

2023's Hottest New Parts & Accessories!

RV ENTHUSIAST

NORTH AMERICA'S PREMIER HOW-TO RV RESOURCE

April 2023

Off-Grid Power Tips



- *Installing RV Airflow System's A/C Plenum Insert*
- *Adding Camco's RV Quickie Flush Tank Cleaner*
- *How to Set Up an Equal-i-zer Sway Control Hitch*

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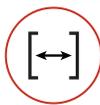
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RV ENTHUSIAST

NORTH AMERICA'S PREMIER HOW-TO RV RESOURCE

April 2023

Volume 3, Number 4

INSIDE



Powering Off-Road — and Off-Grid — Adventures

Heading off to the boondocks? You'd best be carrying enough onboard battery storage to last through your journey. More and more, that translates into lithium-ion battery banks. Yes, they are initially expensive, but lithium cells offer RVers a host of benefits not available in their lead-acid counterparts, from substantial weight savings to having more usable power on tap.



Flushing Troubles Away

Thoroughly cleaning the holding tanks on your RV during each dumping session is essential to maintaining a properly working sanitation system. Not only will flushing the tanks prevent nasty content build-up, but odors also can be eliminated. Unfortunately, in many cases the flow of water is so sluggish it barely budes the contents. Here's how we solved the dilemma.



2023's Hottest Parts & Accessories

Everybody likes to know about the latest and greatest RV components coming through the pipeline — but since they tend to debut at annual distributor shows closed to the public, you don't always know about them until they show up on a parts shelf. That's where we can help. Here's a look at nearly six dozen new and popular parts and accessories you can find a home for.

DEPARTMENTS



6 Publisher's Notes

RVers take a serious approach to accessorizing their rigs. Fortunately, there are plenty of aftermarket products out there to fulfill their needs. Three popular segments include parts that help get you where you're going safely, help energy independence and keep you connected.



8 News & Notes

Got an idea for building a one-off travel trailer? Boreas Campers now makes its popular overlander chassis available. Meanwhile, Living Vehicle debuted its HD model for 2024, while Harvest Hosts introduced CampersCard, a unique new campground discount program.



14 Technically Speaking

A few of the frustrations that encouraged our readers to seek advice this month: fogged-up dual-pane windows, a 32-foot fifth wheel with one air-conditioner that can't keep the rig cooled, maintaining a fiberglass roof, and Technical Director Bill Gehr's thoughts on vacuum cleaners.



On The Cover

The rugged 2023 Imperial Outdoors XploreRV X145 four-season overland trailer is representative of RVs made to live off the grid for extended periods. Photo by Bruce W. Smith.

53 Advertisers Index



Keeping Tabs on Your Workhorse

There once was a time when Ford wasn't the only gas chassis game in town. In fact, Workhorse Custom Chassis underpinnings were used throughout the industry. As they age, however, small things start going awry — like the LCD screen in the instrument cluster. Brazel's RV Performance has come up with an easily installed, inexpensive and attractive replacement.



Rapid Cooling

Summertime brings hot weather, and most RVers try to keep it at bay with rooftop air-conditioners. However, sometimes inefficient mating to the roof ducting can compromise airflow and cooling capacity. Fortunately, RV Airflow Systems offers a kit that improves efficiency dramatically, increasing air velocity while also substantially reducing the noise level.



Ready to Tow

This might be rudimentary to some folks, but anyone who's incorrectly installed a weight-distributing hitch should know it doesn't have to be hit or miss. We assisted a friend during the installation of an Equal-i-zer Sway Control Hitch, which combines weight distribution and sway control, and marveled at its ability to keep stomach butterflies at bay in adverse weather.

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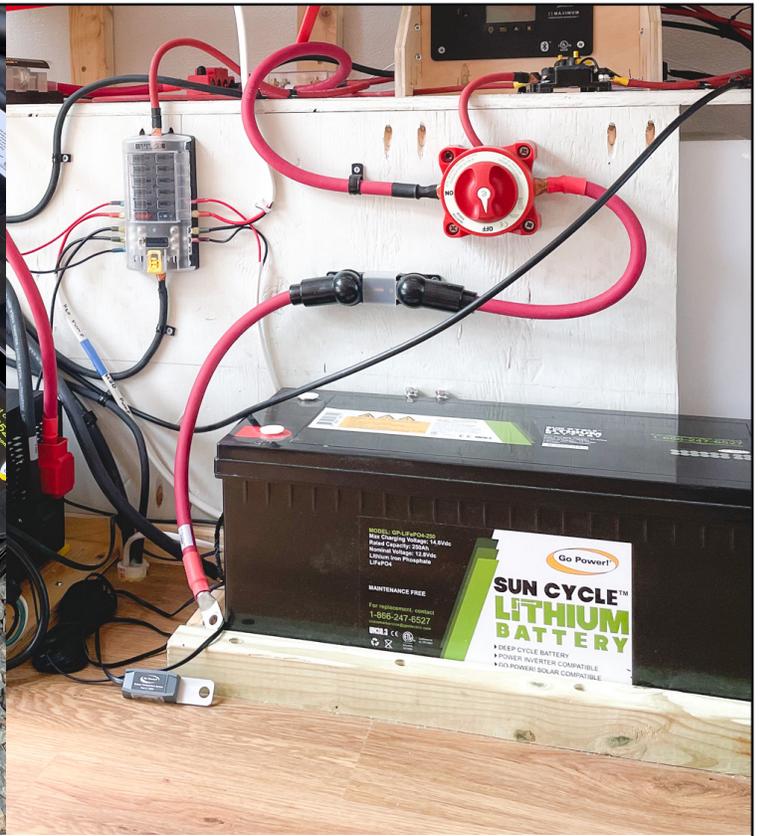
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HAZARDS & EARLY FAILURES – WHY QUALITY MATTERS WHEN SHOPPING FOR LITHIUM BATTERIES

by Eva Mitic, Marketing Manager, Go Power! | Dometic

For all outdoor adventurers out there, lithium batteries are now the go-to solution for a quick upgrade to their mobile power system. They are lighter and provide a much longer lifespan than their lead-acid counterparts. No wonder these power sources have established themselves as key components for RVers across North America.

But there are vast differences in quality. Offshore manufacturers are flooding the market with cheap products that do not meet our standards. Battery fires, shortened battery life, failure on the road, poor performance and dealing with toxic materials can result from an ill-advised purchase. But how can you protect yourself when making this investment?

Lithium battery buying tips

1. Choose quality over price

Properly investing in an RV battery is essential for reliable, consistent power on the road - especially when you are off the beaten track. When considering your purchase options, make sure to source only certified products that have been specifically designed and tested with mobile living in mind. Don't let price be your deciding factor; choosing quality helps avoid any power-less moments.

2. Buy with confidence

Domestic suppliers often adhere to higher quality standards in terms of testing – something that is often lacking from imported products without physical representation in North America. Filing a warranty claim with a company abroad can be challenging, especially when dealing with complex items like lithium batteries. Make sure to select a provider that will stand by their product. So, for peace of mind, safety, and product support, trust a provider with a history of quality.

3. Use a reputable supplier

Always research the company whose products you're buying to ensure they have a reliable track record in creating quality RV-ready products. For optimal performance, consider looking into vendors specializing in engineering mobile solutions and apply rigorous testing of all the needed components as one coherent system.

Are you interested in upgrading to Lithium?
Contact your local RV Dealer or visit
gopowersolar.com for more information.



Upgrading Your RV Has Never Been Easier

RV ownership is an adventure — and it's not solely driven by the travel and social aspects, but also from the experience of setting up a home away from home. Leaving the humdrums of daily life is certainly a major factor, while most people want to see new places and partake in outdoor activities without giving up the niceties associated with living in a stationary home. Today, RVs are well equipped, and owners can augment livability — and the fun factor — by turning to the accessory aftermarket to purchase the items needed to customize and personalize their RVs.

And they do it with gusto. Ever watch how RV owners — and sometimes even those looking to get into the lifestyle — grab a cart in big parts and accessory stores like Camping World or those at dealerships and peruse the aisles with passion? Many times, these enthusiasts have no clue why they went shopping — they just knew they would find something to “use” in their RV. I can remember doing just that numerous times myself...and have always found something to throw in the cart.

Those people who take a more serious approach to accessorizing usually target systems and products that will fit the bill for their particular lifestyle. I can probably safely say that there are three segments that are among the most popular these days: Accessories to get RVers to their destinations safely without creating disharmony in the family; the ability to have energy independence while on the road and in camp; and staying in touch with family, friends and the world via good Internet access.

Fortunately, there are plenty of aftermarket products out there to fulfill the above needs, and more. This issue, in fact, is filled with them. Most, in fact, won't probably fit into my three groups, but that's okay — our equipment needs will always be different.

Why do I believe in the popularity of those three segments? Exploring unfamiliar territory is appealing to RV enthusiasts, though that tends to leave a lot of people in the dark when it comes to directions. And while guys still seem hardwired to not ask strangers for assistance, just about everyone today uses a GPS device to help navigate the roadways. However, not all are created equal. Undoubtedly, Garmin dominates this space with GPS devices that are packed with RV-specific features. I've used the Garmin RV 1090 since its introduction, which has given way to an updated version, the RV 1095. The Garmin GPS units for RVers are indispensable. Once loaded with personal profile information, like RV type and dimensions, it routes owners safely without worrying whether the roads are suitable for larger vehicles. Add in RV park data, and GPS assistance becomes an invaluable tool for planning trips—or making adjustments on the fly.

Then, too, I've spent enough time on the road to know that not all drivers love RVers, especially those drivers with little patience and short fuses. There are too many bad drivers out there, so installing a dash cam should be priority for every RVer. Most dealers don't promote these

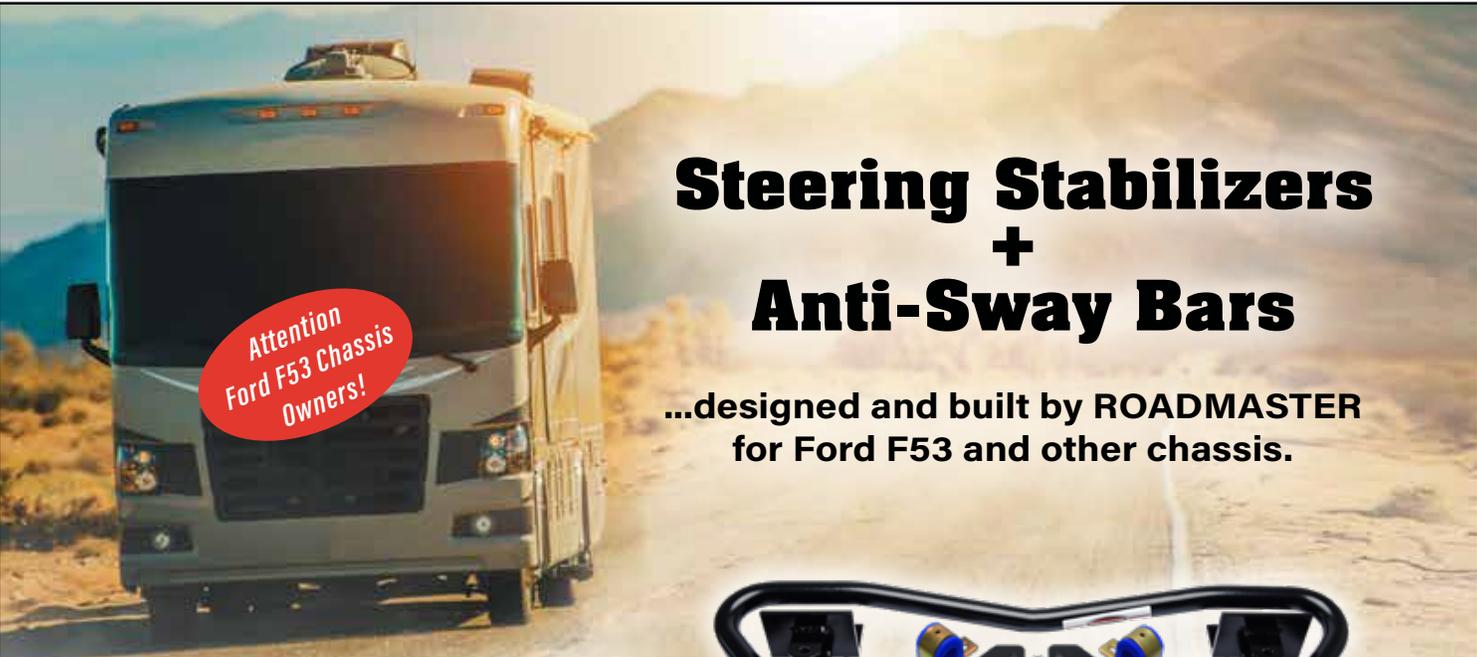
easy-to-install devices and may be missing an opportunity. Proving accident responsibility these days is critical — and I'll go out on a limb to say that RVers are safer drivers — and a dash cam can provide the necessary proof. Again, I like Garmin products, which can be plugged into its GPS hardware for added installation simplicity, but there are many dash cams available.

RVers are natural conservationists and have been infatuated with off-grid living long before solar panels became fashionable. Today's offerings for energy independence are exciting; it seems like the technology curve is advancing at lightning speed. Companies like Xantrex, which previously concentrated on inverters for RVs, have expanded offerings to include solar panels, regulators, lithium batteries and other support electronics. Complete packages from GoPower!, Zamp Solar and Renogy — and others — have come on the market, driving prices down while raising the efficiency bar. Lithium batteries with complementing power management systems like those from Battle Born also are common and more practical than ever. I can't imagine RVs without lithium batteries in the near future, especially since ancillary equipment like inverters and converters have been programmed for compatibility.

On-board energy independence makes it practical to employ sophisticated Internet systems on a 24-hour basis. The ability to stream entertainment — and the need to stay connected, especially for those who work from their RVs — has inspired several companies to develop mobile systems that offer quality, truly unlimited Internet service with little throttling during peak periods. Some of these companies, like Pace International and Winegard, team up with existing cellular providers to provide service to their wireless modems. Tie these modems to components from weBoost, for example, and distant signals become stronger.

The jury is still out on whether satellite Internet systems will ultimately offer more reliable service. StarLink, a division of SpaceX, continues to expand its service for RVers. The concept is fantastic, but at this juncture, there's still work to be done. A clear sight to the northern skies creates the bugaboo for RVers. Navigating around trees and other obstacles in an RV park can prove to be just as difficult as finding clear southern skies for satellite TV. Service can be spotty or slower in some areas, but in pure Tesla fashion, the system should improve dramatically as more satellites are launched. Except for the initial cash outlay for the equipment, the monthly charges are comparable to other systems on market. RV manufacturers continue to provide internal wiring for Internet hardware, which makes it more practical than ever to offer these systems as a dealer installed option.

As this issue of *RV Enthusiast* demonstrates, development in the aftermarket arena continues to grow exponentially with new, exciting products feeding a burning desire to accessorize and customize. It's an obsession we can all live with. **RVE**



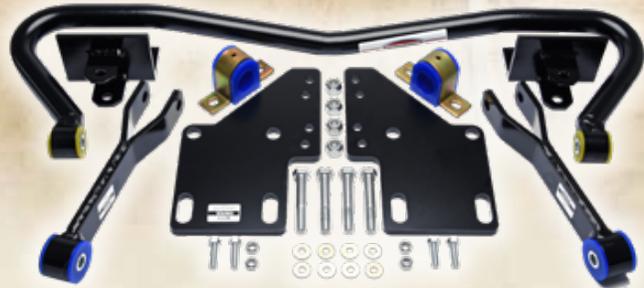
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"Sway on turns very much reduced. Sway due to passing trucks reduced also. **My RV handles like our car**. Very smooth." — A. Dunham



"Ruts, bumps and hairpin curves are no problem. **My steering wheel doesn't belong to potholes any more — it belongs to me.**" — Brian D.

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Boreas Campers Offer Off-Road Chassis to D-I-Y RVers



Spend any amount of time in most any RV and you can find yourself wondering “why did they do that?” We’ve all been there. RVs are built for mass consumption; it’s just a matter of finding one that closest fits your lifestyle and wallet.

If you’re *really* handy, though, you can build your own — and to lend a bit of help, Boreas Campers now offers the same chassis used for its XT Overland camper trailer as a standalone product for backyard builders.

The heavy-duty, powder-coated, laser-cut frame (1/8-inch by 4 x 2 and 3 x 2 tube steel) is 16 feet long and 60 inches wide. The rolling chassis includes a Cruisemaster CRS2 independent suspension and DO35 articulating hitch, BFGoodrich AT tires and Pro Comp wheels, front and rear 2-inch hitch receivers, tail and marker lights, 7-pin and a Manufacturer’s Certificate of Origin.

The MSRP is just \$6,500, with add-ons such as a spare tire holder, fenders

and a 30-gallon water tank available. For information on the Boreas Campers Chassis and everything that is included, click [here](#).



Lone Peak Campers Takes ‘Overlanding’ in New Direction



Ever go camping with friends, only to wonder where everyone is going to sleep? If you have a travel trailer — or just a truck, for that matter — the Lone Peak Camper might be the answer. It combines the security of a lockable waterproof truck bed topper with the living space of a rooftop tent.

Locking side access doors, open-air tent windows, tinted windows, and a 4-inch-deep x 80-inch mattress come

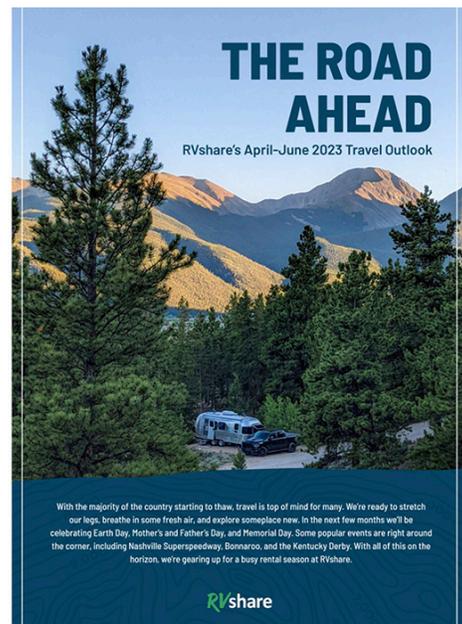
standard. Each camper includes bed gaskets and a fit kit to mount to the vehicle. Side access door offers unobstructed access to the truck bed, and with 32 inches of pass-through space so you can stand up in the camper even with the bed deployed. If more room is needed, the bed pushes up out of the way using dual gas struts so you can utilize the full truck bed out of the elements. The Rear Rain Guard also increases the interior volume of the tent, providing more elbow room, and sheds water so you can unzip the rear door even in bad weather.

The base price for the camper — which sets up in less than a minute — is \$5,995 and there is a host of available options including a gear vault, LED lighting, roof vent fan, cab pass-through window, tall edition, grab handles, stowable bed ladder, load bars, solar panel wiring port and driver-side vent.

Orders are currently being accepted and units are expected to ship in September. For complete details, visit lonepeakoverland.com/.

RVshare

RVshare Offering Free National and State Park Passes



RVShare, the largest community for RV owners and renters, announced in mid-April its first-ever “Explore America’s Parks Promotion” ahead of the summer 2023 season. By giving away up to \$500,000 in national and state park passes to those booking RVs through RVshare, the company is

committed to encouraging awe-inspiring exploration of the country's national and state parks.

After surveying customers and finding that two-thirds of RV renters are facing economic factors that have already hindered their summer travel plans, RVshare decided to launch "Explore America's Parks" to help ensure restricted budgets don't hold travelers back from experiencing the great outdoors.

The Explore America's Parks Promotion is available to RVshare travelers who book rentals by May 31, 2023 for travel by September 5, 2023. To apply, visit pages.rvshare.com/free-park-pass/. Eligible applicants will receive \$80 for trips booked for three nights or more. For other helpful tips and resources, visit the RVshare blog at rvshare.com/blog/.

Timed to the announcement of "Explore America's Parks," RVshare also has released *The Road Ahead*, the company's quarterly guide highlighting insights, tips, and recommendations for every outdoor enthusiast. The Q2 2023 edition of *The Road Ahead* includes Green Travel Considerations, Memorial Day Weekend Planning Tips and an Events Season Breakdown, touching popular RVing events like Coachella, Kentucky Derby, Bonnaroo, Dover Speedway, and the Indianapolis 500, to name a few.

Living Vehicle Debuts 2024 HD Model

Living Vehicle appears intent upon leading the charge in the all-electric luxury travel trailer revolution — and its latest model, the 30-foot 2024 HD, hammers that home. With unmatched off-grid capabilities and more solar power than most residential homes, the HD is the company's most capable and powerful model yet.

The company has created an autonomous, electric-powered living solution, starting with a foundation of renewable solar energy. Each travel trailer is custom-built with a clean, modern design and offers multiple bedroom configuration options capable of sleeping up to 8 adults. The flagship Queen or King Suites feature more than 150 square feet of storage space, zero-gravity lounge, 4K Home Theater system and



The Living Vehicle HD-Pro offers up to 4,400-watts of solar power, while the LT-Pro will carry 3,400 watts of solar. Both use dual fold-out roof awnings.

integrated Hi-Fi wireless audio.

Professionals and "work-from-anywhere" creatives will appreciate the Mobile Office, with an 80-inch dual workstation and folding bed system. The fully customizable Creative Studio integrates a suite of high-end Mac and Apple devices, and the Starlink Flat Satellite dish provides a dedicated Wi-Fi network wherever your adventures take you.

The Flagship HD PRO model offers



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72kWh of energy storage and 18kW of power, which runs all onboard electrical equipment, including electric heating and cooling. With the air-conditioning system relocated to the basement, the 2024 HD PRO features a wall-to-wall solar capacity of up to 6,000 watts and can operate entirely off-grid.

The solar-powered trailer also has true four-season capability and can thrive in below-freezing temperatures down to an industry-first sub-zero -4°F, thanks to the dual-zone 240-volt AC

mini-split electric heating system. It is also fully insulated with 100% rigid closed-cell foam insulation, which keeps the inside cool in environments that reach 120°F or higher using the 24,000-Btu air-conditioning system.

Granted, all this is not without a steep price tag — the Living Vehicle HD starts at \$459,995 — but the company plans on introducing a smaller 24-foot LT series with MSRPs starting at \$359,995. For more information, visit livingvehicle.com.

Harvest Hosts Debuts CampersCard Discount Program

We all know how expensive RVing can be. RV maintenance, fuel, nightly camping fees — the dollars spent add up quickly. Finding ways to save on the road allows you the freedom to invest more in the experiences that matter most to you.

That's why the folks at Harvest Hosts — who know camping — have introduced **CampersCard**, a truly innovative campground discount program. With a **CampersCard** membership, RVers save money on nights they spend at campgrounds of their choice.

CampersCard-affiliated campgrounds offer members a host of



The interactive map at CampersCard highlights the campgrounds that participate in the new program.

exciting benefits such as early check-in, late checkout, free showers, free Wi-Fi, free hookups and/or discounts on nightly rates in order to be part of the program. For just \$39/year, members receive benefits that will quickly offset

the membership cost — it's a win-win for everyone. Plus, if you're already a Harvest Hosts Member, you can save 25% off of the cost of your **CampersCard** membership [here](#).

Already several hundred campgrounds strong, the growing list of campgrounds can be found at the **CampersCard** [interactive map](#) to discover campgrounds that suit your needs and all pertinent information. The website also allows users to add specific campgrounds to their "favorites" list simply by clicking the "heart" button.

RVers can expect to save on the cost of nightly camping fees at campgrounds across in the United States and Canada by joining **CampersCard**. Other perks include discounts on camping gear, entertainment and theme park adventures. Plus, **CampersCard** is offering a special promotion to readers of *RV Enthusiast* magazine. [Join CampersCard today](#) — and save 15% off with the code ENTHUSIAST.

KOA Rolls Out Roadside Assistance Program



Kampgrounds of America, Inc. (KOA) announced the release in mid-April a new roadside assistance program, RV RoadHelp. Working closely with Drive America, a company with more than 50 years of automotive protection expertise, the new roadside program exclusively designed by KOA utilizes curated, expert service providers to offer what the company says is "the best on-the-road assistance." RV RoadHelp will offer RVers full-service roadside rescues and repairs across the U.S. and Canada. And, according to KOA sources, it offers the largest network of

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certified RV specialists allowing more repair flexibility than other assistance options.

Relying on specialized service providers like Custom Glass Solutions and Tire Rescue, KOA's RV RoadHelp combines multiple providers, differentiating it from other roadside assistance products currently available. Benefits of RV RoadHelp include roadside basics such as towing, locksmith service,

fuel delivery, windshield repair, battery boosts and mobile tire repair and replacement. Unique offerings include 24-hour ask-an-expert service, travel interruption assistance and an RV Lifestyle & Repair Club subscription, which includes a library of how-to videos for the DIY-inclined.

The annual cost for RV RoadHelp is \$124.95. Visit koa.com/marketplace/rvroadhelp/ to learn more and sign up.

nuCamp, a major manufacturer of teardrop trailers and truck campers based in Sugarcreek, Ohio, has announced the dates for [uCamp 23](#), the manufacturer's annual rally for its community of campers.

The seventh annual teardrop trailer rally is scheduled for June 12-16 at the Winklepleck Campground in Sugarcreek, just minutes away from nuCamp's manufacturing facilities.

Attracting [nuCamp](#) owners from across North America, the five-day event will include Q&A sessions with company techs, tours of the nuCamp facility, company-sponsored dinners on Wednesday and Thursday nights and a hot breakfast on Tuesday morning. A wine-and-cheese night is on the agenda for the first night of the program.

nuCamp will also provide limited services during the rally, with appointments made online. According to nuCamp EO Scott Hubble, the annual rally continues to grow. Last year's rally, he said, attracted more than 450 attendees from 35 states and two Canadian provinces. For more information on [uCamp23](#), go to nucamprv.com/ucamp23/.

nuCamp Sets Dates, Schedule for Annual Teardrop Rally



Participants at the uCamp22 rally came from 35 states and two provinces.

continued on page 53

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The Campers Inn RV Story

Campers Inn RV began in 1966 after founders Art and Fran Hirsch had a poor experience at an RV dealership. After years of camping in a tent, the Hirsch's saved up some money and decided to find something more comfortable. They gathered their three kids and headed to a local dealership. But when they arrived, the salespeople were more interested in playing cards than helping them find an RV.

Art was furious. He was wearing clothes from his job as a mold maker, and he felt the salespeople judged him by his appearance. They left angry and empty-handed. On the way home, they decided they could do a better job themselves. They pooled together the family's savings and began selling RVs out of their front yard in Acton, Massachusetts.

Campers Inn RV continued to grow over the next five decades, and we are now one of the largest RV dealership groups in the United States. We are still operated by the Hirsch family, and we remain dedicated to connecting families of all backgrounds with the RV lifestyle and helping them find their "away."

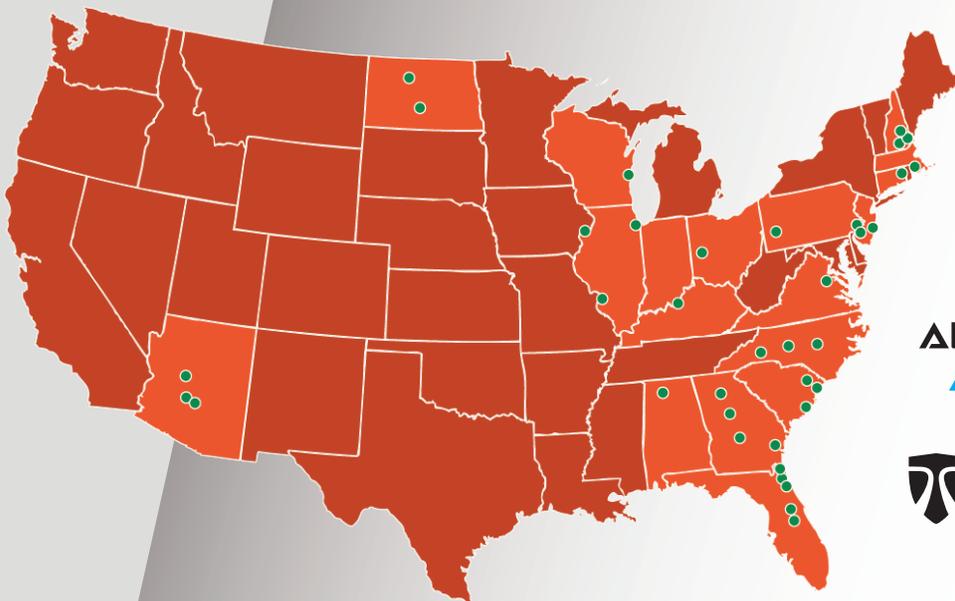




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Up On the Roof



If using Eternabond, remove the backing from just one end of the tape and, while keeping the backing in one hand, continue to push the tape into place as you pull the backing from underneath. The company also sells a weighted roller to help with this process.

I have a 24-foot Winnebago Class C motorhome with a fiberglass roof. I noticed that it's showing its age with some of the fiberglass thread showing. I would like to take care of the problem before it gets too big, since the motorhome otherwise is still in perfect shape. During my research, I have seen a lot of suggestions on how to fix the fiberglass and would like to know the best way to approach this repair.

—**Rafael Sanchez**

Fiberglass does get a little rough over time, especially if the roof has not been maintained properly. It's best to keep it clean and treated to a coat of wax or other surface conditioner at least twice a year if the rig is exposed to sun and other outside conditions. Having said that, even though it's not looking great it's still going to last a long time.

If you'd like to bring it back to life, professional detailers will cut the surface with a buffing compound and add a coat of wax to bring it back to life — but it's going to be slippery and potentially unsafe to walk on to service rooftop accessories and inspect for breaches in the caulking/sealant. Depending on the extent of the damaged area, you can consider painting the roof with

a high-quality marine paint; with the proper primer and preparation, the paint will last for many years. If you want to provide safer footing, consider adding some sand or an anti-slip material in the paint.

Of course, you can always cover the damaged area with Eternabond tape, as long as it is contained and out of sight. Eternabond is available at many RV supply stores and online. And while you're up there, inspect the roof caulking (sealant) to make sure there are no breaches before starting any project to repair the fiberglass. This is another area where Eternabond tape can work wonders.

If you plan on keeping the rig for a long time, the ultimate fix is to replace the entire roof with new material from companies that specialize in such services. Here are some websites to check out: rvroofingsolutions.com, rvroofingpros.com, rvroof.com, crazyseal.com, rv-armor.com.

Sucking Up the Dirt

We need a new vacuum cleaner in our 40-foot motorhome now that we are



living in full time. We brought one of our small upright vacuum cleaners from the house and it's worked fairly well but technology is definitely changed and there are so many new options. Some of these vacuums are really expensive, so we don't want to throw our money away on products that really don't work, and more importantly, not suitable for RV use. We also need to consider storage options. I thought maybe you would have some great ideas since you are a full-timer.

—**Jolene Thompson**

Jolene, I think we've all been there. It's bad enough trying to keep up with cleaning dirt that accumulates quickly when you're in campgrounds without paved surfaces, and when you're off the grid, dirt is a bigger part of the primitive lifestyle.

Cordless vacuums are definitely the way to go; they're easy to handle, quick to access and they can be used for other jobs outside the RV, like cleaning up spills on the patio mat or the floormats/carpet in your tow or dingy vehicle. I personally have a Dyson V8 Absolute model with all of the accessories (dyson.com). One of the most useful tools is designed for cleaning wood or vinyl flooring — the most popular materials used in RVs these days. The crevice tool is indispensable and the extensions snap in quickly and prevent bending over and stressing your back. And it hangs on the wall using little space, so it's out of the way and always handy. The power of the Dyson cordless is probably unbeatable. Granted, it's on the pricey side at around \$500, but I don't think you'll regret the decision.

That said, there also are other cordless vacuums out there that will probably do the job — I know someone who bought an off-brand cordless stick vacuum that has, he said, decent suction, a four-stage filter and has a solid 4-star rating on Amazon (with more than 7,000 ratings). It's only rated at 180 watts —

about half of the Dyson's 350 watts — but he spent less than \$100.

If you prefer something with a cord, there are many small uprights that have the capability of vacuuming carpeting, wood and/or linoleum floors. You definitely should look for a model with a hose so you can vacuum cupboards or your vehicle, which undoubtedly is going to get filled with dirt from your feet. I've also seen some owners use small shop vacs. While they are on the crude side, they are usually "bulletproof" and offer a lot of suction. Plus, they are easy to empty.

It's Not Cool to be Hot



Bill, it's starting to get warm in our neck of the woods and, of course, we know the hotter days are coming. Our 2010 32-foot fifth wheel only has one air-conditioner. It does a pretty good job until it gets up around 110 degrees F, but it can't keep up with the temperatures attacking the outside of the RV. If we're lucky, we camp under the trees, but we can't always guarantee we will be under shade, especially in some of the places that we love to frequent. It's a Coleman-Mach air-conditioner and normally it blows out quite a bit of air, but it's hard to overcome how poorly our fifth wheel is insulated. Any suggestions that would help us alleviate our issues? Maybe some kind of insulation inside the trailer attached to the ceiling?

—John Spielman

John, you're not alone when it comes to suffering from uncomfortable inside temperatures while camping in areas with extreme heat. One of the easiest fixes is to insulate your windows with a bubble-type insulation purchased at most home improvement stores; these can be rigged up temporarily and will help control heat. Cover the inside of your roof vents with special pillows designed to be stuffed in the frame; these

really help insulate against heat, considering the only separation between the outside sun heat and the interior are thin plastic lids that so nothing to control heat.

You didn't mention whether or not you had slideout rooms; if so, you can install a slide-out topper awning on each one to provide some shade and help with intense heat soak from the sun beating on the roof/ceiling that may not be insulated as well as the side-walls. Also, extending the patio awning will help during some of the day. I would also suggest modifying the air-conditioner plenum with a kit from RV Airflow Systems (see "Rapid Cooling" in this issue). It will surely improve efficiency. No matter what, turn on the air early in the morning to start the cooling process before the day gets hotter.

If you spend a lot of time in hot climates, consider installing a second air-conditioner. Most fifth wheels are already wired for this purpose.

Getting a Little Foggy Inside



Photo courtesy RV Glass Guru

During the last year or two, our dual pane windows have started to fog up. One of the bigger ones is really bad and it's very irritating to see blurry scenes when looking outside. Besides, the foggy windows are very ugly. I talked to my local repair shop and the service people said that it's so expensive to replace the window that it may not be worth the effort.

I totally disagree with that diagnosis, since we plan on keeping the RV. Their second option was to break the window and put in plexiglass, which is absolutely ridiculous for such a large window and probably not even practical for the smaller windows. I did go online but it's mind-boggling to take in all the options. What would you do?

—Douglas Epstein

Douglas, I have personally been there, and I've seen many RVs with fogged-up windows. You're right; they are ugly. Usually, a fogged-up window is the result of poor manufacturing or flexing of the body of your RV, which can break the seals and allow moisture to get between the panes. This can be especially prevalent with larger picture windows, but even the smaller ones are not immune. As the sun beats on the windows more moisture is drawn in between the two panes of glass.

There are really only two viable options: Replace the entire window — which, as you found out, is very expensive — or there are several places around the country that will remove the window, take it apart, clean out the moisture (fogging) and reseal the panes to prevent future fogging. This is a much cheaper option, and in most cases, these companies will make the window better than it was when new.

If you are on the road, you probably can find service centers across the country that offer this service, and you can find most of them when searching on the Internet. Some of these companies set up booths at shows and rallies, and many dealers offer this service through independent contractors. Just keep in mind that you'll have to remove the window and ship it to the repair center if you're not in an area that offers this service.

As ominous as that sounds, however, removing a window is not that difficult and shipping to and from these facilities is done all the time. The only exception is crating and shipping huge windows, which are better repaired at a local facility during travel. In the end, it may still be cost-effective when compared to replacing the window(s).

It's at most inconvenient, but in the end, you'll have a window that looks new again, and no more blurred vision when looking out.

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

Powering Off-Road — and Off-Grid — Adventures



The 2023 Imperial Outdoors XploreRV X145 four-season overland trailer is built to be totally self-sufficient. Photo by Bruce W. Smith

Heading off into the boondocks? You'd best be carrying enough battery storage to last through your adventure.

By Bruce Hampson

It's one of the great conundrums of the RV industry: As manufacturers continue to ship motorized and towable units to dealers at a record pace, ever-greater numbers of RV owners vie for a finite number of campsites where they can enjoy them.

Rather than being perceived as a brake on RV sales, however, the scarcity of campsites — especially on popular holiday dates and weekends — has given wings to an RV lifestyle nearly as old as the industry itself: off-grid and off-road camping.

"It's something that a lot of us in the industry have been concerned about for a handful of years — how do we create a product that the consumer doesn't have to use in a campground?" said Cody Schade, product manager for Forest River Inc.'s No Boundaries and IBEX "adventure trailer" lines. "Having those conversations is what

led us to develop No Boundaries, and now we're adapting some of its traits to other (Forest River) products. I think you're going to see this topic take on greater significance."

Indeed, if there was ever a trend evident in new model year RVs, it is more and more OEMs are developing units designed to go off road and/or off the grid. Why the "and/or"? While there is plenty of overlap, it's not just semantics: off-grid and off-

road are actually two distinct elements. "Off-road" means being able to



The XploreRV X145 boasts a battery system using Go Power! and Expion360 components, and offers an optional three-battery package (1,080 amp-hours total) and 740-watt solar roof panel kit — but it's not without its price. The optional equipment adds \$17,000 to the trailer's cost. Photo by Bruce W. Smith.



Forest River's No Boundaries 10.8 is part of the "new wave" of rugged off-grid trailers.

take an RV out of the fully developed campground and into the wilderness, such as the ever-plentiful BLM land out West. But when you're off road, you're also off the grid — as in no hook-ups to power, water or sewer. Hence the need for extra-large tank capacities and for units to manufacture their own power supply, which is where solar panels and lithium batteries and the components to manage the system comes into play.

It's rare, but an RVer can be off the grid without being off-road. Member-based organizations such as Harvest Hosts are pairing RVers up with private landowners whose properties — wineries, golf courses, breweries, etc. — aren't necessarily the wilderness, but they also typically don't have a 30- or 50-amp pedestal nearby.

"I think we're still as an industry working to define the differences between 'off-road' and 'off-grid,'" said Schade. "An off-road RV needs the same systems to survive that an 'off-grid' unit does — along with enhanced clearance and more aggressive tires to negotiate uneven terrain as well as an underbelly enclosure to keep out dust and debris. So, there is a difference between the two, but right now we tend to use the terms interchangeably."

A case in point might very well be No Boundaries' 10.8, introduced last year. Essentially an open-framed unit with a rooftop tent, 40-gallon freshwater capacity, flexible solar panels, outdoor kitchen and Goal Zero Yeti 1500X Portable Power Station, the 10.8 is expressly

designed to carry motorized toys — up to and including a four-seat Polaris RZR ATV. To the consumer, it appears for all the world as if it was designed for off-road use. And it most assuredly can be — but Schade sees it as an off-grid platform.

Meanwhile, the IBEX, launched in 2020, carries similar equipment — but also sports all-terrain tires, increased ground clearance and heated and enclosed underbelly. Call it "off-road" capable.

See what we mean?

Power Storage a Strict Necessity

Absent adoption of a more generic, all-encompassing classification such as "adventure RV," the most telling difference may simply be size: No matter

how stout the tow vehicle, you can only pull or drive so much weight across uneven terrain or deep powder-covered ground.

Meanwhile, the biggest inroads to off-grid performance are being underwritten by manufacturers of more expensive fifth-wheels that can absorb the quest for new technology before it "trickles down" to more affordable units. And that usually revolves around solar power — a trend certain to pick up steam now that the California Air Resources Board has voted to ban the sale of portable gas-powered generators effective 2028. (Like it or not, the Golden State tends to set the trends, especially when it comes to taking a strong stand against air pollution; its standards for low-emission vehicle (LEV) criteria, pollutant and greenhouse gas emission (GHG) regulations and zero-emission vehicle (ZEV) regulations have been adopted by 14 other states.)

Keystone RV Co., for instance, initially made its Super SolarFlex off-grid package available a few years back on Montana, Raptor and Fuzion models. At the time, it was a \$20,000 upcharge and included four 250-watt solar panels for a combined 1,000 watts of solar collection. As of the 2022 model year, the Goshen, Ind.-based subsidiary of THOR Industries Inc. announced all its brands will come factory-equipped with one of four SolarFlex packages. They range from 200 to 1,200 watts of power, with increasingly advanced support components — and increasingly high tariffs.

And Keystone isn't alone in its quest for off-grid performance, by any means. You'd be hard-pressed to find any man-



Available in sizes ranging from 105 to 410 amp-hours (shown), the Xantrex lithium-ion battery line (in 12- and 24-volt sizes) is specifically designed to withstand the harsher operating conditions of mobile and marine applications. Options include a heating blanket and remote state-of-charge display for a quick review of the battery performance.



Soon to be released, the Go Power! 100 amp-hour Advanced lithium-ion battery includes a host of upgrades, including a built-in DC heater, and is both Bluetooth-enabled and RV-C compatible, allowing it to “talk” to house and chassis components via the RV’s multiplex system.

manufacturer that hasn't either added solar as a factory-installed option, or simply made it a standard item altogether on many brands. And the scope of the systems vary, ranging from a simple 100-watt solar panel and 15-amp charge controller to units that can provide its own power almost indefinitely.

And, let's face it: anything the manufacturers can do, you can probably do better — or, at the very least, find a reputable company to create what you need. With manufacturers well aware of what current owners are doing to their rigs, aftermarket trends oftentimes fuel many of the design innovations found at the OEM level. We at *RV Enthusiast* are big believers in solar and have, in fact, run various articles on assembling capable solar systems in the past. And, just last month, we ran an extensive look at DC-to-AC inverters needed to amplify the 12-volt direct-current (DC) charge the house batteries provide into the needed 120-volt alternating-current needed to power most systems in an RV beyond the lights, slideout rooms and maybe the refrigerator (see “Sine Language,” *RV Enthusiast* March 2023).

We thought it appropriate, then, to take a look at batteries this time

around, because all the sun's energy in the world won't do you much good if you can't store it until you need it. And any discussion of 12-volt batteries for RV use is by default really a discussion of lithium-iron phosphate (LiFePO₄) battery systems. (Related discussions on battery monitors, managers and chargers will be shelved to a future date.)

“As we start talking about bigger battery banks (for powering off-grid excursions), lithium makes a lot more sense than lead-acid or AGM (absorbed glass mat) batteries,” said Kyle Cameron, product and engineering manager for Dometic's Go Power! mobile power solutions division. “Lithium batteries are much lighter weight, will last longer and you can store more energy in them.”

While AGM is a step up from sealed lead-acid batteries — the main difference is the addition of a thin glass mat “separator” that absorbs the electrolyte to prevent possible spilling of the electrolyte should you inadvertently knock the battery on its side — neither should ever be discharged past 50% of its capacity (expressed in amp-hours). The same can be said of gel batteries, which suspend the electrolyte in a gel paste inside the battery case.

“Acid batteries really like being at 100% charge all the time,” said Cameron. “The more time they spend at less than 100%, the less life you'll get out of them. For example, if you only discharge an AGM battery to 50% capacity and then charge it all the way up again, you might get 1,100 cycles out of it. But if you frequently discharge it all the way, you might only get 200 or 300 cycles before it needs to be replaced.

“With a lithium battery, it doesn't mind if it's not at 100% — you could have it sitting at 50%, for example, and it won't significantly affect its lifespan. Even completely discharging a lithium battery won't damage it.”

At Dragonfly Energy, company Co-Founder and CEO Denis Phares and Wade Seaburg, director of business development and outside sales, told *RV Enthusiast* the fact that the growth of their company — known for its Battle Born brand of lithium-ion phosphate batteries — coincides with the greater adoption of lithium batteries is not a coincidence.

“We like to think that we had a lot to do with spreading the word, and educating folks on not just how to replace your lead-acid batteries with our lithium



Battle Born offers many of its lithium-ion batteries — including the 270 amp-hour Gamechanger GC3 — separately or with a heated battery kit. The GC3 is built with a unique battery case and shape that can be placed anywhere, while the GC3H (“H” for heated) uses proprietary, low-draw technology to keep the battery warm in low temperature conditions. The heated kit includes the battery, heat battery kit and heat battery jumper wires.



This 850-watt solar system installation featuring five 100 amp-hour Battle Born batteries, is representative of the high-end solar systems custom-built by AM Solar. Photo by Chris Hemer.

batteries, but how to experience the full benefits of the power you can get to power your microwave, your hair dryer and even your air-conditioner,” Phares said.

Seaburg said OEMs, too, are “taking on more ownership of the entire ownership experience” and incorporating lithium technology — even if it’s an after-market upgrade — as part of the overall RV system capability. In fact, anyone logging onto Keystone RV’s website will

be greeted with a window that notes all 2023 models are now shipping with lithium batteries from Dragonfly Energy.

Phares added the sky’s the limit for lithium battery technology.

“We feel the entire movement to being able to live off-grid — and living off solar panels, for example — is something that’s going to become far more prevalent beyond the RV business,” he said.

Of course, lithium batteries are not

completely devoid of drawbacks — chief among them its sensitivity to low temperatures. That’s why many people who utilize a lithium battery bank in the winter employ an eternal battery blanket (heater). They also usually require a different charger. However, battery manufacturers are well aware of this and are taking steps to mitigate issues.

For example, Go Power! currently offers a 100 amp-hour lithium-iron phosphate battery with an internal battery management system (BMS) and heat management; the BMS continually measures temperature and protects the battery from becoming unsafe or damaged. Meanwhile, the company will shortly be releasing an “advanced” version with a host of additional upgrades — including a built-in heater for year-round performance. Compared to its 100 amp-hour solar battery, the 100 amp-hour Advanced also will feature larger cells (50 amp-hour versus 25 amp-hour) that mean less connections between cells to further reduce internal resistance, staggered terminals for ease of wiring in series or parallel, is RVC-compatible for higher-end RVs utilizing the Control Area Network bus to

Powering Your Lifestyle

Every RV is different, as are the solar system and the needs of its user, but AM Solar clued us in on a few rules of thumb relative to what equipment you’ll need to achieve the desired result:

- *If you want to run an air-conditioner, you will get about one hour of runtime on a 15,000-Btu A/C running on “high” per every 200Ah of lithium battery capacity. You will also need at least a 3,000-watt inverter and an EasyStart Kit.*

- *Roughly every 100 watts of solar will produce about 25Ah (or 300Wh) of charge per day.*

- *A minimum of 500 watts is recommended for any system with a residential refrigerator.*

- *With lithium batteries, there is no “solar panel to battery” ratio. This only applies to lead-acid batteries, because it is necessary to top these off at least once a week; lithium batteries do not need to be topped off. If using lead-acid batteries, the ratio is 1 watt solar for every 0.5-2Ah of battery.*



If you'd prefer not to go shopping for the various components making up your power storage, you can find packages such as this 6,000-watt Off-Grid/Back-Up 120-volt and 24-volt kit from Aims Power that includes a lithium battery, inverter/charger, battery cables and fuse kit. Aims Power also offers the kits in 8,000- and 12,000-watt configurations.

allow house and chassis components to communicate, and is Bluetooth-enabled so owners can monitor the battery status remotely. Cameron also let it be known that a 300-amp-hour Advanced battery also is in the works.

"Its RVC compatibility means it can be plugged into a multiplex system, allowing the RV owner to call it up on the RV's touchscreen to monitor battery status and see how much time remains until full charge or until discharged, how many amp-hours are available, things of that nature," said Cameron. "Our plan for the 'Advanced' battery also will have it telling the charger how to charge it. That will eliminate having to configure chargers for the battery type."

There is, truth be told, another drawback to lithium-iron batteries: cost. A quality 12-volt lead-acid battery can be had for about \$150, while an AGM battery will easily double that. Buy a lithium battery and you might not get change back from \$1,000.

However, as PowerTech Advanced Energy Storage Systems outlined on its website, any discussion of a lithium battery's cost must also include its lifespan — which is about six times that of its lead-acid counterpart — and discharge rate. Even taking into consideration a lead-acid AGM battery's 50% discharge rate — and, hence, using a 50 amp-hour lithium battery as a comparison — PowerTech noted that the AGM battery would be good for 500 cycles compared to 3,000 cycles for the lithium-ion.

Factoring in everything from battery cost and transportation to installation cost, PowerTech assigned a cost of about 42 cents (0.42 euros) per cycle to the AGM unit and about 17 cents (0.15 euros) for the lithium battery. Even removing the transportation and installation costs — not usually factors for most RVers — the lithium battery still is a more worthwhile investment.

Depending upon your lifestyle requirements,

however, that initial outlay can be substantial. As AM Solar President Garrett Towne explained, "Before, it was more a matter of 'let's keep our batteries healthy.' Solar systems were a lot more basic — and, because of that, more popular with smaller RVs. Now, the technology exists to take a 40-foot fifth-wheel off the grid for a week. When I first started, the biggest jobs we'd ever do cost about \$20,000.

Now, we're doing \$20,000 jobs regularly — and have even had some that were more than \$50,000."

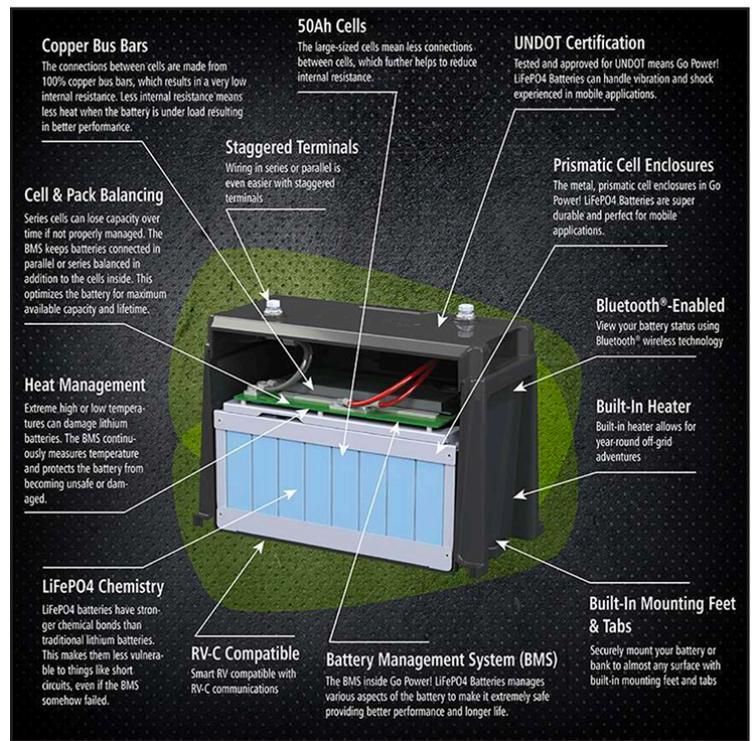
High-end factory installed systems also carry a hefty pricetag. The rugged 2023 Imperial Outdoors XploreRV X145 four-season overland trailer seen at the beginning of this article boasts a battery system using Go Power! and Ex-pion360 components, including a three-battery package (1,080 amp-hours total)

and 740-watt solar roof panel kit — which added \$17,000 to the trailer's bottom line.

For most RVers, however, such systems are well out of the norm. However, while "starter systems" that include a 110- or 120-watt panel and an inverter are fast becoming the standard with factory-installed solar, such setups really only work well to keep the battery topped off for a weekend while offsetting 12-volt DC loads such as lights, fans, water pumps and slideout motors. Many solar suppliers recommend a slightly more robust package to truly enjoy life off the grid.

"I would say the bare minimum needed to just run basic RV operations would be 200 watts of solar and 200 amp-hours of battery, with a charger to keep the charge up," said Cameron. "But if you want to power other accessories — your refrigerator, microwave, along with other AC-powered components at times — you probably want to double that. Using lithium batteries. If you only have AGM batteries, though, you'd have to double it again, because you can really only use half of their capacity."

And you'll also have all that weight to contend with. **RVE**



As this callout highlighting the various features engineered into the new Go Power! Advanced lithium-ion battery demonstrates, modern technology has transformed 12-volt batteries into power stations that do a lot more than simply provide a ready source of electric current. This is yet another argument in favor of lithium.

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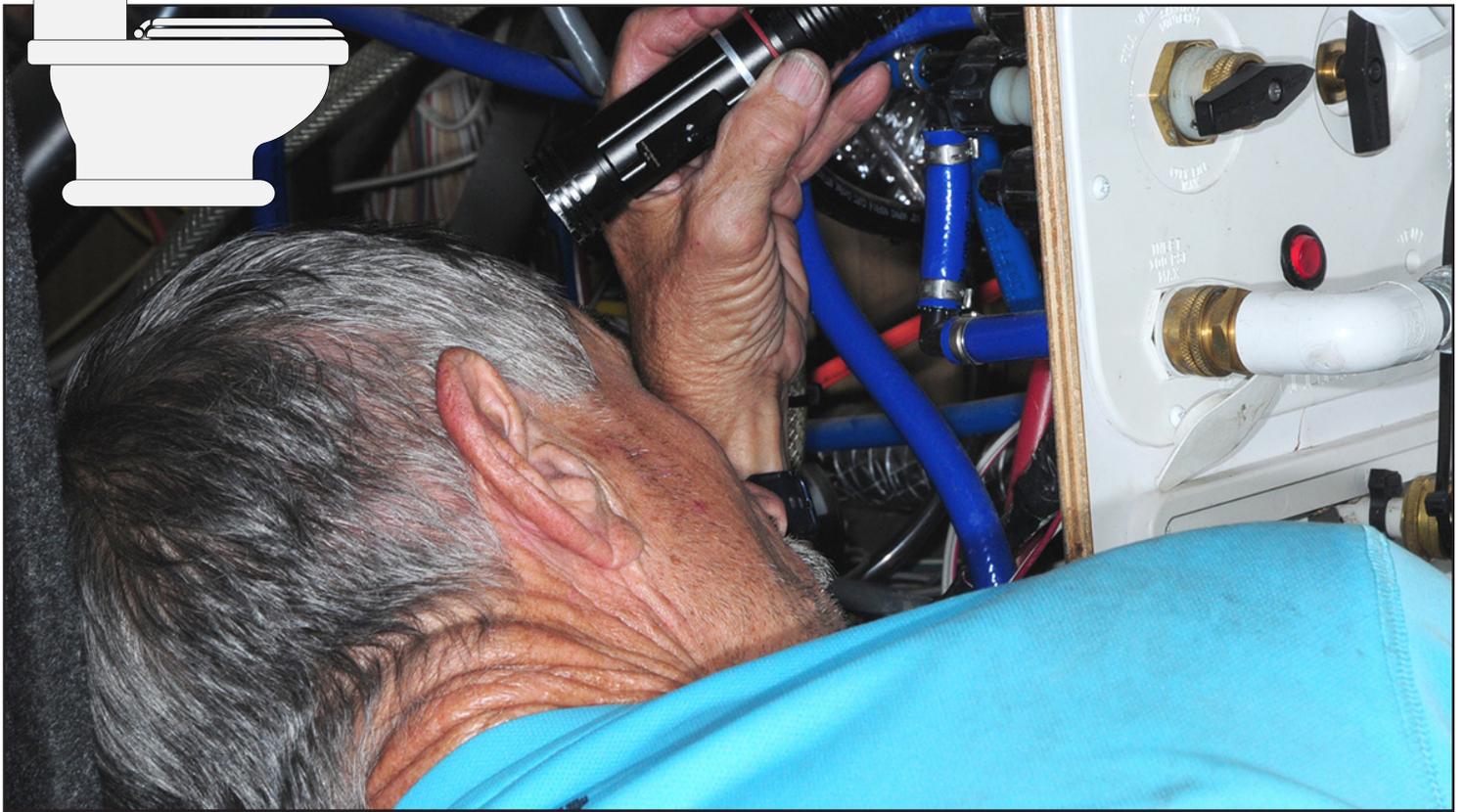
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Flushing Troubles Away



Cleaning the holding tanks thoroughly during each dumping session is essential to maintaining a properly working sanitation system. Not only will flushing the tanks prevent nasty content build-up but odors can also be controlled.

By Bob Livingston / Photos by the author

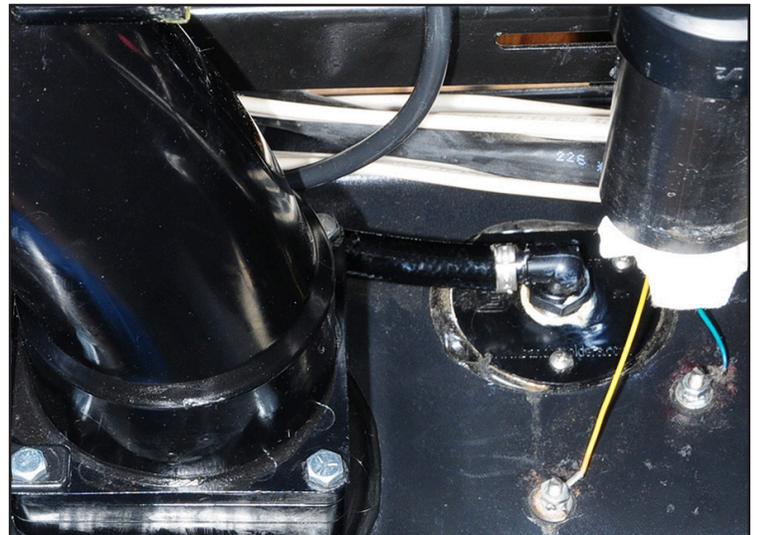
Keeping an RV's holding tanks clean is essential for two reasons: You need to reduce the chances of developing nasty odors — both inside and outside the RV — and it's important to prevent build-ups that can impede the velocity of the contents when dumping. Consequently, most RV manufacturers provide some method of introducing a strong flow of clean water into the tank during the dumping session. Without such a provision, build-up is all but certain, but in many cases the flow of water is so sluggish the extra water barely budes the contents.

Case in point: The tank flush fitting installed in the side of the black holding tank in my fifth wheel. Watching the sluggish flow of water move out of the tank (via a clear fitting on the termination valve) was painful. The solution was to add a more robust flushing system that can actually do some good.

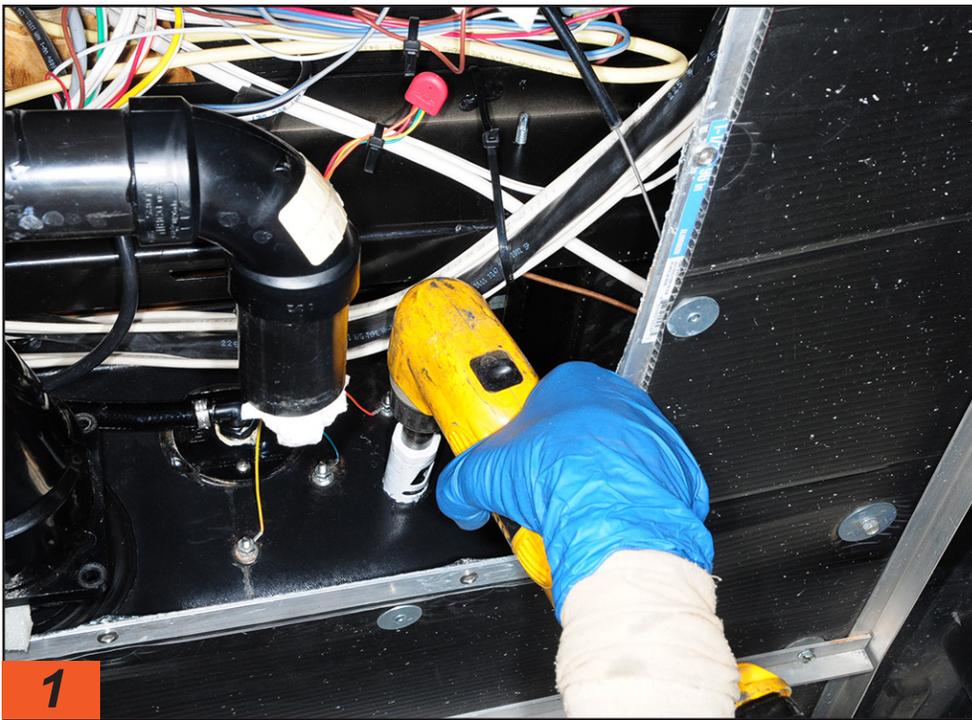
After studying the available products on the market, Technical Director Bill Gehr and I settled on Camco's RV Quickie Flush, which has a multi-directional spray head, high-quality fittings and a hose. (Amazon sells the Camco 40123 Quickie Flush w/ Backflow Preventer for \$28.)

The first step was to determine if there was enough room to mount the additional Camco spray head in the side of the holding tank — and be

able to reach the area for drilling new holes and connecting the hose during the install. Fortunately, there was room



The factory-installed elbow fitting in the black holding tank did not present enough water flow to move contents forcefully enough to do much good.



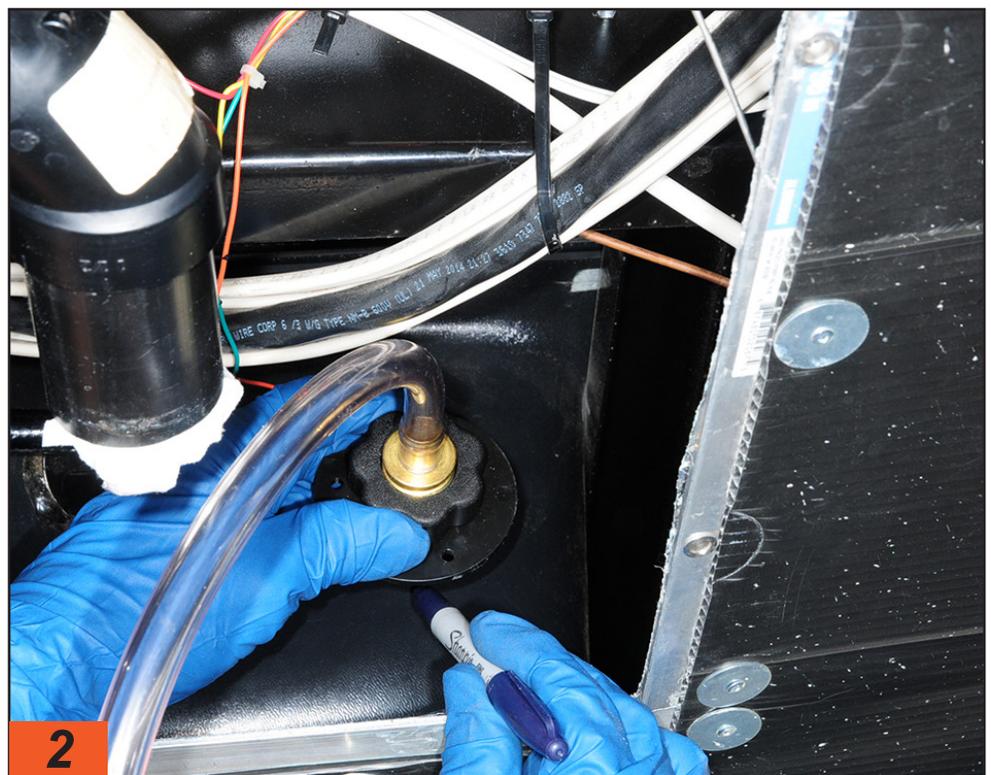
After marking the location for the Quickie Flush spray head, a 1 1/8-inch hole was cut into the side of the holding tank. The instructions call for mounting the spray head 2 inches from the top, but that was not possible in this aftermarket installation.

(barely), courtesy of the smaller space occupied by such a tiny fitting installed at the factory. The original fitting was just a pipe elbow that allowed water to enter the tank with some pressure and, again, it was anemic.

After inspecting the area above the belly pan, we determined that we did not want to reuse the existing hose and make a few modifications for connecting to the RV Quickie Flush spray head. That meant leaving the original hose and hookup-fitting intact and establishing an unobstructed route for the new clear hose from the utility center inside the front driver's side storage compartment to the spray head. The challenge, of course, was to route the new hose while avoiding bends that would restrict water flow, which we were able to achieve by following much of the same pathway for the existing hose. We had previously "visited" the space while making way for new dump valve cables (see "Down the Drain," *RV Enthusiast* March 2022 issue), so piggybacking that process took some of the pain out of working in this spaghetti bowl.

Once the new hose was routed, the next step revolved around installing the spray head. The instructions call for orienting the spray head with the flat surface of the flange pointing up, which allows most of the spray to cover the sides and bottom of the tank. For this

installation, however, Gehr was fighting obstructions that made it difficult to get the drill motor positioned properly to make straight pilot holes for the screw holes in the flange, so he mounted the flat surface toward the right side of the fifth wheel. As it was, a cordless angle drill just cleared the other objects above

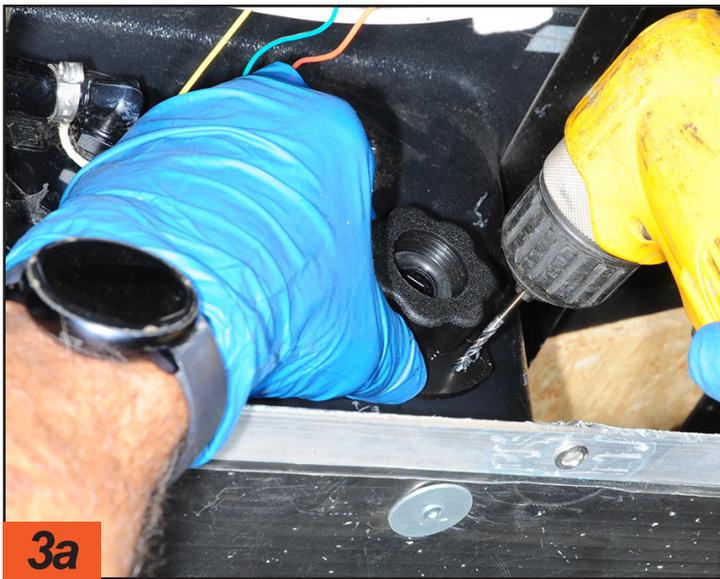


The hose was attached temporarily, and the spray-head flange was marked after centering.

the access opening in the belly pan. This still allowed the flow of water to reach most of the tank, confirmed once the installation was completed and the flushing capability tested (more on that later).

Again, while the instructions are very specific regarding placement of the spray head, doing this job in an aftermarket environment (unless you opt to empty, disconnect and drop the tank, a difficult, time-consuming and messy procedure) required additional alternate plans. For example, the company suggests that the spray head be mounted 2 inches from the top of the tank; that was not possible. Instead, the 1 1/8-inch hole was drilled near the bottom of the tank in such a way to allow room for the mounting flange, which required drilling the three aforementioned 1/8-inch pilot holes. This location also allowed for attaching the new hose to the spray head fitting; enough room is needed to twist the hose fitting on the spray head.

Sealing the flange against the tank is critical if you want to prevent nasty leaks. For this installation, we used Permatex Ultra Black Silicone RTV Gasket Maker (available in just about all auto parts stores and at Amazon, where \$5.40 will get you a 0.5-ounce tube), which I believe is some of the best stuff on the market and used by top auto mechanics. It sets up within one



3a Holes were drilled through the flange in the marked position and the screws were driven into the tank to establish positioning. It's a lot easier to temporarily drive the screws before sealing the flange.

hour, cures in 24 hours and provides a long-lasting seal. We hooked up the hose and headed for the utility center.

Hooking up the remote flusher connection, which has a standard garden hose fitting, required some measuring to mount it next to the original fitting, which was left in place. It comes with a steel bracket for mounting to an exterior surface (without drilling a hole) but installing the hose connection in the utility center wall was much cleaner. For this procedure, a RV city water fill fitting was purchased on Amazon. There are a number of these listed on the site, including those from Valterra, RecPro and JR Products, for less than \$20.

Connecting the new hose to the city water fill required a brass nipple

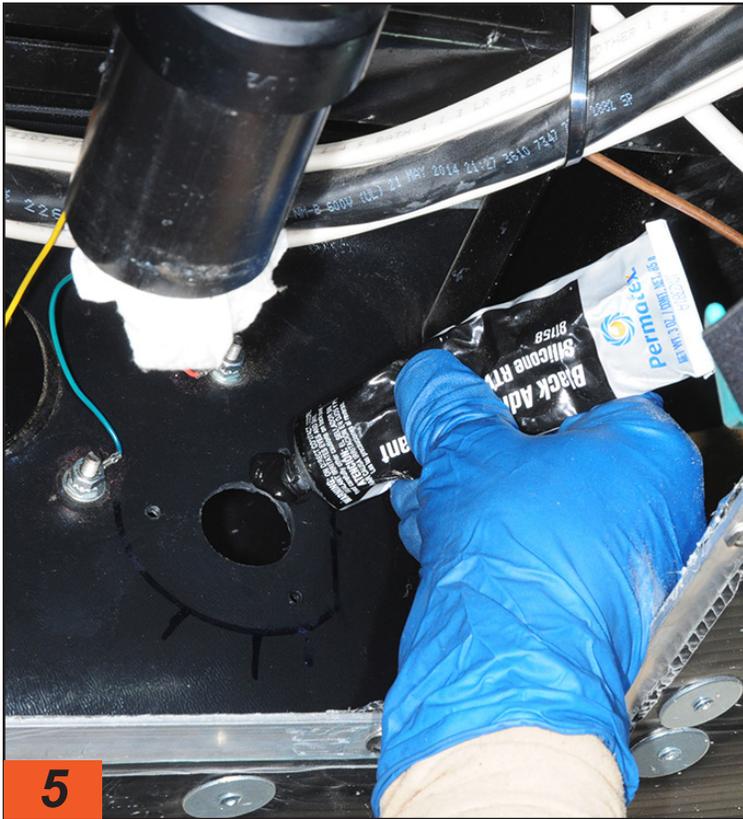
that was threaded onto the back side ("SDTC Tech 2-Pack 1/2-inch Pex to 1/2 inch NPT Female Thread Pipe Fitting," \$9.59 on Amazon). An appropriate hole was drilled into the utility center wall and the city water fill 3-inch flange was attached with three screws after the hose was connected to the nipple with a wide hose clamp; just allow enough length of hose through the hole to make the connections without struggling within the confines of the utility center. Finally, to tamp down Murphy's Law, the new city water fill fitting and hose were coated with JB WaterWeld Epoxy Putty to prevent leaking over time. WaterWeld epoxy cures in one hour and provides a rock-solid seal (\$12.20 for a two-pack on Amazon).

Testing the rinsing capability of the Camco RV Quickie Flush revealed a huge contrast in effectiveness while cleaning out the tank. Water flow was much more forceful than that experienced with the original flushing system. What used to require multiple tank fillings to remove the contents thoroughly now can be accomplished in only a few minutes, with large volumes of waste exiting the tank with determination.

Dumping the holding tanks is never a fun task, but the satisfaction of knowing the tanks will be cleaned properly goes a long way toward having an efficient sanitation system in your RV. And, adding a flushing system to the gray tank will keep the stink at bay.



4a Once again, Technical Director Bill Gehr outlined the exact location for the flange with a permanent marker so it could be placed precisely after the sealant was applied. Gehr is a stickler for marking locations to avoid problems. The mounting surface for the spray-head flange was cleaned with alcohol.

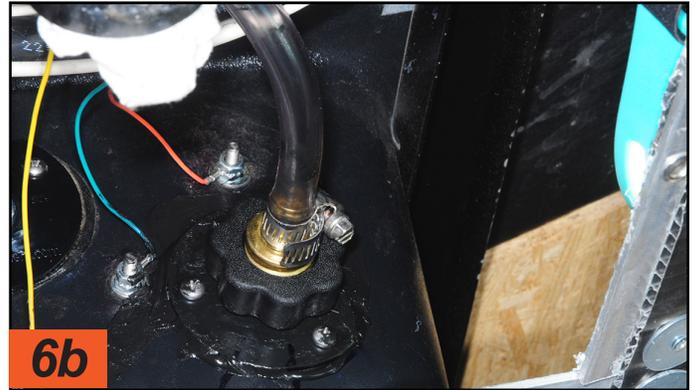


5

A line of Permatex Ultra Black RTV Silicone Gasket Maker was applied to the tank and the spray head screwed in place. The Ultra Black is a premium silicone sealer used by professional mechanics. It dries in one hour and cures in 24 hours.



6a



6b

Once the male hose fitting was secured with a wide hose clamp, it was threaded onto the spray head. Always use a wide hose clamp to prevent leaks. It's best to secure the hose with cable ties to keep it from jumping around and becoming abraded by nearby sharp objects.



7

The second half of the project focused on installing the water hookup. Here, the original inlet was abandoned after removing the water hose that goes to the spigot. This connection was modified years ago using a length of reinforced hose in the utility compartment.



8

Measurements were taken to ensure there was enough clearance next to the original inlet fitting for a new RV city water fill that was purchased on Amazon. The kit comes with a steel bracket for external mounting, but cutting the city water fill into the utility center panel was cleaner and more convenient.



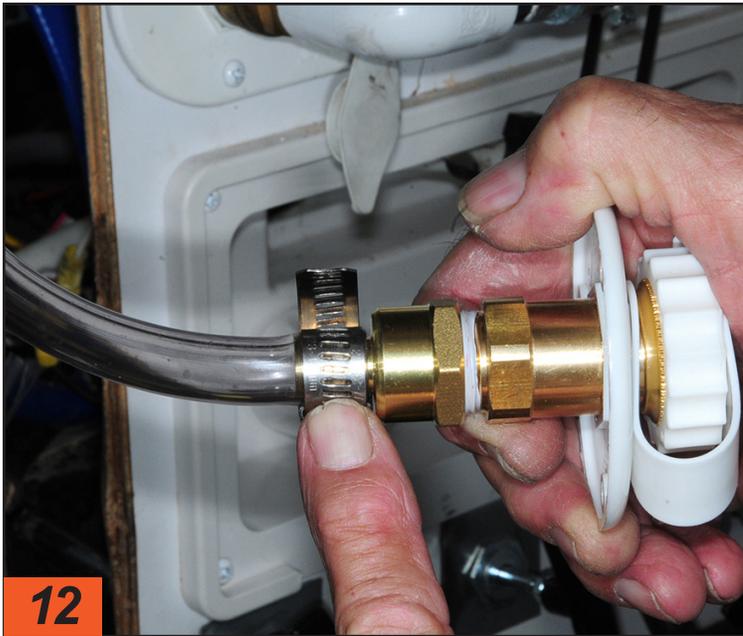
9a After marking the location for the new city water fitting, a hole was cut to allow for flush mounting of the 3-inch flange. When locating the city water fill fitting, make sure you allow enough hand room to rotate the bezel when attaching the water hose. The city water fill has a built-in backflow preventer, which is redundant with the one in the spray head, but taking extra precautions to prevent contaminated water from entering the feed hose is always a good thing.



10 The external bracket and inlet fitting were cut off the hose to make way for connecting to the new city water fill. Here we used the entire length of the hose to make it easier to handle when connecting to the new city water fill.



11a Wrapping the make pipe threads on the city water fill with Teflon tape will help eliminate leaks. With the Teflon tape in place, the 1/2-inch Pex nipple to 1/2-inch NPT female fitting was attached to the city water fill.



12

The cut end of the hose that was routed from the spray head was attached to the nipple and secured with a wide hose clamp (shown here for clarity; normally the hose would be routed through the hole in the utility panel first).



13a



13b

Being students of Murphy's Law, we decided to coat the hose inlet with JB Weld WaterWeld to prevent leaks, which would make a huge mess inside the storage compartment. WaterWeld cures in one hour and provides a seriously strong seal.



14

Three screws were used to mount the new city water fill, which fit nicely in the allocated space. Notice that the city water fill is white, which opens the possibility of hooking up the wrong hose and back-filling the holding tank — and making a mess inside the RV. For this fifth wheel, a permanent hose was connected to this fitting and terminated out the bottom of the trailer to facilitate easier connections; using a black flush fill is safer for those who might experience temporary brain fade.



15

Tip: O-ring-style hose washers provide much better leak protection than the flat counterparts. I've been using the Nelson 50381 Premium O-Ring Style Hose Washers for many years, and they don't fail. You can get 10 washers for \$8.49 on Amazon.



16

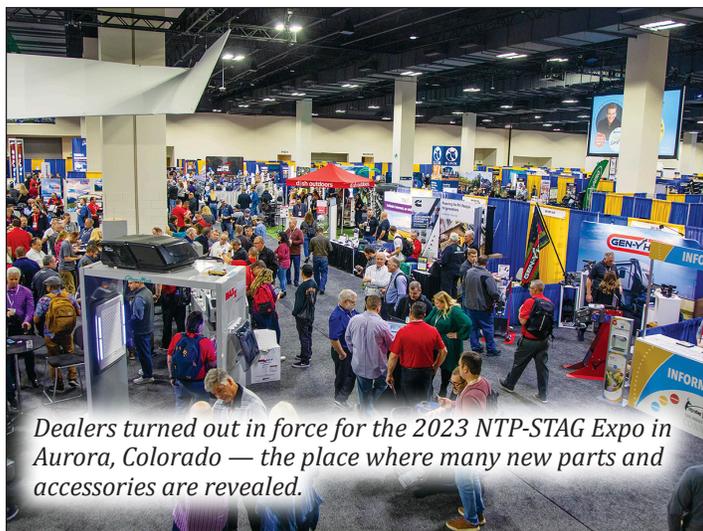
Here, the permanent hose was connected to the new city water fill. Tip: If the hose is going to be removed after each dumping session, consider using quick connectors, but make sure they are high quality; the ones made in the U.S. are usually the best.



17

A cable tie was installed to provide an element of strain relief for the hose connected to the city water fill. **RVE**

2023's **Hottest** Parts & Accessories



Dealers turned out in force for the 2023 NTP-STAG Expo in Aurora, Colorado — the place where many new parts and accessories are revealed.

By RVBusiness / Photos by Shawn Spence

Ask a gearhead what part of his favorite car magazine is the most anticipated each month, and the answer might surprise you.

New products.

Sure, the story lines highlighted on the cover tend to provide all the impetus for sticking the publication in the grocery basket — but most do-it-your-

selfers are nonetheless extremely interested in “the next big thing” they can integrate into their favorite ride.

Anyone spinning wrenches on RVs is likewise prone to ferreting out the latest products that can make life easier, more comfortable or simply more interesting and enjoyable while on the road. Plus, let’s face it: we all like to be on the cutting edge of new

technology.

And it’s only going to get better. During what may well be remembered as “the COVID years,” there wasn’t a whole lot of innovation going on; with supply-chain issues, RV dealers were buying pretty much whatever they could find and suppliers were simply trying to keep the parts-and-accessories pipe-

line full. Now, those same suppliers have begun turning up the wick on new designs, many of which were no doubt already in the planning stages but couldn’t be put into production.

If there’s a downside, it’s that the places where suppliers showcase their new products — RV industry distributor shows — are closed to the public. Most RVers will never know what’s in the parts pipeline until it shows up on a shelf. Fortunately, readers of *RV Enthusiast* don’t have to wait: our partnership with *RVBusiness*, the nation’s premier RV trade journal, means that we can bring you news on the latest components as they are released. The following pages carry many of the latest components RVB staffers saw at the biggest distributor show of 2023 — the NTP-STAG Expo — along with a host of existing parts and accessories you may not have been aware of. Doubtless many readers will find “the next big thing” they need for their RV here. If not, tune in to Part 2 next issue!

2023's Hottest Parts & Accessories



ROADMASTER

767 Remote Battery Disconnect Switch

Many vehicles require their batteries to be disconnected or switched off before dinghy towing. The 767 Remote Battery Disconnect can be used for all vehicles — including ones that require higher cranking amps such as diesels. The 767 battery disconnect is a robust solution for all vehicles, but is especially effective for diesel vehicles. The 767 is typically mounted under the hood with the included hardware. It features high-quality construction and an easy-to-read indicator dial.

roadmasterinc.com



GO POWER!

Go Power! Battery Manager

The Go Power! Battery Manager — soon to be released — is a multi-functional battery monitor with an easy to read, easy to operate color touch screen. Featuring integrated Bluetooth wireless technology, it uses precision current measurement and real-time tracking to show essential battery stats. It can be mounted in portrait or landscape orientation and features a built-in dimmer and includes a 500A max shunt

gopowersolar.com



ASA ELECTRONICS

Tire Pressure Monitoring System

The Tire Pressure Monitoring System (TPMS) is compatible with ASA Electronics’ in-Command RV control system. The TPMS features four Bluetooth-enabled tire pressure and temperature monitoring sensors with an easily replaceable battery, a Bluetooth repeater that boosts the signal for longer towables and a wide pressure monitoring range from 0 to 185 PSI. Via an app, the system can individually monitor up to 22 tires (with the purchase of additional sensors) for pressure and temperature.

asaelectronics.com

2023's Hottest Parts & Accessories



ROADMASTER

Nighthawk Tow Bar

Improve visibility, safety, and style with the Nighthawk tow bar. Crafted from aircraft-grade aluminum and billet stainless-steel inner arms, the Nighthawk is rated to tow up to 8,000 pounds. Equipped with the longest arms ever produced — along with the innovative, non-binding Freedom Latch system — the Nighthawk is easy to disconnect on an angle or while parked on uneven ground. Nighthawk is available to fit Roadmaster (part #676) or Blue Ox and Demco (part #677) baseplates. roadmasterinc.com



MORRYDE

Latch Extender

Trailer owners are all too familiar with the “dance” — they walk up the trailer steps, grab the door latch, walk down the steps so they can open the door to only walk up the steps again. Not anymore. The MORryde Latch Extender extends the door latch, allowing trailer owners to open the door without walking up the steps. It's another cool product to help trailer owners enjoy their trailer without compromises. morryde.com



CURT

CrossWing Fifth Wheel Hitch

The CrossWing single-point fifth-wheel hitch provides a next-level towing experience. It is engineered to be solid yet easy to handle by combining robust strength with state-of-the-art technology — all while remaining lightweight. Compared to traditional fifth-wheel hitches, the CrossWing is 65% lighter with a main body weight of only 70 pounds. And with its lightweight design, assembly and installation are a breeze — and can be done by one person. curtmfg.com



FURRION

RV Tankless LP-Gas Water Heater

Stay comfortable with consistent hot water straight from your RV shower and faucets. The unit's output capacity of 2.4 gallons per minute and heating capacity of 60,000 Btu translates to an RV water heater that is made to keep up with the hot water demands of a busy family on the road. Water temperatures remain consistent thanks to “Vortex technology,” which prevents cold spots and reduces scalding by constantly mixing water before it comes out of the tap. furrion.com



HOPKINS

Endurance Replacement Connector

Hopkins Manufacturing Corp. is changing the way trailers and tow vehicles connect — and talk — with each other. The Endurance is designed to fit any OEM connector and includes built-in troubleshooting technology. LEDs verify a correct connection and indicate potential tow malfunctions. Opening the top portion allows for a 7-way connection, while the bottom portion has a four-point connection. The lids open 180 degrees, so both connectors can be used at the same time for towing and accessories. hopkinsmfg.com



HUGHES AUTOFORMERS

SafeView Power Inlet SV30API

Available in 30- and 50-amp versions, the SafeView Power Inlet (SV30A-PI) lets you quickly and easily know whether your power connection is good. When you connect your RV to a power source, it will show either green (good) or red (fault detected) and on which circuit. ETL-certified with a two-year warranty, the Safe View Power Inlet also features a “halo” status light to determine whether it's a good circuit or if there is a fault present (open ground, open neutral, and reversed polarity). hughesautoformers.com



ROADMASTER

157 LED Lighting Kit

Although this universal lighting kit can be used on any towed vehicle, it was designed as a wiring solution for vehicles where traditional wiring diodes will not work or are difficult to wire. The kit includes a separate wiring harness that routes from the front to the rear of the vehicle. A built-in "Y" allows the harness to reach both sides of the vehicle. Adhesive backing allows the installer to place the light strips at a convenient location. The kit includes flip-latch wiring connectors for easy installation.

roadmasterinc.com



DICOR PRODUCTS

Dicor Surge Protectors

This new line of RV surge protectors from Dicor is designed to protect RVs from dangerous voltage levels and power surges. Available in weather-resistant 30-amp plug, 30-amp pigtail and 50-amp pigtail versions, each surge protector is equipped with automatic shut off/on, easily visible surge indicator and diagnostic lights, incorrect wiring fault indicators and a limited lifetime warranty. Pigtails also feature metal locking ring.

DicorProducts.com



BAL RV PRODUCTS

Powered C-Jack

BAL's Powered C-Jack is a low-profile, dual 12-volt DC motorized-stabilizing system offering independent operation of the legs using included switches. RVers can use it to stabilize each corner of the trailer individually, rather than being restricted to operating the two jacks at one time. The Powered C-Jack offers simple bolt-on installation for new applications or retrofits most import OEM single 12-volt motor cross-frame stabilizers. The product is made in the U.S.A. and coated with an E-coat finish for durability..

balrvproducts.com



B&W TRAILER HITCHER

OEM Gooseneck Ball & Safety Chain Kit

With a 30,000-pound gross trailer weight rating, the OEM Gooseneck Ball & Safety Chain Kit features a solid grip latch handle to provide leverage for operation and a clean way to carry the ball. The handle locks in a horizontal position to prevent accidental unlatching. Internal and external components are plated or made from stainless steel for corrosion protection, and safety chain anchors accommodate commercially available safety chain hooks.

bwtrailerhitches.com



REC PRO

RecPro by Houghton RV Air Conditioners

These ACs will help you raise your RVing comfort up a level with reduced amp draw and decibel levels as low as 55.4 dB. They feature high-performance cooling, dehumidifying, drying, sleeping, timing and more. You can even control your AC via the wireless remote control. Heating/cooling ratings range between 9,500 and 15,000 BTU. Available in white or black.

recpro.com



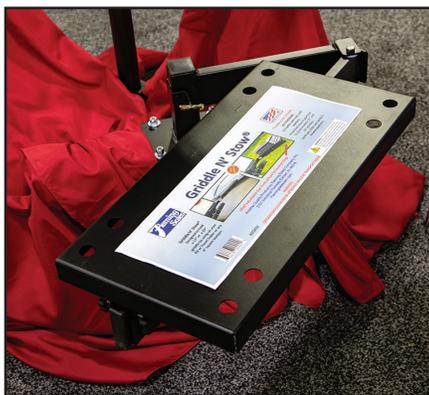
AUTO MOTION SHADE

Magnetic Thermoblock shades

These new static shades feature seven layers of protection against heat, cold and light and are extremely easy to install in any Class B motorhome. Scarborough, Ontario-based Auto Motion features kits for Mercedes-Benz Sprinter, Ford Transit and Dodge Promaster vans. Available in a kit of three, they can be placed over a window using the internal magnets and left in place while camping.

automotionshade.com

2023's Hottest Parts & Accessories



FLEMING Griddle N' Stow

The Griddle N' Stow is Fleming's finest camping and tailgating accessory, said Caryn Grady of Fleming Sales, because it eliminates the inconvenience of all the setup for grilling. The Griddle N' Stow connects to a standard 4-inch RV bumper with two included U-bolts. It locks securely when the RV is in motion, but the articulating arm extends away from the RV when used for cooking. The tray, which has pre-drilled holes to accommodate most griddles, can be manually leveled.

flemingsalesoem.com



GO POWER! 100Ah Sun Cycle Advanced Lithium Battery

The upcoming NEW Sun Cycle Advanced 12V 100Ah Lithium Battery adds enhanced safety and communication features to the flagship Go Power! lithium battery line. This lightweight, Bluetooth-enabled LiFePo4 battery has an advanced BMS, temperature management system, a built-in DC heater and auto-cell balancing for larger battery banks. It can also be wired in series or parallel.

gopowersolar.com



XANTREX Gateway

Xantrex's newest product allows its other electrical system components to communicate with each other and allows the RVer to control functions via an app on any smart device. Gateway relies upon RV-C communication, necessary for Xantrex products to display on multi-function panels built by third-party companies Silverleaf and Firefly. This allows the consumer to see information from the charge control, which connects to the solar panel, the lithium ion batteries and the charger that runs the electrical system.

xantrex.com



GE APPLIANCES Point of Use Water Heaters

GE Appliances Electric Point of Use Water Heaters have a compact design to provide the convenience of having hot water fast from any location within the RV using only a standard 120-volt AC outlet. Installed at the point of use, under a sink or laundry area, it can also be used as an inline booster or standalone main water heater. Available in capacities ranging from 2.5 to 18 gallons.

geappliances.com/rv-appliances



GEN Y HITCH Executive Fifth to Goose

Nappanee, Ind.-based Gen Y introduces the Executive Fifth to Goose to replace any fifth wheel pin box from the OEM. The hitch is designed to make it so RVers can pull into the campsite and unhook the trailer and have the entire bed of the truck at their disposal. With built-in Torsion-Flex technology, the hitch reduces chucking and jerking and increases cargo protection.

genyhitch.com



THETFORD AquaMAX & Tank Blaster Combo

Used in combination, AquaMAX and Tank Blaster are a great way to keep your black tanks in proper working order. The Tank Blaster Holding Tank Cleaner features micro-foam clinging action and an active enzymatic blend attacks tissue, waste and grease, and special additives tackle hard water deposits on sensors. It works overnight to clear the path for AquaMAX Holding Tank Treatment. AquaMAX's advanced enzyme powered formulas neutralize odors and accelerate waste digestion to prevent clumping, clogging and tank residue.

thetford.com

2023's Hottest Parts & Accessories



ROADMASTER 195250-S Spare Tire Carrier

Today's motorhomes often don't come equipped with a spare tire, or even the means to carry one. Roadmaster's Spare Tire Carrier is an easy solution that lets RVers carry their own spare and wheel. Now available for 2.5-inch receivers, it mounts in the existing hitch receiver on the RV, accepts wheel sizes from 16- to 24.5 inches. Rated up to 10,000 pounds (400 pounds hitch weight), the Spare Tire Carrier also incorporates a 2-inch receiver so RVers can safely tow a dinghy vehicle as well. roadmasterinc.com



WFCO WF-9500 Series Power Center

The WF-9500 series all-in-one power center for 50A RVs includes the converter, DC power distribution and the breaker panel. Available between 40A and 80A output, this power center is compatible with a wide variety of RVs. This zero-clearance product does not require any additional space around the enclosure, reducing the space needed behind the wall. Featuring WFCO's exclusive Auto-Detect technology, the WF-9500 series is ready for any battery the RV owner wants to install. wfcoelectronics.com



BLUE OX Patriot Brake

Now with a new lighter, improved and compact design (6.2 pounds vs 9.5 pounds) that fits more dinghy vehicles, the new Patriot brake features a faster extension of the braking action for truly proportional braking. The brake is all-electric and self-contained with no tank to drain and no pumps or hoses to connect. The Patriot checks brake pressure to ensure proper setup and an in-cab controller monitors the brake and allows manual input. The brake also works with hybrid dinghy vehicles. blueox.com



TORKLIFT Fortress Gaslock

With propane theft becoming an increasing problem in campgrounds and residential settings, the Fortress Gaslock allows cylinders to be securely locked when mounted to RVs. It requires no tools or modifications and installs in seconds. Kent, Wash.-based Torklift designed the lock to fit all 3/8-inch and 1/2-inch threaded rods. The device is made of high-impact military-grade aluminum. torklift.com



LIPPERT On The Go Ladder

This telescoping RV ladder gives RV owners the ability to get up and down their trailer with enhanced stability and ease. Unlike other ladders on the market, Lippert's telescoping ladder extends at an angle, making it more like climbing stairs than scaling a vertical wall. Weighing under 30 pounds, the ladder is easy to carry, transport and store when not in use. Requires the Lippert On-The-Go Ladder Receiver. lci1.com



CURT Echo In-Line Brake Controller

The Echo in-line trailer brake controller is truly a brake control for the modern age. The main module installs discreetly between your vehicle's 7-way plug and USCAR port for a concealed, factory-like feel and wirelessly connects to your smartphone, allowing you to control and monitor all trailer brake activity right from your own device. It comes with a customizable app for Apple or Android. curtmfg.com

2023's Hottest Parts & Accessories



SOUTHWIRE

Elite Portable Power Units

Ranging from 200 watts to 1100 watts, Carrollton, Georgia-based Southwire will be adding units up to 1700 watts by May. All units will have wireless charging as well as rapid charging so users can charge high-end electronics. A pair of solar panels with built-in controllers also will be added so a cell phone can be plugged directly into the panel for charging.

southwire.com



SMARTCAP

SmartCap Modular Truck Cap System

SmartCap is the world's first modular stainless-steel truck cap system. From its five-piece modular design to its seamlessly integrated accessories, SmartCap lets you build and organize your truck bed exactly how you want it and can be built out over time. There are four different roof rack options, six different door bin options (including a sliding drawer toolbox) as well as a camp kitchen. Molle panels are included for tying down gear.

na.rsismartcap.com



SUBURBAN

Suburban Advantage Direct Fit Water Heater

The Suburban Advantage Direct-Fit 6-gallon water heater is the only replacement for competitive water heaters that does not require sidewall modifications. Designed to fit into the same compartment as the existing water heater using the same plumbing and connection locations, it features a porcelain-lined steel tank with anode rod design to protect against corrosion plus industry-exclusive flue tube baffles to transfer more heat to water in the tank.

SuburbanRV.com



TORKLIFT

PowerArmor Solar

With the increasing price of batteries as lithium grows in the market, battery theft has become more than an inconvenience. Torklift's locking storage/battery box not only locks batteries in place, but maintains the condition of solar-chargeable batteries, extending their life up to 400%. The box can be used to secure other gear, as well, and comes in bright tread diamond plate and high-impact powder-coat black diamond plate.

torklift.com



HUGHES AUTOFORMERS

30-Amp Portable Bluetooth Surge Protector

The new Power Watchdog Smart Surge Protector offers 3,000 Joules of advanced surge protection and includes a patented Bluetooth connectivity so you can monitor live park power conditions on your smartphone using a free mobile app. Features include a replaceable surge/spike module (should you get hit by a large spike, simply order a new surge module rather than replacing the entire unit), limited lifetime warranty, complete LED park power diagnostics and customizable alert thresholds.

lci1.com



TEKNOR-APEX

Zero-G RV/Marine Water Hose

The zero-G RV/Marine Hose is specifically designed for RV and marine use and is manufactured with FDA-sanctioned materials to make it drinking-water safe. Teknor Apex touts the zero-G as being 50% lighter than standard freshwater hoses. It features crush-resistant couplings and a Tru-Flex inner core that minimizes kinking, as well as G-Force outer cover designed to make it abrasion- and puncture-resistant. The zero-G comes in 25- and 50-foot lengths, each of which is 600 psi-rated.

teknorapex.com



MORRYDE Safe T Rail

Entering and exiting the trailer is safer and more secure than ever with the MORryde Safe T Rail. Using a telescoping design that extends 54 inches, it provides a solid, continuous rail similar to a residential-style stair rail. When traveling down the road, the Safe T Rail collapses down against the trailer side wall and is secured with a magnet.

morryde.com



LIPPERT Flow Max RV Toilet

Lippert's Flow Max toilet offers all the features of a residential toilet in a design specifically built for an RV. The deep bowl has a 100% ceramic construction, giving it a better look and feel than most plastic camper toilets, while making it durable for years to come. The residential seat size and easy-close seat and lid make this RV camper toilet comfortable and convenient to use.

lci1.com



CURT ActiveLink Cargo System

The ActiveLink system provides a one-of-a-kind cargo solution designed to allow for fast, easy, and secure attachment of hitch accessories like bicycle racks. Just install the shank into the receiver once and easily swap between accessories at moment's notice — no more tools required. This system offers two styles of bike racks, SE and Ultra, as well as an aluminum cargo carrier. 2-inch and 1¼-inch shank options are also available.

curtmfg.com



ICON Replacement Winnebago Single Axle Fender Skirt

ICON continues to support the RV market with new fender skirt additions for brand models that are no longer supported by the OEM with its new Winnebago Brave replacement fender skirt (FS5011). Constructed of durable, high-impact ABS plastic, this part is smooth and ready for paint and decals to match the motorhome. It replaces the rear fender skirt and may also fit the front in some applications. The overall size of this part is 73 3/4 x 26 1/4 inches and includes three glue-in back supports for rigidity.

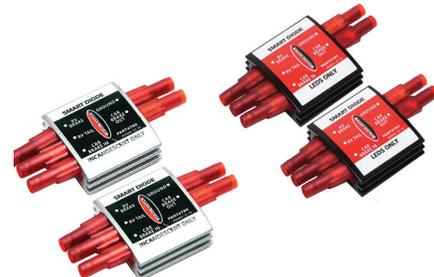
icondirect.com



RV COMFORT SYSTEMS CheapHeat System

"Gas to Electric at the flip of a switch" RV Comfort Systems manufactures an electric heating option that adds on to most RV furnaces. Called the CheapHeat System, this unit is mounted directly downstream of the existing furnace and employs tungsten heating coils powered by 120 volts AC to provide the heat. It can be configured into three different wattage ratings — 1,800, 3,750 and 5,000 watts — depending on 30- or 50-amp service.

rvcomfortsystems.com



ROADMASTER Smart Diodes

Diodes are frequently used in wiring kits to prevent the backflow of current to the electrical system of the towed vehicle or motorhome. However, some newer vehicles now use a multiplex wiring system, whereby multiple electrical signals may be sent down a single wire. The Smart Diode modulates the voltage to activate only the intended circuit. The result is vehicle lighting that looks and functions as intended.

roadmasterinc.com



SOUTHWIRE

Yellow Jacket Rechargeable Clamp Work Light

Built for indoor or outdoor use with two different lumen outputs, the Yellow Jacket can be rotated 360 degrees. In addition to use as a work light, it can be used as a table light or elsewhere as need arises. A monitor alerts the user when batteries need to be recharged. A single charge gives up to 11 hours of usage. It is water-resistant and has High/Low output settings.

southwire.com



SUBURBAN

Suburban Electric Wall Heater

Eliminate cold spots in your RV with the variable-temperature-controlled Suburban Electric Wall Heater. Available as a hardwired model or with grounded 6-foot power cord compatible with standard 120-volt AC outlets, it's easy to mount and, at only 10.5 pounds and less than 5 inches deep, won't protrude into communal spaces. Adjustable thermostat and variable heat settings create comfortable interiors suited to individual preferences.

SuburbanRV.com



BLING SAUCE

Bubble Sauce Boat, RV and UTV Soap

From the maker of colorfully retail packaged cleaning products with catchy names like Hot Sauce and Quicky Sauce comes a new product: Bubble Sauce, a soap specifically made for RVs, boats and UTVs. The new cleaner has several premium features, including a functionalized polymer that makes surfaces easier to clean; advanced sheeting technology; and a powerful soap that provides a durable barrier that is resistant to oil- and water-based stains. Bling Sauce is suited for use on fiberglass, painted surfaces, aluminum, glass and more.

blingsauce.com



BLUE OX

BXR2100 Fifth-Wheel Hitch

Blue Ox's BXR2100 Fifth-Wheel Hitch features a true kingpin connection. No adapters are required: A funnel-shaped hitch head helps guide the kingpin into place, significantly reducing the rate of false hookups and trailer drops with 360-degree nesting around the kingpin. The hitch head is dual articulating: front/back and side-to-side. The BXR2100 connects to a 2-5/16-inch gooseneck ball with a 21,000-pound gross towing capacity and 5,000-pound vertical load limit.

blueox.com



AGUA PRO

Washdown Hose Kit

The Aqua Pro Washdown Hose Kit is great for boats, RVs and home cleanup. The kit contains a UV-coated 20-foot by 5/16-inch (OD) coiled polyurethane hose with quick disconnect fittings, spray nozzle with adjustable tip and contoured grip, and hose adapters. Mate with Aqua Pro 3 GPM or 5.5 GPM water pump for a complete washdown system.

aquaproducts.com



ESCO

PEXLock

PEXLock eliminates the need for metal plumbing clamps that seem to require more than two hands to install. The non-meal PEXLock clamp is made of a polymer that resists freezing, cracking and extreme heat. A simple pair of pliers locks PEXLock in place, leaving nothing to calibrate. It can be used with PEX A, B, C and PERT as well as approved polyvinyl braided tube.

escousa.net



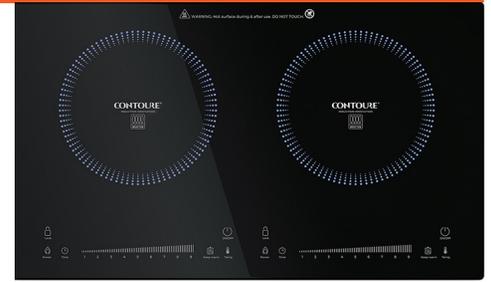
HUGHES AUTOFORMER Adjustable Security Cable Lock

This heavy-duty braided-steel cable will keep your Power Watchdog or Hughes Autoformer voltage booster secure and protected. It features a 3-foot-long, 10-mm-thick braided-steel cable and an adjustable lock, which means you can cinch it down to as big or small of a loop you need. It can also be fashioned into a two-loop setup. hughesautoformers.com



WALEX Ocean Mist Bio-Pak

The enzyme-based deodorizer and digester is now available in a new scent for the season, Ocean Mist. This refreshing scent complements the existing Bio-Pak fragrances Tropical Breeze and Alpine Fresh. As with the existing scents, Ocean Mist contains the same enzyme-based formula that deodorizes and digests black tank solids. It also is free from formaldehyde and bronopol. walex.com



CONTOURE Energy-Efficient Induction Cooking

CONTOURE offers a variety of gas and electric stoves, ovens and cooktops that provide faster heating and greater control. Exclusively designed for small spaces, the innovative induction cooktops are perfect for RVs with limited space. Built with features like simmer options, keep-warm function, auto shut-off and customizable temperature settings, these induction models reduce overall energy usage and can offer more consistent cooking performance when compared with traditional gas or electric ranges. contoureausa.com



BRAND MOTION Wireless HD Observation System AHDS

Brand Motion says its latest observation system includes a high-definition 7-inch DVR monitor and low-latency wireless camera, resulting in images that are crystal clear with virtually no lag. It's possible to sync up to four cameras at a time and the observation system offers multi-camera recording with up to 128GB of storage. The camera kit includes a bracket allowing integration of the camera to an RV's existing pre-wired mounting kit. brandmotion.com



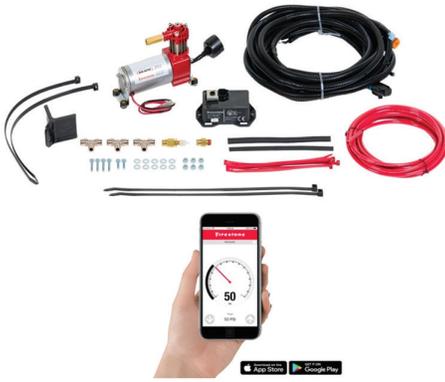
ADCO UV Hydro Covers

Designed with four layers to protect against UV rays as well as repel water from a trailer that has been set aside for the season, ADCO covers provide protection against the elements for almost any size travel trailers and fifth-wheels. The covers have zippered entry access on both sides, making it easier for an RVer to access their unit without having to actually remove the cover. adcoprod.com



DICOR PRODUCTS Dicor RV Care and Cleaning Products

A complete line of RV cleaning and care products is now available from the team at Dicor Products. The line was designed specifically for RVs and includes Exterior Wash, Black Streak Remover, Bug & Tar Remover, Awning Cleaner and Mold & Mildew Remover as well as a universal extension rod with three different brush heads. Dicor RV Care and Cleaning products are safe for use on a variety of surfaces and roof types. DicorProducts.com



FIRESTONE

Onboard Compressor for Trucks with Air Springs

With technology switching over to wireless, Firestone has made it possible to change the pressure in a tow vehicle's air springs with a Bluetooth-equipped smartphone. The compressors come in both light- and heavy duty, depending upon the customer's needs. The accompanying app also has built-in diagnostics, allowing the user to monitor output as well as signal strength, and will track any error messages.

firestoneairide.com



FLAME KING

30-Pound Propane Cylinder with Built-In Gauge

As more RVs are being built to accommodate 30-pound propane tanks, Flame King has developed such a cylinder with a built-in gauge. Developing a built-in gauge for a 30-pound cylinder was a bit more complicated than for a 20-pound tank, said Dov Blauner, but the bottom line is it works — and Flame King's built-in gauges provide an accurate measurement of the amount of propane in the cylinder.

flameking.com



ROADMASTER

Comfort Ride Shocks

Roadmaster's Comfort Ride trailer shock system helps improve both towability and braking performance with an engineered solution that bolts in place with common hand tools. Patented, adjustable mounting brackets allow the heavy-duty, nitrogen-charged shock absorbers to be mounted nearly vertically, where they have the necessary leverage to limit up-and-down motion on both compression and rebound. Comfort Ride shock systems fit 2-3/8-inch, 3-inch or 3.5-inch axles and are designed for tandem- and triple-axle trailers.

roadmasterinc.com



WFCO

WF-8900 Series Power Center

Called the top power center in the RV industry, the WF-8900 series provides an extremely versatile solution for all applications. Designed for 30-amp RVs, this power center features WFCO's exclusive Auto-Detect technology. The patent-pending science behind it allows the 8900 to recognize lithium and lead-acid battery chemistries and automatically adjust the charging profile to the battery type. Multi-stage charging and current monitoring also help increase battery life.

wfcoelectronics.com



GE APPLIANCES

12-Volt DC Top Freezer Refrigerator

GE Appliances 12-Volt DC refrigerators are designed specifically for use in RVs. The durable compressor is tested to extremes to deliver reliable performance, consistent cooling — even on uneven terrain — and no need of external ventilation. Easy to retrofit within a standard 3-way cutout, it offers 7.39-cubic-foot fresh food and 2.42-cubic-foot freezer capacities. Other features include LED lighting, upfront controls and black and stainless finishes.

geappliances.com/rv-appliances



BMPRO

ProBoost25 & ProBoost40 DC-DC Chargers

Melbourne, Australia-based BMPRO designs products with extreme outdoor adventure in mind, including its new ProBoost25 and ProBoost40 three-stage DC-DC Chargers. Designed as standalone chargers for a variety of battery types, including AGM, standard lead-acid and lithium, BMPRO says these 25-amp and 40-amp ultra-compact chargers feature dual inputs from both solar and vehicle auxiliary and are resistant to shaking, wet, dusty and muddy environments.

teambmpo.com



TRIMAX

Bullet Latch Padlock

Trimax makes a variety of locks designed to keep things secure, including its new Bullet Latch Lock specifically designed for trailer door hasps. This lock is designed from aircraft-grade aluminum and features a hardened, ultra-secure 3/8-inch diameter internal shackle that Trimax says can't be cut. The lock fits and secures all trailer door hasps, covering the entire hasp and rivets for maximum security. Additionally, the lock is coated to make it weather-resistant

trimaxlocks.com



CAREFREE OF COLORADO

Carefree Connects Bluetooth Wireless Awning Control System

Carefree Connects Bluetooth Wireless Awning Control System allows RVers to fully control their awning with Carefree's mobile app on their smartphone or through an optional remote-control key fob. Users also can control an awning's LED light and the sensitivity of their awning's motion sensor for maximum protection during periods of inclement weather. Carefree Connects works with all Carefree 12-volt DC awnings. .

carefreeofcolorado.com



B&W Trailer Hitches

Tow & Stow Adjustable Ball Mount

Made in the U.S.A. with a lifetime warranty, the Tow & Stow Adjustable Ball Mount series are adjustable, stowable, versatile and secure. Inverted, raised or lowered for multiple height positions, the ball mounts are available in multiple shank sizes (2-, 2.5- and 3-inch), drops (3-, 5- 7- and 9-inch), finishes (black powder coat, chrome and black with Browning logo), and ball sizes (2- and 2 5/16-inch). When not in use the balls pivot behind the bumper

bwtrailerhitches.com



CLASSIC ACCESSORIES

Over Drive Toy Hauler Screen

RV cover manufacturer Classic Accessories has branched out a bit with its latest RV-related product: a universal screen door for toy haulers to let fresh air and light into the toy hauler while keeping bugs out. It includes a detachable Polypro privacy screen that can be quickly attached and a zipper door closure. The heavy-duty screen is width- and height-adjustable for a custom fit; it fits toy haulers with a rear opening up to 90.5 inches tall. No tools are required for the install

classicaccessories.com



VALTERRA PRODUCTS

Mighty Cord Circuit Testers

The 30-amp Mighty Cord Circuit Tester from Valterra Products tests for faulty wiring in 3-wire receptacles and can detect up to five wiring faults. The 50-amp Mighty Cord Circuit Tester tests for faulty wiring in 4-wire receptacles and can detect up to nine wiring faults. Both have features that include lights to indicate circuit condition and are cETL listed.

valterra.com



DAP

Ultra Clear Roof

This new sealant from DAP is a crystal-clear, elastomeric rubberized sealant that is designed to stop and prevent minor roof leaks. It creates an invisible, ultra-weatherproof seal around roof fixtures and penetrations to keep out water, air and moisture. Ultra Clear Roof sealant adheres even to wet or damp surfaces, can be applied in temperatures ranging from 0 to 120 degrees F, offers strong multi-surface protection and, once cured, offers mold/mildew- and UV-resistance. Ultra Clear is available in 32-ounce and 1-gallon containers.

dap.com

2023's Hottest Parts & Accessories



GO POWER!

200W Overlander Solar Kit

More power, same footprint. The ever-popular Go Power! Overlander now features improved panel efficiency. Now a 200-watt kit, the Overlander also includes a new solar charge controller, complete with improved Bluetooth connectivity and easier installation. The Overlander solar kit comes with everything customers need to add solar battery charging to their RV, including solar cables, and mounting hardware. gopowersolar.com



KING

Phoenix Satellite Antenna System

The KING Phoenix automatic roof-mounted satellite antenna system offers an easy-to-use push-button controller, access to full 4K HD programming simultaneously on multiple satellites and an industry-leading two-year parts and labor warranty. The roof-mounted antenna is capable of powering multiple residential-style satellite receiver/DVR units inside the RV. It is also the lightest weight antenna in its class and features a stowed height of just 8 inches.

www.kingconnect.com



HUGHES AUTOFORMERS

PWD50EPO Smart RV Surge Protector with Emergency Power Off

Hughes Autoformers is saying the PWD50EPO is the world's first advanced "smart" RV surge protector with emergency power off (EPO). The new 50-amp Power Watchdog Smart Surge Protector — a 30-amp version also is available — offers 6,100 Joules of advanced surge protection and features advanced circuit analysis to shut off power in an emergency. It includes a patented Bluetooth connectivity so you can monitor live park power conditions on your smartphone using a free mobile app.

hughesautoformers.com



NORCOLD

Polar Elite N20DC 12-volt DC Refrigerator

Part of Norcold's Polar Elite line of 12-volt DC compressor refrigerators, the 19-cubic-foot N20DC features stainless-steel French doors, glass interior shelves and clear door bins, an LCD control panel, night-mode setting and occupies the same space as an 18 cubic-foot RV refrigerator. Its unique power management system ensures low amp draw, while adjustable independent thermostats monitor fresh and frozen compartments. Individual compressors with separate wire inputs allows for flexibility in wire size selection.

norcold.com



COLLINS & COMPANY

Portable Pellet Grill

Upgrade your outdoor adventure with a portable wood pellet grille. Portable wood pellet grills are perfect for tailgating, camping and RVing. Don't leave your grill game at home — bring it on the road and get smoky BBQ flavor anytime, anywhere. Portable wood pellet grills allow you to lock-in moisture to get tender, juicy cuts every time. Wood pellet grills are also fast-heating and even-cooking for the best results.

burnstines.com



RECPRO

Vento Deluxe RV Roof Vent 10 Speed with Rain Sensor

Built with UB-stabilized polymers for superior performance, convenience and durability, the Vento Roof Vent keeps the air cool, fresh, and clean. A removable metal mesh screen catches debris while the rain sensor detects moisture to automatically shut down the fan and close the lid. A wireless remote and 10 fan speeds allow for fine-tuned control. The Vento RV Roof Vent is available in White and Smoked color options.

recpro.com [RVE](#)

Keeping Tabs *on your* Workhorse



Not being able to read the LCD instrumentation overseeing your motorhome's operation can have dire consequences. Fortunately, Brazel's RV Performance has a cure for this common ailment.

By Bruce Hampson

During an all-too-brief span during between 1999 and model year 2012, the Workhorse Custom Chassis — the successor to Chevrolet's P-30/P-32 chassis — proved to be a popular choice for manufacturers and owners of gas-powered Class A motorhomes. Not surprisingly, while the now-Workhorse Group Inc. has turned its attentions to other venues, a large number of motorhomes built on Workhorse underpinnings still travel the highways — although not without the occasional hiccup.

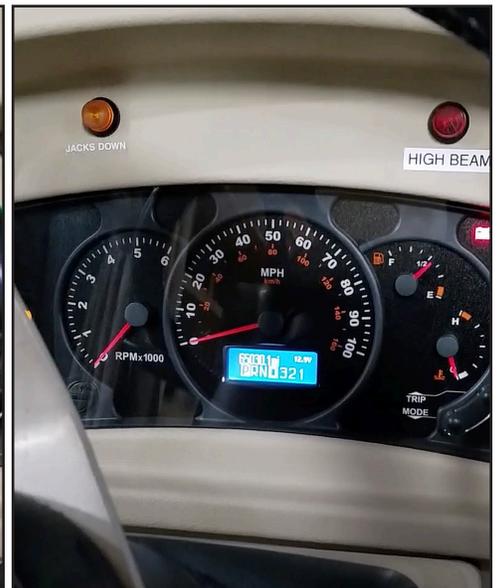
As Jon Brazel pointed out, one component that tends to give Workhorse owners trouble as their vehicles age is the motorhome's instrument cluster.

"Back when Workhorse was still building motorhome chassis, they would just replace the entire panel," he said. "The problem was, owners were just getting the same product that would fail again in a few years."

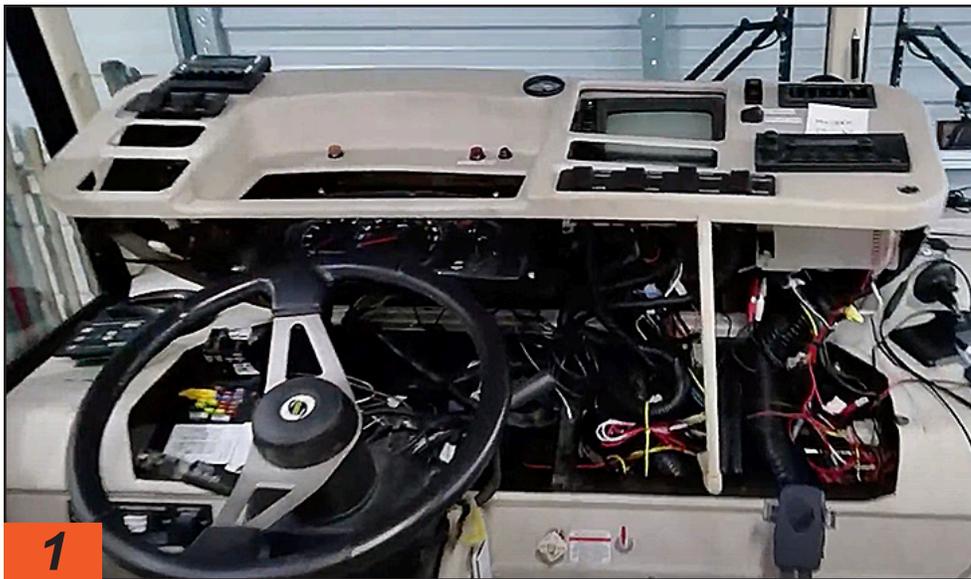
Brazel, parts manager for Brazel's RV Performance and its Ultra RV Prod-

ucts parts distribution division, looked into the problem along with company technicians and discovered that the liq-

uid-crystal display (LCD) screens used would eventually delaminate — and the pixels would begin disappearing. That



The stock LCD in Caudill's Winnebago was beginning to pixelate, making it tough to read — especially while driving. Brazel's replacement screen kit, on the other hand, illuminates against a blue background (which can be adjusted for brightness), making it easy to glance down to see what's going on.



Since the dash in his Winnebago was hinged to allow access to the electronics behind it, Caudill used a short length of PVC pipe (notched at the top) to hold it up and out of the way. When you raise the dash, check all the wiring harnesses to ensure they aren't being pulled too tightly — you don't want to create unnecessary work for yourself by unplugging anything.

left owners in the lurch, without the ability to monitor everything from the odometer and oil pressure to battery voltage, gear shift position, engine warnings and diagnostic features.

"Once delamination started, those screens would become illegible after two or three years," he said. "We thought there has to be a better screen we can provide that doesn't have that issue."

Eventually, the crew at Brazel's RV Performance did find a suitable screen and had it custom-made to fit the Workhorse Actia instrument cluster. The company now markets the up-

grade — along with a host of products for Workhorse and other chassis — at ultrarvproducts.com.

As Brazel stressed, this is not a replacement cluster — it's a replacement for the errant LCD screen that's swapped into an owner's original instrument cluster. The replacement industrial-grade LCD screen utilizes an easily readable dark blue back-lit display for high contrast and easy daytime/nighttime reading and does not alter the vehicle mileage, which is stored on a separate memory chip on the circuit board.

The relatively inexpensive "fix"

(\$149.95) is available for Workhorse motorhome and commercial vehicle chassis model years 2003-2006, when the Actia-brand instrument cluster with this issue was utilized. Coincidentally, those years also were when the greatest number of Workhorse chassis were produced. If you're unsure of fitment, RV owners can input their vehicle identification number (VIN) on the website when ordering the part and company technicians will verify parts selection by the VIN to ensure you are getting the correct component for your vehicle. It's a great service offered by Brazel's, which also operates workhorseparts.com and is considered the "go to" place for Workhorse parts and technical information.

The replacement screen kit, which carries a lifetime warranty, can be replaced either by owners shipping their instrument cluster to Brazel's or by doing it themselves — the company provides a fully illustrated installation guide with color photos detailing every step of the process. To give you an idea of the process, which only takes about 90 minutes, *RV Enthusiast* followed along as one owner, Kevin Caudill, swapped out the screen on his 2005 Winnebago 38J on a W-24 chassis.

Since you are working on the motorhome's electrical system, be sure to disconnect the engine battery before beginning to guard against inadvertently causing a short should certain connections bump against the metal frame behind the dash that's holding everything in place.



The first goal is to remove the nuts and screws holding the instrument cluster against the plastic fascia. Caudill ended up removing a few components in the way, including the dash controls for the motorhome's HWH leveling jacks because, like most of the dash components, it screwed into the metal frame that everything else was attached to.



3 With the instrument cluster accessible, remove the Phillips head screws keeping the faceplate in place. Caudill noted that it may not be possible to find the room for a screwdriver, but inserting the Phillips head bit into a correctly sized ratchet wrench will allow you to unscrew the plate.



4 Once unscrewed, the instrument cluster will drop out of the dash housing. Unplug the rear wiring harness connection. Getting the cluster out took Caudill about 30 minutes "and that's with me not really knowing what I'm doing."



5 Once the instrument cluster is free, it's best to work on it on a soft surface such as a towel placed on a table. Remove the lens cover by pressing in and down on the clear tabs on the back of the cluster. Be very careful to not lose the Mode and Trip pins, which pull right out.



6 Remove the gauge surround plate from the face by grabbing the surround at the 3 o'clock and 9 o'clock positions and lift straight off.



7a The gauge needles now need to be removed, but before you go any further, it's recommended that you take a photo of the gauges with your smartphone to check afterward that the needles returned to the same position. There are different removal techniques: the engine tachometer and speedometer are removed by turning the needles counter-clockwise, while the temperature and fuel gauge needles are turned clockwise. Turn until each bottoms out and can be pulled off — you may find some are on pretty snug.

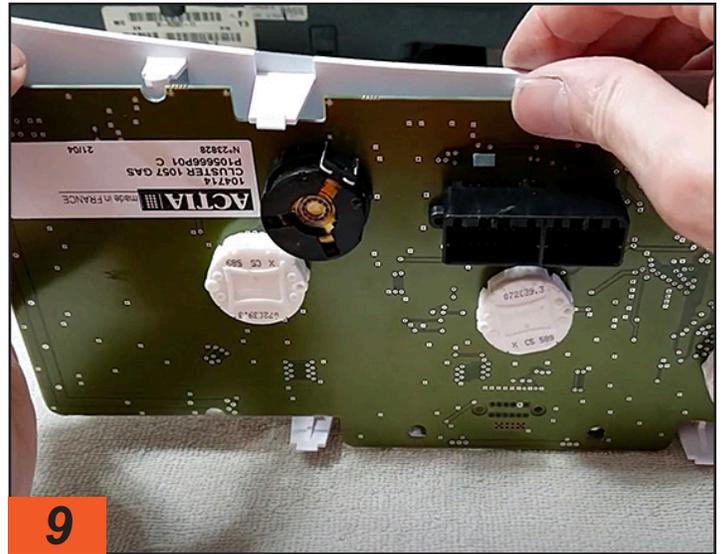


7b



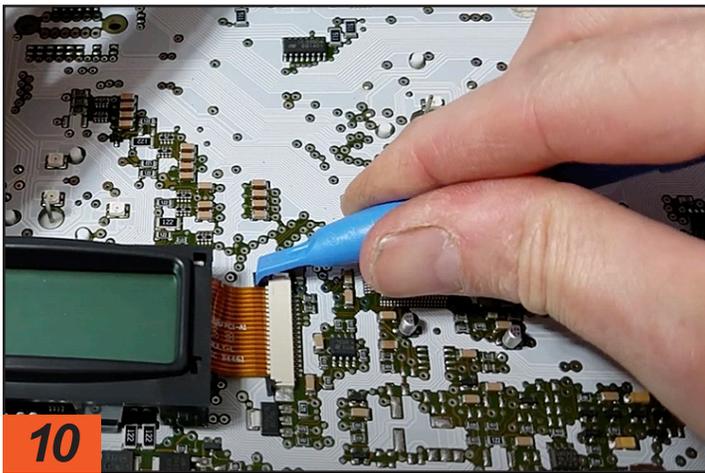
8

After you turn the cluster over, push in the four white tabs and push on the wiring connection plug, the cluster will separate from its housing.



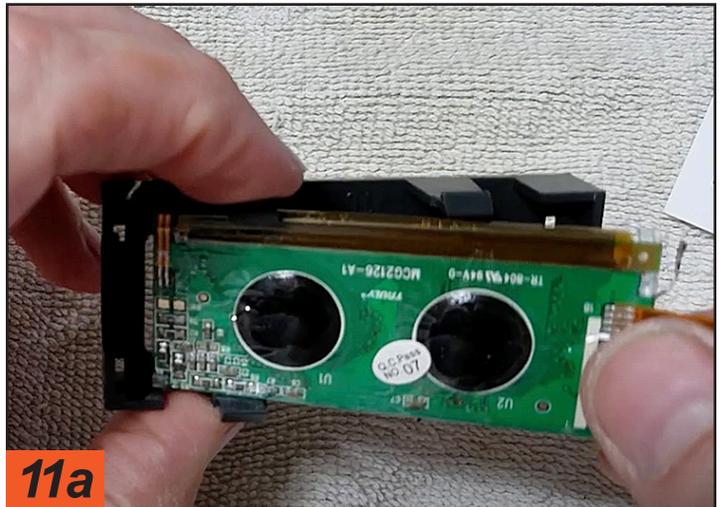
9

The circuit board for the instruments is held against the face by yet more plastic tabs. Release them by pushing on the tab as you gently lift on the board.

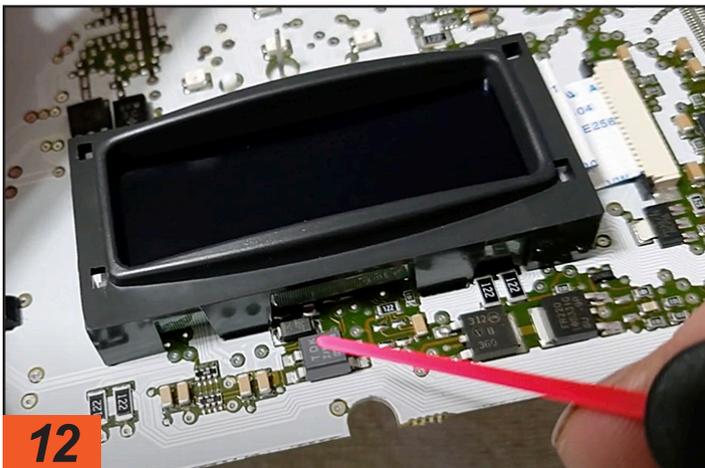


10

The screen housing also is held in place by four plastic tabs, which will have to be released. The screen housing is further attached to the circuit board by a “zero insertion force” wiring ribbon socket on one side. Carefully push the tabs out to release the ribbon from the connection, then remove the bezel.

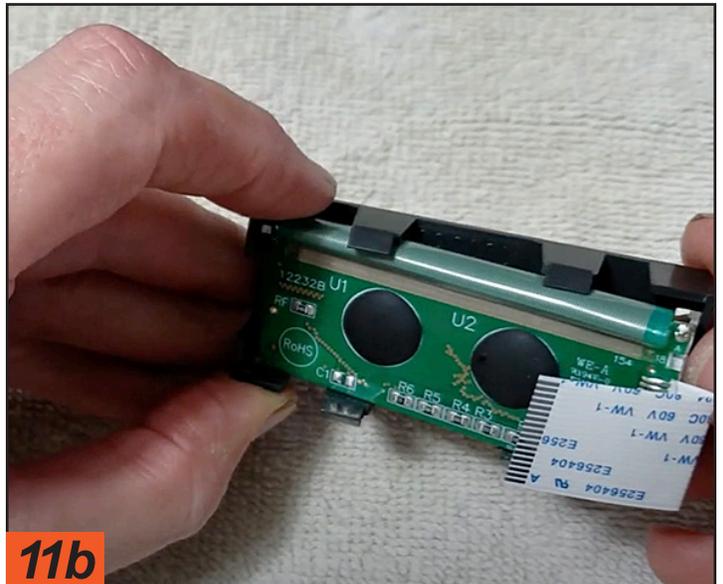


11a



12

Line up the ribbon with the socket and carefully slide it into place; when installed correctly, you will no longer see the contact points on the ribbon. Lock the plastic tabs into place (you'll need to carefully press them in at the same time). When reattaching the bezel to the circuit board, be careful not to damage other components on the circuit board, particularly those directly under the bezel.



11b

To release the old LCD screen from the plastic bezel, bend the corners of the bezel slightly to separate it. Carefully remove the protective plastic from the new screen — being careful not to touch the screen — and snap in the new screen by aligning the white ribbon with the corresponding opening in the bezel, then press it into place. You will feel (and hear) it snap into place.



At this point, the screen installation is done; now everything simply needs to be reassembled. Start by laying the fascia face-down on the towel and pressing the circuit board back into its holder, then install the board into the case. Caudill used a micro-fiber towel to guard against getting fingerprints on the face.



Reinstall the gauge needles — which, Caudill noted, “go in a lot easier than they came out.” Make sure you don’t feel any drag on them when turning; Brazel’s recommends keeping a fingernail’s width of space between the cap and the face so it won’t drag on it.



Before reinstalling the completed instrument cluster into the dash, it needs to be checked to ensure the gauges are working correctly. Reattach the battery connections, then turn on the ignition without starting the engine. Press and hold the “mode” button for 20 second, then release. The LCD display will yield a number of options, from adjusting the screen contrast and restoring default settings to engine hours and max vehicle and engine speeds. Scroll to “cluster diagnostics,” then “gauge test” and it will automatically test each gauge for correct operation at 0%, 50% and 100%. If everything lines up correctly, disconnect the battery again and reinstall the instrument cluster, taking pains to ensure you don’t accidentally pinch any wires when you lower the dash back into place. **RVE**

RV

ENTHUSIAST

NORTH AMERICA'S PREMIER HOW-TO RV RESOURCE

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

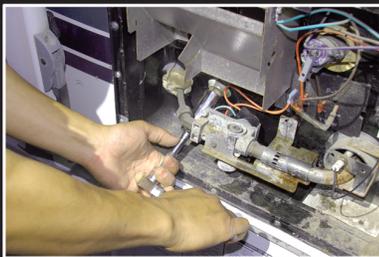
RV Enthusiast magazine was developed to take the mystery out of RV maintenance, repairs and upgrades, as well as providing how-to tips to make RVing better. We get it: Things happen as time and untold miles of bad roads will take their toll on your RV. But we also know that you don't have to be a mechanic 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!

If you like what you see, don't miss an issue. It's less than \$1 a month! Go to our website — www.rventhusiast.com — click the "subscribe" icon risk-free and simply follow the prompts.

Coming in the May issue:

Camping season may be upon us, but it's never too late to add to your collection of "must have" tools as a safeguard against problems. In the May issue, we'll outline how to build the ultimate roadworthy "garage" — including tools and spare parts to carry along with storage-compartment organization tips. We'll also show how to replace all the exterior seals on a motorhome and continue our Off-Grid series with a look at portable power stations. Don't miss it before you hit the road! — **Available May 20**



Rapid Cooling



Modifying an existing rooftop air-conditioner with a RV Airflow System's patented foam plenum insert takes cold-air velocity to a new high — and inside temperatures to a new low.

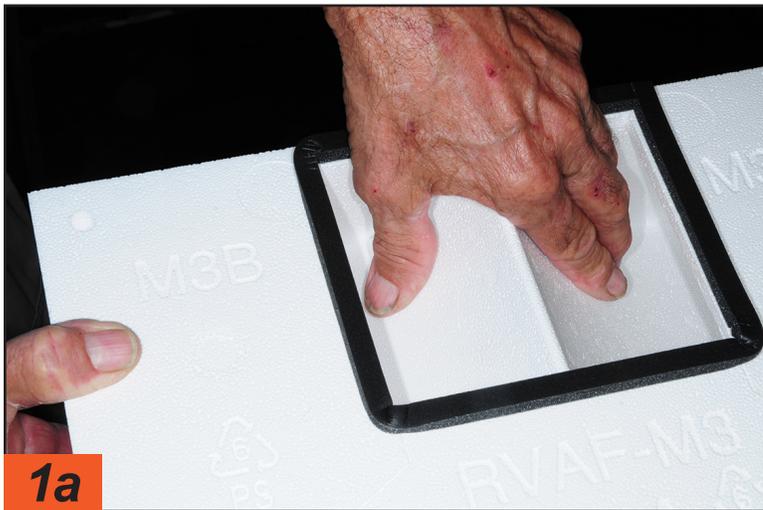
By Bill Gehr / Photos by Bob Livingston

Summertime brings hot weather — and most RVers venturing into regions where the temperature soars must rely on their rooftop air-conditioners to be comfortable. Most RVs have one or two air-conditioners, and many are now outfitted with three to keep the inside temperatures cool. While the Btu ratings of these air-conditioners suggest that they are capable of getting the job done, inefficient mating to the roof ducting can compromise the flow and cooling capacity. RV Airflow Systems (rvairflow.com) has designed an aftermarket modification kit that improves efficiency dramatically, while taking the noise level down substantially.

I fight the heat frequently with my 36-foot fifth wheel, where I elected to have



The RV Airflow Systems kit is fairly simple and includes the AFS foam insert, two duct inserts, adhesive-backed foam gaskets, two Styrofoam spacers (not shown) and some aluminum tape.



1a *The unique design of the AFS foam distributes the air more efficiently through the air ducts. Air is ramped right into the duct, which improves air velocity without obstructions.*

only one air-conditioner to make way for a power roof vent in the bedroom to exhaust the hot air when boondocking. In an attempt to improve air flow — in an admittedly underrated system for the size of the fifth wheel — I modified the plenum with 1-inch waterproof foam to force more cold air through the ducted ceiling registers. This upped the ante quite a bit, but there was still room for improvement. As I realized afterward, I should have gone with the RV Airflow Systems solution in the first place — and probably still will.

To understand how the product works, you also need to understand what happens when you turn on your air-conditioner. Basically, when the fan blows the air through the condenser into the plenum straight down onto the air-shower plate, it cavitates and swirls as it tries to force the cold air into the duct openings. Physically, this creates a problem, and the resulting loss of pres-

sure is tremendous. The other problem is the return air chamber, which is way too small and not filtered properly, so it does not have enough return air volume through the evaporator and limits the amount of discharged air. But there's also yet another issue with ducted rooftop air-conditioners: If the divider between the plenum and the return air is set too far back, airflow will (again) be diminished. Combine the inherent inefficiency of mixing cold air with heat radiating through the roof and into the very ducting that has to distribute air to the other end of a fifth wheel and you can see how maintaining cool inside temperatures can be challenging.

I guess you could say that many systems really need to be redesigned. In fact, some of the newer RVs are getting away from ducted ceilings and using a direct discharge, which manufacturers claim is more efficient. For those of us with older RVs, installing the RV Airflow

Systems foam changes the paradigm.

Making the Conversion

When I opened the box with the RV Airflow Systems kit, I could see that it was quite simple to install. For this project, two kits were ordered for installation in a 2017 Grand Design Solitude fifth wheel that was equipped with two Coleman Mark 8 series air-conditioners, both rated at 15,000 Btu. This 38-foot fifth wheel is located in Palm Springs, California, one of the hottest places in the United States. The RV Airflow Systems AFS foam is designed to be installed by a do-it-yourselfer and will probably take around 1 ½ hours. The instructions are easy to follow, and the company offers a comprehensive video on its website that dispels any mystery to the installation.

The custom-designed, convex AFS expanded polystyrene foam at the heart of the system allows considerably more

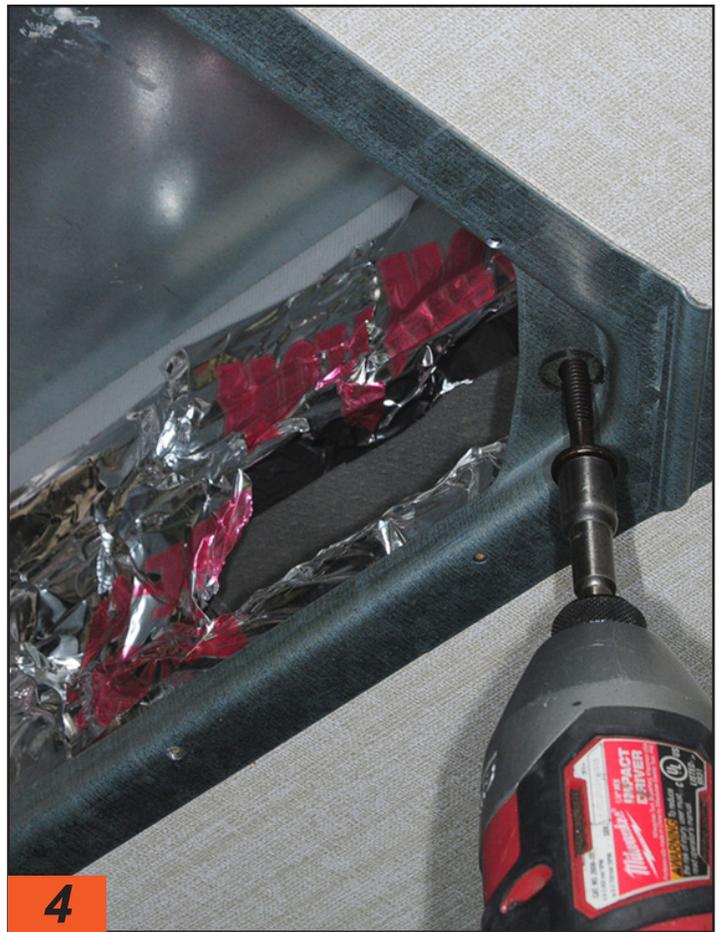


2a *It only took a few minutes to remove the ceiling assembly and air-shower plate under the air-conditioner. The air-shower plate was discarded.*



3

The air separator between the two cavities was installed incorrectly, allowing the cold air to be sucked into the return air chamber. Basically, the unit was recirculating the cold air, limiting the velocity through the ducting.



4

Four lag bolts were removed from the mounting plate and set aside. These bolts hold the air-conditioner to the roof.

airflow across the evaporator, which in turn increases air volume into the plenum — boasting efficiency improvements of 40 to 50%, and as a bonus reduces some of the fan noise emanating from the air-conditioner ceiling assembly/air-distribution box (ADB). The only drawback is the elimination of the “quick cool” feature built into the ADB, which is inconsequential if you only have one air-conditioner and need to distribute the air throughout the interior.

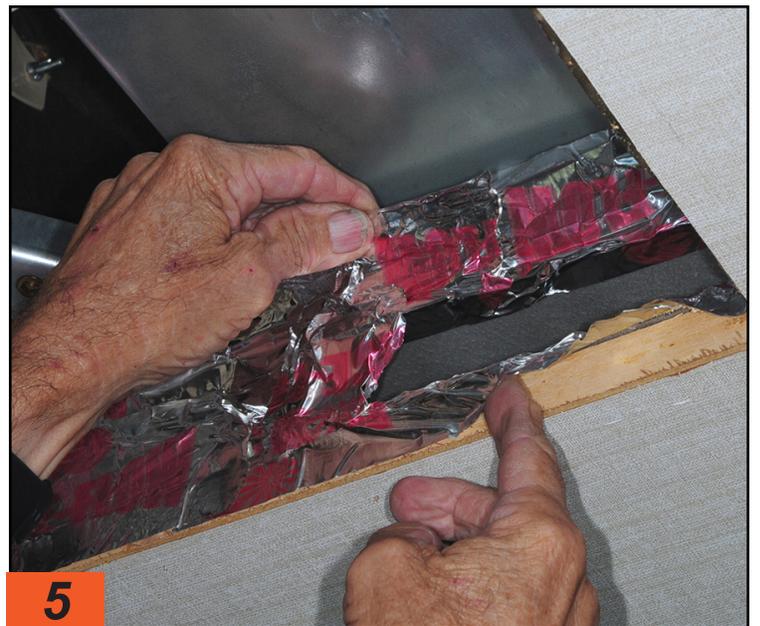
Once the ADB was dropped and the air-shower plate removed, it was noted that the divider between the return air cavity and plenum was never securely attached and air pressure had been pushed halfway into this cavity. This caused the return air to pull in part of the cold air from the plenum, creating far less efficiency. Had this fifth wheel been in a humid climate, quite a bit of frost and ice would have built up on the evaporator. The separator was discarded for this installation, so this issue was solved.

Next, the plenum area was prepped for the AFS unit by removing any loose foil tape in the plenum area. You'll also

have to remove and discard any factory-installed duct inserts, if so equipped. The AFS unit was test fit by gently placing it up into the plenum — being careful not to damage the foam — and the two rear lag bolts were inserted temporarily through the foam. They threaded easily, so it was not necessary to move the air-conditioner upper unit to center the holes (sometimes the upper unit can be installed off-center from the factory). If an adjustment is necessary, remove the AFS foam and gently lift the air-conditioner; when the seal releases, you will be able to move it side-to-side or front-to-back.

After confirm-

ing the fit, the AFS unit was removed in order to install the duct inserts; the kit comes with 1-inch duct adapters, which we needed for this project after measuring the duct opening from the top of the mounting bracket and from the top of the plenum duct. The adapters were



5

All the original aluminum tape from both cavities must be removed and discarded. New tape was applied later in the process.



The AFS was test fitted into the cavity to determine if any trimming was necessary. No trimming was needed for this installation.

sealed with aluminum tape on all sides. It's possible to trim the duct adapter, if needed, with standard tin snips, making sure the sheer edge is to the rear after dry fitting. We had to make a few minor modifications because of the location of the ducting. Once that was done, the strip of foam gasket was applied around

each duct insert, making sure they would be as tight as possible.

Permanently installing the AFS unit is accomplished by starting with a 45-degree angle on one end, so it can slide easily up against the top of the plenum and snugly to both duct inserts. In this case, the AFS unit was a little too

tight, which had the potential of damaging the foam if forced in place. A piece of thin plastic was used to temporarily shim the other side of AFS

unit, which allowed it to be pushed in place easily. If plastic is not available, folded instruction sheets can also be used; just make sure to gently remove the plastic/paper.

Finally, the lag bolts were pushed through the mounting plate and AFS foam and tightened. It's best to start with one bolt in one corner; this is much easier with two people. The three remaining lag bolts were then inserted. These bolts are typically much longer than necessary so a socket-and-ratchet or a drill motor will speed up the process to pull the mounting plate up. Just be sure that you do not over-tighten the lag bolts; they only need to be tightened to 20 in.-lb., which is roughly five or six turns once the bolts are snug. You can tighten them a few more turns, if necessary — again, just make sure you don't damage the AFS foam. Basically, the upper unit seal on the roof must be tight enough to prevent water leakage.

Before re-installing the ceiling assembly/ADB, the air-shower plate was discarded. On some models, there may be a few dog ears on the ceiling plate that will need to be flattened to prevent damage to the AFS foam.

After turning on the air-conditioner, the area was tested for air leaks. Air-conditioning-type aluminum ducting tape was used in several places where air was felt or could possibly result in a leak down the road. Aluminum tape was used to seal all the edges. This is a judgment call after checking out the installation.

Right from the get-go it was obvious that airflow was stronger than before the installation of the AFS foam modi-



Measurements were taken at the ducting inlet on both sides to determine if the duct inserts needed to be cut. Since the trailer duct openings were so close to the end of the opening in the ceiling, the plastic inserts were cut to fit.



Once the duct insert was cut, it was test-fitted into the ceiling duct opening. The adapters were needed to make them fit properly.



9a



9b

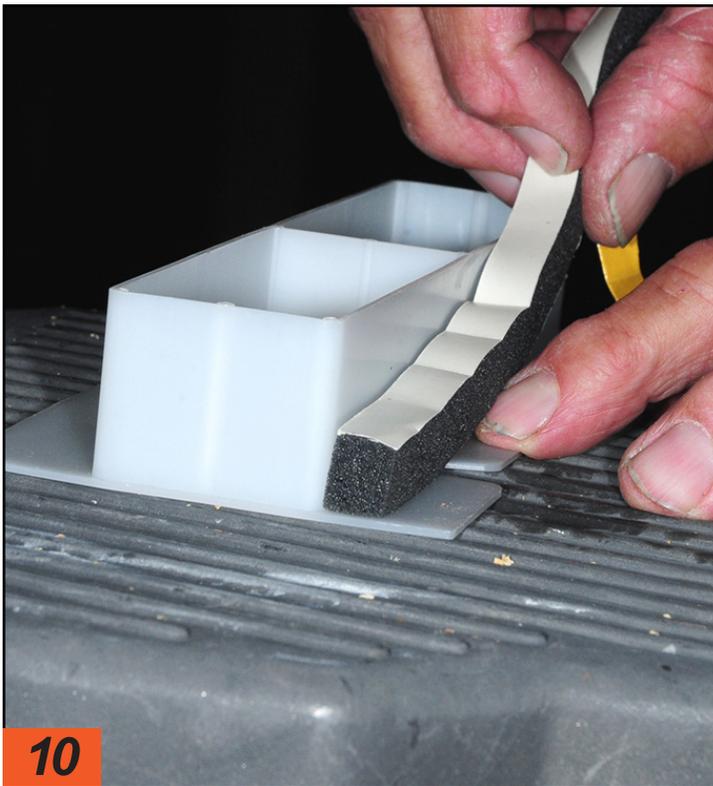
It's important that the AFS foam and the duct inserts line up properly. Measuring and modifying the duct inserts allows for a very close fit to ensure that the highest possible volume of air will flow through the roof ducting.

fication — and it was quieter. Both the rear and front air-conditioners were checked with a decibel meter before and after the installation. At the ADB, noise level was reduced from 83.5 to 76.3 decibels. While sitting on the recliners in the living room, the noise level went from 69 to 63 decibels. Lying in bed, the noise level from the bedroom air-conditioner was lowered from 69.4 to 68.2 decibels.

Temperature reduction was also impressive. At the beginning of the test, the outside temperature was 81 degrees; inside, the living room was 87 degrees F and the bedroom 91 degrees F. After running the air-conditioners for 21 minutes, the bedroom temperature dropped to 79 degrees F and the living room was at 78 degrees F.

Most impressive, however, was the aforementioned increase in airflow.

While the company claims improvements of 40%-50% on most conversions, we had no way to really test this other than seat-of-the-pants, but it was immediately noticeable. For an investment of \$180 for each air-conditioner and a couple hours of time, the addition of the RV Airflow Systems AFS foam insert can easily substantiate the company's claim of "it's like having a second or third air-conditioner."



10

Adhesive foam tape was applied to the duct insert flange before installing permanently into the ducting opening in the ceiling.



11

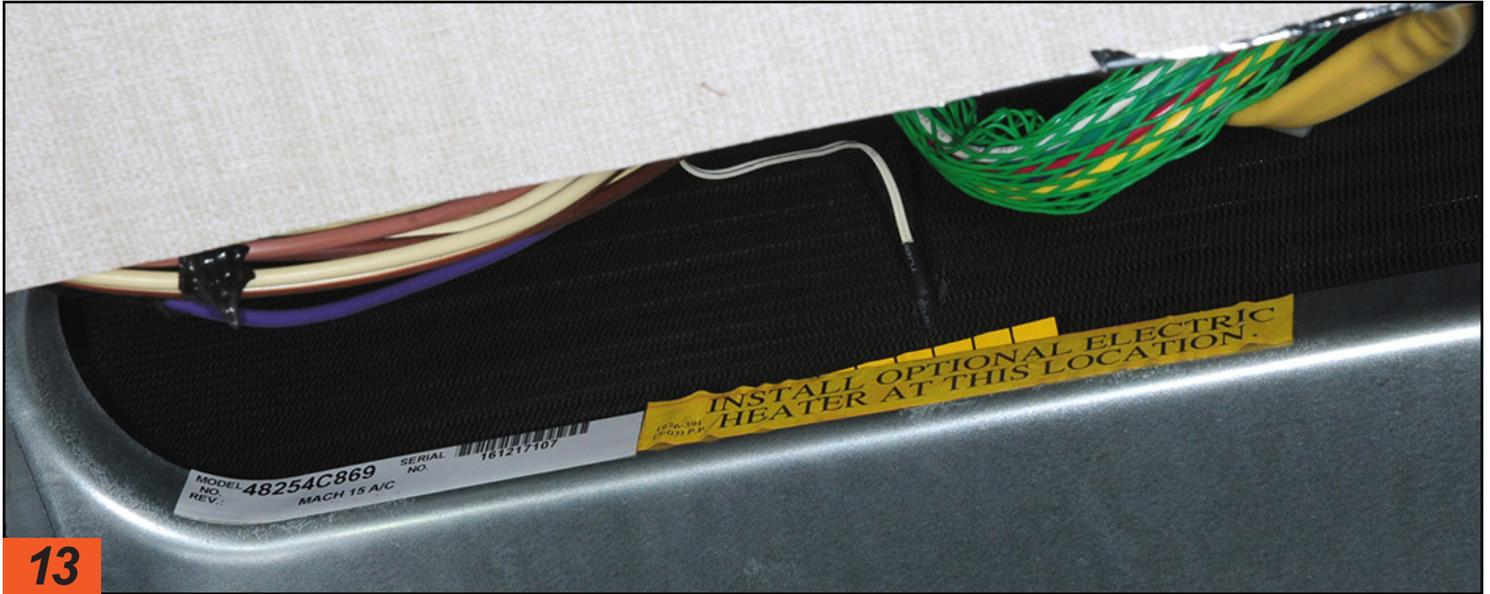
After installing the duct inserts, the surrounding area was measured to cut strips of aluminum tape. While the company provides some aluminum tape, another roll was purchased ahead of this project to make sure there was enough to thoroughly seal all potential air leaks.



12a

12b

Amazingly, there were many places where air could leak, so the taping process is critical to preserve efficiency. Here, the areas around the duct insert were taped liberally; this is one circumstance where more is better. Make sure the tape is smooth as possible.



13

Before finishing the project, the wiring was cleaned up in the return-air cavity, allowing for less obstructed airflow.



14a

14b

The installation of the AFS foam starts at a 45-degree angle being careful to avoid damaging the foam. There are no fasteners for the foam, which is press-fit into the opening. Here, a thin plastic cutting board was used as a shim to help guide the foam past the duct inserts. The plastic worked perfectly, but in a pinch the installation instructions can be folded in half to facilitate this process. Just remember to remove whatever shim is used. Once seated, the AFS was sealed with aluminum tape (not shown).

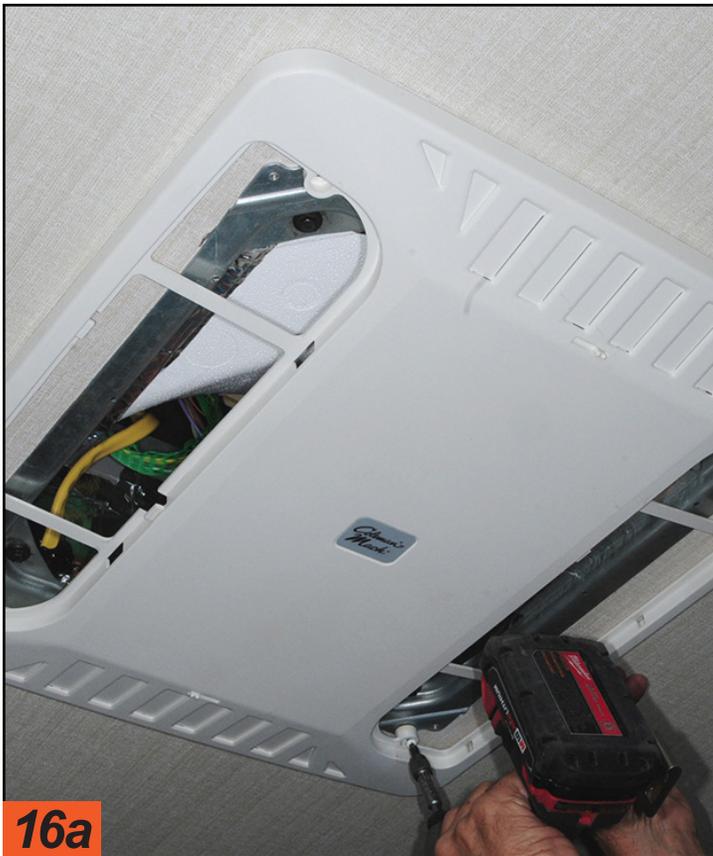


15

Here, the holes in the mounting plate are checked to make sure they line up with the AFS. If the manufacturer did not get the mounting plate centered, the upper air-conditioner unit will have to be lifted and adjusted slightly.



If the air-conditioner(s) is several years old and has not been serviced, I recommend doing so before the installation of this product. If the evaporator and a condenser are dirty, efficiency will have been further diminished before the installation of the new parts.



16a



16b

The ceiling assembly was re-installed without the air-shower plate. Before re-installing the filters into the ceiling assembly, they should be cleaned with warm water and a mild soap. Make sure they are dry before running the air-conditioner. **RVE**

RecPro Acquires ‘World’s Fastest Motorhome’

Last issue, if you recall, we brought you word of this 1977 GMC Kingsley motorhome, which — after heavy modifications to its interior, exterior and drivetrain — set a new Class A motorhome land speed record with a 122 mph run at the Bonneville Salt Flats.

Now, we’ve received word that the haulin’ Jimmy has been purchased by RV aftermarket supplier RecPro — with an eye toward pushing that record to new heights and, perhaps, claiming the outright speed record for motorhomes, a 141.3 mark set by Simon Robins in a (much smaller) Fiat Doblo camper van.

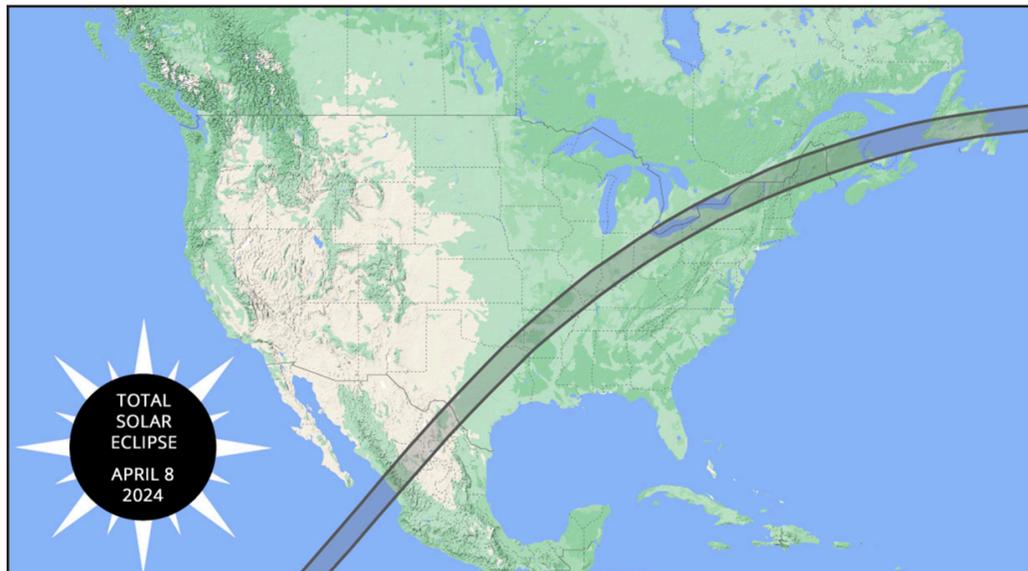
According to a report in *RVBusiness*, the company plans to unveil a “new and improved” MoHo (the motorhome’s chosen monicker) by late this year. Planned upgrades include new graph-



ics, improved aerodynamics and further drivetrain upgrades. It sounds like MoHo may be taking RecPro’s focus on

“lightning-fast delivery” to new heights. Want to follow along? Visit [Recpro.com](https://www.recpro.com) for more information.

2024 Eclipse Fueling Early Surge in Campground Reservations



This map, courtesy of nationaleclipse.com/maps.html, shows the track the eclipse will make across much of the continental United States.

offer front-row seats to this special event, and [Campspot](https://www.campspot.com) — the leading booking site and app for private campgrounds — has noted a corresponding surge in searches and demand. The company reports that searches are up nearly 120% across all U.S. states for stay dates including April 8th, 2024 — but for those states in the full path of totality, searches on Campspot for 2024 stay dates including April 8th are up more than 700% year-over-year.

To help travelers experience the eclipse first-hand, Campspot has created an [eclipse booking page](#) with tips, FAQs, and recommended locations. Travelers are encouraged to plan ahead and make reservations early to enjoy this once-in-a-lifetime experience that will be remembered for years to come. **RVE**

If you haven’t heard about it yet, a 2024 eclipse is going to carve its way across the northern hemisphere next April 8 — and a number of states look to be prime viewing locations. If you’re considering making it a weekend to remember, though, you’d best jump on it: Predicted by some travel insiders to be the biggest mass travel event ever in the United States, campgrounds are already reporting heightened reservations for the weekend.

Campgrounds in the path of totality

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READY TO TOW



Setting up a weight-distributing hitch does not have to be hit or miss. Installing an Equal-i-zer Sway Control Hitch will keep the stomach butterflies in check when adverse weather and/or big trucks impact stability.

By Bob Livingston / Photos by the author

Towing travel trailers is wildly popular these days. Actually, more travel trailers are built every year than in any other segment of the RV industry. That makes sense, since just about anything on wheels these days can tow a trailer. In this arena, though, the “half-ton” pickup has become a staple. Heck, the best-selling vehicle in the country is the F-150, which has become a super capable tow vehicle, with tow ratings up to 14,000 pounds.

The Ford was, in fact, a friend’s choice of trucks when he decided that he needed a smaller RV to travel during the summer. In this instance, the truck was purchased first — he was smitten, perhaps, with all the bells and whistles

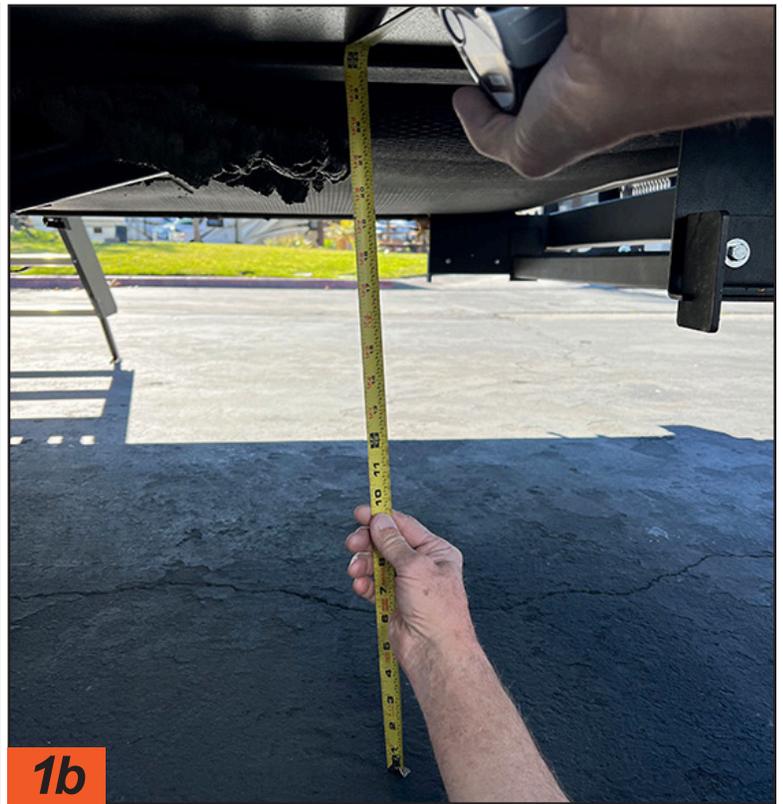
Ford has to offer for this model pickup. Almost \$80,000 later, the shiny red F-150 was sitting in his driveway. And, it was loaded with top-notch towing features — except for the proper mirrors, which was puzzling since my friend made it clear to the salesperson that he was going to tow a trailer,



The Equal-i-zer Sway Control Hitch combines weight distribution and sway control into one patented device. For this project, the 14,000-pound-rated outfit with a 1,400-pound hitch weight capability was chosen for the Ford F-150 towing a 29-foot trailer. Included with the hardware package was the hitch head, shank, spring arms and necessary brackets for mounting to the trailer A-frame. The 2 5/16-inch ball was installed at the factory.



1a



1b

Before assembling the hitch, the trailer must be on a flat surface and leveled by measuring the distances from the frame to the ground in front and back.

but they were a simple (albeit expensive) addition afterwards. The search for a trailer ended with a 29-footer that maxed out the limits of the truck and, as such, required precise equipment to hitch it up. That's when we turned to the Equal-i-zer Sway Control Hitch (equalizerhitch.com).

Stability on the road was a critical factor, considering the total weight of the truck and trailer (at 11,220 pounds) was a sizeable load for the truck, so it was going to be important to make sure any possible sway could be mitigated. And the 1,220-pound hitch weight was also challenging for the truck, leaving little room before potentially overloading the rear axle. It was going to take thoughtful loading and the equalizing hitch to keep things on an even keel. Obviously, when setting up a towing combo like this one, spending time at the public scales is a necessity.

Considering the discovered weights at the public scales, we elected to order the Equal-i-zer set-up with a 1,400-pound maximum hitch weight and a maximum trailer weight of 14,000 pounds (part number 90-00-1400). The kit comes with the ball mount as well as spring arms and brackets for the trailer A-frame, which are instrumental for providing sway control. The 2 5/16-inch

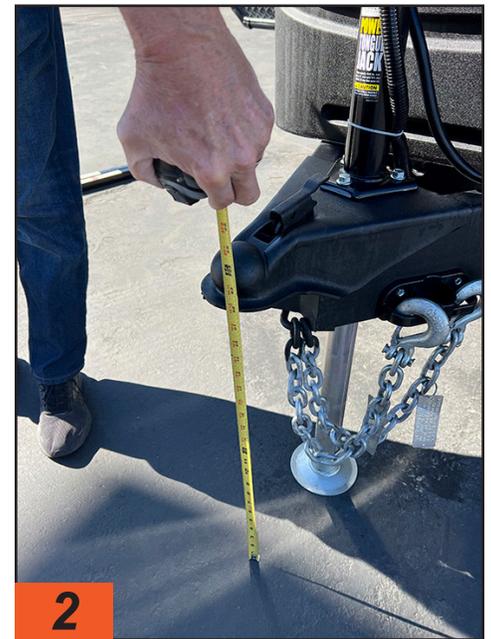
ball was installed and torqued to specifications at the factory. Total retail cost: \$945.

While the patented hitch system does a credible job of transferring hitch weight from the coupler to the truck and trailer axles, its "claim to fame" is its four-way sway-control capability, which is superior to a simple friction device mounted independently between the ball mount and A-frame. With the Equal-i-zer system, friction is applied by downward pressure from the trailer A-frame combined with upward pressure from the spring arms connected to the proprietary brackets mounted on the A-frame. This creates two points of rotational friction at the hitch head (ball mount) by pinching the spring arm sprockets. The other two points of friction are created by the loading of the spring arms on the L-brackets mounted on the A-frame. Together, these four points of friction effectively combat lateral movement (yaw or sway) caused by environmental conditions and passing large vehicles that move a lot of air.

Setting Up the Components

Plan on spending a few hours assembling the parts and making the adjustments. The components are relatively heavy but can be handled easily

by do-it-yourselfers. Before bolting any of the parts together, the trailer should be parked on a level surface and measured, front and back, from the frame to the ground to ensure it is level. The first step was to mount the hitch head to the shank after sliding it into the truck's receiver and pinning in place; the top of



2

Once the trailer is level, a measurement is taken from the top of the A-frame coupler to the ground. This figure will be needed to establish the proper position of the hitch head when mounting on the shank.



3

The shank provides adjustability for the hitch head (also called a ball mount). It can be slid into the 2-inch receiver in an up or down position, depending on the distance from the coupler to the ground.

the ball should be at the same height as the top of the trailer coupler or 1-inch higher. At the outset, the company suggests adding six washers to the spacer rivet before mounting the hitch head to the shank to establish a beginning angle; this will likely change after hitching up the trailer.

Once the 3/4-inch bolts are placed to establish the proper hitch head height, the nuts are tightened enough to allow for loosening to adjust when establishing proper weight distribution. They were ultimately torqued to

320 ft.-lb., which required a pro-grade torque wrench; you'll also need a 1 1/8-inch socket and ratchet handle and a 5/8-inch socket or box-end wrench to tighten the angle set bolt.

The second part of the hardware installation was mounting the spring arm brackets on the A-frame. Again, measurements established mounting locations on both sides, which will be 27-32 inches from the center of the A-frame coupler. There are specific requirements for installing the link plates and L-brackets, and the company warns

against using an impact wrench for this step. The final position of the L-brackets will take some experimentation and more measuring.

Traditionally, hitch installers took a very basic approach to setting spring arm (bar) tension with the use of a tape measure. The Equal-i-zer instruction booklet provides an excellent process for determining the proper percentage of weight distribution, which is between 50% and 100%. Following these instructions will ensure that the front of the tow vehicle meets the proper weight distribution criteria to prevent control issues while towing. Adjustments can be made by adding/removing the aforementioned spacer washers and/or raising/lowering the L-brackets.

While this method has worked for years, Equal-i-zer has raised the bar substantially by introducing its On-Target Towing Tool, which eliminates guesswork and allows for more critical adjustments (see sidebar).

Other than making sure all the bolts are torqued to specifications (provided in the instruction booklet), the only other maintenance is to keep the components clean and lubricate the surfaces of the arm sockets that rub against the top and bottom of the hitch head. You can use multi-purpose or bearing grease; Equal-i-zer's high performance lubricant (part #91-00-4250) is also available.

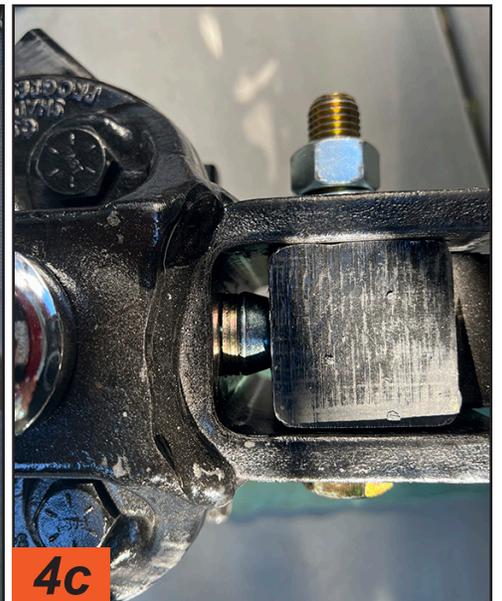
Hitching and unhitching is straightforward, although after pinning the spring arms into the hitch head sockets, they were a little stiff and difficult to move at



4a



4b



4c

A spacer rivet is used to adjust the angle of the hitch head, which was instrumental when correcting the weight distribution percentage later in the process. The company suggests starting with six washers, which are stacked on the spacer rivet before the hitch head is bolted to the shank.



5a



5b



5c

Two 3/4-inch bolts, along with the flat washers, lock washers and nuts, are used to mount the hitch head to the shank. The bolts were torqued to 320 ft.-lb. once the proper ball height was established. This required a hefty torque wrench, something that most professional mechanics have in their toolbox. If you don't have this level of torque wrench — or don't know anyone who does — consider borrowing one at an auto parts store that offers tool-loan services. You'll also need a 1 1/8-inch socket and suitable wrench to tighten the bolts/nuts. Make sure you tighten the angle set bolt to secure the rivet spacer before final tightening. This bolt required a 1/2-turn once it was set against the shank.

first; after a short while, they loosened up. The socket bolts can be torqued to specifications if needed. Since we were using the 14,000-pound-rated hitch, lifting the spring arms required raising the A-frame while coupled to the ball with the electric jack to remove much of

the pressure; the Snap-up lever helps lift the spring arms onto the L-brackets. Once in place, the L-pins are inserted to prevent the spring arms from jumping off the brackets.

Testing the fruits of our labors afterward, we were more than pleasantly

surprised at how well the Ford F-150 handled the big 29-foot travel trailer. There was virtually no sway at highway speeds and passing big trucks created no stability issues. The results certainly squelched the naysayers who were "certain" that towing a trailer of this length would "pucker-up" the driver. Obviously, loading will have to be managed to comply with Ford's axle and payload limits, but other than consuming more fuel than expected (8 mpg while towing), the F-150 was comfortable and safe on the road once the new mirrors were installed.

By the way: Potential buyers be warned. Ordering towing mirrors from the factory is much cheaper than the \$1,820 price tag for the parts after the fact. We're not sure how Ford can label the towing package as "heavy duty" and not include towing mirrors, but the lesson was learned for this owner.

Without question, the Equal-i-zer hitch system is a game-changer when it comes to towing safety and ease of use. The company, Progressive Mfg. Inc., backs the hitch (all components are made in the U.S.A.) with a limited lifetime warranty to the original purchaser — and provides excellent support materials to customers. Teamed up with the ultra-luxurious F-150, the towing experience rises to a new level of comfort.



6

The next step was to mount the link plates and L-brackets to the trailer A-frame. Positioning was accomplished by measuring the distance from the center of the coupler to a point on the A-frame that was 27-32 inches apart.

Taking the Guesswork Out of Setting Up a Weight-Distributing Hitch



Equal-i-zer's OnTarget Towing Tool is a game-changer when it comes to setting up a weight-distribution hitch for the first time or when replacing the truck and/or trailer. It uses laser measurements at the tow vehicle's front wheel well to electronically calculate the proper percentage of weight distribution. A piece of painter's tape was stuck on the wheel well to maintain consistent positioning of the OnTarget device during the three-stage measuring process.

Until recently, adjusting a weight-distributing hitch was a totally manual operation. Equal-i-zer's OnTarget Towing Tool changes the paradigm to favor the do-it-yourselfer when setting up a new hitch or adjusting for towing a different travel trailer. It uses



A target reflector card was placed on the ground so that the red laser light can hit the "target." Three measurements were taken by pushing the Read button once the laser was targeted. The first one is taken with the trailer unhitched from the trailer; the second reading is taken with the trailer on the ball and full hitch weight (no spring arms); the last measurement is with the spring bars loaded. Once the third measurement is recorded, the device automatically calculates the weight distribution percentage and displays the number of the screen.

a laser beam to take three measurements at the front wheel well and then calculates the proper percentage of weight distribution.

Setting up the Equal-i-zer hitch for towing this 29-foot travel trailer with a F-150 required precise adjustments to keep the truck and trailer level while providing the right amount of weight distribution. This combination presented a few challenges because the hitch weight of the trailer was close to maxing out the truck's rear axle and suspension. It was critical that the front end was loaded correctly, without under-distribution of hitch weight, which would create stability problems while towing.

The OnTarget device is exceptionally easy to use and provides accurate percentages of weight distribution by taking the three aforementioned laser measurements from the edge of the front wheel well to the ground where a target reflector is placed. To find the same spot each time, we placed painter's tape on the fender.

We first made sure the truck and trailer were on flat, level ground. The first measurement was taken with the truck disconnected from the trailer. After clearing the device, pushing the Read button revealed a number on the screen. The OnTarget device at this point was left on without touching any other buttons and the trailer was then attached to the truck with all the hitch weight on the ball — no spring bars and the jack was retracted. A second measurement was taken at the front

wheel well in the same location and a second number was revealed on the screen.

The last step was to load the spring arms on the L-brackets and retract the jack — in other words, set up in the ready-to-tow position. A third measurement was taken and the number appeared on the screen. From here, the OnTarget device automatically calculated the percentage of weight distribution. If it's between 50 and 100%, you're good to go. In this case, the number of spacers in the hitch head and the L-brackets were adjusted three times to reach 52%, which turned out to provide excellent handling while towing the trailer.

The device can also be used to laser measure when leveling the trailer in a campsite or to determine clearance for the slide-out, among many needs to establish distance without having someone hold the dumb end of a tape measure.

After using the OnTarget Towing Tool, I can't image working with hitches without it. It sells for \$79.95 and, like the hitch, can be purchased from online/brick and mortar sellers of RV parts and Amazon.



For this installation, the hitch was adjusted until the weight-distribution percentage was between 50 and 100. Here the 52% was within parameters and provided sway-free towing with the F-150. The OnTarget tool can also serve as a laser measuring device, which can come in handy when leveling the trailer in a site or determining if there is enough clearance for slideout rooms.



7a



7b

When installing the link plates, there must not be any gaps between the trailer frame and bolts. The position of the link plates can be changed to accommodate the amount of lift needed to set the spring arms and maintain the proper weight distribution percentage. Once the final position is established, the link plate bolts were torqued to 65 ft.-lb. and the L-bracket bolts to 75 ft.-lb.



10

A few hitch adjustments (rivet spacers and L-bracket position) resulted in a set-up that was just about perfect. Both the Ford F-150 and the 29-foot trailer were level and handling on the road was impressive — and safe.



8

It's best to lift the coupler and hitch head with the A-frame jack to release enough pressure to secure the spring arms on the L-brackets. At first the spring arms were somewhat difficult to swing out when pinned into the hitch head sprockets, but after a few trips, this process became easier. A provided Snap-up lever helps lift the spring arms over the L-bracket.



9

The Equal-i-zer hitch provides a patented, "4 Point Sway Control" configuration whereby friction against uncontrolled lateral movement (yaw or sway) is used to maintain a straight-ahead posture. The two sprockets in the hitch head and the movement of the spring arm ends on the L-brackets (under pressure) provide the necessary sway control.



11a



11b

The only fly in the ointment was the obvious omission of towing mirrors as part of Ford's heavy-duty package. The smaller stock mirrors did not extend far enough to see past the end of the trailer. Ford's towing mirrors can be extended from the door controls and provide plenty of visibility along the sides and rear of the trailer. While there are aftermarket mirrors that will fit the F-150, the factory towing mirrors can be connected to all the power, safety and camera features. They also fold electronically when parking the truck. **RVE**

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