

Polyethylene (PE) Repair Kit



Items supplied in the kit

Polyethylene welding rods

Other items required

Glass-paper – approx 120, 360 and 600 grades

Sharp chisel or knife blade

Spatula to spread PE paste

Cotton polishing cloth

Heat gun

Plastic welding gun (for welded repairs only)

Introduction

It is quite possible to achieve an acceptable repair to the hull of your polyethylene dinghy with limited experience. More practice generally leads to a better cosmetic finish.

Dents – small cracks up to approximately 25mm in length

This level of damage can be repaired using polyethylene powder, melted to form a repair paste. See relevant instructions.

Medium size cracks up to approximately 200mm in length

This level of damage can be welded using a hot air gun. See relevant instructions.

Large damage – cracks over 200mm in length - significant size holes

Damage of this type should be referred to a suitably experienced boat repairer.

Repair Instructions – Type 1

Dents – small cracks up to approximately 25mm in length

1. Ensure the damaged area is clean and dry. Prepare the area for repair by abrading the surface with coarse glass paper to give the new material a good key.
2. Heat a suitable quantity of chopped up rods in an old pan or a tin over a medium heat source such as a kitchen hob or a camping stove. This will “melt” the rods to form a soft paste.
3. Warm the damaged area on the boat gently using a heat gun, to prepare it to accept the new material.
4. Apply the PE paste to the damaged area with a spatula. Spread the paste into place – apply sufficient material for it to stand proud of the surrounding surface.
5. Allow the paste and the hull to cool until the material hardens.
6. Remove most of the excess material with the sharp blade or chisel. Then rub down the material with progressively finer glass-paper until it is flush with the surrounding area of the hull. Be careful not to rub away a significant amount of the surrounding hull material.

If there are any areas with insufficient material, repeat steps 2 to 6.

7. Gently warm the repair area again using the hot air gun and polish the surface with a cotton cloth to restore the finish and gloss.

Repair Instructions – Type 2

Medium size cracks up to approximately 200mm in length

1. Ensure the damaged area is clean and dry. Cut a 90 degree “V” shaped groove along the crack to accept the welding rod using a chisel or sharp blade. Cut away any jagged or loose material – being careful to remove as little hull material as possible. Start the groove 10mm beyond the ends of the crack. The depth of the groove should be no more than 2/3 of the thickness of the hull out skin thickness (excluding the foam layer and inner skin layer).

2. Trim one end of a length of welding rod to form a “cone” that will fit into the “V” groove cut into the hull crack. Follow your welding gun’s instructions to heat the gun to the required temperature for polyethylene and insert the welding rod until approximately 5mm protrudes on the underside.

3. Hold the protruding rod beyond the start of the “V” groove so that the heat is directed onto the start point for welding.

When the surface plastic shows signs of slight “wetting” move the welding nozzle along the groove. The nozzle toe should rest on the rod in the groove while under the heel there should be an air gap of 3mm. Feed the rod steadily into the nozzle with a downward hand pressure of about 2.5kg, sufficient to push the softened rod into the groove. To judge what a pressure of 2.5kg feels like, take a short piece of weld rod and use it to press down on a set of scales until 2.5kg registers. (Do not apply downward force to the weld via the hot air tool itself). Whenever possible the weld should be completed in one continuous run along the contour of the crack.

Correct mating between the welding rod and the material occurs when the rod is seen to soften and the new rod moves down the nozzle feed. As the rod melts into the groove two smooth continuous ridges will appear at the edges, accompanied by a slight wash at the sides of the weld. Do not move too fast, failing to create a wash, nor too slowly, overheating and even scorching or distorting the plastic.

When the weld has been completed, remove the hot air tool, sliding the nozzle off the remaining welding rod. Once cool, the unwelded rod end should be cut off as close to the weld as possible.

The completed weld should appear as a smooth continuous line with the wash still visible alongside it, confirming that the rod has welded successfully with the component.

4/. Follow steps 5 to 7 of Type 1 repair instructions above to finish the repair. If small areas need further material, this can be added using the welding gun, or using PE powder and following steps 1 to 7 of Type 1 repair instructions.

Important Safety Note

Use protective clothing, especially on your hands, as appropriate. Follow specific instructions for use of your heat gun and welding gun. Take all relevant precautions when using hot or sharp tools.

The above repair instructions are for your guidance only and no responsibility can be accepted for any resulting damage to your boat or failure of your repair.

If you have any questions please get in contact with us.

RS Sailing

Tel: +44 (0) 1794 526 760

Email: spares@rssailing.com