

- a) Put the carriage on the work piece or the pipe;
- b) Adjust the welding torch position by the remote controller;
- c) Setting the swing parameters by the remote controller, increase or decrease the swing speed, swing width, left stop, right stop;
- d) Setting the welding current, voltage and the running speed;
- e) Determine to swing during the welding process or not, based on the groove width. Swing if the groove is wider enough. If the groove is narrow, decrease the swing width or stop swing;
- f) Adjust the welding direction by the remote controller;
- g) Push the welding button when the carriage start to running;
- h) Three steps you need to do before the welding:
 - i. Setting the swing parameters and torch position;
 - ii. Setting the running parameters, then start to run;
 - iii. Setting the welding current and voltage, then welding.
- i) During the welding process, keep the welding torch aligned with the center of the welding seam; Push the left / right button to adjust;
- j) When finished the welding, remove the carriage, and clean the welding surface.

1. Welding position: The welding torch is be positioned in the vertical pipe.
2. Swing welding
 - 1) Before welding, press the button to swinging positioning, observe the location of the gap are consistent with bevel edge. Usually, leave a gap on both sides of the cover. In normal, the filling thickness of the gas shielded welding machine is about 2mm.If covering filling thickness is greater than 2mm, swinging width should be smaller than the weld width, reducing welding speed in time, pay attention to adjust the residence time of on both sides of weld bead, avoid to causing weld slag on both sides.The swing width of the middle filling layer shall be subject to the width of the fusion line in the groove, and the residence time on both sides of the groove shall be adjust correctly. In actual welding, the free transition of the weld pool shall be subject to the guarantee.
 - 2) When the groove clearance of the filling layer is small, the first filling can be carried out with small swing and small current and voltage.
 - 3) The swing speed will affect the welding and welding quality, because the speed of the swinging and welding specification, welding speed (the speed of the welding carriage), both sides pause time is together. In principle, is a welding molten pool transition time is given priority to, the speed of the swinging, and pause time on both sides) can guarantee on both sides of weld pool before and after each covers more than half a molten pool advisable, form zigzag welding speed is too slow. Too fast speed will cause the weld bead on both sides of the weld bead fuse is not good, this kind of situation in the filling layer welding is easy to produce slag inclusion.
 - 4) The left and right pause time for swing shall be subject to the fusion of the weld pool and the edge of the weld pass during the welding process. Meanwhile, the front and back weld passes shall be superposition within one swing cycle. Generally, the left and right pause time shall not exceed 100 [i.e., 1 second].

For welding pass with wrong side, the pause time should be increased appropriately on the wrong side to ensure the weld line fusion forming well.

- 5) The swing mode of digital control is adopted, and the adjustable speed has a wide range in the welding process.
3. Welding specifications
 - 1) The dry elongation length of the welding wire (the length of the welding wire extending from the conducting nozzle) should be 10mm to 15mm. Too long is likely to cause instability of the welding and poor gas protection; Too short molten pool is not easy to observe, easy to plug welding nozzle, burn conductive nozzle.
 - 2) It is advisable for the gas flow rate to be about 25L/min according to the scale of the equipped flowmeter. Too large or too small will cause poor gas protection.
 - 3) The welding current, voltage, the current, voltage, welding current is 180 a 28 v), welding voltage, welding in the process of actual welding current, voltage parameters matching situation depending on experience judgement, based on current, welding voltage, welding arc length increases, then cause soft, drift, welding arc is not stable, may even burn out conductive mouth; Welding voltage decreases, welding arc length decreases, welding spatter increases, arc runout, welding wire butt pool phenomenon, welding bead appearance formed welding, resulting in red wire, non-combustion, welding wire burst. Take voltage as reference, contrary to the above situation. The normal arc length is about 2mm.
 4. Setting of welding machine
 - 1) USES the overseas advanced welding power source, just press the button ignition can realize automatic welding, arc extinguishing set to ensure the welding quality of welded joint, the end of the especially in the big specification, when welding with arc function, can guarantee the welding arc in forming, crater arc current, voltage must adjust in advance and adjustment methods with reference to electric welding specifications;
 - 2) Select solid core or flux-cored wire switch by using the wire;

- 3) The gas-shielded welding machine is generally equipped with power saving function. It will automatically cut off the power supply of the main machine when the welding stops for about 7 minutes.

1) Control box power light is not lit

| Cause | Solutions |
|---------------------|---------------|
| Bad cable connector | Replace cable |
| Fuse burned | Replace fuse |
| No power | Check power |

2) Start button does not work

| Cause | Solutions |
|-------------------------------------|-----------------------------------|
| Wire contact poor | Remove welding slag |
| Drive motor burned out | Replace or repair the drive motor |
| Welding / no-welding switch damaged | Check circuit or replace switch |

3) Weld torch position is inconsistent with the objectives

| Cause | Solutions |
|----------------------------|--------------------|
| Touch holder not tightened | Tighten the holder |

4) slides adjust not flexible

| Cause | Solutions |
|--------------------------|-----------------------------|
| Slides parts of sediment | Remove sediment and add oil |

5) Stop phenomenon during welding

| Cause | Solutions |
|--------------------------|-----------------|
| Travel surface barrier | Remove barrier |
| Sediment on guide wheels | Remove sediment |

6) Stop button does not work

| Cause | Solutions |
|---------------------------------|-------------------------------------|
| Stop button failure | Replace button |
| Arc-create switch "on" position | Arc-create switch to "off" position |

7) Oscillator is not working properly

| Cause | Solutions |
|----------------------|--------------------------------------|
| Swing motor not work | Check motor, connect cords and knobs |

7. Maintenance

- 1) Timely clean up the work site to avoid disorderly objects horizontally touching the equipment in the work site, which will affect the normal operation of the equipment;
- 2) Machine maintenance: check the worm gear and worm twice a month for lack of oil;
- 3) The welding trolley oscillators should be refilled or changed twice a month [not easy in winter];
- 4) According to the actual situation, regular maintenance and maintenance, ensure the welding power, control system, remote control box, namely the cable clean;
- 5) Regularly check whether the wire head falls off, the plug is worn, the cable is damaged, the components are damaged, if any, it should be eliminated in time;
- 6) If abnormal conditions such as abnormal noise and smell are found during operation, the cause should be found in time and the fault should be eliminated;
- 7) Avoid getting wet. If water enters the water, it should be treated with appropriate measures before using with electricity. Otherwise, components will be damaged, or leakage phenomenon;
- 8) Each transmission, such as synchronous belt pulley and lead screw, should be checked regularly to ensure that there is no lag in flexible operation.

8. Application of gas ratio and welding wire

- 1) Solid core welding wire; Solid core welding wire is generally used for thin wall pipes with wall thickness of 5-8mm; Current is around 120 voltage 18.6
- 2) Solid core wire melting point low current, so the corresponding slow welding speed
- 3) It is recommended to use a gas ratio of AR80%+CO2 20% mixture, and to use this ratio of gas weld bead appearance to form bright and fine lines
- 4) Flux-cored wire; Flux-cored wire is generally used for 12MM -- 50MM thick wall tube, with high melting point, high current, high efficiency; When filling the first time, put the current around 170 and the voltage around 22.6; Second time - N time after the current 200 or so voltage 28.5 or so; The gas CO2 is 100%.
- 5) Stainless steel; 3. Solid core welding wire is generally used for pipe wall between 5MM and 12MM. The welding method mode is 1. The current of two-point arc extinguishing method is about 270 and the voltage is about 30.5. Two-point arc extinguishing oscillation should not be too wide, generally around 10MM; Gas ratio AR98%+CO2 2%
- 6) Stainless steel; 4. Flux cored wire is mainly used for thick wall, generally 12MM -- 50MM; Stainless steel flux cored wire is different from carbon steel flux cored wire. There are two methods for reference. In the second mode, the arc extinguishing current is about 200 and the voltage is about 28.5. The gas CO2 is 100%.
- 7) For all of the above USES, gas heating, welding power supply with its own plug.