

**How-to: Remove and Replace Vinyl Graphics**

# RV ENTHUSIAST

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# RV ENTHUSIAST

NORTH AMERICA'S PREMIER HOW-TO RV RESOURCE

March 2022

Volume 2, Number 3

## INSIDE



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### A.I. Comes to RVs

Is there an RV with artificial intelligence (A.I.) in your future? The short answer appears to be “yes.” Jayco’s ‘JayVoice’ — and the anticipated debut of Winegard’s ‘Halo’ system later this year — bring artificial intelligence to the RV arena by turning RVs into ‘smart’ homes. And they won’t always need an uplink to “the cloud” to function.



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### Graphic Arts

All the cleaning and buffing in the world won’t prevent vinyl graphics from deteriorating over time — there’s just no stopping the ravages of the sun and weather. That said, you don’t have to live in deteriorating conditions. If your sidewalls are showing their age with dull, cracked or peeling decals, you can restore the shine with computer-generated vinyl.

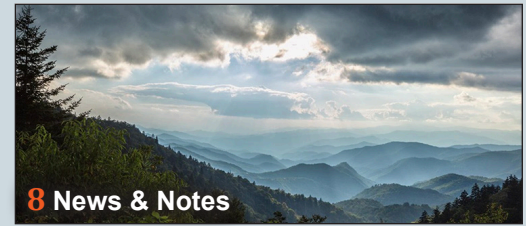


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### Taking ‘Spring Cleaning’ to a Whole New Level

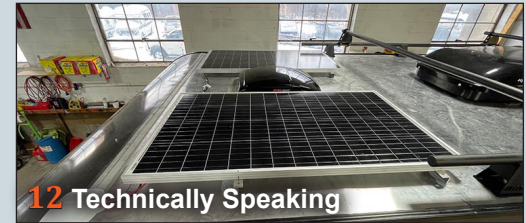
Keeping an RV’s exterior looking new requires a serious commitment from the owner. Allowing dirt and bugs to bake on the surface leads to a dingy look and accelerates oxidation that dulls fiberglass, metal or painted exteriors. It’s not easy to wash and wax an RV, but there are techniques that will curtail the amount of time and effort needed to get the job done.

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### 8 News & Notes

There’s a lot to note as winter turns to spring and thoughts turn to RV rallies like FMCA’s Tuscon, Arizona, shindig and Escapees RV Club’s Tennessee get-together. Plus, a look at a “pop-up” with true panache, info on how to gain RVTI-certification for would-be service technicians — and a lot more!



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Chances are, you have found yourself with certain quandaries while camping, from whether to leave your holding-tank valves open, using solar power for light loads or experiencing less output from your roof-mounted air-conditioner. Here’s RVE Tech Director Bill Gehr’s advice on these and other matters.



### 57 Making Memories

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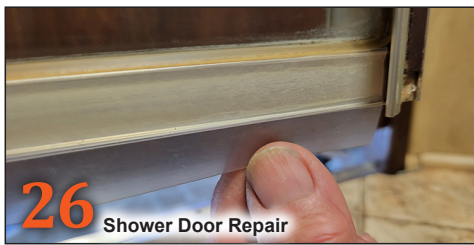
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No matter where you camp or how long you’ve been RVing, you’ve probably confronted a problem or two. This issue takes aim at some of the more frequent dilemmas RVers face — and how to rectify them.

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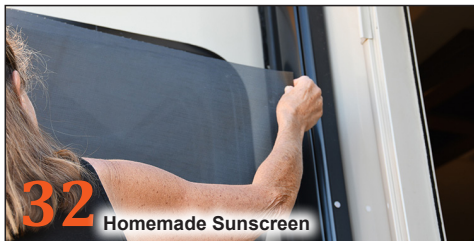
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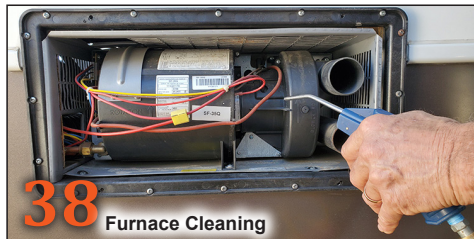
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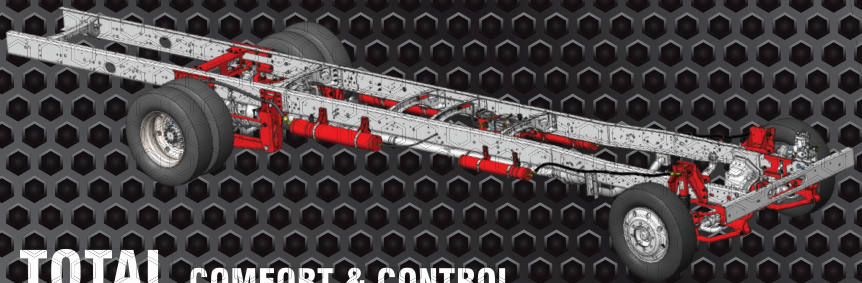
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By Bruce Hampson

If you've been sitting on the fence debating the pros-and-cons of owning an RV, chances are you've picked up on one big stumbling block to the popularity of the lifestyle blowing up even more than it has during the past year or two: cost. You'd be hard-pressed to miss it. That laminated travel trailer or fifth wheel or motorhome you may have been eyeing has doubtlessly increased in price — sometimes dramatically — since the first time you saw it just a few months earlier on a dealer's lot.

Contrary to what you might have read on social media sites, this has nothing to do with manufacturers or dealers "price gouging" their customers. Such moves would be contrary to an industry riding high and doing everything it can to continue to fuel that passion for the outdoors. Unfortunately, like many businesses today, it's been swept up in a "perfect storm" of circumstances it has no control over — and we are all learning of the impacts from supply-chain shortages to transportation issues.

It has, truth be told, been keeping a lot of people up late at night in an effort to develop "work-arounds" to keep the RV pipeline flowing.

"Pre-pandemic, a 3% increase in the price of an RV was viewed as a lot for a year," said Ben Hirsch, COO of Campers Inn, a Florida-headquartered dealer group with 29 dealerships in 14 states. "I don't have the numbers off-hand, but I'd venture a guess that the average RV has gone up close to 30% from March 2020 to March 2022. That's a lot. The increases don't seem to be coming as quickly as they once did, but we're still seeing increases — so it doesn't appear to be over quite yet."

The litany of outside factors hammering the industry are myriad, Hirsch noted, and include everything from a labor shortage in the RV-manufacturing hub of Elkhart and Goshen, Indiana — which in February recorded the lowest unemployment rate in the country at just 0.9% and has caused a "bidding war" of sorts for skilled labor — to freight pricing.

Hirsch's comments were echoed by a top executive I spoke with at one of the major brands, who agreed to speak frankly by not being identified publicly.

"It's not uncommon for a source to call an RV supplier and say 'Hey, I've got that product for you loaded on our truck — and it's going to cost 'X' amount of dollars.' And that price is well beyond what was originally contracted for. The reply, though, runs along the lines of 'Well, right now our raw materials and labor costs have gone up so fast that we can't do it for that price anymore without losing money. So, you can either take it at this price or we literally have nine people lining up behind you to take it.'"

As he outlined, the litany of external forces wracking the RV industry are eye-opening. Aside from the aforementioned labor costs and raw materials costs — which literally affected everything — simply getting product from overseas has proven to be problematic.

"At one point, they literally ran out of containers to ship out of China," he said. "As a consequence, container prices went anywhere from \$3,000 up to a record of \$50,000 for a negotiated container."

Closer to home, remember that winter ice storm that ravaged Texas in February 2021? One of the companies it affected was the Dow Chemical Company — a major producer of

the chemicals used to formulate everything from foam to glue.

"We didn't have alternative sources for a lot of that stuff because a lot of our suppliers — the companies who take the Dow chemicals and make the final stage product — wouldn't source some of the raw materials from China because they didn't trust them," he added. "So we've been impacted by a lot of things that you would not think of. Whether it be screws or hardware or faucets, there's not a single item that I can think of that has not been affected in some way, shape or form from a shortage.

"How am I supposed to build and sell a product when I don't know what the final cost is going to be?" he said. "So we've had to pass on the price increases that we used to be able to negotiate. We tried to hold retail pricing — but for the first time in my years in the industry, we couldn't price-protect retail-sold coaches."

Still, the OEMs continue to search for solutions, including sourcing components from alternative suppliers and streamlining operations.

"So, instead of offering five or six different options for a particular model we might limit it to two options," he said. "That way, we can buy more of those two particular items — and gain a lower price — versus buying fewer of five items."

That said, it's still virtually impossible to completely hold the line on price increases in this environment. As the manufacturing-side executive noted, he will give dealers prices "with the understanding that we cannot guarantee this price when it arrives. But what a lot of dealers are doing is telling the customer, 'Here's the MSRP today — and here's the percentage off MSRP that we are offering. When this unit arrives, whatever the MSRP is at the time, we will give you that same percentage off.' It's been very successful for our dealers, because customers recognize the uncertainty in the market every time they go to the supermarket or the gas station."

Perhaps most importantly, Campers Inn's Hirsch said, the dealer needs to be completely transparent with its customers.

"We have seen significant cost increases over the last year," he said. "And we still believe that the products are great with great features — and we show customers the features, we talk about camping — and we're honest about how prices have gone up. Most customers understand it. They've gone online and read people talking about it. The challenge right now is that it is so dependent on what they buy and who they buy from, both on the manufacturer and dealer sides. The long term, for Campers Inn, is about making sure that we have a customer for life. We want to make sure that they are able to afford not only this, but the future RV they want. I don't think this is an easy time to have a 'one size fits all' answer for the consumer."

However, if you aren't looking to keep your current RV — which is what we're here to help you do — just don't wait too long to pull the trigger.

"I've heard some customers say they were going to sit on the sidelines and wait for the prices to come back down," said the manufacturing executive. "I don't anticipate them coming back down. They will definitely stabilize and level off, but a lot of us have put in infrastructure for customer support, we're buying better components to try to eliminate warranty issues, we've had to increase wages to find and retain good employees. You can't just go backwards on those things. I think some of this is baked in for the future." **RVE**



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# A “Pop-up” with Panache



Home V90 Villa Edition is built in China and, should it go into production — at an estimated price of \$413,000 — will probably only be offered there.

That said, the ‘Villa Edition’ is filled with technological features that make one wonder why such units aren’t built stateside. Well, beyond the obvious cost factor. Many of its features, from interior and exterior lighting to an integrated power management control center, can be accessed using a smartphone or tablet — or voice commands and hand gestures.

But it’s the second story that really “elevates” this RV into the realm of “I want one!” The Class C cruiser uses glass panels that fold in half when not in use but lock into place when the roofline is raised. The net result is a wonderfully open lounge with a forward balcony. Too bright for you?

The glass panels can turn opaque at the touch of a button. Trick? Absolutely. Pricey? Undeniably. Available? It depends.

Pop-up campers are nothing new in the RV world. Nor, for that matter, are rigs with two levels. Both technologies have been tried — with varying degrees of success — through the years. But

now it appears that one company has melded the two philosophies for creating more room into one vehicle — and it’s for sale.

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reservations have been made using the multi-reservation shopping cart. Beta users averaged booking three sites per transaction — with outliers reaching 20 different sites across a season. For more information, visit [koa.com](http://koa.com) and click on the shopping cart icon at the upper left.

## Retail RV Sales Set Record in 2021

The RV industry set a new record for retail sales last year as 567,079 registrations were recorded across North America in 2021, as reported by *RVBusiness* magazine. That’s an 8.4% increase — 43,981 units — better than the previous record of 523,098 set in 2020, according to Statistical Surveys Inc., the Grand Rapids, Mich.-based

As campers begin planning and booking for a new year of travel, the majority are reserving three to five months before they plan to travel (22%) according to the latest research by Campgrounds of America (KOA). So, the company released a multi-reservation shopping cart on its website.

With this new functionality, guests can complete multiple reservations at one campground or across multiple campgrounds in one transaction, making booking faster and easier across KOA locations.

Since going live on the KOA website, the company reported more than 6,500

supplier of RV industry retail and consumer demographic data.

Nearly every segment also saw a year-over-year increase, with the exceptions being camping trailers (8,815 in 2021 vs. 9,629 in 2020; an 8% decline), Class A motorhomes (15,501 vs. 17,514; -10%) and Class C motorhomes (26,106 vs. 27,234; -4%).

Otherwise, it was all positive for the following categories: Class B motorhomes (11,874 vs. 8,725; 36%), fifth wheels (110,249 vs. 90,150; 22%), truck campers (1,920 vs. 1,725; 11%), travel trailers (389,949 vs. 365,931; 7%) and park models (2,665 vs. 2,550; 4.5%).

It's worth noting that the annual

record was set despite the final seven months showing year-over-year declines. For example, there were 23,056 retail registrations in December 2021, a 19% decline from the 28,404 units recorded in the prior December. Prior to this streak, though, there had been 12 months in a row of record retail registrations.

## FMCA Rally Set for Tucson, Escapees Heads to Tennessee



Planning on being in the Southwest — specifically, the southeast area of Arizona — later this month? Consider taking in the Family Motor Coach Association (FMCA) 104th International Convention and RV Expo, set for March

23-26 at the Pima County Fairgrounds in Tucson.

The event isn't just for members. FMCA invites all RV owners to join the festivities. And those who are considering the RV lifestyle or are just curious have an

opportunity to take part as well. One key element of the event — being called "Sunsets + Saguaros" — is the RV Expo. Major RV manufacturers and dealers bring the latest models and invite convention attendees and members of the public to stop by for a tour. RVs in all shapes and sizes will be open for inspection during show hours. RV-related accessories, components, services, and other products of interest to travelers will be available as well. When they aren't shopping, attendees can take part in seminars. Various RV experts will conduct sessions during the event. Topics range from tire maintenance, technology, and safe driving to RV trips to Alaska, New Zealand/Australia, and more.

A variety of daytime and evening entertainment is offered, and attendees have numerous opportunities for socializing with others who share their love of the RV lifestyle. These range from

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Meanwhile, Escapees RV Club will be holding its annual RV rally, Escapade, June 19-24 in Lebanon, Tennessee, at the Wilson County Fairgrounds.

What started as a small gathering of 24 families in 1979 has grown to host hundreds of rigs and thousands of members and visitors each year. This year's event promises great music from groups like Charlotte Pike, Cornfield Mafia, The Po' Ramblin' Boys and Charlie's Bad Habit, along with a talent show full of memorable performances from Escapade attendees.

Attendees can pop into seminars each day throughout the week and learn about handy topics such as towing, domicile, solar power, boondocking tips, mobile internet and more. And while the adults are attending seminars and socials, Kidscapade ensures even the youngest RVers have an opportunity to spend time with others like them, with each day's lessons and activities often inspired by the local history of the area. Other highlights include a photo contest, chili cookoff and tours to Nashville. Additional information can be found at [escapade.escapees.com](http://escapade.escapees.com).

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## Is There a Hydrogen-Powered RV in Your Future?

Cummins Inc. announced in mid-February it is expanding its powertrain platforms, leveraging a range of lower carbon fuel types. As the industry's first unified, fuel-agnostic engines, these platforms will use engine blocks and

core components that share common architectures, while above the head gasket they will have different components for different fuel types.

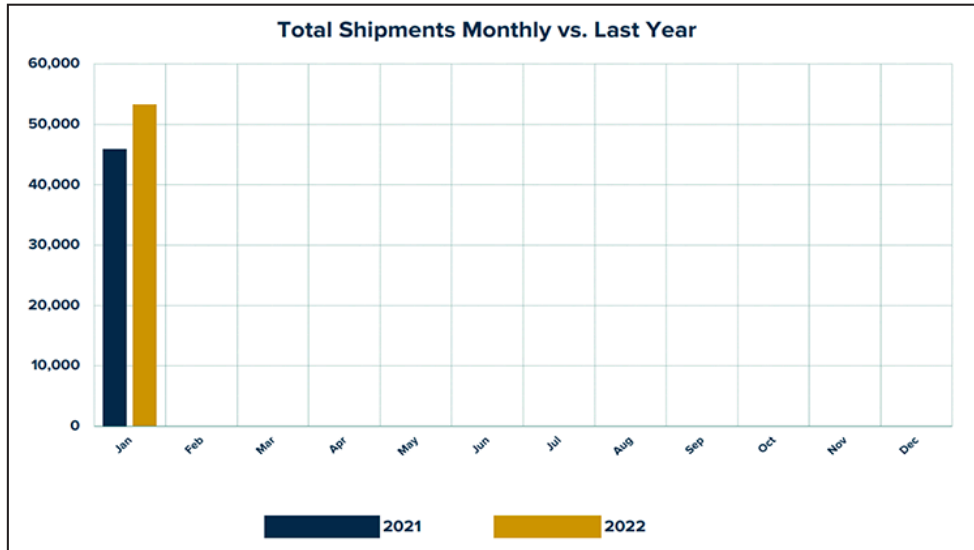
This new design approach will be applied across the company's B, L and X-Series engine portfolios, which will be available for diesel, natural gas and hydrogen. Each engine version will operate using a different, single fuel. These fuel-agnostic platforms are

designed and built upon the learnings extracted from millions of diesel and natural gas engines manufactured and currently in use. Today's digital and connected technologies allow Cummins to extract insights specific to different engine duty cycles, and leverage these to design reliable fuel-agnostic platforms.

The new engine designs, said one Cummins representative, "offer the

company a new way of designing and developing lower emission internal combustion powertrains...while leveraging the benefits of a common product architecture and footprint where possible." The unique approach will allow end-users to more seamlessly pick the right powertrain for their application with the lowest CO2 impact.

## January RV Shipments Set New Mark



Results for the RV Industry Association's (RVIA) January 2022 survey of manufacturers showed total RV shipments ended the month with 53,290 units, an increase of 16.0% compared to the 45,930 units shipped during January 2021.

This January was also the best on comparable record, according to the association, and comes as the industry set a record 600,240 wholesale shipments in 2021.

Towable RVs, led by conventional travel trailers, ended the month up 17.3% against last January with 48,565 wholesale shipments. Motorhomes finished the month up 4.6% compared to the same month last year, with 4,725 units shipped to North American RV dealers.

*continued on page 55*



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## Decals Look Terrible



I have a 2010 Hitchhiker made by NuWa and my wife is complaining about how terrible the vinyl stripes and graphics that cover a large portion of our fifth wheel look. I've been able to keep the sidewalls in good shape over the years, however, no matter what I did, I was not able to keep the vinyl from cracking and looking absolutely terrible. I tried scraping off a couple of the pieces, which is incredibly difficult and then very hard to get the glue off of the siding. I told my wife that we would need to take it to a professional because I cannot handle the job. Any suggestions?

— **Rob McCluskey**

*Rob, don't feel like the Lone Ranger. Most RV decals start deteriorating within 4-5 years and only get worse from there as the sun's UV rays have their way with the vinyl material. At this point, 3M, a major manufacturer of vinyl graphics, states that it does not have anything to put on the vinyl pieces to protect against UV rays. You can try Aerospace 303 Protectant, but don't expect miracles. I've had my 2010 Carriage Cameo restriped professionally and it looks nice after the new graphics were applied. The problem is finding a shop in your area that can handle the job, and the process can get expensive because it's labor-intensive.*

*If you do find somebody who will do the job, make sure that you look at his/her work before signing up. If it's not done correctly, there can be a lot*

*of bubbles, which may or may not go away over a period of time. Another option is to strip all of the vinyl graphics and paint the sections where the vinyl was removed; you could even change the patterns if they cover up the spots where the original vinyl graphics were located. Full body paint is going to be much more expensive but if you're going to keep your fifth wheel for 10 or 15 years it may be worth expense of not having to go through this process again in 5 to 7 years. For another option, read "Looking Like New" in this issue.*

## Too Cold for Refrigerator to Run

Bill, we have been stuck in bitter cold weather for a couple of months. I noticed that the refrigerator was not functioning correctly; it is a Dometic model 2852. I've had a technician look at it and he said that everything is fine — but it stops functioning overnight. I suppose if it was cold enough inside it wouldn't matter, but we keep the interior heated in this freezing weather. I'm running out of options.

— **Ruben Ardent**

*Reuben, you did not mention the ambient temperature you were experiencing during the night, but I suspect it's below freezing. I would bet that the water is starting to freeze inside the cooling unit. If the temperature drops precipitously and the electric and/or gas burner is not running, the water in the*

*hydrogen/ammonia/water solution will start to freeze and will affect the way the ammonia solution is pumped up through the boiler tube. You need to get some sort of heat behind the refrigerator in sustained temperatures below 20 degrees F. I've always used a small 200-watt ceramic heater behind the refrigerator, but space in many rigs may be too tight to do so. You can also use a mechanic's drop light with a 75-watt incandescent bulb; just make sure the light has a protective cage and keep it on 24/7. By the way: I also purchased another little 200-watt ceramic heater from Amazon and leave it in fifth wheel's forward compartment where there are a lot of water lines. I don't want water lines to freeze while parking in cold country.*

## Air-Conditioner Efficiency Over Time

Bill, we have been experiencing some very hot weather here in California lately and, of course, we've been having to run our air-conditioner a lot in our 2015 Grand Design fifth wheel. At this point it seems to be functioning fairly well and I can't really tell if there's any decrease in efficiency. One of the neighbors I was speaking to said that I need to service and clean the parts inside the air-conditioners. I'm not sure exactly what he means. Is there some sort of annual maintenance that should be performed on RV air-conditioners?

— **Gene Robinson**

*Great question. Your air-conditioner could certainly be losing efficiency without you knowing it. Over the years, the evaporator and condenser can develop a build-up of dirt, lint or other debris — especially on the exterior condenser that's exposed to the elements. And yes, you should perform an annual check-up at the very least, which, of course, is dependent on how many hours you run the air-conditioner.*

*Start by removing the interior return air filter and cleaning it thoroughly; you should service the filter at least once a week with heavy use. With the filter down, use a bright flashlight to look up inside the return-air cavity to inspect every square inch of the evaporator — especially the bottom section, which has a propensity to catch most of the oily by-products that attract dirt and debris and stick like glue. Most likely after this many years it will need to be cleaned with a mild detergent/water and a soft brush; be persistent, the dirt will come off.*

*Next, remove the shroud from the top of the air-conditioner and you will*

see the condenser at the rear. Using about 90 PSI compressed air, blow out everywhere you see dirt. Pay close attention to the condenser; you will need to blow through it to dislodge all of the dirt. It's not uncommon to find a bunch of bent fins in the rear of the condenser, which will make the air-conditioner less efficient. Although straightening each fin is tedious work, there are tools to make the job a little less annoying.

Ideally, if you have an induction amp meter, you can check current draw. This is done while the air-conditioner has been running for a half an hour or more under a full load. You can compare your numbers to the value listed on the plate underneath the top shroud. If you are drawing much more than listed rating, the air-conditioner is losing efficiency. If the amperage is low, the air-conditioner is likely low on refrigerant. One thing to keep in mind: if you're hooked up to inadequate power, the compressor will draw more amperage than normal.

## Holding Tanks: Open or Close?



My friend and I are having a debate whether I should leave my black water and gray tank valves open the entire time. He says it can create a real problem although I haven't had an issue since we purchased the trailer four years ago. In fact, he says it's not even a good idea to leave the gray water tank valve open. Perhaps you could put an end to our debate.

— Don Richardson

Don, I think this debate has gone on ever since they first invented holding tanks. After 48 years in the RV industry and being a full-time RVer for 11 years, I have it down to a science. First, do not leave the black water tank valve open. There's usually not enough slope toward the valve opening and if the valve is left open, the toilet paper and solids

can have a propensity to stay where they land while the water just drains around the pile. After a while the solid waste will build the infamous "pyramid" and create a clog, which is a real mess. Once the clog gets to a certain point, even putting a flush wand or a hose down the toilet will not break up the mass.

Leave the valve closed and use plenty of water when flushing the toilet; most RV toilets do not use that much water during a quick flush. Plan on dumping the holding tank once it reaches a point where it's three-quarters full. I suggest you rinse the black tank every time you dump; it's amazing how much sediment stays in the tank and after several years the contents/calcium can build up on the sides and the bottom of the tank and cause the tank probes to fail — which is typically the case in most RVs.

As far as the gray tank is concerned, that's a long-standing debate around RV circles. It's not a real problem leaving the gray tank open all the time; if you do, close it periodically and flush the tank thoroughly. If your gray tank is big enough and can get you through several days, leave the valve closed so you can get plenty of water running through to keep sediment from building up in the bottom of the tank. Dumping a full grey tank after the black tank is beneficial because it will wash down the pipes and dump hose.

## Solar for Light Loads



We love camping off the grid in our small trailer. We don't use a lot of power, but once in a while we would like to watch TV and run the DVD on a rainy night or not have to also worry about using the pump and overhead lights at the same time. During our last trip we noticed that the neighbors had a really nice solar system. They told us about their system, but it seemed a little bit confusing to me. The thought of covering the entire roof with solar panels and buying a lot of expensive batteries was not appealing to us. We are open to suggestions.

— Susan Dickinson

Susan, I'm excited that you're thinking about going solar. After 11 years of full-timing I certainly wouldn't want to live without my solar system, as I spend a lot of time off the grid. Fortunately, solar components have become less expensive and more efficient over the last few years. There are several efficient solar panels on the market right now and the monocrystalline panels seem to be the most efficient. One of the secrets to success is to use a quality charge controller that will actually boost the output of the solar panels; this technology is called maximum power point tracking (MPPT).

You did not mention the number of batteries in your bank, but 200 watts of solar panels should get the job done for your needs, which are rather light. If you spend time camping in winter, you should think about using tilt brackets to take full advantage of a lower sun. Make sure to use at least a 10-gauge wiring to minimize voltage loss from the solar panel to the charge controller to the batteries.

Lithium batteries are your best bet and they are much less expensive these days, especially if you amortize them over the expected 10-year lifespan. Just make sure the converter/charger or inverter/charger is also rated for use with lithium batteries.

Are you stymied by a technical problem with your RV? Write to RV Enthusiast Technical Director Bill Gehr at [bgehr@rvemediagroup.com](mailto:bgehr@rvemediagroup.com). Bill will answer inquiries as space permits. **RVE**

### Bill Gehr

Bill started his 50-year career in the RV industry when he



went to work for an Airstream dealership. After the gas shortages in the 1970s, Bill decided to start his own business and opened up Bill's RV Service in Ventura, California. After several years in business, he met Bob Livingston, and together they worked on hundreds of technical editorial projects at his shop while becoming great friends. Bill eventually joined Bob on the TV show "RVtoday," filming a number of hands-on projects. After retiring, Bill headed out full-time in his fifth wheel and toured 39 states while writing technical articles for *Trailer Life* and *MotorHome* magazines. He now is Technical Director for *RV Enthusiast*.

# A.I. Comes to RVs

Unless you're a computer geek, you've probably never heard of "Moore's Law." Coined by Gordon Moore way back in 1965, he hypothesized that transistors in an integrated circuit (microchip) — and, hence, technology — doubles about every 18 months. That's why the homes we live in today — oftentimes controlled by voice-activated artificial intelligence (A.I.) software that lives in "the cloud" and can control many of the house functions you once did manually — are incrementally closer to the lifestyle portrayed in The Jetsons cartoons of our youth than the houses our parents grew up in.

That similar systems are finding their way into RVs isn't a surprise. The speed at which they are being integrated into the mobile lifestyle is.

At one time, the RV industry was said to be 20 years behind its automotive counterpart when it came to technology, but the Jayco JayVoice — introduced on select 2022 models — comes only a handful of years since embedded voice assistants gained widespread use among auto manufacturers. And Winegard's Halo system, expected to debut later this year in 2023 models, pushes the envelope even further.

Is there an RV with A.I. in your future? The short answer appears to be "yes." And they don't always need an uplink to "the cloud" to function.

## 'Jayco, Night Mode'

"JayVoice has been a one-year project, but we've worked on 'voice' different times through the years," said Ryan Forgey, vice president of engineering for Middlebury, Ind.-based Jayco Inc. "This is not the first voice-activated trailer that we've done — we actually debuted one at our June 2017 dealer homecoming that was basically an Echo Dot-based system. That was a show unit; it worked, but we didn't take it to market.

"The other thing to be remembered is that voice is just one piece of the whole system," he added. "It interfaces with the RV-C network, so we first had to get the network that could run voice built and functional."

As both Forgey and, in a subsequent conversation, Winegard President and CEO Grant Whipple, noted, voice-acti-



Ryan Forgey, vice president of engineering for Middlebury, Ind.-based Jayco Inc. (right) and Lead Electrical Engineer Greg Baumgartner inside a Jayco fifth wheel fitted with JayVoice. Mounted in the ceiling, the module uses voice commands to trigger any of 15 current tasks.

*Jayco's 'JayVoice' — and the anticipated debut of Winegard's 'Halo' system later this year — bring artificial intelligence to the RV arena by turning RVs into 'smart' homes.*

By Bruce Hampson

ated command systems are integrated into an RV's electronics. RV-C is a communications protocol developed in 2005 by the RV Industry Association and manufactured by such companies as SilverLeaf Electronics that allows different components made by different manufacturers to "talk" to one another

in an agreed-upon language. Costly at the outset, RV-C was first used by manufacturers of high-end motorhomes but has in recent years filtered down to, in this case, select Jayco luxury fifth-wheels. Such systems also are available on higher-end travel trailers from various manufacturers.



*The heart of the JayVoice system is the Modulus Director, developed in conjunction with BMPRO and American Technology Components, which ties into the unit's RV-C communications protocol.*

"There's a whole control system hidden in the walls that makes this all work," added Jayco Lead Electrical Engineer Greg Baumgartner, who noted that the company worked with suppliers for three years to get its CAN (Controller Area Network) RV-C-compliant and RV-C itself functioning. "We had many different components 'talking' many different languages, and to get everything on the same RV-C native was one of the bigger challenges — and coordinating with the suppliers of those parts."

Jayco primarily worked with two companies on the development of JayVoice: BMPRO, an Australian manufacturer of power systems with a U.S. office in Elkhart, Ind., and Elkhart-based American Technology Components (ATC), which worked to produce the Modulus Director that's at the heart of the system.

Much of the background work, said BMPRO Marketing Manager Brad Hooper, had already been done. "We had an existing system, JayCommand, that was a BMPRO-developed 'smart' system for controlling and monitoring various operations in an RV through a touchscreen. There are external technologies that can be integrated into the JayCommand interface — and one of them was JayVoice."

Developing the voice technology fell to ATC, which worked with another vendor on the "back end" of the system. And, said Chase Healey of ATC's new product market development team,

development time was again needed — this time, to meld its technology with that of BMPRO.

"Our original device can do some different things and speaks RV-C language a little bit different than that used by BMPRO, so there was some software that needed to be tweaked in order for it to work seamlessly with the BMPRO system," he pointed out. Central to the operating system — which, said Healey, is akin to turning a switch on and off with your voice and operates offline without need for an Internet connection — was formatting the program to respond to keywords to trigger the device. As introduced, the system is designed to react to specific commands initiated by first saying aloud the proprietary keyword "Jayco." Saying "Jayco — interior lights," for example, will turn off all lights inside the unit. Other commands

control the function of the air-conditioning system, furnace and lights within a specific zone, from the living room or the dinette to the bedroom, along with dimming predetermined lights for optimum TV viewing ("movie mode") or sleeping ("night mode").

"In operation, it's very similar to the Amazon Alexa or Echo or different devices of that nature that are found in the residential market today," said Healey. "The difference being that this is designed specifically for the specialty vehicle industry."

Presently, the allotted memory available on the microchip used within the system allows for it to be programmed for 15 functions. Jayco, said Forgey, intentionally limited its use to commands such as lighting that don't potentially compromise an occupant's safety.

"We elected not to try to move anything that could be accidentally activated by voice," he said. "So we're not moving awnings, we're not moving slideouts, we're not activating leveling control systems. There are limitations put on the system to ensure that no one can get hurt or nothing can get damaged."

That said, the company does envision being able to control such systems in the future. "I anticipate in the future it will be updateable and customer-configurable," Forgey added. "We introduced JayVoice to our dealers last fall at the Hershey Show and the Elkhart Open House and it was well-received. Dealers mentioned a desire to include other features and functions — from controlling motor operations to being



*When activated by the RV owner using a "wake" word, the Modulus Director displays colored lighting to show it has heard the command and is responding.*



*Winegard's "Halo" system, expected to debut later this year on certain 2023 models, also integrates with existing control and multiplex systems.*

able to set interior temperatures. We have a long 'wish list' and we're working with our suppliers to add some of those. But first impressions were that it's a neat product, and it's the first time that anyone's introduced something of this nature that didn't require Internet connectivity."

#### **Winegard Halo to Debut**

If rust never sleeps, neither does

technology — so its not surprising that multiple companies would be working separately on similar solutions at the same time. Winegard President and CEO Grant Whipple told *RV Enthusiast* he expects to see Winegard's new Halo system on a number of new models later this season. The product was shown in limited form on several units on display at January's Florida RV SuperShow in Tampa.

In development for several years, Halo is, said Winegard Director of Product Management Lance Beck, both an online and offline voice control system. "What this means," he added, "is it uses offline voice commands for anything related to control and monitoring where you don't need an Internet connection. So, you can say, 'OK RV, set up camp' and it will run through all the actions of deploying the slides, deploying the awnings, turning on the lights, turning on your AV system, leveling the RV — anything related to getting set up after you're parked at the campsite.

"Once you're there," he continued, "you can say, 'OK RV, dim the living room lights 50%,' or 'What is my grey tank level? What is the charge level to my house batteries?'" What systems the product will oversee will be up to each manufacturer, but Beck said Halo has been built with the ability to monitor and control myriad functions.

The system also includes optional motion safety switches to ensure safe operation of slideouts. Shaped like a key fob, the switches incorporate a button that must be held down during slideout operation; the slideout will stop immediately if the button is released or the signal is lost for any reason.

Meanwhile, Amazon Alexa functions the same as it does for anyone using it at home, with its separate 'wake' word for online operations. Presently, Winegard has assigned "OK RV" to the system's offline controls but, said Whipple, "we have the ability to offer custom wake words, as well, for the OEMs."



*The Halo system is available with or without a small camera with fisheye lens that, when installed as expected in the ceiling mid-coach, will allow a user to see front-to-back within the RV. An optional Motion Safety Switch will allow for the operation of slideouts.*

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Halo also features a built-in camera with a fisheye lens. When installed as expected in the ceiling mid-coach, Whipple said the camera will allow a user to see front-to-back within the RV. "Through our Halo cloud portal, you're able to monitor what's going on in the RV," he noted. "So if, for example, you leave a pet inside, you can use the RV Halo app to check on it and ensure everything is okay."

As Whipple explained, Halo also handles multiple protocols — everything from by-the-book RV-C multi-switch implementation to lesser multiplex systems. It also has local network wireless networking built in, so it can operate future wireless systems Winegard might opt to add at a later date. More to the point, he stressed that the system is configured for "real world" use.

"It uses true 'natural' language, which enables a person to speak much more naturally versus having to say an odd preset command," he said. "This isn't offline voice like in a lot of cars people are familiar with where you have to specifically say in a certain sequence — for example, 'Air-conditioner On, turn to seven' — and if you didn't say it exactly as required, if you inadvertently switched the order those words were spoken, it won't work. This is true natural language voice control. It's a very

similar experience to Alexa or another online voice control — offline."

The system, which incorporates four sensitive microphones arrayed throughout the RV, was developed with assistance from Elkhart-based ASA Electronics in configuring the RV-C part of the package. Having previously partnered with Keystone RV Co. in the development of the popular iN•Command global connect app, ASA worked with the product in order for it to be able to monitor certain aspects of iN•Command.

"It (Halo) communicates everything through RV-C protocol, and since iN•Command is the most RV-C-friendly control system on the market today, it was the easiest to integrate with," said said Jim Hess, vice president, RV division, for ASA. "It allows an RV owner with Halo and iN•Command to be able to access the system and tell it to turn the temperature up or down, ask it what the tank levels are, and more, and have it verbally respond. We're working on several things with vendor partners to be able to allow that extra level of access." As Hess indicated, the system can continue to grow.

"If we have sensors in a refrigerator, for instance, someone might be able to get an alert if their refrigerator sensor is detecting a temperature rise above a certain

level, or if your holding tank is nearing full. You can get an alert on your smartphone now, but you'd be able to essentially get some kind of verbal alert over Winegard's system. There are a lot of possibilities. The whole point of A.I. is to do things the customer wants to do, to customize a certain experience based on the user's preference.

It's expected that there will be 75 billion connected devices worldwide by 2025. Some of them will now be RVs.

"RVs continue to get more complicated as we add more systems and technology, so we wanted to make things easier," Winegard's Whipple said. "There are a lot of apps out there a person can use to check on various components, but in many ways an app is a step backward. It's not really convenient to pull out a smartphone and scroll through dozens or hundreds of apps and click on multiple screens in order to check the water level. With Halo, you just ask a question as you're relaxing in your lounge, and you get an answer.

"What we really looked at is trying to make the RV experience better," he added. "We all know that the world is turning to smart homes. That's what Halo does — it instantly turns an RV into a fully functioning smart home, with really advanced artificial intelligence." **RVE**

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# Graphic r t s



*If your sidewalls are showing their age with dull, cracked or peeling decals, you can restore the shine with computer-generated vinyl that will return pride of ownership.*

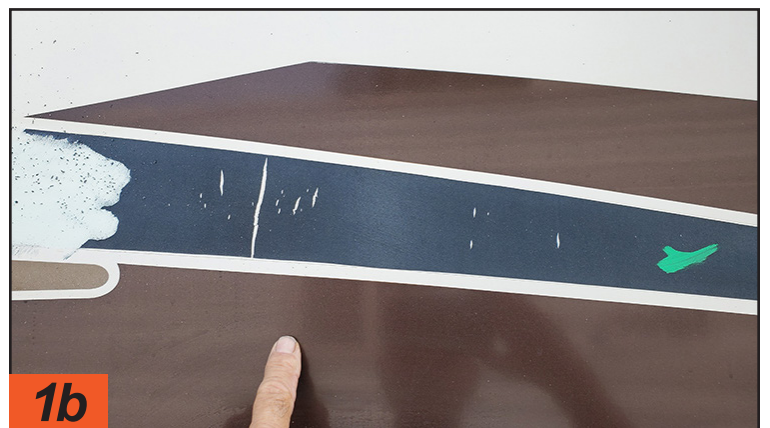
By Bill Gehr / Photos by the author

**M**ost owners want to keep their RVs looking nice for as long as possible. To get there, they make sure the exterior is cleaned and waxed on a regular basis. While that helps keep the shine, all the cleaning and buffing in the world won't prevent vinyl graphics from deteriorating over time. Sure, you can treat the vinyl to regular doses of protectant, but the sun still wreaks havoc with the vinyl material.

That was certainly the case with my Carriage Cameo fifth wheel. In fact, it's exposed to strong sunshine every day under full-time habitation in the Southwest, a situation that caused the factory-applied decals to fade after just a few years. Originally, the vinyl graphics were replaced by V.I.P. Enterprises in San Bernardino, California, a company that has been restoring the appearance of weathered and used RVs since 1993. The results were beautiful, but continued exposure to the elements caused the replacement vinyl in two colors, dark blue and bronze, to start cracking and discoloring prematurely. Fortunately, V.I.P. Enterprises keeps the artwork for all its projects in a database and was capable of removing the

defective pieces of vinyl without damaging the other graphics. It's not an easy task, considering the good stripes swirl and are within ½-inch of each other in some cases, but it demonstrated the advantage of working with a company that holds on to valuable data and has the necessary expertise.

The original job cost \$4,200; this time around the fifth-wheel graphics were restored to original condition at a fraction of the cost (\$1,200), taking advantage of the company's warranty that



*The old vinyl was suffering from early cracking due to constant sun exposure. Green marks are placed on vinyl to be removed.*



2

*If the technician can get a good grip on the end of the vinyl stripe, most of it can be pulled away carefully from the siding without the use of a scraper.*

provides for replacement graphics at no charge within a five-year time frame (material only; labor is one year). V.I.P. Enterprises trains several technicians specifically for the process of removing and installing the vinyl pieces and have become very good at what they do. We followed along and documented the process. It's not an easy task, but the company can print new graphics for installation elsewhere — or by yourself, if you have the patience and skills.

### Getting Rid of the Bad Vinyl

The process starts by identifying vinyl graphics that need attention and removal. Using a 3M rubber wheel with a special adapter in a standard variable-speed grinder that's set to operate at 2,200 to 2,600 RPM, the technician was very adept at removing the vinyl pieces without burning through the Filon siding (which is a mix of fiber-

glass and plastic). In tight areas he had to use a razorblade scraper specially adapted for this type of work; of course, he made it look a lot easier than it really was. After the vinyl pieces were

removed, a special adhesive remover was applied and the razorblade tool used to strip the remaining glue from the surface. Again, this is not an easy task without gouging the siding — keep in mind if attempting this job yourself that any gouge or a nick will show through the new vinyl pieces.

Removing the graphics from a painted surface is even more difficult. It does not take a lot of pressure from the rubber removal tool to burn into the paint and, of course, using a razorblade is not an option. The vinyl graphics that covered sections of the window were dried and cracked, which also presented some challenges. If they get hard and old, the rubber removal tool does not work as well — so it's all up to the razorblade and the adhesive remover.

In some extreme cases, they will use a heat gun to assist in removal. When using the razorblade, the technician angled the blade (instead of straight into the material) for a more accurate method of scraping without gouging the Filon siding. When glue cannot be completely removed with the special chemi-



3

*Leftover adhesive is removed with a special chemical that is not available to the public. Do-it-yourselfers will have to use an over-the-counter adhesive remover.*



4

*A special wheel made by 3M is designed to remove vinyl without damaging the siding. This wheel can be used in a standard variable-speed grinder.*

cal used, the technician will employ fine steel wool to help with the removal of adhesive in the most difficult areas. With all the vinyl removed, the surface was cleaned using alcohol and water on a microfiber cloth. The intense removal and cleaning process ensures that there will not be any remaining specs of glue that might show through the new vinyl graphics.

### Applying the New Graphics

When it came time to apply the new vinyl, another technician with different skillsets was called in to apply the new computer-cut pieces using the shadow left on the siding for orientation after the old pieces of vinyl had been removed. This process is quite a bit slower, and of course, must be precise or you will

see shadows. Getting this process down pat takes years of practice — and a lot of patience.

Using a mixture of water and baby shampoo, the technician sprayed the vinyl pieces and the corresponding siding on the fifth wheel, which allowed the graphics to be located precisely. The installer attached one side of the longer pieces of vinyl at a time; the shorter graphics can be applied as one piece if it can be moved around successfully. The process requires the use of a special squeegee for applying pressure without allowing air bubbles to build in the vinyl material. If you are doing this yourself, pay particular attention to baggage doors, refrigerator access panels, windows and water heater access panels, which present even tougher installation requirements because of the raised edges and angles.

The end result was once again impressive, restoring a “like-new” look to the 2011 Carriage fifth wheel. The technician was successful installing all of the material — in two separate colors — without a mistake, which speaks volumes about the difference nice vinyl graphics make.

The technicians at V.I.P. Enterprises are also experts at restoring the luster of fiberglass sidewalls. If possible, the company will suggest that a buffing compound be used to bring back the finish. Amazing results have been documented, but if that process won't suffice, the company is capable of partial or complete repainting.

The process of replacing the vinyl graphics, buffing/compounding and/or painting the necessary sections does not come cheap. You'd be amazed, however, at how restoring the appearance of an older rig also restores your pride of ownership.



*The removal wheel makes short work of grinding the vinyl from the sidewall, without damaging the surface. Still, the entire job takes a lot of patience.*



*While the 3M wheel is very effective in removing vinyl, it wears down fairly quickly. Most of the time the job requires five to eight wheels. The removal wheel grinds up the vinyl material into tiny pieces, which will make a mess, and the adhesive allows the ground-up vinyl to stick to everything.*



*A razorblade scraping tool is used to remove vinyl in tight places, like around the compartment door frame.*



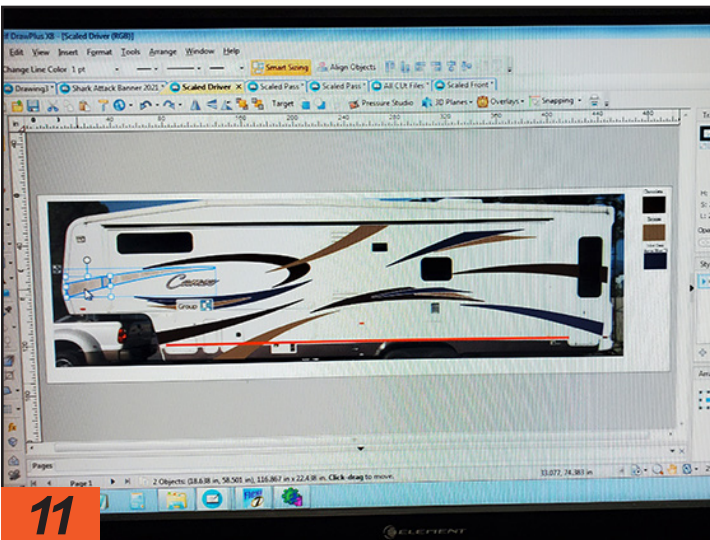
*The razorblade scrapers used by V.I.P. Enterprises are more rigid than those often found at hardware stores, giving the technician additional control when removing the vinyl. Made by companies like Stanley, they can be purchased online and at industrial supply stores such as Granger.*



**9a** Dealing with the residue seems like a never-ending task. It takes a number of passes with the scraper to remove most of the residue, and the adhesive remover is used repeatedly to clean the blade.



**10a** When the vinyl and adhesive are dried by the sun and stick to the sidewall, the chemical may not completely remove the residue. When that happens a fine steel wool pad is used to loosen the residue, which is followed with a final wiping with a cloth impregnated with a mixture of alcohol and water.



**11** V.I.P. Enterprises retains all of the patterns from the original job, which makes it easy to retrieve sections of vinyl. This computer program is always used to duplicate the original graphic design.

**12** The replacement vinyl decals are printed from computer-generated graphics the exact pattern is cut for replacement, which eliminates shadowing.



**13**

A hard silicone squeegee helps lay down the vinyl without causing bubbles and creases. Here the vinyl is applied to the refrigerator vent and adjacent siding, which takes a lot of experience to get it done seamlessly.

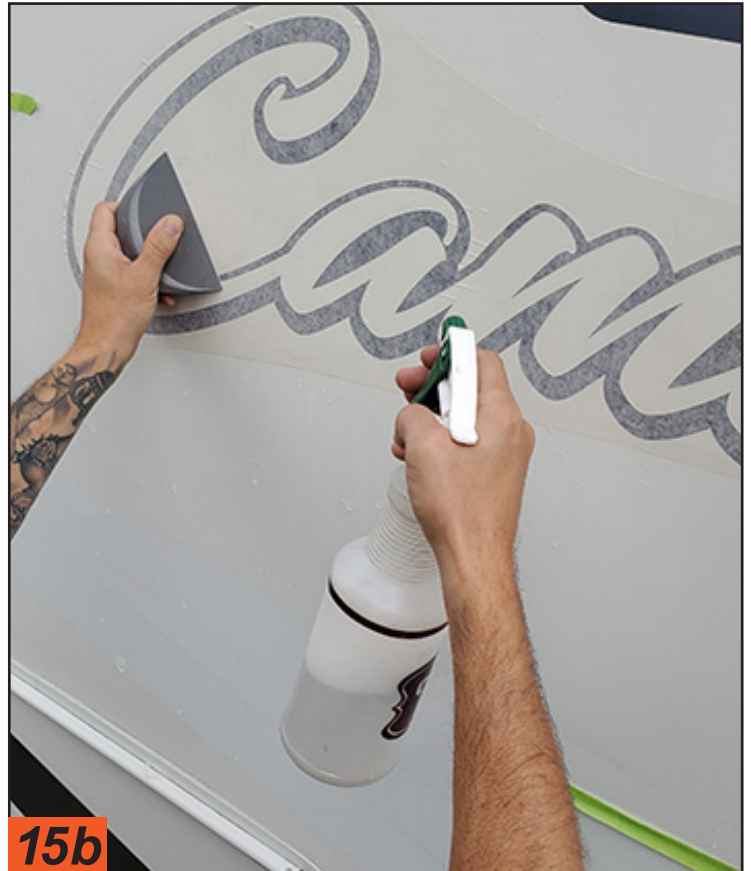


**14**

It can help to remove exterior access doors. Here, the vinyl is cut around the vents in the refrigerator access door. It takes a steady hand and a very sharp blade to ensure the lines are straight.



**15a**



**15b**

The backing that's placed on the new printed vinyl is removed to expose the adhesive. After pulling only half of the backing off, the vinyl is (masking) taped in place. A mixture of water and baby oil is sprayed on the outside protective paper while the squeegee is used to lay the vinyl down. The water and baby oil allow the tool to glide over the new vinyl protective cover before removing.



16

The mixture is sprayed on the graphics once they are in place and any tiny bubbles missed with the protective cover in place are carefully eliminated.



17

V.I.P. Enterprises can buff out oxidized siding as an option, which will restore the luster and make the RV look new again.



18

The final product: This 11-year-old Cameo fifth wheel looks near-new again after all the cracked/faded vinyl was replaced. **RVE**

**Sources:** V.I.P. Enterprises  
(909) 367-0395  
[rvstripes.com](http://rvstripes.com)

# Special Section!

# Tech Tips and Tricks



*Ideas and solutions to maintain, repair and upgrade your RV!*

As the unabated popularity of RV-ing underscores, outdoor enthusiasts across North America have undergone a change of philosophy when it comes to how they opt to spend their tough-earned vacation days. While the pandemic's impact has ebbed and airlines and cruise ships move towards "business as usual," the RV industry continues to set high-water marks. Indeed, data-crunching firm Statistical Surveys reported a record number of retail sales for 2021 — 567,079 units

— while the RV Industry Association tracked a record 600,240 RVs shipped to dealers across the continent.

Of course, you can't pull or drive a "home on wheels" across untold miles of oftentimes suspect roads without things shaking and sometimes breaking — an act that's been described as akin to subjecting a home to a continual earthquake. And when that happens, it becomes apparent that owning an RV isn't quite the same as a traditional home, where you can pick up the phone and dial a service shop for fast relief when the furnace or water heater goes on the blink. You can — but what you're apt to discover is that you'll be going without the comfort such components provide until your scheduled appointment...oftentimes, weeks away.

There is another option. *RV Enthusiast* was founded on the belief that common RV "emergencies" can be easily addressed by owners equipped with basic tools and the knowledge of how to maintain, repair and even upgrade their rigs. Sure, there are certain systems that demand the expertise of a certified RV technician — but you don't need to call one when your shower

door is leaking or your four-legged travel companion tears up the screen door.

That's also why the editors of *RV Enthusiast* started the weekly newsletter *RVExpert* — to deliver solid technical advice to readers throughout the year. It's not a medium for dissecting extensive repairs but how to address the myriad "little things" that can impact a vacation. And when we began fielding requests for assembling many of the most popular tips into a single source, it just seemed to make sense to package them into an issue of the magazine. Some of these tips have appeared on the pages of *RV Enthusiast* previously — though we've culled them down to essential "how-to" information — while others have never been seen on these pages before. All are intended to help take the edge off dealing with nagging little things before they grow into major headaches — because a stopped kitchen drain or leaking sewer hose shouldn't prematurely end your long-planned escape from the rigors of daily life.



# No More Puddles After Showering



*Finding a replacement gasket for the shower door can be tough, especially during supply shortages. Applying a 3M silicone seal strip is simple, inexpensive and only takes 30 minutes to install.*

A large percentage of RV showers are fitted with a glass door that opens outward in similar fashion to a residential setup, only smaller. Many of these shower doors have a seal on the bottom to prevent the water from running out onto the floor. Unfortunately, these seals don't last as long as one might expect, falling prey to deterioration that leads to tearing and pieces falling off. This allows the water to escape onto the floor. While it's possible to put a towel down, doing so is not the most convenient and you end up with a soaked towel or a puddle on the floor, making it hard to dry your feet — much less the damage from water standing on the floor.

Data plates with the shower-door manufacturer name and model number seem to disappear, making it difficult

to find replacement parts — and if they are available, good luck finding replacement parts these days. I struggled for years with the problem before finally discovering a simple silicone seal strip made by 3M. It has the company's venerable adhesive tape laminated to a flexible edge that looked like it would work, so I took a chance and ordered a 26.3-foot, 1 ¼-inch-wide seal strip (\$13.59 on Amazon). Length and widths of these rolls of flexible strip are all over the place when you go online, but if you Google "26.3 feet silicone seal strip" you'll find this exact roll at Amazon.

Since this seal strip comes in several different widths, you'll need to measure your shower door first to get an idea how far the edge of the silicone strip needs to protrude past the bottom of the door so it will prevent the water

from splashing out.

The installation is very simple. Measure and cut a piece of the 3M seal strip to run the entire length of the door. Preparation is the key to success: If



*The original seal for the shower door gave up years ago allowing water to run on the floor. Finding an exact replacement proved futile.*



2

3M's silicone seal strip comes in various length and widths. A 26.3-foot roll of 1.4-inch-wide seal strip was purchased on Amazon, which was perfect for fixing this shower door. After measuring the door length, the seal strip was cut with scissors.



3

There was quite a bit of calcium on the shower door frame, which was removed with Lime-A-way foam. Be sure to use the foam version (indicated on bottle), which does a better job of adhering to vertical surfaces. Once the calcium was removed and the surface smooth, the shower-door frame was cleaned with alcohol and allowed to dry thoroughly. This will facilitate proper curing of the adhesive on the seal strip.



4

Apply the seal strip on the shower-door frame a little at a time, peeling off the adhesive backing as you go. Don't press too hard at first; you may have to move it for proper positioning.

your door bottom has a lot of calcium deposits, you will need to first remove all the crud and smooth out the surface (we prefer to use Lime-A-Way foam) before trying to stick on the seal strip — trying to apply the tape over a rough surface is an exercise in futility. Once the surface is rid of any calcium deposits, clean the area with alcohol and allow to dry thoroughly.

Slowly peel back about 1 inch of the adhesive cover and apply the strip to the door frame a little bit at a time. Don't get in a rush; once it sticks to the surface it's difficult to get off. When you are satisfied it's in the correct position, press down on the strip to make sure it will stick properly. Depending on how the door/frame closes, it may be necessary to cut the seal tape to go around any protrusions. It's also possible to attach the seal strip to the shower-pan frame where the door shuts against it, if necessary.

This simple project solved a problem that went on for too many years. It keeps the water in the shower pan where it belongs — and there are no more sopping wet towels and feet. It's likely, too, that you'll find other uses for this silicone seal strip, including projects to fix drafty windows, doors, vents or maybe even making a refrigerator gasket repair. **RVE**



5

When you are happy with the positioning of the seal strip, apply pressure to seat the adhesive. While this seal strip is not an actual replacement for the original on the shower door, it looks good and prevents water from leaking on to the floor.

## A Bright Reminder



*Leaving porch lights on all night can irritate next-door neighbors; adding indicator lights to jog your memory is the simple way to make new friends*

**H**ow many times have you left your RV's porch light on all night? Those parked next to you know — and probably wish that you would turn the darn thing off! Just walk around the RV park at night and you'll see porch lights glowing brightly across patios and into their neighbors' bedroom windows. It's one of those things that go out of sight (and mind) when the window coverings are drawn and the door is closed. A solution finally dawned on me one morning after my RV's porch light had been on all night and one of the neighbors complained: Install an indicator light.

Unfortunately, finding a matching switch with a built-in indicator light proved to be a futile process — and changing to another style switch was not in the cards. However, searching

online (Amazon) resulted in finding dozens of small red LED lights that could be mounted in a hole just below the porch light switch assembly. I settled on LED 8mm panel-mount lights (<https://amzn.to/3sGsSCp>) that come in a package of five for just \$5.99. These lights are designed to be mounted on a flat surface, whether it be in wood or metal. Each has a backup nut so it could be tightened and not come loose down the road. Two indicators were installed, one for the porch light and the other for the “scare” lights mounted in the corners of the fifth wheel.

The first step was to mark the location where the lights would be installed. Next, the switch assembly was removed, exposing the wiring. The necessary wires were tested using a multimeter: You need to look for 12-volt

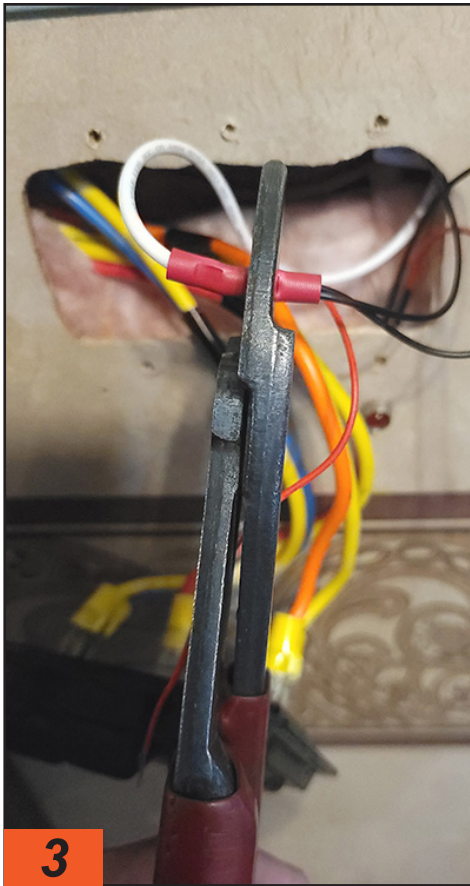


*Numerous small, bright indicator lights can be found online at Amazon and other sources. The choice is varied, so finding the one that suits your tastes might take some time. The best ones will have a threaded retaining nut to make sure the light stays put on the road.*



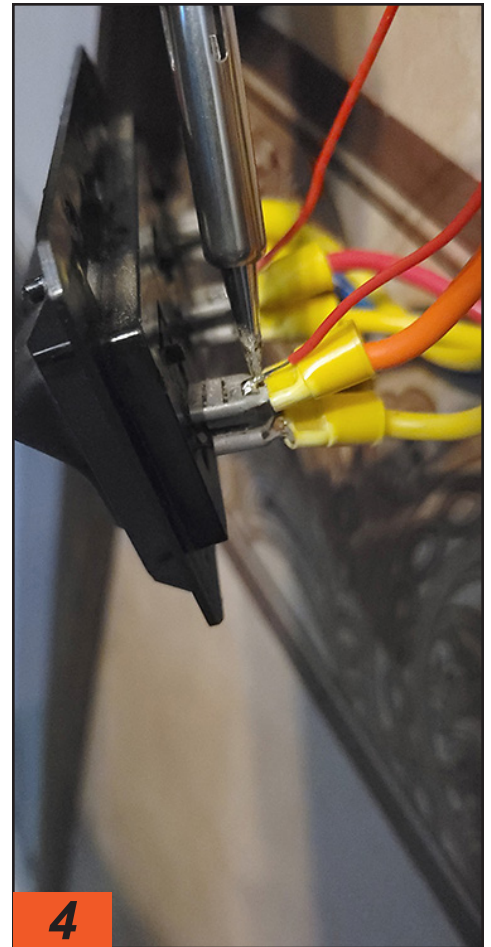
2

The switch assembly for the porch and “scare” lights was removed to expose the wiring. RVs with only a porch light will have one switch plate. If the switch is behind a cabinet door, it will be necessary to route the indicator light to a location outside the compartment.



3

Ground wires were butt-connected to the leads attached to the metal rib located close to the switches. An appropriate ground can be found at nearby metal structures or from leads to other switches if wired in that manner from the factory.



4

Positive wires from the indicator lights are soldered to the switch terminal connectors that are live when the switch is in the ON position.

DC power when the switches are in the ON position. Finding a suitable ground location may be the trickiest part; check nearby objects — a vent switch, frame members or any type of a light that requires a positive and negative wire. In this case, there was a metal frame rib right at the edge of the switch assembly, which I was able to drill into and install a ground lug for connecting to the indicator lights.

Once the wiring was established, the appropriate size holes were drilled in the wall below the switches, the wires routed through the hole from the front and the retaining nut tightened.

There are a number of ways to splice into the 12-volt DC wires using connectors, but we elected to solder the positive wire from each light to the respective terminals on the switches (small wire-tap terminals can be used if you don't have a soldering iron). After the ground wires were connected to their respective lights, the switches were turned on and off to test the indicator lights. Once confirmed, the switch assembly was re-installed, being careful that the very small wires did not become detached.

Now, when the porch and/or scare lights are on, the indicators remind me to be kind to my neighbors — and turn off the lights when not outside. **RVE**



5

Indicators mounted below the switches will make sure the occupants are aware that the porch and “scare” lights (if so equipped) are illuminated. It's pretty hard to miss them.



## Reading the Rubber: What Your RV Tires Can Tell You

We're all accustomed to replacing our tires as they wear out — that's a given. However, RV tires aren't always run to the point where the tread is nearly gone. Because of the way most outdoor enthusiasts use their RVs — on weekends and for extended trips during warmer weather — our rigs usually spend more time sitting than moving. As a consequence, the tires aren't impacted by wear-and-tear; they are instead subjected to the sun's heat and harsh ultraviolet rays.

The end result, however, can be the same: you're driving down the highway and suffer a premature tire failure.

What happened? Like the asphalt when a vehicle is moving, the sun — and weather — will eventually degrade the tire to the point where it's unsafe. That's why most tire manufacturers recommend that RV tires be replaced every six years no matter how much tread is left.

The problem is that most RVers don't know how old their tires are — especially if they bought a pre-owned vehicle.

That's okay: All the information you need is right under your rig. Tire sidewalls are stamped with a wealth of



information, including the wheel size, sectional width, load rating, maximum inflation pressure and the date of manufacture. All of these are important — especially the last one. By knowing how to decipher these hieroglyphics

and adhering to industry standards, you'll increase your chances of traveling without suffering an unforeseen tire problem, and the expensive collateral damage associated with blowouts. **RVE**



Not sure of the age of your RV's tires? All tires are stamped with a four-digit code on the sidewall. This string of letters and numbers begins with "DOT" (Department of Transportation) followed by information about where it was made, tire size and a manufacturer's code. What you need to find are the last four digits: the first two are the week (52 weeks in a year) and the last two are the year. This tire, on an old trailer in a storage lot, indicates it was built on the 25th week of '03. It's well past its prime.



A trailer tire's size is preceded by the letters, "ST" and may also be accompanied by "For trailer service only." 205 is the sectional width in millimeters, 75 is the aspect ratio, which indicates the height or profile of the sidewall relative to the cross-section width, also expressed in millimeters. On this tire, the sidewall is 75% as tall as the cross section is wide. "R" indicates radial and 15 is the rim diameter in inches. Always replace tires with the same size, load rating and tread pattern.



Tires also are stamped with a "max load rating" at a specific inflation pressure. Always take tire-pressure readings when the tire is cold; as they warm up, the internal air pressure increases. Note, too, that maximum tire pressure is the minimum pressure required to handle the load rating of the tire. RV manufacturers provide the tire pressure required on labeling attached to the RV to support the gross vehicle and axle ratings of the chassis. It's best to have the RV weighed at each wheel when the RV is loaded for a trip and compare the figures with the tables provided by the individual tire manufacturers, but in lieu of that, you should air up tires according to the attached labeling.

# Checking Your RV for Leaks

It can be argued that an RV's greatest enemy is water. RV owners are always deeply disappointed and surprised when they're told by a service provider that the damage they're seeing is from a leak, which is not covered by warranty or insurance, and will cost thousands of dollars to repair.

Just about all RV manufacturers limit their liability when it comes to leak damage. Some RVs even have stickers reminding the owner that the roof and body seals must be inspected and maintained at least every 90 days.

If climbing atop the roof of your RV and examining virtually every square inch inside is not how you want to spend an afternoon, one of the easiest ways to find leaks on an RV is with a Sealtech RV leak-testing unit. The compact system pressurizes the interior of the RV body and, with the use of a soapy solution on the exterior, creates bubbles where there are leaks. While no RV is airtight, your service provider can make a judgement call as to extent of the leak and whether it will lead to damage — or if repairs are needed.

Either way, keeping your RV sealed up is essential for a long and healthy service life. Depending upon the size of the RV, the process takes only 1-2 hours and will cost \$200-\$400. Go to [sealtechleaktesting.com](http://sealtechleaktesting.com) to find a Sealtech testing location nearest to you (or during your journey). **RVE**



The Sealtech system features a patented fan unit with pressure gauge, plenum and roof vent attachments. The technician will use a sprayer with a mixture of Dawn dishwashing detergent and water to spray around potential incursion points, and document the leaks by taking photos with a smartphone.



The Sealtech unit is usually set up under a 14 x 14-inch roof vent. It brings in outside air to pressurize the RV body.



Once sprayed, the bubbles show where air is escaping, indicating a possible leak. Not all bubbles will be a leak in need of repair — and don't be surprised to see bubbles at places you might not expect. This marker light might be a concern and looked at more closely, although the air may be passing inside the fixture from the lamp base and/or wiring run, which may not be a cause for worry.

# Tempering the Sun's Rays



*It's easy — and inexpensive — to build removable homemade sunscreens for any window.*

**D**iffusing harsh sun rays — and the resultant heat — that penetrate through RV windows can be a never-ending battle, depending on the position of the rig when parked on a campsite. Sure, you can lower the window coverings, but that blocks any view to the outside and can darken the interior. Making your own sunshades, using over-the-counter materials, is an easy way to control glare and lower interior temperatures while protecting the interior woodwork and upholstery.

The first step is to identify the windows that need to be covered. We seem to be assigned RV sites much too often that have west-facing attitude, so the front window in the patio slideout is blasted with sunshine every afternoon. This window is only 22 x 28 inches, but it allows the sun to heat up the dinette



**1**

*The sunscreen fabric is cut slightly larger than the window frame and held in position with strong, craft-size neodymium magnets.*

counter and table area, contributing to wood fading and making it difficult to work at the table during the afternoon.

While commercial sunshades are available, and we have one that covers the picture window adjacent to the dinette made by Magne Shade ([magneshade.com](http://magneshade.com)), we found that making one out of common sunshade material available at all home improvement stores or Amazon is an easy project with big returns. This fabric comes in a few colors, but we elected to use black, which works nicely. Also, you'll get quite a bit of fabric in the package, so covering multiple windows is practical. Figure on around \$40 for the sunscreen fabric.

Cut the fabric a little larger than the window frame to insure good coverage. To attach the fabric, we used 1/4-inch in diameter by 1/8-inch-thick neodymium magnets, available at home improvement stores or online. If you go online, you'll be inundated by the variety of product on the market; these magnets are also considered craft magnets and are inexpensive, but really strong. The magnets are simply attached to the window frame in each corner with super glue; a second set of matching magnets will be used to hold the fabric in place. We elected to use magnets only at the top corners for the smaller windows, which proved to be suitable in all but high winds; four or more magnets will be needed for larger windows.

Once the glue is allowed to cure, the cut fabric is held in place while another loose magnet is placed near the one on the window frame. When you get close enough, the loose magnet will "jump" in place. The magnets do not need to be permanently attached to the fabric. Just be sure to remove the sunscreen fabric and magnets from the window(s) before retracting the slide and getting on the road. The fabric can be rolled up and stored in a compartment, while the magnets should be kept in a safe place while on the road. Use caution when working with magnets around sensitive medical devices.

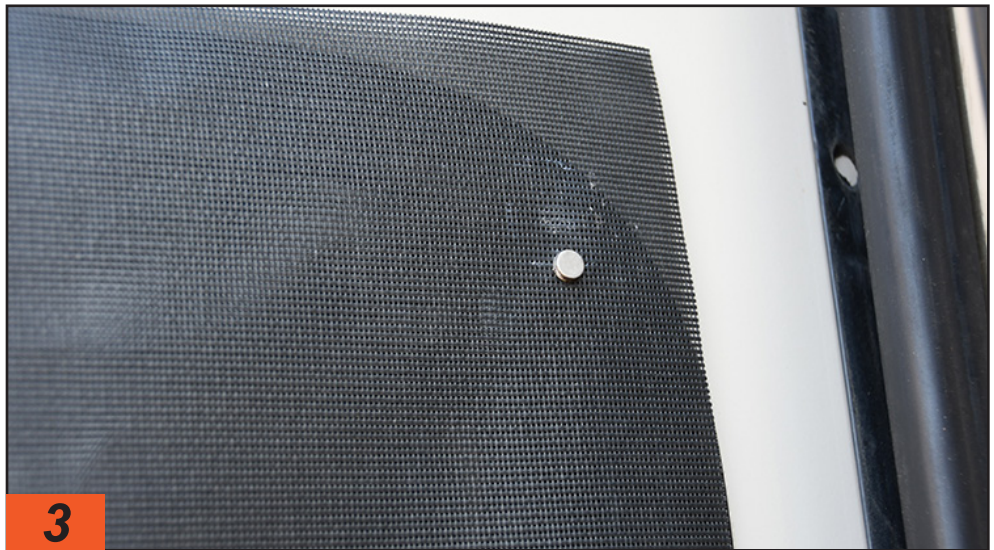
Black-out fabric, attached in the same fashion, can be substituted if you happen to be camped next to someone who loves bright lights and forgets to turn them off at bedtime.

Strong winds, depending on direction, can release the fabric, so it's best to remove any coverings to prevent loss of the material and/or magnets. If you forget, the fabric may disappear, but the good news: You'll likely have enough material on hand to cut a new one, which takes only a couple of minutes. And, of course, you can opt to install the shade inside the RV. **RVE**



2

*Magnets are glued to the window frame with super glue gel, which will cure very quickly. Some glues, like the Gorilla brand, will swell up during the curing process and dislodge the magnet. The number of magnets will be dependent on the size of the window and fabric; here only two were used on the top corners.*



3

*The magnets will literally jump out of your hand, looking for their mates glued to the window frame.*



4

*Sunscreen fabric is available in a few colors, but black was chosen for this fifth wheel. While the fabric will reduce heat and glare substantially, it does not impede the view to the outside, except during the night or on dark/overcast days.*

# Go With the Flow



*This Watts water pressure reducer is outfitted with the necessary hose fittings and quick connectors. It does take up additional space and may create the need to use an elbow fitting to improve clearance for faucets that are low to the ground and point downward.*

*Rather than suffer reduced water volume and short longevity of typical RV pressure regulators, employing a home-style counterpart will make a world of difference.*

**H**ooking up an RV to city water seems like a simple enough task — just screw on a hose that goes from the faucet to the city water inlet in the RV and you're done, right?

Well, not so fast.

RV water systems are tested to withstand 80 psi water pressure, but the RV industry requires a reduction in pressure to around 45-50 psi to protect fittings in the network of Pex components, faucets and appliances used in an RV's plumbing system. Consequently, pressure regulators, commonly available in RV supply stores and online, are installed at the hookup water spigot.

While RV-specific regulators will reduce pressure, they usually reduce volume at the same time, which can lead to an anemic stream of water — and they typically don't last that



*The Zurn Wilkins regulator is half the price of the Watts unit and has held up nicely over the last five years even though the top portion is made of a hard plastic material versus brass on the Watts model.*

long. A better solution is to purchase a home-style water-pressure-reducer online or in a local hardware store and modify the body with fittings to easily connect to a water spigot and hose. A home-style regulator reduces pressure without reducing volume, so it does not impact flow at the faucets inside the RV.

There are a few of these regulators on the market; the most common are those made by Watts and Zurn Wilkins. We've been using a Watts N45P M1 regulator 24/7 for many years with no issues, which is to be expected since these devices are designed for homes where there is no interruption in service. This regulator has been replaced with a new model, LFN55B M1, (<https://amzn.to/3suN9L3>) but has the same specifications.

The Zurn Wilkins ½ NR3XL (<https://amzn.to/30UmHiB>) is another good choice. It has similar specifications but can accept 1/2-NPT fittings instead of the ¾-NPT in the Watts regulator. The Watts also is twice the cost (\$99 versus \$48), but the entire body is brass rather than the hard plastic top on the Zurn Wilkins; both products have lead-free certification. Both regulators have proven to be reliable during more than five years of full-time service (RV Enthusiast's Publisher, Bob Livingston, uses the Watts, while Technical Director Bill Gehr employs the Zurn Wilkins).

Since these regulators are designed for homes, RV owners will have to adapt male and female garden hose thread (GHT) fittings on the inlet and outlet to make them work, but this is not a major obstacle. Most hardware stores and Amazon have various versions of these fittings, including female swivel-hose connectors. Plan on using ¾- to ½-inch reducing bushings if you choose the Watts regulator and seal the threads with Teflon tape.

Once the hose fittings are in place, it's just a simple matter of connecting the regulator to the water faucet and the service hose to the other side. Adding quick-connect water couplers will make it easier (which makes it unnecessary to use a swivel female GHT fitting). These regulators are factory-set to reduce water pressure to 50 psi, which will be fine for most RVs. A further reduction can be made by adjusting the top bolt and retaining nut, while checking pressure with a gauge.

You'll need to employ some system to help you remember to remove the regulator when breaking camp, since these regulators are installed right at the water source you hook up to. We only left it for the next occupant once before learning this lesson. **RVE**



*Fittings obtained at a hardware store are threaded into the inlet and outlet, making it possible to hook up to the faucet and a hose that goes to the RV's city water service. Bushings may be required to attach the garden hose thread (GHT) fittings.*



*These water-pressure regulators are pre-set to reduce pressure to 50 psi. They can be adjusted for less pressure (you don't want more), if desired, by loosening the set nut and turning the bolt on top of the device while monitoring a gauge.*

# Gliding Without Complaint



*Lubricating rack-and-pinion slideout mechanisms will squelch annoying noises, restore a smooth operation and help provide years of trouble-free service.*

Just about every RV has a slideout — or two, three, four or five these days — which, of course, enhances livability. For the most part, these expanding rooms work without complaint — but when they break, the repairs can be complicated and costly. And, of course, there's always the aggravation of being stuck somewhere and the frustration of finding a repair shop or mobile mechanic.

To circumvent premature failures, there's a certain amount of maintenance that is required of the owner — including lubrication, depending on the type of slide-out mechanism. One of the most common types of slideouts is one that uses rack-and-pinion mechanicals. It's a tried-and-true system that has withstood many

years of service. For the most part, other than lubricating the gear pack and arms with teeth cut into the steel (rack), there's not much the end user can do. Over time, though, these systems tend to develop grunts, grinds and squeals that are annoying — and can lead to other adjustment issues. Proper lubrication will quiet down the



*CRC White Lithium Grease and Blaster Dry Lube with Teflon provide a one-two punch in the elimination of slide-out mechanism friction and annoying noises.*

mechanism and restore confidence that the system will keep on working as designed.

There are many lubrication products on the market, and we've tried most of them. You don't want to use a lubricant that will attract dirt, which can gum up the system. One product that does the trick is CRC White Lithium Grease. This lithium-based spray is easy to dispense and will provide a uniform layer of lubrication that lasts a fairly long time, depending on the number of extend/retract cycles and exposure to the elements. Spray the gear pack liberally, but don't overdo it. You just need enough to provide a protective layer, not one that makes mess; it's pretty easy to visualize the lubrication cover-

age.

Next, spray the White Lithium Grease along the teeth of the rack — and you're done with this part of the service.

Continue by spraying the contact points where the floor of the RV and the slide-out room meet. Normally there is some space between the two, but in some cases, like the one shown here, the two surfaces will rub. To circumvent adverse friction, spray the area with Blaster Dry Lube with Teflon, which is a dry silicone-based lubricant. Once the spraying is complete, run the slideout room in and out a few times make sure all moving parts are covered. In just about all cases, any noises will quiet down immediately and the slide-out will move more smoothly with less bumps

and chattering.

While you're at it, take the time to treat the slide-out bulb and wiper seals to a coating of Aerospace 303 Protectant. This is a distillate-free product (meaning it will not degrade EPDM material used for seals) that will protect the rubber from the harsh UV elements. Regular spraying of Aerospace 303 Protectant will ensure longer life of the rubber compound and continue to allow the seals to perform as designed and prevent moisture/wind intrusion. All three of these products are available at auto parts and/or home improvement stores and online.

It's simple maintenance, with long-term benefits. Take care of your slide-outs and they will take care of you. **RVE**



*Spray the gear pack liberally, but don't go crazy. Overloading the components with too much lubrication only makes a mess.*



*The front and rear racks should be sprayed with the CRC White Lithium Grease along the teeth cut into the steel arms.*



*Blaster Dry Lube with Teflon does a great job of lubricating the surfaces at the confluence of the RV and slide-out floors. Normally there's a little more space between the surfaces, but in this case, they were touching and making annoying noises, which were quieted with the dry lube.*



*Spraying the slide-out bulb and wiper seals with Aerospace 303 Protectant will protect the rubber over the long run, and make sure moisture and air leaking through the slide-outs are kept at bay. (And no, it doesn't come in this bottle — we bought it in a gallon container and transferred it to this type bottle, which we've found works easier when spraying at different angles.)*

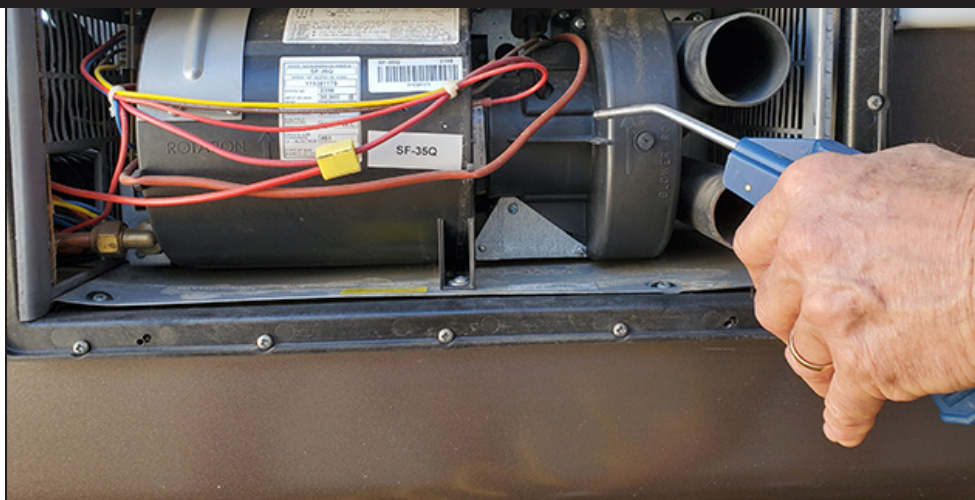
# The Heat Is On

Most motorhomes, trailers and truck campers have some form of comfort heating to maintain interior warmth during cold days and nights. The vast majority of RVs use a forced-air furnace complete with a network of ducting that runs through the floor or cabinetry, terminating with registers to distribute warm air.

Unfortunately, annual furnace maintenance and cleaning are often overlooked, which can lead to poor performance, malfunction and even failure. Annual cleaning is important because the return air system does not include a replaceable filter to prevent dust, lint and pet hair from impacting performance and safety. Following these preventive maintenance procedures will give your heating system the advantage during the cold weather.

To start, use a bright flashlight and peer into the exterior exhaust/cold-air intake of the furnace. You'll be checking for mud daubers, spiders and wasps, any of which can block the airflow in both directions during the heating process. A restricted airway could cause short cycling of the burner or an improper flame from lack of oxygen, leading to an over rich gas-air mixture.

If you discover debris or nests, remove the vent assembly and clean any obstructions. Be sure to replace the gasket or seal before reinstalling the vent assembly. If you suspect a mud dauber has built a nest inside of the



## *An annual inspection will help keep an RV furnace in tip-top shape*

blower assembly, you will need remove the furnace in order to gain access to clean out the debris. If you're not comfortable with removing the furnace, leave this job to professional RV technicians.

The next step is to remove the interior or exterior access panel for inspection. You'll be looking for lint, dust and/or debris on the circuit board and blower wheel(s). Be careful not to disturb the wiring or compromise any of the components, which could lead to a furnace malfunction. Use a bright flashlight to inspect the interior of the partially hidden blower assembly to determine if a build-up of lint/debris is present. With the help of a long-nose air nozzle, compressed air (at no more than 125 psi)

can facilitate the removal of dust in the hard-to-reach areas. Avoid directing high pressure air toward the circuit board or other electrical components (play it safe and adjust air pressure to 20 psi when cleaning the board.)

Thoroughly inspect all of the wiring; it is not uncommon for rats or mice

to chew through electrical insulation and conduit. Damage to wiring or other components may require the assistance of a certified RV technician.

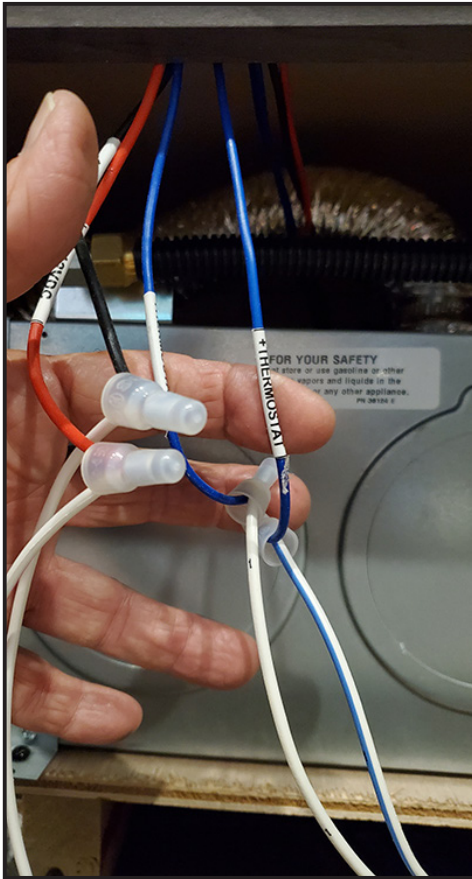
Next, check the return air vent lo-



*Inspect all ducting from the furnace for integrity. Cuts or cracks will reduce efficiency because the heat will escape before reaching the registers. Furnace manufacturers require a specific number of flexible ducting runs and/or the use of a plenum. It may be possible to repair small areas with certified metal duct tape, but in most cases the tubing will need to be replaced.*



*Use a flashlight to check for mud daubers or other debris inside the exhaust port. It might be possible to use a coat hanger to pick out any obstructions. If not, the furnace will have to be removed to gain access to anything clogging up the airway.*



*Inspect all the wiring for faulty connections and repair as necessary. Mice and rats consider wire insulation dessert and vibrations can loosen wire connectors and create issues with furnace operation. Also check out the wiring to the circuit board and make sure the connector is tight. Dust and debris can affect the performance of the circuit board.*

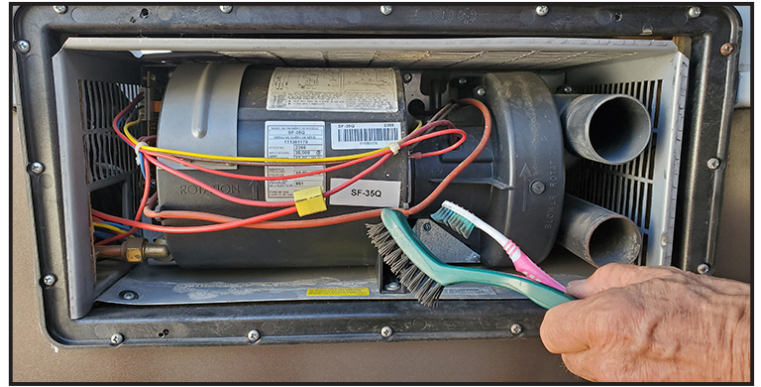
or install a filter, which can affect the heat cycle and reduce efficiency.

Other areas to check:

- Ducting and heat registers play a big role in heating efficiency.

Every furnace is designed to function with a specific number of ducting lengths connected to the furnace body, so don't use adjustable registers or block off the existing registers. Inspect all accessible flexible ducting and replace if compromised. Floor registers are difficult to clean without removing the covers. Any accumulation of pet hair, lint and other items should be removed regularly with a vacuum cleaner crevice tool.

- LP-gas pressure plays a very important role during the furnace's ignition cycle. Not surprisingly, LP-gas regulators deteriorate over time — and any disfunction will cause improper pressure that can lead to ignition problems. Gas pressure should be checked by a professional technician annually using a tool called a manometer. Not only will this confirm proper pressure, but a leak-down test will discover any breaches in the propane piping and/or fittings. Frankly, it's not a bad idea to replace the LP-gas regulator every five years. If you are experiencing ignition problems, seek professional help; gas appliances can be dangerous if



*Higher air pressure can be directed at any of the solid components, including the blower wheel, which tends to collect a lot of sticky lint resulting from centrifugal force. Generally, it's always best to keep all the components and housing clean. Don't exceed 125 psi of air pressure. If the sticky lint is stubborn to remove with air pressure, you may need to use a soft plastic bristle brush or even a toothbrush. Keeping the furnace free of debris and dust will pay off in service longevity.*

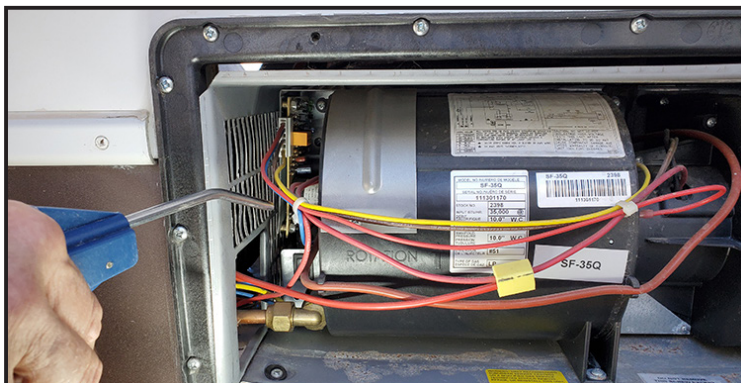
not diagnosed or repaired correctly.

- Battery voltage is critical for the proper function of a forced-air furnace system. Check to be sure that all the



*Registers in the floor have a tendency to collect dirt and lint below the grate. Also, copious amounts of pet hair tend to collect in this area. Remove the register grate to provide access for a vacuum crevice tool for cleaning. Obviously, the furnace register must not be blocked with stored items.*

cated near the furnace. Manufacturers of fifth-wheel trailers and motorhomes normally locate the furnace in the basement and the return air vent will be on a wall or floor inside the RV. The furnace in travel trailers is typically mounted near the galley area compartment with the return air vent directly in front of the furnace. Never block the return air vent



*It's possible to clean out any dust and debris from the area where the circuit board is mounted, but high air pressure can damage the components on the board. Use a long-nose air gun with no more than 20 psi of pressure, using short bursts.*

battery terminals are clean and secure. Using an accurate multimeter, confirm power to the furnace, which requires at least 11 volts DC to operate when the blower is running. Should the voltage drop below that in the middle of a heating cycle, the furnace will go into lockout mode and blow cold air unless the circuit board is designed to shut the furnace off. General battery health is important to keep appliances, like the furnace, running properly.

Obviously, there are other things that can impact RV furnace performance, from broken connections and errant thermostats to parts, like the sail switch, that simply wear out over time. That said, proper and timely maintenance can oftentimes reveal minor problems before they became a major headache.

**RVE**

# Chemical-free Drain Purge

Sink and shower drains will plug up over time — it's a fact of life whether living in a stationary home or RV. Hair, crud from dishes and hands, and other debris, always collects in the drains — usually resulting in a slow flow of water or even a total stoppage. Strainers will capture much of the debris and should be cleaned on a daily basis, but even so, the drain will plug up, oftentimes sooner than expected. You can minimize the frequency for cleaning the drains by using a strainer in each sink and shower;

Camco offers a strainer three-pack (No. 42273) for less than \$8 on Amazon (<https://amzn.to/30rbk1r>). It's also best practice to always wipe off dishes, utensils and pots/pans before washing — and never pour oil from cooking and fish cans (for example) down the drain.

RV owners may be tempted to use a liquid drain cleaner, but such chemicals do not fare well with holding tank chemicals and can impact seals. While it's possible to use one of those barbed probes to pull out the goeey stuff — a job that is messy and usually stinky —

the easiest solution is to simply flush the drains with water. It seems too simple to be true, but it works like a champ.

Actually, we should say “pressurized water,” because you'll need to use a standard-type metal nozzle with a lever (no need to get fancy here). Hook up the hose to an outside faucet (and test it for leaks before dragging it into the RV), then pull out the strainer from the drain. Insert the nozzle into the drain and stuff a towel around the gaps; microfiber towels work great. Pull the nozzle in short bursts, allowing water to enter the drain. Do this a few times and the crud on the sidewalls of the drain pipe and any debris causing a clog will be flushed into the holding tank. When flushing a double galley sink, have someone hold down the strainer (if it's the type that seals the drain) or use another towel to provide a seal. You'll only forget this step once after getting sprayed with water. **RVE**



*The same procedures are used to flush the bathroom sink and shower pan drains. Just make sure to remove the strainer in the shower, which may require a small screwdriver to pry it off. It only takes a few minutes to get the job done..*



*A standard-type metal nozzle works best for flushing drains. These nozzles are available in just about any hardware or home improvement store and matches up well to sink drains. It only takes a few short bursts of water to clean the drain.*



*The smallest strainer in Camco's three-pack works perfectly in a bathroom sink. These strainers have a fine screen that captures quite a bit of hair and debris. It's best to tap the strainer into a paper towel every day to remove collected stuff that can plug drains.*

# Fido Barrier

Dogs love to gaze out the lower section of an RV's screen door when the entry door is open — and when not scanning the outdoors, they also love to lay down against the screen, typically stretching out against the material. More mischievous dogs and cats also enjoy irritating owners by scratching at the material until it rips.

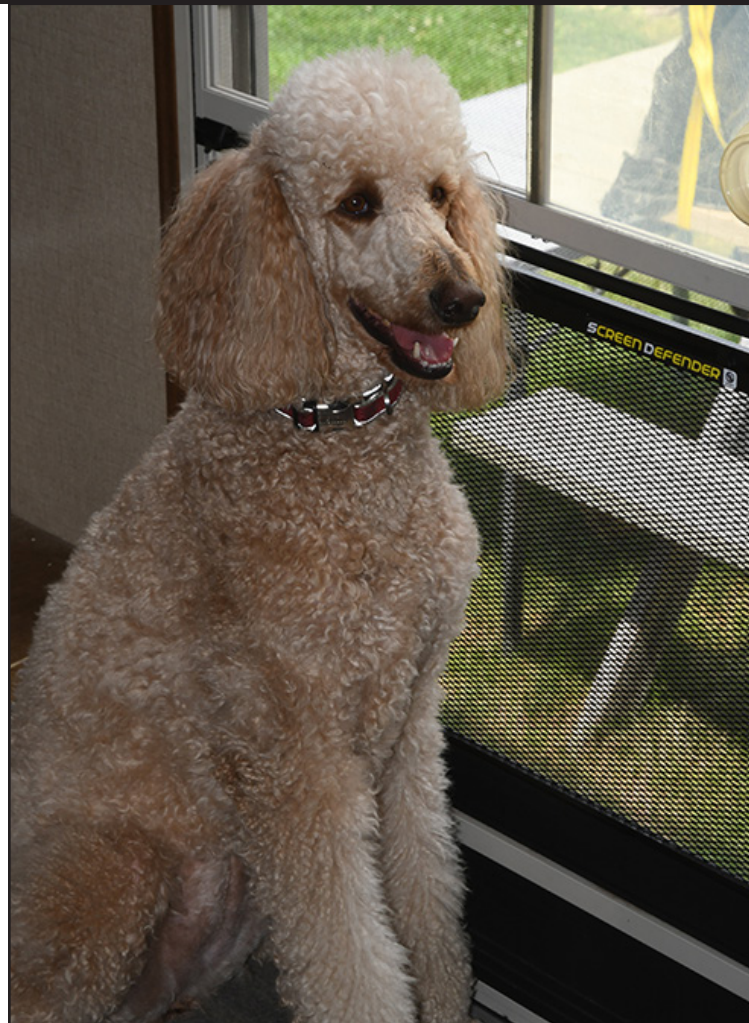
Screen protectors are not new to the RV world, but Lippert's Screen Defender (\$65.97 at Amazon) reinvented the installation process to make it simplicity personified — without the use of any tools, except possibly a tape measure.

The Screen Defender is a metal mesh insert that attaches to the bottom portion of the screen, so long as this area is more than 20 inches high. Don't get overwhelmed by the seven pages of instructions: The process is exceptionally easy, taking only a few minutes to accomplish.

First, a determination must be made whether the provided extrusions are needed to fill any gap between the center bar of the screen door and bottom of the frame. To establish the need for extrusions, the metal mesh insert is pre-fit on the screen and any visible gap is measured. We had to put two extrusions together to make a 2-inch gap filler. This is done by sorting

through the provided extrusions and finding the right combination. For this project, two pieces were pressed together, setting the barbs that are used as fasteners.

Once the extrusions are set, they are placed in the lower portion of the screen door frame and the Screen Defender is simply positioned on top. The spring-loaded latches are then employed to secure the mesh insert into both sides of the screen door frame. In no time you're done, and the metal mesh insert is solidly in place, ready for your pet — or even an errant human foot. **RVE**



**1** The Screen Defender is pre-hung on the lower portion of screen door to determine whether extrusions will be needed to fill any gaps.



**2** In this installation, a 2-inch extrusion was needed, considering the height of the lower section of screen and the location of the previously mounted Screen Shot screen door closer. To make a 2-inch gap filler, two sections of extrusion material were snapped together via the barbed layers of plastic.



**3** The extrusion was fitted to the bottom of the metal mesh screen protector before placing it in the screen channel.



**4** Once the Screen Defender is in position, the spring-loaded latches are employed, locking the metal mesh in place.

# A Flush Beats a Pyramid



*Camco's Swivel Stik throws a strong spray of water inside the tank. Here, the valve is barely cracked open to illustrate the spray pattern. When opened fully, the spray is strong enough to dislodge stubborn waste.*

## Black tank buildups are no match for Camco's RV Flexible Swivel Stik

Dumping a black holding tank is not rocket science, but it does conjure up fears of getting that nasty stuff on your hands or ground — which plays right into the best campfire sto-

ries. There are a number of techniques on how to clean these tanks circulating on the Internet, but one thing is for sure: preventing the dreaded “poo pyramid” inside the tank is crucial to a free-flow-

ing system and odor control. The RV Flexible Swivel Stik from Camco is a must-have accessory to carry in your tool arsenal that will help keep black tanks clean.

Many black holding tanks these days are fitted with a built-in flusher, which should be used every time the tank is emptied. These systems use a spray nozzle, usually mounted to the side of the tank, and are connected to a hose that forces water through a rotating nozzle inside the tank. But while the tank flusher gets much of the contents to flow out the dump hose, there are times when it's just not powerful enough to thoroughly clean the tank — and owners of RVs built without this feature can find themselves in an even more precarious situation.

The Swivel Stik is available with a solid or flexible shaft, depending on how the toilet is connected to the tank. If the toilet is mounted directly over the holding tank, the solid version is needed; when the tank uses a curved connector pipe, the 55 ½-inch flexible model does the trick. For this evaluation, the Flexible Swivel Stik was needed.

There's nothing fancy about this product. It's connected to a water hose and



*When opened, the wand is 55 ½ inches long. This flexible version is designed for cleaning holding tanks that are not directly under the toilet. Swivel Stik folds in half for easier storage. Keep in mind that this wand must be cleaned and sanitized before storing. We discovered that it fit perfectly inside the dump hoses stored in the bumper.*

routed into the tank through the toilet valve. (Always dedicate a hose for this purpose and store it separately; it's not safe to use a drinking water hose that will also be used to hook up the RV to an outside source.) On one end of the Swivel Stik is the threaded hose fitting with an on/off valve and on the other is a nozzle that provides a strong rotary spray of water necessary to dislodge solids in the tank.

To clean the tank, the contents are first dumped in the normal manner. If you have a tank flusher, use it before the Swivel Stik. Once the tank is empty, leave the discharge valve open and insert the Swivel Stick through the toilet valve as far as possible. You'll need to keep the toilet valve open by engaging the flushing lever by hand or foot, depending on the toilet model, so first turn off the water source. Allowing the toilet valve to snap shut on the Swivel Stick tube may damage the valve. To help, a device called the "Johnny Chock" (about \$10 on Amazon) can be inserted to keep the toilet valve open hands-free. Move the lever to the "On" position and let the rotary spray nozzle do its thing.

While it may seem redundant to use the built-in tank flusher and the Swivel Stik, our testing revealed that the latter will remove leftover solids that did not make it out during the initial tank rinsing.

Using plenty of water when flushing and agitation on the road usually will keep the tank flowing without clogging. Final rinsing with the Swivel Stik will ensure the tank is clean and ready for use during the next outing.

Those RVers who are on the road and stop for a few days to a couple of weeks may only have to use the Swivel Stik just before storing the rig. Owners who stay put for long periods of time may find that the lack of agitation inside the tank may create an unwanted build-up of waste, which will impact the flow during dumping and lead to a noxious odor. Full timers should consider using the Swivel Stik once a month and have the tank professionally pressure washed annually.

Although the Swivel Stik folds up for easy storage, keep in mind that it's used in a very unsanitary environment, so don disposable gloves and clean it thoroughly with a throw-away rag or paper towel with a disinfecting solution before placing in any compartment. The Camco RV Flexible Swivel Stik is available at Amazon (<https://amzn.to/3bTn-fHs>) for around \$25, or from most RV supply stores. **RVE**



*A brass rotary fitting at the end of the wand throws a strong spray pattern of water, specifically designed to clean black water holding tanks. A hose is attached to the end of the wand with the on/off valve. This valve makes it easy for one person to control the water. Never use a hose that provides city water service to the RV; it's best to dedicate a hose for cleaning the tank, like Camco's clean-out hose (<https://amzn.to/3CjCWm6>) which is a different color to stand out.*



*The Swivel Stik is routed through the toilet valve (turn off city water source) into the holding tank via the connecting pipe. Holding open the flushing mechanism during the cleaning process will prevent damaging the toilet valve.*

## Smooth as Silk



*Lubricating stubborn entry and compartment door latches makes them easy to close without slamming and suffering expensive-to-repair damage*

Just about everyone who has owned an RV for long has experienced issues with latches on their compartment and entry doors. Exposure to the outdoor elements — and, of course, repetitive use — can create “sticky” situations whereby the doors won’t close properly without a lot of prodding... and we all know that can lead to latch and door damage. Fortunately, the fix is about as simple as it gets — but it’s important to use the right lubricants.

Most people reach for WD-40 (or a similar product) for toning down squeaks and smoothing out friction between metal parts like a bolt and strike plate, but lubricants like this can attract dirt and dust and can be on the messy side.

Fortunately, there are a number of products for this purpose, including a silicone-based liquid or gel or even a dry lube, which will restore function while resisting a build-up of crud. Sil-Glyde Multipurpose Lubricant (<https://amzn.to/3H47n2w>) is a gel that can be applied easily to the bolt and strike

plate, which instantly restores smooth action. This lubricant “sticks” to the metal parts without running down the sides and creating a need to clean up the surrounding area while providing necessary lubrication for a fairly long time (depending on the elements); we usually reapply on a monthly basis.

A thin layer of gel is applied with your finger and worked around the bolt — over-applying the gel is not necessary, nor practical. Instantly, the entry door and exterior compartment slam latches will seat with virtually no effort.

Sil-Glyde is made by AGS, a company with roots in the automotive community and has been making lubrication products since 1931, so it has plenty of experience in this arena. The Multipurpose Lubricating Compound is castor oil-based and formulated to reduce friction between moving parts. The compound will not melt, freeze or gum up — and has a working temperature of -20 degrees F to 400 degrees F. According to the manufacturer, it can be used on rubber, metal, wood, glass and plastic.

Sil-Glyde can also be found in hardware and home improvement stores.

A liquid silicone lubricant that flows much like light oil can also be used, but we found repeated applications were necessary since it runs off the bolt surface.

Another product that works well and can be found on Amazon or in hardware/auto parts stores is Blaster Dry Lube with Teflon (<https://amzn.to/3J6lJjx>).

This dry lube does a good of lubricating the surfaces and provides instant results, but it’s necessary to clean the white residue off adjacent areas (which is no big deal). The Blaster Dry Lube works well on hinges that squeak while opening and closing the door. We subsequently found the two products to be a winning combination on compartment door slam latches. The surface of the bolt is coated with Sil-Glyde and the inside mechanism is treated with a shot of Blaster using the tiny straw that comes with the aerosol can. **RVE**



1

It only takes a dab of Sil-Glyde to coat the surface of the bolt in the compartment door slam latch. Simply use your finger to apply the gel. Figure on reapplying once a month, or more often in wet weather or when exposed to ocean air.



2

Coating the latch bolt with a layer of Sil-Glyde will prevent the entry door from sticking when closing, eliminating the need to slam it shut — which can lead to damage.



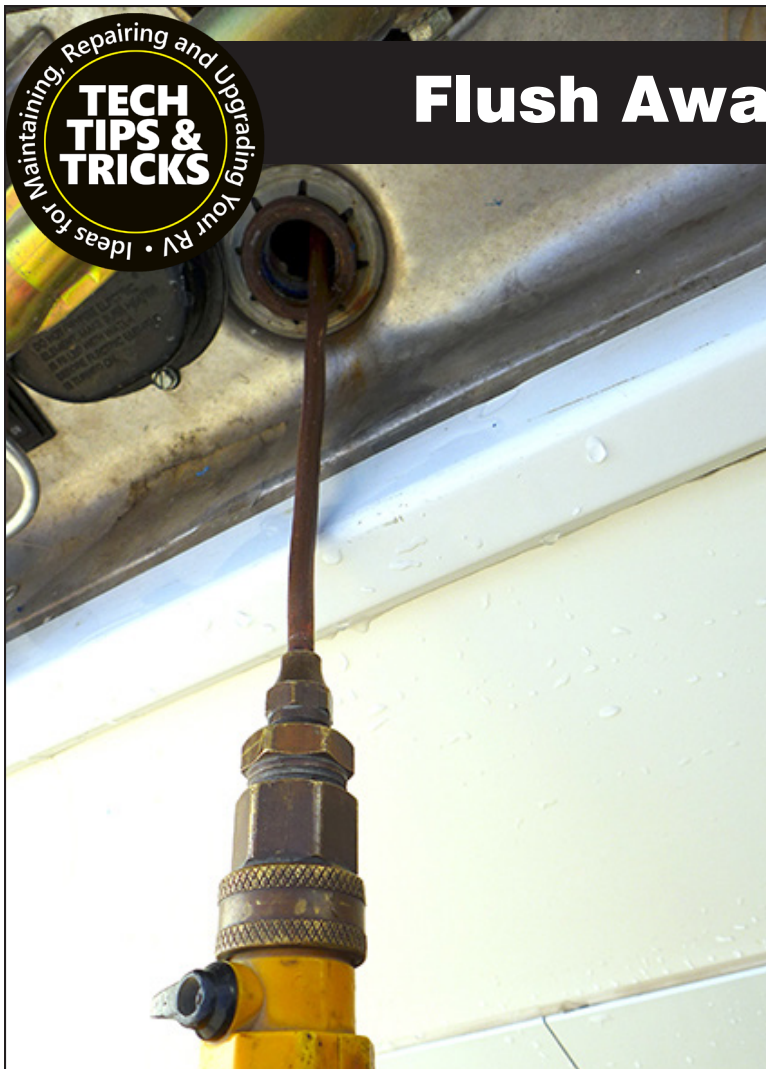
3

Blaster Dry Lube with Teflon is also a good product for lubricating sticky latches. To apply a one-two punch against hard-closing compartment-door latches, squirt a shot of Blaster into the latch mechanism after applying a thin coating of Sil-Glyde to the bolt surface.



4

Noisy door hinges can also be silenced with Blaster Dry Lube. While the results are instantaneous, the white residue left by the lubricant will need to be wiped off with a clean rag or paper towel.



TECH TIPS & TRICKS  
 Repairing and Upgrading Your RV • Ideas for Maintaining

# Flush Away Your Troubles

*RV water heaters are often overlooked until it's too late. Regular tank flushing and replacement of the anode rod (for Suburban models) will ensure full capacity and plenty of hot water.*

Perhaps one of the most overlooked maintenance procedures is flushing the water heater and replacing the anode rod. Inspecting the anode rod seems like an out-of-sight, out-of-mind proposition — except for those who have to pull it to drain the tank for winterizing. Flushing the sediment that builds up in the bottom of the tank on regular basis — regardless of whether you have an Atwood or Suburban water heater — may not be quite as important as servicing the anode rod (Suburban models), but over time it's possible to lose significant capacity, much less damage the tank.

Atwood tanks and the drain-plug threads are made of aluminum and using an aftermarket anode rod is not

magnesium is softer, will deteriorate quicker and is far more effective than the aluminum counterpart (which will work if you have fairly soft water). There's no question that the better protection afforded by using a magnesium anode rod (and its higher expense) is more cost-effective than purchasing an entire water heater. I recommend checking the anode rod at least every six months and replacing as necessary.

recommended. Don't get fooled by those who tout their use; they can literally weld themselves into the drain hole from the electrolysis between the steel and the aluminum. Suburban water heaters have a porcelain-coated steel tank, which requires the use of an anode rod to protect against deterioration of the steel. The rule of thumb is to replace the anode when it's about 50% deteriorated or annually, whichever occurs first.

Anode rods come in either aluminum or magnesium; they're both designed to protect the steel tank. The difference between the two is the hardness of the material: Mag-

Anode rods also come in different lengths, with the longer ones suitable for 10- and 12-gallon water heaters. Magnesium anode rods have a tendency to make the water smell a little bit like sulfur; sanitizing the system with a bleach/water mixture will help solve the problem.

Before flushing the tank, make sure the water is cool and inspect the pressure-relief valve for corrosion and leaks. If it's leaking, tap open and close the valve a few times, which may stop the leak. (The intense heat can cause these valves to drip and eventually the seal will fail.) If it leaks, order a new valve before starting the flushing maintenance; valves are specific to water heater brand since the thread sizes are different. While the force of the water flowing out the drain will remove some of the sediment, it's best to use a flush tool for this job, which can be assembled with parts laying around your garage (like we did; see photo) or you can acquire one online or at RV parts stores. The Valterra A10-4010 Flush Kit has a plastic wand and sells for \$14.79 on Amazon. If you want one with a metal wand, check out the RV Water Heater Tank Rinser, Metal Tube on Amazon (\$16.99).

Make sure the gas and electric switches are off; you don't want the water heater to come on when the water is drained; if the electric element is left on when the water is draining, it will burn up. The water in the tank must be cool before attempting to remove the anode rod (or pressure-relief valve). You will need a deep 11/16-inch socket with a short extension and a 1/2-inch breaker bar or ratchet for this job. The heat and corrosion can make the anode rod very difficult to remove. If you decide to replace the pressure relief valve, you



*Flushing the hot water tank on a regular basis will prevent build-up of debris, which can alter capacity over time and present a good opportunity to replace the anode rod in Suburban models, if necessary.*



*Removing the drain plug/anode rod in a water heater requires the use of a 11/16-inch deep socket, short extension and ratchet. You may need a breaker bar if the plug/rod is tight.*

will need a large pair of slip-lock pliers or a crescent wrench to remove it from the tank. You will also need a 1/4-inch nut driver to remove the vent assembly to gain access to the pressure relief valve and high temperature Teflon tape to seal the threads.

Before you begin, relieve the pressure in the tank by opening the hot side of the faucet farthest from the water heater and leave it open. This will be closed later after the air is purged from the system. Remove the anode rod, then open the pressure-relief valve;



*Clearly, the anode rod in this tank was ready for replacement. If the anode rod is ignored, which is easy to do, the steel tank can develop holes and water will leak out, eventually making a mess and possibly encouraging dry rot.*

do not reverse the order. At this point, there will be a strong stream of water coming out of the drain. First-timers usually stand in front of the drain, but that learning curve will be short-lived. Next, use the flush tool and insert it as far into the tank as possible. Turn on



*Wrap the anode rod threads with Teflon tape before reinstalling it into the tank. Tighten with a good amount of torque.*

the lever and as the water flows, push and pull the wand while using a side-to-side motion, which will force the debris out of the drain. Repeat this process until you're certain that all of the deposits have been eliminated.

Apply the Teflon tape to the anode rod threads and install it into the drain. The length of the anode rod makes it somewhat awkward, so be careful not to cross-thread when installing. Tighten the anode rod with the socket; these are very large threads, making it difficult to strip. At this point if you decide to change the pressure-relief valve, use the Teflon tape for the installation. You can torque this tightly as well and make sure the opening is pointing down.

Leave the pressure-relief valve open and turn the water on. As soon as the water gushes out close the valve and go inside to make sure that the air is purged from the faucet, which will be evident when the "spitting" stops and the water flows freely. Turn on the electric or the gas mode and wait for the water heater to completely cycle off; at this point you can check for leaks since the pressure will be built up. If there are any leaks you will need to give the anode



*It best to replace the anode rod in a Suburban water heater when the material is 50% consumed. Magnesium rods are best for harder water and not needed in Atwood tanks, which are aluminum. The anode rod is a sacrificial metal to prevent deterioration of the porcelain-coated steel tank used in Suburban water heaters.*

sure-relief valve and it leaks, you will need to turn the water off, cool down the water, relieve the pressure and change the valve. Repeat the process above to purge the air from the tank.

Both of these water heater brands are designed to have a small air gap at the top of the tank. Double check your work in a couple of days to make sure there are no drips. **RVE**



*A flush tool will help remove debris and corrosion from the tank. This one is homemade using a few fittings and copper tubing that were laying around the garage. Commercial tools are available online (Amazon) and at most RV parts stores and are very inexpensive. Using push-pull motion (with some added side-to-side action) will dislodge debris inside the tank. Gravity draining the tank alone will not facilitate proper cleaning.*



*If the pressure-relief valve is leaking, opening and closing the lever a few times might help stop the leak. If not, you'll undoubtedly have to install a new valve. Opening the valve while the water is running out of the drain will improve the flow, aiding in the removal of debris.*

rod and/or pressure-relief valve another quarter of a turn. You may need to remove and clean the strainer from the sink if some of the dislodged deposits made their way into the basket.

If you did not change the pres-

# No More Leaking Sewer Hoses

There's probably nothing messier and more embarrassing than watching in horror as the sewer hose pops off the termination pipe connector (bayonet fitting) — or leaks — while dumping the tanks. Unfortunately, it happens all the time, usually caused by a hose clamp that has rusted and released. Many owners go by the "tighter is better" philosophy when turning the worm-screw drive on the hose clamp, overtightening to a point where the mechanism becomes distorted, rendering the clamp unreliable after a short while. And let's not overlook the poor quality of these hose clamps.

A simple solution is to wrap Teflon tape around the RV termination pipe connector and the fitting on the dump-station drainpipe end before sliding on the hose and tightening the clamps. You should make several full wraps around the fitting, stretching the Teflon tape at the same time to assure it will "stick" to itself. It may take some finesse to get the hose to clear the Tef-



lon tape and prevent bunching up next to the collar. Once the hose is in place, the clamp can be positioned and tightened moderately, without deforming the screw-drive mechanism. While it's also possible to seal the hose to the fittings with silicone sealant, doing so requires scraping and annoying clean up when refreshing the connection.

It's best to repeat this procedure a couple times a year to stay ahead of any deterioration caused by the environment and hose fatigue (depending upon how often the RV is used and the tanks are dumped). One more thing: Most of the Teflon tape on the market is flimsy and not very durable. The best stuff is Blue Monster PTFE Thread Tape #70865 available from Amazon (<https://amzn.to/3pUF-q0o>) or hardware stores.



2

The Teflon tape will provide a leak-free connection without the need to overtighten the hose clamp and distort the worm-screw drive.



1

Wrap the Teflon tape around the fitting a few times for a good seal. On the first wrap, place a finger on the end to keep the tape in place. Stretch the Teflon tape slightly so it will "stick" to itself and provide a smooth, and tight, surface. Once the Teflon tape is in place, slide the hose over the fitting carefully to avoid bunching the tape and compromising the seal. Don't forget to add the hose clamp first.



3

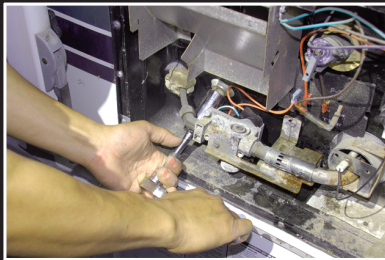
We found Blue Monster PTFE Thread Tape #70865 to be the best Teflon tape product on the market. It's available on Amazon and at hardware stores. **RVE**

# RV

# ENTHUSIAST

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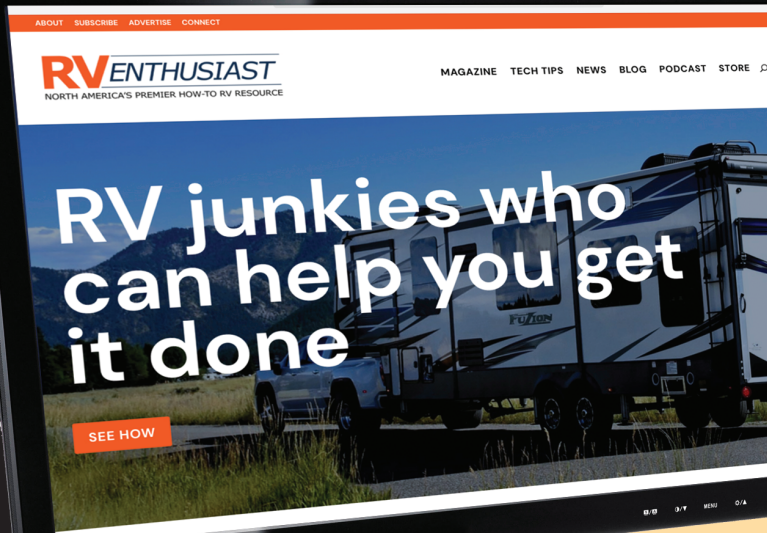
*Created by – and for – hands-on  
RV enthusiasts!*



*RV Enthusiast* magazine was developed to take the mystery out of RV maintenance, repairs and upgrades, as well as providing how-to tips to make RVing better. We get it: Things happen as time and untold miles of bad roads will take their toll on your RV. But we also know that you don't have to be a mechanic to be able to confidently deal with problems that may crop up. All you really need is truly accurate information you can rely on — fully illustrated every step of the way and written in a friendly, conversational manner you can understand.

As this issue shows, each monthly edition of *RV Enthusiast* will be filled cover-to-cover with the kind of information and instruction you need to continue to enjoy your RV for years to come. In fact, there are nearly 50 pages of 'how-to' stories in this issue — just imagine the wealth of topics to be covered and the knowledge gained in a year's time!

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## Coming in the April issue:

For some RVers, "getting away from it all" simply means making the time to go camping. For others, it means camping while untethered from hookups, in places some of us only dream about — boondocking. The April issue will highlight boondocking tech, from installing an inverter/charger (with remote panel!) to a 12-volt refrigerator. We'll also take a long look at lithium batteries, demonstrate how to reseal a roof — and present the hottest new RV components for 2022. **Available April 10.**

# Taking 'Spring Cleaning' to a Whole New Level



*A well-maintained RV holds its value — provided you know the best way to wash, wax and buff out oxidation*

By Bob Livingston / Photos by the author

**K**eeping an RV's exterior looking new requires a serious commitment from the owner. RVs have rightly been referred to as "homes on wheels" — but you never had to concern yourself with bugs hitting the front of your brick-and-mortar home at 60 miles an hour. Allowing dirt and bugs to bake on the surface leads to a dingy look — and, in many cases, accelerates oxidation that leads to a dull fiberglass, metal or painted exterior.

It's not easy to wash and wax an RV, but there are techniques that will curtail the amount of time and effort needed to get the job done. Professional detailers always have a few secrets up their sleeves, and after watching the process of having our fifth wheel detailed multiple times, I came away with a bunch of "why didn't I think of that" ideas to add to my arsenal of tried-and-true products.

## Cut & Rub

The fifth wheel in question (mine) had developed an issue with oxidation that followed the pattern of the aluminum structure that holds the rig together. While the sidewalls generally held up nicely during the last five years since the rig was new, a noticeable pattern had developed on the left sidewall that detracted from the overall look of the fifth wheel.



*Professional RV detailers recommend that the exterior is waxed at least twice a year, depending on how it's used and stored. Working on any RV roof can be dangerous when it's wet and soapy. If you're not comfortable with walking on the roof, it's best to set up a ladder and work from the side.*



*A pressure washer and foaming gun will make it easier to cover larger areas with soap. Foam clings to the surface longer and does a great job of cleaning.*

While in Elkhart, Indiana, last summer, I cut the sidewall with Meguiars Oxidation Remover 49, a liquid compound formulated for RVs and boats (around \$16 at auto parts stores; [www.meguiars.com](http://www.meguiars.com)) and re-waxed the surface. Most of the “scars” went away but returned by the time we landed back in our Palm Springs, California, winter RV park. Juan Romero, the detailer I’ve used twice a year during the entire life of the fifth wheel, agreed to rub out the sidewall but offered no guarantees.

Evidently, the intense desert sunshine baking on the one side of the fifth wheel contributed heavily to the oxidation. Romero, who has years of experience working on RVs in desert environments, cut the fiberglass with Meguiars Oxidation Remover after washing and worked the area until the unsightly streaks blended into the sidewall, but was not optimistic it would last — and it didn’t. Three months later, he returned to compound the surface with a more aggressive product available to professional detailers, which seemed to do the trick.

There are, however, plenty of options for do-it-yourselfers, including Buff Magic Compound from Shurhold Industries ([shurhold.com](http://shurhold.com)). A longtime supplier of cleaners, waxes and tools for the RV and marine industries, Shurhold’s website also includes literally dozens of “pro tips” for getting the job done.

Removing oxidation can be accomplished by an owner using the right tools and compound. Trying to rub out a sidewall by hand is futile; you’ll need a random orbital buffer and the appropriate pads. Since most owners

will not buff out their RVs more than a couple times a year, opting for an inexpensive random orbital buffer from Harbor Freight will suffice. As a matter of fact, many professional detailers use the Bauer 6-inch Short Throw Random Orbit DA Polisher, which seems to last lot longer than its \$79.95 price tag suggests ([harborfreight.com](http://harborfreight.com)).

Don’t even consider using a drill motor and a pad for any type of buffing on an RV; it will burn the surface in a hurry



*A brush specifically designed for painted surfaces and can be attached to a telescoping handle, which makes it possible to reach the higher sections of the sidewalls and end caps. Once the soap is brushed thoroughly, it must be completely washed off with clean water. This is another area where a pressure washer really comes in handy—and conserves water at the same time.*

and lead to expensive repairs. If you want to upgrade from a Harbor Freight tool, consider the Shurhold Dual Action Polisher Pro, which has proved to be a workhorse in the detailing arena (\$208 at Shurhold or at Home Depot).

Using the right pads is paramount. When compounding fiberglass, a wool pad will do the best job; a foam pad is used for painted surfaces. In all cases, choose the compound wisely; those products that cut deeply will likely get you in trouble.

There are a number of liquid rubbing compounds on the market formulated for painted surfaces. Unless you are experienced with rubbing out painted surfaces, it’s best to seek a professional opinion on product selection. Other great sources for information and products for maintaining painted surfaces we’ve used include Griot’s Garage ([griotsgarage.com](http://griotsgarage.com)) and The Wax Shop ([waxshopbrands.com](http://waxshopbrands.com)).

### Time for a Bath

Before even thinking about removing oxidation, the RV must be washed.

Most of us will grab a bucket, fill it with a mixture of water and a washing product, pull out a water hose and connect a wash brush to a telescoping handle. You can improve dramatically on that scenario by adding a small pressure washer to your tool collection. The Ryobi 1900 psi, 1.2 gpm pressure washer (\$159; Home Depot) is compact and lightweight, easy to maneuver and



*Most professional detailers use their own deionized water, which will not spot. If you're working from home or on the road, the water may be hard, which means you'll have to wrestle with spotting. A leaf blower will dry the sidewalls quickly without leaving the dreaded hard-water spotting. A leaf blower also makes it possible to reach all the nooks and crannies on an RV, like the area around the awning.*

store. Add a foaming nozzle, like the Chemical Guys EQP324 Big Mouth Foam Cannon ([chemicalguys.com](http://chemicalguys.com); \$89 and at Amazon), and you'll get the job done faster and more efficiently. Lippert also markets an even more compact, cordless pressure washer, the Power Pro Max Portable Pressure Washer, which retails for \$258.95 ([store.lci1.com](http://store.lci1.com)).

The foam, which is available online and at many auto parts stores from a variety of sources including Chemical Guys, Mother's and Uline, clings to the surface and removes dirt, making it easier to scrub with the brush. Make sure the brush is made for vehicles; there are a number of these brushes on the market, but again the products offered by Shurhold are longtime favorites of mine. Even better, most of them are designed to be attached to the company's telescoping handle (\$34.95) which features positive catches to prevent unwanted collapsing — and the brushes are plenty soft and durable. The first step is to rinse and wash the roof. This is the most dangerous part of the job; a wet, soapy roof is slick and requires careful footing. Professional detailers are as surefooted as mountain goats; it's best to do this from a ladder if you're not comfortable walking on the roof. A pressure washer and telescoping brush handle will really come in handy when working from a ladder. Rubber roofs will require additional attention if they are not cleaned at least twice a year.

Once the RV is washed and waxed, apply a coating of Aerospace 303

Protectant to the rubber or TPO roof and you'll be amazed how well it will weather the elements—and take less effort to clean. While Aerospace 303 Protectant is not cheap and you've probably seen it at your local auto parts store in a 10-ounce spray bottle, RVers should consider buying it in a gallon container to save money (available at RV supply stores, Amazon and Home Depot for around \$60).

Conventional wisdom suggests that it's best to work a section at a time so that the soapy water will not dry on the surface, creating even more effort. Using a foaming nozzle connected to a pressure-washer wand allows a larger area to be washed at a time. Since the soap is suspended on the surface, it gives the user time to brush out the

sidewalls, although you still can't lag. Once the surface is brushed, it must be rinsed thoroughly with clean water. And that's the rub if you're dealing with hard water — it must be dried quickly to prevent water spotting.

A trick method of drying the surface is to blast it with air from a leaf blower, then follow-up with a large dry towel. The towel can be draped over a rag attachment with hook-and-loop strips that allows it to “stick” to the end of the telescoping pole, or you can throw it over the wash brush. Leaf blowers come in all sizes and velocity, but if you don't want to spend a lot of money, choose one that plugs into 120-volt AC power; you get a lot of velocity for the size and it's easy to handle and store. The leaf blower also comes in handy for cleaning the patio and forcing leaves and debris off the awning and slide-out toppers.

Plan on cleaning the tires at the same time you're soaping up the sides. Again, the foaming agent from the pressure washer works well. Scrub the sidewalls with a medium bristle brush and rinse thoroughly. This can also be accomplished with a spray-on wheel/



*After drying the sidewalls with the leaf blower, a large towel wrapped around the brush can be employed to remove any water residue. Make sure the towel is large enough not to roll off the brush. And don't forget to wipe down the slideout sidewalls.*



*Oxidation was evident after cleaning, following the pattern of the sidewall frame. Here, the oxidation was caused by constant exposure to strong sun and was only a problem on one side. Otherwise, the fiberglass held up fairly well over the five years since the fifth wheel was new — and looks near-new again afterward.*

tire cleaner found in auto parts stores if you don't have access to a foaming nozzle, but a brush will be needed to release the dirt and brown protective coating that usually finds its way to the tire sidewalls. When dry, treat the rubber with Aerospace 303 Protectant (another reason for buying it in bulk) and don't worry about over-spraying the wheels. We discovered the protectant builds up on the wheels and makes it

with a microfiber towel as the last step. You'll be surprised how fast this process goes using a random orbital buffer. Many folks who prefer to work by hand typically do a section at a time and get the job done over a few days. Don't forget to open the slideouts so their walls can also be cleaned and waxed. Once a year, apply the Aerospace 303 Protectant to the slideout seals.

easier to clean down the road.

### Wax On, Wax Off

Waxing the fiberglass or painted body is almost an art into itself. Doing it by hand is possible, but will expend a ton of energy. This is best done in a shaded area, but many detailers work in the sun because of necessity. Here's where a random orbital buffer "shines." Work in small areas at a time, apply the wax to a dedicated wool pad and let the buffer do the work. Most people apply too much wax to the pad, which will make a mess, but after a few tries, you'll get the rhythm down.

Remove the wax with a clean cotton towel slung over another pad connected to the buffer, which can be a foam pad rather than using the pad specific for this purpose. That way you won't plug up a bunch of pads, which drives up the costs. Buff the walls and caps using the same technique with a clean towel and dust off the surface by hand

### Glass and Bugs

The best stuff I've ever used for windows is Invisible Glass ([invisible-glass.com](http://invisible-glass.com)), available online and in many auto parts stores as either an aerosol or spray-on product. Dry with a clean microfiber towel and the windows will sparkle.

Bugs are a menace — and a pain to remove, especially if they are allowed to dry and stick to the surface. Over the years, I have relied on two products to make that job more palatable: the Love Bug Eraser ([bugsoffpads.com](http://bugsoffpads.com)) and Simple Reflection Bug & Streak Remover ([simplereflection.com](http://simplereflection.com)). The Love Bug Eraser is a thin foam pad, developed in Florida in "honor" of the copious Lovebugs that can damage painted surfaces if not removed immediately. It's designed to be used with soap and water only and can be reused countless times. For around seven bucks (google "Love Bug Eraser" and numerous sites will pop up), you'll have a pad that can remove bugs between washings quickly without damaging the fiberglass, paint or clear coat.

Simple Reflection bug remover is part of a family of products that includes cleaners and protectants, a robust telescoping pole that will extend beyond the roof line and possibly the best microfiber towels on the planet. The bug remover dissolves bugs almost instantly and the cleaner is perfect for between-wash touch-ups to keep the exterior looking nice. Actually, using the cleaner regularly will help decrease the frequency for major washing, unless the weather is bad and the RV collects excessive road grime. The cleaner also applies a protective coating on the surface, which helps preserve the finish.

### Water May Not Be an Option

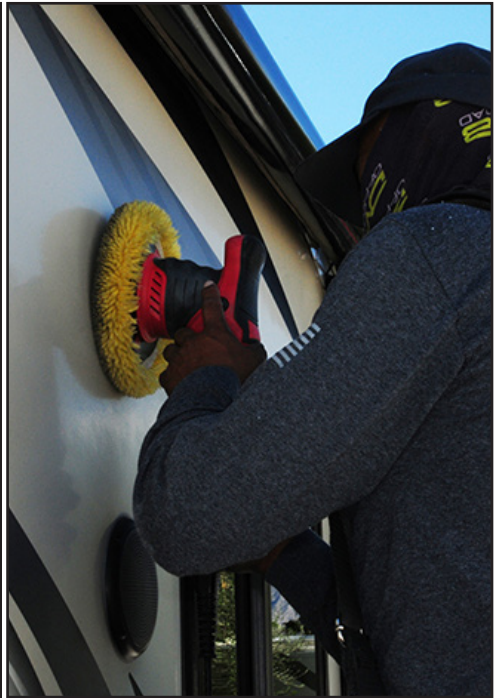
When it's not possible to wash your RV with running water while on the road because of campground prohibitions, many owners turn to waterless cleaners. There are a number of these products on the market and one that really works well is a liquid concentrate called Optimum No Rinse Wash and Shine ([optimumcarcare.com](http://optimumcarcare.com)). Adding two ounces of the No Rinse to two gallons of water is all you need to wash the exterior with a microfiber cloth and wipe dry; larger rigs might require multiple reloads.

The liquid suspends the dirt so it can be easily wiped off without scratching the surface and leaves a protective coating. You can buy it in bottles as small as 8 ounces (\$6.99) or as large as a one-gallon container (\$44.99, both prices from the company website), but



trust me, you'll want to get it in bulk — and it will last a long time. Also, rather than locating the 2-gallon mark in a standard 5-gallon bucket, I purchased a 2-gallon pail at a home improvement store and use it exclusively for mixing

the No Rinse — and it's easier to store. Maintaining the look of any RV will pay off handsomely when it comes to resale and personal satisfaction. Who knows, you might even have fun doing it.



Professional detailers rely on commercial-grade waxing products; do-it-yourselfers have a plethora of products available online and at auto parts stores. The liquid wax is applied to a wool pad attached to a random orbital buffer, which is designed for painted surfaces. Never use a drill motor and pad attachment, which can lead to burned fiberglass and/or paint.

The entire sidewall with the oxidation patterns was cut with Meguiar's Oxidation Remover for RVs and Boats. A wool pad is best for rubbing out oxidation. The oxidation returned after a couple of months at which time professional detailer Juan Romero used a more aggressive compound, which worked much better. After a couple of months, the oxidation was still gone.



A great tip: Load a bag with the wax, towels and other essentials for the job and hang it on the ladder so you won't have to chase supplies when working high up on the sidewalls.



Rather than use a buffing pad to remove the wax, most professional detailers wrap a cotton towel over the waxing pad, which works beautifully and is much more cost-effective.



The towel wrapped around the waxing pad makes it easy to maneuver in tight spots. Rather than plug up buffing pads, the towel can be replaced frequently to make wax removal more effective—and washed for reuse.



After the wax has been removed and the sidewalls buffed to a shine, a clean microfiber towel will capture any remaining residue on the surface, producing a professional look.



Wheels and tires are treated to a liberal dose of foaming soap. A medium bristle hand brush will remove debris and the brown protective material off the tire sidewalls. The medium bristle brush is worked into the wheel spokes and picks up plenty of dirt and brake dust.



Aerospace 303 Protectant is applied to the tires after they are dry. Don't worry about over spraying the wheels; we found that the protectant ultimately helps repel dirt and brake dust, making future wheel cleaning easier. **RVE**



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# Interested in Becoming an RV-Certified Technician?



It's no secret that the current growth in popularity of RVing has revealed a shortage of industry-certified technicians. Just try booking an appointment

with the service department of your local RV dealership and see how long the wait is.

To help address the dilemma, the RV

Technical Institute (RVTI) has implemented a truly affordable subscription plan to help train the next generation of service techs. It has, in fact, never been easier or more affordable to receive the "gold standard" RV Technical Institute training with the launch of RVTI's new subscription model.

For individuals, either mobile technicians or people who are looking to get into the RV technician field, the cost is just \$300/year and provides access to RVTI's Level 1 and Level 2 online training or in-person classes in Elkhart, Indiana.

This new, lower price for training is possible because of the decision from industry leaders on the board of directors of the RV Industry Association, National RV Dealers Association, RV Technical Institute and Go RVing to subsidize the cost of training.

For more information, go to: <https://www.rvti.org/catalog>

## 44 National Parks See Record Visitation



seven parks — all of them historic sites in urban areas — remained closed throughout 2021 due to health and safety concerns related to COVID-19.

According to the 2021 report:

- There was a total of 297,115,406 recreation visits.
- Three parks — Blue Ridge Parkway, Great Smoky Mountains National Park and Golden Gate Recreation Area — had more than 10 million visits.
- 11 parks had more than five million recreation visits, up from seven parks in 2020.
- 25% of total recreation visits occurred in the top eight most-visited parks, while 50% of visits were in the

top 25.

The top 10 most visited parks in the National Park System include:

- Blue Ridge Parkway (15.9 million)
- Great Smoky Mountains National Park (14.1 million)
- Golden Gate National Recreation Area (9.1 million)
- Lake Mead National Recreation Area (7.6 million)
- George Washington Memorial Parkway (6.8 million)
- Natchez Trace Parkway (6.4 million)
- Lincoln Memorial (5.8 million)
- Gulf Islands National Seashore (5.5 million)
- Zion National Park (5 million) **RVE**

While total numbers of visitors across the entire National Park System remained below pre-pandemic totals for 2021, some of the most well-known national parks experienced record visitation according to official statistics released recently by numbers the National Park Service.

Of 423 parks in the National Park System, just 25 received more than 50 percent of the system's total 297.1 million recreation visits in 2021. Last year's visitation increased by 60 million over 2020 when COVID-19 shuttered facilities in most parks for at least part of the year.

Those numbers came even as some parks operated with limited capabilities of indoor space restrictions. In fact,

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# Spinning a Yarn

*Jonesborough, Tennessee, made popular by famous frontiersmen Daniel Boone and Davy Crockett, is a time capsule through turbulent times — and a place where the art of storytelling was perfected.*



*Jonesborough has become known as “The Storytelling Capital of the World.” The Mary B. Martin Storytelling Hall is a venue where storytellers share their stories with the public.*

If you love a good story, consider putting Jonesborough, Tennessee, on your list of places to visit. Jonesborough is not only Tennessee’s oldest town, but it is “the Storytelling Capital of the World.” Tucked away in the Appalachian Mountains in the northeastern corner of the state, the town sits between the Watauga and the Nolichucky Rivers and is surrounded by low hills and elongated ridges. Famous frontiersmen Daniel Boone and Davy Crockett once explored and hunted this land, and have become a part of Jonesborough’s history and culture.

At the time that Jonesborough was established as a town in 1779, the land belonged to North Carolina. A few years earlier, Daniel Boone mapped out a trail from Virginia across the Appalachian Mountains through the Cumberland Gap, allowing for expansion of new settlements in the area. By 1784, the settlers wished to pull away from North Carolina and establish a new state known as Franklin. Franklin actually functioned as the nation’s 14th state over a four-year period, but was never

recognized by Congress; residents nowadays often refer to it as “the Lost State of Franklin.” In 1796, Tennessee became the nation’s 16th state, and Jonesborough became known as the oldest town in Tennessee.

In the early 1800’s, a Quaker, Elihu Embree, established *The Emancipator*, one of the first abolitionist newspapers in Jonesborough. Embree was a member of the Tennessee Manumission Society which was formed in 1815 to advocate for the abolition of slavery in Tennessee. At the time, most east Tennesseans were opposed to slavery and the abolitionist movement continued to grow. During the years of the Civil War, the townspeople of Jonesborough were divided, and the town was known as the “Center of the Abolitionist Movement.”

Today, Jonesborough attracts “heritage tourism” because it has done such a wonderful job of preserving many of its architectural structures, along with keeping its cobblestone streets. It was, in fact, placed on the National Register of Historic Places in 1969 due in no small part to its well-preserved historic downtown and Main Street. When you

visit Jonesborough, be sure to see the Christopher Taylor House, built in 1777. This house is the oldest surviving building in the town and once provided lodging for Andrew Jackson before his presidency. Meanwhile, The Chester Inn dates back to 1779, and is the oldest commercial building in town. Presidents Andrew Jackson, Andrew Johnson and James Polk resided at this inn at some point in history, establishing the inn as a state historic site. The Chester Inn now houses a museum, which is also worth



*The Chester Inn, the oldest commercial building in Jonesborough, actually housed former Presidents Jackson, Johnson and Polk.*



Historic buildings line the streets of Jonesborough — including *The Christopher Taylor House*, built in 1777 and the oldest surviving building in the city — placing the town on the National Register of Historic Places.

seeing. There is no admission charge to the museum and hours vary seasonally, so be sure to check its website at [heritageall.org](http://heritageall.org). The Historic Preservation Heritage Alliance offers one-hour walking tours of Jonesborough, March through October, for just \$5 per person, with tours departing from the Chester Inn.

Other notable buildings that are of significance in Jonesborough's historic district include:

- The Blair-Moore House, built in 1832, now is operating as a bed and breakfast.
- The historic Salt House from the 1840's, once used to store salt during the Civil War era, is now under ownership as the Tennessee Hills Distillery and offers tours and a tasting bar.
- The First Baptist Church of Jonesborough dates back to 1842.
- Started in 1790, the Jonesborough Presbyterian Church originated from the Hebron Church. Divisions in this

congregation occurred during the Civil War, creating the northern and southern branches of the church. Eventually, the southern branch "bought out" the northern branch and built a sanctuary in 1845, which still stands on Main Street.

- The First Christian Church, built in 1870, eventually became known as the Parson's Table Building. It later changed hands several times to become a casket factory, a restaurant and now operates as a special events venue for weddings and more.

Jonesborough is most famous for establishing the International Storytelling Center, located in the heart of historic downtown. The Center is an educational, arts and cultural institution dedicated to building a better world through storytelling and includes the Mary B. Martin Storytelling Hall and a 3-acre park adjacent to the hall. A National Storytelling Festival was started in Jonesborough in 1973 by a local teacher, Jimmy Neil Smith, who invited Appalachian story-

tellers to share their stories. This festival has been held annually on the first full weekend in October since its inception. Tents are pitched in parks around the town and stories are told throughout the weekend. This festival builds on the Appalachian cultural tradition of storytelling and draws people from around the world.



This Salt House dates back to the 1840's and was used during the Civil War to store salt. The building now houses the Tennessee Hills Distillery, which offers tours and a tasting room for visitors.

If you can't make it to the festival, you can also listen to famous (and some not-so-famous) storytellers sharing their tales each week at the Mary B. Martin Storytelling Hall, from May through October. More information can be obtained by going to [storytellingcenter.net](http://storytellingcenter.net).

If you aren't interested in history or storytelling and simply love the beauty of the great outdoors, Jonesborough offers an abundance of recreational opportunities. The town is bordered by the Cherokee National Forest, which offers hiking trails galore. For anglers, the nearby Nolichucky River offers opportunities to catch bass, catfish and several other species. Persimmon Ridge Park is a 130-acre city park in Jonesborough offering a scenic walkway/boardwalk and the Wetlands Water Park (open Memorial Day through Labor Day).

One of the closest campgrounds is the Jonesborough/Cherokee National Forest KOA Journey ([koa.com/campgrounds/jonesborough/](http://koa.com/campgrounds/jonesborough/)) which offers a variety of full hook-up sites with 50/30-amp electric service; the longest site is 65 feet long, with some sites directly on the banks of the Nolichucky River. Nightly rates average between \$85-95. Another nearby facility, the Riverview Campground ([riverviewcampground.org](http://riverviewcampground.org)), is a privately-owned campground with 25 water and electric sites with 50/30-amp service, and some pull-throughs. It offers riverfront camping and has a dump station.

One other nearby campground is in the David Crockett Birthplace State Park ([tnstateparks.com/parks/david-crockett-birthplace](http://tnstateparks.com/parks/david-crockett-birthplace)), located in the town of Limestone, about 10 miles from Jonesborough. Whether or not you choose to stay overnight in this campground, you should make it a point to spend at least a day visiting this lovely state park. Frontiersman Davy Crockett was born in Limestone on August 17, 1786. Crockett lived most of his life in northeastern Tennessee and



This log cabin once housed the Crockett family and their nine children. Davy Crockett was born in Limestone, Tennessee. A state park has been established here to memorialize this famous frontiersman.

was known for his skills as a hunter and woodsman, but he also went on to serve in the Tennessee Militia, earning the rank of colonial. Following his military career, Crockett was elected to the Tennessee State Legislature and



The skyline of Jonesborough features numerous historic buildings, churches and a courthouse.

eventually went on to serve in the U.S. House of Representatives. At the age of 49, Crockett was called back into the militia to serve in Texas and was killed while defending the Alamo. Stories of Crockett's bravery spread all the way back to Tennessee, where stories and songs were written to remember him, and he became known as "Davy Crockett, King of the Wild Frontier." Crockett's log cabin and other personal items are on display in a small museum in the park.

David Crockett Birthplace State Park is a 105-acre park located along the Nolichucky River that offers a variety of outdoor recreational activities, including birding, boating and fishing (on the Nolichucky River), and hiking through the Cherokee National Forest. An Olympic-size swimming pool is also open seasonally, and picnic areas can be found throughout the park, as well as an 88-site campground. The campground here is open year-round, and has wide, paved sites that can accommodate any size RV. There are 54 full

hook-up sites, in addition to 17 water and electric sites and 17 tent sites. Rates are \$35 per night for a full hook-up site.

Traveling through the beautiful Appalachian Mountains and spending some time visiting Jonesborough should be on everyone's bucket list. Listen to the stories about the famous frontiersmen, Boone and Crockett, spend some time here to learn about the culture of the Appalachian people, and undoubtedly you'll return home with some stories of your own to share.



One of the few markers that you will find that refers to Jonesborough as the "Capital of the State of Franklin." **RVE**



The area is rife with history. This stone marker, memorializing Davy Crockett reads: Pioneer, Patriot, Soldier, Trapper, Explorer, State Legislator, Congressman, Martyred at the Alamo. It's surrounded by a stone wall with markers for the states that existed at the time.

## Suzanne Strauss



**Suzanne Strauss** and her husband, **Rich**, have been full-time RVers for about four years.

They started out camping on weekends in a pup tent; eventually, they bought a small single-axle travel trailer to "test the waters" and fell in love with RVing. Now living full-time in a motorhome, they ply the roadways in search of interesting and "off the beaten path" places. She can be reached at: [RStrauss22@gmail.com](mailto:RStrauss22@gmail.com)

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