

Kicking Horse

OPERATION MANUAL

F130 Flux Core Wire Feed Welding Machine

Serial Number: _____

Where Purchase: _____

Date of purchased: _____

CONTENT

1. Safety	2
§1.1 Symbols Explanation.....	2
§1.2 Machine Operating warnings!	2
§1.3 EMC device classification.....	8
§1.4 EMC measure	9
§1.5 Warning label.....	9
2. Summary	11
3. Electrical principle drawing	12
4. Torch break down	13
5. Specifications	14
6. Penal controls and connectors	15
7. Installation & Operation	16
6.1 Installation.....	16
8. Safety precaution	17
8.1 Installation.....	17
8.2 Safety.....	17
9. Maintenance	17
10. Troubleshooting & Service	18

1. Safety

Welding and cutting equipment can be dangerous to both the operator and people in or near the surrounding working area, if the equipment is not correctly operated. Equipment must only be used under the strict and comprehensive observance of all relevant safety regulations. Read and understand this instruction manual carefully before the installation and operation of this equipment.

§1.1 Symbols Explanation



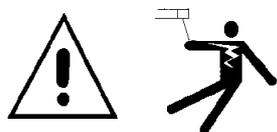
- The above symbols mean warning!

Notice! Running parts, getting an electric shock or making contacts with thermal parts will cause damage to your body and others. The underline message is as follows:

Welding is quite a safe operation after taking several necessary protection measures!

§1.2 Machine Operating warnings!

- The following symbols and words explanations are for some damages to your body or others, which could happen during the welding operation. While seeing these symbols, please remind yourself and others to be careful.
- Only people who are trained professionally can install, debug, operate, maintain and repair the welding equipment covered with this Operator's Manual!
- During the welding operation, non-concerned people should NOT be around, especially children!
- After shutting off the machine power, please maintain and examine the equipment according to §7 because of the DC voltage existing in the electrolytic capacitors at the output of the power supply!



ELECTRIC SHOCK CAN KILL.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode

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and work circuit is electrically live whenever the output is on. The input power circuit and internal machine circuits are also live when power is on. In Mig/Mag welding, the wire, drive rollers, wire feed housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is dangerous.

- Never touch live electrical parts.
- Wear dry, hole-free gloves and clothes to insulate your body.
- Be sure to install the equipment correctly and ground the work or metal to be welded to a good electrical (earth) ground according to the operation manual.
- The electrode and work (or ground) circuits are electrically “hot” when the machine is ON. Do not touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.
- Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.
- Be Careful when using the equipment in small places, falling-off and wet circumstance.
- Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
- Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
- Never dip the electrode in water for cooling.
- Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
- When working above the floor level, use a safety belt to protect yourself from a fall should you get an electric shock!

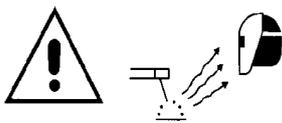


FUMES AND GASES CAN BE DANGEROUS.

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Smoke and gas generated whilst welding or cutting can be harmful to people's health. Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Do not breathe the smoke and gas generated whilst welding or cutting, keep your head out of the fumes. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. When welding with electrodes which require special ventilation such as stainless or hard facing or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and below the Threshold Limit Values using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.
- Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- Shielded gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
- Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet and follow your employer's safety practices.



ARC RAYS: Harmful to people's eyes and skin.

Arc rays from the welding process produce intense visible and invisible ultraviolet and infrared rays that can burn eyes and skin.

- Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding.
- Use suitable clothing made from durable flame-resistant material to protect your skin and that of your coworkers from the arc rays.
- Protect other nearby personnel with suitable, non-flammable screening and /or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

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SELF-PROTECTION

- Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.
- Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.



DO NOT add any fuel near an open-flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.



WELDING SPARKS can cause fire or explosion.

Welding on closed containers, such as tanks, drums, or pipes, can cause them to explode. Flying sparks from the welding arc, hot work piece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding

- Remove fire hazards material from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.
- Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situation.
- When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- Do not heat, cut or weld tanks, drums or containers until the proper steps have been

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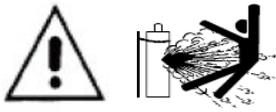
taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been “cleaned”.

- Vent hollow castings or containers before heating, cutting or welding. They may explode.
- Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuff less trousers, high shoes and a cap over your hair. Wear earplugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.



Rotating parts may be dangerous.

- Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- Cylinders should be located:
 - Away from areas where they may be struck or subjected to physical damage.
 - At a safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- Never allow the electrode, electrode holder or any other electrically “hot” parts to touch a gas cylinder.
- Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.



Gas Cylinders.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Because gas cylinders are normally part of the welding process, be sure to treat them carefully. CYLINDERS can explode if damaged.

- Protect gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames sparks, and arcs.
- Insure cylinders are held secure and upright to prevent tipping or falling over.
- Never allow the welding electrode or earth clamp to touch the gas cylinder, do not drape welding cables over the cylinder.
- Never weld on a pressurized gas cylinder, it will explode and kill you.
- Open the cylinder valve slowly and turn your face away from the cylinder outlet valve and gas regulator.



Gas builds up.

The buildup of gas can causes a toxic environment, deplete the oxygen content in the air resulting in death or injury. Many gases use in welding are invisible and odorless.

- Shut off shielding gas supply when not in use.
- Always ventilate confine spaces or use approved air-supplied respirator.



Electric and Magnetic Fields.

Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). The discussion on the effect of EMF is ongoing in the entire world. Up to now, no material evidences show that EMF may have effects on health. However, the research on the effect of EMF is still ongoing. Before any conclusion, we should minimize exposure to EMF as few as possible.

In order to minimize EMF, we should use the following procedures:

- Route the electrode and work cables together – Secure them with tape when

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possible.

- All cables should be put away and far from the operator.
- Never coil the power cable around your body.
- Make sure welding machine and power cable to be far away from the operator as far as possible according to the actual circumstance.
- Connect the work cable to the workpiece as close as possible to the area being welded.
- The people with heart-pacemaker should be away from the welding area.



Noise can damage hearing.

Noise from some processes or equipment can damage hearing.

You must protect your ears from loud noise to prevent permanent loss of hearing.

- To protect your hearing from loud noise, wear protective ear plugs and/or ear muffs.

Protect others in the workplace.

- Noise levels should be measured to be sure the decibels (sound) do not exceed safe levels.



Hot parts.

Items being welded generate and hold high heat and can cause severe burns. Do not touch hot parts with bare hands. Allow a cooling period before working on the welding gun. Use insulated welding gloves and clothing to handle hot parts and prevent burns.

§1.3 EMC device classification

Radiation Class A Device.



- Only can be used in the industrial area
- If it is used in other area, it may cause connection and radiation problems of circuit.

Radiation Class B device.

- It can meet the radiation requirements of residential area and industrial area. It also can be used in residential area which power is supplied by public low voltage circuit.

EMC device can be classified by power nameplate or technical data.

KickingHorse welding machines belong to Class A.

§1.4 EMC measure



In the special situation, The specified area may be affected, the standard of radiation limit value has been complied with (eg: The device, which is easy effected by electromagnetism, is used at the installation location, or there is radio or TV near the installation location). In this condition, the operator should adopt some appropriate measures to remove interference.

Accoring to the domestic and international standards, the ambient devices' electromagnetism situation and anti-interference ability must be checked:

- Safety device
- Power line, Signal transmission line and Date transmission line
- Date processing equipment and telecommunication equipment
- Inspection and calibration device

The effective measures avoid the problem of EMC:

a) Power source

Even though the power source connection meet rules, we still need to take additional measure to remove the electromagnetic interference. (eg: Use the right power filter.)

b) The welding line

- Try to shorten the length of cable
- Put the cable together
- Be Far away from other cable

c) Equipotential connection

d) Ground connection of work-piece

- When necessary, use appropriate capacitance to connect the ground.

e) Shielding, when necessary

- Shield the ambient devices
- Shield the whole welding machine

§1.5 Warning label

The device has a warning label. **Do not remove, destroy or cover this label.** These warnings are intended to avoid incorrect device operations that could result in serious personal injury or property damage.

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 WARNING! For protecting you and others, please read the label and instruction.	
 	Welding dust and gas is hazardous to health. Head should be disengaged the welding dust. Use aerator to avoid the resting-place or working-place polluted.
 	ARC radial can stab the eyes and damage your skin. Wear protective clothing for your eye, your ear, and your body.
 	ELECTRIC SHOCK CAN KILL Do not touch the position with electric, include electric. Turn off the power breaker out of the machine before maintenance.
 	Sparks can cause explosion. A safe distancee from welding area and any other source of sparks or flame.
ADDITIONAL SAFE NOTICE <ul style="list-style-type: none">• Reading and well note the operation manual.• Do not operate when the cover and panel opened.• Only qualified person can install, use and maintenance the machine.• Clear away the dust on the machine twice a month. (by the air compressor)	
DO NOT MOVE THIS LABEL.	

2. Summary

F130 inverter flux core wire feeder welder adopts the latest Pulse Width Modulation (PWM) technology and the Insulated Gate Bipolar Transistor (IGBT) power modules. It uses switching frequencies in the 20 KHz-50 KHz range so as to replace the traditional line-frequency transformer type welding machines. Thus, machines are characterized with excellent dynamic response, portability, small size, lightweight, low energy consumption, etc.

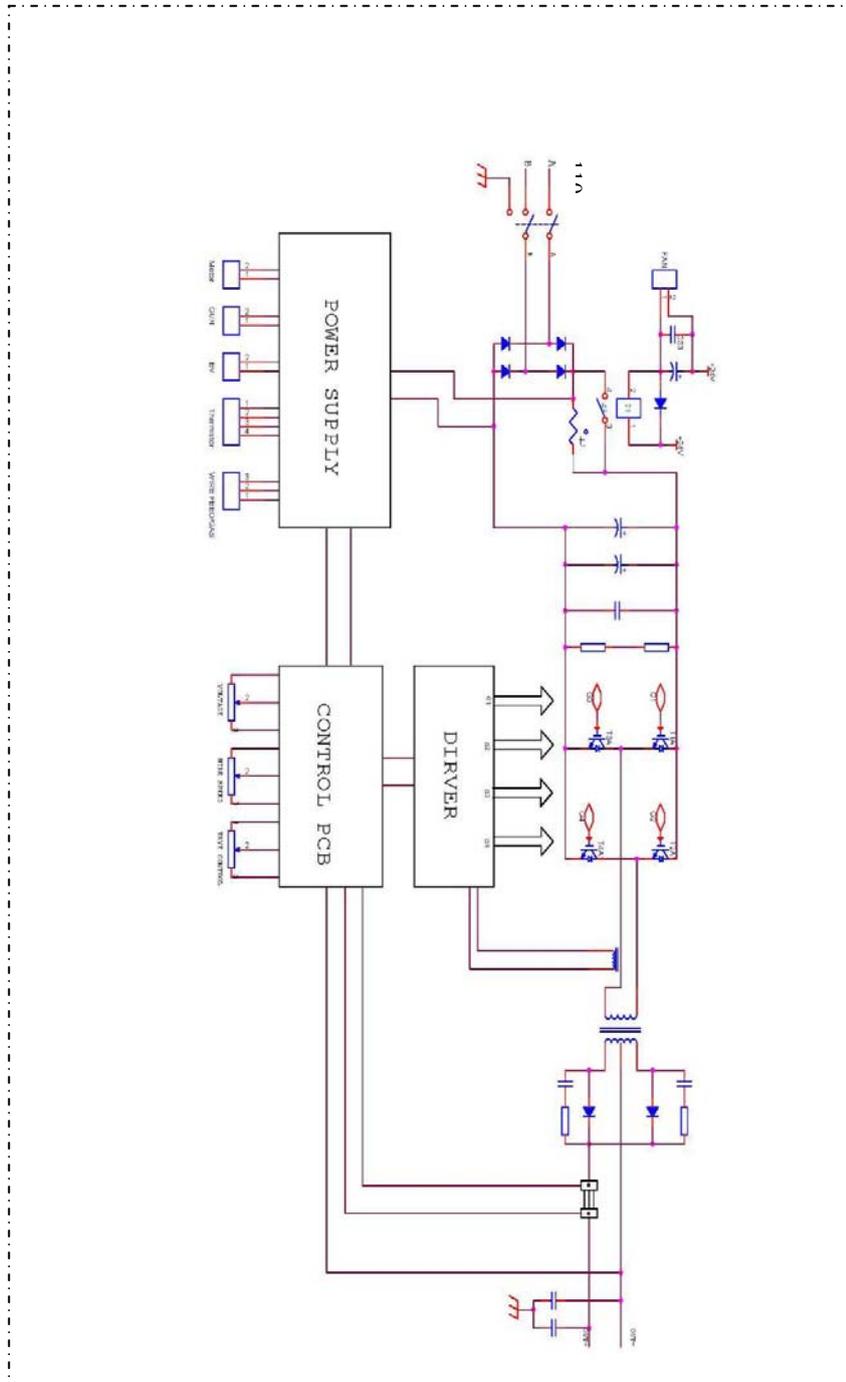
F130 has built-in automatic protection functions to protect the machines from over-voltage, over-current and over-heat. If any one of the above problems happens, the alarm lamp on the front panel will be lit and output current will be shut off automatically for the machine to protect itself and prolong the equipment using life.

F130 Features:

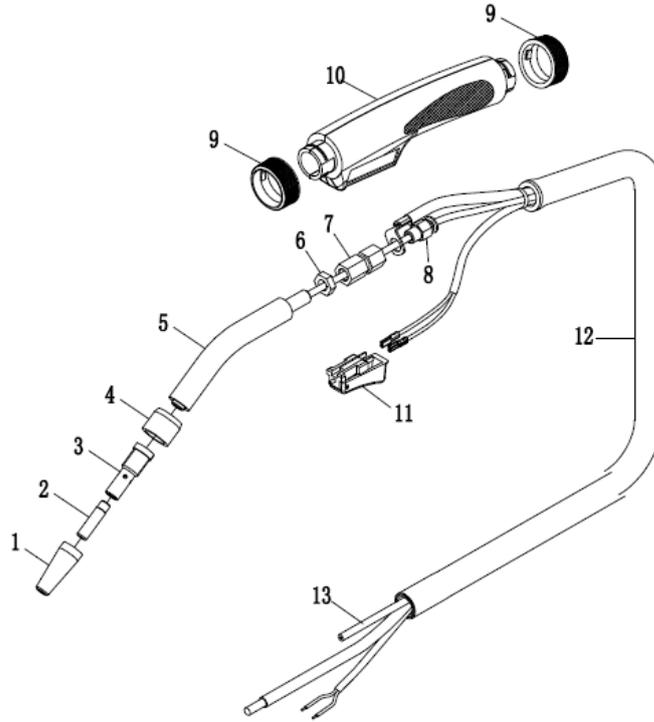
- ❖ IGBT technology, low power consumption;
- ❖ Rated Duty Cycle: 90A @ 15%(40°C)

F130 is suitable for all positions welding for various plates made of stainless steel, carbon steel, alloyed steel etc. Applications applied to pipe installment, petrochemical, architecture equipment, car repair, bicycle repair, handicraft and common steel fabrication.

3. Electrical principle drawing



4. Torch break down



Model: QTB-100A gasless flux core MIG torch.

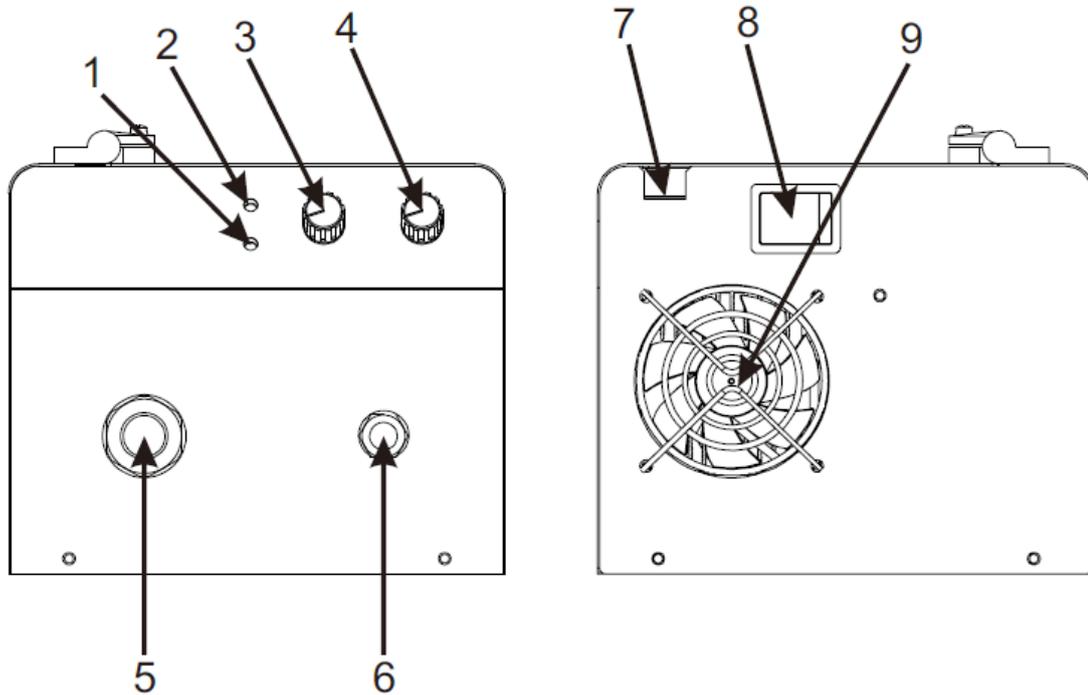
ITEM	DESCRIPTION	PART No.
1	Nozzle self-shield	LA8201
2	Tip 0.035(0.9mm)	11-35
3	Gas Diffuser	FD9002
4	Insulating sleeve	EF1011
5	Goose neck 35 degree	FF9235
6	Nut M8X1	FF9211
7	Front lock nut	FF9027
8	Hose connector	FF9028
9	Handle locking Nut	EH1111
10	Gun Handle (Front)	EH1101
11	Trigger Assembly	EJ0003
12	Gun & Cable Assembly.2M	FL9020
13	Steel liner 0.6-0.9x2	0209-2

5. Specifications

Parameters \ Models	F130
Input Voltage (V)	1~110/120/130±10%
Input Current (A)	28
Input Power (KW)	2.3
Welding Current (A)	50-90
No-load Voltage (V)	46
Duty cycle (40℃)	15% 90A 60% 45A 100% 35A
Protection class	IP23
Insulation class	H
Dimensions (mm)	350*180*190
Weight (Kg)	4.9

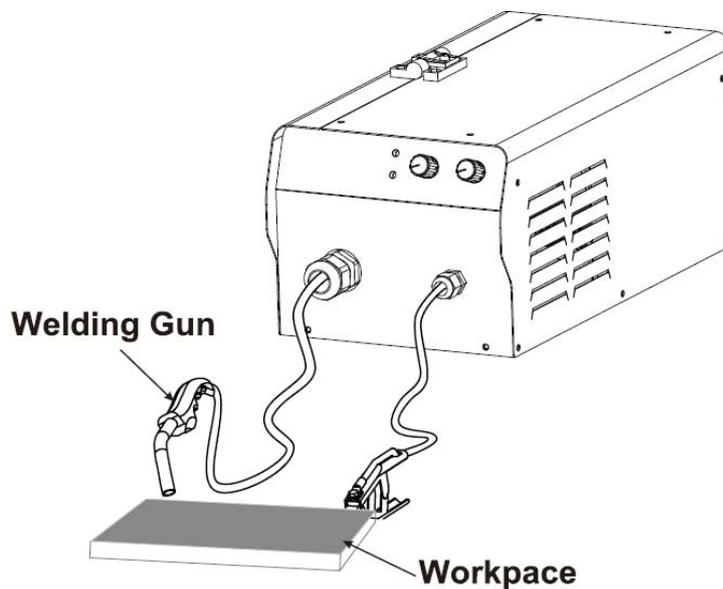
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6. Penal controls and connectors



1. **Alarm Led:** When the welder is over voltage, less voltage, over current or over heated, the alarm pilot lamp will be on.
2. **Power Led:** Power led is lighted when open the machine.
3. **Welding voltage knob:** Set the welding volt.
4. **Welding current knob:** Set the welding current.
5. **Gasless torch.**
6. **Output positive:** This polarity must connect the work piece.
7. **Cable clamp:** Fastened the main cable.
8. **On/off switch:** Control the power supply on and off.
9. **Fan:** Cooling the machine.

7. Installation & Operation



Electrical connection operation must be shut after power distribution box power switch!

The equipment protection level is IP23. Do not use in the rain!

6.1 Installation

1. Welding machine should be installed in a stable position and with good ventilation. Avoid direct sun outdoors or rain. Place at a distance of 12" (300mm) or more from walls or similar that could restrict natural air flow for cooling. Avoid transport in invert or side position.
2. Switch the ON/OFF Switch (located on the rear panel) to OFF.
3. Connect the negative pole of welding machine to gun and keep the wire aim at the wire feeder mouth.
4. Connect the positive pole of welding machine to the work piece (base metal).
5. Connect the power source input cable of welding machine with the output port of air switch in electric box on the spot.
6. Place the Wire Spool onto the Spool Holder. Snip the wire from the spool being sure to hold the wire to prevent rapid uncoiling. Feed the wire into the wire feeder inlet guide tube through to the drive roller.
7. Carefully feed the wire over the drive roller into the outlet guide tube, feed through about 150mm into the torch receptacle. Check that the drive roller size is compatible with the wire diameter, replace the roller if necessary.
8. Align the wire into the groove of the drive roller and close down the top roller making sure the wire is in the groove of the bottom drive roller, lock the pressure arm into place. Apply a medium amount of pressure to the drive roller.

8. Safety precaution

8.1 Installation

- (1) Welding environmental temperature should be between -10°C to 40°C.
- (2) The air humidity of not more than 90%.
- (3) Avoid environment containing dust or corrosive gas.
- (4) Avoid sunlight or rain, do not let water into the welding machine.
- (5) Avoid the strong wind environment.

8.2 Safety

Refer to the American National Standard Z49.1 entitled: SAFETY IN WELDING AND CUTTING. **ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK MUST BE PERFORMED BY QUALIFIED PERSONAL.**

1. Welders must be equipped with welding mask, gloves and tie the sleeves and collar properly. Use Table 6.4 to choose proper glass shade, also can reference to ANSI Z49.1 listed in Safety Standards. There should be an arc shield around welding field to protect others from arc shock.
2. Do not weld near flammable, explosive materials or gases.
3. Keep finger, hair and clothing away from the rotating fan.
4. The power source must be grounded when welding.
5. When yellow protection light is enlightened during welding, it is indicating that the welder is over current or over heat, and automatic protection will be triggered. Stop welding immediately and wait until welder cool down.
6. Welding machine should not work in a flammable and toxic environment, avoid moisture, rain, and do not directly expose to sun.
7. Do not switch off the welder during welding!
8. Periodically maintain the machine and clean the dust inside.

9. Maintenance

Periodic maintenance is necessary for keeping the machine work properly.

DISCONNECT POWER INPUT AND SWITCH OFF THE MAIN POWER SWITCH BEFORE START OF MAINTENANCE.

Regular Check and Inspection	6 Month Routine Maintenance
<ul style="list-style-type: none"> • Replace unreadable labels. • TIG-Clean spatter inside the nozzle when continuously use the machine • TIG-Check and change broken parts in the torch to avoid damage to the torch and machine. • Check the function of all switches. • Check if the fan rotates properly and if there is air venting out from back of the machine. • Pay Attention to the abnormal vibration, noise, 	<ul style="list-style-type: none"> • Blow out with dry clean pressure air or vacuum inside machine, especially transformer coil and power component. • Check the electric connection of input/output bar to avoid bad contact caused by loose or rusted screw. • Check the contactors and relays in the machine or on the PCB work properly. • Calibrate the current meter. • Check the resistance between machine case and

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smell and gas leakage during operation. <ul style="list-style-type: none"> • Check if the welding cables are over heated. • Check if the cable connections are over heated. • Check if the cable is connected firmly and properly, if it is broken and cause bad insulation. • Check the cover grounded properly. 	main circuit, if the value is smaller than 1MΩ, sent the machine to an authorized warranty depot to inspect and repair immediately.
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10. Troubleshooting & Service

The following operations require the operator has sufficient electrical expertise and comprehensive safety knowledge, the operator can demonstrate its capacity to be held valid qualifications and knowledge Documents.

Wire feeding Faults and solutions:

NO.	Trouble	Possible Reason	Suggested Remedy
1	No wire feed	Adjusting wrong dial	Be sure to adjust the wire feed and voltage dials for MIG welding/
		Wrong polarity selected	Select the correct polarity for the wire being used - see machine setup guide
2	Inconsistent / interrupted wire feed	Incorrect wire speed setting	Adjust the wire feed speed
		Voltage setting incorrect	Adjust the voltage setting
		Mig torch lead kinked or too sharp angle being held	Remove the kink, reduce the angle or bend
		Contact tip worn, wrong size, wrong type	Replace the tip with correct size and type
		Liner worn or clogged (the most common causes of bad feeding)	Try to clear the liner by blowing out with compressed air as a temporary cure, it is recommended to replace the liner
		Wrong size liner	Install the correct size liner
		Blocked or worn inlet guide tube	Clear or replace the inlet guide tube
		Wire misaligned in drive roller groove	Locate the wire into the groove of the drive roller
Incorrect drive roller size	Fit the correct size drive roller eg; 0.8mm wire requires 0.8mm drive roller		

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	Wrong type of drive roller selected	Fit the correct type roller (e.g. knurled rollers needed for flux cored wires)
	Worn drive rollers	Replace the drive rollers
	Drive roller pressure too high	Can flatten the wire electrode causing it to lodge in the contact tip - reduce the drive roller pressure
	Too much tension on wire spool hub	Reduce the spool hub brake tension
	Wire crossed over on the spool or tangled	Remove the spool untangle the wire or replace the wire
	Contaminated Mig wire	Use clean dry rust free wire. Do not lubricate the wire with oil, grease etc.

Common Faults and solutions:

NO.	Troubles		Reasons	Solution
1	Close the breaker, but the power light isn't on		Breaker damaged	Change it
			Fuse damaged	Change it
			Power damaged	Change it
2	After welding machine is over-heat, the fan doesn't work		Fan damaged	Change it
			The cable is loosen	Screw the cable tightly
3	Press the gun switch, no output shielded gas	No output gas when test gas	No gas in the gas cylinder	Change it
			Gas hose leaks gas	Change it
			Solenoid valve damaged	Change it
	Output gas when test gas	Control switch damaged	Repair the switch	
		Control circuit damaged	Check the board	

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4	Wire-feeder doesn't work	Wire reel doesn't work	Motor damaged	Check and change it
			Control circuit damaged	Check the board
		Wire reel works	The press wheel loose or weld wire slip.	Press it tightly again
			The wheel doesn't fit with the diameter of weld wire	Change the wheel
			Wire reel damaged	Change it
			Wire liner is jammed	Repair or change it
		Tip is jammed because of splash	Repair or change it	
5	No striking arc and no output voltage	Output cable is connected mistakenly, or loosen	Screw it down or change it	
		Control circuit damaged	Check the circuit	
6	Welding stops, and alarm light is on	Machine has self-protection	Check over-voltage, over-current, over-temperature, lower-voltage and over-temperature, and solve it	
7	Welding current is run away and can be not controlled	The potentiometer damaged	Check or change it	
		The control circuit damaged	Check the circuit	

NOTES

F130 flux core wire feeder welder



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