Inverter Welding

OWNER`S MANUAL

MODEL : MMA/ARC110/140/1 0/200/250/300/400/500/630

(POWER MOSFET CONTROLIED ,DC WELDING POWER SOURCE)

PRODUCTS INTRODUCTION

Congratulations for your purchase .

ARC is hand inverter welder series which is made by international most advantaged invert technical .

Inverter arc welding power supply is inverter arc welding machine which is sprung up in 1980s in international market .50Hz/60Hz frequency is inverted to high frequency (frequency is over 100KHz) by MOSFET ,then step down voltage and rectificate current ,inverter arc welding power supply generates powerful DC welding current through PWM technical .Because inverter technical of switch power is used ,dimensions and weight of welding machine has reduced substantially and efficiency has increased30%.Stabilizing ,reliability ,lightness ,save-energy and no electromagnetic noise are characteristics of welding machine series .Inverter welding machine is developed that is given praise of revolution of welding field by specialist .

Arc welding machine has characteristics as following :

1. High quality .
2. Stable arc .
3. Molten bath is easy to control .
4. No-load voltage is higher .
5. Able to be used widely .
6. Suitable for job of high-altitude and outdoor and fitment of inside or outside
7. Lightweight .
8. Simple installing and operation .

Welcome to purchase products of OUR company and make suggestions ,we will try our best to perfect our products and service .

1. Maintenance for one year since the date of purchase .
2. During maintenance ,if machine is not damaged artificially ,it can be repaired free .Out of maintenance ,users have to pay cost of components only .
3. Users do not dismantle or refit or replace electric components by oneself .Or users have to accept the consequences

DATA AND CHARACTERISTIC

Main Technical Date diagram

Model / Item	MMA/ARC 110	MMA/ARC 140	MMA/ARC 160	MMA/ARC 200	MMA/ARC 250	MMA/ARC 300	MMA/ARC 400	MMA/ARC 500	MMA/ARC 630
Power voltage(v)	Single phase AC220v±15 %	Single phase AC220v±15 %	Single phase AC220v±15 %	Single phase AC220v±15 %	三相 AC380V ±15% AC220v±15 %	三相 AC380V ±15% AC220v±15 %	三相 AC380V ±15% AC220v±15 %	3PAC380V ±15 %	3PAC380V ±15 %
Rate input current (A)	3.4	20.3	24.3	31.8	14.2	18.2	27.3	34	27.3
No-load voltage(v)	56	56	56	62	55	55	67	70	80
Output current adjustment arrange (A)	20-110	20-140	30-160	20-200	20-250	20-300	20-400	20-500	20-630
Rate output voltage (v)	24.4	25.6	27	28	30	32	36	40	44
Duty cycle(%)	60	60	60	60	60	60	60	60	60
Efficiency(%)	85	85	85	85	85	85	85	85	85
Power factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
No-load loss(w)	40	40	40	40	40	40	100	100	100
Weight(kg)	5	5	8	8	18	18	30	33	35
Dimension (mm)	290×133 ×195	290×133 ×195	371×153 ×232	371×153 ×232	480×204 ×303	480×204 ×303	562×303 ×467	562×303 ×467	562×303 ×467

Output Cable Connection

1. Every welding machine has been disposed a pair of mobile plugs ,another end of pincer cable is connected to black mobile plug and another grounding cable pincer is connected to red mobile plug .Furthermore ,they must be tightened by spanner .Make sure secondary cables (holder and grounding cable) are connected to mobile plugs firmly ,or mobile plug will be burned up .
2. After mobile plug is inserted in mobile socket, make sure they has been tightened reliably .Or plugs and sockets will be burned up if they are operated long time and current is high .That is very important .
3. Pay attention electrode of cable .As DC welding machine ,it has two connection methods :positive and regular .Positive connection is that work piece is connected to positive electrode and holder is connected to negative electrode ;negative connection is that work piece is connected to regular electrode and holder is connected to positive electrode .Choose connection method according to welding process of work piece .If choose wrong that will cause unstable arc and much spatter and sticking to electrode .If run upon the fault ,replace mobile plugs each other .User does not think welding machine is damaged.
4. If it is too far(50-100m) between work piece and welding machine and second cables (holder and grounding cables) is longer .so section of cable must be bigger and adequate to welding in order to reduce voltage drop of cable.

Power Cable Connection

1. Every welding machine has been disposed once power cable ,make sure voltage class is adequate to once cable according to input voltage of machine .If welding machine of 220v power voltage is connected to AC 330v power because of carelessness ,that will cause machine into over voltage protection situation .Please close power switch and connect it again .The machine may be operated again after 2-3 minutes .
2. Make sure once power is connected to coordinated contact of power or socket reliably and prevent it from oxidizing .
3. Measure voltage volume if it is in waved arrange by AVO meter .

Check

1. If welding machine is grounded reliably according with demands .
2. All contacts is connected firmly ,specially between grounding cable pincer and work piece .
3. Secondary output cable is shortly connected to grounding cable .
4. Make sure secondary output electrode is correct .
5. If circuit protect device is used , leakage current must be max 30A
6. Spatter of machine can cause fire ,so make sure if there are combustibles in welding environment

EXPLANATION SWITCH

1. Open the power switch ,screen will show set current volume and ventilator is beginning to revolve (RILARC160 has no screen of meter) .
2. Adjust knobs of welding current and arc-striking push ,make welding function complies with demands (ARC160 has no knob of arc-striking drive , drive is increased in proportion.)
3. Generally , welding current is adequate to welding electrode according with as following :
   Φ2.5:70-100A ; Φ3.2: 110-160A;
   Φ4.0:170-220A ; Φ5.0:230-280A.
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 imitate DC welder revolving .
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 .
   4) When machine is being transported ,the switch of remote control is not on correct position by bump cause welding adjustment is out of work .Please pay attention it .

Allowable Duty Cycle

1. Operation complies with duty cycle strictly.
2. Inter-variable components is working if duty cycle is exceeded arrange . That will cause welding machine stop working suddenly .With this situation ,make fan continue working in order to cool down temperature of inter-machine ,after 2-3 minutes machine will be operated again (change with temperature of environment and ventilation) .

NOTES

Operation Environment

1. The machine can perform in environments where conditions are particularly harsh and with outside temperature between –10 and +40 degrees centigrade ,with a dampness level of max 80%.
2. Do not operate machine in sunshine or drippings .

3. Do not operate machine in environment where condition is polluted with more dust or gas with corrosiveness .

Safety

1. Make sure the working area is adequately ventilated .

Welding machine is light and its structure is compact .The electromagnetic fields generated by the high currents .So natural wind is not satisfy in cooling down components .there is axial-flow fan in inter-machine in order to force to cool down it .

2. No over-load !

Limited to welding current strictly according to max allowable current of all kinds of duty cycles . Do not exceed load working in order to prevent from shorting use lifetime of welding machine even burning up machine .

3. No over-voltage !

Power voltage of welding machine is according to main technical data sheet .With this situation ,automatic compensation circuit of voltage may ensure that welding current will not exceed to allowable volume .If power voltage is exceeded to allowable volume ,that may damaged to components .Please more careful .

4 . There is a grounding screw behind machine and which is marked with ground .Mantle must be connected reliably by cable which section is10 square millimeter .

Maintenance and check trouble

1. Remove dust by compressed air regularly ,generally if machine is operated in environment where is polluted with more dust and smoke ,welding machine must be remove dust twice every month .
2. Pressure is adequate to welding machine in order to protect little components .
3. Check the electrify connectors and make sure the connectors are connected firmly(specially connectors and inserts) .Tighten the relaxing connector ,if components is oxidized ,these oxide must be get rid of and connect them again .
4. Avoid water and steam enter into inter-machine ,if machine has been affected with damp ,please dry inter-machine and check insulation of machine .
5. If the machine will not be use for long time ,it must be put in its own packing box and stored in dry environment .
6. Do not throw and bump machine .

Check Fault

Faults	Resolvable methods
Indicator of power switch is not lit ,fan is not working and there is not welding output .	1. Make sure power switch is close . 2. 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 .	1. Maybe be connected wrong to 330v power cause machine is in protection circuit ,connect to 220v power and operate machine again . 2. 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 open it again . 3. Open and close power switch in short time cause protection circuit is working .Close machine and open it again after 2-3 minutes . 4. Cables are relaxed between power switch and power source board ,tighten them again . 5. Main circuit 24v relay of power source board is not closed and has damaged .Check 24v power source and relay .If relay has damaged ,replace it .
Fan is working ,welding current is not stabilizing or out of potential control ,current is sometimes low and sometimes high .	1. Quality of 1K potential is bad ,replace it . 2. Terminal of output is broken circuit or poor connect .
Fan is working and abnormal indicator is not lit ,there is no ' welding output .	1. Check if components is poor connect . 2. Check if connector of output terminal is break circuit and poor connect . 3. Check voltage between power source board and MOS board (VH-07) is about DC 308v . (1) Check if silicon bridge is broken circuit and cable of silicon bridge is poor connect . (2) Some of four electrolysis capacitors(about 470UF/450v) is leaking ,replace it . 4. If green indicator is not lit in assistant power of MOS board ,please connect with seller or OUR company and replace it . 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 .	1. Maybe over-current protection is working ,please close machine and waiting .After abnormal indicator is not on , open machine . 2. Maybe overheated protection is working ,wait for 2-3 minutes. 3. 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 open the machine again . (1) If abnormal indicator is still lit ,some of MOS board is damaged ,check and replace it . (2) If abnormal indicator is not lit : a. Maybe transformer of middle board is damaged ,measure primary inductance volume and Q volume of main transformer by inductance bridge . Primary volume is parallel circuit ,L=1.2-2.0Mh, Q>40 If inductance volume and Q volume is low ,replace it . b. Maybe some of secondary rectifier tube of transformer is broken ,check and replace rectifier tube . 4. Maybe feedback circuit is in fault .