Please read carefully before using machine

Pengwang

PW101

Geomembrane Welder

Profile

1. The new release geomembrane welder is developed by Pengwang, which meets the different thickness applicable to the welding of PE, PVC, HDPE, EVA, PP and other hot-melt materials.

2. Adopt automatic constant temperature PID control, with high control accuracy and small temperature fluctuation. In the speed control part, the pulse width modulation (PWM) automatic voltage stabilizing and speed stabilizing circuit is adopted; The DC servo motor, large output torque and stable working. It can keep the speed constant when climbing, vertical climbing and road load changes.

3. This series of welder has stable working performance and will not been affected by the change of external temperature & voltage. With excellent performance, convenient operation, high welding speed and good welding quality, it is widely used in highway, tunnel, reservoir, building waterproof and other projects.

Technical Parameter

1. Model: PW101

2. Voltage(V): 220V Frequency(Hz): 50Hz

3. Power(W): 800W, 1100W

4. Welding speed(V): 0.5-5m/min

5. Heating temperature(T): 20-450℃

6. Welding material thickness: 0.2mm-1.5mm

7. Welding width:12.5mm+12.5mm+12.5mm

8. Weld strength: ≥85% base material (tensile in shear direction)

Notice

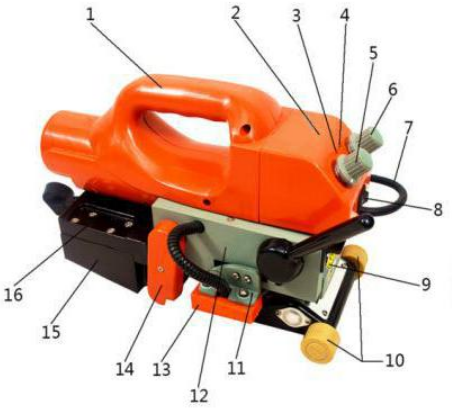
1. Unplug the tools before opening it to avoid of being hurt by exposed wires or component inside the machine with power.
2. Incorrect use of it can cause fire and explosion hazard because of high temperature, especially near combustible materials and explosive gases. It must be running at the correct use of manipulation of the operator.
3. The voltage rating stated on the welder must correspond to line/mains voltage (220V). The drop cable/wire with protective earthed conductors can only be used.
4. In order to ensure operator safety and reliable operation of equipment, the power supply must be installed power supply and leakage protection at the construction site.
5. Don’t use welder in the water, or on a muddy construction site, to avoid flooding, rain or moisture.
6. If the machine has been not used or moistened for a long time, please preheat it for 30 minutes before operating.
7. The machine has been regulated before leaving factory. Please do not adjust it without permission.

Note:

If the thickness of geomembrane is between 1mm-1.5mm, please use stainless steel pressure roller.

Please have a test welding before processing the work. Make sure to turn the temperature, speed and roller’s pressure down and keep the welder moving on flat ground. Or the geomembrane may be teared because of high temperature, speed and pressure.

Main spare parts

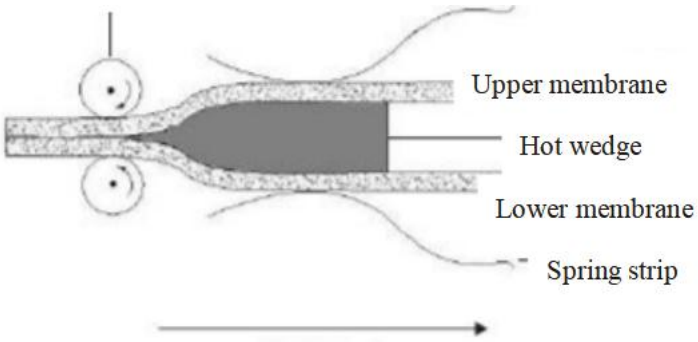


1.Housing	9.Upper pressure roller frame
2.Control Box	10.Foot Rollers (back)
3.Heating Indicator (red)	11.Movable Support
4.Power Indicator (green)	12.Big Support
5.Temperature Setting Knob	13.Heating Support
6.Speed Setting Knob	14.Main Chain Cover
7.Power Wire	15.Bottom Bracket
8.ON/OFF Switch	16.Upper Bracket

Control Box

Operation principle

Motor drives upper and lower pressure rollers to rotate through reduction gearbox and chain. Slide carriages drive the hot wedge and insert it between the two base materials, at the same time lever presses pressure rollers and engages the two fused base materials.



Work regulation

As welding quality is directly related to speed and temperature setting during operating, so welding machine must be specified personnel operated to reach excellent quality and high efficiency.

1. Use with grounded 3-cord mains cable and 3-hole socket with capacity not less than 10A (socket corresponds with welder plug, phase L connected to live wire, N to zero line, phase ⏚ to grounded protection line), confirm that external lines have been well connected. Check that power is on off state and regulate temperature control potentiometer and speed control potentiometer to 0 position, press lever handle down to disengage pressure roller, then insert the plug.

2. Turn on the power and select certain temperature and speed, take several narrow materials for try welding. Temperature selection may be different for the same material at different ambient temperature and material thickness. To determine the best welding effect, adjust the speed to approximately 2m/min, and then fine increase it from low to high temperature (approximately 250℃-350℃).

3. Judge on welding temperature: for transparent PE material, judge by direct observing, speed and temperature will be appropriate if welding mark is flat and in transparent glass form; temperature will be too high and speed be too slow if mark is heavy broken; temperature will be low and speed be fast if mark is not transparent and with white. For opaque material, observe if there is obvious welding mark, also tensile test can be made after complete cooling.

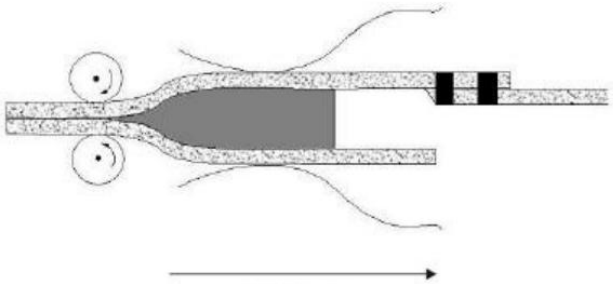
4. Flatly and straightly trim the weld edges and frontage faced, with lower left and upper right overlapped. The overlap width is 100mm.

5. After temperature and speed have been determined, insert material to be welded between the two pressure rollers, make machine body parallel with edges of base materials and engage press lever handle for proper motion. Generally, only observation of deviation between welding mark and base materials is needed for operator, and timely make correction on small degree.

6. When welding will be ended, timely press lever handle to disengage upper and lower pressure roller to prevent rubber wheel damage for long duration.

7. Excessive temperature high and low may occur because of thermal inertia. On this condition, temperature deviation may be compensated by speed regulation on a small degree.

8. A “T” shape overlap is formed between welded material and another material. Welding method is shown as below picture, tightly butt the overlap head of hot wedge against weld mark, and beveling cut length is approximately 100mm.



9. Pressure adjustment: after the machine is used for a while, the pressure might be getting lower. If the pressure is lower, get through the hole on the frame that fixes the electrical wire with a screwdriver, and turn the M4 screw right to heighten the pressure (shown as figure). Turning the screw more right makes the pressure higher. (Note: the pressure should be appropriate. To avoid the damage of the other parts of pressure components, do not adjust the pressure too acutely during once time).

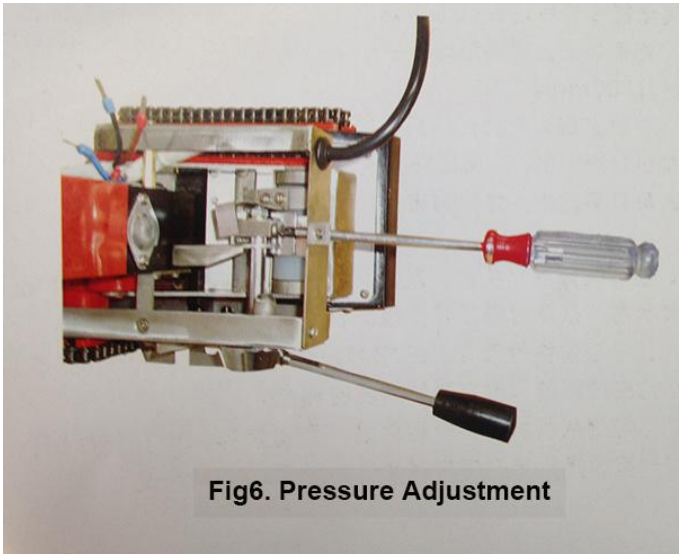
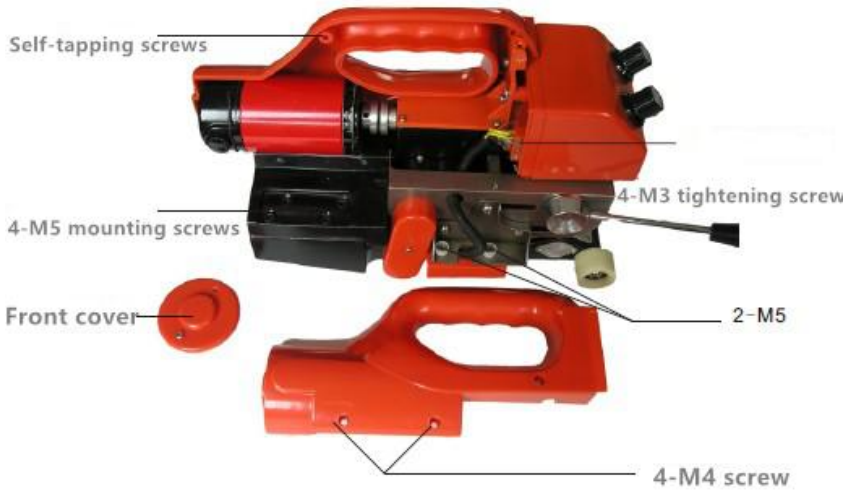


Fig6. Pressure Adjustment

Replacement of spare parts

1. Replacement of hot wedge assembly

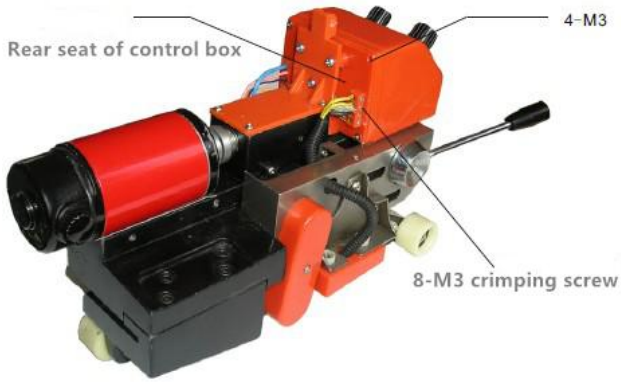
Remove the front end covering, remove the 4-M4 screws and tapping screw, remove a half housing, release 4-M3 screws, remove the 2-M5 screws that connect heating support and slide carriage, remove hot wedge and replace with a new one, and reassemble the complete machine (shown as figure). Note: conform to color on wiring.



The position of the wedge should be adjusted when weld geomembranes with different thickness, especially when the difference of thickness is too huge. When welding the thin one, the peak of the wedge should be adjusted as close as possible to the pressure roller, and vice versa. The method of adjustment is shown as Figure. Release the 2 M5 screws, and adjust the wedge forward and backward slightly. (Note: after adjustment, the peak of the wedge should be parallel with the axle of the pressure roller. Otherwise, it leads to different welding effects. Do not jack up the axle of the pressure roller when adjust the wedge close to the roller).

2. Replacement of control box

Remove all screws on plastic housing, remove housing by removing front end covering, screw off the 4-M3 screws that connect control box to rear base and pull out control box. Loosen the 8-M3 turn buckle screws on the two sides, remove the control box and replace a new one, reassemble the complete machine (shown as figure). Note: conform to color on wiring.



3. Replacement of pressure roller

Remove the chain guard, take off the forcing off screws on the two chain wheels and then remove the chain wheels and chains. For upper roller, it can be removed with the bearing block after 4 screws on both sides are released. For lower roller, it can be removed after the following steps: beating the axle of the lower roller along one side slightly to remove the bearing first, and then beating the axle to the other side slightly. Do the converse operation to reassemble. After reassemble operation, please check if the upper and lower pressure rollers are parallel under press. If not, adjust slightly the padding of screws and screw holes.

Common faults & solution

The motor does not rotate	Power failure	Check if the power is on
	Fuse burn out	Modify fuse
	Speed control circuit board burned out	Replace the speed control circuit board or the control box assembly
	Motor burn out	Modify motor
Motor cannot be adjusted	Speed control knob is loose	Tighten the speed control knob
	Power tube breakdown	Replace power tube or control box assembly
Hot wedge does not heat	Electric heating tube burn out	Replace hot wedge assembly
	Thermocouple failure	Replace thermocouple
	Temperature control knob is loose	Tighten the temperature control knob
	Thermostat circuit board burn out	Replace thermostat circuit board or control box assembly
Hot wedge burning red	Thermocouple failure	Replace thermocouple
	Thyristor break out	Replace thyristor or control box assembly
Chain jump	Chains, gears with mud or small stones	Clean mud and small stones

Maintenance

Whole machine should be cleaned, greased and placed in a dry place if it is not used.

For PVC welding, the adhesions on hot wedge should be cleaned off if it is not used longer than 4 hours to prevent wedge corrosion and service life being shortened.

Recommend: If welding material produces corrosive gas after hot fusing,like PVC membrane, stainless steel hot wedge (optional accessory) is preferred for extending of service life.

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