

CLEANING AND REPAIR

SERVICE TOOLS – OTHER SUPPLIER

Description	Part Number	Page
3M™ DURAMIX™ SEMI-RIGID PLASTIC REPAIR.....	04240	8
CHEM-PAK® PER-FIX BLACK™ POLYPROPYLENE	7500A	8

SERVICE PRODUCTS

Description	Part Number	Page
LOCTITE 5900	293 800 066	8, 10
XPS ALL PURPOSE CLEANER	219 701 709	1

PROCEDURES

WATERCRAFT CLEANING

Body and Hull

Occasionally, wash the hull and various body components with water and soap (use only mild detergent). Remove any marine organisms from engine and/or hull. Apply non-abrasive wax such as silicone wax.

NOTICE Never clean fiberglass and plastic parts with strong detergent, degreasing agent, paint thinner, acetone, or other strong chemical or petroleum type cleaner.

Stains may be removed from the seat and fiberglass using XPS ALL PURPOSE CLEANER (P/N 219 701 709) or the equivalent.

WARNING

Never apply plastic or vinyl protector on the carpets or seat as the surface will become slippery and the occupants may slip off the watercraft.

Cleaning the Seat

For general purpose cleaning, use XPS ALL PURPOSE CLEANER (P/N 219 701 709), Vinyl Finish Cleaner, Fantastik or warm water with a mild dish soap such as Dawn or Ivory. Gently scrub with a small soft bristle brush.

For dirt build-up, use XPS ALL PURPOSE CLEANER (P/N 219 701 709), Vinyl Finish Vinyl Cleaner or an equivalent. Let soak for approximately 10 minutes, then gently scrub with a soft bristle brush. For specific stain removal, refer to your cleaning and care card.

Do not use any silicone-based protectants. They will extract the plasticizers, leaving the vinyl hard and brittle, and eventually cracking will occur.

RECOMMENDED PRODUCTS

1. XPS ALL PURPOSE CLEANER (P/N 219 701 709)
2. Dish Soap (Dawn or Ivory)
3. Fantastik
4. 3M Citrus Cleaner
5. 303 Protectant

Subsection XX (CLEANING AND REPAIR)

Vinyl Cleaning Recommendations for Special Stains

TYPE OF STAIN	STEP 1	STEP 2	STEP 3	ACTION
Ballpoint ink*	E	B	A	A. Medium-soft brush, warm soapy water, rinse/dry.
Chewing gum	D	A	—	
Coffee, tea, chocolate	B	—	—	
Pen	D	B	—	B. Vinyl Finish Cleaner, rinse/dry.
Grease	D	B	—	
Household soil	A	B	—	
Ketchup	A	B	—	C. One (1) tablespoon of ammonia, one-fourth (1/4) cup of hydrogen peroxide, three-fourth (3/4) cup of water, rinse/dry.
Latex paint	A	B	—	
Lipstick	A	B	—	
Mildew or wet leaves*	C	B	A	D. Wipe or scrape off excess (chill gum with ice before hand).
Motor oil	B	—	—	
Oil-based paint	D	B	—	
Permanent marker*	E	B	C	E. Denatured alcohol, rinse/dry.
Spray paint	B	B	—	
Suntan lotion	A	B	—	
Tar/asphalt	D	B	—	
Yellow mustard	A	B	C	
*Suntan lotion, tree pollen, wet leaves and some other products can contain dyes that stain permanently.				

All cleaning methods must be followed by a thorough rinse with warm water.

Certain household cleaners, powdered abrasives, steel wool and industrial cleaners can cause damage and discoloration and are not recommended. Dry cleaning fluids and lacquer solvents should not be used as they will remove printed pattern and gloss. Waxes should be used with caution as many contain dyes or solvents that can permanently damage the protective coating.

Decals

Removing Decal

Using a heat gun warm up one end of decal for a few seconds until decal can roll off when rubbing with your finger.

NOTE: When heating near light surfaces, duct tape should be applied to protect the surface. Otherwise the light color could become a yellowish color.

Pull decal slowly and when necessary apply more heat to ease removal on the area that has to be peeled off.

If decal tears while pulling off, it has to be heated for a few seconds longer. If decal tends to stretch while pulling off, stop heating and wait a few seconds to let it cool, then peel it off.

Installing Decal (with a Protective Film on Back Side)

These decals usually contain written information (e.g.: warning) and are used on gelcoat or metal.

Using isopropyl alcohol, clean the surface and dry thoroughly.

Using a pencil and the decal as a template, mark the area where decal will be located.

Remove half of the decal back protective film and align decal with marks. Start sticking it from center and remove the other half of the film to stick it completely. Carefully squeegee decal beginning at center and working outward using, firm, short, overlapping strokes.

Installing Decal (with a Protective Film on Both Sides)

These decals usually contain graphics and are used on gelcoat or plastic.

Installation on Gelcoat

Using isopropyl alcohol, clean the surface and dry thoroughly.

Using a pencil and the decal as a template mark the area where decal will be located.

For better adhesion a dry application is recommended, however, to ease decal installation a mild solution of soapy water can be sprayed over surface where decal will be installed.

Remove back protective film from decal and align decal with marks. When well aligned squeegee decal beginning at center and working outward using firm, short, overlapping strokes.

Remove front protective film once decal has adhered to hull.

Installation on Plastic surface

Clean surface with isopropyl alcohol and dry thoroughly.

Using a pencil and the decal as a template, mark the area where decal will be located.

NOTICE Do not use soapy water to locate decal on plastic parts.

Remove back protective film from decal and carefully align decal with marks. When well aligned squeegee decal beginning at center and working outward using firm, short, overlapping strokes.

Remove front protective film once decal has adhered.

Carpets

Cleaning Carpet

To clean the carpets, use 3M™ Citrus Base Cleaner or the equivalent. See the manufacturer's instructions.

Removing the Carpet

Unstick a carpet corner.

Pull carpet vigorously to remove the carpet and its glue from body.

To remove the remaining glue from body, use a plastic or rubber spatula. Scrape remaining glue with spatula.

NOTE: Do not use any products (alcohol, acetone, thinner, etc.) or heat the remaining carpet glue. Chemical reactions make glue very hard to remove.

Installing Carpet

Clean body surface with isopropyl alcohol and dry thoroughly.

Install new carpet.

FRP DECK (FIBER REINFORCED POLYESTER)

The deck is constructed of chopped fiberglass, saturated with resin. It is sprayed on the layer of gelcoat along with pieces of fiberglass mat. The cloth and the woven roving are added when required in some areas. The inside finish is rough and grey.

Gelcoat Repair Information

All liquid gelcoat and repair kits can be purchased directly from Gelcote International Ltd. BRP does not distribute these products.

NOTE: Fiberglass repair kit is also available through automotive or marine suppliers.

Gelcote International Ltd web site has all the Sea-Doo personal watercraft and sport boat gelcoat colors.

You can order on the web site and get confirmation of your order within hours. Quick, reliable service is what is offered to all BRP dealers around the world.

There are many services on this web site to make your ordering quick and informative. Or you can call Gelcote International directly with any question pertaining to gelcoat. Service, value and knowledge is what you can expect when you call Gelcote International.

Gelcote International Ltd
174 Colonnade Road Suite 29
Ottawa, Ontario
Canada, K2E 7J5

Phone: (613) 225-2177
Phone: (877) 435-2683 (Toll Free)
Fax: (613) 225-5297

Web Site: www.gelcoat.ca
E-mail: info@gelcote.com

WARNING

Protect skin, wear gloves when in contact with resin, hardeners and gelcoat. A barrier skin cream may also be used. Do not expose area to open flame or lit cigarette. Some of the materials are flammable. Protect eyes, wear safety glasses when grinding, sanding or spraying. Use a dust mask when sanding or grinding. When spraying wear a respirator or paint mask. Always read warning labels on products.

TOOLS

Air mask	Power sander
Polishing pad	Putty knife
Cover sheets	Safety glasses
Heavy-duty polisher	Sanding block
Paint brush	Scissors
Plastic container (mixing)	Spray gun
Plastic film	Stirring stick
Plastic squeegee	White cloths

MATERIALS

Acetone	Epoxy filler
Cabosil	Masking tape
Cardboard	Liquid gelcoat
Fine compound (white)	Medium compound (white)
Fiberglass cloth	Polyester resin

Subsection XX (CLEANING AND REPAIR)

Fiberglass mat	24-grit sanding disks
Gelcoat putty	Wax
Sandpaper (100-grit, 220-grit, 320-grit, 400-grit, 600-grit, 1000-grit)	

Air Bubbles Repair

Possible cause:

- Air pocket trapped between layers of laminate and gelcoat.

Preparation of Surface

Remove all of the damaged gelcoat surrounding the air bubble with a putty knife or preferably a carbide grinding tip. Make sure all loose and weak areas are completely removed. Sand a small area of the gelcoat surface with 220-grit sandpaper. If needed, sand the cavity itself. These areas must have a rough surface to allow the gelcoat putty to bond properly.

Filling the Cavity

The prepared surface must be cleaned with acetone on a cloth. Use a gelcoat repair kit. Follow the mixing instructions in the kit when preparing the gelcoat putty.

Carefully mix the required amount while making sure there are no air bubbles in the mixture. With a putty knife, fill the repair area and cover with plastic film. Curing time may depend on temperature, amount of putty and percentage of catalyst. After 2 hours, press lightly on the surface with fingers to test the hardness. When the area becomes hard, remove the plastic film.

Sanding

Begin by sanding the patch with 320-grit sandpaper until you come close to the original surface. Remove dust with a water soaked cloth and continue sanding with a 400-grit wet paper. Finish wet sanding with a 600-grit to remove deeper scratches. If needed you can wet sand with finer grit paper such as 1000-grit.

Buffing and Waxing

Polish the surface using a heavy duty polisher with a polishing pad. Make sure the pad is free of dirt or you may damage the gelcoat. Carefully begin polishing with a white medium compound. Finish off using a fine compound. While polishing, pay close attention to avoid overheating the surface.

Blisters Repair

Possible causes:

- Insert catalyst
- Improper catalyst/gelcoat ratio.

A blister is a visible bump on the watercraft surface that may not necessarily come right through the gelcoat layer. In the case of only a few blisters, follow the same repair procedure as for air bubbles. If they are numerous and in close concentration, spray liquid gelcoat to achieve proper repair. This procedure is covered in *MINOR GELCOAT FRACTURES*.

Minor Repairs

Possible causes:

- Flexing of fiberglass laminate
- Gelcoat thickness
- Direct result of impact.

In case of fractures which have not penetrated past the gelcoat layer, the repair concerns the gelcoat only. If flex cracking or impact are evident, then additional reinforcement may be necessary. This subject will be covered in *COMPOUND FRACTURES*.

Preparing the Surface

Small Fractures: Open the cracks up with a sharp triangular can opener or preferably a carbide tipped die grinder. The V groove will provide a good bonding area for the gelcoat. With 220-grit sandpaper, sand the sides of the notched out areas.

Numerous Fractures: Using a grinder with a 24-grit disk, remove the gelcoat. Sand the area edge with 220-grit sandpaper.

Filling the Repair Area

Small Fractures: Refer to the same procedure as in the *AIR BUBBLES*.

Numerous Fractures Over Large Surface: Prepare the area for spray application of liquid gelcoat. Wipe down the surface with acetone. Mask the area off to protect the watercraft from overspray.

Mix the needed quantity of gelcoat and catalyst according to suppliers recommendations. The gelcoat can be thinned with acetone up to 10%. If it needs more consistency you can add cabosil.

Make sure that the air supply is free of oil, dirt and water.

Test spray the gelcoat mixture on paper to verify its consistency and pattern. You may have to apply 5 or 6 coats to cover the area properly. Overlap each coat further than the last, leaving at least 30 seconds between passes. Avoid trying to coat the surface with only a few heavy coats, this will not allow the gelcoat to dry properly.

Apply a coat of polyvinyl alcohol (PVA) to seal off the air and protect the gelcoat surface from dust. PVA speeds up the curing process because gelcoat will not cure properly when exposed to air.

Sanding

Wash the polyvinyl alcohol off with water. Depending on the size of the area repaired, you can either sand by hand as per previous procedure or you may use an air sander. Sand the surface down with progressively finer grits of sandpaper until the desired finish is achieved.

Polishing and Waxing

Polish the surface using a heavy duty polisher with a polishing pad. Make sure the pad is free of dirt or you may damage the gelcoat. Carefully begin polishing with a white medium compound. Finish off using a fine compound. While polishing, pay close attention to avoid overheating the surface.

Major Repairs

Possible causes:

- Thickness of fiberglass laminate
- Direct result of impact.

Major repairs are those that have gone past the gelcoated surface and in through the layers of fiberglass laminate. Two types of repairs have to be performed. The first is to restore the structural integrity of the damaged area. Fracture types can vary from a simple crack to a large hole. Usually, fiberglass reinforcement becomes necessary, especially if the fracture can be attributed to weakness. The final part of the repair is the gelcoating, which cannot be done until the interior and exterior laminate surfaces have been repaired.

Outside: Remove the damaged gelcoat and fiberglass with a 24-grit disk using a power sander. Grind outward at least 2 inches from the fracture to allow the patch to bond to strong material. Cut enough pieces of fiberglass mat necessary to build up the area. The pieces should be cut so they overlap each other by at least a half inch. For a smoother finish, the last layer should be fiberglass cloth. If the fracture is small enough all you may have to do is fill the area with an epoxy filler.

Inside: For the interior repair, you can grind more. This will allow for more fiberglass material which will strengthen the area. If the fracture opening is too large after surface preparation, you may need a backing support to cover the opening. Cut alternating pieces of fiberglass mat and cloth in overlapping sizes.

Patching the Repair Area

Outside: The outside should be done first. Wipe clean the area with acetone on a cloth, then mask off area. For a small crack use an epoxy filler in the same way you would use gelcoat repair putty. When laying up a larger area you will use mat, cloth and fiberglass resin and catalyst. Use a clean container to mix the resin, mix only what you will need. Follow the recommended catalyst ratio.

Using a clean paintbrush, brush the mixed resin on the surface. Place the smallest piece of mat over the fracture and then wet out the mat. Follow with the remaining pieces of mat and final layer of cloth. While wetting the pieces make sure you work the air bubbles out and saturate all the pieces evenly. Try to work quickly, you may only have 15 or 20 minutes. You may clean the brush with acetone.

Wait until the repair has hardened before moving on to the interior repair. If the size of the opening is too large for the pieces to maintain the proper shape, you will have to use a backing support. It is a shaped piece of cardboard that fits flush to the interior surface and has a plastic layer on the repair side. It is held in place by tape or a support.

Inside: Wipe down the area with acetone on a cloth. Apply the same procedure as for outside repair when laminating the alternating pieces of fiberglass material. If a backing support was used, remove it before starting the repair. After the area has hardened, remove sharp edges of material from surface. If required paint the surface.

Sanding

Outside: This surface will have to be prepared for application of gelcoat. The size of the area will determine the gelcoating procedure to be used. Refer to the *MINOR REPAIRS*.

Polishing and Waxing

Refer to the *POLISHING AND WAXING* in *MINOR REPAIRS*.

CM-TEC HULL (CLOSED MOLD TECHNOLOGY)

The CM-Tec hull is a compound of polyester based gelcoat, fiberglass, and polyester resin, all compressed in a closed mold. The inner skin finish is smooth and white.

Hull Repairs

The repair procedures of the CM-Tec hull is the same as a standard gelcoat and fiberglass composite deck. Either a standard polyester based fiberglass repair kit or a two-part epoxy repair kit, such as the WEST SYSTEM®, can be used for a major repair.

To repair a hull with a standard polyester based fiberglass repair kit, refer to *FRP DECK*.

An epoxy repair kit can be purchased directly from WEST SYSTEM.

Go to www.westsystem.com.

On this site you will find complete repair instructions, click on HOW TO USE.

Also training videos, tools and several products are available on the web site.

Consumer Assistance

North and South America
WEST SYSTEM 102 Patterson Ave. P.O. Box 665 Bay City, MI 48707-0665 Phone: 989 684-7286 Toll free: 866 937-8797 Fax: 989 684-1374
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E-mail: enquiries@adhesivetechologies.co.nz

POLYTEC DECK

The Polytec deck is made of a single thick skin of injected polypropylene reinforced with fiberglass.

Fixing scratches

Perform a flame treatment on any body or hull surface.

A flame treatment:

- Is a quick movement over an area or part with a blow torch
- Should never be too intense. The part should never melt to the point that it looks polished
- Will burn any excess plastic around the scratch
- Will burn the oxygen on the surface of the part.

The flame treatment will also restore the original color of the plastic, painting is not necessary.

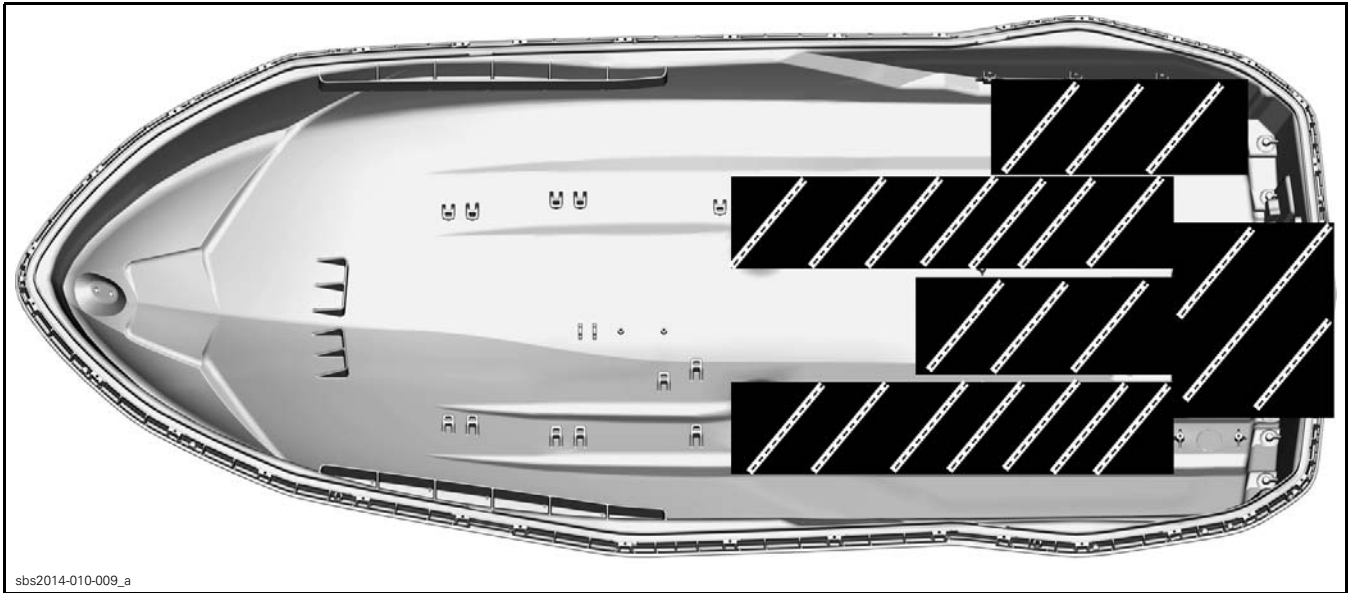
POLYTEC HULL

The Polytec hull is made of a single thick skin of injected polypropylene reinforced with fiberglass.

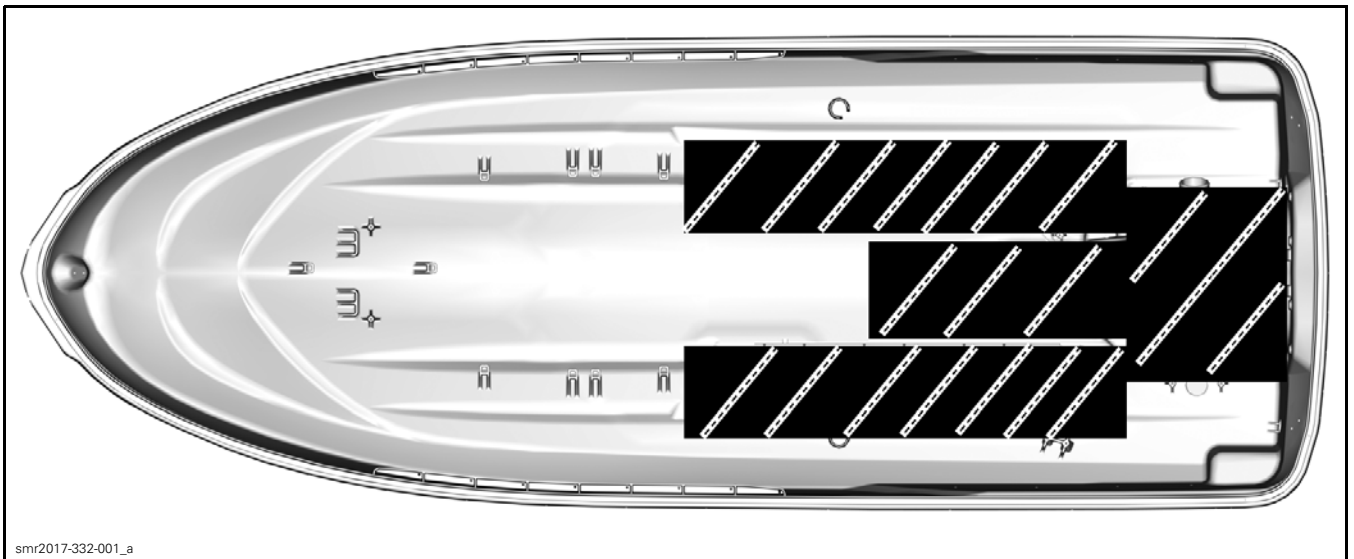
The shaded areas are:

- Important structural sections of the hull
- Areas where clearance is tight.

The hull is not repairable in these areas.



SPARK SERIES



GTS, GTI 90 AND GTI SE 90

Subsection XX (CLEANING AND REPAIR)

Required Tools

DESCRIPTION	
Drill bit 5 mm (13/64 in)	
Counter bore 12.5 mm (1/2 in)	
Grinding burr 3 mm (1/8 in)	

Required Parts

DESCRIPTION	PART NUMBER	QUANTITY
Aluminum foil tape	Available locally	As needed
±150 grit sand paper	Available locally	As needed
M5 X 20 screw	Available locally	2
M5 retaining nut	Available locally	2
Stainless steel rivet	293 150 043	As needed
Stainless steel rivet washer	234 052 600	As needed
Fiber reinforced laminate with (polyester or epoxy) resin	Available locally	As needed
Sealant	LOCTITE 5900 (P/N 293 800 066)	As needed
Black epoxy ¹	Available locally	As needed
Multipurpose black paint (metal-wood-plastic) ²	Available locally	As needed
¹ BRP has tested 3M™ DURAMIX™ SEMI-RIGID PLASTIC REPAIR (P/N 04240) with good results.		
² BRP has tested CHEM-PAK® PER-FIX BLACK™ POLYPROPYLENE (P/N 7500A) with good results.		

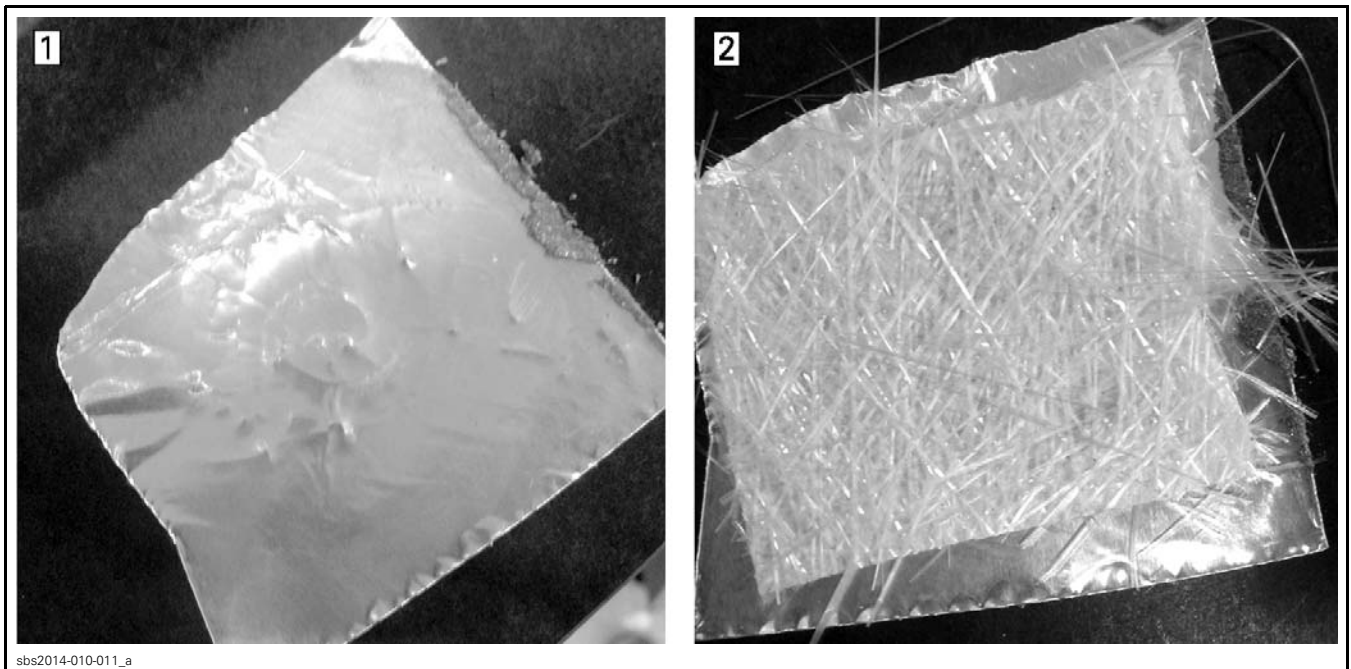
Pop Rivet Procedure with Fiber Reinforced Laminating

NOTICE Cracks longer than 400 mm (15-1/4 in) should not be repaired.

If repairing a hole in the hull, read *REPAIRING A HOLE* in this subsection.

Mould a Fiber Reinforced Backing Skin

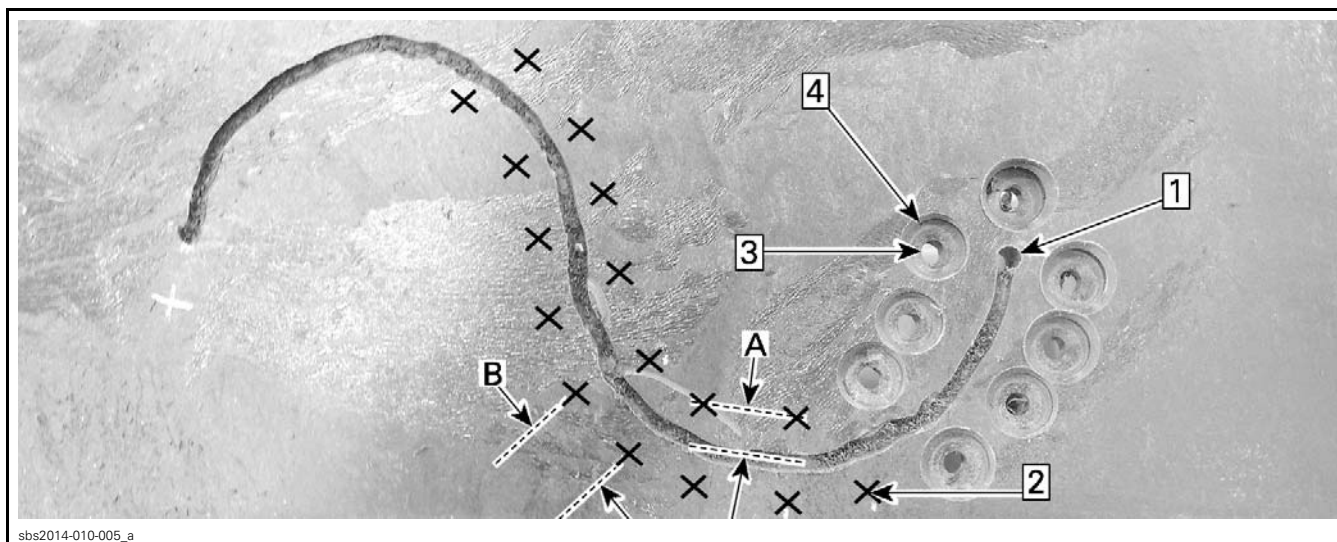
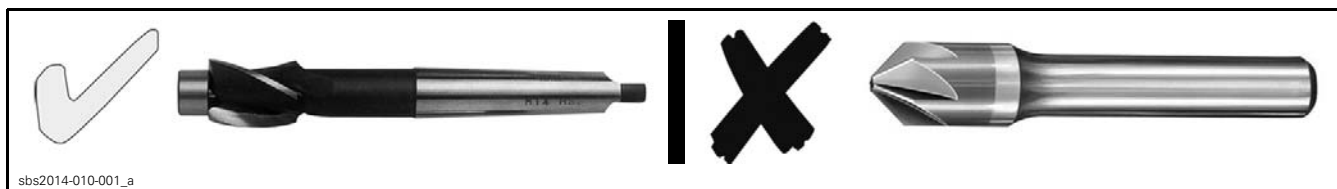
1. Lay down the aluminum foil tape over the area to be repaired. Extend the aluminum foil tape 150 mm (6 in) beyond the crack.
2. Prepare the fiber reinforced backing skin using 3 skins of laminate.
 - 2.1 Apply the mat, the resin and the catalyst over the aluminum foil tape.
 - 2.2 Allow to dry.
3. Remove the newly moulded backing skin and trim to 50 mm (2 in) beyond the crack.
4. Remove the aluminum foil tape.



Drill Holes for Rivets

1. With the drill bit, drill a hole at each end of the crack to prevent it from growing longer.
2. Measure and mark drilling locations on the exterior of hull around crack.
3. Drill the hull at marked locations.
4. Install the backing skin over the area to be repaired from the interior.
5. Drill one hole in the backing skin using the hull as a template.
6. Install screw and retaining nut to prevent the backing skin from moving.
7. Repeat steps 5 and 6.
8. Drill all remaining holes.
9. Remove backing skin.
10. Counter bore all the drilled holes 3.5 mm (9/64 in) into the hull from the exterior.

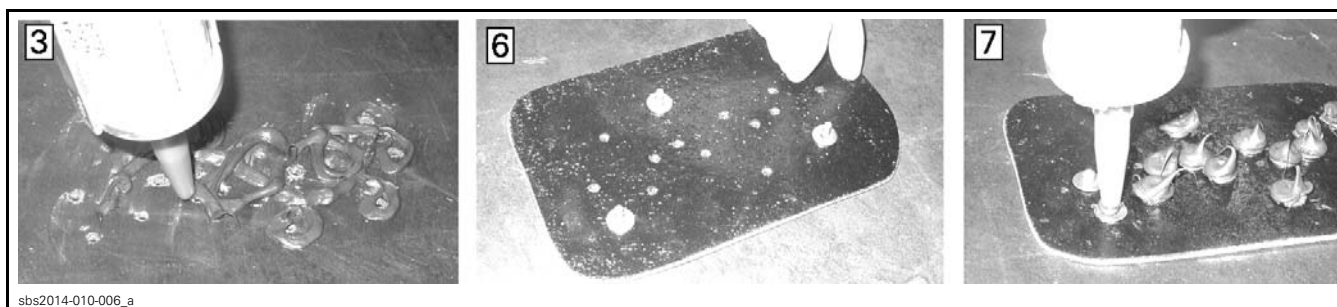
Subsection XX (CLEANING AND REPAIR)



1. Hole at end of crack
2. Mark drilling locations
3. Drill hull
4. Counter bore
- A. 15 mm (19/32 in) from centerline of crack
- B. 30 mm (1-13/64 in) from next hole

Seal the Backing Skin on Hull

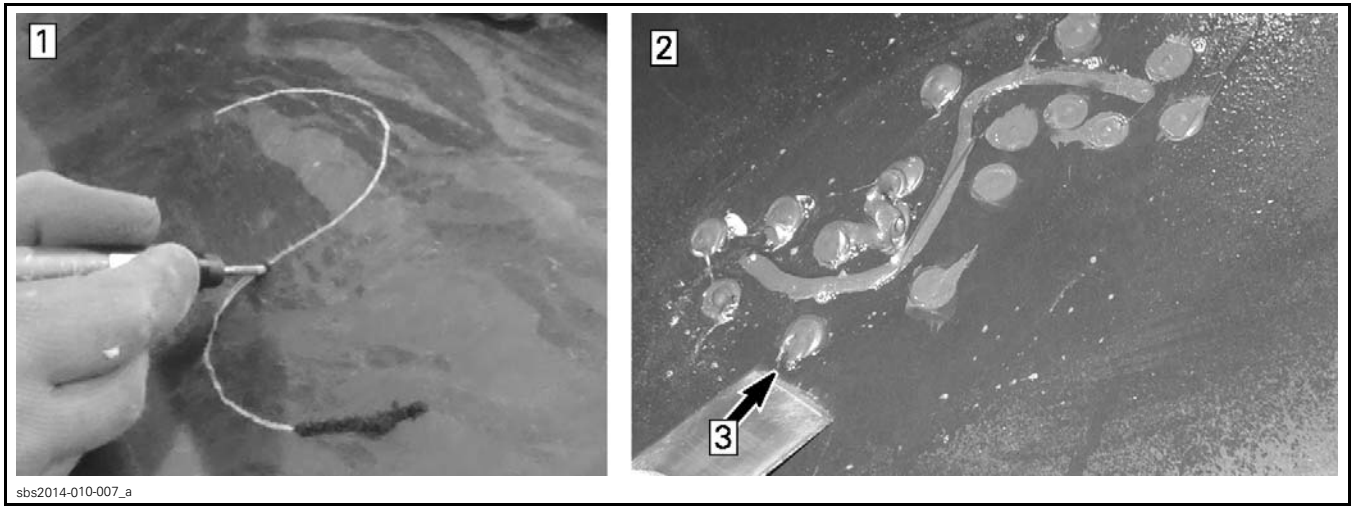
1. Sand hull (inside only) to roughen surface.
2. Clean the area to be repaired with isopropyl alcohol.
3. Apply LOCTITE 5900 (P/N 293 800 066) on the inside hull around the drilled holes and the crack.
4. Align the backing skin over holes from interior. Push it against the sealant.
5. Use the screws and retaining nuts to hold the backing skin in place.
6. Install rivets from the exterior and washers from the interior.
7. Remove retaining nuts and screws.
8. Install remaining rivets with washers.
9. Apply LOCTITE 5900 (P/N 293 800 066) from the interior over the washers.



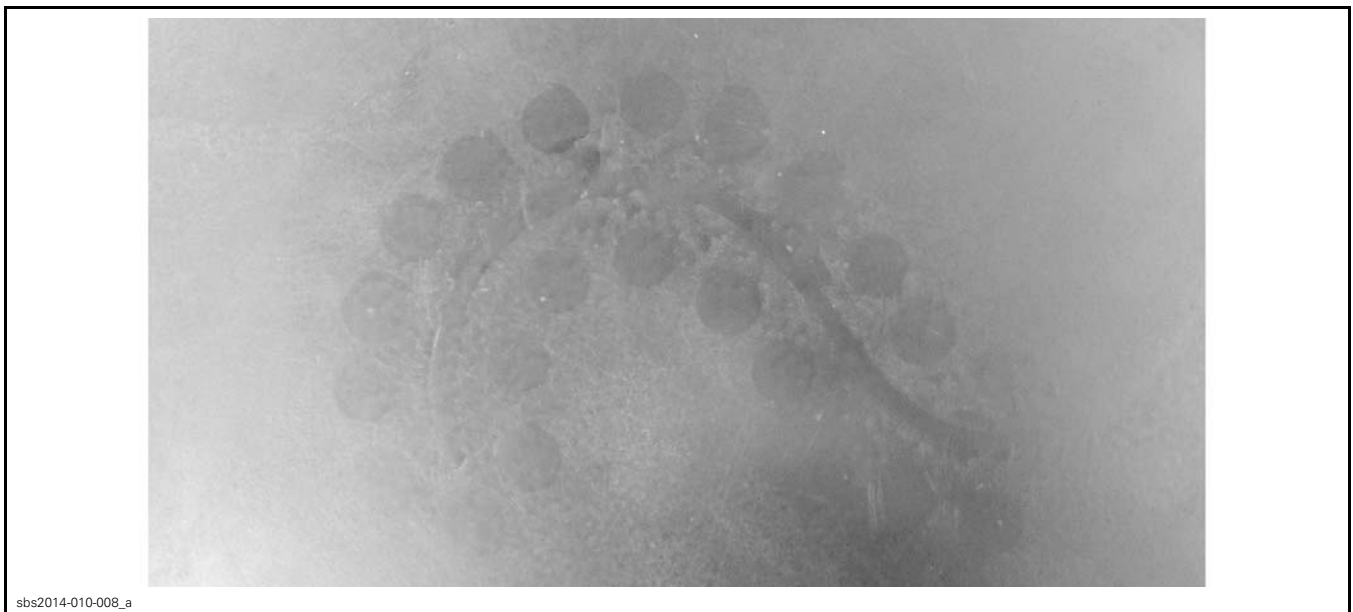
Exterior Aesthetics

1. Grind a 5 mm (5/32 in) wide by 3.5 mm (9/64 in) deep groove in the crack from the exterior.
2. Fill the groove and the counter bored holes with epoxy.

3. Remove the excess epoxy before it cures.



4. Apply a thin layer of paint or perform a flame treatment.



Repairing a Hole

NOTICE Holes larger than 150 mm (6 in) in diameter should not be repaired.

If the broken piece is in your possession, ensure a good fit in its original location. If needed, rework some portions of the piece to make it fit perfectly.

NOTE: If the broken piece is not in your possession, it is recommended to replace the hull.

1. Grind a chamfer of 3 mm (1/8 in) wide by 3 mm (1/8 in) deep around the exterior perimeter of the broken piece.
2. Repeat step 1 to the hole in the hull.
3. Tape the broken piece to the exterior of the hull so that it fits flush with the inside.
4. Continue with *MOULD A FIBER REINFORCED BACKING SKIN* in this subsection.

