

OPERATION INSTRUCTION

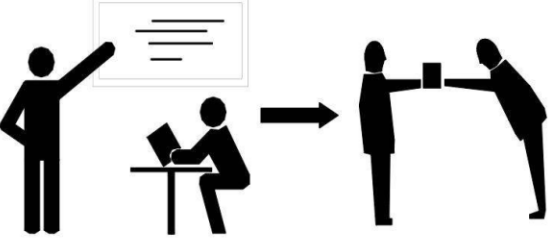
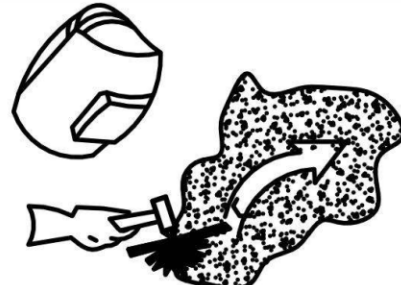


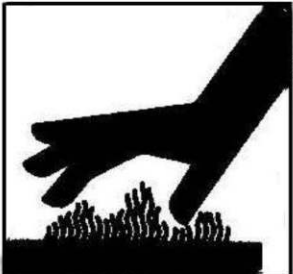
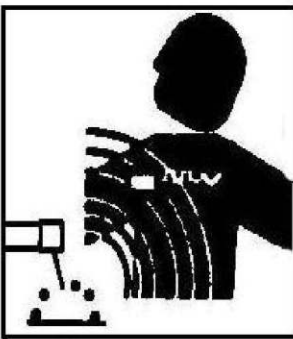
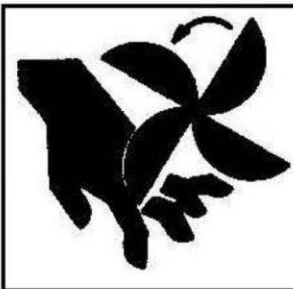
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1. SAFETY

Welding is dangerous, and may cause damage to you and others, so take good protection when welding. For details, please refer to the operator safety guidelines in conformity with the accident prevention requirements of the manufacturer.

	Professional training is needed before operating the machine. ● Use labor protection welding supplies authorized by national security supervision department. ● The operator must be qualified personnel with a valid "metal welding (OFC) operations" operation certificate. ● Cut off power before maintenance or repair.
	Electric shock—may lead to serious injury or even death. ● Install earth device according to the application criteria. ● Never touch the live parts when skin bared or wearing wet gloves/clothes. ● Make sure that you are insulated from the ground and workpiece. ● Make sure that your working position is safe.
	Smoke& gas—may be harmful to health. ● Keep your head away from smoke and gas to avoid inhalation of exhaust gas from welding. ● Keep the working environment well ventilated with exhaust or ventilation equipment when welding.
	Arc radiation—may damage eyes or burn skin. ● Wear suitable welding masks and protective clothing to protect your eyes and body. ● Use suitable masks or screens to protect spectators from harm.
	Improper operation may cause fire or explosion. ● Welding sparks may result in a fire, so please make sure no combustible materials nearby and pay attention to fire hazard. ● Have a fire extinguisher nearby, and have a trained person to use it. ● Airtight container welding is forbidden ● Do not use these machines for pipe thawing.

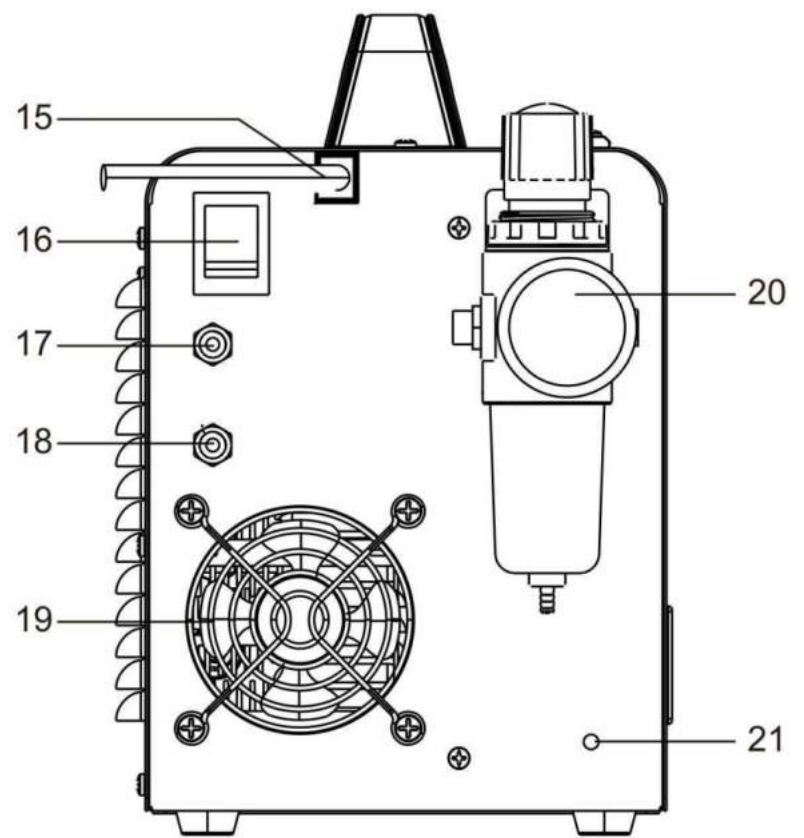
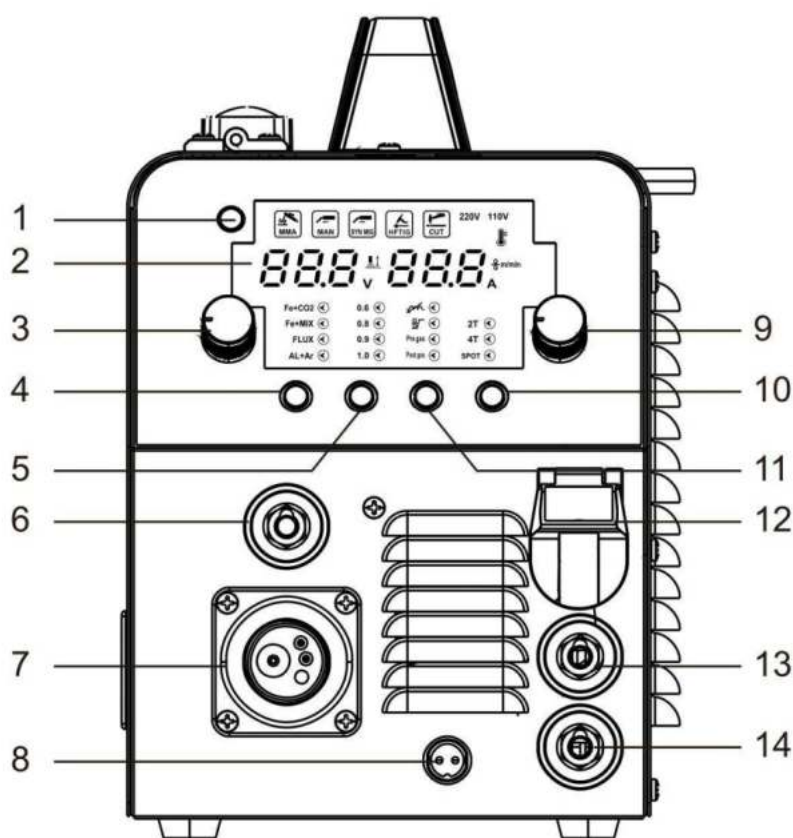
	Hot workpiece may cause severe scalding. ● Do not contact hot workpiece with bare hands. ● Cooling is needed during continuous use of the welding torch.
	Magnetic fields affect cardiac pacemaker. ● Pacemaker users should be away from the welding spot before medical consultation.
	Moving parts may lead to personal injury. ● Keep yourself away from moving parts such as fan. ● All doors, panels, covers and other protective devices should be closed during operation.
	Please seek professional help when encountering machine failure. ● Consult the relevant contents of this manual If you encounter any difficulties in installation and operation. ● Contact the service center of your supplier to seek professional help if you still can not fully understand after reading the manual or still can not solve the problem according to the manual.

2. GENERAL DESCRIPTION

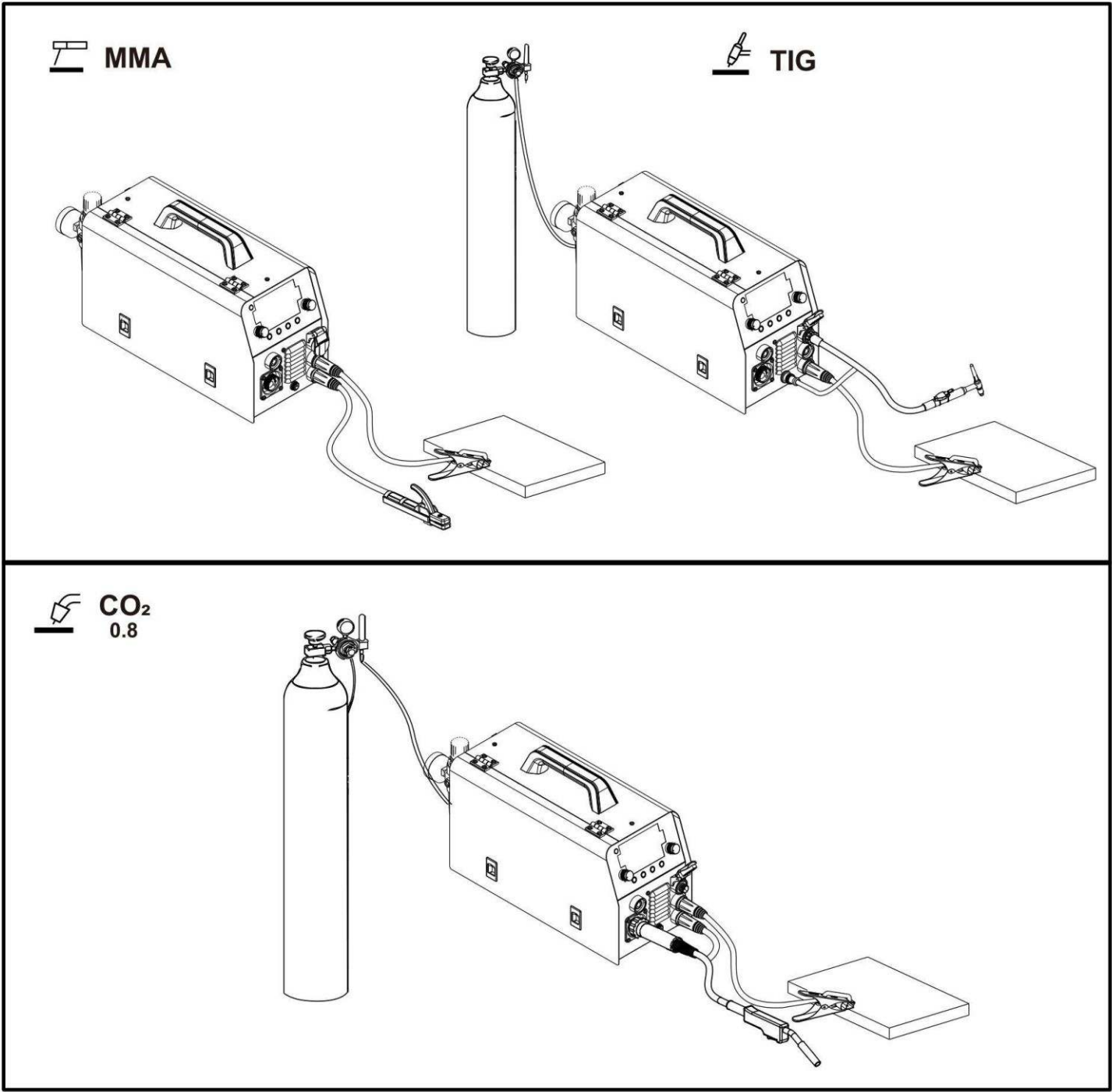
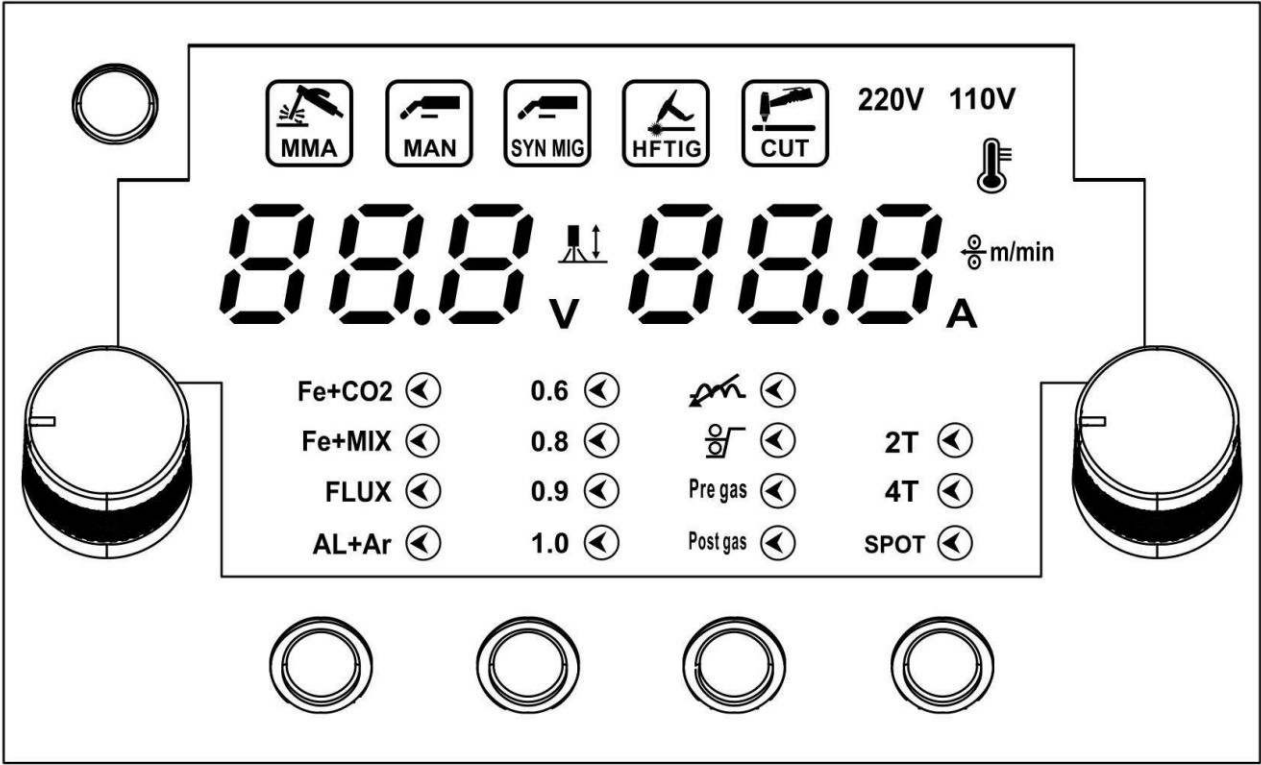
- MIG, MMA, CUT and gasless self-shielded welding are available for the machine.
- IGBT power device with unique control mode improves the reliability of welding machine.
- High duty cycle ensures long time welding.
- Closed loop feedback control, constant voltage output, workable under mains voltage fluctuation within $\pm 10\%$.
- Adjustable welding voltage and current, excellent welding characteristics.
- Adopting unique welding dynamic characteristic control circuit in MIG, stable arc, little spatter, beautiful weld bead, high welding efficiency.
- Removing tip ball after welding, high no-load voltage, slow wire feeding, high successful rate of arc ignition.
- Stable welding current in MMA, excellent arc ignition, various electrodes applicable.
- High inverter frequency greatly reduces the volume and weight of the welder.
- Great reduction in magnetic and resistance loss obviously enhances the welding efficiency and energy saving effect.
- Switching frequency is beyond audiorange, which almost eliminates noise pollution.

3. DESCRIPTION

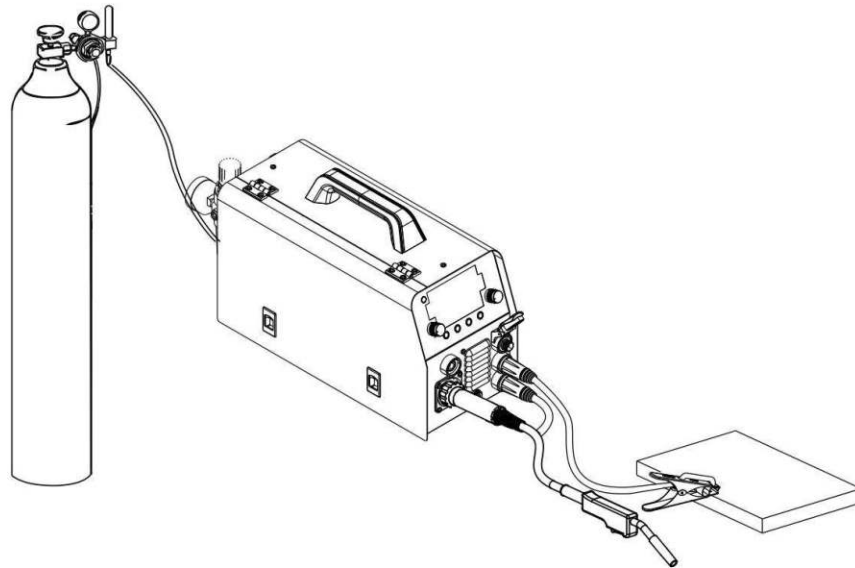
1. Function display table
2. Function selection
3. Adjusting knob: MIG voltage/CUT post flow time
4. Gas/Material Choose
5. Wire Diameter Choose
6. CUT wire clamp interface
7. MIG gun interface
8. CUT gun interface
9. MMA / LIFT TIG current adjustment knob
10. 2T/4T Choose
11. Synergic Choose
12. CUT gun interface
13. Negative output
14. Positive output
15. Power cord
16. Power switch
17. MIG gas in
18. CUT gas in
19. Fan
20. Pressure regulating valve
21. Ground screw



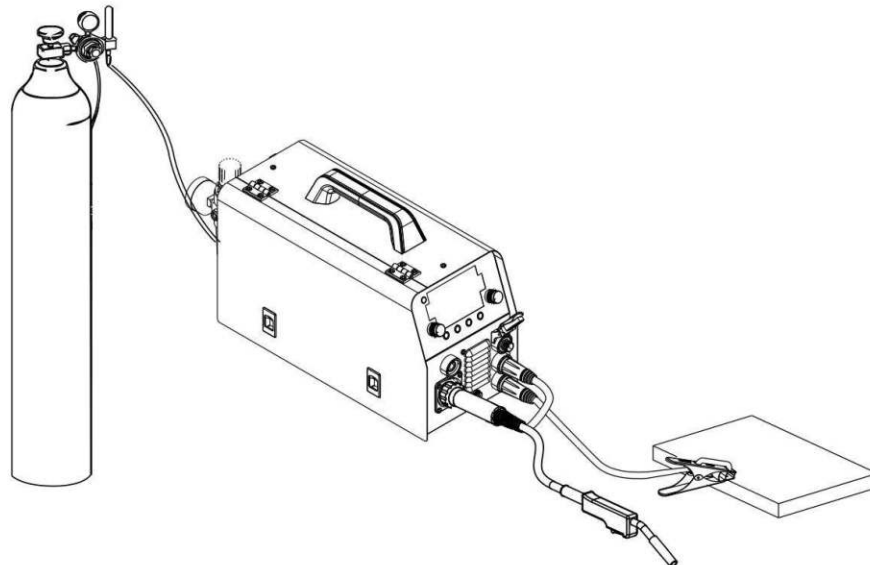
4. CONNECTION METHOD



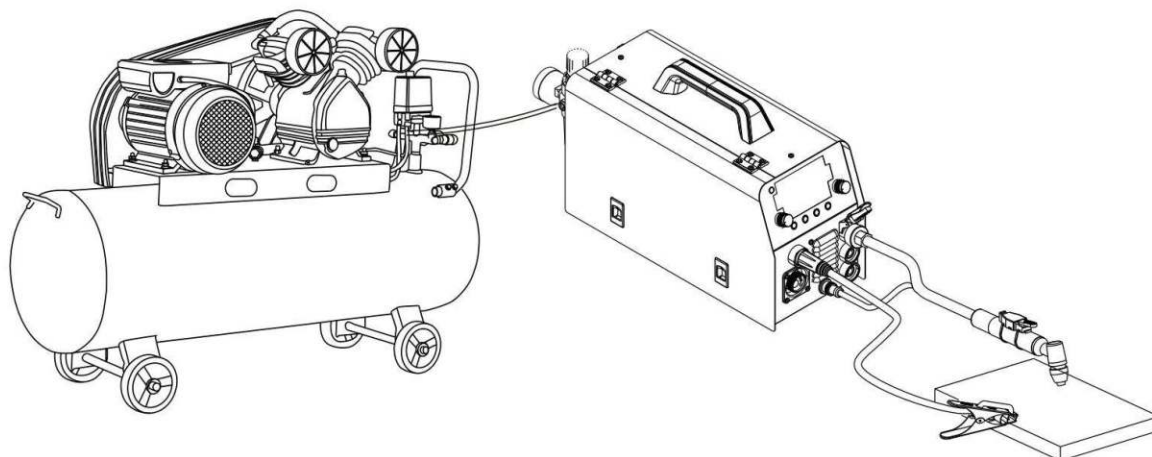
 **MIX**
0.8



 **FLUX**
1.0



 **CUT**



5. CAUTION

7.1 Working Environment

- 1) Welding should be carried out in dry environment with humidity of 90% or less.
- 2) The temperature of the working environment should be between -10°C and 40°C.
- 3) Avoid welding in the open air unless sheltered from sunlight and rain. Keep it dry at all times and do not place it on wet ground or in puddles.
- 4) Avoid welding in dusty area or environment with corrosive chemical gas.
- 5) Gas shielded arc welding should be operated in environment without strong airflow.

7.2 Ventilation

This welder can create powerful welding current that has strict cooling requirements that cannot be met with natural ventilation. Therefore the built-in fan is very important in enabling the machine to work steadily with effective cooling. The operator should make sure that the louvers be uncovered and unblocked. The minimum distance between the machine and nearby objects should be 30cm. Good ventilation is of critical importance to the normal performance and lifespan of the machine.

7.3 Overvoltage is forbidden.

Regarding the power supply voltage range of the machine, please refer to "Main Parameters" table. This machine is of automatic voltage compensation, which enables the maintaining of the voltage range within the given range. In case that the input voltage exceeds the stipulated value, it would possibly damage the components of the machine.

7.4 Overload is forbidden.

Remember to observe the max load current at any moment (refer to the corresponding duty cycle). Make sure that the welding current should not exceed the max load current. Overload could obviously shorten the machine's lifespan, or even damage the machine.

7.5 Overheating protection

A sudden halt may occur with the overheating LED on the front panel on while the machine is of over-load status. Under this circumstance, it is unnecessary to restart the machine. Keep the built-in fan working to lower the temperature inside the machine. Welding can be continued after the inner temperature falls into the standard range and the overheating LED is off.

6. MAINTENANCE



WARNING: The following operation requires sufficient professional knowledge on electric aspect and comprehensive safety knowledge. Operators should be holders of valid qualification certificates which can prove their skills and knowledge. Make sure the input cable of the machine is cut off from the electricity utility before uncovering the welding machine.

- 1) Check periodically whether inner circuit connection is in good condition (esp. plugs). Tighten the loose connection. If there is oxidization, remove it with sandpaper and then reconnect.
- 2) Keep hands, hair and tools away from the moving parts such as the fan to avoid personal injury or machine damage.
- 3) Clean the dust periodically with dry and clean compressed air. If welding environment with heavy smoke

and pollution, the machine should be cleaned daily. The pressure of compressed air should be at a proper level in order to avoid the small parts inside the machine being damaged.

- 4) Avoid rain, water and vapor infiltrating the machine. If there is, dry it and check the insulation of the equipment (including that between the connections and that between the connection and the enclosure). Only when there are no abnormal phenomena anymore, can the machine be used.
- 5) Check periodically whether the insulation cover of all cables is in good condition. If there is any dilapidation, rewrap it or replace it.
- 6) Check periodically whether the gas hose is in good condition. If there are any cracks, replace it.
- 7) Put the machine into the original packing in dry location if it is not used for a long time.

7. TROUBLESHOOTING



WARNING: The following operation requires sufficient professional knowledge on electric aspect and comprehensive safety knowledge. Operators should be holders of valid qualification certificates which can prove their skills and knowledge. Make sure the input cable of the machine is cut off from the electricity utility before uncovering the welding machine.

Common Malfunction Analysis and Solution:

Malfunction phenomena	Solution
The overheating LED is on.	1. Check the welding current and welding time. Refer to the manual, and operate according to the requirement. 2. Check the running status of the fan when welding. If the fan does not work, check if the power supply of the fan is 230V: If the power supply is normal, check the fan; if the power supply is abnormal, check the connecting cable of the power supply. 3. Replace the thermal switch if it is damaged.
There is no response when pushing the gun trigger, and the protection LED is off.	1. Check if the power LED is on, and if the digital meter shines. 2. Check if the gun trigger is in good contact, and check the welding torch for good connection. 3. Check the wire feeder for good connection.
Wire feeder feeds wire when pushing the gun trigger to feed gas, but there is no output current, and the protection LED is off.	1. Check if the power cord connected to the workpiece is in good contact. 2. Check if the quick plug is connected to correct quick socket. 3. Check if the wire feeder is well connected. 4. Check the welding torch for damage. 5. The control PCB inside the machine fails.
There is output current when pushing the gun trigger to feed gas, but the wire feeder does not feed wire.	1. Check the wire feeder for clogging or damage. 2. Check the contact tip of welding torch for clogging or damage. 3. The wire feed board fails.

Welding can be carried out when pushing the gun trigger, but the voltage cannot be adjusted. The no-load voltage is too high.	1. Check if control cable of the wire feeder is in good condition. 2. The control PCB inside the machine fails.
Welding current is unstable.	1. Check the pressure arm on the wire feeder for proper pressure. 2. Check if the drive roll matches the wire size being used. 3. Check the contact tip of the welding torch for wear. Replace it and tighten it if necessary. 4. Check the welding wire for good quality. 5. Check if the torch cable is too twisted. 6. Check if the quick plug is loosely connected.
Weld bead is not well protected.	1. Do not move the welding torch away immediately when stopping welding, so that the shielded gas can protect the weld bead. 2. Prolong the post-flow time of the shielded gas, and contact our company.
There are big craters after welding.	1. Select 4T mode, and carried out crater welding under low current. 2. Change the operation mode.

8. WELDING PARAMETERS TABLE (for reference only)

Welding current and welding voltage directly influences the welding stability, welding quality and productivity. In order to obtain good welding performance, the welding current and welding voltage should be set optimally generally according to the electrode diameter, the mode of metal transfer and the production requirement.

Set the welding current and welding voltage according to the below tables.

1) Parameters for I-type butt-welding

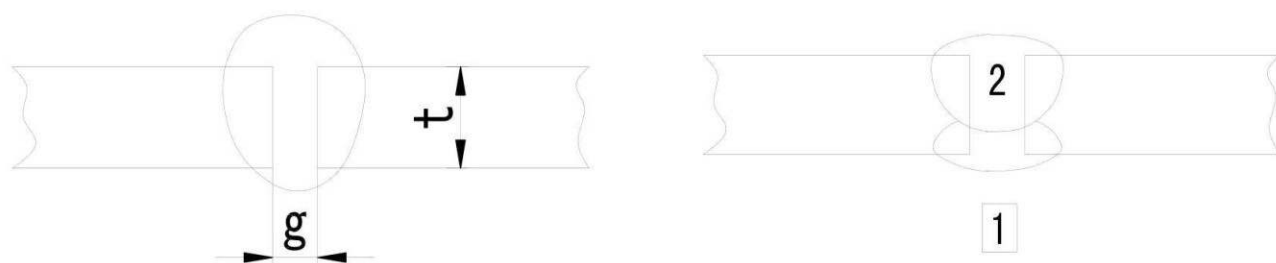


Plate thickness t (mm)	Gap g (mm)	Electrode φ (mm)	Welding current (A)	Welding voltage (V)	Welding speed (cm/min)	Gas flow (L/min)	Layer
1.2	0	1.0	70~80	17~18	45~55	10	1
1.6	0	1.0	80~100	18~19	45~55	10~15	1
2.0	0~0.5	1.0	100~110	19~20	40~55	10~15	1
2.3	0.5~1.0	1.0 or 1.2	110~130	19~20	50~55	10~15	1
3.2	1.0~1.2	1.0 or 1.2	130~150	19~21	40~50	10~15	1
4.5	1.2~1.5	1.2	150~170	21~23	40~50	10~15	1

2) Parameters for flat fillet welding

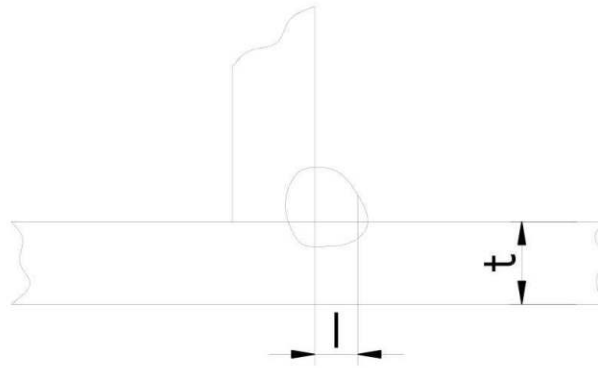


Plate thickness t (mm)	Corn size l (mm)	Electrode ϕ (mm)	Welding current (A)	Welding voltage (V)	Welding speed (cm/min)	Gas flow (L/min)
1.2	2.5~3.0	1.0	70~100	18~19	50~60	10~15
1.6	2.5~3.0	1.0 ~ 1.2	90~120	18~20	50~60	10~15
2.0	3.0~3.5	1.0 ~ 1.2	100~130	19~20	50~60	10~20
2.3	2.5~3.0	1.0 ~ 1.2	120~140	19~21	50~60	10~20
3.2	3.0~4.0	1.0 ~ 1.2	130~170	19~21	45~55	10~20
4.5	4.0~4.5	1.2	190~230	22~24	45~55	10~20

3) Parameters for fillet welding in the vertical position

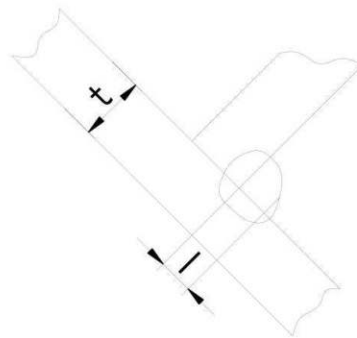


Plate thickness t (mm)	Corn size l (mm)	Electrode ϕ (mm)	Welding current (A)	Welding voltage (V)	Welding speed (cm/min)	Gas flow (L/min)
1.2	2.5~3.0	1.0	70~100	18~19	50~60	10~15
1.6	2.5~3.0	1.0 ~ 1.2	90~120	18~20	50~60	10~15
2.0	3.0~3.5	1.0 ~ 1.2	100~130	19~20	50~60	10~20
2.3	3.0~3.5	1.0 ~ 1.2	120~140	19~21	50~60	10~20
3.2	3.0~4.0	1.0 ~ 1.2	130~170	22~22	45~55	10~20
4.5	4.0~4.5	1.2	200~250	23~26	45~55	10~20

4) Parameters for Lap Welding

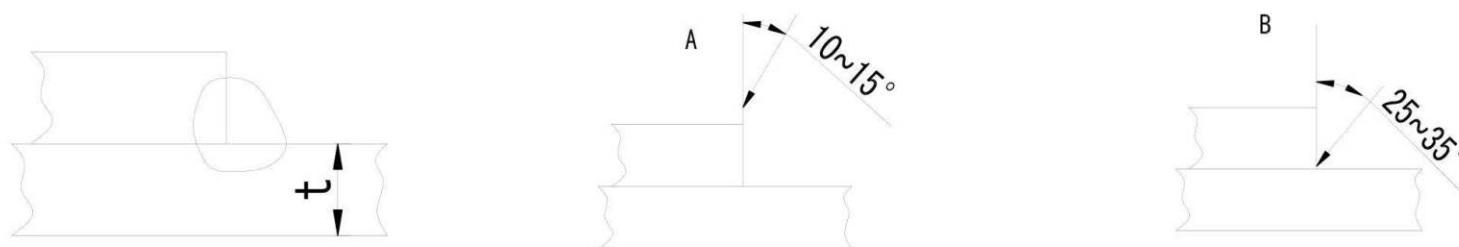


Plate thickness t (mm)	Welding position	Electrode ϕ (mm)	Welding current (A)	Welding voltage (V)	Welding speed (cm/min)	Gas flow (L/min)
1.2	A	1.0	80~100	18~19	45~55	10~15
1.6	A	1.0 ~ 1.2	100~120	18~20	45~55	10~15
2.0	A or B	1.0 ~ 1.2	100~130	18~20	45~55	15~20
2.3	B	1.0 ~ 1.2	120~140	19~21	45~50	15~20
3.2	B	1.0 ~ 1.2	130~160	19~22	45~50	15~20
4.5	B	1.2	150~200	21~24	40~45	15~20

5) Parameters for MAG

Material: Carbon steel

Gas: Ar+CO₂ mixed gas (10~15L/min)

Junction type	Plate thickness (mm)	Electrode ϕ (mm)	Gap g(mm)	Welding condition		
				Current (A)	Voltage (V)	Welding speed (cm/min)
I- type	1.0	1.0	0	50~55	13~15	40~55
	1.2	1.0	0	60~70	14~16	30~50
	1.6	1.0	0	100~110	16~17	40~60
	2.3	1.0 or 1.2	0 ~ 1.0	110~120	17~18	30~40
	3.2	1.0 or 1.2	1.0~1.5	120~140	17~19	25~30
	4.0	1.2	1.5~2.0	150~170	18~21	25~40

We are still constantly improving this welder, therefore, some parts of this welder may be changed in order to achieve the better quality, but the main functions and operations will not be alternated. Your understanding would be greatly appreciated.



Cruxweld MultiWeld 4S - Multi-Process Inverter Welding Machine

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