator

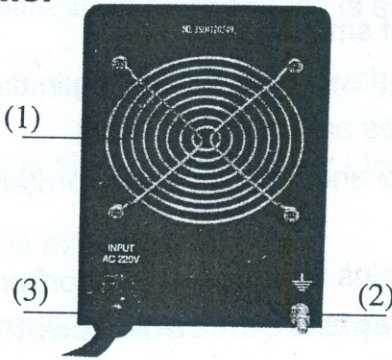
If temperature of machine inside is over set value,overheat indicating lamp will light,but operation main circuit of overheat protection circuit isn't off-state; If temperature reduce under set value,the indication lamp is off and overheat protection finishes, you can reweld.

(1) front panel



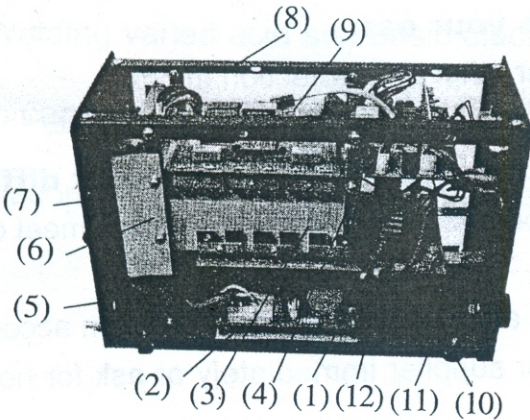
- (1)power switch
- (2)abnormal indicating lamp
- (3)potentiometer of welding current regulation
- (4)anode of output lead
- (5)cathode of output lead

(2) back panel



- (1)fan overlay
- (2)power input lead
- (3)earth terminal

(3) inside structure



- (1)power board
- (2)input power board
- (3)radiator
- (4)lattice framing(short)
- (5)lattice framing(long)
- (6)weather board
- (7)fan
- (8)support
- (9)primary control board
- (10)bottom
- (11)output elbow
- (12)output reactive resistance

(4) Installation site and usage condition

① Installation site

A. Should install in the room where is free from direct sunshine, rain, low humidity and less dust.

B. Forbid metallic nonself to enter into welding power inside. Welding power is over 20cm away from wall. Two machines installed at same place should be over 50cm away from each other.

C. Weld at airless place. (use weather board when blowing)

② Usage environment

A. Use in the drying environment. Air temperature $\leq 80\%$;

B. Environmental temperature is at the range from -100C to +400C;

C. Avoid operating at the place where has direct sunshine or raining outdoors;

D. Avoid operating at the environment where has much dust or corrosive gas.

(5) Technical parameter

Model Parameters	ZX7-100	ZX7-140	ZX7-160	ZX7-180	ZX7-200
Voltage	AC220V	AC220V	AC220V	AC220V	AC220V
Frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Rated current	9A	12.6A	15A	18.2A	21A
No-load Voltage	64V	64V	64V	64V	64V
Output current	10-100A	10-140A	10-160A	10-180A	10-200A
Work Voltage	14V	15.6V	16.4V	17.2V	18V
Rated cycle duty	40%	40%	60%	60%	60%
No-load wastage	40W	40W	40W	40W	40W
Arc-start mode	----	----	----	----	----
Efficiency	85%	85%	85%	85%	85%
Power factor	0.93	0.93	0.93	0.93	0.93
Insulation Class	B	B	B	B	B
Protection Grade	IP21	IP21	IP21	IP21	IP21
Weight	5.2KG	5.4KG	8.1KG	9KG	9KG

3. Operation instruction

(1) Connect power line

① Connect power line with the relative voltage grade according to input voltage of welder to make sure contacts relative power connector or socket well in case of oxidation.

② Measure whether input voltage value is within the range of fluctuation with multimeter. Be sure not connect power grade wrongly.

(2) Connection of output line

① Each welder is equipped with two fast plug adapter. Insert fast plug adapter into fast socket of front panel. You should screw it tightly to make sure contact well or will burn adapter and socket when operating for long time and operation current is large. You should take it seriously.

② Connect electrode holder with cathode of front panel and workpiece with anode. Another terminal of ground clamp connected with red fast adapter. Take care that screw it tightly with hexagonal wrench in order for quadratic cables(holder wire and ground wire) to be contacted with fast adapter well or will burn fast adapter.

③ Take care with polarity of wiring. Normally there are two wiring modes for DC welder: straight polarity and reversed polarity;

Straight polarity: Holder connected with cathode, workpiece connected with anode (applied to acid welding rod).

Reversed polarity: workpiece connected with cathode, holder connected with anode (applied to welding rod such as stainless and cellulose base).

Choose and determine according to requirement of workpiece crafts. If you choose inappropriately, the phenomenon that arc isn't stable, spatter is large and stick will arise. You can change fast adapter freely to change polarity if you meet the situation.

④ If workpiece is far away from welder(50-100meter), Quadratic cables(holder wire and ground wire) that used is a bit long, so that section area of wire you choose should be larger in order to reduce voltage-drop of cable.

(3) Check

① Check whether welder is reliably earthing according to standard.

② Check whether all tie points contact well or not (especially ground clamp contact workpiece).

③ Check whether holder wire that outputs and ground wire is short circuit or not.

④ Check whether polarity that outputs is correct or not.

⑤ Check whether choose and use circuit protector of which drain current is 30mA.

⑥ During welding, spatter can cause conflagration so that should check nearby whether has inflammable things.

(4) Operation

① Turn on power switch and fan begin to run.

② User adjust regulation button of welding current according to need in order for welding performance to be able to reach requirement.

Normally use of different diameter of welding rod that recommended is with welding current that indicated as table below:

Diameter of welding rod(mm)	Use of welding current that recommended(A)
1.0	20~60
1.6	44~84
2.0	60~100
2.5	80~120
3.2	100~150
4.0	140~180
5.0	180~220

③ Duty cycle that allowed

If operation is over duty cycle, welder can stop operation immediately during welding. This is caused by hard service of welder from which inner thermosensor disconnects to make welder stop operating. welder needn't power-off and let fan continuously run to quicken hypothermal process of inside of the machine. Normally it will took 5-10 minutes (it changed with circuferential temperature and air-cooling condition) to restore operation (notice: Increase thrust properly when welding cellulose rod).

4. Safety resume



Notice:

Forbid to insert and take out any cables or joint that are being used during welding, because the operation will hurt safety of human being and cause serious damage to the equipment.

(1) Make sure of good air-cooling condition

Volume of the machine is small, structure is compact and output current is large, so that natural air-cooling condition is unable to satisfy radiation requirement of elements. So that inside of machine has been installed tube axial fan to force air-cooling.

(2) Be sure not be overload

Please users limit welding current strictly according to maximum current that allowed under condition of varied duty cycle. Absolutely not allow overload service in case reduce service life of welder, even burned.

(3) Be sure not be overvoltage

Voltage of inside of the machine automatically off-set current to make sure welding current not over permission value, e.g. power voltage is over define value, which can cause damage to the element.

(4) There is an earth screw at the back of each welder, of which symbol is sign of earthing. Before operation, choose 4mm² section area of wire to reliably connect machine chassis with ground in case cause electrostatic leakage to cause failure.

(5) Welding operation site should have fireproof action, and have good air-cooling condition.

(6) Operator should equipped with protection product, and have relative operation certificate.

5. Maintenance(please maintain the machine under condition of power-off)

(1) Regular dust removal: Remove dust with dry and clean compressor air. If use welder in the air which has too much smoke and polluted, you should remove dust at least once each month.

(2) Compress air should be lowered to pressure required in case damage small elements of welder.

(3) Check whether electrical tie point of inside contact well (especially connector), tighten loosen tie point. If has oxidation, you should remove oxidation film with sand paper and reconnect it.

(4) Inside of machine should be avoided water or wet or you dry it immediately. Measure Insulated condition with megameter (including between tie points, tie point and chassis). You just continue to weld on condition that there is no abnormal situation.

(5) If you don't use welder for long time, put welder in the original packing and dry environment.

5. Repair for failure



Notice:

Operation below require operator should have enough special knowledge of electric equipment and complete safety commonsense. Operator should have certificate from which can prove his ability and knowledge.

(1) Debug of regular failure

failure	debug
Power switch indicating lamp doesn't light, Fan doesn't run, no welding output	<ol style="list-style-type: none">1. Make sure power switch shut2. Make sure power with which input cable connected has electricity.
Power indicating lamp lights, fan doesn't run, no welding output	<ol style="list-style-type: none">1. Maybe input is connected with 380v power wrongly, which cause start of overvoltage protection circuit. You can connect with 220v power, and then turn on machine again.<ol style="list-style-type: none">2. 220v power is not stable (input wire is too thin and long) or input wire is hung over electrified barbed wire, from which cause start of overvoltage protection circuit, so that increase line of input wire of electrified barbed wire; You should tighten tie point of input wire. It will restore to normal condition after you switch off machine for 5-10 minutes and switch on again.3. Continuously turn on and off power switch for short time will cause start of overvoltage protection circuit. It will restore to normal condition after you turn off machine for 5-10 minutes and turn on again.4. The lead between power switch and power board wire looses and disconnect, tighten it.5. 24V relay which is on power board doesn't shut or has damaged. Check 24V power and relay. Use same type of relay instead of it.

failure	debug
<p>Fan doesn't run, output current isn't stable or not controlled by potentiometer during welding, current sometimes is big and small.</p>	<ol style="list-style-type: none"> 1. Quality of potentiometer 1K has problem, should be changed. 2. varied connection contacts badly, especially plug-in unit, which need checked.
<p>Fan runs, abnormal indicating lamp lights, but no welding output</p>	<ol style="list-style-type: none"> 1. Maybe it is overheat protection. Please turn off machine until indicating lamp doesn't light and turn on machine to restore normal condition. 2. Maybe it is overheat protection. The machine can restore naturally after waiting for 5-10 minutes. 3. Maybe it is failure of contravariant circuit: Please take out adapter of power supply of primary transformer on MOS board (near to fan VH-07) and turn on machine again. <ol style="list-style-type: none"> (1) If abnormal indicating lamp still light, it is because one field-effect transistor is damaged, so that check and change it with same type of field-effect transistor. (2) If abnormal indicating lamp doesn't light <ol style="list-style-type: none"> a. Maybe mesoplax transformer is damaged. You can measure primary inductance of main transformer and Q value transformer with electric bridge Primary parallel connection $L=12.2-2.0$ mHQ > 40 Inductance Q value are all small, which should be changed. b. Maybe one quadratic rectifier of transformer is damaged, look for and change it with same type of rectifier. 4. Maybe is failure of reactive circuit.

failure	debug
<p>Fan runs,abnormal indicating lamp doesn't light,no welding output</p>	<ol style="list-style-type: none"> 1.Check whether varied plug-in unit and ground wire contacts badly or not 2.Check whether tie point of output terminal is off-state or contacts badly. 3.Voltage from instrument power board to MOS board(VH-07) is DC about 380V. <ol style="list-style-type: none"> (1) Check whether silicon bridge is off-state and patching wire of silicon bridge contacts badly. (2) Change one of four big electrolytic capacitor which leak electricity on the power board. 4.If one green indicating lamp of auxiliary power on MOS board doesn't light,please contact distributors or the company.. 5.If control circuit has problem,please contact the company.

The company reserve the right to modify and explain the instruction manual .
 If content of the instruction manual has changed , it will has no extra notice.