

# **Proweld™ Equipment**

## **Owner & Maintenance**

### **Manual**

## **Maxiplast**

(Widos Shop 6)



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## Section I - Safety Precautions for Shop Machines

1. Keep working area clean and tidy.
2. Keep electrical tools away from moisture. Never use in a wet environment or humid conditions. Working area should be well illuminated. Keep tools away from chemicals and other corrosive materials.
3. Keep visitors at a safe distance.
4. Electrical tools not in use should be stored away safely.
5. Do not wear loose clothing or jewelry. They can inadvertently get stuck in the moving parts of the machine, causing injury.
6. Never carry tools by the electric cable. Never unplug by pulling the cable. Keep cables away from oil, heat and sharp edges.
7. Always check that the pipe and fittings are clamped down tightly.
8. The heating element can reach temperatures in excess of 300°C (570°F). Do not touch the surface, and keep non-operating personnel at a safe distance.
9. Keep tools clean and sharpened. They produce better and safer results. Missing and worn-out parts should be replaced immediately. Always assure that the accessories are properly mounted on the machine. Only use factory parts.
10. Always use correct extension cable.
11. Do not use tools and machines when housing or handles, specifically plastic ones, are bent or cracked. Dirt and humidity in any fracture can lead to electrical shock should the insulation in the machine be damaged.

## Section II - Welding Conditions

1. The welding environment needs to be protected against unfavorable conditions, e.g. rain, wind, dust, excessive humidity or temperature below 5°C (41°F).
2. It needs to be assured that the pipe wall temperature is adequate for welding. If necessary, the pipe has to be warmed up or an environmentally controlled welding tent needs to be erected. If these conditions are met, the welding can be performed at virtually any environmental temperature. It is advisable to verify the weld quality by making some test welds at the given conditions.
3. Should the pipe be irregularly heated by intense sunshine, it may be necessary to cover the pipe ends to be welded so that a balanced temperature is obtained.
4. The pipe ends to be welded must be checked for damage and be free from oil, grease, dirt and other contaminates. Cleaning the pipe ends must be done just prior to welding.
5. The weld must be kept free from external stresses during the weld process until the material has sufficiently cooled.
6. The weld process has to be observed continuously. It is recommended to keep a record of each weld.
7. A stop watch is to be available in order to register the actual times for heating up and cooling down.
8. A heat stick or pyrometer is to be available in order to verify the correct heating element temperature.
9. A table is to be available from which you can read the parameters that are prescribed by the welding regulation for the pipe dimension to be welded.
10. The heating element surfaces are to be clean and, above all, free from grease. Therefore, they are to be cleaned with lint free paper and detergent (e.g. technical cleaned spirit) before every welding or if they are dirty.

## Section III - Machine Set Up and Operation

### 1. General Tool Information

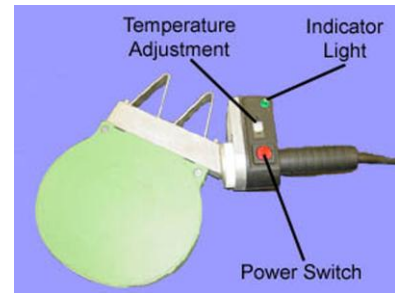
- A. The Maxiplast Shop 6 is made for heating element butt welding of pipes and fittings made out of PE, PP, PVDF and ECTFE with a diameter range of 1 ½" – 6" (50 mm – 160 mm).
- B. Voltage: 110 AC (Two required)  
Amperage: 15 Amps
- C. Additional Technical Data

Pipe/Fitting Material:	PE, PP, PVDF, ECTFE
Pipe/Fitting Sizes:	1½" – 6" (50 mm – 160 mm)
Transport box (LxBxH):	35 x 24 ½ x 28 inches
Weight:	Appr. 250 lbs.
Breaker:	15 Amp
Heating Element Voltage:	110 V (+/- 10%)
Planer Voltage:	110 V (+/- 10%)

### 2. Heating Element Temperature Setting

- A. Connect the plug of the heating element to a 110-volt outlet.
- B. The thermostat is located in the heating element and can be adjusted by turning the dial located above the handle. Set the thermostat to the appropriate temperature.

- I. HDPE 215°C-230°C/ 420°F-446°F
- II. PP 200°C-210°C/ 393°F-410°F
- III. PVDF 225°C-235°C/ 436°F-456°F
- IV. Halar 275°C-280°C/ 527°F-536°F

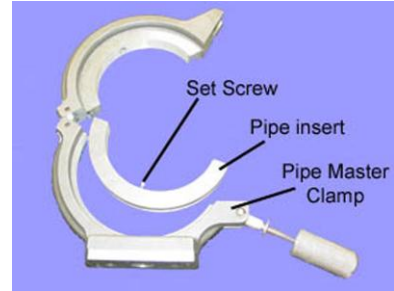


### 3. Welding Machine Setup

- A. The machine can be mounted on a bench by bolting the base to the bench with the enclosed screws or it can be placed in a vice.

#### 4. Clamping Setup

A. For pipe to pipe joints with pipes smaller than 160mm diameter, appropriate pipe clamp inserts must be placed into the master pipe clamps and fixed with the appropriate screws. For 160mm pipe to pipe joints, the master pipe clamps should be used. The pipe should be placed in the clamps with ½ -1½ inches extended out of the clamps.

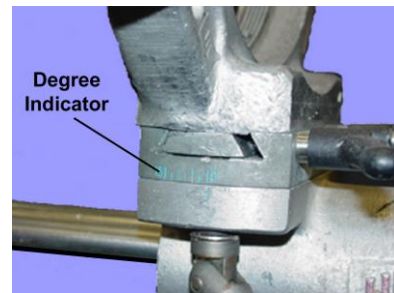


B. For pipe to fitting joints, the master pipe clamp, which is fixed to the movable part of the machine, must be replaced with the master fitting clamp. For fittings 160mm, the master clamp is used. For fittings smaller than 160mm, use the appropriate fitting inserts and fix them with the appropriate screws.

C. For fitting to fitting joints, the second master pipe clamp should be replaced with the other master fitting clamp with the appropriately sized inserts.

D. To weld a flange to pipe or fitting, the flange adapter should be placed in the pipe master clamp and the flange centered on the flange adapter.

E. It is possible to manufacture segmented elbow pieces. The master pipe clamps can be swiveled from 0-15 degrees on either side. The upper part of the planer is radial adjustable in order to adjust the cutters axial to the end of the pipe. It is possible to produce equally segmented elbow pieces provided the limit stops are set exactly.



#### 5. Facing

A. The planer has to be placed onto the two shafts and locked using the rotary button.

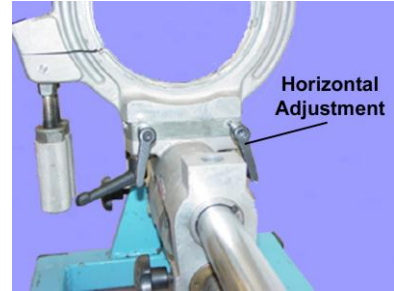
B. Use the hand wheel to gently press the ends of the pipe against the rotating cutters of the planer. The planing step is complete when the shavings on both pipes are continuous. Release the pressure using the hand wheel while the cutters of the planer are rotating.



C. After loosening the rotary button, remove the planer and store in an appropriate place.

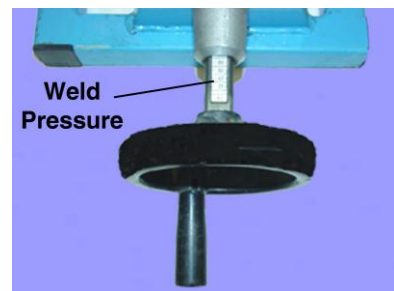
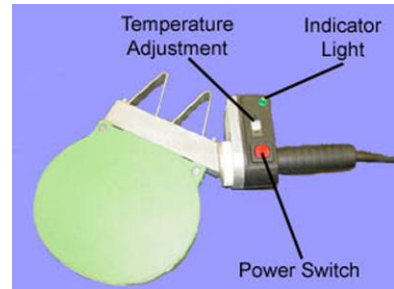
## 6. Alignment

- A. Using the hand wheel, bring the two ends of the pipe together to check alignment both parallel and axial.
- B. Adjustments can be made using the horizontal adjustment. Loosening or tightening the clamps will adjust the vertical alignment. The misalignment of the pipe should not exceed 10% of the wall thickness of the pipe.
- C. Loosening or tightening the clamps can eliminate egg-shaped pipe, as can be seen when too much clamping pressure is applied.



## 7. Initial Heating

- A. Check whether the heating plate has reached the working temperature (see Heating Element Temperature Setting or the welding charts at the end of this manual). The working temperature is reached when the lamp blinks in short intervals. A heat stick or pyrometer should be used to verify temperature.
  - B. Place the heating element on the shaft of the welding machine with the brackets on either side of the shaft. Using the hand wheel, bring the pipe ends against the heater, applying the proper initial melt pressure (see charts at the end of this manual for proper welding pressures).
  - C. Watch for a continuous bead to form 360 degrees around both pipe ends (see pipe manufacturer or AWS/DVS standards for size).
  - D. Lower pressure using the hand wheel until the proper melt pressure is reached (almost zero). Be sure the mirror does not break contact with the pipe or fitting.
- ⇒ **Note:** If the hand wheel is moved too far in this direction, the pipe may move away from the heater causing a bad weld.



## **8. Heat Soak**

- A. With the pressure almost at zero, begin to time the heat soak time (see welding parameters). It is important to assure that the pipe ends remain in full contact with the heating element.

## **9. Change Over Time**

- A. With the hand wheel, move the pipe ends apart. Remove the heating element and then bring the pipe end back together.
- B. Bring the pressure back to the original weld pressure. Do not over pressurize, as this will cause a bad weld. These steps must be performed within the allowable change over time (see parameters at the end of the manual for proper time).

## **10. Cooling Time**

- A. Keep the machine under pressure until the cooling time has expired.
- B. For PP and HDPE, Cooling time can be reduced by 50% under the following conditions:
  - I. Prefabrication under workshop conditions
  - II. Low additional pressure when unclamping
  - III. No additional pressure during further cool down
  - IV. System will not see pressure until cool down is complete

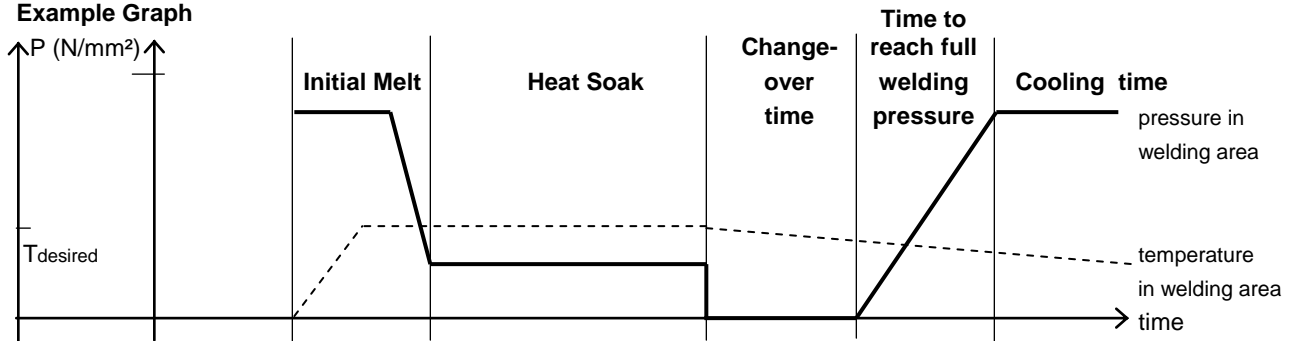
## Section IV - Maintenance

To keep the machine in good working condition, the following should be observed:

1. Keep the hardened chrome guide shafts free of dirt.
2. Assure that the machine is always connected to proper power supply.
3. Keep heating element clean. Whenever necessary, wipe residue off with clean, lint free cloth while the element is at operating temperature.
4. Assure that blades are sharp at all times. The blade design allows for reversal to use both sides. If necessary, replace blades.
5. For a long service life, clean and grease regularly the threaded spindles and the joint parts which are used for clamping the pipe.
6. Asahi/America recommends maintenance work after one year for contractor owned tools.

## Section V - Maxioplast Welding Parameters

Example Graph



### Single Wall Butt Fusion

PIPE SIZE (INCHES)	INITIAL MELT PRESSURE (LBS)	MELT PRESSURE (LBS)	HEATSOAK TIME (SEC)	CHANGE OVER TIME (SEC)	WELDING PRESSURE (LBS)	COOLING TIME (MIN)
<b>Pro 150</b>						
1 ½	14		35	4	14	6
2	23	Almost	45	5	23	7
2 ½	33		55	7	33	9
3	46	Zero	60	8	46	10
4	69		80	9	69	13
6	148		100	10	148	16
<b>Pro 45</b>						
4	26	Almost	35	5	26	5
6	54	Zero	45	5	54	5
<b>Air Pro</b>						
4 (230 psi)	70	Almost	100	9	70	13
6 (150 psi)	220	Zero	200	10	220	15
<b>PVDF</b>						
1 ½ (230 psi)	12		30	4	12	5
2 (230 psi)	16	Almost	35	4	16	5
2 ½ (230 psi)	16		40	4	16	5
3 (150 psi)	22	Zero	30	4	22	6
4 (150 psi)	34		40	4	34	7
6 (150 psi)	70		60	4	70	10
<b>Halar</b>						
1 ½	9		14	3	9	4
2	11	Almost	15	3	11	5
3	23		25	3	23	6
4	33	Zero	40	4	33	7
6	70		50	4	70	10

#### Welding Temperatures

PP	393°F-410°F	200°C-210°C
HDPE	420°F-446°F	215°C-230°C
PVDF	436°F-446°F	225°C-230°C
Halar	527°F-536°F	275°C-280°C

**Maxiplast**  
**Single Wall Butt Fusion**

PIPE SIZE (INCHES)	INITIAL MELT PRESSURE (LBS)	MELT PRESSURE (LBS)	HEATSOAK TIME (SEC)	CHANGE OVER TIME (SEC)	WELDING PRESSURE (LBS)	COOLING TIME (MIN)
<b>HDPE SDR 11</b> (IPS PE 80)						
2	32		55	5	32	10
3	69	Almost	81	5	69	16
4	114	Zero	104	6	114	16
6	248		153	8	248	24
<b>HDPE SDR 17</b> (IPS PE 80)						
2	21		35	3	21	5
3	46	Almost	52	5	46	7
4	77	Zero	67	5	77	10
6	166		99	6	166	16
<b>HDPE SDR 26</b>						
2	14		23	3	14	5
3	31	Almost	34	3	31	6
4	51	Zero	44	4	51	6
6	111		65	5	111	10
<b>HDPE SDR 32.5</b>						
2	11		19	3	11	5
3	25	Almost	27	3	25	5
4	41	Zero	35	3	41	5
6	89		52	5	89	6

Welding Temperatures

PP	393°F-410°F	200°C-210°C
HDPE	420°F-446°F	215°C-230°C
PVDF	436°F-446°F	225°C-230°C

**Maxiplast**  
**Double Containment Butt Fusion**

PIPE SIZE (INCHES)	INITIAL MELT PRESSURE (LBS)	MELT PRESSURE (LBS)	HEATSOAK TIME (SEC)	CHANGE OVER TIME (SEC)	WELDING PRESSURE (LBS)	COOLING TIME (MIN)
<b>Pro 150 x Pro 45</b>						
2 x 4	49	Almost	60	4	49	7
3 x 6	100	Zero	80	4	100	9
<b>Pro 150 x Pro 150</b>						
1 x 3	52	Almost	80	3	52	10
2 x 4	92	Zero	100	4	92	13
3 x 6	194		130	4	194	16
<b>PVDF x PVDF</b>						
2 x 4	50	Almost	50	4	50	10
3 x 6	92	Zero	70	4	92	12
<b>Poly-Flo Polypropylene</b>						
1 x 2	15	Almost	40	4	15	5
2 x 3	30	Zero	70	7	30	9
4 x 6	95		80	8	95	10
<b>Poly-Flo HDPE</b>						
1 x 2	17	Almost	30	4	17	5
2 x 3	17	Zero	30	7	17	9
4 x 6	168		62	8	168	15
<b>Poly-Flo PVDF</b>						
1 x 2	16	Almost	65	4	16	5
2 x 3	30	Zero	72	4	30	8
<b>HDPE SDR 11 x SDR 11 (IPS PE 80)</b>						
2 x 4	146	Almost	104	6	146	16
3 x 6	317	Zero	153	6	317	24
<b>HDPE SDR 11 x SDR 17 (IPS PE 80)</b>						
2 x 4	108	Almost	67	3	108	10
3 x 6	235	Zero	99	5	235	16
<b>HDPE SDR 17 x SDR 17 (IPS PE 80)</b>						
2 x 4	96	Almost	67	3	96	10
3 x 6	212	Zero	99	5	212	16

Welding Temperatures

PP	393°F-410°F	200°C-210°C
HDPE	420°F-446°F	215°C-230°C
PVDF	436°F-446°F	225°C-230°C

**Notes:**

**Notes:**

# Tool Department Contacts

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