

**Updated 4/2002**

## **Handling Moisture in RVs**

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**NOTE:** A section on Rubber Roofs is in the [middle of this page](#). A section on Dry Rot is near [the end of the page](#).

**First things first.** You've got to keep moisture from getting in. After that, you deal with what you make on your own.

### **Emergency repairs:**

There are emergencies, and, then, there are big emergencies.

**Simple emergencies**—broken window, tear in skin or roof, cracked vent cover, etc. Most of these can be temporarily patched with "aluminum duct tape." NO, not that grey cloth crap.

- Aluminum (AL) duct tape is aluminum tape with a peel-off sticky back (from building supply stores). If you put it on a reasonably clean, dry surface, it'll work for months. Every RVer should carry a roll—it's good for lots of other things.
- Heavy duty aluminum foil. NO, not super-market stuff, but the kind they use in food service places (or use more layers of the cheap stuff).
- Cardboard (or equal) from a box in a dumpster.
- A roll or two of "Kool Seal" brand "Kool Patch-White Patching Tape" (Kool Seal # 40-321-T from any RV store). It comes in black too, but avoid it if you can, it makes a mess.

If the problem is simple (a crack or tear) aluminum tape will usually get you by. If not, cut off a length of "Kool Seal tape," press it down well (it even works on wet surfaces) and cover it, if you can, with overlapping layers of the aluminum tape. "Kool Seal Patching Tape" is fantastic stuff. A bit expensive, but worth it when you've a problem.

**More complicated emergencies**—Bigger stuff (like a shattered vent cover,

antenna torn off, air conditioner knocked loose by tree limb) take a piece of cardboard, thin paneling, whatever's appropriate. Wrap it in aluminum foil. Tape seams. Stick "Kool Seal tape down around edge. Lay/fold/bend alum covered cardboard over the disaster. Tape again.

## "Regular" Leaks: Sealing, Caulking and Coating

If you can take something that's leaking apart, do it. Then seal the mating surfaces and put it back together. A "seal" can be a gasket (like under the air conditioner) or an RV putty tape (doors, windows, roof vents and the like) or "Kool Seal Patching Tape" (lots better than RV putty tape). However, smearing globs of caulking all over everything is not sealing—and it doesn't work.

"Caulking" is something you reserve only for things that can't be fixed properly in the first place (or that you're too lazy to fix properly). Caulking is also "insurance." First you seal something (like a roof vent); then, for insurance, you caulk it to keep moisture from getting at the seal that does the real job.

"Coating" is the last step. After you've applied your sealing material and assembled things properly (without a lot of holes and gaps) and caulked (if necessary); then you coat the whole surface if appropriate.

Coating can be as simple as paint (prevents weathering, ultraviolet decay, rust and makes the thing look decent); or more complex (elastomerics that provide more durability and insulation) or more complicated and expensive (like custom-fitted vinyl sheeting—the so-called "Rubber Roof").

**Fixing:** There's no point in doing any of the above unless you first repair structural defects. Impossible to cover all variations, but here are some that many people don't consider:

### Roof Edges and Corner Trim:

In many RVs (especially older ones) this is nothing more than a thin aluminum extrusion with screw holes and a vinyl insert. Siding and roof sheeting raw edges are simply butted together and fastened to the frame (usually just with staples). A strip of RV putty is laid over the joint and the trim strip is screwed on. Generally, sufficient screws hit something solid

enough to hold everything together and compress the putty to prevent leaks (for a while).

As time goes by, the putty gets squeezed out (most rigs have this icky, dirty stuff oozing around corners and windows). What remains dries, then cracks and gaps appear. Water leaks in through the edges and screw holes.

The steel screws, staples, water and, often, aluminum parts set up a corrosive (electrolytic) action that compounds the problems of the water—that dribbles down through the interior walls and rots everything out (including the flooring). Insulation absorbs the water, loses all its capacity to insulate and soon the whole frame gets wet and stays that way.

Water entering at the roof joint is especially troublesome because it runs toward the lowest point in the ceiling (usually at air conditioner, light fixture or a roof vent) before drips start. The RVer then climbs on the roof and spreads caulk all over above the place where (it seems) water drips—but not where it came from—which does no good at all. The vinyl insert in the trim, contrary to what people think, is not there to prevent water from entering. Even though it's doubled over at the top, screwed down and has half-a-pound of caulking smeared all over, it's nothing more than a cosmetic to hide screws.

### **Roof Edges and Corner Trim**

**The fix:** Remove vinyl insert and throw it away. You can get it new by the foot at any good RV store. Trying to reinsert old stuff just looks crummy.

Examine screws as you remove them. Generally, they'll be stock, #8 size, steel screws and some will be corroded and rusty. If so, throw them away also. You can replace them with better quality plated-steel screws or #9 aluminum hex-head (unusual oversize but deliberately made that way—sold in RV and boating stores—to fill up previously used holes). Better are stainless-steel screws (expensive, but can often be found in electronics and "surplus" stores for about \$3 a pound).

Carefully pry siding and roofing away just enough to peek in and look for evidence of leaks. If you find major damage, you can either: Put everything back together and get rid of the rig; or, repair and reinforce (which you

might want to do anyway). My travel trailer had all of these "borders" replaced with 1-1/2" x 1/8" thick aluminum angle. Expensive, but it formed a "cage" and the RV sort of held itself together. If you have some water damage (but the thing isn't falling apart), you can get a product called "Git Rot" in boating stores. A liquid you mix and squirt or inject into wood, it chemically converts wood cellulose into an epoxy-like material. (Nice for treating exposed wood behind motor home skin.)

Clean off the old RV putty. "409, Simple Soylen Green" and the like, all work well with a scrubbing pad like you use on Teflon pans. You'll remove the vehicle wax too, but after this job, you'll need to rewax (maybe refinish) anyway.

**An aside:** Regular RV putty tape is a gray material in rolls of 3/4" or 1" wide with a crepe-paper backing (it's often called monkey-poop). It's inexpensive and sold in every RV store. Far better is a "whiter" putty tape that is much stickier and often has a slick, plastic paper backing. Only a little more expensive, it is far more effective (has some "butyl-like" content), doesn't "ooze" as bad and can be found up to 1-1/2" wide. (If your RV store is "backward," find it in boating stores or in heating air conditioning places where they use it in duct work.)

**TIP:** When using any kind of this tape/sealer, it will tend to stick to itself and the backing. Most annoying. Avoid this by putting it in the freezer for 10 or so minutes and it's a lot easier to handle (and will still stick just fine).

Once all is done, excess rusty staples and tacks replaced, etc., (you can get stainless-no corrosion staples or tacks in large upholstery stores), carefully reapply a strip of the good putty tape mentioned above. (Don't try to skimp on a \$ with 3/4" stuff, get the 1" wide stuff (or wider where applicable). You can always trim off excess, but you can't easily add on extra.) Replace moulding and put it back together.

As you replace screws (with better grade as above), note previous "bad" holes (with simple pencil marks). There's no point putting new screws in non-existent holes. Just drill a hole near to it and seal the old one. Similarly, if you're in a suspect area, drill new holes and add more screws.

**An Important Step:**

- Before you insert a screw, drill a pilot hole (if new) and fill the existing, or new, hole with caulking.
- You don't need a big gun full of crud for this. You definitely DO NOT need the cheap, ordinary "silicone" caulk used by most RVers. Sun (ultra-violet) light decays it. It won't adhere to many surfaces and it's hard to remove if it does stick.
- What you need is the "Quick-Leak-Check" brand or something similar (that doesn't dry out and can be "unscrewed" from later) in a small tube that you can handle easily.

When you put in new screws, DO NOT over-tighten! (Especially with aluminum screws that will easily snap off if overtightened.) All you want to do is get this largely cosmetic strip "snugged up" nice and firm. The minute you hit the road, the whole rig is going to start flexing. You want it to be allowed to flex without opening new holes.

Finally, insert new vinyl flex trim.

- Do not let it get stretched out too much. It will eventually reassume its natural length and you'll be left with gaps.
- Look around your RV park. Note even new RVs with gaps in trim because idiots installed it. (A new home for bugs.)
- Better, lock it in place at the top or an end with a screw and leave a few inches of slack at the other. It'll look funny for a few weeks (what do you care?) but you can trim it and screw the bottom down after it's settled in position. Do you now caulk the edges? No, you shouldn't really need to if you did the job right.

### **Awning supports:**

Awning supports are difficult because they are almost never sealed properly. Installers usually (but not always) make a big deal out of locating structural members inside the walls for attaching the (main) end pieces (upright supports). Then they just screw them in through the outer skin without any gasket, backing sealer or caulk in the holes. Further, corrugated aluminum and fiberglass skins are usually badly crushed in the

process. The thin moulding strip that holds the awning fabric against the wall (along the top) also has no backing and the many screws are just run through prepunched holes with no effort to locate what other structural members might be behind there.

If you're going to have an awning installed, you might get an installer to do the job right, but it's unlikely. Usually they'll agree with everything you say, then ignore you and do it "quick and dirty." You'll be better off getting a friend or two to help. It's easy if you read the instructions. It'll take up to two days (if you do it properly and spend some time figuring out where the backing behind the skin really is) instead of a couple of hours; but you won't have any leaks and it will be secure. (A friend and I were sitting at the RV park when the truck showed up -- from one of the really, really big RV stores -- at a neighboring site. The men got the job done quickly -- too quickly -- and while they putzed around measuring the outside, we never saw them go inside the RV. We knew we were in for a treat and sure enough, when the techie reached up with the hook and pulled on the awning, it came right off the RV.)

Awning leaks are really nasty, because water goes into the inner wall and usually isn't detected until it's done severe damage. Sometimes water will work its way down the inner wall (through all those screw holes that aren't really screwed into anything). Often, water from awning leaks eventually works its way into the inner RV wall through a window frame. Most RVers then assume the frame is the source and spread caulk all over the window and wonder why it won't stop leaking.

If the awning is already installed, removal and reinstalling is a real chore. This is a case where you might get away with caulking if you do it right. Remove each awning strip screw (just one at a time), fill the hole with caulk and reinsert a better screw as above.

**CAUTION!** Most of these screws only go through a thin aluminum or fiberglass skin. If you tighten them too much, you'll just make a bigger hole. You can repair with an insert or pop rivet, but you don't want to.

If you're using a quality sealer in an easily-handled tube with a fine tip, you can also apply just a bit around the edge of each screw head. Examine main support bolts before diddling with them. You may be able to remove,

caulk hole, and replace one at a time, or you may be able to partially unscrew and apply caulk to threads and retighten.

Carefully caulk around the edge of support arm plates. Don't try to apply huge globs at one time. Try to get a thin bead into, not just all over, crevices; then go back and add more later. Similarly, apply a thin bead of caulk along the top and bottom of the long horizontal strip.

Another superior caulk for long runs and tight crevices is "SEAL ONCE." It's very sticky but "creeps" into thin cracks. It also works on wet and oily surfaces, which helps. It stays tacky for days; don't fiddle with it until it sets. It's probably the most effective caulk made. Sold in some RV stores and many boating stores (used in wet bilge compartments).

### **Door and window frames**

Door and window frames are fixed like the above with some added steps. They're made to be opened, so joints aren't going to be weather proof. In good windows, a very small amount of water will enter, but it should remain on the glass or frame and exit through small "weep" holes at the bottom of the frame. Weep holes can't work if plugged with dirt/caulk or you deliberately plug them to keep out bugs. Some condensation will also form on glass and metal frames, but a well-constructed window should drain this through weeps also.

Often, windows leak around the edge of the frame simply because the manufacturer cut the hole too big. In the worst cases, the siding and frame don't even touch (once again, you'll see enormous amounts of caulk smeared around because people are too lazy or inept to remove the window frame and do the job right).

One way to fix this is to: Remove window and frame. Treat any rot with "Git Rot." Cover the edges of the hole (after everything is dry) with aluminum duct tape, overlapped, so the inner framework is completely covered and the tape overlaps the inner and outer wall a bit. The idea is to prevent moisture from getting into the inner wall and insulation. In case of a future leak, water will either run back out to the outside, or onto the inside, finished wall where it will easily be seen before it does any damage. Once this is done correctly, replace window and frame. It's easy to trim off excess putty and, then, with an "X-Acto" or similar sharp blade, score the

aluminum tape and peel off any that shows.

Another way to do this fix is to: Treat rot then shim/fill the inside of the hole as above and apply the aluminum tape (or don't fill the excess hole and do the following—I'd do both): Extend the outer lip of the window frame itself by adding 1/8-inch thick by 1-1/4, 1-1/2 or 2-inch wide aluminum flat bar.

If you lay the pieces out carefully, cutting edges to match, then pop-riveting the pieces to the frame, you'll end up with a big frame and crude corners. Once put together, though, you can round off and smooth the corners. Automotive paint stores sell a "self-etching aluminum primer" that bonds quite well to new and old cleaned aluminum. If you clean aluminum properly and use this primer, you can paint the frame with matching trim paint and it will hold up at least as well as a new window.

Place the window in the hole, measure carefully to the actual surrounding framework (there will be something around the hole), then drill holes through the "new" frame and screw it to the wall (not just to some inner frame that sandwiches the newer, cheap windows together).

Before final assembly, seal the frame with good putty tape, carefully applied, and you won't need any caulking here either. To do a really nice job, since you're more or less building a new window anyway, instead of just flat aluminum along the top, use aluminum channel or angle instead. The thing will be ultra-sturdy and you'll have a built-in rain protector.

**Doors:** Are done like windows, but because the whole inner frame is going to be constantly banging in and out, you have to be extremely accurate in measuring the placement, in making sure you have square corners and securing the door assembly. Few RVs have door cutouts with accurate corners, so most RV door assemblies are forced into place and are crooked. Eventually, they get sprung out of shape and don't operate well. Careful trimming and shimming can correct this.

### **Luggage compartment doors**

Luggage compartment and similar doors usually leak because they weren't installed right. Remove them, clean things up, patch holes and cracks, squeeze a bit of seal in screw holes, carefully putty tape and reinstall. The

bottom frame of compartment doors should be kind of like a window, with weep holes so water can run out. Unleveled rigs, cheap doors, and sloppy installation can let water run in instead of out. This is especially common in reefer pop-out doors.

Before you reinstall any of these frames, examine the edges of the hole. Tubing, wood 2 x 2, ply and foam—all will allow water to infiltrate. Again, treat for rot, use aluminum tape and seal properly just as for windows. Don't do a sloppy job just because the inside won't show as it does in the living area. It doesn't do any good to have a nice living area if the compartments underneath are rotting away.

### **Sewer vents**

If they were installed properly, there will be a bit of pipe penetrating the roof with a sealed flashing. Some, though, will be cut off flush with the roof and have a large hole all around them and a big cap covering the whole mess. It's obvious, when you look at one of these, that there's no way the thing won't leak (so many RVs have wet closets).

If you cement a pipe coupling to one of these flush-cut things you can add a bit more pipe. Then you can cut a piece of aluminum sheet to cover the old hole and seal a proper flashing around it. This isn't complicated but can require some detailed work. For example; there's no pressure on these pipes, so you can cut the coupling to slip up and down anywhere, carefully measure its eventual height with an allowance for the thickness of a piece of plywood that will go around the pipe, rest on the top of the coupling and, in turn, support the aluminum patch. It's a little more work, but it will be sturdy.

You do need some kind of lid over/above sewer vents to keep out crud and critters and help provide a draft to pull gas out of the tank. Most cheap RV store caps work okay and you can get nice aluminum ones in building supply stores. The "venturi" types in RV stores (look like a "T" with one end bigger than the other) provide a better draft (so does a regular "T" and it's cheaper).

To do a really nice job and really ventilate a tank, consider topping vent pipes with "solar ventilating fans." These look like mushrooms, have a 4-inch base (easily adapted to any size sewer pipe), include a small fan

and single solar cell. Anytime there's sun, gas is being drawn out of your tank. Whatever you cap your pipes with, make sure you coat it. Sunlight (UV) eats plastic. Any coating, even plain paint, will keep your plastic from rotting away. (This is also necessary down along the under edge of your rig, in case you wonder why valves and fittings break for no apparent reason.)

### **Air conditioners:**

Air conditioners are really pretty well designed. They have to be open to the elements, so everything is just mounted on a big pan with drains in it and any water that gets in just goes back out (or should). Lift off the outer cover (shroud) and make sure the drains aren't full of crud. Weather, dirt, insects and small birds and critters have easy access to the inner machinery of the A/C. You should clean up the area once or twice a year.

While the cover is off, examine the sheet metal box that covers the blower and air chamber. Seams usually have a gasket or putty material to keep what little rain that might collect from dripping down into the housing inside the RV. It's easy to reseal these but in many cases all that's needed is to cover them with the aluminum repair tape mentioned above, allowing moisture to run down into the pan.

The whole air conditioner is held on by nothing more than a large gasket and about four big nuts and threaded rods reached through the A/C inside frame. (Has to be that way because it moves and vibrates.) Most leaks occur at the gasket and fortunately can usually be stopped by doing nothing more than gradually tightening the main nuts/bolts, (one of the few things in an RV that's usually easy to fix).

Replacing an A/C gasket is easy but strenuous. Simply remove the main nuts/bolts, disconnect the wiring harness, go up on the roof and lift/tilt the thing from one end, not straight up. It's easier when two people do it and you should have someone down below to make sure wires and such don't get hung up. New gaskets don't need added putty and stuff, but you do need to make sure the roof edges around the hole are clean and don't have gouges or dents that water can run through.

### **Roof vents:**

Roof vents will leak, and the slightest crack, that you can't even see, can suck water in, even uphill, by capillary action from differing inside and outside air pressure. This can give you a fit and can be complicated by a leak from somewhere the ceiling panel joins.

Vent frames are usually putty-taped to roofs and, some cases, you can see the putty seam from inside if you remove the trim piece. If so, cram a putty knife in the crack about 1/4" to 1/2" repeatedly all the way around. If the leak stops, you might be OK. If it moves to a new place, you need to replace the vent and putty tape, not just smear caulk all over.

For leaks between rafter and inside ceiling, usually you can gently pry the ceiling panel down about 1/4 inch (look for staples and tacks) and hold open with pencils or screwdriver tips. As you create this new low point in the ceiling, you may get a whole bunch of water. If so, leave wedges there for several days (might take weeks), no matter what other steps you take to fix it, so it'll dry out. In some cases you might have to open a whole seam. It's awful, and will look bad, but the alternative is major surgery—which still might be necessary.

This kind of leak might be in the vent also, You ought to remove and reseal or replace it (depending on what you find). If the leak stops, you lucked out. If not (actually simultaneously), you need to spend a lot of time on the roof, poking, probing, pressing anywhere there's a seam, strip or something coming through the roof -- the things mentioned earlier.

### **Replacing roof vents:**

Replacing roof vents is easy—it's just a lot of work. Usually the hardest part is removing caulking (that shouldn't have been there in the first place) and getting the screws out. Once the hole is open, scrape all the old stuff away at least enough to clear the new vent frame plus an inch or so. Poke around. Are the rafters wet? Why? Dry it out. Can you beef it up with Git-Rot (above)? Or short pieces of aluminum angle in the corners? Maybe build a lip all around the hole with aluminum? Lay the new vent on the hole. Do screw holes match up? Do you want them to? Are the old ones rotten? Actually, you're better off if new screw holes don't match. But seal the old ones before installing a new vent.

Use a new, aluminum framed vent if you can. If you use cheap plastic

frames, you'll just have to do this all over. Aluminum lids are best also, but some people want the light through a plastic one (until the sun eats them or hail destroys them). The "Lindeen" style vent covers/hoods can help a lot. Also, better RV stores now carry an "unbreakable" plastic vent lid. Expensive, but with a good warranty. I've used these for two years, through two hailstorms, with no leaks or breakage (but no base-ball-sized hail either). Once the hole is prepared, all you need to do is carefully apply quality putty tape and evenly and firmly screw the thing down. Do NOT overtighten! All you'll do is create a new leak. Let the thing sit there a few days. You can go back and tighten it a little more later. Don't smear caulk all over the edge and screws either (that comes later if needed at all). Don't be in a hurry to replace inside trim pieces. Leave the hole bare awhile, let it dry and easily look for leaks. Trim rings aren't much good anyway. Almost all of them just slip up inside the vent frame. Leaks then drip down behind them, where you can't see them, until they start coming through the ceiling. If nothing else, when you install trim, run aluminum tape around the inner hole (it won't be seen later) where rafters meet ceiling panel, so that incoming water will run directly in and you can see it before you ruin a ceiling. Better yet, make your own trim pieces—something that funnels water in the right place, that matches your ceiling better, that you can attach fans, decorative items or condensation covers to.

### **Lights, water entries, antennas, etc.**

Running and other lights, ladders and grab bars, water entries, antennas and such usually have an ugly ring of caulk smeared on them. They still leak and you can't see it and moisture is in there rotting your rig away. Most of the cheap stuff, like lights, can easily be removed and replaced with bigger (to cover the crummy old edges), better (sturdier and some with gaskets) lights at surprisingly low cost.

**Patch old wires and screw holes first.** Look for scraped wires while you're at it. If possible, fold wire down from hole, tape it in place temporarily and seal the hole with good stuff like Seal Once. Build up layers a bit at a time on big holes. Make a miniature awning out of a small piece of aluminum tape. Rub it good above the hole, but just sort of lay it over the hole and wire. (Anything that does get inside the light fixture ought to run out the bottom.) If you're careful, you'll be able to fold the

wire back up a bit when installing the light and further keep water from running into the hole.

Unless the light is top quality and has a gasketed lens, don't try to seal the lens. The idea is it should be a little loose so water will run out as fast as it gets in. You also need to get in and change the bulb easily. Just a little dab of sealer on opposite sides of the lens will keep it from falling off.

Depending on what kind of "skin" your rig has, you can get nice watertight gaskets in automotive stores. Also look for "**threaded inserts**" under various brand names in auto and hardware stores. Some are compressed into place with a pop rivet tool, other are screw-compressed with a wrench. There's a large variety of thread sizes and depths. Once installed, you have a secure threaded nut attached to the skin, not just a hole that keeps getting bigger with age. Put a dab of "Loc-Tite" on the machine screw threads and you can firm up things so they won't leak and can be easily removed and replaced without screw holes getting ever bigger.

Shop for **gasket material** by the square foot. Varying thickness and densities (so it can be squeezed against uneven surfaces) are available. (I got a soft, but water-repellent piece of vinyl, really quality stuff, from a shoe repair shop cheap. They use it to resole moccasins.) A firmer piece is perfect for behind a grab bar, luggage rack and ladder bolts, antennas, and flag holders. Computer "mouse pads" make a nice gasket material, cheap.

### **Fender well covers:**

Fender well covers are a key source of interior wet rot that most people never think of—until they're digging around under a cabinet and find a huge mass of green crud growing there. First, remember that these things, like wheel covers, are strictly cosmetic and often not needed unless the fender well is really crudely built. Most people automatically run a bead of caulk along them. It does absolutely no good and just makes the thing hard to remove when you have to work on your rig. And more time to remove it = more cost if in an RV shop. If you must use these things, don't try to seal/caulk them. Instead, use the threaded inserts mentioned earlier—no leaks and EZ on-and-off.

However, the edge around the actual wheel well, where side, bottom and

wheel well meet, might have really shabby seams. Putty tape and aluminum angle can usually leak-proof these. It won't look too swell, but fender well cover will conceal it.

### **Wire and cable entry:**

Wire and cable entry through a roof or wall: Usually, some fathead drills a hole, pokes the wire through, then smears on huge globs of silicone. How sad. I once watched a satellite TV "technician" adequately install and seal the main antenna. He then prepared to drill a hole right through the roof alongside it and poke the wire through with the intention of running the wire, exposed, along the ceiling and down the wall to a shelf. What an idiot! The refrigerator roof vent was only a couple of feet away. All he had to do was enter through the side of the upper reefer vent cover (no leaks) then run the wire down the back corner behind the reefer and through the wall to the very same shelf. (He got very upset when I pointed this out.) Was it just too much time and trouble to snake the wire around some corners? Probably. Did he just not give a damn? Probably. Is he still doing this (like the manufacturers who run wire and pipe aimlessly through your valuable cabinet space)? Probably. I find that it's very profitable (and most enjoyable) to spend an hour or so sitting on the roof, drinking beer and just thinking about the possibilities before I start chopping holes in things.

### **Solar modules:**

See above for considerations on running cable to them. A couple of modules/panels, regulator and cable, etc., are going to cost over \$1,000. Do you want to install it sloppily and create leaks? Sit on the roof, drink beer with a couple of knowledgeable friends and make a plan.

(Good place to hide out from spouses for awhile too.) Notice, also, I said spouses, not wives. I find women are as adept at this kind of abstract stuff—maybe more so—than men. Men want to jump right in and start chopping holes. Then they have to do it all over again later. Women don't know they're not supposed to be involved in this, so they do it anyway, paying attention to planning and detail, and usually do it better—and that's no horse hockey.

Consider that a solar module weighs about 10 pounds, whereas an air

conditioner weighs about 150. If the A/C is held down by only four bolts, do you really need some massive structure for a few solar modules? No. (See RVers' Guide to Solar Battery Charging, Noel and Barbara Kirkby, aatec Pubs., for details. Kirkby, owner of "RV Solar Electric" and the most knowledgeable of dealers, also has a solar "Systems Installation Guide." Only \$5, refundable with a purchase. You need to buy it even if you get your equipment elsewhere. No other dealer provides—and few know of—the info in here that will allow you to install solar panels securely, with no mess and no leaks. Most highly recommended.)

## **RUBBER ROOFS (followed by more on other roof coatings)**

Possibly (but arguably) the best coating is a professionally-applied layer of vinyl sheeting (the so-called rubber roof). It's expensive, but it is, in effect, a new roof—IF INSTALLED PROPERLY! Careless installation, even by a professional, can end up with you being even worse off. To install it properly, everything is first removed from the roof and replaced when the job is done. The problem with this is that when basic problems are not repaired before the new roof is laid on, the new roof isn't affixed properly, the vinyl is cut improperly and things are replaced and not sealed properly as described above, you're right back where you started.

### **More on Rubber Roofs:**

I'm getting lots of letters from readers on the subject. I expect the reader queries will increase as more and more used RVs with rubber roofs are passed on to others.

"Dicor Corp." makes most of the EPDM (Ethylene Propylene Diene Monomer) material used in so-called rubber roofs. (Dicor calls it Brite-Ply.) Literature is provided with new RVs. Most people never pay attention to it, if the dealer even bothers to pass it on. Used RVs also seldom have the information.

You can get information sheets from Dicor Corp., PO Box 1806, Elkhart, IN 46515. (219) 264-2699. Best way is to use their Web site at [www.dicor.com](http://www.dicor.com) for much more extensive and timely information.

A critical point: It is critical that no petroleum-based solvents, harsh abrasives, or citric-based cleaners be used on rubber roofs! Doing so can cause irreparable damage. (And seems to be the real cause of most roof

complaints, followed closely by sloppy installations. (What do you expect from installers working for minimum wage?)

Petroleum-based solvents are especially damaging. They can penetrate the membrane and dissolve the adhesive underneath. The result can be bubbles or even large, loose patches.

### **Bubbles:**

Bubbles should generally be left alone, unless there are a great many of them, which indicates a more serious problem (like extensive use of petroleum products or a poorly installed roof).

Dicor makes the material. They do **not** apply it to the RV. The RV manufacturer (in some cases RV dealers) do that. The EPDM membrane, as supplied by Dicor, should last 30 or so years (possibly longer than you will), if properly installed and taken care of.

Most blisters are small, few in number and are only cosmetic. Since they are on the roof, they are not all that visible. Cutting slits or poking holes in them and injecting sealer or caulking can lead to water leaks and further damage. If they are left as is and not carelessly torn, you are usually better off.

If you insist on fixing bubbles (and you shouldn't), make sure you use only sealers that specifically state: "butyl rubber" caulking/sealant.

There are a lot of sealers, caulks and care products that have something like "Okay for rubber roofs" on the label. Do not accept that as a fact.

Insist on butyl rubber ingredients for sealers and caulking.

When attempting to fix (flatten) bubbles, don't just start cutting away. Get some disposable medical syringes from a pharmacy. Load one with some of the butyl rubber sealant, carefully inject some and carefully massage the bubble. Once it's flat (*this can take a lot of massaging, hey, I warned you*), put a piece of cling wrap or wax paper over it and put a weight on it until dry. You might be successful and might not.

One place you can successfully use the butyl rubber sealant (and really do some good, rather than just screw around with bubbles) is at the edges of

the roof membrane. Roof vents, plumbing vent pipe holes, roof edges under trim strips, air conditioner openings, etc., are all subject to loosening at the membrane's edges. (This is often caused by a sloppy installation.)

Refrigerator roof vents are especially troublesome. Installers often cut the opening through the membrane rather casually. They then fold it over the edges of the vent hole and don't adequately secure it. Over time, and with the heat that flows up through the vent, air flow can be restricted (and it doesn't take much to cause the all-too-common complaint that the reefer isn't cooling properly).

RV manufacturers do (frequently) an absolutely lousy job of installing refrigerators. Poor ventilation is (experts say) the primary cause of refrigerator failures. I recently heard of a refrigerator ruined because the manufacturer simply cut a hole in the roof over a reefer and let the rubber-covered plywood drop on top of the reefer. No venting equals no reefer. You might want to see what's really under your roof vent.

**Maintaining the rubber roof:** Mild dish washing detergent (Dawn, Joy, etc.) should do the job unless parked under really grody trees. Use a mild-bristle brush. Do not use harsh abrasives or a stiff brush. A sponge is okay for scrubbing, but a brush is needed when rinsing. (Using a sponge when rinsing just smooshes the dirt around and doesn't get rid of it.)

Full-strength household bleach is good for stubborn stains (but don't slop it all over, or it will run down the sides and screw up your wax job).

Dicor makes a safe cleaner. Their "RC100 Dicor Synthetic Roof and General Purpose Cleaner" works and attacks stubborn stains when used full strength.

Mineral spirits can help with stubborn stains, but, you can't spread it over large areas and must work very fast (spot clean and flush it off quickly) or it can deteriorate the membrane.

Another good protectant is "303." It will not harm rubber roofs and will keep crud from accumulating, but, Dicor insists it isn't really necessary. (Does this remind you of the days when Andy Granatelli sold STP? He

finally admitted it didn't really do any good, but didn't do any harm either.) What the hell, it's your money. "303" can be used for lots of things.

### **Something to think about then:**

A word often used in discussing (so-called) rubber roofs is *"if."* As in rubber roofs can be dandy:

**If the basic structure** (rafters, etc.) is sound.

**If the ply underlayment** is sound and of adequate thickness.

**If the rubber sheeting** is carefully laid on without gouges, cuts, etc.

**If done without** careless trimming around things that penetrate the roof.

**If done without** any nail/screw heads/wood splinters and such left so that they'll eventually penetrate the rubber from the underside, etc.

**If rubber adhesive** is properly applied so bubbles won't appear later and edges won't come loose.

**If rubber material** is properly folded over roof edges, carefully trimmed and moulding is properly applied.

**If the RVer** doesn't screw things up by gouging, scraping, etc.

**If the RVer** uses the specified mild-detergent cleaning agents and never uses a petroleum-based cleaner or protective coating.

**If the RVer** reads the material that accompanies the roof and understands that there will be discoloration of the roof, which won't hurt anything.

**If the RVer** understands that minute particles (dust) from the roof membrane will flake off, and combined with water, make some dirty-looking marks on the RV, which are easily washed off.

### **In summary:**

Rubber roofs are not cheap. They require care. If installed properly and if maintained properly, they can be very nice and almost leak-proof. The material, if properly applied and maintained will flex just slightly with temperature and weather and may (should?) last the life of the RV. However, any deviation from any of the above "ifs" can be a real problem.

"Hitcharama RV" in New Jersey uses a product called "Reliable Cleaner" for all their coach preparations. It contains Glycol-Butyl-Ether, Non-ionic Surfactants, Sodium Metasilicate and is water based. Might be okay?

### **After-Market Kits to "Recoat" a Rubber Roof:**

The kits available to do this will cost at least several hundred dollars (\$700

or more?) from Camping World, etc. You'll have to remove everything on the roof to do the job properly or you'll have all the loose edges, untreated areas, etc., as discussed above. If you don't do the job properly, you'll have just pissed away that several hundred dollars. Preparation of the existing surface is exhausting and must be done properly. Or you'll have ...as above. A minimum of four coats (of various substances) are required -- yet more hard labor -- and they all have to be done right, or ...as above.

If anyone is considering "resurfacing" an existing roof with "paint on" stuff, I suggest you first check with a shop that can remove the existing "rubber" cover and install a new one. If you're a careful shopper, you may find that they can put on a new roof for only \$200 to \$300 more than your resurfacing "paint" job. I don't know about you, but it seems cheap to me considering all that's involved.

### **Bonus stuff:**

While lurking around the back room of a place that does rubber roofs, look for fairly large scraps of the membrane. It makes excellent gasket material for water pumps and sewage macerators. It's good for covering sharp edges and inserting between things that rub together. It maintains its flexibility and is good for use as a flap over outdoor electric receptacles and leaky upper hinges on storage compartments.

### **Other Roof Coatings.**

There are a number of paint-on/roll-on coatings available. Standard, mobile home or RV roof coatings of this type are not suitable. All they will do is flex, crack, peel and leak. You must use a coating that is clearly labeled as being an "Elastomeric." Elastomeric simply means it has a teflon-like ingredient that allows it to stretch as much as 40% without cracking loose.

Properly applied, in successive coats, using one gallon per 10 feet of roof length, this stuff prevents leaks and enormously improves insulation. The key is "properly." First, you've got to properly seal everything up. Then you have to scrape off the loose crud, globs of old asbestos coating, flakes and such. Use a cleaner to remove mildew. Fortunately, you don't have to remove all old coatings, just the shabby stuff. Good elastomeric will cover a multitude of old sins.

Seams, cracks, edges of patches and the like should be treated first. Building supply stores will have a 4-inch wide fiber mesh tape (usually yellow or black) made for this purpose. If you use the "Liquiply" brand of elastomeric, they have a matching caulk that comes in gallon cans and caulking-gun tubes. It's the same as the coating, just thicker.

Spread a layer of this all along the seam, for example about 6" wide. Embed a length of the tape in it with fingers, putty knife or similar. Let it dry. Then spread another layer over it and work it well into the tape. Touching up is easy. Just add more after the previous layer dries. (If you keep spreading or brushing this stuff too long, it starts to dry and gets hard to handle.) If you're using the Kool Seal brand, you won't have matching caulk, but the coating itself will do as well. You'll just need to spread more layers because it's thinner.

Finally, coat the whole roof with successive layers. You want a nice thick coat, but don't lay it on too thick at one time or it'll take forever to dry. The base material for elastomerics is a latex. If it gets rained on before it dries, you've got a mess. The stuff can be sprayed on, but you'll get it all over everything. Brushing works well. Some people use a paint roller for even coats but it's hard to spread because it's so thick. One gallon per 10 feet of roof length (don't deduct for A/Cs, vents, etc.) will allow about three good coats, even if you use some for patching seams.

Properly done, you won't have leaks and in our test we measured (albeit unscientifically) a 20-degree reduction in roof temperature during the summer. That's significant.

## **Is it condensation or a leak?**

Is it a leak from outside or inside? Frequently, people have damp bedrooms and bathrooms, often with a musty odor. No big puddles, just damp and smelly. The first thing they do is start running heaters and fans. Then they cover the walls, put in storm windows and buy sacks of moisture-absorbing chemicals. What they should have done first is check for leaks.

### **The Toilet:**

The toilet is often the culprit, but not usually the sewer connection

through the floor. If that's the problem, it won't be just a bit smelly, it'll really be smelly.

The vacuum breaker and the toilet inlet valve, if just slightly loose, will allow just a bit of water to leak at each flush. This water is concealed by the cosmetic plastic housing around the toilet. Little by little, it permeates the carpet. It's complicated by the toilet being jammed in a corner or up against the wall. Many RVers have never gotten down on hands and knees and really examined what's going on down there.

Try poking a flashlight in behind the toilet, then hold the pedal down for about three gallons worth. Feel around with fingers.

### **Tub or Shower:**

The tub or shower, especially if mounted above the floor, is another likely place. Many are surrounded by vinyl wall covering with joints "sealed" by moulding. Again, a little bit of water, over a long period of time, finds its way down, down, down until there's a permanent damp area. In many rigs, the entire floor is carpeted during manufacture and everything is built on top of it. Eventually, the whole place becomes a giant blotter.

On hands and knees, with a flashlight, peer under cabinets, remove a few drawers, open outside compartments, have someone turn on shower and spray around a bit. Look for evidence of moisture on walls. Examine closely the connection between trap and drain. Like windows and other openings, don't try to squeeze a bead of tub sealer along all the seams; it'll just look crummy and won't last. Remove suspect mouldings, reseal and replace.

### **Water Lines:**

Water lines can really fake you out, especially where the city water fitting enters the RV. It's usually halfway up the wall. If the leak is serious, there will be a big wet spot somewhere. If it's a slight leak, the water may run along the line for several feet and just slightly dampen lots of places (usually behind cabinets, under beds and the like). Sometimes you can feel around for this kind of leak. Just one wet drop on your finger means a leak. Plumbers (good ones) don't rely on fingers, they use a wad of toilet paper. Any moisture at all will show up.

Most RVs now use the gray, plastic water line with "Qest" style fittings. These can be fine if installed properly and not stressed. Connections are made with rings clamped on with a special tool. RVers often try to fix these fittings, or add on new ones, with standard hose clamps. This is the way to cause more, or worse, leaks. If you have this kind of plumbing, it's to your advantage to invest in the proper tool.

### **More Inside Leaks:**

So far I haven't mentioned condensation, just water that gets in from someplace and gives the same effect. In most cases, this kind of thing is what people think is condensation. Actual condensation is usually taken care of through adequate ventilation. Your door, range hood vent, furnace, air conditioner, window frames, and several other places all combine to provide a lot of ventilation.

Even with good ventilation, there are several in-house activities that can saturate the air with moisture. It, in turn, condenses on walls and everywhere:

- Washing clothes, dogs and similar, and hanging things to dry in the bath.
- Boiling lots of water for a long time (like 6 qts for noodles) without using the range-hood vent fan. If your fan, like most, is ineffective and noisy, get a good one. You can get 12 VDC or 120 VAC "muffin" fans (as used to cool electronic equipment) that are very quiet, use very little electricity and will move up to 105 cfm (cubic feet per minute) of air for as little as \$15 from electrical surplus places.
- Running a water distiller in your house is going to load the air with water. So will the endlessly running coffeepot.
- Catalytic heaters make water vapor. As from any other source, it will condense on cool surfaces unless you ventilate. Odd as it seems, slightly opening a ceiling vent can reduce this moisture significantly without making the house cold. Another point: catalytic heaters technically don't heat air, they radiate heat directly to objects (and people). However, air is full of dust and other particles which get heated. Running an ordinary fan, at low speed, circulates this warmed air and actually makes the RV feel warmer (unless the fan is pointed at you).

Circulating air, even in the winter in a closed RV, can greatly assist in dissipating moisture. Note how motor homes often use one or two small fans on the dash to remove "fog" from windshields. The same fans, table fans on low, muffin fans mounted on the ceiling and pointing along the length of the RV, can all help. (And in some cases, solve the whole problem.)

Two people in a closed-tight RV, along with panting pets wee-weeing in a cat tray, wet towels, simmering coffee pot, convection/microwave (where do you think all that steam goes?) etc., will pump a lot of water into the air. If you don't get rid of it, you'll have condensation problems (and the place will smell).

### **Building Better RVs:**

Building better RVs is not a suggestion, it's already being done. In some cases this results in odd problems. I examined one new, lightweight, super tight RV that apparently had such extreme condensation up inside the ceiling that water was dripping from seams. Lowering a bit of the paneling we found soggy insulation.

Condensation? No. It just seemed so. A slight leak in the roof allowed water in. The inner ceiling had been built so tightly/well that it didn't just run on through as usual. But, in that closed, warm space, it just kept turning to vapor until the whole thing was loaded with water. Finding and fixing the leak was a problem. Drying the inside out was an enormous problem. The main point, though, is that condensation didn't cause the problem; it was the result.

### **Refrigerators:**

Refrigerators don't usually contribute to general RV condensation, but they can. If the reefer is soaking wet inside, it might be working too hard and/or have a loose fitting at the door gasket. Fix it. If it's wet enough inside, the water will run out the bottom and ruin your paneling, carpet, and contribute to interior moisture. That's not condensation; that's a leak.

More often, excess water is due to "dumb" stuff. Most reefers have a tray under the inside fins to collect water (and most are now self defrosting, so they make water quite often). A hose is connected to the tray and lets

water go through the back of the fridge where it collects in a cup and evaporates.

Frequently, people don't properly connect the inside hose to tray and water just runs down inside the reefer. Also, people might connect the hose but don't fully insert the tray into the exact position under the fins (often because they put a huge hose clamp on the hose and the tray will no longer go where it's supposed to).

In either case, there can be lots of inside water. Instead of checking for the obvious, they go out and spend money on battery operated air circulating fans and other forms of foolishness.

Unless it's way too hot outside, the RV reefer should not make so much water that it overflows the evaporator cup or runs down inside the fridge. Nor should you require added air circulation inside the thing or up the back of it UNLESS you have a faulty unit, loose gaskets, have overloaded it with stuff, or keep opening the door for ice cubes. Similarly, if your cup keepeth running over, you might want to run the hose outside the rig (old RV tip), but you shouldn't do so without also determining the actual cause for so much water.

### **Real Condensation:**

If you haven't a leak, haven't carelessly been making your own condensation, and have ventilated the RV properly, you shouldn't have any condensation problems. But you might anyway.

Some RVs are constructed so cheaply, with so little insulation, that outside temps collide, if you will, with inside temps. If it happens on the outer wall, you get moisture and rot inside the walls. Inside, and you get sweaty walls. As a worst case, you get both. The simplest fix is to get rid of the thing. (Next time, become a member of the RV Consumer Group before buying an RV so you'll be warned of faulty rigs in advance.)

Some people choose to reinsulate. It's a job, removing paneling, but can be done. You don't need to remove the paneling completely in some cases, but can get it far enough away from the wall to allow slipping in 3/4 inch pieces of urethane foam. Not a lot of fun, but some of us have done it when we didn't want to or couldn't afford to get rid of the RV.

Often, a second wall covering will do the job. Sometimes carpet works. I had one rear room, with minimal heat, and the walls always felt cool and damp. After carpet covering they didn't. A front room was well heated and at times very damp. Carpet with a 1/4 inch foam backing took care of it. However, you need to experiment first before going through the carpet installation, because you might just be covering up dampness that's still there, doing its dirty work behind the carpet. Scrap carpet, temporarily attached, can give you a clue. (See more below.)

There are some very high quality vinyl wall coverings available. Not just wallpaper, but thick vinyl. In all cases, the added coverings give better insulation. And they certainly look a lot better than the cheezy paneling that comes with the RV. (Carpeted walls make it easy to hang things also. When you move them, you just rub the carpet and the mark's gone.) Some people cover walls with cork. Works well, but you get an incredible amount of dirt off it without a protective spray coating.

### **Metal Frame RVs:**

Some of the so-called "better" RVs have metal frames. If the siding and paneling were attached properly (over a thin foam-core or similar barrier), you shouldn't have a condensation problem anyway. If not, the metal frame makes a "bridge" right through the wall and you'll see wet or damp areas. These "bridges" often take the form of vertical and/or horizontal "lines" of cold, damp about 1-1/2" wide (indicating that the metal structure inside the wall is up against the paneling with no moisture barrier). Sometimes, wall coverings, as mentioned earlier, work. A test is to get a roll of the foam-and-aluminum-foil tape with a slightly tacky backing that is sold to wrap pipes for insulation. If you're lucky, you can tape a few pieces to the wall to see if a covering works. Remove tape without peeling the cheap paper "wood grain" and trade the rig in if it doesn't.

### **Metal Window and Door Frames:**

These can be real "sweaters." Some of the most expensive RVs have compression-type frames where the outer and inner window, for example, are squeezed together with screws (and aren't really attached to the RV siding at all). The result is an instant bridge and moisture. Storm windows

generally work, but who wants to haul around all that junk? Some people have had good luck with removing the inside frame and covering its inner surfaces with glued-on or sprayed-on vinyl or foam. Others have succeeded in just putting up good draperies (but not often). Some have had success with the wood slat and woven yarn window coverings. Some have "outlined" windows with a wood frame of 1 x 2 inch and fitted the above or pleated shades inside them. Very nice and, if done with care, like an overlapping edge of lath to go around the ends/bottom/top of the shade, can provide a total window cover. You'll be amazed how this kind of window cover can save heat in winter and cool in summer. Some of us have built things like Japanese-style shoji screens (with plastic, not paper) over the windows. The point is: Get imaginative.

Doors? Hang a drape on a swinging rod inside the actual door. It reduces condensation in cold weather. Remove in warm or leave it and have an extra fly barrier. (Also prevents visitors from standing there with their nose up against the door.)

### **Heaters and Dehumidifiers:**

Failing all the above there are, of course, heaters and dehumidifiers. Unfortunately, all are electric, heat-producing devices. Most are only available in 120 VA. If you've trudged through all this and corrected all the deficiencies, you shouldn't need them unless you're parked in a humid swamp. Some samples available in most boating, and many RV, stores are: Thermo-electric heaters, 8 watts to 25 watts of safe warmth to eat dampness. There are several crystal-filled bags/jars of stuff available that soak up moisture.

Definitely not recommended are simple light bulbs. Dangerous! Especially when used in closets.

### **DRY ROT (Called *Serpula Lacrymans* -- more accurately should be called wet rot.)**

You won't find any technical references that I know of. Most repair shops won't even attempt these repairs except at great (prohibitive) cost. It can cost more than the RV is worth. Still, sometimes, for various reasons, people do successfully rebuild such a mess.

**Just a few tips before you get started:**

Don't start taking things apart until you know where the water leaks are coming from!

To do this effectively, you need to "overpressurize" the interior of the RV. It's simple, but can take some time. You will seek to have more air pressure inside, than outside. Simply tape up vacant "holes, cracks or other openings" and/or stuff them with what's at hand. Then, run a line from an air compressor or (vacuum cleaner backside) into the RV. It's not critical that everything be totally "tight."

A more efficient (quicker) way to do the above leak check is to rent one of the fans used to inflate portable structures. It has a BIG fan and feeds the air through a very large flexible hose. You can stick the hose end in a window and plug the excess space with tape, cardboard, rags, etc., as above.

Before doing the leak check, you'll need to open some of the inner ceiling so the air can pressurize the roof. Easier way is to remove trim from ceiling vents and (gently) pry inner ceiling loose and insert wedges, pencils, whatever to keep it open.

Once the air pressure on the inside is more than the air pressure on the outside, you go around the whole RV (sometimes on a ladder) and spray a windex-type bottle, with a mix of detergent and water, on any possible "leaker" place (like you would when looking for an LP gas leak). Seams, joints, whatever. If bubbles appear, that's where air is leaking out -- and that's also where water is leaking IN. (This is basic high-school physics.) Mark these places.

Your next job is to fix those leaks! If you don't do this first, and if you don't do it properly, leaks (and more dry rot) will keep coming back to haunt you in the future. (Fixing leaks is covered in earlier paragraphs above.)

**Aluminum extrusions:** These are little more than cosmetic crap that conceals the crummy way an RV is assembled. Before you actually fix the leaks, you'll need to remove a lot of the extruded aluminum trim pieces. Do it carefully, so you can reuse them. Peel off the cheezy, smeared caulking and putty tape sealer (aka monkey poop) and examine the seams for leak evidence (per your marked bubble areas from earlier). If you then

remove the staples/nails holding the siding in place at the edges, you'll be able to "gently" pry the edges loose to a surprising degree (putty knives, slim wedges, etc.). This allows poking around to see what you really have/don't have in there.

While you're doing all this, it's obvious you need the RV under a shelter or have a large tarp you can batten down during inclement weather. As you go through this drill, the interior framing should start to dry. While that's happening, you should still be inspecting and examining.

Don't just initially tear out anything that appears rotted. Some dry-rotted wood can be "rescued" -- at least to some extent. The product I use is called "Git Rot" and is available at good marine stores or from "West Marine" ([www.westmarine.com](http://www.westmarine.com)) or (800)-boating. I recommend you call West Marine and get their "master catalog." There's a whole bunch of products in there that most RVers don't know about. "Git Rot" is a two-part mix (like an epoxy, but thinner). Much dry-rot can be saturated with this. It creeps through the wood and does a "molecular thing" with the cellulose that's left. If properly done, the remaining wood is like an epoxy and can be cut, drilled, etc. Added pieces of wood can be affixed to it and you can, if careful (lucky) end up with a rather stout structure. Git Rot is tricky to use. Carefully follow the detailed instructions! West Marine has a few other similar products as well. Another favorite dry-rot product is "Poly All" at [www.polyall.com/wood.html](http://www.polyall.com/wood.html).

Once you open up the outer shell, and locate the rot, then, before you start using Git Rot (or similar), you need to open up the inner shell (at appropriate places) as well. Cut away the thin paneling on the inner RV. Save the pieces for patterns when replacing. Once removed, you will *REALLY* see the rot that might be in there -- and be able to repair it.

**Ref: Fiberglass outer skin.** If you do the job right, you should be able to save the outer fiberglass skin (because it's hard to find). If you're lucky, you'll have a preformed end cap. The entire end cap can be removed to get to the structure (not hard, just laborious). You'd want to "beef" the cap up anyway and removing it makes getting to the structure easier. If you've just got fiberglass siding butted together at the corners, try to save it. Finding fiberglass that matches your RV's style will be difficult. First, try the RV manufacturer. Also try calling local RV shops and ask where the

damaged "junkers" go. Check "yellow pages" for fiberglass distributors (who can refer you to retail sources). You might call "Wabash National Parts" (800) 621-7949 for a clue. Also check [www.all-rite.com/fiberglassiding.html](http://www.all-rite.com/fiberglassiding.html) for what they have available.

**First, fix the leaks.  
Then reduce the water you make on your own.  
Then insulate the thing properly.  
And, then, you shouldn't need extras.**

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