
Preface



Please read first.

Before the installation or operation, in order to protect your and others' safety, please read and understand the manual.



Warning! The welding machine is professional equipment for arc welding, which is only provided for professionals with training Background and technical background.

Thank you for choosing Jasic inverter welder. In order to ensure your safety and correct operation, please read this manual carefully. Keep this manual properly for future references.

This product is designed and manufactured according to relevant national and international standards, conforming to GB15579, ICE60974, EN60974, AS60974, UL60974, etc.

This product conforms to electromagnetic compatibility requirements for A category equipment.

Relevant design plans and manufacturing technologies of this product are patented.

All products purchased from Jasic are covered for one-year defect liability period, starting from the purchasing day on the contract, provided with complete technical supports and after sales maintenance. Users can contact nearby Jasic office, customer service center, or Jasic headquarters, if there is anything needed.

SHENZHEN JASIC TECHNOLOGY CO., LTD.

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1. SAFETY GUIDANCE

1.1 Precautions for Installation



Warning! During the welding process, it may cause damage to you and others, please do well the protection. For the details, please refer to the safety protection guide to the operators that accord with the manufacturer accident prevention requirements.

	<p>Beware of electric shock!</p> <ul style="list-style-type: none">● Install grounding device according to relevant standard.● Do not touch live parts with naked skin, wet gloves or wet clothes.● Make sure you are insulated from ground and workpiece.● Close the cover plate of the machine before power on to avoid any electric shock.● Confirm the safety of your working position.
	<p>Beware of fire hazard!</p> <ul style="list-style-type: none">● Please install the machine in dry indoor working environments; please make sure there is over 30cm distance between the machine and wall/ other objects.● Make sure there are no inflammables near the welding position, or there might be danger of fire hazard
	<p>Beware of explosion!</p> <ul style="list-style-type: none">● This machine can be installed in normal environment where there is exhaust gas or dust which are resulted from normal welding processing. But please do not install the machine in an environment with explosive gas, or metal dust environment, which could have direct contact with spatters; or there might be danger of explosion.








Carrying or moving the machine can be dangerous.





- Cut off the power supply via the switching box before moving the welding machine.
- Make sure that the hanging rings are tightened, and that the machine enclosure and cover are fixed when moving the welding machine with a crane.
- Two lifting belts should be used when lifting the welding machine, and the angle formed by the lifting belt and the vertical direction should be smaller than 15°.
- Do not lift the machine together with other objects.
- Do not apply any stress on the operation panel and cover when moving the welding machine. Otherwise, personal injury or property damage may be caused by a drop.
- Please make sure the wheels are fixed tightly when using a forklift to move the machine.
- Do not install or run the welding machine when the machine is damaged or lacks any components. Otherwise, fire hazard or personal injury may be caused.

⚠ Replacing the components can be dangerous.

- Only professionals can replace the machine components. Make sure there are no foreign bodies such as wire leads, screws, gaskets and metal bars falling into the machine inside when replacing the components.
- Make sure the connecting wires inside the machine are correctly connected after replacing the PCBs, and then the machine can be operated. Otherwise, there is a risk of damage to property.

1.2 Precautions for operation

	<p>Only qualified professional is allowed to operate this machine.</p> <ul style="list-style-type: none"> ● Please use national safety supervision department authorized labor protection appliance. ● Operators must be valid and certified welding & cutting special work personnel. ● Do not maintain or fix machines when machine is powered on.
	<p>Smoke-may be harmful to your health!</p> <ul style="list-style-type: none"> ● Welding might generate harmful smoke and gas; please avoid inhalation of waste gas in welding. ● Keep your head away from the smoke during welding. Make sure the working environment is well ventilated with exhaust or ventilation equipment.
	<p>Arc radiation-may hurt your eyes and burn your skin!</p> <ul style="list-style-type: none"> ● Use proper mask and wear protective clothing to protect your eyes and body. ● Use proper mask or curtain to protect onlookers from being injured.
	<p>Magnetic field can make cardiac pacemaker a bit wonky.</p> <ul style="list-style-type: none"> ● People with cardiac pacemaker should consult the doctor before carrying out welding. ● Stay away from the power source to reduce the interference of magnetic field.
	<p>Improper use and operation may result in a fire or an explosion.</p> <ul style="list-style-type: none"> ● Welding spark may result in a fire, so please make sure there are no inflammables near the welding position, and pay attention to fire safety. ● Ensure there is fire extinguisher nearby, and make sure someone has been trained to operate the fire extinguisher. ● Do not cut sealed container. ● Do not use this machine for pipe unfreezing

	<p>Hot workpiece can cause severe scald.</p> <ul style="list-style-type: none"> ● Do not touch hot workpiece with bare hands. ● Cool the welding torch for a while after continuously working.
	<p>Excessive noise does great harm to people's hearing.</p> <ul style="list-style-type: none"> ● Wear ear covers or other hearing protectors when welding. ● Give warning to onlookers that noise may be potentially hazardous to hearing.
	<p>Moving parts may injure your body.</p> <ul style="list-style-type: none"> ● Please keep away from moving parts (like fan). ● Each door, panel, cover, baffle plate, and protective device the like should be closed and located correctly.
	<p>Seek professional supports when trouble strikes.</p> <ul style="list-style-type: none"> ● When trouble strikes in installation and operation, please inspect according to related contents in this manual. ● If you still cannot understand fully, or you still cannot solve the problem, please contact the dealer or the service center for professional supports.

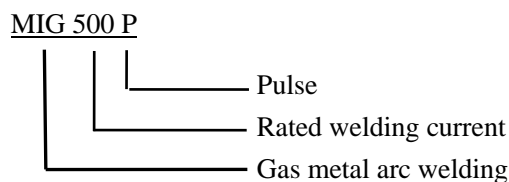
1.3 Precautions for scrapping

Pay attention to the following when discarding the welding machine:

- Burning the electrolytic capacitors in the main circuit or on the PCBs may cause an explosion.
- Dispose the machine as industrial waste.

2. PRODUCT OVERVIEW

2.1 Model name description



2.2 Product features

This digital DC MIG machine is of excellent welding performance, multiple functions, abundant interfaces, convenient operation, high reliability and easy upgrade.

A. Excellent welding performance

Mature IGBT inverter technology: this machine main circuit adopts international cutting-edge high frequency IGBT full bridge inverter technology, which largely reduces machine size and improves power supply conversion rate. High inverter frequency is beyond audio range, which almost eliminates noise pollution, contributing easily controlled welding current, as well as more smooth and stable welding processing.

Brand-new digital control method: the control circuit is dominated by high performance processor, which realizes fine control of the welding waveform. Waveform of pulse current varies with wire of different material, diameter and shielding gas so that it can achieves optimal arc and welding of high efficiency and quality with neat metal weld and elegant shape; Precise procedure control enables stable transition of the whole processing from arc start, welding to crater.

B. Powerful functions: digital control with high performance processor equips this machine extra functions which traditional welding machines do not possess. These functions are of vital importance in modern automation and semi-automation welding application.

Multiple welding modes: The machine has four welding modes including pulse MIG, DC MIG, MMA and simple TIG.

“synergic control”: this machine has built-in synergy parameters function for different materials, wire sizes and under different protective gases. After operators’ setting on material type, wire dia and protective gas through front panel, he/she only needs to set welding current (or wire feed speed/ work piece thickness); then machine will have auto-match on welding voltage.

Parameters set: there are 20 sets parameters in this machine, which allows storage and invoking of all welding status and parameters. This will make convenience for different users’ operation in one machine. Each operator can set his or her own welding method and parameters, and without interfering with each other.

Four MIG operation methods: except for 2T, 4T, there are also spot welding and repeat (4T) operation method. In addition, under 2T of pulse MIG, specification and time for initial phase and crater phase can be set to satisfy automation welding.

C. Convenient operation: operators can easily set welding mode, wire type, gas, wire dia, etc. through the concise human-computer interface. They can also set different parameters during welding processing through encoder. Meanwhile, both power source front panel and wire feeder front panel can set welding current and voltage (or arc length).

D. High reliability: this product is carefully designed and has gone through a whole series of lab testing, not only in enclosure, but also internal components. eg. This product external structure is anti-vibration, anti-dust, even anti-metal dust. All electric components, PCB are with special protection treatment, and can be used in damp environment for a long time. Meanwhile, this machine is of over-heat protection, over-current protection, under-voltage protection, lack of water protection, communication failure warning, etc. These protection can guarantee all external and internal failures will not do damage to welding machine and other equipments.

E. Convenient upgrade: this machine adopts high performance processor as its main control chip. Special customized demands can be realized by upgrading software. There is reserved software download interface in the back of the machine, which saves the procedure of open the machine.

Other information about the machine:

- 1、 Four functions: Pulse MIG, MIG, MMA, Lift-TIG.
- 2、 Cooling method: fan cooling.
- 3、 Handles or wheels are provided for moving.
- 4、 Characteristics of welding machine: flat characteristic usually, or drop characteristic while set arc force.
- 5、 EMC is Class A according to CISPR11.

3. TECHNICAL PARAMETERS

3.1 Technical parameters

model		MIG500P(N36801)	MIG350P(N36701)
Input	Power supply	3Phase AC380V±20% 50Hz	
	Rated input (KVA)	26.7	16.6
	Power factor	0.90	0.89
Output	Rated OCV (V)	86	
	V.R.D	√	
	MMA、 TIG Rated VRD (V)	15	
	MIG rated max output (A/V)	500A/39V	350A/31.5V
	MMA rated max output(A/V)	500A/40V	350A/34V
	TIG rated max output (A/V)	500A/30V	350A/24V
	Welding voltage (V)	10-50	10-42
	Welding current (A)	30-500	30-350
	Wire feed speed (m/min)	1.5-23.0	1.5-23.0
	Regulator heater voltage (V)	AC36	
	Output characteristics	MMA&TIG:CC MIG/MAG:CV	
Environment	Working temperature (°C)	—10~+40	
	Storage temperature (°C)	—25~+55	
	IP class	IP23	
	Cooling type	Air-cooled	
Rated duty circle (%)		50%	60%
Efficiency (%)		91%	90%
Insulation grade		F	F
Dimension (mm)		785×330×666	630x300x540
Weight (kg)		59	45

Note:

Duty cycle (%):

The ratio of given duration time/the full-cycle time

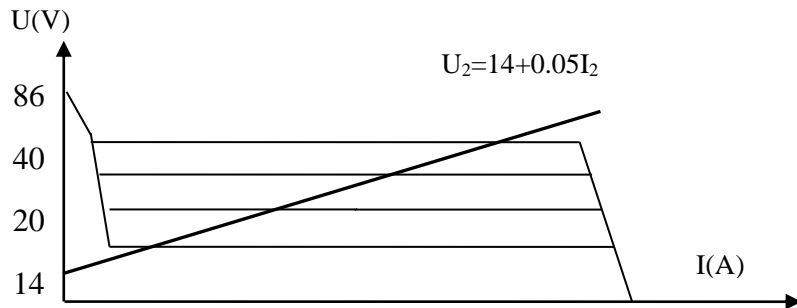
This ratio shall be within 0~1, and can be indicated by percentage.

In this standard, the full-cycle time is 10minutes.

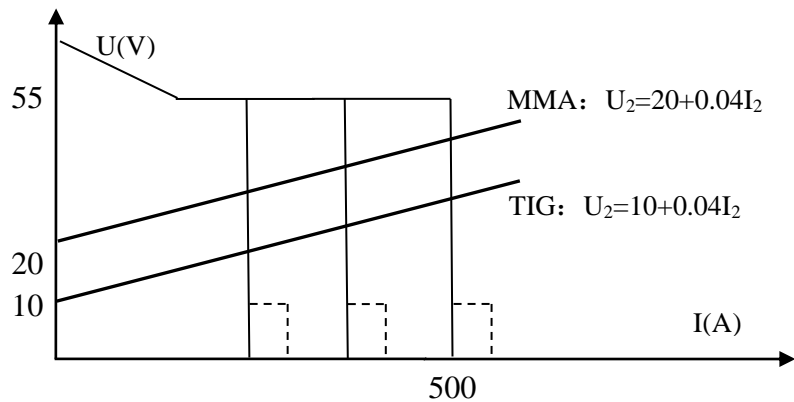
For example, if the duty cycle is 60%, the load-applying time shall be 6 minutes and the following.

3.2 Output characteristics

MIG is of CV characteristics
Output external characteristics
curve is as shown on the right.



MMA & Lift-TIG are of CC
characteristics.
Output external characteristics
curve is as shown on the right.



4. INSTALLATION

4.1 Installation requirements

4.1.1 Working environment

Please pay attention to the following items when choosing the installation environment:

- Avoid installation in places filled with dusts or metal powder.
- Avoid installation in places filled with corrosive and explosive gases.
- Please make sure the working environment is within $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$; extra forced heat dissipation or derating operation is required if the temperature is more than 40°C
- Humidity has to be below 90% and of no condensed water drop
- Make sure there is no wind in the welding site; please use wind screen if necessary, or else the welding performances may be affected.
- Please consult and confirm with Jasic qualified personnel first if there is any special installation requirements.

4.1.2 Installation space requirements

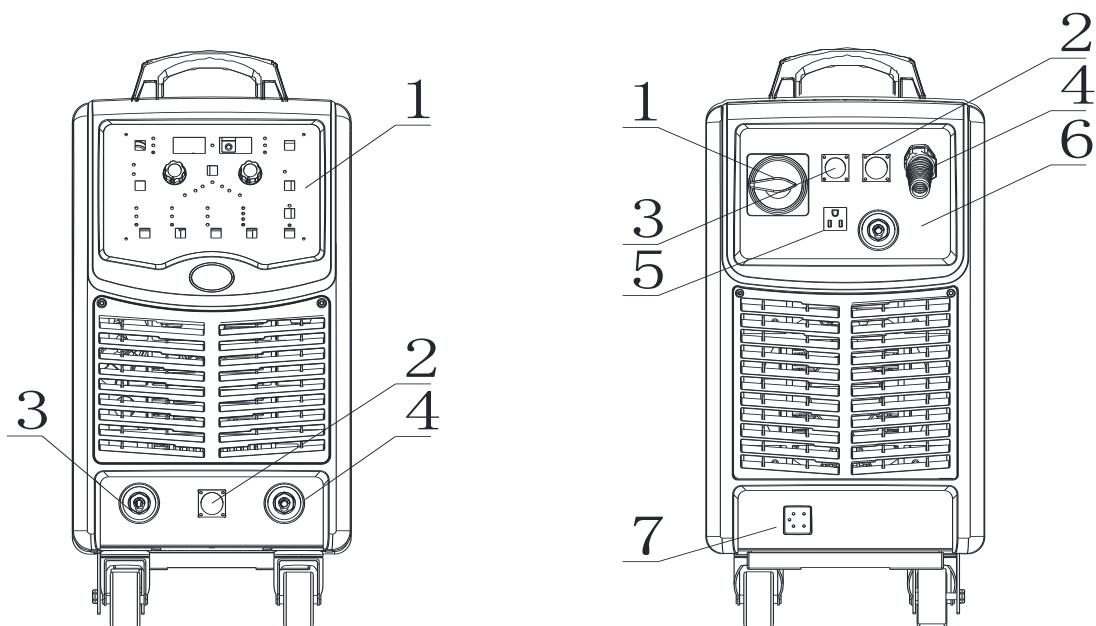
Keep the welder more than 30cm distant from the wall or any other equipment.

4.2 Electrical connection

Attention:

1. All electrical connection has to be carried out by qualified and licensed operators.
2. Please turn off the distribution box switch and make sure safety before any electric connection.
3. Please use required standard cables.
4. Don't touch with wet hands.
5. Don't place heavy items on cables.
6. Tap water pipe, house rebar may be in poor ground condition. Please don't use them as safe ground lead.
7. Every welder is equipped with an air switch or fuse.

4.3 Front & back panel introduction



Front panel description:

1. Digital front panel(parameters selection, setting and display.)
2. Wire feeder control cable connector
3. Quick socket for positive output (connect wire feeder or MMA electrode holder)
4. Quick socket for positive output(connect MMA earth clamp)

Back panel description:

1. Breaker (air switch)
2. Wire feeder control cable connector
3. Software upgrade interface
4. 3 phase power cable ($4\times 6\text{mm}^2/4\times 4\text{mm}^2$)
5. Socket for gas heater (Not for any other use except heating gas)
6. Quick socket for positive output(connect wire feeder)
7. Cooler interface

Fig 4.1

4.4 Power supply input cable connection



Warning! Electric shock may result in personal death; high voltage direct current still exist on equipment even after power-off, please do not contact the current-carrying part on equipment.



Warning! The electric connection of equipment must be performed by qualified electrician with qualification certificate.



Warning! Do not connect the power cord (blue /brown/black)to ground terminal. Do not connect the ground wire (yellow/green) to power cord.

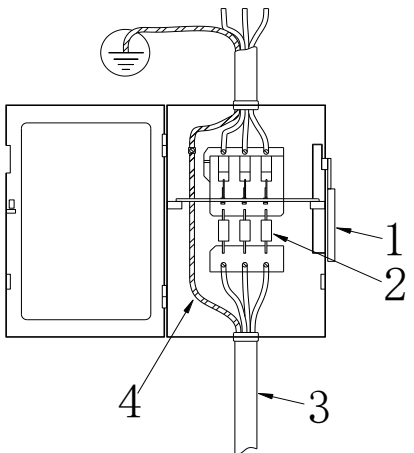


Warning! Improper power supply voltage may damage equipment.

- 1) This welding machine is equipped with power source voltage compensation system, so it still can work on normally when the power source voltage varies within $\pm 15\%$ range of rated voltage.
- 2) Connect the power cord to the corresponding voltage class of distribution box according to input voltage class of welding machine, don't connect the voltage by mistake. Meanwhile, make sure that tolerance of supply voltage is within the allowable range. Voltage of the product is 380V~, 50/60Hz three-phase.
- 3) When long cable is necessary to be used, the larger section cable is advised to be used to decrease voltage drop; when the connecting cable is overlong, it may impose great affect on arc starting performance of welding machine and other performance of system, so we advice you use the recommended cable length.
- 4) It is suggested that power cord should be H07RN-F 4X6mm² for MIG500P and H07RN-F 4X4mm² for MIG350P, welding cable (approved according to EN 60245-6) should be H01N2-D 1X70/50/35mm² and external fuse should be 60A for MIG500P and 40A for MIG350P. The recommended MIG welding torch is 50% 500A (approved according to EN 60974-7). The recommended electrode holder is 50% 500A (approved according to EN 60974-11).

- Make sure the switch is turned off in the distribution box before install the power supply input cable.
- Connect the welder's input cable to the output port of distribution box switch's. The cable connection is completed.

Connection of the distribution box



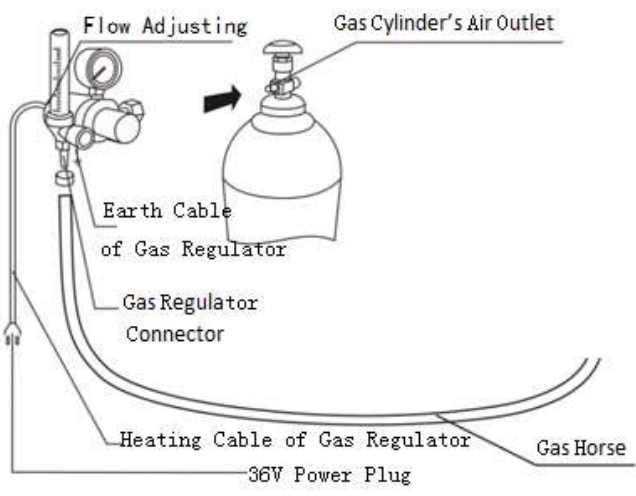
1. Distribution box power switch.
2. Fuse of 60A or more to be applied to machine of 500A, while fuse of 40A or more to be applied to machine of 350A
3. Welder Cable (4*6mm² for MIG500, 4*6mm² for MIG400 and MIG350)
4. Olivine Ground Cable (Ground connection! NOT Zero Line Connection)

Please connect per the wiring map or other correct wiring way. Please turn off the power supply during connection.

Warning: Power Off during Connection!

- ▲ All connection has to be done by qualified operators.
- ▲ Don't connect two welders in the same fuse-box.
- ▲ If the cover of the machine is grounded, no ground connection of no. # 4 cable.

4.5 Gas cylinder connection



Attention:

1. Connection has to be done by qualified and licensed operators.
2. Please read CO₂ heating gas meter's manual carefully before connection.

4.6 Machine installation



Warning! All the connections should be conducted after making sure that power supply is cut off. Correct sequence is to connect the bond and grounding line to the welding machine, make sure that connection is reliable and not loose, and then connect to power supply finally.

4.6.1 Compact machine installation

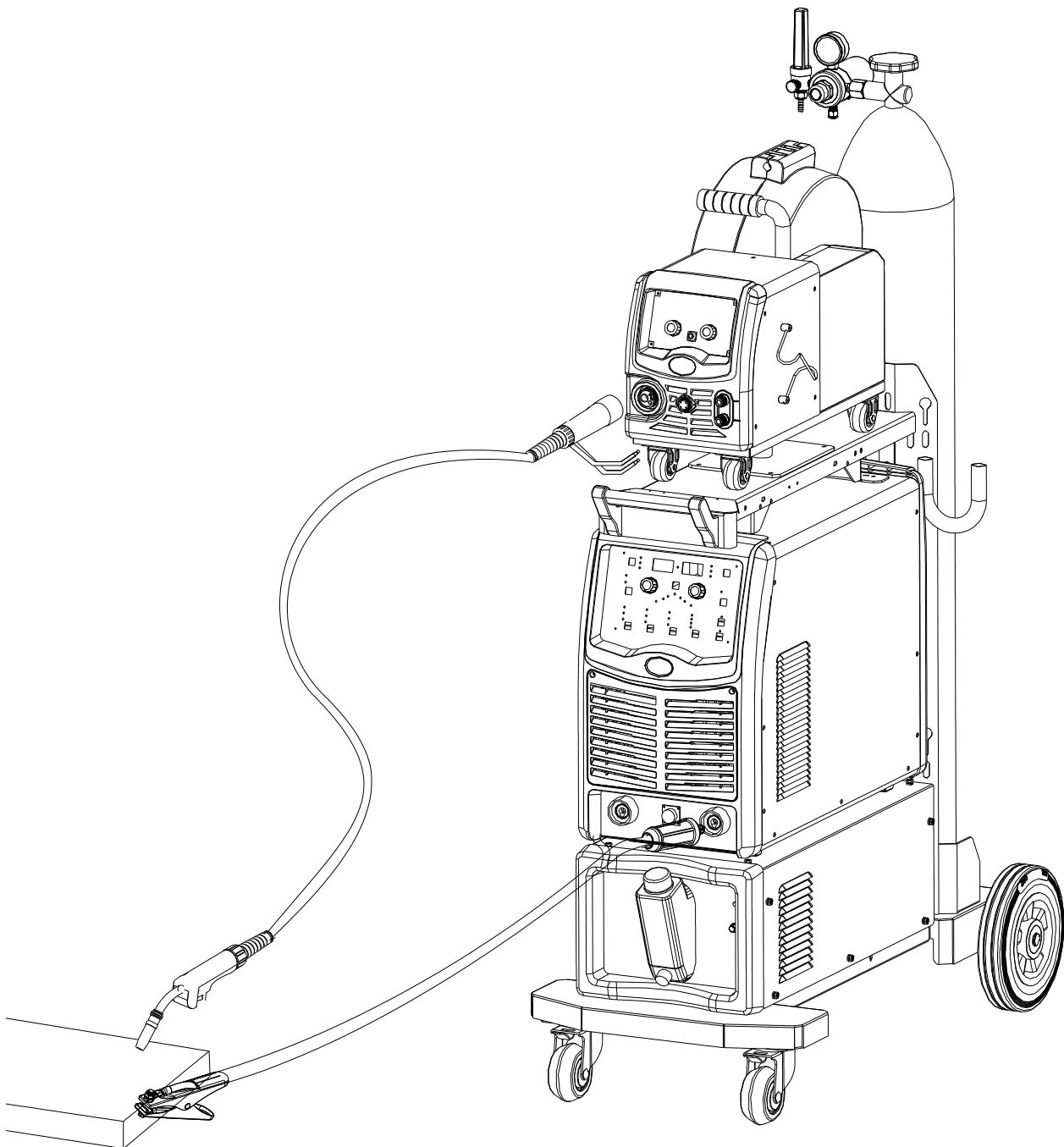


Figure 4.2

4.6.2 Separated machine installation

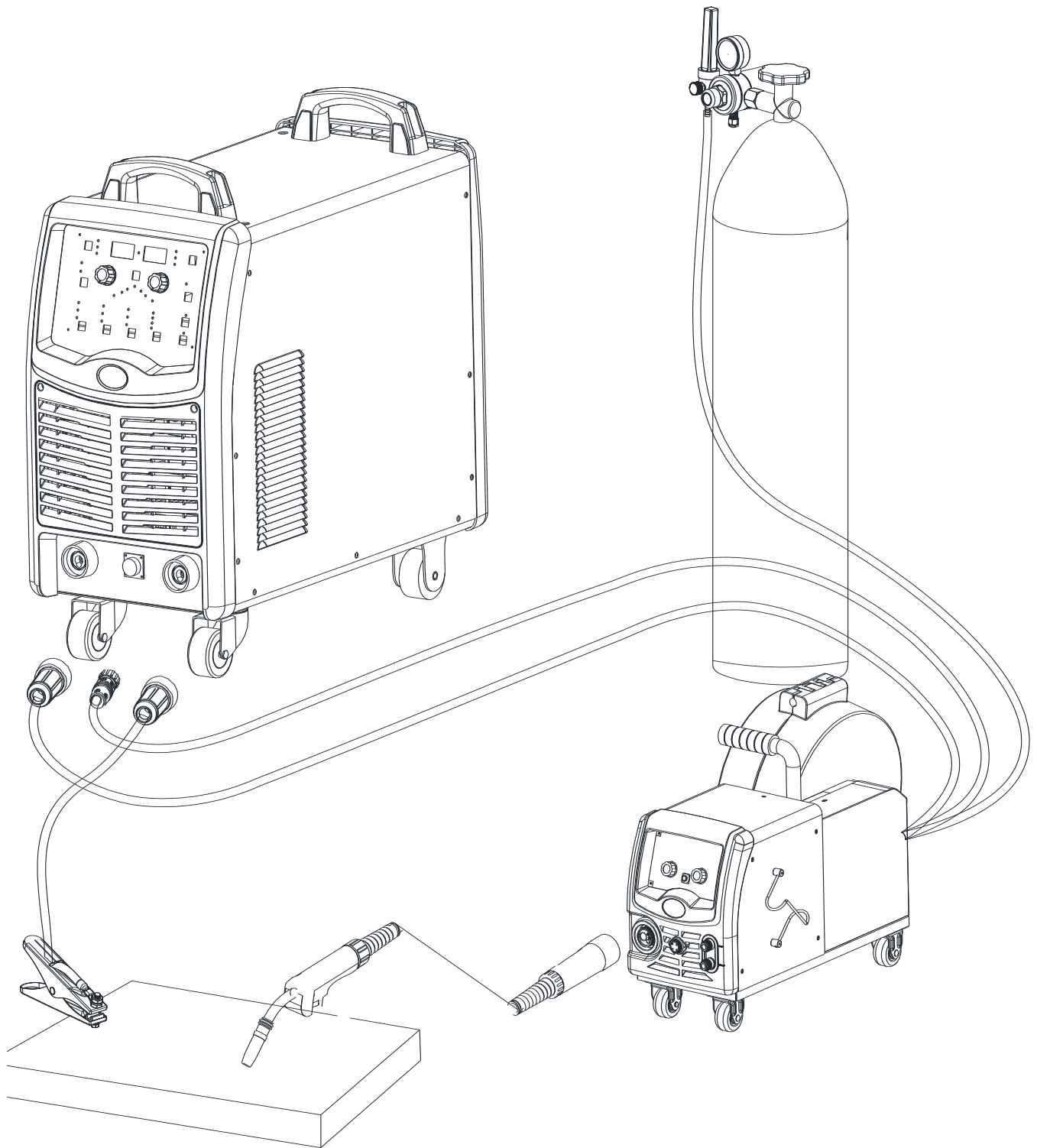


Figure 4.3

5. FUNCTIONS AND OPERATION

5.1 Digital front panel

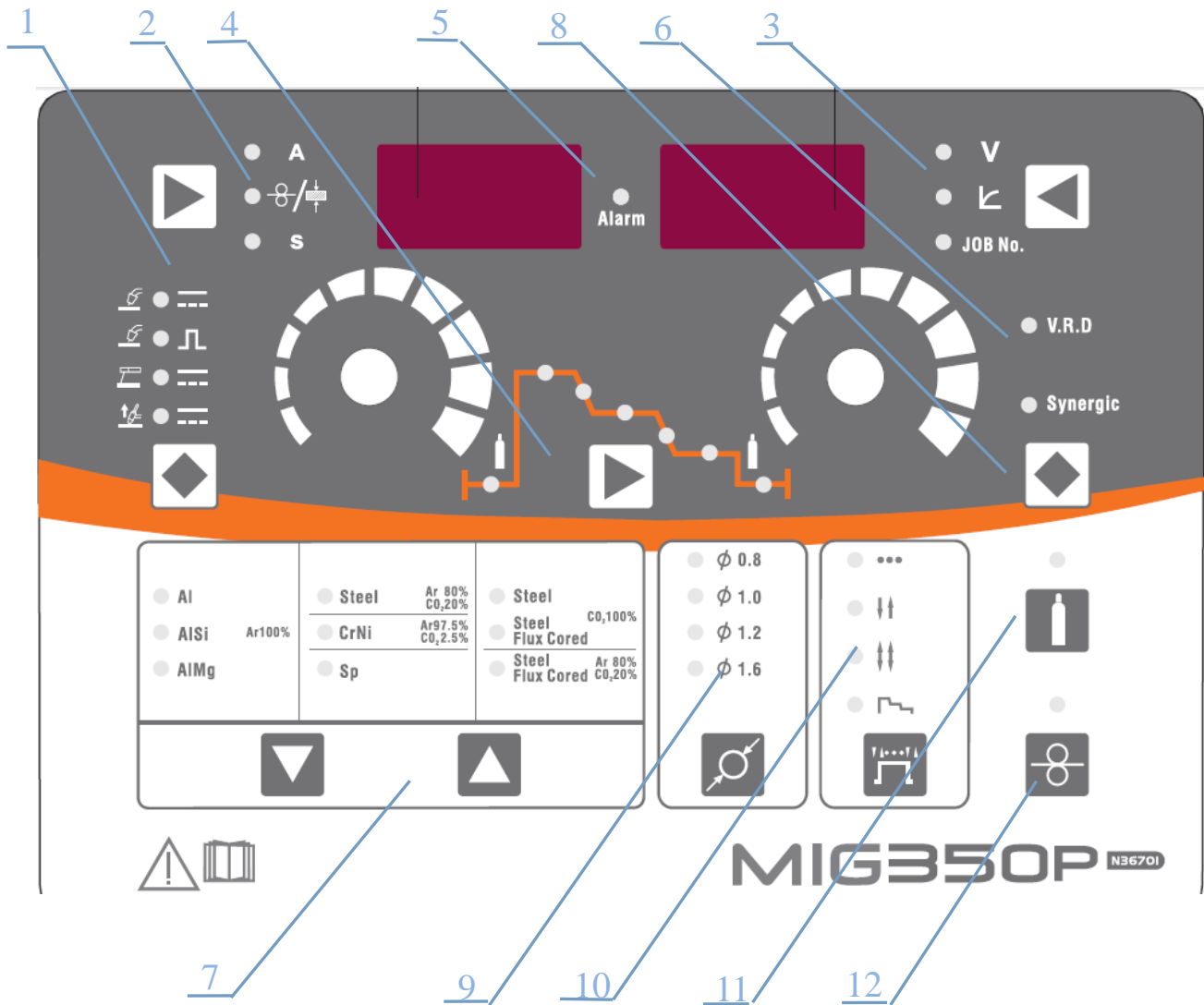
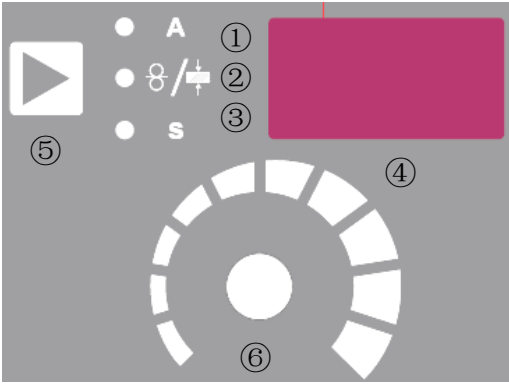
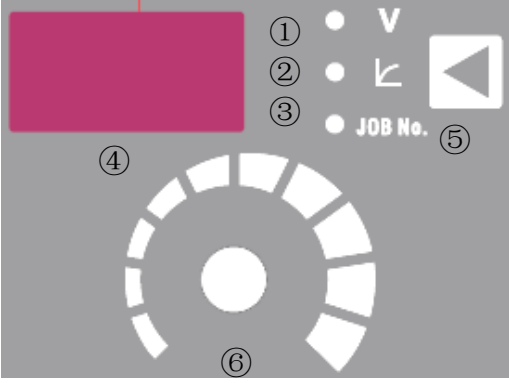
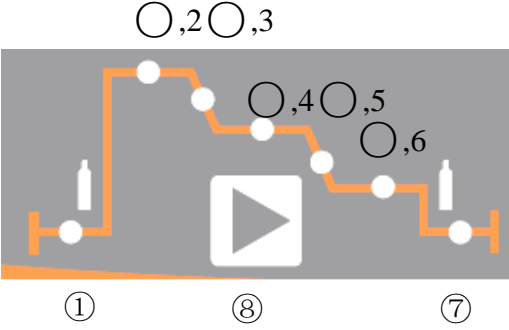
















Figure 5.1

Table 5-1 Digital front panel functions table

1	Welding method selection area		○,1DC MIG welding indicator
			○,2Pulse MIG welding indicator
			○,3DC MMA welding indicator
			○,4Lift-TIG welding indicator
			○,5Welding method selection key K3

2	Current/wire feed speed/workpiece thickness/Time display and selection area		<input type="radio"/> 1 current parameter indicator <input type="radio"/> 2 wire feed speed, welding piece thickness indicator <input type="radio"/> 3 time indicator: pre-flow time, post-flow time, or spot welding time, initial segment, crater segment, up/down-slope, etc <input type="radio"/> 4 parameter display window W1 <input type="radio"/> 5 parameters selection key K1 <input type="radio"/> 6 parameter adjustment encoder EC1
3	voltage/arc force(MIG) or arc force(MMA)/parameters set display and selection area		<input type="radio"/> 1 voltage parameters indicator <input type="radio"/> 2 arc force parameter indicator <input type="radio"/> 3 parameters groups set indicator <input type="radio"/> 4 parameter display window W2 <input type="radio"/> 5 parameters selection key K2 <input type="radio"/> 6 parameter adjustment encoder EC2
4	Welding processing parameters selection area		<input type="radio"/> 1 pre-flow time indicator <input type="radio"/> 2 Initial segment indicator <input type="radio"/> 3 Transition indicator from initial segment to process <input type="radio"/> 4 welding primary segment <input type="radio"/> 5 Transition indicator from process to crater segment <input type="radio"/> 6 Crater segment indicator <input type="radio"/> 7 post-flow time indicator <input type="radio"/> 8 Welding process selection key K4

5	Failure indicator		Light up when there is any failure.
6	VRD indicator		MMA unload status output voltage indicator. Green means safe; red means danger.
7	Wire & Gas selection area	① ● Al ② ● AlSi Ar100% ③ ● AlMg	<input type="radio"/> ,1Al + Ar100% <input type="radio"/> ,2AlSi + Ar100% <input type="radio"/> ,3AlMg + Ar100%
		① ● Steel Ar 80% CO ₂ 20% ② ● CrNi Ar97.5% CO ₂ 2.5% ③ ● Sp	<input type="radio"/> ,1Steel + Ar80%CO ₂ 20% <input type="radio"/> ,2CrNi + Ar97.5%CO ₂ 2.5% <input type="radio"/> ,3SP1
		① ● Steel ② ● Steel CO ₂ 100% Flux Cored ③ ● Steel Ar 80% CO ₂ 20% Flux Cored	<input type="radio"/> ,1Steel + CO ₂ 100% <input type="radio"/> ,2Steel Flux-Cored + CO ₂ 100% <input type="radio"/> ,3Steel Flux-Cored + Ar80%CO ₂ 20%
		 	welding method selection key K5、K6
		①  ② 	<input type="radio"/> ,1Synergic status indicator: light on means under synergy control. Light off means “separate” <input type="radio"/> ,2“synergy”、 “separate” status switch key K7
		① ϕ 0.8 ② ϕ 1.0 ③ ϕ 1.2 ④ ϕ 1.6 ⑤ 	<input type="radio"/> ,1 ϕ 0.8 <input type="radio"/> ,2 ϕ 1.0 <input type="radio"/> ,3 ϕ 1.2 <input type="radio"/> ,4 ϕ 1.6 <input type="radio"/> ,5wire diameter selection key K7

1 0	MIG operation mode selection area	① 	<input type="radio"/> .1spot welding
		② 	<input type="radio"/> .22T
		③ 	<input type="radio"/> .34T
		④ 	<input type="radio"/> .4Special 4T
		⑤ 	<input type="radio"/> .5operation mode selection key K8
1 1	Gas detection key and indicator		K8 self-locking gas detection: one press and there is gas, also indicator will light up; gas will stop entering automatically after 20s. If press again within 20s, it will stop sending gas.
1 2	Wire feed key and indicator		K10 self-locking wire feeding: one press and indicator will light up; start wire feeding by pressing wire feed speed; press again and indicator will light off and it will stop wire feeding.

5.2 Function description



Warning! Select welding function complies with demands. Select the method according to the technological requirements of workpiece during the welding, if selects the method improperly, unstable electric arc, large splash and sticky welding rod may occur.

5.2.1 Parameters set

“JOB No.” refers to storage and invocation of parameters set, which can store 20 sets of parameters “0~19”. The parameters set has priority over any other parameter because it includes all parameters that can be set by welder panel such as welding modes and all states and parameters setting in welding mode. Each parameter adjusted will be automatically saved in the current applied parameters set, therefore parameters of this parameters set are still the same as last time when you turn on the machine next time. This machine is not installed specialized memory key as well as manual storage or invocation.

Parameters set is easy-operated, because it can be switched by encoder EC2 with indicator of “parameters set” on by pressing parameters switching key K2. By switching parameters set, corresponding parameters will show up and will be saved automatically if they are adjusted.

5.2.2 DC MIG

1、 “Synergic” and “ Separate ”

DC MIG, namely standard MIG/MAG, has “synergic” and “separate” modes for welding specification adjustment:

Synergic: There are accordant current and voltage setting for any wire type, wire diameter, protective gas. same current have different wire feed speed, workpiece thickness, and synergic voltage; after setting current or wire feed speed, workpiece thickness, system will have an auto match for welding voltage, which saves a separate setting on welding voltage. User can also have arc length adjustment according to real processing requirements.

After choosing “synergic”, machine panel’s left display will show preset current(or wire feed speed, workpiece thickness);right display will show preset voltage; wire feeder panel left display will show preset current and right display will show preset arc length; they both can set current and voltage. Standard arc length is “0”; adjustment is based on synergic voltage, ranging between±9.9V.

Separate: current or wire feed speed, workpiece thickness adjustment has no relation with voltage adjustment and requires separate setting.

2、 Parameters setting

Under standard MIG/MAG, adjustable parameters include: pre-flow time; welding specification of process: welding current (or wire feed speed/board thickness), welding voltage, arc force (inductance); welding specification of crater segment: welding current (or wire feed speed/board thickness), welding voltage, arc force (inductance); post-flow time.

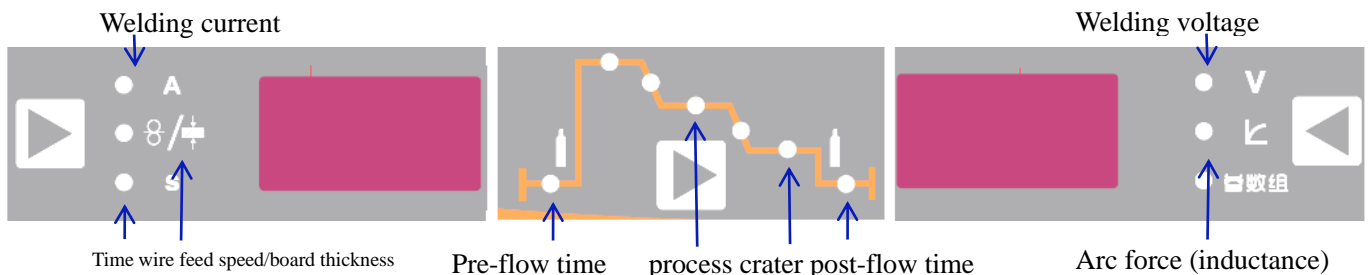


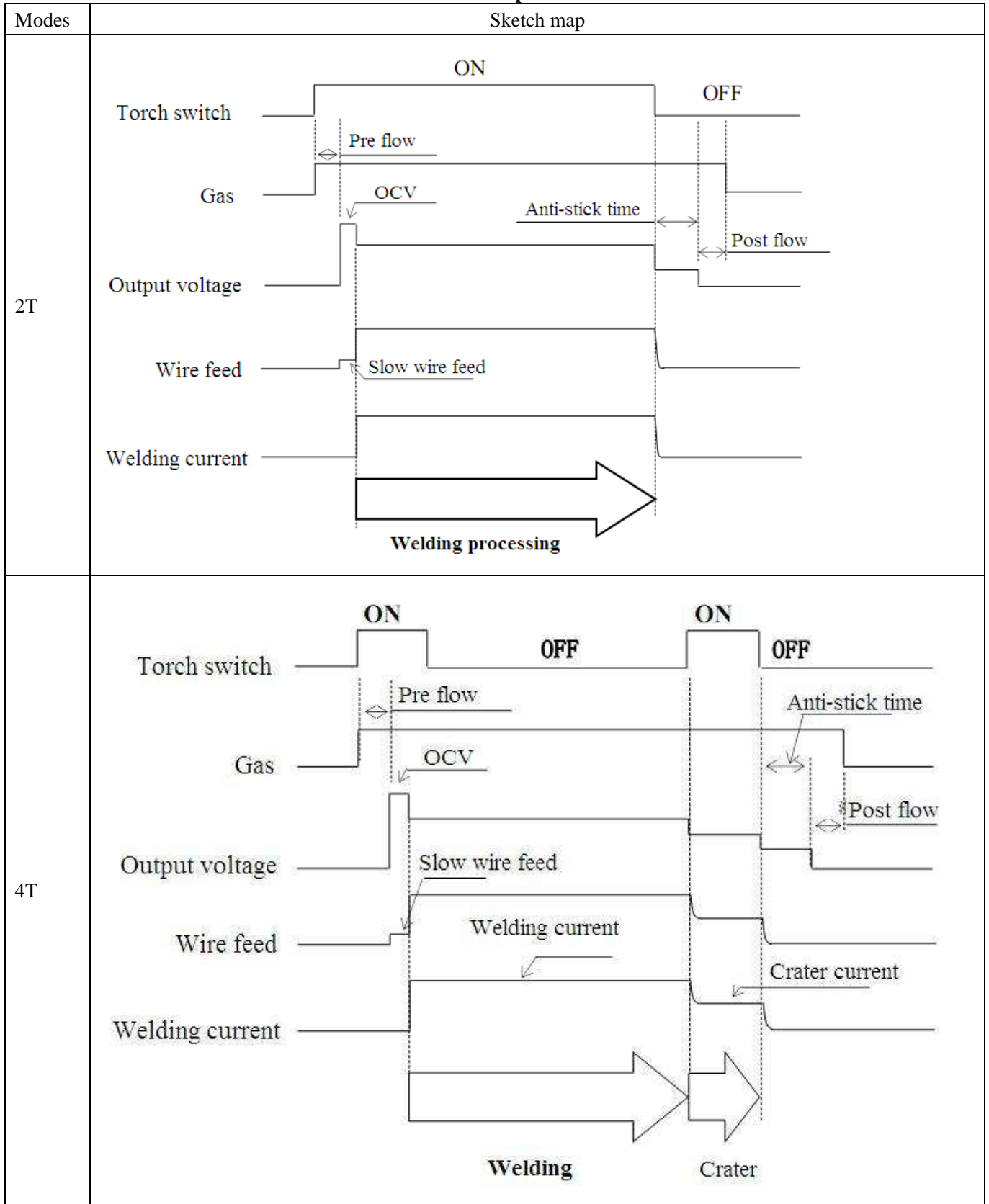
Fig 5.2

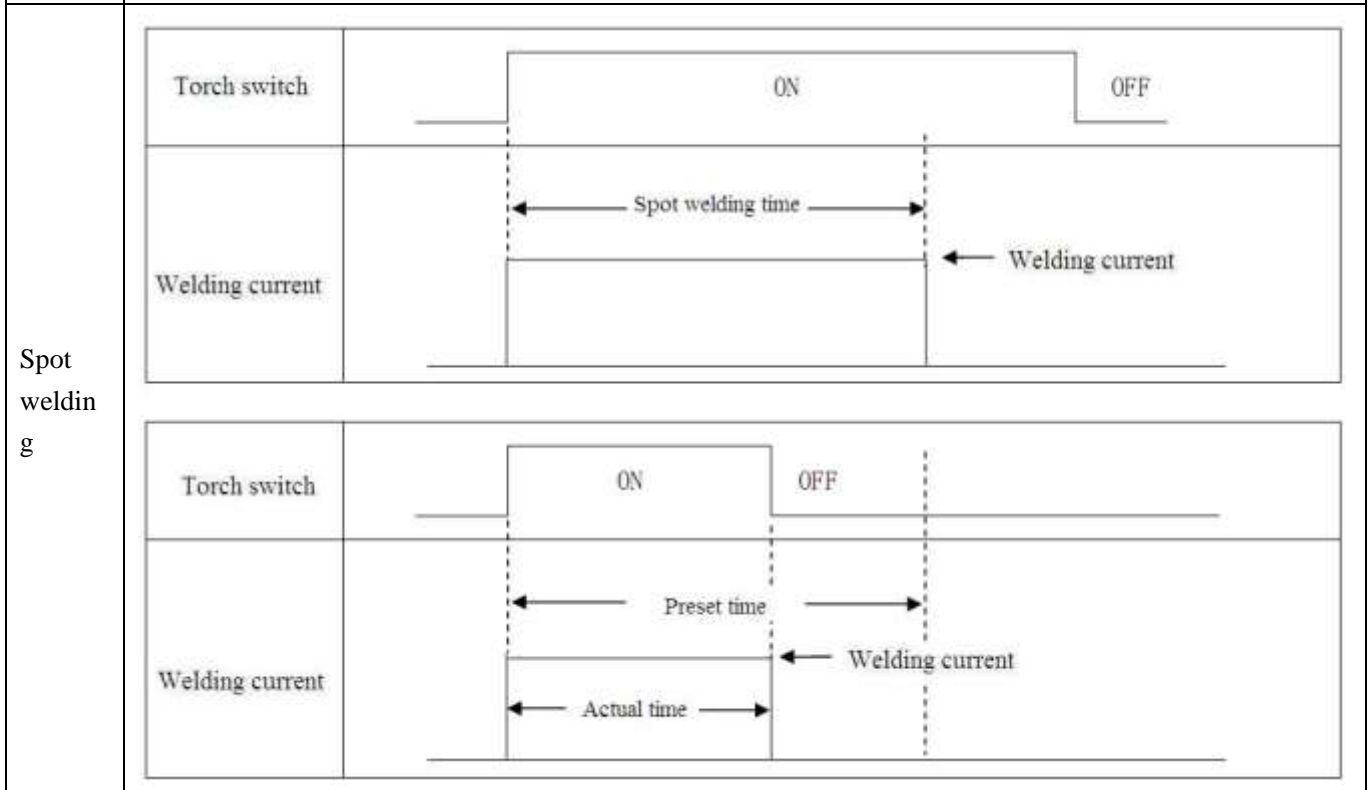
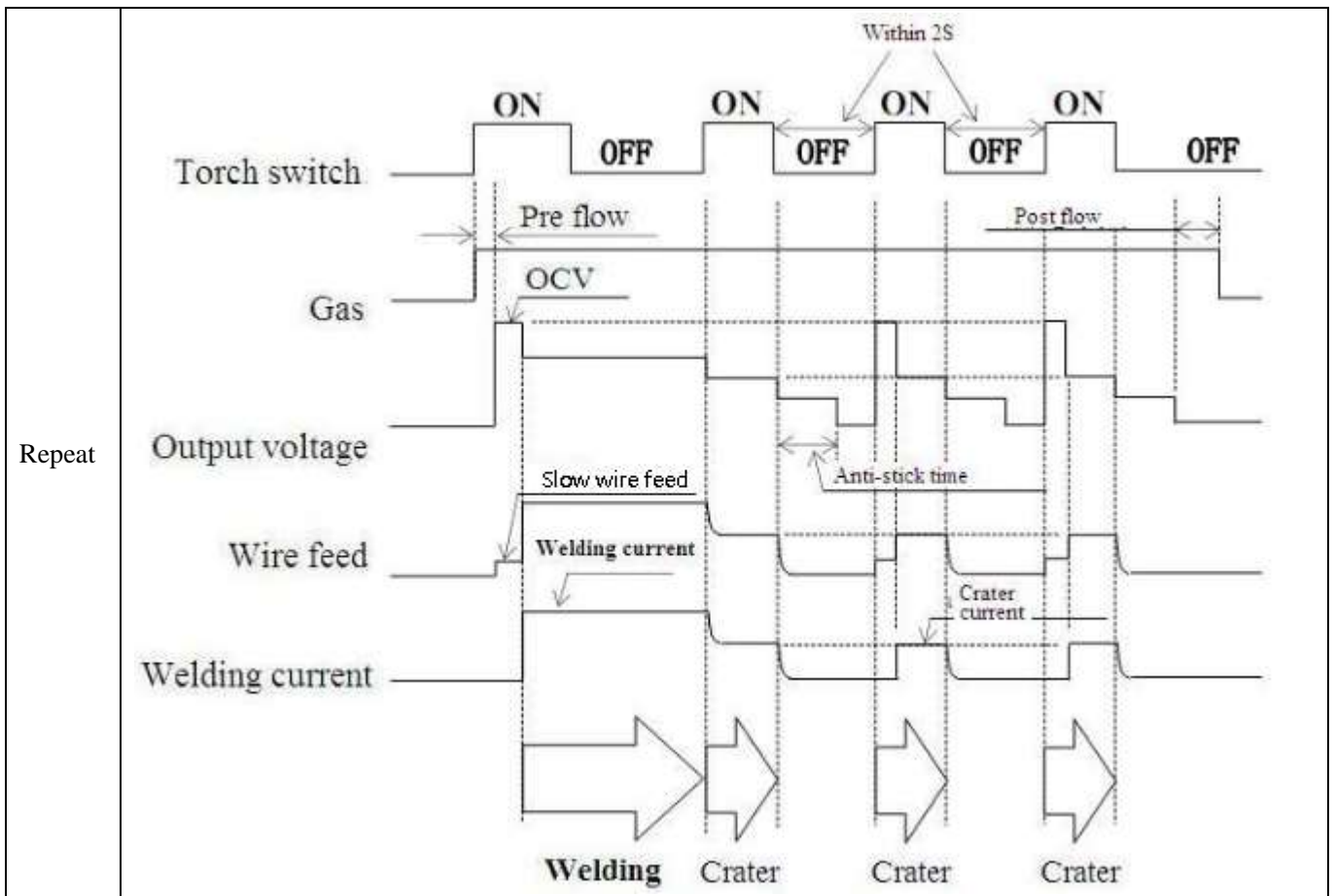
Model	Welding current	Welding voltage	Pre-flow time	Post-flow time	Arc force (inductance)
MIG500P	30~500A	10~50V	0~3.0s	0~10.0s	-10~10
MIG350P	30~350A	10~42V	0~3.0s	0~10.0s	-10~10

Note: Different welding wire has different welding current range; with different welding wire, wire feed speed differs even under the same current

3. Operation modes

Table 5-2 DC MIG operation modes





5.2.3 Pulse MIG

1. "Synergic" and "Separate"

Pulse MIG/MAG only has “synergic” mode, while “separate” mode is unavailable. Under “synergic”, voltage can be adjusted with a focus on synergic voltage±9.9V.

2、Parameters setting

Under standard MIG/MAG, adjustable parameters include: pre-flow time; welding specification of initial segment: welding current (or wire feed speed/board thickness), welding voltage, arc force (inductance); transition time from initial to process; welding specification of process: welding current (or wire feed speed/board thickness), welding voltage, arc force (inductance); transition time from process to crater; welding specification of crater segment: welding current (or wire feed speed/board thickness), welding voltage, arc force (inductance); post-flow time.

Arc force: arc force range is -10~+10; 0 is the standard central value; adjust to the positive direction and arc will be harder and weld bead will be narrower; if adjust to the negative direction, arc will be softer and weld bead will be broadened; arc force can be set respectively at welding process, initial and crater.

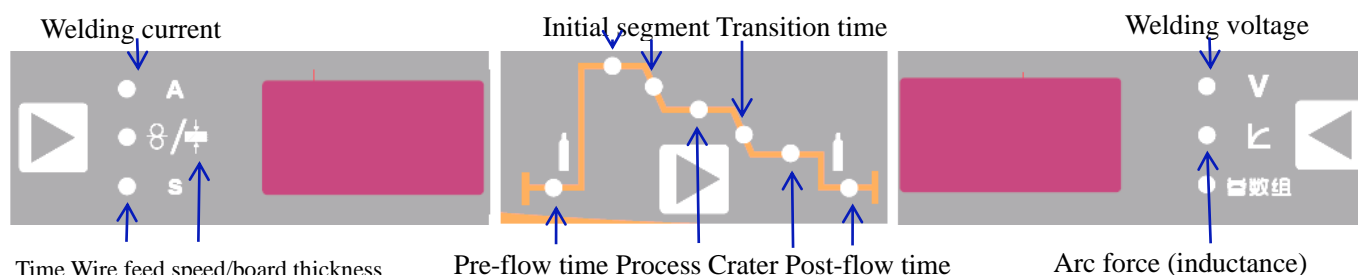


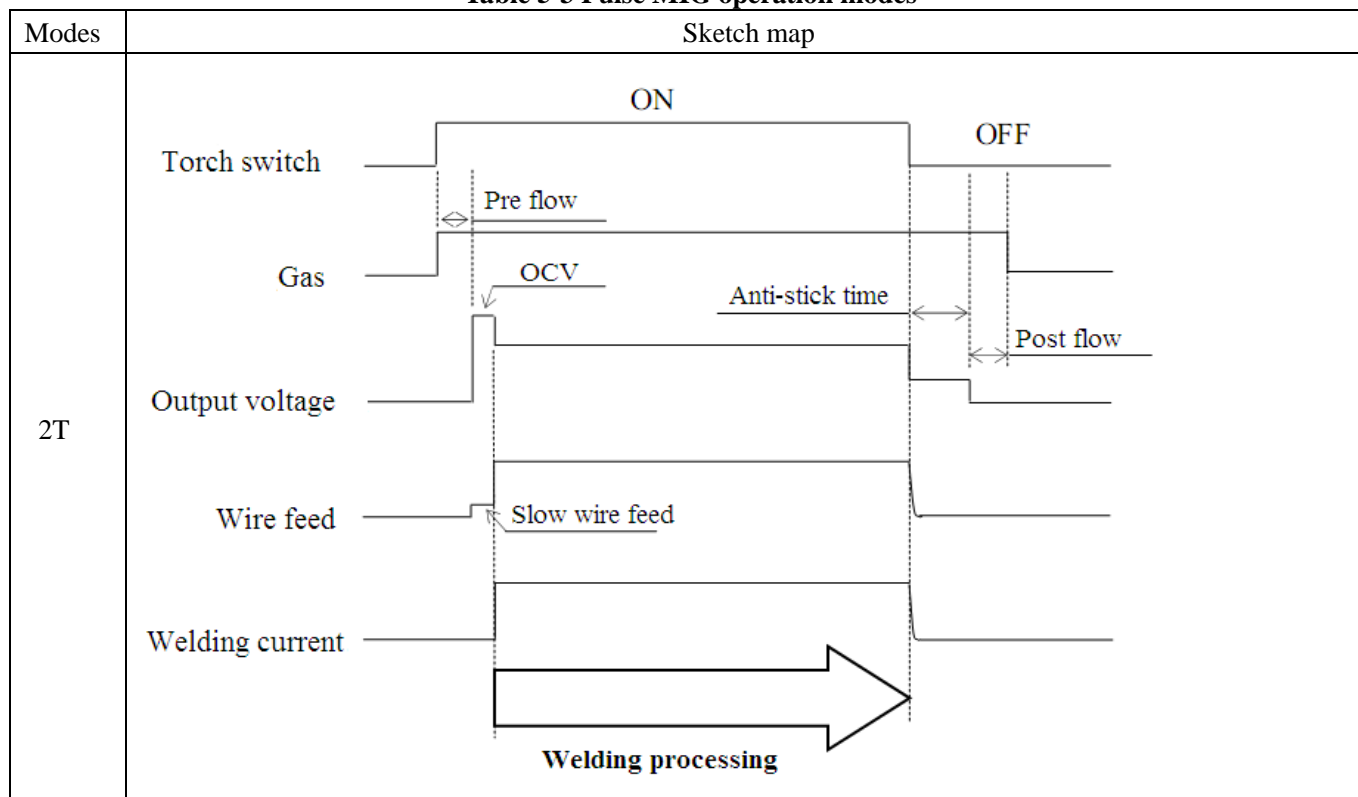
Fig 5.3

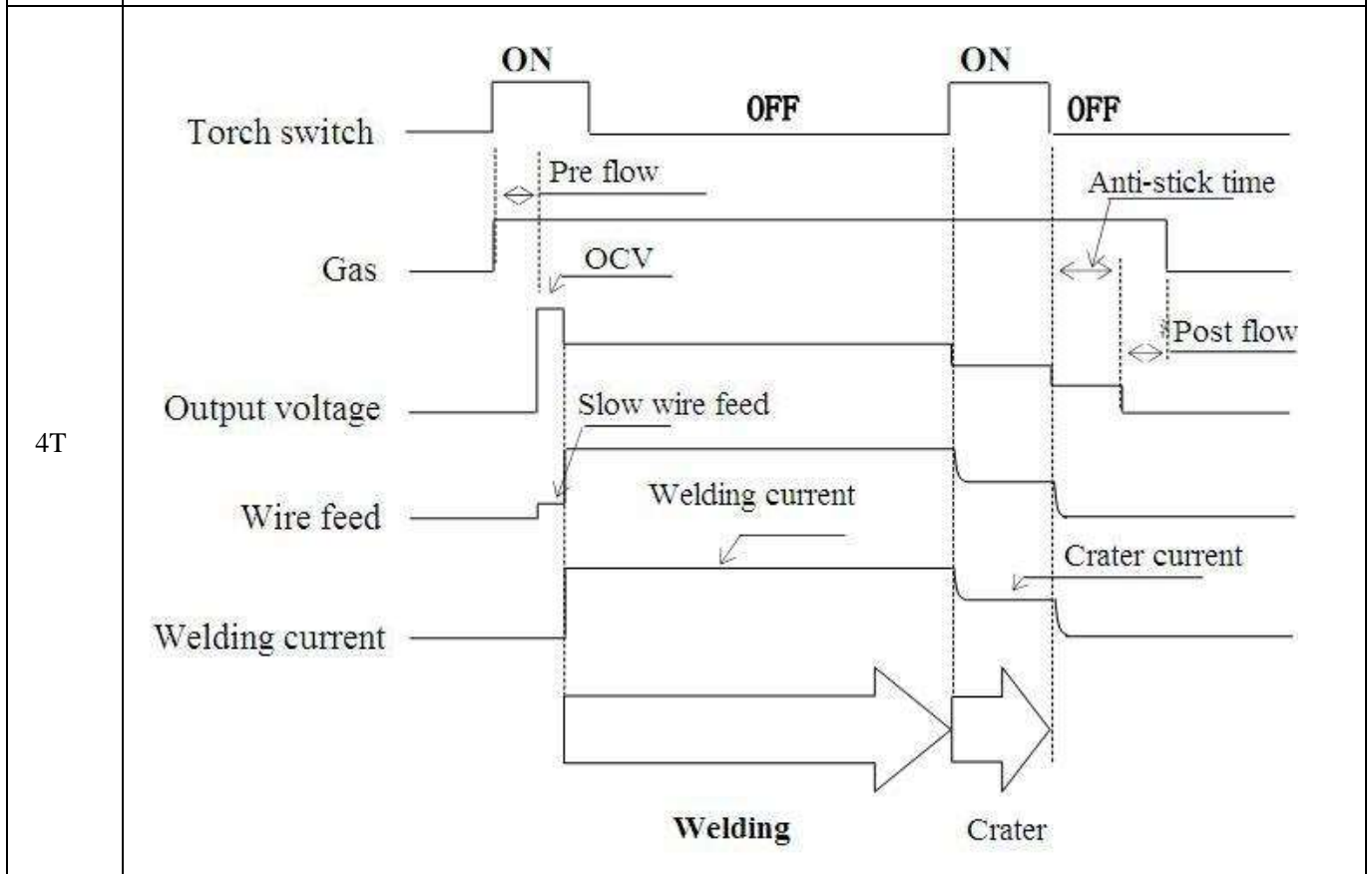
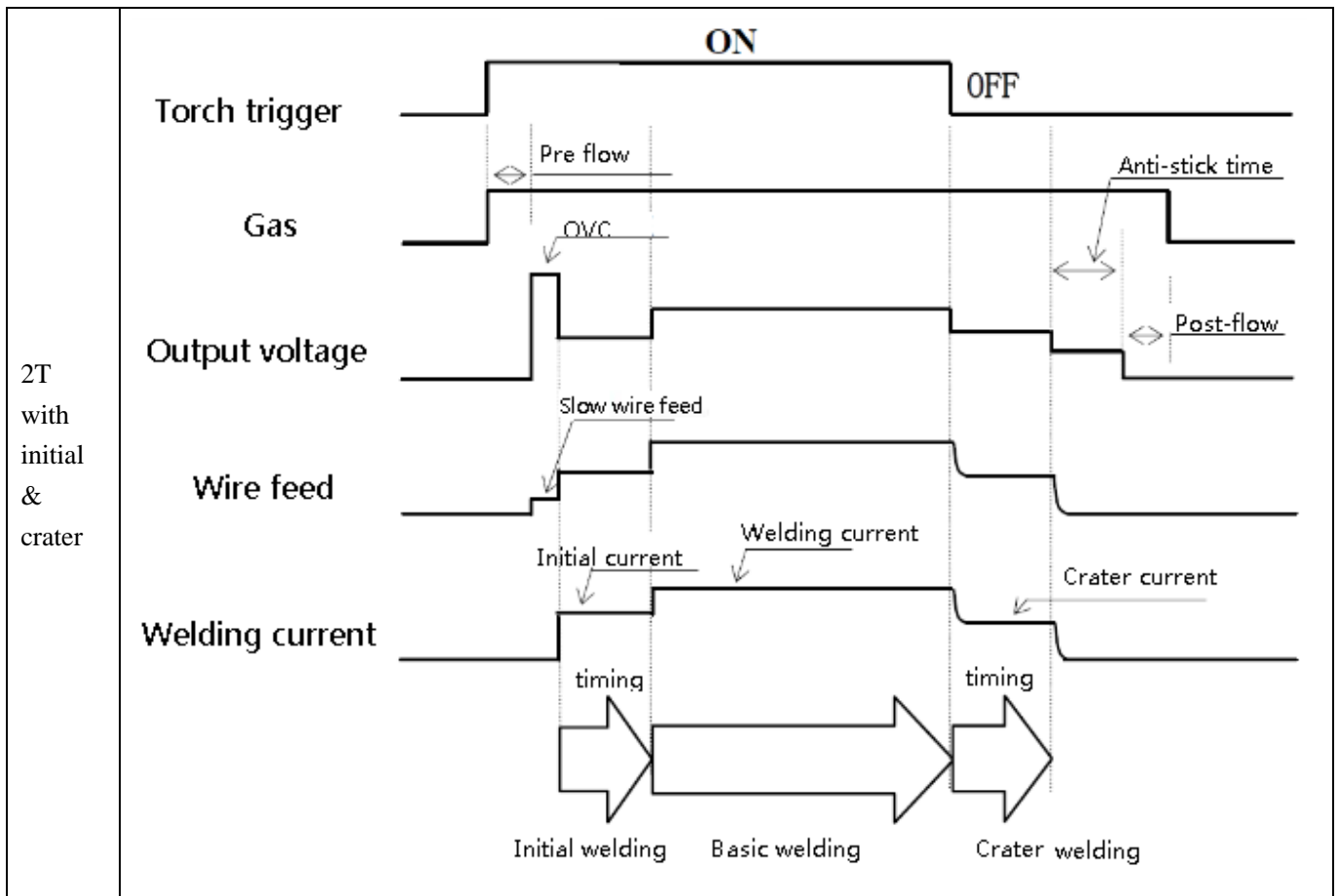
Model	Welding current	Welding voltage	Transition time	Pre-flow time	Post-flow time	Arc force (inductance)
MIG500P	30~500A	10~50V	0.1~3.0s	0~3.0s	0~10.0s	-10~10
MIG350P	30~350A	10~42V	0.1~3.0s	0~3.0s	0~10.0s	-10~10

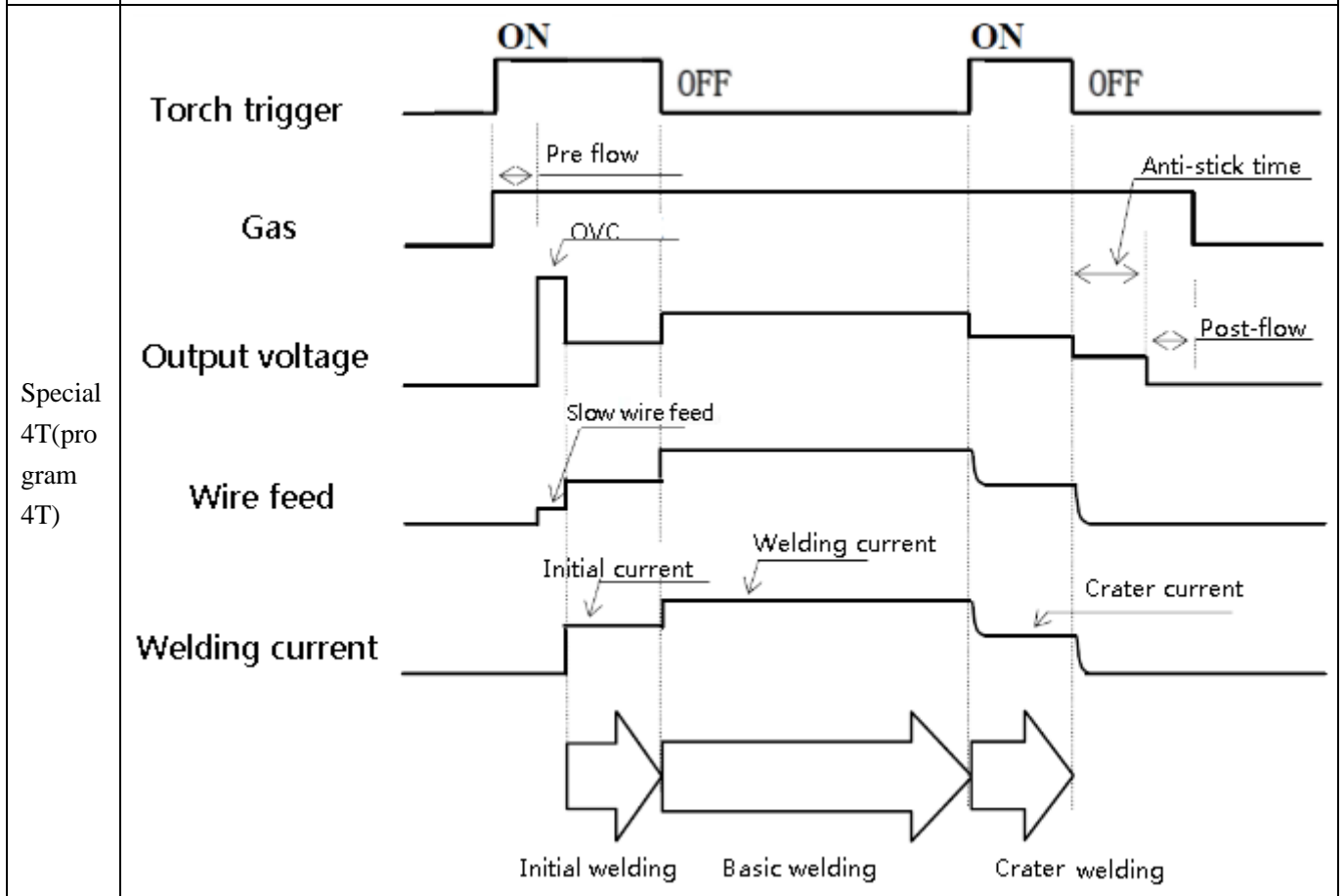
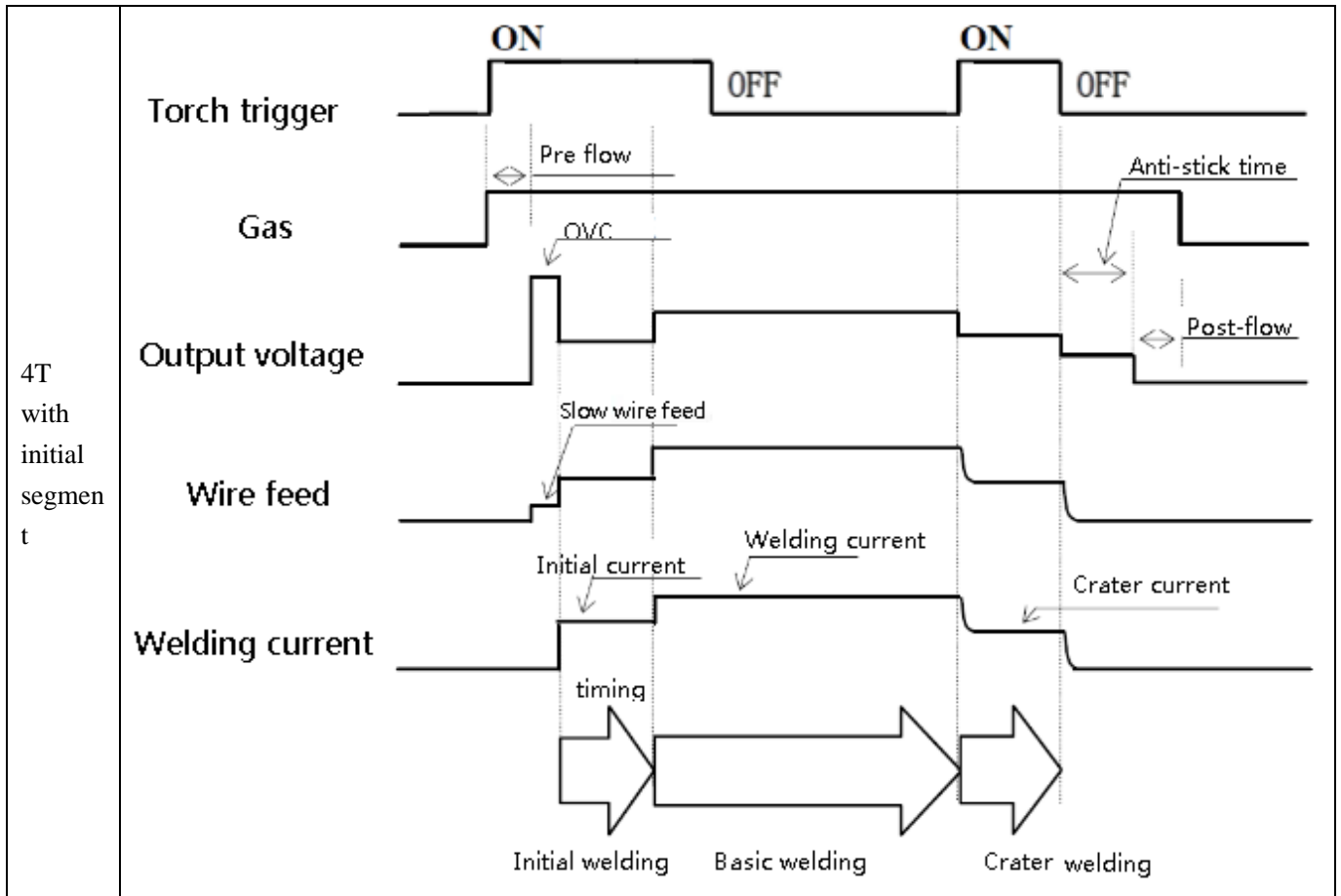
Note: Different welding wire has different welding current range; with different welding wire, wire feed speed differs even under the same current

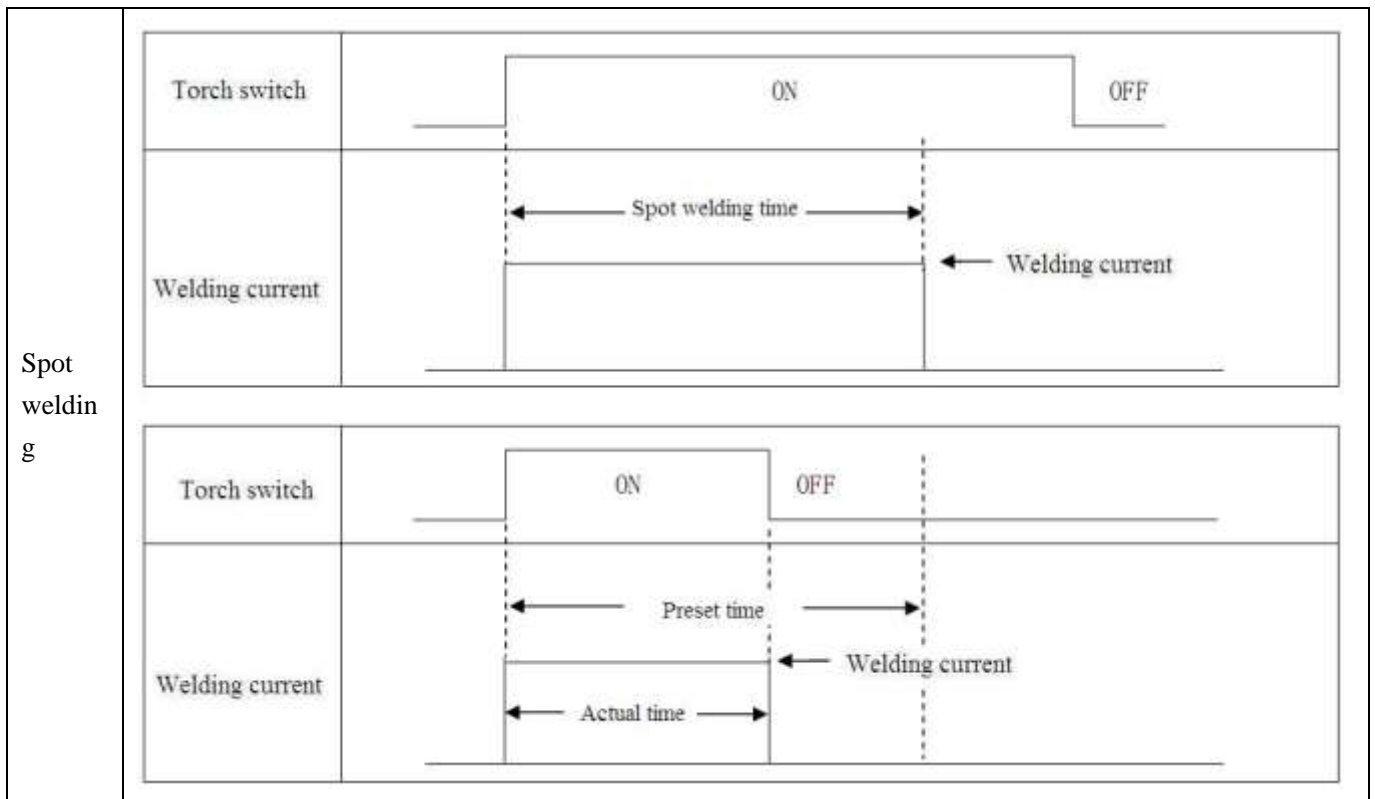
3、Operation modes

Table 5-3 Pulse MIG operation modes









Note:

○,1 Initial segment: Initial segment of 2T and 4T is set for automation welding. Welding specification of this segment is -50%~+100% of that of process, displaying “0.5~2.0” at initial current with 0~10s. When time is set as 0, initial segment is off. So if initial segment is needed, it is recommended to set as 1.30 with 0.5s. Initial segment of program 4T can be set freely without being affected by process.

○,2Crater phase: It is applied to fill in the crater. This segment can be set freely but the specification is usually smaller than that of process.

5.2.4 MMA welding

Under MMA welding for coated electrode, three parameters including hot start current, welding current and arc-force current are adjustable on digital panel. Hot start current is at “initial segment” of “welding process selection zone”; welding current is at “process” of “welding process selection zone”; arc-force current is at “MIG arc force, MMA Arc-force current indication” of “Voltage/arc force/parameters set, etc displaying and setting zone”.

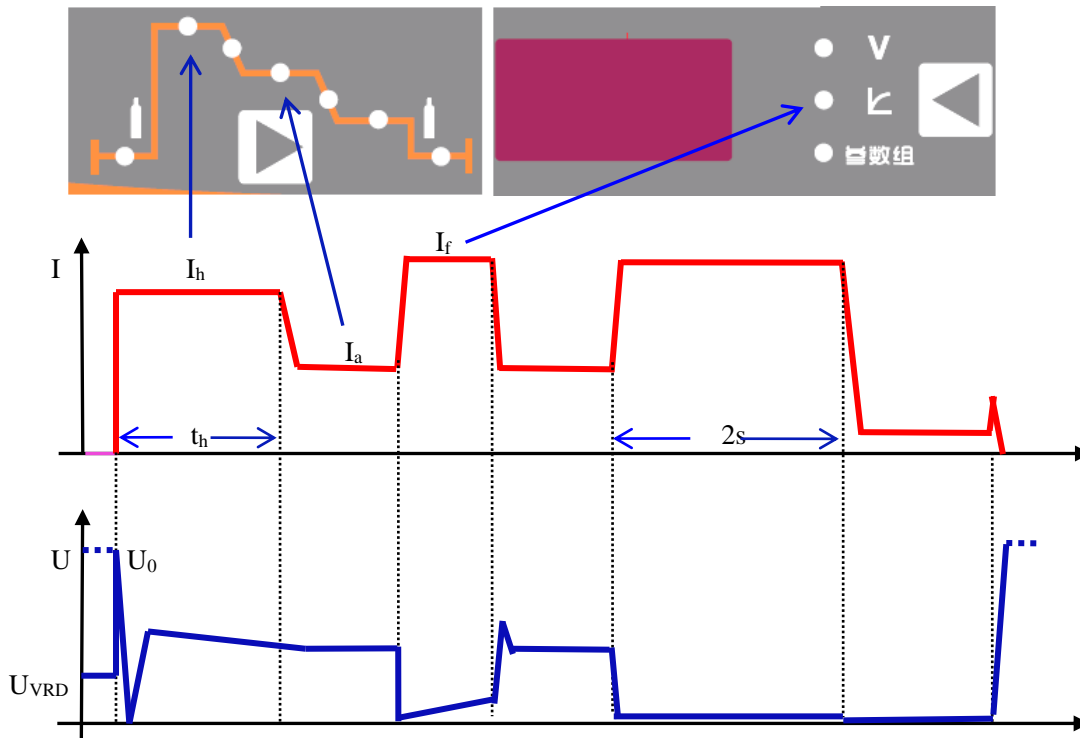


Fig 5.4 MMA processing

- 1、 $I_h(\text{hot start current}) = I_{\Delta h} (\text{arc start current}) + I_a(\text{welding current})$; Fixed hot start time: $t_h = 500\text{ms}$
- 2、 $I_f(\text{arc-force current}) = I_{\Delta f}(\text{arc-force current}) + I_a(\text{welding current})$; Arc-force current should be set based on electrode diameter, set current and process requirement. With strong arc force, droplet transfer is so fast that it can be anti-stick, but too strong arc force can increase the spatter; with low arc force, spatter is reduced and weld bead has nice shape, but arc is weak or electrode is easily stuck. Therefore, arc force should be increased when welding with thick electrode under low current. Generally, arc force is 20~70 during welding.
- 3、 After short-circuit time is over 2s, anti-stick current of 25A comes out until electrode is separated from the workpiece;
- 4、 U_{VRD} , VRD of about 15V, conforming to Australian standard 1674.2 2007, is switched off by default. After being switched off, welder outputs no-load voltage U_0 when MMA welding is not started.
- 5、

Model	Hot start current	Welding current	Arc-force current	Max current limit
MIG500P	0~250A	30~500A	0~250A	550A
MIG350P	0~200A	30~350A	0~200A	400A

Note: Max current limit limits I_h and I_f .

5.2.5 Lift-TIG welding

Simple TIG, namely lift TIG, is simple DC TIG realized by lift TIG or scratch TIG with help of necessary gas circuit device, but operation modes and functions of torch trigger for common TIG are unavailable for simple TIG. Simple TIG can set only welding current: 30A~500/350A, while fixed shorted current is 25A.

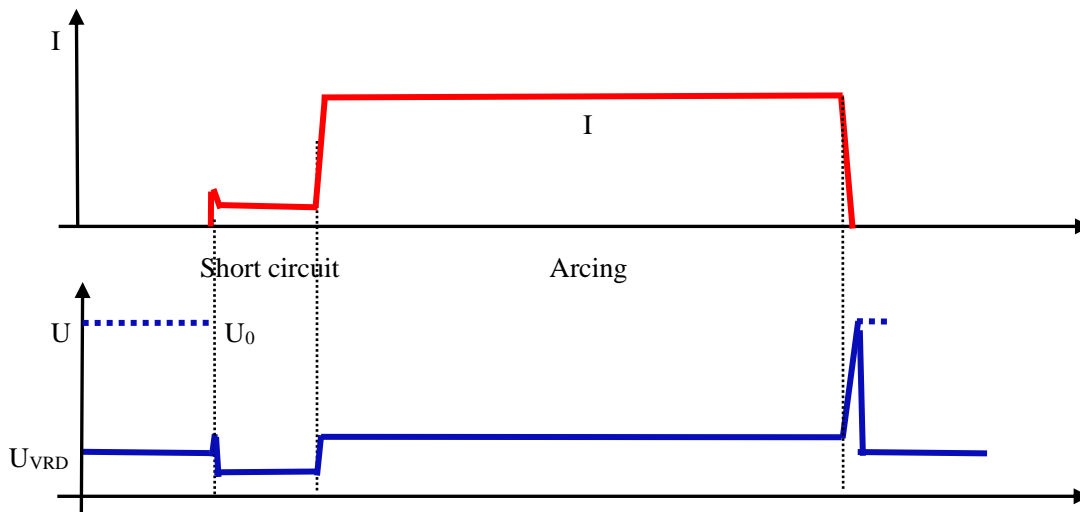


Fig5.5 Simple TIG processing



Warning! During welding, it is forbidden to pull off any plug or cable in use, or it will lead to life-threatening danger and severe damage of the machine.

5.3 Selection and adjustment of internal parameters

- Please be careful of the internal parameters that are applied to factory calibration and adjustment on the basis of special requirements of professional personnel, otherwise it will result in welder failure.

5.3.1 Adjustment on burn-back coefficient

Under pulse MIG, preset burn-back parameters in the welder usually can satisfy normal burn-back removal of metallic ball, but users can adjust burn-back coefficient if necessary. Below are adjustment steps:

1、 Select welding post-flow segment; 2、 Switch time LED to speed/board thickness LED. At this time, the left segment displays 1.00; 3、 It can be adjusted between 0.50~1.50 by left encoder. Within 0.50~1.50, if it is decreased, burn-back time is long, if it is increased, burn-back time is short. This parameter will be applied to all welding wires and it is 1.0 by default after welder is restarted.

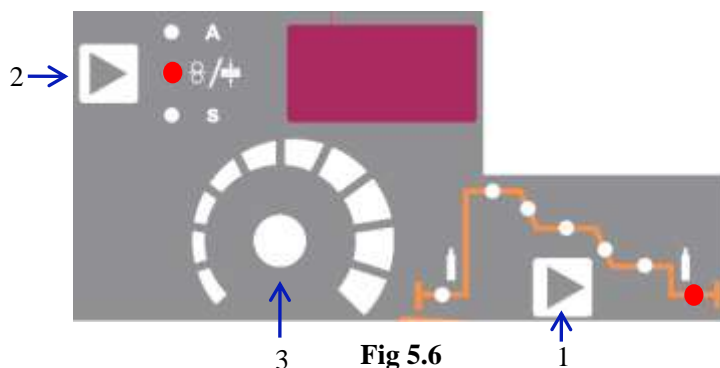


Fig 5.6

5.3.2 Other internal parameters:

Backend parameter mode where calibration of current and voltage, VRD and cooler switch are available can be activated when this machine is switched on. Below are steps:

- 1、 Press K2 button on the panel to switch power on, segment display W1 shows “001”, W2 shows “CAL” and K2 can be released;
- 2、 At this time, segment display W1 shows “P01”, representing “parameter 1”, while segment display W2 shows the value of “parameter 1”;
- 3、 Pressing K1 can switch parameters in order, rotate encoder EC2 to adjust current parameters, press K2 to save and exit.

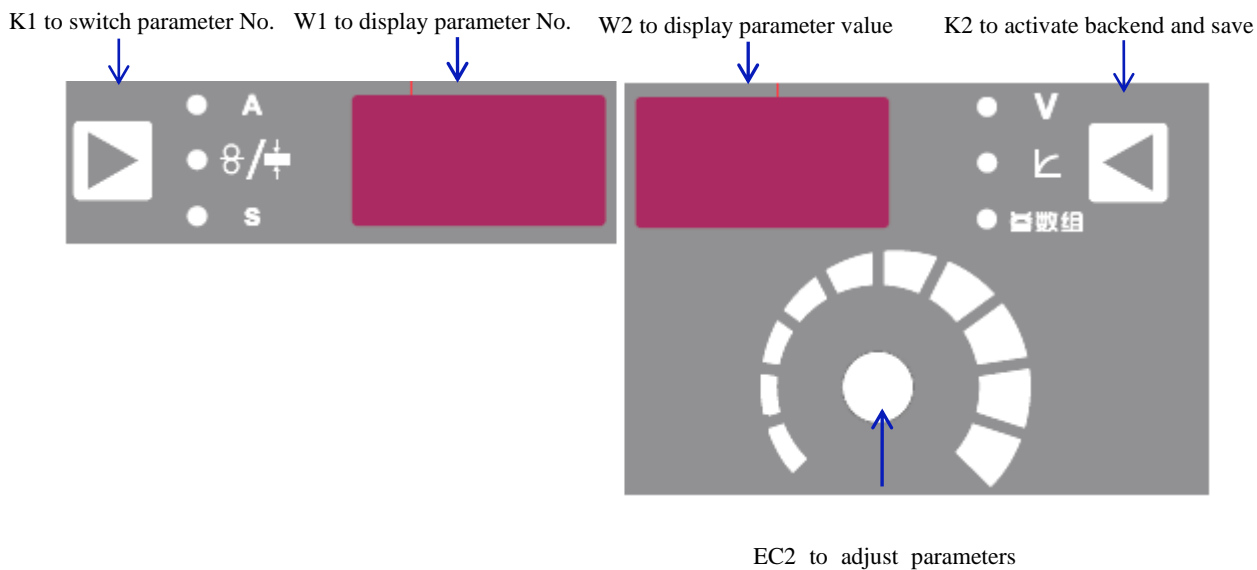



Fig 5.7

Table 5-4 Backend parameters table

Parameter No.	Parameter definition	Parameter value	Remark
P1	Actual current calibration		Please do not change!
P2	Display current calibration		
P3	Display voltage calibration		
P4	Actual voltage calibration		

P5	Wire feed speed and board thickness setting	0:speed; 1:board thickness	
P6	Metric unit and English unit setting	0:metric system; 1: English system	
P7	Current temperature of inverter		
P8	High speed (22m/min) calibration of wire feed speed		
P9	Low speed (2m/min) calibration of wire feed speed		
P11	V.R.D switch	0:V.R.D is off; 1:V.R.D is on	
P12	Water system switch	0: water system is off; 1: water system is on	
P15	Welder overheating protection point setting	Protective temperature setting around IGBT	 Please do not change!
P22	Speed adjustment	It is defaulted as 1.00, which can be adjusted to 0.50~1.50 times of current speed.	
P24	Slow wire feeding adjustment	0~10.0, plus slow feeding speed.	
P23	Factory reset	0: unchanged; 1: factory reset	

Note: Unprofessional personnel cannot adjust the internal parameters unless there is professional guidance.

6. OPERATION PRECAUTIONS

6.1 Precautions



Warning! Crash down may cause equipment damage or personal injury. Refer to transporting and placing methods marked on the external packing of equipment, handle the equipment with trolley or similar handling equipment which has adequate carrying capacity.

- 1) Machine lifting: use fork lift truck or crane for machine lifting. This machine has no hanging rings; please pay attention to the fixture when lift the machine with crane.
- 2) input cable specs: To connect distribution box and machine, the cable has to be 4×6 mm² for MIG500 and 4×4 mm² for MIG350/400. The breaker or fuse in distribution box has to be bigger than 60A for MIG500 and 40A for MIG350/400.
- 3) Grounding: please connect machine input cables yellow-green wire to PGND.
- 4) Cooling type: air cooling. Please make sure machine is well ventilated and there is nothing on the way of inlet and outlet.
- 5) IP class: IP23.
- 6) duty circle: Machine will stop welding output when under over-heat protection.
- 7) Power source inclination angle: less than 15° or machine can easily topple over.
- 8) Working environment: should meet the following requirements:
 - a) temperature : During welding -10°C~+40°C,

During transportation and storage $-25^{\circ}\text{C}\sim+55^{\circ}\text{C}$

Remark: when using the radiator, please avoid using or storage under coolant's solidification temperature.

Please make sure there is no coolant left in the radiator for storage under low temperature.

b) Relative air humidity: less than 50% when under 40°C ; less than 90% when under 20°C .

c) The dust, acid and corrosive gas and matters in the air cannot exceed normal standard, excluding those matters generated from normal welding.

9) Do not use this machine for pipe unfreezing.

10) don't let hand, hair or other tools to contact live parts when machine is powered on, eg, fan, so that to avoid any injury or machine damage.

11) avoid water or vapour entering machine inside; in case it happens, please dry the machine internal structure. Then use a mega-meter to test machine's insulation (including wire to wire connection and wire to machine enclosure connection.). Welding can be resumed only after the confirmation of no abnormality.

12) There are rated duty circle for both machine and torch. Please do not over-load them.

13) Please use proper welding cable: when cable size is too small, there will be insufficient current, therefore, unstable arc; there is no output rating and cable can be easily burned.

14) Please guarantee the connection is correct; please pay attention to polarity during connection.

15) Water cooling torch: please make sure coolant pressure and water flow is under $1\text{-}2\text{kg}/\text{cm}^2$ so that to avoid burning the torch. Even under low current welding, the torch needs to be water-cooled, or else no welding can be carried out.

16) Unblocked gas pipe and water pipe: torch burnt and welding defect might be caused if there are heavy items being placed on water pipe or gas pipe, or the pipes are bent and there is no gas flow and water flow.

17) Take good care of the torch: inappropriate torch operation can cause wire disconnection, water-leak, gas leak or nozzle failure.

18) There might be gas leak or lack of gas flow on torch nozzle if flowmeter or gas pipe connection is not tight enough, which might affect gas protection effects and cause weld porosity. Please check if there is any gas detection with soap-suds.

19) Reliable grounding: please make sure the ground connection between machine and power supply, machine and torch, electrode holder, wire feeder, ground cable; all control cables have to be well connected. If there is any poor connection, failure might be caused, which in return brings machine abnormality, burnt or other failures.

20) Connection with workpiece: if people use steel plate and steel bar to replace the cable which connecting the workpiece, the resistance is large and welding current is not stable; moreover, over-heat can easily cause fire hazard. Please use correct insulation cable and workpiece for reliable connection.

21) Please pay attention to anti-wind measure if there is wind in the working environment. Or protective gas can be blown away and weld porosity can be caused.

22) Welding workpiece surface has grease, rust, paint, water or other items or pollution. Please remove them, or else weld porosity and crack can be cause and it will affect welding effects.



Warning! Over-current/over-voltage/over-heating protection circuit is installed in this machine. When the network voltage, output current or inner temperature exceeds the setting standard, the machine will stop working automatically. However, excessive operation (over voltage) will lead to welder damage.

6.2 Maintenance



Warning! All of the maintenance must be carried out after power source is disconnected completely. Please check and confirm the power source plug has already unplugged before opening housing case.

1) Periodical cleaning of internal dust: too much dust will lower the machine's insulation performance and can have direct threats to human safety and machine safety. Please have at least twice cleaning each year. If the machine is

working in dense smoke and heavily polluted environment, please dedust the machine every day. Please cut off power supply before cleaning; remove side cover and top cover, and use dry compressed air to remove the dust following the direction of top to below. The compressed air pressure should be reasonable so that to avoid any damage on machine's small components. Please use a cloth to remove the oil.

2) Periodical check on machine's internal circuit connection and make sure they are correct and tightly connected (especially those inserting connectors or components) if there is any rust or loosening parts, please use a sandpaper to remove the rust layer or oxidation layer and connect them tightly.

3) Periodical check on cables and check if there is any worn cable insulation skin; if yes, please fix them or replace the cable with new ones.

4) Periodical check on machine's insulation resistance: mainly checking machine's insulation resistance between power input and output, also between power input and enclosure, which should be bigger than 10MΩ

5) please store the machine in the original packing box and place it in dry environment if the machine will not be used for a long time.

6.3 Troubleshooting



Warning! The following operation requires the operator must have adequate professional knowledge in electrics and overall safety common sense, and hold the valid qualification certificate to support his competence and knowledge. Please check and confirm the power source plug has already unplugged before opening housing case.

Remark: the following operation has to be carried out by qualified personnel who have enough knowledge on electric field and safety. Operators has to be equipped with valid certificates which can prove his or her capability and knowledge.

- Please make sure the machine input cable and power grid is cut off before opening the machine.
- The below examples might be related with the components, gas, working environment, and power supply conditions. Please try your best to improve them so that to avoid the similar problems.

6.3.1 General troubleshooting



Warning! The welder may be damaged during use, and should be repaired in time. Only professionally trained personnel can repair the welder, or else it may further expand the scope of the failure or cause damage to more expensive components.

Table 6-1 common problems and troubleshooting

phenomenon	Reasons	Suggested solutions
No display when power on the machine	<ul style="list-style-type: none"> • Power cable is not well connected • Machine failure 	<ul style="list-style-type: none"> · connect well the power supply · ask for professional help

Fan is not working or abnormal rotating speed during welding	· 3 phase power cable is well connected · phase loss · input voltage is too low	· connect well the 3 phase power cable · solve the power input phase loss · resume operation after input voltage is back to normal
The left display shows “EXX”, and right display shows“---”	E60	· overheat protection (thermoswitch) · Auto recovery after machine is cooled down.
	E61	· over-heat protection (temperature probe) · Auto recovery after machine is cooled down
	E31	· low supply voltage · failure on auxiliary power supply · Machine can resume to work when power grid input voltage is back to normal. · replace the new control board or industrial frequency transformer
	E10	· Over current or failed power components · restart the machine; if over-current still exists, please contact Jasic service man.
	E71	· Failure on water flow · Please check if there is not enough water in the radiator and check if water flow is under good condition.
	E70	· Water cooler over-heat · The radiator is not well connected to the welder · Radiator is over-heated; stop welding until the radiator is cooled off and problem is solved. · Please do checking after turn off the machine; or there might be danger of electric shock hazard.
	E52	· Wire feeder communication failure · connect tight the control cable; if the problem still cannot be solved, please contact Jasic service center.

6. 3. 2 MIG problems and troubleshooting

Table 6-2 MIG problems and troubleshooting.

Failures or problems	Analysis	Solutions suggested
Machine has no current output and no failure	· failure on welding loop · failed current feedback inside the machine	· please check welding loop and fix the according problem · Please contact Jasic service center for professional solutions.
There is gas and current output when push torch trigger, but no wire feed.	· worn wire feeder control cable · stuck wire feeder · failure on wire feeder · failed machine control board.	· replace or fix the worn wire feeder control cable. · make sure wire feeder is not stuck · fix wire feeder · replace control board
Welding current is unstable	· inappropriate wire feeder moment knob adjustment	· please adjust the suitable wire feeder moment force

	<ul style="list-style-type: none"> · unmatched wire feed rolls and wire size · seriously worn contact tip · seriously worn wire guide tube in the torch · poor quality wire 	<ul style="list-style-type: none"> · please make sure wire feed rolls and wire match · replace torch contact tip · replace the torch's wire guide tube · change a better quality wire
Regulator heater is not working	<ul style="list-style-type: none"> · Heater connector is not well connected. · shorted circuit in the heater · machine auto-protection failure heating appliance inside the heater 	<ul style="list-style-type: none"> · connect well the heater · fix heater electric wire · restart the machine back panel over-current protector · replace regulator

Note: Above situations may be related to accessories, gas, environment and power supply applied by users. Please try to improve the condition to avoid similar problems.



Warning! Blind experiment and careless repair may lead to more problem of the machine that will make formal check and repair more difficult. When the machine is electrified, the naked parts contain life-threatening voltage. Any direct and indirect touch will cause electric shock, and severe electric shock will lead to death.

6.4 Welding processing reference (for reference only)

Welding stability, quality and productivity depend on suitable welding current and arc voltage. In order to ensure welding quality, welding current should match arc voltage according to wire diameter, required droplet transfer form and productivity.

6.4.1 MMA processing parameters for coated electrode

Table 6-3

Weld position	Weldment thickness or welding foot dimension /mm	Weld of the first layer		Weld of other layers		Sealing weld	
		Electrode diameter/mm	Welding current/A	Electrode diameter/mm	Welding current/A	Electrode diameter/mm	Welding current/A
Square butt weld	2	2	55~60	~	~	2	55~60
	2.5~3.5	3.2	90~120	~-	~	3.2	90~120
	4~5	3.2	100~130	~	~	3.2	100~130
		4	160~200	~	~	4	160~210
		5	200~260	~	~	5	220~250
	5~6	4	160~210	~	~	3.2	100~130

						4	180~210
	≥6	4	160~210	4	160~210	4	180~210
				5	220~280	5	220~260
	.12	4	160~210	4	160~210	~	~
				5	220~280	~	~
Verti cal butt weld	2	2	50~55	~	~	2	50~55
	2.5~4	3.2	80~110	~	~	3.2	80~110
	5~6	3.2	90~120	~	~	3.2	90~120
	7~10	3.2	90~120	4	120~160	3.2	90~120
		4	120~160				
	≥11	3.2	90~120	4	120~160	3.2	90~120
		4	120~160	5	160~200		
	12~18	3.2	90~120	4	120~160	~	
		4	120~160				
	≥19	3.2	90~120	4	120~160	~	
4		120~160	5	160~200			
Tran svers e butt weld	2	2	50~55	~	~	2	50~55
	2.5	3.2	80~110	~	~	3.2	80~110
	3~4	3.2	90~120	~	~	3.2	90~120
		4	120~160	~	~	4	120~160
	5~8	3.2	90~120	3.2	90~120	3.2	90~120
				4	140~160	4	120~160
	≥9	3.2	90~120	4	140~160	3.2	90~120
		4	140~160			4	120~160
	14~18	3.2	90~120	4	140~160	~	
		4	140~130				
≥19	4	140~160	4	140~160	~		
Over head butt weld	2	~	~	~	~	2	50-65
	2.5	~	~	~	~	3.2	80-110
	3~5	~	~	~	~	3.2	90-110
						4	120-100
	5~8	3.2	90-120	3.2	90~120	~	
				4	140~160		
	≥9	3.2	90-120	4	140~160	~	
		4	140-160				
	12~18	3.2	90-120	4	140~160	~	
		4	140-160				
≥19	4	140-160	4	140~160			

Fillet weld in the horiz ontal posit ion	2	2	55-65	~	~		
	3	3.2	100~120	~	~		
	4	3.2	100~120	~	~		
		4	160~200	~	~		
	5~6	4	160~200	~	~		
		5	220~280	~	~		
	≥7	4	160~200	5	220~230		
		5	220~280				
~	4	160~200	4	160~200	4	160~220	
			5	220~280			
Fillet weld in the verti cal posit ion	2	2	50~60	~	~		
	3~4	3.2	90~120	~	~		
	5~8	3.2	90~120	~	~		
		4	120~160				
	9~12	3.2	90~120	4	120~160		
		4	12~0160				
~	3.2	90~120	4	120~160	3.2	90~120	
	4	120~160					
Fillet weld in the over head posit ion	2	2	50~60	~	~		
	3~4	3.2	90~120	~	~		
	5~6	4	120~160	~	~		
	≥7	4	140~160	4	140~160		
	~	3.2	90~120	4	140~160	3.2	90~120
		4	14~0160			4	140~160

6.4.2 MIG processing parameters

Table 6-4 CO₂ welding nozzle distance and gas flow

Wire diameter/mm	Welding current/A	Nozzle distance/mm	Gas flow L/min
1.2	100	10~15	15~20
	200	15	20
	300	20-25	20
1.6	300	20	20
	350	20	20

	400	20~25	20~25
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Table 6-5-1 CO₂ welding (solid wire)

type	Workpiece thickness(mm)	Wire dia Φ(mm)	Root gap g(mm)	Welding current (A)	Welding voltage (V)	Welding speed (cm/min)	Distance between contact tip and workpiece (mm)	Gas flow (L/min)
I type butt welding (low speed condition)	0.8	0.8	0	60-70	16-16.5	50-60	10	10
	1.0	0.8	0	75-85	17-17.5	50-60	10	10-15
	1.2	0.8	0	80-90	17-18	50-60	10	10-15
	1.6	0.8	0	95-105	18-19	45-50	10	10-15
				1.0	0-0.5	120-130	19-20	50-60
	2.0	1.0 1.2	0-0.5	110-120	19-19.5	45-50	10	10-15
				120-130	19.5-20	45-50	10	10-15
	2.3	1.0 1.2	0.5-1.0	120-130	19.5-20	45-50	10	10-15
			1.2	0.8-1.0	130-150	20-21	45-55	10
	3.2	1.0 1.2	1.0-1.2	140-150	20-21	45-50	10-15	10-15
			1.2	1.0-1.5	130-150	20-23	30-40	10-15
	4.5	1.0-1.2	1.0-1.2	170-185	22-23	45-50	15	15
			1.2	1.0-1.5	150-180	21-23	30-35	10-15
	6	1.2	1.2-1.5	230-260	24-26	45-50	15	15-20
1.2-1.5			200-230	24-25	30-35	10-15	10-20	
8	1.2	0-1.2	300-350	30-35	30-40	15-20	10-20	
		1.6	0-0.8	380-420	37-38	40-50	15-20	10-20
9	1.2	1.2-1.5	320-340	32-34	45-50	15-20	10-20	
12	1.6	0-1.2	420-480	38-41	50-60	20-25	10-20	
I type butt welding (high speed condition)	0.8	0.8	0	85-95	16-17	115-125	10	15
	1.0	0.8	0	95-105	16-18	115-125	10	15
	1.2	0.8	0	105-115	17-19	115-125	10	15
	1.6	1.0 1.2	0	155-165	18-20	115-125	10	15
	2.0	1.0 1.2	0	170-190	19-21	75-85	15	15
	2.3	1.0 1.2	0	190-210	21-23	95-105	15	20
	3.2	1.2	0	230-250	24-26	95-105	15	20

Table 6-5-2 CO₂ welding (solid wire)

Type	Workpiece thickness (mm)	Wire dia Φ(mm)	Root gap g(mm)	truncated edge	Welding layer welding current (A)		Welding voltage (V)	Welding speed (m/min)	Gas flow (L/min)
V type butt	12	1.2	0-0.5	4-6	outer 1	300-350	32-35	30-40	20-25
					inner1	300-350		45-50	

welding		1.6			outer 1	380-420	36-39	35-40	20-25				
					inner1	380-420		45-50					
	16	0-0.5	4-6	outer 1	300-350	32-35	25-30	20-25					
				inner1	300-350		30-35						
	1.6			outer 1	380-420	36-39	30-35	20-25					
				inner1	380-420		35-40						
X type butt welding	16	0	4-6	outer 1	300-350	32-35	30-50	20-25					
				inner1	300-350								
		1.6			outer 1	380-420	36-39	35-40	20-25				
					inner1	380-420							
	19	1.6	0	5-7	outer 1	400-450	36-42	25-30	20-25				
					inner1	400-450		25-30					
									outer 1	400-420	36-39	45-50	20-25
									Inner2	400-420		35-40	
	25	1.6	0	5-7	outer 1	400-420	36-39	40-45	20-25				
					Inner2	420-450	39-42	30-35					

Table 6-5-3 CO₂ welding (solid wire)

Type	Workpiece thickness (mm)	Wire diameter Φ(mm)	Leg size(mm)	Welding current (A)	Welding voltage V	Welding speed cm/min	The distance between contact tip and workpiece (mm)	Gas flow L/min	Welding angle
T type flat fillet welding (low speed condition)	1.0	0.8	2.5-3	70-80	17-18	50-60	10	10-15	45°
	1.2	1.0	3-3.5	85-90	18-19	50-60	10	10-15	45°
	1.6	1.0 1.2	3-3.5	100-110	18-19.5	50-60	10	10-15	45°
	2.0	1.0 1.2	3-3.5	115-125	19.5-20	50-60	10	10-15	45°
	2.3	1.0 1.2	3-3.5	130-140	19.5-21	50-60	10	10-15	45°
	3.2	1.0 1.2	3.5-4	150-170	21-22	45-50	15	15-20	45°
	4.5	1.0 1.2	4.5-5	180-220	21-23	40-45	15	15-20	45°
			1.2	5-5.5	200-250	24-26	40-50	10-15	10-20
	6	1.2	5-5.5	230-260	25-27	40-45	20	15-20	45°
			6	220-250	25-27	40-45	13-18	10-20	45°
			4-4.5	270-300	28-31	60-70	13-18	10-20	45°
	8, 9	1.2 1.6	6-7	270-380	29-35	40-45	25	20-25	50°
	8	1.2	5-6	270-300	28-31	55-60	13-18	10-20	45°
			7-8	260-300	26-32	25-35	15-20	10-20	50°
			6.5-7	300-330	30-34	30-35	15-20	10-20	50°
12	1.2 1.6	7-8	270-380	27-35	27-40	20-25	20-25	50°	

		1.2	7-8	260-300	26-32	25-35	15-20	10-20	50°
		1.6	6.5-7	300-330	30-34	30-35	15-20	10-20	50°
T type flat fillet welding (high speed conditio n)	1.0	0.8	2-2.5	130-150	19-20	140-145	10	15	45°
	1.2	1.0	3	130-150	19-20	105-115	10	15	45°
	1.6	1.0 1.2	3	170-190	22-23	105-115	10	15-20	45°
	2.0	1.2	3.5	200-220	23-25	105-115	15	20	45°
	2.3	1.2	3.5	220-240	24-26	95-105	20	25	45°
	3.2	1.2	3.5	250-270	26-28	95-105	20	25	45°
	4.5	1.2	4.5	270-290	29-31	75-85	20	25	50°
	6	1.2	5.5	290-310	32-34	65-75	25	25	50°

Table 6-6 MAG welding (solid wire, Ar 80% + CO₂ 20%)

type	Work piece thickness(mm)	Wire dia Φ(mm)	Width of welding seam g(mm)	Welding current (A)	Welding voltage (V)	Welding speed (cm/min)	The distance between contact tip and workpiece(mm)	Gas flow (L/min)
I type butt welding	1.2	0.8	0	60-70	15-16	30-50	10	10-15
	1.6	0.8	0	100-110	16-17	40-60	10	10-15
	3.2	0.8 1.2	1.0-1.5	120-140	16-17	25-30	15	10-15
	4.0	1.0 1.2	1.5-2.5	150-160	17-18	20-30	15	10-15
T type flat fillet welding	0.6	0.8	2	70-80	17-18	50-60	10	10-15
	1.0	1.0	2-2.5	85-90	18-19	50-60	10	10-15
	1.6	1.0 1.2	3	100-110	18-19.5	50-60	10	10-15
	2.4	1.0 1.2	3.5	115-125	19.5-20	50-60	10	10-15
	3.2	1.0 1.2	4	130-140	19.5-21	50-60	15	10-15

Table 6-7 flux-cored wire parameters

Flux type	Welding position	Wire dia Φ(mm)	Leg size(mm)	Welding beads	Welding current (A)	Welding voltage (V)	Welding speed (cm/min)	Swing
Metal		1.2	4	1	240-260	26-28	48-53	N
		1.4		1	320-340	28-30	95-105	N
		1.6		1	340-360	30-32	100-110	N
		1.2	5	1	260-280	28-30	48-53	N
		1.4		1	330-340	29-31	85-95	N
		1.6		1	360-380	32-34	85-95	N
		1.2	6	1	260-280	27-29	40-45	N
		1.4		1	320-340	30-32	75-85	N
		1.6		1	370-390	33-35	75-85	N

		1.2	7	1	270-180	29-31	38-43	N		
		1.4		1	340-360	31-33	48-53	N		
		1.6		1	370-390	33-35	60-70	N		
		1.4	9	1	260-280	27-26	22-26	Y		
				12	1	320-340	30-32	38-42	N	
					2	320-340	30-32	40-44	N	
		1.2	9	1	260-280	22-29	23-27	N		
				12	1	290-310	30-32	33-37	N	
		Titanium calcium		1.2		2	290-310	30-32	27-31	Y
						4	-	210-230	26-28	68-72
6	-					260-280	28-30	48-52	-	
8	-					290-310	29-31	33-37	-	
1.4	4			-	250-270	27-29	68-72	-		
				6	-	310-330	30-32	48-52	-	
				8	-	340-360	32-34	33-37	-	
Vertical angle welding	1.2			4	-	170-190	21-23	48-52	-	
				6	-	190-210	22-24	48-52	-	
				8	-	210-230	22-24	43-47	-	

If welding conditions are not suitable, problems in table 6-8 will happen.

Table 6-8 Common MIG failure table

Inappropriate welding conditions	effects	Inappropriate welding conditions	effects
Long wire extension	Arc is long	Arc voltage is too high	Arc is too long
	Weld bead is wide		Weld bead is wide
	Gas shielding effects will be poor		Bigger penetration and excess weld metal
Short wire extension	Arc is short	Arc voltage is too low	Sticking, spatter
	spatter		Weld bead is narrow
			Smaller penetration and excess weld metal
Welding current is too big	Weld bead is wide	Welding speed is too high	Weld bead is narrow
	Bigger penetration and excess weld metal		Smaller penetration and excess weld metal
Wire extension: the distance between torch contact tip and workpiece.			

6.5 After sales service

Warranty card

There is a warranty card in every machine. Please fill in the according information on the card. Please read carefully the content and keep the card well.

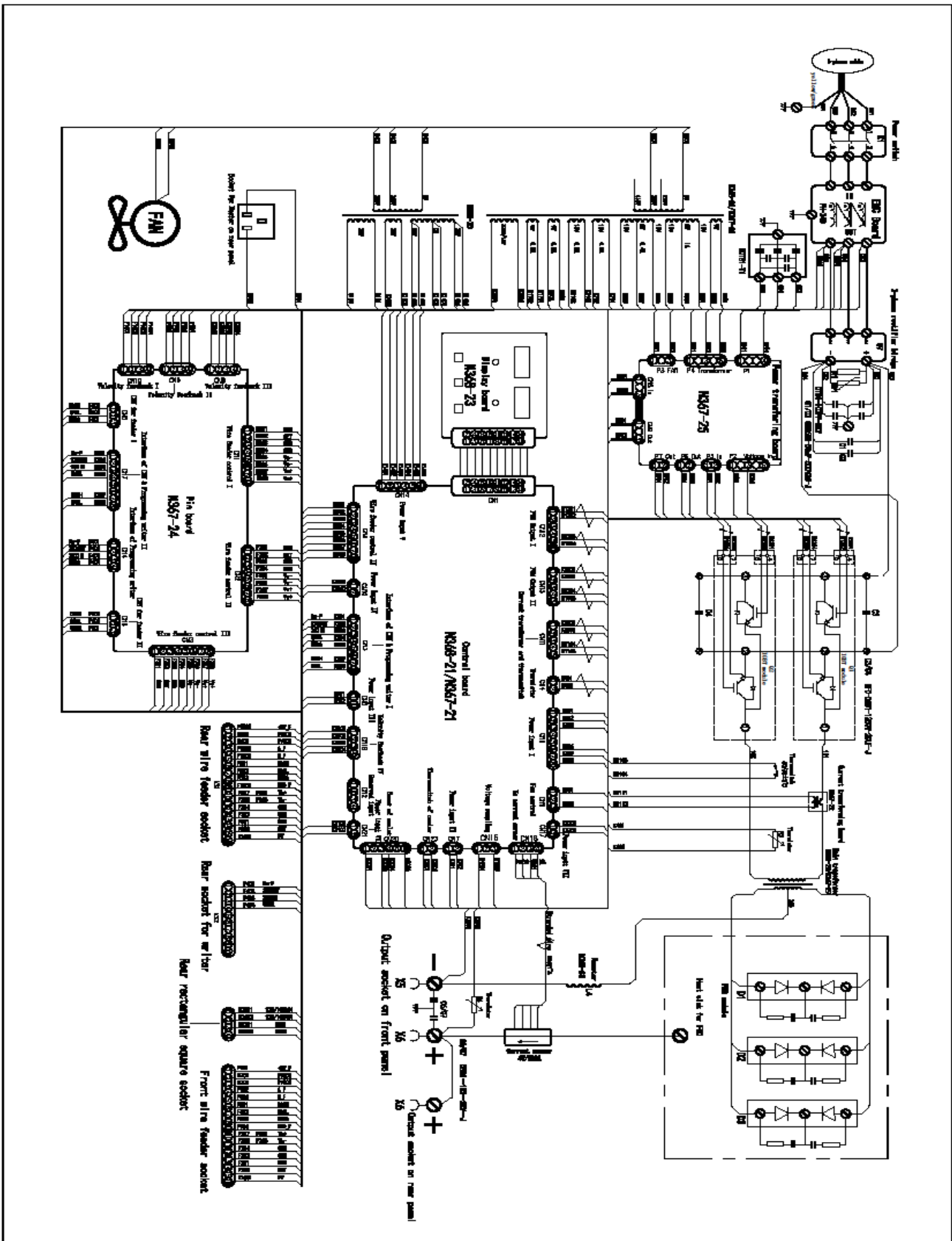
Maintenance

Please do the preliminary troubleshooting or record the according failure information according to common problems analysis and troubleshooting solutions in table 6-1 and 6-2.

If there is any fixture or components replacement needed, please contact local distributors. Please use those accessories or spare parts which are recommended by Shenzhen Jasic Technologies Co., Ltd.

This machine is covered for one year defect liability period, starting from the purchasing day on the warranty card or purchasing contract. Any machine failure which are caused by abnormal and inappropriate usage are not included in the free warranty scope, but can be fixed with extra charge.

7. Wiring Diagram



This product is being improved, therefore other parts, except for functions and operation, may be different. Your understanding would be greatly appreciated.

