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## WEDGE WELDER ROBOT, WAC100 - Manual (En)



WAC100 is a geomembrane welding robot and mainly used for welding of geomembrane sheets in the application areas like waste storage places, ponds (artificial lakes), medical waste collection areas, treatment and irrigation pools, canals, dams etc. WAC100 is the one of the best products in the market considering the weight and the price/quality ratio together.

**General Properties:**

Voltage	V	220
Power Consumption	W	1400
Temperature	°C	0 - 450
Travel speed	m/min	1.2-4
Material thickness	mm	0.5-3
Weight	Kg	6.3
Dimension	mm	295x220x200
Shipping Weight (With Metallic Case)	Kg	10.5

**Temperature adjustment:**

In the figure below the temperature unit (element + wedge) has been shown. The temperature can be assigned between 0-450 °C according to the membrane material and thickness. Also, the wedge the type of material is defining the type of wedge where for PVC membrane stainless steel wedge and for others copper wedge is used. The length of the wedge is defined based on the thickness of the membrane as shown in the table below.

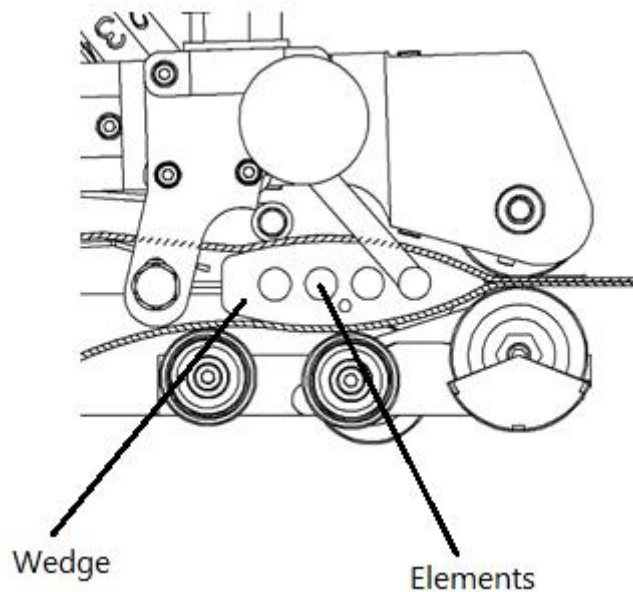


Fig1. Temperature unit

Copper Wedge length	Material	Thickness
70 mm	HDPE, PP	1.5-2.0 mm
	LDPE	2-3mm
50 mm	HDPE, PP	0.5-1.5mm
	LDPE	1-2mm

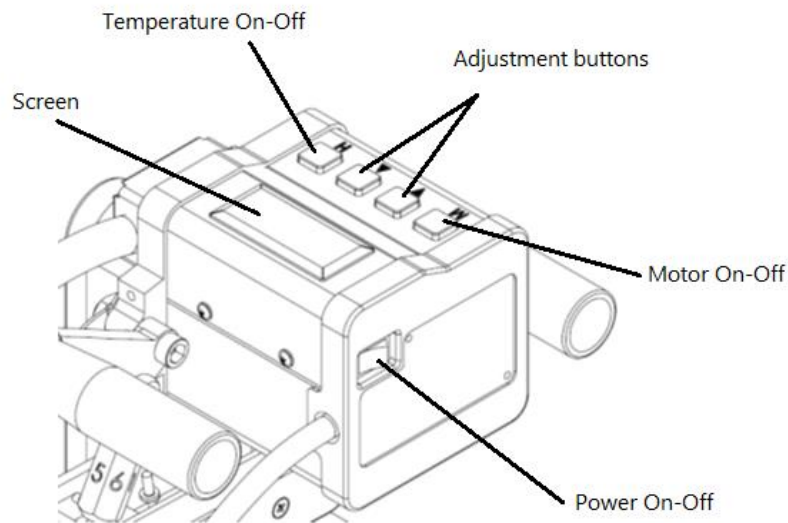


Fig2. Adjustment and On-Off buttons

To adjust the temperature, be sure that the power is already on. If it is not, use Power On-Off button (Fig.2) to open the power. Push the “H” button (Temperature On-Off) and one of the adjustment buttons ( $\Delta$  or  $\nabla$ ) at the same time to enter to temperature adjustment menu. When the screen starts to blink and shows the temperature, you are in the adjustment menu and you can leave your hand. While screen blinks you can hold “ $\Delta$ ” or “ $\nabla$ ” buttons to increase or decrease the temperature. As soon as the desired temperature is reached just leave the buttons and push the “H” button again to save.

#### Pressure adjustment:

To adjust the welding pressure, there is an adjustment bolt which is designed to apply the forces 100 to 1000 N to the membranes. The bolt is designed to apply 100 N per number. Therefore, before starting to turn the bolt just hold down the pressure lever (Fig.3) and put two overlapped membrane between the rollers. Then start to turn the bolt until both upper and lower rollers get in contact with the membranes without applying any pressure. Write down the number you can read (Example, in the figure you can read number 4) and accept it as zero force. After this, any number in the bolt will apply excessive 100 N to the membranes.

Please be sure NOT to pass 10 turns which is equal to 1000 N. After few tryouts you will understand the suitable pressure considering the welding quality.

Note: It is advised to use 500 N for a membrane with 1.5 mm thickness as manufacturer suggestion.

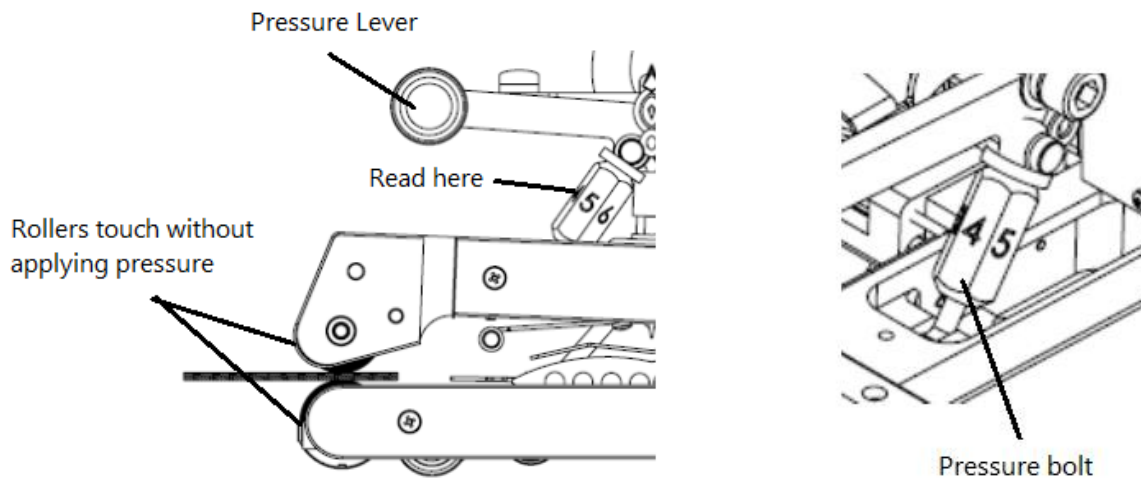


Fig3. Pressure unit, Left: Pressure lever clamped, Right: The bolt position

### Guiding roller adjustment:

The guiding rollers are utilized to make the membrane have maximum contact with the hot wedge so that the welding quality increases. Generally the rollers should be adjusted in a way that a membrane easily slide between the wedge and them. If the clearance is too large, the membrane may NOT slide and will stuck between the rollers so that the welding will be stopped.

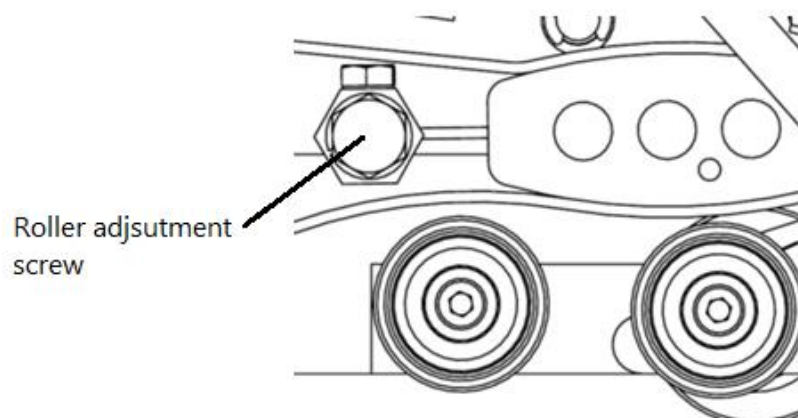


Fig.4. Roller adjusting with two different screws

If you have already adjusted the temperature, pressure and rollers, you need to do some arrangements before starting to weld.

- Clean the membranes and overlap them between 80 to 120 mm.
- The power supply should be at least 4 KW with a voltage stabilizer.
- Extension cord should be chosen as below,

230 V~	to 50m	3x1,5 mm <sup>2</sup> / 3x14 AWG
	to 100m	3x2,5 mm <sup>2</sup> / 3x12 AWG

- Be sure that the pressure Lever is NOT clamped.
- Adjust the welding speed using “M” and “Δ” or “∇” buttons.
- Be sure to clean the wedge and rollers before welding.
- Be sure to lubricate the rollers and check if they can turn freely.

#### How to Weld:

1. Connect the cable to the 220 V power outlet.
2. Hold down the “H” button to make the elements start to heat and reach to your predefined temperature.
3. Try to put the overlapped membranes as below into the space between wedge and rollers.

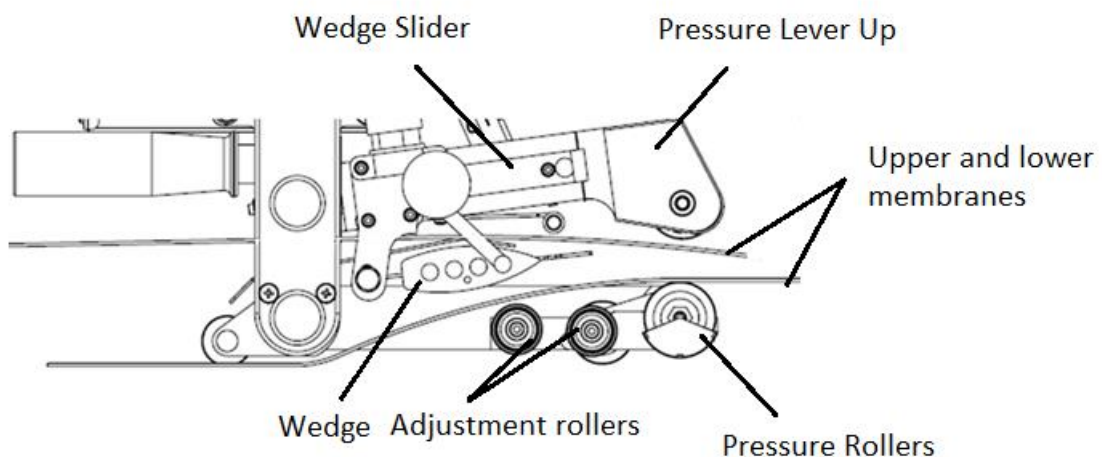


Fig.5. The way of putting membranes into the robot

4. The wedge position can be adjusted horizontally. Be sure that it is in the right end of the wedge slider considering Fig.5.
5. Now the wedge temperature and motor speed are both set membranes are both in the place. You can now push the pressure lever down to clamp and start the welding.
6. The robot will automatically pull the membranes inside the pressure rollers and the melted surface of the membranes will get welded.
7. As soon as the robot reaches to the end of the welding route, open the pressure lever up to avoid the pressure rollers (Fig.5) sliding on each other.
8. Push back the wedge on slider and turn off the elements using “H” button and the motor with “M” button.
9. Do the vision test on the welding and if the quality is not satisfactory, decrease the speed using “M” and “V” buttons.

### Warnings:



The hot wedge may cause fire hazards. Try to avoid putting it near easily flammable materials.



Do NOT touch the wedge with bare hands.



Be sure to check the robot before using to avoid electrical shock. This problem is generally happening in wet environment.



Be sure you are using voltage stabilizer to avoid electrical damage to control unit.



Do NOT touch or change the robot electrical fuse.



The robot should be protected against water because it is NOT waterproof.

### Out of guarantee situations:

- Damage due to voltage fluctuation
- Damage due to wet environment
- Damage due to mechanical impact
- The parts which have finished their lifetime elements are out of guarantee
- Any attempt to open the machine parts by the customer will end the guarantee
- Any damage due to misuse