

OWNER'S MANUAL



PLEASE CAREFULLY READ THIS MANUAL BEFORE ASSEMBLY,
USE OR MAINTENANCE

 WARNING	When the DC inverter welder works with AC welder, please don't let the output cable of two different machine connected together prevented from damage welder
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 DANGER	Once you touch the electric parts will result in electric shock
	● Don't touch the electric parts. ● Make sure the welder connect to earth before using. ● Off power supply while assembly and maintainnace. ● Don't use the welder while opening the case. ● Please use the good insulating gloves.
 CAUTION	ARC、Spatter and slag may burn eyes and skin, abnormal noise may hurt hearing
	● Please use the welding mask to protect your face and eye ● Please use the welding clothes to protect your body ● Please use hearing protecting tool when it is noising
 DANGER	Using welder in a narrow place or higher have the potential to cause electric shocks, stinging lead to falls and other accidents.
	● Please use the VRD device or build-in VRD welder in the following location ● 2m or higher location with risk of falling, workers who may be exposed to bars and other places of grounding electrical conductivity. ● Please check the VRD device per the safety rule while operating
 CAUTION	The dust, smoke or gas caused by welding are bad for health
	● Please use local exhaust ventilation equipment and respiratory protective equipment. ● When operating in narrow places, please check and accept monitoring of adequate ventilation, wearing of respiratory protective equipment ● Please don't use the welder in the degreasing, cleaning and spraying area
 CAUTION	It may result in fire, blasting or other accident during welding
	● Please don't place any Combustible and flammable gases in the welding location. ● Please don't weld any airtight container, like oil tank or tube or others ● Please equip with fire apparatus in welding location.
 CAUTION	Lifting Device:
	The standard package for this welder is carton or wooden box without any connector for lifting device, so when the welder arrive, please use the fork lift truck to move the machine and then open it. ● When the welder equipped with rings for lifting, you can use the ring to transport the machine, but please notice that don't use roller to move the welder since it may damage the welder ● Please make sure all accessories have been removed when lifting ● When the welder is being lifted, please make sure there is nobody below the welder and there is someone to mention the passengers. ● Please don't use the crane to move the welder quickly. ● Please install the welder in accordance with the assembly direction.

 WARNING	Please make the generator's power is at least 2 times than the welder's rated power when using generators as power supply
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1、MACHINE DESCRIPTION:

1) INVERTER MMA/ARC WELDER SERIES FEATURES:

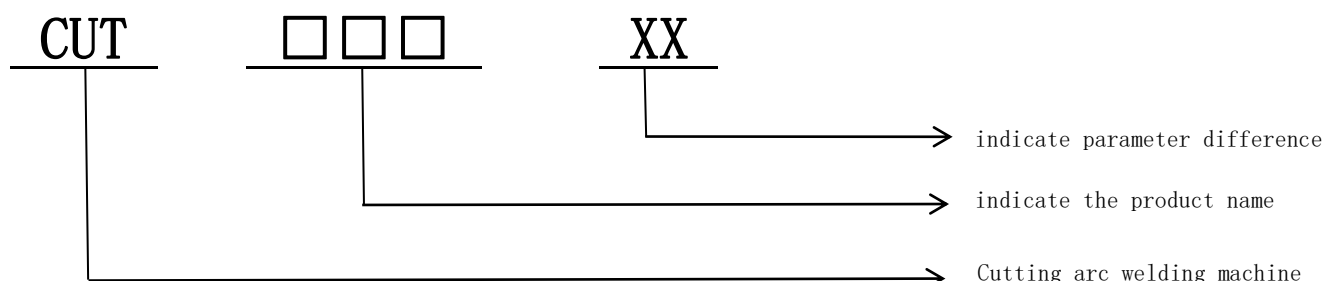
CUT 40、60、100、120、130、160 Series inverter plasma cutting machine has the following advantages;

- ① Strong ability against the power fluctuation, it can work normally under the fluctuation of $\pm 15\%$;
- ② Fashionable appearance, small size, light weight and easy to move;
- ③ Using the three-proofed structure against the dust, moisture and corrosion, very considerable protection for all the electronic components
- ④ This series of manual arc welding machine using current-mode PWM pulse width adjustment technology, IGBT inverter technology, high-power fast recovery diode application technology, product reliability, stability, higher.
- ⑤ With undervoltage, overheating, overcurrent, lack of protection, to ensure product reliability.
- ⑥ Stable output performance, real-time monitoring of the welding output power, the effective management of the output current to ensure welding welding reliability.
- ⑦ Has a good dynamic characteristics, easy arc, arc stability, easy to control the pool.
- ⑧ With precise preset welding current to make sure good welding result and energy saving, more easy to operate and suitable for different thickness work-piece, thin plate in small current and thick plate in large current.

2) APPLICATION:

Suitable for welding of carbon steel, alloy steel, non-ferrous metals, suitable for boiler pressure-melt industrial power plants, aerospace manufacturing, industrial, automotive and vehicle manufacturing, construction and other related metals welding industry.

3) MODEL EXPLANATION::



4) LABEL EXPLANATIONS:



Read all safety regulations and instructions



Disconnect the machine from the mains before installation or adjustment



Wear a welding mask



Wear a dust mask



Rotation direction



Earth loop



Attention. Warning of possible user health damage



Movement direction



Unlocked



Locked



note: Be sure to identify the product model on the nameplate, the same product model may have different parameters.

2、TECHNICAL PARAMETERS TABLE:

Model Parameters	CUT40	CUT60	CUT60QN		CUT80	
Power voltage (V)	One phase AC220V±15%	One phase AC220V±15%	AC220V±15 %	AC380V±15 %	AC220V±1 5%	AC380V±1 5%
Frequency (Hz)	50/60	50/60	50/60		50/60	
Rated input current (A)	30	54	41	16	45	17
No-load voltage (V)	280	280	330	300	CUT 330 ARC 70	CUT 300 ARC 60
Output current regulation (A)	20-40	20-60	20-50	20-60	CUT 20-60 ARC20-200	CUT 20-70 ARC20-200
Rated output voltage (V)	96	104	100	104	CUT 104 ARC 28	CUT 108 ARC 28
Duty cycle (%)	35	40	40		40	
No-load loss (W)	40	40	80		80	
Efficiency (%)	80	80	85		85	
Power factor	0.73	0.73	0.93		0.93	
Insulation grade	F	F	F		F	
Housing protection grade	IP21	IP21	IP21		IP21	
ARC starting mode	No contact	No contact	No contact		No contact	
Pressure of air compressor (kg)	3-5	4-6	4-6		4-6	
Thickness (mm)	0.5-10	0.5-15	0.5-15		0.5-20	
Weight (kg)	18	10.5	25		30	
Dimensions (mm)	475*203*360	420*181*331	545*234*414		580*340*450	

Model Parameters	CUT 100		CUT 120		CUT 130	
Power voltage (V)	Three phase AC380V±15%		Three phase AC380V±15%		Three phase AC380V±15%	
Frequency (Hz)	50/60		50/60		50/60	
Rated input current (A)	17		17		17	
No-load voltage (V)	CUT 300	ARC 60	CUT 300	ARC 60	CUT 320	ARC 68
Output current regulation (A)	CUT 20-100 ARC20-240		CUT 20-120 ARC20-240		CUT 20-130 ARC20-240	
Rated output voltage (V)	CUT 120	ARC 29.6	CUT 128	ARC 29.6	CUT 132	ARC 29.6
Duty cycle (%)	60		60		60	
No-load loss (W)	80		80		80	
Efficiency (%)	85		85		85	
Power factor	0.93		0.93		0.93	
Insulation grade	F		F		F	
Housing protection grade	IP21		IP21		IP21	
ARC starting mode	No contact		No contact		No contact	
Pressure of air compressor (kg)	4-7		4-7		4-7	
Thickness (mm)	0.5-30		0.5-35		0.5-40	
Weight (kg)	31		32		20	
Dimensions (mm)	580*340*450		580*340*450		515*262*480	

2. Plasma gas requirements:

*Supply pressure range: 0.5MPa~0.7MPa

*Air supply pressure: >1MPa

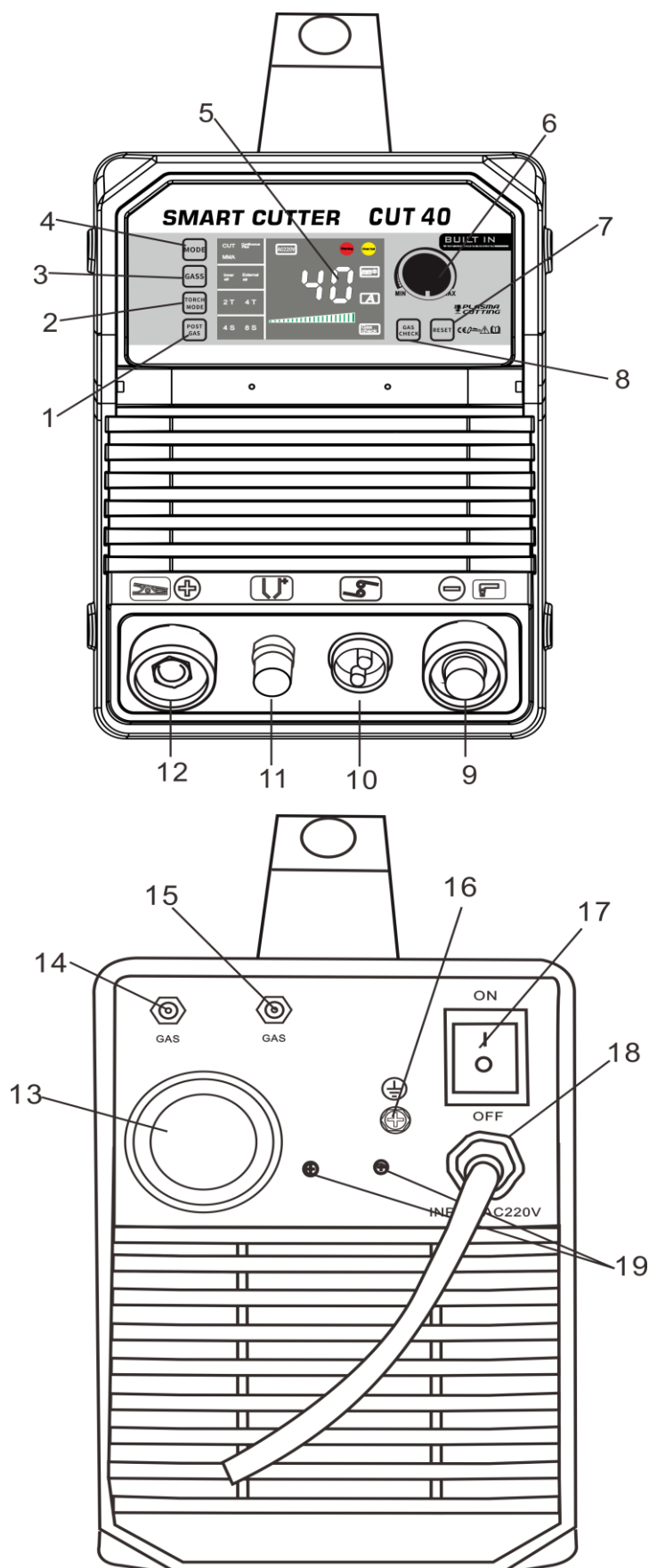
*Supply flow: >180L/MIN

*Inner diameter of air supply pipe: >8mm (Pipe joints 8mm)

*Must first filter out the gas moisture, and then send into the cutting machine

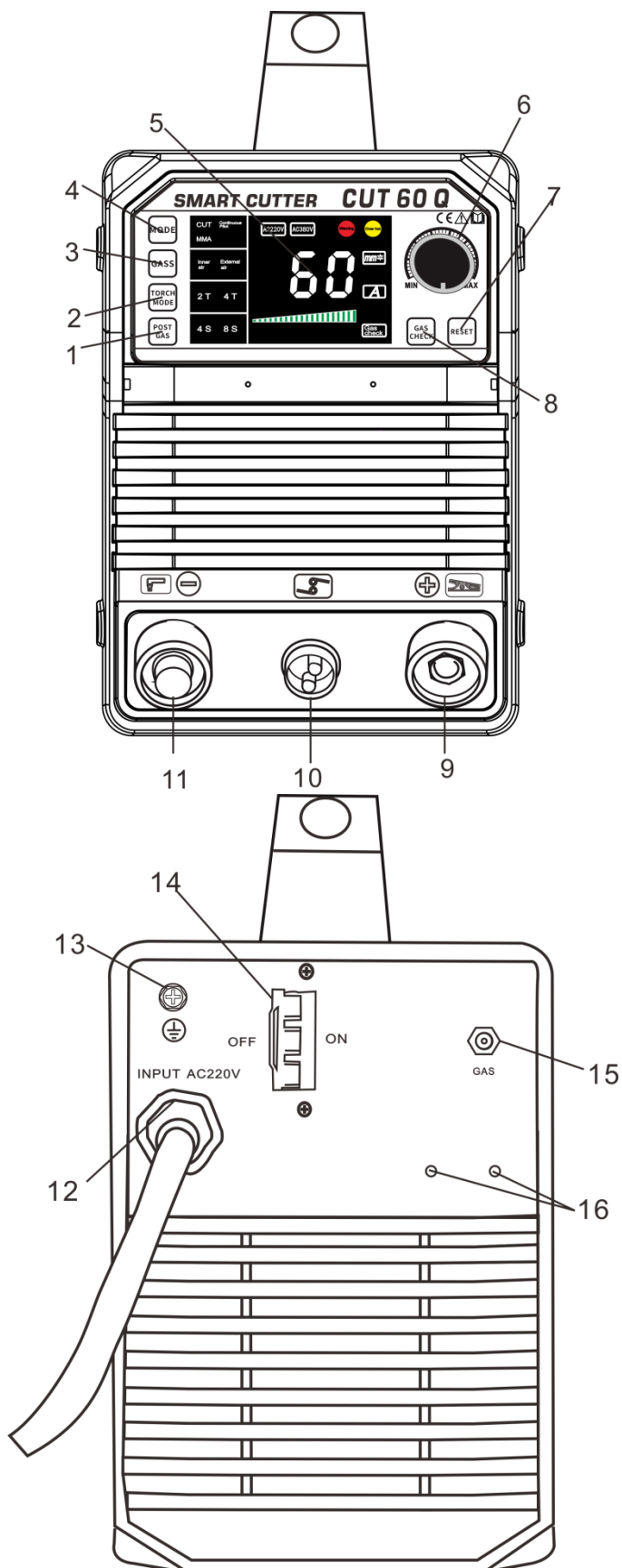
3、PANEL FUNCTION INSTRUCTION:

Picture 3-1 CUT 40



Function description:	
1	Aftergas time selection
2	2t/4t selection
3	Built-in air pump switch
4	Working mode selection
5	LED display screen
6	welding current potentiomete
7	Factory reset
8	Gas detection
9	Negative output (Torch interface)
10	Torch control ling interface
11	pilot arc interface
12	Positive output
13	Air pump silencer
14	INNER PUMP GAS OUT
15	OUTSIDE PUMP GAS IN
16	Ground screw
17	Power switch
18	Input power line
19	Valve fixing screw

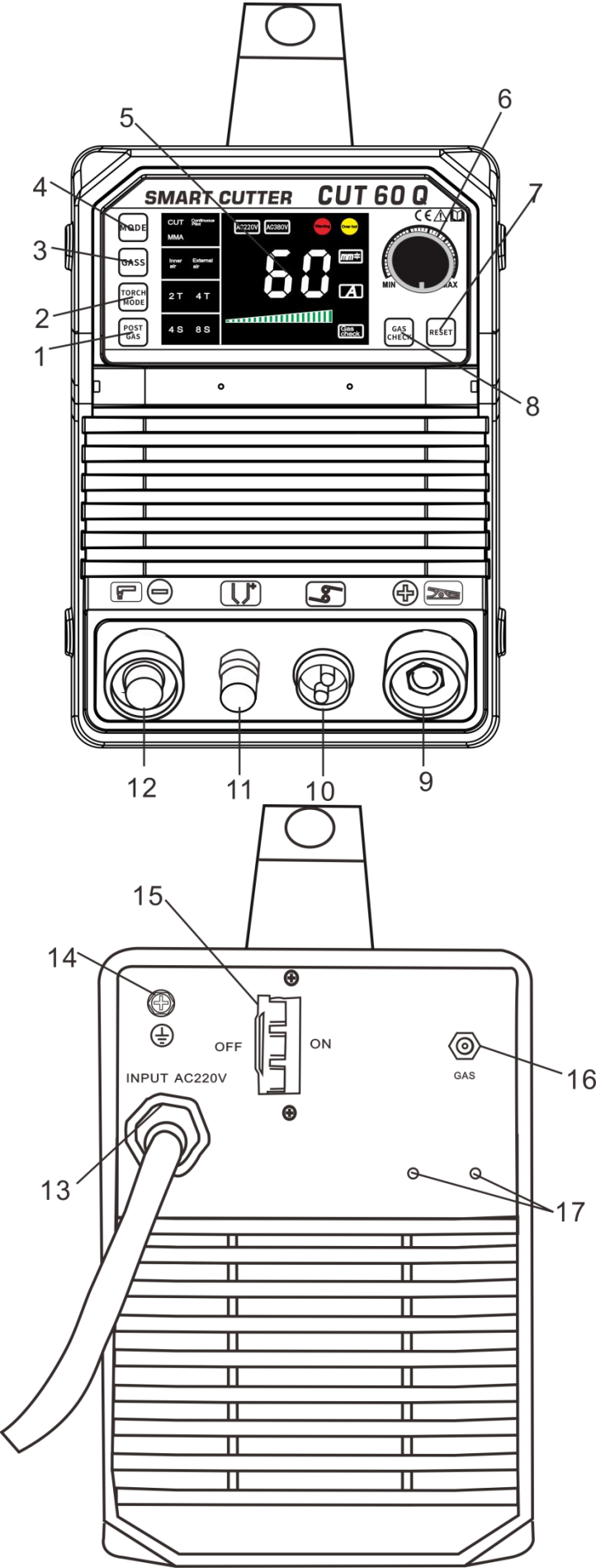
Picture 3-2 CUT 60



Function description:

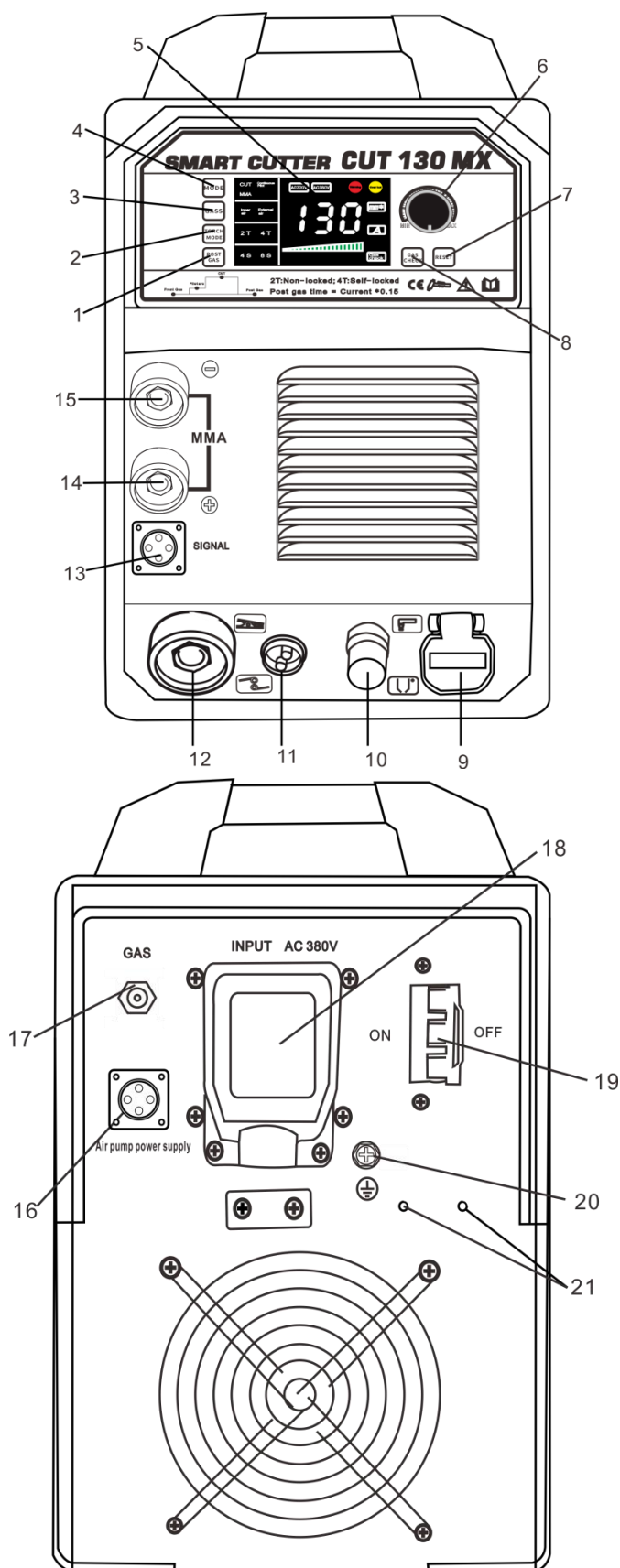
1	Aftergas time selection
2	2t/4t selection
3	Built-in air pump switch
4	Working mode selection
5	LED display screen
6	welding current potentiometer
7	Factory reset
8	Gas detection
9	Positive output
10	Torch control ling interface
11	Negative output (Torch interface)
12	Input power line
13	Ground screw
14	Power switch
15	Air inlet
16	Valve fixing screw

Picture 3-3 CUT 60 No contact



Function description:	
1	Aftergas time selection
2	2t/4t selection
3	Built-in air pump switch
4	Working mode selection
5	LED display screen
6	welding current potentiomete
7	Factory reset
8	Gas detection
9	Positive output
10	Torch control ling interface
11	pilot arc interface
12	Negative output (Torch interface)
13	Input power line
14	Ground screw
15	Power switch
16	Air inlet
17	Valve fixing screw

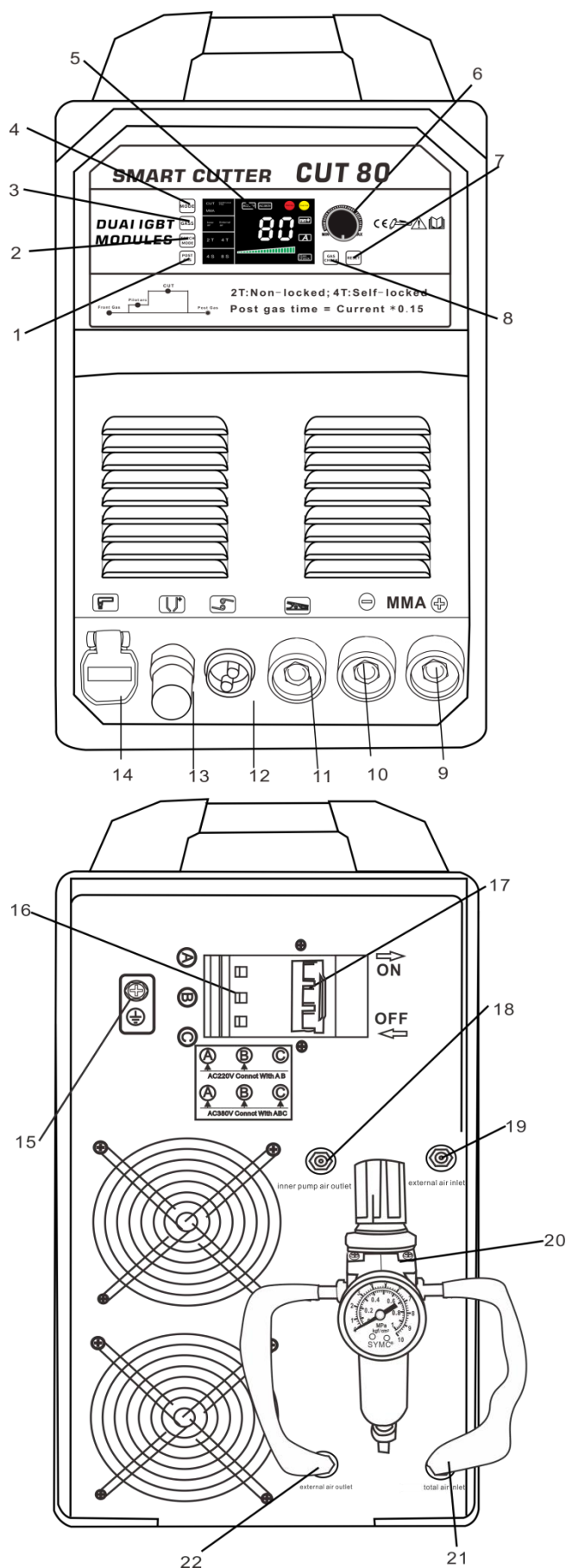
Picture 3-4 CUT 130 (MMA)



Function description:

1	Aftergas time selection
2	2t/4t selection
3	Built-in air pump switch
4	Working mode selection
5	LED display screen
6	welding current potentiomete
7	Factory reset
8	Gas detection
9	Negative output (Torch interface)
10	pilot arc interface
11	Torch control line interface
12	Positive output
13	CNC control line interface
14	Positive output(MMA)
15	Negative output (MMA)
16	Air pump power supply
17	Air inlet
18	Power wire box
19	Power switch
20	Ground screw
21	Valve fixing screw

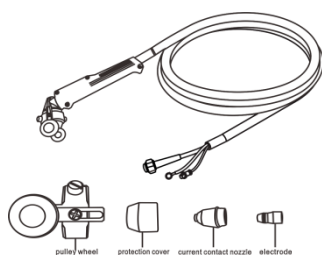
Picture 3-5 CUT 80/100/120 Iner air pump plasma(MMA)



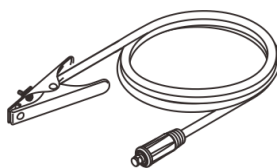
Function description:

1	Aftergas time selection
2	2t/4t selection
3	Built-in air pump switch
4	Working mode selection
5	LED display screen
6	welding current potentiometer
7	Factory reset
8	Gas detection
9	Positive output(MMA)
10	Negative output (MMA)
11	Positive output
12	Torch control ling interface
13	pilot arc interface
14	Negative output (Torch interface)
15	Ground screw
16	Power wire box
17	Power switch
18	inner pump air outlet
19	external air inlet
20	Valve fixing screw
21	total air inlet
22	external air outlet

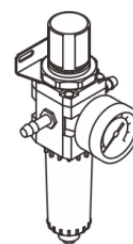
4、ACCESSORY DRAWING:



Picture 4-1 Cutting gun P80



Picture 4-2 Earth clamp with cable



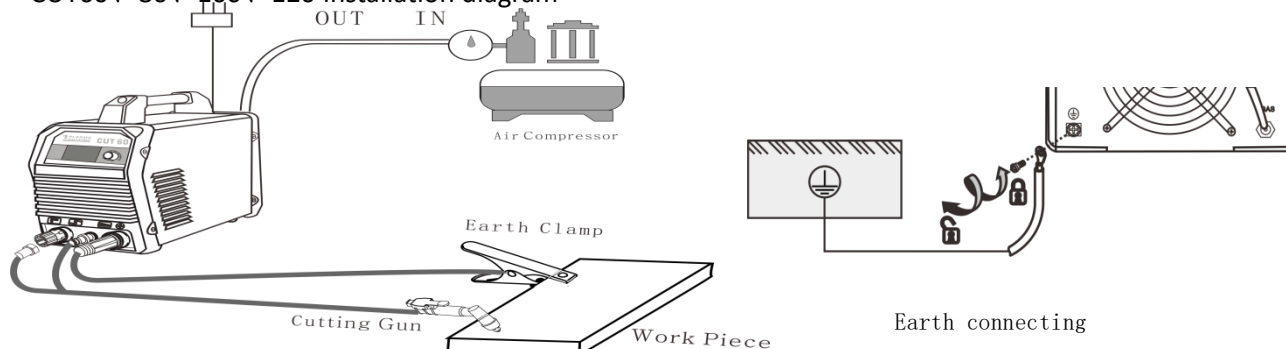
Picture 4-3 air compression release valve

5、INSTALLATION INSTRUCTION:

When using a longer cable to reduce the voltage drop, it is recommended to use a larger cross-section cable, If connecting cable too long maybe will seriously impact arc performance and other performance

- 1、 Make sure the cutting power supply vents are not covered and blocked, so as to avoid cooling system failure.
- 2、 Connect the chassis with ground with conductor which cross sectional area not less than 6mm² , The method is to connect the grounding device from the protective grounding screw on the back of the welder , or confirm that the ground of the power outlet has been reliably grounded separately, the two methods can be used together to ensure safety.
- 3、 Use a trachea to connect the gas inlet and compressed air source behind the cutter, use a hose clamp or other method to tie the interface, So as to avoid leakage and to ensure that the gas source can provide the appropriate pressure、 Sufficient flow, and is dry, if your existing gas source can not meet the above requirements, you should consider the use of a separate enough power of the air compressor and gas decompression filter to ensure the normal work of the machine.
- 4、 Install the gauges of the cutting guns on the corresponding interface of the cutter panel, And fasten with a wrench clockwise, The air plug and the dimension arc on the cutting gun are connected to the corresponding interface of the cutter panel respectively, Tighten the interface screw Insert the quick plug of the workpiece cable into the quick socket of the cutter panel and tighten it clockwise, the other end of the ground clamp clamp the workpiece.
- 5、 Connect the power cord to the corresponding voltage level distribution box according to the input voltage level of the cutting machine,do not choose the wrong voltage, While ensuring that the supply voltage error within the allowable range.
- 6、 Connecting the corresponding cable according to the map, you can proceed to the next step.

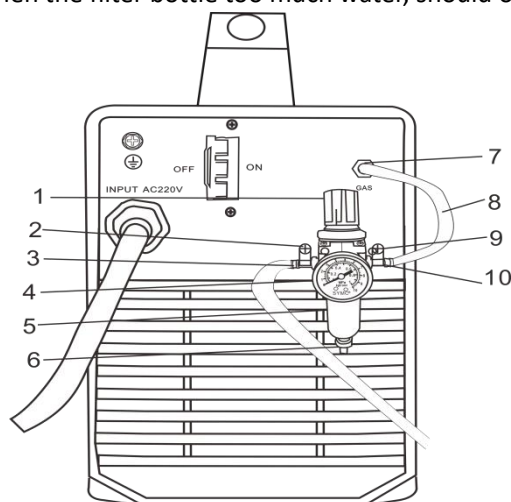
CUT60、 80、 100、 120 Installation diagram



Picture 5-1 Installation of Instruction, using CUT 60 as a installing example

Installation and operation of air pressure reducing valve

- 1、Tighten the copper gas nozzle seal on the IN and OUT ends;
- 2、Tighten the top of the head with the seal in the head mounting position
- 3、Use the nuts in the connection frame to fix the pressure relief valve mounting position on the back of the welder as shown;
- 4、Unscrew the nut and secure the pressure relief valve to the connecting frame as shown;
- 5、Open the valve switch, adjust the pressure knob up, the air pressure (the head of the scale Kg / cm² value) transferred to the specified pressure (To "+" to increase the air pressure, to "-" to reduce the air pressure), and then press the pressure knob;
- 6、the head of the scale position shown in the figure, the figure shows the location of 4 Kg / cm² pressure, when the filter bottle too much water, should open the water valve to let the water off.



1	Pressure knob
2	Connection bracket
3	Copper inlet
4	barometer
5	Filter gas cylinders
6	Drain button
7	Pressure switch inlet
8	Gas pipe
9	Hose clamps
10	Copper inlet

Picture 5-2 Installation of air pressure reducing valve

6、 OPERATING INSTRUCTIONS AND PRECAUTIONS:

- 1) Place the power switch on the front (rear) panel to the "ON" position, The power indicator light or digital Light is on, and the cooling fan inside the machine should start working immediately.
- 2) Open the air valve or switch to control the air, adjust the pressure and air flow to the rated standard.
- 3) According to the thickness of the workpiece cut, the station and process needs, to determine the appropriate cutting current and gas time.
- 4) 2T/4T function:
 1. Switch the 2T / 4T function via the key switch.
 2. When cutting a short workpiece, select 2T, press the gun switch to start cutting, release the switch to stop.
 3. When cutting long workpieces, select 4T, the first press switch to start cutting, release can be maintained cutting, press the gun again to release the switch after cutting off.
- 5) After-gas conditioning function : in 5 ~ 20S time to adjust the gas time.



Warn! All connection operations should be made in the event that the power supply has been disconnected. The correct order is to first connect the wire and ground wire to the welding machine, confirm the connection is reliable, no loosening, and finally plug the power plug into the power supply.

7、PRECAUTIONS:

1. ENVIRONMENT

- 1) The machine should be operated in dry environments with humidity level of max 90%.
- 2) Ambient temperature should be between -10 to 40 degree centigrade.
- 3) Avoid welding in sunshine or drippings. Do not let water infiltrate the machine.
- 4) Avoid welding in dusty area or the environment with corrosive gas.
- 5) Avoid gas-shielded welding operations in environments with strong airflow.

2. SAFETY NORMS

The welding machine is installed with protection circuit of over voltage, over current and over heat. When voltage, output current and temperature of machine exceed the required standard, welding machine will stop working automatically. However, overuse (such as over voltage) will still result in damage to the welding machine. To avoid this, the user must pay attention to the following notes.

1) The working area is adequately ventilated!

The welding machine is powerful machine. When it is being operated, it generated by high current, under this situation, natural wind will not satisfy machine cool demands. So a fan is used into inner-machine to cool down itself. Make sure the intake is not blocked or covered. The objects around the welding machine should be kept away not less than 0.3 meters. Make sure the working area adequately ventilated is specially necessary. It is vitally important for the performance and longevity of the machine.

2) Not over load!

The operator should remember to watch the max duty current (Response to the selected duty cycle). Keep welding current is not exceed max duty cycle current. Over-load current will damage and burn up machine.

3) No over voltage!

Power voltage can be found in diagram of main technical data. Automatic compensation circuit of voltage will assure the welding current keep in allowable range. If power voltage exceeds the allowable range limited, it will damage to components of machine. The operator should understand this situation and take preventive measures.

4) There is a grounding screw behind welding machine, with a grounding marker on it. Before operation, welding crust must be grounded reliable with cable which section is over 6 square millimeter, in order to prevent from static electricity, and accidents possibly caused by electricity leaking.

5) If welding time exceeds the duty cycle limited, welding machine will stop working for protection. Because machine is overheated, temperature control switch is on "ON" position and the indicator light is yellow (red). In this situation, you needn't pull the plug, in order to let the fan cool the machine. When the indicator light is off, and the temperature goes down to the standard range, it can weld again.

8、MAINTENANCE,AFTER-SALES:

1. Daily maintenance

- 1) Remove dust by dry and clean compressed air regularly, if welding machine is operating in environment where is polluted with smokes and pollution air, the machine need remove dust every month.
- 2) Pressure of compressed air must be within the reasonable range in order to prevent damaging to small components of inner-machine.
- 3) Check internal circuit of welding machine regularly and make sure the circuit connections are connected correctly and tightly (especially plug-in connector and components). If scale and rust are found, please clean it, and connect again tightly.
- 4) Prevent water and steam from entering into the machine. If that happens, please blow it dry and check insulation of machine.
- 5) If welding machine will not be used for long time, it must be put into the packing box and stored in dry and clean environment.

9、TROUBLESHOOTING AND FAULT FINDING:

1、CUT40、 60

Fault phenomenon	Solutions
Power indicator light does not shine, digital table no display, the fan does not rotate, no no-load voltage output.	1、 Make sure the air switch is intact or closed; 2、 Make sure that the output cable is connected to the grid. 3、 Rectifier bridge damage or rectifier bridge cable terminal loose
Power indicator shine, digital table shows normal, fan run, abnormal indicator light does not shine, no high-frequency discharge "rust" sound, no no-load voltage output.	1、 Check whether the gun switch is bad connection; 2、 The gun switch cable terminal is loose; 3、 The control wire on the torch or the gun switch is damaged; 4、 Gun welding line is in bad connection; 5、 Control board problems, contact the dealer.
Power indicator shine, digital table shows normal, abnormal indicator light does not shine, no high-frequency discharge "rust" sound, there is gas discharge, can not cut.	1、 Torch cable off; 2、 The ground line is broken or not connected to the welding workpiece; 3、 The output terminal of the positive electrode or the gas-electric output terminal of the welding torch is loosened at the connection with the inside of the machine; 4、 Check the machine patch cords are plugged in good, whether with or without loose phenomenon; 5、 control board problem, contact with the dealer.
Power indicator shine, the digital table shows normal, abnormal indicator light does not shine, no high-frequency discharge "rust" sound, there is gas discharge, has a no load voltage output.	1、 The primary line of the arc transformer is in poor contact with the power supply board and need re-tightened. 2、 Discharge Tsui oxidation or remote, handle the discharge nozzle surface oxide film or adjust the discharge nozzle distance to 1mm; 3、 High frequency arcing circuit individual device is damaged, look for replacement.
Power indicator shine, digital table shows normal, fan run, abnormal indicator light, no output	1、 May be overcurrent protection, turn off the machine and the abnormal lights off , then reboot; 2、 May be overheating protection, wait 5-10 minutes, the machine can be automatically restored; 3、 may be inverter circuit failure. To check whether the IGBT single tube has been damaged; 4、 May be secondary rectifier tube breakdown, find and replace the same type of rectifier; 5、 May be the control board problem, please contact the dealer or the company.
Power indicator shine, digital table shows normal, fan turn, abnormal indicator light does not shine, no load voltage output, no gas discharge	1、 Make sure the inlet trachea has a gas discharge; 2、 Press the switch, the solenoid valve if not beating, and its power cord terminal contact is good, the solenoid valve may be broken; 3、 Solenoid valve does not work, replace the solenoid valve is invalid, may be the control circuit problem, please contact the dealer or the company; 4、 Check if the gas outlet hole is blocked.
Fault phenomenon	Solutions
The digital display does not shine or the power indicator does not shine, fan turn, abnormal indicator light does not shine, there is welding output	1、 May be damaged digital display, replace is ok; 2、 If the digital table doe not shine ,may be that the digital cable is loose; 3、 If the power indicator does not shine, may be that the indicator cable is loose; 4、 May be the control board problem, please contact the dealer or the company.
Welding current is not large enough, the current regulation out of control	1、 Secondary line is too long or too thin, the second line as short as possible or increase the cross-sectional area; 2、 May be the current regulation potentiometer damage; 3、 May be poor contact at the current potentiometer weld line; 4、 Maybe the current potentiometer cable terminal is loose.
Air switch not work	1、 Air switch is damaged; 2、 Silicon bridge damage, need to be replaced; 3、 Check whether there is a short circuit inside the machine.

2、CUT 80/100/120

Fault phenomenon	Solutions
The fan does not rotate, the digital meter does not show.	1、 Make sure the air switch is intact or closed; 2、 Make sure that the output cable is connected to the grid. 3、 Rectifier bridge damage or rectifier bridge cable terminal loose 4、 May be power transformer damage; 5、 Make sure the power supply phase is not missing; 6、 May be the control board problem, please contact the dealer or the company
Digital table shows normal, fan run , abnormal indicator light does not shine, the button on the cutting gun does not work	1、 check the gun switch is in bad connection; 2、 gun switch cable terminal loose; 3、 control line damage on the welding torch or torch switch broken、 4、 Gun switch weldingline is in bad connection; 5、 May be the control board problem, please contact the dealer or the company
Abnormal indicator shine, the header shows normal, fan rotation is normal	1、 may be overcurrent protection, turn off the machine to be abnormal lights off, and then re-boot; 2、 may be overheating protection, wait 5-10 minutes, the machine can be automatically restored; 3、 May be the control board problem, please contact the dealer or the company
Fan rotation is normal, the digital table shows normal, solenoid valve work, no dimension arc output, abnormal indicator light does not shine, no high frequency discharge "rust" sound	1、 The primary line of the arc transformer is in poor contact with the arc plate,please re-fasten 2、 Discharge Tsui oxidation, processing discharge nozzle surface oxide film; 3、 high-frequency arc circuit individual device damage, replace it 4、 The main transformer around the high temperature line terminal bad contact, re-fastening.
Fan rotation is normal, the digital table shows normal, solenoid valve work , no dimension arc output, abnormal indicator light is not bright, high frequency discharge "rust" sound	1、 gunfire arc interface bad contact; 2、 check the machine patch cord is plugged in good or not, with or without loose phenomenon; 3、 High frequency board or control panel, please contact the dealer or the company.
The head shows normal, fan turn, under pressure indicator shine, no load voltage output, no gas discharge	1、 press the switch, solenoid valve if not beating, and its power cord terminal contact isgood, the solenoid valve may be broken; 2、 the solenoid valve does not work, replace the solenoid valve is invalid, may be the control circuit, please contact the dealer or the company; 3、 check the gas plug hole whether is blocked.
Air switch not on	1、 air switch damage; 2、 three-phase rectifier bridge damage, need to be replaced; 3、 check whether there is a short circuit inside the machine.

If after the above adjustment or maintenance still can not work properly, please contact the local dealer or our after-sales service department.

 **WARN:** The above operations must be carried out by qualified electricians with valid certification. Please contact us before repair to obtain professional advice.

