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Pulse-MIG-II(IX) · WSM(Pulse TIG-DC) · MIG-X(M)
WSME(Pulse TIG AC-DC) · SAW(AC/DC) · MMA · CUT
Digital high-end inverted welder series

OPERATION MANUAL

Pulse MIG-IX series

Pulse MIG/MAG welding machine

V2.0

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Thanks for choosing our Inverted Welding Equipment Series. For your safety, health and correct use of this product, please carefully read this Manual before use. We are appreciated for your cooperation.

Contents

Purpose and Characteristics

MIG-IX series inverter gas shielded welding machine is a high performance universal semi-automatic digital multi-function welding machine. There are two welding modes: pulse gas shielded welding and ordinary gas shielded welding.
The inverter technology can ensure that the welding process is highly stable under the condition of grid voltage fluctuation and arc length variation, and the arc self-adjustment ability is strong. The performance characteristics are as follows:

- Friendly operating interface, unified adjustment mode, easy to master
- System built-in welding expert database, automatic intelligent parameter combination.
- 10 sets of welding procedures can be stored to save operation time.
- Fully digital wire feeding speed feedback control, and accurate and stable wire feeding.
- Optimized arc striking, arc-closing and ball removal functions.
- Multiple safety protection functions.
- Fan intelligent control to extend the service life of the fan.
- Fully digital control system, to achieve accurate control of welding process and arc length stability
- Lower spatter and good appearance of weld
- Soft-switching inverter technology, can improve the reliability of the whole machine, save energy and power.

The series of welding machines are manufactured in accordance with the standard GB15579_1-2004 Arc Welding Equipment - Part 1: Welding Power Sources.

Safety Precautions

⚠General safety precautions

- Please observe the precautions stipulated in the instructions, otherwise accidents may occur.
- The design and construction of input power supply, the selection of installation site, the use of high-pressure gas, etc., should be carried out in accordance with relevant standards and regulations.
- The irrelevant personnel must not enter the welding work place.
- The professional qualified personnel are requested to install, repair, maintain and use the welding machine.
- The welding machine should not be used for other purposes than welding (such as charging, heating, pipeline unfreezing, etc.).
- If the ground is uneven, care should be taken to prevent the welding machine from dumping.

⚠The electric shock or burns caused by electric shock should be prevented

- The live parts must not be touched.
- The professional electricians are requested to ground the welding machine by copper wires with specified cross-section.
- The professional electricians are requested to connect the welding machine to the power supply by copper wires with specified cross-section, and the insulation sheath should not be damaged.
- When working in damp and movement restricted areas, it is necessary to ensure the insulation between the body and the base metal.
- When working at high altitude, please use safety net.
- When not in use, please turn off the input power supply.

⚠The harm of welding fume and gas to human body should be avoided

- Please use the prescribed ventilation equipment to avoid accidents such as gas poisoning and asphyxiation.
- When working at the bottom of the container, the protective gas will deposit around it, causing asphyxiation. Special attention should be paid to ventilation.

⚠The harm of welding arc light, spatter and welding slag to human body should be avoided

- Please wear protective glasses with sufficient shading. Arc light may cause eye inflammation. Spatters and welding slag may burn eyes.
- Please use leather protective gloves, long sleeve clothes, hats, foot protectors, aprons and other protective articles for cutting to avoid arc light, spatter and welding slag to burn and scald the skin.

⚠The fire, explosion, rupture and other accidents should be prevented

- The flammable materials should not be placed in welding places. Spatters and hot welds may cause fire.
- The welding cable and base metal should be connected tightly, otherwise it will heat and cause fire.
- Please don't weld in flammable gases or on containers containing flammable substances, otherwise it will cause explosion.
- Please don't weld in a closed container, or the container will be broken.
- The fire extinguishers should be prepared, just in case.

⚠The injuries caused by rotating moving parts should be prevented

- Please don't make your fingers, hair, clothes, etc. close to cooling fans, wire feeding wheel and other rotating parts
- When feeding the welding wire, please don't put the end of the welding gun close to the eyes, face and body to avoid injury from the welding wires.

⚠The gas cylinders from toppling and gas regulators from rupturing should be prevented

- The gas cylinder should be securely fixed, and toppling may cause personal accidents.
- Please don't expose the cylinder to high temperatures or sunlight.
- When opening the cylinder valve, please keep your face away from the gas outlet to avoid injury from the high pressure gas.
- Please use the gas regulator that is supplied or recommended by our company and comply with its regulations.

⚠The welding machine from injuring people in motion should be prevented

- When lifting forklift or crane is used to carry welding machine, the personnel should not be under the welding machine and in front of the movement to prevent the welding machine from falling down and being damaged.
- When hoisting, the rope should be able to withstand enough tension and not be broken. The angle between the rope and the hook should not be greater than 30°.

Electromagnetic Compatibility Precautions

1. Overview

- Welding can cause electromagnetic interference.
- The interference emission of arc welding equipment can be minimized by adopting proper installation mode and correct use method;
- The products described in this manual are Class A equipment (applicable to all locations except residential areas powered by public low voltage power systems).

  WARNING: Class A equipment is not intended for use in residential buildings powered by public low-voltage power systems. Electromagnetic compatibility is difficult to guarantee in these places due to conduction and radiation disturbance.

2. Environmental assessment recommendations

Before installing arc welding equipment, users should evaluate potential electromagnetic disturbance problems in the surrounding environment. Considerations are as follows:

- Whether there are other power cables, control cables, signals and telephone lines up and down and around the arc welding equipment;
- Whether there are broadcast and television transmitting and receiving equipment;
- Whether there are computers and other control equipment;
- Whether there is high security level equipment, such as industrial protection equipment;
- The health of the staff around should be considered, such as those with or without hearing aids and those with heart pacemakers;
- Whether there is equipment for calibration or testing;
- Pay attention to the immunity of other devices around you. Users should ensure that other devices used around them are compatible, which may require additional protection measures;
- Time for welding or other activities

  The extent of the environment to be considered depends on the structure of the building and other possible activities which may extend beyond the boundaries of the building itself.

3. Method of reducing emissions

1) Public power supply system

Arc welding equipment of public power supply system shall be connected to the public power supply system as recommended by the manufacturer. If interference occurs, additional precautions should be taken, such as accessing the filter in a utility power system. For fixed installation of arc welding equipment, the shielding problem of its power supply cable should be considered, which can be shielded by metal pipe or other equivalent methods. Shielding should maintain electrical continuity. The shield shall also be connected to the welded power supply housing to ensure good electrical contact between the two.

2) Maintenance of arc welding equipment

Arc welding equipment shall be routinely maintained as recommended by the manufacturer. When welding equipment is in operation, all inlets, auxiliary doors and covers on the equipment should be closed and properly tightened. The arc welding equipment shall not be modified in any manner except as permitted in the instructions. In particular, the spark gaps in ignition and hidden arc devices should be adjusted and maintained as recommended by the manufacturer.

3) Welding cable

The welding cables should be as short as possible and close to each other, also near the ground.

4) Potential overlap

It is important to pay attention to the overlap of all metal objects in the surrounding environment. Overlapping metal objects with workpieces increases the risk of working, and operators may be subjected to electric shocks when they come into contact with both metal objects and electrodes. Operators should be insulated from all these metallic objects.

5) Workpiece grounding

Workpiece may not be grounded for electrical safety or workpiece location, size, etc., such as hull or building steel frame. Connecting the workpiece to the ground sometimes reduces the emissions, but this is not always the case. Therefore, it is necessary to prevent the grounding of the workpiece to increase the risk of electric shock or other electrical equipment damage. When necessary, the workpiece should be directly connected to the ground, but in some countries, direct grounding is not allowed. It can only be achieved by selecting the appropriate capacitor according to the regulations of the host country.

6) Shielding

Selective shielding of surrounding equipment and other cables can reduce electromagnetic interference. Shielding the entire welding area may be considered for special applications.

Installation of Welder

1. Installation environment

- It should be placed in the room without direct sunlight and with rain proof, low humidity and less dust. The ambient air temperature range is - 10 ℃ to 40℃.
- The ground tilt should not exceed 15°.
- The cutting station should not be windy. If any, it should be shielded.
- A confirmation should be made that there is at least 20cm of space before and after the welding machine to ensure a good air cooling cycle, and there is at least 10cm of space around the welding machine.
- When using a water-cooled welding gun, the water cooling machine should be injected with the pure water, and attention should be paid to anti-freezing and water shortage

2. Power supply voltage quality

10%, the frequency is 50Hz.

The unbalance tolerance of three-phase voltage is ⩽5%.

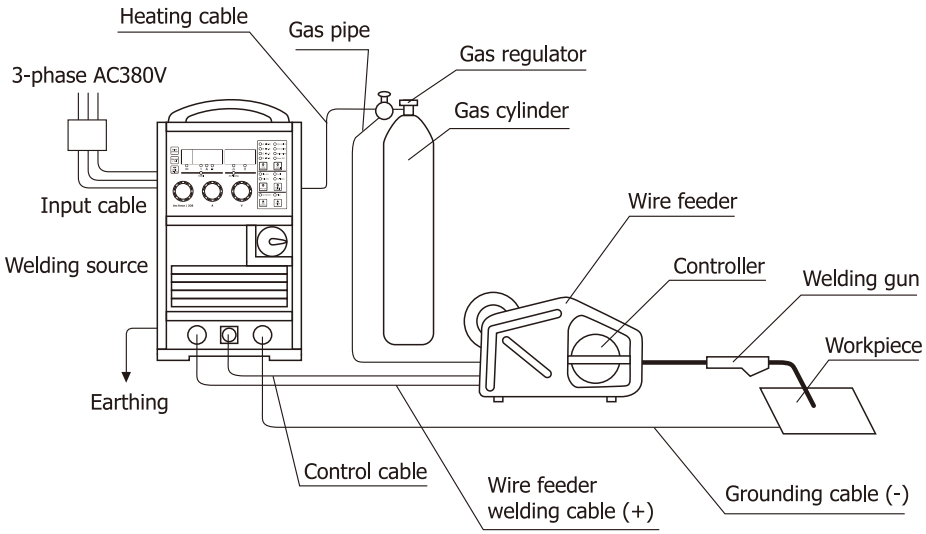
3. Power supply input

Welding machine type		MIG-350IX	MIG-500IX
Input power		3-phase AC380V	3-phase AC380V
Minimum power supply capacity	Power grid	22KVA	38KVA
	Generator	30KVA	50KVA
Input protection	Fuse	30A	50A
	Circuit breaker	32A	63A
Cable	Input side	⩾2.5mm²	⩾4mm²
	Output side	50mm²	70mm²
	Grounding wire	⩾2.5mm²	⩾4mm²

Notes: The capacities of fuses and circuit breakers in the table above are for reference only.

4. Equipment installation

The welding machine is small in size, light in weight, easy to be carried and can work with welders. The welding machine should be ensured to be placed in a flat place. The external electrical connection of the welding power source is as shown in Figure 1.



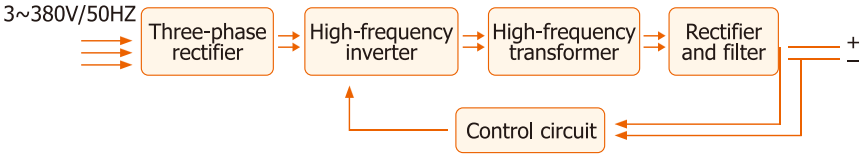
Operating procedure:

- Connect the welding machine terminal block (I) to the welded workpiece with a grounding cable.
- Connect the wire feeder welding cable to the welding machine terminal block (+)
- Connect the wire feeder control cable to the control socket of the welding machine.
- Connect the wire feeder gas pipe to the gas regulator.
- Connect the heating cable of the CO2 gas regulator to the heating power socket on the rear panel of the welding machine.
- Connect the input three-phase cable to the switchboard and ground the grounding wire reliably.
- Turn on the automatic air switch on the switch box. The welding machine panel will be displayed each time it is started.

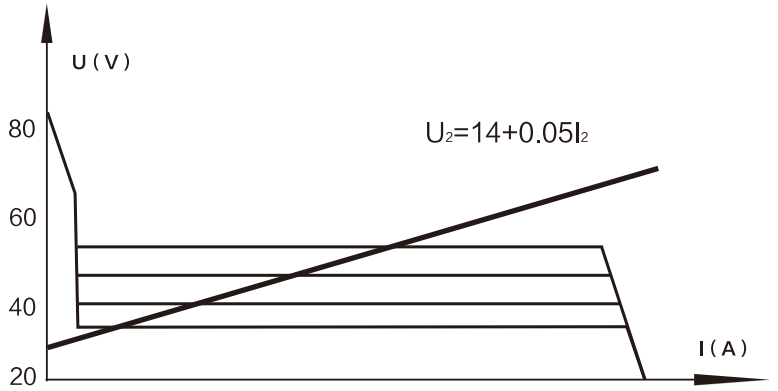
After completing the above work, the wire feed roll type should be confirmed and the welding wire should be installed. The corresponding welding wire diameter and materials should be selected on the welding machine control panel and the shielding gas specified by the welding wire materials should be connected. The voltage knob should be adjusted to the standard position and the current knob should be adjusted to the required current, then the proper welding specification can be obtained and the welding work can be started.

Description of Principle

Schematic diagram of MIG-IX welding machine



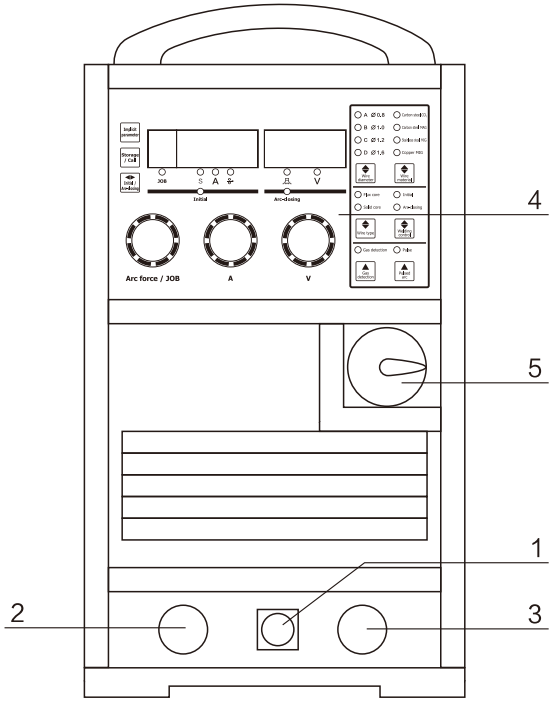
This welding machine uses IGBT soft-switching inverter technology. After power frequency three-phase 380V power input rectification, the IGBT inverter changes to high frequency AC, the DC power suitable for welding is output after voltage reduction by the high-frequency transformer and the rectification by the high-frequency rectifier. Through this process, the dynamic response speed of the welding machine is increased, and the size and weight of the welding machine are reduced. The control circuit performs closed-loop control on the whole machine, so that the welding power source has good resistance to grid fluctuation and excellent welding performance. The output characteristics of the MIG-IX inverter welding machine are as shown in the figure below.



Operation Instructions

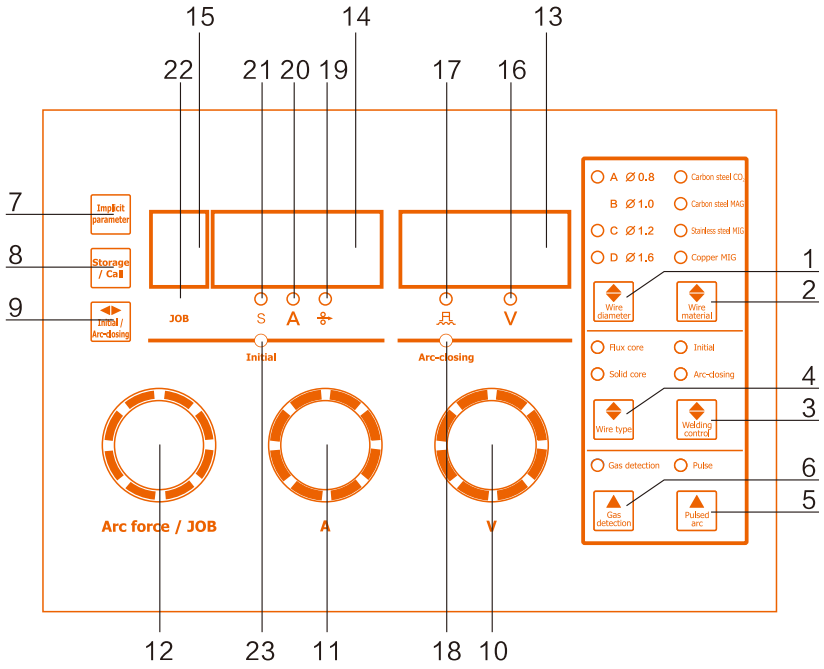
1. Welding power source front panel

3-380V/50HZ



1) Connect the wire feeder control socket to the wire feeder control cable.
2) Connect the welding power source terminal block (-) to the workpiece by welding cable.
3) Connect the welding power source terminal block (+) to the wire feeder welding cable.
4) Welding machine control panel.
5) Power switch.

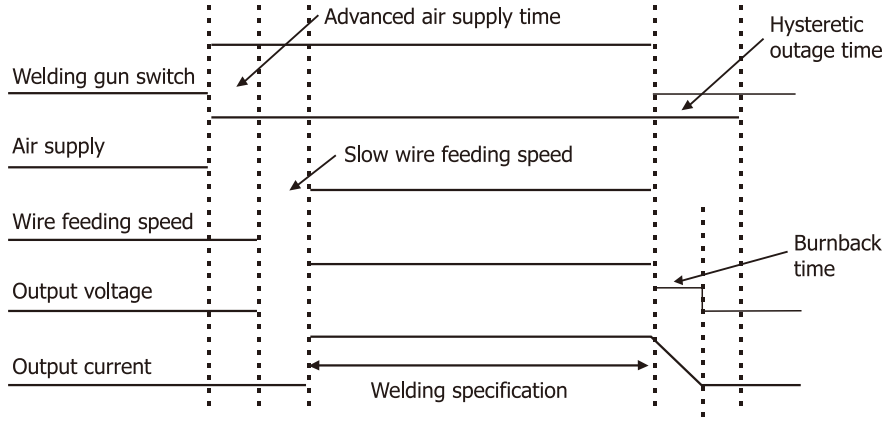
The control panel of the welding machine is used for the function selection and partial parameter setting of the welding machine. The control panel includes a digital display window, an adjustment knob, a key and an LED indicator light. As shown in the following figure.



1) The wire diameter used can be selected via the wire diameter selection key.
2) The wire material used for welding can be sleeted via the welding material selection key.
3) Welding control selection key

Without initial and arc-closing functions:

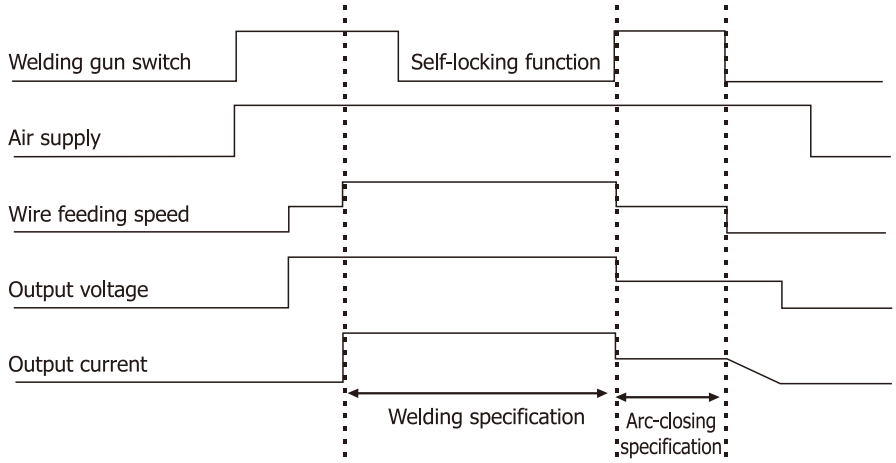
The welding can be performed normally after pressing the welding gun switch, and the welding can be stopped after the switch is released. Suitable for short seam welding. As shown in the following figure.



Two-step operation mode timing diagram

② Without initial but with arc-closing function:

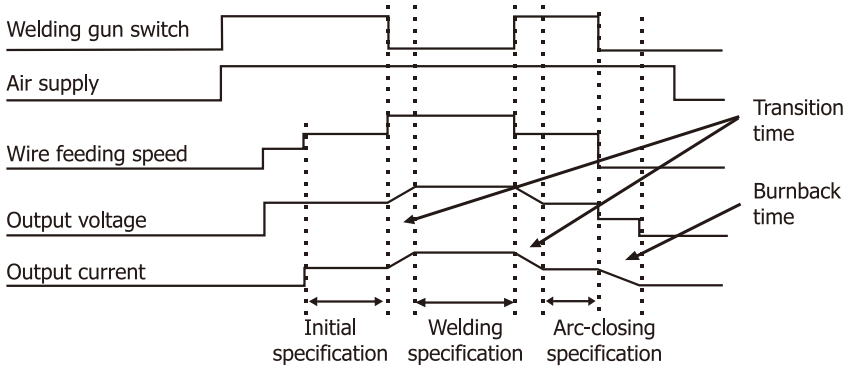
After the welding gun switch is pressed and the arc striking is successful, the welding can be performed normally after the switch is released. When the welding gun switch is pressed again, it will be transferred to the set arc-closing welding specification, and the welding will be stopped when the switch is released. Suitable for long seam welding. As shown in the following figure.



Four-step operation mode timing diagram

③ With initial and arc-closing functions:

After the welding gun switch is pressed and the arc striking is successful, the welding can be performed according to the set initial welding specification in terms of the welding specification; After he switch is released, the welding can be performed normally according to the normal welding specification given by the wire feeder; When the welding gun switch is pressed again, it will be transferred to the set arc-closing welding specification, and the welding will be stopped when the switch is released. As shown in the following figure.



Special four-step working mode timing diagram

4) The solidly and flux cored welding wires can be selected via solidly / flux cored selection key, and the corresponding indicator light should be turned on.

5) The pulse arc function can be selected via the pulse arc function key according to the welding process requirements, and the pulse indicator light should be turned on, and vice versa. With pulse: Suitable for welding carbon steel and low alloy steel, stainless steel and other non-ferrous metals. It is generally protected with pure Ar or a mixture. Without pulse: Ordinary CO2 gas shielded welding.

6) Gas detection function key

If the key is pressed once, the solenoid valve will be closed, the indicator light will be tuned on, and the air will be supplied for 30 seconds. If it is pressed again within 30 seconds, the solenoid valve will be disconnected, the indicator light will be turned off, and the air supply will be stopped.

7) For the implicit parameter key, if the implicit parameter key is pressed, it will enter the implicit parameter adjustment.

8) Storage and call key

After the - key is pressed, the PROG indicator light will be turned on, and when it is in the call state, the channel can be selected via the channel adjustment knob (0-9). After the key is pressed again, the channel number will be flashed for 5 seconds, and if the channel is selected and the key is pressed again during the period, the current panel state and welding specifications will be saved to the channel; During the period when the channel number is flashing, if the key is not pressed again, the storage and call state will be exited after 5 seconds.

9) When the initial indicator light of the initial and arc-closing selection key is turned on, the initial specifications can be set via the control panel current and voltage knobs. When the arc-closing indicator light is turned on, the arc-closing specifications can be set via the control panel current and voltage knobs.

10) Voltage knob

① Adjust the implicit parameter setting range in the implicit parameter state.

② Adjust the initial voltage when the initial indicator light is turned on.

③ Adjust the arc-closing voltage when the arc-closing indicator light is turned on.

④ Adjust the given voltage when the ON is selected for whether there is proximity control P09 or not.

⑤ Switch between the given voltage and voltage offset display after pressing and holding the voltage knob for 3S.

11) Current button

① Adjust the implicit parameter items P01-P19 and F in the implicit parameter state.

② Adjust the initial current when the initial indicator light is turned on.

③ Adjust the arc-closing voltage when the arc-closing indicator light is turned on.

④ Adjust the given current when the ON is selected for whether there is proximity control P09 or not.

⑤ Switch between the given current and wire feeding speed display after pressing and holding the current knob for 3S.

12) Arc force / channel knob

① In call and storage state: The channel number can be adjusted between 0 and 9.

② The arc force knob can be adjusted when the welding machine works normally, the digital tube should display the inductance value, the indicator light should be turned on, the adjustment range should be -5.0-5.0, and in no pulse mode: "  " The arc force will be decreased, the stability will be good, the penetration depth will become shallower, and the amount of splash will become more; The arc force will be increased, the stability will become poor, the penetration depth will become deeper, and the amount of spatter will become less. In pulse mode: The arc force will be decreased, the arc will become narrower and shorter, and the penetration depth will become deeper; The arc force will be increased, the arc will become wider and longer, and the penetration depth will become shallower.

③ The factory settings can be restored after pressing and holding the arc force knob for 5S.

13) Voltage display digital tube
① The given voltage or voltage offset will be displayed during standby.
② The actual welding voltage will be displayed during welding.
③ The welding holding current will be displayed during holding.
④ The fault code will be displayed when the fault occurs.
⑤ The item parameters will be displayed in the implicit parameter state.
⑥ When the arc force knob is activated, the arc force value will be displayed, and after the arc force knob action is stopped for about 2S, the inductance display will be exited.
14) Current display digital tube
① The given current or wire feeding speed will be displayed during standby.
② The actual welding current will be displayed during welding.
③ The welding holding current will be displayed during holding.
④ The fault code will be displayed when the fault occurs.
⑤ The item number will be displayed in the implicit parameter state.
15) Channel display digital tube
The channel number 0~9 will be displayed in the call and storage state, and the user can store and call 10 sets of welding specifications as needed.
16) When the "V" indicator light displays a voltage or voltage offset, the "V" indicator light will be turned on.
17) When the arc force knob of the "  indicator light is adjusted, the "  " indicator light will be turned on.
18) When the "arc-closing" indicator light is turned on, the arc-closing specifications can be set via the control panel current and voltage knobs.
19) When " wire feeding speed" indicator light displays the wire feeding speed, the indicator light will be turned on
20) When the "A" indicator light displays the current, the "A" indicator light will be turned on.
21) When the implicit parameters of the "S" indicator light is in the time adjustment state, the "S" indicator light will be turned on.
22) When the "channel" indicator light is in the call state, the "channel" indicator light will be turned on.
23) When the "initial" indicator light is turned on, the initial specifications can be set via the control panel current and voltage knobs.

Implicit parameter adjustment

Press the "Implicit parameters" key to enter the implicit parameter adjustment; Adjust the "Current" knob to select the setting item; Adjust the "Voltage" knob to change the parameters of the setting item; Refer to the below table for implicit parameters.

Item	Purpose	Setting range	Minimum unit	Factory settings
Implicit parameters of gas shielded arc welding mode:				
P01	Burnback time	0.01-2.00s	0.01s	0.08s
P02	Slow wire feeding speed	10%-100%	1%	30%
P03	Advanced air supply time	0.0-10.0s	0.1s	0.20s
P04	Hysteretic stop gas time	0.0-10.0s	0.1s	1.0s
P05	——	——	——	——
P06	——	——	——	——
P07	Transition time	OFF -10.0s	0.1s	OFF
P08	Spot welding time	OFF -20.0s	0.1s	OFF
P09	With/without near control	OFF / ON	——	OFF
P10	Water cooling selection	OFF / ON	——	OFF
P15	Fixed frequency mode	OFF / UI	——	OFF
P16	Fan operating time	5-15min	1min	15min
P17	Arc striking time	OFF -10s	0.1s	OFF
P18	Arc-closing time	OFF -10s	0.1s	OFF
P19	Separate mode	OFF / ON	——	OFF
P20	Arc width	-5.0-5.0	0.1	0.0

Interpretation of implicit parameters:

» P01 Burnback time: If the burnback time is too long, it will cause excessive wire burn-back when the welding is completed, and the molten ball at the end of the wire may be too large; If the burnback time is too short, it will cause the adhesion of the wire to the workpiece when the welding is completed.

» P02 Slow wire feeding speed: If the slow wire feeding speed is too fast, the wire may be easily broken during the arc striking, and the arc striking may fail; If the slow wire feeding speed is too slow, the wire feeding speed may be lower than the wire melting speed during the arc striking, the arc may be too long, and the conductive nozzle may be easily burned.

» P03 Advanced air supply time: If the advanced air supply time is too long, the gas may be wasted, and the efficiency may be low; If the advanced air supply time is too short, the air holes may be prone to occur during the arc striking.

» P04 Hysteretic outage time: If the hysteretic outage time is too long, the gas may be wasted; If the hysteretic outage time is too short, the air holes may be prone to occur during the arc-closing.

» P07 Transition time

The elapsed time from initial period to welding and then from welding to arc-closing. When the welding specifications are switched, the current welding specification will be evenly transited to the next welding specification within the set transition time, thereby effectively preventing welding defects caused by sudden heat changes.

» P08 Spot welding time: For the single continuous welding time, the welding will be completed via the welding gun switch during the spot welding time. When the spot welding time is set as 0.5-20.0s, the spot welding function will be turned on.

» P09 when the ON is selected for whether there is proximity control or not, the welding current and voltage can be adjusted on the welding machine panel. When OFF is selected, the welding current and voltage can be adjusted in the wire feeder controller, remote control box, etc.

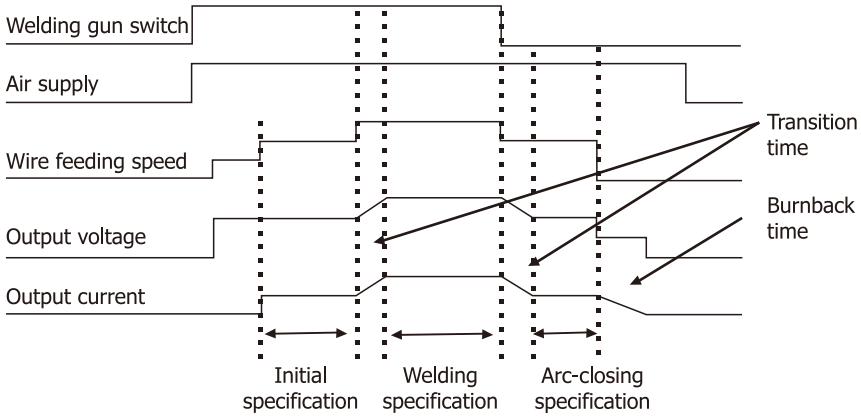
» P15 When OFF is selected for the pulse mode, it will be in the non-fixed mode; Otherwise, the UI mode, UU mode and II mode can be selected.

» P16 Fan operating time: The continuous operation time of the fan after the welding machine stops working can be set.

» P17 For the arc striking time, when two function indicator lights are not turned on during the initial and the arc-closing, and the initial time is set as 0.1 to 10.0s, the initial timing function will be enabled.

» P18 For the arc-closing time, when two function indicator lights are not turned on during the initial and the arc-closing, and the initial time is set as 0.1 to 10.0s, the arc-closing timing function will be enabled.

After the welding gun switch is pressed, for the welding specification, the welding can be performed according to the set initial welding specification, the welding time should be set as P17, and after the timing is completed, the welding can be performed according to the given normal welding specification of the wire feeder; After the switch is released, it will be transferred to the welding performing according to the arc-closing welding specification, and after the welding time reaches the set time of P18, the welding will be stopped. As shown in the picture:

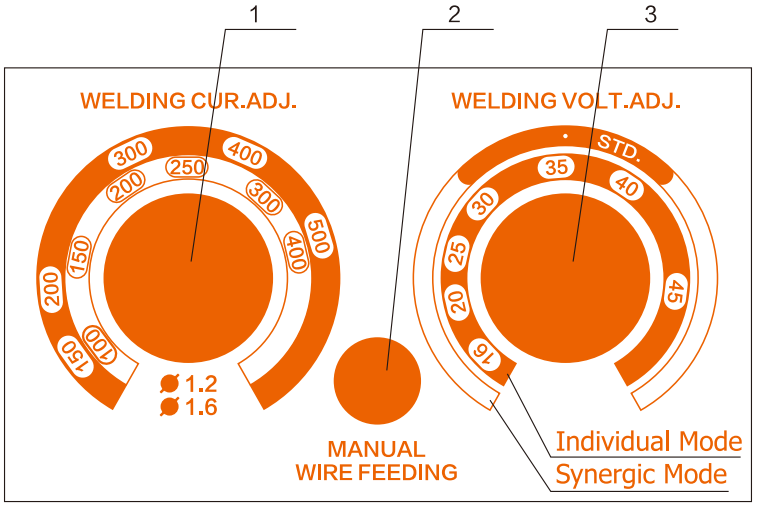


Special two-step working mode timing diagram

» P19 When OFF is selected for the separate mode, the separate mode will be closed, and when ON, the separate mode will be enabled.

» P20 The larger the arc width parameter, the wider the arc; On the contrary, the arc may become narrower.

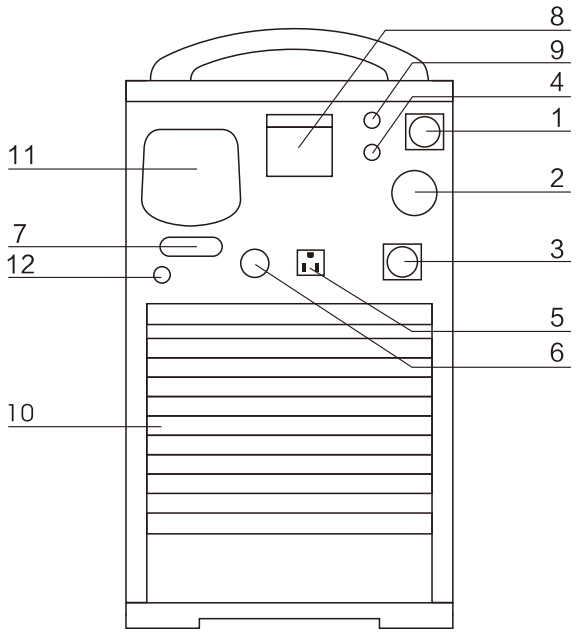
2. Controller



1) The current adjustment knob can be used to adjust the welding current.
2) The manual wire feed key can be used for quick wire feeding.
3) Voltage adjustment knob

This machine adopts a unified adjustment mode. When adjusting, the knob indication is generally adjusted to "Standard". The knob can be rotated from left to right or from right to left to perform ±50% voltage adjustment.

3. Rear panel of the welding machine



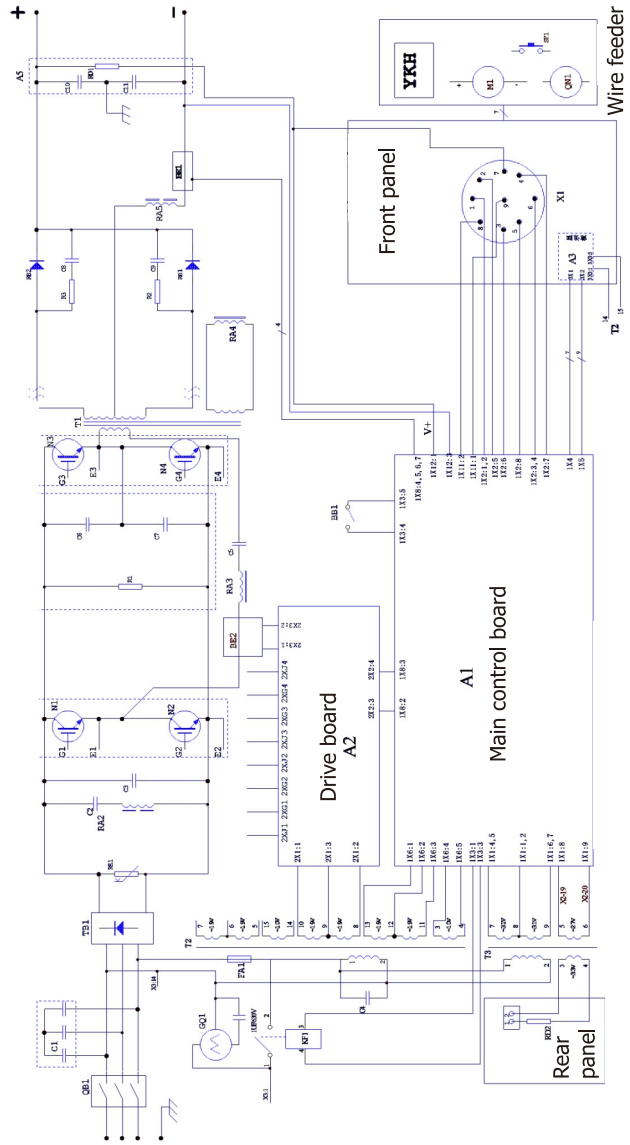
1) 485 interface
2) Welding gun terminal block (+)
3) Wire feeder control socket
4) 36V Heating power fuse
5) Heating power source (36VAC)
6) Water tank power input
7) Cable clamp
8) Air switch
9) Control transformer fuse
10) Fan
11) Power junction box
12) Grounding wire

Technical Data

1. Table of Main Technical Parameters

NO	Name	MIG-350IX	MIG-500IX
01	Power supply voltage/frequency	3-phase 380V 10%/50HZ	
02	Rated input power	14.4KVA	25KVA
03	Rated input current	25A	37A
04	Rated load persistency rate	60%	60%
05	Output current adjusting range	20～350A	20～500A
06	Output voltage adjusting range	17~32V	17~42V
07	Output no-load voltage	98V	98V
08	Efficiency	89%	89%
09	Power factor	0.87	0.87
10	Gas flow	15~20L / min	15~20L / min
13	Insulation level	H	H

2. Schematic Diagram of the Main Circuit



Maintenance and servicing of welding machine

In principle, the maintenance of the welding machine should be the responsibility of our company. The user can solve various problems encountered in the use under the guidance of our company.

1. Use precautions

1) The device number plate should be riveted on the specified position of the upper cover of the enclosure, otherwise the internal components will be damaged.

2) The connection between the welding cable and the welding machine terminal block should be tight and reliable. Otherwise, the connector may be burnt out and instability may be caused during the welding process.

3) The contact of bare copper parts of the welding cable and the welding machine terminal block with ground metal objects should be avoided to prevent short circuit of the welder output.

4) The damage and disconnection of the welding and control cables should be avoided.

5) The deformation of the welding machine by impact should be avoided and the heavy objects should not be stacked on the welding machine.

6) The smooth ventilation must be ensured.

2. Regular inspection and maintenance of the welding machine

1) The professional maintenance personnel should use compressed air to remove the dust for the welding power source every 3 to 6 months, and whether there is any looseness of fasteners in the machine should be inspected.

2) The check should be always made on the cable for breakage, the adjustment knob for looseness, and the components on the panel for damage.

3) The conductive nozzle and the wire feed roll should be replaced in time, and the wire feeding hose should be cleaned frequently.

3. Faults and their elimination of the welding machine

1) Whether the front panel state and welding specification of the welding machine are correct, and whether the keys and knobs work normally.

2) Whether the line voltage of the three-phase power supply is in the range of 340V-420V; Whether there is a phase loss.

3) Whether the connection of the welding machine power input cable is correct and reliable.

4) Whether the welding machine grounding wire is correct and reliable.

5) Whether the welding cable is wired correctly and the contact is good.

6) Whether the gas path is good and the gas regulator or proportioner is normal. Note: The maximum voltage in the machine is up to 600V. To ensure safety, it is strictly forbidden to open the enclosure at will. When maintaining, the electric shock prevention and other safety protection measures should be taken. The power should be turned off when installing the welding cable and replacing the welding gun accessories.

Appendix

1. Self-identification fault

The welding machine will display the fault code when a fault which can be self-identified by the product occurs.

Fault code	Abnormal phenomenon	Cause of abnormalities	Elimination method
E10	The welding gun switch is abnormal	There is no current output after the welding gun switch is pressed for 2s	Release the welding gun switch
E15	The startup is abnormal	The welding gun switch is closed when it is started	Remove the welding gun switch abnormity when shutdown
E17	Over-current	Positive and negative output short circuit or current sensor fault	Check and repair the output cable or replace the current sensor
E18	The voltage feedback is abnormal	The voltage feedback line is broken or the main control board is damaged	Check and repair the voltage feedback line or replace the main control board
E19	Overheating	The overheating occurs in the machine or the temperature relay fails	Wait for cooling inside the machine or replace the temperature relay
E40	The communication between the display panel of the welding machine and the main control board is abnormal	The main control board does not receive the signal from the display board	Replace the main control panel
E46	The communication between welding machine and group control controller is abnormal	The communication harness is loose or broken ☐The group controller fails ☐The corresponding control circuit in the welding machine fails	Check and repair the communication line ☐Replace the group controller ☐Replace the main control panel
E0A	The water cooling is abnormal	The water cooling system is without water circulation	Check and repair the water cooling system

2. Non-self-identified fault

NO	Phenomenon	Cause	Solutions
1	The arc is unstable and floating; The seam forming color is black; There are many splashes and short circuit phenomena	The gas mixing ratio is wrong	① Stainless steel Ar+(2~5)%C02 ② Carbon steel: 80%Ar+20%C02 ③ Flat characteristic carbon steel: 100%C02
2	There are pores on the welding seam	① The air leakage occurs or the airflow star is not suitable ② The surface of the workpiece is too dirty	① Check the air pipe and welding gun, air flow: 15~20L/min ② Clean the workpiece
3	There is no penetration, the base metal cannot be molten, and the pulse current is not obvious	① The current sensor is damaged ② The control circuit board is damaged	① Replace the current sensor ② Replace the control circuit board
4	There are many splashes and short circuit phenomena	① The specification is not suitable ② The conductive nozzle is seriously worn	① Adjust the specification and adjust the inductance ② Replace the conductive nozzle
5	The conductive nozzle is burnt out, the welding voltage and current are not adjustable	① The wire feeder control cable is disconnected or the controller is damaged ② The current sensor is damaged ③ The control circuit board is damaged	① Replace the wire feeder control cable or controller ② Replace the current sensor ③ Replace the control circuit board
6	The arc striking success rate is low	① The slow wire feeding speed is not suitable ② The welding cable contact is not good	① Adjust the slow wire feeding speed ② Check the welding cable
7	The wire feeding speed is uneven	① There is something wrong with the wire feeding mechanism ② The conducting wire hose is damaged ③ The conductive nozzle is seriously worn	① Check the wire feeder and wire pressing roll ② Replace the conducting wire hose ③ Replace the conductive nozzle
8	CO2 gas regulator is not heated	① CO2 gas regulator is broken ② The heating cable is disconnected or under short circuit ③ The heating power supply thermistor is damaged	① Replace CO2 gas adjustment ② Repair the heating cable ③ The replace the thermistor
9	After pressing and holding the welding gun switch, the wire feed is normal, but the gas path is not available.	① The control circuit board is damaged ② The solenoid valve is blocked or damaged ③ The control cable is disconnected	① Replace the control circuit board ② Repair or replace the solenoid valve ③ Connect the disconnected wire well
10	After pressing and holding the welding gun switch, the wire feeder does not work, and there is no no-load voltage indication	① The welding gun switch is damaged ② The wire feeder control cable is disconnected ③ The control circuit board is damaged	① Replace welding gun ② Repair wire feeder control cable ③ Replace the control circuit board