Glass Fibre Boat Repair Kit

A Quick Route to Successful GRP Repairs

Kit Contents:
250g 105 Resin; 50g 205 Hardener; 1m 450g/m² 125mm wide biaxial glass tape; 1m 175g/m² 75mm wide woven glass tape; 1m 100mm peel ply tape; 1 tub 402 Milled Glass Fibre Filler; 1 tub 409 Microsphere Blend; 2 prs Gloves; 1 Reusable Mixing Stick; 3 Mixing pots; 2 Brushes; 2 Syringes; Instructions.

Materials

WEST SYSTEM 105 Resin/205 Hardener - Mixed at 5:1 (graduated cups and syringes included) Used for coating - Wetting out Glass Fibre materials - Mixing with fillers.

402 Milled Fibre Blend - mixed with 105/205 for repairing holes, cracks, punctures, gouges.

409 Microsphere Blend - mixed with 105/205 for fairing smooth scratches and gouges and for filling a repair prior to paint or gelcoat.

450g/m² biaxial glass tape - for structural repair of holes and cracks.

175g/m² glass tape - for repairing thin laminates or semi structural damage.

Peel ply reduces subsequent sanding if applied to wet epoxy and peeled away after curing.

4 steps to successful Repair

Assess • Prepare • Repair • Make Good

Assess

Identify extent of damage. If unsure consult a marine surveyor. Identify materials to be used.

Prepare

All surfaces to be dry and free from contamination. Use a heat gun to dry any surface to be repaired or core materials. Clean acetone or WEST SYSTEM 850 Solvent may used to degrease surfaces.

Use 80 grit minimum to abrade the surface. A small angle grinder or surform file will grind GRP. GRP requires a bevelled edge to existing structure of 12:1 minimum (a 'scarf' joint 12 times the dimension of the laminate thickness), on some thin laminates, i.e. dinghies, this may need to be enhanced to 25:1. Contact your local Distributor for further advice.

Repair

GRP repairs benefit from 2 step bonding i.e. priming surfaces with Resin/Hardener mix prior to repair.

Use 409 for repairing minor abrasion and scratches.

Use 406 for repairing delaminated decks and bulkheads.

Use 402 or woven or biaxial tape for holes or punctures.

Peel ply use will avoid or reduce sanding if peeled immediately prior to applying paint or polyester gelcoat - seek the coating manufacturers advise concerning the correct surface preparation.

Allow repair to cure for a minimum of 48hrs or accelerate with moderate heat.

Make good

Use 409 to fill imperfections in final repair.

Use paint or good quality polyester gelcoat to protect repair from UV light - seek the coating manufacturers advise concerning the correct surface preparation.

Health and Safety

Use a dust mask and body covering when grinding glass reinforced plastic. Avoid skin contact with epoxy. Do not grind or sand uncured epoxy. See material safety data sheets for full information.

Common Repairs to GRP Using WEST SYSTEM products

It is essential that a mix ratio of 5:1 is strictly followed and that the resin and hardener is blended together thoroughly before adding the filler powder or impregnating glass.

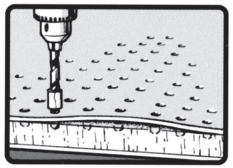
For further information regarding repairs to Glass fibre boats refer to "002-550 Fibreglass Repair Manual" Download free on www.westsystem.co.uk or the HOW-TO DVD

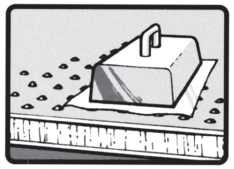
Repairing minor cracks and scratches
(105, 205, 409)

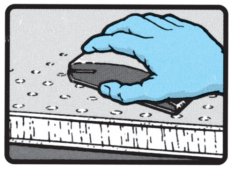
1. Follow surface preparation guidelines above.
2. Add 409 Microsphere Blend to the mixed epoxy to make a thick non sagging mixture. Trowel the mixture into the pre-wet cavity.
3. Allow to cure for 24 hours.
4. Sand to shape before painting. Use 80-grit sandpaper to level any ridges or bumps if necessary. Sand fair by reducing the grades of sand paper - to a minimum 120grit.
5. Apply gelcoat or a two-part polyurethane paint directly on top, both provide the ultraviolet protection required for the epoxy. Follow the paint manufacturer's recommendations for final preparation and application. (Or for gelcoat use premium quality polyester gelcoat).

Repairing Cored Deck, Hull and Bulkhead Delamination

(105,205,409, Biaxial Glass Tape, Peel Ply Tape)



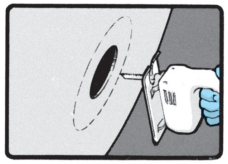


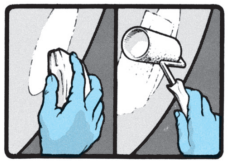


1. Follow surface preparation guidelines above.
2. Define the delaminated area. Typically, exerting pressure on the skin yields a soft feel before contact with the core and indicates a gap between the skin and core.
3. Thorough drying of the core must be accomplished before rebonding. Drill 6mm holes, 25mm apart and about 75mm beyond the delamination area. Drill through the skin and about ⅓ of the way into the core.
4. Add 409 Microsphere Blend to a mix of epoxy to a syringeable consistency and load into syringe. Trim the syringe tip as necessary.
5. Inject the thickened mix into all holes drilled in the delaminated area. Work the epoxy into all areas between the skin and core.
6. Add weights on the skin to force it into contact with the core until the epoxy cures. Placing a plastic sheet between the skin's surface and the weights will prevent inadvertent bonding.
7. If the skin is damaged you will need to replace the damaged laminate after bonding the core, use the 450 g/m² biaxial glass tape with WEST SYSTEM epoxy to replace damaged laminate.

Repairing Holes and Punctures

(105, 205, 402, Biaxial Glass Tape, Woven Glass Tape, Peel Ply)

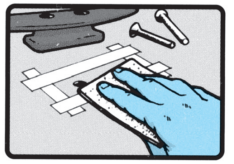


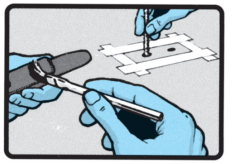


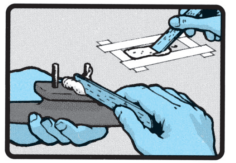
1. Follow surface preparation guidelines above.
2. If the hole is not of great structural significance (i.e. less than 25mm diameter) place a former behind and use the 402 Milled Fibre Blend mixed with a resin-hardener mix to replace laminate. Go to stage 8.
3. If the hole is of structural significance (i.e. greater than 25mm diameter) then follow the guidelines below and use the 450 g/m² biaxial glass tape.
4. Bevel the edge of the hole to expose solid laminate with sufficient surface area to achieve a good bond. A bevel with a width of 12 to 25 times the existing GRP thickness provides an enhanced surface area for the new repair.
5. If necessary, provide backing for the repair by bracing plastic covered plywood over the inside of the hole.
6. Cut discs of cloth staggering the sizes out until required laminate thickness is achieved.
7. Several applications may be necessary to fill the hole. Allow each layer to tack before applying the next.
8. Cover the repair with peel ply adding more epoxy to wet out the peel ply if necessary and allow curing to take place.
9. Remove the peel ply once cured. Thicken an epoxy mix with 409 Microsphere Blend and screed it over the cured repair.
10. Once cured sand the filler fair and apply Gelcoat or paint to give the repair sufficient UV stability.

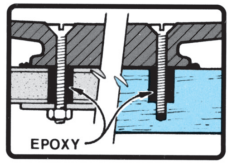
Refitting and replacing hardware

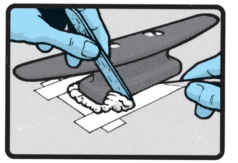
(105, 205, 402 or 406 [purchased separately])











1. Follow surface preparation guidelines above.
2. Place hardware in position. Trace the perimeter with a pencil. Remove the hardware and tape the marked perimeter with masking tape.
3. Prepare the surfaces as described above.
4. Coat both mating surfaces with the epoxy mixture. Wet-out the inside of the fastener hole with an epoxy-wet glue brush, or by injecting epoxy with a syringe.
5. For best results purchase 406 Colloidal Silica or use the 402 Milled Fibre Blend. Add 402 or 406 to mixed epoxy to create a mayonnaise consistency. Apply generously to the mating surfaces, in fastener holes and fastener threads. Use a syringe to fill holes, if necessary.
6. Position the hardware and tighten the fasteners until some of the epoxy mixture squeezes out. Do not over tighten. Apply wax or light oil to bolts to ensure the epoxy dose not permanently bond to them.
7. Clean excess epoxy away with a mixing stick. Remove the masking tape. Allow to cure for 24 hours at 21°C before applying load to the fitting.