

7. Istruzioni per una saldatura di tasca corretta

7.1 Preparation

All the following descriptions are valid for both PP-R and PP-R ALU pipe. The only exception at paragraph 7.1.5 where you need two different tools.

7.1.1 Check the temperature

Once the socket fusion machine is on, check the temperature, which must range between 253°C and 274°C.

This operation must be performed by means of tempil sticks.

The yellow one melts at 253°C.

The red one melts at 274°C.

The fusion temperature ranges between 253°C and 273°C, when the yellow pen melts and the red one does not melt, the temperature is perfect for fusion.



N.B. Cut the pipe ends of 5 cm.



7.1.2 Clean the heating tools

After checking the heater bush temperature, wipe the heater bush with a clean cloth. This operation must be repeated after each welding.

7.1.4 Chamfer the PP-R/ALU/PP-R

In case of PP-R ALU pipe to take off the aluminium film use the suitable tools.

7.1.5 Clean pipe & fitting

Clean the fitting inside and the pipe outside (the presence of dust can cause improper fusion).



7.1.3 Cut the pipe

Cut the pipe at right angle, if necessary remove swarf from inside.

7.2 Fusion

7.2.1 Mark the pipe

Mark the pipe for depth of penetration into the heater bush and fitting (see table).
The mark must remain visible under heating and joining.



7.2.2 Heat pipe & fitting

Push the pipe and the fitting into the heating tools. Once pipe and fitting are hot (after the correct time), pull out pipe and fitting very slowly.



7.2.3 Joint pipe & fitting

Joint the pipe & the fitting and push the pipe until it reaches the mark (that has to stay outside).

During the jointing time the welded part of pipe and fitting must remain fix, without any rotation.

During the cooling time, the welded part of pipe and fitting can be adjusted until cold.



7.2.4 Fusion inspection

Fusion inspection.

The outer fusion seam must be inspected.
The seam must be present all around the pipe.



Summary Value table

pipe diameter (mm)	minimum wall thickness (mm)	insert depth (mm)	heating time (sec.)	jointing time (sec.)	cooling time (min.)
20	3,4	14	6	4	2
25	4,2	16	7	4	3
32	5,4	18	8	6	4
40	6,7	20	12	6	4
50	8,4	23	18	6	5
63	10,5	26	25	8	6
75	12,5	28	30	8	8
90	15,0	31	40	10	8
110	18,4	33	50	10	8

8. Electrofusion

The welding can also be made by means of the electrofusion machine. This machine is useful in the repair situation, where it is difficult to use the standard machine and where there is a little space.

Pay attention to the following instructions:

1. Wipe the coupling area of the pipe with a clean cloth. Scrap the same area with a blade all around the pipe. Check the pipe ovalisation ($\ll 1.5\%$).



2. Just before electrofusion, degrease the treated pipe end by means of solvent and lint free cloth.



3. Unpack the fitting and position it on the pipe, so that the sleeve-end matches the pipe-end. Insert the end of the other pipe. Make sure that both ends of the pipe are lined up and secure the fitting and the pipe.



4. Fix the electrofusion machines cables so that the cables do not weigh on the clamps. Connect the clamps to the resistor terminals on the fitting and make sure that the connection is correct. Follow the instructions to program and operate the welding machine.



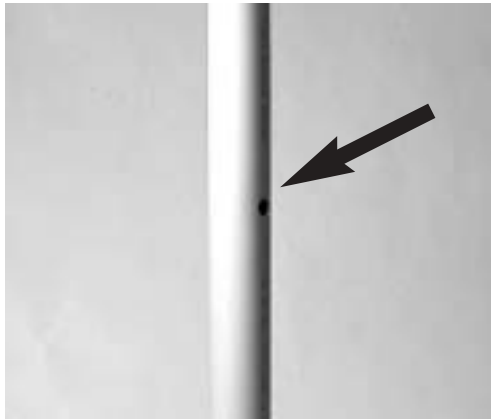
Minimum cooling time without moving sleeve and pipe

d mm	minutes
20	10
25	10
32	10
40	15
50	15
63	20
75	25
90	30
110	35

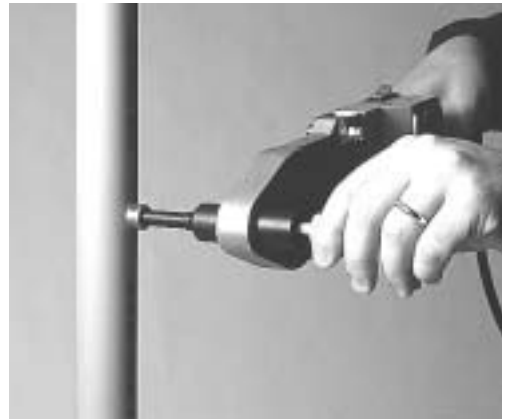
about 2 hours hardening time must be allowed from when the fitting is cool before any pressure tests can be used.

9. Hole repairing

In case of accidental drilling it is possible to repair the pipe as follows:



1. As first, adequate the hole to the hole member dimension. They are available in 7 mm and 11 mm, respectively repairing an hole of 6 mm and 10 mm. Take the hole to this dimensions.



2. Proceed to the normal fusion, heating the two part for 5 sec. positioning in relation to the thickness of the pipe, the ogive in brass. This avoid to waste the pipe.



3. Joint the two parts and keep the repairing part for a while until cool.



4. Wait after the cooling time before cutting the part in excess.

10. Instruction for the welding saddle

Phase of preparation of welding

Mount the saddle welding tool to the manual welding machine. Once the tools are positioned, check the surface temperature, which must be in the range of 253°C and 274 °C.

This operation may be performed with the tempil stick.

Check the surface to be welded, which have to be clean and dry .

Scrap the same area with a blade (picture 1) and just before welding degrease by light solvent and lint free cloth.

In case of PPR-ALU pipe proceed taking away the aluminium film.

Welding phase

Heat up the pipe with the tools for 30 seconds and then further 20 sec. heat up the saddle, for a total of 50 sec. for the pipe.

Make a light pressure with the saddle on the tools.

Make sure all the surface have to be in contact with the heating tool.

Joining process

After finishing the heating phase remove the welding unit, place the welding saddle into the pipe. Fix under a light pressure avoiding rotation for an additional 30 sec.

Drill out the pipe at the welding point with a commercial spiral drill bit (picture 4). If necessary clean the hole of chips which may remain.

Caution is to be taken in drilling the correct depth and use the correct diameter see table 1.

The system may be exposed to full load after 30 minutes the last welding.



Please find in page 26 the welding parameters.

Table 1. Welding parameter

Diameter Pipe (mm)	Diameter derivation (mm)	Heating time pipe (sec)	Heating time saddle (sec)	holding time (sec)	Cooling time (min)	Hole Diameter (mm)
40	20	30	20	30	30	15
50	20	30	20	30	30	15
63	20	30	20	30	30	15
63	25	30	20	30	30	20
75	20	30	20	30	30	15
75	25	30	20	30	30	20
90	20	30	20	30	30	15
90	25	30	20	30	30	20
40	1/2"	30	20	30	30	12
40	3/4"	30	20	30	30	12
50	1/2"	30	20	30	30	12
50	3/4"	30	20	30	30	12
63	1/2"	30	20	30	30	12
63	3/4"	30	20	30	30	15
75	1/2"	30	20	30	30	12
75	3/4"	30	20	30	30	15
90	1/2"	30	20	30	30	12
90	3/4"	30	20	30	30	15