ZIKA

OWNER'S MANUAL

I-DC630

CONTENTS

SAFETY WARNING

The safety notes listed in this manual is to ensure correct use of the machine and to keep you and other people from being hurt.

The design and manufacture of welding machine considers safety. Please refer to the safety warning listed in the manual to avoid accidents.

Different damage would be caused by wrong operation of the equipment as follows. Please read the user manual carefully to reduce such damage.

Sign	Description
	✧ **Any contact of electric parts may cause fatal electric shock or burnt.**
	✧ **Gas and fumes are harmful to health.** ✧ **Operation in narrow space may cause choke .**
	✧ **Spark and hot workpiece after welding may cause fire.** ✧ **Bad connected cable may cause fire.** ✧ **Incompletion connection of workpiece side circuit may cause fire.** ✧ **Never weld on the case of tinder stuff, or it may cause explode.** ✧ **Never weld airtight containers such as slot, pipe etc., or it may break.**
	✧ **Arc ray may cause eye inflammation or skin burnt.** ✧ **Spark and residue will burn your eyes and skin.**
	✧ **Toppling over of the gas cylinder will cause body hurt.** ✧ **Wrong use of the gas cylinder will lead to high-pressure gas eruption and cause human hurt.**
	✧ **Never let fingers, hair, clothes or etc. near the moving parts such as the fan.**
	✧ **The wire shoot out of the torch may stab eyes, face and other naked parts.**
	✧ **Never stand in front of the swang equipment or under it, or it may fail and cause injury.**

⚠DANGER **Please follow the rules below to avoid heavy accidents.**

- Never use the equipment to do other things but welding.
- Follow related regulations for the construction of the input-driven power source, choice of place, usage of high-pressure gas, storage, configuration, safe-keeping of workpiece after welding and disposal of waste, etc.
- Nonessentials do not enter the welding area.
- People using heart pacemaker is not allowed to get close to the welding machine or area without doctor's permission. The magnetism created by energizing the welding machine can have a bad effect to the pacemaker.
- Install, operation, check and maintain the equipment by profession personnel.
- Understanding the contents of the user manual for safety.

⚠DANGER **Please follow the rules below to avoid electric shock。**

- Keep away from any electric parts.
- Earth the machine and workpiece by professional personnel.
- Cut off the power before installation or checking, and restart 5 minutes later. The capacitance is chargeable device. Please ensure it has no voltage before start again even if the power source is cut off.
- Do not use wire with inadequate section surface or damage insulation sleeve or even exposed conductor.
- Do ensure well isolation of wire connection.
- Never use the device when the enclosure is removed.
- Never use broken or wet insulation gloves.
- Use firenet when work at high position.
- Check and maintain regularly, don't use it until the broken parts are fixed well.
- Turn off the power when not in used.
- Follow the national or local related standard and regulations when using the AC welding machine at narrow or high position.

⚠DANGER **Please follow the below notes to avoid fire and explode, etc.**

- No combustible in welding area.
- Keep off combustible when welding.
- Keep hot workpiece after welding away from flammable gas.
- Do move away the combustible around when weld the dooryard, ground and wall,.
- The wire connection of base metal should be as close to the welding place as possible.
- Never weld those facilities with gas pipe or airtight slot.
- Put fire extinguisher around the welding area to prevent fire.

⚠ WARNING **The gas and fumes are harmful to health, please wear protective device according to regulations.**

- Wear exhaust equipment and breathe preventive facilities to prevent gas poisoning or choke.
- Use suggested part exhaust equipment and breathe preventive facilities to prevent hurt or poisoning by gas and other powder, please.
- To prevent oxygen-deficiency, air out the gas-filled room which is full of CO_2 and argon on the bottom, When operating on trunks, boilers, cabins, etc.
- Please accept the supervisor's inspection when operating in narrow space. Air the room and wear breathe preventive facilities.
- Never operate in degrease, washing or spray space.
- Using breathe preventive facilities when weld shielded steel for it will cause poisonous dust and gas.

⚠ WARNING **The arc, spark, residue and noise are harmful to health, please wear protective appliance.**

- Eye protection against arc is recommended when welding or supervise welding.
- Please wear preventive spectacles.
- Welder's gloves, welder's goggles, long sleeve clothes, leather apron, and other standard protection equipments must be worn for welding operation.
- A screen to protect other people against the arc must be set in the welding place.

⚠ WARNING **Please follow the notes below to avoid gas cylinder toppling over or broken.**

- Use the gas cylinder correctly.
- Use the equipped or recommended gaseous regulator.
- Read the manual of gaseous regulator carefully before using it, and pay attention to the safety notes.
- Fix the gas cylinder with appropriative holder and other relative parts.
- Never put the cylinder under high temperature or sunshine environment.
- Keep your face away from the gas cylinder exit when opening it.
- Put on the gas shield when it is not used.
- Never put the torch on the gas cylinder. The electrode can not meet the gas cylinder.

⚠ WARNING **Any touch of the switch part will cause injury, please note the following.**

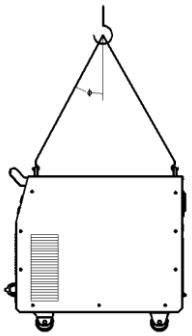
- Never use the machine when the enclosure is off.
- Install, operate, check and maintain the machine by professional person.
- Keep your fingers, hair, clothes etc. away from the switch parts such as the fan.

⚠ WARNING **The wire end may deal damage, please note the following.**

- Never look into the electric conduction hole when checking the wire feeding is normal or not, , or the shooting wire may stab your eyes and face.
- Keep your eyes, face or other naked parts away from the end of torch when feeding the wire manually or pressing the switch.

⚠ ATTENTION **For better work efficiency and power source maintenance, please note the following.**

- Precautions against toppling over.
- Never use the welding equipment for pipe thawing.
- Lift the power source from side when use the up-down forklift truck to avoid toppling over.
- When using the crane for lift, tie the rope to the ears with an angle no more than φ15 to the vertical direction.
- When lifting the welding machine which equipped with gas cylinder and wire feeder, download them from the power source and ensure the horizontal of the machine. Do fix the gas cylinder with belt or chain when moving it to avoid body hurt.
- Ensure fastness and insulation when lifting the wire feeder through the swing ring for welding.



Lifting way for the machines with swing ring on the top（φ≤15°）

⚠ ATTENTION **Electromagnetic interference needs attention.**

- It may need extra preventive measures when the equipment is used in particular location.
- Before the installation, please estimate the potential electromagnetism problems of the environment as follows.

  a) Upper and lower parts of the welding equipments and other nearby power cable, control cable, signal cable and phone cable.

  b) Wireless electric as well as TV radiation and reception equipment.

  c) Computer and other control equipments.

  d) Safety-recognition equipment etc. Such as supervise of industrial equipments.

e) Health of people around. Such as personnel using the heart pacemaker or audiphone.

f) Equipments for adjustment and measurement.

g) Anti-disturb capability of other used equipments .Users should ensure these equipments and the environment are compatible, which may need extra preventive measures.

h) Practical state of the welding and other activities.

- Users should observe the following dos and don’ts to decrease radiation interference.

  a) Connect the welding equipments to the power supply lines.

  b) Maintain the welding equipments regularly.

  c) The cable should be short enough to be close to each other and the ground.

  d) Ensure the safety of all the welding metal parts and other parts nearby.

  e) The workpiece should be well earth.

  f) Shield or protect the other cable and equipments to decrease the effects of disturbances. The welding equipments can be complete shielded in some special conditions.

- Users are responsible for interference due to welding.

MACHINE DESCRIPTION

The welding machines are rectifiers adopting the most advanced inverter technology.

Their principle is to commutate the power frequency of 50Hz/60Hz into direct current, and then utilize the high-power device IGBT to invert it into high frequency (15 KHz/16KHz), then perform voltage-drop and commutate, and output high-power D.C power supply via Pulse Width Modulation (PWM). Since the switch power inversion technology is adopted, the weight and volume of the welding machine is brought down greatly with a conversion efficiency increase of more than 30%. Characteristic: stable wire feed rate, little splatter, portable, energy-saving, low electromagnetic noise.

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, and 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, alkalescence, 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 the 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

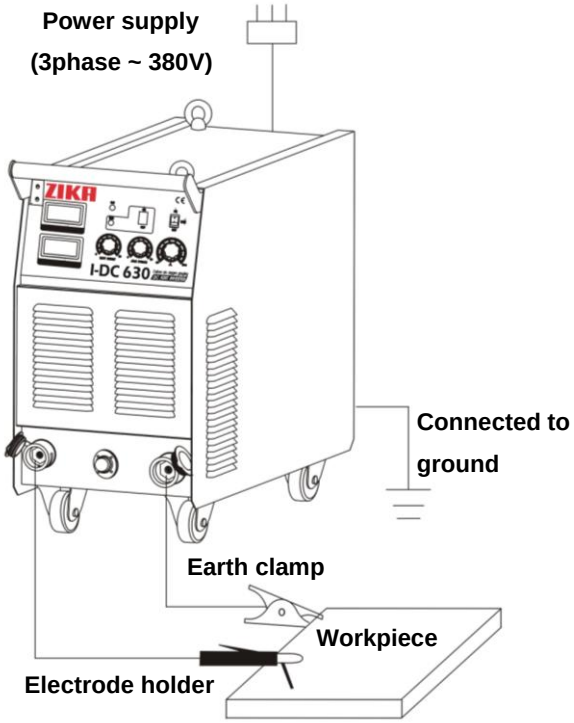
Model / Parameters	I-DC 630
Power voltage（V）	3phase AC380V ±15%
Frequency （Hz）	50/60
Rated input current（A）	53.1
No-load voltage（V）	90
Output current（A）	50-630
Rated output voltage（V）	44
Force range（A）	0-150
Duty cycle （%）	60
No-load loss （W）	300
Efficiency（%）	85
Power factor	0.93
Insulation grade	H
Housing protection grade	IP21
Weight （kg）	58
Dimensions （mm）	670×320×640

INSTALLATION INSTRUCTION

The machine is equipped with power voltage compensation equipment. When the power voltage fluctuation is 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 the cable is too long, it may affect the performance of the power system. So cables of configured length are suggested.

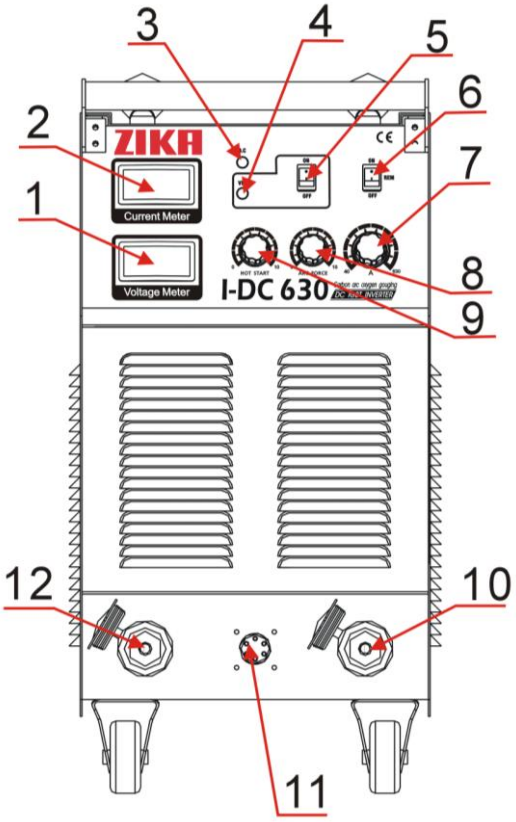
1. Make sure the intake of the machine is not blocked or covered to avoid malfunction of cooling system.
2. Ground the cables with section area no less than 6mm^2 to the housing, the way is connecting screw in the back of the power source to ground device .
3. Correctly connect the arc torch or holder 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 "-"terminal and fasten it clockwise. Put the fastening plug of the cable to fastening socket of "+" terminal at the front panel, fasten it clockwise, and the earth clamp at the other terminal clamps the work piece.
4. Please pay attention to the connecting terminal, DC welding machine has two connecting ways: positive connection and negative connection. Positive connection: holder connects with "-"terminal, while work piece with the "+"polarity. Negative connection: work piece with the "-"terminal, holder with the "+" terminal. 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.
5. According to input voltage grade, connect power cable with power supply box of relevant voltage grade. Make sure there is no mistake and the voltage of power supply does not exceed permission range. After the above job, installation is finished and welding is available.



If distance of work piece and machine is too far (50-100m), and the cables (torch cable and earth cable) are too long, please choose cable of bigger section to minimize the reduction of the voltage.

PANEL FUNCTION INSTRUCTION

ARC 630I Front Panel Instruction:



1	Voltage meter
2	Current meter
3	Abnormal indicator
4	VRD indicator
5	VRD switch
6	Remote control switch
7	Welding current adjustment
8	Arc force adjustment
9	Hot start adjustment
10	Positive output terminal
11	Remote control socket
12	Negative output terminal

The images shown here are indicative only. The actual product may differ.

OPERATION INSTRUCTION

1. Turn on the power switch, screen will show set current value and ventilator is beginning to run.

2. Adjust knobs of welding current, arc force and hot start, 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	ϕ6.0
Current	70-100A	110-160A	170-220A	230-280A	260-300
Hot-starting	1-3	3-7	7-10	7-10	——

4. “Hot-starting adjustment knob”

   You can adjust this knob below pre-set current 300A, which can make arc-striking more easy. The range of hot start is 0-150A.

5. Knob of arc force adjustment is use to adjust welding function, specially in low current range, 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 gain powerful energy and push current can achieve effect.

6. 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.

7. When the switch of front panel is put "ON" position, the VRD indictor is lit, and when the switch is put "OFF" position, the VRD indicator is off, and then the no-load voltage is 76V. Switch of VRD is put outside the machine, with the "on" condition. The no-load voltage changes to be less than 15V, which is safe for people.

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.

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 infilter 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 is 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:

This may be caused by the following factors:

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

D. Too much spatter during MMA welding:

1. Maybe current is too heavy while welding rod diameter is too small:
2. Output terminal polarity connection is wrong. The positive connection should be applied at the normal technics, that is to say, welding rod connects with the negative polarity while the work piece 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 needs to be cleaned once a month.
2. Pressure of compressed air must be within the reasonable range in order to prevent damaging to small components of inner-machine.
3. Check internal circuit of welding machine regularly and make sure the circuit connections are connected correctly and tightly (especially plug-in connector and components). If scale and rust are found, please clean it, and connect again tightly.
4. Prevent water and steam from entering into the machine. If that happens, please blow it dry and check insulation of machine.
5. If welding machine will not be used for long time, it must be put into the packing box and stored in dry and clean 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.

ARC630I fault symptom and solution:

Fault symptom	Solution
Meter doesn't display, fan doesn't work, no welding output.	1. Make sure power switch is off. 2. Make sure the power source connecting to input cable is working alright. 3. Make sure the input voltage is 3 phase.
Meter is normal, fan is working, no welding output.	1. Check if all kinds of components of machine are poor contact. 2. Check if connector of output terminal is broken or damaged. 3. Check if the control board is damaged (contact with the supplier or .manufacturer).
Abnormal indicator is on, fan is working, meter is normal	1. IGBT is damaged. 2. Rectifier of quick recovery is damaged. 3. Control board is broken. 4. The feedback circuit is in fault. Please contact with the supplier or manufacturer.
Too much spatter during MMA welding	Output terminal polarity connection is wrong. So please change the polarity.
Erratic welding output current or out of control of potentiometer.	1. The potentiometer is damaged. 2. All kinds of connectors are poor contact, especially plugs. Check them.
Power switch doesn't work	1. Power switch is broken. 2. Three phase rectifier bridge is broken, replace it. 3. Check if there is any short circuit of inner-machine.