

MIG250GN WELDING MACHINE




USER MANUAL

Preface

This manual includes hardware description and operation introduction of MIG 250 GN equipment. For your and other people's safety, please read the manual carefully.

Pay attention

Pay attention to the words after the signs below.

Sign	Description
 DANGER	The words after this sign means there is great potential danger, which may cause major accident, damage or even death, if it is not followed.
 WARNING	The words after this sign means there is some potential danger, which may cause hurt or property lose, if it is not followed.
 ATTENTION	The words after this sign means there is potential risk, which may cause equipment fault or break, if it is not followed.

Version

The contents of this manual are updated irregularly for updating of product. The manual is only used as operation guide, except for other promises. No warranties of any kind, either express or implied are made in relation to the description, information or suggestion or any other contents of the manual.

The image shown here is indicative only. If there is inconsistency between the image and the actual product, the actual product shall govern.









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1 Safety warning

The safety notes listed in this manual is to ensure correct use of the machine and to keep you and other people from being hurt. The design and manufacture of welding machine considers safety. Please refer to the safety warning listed in the manual to avoid accidents.

Different damage would be caused by wrong operation of the equipment as follows. Please read the user manual carefully to reduce such damage.

Sign	Description
	<ul style="list-style-type: none"> ◇ Any contact of electric parts may cause fatal electric shock or burnt.
	<ul style="list-style-type: none"> ◇ Gas and fumes are harmful to health. ◇ Operation in narrow space may cause choke .
	<ul style="list-style-type: none"> ◇ Spark and hot workpiece after welding may cause fire. ◇ Bad connected cable may cause fire. ◇ Incompletion connection of workpiece side circuit may cause fire. ◇ Never weld on the case of tinder stuff, or it may cause explode. ◇ Never weld airtight containers such as slot, pipe etc., or it may break.
	<ul style="list-style-type: none"> ◇ Arc ray may cause eye inflammation or skin burnt. ◇ Spark and residue will burn your eyes and skin.
	<ul style="list-style-type: none"> ◇ Toppling over of the gas cylinder will cause body hurt. ◇ Wrong use of the gas cylinder will lead to high-pressure gas eruption and cause human hurt.
	<ul style="list-style-type: none"> ◇ Never let fingers, hair, clothes or etc. near the moving parts such as the fan.
	<ul style="list-style-type: none"> ◇ The wire shoot out of the torch may stab eyes, face and other naked parts.
	<ul style="list-style-type: none"> ◇ Never stand in front of the swang equipment or under it, or it may fail and cause injury.

**DANGER**

Please follow the rules below to avoid heavy accidents.

- Never use the equipment to do other things but welding.
- Follow related regulations for the construction of the input-driven power source, choice of place, usage of high-pressure gas, storage, configuration, safe-keeping of workpiece after welding and disposal of waste, etc.
- Nonessentials do not enter the welding area.
- People using heart pacemaker is not allowed to get close to the welding machine or area without doctor's permission. The magnetism created by energizing the welding machine can have a bad effect to the pacemaker.
- Install, operation, check and maintain the equipment by profession personnel.
- Understanding the contents of the user manual for safety.

**DANGER**


Please follow the rules below to avoid electric shock.

- Keep away from any electric parts.
- Earth the machine and workpiece by professional personnel.
- Cut off the power before installation or checking, and restart 5 minutes later. The capacitance is chargeable device. Please ensure it has no voltage before start again even if the power source is cut off.
- Do not use wire with inadequate section surface or damage insulation sleeve or even exposed conductor.
- Do ensure well isolation of wire connection.
- Never use the device when the enclosure is removed.
- Never use broken or wet insulation gloves.
- Use firenet when work at high position.
- Check and maintain regularly, don't use it until the broken parts are fixed well.
- Turn off the power when not in used.
- Follow the national or local related standard and regulations when using the AC welding machine at narrow or high position.


**DANGER**

Please follow the below notes to avoid fire and explode, etc.

- No combustible in welding area.
- Keep off combustible when welding.
- Keep hot workpiece after welding away from flammable gas.
- Do move away the combustible around when weld the dooryard, ground and wall,.
- The wire connection of base metal should be as close to the welding place as possible.
- Never weld those facilities with gas pipe or airtight slot.
- Put fire extinguisher around the welding area to prevent fire.

 **WARNING** The gas and fumes are harmful to health, please wear protective device according to regulations.

- Wear exhaust equipment and breathe preventive facilities to prevent gas poisoning or choke.
- Use suggested part exhaust equipment and breathe preventive facilities to prevent hurt or poisoning by gas and other powder, please.
- To prevent oxygen-deficiency, air out the gas-filled room which is full of CO₂ and argon on the bottom, When operating on trunks, boilers, cabins, etc.
- Please accept the supervisor's inspection when operating in narrow space. Air the room and wear breathe preventive facilities.
- Never operate in degrease, washing or spray space.
- Using breathe preventive facilities when weld shielded steel for it will cause poisonous dust and gas.

 **WARNING** The arc, spark, residue and noise are harmful to health, please wear protective appliance.


- Eye protection against arc is recommended when welding or supervise welding.
- Please wear preventive spectacles.
- Welder's gloves, welder's goggles, long sleeve clothes, leather apron, and other standard protection equipments must be worn for welding operation.
- A screen to protect other people against the arc must be set in the welding place.

 **WARNING** Please follow the notes below to avoid gas cylinder toppling over or broken.

- Use the gas cylinder correctly.
- Use the equipped or recommended gaseous regulator.
- Read the manual of gaseous regulator carefully before using it, and pay attention to the safety notes.
- Fix the gas cylinder with appropriate holder and other relative parts.
- Never put the cylinder under high temperature or sunshine environment.
- Keep your face away from the gas cylinder exit when opening it.
- Put on the gas shield when it is not used.
- Never put the torch on the gas cylinder. The electrode can not meet the gas cylinder.

 **WARNING** Any touch of the switch part will cause injury, please note the following.

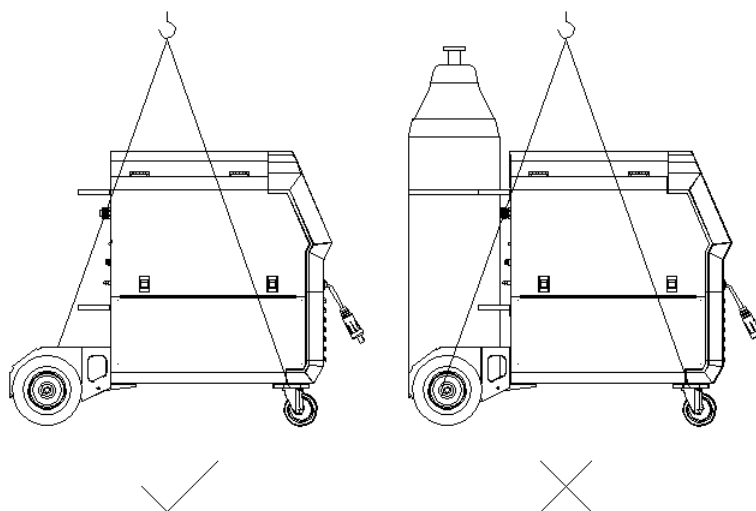
- Never use the machine when the enclosure is off.
- Install, operate, check and maintain the machine by professional person.
- Keep your fingers, hair, clothes etc. away from the switch parts such as the fan.

 **WARNING** The wire end may deal damage, please note the following.

- Never look into the electric conduction hole when checking the wire feeding is normal or not, , or the shooting wire may stab your eyes and face.
- Keep your eyes, face or other naked parts away from the end of torch when feeding the wire manually or pressing the switch.

 **ATTENTION** For better work efficiency and power source maintenance, please note the following.

- Precautions against toppling over.
- Never use the welding equipment for pipe thawing.
- Lift the power source from side when use the up-down forklift truck to avoid toppling over.
- When using the crane for lift, tie the rope to the ears with an angle no more than $\phi 15$ to the vertical direction.
- When lifting the welding machine which equipped with gas cylinder and wire feeder, download them from the power source and ensure the horizontal of the machine. Do fix the gas cylinder with belt or chain when moving it to avoid body hurt.
- Ensure fastness and insulation when lifting the wire feeder through the swing ring for welding.



Lifting way for gas shielded machines



ATTENTION Electromagnetic interference needing attention

- It may need extra preventive measures when the equipment is used in particular location.
- Before the installation, please estimate the potential electromagnetism problems of the environment as follows.
 - a) Upper and lower parts of the welding equipments and other nearby power cable, control cable, signal cable and phone cable.
 - b) Wireless electric as well as TV radiation and reception equipment.
 - c) Computer and other control equipments.
 - d) Safety-recognition equipment etc. Such as supervise of industrial equipments.
 - e) Health of people around. Such as personnel using the heart pacemaker or audiphone.
 - f) Equipments for adjustment and measurement.
 - g) Anti-disturb capability of other used equipments .Users should ensure these equipments and the environment are compatible, which may need extra preventive measures.
 - h) Practical state of the welding and other activities.
- Users should observe the following dos and don'ts to decrease radiation interference.
 - a) Connect the welding equipments to the power supply lines.
 - b) Maintain the welding equipments regularly.
 - c) The cable should be short enough to be close to each other and the ground.
 - d) Ensure the safety of all the welding metal parts and other parts nearby.
 - e) The workpiece should be well earth.
 - f) Shield or protect the other cable and equipments to decrease the effects of disturbances. The welding equipments can be complete shielded in some special conditions.
- Users are responsible for interference due to welding.

2 Product

2.1 General

The welding machine applies the most advanced inversion technology in the world.

The principle of inversion is to transform the power frequency of 50/60Hz into direct current and invert it into high frequency through high-power device IGBT, then perform voltage-drop and commutation with the output high-power D.C power supply via Pulse Width Modulation (PWM). Since the switch power inversion technology is adopted, the weight and volume decrease greatly while the conversion efficiency increase by more than 30%. Its characteristics are: stable wire feed rate, little splatter, portable, energy-saving, low electromagnetic noise.

Our CO₂ gas shielded welding machine is equipped with unique electronic reactor circuit, which can precisely control the short-circuiting transfer and mixed transfer resulted in better performance than other machines. Compared with silicon controlled welding machine and tapped welding, our products have the following advantages: stable wire feed rate, portable, energy-saving, electromagnetic noise free. Besides, our products spatter less, easier arc starting, deep welding pool, high duty cycle etc. With high efficiency and energy-saving features, this equipment is applicable in large-scale plants such as shipyards, steel structure plants etc..

Thank you for choosing our products. Please feel free to propose your valuable suggestions; we will make efforts to perfect our products and service.



The machine is mainly used in industrial fields. It will cause radion interference if used indoors. Please take through precaution measures.

2.2 Technical data

Type Description	MIG250GN	
Power voltage(V)	1 phase 220V±15%	1 phase 110V±15%
Frequency(HZ)	50/60	
No load voltage(V)	56	
Rated input current(A)	MIG:51.6	MIG:45.8
	TIG:39	TIG:34
	MMA:58.4	MMA:55.8
Output current adjustment(A)	MIG:50-250	MIG:50-140
	TIG:15-250	TIG:15-140
	MMA:25-250	MMA:25-140
Output voltage(V)	MIG:16.5-26.5	MIG:16.5-21
	TIG:10.6-20	TIG:10.6-15.6
	MMA:21-30	MMA:21-25.6
Duty cycle(%)	MIG:60%	
	TIG:60%	
	MMA:60%	
Power factor	0.73	
Efficiency(%)	80	
Type of wire feeder	Internal	
Wire feed speed(m/min)	78-629	
Post flow time(S)	1.0±0.5	
Welding-wire diameter(inches)	.023"-.045"	
Insulation grade	F	
Housing protection grade	IP21	
Welding thickness(inches)	More than .030"	
Weight(lb)	94.8	
Overall dimension L*W*H(inches)	35.4*20.5*30.1	

3 Installation

The welding equipment is equipped with power voltage compensation device. It keeps the machine work normally when power voltage fluctuating $\pm 15\%$ of rated voltage.

When using long cable, in order to reduce voltage drop, big section cable is suggested. If the cable is too long, it will affect the performance of arcing and other system function, it is suggested to use the recommend length.

- Make sure the intake of the machine is not covered or blocked to avoid the malfunction of the cooling system.
- Use ground cable whose section no less than 6mm^2 to connect the housing and earth. The method is to connect the grounded interface in the back to the earth device, or make sure the earth end of power interface has been reliably and independently grounded. Both ways can be used together for better security.

Installation Procedures:

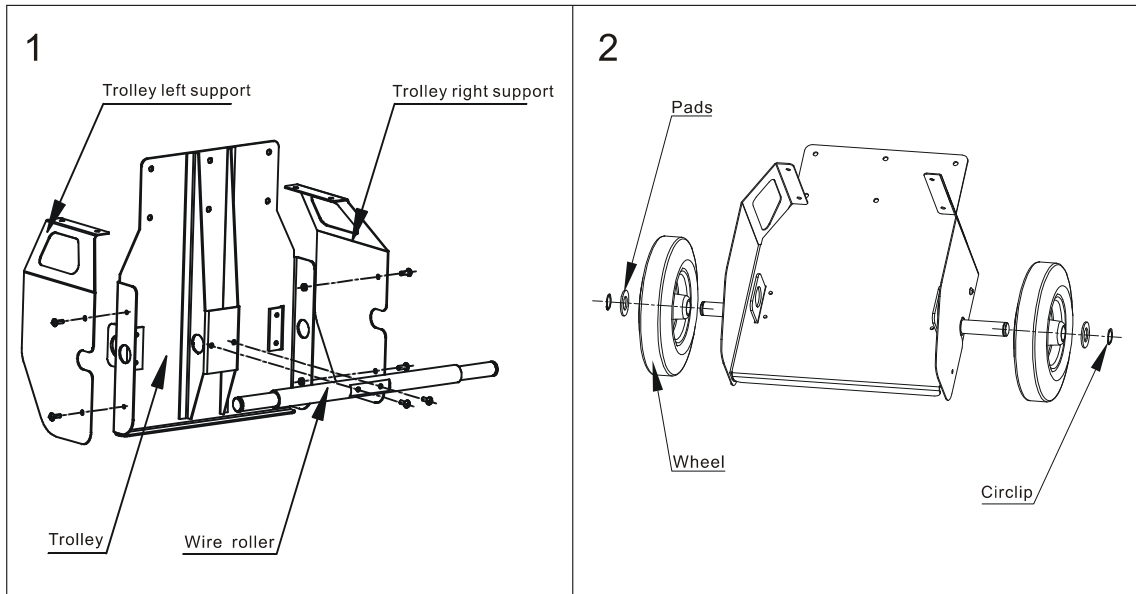
- Connect the gas cylinder with CO2 decompression flow meter tightly to CO2 mouth behind the machine via air tube.
- Insert the swift plug of earth cable into socket at the front panel.
- Set the wire wheel with wire on the wheel axis, the wheel hole should be matched with the wheel fixer.
- Choose wire slot according to wire diameter.
- Loosen the screw of wire-pressing wheel, pit the wire into slot via wire-lead tube, adjust the wire-pressing wheel to keep wire fix from gliding, but strength should be suitable in case the wire distorts and affects wire sending.
- Wire roll should turn clockwise rotation to let out wire, to prevent wire from gliding; wire is usually set to the fixed hole on the wheel side. To prevent the bent wire from getting stuck, please cut off this part of the wire.
- Put and tighten the torch on the output socket and put the wire into the torch by hand.

This procedure must be operated by electrician!

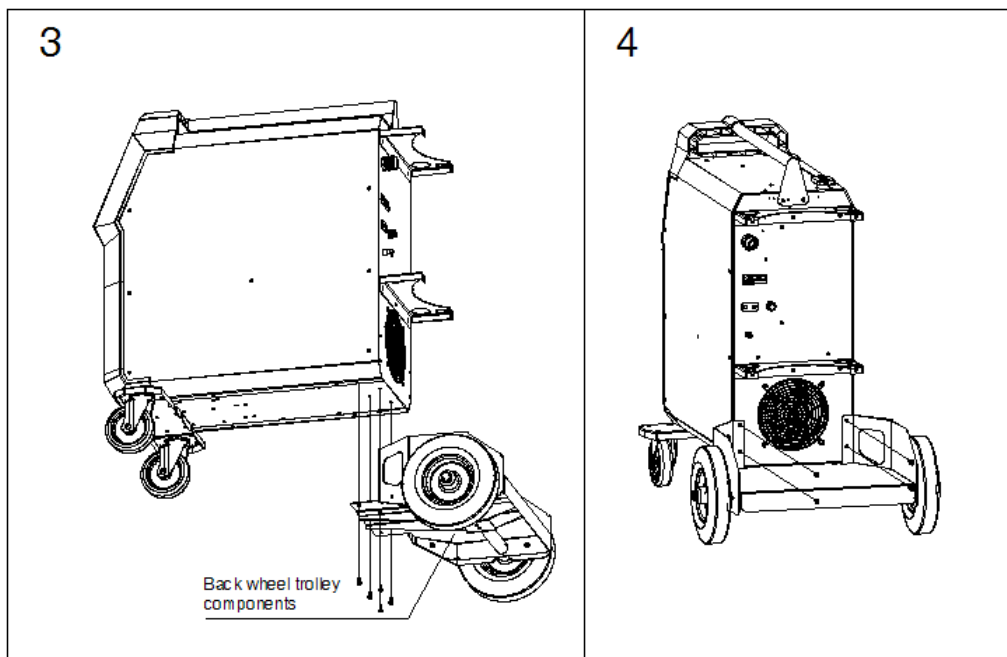
Connect proper power cable to the distribution box with corresponding capacity according to the input voltage and current (See technical parameter table). Do not connect to the inappropriate voltage and make sure that the difference of power supply is within permitted range.

If the components are packed separately, users should install them as following steps.

- Fix the trolley left and right supports and wire roller to the trolley with 6 pieces of M5 screws as figure 1. And fix the wheels to the wire roller with pads and circlip as figure 2.

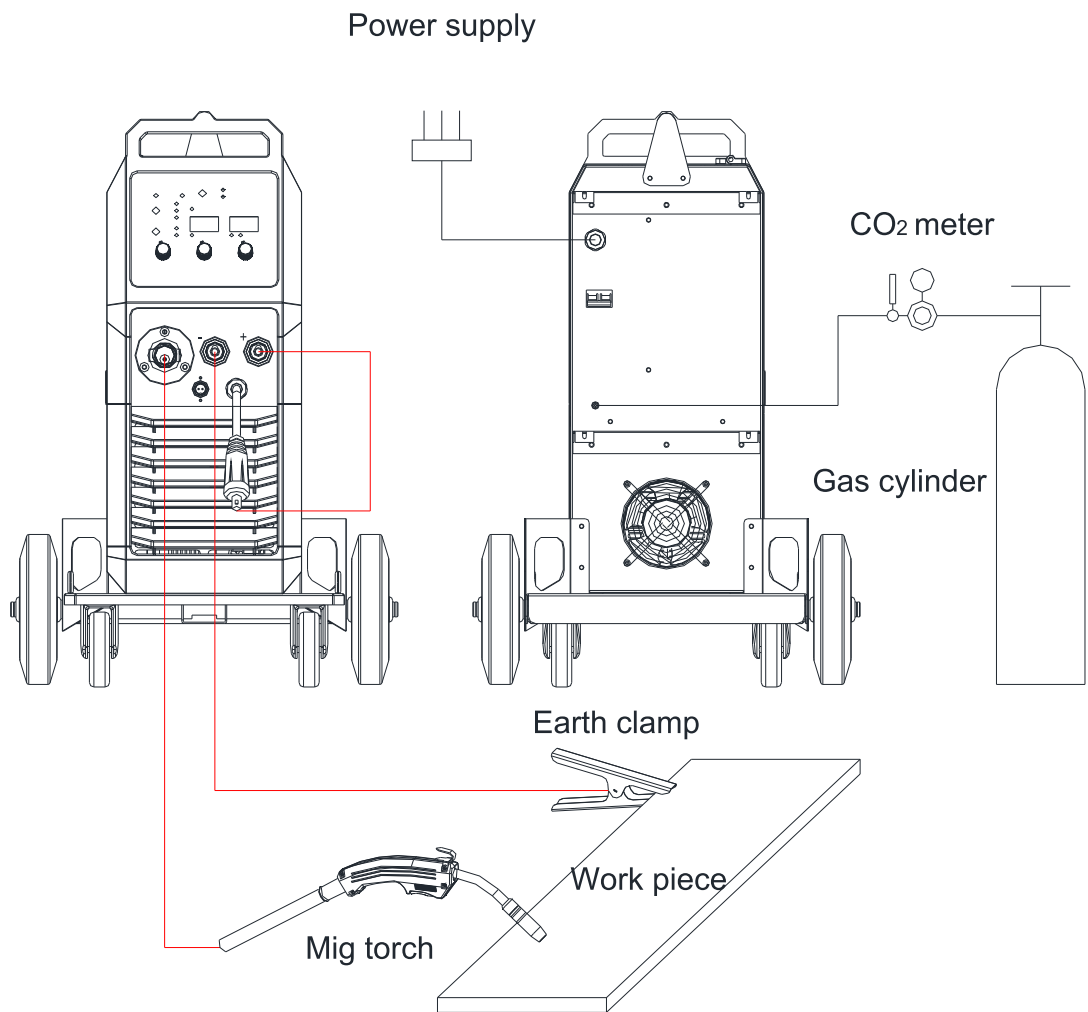


- Then install the bottom of back wheel trolley components and tool box to trolley with 5 pieces M6 screws as figure 3. And fix the bottle support and back wheel trolley components to trolley with 4 pieces M5 screws as figure 4.

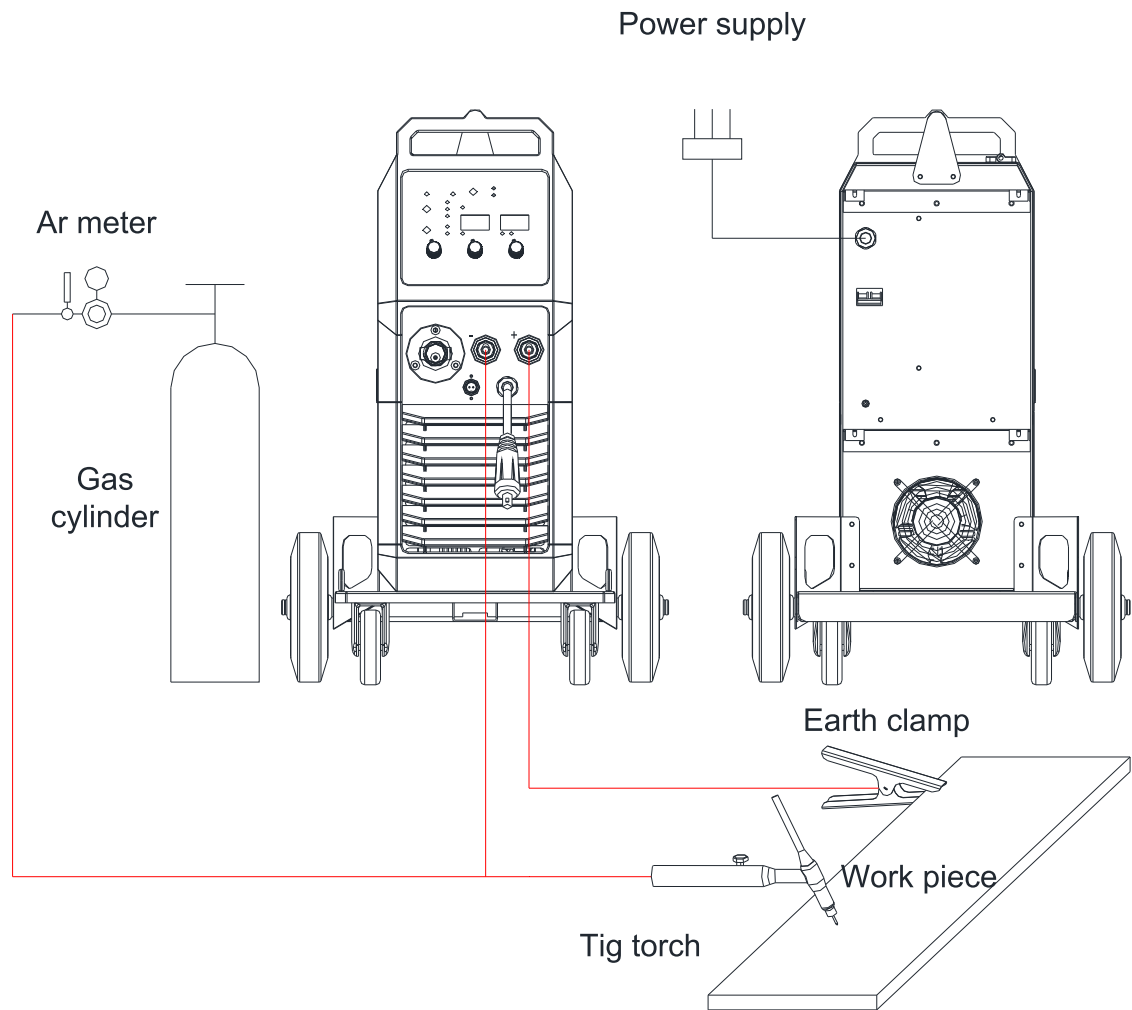


Installation diagram (MIG / TIG / MMA)

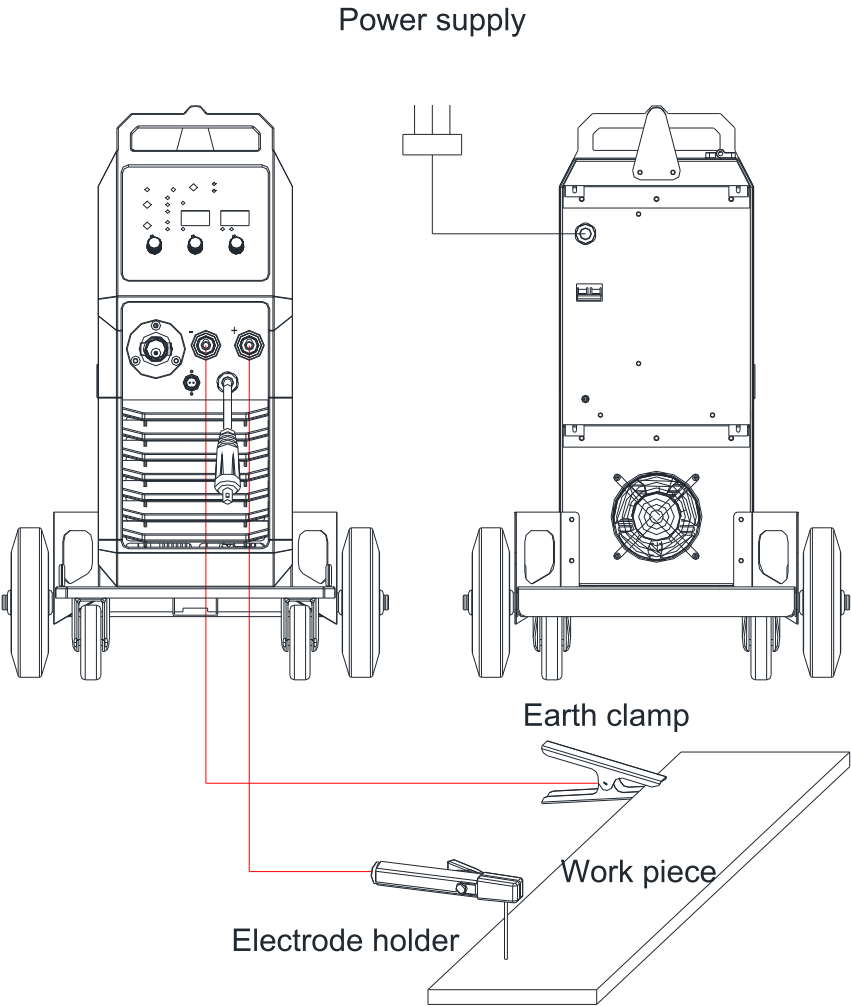
MIG mode:



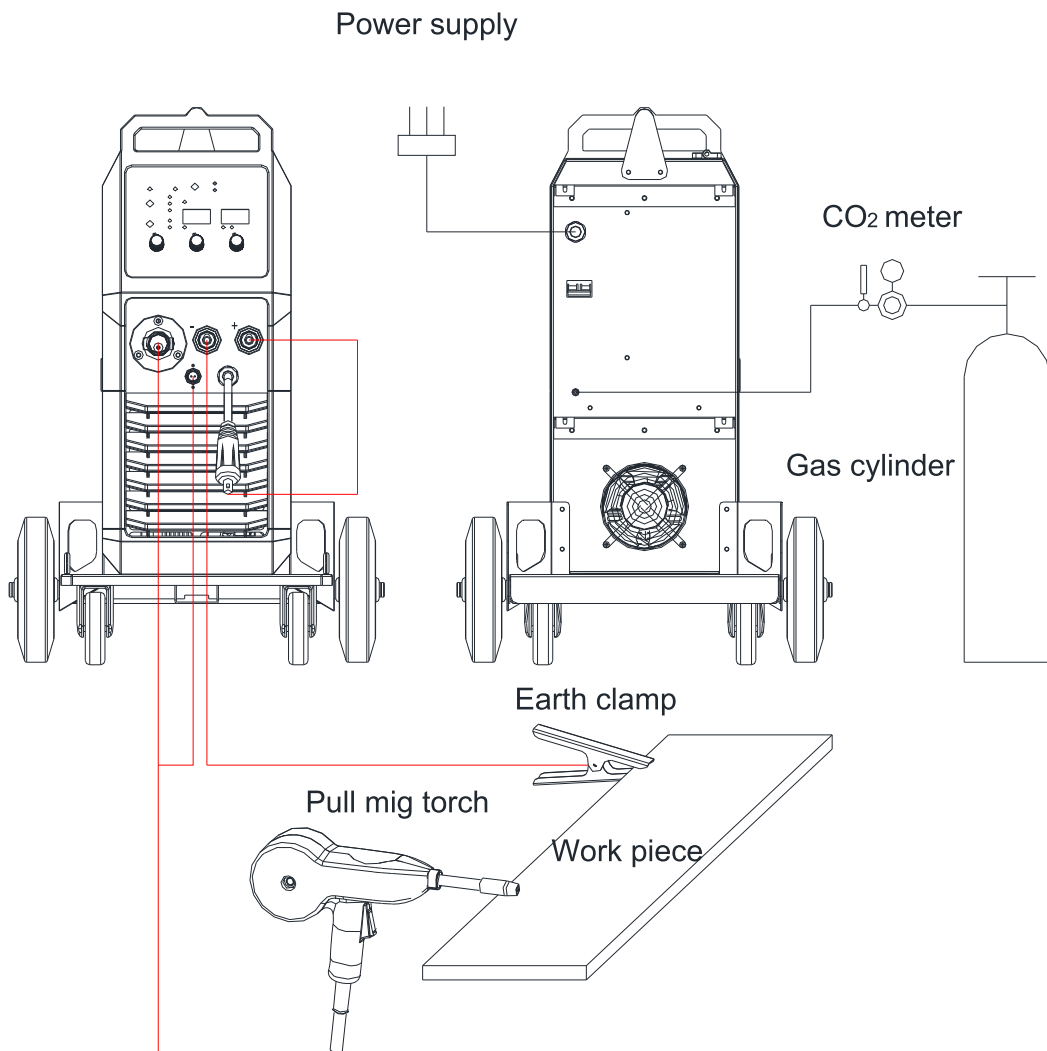
TIG mode:



MMA mode:



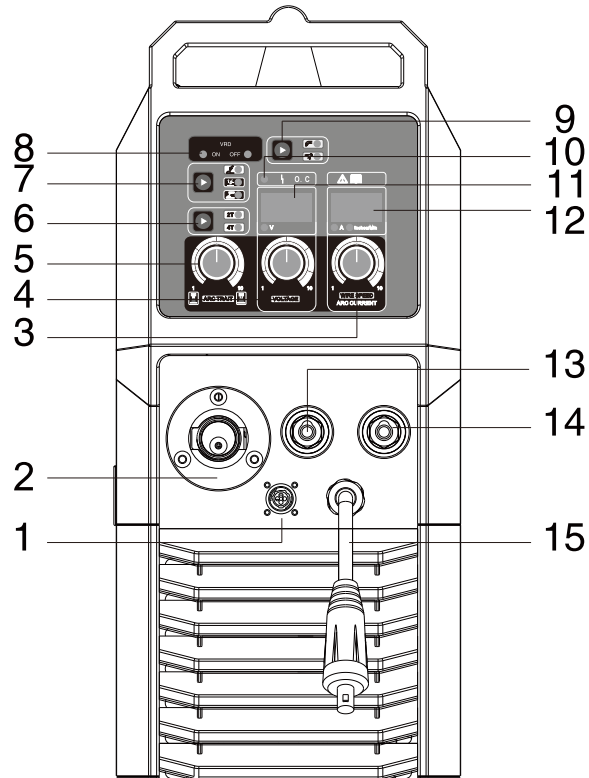
MIG (SPOOL GUN) mode:



Notes: Turn the welding machine to MMA mode for heating the gas cylinder to prevent CO₂ meter icing when it is not working under MIG mode.

4 Operation

4.1 Front panel layout



1.	Four core socket	10	Abnormal indicator
2.	Torch joint	11	Voltage meter
3.	Current adjustment button	12	Current meter
4.	Voltage adjustment button	13	Negative output terminal
5.	Arc trait adjustment button	14.	Positive output terminal
6.	2T/4T switch button	15	Polarity conversion joint
7.	MIG/TIG/MMA switch button		
8	VRD indicator		
9	Welding torch(push wire and pull wire) selection		

The image shown here is indicative only. The actual product may differ.

4.2 Operation instruction

● Front panel instruction

- a) MIG/TIG/MMA button. Press it to change the welding mode of MIG or TIG or MMA. The indicator would light on.
- b) 2T/4T button. The description as follows.

2T mode applies to spot welding. The welding machine starts working by press the torch switch, and stops when release it.

4T mode is suitable for long time welding. The arc current starts when pressing the torch switch first time. Then the machine welds by release the switch. The crater current occurs when press the switch again, and the machine stops welding when release it.

- c) Voltage adjustment knob. Adjust the range of output voltage.
- d) Current adjustment knob. Adjust the range of output current.
- e) Electric arc characteristic knob. Adjust the soft/hard range of the electric arc to achieve perfect welding performance.

● Polarity conversion joint

This machine has the polarity conversion; There are positive output terminal and negative output terminal between wire feeder and wire spool; When use solid wire with gas protection, torch socket should be connected to the positive output terminal, ground cable should be connected to the negative output terminal; When use flux-cored wire, the two connected cable should be exchanged.

4.3 Welding environment and safety

● Working surrounding

- a) Welding should be carried out in dry surroundings. The air humidity level should not be higher than 90%.
- b) The temperature should be between -10°C to 40°C.
- c) Don't use the welding machines in sunshine or rain. Keep it off water.
- d) Don't use the machines in the places of dust or corrosive air.
- e) MIG welding should not be carried out in places with quick air flow.

● Safety norms

Protection circuit of over-voltage, over-current and over-heat circuits are designed in the welding machines. It will stop working automatically when the input voltage, output current or internal temperature exceed the rated value. But if the machines are excessively used,

such as with input voltage higher than the rated, the machine might be damaged. Please pay close attention to the following matters.

a) **Keep good ventilation!!**

The welding machines work with high welding current. Nature air flow can't reach the requirement of heat dissipation. So the fans are installed as cooling system to ensure stable performance.

Make sure the ventilation windows are not covered or blocked. The distance between the machines and things around should not be less than 0.3m. Good ventilation is good for welding performance and operational life.

b) **Never over load!**

Check the maximum rated current (according to the Duty Cycle chosen). Make sure the welding current is never higher than the rated value. Over current running will obviously shorten the operation life, even damage the machine.

c) **Never over voltage!**

The Input Voltage could be found in **Technical data diagram**. The auto-compensation function will keep the welding current in the rated range. If the input voltage exceeded the permissible value, the machine would be damaged. Users should take protective measures in advance to avoid it.

d) **Make sure earth connected before operation.**

On the rear panel of welding machine, a screw for earth connecting would be found. It must be ground connected with cable whose section is bigger than 6mm^2 before operation, to avoid accidents caused by static or electricity leak.

4.4 Welding problems and resolution

The phenomenon listed below may happen due to relevant accessories used, welding material, surroundings and power supply. Please improve surroundings and avoid these problems..

- **Arc starting difficulty. Arc interruption happens easily:**

- a) Examine whether grounding wire clamp contacts with the work pieces well.
- b) Examine whether each joint has improper contact.

- **The output current fails to reach rated value:**

The deviation of power voltage from rated value may cause that the output current does not accord with adjusted value. When the power voltage is lower than rated value, the maximum output current may be lower than rated value.

- **The current can not keep stable during operation:**

This situation may relate to the following factors:

- a) The voltage of electric power network changes;
- b) Serious interference from electric power network or other electric facilities.

- **Gas vent in welds:**

- a) Examine whether the gas supply circuit has leakage.
- b) Examine whether there is sundries such as oil, dirt, rust, paint etc. on the surface.

5 Daily maintenance and checking

- **Daily maintenance**

- a) Remove dust regularly with dry compressed air. If the welding machine is used in surroundings with heavy smoke and polluted air, it is necessary to remove dust at least one time one month.
- b) The pressure of compressed air shall fall to required level to prevent damage to small components in the machine.
- c) Examine inside electric joints and ensure perfect contact (Especially plugs and sockets). Fasten the loosing joints. In case of oxidation, remove oxide film with sand paper and connect again.
- d) Prevent water from entering into the machine and prevent the machine from getting moist. If any, blow and dry. Measure the insulation with megohmmeter to make sure it is qualified to use.
- e) If the welding machine is not used for a long time, pack the machine in original package and store in dry surroundings.
- f) Every time the wire feeder operates for 300hours, grind the electrical carbon brush and clear up the armature commutator. Rinse speed reducer, apply 2# Molybdenum Disulfide lubricant to the turbine, whirlpool rod and bearing.



All the maintenance and testing must be carried out when the power supply is totally cut off. Please make sure the power is off before opening the closure.

- Daily checking

WELDING POWER SUPPLY		
Position	Checking keys	Remarks
Control panel	Switch condition of operation, transfer and installation. Test the power indicator.	
Cooling fan	Check if there is wind and the sound normal or not.	If abnormal noise and no wind, to check the inner.
Power part	When electrified, abnormal smell or not. When electrified, abnormal vibration and buzz or not. Color changing and heating or not in appearance.	
Periphery	Gas pipe broken, loosen or not. Housing and other fixed parts loosen or not.	

WELDING TORCH		
Position	Checking keys	Remarks
Loophole	If installment fixed, the front distorted	Reason for air hole.
	Attach splash or not.	Reason for burning the torch. (can use splash-proof material)
Electric hole	If installment fixed	Reason of torch screw thread damage
	Damage of its head and hole blocked nor not	Reason of unstable arc and broken arc
Wire sending tube	Check the extended size of the pipe	Have to be changed when less than 6mm, when the extended part too small, the arc will be unstable.
	Wire diameter and the tube inner diameter match or not	Reason of unstable arc, please use the suitable tube.
	Partial winding and extended	Reason of poor wires sending and unstable arc, please change.
	Block caused by dirt in the tube, and the remains of the wire plating lay.	Reason of poor wire sending and unstable arc, (use kerosene to wipe or change new one.)
	Wire sending tube broken O circle wear out	Pyrocondensation tube broken, change new tube. Change new O circle
Gas bypass	Forget to insert or the hole blocked, or different factory component.	May lead to vice (splash) because of poor gas shield, torch body get burned (arc in the torch), please handle.

WIRE SENDING MACHINE		
Position	Checking keys	Remarks
Pressing arm	If put the arm to the suitable indicating level. (notes : not to damage wire less than $\Phi 1.2\text{mm}$)	Lead to unstable arc and wire sending.
Wire lead tube	If powder or residue store up in the mouth of the tube.	Clean the residue and check the reason and solve it.
	Wire diameter and the tube inner diameter match or not	If not match, lead to unstable arc and residue.
	If the tube mouth center matches the wire wheel slot center or not.	If unmatched, lead to unstable arc and residue.
Wire wheel	Wire diameter matches the wheel's requirement If the wheel slot blocked.	Lead to unstable arc and residue, and block wire tube. Change new one of necessary.
Pressure wheel	Check the stability of its move, and wearing-out of pressed wire, the narrowing of its contact surface	Lead to unstable arc and wire sending.

CABLE		
Position	Checking keys	Remarks
Torch cable	If torch cable over bended. If the metal connecting point of mobile plug loosen.	Cause poor wire sending. Unstable arc if cable over bended.
Output cable	Wearing-out of the cable insulated material. Cable connecting head naked(insulation damage),or loosen(the end of power supply, and cable of main material connecting point.)	For life security and stable welding, adopt suitable method to check according to working place. Simple check daily Careful and in-depth check on fixed period
Input cable	If the connect of power supply input, protective equipment input and the output end fixed or not. If the security equipment cable reliably connected. If the power input end cable fixed. If the input cable is worn out and bares the conductor.	
Earth cable	If the earth cable that connects the power supply is broken and connect tightly. If the earth cable that connects the main part is broken and connects tightly.	To prevent creep age and insure security, please make daily check.

6 Trouble shooting and fault finding

Notes: The following operations must be performed by qualified electricians with valid certifications. Before maintenance, you are suggested to contact local distributor to verify qualification.

Malfunctions	Solution
The meter show nothing; Fan does not rotate; No welding output	<ul style="list-style-type: none"> ➤ Confirm the power switch is on. ➤ Power supply available for input cable. ➤ Check if the three phase commute bridge is damaged. ➤ There is malfunction occurs in the supplementary power source on control board (contact dealers).
The meter shows; Fan works normally; No welding output	<ul style="list-style-type: none"> ➤ Check if all the sockets in the machine are connected well. ➤ There is open circuit or badness of connect at the joint of output terminal. ➤ The control cable on the torch is broken off or the switch is damaged. ➤ The control circuit is damaged.(contact to dealers)
the meter shows; Fan works normally; Abnormal indicator lights.	<ul style="list-style-type: none"> ➤ It might be over-current protection, please turn off the power switch; restart the machine after the abnormal indicator light winked. ➤ It might be overheating protection, please wait for about 2-3 minutes until the machine renew without turn off the power switch. ➤ It might be multifunction of inverter circuit. (contact dealers)

Even the machine comes up with abnormal phenomenon such as welding unable, arc unstable or bad welding effect, it is still early to judge that there is malfunction on the machine.

The above-mentioned abnormal phenomenon may be caused by some reasons. For example: tight parts loosen, forgetting to switch on, wrong set up, cable broken and gas rubber pipe cracked, etc. Therefore, please test and inspect these factors before deliver it back to the factory because a large number of troubles may be easily solved probably.

For this reason, an initial diagnosis list for general welding troubles is shown below. A trouble happened may be found in the column of “Abnormal items” on up-right of the list, please inspect and maintain for the corresponding items which have “○” mark in the column according to the following list respectively.

Initial problems diagnose

Area and Item to be Inspected and Maintained	Abnormal Items	No arch Arc Starting	No Gas out	No Wire Feeding	Bad Arc Ignition	Unstable Arc	Dirt on Edge of Weld Seam	Wire Stick to Parent material	Wire Stick to Conductive Tip	Blowhole Formed
Distribution Boxes (Input Protection Devices)	<ul style="list-style-type: none"> ➤ Turn on power supply or not? ➤ Fuse burnt out ➤ Connection joint loose 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
Input Cable	<ul style="list-style-type: none"> ➤ Examine whether the cable is cut off. ➤ Connection joint loose ➤ Over heat 	<input type="radio"/>			<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
Welding Power Operation	<ul style="list-style-type: none"> ➤ Turn on power supply or not? ➤ Phase Lacking 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Gas Cylinder and Gas Regulator	<ul style="list-style-type: none"> ➤ Turn on gas supply ➤ Residual Amount of Gas in the cylinder ➤ Set value for flow ➤ Connection joint loose 					<input type="radio"/>				<input type="radio"/>
Gas supply hose (the whole line from the high pressure cylinder to the weld gun)	<ul style="list-style-type: none"> ➤ Connection joint loose ➤ Gas hose damaged 									<input type="radio"/>

Initial problems diagnose

Abnormal Items		No arch	No Gas out	No Wire Feeding	Bad Arc Ignition	Unstable Arc	Dirt on Edge of Weld Sea	Wire Stick to Parent	Wire Stick to Conductive	Blowhole Formed
Area and Item to be Inspected and Maintained										
Wire Feeding Device	<ul style="list-style-type: none"> ➤ Wire feeding wheel does not match with the diameter of wire in texturing tube ➤ Crackle on wire feeding wheel, groove blocked up or defect ➤ Too tight or loose of the handle ➤ Wire powder accumulated on the inlet of SUS pipe 			○	○	○	○	○		
Weld Gun and Cable	<ul style="list-style-type: none"> ➤ 1. Weld gun cable rolled up or over curved ➤ 2. Adaptability of conductive tip, wire feeding pipe and cable diameter Worn, blocked up or deformation, etc. 				○	○	○	○		
Body of weld gun	<ul style="list-style-type: none"> ➤ Loose connection of conductive tip, nozzle and nozzle contactor ➤ Contactor of weld gun body is not plunged in or tightened well 						○			○
Power supply cable of weld gun as well as cable of switch control	<ul style="list-style-type: none"> ➤ Break off (bending fatigue) ➤ Damaged by weighted drop 	○	○	○		○		○		

Surface Condition of Parent material and length that wire stretches out	<ul style="list-style-type: none"> ➤ Oil, dirty, rust and paint residues ➤ Too long length of wire stretched out 				○	○	○	○		○
Output Cable	<ul style="list-style-type: none"> ➤ Cross-section of cable that connects to parent material is not enough ➤ Loose connection of (+) , (-) output cable ➤ Bad electric conductivity of parent material 				○	○	○			
Lengthened Cable	<ul style="list-style-type: none"> ➤ Cross-section of cable is not enough ➤ It is rolled up or folded 				○	○	○	○		
Work Condition for Welding	<ul style="list-style-type: none"> ➤ Welding current, voltage, angle of weld gun, welding rate and wire length stretched out should be confirmed once again 				○	○	○	○	○	

Appendix I Welding parameter list

The values listed in the following table are the general specification values under standard condition.

		Plate thickness (mm)	Wire diameter (mm)	Interval (mm)	Current (A)	Voltage (V)	Welding speed (cm/min)	Wire extension (mm)	Gas flow rate (L/min)
I Square butt welding	Low welding speed	0.8	0.8,0.9	0	60~70	16~16.5	50~60	10	10
		1.0	0.8,0.9	0	75~85	17~17.5	50~60	10	10~15
		1.2	0.8,0.9	0	80~90	16~16.5	50~60	10	10~15
		1.6	0.8,0.9	0	95~105	17~18	45~50	10	10~15
		2.0	1.0,1.2	0~0.5	110~120	18~19	45~50	10	10~15
		2.3	1.0,1.2	0.5~1.0	120~130	19~19.5	45~50	10	10~15
		3.2	1.0,1.2	1.0~1.2	140~150	20~21	45~50	10~15	10~15
		4.5	1.0,1.2	1.0~1.5	160~180	22~23	45~50	15	15
			1.2	1.2~1.6	220~260	24~26	45~50	15	15~20
			1.2	1.2~1.6	220~260	24~26	45~50	15	15~20
			1.2	1.2~1.6	300~340	32~34	45~50	15	15~20
		1.2	1.2~1.6	300~340	32~34	45~50	15	15~20	
	High welding speed	0.8	0.8,0.9	0	100	17	130	10	15
		1.0	0.8,0.9	0	110	17.5	130	10	15
		1.2	0.8,0.9	0	120	18.5	130	10	15
		1.6	1.0,1.2	0	180	19.5	130	10	15
		2.0	1.0,1.2	0	200	21	100	15	15
		2.3	1.0,1.2	0	220	23	120	15	20
		3.2	1.2	0	260	26	120	15	20

		Plate thickness (mm)	Wire diameter (mm)	Current (A)	Voltage (V)	Welding speed (cm/min)	Wire extension (mm)	Gas flow rate (L/min)
Fillet butt welding	1.6	0.8,0.9	60~80	16~17	40~50	10	10	
	2.3	0.8,0.9	80~100	19~20	40~55	10	10~15	
	3.2	1.0,1.2	120~160	20~22	35~45	10~15	10~15	
	4.5	1.0,1.2	150~180	21~23	30~40	10~15	20~25	

		Plate thickness (mm)	Wire diameter (mm)	Welding gun vertical angle(°)	Current (A)	Voltage (V)	Welding speed (cm/min)	Wire extension (mm)	Gas flow rate (L/min)
Horizontal fillet butt welding T joint	Low welding speed	1.0	0.8,0.9	450	70~80	17~18	50~60	10	10~15
		1.2	0.9,1.0	450	85~90	18~19	50~60	10	10~15
		1.6	1.0,1.2	450	100~110	19~20	50~60	10	10~15
		2	1.0,1.2	450	115~125	19~20	50~60	10	10~15
		2.3	1.0,1.2	450	130~140	20~21	50~60	10	10~15
		3.2	1.0,1.2	450	150~170	21~22	45~50	15	15~20
		4.5	1.0,1.2	450	140~200	22~24	45~50	15	15~20
		6	1.2	450	230~260	24~27	45~50	20	15~20
		8.9	1.2,1.6	500	270~380	29~35	45~50	25	20~25
	12	1.2,1.6	500	400	32~36	35~40	25	20~25	
	High welding speed	1.0	0.8,0.9	450	140	19~20	160	10	15
		1.2	0.8,0.9	450	130~150	19~20	120	10	15
		1.6	1.0,1.2	450	180	22~23	120	10	15~20
		2	1.2	450	210	24	120	15	20
		2.3	1.2	450	230	25	110	20	25
		3.2	1.2	450	270	27	110	20	25
		4.5	1.2	500	290	30	80	20	25
		6	1.2	500	310	33	70	25	25
Horizontal fillet welding joint	Low welding speed	0.8	0.8,0.9	100	60~70	16~17	40~45	10	10~15
		1.2	0.8,0.9	300	80~90	18~19	45~50	10	10~15
		1.6	0.8,0.9	300	90~100	19~20	45~50	10	10~15
		2.3	0.8,0.9	470	100~130	20~21	45~50	10	10~15
			1.0,1.2	470	120~150	20~21	45~50	10	10~15
		3.2	1.0,1.2	470	150~180	20~22	35~45	10~15	20~25
		4.5	1. 2	470	200~250	24~26	45~50	10~15	20~25
	welding	2. 3~3.2	1.2	470	220	24	150	15	15
				470	300	26	250	15	15

Appendix II Circuit diagram

MIG250GN

