

Roof Repair Procedure

First the suspected area needs to be exposed, usually this means removing one or both of the interior fiberglass body liners or fabric ceiling panels whichever the case. Now locate the area to be repaired, generally the area is visible either because the spot is discolored or a lighter color than the surrounding fiberglass, water marks, streaks or rust can also help locate the damaged area. When the general area is located start in the center of the “spot” and push up firmly against the roof, if the verticell is compromised it will “give” or in other words you will feel it squish indicating the interior of the roof is wet. Keep pushing up and working from the center of the spot outwards until you find where the roof is not compromised (or squishy). At this point it’s a good idea to mark the roof where the wet and dry areas meet, an area a little larger than it needs to be is optimal to ensure all the damaged Verticell is removed. I locate where the marks are to be made then extend those marks 3 to 4 inches around all sides, so in the end you will actually be removing 3 to 4 inches of dry Verticell around the perimeter of the wet spot.

Now the area to be cut out should be marked on the roof itself. If this area is longer than 4 feet it should be repaired in sections. I am going to use an example of an area 5 feet long by 2 feet wide to help explain these next few steps. When the roof skin is cut I would make my first cut at 2 ½ feet to split the 5 feet section in half, then cut the perimeter of the area to be repaired, keep in mind these pieces of the interior roof will be reused so save them for the later processes. When the Nida-core is cut I would cut the piece 2 feet wide by 5 feet long but I would recommend cutting that piece so when you’re finished you have 2 feet by 2 feet piece and 2 feet by 3 feet piece. The reason behind this is when Nida-core is placed in the roof with the previously cut interior roof pieces you don’t want the seams of the Nida-core at the same place as the seams of the interior roof sections as this could create weak spots. It is essential that the seams of the Nida-Core do not line up with the interior ceiling panel seams! Now it’s a good idea to make marks on the roof where the Nida-Core is to be placed along with the marks where the roof would be cut. I use different colored markers for this.

The roof should have all its marks in place and is ready to be cut out. Cut out the sections to be repaired without making holes in the exterior of the roof. Remove the freshly cut panels. This usually needs to be done with spring bars or pry bars taking care not to stress crack the exterior of the roof. After the section or sections are removed put them aside as they will be used later. All Verticell both wet and dry needs to be removed from the roof where the cut outs were made; and off of the sections of the interior skin that were removed as well. Usually a combination of scrapers and spring bars are used to accomplish this. After the Verticell is removed the inside of the exterior roof needs to be ground so the area is completely flat and free of any Verticell remnants, but at the same time rough enough that fiberglass resin will adhere to it. Avoid “glazing” the roof or making it too smooth. Also the sections that were removed will need to have the Verticell removed from them and they too ground flat and rough but not glazed. These sections are sometimes very thin so care should be taken as to not grind through these.

At this point the Nida-Core needs to be cut to fit the sections that have been cut out of the roof. Keep in mind that the seams of the Nida-Core can not line up with the seams of the interior roof sections that have been cut out (see above). Now if a small area is to be repaired just cut the Nida-Core to fit the cut out. After the Nida-Core has been cut be sure to test fit all the pieces to ensure a correct fit, it is better for the pieces to fit snugly as this will aid in installation later.

All of the pieces of Nida-Core and all the pieces of the interior roof section along with the roof as well need to be blown off to remove any existing dust or foreign material. After this is done the roof and the interior roof skins need to be wiped with acetone to remove oils and remaining dust.

Now all the pieces of Nida-Core, all the pieces of interior wall skin, and the roof should be ready for installation. These next steps will be using fiberglass resin and will get messy so it's a good idea to put plastic down on the floor and cover everything in the unit that you don't want fiberglass resin on, as well as use appropriate PPE for the persons doing this work.

Start this installation process by arranging the roof skin pieces and their corresponding Nida-Core pieces together. Lay the interior roof skin piece on a material larger than the roof skin itself, this material (I use a big piece of cardboard) should be large enough to accept any fiberglass resin that will run off during the application process.

With the roof skin in place (interior side down) place the corresponding piece of Nida-Core right on top of the roof skin. Mix enough fiberglass resin to completely saturate the piece of Nida-Core. *note: I mix the fiberglass resin at a ratio of 20cc of catalyst to 2qts of resin.

With the mixed fiberglass resin saturate the Nida-Core completely, using your hand (with chemical gloves on) try to "push" the resin mixture into the Nida-Core do this until the entire piece has been gone over in this fashion, you should start to see tiny bubbles form in the resin when this starts to happen wait 3-4 minutes then turn the Nida-Core over and repeat these steps for the other side. Now that the Nida-core is completely saturated, install Nida-Core along with the interior roof skin piece together in a sandwich fashion in the appropriate cut out in the roof. After the pieces are in place they need to be held in for some period of time. **Please note that these next couple of steps will require some planning ahead of time, to cut the 2x4 braces to proper length (I believe either 79" or 84" will be the right lengths) and some 1/4 in sheets of plywood to be cut to desired size to be used to cover the repaired area**. I take a piece of 1/4 in. plywood cut purposely to be oversized about 6" larger than the repaired area, then brace that to the roof using 2x4's wedged between the roof and the floor. When these 2x4's are placed be sure they are protected in such a way as to not damage the floor covering as they have to apply enough pressure to make the roof regain its shape. **Several braces will be needed for EACH piece of Nida-core being installed; too many is better than not enough in this situation. I use at least 5 for a 2'x2' repair area. After the Nida-core is up and is covered with the plywood, and braced in place with the 2x4's allow this assembly to set and dry for at 10 hours. Please make note that when repairing a large area all of the roof skins, Nida-core, plywood and braces need to be put in place quickly enough so that the entire roof is

allowed to dry all at once meaning more than one person will need to assist on larger repairs.

After the fiberglass resin has dried (at least 10 hrs) all of the bracing can be removed along with the plywood that was used to help hold everything in place. At this point the repaired area should be completely hard and have the shape to match the rest of the roof. All the seams of all the cut outs need to be fiber glassed together. Using a grinder rough up an area extending 4 inches both side of the seams. After these seams are rough, remove all of the dust off of the seam, then using acetone wipe these rough areas to completely all dust and debris. In order to fiberglass these seams fiberglass matting, and more resin will need to be obtained. Be sure to cut the matting (If not already done) in strips large enough to cover at least 2 inches on both sides of the seams to be bonded. Mix the fiberglass resin as spoken about earlier, and saturate the previously cut fiberglass matting and apply these to the seams. To aid in applying the saturated matting start at one end and use a smoothing back and forth motion working from one end to the other as opposed to trying to apply it all at once. After the matting is applied allow this to set over night to completely dry.

After the repaired area has dried, grind off any “hairs”, bumps or extrusions that may show thru the headliners, the entire area at the seams will be slightly raised this is normal. After some cleaning the unit can now be reassembled.