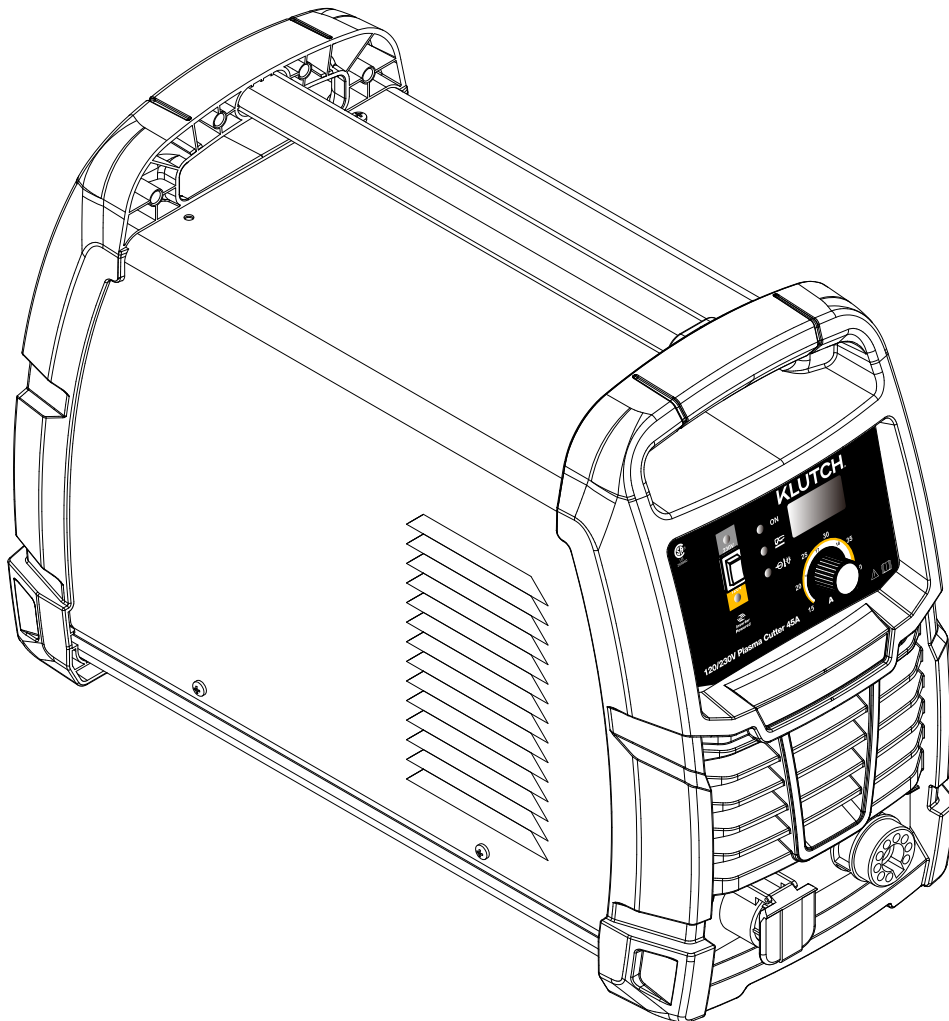


KLUTCH™

120V/230V Plasma Cutter 45A



⚠ WARNING: Read carefully and understand all ASSEMBLY AND OPERATION INSTRUCTIONS before operating. Failure to follow the safety rules and other basic safety precautions may result in serious personal injury.

Item #5876600

READ & SAVE THESE INSTRUCTIONS

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Operating Instructions and Parts Manual

Please read and save these instructions. Read through this owner's manual carefully before using product. Protect yourself and others by observing all safety information, warnings, and cautions. Failure to comply with instructions could result in personal injury and/or damage to product or property. Please retain instructions for future reference.

GENERAL SAFETY INSTRUCTION

1.1 Your Welding Environment

- Keep the environment you will be welding in free from flammable materials.
- Always keep a fire extinguisher accessible to your welding environment.
- Always have a qualified person install and operate this equipment.
- Make sure the area is clean, dry and ventilated. Do not operate the welder in humid, wet or poorly ventilated areas.
- Always have your welder maintained by a qualified technician in accordance with local, state and national codes.
- Always be aware of your work environment. Be sure to keep other people, especially children, away from you while welding.
- Keep harmful arc rays shielded from the view of others.
- Mount the welder on a secure bench or cart that will keep the welder secure and prevent it from tipping over or falling.

1.2 Your Welder's Condition

- Check ground cable, power cord and welding cable to be sure the insulation is not damaged. Always replace or repair damaged components before using the welder.
- Check all components to ensure they are clean and in good operating condition before use.

1.3 Use of Your Welder

▲ CAUTION

Do not operate the welder if the output cable, electrode, MIG gun, wire or wire feed system is wet. Do not immerse them in water. These components and the welder must be completely dry before attempting to use them.

- Follow the instructions in this manual.
 - Keep welder in the off position when not in use.
 - Connect ground lead as close to the area being welded as possible to ensure a good ground.
 - Do not allow any body part to come in contact with the welding wire if you are in contact with the material being welded, ground or electrode from another welder.
 - Do not weld if you are in an awkward position. Always have a secure stance while welding to prevent accidents. Wear a safety harness if working above ground.
 - Do not drape cables over or around your body.
 - Wear a full coverage helmet with appropriate shade (see ANSI Z87.1 safety standard) and safety glasses while welding.
-

- Do not overuse or overheat your welder. Allow proper cooling time between duty cycles.
 - Keep hands and fingers away from moving parts and stay away from the drive rolls.
 - Do not point MIG gun at any body part of yourself or anyone else.
 - Always use this welder in the rated duty cycle to prevent excessive heat and failure.
-

1.4 Specific Areas of Danger, Caution or Warning



Electrical Shock

⚠ WARNING

Electric arc welders can produce a shock that can cause injury or death. Touching electrically live parts can cause fatal shocks and severe burns. While welding, all metal components connected to the wire are electrically hot. Poor ground connections are a hazard, so secure the ground lead before welding.

- Wear dry protective apparel: coat, shirt, gloves and insulated footwear.
- Insulate yourself from the work piece. Avoid contacting the work piece or ground.
- Do not attempt to repair or maintain the welder while the power is on.
- Inspect all cables and cords for any exposed wire and replace immediately if found.
- Use only recommended replacement cables and cords.
- Always attach ground clamp to the work piece or work table as close to the weld area as possible.
- Do not touch the welding wire and the ground or grounded work piece at the same time.
- Do not use a welder to thaw frozen pipes.



Fumes and Gases

⚠ WARNING

- Fumes emitted from the welding process displace clean air and can result in injury or death.
 - Do not breathe in fumes emitted by the welding process. Make sure your breathing air is clean and safe.
 - Work only in a well-ventilated area or use a ventilation device to remove welding fumes from the environment where you will be working.
 - Do not weld on coated materials (galvanized, cadmium plated or containing zinc, mercury or barium). They will emit harmful fumes that are dangerous to breathe. If necessary use a ventilator, respirator with air supply or remove the coating from the material in the weld area.
 - The fumes emitted from some metals when heated are extremely toxic. Refer to the material safety data sheet for the manufacturer's instructions.
-

GENERAL SAFETY INSTRUCTION

-Do not weld near materials that will emit toxic fumes when heated. Vapors from cleaners, sprays and degreasers can be highly toxic when heated.

UV and IR Arc Rays



⚠ DANGER

The welding arc produces ultraviolet (UV) and infrared (IR) rays that can cause injury to your eyes and skin. Do not look at the welding arc without proper eye protection.

-Always use a helmet that covers your full face from the neck to top of head and to the back of each ear.

-Use a lens that meets ANSI standards and safety glasses. For welders under 160 Amps output, use a shade 10 lens; for above 160 Amps, use a shade 12. Refer to the ANSI standard Z87.1 for more information.

-Cover all bare skin areas exposed to the arc with protective clothing and shoes. Flame-retardant cloth or leather shirts, coats, pants or coveralls are available for protection.

-Use screens or other barriers to protect other people from the arc rays emitted from your welding.

-Warn people in your welding area when you are going to strike an arc so they can protect themselves.

Fire Hazards



⚠ WARNING

Do not weld on containers or pipes that contain or have had flammable, gaseous or liquid combustibles in them. Welding creates sparks and heat that can ignite flammable and explosive materials.

-Do not operate any electric arc welder in areas where flammable or explosive materials are present.

-Remove all flammable materials within 35 feet of the welding arc. If removal is not possible, tightly cover them with fireproof covers.

-Take precautions to ensure that flying sparks do not cause fires or explosions in hidden areas, cracks or areas you cannot see.

-Keep a fire extinguisher close in the case of fire.

-Wear garments that are oil-free with no pockets or cuffs that will collect sparks.

-Do not have on your person any items that are combustible, such as lighters or matches.

-Keep work lead connected as close to the weld area as possible to prevent any unknown, unintended paths of electrical current from causing electrical shock and fire hazards.

-To prevent any unintended arcs, cut wire back to ¼" stick out after welding.

Hot Materials



⚠ CAUTION

Welded materials are hot and can cause severe burns if handled improperly.

-Do not touch welded materials with bare hands.

-Do not touch MIG gun nozzle after welding until it has had time to cool down.

GENERAL SAFETY INSTRUCTION



Sparks/Flying Debris

⚠ CAUTION

Welding creates hot sparks that can cause injury. Chipping slag off welds creates flying debris.

-Wear protective apparel at all times: ANSI-approved safety glasses or shield, welder's hat and ear plugs to keep sparks out of ears and hair.



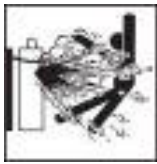
Electromagnetic Field

⚠ CAUTION

-Electromagnetic fields can interfere with various electrical and electronic devices such as pacemakers.

-Consult your doctor before using any electric arc welder or cutting device

- Keep people with pacemakers away from your welding area when welding.
- Do not wrap cable around your body while welding.
- Wrap MIG gun and ground cable together whenever possible.
- Keep MIG gun and ground cables on the same side of your body.



Shielding Gas Cylinders Can Explode

⚠ WARNING

High pressure cylinders can explode if damaged, so treat them carefully.

-Never expose cylinders to high heat, sparks, open flames, mechanical shocks or arcs.

- Do not touch cylinder with MIG gun.
- Do not weld on the cylinder
- Always secure cylinder upright to a cart or stationary object.
- Keep cylinders away from welding or electrical circuits.
- Use the proper regulators, gas hose and fittings for the specific application.
- Do not look into the valve when opening it.
- Use protective cylinder cap whenever possible

1.5 Proper Care, Maintenance and Repair

⚠ DANGER

- Always have power disconnected when working on internal components.
- Do not touch or handle PC board without being properly grounded with a wrist strap. Put PC board in static proof bag to move or ship.
- Do not put hands or fingers near moving parts such as drive rolls of fan

DESCRIPTION

The KLUTCH PC 45DV is a Dual Voltage, DC Inverter Plasma Cutter. It uses new state-of-the-art technology. The output can be adjusted from 15 to 45 Amps. This unit is designed to cut up to 11/16" steel at a travel speed of 10 inches per minute when operating on 230V AC power. Use the included adapter cord to run this unit off 120V AC power for a cutting capacity on steel of up to 1/4" at a travel speed of 10 inches per minute. It cuts all electrically conductive materials. See chart below. It cuts a narrow kerf that results in a smaller heat affected zone for reduced warping. The KLUTCH PC 45DV is lightweight (22.48lbs.), compact, inverter design for greater portability. It has a pilot arc for easy starts and enables the user to cut fence or expanded metal. This unit has a built-in air pressure adjustment and gauge, indicator lights for quick trouble shooting and thermal overload protection and now features a built-in water separator. The Electrode, nozzle, diffuser ring and protective cap are consumable items and available through KLUTCH Distributor.

Plasma Cutter	1 unit
Grounding Cable	1 pc
TRAFIMET Cutting Torch	1 pc
Electrode	3 pcs
Tip	3 pcs
Operator's Manual	1set

Power Supply	1ph-120V-50/60HZ	1ph-230V-50/60HZ
No-load Voltage	305V	305V
Output Range	20A	45A
Duty Cycle	35% @ 20A	50% @ 45A
Air Pressure	4.2CFM@ 80-110 PSI	
Power Switch	250VAC 30Amps	
Dimension (L x W x H)	20.86inch x 10.62inch x 14.17inch	
Weight	22.48lbs	

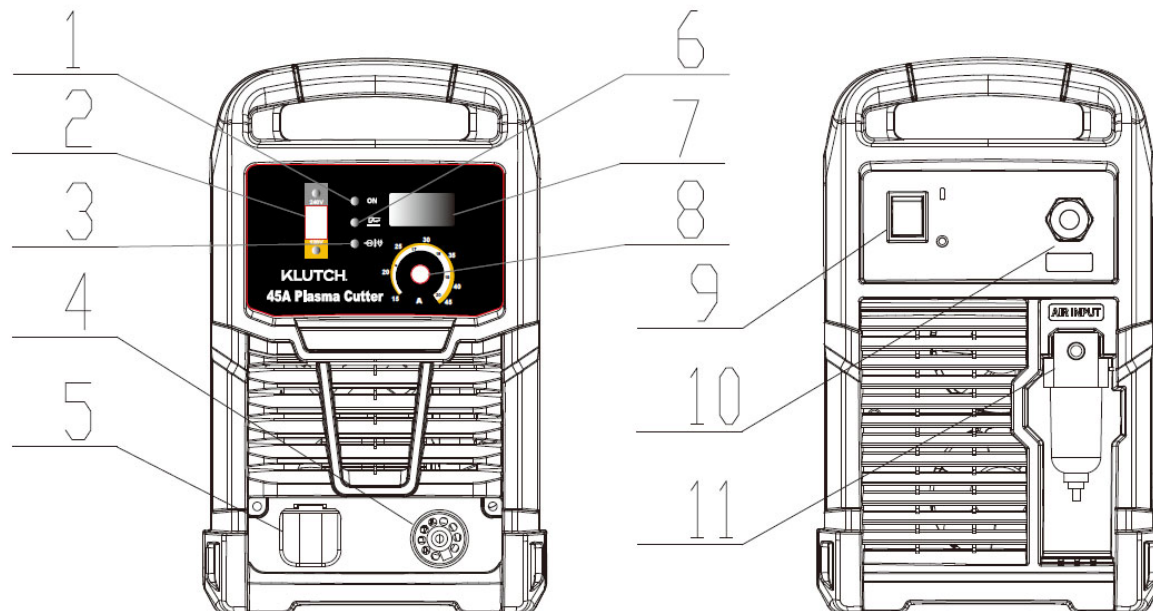
Removing from carton

1.1 Remove cartons, bags or Styrofoam containing the welder and accessories.

1.2 Check the contents with the packing list below.

1.3 After unpacking unit, inspect carefully for any damage that may have occurred during transit. Check for loose, missing, or damaged parts. Shipping damage claim must be filed with carrier.

Know your Welder



1. Power indicator Light

This light will turn on when the input power cord is plugged into the power supply and the power switch on the back of the plasma cutter is in the "ON" position.

2. Power Voltage Switch

120V&230V input power voltage switch

3. Protection indicator Light

When the unit is in thermal overload, is over voltage or lacking voltage, the indicator will be on and the machine will stop working. When the unit is cooled down and voltage stabilizes, the unit will return to work automatically.

4. Cutting Torch Connection

The Cutting Torch Connect the negative(-) on the front of the plasma cutter.

5. Ground Cable Connection

Connect the ground cable to the positive (+) receptacle on the front of the plasma cutter. The ground cable clamp connects to your work piece.

6. Work Indicator

When cutting, this light is on to show the unit is on working mode.

7. Digital display

8. Amperage adjustment

9. Power switch

It is the on/off switch. After the machine is connected to the input power supply, turn on this switch. The power indicator on the front panel will turn on.

10. Power cord

There is a 20 amp plug on this cable. Plug this into a 120V, 20amp circuit breaker power supply.

11. Air Pressure Regulator

Material	Clean Cut 120V	Clean Cut 230V
Mild Steel	1/4"	11/16"
Stainless Steel	1/4"	9/16"
Galvanized	1/4"	9/16"
Aluminum	3/16"	9/16"
Copper	3/16"	7/16"
Brass	3/16"	7/16"

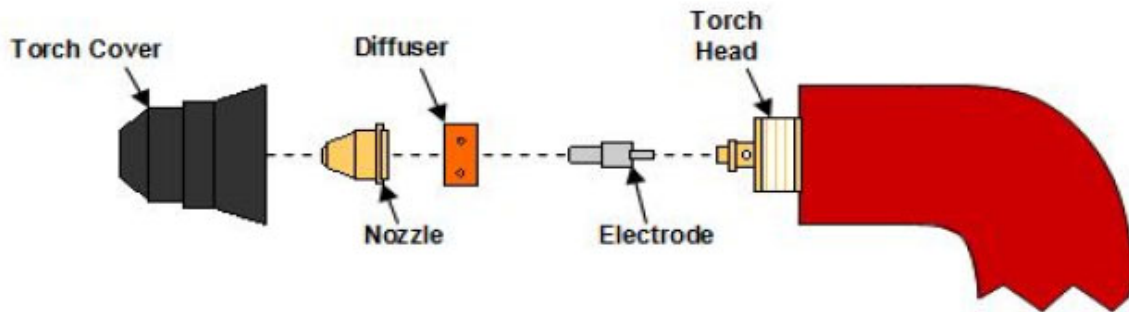
INSTALLATION

▲WARNING

- **High voltage danger from power source! Consult a qualified electrician for proper installation of receptacle. This cutter must be Grounded while in use to protect the operator from electrical shock.**
- **Do not remove grounding prong or alter the plug in any way. Use only the supplied adapter between the plasma cutter's power cord and the power source receptacle. Make sure the POWER switch is OFF when connecting your plasma cutter's power cord directly to a properly grounded 230 VAC, 60 HZ, Single phase, 50 Amp input power supply. Or, when using the supplied adapter, connect the 120V Adapter to a properly grounded 120V, 20 Amp input power supply.**

1. POWER REQUIREMENT 230V-AC single phase 230V(200-240V)50/60 HZ fused with a 50A time delayed fuse or circuit breaker is required. DO NOT OPERATE THIS UNIT if the ACTUAL power source voltage is less than 215 volts AC or greater than 240 volts AC.
2. POWER REQUIREMENT 120V-AC single phase 120V(110-130V)50/60 HZ fused with a 20A time delayed fuse or circuit breaker is required. DO NOT OPERATE THIS UNIT if the ACTUAL power source voltage is less than 110 volts AC or greater than 130 volts AC
3. EXTENSION CORD - We do not recommend an extension cord because of the voltage drop they produce. This drop in voltage can affect the performance of the plasma cutter/welder. If you need to use an extension cord, we recommend you check with a qualified electrician and your local electrical codes for your specific area. Do not use an extension cord over 25 ft. in length.
4. INSTALLATION OF THE CUTTING TORCH CONSUMABLES
 - a. Your torch should be fully assembled and ready to operate. The below figure shows the components of the torch head and how those components are installed.

TORCH ASSEMBLY



- b. Connect the Torch Control Cable to the Torch Trigger Connection. See Figure 3.
- c. Connect the Grounding Cable to the ground connection. See Figure 3.
- d. Connect the Grounding Clamp to your workpiece.
- e. Connect your compressed air source to the gas connection on this unit's back panel.

Torch connection

Ground connection.

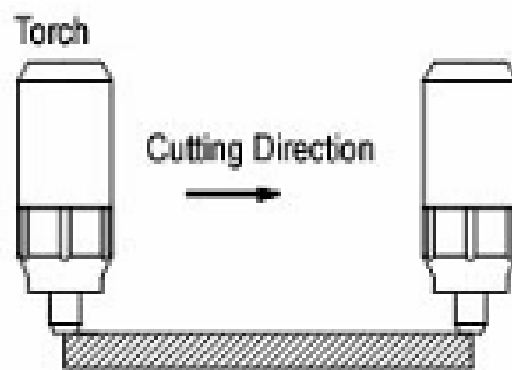


Figure 3

2. CUTTING OPERATION

2.1. Metal Sheet Cutting

- Put the torch's nozzle at the start of the work piece. Turn on the torch switch to ignite the plasma pilot. After the work piece is cut through, move the torch along the cutting direction uniformly. The cutting speed is determined by watching to see if the cutting goes all the way through. If the speed is too fast, the work piece won't be cut through, or if too slow, the cut quality would be affected, excessive warping may occur, or the arc could stop.
- When you've completed the cutting process, turn off the torch; the plasma pilot arc will stop.



2.2. Metal Mesh Cutting

- Fix the work piece and connect the earth cable with the work piece.
- Put the cutting nozzle onto the work piece, lift torch up slightly from the work piece and turn on the switch to cut.

2.3. Notice while cutting

- Unnecessary igniting of the pilot arc in the air will reduce the life-span of the torch's electrode and nozzle.
- It is best to start cutting at the edge of the work piece, unless you are piercing the work piece.
- Keep a space between the nozzle and the work piece. Pressing the nozzle on the work piece could cause the nozzle to stick, reducing the smoothness of the cutting action creating an undesirable result.
- Keep the torch's nozzle vertical against the work piece, and watch to be sure the arc is moving along the cutting line.
- Do not rapidly switch the torch trigger on and off; this will damage the pilot arc system and work piece.
- The plasma cutter's working air pressure range is 50-80psi. Notice: the internal pressure switch will shut off when the air pressure falls below 50psi. The switch only works when the pressure rises to 50psi or above.
- Every 4-8 hours, check the air filter on your air supply and remove excess moisture. Too much moisture in the cutter or torch may lead to operational trouble.

▲WARNING

Always unplug the power supply before checking for and removing moisture.

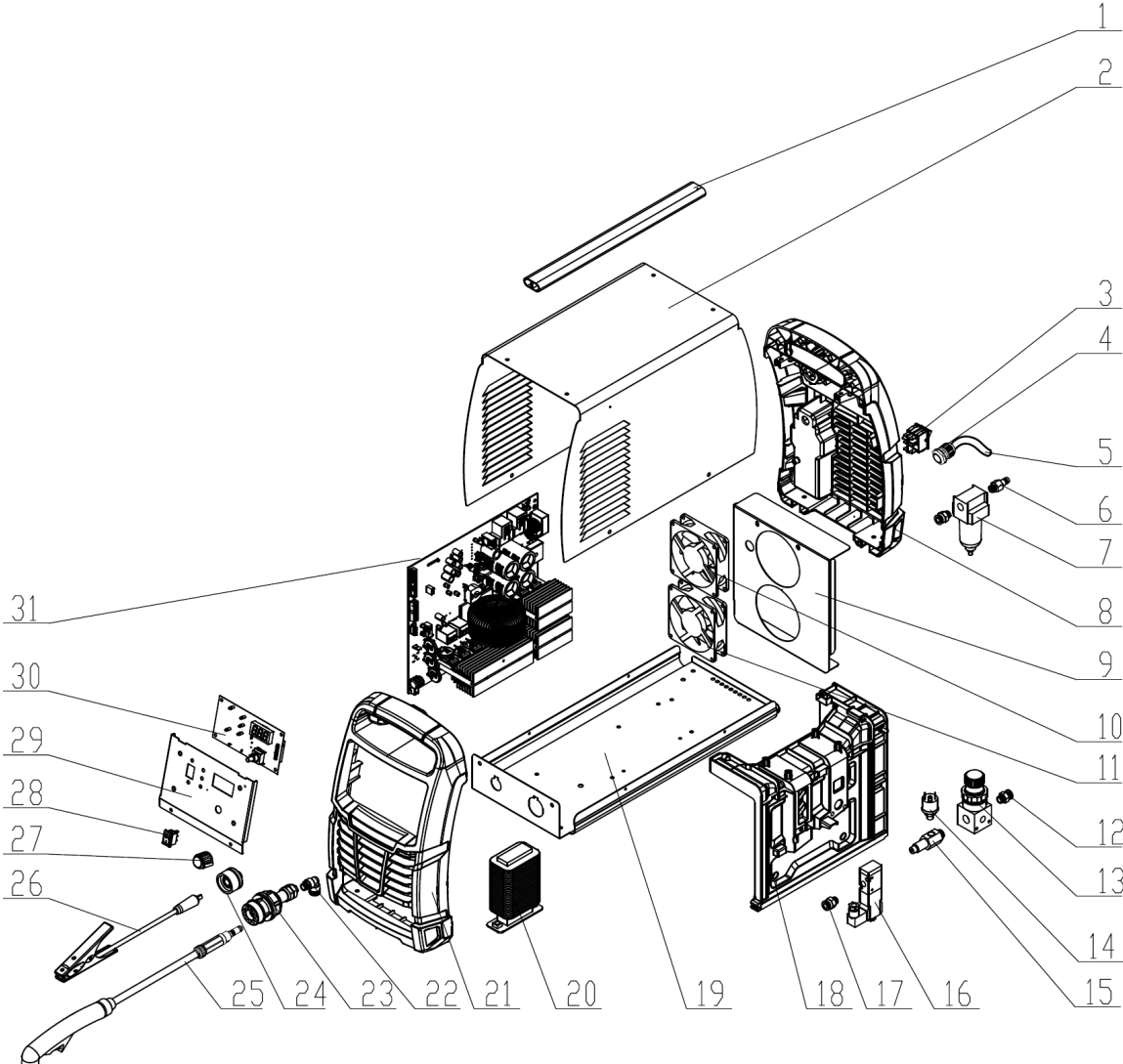
4. Safety Requirements

- Never allow the torch to be aimed at any part of a body.
- Make sure to wear protective glasses and gloves while operating.
- Work only in well-ventilated areas. If necessary, use exhaust/ventilation fans to keep fumes or emissions away from the breathing zone.
- Do not touch the work piece while cutting.
- Do not cut a pipes, containers, or other materials that contain, or have ever contained, flammable or explosive materials.
- Do not work underwater or in wet/moist environments.
- Do not bend the torch cable sharply; this may damage the air hose.
- Nobody other than the operator should be allowed to access the working area.
- Always turn off the power supply prior to repairing or moving the machine.
- Always turn off the power supply prior to repairing or installing any spare parts (e.g., torch, electrode, nozzle, ground clamp, etc.).
- Never allow a person with a cardiac pacemaker close to the working area without the permission of a doctor. The magnetic field produced by plasma cutters during operation can disrupt pacemakers and similar devices.
- Do not allow the ground cable to be pinched or damaged. If damaged, replace immediately.
- Never clean the slag off the torch head by hitting it against a hard object.

Trouble shooting Chart

Symptom (s)	Possible Causes(s)	Corrective Action(s)
Power Indicator Light is off after turning on the power supply.	<ol style="list-style-type: none"> 1.The light is broken. 2.Not 120V Input Voltage. 3.Power supply switch is broken. 4.Controlling board or cutter is damaged. 	<ol style="list-style-type: none"> 1.Replace. 2.Connect the 120V Input cable. 3.Replace. 4.Examine and repair.
Fan doesn't work after turning on the power supply.	<ol style="list-style-type: none"> 1.Fan is damaged. 2.Fan's ground lead is broken. 3.Fan's blade is blocked 4.Transformer is damaged. 	<ol style="list-style-type: none"> 1.Replace. 2.Examine and repair. 3.Clean the block. 4. Replace.
Low Pressure Indicator Light is on	<ol style="list-style-type: none"> 1.No input compressed air 2.Air/gas pressure valve is adjusted to 0 or broken. 3.Air/gas pressure circuit is blocked 4.Air/gas pressure valve is damaged 	<ol style="list-style-type: none"> 1.Examine and repair. 2.Adjust or replace. 3.Clean the block. 4.Replace.
Can't cut	<ol style="list-style-type: none"> 1.Discharge gap is too big or too low. 2.Main controlling board is damaged. 3.Ground lead is broken 	<ol style="list-style-type: none"> 1.Adjust to suitable gap. 2.Examine and repair. 3.Examine and repair.
No response after turning on the torch switch.	<ol style="list-style-type: none"> 1.Switch and ground-lead are broken. 2.Switch board is broken. 3.Main controlling board is damaged. 4.Ground lead is broken. 	<ol style="list-style-type: none"> 1.Examine and repair or replace. 2.Examine and repair or replace. 3. Examine and repair or replace. 4.Examine and repair.
No response after turning on power supply.	<ol style="list-style-type: none"> 1.Power cord hooked up wrong. 2.Power supply switch is broken. 3.Transformer is broken. 4.Main controlling board is ruined. 	<ol style="list-style-type: none"> 1.Examine and repair. 2.Replace. 3.Replace. 4.Examine and repair or replace.
Protection indicator Light comes on.	<ol style="list-style-type: none"> 1.No input compressed air or Discharge gap is too big or too low. 2.Over heating from exceeding the duty cycle. 3.The bad or broken connection in the thermal relay. 4.Main PCB board is broken. 	<ol style="list-style-type: none"> 1.Examine and repair or replace. 2.Wait until the machine cools down. 3.Repaired by the qualified people. 4.Replace.
Other problem.		Please contact customer service number on the outside of the manual

Spare Part List



Repair Parts List

NO	CODE	DESCRIPTION	QTY
1	125700033	Handle	1
2	125700034	Enclosure	1
3	125700035	Power Switch	1
4	125700036	Cable Clamp	1
5	125700037	Power Cable	1
6	125700038	Gas Inlet	1
7	125700039	Gas Filter	1
8	125700040	Rear Panel	1
9	125700041	Back Plate	1
10	125700042	Fan 2	1
11	125700043	Fan 1	1
12	125700044	Gas Connector	2
13	125700045	Regulator	1
14	125700046	Pressure Switch	1
15	125700047	Gas Connector	1
16	125700063	Gas Valve	1
17	125700064	Gas Connector	1
18	125700048	Ventilation Chamber	1
19	125700049	Bottom Plate	1
20	125700050	Inductance Assembly	1
21	125700051	Front Plastic Panel	1
22	125700052	L-Type Gas Connector	1
23	125700053	Torch Socket	1
24	125700054	Euro quick connector	1
	125700055	Quick socket bakelite piece	1
25	125700056	Plasma Torch	1
26	125700057	Ground Cable	1
27	125700058	Knob	1
28	125700059	Voltage Selection Switch	1
29	125700060	Front PCB Support	1
30	125700061	Front PCB	1
31	125700062	Main PCB	1

KLUTCH™

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