

RV TECHNICIAN

October/November 2010

PUBLISHED BY THE RVDA EDUCATION FOUNDATION'S



Current Clamps: Part Two

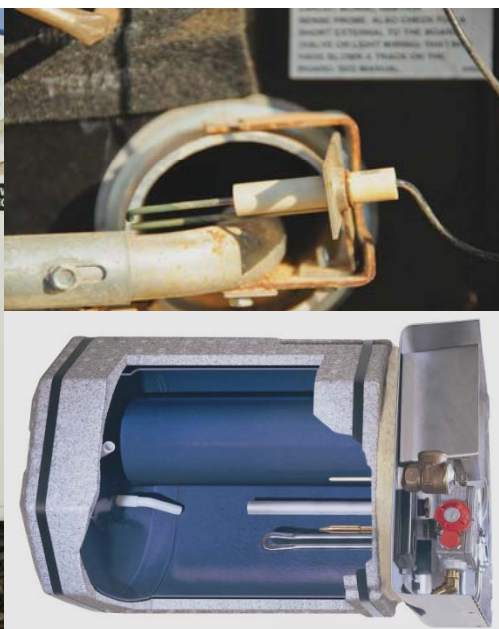
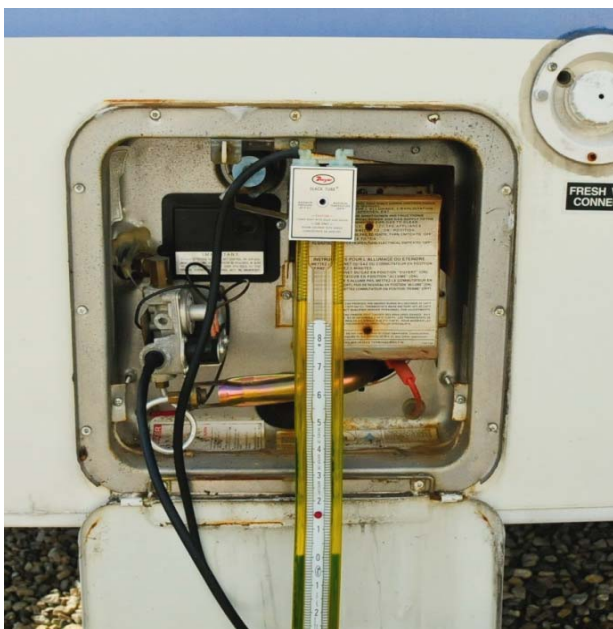
For diagnosing everything from ACs to towable brakes, read why these indispensable tools are a tech's constant companion
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Don't Get Caught Out in the Cold: Winterization and Maintenance Tips

Water Heater Maintenance, Page 10

Battery Storage, Page 8



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I enjoyed meeting some of you at RVDA's convention in Las Vegas and wish I'd had more time to talk with you individually. Thanks for giving me such a warm welcome – and keep those story ideas coming! Last issue's article about current clamps apparently gave readers a charge. It was so popular that some of you suggested another story on the subject. It seems there are many more uses for this handy tool. In fact, advisory board member Steve Savage of Mobility RV Service says his clamp meter "is my constant companion, and I'm not sure how techs who work without one can work efficiently." Steve has kindly shared some of the ways he uses his trusty clamp meter in "Current Clamps: Part Two."

If you're not doing a formal walk-around of every vehicle that comes to your shop, you're not only missing out on the opportunity to sell needed additional repairs and services, but you may also be leaving yourself open to customer claims of damage done to their unit while it was left with you, according to Tony Yerman in "Walk-Arounds." Don't risk potential misunderstandings with valued customers – take them around their RV and diagram existing damage on a form like the one Tony uses.

Finally, colder temperatures mean it's time for winterizing and maintenance routines such as cleaning and draining water heaters. Find the procedures for winterizing the latter in "General RV Water Heater Troubleshooting and Preventative Maintenance." Batteries, too, require special care in the winter, but different battery types require different treatments.

To find out how and when to charge each type, read "Winterizing Battery Banks." While we're on the topic of cold weather, I'd be interested in hearing about what you do to stay busy (profitable?) during the winter. What fills your days in the dead of the season? E-mail me at mashreve@rvda.org and your comments may appear in the next issue.

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CLAMPS

Current Clamps, Part Two

By Steve Savage

In the last issue of *RV Technician*, Chris Friesen's "Troubleshooting With A Current Clamp" homed in on what I believe is an essential tool for any RV tech who works on electrical systems. Whether you call it a clamp meter, a current meter, a clamp-over meter or, as I do, a clamp-on meter, we're talking about the same thing -- a meter capable of reading the amount of current passing through a wire, without touching the wire or terminal.

Pay for quality

If you don't own a clamp-on yet, you'll discover a surprising array of prices, ranging from not very expensive to "It costs how much?" Most of us who work on RVs learn not to cut corners when it comes to tools, and that holds true with clamp meters. I've discovered that the cheapest clamp meters I've owned were short-lived and inaccurate. Moderately priced ones were more accurate but didn't last long in the field. The meter I have now has been in my bag for years and never misses a beat.



It pays to spend more for a good clamp-on meter.

Regardless of which manufacturer you choose, I recommend an auto-ranging clamp meter capable of reading RMS voltage. It should have a narrow snout so you can close it around the wire in tight spaces.

Most importantly, it will read both AC and DC amperage. Meters that can only read AC current are much cheaper but have



Measuring amperage through the main breaker at the distribution panel

to ride the bench when DC current comes into play. A meter that powers down on its own increases battery life. And every time I have to crawl up into a belly bay, I'm thankful my meter has a back-lit face so I can read it in the dark. Pricier meters also have "min" and "max" features that come in handy on occasion.

The clamp-on advantage

Why use a clamp-on rather than a conventional multimeter? First, conventional meters normally limit amp draw to 10 or 20 amps -- not enough for some applications. Second, a conventional multimeter has to be wired in series between the source and the load. That means disconnecting a lead, which is inconvenient when measuring DC loads and potentially dangerous with AC loads.

Finally, when it comes to speed, using a conventional meter rather than a clamp-on to measure amperage is analogous to

communicating with a telegraph instead of a cell phone.

What REALLY blew the circuit breaker?

While the uses for clamp-ons are almost limitless, here are a few of my own. First up, let's talk about alternating current (AC). How many times do your customers complain about blowing a circuit breaker? And how many circuit breakers get replaced without checking the current draw through the breaker? Pretty common, right?

Here's a typical scenario: A customer calls to complain that the campground must be wired wrong because they keep blowing the shoreline breaker. The campground has already replaced the original breaker, which is lying on top of the pedestal. Before offering an opinion, I need a fast way to check amp draw.

I pop the cover on the distribution panel, put my clamp-on around the lead to the 30-amp main, and power up the circuits one by one



Measuring direct current with the furnace running.

with the appliances on. Everything looks good until I hit the breaker for the water heater. Total amp draw jumps to well over 30-amps. I'll bet someone replaced the original element with one from a local building supply store. I discuss possible fixes with the customer -- I can either install the correct part, or he can operate his water heater on propane. But it's not a campground problem.

ACs, furnace motors, and more

Randy Biles at Pikes Peak Traveland Inc. notes that a clamp meter is also a great tool when it comes to diagnosing problems with air conditioners. You can even determine the unit's status and charge level if you know manufacturer specs for the proper amp draw.

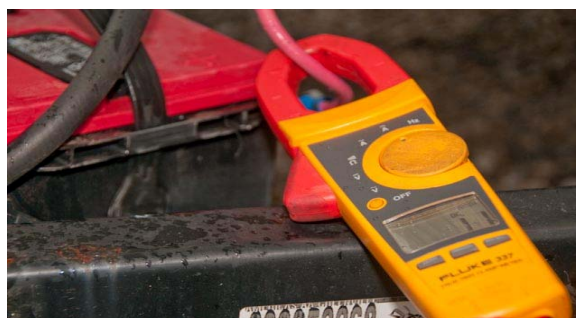
Whether you use the meter at the distribution panel or the junction box in the



Measuring amp draw through the electric element on the refrigerator

cooler, you can quickly measure amp draw for the fan motor or the compressor. A reading within specs here means one less climb to the roof. Once you become familiar with amp draws, the same trick works for refrigerator and water heater elements.

Now let's switch to DC current. Just as with AC, you can work at the distribution panel, at the board or component, or at the battery. If you're worried about multiple loads on the same circuit, shut off the component of interest, take a background reading with your meter, then turn on the appliance. This



Measuring parasitic load (DC amps) with everything turned off except the detectors

method will work for lights, furnace motors, slide and landing gear motors, and so on.

Tom Fibley of Fibley Technical Services, Inc. adds that he uses his clamp meter to test battery draw-down and to isolate parasitic loads.



The clamp can be used on any breaker in the box

If you've got it, the electrical end is good; focus on the mechanical end. If the amp draw is off, "fixing" the mechanical end of things will not make that towable stop any better.

These are just a few of the many uses for your clamp-on. See how many more you can discover. If you do much electrical work and don't have this tool in your arsenal, getting one is a sure way of putting more money in your pocket and more smiles on your customers' faces.

Steve Savage is a Master Certified RV technician, the owner/operator of Mobility RV Service in Bristol, TN, and a member of the RV Technician Advisory Group. His articles frequently appear in consumer and industry magazines.

Putting the brakes on the wrong fix

Want a fast way to determine if the problem with towable brakes is electrical or mechanical, after verifying the operation of the brake controller?

Using a charged battery, put your meter around either lead on the breakaway switch and pull the pin. The magnet in each brake should draw about 3 amps. Four wheels, four magnets, around 12 amps.

BATTERIES

Getting Charged Up For Winter: Tips For Storing Batteries

Winterizing season always brings battery questions: What should be done with the batteries during storage? Should the charger be left on or off? Can all the batteries be hooked in parallel and charged from a single charger? Should the charger be placed on a timer?

Unfortunately, there's no one right answer to any of these questions. Different battery technology and winter circumstances dictate an individualized regimen.

Charging issues

The first rule is to always fully charge batteries before leaving them unattended. When batteries are idle for more than a few weeks, leave some sort of charger attached. This will keep up with battery self-discharge. Ideally, the battery voltage should be maintained between 13.2 and 13.6 volts.

A small solar panel is often sufficient to maintain a battery. Solar panels can overcharge, however, so be sure to use a regulator on larger panels.

If you can't leave a charger attached, apply a full charge every three to four weeks. Self-discharge is less in cold weather, so the time between full charges can be longer, perhaps eight to ten weeks during northern winters.

Basically, a full charge is a process where a temperature-corrected absorption voltage is applied to the batteries until battery current declines to a low percentage of battery amp-hour capacity.

Batteries which are fully charged won't freeze in weather typical of the U.S. Batteries that are not fully charged may freeze, and the expansion of the ice could fracture the cases.



Battery cells need special treatment in the winter.

Battery types

There are four distinct types of lead-acid batteries:

- liquid electrolyte, lead/antimony plate
- liquid electrolyte, lead/calcium plate
- gelled electrolyte, lead/calcium/tin plate
- absorbed electrolyte, lead/calcium/tin plate

Lead-antimony batteries

Antimony is used as a stiffener in the grids of lead plates of deep cycle batteries. While antimony makes the plates stronger, it also causes battery cells to self-discharge more rapidly. Self-discharge is a deleterious discharge, because it creates a hard lead sulfate that crystallizes and ultimately destroys the battery.

To avoid self-discharge, keep lead-antimony batteries on a charger when not in use. Self-discharge lessens as temperatures drop; if it's cold enough, a full-time charge isn't necessary. Do a full charge once a month in very cold weather and every two weeks if it gets above freezing. Check the electrolyte level periodically.



Battery cells can be drained by small loads like clocks and control panel indicators.

Lead-calcium batteries

Batteries made with lead-calcium plates, such as the so-called maintenance-free types, have low self-discharge as long as the weather isn't too warm. These batteries can be left fully charged for several months without experiencing sulfation. It's good to bring them to a full charge a couple of times during the winter.

Absorbed electrolyte batteries

Absorbed electrolyte batteries have most of their electrolyte captured in a fiberglass mat. Plates are made of lead and calcium and some tin may also be used. Because there is no antimony in the grids, self-discharge is quite low. Fully charge the batteries before storing the system for the winter, and apply at least one full charge during the winter.

Gel batteries

Gel batteries have the lowest rate of self-discharge and can be left for months without a charger attached. Just be sure to bring the batteries to a full charge before leaving them.

Mixed battery systems

Many systems have two different types of batteries for the house portion of the vehicle and starter. Follow the recommendations for the type of battery that requires the most charging during the winter. If you leave a charger hooked up, it's permissible to connect all the batteries in parallel.

If your area is subject to frequent power outages, be sure to check charger operation frequently, since it isn't a good idea to have different battery types connected unless they are being charged.

Don't forget small loads

Often, there are a number of small loads on the batteries, such as clocks, instrumentation, and control panel indicators. If you're going to leave the batteries without a full-time charger attached, then it's wise to lift one of the battery leads to make sure that there are no stray loads discharging the batteries. For safety purposes, always remove the ground side of the battery first and reconnect it last.

...Or temperature

When you charge the batteries for the last time before storage, be sure to get a voltage high enough to fully charge the batteries at their present temperature. Just as important is actually reaching a full charge when called for during the storage period. If the batteries are really cold, it will take a high voltage to reach that full charge.

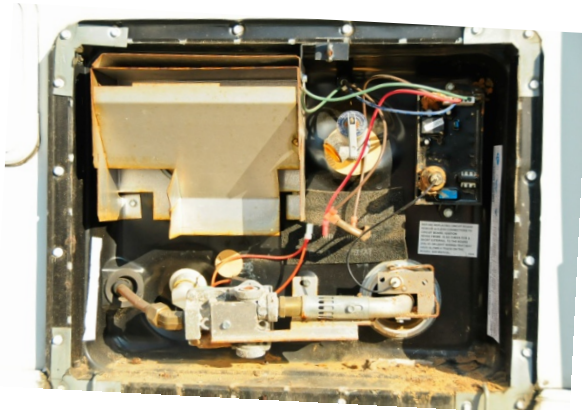
Compiled from various sources.

Winterizing And Maintenance Tips For Water Heaters

Preventative maintenance should be done to make sure water heaters perform at optimal levels. This troubleshooting and maintenance information may not pertain to all water heaters. For specific information, refer to the owners and service manuals provided by the manufacturer of the model you're servicing. All service, especially gas and electric, should be attempted only by technicians trained to service RV systems.

For **pilot models**, follow these instructions:

1. Periodically check the burner orifice and pilot assembly for spider webs, dirt, etc.
2. Clean the main burner tubes with a small brush.
3. Check the flame at the main burner. If the flame is burning yellow, sooting or smoking can occur. To correct this, make sure the pilot flame totally engulfs the tip of the thermocouple; if it doesn't, correct as needed.



A water heater in need of its annual cleaning and maintenance

If the problem persists, check the following:

- A. Ensure that the gas pressure is correct, using a properly calibrated

manometer. The recommended measurement should read 11-1/2" of water column while two or more appliances in the coach are running.

- B. Replace the gas supply if it's poor.
 - C. If there is an insufficient pilot flame, clean or replace the pilot orifice.
 - D. Check for improper air adjustment. The main burner air adjustment shutter should be approximately 1/4 of the way open.
 - E. If the flame spreader is misaligned, it should be realigned or the main burner should be replaced.
 - F. If the main burner is blocked, remove the blockage.
 - G. If the main burner is improperly aligned, re-align it and the main burner orifice holder and the gas valve.
 - H. If the "U" tube is blocked, remove the blockage.
4. If there's a low pilot flame, check for obstructions or contamination. If none, the pilot orifice should be replaced or adjusted.
 5. If the pilot won't stay on when the pilot button is released, the thermocouple and valve should be checked. If the thermocouple isn't hot, hold the button for 30 seconds before releasing. If the thermocouple is loose, tighten the connection at the gas control. If the thermocouple is weak, replace it. If there's a weak gas control magnet or a defective E.C.O. in the gas control, the gas control should be replaced.

For **electronic ignition models**, follow these instructions:

1. Check the main burner orifice.
2. Clean and adjust the main burner.

3. Be sure the main burner and valve manifold are aligned.
4. Check to make sure the porcelain on the electrode isn't cracked.



Check for cracks in the porcelain on the electrode

5. Check for a proper gap between the electrode and the ground.
6. If the module board is functioning only intermittently, it must be removed; then clean the terminal block with a pencil eraser.
7. If there is no ignition, the thermal cut off should be checked. If it's blown, clean the burner and flue tube and replace the thermal cut off.

The following applies to **both models**:

1. Water heaters should be drained at least once annually to prevent sediment from forming in the tank.
2. When storing an RV for the winter, especially in areas of the country where temperatures dip below freezing, the water heater needs to be winterized.

Here are instructions for winterizing a water heater:

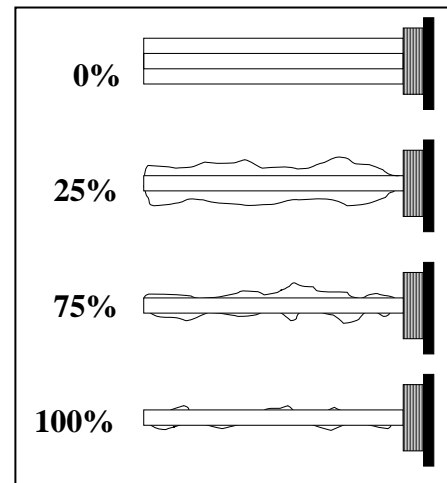
1. Turn off the power supply to the water heater.
2. Shut off the gas supply to the water heater.
3. Turn off the water pump or external water hook up (the main water source to the coach).
4. If the water is hot, allow time to cool prior to continuing.

5. For **Atwood** water heaters--Remove the drain plug.

For **Suburban** water heaters--Remove the anode rod from the water heater. This can be done by using a 1-1/16" socket. (**Atwood** water heaters do not use an anode rod.)

*Note: If you introduce antifreeze into the water lines, you **MUST** either bypass the water heater or remove the anode rod and replace it with a drain plug. If this isn't done and antifreeze comes in contact with the anode rod, it can lead to damage to the rod and an increase in the amount of sediment in the tank.*

At this time you should also inspect the anode rod for deterioration. If it has deteriorated 75 percent or more, it needs to be replaced. Below is a diagram of the stages of deterioration (the manufacturer suggests replacing the anode rod at least once a year).

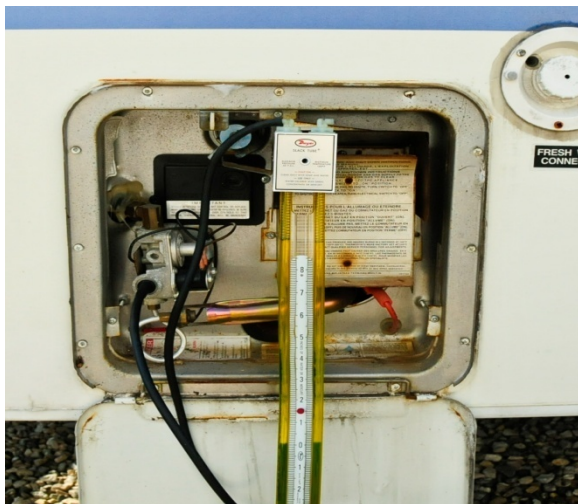


A new anode rod and one that needs replacing

6. If the coach is equipped with a bypass kit, the water heater should be closed off from the system and the kit should remain in the bypass position.

7. Drain the water heater's inner tank by removing the anode rod or the drain plug; at this time also open the relief valve to allow air to enter the tank and improve the flow of the water if the flow is strained.

8. When the flow of water has stopped, allow the relief valve to snap shut.



A slack tube manometer which reads gas pressure at the water heater gas valve



Water heater with cover removed from the burner tube for cleaning

9. A residual amount of water will be left in the tank and should be flushed with air pressure or fresh water. This water must be removed, because it contains a majority of the harmful particles that can cause corrosion.

If air pressure is used, make sure the drain plug or anode rod is removed. The air pressure can then be delivered through the inlet or outlet of the tank or through the relief valve part; however, the relief valve support flange must be removed.

If fresh water is used, the tank should be flushed for at least five minutes. This will force any residual sediment through the drain opening.

10. After the tank has been flushed, replace the drain plug or add a drain plug where the anode rod was removed. You will notice a small amount of water left over in the tank. This amount of water won't cause the tank to split if it happens to freeze.

Note: **DO NOT** operate the water heater after the water has been removed.

References: Atwood Mobile Products and Suburban Manufacturing Company literature and Web sites.

Prevent Customer Misunderstandings With Walk-Arounds

By Tony Yerman

It's a common scenario: A customer picks up his vehicle after service and complains that something has been damaged or gone missing. You know the phrase: "It wasn't like that when I brought it in."

Sometimes the damage was already there and the owner just never noticed. And sometimes he just wants something for nothing. How do you tell which it is and avoid damaging a customer relationship?

A simple answer not only prevents the problem but can also generate other sales: Walk the customer around his vehicle when he drops it off.

Getting it on paper

The walk-around protects both parties and should be done with every vehicle. Many companies use a form with diagrams where the service writer can indicate the location of existing damage.

A walk-around sheet doesn't have to be elaborate. Allow some space to write notes. Drawings are helpful in placing the location of damage or needed repairs. Customized sheets for specific vehicles can be developed and attached and filed with a printed copy of any repair order, estimate, or warranty claim.

You can make an electronic sheet, using digital photos, to keep in an electronic file. Insurance adjusters do this to support estimates on damage and related issues.

Pointing out prior damage and having the customer sign the sheet keeps everyone out of trouble. It's a good idea to walk him around the vehicle when he comes to pick it up to show everything is the same. You can also demo the repairs made.

The walk-around as sales tool

The walk-around also provides a service sales opportunity. If there's existing damage, offer to provide an estimate to repair it. Point out problems that could occur if conditions go unaddressed, like leaky roofs causing water damage to the interior. Missing sealants or deteriorating areas are easy to spot in a walk-around.

Customer-made or temporary repairs may have been done and forgotten. The walk-around is a good reminder that attention is needed. Point out special packages that the service department might be offering.

If there's a pile of boards hanging out of a storage compartment, maybe the customer would like a set of levelers. If there are lawn chairs and tables strapped to the rear ladder, maybe he could use a roof storage container. If he has a dinghy vehicle on a trailer, he may like the ease of a tow bar. If you hear comments like, "We're outgrowing the unit," or "It would be nice to have something newer/ smaller," suggest he talk to a salesperson and relay the comments to sales for follow-up.

Own up

Finally, if the walk-around shows damage *did* happen while the vehicle was at your store, take responsibility. Tell the customer you'll make good. Don't let him discover the damage at home.

Walk-arounds eliminate misunderstandings and protect customer relationships. They may also save you legal fees from issues that could have been avoided by simply looking at what the customer brought in.

RVDA Service Consultant Tony Yerman is a Master Certified Technician and the author of theRV Damage Repair Estimator. You can contact him at tyerman@rvda.org.

NEW PRODUCTS

Aqua-Hot Heating System Provides Comforts of Home



RVers have trusted Aqua-Hot Hydronic Heating Systems to deliver continuous hot water, uniform cabin heat, and engine preheating to their home-away-from-home for more than 25 years. Making the road a more comfortable place, the advanced Aqua-Hot 450 provides all these features in a compact package.

Saving space and weight, the self-contained Aqua-Hot 450 can use power from three sources: recycled heat from the engine while driving, shore power when available, and diesel fuel anytime. When connected to shore power, the unit's 1,650W, 120V electric element provides light-duty heating ideal for milder climates, while the diesel burner is perfect for colder temperatures.

Unlike noisy forced-air systems, it produces quiet, even interior heat by circulating hot water through up to eight subtle heat exchangers. Five separate thermostatic heating zones and two circulation loops ensure consistent warmth throughout the cabin. The hydronic system can raise an engine block's temperature from 30 degrees F to 90 degrees F in just one hour.

Providing an unlimited supply of on-demand hot water, the Aqua-Hot 450 eliminates the need for a storage tank. The unit has a flow rate of 1.5 gallons per minute of 120-degree F water for more than 15 minutes. It can generate up to 90 gallons of hot water an hour.

Environmentally friendly, the Aqua-Hot 450 employs advanced technology that virtually eliminates emissions and exhaust odor. Energy efficient, it uses 0.41 gallons of diesel per hour. Measuring 12" H x 18.5" W x 30" L and weighing 140 lbs. empty, it can be installed as an RV is being built or retrofitted into an existing coach. [Visit www.aqua-hot.com](http://www.aqua-hot.com).

RECALLS

Norcold/Thetford Corp.

Recall: Models 1200, 1201, 1210 and 1211, 1200, 1201, 1210 and 1211 4-door refrigerators with cooling unit serial numbers ranging from 700000 to 13085759.

Summary: These refrigerators were installed as original equipment in vehicle model years 1997 to 2010. Other recalled refrigerators may have been purchased as replacement during the same period.

Remedy: Implementing this safety enhancement will prevent an unsafe elevation in the temperature of the cooling unit should the unit fail in operation. For more information, contact the company at (800) 767-9101.

Thor Industries

Recall Number: 10V523000

TMC is recalling certain model year 2011 Damon Daybreak, Four Winds Freedom Elite, and Hurricane recreational vehicles equipped with Atwood 35 Series range ovens. A potential exists for a small fracture within the line delivering gas to the oven cavity burner. Such a fracture may cause propane gas to leak from the line.

A propane leak in the presence of an ignition source could result in a fire and/or explosion, causing property damage and/or personal injury.

Remedy:

TMC is working with Atwood and will replace or repair the stoves. Owners may contact Atwood at 1-574-266-4749 or TMC warranty/service department at 877-855-2867.

Evergreen Recreational Vehicles, LLC

Recall Number: 10V510000

Summary:

Evergreen is recalling certain model year 2011 RVs equipped with Atwood 35 series range ovens. A potential exists for a small fracture within the line delivering gas to the oven cavity burner. Such a fracture may cause propane gas to leak from the line.

A propane leak in the presence of an ignition source could result in a fire and/or explosion, causing property damage and/or personal injury.

Remedy:

Evergreen is working with Atwood and will replace or repair the stoves. Owners may

contact Atwood at 1-574-266-4749 or Evergreen at 1-574-825-4298.

Coachmen RV Company, LLC

Recall Number: 10V508000

Summary:

Coachmen is recalling certain model year 2011 Chaparral, Brookstone, and Northridge fifth wheel travel trailers equipped with Atwood 35 Series range ovens. A potential exists for a small fracture within the line delivering gas to the oven cavity burner. Such a fracture may cause propane gas to leak from the line. A propane leak in the presence of an ignition source could result in a fire and/or explosion, causing property damage and/or personal injury.

Remedy:

Coachmen is working with Atwood and will replace or repair the stoves. Owners may contact Atwood at 1-574-266-4749 or Coachmen at 1-574-825-8360.

Open Range

Recall Number: 10V524000

Summary:

Open Range is recalling certain model year 2009-2011 Open Range, Residential and Rolling Thunder recreational vehicles equipped with 1200-series Norcold refrigerators. The refrigerators' power cut-off devices don't react fast enough to prevent potential fires.

Remedy:

Open Range is working with Norcold to get the units repaired for free. Please see Norcold's defect report 10e-049. Owners may contact Norcold at 1-800-767-9101.

Keystone RV Company

Recall Number: 10V521000

Summary:

Keystone is recalling certain recreational vehicles equipped with Dimplex Electraflame, Symphony, or Optiflame branded electric fireplaces, stoves, and fireplace inserts. The plug-in remote control receiver for the fireplace can overheat and cause a fire.

Remedy: Dimplex will provide owners a free replacement plug-in remote control kit. Owners may contact Dimplex customer service at 1-888-346-7539.



RV-C Booth At Trade Show Will Feature Component Networking

The National RV Trade Show will feature a special booth (booth C50 in the South Wing Hall 1) where industry members can learn about the features and benefits of RV-C or RV-Complete.

RV-C is a unique RV multiplexing system designed and approved by RVIA's Technical Subcommittees that networks RV-C compliant components together and provides a protocol for component diagnostics and control. It's based on the same technology that enables cars to be diagnosed and serviced by computer. A key benefit is that technicians can use a standard tool to download diagnostic information on every RV-C compliant component on an RV, reducing service time and expense. Using RV-C on vehicles adds flexibility, multi-point control, enhanced automation, increased safety, and simplification of wiring.



FRVTA and the RV Learning Center Deliver Online Training and RV Service Technician Certification Preparation

The RV Learning Center and the Florida RV Trade Association (FRVTA) are once again offering the RV Technician Training Online program, which provides materials to improve performance of both experienced and novice techs and service writers/advisors. There are also materials available for greeter/receptionists and dealer/GMs.

Dealerships can provide in-house training to employees whenever needed, says FRVTA Executive Director Lance Wilson. The program also offers advanced, product-specific training from RV manufacturers and suppliers, mentor guidance, and a technical help line. A mentor training workshop is also held annually at the RV Dealers International Convention/Expo.

A one-year subscription provides unlimited access to more than 40 training sessions, reviews, and test preparation sections, including preparation for tech certification. "This eliminates the cost of travel and time out of the shop," says RVDA Education Foundation Chairman Rick Horsey.

Participation requires a high-speed Internet connection. A video cable connected to a television is also useful for group training. A one-year subscription costs \$995 per dealership location. For more information and a sign-up form, see page 19. The RVDA Education Foundation is a 501(c)(3) tax exempt organization. Contributions may be tax deductible as charitable donations.

RV Technician Certification Preparation Course



Available Anywhere &
Anytime (with high speed internet
connection)

Interactive-Multimedia, Online Format

- Combines text, audio, graphics, and video, with mentor-led technician community forum – **all content delivered online** (no books or handouts)
- Available 24 hours a day, seven days a week for **12 months** (with computer and high speed internet connection)

Corresponds to RV Certification Test Sections

- Propane; Electrical; Plumbing; Brakes, Suspension & Towing; Appliances; Generators; Hydraulics; Exterior; Interior; Expandable Rooms; Miscellaneous (Welding Safety, Customer Care)

- Fulfills 40 hour RVDA-RVIA RV Service Technician recertification requirement

Personal Progress Tracking

- Automatically tracks individual's progress
- Quizzes after each chapter and section with immediate feedback
- A final assessment that is similar to the RV technician certification test

Every RV Technician Can Have Access to Individual Self-Study Online Certification Preparation

Registration Information

Company: _____

Address: _____

City/State/Zip: _____

Phone: _____ Fax: _____

Yes! Sign up the following from our dealership:

Name: _____

E-mail: _____

Name: _____

E-mail: _____

Name: _____

E-mail: _____

Name: _____

E-mail: _____

Send progress reports to the following supervisor:

Name: _____ Title: _____

E-mail: _____

Method of Payment

All registrations must be pre-paid in U.S. funds.

☐ Check Enclosed: Make Check Payable to: The RVDA Education Foundation

☐ Send Invoice (RVDA Members Only) ☐ VISA ☐ MC ☐ AMEX

Cardholder's Name: _____

Acct. Number: _____ Exp.: _____

Cardholder's Signature: _____ Security Code: _____

Billing Address: _____

Return completed form to: RVDA | 3930 University Drive | Fairfax, VA 22030 | Ph. (703) 591-7130 | Fax (703) 359-0152

www.rvlearningcenter.com | info@rvda.org

[code: cpwld]

SAVE!
up to 40% discount
when registering multiple technicians at
one time

Tuition

# Technicians	Price Per Person
1-3	\$249.00
4-9	\$199.75
10+	\$159.99

Developed by RVIA
Available through the RV Learning
Center



Important:

- The RV Technician Certification Preparation course offers RV service technicians the means to prepare for the technician certification test through an online, self-study format. Information about the RVDA-RVIA RV Service Technician Certification Program is available at: www.rvtechnician.com. The certification testing fee is not included in the course fee.
- Registration gives the technician 365 days to complete the course by achieving 80% or higher score on the final assessment. The technician should plan for certification testing within the enrollment period as course extensions are **not** available.

Home

Disclaimer

Search Events

Online Events

Manage Events

THE RV Industry's

CENTRAL TRAINING CALENDAR

Dealer/GM

Sales

Service

RV Service Technician

Parts

F & I

Rental

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December 2010
Fwd >>

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			RVDA of Canada / A World Of Training webinar; Synergy in fixed operations Show Online Events	1 Show Online Events	2 Show Online Events	3 Show Online Events
	4 Show Online Events	5 Team Leadership Workshop Show Online Events	6 Show Online Events	7 Show Online Events	8 Team Leadership Workshop Show Online Events	9 Show Online Events
	10 Show Online Events	11 Show Online Events	12 Show Online Events	13 Show Online Events	14 Show Online Events	15 Show Online Events
	16 Show Online Events	17 Show Online Events	18 Show Online Events	19 Show Online Events	20 Show Online Events	21 Show Online Events
	22 Show Online Events	23 Show Online Events	24 Show Online Events	25 Show Online Events	26 Show Online Events	27 Show Online Events
	28 Show Online Events	29 Show Online Events	30 Show Online Events	31 Show Online Events		

Go RVing.

Don't see your events listed?
Visit www.rvtraining-calendar.com to upload your events to the calendar.

As of October 20, 2010

ONGOING ONLINE EVENTS:

Technician Certification Self-Study Prep Course

FRVTA's Distance Learning Network - Training for Every Position at Your Dealership

Customer Service Training through FRVTA's DLN

Service Writer/Advisor Training through FRVTA's DLN

Don't Miss the FY 2011 Trouble Shooter Clinics

Get more than 40 hours of training in one event from Norcold, Dometic, Suburban, Onan, Generac, Atwood, Airxcel, and others. A must for all professional RV service technicians. The 2011 schedule is being finalized, so check for updates. Registration (\$499/person, up to 30 days before the event; \$599/person, 29 days or closer) includes lunch, textbooks, completion certificates, and manufacturing updates. Call RVIA for info (703-620-6003).

January 17-21	Dallas, TX
February 7-11	Springfield, MA
March 7-12	Goshen, IN
March 28- April 1	Seattle, WA

Online Training with FRVTA's

DISTANCE LEARNING NETWORK

FRVTA—RV Learning Center Partnership

\$995 per year for each dealership location
Over 40 sessions available, 24 hours a day, seven days a week with full access to training through July 31, 2011!

The DLN offers your dealership:

- Training at your dealership
- Together as a group
- Without any travel time or expenses
- On a pace determined by your needs
- At times to suit your operation
- For one fixed price of \$995 for the subscription term



The DLN offers online training for:

- **RV Technicians** – An excellent resource for techs preparing for certification and techs seeking recertification continuing education credits.
- **Service Writers/Advisors** – Useful for new staff and experienced personnel preparing for the RV Learning Center's Service Writer/Advisor certification.
- **Greeters/Receptionists** – Emphasizes customer interaction and service.
- **Dealers/GMs** – Features hot topics, including Lemon Laws, LP gas licensing issues, and Red Flags.

DEALERSHIP REGISTRATION

Company Name: _____

Address: _____ City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Mentor Name: _____ Phone: _____

E-mail (at dealership): _____ Fax: _____

****High speed internet access required. RVIA Service Textbooks not included****

_____ location(s) at **\$995 each** = payment due: \$_____ (select payment method below)

PAYMENT METHOD (complete lower section & mail or fax to):

☐ PAY BY CHECK OR MONEY ORDER ☐ PAY BY VISA, MASTERCARD

Florida RV Trade Association, 10510 Gibsonton Drive, Riverview, FL 33578, (813) 741-0488, Fax: (813) 741-0688

Name on Credit Card: _____

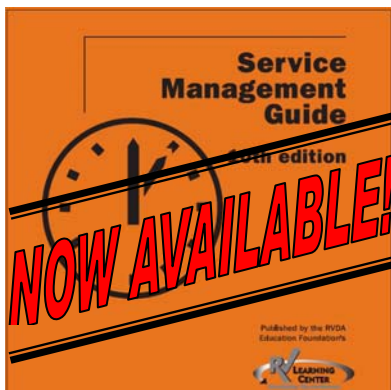
Card Number: _____ Security Code: _____ Expires: _____

Card Billing Address: _____ City: _____ State: _____ Zip: _____

Card Holder Signature: _____

For more information, call (386) 754-4285 or go to <https://www.fgc.edu/rv-institute.aspx>

NEW! 10th Edition Service Management Guide (Flat Rate Manual)



The expanded Service Management Guide offers over 100 pages of average work unit times for the most basic service functions performed by competent RV technicians.

- The 10th Edition of the Service Management Guide offers extensive updates and additions provided by dealers, service managers, and technicians.
- It also offers all new Service Check Sheets that provide a valuable reference for service managers and technicians.
- It is a great tool for the service department when working with extended service contracts.
- The Service Management Guide is also available in CD-ROM.

The Service Management Guide is designed to provide reasonable guidance relative to the time required for competent technicians to complete assigned tasks. It is an important part of the service management system, but it is not intended to be the sole determinant of prices or rates charged in that sale of service.

Manual or CD-ROM: RVDA Members \$164.95 Non-Members: \$330.00

Manual and CD-ROM: RVDA Members \$275.00 Non-Members: \$550.00

Order Online at <http://www.rvlearningcenter.com>

Order Form – 10th Edition Service Management Guide (Flat Rate Manual)

Name: _____

Company Name: _____

Address: _____

City: _____ State: _____ Zip Code: _____

Phone: _____ Fax: _____ E-mail: _____

☐ RVDA Member ☐ Non-RVDA Member Manual - # of Copies: _____ CD-ROM - # of Copies: _____

Method of payment (Please check one)

☐ Check enclosed (Made Payable to The RVDA Education Foundation)

☐ Send an invoice (members only) Credit Card: ☐ Visa ☐ Master Card ☐ American Express

Card Number: _____ Expiration Date: _____

Name on Card: _____ Signature: _____

Billing Address: _____ Billing Zip: _____



CONTRIBUTORS:

<i>Additional/New Contributions Received 7/01/09-7/01/11</i>	<i>Received 7/01/09-11/04/10</i>	<i>Total Received</i>	<i>Last Contribution Received</i>
Ace Fogdall, Inc.	\$5,200	\$36,600	11/1/2010
Affinity RV Service Sales & Rentals	\$2,000	\$6,000	8/30/2010
All Seasons (CA)	\$49	\$37,049	7/10/2010
Alpin Haus	\$4,000	\$15,500	9/30/2010
Altman's Winnebago	\$5,000	\$45,500	3/11/2010
Bill Plemmons RV World	\$2,550	\$5,050	10/20/2010
Bill Thomas Camper Sales, Inc.	\$1,000	\$21,000	10/26/2010
Blue Ox	\$1,870	\$12,750	4/22/2010
Byerly RV Center	\$11,000	\$11,000	7/20/2010
Camperland of Oklahoma, LLC	\$500	\$3,350	7/2/2010
Campers Inn of Kingston	\$2,000	\$27,422	7/12/2010
Candys Campers	\$50	\$1,050	8/18/2009
Circle K RV's, Inc.	\$500	\$5,500	10/21/2010
Coach-Net	\$10,417	\$199,917	11/24/2009
Diversified Insurance Management, Inc.	\$2,200	\$10,000	5/19/2010
Dixie RV Superstore	\$5,000	\$15,000	8/18/2010
Bill & Kristin Fenech	\$10,000	\$50,000	7/29/2010
Ron & Lisa Fenech Foundation	\$25,000	\$50,000	6/16/2010
Floyd's Recreational Vehicles	\$250	\$250	10/19/2010
Folsom Lake RV Center	\$2,500	\$7,000	12/23/2009
Greeneway, Inc. (Route 66 Dealer)	\$10,300	\$10,300	10/21/2010
Hayes RV Center	\$1,250	\$5,000	6/16/2010
Hemlock Hill RV Sales, Inc.	\$2,000	\$6,000	9/16/2010
Ronnie Hepp	\$250	\$300	10/20/2010
Hilltop Trailer Sales, Inc.	\$41	\$1,540	6/23/2010
Holiday World of Houston	\$5,000	\$25,000	8/24/2010
Horsey Family Memorial Fund	\$13,500	\$66,000	10/19/2010
J. D. Sanders, Inc.	\$250	\$2,250	7/21/2009
Jayco, Inc.	\$2,500	\$17,500	2/19/2010
Lloyd's I-10 RV Center, Inc.	\$50	\$15,050	7/27/2009
Manteca Trailer & Camper	\$500	\$4,000	6/21/2010
Maxxair Vent Corporation	\$250	\$2,250	6/25/2010
MBA Insurance, Inc.	\$1,100	\$12,100	10/19/2010
McClain's RV Superstore	\$5,000	\$30,000	6/23/2010
Mike Molino	\$150	\$10,736	10/18/2010
Momot Trailer Sales	\$250	\$750	7/1/2009
Rose Zella Morris	\$25	\$25	10/25/2010
Motley RV Repair	\$600	\$6,940	10/25/2010
Myers RV Center, Inc.	\$750	\$1,000	10/20/2010
Noble RV, Inc.	\$50	\$50	10/18/2010
Northern Wholesale Supply, Inc.	\$250	\$750	7/7/2009
Open Range RV Company	\$250	\$500	3/31/2010
Pan Pacific RV Centers, Inc.	\$500	\$36,500	10/21/2010
Paul Evert's RV Country, Inc.	\$1,875	\$23,125	3/4/2010
PleasureLand RV Center, Inc.	\$5,250	\$75,250	10/5/2010
PPL MotorHomes	\$100	\$100	8/12/2010
Protective	\$14,576	\$68,784	12/8/2009
RCD Sales Company, Ltd.	\$500	\$1,250	6/16/2010
Redex	\$3,000	\$3,000	12/29/2009
Reines RV Center, Inc.	\$2,000	\$17,525	12/29/2009
Rich & Sons Camper Sales	\$2,000	\$2,000	11/5/2009
Rivers Bus & RV Sales	\$1,000	\$15,850	9/28/2010
RV World Recreation Vehicle Center	\$250	\$1,600	6/8/2010
RVDA of Canada	Cdn \$25,000	Cdn \$150,000	10/13/2009
RV's Northwest, Inc.	\$50	\$9,050	7/6/2009
Sonny's RV Sales, Inc.	\$1,000	\$2,000	12/17/2009
Stag Parkway	\$5,100	\$32,100	10/25/2010
Steinbring Motor Coach	\$500	\$500	10/14/2010
Tacoma RV Center	\$500	\$500	7/6/2010
Tarpley RV	\$250	\$4,500	9/9/2010
Tiffin Motor Homes, Inc.	\$2,500	\$16,000	3/4/2010
U-Neek RV Center	\$200	\$200	3/17/2010
United RV	\$1,000	\$1,000	9/9/2010
United States Warranty Corporation	\$1,000	\$3,250	8/24/2010
Wilkins R.V., Inc.	\$3,200	\$11,100	10/22/2010

Endowments:

The Kindlund Family Scholarship Endowment

\$270,000

Join the RV Learning Center's 2010 Fundraising Challenge



The RV Learning Center launched its 2010 Fundraising Challenge in March with an \$11,000 pledge from Diversified Insurance Management, Inc. Join them and a long list of RV dealers, manufacturers, dealer business partners, and associations in supporting continuing education through the RV Learning Center. The RV Learning Center is dedicated to providing dealers and their employees with innovative ways to operate RV dealerships through an array of education resources including publications, distance learning, live workshops, online products, training, and certification programs for RV dealership personnel. Participation in RV industry certification programs was a key recommendation of the Go RVing Coalition's Committee on Excellence Task Force reports, which studied consumer satisfaction.

☐ **Please check here if you would like the RVDA Education Foundation to send you a reminder invoice in the month/year that you listed at right.**

I, _____, accept the invitation to join with others to support the dealership education efforts of the RVDA Education Foundation's RV Learning Center.

I agree to make a one-time contribution of \$_____, or, I hereby pledge and agree to contribute the total sum of \$_____ per year for _____ years, starting ____/____ (month/year) to the RVDA Education Foundation, a 501(c)(3) charitable organization.

This is a: ☐ Company Contribution ☐ Personal Contribution

Method of Payment:

☐ Check Enclosed (payable to the RVDA Education Foundation)

☐ VISA ☐ MasterCard ☐ AMEX

Card #: _____

Security Code (3 or 4 digit code on card): _____ Expires: _____

Signature: _____

Company: _____

Billing Address: _____

For more information on the Foundation's RV Learning Center, visit www.rvlearningcenter.com. Return this form by e-mail to info@rvda.org, by fax to (703) 359-0152, or by mail to 3930 University Drive, Fairfax, VA 22030. The RVDA Education Foundation is a tax exempt organization as described in section 501(c)(3) of the Internal Revenue Code. Contributions may be tax deductible as charitable donations.



Jim Summers Memorial Fund

Total Received Through 11/04/10 \$6,725

An RVDA member, who wishes to remain anonymous, provided a donation to start a memorial fund in honor of former RVDA Executive Vice President Jim Summers, who passed away in October 2010. Summers was RVDA's chief staff leader for a decade, serving as Executive Vice President from 1976 to 1986. To contribute, visit www.rvlearningcenter.org or send an e-mail to info@rvda.org for more information.



Contributors:

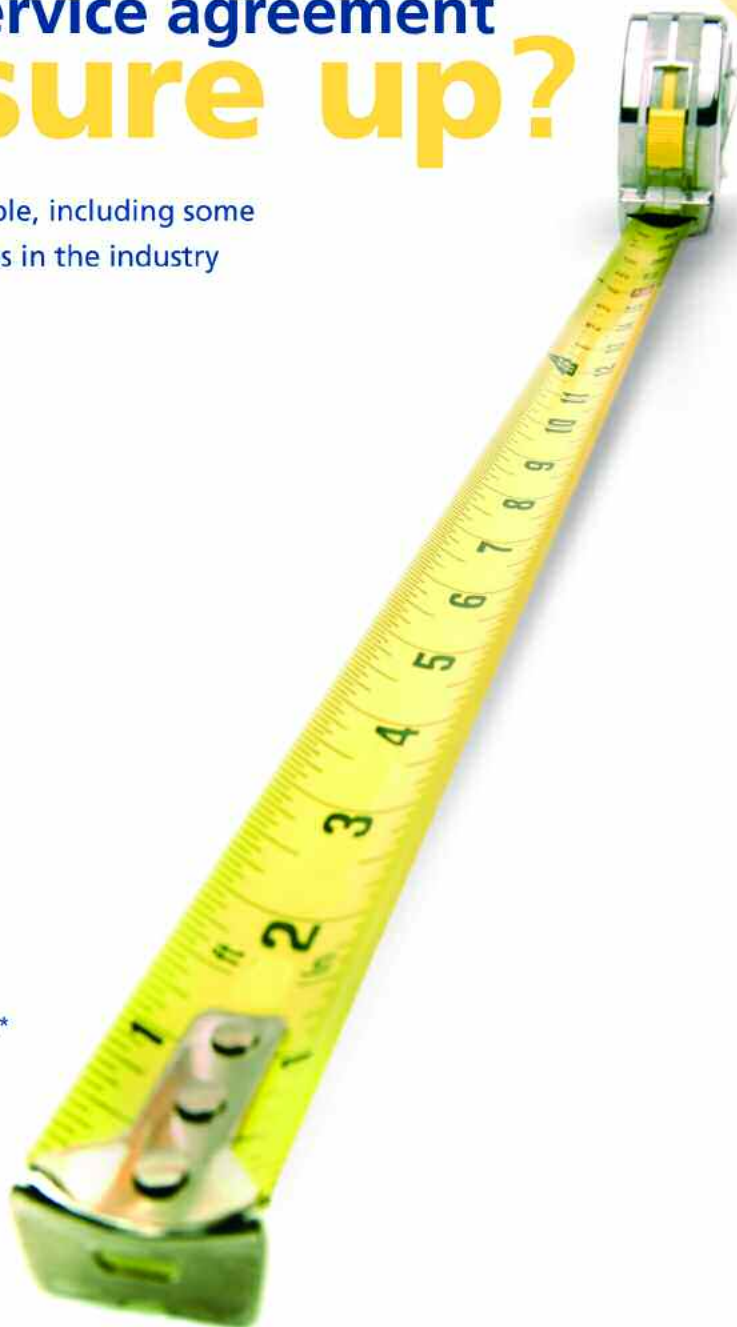
Ace Fogdall, Inc.
Bill Plemmons RV World
Bill Thomas
Bill Thomas Camper Sales, Inc.
Circle K RV's, Inc.
Craig Mellor
Floyd's Recreational Vehicles
Ronnie Hepp
Greenway, Inc.

MBA Insurance, Inc.
Mike Molino
Rose Zella Morris
Motley RV Repair
Myers RV Center, Inc.
Pan Pacific RV Centers, Inc.
PleasureLand RV Center, Inc.
The Trail Center
Wilkins R.V., Inc.



How does your RV service agreement program **measure up?**

- Multiple levels of coverage and terms available, including some of the lowest mileage terms for motor homes in the industry
- Program Benefits Include**:
 - 24/7/365 Towing
 - 24/7/365 Emergency Road Service
 - 24/7/365 Concierge Service
 - 24/7/365 RV Technical Assistance
 - And much more...
- Optional Tire & Wheel Coverage available**
- Rental programs available
- Post-sale programs available
- Renewal programs available
- Exclusively endorsed by the RVDA since 1992*
- Serving the RV industry for over 25 years
- Fully backed by an insurance company rated "A-" or better by A.M. Best



XtraRide is designed to meet your customers' needs and expectations, ultimately increasing your dealership's profit and customer satisfaction.

Protective 
Asset Protection Division

XtraRide Service Agreements | Post-Sale Programs
Dealer Experience Refund & Reinsurance Programs | Rental Programs
F&I Training | On-Line Rating, Reporting & Agreements

Call us to find out how you
can start offering XtraRide
at your dealership today!

866.286.8087
www.protectiveassetprotection.com

The XtraRide Service Agreement Program is backed by Lyndon Property Insurance Company, a Protective company, in all states except New York. In New York this product is backed by Old Republic Insurance Company. *An RVDA endorsed product or service is one that has been extensively evaluated by the RVDA to assure quality, dependability and overall value. RVDA and the RVDA Education Foundation receive compensation from a Protective company for business generated by RV dealers. **Certain benefits or coverage may not be available in all states due to state law restrictions. These benefits are subject to limitations or exclusions and may apply in the event of a covered repair. See coverage booklet for details.

