
MIG160/200

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This welding machine for industrial and professional use is in the conformity with IEC 60974 International Safety Standard.

Hereby we state that we provide one year of guarantee for this welding machine since the date of purchase.

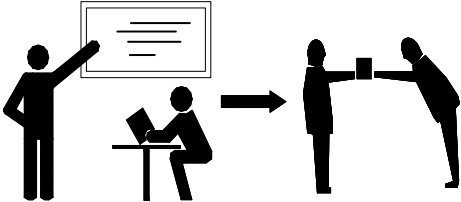

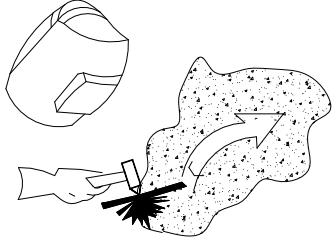
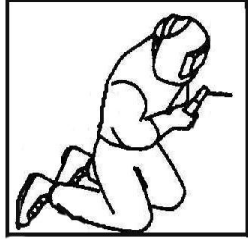
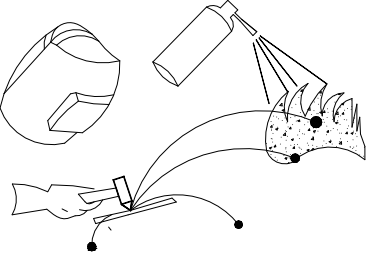

Please read and understand this instruction manual carefully before the installation and operation of this machine.

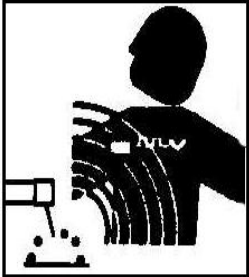
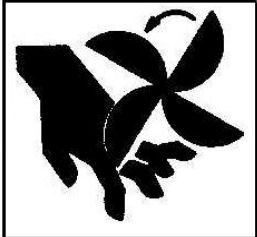

The contents of this manual may be revised without prior notice.

This instruction manual is issued on 5th May 2008.

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.

	<p>Professional training is needed before operating the machine.</p> <ul style="list-style-type: none"> • Use labor protection welding supplies authorized by national security supervision department. • The operator must be special personnel with a valid "<i>metal welding (OFC) operations</i>" operation certificate. • Cut off power before maintenance or repair.
	<p>Electric shock—may lead to serious injury or even death.</p> <ul style="list-style-type: none"> • Install earthing 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.
	<p>Smoke& gas—may be harmful to health.</p> <ul style="list-style-type: none"> • Keep the head away smoke and gas to avoid inhalation of exhaust gas from welding. • Keep the working environment in good ventilation with exhaust or ventilation equipment when welding.
	<p>Arc radiation—may damage eyes or burn skin.</p> <ul style="list-style-type: none"> • Wear Suitable welding masks and protective clothing to protect your eyes and body. • Use suitable masks or screens to protect spectators from harm.
	<p>Improper operation may cause fire or explosion.</p> <ul style="list-style-type: none"> • Welding sparks may result in a fire, so please make sure no combustible materials nearby and pay attention to fire safety. • Have a fire extinguisher nearby, and have a trained person to use it. • Airtight container welding is forbidden • Pipe thaw with this machine is forbidden.
	<p>Hot workpiece may cause severe scalding.</p> <ul style="list-style-type: none"> • Don't contact hot workpiece with bare hands. • Cooling is needed during continuous use of the welding torch.

	<p>Magnetic fields affect cardiac pacemaker.</p> <ul style="list-style-type: none"> • Pacemaker users should be away from the welding spot before medical consultation.
	<p>Moving parts may lead to personal injury.</p> <ul style="list-style-type: none"> • Keep yourself away from moving parts such as fan. • All doors, panels, covers and other protective devices should be closed and in place.
	<p>Machine fault — seek professional help when encountering any difficulties.</p> <ul style="list-style-type: none"> • Consult the relevant contents of this manual If you encounter any difficulties in installation and operation. • Contact the service center of your supplier or our company 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

- Gas shielded arc welding, MMA welding and Self Shielded arc welding are available.
- IGBT technology and unique control enhance the reliability of the welding machine.

- High duty cycle, long time welding is available.
- Closed loop feedback control, constant voltage output, workable under network voltage fluctuation within $\pm 15\%$.
- Adjustable welding voltage and circuit, excellent welding characteristics.
- Unique dynamic characteristic control circuit is used in gas shielded arc welding, stable arc, little splash, good shaping, efficient welding.
- Melting ball removing, high no-load and slow wire feeding function increase the success rate of arc starting.
- Stable current and excellent arc starting in MMA welding, and various welding rods can be used.
- Inverter frequency is 35 KHz, greatly reducing the volume and weight of the welder.
- Great reduction in metal loss obviously enhances the welding efficiency and energy saving effect.
- Switching frequency is beyond audiorange, which almost eliminates noise pollution.



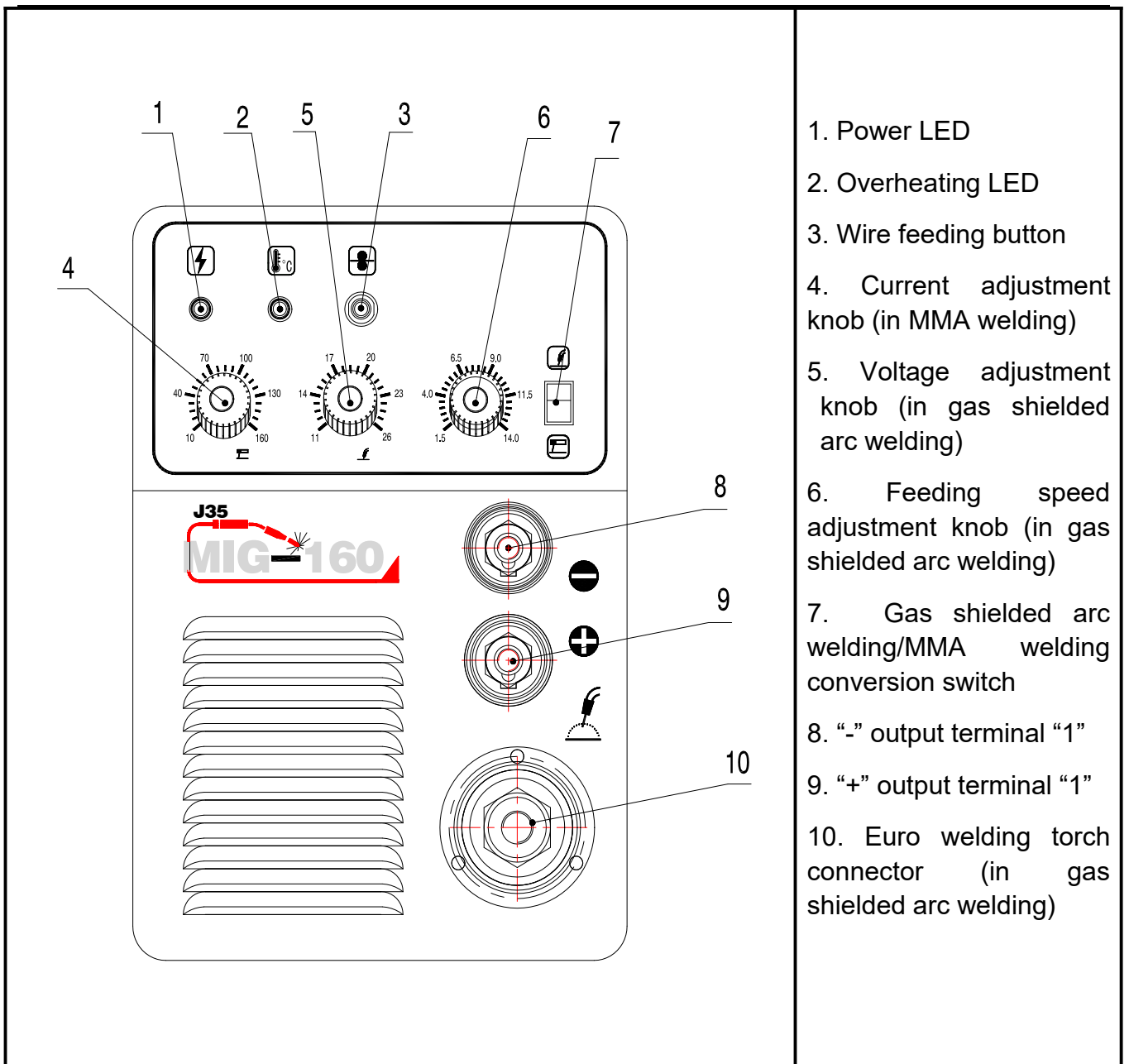
4. MAIN PARAMETER

TYPE	MIG160	MIG200
Input power voltage (V)	Single-phase AC230V $\pm 15\%$, 50/60Hz	
Rated input current (A)	22	32
Rated power capacity (KVA)	6.5	7.4
Recommended fuse capacity (A)	40	50
Current adjustment range (A) (MMA welding)	20~160	30~200
Current adjustment range (A) (Gas shielded welding)	25~160	35~200
Voltage adjustment range (V) (Gas shielded welding)	11~24	11~26
No-load voltage (V)	60	70
Feeding speed adjustment range (m/min)	2.5~13	2.5~13
Welding wire diameter (mm)	0.6-1.0	0.6-1.0
Efficiency (%)	85	85
Power factor	0.93	0.93

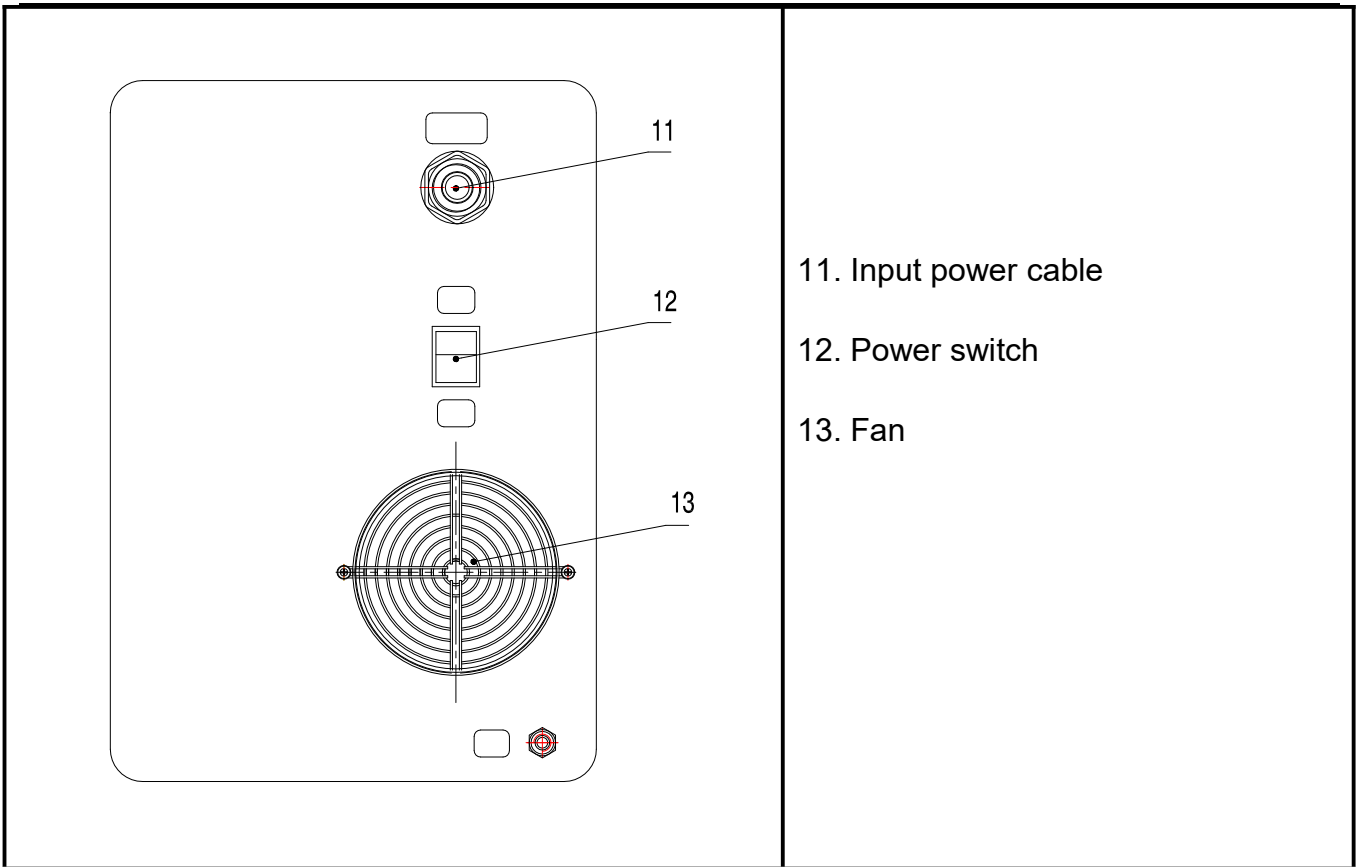
Size (mm)	480×260×450	480×260×450
Weight (Kg)	16	18

5. PANEL STRUCTURE

5.1 Front panel structure

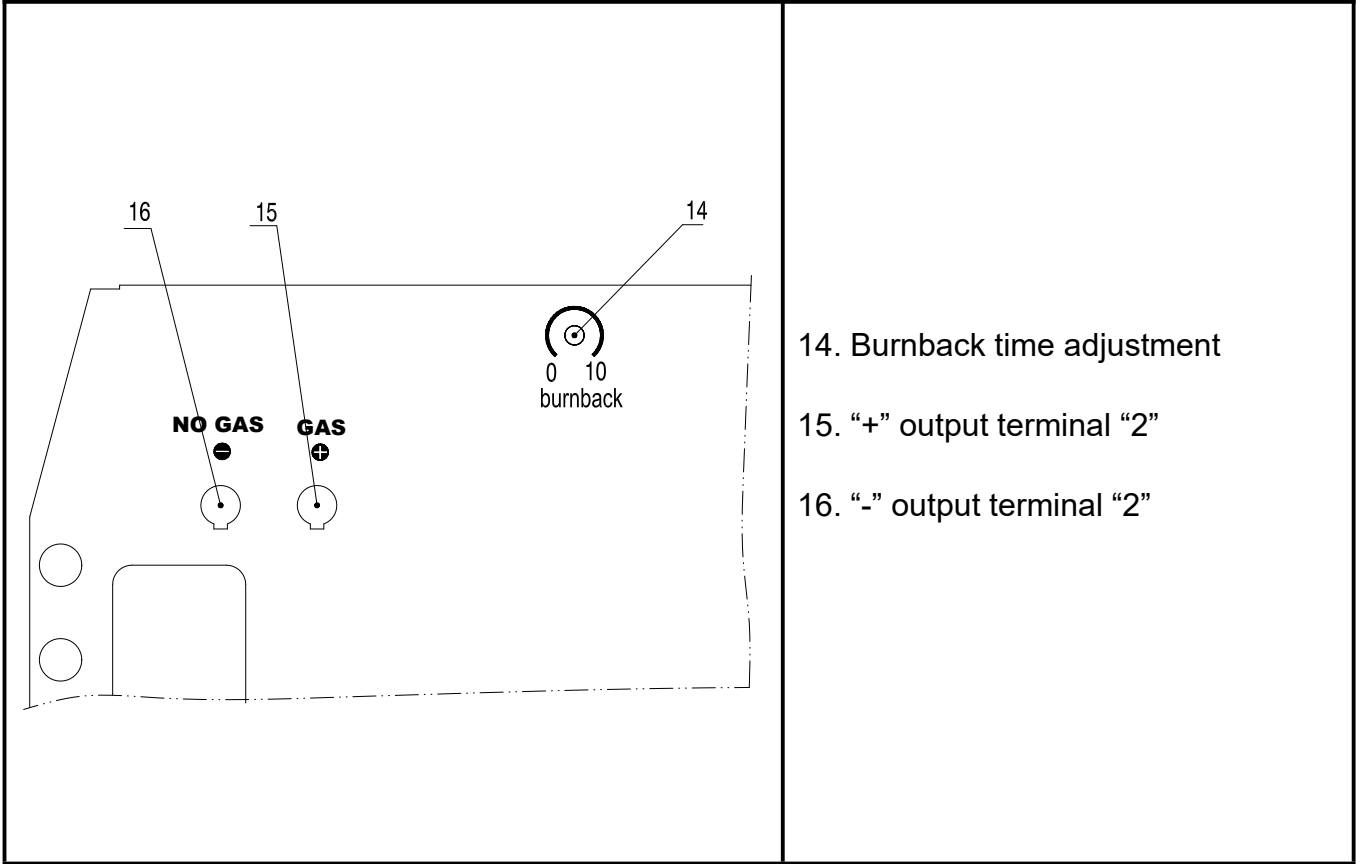


5.2 Back panel structure



- 11. Input power cable
- 12. Power switch
- 13. Fan

5.3 Clapboard structure



- 14. Burnback time adjustment
- 15. "+" output terminal "2"
- 16. "-" output terminal "2"

6. INSTLLATION & OPERATION

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- Note:**
- Please install the machine strictly according to the following steps.
 - Electric connection operation should be after turning off the power supply switch of the switch box.
 - The protection class of this machine is IP21S, so avoid using it in rain.

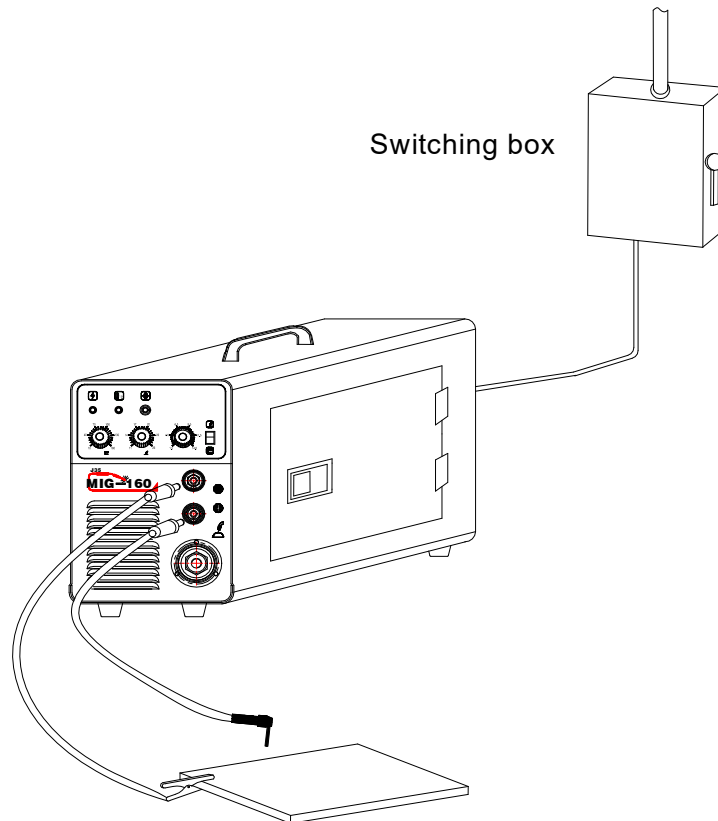
6.1 Connection of input cable

- (1) A primary power supply cable is available for this welding machine. Connect the power supply cable with required voltage. (Note: Earth the machine reliably during connection.)
- (2) The primary wire should be connected to the corresponding socket to avoid oxidization.
- (3) Use multi-meter to see whether the voltage value varies within the given range.

6.2.1 Installation of MMA welding

- (1) Two air sockets are available for this welding equipment. Connect the plug to the socket on the panel board. It is possibly damaging to both the plug and socket, if the plug and the socket are incorrectly connected.
- (2) The electrode holder cable should be connected to the negative terminal, while the work piece should be connected to the positive terminal.
- (3) Serious attention should be paid to the electrode of the wire. Generally, two modes of connection of DC welding equipment are available:
 - Positive connection: electrode holder to “-”, while work piece to “+” ;
 - Negative connection: work piece to “-”, while electrode holder to “+”.Opt the mode according to practical requirements, and incorrect connection may cause unstable arc, splash and conglutination of rod and work piece etc.
- (4) In case that minimum distance between work piece and this welding equipment is over 50m, as a consequence it spells the over-length of the secondary cable including electrode holder cable and earth cable. Therefore it is necessary to increase the diameter of cable in order to maintain and improve the performance of voltage output.


6.2.2 Installation sketch map



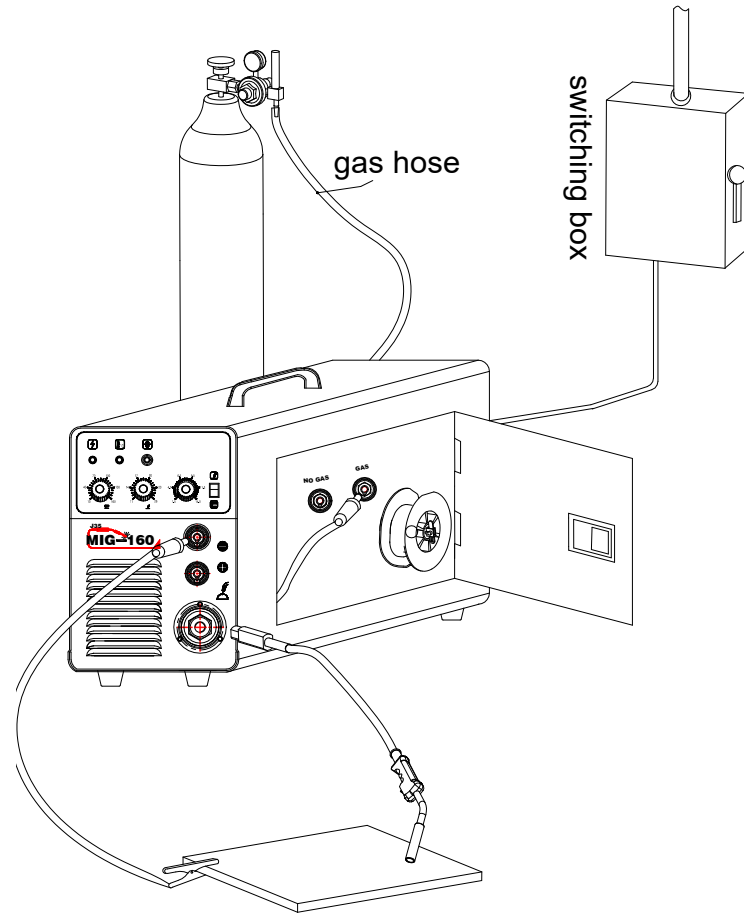
6.2.3 Operation

- (1) Turn the power switch on the back panel to “ON” position after the installation according to the above steps, the machine is started, the power LED turns on, and the fan works.
- (2) Turn the conversion switch on the front panel to “MMA” position, and adjust the welding current adjustment knob according to the workpiece thickness to get the desired welding performance.
- (3) Generally, the required welding current is listed as follows:
 $\Phi 2.5$: 70-100A; $\Phi 3.2$: 110-160A; $\Phi 4.0$: 170-220A; $\Phi 5.0$: 230-280A

6.3.1 Installation of gas shielded arc welding

- (1) Plug the welding torch into the output socket “” on the front panel, and tighten it. Thread the wire into the torch manually.
- (2) Insert the earth cable plug into the negative socket “1” on the front panel, and tighten it clockwise.
- (3) Insert the fast plug on the wire feeder into the output socket “GAS” on the clapboard, and tighten it clockwise.
- (4) Fix the welding wire coil to the rack axis on the wire feeder; make sure the hole of the wire feeding wheel matches well with the bolt on the rack axis and the welding wire diameter. Unfasten the screw on the wire-pressing wheel, and make the wire into the groove of the wire feed wheel, press the wire tightly, but not too tight, and then thread the wire into the torch. Press the “wire feeding” button to feed the wire out of the welding gun.
- (5) Tightly connect the gas hose, which come from the back of the machine to the copper nozzle of gas bottle.


6.3.2 Installation sketch map



6.3.3 Operation

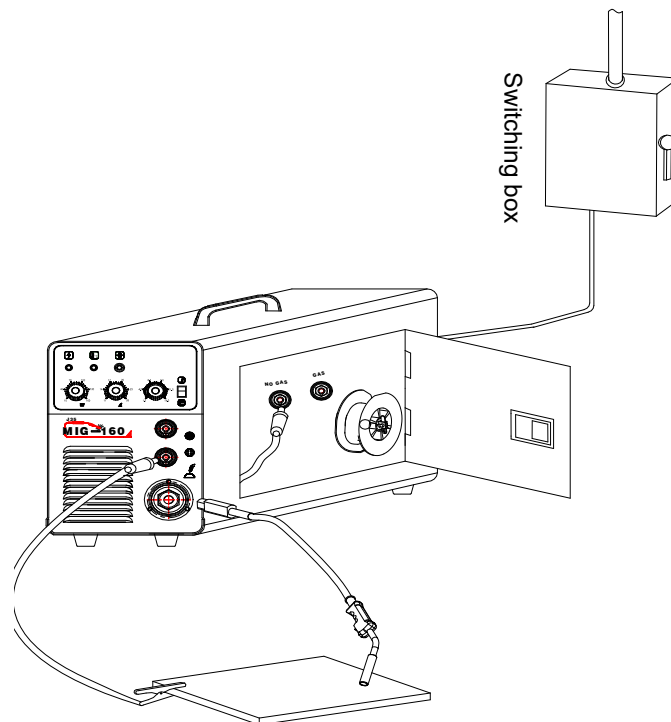
- (1) After installation according to the above steps, turn the power switch on the back panel to “ON” position, then the power LED turns on, and the fan works. Open the gas cylinder valve, and adjust the flow meter to the desired position.
- (2) Turn the conversion switch on the front panel to “Gas shielded arc welding” position, and adjust the welding voltage adjustment knob and wire feeding speed adjustment knob according to practical needs to get the desired welding voltage and welding current.
- (3) Press the welding torch switch, and welding can be carried out.
- (4) Adjust the burnback time potentiometer on the clapboard to get the desired length of welding wire stretching into the contact tip after welding.
- (5) Cut off the gas 1s after the arc is stopped.

6.4.1 Installation of self shielded arc welding

- (1) Plug the welding torch into the output socket “” on the front panel, and tighten it. Thread the wire into the torch manually.
- (2) Insert the earth cable plug into the positive socket “1” on the front panel, and tighten it clockwise.
- (3) Insert the fast plug on the wire feeder into the output socket “NO GAS” on the clapboard, and tighten it clockwise.
- (4) Fix the welding wire coil to the rack axis on the wire feeder; make sure the hole of the wire feeding wheel matches well with the bolt on the rack axis and the welding wire diameter.

Unfasten the screw on the wire-pressing wheel, and make the wire into the groove of the wire feed wheel, press the wire tightly, but not too tight, and then thread the wire into the torch. Press the " wire feeding" button to feed the wire out of the welding gun.

6.4.2 Installation sketch map



6.4.3 Operation

- (1) After installation according to the above steps, turn the power switch on the back panel to "ON" position, then the power LED turns on, and the fan works.
- (2) Turn the conversion switch on the front panel to "Gas shielded arc welding" position, and adjust the welding voltage adjustment knob and wire feeding speed adjustment knob according to practical needs to get the desired welding voltage and welding current.
- (3) Adjust the burnback time potentiometer on the clapboard to get the desired length of welding wire stretching into the contact tip after welding.
- (4) Press the welding torch switch, and welding can be carried out.

7. CAUTION

7.1 Working Environment

- (1) Welding should be carried out in a relatively dry environment with its humidity of 90% or less.
- (2) The temperature of the working environment should be within -10°C to 40°C.
- (3) Avoid welding in the open air unless sheltered from sunlight and rain, and never let rain or water infiltrate the machine.
- (4) Avoid welding in dusty area or environment with corrosive chemical gas.
- (5) Avoid gas shielded arc welding in environment with strong airflow.

7.2 Good Ventilation

This welding machine has so big welding current when working that nature ventilation can not meet the cooling demand, while the inner fan enables the machine to work steadily by its effective cooling. Operator should make sure the louvers are 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 service life of the machine.

7.3 No Overvoltage

If the voltage exceeds the permitted limit, the machine will be damaged, so pay attention to the changes in voltage. Once overvoltage occurs, stop welding and switch off the power.

7.4 No Overload

Remember to observe the max load current at any moment (refer to the optioned duty cycle). Make sure that the welding current should not exceed the max load current. Over-load current could obviously shorten the welding equipment's life, or even burn the equipment.

7.5 Overheating Protection

Overheating protection appears while the machine is of overload status because of continuous welding for a long time, and a sudden halt of welding occurs. In this case, it is unnecessary to restart the machine, but just wait for the overheating LED to go out, and welding can be recovered.

8. MAINTENANCE



WARNING: The following operation requires sufficient professional knowledge on electric aspect and comprehensive security 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 before uncovering the welding machine.

1. Check periodically whether inner circuit connection is ok (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 in environment with heavy smoke and pollution, the machine should be cleaned daily. The pressure of compressed air should be at a proper level lest the small parts inside the machine be damaged.
4. Avoid rain, water and vapor infiltrate the machine. If there is, dry it and check the insulation with a megger (including that between the connections and that between the connection and the case). Only when there is no abnormal phenomena can welding be continued.
5. Check periodically whether the insulation skin of all cables are perfect. If there is any dilapidation, wrap it or replace it.
6. Check periodically whether the gas hose has any cracks. If any, get them replaced.
7. Put the machine into the original packing in dry location if it is not to be used for a long time.

9. TROUBLESHOOTING



WARNING: The following operation requires sufficient professional knowledge on electric aspect and comprehensive security 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 before uncovering the welding machine.

Common Malfunction Analysis and Solution

Phenomena	Solution
1. The overheating LED flashes.	<ol style="list-style-type: none"> 1. Check the working current and the working time, and use the machine according to the parameters in this manual. 2. Check the running situation of the fan. If the fan doesn't work, check if there is power supply 230V: If the power supply is ok, check the fan; if the power supply is abnormal, check the power cable. 3. Replace the thermal switch if it is damaged.
2. The power LED is off, and there is no current output.	<ol style="list-style-type: none"> 1. Check if the fan works. If not, the power cable is not in good connection. 2. If the fan works, the control PCB PK-64-A1 inside the machine fails.
3. No response when pressing welding torch switch; the protection LED is off.	<ol style="list-style-type: none"> 1. Check if the welding torch switch is in good connection. 2. Check the connection condition of the welding torch and the Euro socket and check the control jack of the Euro socket. 3. The control PCB PK-64-A1 inside the machine fails.
4. Press the welding torch switch to input gas, but no current output, and the protection LED is off.	<ol style="list-style-type: none"> 1. Check if the power cable connecting the workpiece is in good connection. 2. Check if the position where the fast socket inserting the fast plug is correct. 3. Check if the wire feeder is in good connection. 4. Check if the welding torch is damaged. 5. The control PCB PK-63-A2 inside the machine fails.
5. Press the welding torch switch to input gas, there is current output, but the wire feeder doesn't work.	<ol style="list-style-type: none"> 1. Check if the wire feeder is blocked or damaged. 2. Check if the contact tip of the welding torch is damaged or blocked. 3. The control PCB PK-64-A1 fails.

<p>6. Press the welding torch switch, welding can be carried out, but the voltage can not be adjusted.</p>	<ol style="list-style-type: none"> 1. Check if the voltage feedback cable inside the machine is ok. 2. The control PCB PK-63-A2 inside the machine fails.
<p>7. Welding current is unstable.</p>	<ol style="list-style-type: none"> 1. Check the pressure of the wire feeder pole is appropriate. 2. Check if the wire feed wheel matches the welding wire. 3. Check if the contact tip is badly abraded. If it is, replace it and tighten it. 4. Check the quality of the welding wire. 5. Check if the welding torch cable is too winding. 6. Check if the metal connection part of the fast plug is loose.
<p>8. The weld bead is not well protected.</p>	<ol style="list-style-type: none"> 1. Do not remove the welding torch as soon as the welding stops. Thus the shielded gas can protect the hot weld bead. 2. Prolong the post-flow time, or contact our company.

Note: This machine is in continuous improvement, so other parts may be different except the function and operation. Your understanding would be greatly appreciated.