This manual is intended to demonstrate the steps involved in repairing an average ding requiring a fill on a flat surface of a polyester resin board. This manual does not address rail dings, broken noses, fin boxes or any other damage that requires advanced techniques. That being said, the principals set forth in this manual, when understood correctly, can be applied in order to address such forms of damage.

Overture does not endorse the use of power tools such as hand held grinders and dremel tools, we just like to talk about them. Please take extreme precaution when attempting to apply the techniques set forth in this manual. Overture is not liable for any loss of appendages, digits or damage to the senses that may occur while attempting to apply the principals set forth in this manual.

**Materials List:**
- Polyester sanding resin/ catalyst
- Fiberglass cloth (4 oz. / 6 oz.)
- Sandpaper (60, 80, 120 Dry)/ (220, 320, 400, 600 Wet/Dry)
- Wood sanding block (3/4” x 1” x 4”)
- Q-cell / Filler
- Chip Brush (natural bristles)
- Blue painters tape
- Popsicle sticks
- Disposable plastic cups
- Spray bottle (2)
- Isopropyl alcohol / water
- Finishing Wax

**Safety Equipment:**
- Particle / Organic Vapor Mask
- Nitrile Gloves
- Protective Glasses
- Ear plugs

**Tools:**
- Dremel/Rotary Tool
  (Sanding drum/ cutting head)
- Handheld Grinder
  (60 - 80 grit disk)
1. **CUT** –
   a. Using the cutting head attachment on your rotary tool, cut away all weak/cracked glass. Keep the geometry of the cuts simple and clean. Remove the glass and leave the ding open to dry. *(Figure 1a)*

   b. Once dry, cove out the inner area of the ding using your sanding drum attachment to make room for the fill. *(Figure 1b)*

   c. Using a pen, chopstick or any tapered tool, push the foam in under the glass around the perimeter of the ding. This will aid in backing up the surrounding glass, creating a better seal and locking in the fill securely. *(Figure 1c)*

   d. Blow out any loose dust and debris. Remove any remaining loose or weak foam. It’s time to fill!!

2. **FILL** –
   a. Using latex gloves and a mask, pour an adequate amount of polyester resin into a disposable plastic cup, preferably one you can see light through. Mark off the level of the resin on the side of the cup.

   b. To lighten up the fill, mix in enough Q-cell to double the level of the original resin line. Hold the cup up to the light to gage how much Q-cell to add. Mix in the Q-cell carefully using a popsicle stick.

   c. Add catalyst as directed by your resin provider. Mix thoroughly for around 30 seconds. If you are filling a large, deep volume, less catalyst than normal will be required to set off the reaction, so cut back a little.

   d. Slowly pour your Q-cell mixture into your open ding. Be sure to overfill above the glass line. *(Figure 2a)*

   e. After waiting 25-30 minutes, come back and trim the fill using a fresh razor blade while it’s in a semi-cured state. *(Figure 2b)*

This will save you from a lot of dust and noise making. If it’s too “hard” to trim, wait until its fully cured and make flush using a handheld grinder with a sanding disk. (50-60 grit)
3. **GRIND DOWN ZONE** - This is the most critical aspect of good ding repair. A healthy grind down zone ensures that newly laid glass extends beyond the perimeter of your fill, keeping the repaired area strong and impermeable to water.

**a.** Using a rotary tool or handheld grinder equipped with a sanding drum/disk (50/60 grit), gently pass over the outer perimeter of your fill, grinding through the gloss coat and halfway through the existing glass, exposing the fibers. *(figure 3a)* Making your way out from the center of the fill, extend your grind down zone ½ inch to about 1 inch beyond the perimeter of the fill in all directions. *(figure 3b)* Be careful not to grind fully through the glass, exposing the foam beneath. Stop as soon as fibers can be observed.

**b.** Using your sanding block rapped with 60/80 grit paper, sand over the area of the grind down zone using smooth controlled motions. Extend your sanding line another ¼ inch to a ½ inch beyond the grind down zone in all directions. *(figure 3b)*

**c.** Wipe the board clean of dust and debris around the area of the repair so tape can stick. Using blue painters tape, tape off the sanded area around the fill using clean geometry. *(figure 3c)* Go back in with 60/80 grit by hand (no block), making sure the entire surface within the taped off zone is fully scuffed. Wipe away the dust, it’s time to glass!!
4. GLASSING –

a. Cut an appropriate size piece of cloth (4 oz. / 6 oz.) The cloth should be ½ inch to ¾ inch larger than the taped off area in all directions. Tape an edge of the cloth down to the board to keep it in position. (Figure 4a)

b. Lift up the cloth and wipe the surface beneath once more using a clean cloth and a little rubbing alcohol.

c. Equipped with gloves and a mask, fill a disposable cup with enough resin to fully saturate the cloth. Note the temperature and humidity before adding catalyst as instructed by your resin provider. Mix in catalyst thoroughly for around 30 seconds.

   Note: 5 drops of catalyst per fluid ounce of resin is an average ratio.

d. With the cloth down on the surface of the board, pour the resin on top slowly until you think there is enough to fully saturate the cloth. Do not pour too much or you will make more work for yourself. Remember you can always pour more.

   Work the resin into the cloth using a squeegee or a gloved knuckle until fully saturated. Press down firmly while moving in a direction away from the taped down edge, squeezing all excess resin off to the side.

   Note: resin will not adhere to the surface of an un-sanded board. Don’t worry!

Walk away for 15-20 minutes and grab a cold drink.

e. After waiting, it’s time to apply a “hot coat” of resin. This will speed up the rate of the reaction and help compensate for any low spots in the repair.

   Pour up an adequate amount of resin. Place 1 ½ times the recommended amount of catalyst per volume of resin. So if you used 10 drops of catalyst before when laying the glass, use 15 drops to lay the “hot coat”. After mixing thoroughly, quickly apply the “hot coat” or resin over the saturated cloth using a chip brush. (Use a brush with natural bristles, no plastic) (Figure 4b) Apply a thin, even coat. Walk away for another twenty minutes or so.
5. TRIMMING -  
   a. When you return, grab a fresh razor blade. Carefully **trim along the inside of the tape line.** You want to cut through the hot coat and the newly laid glass cloth, but be careful not to push too hard and damage the original glass. As you reach each corner, extend the trim onto the tape, making sure to cross each adjacent trim line in order to complete the shape. **(Figure 5a)**  
   
   b. Begin pulling the tape carefully up off the board. The glass surrounding the outside of the repair should begin to pull up and separate along the trim line, leaving you with a floating rectangular piece of glass over your fill. **Important:** If the glass resists separating along the trim line, go back and complete the cut before pulling any further.  
   
   c. Walk away and don’t return to do work until the glass has fully cured. It is normally recommended to let the glass sit overnight.

6. GRINDING THE GLASS – Making the new glass flush with the old.  
   a. Using a handheld grinder or rotary tool, follow along the edges of the glass patch, keeping your grinder/tool at a medium to shallow angle. (Too steep and you can dig in too far!) In the beginning, you do not want to touch your grinder to any area outside the glass patch, so keep your focus on the edges of the patch. **(Figure 6a)** Listen, feel and look to see what’s happening. As you grind down along the perimeter of the patch, you will want to fully feather the edges of the new glass in with the board. At this point it is ok for the grinder to slightly touch glass outside of your repair. Just keep your passes light and the angle shallow. **(Figure 6b)** Follow along the edges of the glass, working in towards the center, stopping to check every 30 seconds or so. Keep checking for flushness with your hand. Finally, cross over the center of the ding to achieve complete flushness and continuity. Once everything feels fairly flush, stop and put the grinder away.
b. Using your sanding block wrapped with 80/60 grit paper, pass over the area of the repair using slow controlled motions until you are satisfied fully with the level of flushness.

It is ok if you sand the original board glass outside of the trim line while seeking flushness, in fact its expected and perfectly fine. Just be sure not to sand too much!!

c. Wipe away any surrounding dust and grab some blue tape. Tape off an area around your ding just as you did before when laying the glass. **(Figure 6c)**

The area should be at least ½ inch larger than your original trim line in all directions. Using 60/80 grit, go in by hand and scuff up the entire area inside the tape line. It’s time to gloss.

7. **GLOSSING** – The gloss coat adds a last and final level of protection against water entry while also helping to fill any deep sanding marks, allowing you to bring the repaired area to a fine finish.

a. Armed with gloves and mask, mix a small amount of resin and catalyst, enough to cover the taped off area in a thin coat. Dipping the chip brush into the cup of resin, apply a thin coat of resin over the taped off area. It should appear as a thin film, having almost zero thickness.

b. Once applied, wait 5 minutes and carefully remove the tape by pulling up, as not to disturb the fresh gloss. Walk away and don’t return until the gloss is fully cured. It is typical to wait a full day.
8. **FINISH SANDING** - The last and final step to good ding repair.

   a. Using 120 grit sand paper, go in by hand and feather off the edges of the gloss coat until you can no longer feel or see the edge of the gloss. It is ok to scuff some of the original glass and this is expected to occur when feathering, but don’t sand too much.

   b. Using a spray bottle filled with water, wet the surface of the repair thoroughly. Using your sanding block wrapped in 220 grit wet/dry paper, start to work the surface of the repair using controlled motions. Continue to wet the surface of the board as you work. Start at the outer edges of the repair and work your way around fully before heading towards the middle.  
      **(Figure 8a)**
      
      **Note:** A dry sponge or cloth is handy in order to dry the area every minute or so. This way you can stop and see your progress.

   c. Moving on to 320 grit, make sure the area is wet. Start to broaden you strokes, crossing over the center of the repair with each pass. Don’t forget to stop and dry the area to check your progress. In the right light, you will be able to see any minor deviations in the surface of the repair and adjust your sanding accordingly. Continue on with 400 wet/dry and then 600 wet/dry until you are satisfied with the level of finish.

   d. Last but not least, apply finishing wax with a clean cloth as directed by your wax provider. The wax can then be buffed out by hand or by using a grinder with a buffing wheel attachment.