Automotive Upholstery Handbook

by Don Taylor

California Bill's
Automotive Handbooks
Tucson, Arizona
Foreword

Well friends, here it is. I'm giving you a thorough overview of the auto trim trade. As a skill, it is neither a science nor art—it is both. If you read the directions laid out here for you, and follow them, you'll be dealing with the science part. When you begin to work the materials, sew a smooth seam, and pull out wrinkles, only then will you begin to practice the art.

And practice there must be. No "art" was ever learned without practice, be it music, medicine, or auto trim. Practice on friends' used cars. Let them pay for the materials, if you do the work and offer no guarantees.

When you begin to get a handle on it, then you can begin to charge them a few dollars for your labor. If you're going to get serious about the trim trade, save those few dollars toward buying a good sewing machine and some of the other tools which will speed up your work and increase quality. If you only do it as a hobby, I know you'll have a world of fun. Each job will be a new challenge with the reward being satisfaction in doing a job well and creating a serviceable product. I hope you enjoy the work as much as I have for so many, many years.

Eddie Salcido of Master Craft Auto Interiors in Tucson, Arizona, created the outstandingly handsome upholstery on our cover car. The beautiful 1937 Ford two-door sedan, owned by Gare Perry of Farmington, New Mexico, was featured in the December 1991 American Rodder magazine.

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In the previous chapters, we worked on products of the '60s and '70s. These are excellent learning projects because they're quite forthright and simple, have little or no high-tech engineering or materials, and are readily available to be worked on. Now, we're going to put all your newly acquired skills to work on a late-model interior.

For our example I've selected a 1969 BMW with bucket seats, headrests, and a center armrest in the rear bench seat. This arrangement is common in late-model automobiles.

The customer made one of the common requests heard today: remove the vinyl in the body of the covers and replace it with a fabric. Whether you're a resident of the southwest or the northeast, vinyl can become uncomfortably hot, hot, hot in the summer and cold, cold, cold in the winter.

In the vocabulary of the trade this type of work is called an "insert job." We'll be "inserting" a cloth body into the existing vinyl. Rather than replacing all the materials we'll carefully remove much of the vinyl coming in contact with the customer's body and replace it with cloth. The remainder of the seat stays. Our project seat will be finished in a gray-black, tweed-style velour.

All of the major techniques you have learned so far will be used in this job. Then, we'll add a few new ones. Contrary to what I said in the last chapters, you'll learn to use the old material as a pattern. You'll see some tricks the auto industry created to do away with listings and discover a number of short cuts that speed things along. So, let's take a look at our job and get started.

ESTIMATING YARDAGE

By now this should be a snap for you. You shouldn't need to make a drawing, just take the face measurements, block them out in your mind and come up with the required number of yards.

The cushions are a bit over 1/2 yard; the seat backs are a bit under 2/3 yard. Each is less than 27-inches wide. Therefore, you should need 1-1/2 yards to do the buckets. The rear bench seat will need another 1-1/2 yards but is right at 54-inches wide in the cushion and a bit more across the back. If you add another yard of material this will give you end caps for the rear cushion with
After removing the reveal molding we can see this is no simple hinge. Before disassembling be certain you can assemble it again. Make drawings, take Polaroid pictures or keep its partner together until you’ve assembled this one.

Carefully cut the wire ties holding the electrical wires to the springs. Copy the color code so you can put things back together.

Notice hinge mechanism attached to tracks. This is quite common on late-model cars, less common on some of the earlier models.

straight up on the bottom edge or push the bottom edge towards the rear of the car—then lift up. This rearward push unlashes the seat. The rear seat back is usually bolted to the body in two places along the bottom edge. The top is retained by hooks. Remove the bolts and push straight up on the seat back to slide it out of its retainers. Now let’s get the bucket seat apart and the cover off.

Bucket Seat Disassembly

My first admonition is to disassemble one seat at a time. These high-tech, unit-steel seats are true nightmares when it comes to reassembling them. Any child over the age of five can get anything apart. Putting it back together can frustrate an engineer! So, save an assembled seat to look at. If you’re working on a seat belt, take Polaroid pictures to remind you where things went.

This is a real hard point to get across. Most people are positively sure they can remember where a particular part went. Maybe they can for 10 minutes. I know of no one, however, with that photographic memory we’re always hearing about. So unless you’re that person, keep a visible record of the disassembly! Please watch over my shoulder as I take this seat apart. You’ll see I have taken my own good advice later in the chapter as I reassemble it.

Begin by removing any reveal moldings (plastic covers) so you can access the moving parts. Disconnect or remove any electrical wires or motors. Most “power” seats are removed with the motors fixed to the seat and track. Our BMW has wires going to the seat-back warmer and to the seat-belt buckle which came out with the seat. In turn they were tied to the springs with wire ties.

On late-model cars the hinging mechanism connecting the back to the cushion usually incorporates a number of features. These might include letting the seat assembly slide forward when the back is released to allow passenger access to the rear seat. Or, let the seat back down into a reclining position. This is often accomplished with a lever on the side of the seat back. Cables or wires go from this lever to the hinging mechanism. These transfer lines must be removed. When all the attachments between back cushion and seat cushion have been removed, the back cushion may be unbolted from the hinging mechanism. Our project back cushion is retained by two bolts through the back-cushion frame and into the hinge arm.

To remove the hinge mechanism from the seat back I removed the bolt that attached it to the seat track, removed the trigger (by pulling it out) which lets the back recline, then removed the snap ring retaining the hinge mechanism to its shaft. Voila! It’s off. The tracks can then be removed from the seat.

You may have to deal with power-seat motors. Usually these are fairly straightforward. If electrical wires must be removed, tag them so you’ll know where they go. Do this even if you only disassemble one seat at a time. Sometimes only the driver’s seat will have electrical wiring—the passenger’s seat doesn’t. So attach little masking-tape flags to the wires indicating where they go. You still have to back cushion to take apart.

Begin with the headrest. The project seat was easy; I just yanked it out. Not very sophisticated for BMW. See the sidebar on page 93 for a more common way to remove a headrest. A tentative rule of thumb is this: if the seat outside back is removable, the headrest locking device will be accessible by removing the outside back.
There have been upgraded bogeys. The
Mercedes-Benz has a rectangular
side, as you're only able to break
the channel and the parts
and take the cover off the seat
logics and the whole seat frame.

Screw these screws. Then, bit by
bit, the seat will be able to be
and the seat will be able to be
broken into pieces. The seat frame
will (if there's a channel) be
broken into pieces, as will the
seat frame if there is.

Before you put up the seat cover, you
must ensure that you have all the
parts in order. If you are not
sure, consult the manual or seek
professional assistance.

When you are ready to do so, begin
by removing the seat cover. This
will allow you to access the
internal components of the seat.

Next, you can begin to work on the
bogeys. These are located under
the seat frame and must be
removed in order to access the
channel and parts.

Once the bogeys have been
removed, you can begin to work
towards the channel and parts.
These are located at the back of
the seat and must be removed in
order to access the cover.

Finally, you can begin to work on
the cover itself. This will
require some additional tools
and knowledge, but with care
and caution, you should be able
to complete the task.

It is important to note that
when working on seats, it is
doubly important to pay
attention to the wiring and
connections. Damage to these
components can result in
serious issues with the seat's
functionality.

When you are finished,
reinstall the seat cover and
bogeys. Ensure that all
components are securely
attached and that the seat is
functioning properly before
using it.

Safety is of the utmost
importance when working on
seats. Always follow
manufacturer recommendations
and seek professional
assistance if you are unsure
of how to proceed.

Enjoy your upgraded seat!

[Diagram showing seat frame and
components]
As in Chapter 4, when you made your first pleats you added a little for shrinkage. Again, you must add a little on this job. The curve of the pleats makes the material, making the finished product narrower than what you started with.

Be sure you have the nap going in the correct direction: top-to-bottom for the back cushion, back-to-front for the seat cushion. You can see I'm doing the seat cushion and back cushion at the same time.

Now, layout the pleats as you did in Chapter 4, with one difference: make the last pleat on each side 1/4-inch larger than the others. In other words, if the other pleats were 3-1/4 inches wide, make the two outside pleats 3-3/4 inches wide. The finished product should have several pleats in the center, the two outside 1-1/4 inches larger, and then two large "end caps" (they're not really caps because it's all one piece of material). Before I can sew the pleats I've got to do something about those three plastic listings in the center of the seat. Refer to the drawing at left to see how I solved this problem.

Working from the backside of both the old and new pieces, I draw a line across the pleats at the exact location of the listings. Then, I cut a piece of clear vinyl from a scrap of convertible rear-window vinyl about 1-1/2 inches wide and long enough to cross all the pleats with another 1-inch on each side. I cement this piece, centered over the previously drawn location line, to the back of the Polyfoam. This will hold it in place while I top sew the pleats; and simultaneously, the clear vinyl in place. When finished, I'll turn the work over, separate the vinyl cemented to the Polyfoam, and clip the vinyl down the center of each pleat. This will give three wing-shaped tabs, which, when trimmed, will become my three listings!

All of the top-sewn seams are in place. We must now make the end caps appear to be blind-stitched to the pleats.

At the sewing machine, fold the material face-to-face along the outboard top-sewn-pleat seam (the one you made 1/4-inch wider than others). From the back side of the material sew another seam 1/4 inch in from the fold line. Now you have a blind-stitchend cap for the material over and see what you have. You've got top-sewn pleats and what appears to be separate end caps.

This is a quick way to do the job when the material for the pleats and end caps are the same. On our bench seat, the pleats and end caps were different

The shaped listing is made to hold them in place or tack them in place to the bench or to a piece of plywood as we did before. Carefully chalk a line around the outside of the selvage edge making a mark for each notch cut as a locator mark. Don't forget the location marks! Now, to the sewing machine. You've done the next steps before but here's a quick review.

**Sewing Seat Cushion**

**Back Together**

Sew a locking stitch around the chalk line and trim away the excess material up to the seam. Starting at the locator mark you made to indicate where to begin the seam, lay the facing (with Welt attached) onto the new insert. Begin sewing through the lining and welt, maintaining an accurate 1/2-inch seam allowance and matching notches (location marks). Don't forget to lock your stitch at the beginning and end of the seam. Finish by sewing the stretcher onto the rear. Zipper-whippo, you're done!

**Reassembly from Frame**

Now you've got to get this work of art back onto the seat frame. On the project seat I need to put the heater coils in first. To do this I made a slit through the Polyfoam at each end of the four pleats. Then I ran a yardstick in between the material and Polyfoam to break the glue bond. I knew I would have to do this, so when I cemented the material to the poly, I used very little glue. At the end of each heater coil there is a little

These are the original vinyl tabs.

Align old seat-cushion body carefully over newly fabricated insert (body). Weight it down or tack it to the bench.

I've finished sewing and am now pushing the heater coils back into the pleats. If your project has these, install them carefully. Make sure they don't twist on the way in.

Back of insert showing clear-vinyl tabs, top sewn pleats and blind-stitched end caps with listings.
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Learn step-by-step how to:

- Make and install interiors for any car, truck, van, RV, boat or airplane
- Sew like an expert—on vinyl, leather or any fabric
- Restore, recover and build bench and bucket seats
- Upholster armrests and door panels
- Make and install headliners and carpeting
- Install convertible tops, vinyl roofs, sim-con and landau tops
- Create street rod interiors
- Build boat and motorcycle seats

Author Don Taylor has spent a lifetime as a professional upholsterer. He has owned and operated upholstery and van-conversion shops. Don shares his vast knowledge and many years of experience so you can do the job right and get the results you want!

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If radius is large enough, you'll not need to clip boxing as you did welt. If it looks as though material is stretching—indicated by selvage edge curling up from strain—clip it to release strain.

To reduce bulk in the corners, cut tight “Vs” around the radius before cementing corners in place.

Remember when you're using such a pattern, that chalk line is the seam line, not the cutting line. Maintain the 1/2-inch seam allowance.

To reduce bulk in the corners, cut tight “Vs” around the radius before cementing corners in place.

Completed project, well worth the effort.
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Don Taylor grew up in the auto trimming business: his father was a trimmer, Don is a trimmer, and his two sons were trained as trimmers as they grew up. As an expert author, Don created the Automotive Upholstery Handbook for California Bill’s and six automotive books on engine rebuilding, restoration and paint and body work for HPBooks.

In 1979, with his brother Alan, Don created numerous van conversions. They also created several exciting vehicles, including Toyota’s “Yamahauler”, and the “Huskyhauler.” One interesting job was trimming a steam-powered taxicab with seating for the physically handicapped. The vehicle was displayed for a year at the Smithsonian Museum with a Taylor-Made sign.

Just prior to a 14-year “retirement,” Don’s work on the interior of a 1932 Auburn Coupe won Best of Class, People’s Choice, and Best of Show awards at the international Auburn/Cord/Duesenberg Show.