
Please read carefully before using machine



Pengwang

PW102 Digital Display

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 be 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: PW102 with Digital Display
2. Voltage(V): 220V
3. Frequency(Hz): 50Hz
4. Power(W): 800W, 1100W
5. Welding speed(V): 0.5-5m/min
6. Heating temperature(T): 0-600°C
7. Welding material thickness: Rubber tire 0.2mm-1.5mm
8. Steel tire 0.8mm-2.0mm
9. Lap width:100mm, 150mm
10. Welding width:16mm×2
11. Intermediate cavity: 11mm
12. Weld strength: $\geq 85\%$ base material (tensile in shear direction)
13. Insulation grade: II

Notice

Please read the manual carefully in order to use the machine correctly.

Please use three core power cable and socket with grounding (10A capacity socket, plug L on the corresponding welder to connect the live wire, N connects the neutral wire, and \perp connects the ground protection wire). Do not change the plug without permission.

In order to ensure the welding quality, please assign special personnel to operate.

When the machine is idling, the pressing roller shall not be in the pressing state.

Please don't use it when there is water, so as not to affect the welding.

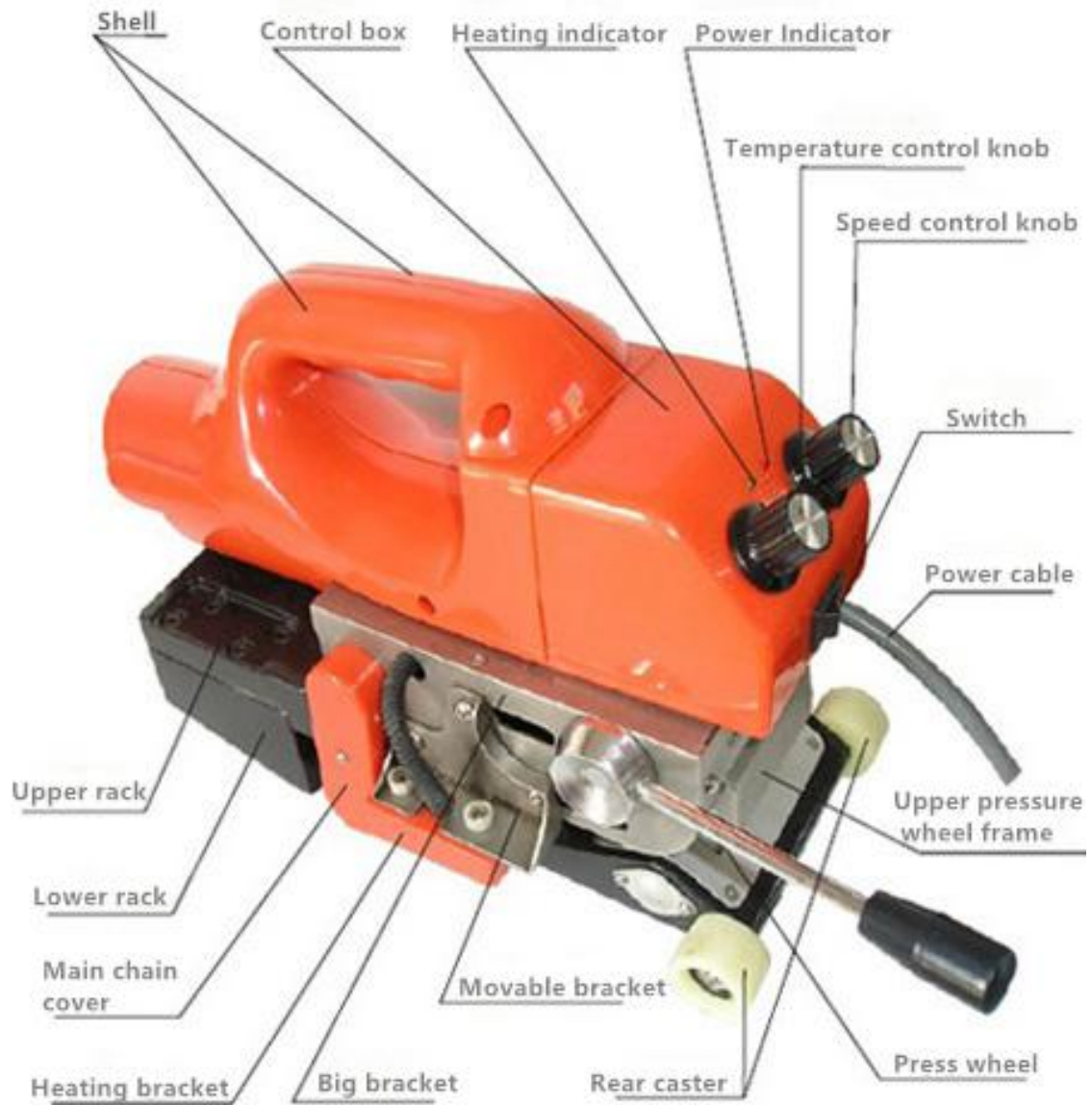
The machine has been debugged before shipping. Please do not adjust it casually.

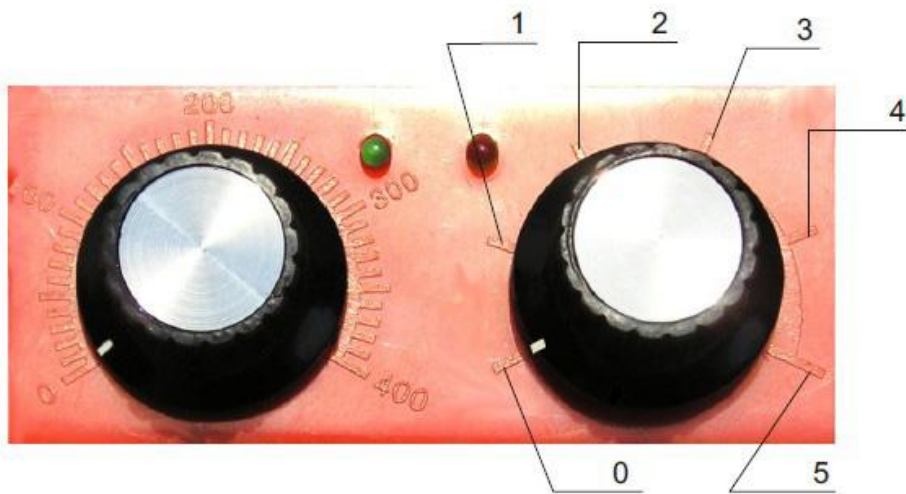
The circuit board in the control box is with electric, and non professionals are not allowed to dismantle it without permission.

If the machine is not used for a long time or is damp, please preheat it for 30 minutes before turning on.

Due to continuous improvement of our products, we are subject to change without notice.

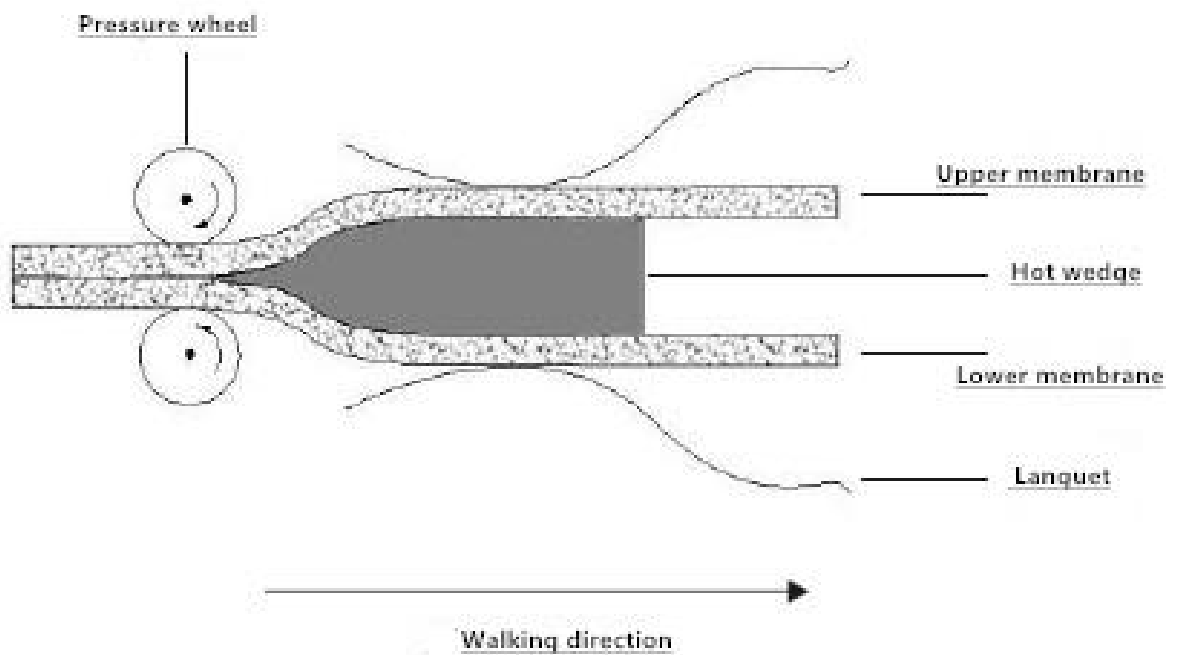
Main spare parts





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.



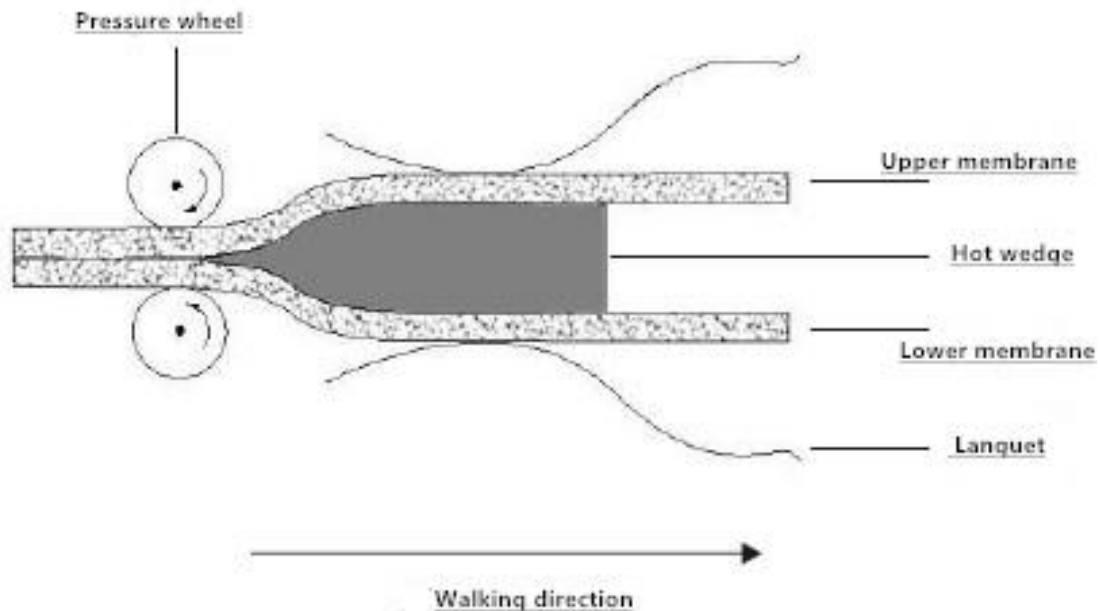
Welding diagram

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.

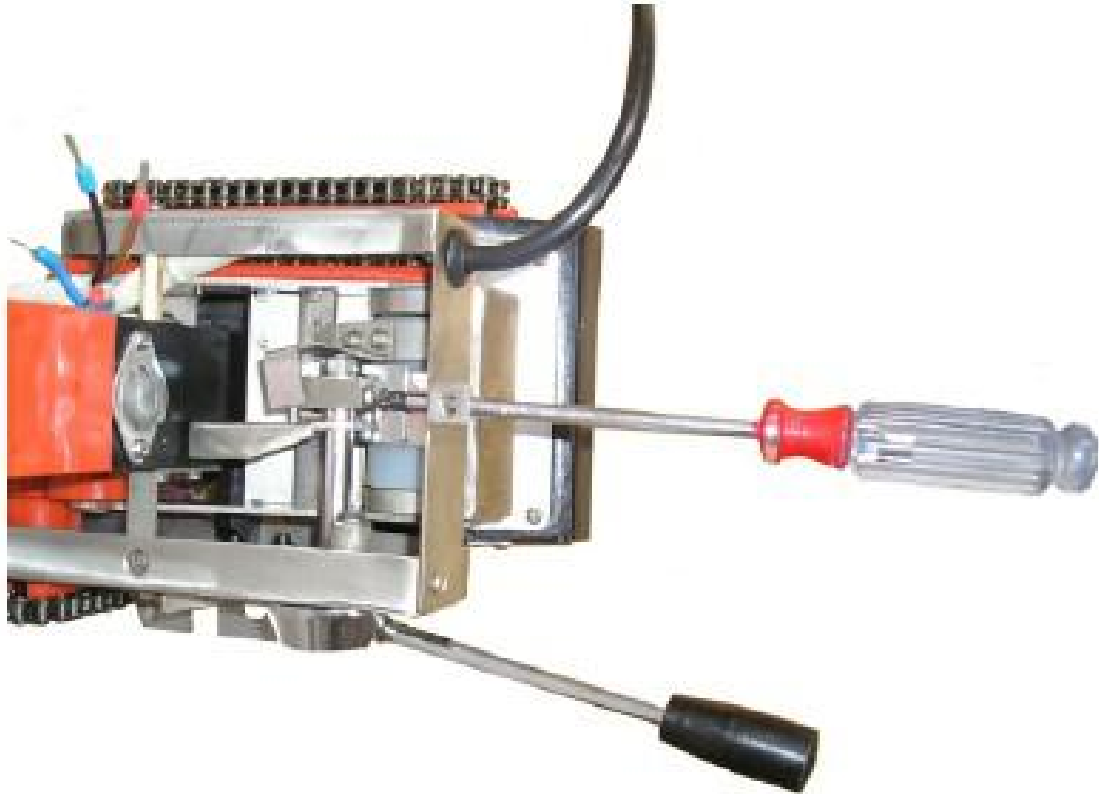
1. Use with grounded 3-cord mains cable and 3-hole socket with capacity not less than 10A (socket corresponds with welder plug, phase L connected to live wire, N to zero line, phase $\underline{\text{L}}$ to grounded protection line), confirm that external lines have been well connected. Check that power 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°C-350°C).
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 fig.5, tightly butt the overlap head of hot wedge against weld mark, and beveling cut length is approximately 100mm.



Welding diagram

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).

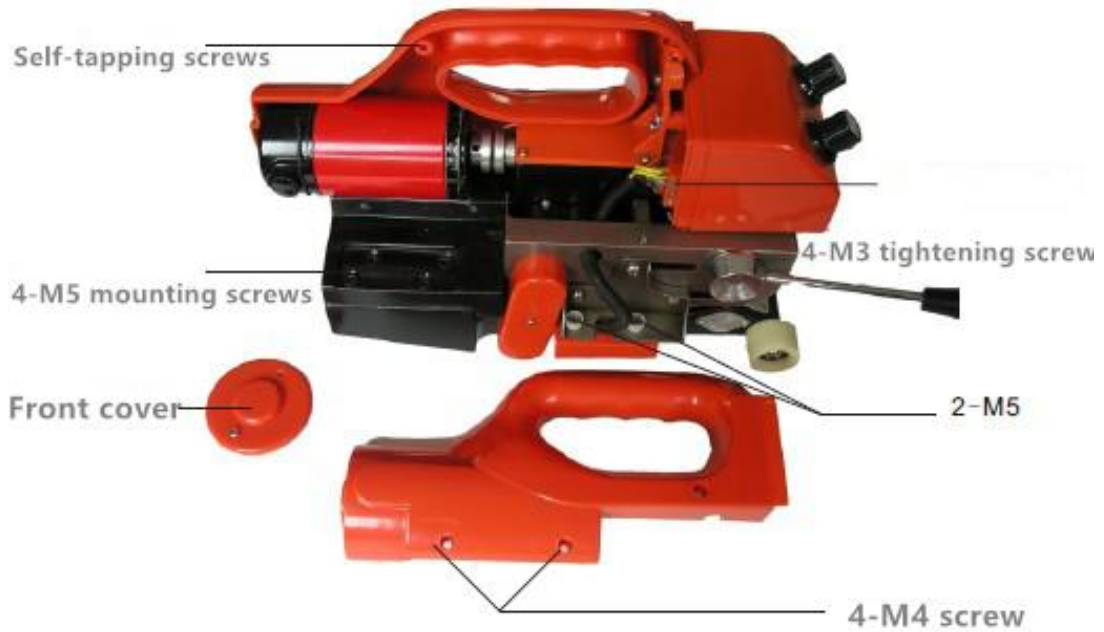


Schematic diagram of pressure regulation

Replacement of spare parts

1. Replacement of hot wedge assembly

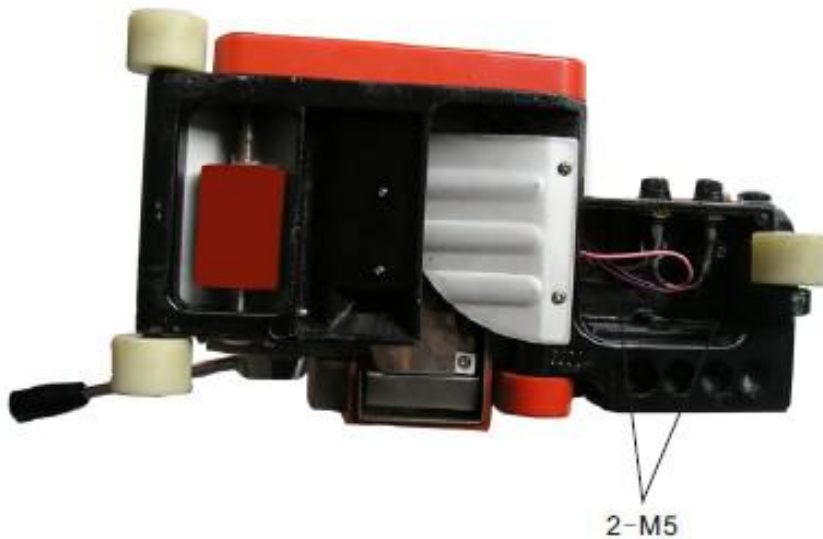
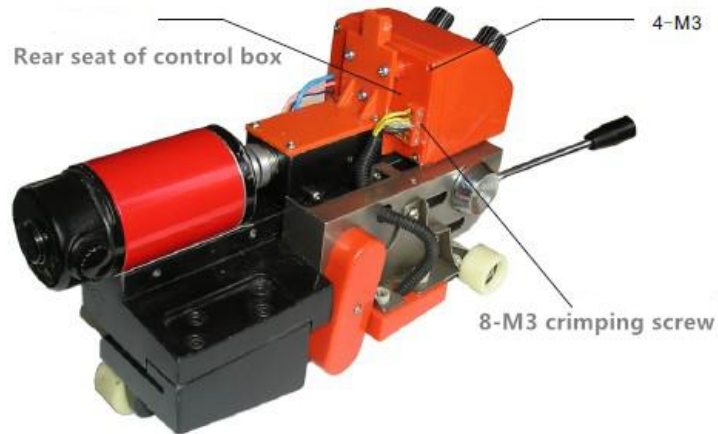
Remove the front end covering, remove the 4-M4 screws and tapping screw, remove a half housing, release 4-M3 screws, remove the 2-M5 screws that connect heating support and slide carriage, remove hot wedge and replace with a new one, and reassemble the complete machine (shown as figure). Note: conform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

The 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.

Random accessories

Fuse	4A	5
	1A	5
Phillips screwdriver		1
Allen Key		2

Product qualify certificate

The product has passed the inspection and all technical indicators are qualified, and is allowed to leave the factory.

Model: _____

Sort number: _____

Date of manufacturer: _____

Inspectors: _____

User information	
Name:	
Address:	
Zip Code:	Contact:
Phone:	Fax:
Model	
Model:	Sort number:
Purchase date:	

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