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1.1 Welding safety

Make sure take proper protection measures in arc welding and cutting process to prevent causing personal injury. For further detailed information, please refer to safety protection instruction for operating personnel which conforms to manufacturer's accident prevention requirement.

**Electric shock —— may result in death !!**

- Install grounding device according to applicable standard.
- Do not touch live parts or electrode with bare skin, wet glove or clothing.
- Make sure you, floor and workpiece are insulated.
- Make sure your working station is safe.

**Fume —— likely do harm to health!**

- Keep head out of fume.
- Use ventilation or exhauster in arc welding process to avoid breathing in weld gas.

**Arc rays radiation——likely to injure your eyes and burnt skin!**

- Wear appropriate welding mask, filter glass and protective clothing to protect your eyes and body.
- Use proper face mask or screen to protect onlooker from injury.

**Fire**

- Welding sparkle may cause fire, so please make sure no inflammable substance is near welding station.

**Noise —— excessive noise will do harm to hearing!**

- Use ear shield or wear other hearing protection device to protect your ear.
- Warn the onlooker that noise may do harm to his hearing.

**Trouble——ask for help from professional personnel when trouble occurs**

- When encounter difficulty in installation and operation, please inspect according to relative content in this manual.
- When you are not able to fully understand this manual after reading it or are not able to solve problems according to instructions in this manual, please contact your supplier or Our company's service center immediately to seek for help from professional personnel.

**Warning !**

Please install leakage protection switch when use this equipment. ! ! !
EQUIPMENT INSTRUCTION

2.1 How to use this manual
Please carefully read the relative chapters about operation safety instructions and warning to ensure reliable installation and operation. Pay more careful attention to the contents with the title of warning, notice and remark. These explanations are easily understandable.

⚠️ **Warning** The warning indicates matters that have the potential to cause personal injury.

**Notice** indicates matters that have potential to cause damage to equipment.

**Remark** Remark indicates matters that can provide helpful operating instruction.

2.2 Confirmation and acceptance of equipment
Please check and confirm whether the model of received equipment is right, the accessories and parts accompanying with the equipment, the specification, guarantee card, certificate of conformity and packing list are complete, the serial number or ex-factory No. is one-to-one correspondent and correct. After confirmation, record the result in relative forms for reference.

Please confirm the received equipment is complete and in good condition. In the event that something has been damaged, please inform the post personnel your just claim and offer the recorded detailed information about the equipment damage and transport error as the evidence in support of your rights and interests.

The equipment should be stored in a proper and safe place with reasonable care after acceptance.

2.3 Product description
The inverter gas shielded welding equipment is based on the theory of inverter power source and appearance of parts. The power source of gas shielded welding converts the 50 / 60Hz industrial frequency to high frequency(more than 100KHz)through high power parts :MOSFET field effect tube,and then reduce voltage and rectify it to output high power voltage source through pulse-width modulation technology(PWM). The weight and volume of main transformer have been reduced considerably and the effectiveness has improved by more than 30%. The inverter welding machine is praised as once revolution in welding machine industry by specialist.

CO2 gas shielded arc welding machine is a kind of inverter welding machine adopting international advanced inverter technology. The welding machine is equipped with unique electron reactor circuit to control welding process of the short-circuit transfer and mixed transfer, therefore, it has excellent welding characteristics. Compared with silicon control welding machine and welder with taps, it has the following advantages: stable wire feed rate, easy to carry and energy-saving, without electromagnetic noise. It can work continuously and steadily with low current, which make it suitable for welding the thin sheet such as low carbon steel, alloy steel and stainless steel sheet. In addition, it has the automatic power grid fluctuation compensation function, little splash, excellent arc starting, deep molten pool and high duty cycle etc.

Welcome friends from all walks of life use our products and offer invaluable advice. We will commit
ourselves to make our product and service most perfect.

<table>
<thead>
<tr>
<th>Model</th>
<th>MIG200M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Input Voltage</td>
<td>240V/1Phase</td>
</tr>
<tr>
<td>No-Load Loss</td>
<td>50W</td>
</tr>
<tr>
<td>Efficiency</td>
<td>0.8</td>
</tr>
<tr>
<td>Power Factor</td>
<td>0.73</td>
</tr>
<tr>
<td>No-load output voltage</td>
<td>61V</td>
</tr>
</tbody>
</table>

| MIG | Rated Input Current | 35.7A                                      |
|     | Output Voltage adjustment Range | 14-24V                                   |
|     | Output Current Range | 30A-200A                                  |
|     | Load Duty Cycle      | 60%                                       |

| TIG | Rated Input Current | 24.9A                                     |
|     | Output Voltage adjustment Range | 10.8-17.6V                              |
|     | Output Current Range | 21-190A                                   |
|     | Load Duty Cycle      | 60%                                       |

| MMA | Rated Input Current | 37.7A                                     |
|     | Output Voltage adjustment Range | 21.7-27.4V                               |
|     | Output Current Range | 17-185A                                   |
|     | Load Duty Cycle      | 60%                                       |

| Protection Class | IP21                           |
| Cooling method   | Fun-cooled                      |
| Standard         | GB15799.1-2004                  |
| Size             | 495*265*450mm                   |
| Weight           | 20KG                           |
### 2.5 Operating principle block diagram of circuit

- Grid input
- Input current switch
- Primary side rectifier diode
- Filtering
- Cooling fan
- Control power supply
- Inverter switch assembly
- High-frequency transformer
- Temperature sensor
- Secondary side rectifier diode
- DC reactor
- Current sensor
- PWM control
- External characteristic control

### 2.6 Means of transportation

**Warning**

Crash down may cause equipment damage or personal injury.

Refer to transporting and placing methods marked on the external packing of equipment, handle the equipment with trolley or similar handling equipment which has adequate carrying capacity.
3.1 Work environment and place

MIG series welding machine must be used in recommended environment. The insulation must be done in advance if the following or similar instance exist:

a. When the operator's action is limited by environment(such as: only can work on bended knees, on foot or lay), it must avoid directly contacting the current-carrying part on equipment with body.

b. In the event the operating environmental space is very narrow and small which make the operator unable to step aside the current-carrying conductor, or

c. In humid environment, the operators easy to sweat which make them in great electric shock risks

Ensure the welding machine is placed according to the following instructions

+ Dry and dustfree environment
  . Ambient temperature: within 0℃ - 40℃
  + Without oil sludge, water vapor and corrosive gas.
  + No vibration and strike
  + In rainproof and shade place
  + More than 300mm to wall to ensure smooth cooling air-flow and excellent ventilation

3.2 Electrical input connection

⚠️ Warning Electric shock may result in personal death; high voltage direct current still exist on equipment even after power-off, please do not contact the current-carrying part on equipment. Shutoff welding machine power, remove fuse, and stick red warning mark on disconnecting switch.

⚠️ Warning
The advice: the electric connection of equipment must be performed by qualified electrician with qualification certificate.

3.3 Distribution requirement

⚠️ Warning
Do not connect the power line(black / white wire) to ground terminal.
Do not connect the ground wire(green wire) to power line.

Welding equipment is powered by single-phase(or three-phase) 50 / 60Hz AC power supply. For the input voltage and fluctuation range, please see the parameters listed on nameplate. Please select power supply voltage strictly according to nameplate.

Notice: Improper power supply voltage may damage equipment.
Remark: This equipment is furnished with electric outlet which must be correctly connected by qualified electrician according to specification.

3.4 Duty cycle
Duty cycle means: the working hour percentage of equipment in 10 minutes work cycle, when welding current decreases, the duty cycle will increase, when welding current increases, it will decrease.

Warning: When output exceed duty cycle grade, the temperature in equipment will rise up, at this moment, the protective circuit will work and disconnect the power source output, the equipment will not resume work until it cools to normal temperature.

Notice: Persistent overload may damage welding power source.

3.5 MIG200M Installation:
Our welding machine is equipped with power source voltage compensation system, so it still can work on normally when the power source voltage varies within ±15% range of rated voltage.
When long cable is necessary to be used, the larger section cable is advised to be used to decrease voltage drop; when the connecting cable is overlong, it may impose great affect on arc starting performance of welding machine and other performance of system, so we advice you use the recommended cable length. Reliably ground the housing case through wire with conducting sectional area not less than 6mm2; connect the ground terminal on the back of welding machine to grounding device, or make sure the ground terminal of power source socket has already been grounded independently and reliably. Both methods can be adopted simultaneously to ensure safety.
Connect the gas cylinder equipped with carbon dioxide gas pressure reduction flowmeter to the carbon dioxide inlet on the back of machine with gas pipe end-to-end tightly.

2) Plug the quick-plug of ground wire into the corresponding quick-socket on the front panel.
3) Explanation to the polarity conversion: this machine has the polarity conversion function.
When use solid wire in work, polarity conversion quick-plug on panel should be connected to positive output terminal.
When use self shielded flux-cored welding wire, the above said quick-plug should be connected to negative output terminal, the workpiece connected to positive output terminal.
4) Install the welding-wire reel with welding wire on the rack shaft of wire feeding machine, the hole on welding wire reel should be aligned with set pin on rack shaft and fitted well.
5) Select the wire feed groove according to the size of welding wire used.
6) Unscrew the nut on welding wire pressing wheel, feed the welding wire into the wire feed groove
through welding wire leading pipe, then adjust welding wire pressing wheel to press the welding wire firmly to ensure the welding wire not slip, but the pressure should not be excessive to avoid welding wire distortion which affect wire feed.

7) The welding wire reel should rotate in clockwise direction to uncoil welding wire. The head end of new welding wire reel is usually pulled through the fixing hole on the side of welding wire reel to prevent welding wire getting loose. In regular service, this part of welding wire should be cut off to prevent the curving welding wire being blocked.

8) Welding torch should be inserted into the output socket on front panel and screwed tightly, and the welding wire should be lead into welding torch with hand.

**OPERATION CONTROL**

4.1 Schematic diagram of panel

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power switch</td>
</tr>
<tr>
<td>2</td>
<td>Power and working state(MMA,TIG,MIG) indicator</td>
</tr>
<tr>
<td>3</td>
<td>The working state of welding machine(MMA,TIG,MIG) selection</td>
</tr>
<tr>
<td>4</td>
<td>Welding torch (push wire and pull wire) selection</td>
</tr>
<tr>
<td>5</td>
<td>Welding voltage adjustment: When welding, it is used for the regulating the welding voltage. It is valid in the MIG welding state, but it’s invalid in the TIG and MMA welding state.</td>
</tr>
<tr>
<td>6</td>
<td>Arc welding feature adjustment</td>
</tr>
<tr>
<td>7</td>
<td>Welding current (feed wire speed) adjustment: It is used for regulating the welding current. It is valid in MIG,TIG,MMA welding state.</td>
</tr>
<tr>
<td>8</td>
<td>Welding torch socket</td>
</tr>
<tr>
<td>9</td>
<td>Quick connector socket: welding machine output (+)</td>
</tr>
<tr>
<td>10</td>
<td>Fence core socket: It is used for controlling the output of welding machine.</td>
</tr>
<tr>
<td>11</td>
<td>Quick connector socket: welding machine output (-)</td>
</tr>
<tr>
<td>12</td>
<td>Integrated gas-electric output: connect with the TIG welding torch (Polarity-)</td>
</tr>
</tbody>
</table>
4.2 Operate and control

1. Set the air switch of welding machine at "ON" position, open the valve of gas cylinder and adjust the flowmeter to required flow.

2. Select the diameter of welding wire on welding feeding machine according to specified value.

3. Select bore diameter of welding torch contact tube according to diameter of wire.

4. According to the thickness and processing techniques of workpiece under welding, adjust VOLTAGE turnbutton and SPEED turnbutton to required position.

5. Press the switch on welding torch to make the welding wire extend out of gun head, then the machine is ready to work.

6. Reference table for welding conditions

<table>
<thead>
<tr>
<th>Parent metal</th>
<th>Thickness (mm)</th>
<th>Welding method</th>
<th>Diameter of wire (Φ)</th>
<th>Welding current range (A)</th>
<th>Applicable to OUR welding machine's model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon steel, common low alloy steel</td>
<td>0.8-8.0</td>
<td>CO2/MAG</td>
<td>0.8/1.0/1.0</td>
<td>60--230</td>
<td>MIG200</td>
</tr>
</tbody>
</table>

When Use Separate Wire Feeder:
When Use Pull Mig Torch:

4.3 Installment

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

When use long cable, in order to prevent voltage from 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. Make good connection of shielded gas source. Gas supply passage includes cylinder, argon decompress flow meter and pipe. Connecting part of pipe should used hoop or other things to fasten, lest argon leaks out and air gets in.
3. Use inducting cable whose section is not less than $6 \text{ mm}^2$ to connect the housing to the ground. The way is from the ground-connecting screw at the back to the earth device.
4. Correctly connect the arc torch or holder according to the sketch. When use MMA welding: 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. When use pulse arc welding: Put the gas-electricity plug of the welding gun to the joint at the front panel, and fasten clockwise. Put the air
switch on the gun to the relevant joint at the front panel, and fasten the screw.

5. 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.

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.
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.

4.4 Operation
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:

<table>
<thead>
<tr>
<th>Specification</th>
<th>φ 2.5</th>
<th>φ 3.2</th>
<th>φ 4.0</th>
<th>φ 5.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>70-100A</td>
<td>110-140A</td>
<td>170-220A</td>
<td>230-280A</td>
</tr>
</tbody>
</table>

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. VRD equipment is installed in the machine. When the switch of back panel is put "ON" position, the VRD indictor is lit and the no-load voltage changes to be less than 15V, which is safe for people; and when the switch is put "OFF" position, the VRD indicator is off.

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.
MAINTENANCE AND SERVICE

5.1 Notice and precaution

1. Environment

1) Welding should be performed in a relatively dry environment with air humidity not more than 90% in general.

2) Ambient temperature should be within the range of -10 °C to 40 °C.

3) Do not weld in sunlight or rain to prevent the water or rainwater seeping into welding machine.

4) Do not carry out welding work in the region or environment that containing dust or corrosive gas.

5) Do not perform gas shielded welding operation in the environment with strong air-flow.

2. Key point of safety

Our welding machine is furnished with overvoltage, overcurrent and overheating protection circuit. When electric grid voltage, output current and interior temperature exceed the setting standard, welding machine will stop automatically; but overuse(such as overvoltage) may damage welding machine, therefore, you should pay attention to the following points:

1) Ensure excellent ventilation!

Our welding machine is of minitype welding machine. There is great working current passing through it when working, so natural ventilation could not satisfy the cooling requirement of welding machine, therefore, a built-in fan is provided to cool the welding machine effectively to make it work steadily. The operator should ensure the ventilation not be covered or blocked, the distance from the welding machine to objects around it should not be less than 0.3m. User should always keep excellent ventilation which is vital to perfect working and long service life of welding machine.

2) Overload is forbidden!

The operator should observe and check the maximal allowable load current from time to time(relative to the selected duty cycle)to ensure the welding current not exceed the maximal allowable load current.

Current overload may shorten the service life of welding machine remarkably even cause burnt of welding machine.

3) Overvoltage is forbidden !

The supply voltage is listed in "main performance parameter" table. In general, the automatic voltage compensation circuit in welding machine will ensure the welding current within the allowable range. When the power source voltage exceeds allowable value, the welding machine may be damaged. The operator should fully realize this instance and take corresponding preventive measures.

4) On the back of each welding machine has a ground terminal with grounding mark . Before operation, ground the welding machine housing reliably with a cable whose section area more than 6mm2 to discharge static or prevent potential accident due to electrical leakage.
5) When the welding machine exceeds the standard duty cycle in work, it may enter into protection mode and pause, which indicates that welding machine has exceeded standard duty cycle and the excessive heat energy will activate the temperature detect switch (TDS) to make welding machine stop, at the same time, the red indicator on front panel will light. Under this circumstances, power source plug need not to be unplugged so that the cooling fan can work continuously to cool the welding machine. When the red indicator extinguishes, it indicates that the temperature has dropped to standard range and the welding can restart.

5.2 Problems likely happen in welding process

The phenomena listed here may have relative to the parts used, welding consumables, environmental factor and power supply, please take measures to improve environment to avoid the followings occurring.

<table>
<thead>
<tr>
<th>A. Arc starting is difficult and arc easy break</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Check and confirm whether the ground wire clip contacts well with workpiece.</td>
</tr>
<tr>
<td>2) Check whether connection point has bad contact.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Output current not reach rated value</th>
</tr>
</thead>
<tbody>
<tr>
<td>When power supply voltage deviates from the rated value, it may result in unconformity between output current value and setting value; when power supply voltage is lower than the rated value, the maximum output current of welding machine will be lower than the rated value correspondingly.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C. The current can not keep stable in operating process of welding machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>This may be related to the following factors:</td>
</tr>
<tr>
<td>1) Grid voltage has changed;</td>
</tr>
<tr>
<td>2) Serious interference from power grid or the other utilization equipment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D Welding seam has blowing hole</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Check whether the air feeding loop has gas leakage.</td>
</tr>
<tr>
<td>2) Check whether there are impurity such as oil, dirt, rust and paint etc on the surface of parent metal.</td>
</tr>
</tbody>
</table>

5.3 Routine maintenance

**Warning:**

All of the maintenance and repair must be carried out after power source is disconnected completely. Please check and confirm the power source plug has already unplugged before opening housing case.

1. Regularly dedust the welding machine with dry compressed air. When use it in heavy fume and polluted air, dedust at least once a month.
2. Compressed air should drop down to the required pressure to prevent damaging the small parts and units in machine.
3. Check the interior electric connections to ensure perfect contact (especially the connector assembly) and reinforce the loosed connection point. If the electric connections have oxidation phenomena, remove the oxidation film with sandpaper and reconnect.
4. Avoid water or moist getting into welding machine, or else, blow the welding machine to dry immediately, then measure the insulation with megameter, it can only be used when the measuring
result is accepted.

5. In the event that the welding machine is not used for long-term, it should be placed into the original package and stored in dry place.

6. When wire feeding machine has been operating for 300 hours, perform the motor carbon brush bedding and clean up the armature ring header, wash retarder, apply 2# supramoly lubricant grease to worm wheel, worm and bearing.

---

**TROUBLESHOOTING**

6.1 Maintenance tool

The followings are the schematic drawing of the required maintenance tool

![Schematic Drawing]

6.2 Troubleshooting 1

Notice: the following operation requires the operator must have adequate professional knowledge in electrics and overall safety common sense, and hold the valid qualification certificate to support his competence and knowledge. We recommend you contact OUR Company first for approval before performing inspection and repair.
<table>
<thead>
<tr>
<th>Trouble</th>
<th>Troubleshooting</th>
</tr>
</thead>
</table>
| Power source indicator light, fan not rotate, no welding output | 1. Check and confirm whether the air switch is closed.  
2. Check whether the power source of input cable has power.  
3. Check whether the thermal resistor (4 pieces) have been damaged (24V relayer constant open point is not closed or contact point has bad contact).  
4. Power board has trouble and no DC537V voltage output:  
   (1) Silicon bridge circuit is broken, patch cord of silicon bridge has bad contact.  
   (2) Burned-out on power board.  
   (3) Check the patch cord between air switch and power board, power board and inverter board (MOS board).  
5. Auxiliary Power source on control panel has trouble. (contact the dealer or manufacturer) |
| Power indicator light, fan rotate normally, no welding output | 1. Check whether the various interior patch cords have bad contact.  
2. Whether output terminal connections have broken circuit or bad contact.  
3. Whether the control wire on welding torch has broken or inching switch has been damaged.  
4. Control circuit has been damaged (contact the dealer or manufacturer) |
| Power indicator light, fan rotate normally, abnormality indicator light | 1. It may be the overcurrent protection, please switch off the machine, when the abnormality indicator extinguishes, start up the machine again, it will return to normal state.  
2. It may be overheating protection, it is not necessary to shutdown the machine, it will return to normal automatically after 2 - 3 minutes.  
3. It may be the inverter circuit trouble, please unplug the power source plug (near VH - 07 plug-in unit of fan) of main transformer on MOS board and start-up again:  
   (1) The abnormality indicator lights indicates that some field effect tube on MOS board have been damaged, check and replace the field effect tube.  
   (2) In the event the abnormality indicator not light:  
   a. The transformer of median board may be damaged, measure the primary inductance and Q value of main transformer with electrical bridge.  
   b. May be some quadric rectifiers of transformer have been broken down, check and replace the rectifier with the same type. |

When the machine can not work normally after the above adjustment and repair, please contact with the local dealer or the after-sale service center of our company.

### 6.3 Troubleshooting 2

Do not judge that the welding machine is out of order although the abnormal phenomena such as unable to welding, electric arc not stable, welding effect not good etc occur.

When every part of welding machine is normal, some phenomenon that can not be regarded as trouble may cause the above trouble. For example, fastening part gets loose, forget to switch, error of setting,
broken of cable and fracture in gas hose. Therefore, before making failure predication and sending back the machine to repair, please check it first, quite a part of troubles may be readily solved by chance.

The following is the diagnostic list of initial stage abnormity about general welding based on such sense. The abnormal phenomena can be found out from the abnormal item column on the upper right of the table. For the items with "〇" in the column, please check and repair it according to the corresponding note listed in the following table.

<table>
<thead>
<tr>
<th>Abnormal item</th>
<th>Check point and repaired item</th>
<th>No arc starting</th>
<th>No gas output</th>
<th>No wire feed</th>
<th>Arc flare</th>
<th>Weld edge not clean</th>
<th>Welding wire and parent metal adhere together</th>
<th>Welding wire and contact tube adhere together</th>
<th>Blowing hole</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Distributor box (input protection device)</strong></td>
<td>1. Whether switch on or not 2. Blown fuse 3. Connection part gets loose</td>
<td>〇 〇 〇 〇 〇 〇</td>
<td>〇 〇 〇 〇 〇 〇</td>
<td>〇 〇 〇 〇 〇 〇</td>
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<td>〇 〇 〇 〇 〇 〇</td>
</tr>
<tr>
<td><strong>Input end cable</strong></td>
<td>1. Whether the cable has been broken 2. Connection part gets loose 3. Overheat</td>
<td>〇 〇 〇 〇 〇 〇</td>
<td>〇 〇 〇 〇 〇 〇</td>
<td>〇 〇 〇 〇 〇 〇</td>
<td>〇 〇 〇 〇 〇 〇</td>
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<tr>
<td><strong>Welding source operation</strong></td>
<td>1. Whether switch on or not 2. Whether open-phase or not</td>
<td>〇 〇 〇 〇 〇 〇</td>
<td>〇 〇 〇 〇 〇 〇</td>
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</tr>
<tr>
<td><strong>Air hose (the whole channel from high pressure gas cylinder to welding torch)</strong></td>
<td>1. Connection part gets loose 2. Damage of gas hose</td>
<td>〇 〇 〇 〇 〇 〇</td>
<td>〇 〇 〇 〇 〇 〇</td>
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</tr>
<tr>
<td><strong>Wire feed device</strong></td>
<td>1. The wire feed rolls is not suitable to the diameter of wire leading pipe 2. Crack of wire feed rolls, blockage and shortage of groove etc 3. Overtight or overloose of pressing handhold, pile-up of welding wire cutting powder on SUS pipe entrance</td>
<td>〇 〇 〇 〇 〇 〇</td>
<td>〇 〇 〇 〇 〇 〇</td>
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</tr>
</tbody>
</table>
### 6.4 Troubleshooting 3

**Warning:** Unless special needs, inspection and repair should be performed after the power supply of distributor box has cut off and the safety can be ensured. Failure to observe the above principle may result in serious personal injury accident such as electric shock, burnt etc.

#### Diagnostic list of initial stage welding abnormality

<table>
<thead>
<tr>
<th>Abnormal item</th>
<th>Check point and repaired item</th>
<th>No arc starting</th>
<th>No gas out</th>
<th>No wire feed</th>
<th>Arc ignition not good</th>
<th>Arc flare</th>
<th>Weld edge not clean</th>
<th>Welding wire and parent metal adhere together</th>
<th>Welding wire and current contact nozzle adhering</th>
<th>Blowing hole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welding torch and welding torch cable</td>
<td>1. The coils and bending of welding torch cable is too oversize 2. The compatibility of contact tube, wire feed tube and the diameter of wire. Whether has worn and tear, blockage and deformation etc.</td>
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</tr>
<tr>
<td>Welding torch</td>
<td>1. Whether the contact tube, nozzle, nozzle joint get loose 2. The connecting joint of welding torch body are not properly inserted and fastened</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Welding torch power cable and switch control cable</td>
<td>1. Cable broken (bending fatigue) 2. Crushed by heavy object</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent metal surface condition and wire extension</td>
<td>1. Oil, dirt, rust, paint film 2. Overlong wire extension</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output terminal cable</td>
<td>1. The cable connecting the parent metal has not sufficient sectional area 2. (+), (-) Output line connection parts get loose 3. Bad conduction of parent metal</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Lengthen cable</td>
<td>1. Insufficient cross section area of cable 2. Roll and fold use</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Welding condition</td>
<td>Reconfirm the welding current, voltage, welding torch angle, welding speed and wire extension</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
## 6.5 Routine check 1

### Welding power source

<table>
<thead>
<tr>
<th>Part</th>
<th>key point of inspection and repair</th>
<th>Remark</th>
</tr>
</thead>
</table>
| Operation control panel | 1. Operation, switch and installation of switch.  
2. Verify the function of power indicator (light or extinguish). | When the fan does not rotate or has abnormal sound, it requires interior inspection and repair. |
| Cooling fan           | 1. Check whether it offers wind and sound is normal.                                                   |                                                                          |
| Power source          | 1. When Power On, check whether it has abnormal vibration and buzzer.  
2. When Power On, whether it gives out strange smell.  
3. Whether it has heating sign on appearance such as color change etc. |                                                                          |
| Periphery             | 1. Whether the air-feed pipeline has breakage and connections have got loose.  
2. Whether the housing and other fixture parts have got loose. |                                                                          |

### Welding torch

<table>
<thead>
<tr>
<th>Part</th>
<th>key point of inspection and repair</th>
<th>Remark</th>
</tr>
</thead>
</table>
| Nozzle            | 1. Whether the installation is firm or leading end has distortion.  
2. Whether it is spotted with splash. | The cause of blowhole.  
The cause of burning loss of welding torch (The effective method is using antisplash agent) |
| Contact tube      | 1. Whether the installation is firm.  
2. End head damage, hole's wearing down and blockage. | The cause of thread damage of welding torch.  
The cause of arc flare or arc break. |
| Wire feed hose    | 1. Examine the extension of wire feed hose.  
2. Whether the diameter of wire fits the inner diameter of wire feed hose.  
3. Partial bending and elongation.  
4. Wire feed hose is blocked by dirt or welding wire coating slag.  
5. Breakage of wire feed hose or wearing down of O-ring. | When it is less than 6mm, replace the wire feed hose because the too small extension size may result in arc flare.  
Misfit is the cause for arc flare, please replace it with proper wire feed hose.  
It may result in bad wire-feed and arc flare, replace it  
May result in bad wire feed and arc flare(wipe with kerosene or replace it with new one)  
1. Thermal shrinkage pipe has broken, it should be replaced with new one.  
2. O-ring has been worn down, replace it with a new one. |  
Gas diverter       | Forget to insert or the hole is blocked, or the assembly of component part purchased from other manufacturers. | May cause bad gas shield which result in welding defect(such as splash etc.), burnt of welding torch body (the electric arc in welding torch body) etc, please correct it properly. |
### 6.6 Routine check 2

#### Wire feeding machine

<table>
<thead>
<tr>
<th>Part</th>
<th>key point of inspection and repair</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press handhold</td>
<td>1. Whether the press handhold has been adjusted to correct pressure loading indication line. (notice: do not damage the welding wire whose diameter less than Ф1.2mm)</td>
<td>Result in the unstable wire feed and arc flare.</td>
</tr>
<tr>
<td>Wire-leading tube</td>
<td>1. Whether the entrance of wire-leading tube and edge of wire feed rolls have built-up cutting powder or chip.</td>
<td>Clean up the cutting powder and chip, find out the cause and remove it.</td>
</tr>
<tr>
<td></td>
<td>2. Whether the diameter of wire fits the internal diameter of wire-leading tube.</td>
<td>Misfit may result in arc flare or cutting powder or chip.</td>
</tr>
<tr>
<td></td>
<td>3. Check the center of wire-leading tube connecting end aligns with the center of wire feed rolls groove (visualization)</td>
<td>Misalignment may result in cutting powder and arc flare.</td>
</tr>
<tr>
<td>Wire feed rolls</td>
<td>1. Whether the diameter of wire fits the nominal diameter of wire feed rolls. 2. Check whether the wire feed rolls groove has been blocked.</td>
<td>1. Result in cutting powder of welding wire, blockage of wire feed hose and arc flare. 2. Replace it with new one if it has abnormal phenomena.</td>
</tr>
<tr>
<td>Pressure loading wheel</td>
<td>Examine the smoothbility of rotation, worn of pressure loading surface and narrowing down of contact surface.</td>
<td>Result in bad wire feed, then cause arc flare.</td>
</tr>
</tbody>
</table>

#### Cable

<table>
<thead>
<tr>
<th>Part</th>
<th>key point of inspection and repair</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welding torch cable</td>
<td>1. Whether the welding torch cable bends too much. 2. Whether metal connection part of quick-plug has got loose</td>
<td>1. Cause bad wire feed. 2. Oversize cable bending and wire feed may cause arc flare.</td>
</tr>
<tr>
<td>Output terminal cable</td>
<td>1. Cable insulation is worn and damaged. 2. Cable connector exposes (insulation damage) and gets loose (terminal of welding source, connection cable of parent metal)</td>
<td></td>
</tr>
<tr>
<td>Input terminal cable</td>
<td>1. Whether the input and output terminal's connections of distributor box input protection device are firm. 2. Whether the wire connection of safety device is reliable. 3. Whether the wire cable of input terminal connections of welding source is firm. 4. Whether the insulating material of input terminal cable has been worn or damaged in wiring course which cause conductor exposure.</td>
<td>In order to ensure personal safety and stable welding, please adopt proper inspection and repair measures according to the working place condition.  ● Routine maintenance is too simple  ● Periodic inspection is thorough and overall</td>
</tr>
<tr>
<td>Ground wire</td>
<td>1. Whether the ground wire of welding source has broken circuit or the connection is firm and tight. 2. Whether the ground wire of parent metal has broken circuit or the connection is firm and tight.</td>
<td>For prevent electrical leakage accident and ensure safety, routine maintenance must be carried out carefully.</td>
</tr>
</tbody>
</table>