

Tested & Rated!

10 Top Products for Removing 'Bug Splatter'

RV ENTHUSIAST

NORTH AMERICA'S PREMIER HOW-TO RV RESOURCE

June 2022

Keep Cool This Summer!

- *A/C Maintenance Tips*
- *Ducting Airflow Mods*
- *Upgrade to a 3-A/C System*

Plus:

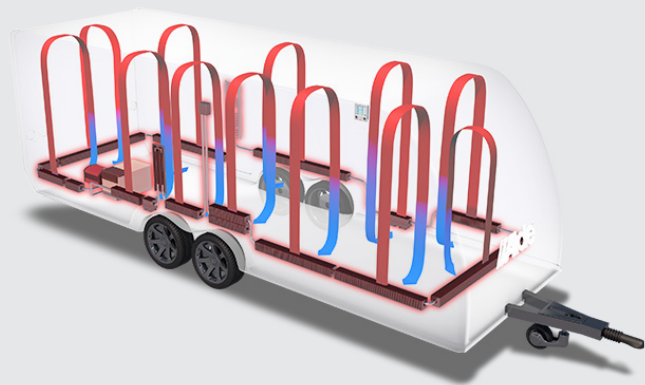
- *The Latest in RV Furnishings*
- *How to Add Internal Tire-Pressure Sensors*



More than Comfort-- Luxury.

The Alde Heating System utilizes hydronic heat and natural convection to warm your RV without fans, creating one of the quietest heating solutions on the market. Not only does the Alde Heating System create a comfortable indoor environment, it also brings additional luxuries to your camping experience including:

- Hot water on demand
- In-floor heating
- Heated towel rails
- Cab heater
- All-season capability



Alde[®]
www.alde.us

RV ENTHUSIAST

NORTH AMERICA'S PREMIER HOW-TO RV RESOURCE

June 2022

Volume 2, Number 6

INSIDE



20

Don't Bug Me

Summer's great — but the same weather that draws RVers to the outdoors is prime season for insects and, well, their inevitable splatter across the front of our rigs. Unfortunately, removing them can tax even the best cleaners. We tested — and rated — 10 top products for keeping RVs clean of bug residue during and after travels.



28

Air Apparent

Replacing the hard-to-reach factory valve stems in dual rear wheels with Borg extensions civilizes the process of checking and inflating tires. Unfortunately, the factory tire-pressure-monitoring system is attached to the original valve stems. Here's a cool modification to upgrade to extensions and keep the factory TPMS.

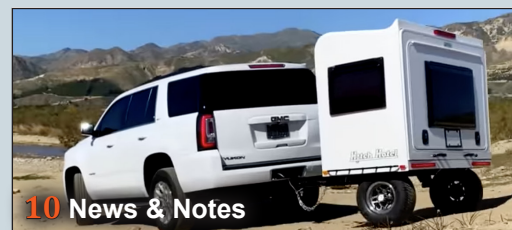


58

RV Furnishings Following Residential Trends

Pet-friendly fabrics, easy-glide seating, even heated towel racks — the evolving state of RV interior comfort continues to ratchet up in a big way. Here's a look at what suppliers are creating and OEMs will be introducing this summer as RV manufacturers look to differentiate their products in a crowded marketplace.

DEPARTMENTS



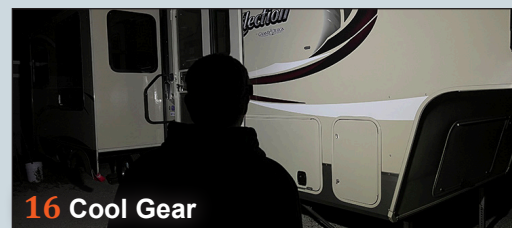
10 News & Notes

Alliance RV, NRVTA partner on education, new ultra-lightweight travel trailers, Winnebago's new accessibility-enhanced Class B — and more!



14 Technically Speaking

Water pressure dropped? Jacks not leveling? Reader queries on these problems, plus advice on amp gauges and lubricating hitch balls.



16 Cool Gear

Wearable headlamps have been around for a long time — but our resident techheads have found one that adds versatility to any repair scene.



19 Publisher's Notes

It's not the cost of fuel that's important — it's how much more it will cost than you budgeted for. Don't let fuel costs keep you home.



On The Cover

Brandon Turner, lead technician at Tim's RV, removes the luau trim from the air distribution box for the old heat pump in preparation for adding new Coleman-Mach A/C units in our project Montana fifth wheel. Photo by Karen Dougherty

56 Advertisers Index

Special Section!



32

Full of Hot Air

The “dog days” of summer scream for relief — and that means air-conditioning. Unfortunately, many RV owners ignore their upkeep until it’s time to flip a switch and expect it to work. Cleaning the rooftop A/C filter, condenser and evaporator will restore maximum cooling — and the process is simpler than you might imagine.



38

Keeping Your Cool

Rooftop air-conditioners oftentimes don’t live up to their capabilities and owner expectations — a situation that has worsened since the inception of ducted air distribution in the roof. This do-it-yourself project to increase airflow will improve efficiency — and drop interior temperatures more quickly.



48

Good Things Come in 3's

If you’ve got a larger rig, you know full well that sometimes even dual A/C units running at peak performance simply won’t get the job done. We modified our project Montana fifth wheel with the new Coleman-Mach three-unit air-conditioning system — along with logical duct repairs — and reaped a big change in cooling efficiency.

EDITORIAL STAFF

PUBLISHER - BOB LIVINGSTON

(805) 320-6909

BLIVINGSTON@RVEMEDIAGROUP.COM

EDITOR - BRUCE HAMPSON

(574) 584-4616

BHAMPSON@RVEMEDIAGROUP.COM

TECHNICAL DIRECTOR

BILL GEHR

(805) 340-5015

BGEHR@RVEMEDIAGROUP.COM

ART DIRECTOR - MIKE ACCUARDI

MACCUARDI@RVEMEDIAGROUP.COM

BUSINESS OFFICE

RV ENTHUSIAST/

RVE MEDIA GROUP INC.

26362 DOUGLAS AVE., ELKHART, IN 46514

ADVERTISING

ADVERTISING DIRECTOR

SUE SEIDLITZ

(805) 816-8759

SSEIDLITZ@RVEMEDIAGROUP.COM

SUBSCRIPTIONS

To subscribe electronically, log onto:

www.rventhusiastmagazine.com, click on

the “subscribe” icon and follow the prompts to add subscriber and payment information.

Alternately, you may also mail to: *RV Enthusiast*

Subscriptions, 26362 Douglas Ave., Elkhart, IN

46514. Subscription rates: Subscriptions for U.S.

and Canada: \$9.99/one year, \$18.99/two years.

Premier membership subscription rates available upon request.

CORRESPONDENCE

Correspondence is invited from subscribers and readers of *RV Enthusiast*. Technical inquiries relating to RV function, maintenance, repairs and/or upgrades should be directed to Technical Director Bill Gehr at the above email addresses. Letters to the Editor should be directed to Editor Bruce Hampson at the above email address.

Personal replies cannot be sent due to the volume of mail received. By forwarding letters to *RV Enthusiast* magazine, the author consents to allow letters to be published at the discretion of *RV Enthusiast* editors. Letters may be edited for brevity and clarification.

AFFILIATE NOTICE: RVE Media Group LLC provides links to vendors and products, such as an Amazon Associates account, for informational purposes, but that may provide a commission if you purchase from that link. We

often label these links with language that provides transparency if the destination is an advertiser, affiliate, or partner. Products are often provided to RVE at little/no cost for editorial testing purposes by vendors/suppliers. Under no circumstances does this affect the results of the test or install as published in *RV Enthusiast*. Sponsored content is identified as such directly on the content.

PRIVACY POLICY: Our complete privacy policy can be found at <https://rventhusiast.com/privacy-policy/>





THOMAS PAYNE[®]
COLLECTION

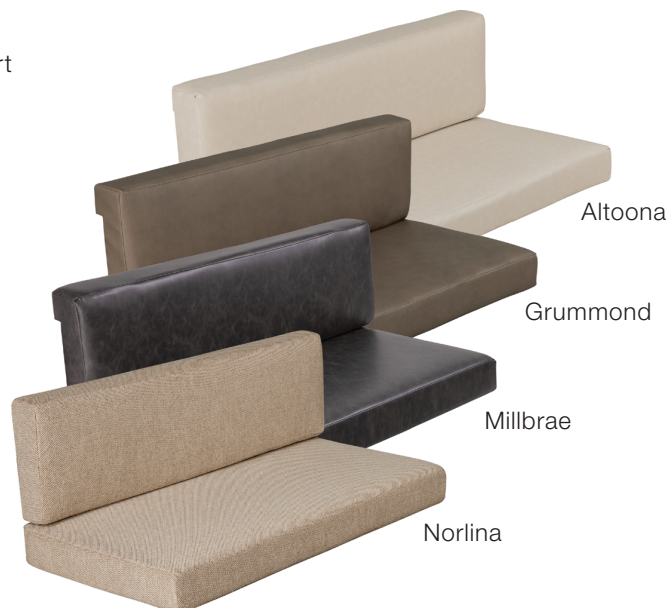
BY **LIPPERT**

REVIVE AND REFRESH YOUR RV INTERIOR

THOMAS PAYNE RV DINETTE CUSHIONS

Whether you're looking for a better color, more comfort or just a simple upgrade, Thomas Payne replacement RV dinette cushions are available in a wide variety of options to revive and refresh your RV interior.

- Premium fabric and foam cushioning built for comfort and durability
- Easy-to-clean materials allows quick wipe-up as needed
- Backed by a five-year hydrolysis warranty (PolyHyde only)
- Our dining cushions are available in four fabric colors to match Thomas Payne furniture, allowing you to maintain a consistent look throughout your RV
- Includes four cushions to make a complete dinette set
- Available sizes: 38", 40", 42" and 44"



WHENEVER, WHEREVER, WE MAKE YOUR EXPERIENCE BETTER.™ | lippert.com

By Bruce Hampson

Yes, Virginia, DEF Is Still Available

Sometimes a little knowledge is a dangerous thing. I was reminded of this recently while perusing one of the numerous RV-centric groups on social media. One post that caught my eye was a somewhat dubious claim that the recent runup in prices of diesel exhaust fluid — DEF — was attributable to possible manipulation by a major stockholder in both a certain railroad as well as a big manufacturer of electric vehicles. Where the author crossed the line, in my opinion, was drawing an inference that pressure was being exerted on one stock in hopes of propping up the other.

Have I lost you yet? Perhaps a bit of background is in order.

When it comes to RVing, there's really no substitute for diesel power. Whether it's a diesel-pusher motorhome or diesel-powered pickup towing a fifth wheel or travel trailer, the torque capabilities of a diesel engine — along with the attendant upgrades to drivetrains and suspensions that are usually part and parcel to diesel powerplants — make it perfect for moving heavy RVs.

Modern diesels require the injection of DEF — diesel exhaust fluid — into the exhaust stream in order to meet current exhaust emissions standards. Unfortunately, the main component of DEF is urea (along with de-ionized water), a byproduct of industrial ammonia production. And the largest exporter of urea is Russia, currently engaged in a war with Ukraine and, consequently, facing worldwide sanctions.

To make matters worse, urea also is a key ingredient in fertilizer, which has skyrocketed in cost due to the pandemic and shipping slowdowns. In fact, China — the previous No. 4 urea exporter — has at least temporarily stopped exporting the chemical in order to meet agricultural demands in its own country.

The upshot is that DEF prices — already headed upwards — will be hammered. According to a report by Mansfield Energy, urea prices were \$600/ton in December — three times the normal rate.

And while U.S. urea imports only hover around 10%, it faces other problems. Last year, Hurricane Ida damaged some of the major Gulf Coast chemical manufacturing plants, creating production and delivery challenges.

Now, according to a report in S&P Global, widespread railroad service problems in the U.S. could possibly sideline 10% of the nation's commercial trucking fleet because of fuel and additive supply disruptions — specifically, DEF.

As the report noted, during an April 27 hearing of the Surface Transportation Board, Pilot Travel Centers CEO Shaameek Konar said the aforementioned disruptions have led to Union Pacific Railroad ordering Pilot to reduce deliveries of DEF or face a shipment embargo.

This is where the social media poster I spoke of earlier may have gone off the rails, in my opinion. Apparently, a bit of digging on his part yielded the information that a major

stockholder in Union Pacific holds a similarly large position in an electric-vehicle manufacturer — and drew an inference that the pushback by the railroad was somehow orchestrated by said stockholder to increase the value of battery-powered vehicles.

That, I think, is a bridge too far.

As it turns out, Pilot Travel Centers was not the only company told to reduce shipments. According to *Michigan Farm News*, Union Pacific gave similar edicts to about 30 shippers to reduce their volume of private cars or face embargo. The problem is simple and has hit virtually every industry: Union Pacific lost a lot of employees during the downturn — according to one source, railroads have reduced their workforces by 45,000 employees in the last six years. Consequently, railroads are behind in their own shipments, leading to the restrictions placed upon private cars in order to catch up.

While the agricultural industry has a fallback of sorts — manure — the same can't be said of diesel-powered vehicles. The only alternative is rising cost. The *Argus DEF Weekly*, a product of Argus Media, pegged bulk quantities (a typical order of about 1,500 gallons) of DEF at Dallas at 60.5 cents/gallon at the beginning of 2021; by early December, it was \$1.59/gallon. A major supplier, SC Lubricants (SCL) announced back-to-back price increases in December and January that, together, put DEF prices “at the highest they have been in history,” noted a report on the company's website.

And, according to SCL, a market update released by Blue DEF noted that every step in the process to bring DEF to market has become more costly, from those incurred by

domestic urea producers to transportation costs to packaging for totes, drums, jugs and bulk. To make matters worse, the industry is dealing with worker shortages and imported prill (a granular form of urea) that has created a shortage of raw materials.

You already know most of this, even if you don't know why it's happening. Escalating prices are everywhere, from the fuel pump to the grocery store. What we're all learning, though, is what happens when the railroad and trucking industries are squeezed.

Will RVers with diesel-powered rigs face a DEF shortage during their travels this summer? Unless something significant happens, no — but it will cost more. As noted by *Jobber's World*, “The message here is, DEF supply is expected to remain tight with continued unpredictable price movement as the European conflict continues and the planting season nears.”

As the old adage goes, “You're not paranoid if they're really after you.” But we all just need to make sure the sky really is falling before anyone gets worked up, because when something bounces off your head it's usually just an acorn.

So go ahead and enjoy your summer.



Did You Know?

THETFORD

- 1 Remnants of chemical-based products will kill enzymes and reduce the performance of natural products in your holding tank.
- 2 If you used a chemical-based holding tank treatment in the past, cleaning the tank with Tank Blaster® will eliminate chemical residue and ensure optimal performance of enzyme powered formulas.
- 3 You can dose your tank with Aqua MAX® before you leave on a trip to give the enzymes time to activate. It can take up to 24 hours to achieve maximum results.
- 4 If you are using your RV toilet for only urine, you can add extra water to reduce odor.
- 5 Continuous strong odors may indicate a faulty toilet seal. We recommend using Thetford® Toilet Seal Lubricant & Conditioner to keep the seal in good working order.



ADVANCED-ACTION
**Aqua
MAX**



HOLDING TANK TREATMENT

TRUST THETFORD TO KEEP YOU GOING.

Visit thetford.com to learn more.

Protect Your Lifestyle with the Right Service Contract

Purchasing a service contract (extended warranty) for your motorized or towable vehicle might seem hard to justify — but the right service contract will mitigate future problems, save you money in the long run and get you on the road faster. It's critical, however, to look at your options — not all service contract/extended warranty companies are the same.

What should you look for? Here are a few differentiators between extended warranty providers and a few industry "best practices" for getting a claim approved.

Top 3 Extended Warranty Differentiators

1) Claims Department Staffing — To begin with, look for a corporation that has an in-house claims department — larger organizations farm out the claims process, reducing customer service. In-house claims adjusters reduce the approval process time by leveraging combined years of experience and have direct contact with leadership for escalations and increased dollar thresholds for faster payment processing. Having in-house administration also increases the likelihood you get the same adjuster with knowledge of your unit/past problems. Ensure the hours of operation are 24/7 in the United States, with the ability to talk to someone and not just upload documents. An experienced, well-seasoned staff also will know labor rates and replacement part costs across the country — which can mitigate repair facilities overcharging the customer.

2) Offering Multiple Plans — The extended warranty provider should offer plans and coverage for any budget and risk tolerance. They know the extended warranty industry, stay up on trends/recalls and network with manufacturers and aftermarket partners. Remember: service contracts are not insurance — they only cover factory-approved and factory- or dealer-installed electrical, electronic, hydraulic and/or mechanical parts essential for the operation of your vehicle. These plans should allow you to go to any repair facility in the USA or Canada. This includes mobile repair professionals.

3) Providing No-cost Benefits

- Look for companies that offer **higher dollar allowances** and perks for free.
- **Emergency roadside assistance and towing** to include buy-ups for enhanced service calls.
- **Winterization services** for seasonal customers.
- **Deductible Reduction.** This is the ability to go to the dealership you purchased the unit and receive a 50% deductible reduction. If you are a senior or military veteran, look for discounts on deductibles, too. Often these discounts mean paying a zero deductible.
- **Pet Benefit:** in the event of an authorized breakdown, you might need to transport or board your domestic animal. This benefit reimburses the contract holder for such expenses. If you have older animals or even horses, this benefit is a no-brainer.

How to File a Claim and Get it Authorized

It is not uncommon to read in RV forums about contract holders dismayed because "they just find any loophole to

deny." At United States Warranty Corporation, we are not numb to your frustration — so read these five actions to help us, help you. After all, we would all not be in business if we didn't pay claims and do right by our contract holders and industry partners.

1. First things first: In the event of a breakdown, contact the company to report/discuss the claim prior to the repair being started. A reputable company will have 24/7 claims adjusters to help guide you through the claims process to ensure proper coverage on all covered components. This way, they can evaluate based on the plan you have, all the items that can be covered, and which items they can't cover — and why. *How to submit a claim should be front and center.*

2. Your responsibility: Most contracts state it is your responsibility to authorize the repair facility to diagnose the problem. You or the repair shop must contact the Claims Department directly to provide the diagnosis and a detailed estimate of parts and labor.

3. What happens next: The Claims Department evaluates the claim and if everything is in order, they issue an authorization number for the covered repair and confirm costs. You review and sign the work order. At USWC, more than 80% of claims are handled in two calls or less.

4. Authorization must be obtained from the claims department before repair work is started. Reach out to the Claims Department first. Document what is going on. Extended Warranty Claims Adjusters are working on your behalf. Make sure you understand the authorization process.

5. If a repair shop or mobile facility won't work with extended warranty/service contract administrators/providers, call the Claims Department regardless to document your situation. Often the service contract company will work up the claim in the same way as if they were working with the shop. The only difference is you would pay the shop directly and the service contract provider would reimburse you via check or ACH.

Knowing what your plan covers and what it does not is critical. Keeping a log/receipt of your maintenance is very important. Having the registration page and all the other insurance or ancillary product (tire and wheel) coverage documentation will expedite those emergency situations on the road. After all, if contract holders are not educated consumers, the integrity of our industry is weakened — and at United States Warranty Corporation we want to provide a good product to protect our customers in the event of those unexpected high-cost breakdowns.

United States Warranty Corporation, Cleveland Ohio, specializes in the design and administration of outdoor recreation vehicle service contracts, since 1975. USWC offers an expansive range of coverage on towable and hybrid trailers, Class A, B & C motorhomes, motorcycles (new & used), scooters, ATVs/UTVs, personal watercraft and boats. Your dealer, being accepted to represent USWC, solidifies first-class sales and service, providing the consumer advantage. Not affiliated with United States Warranty Corp. of Florida.



United States Warranty
CORPORATION
SERVICE, INTEGRITY AND TRUST SINCE 1975



**Travel with peace of mind, protect your vehicle
YES WE COVER AC and GENERATOR COMPONENTS**

COMPARE PLANS AND BENEFITS ON
WWW.USWCEAGLE.COM OR CALL **(800) 233-9878**
FOR A DEALER NEAR YOU!

24/7 Claims Adjusters • Up to 20 Model Years
4 Plan Choices • Cancellable • Transferrable*
Service Approved in the U.S and Canada
(*not available on Eagle Infinity)

AVERAGE REPAIR

AIR CONDITIONING **\$500- \$2,000** • GENERATOR **\$500-\$5,000**



BBB Rating: A+

Telescoping ‘Hitch Hotel’



How to do more with less is a constant focus among RVers. Now, an engineer has designed what may very well be the most compact travel trailer on the road — at least, when it's on the road.

The Hitch Hotel was created in 2018

by a father to allow his son to safely transport a bicycle. Originally, it was essentially a waterproof fiberglass box that connected with a vehicle's hitch receiver. As reported in newatlas.com, some cars could handle the weight, while others couldn't — so, the team

behind the concept added wheels, creating the Hitch Hotel Traveler. The tiny, versatile trailer utilizes an under-body power-coated frame with 10-inch wheels and tires (rated to 80 mph), and fold-out legs to support the structure. A patent-pending design allows the front A-frame/jackstand to fold up against the unit when not in use, reducing storage needs to just 39 inches long and 6 feet high.

Weighing in at under 700 pounds, the Traveler has a hitch weight of less than 120 pounds and is rated for a 1,500-pound total capacity. When collapsed for travel, it has a volume of about 1.7 cubic meters; opened camp-side, it provides about 4 cubic meters of carpeted and insulated interior space — enough room for two adults. A removable exterior storage box and spare tire come standard. The unit retails for less than \$6,000. For more information, go to hitchhotel.com.



The World's Largest RV Show



While Yanks stateside can attend some impressive RV shows — The Hershey Show and the Florida RV SuperShow come to mind — none compare with the annual Caravan Salon. If you're planning to park your RV for a week or two this summer to travel overseas, Dusseldorf, Germany ought to be high on your list.

How big is this show, which runs Aug. 26-Sept. 4? According to organizers,

Caravan Salon will “grow” this year with the addition of three exhibit halls — bringing the size of the event to a whopping 600 exhibitors covering 2.7 million square feet.

“Vacationing with motor-homes and caravans has seen enormous and constantly

growing uptake for more than 10 years. The pandemic then reinforced the trend toward individual and near-nature travelling yet again,” said Daniel Onggowinarso, managing director of Caravaning Industrie Verband e.V. (CIVD). “Since traveling has become possible again with almost no restrictions people are planning their holidays at full speed. This means a visit to CARAVAN SALON pays off all the more for both car-

avanning lovers and newbies because there is no other place where the bandwidth of vehicles and accessories is so broad and products can be experienced in such a hands-on way.”

For the first time, the first Friday will serve as Preview Day. Alongside media representatives and trade visitors, exhibitors will also be able to invite end-users — permitting them to explore the fairgrounds in a quiet atmosphere. Last year, 185,000 people visited the show during its 10-day run.

(photo: Messe Düsseldorf/ctillmann)

RVing Today Adds Stations

As part of its 2022 station and network expansion plan, officials with “RVing Today” announced June 9 the addition of five more stations to its nationwide lineup. These new stations are located in Oklahoma, Illinois, Iowa and Colorado and include: WHBF 4 (ABC) in Rock Island, Ill., serving the Quad-City area; KGCW 26 (CW) in Davenport, Iowa; KFOR 4 (ABC) in Oklahoma City, Okla., and KAUT 43 also serving the Oklahoma City area; plus KREX 5

(ABC) in Grand Junction, Colo.

The fact that the program has streaming media agreements with each of its television stations means that "RVing Today TV" can be seen 24/7 directly on one of those stations, or on each station's streaming media

site along with ROKU, Vimeo, Amazon Fire, YouTube, RVBusiness.com and on the rvingtoday.tv website.

To see where, and how, to watch the show visit www.rvingtoday.tv and click on the ways to watch link. Keep in mind that some stations and networks

cover multiple states so just hover your pointer over the station logo to see the actual coverage area or head over to the particular state you are interested in with our state drop-down list.

Alliance RV, NRVTA Partner on Education



NRVTA Director of Education Todd Henson, left, with Alliance RV co-founder Coley Brady during the Alliance RV National Rally.

Alliance RV and the National RV Training Academy (NRVTA) developed an educational platform exclusively for Alliance owners. Developed as part of Alliance RV's owner empowerment

initiative, NRVTA created an online training program to help Alliance owners better understand how to use their RVs and onboard systems. The program includes a series of videos describing basic RV systems as well as providing detailed walk-through

orientations for Alliance RV models.

After buying an RV, new owners can register to access the free training through the Alliance Academy from the company's primary website. People

who purchase used Alliance RVs also can register for the program by submitting details to the company, such as the vehicle identification number and new owner's contact information.

The platform currently includes five hours of video content specific to Alliance RVs; however, it will be expanded over time. The videos were produced by NRVTA staff and feature instruction by Todd Henson, the director of education.

The new platform was rolled out at the Alliance RV National Rally, which took place at the Elkhart (Indiana) Fairgrounds May 25-27. A total of 220 fifth wheels were involved in the gathering, which combined educational sessions with leisure activities as well as a factory tour.

Owners can access the Alliance Academy by visiting alliancerv.com/alliance-academy.



ALL BRANDS. ALL MODELS. ALL RVS.

Schedule on-line at **REVRVSERVICEANDREPAIR.COM**

EAST COAST

REV RV Service & Repair
1420 Patterson St.
Decatur, IN 46733

WEST COAST

REV RV Service & Repair
91186 N Coburg Industrial Way
Coburg, OR 97408

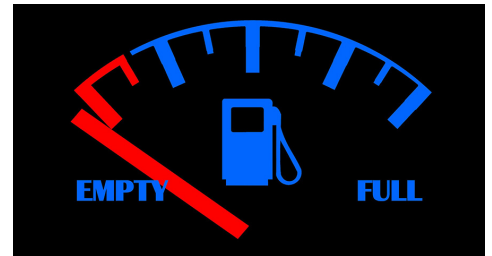
REV
RV Service & Repair



YOU DRIVE
Hensley will get you there

HensleyMfg.com
800-410-6580

Fuel Prices Not a Major Concern



While much has been said on social media sites of the rising cost of fuel curtailing RV adventures, what's sometimes lost in translation is the fact that there has always been a fuel cost budgeted to any trip. The question, then, is not "How much will fuel cost?" but "How much more will fuel cost?" Put another way, is the recent surge in fuel prices enough to make a traveler cancel long-anticipated plans?

For the majority of RVers, the answer is an emphatic "No!" — even with rising prices at the pump, an RV trip is still the best way to travel.

That attitude was reinforced recently with the release of THOR Industries' 2022 U.S. Camper Perception Study, which explores consumer RV purchase and usage behavior in the environment of rising fuel prices, as well as their perception of sustainability-focused organizations.

The study — based upon a total of 500 surveys with a margin of error of +/- 4.4% — found that rising fuel costs will have minimal impact on consumers' likelihood to purchase an RV in the next five years. The survey, which includes information from those who camped or glamped since 2020 — 80% of whom had an RV experience in the past two years — also indicates that rising fuel costs have a nominal impact on intended RV usage in the coming year.

Key findings from the study include:

- 67% of those who have RVed in the last two years reported rising fuel costs have increased their likelihood to purchase an RV in the next five years or has no impact.
- 69% reported rising fuel costs have increased their likelihood to use an RV within the next year or has no impact.

The study also highlighted RVers' growing perception of sustainability-focused organizations, with 73% saying they are more likely to purchase from companies with sustainable/eco-friendly manufacturing processes. THOR is committed to be a carbon net-neutral company globally by 2050; its European operations are already carbon net-neutral.



HOW WE USED TO TUNE AN ENGINE FOR POWER AND MILEAGE

HOW WE NOW TUNE AN ENGINE FOR POWER AND MILEAGE

ULTRA RV

Ford

www.URVP.com
800-417-4559

Starlink Debuts Internet Plan for RVers



Staying connected while on the road has been an ongoing problem for many RVers — especially those who work from the road and require a dependable uplink. That may have been solved with an new — albeit somewhat pricey — system from SpaceX, the operator of the low-earth-orbiting satellite Internet service known as Starlink. In late May, the company began offering a plan specifically for travelers — and, unlike the company's stationary service, it's available for immediate order.

The program — known as Starlink for RVers — is said to provide immediate

access to high-speed, low-latency Internet on an as-needed basis at any destination where Starlink provides active service. Price for the service is \$135/month, although it does also require a one-time hardware cost of \$599. The program also allows users the ability to pause and un-pause service at any time. Starlink is not designed for use while in motion and does require a clear view of the sky to connect. For more information, go to starlink.com/rv.

Happy Camper Debuts HC1 Studio Edition



In the market for a truly lightweight travel trailer? Happier Camper, a premier lightweight modular travel-trailer brand, launched its new HC1 Studio trailers in early June at the Outdoor Retailer Show in Denver.

Inspired by the compact design of a modern studio apartment, the HC1 Studio is equipped for premium travel with an integrated kitchenette, bathroom, and shower and sleeps two on the Adaptiv queen bed. The HC1 Studio provides travelers the opportunity to comfortably extend their trips while being self-sufficient. While traditional utility hookups are included, the increasing popularity of off-the-grid experiences are made even more available with the inclusion of solar power. The HC1 Studio features Happier Camper's proprietary Adaptiv modular technology

and is said to be easily pulled behind most vehicles. The Adaptiv system allows for hundreds of different floor plan combinations to quickly enable sleeping, eating, cargo, working, and lounging needs — and the HC1 Studio fits in a single parking space. Prices start at \$49,950.

continued on page 47

vueSMART™ Wireless Trailer Camera

The only trailer camera that installs in minutes!

- ✓ Fits any trailer
- ✓ No re-wiring needed
- ✓ WiFi to any smart device

Put a Set Of Eyes Behind Your Trailer Today!



◀ **SCAN HERE TO SEE IT IN ACTION!**

or visit www.hopkinstowingsolutions.com/vuesmart for video and additional product information

HOPKINS™
TOWING SOLUTIONS



Part # 50050

Leveling Jacks Not Leveling



I have a 2011 Carriage Cameo with Bigfoot hydraulic leveling jacks. I was out on a road trip and could only get the front jacks to function using the key fob. It seems as though the keypad is ineffective since it keeps giving me an error code; I cleared the error code but it comes right back. I tried to get through to Bigfoot but have not heard back. Now I'm running out of options. My wife and I are full-time RVers and we will be in a place for two or three months — but then we need to get on the road again. Any suggestions?

— **Brian Hunt**

Brian, since I have the same system on my fifth wheel, I have become very familiar with the operation of the Bigfoot components. There was an update on both the keypad and the control board several years back, which eliminated

the rear Leveling Sensor. Because of the rigid frame used by some manufacturers (like your Carriage), the rear Leveling Sensor was eliminated because it did not work correctly. If you have not eliminated that sensor, now is the time to do it, and you'll need to update the control board and keypad. If you already updated the system, it's likely the problem lies with the control board. The keypad simply tells the control board what to do. However, having said that, I would replace both the control board and the keypad for better reliability.

I've had trouble with my keypad in the past with the buttons not making contact after many years of service. This is typically not fixable. Go online and search for Bigfoot parts and you should be able to find what you're looking for. Another good option is to look on eBay;

if you can find the parts, the pricing may be better. As you know, everything has gone up in price, if you can even get the parts. I found the parts on eBay for a lot less money.

Voltage to the control board should not be the issue since the front jacks work with the keyfob. Just for the heck of it though, I would check (with a multi-meter) to make sure that there's enough of voltage at the control board. You should see a minimum of 10.8 volts DC at this point.

Amp Gauge Install Clarification

Bill, I read the tip in the *RVExpert* newsletter (sent out weekly by *RV Enthusiast*) about placing an instant-read current gauge on the battery wire. I don't understand how this would be helpful, as amperage changes constantly and many devices have a quick draw when first turned on that it may not capture. Does it record power usage over time as well? Why not just use a shunt device, which will measure current and voltage as well as record usage over time? These are available on Amazon for less than \$20 from the same company that makes the model depicted in your tip.

— **Brian Amos**

Brian, thank you for pointing this out. It's a good thought, but there are a few caveats. The goal of installing this basic amp meter is to give the user a general idea of the amount of amperage draw from the inverter.

When you are watching TV, for example, the amperage should stay fairly constant; most of the other appliances and accessories powered by the inverter when unhooked will function in the same manner. If you record the amperage draws from individual appliances and accessories and multiply those figures by the number of hours (or fraction of an hour) they are typically run, you'll get a fairly good idea mathematically of how long your batteries will last without re-charging when hookups are not available.

Of course, more sophisticated meters, like those from larger inverters and solar systems, record amp hours and percentage of available battery power in real time, but this tip is really targeted at those with smaller inverters and/or simple solar systems, like the portable models.

The meter presented in the tip (Baylite DC-5-120V 100A Mini Digital Current Voltage Amp Meter; sold by Amazon) is simple to hook up and does not require

a lot of knowledge or tools. A meter with a shunt, like the one you suggested, requires a lot more experience with DC wiring. To hook up the shunt, all of the negative cables for one, two or three or more batteries have to go to the shunt first, which is not always an easy task.

Lubricating the Hitch and Ball



I have a travel trailer that I pull with a pickup truck. Hook up is with a hitch ball and I use sway bars. I have a two-part question. First, is it okay to lightly grease the ball to prevent the squeaking sound and help with hooking and unhooking the trailer? Second, I always use sway bars and I was wondering if I can lightly grease them also?

— **Fred Sess**

It's always a good idea to grease the hitch ball — not only to prevent abnormal wear but also to reduce the annoying squeaking. On the other hand, it's a bad idea to grease a friction-type sway bar (control). Friction created by tightening the flat bar in the outer housing is what reduces sway. If you grease this bar, you've defeated the purpose of the sway control.

If you're calling the equalizing bars "sway bars," then you're talking about a different scenario. The ends of the equalizing bars should be greased at the point where the bars rotate in the ball mount. Usually, you can see where the lubrication needs to be applied — at the two points that are wearing through the paint. Over time, the excess wear will make the bars less effective and they will need to be replaced. While it may seem like overkill, the bars should be cleaned and greased every time you hook up — it's amazing how much dirt

Those owners capable of doing the wiring can opt for the model you suggest (Baylite DC 6.5-100V 0-109A LCD Display Digital Current Voltage Power with 100-amp current shunt). Thanks for embellishing on this tip.

will be attracted during use and when stored (typically on the ground) while in camp.

Use a thin coat of white lithium grease for the ball and equalizing bars (although for the ball, any automotive grease will work). Don't use too much or the excess grease will just make a mess and run down the side of the ball and ball mount. You might consider purchasing a ball cover online to prevent spreading grease all over your pants and/or legs. These covers are fairly cheap; it's a known fact that at some point in time you're going to rub against the ball and make a mess.

Periodically clean the ball and apply fresh grease; like the equalizing bars, dirt is attracted easily over a short period of time. While you're at it, don't forget to grease the inside of the coupler when performing your cleaning chores.

Where's the Water Pressure?



Hi Bill, I love reading your column — and now I've got a question for you. I have a Lance trailer that I store in my

side yard that's hooked up to water and sewer in case I have company and they want to stay in the trailer. I'm starting to have faucet problems; there's not enough pressure at the bathroom and galley sinks and in the shower. I've replaced the pressure regulator before and it seems to solve the problem for a short time, but now it's back to low pressure. Could the problem be the \$15 inline regulators that I'm using?

— **Mary Lake**

Mary, I've seen this so many times I can't even count that high. The bargain regulators just can't manage water that has a lot of calcium, which is probably your problem. They regulate the pressure by restricting the opening. I suggest that you change to a small all-house regulator where the pressure is regulated by a diaphragm, which is much more effective. Most RV systems are fine with around 50 psi, which is the preset pressure for most house regulators. I've seen too many owners who have simply removed the regulator to increase water pressure. This is a bad idea since the water lines and fittings cannot handle high pressure, which is found in most RV parks.

Go on Amazon and just type in "small house water pressure regulators" and several models will pop up — but don't get lured into cheap one. The better models are made of brass and will likely last the life of the RV. Make sure the model you choose has internal threads so that you can use adapters to install it on the hookup water bib to attach the hose to an filter and/or city water inlet. These fittings are usually available at local home improvement/hardware stores. You can also search the Internet and Amazon for these adapters.

You should also clean the aerators on your kitchen and bathroom faucets. They get clogged with calcium and the pressure goes down substantially. You can try cleaning them with Lime-A-Way or a similar product, but it may not be worth the effort. New aerators are inexpensive and readily available. There are no screens or aerators in the shower; if the pressure is very low in the shower, then it's got to be the pressure regulator.

*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***

Light Up Your Life



It's not exactly a new concept — wearable headlamps have been around a long time — but the All Perspectives Induction Headlamp is one that will add versatility to any campsite or repair scene.

By Bob Livingston

A flashlight is probably the most common tool found in RVs. There are dozens of uses for extra portable light, and flashlights make it possible to navigate dark places like inside storage areas, engine compartments, sidewalks — you get the picture. Unfortunately, humans only have two hands, so working on projects (or carrying groceries) where extra light is needed can be frustrating when having to use one hand to hold a flashlight. Headlamps, though, are practical tools; just ask outdoorspeople who attach them to their hats or foreheads to move around at night.

I've used headlamps for years, and most of them are unwieldy and only provide basic, focused lighting — not to mention wrestling with drooping headbands. But that's before the All Perspectives Induction Headlamp came on the scene. You have got to love the names overseas companies dream up.

I came across this headlamp while watching an ad from FlexBeam ([buy-](#)

[flexbeam.com](#)) on a YouTube video. After I received the headlamp (for which I paid \$39.95 plus \$8.99 shipping), a little web searching revealed that this headlamp is also offered through a number of other sources, including Amazon, with prices ranging from \$15 to \$50. I can't vouch for whether the cheaper models are the real deal, but after I told *RV Enthusiast* Technical Director Bill Gehr about this headlamp, he ordered one from a different company and the product looked the same, albeit for the color — and he paid \$10 less.

Gehr and I quickly discovered that this is the most versatile flashlight we've ever used for projects around the RV — and the COB LED strip emits a tremendous amount of light, spread over a 230-degree field, which illuminates a lot of area. The strip light is said to be rated at 1,200 lumens, but when it comes to products from China, you can't always count on accurate ratings. The box that mine came in "boasted" 350 lumens, but my experience with



Tech Director Bill Gehr dons the headlamp he purchased from a different source. The flexible rubber strap is infinitely adjustable and super comfortable — and stays put even with vigorous head movement. Wearing the headlamp makes it possible to use both hands, and see clearly, when working on projects in dark areas.

LED flashlights made me believe that the advertised 1,200 lumen figure is closer to reality. Nevertheless, the light is fantastic and under real-world conditions the rechargeable battery lasts for a long time — supposedly for up to eight hours on the lowest light level. The headlamp can be recharged via the included Type C USB cable that can be plugged in to a phone, car or laptop charger, etc.

This headlamp is also full of features — including a flexible rubber adjustable headband that is extremely comfortable — and is designed for all shapes and

sizes of heads, with or without a hat. And, it stays put, even with vigorous head movement. The coolest feature is the motion sensor that turns the strip light On and Off by waving your hand over the top of the control box integrated into the headband. It's activated initially by a second button — and it really works. A spotlight for more pinpoint illumination is also built into the control box, triggered by cycling the same button that turns on the strip light. The strip and spotlights each have two levels of brightness.

I'm not sure if the quality issue

will hold true for all the others on the market, but the headlamp Gehr bought seems to perform equally as well. A few words of caution: This light is very bright and, like most bright flashlights these days, can cause temporary blindness if shined into your eyes (or your dog's) directly when in close proximity to the LEDs.

I found this headlamp to be indispensable for strolling around camp at night and for making repairs in dark areas — and the quality actually exceeded expectations.



The control box is integrated into the headband and features a secondary spotlight for use in areas where a focused beam is needed (like working on close-up repair projects in dark locations). One button is used to turn on the strip LED and spotlight; hold down the button and the spotlight will flash rapidly. The other button activates the motion sensor.



When folded, the headlamp takes up very little space and is extremely lightweight for a device packed with features.



*The strip light can be turned On/Off by waving your hand across the motion sensor on the top right side of the control box (if you wear it that way). This is a cool feature that really comes in handy, especially when your hands are in use or greasy. **RVE***



WAY Elite

Learn More Video



Flex Power - The Next Generation of RV Generators

Deliver more power, more efficiently with the Flex Power by Elite

BENEFITS

The Elite Flex Power Generator is built for your convenience and maximizes versatility while out on the road. With a dual fuel capability, the Flex Power can run on either gas or propane for better functionality even off the grid. A compact design, lightweight build, quieter operation, and ease of service are other benefits that make the Elite Flex Power, the next generation of RV generators.

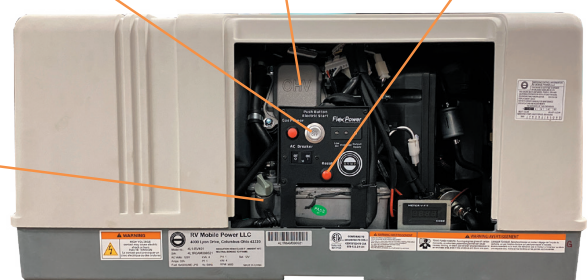
Learn more about the Elite Flex Power 4000 Watt Generator and all of our power solutions at Wayinterglobal.com

Green Machine

Quieter Operation

Better Efficiency

Dual Fuel



WAY Take your home
on the road

(574) 971-4490 | Sales@Wayinterglobal.com | 3002 Coast Court, Elkhart, Indiana 46514

Wayinterglobal.com

Don't Let Rising Fuel Costs Keep You Home

By Bob Livingston

The resiliency of the RV lifestyle is astonishing. While the country — and the world, for that matter — have been plagued with episodes of bad news during the past few years, people have flocked to dealer's lots in droves to buy new and used RVs. The other day I drove past a local RV dealership and the lot was crawling with potential buyers looking at new motorhomes and fifth wheels. Obviously, buyers are still motivated.

One can only surmise that the RV lifestyle is a great way to escape the constant bombardment of bad news and instill a little happiness into our lives during stressful times. We have endured a nasty pandemic (which has subsided, thankfully), crippling supply shortages, economic hardships, labor shortages, skyrocketing fuel prices, vehicle service issues, difficulty making RV park reservations (and when available, big increases in daily rates), runaway inflation and, now, a war in eastern Europe that will continue to impact the world for a long time. Yet people are still partaking in the RV lifestyle.

How do we make sense out of all this? For one, balance is needed in one's life — humans cannot survive on bad news alone, so there must be an outlet to counter daily stress. Getting out on the road and spending time in RV parks and in natural surroundings is good for anyone's soul. Some will ask, "What about the issues related to expensive fuel and difficulty finding places to stay?" There are solutions — but RVers will have to change the way they pursue the lifestyle.

Unless owners look to boondocking — which is becoming easier and more wildly popular every day as the RV industry embraces advanced technology and offers more efficient appliances and systems — they will have to plan way in advance. I, too, really miss being spontaneous, but those days are ending rapidly. My wife, Lynne, and I dropped the ball this year and procrastinated making plans for the summer, with the expected result: Most of the RV parks we want to visit are sold out. Shame on us. But we've learned our lesson and are currently making plans



Image by Alexander Fox / PlaNet Fox from Pixabay

for the summer of 2023. Fortunately, we're well equipped with efficient appliances and an extensive solar system, so we can boondock for long periods of time.

There is no doubt that owners are planning shorter trips, staying closer to home and capturing most of the weekend RV-park reservations. This is not a new scenario: Back in the 1970s, the infamous gas crises also scared RV enthusiasts into staying closer to home. Owners are again adopting similar strategies while getting over the next fuel-cost hump.

But don't let higher fuel costs keep your rig in the driveway. Granted, looking at the posted prices at fuel stations can be pretty frightening and overwhelming — unless you do a little math. The naysayers sometimes exaggerate future fuel prices, always looking at the glass as half empty — but (at the risk of being labelled "cavalier") I believe fuel increases can be handled with good planning and maybe an adjustment in daily lifestyle habits.

I've run a few financial scenarios and this summer we'll probably limit our travel to around 5,000 miles. Figuring on 10 mpg while towing and the price of diesel at \$5.75 (on average at press-time) the additional cost (versus last year's average of \$3.35) to stay on the road this summer can be amortized at \$100 extra per month on an annual basis. If the price of fuel hits \$7 a gallon (national average), then the extra amortized expense will be \$152 per month. I submit that RV owners will not mothball their rigs and will figure out ways to reduce other costs (there goes the good wine) to allow for the extra fuel

expense.

Reality suggests that the RV landscape in the U.S. will start to look more like Europe over the next decade. Europeans have been paying high fuel prices for a long time and fuel economy is a big factor influencing RV design. The popularity of Class B and smaller Class C motorhomes and trailers supports further development of more fuel-efficient RVs. Creative space utilization, strategic slide-out placement and technology make it possible to be a lot more comfortable in smaller RVs — and let's not forget how improvements in tow-vehicle fuel economy will impact RV-lifestyle affordability. Surely, advancements in electric vehicles (think range) will also play pivotal roles in how RVers tow trailers.

Yes, there will likely be a change in mindset on how RVers live in — or should I say "live outside" — of their rigs. We started our RV adventure in a homemade van conversion and then moved up to a 13-foot Cardinal travel trailer. Like many enthusiasts, our RVs of choice kept growing in length over the years and morphed into more feature-rich accommodations, culminating in a fifth wheel suitable for fulltiming. The possibility of leaving our fifth wheel on our winter RV lot and moving to a more diminutive second RV will allow us to return to the freedom of spontaneous summer travel — to include boondocking and visits to public facilities. And we're not alone in our thinking.

We're just too spoiled to go back to our roots; happily, the current (and future) RV industry offerings will make it possible to continue to wander without compromise. **RVE**

Don't Bug Me



Testing — and ranking — 10 top products for keeping your RV clean of splatter during and after your travels

By E. Don Smith / Photos by the author

Taking our motorhome out for vacation has to be the highlight of the year for us — and everyone else we know with an RV. If you're like us, you spend weeks planning the trip and days packing and getting ready. After driving all day, you set up camp and are ready to relax and enjoy yourself away from the daily grind back at home — but after walking around your RV and or tow vehicle, you notice that it is covered with a thick, unsightly layer of bugs. It's an unfortunate part of the camping season — the same weather that draws us to the outdoors is prime season for insects, and for many their "cycle of life" oftentimes ends across the front of our rigs.

If you are one of those people who prefers to keep your rig clean and shiny, you know you can't leave those bugs on all week, drying and etching the paint, so out comes the water hose and your bug cleaner of choice. As you start cleaning, you notice the whole front of the RV and tow vehicle as well as the windshield are covered in bugs.

What a mess.

We've all been there, done that — and learned from our experiences.

And while we can't promise to turn this chore into something that you will look forward to doing, there are some tips, cleaning tools and products that will make this process easier. In this article we tested 10 different bug removers and report on their effectiveness. We'll also clue you in on what we've

found to be the right cleaning tools to use — and when is the best time to clean up those unsightly bug stains.

First, let's start with the right tools. To properly remove stubborn bugs off your RV you will need a dedicated bug remover sponge. There are many different types and brands, but we did not find any major performance differences in the ones we gathered for this article and those we have used in the past



Here's a look at all the products we tested, along with the cleaning mitts and bug sponges that will help to make this task a bit less tedious. The wash mitts (from Auto Drive) have a typical microfiber side for washing your auto or RV while the other side is a dedicated bug scrubber sponge.

15-20 years of RV cleaning. All major auto parts stores as well as Walmart and Camping World have bug sponges that work fine. Some wash mitts have one side with a microfiber sponge and a perforated surface on the other side just for bugs. Those mitts are very handy if you are removing bugs and washing the RV at the same time.

The best time to clean and remove bugs off your RV or tow vehicle is, as



Starting with a cool, dry surface, spray the product on a section of the RV and allow it to dwell for 30-60 seconds — do not allow the product to dry on the surface. Then, use a dedicated bug sponge and agitate the cleaner on the surface. If all the bugs are not easily removed, add a little more product and continue to scrub until clean. After removing the bugs most product manufacturers suggest you rinse with water to neutralize the chemical and prevent damage to the finish.



Notice the thick foam created by the Meguiar's Heavy Duty Bug and Tar Remover. This product does a great job at softening and removing heavy layers of tough bugs but is not our favorite for removing tar or sap.



Though we didn't like using the Turtle Wax Bug and Tar remover on large areas due to its thick consistency, it does a great job on spot removals of bugs because it doesn't require rinsing. We also found that when removing heavy spots of tar or sap, it has no equal among this group of products.



If you do not already have some dedicated microfiber towels these are some of our favorites. These towels are from Chemical Guys ([Chemical Guys Microfiber Towels](#)) and are a 70/30 blend and a full 16x16 inches in size.

you might expect, as soon as possible. Usually that means after arrival at your destination or when returning home. Some of these products are more flexible than others in terms of when and at what temperature they can be applied, but it is always safest to apply bug removing chemicals in the shade when the surface is cool.

If you absolutely have no other option than to clean in the direct sun, there are a few things you can do to improve your chances of success. First, fully wet the surface with cool water. This will not only help cool the paint but will help loosen and soften the bugs. When spraying bug cleaner on the vehicle, make sure you do not allow it to dry before wiping it off or rinsing. Some cleaners are harsher than others and, of course, you should always read the manufacturers suggestion on the product label. Some of these cleaners are a gel or lotion and are meant to

be sprayed on dry and then wiped off with a microfiber towel without water; others specifically state that they need to be rinsed with water to neutralize the effects of the cleaner.

Some RV parks and, in particular, high-end RV resorts, don't allow you to use a water hose to wash or rinse your RV on-site; in those cases, you'll want to stick to some of the "waterless options" tested. If you have access to water and a hose, we find this traditional water method to be the most reliable as you can keep scrubbing and applying more bug remover to the surface until each spot is clean.

Also, keep in mind that some of these products state they do not remove wax while others recommend a wax or sealant should be used afterwards. One product that we tested, from Aero Cosmetics called Wash Wax All, is a waterless cleaner and sealant built into one. If you plan on using a cleaner that

removes the wax, it is simple enough to keep a bottle of spray sealant in your bag of detailing supplies and give it a quick wipe down after removing the bugs — this will restore any loss of sealant and make the surface as smooth and slick as possible, which will make clean up easier the next time. There are literally dozens of spray sealants to choose from, so pick one you like and use it after cleaning off the bugs.

Know, too, that some of these specialty bug remover products are available at your local auto parts stores — but some of the higher-end products are only available through automotive detail suppliers such as Autogeek.net. Many are also available online at Amazon.

Below is a product-by-product breakdown of the 10 bug removers we tested, in no particular order, along with our user notes and ratings of each one.

CarPro Bug-Out



CarPro Bug-Out is a spray dispensed liquid that is \$16.99 for 16.9 oz and it comes with a two position spray dispenser on top. It is intended to be used as is without dilution. Shake well, then spray on the surface allow to dwell for 30-120 seconds then scrub with a bug sponge. Rinse after cleaning. It is safe for all surfaces including glass and plastic trim.

Bug Removal Score — 8

User Notes: Easy to use and bugs came off easily with light rubbing.

carpro-us.com/deep-cleanse/carpro-bug-out-insect-removal-500ml-17-oz/

Mothers Speed Foaming Bug and Tar Remover



Mothers Speed Foaming Bug and Tar Remover is \$7.99 for an 18-ounce aerosol can. This product sprays as a foam on the surface then you scrub with a bug sponge or micro-fiber towel. Once clean you simply wipe it off — no rinsing needed.

Bug Removal Score — 7

User Notes: Spray foam is good, but not as heavy and thick as Meguiar's. Also, if you plan on wiping off instead of rinsing, the foam gets into small cracks and crevices — making the wipe-off method a bit more difficult. However, the no-rinsing method is a huge advantage if you don't have access to water.

mothers.com/products/speed-foaming-bug-and-tar-remover-16719

Turtle Wax Bug and Tar Remover



Turtle Wax Bug and Tar Remover is a thick liquid with a lotion-like consistency. It comes in a 16-ounce spray bottle for \$7. This product is safe for use on all surfaces. Wash area first, then — after drying — spray on the bug-and-tar remover and allow it to soak in. Use a microfiber towel to wipe away the bugs and tar until clean and dry. This product is incredible for removing fresh tar from paint.

Bug Removal Score — 6 (only because the thick liquid is hard to deal with on large areas)

User Notes: This is the best product I've found for removing tar and sap and for that reason alone it is in my personal RV.

turtlewax.com/products/bug-tar-remover-trigger-16-fl-oz

Meguiar's Heavy Duty Bug and Tar Remover



Meguiar's Heavy Duty Bug and Tar Remover is \$6.99 for a 15-ounce aerosol can. Spray on the foam and allow to remain briefly. After scrubbing with a towel or bug sponge, it can be rinsed or wiped with a microfiber towel. Do not allow product to dry on surface.

Bug Removal Score — 9

User Notes: It produces a thick, clingy foam and if you can wait the full 5 minutes dwell time, the bugs can be removed very easily.

meguiars.com/automotive/products/meguiars-bug-tar-remover-g180515-15-oz-aerosol

Camco RV Black Streak Remover



Camco RV Black Streak Remover is \$5.74 for a 32-ounce spray bottle. This product can be used for bugs and tar as well as black streaks. Apply to a towel and rub on the surface until clean, then rinse with water.

Bug Removal Score — 7

User Notes: The bug removal is pretty good; not among the best in terms of strict bug removing power, but it is very economical — and it also removes black streaks!

camco.net/black-streak-remover-pro-strength-32-oz-41008

3D Bug Remover



3D Bug Remover is a liquid spray in a 16-ounce bottle for \$8.99. It is safe on glass, trim, plastic and all painted surfaces — but do not use on hot paint or in direct sun. Spray on the surface and allow to dwell for 1-2 minutes. Use a bug sponge or microfiber towel to agitate the surface, then rinse off or use a waterless wash afterwards to neutralize the product.

Bug Removal Score — 10

User Notes: This is the most satisfying product here to use in terms of bug removal. If you will follow the directions, the bugs wipe off more easily than any other bug cleaner we have ever tested or used. The price is good, too — and you can buy it in a gallon jug for very economical refills.

autogeek.net/3d-bug-remover-16.html

Aero Cosmetics Wash Wax All



Aero Cosmetics Wash Wax All is a liquid in a 16-ounce spray bottle for \$9.99. This product (originally designed for airplanes) is both a cleaner and a sealant, so after removing the bugs you do not need another wax or sealant. It is safe for all surfaces such as glass, paint, plastic trim and vinyl. Spray on the surface wet or dry and agitate with a bug sponge or its own dedicated Aero Scrubber pad. Once the bugs are gone, use a clean microfiber towel to wipe clean. It leaves a slick surface that feels as if you just applied wax.

Bug Removal Score — 8

User Notes: *It does take a bit longer to cut through heavy layers of bugs but if you use its bug removal pad that helps speed up the process. The big advantage with this product is you do not have to use a spray sealant afterwards to restore surface protection.*

washwax.com/collections/wash-wax-all/products/waterless-car-wash-wax-all-16oz

Duragloss Bug Remover #471



Duragloss Bug Remover #471 is a spray liquid that retails for \$9.99 for a 22-ounce bottle. It is safe on glass, painted surfaces, fiberglass and chrome. It will not remove durable sealants when used properly. Spray on the surface and allow 30-90 seconds to penetrate, then scrub with a bug sponge. Rinse with water.

Bug Removal Score — 9

User notes: *This is an industry favorite and a product we have used successfully for many years. It is among the very best products in this test and simply powers through bugs, making clean up a breeze.*

autogeek.net/duragloss-bug-remover.html

Griot's Garage Bug and Smudge Remover



Griot's Garage Bug and Smudge Remover is a clear liquid that comes in a 22-ounce spray bottle for \$14.99, making it one of the more expensive products in the line-up. This product should be sprayed on and allowed time to dwell. Use a microfiber to clean away the bugs then simply wipe it dry. No rinsing required.

Bug Removal Score — 8

User Notes: This is a good product overall but thick and/or big bugs took a bit longer to fully hydrate and remove. autogeek.net/griots-garage-bug-and-smudge-remover.html

PoorBoys Bug Squash



PoorBoys Bug Squash is a concentrated liquid that can be used as is or diluted up to 3-1. It comes in a 16-ounce bottle for \$11.99. It is safe on all surfaces such as glass, paint, metal, plastic trim and paint. Spray on the surface and allow 30-60 seconds to dwell, then use a microfiber towel to clean away the bugs. Wipe dry with a clean microfiber towel.

Bug Removal Score — 9

User Notes: When used at full strength, it is one of the very best products on the market today. If you do not have a heavy layer of bugs, you can dilute it — making it even more economical to use.

autogeek.net/poorboys-bug-squash.html 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.

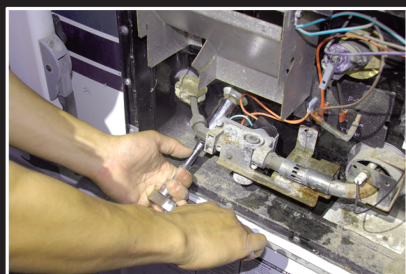
As this issue shows, each monthly edition of **RV Enthusiast** will be filled cover-to-cover with the kind of information and instruction you need to

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 July issue:

It happens all the time: an RVer travels to a campground — only to realize they are missing critical hookup parts and accessories. The July issue of **RV Enthusiast** outlines everything it takes for a "perfect" campsite experience — from electrical, plumbing and water accessories to all the related aspects of establishing a comfortable camp. We'll also delve into the hottest topic of the moment — RV service — and how OEMs, suppliers and dealers are coming together to reduce service times. And, of course, the issue will be filled with hands-on projects for the do-it-yourself RVer, from installing a heat strip on an air-conditioner and fixing weak struts on a mattress platform to installing a Bluetooth-equipped entry door handle and R&Ring Ram truck front bearings. Watch for it! **Available July 15.**





Replacing the hard-to-reach factory valve stems in dual-rear-wheels with Borg extensions civilizes the process of checking pressure and inflating tires.

By Bob Livingston / Photos by the author

There's nothing exotic about airing up tires. No experience is necessary and there is a plethora of tools available to get the job done. The learning curve — which is short — started for most of us by putting air in our bicycle tires when we were young kids. The process hasn't changed much, other than the availability of more sophisticated and accurate methods for checking pressure. So, what is there to say about inflating tires other than maintaining the proper pressure for the load?

Well, nothing — unless you own a dually truck. Reaching the inner valve stem on dual-rear-drive trucks and motorhomes can be frustrating, especially if the stems wiggle around when trying to push an air chuck onto the Schrader valve. Using a dual head air chuck helps, but losing more air than you put in during the process can produce a colorful vocabulary — not to mention the discomfort of squirming on the ground, front and center with your wheels. A good solution is to install Borg Dually Valve extensions,

which will change your prospective on airing up dual-rear-wheel tires — and you'll lose the potty mouth.

While there are a number of solid valve extensions on the market, with many of these products sold on Amazon, the Borg brand is one that we are most familiar with, having logged more than 100,000 miles of experience on two dually trucks without even a hiccup. Installing these extensions on the wheels requires dismounting the tires (and re-balancing when mounted), which will need to be accomplished by your local tire dealer. The best time, of course, to install the valve extensions is when new tires are needed, but waiting on exist-

ing tires to wear out will only allow the frustration to fester.

One hurdle to clear is finding a method of retaining the internal factory tire-pressure-monitoring system (TPMS). The sensors for the factory TPMS are attached to the valve stems — and when they are removed



Struggling with recessed valve stems in dually-truck wheels is no fun. Adding Borg extensions is a game changer. The tire is dismounted from each wheel using a truck tire machine. This is necessary to remove the factory valve stems and pressure sensors. When removing a tire, care must be exercised to make sure the sensor is not damaged.



1

The factory sensor is unscrewed from the valve stem before it can be removed from the wheel. Since the truck had 40,000 miles on the odometer, it was decided to replace the factory sensors with new aftermarket counterparts.

to make way for the extensions, so goes the sensors. It's possible to use an aftermarket TPMS with sensors screwed onto the end of the new valve extensions or mounted internally on the wheels, but we figured out a way — with the help of Redlands Truck and RV, in Redlands, California — to retain the factory sensors and in-dash monitor/alert feature found on new vehicles since 2008. Redlands Truck and RV has been one of our project partners since the inception of *RV Enthusiast* magazine. Banking on years of experience working on trucks and RVs, Redlands has gained a reputation as one of the premier service centers in the country and is not afraid to tackle creative repairs and projects, sometimes more difficult than expected.

extensions, so a little creativity resulted in a surprisingly easy, but reliable method for securing these sensors. Generic metal bands — which look like oversized hose clamps — were used to attach the sensors inside the wheel with 3M VHB tape and small cable ties (two for each sensor). The band is first loosely tightened around the logical channel near the center of the wheel using a screw gun, leaving a few inches of extra band so that there was enough “wiggle room” for installing the cable ties. When the sensor was secure, the band was tightened to eliminate movement and the end trimmed to size with hand snips.

Since the project truck was five years old with 40,000 miles on the odometer, it was decided to replace the original

factory sensors. Factory sensors are available at the Ram dealership, but they are very expensive. Rather than go that route, we found replacements with the exact specifications on Amazon. It took a little searching to find the ones we needed because there are literally dozens of these sensors on the market, and very few are interchangeable. In true long-description fashion, we found the sensors under BDFHYK TPMS Sensor 433 MHZ Programmed Tire Pressure Sensor Compatible with 2014-2020 Cherokee, Ram 2500/3500, 2014-2020 Ram 1500. They are priced at \$32.99 for a pack of four sensors, so we purchased two packs to handle the six tires, giving us two spares.

Once the sensor install was complete on an individual wheel, we turned our attention to the valve extension. The new extension was pushed through the hole and the inside nut tightened to secure the valve. It's important to make sure the extension is fully seated. The process is repeated for all four rear wheels; the longer extensions are designed for the inner wheels. These extensions were adjusted (bent carefully) when the tire was put back on the wheel. Once satisfied with the work, each tire was re-mounted and computer balanced.

Installing the sensors in the front tires only required breaking the bead on the tire machine to gain access to the edge of the wheel to pull the old sensor and valve stem and replace them with the new parts. These wheels were also re-balanced.

As it turned out, replacing the sensors was a good move. One of the factory sensors in the first project truck failed with 42,000 miles on the



2a



2b

A large metal band that looks like a gigantic hose clamp is unwound using a screw gun so it can be fitted on to the wheel. Once the clamp was at a workable size, it was positioned around the center of the wheel.

odometer. New tires were mounted last year — at which time we should have replaced the sensors.

The last step after replacing the wheels and torquing the lug nuts to specification was to reprogram the new sensors. A programming tool was connected via the OBD II port under the dash and each sensor was paired to the appropriate icon on the read-out in the dash. The same device was held

at each tire to verify that the sensors were indeed sending a signal. The truck had to be driven for at least 20 minutes at 60 mph or faster to set the programming. By the time we reached our destination, pressures were showing up on the readout in the instrument panel.

The cost of installing the Borg Dually Valve Kit will run \$595, which includes the parts and labor for dismantling the tires and re-balancing (filling the tires

with nitrogen was included). Figure on \$180 for the labor to replace the pressure sensors, plus \$22 for each band, when done in conjunction with the installation of the Dually Valve Kit. You'll be almost giddy about the conversion after airing up the tires for the first time — and not having to dread this chore when the air pressure is adjusted.



The back side of the new sensor was covered with 3M VHB double-sided tape. This tape has amazing holding power. Rather than use the factory sensors, which do not have infinite lifespans, compatible sensors were purchased on Amazon at a much lower price than those provided by the dealership.



The band was tightened around the wheel and the end cut with hand snips (not shown) to make a tidy installation. Retaining the original factory-style sensors made it possible to monitor pressure from the dashboard instrumentation.



Installing the Borg valve extension is a relatively easy task. The longer stem goes in the inner wheel. After threading the extension through the hole in wheel, the retaining nut is tightened, which compresses the gasket and makes a leak-proof seal. Shorter valve stem extensions were installed in the outer wheels using the same process.



Once the tape backing was removed, the sensor was attached to the band. Enough wiggle room was allowed so that two cable ties could be wrapped around the sensor and band.





7a



7b

It was decided to also replace the sensors in the front wheels to ensure consistency. One of the sensors had already failed at 40,000 miles, so we deemed it economically prudent to make the change while we were at it. Gaining access to remove these old sensors and stems required that the tire bead was cracked and held open by the tire machine.



8

All six wheels were re-balanced on a computer-controlled machine. Sometimes it's difficult to re-balance wheels/tires that have been dismounted and re-mounted after being on the road for a while, but in this case achieving the proper balance was possible.



10



9

As you can see, the new valve extensions are easily accessible. Say "goodbye" to struggles associated with adjusting inflation pressures.

*The last step in this project was to pair the new sensors using a specialized tool that plugs into the OBD II port under the dash. Holding this tool near each tire will confirm that the sensors are providing a good signal. The sensors were set after driving the truck for at least 20 minutes at 60 mph or faster. **RVE***

Full of **HOT** Air



Often neglected until needed most in summer, cleaning the rooftop air-conditioner filter, condenser and evaporator will restore maximum cooling — and the process is simpler than one might imagine.

By Bill Gehr / Photos by the author

The hot days of summer lure RVers to the road, visiting places where the weather makes it possible to enjoy the outdoors, including participating in water sports and other activities. Of course, it also raises the temperature inside the RV — which can quickly end all that outdoor joy when retreating to the inside. Fortunately, almost all RVs are equipped with air-conditioning

to help moderate the inside temperature — but many owners don't use their air-conditioner(s) during the other seasons and simply turn it on when temperatures rise and expect them to work.

And sometimes, they don't.

I am also guilty of neglecting my air-conditioner — and I know better. However, I didn't use my air-conditioner

very often during the last three or four years, so there was a huge build-up of grime and dirt on everything from the evaporator to the condenser — leaves, dirt and cobwebs seemed to be everywhere. Very few RVs come with an adequate manual for the appliances (including the air-conditioner) describing in detail proper maintenance procedures. At the very best, the owner's



There are a couple of ways to go when it comes to cleaning the evaporator or condenser. The "least messy" alternative is using Nu-Calgon evaporator foam (on right) that doesn't require rinsing with clean water. Before the no-rinse spray came around, Coil King Condenser Coil cleaner (center) was the best stuff to use (it works well, but makes a mess). A dishwashing wand makes short work of the cleaning process.

manual suggests that you take your RV to a certified dealership for service. Fortunately, servicing (think cleaning) your air-conditioner is accomplished easily without specialty tools except for maybe for the fin straightening tool.

The most important service point is the return-air filter. It is easily accessible, and you should frequently check the condition of the foam filter, which should be cleaned on a weekly basis during heavy use. Preventing debris or oily substances from reaching the evaporator is critical for efficient performance. Remove the return-air grille from the ceiling assembly, lift out the foam filter and clean it with mild soap and water. Be sure to let it completely dry before reinstalling. If the filter is falling apart from age, replace it with a new one that has similar material, thickness and dimensions; preferably replace it with a filter designed for the year, make and model of the air-conditioner on your RV. Be careful with aftermarket filters; if they are too dense the return air could

be significantly reduced, which will affect the efficiency of the air-conditioner.

Cleaning the evaporator is one of the most overlooked maintenance tasks. I'd venture to say most RVers have never even seen the evaporator, much less cleaned it. The evaporator is deep inside the return air cavity and is not easy to see or clean. While the return air-filter assembly is off, grab a bright flashlight and look up into the cavity and check for oil, dirt and debris on the evaporator fins. If the evaporator needs cleaning, you'll find this cleaning task easier by removing the entire ceiling assembly. The aluminum fins are delicate, so be careful when cleaning. I found that a soft bristle dishwashing wand works very well for removing lint/dust.

For some reason the evaporator assembly itself always tends to get oily or greasy, which requires cleaning. You can use a mild cleaner and water in a spray bottle, but rinsing off the soapy water from the fins can make a big mess as the water splashes

everywhere. I use an evaporator coil cleaner foam made by Nu-Calgon that comes in a spray can that sells for \$22 on Amazon (Nu-Calgon 4171-75 Evap Foam No Rinse Evaporator Coil Cleaner, 18 oz.). This is a no-rinse formula that utilizes condensation to rinse the cleaner from the fins on the evaporator. If you live in a dry climate, however, condensation is going to be limited, which might make it necessary to rinse the foam off with water from a spray bottle. This can be done carefully by starting at the top and working your way to the bottom of the evaporator. Don't overdo it, because the water will not run out through the condensation hole as quickly as you can spray it on. Be sure to wear eye protection and some type of a mask when using this cleaner and follow the directions printed on the spray can.

Once you are satisfied that the inside section of the air-conditioner is clean and dry, it's time to move on to the upper unit on the roof. Start by removing the shroud to access the working parts. I've always been amazed at the high level of dirt accumulation, even though the shroud is always in place. Since all of the components, for the most part, are waterproof, the shroud is just basically there for aesthetics. If it was missing the weather would not affect the operation of the air-conditioning unit in the short run; however, over time you'd likely see more wear-and-tear on the components.

Using an air compressor — set no higher than 110 psi — blow out all the debris, dust and spider webs. If you do not have access to an air compres-



1
A screwdriver is used to unlock the return-air access panel with the filter attached.

sor, you could use a vacuum cleaner — but it won't be quite as effective when cleaning the condenser. Blow the dust and dirt out of the condenser, being careful not to hold the air nozzle any closer than 8 or 10 inches to the condenser; the air pressure could damage the delicate aluminum fins. If you do have a large area of bent fins, now is the time to straighten them — using a specific fin straightening tool designed for this purpose. I recommend the Malco FST2 Fin Straightening Tool (available on Amazon for \$15.86). You can also use a dull knife, but that could take hours. It is important to straighten the fins to restore cooling efficiency.

You can also use a soft-bristle tooth-

brush to clean some large pieces of debris that may be stuck in the fins on the condenser before blowing out the area with compressed air. Spray on the evaporator foam cleaner if some of the fins are oily or greasy, followed by a rinsing with very low-pressure water. Use a wet towel or a rag to wipe off dirt or oil from the compressor and fan housing, being careful not to damage any of the wiring. If water was used for cleaning, let the moisture dry before reinstalling the shroud. When replacing the shroud, make sure the front is hooked over the metal catch (if so equipped) to prevent lifting during travel — and, again, be careful not to bend any of the fins during reinstallation of

the shroud.

Tools and supplies needed for this project are pretty straightforward and include the aforementioned evaporator cleaner, a soft-bristled brush, screwdriver or impact driver, fin straightening tool (or dull knife), flashlight, cleaner and rags, air compressor with nozzle or vacuum cleaner (if air is not available), water, hose and spray bottle.

Plan on spending a few hours completing this project — and be careful when working on the roof. Your hot body will thank you for restoring the cool air on hot days, especially when trying to sleep at night.



Remove the filter from the return-air access panel so it can be washed with soap and water in the sink. It must be dry before reinstalling and operating the air-conditioner to eliminate moisture gathering in the evaporator.



The ceiling assembly is pulled to get better access for cleaning the evaporator. Normally, there are four to six screws holding it in place. It can be on the heavy side, depending on the model. This model has a steel plate, which adds to the weight. You don't want to drop and damage this ceiling assembly because the replacement cost is expensive.



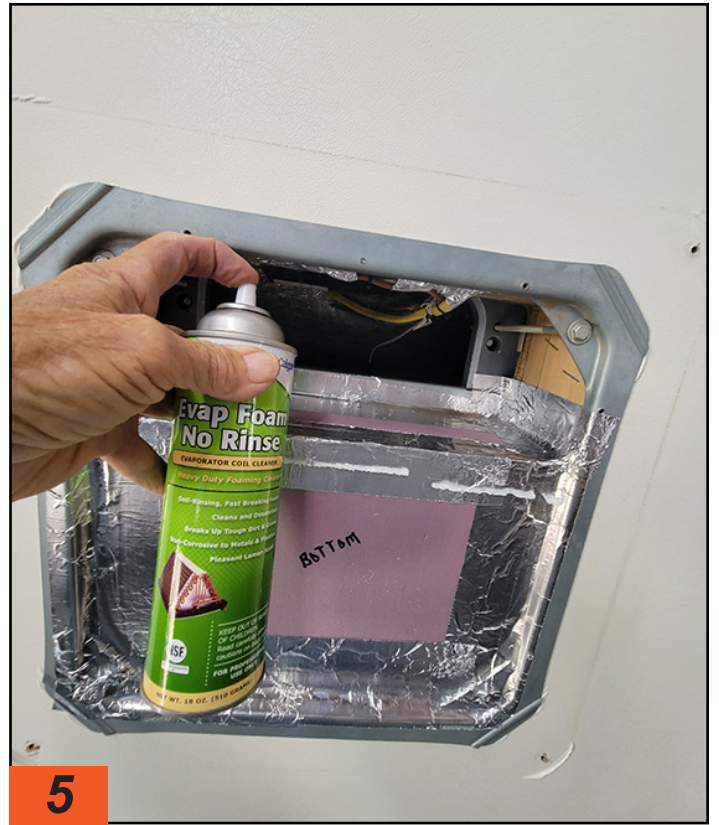
4

The inside of the ceiling assembly can collect quite a bit of dirt. While it is down for this servicing, use a microfiber towel to clean up any dirt and debris.



6

If the no-rinse foam is not handy, you can use Coil King Condenser Coil cleaner, which is available at home improvement stores. Clean water must be sprayed onto the evaporator or condenser to rinse off this liquid product. It must be allowed to dry before running the air-conditioner.



5

The Nu-Calgon foam is sprayed up into the return-air cavity to reach the evaporator. No rinsing is required, which makes little mess. Condensation while running the air-conditioner cleans off the foam.



7

This air-conditioner model has four bolts on top that must be removed to lift off the shroud. Some models have several screws around the skirt, which must be removed.



8

The design of this particular shroud allows the top of the condenser to collect excess dirt and debris, which must be cleaned off.



9

Debris is collected between the motor and wiring harness. This pile of pine needles, twigs and dirt must be cleaned without dislodging the wiring.



10

Spiders love the dark environment with dirt and debris and will stay busy building cobwebs, which can be difficult to blow out with compressed air.



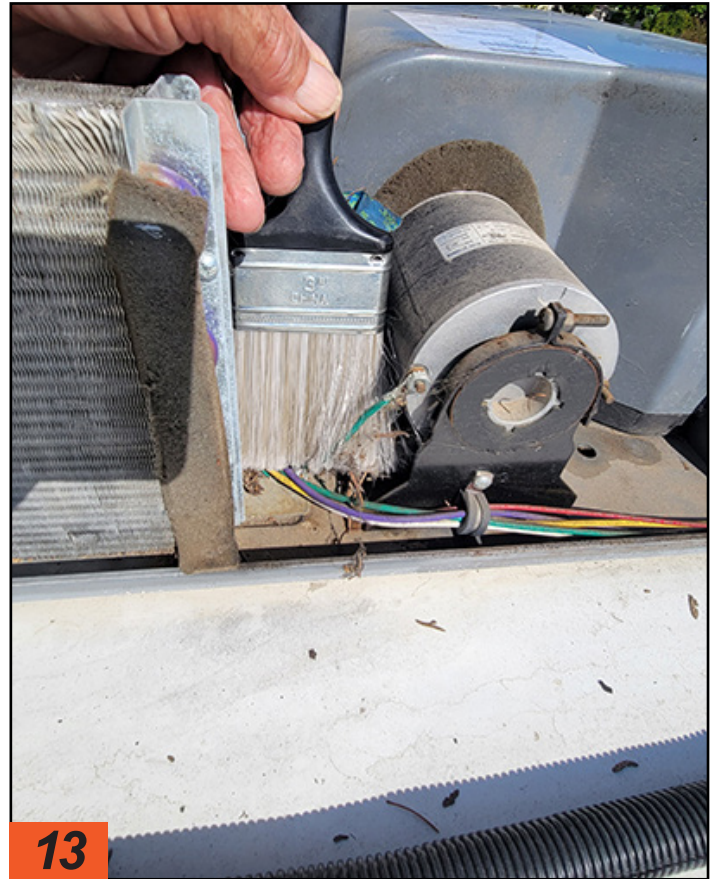
11

A basic utility brush, available at any home improvement store, is used to remove debris from the condenser. Apply light pressure to avoid damaging the delicate fins.



12

Once the bulk of debris is removed, compressed air through an air gun is directed to the condenser coils (no closer than 8-10 inches) to blow away the remaining dust and dirt. Keep pressure below 110 psi to avoid damaging the fins.



13

A clean paint brush comes in handy for removing debris in delicate areas.



14

A commercial straightening tool is best for fixing damaged condenser fins, but if one is not available a dull knife will suffice. It can take some time to fix the fins but doing so will restore peak efficiency.



15

Before replacing the shroud, take the time to clean the underside of any dirt and dust. **RVE**

Keeping your Cool



Roof-top RV air-conditioners usually don't live up to their capabilities and owner expectations; a do-it-yourself project to increase airflow will improve efficiency and drop inside temperatures more quickly.

By Bill Gehr / Photos by the author

When it comes to acknowledging which components in a modern RV have best aided in maintaining comfort at camp, it would be tough to overshadow air-conditioning, especially during prime summer months when the weather is great outdoors — but is stifling inside an RV.

In many cases, however, modern RV air-conditioners do not live up to their potential — a situation that has amplified since the inception of ducted air distribution in the roof.

In theory, moving air through a network of ducting and registers strategically placed throughout the interior of

any RV should balance out temperature extremes. But the biggest challenge is forcing the air into the ducting without sacrificing flow, something that is painfully less efficient in many roof-air installations. I personally like to upgrade everything possible in my 2011 Carriage Cameo fifth wheel to make



Once the ceiling assembly was removed it was immediately clear that the airflow was restricted because of the way the plenum was designed and the configuration set by the factory.

life easier, but for 10 years the performance of my rooftop air-conditioner has bugged me because it just does not have the airflow that I think it should. Worse yet is the obnoxious loud noise that drowns out the sound from the TV, which is right below the air-conditioner ceiling assembly.

Since I elected to only have one air-conditioner installed from the factory in order to accommodate a Fan-Tastic Vent in the bedroom, it's critical to maintain adequate airflow — especially when the ambient temperature climbs above 100 degrees F. in the area where I decide to spend the summer. Of course, I will service the air-conditioner to ensure best possible efficiency, but I figured out a way to improve performance by redirecting airflow through the roof ducting. Best of all, it cost less than \$50 and some personal labor.

After removing the ceiling assembly and scrutinizing the innards, it was immediately clear that the airflow design for the air-conditioner was poorly implemented at the factory. Therefore, modifications were in order. The trick, however, was figuring how to build foam pieces to force the air directly into the duct openings without restricting the size of the cavity too much and diminishing the amount of air pressure.

time on your hands, read on.

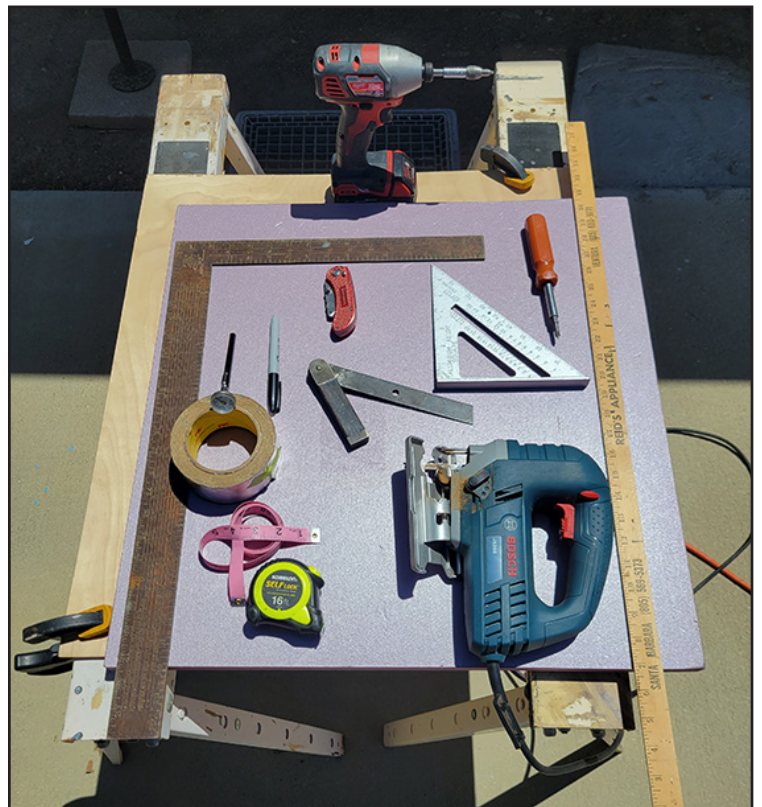
This modification was performed on an Airxcel (Coleman) Mach 8 series air-conditioner. Dometic products, as well as models from other manufacturers, will differ in many aspects, so the cut and fit will be a little bit different.

Before starting to build the components for this homemade project, I made sure that the evaporator and the condenser were clean and had the ability to provide as much airflow from the fan motor as possible. If the evaporator is so dirty that airflow is restricted, even these modifications will not help very

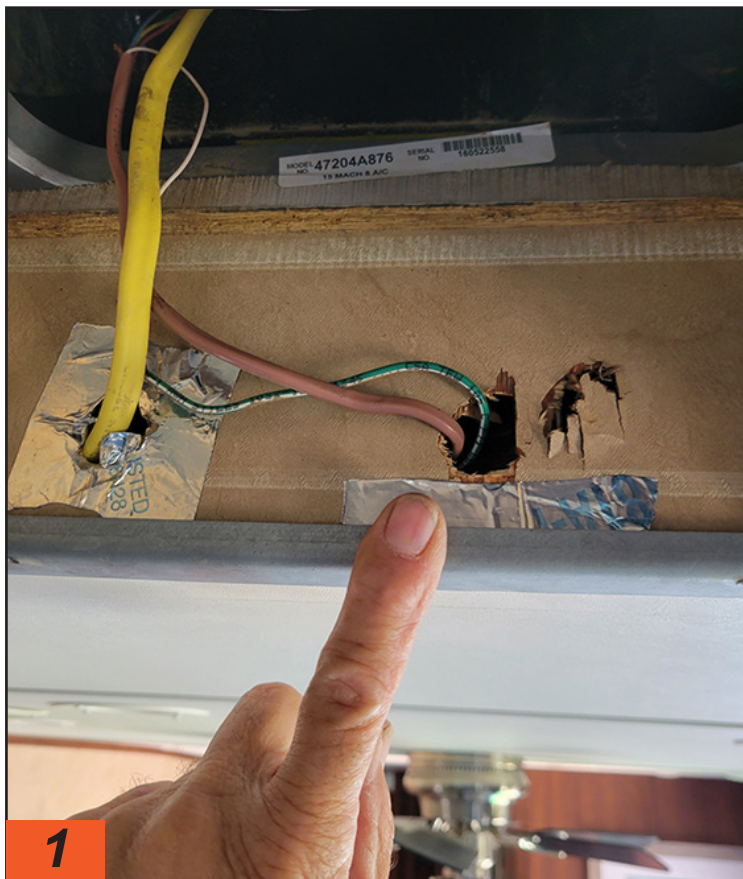
much. For this project, you'll have to spend quite a bit of time measuring and cutting pieces that must be taped together and fit into the cavity in the ceiling. That effort is rather tedious and can be circumvented by purchasing a module that goes in the A/C plenum from RV Airflow Systems (rvairflow.com). While it's more costly (around \$180) the installation process is plug-and-play and, frankly, this product will likely provide even better airflow while knocking down additional sound decibels (dB). But for those dedicated do-it-yourselfers with some

much. Browsing through Home Depot, I settled on a 1-inch x 2-foot x 2-foot board of Formular High Performance XPS Insulation. This pink-color material feels and looks like it can withstand the moisture generated from condensation in high humidity climates. Redesigning the air-conditioner discharge cavity is challenging at best because the duct openings on either side are too small and cannot be modified to improve the airflow, relying solely on improving the way air is channeled into the ducting openings.

I started the process by removing the ceiling assembly — and the first thing I noticed was that the return air divider was in the wrong place for maximum air intake. It needed to snug up to the edge of the duct opening on either side, which would increase the airflow (cubic feet per minute or CFM) to be pulled through the return air cavity. The decision was made not to use the original divider (since it didn't fit very well anyway) and cut the pink foam to form a new complete seal. Remodeling the plenum cavity was difficult given the restricted space for cutting and taping the pieces together to make them fit. It was also clear that the air discharge from the fan was blowing straight down onto the ceiling assembly instead of directly into the duct ports — jumbling up the airflow. In this configuration the pressure had to build before it could be forced into the two rectangular duct



All the tools and supplies for this project were laid out in advance to make sure the process would go smoothly.



1 The fifth-wheel manufacturer failed to seal all the openings in the return-air duct. These holes were sealed with aluminum HVAC tape.

holes — not the most efficient way to pressurize the ducting system in the ceiling. It's bad enough that the ducting in most RVs is subjected to high temperatures radiating through the roof and warming the circulating air, so all the help it can get will improve efficiency.

The vertical plate that separates the return air from the discharge cavity was cut first. It was important to cut the plate one inch shorter in height to accommodate the bottom plate, which is also one inch thick. Next, a new bottom

plate was cut, making sure the measurements extended all the way from the vertical plate to the wall of the plenum. Two of the bolts that hold the air-conditioner on the roof made it necessary to cut slots in the bottom plate.

Pushing the flat plate up against the bolts will leave divots in the foam showing you where to cut; you'll just need to measure the depth of the cut. Be sure that you cut the slots as close as possible to eliminate air escaping around the bolt openings. Test the bottom plate and the flat vertical panel to make sure that they fit snugly; they will be taped later with the HVAC aluminum tape.



2 While sealing the holes in the return-air duct, time also was devoted to cleaning up the wiring. Cable ties were used to bundle the wires. This made working in the area much more palatable.

Although it seems like these pieces could be much taller and at much more of an angle to force more air into the ducting holes, the result might diminish the CFM coming from the fan. HVAC tape was used to make sure that no air will go around them. These pieces will act as ramps to send the air into the duct openings.

When measuring inside the cavity use a fabric tape measure (used for sewing projects), which will give you more accurate measurements than a metal tape measure. Keep in mind that if you have two air-conditioners, the height measurements may be different depending on how much the roof gasket is compressed. After the pyramid is taped into place — which is going to be a little snug when positioning — the flat and vertical plates are installed and taped so that no air escapes around the foam. The vertical plate is placed right at the edge of the bottom plate, on the side of the duct opening.

When putting the ceiling assembly back in place, the configuration will be different because the flat plate is not used at this point. There will be a gap between the plastic and the bottom of the new flat plate; fill this space with the original foam divider that was between the intake and discharge to prevent the air-conditioner from pulling return air from the ceiling assembly. Before you reinstall the return air filter — which should be washed before assembling — use a bright flashlight to look up into the cavity and check the evaporator for dirt or debris. Make sure that the thermistor coming from the control board is inserted into the evaporator in the proper position in case it has fallen out, which happened during this project (it wasn't in tight enough).

Satisfied with the installation, the air-conditioner was turned on High and I let it run; it was obvious immediately that there was much more airflow coming out of the registers. There also was no question that the air-conditioner was running quieter — and a dB meter confirmed that seat-of-the-pants observation (see sidebar).

The only materials needed for this project are the aforementioned foam board and a roll of quality 3M HVAC

aluminum tape. As for the tools, a sharp blade or knife to cut the foam is needed, as was a little step ladder to reach the ceiling assembly. You will also need a straight edge, sandpaper to smooth out a rough cut, a drill driver to remove the screws from the ceiling assembly and a ratchet and socket to make sure that the bolts holding the air-conditioner to the roof are tight — these bolts loosen over time with the weight sitting on the gasket and the movement of the RV.

While the steps for this project were like putting together a jigsaw puzzle, it was really not that difficult — just time consuming. Given the results — less noise, more cooling — it was definitely worth the time spent.



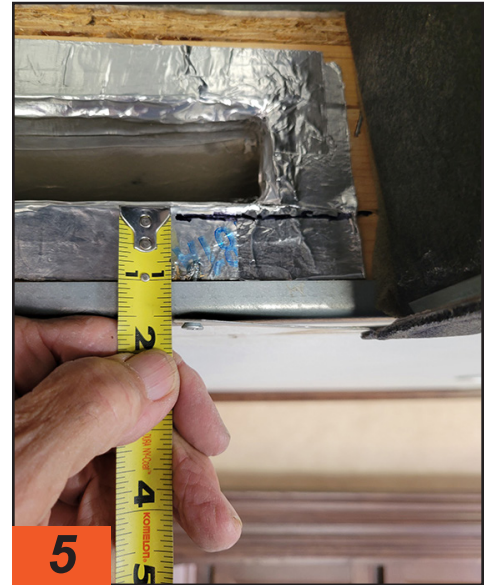
3

Years ago the ducting openings were sealed with HVAC tape to make sure they were air tight. This did not improve airflow, but it did look better.



4

When taking measurements in tight quarters it's best to use a fabric tape — typically found in sewing kits — to ensure accuracy. Metal tapes do not bend easily, so it may be necessary to guess at the measurement.



5

The thickness of the bottom plate was measured and marked with a felt pen. This measurement is critical for cutting the vertical divider.



6

The height of the vertical divider is measured for cutting the foam. This measurement is also critical so that all the pieces will fit and be sealed properly.



7

A power jig saw was used to cut the bottom plate from the foam board. Take your time here; it's important to make accurate cuts for a proper fit.



8

After the bottom plate is cut, it's temporarily positioned in place to make sure the cuts are right. Pushing the bottom plate against the bolt threads will put divots in the foam, locating the places to cut notches for the bolts.

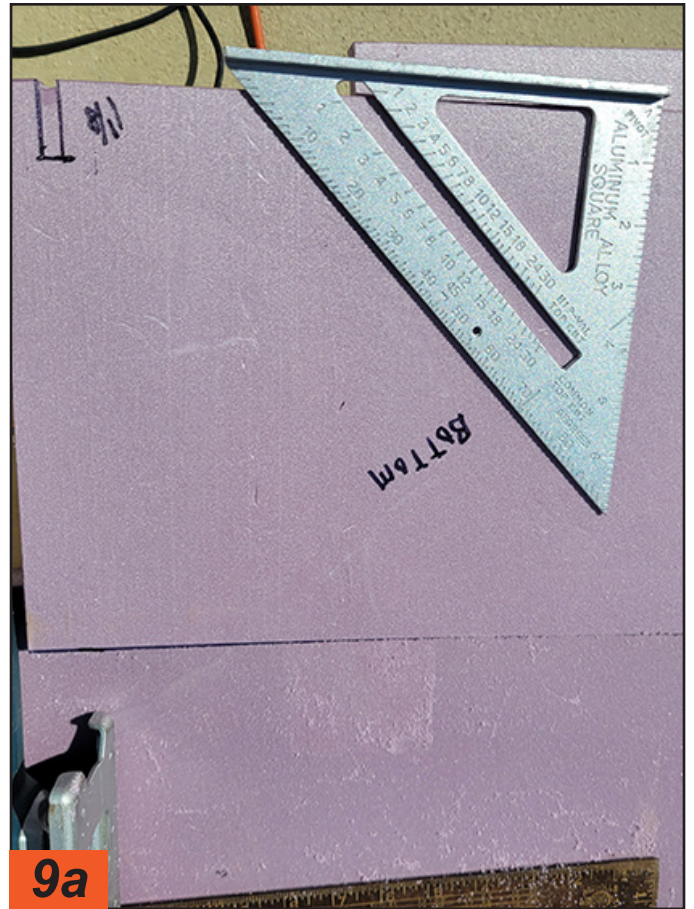


10a

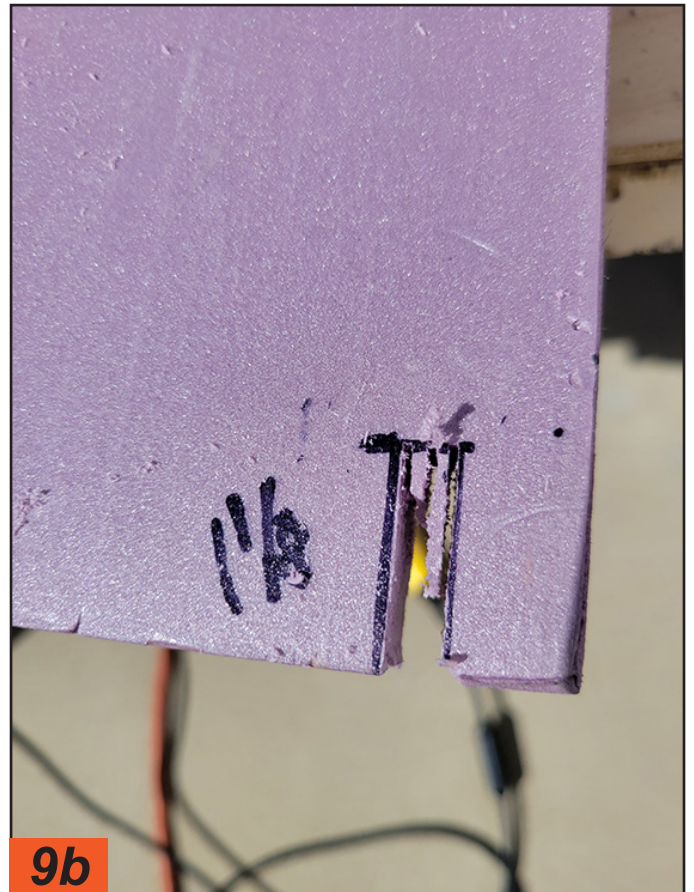


10b

Once the notches are cut, the bottom plate is checked for proper fit. As you can see, the notches were cut perfectly, and the bottom plate butted up against framing tightly.



9a

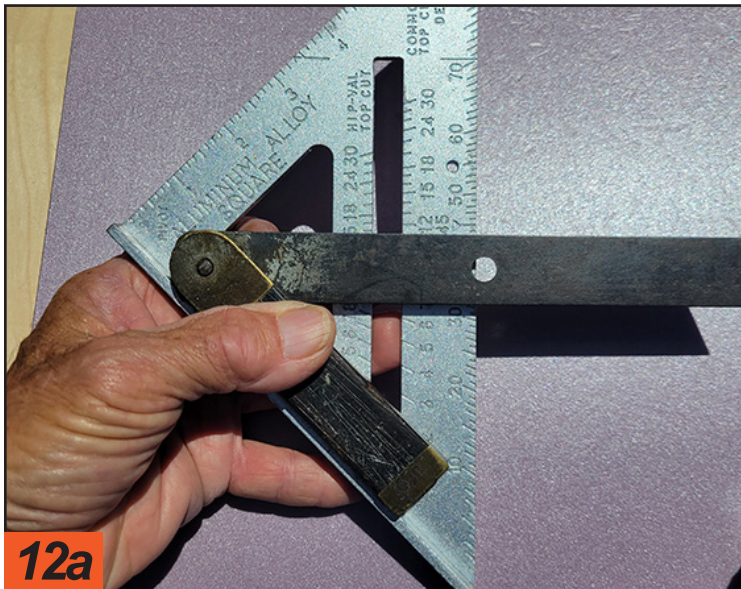


9b

The cut areas for the notches in the bottom plate are measured and marked. A speed square assures accurate notches. The notches were first cut with a jig saw and the remaining material was removed with an old, serrated knife. If a jig saw is not available, a fine-tooth hand saw will suffice.



Measurements are taken for the upper wedges. Make sure to measure the width and length on each side because they will be different. This is dependent on the position of the upper unit (air-conditioner) in relation to the cutout in the ceiling.



A speed square is used to set the proper angle on another type of speed square that's adjustable. Once the angle is set, the foam is cut to build the wedges.



Holding the wedge in place, a cutout location is marked to clear the hold-down bolt. Keep in mind that the cutout will be at a strange angle because the bolt is not vertical to the wedge. Basically, you'll be cutting a custom angle for both wedges.



Wedges are taped into place and the vertical plate is checked for a proper, tight fit. The vertical plate must fit right at the edge of the duct opening. The original was 2 inches from the duct opening so the air did not flow smoothly into the duct.



15 With one of the wedges taped into place, the vertical plate is positioned to make sure it is at the edge of the air duct.



16 Before taping the wedges into place permanently, make sure the bottom plate fits properly in relation to the two upper wedges.



17 The bottom plate is marked at the point where the vertical plate will fit. This step is important because the line will delineate the position of the bottom wedge assembly.



18a

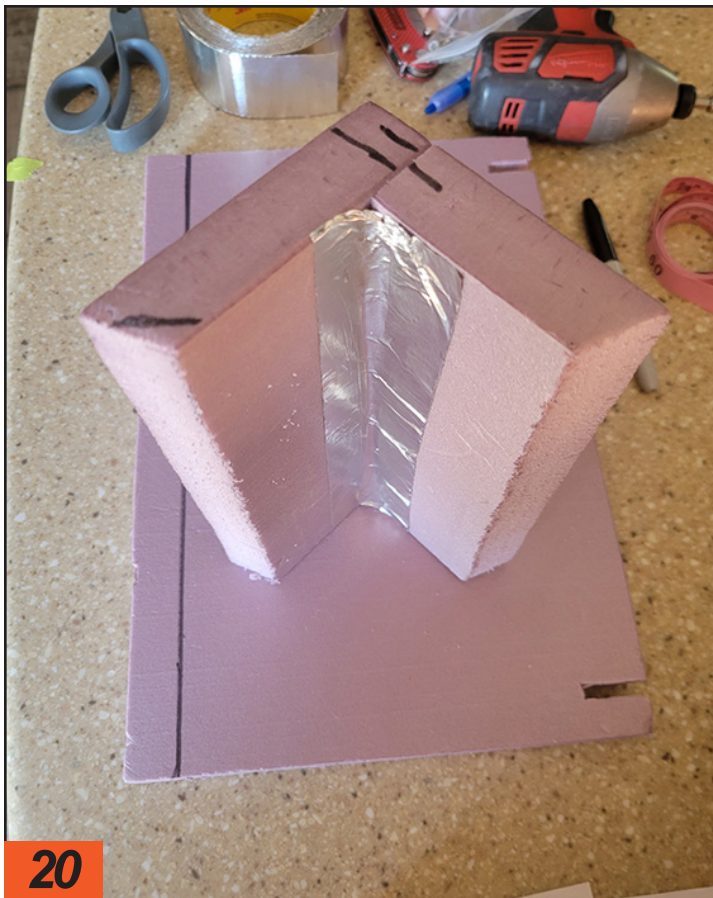


19 It's best to use HVAC tape made by 3M. This is a high-quality tape necessary to hold up in this type of environment for many years.



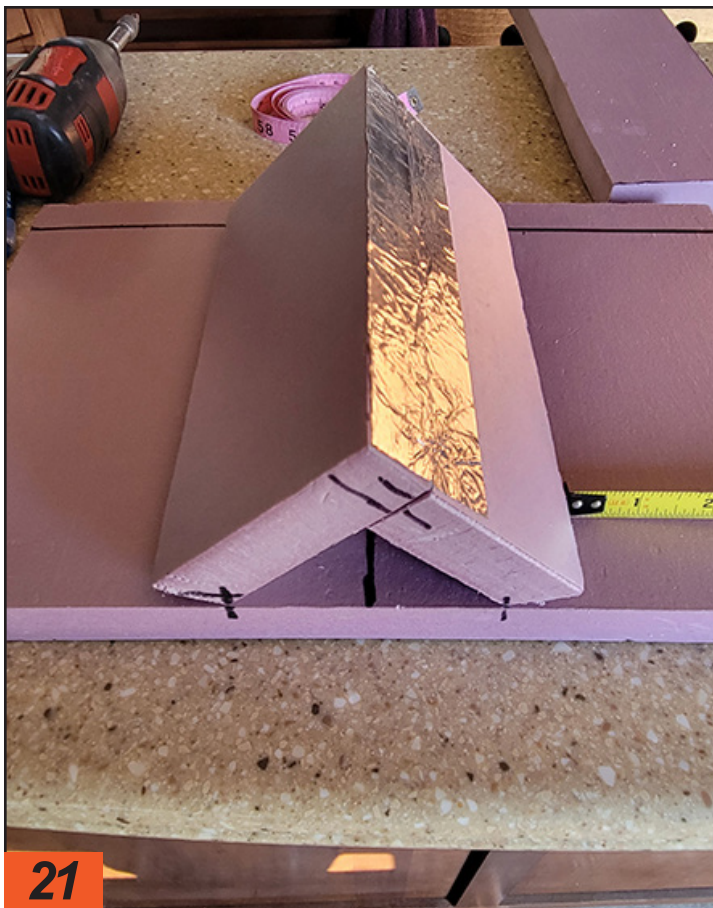
18b

Before taping the wedge assembly, check to make sure it is centered on the bottom and will fit correctly without making additional cuts. Side and top views are shown.



20

The seam of for the bottom wedge is taped from the inside as well as the outside to ensure strength under airflow conditions.



21

Make sure the wedge assembly is centered on the bottom plate before taping permanently.

Test Results

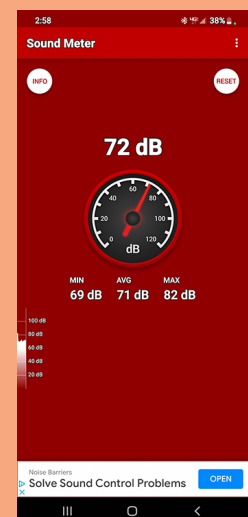
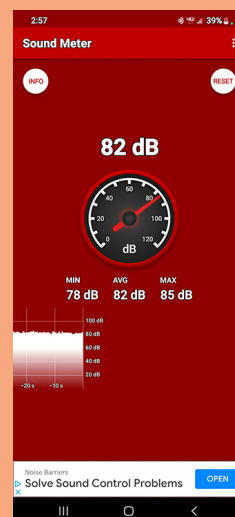
A baseline (before modification) was recorded mid-afternoon with the outside temperature hovering at 94.8 degrees F and the inside at 92.8. The air-conditioner ran for an hour and 50 minutes before lowering the inside temperature to 82.4 degrees; the outside temperature fell to 92.3 degrees. After the modification, it was hard to duplicate the exact temperature — that's a daily moving target without the use of a controlled climate facility — but it was again in mid-afternoon and the outside temperature was a hotter 97 degrees with the inside at the same 92.8 degrees to start the test. After



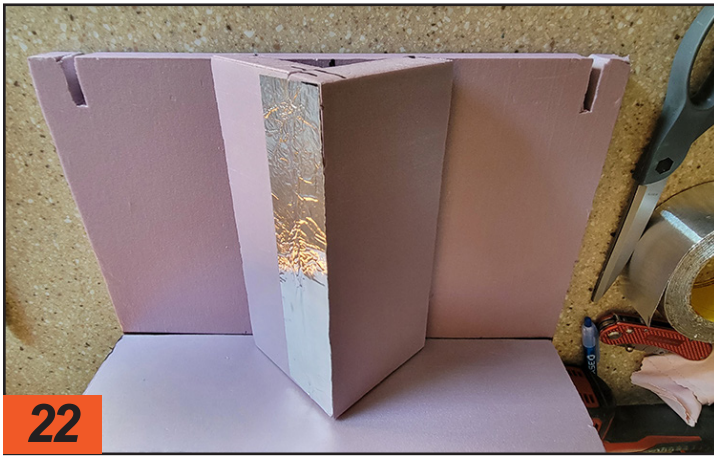
A pencil-type thermometer typically used for testing HVAC systems was inserted into the register to establish temperatures before and after; the difference was 8 degrees. Overall, the necessary run time to bring the interior to a comfortable temperature was reduced substantially.

an hour and 14 minutes the temperature outside was down to 92 degrees and the interior dropped to 82.4 degrees. It was clear that the inside cooled down much faster — a whopping 33% faster — after the modifications were made. Temperatures at the register closest to the air-conditioner were 58 degrees before and 50 degrees after, which further illustrated the need for improved airflow through the ducting to achieve maximum efficiency.

And, it's now much quieter in my fifth-wheel when the air-conditioning is running. The noise level was monitored 8 inches from the return air intake. Before the modification, 82dB were recorded at the couch where I watch TV; after the project, the noise was at 72dB. The results were even better the farther I moved away from the return air in the ceiling assembly. It would be nice to also reduce outside noise (so your neighbor doesn't have to listen to the roar of the air-conditioner), but that's not possible without restricting airflow.

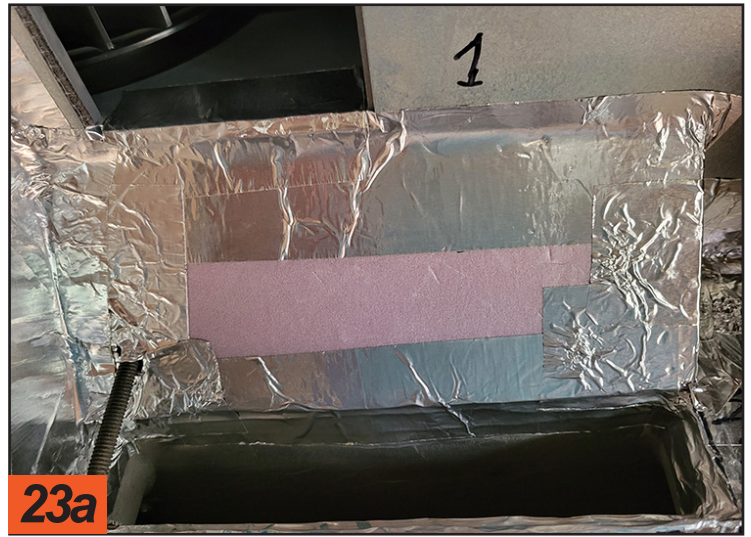


A dB meter app (free) was downloaded on a smartphone for monitoring noise levels. Noise level suppression, from 82 to 72 dB, happily made it possible to hear the living room TV, which was mounted near the air-conditioner.



22

Before taping the wedge assembly to the bottom plate, make sure the vertical plate fits properly. Tape permanently in place.



23a



24

The vertical plate is installed once again to verify a proper fit before permanently taping everything in place. Note the gap in the wood structure on the right, showing that the initial installation was not square. The tape will fill that gap at the completion of this project.



23b

The upper wedges are taped thoroughly in place to make sure they don't move before installing the bottom wedge and plate assembly. Next the bottom plate is again checked for proper fit before taping together.



25a



25b

The final product shows all the components are taped in place, forming an air-tight seal between the return air and the plenum. After replacing the ceiling assembly, we noticed that there was a gap below the new bottom plate. If left alone, this would draw return air through the ceiling assembly, pulling in excess dirt and lint. To rectify this situation, the original foam divider between the intake and discharge was used to fill this gap; no cutting was necessary. **RVE**

RV Retailer Celebrates Milestone with Donation to a Veteran



RV Retailer LLC (RVR) celebrated the sale of its 100,000th RV in May by giving away a 2022 Jayco Jay Flight SLX to a military veteran at RV One Superstores in Charlotte, North Carolina.

"This is an incredible milestone for our company — to sell more than 100,000 RVs in under four years, continuing our momentum as the fast-

est-growing RV company in the industry," said RVR President and CEO Jon Ferrando. "All of our associates helped us attain this historic milestone in record time."

"We surprised our customer, a 29-year military veteran, by ripping up the contract and giving away the

2022 Jayco Jay Flight SLX she was purchasing to go on trips with her family. Thank you to all of our customers and associates for making this happen, along with Ken Walters and his team at Jayco for helping us give this unit away to a deserving military veteran," added Ferrando. Founded in 2018, RV Retailer has grown to 100 stores in 31 states.

Winnebago recognize that there is a growing need for factory-built accessible camper vans and motorhomes. La Mesa will soon have inventory of the Winnebago Roam available in multiple stores in California, Arizona, New Mexico and Florida. Additional information on units that will be available at La Mesa can be found at www.lamesarv.com.

In addition to the Roam, Winnebago offers an accessibility-enhanced diesel-pusher Class A motorhome, the Inspire.

Roadmaster Issues Safety Update for Nighthawk Tow Bar



Roadmaster, Inc. of Vancouver, Washington, has issued a safety update for Nighthawk tow bars with serial numbers between 9513-10200. These bars have a T-bolt assembly that may loosen during travel, resulting in a potential safety issue. If the T-bolt loosens, the bar could become disconnected from the towed vehicle. Out of an abundance of caution, owners of the affected serial numbers will be provided a free update kit. For more information about this safety update and/or to claim a Nighthawk update kit, owners are requested to contact Jennifer Lee directly at 360-597-2434. Lee may also be reached by email at jlee@roadmasterinc.com. Even if you no longer own your tow bar, please contact Roadmaster so that ownership records may be updated.

RVE

Winnebago, La Mesa RV Offer Accessibility-enhanced Class B



New Roam owners Jerry and Joyce Free with representatives of La Mesa RV and Winnebago.

La Mesa RV and Winnebago officials recently announced the first delivery of the Winnebago Roam, the first accessibility-enhanced camper van from Winnebago.

Built on the Ram ProMaster chassis, the 20-foot Roam incorporates a number of accessibility features including a 750-pound capacity Braun wheelchair

lift, integrated wheelchair tie downs, powered sofa bed, lowered coach monitor panel, a wet bath with transfer assist handles and a special overhead cabinet that pulls down for access from a seated position.

Roam is completely modified by the Winnebago factory before being shipped to La Mesa RV, the exclusive retail selling dealer for the 2023 Winnebago Roam. Both La Mesa and

Advertiser Index

(click on company name to view its ad)

Advertiser	Website	Page
Alde	alde.us	2
Brazel's RV/Ultra RV Products	urvp.com	12
Hensley Mfg.	hensleymfg.com	12
Hopkins Mfg.	hopkinsmfg.com	13
Lippert	lci1.com	5
REV RV Group – Parts	revrvparts.com	51
REV RV Group – Service	revrvserviceandrepair.com	11
Thetford	thetford.com	7
Truma Corp.	truma.net	64
United States Warranty Corp.	uswceagle.com	9
Way Interglobal	wayinterglobal.com	18



Modifying a 2015 Montana fifth wheel with the new Coleman-Mach three-unit air-conditioning system — along with logical duct repairs — makes a huge difference in cooling efficiency.

By Chris Dougherty / Photos by Karen Dougherty

Summer is a funny time of the year. It's a season we all look forward to, then — once set up with the sun shining down on our RVs — we remember what we didn't like about it.

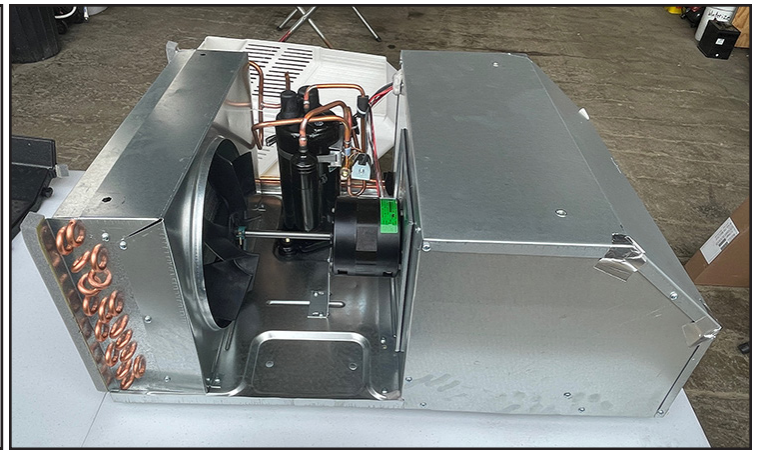
Okay, that sounds harsher than it should. Summer really is prime season for camping — but when you are set up out in the open and there's a heat index approaching 100 degrees F, it can be tough to get comfortable inside. By noon, when it's hot enough to pour a shoo-fly pie into a bucket, even two factory-installed air-conditioners running at full tilt won't bring the interior of most bigger RVs down below 80 degrees or so. Cooler than outside? Most definitely — but still not exactly comfortable.

When I'm working on a deadline inside my 40-foot Keystone Montana 3710FL, I don't mind sweating in the figurative sense, but I draw the line at sweating physically. This fifth wheel came from the factory with a 15,000 Btu A/C with heat pump and a 13,500 Btu unit, but they just couldn't keep up in triple-digit climates.

Most RV heating ventilation and air-conditioning systems (HVAC) are, from Day One, going to be stressed in climate extremes when compared to a typical building installation, primarily because of the type of construction and materials used. While methods and materials have improved, there's only so much you can do with a house that's

towable: The walls and roof are thinner, so there's less insulation, and frequently have aluminum framing — which transmits more heat. Plus, warm and cold air can circulate around the RV unimpeded because there is no foundation. Throw in dark body paint and dark-tinted, single-pane windows and the battle to keep the interior cool rages on.

The biggest problem, though, may be in the way the systems — and especially the ducting — are installed. RV roof ducting in many industry segments is often crushed or poorly sealed, which leads to airflow problems. Heat soak on the roof can further impact airflow temperature, forcing the air-conditioner



This 15,000-Btu ducted air-conditioner with heat pump and new style white shrouds was among the new models we installed for this project. We chose white for a better reflection of sunlight.

to work harder and less efficiently.

The net result? Screamingly loud air-conditioners that can't keep up when the mercury rises.

The Fix

Back during the height of the pandemic, we started an ongoing conversation with Sam Lengerich, general manager of Keystone RV's Montana division, about air-conditioning and the company's research on HVAC in RVs and fixes it had explored. Like other manufacturers, Keystone has received negative feedback about A/C efficiency, loudness and effectiveness.

As Lengerich explained, Keystone's customer service and engineering folks chart all owner concerns to identify problem points and work on new corrections and designs in response. It's a complex process, loaded with software programs and Excel spreadsheets,

but Lengerich briefed us on the project's concerns and objectives. To sum it up:

- A/C units are getting better, but maximum cooling power is being wasted by current distribution design.
- Ducting does not allow for capable airflow.
- Assembly of ductwork often negatively affected the functionality of the A/C system.

Given all that, the team, Lengerich said, was tasked with redesigning the entire A/C system to eliminate airflow inefficiency and failure points. Additionally, new technology implemented by Airxcel's Coleman-Mach division has improved dramatically and offers significant improvements. The duct and register vent design changes allow them to breathe correctly. Therefore, a project to illustrate how A/C could improve livability was born.

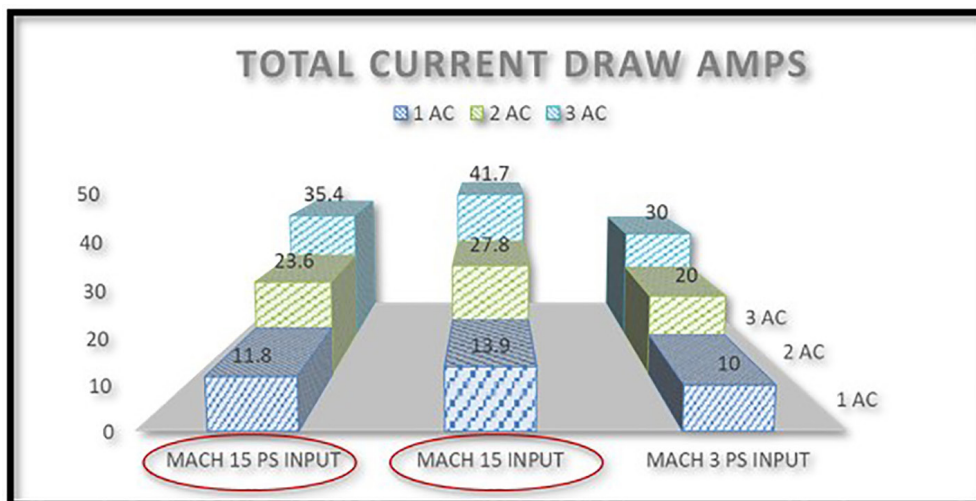
Working with the engineers at Cole-

man-Mach, Lengerich's team devised a whole new system which claimed to be the fix. First, the air-conditioners would utilize a center return vent system — more appropriately known as an air distribution box (ADB) — redesigned to quiet the system while offering optimal airflow and filtration.

"Whisper quiet older style return ducting has been used to hide loud air-conditioners. With the new Q (quiet) series A/Cs, 'whisper quiet' ducting is not required, which allowed us to develop the single return that could accommodate a MERV 9 filter. The result is the new Blade Pure A/C return," said Lengerich.

Second, the new air-conditioners and heat pumps would be more efficient with optional built-in electronic soft-starting, which would ramp up the compressor on startup, reducing the starting surge amp draw to 15-18 amps instead of 35-40 amps. This will allow for easier starting so that power could be successfully provided by smaller generators or inverter systems (that are sized right). The Power Saver models reduce running current consumption by about 2 amps for each A/C, so two units can run on a 30-amp power or three on 50-amp service without a shedding feature. A central thermostat controller regulates these air-conditioners, with zone thermistors installed throughout the rig to better balance heating and cooling.

Embellishing the upgraded A/C units is a redesign of the cool-air ducting system, which combined prefabricated polypropylene duct connectors and terminations that direct airflow into the ducts via a radius, reducing airflow loss from hard-right angles. These improvements are combined with more precise assembly and a new, custom-designed ceiling register Keystone calls "The Blade." This register directs air out of the duct into a spiral grille that helps



This chart illustrates the power use difference between the Powersaver Mach 15 A/C and the standard Mach 15. For a three-A/C system, that's a 6-amp saving. The amperage goes down if the size is reduced, as seen on the right with the Mach 3 PS. Remember that with 50-amp service, each side of the breaker panel has 50-amps, for a total of 100-amps. That means that on a 50-amp service, three 15K A/Cs can run with plenty of room to spare. Two on a 30-amp service can be tight, but most RVs with 30-amp service don't have two 15k A/Cs. Chart courtesy Airxcel

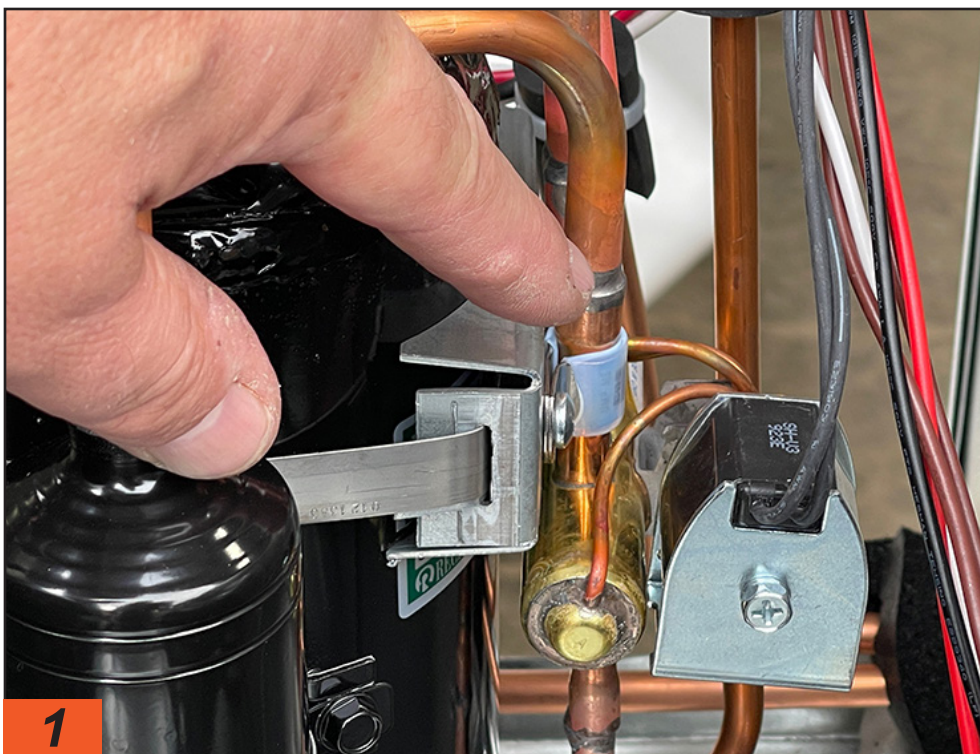
disburse the cold air more evenly in the RV. Moreover, the ducts themselves are redesigned, using fluid dynamic principles to increase airflow velocity throughout the system.

Better (and additional) air-conditioners, better ducting, better registers, better sealing of ducts (and no crushing of ducts) translated into a 20% increase in cooling performance, according to Keystone — all while lowering noise levels.

Does it work? We were able to upgrade the project Montana to find out.

Our first task was to determine if the new system could be installed without tearing apart the whole roof assembly. Replacing the ductwork ultimately would be an immense task that would damage the fifth wheel and cost thousands of dollars, which is not something most people will do unless the roof was being removed anyway to repair water or collision damage. However, we removed the existing registers and A/Cs exposing many of the most significant failure points in duct system, which allowed us to make modifications and improvements.

The existing two-air-conditioning system was replaced with the new Coleman-Mach A/Cs — consisting of a 15,000 Btu Power Saver air-conditioner with white polished shroud and Ducted Quiet (DQ) feature, a 15,000 Btu Power Saver Heat Pump with white textured shroud and DQ, and a 13,500 Btu Standard air-conditioner with white textured



The key to any heat pump is the reversing valve. This makes the evaporator and condenser exchange duties, absorbing warmth from the outside air and transferring it to the inside of the RV.

shroud and Non-Ducted Quiet. Wiring was added to the front of the Montana for the third air-conditioner and the rig was re-wired for the new A/C system and thermostat with zone thermistors.

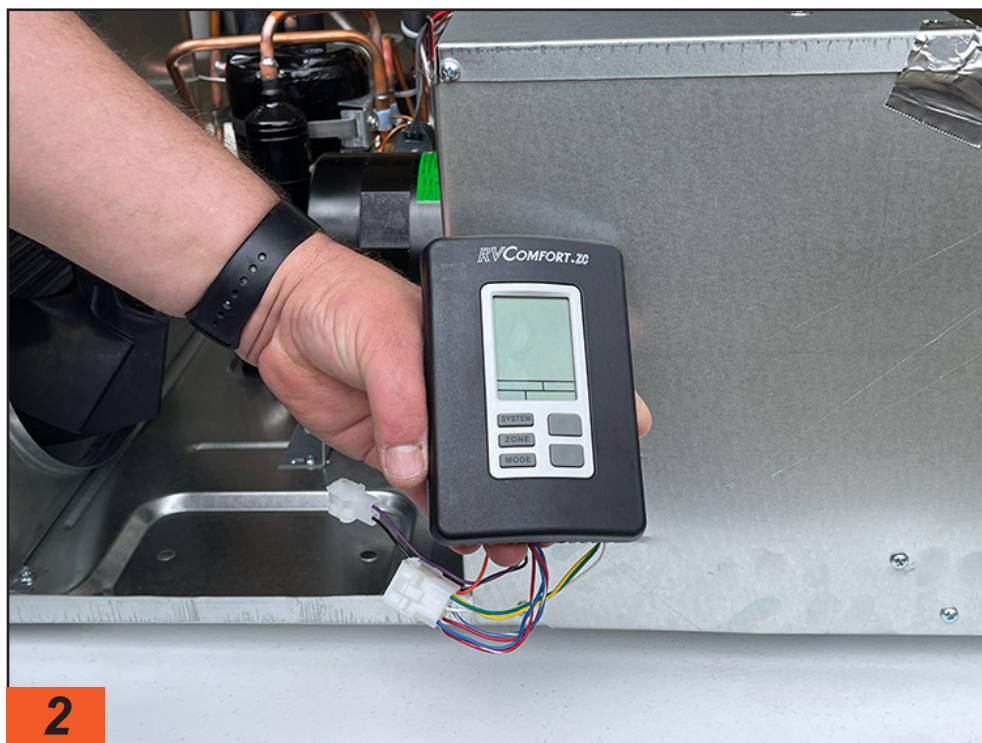
For this project, we also worked with David Gehlen, product manager for the Coleman-Mach and Maxxair brands for

Airxcel. Gehlen is a wealth of engineering knowledge in this segment and was extremely thorough with his answers to my questions.

The Installation

We removed the old air-conditioners, thermostats, thermistors and registers. We also removed the living room MaxxFan and its control switch since we would be adding a third A/C unit (the 13,500-Btu NDQ model) in that space. The use of this unit is one of the only changes we made from the factory-designed 2021 Montana's setup; the third A/C option for new Montanas is a 15,000-Btu NDQ model. The other change is the thermostat. We installed the Coleman-Mach digital multi-zone system, while KRV uses the Jensen iN-Command multiplexing system as the control interface. The 2015 was built before iN-Command was available.

The duct repairs and re-wiring were our first tasks. The ductwork in this unit needed a lot of re-working and TLC. There were no duct registers in the galley and dining slide/hallway, which made the mid-section (the core of rig) quite warm. Also, there was little airflow through the ducts directed to the living room. These problems are common in many RVs, and sometimes reworking the reachable ductwork can make a big difference. Fortunately, when we used a camera to scope the ductwork, the ends and joints were in good condition,



While the new Montanas use the Jensen iN-Command system to control the HVAC, the project fifth wheel was built before iN-Command was available, so we installed the RV Comfort ZC digital control system.



3

When the ceiling registers were removed, many looked like this, where the aluminum tape had ripped away during the installation of the register, opening the rafter space to the duct and creating leaks.

and only minor crushing was evident.

In 2015, KRV was using a central ADB instead of the outboard air returns, which were problematic on some models because the return ducts in the

crowned roof were crushed. It is possible to abandon these ducts and cut in center ADBs when doing a replacement if your return ducts are problematic. This will also allow you to benefit from

the new features like better air filtration and the new quiet technology while improving airflow through the system.

Once the ducts were repaired and the new registers cut in, we had to run a new wiring harness from the front to back. We ran this harness over the roof and into the door-side A/C duct. This is the only way to go without removing the roof or ceiling. In a trailer, this is fine, but in a motorhome, it might be better to consider internal routing, as rattling could develop from jostling while driving — which could be annoying and challenging to fix. We secured the harness nicely, tucked into the corner of the duct, and sealed around the areas where we routed the harness through the duct walls. This included 120-volt AC power for the new front A/C, electronic control wires and furnace thermostat wires (the Coleman-Mach system controlled the furnace from the wall thermostat controller, not the ceiling control box). We also added two remote thermistors for the mid-trailer area and front living room zones. The wall thermostat was converted to a controller and mounted inside the RV command center's cabinet.

Physically mounting the air-conditioners is a straightforward process that requires a lot of lifting and is better done with a hoist, like the one we used at Tim's RV in Erving, Massachusetts.



KEEPING YOU CONNECTED.

parts.revgroup.com/store





We used a small camera to look inside the ductwork and found the ends were sealed, but only with aluminum tape. While we were unable to change this, we could seal the ends of the duct with foam. Keystone now uses a polyethylene cap at junction and termination points.

It was nice having the lift and extra hands to help. The air-conditioners are sandwiched between the roof and ADB using four long bolts that were torqued to spec.

The Result

When all was said and done, we tested the system, and everyone in the shop was amazed at the difference in sound and cooling. We were lucky (at the testing phase, anyway) to be having an early heatwave in New England during this project, and with all three A/Cs running on the 50-amp service, the cooling was exceptional. Plus, the Quiet Series air-conditioners benefit from a reduction in noise: on High Cool, the NDQ version reduces sound by 5 to 6dB, and 8 to 9dB on Low Cool; the DQ reduces noise at low speed by 5 to 6dB. Tim's RV's chief technician, Brandon Turner, is a detail-oriented technician who excels in this kind of project, and the whole project was completed in about 20 labor hours over two days.

So, did the upgrade on our 2015 match the 2021 Keystone Montana (and newer models) with the same Coleman-Mach equipment and duct system? Not quite — there's no substitute for implementing a system like this right at the initial construction stage

— but the Achilles heel for cooling the 2015 has been resolved: it now cools off quite nicely in direct heat and sun.

We also replaced the factory A/C filters with new Coleman-Mach MERV-9 replacement air filters (MERV rating is 1-16, with 16 the highest) in two of the units, which is the first time a roof-mounted A/C has efficiently and successfully benefited from this level

of filtration. If we were so inclined, we could have opted for the Soft Start feature (also available as an easy, one-hour-to-install aftermarket product from Coleman-Mach), which is included in the new Montanas with the SolarFlex 1200i package, according to Lengerich. Kudos to the KRV team for studying this and implementing it in the units.

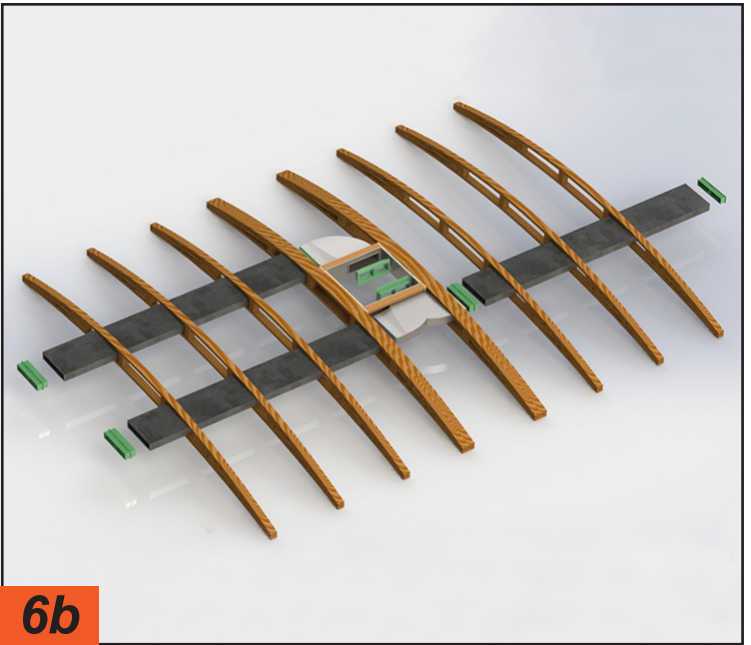
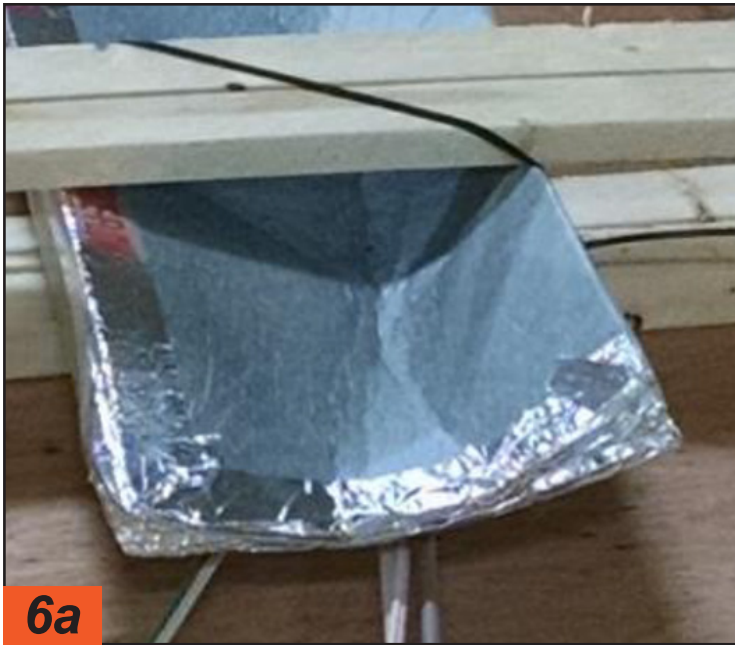
As far as pricing is concerned, you can find the Coleman-Mach units we installed at a number of retailers, both online and in the store. Air-conditioner or heat pump pricing runs about \$1,300-1,550 depending on the unit, the functions and the shroud style you prefer. The thermostat system and controllers are separate. We also had additional wiring and some shop supplies. Overall, our cost was about \$5,000 for everything, but there may be deals to be had online. Some of these parts are brand new, and you may have to reach out to Coleman-Mach for more information. The parts person at your dealer or service center should be able to help.

One thing that was abundantly clear from working on this project is that RV owners who are replacing their A/Cs now have better options and flexibility. While it's not recommended in most cases, RVers can replace a roof-air unit and adapt it to the RV's existing ADB and control system. A direct replacement is logical if the A/C system works suitably over time. But, if the legacy system could be improved and/or become more efficient, spend some time researching your options, especially if you plan on keeping your RV for a while.

Your body will thank you for the cool breeze in summer.



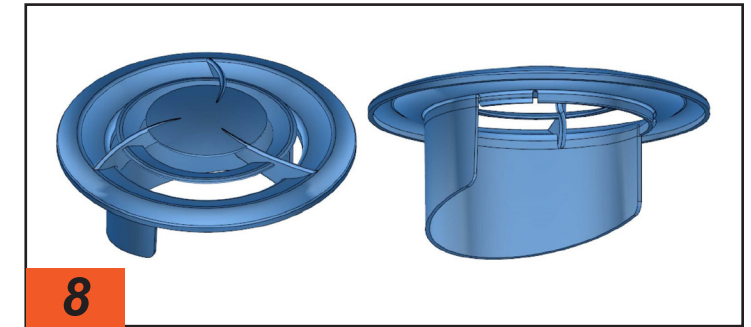
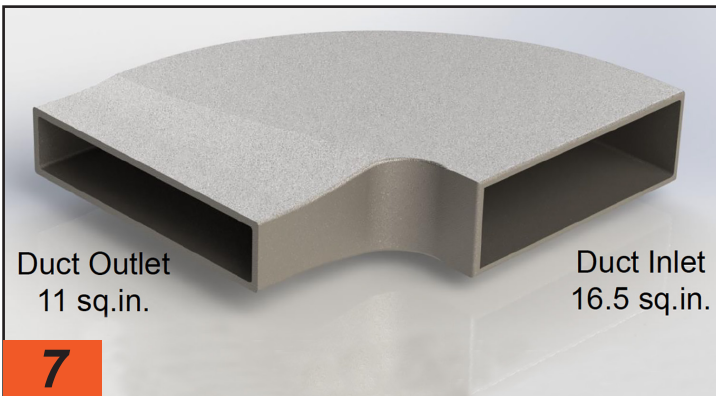
When we removed the two original A/Cs, the air distribution boxes, (ADB), were a mess. Since this fifth wheel was new, the air-conditioner made the rafter space nice and cool, but not the living area.



6a

6b

In many instances, a duct termination can be crushed and taped closed like this one. Keystone RV now uses a polyethylene cap, a redesigned duct and ADB liner to fix this issue. Photos courtesy Keystone RV



7

8

The new patented quiet duct uses Bernoulli's principle of reducing the space the air can travel in the duct to accelerate the flow of air to the registers.

The new patented Blade registers direct air in a 360-degree pattern instead of the uni-or-bi-directional flow of most registers.



9

10

Not only had the tape failed and the ducts been crushed in our Montana, but the lauan panels installed as separators covered about one inch of the duct.

Upon repair, we expanded and secured the duct to the framing, cut back the lauan panel and re-taped and resealed the ADBs.



11a



11b

We removed the front MaxxFan and controller and spent some time cleaning up the roof. Because the opening was not prepped, we built out the box structurally and sealed it before attaching the air-conditioner.



12

A new wiring harness was designed and assembled; it was routed from the front A/C opening through the ductwork to the rear A/C with stops at the middle A/C, utility panel and circuit breaker cabinet. Because of other modifications done to this RV, we had an open a 20-amp circuit in the breaker panel, which made adding the third A/C a breeze.



13

Pulling the new harness required a little finagling, and some cabling from the old system was abandoned.



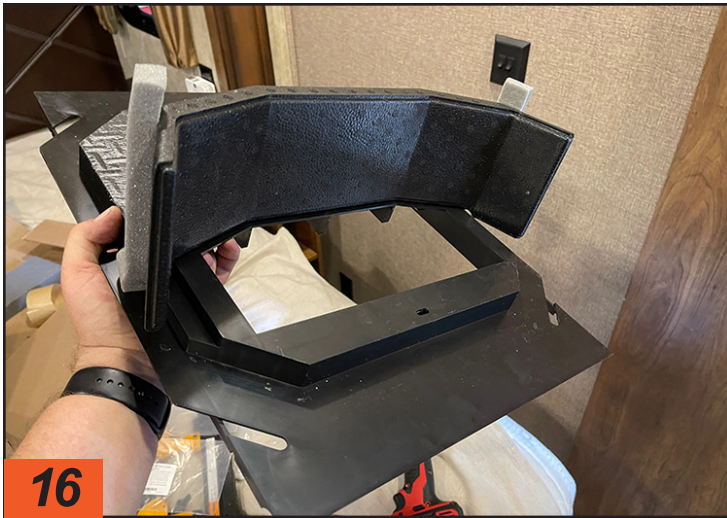
14

Each A/C has a control box specific to the system, which must be wired to the other controllers, the thermostat control and 120-volt AC power.



15

An essential part of this job was to assign each unit to a zone by moving a jumper in each controller.



16

Part of the system is this new baffle, made of sound and thermally insulating foam, which snaps onto the ADB panel.



17

Once the ADB is appropriately installed, a nice air-tight and insulated seal is created between the delivery and return sides.



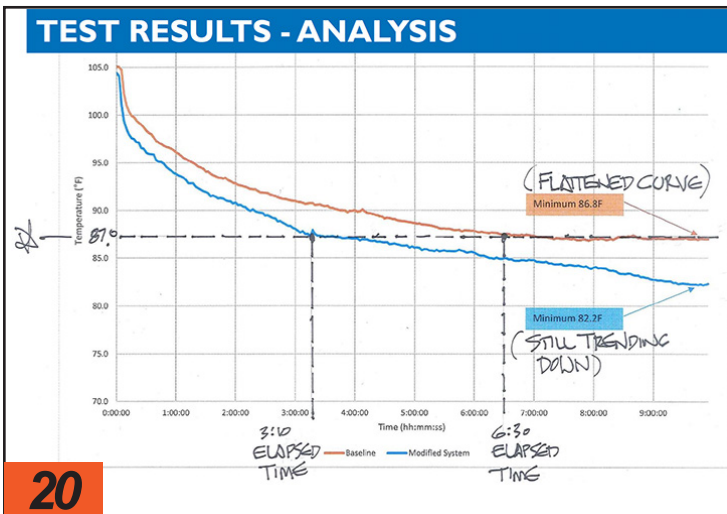
18

The DQ ADBs used here feature the new air-filtration feature, with an easily replaceable filter available online.



19

In previous years, the "ultra-quiet" return duct, circled here, was used to reduce sound from the A/C. The problem? The radius roof slants down to where the intake vents were situated by the outside wall, insulation and roof decking. This configuration would sometimes crush the duct, reducing airflow. The new system eliminates this problem, and even owners who have this type of return may be able to modify their unit for the central return and abandon the outboard returns, depending on the design of the ADB. This one has a truss through the middle, which would complicate that modification.



20

These test results provided by Keystone RV show the effectiveness of the new Blade A/C system over the old setup in a sample floor-plan. The results as shown here correlate with our "seat of the pants" experience with the new system vs. the old, except that the cooling was worse before the duct repairs. **RVE**

Sources:

Airxcel/Coleman-Mach (316) 832-3400
airxcel.com/rv/coleman-mach

Keystone RV Co. (574) 535-2100
keystonerv.com/montana

Tim's RV (413) 522-3410
timsrvinc.com

RV Furnishings — From Sofas to Showers — Following Residential Trends More Than Ever



Doug Miller, product and sales manager for Fleetwood RV, a division of REV RV Group, inside the company's new Fleetwood Flex. The Class A features a lighter, brighter interior and such unique touches as sliding barn-style doors to create more privacy for the stacked bunks.

Pet-friendly fabrics, easy-glide seating, heated towel racks — the evolving state of RV interior comfort continues to ratchet up in a big way.

By Ron Barger

With its back-to-back record sales years, the growing RV industry has not only enjoyed a newfound popularity among outdoor RV enthusiasts but it has also shed an even brighter light on how RV interiors have reached astonishing levels of performance.

Indeed, few would argue that the industry's interior design segment has grown its supplier base, material choices, color palettes and design

decisions to the point where form and style are just as important as functionality, durability and comfort. In fact, this burgeoning RV niche attracts new suppliers every year, many of which were previously dedicated to the residential market.

The newcomers to this niche, it could be argued, also are on the scene because savvy OEMs now see opportunities in targeting specific demographics beyond traditional price points. These

can include hip, young design offerings for hip, young buyers, or more conservative classic styles for older buyers — and everything in between. And let's not forget that the push to make RVs lighter, more fuel efficient and environmentally friendly also has resulted in myriad new materials, films and coatings that have opened up a new age of color and variety.

In short, the days of RV OEMs copying each other with mauve, teal and



Lippert Furniture Product Manager/R&D Tim Meade, left, and Anthony Howard, general manager, in the company's furniture showroom. (RVBusiness photo: Peter Ringenberg)

tan interiors are gone. Nowadays, each company is striving for a unique look and feel.

"RV companies used to copycat each other and it's not that way anymore," one supplier said privately. "We now show a huge variety of product design to the (OEM) customer. They are no longer asking 'who is doing what,' but rather 'what can we do differently.' If they are looking for contemporary, or they are looking for farmhouse, there are choices they can make. Dark or light. Everyone is going to their own beat, which is really nice for both the suppliers and the consumer."

Kelli Gierz, consumer business manager for ITC Inc., a lighting and accessory maker based out of Hudsonville, Mich., concurred that OEMs are looking to stand apart. It's good for business, she said.

"We do see customers wanting to stand out," she reported. "And that's

one of the things we excel at. We work in the marine industry as well and those companies have been on that path for a much longer time. We have many products that help RV companies look different and then we have many that work with us to customize solutions."

At Georgia-based Toppan Interamerica Inc., a producer of décor films for furniture and flooring, Patty Holt, an RV account executive and design consultant, said there are a variety of trends that have developed throughout the last year.

"The consumer has more choices than ever when it comes to the interiors offered today," she said. "From whites to blacks, but natural finished tones are definitely on a rise. Every option

of grey can be seen in cabinetry. We've seen an introduction of a strong blue hue as it relates to grey in cabinetry as well. We are also seeing the natural tones mixing with the greys, which is a very inviting trend. Marbles, woods, and subtle transitional patterns can be seen on countertops.

"Wallboards continue with linens, natural fiber designs to add the feel of texture," Holt continued. "We are also seeing larger accent wallboards in geometric designs, herringbones, chevrons, and more. The interiors today are giving true dimension and layering, which gives the right balance when designing an interior."

Doyle Stump, executive vice president of innovation for Patrick Industries, also commented on the trends his firm is seeing in the RV interiors realm.

"Comfortable, warmer interiors are definitely on the rise, as opposed to the cooler, more clinical interiors we have seen in the recent past," he said. "Lighter, brighter walls, curved furniture lines, natural wood tones and inviting textures are what our customers have been asking to see. Bits of neutral, natural colors are also creeping into RV interiors. Blues and greens on islands, fabrics, and feature walls will definitely have their place in future RV interiors."

Of course, no discussion of RV interiors would be complete without a focus on furniture — and most RV furniture executives agree that, although the variety of styles is more diverse than ever, campers are increasingly looking for the "feel" of home in their RV, from luxurious couches to comfort-height commodes.

"I would say the biggest change I've



Winnebago's Class B EKKO is available with a Boho color palette that includes bold red countertops and fabric inserts.



With an estimated 80% of the market, Lippert has four facilities dedicated to making furniture and other furnishings. (RVBusiness photos: Peter Ringenberg)

seen in the last few years is we used to always trend behind the residential segment from two to five years. That window is a lot tighter now across the interiors segment,” said Andrew Mock, director of sales for Lippert’s interiors division. The largest supplier in the RV furnishings space since it entered the market around 2010 with the acquisition of Seal Tech, Lippert sells its furniture under the Lippert and Thomas Payne brands as well as under private-label branding.

“If we saw something popular in residential, it typically took two to five years for it to get popular in the RV space,” Mock added. “When we do our product development, we go to every retail furniture show. That’s where we get our inspiration from and then kind of create it from there.”

He said that quality of components has been another big improvement.

“For instance, there are higher-quality coverings now in polyurethane,” he noted. “There has been an emphasis on putting on quality covering now, which is great to see.”

Variety of products available has also evolved to now include a wider assortment, he added.

“As an example, we probably have in each space — from stick-and-tin to motorized luxury — five or six different sleeping functions,” Mock said. “In cedar seats you have probably 10 different ways you could build out a cedar seat. Then the low end, probably four to five different ways to add function to a jack-knife or a storage sofa.”

In talking with other manufacturers in the RV furniture space, it was clear that most campers also want furniture that is kid-, dog- and uncle-proof.

“When we see people come into the design center, most are looking

for more durable fabrics,” stated Ryan Biren, senior vice president of corporate development for Camping World’s new Allure furniture brand. “When they hit the road, they have dogs and they don’t want to get their fabrics scratched up. So, we are increasingly looking at durable fabrics that can withstand stain protection and weather and age appropriately.”

Camping World is distributing furniture to OEMs, dealers and campers

wanting a change through its chain of some 185-plus stores across the U.S. It has a solid feel for what campers want from its furniture replacement business at these outlets, Biren said.

“Most people coming for a replacement are because of fabric-quality issues,” he added. “Would it survive the kids and the dog? That’s the big question they ask upon replacement — which gives us a good feel for what the market is looking for.”



OEMs and major suppliers alike employ a cadre of designers who continually upgrade the aesthetics of RV interiors to embrace current — and future — trends. Patrick Industries’ Design Team (pictured) are (back row, L-R, Kaitlyn Kirkwood (designer), Stacey Pletcher (senior designer), and Cassie Russell (designer); (front, L-R) Sarah Raymond (vice president of design), and Corey Payne (senior designer).

Jason Miller, president of the Wapakarusa, Ind.-based REM Industries, concurs. The family company was founded in 1991 and specialized in free-standing, upholstered dinette chairs. But it now is diversifying into the rest of the RV furnishings market.

Today, he said, the company is producing dinette cushions for travel trailers, all the way through its high-end freestanding chairs and recliners; what's trending now, he added, are the new woven vinyl fabrics that have hit the market.

"They don't look like vinyl," Miller shared. "They have prints in them basically to make them look like cloth, but they're not. It's just a really impressive new product. They come in many patterns, look like real fabric but are more durable."

Brian Pletcher, president of Pletcher Sales Inc., based in Bristol, Ind., also sees durable, stain-resistant fabrics on the comeback.

"Our big push right now is polyurethanes because everybody's using it," said Pletcher. "I have a strong feeling that it's going to turn back to fabrics eventually, but it's going to need to be a performance-type fabric so that the dealers have a story to tell."

The company specializes in providing complete RV interior packages including comforters, pillows, window treat-

ments, privacy curtains, hard valances, headboards and backsplash panels.

"We also offer upholstery products including performance fabrics, polyurethane, vinyl and leather," Pletcher added. "Along with our manufacturing capabilities, we also import and distribute comforter packages, peel-and-stick backsplash panels and dinette chairs."

And, as Biren pointed out, people also want electronics incorporated into furniture. "There's a lot of interest in some phone-charging capability as well as cooling and warming of cups in the cup holders. So, there's a lot of cool technology and electronics that are starting to be added to the entertainment side of the furniture and we're introducing those as well," he explained.

Then too, many higher-end suppliers, such as Bradd & Hall, a maker of luxury captain's chairs, have gone to Ultraleather fabric replacing cloth.

"Mostly 90-95% of what we sell is an Ultraleather. It's used in Cadillacs, Mustangs and they're putting it in the



Interior of the 2023 Entegra Coach Reatta XL.

2022 Range Rover. It holds up nicely," said CEO Bradd Neidhamer.

Here's a look at some of the latest offerings in the interior space — both furniture and comfort upgrades — you'll find on dealer lots this summer:

Lippert Components Inc./ Thomas Payne Furniture

LCI offers a full range of its Thomas Payne brand furniture to both OEMs and dealers.

"As far as design trends, the grays are still the decor trend," said Mock. "That will be here for a while, and I'd say that more of a modern look to the sofas has definitely taken over. We're all kind of getting rid of the over-stuffed arms and the big, poufy seats and backs."

Thomas Payne Euro Recliner – In line with this trend



is the Thomas Payne Euro Recliner Chair with Footrest. A more modern alternative to viewing TV and reading, this RV recliner has a full 360-degree swivel action, smooth-reclining motion, and comes with a high-density foam interior for added comfort. The chair features manual recline operation

and is covered in an easy-to-clean, PolyHyde vinyl fabric that comes with a five-year hydrolysis warranty. Three PolyHyde color options include Millbrae, Altoona and Grummond with a single woven option of Norlina. It fits through a 26-inch entry door for easy installation. When reclined it extends to 59 inches.

Thomas Payne RV Tri-Fold Sofa – Designed for style



and functionality, this 72-inch RV tri-fold sofa is low maintenance and easy to clean. In four simple steps it converts from seating space to sleeping space with total ease.

PolyHyde vinyl fabric has a five-year hydrolysis warranty. Three stylish color options include: Millbrae, Altoona, and Grummond with a woven fabric color option called Norlina. It is designed so support bars do not disrupt sleep or comfort and has a high-density foam interior for extra comfort. It has a removeable back for easy installation on the line. It takes up one-foot less than traditional hide-a-bed-sofas.

Allure by Camping World



Camping World has entered the furniture market with its Allure, Kathy Ireland and other brands serving its retail outlets, dealers and, now, RV OEMs.

Allure has come out with two, patented easy-glide, easy-out featured sofas that extend into tight spaces, Biren mentioned.

"It's very easy to maneuver and it uses the furniture itself as the cushion. So, our easy-out, easy-glide has been really two key products popular with OEM customers as it reclines really well and doesn't require a pullout mattress," he said. "It's much simpler to support on the line and it is lighter weight."

"The biggest thing from a support perspective for the end user is if there's an issue with a piece of furniture, they can come to a local Camping World and we can support that issue with units in the store," he explained. "So, customers don't have to wait for something coming from Elkhart. So with our Camping World network, it makes it very accessible to supply the OEMs."

Pletcher Sales/Revolution Fabrics



Company president Brian Pletcher said the Revolution line of fabrics is virtually stain proof. "It can be bleach cleaned and it doesn't harm the fabric or the yarns at all," he said. "It won't discolor, and we don't use any chemicals on it so it passed 302 (automotive standard). So, we can put it in the motorized unit."

He explained the Revolution line is made of woven yarn that's extremely durable. "It's the yarn that we use and the way we weave it. It's not something that I would call water-proof," he said. "There are some fabrics out there now that will bead up water; that's not what this is. You can't destroy this stuff. And it's got a pretty big presence in the retail furniture industry. And we think that more and more of these designers want their units to look like your home."

Bradd & Hall Inc.



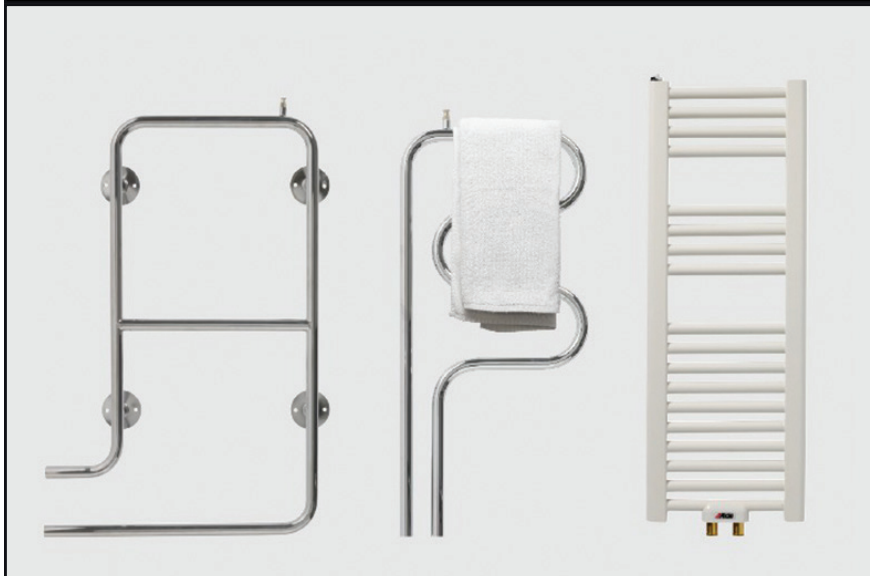
Bradd & Hall just celebrated 40 years in business serving the high-end captain's chair seating for motorhomes and other RV accessory furniture. This year, the company is touting its newest captain's chairs dedicated to the higher-end Class A motorhome market.

"We're doing pretty much Class A captain's chairs," Neidhamer stated. "But we're also doing a few smaller ones. We're working on doing some integrated seats, but mainly Class A with nice footrest chairs for passengers and all that kind of stuff."

Neidhamer said the company's newest, most deluxe captain's chair is called the Contoura because of its ergonomic properties that conform to any shape. "We wanted to make a footrest that was comfortable," he explained before saying Flexsteel, before it left the market a few years ago, made the best product in the industry. "Especially when it came to captain's chairs, nobody compared to what they did."

After selling Flexsteel chairs for many years, his designers integrated the best elements of its top selling chairs. "It's a contoured fit," Neidhamer continued. "It's got side bolsters and back bolsters and we're using an automotive-grade lumbar device in both a manual and power version. It features both high and low heat options. It has a footrest option. There are adjustable arms with six-way power settings as well. It's really nice and is finished off with Ultraleather."

Alde Heated Towel Racks



Alde Hydronic Heating was originally developed to keep RVs warm in the harsh, Swedish winters and has been tested in temperatures as low as -31 degrees F. In addition to providing year-round comfort, the Alde Compact 3020 — a unique OEM-installed heating system that circulates warm glycol heated by LPG and electric-powered boiler — also has compatible accessories that will add an extra level of luxury to the RV. In-floor heating and heated towel bars can be added to the system and are warmed by the same glycol that is used to heat the air. This creates a more natural convection heat, where the warm air from the system rises to the ceiling and falls as it cools. Because there is no forced air, the atmosphere inside the RV is warm and quiet without being dry and noisy. Due to the unique way the heat is delivered throughout the RV, Truma Corp in Elkhart, Ind., assists OEMs in developing the Alde system for each unit to achieve the best end result.

Dometic Model 7640 Macerator Toilet



A critical part of any RV interior furnishings is the bath, and Dometic offers good, better and best options for its RV commodes — from portable toilets for vans to its new model 7640 — according to Brent Clark, a senior OEM new business development manager for the company.

“For new entries into our product line we have a 7640, which is our 310 toilet but it has a macerator and runs off of a pedal flush,” explained Clark. “It’s 50% less than our standard macerator but it gives the customer more. It’s very popular today because we have seen a second bath that has been added to many coaches that don’t have a lot of space for another tank. This allows the pumping of the slur over to the main tank.” He said the slow, quiet-close toilet seat has become very popular in RVs because of the sound reduction in the innate close quarters of camping. “That has just taken off to the point that this will soon be standard on all RV toilets,” he said. “No more slams in the middle of the night. Unlike on residential toilets, our wood seat is the top of the line.”

Way Interglobal/Greystone 36-Inch Wall-Mount Fireplace



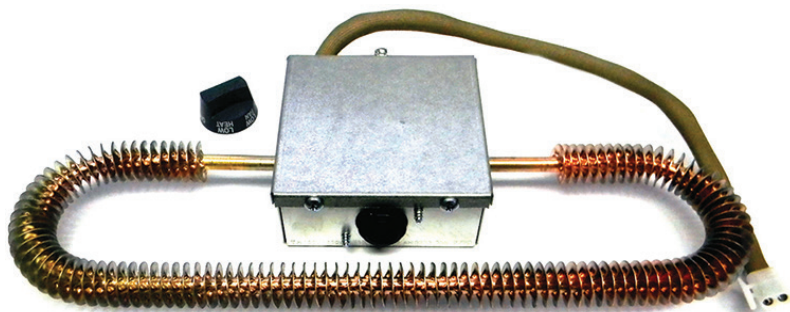
The folks at Way understand it can be tough to stay warm on those cold, windy evenings out on the road. It can also be a challenge to find a place for an electric fireplace in an RV with limited space. One solution is the Greystone 36-Inch Wall-Mount RV Fireplace. This well-designed and engineered fireplace specifically for RVs includes six temperature settings, five flame brightness settings, a high-quality and quiet fan blower, and an automatic shut-off timer from 30 minutes up to nine hours. The Greystone 36-Inch Wall-Mount RV Fireplace has realistic flames and a log set to make any room feel warm and cozy.

Airxcel/Coleman-Mach iWave-M Ionic Air Purifier



Campers get cleaner air for safer and more pleasant RV interiors with the iWave-M Ionic Air Purifier, said to provide a cleaner and healthier RV interior by killing airborne mold, bacteria and many virus spores and removing pet and cooking odors without creating harmful by-products like ozone. This climate control accessory is installed inside Coleman-Mach air conditioners and ceiling assemblies for protection without intrusion into an RV's living space. The air purification unit operates whenever the fan is on. The innovative add-on accessory was developed with HVAC specialists at Nu-Calgon and uses a powerful particle ionization method to create positive and negative ions that react to and break down pathogens, allergens and particles.

Airxcel/Coleman-Mach Add-on Electric AirSpace Heater Kit



Feel an immediate temperature increase when needed with the Coleman-Mach Add-On Electric AirSpace Heater Kit. It not only gives the RV heating system a boost, it also steadily and evenly distributes warm air throughout the living space. The AirSpace Heater can be easily installed from inside the coach into existing Coleman-Mach ceiling assemblies. End-user packaging has been redesigned to align with the rest of the Climate Control Accessories.

Patrick Industries/SwiftTile



According to the company, Swift-Tile is a revolutionary new porcelain tile that installs more than two times faster than standard tile. The Rapid-Prep underlayment, RapidGrout, and ClicFit technology allows easy, quick installation without the mess of mortar, spacers, or long wait times. This floating floor system is glazed porcelain laminated onto a proprietary core backer with its patented ClicFit Technology locking system. SwiftTile offers the same durability and benefits of standard porcelain tile. The only difference is the ClicFit Technology that allows for the click-together installation that makes the process quick and easy.

ITC MOD Leg System



The MOD Leg system can support a dining table, desk or workspace, seamlessly changing positions with a single mounting location. Available in a wall or floor mount, the leg is height-adjustable with a 360-degree swivel. The wall mount with tilting functionality lets users move the tabletop to various tilted positions – as far as 90 degrees – allowing it to be locked and stowed against the wall when not in use. “Post-pandemic lifestyle changes have encouraged RV manufacturers to implement more modular and multi-use spaces, boosting interest in our spread of adjustable table legs which allow RVers to make more of their spaces,” Gierz said.



ITC RV Contemporary Linear Light



With a modern design, the Contemporary Linear Light will complement all RV styles. It provides a more evenly lit environment and offers easier installation than traditional puck lights. One linear light can replace up to four puck lights. As a versatile, single-color diffused lighting fixture, it comes in three finishes and several Kelvin light color options that will brighten up any space. ITC also offers tape lights for installation around curves. **RVE**



Simply Better

Quality products designed to work together.

Truma systems are designed to provide the highest level of quality, comfort, and efficiency on any adventure. Our energy-efficient hot water, heating, and air conditioning systems allow you to take the comforts of home with you no matter how far off the beaten path you may roam.

www.truma.net

