

USER'S MANUAL



DIGITAL IGBT INVERTER AC/DC TIG/MMA/PULSE
MODEL: **WSME200/315/350/500**

PLEASE READ FIRST

Thank you for purchasing our equipment!

For your safety, please read this user's manual before installation and operation.

Thanks for your support!

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INTRODUCTION

WSME series welder is developed with advanced inverter technology, with digital control through microprocessor, it transfers 50/60HZ industrial frequency power to 30KHZ high frequency power through the inverter part combined with IGBT and so on. Then after voltage reducing- rectifying-wave filtering, as well as pulse-width modulation (PWM) and closed-loop back circuit control technology to output stable DC current for welding. Thus this unit has the following characteristics: high efficiency, energy saving, portability, good dynamic characteristics, stable arc, continuous adjustable current and so on. Also it's with protection function against overvoltage, over current and over heat to ensure the safety and durability of the welder. Especially the twice-inverter technology and the pure square wave output features the excellent welding characteristics of good arc stiffness, concentrated heat, strong reverse clearing ability, wide clear range, and arc is not easy to break with low current.

WSME series welder is AC/DC welder with wide application, which can realize MMA welding, DC CC TIG welding, DC PULSE TIG welding, AC CC TIG welding, AC PULSE TIG welding, applied to various materials welding including carbon steel, copper, titanium, aluminum, aluminum magnesium alloy etc.

Thanks for purchasing our product and giving us more valuable advice. And we will commit to perfect products and service to create the top one brand among the welding industry.



1. Earth leakage protection device should be installed when you use the machine.
2. Within indoor environment the machine may produce radio wave, so the user should make full of preventive measures.
3. Please make sure the power supply is off before any connecting operation.
4. If distance between work-piece and machine is too far ($>50\text{m}$), and welding cables are too long, please select the cable with bigger section to reduce the voltage dropping.

SECURITY CAUTION



Please make good protection as there will be possibility of harm during arc welding process. For more details please refer to the Operator Safety Guide, which complies with the preventive requirements of the manufacturer.

Electric shock-----may be fatal



Install the earth cable according to the standard.

No touching electric parts with bare or wet hands or wet clothes.

Make sure that the working piece and you are in insulation circumstances.

Make sure that your working is in safe condition.



Smoke-----may be harmful

Keep your head out of the smoke

Make sure the air is flowing to avoid breathing the smoke in welding process.



Arc radiation-----may be harmful to your eyes and skin

Wear suitable welding mask and clothes to protect your eyes and skin.

Use suitable screen or curtain to keep the onlookers away from the emission



Fire

Welding sparks may cause fire, make sure that welder is close to non-flammable material



Noise----excessive noise may be harmful to your hearing

Please wear something to protect your ears from the noises

Warn the onlookers latent harm may be caused by the noise

Break-down: ask the professional for help

Any problems in setting up or operation please turn to this manual first.

If you still can not understand after reading this manual, please contact your supplier or manufacturer to get professional assistance.

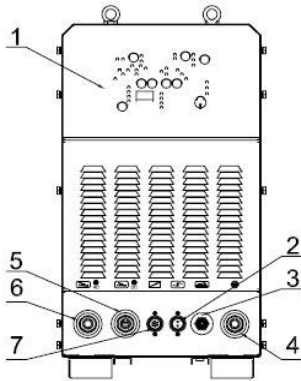
MAIN PARAMETE

Model Parameter	WSME200		WSME315		WSME350		WSME500	
Input power voltage(V)	AC220V±15%		AC380V±15%		AC380V±15%		AC380V±15%	
Input voltage frequency (HZ)	50/60		50/60		50/60		50/60	
Rated input power capacity (KVA)	TIG	MMA	TIG	MMA	TIG	MMA	TIG	MMA
	4.6	7	9	13	10.6	15.1	19	25.3
Rated input current (A)	20.7	32.2	13.7	19.7	16.1	22.9	28.9	38.4
Output current range (A)	5-200	40-200	5-315	40-315	5-350	40-350	5-500	40-500
No-load voltage (V)	59		67		77		77	
Duty cycle (%)	60		60		60		60	
No-load consumption(W)	60		60		60		60	
Efficiency(%)	85		85		85		85	
Power factor	0.93		0.93		0.93		0.93	
Insulation class	F		F		F		F	
Protection class	IP21S		IP21S		IP21S		IP21S	
Weight (KG)	20		26		39		47	
Dimension (mm)	480*201*295		500*280*435		622×280×480		622×280×480	



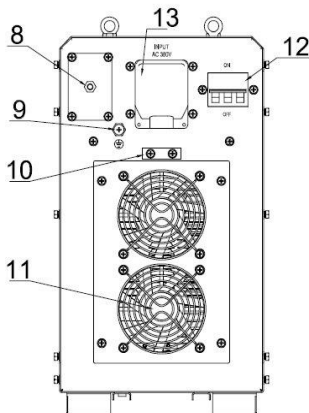
PANEL DESCRIPTION

Front panel:



No.	Name
1	Control Panel
2	Torch Connector
3	Gas-electric Integration
4	Torch Switch Connector
5	DC positive output terminal (earth clamp)
6	AC positive output terminal (earth clamp)
7	Remote Control
8	Gas Interface
9	Ground Screw
10	Power cable fixing groove
11	Fan
12	ON/OFF Switch
13	Power cable box

Rear panel:



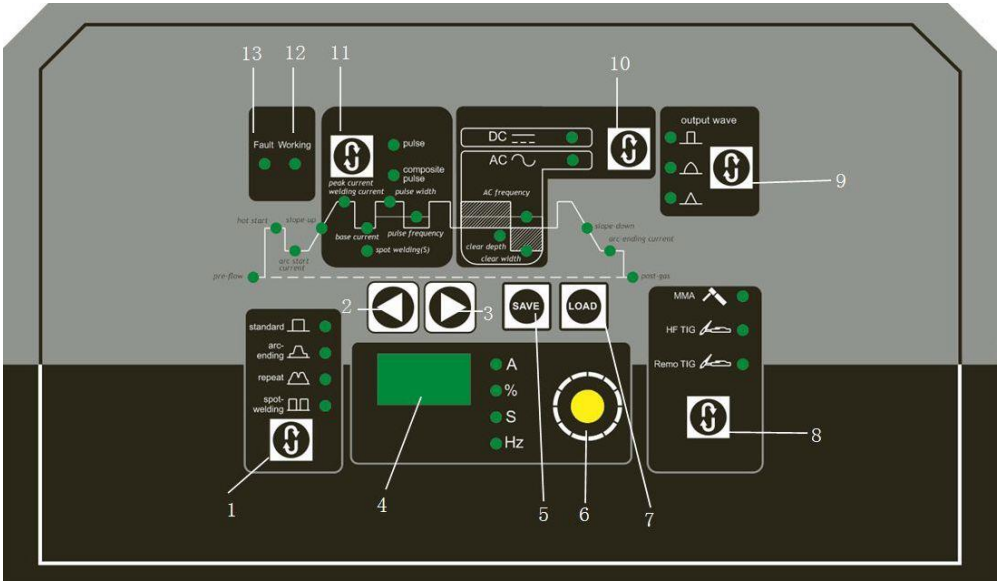
Pls note: AC and DC 2 in 1 for WSME200/315, WSME200 is without remote control connector.

PANEL DETAILS

1. Control panel

Control panel according to below drawing for the function selection and parameter setting.

Control panel includes digital display, adjustable knob, selection knob and indicator led.



2. Panel description

No.	Name	Description
1	Welding function selection	used for welding mode selection under different function, the standard mode is “no arc ending” function, gradient is “with arc ending”
2	Parameter selection	Shift the indicator light leftwards
3	Parameter selection	Shift the indicator light rightwards
4	Display	To display the value of each parameter
5	Save key	Used for saving setted welding data, 10sets different welding datas are available
6	Parameter adjustment knob	To adjust the value of setted parameter

7	Load key	To load the different welding parameter which has been saved
8	Welding mode selection	Press 3S under TIG situation then can switch to MMA by releasing
9	Waveform selection key	Three different welding output waveform can be selected, such as square wave, sine wave and triangular wave
10	AC DC selection	Function selection for AC DC
11	Pulse selection	Selection for pulse and composite pulse, composite pulse only can be used under AC status
12	High voltage indicator	No-load voltage output indicator
13	Warning indicator	Warning indicator for overheat, overcurrent



Parameter setting(Eg.WSME315)

Short name	Full name	Description	Adjust range	Default value
Pre-gas	Gas feeding in advance	Gas feeding time before welding	0~10 S	0.1 S
Hot start	Arc striking current	The current during arc striking	10~315A	100A
Arc start	Arc starting current	With the arc-ending mode to adjust the preset current value of arc striking	5~315A	40 A
Slope-up	Slope-up time	With the arc-ending mode to adjust the current slope-up time from the arc striking to welding	0~10 S	5 S
Spot time	Spot time	The welding time in the spot welding status	0~10 S	3 S
Base value	Base current	With the pulse method to adjust the low current	5~315A	10 A
Welding	Welding current	Adjusting the welding current or pulse peak current	5~315A	150 A
%	pulse width	With the pulse method to adjust the ratio between peak current and pulse cycle	10~90 %	50 %
Pulse frequency	Pulse frequency	With the pulse method to adjust the pulse frequency value	0.1~20HZ	5HZ
Clear width	Clear width	Adjust the clear width when welding with AC method	10~90 %	30 %
Clear depth	Clear depth	Adjust the clear depth when welding with AC method	-50~+50 %	0%
AC frequency	AC frequency	Adjust the exchange current frequency when welding with AC method	20~200HZ	80HZ
Slope-down	Slope-down time	With the arc-ending mode to adjust the current slope-down time from welding to arc-ending	0~10 S	5 S
Arc ending	Arc ending current	With the arc-ending mode to adjust the preset current value of arc ending	5~315A	20 A
Post-gas	Post gas time	Post gas time after welding	0~10 S	5 S

INSTALLMENT

The welding machine is equipped with power voltage compensation device. When power voltage fluctuates within $\pm 10\%$ of rated voltage, it can still work normally. In order to reduce the voltage drop when using long cables, cable of bigger section is suggested. If cable is too long, it may affect the performance of the power system as well as other properties, so we suggest you to use the recommended length.

1. Be sure the vents are not blocked, lest cooling system will not work.
2. Use inducting cable with the section not less than 6 mm^2 to connect the housing to the ground. The way is from the ground-connecting screw at the rear to the earth device.
3. Connect the power cable to power supply box which equipped with earth leakage protection device. Make sure the input power is of the proper voltage and meanwhile please ensure the voltage fluctuation is within applicable range.
4. In actual use, maybe the power cable and welding cable length is not enough, please refer to below form to choose suitable cable.

List 1

The section and the length of the welding cable

Rated current I/A	Section (mm^2)								
	L=20m	L=30m	L=40m	L=50m	L=60m	L=70m	L=80m	L=90m	L=100m
100	25	25	25	25	25	25	25	28	35
150	35	35	35	35	50	50	60	70	70
200	35	35	35	50	60	70	70	70	70
300	35	50	60	60	70	70	70	85	85
400	35	50	60	70	85	85	85	95	95
500	50	60	70	85	95	95	95	120	120
600	60	70	85	85	95	95	95	120	120

List 2

**The rated current and the diameter of the output cable
(Max. temperature of conductor 60℃)**

Rated section of copper conductor (mm ²)	Rated current of the max duty cycle (A)				
	100%	85%	60%	30%	20%
16	105	115	135	190	235
25	135	145	175	245	300
35	170	185	220	310	380
50	220	240	285	400	490
70	270	195	350	495	600
95	330	360	425	600	740
120	380	410	490	690	850
185	500	540	650	910	1120

Warnings:

- 1. Please don't connect or disconnect the cables during working, it will terribly damage the machine.***
- 2. When the machine is powered by the generator, please don't connect the powerful sensitive load to the generator(such as power motor, air compressor and so on), otherwise the big power machine will damage the cutting machine.***



INSTALLMENT & OPERATION

MMA

1. Open the cable connecting box at the rear of the machine and connect the power cable to the terminal screw then fasten it. After that please unscrew the screw of the cable fixing groove, remove the groove cover, fix the cable into the groove then install the cover and fasten the screw.
2. Put the cable connector of the electrode holder to the negative terminal “-“ of front panel, and fasten it clockwise.
3. Please connect the earth clamp to the positive terminal “+”, and fasten it clockwise.
4. Please pay attention to the connecting polarity and there are two connecting methods for DC welding machine: positive connection and negative connection.
 - 4.1 Positive connection: holder connects with “-“polarity, work-piece with the “+” polarity.
 - 4.2 Negative connection: work-piece to the “-“polarity, electrode holder to the “+” polarity.
 - 4.3 Choose suitable method according to the welding requirement. If unsuitable method is selected, it will cause unstable arc, more spatters and sticking. If so, please change the polarity of the welding cables. Normally choose positive connection.
5. Switch to “MMA”.
6. Switch on the power switch, meanwhile the digital display will be on, then the cooling fan will start work immediately.
7. Please select appropriate welding current and rod according to thickness of work-piece.

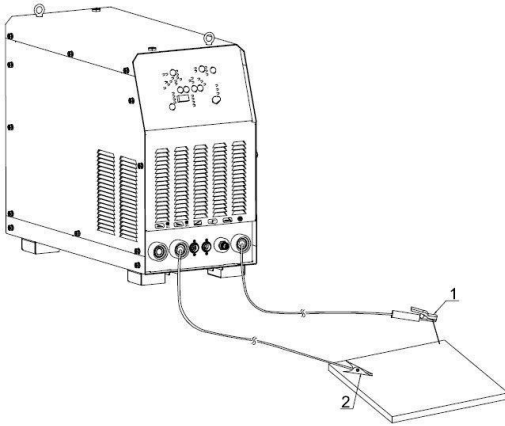
(Taking notice of distinction for the positive connection terminal between AC and DC welding)

Electrode standard

Electrode Diameter (mm)	1.6	2.0	2.5	3.2	4.0	5.0	6.0
Welding Current (A)	25-40	40-65	50-80	100-130	160-210	200-270	260-500



MMA installation instruction



No.	Name
1	Electrode holder
2	Earth clamp

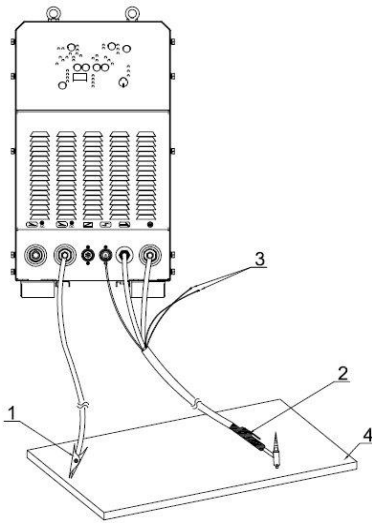
TIG

1. Connect gas cylinder with copper connection on rear panel of the machine then fasten the connector with hose clamp to prevent from gas leaking, the gas access include cylinder, argon gas regulator and gas hose.
2. Correctly install the TIG torch according to sketch diagram, connect the gas-electricity integration connector of another head of torch, air socket to the torch connector and torch switch of panel, and then fasten it clockwise.
3. Please connect the plug of earth clamp to the positive terminal “+”, and fasten it clockwise, and use earth clamp to hold the work-piece.
(Taking notice of distinction for the positive connection terminal between AC and DC welding)

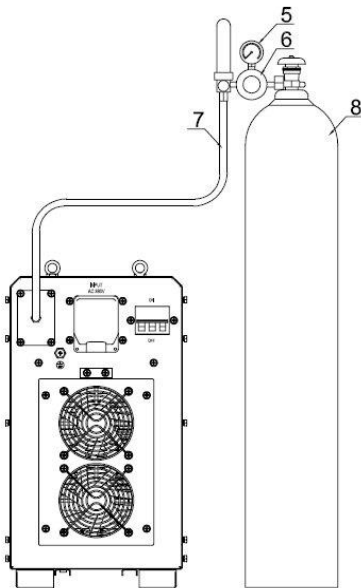
Remote control (Foot Pedal) function

The setting current of machine is the max. current of foot pedal when you connect remote foot pedal. For example, if the current of machine is 200A, the adjustment current range of foot pedal is 5-200A under switch on when you press torch after machine working.

TIG installation instruction



No.	Name
1	Earth clamp
2	TIG torch
3	Water inlet/outlet torch connector
4	Work piece
5	Pressure meter
6	Gas regulator
7	Gas hose
8	Gas cylinder



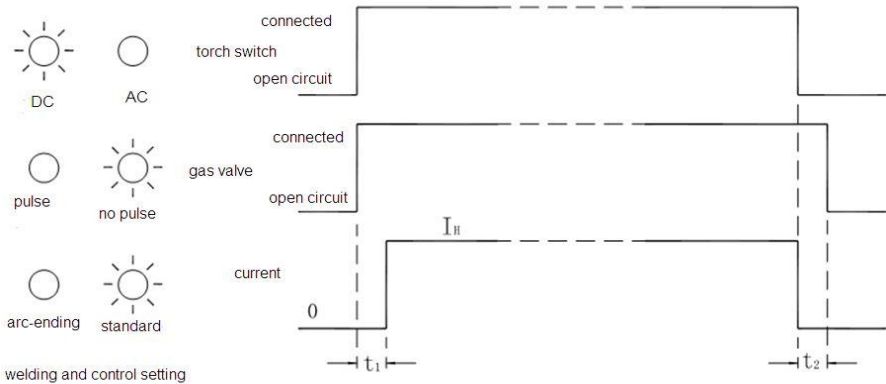
INSTALLMENT & OPERATION

1) Tig welding operation

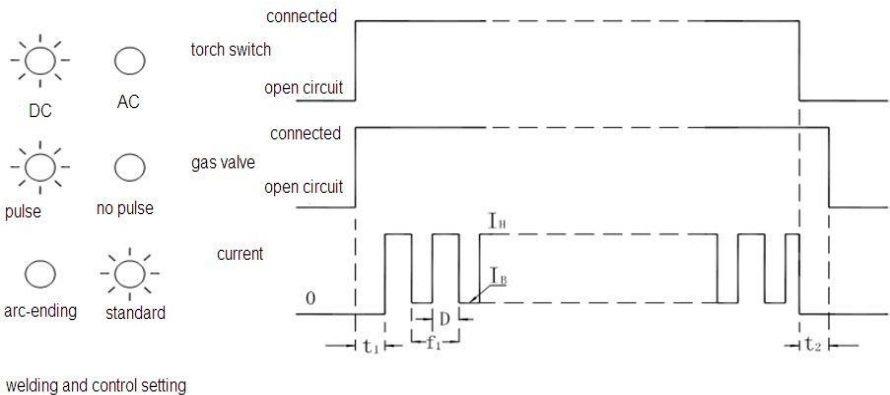
(1) DC TIG welding operation

- Please make sure connection is correct with each part, then power on the machine, the panel indicator will come on, and fan will start work.
- Press the button ⑧ “gas check” on panel to release the air valve, adjust the gas follow to specified value according to the craft standard, then once again to press the button to shut the gas valve.
- Select the welding method according to welding process requirement, press button ⑩ to select AC/DC, press button ⑪ to select pulse or no pulse, press button ① to select “standard” or “arc-ending”.

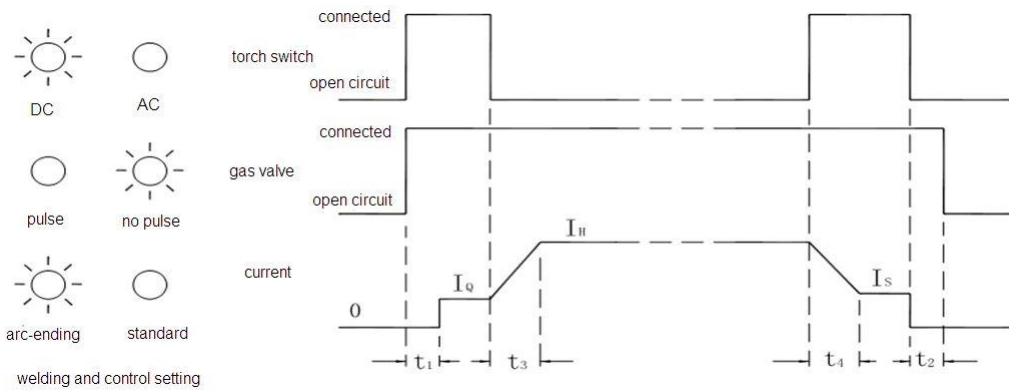
d. DC TIG welding sequence chart as below:



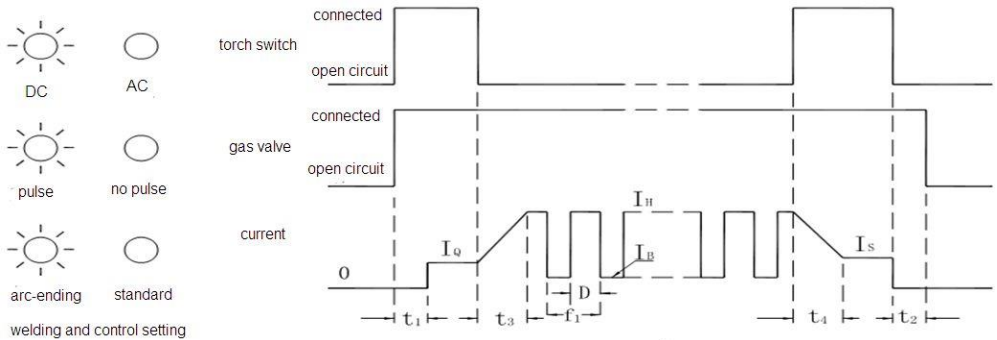
DC tig welding sequence chart (1)



DC tig welding sequence chart (2)



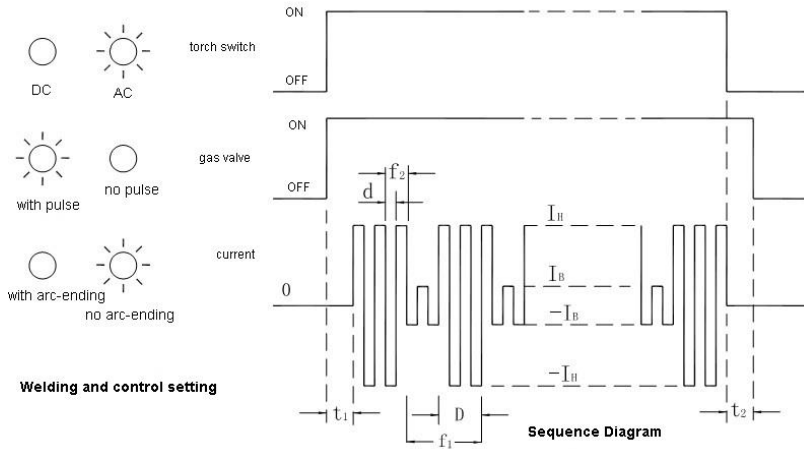
DC tig welding sequence chart (3)



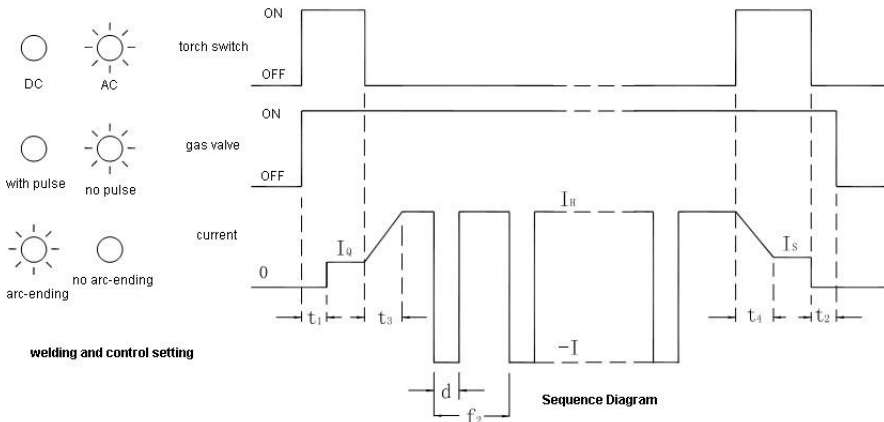
DC tig welding sequence chart (4)

2) AC TIG welding operation:

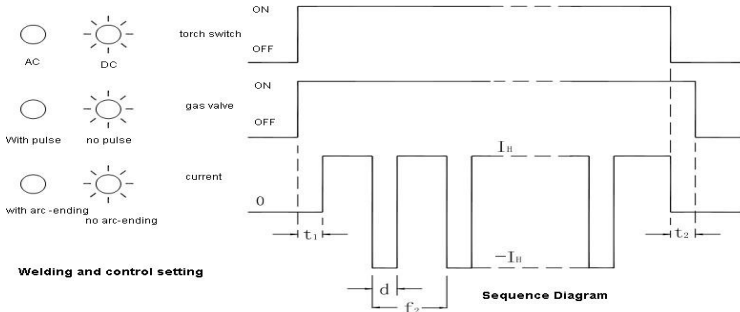
- a. Ensure the correct connection of each part, then shutting power switch, panel indicator is on, and fan is working.
- b. Press the button gas check⑧ to release the gas valve, adjust gas flow to the argon regulator, then press the button and close the gas valve.
- c. Select the welding mode according to the technique requirement, press button⑩to select“AC/DC”,press button⑪to select pulse/no pulse, press button①to select control mode with/without arc-ending.
- d. AC TIG welding Sequence Diagram(Refer to below):



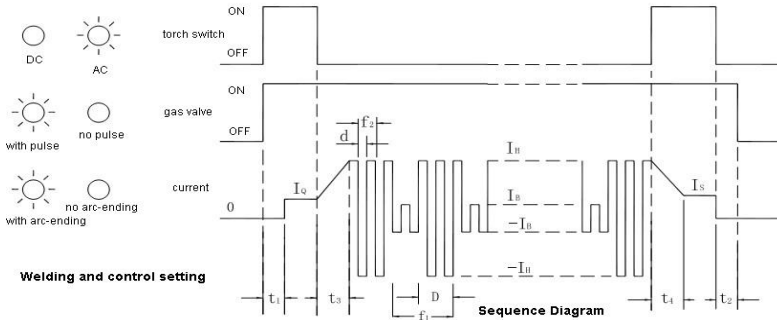
AC tig welding sequence chart (1)



AC tig welding sequence chart (2)



AC tig welding sequence chart (3)



AC tig welding sequence chart (4)

- | | | |
|---------------------------|------------------------|------------------------|
| I_H -welding current | t_1 - pre-flow time | D - pulse width |
| I_B -base current | t_2 - post-gas time | d -clear width |
| I_Q -arc start current | t_3 -slope-up time | f_1 -pulse frequency |
| I_S -arc-ending current | t_4 -slope-down time | f_2 -AC frequency |

(3) clear width:

It's necessary to do arc clearance when you use AC TIG aluminum welding, you have to adjust the strength according to the clear width. Setting of clear width and welding effect, also electrode consumption as follows:

Meter(%)	10	33(standard)	50
Electrode consumption	Less	Normal	More
Molten depth	Deep	Normal	Shallow
Clear width	Narrow	Normal	Wide

(4) AC waveform:

Setting	Result
Soft Square wave	Easier to control the puddle
Sine wave	Soft sounding arc
Triangular wave	Reduce heat input on the thinner materials, also provides better cleaning in the anodic oxidation application.

ATTENTION

1. Environment

- 1.1 The machine can perform in environment with dry air of a dampness proportion of max 90%.
- 1.2 Ambient temperature should be between -10°C to 40°C.
- 1.3 Avoid welding in sunshine or drippings.
- 1.4 Please do not use the machine in the air which is polluted with conductive dust or corrosiveness gas.

2. Safety points

The welding machine has adopted protection circuit to avoid broken under over voltage, over current and overheat. When voltage, output current and temperature of machine exceed the standard level, the unit will stop working automatically. In order to avoid the damage to the unit, operator must pay attention to the following:

2.1 Please make sure the working area is adequately ventilated!

The machine adopts air cooling, so be sure the intake is not in block or covered. It should be more than 0.3 meter from welding machine to the surroundings. And good ventilation is important for better performance and the longevity of the unit.

2.2 No over load!

Please avoid working overload as it will shorten the machine life.

Normally it's overloaded if the current display show abnormal code during welding, namely it's over rated duty cycle. So please stop welding immediately and resume working after display is on normally. (Rated duty cycle 60% means: take 10 mins as a circle, the machine works for 6mins and stop for 4mins under the rated output current).

2.3 No over voltage

Automatic compensation circuit of voltage will assure that welding current is kept in allowable arrangement. If power voltage exceeds the limitation, it will damage the welder. In that case, please take relevant preventive measures.

2.4 Assure the ground screw is well connected

There is a ground screw with the symbol at the rear panel of the unit. Choose section of inducting cable over 6mm² and reliably grounding to prevent from static electricity and leaking.

TROUBLE SHOOTING

Below failures are related to fittings, welding materials, environment factor, supply power, please try to improve the welding environment.

1. Welding spot become black

It means the welding spot is oxygenated without good protection, and please check the followings:

- 1.1 Make sure the argon cylinder is open and has enough pressure which should be above 0.5 MPa.
- 1.2 Make sure the pressure valve is open and has enough flow. In order to save gas, you can choose different flow according to the different welding current, but it may result in that the protective gas can't cover the welding spot entirely. Argon flow should be not less than 3L/min.
- 1.3 The simple method to check whether the argon flows out or not is to feel the gas through nozzle with your finger.
- 1.4 Gas flow is not well sealed or argon is not pure.
- 1.5 If air flow is too strong, it may low down the welding quality.

2. Arc-striking difficult and easily pauses

- 2.1 Make sure the rod or tungsten is of good quality otherwise it is difficult to meet the request of the high quality welding.
- 2.2 It will be hard to strike arc if the rod is not dry enough or the tungsten is not sharpened. It will also cause unstable arc and the welding quality will be influenced by increased defect.

3. Output current not up to rated value

Current will not match the setting value when power voltage departs from the rated value. While voltage is lower than the rated value, the max output may be lower than the rated value.

4. Current is unstable during welding process and it may be caused by the followings:

- 4.1 Electric network voltage changes.
- 4.2 Harmful interferences from electric network or other equipments.
- 4.3 Undersize of external input cable.

5. Too much spatter under MMA welding

- 5.1 High current with rod of small diameter.
- 5.2 The output terminal polarity is reversed. For normal use you can adopt positive connection which means the holder connects to “-” polarity and work-piece to the “+” polarity, so please exchange.

REPAIR AND MAINTENANCE

Repair and maintenance should be done by professional person and please make sure the power supply is cut off before any operation. When you meet any insoluble problem please contact us.

Repair and maintenance

1. Check internal and external circuit of welding machine regularly and make sure the connections are correct and tight.
2. Avoid water or steam infiltrating into the internal machine. If it occurs please dry the machine then check carefully before welding.
3. If the welder will not be used for a long time, please pack it and store in the dry air.
4. Blowing away the dust with dry clean pressed air regularly, if the welder is used under condition of dense smoke or polluted air, please clean the machine everyday.

Attention: The highest voltage of machine is above 1000V, please don't open the machine optionally, electric shock proof should be done during repair.



Common fault and elimination method

Fault	Solution measures
Nothing happened after turned on machine	1. Check if the power supply is normal 2. Check if the power switch is broken down 3. Check the auxiliary power circuit 4. Check if the connecting wire is loose
No output current with high frequency discharge	1. Check if the connecting wire of torch and earth clamp open circuit 2. Check if the earth clamp is connecting with workpiece well
With output current, but unadjustable	1. Check and adjust the potentiometer 2. Check control module
Abnormal indicator is on	1. Environment temperature too high or cooling system has problem 2. Long time welding 3. Torch switch is broken 4. Inside control circuit is broken
oxide film is unopened during aluminium welding	1. Check if choose AC 2. Increase duty ratio or clear workpiece's oxide film 3. Check the middle board



USER'S RECORD

Purchase Date:
Serial No. (Rear Panel of the Machine) :
Dealer's Name:
Dealer's Address:
Dealer's Tel / Fax:
Notes:

Please attach the proof of purchase

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