

Headliner Replacement

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1976 Jaguar XJ-S

Background

I had the headliner, front seats, and carpets redone for the first time in 1988. By 2000 the headliner had begun to sag in a couple places, and by late 2001 it was around my shoulders. This time I decided to do it myself. Not that it's terribly expensive to have it done (about \$200 labor and materials at local shops), but I decided I would rather save the labor money for having things done that I really could not do myself. As it turned out though I didn't save much, as the materials cost about \$150, as explained below.

Materials

There are many online sources for headliner materials today, e.g., <http://www.anthonysupholstery.com/>. However, I live in a major metropolitan area where there are local material stores catering to the automotive interior trade so I decided to buy locally where I could "feel the cloth." I had no trouble finding a color (doeskin) that matched my tan leather very well. It cost about \$10 per yard. The pieces to be covered include the headliner shell itself (about 43" x 47"), the two quarter panels (about 18" x 18"), and the two side strips (about 6" x 42") so you could possibly get by with 2 yards of the 54" wide material, but it would require very careful cutting and positioning. I got 3 yards to give myself some margin and not run out. There was plenty left over, and I later used it for other upholstery repairs such as the door panel pockets.

The store where I got the headliner material offered an adhesive with their own label for \$7.95 per can. Although I sure many headliners in Orange County are stuck on with this stuff, I went with a product recommended by several XJ-S listers, 3M Super Trim Adhesive, #08090. The product is not usually stocked, but my local auto parts store was able to order it, as was NAPA. It's expensive at \$17 for an 18 spray once can. Although I have read that two cans should be enough, I wound up using three full cans and a few squirts out of a fourth. I followed the 3M directions on the can, giving both surfaces three coats. I did use some of it recovering the parcel shelf, but even without that I don't see how you could comfortably do the headliner with two cans. You definitely do not want to run out half way through the process.

The other trim work I did was the parcel shelf and the center console lid. I had a leak in the rear window seal (another story) so the parcel shelf backing fiberboard was warped and the vinyl covering looked tired. I got a sheet of door panel backing material to replace the fiberboard (\$8), and a yard of good Naugahyde-like material

for \$11. I also got a yard of thin foam (1/4") for under laying the parcel shelf, and a piece of high-density foam for the center console.

I also wound up getting half a dozen or so panel fasteners and rubber inserts that hold on the side strips, quarter panels, and parcel shelf since some disappeared between the tear-down and reassemble. These are a bit pricey from Jaguar, about \$3 per set, but I have found no substitute.

You also will need a couple 1/8" x 3/8" aluminum pop rivets to attach the front interior lamp bezel to the headliner. Finally, if you happen to lose some of the spacers that are used where the sun visors and rear view mirror are attached you can get a suitable replacement through McMaster-Carr (part #92510A661, aluminum round spacers, 3/8: OD, 3/16" length, #12 screw size). Also, if you need longer screws to reattach the mirror, as I did, they also can be purchased at McMaster-Carr (part #unknown, 18-8 SS oval head screws (metric) M5 x 20mm long, 0.8 pitch). I colored them with an industrial quality black marking pen since the bare stainless steel did not go well with the black mirror mount.

An option you may want to consider is to apply sound control material to the otherwise bare roof while the headliner is out. I used the B-Quiet Extreme product (www.b-quiet.com). It is less expensive than the more well known Dynamat product, but still pricey at \$85 for 50 square feet. Since you will need only 16 square feet for the roof you will have a lot left over, possibly for applying other places such as the door. I sold half my roll to another XJ-S lister.

The total parts cost are shown in Table 1 (approximate).

Table 1

Description	Qty	price per	Cost
Headliner	3 yds.	\$10	\$30
3M 08090 Adhesive	4 cans	\$17	\$68
Panel fasteners	6	\$3	\$18
Marine resin	2 16 oz cans	\$8	\$16
Screws & spacers			\$10
Headliner total			\$142
Naugahyde	1 yd	\$11	\$11
Panelboard	1 sheet	\$8	\$8
B-Quiet Extreme	25 sq. ft.	-	\$43
Other total			\$62
Grand Total			\$204

The Tear-down

Removing the headliner is easy. First, remove the dome light, sun visors and rear view mirror. Be sure to capture the spacers at each screw or you will be calling McMaster-Carr. Pop off the upholstered side strips on each side. Each one is held on by four panel fasteners which slip into rubber inserts in the body member forming the edge of the roof. Slip a flat tool of some kind under the strip, move it beside a fastener, and gently pry it out.

The next task is to remove the upholstered quarter panels in the back seat, although there are some obstacles in your way. You can perhaps force the quarter panels out with the back seat and parcel shelf in place, but you will never be able to get them back in so I recommend that you remove them now. The cushion lifts out by pulling up on the front edge. The backrest is secured to the car body with two screws along the bottom. The parcel shelf has a panel fastener on each end, a little different than the ones used on the side strips.

One more small matter; you will have to pop the interior lights out of the quarter panels and disconnect them.

Then you are to the point where the upholstered quarter panels can be removed. Each panel is secured with a panel fastener, like the ones used for the side strips, positioned a bit rearward of center. These have to be pried out as gently as possible while trying to avoid cracking the quarter panels, which are made of plastic. You will find that each panel registers into a groove in the rear window seal along its back edge, and into the side window seal along its front edge. Free it at the front edge, then slide it forward a bit to free it at the back edge. However, forward motion may be impeded by a large bolt of some kind on the car body for which there is a clearance hole in the quarter panel about $\frac{3}{4}$ of the way back. You have to swing the panel out a bit to clear the bolt.

As I said, removing the headliner is easy; it's just all the other stuff!

After removing these pieces all that is holding the headliner and backing shell in place are three or four bendable tabs along each side, plus support at the rear by virtue of fitting into the groove in the rear window seal. Get in the back seat and bend the tabs down, allowing the shell to drop a few inches at the front, and then slip it forward to clear the window seal. At this point you have the thing on your shoulders. Handle it gently and never force it as you try to maneuver it out of the car. The only way to do so is as follows. This is more easily done from outside the car so first wiggle out from the headliner, letting it rest on the seat backs, and get out. Then:

1. Move the passenger seat back all the way and tilt it all the way back. Tilt the driver seat back too.
2. You must turn the headliner 90 degrees to get it out of the car. Reach in through the passenger door and grasp the shell as best you can. As I recall, a right hand grasping the

front edge while the left hand is under shell and at its center works, but do whatever seems best for you. Maneuver the shell 90 degrees, so its front is facing you.

3. Tilt the front corner down so it is headed toward the lower front corner of the door. You still should be supporting its center with the left hand. Maneuver it carefully towards you.
4. If it gets stuck, stop and think about it a bit and try again. Be motivated by my assurance that it will come out that way without any bending or scrunching of corners.

The Cleanup

The headliner shell, the side strips, and the quarter panels will of course be covered with the old headliner material in some state of decay. Obviously, all of this has to be removed. But before you remove material from any of these parts you should carefully study how it is fitted around the edges. The material is folded over and glued to the back all around the side strips and quarter panels. For the headliner itself, the material is folded over and glued to the back only at the front and back. For each piece, note how the material is cut so as to allow it to conform to the curvature of the backing without wrinkling. When you are ready to attach the new material it helps to see how a pro did it in the first place. Perhaps a photo or two would be a good idea.

Then rip it all off. This will most likely leave behind lots of the foam rubber, since it is the bond between the material and the foam that fails. Figure 1 shows this. You can also see the dome light bezel after removal by drilling out the pop rivets. Note how the outer bezel is covered with headliner material, without foam backing. When the time comes, you will have to replace this material, so if you strip it off now be sure to note how it's done.



Figure 1. Stripping old headliner material from shell.

Getting the foam off is a major piece of work. The side strips are aluminum and the quarter panels are plastic, so you can use a hard scraper of some kind, followed up with a solvent to soften the old adhesive. I used acetone, but there are probably better products. 3M makes an adhesive solvent, for example, but I couldn't find it locally. Use a wire brush to finish the job.

Getting the foam and adhesive off the headliner shell is a bigger problem because it is made of somewhat fragile unbonded fiberglass. As I began scraping and brushing I noticed a that there was a thin, paper like membrane on the surface of the fibrous shell, with a tendency to peel. At first I was careful to avoid this peeling, but soon gave up, figuring that if it was that prone to peeling it was not a good foundation for gluing the new headliner. So off it came, in large sheets, Figure 2.



Figure 2. Stripping paper membrane from shell (not necessarily recommended)

Once I started doing this the entire job was done in 15 minutes, whereas scraping and brushing of the foam would have taken hours. Having said that, I'm not sure it was really a good idea after all, as noted below.

Repairing the Shell

Once the material and foam are removed from the shell you may notice places where it needs repair. For example, the area around visor and mirror attachment may be damaged, or you (or someone else if the job has been done before) may have cracked the shell while taking it out. Conceptually, fixing it is an easy process; just lay some fiberglass cloth over damaged areas (not the entire shell, however) and paint on some resin. However, as a practical matter it's awful hard to get it right. For example, you

will wind up covering the holes for the hardware screws, Figure 3, so you will have to drill them out after the resin sets. Getting the holes in the right place is very difficult. Additionally, you will find it virtually impossible to get the fiberglass to conform to the original contour of the recess for the mirror mounting base. The result of these difficulties is that when you attempt to reinstall the newly covered shell nothing will line up. This is extremely frustrating, and will take as much time to get straightened out as the rest of the project. I address this problem further below.



Figure 3. Front edge and hardware attachment points.

If you have removed the membrane you will have to apply some kind of coating to the shell, as otherwise the adhesive will soak into the shell when you try to attach the material. I used a marine quality resin typically used with fiberglass cloth. It is tricky business though, as it will soak in too, and when you put on another coat it tends to pile up in places, creating an uneven surface. This is aggravated by the shell material fluffing up in places, creating bumps. All this unevenness in the shell will show through as unevenness in the headliner when you attach the material. I sanded mine with a disk sander a bit and managed to get it fairly smooth, so the finished product looks pretty good. In addition to these difficulties, someone else pointed out to me that if you apply too much fiberglass and resin on the back edge it won't fit into the rear window seal when you try to reinstall it.

Because of these problems, if I had it to do over again I would put more effort into trying to salvage the paper membrane, and would have skipped the fiberglass altogether. To be more specific, my advice is to **avoid attempting repair of the shell unless it is crumbling in your hands**. Try to remove the foam without stripping the membrane, and look very hard at the hardware attachment points to see if they might be alright. They don't have to be perfect. All that is required is that the screw holes are not so enlarged (by previous headliner work perhaps) that the hardware falls through them.

If you decide you must repair your shell you should try the fit in the car before attaching the headliner. Ray Schmitt told me this, and I did, but not quite carefully enough. You have to be sure it lines up *perfectly* with the front hardware mounting holes when it is properly registered in the rear window seal. I thought it was good enough to just be able to see the screw hole in the body though the hole in the shell. Not so. The screws that hold the visors and mirror on are metric fine thread cut square at the end, so they will start properly only if the screw is dead on center and straight. I wound up cross threading the holes so that I had to re-tap them, and also ruined some of the screws.

Attaching Headliner Material

The goal here is to glue the new foam backed material to the shell, side strips, and quarter panels securely and without wrinkles. I thought and worried about how to do this for a long time, but it turned out to be not that difficult. Be sure to wash up before handling the material, and once and a while during the process. You don't want a grimy handprint on your new headliner.

One strategy I used was to tackle the side strips and quarter panels first. Since these are smaller, if you mess up while perfecting your adhesive spraying skills less material will be wasted. Also, doing the shell will require an assistant, and you will want to be able to order her around with authority based on your vast experience with these smaller pieces!

The first step is cutting material. Unroll it on a clean surface. I bought a roll of plastic drop sheeting so I could work on the garage floor. If you look at the material carefully you may see a noticeable difference in the material lengthwise, as compared to widthwise (the warp and the weave?). If there is a difference, you may want to think about how you want the material oriented in the car. In my case I decided to have the warp aligned with the length of the car. However, after gluing it to the shell, I discovered I had done the reverse after all. It still looks good, so maybe this is not even worth worrying about.

Once that issue is decided, measure the headliner shell and cut the material about 6 or 7 inches greater in each dimension. The idea is to allow about 1 ½" on each end for wrapping around the ends of the shell, plus some extra so you don't have to worry about precise alignment when attaching it to the shell. Note that *the material does not get folded over the sides of the shell*, so you don't need quite as much extra in the width direction. As I recall the shell is 43" x 47" so that means about 50" x 54", but please don't take my word for it. Do your own measurements, and when you do allow your tape measure to follow the contour of the shell so you get true surface dimensions. Repeat the process for the quarter panels and the side strips. It will help if

you have a good recollection (or photos) of the way the original material was attached, so you know how much extra to allow around the edges for folding over.

To attach the material to the side strips, spray the foam side of the fabric and the front side of the metal with adhesive. Let stand for 5 minutes then carefully lay the material onto the side metal, a few inches at a time. As you go press it down firmly with the palm of your hand. Then flip it over so you can fold it over the edges and glue to the back side. You will have to cut darts at the corners so as to allow pulling the material around and gluing it down without doubling up the thickness anywhere, which would increase the thickness and make the strips not fit right when reinstalled. Repeat the process for the quarter panels. For the latter, carefully cut out where the interior lights go. I cut a shape like >---< so the edges could be folded around the edges of the hole. Again, knowing how the original was done helps a lot.



Figure 4. Preparing to attach lining material to shell.

For the big one, the headliner itself, my basic approach was to glue it on in two halves, back then front. Figure 4 shows the rough cut material laying over the shell as the first step. After getting it properly positioned I held it in place with clothespins across the front. Then I folded the back half forward, with a piece of plastic drop sheeting sandwiched in between. This allowed me to spray the foam side of the material and the shell without getting adhesive on the upholstered side, Figure 5. Per instructions on the can, I applied three coats to both foam and shell, with the last coat sprayed perpendicular to the first two.



Figure 5. Applying adhesive.

After allowing to dry five to ten minutes the material can be flipped over and pressed onto the shell. This is the crucial step because one wrong move and it will stick in the wrong place, producing a wrinkle or worse. I did find, however, that small mistakes can be corrected. Before the adhesive fully sets you can pull it loose, realign it a bit, and press it down again.

Here's what worked for us. With my wife working one side and me on the other, we together held the free end of the material high using one hand, and then dropped it down so a few inches came into contact. With our other hands we pressed the material to the shell, *working from the middle to the outside with firm, open palm*. Then we dropped another few inches into contact and pressed it down, continuing the process until the entire back half was attached. After resting a bit and admiring our work, we flipped the still unattached front half back over the completed back half, again with

drop sheeting sandwiched between. Spraying was the same as for the back half, but pressing the material to the shell was a bit more challenging because of the many recesses and contours at the front. It was near the drivers side sun visor attachment recess that I got my only wrinkle. Fortunately, I was able to pull it free in a small area behind the wrinkle, realign the material, and press it back down, without the wrinkle.



Figure 6. Folding and attaching back edge.

After you are finished gluing it to the concave side of the shell, flip it over so you can fold it over and glue it down along the front and back edges. Because the edges are curved you will have to cut darts every few inches. Figure 6 shows this for the back edge. Here is another place where a photo of the original headliner before stripping would come in handy. After cutting the darts, spray material and shell edge with adhesive and let set for 5 minutes. Then pull it over the edge and press it down. Repeat for the front edge.

The finished product is shown in Figure 7. Not bad if I do say so myself!



Figure 7. Finished product.

Reinstalling

Although reinstalling should be straightforward, and probably will be if you didn't do any repairs to your shell. It was an ordeal for me, as mentioned below.

The order of installation is, as often stated in the ROM, "reverse the above procedure." So the first thing is getting the headliner back into the car. This is through the passenger door with seats tilted back all the way. The rear edge goes in first, tilted down toward the front so as to pass through the door diagonally. Once it's in, jockey it up above the dash and rotate it so the back heads toward the rear where it's supposed to go.

Once it's in the car, get in the back seat under it. Gripping it on each side, maneuver it so the back edge goes into the rear window seal groove, or at least positioned to go in. Supporting it on your shoulders, reach up and bend a couple of the tabs horizontal under it to support it along the sides--- not tight though, since it has to be free to move as you try to drive it home into the seal groove. This can be somewhat of a challenge. I used a broad, flat table knife to work it into the groove. Slip the blade into the groove under the headliner edge, and then slip it sideways, trying to pry the lip of the seal up over the material. Do this all the way across. Then grip the headliner at the sides with both hands and push rearwards. Then repeat the process with the knife. After two or three times it will be properly seated in the seal. You can tell because the

front edge will fit nicely into valley between the windshield and the roof, and the hardware mounting holes will line up. Once this has been achieved, bend the side support tabs all the way up, securing the headliner in place. Of course, it won't really be tight along the front until the hardware is mounted. I deferred that until I had installed the rear panels, but it could be done now if you wish.

The problem was the hardware mounting holes through the shell. They really did not line up with the screw holes in the body, so when I tried to install the visors, I could not get the screws started. I managed to cross thread the holes and ruin the screws. At this point I had to attack the shell with the Dremel, using a small burr bit. The key, I discovered, was to ream out the holes in the shell till I could see sufficient space all around the body screw hole to accommodate the spacer. Keep in mind that the function of the spacers is to allow the hardware to be firmly mounted to the body, not the headliner shell. That is, if the spacer pinches the shell between it and the body the visor or mirror will be cockeyed and infirm. I believe the people who did my headliner the first time got it wrong, so the Porches always looked like they were shimmying in my rear view mirror, and the visors always popped out of their clips. On the other hand, if a spacer binds against the side of the hole, the screw cannot possibly go in straight. So, I had to ream it out till I could see a good 1/16" all around the screw hole. The mirror was even more of an ordeal for me because the fiberglass I had laid over its mounting position did not follow the original contour. I had to do quite a lot of work with the Dremel to finally get it installed, and in the process managed to nick the material beyond what is covered by the mirror base. It's not too bad, fortunately, since I have to lean way forward to see the imperfection, but it will not do well in Consourse d'Elegance. Clearly, all of this should have been done *before* attaching the material. Since I did it afterwards, I had difficulty with seeing what I was doing, and avoiding messing up the material. Better yet, if I had not "repaired" the shell, I probably would not have had any difficulty at all in this area.