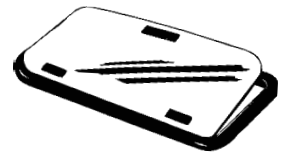


INSTALLATION PROCEDURE

FUNSPORT[®]
S U N R O O F S
by DONMAR



Don't be nervous! The hardest part is deciding to actually cut into a vehicle. The rest is easy! This guide provides instructions for wrap finishing a FUNSPORT sunroof in a vehicle with a cloth covered hardboard headliner. [FUNSPORT may also be quick-fit with the T-Section trim ring. Refer to install options diagrams]

Tools Required

all-surface marking pencil [china marker], tape measure, razor knife, razor blades, scratch awl, putty knife, file, fiber stick or plastic squeegee, hand-held metal snips, #2 phillips screwdriver [ACR bit preferred] and cordless screwgun, powered sheet metal shear or other suitable metal cutter, electric drill and bits 2 inch masking tape, denatured alcohol, spray bottle, solvent (wax/grease remover), glass cleaner, rustproofing or primer. [see photo]

Step 1 - Select proper sunroof size for vehicle

Measure the interior headliner to determine the proper size. While a tape measure works, a sunroof clamp frame or template make the job much easier. We generally recommend that the installer use the largest possible sunroof that will fit the given vehicle to maximize the owner's open air pleasure. While this method of sunroof selection works well for most vehicles, there are a several exceptions to be concerned with. [refer to exceptions list, page 11]

Step 2 - Remove sunroof and kit components from carton. Verify the contents are complete

Each kit includes a sunroof assembly, template, butyl sealant, screws, trim finisher (knock-in strip), and screw-cover strip. Place these items on a work table covered with a protective cloth to reduce risk of damage to the sunroof frame and glass. Verify the template is correct.

Step 3 - Disassemble the sunroof

Remove the glass panel from the frame, and with a marking pencil or other bright-colored marker, mark the location of the hinge blocks and latch assembly on the seal. This will make re-installation of these components easier once the frame sections have been installed and the installer is ready to "wrap" the headliner material. Remove the hardware and trim ring from the main frame.

Step 4 - Preparation of vehicle

Clean vehicle roof with solvent or glass cleaner to remove wax and residue which may impair proper bonding of sealant and to reduce risk of scratching to the roof panel. Cover vehicle seats with a drop cloth to keep interior clean

and catch any shavings or other particles.

Step 5 - Positioning of sunroof

Cut a 4-inch *sight hole* in headliner near approximate center of desired sunroof location. Any obstructions (such as roof bows, side rails and front header) can be located from this sight hole, and avoided with proper positioning. It may be necessary to relocate a dome lamp or roof bows. Place interior trim ring against the interior headliner and position to avoid any obstructions. With a measuring tape and awl, measure 6 inches back from the inside front edge of the trim ring place the point of the awl against the headliner. Pierce the headliner and make a slight indentation in the roof panel that will be easily visible on top of the vehicle.

Step 6 - Positioning template on vehicle roof

Use all-surface marking pencil to mark a center line from front-to-rear on the roof panel [*double-check the measurement from both sides front and rear to avoid an error in positioning*]. Measure 6-5/8 inches forward from the indentation and place a "cut mark" for alignment of the template. Position template front to this mark and center. Mark cut line around template, then using 2 inch wide masking tape, mask aperture to avoid paint damage while cutting roof panel.

Step 7 - Cutting hole in roof panel

Drill pilot hole (large enough to allow entry of the cutting tool) approximately 1 inch inside the cut line. With a shear or other suitable sheet metal-cutting tool, cut roof panel in counter-clockwise direction to cut line. After cutting is completed, check hole size for fit by positioning sunroof main frame in hole. Check edge of aperture for "burrs" and file if necessary. Prime edge of cut opening to eliminate risk of rust. Carefully remove masking tape, peeling inward toward opening to prevent peeling the paint off.

Step 8 - "Peeling" headliner material for wrapped finish

With a scratch awl (from outside vehicle), punch a hole approximately 4 inches in from each corner, through headliner board and material. From inside vehicle, use a sharp blade to cut through *facing of the material only* between the four pilot holes. Use denatured alcohol in a spray bottle to saturate headliner material from the cut line outward approximately 6 inches, and allow to set for 5 minutes. The alcohol will release the facing of the headliner material, thereby allowing it to peel away and leave the bonded foam backing adhered to the headliner

board. Carefully begin peeling headliner facing from cut edge outward, and peel back evenly approximately 6 inches from cut edge.

Step 9 - Cutting headliner board

From top of vehicle use a sharp razor knife, or ultimate headliner tool, to carefully cut headliner board evenly with the aperture of opening. This enables the second cut of the headliner board to be made easier and more uniformly. From inside vehicle, cut headliner board approximately 1 inch back from initial cut. This allows the interior trim ring to be installed without interference from the headliner board. To avoid having an obvious edge of the headliner board show in the material, it may be necessary to "curl" the edge of the headliner board upward slightly. This is easily done by hand.

Step 10 - Application of butyl to frame

Clean underside of main frame with a suitable cleaning solvent (clix, var-sol, prep-sol, etc.) to remove any silicone, dirt or grease. Carefully apply butyl seal to underside lip of frame, flush to the edge. Join the butyl at ends with a 1 inch overlap in center rear. Press butyl firmly to frame and carefully peel back paper liner to remove it from butyl seal. [Note: non-corrosive silicone sealant may be substituted for butyl]

Step 11 - Installation of main frame & trim ring

Carefully install main frame into opening and "hand-clamp" into position by pressing downward on frame and upward on roof panel in same motion. This will secure frame position while installing trim frame. Install trim ring by carefully inserting between peeled headliner material and roof panel. Align trim ring and start one screw in front and one screw in rear in pre-aligned holes in screw channel. This will make corner alignment easier. Start one screw in each corner and hand tighten, checking to insure that trim ring does not bind against main frame. Once completed, insert and tighten remaining screws in trim ring.

Step 12 - Interior finish

Begin by installing the hardware. Pull the headliner material up and align the hardware components with the marks on the seal made during disassembly (step 3). Install screws in the hardware, being certain to secure but not overtighten. Install trim finisher (knock-in bead) by hand, if possible. Cut approximately 1/2" extra length on finisher to avoid shrinkage in cold weather. After completed, carefully tap finisher with a rubber mallet, being sure not to make contact with wrapped edge of headliner material. From top of vehicle, carefully trim excess headliner material with sharp blade [use extreme caution not to cut finisher or sunroof gasket].

Step 13 - Exterior finish

Trim excess butyl to frame edge with a tool which will not cut the paint. A LilChizler, fiber stick, body filler squeegee, or plastic knife blade works well. After this is completed, clean around the aperture with wax and tar remover to remove residue and center line markings.

Step 14 - Insertion of glass panel

Aligning the front hinge brackets on the glass with the hinge blocks mounted to the frame, making certain that hinge blocks are in the unlatched position and the glass rests on top of the gasket. Press front of glass downward and forward to the proper position and latch hinge blocks. Attach handle by squeezing together the spring-loaded toggles toward the center of the pivot arm and aligning the pins into the proper position and release. Fully open the glass panel by swinging the latch bracket forward and up. To close, depress the grey button with your thumb to release the lock at the same time as you pull down upon the latch bracket with your fingertips. Repeat this procedure to check the various opening positions.

Step 15 - Inspect and test

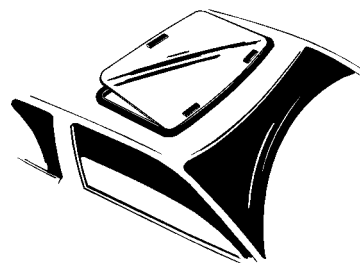
Inspect the outside to ensure that glass is evenly positioned within the frame. From inside, slip a business card between the gasket and glass, and slide around the aperture to ensure even compression. Occasionally the sunroof glass may need slight adjustment. While an assistant sits inside the vehicle, spray the roof of the car with water to simulate natural weather conditions. If any seepage occurs between the glass and gasket, remove the glass panel to adjust the hardware. Loosen the hinge brackets, slide them toward the center of the glass and retighten. This will increase clamping pressure on the gasket. Re-insert the glass panel and test again. There should be no more seepage. Dry the vehicle.

Step 16 - Cleanup and deliver

Clean glass with soft cloth and a non-abrasive cleaner. You may wish to wax the vehicle roof for a gleaming presentation. Instruct your customer on proper sunroof operation, removal and reinsertion of the glass panel, then provide a written receipt with a completed DONMAR FUNSPORT warranty card.

The sunroof installation is now complete.

Consider offering the customer accessories such as a sun-block shade, storage bag or wind deflector.





Step 5 - positioning of sunroof



Step 10 - application of butyl to frame

Installation Procedure **FUNSPORT**[®] SUNROOFS *by DONMAR*



Recommened Tools & Supplies



Step 6 - positioning template on roof



Step 11 - installation of main frame



Step 7 - cutting hole in roof panel



Step 11 - installation of trim ring



Step 14 - insertion of glass panel



Step 8 - "peeling" headliner material



Step 12 - interior finish



Completed Installation - interior view



Step 9 - cutting headliner board



Step 13 - exterior finish

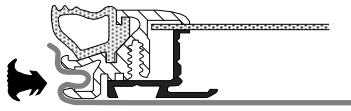


Completed Installation - exterior view

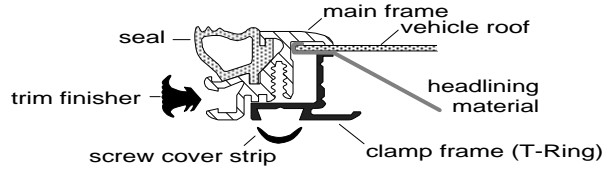
FUNSPORT® Pop-Up Sunroof Interior Trimming Options

cross section view

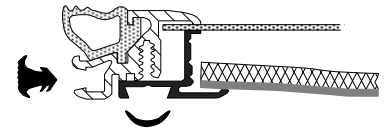
1 Fully Trimmed - Soft



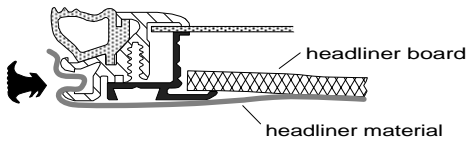
3 Untrimmed



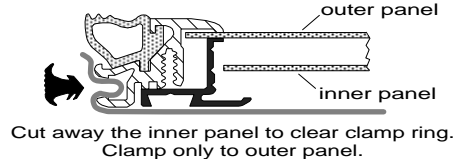
5 T-Ring Quick Trim



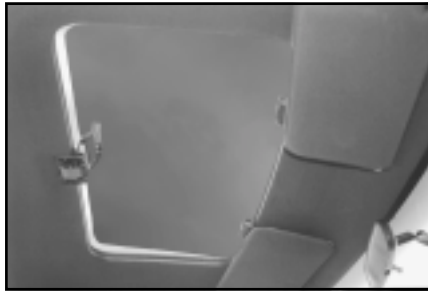
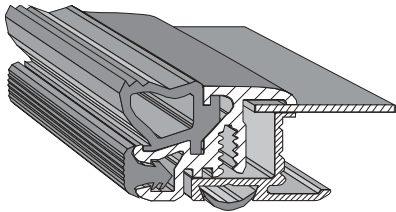
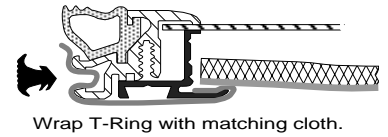
2 Fully Trimmed - Hard



4 Double Skin Roof



6 T-Ring with Trim Sash



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