PoWer MIG Series

GeKaMac®

Power MIG 200 SYN

Users Manual

Please Read and Understand This Manual
Before Operating The Welding Machine

www.gedikwelding.com

This machine is for internal use only.

It complies with the WEEE Directive.

This machine has been designed in accordance with the EN 60974-1 and EN 60974-10 standards.

The machine is safe when installation, operation, and maintenance are performed in accordance with the user manual and regulations. The operator and machine owner are responsible for adhering to safety rules.

Gedik Kaynak San. Ve Tic. A.Ş. assumes no responsibility for safety or CE compliance if any modifications are made to the machine or if safety rules are not followed.

CE

This Class A equipment is not suitable for use in homes and similar residential areas where the power supply is provided by the low-voltage public electricity network.

This machine is not household waste and cannot be disposed of in the trash.

When the machine reaches the end of its service life or becomes obsolete, it must be disposed of in accordance with regulations.

COMPLIES WITH THE WEEE DIRECTIVE.

Eco Design Statement

This machine has been designed and manufactured in accordance with the requirements of the 2009/125/EC Eco Design Directive concerning the environmentally friendly design of energy-related products.

Accordingly, machines with an idle mode are as follows.

	Idle Mode
MMA	**X**
MIG	√
TIG	√
Plazma	√
SAW	**Out of Scope**

Efficiency measurements should be conducted only on the power unit. The water cooling system should be disabled. For more information on measurements and machine settings, Gedik Kaynak Sanayi ve Ticaret A.Ş. should be consulted.

Dear Customer

This instruction manual will help you get to know your new machine. Read the manual carefully and you will soon be familiar with all the many great features of your new product. Meanwhile, please remember well safety rules and operate as instruction.

If you treat your product carefully, this definitely helps to prolong its enduring quality and reliability things which are both essential prerequisites for getting outstanding results.

Production specification may change without advance notice.

The model you purchase is for:

☐ PoWer MIG 200 SYN

Important:

Please take special note of safety rules and operate as instruction in case of damage and serious injury.

AT UYGUNLUK BEYANI

EU DECLARATION OF CONFORMITY

Bu uygunluk beyanı yalnızca imalatçının sorumluluğu altında düzenlenir.

This declaration of conformity is issued under the sole responsibility of the manufacturer.

İstanbul, Turkey, 08.03.2024

İmalatçı / Manufacturer

GEDİK KAYNAK SANAYİ ve TİCARET A.Ş.

Ankara Cad. No.306 Seyhli Pendik ISTANBUL TURKIYE

Ürün / Product	ARC WELDING MACHINE
Marka-Model / Brand- Model	POWER MIG 200 SYN

Yukarıda tanımlanan beyanın nesnesi ilgili uyumlaştırılmış AB mevzuatı ile uyumludur.

The object of the declaration described above, is in conformity with the relevant union harmonisation legislation.

Direktifler / Directives	2014/30/EU & 2014/35/EU

Uyumlaştırılmış standartlar ve uygunluğun deklare edilmesiyle ilişkili diğer referanslar.

References to the relevant harmonised standarts used and references to the other technical specifications in relation to which conformity is declared.

EN 60974-1:2018+A1:2019
EN 60974-10:2014+A1:2015
EN 60974-5:2019

Bu ekipman, talimatlara uygun kurulduğunda, bakımı yapıldığında ve kullanıldığında belirtilen standartlara uygundur. Makine üzerinde bir değişiklik yapıldığında veya yanlış kullanımda deklarasyon geçersiz olur.

The equipment is in compliance with pertinent legislation when installed, utilized, and maintained in accordance with the enclosed instructions. This declaration will be invalid under any modification or improper use.

İmalatçı Adına imzalayan / Signed for and on behalf of:

Hatice Özel, Equipment Business Unit Director

Safety Rules

“Danger” indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

“Warning!” indicates a possible hazardous situation which, if not avoided, could result in death or serious injury. The possible hazards are explained in the text.

“Caution” indicates a possible hazardous situation which, if not avoided, may result in slight or moderate injury.

“Note!” indicates a situation which implies a risk of impaired welding result and damage to the equipment.

Utilisation for intended purpose only

- The machine may only be used for jobs as defined by the “Intended purpose”.
- Utilisation for any other purpose, or in any other manner, shall be deemed to be “not in accordance with the intended purpose”. The manufacturer shall not be liable for any damage resulting from such improper use.

Safety signs

- All the safety instructions and danger warnings on the machine must be kept in legible condition, not removed, not be covered, pasted or painted cover.

Safety inspection

- The owner/operator is obliged to perform safety inspection at regular intervals.
- The manufacturer also recommends every 3-6 months for regular maintenance of power sources.

Electric shock can kill

- Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In MIG/MAG welding, the wire, drive rollers, wire feed housing and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.
- Do not touch live electrical parts of the welding circuit, electrodes and wires with your bare skin or wet clothing.
- The operator must wear dry hole-free insulating welding gloves and body protection while performs the welding.
- Insulate yourself from work and ground using dry insulating protection which is large enough to prevent you full area of physical contact with the work or ground.
- Connect the primary input cable according to rules. Disconnect input power or stop machine before installing or maintenance.
- If welding must be performed under electrically hazardous conditions as follow: in damp locations or wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; or in occasion when there is a high risk of unavoidable or accidental contact with the work piece or ground. Must use additional safety precautions: semiautomatic DC constant voltage (wire) welder, DC manual (Stick) welder and AC welder with reduced open-load voltage.
- Maintain the electrode holder, ground clamp, welding cable and welding machine in good, safe operating condition. Replace damaged part immediately.

Electric and magnetic fields (EMF)may be dangerous

- If electromagnetic interference is found to be occurring, the operator is obliged to examine any possible electromagnetic problems that may occur on equipment as follow:

- minas, signal and data-transmission leads
- IT and telecoms equipment
- measurement and calibration devices
- Wearers of pacemakers

- Measures for minimizing or preventing EMC problems:

– Mains supply

If electromagnetic interference still occurs, despite the fact that the mains connection in accordance with the regulations, take additional measures

– Welding cables

Keep these as short as possible

Connect the work cable to the work piece as close as possible to the area being welded.

Lay tem well away from other cables.

Do not place your body between your electrode and work cables.

– Equipotential bonding

– Workpiece grounding (earthing)

- Shielding

Shield the entire welding equipment and other equipment nearby.

ARC rays can burn.

- Visible and invisible rays can burn eyes and skin.
- Wear an approved welding helmet or suitable clothing made from durable flame-resistant material (leather, heavy cotton, or wool) to protect your eyes and skin from arc rays and sparks when welding or watching.
- Use protective screens or barriers to protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or material.

Fumes and gases can be dangerous

- Welding may produce fumes and gases, breathing these fumes and gases can be hazardous to your health.
- When welding, keep your head out of the fume. If inside, ventilate the area at the arc to keep fumes and gases away from the breathing zone. If ventilation is not good, wear an approved air-supplied respirator.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator.
- Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

Welding and cutting sparks can cause fire or explosion.

- When not welding, make sure the electrode circuit is not touching the work or ground. Accidental contact can cause sparks, explosion, overheating, or fire. Make sure the area is safe before doing any welding.
- Welding and cutting on closed containers, such as tanks, drums, or containers, can cause them to blow up. Make sure proper steps have been taken.
- When pressure gas is used at the work site, special precautions are required to prevent hazardous situations.
- Connect work cable to the work as close to the welding zone as practical to prevent welding current from passing too long and creating fire hazards or overheat.
- Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- Be attention that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas and start a fire. Remove fire hazardous from the welding area, if not possible, cover them thoroughly. Do not weld where flying sparks can strike flammable material and where the atmosphere may contain flammable dust, gas, or liquid vapors (such as gasoline).
- Protect yourself and others from flying sparks and hot metal. Remove any combustibles from operator before perform any welding.
- Keep a fire extinguisher readily available.
- Empty containers, tanks, drums, or pipes which have combustibles before perform welding.

- Remove stick electrode from electrode holder or cut off welding wire at contact tip when not in use.

Apply correct fuses or circuit breakers. Do not oversize or bypass them.

Cylinder can explode if damaged.

- Pressure gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.
- Cylinders should be located away from areas where they may be struck or subjected to physical damage. Use proper equipment, procedures, and sufficient number of persons to lift and move cylinders.
- Always install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling over or tipping.
- Keep a safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- No touching cylinder by welding electrode, electrode holder or any other electrically “hot” parts. Do not drape welding cables or welding torches over a gas cylinder.
- Use only correct compressed gas cylinders, regulators, hoses, and fittings designed for the process used; maintain them and associated parts in good condition.
- Use only compressed gas cylinders containing the correct shielding gas for the and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- Open the cylinder valve slowly and keep your head and face away from the cylinder valve outlet.

Valve protection caps should be kept in place over valve expect when the cylinder is in use or connected for use.

Hot parts can burn

- Do not touch hot parts with bare hand or skin.
- Ensure equipment is cooled down before perform any work.
- If touching hot parts is needed, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

Flying metal or dirt can injure eyes

- When welding, chipping, wire brushing, and grinding can cause sparks and flying metal. It can hurt your eyes.
- Remember wear appropriate safety glasses with side shields when in welding zone, even under your welding helmet.

Noise can damage hearing

- Noise from some processes or equipment can damage hearing.

Remember wear approved ear protection to protect ears if noise level is high.

Moving parts can injure

- Stay away from moving parts such as fans.
- Stay away from pinch points such as drive rolls.

- Keep all doors, panels, covers, and guards closed and securely in place.
- Have only qualified persons remove doors, panels, covers, or guards for servicing and maintenance.
- Reinstall doors, panels, covers, or guards when servicing and maintenance is finished and before reconnecting input power.

Overuse can cause overheating

- Use machine follow duty cycle. Reduce current or reduce duty cycle before starting to weld again.
- Allow cooling period.

Do not block or filter airflow to unit.

Safety markings

Equipment with CE-markings fulfils the basic requirements of the Low-Voltage and Electromagnetic Compatibility Guideline (e.g. relevant product standards according to EN 60974).

Safety markings

Equipment with CCC markings meets the requirements of implementations rules for China compulsory certification（e.g. relevant product standards according to GB/T 15579）.

Safety markings

CSA marked equipment meets the requirements of the North American market safety certification implementation rules (e.g. relevant product standards according to CAN/CSA-E60974,ANSI/IEC 60974)

Contents

1-GENERAL REMARKS

1-1 Features

PoWer MIG 200 SYN multi function inverter welding machine can use for MIG/MAG and flux cored welding. Also it possesses STICK, Lift TIG function. This series welding machine enjoys reasonable static characteristic and sound dynamic characteristic.

Features and benefits:

- Inverter technology ensures stable welding voltage when network voltage fluctuates and arc length changes. Arc has high self-adjustment ability, welding process is stable.
- Easy to operate, fast welding, and easy arc-starting with minimal spatter.
- Synergic adjustment function.
- Deep penetration, minimal spatter, low welding distortion, excellent welding seam.
- Current and voltage are continuously adjustable with wide adjustment range.
- Energy-saving, low expense.
- Built-in wire feeder, 5kg(PoWer MIG 200 SYN) wire spool, 15kg(PoWer MIG 200 SYN) wire spool,small size, light weight, more portable, convenient to use.

1-2 Functional principle

This series welding machine applies HF inverter technology. 1- phase input volt is rectified by rectifier, inverted into HF AC, reduced by HF transformer, rectified and filtered by HF rectifier, then output DC power suitable for welding. After this process, the welding machine's dynamical responsive speed has been greatly increased, so the welding machine size and weight are reduced noticeably. The schematic diagram is as shown in Fig. 1-2-1:

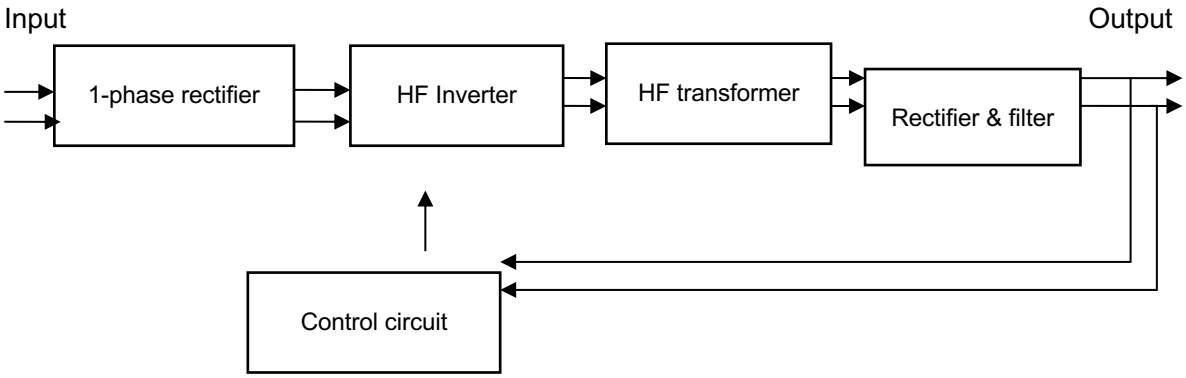


Fig. 1-2-1: Schematic diagram

1-3 Output characteristics

Please refer to Fig. 1-3-1 for output characteristics.

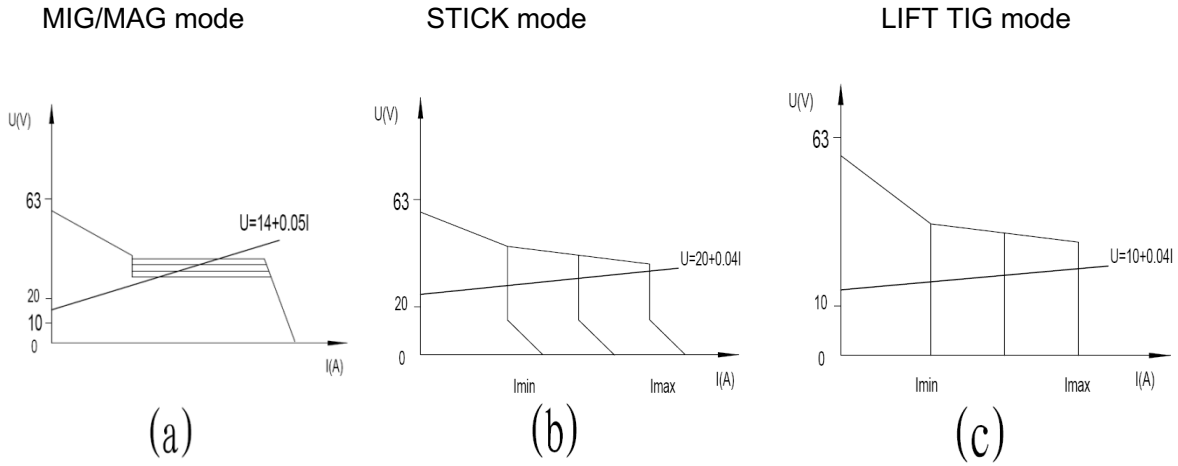
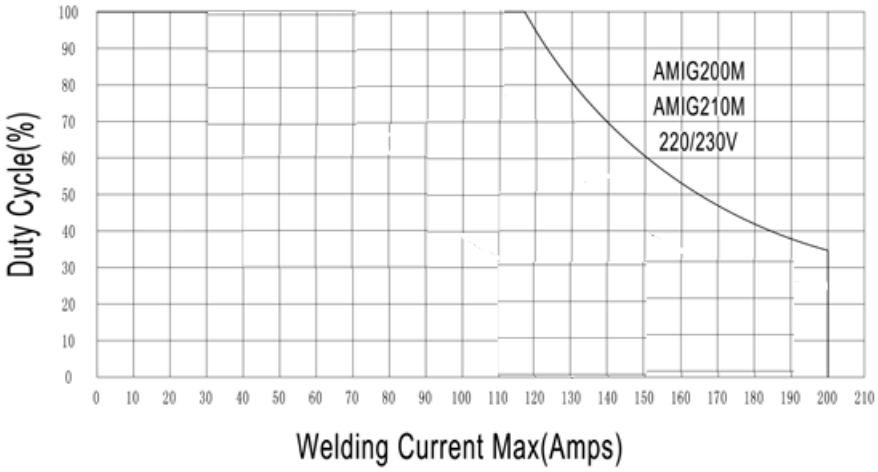


Fig. 1-3-1: Output characteristics

1-4 Duty cycle

Duty cycle is percentage of 10 minutes that a machine can weld at rated load without overheating. If overheats, thermostat(s) will close, output stops. Wait for fifteen minutes for the machine to cool down. Reduce amperage or duty cycle before welding.

NOTE! Exceeding duty cycle can damage unit and void warranty.



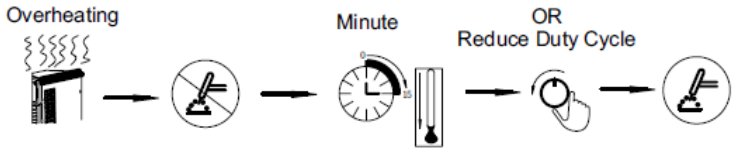


Fig. 1-4-1: Duty cycle

1-5 Applications

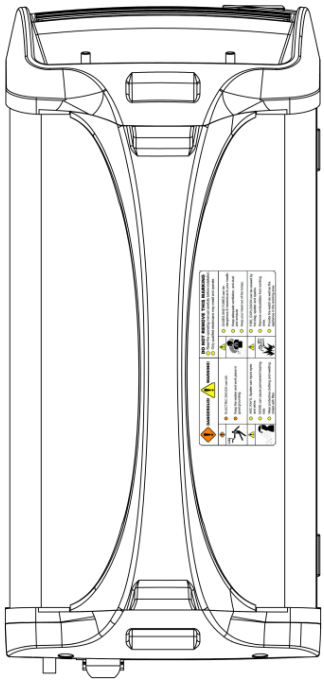
This series power source can use for carbon steel, stainless steel, aluminum and al-mg alloy welding with solid wire (Φ0.6, Φ0.8, Φ1.0mm) and flux-cored wire (Φ0.8, Φ1.0mm).

The power source is designed for the following recommend areas:

- Automobile
- Steel door and window
- Furniture
- Decoration
- Fitness equipment manufacture
- Maintenance and repair

1-6 Warning label

The warning label is affixed onto the top of the power source, and it must not be removed or painted over.



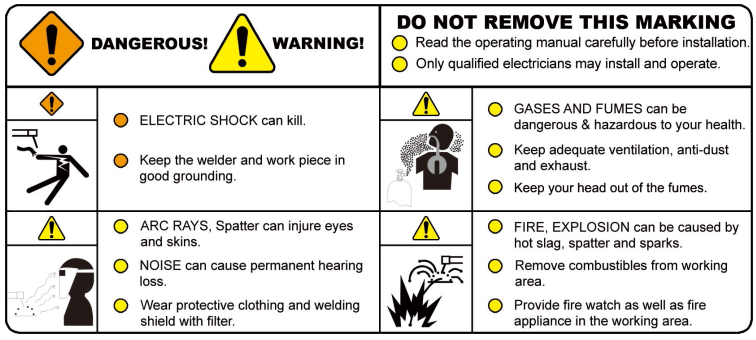


Fig. 1-6-1: Warning label

2-VERSIONS BRIEFS

Professional welding of special materials requires special welding parameters. Different models of the power sources are matched to different welding.

- PoWer MIG 200 SYN

It is multi function inverter welding machine, can use for MIG/MAG, FCAW-S, STICK and Lift TIG function. Built-in wire feeder with 5kg wire spool, closed type, small size, light weight and easy to start arc, enjoy stable arc length, pretty welding seam formation and welding current continuous adjustment capability. Also we can provide external 15kg wire spool together with tractor if we get your requirements.

3-BEFORE COMMISSIONING

 **Warning!** Operating the equipment incorrectly can cause serious injury and damage. Do not use the functions described here until you have read and completely understood the safety rules.

3-1 Utilization for intended purpose only

The power source may only be used for MIG/MAG, FCAW-S, STICK and Lift TIG. Utilisation for any other purpose, or in any other manner, shall be deemed to be “not in accordance with the intended purpose”. The manufacturer shall not be liable for any damage resulting from such improper use.

Utilisation in accordance with the “intended purpose” also comprises:

- following all the instructions given in this manual

- performing all stipulated inspection and servicing work

3-2 Machines set-up regulations

According to test, protection degree of this power source is IP21S (optional IP23S). However, the internal key components must be protected from direct soaking.

 **Warning!** A machine that topples over or falls can easily cause harm to people. Please firmly install the machine on a stable place.

The venting duct is very important for safety protections. When choosing the machine location, make sure it is possible for the cooling air to freely enter and exit through the louvers on the front and back of machine. Any electro conductive metallic dust like drillings must not be allowed to get sucked into the machine.

3-3 Power source connection

- The power source is designed to run on the voltage given on the name plate;

- The mains cables and plugs must be mounted in accordance with the relevant technical standards;

- The power supply sockets that come with power source are designed to use strictly according to the marked voltages.

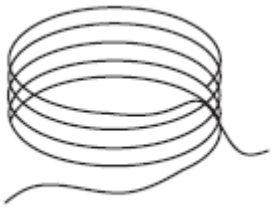
Note! Inadequately dimensioned electrical installations can lead to serious damage. The mains lead, and its fuse protection, must be dimensioned in accordance with the local power supply. The technical data shown on the nameplate shall apply.

3-4 Welding cables instruction

When welding, please pay attention to the followings:

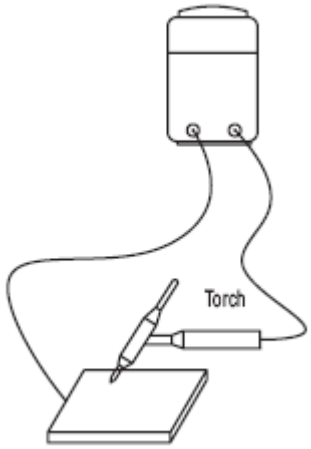
a. The welding cables should be kept as short as possible;

b. If extended cable is used, please do as shown in Fig. 3-4-1.



Wrong

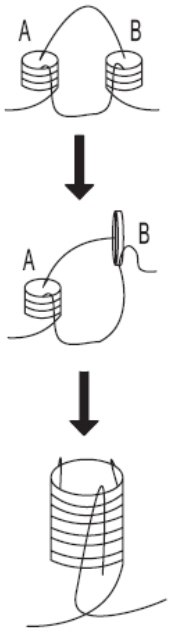
Coil the excess ground cable and welding cable in same direction respectively.



Correct

Straighten the ground cable and welding cable and make them close to each other.

Bundle the ground cable and welding cable together, running the wires close to the



Correct

When the excess cables are only be used by rolling up, coiling the cables to two windings in reverse direction and overlap them.

The number of turns for A is same as the number of turns for B.

Handle the welding cable and ground cable according to the above-mentioned method.

Fig. 3-4-1: Welding cables instruction

4- PoWer MIG 200 SYN

4-1 System components

This series of machines can be equipped with many different accessories and can be used in various special sites with different configurations.

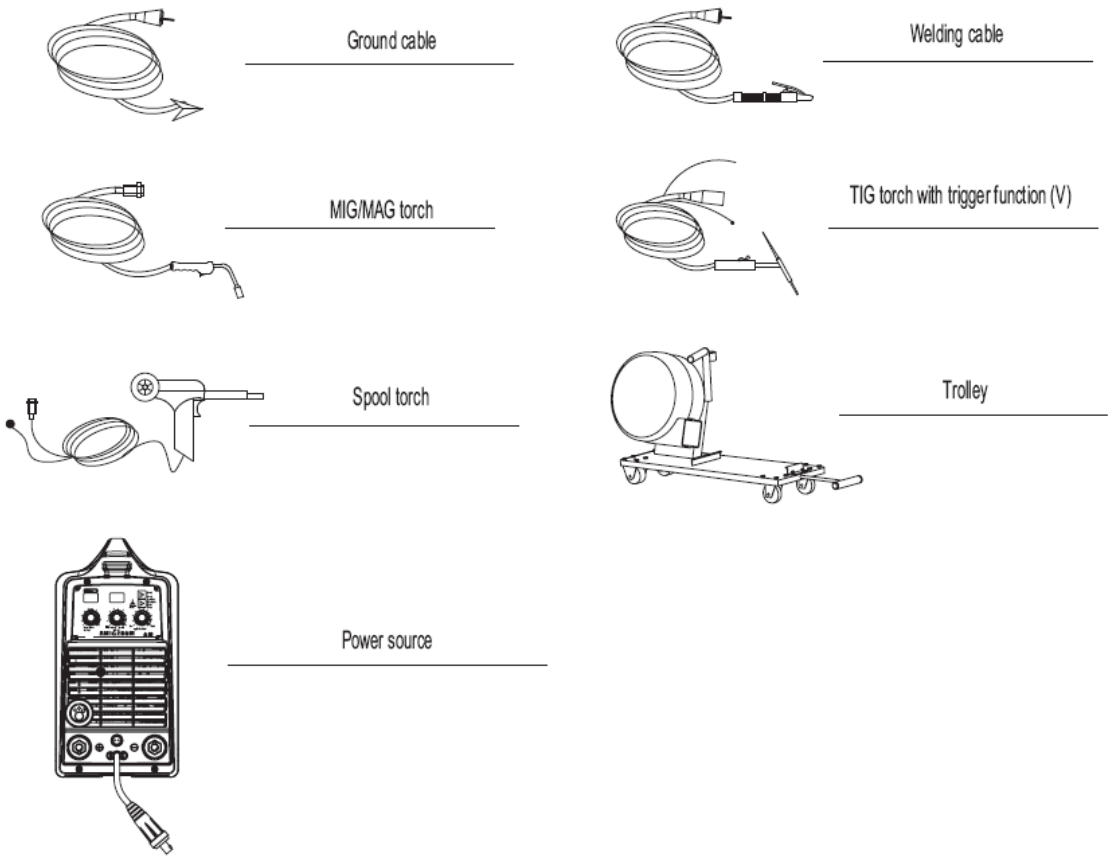


Fig. 4-1-1: System components

4-2 Basic equipments for welding

Basic equipments are needed for normal welding. Below are the lists:

MIG/MAG

- Power source
- Ground cable
- MIG/MAG welding torch
- CO2 gas regulator, gas hose, gas cylinder (to supply the machine with shielding gas)

FCAW-S

- Power source
- Ground cable
- MIG/MAG welding torch

STICK

- Power source
- Ground cable
- Electrode holder
- Electrode

Lift TIG

- Power source
- Ground cable
- TIG torch
- Gas regulator, gas hose, gas cylinder (to supply the machine with shielding gas)

4-3 Interface

Front panel

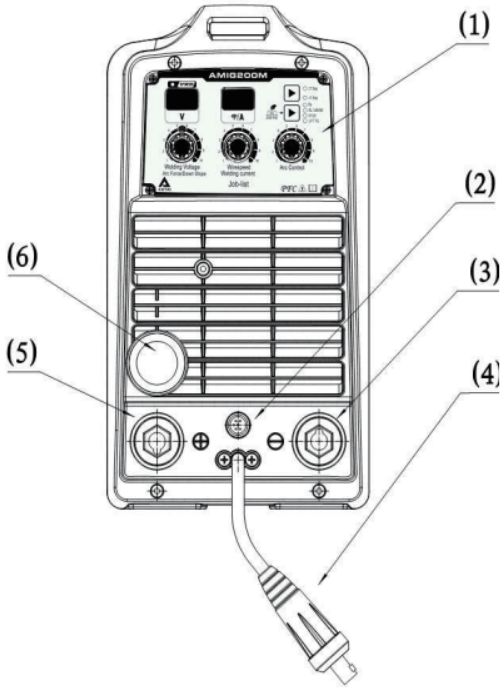


Fig. 4-3-1: Front panel

1) Control panel

2) Control socket

3) Welding machine output terminal (-)

MIG/MAG, STICK: connect with work piece via ground cable;

FCAW-S/Simple TIG: connect with welding torch.

4) Polarity conversion plug

It is used to change polarity (positive and negative) of welding torch.

5) Welding machine output terminal (+)

MIG/MAG: connect with welding torch;

FCAW-S/Simple TIG: connect with work piece via ground cable;

STICK: connect with electrode holder.

6) Torch connector

Euro-type connector, connect to the MIG torch.

Rear panel

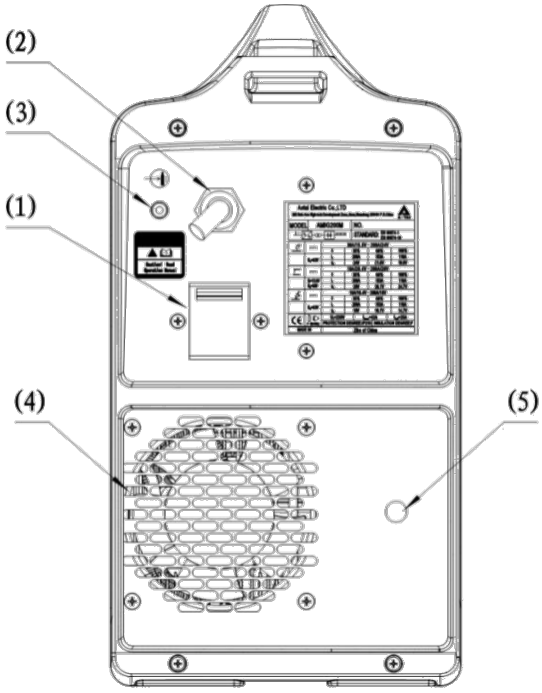


Fig. 4-3-2: Rear panel

1. Main circuit breaker

Main circuit breaker for one phase AC power supply.

Turn on this switch (on the position: “ON”), then displayers on control panel light up, and the fan

runs.

2. Power supply cable

The mixed-colored wire must be firmly grounded; the rest 2 wires connect to one phase AC power supply.

3. Gas inlet

Connect to gas regulator with gas hose (MIG/MAG ONLY).

4. Fan

Cool down the heat components inside welding machine.

5. Wire inlet of external wire spool

It is used for feeding wire from external wire spool to wire feeding system.

Side panel

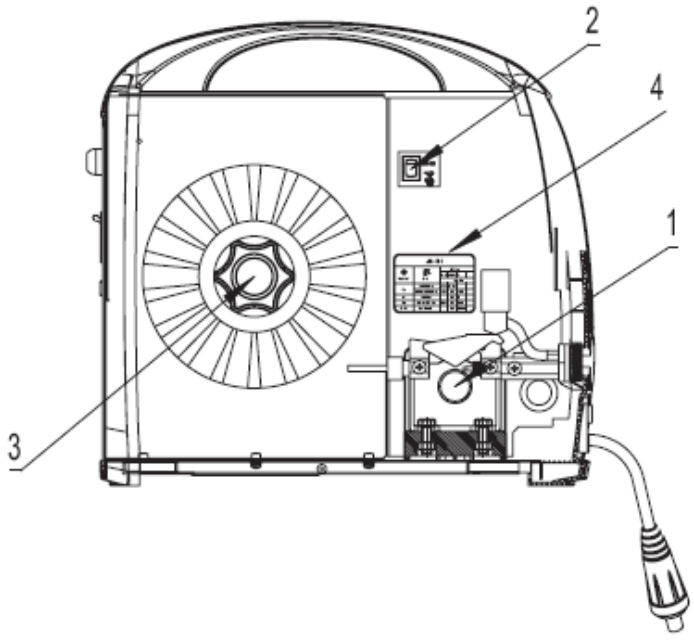


Fig. 4-3-4: Side panel

1. Wire feeding system

Single drive wire feeder, can weld solid wire and flux cored wire;

Solid wire: V type wire roller, wire diameter Φ0.6, Φ0.8, Φ1.0;

U type wire roller, wire diameter Φ0.8, Φ1.0, Φ1.2;

Flux cored wire: knurl type wire roller, wire diameter Φ0.8, Φ1.0.

2. Wire pushing/wire pulling selection switch

In wire pushing, wire feeder power supply will provide power to wire feeding system inside of welding machine;

In wire pulling, wire feeder power supply will provide power to spool torch by front panel control socket. Wire pulling torch is Euro type connector.

3. Wire spool

Suitable for diameter 100mm, 200mm wire spool (PoWer MIG 200 SYN).

4. Job list label

JOB codes corresponding to different welding materials, please see 4-5 Job list for specific operations.

4-4 Control panel

Note! You may find that your machine has certain functions or some parameters that are not described in this operating manual. Also, certain illustrations may be very slightly different from the actual controls on your machine. However, these controls function in exactly the same way.

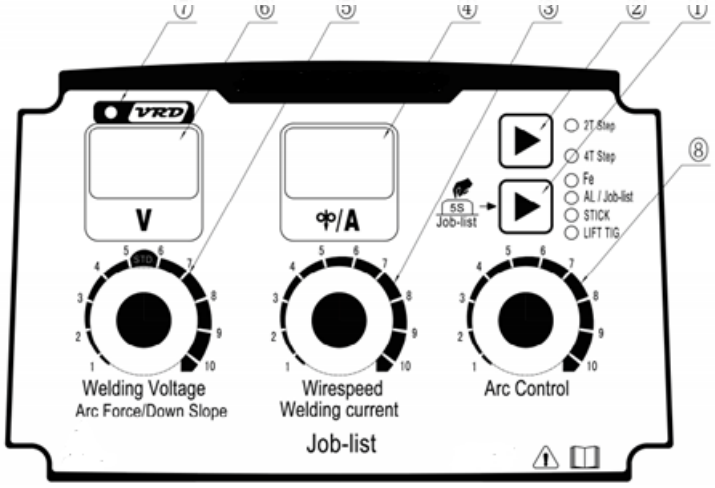


Fig. 4-4-1: Control panel

1. Welding mode selection button

Change welding modes between Fe/AL/JOB LIST/Synergic MIG/ STICK/ LIFT TIG, corresponding indicator lights up;

Fe/Manual MIG: Fe mode: Non-expert library gas shielded welding mode, manual setting of welding parameters, welding of carbon steel, stainless steel and self-shielded flux cored wire;

AL / Job-list /synergic MIG : MIG expert library mode, the factory setting is aluminum Φ 1.2 welding material job code; in this mode, other welding material job codes can be called, refer to 4-5 Job list, and welding of carbon steel, aluminum, stainless steel and self-shielded flux cored wire can be performed ; When the 232-236 code of the expert library code is selected, it has a pulse wire feeding function.

STICK: SMAW welding mode;

LIFT TIG: Lift TIG welding mode.

2. 2T Step/4T Step button (Fe-Manual MIG/ AL-Synergic MIG / Lift TIG only)

2T Step mode suits for short welding seam welding: on Manual MIG/ Synergic MIG mode, press torch trigger to start normal welding, release trigger to stop welding. On Lift TIG mode, press torch trigger to start normal welding, release trigger to enter into down slope time mode, and welding machine will stop welding when down slope time is finished.

4T Step mode suits for long welding seam welding: press torch trigger to start arc and release trigger to weld. On Manual MIG/ Synergic MIG mode, re-press torch trigger, welding machine continues welding, release torch trigger, then welding stops. On Lift TIG mode, re-press torch trigger to enter into down slope time mode, and welding machine will stop welding when down slope time is finished. If release torch trigger before down slope time is finished, welding stops.

Manual MIG/ Synergic MIG:

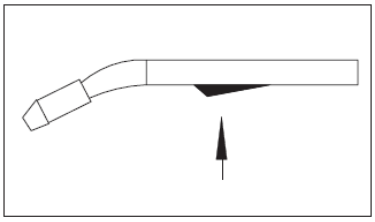


Fig. 4-4-2: Press torch trigger

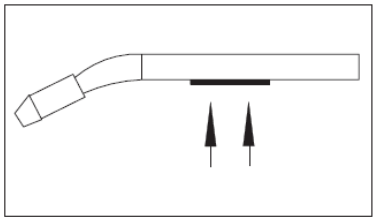


Fig. 4-4-3: Hold torch trigger

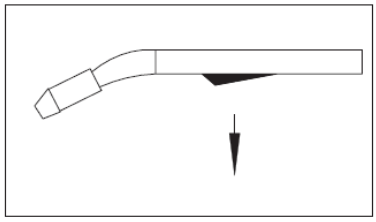


Fig. 4-4-4: Release torch trigger

2T Step mode

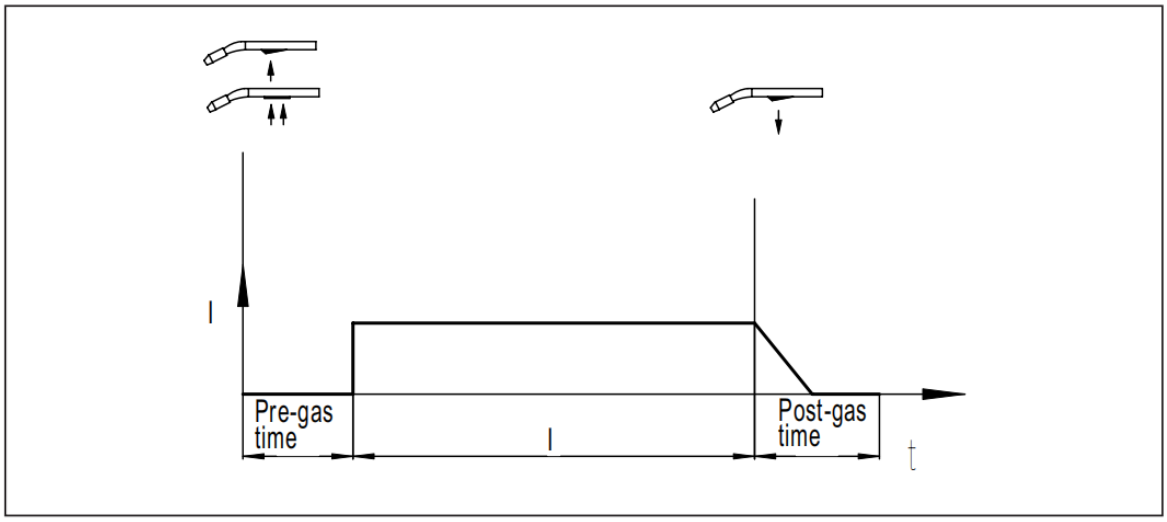


Fig. 4-4-5: 2T Step mode

4T Step mode

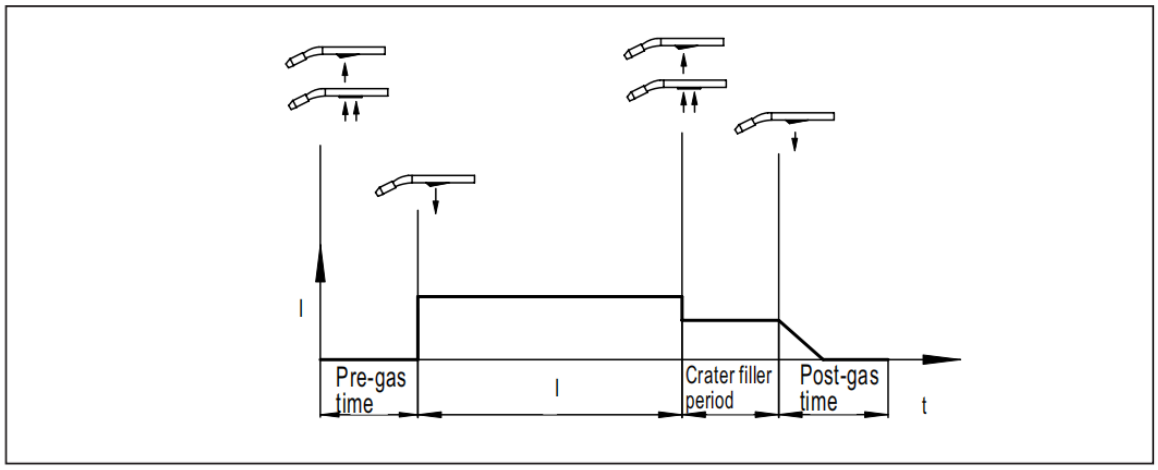


Fig. 4-4-6: 4T Step mode

3. Wire feeding speed/ welding current/job list adjustment knob

On Fe/Manual MIG mode, it is used for adjusting preset wire feeding speed;

On AL/Synergic MIG mode, select Job-list code, preset wire feeding speed;

On Lift TIG and STICK mode, it is used for adjusting preset welding current.

4. Wire feeding speed/ current/job list code displayer

On open load, Manual MIG mode, display wire feeding speed;

On open load, Synergic MIG mode, display job list code and wire feeding speed;

On open load, Lift TIG and STICK mode, display preset welding current

Display actual welding current when welding.

5. Welding voltage/down slope time/arc force adjustment knob

On Fe/Manual MIG mode, it is used for adjusting preset welding voltage;

On AL/Synergic MIG mode, adjust matched voltage, middle zone of knob scale is standard zone,The welding machine automatically matches the appropriate voltage, and can also adjust the voltage knob to fine-tune the matching voltage to ±3V according to requirements.

On Lift TIG mode, it is used for adjusting down slope time;

On STICK mode, it is used for adjusting arc force.

6. Voltage displayer

On open load mode, display preset voltage (Manual MIG/ Synergic MIG mode ONLY); display actual welding voltage during welding.

7. VRD indicator

VRD is anti-electric shock device on STICK mode, but should also pay attention to safe operation requirements in this manual.

On STICK mode, open load mode, VRD indicator lights up, means VRD is on. Output voltage is reduced to about 15V, so it reduces electric short hazard.

8. Inductance adjustment knob

On MIG mode, it is used for adjusting arc softness. Increase preset inductance value, arc becomes soft, spatter becomes little; decrease preset inductance value, arc becomes hard, penetration becomes strong.

4-5 Job list

1. Press the mode selection button to make the AL / Job-list indicator light on, and adjust the voltage setting knob to the standard area;

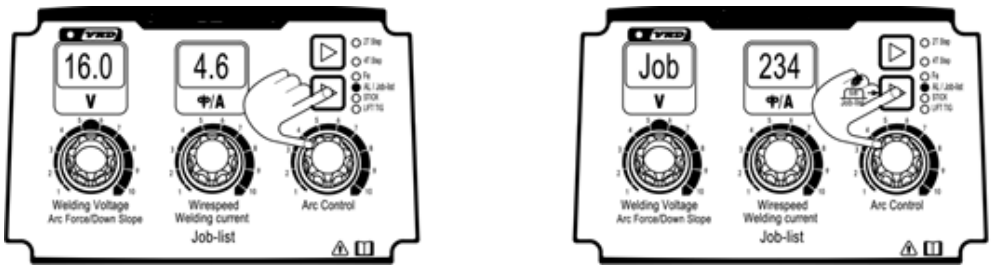


Fig. 4-5-1: Enter Job list menu

2. Press and hold the mode selection button 5S to enter the job list menu. At this time, the voltage displayer shows “Job” and the current displayer shows the previously set job code. Adjust the Job-list knob to select the desired job code.

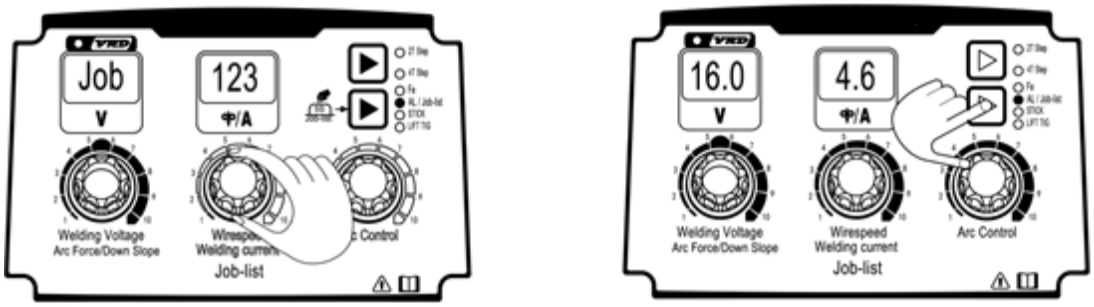


Fig. 4-5-2: adjustment Job list parameter

3. Refer to the Job-list table on the vertical plate of the welding machine, and select the correct Job code (factory setting is aluminum Φ1. 2 Welding material Job code, the indicator light is always on).

Job-list

Material		Gas	Thickness	Ø Wire 0.6	0.8	1.0	1.2
				Job-No.			
Fe		100%CO_2		111	112	113	
		80%Ar 20%CO_2		121	122	123	
Al	Pull	100%Ar	0.8~1.5		232	234	
			1.5~2.5		233	235	
			2.5~3.5			236	
			3.5~4.5			237	
			4.5~5.5			238	
	Push					239	240
Ss		98%Ar 2%CO_2		341	342	343	
CW		Self-shield			402	403	

Fig. 4-5-3: Job list label

4.After waiting for 5 seconds or press and hold the mode selection button for 5S , the welder will automatically exit the Job code interface (if the job code is not 240, the job list indicator will keep flashing).

If you choose aluminum/pull (spool gun) code(232-238), you can refer to the welding specifications listed in Table 4-9-2 for adjustment, or you can adjust the parameter values of sub menu P11～P13 according to the needs of weld scale patterns;

4-6 Sub menu

1.Simultaneously press and hold the 2T Step/4T Step and mode selection buttons for about 2S to enter the submenu. At this time, the voltage displayer meter displays the hidden parameter number, and the current displayer meter displays the hidden parameter value.

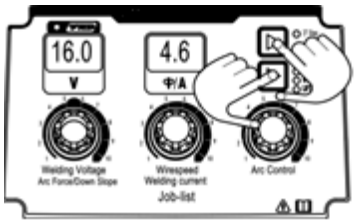
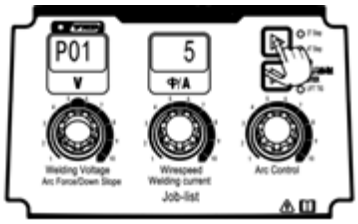


Fig. 4-6-1: enter submenu



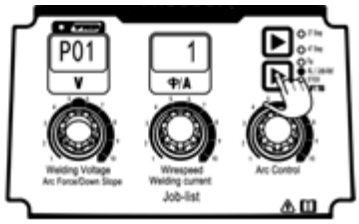


Fig. 4-6-2: adjust parameter value

2.Press the torch trigger to adjust the number of submenu parameters.

3. press the 2T Step /4T Step button to increase the parameter value;press the mode selection button to decrease parameter value;

4.About 5S after stopping the operation, automatically exit the submenu and save the parameter value.

Item	Parameters	Setting Range	Remarks
P01	Burn back time	1～200	MIG/MAG mode
P02	Slow wire feeding	3～100	MIG/MAG mode
P11	Double pulse frequency	0.5～5.0	MIG/MAG mode
P13	Double pulse speed offset	1~100	MIG/MAG mode
P14	High pulse group duty cycle	10～90	MIG/MAG mode
P34	Deballing voltage	1～20	MIG/MAG mode

H01	VRD function selection	ON/OFF	STICK mode

Table 4-6-1 Submenu parameter

- P01 Burn back time

When the gas shielded welding or self-shielded flux cored welding is completed and the welding wire sticks to the workpiece, press the 2T Step/4T Step button to increase the parameter value; when the welding wire is burned back to the contact tip, press the mode selection button to decrease parameter value;

- P02 Slow wire feeding

When gas shielded welding requires fast spot welding, you need to press the 2T Step/4T Step button to increase the parameter value; when starting the arc, the wire feed is too fast, you need to press the mode selection button to decrease the parameter value;

- P11 Double pulse frequency

Appears only in the job number 232~236 of Job code.Adjust the parameter value through the 2T Step/4T Step button and the mode selection button. The larger the value, the denser the fish scale.

The double pulse welding is added modulated by low frequency pulse and the low frequency pulse between 0.5-5.0 Hz. Compared with single pulse, double pulse has more advantages: no need to swing, welding seam become fish-scaly automatically, the depth and density of the fish-scale welding seam is adjustable; precise control of heat input. In low-current, cool the melting pool,reduce the deformation of the workpiece and the hot cracking tendency. The melting pool can be periodically stirred; grain refinement, hydrogen and other gases are easilyprecipitated from the pool to reduce the porosity and the welding defects.

Double pulse reference wave form as shown in Fig. 4-6-3.

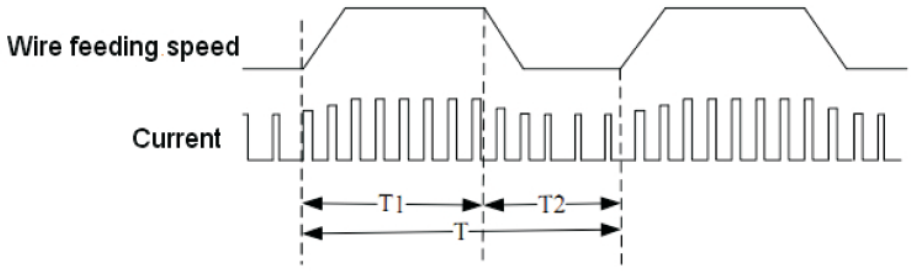


Fig. 4-6-3: Double pulse reference wave form

- P13 Double pulse speed offset

Appears only in the job number 232 ~ 236 of Job code.Adjust the parameter value through the 2T Step/4T Step button and the mode selection button. The larger the value, the greater the depth of the fish scale; when the parameter is reduced to 1, the pulsating wire feed function is canceled.

- P14 High pulse group duty cycle

Appears only in the job number 232~236 of Job code.Adjust the parameter value through the 2T Step / 4T Step button and the mode selection button. The larger the value, the greater the proportion of the entire fish scale protrusion and groove;

- P34 Deballing voltage

When gas shielded welding or self-shielded flux-cored welding is completed and the welding wire sticks to the workpiece, the 2T Step/4T Step button needs to be pressed to increase the parameter value; when the ball at the end of the welding wire is larger, the mode selection button needs to be pressed Reduce the parameter value;

- H01 VRD function selection

Appears only in STICK mode. Press the 2T Step/4T Step or mode selection buttons to adjust the display of the current displayer. When the display is ON, the STICK mode has VRD function; when the display is OFF, the STICK mode has no VRD function.

4-7 Reset Factory setting

Press and hold the 2T Step /4T Step button 5S to reset the factory setting.

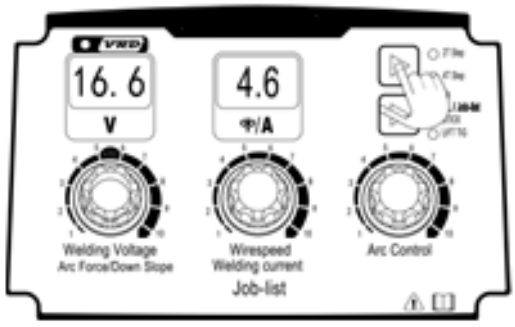
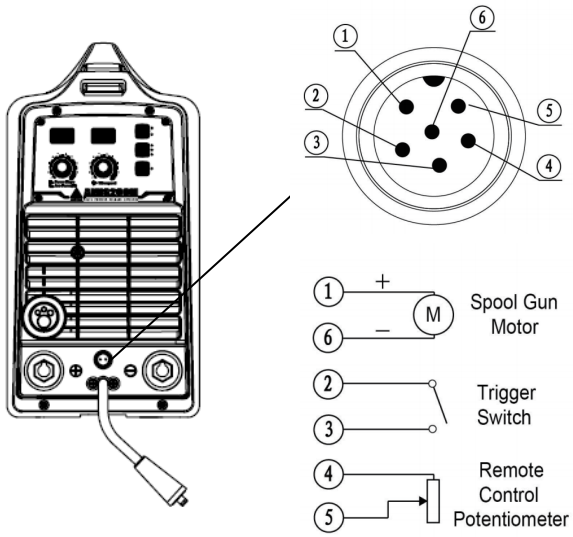


Fig. 4-7-1 Reset factory settng

4-8 Control socket



Pin NO.	Description
1	Connect motor (+24VDC) positive of spool gun
2, 3	Connect torch trigger cable
4	Connect 0Ω end of remote control potentiometer (4.7 KΩ)
5	Connect wiper end of remote control potentiometer (4.7 KΩ)
6	Connect motor (+24VDC) negative of spool torch

Note: when use spool torch, should place wire pushing/wire pulling selection switch on side panel on wire pulling position, then wire feeding power supply of pin 1, 6 is connected.

When pin 4, 5 external connect 4.7KΩ potentiometer, then welding machine enters into remote control mode. On MIG mode, can adjust wire feeding speed remotely; on Lift TIG and STICK mode, can adjust current .

Table 4-8-1: Control socket connections

4-9 Installation and operation

Warning! Electric shock is very dangerous. If the machine is plugged into the mains electricity supply during installation, there is a high risk of very serious injury and damage. Only carry out work on the machine when

- the mains switch is in the “OFF” position,

- Power supply and cable requirement

Please note the size of fuse and circuit breaker in the table below are for reference only.

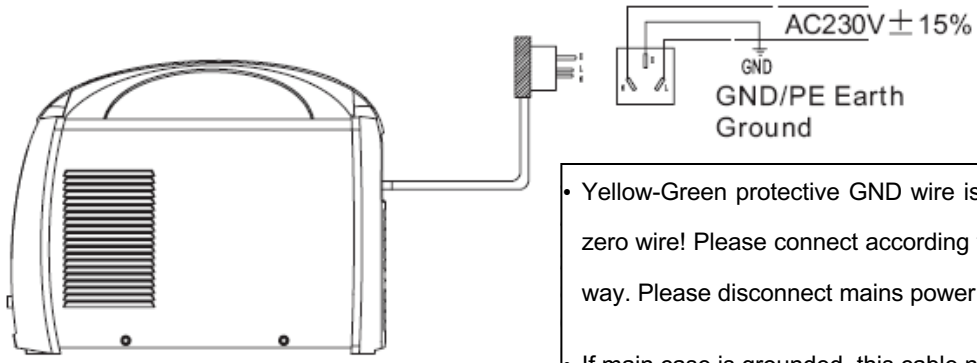
Model		POWER MIG 200 SYN
		AC 220/230V±15%, 50/60Hz
Power supply(1-phase)		13
Min. power capacity (KVA)		Fuse
Input protection (A)	Circuit breaker	
	Input cable	
Cable size (mm²)	Output cable	
	Protective GND wire	

Table 4-9-1: Input power supply cable installation

The connection between input power supply cable and switch box (Fig. 4-5-1).

Warning!

- Never connection when equipment is power on!
- The connection must be carried out by a qualified electrician!
- Do not connect two units of power sources to the same circuit breaker!



- Yellow-Green protective GND wire is used for grounding! Not zero wire! Please connect according to picture or other correct way. Please disconnect mains power when connecting!
- If main case is grounded, this cable needs no grounding.

Fig. 4-9-1: Connection between input power supply cable and switch box

Warning! Operating the welding machine incorrectly can cause serious injury and damage.

Do not use the functions described here until you have read and completely understand all the following documents:

- “safety rules”

Warning! Electric shock is very dangerous. As soon as press the torch trigger, the welding wire is power on. Make sure that the welding wire does not touch any person or conductor or earthed parts (e.g. lifting appliance etc).

MIG/MAG welding with push gun

Open the side panel, and select the push gun with the pushgun/pull gun switch on the vertical board.

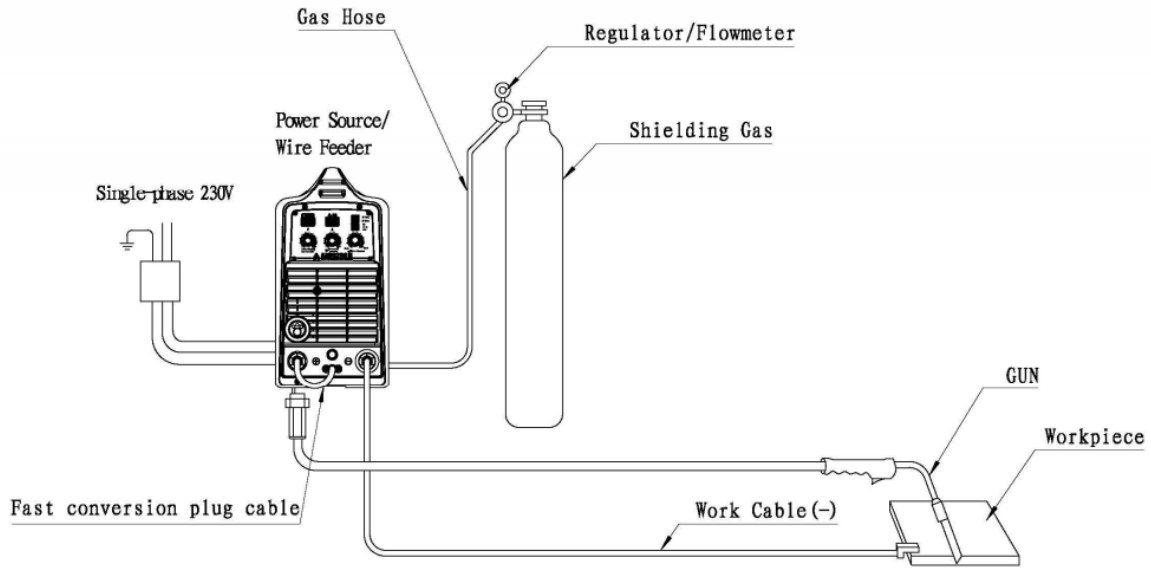


Fig. 4-9-2: Installation - MIG/MAG with push gun

When welding aluminum and aluminum alloy welding wire, the wire guide tube of the welding gun and wire feeder is replaced with a Teflon hose, and a U-type roller is used. The installation is shown in Figure 4-9-3.

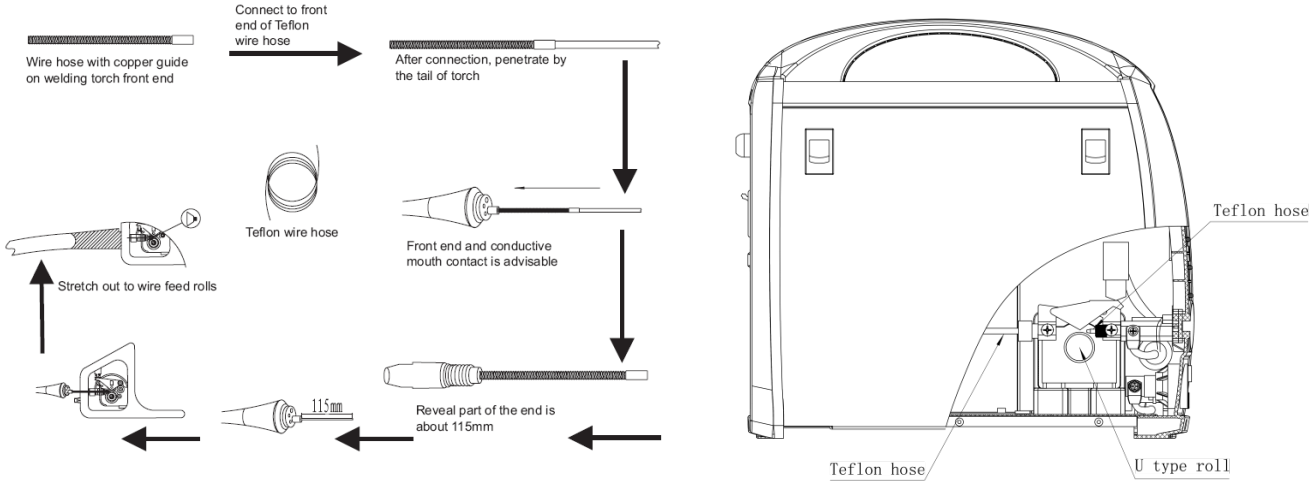


Fig. 4-9-3: Installation -teflon hose

Wire diameter (mm)	Thickness (mm)	Voltage (V)	Wire speed (cm/min)	P11	P13	P14
Φ0.8	1.0	11	5.9	1.3	29	60
	2.0	15	8.4	1.8	50	60
Φ1.0	1.0	10	4.0	1.3	29	60
	2.0	14.3	6.0	1.8	50	60
	3.0	15.2	8.2	1.5	33	50
	4.0	17.4	10.4			
	5.0	18.6	11.4			

Table 4-9-2 Welding parameter

MIG/MAG, FCAW-S welding with pull gun(spool gun)

Open the side panel, and select the pull gun(spool gun) with the pushgun/pull gun switch on the vertical board

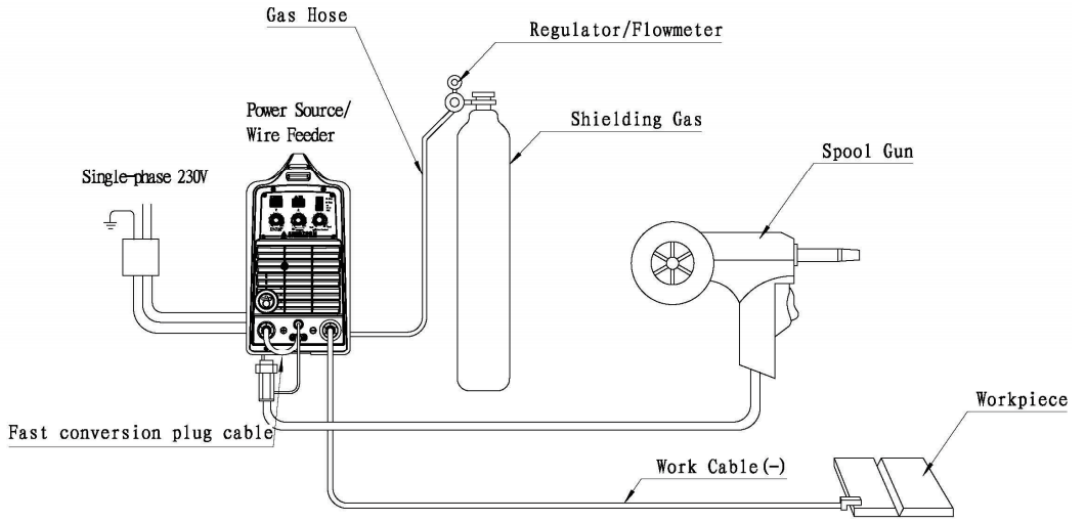


Fig. 4-9-4: Installation - MIG/MAG with pull torch

FCAW-S-Flux-cored wire welding

Open the side panel, and select the push gun with the pushgun/pull gun switch on the vertical board.

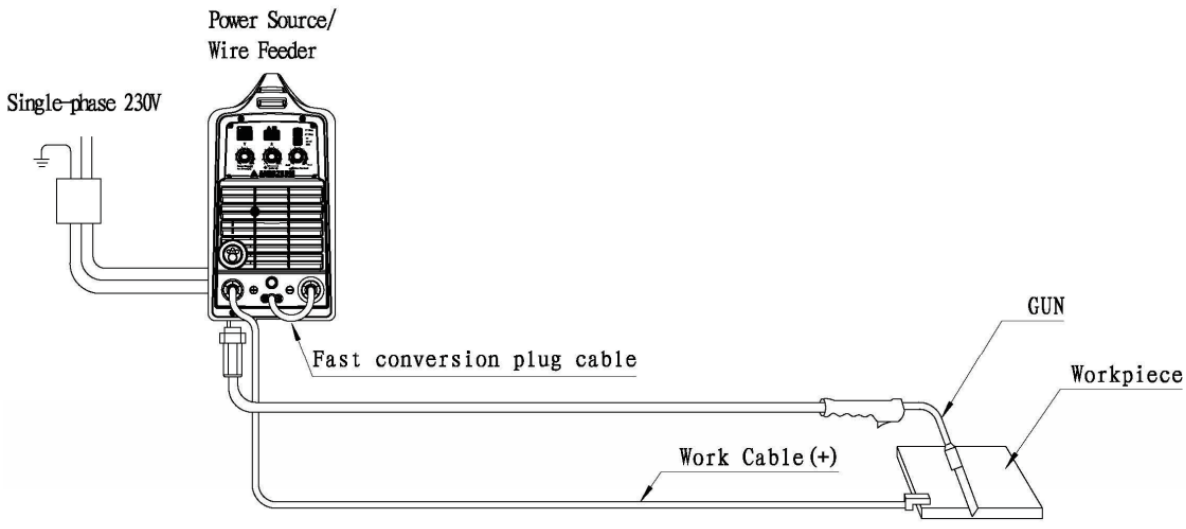


Fig. 4-9-5: Installation – FCAW-S welding with push gun

1.According to the above diagram and description, correctly set the insertion position of the welding torch conversion quick-plug cable and the push wire/drawing switch state; the grounding cable is reliably connected to the quick socket, and the welding torch is reliably connected to the welding torch socket;

2. Reliably connect the gas pipe and gas source; (except for FCAW-S welding)

3. Please refer to Table 4-9-3 to select and install the applicable wire feed wheel and the contact tip of the welding gun; (The contact tip selection of aluminum and aluminum-magnesium alloy welding wire is slightly larger than the diameter of the welding wire)

4. Install the welding wire reel and feed the welding wire into the welding gun through the wire feed wheel;

5. Power on;

Welding mode	Metrial	Wire diameter 110V	Wire diameter 220V/230V	Roll type	Wire hose	Shield gas
MAG	Fe	Φ0.6,Φ0.8	Φ0.6,Φ0.8,Φ1.0	V	Steel hose	100%CO2 or 80%CO2+20%Ar
	SS	Φ0.6,Φ0.8	Φ0.6,Φ0.8,Φ1.0	V	Steel hose	97.5%CO2+2.5%Ar
MIG	AL	Φ0.8,Φ1.0,Φ1.2		U	Teflon hose	100%Ar
FCAW-S	CS	Φ0.8,Φ1.0		Knurl	Steel hose	

Table 4-9-3: Welding

Stick welding

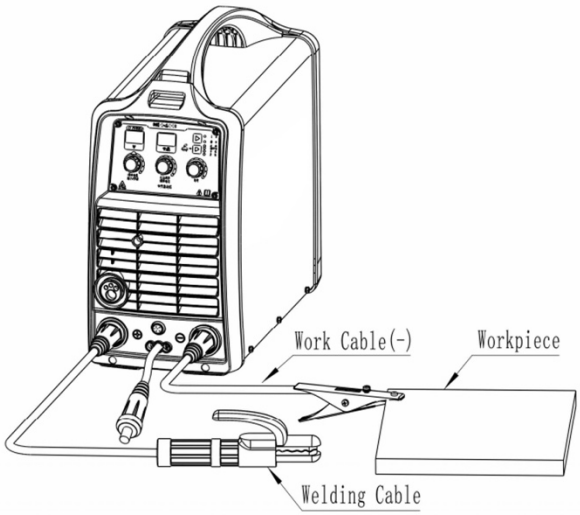


Fig. 4-9-6: Installation - stick welding

1. Connect welding cable to welding machine positive output terminal (+);
2. Connect work piece with ground cable, and connect ground cable to negative output terminal (-);
3. Connect well one phase power supply, and ensure good grounding;
4. Turn on the power switch on rear panel;
5. Place Manual MIG/ Synergic MIG/ LIFT TIG/ STICK selection switch on STICK position, STICK and VRD indicators light up;
6. Adjust proper welding current;
7. Start welding, VRD indicator lights off during welding.

Lift TIG welding

1.Screw shielding gas regulator onto the gas cylinder and tighten it; connect torch gas hose with shielding gas regulator;

2.Connect torch cable to welding machine negative output terminal (-);

3.Connect work piece with ground cable, and connect ground cable to positive output terminal (+);

4.Connect well one phase power supply, and ensure good grounding;

5.Turn on the power switch on rear panel;

6.Place Manual MIG/ Synergic MIG / LIFT TIG/ STICK selection switch on LIFT TIG position, LIFT TIG

indicator lights up;

7.Adjust proper welding current;

8.Open gas cylinder, gas feeds out;

9.Start welding.

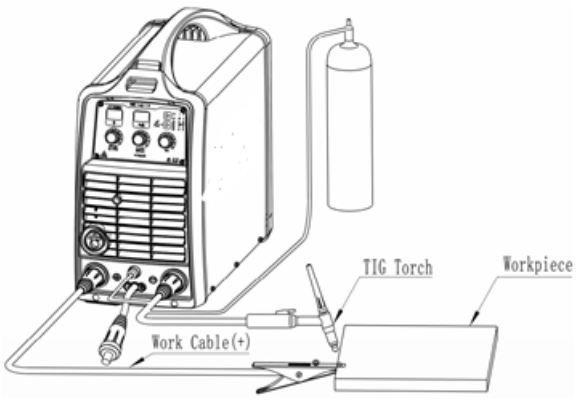


Fig. 4-9-7: Installation - TIG welding

4-10 Technical data

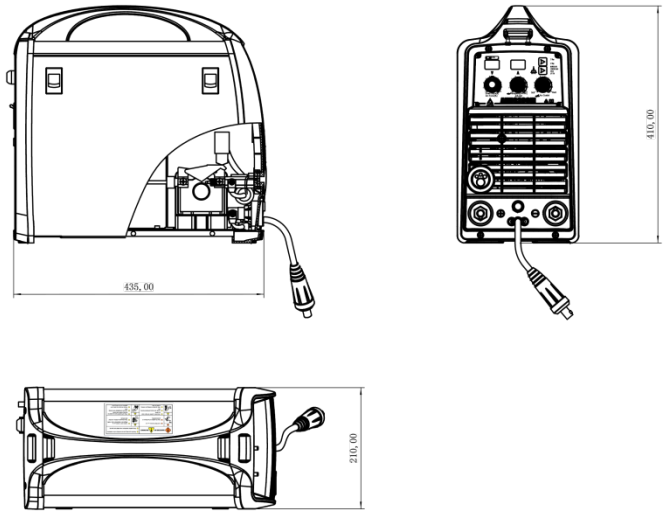
Note! Please use the machine under the allowed power supply voltage range marked in the nameplate. The technical data with the basic input voltage are listed as the Table 4-10-1.

Model Power MIG 200 SYN			
Rated input voltage/frequency(1 phase)		AC220/230V±15%, 50/60Hz	
Rated input power (KVA)		10	
Rated input current (A)		42	
Range of output current (A)	MIG	30-200	30-210
	STICK	10-200	
	LIFT TIG	10-200	
Range of output voltage (V)	MIG	10-26	

Table 4-10-1:

Rated duty cycle (%,@40℃)	35	
Open circuit voltage (V)	63	
Shielding gas	CO2, Ar+CO2, Ar	
Step	2T Step/4T Step	
Protection class	IP21S	
Insulation grade	F	
Cooling way	Air cooled	
Wire spool diameter (mm)	100, 200	200,300
Wire-feeding speed (m/min)	2-15	
Down slope time (S)	0-10	
Wire feeding system type	Built-in	
Dimension (W×D×H) (mm3)	410×210×438	510×210×440
Weight (Kg)	16	18.5

4-11 Dimension



NO.	Item	200 SYN
1	length	435
2	Width	210
3	Height	410

Fig. 4-11-1: Dimension

Table. 4-11-1: Dimension

4-12 Disassembly and reassembly

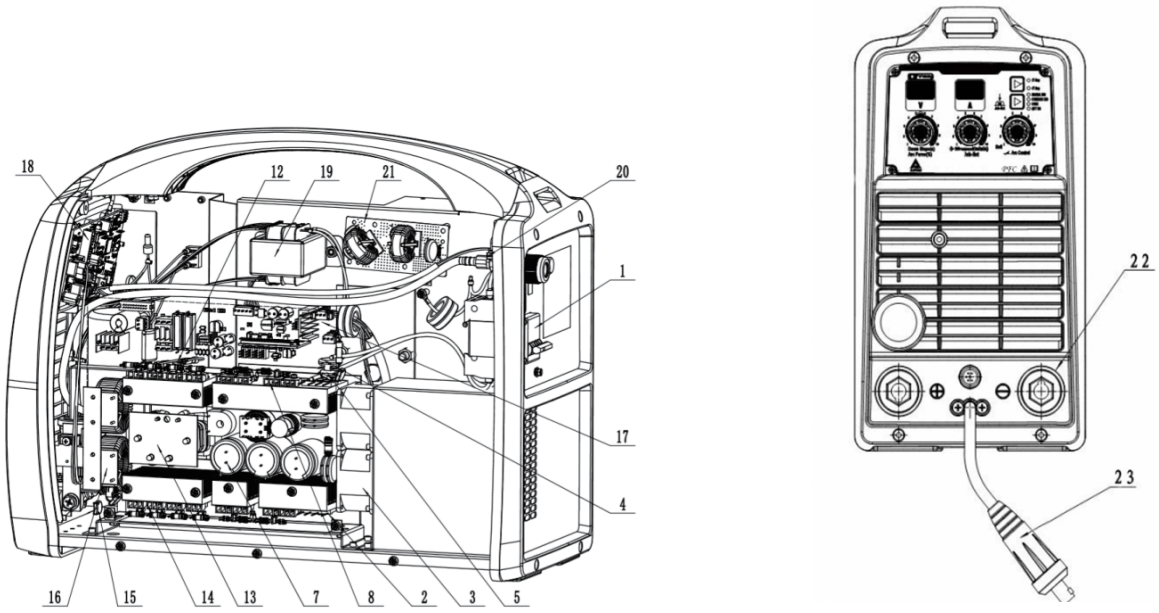


Fig. 4-12-1: Power MIG 200 SYN

No.	Item	Stock no.	Qty
1	Circuit breaker	745011-00068	1
2	Rectifier bridge	735004-00007	2
		735004-00006	2
			1
3	Fan	746002-00025	1
		746002-00049	2

4	Varistor	720021-00020	1
5	Polypropylene capacitor	722001-00023	1
6	Polypropylene capacitor	722001-00065	1
7	Aluminum electrolytic capacitor	722004-00105	3
		722004-00146	2
8	IGBT tube	735003-00013	8
			10
9	Diode tube for PFC	730003-00007	1
10	Inductor for PFC	763005-00145	1
11	Temperature relay for PFC	745008-00031	1
12	Temperature relay	745008-00028	1
		745008-00032	1
		745008-00030	1
13	Main transformer	763002-00026	1
		763002-00029	1
14	Diode	730001-00007	8
15	Safety capacitor	722008-00011	2
16	Output reactor	763005-00023	2
17	Main control drive board	210580-00781	1
		210580-01368	1
		210580-00960	1
18	Display board	220503-00282	1
19	Power transformer	220179-00669	1
		220179-01025	1

		220179-00797	1
20	Solenoid valve	752001-00045	1
21	Power supply filter board	220900-00473	1
	Power supply switch board	220900-00309	1
22	Quick socket	740002-00091	2
23	Quick plug	740002-00063	1

Table 4-12-1: Main components list

Note: If no special remarks, the input voltage mentioned in above table is one phase.

5-TROUBLE SHOOTING

Warning! An electric shock can be fatal. Before opening the machine:

- Switch it off and unplug it from the mains

- Unplug machine from the mains

- Put up a clearly legible and easy-to-understand warning sign to stop anybody inadvertently switching it back on again

- Check to make sure the electrically charged components (e.g.capacitors) have been discharged

Error code

This series welding machine will be on protected mode if machine has any problem, and display error code. Please refer to below table:

Error code	Fault	Cause	Remedy
E17	Over current	Output current is over rated current	Reduce output current
E19	Over heat/fan does not work	1) Inner of welding machine is too hot 2) Temperature relay is damaged 3) Fan is damaged	1) Wait until cool down 2) Replace 3) Replace
E35	Short circuit of wire feeding motor	1) Output of wire feeding power supply is short circuit 2) Main control board is damaged	1) Check 2) Replace

Table 5-1: Error code

Important! If an error code excluded in above table is displayed, please supply the fault phenomenon, error code, together with machine serial no. and machine model to the manufacturer after-service department.

Machine problem, cause and remedy

Note! The following troubles and causes are uncertain. However, during the normal welding, that might happen.

No.	TROUBLE	CAUSES	REMEDY
1	Power on, LED does not light up, fan does not run, no output when machine switches on	1) Power switch is damaged 2) No electricity on the electricity grid 3) Short circuit in the power supply cable 4) Input/output cable of power transformer is bad connected or power transformer is damaged 5) Fuse is damaged	1) Check power switch and the fan 2) Check power supply on the the electricity grid 3) Check the connection of power supply cable 4) Check input/output cable of power transformer, or replace power transformer 5) Replace
2	Circuit breaker on the switch board or power switch on welding machine trips while in welding	1) Rated current of circuit breaker on the switch board is too small 2) The following devices may be damaged: input rectifier bridge, electrolytic capacitor, IGBT	1) Change workplace, use proper switch board 2) Check and replace
3	Welding current/voltage is not adjustable	1) Display board is damaged 2) Main control board is damaged 3) Bad connection of joints	1) Replace 2) Replace 3) Connect well
4	Instable welding arc, large spatter	1) Contact tip is worn out 2) Wire is not well installed in wire feed roller's groove	1) Replace 2) Check and adjust
5	MANUAL MIG/ SYNERGIC MIG mode, press torch trigger, wire feeding is normal but gas flow way is blocked	1) Solenoid valve is damaged 2) Display board is damaged 3) Wire guide hose is blocked	1) Replace 2) Repair or replace 3) Clean wire guide hose
6	MANUAL MIG/ SYNERGIC MIG mode, press torch trigger, wire feeding system does not work and there is no open circuit voltage	1) Torch trigger is damaged 2) Display board is damaged 3) Cable 3*1 of control socket is bad connection	1) Repair or replace 2) Replace 3) Repair

Table 5-2: Trouble shooting

6-CARE AND MAINTENANCE

● Before open the machine

Warning! An electric shock can be fatal. Before opening the machine:

- Switch it off and unplug it from the mains
- Put up a clearly legible and easy-to-understand warning sign to stop anybody inadvertently switching it back on again
- Check to make sure the electrically charged components (e.g.capacitors) have been discharged

● Maintenance of welding power source

Please follow the instructions as below to ensure normal use of power source

- Conduct safety check at regular intervals (see “Safety rules”)

- Dismantle machine side panels and clean machine inside with clean and low-pressure compressed air by professional technician, not less than twice per year. Clean the components at a certain distance only

- If a lot of dust has accumulated, clean the cooling-air ducts

● Daily maintenance

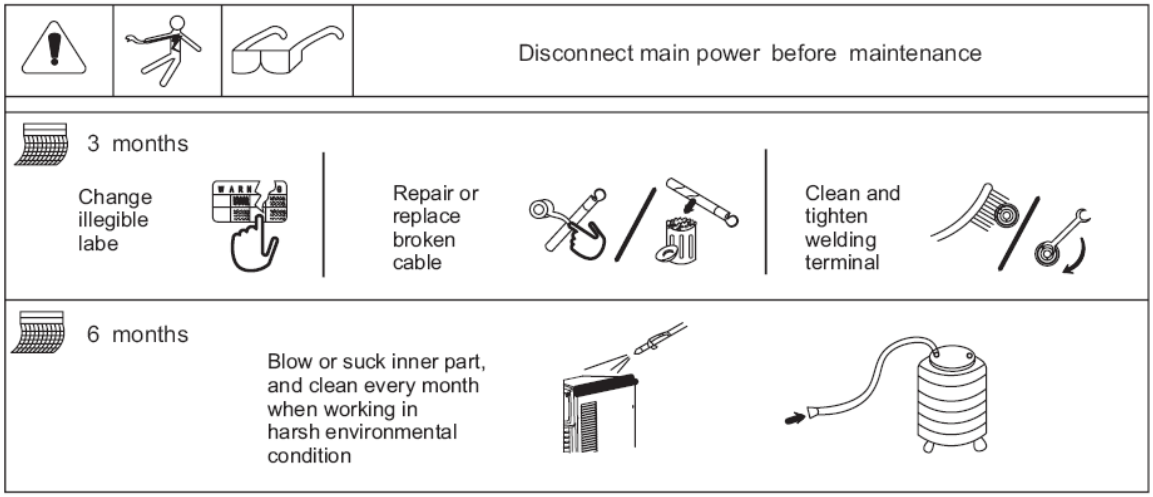


Fig. 6-1: Daily maintenance

PoWer MIG Series

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