AWE-P1600

Intelligent Precision Welding Machine

USER MANUAL

● **CAUTION : PLEASE READ THIS USER MANUAL CAREFULLY BEFORE WELDING !**

CHAPTER-1, PERFORMACE INDICATORS

Power: single phase 220V 50HZ

Please use 220V single-phase AC power supply. If power supply is not stable please use a stabilizer, if higher than 220v it may cause a damage to the machine.

Power consumption: 10-1200W

Instantaneous maximum output power: 40KW

Power mode:

- Argon welding output (mode 1--mode 4) adjustable;
- Output current 1--99 adjustable;
- Output pulse time 1--99 adjustable;
- Resistance welding output;
- Continuous output pulse frequency: 1Hz; 2Hz; 3Hz; 5Hz adjustable;

CHAPTER-2, OPERATOR PANEL INSTALLATION

Front panel:

I. Connect the arc welding gun on position **(12)**
II. Connect the ground clip on position **(5)**
III. Connect the resistance torch on position **(11)**
IV. Connect the foot pedal on position **(10)**

* Switch and function *

(1) Mode selection
(2) Resistance welding function
(3) Single output / continue output
(4) Start / pause
(5) Ground clip connector
(6) Pulse current display
(7) Pulse time display
(8) Pulse time adjustment switch
(9) Pulse current adjustment switch
(10)Foot pedal (or welding gun finger click) control switch
(11)Resistance torch connection socket
(12)Arc welding gun connection socket

Back panel:

I. Connect argon air tube on (13)
II. Connect the welding helmet cable on (14)
III. Connect the power cable on (16) single face 220V 50Hz/60Hz (socket grounding line must connected properly)
IV. Fuse replacement (17)

WELDING HELMET INSTALLATION VIDEO:
http://www.atomwelding.com/play-32.html

CHAPTER-3, START TO USE

Security preparation:

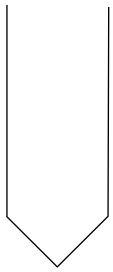
During welding, the strong high temperature electric arc Flash and splash, can burn the eyes and skin. Must use the welding helmet that came with the machine, please correctly installation the welding helmet, and step on foot pedal to detect the screen can turn black and opaque!

A. Preparing and installation of tungsten needle :

The standard tungsten to be used is 1.6mm diameter;

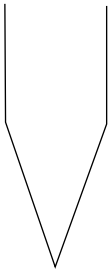
Big area welding or big current continue output can choose 2-2.5mm tungsten needle.

B. How to grind the tungsten electrode:



[style 01] 70-90 degree

For flat surface and corner

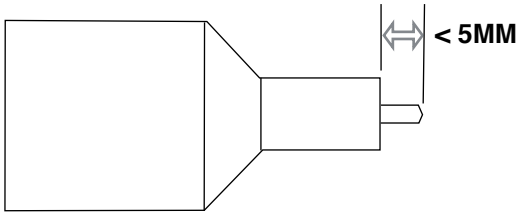


[style 02] 20-30 degree

For inside corner or narrow crack

IN MOST CASES,
[style 02] WILL BE OK.

***TO AVOID BLACK EDGE ON THE WELDING SPOT, PLEASE KEEP THE TUNGSTEN NEEDLE AS LESS AS POSSIBLE TO EXTEND THE CERAMIC TIP, BETTER < 5MM ***

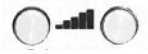


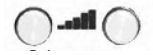
C. Selection of welding wire (more introduction see chapter 9 <how to choose welding wire>): Normally, needs to select the wire material similar with welding metal, if can not find similar material wire at least need to select similar chemical property welding wire. Choose high Nickel content welding wire can reduce the hardness of the welding area, choose small diameter welding wire and low power output can reduce the welding inner strain.

D. Power on: Turn on the power button on the back side, the equipment will put on standby, the "start/pause" signal light on the front panel will shine.

E. Start to welding: Press the "start/pause" button, "Mode 2" signal light will shine; "Pulse current" and "Pulse time" display will show "20" "20". (This is default value)

F. Mode selection: Select different mode base on different welding area. "Mode 1" is minimum output and "Mode 4" is maximum output. (Each mode has storage function until the power off, can first setting different pulse current and pulse time to match different material welding and storage to the different mode for more convenient operation.)

G. Pulse current selection: Press "  " button to increase or reduce the pulse current, press and hold for more than one second for continue increasing or reducing.

H. Pulse time selection: Press "  " button to increase or reduce the pulse time, press and hold for more than one second for continue increasing or reducing.

I. Grounding connection: Use grounding wire to clip tightly with welding part.

J. Start welding:

① Clean the welding part (remove surface oil or rust)

② Turn on power button (back side red switch)

③ Press "start/pause" button on the front panel

④ Select different mode/pulse current/pulse time depends on different welding parts (details and method see next chapter)

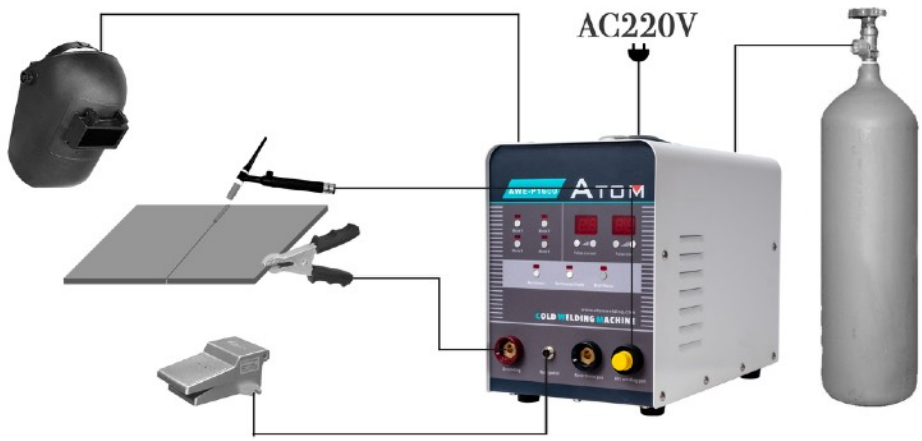
⑤ Open argon tank valve, adjust the argon flow to 3L/min

⑥ Press foot pedal or finger button to generate one welding point.

⑦ Repeat step 6 to generate a continue welding line. If your operate skill is fluent enough, can press "single/continue" button to change to continue mode, press and hold the foot pedal the machine will run in continue mode.

⑧ When stop using this machine need to turn off the power button and close the argon tank.

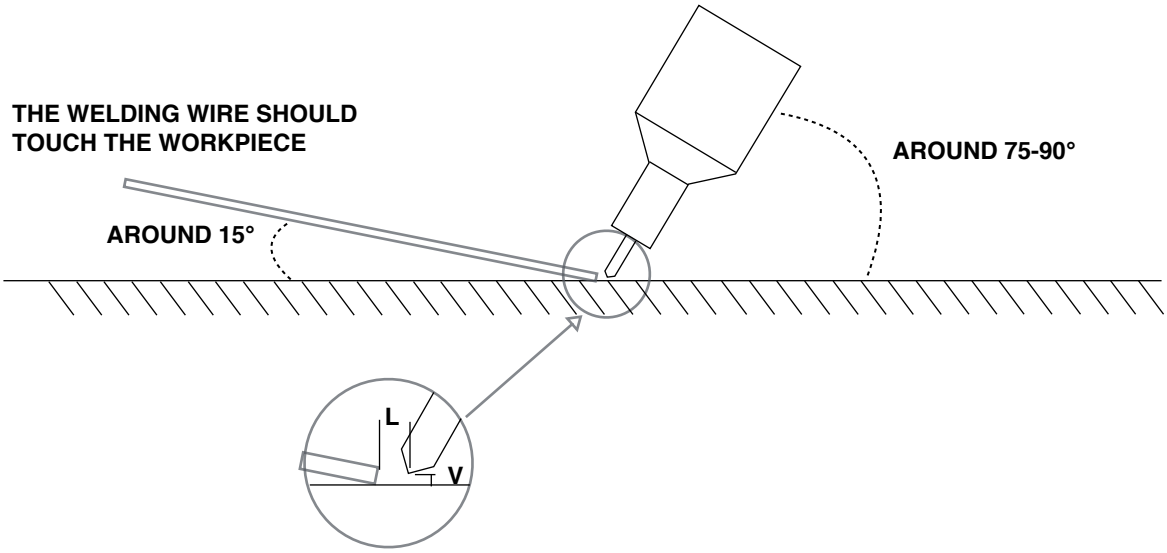
⑨ Resistant place welding wire mode(need to connect resistant torch): First need to check the grounding connection should be tight; Clip the grounding line tightly to the welding part; Select the right value base on different diameter of welding wire. Need to press the resistant torch tightly with the welding wire and welding part to avoid of producing a flame. (details see CHAPTER-5).



CHAPTER-4, WELDING GUN DIRECTION

1. Flat surface welding method:

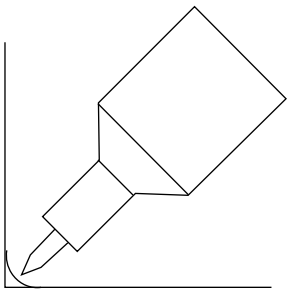
Note: **Welding spot should shoot on the workpiece first, only after the workpiece melted then the welding wire can transition to the workpiece to form qualified welding points.** During operation the tungsten needle distance from the workpiece should closer than tungsten needle distance from the welding wire. Tungsten needle position please refer to the following diagram, keep "**L**" and "**V**" as smaller as you can (both <1.0mm).



2. Inner corner welding method:

We refer here to the angle is the angle between the two formed workpiece is equal to or less than 90 degrees. Because of the characteristics of arc discharge through the shortest path, the conventional welding method often can not welding to the bottom corner.

The tungsten needle should be grinded very sharply (< 20 degrees), tungsten needle direct close to the bottom (see the below picture). Both sides of the metal were melted to the middle position to form a welding spot. If it is necessary, need to increase the welding current, until the middle form of a solder joint.



3. Take stainless steel sheet welding for example:

Suggested parameter:

STAINLESS STEEL THICKNESS (mm)	0.50mm	0.60mm	0.70mm	0.80mm
PULSE CURRENT	8	9	10	11
PULSE TIME	5	6	7	8

THE PULSE CURRENT AND PULSE TIME CAN BE ADJUSTED BASE ON THE REQUIRED WELDING THICKNESS, DIFFERENT MATERIALS NEED DIFFERENT PARAMETERS, JUST TRY AND GET THE RIGHT SETTINGS

CHAPTER-5, SPECIAL WELDING METHOD

When to use resistance place wire function ?

Resistance place wire function is a very useful assistant function. It can easily fix the welding wire on the workpiece, then use arc welding to repair or joint. mainly used for:

① New users who are not familiar with arc welding. can easily control the distance with tungsten / workpiece and welding wire.

② Some areas may be very narrow, not able to operate, then use this function can easily fix the wire and do continue welding precess, can improve the welding efficiency.

③ Some areas need high smooth welding, then use this function can improve the welding performance.

WELDING WIRE DIAMETER (mm)	MODE	PULSE CURRENT	PULSE TIME
Φ0.3	RESISTANCE	30	---
Φ0.6	RESISTANCE	60	---
Φ0.8	RESISTANCE	80	---
Φ1.0	RESISTANCE	99	---

***CAUTION: RESISTANCE PLACE WIRE FUNCTION IS ONLY SUITABLE FOR STEEL / IRON AND STAINLESS STEEL. ***

In resistance place wire mode, pulse time display show "_ _" means invalid value. Then only need to adjust pulse current value. If use stainless steel wire, the related pulse current value needs to reduce 30%.

CHAPTER-6, FREQUENTLY ASKED QUESTIONS

QUESTIONS	REASONS	SOLUTIONS
WELDING WIRE MELTS INTO BALL SHAPE, FAILED TO MELT ON THE WORKPIECE	1、Tungsten needle too close to the wire and too far from the workpiece	Put tungsten needle from wire about 0.3-1.0mm distance, at the same time keep 0.2-0.7mm to the workpiece. do not move the torch when step on the foot pedal.
	2、The power output is too small	To increase the pulse current and pulse time to increase the power output.
	3、Tungsten needle is not sharp enough	Grind tungsten needle sharp
	4、Welding wire not touch the workpiece	Keep welding wire touch the workpiece
WELDING SPOT IN BLACK COLOR OR YELLOW COLOR	1、Tungsten needle too long outside the ceramic nozzle	Adjust the needle position to keep less than 5mm outside the nozzle
	2、Power output to big	Adjust the power output
	3、The workpiece is dirty	Clean the workpiece surface
	4、The argon air tank not open or argon flow is too small	Check whether there is argon air going outside when step on the foot pedal, adjust the argon air flow value.
THERE IS ARC SOUND BUT CAN NOT WELDING	1、Grounding line not connect to the workpiece	Connect the grounding line to the workpiece
	2、The arc welding gun is too far from the workpiece	Keep the right distance between tungsten needle and work piece

Made in China.

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