

## INTRODUCTION

During the past year we have found a few new items from our various wood repair suppliers to make repairs. Although the basics have not changed, these new materials can help make the task of repairing wood easier and more effective. The new items have been included in the text and also in the supplies list on the last page of this guide.

## BACKGROUND

The interior woodwork on a Beneteau is a combination of veneered hardwood plywood; strip laminated trim, and solid hardwood trim. The wood is Douka. This wood is a tropical hardwood related to the mahogany family; the species is *Tieghemella Africana* of the Sapotaceae family. The finish is a two-part catalyzed polyurethane varnish that contains a yellow colored stain.

Repairs to damaged areas can range from simple to quite complex. The characteristics that you need to restore in a damaged area are:

**Surface Smoothness** – the finish must be leveled even with the surrounding area.

**Sheen** – a repair must match the semi-gloss appearance of the finish surrounding it.

**Color** – the repair must match or fit in with the color tones surrounding it.

There is not one easy method that applies to every repair. Experiment with the techniques, and find what works well for you. If you would not undertake the refinishing of your dining room table, call in a furniture repair technician for advanced repairs.

## TO BEGIN

The first thing to be done is to determine the nature and extent of the damage. Scratches and scuffs may only extend part way into the finish. If so, they can be fairly easily repaired. Dents and gouges usually affect the underlying veneer or hardwood. If this has happened the repair needs to include more advanced techniques.

Always start with a clean surface. Before beginning any repair it is necessary to be sure no waxes or other contaminants are present on the surface to be repaired. If you begin a repair thinking it will only be a simple touch-up, but end up needing to spray finish over the repair; then your respray may be ruined if there is any residue from cleaners etc. Wiping the area to be repaired with denatured alcohol is usually the best prep for refinishing. However, if you have already resprayed the area, alcohol will damage the uncured lacquer.

You are usually best off to minimize the area to be repaired. Try to not turn a small nick into a repair the size of a life jacket. The exception to this rule is medium sized repairs on a prominent surface such as the main bulkhead. In this case, respraying of the entire area (usually one-half of a main bulkhead) is needed in order to achieve the best result. This size of respray is best left to a wood finisher with spray experience.

## LIGHT SCRATCHES AND SCUFFS:

Light scratches in the direction of the wood grain can sometimes simply be colored with a felt tip touch-up marker. This is especially true when the scratch or scuff is on the edge of a molding or

trim piece. The cherry marker from Woodworker's Supply is a very good color match. Most touch-ups done with a felt tip marker will require some blending around the edges of the touch-up. This can be done using a clean cotton cloth. Spraying one or two coats of lacquer over the touch-up will seal the surface. Scratches across the grain usually require sanding of the finish to remove the scratch. It is best to not sand all the way through the finish down to the bare wood. Remember that the varnish contains color, so on a large surface you do not want to sand more than is necessary. (On a small surface, sanding through the finish is not as much of a problem. See the section on sanding under Filling). Better results will be achieved by also minimizing the scratches produced by the sandpaper. Many light scratches can be removed by only using very fine steel wool (Grade 4-0 or 0000). The dull surface left by using steel wool can be blended into the surrounding finish by using polyester buffing compound. We use Aquabuff 2000. A very small amount of compound rubbed on a dull area (using a soft cotton cloth) can blend away steel wool scuffs in 15 to 20 seconds. Don't use too much compound or buff for too long. You are only trying to change the surface sheen from dull to semi-gloss. If you buff a touch-up into a shiny spot, go back to the steel wool and try again. An alternate method to complete a steel wool job is to spray several light coats of lacquer. This will better hide a repair on a prominent surface such as the main bulkhead than will a buffed spot. The next alternate method is to use 1200 grit sandpaper. As the grit on this paper fills in with the removed finish, it will actually begin to buff the finish. A light compound buff or single coat respray will often make this kind of touch-up totally disappear with a minimum of effort. Some scratches can best be removed by a combination of sanding off some of the original finish, and then building up new finish to fill in the balance of the scratch. This build-up of 3 or four spot applications of finish is followed by sanding the respray to flatten the area, followed by one or two additional coats of finish applied to a larger area. If steel wool or 1200 grit sandpaper is not enough to remove a scratch, use a slightly more coarse sandpaper. Most light scratches can be sanded out using 400 grit and 800 grit. Using sandpaper as coarse as 320 will mean additional coats of lacquer will need to be applied in order to cover the dullness caused by sanding. Many areas that need sanding can be finished with 3 to 4 coats of lacquer applied after using the 400 grit, other areas will need finer sanding with the 800 grit.

## COLORING

As noted above, light scuffs and scratches can often be colored using a felt tip stain marker. This is especially true when the damage occurs along the edge of a doorframe, fiddle or other surface. The cherry marker from Woodworker's Supply is a good color match. Any local hardware store will also have an assortment of stain markers. The most difficult damage to color is crazed varnish. When the varnish is scratched or dented, the area that is crushed will turn a pale yellow color. This yellow color is the result of fine cracks or crazes in the finish and is very difficult to color or hide. The felt tip markers will only be successful on some crazed varnish. You often will have better results applying color over the yellow area by using one of the varnish/stain pens. Be careful using the varnish pen on top of fresh lacquer. If the lacquer has cured it is possible to use the varnish pen on top of the finish. If the lacquer has not fully cured, you are likely to get a reaction between the two materials. Using this pen requires allowing the time for the stain/varnish combination to dry before attempts are made to blend the touch-up and seal the surface. The color from the felt tip markers or the varnish/stain pens can also be transferred to a cloth and padded onto a discolored area.

Both the felt tip and varnish pen markers will "take" better to a surface that has received a coat or two of lacquer. When you are adding color to a damaged area, try to blend in a natural way

into the wood grain around the area. This may include staining a grain line into the wood several inches above and below the actual damage in order to conceal the repair. If the end result looks natural and has a good finish on top of it, then it will not be noticed as being a repair.

The graining pen is also useful. If an area has been filled with burn-in sticks or another type of filler, adding some fine grain lines to the otherwise “flat” color may better mask the repair.

We are often asked about the stain that is used in the Woodshop. The color that is added to the varnish is more of a yellow coloring than it is a normal stain. If you sand all the varnish off of a piece of the wood and then apply six to eight coats of lacquer; you will have the same appearance as the original wood except it will appear somewhat more reddish in color. The stain that is mixed into the varnish simply gives the wood more of a golden cherry tone. In the past we have found that in many instances where a piece of trim has a scratch or dent, it is possible to sand down through the varnish and respray without ever adding color. As long as an entire length of a piece of wood is sanded and refinished, the result will usually be acceptable.

Where color would be needed is when damage has occurred to a limited area of a large surface. Sanding down through the finish in a small part of a large surface will result in an unsightly off-colored spot. During the past year we tested a variety of Mohawk’s colored finishes and discovered that the Light Golden Oak color is the best match for the stain that is in the varnish from France. If used sparingly, this toner can restore the golden color to a repair. On wood that has aged and is quite deep reddish in color, then the Cherry toner will be necessary as a base color coat, followed by a light application of the Light Golden Oak. To use these products, build up the finish over a repair until it is nearly complete. Spray only a light amount and contain it to the area that actually needs the color. Once the color matches, apply the final coats of Pre-Catalyzed Lacquer. Do not apply any stain directly to bare wood, the results will not match the surrounding finish.

## DEEP DAMAGE

The first consideration with deep damage is whether the part can be repaired at all. Sometimes the best result will be achieved by covering a damaged spot with something that fits the appearance of the boat interior. This can be a screw, an added piece of trim, a swivel light unit, etc. Beyond covering a severe damage spot, consideration needs to be given as to whether the best result will only come from replacing the part with a new piece of wood or trim. This is the case when no repair will truly conceal the damage. Ordering a replacement wood component does take time and the color match will always be a problem, but sometimes it is the only answer.

Begin all repairs with a clean surface. If the wood is dented, the first step will be to attempt to raise the grain of the wood by using steam.

## STEAMING WOOD

Applying steam to wood fibers that are dented or crushed will cause the wood to swell and expand. This technique can sometimes raise the grain of the damaged wood to a level where no additional fill material will need to be added. In more severe cases, steaming will at least help to minimize the amount of filler needed. To begin, prick with a pin, or sand, or lightly score the finish over the dent with a razor blade. This will make it easier for the water to penetrate to the wood fibers. Dampen a cloth with water, place the cloth over the dented area of wood, and

apply a hot clothes iron to the cloth to drive steam into the wood. Several applications of steam over a period of 5 minutes to an hour may be necessary in order to cause the wood to swell. Once the grain has been raised, allow the wood to dry completely before sanding and refinishing the area. Be careful to not discolor the wood or burn the surrounding finish with the iron.

## FILLING & LEVELING

Areas that are indented below the surface need to be leveled using one or more of the following methods:

**Sanding:** Small shallow indentations on shaped surfaces can often simply be sanded away. If you have a shallow dent that is one inch long on the top edge of a galley fiddle, the best repair will be to sand that section of the fiddle to remove the dent. Always try to maintain the same profile, and don't dish out a small area. In this example the result will look better if you "fair" the indentation by sanding for six to eight inches on either side of the dent. Refinish the top edge of the fiddle with six to eight coats of lacquer and the repair will be invisible. This same technique can be used on other small surfaces such as doorframes, cap trims and individual sections of hull liner planking.

**Burn-In Sticks:** Deep dents and gouges can be filled using a hot knife and lacquer burn-in sticks. These sticks are hard at normal temperatures and are melted into an area to be filled using a burn-in knife. A burn-in balm is applied around the filled material so that excess material can be removed using the hot knife but without smearing the excess around the repair. The fill is sanded flat to the surface and finished with lacquer. Additional coloring and graining may be necessary on top of the burn-in in order for the repair to look as good as possible. Burn-ins are a good way to fill a deep gouge, but it needs to be understood that this material will not provide the same wood grain appearance (sometimes called "flash") as the wood surrounding it. When viewed from different angles, a burn-in repair will look like a good color match from one direction and a poor color match when viewed from a different position. Keep this in mind and strive to have a burn-in repair look good from the direction it is most often viewed from.

You can also use clear and amber colored burn-in in the same manner as a varnish fill (see below). Remove all damaged varnish from inside a dented or damaged area. The amber colored sticks burn-in sticks match the varnish color and will allow a more rapid filling of a dent than is possible using varnish for a varnish fill (see below).

**Wax Fill:** Wax wood fill pencils such as those made by Minwax are only useful to fill small diameter holes that have adequate depth. The classic use of wax fill is to fill a hole over a nail that has been "set" below the surface. Use of wax filler on shallow indentations that are large in size, or on any edges, is not useful because of the ability of the wax to be removed during cleaning operations later in the life of the boat. We use Minwax Blend-Fil pencil numbers 5, 3 and 6. It is best to spray lacquer over a wax fill in order to seal the surface and prevent it from attracting dust.

**Varnish Fills:** Depressions and dents can often be filled using a "varnish fill" technique. This involves removing any discolored (crazed) varnish from the depression and filling the area with finish. The fill itself is provided by applying multiple layers of lacquer or varnish. The area is filled until it is above the surrounding surface, and then sanded back flat to the surface. The trick to this technique is to apply adequate fill varnish to the repair, allow sufficient time for it to

fully cure (most finished shrink slightly during their cure), and then carefully sand the repair flat without dishing out the surrounding finish. Several top coats of lacquer complete the repair. A good method that includes sanding the fill without disturbing finish is as follows:

- Pick and/or sand away any damaged varnish
- Clean the surface
- Use masking tape to mask off as small an area as possible around the dent
- Fill the dent using varnish or lacquer
- Allow as much time as possible for the fill to cure: 3 to 4 days is best.
- Begin sanding the fill using 180 grit dry sandpaper wrapped around a small flat wood block. This block sanding is done with the block riding on a single layer of masking tape placed on either side of the fill.
- When the masking tape begins to wear away, switch to a finer grit. Sand with progressively finer grits to remove the 180 grit scratches.
- Remove the masking tape when you reach 400 grit.
- Carefully level the edges of the fill to the surface. Sand using 400, 600 and 800 grit
- Respray the area using lacquer.

**Epoxy Fills:** In the rare instance where you have a piece of wood that is missing quite a bit of material, but where it is also not in a highly visible area of the boat; you can replace the missing wood with Mohawk's epoxy stick. This material will bond to an edge or corner better than a burn-in. It cures to a flesh tone color that will need additional coloring and finishing. We would not recommend this product as a first choice or in important areas of the interior due to the difficulty in matching color and grain.

### **Total Removal of Finish**

In the rare instances where removal of the original finish is necessary over an entire panel of the interior cabinetry, heat stripping is the easiest method to use. Careful use of a heat gun and putty knife will result in a more rapid and more thorough removal of the finish than is possible through sanding. Mask off the wood surrounding the panel to be stripped. Use the low setting on a heat gun. Make sure the putty knife has a nicely rounded edge so as to not gouge the veneer. Be careful to not overheat the surface. The glue that bonds the veneers together will release if too much heat is applied. This will result in a blister of the top veneer where it separates from the underlying wood. Concentrating the heat gun in one place for too long can also burn the veneer. After the finish has been stripped, sand the panel using 180 and 320 grit. Respray the panel to match the surrounding finish by applying 4 - 6 coats of sanding sealer; block sand using 320 through 800 grit; tack cloth wipe; and 2 finish coats of pre-catalyzed lacquer.

### **RESPRAYING FINISH**

Although the original varnish from France is available, we do not recommend using it. We have found that much better results can be obtained using the aerosol Pre-Catalyzed Lacquer products. To begin a respray, be sure you start with a clean surface free of any contaminants. Use a tack cloth to remove any final dust from the surface. In instances where you need to build up finish (as opposed to simply applying a final finish coating), use Sanding Sealer for the early coats. Sanding sealer has more solids content while also being formulated to aid in easy sanding. Apply lacquer using normal spraying techniques:

- Shake the can to mix the finish thoroughly.
- Spray even coats, holding the can perpendicular to the surface at a distance of about 9". Spray each pass about 3" away from the previous pass. Spray in the direction of

the wood grain. Spray enough finish to allow the lacquer to flow out, while not applying enough finish to promote runs, sags and curtains.

- After spraying two to three coats, lightly sand using 800 grit dry sandpaper to remove any dust inclusions.
- Vacuum and use a tack cloth to remove dust.
- Continue building up finish.
- Apply final coats using a double-coat technique. This is done by spraying a light coat, allowing the solvent to flash off for two to four minutes, followed by a medium coat. The second application flows out better without forming runs because the light first coat is already partially dry.
- Between uses of the aerosol finish, clear the valve and pick-up tube by turning the can upside down and spraying until finish is cleared out of the valve.
- Always remove dust using a tack cloth prior to spraying.

Always wear a respirator when spraying finish. Provide adequate ventilation. Be careful about the use of fans, motors and other spark generating devices while spraying: lacquer fumes are explosive.

If you are respraying a large surface, be sure to begin with one or two full cans of finish. Due to the expansion of the propellant, aerosol cans will provide a better finish when they are full. Save your partial cans for small touch-ups.

Lacquer is sensitive to temperature and humidity. At high temperatures (above 95° F.) the solvent will sometimes flash off so quickly that the surface skins before the coat flows out. If this happens there will be an orange peel effect in the finish. This can be sanded out with 400 or 800 grit using a hard wood backing block. High humidity will cause moisture trapped in the respray to fog or form a white blush in the finish. The best answer is to spray early in the day during summer months. Applying a coat of "No Blush" on top of the recently sprayed material can help overcome both orange peel and blushing. No Blush has more solvent and very little solids in the product. This means it will slow down the drying of the lacquer and allow water trapped in the finish more time to evaporate. This thinning of the finish also means that runs and sags will form more easily, so use it sparingly.

**Material Sources: MOST ARE AVAILABLE AT THE LOCAL HARDWARE STORE OR A WOODWORKERS SUPPLY HOUSE.**

<b>Material</b>	<b>Manuf. #</b>	<b>Supplier</b>	<b>Manufacturer</b>	<b>Phone #'s</b>
Pre-Catalyzed Lacquer Satin P/N 297668	102-0412	Hardware store or Mohawk	Mohawk Finishing Products	518-843-1380
Clear Lacquer Sanding Sealer P/N 297667	102-0423	Same	Mohawk	
Light Golden Oak Ultra Classic Toner P/N 454897	100-0415	Same	Mohawk	
Cherry Ultra Classic Toner	100-0408	Same	Mohawk	
Super Blush Retarder	103-0476	Same	Mohawk	
Beneteau Touch-up Marker – Lt. Cherry P/N 454840		Beneteau France		
Beneteau Touch-up Marker – Dark Cherry		Beneteau France		
Behlen Scratch Remover - Cherry	851-260	Hardware	Woodworker's Supply	800-645-9292
Varnish/stain pens: Furniture Touch-up Stain - Early American	10040	Hardware store	Cecil James Paint & Wallpaper Center	843-423-5814
Furniture Touch-up Stain - Cherry	10010	Hardware or >	Cecil James	
Light Oak Graining Pen	265-0101	Hardware or>	Mohawk	
Behlen's burn-in kit (incl. sticks & balm)	850-987	Hardware or>	Woodworker's Supply	
Electric Burn-in Knife	900-EK24FC		Mohawk	
Burn-in Balm	401-1203		Mohawk	
E-Z Flow burn-in – Cherry P/N 454686	315-0408		Mohawk	
E-Z Flow burn-in – Light Amber Transparent	315-0009		Mohawk	
E-Z Flow burn-in – Clear Transparent	315-0001		Mohawk	
E-Z Flow burn-in – Dark Cherry P/N 454685	315-0390		Mohawk	
E-Z Flow burn-in - Champagne	315-0402		Mohawk / woodworkers	
Lt. Walnut burn-in stick	850-868		Woodworker's Supply	
Dark Walnut burn-in stick	850-931		Woodworker's Supply	
Cherry burn-in stick P/N 454686	851-889		Woodworker's Supply	
Wood Epoxy Stick	743-1500		Mohawk	
Bend-Fil Wax Filler sticks: # 5 (best match), # 3 (light), # 6 (dark) Light Cherry P/N 270010 Dark Cherry P/N 006013		Hardware store	Minwax	Local Hardware Store
Aquabuff 2000 Polyester buffing compound			Hawkeye Industries	800-977-0060
Dull Aluminum Paint for older portlights & anodized aluminum	1403	Hardware / K - Mart	Krylon	Local Hardware Store
White semi-gloss Enamel for Portlights	7797	K-Mart	Rust-Oleum	Local Hardware Store