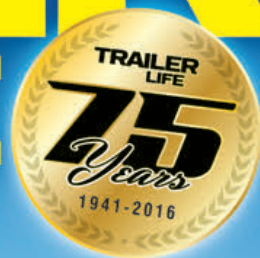


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Fargo, North Dakota



➤ For 2017, Jayco extends the White Hawk 24MBH's awning to cover the outdoor kitchen. Page 12

On the cover: The new front-kitchen Keystone Montana at the RV/MH Hall of Fame and Museum in Elkhart, Indiana, by Shawn Spence Photography

Knowledge Is the Key to Fun Times

Gleaning information from fellow RVers and through a solid testing program keeps enthusiasts on top of the curve



Testing RVs and keeping current on new models and floorplans are among the more exciting aspects of our job. Throughout the year, we visit manufacturers, shows and campgrounds to see what's new and interesting. We live in the new RVs so we can learn what works and what doesn't. Many times we end up in rigs that are prototypes, and in the case of this month's test (page 22), the new front-kitchen Montana came off the assembly line just hours before we started our evaluation.

To Keystone's credit, this fifth-wheel rolled off the line with nary a glitch, which made our experience virtually incident-free and left us without stories to tell our fellow editors. That's not always the case, of course, but we take challenges as a positive way to learn new things and figure out ways to solve problems. Just like most RV owners, we build on our personal book of knowledge by doing, and assemble research material that can be referenced at a later date.

As part of that learning experience, we spend a lot of time in RV parks and at special events talking to fellow owners, who typically are eager to share their thoughts, good or bad. To capture that information, we introduced an annual editorial feature four years ago that allows us to tap into that knowledge base and present the information to others. Our Readers' Choice Awards are based on the results of online voting by subscribers who would like to tell the world which products, RVs, tow vehicles and places to camp live up to or exceed expectations.

Be sure to go to www.trailerlife.com/readers-choice and place your votes in various categories before the September 23 deadline. Your voting is very important, and the results will be published in the January 2017 issue.

While your input is valuable, we also pride ourselves on developing top-notch technical content. Our goal is to publish articles on every aspect of RV ownership, including maintenance, lifestyle and what's new in the industry. To build on that commitment, we've added a new technical editor, Chris Dougherty, who jumped right into the fray and spearheaded the test on the Montana 3820FK. A certified RV technician, Dougherty spent 10 years as a full-time RVer, and will use this experience along with his service training to bring strength to our technical team.

We welcome Dougherty aboard, and look forward to your votes for the best of the best. 📧

— Bob Livingston, publisher

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BIRTHDAY BASH

The National Park Service turns 100 on August 25, the day President Woodrow Wilson signed into law the act creating the agency that protects and preserves America's public lands. To celebrate, from August 25 through 28 this year, admission is free at the 127 national parks that charge an entrance fee.

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Back on the Rack

Regarding Mike Schnierle's June letter, "Bicycles, Front and Center," and previous letters about transporting bikes on RVs, I have two suggestions. First, if the RV is anything other than a pop-up trailer, why not simply put the bike inside the trailer when traveling? Surely, there is room, and this can save all the hassles of outside-the-vehicle mounting and exposure to the elements. Second, for those who do have a pop-up, the very low trailer height allows a bike rack to fit easily on top of the trailer.

Jim Isbell, Anaheim, California

I have been a subscriber ever since my wife and I traded in our tent for a truck camper nine years ago. We graduated to a 31-foot Keystone Laredo, and now own a 30-foot CrossRoads Cameo. Like Mike Schnierle, we wanted to take our bikes with us. I bought a top-of-the-line bike rack to use behind our truck camper, and that worked well, but once we switched to a fifth-wheel, we found that our bikes were all beat up after our first trip. I ended up contacting the maker of the bike rack and found out that it was not intended for use on RVs.

After doing some research and finding no U.S. manufacturers that approved their bike racks for RV use, I found a Canadian company called Swagman that has a line of RV bike racks. I ordered one and have been using it for seven years and many miles. I also turned a friend who has a motorhome on to them, and he has been using his for about five years. Camping World carries Swagman bike racks and will install them.

I hope this helps Mike and those who want a better way to travel with their bikes.

Scott Schulze, Sidney, Ohio



Indiana Takes Its Toll

On a recent trip from Ohio to Wisconsin for a family funeral, I decided to take our small Keystone Passport trailer for our



stay in the Milwaukee area. We drove the Indiana Toll Road, which charged us more than three times the car toll! This in the state that has more RV manufacturers than any other?

Robert Ulich, Media, Ohio

The Long and the Short of National Park Campsites

I appreciate *Trailer Life's* well-rounded coverage of RVs, including the outstanding RV Clinic section by Ken Freund and Jeff Johnston. You haven't shied away from taking on familiar woes such as tire and battery problems, front-cap troubles and delaminating sides. The RV Resolutions column is also useful in highlighting brands that seem more prone to quality-control problems. While *Trailer Life* always features informative travel articles, I suggest specifying exactly what length of RVs are allowed at campsites when national park campgrounds are mentioned.

Dave Holmes, South Hill, Washington

Maximum RV length at national park campgrounds varies from site to site, so that's easier said than done in articles that cover more than one national park, such as "The National Park Highway" on page 38. As the "Where to Stay Along the Way" sidebar suggests, it's best to check each NPS campground's webpage for campsite length restrictions. — Editors

What Were They Thinking?

Joe Mahonchak's "Why Did They Do That?" letter in the June issue prompted me to write about a bad idea I found on my new fifth-wheel trailer.

The problem is that the manufacturer put electrical wiring and LP-gas lines under the slideouts. When the slides are retracted for travel, the

wiring and gas lines are right above the tires and fully exposed. If a tire failure or blowout occurred, it would likely rip out the wiring and gas lines, as well as the weather seal and insulation, and damage the wheel well. The service center at our local RV dealer estimated it would cost \$2,500 to repair the sort of damage a tire failure would cause to my fifth-wheel.

Trailer Life has published a number of letters about tire failures this past year, and in our travels it is not uncommon to see trailers damaged by blowouts, along with temporary fixes to get the RVs home for more permanent repairs. To avoid costly repair bills and keep our vacations fun, I fabricated a shield to protect the wiring and gas line and some 10-gauge plates to protect the entire floor area above the tires.

It's also a good idea to check the DOT numbers on a new trailer's tires to see when they were manufactured. In my case, the tires were already more than two years old when I bought the fifth-wheel. This is a setup for failure.

Larry Gross, West Richland, Washington

Sometimes It Feels Like a Nut

I am religious about maintenance on my 2013 Jayco trailer, including tightening the lug nuts with a torque wrench before every trip. While doing that recently, my wrench slipped (I had made the rookie mistake of using a multi-point instead of a six-point socket), and it appeared

that I had rounded off the nut. With a little effort, I was able to turn the nut counterclockwise, but it seemed to be slipping and would not come off. I was sure the threads were stripped.

I contacted Jayco, as well as several tire dealers and mechanics, and got the same answer from everyone that I had a real problem and would probably have to cut it off with a torch, an air hammer or a chisel, which would probably ruin the hub, and it might even need a new axle. I saw a serious exodus from my bank account and envisioned our summer travel plans going up in smoke.

Jayco's service department did have one suggestion, to call Dexter Axle. I did that and spoke to Glenn Null, a service technician. After a few calls back and forth to get the axle number and photos to Glenn, he told me that the "nut" I was looking at was a cover over the lug nut, and that with a little patience, a Vise-Grip and a screwdriver (actually, a small nail-puller worked best), I might be able to pry off the cover and possibly

get a wrench on the inside nut.

It took quite a while, but it worked! Inside the cover was an 18-millimeter nut, which came off relatively easily with the right socket. Apparently, the nut "cover" was just slipping around the nut itself, but there was no damage to the stud, the hub or the axle.

My extreme thanks go to Glenn Null, who did not immediately go for the most obvious and costly solution. His suggestion saved us hundreds of dollars in repairs and probably weeks of delay in our summer travel. I also want to thank Anthony Rodriguez at Jayco, who suggested calling Dexter Axle. We're back on the road again, and I will always use a six-point socket on those wheels!

Larry Compter, Goode, Virginia

Time for Reflection

My wife, Sheila, and I own a 2014 Grand Design Reflection 337RLS fifth-wheel that we purchased new from Pleasureland RV Center in St. Cloud, Minnesota. Last fall, on our second-to-last outing

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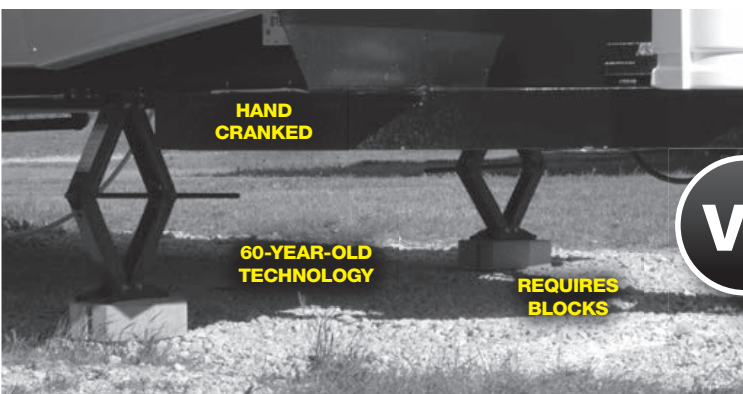
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LETTERS

of the season, the passenger-side slide would not work when we tried to pull it in at the end of the weekend. Thankfully, we were able to bring it in manually with the handle provided with the trailer.

The following Monday, I spoke to David Hilliker, Grand Design's service manager, to explain the problem. He thought it might be a bad switch and sent us a new one at no charge. I installed the new switch, but it did not correct the problem.

I contacted Hilliker to let him know I had made an appointment with Pleasureland's service department. He asked that I have Pleasureland contact him when they found the problem. After looking at the trailer, the technician determined that the circuit board for the slide was the issue. Hilliker told us the manufacturer would cover all of the associated repair costs. For this, my wife and I sincerely thank Grand Design.

We will definitely purchase from Grand Design when we are ready for our next fifth-wheel.

John Babin, Savage, Minnesota

Redwood Recap

We have a 2013 Redwood fifth-wheel that we have been very pleased with. This past summer, six months after the warranty expired, we noticed that both the front and rear caps were fading. I contacted Spader's RV Center in Sioux Falls, South Dakota, where we purchased the RV new, and explained my concern. Spader's said to send them some photos, and they would be in contact with Redwood RV. They also said that Redwood did not like seeing the company's RVs going down the road looking like that.

To make a long story short, Redwood paid to have both end caps painted. We cannot say enough good things about both Redwood and Spader's RV.

**Jim and Sharon Henderson
Worthington, Minnesota**

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(From far left) From Eagle Terrace within the park, visitors get a commanding bird's-eye view of Green Bay. Nicolet Beach is a favorite launching spot for kayakers wishing to paddle the bay.

Open the Door to a Treasure

Wisconsin's Peninsula State Park in Door County borders nearly 7 miles of Lake Michigan's Green Bay shoreline

article and photos by **Dave G. Houser**

Door County, Wisconsin, occupies a peninsula that extends like a giant thumb, with Lake Michigan on one side and Green Bay on the other. Known as the Cape Cod of the Midwest, it offers more miles of shoreline (298), the highest concentration of lighthouses (11) and more state parks (five) than any other county in the nation.

One of those state parks is on a peninsula on a peninsula, and is aptly named Peninsula State Park. The sprawling 3,776-acre preserve, situated near the villages of Fish Creek and Ephraim on the Green Bay shore, is Wisconsin's third largest state park. It is immensely popular, attracting

nearly a million visitors a year.

Many of those vacationers are RVers, enticed by a variety of outdoor activities and the park's five campgrounds that offer nearly 500 campsites. All of the campgrounds accommodate RVs, and three of them — Tension Bay, Weborg Point and South Nicolet Bay — have campsites with electric service.

You'll encounter one of the park's most outstanding features just past the entrance — the lush 18-hole Peninsula Golf Course, considered one of the most scenic in Wisconsin. The course measures 6,308 yards from the longest tees for a par of 71.

Green fees are a bargain at just \$20 for nine holes and \$36 for 18.

Open year-round, the park is laced with hiking, biking and cross-country-skiing trails. During the summer months, kayaks and canoes are available to rent at Nicolet Beach, where there's also a nice stretch of sand for swimming and sunbathing.

Towering limestone bluffs, some as high as 150 feet, rise from the shore of Green Bay and provide panoramic views from stone-lined overlooks constructed in the 1930s by the Civilian Conservation Corps.

Another key attraction is Eagle Bluff Lighthouse. President Andrew Johnson authorized construction of this handsome light in 1866, and it was completed in 1868. The lighthouse is open to visitors, and there's a small museum in the former lighthouse-keeper's home.

Peninsula State Park

920-868-3258

www.dnr.wi.gov/topic/parks/name/peninsula



The 1868 Eagle Bluff Lighthouse has been immaculately restored and preserved in Peninsula State Park.

Jayco White Hawk

Jayco improves upon its White Hawk travel trailer line for 2017, including the 27-foot 10-inch 24MBH with new exterior graphics and a 5-foot-longer awning that covers the outside kitchen. Inside enhancements range from double-over-double bunks at the rear to a soft-touch mattress on the forward Murphy bed, galley and vinyl flooring upgrades, and an optional EZ-Breeze power roof vent.

The 24MBH has a U-shaped dinette with a free-



standing table housed in a 36-inch-deep slideout. With the dinette converted to a bed, the trailer can sleep up to eight people. Across from the dinette, an angled peninsula structure houses a residential-style split-bowl sink with a pullout sprayer, set in an optional solid-surface countertop.

The 24MBH is the third shortest of the 14 trailers in the White Hawk line yet still offers a spacious interior with a ceiling height of 6 feet 9 inches. Unloaded vehicle weight is a claimed 5,455 pounds, leaving 1,295 pounds for cargo carrying capacity. The pass-through storage compartment, 42-gallon freshwater tank and 10-gallon LP-gas capacity (a 14-gallon upgrade is available) help owners gear up for adventure. Base MSRP is \$27,729.

Jayco, 574-825-5861, www.jayco.com



American Adventures Month

August marks the celebration of American Adventures Month, created by Peter Kulkkula. A lover of exploration who has traveled to every state and nearly every Canadian province, Kulkkula says the idea for the annual event originated from a desire to encourage people to go on vacation and explore the Americas.

To truly explore, he says, vacationers should go beyond the resorts, taste the local fare and meet the residents. The key is getting to know the area from someone who lives there — and bringing the kids along. For those uncomfortable traveling in unfamiliar areas, Kulkkula suggests vacationing with a tour group or a guide.

Kulkkula's philosophy is that seeing natural wonders and national parks in person — walking barefoot in rivers and gazing up at tall gorges, rather than looking at photos and videos — leads to a more fulfilling experience and a richer life. In the words of Dr. Seuss: "You're off to great places! Today is your day! Your mountain is waiting, so...get on your way!" www.americanadventuresmonth.com



Reno Air Races

The 2016 National Championship Air Races take place September 14 through 18 this year at Nevada's Reno-Stead Airport, with the U.S. Navy's Blue Angels taking to the sky for high-performance maneuvers. The airshow also features a Beechcraft F33C Bonanza and a Pitts S-1-11B performing aerobatics, and an F-35 Lightning II on display for the first time, along with other military aircraft.

"Each and every year, the performers take this event to an even higher level," said Mike Crowell, president and CEO of Reno Air Races. "I hope that race fans, visitors and spectators will be as excited about this year's lineup as I am." **National Championship Air Races, www.airrace.org**



Reno RV Parks

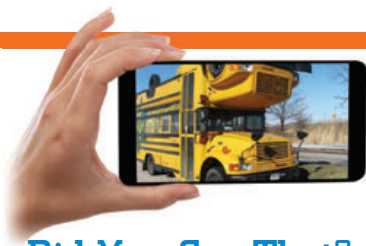
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Every Kid in a Park

Fourth graders entering fifth grade this fall have until August 31 to get a free pass to federal parks, lands and waters. The U.S. government's Every Kid in a Park program encourages fourth graders and their families to discover wildlife and appreciate the country's history while supporting a healthy planet. The program allows students to bring their siblings under age 16 and parents for free. Educators can get one pass per fourth-grade student as well. Third graders entering fourth grade this fall can get passes starting on September 1. www.everykidinapark.gov/get-your-pass





Did You See That?

Cruise Inn RV Parks invites individuals to share their travel memories for chances to win prizes through its summer promotion, Did You See That? To enter, choose a photo of a crazy thing you've seen while traveling and post it on Cruise Inn's Facebook or Instagram page with the hashtag #didyouseethatcontest.

Cruise Inn will randomly award \$50 gas cards or \$50 gift cards for RV accessories. At the end of the promotion, a winner will receive the grand prize of seven nights at Cruise Inn RV Parks, and reimbursement of fuel expenses. Deadline is August 15, 2016.

Cruise Inn RV Parks
www.cruiseinnrvparks.com
www.facebook.com/cruiseinnrvparks

NEWSWIRE

TOY HAULER



ATC Partners with Tacoma RV
ATC Trailers recently partnered with Tacoma RV, a towable-RV dealership in Fife, Washington. ATC Toy Hauler, a business segment of ATC Trailers, specializes in high-end car haulers and custom trailers. The manufacturer also builds an aluminum half-ton towable toy-hauler line that ranges from 7x20 feet, with an optional tip-out bed, to 8.5x28 feet, with a front bedroom.

Ian Kettering, ATC Toy Hauler's product manager, noted that building a safe trailer was "a primary goal to help our dealers sell to families, which makes up a large segment of the living-quarter trailer market."
www.aluminumtoyhauler.com

TELESCOPING TRAILER



Hi-Lo Resumes Production
Hi-Lo Trailers Worldwide, manufacturer of trailers since 1956, ceased production in 2010. Now headquartered in Transfer, Pennsylvania, the company is back in business with a new model. According to William Kerola, the company's president, "This new trailer is built for today's small-camper enthusiasts and re-creates the Hi-Lo legendary tried-and-true hydraulic-over-electric lift system and iconic look admired for more than 50 years."

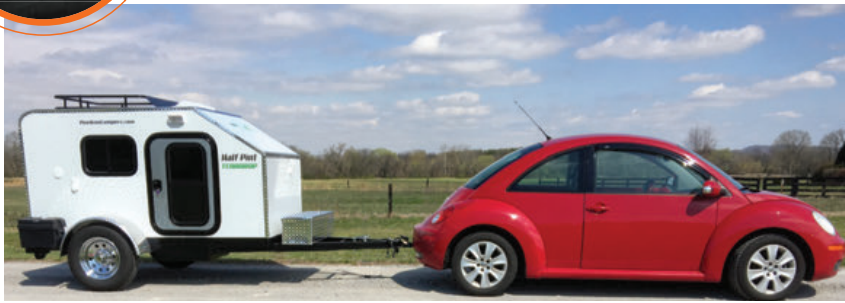
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PeeWee Campers Celebrates NPS Centennial

August 25 marks the official 100-year anniversary of the National Park Service (NPS). In celebration of this milestone, PeeWee Campers, manufacturer of teardrop trailers and toy haulers, is giving away its 110-Power Package option (a \$375 value) on all Half Pint teardrop trailers ordered before the NPS's big birthday. The package includes a 30-amp shorepower/generator hookup, 120-volt AC wiring, two outside GFI outlets, six 120-volt AC outlets and a breaker box.

PeeWee released the 5x8-foot Half Pint earlier this year, and the company claims it has more usable space than traditional round-design teardrops. The Half Pint has 1¾-inch insulated walls, a queen-size sleeping area, a kitchen, 15-inch wheels, USB ports and a deep-cycle battery for 12-volt DC power. More than 50 options are available including a microwave, a generator, a roof rack and a TV.

The free package offer expires on August 24, 2016. PeeWee Campers is headquartered in Nashville, Tennessee. All PeeWee teardrop trailers are sold factory-direct.

PeeWee Campers, 931-675-8494, www.peeweecampers.com

Southern California Food and Wine Festival

California's Pala Casino Spa and Resort opened its 10-acre, 100-site RV park earlier this year in northern San Diego County with a heated swimming pool, two spas, a barbecue grill area and a dog park. The RV park is part of Pala's Las Vegas-style casino complex with table games, poker tables, more than 2,000 slot machines, a full-service spa and 11 restaurants.

RVers can toast the new park at Pala's Starlight Food and Wine Festival, August 20 this year, from 4 to 8 p.m. The event takes place on the lawn of the resort's outdoor theater and features 50 wine selections from California's Napa, Sonoma and Paso Robles regions. Wine tastings will be paired with savory appetizers and delectable chocolate creations.

Tickets for the Starlight Food and Wine Festival are \$75 per person. 877-946-7252, www.palacasino.com

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Oregon Zoo Summer Celebration

The Oregon Zoo in Portland is committed to conservation and projects focused on saving animals from extinction. This summer's special events include outdoor concerts (www.zooconcerts.com) and Twilight Tuesday on August 16, where visitors can view animals that are more active around dusk. Twilight Tuesday also offers al fresco dining, live music, and activities for kids such as animal encounters and the Howl and Meow Contest.

RVers staying at Portland's Jantzen Beach RV Park can cross the street and catch a bus to the MAX Light Rail line (503-238-7433, www.trimet.org), then ride the train to the zoo and receive \$1.50 off zoo admission. Train enthusiasts will appreciate the zoo's 30-inch-gauge railway, with its steam locomotive and diesel Zooliner, and the new solar-powered railway station. The zoo has extended summer hours from 9:30 a.m. to 6 p.m. daily, through September 5. On the second Tuesday of each month, zoo admission is \$4.

Oregon Zoo, www.oregonzoo.org • Jantzen Beach RV Park, 800-443-7248, www.jantzenbeachrv.com



Minnesota's Good Old Days

The Minnesota Machinery Museum in Hanley Falls is taking a step back in time with the Good Old Days and Threshing Show, August 6 and 7, 2016. Capturing a century of Minnesota farm life, the event gives visitors a glimpse of the past when rural neighbors worked together to harvest crops and build barns.

The public is encouraged to bring picnic lunches and join the fun watching demonstrations of corn shelling, wood planing, blacksmithing, threshing and rope making. The two-day event includes a working sawmill, a pedal-tractor pull for kids, a craft show and flea market, and an antique vehicle display, including tractors dating to 1912. Admission is \$6 for adults; kids 12 and under are free. RVers are welcome to stay at the adjacent campground off Highway 23 with limited hookups, restrooms (no showers) and 2 acres of open space. Nearby Lac Qui Parle State Park in Watson and Lagoon City Park in Montevideo have some full-hookup campsites. Minnesota Machinery Museum, 507-768-3522, www.mnmachinerymuseum.com 📞

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ST225 / 75R15 - 8PR

ST225 / 75R15 - 10PR

ST235 / 80R16 - 10PR*

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Running on Empty

Despite fuel shortages, *Trailer Life* kept on truckin' in the 1970s



Interest in RVs soared in the early 1970s, with plentiful gasoline at every service station and a powerful engine in every sedan and station wagon. With fifth-wheels rolling off the production line for the first time, and travel trailers, truck campers and motorhomes adding innovative features, the industry had its best year in 1972, shipping 582,900 RVs. Keeping pace, *Trailer Life* published its beefiest issue ever, the 348-page May 1973 edition. Just five months later, the boom turned to bust as the first of the decade's two energy crises resulted in upwardly spiraling fuel prices and "Sold Out" signs at the pumps. The following year RV shipments dwindled to 295,800.

The ensuing gas shortages and government mandates forced auto-makers to design more fuel-efficient vehicles and inspired RV manufacturers to do the same. "Mini" became the buzzword in *Trailer Life*, whether in a 1977 test of five imported mini pickups, the 1979 Micro-Mini Buyer's Guide, or advertisements for the Jayco JayMini, the Argosy Minuet

("So light you can tow it with the new small cars!") and the new fleet of mini-motorhomes built on Toyota's four-cylinder compact-truck chassis.

In 1977, after President Jimmy Carter proposed a nationwide 10 percent reduction in fuel consumption, *Trailer Life* published "10 Ways to Save 10 Percent" by Bill Estes, the magazine's director of technical

services at the time. To soften the public's perception of recreational vehicles as gas guzzlers, Publisher Art Rouse distributed hundreds of thousands of RV bumper stickers proclaiming: "We're ConseRVing Energy: We've Cut Our Travel 10%."

Beyond asking readers to ease off the gas pedal and choose destinations closer to home, the magazine published timely features ranging from "Miniaturize Without Misery!" to "Alcohol Fuel: The Great Clear Hope." The *Trailer Life* of the late-1970s clearly struck a chord with the Western Publications Association, which in 1977 named the then-36-year-old monthly its Consumer Magazine of the Year. 🗨️



TL tests the mini trucks

All are gas-savers and good handlers solo, but what can they mean to trailerists? Here are the answers in comparative performance and mileage tests with five mini trucks towing three different trailers.

by Bill Estes

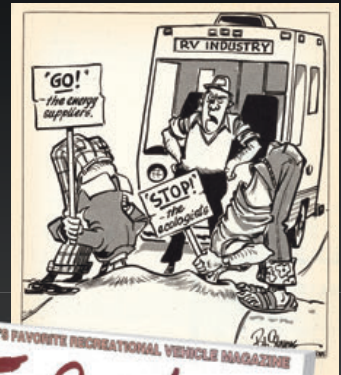
WHAT'S NEW? TODAY that's the question which occurs to any trailerist who considers a purchase of an imported pickup truck. Towing information has been scarce on these vehicles ever since their popularity blossomed in the early 1970s. Until Chevrolet and Ford jumped into the market with their "compact" pickups bearing their own series but built by Japanese manufacturers specific recommendations on towing with these sturdy, versatile little vehicles was scarce.

Ford and Chevrolet now offer towing recommendations for the other three brands, Toyota, Datsun and Mazda. All do not, by a long, indeed, wide margin, make it.

In an effort to better define the towing capabilities of the trucks we tested all five with three trailers: a 13-foot Flair-trailer weighing 1,200 pounds, a 16-foot Flair-trailer weighing 2,170 pounds and a 16-foot self-contained Air Toy weighing 2,510 pounds.

Obviously, it's best to keep trailer weight and wheel separation to a minimum and, in that interest, subdivide camping trailers.

The best test trailer, built by Chevrolet, is a 13-foot Flair. It has the best towing capacity of any trailer tested and the best towing, but it's not as comfortable and easy to tow as the other two.



From Gas Guzzlers to Gas Misers

(Clockwise from above) In the October 1977 issue, Bill Estes tested the towing capability of Japanese compact pickups from Toyota, Datsun, Isuzu (the Chevy-branded Luv) and Mazda (the four-cylinder Ford Courier and Mazda's rotary-engine truck). An editorial cartoon in the same issue portrayed energy suppliers and ecologists with their heads in the sand, as an RV-industry mediator declared, "We're sure as h... not makin' much progress this way, are we fellas?" From 1974 to the end of the decade, nearly every *Trailer Life* cover broached the topic of energy conservation, including the August 1977 edition.

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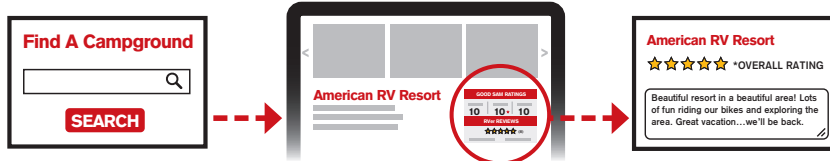
Thetford Corporation, Circle 131 on Reader Service Card



MAP YOUR TRIPS WITH GOOD SAM

Powered by Rand McNally, the Good Sam Trip Planner lets RVers customize their travel itineraries. The online mapping tool charts routes with colorful pins showing the locations of nearby Good Sam Parks, Camping World SuperCenters, Pilot Flying J travel plazas, restaurants and attractions along the way. Users can click on the pins for more information about each stop. The Trip Planner also estimates fuel costs and shows low clearances, LP-gas restrictions and other RV warnings.

► To get started, go to www.goodsam.com, select Trip Planner from the Plan a Trip tab, and create a new trip.



RV PARK PICKS AND PANS

Looking for a great place to stay in your RV? Take advantage of the thousands of RV park reviews posted on the Good Sam Club website in the past year. Reviewers not only share their experiences, they rate RV parks with one to five stars, with an average score appearing on each reviewed park's information page, along with Good Sam's annual three-number rating.

► Share your own RV park experiences on www.goodsam.com by clicking on Find a Campground and identifying the park you'd like to review. On the park's information page, locate Reviews and click on Write a Review.

21ST CENTURY SAVINGS AT CAMPING WORLD

The Camping World and Good Sam 50th anniversary festivities continue with a late-summer celebration of the 21st century at Camping World SuperCenters. From August 1 through 21, customers will receive a free 2000s-theme reusable shopping bag with any purchase of \$50 or more, while supplies last. On the first two weekends of the month — August 5, 6, 12 and 13 — customers can take advantage of event-only savings, including unadvertised discounts, and the first 50 shoppers each day will receive a gift.

► Go to www.campingworld.com/stores to find all 120 Camping World locations, driving directions, hours and available services.



Game On!

Camping World takes the field in Orlando

The Orlando, Florida, stadium formerly known as the Citrus Bowl now bears the name of America's top retailer of RVs, RV accessories and RV-related services. Rebranded Camping World Stadium, the historic arena opened in 1936 as a Works Progress Administration project and has hosted the annual Citrus Bowl college football game from its 1947 debut as the Tangerine Bowl to its current incarnation as the Buffalo Wild Wings Citrus Bowl.

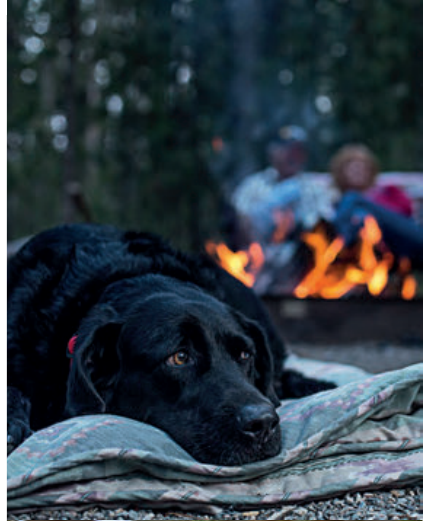
The recently renovated venue is home to two other bowl games and a pair of Major League Soccer teams, and stages concerts as well as events on the Monster Jam and WWE Wrestlemania circuits. On September 5, the stadium welcomes Florida State and Ole Miss in the first annual Camping World Kickoff college football game.

Camping World Stadium isn't the company's first foray into sports sponsorship. Camping World also sponsors the NASCAR Camping World Truck Series and the Camping World Independence Bowl, and Good Sam Enterprises sponsors the Good Sam 500 NASCAR Sprint Cup Series race. www.campingworldstadium.com



◀ **CATS' CRADLE** Good Sam members and full-time RVers Cheryl and Pete Keefe weren't on a mission to spoil their cats. George and Gracie's outdoor habitat started off as a small tent. Then the Keefes added a tunnel, a ramp and a catwalk connecting their motorhome to the pets' tent, creating a kitty amusement park.

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Where's Our Money?

A Florida couple's check for an extended RV warranty was cashed, but the company had no record of it, prompting them to ask RV Resolutions to look into the matter:

► In October of 2015, we purchased a DRV Mobile Suites fifth-wheel from Ballantyne RV and Marine in Victor, New York. We also paid for an 84-month Compass RV Protection insurance policy from American Guardian. The problem is that we still have no coverage from this company. When we called Compass nearly four months after buying the RV, they said they have no record of the policy. We feel that enough time has passed for the paperwork to have been processed.

We have on numerous occasions called Ballantyne RV to find out why the policy had not been activated within the 30 to 45 days we were originally told, yet the check had already been cashed. We understand that we have a one-year warranty from the RV manufacturer, but we still

wonder where our money and our coverage are.

Daria and Anthony Ricci, Merritt Island, Florida

After RV Resolutions reached out to the companies involved, Daria Ricci sent the following update:

► Our issue has been resolved! We called the insurance company to double check, and the policy is now in effect. Thank you for your time and effort.

D.R.

Rotten to the Floor

A Michigan couple told RV Resolutions they were upset about having to cover the cost of replacing their travel trailer's rotting floor and asked for help getting the extended-service provider to reconsider their claim:

► We purchased a used 2008 Keystone Sprinter in August 2014 from Kitsmiller RV in Mason, Michigan. When we were preparing the trailer for our first camping trip a few days later, our granddaughter noticed that the carpet was damp in the front slideout. We called Kitsmiller and were told to keep an eye on it.

As we were packing up after our third camping trip a few months later, we again noticed that the carpet was damp, but this time it was in the bunk slide. We towed the trailer straight to the dealership, and the service department discovered a leak under the water heater, which was then replaced. The paperwork states that the technicians "pulled and resealed all slide fascia corner moldings as well as resealed the floor-line molding." We left believing

this meant both slides were resealed, since the paperwork said "all," and that everything was properly fixed and inspected.

Last summer when we removed the sofa bed to replace it with a new one, we discovered that the floor was rotting underneath it. We took the trailer back to the dealership, and they sent a repair estimate to Portfolio Protection, our extended-service insurer. Portfolio denied the claim because of "lack of maintenance."

What more could we have done? We reported the problems as soon as they were discovered, we took the trailer back to the original dealer, and we had the dealer repair and reseat everything. We hadn't even had the trailer a year when the rotted floor was discovered by sheer luck. The damage could have been caused by the water heater installed by

Kitsmiller or by them not resealing the moldings correctly, but not from lack of maintenance on our part.

We do not feel that we should have had to foot the bill for replacing the floor under these circumstances and hope you can help us get reimbursement for the \$1,651.70 repair cost minus our \$100 deductible.

Phillip and Linda Hutchins Jackson, Michigan

RV Resolutions explained the Hutchins' circumstances to First Extended Service Corporation and provided documentation to support it. A few months later, Linda Hutchins sent the following note:

► Thank you, RV Resolutions and Trailer Life, for your help in getting this claim paid in full.

L.H.

NEED HELP? » RV Resolutions is a forum for the settlement of conflicts between consumers and RV dealers and manufacturers, accessory suppliers and service providers. After exhausting all other resources without success, please send a typed letter to *Trailer Life* RV Resolutions, 2750 Park View Court, Suite 240, Oxnard, California 93036. Include copies of appropriate bills and correspondence as well as a self-addressed, stamped envelope.



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article by Chris Dougherty photos by Shawn Spence Photography

One-of-a-Kind Fiver

With its unique floorplan and five slideouts, Keystone's front-kitchen Montana 3820FK makes a big impression

Montana has a number of different meanings. In Spanish, *montaña* means mountains. In the United States, it's the name of our 41st state and is known as Big Sky Country. But in RV land, Montana is the name of a fifth-wheel trailer that is built for ruggedness and comfort, is warranted for full-time RVing and is the number-one-selling fifth-wheel brand for the past 15 years, according to Keystone RV Company, its manufacturer. In 2016 the company knocked the ball out of the park with a unique concept in fifth-wheel design, the front kitchen, earning the RV of the Year award from *RVBusiness* magazine for the Montana 3820FK. For 2017, the company has further refined this truly luxurious 40-foot floorplan to make it one of a kind.

For this test, we picked up the brand-new unit from the Goshen, Indiana, plant where it was built, within five hours of its completion. We then put it through its paces for a week at Elkhart Campground, a 9/10*/9-rated Good Sam Park on the outskirts of the RV Capital of the World. The park has excellent drive-through sites with 50-amp power and full hookups.

From the outside, it is easy to tell

that the 3820FK is special, with its patented Max Turn front cap adorned with a tinted motorhome-style windshield, made by Guardian and inset into the reinforced cap. Two-tone paint and inset LED light strips make this one good-looking fiver.

Around the sides, the looks continue to impress, with attractive graphics, radius doors and hatches, and standard frameless tinted windows, with optional

dual panes. Exterior lighting is generous with standard outside lighting on the sides and front, plus security lights on both sides. Exterior storage is on the lighter side in this unit, although still quite adequate with a 41-cubic-foot front pass-through and a 46-cubic-foot exterior storage compartment under the bed that moves with the slide. The forward-most compartment is taken up by the batteries and the optional generator-prep cabinet.

Our test unit, which featured the Java interior decor, was equipped with three packages: the optional Legacy package and the mandatory Residential Living and Four Season Living packages. As part of the Legacy package, the Montana came equipped with an attractive dual-tone painted rear fiberglass cap, a rear accessory hitch receiver, which is a nice option for bike racks or a tray, and an exclusive MOR-ryde LRE4100 suspension system.

"One of the things we noticed with past owners was having to replace the suspension system due to wear at 10 years," said Mark Krol, product manager for Keystone's two Montana lines. "We wanted to build a 15-year coach, so this was one of the upgrades, which gives a better ride and has



At close to 41 feet, the five-slide Montana 3820FK provides plenty of room for living and entertaining.



[greaseable] bolts for the shackles,” Krol explained.

Our test drives with two different trucks showed the Montana 3820FK to be quite compliant, following turns nicely, handling bumps smoothly and leaving everything inside in place during drives over bumpy roads and speed bumps in the campground.

The five-slideout fifth-wheel comes with Lippert’s six-point Level-Up hydraulic leveling system controlled by a dedicated and super-convenient left-front side-access panel. The same pump controls three of the slides, and the control valves are also here if you need to extend or retract each room independently.

The view down into the ample living room (above left) reveals a 48-inch HDTV above the fireplace, which is easily viewed while cooking. A unique floorplan, the 3820FK has a front kitchen (above right) that is a cook’s delight with solid-surface counters, stainless-steel-clad appliances and a U-shaped dinette beneath the forward-facing windshield.

The other two slides are electric.

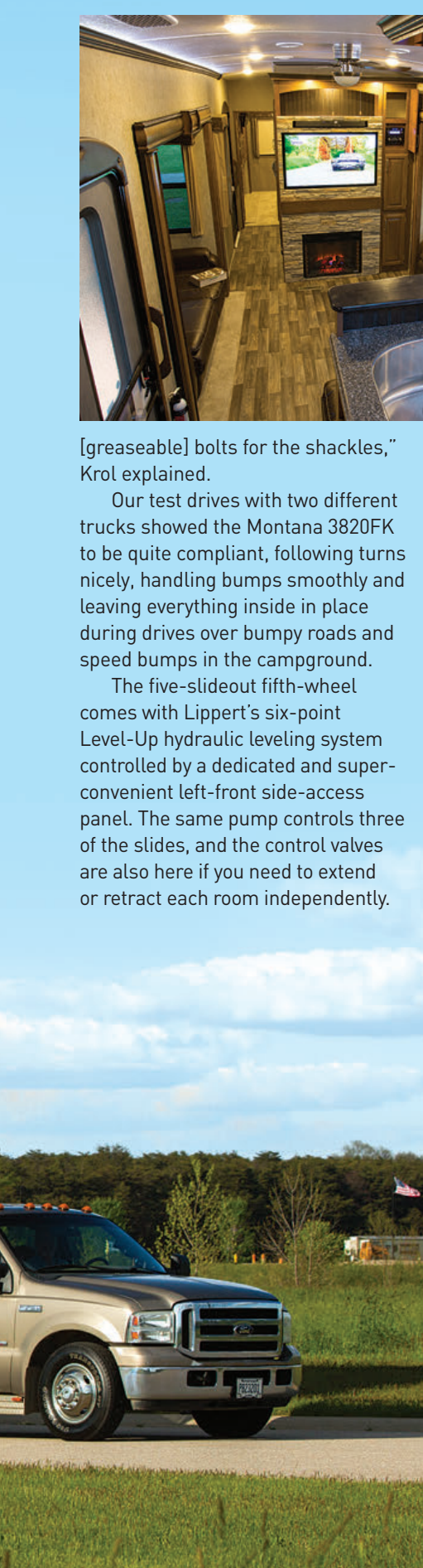
The slides, front jacks and more can be operated from the new In-Command system by Jensen. This is a computerized monitor and multiplex control system for RVs, utilizing a central Body Control Module (BCM) that runs most of the lighting and control circuits, similar to how late-model cars and million-dollar conversion coaches work. Finding tank levels, turning on and off lights, and operating the slides, awning or jacks are all controlled from the touch-screen. What’s neat about this is, if you have an Android or Apple iOS device, Jensen provides a free app that mates your device with the onboard computer, so you then have complete control from anywhere around the trailer. In our tests the system worked well, and, especially with nighttime campground setup, allowed us to turn on the exterior lights from outside and operate the slides while we watched to make certain they weren’t going to hit anything. Dumping tanks is simplified, too, as you can see tank levels through the phone.

One downside to this floorplan is the complete lack of interior access when the slides are in. If you plan to make lunch while stopped at a rest area, you’ll need more than one parking space. Some slides have to go out to access any of the kitchen, living

room or bedroom. Front-to-rear interior access requires at least the three curbside slides to be opened. On the plus side, the bathroom can be entered using the rear-entry door.

Stepping into the RV using the front of the two doors, you enter the attractive living room, but the upstairs galley immediately catches your eye. Fitted with an L-shaped counter opposite an attractive and functional buffet, the kitchen features solid-surface countertops and cherry hardwood cabinets (that means doors and frames.) All the appliances are clad in stainless steel and include an 18-cubic-foot Norcold four-door refrigerator, an Atwood three-burner range and a High Pointe 30-inch convection microwave with a range vent. A double-bowl stainless-sink is under-set in the counter, and in the curbside slide is a gorgeous buffet setup with a center window, opposing glass-front china cabinets and a bow-front six-door buffet cabinet underneath.

Cabinet and drawer storage is ample, and lighting is excellent with both ceiling and under-cabinet LEDs. The kitchen is also illuminated by a rectangular skylight with custom cherry surround, complete with four LED lights and a skylight shade to darken the room if desired. The stainless sink is a nice size and has solid-surface covers with their own storage



rack just below them next to the trash can, so they're out of the way when you don't need them. The two-way refrigerator-freezer incorporates Norcold's new LCD control center and integrated circulation fans, which ensure even cooling and little to no frost buildup on the fins.

At the end of the galley suite is a unique custom U-shaped dinette with a sturdy oval table with a swivel lock that allows easy access to the seating. Behind this dinette is the large aforementioned windshield with a pull-down night shade that is held against the windshield by a track. We would have liked to see some storage under the dinette, but with all the other storage in the galley, it's probably unnecessary.

Lighting throughout the Montana is thoughtful and plentiful. All of the lighting is LED, which is great for energy preservation while dry camping. LED accent lighting is positioned above the cabinets and behind the custom crown molding throughout the living room and kitchen, and is again controlled by the In-Command system app. A number of task lights are also built into this model with on-off switches in the individual fixtures.

The living room is a popular setup, similar to front-living-room fifth-wheels. Two opposing couches with built-in queen beds sit in opposing slides, so when the beds are out, there is just enough room to pass between them. Up against the kitchen wall is freestanding theater seating. All are clad in an attractive brown leatherette. The theater seats are also recliners with an armrest/cup holder resting in the



(Above) The Legacy Edition features the exclusive MORryde LRE4100 suspension, which helps smooth out the roughest road. **(Above center)** The front kitchen features a buffet cabinet with slide-out drawers, china cabinets and a window. **(Above right)** There is ample storage under the main bed in this exterior-and-interior-accessed compartment.

middle. Removing the armrest turns the whole thing into more of a loveseat.

Two things about these seats: first, they need to be strapped in place for travel. Second, to recline, they have to be pulled out from the wall, and they have some heft to them. Don't forget to strap the theater seating back for travel, or the hydraulic slide will have its way with them. Also, when the seats are pulled forward, they block a heat register in the floor, so this must be watched when running the furnace.

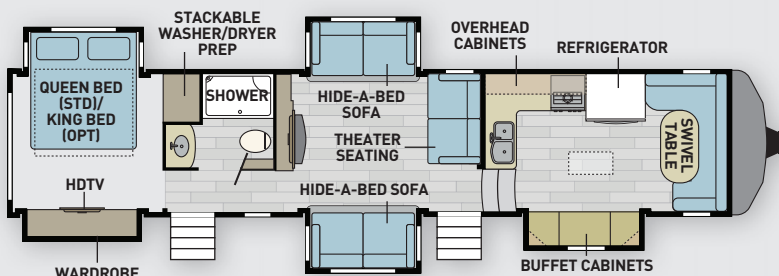
Across from the theater seating are the entertainment center and a remote-control fireplace, which is really slick. This new fireplace, complete with a quartz heater above the "firebox" for added realism, allows control of every function of the unit. The flames have a number of controls including speed, brightness and, yes, even colors. The temperature can be digitally set, and there's a timer as well.

Above the fireplace is a 48-inch flat-panel HDTV and surround-sound bar by Insignia, which is Best Buy's own brand. What's nice about this is that, if there's a problem, help is as close as the nearest Best Buy and Geek Squad, according to Krol. Next to this is the iRV Technologies iRV-34. This unit is an AM/FM/CD/DVD/MP3/MP4 stereo with HDMI, USB, SD and Bluetooth inputs. In addition, it has an app for Android and Apple iOS that not only allows you to control the stereo from anywhere around the trailer (think under the awning or in bed) but also to stream music from that device. It has 2.1 Dolby Digital Surround, and in this configuration it feeds the DVD and stereo audio in the living room to the sound bar. The result is pretty impressive, even if a degree in engineering is required to figure out how to operate it.

Down the hallway are the master-control panel and switches, conveniently and attractively located inside a cabinet, and the bathroom with Montana's space-saving pivot-hinge door, which makes entry from either direction easy. Inside the bathroom, the full-length rectangular walk-in shower with a triple-glass sliding door is nice, and the Euro-style shower-handle setup worked well. The china toilet and sink vanity also worked well, although we thought the sink could use another light under the vanity.

The master bedroom, with its high ceilings and expansive rear picture window is impressive. The closet, in its

KEYSTONE MONTANA 3820FK



SPECIFICATIONS

2017 KEYSTONE MONTANA 3820FK

Exterior Length	40' 9"
Exterior Width	8'
Interior Width	7' 8 1/4"
Interior Height	6' 6" to 8' 8"
Construction	Aluminum frame laminated with 2" welded-aluminum studs, R-11 block-foam wall insulation, 3" aluminum-truss floor with R-21 fiberglass insulation. One-piece R-38 TPO roof, 5" arched plastic roof rafters and full roof space ventilation
Freshwater Cap.	62 gal.
Gray-Water Cap.	76 gal.
Black-Water Cap.	38 gal.
LP-Gas Cap.	14 gal.
Water-Heater Cap.	12 gal.
Refrigerator	18 cu. ft.
Furnace	35,000 Btu
Air Conditioner	15,000 Btu/front 15,000 Btu heat pump/rear
Converter	75 amp
Battery	(2) Group 27
Tires	ST235/80R16E or G
Suspension	MORryde 4100 suspension system with greaseable bolts
Weight (freshwater, water heater, LP-gas full; no cargo)	13,795 lbs.
Hitch Weight	3,835 lbs.
Axle Weight	9,960 lbs.
GVWR	16,810 lbs.
GAWR	7,000 lbs.
Cargo Carrying Cap.	3,015 lbs.
MSRP, base	\$72,300
MSRP, as tested	\$90,200
Warranty	1 year

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own slide, has nine drawers, a built-in HDTV and plenty of hanging space for the average RVer. The optional king-size bed has an iRelax high-density foam mattress and two small shelves, one on each side with electrical outlets. Being a CPAP (breathing-assist device for sleeping) user, I found this setup unsatisfactory and would have preferred a queen with side tables, which is standard.

With the exception of the bedroom, the floor is clad with Beauflor vinyl in a gray hardwood pattern, which is attractive and functional. The slides and bedroom have tan carpet. Heating and ventilation are efficient, with a front 15,000-Btu air conditioner and 35,000-Btu furnace, and a rear 15,000-Btu heat pump.

For 2017, Keystone put these on

two separate single-zone thermostats, instead of using Dometic's multi-zone control. This did two things, according to Krol. First it reduced confusion on how to operate the multi-zone thermostat, which Krol said customers were experiencing. Second, it allowed control of the air conditioning and some heat from the heat pump in the bedroom. We agree and see the benefit. However, the rear heat pump also has a mandatory furnace setting, which controls nothing, and this was confusing at first when it came to heating the trailer, but we got over it. This model is very well insulated, which Montanas are known for, and so the nighttime lows in the mid 30s were of no concern during the test.

The Montana 3820FK is an impressive fiver, especially if you're a full-timer or have plans for extended travel. 🚐



Exterior lighting includes LED strips set in the cap and awning, as well as scare lights, making this an eye-catching setup at the campground.

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The SportTrek Touring Edition 343 offers room to spread out surrounded by feature-rich amenities



The kitchen island occupies a small portion of the vast floor space that makes up the SportTrek's galley and living room.

These days, it's easy to see that the RV industry is thriving. RV dealerships are packed from one edge of their lots to the other with an almost overwhelming variety of makes, models and types, usually from several manufacturers. As a potential buyer, this means digesting a great number of options and spending some serious time shopping. But it also means more opportunities for good deals. You'll want some sort of a game plan to help simplify shopping in such a vast market, and one way is to narrow the field based on desired floorplans, amenities and dimensions in a package that represents good value.

For those shopping for an affordable yet fully equipped travel trailer, one triple-slide floorplan to consider is Venture RV's SportTrek Touring Edition STT343VIK — or the 343, as stated on the sticker. The exterior

displays smooth, clean lines and pleasing graphics, but what really stands out are the new platform and included features.

The chassis comes from a producer of well-known RV components, BAL (Norco Industries) and is relatively new to the industry. Built from high-strength, low-alloy steel, which is said to provide the highest strength-to-weight ratio, the chassis is e-coated and epoxy-painted to resist rust, and assembled with huck bolts and interlocking dimples, rather than just welding. It is fitted with four independent power stabilizer jacks and Dexter E-Z Lube axles with 15-inch aluminum wheels and tires.

Venture RV employs construction methods that are designed to stand up to many years of service, such as a 5/8-inch tongue-and-groove plywood floor with 2x3-inch joists on 16-inch centers, a walkable 3/8-inch plywood

roof stuffed with R-14 residential fiberglass insulation, high-gloss exterior fiberglass sides, a Darco moisture barrier and an insulated, heated and enclosed underbelly. Rounding out the exterior features are frameless windows, a large pass-through storage compartment with slam latches, a 14-foot power awning with LED lighting, a well-equipped outside kitchen-and-entertainment center, and an optional folding cargo/bike rack and solar-prep package.

Inside, the wide-open living and kitchen space has wood-plank-looking Congoleum vinyl on the floor and dark-walnut woodwork tucked into every nook and cranny. The kitchen features a solid-surface, radius-cornered island with a stain-



Pleasing graphics and smooth lines grace the 343's fiberglass exterior.

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(Above, from left) An entertainment center and one of two fireplaces are fitted into the curbside slide in perfect view of the opposing theater seating (not shown). The outdoor kitchen offers full patio service for those who enjoy preparing meals outside.

less-steel twin-basin sink and some really handy hinged shelves inside both corners. Across from the kitchen island, a freestanding dining set provides seating for four.

Two large slideouts house the majority of the accouterments that make this trailer into a home. One of the slides finishes off the kitchen with an 8-cubic-foot refrigerator, a three-burner high-output range, a microwave and an overhead exhaust fan, providing a pleasant culinary experience. The rest of the space in the slide is devoted to a pair of extra-plush, fully reclining theater seats that give an unobstructed view of the LED HDTV in the entertainment cabinet in the opposing slide. The entertainment center also holds a Bluetooth DVD/CD/MP3/AM/FM stereo and a fireplace.

In the rear of the 343, a tan hide-a-bed couch adds to the overall seating and sleeping capacity. This is no small travel trailer at 37-plus feet, and the extended length means there's room to accommodate guests or take advantage of all the extra elbowroom for a family of four.

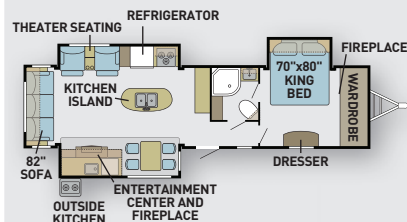
The bathroom divides the main portion of the trailer from the front bedroom and is accessed via a side hallway, with another door leading to the bedroom, a layout that is commonly found in fifth-wheels. The bathroom has all the usual amenities, although the extra-large arrangement allows for a roomy garden-style shower, a respectable-size sink and plenty of space to store toiletries and linens.

The master bedroom has more than ample floor space and is aug-

mented by the third slideout, which is occupied mostly by a king-size Sleep Tight memory-foam mattress and overhead cabinets. Spanning the entire front wall, the huge wardrobe can stow lots of clothes and other gear. The bedroom also contains a second fireplace, making it a cozy place to relax.

If lots of legroom and storage space and a kitchen capable of preparing big meals are among your primary requirements for a travel trailer, the SportTrek Touring Edition 343 could very well fit the bill. It's a solidly built trailer that's fully loaded and functional, and has a decent price tag to boot. 🚐

QUICK INFO



Exterior Length	37' 8"
Exterior Width	8'
Interior Height	7' 8"
Exterior Height	11' 6"
Freshwater Cap.	40 gal.
Black-/Gray-Water Cap.	32 gal. / 32 gal.
LP-Gas Cap.	10 gal.
UVW	8,515 lbs.
Hitch Weight	1,070 lbs.
GVWR	9,995 lbs.
MSRP, base	\$41,495

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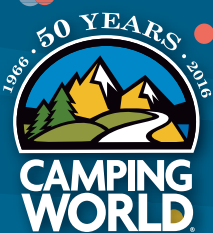
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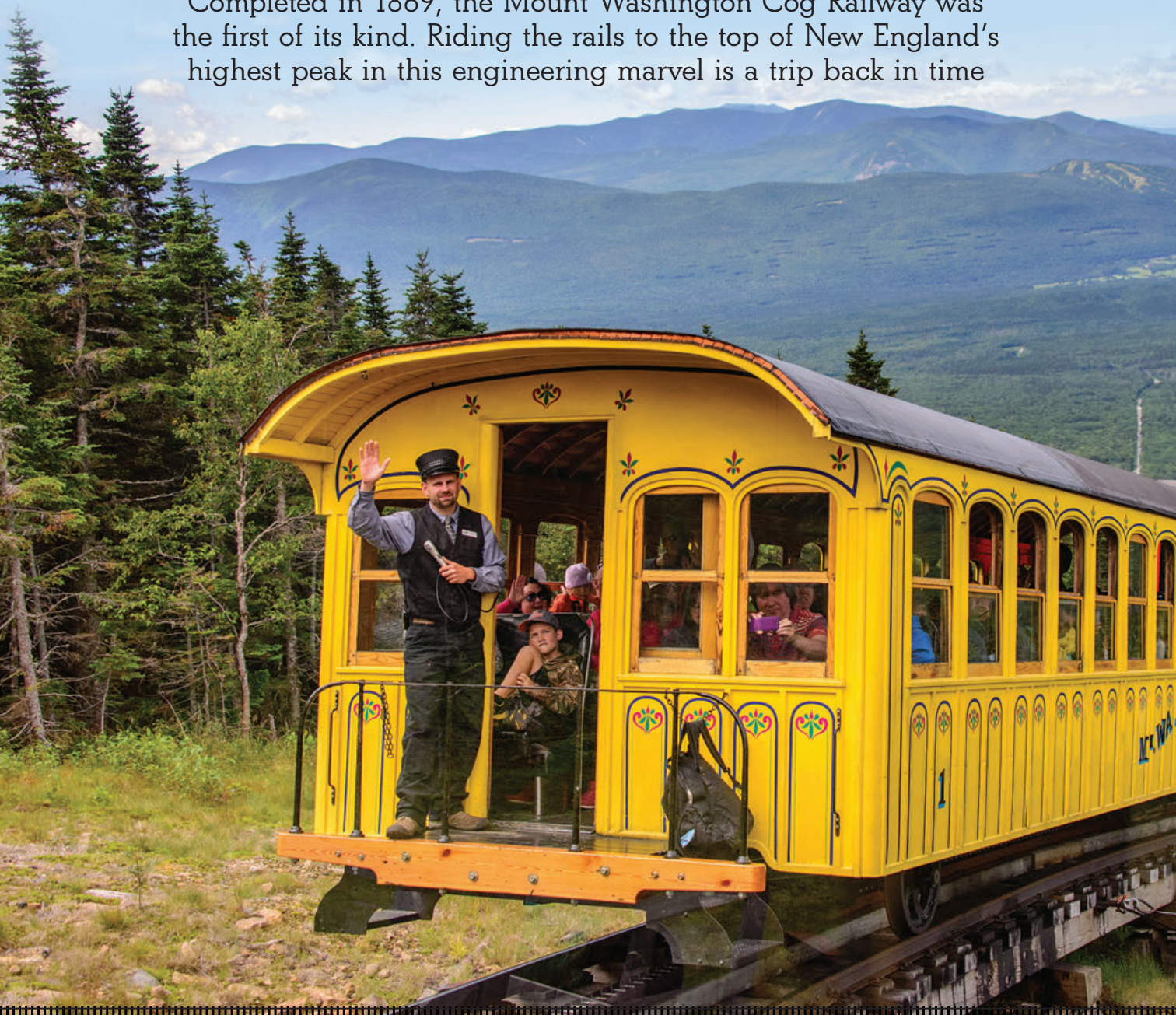
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NEW HAMPSHIRE'S **LITTLE ENGINE THAT COULD**

Completed in 1869, the Mount Washington Cog Railway was the first of its kind. Riding the rails to the top of New England's highest peak in this engineering marvel is a trip back in time



A train chugs up Mount Washington on the world's first mountain-climbing cog railway. (Right) Switching tracks makes it possible for trains to pass each other on the way up and down the mountain. (Far right) Hikers approach the 6,288-foot summit on the steep and rocky trail.



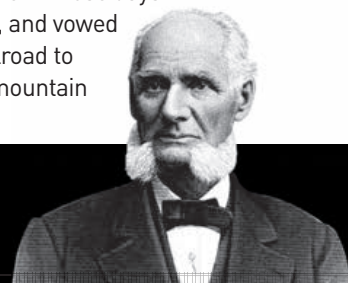
The bright-red coach of the Mount Washington Cog Railway train glinted in the early morning sun as it chugged up to the boarding platform from its overnight base camp below. A crowd of grinning passengers eagerly awaited its arrival, and we laughed in delight when the engine's shrill horn pierced the air, sending a burst of white steam from its whistle.

The engine heaved and coughed and sputtered as it inched toward us, clouds of steam billowing out from beneath its wheels. At the front of the coach, wearing a classic conductor's hat and vest, the brakeman beamed and waved, as though reaching out to us from another era. With cell phones and selfie sticks held high to capture the moment, the crowd was instantly swept up in a magical mirage that transported us across nearly 150 years from our Internet Age to the peak of the Railway Age.

Back in the summer of 1869, the unique cog railway became the first train ever to climb straight up the side of a mountain. With an elevation of 6,288 feet, New Hampshire's Mount Washington is the tallest peak in the eastern United States, and despite legions of naysayers and railroad barons who deemed the project impossible, Sylvester Marsh, the visionary behind this Little Engine That Could, pursued his dream and designed a train that could literally claw its way up the steepest slopes.

Marsh was an ambitious New Hampshire native who, as a teenager, had walked 117 miles to Boston to seek his fortune. He later found both great riches and extraordinary success in the burgeoning town of Chicago, which, upon his arrival in 1833, had a population of just 300. Beginning in meat packing and moving on to the grain industry, Marsh was an inventor to the core. His creative mind brought him 11 patents in his lifetime, six of which were for machinery used in drying grain, a process that made it possible to ship American wheat, corn, oats and barley to Europe and ultimately helped put Chicago and the Bread Basket states on the map.

Wealthy yet still in his prime years, Marsh tried to retire at age 52, but inactivity didn't agree with him. On a hike up Mount Washington with a friend in 1857, his passion for invention was fueled once again. The summit was accessible only on foot in those days, and the mountain took the lives of more than a few adventurers who dared hike to the top. Marsh barely made it himself, battling ferocious weather near the peak. Reaching the hiking hut called Tip Top House, he watched the next morning dawn in spectacular color with jaw-dropping views, the likes of which few people in those days would ever see, and vowed to bring the railroad to the top of this mountain



Sylvester Marsh's 1857 hike up Mount Washington inspired him to design a railway car that could claw its way along train tracks to the summit and enable city people to enjoy the spectacular views of New Hampshire's White Mountains.



and make it possible for city folk from Boston and New York to witness the stunning beauty, too.

Our train breathed noisily, snorting big puffs of steam as we all climbed aboard, and in no time we were off on an hour-long 3-mile journey up this fearsome mountain. Marsh's clever invention uses a third-rail ladder track that runs between the two standard train tracks. Functioning like a bicycle chain laid out on the ground, the teeth on two big cogs in the center of the train engine and coach car grab onto the ladder track and pull the train up. The regular train wheels simply roll along for the ride.

(Above) A hopper of coal feeds the fire that boils the water that powers the steam engine. Three people operate the train. Going up, the fireman shovels coal into the fire for propulsion. Going down, the brakeman — or woman (far right) — controls the downhill coasting action with the brakes. In both directions, the engineer (right) is in charge of it all.

Our brake operator, Kelly, told us all about the train, now a National Historic Engineering Landmark, while we watched wide-eyed as the incline became ever steeper in front of us and the views into the valley expanded behind us. It was easy to imagine the thrill that late-19th-century New Yorkers must have felt when they boarded a train at Grand Central Station, their bags checked through to the Summit House hotel on top of

Mount Washington, and then rode the last 3 miles of their two-day journey up into the clouds.

Halfway up the mountain, the train stopped, and Kelly explained that the train was taking on another 300 gallons of water from a mountain spring that would get us through the toughest climbs ahead. The railroad's steepest incline is at Jacob's Ladder, a fantastic elevated trellis that soars high above a valley between two



With countless hiking, biking, sightseeing and camping opportunities, New Hampshire's White Mountains are an outdoor playground for RVers.



SUMMITTING THE NORTHEAST'S HIGHEST PEAK

Mount Washington Auto Road

Open from late May through late October, the privately owned toll road ascends the east side of Mount Washington, departing from Route 16 in Pinkham Notch. RVs and some pickups with large cabs and/or dual rear wheels are not permitted. Check the website for full restrictions. 603-466-3988 www.mtwashingtonautoroad.com

Mount Washington Cog Railway

Open from late April through November, the historic cog railroad ascends the west side of Mount Washington. From Route 302 in Bretton Woods, take Base Station Road and follow it 6 miles to the station. Plan to arrive 30 minutes before the scheduled departure to allow plenty of time for ticketing. 800-922-8825, www.thecog.com

Mount Washington Observatory

Open when the cog railroad is running, the Extreme Mount Washington museum and weather station are housed in the state park visitor center at the summit. The affiliated Weather Discovery Center is located in North Conway Village on State Route 112. 603-356-2137 www.mountwashington.org

Tuckerman Ravine Trail

Among the many hiking routes leading to the summit of Mount Washington, the 4.2-mile Tuckerman Ravine Trail up the peak's east side is the most popular. Starting at the Pinkham Notch Visitor Center, the trail starts off easy and gets steep toward the end. From the trailhead to the top and back, the day hike takes from five to nine hours.

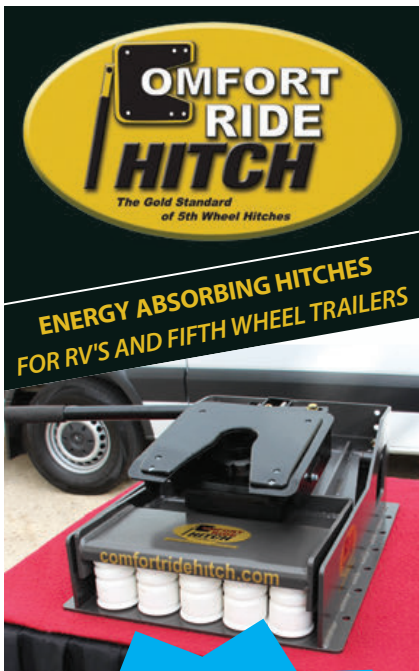
peaks and climbs a grade of 37.4 percent. As we chugged through this portion of the ride, the fireman shoveled coal from a huge hopper into the boiler as fast as he could, and clouds of black smoke filled the air.

Soon, we were above the tree line, and the peaks of the White Mountains filled our view in every direction. Suddenly, we saw a long line of hikers approaching on a trail. We waved, and they stopped to take photos of us as we passed. These hardy people were trekking to the summit with backpacks, hiking boots and walking sticks, while we had taken the easy way. When the train stopped at the top and let us off,

we rushed to the sign that marks the summit along with all the hikers so we could get selfies by the sign, too. The hikers might have had more bragging rights for reaching this spot, but I suspect we had more fun.

Mount Washington sits in a precarious position on the planet where weather systems go through a funneling effect that intensifies their ferocity as they approach the mountain, and it is impossible to predict what the weather will be at the top when you board the train at the bottom. As we walked around the summit, we were glad we'd brought warm sweatshirts, as the entire mountaintop was socked in with





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The once-a-day steam-engine trip is pure 1875 technology, while the quieter and quicker biodiesel engines (above) take riders up the mountain with the latest in cog-rail engineering.

pea-soup fog. So much for experiencing the stunning views that inspired Sylvester Marsh to build his railroad! The moodiness of this fickle mountain is legendary, and the cold, wet wall of white mist on this sunny midsummer day gave us an appreciation of just what the weather might be like in more dismal conditions.

Around the time the cog railway was beginning to bring tourists up to the summit of the mountain, the U.S. Signal Service, the predecessor of the National Weather Service, established a manned weather station on the peak, and scientists began studying the variable moods of this notoriously menacing mountain.

On April 12, 1934, wind speeds on the summit were measured at 231 MPH, the highest the world had ever seen. A local legend claims that the wind speed gauge was blown right off the top of the mountain, but the truth is that the scientists were there, huddled inside the weather station, and one brave soul went out to take a reading on the firmly affixed instrument and saw the conditions with his own two eyes. In 1996, that max wind speed was handily topped inside the eye wall of Hurricane Olivia at Barrow Island in Australia, but it was recorded by an unmanned weather station, which is not quite the same thing.

The Mount Washington Observatory is a scientific complex, operated 24/7

by meteorologists, physicists and other scientists. In addition to studying the weather, the observatory offers all kinds of educational opportunities, including live-in volunteer positions. The facility also offers tours, and we were thrilled to take one, given by Kaitlyn O'Brien, and be shown the myriad of sophisticated equipment that records every imaginable weather-related statistic, day in and day out, as well as the dormitory-style residential quarters where the scientists and volunteers live.

The key wind gauges sit on the roof of the observatory, and our guide led us up through a series of steep ladders and hatches to make our way out onto the roof. On a sunny day, I'm sure the views from this vantage point are sensational, but we hugged our arms tightly to our chests in the fog and shivered as she pointed out two vanes that continuously record wind speeds. The wind was not that high as we stood there, but we got a kick out of seeing much more accelerated speeds on the observatory's webcam during winter storms after our visit.

As we emerged from the observatory's Extreme Mount Washington museum, our heads spinning with thoughts of harrowing storm systems, the fog began to lift, and we heard the welcoming sound of our train's whistle. We had been mingling with people who had reached the summit of Mount

Washington on foot via hiking trails and by car via the toll road, but now we and our fellow railway passengers came from all corners of the summit's many buildings to hustle back onto the train.

Kelly took her position at the front of the coach and began to guide us down the mountain. Marsh's engine design places the engine below the coach at all times, so there is no need to turn the train around at either the top or bottom of the track. While the train ascends, the engine pushes the passenger coach up the mountain. As it descends, the engine and coach coast down together, relying on the engine's compression brakes, controlled by the engineer, and the coach's disc brakes, controlled by the brakeman, to slow the whole thing down. While Kelly had an easy job on the way up and could tell us all about the train and the mountain, she was a busy woman on the way down.

She had two big wheels in front of her, and she feathered the brakes to keep the coach from bumping the engine ahead of us, as we traveled down the mountain. One wheel put the brakes on hard, while the other was for fine-tuning. The train was now pitched very far forward, so Kelly had to lean back quite a bit to keep standing upright. Kids on the train hopped out of their seats to experience the weird sensation of standing at such an angle, too. At one point, the rear end of the coach was 14 feet above the front end of the coach, and it was amusing to walk uphill and down in the aisle from one end of the coach to the other.

Marsh's invention spawned lots of imitators worldwide. Swiss engineers copied his designs in the 1870s and improved upon them, ultimately developing a cog railway that chugs up a 48 percent grade in Switzerland. Another famous American cog railway climbs Pikes Peak in Colorado. However, Marsh was the visionary who imagined the concept and saw it through, and his tradition of innovation carries on at the Mount Washington Cog Railway to this day.

The cog railway has been owned by two couples since 1983, and they

have invested heavily in exploring new technologies for their trains. The latest innovation is a new engine that runs on biodiesel that they introduced in their 25th year of stewardship of the railway. The steam train now runs once a day, first thing in the morning, while the rest of the trains that roll up and down the mountain all day long are fueled by biodiesel.

With only one track, the original railway had no way for trains to pass each other. Since then, supplemental tracks with switching stations were built to allow multiple trains to ride the rails. As we rolled downhill, we could see another train approaching on its way up. Soon, we were side by side at the switching track, and we took photos of each other out the windows.

We arrived at the bottom of the mountain totally exhilarated. This is a ride that brings out the kid in everyone, and we had been utterly enchanted by the experience. For RV travelers planning a road trip in the northeast, the Mount Washington Cog Railway offers a wonderful immersion in America's railway history on a special excursion to the peak of New Hampshire's White Mountains. 🚗

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With the National Park Service celebrating its centennial this year, what better time to travel U.S. Route 89, also known as the National Park Highway. The Wyoming and Montana stretch of Route 89 connects three of the country's more popular national parks — Grand Teton, Yellowstone and Glacier — and is unmatched in the northern Rocky Mountains for its scenic beauty, wildlife watching and frontier history. These life-list destinations are only part of what you'll see on the 700-mile roadway. It's not a route to rush, but one to wander, taking in many memorable sights and storied places along the way.

Evanston, Wyoming. The route starts here. Situated in the southwestern corner of Wyoming near the Utah border, Evanston serves as the Uinta County seat. There's some disagreement about the town's namesake. Some claim it was James E. Evans, a surveyor for the Union Pacific Railroad. Others believe it was John Evans, second governor of the territory of Colorado.

Like many railroad towns in the Old West, Evanston was established when the Union Pacific Railroad came

through the area, in this case in the 1860s. It survived as a depot because of abundant water and a nearby coal mine, both critical needs of early steam-powered locomotives. The 1912 brick roundhouse, used for servicing locomotives, is the only complete railway roundhouse between Omaha and Sacramento on the Union Pacific line.

Before getting on Route 89, it's worth exploring Fort Bridger State Historic Site, between Evanston and Green River, a trading post for pioneers and miners dating back to the 1840s. The reconstructed site hosts one of the largest mountain man festivals in the country, Fort Bridger Rendezvous, September 2 through 5 this year.

Jackson, Wyoming. From Evanston, Route 89 curves west into Utah for about 45 miles, then reenters Wyoming where it meets U.S. Route 30. Routes 89 and 30 are the same for another 30 miles, heading north along the western edge of Wyoming, then Route 30 veers west into Idaho.

Route 89 continues north through Bridger-Teton National Forest, passing through Hoback Junction and into the resort town of Jackson. If you are interested in outdoor recreation, you could camp in the area for a week

and never do the same activity twice. The Hoback and Snake rivers are well known for trout fishing, and hiking trails ribbon the area. Horseback riding, wildlife viewing, whitewater rafting, ATV tours, golf — you can wear yourself out just imagining the possibilities. But keep on driving. The sites keep getting better and better.

National Elk Refuge. From Jackson, Route 89 passes through the 25,000-acre National Elk Refuge. Created in 1912 to provide winter range for one of America's largest elk herds, the refuge allows between 5,000 and 7,000 elk to migrate from Yellowstone National Park to meadows, marshes and sagebrush flats.

The odds of seeing elk here in the summer are low, but you can often spot bighorn sheep in the rocky outcroppings, pronghorn and mule deer on the open prairielands, and trumpeter swans on Flat Creek. An occasional wolf or grizzly might also pass through. Although the National Elk Refuge was created to conserve elk, the habitat provides residence for 175 species of birds and 47 mammals.

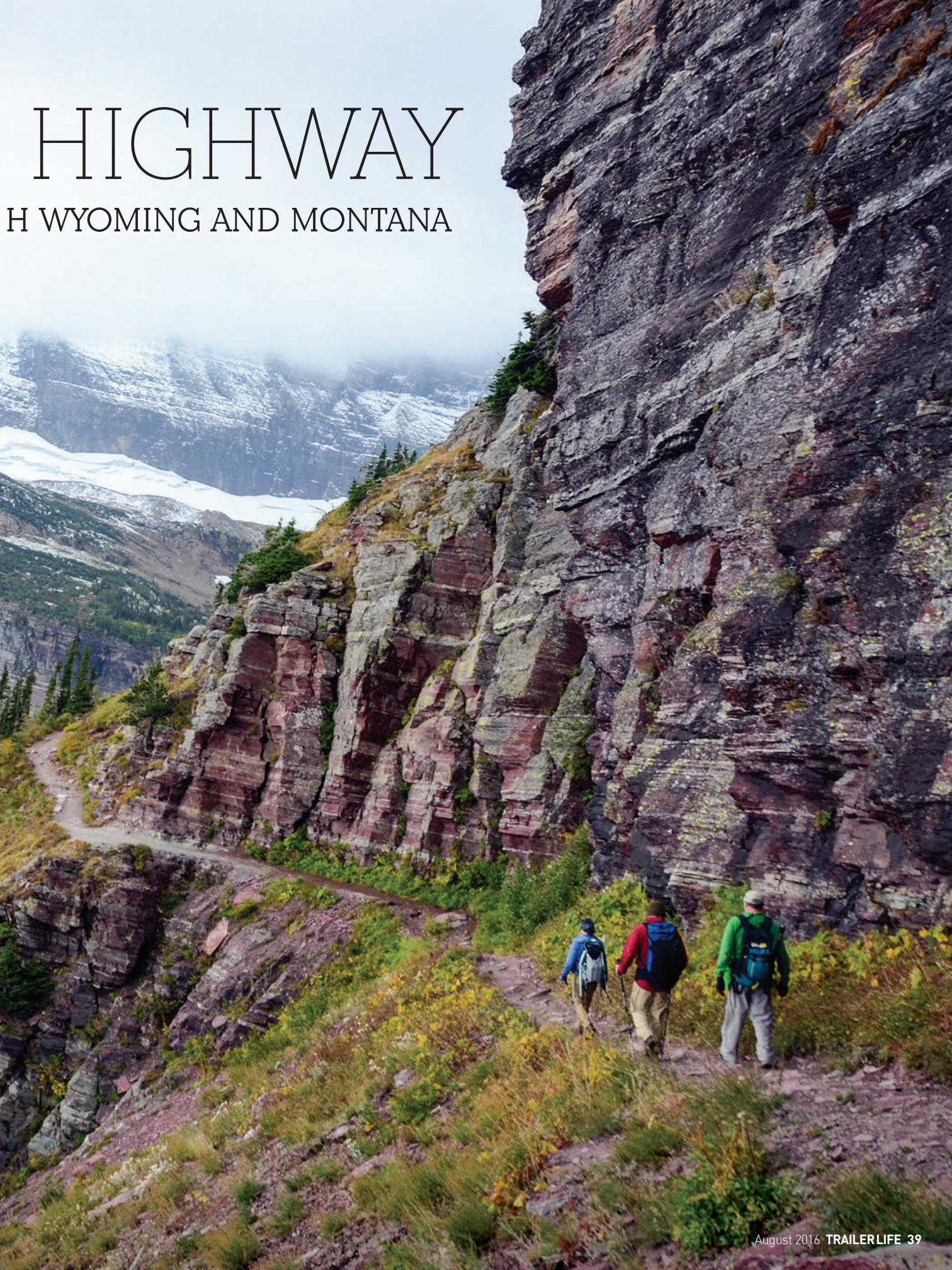
Grand Teton National Park. Just north of the National Elk Refuge, Route 89 enters Grand Teton National Park. You can ogle the spectacular Teton peaks from a number of pullouts along the road. The



(Far left and left) A bull elk bugles in Yellowstone National Park, and bighorn ewes and lambs trot beside the road in Glacier National Park. (Right) Hikers on the spectacular trail to Grinnell Glacier in Glacier National Park.

HIGHWAY

H WYOMING AND MONTANA





WHERE TO STAY ALONG THE WAY

The northern stretch of U.S. Route 89 passes through three of America's grandest national parks. Public campgrounds at all three parks accommodate RVs with everything from primitive campsites to electric-only and full-hookup sites. Check the campground information on the individual national park websites for RV-length restrictions, which vary from campsite to campsite. Make reservations in advance, when available, particularly for visits during the peak summer months or if you own a sizable RV and require a larger site.

Glacier National Park

Campsites in Glacier National Park are first-come, first-served with the exceptions of Fish Creek and St. Mary campgrounds. The park's largest campground, Apgar, has 194 sites, 25 of which can accommodate RVs up to 40 feet. www.nps.gov/glac

Grand Teton National Park

Campsites in Grand Teton National Park are all first-come, first-served. Colter Bay and Headwaters campgrounds offer full-hookup sites. Signal Mountain and Gros Ventre campgrounds have electric-only sites. www.nps.gov/grte

Yellowstone National Park

Five campgrounds in Yellowstone National Park accept online or phone reservations. The other seven campgrounds are first-come, first-served. Fishing Bridge is the park's only campground with water, sewer and 50-amp hookups. www.nps.gov/yell

Nearby RV Parks

RV resorts and campgrounds that offer a variety of amenities can generally be found close to the national park entrances. For information about commercial RV parks, including Good Sam Parks, go to the Good Sam Club website. www.goodsam.com

THE NATIONAL PARK HIGHWAY

Plummeting 132 feet into a canyon, Tower Fall is one of the most popular waterfalls in Yellowstone National Park.

park was established in 1929 to protect these peaks and the lakes at their base, then expanded in 1950 to include a large portion of the valley through which Route 89 passes.

The park's glacially formed lakes are a big draw. Motorboats up to 10 horsepower are allowed on Jenny and Jackson lakes. Sailboats and windsurfers are allowed on Jackson Lake. Canoe and kayak paddlers can explore Jenny, Jackson, Bradley, Taggart, Leigh and String lakes, among others. Visitors can also take a scenic cruise across Jenny Lake and then hike to waterfalls and other spectacular viewpoints.

One artifact of interest in the park is the Colter Stone, a piece of rhyolite in the shape of a human head. It is engraved with "John Colter" on one side and "1808" on the other. Though scientists and historians debate the authenticity of the stone, some consider it proof that John Colter, the famous guide and trapper, passed through the Yellowstone-Teton region during the winter of 1808, the first non-Native American to do so.

What is known is that Colter traveled south to north through what is now Yellowstone National Park, but his specific route is only a theory based on what he told others afterward. One common view is that he traveled through Jackson Hole, over Teton Pass and along the Teton Range. The Colter Stone was found along this route and may literally be the only hard evidence



of his trek. Whether it was truly left behind by the man may never be known.

Yellowstone National Park. Colter called Yellowstone "the land of fire and brimstone." It's easy to understand why after watching Old Faithful and other geysers erupt.

After leaving the Tetons, you immediately enter Yellowstone National Park, and Route 89 becomes the John D. Rockefeller Jr. Memorial Parkway. The scenic drive heads up the west side of Yellowstone, passing many of the park's must-see's including Old Faithful, Norris geyser basin and the sulfur terraces at Mammoth Hot Springs.

If you have time, it's worth swinging east in the park at Norris. The road goes by Canyon Village and then over Dunraven Pass to the trailhead for Mount Washburn. Mount Washburn (elevation, 10,243 feet) is Yellowstone's highest point but an easy 3-mile hike up a broad, well-maintained dirt path. Along the way, you'll likely see bighorn

Route 89 has no shortage of scenic pullouts, including this one near Yellowstone.





Geysers, fumaroles, hot springs and other geothermal features are common throughout Yellowstone National Park, and many are visible from the road.



sheep on the trail and, near the top, endangered pika scurrying among the rocks. As the road swings back west to Route 89, it passes several of the park's most impressive waterfalls, including Tower, Wraith and Undine.

Livingston, Montana. Route 89 exits Yellowstone through the recently updated Gardner Gate, then continues north another 56 miles to Livingston. In July 1806, Captain William Clark and Sacagawea of the Lewis and Clark Expedition camped here before floating the Yellowstone River to reunite with Captain Meriwether Lewis.

Originally known as Benson's Landing, Livingston began as a trading post on the Yellowstone River about 3 miles from its present location. In 1882, the Northern Pacific Railroad changed the name to Clark City, after one of its contractors, then relocated the town to its current location and renamed it again in honor of Johnston Livingston, one of the major stockholders in the railroad.

The original gateway into Yellowstone, Livingston grew in large part because of the railroad's promotion of the park as an international tourist destination. Calamity Jane lived in this frontier town for two decades and entertained visiting European royalty.

Now with a population of 7,044, Livingston remains a popular tourist stop. The Livingston Depot houses a railroad museum, the Yellowstone-

Gateway Museum, which preserves the archeological history of the region, and the International Federation of Fly Fishers Museum, which contains a century's worth of angling artifacts and literature from all over the world.

Livingston is also among Montana's centers of art and film. It was the location for *A River Runs Through It* and *The Horse Whisperer*. Actors Peter Fonda and Margot Kidder, *Saturday Night Live* alumnus Rich Hall, musician Ron Stryker (Men at Work) and novelist Walter Kirn (*Up in the Air*) live here. And Jimmy Buffett mentions the town in a number of songs, including *Livingston Saturday Night* and *Livingston's Gone to Texas*.

Glacier National Park. From Livingston, Route 89 passes through Lewis and Clark National Forest en route to Great Falls. From there it angles northwest through the town of Choteau, near the Bob Marshall Wilderness. It rolls on through the Blackfoot Indian Reservation and finally comes to an end at St. Mary on the eastern side of Glacier National Park.

Arguably the most memorable section of road begins at the end of the journey, the Going-to-the-Sun Road. This 50-mile mountain byway traverses the heart of Glacier National Park. An astonishing feat of engineering and a national historic landmark, the road was built by the Civilian Conservation Corps



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(From far left) Horseback riding is a favorite activity in Yellowstone (shown here), Glacier and Grand Teton national parks. Mountain whitefish populate the Hoback River near Jackson, Wyoming. (Below) A protected species, bison are a common sight in Yellowstone National Park.

during the 1930s. It climbs 18 miles past Lake St. Mary to the top of Logan Pass, and then descends to the western park gate at West Glacier. Along the way, the odds are high of seeing mountain goats and bighorn sheep among the craggy cliffs beside the road.

If you plan to drive the Going-to-the-Sun Road, leave your trailer at the campground. Vehicles longer than 21 feet or wider than 8 feet are not allowed, and vehicles taller than 10 feet don't fit under the cliffy overhangs. Another option is to take a guided ride over Logan Pass in one of the park's antique touring cars.

These are only a few of the highlights along Route 89 in Montana and Wyoming. You won't be disappointed on this exceptional tour of the northern Rocky Mountains, which offers not only epic views and memorable outdoor adventures, but also a sense of the lives of some of the key pioneers and personalities of the Old West. 🚗



WHAT TO KNOW WHEN YOU GO

- Purchase a National Parks and Federal Recreational Lands Pass at www.store.usgs.gov/pass or at the entrance to Grand Teton National Park, the first park you'll enter heading north on Route 89. The \$80 annual pass (\$10 for seniors) is cheaper than paying individual entrance fees at each park, and it gets you into all National Park Service, USDA Forest Service, U.S. Fish and Wildlife Service, Bureau of Land Management and Bureau of Reclamation sites that charge day-use or entrance fees.
- A ranger will offer a free map at each park entrance. Take it. It's the best map of that park for drivers. The park paper, also free at the gate, will tell what events and programs are scheduled during your visit.
- Fill up your fuel tank when passing through population centers. There are long stretches on Route 89 between service stations, and fuel in the parks is more expensive and sporadically located.
- Traveling on Route 89 outside the parks is fast and efficient, but traffic moves slowly within the parks. There's lots to see both from the road and on foot.
- Watch wildlife from the safety of your vehicle. Do not get out and approach animals! They may look placid, but they are wild and can hurt or kill you without warning.
- Dress in layers. It can be hot during the day, in the 90s or higher, especially in towns, yet chilly at night, in the 40s or colder. It can snow year-round at higher elevations in all three national parks.
- Wear sunscreen, sunglasses and a wide-brimmed hat. The sun at high elevations and on the water is very strong in the Rockies.
- Bring bug spray. The mosquitoes can be thick, especially in June and July. By August, they are less of a problem.

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On fifth-wheels and travel trailers, upgrading from electric to Kodiak disc brakes shortens stopping distances dramatically

It's no secret that trailers and fifth-wheels are getting bigger. And with that extra length comes a full list of standards and options. Add larger slideouts, deeper storage compartments and extra-large garages, and the load grows exponentially. Tow vehicles may be able to pull these heavy, homelike RVs, but efficient — and safe — braking could be an issue, considering the limitations of the trailer's electric brakes. Upgrading a trailer or fifth-wheel with disc brakes shortens stopping distances substantially. Kodiak Trailer Components is one of the major suppliers of kits designed to retrofit the electric brakes that are commonly used on trailer chassis.

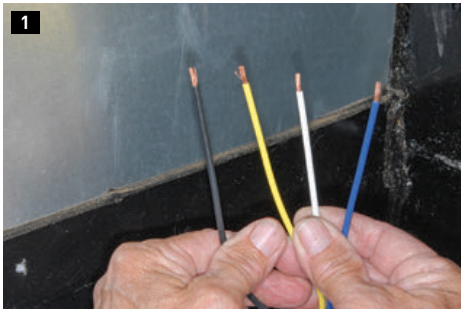
If you've ever experienced brake fade or brake failure with electric

brakes, you know that sinking feeling in your stomach when it's difficult to stop or slow down, especially during emergency braking. Unfortunately, the standard electric drum brakes have not kept up with the times, and the best brake-lining material, asbestos, was banned years ago, leaving more environmentally friendly but less effective shoe material to perform an even more extreme-duty job.

Disc brakes have fewer moving parts that more effectively dissipate heat, and the calipers are self-adjusting, unlike most electric brakes, eliminating unequal braking on either side of the axle, which results in much better performance. Another important factor to consider when deciding on the benefits of a

conversion is that disc brakes are less affected by water or rust and are extremely fade-resistant for those long downhill grades, which is ideal for anyone towing a heavy RV.

It is smart to consider what type of traveling you will be doing, now and in the future, before deciding on the disc-brake conversion kit that will be best for your RV. Kodiak offers various disc-brake conversion kits that are manufactured with several different types of materials and coatings. The company offers kits made of stainless steel for the ultimate protection from moisture and salt, and a number of coatings that bridge the gap between standard parts and stainless steel. The company's Dacromet and e-coatings are designed for all types of climates



1) The HydraStar actuator employs a simple four-wire system using standard RV wire color code. **2 and 3)** When installing the actuator in a storage compartment, be sure to use cable clamps to secure the brake lines to avoid any type of damage. **4)** During the caliper bleeding process, it's important that the actuator does not run out of brake fluid. Air will enter the brake lines, and you will have to start over again. **5)** When starting the bleeding process of the brake lines, always begin at the farthest caliper from the actuator. **6)** Before installing the new hub and rotor assemblies, clean the spindle and inspect for flaws or damage. Replace any parts that may be compromised.

that an RV might live in, including coastal areas where rust is a serious problem. Even areas with high humidity can wreak havoc on moving parts, so the materials are very important.

Kodiak's kit components include coated rotors to minimize corrosion between the rotor hub face and the wheel face. Kits with stainless-steel pistons, ceramic brake pads and brass bleeding fittings are integral for a solid, rust-free system designed to last the lifetime of an RV and are well worth the cost of admission.

Unlike electric brakes, hydraulic disc brakes require an electric-over-hydraulic actuator. This piece of equipment routes the pressurized hydraulic fluid via a signal from the brake controller to the calipers in response to braking of the tow vehicle. HydraStar's hydraulic trailer brake actuator was our choice for powering

the two 8,000-pound-rated axles on the test fifth-wheel trailer with the Kodiak disc brakes.

HydraStar offers three hydraulic actuators for small to large brake calipers. All three are designed to work with most OEM integrated brake controllers as well as most aftermarket brake controllers. Model HBA-16 is rated at 1,600 PSI and has possibly the fastest response time and shortest stopping distance in the industry; it meets all DOT and federal requirements. Compact in size at only 11.8 inches long, 3 inches wide and 7.3 inches high, this unit has a large fluid reservoir essential for bleeding the system and pressurizing four or more large brake calipers without losing

critical volume. For integrated brake controllers that are not compatible, HydraStar offers an HBA-CAM adapter.

Installation of the Kodiak disc brakes and HydraStar actuator is time-consuming but pretty straightforward; figure on around six to eight hours, if you are an experienced DIY mechanic. The process begins with selection of the brake actuator's location, keeping in mind that the shorter the brake lines to the calipers, the faster the response time.

The only choice for locating the actuator in the test Carriage Cameo 36-foot fifth-wheel was in the front compartment, slightly more than 16 feet from the front axle. The batteries

7) Install the Kodiak caliper flanges to the axle flange, torquing to the manufacturer's specifications. **8)** During installation of the hub and rotor assembly, be careful not to damage the spindle or threads.



were close, making it easier to supply a positive and negative wire to the actuator. All of the other wires needed to complete the HydraStar installation were also close at hand. Directions for wiring are very precise.

The next step is to lift all four tires off the ground and support the chassis with properly rated jack stands. After the tires and wheels are removed and set aside, the wires are cut, and the hub/drum and backing-plate assemblies are removed.

Once the old brake components are clear, it's time to install the caliper mounting brackets, paying close attention to the position of each one: three o'clock on the left side and nine o'clock on the right side. The hub and rotor assemblies install fairly easily, although we had to do some grinding on the bracket to make everything fit perfectly. We then spun the rotors several times to ensure they moved freely and rechecked the spindle nut for proper tightness, according to the manufacturer's specifications.

When installing the calipers, the fluid-bleed fitting must point up, and the mounting bolts are torqued to 40 to 50 lb-ft.

Some preplanning is required to route the brake lines, which, along with the necessary fittings, are included with the kit. Getting the brake lines from the actuator to the axles will require custom routing,



9) Install the outer bearing, making sure that it fits into the race properly. If the bearing does not fit properly, remove the hub and reseal until the proper fit is achieved. **10 and 11)** Install the spindle nut to the manufacturer's specifications. Insert the cotter pin to prevent the spindle nut from loosening. **12)** Be careful not to overtighten the plastic dust cap. If the cap is overtightened, failure is eminent.

and it's important to provide enough slack in the lines to allow for any axle flexing while on the road. All of the brake lines will be permanently mounted and will need to be protected from rocks or debris that can be thrown from the tires.

After double checking all of the brake-line connections, we filled the HydraStar actuator reservoir with DOT 3 brake fluid and followed the directions for bleeding the air from the system. This process starts at the brake caliper

farthest from the actuator, using the bleeder fitting on the caliper. It's best to use a small, clear vinyl hose and a clear bottle filled partially with fresh brake fluid to capture the fluid and air being pushed out of the system. This allows you to see when the bubbles stop, indicating that the air is purged from the brake line.

To complete the bleeding procedure, you will need a helper to activate the tow vehicle's brake controller, which will engage the

13 and 14) Carefully install the calipers onto each rotor. Use the supplied bolts and torque to the manufacturer's specifications. **15)** Calipers fitted with new brake pads can be quite snug when installing them onto the rotor. Carefully tap the bottom and the top of the caliper until it seats into the proper position.



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16) In our case, the caliper would not fit over the flange because of excess material. A hand grinder was used to remove just enough material to ensure the proper fit. **17)** Use a box end wrench to start the caliper mounting bolts, as this will give you more control than using a heavy-duty socket and ratchet assembly. **18 and 19)** High-quality brake lines and fittings offered by Kodiak are designed to last a long time in trailer service. **20)** During removal of the electric brake backing assembly, be careful not to damage the grease seal surface, spindle or threads. **21)** Before using the brakes, the air must be bled from the brake lines. A hose is pushed onto the bleeder fitting at the caliper, and the other end is submerged into a clear container with fresh brake fluid.

HydraStar actuator and pressurize the brake lines. We used the hands-free speakers on our cell phones to communicate during this process rather than relying on a walkie-talkie, which needs to be manually activated.

When the actuator is running with the bleeder fitting open, count out five to 10 seconds, then close the bleeder and stop the brake control. Repeat this process with the other three calipers. It's a little tricky, but very important, so be patient. Be sure to fill the fluid reservoir continually throughout this process and triple check all fittings for possible brake-fluid leaks — and wear safety glasses, as brake fluid is not something you want in your eyes.

If you allow the actuator to go dry, you'll have to start over.

Reinstall the tires and wheels, and you're ready for the road. Before driving at normal speeds on public roads, manually test the brakes for function while moving forward slowly. Be sure to check the lug nuts and brake lines after the first 50 miles and then again after the next 50 miles.

Ideally, new brake pads and rotors need a short break-in period for maximum performance. For the first 2 or 3 miles, try to avoid heavy braking, which leads to higher rotor temperatures. Start driving with four or five moderate braking stops from 40 MPH while manually applying the brake

control. Let the brakes cool for 20 to 30 minutes. Next, complete four or five more aggressive braking stops from 40 MPH. Again, let the brakes cool for 20 to 30 minutes.

After the break-in period, we towed the 17,000-pound fifth-wheel on various roads and steep grades, and the overall performance of the Kodiak disc brakes was astounding compared to the electric counterparts. The powerful feeling of being able to descend long, steep grades with confidence and peace of mind made the towing experience much more enjoyable. Once you've experienced disc brakes, you'll never own a trailer with electric brakes again.

Retail prices for the Kodiak kits vary, depending on axle size and coatings, but the standard kit for two 8,000-pound axles runs around \$1,100. HydraStar trailer brake actuators sell for \$599. 🚚

22 and 23) Before installing the tires and wheels, carefully inspect the installation of all parts and brake lines. One small missed step can cause brake failure.



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Weigh To Go

Rieco-Titan's A-frame jack combines power lifting with a unique built-in scale to keep trailer owners apprised of hitch weight

DIFFICULTY	1 2 3 4 5
TIME TO COMPLETE	45 MINUTES
TOOLS NEEDED	JACK STANDS, WRENCHES OR SOCKET SET

Safety is one of the most popular topics when it comes to trailer towing. Pulling a large, heavy trailer on any road or major highway puts the safety onus on the owner, who needs to make sure the equipment is right for the job and in good shape.

Towing safety is all about knowing key information, like the trailer's gross vehicle weight rating (GVWR) and hitch weight, combined with a suitable weight-distributing hitch, which is reliant upon those numbers for proper setup. Unfortunately, to get these real-world weights, a trip to the public scales or the purchase of some kind of standalone scale is typically necessary. To allow trailer owners to keep tabs on hitch weight due to changes in loading, without going to the scales, Rieco-Titan Products has created a unique A-frame scale, the Weigh Station.

The 4,000-pound-rated Weigh Station is not your typical scale. Hitch weight is displayed in a plastic housing



The Weigh Station A-frame jack mounts in existing threaded holes in the coupler. Installation takes only a few minutes. The motor in the Weigh Station is similar to the ones used in the company's truck-camper corner jacks, which have historically been strong and reliable. The jackleg moves quickly and smoothly, and LEDs illuminate the scale and A-frame.

attached to the A-frame jack, and the easy-to-read gradations show weight up to 2,000 pounds. The unit reads out in 200-pound increments, which is not very precise but is still better than not knowing.

Building electric jacks is not new for Rieco-Titan, a company that has been providing power corner jacks to the truck-camper segment of the RV industry for a long time. The Weigh Station is constructed in the same tough manner as Rieco-Titan's other products and enhanced by a resilient powder-coat finish. Beyond the high-quality look and solid feel, the Weigh Station includes marine-grade switches and LEDs that illuminate both the scale and the coupler area. The electronics and wiring are circuit-breaker and fuse protected, as well as sealed from the elements via a gasket-lined gearbox.

Installation of the Weigh Station is straightforward and should consume

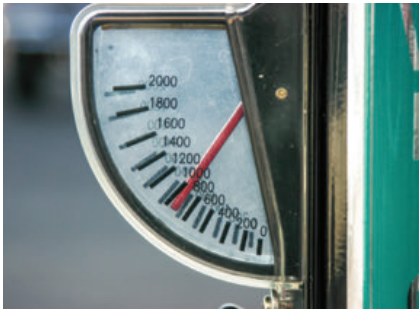
little time and effort. To get started, make sure the trailer is safely secured with chocks and the A-frame is supported with a properly rated jack stand. In lieu of a jack stand, the job can be done while hitched to the tow vehicle.

Retract the current jack and remove the three bolts holding it to the A-frame. The Weigh Station can then be bolted in place using the included hardware. This will take only a few minutes, since the holes in the A-frame have a standard pattern and are threaded.

Once the new jack is in place, it's a simple matter of running positive and negative wires directly to the battery, which is normally on the A-frame. Make sure the wires are out of harm's way and that the connections to the battery are solid. The circuit breaker



LIFT AND WEIGH » Rieco-Titan's Weigh Station A-frame jack provides up to 22½ inches of lift with the push of a button. The powder-coated finish is designed to resist corrosion and withstand the rigors of outdoor exposure. The electric motor has an excellent track record in the pickup-camper segment of the industry.



The scale mounted on the Weigh Station reads out in 200-pound increments.

and fuse are built into the housing, so there's no need for additional protection at the battery.

The motor propels the jack leg quickly, and combined with the adjustable drop leg it can move 22½ inches, which allows for a shorter cranking time and the ability to reach a higher lift, if necessary. The switch feels very precise, and there's a manual crank handle, should the battery become too discharged to power the motor.

Knowing the hitch weight on the spot turned out to be a welcome feature. Since the test trailer has a garage for toys, the balance shifts depending on loading for each trip and the type and quantity of toys stored in the back. It's important to maintain 10 to 12 percent hitch weight to limit sway, and the scale on the Weigh Station eliminates most of the guessing.

It's best to weigh the trailer loaded for a typical trip to ascertain total weight. Since it's not practical to do that before every trip, owners of toy haulers will still have to make some guesstimates on the percentage of hitch weight, based on the reading shown on the scale, if the items carried in the garage change from trip to trip. But that's still way better than not knowing at all.

Although this may not be the most technically advanced or heaviest lifting jack, it is definitely capable and convenient, and offers a new level of safety and towing preparation. The Weigh Station retails for \$299.89. 📞

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866-403-9803, www.riecotitan.com

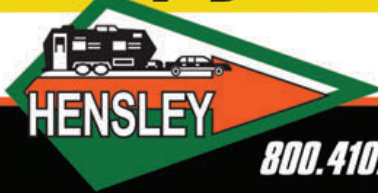
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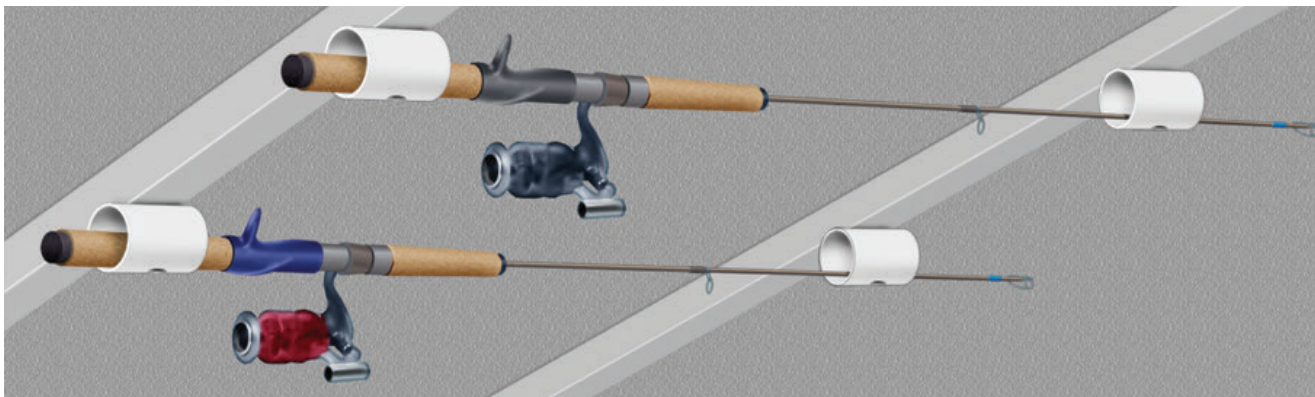
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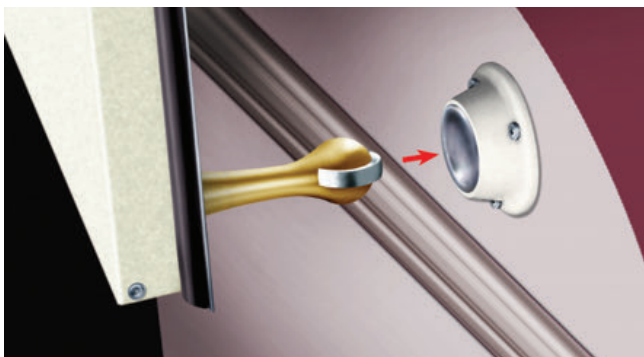
Hooked on Fishing

We have enjoyed camping for 20-plus years. Since we also like to fish, we carry fishing rods in our RV's outside storage compartment, but they were always in the way. I designed an inexpensive fix by mounting two pairs of 1½-inch PVC connectors to the top of the frame of the storage compartment, one pair for each fishing rod.

First, I drilled a ½-inch access hole through each PVC connector to attach them to the frame with self-tapping screws. I mounted them so the handle of each rod fits into one connector and the tip of the rod slips into another.

Total cost was less than \$4. The rods now hang out of the way in their own space and are mostly out of sight.

Jim Robben, Victoria, Kansas



Hold the Door

I have a Forest River fifth-wheel and spend summers in Wyoming where afternoon rain showers are common. When the rain moves in, I don't want to step out into the wet to close my RV's door. I installed a magnetic-catch doorstop, so all I need to do is reach out and pull the door closed, rather than having to step outside and unlatch it. The latch is sturdy and was easy to install.

Mike Nicks, Grass Valley, California



Sleep Tight

Some Rvers use their dinettes for mealtime and lounging, then transform them into beds for sleeping. We converted our dinette into a semi-permanent crib until our daughter was almost five, since she enjoys RVing just as much as we do!

I removed one of the railed sides of a crib that someone no longer needed and joined the wooden rails with a solid piece of pine on the outside for rigidity. With the dinette set up for sleeping, I attached the crib section to the wooden ends of the bench seats. That kept our daughter safely in her own bed. Now that she's older, I removed the crib rails and returned the dinette to its original configuration.

Chris Martone, Milford, Connecticut 📧

To send your submission, write to 10-Minute Tech, 2750 Park View Court, Suite 240, Oxnard, California 93036 or email 10minutetech@trailerlife.com. Please include an illustration or photo, if applicable. *Trailer Life* will pay \$35 for original 10-Minute Tech ideas. All payments require an SSN or FEIN.



RVing Paratrooper

A great ride for adventurous RVers who love to explore trails, the Paratrooper from Montague Bikes weighs 32 pounds and fits into tight storage spaces. The full-size folding mountain bike, which can be ready to go in less than a minute, was originally developed for the military. Available in 16-, 18- and 20-inch frame sizes with 24 gears, the Paratrooper delivers smooth off-road performance with a Suntour suspension fork, mechanical disc brakes and 26-inch wheels that roll over obstacles with ease. The bike's Rackstand serves as a cargo holder and mudguard when the bike is in use, converts to a kickstand when parked, and allows the bike to stand upright when folded.

MSRP: \$899

617-491-7200, www.montaguebikes.com
Circle 138 on Reader Service Card



Fuel-System Refresher

Clean fuel injectors are critical for getting the best performance out of any tow vehicle, gas or diesel. Royal Purple Max-Clean is designed to do just that. It's a synthetic fuel-system treatment said to penetrate and clean modern injection systems and old-school carburetors alike. Royal Purple claims the product improves fuel economy, deposit-related engine knock and premature spark-plug fouling, and also works as a fuel stabilizer for long-term vehicle storage. One 20-ounce can is said to be good for 10,000 miles. Whether the fuel additive works for your particular vehicle or not may depend on how dirty the injectors and valves are in the first place.

MSRP: \$19.99

888-382-6300, www.royalpurple.com
Circle 139 on Reader Service Card



Convection Connection

Is that built-in microwave in your RV starting to look and act its age? Muave's stainless-steel microwave convection oven and grill has a sophisticated boutique look to enhance the galley. UL- and CUL-approved, the 1-cubic-foot appliance provides 1,000 watts of cooking power, touch-pad controls, 10 power settings and a 12.4-inch glass turntable. The 19.25-inch-deep unit slides right into the standard 24-inch-wide by 17-inch-high vented stainless-steel trim face. An optional 23-inch-wide by 17-inch-high trim kit is also available. Model MUCMKT120S is a retrofit match for many brands including compact models from Panasonic, GE, Contoure, Tappan and Cuisinart.

MSRP: \$499.95

941-378-9727, www.muaveappliances.com
Circle 140 on Reader Service Card



Riding on Air

Truck owners can take the harsh ride out of trailer-pulling 1979 to 2016 Ford Super Duty pickups by replacing the rear leaf springs with the Auto Flex 5-Link Air Suspension system, getting the full benefit of riding on air like the big rigs. Auto Flex claims the 5-Link system also prevents wheel hop and enhances rear-suspension travel for better off-pavement performance. An air-valve dump allows the truck to be lowered for loading and unloading, while the system's self-leveling feature maintains the same ride height whether loaded or empty. The 5-Link kit is designed to be 100 percent bolt-on and includes an onboard air compressor, air tank, shocks, wiring harness and all hardware. Kits are also available for GM, Ram and F-150 trucks.

MSRP: \$3,499. 807-623-0590, www.autoflexsuspensions.com

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Hurry, offer expires July 31, 2016. Call Camping World at 1.888.875.1540 to activate your DISH programming!

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PRODUCTS



Level-Minded Rams

Ram changed its 2500/3500 heavy-duty pickups to coil front suspensions in 2014 to enhance the ride, but some owners don't like the nose-down attitude. That's where Epiq Suspension's 2-Inch Premium Leveling Kit comes into play. It levels the front of 2014-and-newer Ram 2500/3500 4x4s, improving the ride and handling, especially when towing a fifth-wheel trailer. The kit consists of two hand-fabricated steel spacers that sit above the front coils, along with a pair of longer, nitrogen-filled Fox 2.0 Performance shocks to replace the factory versions. The kit is said to be easy to install by DIYers and doesn't require special tools.

MSRP: \$359

541-726-1006, www.dunkperformance.com

Circle 142 on Reader Service Card



Side-Bagged Super Duty

Ford F-250 Super Duty owners who find that a truck camper or travel trailer drops the rear suspension a little more than they'd like can turn to Air Lift's new Side-Mount RideControl kit to quickly elevate the rear suspension back to a level stance. The air-helper-spring kits, which have 2,000 pounds of load-leveling capacity, are designed for non-fifth-wheel towing applications in 2011 to 2015 2WD/4WD models. The RideControl kit takes about two hours to install and works with the factory leaf springs. Air Lift's air helper springs can be inflated or deflated as needed to improve the ride, reduce body roll and enhance overall handling.

MSRP: \$412.58

800-248-0892, www.airliftcompany.com

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LOT 69682 shown
69111/625262
62573/656020

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SCISSOR SUPER COUPON

WOW

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SAVE 77%

Customer Rating

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60715/60714

LOT 47873 shown
69050/61282

\$3.99

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SCISSOR SUPER COUPON

WOW

PACIFIC HYDROSTAR 1650 PSI PRESSURE WASHER



SAVE \$70

Customer Rating

LOT 68333/69523

69468 shown

• 1.3 GPM

\$7.99 ~~\$14.99~~ **\$1.99**

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WOW

4-1/2" ANGLE GRINDER



SAVE 40%

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LOT 95578 shown

69645/60625 shown

\$11.99 ~~\$20.26~~

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SCISSOR SUPER COUPON

WOW

25" 16 DRAWER ROLLER CABINET



SAVE 62%

Customer Rating

LOT 61609/67831 shown

14,800 cu. in. of storage

\$329.99 ~~\$952.99~~

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SCISSOR SUPER COUPON

WOW

1-1/4 GALLON HOME AND GARDEN SPRAYER



SAVE 33%

Customer Rating

LOT 61280/63124/63145

95922 shown

\$99 ~~\$149~~ **\$99**

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WOW

900 PEAK 2 HP (63 CC) 2 CYCLE GAS RECREATIONAL GENERATOR



SAVE \$78

Customer Rating

LOT 68338 shown

\$899.99 ~~\$1688.97~~

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WOW

STEP STOOL WORKING PLATFORM



SAVE 60%

Customer Rating

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50 lb. capacity

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SAVE \$189.99

Customer Rating

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69612 shown

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SAVE 64%

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LOT 69641/60725 shown

61894/650465 shown

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SCISSOR SUPER COUPON

WOW

3 GALLON, 100 PSI OILLESS PAINTCASK AIR COMPRESSOR



SAVE 43%

Customer Rating

LOT 916275 shown

66827/61615

\$499.99 ~~\$899.99~~

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SCISSOR SUPER COUPON

WOW

RAPID PUMP® 3 TON LOW PROFILE HEAVY DUTY STEEL FLOOR JACK



SAVE \$85

Customer Rating

LOT 61282 shown

60688/61283

62328/62670

\$84.99 ~~\$169.99~~

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WOW

72 VOLT MAGNETIC TOWING LIGHT KIT



SAVE 71%

Customer Rating

LOT 63100/69625 shown

62517 shown

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SCISSOR SUPER COUPON

WOW

MOVING BLANKET



SAVE 66%

Customer Rating

LOT 66837 shown

69505/62418

\$5.99 ~~\$17.97~~

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SCISSOR SUPER COUPON

WOW

72" x 80" MOVING BLANKET



SAVE 66%

Customer Rating

LOT 66837 shown

69505/62418

\$5.99 ~~\$17.97~~

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SCISSOR SUPER COUPON

WOW

3 GALLON, 100 PSI OILLESS PAINTCASK AIR COMPRESSOR



SAVE 43%

Customer Rating

LOT 916275 shown

66827/61615

\$499.99 ~~\$899.99~~

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5.99%**
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See our website for current rates and terms, as well as financing for Full-Timers and loan amounts below \$15,000

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 EQUAL HOUSING LENDER

SAE J2807 Towing Standards

Until recently, there were no industry-wide standards for measuring towing capacity, and vehicle manufacturers were left on their own to develop testing procedures and verify results. The outcome was a sort of frontier free-for-all, where ratings were fast and loose, and sometimes questionable. It was a tug-of-war between automakers' marketing, engineering and warranty departments; hype versus reality. Nobody outside of the manufacturer's inner circle really knew how the company's vehicles were tested, and it was considered "proprietary" information that was carefully guarded.

In response to the confusion that resulted when buyers wanted to compare maximum tow ratings across different brands, the neutral and widely respected SAE International (initially, the Society of Automotive Engineers) stepped in and developed uniform testing procedures, called SAE J2807. Work began on the J2807 standard back in the 1990s, but practical testing was not completed until 2008. By 2010 manufacturers started to adopt the

standard, and today most tow-vehicle manufacturers are onboard with full implementation.

The SAE J2807 document spells out the performance tests necessary for a tow vehicle and trailer combination to meet the new standard and determine the tow vehicle's gross combination weight rating (GCWR) and trailer weight rating (TWR). The document also covers detailed requirements for trailers used for testing, including not only the

structure, chassis and ballast used, but also the brand, model and even the size of the trailer tires used. This testing process provides consistent, verifiable ratings so consumers can compare similar vehicles of various brands for their towing capability.

Prior to introduction of the J2807 standard, manufacturers typically allowed for a single 150-pound occupant in the vehicle when setting tow ratings. With J2807, tow-vehicle trailering weight (TW) includes 150 pounds for the driver plus 150 pounds for a passenger, the weight of all applicable towing-package equipment and 100 pounds for optional equipment, such as the hitch ball and weight-distributing bars, divided equally between front and rear axles.

For test purposes, the J2807 standard requires that a tow vehicle "be equipped with the propulsion system or powertrain and driveline



(engine, transmission, axle ratio, tire size, etc.) and cooling package to produce the GCWR under test.” However, if more than one tire size or gear ratio is available for a specific model with the same GCWR, the combination that produces the lowest numerical axle ratio (tallest gearing) is the combination that is tested.

This type of thinking — favoring the buyer — is seen throughout the standard and ensures that the towing

capability will be shared by all of the included versions. For instance, if an optional heavy-duty cooling package is available but not required to get the stated GCWR, the vehicle is tested without benefit of this option.

Climbing

The J2807 document specifies tests that measure a tow vehicle and trailer combination’s ability to climb. The tow vehicle must be able to start moving

and drive on a 12 percent gradient for at least 16 feet uphill, five times successively, within five minutes or less. This test must be repeated by the tow vehicle and trailer while starting out in Reverse.

The climbing-test route begins at an elevation of 550 feet, near Bullhead City, Arizona, and Laughlin, Nevada, and ascends to 3,500-plus feet in 11.4 miles. For test purposes, the air temperature at the bottom of the grade must be at least 100 degrees Fahrenheit. Beyond the high temperature, J2807 testing requires the tow vehicle’s air conditioning to be set on maximum cold (with outside air, not recirculated) and the circulation fan to be running at full speed. To pass the test, single-rear-wheel (SRW) tow vehicles must maintain at least 40 MPH until summing Union Pass. Dual-rear-wheel (DRW) trucks must maintain at least 35 MPH.

Along with the speed requirement, J2807 has a clause called Drivetrain System Performance that calls for the vehicle undergoing testing to suffer no component failures, no Check Engine-light illumination or any other warnings or alerts of malfunctions. A Cooling System Performance clause likewise calls for zero component failures, no trouble codes or warnings of any kind, and no coolant loss during any test.

Instead of testing on that specific road, simulations in a “climactic” wind-tunnel facility can be performed.

Accelerating

A battery of three tests determines if a tow vehicle and trailer combination loaded to maximum GCWR can accelerate satisfactorily on a level road.

The first test measures the time it takes to go from 0 to 30 MPH. SRW vehicles are required to reach 30 MPH within 12 seconds. DRW trucks must reach 30 MPH within 14 seconds.

The next test measures 0-to-60-MPH acceleration. SRW vehicles have 30 seconds to reach 60 MPH, and DRW trucks have 35 seconds to hit 60 MPH.

Passing performance from 40 to 60 MPH is also tested. SRW vehicles must hit 60 MPH within 18 seconds, and DRW trucks must reach 60 MPH within 21 seconds.



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SAE J2807-compliant charts allow shoppers to compare uniform weight ratings for tow vehicles from the various manufacturers.

Handling

A tow vehicle may have enough power to accelerate and climb at acceptable speeds, but the J2807 standard also seeks to verify that it handles safely with a maximum load. Ensuring minimum performance standards for trailer sway and understeer, the Combination Handling Requirements assess a tow vehicle's weight-carrying and weight-distributing limits and measure its stability with a fifth-wheel or gooseneck trailer, at its maximum GCWR.

Understeer, the tendency of a vehicle's front wheels to skid rather than turn when cornering, is measured during three levels of front-axle load redistribution (FALR), which calculates how much the front axle's loading changes. This test is designed to ensure that steering is not overpowered by the weight of the trailer unloading the front axle during normal driving while towing the maximum-rated trailer weight. For a fifth-wheel or gooseneck trailer, the vehicle combination is allowed 0 degrees per g of understeer when there is 0.4 g or less of lateral acceleration and an FALR of 0 percent.

In addition to the understeer testing, there's a measurement of sway damping that requires the trailer to move at a ratio of 0.10 or less at 62.1 MPH.

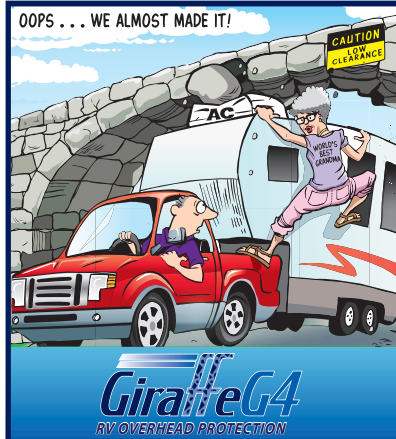
Braking

Tow-vehicle braking performance with a trailer depends greatly on the quality and effectiveness of the trailer's brakes, which is out of the control of the tow-vehicle manufacturer. However, since the test trailers are standardized, at least the results are comparable, even if they don't match the performance of a trailer that may subsequently be pulled by that model of tow vehicle.

The J2807 braking standards for a tow vehicle and trailer combination require testing at the maximum GCWR. Any tow vehicle with a maximum tow rating of more than 3,000 pounds must be able to go from 20 MPH to a full stop

Engine	Trans.	Axle Ratio	GVWR	Payload	Base Weight			GAWR		GCWR	Max. Trailer Weight Rating
					Total	Front	Rear	Front	Rear		
CREW CAB LONG BOX, 4X4, SRW											
5.7L V8 HEMI	A6 66RFE	3.73	11,300	4,390	6,909	4,006	2,903	5,250	7,000	18,400	11,020
5.7L V8 HEMI	A6 66RFE	4.10	11,300	4,390	6,909	4,006	2,903	5,250	7,000	20,400	13,020
6.4L V8 HEMI	A6 66RFE	3.73	11,400	4,440	6,963	4,046	2,917	5,500	7,000	19,900	12,470
6.4L V8 HEMI	A6 66RFE	4.10	11,400	4,440	6,963	4,046	2,917	5,500	7,000	22,900	15,470
6.7L CUMMINS DIESEL	M6 MT-G56	3.42	12,300	4,430	7,868	4,891	2,977	6,000	7,000	24,300	15,960
6.7L CUMMINS DIESEL	A6 68RFE	3.42	12,300	4,480	7,825	4,854	2,970	6,000	7,000	25,300	17,010
6.7L CUMMINS DIESEL (HO)	A6 A569RC	3.42	12,300	4,330	7,972	4,971	3,001	6,000	7,000	25,300	16,860
CREW CAB LONG BOX, 4X4, DRW											
6.4L V8 HEMI	A6 66RFE	3.73	13,300	5,970	7,328	4,070	3,258	5,500	9,750	19,900	12,100
6.4L V8 HEMI	A6 66RFE	4.10	14,000	6,670	7,328	4,070	3,258	5,500	9,750	23,400	15,600
6.7L CUMMINS DIESEL	M6 MT-G56	3.42	14,000	5,780	8,216	4,897	3,319	6,000	9,750	24,300	15,610
6.7L CUMMINS DIESEL	M6 MT-G56	3.73	14,000	5,780	8,216	4,897	3,319	6,000	9,750	26,300	17,610
6.7L CUMMINS DIESEL	A6 68RFE	3.42	14,000	5,830	8,172	4,860	3,313	6,000	9,750	25,300	16,650
6.7L CUMMINS DIESEL	A6 68RFE	3.73	14,000	5,830	8,172	4,860	3,313	6,000	9,750	27,300	18,650
6.7L CUMMINS DIESEL	A6 68RFE	4.10	14,000	5,830	8,172	4,860	3,313	6,000	9,750	30,300	21,650

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in 80 feet or less. During testing, the trailer must stay inside a lane that is 11.5 feet wide. There is also a static-brake test, where the tow vehicle's parking brake must be able to keep the vehicle and trailer stationary on a 12 percent grade, both forward and backward, while it is loaded to the maximum GCWR.

Conclusion

So, what does the SAE J2807 standard mean for RVers?

When shopping for a new tow vehicle, it is unlikely that you will see the engineering terms "TWR" or "TTW" in the manufacturers' tow-rating guides. What you will find are J2807-compliant charts, which are available online from the vehicle manufacturers. The charts spell out weight ratings for each vehicle based on available configurations, including engine and axle-ratio choices.

The charts are useful to consumers because they not only show uniform maximum trailer weight ratings, they

indicate other important weights including GCWR. Charts for Ford and GM vehicles show maximum trailer weight for fifth-wheel/gooseneck and conventional towing.

For those wondering how big a truck camper they can carry in the beds of various pickups, similar guides from the manufacturers give the GCWR of trucks by package and maximum camper weight with minimum equipment built on the truck.

Finally, tow-vehicle buyers can shop for new models from different brands on a level playing field, comparing "apples to apples and oranges to oranges," as the saying goes. That's something RVers were not able to do before. 🚚

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No Uncertain Terms

Gross Vehicle Weight Rating (GVWR)

Maximum allowable weight of a loaded tow vehicle or trailer, including fuel, cargo, passengers and hitch weight carried by the tow vehicle, as determined by the manufacturer.

Gross Combined Weight Rating (GCWR)

Maximum allowable weight rating of a loaded tow vehicle and trailer combination, including everything carried by both vehicles, as determined by the manufacturer. Also known as gross combination weight rating.

Unloaded Vehicle Weight (UVW)*

Vehicle weight with full fuel, engine (generator) oil and coolants.

Cargo Carrying Capacity (CCC)*

Gross Vehicle Weight Rating minus Unloaded Vehicle Weight plus full LP-gas weight.

Net Carrying Capacity (NCC)*

Maximum allowable weight of all personal belongings, food, fresh water, LP-gas, tools, dealer-installed accessories, etc., that can be carried by the RV.

Curb Weight

Vehicle weight with standard equipment, all necessary operating consumables such as motor oil, transmission oil, coolant, air-conditioning refrigerant and a full tank of fuel, while not loaded with either passengers or cargo.

Trailer Weight Rating (TWR)**

Maximum allowable weight of a loaded trailer for a specific tow-vehicle model and hitch type, as determined by the manufacturer and calculated as specified by SAE J2807. A specific tow-vehicle may have multiple TWRs for weight-carrying hitch, weight-distributing hitch, fifth-wheel hitch and gooseneck hitch. A tow-vehicle may also have a TWR for an unbraked trailer.

Tow-Vehicle Trailering Weight (TVTW)**

For tow vehicles with a GVWR higher than 8,500 pounds: Base vehicle curb weight plus one 150-pound driver and one 150-pound front-seat passenger, 100 pounds of optional equipment split evenly between front and rear axles, the manufacturer's available trailering package and/or any required trailering content and representative aftermarket trailering equipment, as determined by the tow-vehicle manufacturer and calculated as specified by SAE J2807.

For tow vehicles with a GVWR lower than 8,500 pounds: Weight of the tow vehicle used for EPA emissions and fuel-economy certification, including all options in excess of 33 percent sales penetration, plus one 150-pound driver and one 150-pound front-seat passenger, the tow-vehicle manufacturer's available trailering package and/or any required trailering content (if not included in the 33 percent option-penetration weight) and representative aftermarket trailering equipment, as determined by the tow-vehicle manufacturer and calculated as specified by SAE J2807. In the case where a trailering package is not available from the tow-vehicle manufacturer or it does not include a trailer-hitch component, the representative aftermarket trailering equipment includes a trailer-hitch component.

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SURGE PROTECTION

Q Having read Chris Hemer's "Power Protection" feature in the May issue, I am somewhat confused by my situation. I have a 34-foot fifth-wheel with 50-amp service. I stay mostly in campgrounds with 30-amp power poles. I seldom camp where there is 50-amp power available. My question is, should I be using a 30-amp or a 50-amp surge protector? Do I need to purchase both 30- and 50-amp protectors, or will a 50-amp protector work for both amperages?

George Bremner, Hilton, New York

A Definitely buy the 50-amp surge protector, George. The surge protector is good only for its maximum rating. For those occasions when you visit a 50-amp-service site, you'd be unable to use your trailer's full power potential because you'd be limited to the 30-amp surge protector's capacity. You'll be better off spending a bit more and buying the larger unit so you have the power capacity available when you need it, even if that's not very often.

— **Jeff Johnston**



MARATHON BLOWOUT

We have a 36-foot 2013 Montana Mountaineer and were traveling on Interstate 10 in March of 2015 when we experienced a blowout on a 235/80R16 load range E Goodyear Marathon. The tire was on the fifth-wheel's left-front axle and sounded like a bomb going off.

I took the destroyed tire to a Goodyear dealer and talked with the service manager about whether to put on a Maxxis or replace the blown tire with another Goodyear. He took me back into their warehouse and put a Goodyear and a Maxxis tire of the same size side by side and asked me to pick them up. The Maxxis had noticeably more weight to it. I believe the Maxxis weighed around 8 pounds more, and the bead and sidewall were slightly thicker. Now, I don't know if that means anything, but the comments on various forums did not speak well for Goodyear.

I elected to buy a Maxxis tire, which I took back and put on. While I had the jack out, I decided to grease the shackles and check everything else out. When I got to the Goodyear tire on the right-front axle, I happened to see a

bubble about the size of a silver dollar in diameter and bulging out about a quarter of an inch on the inside of the tire. I went back to the tire shop and bought three more Maxxis tires. The blowout had shredded the waterproof fabric underbelly above the tire and ripped the panel and plastic fender off, resulting in more than \$1,600 in damage, not counting the cost of new tires.

After finding a number for Goodyear's "damage team" in an RV forum and jumping through the hoops of sending pictures and estimates and having a Goodyear store send the old tire to Akron, Ohio, the company did reimburse me for the damages. Unbelievably, a guy I camped next to told me not to feel bad, as he had four blown tires at four different times and had become quite proficient at replacing parts. This really did not make me feel any better.

Dan Judy, Fort Madison, Iowa

Thank you for relating your tire tale, Dan. The whole matter of finding good-quality replacement trailer tires is complicated and fraught with potential poor choices. Buying based on price

alone can be a disaster, but using tire weight as one metric, among other features, of course, is an interesting option. It's good you found name brand tires that fit your trailer. We'd like to hear back from you again after you've rolled up a few miles and months on the new Maxxis tires. — **J.J.**

AIR CONDITIONING WITH SOLAR POWER

Q Is there a solar setup I can roof-mount and connect into my Keystone Hideout to run the 13,500-Btu air conditioner? I do appreciate the advice, even if your answer is "no way."

Doug McNamara, via email

A Yes, you can operate a rooftop air conditioner using solar-based power in lieu of being hooked to shorepower, but it's going to be really expensive, and it's not that practical. You'll need a large solar-panel array to provide enough current to charge a large bank of batteries, and those will need to be connected to a heavy-duty inverter capable of handling the AC's not-insignificant power requirements.

Once you consult with a solar-power expert, like the people at AM Solar (www.amsolarrv.com) in Springfield, Oregon, you may decide to pursue a different option. If you give it a go, though, we'd enjoy hearing back with your results. — **J.J.**

THE TECH TEAM



KEN FREUND: Ken is a former ASE Certified Master Technician, service manager and shop owner who has authored numerous books on automotive repair.



JEFF JOHNSTON: Jeff served as technical director of *Trailer Life* for 20 years and has been an RV enthusiast, mechanic and writer since he could hold a wrench.

TIRE BEAD BALANCE

Q You have stated that balancing tires on trailers and fifth-wheels is important. We have businesses that are using tire beads with which to balance. I understand that large commercial trucks are using them, but do they work on smaller tires like travel trailers?

Kevin Nilles, Sanford, Michigan

A If by "tire beads" you mean some type of product that's loosely placed inside a tire that's supposed to provide balance by moving to the lighter part of the tire, I believe it's safe to say the product would be just as effective on a smaller trailer as it would be in a large commercial vehicle. We haven't had any firsthand experience with that type of product, so we can't comment on how, or if, it works, but we'd love to hear from any readers with solid firsthand experience. We've always found that conventional spin-balancing works very well on RV trailer tires. — J.J.

MORE ON SLIDEOUT FAILURES

Regarding the issue addressed by Loyd Flynt in May's "Slideouts Not Retracting" letter, I had the exact same problem on my 2014 Heartland Big-horn 3685. My Bighorn has two hydraulic slides and one electric, and I had the same problem bringing the slides in on 12-volt DC power, but not on shorepower. I tried new batteries and checked the hydraulic pump motor, the converter and all the wiring.

I found the problem when I saw that a 50-amp automatic reset breaker had become weak and would cut out when the slides were halfway in. As soon as the breaker cooled down, it would reset itself, and then I could continue to bring the slide in. My Bighorn has a 12-volt 50-amp breaker that goes from the batteries to the hydraulic pump motor. That is the breaker that became weak. Loyd should try changing the circuit breaker that controls his RV's slides.

Bruce Perry, Lower Sackville, Nova Scotia

Thanks for the information, Bruce. Sometimes it's things we may not expect that provide the best solutions. — J.J.



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WORN HITCH COUPLER

Q Can you tell if the coupler shown in the photo is worn? Should it be replaced? And does it look like this is wear and tear over time or something that just happened overnight?

Krzysztof Wirkowski, via email

A No, this type of wear doesn't happen overnight, and, yes, from your photo, I'd say the piece that clamps down on the ball does indeed show some wear. However, as long as it's still clamping tightly, I don't think the wear pattern shown is a major problem.

What's more significant from your photo is the lack of lubrication. There should be some lubricant on the latch mechanism, the housing and the piece with the wear that contacts the ball. Lubrication is what helps mechanical pieces work well together, and adding some to the ball will significantly slow down, but not completely eliminate, further wear. — J.J.

GOOSENECK, FIFTH-WHEEL OR HITCH ADAPTER?

Q I have a 2007 Dodge Ram 3500 Mega Cab with dual rear wheels. It has a B&W Turnoverball gooseneck hitch in the bed. I am looking to purchase a fifth-wheel toy hauler and have read numerous articles about the benefits and negatives of using a hitch adapter. Some say that a lot of fifth-wheels cannot handle the shock of the adapter from gooseneck to fifth-wheel.

I am also unsure as to what to do with the short-bed issue. They do make offset adapters, and I am curious as to how well they do going down the highway as well as at jackknife angles. I also saw rail adapters that would

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While every effort is made to maintain accuracy and completeness, last-minute changes may occasionally result in omissions or errors.

work. Am I better off buying a pin box with a gooseneck hitch, an offset adapter or rail adapters?

Matt Zelenak, Norvelt, Pennsylvania

A If you already have other trailers with gooseneck connectors, such as a horse trailer, go ahead and use the Turnoverball and some type of gooseneck adapter or replacement hitch for your RV trailer. For gooseneck use, there's nothing wrong with the adapters on the market, as they are successfully used by many RVers and others, as long as using one doesn't void your RV warranty. A pin-box manufacturer will likely tell you not to use the gooseneck adapter, for liability reasons. It's also possible to find a gooseneck hitch that may bolt on in place of the fifth-wheel box on your RV. If the RV trailer is your only towed load, I'd suggest using a conventional fifth-wheel hitch. B&W makes one that connects right to the Turnoverball mount with no truck modifications.

You'll need to do some measuring to determine if you need to make allowances for short-box fifth-wheel towing. An extended pin box and cut-back front corners on the trailer can help with tight-turn clearances, but measure the pertinent dimensions to see where you stand. Google is your friend: do an online search for something like "short bed truck and fifth-wheel towing," and you'll find dozens of references that can help answer your questions in more detail than we have room for here. — **J.J.**

ON-THE-ROAD REFRIGERATOR OPERATION

Q I have a 2015 Winnebago 33-foot travel trailer. This trailer has the optional outside auxiliary kitchen with an AC-only-powered refrigerator. Could I install a power inverter to supply AC power to the refrigerator for when I'm towing to keep food and drinks cold? Would this type of a setup damage the charging system of the tow vehicle or damage the wiring of the trailer? When dry camping, I would need to add some solar panels as well, to keep some charge going for the battery.

Larry Wahl, Brentwood, California

A Yes, you could use an inverter of the right amperage rating to power the fridge while driving. That same inverter could be wired to a multiple-battery array and solar panels, plus associated equipment to provide power when dry camping.

However, you need to check the cabinetry near the refrigerator to make sure there would be enough cooling air circulation when the outside kitchen is closed for travel. Most of those are designed to be wide open when camped, which leaves space for air circulation for effective refrigerator operation. Closed for travel, it's probably a sealed box, more or less, which could lead to an overheated refrigerator situation. Check your owner's manual for safe-operation instructions, and an RV service center could probably give you an estimate to install the cooling vents and gear you'd need for refrigerator operation while going down the road. — **J.J.**

GENSET QUILTS

Q We own a 2015 Keystone Fusion toy hauler with an Onan 5500 generator. When traveling with temperatures in the high 90s and high humidity, the generator kept shutting down. It would start, but when we slowed or stopped, it sounded like it was choking. I have contacted Onan and Keystone, and been to authorized repair shops, with no answer. They can't duplicate the problem.

Steve Amen, Etoile, Texas

A gensets like yours have automatic-shutdown features that protect them from overheating or running with oil levels that are too low. Although you should check the oil regularly, I suspect that the overheat-protection is kicking in, especially since it occurs only in very hot weather. The fact that it seems to cut out when you slow down indicates there may be an airflow problem that is preventing the unit from circulating enough cooling air at a standstill.

Onan provides specifications to RV manufacturers for proper installation. Call Onan (800-888-6626) for this information and verify that your RV allows enough ventilation. — **Ken Freund**

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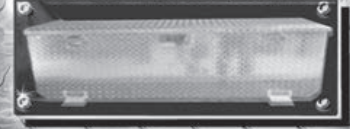
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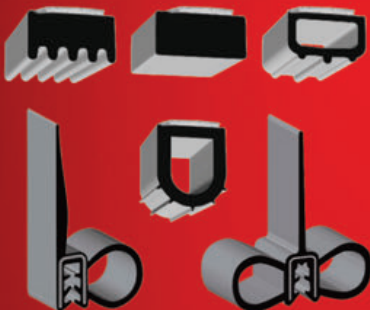


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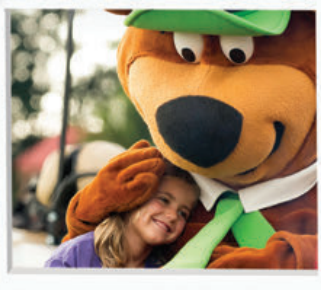
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50- AND 30-AMP SERVICE

Q My travel trailer has a 30-amp 120-volt AC power cord. I have an adapter that goes from a 50-amp to a 30-amp trailer plug. Is the 240-volt AC 50-amp output reduced to 30 amps and 120 volts AC with this adapter? I've never had to use it, as I'm new at the game.

Bob Greene, via email

A Here's how that works, Bob. RV circuits, whether 30-amp or 50-amp, work on 120 volts AC. With a 50-amp campground connection, you have two 50-amp, 120-volt AC circuits, a neutral and a ground. With a 30-amp connection, you have a single 30-amp, 120-volt AC circuit, a neutral and a ground. With the 50-30 dogbone, as we call them, the power to feed your 30-amp connection comes from a single 50-amp circuit, or one of the 50-amp prongs, if you will.

While the cord set for your trailer will be protected at 50 amps, which is probably too high, the main circuit breaker in your panel will limit the draw to 30 amps, thereby allowing safe usage. — **K.F.**

TUNDRA AND TRUCK CAMPER

Q I have two issues involving my 2013 Toyota Tundra. The owner's manual specifies that it needs a sway-control device. I assume they are referring to antisway bars, but I am uncertain if their intent was for a sway bar on both axles or just the rear.

Second, I carry a very lightweight aluminum truck camper, but with my wife, myself and light packing, we are still close to the GVWR. My concern is that I also wish to tow my boat/trailer combo, adding 180 pounds of tongue weight to the vehicle, which, as I mentioned, is already at the GVWR. There is a noticeable sag in the rear, and I assume it would need air bags to level the load.

Am I taxing the truck beyond reason? It is not in excess of its towing limits, but with the heavy load via the camper, I worry that the added weight from the tongue might be too much.

Jim Isbell, Anaheim, California

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A There are a couple of issues here,
 Jim. First of all, the sway control
 that your manual refers to is a trailer
 sway bar, and there are a couple of ver-
 sions of these, but they may not apply
 to you at this point, depending on the
 size and weight of your trailer.

The bigger concern is that of the
 GVWR. The GVWR is the maximum your
 vehicle is allowed to weigh, and since
 you are already at the GVWR without the
 trailer, you can't tow the boat because
 it adds weight to your vehicle. If you
 removed enough weight from your ve-
 hicle to accommodate the hitch weight
 of the trailer, then we could look at the
 gross combined weight rating (GCWR)
 and see if that would be exceeded. In
 addition, running a vehicle right at its
 rated limits, while technically OK, may
 lead to premature component failure
 over time.

What you don't mention is the gross
 axle weight rating, or GAWR. The GVWR
 is made up of the shared capacities of
 the front and rear axles. The GAWR for
 the rear axle may be exceeded by the
 weight of the camper and on the hitch,
 even if you are within the GVWR, and
 so this, too, must be considered. Your
 truck will have a certification label on
 the doorjamb that lists the GVWR and the
 GAWR for each axle.

Once you are safely within the
 weight ratings of both the axle and the
 complete vehicle with the camper on
 the truck, you may still find that vehicle
 handling is less than desirable. To help
 this, airbags and aftermarket sway
 bars for your truck suspension may be
 an option. Just remember that these
 items help correct handling issues but
 in no way increase the weight ratings
 of the vehicle. — K.F.

F-250 COLD IDLE

Q We have a 2004 Ford F-250 four-
 wheel-drive with a V-10 gas engine
 and a Banks system with headers, en-
 gine and trans chip, and an aftermarket
 air filter. The truck has 75,000 miles,
 and 75 percent of the mileage is towing.
 Lately, the truck has a rough idle when
 starting for the first time in the morn-
 ing. The idle ranges from 1,000 RPM to

about 500 RPM, and the idle goes up and down until the truck reaches the operating temp. Then the truck runs fine for the rest of the day. It does not matter if the morning temperature is 45 or 70 degrees. The Check Engine light is not on.

Mark O'Connell, Rockledge, Florida

A Engines need a richer air-fuel ratio when they are cold than when they are warm. The idle surging when cold is usually an indication of

a lean air-fuel mixture. This might be caused by a failing coolant temperature sensor, low fuel pressure, a vacuum leak or anything that upsets the air-fuel mixture.

I would start with a fuel-pressure test, as it's very easy. The idle air-control valve may be partly clogged and sticking. The PCV hose may be leaking from a crack or porosity. Also, if the aftermarket air filter is the type you have to oil, check to make sure it isn't

over-oiled, as this gets onto the mass-airflow sensor. If so, it needs to be cleaned with a special spray available at auto-parts stores. — **K.F.**

NOISY FAN CURE

The answer to June's "Refrigerator Boost" letter about fan noise and cooling did not include installing a new slower-rotating computer fan. I did that, and it solved the problem in our 2014 Forest River Sabre fifth-wheel.

John Boardman, Nampa, Idaho

Computer fans, also called "muffin fans," are viable alternatives for some noisy fans used to cool power converters, refrigerator coils and the like. It is essential that you choose one that moves at least as much air as the one you are replacing, especially if it cools an item that is heat-sensitive, such as an inverter or converter. Muffin fans are available online and come in a variety of voltages, including 12-volt DC, which is what you need for an RV. — **K.F.**

FIBERGLASS DETERIORATION

I read April's "End-Cap Encore" letters about problems with deterioration of the fiberglass gel-coat. I keep my 2008 Heartland Bighorn in a storage warehouse, away from the sun and bad weather, and it looks like the day I pulled it off the dealer's lot.

Tom Blanton, Sacramento, California

Storing an RV and tow vehicle indoors is the ideal solution, but not everyone can afford to do this. The next best thing is a good RV cover, and that's what I recommend for owners who can't keep their RV indoors. Still, the majority of RVs need attention to reduce the affects of weather and sun. — **K.F.** 📧

LEGAL NOTICE

If You Own or Owned a Norcold 1200 Series, N6 Series, or N8 Series Gas-Absorption Refrigerator or Cooling Unit, You Could Get Benefits From a Class Action Settlement.

There is a proposed settlement in two class action lawsuits against Norcold, Inc., Thetford Corporation, and The Dyson-Kissner-Moran Corporation ("Defendants") concerning three models of gas absorption refrigerators (1200, N6 and N8 series) for use in recreational vehicles ("RVs"), such as motorhomes, travel trailers, and boats. Those persons included in the settlement have legal rights and options and deadlines by which they must exercise them.

The United States District Court for the Central District of California authorized this Notice. The Court will have a hearing at the Santa Ana courthouse on September 16, 2016 at 2:30 p.m. to consider whether to approve the settlement so that the benefits may be paid.

What Are The Lawsuits About? The lawsuits claim that Defendants' 1200, N6 and N8 series gas-absorption refrigerators share a safety related defect in the cooling unit which, in certain circumstances, causes the boiler tubes to corrode and leak flammable gas, exposing consumers to the risk of fire. The lawsuits seek compensation for economic losses related to the purchase of Norcold Gas Absorption Refrigerators or Cooling Units. The lawsuits do not allege class claims for personal injury, wrongful death or damage to property other than the allegedly defective Norcold Gas Absorption Refrigerators or Cooling Units themselves. Defendants deny any wrongdoing and have denied all allegations in the Complaint and asserted many defenses. The Court did not decide which side was right. Instead, the parties decided to settle the class claims.

Who Is Affected? Subject to certain limited exclusions, you are included in the settlement if you:

- **Currently own, or formerly owned, a Norcold 1200 Series Gas Absorption Refrigerator or Cooling Unit that was manufactured between January 1, 2002, and October 1, 2012; OR,**
- **Currently own a Norcold N6 Series Gas Absorption Refrigerator or Cooling Unit, or N8 Series Gas Absorption Refrigerator or Cooling Unit, that was manufactured between January 1, 2009, and December 31, 2013.**

This settlement does not involve class claims for personal injury, wrongful death or damage to property other than to the Norcold refrigerator they own, owned, or may own in the future. Such claims are reserved.

What Does The Settlement Provide? The proposed settlement provides for an "all-in" Common Fund totaling \$36,000,000 to resolve all eligible class claims of 1200 Series, 800 Series and 600 Series gas absorption refrigerator owners and to fund all administrative and legal costs associated with the proposed settlement. To receive a share of the Monetary Fund you must submit a Claim Form by August 26, 2016. Payments will vary depending upon several factors, such as the number of claims submitted and other adjustments and deductions in accordance with the Allocation Plan described more fully in the detailed Notice and Claim Form available at www.NorcoldClassAction.com. In addition, Defendants will provide, at Defendants' sole expense, a three-year extended warranty to class members who own N6 and N8 Series gas absorption refrigerators manufactured between January 1, 2009 and December 31, 2013, for a cooling unit that fails due to a leak.

What Are Your Options? Submit a Claim. If you don't exclude yourself, you may submit a Claim Form by August 26, 2016 to receive any benefits for which you are eligible. Do Nothing. You will remain in the Class and will not be able to sue Defendants about the issues in the lawsuit, but you may not receive certain benefits for which you may be eligible. Exclude Yourself. If you do not want to be part of the settlement, you must exclude yourself by August 26, 2016. You won't be able to get any settlement benefits, but you keep the right to sue Defendants about the class claims in the lawsuit. Object. You can object to all or part of the settlement by August 26, 2016, if you don't exclude yourself. Enter Appearance. Enter an appearance through your own lawyer at your own expense. Otherwise you will be represented by court-appointed Class Counsel, Zimmerman Reed LLP.

A detailed Notice and Claim Form containing everything you need is available online at www.NorcoldClassAction.com. You may also call 1-877-449-8550 to request a copy. The detailed notice describes how to exclude yourself, submit a Claim Form and/or object to the proposed settlement. We encourage you to read and review it in detail.

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Harvest Time in North Dakota

Sunflowers and an iconic wood chipper greet visitors to the Fargo-Moorhead metropolitan area



North Dakota is one of our least-populated and most-rural states. It's also one of the least-visited. Geography probably accounts for that. Being on the north rim of the country, its short summers translate into a short tourist season. Too often, it's a drive-through state for folks headed for neighboring Minnesota or Montana.

Entering North Dakota on Interstate 94, I stopped at the Fargo-Moorhead Visitors Center, which was built to look like a grain elevator. Moorhead is actually across the Red River in Minnesota.

In a prime location in front, where convention would dictate the placement of a statue of a state notable (I would nominate Lawrence Welk), is a replica of a yellow wood chipper. If you saw the 1996 movie *Fargo*, you get the connection. If you didn't, suffice it to say that a wood chipper had a major role.

The authentic wood chipper, the one that was in the movie, is inside the building. True to character, it has a foot sticking out the top with a white sock on it. The lady at the desk claimed that it's the most-photographed wood chipper in the world, followed by the one out in front that they call the "stunt double."

She gave me a tourist brochure that says North Dakota has three times more cattle than people and the state's official drink is milk. Can you guess the state's official dance? No, it is not the polka; it's the square dance. North Dakota's economy is based heavily on farming, more than any other state except South Dakota. For the most part, its factories process farm products or make farm equipment. About 44 of every 100 North Dakotans live in rural areas.

The two Dakotas are the country's top producers of sunflower seeds. I was here to experience the sunflowers in bloom, and to see them by the acre was an extraordinary sight. Their faces follow the sun.

To get some pictures, I exited the highway to go onto an access road, and there I came upon four tri-axle grain trucks, stopped on the shoulder, each with a flatbed in tow loaded with a huge field harvester. The vehicles had



(Top) Typically displayed inside the Fargo-Moorhead Visitors Center, the wood chipper from the 1996 film *Fargo* joins its "stunt double" outside for special events. (Above) Sunflower seeds rank as North Dakota's third top export after wheat and barley.

Minnesota plates with decals in the windows that read "johnsonharvesting.com."

These are the totally mechanized Midwest migrant farm "workers" of today. The young guys, well-groomed, tanned and Minnesota-friendly, live in air-conditioned bunkhouses on wheels, complete with showers and televisions. One of them, Brent Johnson, told me that their harvest season begins in Kansas in midsummer. From there they move north until the job is done.

Brent said that sunflower seeds, which are rich in protein, account for one-eighth of all vegetable oils produced throughout the world. The plants grow as tall as 10 feet, and the head can be a foot across. The oil is sometimes used as a replacement for diesel fuel. We know sunflowers roasted as a snack food, of course, and blended with other grains to make birdseed.

I then headed north to Fort Mandan where Lewis and Clark's Corps of Discovery spent the winter of 1805 and 1806. A local group built a replica of the fort here on the east bank of the Missouri River. Dressed in period garb, they staff the fort and tell the story of what happened.

"Filled with 45 men bundled up for below-zero weather, the fort must have been like living in a crowded subway," Gary Anderson, the duty docent, said. "And they were probably the last people to come up here to spend the winter on purpose."

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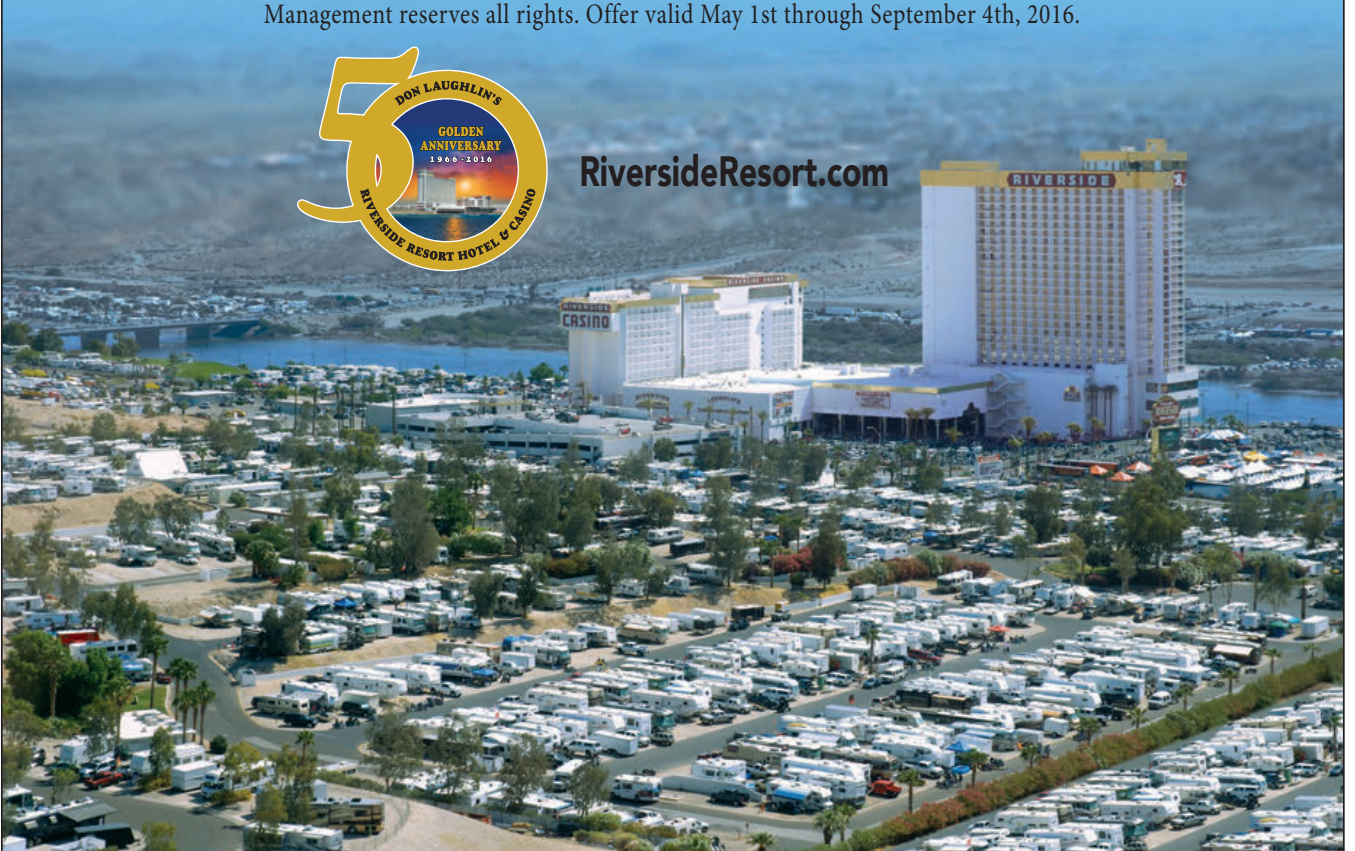
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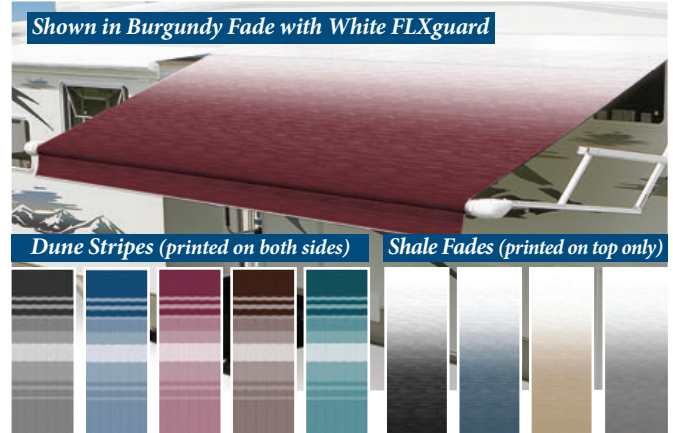


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Carefree vinyl fabrics: Dune Stripes and Shale Fades



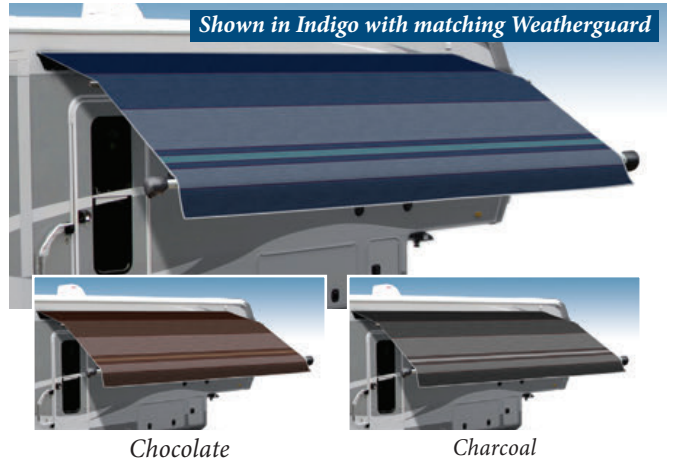
- ▶ 13.5 oz. vinyl fabric
- ▶ Greater durability than other awning brands
- ▶ Hemmed and stitched edging
- ▶ Available with Weatherguard, FLXguard or metal wrap

Carefree's standard and custom woven acrylic fabrics



- ▶ Minimal fading – color can't be washed out
- ▶ Easy to maintain – no mold, mildew or deterioration
- ▶ Hemmed and stitched edging
- ▶ Available with FLXguard or metal wraps

Carefree's premium vinyl fabrics



- ▶ Heavier, more robust 15 oz. vinyl fabric with printing on top and bottom
- ▶ Industry best 10 year warranty!
- ▶ Double-hemmed, double-stitched with Gore Tenara thread
- ▶ Available with vinyl Weatherguard, FLXguard or metal wrap

Tell your dealer to "Make it Carefree!"

Quality • Value



Performance • Style

Carefree of Colorado, Circle 104 on Reader Service Card