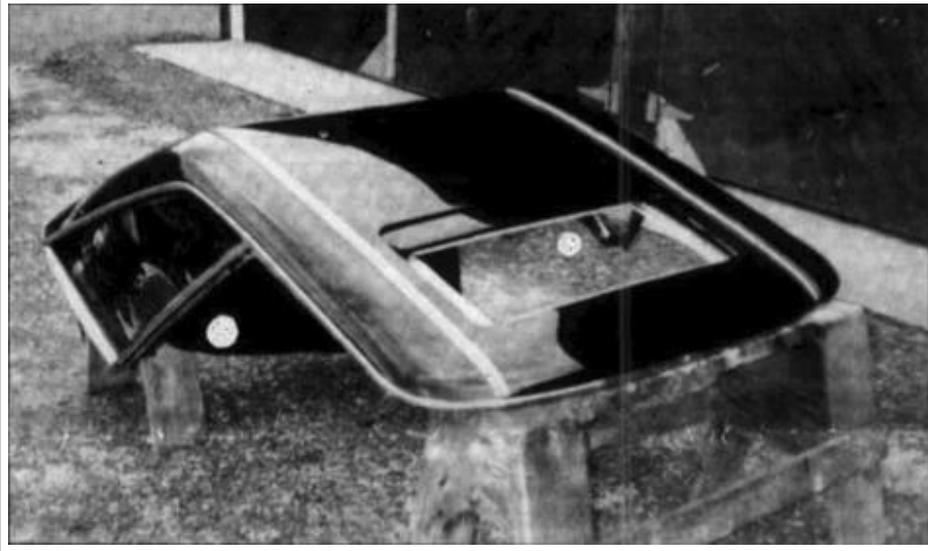


# Restoring the Pagoda Hardtop

By Gernold Nisius, Originally for Star Magazine, March/April 1994



Heavy hardtop requires strong support

Evolution of Mercedes-Benz hardtop/softtop configurations began with the so-called combination coupe of the 1930s. The first post-war production model with a hardtop was the 190SL, followed by the 300SL Roadster. These 1950s single-shell hardtops were likely designed after the car was already drawn; they seemed to be almost afterthoughts. The first SL designed with a hardtop in mind was the 113 chassis 230SL.

Major differences between the 190/300SL hardtop and the 230/250/280SL top are the shape and the means of attachment and sealing to the body. The 230SL hardtop is in every way superior to the former versions and is an obvious result of designing body and top together. This design was subject to safety aspects and proved to be well beyond the standards of the period. Rigid double-wall construction with large glass area for excellent all-around visibility resulted in a heavy, somewhat over-engineered hardtop. The name "pagoda" originated from the low center and high side lines of this design, which remind one of a oriental pagoda roof.

Due to its thorough construction, restoration of this top is complex and time consuming. The later W107 SL hardtop is easier to restore, since it is built with about half as many parts as a W113 hardtop. For example, headliner installation can take up to 20 hours on a 230SL compared to about 5 on a 450SL.

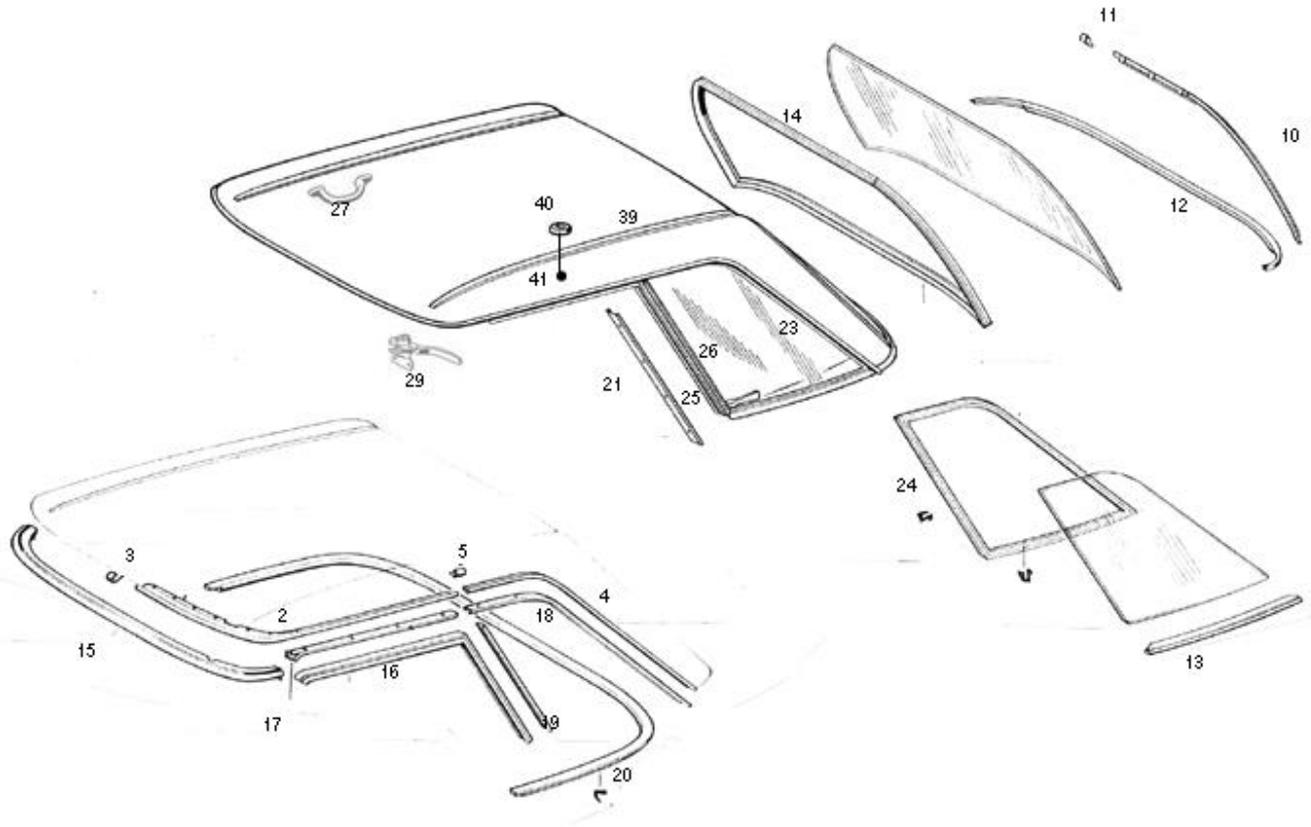


Figure 1: Fitting the hardtop's trim pieces properly is key

## Disassembly

The first step is preparation of the work area, which should include two saw horses, electric or air drill, putty knife, scissors, masking tape, carpet knife, and common hand tools. Materials needed are listed at the end of this article and depend on the extent of restoration.

Cover the top of the saw horses with a blanket or other non-abrasive material and position them 32 inches (80cm) apart. Now, place the top upside down on the saw horses. If your top doesn't have the two optional chrome bar for the ski/luggage rack, be extra careful. Since the hardtop is very heavy, safely positioning it requires two people. All work except removal of the top chrome bars and the rear glass can be done in the upside-down position.

Every part removed from the hardtop should be marked left and right accordingly. Begin disassembly by removing all rubber gaskets, i.e. the top to windshield seal, the door glass seals, and the rear top to body seal. Since there are so many different moldings on this hardtop, we will refer to Figure 1 and use the numbers there for better

understanding.



The wood trim

Remove the rear lower chrome molding (12) and the wood trim (14) around the rear glass seal.

Once the chrome trim (12) is removed, you will find two sheet metal screws in each lower corner of the chrome surrounding the rear glass (10). After removing the screws, pry out the trim with a wooden wedge. Now the rear glass can be removed.

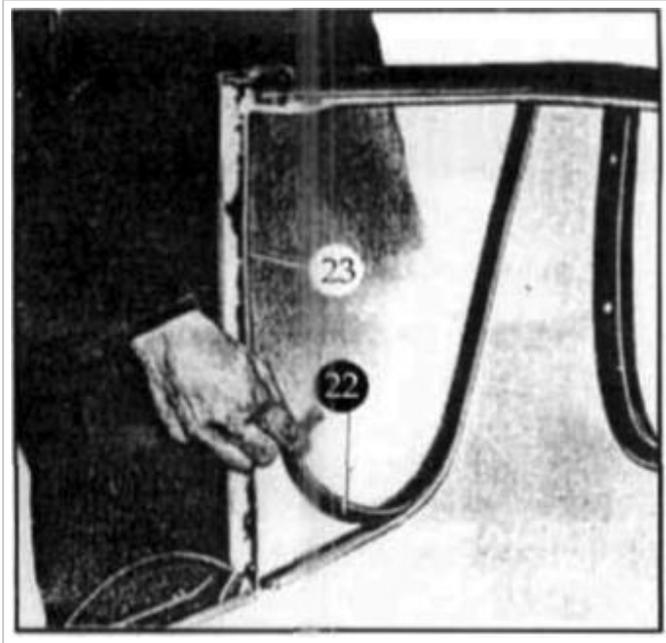


Figure 2: Removing the quarter window rubber

The factory used plenty of sealer on the rear glass seal. Over time this dries to a stone-hard mass, which can make removal difficult. To avoid breaking the glass (tinted glass is very expensive), cut the seal on the inside around the headliner with a carpet knife, which makes it easier to press out the glass. Cutting the seal will ruin the headliner, so this is only recommended if the liner is to be replaced. If you need to keep the headliner intact, use silicone spray between the seal and the liner. Glass removal can be done in the upside down position but is much easier if you turn the top right side up.

With the top upside-down, remove the front locking devices (29) and the weatherstrip channels (In, 19). Next detach the front chrome surround (2) by removing the center dip (3), the sheet metal screws inside the seal channel, and the two screws on each side which were exposed after removal of the weatherstrip channels. These two screws are often hidden by caulking material applied during top assembly. The same material causes the chrome pieces to stick to the top as if cemented in place, so they need careful loosening when being detached.

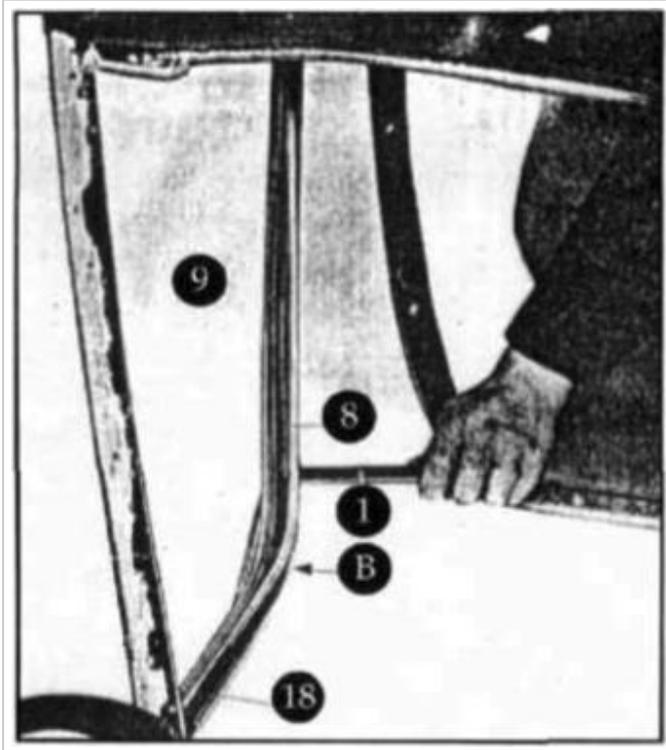


Figure 3: The glass can be pried out of it's channel

The most difficult part of disassembly is removal of the quarter windows. See Figures 1 and 2. The procedure is the same on the left and right side, starting with removal of the chrome trim piece (25) which comes off with the inserted rubber spacer (24). Next, remove the long rubber spacer (23). Use silicone spray or a similar lubricant to loosen the glass with its seal inside the channel. When the glass moves freely in the channel, cut the seal with a carpet knife and pull it out completely. Then take a wooden or plastic wedge and pry the glass out of the channel as shown in Figure 3. Don't worry too much about breaking the glass when prying it out of this channel. I have removed plenty of them and never broken one so far!

Next, remove the glass channel (18). Then take off the lower trip molding (13) by removing the three sheet metal screws on the bottom then prying the narrow lip over the ridge used to position the glass seal. Don't pry from the bottom up; this will only bend and eventually destroy the molding. Last, remove the chrome trim (26) and the rim molding (4).

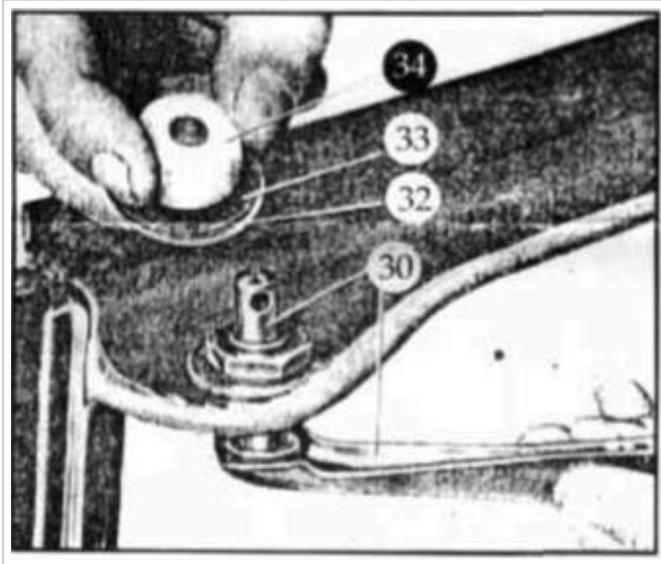


Figure 4: Hardtop latch and release mechanism

Now, start peeling off the headliner material in the front, where the top releases were, and expose the metal strip below. This strip makes the division between the front dam and the actual headliner. Remove the overhead handles (27) on the left and right by prying away the chrome covers and exposing the sheet-metal screws. Peel off the liner all around the outer edges and detach the cardboard-type retainers in the quarter sections. After folding the liner toward the center, pry out the rods on the outside, then the rear, and finally the center ones.

If the headliner will be re-used, fold it and put it in a safe place. To remove the lower release handle shown in Figure 4, carefully grind away the tapped end on one side and remove the sleeve which is pushed over the pin. If you are unable to drive out the pin with a center punch, use a drill. Be careful not to generate too much heat by drilling, as this will melt the plastic cone. Unfortunately the pin is no longer available from the factory, so you will have to make a pin and two sleeves for each handle or find someone to do so. (A kit is available which includes one pin, two sleeves, and the plastic cone for \$48.) After pulling out the handle, carefully remove the nut holding the bearing part of the mechanism.

Now you can peel off the vinyl/leather trim around the lower edge. If your top has the optional chrome bars, their removal is the last step of disassembly. The top is now ready for paint removal and evaluation. Check for rust in the lower wings and beneath the optional chrome bars.

## Re-Assembly

After the top is painted, you should install the chrome bars first and use sealer around the screws to keep out water. If you get a leak through the bars onto the liner, you'll have to disassemble and re-assemble the entire top to fix the problem. Next, put the top in the upside-down position. Protect the inside between the double sections, especially the lower wings, with body wax.

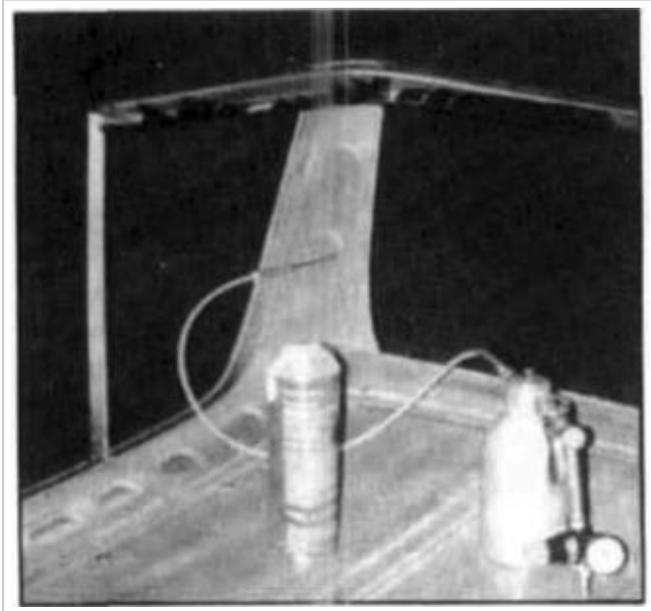


Figure 5: Protect lower wings with body wax

Assembly is essentially the opposite of the strip down, but a few things should be noted. First, install the vinyl or leather covering and the release handles. Use 1/4-inch foam underneath the trim, and if you changed the top color, check for the correct matching vinyl or leather. Next, glue 1/4-inch foam under the entire headliner area; trim the edges so that no foam will be visible later.

If a new headliner is to be installed, insert the vertical rods first, then position the headliner inside the top and attach the two center rods. Next insert the rear rod and attach it to the top. Then stretch the liner into place before attaching the outer rods. Now glue in the liner, starting at the front and doing the rear quarters last. On the short channel, use plastic inserts instead of the usually deteriorated cardboard strips. Lay out the front dam covering upside-down, and center the material before attaching the metal strip. If you haven't done so already, cover this area with foam, too.

Then fold over the headliner material and glue it in place, making sure the fold is in the cavity where the front seal meets the door seal. Don't cut the holes for the front locks yet. Install the overhead handles (27) now because you still may need to lift the liner material to find the clips holding the screws. Next, install the front left and right trim molding (2). A urethane compound is recommended between molding and top to seal out moisture. Use the same compound to attach the center piece.

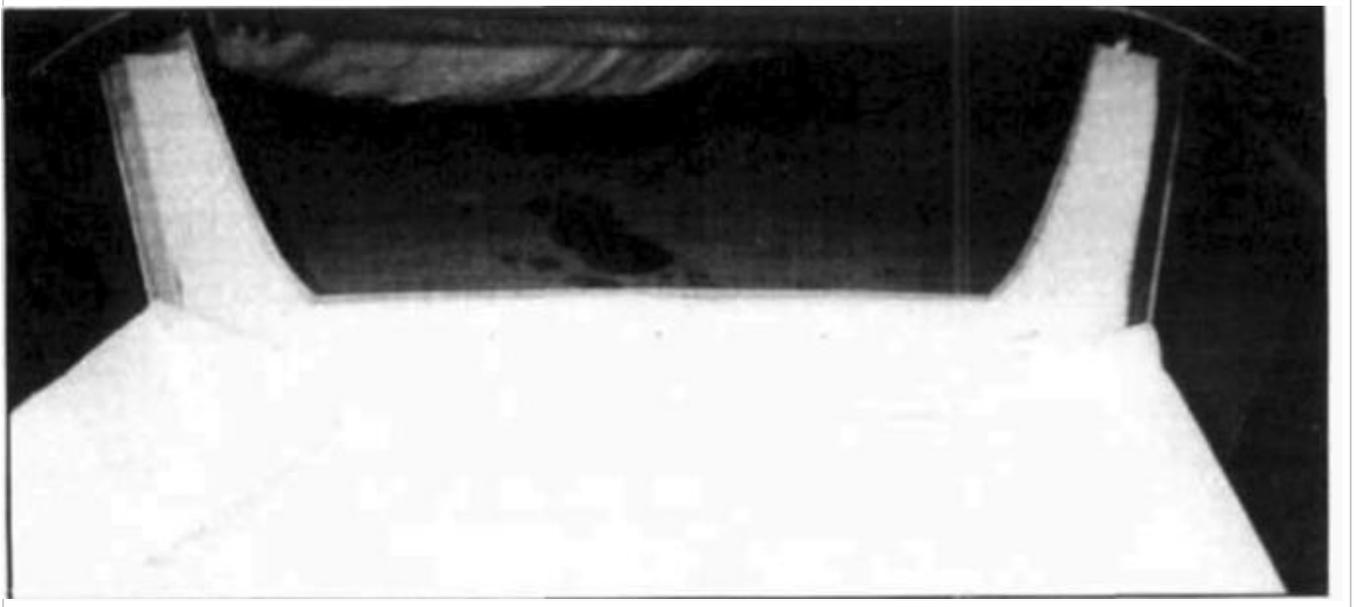


Figure 6: Headliner is held in place by rods, then glued and trimmed

Now install the left and right rear trim molding (4) using strip caulk. Do not use dark-colored sealer on this molding because it may squeeze onto the headliner and would be very hard to remove without traces. Strip caulk is closest to the original putty-type sealer. When installing the quarter windows, use plenty of sealer in the corners and make sure the lower trim molding (13) is seated correctly. Install the rest of the chrome channels and insert the rubber seals.

Turn the top right side up to install the rear glass. Trim the headliner around the edges, and make sure it is properly glued in place. Install the glass seal, and apply sealer around the edge on the hardtop; use plenty of sealer on the lower part next to the vinyl covering. Insert a wire in the seal to pull the lip around the edge and install the rear glass. Since the seal is not wrapped around at the bottom, make sure it is seated properly there.

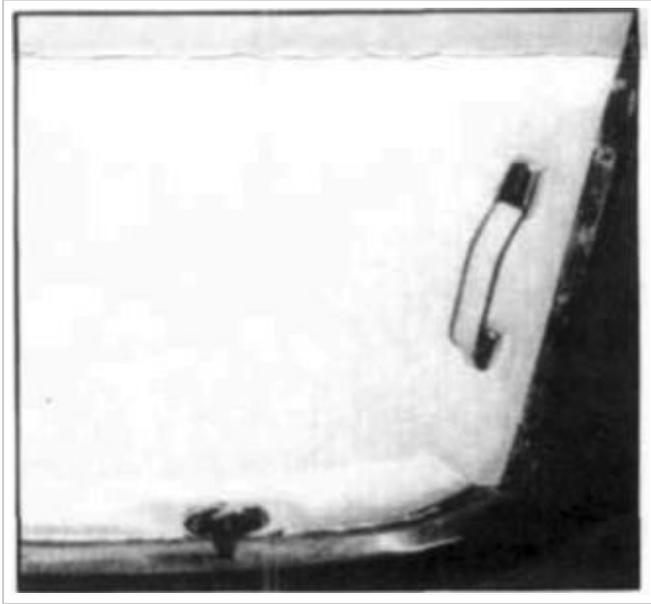


Figure 7: Latch and overhead grab handles are now in place

After the glass is seated correctly, install the chrome around the glass (10); remember the two sheet-metal screws in the lower corners. If the retaining clips don't hold the chrome trim in place properly, use a center punch to slightly flatten the clips.

Turn the top upside-down again for the final steps. The rear lower molding is pushed into the seal, preventing the glass from popping out. To avoid scratching the paint when installing the molding, mask off the area that meets the paint. Install the wood trim, using a thin rod to find the screw holes.

The last step is to cut the holes for the front locking devices in the headliner. Since the lock can be moved for adjustment, don't cut the opening the size of the stamped hole in the top. Insert the locking device with the high crown facing the rear, and hand-tighten the screws. Mount the top on the car, make sure the locks are in the proper position, then tighten the screws. Check all moldings for excess sealer, and clean up thoroughly. Brake cleaner removes fingerprints from the headliner, but always test a scrap piece to be sure the cleaner doesn't harm the headliner.

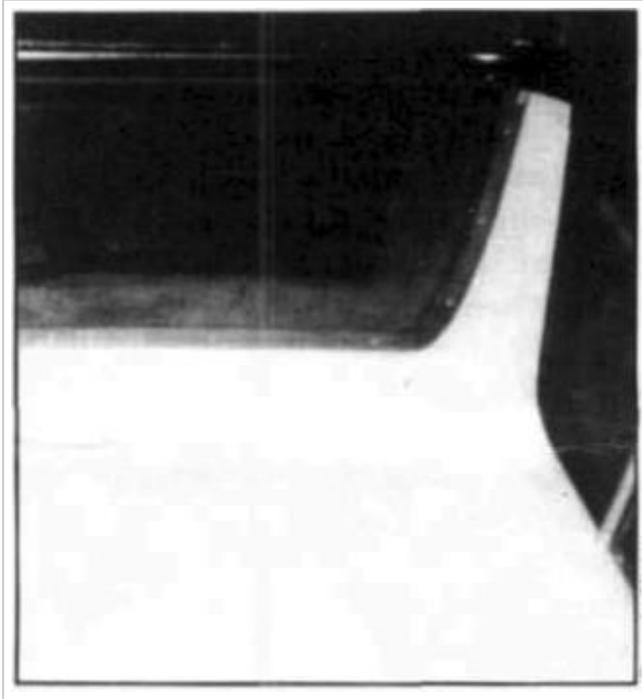


Figure 8: Wood trim and all windows are back in place

## Parts & Material

A new Pagoda hardtop is no longer available from the factory; used ones generally cost \$500-2,000 (1994 prices), depending on condition and year. Remember, a U.S. 1971 280SL had a heated rear window as standard equipment. A fully restored hardtop can be expensive, depending on the amount of chrome to be replaced with factory new parts. Almost all chrome pieces are presently available from the factory, but if you bought all of them, you'd spend roughly \$4,000 (1994 prices). Because of this, you are advised to find a decent plating company and have the pieces re-chromed, which can get you by at perhaps half the cost.

As this is written, headliners are still available from the factory in all three original colors for \$80. Color codes needed when ordering are 8036 for creme, 8038 for light bamboo, and 9002 for white. A set of clear glass runs around \$475, with tinted glass between \$800 and \$1,000 (heated). Current retail price of a complete factory seal kit is \$465.

Restoring a 230/250/280SL hardtop requires 40-50 hours, not including stripping and painting. Considering this and the parts prices gives you a good idea of the value of a properly restored hardtop. The author has so far restored more than a dozen pagoda hardtops and owns a fully restored sun roof version.

## Material

- Body wax, Mercedes-Benz part number 000 986 3370
- Universal adhesive, part number 000 98M 8271
- Urethane sealer, cartridge type, sold in automotive supply houses
- Strip caulk, 3M part number 08578 black, 08575 white
- Sheet metal screw, part 007 982 002 212, need 40 per top
- Sheet metal screw, part 007 982 003 215, need 40 per top

- Sheet metal screw, part 007 982 002 220, need 2 per top;
- Countersunk screw, part 007 9S7 004 119, need 10 per top;
- Countersunk screw, part (X)7 987 005 114 (only with optional chrome bars), need 12 per top.

Other parts, such as chrome and headliners, are sold by Mercedes-Benz dealers and independent parts sources.

Gernold Nisius owns SL-Tech in Kennebunkport, Maine.

## Hard Top Latch



Hard top latch