

Surfboard Repairs

Chapter 7

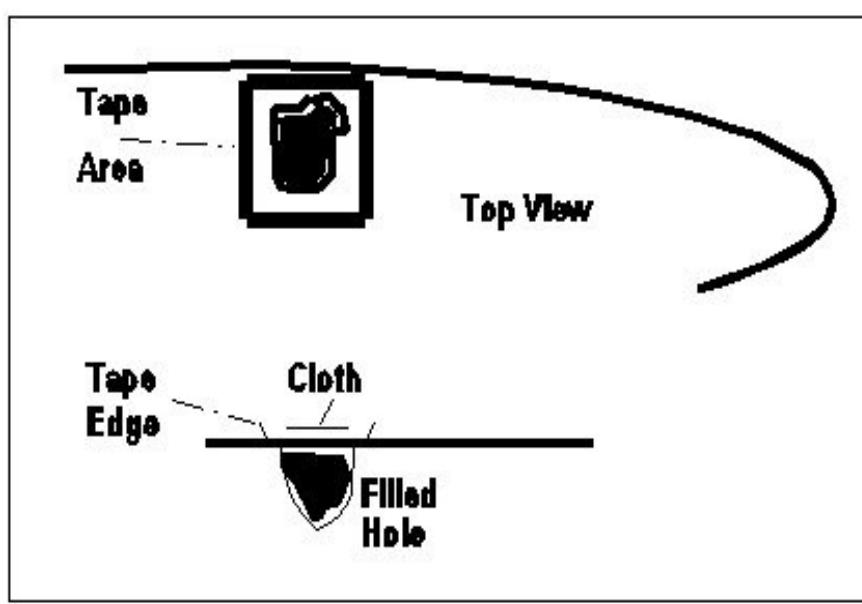
The Complete Surfing Guide for Coaches – Bruce “Snake” Gabrielson

Repair Problems

Boards continuously get bumped, hit rocks, break fins, get dropped, and many other things that can cause the blank to take on water, injure the user or prevent the board from working properly. Often times, simply putting a piece of duct tape over the crack will temporarily solve the problem. While SunCure can be used to easily fix small dings, to fix a real problem without ruining the original condition of the board is often a real challenge.

Before even fixing a board, the blank must be completely dry. If the board is just left to dry, and natural humidity is high, it can take a full week (depending on foam saturation) for a good drying. To determine if the foam is saturated, push down on the glass around the ding. If water seeps out, the foam is saturated, and longer drying time is necessary. To speed up the process, use a 100 watt light bulb placed 8 inches above the ding. This also ensures that air near the ding will be low in humidity. Furthermore, never fix a ding while the foam underneath is still wet as it will lead to a bad delamination.

Most rail shatters or fractures which cause a break in the cloth are fixed by sanding and placing a coating of resin over the break. Sand the cloth edge and a small surface area around the shatter. Place a ring of masking tape around the sanded area extending to the board's edge and flared out at the bottom. This will allow the excess resin to drip off. Mix a hot coat of sanding resin and paint the area of the break. When the resin starts to set, pull the tape. Afterwards, sand smooth with wet sand paper and buff until polished if desired. (wet meaning a fine grit sandpaper that is specially designed to be used with water for final polishing)



If the fracture is a stress fracture that is starting to cause a delamination or foam discoloration, use a razor blade to open the crack slightly. Let the board sit a few days to dry, and then follow the process outlined above. If the hole is large, you may need to add a little filler. Understand that repairs will not last on this type of fracture, and will need to be re-done every so often when they break open again.

For a deep puncture, such as a hole (Figure 7.1), or a broken tip on the nose or tail, cabosil or foam dust filler (Q-cell) mixed in resin is used. Prepare the area by sanding and taping like

you would with a fiberglass break. Lift the edge of the tape up to ensure the resin doesn't get on the rest of the board. Mix a cold (slow curing) amount of resin in a container before adding the cabosil. Mix just enough resin so the result is pliable like putty. Use a tongue depressor to mix and apply to fill the hole completely.

Hole Filled With Cabosil

When the cabosil or Q-cell starts to set, use a razor blade and sandpaper to trim the excess down to the edge of the hole. A final sanding will smooth the repair edge after the resin has completely cured. Mix a hot coat of finish resin and paint over the hole using a 1" width brush, pulling the fiberglass cloth over while it sets. After the resin is completely hard, wet sand and buff to finish.

Fin Repair (Broken Off)

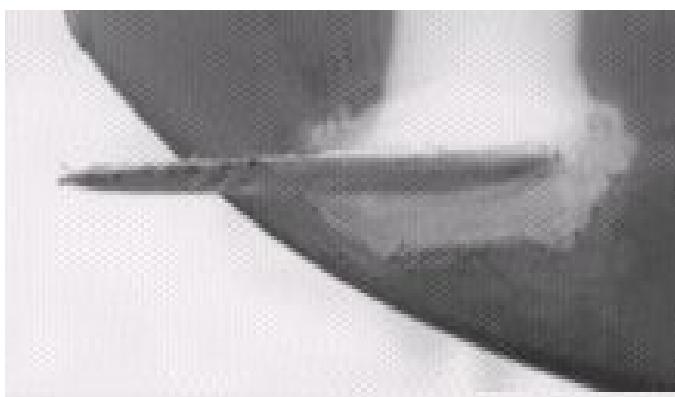
Fin repair is nearly as complicated as putting a fin on the board during glassing. If the old fin is cracked along its base, it must be removed by sanding. Use a 7 inch sanding disk, and sand straight down on the resin area around each fin base until the fin can be removed with a slight tap. There will likely be a hole in the foam under the fin, and this is to be filled the same as any other puncture ding.

When the cabosil filler is cured in the fin hole (see Figure 7.2 picture), sand the area around the fin smooth and flat. Also, sand the fin sides and bottom to remove excess resin buildup. Position the fin on the board using non-hardening resin to tack the bottom down. Put masking tape around the board's tail and fin area, flaring at the bottom, to allow excess resin to drip off.



Actual Board Showing Filled Hole

Cut cloth and rope as was described under glassing fins while the tacking resin dries. Remove the tape, and using your thumbs, complete the glassing as was described previously.



Squeeze any excess resin off the rear of the board. When the resin has started to harden, remove the tape and use a razor blade to cut the excess cloth from around the fin and excess rope from the front and rear of the fin. Re-tape the board at approximately the same location and paint a sanding coat over the entire area. The picture shown in Figure 7.3 is a reinstalled fin ready for sanding with the tape removed.

Be extremely careful sanding the base of a re-installed fin as it is very easy to sand through the bottom cloth of a finished board. Try to stay on the flat of the sanding pad rather than use the pad's edge until you are very comfortable with using the sander. A low speed sander might be a good idea for beginners. Most of the final sanding should be done by hand, especially on the rails and fin area. Figure 7.4 shows the author at his sanding rack.



Me at My Rack - Note the Trash Can Close By

Glassed on Fin Repair (Splits and Re-Building)

Split fins are basically fins that have suffered massive delaminations between cloth layers. If the delamination is bad, sand the base of the fin until the cut is just flush with the fin's base and then tap the fin off. Be careful not to try removing the fin before completely cutting at the base or you will damage your board. If the split isn't bad, the following section below might work.

Work some resin, set to go off slowly, into the delaminated section using a syringe with a large gauge needle if available. Get two short pieces of 4 inch wide by 1/2-3/4 inch thick pine and press the fin together using two C clamps, one on each side. Put masking tape and/or wax paper on the wood boards, especially if you plan to use them again. This also helps the surface cure better. Once the resin sets, you will need to sand the fin down as it will be thicker than before. You will probably also need to build the fin up in places again after sanding as any internal air bubbles will leave holes.

If the fin's tip is broken, it can be built up again by using this method in combination with the approach used to replace a fin. Except in this case, build the body up with small pieces of cloth. Make sure the cloth is fully saturated and also make sure to color the resin similar to the color of the fin or it will look bad. Also, try to press several layers of cloth between the large outer layers or the fin will be mostly resin, and will break off again easily. The harder the fin is pressed between the boards, the better off you will be.

There are two problems with repaired fins, they are thicker than before, and they are never as strong afterwards. Where this approach works best is at breaks where there are lots of rocks, and hitting them is common. In these situations it's easier to continually make small fixes rather than try replacing fins on a regular basis.

Smaller Delaminations

Delaminations are basically an air bubble or soft spot that appears under the board's surface . They are usually caused by a small hole in the outer glass that allows water to seep into the blank underneath. Unfortunately, the longer a delamination is left unrepairs, the worse the condition will get. A chip or crack in the board's nose or tail can also cause cloth delamination.

Repairing a delamination will nearly always result in a discolored and often ugly spot on the board's surface. If the delamination is still very small, a quick fix that sometimes works is to use a syringe with laminating resin mixed to cure slowly. A large needle is necessary to insert the resin into the delaminated area. Put a very small air hole into the middle of the delaminated area first, then try to force resin into the edges of the delaminated area with the needle. The last area to fill is the middle air hole. In all cases, tape around the hole before you start.

If the delaminationation is a little larger, cut a $\frac{1}{4}$ " slit and put a flat head screwdriver into the slit. When you twist the flathead there will be just enough room to pour some mixed resin into the hole. Make sure you get resin into the entire area under the delamination by turning the board to its opposite rail and pouring more resin in.

Once you have forced resin into the hole, clamp the area down as shown using two three inch boards between the clamps.

Leave the pressure on for a day to make sure the resen in completely hard. This approach also sometimes works for large delaminations.

If the delaminated area has grown too large for a needle (over $3 \frac{1}{2}$ inches or so), the best way to fix the problem is a little more involved. First, lightly sand the delaminated area plus a small overlap. Use a razor blade and carefully cut the cloth around, but just inside, the delaminated



area. This might be difficult as the cloth is hard, so use the point of the blade and jab slowly as you work around. Coat the delaminated area and the bottom of the cut out cloth with finish resin, and then insert the piece back into the hole. When the resin starts to cure, but before it gets hard, tape the entire sanded area off and hot coat with finish resin. Sand and buff to finish.

Large Delaminations

When the delamination is over 5 or 6 inches across, it's best left to a professional to fix. An inexperienced person can greatly damage a board if the following process (probably one of several) is not followed correctly. Depending on size, here is how I fix this type of a problem.

Using the sandpaper edge on a disk sander, carefully sand the glass around the edge of the delaminated area until you are close to but not quite through. You don't need to sand completely through as anything thin enough to easily cut with a razor (or a Stanley knife blade) is acceptable. Once the delaminated cloth has been removed, use a razor to trim any edges of the delaminated cloth that still extend over the foam. There should be very few places if the sanding and removal was done carefully. Save the removed cloth if the board has pigmented color, or if it will be difficult to match the color on the board.

The big problem with delaminations is that there will be a dip in the foam under the delaminated area when the cloth is removed. There may also be some discoloration. Here is where experience is a must. If there is discoloration, I sometimes slightly sand the foam to expose a whiter surface. The problem is that this causes an even larger dip that must be filled in. Unless you know what you are doing, don't sand.

Next, tape around the delaminated area about 1/4 inch or less from the cloth break, just outside the entire area, and rough up the exposed surface with sandpaper. There should be no edges sticking up. Next, cut a piece of 4 oz. cloth just larger than the cut area. If you are going to re-install the removed glass, slightly sand (rough up) the surface area of the cloth prior to using so the resin will stick. Don't do anything to the bottom of the cloth (the foam coated side). Resin (non-finish resin) under the removed piece and replace it, then lay the 4 oz. cloth over the entire area.

Using a tongue depressor, saturate the cloth (with the same non-finish resin) to the edge of the cut area. This should be a thick saturation, not a thin one. If done correctly, there will be a slight overlap of the resin on the good surface area, but only minor. Use the depressor on edge to smooth the resin down.

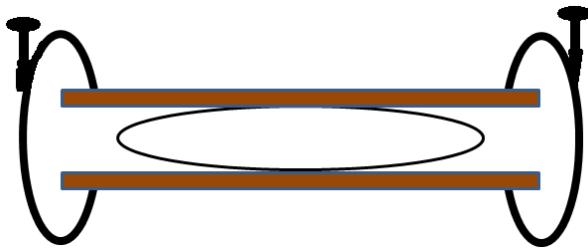
When the resin starts to set, remove all non-saturated cloth and any cloth sticking up around the edge of the repaired area. Using a 2 inch brush, apply a thin coat of sanding resin over the entire exposed area, and remove the tape once this starts to set. I use a vibration sander with fine grit sandpaper to smooth the surface prior to glossing. After sanding, re-tape, apply a fine coat of finish resin, and remove the tape when the resin is close to setting.

If the removed cloth is too damaged to replace, you will need to build up the area under the



delaminated area with a layer of cloth (sometimes two layers). I generally cut a piece of 6 oz. cloth just smaller than the removed area, and squeegee it to the foam with non-finish resin. If this doesn't bring the level up enough, apply a second layer of cloth, but if you do, let it harden before applying the outer 4 oz. layer. Also, make sure you used bleached cloth. All other steps should be the same.

I personally think pigmented resin looks best for this type of repair. If you are not replacing the removed piece, only pigment the outer 4 oz. layer. If you are replacing, pigment isn't necessary.



As a final note on delaminations, if you are just restoring an old board and don't plan to put it back in the water again, you can repair a delamination by forcing resin almost ready to go off between the glass and the foam through a small slit. Use C-clamps to hold two boards as shown to pressure the glass to the foam

until the resin sets. This takes a little longer to fix the delamination but the results often look great.

Broken Boards

This is probably the toughest repair job there is. You can fix the board, but it will never be as strong or light as it was initially. For best results, you will need two 8" long and 1/4 to 3/8 inch diameter dowels, a hand drill, and a sander. Using the hand drill (the old type) carefully drill two 4 inch deep holes in one end of the break, parallel to and about 1 inch on either side of the stringer. Place the two dowels in these holes, lay the two board halves on top of a table, and carefully align the half pieces together to determine where to drill the holes in the second board half. The holes should match up height wise as well as offset from the stringer.

Use the sander to smooth down slightly the glass in a 5 inch ring around each half at the broken end. Be very careful not to sand through the outer glass. Next, tape off the un-sanded area for two or three inches past the strip.

Put newspaper on the table or flat surface you plan to use (not on the floor). Using laminating resin with a small amount of hardener, place the dowels in first, making sure the two edges of the board break are exactly even with the board bottom, and straight against the flat surface. Tack the two pieces together by painting a layer of resin set to go off quick (hot) on each broken end, and then push the two pieces together. The resin used for the dowels, which shouldn't be hard yet, can work by carefully adding a little more hardener. Use a few small wood blocks to adjust the two pieces so the rails align correctly, and then tape the two pieces together until they are set. I suggest you make the wood blocks fit first before you try to laminate the board pieces.

The broken board should be glassed in two sessions after tacking: first the deck with the bottom flat and together, and then the bottom. When the tacking resin hardens, apply the top cloth. Squeegee the cloth around the rail to just underneath the rail line, and then trim the excess cloth just when it starts to cure with a razor blade. After curing, the bottom can be laminated in the same manner.

From this point on, the fill coat, sanding, and final gloss is similar to what is identified in chapter six. I use one layer of 6 oz. cloth on both sides, but some people use 4 oz. If you skip

the dowels, I strongly recommend 6 oz. or you run the risk of having the board break when paddling through a larger wave. I broke a number of boards, both long and short, on pilings under Huntington Beach Pier over the years. I only left the dowels out one time, and the board rebroke right in my face while paddling out.