ARC 200GE

WELDING MACHINE

USERMANUAL

Welcome to use our company’s welding machine!

For your own and other people’s safety, please read the manual carefully before operating. And the user manual must always be available near the welding machine.

Announcement

The contents of this manual are updated irregularity for updating of product. The manual is only used as operation guide, except for other promises. No warranties of any kind, either express or implied are made in relation to the description, information or suggestion or any other contents of the manual.

Version

Version YF-TAE-0127,A1. Released on August 27, 2020.

The images shown here are indicative only. If there is inconsistency between the image and the actual product, the actual product shall govern.

Content

1 Safety warning

Security Definitions

 DANGER	It indicates that neglecting safety warnings may result in serious accidents, even death or serious injury.
 WARNING	It indicates that neglecting safety warnings may result in minor injury to personnel or property damage.
 NOTE	It indicates that neglecting safety warnings may result in equipment failure or damage.

Personal Protection Precautions

- Personnel with professional qualifications or relevant knowledge and skills are requested to install, operate, maintain and repair the power source.
- Installation, inspection and repair of power source must be carried out by electricians, and temporary construction points should be connected by electricians.
- Supervisors shall be provided for working in high altitude or narrow places, such as boxes, boilers, cabins, etc.
- Personal protective equipment, such as protective masks, overalls, insulating gloves and insulating shoes, should be worn when working.
- Those who use cardiac pacemakers shall not approach the power source in use and welding workplaces without the permission of a physician.

Installation Operation Precautions

DANGER The power source shall not be used for pipeline thawing, battery load or motor start-up.

Beware of Electric Shocks

- Before welding, the yellow-green grounding wire in the power line must be grounded and the insulation of the welding cable must be ensured.
- During welding operation, do not touch live parts such as workbench, welding parts, earth clamp, electrode holder or welding torches.
- Rubber insulation pads should also be laid on the ground near the operating table for welding operations with high no-load voltage and in wet working places.
- In the welding process, do not open the machine house and side cover.
- Do not touch the electrically charged parts.
- Do not use cables with insufficient cross-section, damaged insulation sheaths or exposed conductors.
- Maintenance operation should be carried out after 5 minutes of disconnection of the power supply until the power indicator is completely turned off, otherwise there is a risk of electric shock.
- Turn off all input power when transferring work place, replacing fuse, repairing or not using the equipment.

Beware of welding fume and harmful gases

- When welding steel plates with coatings or coatings, harmful fumes and gases will be produced. Full ventilation or exhaust facilities should be used to keep fumes and toxic gases away from the breathing area. If necessary, wear breathing protection tools.
- When working in narrow places, such as boxes, boilers, cabins, etc., please accept the inspection of supervisors. In order to prevent hypoxia, we should fully ventilate and wear respiratory protective equipment.

- Keep ventilation system of welding machine unblocked. The minimum distance between power source and surrounding place should be greater than 0.5m. Do not cover the inlet and outlet of equipment to ensure smooth circulation of cooling air.

Welding Sparks May Cause Fire or Explosion

- Corresponding protective measures should be taken in the welding area to avoid fire caused by welding mars.
- Do not carry out welding operations in degreasing, cleaning and spraying areas.
- Do not weld gas-filled pipes, sealing grooves (boxes) and other devices, otherwise explosions or fires are likely to occur.
- Do not weld near flammable gases or devices with flammable substances, otherwise explosion or fire may occur.
- When not welded, make sure that any component in the wire circuit does not contact the workpiece or the earth, otherwise it may cause overheating and fire.
- When the welding operation is stopped, remove the electrode in the welding pliers or cut off the welding wire in the nozzle of the welding torch.

Electrical Base Field May be Dangerous

- Those who use cardiac pacemakers shall not approach the power source in use and welding workplaces without the permission of a physician.
- It is strictly forbidden to place or wrap welded cables around the body.
- Do not place the body between the welding wire and the workpiece cable. If the welding wire cable is on the right side of the body, the workpiece cable should also be on the right side of the body.

Arc Rays May Cause Burns

- When welding or supervising welding, please wear protective appliances with adequate shading.

- Protective barriers are set around the welding site to prevent arc or welding spatter from injuring others.

Avoiding Electromagnetic Interference

- Users should ensure that the welding power supply and other equipment in the environment do not produce electromagnetic interference, otherwise corresponding shielding and protection measures should be taken.
- According to the manufacturer's suggestion, the power source should be connected to the main power supply line.
- The length of welded cables should be shortened as far as possible to make them close to each other and to the ground.
- Safety of all metal assemblies assembled by welding and the assemblies connected with them should be confirmed.
- The yellow-green grounding wire in the power line must be grounded, and the workpiece must be well connected with the ground clamp.
- Users should be responsible for the interference caused by welding.

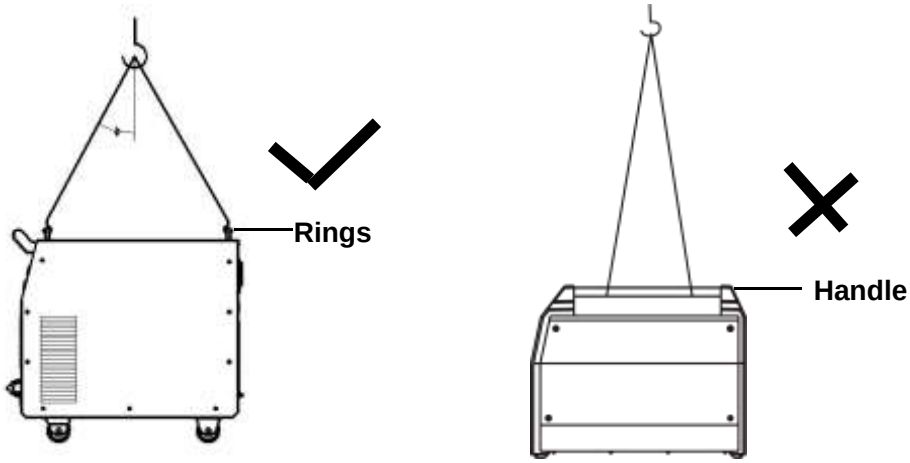
Noise Produced during Welding can Easily Cause Hearing Loss

- In order to avoid the harm of noise to you and others, please wear the prescribed protective equipment.

Cautions for Hoisting

- The power source with strap or handle is prohibited from using strap or handle for lifting.
- When lifting power source with lifting forklift truck, in order to prevent dumping, please fork-fit and fix it from side.
- When lifting power source with crane, the cable should be tied to the suspension ring, and the angle between the cable and the vertical direction should not exceed 15 degrees.

- When the power source with cylinder and wire feeder is hoisted, the two equipments should be unloaded from the power supply first. When moving the power source on the ground, it is necessary to fix the cylinder with a strap or chain to prevent dumping and injuring people.
- If the wire feeder is hoisted by lifting lugs for welding, it is necessary to ensure that it is firm and insulated.



2 Product

2.1 General

The machine with MMA function, is digital function welding machine that apply the most advanced inversion technology in the world.

The principle of inversion is to transform the power frequency of 50Hz/60Hz into direct current and invert it into high frequency (33KHz) through high-power device IGBT, then perform voltage-drop and commutation with the output high-power D.C power supply via full digital Pulse Width Modulation (PWM) control technology. Since the switch power inversion technology is adopted, the weight and volume decrease greatly while the conversion efficiency increase for more than 30%.

Our welding power source can offer stronger, more concentrated and more stable arc. When the welding rod and work piece get short circuit, its response will be quicker. It means that it is easy to design welding machine with different dynamic characteristics, and it can even adjust the characteristics to make arc softer or harder.

The characteristic of the machine is slope. The welding current, push current and heat arc initiation current use the same knob for synergic adjustment. And with good arc initiation and stable power output, the welding gap and quality can reach the best effect.

The machine, with small volume, light weight and stable characteristic, can weld stainless steel, carbon steel, copper and other color metal. Its transfer efficiency is above 85%.

Thanks for purchasing our products and looking forward to your precious advice, we will try our best to perfect our products and service.

⚠ WARNING

The machine is mainly used in industrial fields. It will cause radio interference if used indoors. Please take through precaution measures.

2.2 Technical data

Item \ Type	ARC 200GE
Power voltage(V)	1 phase 220V□15%
Frequency (Hz)	50/60
Rated input current (A)	25.5
Output current adjustment(A)	40-140
Output voltage(V)	21.6-25.6
No-load voltage(V)	58
VRD voltage(V)	-
Duty cycle(40℃)	20%
Power factor	0.65
Efficiency	86%
EMC grade	-
Insulation grade	F
Housing protectiongrade	IP21
Weight (kg)	3.5
Overall dimension(L*W*H mm)	Plasticwith square corner: 295*140*230

"-": It indicates that the machine has no content or no this function.

The following procedures shall be operated by electrician!

Connect proper power cable to the distribution box with corresponding capacity according to the input voltage and current (See technical parameter table). Do not connect to the inappropriate voltage and make sure that the difference of power supply is within permitted range.

3 Installation

The welding equipment is equipped with power voltage compensation device. It keeps the machine work normally when power voltage fluctuating ±15% of rated voltage.

When using long cable, in order to reduce voltage drop, big section cable is suggested. If the cable is too long, it will affect the performance of arcing and other system function, it is suggested to use the recommend length.

- Make sure the intake of the machine is not covered or blocked to avoid the malfunction of the cooling system.
- Make sure the earth end of power interface has been reliably and independently grounded.

Installation Procedures

a) Connect the quick plug of the electrode holder into the socket “-” of the machine, and fasten it clockwise tightly.

b) Connect the quick plug of the earth clamp into the socket “+” of the machine, and fasten it clockwise, the other end clamps the workpiece.

Please pay attention to the connecting terminal, DC welding machine has two connecting ways: positive connection and negative connection.

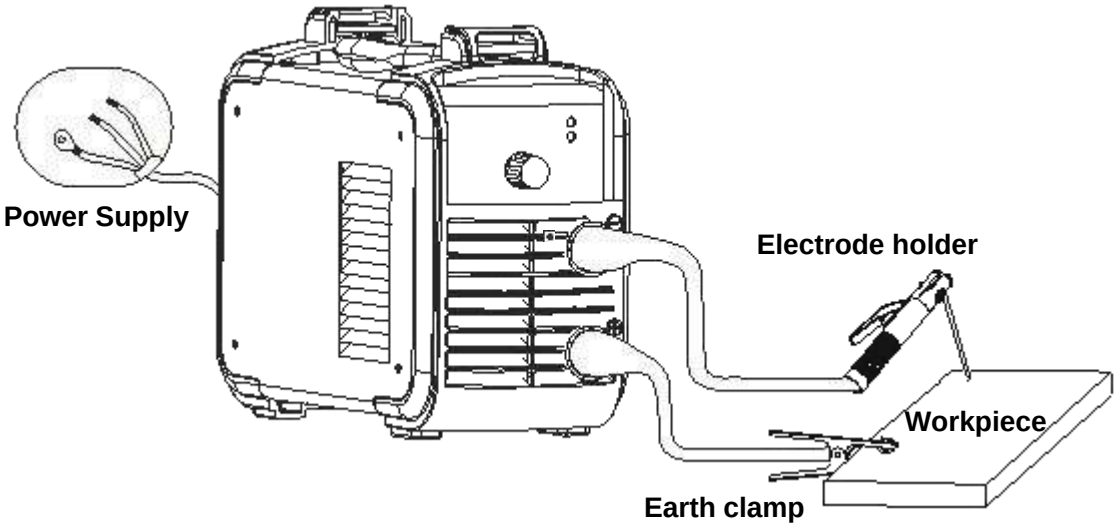
Positive connection: work piece connects with the “+” terminal, while electrode holder connects with “-” terminal.

Negative connection: work piece connects with the “-” terminal, while electrode holder connects with “+” terminal.

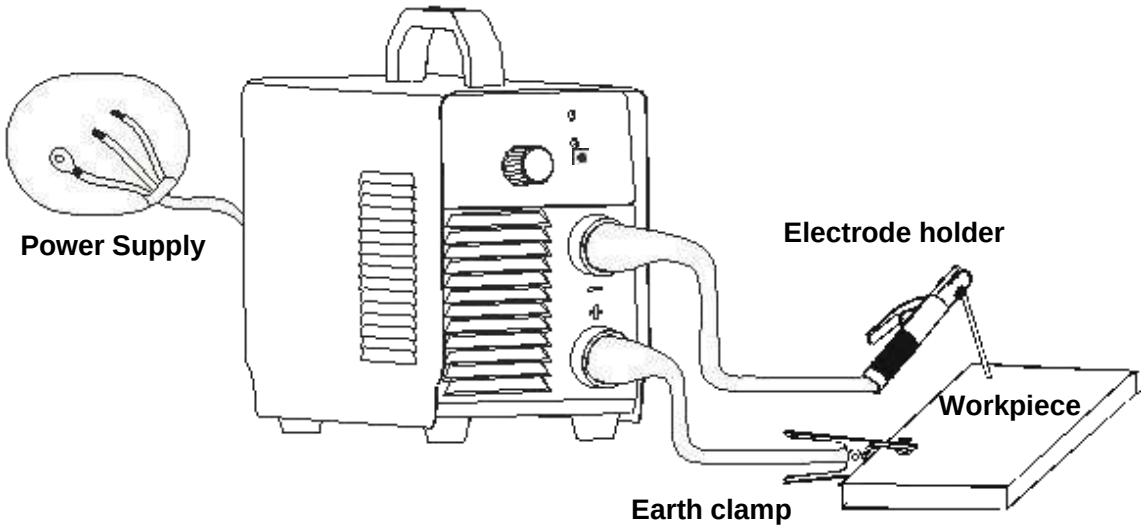
Choose suitable way according to the working situation. If unsuitable choice is made, it will cause unstable arc, more spatters and conglutination. If such problems occur, please change the polarity of the fastened plug. It should adopt negative connection when welding with alkaline electrode, while positive connection when welding with acid electrode.

Installation diagram

Plastic with round corner:



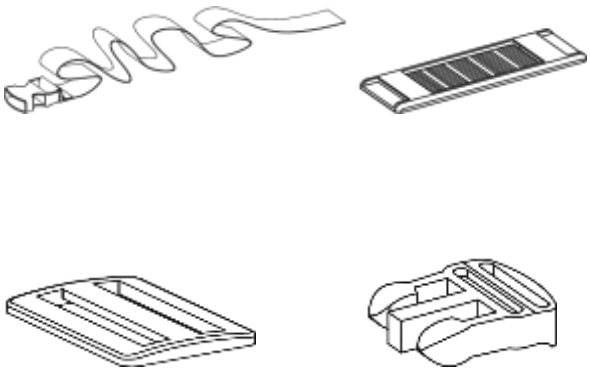
Iron shell



The Belt Fixing Steps (optional)

The images shown here are indicative only. If there is inconsistency between the image and the actual product, the actual product shall govern.

Take the following parts to fix the belt into the machine.



Fix the belt as figure 1 to 3. The length of the belt can be adjusted as needed.

Figure. 1

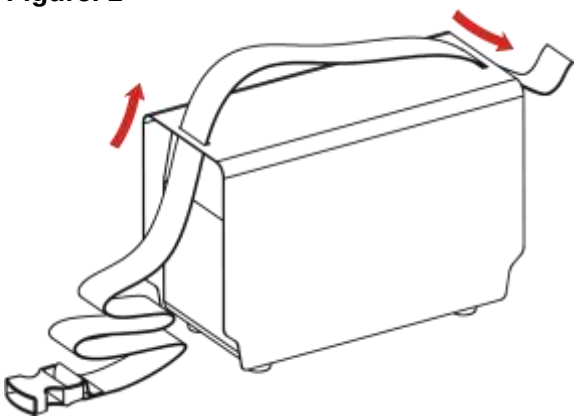


Figure. 2

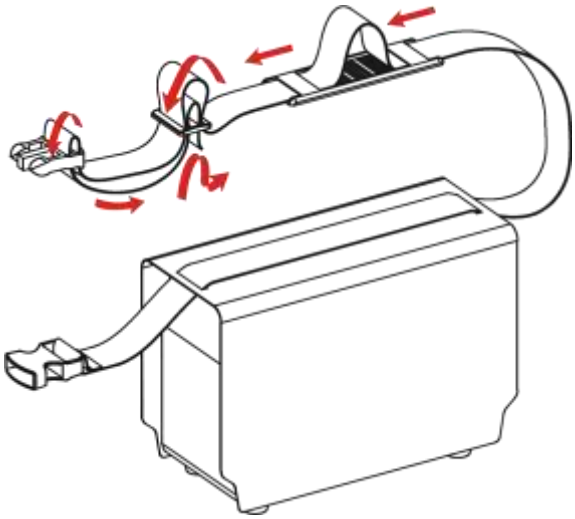
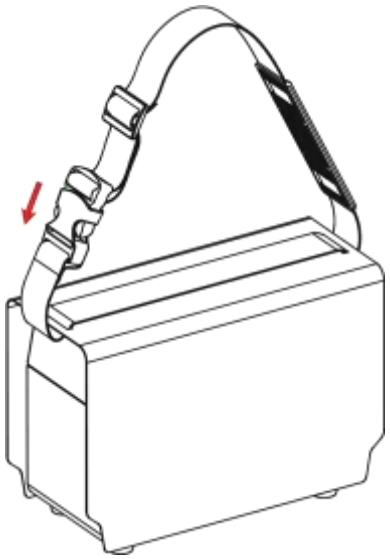
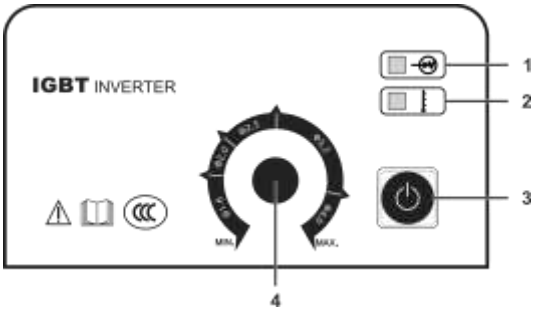


Figure. 3

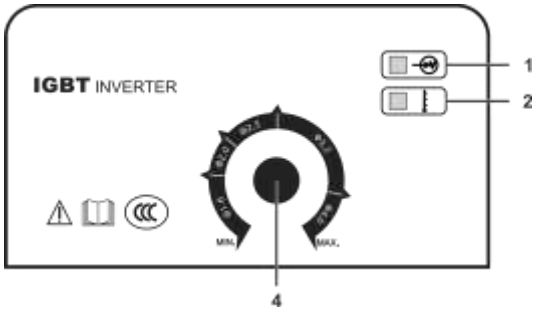


4 Operation

4.1 Front panel layout



With stand-by button



Without stand-by button

Instruction

No.	Description
1	Power indicator
2	Over heat indicator In case of over heat, the indicator lights on
3	Stand-by button Press the stand-by button, the power indicator lights on. The machine enters working state. **Note**： For machines without the stand-by button, turn on the power switch on the rear panel, the power indicator lights on. The machine enters working state.
4	Current adjustment knob Adjust the range of output current

4.2 Operation instruction

1. Press the stand-by button, the power indicator lights on, and the fan starts running. **Note:** The power switch should be turned on before pressing the stand-by button, if three is a power switch on the rear panel of the machine.
For machines without the stand-by button, turn on the power switch on the rear panel, the power indicator lights on, and the fan starts running.

2. Set the welding current according to the welding requirement.

3. Generally, welding current is adequate to welding electrode according with the section "**Appendix Ⅰ Welding parameter list**".

- **Fan dormancy function**

The fan is in the dormancy state when the welding machine starts welding. It won't work until the internal temperature above 45℃. And it will stop working when the temperature is less than 35℃.

4.3 Welding environment and safety

- **Working surrounding**

a) Welding should be carried out in dry surroundings. The air humidity level should not be higher than 90%.

b) The temperature should be between -10□C to 40□C.

c) Don't use the welding machines in sunshine or rain. Keep it off water.

d) Don't use the machines in the places of dust or corrosive air.

e) MIG welding should not be carried out in places with quick air flow.

- **Safety norms**

Protection circuit of over-voltage, over-current and over-heat circuits are designed in the welding machines. It will stop working automatically when the input voltage, output current or internal temperature exceed the rated value. But if the machines are excessively used, such as with input voltage higher than the rated, the machine might be damage. Please pay close attention to the following matters.

a) **Keep good ventilation!**

The welding machines work with high welding current. Nature air flow can't reach the requirement of heat dissipation. So the fans are installed as cooling system to ensure stable performance.

Make sure the ventilation windows are not covered or blocked. The distance between the machines and things around should not be less than 0.3m. Good ventilation is good for welding performance and operational life.

b) **Never over load!**

Check the maximum rated current (according to the Duty Cycle chosen). Make sure the welding current is never higher than the rated value. Over current running will obviously shorten the operation life, even damage the machine.

c) **Never over voltage!**

The Input Voltage could be found in **Technical data diagram.** The auto-compensation function will keep the welding current in the rated range. If the input voltage exceed the permissible value, the machine would be damaged. Users should take protective measures in advance to avoid it.

4.4 Welding problems and resolution

The phenomenon listed below may happen due to relevant accessories used, welding material, surroundings and power supply. Pleas improve surroundings and avoid these problems..

- **Arc starting difficulty. Arc interruption happens easily.**

a) Examine whether grounding wire clamp contacts with the work pieces well.
b) Examine whether each joint has improper contact.

- **The output current fails to reach rated value.**

  The deviation of power voltage from rated value may cause that the output current does no accord with adjusted value. When the power voltage is lower than rated value, the maximum output current may be lower than rated value.

- **The current can not keep stable during operation.** This situation may relate to the following factors:

a) The voltage of electric power network changes;
b) Serious interference from electric power network or other electric facilities.

- **Gas vent in welds.**

a) Examine whether the gas supply circuit has leakage.
b) Examine whether there is sundries such as oil, dirt, rust, paint etc. on the surface.

5 Daily maintenance and checking

- **Daily maintenance**

a) Remove dust regularly with dry compressed air. If the welding machine is used in surroundings with heavy smoke and polluted air, it is necessary to remove dust at least one time one month.

b) The pressure of compressed air shall fall to required level to prevent damage to small components in the machine.

c) Examine inside electric joints and ensure perfect contact (Especially plugs and sockets). Fasten the loosing joints. In case of oxidation, remove oxide film with sand paper and connect again.

d) Prevent water from entering into the machine and prevent the machine from getting moist. If any, blow and dry. Measure the insulation with megohmmeter to make sure it is qualified to use.

e) If the welding machine is not used for a long time, pack the machine in original package and store in dry surroundings.

f) Every time the wire feeder operates for 300hours, grind the electrical carbon brush and clear up the armature commutator. Rinse speed reducer, apply 2# Molybdenum Disulfide lubricant to the turbine, whirlpool rod and bearing.

⚠ WARNING

All the maintenance and testing must be carried out when the power supply is totally cut off. Please make sure the power is off before opening the closure.

- **Daily checking**

WELDING POWER		
Position	**Checking keys**	**Remarks**
Operation control board	➢ Operation, conversion and installation of the switch ➢ Check the state of the power indicator light	Lead to unstable arc sending and wire
Cool-down fan	➢ Check if the fan state and the sound is normal of not	Clean the residue and check the reason and solve it

Power part	➢ Check if there is abnormal liberation and sound when the power is on ➢ Check if there is smell when the power is on ➢ Whether the outside color change or get warm	-

Outer parts	➢ Whether the wire feeder pipe is broken,and the connector is loosen ➢ Whether the outer shell or other connect parts are loosen	-
CABLE		
Position	**Checking keys**	**Remarks**
Output cable	➢ Wearing-out of the cable insulated material ➢ Cable connecting head naked (insulation damage), or loosen (the end of power supply, and cable of main material connecting point)	For life security and stable welding, adopt suitable method to check according to working place ➢ Simple check daily ➢ Careful and in-depth check on fixed period
Input cable	➢ If the connection between the plug and the power socket is firm If the ➢ power input end cable fixed ➢ If the input cable is worn out and bares the conductor	
Earth cable	➢ If the earth cable that connects the main part is broken and connects tightly	In case of leakage and to ensure safety, please do perform daily checking

6 Trouble shooting and fault finding

Notes: The following operations must be performed by qualified electricians with valid certifications. Before maintenance, you are suggested to contact local distributor to verify qualification.

Malfunctions	Solution
Fan does not rotate; No welding output	➢ Confirm the power switch is on. ➢ Power supply available for input cable. ➢ Check if the silicon bridge is damaged. ➢ There is malfunction occurs in the supplementary power source on control board (contact dealers).
Fan works normally; No welding output	➢ Check if all the sockets in the machine are connected well. ➢ There is open circuit or badness of connect at the joint of output terminal. The control cable on the torch is broken off or the switch is damaged. ➢ The control circuit is damaged.(contact to dealers)
Fan works normally; Abnormal indicator lights.	➢ It might be over-current protection, please turn off the power switch; restart the machine after the abnormal indicator light winked. ➢ It might be overheating protection, please wait for about 2-3 minutes until the machine renew without turn off the power switch. ➢ It might be multifunction of inverter circuit. (contact dealers)

Appendix Ⅰ Welding parameter list

Please refer to the following parameter in operation.

- **Generally, welding current is adequate to welding electrode according with as following.**

Electrode specification	Φ1.6	Φ2.0	Φ2.5	Φ3.2	Φ4.0
welding current	25-40A	40-65A	50-90A	90-130A	140-210A

Appendix Ⅱ Circuit diagram

■ **ARC 200GE**