

RV TECHNICIAN

The Mike Molino
RV LEARNING CENTER
Developing Top Performers®

PUBLISHED BY THE RVDA EDUCATION FOUNDATION'S

Developing Top Performers®

November/December 2013



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Winter, Yes. Hibernation, No.

Welcome to this issue of *RV Technician*.

It's wintertime, and summer vacations are now just fond memories. But cold weather doesn't have to send the service department into hibernation. There are still jobs to be had—it just takes a plan and some perseverance.

Read Tony Yerman's story, "Turning On the 'Off' Season," page 16, for ideas about how to gather winter work. Now's the time to reach out to customers who got estimates but never had the work done, owners in need of cosmetic repairs, and those whose units are due for maintenance.

And with a conservative estimate of 8 to 9 million RVs on the road, there are lots of potential service opportunities, cold weather or no. The fresh water pump is an important component on those millions of units, and the number one cause of pump trouble is lack of proper maintenance, including winterizing. Find out how to troubleshoot,

sanitize, and winterize these components in an article from Pentair-Shurflo, starting on page 5. There's even a convenient chart to quickly look up symptoms and causes.

Another good possibility for jobs at this time of year is detailing, specifically, replacing sidewall vinyl graphics. You'll find an article on that subject on page 12.

Did we mention that it's winter? That means freezing temperatures in many parts of the country. Do you know how quickly frostbite and hypothermia can set in under varying weather conditions? Find out with OSHA's cold-stress factor card. And learn more about recognizing the symptoms of – and preventing—hypothermia in the accompanying article on page 14.

Stay warm and busy—and stay in touch!

Mary Anne Shreve

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Water Pumps

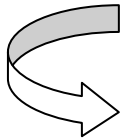
RV Water Pump Maintenance and Troubleshooting

From Pentair-Shurflo

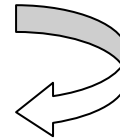
Conservative estimates put the number of RVs on the road at 8 to 9 million. That's a lot of service opportunities. An important part of the RV is the fresh water pump. The number one cause of pump trouble is the lack of proper maintenance, including sanitizing and winterizing.

Troubleshooting the pump is easy with a little practice and some hands-on ability.

SHURflo has two main pump types on the road -- the 2088, in service since 1988, and the 4008, an integrated by-pass pump, available since 2008.



TROUBLESHOOTING



Driving-induced vibrations can loosen plumbing, strainers and pump hardware.

Check for loose system components--many symptoms can be resolved by simply tightening the hardware. Check the following items, along with other particulars of your system.

Pump won't start/ blows circuit:

- * Check electrical connections, fuse or breaker, main switch, and ground connection.

- * Is the motor hot? The internal thermal breaker may have triggered; it will reset when cool.

- * Is voltage present at the pressure switch? Bypass the pressure switch. Does the pump operate?

- * Check the charging system for correct voltage ($\pm 10\%$) and good ground.

- * Check for an open or grounded circuit, or motor; or improperly-sized wire.

- * Check for a seized or locked diaphragm assembly (water frozen?).

Noisy or rough operation:

- * Check for plumbing which may have vibrated loose.

- * Check for a restricted inlet (clogged strainer, kinked hose, restrictive valves).

- * Is the pump plumbed with rigid pipe causing noise to transmit?

* Does the mounting surface amplify noise (flexible)? Does it bang like a drum?

* Check for mounting feet that are loose or compressed too tight.

* Check for air in the system. Check all fixtures for air and bleed system.

* Check the motor with pump head removed. Is noise coming from the motor or the pump head?

Leaks from pump head or switch:

* Check for loose screws at switch or pump head.

* Is the switch diaphragm ruptured or pinched?

* Check for a punctured diaphragm if water is present in the drive assembly.

Rapid cycling (pump turns on and off rapidly while running):

* Check for restrictive plumbing and flow restrictions in faucets/shower heads.

* Water filter/purifier should be on a separate feed line.

* Check for clogged faucet aerators or shower heads from debris or hardness build-up.

Pump won't shut off or runs when faucet is closed:

* Check the output side (pressure) plumbing for leaks, and inspect for leaky valves or toilet.

* Check for air trapped in outlet side (water heater) or pump head.

* Check for correct voltage to pump ($\pm 10\%$).

* Check for loose drive assembly or pump head screws.

* Are the pump valves held open by debris or is the rubber swollen?

* Check for a bad city water/tank fill valve.

* Check the pressure switch operation.

* Check to see if the by-pass pressure is set higher than shut-off pressure.

Won't prime/sputters (no discharge/motor runs):

* Is the strainer clogged with debris? Some systems have a strainer inside the tank.

* Is there water in the tank, or has air collected in the hot water heater?

* Is the inlet tubing/plumbing sucking in air at plumbing connections (vacuum leak)?

* Is the inlet/outlet plumbing severely restricted or kinked? Check for any restrictive or clogged winterizing valves.

* Check for proper voltage with the pump operating ($\pm 10\%$).

* Check for a bad city water/tank fill valve.

* Check for debris in pump inlet/outlet valves or swollen/dry valves.

* Check the pump housing for loose screws, cracks or loose drive assembly screws.

* Check for a stuck check valve.



Potable water systems require periodic maintenance to keep components working properly and deliver a consistent flow of fresh water.

Sanitizing is recommended before storing and also before using the water system after a period of storage.

Systems with new components, or ones that have been subjected to contamination, should also be disinfected as follows.

[NOTE: Check your vehicle owner's manual for specific instructions.]

1. Use one of the following methods to determine the amount of common household bleach needed to sanitize the tank.

a) Multiply the tank gallon capacity by 0.13 for the number of ounces of bleach needed to sanitize the tank. Example: An 80 gallon tank requires 10.4 ounces of bleach.

b) Multiply tank liter capacity by 1.0 for the number of milliliters of bleach needed to sanitize the tank. Example: A 300-liter tank requires 300 milliliters of bleach.

2. Mix the bleach with water in a pourable container such as a gallon jug. If tank is filled through a pressurized fitting, carefully pour the bleach into the hose before attaching the hose to the city water entry.

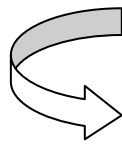
3. Pour the bleach solution into the tank and fill the tank with potable water.

4. Open **all** faucets (hot and cold) allowing the water to run until the odor of chlorine is detected. Now the system must sit to let the disinfectant work.

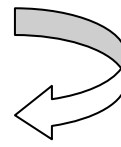
The system must have four hours of contact time to disinfect completely. Doubling the solution concentration allows for a shorter contact time of one hour.

When the contact time is completed, drain the tank. Refill the tank and flush the system once or twice until the odor has decreased. The residual chlorine odor and taste is not harmful.

Continued on next page



WINTERIZING



If water is allowed to freeze in the system, serious damage to the plumbing and the pump may occur. Failures of this type will void the warranty. The best guarantee against damage is to completely drain the pump.

NOTE: When used according to the manufacturer's recommendations, non-toxic antifreeze for potable water is safe for use with SHURflo pumps. It's always best to refer to the vehicle owner's manual for specific winterizing instructions.

WARNING: *Do not use automotive antifreeze to winterize potable water systems. Such solutions are highly toxic. Ingestion may cause serious injury or death.*

To properly drain the pump, perform the following:

1. Drain the water tank. If the tank doesn't have a drain valve, open all faucets allowing the pump to operate until the tank is empty.
2. Open all the faucets (including the lowest

valve or drain in the plumbing), allow the pump to purge the water from the plumbing, and then turn the pump OFF.

3. Using a pan to catch the remaining water, remove the plumbing at the pump's inlet/outlet ports. Turn the pump ON, allowing it to operate until the water is expelled.

Turn OFF power to the pump once the plumbing is emptied. Do not reconnect pump plumbing. Make a note at tank fill as a reminder: "Plumbing is disconnected".

4. All faucets should be left open to guard against any damage.
5. Potable anti-freeze may be poured down drains and toilets to protect p-traps and toilet seals.
6. Be sure to sanitize the system when done with winter storage.

Continued on next page

SYMPTOM	Noise	Pump cycles on-off-on	Pump won't start	Pump won't shut off	Tank fills on city water	Pump starts with fixture closed	Pump loses prime	Pump will not prime	Low flow	Leaks
POSSIBLE CAUSE										
Kinked inlet hose	★							★	★	
Hard plumbed pump	★									
Elbows at pump	★	★							★	
Pipes hitting	★							★		
Clogged tank outlet	★							★	★	
Clogged tank strainer	★							★	★	
Clogged/small I.D. winterizing valve	★							★	★	
Clogged/small I.D. shut-off valve	★							★	★	
Small I.D. hose at pump inlet	★							★	★	
Pump too far from tank								★	★	
Collapsing/non-vacuum-rated hose	★							★	★	
Small I.D. hose at pump outlet		★							★	
Inlet air leak	★			★		★		★		
Air in system	★			★		★				
Cracked strainer				★		★				★
Loose pump fittings				★						★
Pipes banging in system	★									
Kinked outlet hose	★	★							★	
Small I.D. hose at heater/toilet	★	★							★	
Bad city water/tank fill 3-way valve	★	★		★	★		★	★	★	
Clogged faucet aerators	★	★							★	
Flow restrictors	★	★							★	
Dirty/worn pump valves				★	★	★	★	★	★	
Dirty/worn check valve			★		★	★	★			
Bad drive assembly	★			★				★	★	★
Pinched main diaphragm										★
Ruptured main diaphragm									★	★
Ruptured switch diaphragm			★							★
Bad micro switch	★	★	★	★						
Loose wire at switch			★							
Loose pump screws	★						★			★
Leaking fixtures/fittings						★	★			
Frozen pump			★							★
Motor thermal overload (hot motor)			★							
Low voltage				★				★	★	
Bad motor	★		★					★	★	
Bad pump mount (thin, loose, etc.)	★									

Get Serious About Slip, Trip, and Fall Prevention

By Peter Zaidel, Environment & Safety Product Director, KPA



Dealerships are subject to a variety of safety risks, and the largest are slips, trips, and falls. Statistics show these three account for 15 percent of all accidental deaths and for the majority of worker's compensation-related losses at most dealerships. Luckily, you can take preventative measures to lower your slip, trip, and fall risk significantly.

What exactly are slips, trips, and falls?

- A **slip** is when a lack of traction and friction occur between the shoe and the surface. Slips most often cause a person to fall backward.
- A **trip** is when a person inadvertently strikes an object in his pathway, or when the foot path drops to a lower level, causing the person to be thrown off balance. Trips most often result in a person falling forward.
- A **fall** is the end result of a slip or trip causing a person to be thrown too far off balance.

To avoid these circumstances, follow these rules.

For spills:

- Clean up spills immediately.

- Remind employees to walk safely on wet and icy surfaces by shortening their stride, taking small steps, and making wider turns.
- Ensure workers have shoes with adequate tread.
- Place anchored mats in areas that may become wet.
- Display wet signs where appropriate.
- Salt areas that may freeze and become slippery.
- Ensure proper drainage in wet work areas.
- Install rails in areas used for wet jobs and areas that become wet due to weather.

For trips:

- Keep all debris out of walkways and away from stairs.
- Secure and anchor mats and rugs.
- Maintain walkways and report any uneven or broken pavement, sidewalks, or handrails.
- Ensure walkways have adequate lighting.

- Provide handrails.

proper type and size.

For falls:

- Only stand on ladders, never chairs, boxes, etc.
- When using ladders, select the

For more information on slips, trips, and falls contact KPA at info@kpaonline.com.

KPA is an environment & safety/HR management/Internet marketing consultant.



Did you know that slips, trips, and falls are the leading cause of workers' compensation claims?

Costing an average of **\$20,000 per accident**, trips, slips, and falls send approximately **9 million people** to the hospital yearly.

Flooring and flooring materials contribute to ¼ of falls every year, with 85% of workers' compensation claims attributed to falling on slick floors.

- **20.8% of ER visits** are due to slip, trip, and fall injuries.
- **9 million slip, trip, and fall injuries** require ER care yearly.
- **95 million work days** are lost yearly due to slip, trip, and fall injuries.
- **38 days of work** are missed on average due to trip, slip, and fall incidents.
- **\$70 billion is spent** on annual compensation and medical costs associated with slip, trip, and fall injuries.

Environment and safety compliance and loss-control best management practices are the best defense against accidents. Do you have adequate safety policies in place at your facility?

Replacing Sidewall Vinyl Graphics

From the RV Damage Repair Estimator by Tony Yerman

Replacement of graphics depends on surface preparation and the complexity of the graphics. When applying graphics to a new panel, the graphic is simply applied and positioned. When replacing a damaged graphic, the old graphic must be completely removed. An old graphic can be removed by heating and peeling or with chemicals obtainable through automotive refinishing supply stores.

When applying a vinyl or tape graphic, it's only necessary to measure and mark positioning points, unlike painted graphics where graphic lines must be drawn and masked. A graphic comes covered with a protective waxed paper on its adhesive side and a protective film on the color side.

Once the positioning marks have been made on the surface to which the graphic is to be applied, a water/soap solution is sprayed on the surface. The waxed paper covering the graphic adhesive is removed. Then the graphic is laid over the solution on the sidewall surface. The solution allows the graphics to float on the sidewall, making it easy to position to the marks.

A squeegee is then used to push excess water out from under the graphic. The

graphic is then left to dry. Once dry, the outer protective film can be removed, and the installation is complete.

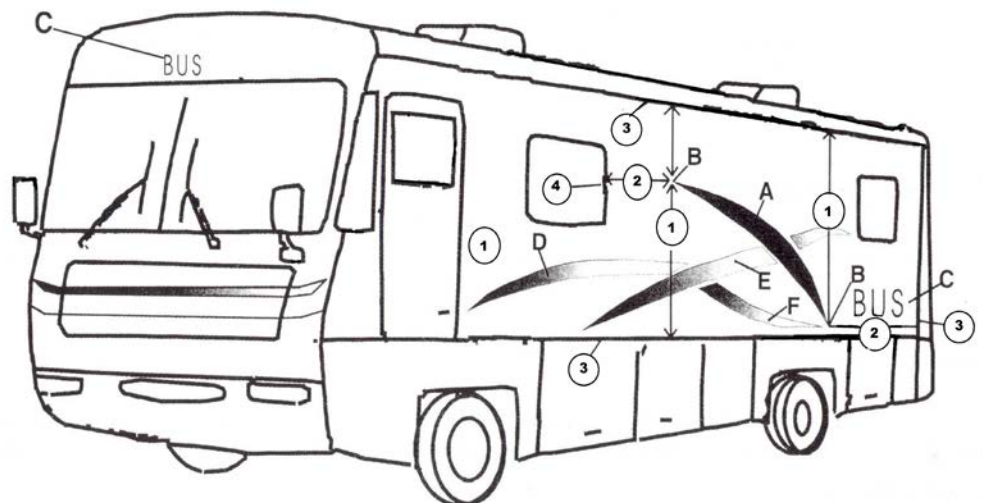
Some vehicles are then clear-coated to give an appearance of depth in coloring and a smooth, no-lines surface texture/finish.

Please note illustration graphic (A). Find areas on the body such as upper, lower or end wall edge (3) or window frames (4) and measure from end, tip or corners of graphic (B) for positioning height (1) and front to rear (2).

Logos or name plates (C) can be installed in much the same way.

Removal of old striping or graphics on a late model vehicle can usually be figured at 0.5 per linear foot of vehicle. Replacement of

Continued on next page



splashes or sweeps can be figured at 2 hours per 2'- 5' lengths or 4 hours for 6' - 10' lengths. That includes cleaning the surface, measuring and marking positions, and application.

Note: Be aware of the condition of the graphics both on the vehicle and from the supplier. The older the graphics, the harder the removal and installation. Old graphics need to be removed with a type of grinding wheel and a machine, as well as with removal chemicals.

Some new graphics supplied by the vehicle manufacturer may actually be old and may

not separate from their backings or protective layers. They may not lay flat or may develop unremovable bubbles. If in doubt, try a sample area—if the graphics are bad, you won't have to redo the whole application.

Tony Yerman is RVDA's service consultant. He is a Master Certified Technician, an Ohio repair specialist, and an RV Technician advisory group member. Contact him at tyerman@rvda.org.

Stay Warm!

OSHA Tips to Protect Employees in Cold Environments

With the onset of cold weather, OSHA is reminding employers and workers to take necessary precautions, such as those listed on OSHA's Cold Stress Card, to prevent and treat cold-related health problems.

Prolonged exposure to freezing or cold temperatures may cause serious health problems such as trench foot, frostbite, and hypothermia. In extreme cases, including cold water immersion, exposure can lead to death. Danger signs include uncontrolled shivering, slurred speech, clumsy movements, fatigue, and confused behavior. If you observe these signs, call for emergency help. OSHA's Cold Stress Card provides a reference guide and recommendations to combat and prevent many illnesses and injuries. Available in English and Spanish, this laminated fold-up card is free to employers, workers, and the public.



- Encourage workers to wear proper clothing for cold, wet, and windy conditions, including layers that adjust to changing conditions. Keep a change of dry clothing available.

- Take frequent breaks in warm dry areas.

- Schedule heavy work for the warmest part of the day.

- Avoid exhaustion or fatigue--muscles need energy to keep warm.

- Use the buddy system--work in pairs so that one worker can recognize danger signs.

- Drink warm, sweet beverages (sugar water and sports-type drinks) and avoid drinks with caffeine (coffee, tea, sodas or hot chocolate) or alcohol.

- Eat warm, high-calorie foods such as hot pasta dishes.

- Workers face increased risks when they take certain medications, are in poor physical condition, or suffer from illnesses such as diabetes, hypertension, or cardiovascular disease.

How to Protect Workers

- Recognize the environmental and workplace conditions that may be dangerous.

- Learn the signs and symptoms of cold-induced illnesses and injuries and what to do to help workers.

- Wear a hat and insulated footwear and refrain from wearing tight clothing.

Continued on next page

For copies of OSHA's Cold Stress Card in English or Spanish, go to OSHA's website, www.osha.gov, or call (800) 321-OSHA.

OSHA is dedicated to assuring worker safety and health. Safety and health add value to business, the workplace, and life. For more information, visit www.osha.gov.

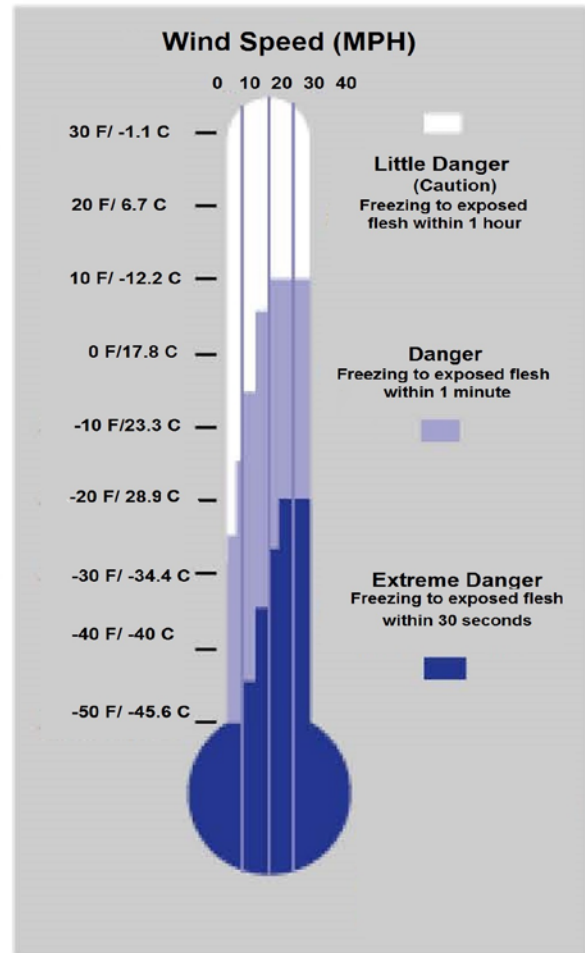
U.S. Department of Labor
Occupational Safety and Health Administration

THE COLD STRESS FACTOR

**Low Temperature + Wind Speed + Wetness
= Injuries & Illness**

When the body is unable to warm itself, serious cold-related illnesses and injuries can occur, and permanent tissue damage and death may result.

Hypothermia can occur when land temperatures are above freezing or water temperatures are below 98.6F/37C. Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.



Turning On the "Off Season"

By Tony Yerman

When winter rolls around, animals hibernate, snow birds head south or west, and it seems as if the dealership, too, goes into a sort of hibernation mode.

Not me--when I was in the business, I took the position that, just as squirrels gather nuts and other animals gather whatever they need to survive the winter, I too needed to do the same to survive.

Why bother?

Many dealerships lay off staff for the winter or close up part of the facility so they don't have the expense of heating it. The trouble is that some of the good staff members who are laid off might find new employment, and you won't get them back for the next season.

Keeping the shop busy maintains the personnel that most dealers have invested time and money into training and developing job experience. But the biggest reason is that the service department is a profit center and can be the key to surviving the winter months.

How to gather winter jobs

Not all customers who get an estimate from you return to have the repairs done. Why? One reason is that they simply went somewhere else; another reason is that they were transient and decided to wait until they got home. Some decided to get

through the season and deal with the problem in the off season. Some are teetering between buying a new vehicle or remodeling the old one.

Throughout the fall and even into early winter, I would start calling all of my estimates. These estimates were written for all sorts of reasons: upgrades, insurance repairs, remodeling, off-season maintenance, and even detailing. I would call to find out what they had decided and see if I couldn't coax them to come back and have the work done.

An email or flier promoting off-season repairs or maintenance is an effective reminder that the cold months are a good time to take care of service issues. If your service writers are good, they add notes to repair orders about possible repairs or upgrades. These ROs can then be flagged to use as sales leads later on.

Here's the hook

Once you've identified customers to contact, you must be able to entice them to bring in the vehicle and have the work done.

Insurance claims and checks do expire, but they can be reissued. If you contact a customer who has decided not to go ahead with repairs, explain how damage will reduce the value, appearance, and even the usability of their vehicle. Offer to contact

their insurance company to get their claim reinstated.

Discounts and payment plans are extremely effective in closing a service sale. Many large customer-pay remodeling or refurbishing jobs will take some time to complete. A payment plan with 30 percent down, a 30 percent payment during the repairs, and a final payment when the repairs are completed takes the sting out of a big service purchase.

Offer free winter storage to help make the sale. People know that their unit will sit unused in the off season, incurring storage fees. So show them that something productive can be done during the winter that will make the unit ready to go when the new season begins. The idea that storage won't cost them anything adds value to any upgrade or repair.

Suddenly it doesn't feel like winter

It may, in fact, be winter but there's still revenue in the shop and on the lot. People can stay employed. And repairs don't have to be rushed under short deadlines. You could have months to complete several jobs.

You can have plenty of business for the entire off season. You won't have anyone screaming for his unit, and you'll be the hero when Memorial Day rolls around and your customer has a newly remodeled or upgraded unit.

Tony Yerman is RVDA's service consultant. He is a Master Certified Technician, an Ohio repair specialist, and an RV Technician advisory group member. Contact him at tyerman@rvda.org.

Touch-n-Seal Spray-In Foam



Dicor's Seal Design Touch-n-Seal™ spray-in insulating foam, originally marketed for OEMs, has dealers and distributors excited about the chance of buying it for repairs and renovations. Its closed-cell structure provides a barrier impervious to water, and it achieves a much higher

insulating R-Value of 7.2 per inch versus 3.2 per inch for standard RV fiberglass. It can easily be applied between wall or roof studs, using a variable speed spray gun. The foam expands and hardens to fill all gaps, bonding tightly to all surfaces and creating a seal against water, airflow, heat transfer and noise. It adheres to a variety of coated and uncoated metal, wood, laminate, glass and plastic materials.

Dometic Macerator Toilet

Dometic's 8700 series of RV macerator toilets are high-performance, low-flushing models with patented MasterFlush



technology that delivers a 30 percent increase in efficiency over previous models. Dometic integrated a water trap into the macerator assembly to enhance performance and ensure odorless operation. The models also have a new 360-degree rim wash design. In addition to the normal flush setting that uses 0.85

gallons of water, there's an eco-conscious dry bowl setting that uses just 0.45 gallons. The 8700 features an elongated wood seat and new 100-percent porcelain bowl. A powerful 18-blade macerator turbine pushes effluent up to 98 feet away.

Lippert Trailer Alignment System

The Correct Track™ trailer alignment system is integrated into the suspension system of the RV chassis and enables a



manufacturer or certified dealer to customize the wheel alignment to the end user's specific load requirements. Correct Track™ permits easy

alignment adjustment and curtails expensive equipment repairs caused by misalignment. Properly aligned suspension can also improve gas mileage and steering control and reduce wear on suspension components.

New RV Shade Cleaner

Spray 'n Brush™ is an aftermarket cleaner for RV shades with an advanced surfactant formula that breaks the chemical bond between soil and fabrics.

Spray 'N Brush can be used on many RV window treatments, including cellular shades, frame shades, roller shades, roman shades, and windshield wraps and skylights.



Recalls

Note: For more information on these and all federal recalls, contact the National Highway Traffic Safety Administration's Vehicle Safety Hotline at 1-888-327-4236 (TTY 1-800-424-9153), or go to www.safercar.gov.

Spartan Steering Linkage

Spartan Motors Inc. is recalling certain model year 2013-2014 K2, K3, MetroStar, and MM motorhomes and one emergency response chassis. Castle nuts for the steering linkage ball joint fasteners, which mount to bell cranks, may be loose. If the castle nuts become completely loose, the steering linkage may separate from the bell cranks without warning. This may cause a loss of steering, increasing the risk of a crash.

Spartan will notify owners, and dealers will inspect the castle nuts and tighten them as necessary. Owners may contact Spartan at 1-517-543-6400.

Forest River Trailer Tires

Forest River Inc. is recalling 721 model year 2012-2013 Rockwood, Windjammer, Vlite and Flagstaff travel trailers manufactured from February 3, 2012, through February 4, 2013. When an affected trailer hits a large bump or pot hole, the trailer tire may contact the bottom of the floor. The tire may become damaged and possibly blow out, causing loss of control.

Forest River will notify owners, and dealers will add a lift kit between the frame and the axle mounting brackets.

Owners may contact Forest River at 1-574-825-7178.

Jayco Roof Lifter System

Jayco is recalling 91 model year 2011 Jay Series pop-up camping trailers. If a component failure occurs in the roof lifter system, the roof may abruptly collapse to the closed position.

Jayco will notify owners, and dealers will add a metal stop that prevents the sudden collapse of the roof. Owners may contact Jayco at 1-800-283-8267 for more information.

Starcraft Roof Lifter System

Starcraft RV is recalling 57 model year 2013 Starcraft RT and Comet pop-up camping trailers manufactured from August 2, 2010, through August 9, 2012. If a component failure occurs in the roof lifter system, the roof may abruptly collapse to the closed position.

Starcraft will notify owners, and dealers will add a metal stop that prevents to sudden collapse of the roof. Owners may contact Starcraft at 1-800-945-4787 for more information.

Forest River Tire Labels

Forest River is recalling 725 Flagstaff, Cherokee, Salem, Rockwood, and Surveyor travel trailers from model years 2008-2011 because they contain incorrect tire inflation pressures on the Vehicle Certification Label. The incorrect information may lead to the tire being overinflated, resulting in sudden tire failure.

Forest River will notify owners and provide a corrected replacement label. Owners may contact Forest River at 1-574-534-3167.

Entegra Exterior Power Cables

Entegra Coach is recalling 353 model year 2010-2014 Anthem and Cornerstone motorhomes manufactured from December 16, 2009, through April 30, 2013 because the power cables from the exterior freezer can be damaged due to contact with the freezer sliding tray rails. Prolonged rubbing of the power cables against the sliding tray rails may cause the wires to short circuit, increasing the risk of a fire.

Entegra Coach will notify owners, and dealers will secure the freezer power cables to prevent their chafing. Owners may contact Entegra Coach at 1-800-945-4787.

Jayco Water Heater Wires

Jayco is recalling 247 model year 2014 Jay Flight and Jay Flight Swift travel trailers manufactured from July 8, 2013, through August 30, 2013. Due to an improper amount of insulation that may be stripped from the 110V AC water heater ignition wires resulting in a poor connection of the wires. A poor wiring connection could increase the wiring's resistance, causing excessive heat and increasing the risk of fire.

Jayco will notify owners, and dealers will inspect the installation of the LP/Electric water heater and repair it as necessary. Owners may contact Jayco at 1-800-283-8267.

Gulf Stream Door Locks

Gulf Stream Coach is recalling 48,053 model year 2007-2013 Cavalier, Innsbrook, Conquest, Amerilite, Stream lite, Emerald Bay, Fire Fly, V Stream Ultra, Mako, Gulf Breeze, Side Track, Matrix, Mini Superlite, Zero Gravity, Visa, Capri, Northern Express, Vista, Aztec, Yellowstone, Prairie Schooner, G Force, Max Wide Open, Endura Max, Canyon Trail, Sedona, Ridgeline, Kingsport, Trail Master, Sky and Bull Dog travel trailers manufactured from January 1, 2006, through April 25, 2013. These units are equipped with Fastec-brand door locks. It may be possible to remove the key from the lock in a way that potentially jams the deadbolt. If the deadbolt jams, the interior side of the door lock may also jam. A person inside the travel trailer at the time will then be locked in and unable to exit the vehicle without using the emergency exit.

Gulf Stream will notify owners, and Fastec will coordinate the inspection and replacement of the cylinders as needed. Owners may contact Fastec at 1-800-837-2505 or Gulf Stream at 1-574-773-7761.

Outdoors RV Door Locks

Outdoors RV Manufacturing (Outdoors RV) is recalling 7,343 model year 2010-2014 Wind River, Timber Ridge and Back Country, model year 2010-2012 Tamarack Trails, model year 2012-2014 Black Stone and model year 2014 Black Rock travel trailers equipped with Fastec-brand door locks. It may be possible to remove the key

from the lock in a way that potentially jams the deadbolt. If the deadbolt jams, the interior side of the door lock may also jam. A person inside the travel trailer at the time will then be locked in and unable to exit the vehicle without using the emergency exit.

Outdoors RV will notify owners, and Fastec will coordinate the inspection and replacement of the cylinders as needed. Owners may contact Outdoors RV at 1-724-423-7440 or Fastec at 1-800-837-2505.

Northwood Door Locks

Northwood Manufacturing Inc. is recalling 19,106 model year 2007-2014 Arctic Fox, Nash, and Desert Fox, model year 2011-2012 Fox Creek and model year 2011-2014

Fox Mountain, Snow River and Wolf Creek trailers, fifth wheels, toy haulers and pickup campers that are equipped with Fastec-brand door locks. It may be possible to remove the key from the lock in a way that potentially jams the deadbolt. If the deadbolt jams, the interior side of the door lock may also jam. A person inside the travel trailer at the time will then be locked in and unable to exit the vehicle without using the emergency exit.

Northwood will notify owners, and Fastec will coordinate the inspection and replacement of the cylinders as needed. Owners may contact Northwood Manufacturing at 1-541-962-6274 or Fastec at 1-800-837-2505.

Certification How-to

It's time to take the first step toward certification!

The RV technician certification process is just a click away. Visit www.rvtechnician.com to learn more.

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Technician Certification Candidate: The candidate test is a basic orientation to the RV service technician career. The training and test is available at no cost and is located at: <http://www.rvst.org/Candidate/>.

Step 2

Registered Technician: This test establishes that the technician is proficient in core knowledge areas such as propane, basic electrical, fire & life safety, weight knowledge, and other technical skills.

Step 3

Select a Career Path

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Specialty Certifications: There are five certified specialist areas that make up the right path on the RV Service Technician Career Ladder: body, chassis, electrical systems, appliances, and plumbing. Each test focuses on the subject related to the specialty.





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Course B. \$249

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YES, I WANT TO REGISTER MY TECHNICIANS! (Copy this form to register more than four.)

Company _____

Address _____

City/State/Zip _____

Phone _____ FAX _____

*Developed by RVIA and available through
the Mike Molino RV Learning Center.*



Each technician **MUST** have a *distinct* email address that only they can access.

Indicate which **COURSE** a technician is choosing with A, B, or C. If choosing C, indicate chosen specialties by number.

Name _____ Email _____ Course _____ \$ _____ *

Name _____ Email _____ Course _____ \$ _____ *

Name _____ Email _____ Course _____ \$ _____ *

Name _____ Email _____ Course _____ \$ _____ *

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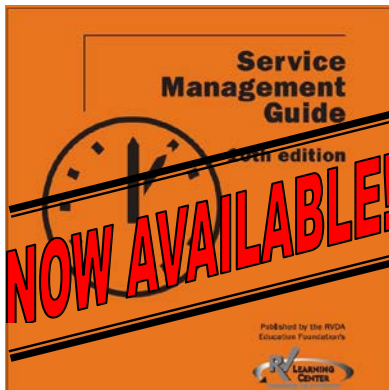
CONTRIBUTORS

*Active donors are those who have contributed to the RV Learning Center since 07/01/12.



Received From	Contributed 07/01/12 - 12/20/13*	Total Lifetime Pledge	Last Contribution	Received From	Contributed 07/01/12 - 12/20/13*	Total Lifetime Pledge	Last Contribution
MAJOR GIFTS active donors* with cumulative donation or pledge of \$25,000 or more							
Newmar Corporation	\$50,000	\$260,000	10/31/13	Pan Pacific RV Centers, Inc.	\$1,000	\$41,500	10/15/13
Bank of America Merrill Lynch	\$5,000	\$173,000	04/29/13	McClain's RV Superstore	\$6,000	\$41,000	08/05/13
Protective	\$50,199	\$161,162	11/22/13	Ace Fogdall, Inc.	\$2,000	\$39,100	04/12/13
RVDA of Canada	\$25,000	\$175,000	12/18/13	RVAC	\$12,000	\$38,000	12/11/13
Tom Stinnett Derby City RV	\$1,000	\$102,000	11/25/13	Pikes Peak Traveland	\$1,000	\$31,000	06/03/13
PleasureLand RV Center, Inc.	\$4,000	\$86,350	11/15/13	Paul Evert's RV Country, Inc.	\$1,000	\$30,000	04/01/13
Horsey Family Memorial Fund	\$1,000	\$69,000	07/01/13	Tiffin Motor Homes, Inc.	\$2,500	\$28,500	03/11/13
Bill & Kristen Fenech	\$7,500	\$57,500	07/09/13	Reines RV Center, Inc.	\$5,000	\$27,025	12/18/13
Campers Inn of Kingston	\$23,578	\$56,000	10/08/13	Avalon RV Center, Inc.	\$1,000	\$26,500	04/12/13
Ron & Lisa Fenech	\$5,000	\$55,000	08/27/13	Holiday World of Houston	\$500	\$25,500	06/17/13
Byerly RV Center	\$11,000	\$47,000	07/08/13	Bill Plemmons RV World	\$5,000	\$25,000	06/24/13
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Diversified Insurance Mgmt. Inc.	\$2,200	\$21,000	11/05/12	Curtis Trailers	\$1,000	\$8,000	06/03/13
Earl Stoltzfus	\$10,000	\$20,000	08/30/13	American RV	\$1,000	\$6,925	10/04/12
Wilkins R.V., Inc.	\$1,500	\$19,600	07/22/13	Circle K RV's, Inc.	\$250	\$6,250	06/24/13
Greenway, Inc. (Route 66 Dealer)	\$5,250	\$18,550	06/11/13	Burlington RV Superstore	\$500	\$5,500	06/19/13
Rivers RV	\$250	\$17,600	05/31/13	Hayes RV Center	\$300	\$5,400	02/01/13
Alpin Haus	\$500	\$17,500	06/21/13	Webster City RV, Inc.	\$1,000	\$5,100	04/22/13
Butch Thomas	\$1,000	\$16,000	11/30/12	Madison RV Supercenter	\$1,000	\$5,000	08/08/13
Hartville RV Center, Inc.	\$1,250	\$15,750	10/18/13	Minnesota RVDA	\$5,000	\$5,000	01/11/13
MBA Insurance, Inc.	\$1,000	\$15,100	05/17/13	Camperland of Oklahoma, LLC	\$500	\$4,850	07/02/13
Mike and Barb Molino	\$750	\$11,561	10/24/13	Topper's Camping Center.	\$500	\$3,500	04/18/13
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Little Dealer, Little Prices	\$5,000	\$10,050	01/23/13	United RV Center	\$1,000	\$3,000	09/20/12
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Hemlock Hill RV Sales, Inc.	\$639	\$10,000	09/14/12	RV Outlet Mall	\$750	\$2,550	06/05/13
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Crestview RV Center	\$500	\$2,000	12/18/13	Out of Doors Mart, Inc.	\$500	\$1,250	09/18/13
Lindsey Reines	\$1,500	\$1,500	12/20/13	Phil Ingrassia	\$1,000	\$1,000	09/05/12
Skyline RV & Home Sales, Inc.	\$1,250	\$1,500	06/14/13	Bill Mirrieles	\$250	\$1,000	05/09/13
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Steinbring Motorcoach	\$500	\$750	11/21/12	Holiday Hour, Inc.	\$100	\$500	03/20/13
Ronnie Hepp	\$300	\$625	08/24/12	Beckley's Camping Center	\$250	\$500	06/06/13
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Bell Camper Sales	\$200	\$450	08/26/13	Happy Camping RV	\$200	\$200	11/07/13
Foley RV Center	\$250	\$250	09/01/12	Mike Thompson's RV Super Stores	\$100	\$100	08/12/13
Kroubetz Lakeside Campers	\$250	\$250	12/02/11	John Peak	\$100	\$100	10/03/13
Mayflower RV, Inc.	\$250	\$250	07/27/12	Amy Pennington	\$100	\$100	11/30/12
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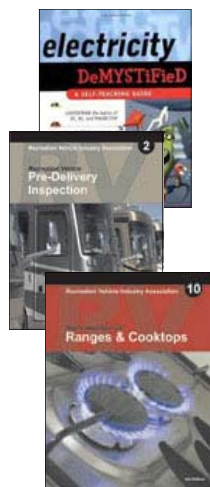
SUMMARIES & ORDER FORM

Published by RVIA, Available through The RV Learning Center

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Electricity Demystified – Written in a step-by-step format, this practical guide begins by covering direct current (DC), voltage, resistance, circuits, cells, and batteries. The book goes on to discuss alternating current (AC), power supplies, wire, and cable. Magnetism and electromagnetic effects are also addressed. Detailed examples and concise explanations make it easy to understand the material.	\$14.95		
RV Electrical Systems – Provides instruction on performing AC and DC voltage systems inspections and tests; servicing AC and DC power sources; servicing wiring/distribution systems; and maintaining, repairing and inspecting AC and DC devices.	\$49.95		
RV Propane Systems – Provides instruction on inspecting and maintaining propane containers and fittings; inspecting and maintaining the piping system; performing propane system tests; purging and filling containers; transferring propane from container to container; and burning off propane in a container.	\$49.95		
RV Generators – Covers the installation, maintenance and repair of RV generators, the generator section and control system. This includes inspecting, maintaining and repairing generator components and verifying battery voltage, fuel source and pressures, engine operation, output voltage and frequency, and governor operation.	\$39.95		
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RV Service Textbooks

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