# LGK-120LT

## PLASMA CUTTING MACHINE

# MANUAL

# INSTRUCTION

(PLEASE READ CAREFULLY BEFORE OPERATION)

**Thanks for choosing Huayuan Welder**

Even though customer's safety and comfort have being fully considered for the welding and cutting equipment from Huayuan company, installation and operation correctly is still needed for your safety. Pleased don't install, operate or maintain the machine before reading the manual instruction.

Huayuan Welder-DO THE BEST!

# Content

# 1. Safety Warnings

**For your and other's safety, please follow the list below before welding:**

1. Operator must be qualified according with the state standard

2. The welding circuits are not insulated when welding. If you touch the two output electrodes of the machine with your bare skin at the same time, it will lead to electric shock, sometimes even fatal dangers. The protective equipment worn while cutting must be dry and insulated

3. Make sure the machine is off when install, repair or maintain the machine, and all these need to be done by technical person.

4. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. While working in limited room, use enough ventilation and/or exhaust to keep fumes and gases away from the breathing zone, or use the respirator. Do not weld at the same time when using of degreasing, cleaning or spraying operations. The heat and rays of the arc can react with these gases to form phosgene, a highly toxic gas,

5. The machine must be far away from the explosive items. Don't weld well-closed container. It is dangerous to weld the box hole, you should make sure there is no flammable or toxic gas before welding.

6. Machine need to be checked by technical person if drop down or collision

happen

7. When working high above the ground, safety belt must be needed

8. The machine insulation grade is IP21S, can't be used under the rain

9. Put the machine on the inclined place need to avoid tilting.

10. Use the machine for pipeline thawing is prohibited

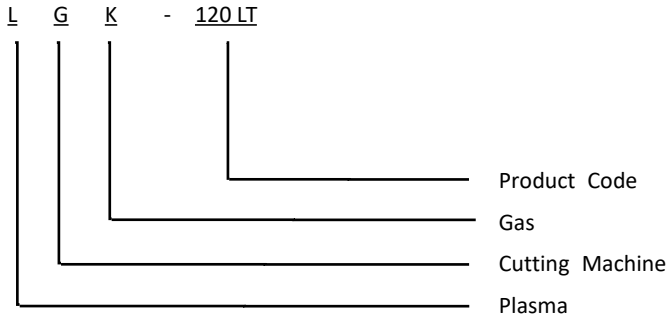
11. Electromagnetic would affect cardiac pace maker, the cardiac pacemaker users should consult one's doctor first. The effect of electromagnetic to one's health is not confirmed, so it might have some negative effect to one's health. Welders should reduce the hazardous of electromagnetic

12. This Machine is with CC mode with rated duty cycle 45%, that means machine working 4.5min need rest 5.5 min, when the machine over the rated duty cycle, the inside temperature will be increase, then the machine will protect itself, the overheat indicator on the panel will on, welding can't continue. Only when the temperature inside the machine cool down, the overheat indicator off, then the machine can continue to work.

13. The machine is with carton package, light weight, no lifting device.

# 2. Product Summary

## 2.1. Model Instruction




## 2.2. Characteristics

LGK-120LT plasma cutting machine with its own gas pump is developed by our company.

- ☞ Non-contact high-frequency arc strike, high arc strike success rate
- ☞ It has built-in thermal protection, phase loss protection and over-voltage and under-voltage protection functions
- ☞ It can be used with an external gas source to improve the service life of the gas pump
- ☞ The gas pump and cutting machine are integrated into the frame, with wheels, which is easy to move
- ☞ With its own gas pump, it can be used for cutting operations without external gas supply;

## 2.3. Applications

It is mainly used for manual cutting of various metal materials such as carbon steel, alloy steel, and non-ferrous metals. It is widely used in boiler chemical industry, pressure vessel production, industrial power station installation and construction, metallurgical construction, aerospace industry, automobile manufacturing and maintenance, building decoration and other industries involving metal cutting.

# 3. Technical Specification

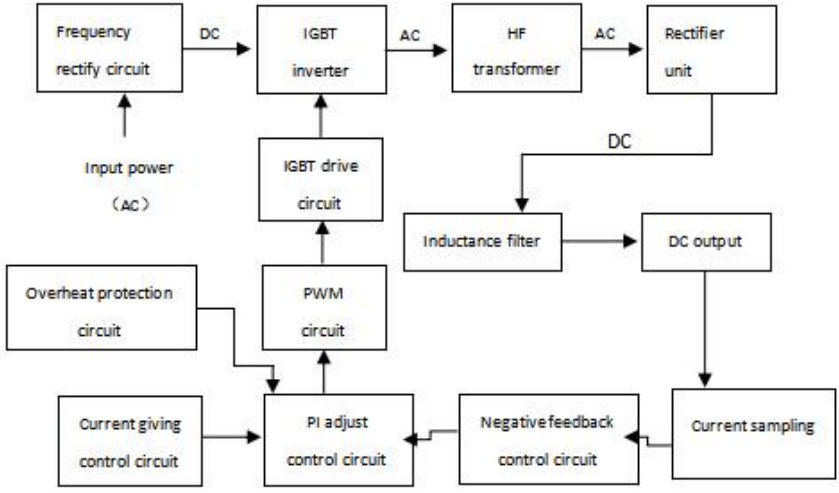
| Item | Unit | LGK-120LT |
|---|---|---|
| Rated input power | V/Hz | 3～380±15%　50/60 |
| Rated input capacity | kVA | 20.9 |
| Rated input current | A | 31.5 |
| Rated open circuit voltage | V | 292 |
| Rated duty cycle | - | 45%（40℃） |
| Efficiency | - | 92.7% |
| Power factor | - | 0.80 |
| Energy efficiency grade | | 3 |
| Output current adjust | - | 30～120 |
| Quality cutting capacity( C.S.) | mm | 30 |

| | | |
|---|---|---|
| Cut off capacity(C.S.) | mm | 45 |
| Arc strike mode | - | Non-contact |
| Plasma gas | - | gas |
| Gas pressure | MPa | 0.3～0.5 |
| Torch cooling mode | - | gas |
| Machine cooling mode | - | gas |
| Insulation grade | - | F |
| Protection grade | - | IP21S |
| Power source weight | kg | 29 |
| Power source dimension （L×W×H） | mm | 440×220×350 |
| Complete weight | kg | 60 |
| Complete dimensions （L×W×H） | mm | 560×490×620 |

# 4. Working Principle

The main circuit of the cutting machine uses IGBTs as the primary inverter switching devices. Three-phase AC power is rectified by a full-bridge industrial frequency rectifier, then inverted into a 20kHz high-frequency current. This current is stepped down by a high-frequency transformer, rectified by fast-recovery diodes, and filtered by a reactor before outputting the cutting current. Control circuit can control output current by controlling driven pulse width. The real time cutting current, which is obtained through current sensor connected to output terminal in

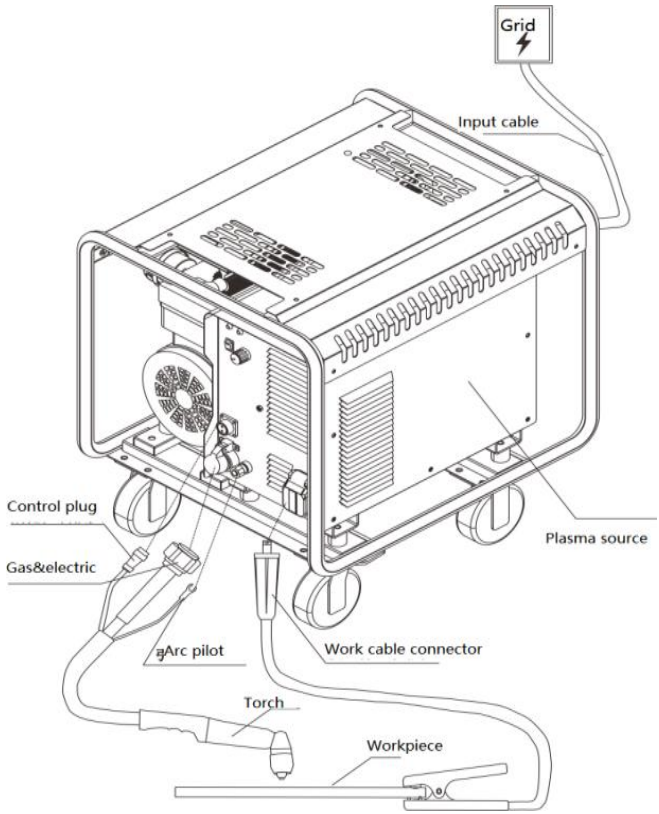
series, is used as negative feedback control signal. After comparing with current adjusting signal, the negative control signal is sent to PWM adjusting integrated circuit, a controlled driving pulse is output to control IGBT. Thereby a constant output current can be maintained, and a steep dropping & constant current external characteristic is obtained. Striking arc adopts high-frequency striking model. The main circuit refers to appendix figure1，and principle diagram of control circuit is shown as drawing:



# 5. Machine Components

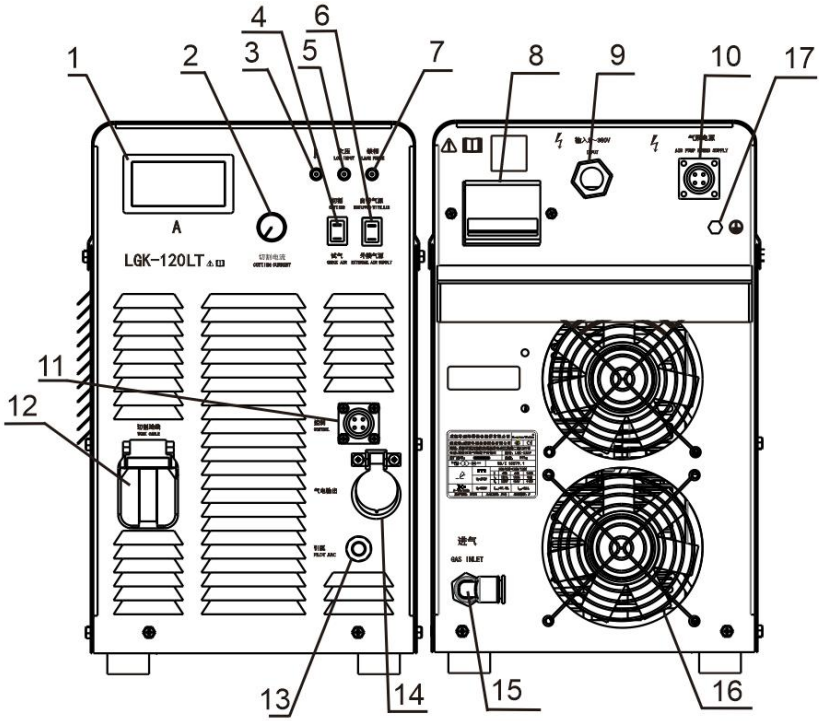
## 5.1. System Component

Complete machine consists of power source, torch, work cable and trolley



## 5.2. Function instruction

### 5.2.1. Cutting Power Supply




① Three-digit display ammeter (current preset): displays the preset current or the actual output current value, and is used in conjunction with the cutting current adjustment knob

② Cutting current adjust knob: adjust the cutting current

③ Overheat indicator：This indicator lights up when the inside of the cutting power supply is overheated.

④ Gas control selection switch: when switch on “gas check” position, gas valve work to check the pump working and gas flow, when switch on the "cut" position, the gas valve opens automatically when the cutting operation is performed

⑤ Under-voltage indicator: When the three-phase power supply exceeds 440VAC or is lower than 300VAC, this indicator is on;

⑥ Built-in gas source/external gas source selection switch: according to the actual site situation, choose the cutting machine's own gas source or external gas source, please give priority to the use of external gas source, so as to prolong the life of the gas pump;

⑦ Gas pump phase loss indicator: This indicator is always on when there is phase failure, phase sequence error, or network pressure fluctuation of more than ±20% of the power supply of the gas pump motor. The power must be turned off, and the power supply fault must be dealt with and then restarted before this indicator light will be turned off;

⑧ Power switch (air switch): control the on/off of the three-phase power supply of the cutting power supply;

⑨ Power cable: connect power supply, green and yellow cable connect ground;

⑩ Gas pump power supply: This socket is used for the power supply of the gas pump with its own;

⑪ Control socket: is used for connecting the cutting torch;

⑫ Cutting ground cable plug: is used for connecting the cutting ground cable; Power cable: used to connect the three-phase power supply; One of the green and yellow two-color cable is a protective earth cable, which must be reliably connected with the earth;

⑬ Arc terminal: is used for connecting the arc cable of the torch;

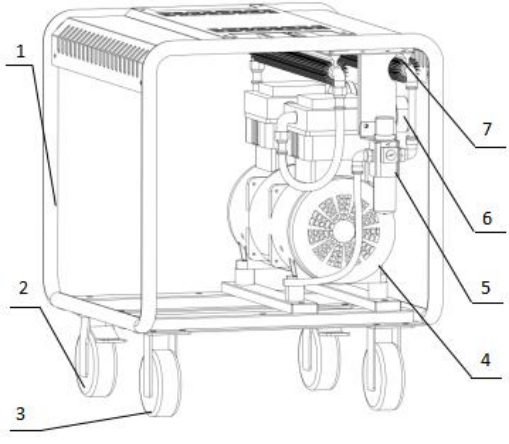
⑭ Gas and electric output interface: The cutting power output current interface, and also the compressed gas output interface, which is used to connect the torch cable joint;

⑮ Gas pump inlet: The compressed gas filtered by pressure regulation is input from this inlet;

⑯ Cooling fan: is used for internal heat cooling of the power supply by blowing wind inward;

⑰ Gas pump motor grounding screw: to fix the grounding cable of the gas pump power supply;

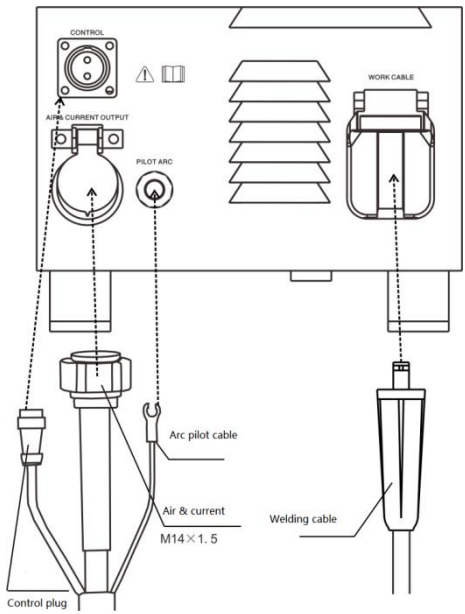
## 5.2.2. Trolley




1. Frame
2. 4 inch Universal Wheel (with brake)
3. 4 inch Directional Wheel
4. Air Compressor
5. Gas Filter
6. Silencer
7. Heat Sinker

# 6. Connection

Turn off the machine before connection!




## 6.1. Torch Connection

Open the protective cover of the gas-electric output interface of the cutting power supply, connect the gas-electric joint of the torch to the gas-electric output interface, and tighten the gas-electric integrated joint;

Loosen the pilot arc terminal of the cutting power supply, insert the arc cable

joint of the torch into the nut of the pilot arc, and tighten the pilot arc terminal;

Plug the two pins of the torch control plug into the control socket of the cutting power supply, insert the plug, and fix the nut.

## 6.2. Cutting GroundCable Installation

Open the protective cover of the earth cable plug. Connecting the earth cable fast connector to the machine, the other side of the cable connect the work piece stably.

## 6.3. Power Input Cable Installation

Place the cutting machine near the power distribution cabinet for easy installation;

The cutting power supply comes with an input power cable, and the input power cable is connected to the power distribution cabinet when connected, in which the green and yellow two-color cable is the protective grounding wire, which needs to be reliably connected with the protective grounding wire of the power distribution cabinet.

| **Model** | | **LGK-120LT** |
|---|---|---|
| Input power | Grid | 3～380V≤±15% |
| | Frequency | 50/60Hz≤±1% |
| | Other | ≤5% |
| Power | Power | ≥31.5kVA |

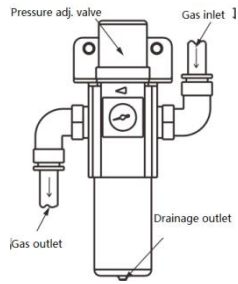
| | | |
|---|---|---|
| capacity | Generator | ≥42kVA |
| Input protection (Distribution cabinet) | Fuse | 50A |
| | Breaker | 63A |
| Power supply （Distribution cabinet） | Power cable | ≥6mm$^2$ |
| | Earth cable | ≥6mm$^2$ |

## 6.4. Outside Gas Supply

This machine can use the built in gas pump. We recommand to use the outside gas supply, when there is a outside pump. the outside gas supply should be:

1. Gas pressure：0.5～0.7MPa；
2. Gas hose pressure resistance：≥1MPa；
3. Gas hose diameter：10mm（gas filter connector10mm）
4. Gas flow：≥180L/min；

Take off the gas pump power supply cable then take the gas filter hose and inlet hose, connect with the outside gas supply hose



# 7. Operation

## 7.1. Preparation before Operation

Make sure that the input power supply, ground cable, base material, etc. are properly connected, and that the gas connection is complete.

1. Turn on the power supply switch and adjust the cutting current on the front panel to a suitable position according to the thickness of the cutting plate;
2. Pull up the adjustment knob of the gas pressure regulating filter, increase the gas pressure with the right rotation, decrease the gas pressure with the left rotation, start the control switch, and the gas pump will work to adjust the appropriate pressure.

## 7.2. Cutting Procedure

1. Cut from the edge of the workpiece:

①Clamp the workpiece with a clamp so that the torch nozzle is perpendicular to the edge of the workpiece;

②Press the torch switch to ignite the arc, stay on the edge of the workpiece for a while, and wait for the arc to completely cut through the workpiece;

③Gently drag the torch along the workpiece to keep it stable and the speed is uniform;

④After the cutting is completed, release the torch switch, and the compressed

gas will be turned off after a delay of 30S.

2. Perforation and cutting of the workpiece:

①Clamp the workpiece with a workpiece clamp so that the torch nozzle is inclined to the workpiece;

②Press the torch switch to ignite the arc and slowly rotate the torch to reach the vertical position;

③Keep the position unchanged, wait for the sparks to scatter from under the workpiece, and the perforation is completed;

④Gently drag the torch along the workpiece to keep it stable and the speed is uniform;

⑤After the cutting is completed, release the torch switch, and the compressed gas will be turned off after a delay of 30S.

## 7.3. Precautions after Cutting Operations

① After the cutting operation is completed, the compressed gas heat pipe and the connected accessories are still in a high temperature state, and it is forbidden to touch them by hand within half an hour.

② After the main valve of the external gas source is closed, the residual pressure in the pipe is removed through the gas test function.

③ Turn off the switch of cutting power supply, and then turn off the power supply of the distribution cabinet.

Note: In order to fully cool down the inside of the cutting power supply, please turn off the cutting power after more than 5 minutes after the cutting operation has ended.

## 7.4. Duty Cycle

The rated duty cycle of this power supply is 45%, which means that the welding machine will work for 4.5 minutes and rest for 5.5 minutes in the rated welding current state within a 10-minute work cycle. In order to avoid the deterioration of the performance of the welding machine and even the danger of burning the welding machine, this series of welding machines is provided with thermal protection function, when the internal temperature of the welding machine rises more than the set temperature, the thermal protection action, the overheating indicator light on the welding machine panel is on, the welding machine can not weld at this time, and the light of the overheating indicator on the welding machine panel should be off when the internal temperature of the welding machine drops to lower than the set temperature, and the welding machine will return to normal and can still continue welding.

# 8. Cutting Process

## 8.1. Main Cutting Parameter and Related Factor

### 8.1.1. Cutting material and thickness

The selection of cutting technical parameters is based on the cutting material and thickness. If the material is thick, it should adopt large current and nozzle with big aperture. For different material under the same thickness, the parameter should also be different.

### 8.1.2. Gas flow

The arc voltage increases as the increase of gas flow, that is, the arc power, the cutting speed, as well as the cutting capacity and quality is improved accordingly. Because the arc compression level increases, the energy is more concentrated, the arc beam temperature, the arc spraying speed, as well as the arc current impulsion increases. But overlarge current may cause the instability of the plasma arc. Usually no change is made to gas flow for one torch. But it can be adjusted a little when the cutting torch or cutting thickness is different.

### 8.1.3. Cutting current and arc voltage

The selection of cutting current should be according to the diameter of the nozzle, the relationship between the two should be as: I(current A) = (70 ~

100)×ϕ(mm). As the increase of the metal thickness, the influence of arc current to the cutting speed will become less. But as the increase of current, the burning damage will be worse for the electrode and the nozzle. So when cutting a thick metal work-piece, usually the increase of cutting speed is made by increasing arc voltage. The actual arc voltage is decided not only by the gas type but also by the gas flux and nozzle shape. Working voltage increases with the increase of gas flux.

### 8.1.4. Cutting speed

The cutting speed is related with many parameters. The main parameters determining cutting speed include work-piece thickness, cutting current, gas flux and nozzle aperture. A proper drag is allowed during cutting. The cutting speed should be increased as much as possible, but the incision quality must be guaranteed.

## 8.2. Eliminate the Cutting Slag Burr

### 8.2.1. The characteristics of the slag burr

The ordinary cutting surface is smooth and clean, but if the parameter selection is not suitable, and electrode centering is not good, then slag may be formed on the cutting surface.

Slag is formed by molten metal and its oxide which is adhesive to the bottom edge of incision and solidified. The reason for forming this slag is that the molten metal adhesive strength is bigger than the gravity and blow strength of metal oxide.

When cutting the alloy steel, the molten metal is difficult to be blown away

because of its bad fluidity, in addition, the alloy steel have bad thermal conductivity, the incision bottom is over-heated easily, the left molten metal and incision bottom melts into one, thereby the irremovable and tough burr is formed.

On the contrary, the incision bottom is difficult to be melted together with molten metal, and the slag formed under incision is come off easily.

### 8.2.2. The factors affecting the forming of slag burr

The fluidity of the molten metal is not good, when the power is too small or the plasma arc compression effect is not good, the temperature of molten metal during the cutting process is low, fluidity is weak, even if the gas current blow force is strong, it is still difficult to blow away the metal completely, so the burr is formed.

When cutting the thick plate, the burr is caused by the drag of overlarge cutting seam. During the cutting process, the heat received by different parts of metal is different, the heat on the upper incision is larger than that of the lower incision, so the upper part melting speed is faster than that of lower part, thereby a distance between them is formed, it is called drag L of cutting seam. The drag size is related to plasma arc shape and cutting speed. When the flame is short while the cutting speed is too fast, drag L increases, so the vertical and horizontal blow force of the arc is formed, the vertical one helps to blow away the molten metal, while the horizontal one makes the molten metal flow backward along with incision bottom, this over-heated metal will melt parts of the bottom metal again, then the burr is formed when they cool down and melt together.

The burr is caused by overheat bottom. When the cutting speed is too slow, but the incision bottom is so over-heated that it melts, the liquid metal flows to bottom metal and combines into one which makes the difficulty to blow away molten metal by gas current, and then the burr is formed.

The gas current blow force is not enough. When cutting with plasma, the arc blow force consists of the gas current blow force and the arc electromagnetic force, the gas current blow force acts the main function. If the gas current blow force is not strong enough, it cannot ensure all the burr is flown away, then the burr is formed.

### 8.2.3. The measurement to eliminate slag burr

Ensure the centering between electrode and nozzle precisely, so that the compression of the plasma arc is not damaged, the concentration of flame and cutting capacity can be guaranteed.

Enough power to ensure the fluidity of molten metal, as well as increase the stability of the cutting speed and operation. This makes it possible to adopt large gas flux to enlarge the gas blow force, and beneficial for eliminating burr.

Adjust suitable gas flux and cutting speed. If the gas flux is too small, the blow force is not enough, while if too big, the plasma arc will be shorten, the incision will be “V” shape, the drag enlarge. The burr can be formed under both conditions. When cutting speed is too slow, the incision is large and rough, the bottom is easy to be over-heated, while the cutting speed is fast, the drag is enlarged, this is not beneficial for eliminating burr. So under certain circumstance, there exists a proper selection range for gas flux and cutting speed.

# 9. Maintenance and Repair

## 9.1. Maintenance

**Maintenance and repair must be made by technical person!**

1. It must be operated by electrical personnel who have obtained the certificate of conformity issued by the state and relevant departments;
2. When carrying out maintenance and repair, the power supply must be cut off;
3. This cutting power supply adopts large-capacity high-voltage capacitor filtering, and the three-phase power supply should be turned off for 5 minutes before the case can be opened for maintenance.
4. Regularly check whether the joints of the welding machine are loose, or the contact is poor due to poor installation and other reasons;
5. Regularly inspect the air joint, if there is air leakage, it will affect the cutting performance, and it should be dealt with in time;
6. Keep it clean: Because the accumulation of dust or dirt inside the machine will shorten the life of the welding machine, open the top cover at least every six months and blow the dust off with dry compressed air;
7.Maintenance of built-in gas pump

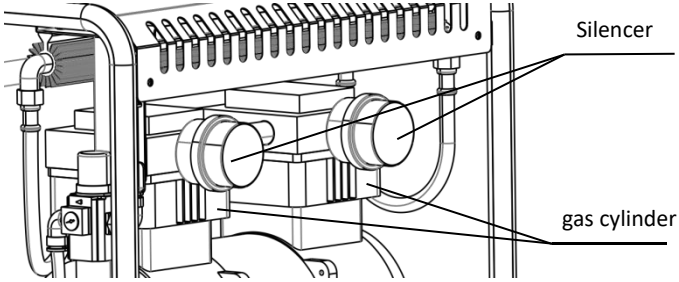
| | Maintenance cycle | | |
|---|---|---|---|
| | Clean circumstance | Light pollution | Heavy pollution |
| Primary (Silencer maintenance) | Once half a year | Once three months | According to exact situation |

| | | | |
|---|---|---|---|
| Secondary (Gas Cylinder maintenance) | Twice half a year | Once per year | |

A. Primary maintenance（silencer maintenance）:

Open the silencer, use compressed gas to blow the dust, when filter damage or pump output decrease, replace the filter

| Model | Screw | Material |
|---|---|---|
| LGK-120LT | G 1/2 screw | Steel |




B. Secondary maintenance（gas cylinder maintenance）:

When filter replaced or without silencer, the pressure still low, then need to do the secondary maintenance.

Check the gas cylinder, the belt life is around 1.5 years, when cylinder and belt damage, need to be replaced.

## 9.2. Repair

| Problem | Reasons | Measurements |
|---|---|---|
| 1. Turn on the machine,power indicator not on | 1. Input power switch shut or damage<br>2. Three-phase power supply lacks phase<br>3. Inside fuse damage | 1. Check the input power switch, make sure the input voltage correct<br>2. Check the three-phase power supply<br>3. Replace fuse |
| 2.Machine not work, overheat indicator off | 1．Earth cable not connect well；<br>2．Gas pressure too high；<br>3．Torch electrode and nozzle damage；<br>4．Torch damage； | 1．Connect earth cable well；<br>2．Adjust gas pressure；<br>3．Replace electrode and nozzle；<br>4．Replace torch； |
| 3. Machine not working, overheat indicator on | 1．Overload<br>2．Cooling fan damage<br>3. Temperature sensor damage | 1．Wait the welding machine cool down, the overheat indicator off, machine can work again<br>2. Replace the fan<br>3. Replace the temperature sensor |
| 4.Gas pump not work | 1．Machine lack phase；<br>2．Gas pump power not connect；<br>3．Gas pump contactor damage；<br>4．Gas pump damage； | 1．Check input connect；<br>2．Connect the gas pump power cable；<br>3．Replace contactor；<br>4．Replace pump； |

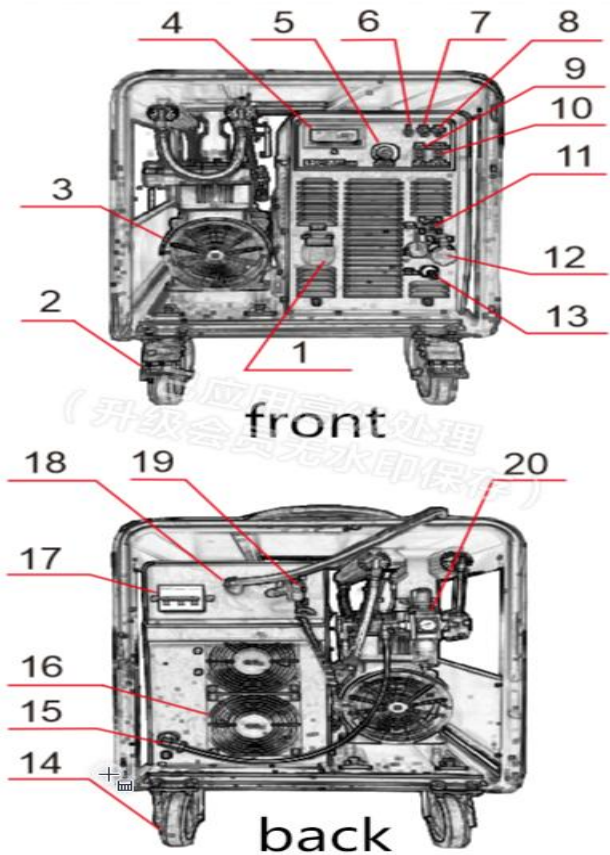
| | | |
|---|---|---|
| 5. Bad cutting quality | 1. Gas pressure too low or too high<br>2. Work piece too thick<br>3. Electrode and nozzle burnt<br>4. Plasma arc and work piece not vertical<br>5. Cutting speed too fast or too slow | 1. Check the gas pump pressure<br>2. Work piece thickness should within the machine cutting capacity<br>3. Replace electrode and nozzle<br>4. Adjust torch angle<br>5. Adjust the cutting speed |
| 6. Cutting pressure can't increase, cutting capacity decrease | 1. Gas hose leak;<br>2. Torch gas hose damage;<br>3. Gas pump filter chocked;<br>4. Gas pump cylinder damage; | 1. Check gas leak;<br>2. Replace torch;<br>3. Gas pump maintenance |
| 7. Arc inconsistent | 1. Gas pressure too high;<br>2. Torch electrode and nozzle damage | 1. Adjust gas pressure;<br>2. Replace electrode and nozzle; |
| 8. Power supply abnormal indicator is steady on, the power supply cannot work properly. | 1. The three-phase power supply exceeds the normal operating voltage range;<br>2. Unbalanced three-phase power input | Check whether the three-phase power supply meets requirements. |

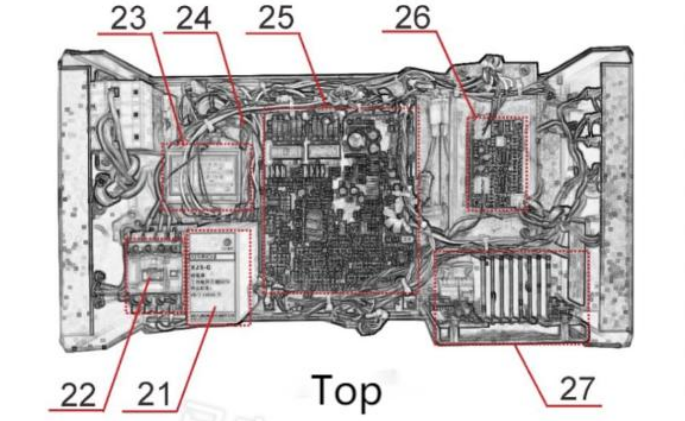
| | | |
|---|---|---|
| 9. The gas pump phase deficiency indicator light is on, and the gas pump cannot work normally. | 1. The phase sequence of the input three-phase power supply is incorrect.<br>2. Input three-phase power supply has open phase;<br>3. Input unbalanced three-phase power or network voltage beyond normal range. | 1. Turn off the power, switch any two phases of the three-phase input line and then turn it on again;<br>2. Turn the power off, check the input power, eliminate reopened after open phase fault;<br>3. Turn the power off, check whether the input power is up to the standard, reopened after troubleshooting. |

# 10. Packing List

| | |
|---|---|
| 1. Cutting power source | 1set |
| 2. Ground cable | 1pc |
| 3. Cutting torch | 1pc |
| 4. Instruction manual/guarantee card/qualified card | one for each |

## 11. Key Component List

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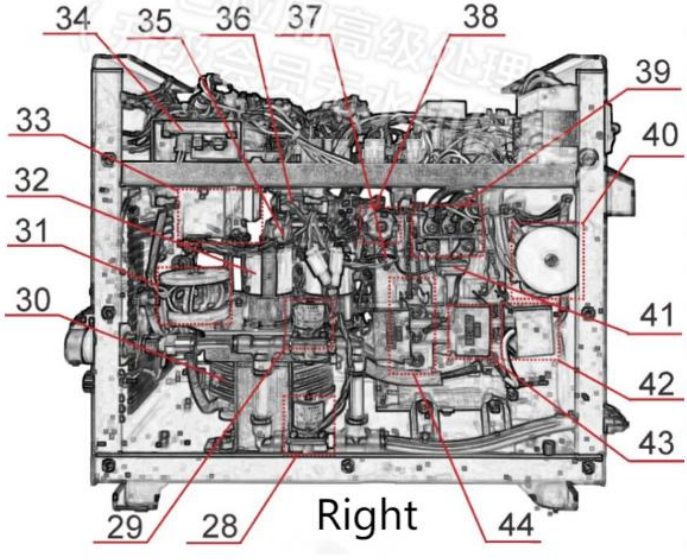
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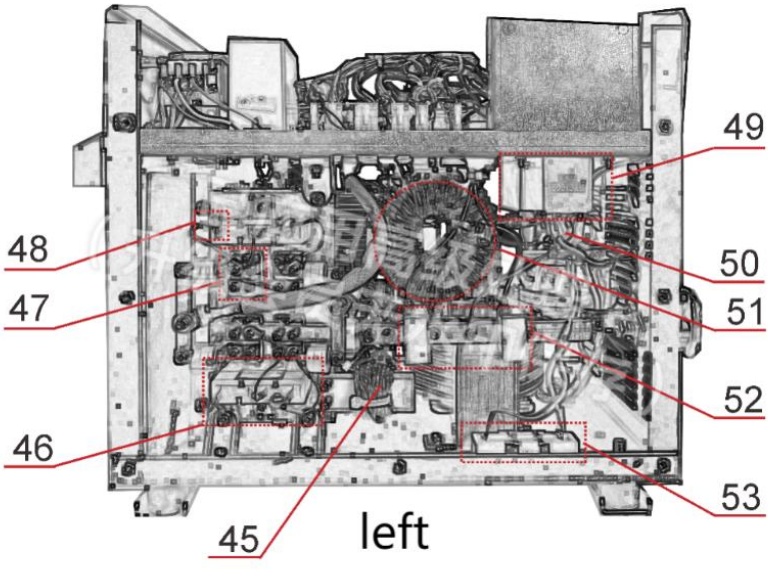
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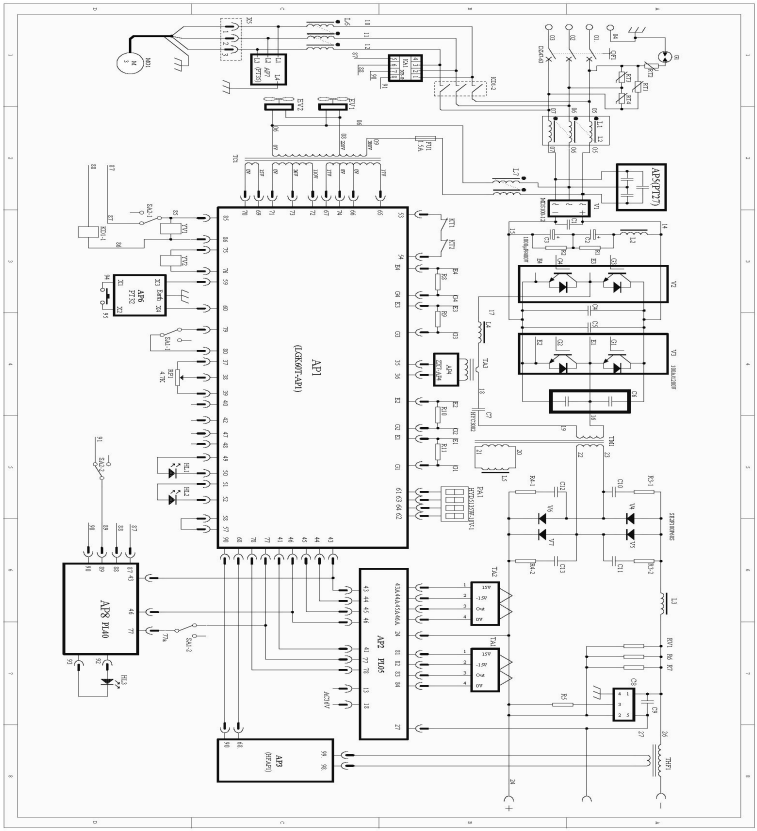
| No. | Code | Material Code | Name | Specification | Qty |
|---|---|---|---|---|---|
| 1 | X3 | 104010000071 | Quick connector | DKZ35-50N（Black protective cover） | 1 |
| 2 | | 108100000038 | Universal wheel (with brake) | 4 inch | 2 |
| 3 | M1 | 103020000043 | Oilless air compressor | OLF1500A | 1 |
| 4 | PA1 | 102060100039 | Digital Display | HYD5135W-10V-1 | 1 |
| 5 | RP1 | 102030600310 | Potentiometer | RVS28P-B470-K16X(with XN-28D-knob) | 1 |
| 6 | HL3 | 102010700021 | Indicator light | Φ5 light emitting diode yellow（with seat） | 1 |
| 7 | HL2 | 102010700020 | Indicator light | Φ5 light emitting diode red（with seat） | 1 |
| 8 | HL1 | 102010700020 | Indicator light | Φ5 light emitting diode red（with seat） | 1 |
| 9 | SA1 | 102010500003 | Rocker switch | RK2-0122 | 1 |
| 10 | SA2 | 102010500003 | Rocker switch | RK2-0122 | 1 |
| 11 | X4 | 104020000098 | Two-pin socket | WS20K4Z | 1 |
| 12 | X1 | 114020200012 | Air cock | HYTYJ-01-012 | 1 |
| 13 | X2 | 104010000027 | Wiring terminal | JS-999 black | 1 |

| | | | | | |
|---|---|---|---|---|---|
| 14 | | 108100000037 | Directional Wheel | 4 inch | 2 |
| 15 | | 104050000138 | L-shaped partition straight through | PLM10 | 1 |
| 16 | EV1，EV2 | 103020000002 | Cooling Fan | KA1238HA2 | 2 |
| 17 | QF1 | 102010200041 | Air switch | DZ47-63/3P D63 | 1 |
| 18 | | 101020100089 | Power tail wire | YZ4×4mm$^2$ | 1 |
| 19 | X5、X6 | 104020000140 | Three-pin socket | SD20ZG03K | 1 for each |
| | | 104020000139 | Aviation connector | SD20TAJ03 | |
| 20 | | 102060401007 | Air filter regulator | GRF-200-08 | 1 |
| 21 | KA1 | 102010100040 | Phase loss protector | XJ3-G | 1 |
| 22 | KD1 | 102010100039 | AC contactor | CDC6H-18 | 1 |
| 23 | TC1 | 105010000050 | Control transformer | LGK-6 | 1 |
| 24 | FU1 | 102010300102 | Fuse Stand with wire | 5×20（fuse RF1-20-F1.5A） | 1 |
| 25 | AP1 | 112010000491 | Main PCB | LGK60T-AP1 | 1 |
| 26 | AP8 | 112010000508 | Phase loss protection | PL40 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| | | | PBB | | |
| 27 | AP2 | 112010000054 | Arc Strike PCB | PL05 | 1 |
| 28 | YV2 | 102060400014 | Gas valve | DF2-3B-AC36V(3mm) | 1 |
| 29 | YV1 | 102060400013 | Gas valve | DF2-3B-AC36V(2mm) | 1 |
| 30 | L3 | 201861106 | Filter reactor | HYLGK120P1-02-000 | 1 |
| 31 | THF1 | 105030000012 | High-frequency coupling coil | HYLGK120P1-00-018 | 1 |
| 32 | C2、C3 | 102020100080 | Electrolytic capacitor | 1000μF/400V | 2 |
| 33 | C7 | 102020503002 | Capacitor | HYC3002 | 1 |
| 34 | AP3 | 112020000005 | High Frequency Board | HY-110V | 1 |
| 35 | TA3 | 105010000173 | Mutual Inductor | T311908-375TS（The yellow and black leads are 150mm long） | 1 |
| 36 | L4 | 201861103 | Saturable Inductor | HYLGK120P1-00-016 | 1 |
| 37 | KT1、KT2 | 102010400031 | Thermal Relay | JUC-6F-75℃NC | 2 |
| 38 | L2 | 105010000051 | Choke Coil | LT03 | 1 |
| 39 | V1 | 102070300161 | Three phase rectifier bridge | MDS100-12 | 1 |

| | | | | | |
|---|---|---|---|---|---|
| 40 | L1 | 105020000002 | Three phase inductor | homemade | 1 |
| 41 | C1 | 102020201005 | Capacitor | CBB21-1μF-630V | 1 |
| 42 | C6 | 102020502008 | Capacitor | HYC2008 | 1 |
| 43 | C4、C5 | 102020504007 | Capacitor | HYC4007 | 2 |
| 44 | V2、V3 | 102070100177 | IGBT Module | GD100HFF120C1SL | 2 |
| 45 | L5 | 201861102 | Linear inductor | HYLGK120P1-00-017 | 1 |
| 46 | R3、R4 | 102030300533 | Resistance | RXG7-20W-30Ω+30Ω | 2 |
| 47 | V4~V7 | 102070200033 | fast recovery diode | JU100K2 | 4 |
| 48 | C10~C13 | 102020300302 | Ceramic capacitor | CT-103M/2KV | 4 |
| 49 | C8 | 102020501002 | Capacitor | HYC1002 | 1 |
| 50 | RV1 | 102030400014 | Varistor | MYG-20K510 | 1 |
| 51 | TM1 | 201861101 | Inverter transformer | HYLGK120P1-00-015 | 1 |
| 52 | TA1、TA2 | 102060300103 | Hall sensor | TKC100BR(600mm） | 2 |
| 53 | R5 | 102030300563 | Resistance | RXG7-50W-10Ω | 1 |

# 12. Main Circuit Diagram



The final explanation right is reserved to Huayuan Company!

If there is any change in the manual, please forgive not to inform separately!

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