

BELZONA® KNOW-HOW

FOR REBUILDING DAMAGED SHAFTS USING FORMING TECHNIQUES

MPT-2

Common Problems

- Damage to shafts at bearing locations.
- Chemical or corrosion attack.

Set-up

All work should be carried out in strict accordance with the relevant Belzona® Instructions For Use.

Product and application technique selection should be made based on the cause and nature of damage and the operating conditions of the equipment.

For this method of repair, suitable formers should be fabricated from rigid materials and split longitudinally. They should be of a suitable length to centralize the repair onto undamaged sections of the shaft. Where injection techniques are being utilized, injection ports and vent holes should be drilled (fig.1).

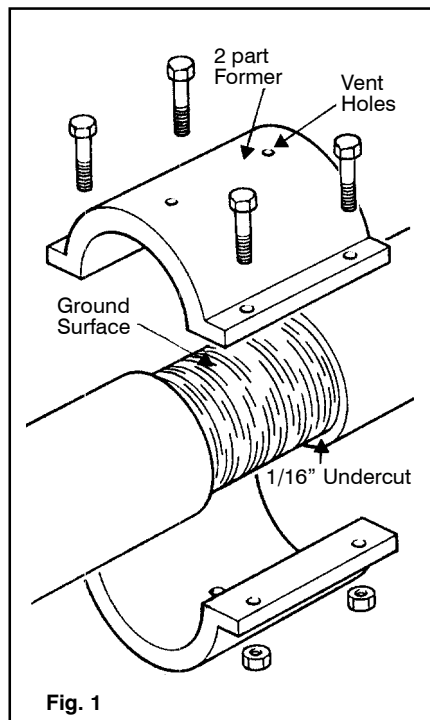


Fig. 1

Incorporation of the injection ports and vent holes into the mould part line will aid dismantling and minimize dressing down required.

Preparation

At the extent of the repair area, mechanical grinders fitted with suitable cutting discs should be used to undercut the shaft by 1/16 inch (1.5 mm) around the circumference. The area between should now be ground and thoroughly roughened (fig.1).

On completion of preparation, the prepared area should be thoroughly cleaned utilizing **Belzona® 9111** to remove all dirt, grease and surface contaminants.

The surface of the formers should be treated with **Belzona® 9411**, applied in 2 coats in accordance with the Belzona® Instructions For Use.

Application

a) Forming

Mix the selected Belzona® Paste Grade material in accordance with the Belzona® Instructions For Use. Apply a thin layer of material to the prepared area of the shaft, thoroughly wetting out the roughened profile. Apply further material to the area taking care to avoid air entrapment.

Apply a thin layer of material to the internal surfaces of the former and additional material should be applied to form a central peak (fig.2).

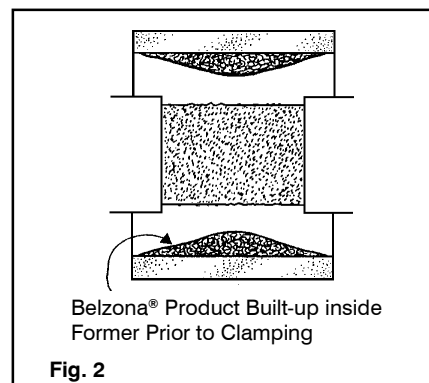


Fig. 2

Position the former around the shaft and clamp in position ensuring that excess material is extruded from the ends of the former. Remove all excess Belzona® material and allow to cure in accordance with the Belzona® Instructions For Use.

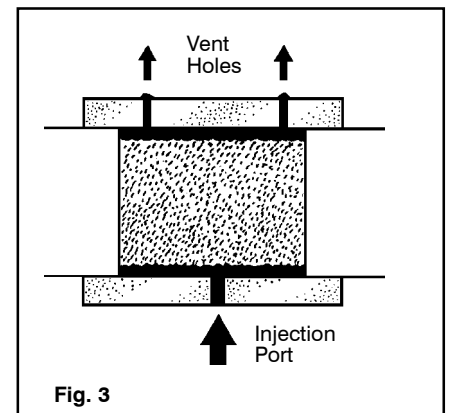
b) Injection

Mix the selected Belzona® material in accordance with the Belzona® Instructions For Use and using a short bristle brush, apply a thin film to wet out the prepared area of the shaft and the internal surfaces of the former.

Position the former onto the shaft and clamp in position.

Insert the remainder of the Belzona® material into a disposable injection cartridge and mount in a suitable gun.

Slowly inject the Belzona® material into the injection port from a position at the lowest point until excess material escapes at the vent holes (fig. 3).



Remove the injection cartridge and plug the injection port. Allow the Belzona® material to cure in accordance with the Belzona® Instructions For Use before removing the former and finishing the repair using suitable emery cloth/crocus paper.

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Belzona® Technical Comparison:

Product	Consistency	Compressive Strength (ASTM D695)	Tensile Shear Adhesion to Steel (ASTM D1002)	Working Life at 60°F (15°C)	Full Mechanical Cure at 60°F (15°C)
Belzona® 1111	Paste	13,000 psi	2,700 psi	25 minutes	36 hours
Belzona® 1121	Paste	12,500 psi	2,800 psi	60 minutes	72 hours
Belzona® 1321	Fluid	13,000 psi	2,900 psi	60 minutes	48 hours

Belzona® System Selector:

Main System Requirement	Belzona® 1111	Belzona® 1121	Belzona® 1321
Rebuilding shafts up to 12 inches (30 cm) diameter	•	•	
Rebuilding shafts above 12 inches (30 cm) diameter		•	
Rebuilding shafts utilising injection techniques			•

Recommended Equipment:

Mixing and application tools are included in each pack of Belzona®. Prior to carrying out the repair, however, it is important that all other necessary tools and equipment are available on site. Every situation will be somewhat different, but the basic requirements could include those shown to the right.	• Mechanical Grinding Equipment • Belzona® 9111 • Belzona® 9411 • Drill • Suitable Protective Clothing/ Equipment	• Suitable Clamping Devices • Injection Cartridges • Injection Pistol • Formers • Emery Paper/Crocus Paper
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For more complete technical information, please refer to the appropriate Belzona® Product Specification Sheet. For detailed instructions on surface preparation, mixing and cure, please refer to the appropriate Belzona® Instructions For Use. Comprehensive Health and Safety information is provided with the product. All of these are available through your local Belzona® Engineer

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Belzona Polymerics Ltd.,
Claro Road,
Harrogate, HG1 4DS, England.
Tel: +44 (0) 1423 567641
Fax: +44 (0) 1423 505967
E-Mail: belzona@belzona.co.uk

Belzona Inc.,
2000 N.W. 88 Court,
Miami, Florida 33172, U.S.A.
Tel: +1 (305) 594 4994
Fax: +1 (305) 599 1140
E-Mail: belzona@belzona.com



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