

SHELL REPAIR INSTRUCTIONS

For Bench Seat, Footwell, and Filter Compartment Repairs

TOOLS and MATERIALS REQUIRED:

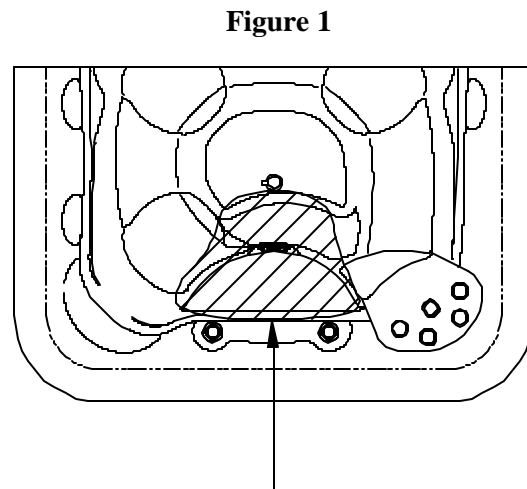
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|--|-----------------------------------|
| Hand saw (small or keyhole type) | Sandpaper (40 grit)(220 grit w/d) |
| Sanding block | Jigsaw or Dremel Tool |
| Drop Cloth | Red Devil scraper |
| Crack Repair Kit (Part # 70998) | Acetone |

Note: The adhesive is temperature sensitive. The warmer the temperature, the quicker the adhesive will set up. At lower temperatures, the adhesive will set-up much slower. **ONLY PERFORM THIS REPAIR IF THE TEMPERATURE IS BETWEEN 50° AND 80° DEGREES F. (10° – 27° C)**

The adhesive is highly flammable. Only use in well-ventilated areas. Always wear protective gloves and safety glasses when handling adhesive.

Section I – Performing a Bench Seat Crack Repair

It is required for warranty payment that the underside of the Bench Seat and Vertical Wall by the Light Lens including the area to the drain wallfitting be supported by the addition of the fiberglass fabric and adhesive kit any time a crack repair that involves accessing a crack through the equipment compartment is performed. **There are no exceptions to this requirement.** Adding the fiberglass fabric to the entire bench seat area provides additional structural support to prevent flexing of this high use area. See Figure 1.



**Support the entire shaded area
(Bench Seat, Light Lens, Drain, etc.)**

Important: For supporting the Bench Seat, **removal and disposal of the existing plastic supports** siliconed to the underside of the bench seat area is required.

1. Identify the area of the bench seat that is cracked.

Service Note: Any crack repair that involves accessing a crack through the equipment compartment area requires that the Bench Seat and Vertical Wall by the Light Lens be properly supported. This would include the area all the way to the drain wallfitting.

2. Disconnect power and drain the spa.
3. From the inside of the spa, tape over the crack with masking tape. The masking tape is used to minimize the amount of adhesive that may progress through the crack and onto the interior spa surface during the repair process.
4. Remove any components necessary to provide complete access to the underside the bench seat area.
5. Use masking tape to mask off all plumbing lines, compression fittings, and the light lens.
6. It is required that the spa be flipped over or turned on its side to allow easier access to the cracked area.
7. From the under side of the spa, access the back/ABS side of the spa shell. In order to access the crack, it is often necessary to:
 - Remove structural foam
 - Remove wood slats / siding
 - Remove spa components
 - Cut away portions of the equipment compartment walls

Service note: It is important to have clear access to the crack and entire bench seat area from the backside of the spa.

8. Carefully cut away or remove the fiberglass insulation that covers the entire underside of the bench seat. Discard this insulation and use the new insulation provided in the large crack repair kit.

Important: The fiberglass insulation needs to be removed from the entire bench seat area, as additional support to the bench seat is a requirement during this repair process.

9. Carefully remove any portion of the ABS equipment compartment that interferes with the cracked area using a jigsaw or Dremel tool. Use a rope or tie-down to hold the equipment compartment walls away from the crack and bench seat area.
10. Clean the area around the crack and bench seat thoroughly. This requires the following items be performed:
 - a. Using the scraper, remove any foreign material (such as foam) from around the crack area.
 - b. Wipe down the cleaned area with Acetone.

- c. Sand the cleaned area with 40-grit sandpaper.
- d. Dry wipe the sanded area with a cloth to remove any sanding dust.

Important: This area must be completely free from dirt and debris to ensure a proper bond is completed.

Reminder: For any crack repair accessed through the equipment compartment area, the actual crack must be repaired in addition to the supporting of the bench seat and Vertical light lens wall including the radius to the floor drain.

11. Use a drop cloth to cover any area of the spa or surroundings that will be exposed during the adhesive repair. The adhesive may cause permanent damage to surfaces it contacts. Be sure to mask off any plumbing lines and compression fittings before starting the repair.
12. Cut the fiberglass fabric into pieces to cover the crack and entire bench seat area. Use masking tape to hold the pieces in place while the fabric is laid out on the work surface.
13. Once all the pieces are properly sized and cut, remove the fiberglass fabric and set the pieces aside. Remove the masking tape from the fiberglass fabric.

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14. Mix the adhesive kit **following the label instructions**. Do not over agitate while mixing, as this will cause the adhesive to set up faster than normal. Normal working time for the adhesive supplied in the Crack Repair Kits is between twenty (20) and thirty (30) minutes at seventy (70) degrees Fahrenheit.
15. Apply a layer of the prepared adhesive over the crack and entire bench seat area. Force the adhesive into the crack (if open) to completely fill any voids.
16. Press the pre-cut, fiberglass fabric into the adhesive. Apply a second layer of adhesive over the fiberglass fabric. Continue adding adhesive until the fabric will not absorb anymore. Depending on the outside temperature, it may be necessary to work in sections to prevent the adhesive from drying.

17. After covering all of the fiberglass fabric, add a final layer of adhesive to cover any exposed fabric. As the fabric absorbs the adhesive, small pinholes may appear. Fill these in with the adhesive.
18. The adhesive should be allowed to set up for a minimum of 24 hours.
19. Upon returning on the following trip, the repaired area should be inspected to ensure the adhesive has hardened. If the adhesive has not hardened, you must begin the repair again at Step 10.
20. Remove the tape and sand any adhesive that may have seeped through the crack until it is flush with the spa surface.
21. Refill the spa and wet test to ensure the crack is not leaking. If the crack is leaking, apply another layer of adhesive to the crack and bench seat area.
22. After the wet test, replace the foam, wood, insulation blanket, components, etc. (as necessary).
23. To perform a cosmetic repair, refer to the Endurool repair instructions (included in the Endurool repair kit).

Section II – Footwell Crack Repairs

1. From the inside of the spa, tape over the crack with masking tape. The masking tape is used to minimize the amount of adhesive that may progress through the crack and onto the interior spa surface during the repair process.
2. Flip the spa over or turn the spa on its side to allow easier access to the cracked area.
3. Break away the 60-lb. foam on the bottom of the spa or remove the base plate.
4. Remove the foam insulation until the crack is exposed from the ABS side.
5. Clean the area around the crack thoroughly. This requires the following items be performed:
 - a. Using the scraper, remove any foreign material (such as foam) from around the crack area.
 - b. Wipe down the cleaned area with Acetone.
 - c. Sand the cleaned area with 40-grit sandpaper.
 - d. Dry wipe the sanded area with a cloth to remove any sanding dust.

6. Cut a piece of fiberglass fabric to cover the crack. The cut fabric should be oval in shape (if possible) and extend 5 inches beyond the crack in all directions.

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The adhesive is highly flammable. Only use in well-ventilated areas. Always wear protective gloves and safety glasses when handling adhesive.

7. Mix the adhesive kit following the label instructions. Do not over agitate while mixing, as this will cause the adhesive to set up faster than normal. Normal working time for the adhesive supplied in the Crack Repair Kits is between twenty (20) and thirty (30) minutes at seventy (70) degrees Fahrenheit.
8. Apply a layer of the prepared adhesive over the crack. Force the adhesive into the crack (if open) to completely fill any voids.
9. Press the pre-cut, fiberglass fabric into the adhesive. Apply a second layer of adhesive over the fiberglass fabric. Continue adding adhesive until the fabric will not absorb anymore.
10. After covering all of the fiberglass fabric, add a final layer of adhesive to cover any exposed fabric. As the fabric absorbs the adhesive, small pinholes may appear. Fill these in with the adhesive.
11. The adhesive should be allowed to set up for a minimum of 24 hours.
12. Upon returning on the following trip, the repaired area should be inspected to ensure the adhesive has hardened. If the adhesive has not hardened, you must begin the repair again at Step 4.
13. Remove the tape and sand any adhesive that may have seeped through the crack until it is flush with the spa surface.
14. Refill the spa and wet test to ensure the crack is not leaking. If the crack is leaking, apply another layer of adhesive to the crack and surrounding area.
15. After the wet test, replace the foam, wood, etc. (as necessary).

16. To perform a cosmetic repair, refer to the Endurol repair instructions (included in the Endurol repair kit).

Service Note: An area five (5) inches (when possible) wider than any portion of the crack must be accessible.

Section III – Filter Compartment Crack Repairs

1. Access the area to be repaired from the spa (water) side. This is the only crack repair performed from the water side of the spa.
2. Remove the standpipes. Make sure to tape over the wall fittings.
3. Sand the cracked area with 40 grit sandpaper.
4. Using a clean rag, dry wipe the sanded area to remove debris.
5. Cut the fiberglass fabric. When cutting the fiberglass fabric for a filter compartment repair, one layer of fabric should cover the entire filter compartment area. Depending on the size of the compartment, this may take one whole sheet or several sheets to provide the proper coverage.

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The adhesive is highly flammable. Only use in well-ventilated areas. Always wear protective gloves and safety glasses when handling adhesive.

6. Mix the adhesive kit following the label instructions. Do not over agitate while mixing, as this will cause the adhesive to set up faster than normal. Normal working time for the adhesive supplied in the Crack Repair Kits is between twenty (20) and thirty (30) minutes at seventy (70) degrees Fahrenheit.
7. Apply a layer of the prepared adhesive over the entire filter compartment. Force the adhesive into the crack (if open) to completely fill any voids.
8. Press the fiberglass fabric into the adhesive. One layer of fabric should cover the entire filter compartment area. Depending on the size of the compartment, this may take one whole sheet or several sheets to provide the proper coverage.

9. Apply a second layer of adhesive over the fiberglass fabric. Continue adding adhesive until the fabric will not absorb anymore.
10. After covering all of the fiberglass fabric, add a final layer of adhesive to cover any exposed fabric. As the fabric absorbs the adhesive, small pinholes may appear. Fill these in with the adhesive.
11. The adhesive should be allowed to set up for a minimum of 24 hours.
12. Upon returning on the following trip, the repaired area should be inspected to ensure the adhesive has hardened. If the adhesive has not hardened, you must begin the repair from the beginning.
13. Replace standpipes, filters, etc. (as necessary).
14. Refill the spa and wet test to ensure the crack is not leaking. If the crack is leaking, apply another layer of adhesive to the crack and filter compartment.