VILANO | OWNER'S MANUAL

VANLEIGH
A DIVISION OF TIFFIN

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INTRODUCTION

ABOUT THIS MANUAL

The objective of this manual is to provide a guide for normal operations, safety, care, and maintenance of your recreation vehicle (RV). In this owner's manual, the information is accurate at the time of publication but is liable to change without notice. Photographs, drawings, components, and systems illustrated may not exemplify exactly what is in your RV due to continual upgrades and improvements.

The information in this manual is not meant in any way to complement, adjust, or transform the terms and conditions of your Limited Base and Structural Warranties, or any manufacturer warranties.

Applications defined in this guide are common for normal operating conditions. As the owner, you are subject to the safety operations and use of your RV, and we have tried our best to inform you. There are particular tips to assist you as you enjoy the RV lifestyle; however, this guide is not designed to persuade you how, or where, to camp.

If you have any questions, concerns, or request service regarding your RV, please contact your dealer or Vanleigh RV.

CONTACT INFORMATION

Main Manufacturer Line:	662.612.4040	**Website:**	www.vanleighrv.com
Customer Service Direct Line:	662.331.2933	**Email:**	customercare@vanleighrv.com
Emergency After Hours Line:	256.275.2091	**Address:**	P.O. Box 445 26 Industrial Dr. Access Rd. Burnsville, MS 38833

OWNER INFORMATION PACKAGE

The Owner Information Package incorporates the manual and registration cards for multiple individual components of your new Vilano Fifth Wheel (FW).

- It is crucial that you register and submit each warranty card within the time limit provided to avoid loss of warranty coverage.
- Some component manufacturers present warranties beyond the Vanleigh RV Limited Base and Structural Warranties.
- Other components are warranted independently and completely by the individual component or parts manufacturer, and are omitted from our Limited Base and Structural Warranties.

It is essential that you read carefully and understand the information provided in this manual and in your Owner Information Package before operating your RV.

MANUFACTURING CERTIFICATION

Vanleigh RV is subject to periodic examinations to assure our RVs are manufactured to the accurate safety and manufacturing codes, standards and regulations established by the Recreation Vehicle Industry Association (RVIA).

Figure 1. *Manufacturing Certification Placard*

THE VEHICLE IDENTIFICATION NUMBER

The 17-digit vehicle identification number (VIN) for your fifth wheel is stamped on a metal tag permanently secured to the pin box. It is also listed on the Federal Certification Label. A breakdown of a typical Vanleigh RV VIN is shown in the picture below:

Figure 2. *VIN Number*

Table 1. *VIN Numbers*

VIN position	Description	Code	Code Name
1 Through 3	WMI	7HH	
4	Type of Trailer/ Make	F	Vanleigh RV Fifth Wheel
5	Body Type	B	Beacon
		F	Vanleigh RV/Fifth Wheel
		P	Pinecrest
		V	Vilano
6 Through 7	Length	32	32 Feet
		34	34 Feet
		36	36 Feet
		39	39 Feet
		40	40 Feet
		41	41 Feet
		42	42 Feet
8	Axles Configuration	2	2
9	Check Digit	A Calculation	None
10	Model Year	J	2018
		K	2019
		L	2020
		M	2021
11	Plant Location	V	Burnsville, MS
12 Through 17	Sequential Prod. #	Example: 000001	VIN position

SAFETY PRECAUTIONS

There is nothing more essential than the individual safety of you, your family and others. Safety includes several areas of the RV experience. This includes driving and towing safety, operational safety, occupant safety, environmental safety, and many more. Any time you are handling parts that contain propane gas, electricity and other carbon monoxide producing appliances, it is highly important that safety becomes your number one focus in and around your RV.

SAFETY MESSAGES

Please note that several labels listed in this manual represent items that need your attention. The "Danger," "Warning," "Caution," and "Note" labels alert you to precautions that may help you avoid damage to your RV, its equipment, or your personal safety. Please read and follow them carefully.

NOTE: *Is used to address practices not related to personal injury.*

⚠ CAUTION

INDICATES A HAZARDOUS SITUATION, WHICH, IF NOT AVOIDED, COULD RESULT IN MINOR OR MODERATE PERSONAL INJURY.

⚠ WARNING

INDICATES A HAZARDOUS SITUATION, WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS PERSONAL INJURY.

⚠ DANGER

INDICATES A HAZARDOUS SITUATION, WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS PERSONAL INJURY.

ADDITIONAL TERMINOLOGY USED

[Customer Supplied] This includes items not incorporated or installed by Vanleigh RV. Items recognized as "customer supplied" are not enclosed by the Limited Base and Structural Warranties. The incorporation of items listed as "customer supplied" does not entail or advise the availability, application sustainability, or inclusion for any specific unit.

[If so equipped] This includes items that may be installed by Vanleigh RV on certain RVs. Although, some items listed as "if so equipped" can only be incorporated during the manufacturing stage and cannot be added at another time. The involvement of items listed as "if so equipped" does not imply or suggest the availability, application sustainability, or inclusion for any specific unit.

[Optional] This includes items that may be an option on all or specific models. Therefore, some optional items can only be incorporated during the manufacturing stage and cannot be added at another time. The incorporation of optional items does not involve or suggest the availability, application sustainability or inclusion for any individual unit.

REPORTING SAFETY DEFECTS

IN THE UNITED STATES

If you believe your vehicle has a deficiency, that might cause an accident, injury or death, we encourage you to immediately contact the National Highway Traffic Safety Administration (NHTSA) and Vanleigh RV.

If NHTSA receives similar concerns, they may open an investigation. If they determine that a safety deficiency lies in other vehicles, a recall and remedy campaign may be called. The NHTSA does not become associated with individualized cases between you, your dealer, or Vanleigh RV.

TO CONTACT THE NHTS

Website: www.safercar.gov

Address: NHTSA Headquarters
Attn: Administrator
1200 New Jersey Avenue,
SE Washington DC 20590

TOLL-FREE VEHICLE SAFETY HOTLINE

Safety Hotline: 1-888-327-4236

TTY: 1-800-424-9153

Additional motor vehicle safety information is available online at www.safercar.gov

SERVICE AND WARRANTY

DEALER'S RESPONSIBILITIES

When you buy your new RV, at the time of purchase, your dealer is expected to:

1. **Deliver your RV in the best condition possible.**
   Your RV must pass the dealer's Pre-Delivery Inspection (PDI). This inspection tests all systems and components.
2. Provide an orientation, familiarizing you with your new RV and how to operate all systems and components.
3. Review with you, and explain the provisions of the *Limited Base Warranty and Limited Structural Warranty*.
4. Send your completed Warranty Registration and New Vehicle PDI Check List to Vanleigh RV. ***This form is required within 5 days of your delivery date to activate your warranty coverage.***
5. Ensure that you receive a complete Owner Information Package. Assist you with all component manufacturer warranty registrations (i.e., locating the model and serial numbers of components as needed).
6. Explain how to obtain local and out-of-town service for your RV, and its (separately warranted) components, including repairs NOT under warranty.
7. Service all Vanleigh RV products.

OWNER'S RESPONSIBILITIES

As the owner, you are liable for the periodical care and proper maintenance of your RV. Proper maintenance will help avoid situations where the Limited Base Warranty and Limited Structural Warranty will not cover items due to improper care. You are required to perform maintenance services in accordance with this manual and the corresponding manufacturer instructions for the parts included in your RV.

As the owner of your RV, it is your responsibility and liability to return the RV to an authorized dealer for any warranty repairs and service that may be needed. Your dealer is subject to proper service prior to delivery and has a continued interest in your fulfillment. Therefore, we suggest warranty and maintenance services be performed by your local Vanleigh RV dealer.

With your other personal belongings, it is crucial to secure yourself and others with insurance coverage. Your insurance agent can aid you in receiving the appropriate insurance coverage for personal liability collision, property damage, theft, liability, etc.

OBTAINING WARRANTY SERVICE

Warranty service must be obtained:

- WITHIN a reasonable time after the discovery of a defect, and
- BEFORE the applicable warranty period expires.

To help your dealer provide you the best level of service, please do the following:

Call Ahead

It is best to have your service performed several weeks before you plan to use your RV. Your dealer may need some time to get you in their schedule. Most service departments are busiest on Mondays, Fridays and before holidays.

Be Prepared

Keep your warranty and service history paperwork available. Past repairs and maintenance records may help the service technician diagnose a current issue.

Make a List

Provide the dealer a prioritized list of all repairs needed. If you need your RV returned by a specific date, discuss this with the dealer's service management. A second appointment may be required to complete lower priority list items or if parts need to be ordered.

While Waiting

If possible, drop off your RV. Usually, customers cannot watch as repair work is performed. Insurance companies may even require that customers not be allowed in the service area.

Inspect the Work Performed

Inspect all repairs thoroughly. Notify the dealer's service manager of any dissatisfaction right away.

- If you cannot immediately return your RV for repair, make an appointment to return as soon as possible.

- If a problem re-occurs after leaving the dealership, contact the dealer's service manager and Vanleigh RV Customer Support to quickly resolve the issue.

OBTAINING EMERGENCY WARRANTY REPAIR

A roadside emergency can happen at any time, whether your RV is new or old. If you are traveling, using the following guidelines can help get you back on the road faster.

1. To find the nearest authorized repair center, use the Dealer Locator on our website www.vanleighrv.com.
2. If there is not an authorized dealer near your location, try the following to find a repair facility:
   - Ask the campground staff for referrals;
   - Check the local telephone yellow pages;
   - Contact your dealer; or
   - Vanleigh RV Customer Support.

WHEN YOU FIND AN AUTHORIZED DEALER OR REPAIR FACILITY:

A. Call the RV repair facility to discuss your situation and make an appointment. Ask how their billing will be handled. They may choose to bill Vanleigh RV directly; otherwise, you are expected to pay them.

B. Have the RV repair facility inspect your RV. Either they or you must call Vanleigh RV Customer Support to discuss applicable warranty coverage prior to any repair work being performed.

C. Vanleigh RV Customer Support will issue an authorization number upon warranty repair approval and advise if any original parts must be returned.

D. Only after the authorization number has been issued, may the repair center begin work on your RV.

E. For reimbursement, either you or the RV repair facility must have approval from Vanleigh before getting work done, and send a copy of your itemized repair bill and all requested return parts by UPS (regular ground, freight pre-paid) to Vanleigh RV within 60-days of the completed repair date. To expedite processing your warranty

claim, include your name, address, phone number, RV 17-digit VIN and authorization number. If returning parts, include a copy of your freight bill.

3. Inspect the completed repair work thoroughly. If you are not satisfied, communicate that to the RV repair facility management. Make sure you are satisfied with the repair before you pay or leave the premises.

Obtaining Emergency Repair Assistance on a Weekend or After Business Hours

If an authorized Vanleigh RV dealer is not located near-by, contact your selling dealer for assistance. If your dealer is closed, check with the campground staff or telephone yellow pages for an RV repair facility. Have the item repaired and contact Vanleigh RV Customer Support immediately the following business day.

Replacement Parts

Replacement warranty parts are distributed by authorized Vanleigh RV dealers or service centers. Vanleigh RV does not sell parts retail direct or to non-authorized dealers. If an original part is no longer available, Vanleigh RV or your dealer will try to provide an appropriate substitute.

Aftermarket Installations & Alterations

Aftermarket installations or alterations to the original equipment vehicle as distributed by Vanleigh RV are not covered by the Limited Base and Structural Warranties. The special body company, assembler, equipment installer, or up-fitter is solely responsible for warranties on the body or equipment and any alterations (or any effect of the alterations) to any of the parts, components, systems, or assemblies installed by Vanleigh RV. Vanleigh RV is not responsible for the safety or quality of design features, materials, or workmanship of any alterations by such suppliers.

UPDATING YOUR CONTACT INFORMATION

Federal law requires that we keep a record of all Vanleigh RV owners. Please help us assist us in keeping your updated contact information, so that we can directly contact you in a timely manner in case of a recall or customer notification letter.

We desire that you please contact us in writing of address and ownership changes, or if your RV is stolen, totaled or destroyed.

TO UPDATE YOUR CONTACT INFORMATION,

Email: customercare@vanleighrv.com

Or write: P.O Box 445
26 Industrial Dr. Access Rd.
Burnsville, MS 38833

If you have any questions, please contact Vanleigh RV Customer Support at 662.331.2933.

VANLEIGH RV

ONE YEAR LIMITED BASE WARRANTY

SUMMARY

What does this Warranty cover?

Vanleigh RV, Inc ("Warrantor") provides this One (1) Year ("Warranty Period") Limited Base Warranty [which begins to run from the earlier of (i) the date of purchase by the original retail consumer purchaser or (ii) when the recreational vehicle is put into service] against certain defects in materials and/or workmanship for the recreational vehicle manufactured by, and workmanship provided directly by, Warrantor arising under normal use and service to the ORIGINAL RETAIL CONSUMER PURCHASER for the Warranty Period of the recreational vehicle. In addition to the forgoing and the other limitations and restrictions set for in this limited warranty, this limited warranty only covers a recreational vehicle sold by an authorized warrantor dealer to the original retail customer, but only if the warranty for the recreational vehicle is registered in the original vehicle owner's name within the five (5) day start date period set forth above.

THIS WARRANTY CONSTITUTES THE EXCLUSIVE REMEDY FOR ALL DEFECTS OF MATERIAL AND WORKMANSHIP. THIS WARRANTY IS IN LIEU OF ANY AND ALL OTHER EXPRESSED OR IMPLIED WARRANTIES. THERE ARE NO OTHER EXPRESSED OR IMPLIED WARRANTIES BEYOND THOSE SET FORTH HEREIN. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. IN ADDITION TO THE EXCLUSIONS SET FORTH IN THIS LIMITED WARRANTY, THIS WARRANTY DOES NOT APPLY TO DAMAGE DUE TO NEGLIGENT USE, MISUSE, ABUSE OR ACCIDENT INVOLVING ANY PART AND/OR ALL OF THE RECREATIONAL VEHICLE, OR THE REPAIR OR ALTERATION OF SUCH RECREATIONAL VEHICLE. ANY REPAIR OR ALTERATION TO THE RECREATIONAL VEHICLE SPECIFICALLY VOIDS THIS WARRANTY. ANY COMMERCIAL USE, RENTAL, OR BUSINESS USE OF THE RECREATIONAL VEHICLE VOIDS THIS AND ALL OTHER WARRANTIES PROVIDED BY WARRANTOR.

The sole remedy for a breach of the warranty is as follows. Defective parts and workmanship will be replaced by the Warrantor, or the Warrantor's authorized agent, provided that the following terms are met:

1. The Warrantor's authorized agent must be notified of the covered defect within the warranty period and within Twenty (20) days of when the defect was discovered or

should have been discovered by a reasonable person exercising reasonable care according to the terms of this Limited Warranty.

2. The person seeking the replacement of the defective part or labor must be the original retail consumer purchaser. Any assignment does not extend the Warranty Period.

3. The defective material or workmanship for which the warranty work and/or part is sought must be to the RECREATIONAL VEHICLE itself only.

4. The other terms and conditions of this Limited Warranty must be satisfied.

What types of things are excluded from the Warranty?

This Warranty does not cover:

A. Defects in any component parts or labor of the recreational vehicle which are not considered the RECREATIONAL VEHICLE or which were not manufactured by Warrantor;

B. Deterioration due to normal wear, tear, and exposure;

C. Repairs or replacements made necessary by negligence, negligent use of, misuse of, abuse of, loading the unit beyond its gross weight limitations, accidents, acts of God, modifications or alterations in or to the RECREATIONAL VEHICLE by anyone, and failure to maintain or care for the RECREATIONAL VEHICLE, and any and all matters which were not within the control of the Warrantor;

D. Neglect of the recreational vehicle or any part of it;

E. Repairs or replacements made necessary by reason of a failure of the original retail consumer purchaser or others to follow ordinary maintenance procedures as recommended by the Warrantor or the manufacturer or dealer of the recreational vehicle;

F. Any defect caused in-transit to or from a dealer or to or from the consumer or by the consumer or another;

G. Any defects in work, labor, materials or parts not actually manufactured by, performed by or made by Warrantor;

H. Tires;

I. Batteries;

J. Recreational vehicles purchased anywhere other than from an authorized Warrantor dealer;

K. Alterations, modifications or changes to the original design and build of the recreational vehicle;

L. Vehicles used for rental, business or disaster relief purposes;

M. Routine maintenance and adjustments;

N. Consequential/incidental expenses (damages) such as service calls, transportation, lodging, food, fuel, etc.

O. Fading, yellowing or aging of exterior materials due to UV or sunlight or weather exposure;

P. Damage that has occurred as a result of misuse, abuse, neglect, or lack of maintenance;

Q. Damage caused by unregulated water pressure, tank over-fill or plumbing system modifications resulting in flooding of the vehicle;

R. Damage caused by unprotected electrical hook-ups (home or campground), power surges, lightning, circuit overload or electrical system modifications;

S. Damage caused by overloading or improper weight distribution;

T. Damage caused by improper ventilation resulting in excessive condensation which results in water damage and/or mold or mildew;

U. Damage, fading or deterioration caused by prolonged exposure to natural elements;

V. Damage caused by infestation by insects or other animals;

W. Damage caused by the tow vehicle hitch, equalizer, stabilizer, electrical or brake controller system;

X. Damage caused by the environment or weather, including, but not limited to, flooding, high winds, acid rain, hail, lightning, high heat, extreme cold, etc.

Y. Damage caused by road surface conditions, applications of salt or de-icing chemicals, gravel/sand, ruts, holes, etc.;

Z. Exterior paint or finish which is warranted independently by the paint manufacturer and/or independent applicator;

AA. DEFACING: scratches, dents, and rust on any surface of the RECREATIONAL VEHICLE; and

AB. EXCESS weight on the RECREATIONAL VEHICLE.

WARRANTOR'S OBLIGATIONS — HOW TO GET WARRANTY SERVICES

How Do You Get Service?

In no event shall repair or replacement for a defect be covered under this Warranty unless the repair or replacement occurs at Warrantor's facilities, or Warrantor's designated repair shop or dealer. Upon discovery of any defect covered by this Warranty, you must notify the authorized dealer from whom you purchased the recreational vehicle. Following notification, the recreational vehicle must be taken to the authorized dealer from whom you purchased it for inspection or another authorized dealer, if authorized by Warrantor, or authorized repair shop as directed by Warrantor. Either that dealer or repair shop or Warrantor will undertake appropriate corrective repairs in instances where the defect is covered by this Warranty. Warrantor reserves the right to use or cause the use of alternative parts or components having substantially equal or greater quality.

Warrantor will remedy defects in materials and workmanship covered under this Limited Warranty under normal use and service caused by Warrantor in the RECREATIONAL VEHICLE ONLY of the recreational vehicle. Warranty performance can only be obtained at Warrantor's authorized dealers and service representatives. All costs incurred in transporting this recreational vehicle for warranty service shall be borne by purchaser.

What are purchaser's obligations?

The purchaser shall give notice to the Warrantor's agent or dealer within Twenty (20) days after it is or should have been discovered, and any action to enforce it shall be commenced not more than three (3) months thereafter; otherwise the Purchaser will have waived any such defect and claim, and any and all damages arising as a result thereof. The purchaser must perform reasonable and necessary maintenance upon the recreational vehicle and use the recreational vehicle in accordance with the manufacturer of the recreational vehicles and Warrantor's directions and recommendations. Among the other requirements under this Warranty, the Purchaser must also:

- Maintain the recreational vehicle in accordance with the maintenance requirements contained in the Owner's Manual;
- Make minor adjustments including (but limited to) doors, drawers, latches, regulators, controls, mechanisms, etc. after 90 days of ownership;
- Maintain all exterior seals and sealant, which must be inspected every 6 months to assure there are no gaps or voids, and correcting as necessary; and
- Return their vehicle to an authorized dealer for repairs.

If you believe that you have a claim under this Warranty, locate and contact your nearest authorized Warrantor dealer to schedule an appointment. Be prepared to provide your ve-

hicle serial number (VIN), date of purchase, and a description of the issue or concern. If you cannot locate a dealer, please go to the Warrantor's web site or contact Warrantor directly for immediate assistance.

What are the Dealer's Responsibilities?

- Perform a walk-through to assure that the customer understands the operation, use and safety requirements of the vehicle;
- Review vehicle warranties, operating manuals and instruction guides; and
- Inform the customer on how to obtain service, locally or while in transit;

Warrantor is not responsible or liable for any failures, breaches, negligence, inattention or problems on the part of the Dealer.

What events discharge Warrantor from the obligations under this Warranty?

Misuse or negligent use, abuse, or accident, neglect, unauthorized alteration, failure to provide reasonable and necessary maintenance including reasonable periodic inspections of the recreational vehicle and/or use of the recreational vehicle for rental, business or commercial use or any other use other than to use the recreational vehicle only for personal use, shall each discharge the Warrantor from any obligation under this Warranty. The recreational vehicle is designed for recreational and personal use.

Warranties of Other Manufacturers of Component Parts and Goods

It is the Purchaser's obligation to register and activate any warranties offered by the manufacturers of components parts and goods.

DISCLAIMER OF CONSEQUENTIAL, PUNITIVE AND INCIDENTAL DAMAGES

What other conditions or limitations apply to this Warranty?

The original retail purchaser of the recreational vehicle and any person to whom the recreational vehicle is transferred or given or conveyed, and any person who is an intended or unintended user or beneficiary of this Limited Warranty, shall not be entitled to recover from Warrantor any consequential, punitive or incidental damages resulting from any defect in the recreational vehicle, or loss of use, time or revenues. This warranty also excludes costs of transportation to any authorized dealer or service representative or to the Warrantor to get warranty service, loss of use of the recreational vehicle, loss of time, loss of revenues, inconvenience, or other incidental or consequential damage and any punitive damages, with respect to business or property, whether as a result of breach of warranty, negligence, or otherwise.

TO THE EXTENT NOT EXCLUDED IN THIS LIMITED WARRANTY, THE IMPLIED WARRANTY OF MERCHANTABILITY, AN UNWRITTEN WARRANTY THAT THE PRODUCT IS FIT FOR ORDINARY USE, IS LIMITED TO THE WARRANTY PERIOD OF THIS WRITTEN WARRANTY, AND ANY OTHER IMPLIED WARRANTY ARISING BY OPERATION OF LAW ARE SPECIFICALLY LIMITED TO THE WARRANTY PERIOD OF THIS WRITTEN WARRANTY TO THE EXTENT NOT ACTUALLY EXCLUDED IN THIS LIMITED WARRANTY.

IF ANY MODEL OR SAMPLE IS SHOWN TO THE PURCHASER PRIOR TO THE PURCHASE OF THE RECREATIONAL VEHICLE, SUCH SAMPLE OR MODEL WAS MERELY TO ILLUSTRATE A GENERAL TYPE OF QUALITY AND NOT TO REPRESENT THAT THE RECREATIONAL VEHICLE WOULD NECESSARILY CONFORM TO A SAMPLE OR MODEL AND SHALL NOT BE DEEMED TO BE PART OF THE BASIS OF THE BARGAIN OR CREATE ANY EXPRESSED WARRANTIES OR AFFIRMATIONS OR PROMISES.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

THE WARRANTOR EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ANY OTHER IMPLIED WARRANTIES.

THERE IS NO EXPRESS OR IMPLIED WARRANTY MADE BY WARRANTOR BEYOND THAT CONTAINED IN THE LIMITED WARRANTY ABOVE. THE ABOVE REFERENCED LIMITED WARRANTY IS IN LIEU OF ANY AND ALL OTHER WARRANTIES. TO ACTIVATE THE LIMITED WARRANTY, THE RECREATIONAL VEHICLE MUST BE REGISTERED WITHIN FIVE (5) DAYS OF THE DATE OF PURCHASE; OTHERWISE, THIS LIMITED WARRANTY WILL NOT BE EFFECTIVE. NO PERSON HAS THE AUTHORITY TO ENLARGE, AMEND, OR MODIFY THIS WARRANTY.

DESIGN CHANGES

Warrantor reserves the right to change the design of its RECREATIONAL VEHICLE from time to time without notice and without obligation to make corresponding changes in its products previously manufactured.

ATTORNEYS FEES

Any warranty claim asserted or brought in violation of this Limited Warranty, or any claim brought against WARRANTOR, directly or indirectly, under which the Purchaser or any other person or entity seeks to broaden the terms of the Limited Warranty or under which the Purchaser or any other person fails to successfully prevail on any issue or matter of any type

or nature, shall entitle Warrantor to recover its costs, damages, and reasonable attorney's fees in connection with the same.

How Does State Law Relate to This Warranty?

This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

By registering or having your recreational vehicle registered in your name, or by asserting a claim under this Limited Warranty, Purchaser (and all assigns) is agreeing on behalf of the purchaser and all assigns to be bound by the terms and conditions of this Limited Warranty.

VANLEIGH RV

THREE YEAR LIMITED STRUCTURAL WARRANTY

SUMMARY

What does this Warranty cover?

Vanleigh RV, Inc ("Warrantor") provides this Three (3) Year ("Warranty Period") Limited Structural Warranty [which begins to run from the earlier of (i) the date of purchase by the original retail consumer purchaser or (ii) when the recreational vehicle is put into service] against certain defects in materials and/or workmanship for the structural components manufactured by, and workmanship provided directly by, Warrantor arising under normal use and service to the structural components (as defined below) for the above described recreational vehicle of Warrantors to the ORIGINAL RETAIL CONSUMER PURCHASER for the Warranty Period. This Warranty only covers material components and parts of the Structural Components actually manufactured by and made by Warrantor and labor provided directly by Warrantor. In addition to the forgoing and the other limitations and restrictions set for in this limited warranty, this limited warranty only covers a recreational vehicle sold to the original retail customer by an authorized warrantor dealer within the thirty (30) day start period set forth above. This Warranty is not assignable to any person or entity.

"Structural Components" consist of: materials and/or workmanship directly attributable to Warrantor, namely, the laminated fiberglass sidewall assembly, laminated fiberglass rear wall assembly, laminated fiberglass front wall (wrap), sidewall/end wall/front and rear wall frame assembly (wood and aluminum), roof assembly, floor assembly and frame assembly.

THIS WARRANTY CONSTITUTES THE EXCLUSIVE REMEDY FOR ALL DEFECTS OF MATERIAL AND WORKMANSHIP. THIS WARRANTY IS IN LIEU OF ANY AND ALL OTHER EXPRESSED OR IMPLIED WARRANTIES. THERE ARE NO OTHER EXPRESSED OR IMPLIED

WARRANTIES BEYOND THOSE SET FORTH HEREIN. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. IN ADDITION TO THE EXCLUSIONS SET FORTH IN THIS LIMITED WARRANTY, THIS WARRANTY DOES NOT APPLY TO DAMAGE DUE TO NEGLIGENT USE, MISUSE, ABUSE OR ACCIDENT INVOLVING ANY PART AND/OR ALL OF THE STRUCTURAL COMPONENTS, OR THE REPAIR OR ALTERATION OF SUCH STRUCTURAL COMPONENTS. ANY REPAIR OR ALTERATION TO THE STRUCTURAL COMPONENTS SPECIFICALLY VOIDS THIS WARRANTY. ANY COMMERCIAL USE, RENTAL, OR BUSINESS USE OF THE RECREATIONAL VEHICLE VOIDS THIS AND ALL OTHER WARRANTIES PROVIDED BY WARRANTOR.

The sole remedy for a breach of the warranty is as follows. Defective parts and workmanship will be replaced by the Warrantor, or the Warrantor's authorized agent, provided that the following terms are met:

1. The Warrantor's authorized agent must be notified of the covered defect within the warranty period and within Twenty (20) days of when the defect was discovered or should have been discovered by a reasonable person exercising reasonable care according to the terms of this Limited Warranty.
2. The person seeking the replacement of the defective part or labor must be the original retail consumer purchaser. An assignment of the recreational vehicle to another person voids this Limited Warranty.
3. The defective material or workmanship for which the warranty work and/or part is sought must be to the STRUCTURAL COMPONENTS only.
4. The other terms and conditions of this Limited Warranty must be satisfied.

What types of things are excluded from the Warranty?

This Warranty does not cover:

A. Defects in any component parts or labor of the recreational vehicle which are not considered the STRUCTURAL COMPONENTS or which were not manufactured by Warrantor;

B. Defects in any items or labor which are covered by a separate warranty from the original manufacturer of any part that is used by Warrantor in the STRUCTURAL COMPONENTS;

C. Deterioration due to normal wear, tear, and exposure;

D. Repairs or replacements made necessary by negligence, negligent use of, misuse of, abuse of, loading the unit beyond its gross weight limitations, accidents, acts of God, modifications or alterations in or to the STRUCTURAL COMPONENTS by anyone, and failure to maintain or care for the STRUCTURAL COMPONENTS, and any and all matters which were not within the control of the Warrantor;

E. Neglect of the recreational vehicle or STRUCTURAL COMPONENTS;

F. Repairs or replacements made necessary by reason of a failure of the original retail consumer purchaser or others to follow ordinary maintenance procedures as recommended by the Warrantor or the manufacturer or dealer of the Structural Components;

G. Any defect caused in-transit to or from a dealer or to or from the consumer or by the consumer or another;

H. Any defects in work, labor, materials or parts not actually manufactured by, performed by or made by Warrantor;

I. Front and rear fiberglass caps and any other cosmetic fiberglass attachments;

J. Sidewall metal (unless the root cause is the wall structure);

K. Exterior roof material (EPDM rubber, TPO, etc.);

L. Floor covering (carpet, linoleum, hardwood, tile, etc.);

M. All sidewall, end wall, front and rear wall, roof and floor attachments;

N. Delamination caused by water intrusion from lack of required exterior seal maintenance;

O. Vehicles purchased anywhere other than from an authorized Warrantor dealer;

P. Alterations, modifications or changes to the original design and build of the recreational vehicle;

Q. Vehicles used for rental, business or disaster relief purposes;

R. Routine maintenance and adjustments;

S. Vehicles registered and used outside the U.S. and Canada;

T. Consequential/incidental expenses (damages) such as service calls, transportation, lodging, food, fuel, etc.;

U. Fading, yellowing or aging of exterior materials due to UV or sunlight or weather exposure;

V. Damage that has occurred as a result of misuse, abuse, neglect, or lack of maintenance;

W. Damage caused by unregulated water pressure, tank over-fill or plumbing system modifications resulting in flooding of the vehicle;

X. Damage caused by unprotected electrical hook-ups (home or campground), power surges, lightning, circuit overload or electrical system modifications;

Y. Damage caused by overloading or improper weight distribution;

Z. Damage caused by improper ventilation resulting in excessive condensation which results in water damage and/or mold or mildew;

AA. Damage, fading or deterioration caused by prolonged exposure to natural elements;

AB. Damage caused by infestation by insects or other animals;

AC. Damage caused by the tow vehicle hitch, equalizer, stabilizer, electrical or brake controller system;

AD. Damage caused by the environment or weather, including, but not limited to, flooding, high winds, acid rain, hail, lightning, high heat, extreme cold, etc.

AE. Damage caused by road surface conditions (gravel/sand, ruts, potholes, etc.); applications of salt or de-icing chemicals resulting in rust.

AF. Exterior paint or finish which is warranted independently by the paint manufacturer and/or independent applicator;

AG. Defacing: scratches, dents, and rust on any surface of the STRUCTURAL COMPONENTS; and

AH. Excess weight on the STRUCTURAL COMPONENTS.

WARRANTOR'S OBLIGATIONS — HOW TO GET WARRANTY SERVICES

How Do You Get Service?

In no event shall repair or replacement for a defect be covered under this Warranty unless the repair or replacement occurs at Warrantor's facilities, or Warrantor's designated repair shop or dealer. Upon discovery of any defect covered by this Warranty, you must notify the authorized dealer from whom you purchased the recreational vehicle. You must always notify the Warrantor as well even if you contact the dealer from whom you purchased the recreational vehicle. Following notification, the recreational vehicle must be taken to the authorized dealer from whom you purchased it for inspection or another authorized dealer, if authorized by Warrantor, or authorized repair shop as directed by Warrantor. Either that dealer or repair shop or Warrantor will undertake appropriate corrective repairs in instances where the defect is covered by this Warranty. However, no work may be performed to the STRUCTURAL COMPONENTS without the prior authorization of the Warrantor. And, Warrantor reserves the right to use or cause the use of alternative parts or components having substantially equal or greater quality.

Warrantor will remedy defects in materials and workmanship covered under this Limited Warranty under normal use and service caused by Warrantor in the STRUCTURAL COMPO-

NENTS ONLY of the recreational vehicle. Warranty performance can only be obtained at Warrantor's authorized dealers and service representatives. All costs incurred in transporting this recreational vehicle for warranty service shall be borne by purchaser unless otherwise approved in advance by Warrantor.

What are purchaser's obligations?

The purchaser shall give written notice to the Warrantor or an Authorized Dealer of any defect within Twenty (20) days after it is or should have been discovered, and any action to enforce it shall be commenced not more than three (3) months thereafter; otherwise the Purchaser will have waived any such defect and claim, and any and all damages arising as a result thereof. The purchaser must perform reasonable and necessary maintenance upon the recreational vehicle and STRUCTURAL COMPONENTS and use the recreational vehicle and STRUCTURAL COMPONENTS in accordance with the recreational vehicle manufacturer and Warrantor's directions and recommendations. Among the other requirements under this Warranty, the Purchaser must also:

- Maintain the recreational vehicle in accordance with the maintenance requirements contained in the Owner's Manual; and
- Maintain all exterior seals and sealant, which must be inspected every six (6) months to assure there are no gaps or voids, and all gaps and voids must be corrected as necessary. Documentation acceptable to Warrantor must be presented confirming completion of an annual sealant inspection by an authorized Warrantor dealer or authorized dealer repair shop for coverage consideration.

If you believe that you have a claim under this Warranty, locate and contact your nearest authorized Warrantor dealer to schedule an appointment. Be prepared to provide your vehicle serial number (VIN), date of purchase, and a description of the issue or concern. If you cannot locate a dealer, please go to the Warrantor's web site or contact Warrantor directly for immediate assistance.

What events discharge Warrantor from the obligations under this Warranty?

Misuse or negligent use, abuse, or accident, neglect, unauthorized alteration, failure to provide reasonable and necessary maintenance including reasonable periodic inspections of the recreational vehicle and STRUCTURAL COMPONENTS and/or use of the recreational vehicle for rental, business or commercial use or any other use other than to use the recreational vehicle only for personal use, shall each discharge the Warrantor from any obligation under this Warranty. The Structural Components in the recreational vehicle are designed for recreational and personal use.

DISCLAIMER OF CONSEQUENTIAL, PUNITIVE AND INCIDENTAL DAMAGES

What other conditions or limitations apply to this Warranty?

The original retail purchaser of the recreational vehicle and any person to whom the recreational vehicle is transferred or given or conveyed, and any person who is an intended or unintended user or beneficiary of this Limited Warranty, shall not be entitled to recover from Warrantor any consequential, punitive or incidental damages resulting from any defect in the recreational vehicle, or loss of use, time or revenues. This warranty also excludes costs of transportation to any authorized dealer or service representative or to the Warrantor to get warranty service, loss of use of the recreational vehicle, loss of time, loss of revenues, inconvenience, or other incidental or consequential damage and any punitive damages, with respect to business or property, whether as a result of breach of warranty, negligence, or otherwise

TO THE EXTENT NOT EXCLUDED IN THIS LIMITED WARRANTY, THE IMPLIED WARRANTY OF MERCHANTABILITY, AN UNWRITTEN WARRANTY THAT THE PRODUCT IS FIT FOR ORDINARY USE, IS LIMITED TO THE WARRANTY PERIOD OF THIS WRITTEN WARRANTY, AND ANY OTHER IMPLIED WARRANTY ARISING BY OPERATION OF LAW ARE SPECIFICALLY LIMITED TO THE WARRANTY PERIOD OF THIS WRITTEN WARRANTY TO THE EXTENT NOT ACTUALLY EXCLUDED IN THIS LIMITED WARRANTY.

IF ANY MODEL OR SAMPLE IS SHOWN TO THE PURCHASER PRIOR TO THE PURCHASE OF THE RECREATIONAL VEHICLE/STRUCTURAL COMPONENTS, SUCH SAMPLE OR MODEL WAS MERELY TO ILLUSTRATE A GENERAL TYPE OF QUALITY AND NOT TO REPRESENT THAT THE RECREATIONAL VEHICLE/STRUCTURAL COMPONENTS WOULD NECESSARILY CONFORM TO A SAMPLE OR MODEL AND SHALL NOT BE DEEMED TO BE PART OF THE BASIS OF THE BARGAIN OR CREATE ANY EXPRESSED WARRANTIES OR AFFIRMATIONS OR PROMISES.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

THE WARRANTOR EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ANY OTHER IMPLIED WARRANTIES.

THERE IS NO EXPRESS OR IMPLIED WARRANTY MADE BY WARRANTOR BEYOND THAT CONTAINED IN THE LIMITED WARRANTY ABOVE. THE ABOVE REFERENCED LIMITED WARRANTY IS IN LIEU OF ANY AND ALL OTHER WARRANTIES. TO ACTIVATE THE LIMITED WARRANTY, YOU MUST RETURN THE ATTACHED NOTICE TO WARRANTOR WITHIN THIRTY (30) DAYS OF THE DATE OF PURCHASE; OTHERWISE, THIS LIMITED WARRANTY

WILL NOT BE EFFECTIVE. NO PERSON HAS THE AUTHORITY TO ENLARGE, AMEND, OR MODIFY THIS WARRANTY.

DESIGN CHANGES

Warrantor reserves the right to change the design of its STRUCTURAL COMPONENTS from time to time without notice and without obligation to make corresponding changes in its products previously manufactured.

ATTORNEYS FEES

Any warranty claim asserted or brought in violation of this Limited Warranty, or any claim brought against WARRANTOR, directly or indirectly, under which the Purchaser or any other person or entity seeks to broaden the terms of the Limited Warranty or under which the Purchaser or any other person fails to successfully prevail on any issue or matter of any type or nature, shall entitle Warrantor to recover its costs, damages, and reasonable attorney's fees in connection with the same.

How Does State Law Relate to This Warranty?

This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state

How Does State Law Relate to This Warranty?

This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

By registering, or having your recreational vehicle registered in your name, or by asserting a claim under this Limited Warranty, Purchaser (and all assigns) is agreeing on behalf of Purchaser and all assigns to be bound by the terms and conditions of this Limited Warranty.

COMPONENT SUPPLIER CONTACT INFORMATION

All component suppliers listed are correct at the time of publication. Vanleigh RV may change components at their consideration. Please contact Vanleigh RV Customer Support with any questions or concerns.

Table 2. *Component Supplier Contact Information*

Component	Brand	Supplier Website	Phone Number
Air Conditioner	Coleman Mach A/C	www.airxcel.com	(316) 832-3400
Awning(s)	Carefree of Colorado	www.carefreeofcolorado.com	(303) 469-3324
Axles	Lippert Components	www.lci1.com	(574) 537-8900
Baggage Doors	Lippert Components	www.lci1.com	(574) 537-8900
Entry Door	Lippert Components	www.lci1.com	(574) 537-8900
Entry Steps	Lippert Components	www.lci1.com	(574) 537-8900
Fan-tastic Fans	Dometic	www.dometic.com	(800) 544-4881
Fireplace	Furrion	www.furrion.com	(888) 354-5792
Frame	Lippert Components	www.lci1.com	(574) 537-8900
Furnace	Suburban	www.airxcel.com	(316) 832-3400
Inverter	1000W Sensata Tech	www.sensata.com	(508) 236-3800
Leveling System	Lippert Components	www.lci1.com	(574) 537-8900
Load Center	Progressive Dynamics	www.progressivedyn.com	(269) 781-4242
Microwave	Furrion	www.furrion.com	(888) 354-5792
Pin Box	Lippert Components	www.lci1.com	(574) 537-8900
Propane Alarm	RV Safe	www.rvsafealarm.com	(714) 934-8512
Range with Oven	Insignia	www.insigniaproducts.com	(877) 467-4289
Refrigerator	Samsung	www.samsung.com	(800) 726-7864
Roof Membrane	Dicor Products	www.dicorproducts.com	(800) 837-2059
Shades	Irvine Shade	www.irvineshadeanddoor.com	(574) 522-1446
Slideout Components	Lippert Components	www.lci1.com	(574) 537-8900
Sofas	Franklin	www.franklincorp.com	(662) 456-4286
Spyder Control Center	Spyder Company	www.spydercontrols.com	(866) 919-9092
Stereo	Furrion	www.furrion.com	(888) 354-5792
Suspension system	Lippert Components	www.lci1.com	(574) 537-8900
Televisions	LG	www.lg.com	(800) 243-0000

Component	Brand	Supplier Website	Phone Number
Tires and Wheels	Westlake from Lionshead Tire & Wheel	www.lionsheadtireandwheel.com	(574) 533-6169
Toilets	Thetford	www.thetford.com	(800) 543-1219
TV Antenna	King	www.kingconnect.com	(303) 772-9591
Water Heater	Atwood (Standard)	www.atwoodmobile.com	(800) 544-4881
	Truma (Optional)	www.truma.net	(855) 558-7862
Water Pump	Shurflo by Pentair	www.pentair.com	(800) 782-7483
Wine Chiller	Avanti	www.avantiproduts.com	(800) 220-5570

COMPONENT MANUFACTURER WARRANTY INFORMATION

All component suppliers listed are correct at the time of publication. Vanleigh RV may change components at their consideration. Please contact Vanleigh RV Customer Support with any questions or concerns.

Table 3. *Component Manufacturers Limited Warranty Information*

Component	Brand	Manufacturer Warranty
Air Conditioner	Coleman Mach A/C	Limited two year warranty transferable from owner to owner.
Awning(s)	Carefree of Colorado	One year parts and service warranty. Original owner only.
Axles	Lippert Components	Three year warranty from date of purchase. Original owner only.
Baggage Doors	Lippert Components	One year warranty from date of purchase. Original owner only.
Entry Door	Lippert Components	One year warranty from date of purchase. Original owner only.
Entry Steps	Lippert Components	One year warranty from date of purchase. Original owner only.
Fan-tastic Fans	Dometic	One year warranty from date of purchase.
Fireplace	Furrion	One year limited warranty.
Frame	Lippert Components	Three year warranty from date of purchase. Original owner only.

Component	Brand	Manufacturer Warranty
Furnace	Suburban	Two year limited warranty.
Inverter	1000W Sensata Tech	One year limited warranty.
Leveling System	Lippert Components	One year warranty from date of purchase. Original owner only.
Load Center	Progressive Dynamics	Two year limited warranty.
Microwave	Furrion	One year warranty.
Pin Box	Lippert Components	Three year warranty from date of purchase. Original owner only.
Propane Alarm	RV Safe	One year warranty from date of purchase.
Range with Oven	Furrion Components	One year warranty from date of purchase. Original owner only. Please double check this.
	Insignia	One year warranty from date of purchase. Original owner only. Please double check this.
Refrigerator	Samsung	Must register product with Samsung. One year warranty.
Roof Membrane	Dicor Products	Twelve year limited warranty.
Slideout Components	Lippert Components	One year warranty from date of purchase. Original owner only.
Sofas	Franklin	One year limited warranty.
Stereo	Furrion	One year limited warranty.
Suspension System	Lippert Components	Three year limited warranty from date of purchase. Original owner only.
Televisions	LG	1 year warranty, plus parts and labor.
Tires and Wheels	Westlake from Lionshead Tire & Wheel	Limited warranty for forty-eight months from date of tire manufacture.
Toilet	Thetford	One year limited warranty.
TV Antenna	King	One year limited warranty.
	Winegard	One year limited warranty.
Water Heater	Atwood	Two year limited warranty from date of purchase. Original owner only.
	Truma	12 month year limited warranty from date of purchase. Register your water heater to receive an additional 12 months.

Component	Brand	Manufacturer Warranty
Water Pump	Shurflo by Pentair	One year limited warranty
Windows	Lippert Components	One year limited warranty from date of purchase. Original owner only.
Wine Chiller	Avanti Products	One year limited warranty from date of purchase. Original owner only.

Each manufacturer provides their own warranty for the components on your Vilano. This warranty information is current at the time printing, but is subject to change at any time per the manufacturer. Details can be found on the company websites listed or by contacting them directly. See previous page, Component Supplier Contact Information.

OCCUPANT SAFETY

Your Vilano Fifth Wheel is constructed with safety as the top priority. This fifth wheel meets or exceeds the safety requirements and suitable codes in effect at the time it is built. All mandatory safety items are attentively installed to protect you and the tenants of your RV.

FAMILY SAFETY PLAN

In case of emergency or severe weather conditions, we advise that you develop a Family Safety Plan. Practice to perfect the safety plan with your entire family, especially young children.

- Please read and become familiar with the locations of all doors, emergency exits, and all safety equipment before camping.
- Explain to everyone on the RV what the safety alarm signals represent, and how to evacuate the coach in case of an emergency.
- There should be a minimum of one way to exit the coach without having to open a door. Provide everyone involved with a drawn-out floor plan to find two emergency exits.
- In case of emergency, teach every person to stay low if there is presence of smoke, gases, or fumes to prevent injury. Also, show everyone how to check for a fire by feeling the door without opening it.
- You should decide on one meeting place to gather and wait until all family members are present. The specified meeting place should be a safe distance from your fifth wheel.
- During an emergency, make sure every person knows where to go to call 911 or the fire department while outside of the RV.
- Every six months, make sure that you are conducting safety drills and examples of evacuation to everyone including guests.
- Practice a real fire emergency exit by blindfolding yourself while exiting the RV. During a fire, the black smoke that is produced makes it impossible to see.
- Make sure an out-of-state relative or friend has updated information for the contact person such as name, address, phone number, and email.

ELECTRICAL

Careless handling of electrical components can be fatal. The following guidelines must be followed to avoid significant risk of bodily injury or death:

- Never touch or use electrical components while feet are bare, while hands are wet, or while standing in water.
- Improper grounding of the vehicle can cause personal injury.
- Do not attach an extension cord to the utility power cord.
- Do not use any electrical device that has had the ground pin removed.
- Avoid overloading electrical circuits. Replace fuses or circuit breakers with those of the same sized amperage rating only. NEVER use a higher rated fuse or breaker.

PET SAFETY

As a pet owner, it is vital that you have a safety plan in place ahead of time. A shelter is not a safe place for pets because of space and health reasons. When preparing a safety plan, you need to take into consideration at least a three-day supply of dry food only and water bowl.

EMERGENCY WEATHER PLANNING

Earthquakes, hurricanes, hail, thunderstorms, strong winds, tornadoes, etc. can be very hazardous and cause corruption to your RV. Sometimes weather strikes with little to no warning at all. When camping, you always need to take into consideration severe weather.

The weather radio offers a 24 hour-a-day weather updates and forecasts from the National Weather Service (NWS). When traveling in your RV, you may want to examine purchasing a weather radio or locating local radio and TV stations. If you do not have access to either of these, investigate other arrangements to make.

The frequencies used by the US National Oceanic and Atmospheric Administration (NOAA) weather radio stations are 162.400, 162.425, 162.450, 162.475, 162.500, 162.525, or 162.550 megahertz or visit their website www.noaa.gov.

Repairing severe weather damage

- If your RV needs repair or service, you will need to report your claim to your insurance company as soon as possible.

FIRE SAFETY

Please REFRAIN from the three most frequent Fire Safety problems: use of flammable cleaning products, leaving children unattended, and smoking in bed.

- In case of a fire emergency, EVACUATE the RV first, then call 911 from a safe location.

- In a fire emergency, perform your Family Safety Plan.
- Make sure everyone knows how to Stop, Drop & Roll if their clothes or any part of them catches on fire.
- Stop where you are. Do not try to run.
- Drop down to the ground.
- Roll back and forth while placing your hands over your face as protection from the fire.
- Monitor children around any open flame, including campfires and grills.
- Demonstrate how to safely build a campfire away from bushes and/or trees.
- When cooking or preparing a campfire, make sure that the fire is at least three feet away from leaves, pine needles, dry grass, or anything that will easily catch on fire.
- Never leave an active fire or cigarette abandoned. There should always be a quick accessible fire extinguisher ready for use at all times.
- Demonstrate how to change the fire extinguisher to all family members in case it is needed.
- Combustible elements MUST NOT be stored in closed in areas or near a heated source.
- During an electrical fire, water can spread and cause electrocution hazards.
- NEVER use water to put out a grease fire.
- No matter how small the fire is, ALWAYS call the Fire Department.

More information on firefighting can be found at the National Fire Protection Association website (www.nfpa.org).

FIRE EXTINGUISHER

Fire can spread very quickly, so the escape plan is highly important. EVERY person should evacuate the coach in case of an emergency.

Household fire extinguishers are classified into four types by Underwriters Laboratories (UL):

Table 4. *Fire Extinguisher Types*

Rating	Intended Use
Type A	For use on fires involving combustible materials such as wood, cloth and paper.

Rating	Intended Use
Type B	For use on flammable liquid fires, including kitchen grease.
	NEVER use water on this type of fire.
Type C	For use on fires involving energized electrical equipment.
Type ABC	Works on all three types of fires listed above.

A small portable extinguisher will be able to maintain a fire until the fire department arrives, but they do have limitations. Near the entry door of your coach, there is a Class B/ Class C fire extinguisher that can be used in case of an emergency.

Figure 3. *Fire Extinguisher*

Operation

To operate a fire extinguisher, remember the word: P.A.S.S.

Pull the pin. Hold the extinguisher with the nozzle pointing away from you, and release the locking mechanism.

Aim low. Point the extinguisher at the base of the fire.

Squeeze the lever slowly and evenly.

Sweep the nozzle from side-to-side until the fire is out.

ALWAYS keep your back to an open exit in case you need to escape quickly when using a fire extinguisher. If the fire cannot be contained, evacuate immediately before the room is contaminated by smoke.

Most all fire extinguishers operate similarly to each other, but they are produced in various sizes and types.

Disposal

BEFORE dispensing your used fire extinguisher, check the local laws. To locate the law on dispensing, call the local sanitation, fire or environmental protection department.

EMERGENCY EGRESS WINDOW

During an emergency, if the door suddenly becomes blocked, then you should use the secondary exit called Emergency Egress Window. Every person in the coach should be aware of how to correctly operate the egress window in case of an emergency. The egress window might take up more space in the window. Each egress window has a noticeable sticker with a red handle.

Figure 4. *Emergency Egress Window*

- For safety reasons, when you arrive at the campsite be mindful that the egress window should never be blocked.
- When finding a place to park, monitor your surroundings around the egress window and make sure that the ground is safe to escape in case of an emergency.

- Make sure that every person in the RV is aware of the operations of the egress window and aware of the information given on the label.
- An escape plan should be set using the front and the back of the RV.
- Everyone in the RV should be aware of who will exit the egress window first and how they will exit.
- When using the exit window, provide cushion between yourself and the frame.
- In case of a fire, those who exit the RV first should be able to aid those who have not exited.
- Always have a safe meeting place away from the RV.

SMOKE ALARM

The smoke alarm is wired to go off once the smoke makes contact with the alarm. The alarm is created for your safety. In your RV, the smoke alarm is placed above the stairway on the ceiling.

Figure 5. *Smoke Alarm*

- It is highly important that all smoke alarms are maintained, located, and installed for correct use.
- **People who are deaf or hard-of-hearing should install alarms with strobe (flashing) lights** that have been tested by an independent testing laboratory.

Operation

When the smoke alarm identifies smoke, the alarm will continue to sound until the air is safe. If the red light is flashing, then that means the 9-volt battery is installed properly.

If the smoke alarm sounds

When the alarm is sounding, you will see a red light flashing quickly along with a loud horn sound.

- As soon as the alarm sounds, it is imperative that you take it seriously and act instantly.
- **You should never ignore any alarm. It is for your safety.**
- FIRST, you should evacuate the RV.
- Then call 911 from your safe meeting place.

How to test

One every three months, text your smoke alarm. While testing your alarm, stand a few feet back so that it does not cause damage to your hearing.

1. Hold down the test button until it alarms. After releasing your finger, it might still sound for a couple seconds but do not be concerned that is normal.
2. If the alarm does not sound, then check the amount of power the alarm is getting and retest.
3. If it still does not sound, replace the battery or alarm as quickly as possible.

Battery

The most important step in maintaining your smoke alarm is making sure your 9-volt battery is good and properly installed. Your alarm will not work if your battery is either dead, or has been removed. Checking and replacing the battery will eliminate the high pitch beep sound that can come from your smoke detector as the battery becomes weak. When this sound occurs, it is your reminder to check your unit to ensure it is working. As a guideline, you should change the battery in your smoke detector every six months. Do not ever disconnect any part of the fire alarm to silence it.

Maintenance

A second step in maintaining your alarm for optimum operation is wiping the exterior cover with a soft cloth to remove any dust or particles that may have settled on it. Never paint, cover, or place any object over the smoke alarm as it will interfere with its ability to function.

CARBON MONOXIDE (CO)

Carbon monoxide, known as CO, is a tasteless, colorless, odorless gas produced by burning gasoline, wood, propane, or other fuel. In sufficient concentrations, CO kills by asphyxiation. In lesser amounts, CO makes the victim groggy, lethargic, and unable to think clearly or quickly. Improper ventilation of appliances and engines may allow carbon monoxide to accumulate to dangerous levels. Always check in and around your RV for any exhaust or propane system defects. Be mindful that pets and young children are the first to be affected.

CO is one of the products of combustion for many materials including petroleum-based products (e.g., gasoline, diesel fuel, propane, butane; among others). Since many of the appliances associated with the RV produce CO in their normal operations, it is necessary to assure that CO levels do not rise to dangerous levels within the RV. In sufficiently high concentrations, CO can kill in minutes.

The following symptoms are related to CO exposure or poisoning:

- Dull headache, weakness, dizziness, nausea or vomiting, shortness of breath, confusion, blurred vision, loss of consciousness
- **Seek immediate medical attention if anyone exhibits these symptoms.**

CO/LP GAS ALARM

Since LP gas is denser than air, the LP gas will naturally settle to the lowest point in an enclosed space. In the RV, this would be the floor.

Because of this, the CO/LP-gas detector is necessarily mounted close to the floor. To activate the CO/ LP-gas sensor on this detector for the first time, remove the sensor or activation strip, if such was not performed during the pre-delivery inspection.

If the alarm persists in re-arming and giving further alarms, ventilate the RV by opening doors and windows and then check for possible LP-gas leaks. If the leak cannot be readily found, close the main valve to the LP tank, turn “off” all gas appliances, and then take the RV to a qualified service technician after the ventilation process is concluded and the doors and windows again shut.

The single, compact system provides a powerful combined alarm that detects both carbon monoxide (CO) and explosive gases propane (LPG) and methane (natural gas). This detector uses the latest microprocessor technology combined with two electronic, self-cleaning

sensors that operate independently of each other. The combined unit can detect both CO and explosive gases simultaneously.

Figure 6. *Propane/CO Alarm*

See "Indoor Air Quality" on page 52 and "Chemical Sensitivity & Offgassing" on page 53.

If the alarm sounds

1. EVERYONE should exit the fifth wheel. Allow the inside of the coach to vent by opening windows, etc. Then meet your family at the safety location that you previously established.
2. On the LP tank valve, there is a shut off switch to stop the gas supply. This shuts off the water heater, furnace, stove, etc.
3. DO NOT use/touch electronics including phones or touch anything that has an electrical switch.

Until the problem is fixed, DO NOT go in your RV.

1. DO NOT access any generator or engine.
2. For gas or technical repairs, contact the nearby service area that is qualified in repairing RVs.

If there is not a qualified technician that is able to help for service, then contact the closest fire department.

3. If the propane alarm continues to sound, that might indicate that there is an LP leak.

- Until the leak is corrected, you should not turn the gas.

You should contact your local dealer if you would like service on your propane gas before using it.

Testing the CO/propane gas alarm

If you are camping, storing, or traveling frequently, then you should test the gas alarm after each of these events.

4. Once every three months, test the propane alarm.
5. Replace the alarm instantly if it does not pass the test.
6. Press the TEST button to reset.
7. The alarm will sound two times.
8. To get back to normal operations, the light will turn red for eight seconds, then it will proceed to turn green once it is reset.

The CO/LP detector is hardwired to the 12V batteries and is a constant, small draw. It can eventually drain the batteries. **When the alarm has low voltage, it will not be able to reveal the threatening levels of the LP.** If the voltage falls below 8V, the warning signal will sound.

INDOOR AIR QUALITY

Enhancing your air quality:

- Open the windows and get fresh air.
- Controlling mold inside your RV:
  - Frequently clean the kitchen and the bathroom.
  - Repair water leaks.
  - When you are powering your AC, make sure that all of the windows are closed.
  - If there is any mold present, use 1 gallon of water with no more than 1 cup of bleach to clean it up.
  - Ammonia and bleach should never be mixed together.
- The interior should be dusted frequently to clean any dust particles or pet hair.
- Bug spray should never be used inside your fifth wheel.
- Smoking inside your fifth wheel releases tobacco and other substances into the air and may cause damage.

EPA recommendations

Environmental Protection Agency, (EPA) provides three methods for better air quality:

1. **Eliminated sources:** To lessen the source of pollution, see the following elements that contribute to contaminating the air and limiting them will help with better air quality:

    - Insects, paint, cleaning products, mold, bacteria, pollen, viruses, and animal fur.

2. **Ventilation:** Listed are some ways to allow fresh air to enter your RV: activating fans, furnace, opening windows, doors, vent fans, and exhaust vents. Allowing fresh air from outside will help reduce the amount of pollutants in your fifth wheel.

See "Chemical Sensitivity & Offgassing" on page 53 and "Tips to controlling condensation" on page 55.

3. **Air Cleaners (customer supplied):** For the air cleaner to work efficiently, the circulation and filter need to be working properly. The purpose for an air cleaner is to purify the air. It requires enough air coming through to filter the particles trying to stay inside.

4. One function that air cleaners usually do not serve is cleaning gaseous particles. Be mindful of the brand that you purchase, because a few might not serve its full purpose. There are multiple brands and sizes that are available.

CHEMICAL SENSITIVITY & OFFGASSING

If you have recently purchased your fifth wheel or had it in storage for a period of time, do not be alarmed if you smell the presence of a chemical odor . It is not abnormal.

Offgassing is the process of a gas being released into the air after being dissolved into another material.

During the construction process of your fifth wheel, things such as OSB, aluminum, carpet, insulation, etc. are used. Over time, these materials can cause an offgas of a variety of chemicals. Some of which might contain formaldehyde. Humidity and high temperatures can cause the offgas to begin.

Anyone who has a history of lung problems, asthma or allergies, will be more vulnerable to the consequences of out-gassing. Young children as well as older men and women need to protect themselves as much as possible from these chemicals. Symptoms might include: head-ache, sore throat, itchy eyes and nose, and even asthma related symptoms.

FORMALDEHYDE

Formaldehyde is a chemical that is very hypersensitive for some people while others it is not an issue. The reason for so much safety consideration is based off of the sensitivity of formaldehyde.

Another reason to be safe with formaldehyde is because cleaners, coatings, cooking, and smoking can release the chemical into the air. In the construction process, formaldehyde is a naturally occurring chemical that is used.

California Air Resource Board (CARB) Notice

Formaldehyde is used widely in building materials such as pressed wood products, particleboard, hardwood plywood paneling, medium density fiberboard (MDF), and plywood which are commonly used throughout the Recreational Vehicle Industry. As mandated by the RV Industry, Vanleigh RV recreation vehicles contain composite wood products (hardwood plywood, particle board, and MDF) that comply with the California Air Resource Board (CARB) formaldehyde emission standards under California Code of Regulations ß 93120.2(a) Phase 2 (P2).

Figure 7. *CARB Notice Label*

EFFECTS OF PROLONGED OCCUPANCY

Your RV is designed primarily for recreational and extended stay use. Be prepared to deal with condensation and the humid conditions that may be encountered, if you plan to occupy your RV for an extended period. Modern RVs have a relatively small volume due to their compact construction. The normal living activities of even a few occupants in the RV, can lead to rapid moisture saturation of the air inside and the appearance of visible moisture, especially in cold weather.

CONDENSATION

Condensation refers to the water droplets that appear on a cold surface as water vapor in the air cools, changing to liquid water. In cold weather, it may be seen as frost or ice. Moisture can condense on the inside of an RV during cold weather the same way that moisture collects on the outside of a cold glass during humid weather.

Condensation may also collect out of sight within the walls or ceiling, causing warped or stained panels. Appearance of these conditions may indicate a serious condensation problem. To minimize condensation inside your RV, moisture in the air must be carried outside by ventilation, or removed with a dehumidifier (customer supplied).

Tips to controlling condensation

To help alleviate excess moisture, use these tips:

- Allow excess moisture to escape to the outside when bathing, washing dishes, hair drying, laundering and using appliances and non-vented gas burners.
- Keep the bathroom door closed and roof vent opened (if equipped, exhaust fan on) when bathing/showering and for a period of time after you have finished.
- DO NOT hang wet clothes in the RV to dry.
- Use a fan to keep air circulating inside the vehicle so condensation and mildew cannot form in dead air spaces.
- Allow air to circulate, keeping the temperature the same throughout the RV, even inside the cabinets.
    - Leave closet and cabinet doors partially open.
    - A closed cabinet full of stored goods will prevent circulation and can cause condensation.

In hot weather

- Start the air conditioner early in the day to remove excess humidity from the air while lowering the temperature.
- If the entry door is open for an extended amount of time while the air conditioners are on, condensation will occur.

In cold weather

- During cold weather it is very important to continue utilizing your vents and vent fans. This will keep the humid air inside moving to the outside. Keeping the RV tightly closed during cold weather will increase condensation.

- Manage the inside temperature during cold weather. The warmer temperatures inside your RV will cause condensation to form on areas that are not well insulated (ie., windows, vents, wall studs, etc.).

WHERE THERE IS MOISTURE, THERE MAY BE MOLD

Mold is a microscopic organism that can live in virtually any indoor or outdoor environment. Mold growth requires a source of moisture (ie., high humidity, wet/damp materials, standing water) and a temperature between 40° and 100° Fahrenheit.

According to the Center for Disease Control, exposure to damp and moldy environments may cause a variety of health defects, or none at all.

- For people sensitive to mold, mold exposure may cause nasal congestion, coughing, wheezing, and/or irritation of the eyes, throat, or skin.
- People with mold allergies may have more severe reactions to mold exposure. Immune-compromised people and those with chronic lung illnesses, like obstructive lung disease, risk serious lung infections.

Mold growth can be very harmful to the natural wood products and fabrics in your RV. Follow these tips to help control the relative humidity inside your RV and inhibit mold and mildew:

- While cooking and bathing, ALWAYS use the kitchen and bathroom vents, even during colder weather.
- In addition, opening a window will increase ventilation during these activities.
- Running your air conditioner will also reduce the relative humidity.
- In extremely humid conditions, using a dehumidifier (customer supplied) can be helpful.

Mold Prevention

To help protect your RV from mold, follow these important preventative measures:

- Clean regularly, especially the kitchen and bathroom. On safe surfaces, use cleaning products that kill mold and mildew.
- Any spills should be wiped up and dried right away.
- DO NOT leave any damp items inside the RV.
- Check seals regularly. Reseal as needed to avoid water leaks.

COLD WEATHER USE

Please keep in mind, that your RV is not designed for use during sub-freezing weather. If you plan to use your RV in freezing (or below freezing) temperatures, the following precautions MUST to be taken:

- The freshwater and waste systems require added protection to avoid freezing.
- More frequent furnace operation, substantially increases battery draw and propane use. Sufficient power and propane are required to protect against possible freeze-ups on the propane regulator.
- Proper ventilation or the addition of a dehumidifier may be required to reduce condensation.
- To avoid damage to parts, CHECK the outside of the RV for ice BEFORE operating the: slide outs, compartment doors, locks, windows, vents etc.
- Turn on the tank heater

If you have further questions, please contact your dealer or Vanleigh RV Customer Service.

Vehicle/Generator Exhaust

Only operate a generator (if customer supplied) in an open outdoor area where the exhaust can dissipate.

- To avoid the dangers of carbon monoxide, prevent exhaust gases from entering your RV.
- Close all entry/compartment doors, and windows near vehicle or generator exhaust.

PRE-TRAVEL INFORMATION

To help ensure your traveling enjoyment, update your GPS (customer supplied) and confirm that your route is planned with current road maps. Call ahead for tourist information for the areas that you will be visiting or traveling through. Research that your planned camping adventures comply with all federal, state and local regulations (such as whether it is legal, in the states where you will be traveling, to haul a trailer behind your fifth wheel).

NOTE: *Several RV GPS apps displays bridge heights along travel routes.*

- Arrange for someone to check your house periodically while you are away. Stop mail or newspaper delivery.
- Carry an extra set of vehicle and house keys with you on a separate key ring.
- Be sure to renew your license if it has expired, or will expire during your trip.
- If you are planning to visit other countries, contact the consulate nearest the point at which you plan to enter that country for the specific and most current information (including rules for re-entering the United States).

Always carry your vehicle registration and insurance policy card(s).

ADDITIONAL SAFETY PRECAUTIONS

Tire Pressure

ALWAYS check tire pressure BEFORE departing on any trip, even for short distances. For proper tire inflation pressures, refer to the Tire Information Label.

Wheel Torque

- ALWAYS check the torque on all lug nuts. BEFORE departing on any trip, even a short distance.
- For lug nut torque specifications and patterns, refer to "Table 11. Wheel Nut Torque" on page 86.
- ALWAYS use a calibrated torque wrench to confirm proper torque.

Propane Appliances & Equipment

- Turn OFF all propane appliances and equipment (including the tanks) are BEFORE departing on a trip.

- Understand all propane safety warnings and follow manufacturer recommended operating procedures.

⚠ WARNING

PROPANE GAS IS FLAMMABLE, IMPROPER USE MAY RESULT IN A FIRE OR EXPLOSION.

Passenger safety

⚠ W0ARNING

WHILE YOUR RV IS IN MOTION, DO NOT ALLOW ANYONE TO RIDE INSIDE AS A PASSENGER.

- In several states, this practice is against the law.

Loading & Weight Distribution

- Distribute cargo weight evenly throughout your vehicle.
- NEVER exceed your RV's Cargo Carrying Capacity or Gross Vehicle Weight Rating.
- Place heavy items in the center of your vehicle, on the floor.
- Balance loads front-to-rear and side-to-side.

Towing

High cross winds and the external forces created by large trucks as they pass, may cause swaying or fishtailing. This can lead to a loss of control, resulting in serious injury or death. Under these conditions, slow down and pay close attention to other vehicles.

- ALWAYS follow posted speed limits, and
- Adjust for weather or road conditions that can impact the stability/handling of your tow vehicle and RV.

TOWING

- **As a minimum requirement, the towing capacity of your tow vehicle MUST be greater than the Gross Vehicle Weight Rating (GVWR) of your RV.**

NOTE: *Manufacturer-advertised tow ratings for vehicles may not reflect the tow rating of your particular vehicle. A vehicle's tow rating is specific to the build of each individual vehicle.*

It is important to confirm the towing capacity of your vehicle, whether you are buying a new tow vehicle, or will tow your RV with one that you already own. Your GVWR may be stated in one of more of the following places:

- somewhere on your tow vehicle (such as in a placard in the glove box, or as a sticker on the driver's side door, or on the door jamb.
- in your tow vehicle's manual.

If you have difficulty locating your specific vehicle's tow rating and GVWR, take your vehicle to your vehicle dealer's service department for assistance.

Some automotive manufacturers publish brochures that discuss towing considerations. Ask your automotive dealer how to obtain a copy of this information. Verify that the weight ratings listed in the brochure are for your exact vehicle, ie, the correct year, model, engine, transmission, suspension and any relevant options.

Vehicle Labels

Decals and data plates used throughout the RV aid in its safe and efficient operation; others give service instructions. Read all decals, data and instruction plates before operating your RV. If any decal, data or instruction plate is painted over, damaged or removed, it should be replaced.

Weight Ratings & Definitions

It is essential to understand and stay within the weight ratings of your RV and tow vehicle. Learning these definitions is the first step in safely managing your RV's weight and balance. Vehicle and trailer weight numbers fall into two categories:

- **Ratings** are maximum limits, NEVER to be exceeded. These limits are established by Vanleigh RV and our component manufacturers in the design of the vehicle.

Weight and **Load** are often used interchangeably. Weight is measured by putting an RV, tow vehicle or its components on a scale. Vehicles and cargo have weight, which impart loads to tires, axles, and hitches.

GAWR (Gross Axle Weight Rating) — GAWR is the maximum weight each axle is designed to carry.

GVWR (Gross Vehicle Weight Rating) — GVWR (also called Maximum Loaded Trailer Weight) includes the GAWR plus the hitch weight. It is the maximum allowed weight for a fully loaded RV or tow vehicle.

Gross (Trailer/Vehicle) Weight — Gross Weight is the total actual weight of your RV plus cargo, as measured on a scale.

UVW (Unloaded Vehicle Weight) — UVW is the weight of the RV as built at the factory. The UVW includes the empty LP bottles but does NOT include cargo, water, LP gas, or dealer-installed accessories.

Hitch Weight (or Tongue Load/ Tongue Weight) — Hitch weight is the actual weight pressing down on the hitch by the RV.

CCC (Cargo Carrying Capacity)

- United States: CCC is equal to GVWR minus the following: UVW and LP gas weight. Water is considered cargo weight.
- Canada: CCC is equal to GVWR minus the following:
  UVW, LP gas weight, and full fresh (or potable) water weight (including the water heater).
- *For additional definitions, see "Glossary" on page 249.*

WEIGHT LABELS

Vehicle weight labels are affixed to your RV to help you make an informed decision before your purchase. Do not remove these labels. If the labels are missing, contact your dealer or Vanleigh RV Customer Service for replacements.

Federal Certification Label
This label specifies maximum capacities for GVWR, GAWR and tires.

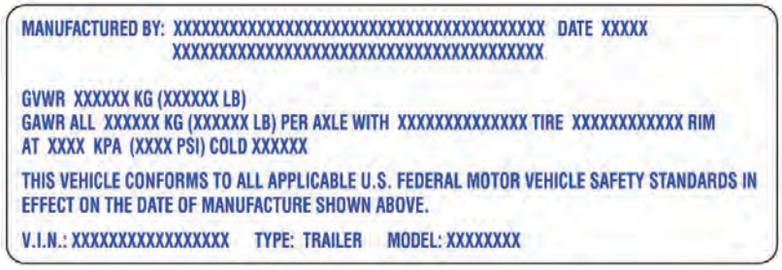


Figure 8. *Federal Certification Label (Example)*
(Located on the Forward, Off-Door-Side Exterior)

Tire and Loading Information Label

This label specifies the maximum amount of cargo that can be safely added to the RV. It is located on the driver's side exterior, just forward of the propane tank.

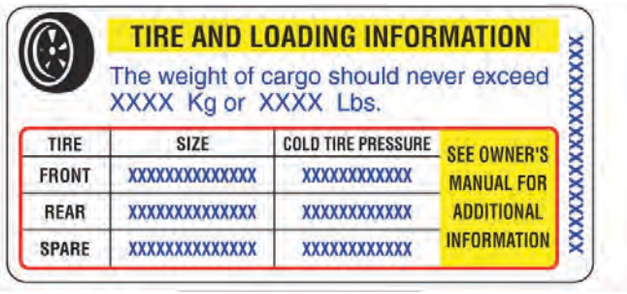


Figure 9. *Tire and Loading Information Label (Example)*
(Located on the Forward, Off-Door-Side Exterior)

CARGO CAPACITIES

When loading cargo into your RV, **DO NOT exceed:**

- Maximum weight specified on the Cargo Carrying Capacity label
- GVWR (Gross Vehicle Weight Rating)
- Maximum Load Rating of your RV tires.

The Maximum Load Rating of your RV tires is less than the GVWR. To calculate the actual weight on your RV tires, subtract the hitch weight from your RV's Gross Weight. The hitch weight is carried by your tow vehicle, not the RV tires.

For example, if your RV's:

- Tires are each rated at 2,000 lbs.
  2,000 lbs. x 4 tires = 8,000 lbs.
- Gross Weight is 9,000 lbs.
- with a hitch weight of 1,200 lbs. then
  9,000 lbs. - 1,200 lbs. = 7,800 lbs.

The actual weight on the RV tires is 7,800 lbs., This is under the load rating of the tires.
7,800 lbs. ÷ 4 tires = 1,950 lbs. each

Water and Propane

- Your fresh water is treated as cargo weight. Water weighs 8.3 lbs. per gallon; 50 gallons weighs over 417 lbs.
- The weight of your full LP cylinders is already figured into your RV's Cargo Carrying Capacity.

If you are close to your GVWR, reducing the amount of water in the holding tank will increase the amount of cargo weight available by the same amount. This flexibility allows you to make choices that fit your travel and camping needs.

If you have further questions, please contact your dealer or Vanleigh RV Customer Service.

LOADING YOUR RV

For traveling safety, distribute cargo side-to-side so the weight on each tire does not exceed one-half of the GAWR for either axle.

It is important to secure the tie down straps (if so equipped) on appliances or furniture. Free-standing furniture or overlooked items on the counter top or range can become dangerous projectiles during a sudden stop.

Store and secure all loose items inside the RV before traveling. Check that all items such as canned goods, small appliances, cooking pans, etc. are safely put away.

WEIGHING YOUR TOW VEHICLE & RV

There are two important factors when loading your RV, total weight and balance. It is imperative that you verify compliance within all applicable weight ratings. Overloading your RV will void the Limited Base Warranty and Limited Structural Warranty, and the warranties of many component part manufacturers.

Have your RV weighed periodically at a public scale to determine the proper load distribution. Keep in mind that individual scales will operate differently. The surroundings of the scale need to be adequate to accommodate weighing each side of your RV.

To weigh your tow vehicle and RV

Read through all the weighing instructions before you begin. If you have further questions, consult with your dealer or the scale operator. Your RV must be weighed fully loaded (that is with food, clothing, fuel, water, propane, supplies, etc.).

1. Weigh the RV including the tongue weight, while detached from the tow vehicle. This actual overall weight must be less than or equal to the GVWR for safe operation. If the overall weight is greater than the GVWR, some contents must be removed until the actual overall weight is less than or equal to GVWR.

2. Hitch the RV to your tow vehicle. Weigh the RV and the tow vehicle to determine the Gross Combined Weight (GCW). Make sure that this rating is less than or equal to the GCWR as specified by the manufacturer of your tow vehicle. If this overall weight is greater than the Gross Combined Weight Rating (GCWR), some contents must be removed to bring the combination into compliance with the listed ratings.

3. Weigh the RV while attached to but excluding the tow vehicle. This will result in the actual weight that is exerted on all of the RV tires. This weight may be subtracted from the overall RV GVWR to determine the actual "tongue" weight.

4. With the RV still attached to the tow vehicle, weigh each wheel position separately to ensure each tire is not overloaded.

To determine the wheel position weight:

5. Pull the RV onto the scale so only one tire is on the scale. Record the weight. Your RV must remain as level as possible on the scale (even though an axle or side is not physically on the scale). Obviously, to obtain the side-to-side weights, there must be enough space on either side of the scale to accommodate the RV being partially off the scale.

6. To calculate the opposite side of the RV wheel position weight, subtract the first side's weight from the weight determined in step #3.

If there is a difference in the weights on one side of the vehicle as compared to weights on the other side, components (tires, wheels, brakes, springs, etc.) on the heavier side could be overloaded, even though the total axle load is within the GAWR. It is important to redistribute the load to avoid component failure, improve the handling characteristics of the tow vehicle and not void the Limited Base Warranty and Limited Structural Warranty.

With these actual weights, it is now possible to compare them against the Trailer Weight Information label weight ratings to ensure you are below the posted minimum ratings.

RECOMMENDED TIRE PRESSURE & LOAD LIMITS

The major causes of tire failure are under-inflated tires and overloaded vehicles. Tire information placards and vehicle certification labels give important information on tires and load limits, including:

- Recommended Tire Size
- Recommended Tire Inflation Pressure
- Cargo Weight
  (the **maximum** cargo weight the RV is designed to carry)
- Front and Rear Gross Axle Weight Ratings (GAWR)
  (the **maximum** weight the axle system is designed to carry)

For the label locations and more detailed information, see "Weight Labels" on page 61.

Figure 10. *Tire and Loading Information Label (Example)*

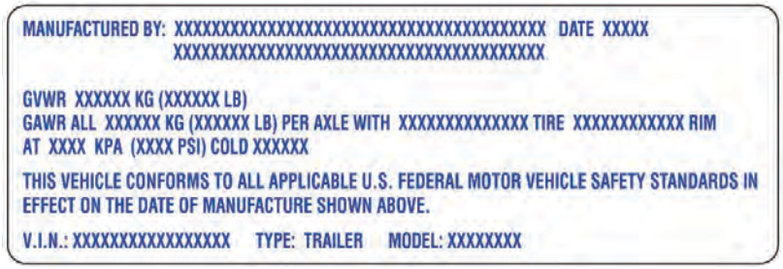


Figure 11. *Federal Certification Label (Example)*

To improve safe driving and help protect against injury, please follow these recommendations:

- Keep the RV and tow vehicle tires properly inflated, and **replace** the tires BEFORE they are excessively worn.
- ALWAYS wear your seatbelt and obey all traffic laws.
  - DO NOT exceed the posted speed limit.
  - Many states have lower speed limits for tow vehicle/RV combinations.
- ALWAYS be a courteous and alert driver.
  - Watch out for other drivers, bicyclists and pedestrians.

  - Pay attention to traffic and road conditions.
  - BEFORE changing lanes, check the outside rearview mirrors for other vehicles and use your turn signals.
  - Leave room for sudden braking and other unexpected events.
- ALWAYS use the daytime running lights on your tow vehicle to increase visibility to other drivers.
- NEVER drive when you are sleepy or tired.
- NEVER drive when alcohol, drugs or medication have affected your judgment, reflexes, or alertness.
- Adverse weather conditions or extreme terrain may affect your tow vehicle's performance and handling.
  - DO NOT use the tow vehicle's cruise control on icy, wet, or winding roads; or any other traffic situations where a constant speed could be dangerous.

Propane Safety

- ALWAYS shut OFF the propane system at the LP cylinder BEFORE you travel.
- If you drive with the propane system ON, the dangers are greatly increased in the event of an accident or fire.

RV DRIVING SCHOOLS & SEMINARS

If you have any concerns about driving while towing an RV, consult an expert for specific RV driver education. There are private RV schools and some RV owner's organizations that offer driving seminars. The schedules and locations of the various RV driver education seminars and schools can be researched through RV-related publications and websites.

Please use caution when using websites as a resource tool. Verify the information is from a credited and reliable source in the RV industry, and pertains to your specific RV. If in doubt, contact your dealer for assistance.

RV BRAKING SYSTEM

The RV brakes are designed to work with your tow vehicle brakes. To maintain proper braking performance, both the RV and tow vehicle brakes must be used together. Separate use of the braking systems will cause accelerated wear and damage. When your RV is new, it is impossible to adjust the brake shoes precisely. It takes approximately 1,000 miles and/or 50 medium to heavy stops to "burnish" fit or "seat" the shoes to the brake drum. After the

initial break-in period, your brake shoes must be adjusted accurately for best performance and increased durability.

Braking system components include:

- Tow vehicle battery
- Wire harness/connector plug
- Batteries (see "Electrical Systems" on page 116)
- Breakaway switch

AXLES

Most Vilanos have 7,000 lb axles. The 385RD and 394RK have 8,000 lb axles.

Table 5. *Trailer Axle Maintenance Schedule*

Item	Function Required	Weekly	3 Months or Every 3,000 Miles	6 Months or Every 6,000 Miles	12 Months or Every 36,000 Miles
Brakes	Test that they are operational.	At Every Use			
Brakeaway System	Check battery charge and switch operation.	At Every Use			
Oil Level	Check oil level in hubs, if equipped.	At Every Use			
Brake Magnets	Inspect for wear and current draw.				◆
Brake Linings and Pads	Inspect for wear or contamination.				◆
Hub/Drum and Rotors	Inspect for abnormal wear or scoring				◆
Wheel Bearing	Inspect for corrosion or wear. Clean and repack.				◆
Seals	Inspect for leakage. Replace if removed.				◆
Springs	Inspect for wear, loss of arch.				◆
Suspension Parts	Inspect for bending, loose fasteners, wear.				◆

Item	Function Required	Weekly	3 Months or Every 3,000 Miles	6 Months or Every 6,000 Miles	12 Months or Every 36,000 Miles
U-bolts	Tighten to specified torque values.				◆
Brake Controller	Check for correct amperage and modulation.			◆	
Trailer Brake Wiring	Inspect wiring for bare spots, fray, etc.				◆
Hangers	Inspect welds.				◆
Trailer Brake Wiring	Inspect wiring for bare spots, fray, etc.				◆
Hangers	Inspect welds.				◆
Wheel Nuts and Bolts	Tighten to specified torque values.		◆		
Wheels	Inspect for cracks, dents, or distortion.			◆	
Tire Inflation Pressure	Inflated tires to MFG's specifications.	◆			
Tire Condition	Inspect for cuts, wear, bulging, etc.		◆		

TOW VEHICLE BATTERY

The tow vehicle battery is the primary source of power for your RV's brake operation. To ensure available power when needed, keep your tow vehicle battery and charging system working properly.

BATTERY ISOLATOR (CUSTOMER SUPPLIED)

You may want to install a battery isolator on your tow vehicle. A battery isolator is a device that:

- Receives current from the tow vehicle alternator to independently charge both the RV auxiliary battery and the tow vehicle battery.
- Prevents the RV from draining your tow vehicle battery (so you can start your tow vehicle engine).

Your dealer can assist you with the selection, purchase and installation of this aftermarket part.

7-WAY WIRE HARNESS/CONNECTOR PLUG

A 7-way wire harness/connector plug is wired into your RV to connect electrical power from the tow vehicle for travel. This supplies power to the RV brakes, tail lights, clearance lights, turn signals, brake lights, etc. Wiring to operate your brakes must be the same size in both the tow vehicle and RV.

Make sure that any cable from the vehicle to be towed is wired correctly to mate properly with the connections shown in the connector. If in doubt about proper wiring, have a qualified service technician prepare and install the necessary cable to mate with the seven-pin connector on the RV to ensure proper operation when any vehicle is towing the unit.

When the RV is uncoupled from the towing vehicle and the cable is disconnected from the seven-pin connector, be sure to close the spring-hinged cover plate on the connector to protect the contact pins from dirt or debris. In a similar manner, protect the cable end from similar damage, weather, or debris; one such method could be to place the connector end in a heavy-gauge plastic bag (e.g., polypropylene, polyethylene, etc.) and secure the bag tightly around the cable with a stout elastic band or tape, and then mount the secured cable in a manner to keep it from both mechanical damage and water intrusion.

When the RV is again coupled to the towing vehicle via the towing hitch and the cable is again connected to the seven-pin connector, make sure the resultant connection is tight and solid so that the connection won't jar loose during use.

Should a conversion adapter to convert the round, seven-pin connector to a flat, four-in connector be needed, such an adapter may be purchased from any RV after-market store.

Maintenance

The connector plug may build up corrosion with extended use and should be cleaned periodically to insure good electrical contact. Make sure the connector plug is kept clean and protected from road elements as you travel.

The wiring of that connector is shown in the accompanying diagram.

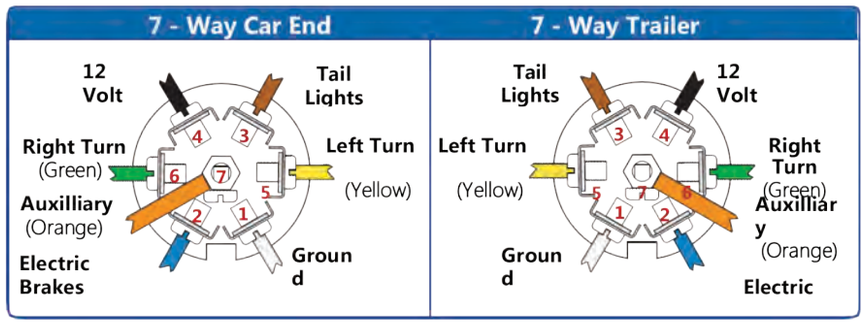


Figure 12. *7-Way Wire Harness/Connector Plug*

BREAKAWAY SWITCH

The breakaway switch is located by the RV pin box. It is a crucial part of the RV braking system. If the RV becomes detached from the tow vehicle, the lanyard pulls the pin from the breakaway switch, which automatically activates the RV brakes.

- While hitching the RV, ALWAYS secure the breakaway switch lanyard to a permanent part of the tow vehicle.
- Check that your auxiliary battery (customer supplied) is correctly installed, and fully charged BEFORE travel.

HITCH SELECTION

Hitch selection is important because it affects the towing and handling characteristics of your RV. There are many kinds of hitches available for various uses and assuring that you have the correct hitch installed is critical to a safe towing experience.

Ask your dealer about the proper class and type of hitch you need to purchase for your individual tow vehicle/fifth wheel combination. A fifth wheel requires a hitch designed for fifth wheels. Before selecting a hitch, you must know your GVWR and pin box rating.

Fifth wheel pin box height

There is no recommended hitch height for fifth wheels; usually the fifth wheel pin box is adjustable for variance in trucks and truck suspension systems. Adjust the hitch assembly so the tow vehicle and the fifth wheel are essentially level. A high hitch will transfer weight behind the axles and cause the vehicle to fishtail. A low hitch will transfer additional weight to the hitch.

To adjust the hitch to the proper height, refer to the hitch manufacturer instructions.

WELDED REAR HITCH (IF SO EQUIPPED)

- **DO NOT exceed the Hitch Weight Ratings for your Welded Rear Hitch (if so equipped). Failure to do so may void the warranty.**

NOTE: **Any hitch that is welded to the chassis and not approved by Lippert will void the chassis warranty.**

FIFTH WHEEL HITCHING PROCEDURE

The fifth wheel hitching procedure (below) becomes easier with practice. To safely hook up your fifth wheel to your tow vehicle, use the following steps:

1. ALWAYS use wheel chocks to block the trailer wheels.
2. Check that your hitch lever is in the open (or cocked) position.
    - Unless it is designed to open automatically.
3. Adjust the trailer height to achieve the proper level of the pin.
4. OPEN the truck tailgate.
    - Unless your truck is equipped with a tailgate designed to accommodate a fifth wheel hitch.
5. Back up your truck so the hitch encircles the fifth wheel pin.
6. Making gentle contact of the hitch saddle against the pin will cause the mechanism to close.
7. Secure the hitch lever as specified in the hitch manufacturer documentation.
    - Shift the truck into drive, but
    - **DO NOT** press on the accelerator.
    - Bump the hitch to make sure it is locked.
8. Check that the fifth wheel landing legs are fully RETRACTED.
9. Attach the breakaway switch cable to the tow vehicle. Leave enough slack to accommodate tight turns.
10. Connect the 7-way wire harness from the fifth wheel to your tow vehicle and secure in the travel position.
11. Walk around the fifth wheel to verify that the exterior lights are working correctly,
12. Remove the wheel chocks from the trailer wheels.

UNHITCHING

1. Choose a place to park, and pull the RV into the site.
2. Block the wheels to keep the RV from rolling.
3. LOWER the landing legs to stabilize the RV.
    - For proper operation, it is important to follow the manufacturer's instructions.
4. Disconnect the wire harness/connector plug.
5. Disconnect the breakaway switch lanyard.

6. OPEN the truck tailgate.
    - Unless your truck is equipped with a tailgate designed to accommodate a Fifth wheel hitch.
7. Shift your truck into reverse, but **DO NOT press on the accelerator.**
    - This moves the kingpin off the locking bar, so that it can be disengaged.
8. Apply the brakes, then set your parking brake.
9. Disengage the locking bar, then Unhitch the RV.
10. Pull away your tow vehicle.
11. Level the RV front to back by adjusting the fifth-wheel height.

TOWING THE RV

You will find that your RV will travel safely and comfortably at most posted trailer highway speed limits. However, it will take longer than a passenger automobile to reach that speed. Keep this in mind when overtaking and passing another vehicle.

Allow more time to go around the vehicle you are passing. You cannot cut back into the traffic lane as quickly due to the longer length of your tow vehicle/RV combination. Drive with caution to avoid situations that might require quick momentum changes.

The required stopping distance is greatly increased when towing an RV. Even though your RV is equipped with brakes designed for GVWR, we suggest practicing stopping away from traffic until you become accustomed to your RV's stopping distance. A good way to practice is at a large parking lot (where it is permissible). Easing to a stop and starting smoothly saves wear and tear on your tow vehicle/RV combination.

Be aware of road surface conditions. Slow down well in advance of dips and bumps to reduce the jolting to your tow vehicle/RV combination. Drive over them slowly and let the trailer tires pass over them before accelerating. Cross railroad tracks slowly (always release your brakes before crossing).

When descending a long hill, drop down into a lower gear (or lower range if you have automatic transmission). Avoid conditions that require excessive and prolonged use of your brakes. Apply and release brakes at short intervals to give them chance to cool. The tow vehicle transmission and engine will help in controlling downhill speed and can lengthen brake life.

Use care when accelerating or decelerating on a slippery surface. Abrupt speed changes can cause skidding and loss of control. Driving through water deep enough to wet the brakes may affect stopping distance or cause the vehicle to pull to one side. Check the RV's

brake operation in a safe area to be sure they have not been affected. Never operate any vehicle if a difference in braking efficiency is noticeable.

Passenger safety

- **While your RV is in motion, DO NOT allow anyone to ride inside as a passenger.**
- In several states, this practice is **against the law**.

Weight and Clearance Limits

In order to obey all posted weight and clearance limits, you MUST always know the weight and height of your RV/tow vehicle combination.

- ALWAYS include the roof air conditioners, TV antennas, and floodlights as they may cause clearance problems under some tunnels, canopies or hanging signs.
- Some bridges, older ones in particular, may not support the weight of your RV/tow vehicle combination.

Turning Corners

When turning, the tires do not follow the path of your tow vehicle tires. The RV will make a tighter turn than the tow vehicle. You must compensate for this action by carefully pulling the tow vehicle out into the intersection further than you would normally so that the RV clears the curb (or any parked vehicles along the curb).

Backing up

If there are no pull through sites at your camping destination, choose a level site and back in carefully. BEFORE you park, exit your tow vehicle, and inspect that site conditions are satisfactory.

- Check that you have plenty of vehicle clearance.
- Check that your path is free of obstacles. (ie., low-hanging tree limbs, posts, large rocks)
- Try to choose a site that is on the driver's side, so that you can easily see the rear of the RV.
- A site on the passenger side is more difficult, since you back into the site on your blind side.
- Position your tow vehicle and RV for backing into the site.
- Back up the RV slowly. Watch your tow vehicle mirrors and Back Up Camera (customer supplied) carefully to help you guide the RV into the site.

- Have another person outside the RV to assist you until the RV is parked in the desired position. Use cell phones or radios to communicate.

Parking

- After the RV is in the desired location, set the tow vehicle parking brake and place the transmission in park. Turn OFF the ignition switch. Go outside and block the RV wheels securely with wheel chocks. The wheel chocks can be wood blocks or purchased items as long as they prevent the RV from rolling.

ROADSIDE EMERGENCY

A roadside emergency can happen at any time. ALWAYS carry an emergency kit with three red warning signs (or *indicators*) to display if necessary.

If you must make an emergency roadside stop:

- Pull off the road as far as possible.
- Turn ON the hazard warning flashers (or hazard lights) to alert other drivers.
- The hazard warning flashers warn passing drivers to approach and overtake your vehicle with caution.

Use the three red warning indicators (signs, reflectors, lanterns, or road flares) as follows: Place the **1st** indicator **10 feet *behind*** the RV on the off-door (or road) side.

Place the **2nd** indicator **100 feet *behind*** the RV in the center of the lane.

Place the **3rd** indicator **100 feet in *front*** of the RV in the center of the lane.

- 10 feet = 4 paces, 100 feet = 40 paces
- Curves and/or hills may affect the safe placement of the warning indicators.

For your personal safety, ALWAYS stand off the road and away from traffic.

TIRES

TIRE SAFETY INFORMATION

This portion of the Owner's Manual contains tire safety information as required by 49 CFR 575.6(4) and is based in part on the National Highway Traffic Safety Administration's (NHTSA) brochure titled Tire Safety, Everything Rides On It. It can be obtained from NHTSA as a free download at *https://one.nhtsa.gov/Vehicle-Safety/Tires/Tire-Safety:-Everything-Rides-On-It*.

Studies of tire safety show that the most important things you can do to avoid tire failure, blowouts, and flat tires are:

- Maintain proper tire pressure.
- Observe tire and vehicle load limits. (NEVER carry more weight in your vehicle than your tires or vehicle can safely handle).
- Avoid road hazards.
- Drive within the designated tire speed ratings.
- Inspect tires for cuts, slashes, and other irregularities.
- Inspect tires for expiration date.

These actions, along with other care and maintenance activities, can also:

- Improve vehicle handling.
- Help protect you and others from avoidable breakdowns and accidents.
- Improve fuel economy.
- Increase the life of your tires.

Make tire safety a regular part of your vehicle maintenance routine. Know that the time you spend is minimal compared with the inconvenience and safety consequences of a flat tire or other tire failure.

TIRE PLY COMPOSITION & MATERIALS

A tire is built from multiple layers of rubber-coated fabric. Each layer is called a ply. In general, the higher the number of plies in a tire, the more weight it can support. Tire man-

ufacturers must report all materials used in the composition of the tire, ie., steel, nylon, polyester, etc.

TIRE SAFETY TIPS

Preventing tire damage

- DO NOT run over curbs or foreign objects in the roadway or when parking.
- Slow down if you cannot avoid a pothole or other object in the road.

Tire safety checklist

1. Check tire pressure (including the spare) before every trip.
2. Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or any other damage.
3. Carefully remove bits of glass or foreign objects wedged in the tread.
4. Check that all tire valves have valve caps.
5. DO NOT overload your vehicle.
    - Check the *Tire and Loading Information* label.

Figure 13. *Tire and Loading Information Label (Example)*

TIRE MAINTENANCE

Proper tire maintenance improves the stopping distance, traction, steering, and load-carrying capability of your vehicle. As mentioned above, to prevent flat tires and other types of tire failure, you should maintain proper tire pressure, observe tire and vehicle load limits, avoid road hazards, and regularly inspect your tires.

TIRE BALANCE AND WHEEL ALIGNMENT

To avoid vibration or shaking of the vehicle when a tire rotates, the tire must be properly balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire assembly. A wheel alignment adjusts the angles of the wheels so that they are positioned correctly relative to the vehicle's frame. This adjustment maximizes the life of your tires. These adjustments require special equipment and should be performed by a qualified technician.

TIRE ROTATION

For maximum mileage, rotate your tires every 5,000 miles. Follow correct rotation patterns.

TIRE REPAIR

The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire that surrounds the puncture hole. Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim to be properly inspected before being plugged and patched.

TIRE TREAD

The tire tread provides the gripping action and traction that prevent your vehicle from slipping or sliding, especially when the road is wet or icy. In general, tires are not safe and should be replaced when the tread is worn down to $^{1}/_{16}$ of an inch.

Tread wear bars are raised sections built into the bottom of a tire's tread grooves that show how much tread is remaining. When they appear "even" with the outside of the tread, it is time to replace your tires.

The Penny & Quarter Test. Place a penny or quarter upside down into the tire groove. If you can see the top of Lincoln's head, you are ready for new tires. If you can see the top of Washington's head, tires are OK but close to wearing out.

Inspect your tires regularly for uneven tread wear.

Table 6. *Tire Wear Patterns*

Wear Pattern		Possible Cause	Solution
	**Edge Wear** Thin Tread Wear on Tire Edges	Under Inflation	Fill tire with an air compressor to the recommended cold tire pressure
	**Center Wear** Thin tread wear center of tire	Over Inflation	Press tire valve stem, slowly release air until reaching the recommend-ed cold tire pressure
	**Side Wear** Exaggerated Inner or Outer Tread Wear	Loss of camber or overloading	Make sure your load does not ex-ceed the axle rating
	**Toe Wear** Thin inner or outer edge	Alignment or in-correct toe-in	Correct toe-in is 0–0.5 degrees
	**Cup Wear** Diagonal "Scalloped" tread wear	Loose bearings or wheel balance	Check bearing adjustment and tire & wheel balance
	**Flat Spots** Flat spots or patchy tread wear	Tire skidding, wheel lock up or out of balance	Avoid sudden stops, adjust brakes, check tire & wheel balance

Figure 14. *Tire*

TIRE PRESSURE

Load Limits are determined by the tire size and the greatest amount of weight each tire can safely carry.

Tire Pressure is the amount of air pressure a tire requires to be properly inflated. It is measured in pounds per square inch (PSI). Tire pressure affects your RV's overall performance and provides the load-carrying capacity.

The proper tire pressure for your vehicle is referred to as the "cold inflation pressure." You will also find this number on the Tire and Loading Information placard, expressed in both PSI and kilopascals (KPA), the metric measurement used internationally.

It is difficult to obtain the recommended tire pressure when the tires are not cold.

Figure 15. *Tire and Loading Information Label (Example)*

CHECKING TIRE PRESSURE

It is important to check your vehicle's tire pressure at least once a month for the following reasons:

- Most tires may naturally lose air over time.
- Tires can lose air suddenly if you drive over a pothole or other object or if you strike the curb when parking.
- With radial tires, it is usually not possible to determine under-inflation by visual inspection.

For safety and convenience, purchase a tire pressure gauge to keep in your vehicle. They are sold at auto parts stores, hardware stores and many other retail outlets.

Steps for maintaining proper tire pressure

1. Locate the recommended tire pressure on the RV's Tire and Loading Information label located on the forward, off-door-side exterior.
2. Check the tire pressure of all tires.
    A. If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure.
    B. If the tire pressure is too low, use an air compressor to fill the fire to the recommended tire pressure.

If you have been driving your vehicle and find that a tire is under-inflated, fill it to the recommended cold inflation pressure indicated on your vehicle's Tire and Loading Information label. While your tire may still be slightly under-inflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive with a significantly under-inflated tire. Since this is a temporary fix, do not forget to recheck and adjust the tire's pressure when you can obtain a cold reading.

HOW OVERLOADING AFFECTS YOUR RV AND TIRES

The results of overloading can have serious consequences for passenger safety. Too much weight on your vehicle's suspension system can cause spring, shock absorber, or brake failure, handling or steering problems, irregular tire wear, tire failure or other damage. An overloaded vehicle is hard to drive and hard to stop. In cases of serious over-loading, brakes can fail completely, particularly on steep hills. The load a tire will carry safely is a combination of the size of tire, its load range, and corresponding inflation pressure. Excessive loads and/or under-inflation cause tire overloading and, as a result, abnormal tire flexing occurs. This situation can generate an excessive amount of heat within the tire. Excessive heat may lead to tire failure.

TRAILER TIRE LABELING

Federal law requires tire manufacturers to place standardized information on the sidewall of all tires. This information identifies and describes the fundamental characteristics of the tire and it also provides a tire identification number for safety standard certification and in case of a recall.

US DOT TIRE IDENTIFICATION NUMBER (TIN)

Table 7. *US DOT Tire Identification Number (TIN) Example*

- This begins with the letters "DOT" and indicates that the tire meets all federal standards.
- The next two numbers or letters are the plant code where it was manufactured
- The last four numbers represent the week and year the tire was built. For example, the numbers 0918 means the 9th week of 2018.
- The other numbers are marketing codes used at the manufacturer's discretion. This is the number used to identify a tire in the event of a recall.

Figure 16. *Tire Labeling (Example)*

MAXIMUM LOAD RATING

This Maximum Load Rating indicates the maximum load in kilograms and pounds that can be carried by the tire.

NOTE: *Make sure that the tires on your tow vehicle have a payload capacity to handle the hitch weight of your trailer, plus the weight of your tow vehicle and its cargo.*

TIRE SIZE

To maintain tire safety, purchase new tires that are the same size as the vehicle's original tires or another size recommended by the manufacturer. Look at the Tire and Loading Information label, or the sidewall of the tire you are replacing to find this information. If you have any doubt about the correct size to choose, consult with the tire dealer.

TIRE SIZE & TYPE DESIGNATION

The tires on your unit are marked with a tire size and type designation:

- Goodyear or Westlake 215/75R17.5
- Goodyear LT235/85R16
- Westlake ST235/85R16.

The designation breakdown is as follows:

Table 8. *Tire Size and Type Designation*

235	The first three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.
85	The next two-digit number after the "slash" mark, known as the aspect ratio, gives the tire's ratio of height to width.
R	The "R" stands for radial.
16	The last two-digit number is the wheel or rim diameter in inches.

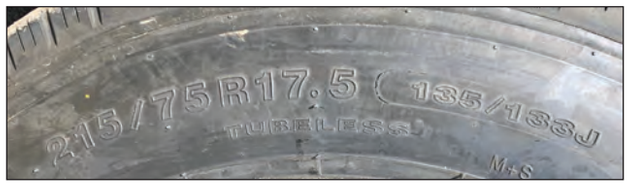


Figure 17. *Tire Size and Designation Label*

MAXIMUM TIRE INFLATION PRESSURE

This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

Table 9. *Maximum Tire Inflation Pressure*

Westlake ST235/85R16	110 PSI
Goodyear LT235/85R16	110 PSI
Westlake 215/75R17.5	123 PSI
Goodyear 215/75R17.5	125 PSI

SPEED RATING

Table 10. *Maximum Tire Speed Rating*

16" Tires	75 MPH
17.5" Tires	62 MPH

⚠ CAUTION

DO NOT EXCEED THESE SPEED RATINGS REGARDLESS OF THE POSTED MAXIMUM SPEED LIMIT.

Tires are warrantied by the tire manufacturer, not by Vanleigh RV.

If you need tire warranty assistance, please contact LionsHead Specialty Tire & Wheel.

SPARE TIRE

The spare tire is used if a trailer tire is damaged, flat, or loses air pressure. The spare tire/wheel may differ from the original equipment, and is intended for temporary use only.

The spare tire is secured below your RV. Locate the 1" access hole in the skirt metal on the door-side of your RV, approximately even with the spare tire.

- Insert the crank handle extension.
- Turn ***counter-clockwise*** to lower the spare tire.
- Turn ***clockwise*** to raise the spare tire.

Figure 18. *Spare Tire*

Figure 19. *Spare Tire Winch Access Hole*

Figure 20. *Crank Handle*

TIRE CHANGING

TIRE CHANGING BASICS

NOTE: *A Hydraulic Jack and Jack Stands (for changing a tire) are customer supplied.*

1. See "Roadside Emergency" on page 75.
2. Block the wheels on the opposite side from the tire you wish to change. This will prevent accidental movement.
3. Loosen the wheel lugs BEFORE raising the RV.
4. Place a Hydraulic Jack on the frame close to the spring hanger. Raise the trailer until the tire clears the ground. **NEVER attempt to use a stabilizer jack to lift the RV.**
5. Set up a Jack Stand under the frame just to the rear of the tire being changed, then change your tire.
6. Follow the Wheel Nut Torque instructions provided in "Table 11. Wheel Nut Torque" on page 86.

Wheel Nut Torque

Torque is the amount of rotating force applied to a fastener, such as a lug nut. The axle and wheel assemblies of your RV are designed differently than those on your car. The overall size, weight and center of gravity subject the wheels to pressures unique to trailering. During normal cornering, the tires and wheels experience a considerable amount of stress called side-load. Therefore, the lug nuts on your RV frequently require torque maintenance.

- ALWAYS use a properly calibrated torque wrench to confirm proper torque.
- ALWAYS check lug nut torque on each wheel before departure, regardless of how short the trip may be.
- DO NOT allow under-torque or over-torque on any wheel.
- Tighten the lugs in the correct order for your RV's lug pattern shown in the diagram below.

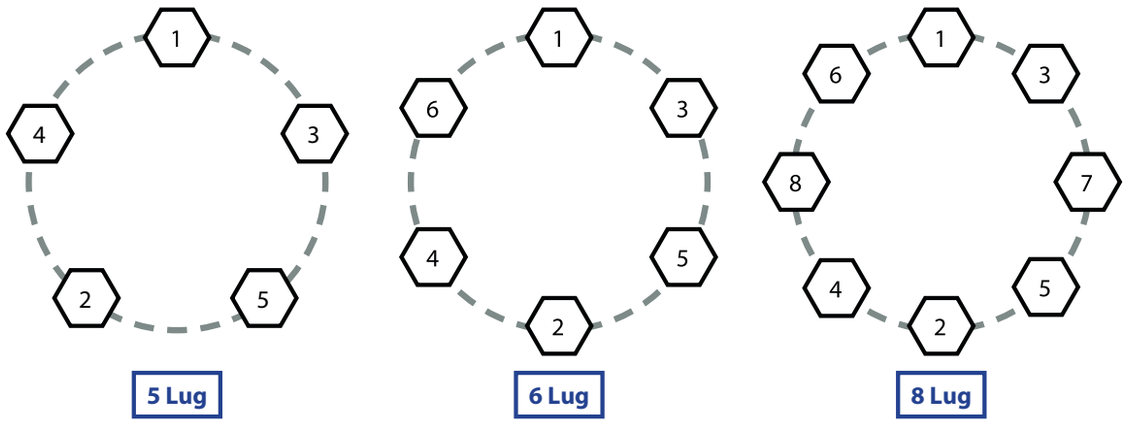


Figure 21. *Torque Digram*

Find your RV's wheel size on the table below. Tightening the lugs should be done in three stages. Determine the correct torque for each stage, and use the torque sequence shown.

Table 11. *Wheel Nut Torque*

Wheel Size	Stud Size	Torque Sequence		
		1st Stage	2nd Stage	3rd Stage
16″	1/2″	20-25	50-60	90–120
16″	9/16″	20-25	60-70	90–120
17.5″ w/ cone nut	5/8″	50–60	100–120	190–210
				*NOTE: All torque in ft.–lbs.

LEVELING

AUTOMATIC LEVELING SYSTEM

After unhitching your RV, you need to ensure it is level. Leveling is very important. A level RV is more comfortable for sleeping and walking inside. The water drainage systems are designed with proper slope and must be level for proper operation. The appliances perform best when level. Slides can malfunction if the RV is not level.

Before operating the hydraulic leveling system, make sure of the following:

1. The RV is parked on a reasonably level surface.
2. The towing vehicle is disengaged from and from clear of the RV.
3. Make sure all persons, pets, and property are clear of the RV while the leveling system is in operation.

To operate the hydraulic leveling system, read and follow the component manufacturer's instructions.

NOTE: *Never Auto Level while hooked up to the truck.*

LEVEL-UP® WITH ONECONTROL™ TOUCH PANEL

OWNER'S MANUAL

LIPPERT COMPONENTS®

LEVEL-UP TABLE OF CONTENTS

System Information

The LCI Level-Up® OneControl™ Touch Panel is an automatic leveling system control for fifth wheel applications. It interfaces to the LCI Level-Up pump/jack system to level the trailer. The system utilizes one main control board and a separate waterproof remote level sensor to measure and manage level point, and can be operated from several user interface devices, including:

Auto Leveling Control Touch Pad - Mounted outside the trailer within view of the hitch.

MyRV® OneControl Touch Panel (OCTP) - Mounted on a wall inside the living space of the trailer.

MyRV OneControl Leveling App - The app is available on iTunes® for iPhone® and iPad® and also on Google Play™ for Android™ users. iTunes®, iPhone® and iPad® are registered trademarks of Apple Inc. Google Play™ and Android™ are trademarks of Google Inc.

Linc® Remote Control - Optional.

The LCI Level-Up OneControl Touch Panel is for fifth wheel applications only.

Safety Information

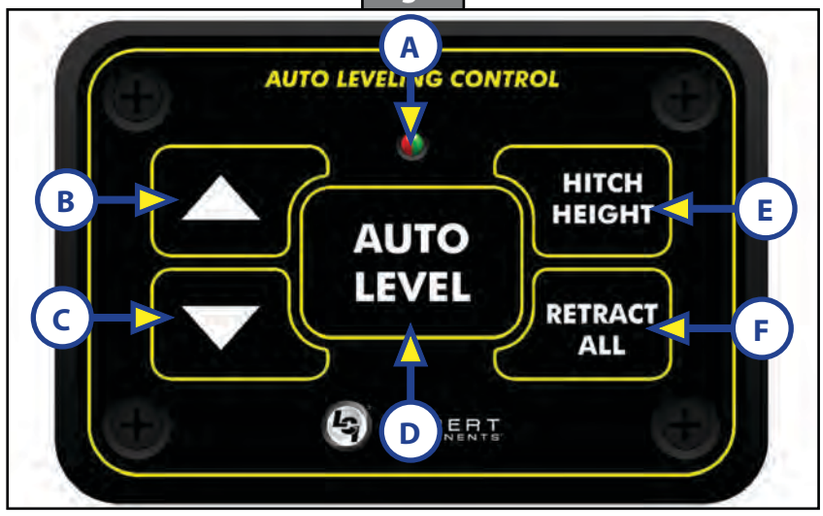
Be sure to park the trailer on solid, level ground. Ensure all jack landing locations are cleared of debris and obstructions and also free of depressions. People and pets should be clear of trailer while operating the leveling system. Ensure the battery of the trailer is fully charged or that the trailer is plugged into shore power prior to attempting to operate the system. Level-Up requires a minimum of 12.75V DC from the battery for proper operation. Be sure to keep hands and other body parts clear of fluid leaks. Hydraulic fluid leaks in the Lippert Leveling System may be under high pressure and can cause serious skin-penetrating injuries.

⚠WARNING

Lippert Components Inc. recommends that a trained professional be employed to change the tires on the trailer. Ensure that the trailer is properly supported with jack stands, or other adequate devices, under the frame of the trailer prior to commencing any service or repair procedure. Any attempts to change the tires or perform other service while trailer is supported solely by the LCI Level-Up could result in death, serious injury, trailer or property damage.

Touch Pad Diagram - Auto Leveling Control

Fig. 1



Callout	Description	
A	Red/Green LED - Indicates the status of the system.	
B	Up Arrow - Extends front jacks (landing gear).	To turn on the touch pad, press the Up and Down arrow buttons at the same time.
C	Down Arrow - Retracts front jacks (landing gear).	
D	Auto Level Button - Places leveling system into auto level mode.	
E	Hitch Height Button - Initiates the Hitch Recognition feature.	
F	Retract All Button - Places leveling system into full retract mode.	

Red/Green LED Indicator

What Is Happening?	Why?
Off	Touch pad is locked.
Solid Green	Touch pad is active.
Blinking Green	Jacks are moving.
Solid Red	Low battery.
Blinking Red	Error - Refer to OneControl™ Touch Panel screen or the Leveling App for the specific error, then consult the Troubleshooting section of this manual to clear the error.

Operation - Auto Leveling Control Touch Pad

Unhitching Instructions

NOTE: Prior to unhitching from the tow vehicle, ensure trailer is parked on a level surface and chock the tires of the trailer.

1. To turn on the touch pad, press both "UP" and "DOWN" arrows (Fig. 1B and Fig. 1C) at the same time. The green indicator LED (Fig. 1A) will turn on.

NOTE: The touch pad will remain on as long as the user is pressing buttons. It will time out after approximately 7 minutes without use.

2. Press the "UP" arrow (Fig. 1B) to extend the front jacks and lift the front of trailer to take the weight of the trailer off of the hitch.
3. Uncouple the trailer connection on the tow vehicle.
4. Pull tow vehicle away and park at a safe distance.

Auto Level

NOTE: Once the automatic leveling cycle has been started, it is important that there is no movement in the trailer until the trailer has completed the leveling process. Failure to remain still during the leveling cycle could have an effect on the performance of the leveling system.

1. After unhitching from tow vehicle press "AUTO LEVEL" (Fig. 1D).

NOTE: Pressing any button during an Auto Level sequence will abort the auto leveling cycle.

Auto Level Sequence

NOTE: Sequence may vary slightly based on the height of the trailer king pin prior to leveling.

1. When the Auto Level sequence begins, the front of the trailer will seek a position near a level state, then the trailer will level from front to back.
2. The left side jack(s) extend to ground (left mid and left rear).
3. The right side jack(s) extend to ground (right mid and right rear).
4. Jack pairs will extend as needed in order to level the trailer.

NOTE: Step 4 may repeat several times if the controller deems necessary.

NOTE: If the AUTO LEVEL sequence does not perform as described above, place the system in manual mode and test that the jacks operate correctly by pushing their coordinating buttons on the OneControl Touch Panel inside the trailer; e.g., "FRONT" button operates only the front jacks, etc. See Operation - MyRV OneControl Touch Panel in this manual.

Hitch Recognition - Reconnecting to Tow Vehicle

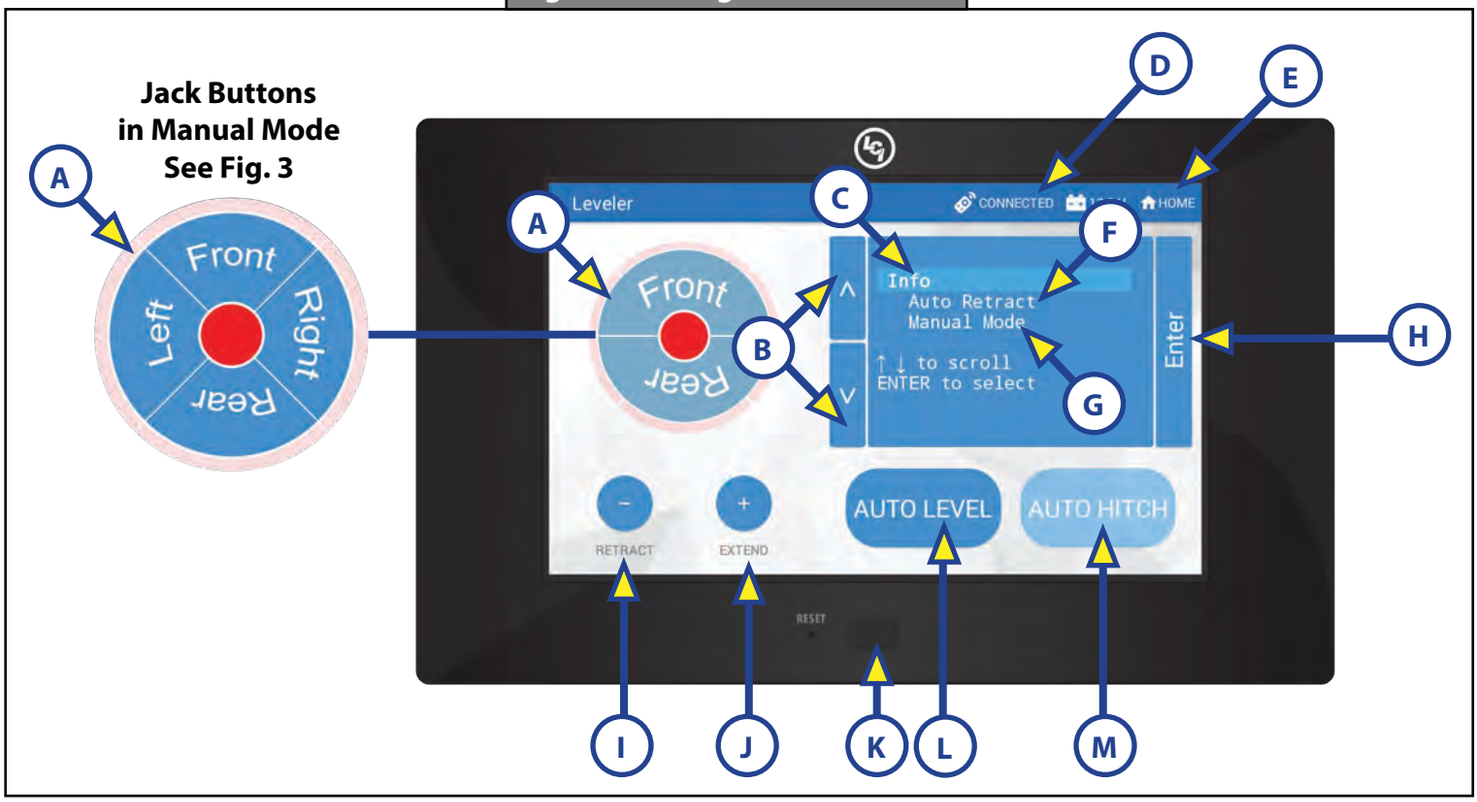
1. To turn on the touch pad, press both "UP" and "DOWN" arrows (Fig. 1B and Fig. 1C) at the same time. The green indicator LED (Fig. 1A) will turn on.
2. Press "HITCH HEIGHT" (Fig. 1E). The rear jacks will retract.
3. The front of the trailer will raise to the height where the auto level sequence was started.

NOTE: If the front of the trailer was below level when the Auto Level process was initiated, the hitch recognition feature will retract the rear jacks but will not retract the front jacks to lower the trailer to the initial hitch height. This feature helps prevent injury and/or damage to anything underneath the trailer.

4. Connect tow vehicle and make sure trailer and hitch are connected and locked.
5. Press "RETRACT ALL" System will immediately retract all jacks.

Touch Panel Diagram - MyRV OneControl Touch Panel

Fig. 2 - Leveling Standard Mode



Callout	Description
A	Jack Buttons - Select front, rear, right and left jacks to be operated depending on mode. Jacks available to be operated will be highlighted in blue. In Standard Mode (Fig. 2), only front and rear jacks are available to be operated. In Manual Mode (Fig. 3), all jacks are available to be operated.
B	Up and Down Arrows - Scrolls through options on screen.
C	Info - Displays system information, e.g. angle, jack stroke or software version.
D	Connected Icon - Press 6 times to program zero point/ wireless configurations.
E	Home Icon - Returns screen to home page.
F	Auto Retract - Enters Auto Retract mode to retract all jacks.
G	Manual Mode - Enters Manual Mode to manually operate jacks.
H	Enter - Push to select various modes.
I	Retract - Retracts jacks in several modes. Jacks available will be highlighted in blue.
J	Extend - Extends jacks in several modes. Jacks available will be highlighted in blue.
K	Power Button - Turns touch panel on and off.
L	Auto Level - Starts the Auto Level sequence.
M	Auto Hitch - Returns trailer to previous hitch height for reconnecting to tow vehicle.

Operation - MyRV OneControl Touch Panel

Standard Mode and Menu

To reach Standard Mode (Fig. 2) for leveling:

1. Power on the OneControl Touch Panel (Fig. 2K).
2. Press "MyRV Control Panel" on the main screen.
3. Press the "Leveler" icon.
4. The screen will show the system menu (Fig. 2) for Standard Mode. The front jacks can be extended/ retracted in Standard Mode. Rear jacks can be retracted from this mode.

Basic Jack Operation

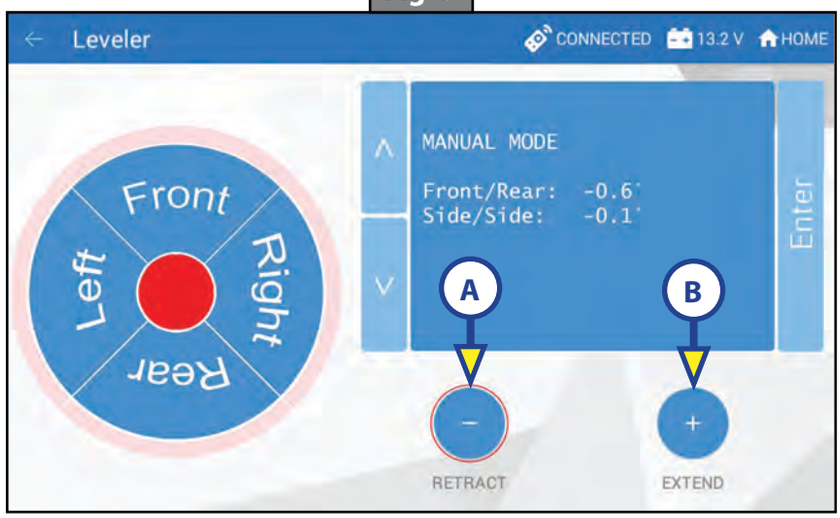
While in Standard Mode:

1. Press "RETRACT" (Fig. 2I) or "EXTEND" (Fig. 2J), then "FRONT" to retract or extend front jacks.
2. Press "RETRACT" and "REAR" to retract rear jacks.
3. Press the "AUTO LEVEL" (Fig. 2L) button to start the auto leveling sequence.
4. Press the "AUTO HITCH" (Fig. 2M) button to start the hitch recognition sequence when reconnecting to the tow vehicle.
5. Use the "UP" or "DOWN" arrow (Fig. 2B) buttons to cycle through the menu screen options:
   - **A. Info**: Scroll to "INFO" (Fig. 2C) and press "ENTER" (Fig. 2H) button to display system information, e.g., angle, jack stroke or software version.
   - **B. Auto Retract**: Scroll to "AUTO RETRACT" (Fig. 2F) and press "ENTER" button to start the "Auto Retract" sequence, which will retract all jacks.
   - **C. Manual Mode:** Scroll to "MANUAL MODE" (Fig. 2G) and press "ENTER" button to start Manual Level operation. Jacks operate in pairs. Use "RETRACT" or "EXTEND" to operate front jacks, right rear and left rear jacks.

NOTE: Upon entering Manual Mode, a tutorial on operating the jacks will appear on the screen. Press "OK" to clear the tutorial. To delete the tutorial, click the "Don't show this again" box in the bottom right of the screen.

- **I.** Press "RETRACT" (Fig. 3A) or "EXTEND" (Fig. 3B), then "FRONT" (Fig. 3) to operate front jacks.
- **II.** Press "EXTEND" or "RETRACT," then "REAR" to operate rear jacks (right rear, right mid, left rear and left mid).
- **III.** Press "EXTEND" or "RETRACT," then "RIGHT" to operate right jacks (right mid and right rear).
- **IV.** Press "EXTEND" or "RETRACT," then "LEFT" to operate left jacks (left mid and left rear).

Fig. 3



Unhitching Instructions

NOTE: Prior to unhitching from the tow vehicle, ensure trailer is parked on a level surface and chock the tires of the trailer.

1. Push touch panel “ON/OFF” (Fig. 2K) to turn system on (See "Standard Mode and Menu" to reach standard mode.)
2. Push "EXTEND" (FIG. 2J), then "FRONT" button (Fig. 2) to extend front jacks and lift front of the trailer to take the weight of the trailer off of the hitch.
3. Uncouple the trailer connection on the tow vehicle.
4. Pull tow vehicle away and park at a safe distance.

Auto Level

NOTE: Once the automatic leveling cycle has been started, it is important that there is no movement in the trailer until the trailer has completed the leveling process. Failure to remain still during the leveling cycle could have an effect on the performance of the leveling system.

1. After unhitching from tow vehicle press "AUTO LEVEL" (Fig. 2L).

NOTE: Pressing "ABORT" during an Auto Level sequence will abort the auto leveling cycle.

Auto Level Sequence

NOTE: Sequence may vary slightly based on the height of the trailer king pin prior to leveling.

1. When the Auto Level sequence begins, the front of the trailer will seek a position near a level state, then the trailer will level from front to back.
2. The left side jack(s) extend to ground (left mid and left rear).
3. The right side jack(s) extend to ground (right mid and right rear).
4. Jack pairs will extend as needed in order to level the trailer.

NOTE: Step 4 may repeat several times if the controller deems necessary.

NOTE: If the "AUTO LEVEL" sequence does not perform as described above, place the system in manual mode and test that the jacks operate correctly by pushing their coordinating buttons on the touch panel; e.g., "FRONT" button operates only the front jacks, etc.

Hitch Recognition - Reconnecting to Tow Vehicle

1. Push touch panel “ON/OFF” (Fig. 2K) to turn system on (See "Standard Mode and Menu" to reach standard mode.)
2. Press "AUTO HITCH" (Fig. 2M). Rear jacks will retract.
3. The front of the trailer will raise to the height where the auto level sequence was started.

NOTE: If the front of the trailer was below level when the Auto Level process was initiated, the hitch recognition feature will retract the rear jacks but will not retract the front jacks to lower the trailer to the initial hitch height. This feature helps prevent injury and/or damage to anything underneath the trailer.

4. Connect tow vehicle and make sure trailer and hitch are connected and locked.
5. On the Standard Mode screen (Fig. 2) use the "UP" and "DOWN" arrows (Fig. 2B) to scroll to "AUTO RETRACT" (Fig. 2F).
6. Push “ENTER” (Fig. 2H). System will immediately retract all jacks.

Zero Point Calibration

The “Zero Point” is the programmed point that the trailer will return to each time the Auto Level feature is used. The “Zero Point” must be programmed prior to using the Auto Level feature to ensure the proper operation of the system. The "Zero Point" feature is only available on the OneControl Touch Panel with this system.

NOTE: Prior to starting this procedure, double check all connections on the controller, jacks, and touch panel.

NOTE: When calibrating Zero Point, the user has full manual control over the jacks. See “Basic Jack Operation - Manual Mode” to adjust to the desired level position. Press the enter button to set.

To Set the Zero Point

NOTE: The following procedure works from Standard Mode only. (See "Standard Mode and Menu" to reach standard mode.)

1. Press the “CONNECTED” icon (Fig. 4A) at the top of the leveling screen quickly 6 times. Wait a few seconds until the gear icon with "OPTIONS" appears (Fig. 5A).
2. Press the gear icon with "OPTIONS" (Fig. 5A).
3. The screen will show "SET UP: Zero Mode Press Enter" (Fig. 6).
4. Press the “Enter button” (Fig. 6A).
5. The touch pad will present options for further leveling of the trailer if needed. The screen will also state "ZERO POINT CALIBRATION - Press Enter to Set" (Fig. 7).
6. Press "ENTER" (Fig. 7A).
7. Screen will show "Zero Point Stability Check ... Please Wait" (Fig. 8), followed by "Zero Point Set" (Fig. 9).

Fig. 4

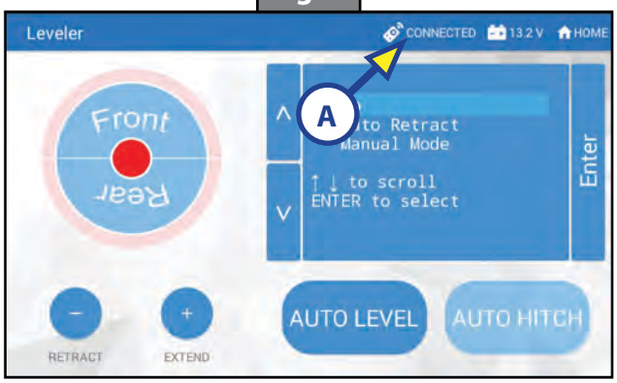


Fig. 5

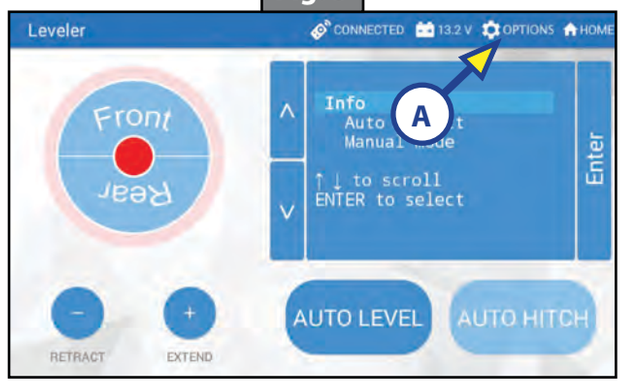


Fig. 6

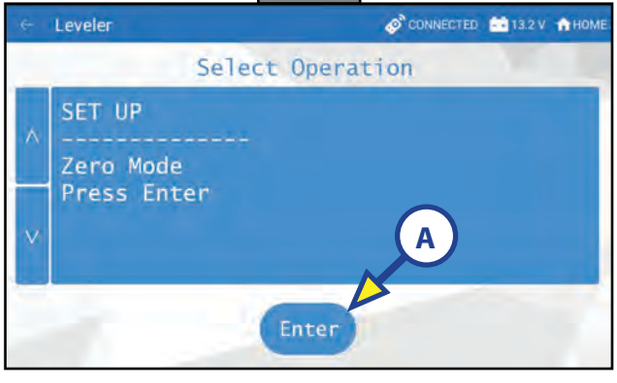


Fig. 7

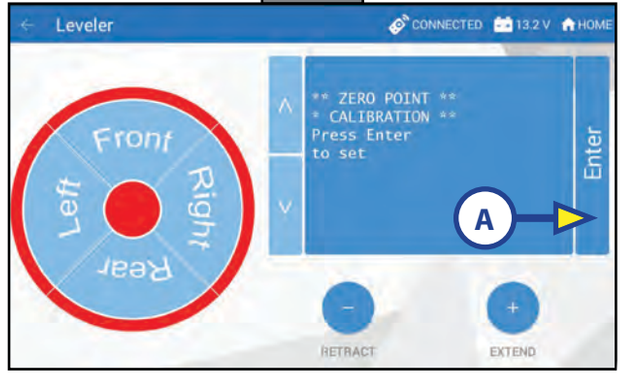


Fig. 8

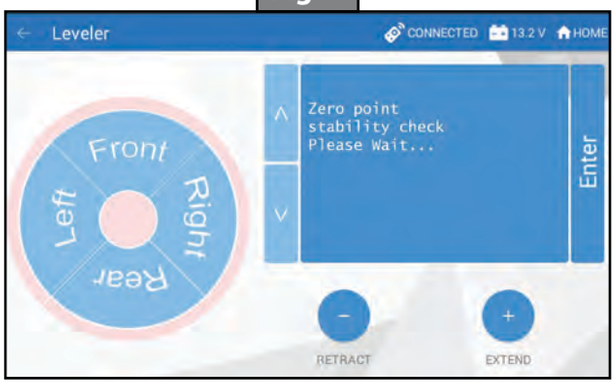
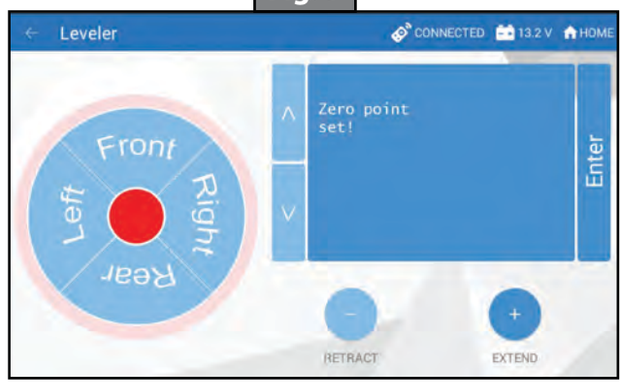


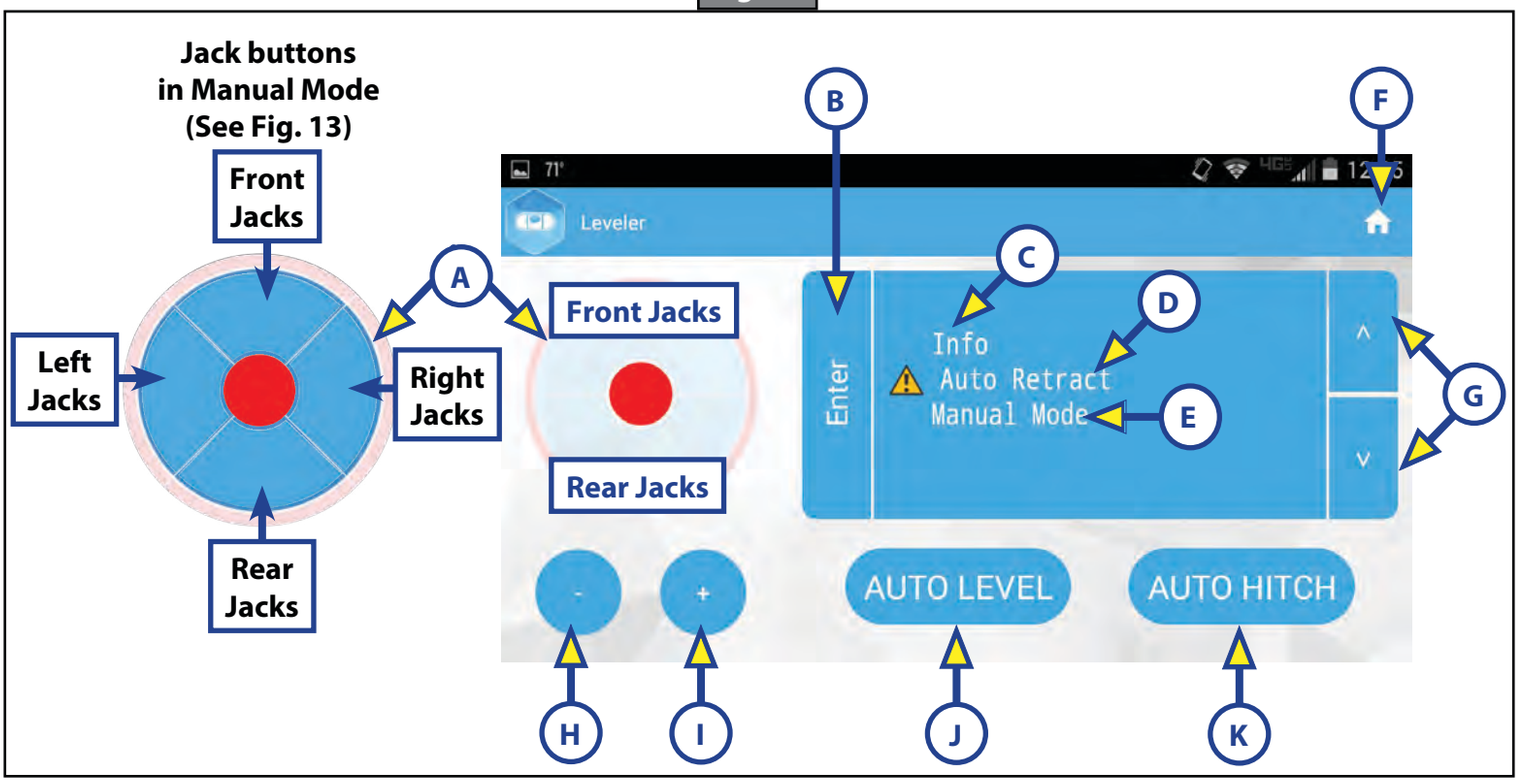
Fig. 9



Touch Pad Diagram - OneControl App From MyRV

NOTE: The One Control Leveling App is available on iTunes for iPhone and iPad and also on Google Play for Android users.

Fig. 10



Callout	Description
A	Jack Buttons - Select front, rear, right and left jacks to be operated depending on mode. Jacks available to be operated will be highlighted in blue. In Standard Mode (Fig. 10), only front and rear jacks are available to be operated. In Manual Mode (Fig. 12), all jacks are available to be operated.
B	Enter - Push to activate various modes.
C	Info - Displays system information, e.g., angle, jack stroke, software version.
D	Auto Retract - Enters Auto Retract mode to retract all jacks.
E	Manual Mode - Enters Manual Mode to manually operate jacks.
F	Home Icon - Returns screen to home page.
G	Up and Down Arrows - Scroll through options on screen.
H	Retract - Retracts jacks in several modes. Jacks available will be highlighted in blue.
I	Extend - Extends jacks in several modes. Jacks available will be highlighted in blue.
J	Auto Level - Starts the Auto Level sequence.
K	Auto Hitch - Returns trailer to previous hitch height for reconnecting to tow vehicle.

Operation - OneControl App

Accessing the OneControl App

1. Turn on the trailer to provide power to the trailer's wireless network.
2. Navigate to the device's (smart phone, tablet, etc.) wifi settings. Turn wireless feature on and connect to the MyRV wireless network.

NOTE: If this is the first time connecting to the MyRV wireless network, a password will be required. The password is located on the trailer's wifi hub (Fig. 11).

3. Open the OneControl application on the compatible device.

NOTE: If the device states "Unresolved Network Connection," retry connecting to the MyRV wireless network and/or wait for the connection to resolve and display "Connected" under the MyRV wireless connection.

4. The application will request the user "Agree" to an end user license agreement, create a PIN and "Re-enter PIN to confirm."
5. The OneControl app will now display all functions. Choose "Leveler."

Fig. 11

Standard Mode and Menu

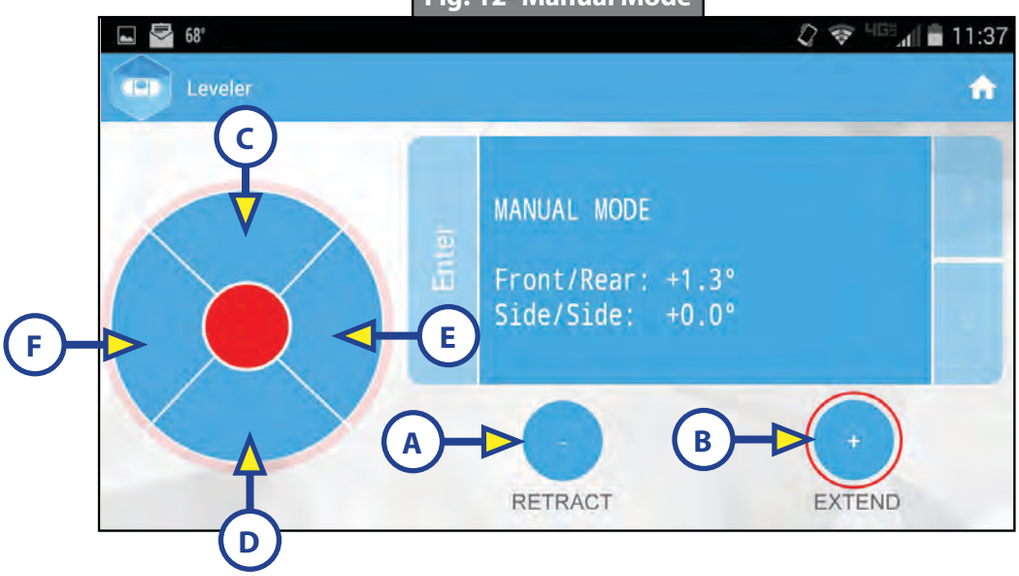
Standard Mode is the mode launched when the OneControl app "Leveler" function is powered up. The screen will show the system menu (Fig. 10). The front jacks can be extended/retracted in Standard Mode. Rear jacks can be retracted from this mode.

Basic Jack Operation

While in Standard Mode:

1. Press "RETRACT" (Fig. 10H) or "EXTEND" (Fig. 10I) and "FRONT" (Fig. 10) to extend or retract front jacks.
2. Press "RETRACT" and "REAR" (Fig. 10) to retract rear jacks.
3. Press the "AUTO LEVEL" (Fig. 10J) button to start the leveling sequence.
4. Press the "AUTO HITCH" (Fig. 10K) button to start the hitch recognition sequence when reconnecting to tow vehicle.
5. Use the "UP" or "DOWN" arrow buttons (Fig. 10G) to cycle through the menu options:
   - **A. Info**: Scroll to "INFO" (Fig. 10C) and press "ENTER" button to display system information, e.g., angle, jack stroke or software version.
   - **B. Auto Retract**: Scroll to "AUTO RETRACT" (Fig. 10D) and press "ENTER" button to start the Auto Retract sequence.
   - **C. Manual Mode:** Scroll to "MANUAL MODE" (Fig. 10E) and press "ENTER" button to start Manual Level operation. Jacks operate in pairs. Use "RETRACT" or "EXTEND" to operate front jacks and rear jacks.
     - **I.** Press "RETRACT" (Fig. 12A) or "EXTEND" (Fig. 12B), then FRONT (Fig. 12C) to operate front jacks.
     - **II.** Press "RETRACT or "EXTEND," then "REAR" (Fig. 12D) to operate rear jacks (right rear, right mid, left rear and left mid).
     - **III.** Press "RETRACT" or "EXTEND," then "RIGHT" (Fig. 12E) to operate right jacks (right mid and right rear).
     - **IV.** Press "RETRACT" or "EXTEND," then "LEFT" (FIG. 12F) to operate left jacks (left mid and left rear).

Fig. 12- Manual Mode



Unhitching Instructions

NOTE: Prior to unhitching from the tow vehicle, ensure trailer is parked on a level surface and chock the tires of the trailer.

1. Push "Extend" (Fig. 10I) and "FRONT" buttons (Fig. 10) to extend front jacks and lift front of trailer to take the weight of the trailer off of the hitch.
2. Uncouple the trailer connection on the tow vehicle.
3. Pull tow vehicle away and park at a safe distance.

Auto Level

NOTE: Once the automatic leveling cycle has been started, it is important that there is no movement in the trailer until the trailer has completed the leveling process. Failure to remain still during the leveling cycle could have an effect on the performance of the leveling system.

1. After unhitching from tow vehicle press "AUTO LEVEL" (Fig. 10J).

NOTE: Pressing "ABORT" during an Auto Level sequence will abort the auto leveling cycle.

Auto Level Sequence

NOTE: Sequence may vary slightly based on the height of the trailer king pin prior to leveling.

1. When the Auto Level sequence begins, the front of the trailer will seek a position near a level state, then the trailer will level from front to back.
2. The left side jack(s) extend to ground (left mid and left rear).
3. The right side jack(s) extend to ground (right mid and right rear).
4. Jack pairs will extend as needed in order to level the trailer.

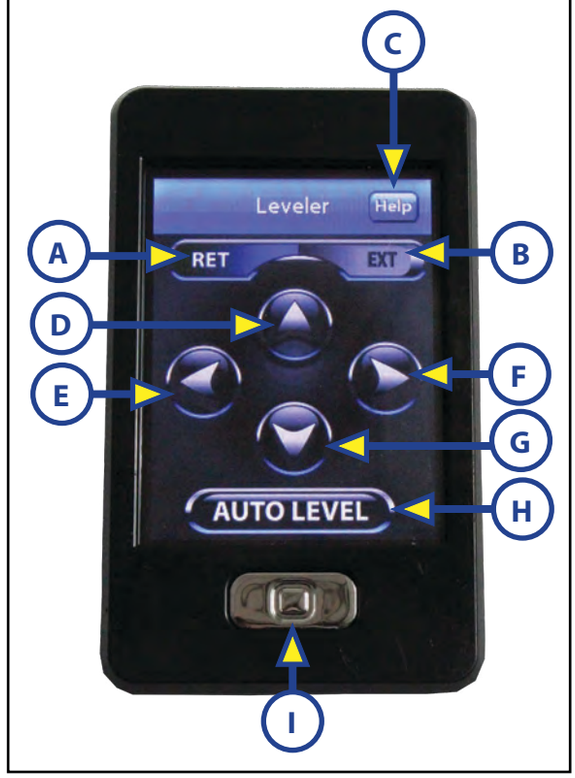
NOTE: Step 4 may repeat several times if the controller deems necessary.

NOTE: If the AUTO LEVEL sequence does not perform as described above, place the system in manual mode and test that the jacks operate correctly by pushing their coordinating buttons on the touch panel in manual mode, e.g., "FRONT" button operates only the front jacks, etc.

Touch Pad Diagram - Linc Remote Control - Optional

Callout	Description
A	Retract - Retracts front jacks and rear jacks.
B	Extend - Extends front jacks and rear jacks.
C	Help - Provides contact information for LCI.
D	Front Arrow - Operates front jacks.
E	Left Arrow - Operates left rear jacks.
F	Right Arrow - Operates right rear jacks.
G	Rear Arrow - Operates rear jacks.
H	Auto Level- Initiates Auto Level sequence.
I	Power Button - Turns remote control on and off.

Fig. 13



Configuring Linc Remote to Sync to MyRV One Control Touch Panel

1. Turn on the Linc remote control (Fig. 13I) and enter a PIN.
2. Choose "Leveler" from the menu screen.
3. Turn on the MyRV OneControl Touch Panel (Fig. 2K).
4. On the MyRV OneControl Touch Panel, press the "CONNECTED" icon at the top of the screen (Fig. 14A) quickly 6 times. Wait a few seconds until the gear icon with "OPTIONS" appears (Fig. 15A).
5. Press the gear icon with "OPTIONS" (Fig. 15A).
6. Use the "UP" and "DOWN" arrows (Fig. 15B) to scroll to "WIRELESS CONFIG" (Fig. 16).
7. Press "ENTER" (Fig. 16A). The screen will display "Wireless Configuration Press any Linc button to Sync" (Fig. 17).
8. Press any button in "Leveler" mode on the Linc remote control (Fig 13).
9. Pressing "ABORT" on the MyRV OneControl Touch Panel (Fig. 17A) will cancel configuration sequence.

Fig. 14

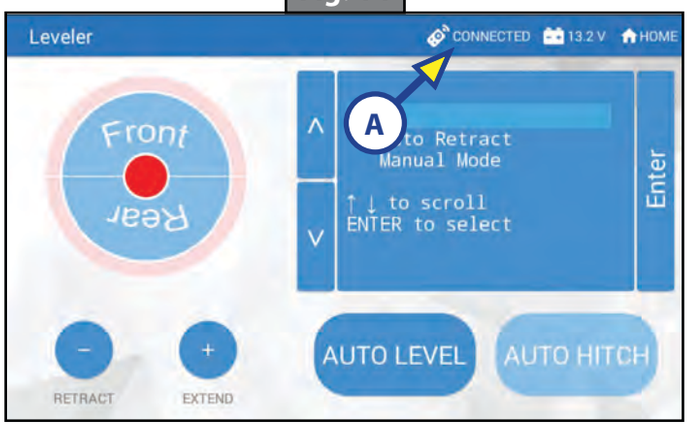


Fig. 15

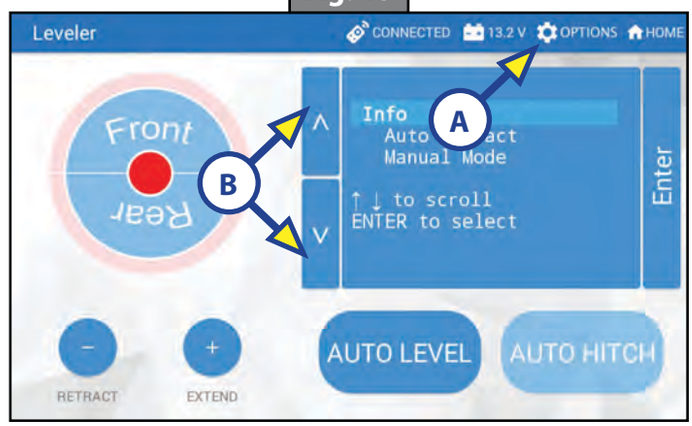


Fig. 16

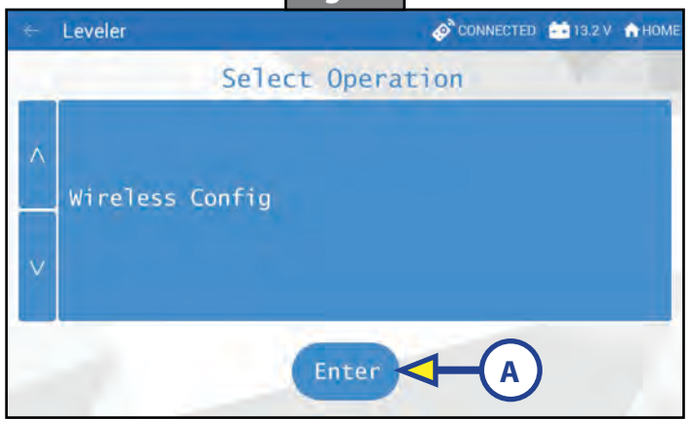
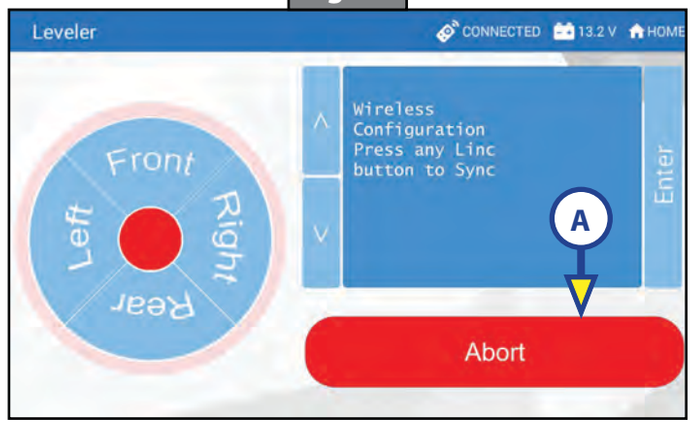


Fig. 17



Basic Jack Operation

1. Press RETRACT (Fig. 13A) or EXTEND (Fig. 13B) and "front" arrow (Fig. 13D) to operate front jacks.
2. Press RETRACT or EXTEND, then "rear" arrow (Fig. 13G) to operate rear jacks (right rear, right mid, left rear and left mid).
3. Press RETRACT or EXTEND, then "right" arrow (Fig. 13F) to operate right jacks (right mid and right rear).
4. Press RETRACT or EXTEND, then "left" arrow (Fig. 13E) to operate left jacks (left mid and left rear).
5. Press AUTO LEVEL (Fig. 13H) to start auto-level sequence.

Unhitching Instructions

NOTE: Prior to unhitching from the tow vehicle, ensure trailer is parked on a level surface and chock the tires of the trailer.

1. Turn the Linc remote on (Fig. 13I) and enter a PIN code to turn system on.
2. Press the LEVELER button.
3. Press EXTEND (Fig. 13B) and FRONT arrow (Fig. 13D) to extend front jacks and lift front of trailer to take the weight of the trailer off of the hitch.
4. Uncouple the trailer connection on the tow vehicle.
5. Pull tow vehicle away and park at a safe distance.

Auto Level

NOTE: Once the automatic leveling cycle has been started, it is important that there is no movement in the trailer until the trailer has completed the leveling process. Failure to remain still during the leveling cycle could have an effect on the performance of the leveling system.

1. After unhitching from the tow vehicle press "AUTO LEVEL" (Fig. 13H).

NOTE: Pressing any button on the Linc™ remote during an Auto Level sequence will abort the auto leveling cycle. To restart the Auto Level process, refer to the OneControl Touch Panel (Fig. 2).

Auto Level Sequence

NOTE: Sequence may vary slightly based on the height of the trailer king pin prior to leveling.

1. When the Auto Level sequence begins, the front of the trailer will seek a position near a level state, then the trailer will level from front to back.
2. The left side jack(s) extend to ground (left mid and left rear).
3. The right side jack(s) extend to ground (right mid and right rear).
4. Jack pairs will extend as needed in order to level the trailer.

NOTE: Step 4 may repeat several times if the controller deems necessary.

NOTE: If the Auto Level sequence does not perform as described above, test that the jacks operate correctly by pushing their coordinating buttons on the Linc remote; e.g., "FRONT" button operates only the front jacks, etc. The jacks can also be tested in manual mode on the OneControl Touch Panel (Fig. 2). See Operation - MyRV OneControl Touch Panel.

Maintenance

Fluid Recommendation

Automatic transmission fluid (ATF) with Dexron® III or Mercon® V or a blend of both is recommended by Lippert Components, Inc. For a list of approved fluid specifications, see TI-188. To obtain this Technical Information sheet on-line, go to http://www.lci1.com/support-lci4a3lcd. Then click on the Technical Information Sheets tab. Look for *TI-188: Hydraulic Operation Fluid Recommendation* within the listing.

NOTE: In colder temperatures (less than 10 ° F) the jacks may extend and retract slowly due to the fluid's molecular nature. For cold weather operation, fluid specially formulated for low temperatures may be desirable.

Preventative Maintenance

1. Check hydraulic fluid in reservoir every 12 months. If fluid is a clear, red color, do not change. If fluid is milky, pink and murky, and not clear red in color, drain reservoir and add new fluid. Hydraulic fluid in reservoir should be changed a minimum of every five years.

NOTE: Check the fluid only when all the jacks are fully retracted.

NOTE: When checking the hydraulic fluid level, fill to within ¼" to ½" of fill spout.

2. Inspect and clean all power unit electrical connections every 12 months. If corrosion is evident, use a small amount of lubricant to remove corrosion. Contacts must be cleaned with a non-residue cleaner prior to use. LCI recommends the use of an electrical contact cleaner spray.
3. Remove dirt and road debris from jacks as needed.

⚠WARNING

The coach should be supported at both front and rear axles with jack stands before working underneath. Failure to do so may result in death, serious personal injury or severe product or property damage.

4. If jacks are down for extended periods, it is recommended to spray exposed jack rods with a dry silicone lubricant every three months for protection. If the trailer is located in a salty environment, it is recommended to spray the rods every four to six weeks.

Manual Override

The LCI Level-Up Automatic Leveling System can be manually operated with an electric drill. In the event of electrical or system failure, this manual method of extending and retracting the jacks can be used. See the instructions below.

NOTE: Unhook the power unit motor from the power source prior to attempting the manual override procedure.

1. Locate the valves that are paired with the front jacks or rear jacks to be manually overridden.
   - **A.** Front jacks - Valve located on the front jacks (Fig. 18).
   - **B.** Rear Jacks - Valve located on manifold (Fig. 19).

⚠ CAUTION

DO NOT over-tighten override set screws, as this can damage the valves.

2. Using a 5⁄32" hex wrench, open the valve by turning the manual override set screw clockwise (Fig. 20A).
3. Remove protective label (Fig. 21A) from power unit to reveal the manual override coupler.

⚠ CAUTION

DO NOT use an impact wrench to perform any of the override procedures, as this may damage the motor.

4. Using an electric drill with a 1⁄4" hex bit, insert the hex bit into the manual override coupler to manually operate the Level-Up system (Fig. 22).
   - **A.** Run the drill forward (clockwise) to retract the front jacks or rear jacks (Fig. 22A).
   - **B.** Run the drill in reverse (counterclockwise) to extend the front jacks or rear jacks (Fig. 22B).
5. Be sure to turn the manual override set screw on the valve (Fig. 23A) back to the counterclockwise position after extending or retracting the front jacks or rear jacks.

Fig. 18

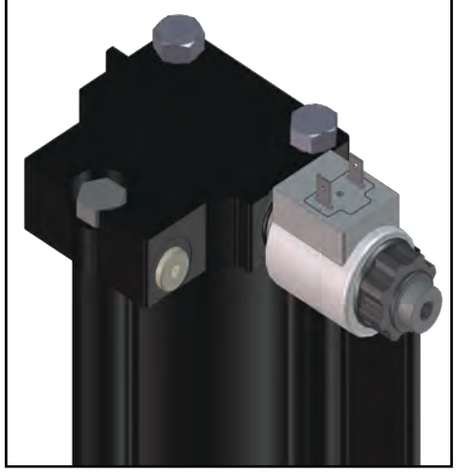


Fig. 19

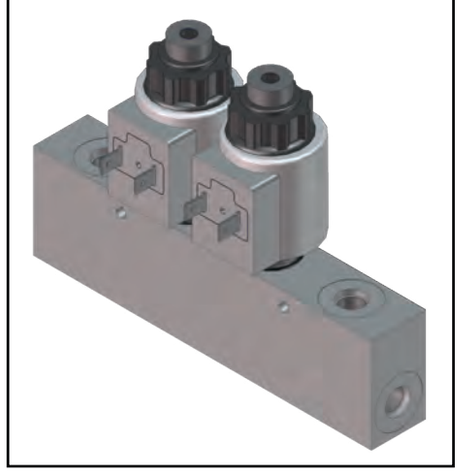


Fig. 20

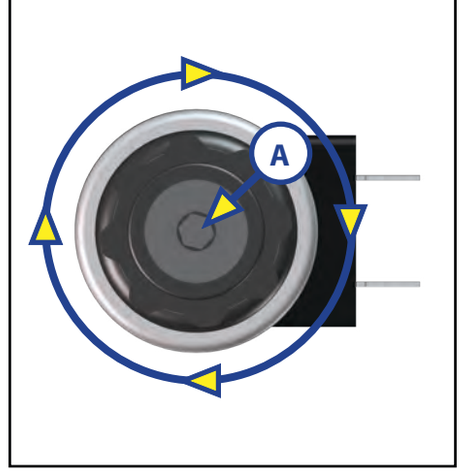


Fig. 21

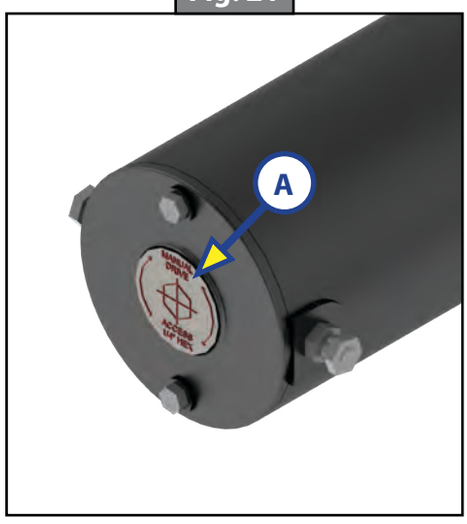


Fig. 22

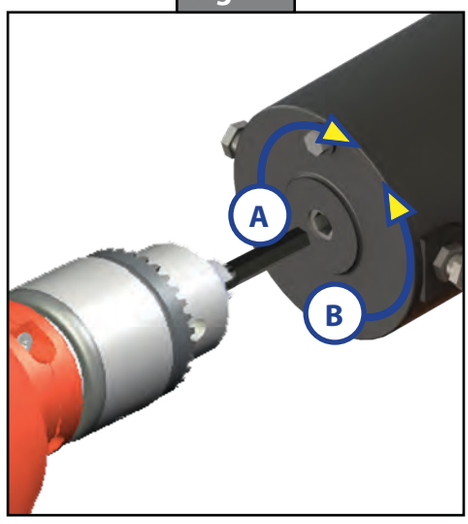
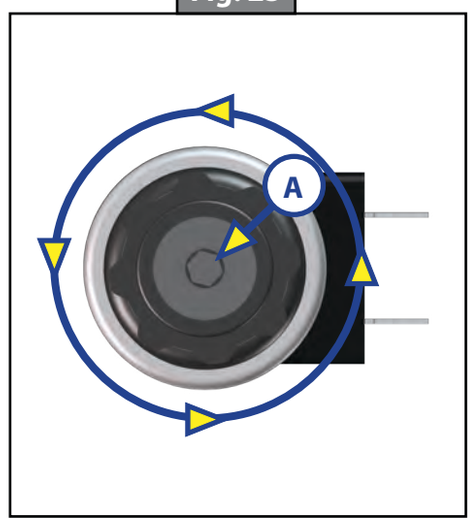


Fig. 23



Troubleshooting

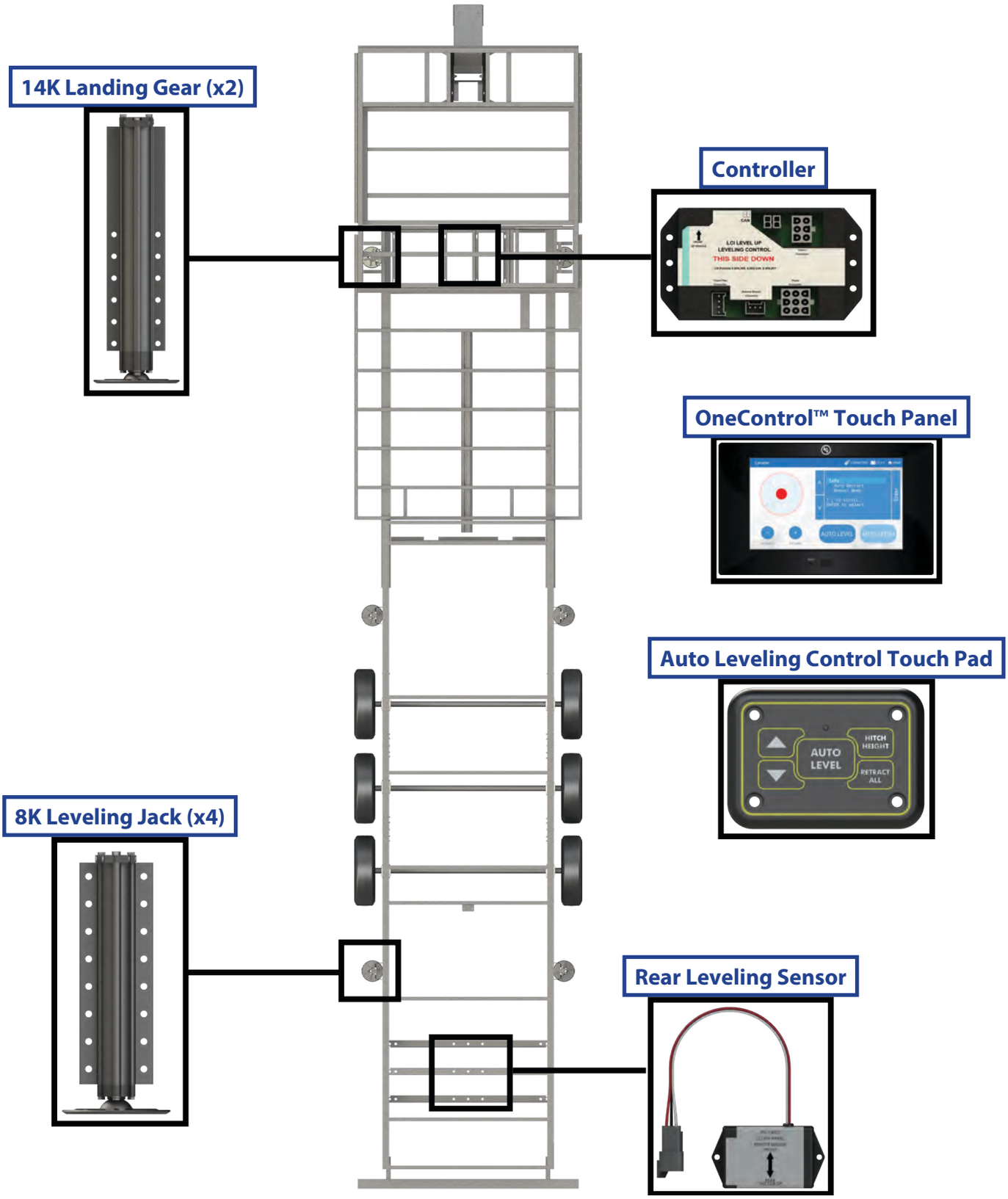
Error Display In LCD Screen

Faults can only be cleared via the OneControl Touch Panel or OneControl Leveling App through MyRV. The only exception is when the Auto Leveling Control mini-touch pad (Fig. 1) was used to abort an auto-sequence. In this case the fault can be cleared by pressing any Auto Leveling Control button.

LCD Message	What's Happening?	What Should Be Done?
"EXCESS ANGLE"	Unsecured controller. Uneven or sloped site.	Check and secure controller placement. Relocate the trailer.
"EXCESSIVE ANGLE"	Controller not properly secured.	Check and secure controller placement.
	Excessive angle reached during manual operation.	Relocate the coach.
"BAD CALIBRATION"	Sensor calibration values are out of range.	Replace controller.
"FEATURE DISABLED"	Hitch recognition requested but no hitch height set.	Perform "AUTO LEVEL" sequence to establish hitch height.
	Zero point not set.	Set zero point.
"LOW VOLTAGE"	Bad connection or wiring. Discharged or bad battery.	Check wiring - repair or replace. Test battery voltage under load - charge or replace.
"OUT OF STROKE"	Unsecured controller. Uneven or sloped site.	Check and secure controller placement. Relocate the trailer.
"EXTERNAL SENSOR"	Bad connection or wiring.	Replace or repair connection to rear remote sensor.
"JACK TIME OUT"	System could not level in expected time.	Check for obstructions, leaks, fluid level and voltage to power unit motor under load.
"AUTO LEVEL FAILURE"	Unsecured controller. Voltage drop.	Check and secure controller placement. Test battery voltage under load - charge or replace.
"FUNCTION ABORTED"	User has aborted an automatic leveling sequence.	Restart the sequence.

LEVEL-UP® TOWABLE OCTP ASSEMBLY

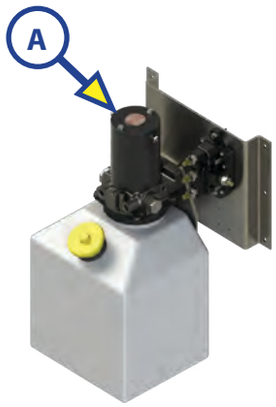
LEVELING AND STABILIZATION

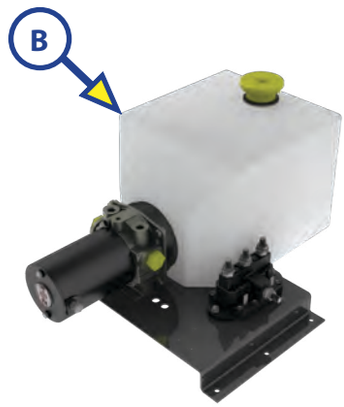


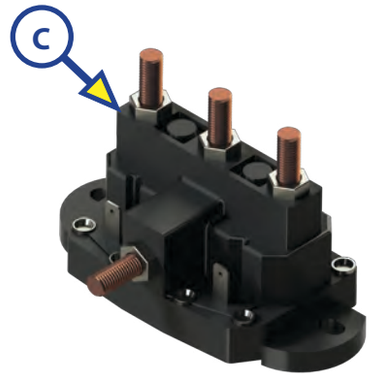
LEVEL-UP® TOWABLE OCTP COMPONENTS

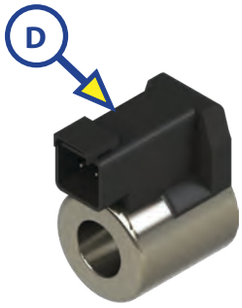
LEVELING AND STABILIZATION

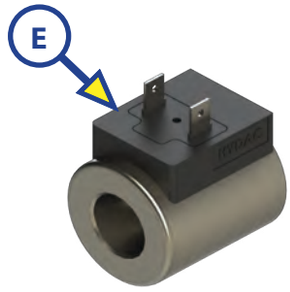
NOTE: Part numbers are shown for identification purposes only. Not all parts are available for individual sale. All parts with a link to the Lippert Store can be purchased.

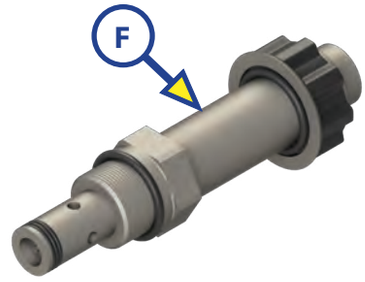


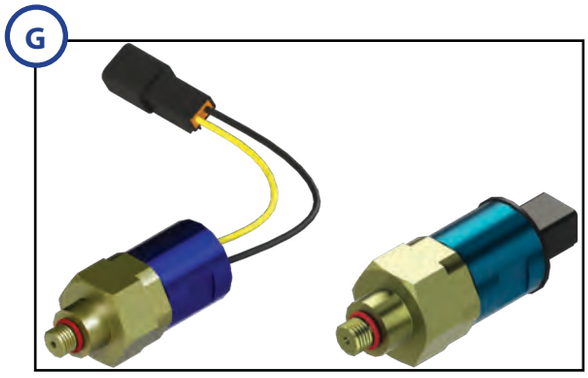












Original **Current**

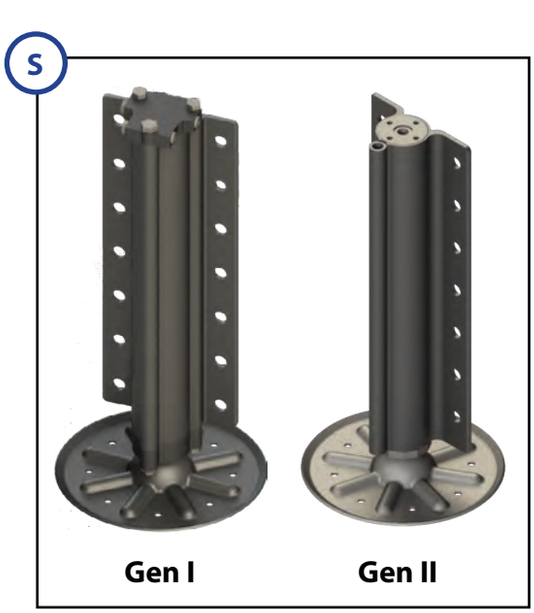
Callout	Part #	Description
A	251910	Vertical Power Unit
B	251909	Horizontal Power Unit
C	118246	Dual Polarity Solenoid
D	174184	Deutsch Coil
E	176954	Spade Coil
F	177094	Cartridge Valve
G	142927	Pressure Switch
H	167576	Power Unit Motor
I	157505	Fill Cap

LEVEL-UP® TOWABLE OCTP COMPONENTS

LEVELING AND STABILIZATION

Callout	Part #	Description
J	406345	OneControl™ Touch Panel (5")
	675813	OneControl™ Touch Panel (7")
K	425585	4-Pin Pigtail Harness
L	237855	Deutsch 2 Wire Pigtail Harness
M	425749	Controller
N	425306	Auto Leveling Control Touch Pad
O	*135461	80 AMP 12V Breaker
P	241318	Controller Harness
Q	331116	CAN Bus Data Harness
R	333041	CAN Bus Terminating Resistor
NOTE: * Circuit Protection requirement is 50 amps to 100 amps as needed by RVIA Standards and OEM requirements.		

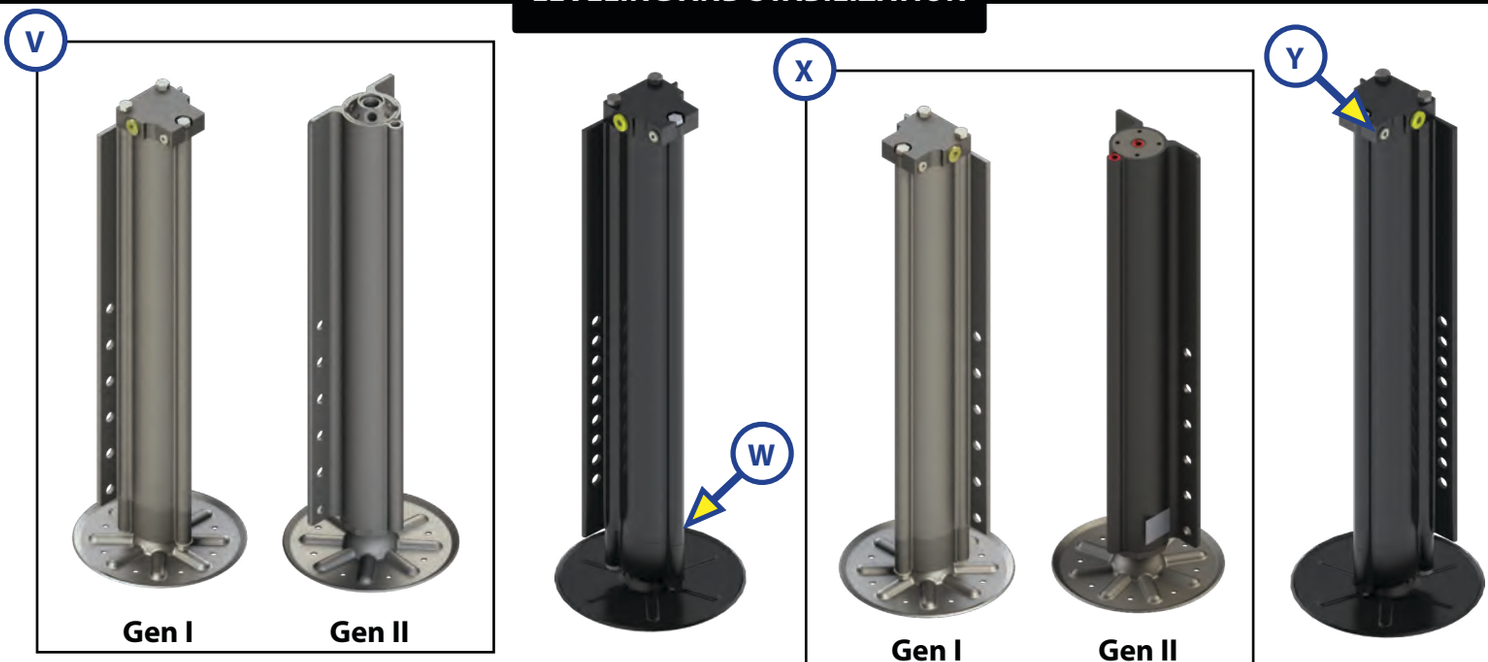
8K Jacks

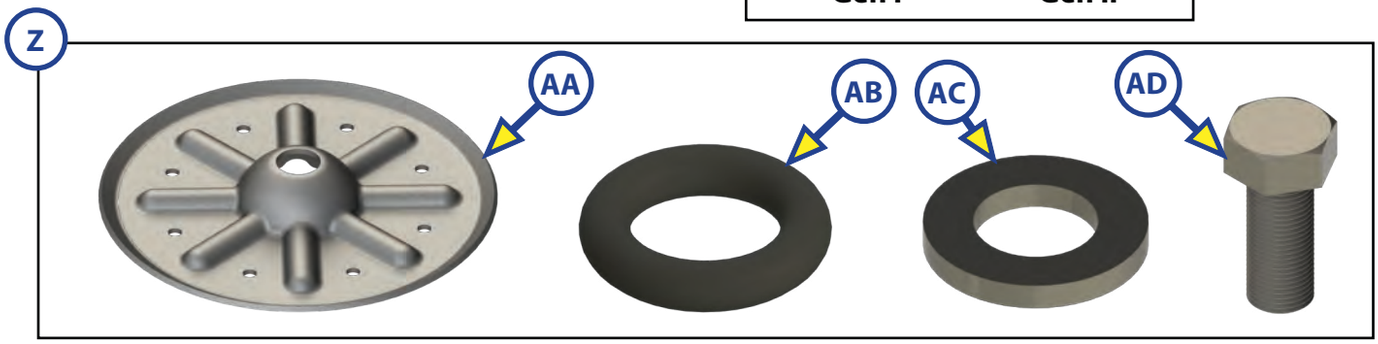


Callout	Part #	Description
S	336066	Mini 8K Jack **(Gen I)**
	708459	Mini 8K Jack **(Gen II)**
T	195860	8K Jack, 8 Hole Black **(Gen I)**
	372892	8K Jack, 8 Hole Black **(Gen II)**
	1958604	8K Jack, 8 Hole Silver **(Gen I)**
	3728923	8K Jack, 8 Hole Silver **(Gen II)**
U	433458	8K Jack, 13 Hole Black **(Gen I)**
	43345810	8K Jack, 13 Hole Silver **(Gen I)**

LEVEL-UP® TOWABLE OCTP COMPONENTS

LEVELING AND STABILIZATION

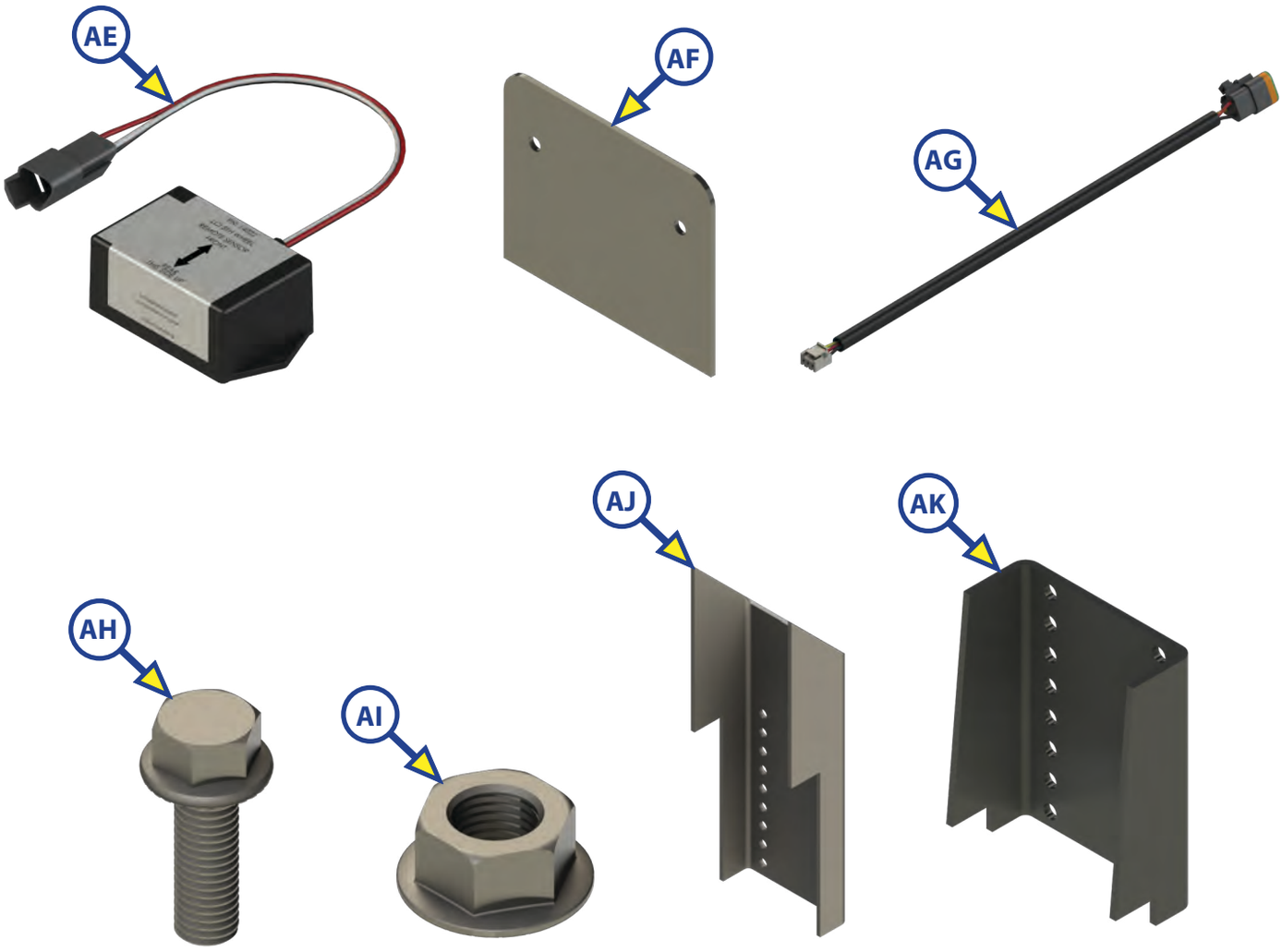




Callout	Part #	Description
V	257125	14K Landing Gear, 6 Hole Black (RH) **(Gen I)**
	2571254	14K Landing Gear, 6 Hole Silver (RH) **(Gen I)**
	351924	14K Landing Gear, 6 Hole Silver (RH) **(Gen II)**
W	433469	14K Landing Gear, 9 Hole Black (RH) **(Gen I)**
	43346910	14K Landing Gear, 9 Hole Silver (RH) **(Gen I)**
X	257126	14K Landing Gear, 6 Hole Black (LH) **(Gen I)**
	2571264	14K Landing Gear, 6 Hole Silver (LH) **(Gen I)**
	731041	14K Landing Gear, 6 Hole Silver (LH) **(Gen II)**
Y	433467	14K Landing Gear, 9 Hole Black (LH) **(Gen I)**
	43346710	14K Landing Gear, 9 Hole Silver (LH) **(Gen I)**
Z	324269	Footpad Kit
AA	364372	Footpad
AB	123932	O-Ring Seal (2x)
AC	178208	Washer, ¾"
AD	139446	Hex Bolt, ⅝" - 18 x 1 ½"
NOTE: A second O-Ring seal needs to be used above the footpad to secure kit.		

LEVEL-UP® TOWABLE OCTP COMPONENTS

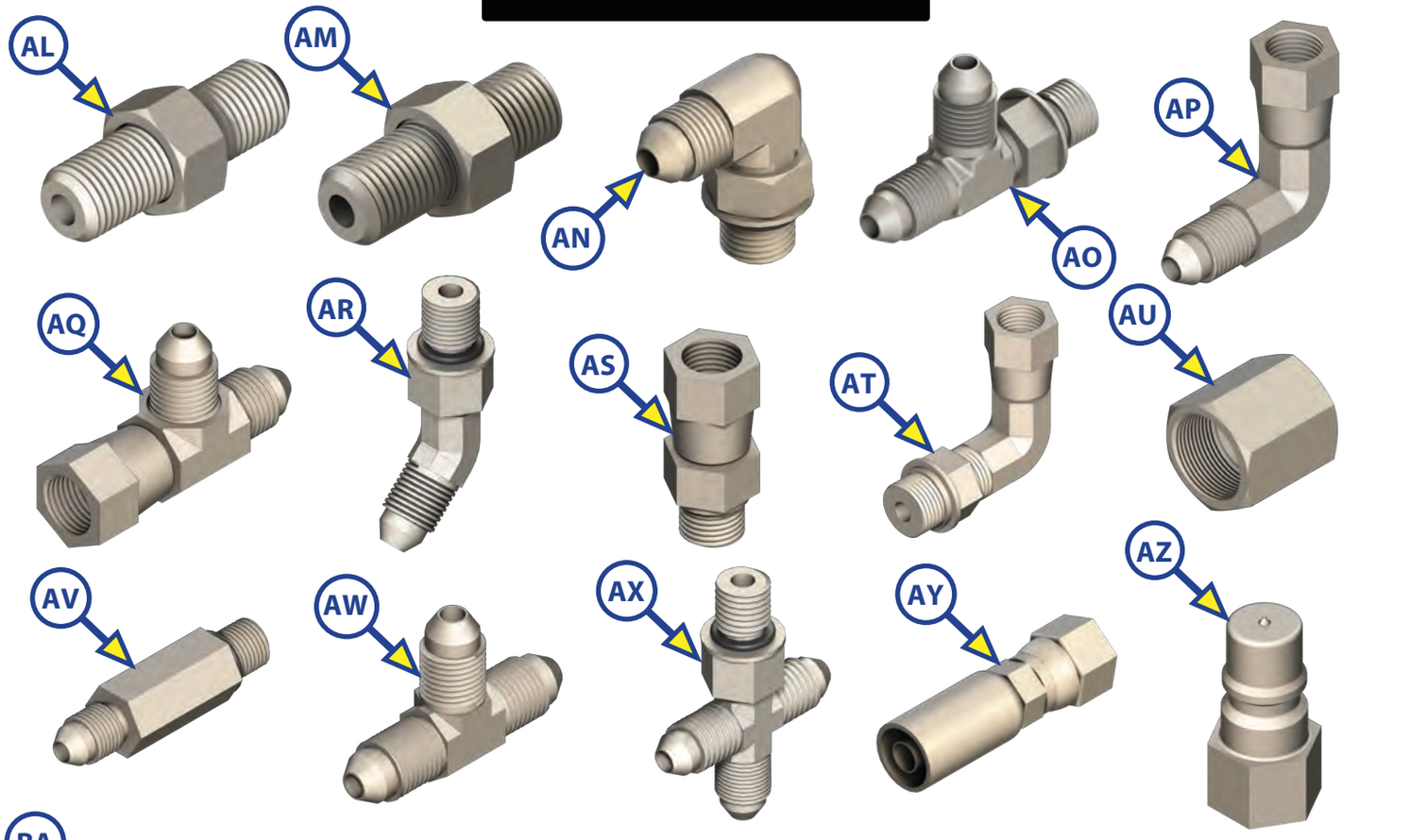
LEVELING AND STABILIZATION



Callout	Part #	Description
AE	232201	Rear Sensor
AF	231775	Rear Sensor Mounting Plate
AG	241314	Rear Sensor Harness
AH	118076	Bolt, ½" - 20 x 1 ½"
AI	178210	Nut, ½" - 20
AJ	134989	Mount Bracket (Weld-On)
AK	218210	Front Mount Bracket (Weld-On)

LEVEL-UP® TOWABLE OCTP COMPONENTS

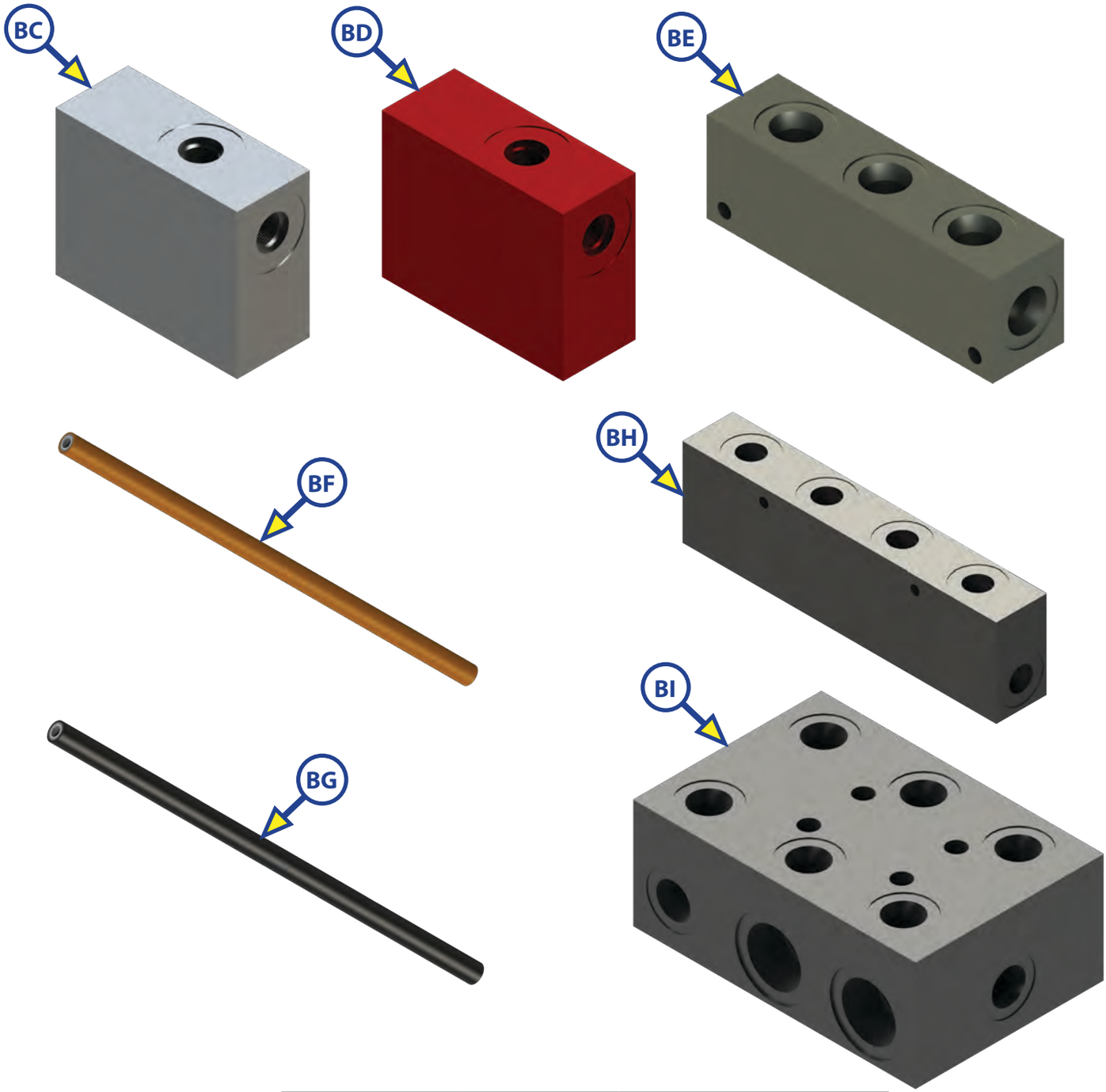
LEVELING AND STABILIZATION



Callout	Part #	Description
AL	113042	Hose Union Fitting
AM	113131	Straight Fitting
AN	113128	JIC to O-Ring 90 Degree Elbow Fitting
AO	113130	Run Tee Fitting
AP	113134	Swivel Elbow Fitting
AQ	113135	Swivel Run Tee Fitting
AR	113129	45 Degree Elbow Fitting
AS	113133	Swivel Straight Fitting
AT	141020	Swivel Elbow Fitting
AU	216288	Steel Cap Fitting
AV	139417	Long Straight Fitting
AW	138423	Union T-Fitting
AX	136225	Cross Fitting
AY	138416	Hose Coupling
AZ	140457	Quick Disconnect
BA	141323	Hex Plug
BB	140998	Hollow Hex Plug

LEVEL-UP® TOWABLE OCTP COMPONENTS

LEVELING AND STABILIZATION



Callout	Part #	Description
BC	138420	Manifold
BD	138421	Restricted Manifold
BE	166078	Retract Valve Block
BF	248654	Orange Hose
BG	248653	Black Hose
BH	194712	Extend Valve Block
BI	255130	4-Bank Manifold

Notes

LIPPERT COMPONENTS®

Please recycle all obsolete materials.

For all concerns or questions, please contact
Lippert Components, Inc.
Ph: (574) 537-8900 | Web: lci1.com | Email: customerservice@lci1.com

ELECTRICAL SYSTEMS

The electrical system on your Vilano fifth wheel is comprised of two independent electrical systems. One system is 120-volt 60HZ AC power (shore), and the other is 12VDC power (battery).

All installations meet or exceed industry standards applicable on the date of manufacture. The electrical equipment and associated circuitry are engineered into a dedicated system specific to your RV. Unauthorized changes or adding fixed appliances is NOT recommended. Changes or additions made after delivery may result in a hazardous condition.

Service and/or modification of the RV electrical system should only be performed by qualified electrical technicians. The methods, components, and materials used must be in compliance with current safety and code requirements. Please consult your dealer's service department for assistance.

Electrical System Maintenance

- ALWAYS disconnect the negative 12VDC battery terminal and the shore power cord BEFORE working on the electrical system.

For more information on your RV's electrical system, See the component manuals in your Owner Information Package.

50-AMP POWER CORD

The power cord (or shore power cord) connects your RV to an external power receptacle. This heavy-duty cord has a dual purpose.

- It carries voltage and current to your RV from the external power receptacle, and
- Grounds your RV electrical system through the external power receptacle.

ALWAYS test the external power receptacle (or electrical box) with a Ground Monitor BEFORE connecting your power cord.

NEVER connect the power cord if the ground monitor indicates reverse polarity or an open ground.

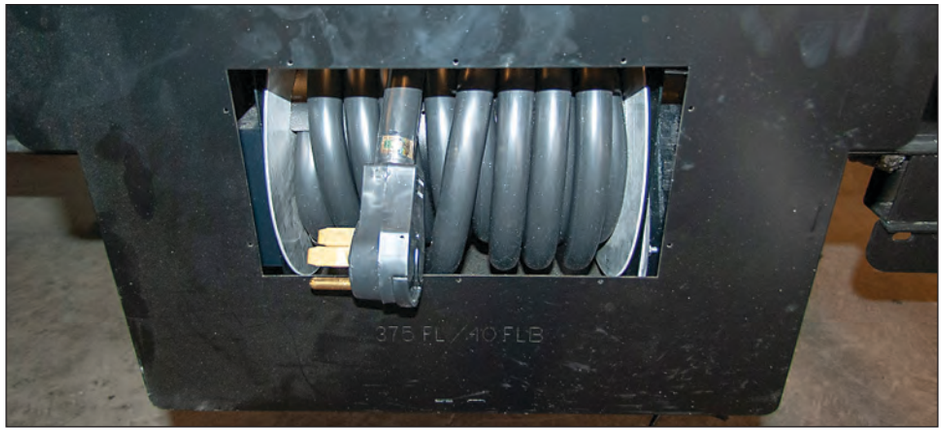


Figure 22. *50-Amp Power Cord*

Connecting the power cord

1. Turn OFF the load center main 120-volt circuit breaker.
2. Carefully extend the entire length of the power cord from the electric cable hatch to the external power source.
3. Plug the power cord into the receptacle. Make sure that all of the power cord prongs are properly seated into the receptacle.
4. Return to your RV and turn ON the load center main circuit breaker.

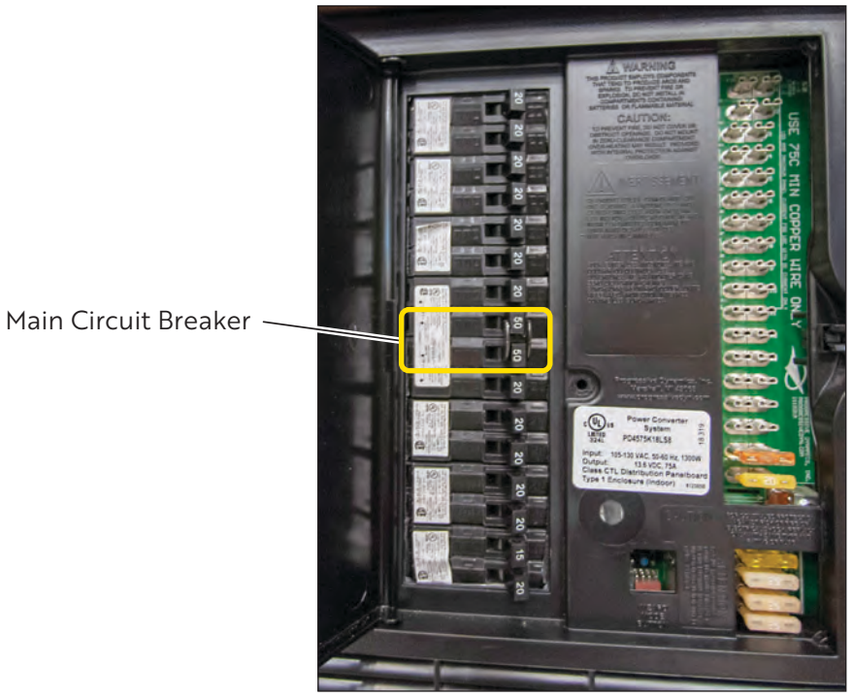


Figure 23. *Load Center*

5. To help prevent power surges from damaging the connected loads, please follow these instructions when hooking up to the external power source:

   A. Unplug the shore power cord when the RV is left unused. This may help limit potential damage in the event of a power surge.

   B. Use care to prevent damaging the connection pins when connecting or disconnecting the power cord.

   C. Reverse the "Connecting the power cord" on page 117 steps (1-5), when you are ready to leave.

6. ALWAYS disconnect the power cord from the outlet by the plug; NEVER disconnect the plug by pulling the cord.

Power Cord Maintenance

7. Frequently inspect the power cord for cuts, cracks and worn insulation. Replace it immediately if any of these symptoms are found.

LOAD CONTROL CENTER

The circuit breakers and associated fuses are installed to protect the electrical system of the RV from any overloads. Do not attempt to change from the electrical circuitry or to add appliances yourself.

Please consult an authorized dealership or Vanleigh RV, Inc. to determine whether any changes you desire are appropriate and acceptable. Our qualified staff of electricians can readily determine whether any changes sought (e.g.: CB radio, amateur radio, satellite television receiver, personal computer system, and the like) are possible or not and can advise you on how to add these features.

NOTE: *The 12-VDC fuses and breakers are located in a separate compartment adjoining the 120-VAC breakers. Fusing is provided for the following 12VDC circuits: all interior/decorative/overhead lighting, water heater, TV antenna booster, slide-outs, power roof vents, monitor panel, exterior lights, awning, air conditioning, and thermostat.*

NOTE: *The Truma water heater always works on LP, but it needs 12V to ignite.*

- 2-in-1 unit combines an AC/DC distribution panel with a converter and smart battery charger
  - Delivers AC and DC loads and converts shore power to charge your RV batteries
  - Consolidated system saves space and means you only have to install 1 component

- Power distribution panel provides power to AC and DC applications in your RV
  - AC section includes 12 branch circuits rated for 240V at 50 amps
  - DC section includes 18 branch fuse holders - wired for (4) 30 amp and (14) 20 amp fuses
  - AC breakers and DC fuses not included
- Power converter with smart charger converts AC shore power to DC power to quickly charge your RV batteries
  - Provides continuous power to run 12V loads
  - Works with flooded lead acid, AGM, and gel batteries
- Integrated Charge Wizard monitors your RV's batteries and automatically begins charging when needed
- Automatic multistage charging switches modes as the battery charges and helps extend battery life
  - Boost mode charges at the full rated load for a quicker recharge time
  - Normal mode provides controlled voltage to ensure a full charge
  - Storage mode maintains a lower voltage to compensate for self-discharge which reduces battery stress
  - Equalization mode activates to prevent stratification and sulfate buildup during extended storage cycles
- Built-in safety features protect your RV's electrical system
- Current protection for reverse polarity, overheating, short circuiting, and over/under voltage
- Cooling fan controls the temperature of the converter and removes excess heat generated by the unit

Figure 24. *Power Control Center*

Inspection and maintenance

If the 12V power converter is NOT working, or the battery system is not being charged:

1. Locate the converter fuse panel on one end of the converter. See "Figure 25. 120-Volt Circuit Breakers" on page 122.
2. Check the fuses to see if they are blown.

The manufacturer's warranty will be void if the case has been removed. There are no customer serviceable parts inside.

For further information, contact your dealer.

120-VOLT AC SYSTEM

Your RV is equipped with a **50 amp** electrical system.

- The ***50 amp*** 120 volt 60hz AC electrical system is designed to operate on two (2) legs of 120-volt power at a maximum current flow of 50 amperes per leg.

Power to your 120-volt 60hz AC electrical system (30 amp or 50 amp) can be supplied by the 120-volt 60hz utilities found at RV campgrounds or by a generator. A campground's electrical service may occasionally experience high or low voltage.

- **Exposure to voltages higher or lower than 120-volts will damage or shorten the service life of the electrical system and appliances.**

The following electrical components (if so equipped) will operate ONLY when your RV is connected to shore power: 120-volt to 12V power converter, air conditioner, 120-volt refrigerator, wine chiller, microwave oven, television(s), fireplace, and other appliances that plug into convenience electrical receptacles.

For recommendations on power-surge protection, consult your dealer.

120-VOLT CIRCUIT BREAKERS

When the circuit breakers are shut down or electrically tripped, they must be manually reset. These breakers protect the slide-outs, the 120-VAC system, and the 120-VAC disconnect system. (As needed, manually reset the circuit breaker or breakers).

Be careful when working around these connections as an accidental electrical short (i.e.: momentarily connecting the "positive" or "hot" terminal to any part of the chassis) can be hazardous and harmful.

The 120-volt AC circuit breakers are located in the main load center. They protect all of the 120-volt wiring and components. Each circuit is identified on a label inside the load center.

- An overload or short circuit will cause the breaker to trip, stopping the flow of electricity for the affected circuit.
- If a circuit breaker trips, turn OFF the appliance on that circuit. Allow some time for the circuit breaker to cool.
- To RESET the circuit breaker, flip the switch to the OFF position, then flip it back to the ON position.
- If a breaker immediately trips again or trips frequently, contact your dealer to diagnose and repair the problem.

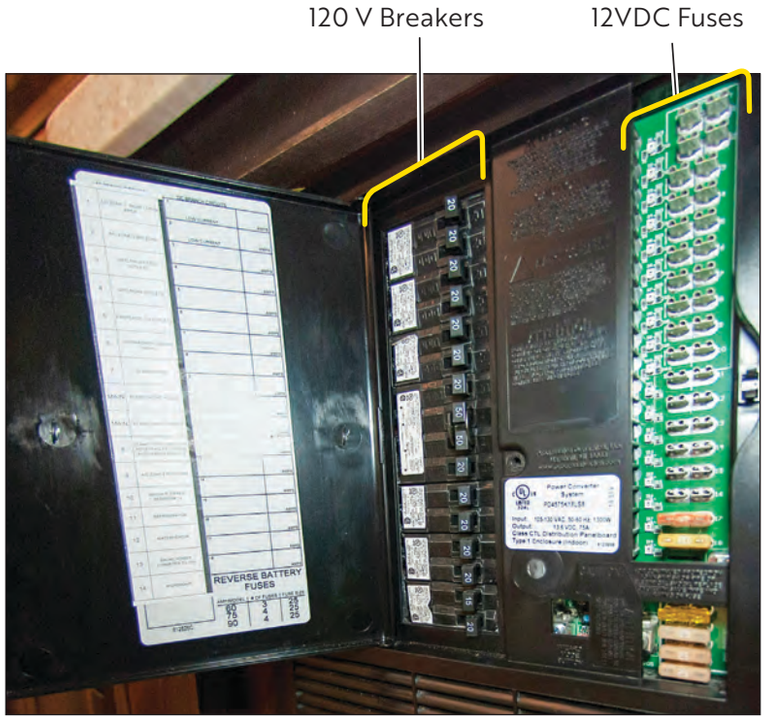


Figure 25. *120-Volt Circuit Breakers*

Maintenance and replacement

Circuit breaker switches can wear out. Test the breakers annually, at the beginning of the camping season. Replace them as needed, during normal maintenance.

- **To TEST:** Flip each breaker switch to the OFF position, then back to the ON position.

For further information, contact your dealer.

120-VOLT AC (VAC) RECEPTACLES

Your RV is equipped with several 120-VAC receptacles located throughout the interior of the unit.

These 120-VAC receptacles are of the "three-prong" variety; the third prong being a grounding pin which provides adequate grounding to protect from any electrical shock.

- For these receptacles to work properly, do not use an adapter, cheater, or extension cord which defeats the function of the grounding pin. For the same reason, never remove or bend away the ground prong or pin from any three-prong AC plug so that it would fit a two-prong AC receptacle (i.e., an ungrounded AC receptacle).
- Never operate the RV if there is an electrical short present, as an electrical short may deliver an electrical shock to anyone coming in contact with the exterior of the unit.

- If you should feel even the slightest of electrical shock, immediately disconnect the unit from the 120- VAC power source and locate the electrical fault (i.e.: typically, it is a break in the grounding circuit).
- Do not reconnect the 120-VAC power until after that electrical fault is fixed. The grounding circuit must be continuous from the frame to the distribution panel, to the power cord, and to the earth ground so that electrical-shock protection is realized.

12V USB RECEPTACLES

The RV is equipped with USB ports conveniently located throughout. These ports allow for easy access when charging cell phones, laptop computers, iPods, iPads, tablets or other electronics.

Figure 26. *USB Receptacles*

GFCI RECEPTACLES

Grounding is your personal protection from electrical shock. Each RV has a ground fault current interrupter (GFCI) engineered into the electrical system. This device has been designed to reduce the possible injury caused by electric shock. The GFCI will not protect against short circuits or circuit overloads.

- A *tripped* GFCI receptacle indicates that abnormally high 120-volt current flow (a ground fault) was detected through the electrical system grounding circuit.

A fault condition can be caused by faulty wire insulation, wet wiring inside an appliance, or faulty electrical equipment connected to the circuit, etc. All ground faults must be repaired before use of the RV.

Test all GFCI receptacles monthly

- **Push in** the *TEST* button. This should **pop out** the *RESET* button, indicating the GFCI receptacle has been *tripped*. This will interrupt 120-volt power.

Figure 27. *120VAC Receptacles*

Contact your dealer for assistance, if the RESET button does NOT restore 120-volt power or trips repeatedly.

LP GENERATOR

When purchasing your Vanleigh RV, you may have selected one of the following options: a generator or the preparations for a generator.

The preparation for a generator consists of a remote hour/start switch, two batteries, and a generator box located conveniently in the front, exterior compartment of your RV.

If you've chosen the full generator install option, the generator and its components can be found in the front, exterior compartment of your RV.

- Prior to starting or stopping the generator, make sure that all the 120-VAC appliances, breakers, and the 50-amp main are turned "off."

The generator can be started from either the remote-start switch located in the hallway or directly at the generator itself. The hour meter installed on the generator and on the switch in the bathroom records the number of hours of operation of the generator motor. This elapsed time is needed for observing necessary maintenance schedules on the generator.

⚠ WARNING

FAILURE TO TURN "OFF" THE 120-VAC APPLIANCES WHEN STARTING OR STOPPING THE GENERATOR MAY DAMAGE THE TRANSFER SWITCH AND/OR ELECTRICAL APPLIANCES.

Figure 28. *Generator Control Panel*

Refer to the Generator manual for additional information and maintenance instructions.

TRANSFER SWITCH

- Transfers to generator power automatically when energized after 30 second delay (generator mode). When both shore and generator power are available, generator dominates after a 30 second delay. Once generator shuts down, shore power activates after 3 second delay.
- Limited protection from faulty park power Provides protection against:
- Power surges
- Open neutral
- Reverse polarity

Figure 29. *Transfer Switch*

12-VOLT DC SYSTEM

Many of your RV components including the light fixtures, water pump, motors and appliances run on 12V electricity.

- The **Converter** supplies 12V power when your RV is connected to external power. The converter will also charge the batteries in most situations.
- The **batteries** supply 12V power when your RV is NOT connected to external power.
- The **Tow Vehicle Alternator** supplies 12V power when the *7-Way Wire Harness* is connected, and the tow vehicle engine is running.

This runs the components needed for travel including, the brake lights, turn signals, brakes, running lights and the breakaway switch. In addition, the 7-Way Wire Harness provides a common ground and a charge line to your auxiliary battery.

12- VOLT FUSE PANEL

- The label inside the 12V fuse panel indicates the fuse sizes, positions and components powered. Annually, at the beginning of the camping season, inspect each 12V fuse and replace as needed.

Replacing a fuse

Before replacing a fuse, always turn off the electrical component(s) protected by it.

1. Disconnect the shore power cord.
2. Disconnect the RV auxiliary battery main negative battery cable.
3. Remove the fuse panel cover to check fuses.
4. Pull the fuse straight out of the fuse block. If the fuse is not blown, something else must be causing the problem. Please contact your dealer for further assistance.
5. Insert a new fuse of the same specified voltage, amperage rating and type in the original location. Never use a higher rated replacement fuse.
6. The fuse panel label should be kept permanently affixed to your RV. The fuses will not offer complete protection of the RV electrical system in the event of a power surge or spike.

Figure 30. *12V Fuse Panel*

BATTERIES

Your RV has many 12VDC loads. When combined, their total is more than the converter can produce. High demands for 12V power can be met by an auxiliary battery for limited periods of time. The 12VDC electrical system is designed for usage with a Group 27, deep cycle battery.

The RV battery which constitutes the 12-VDC system is contained in the front, outside compartment.

To access this battery, open the front, outside compartment door and remove the sealed battery cover. When access to the battery is no longer needed, reinstall and securely fasten the battery cover and shut the compartment door.

BATTERY VENT

Use of the installed battery vent is required when using a non-sealed lead acid battery.

⚠ DANGER

NON SEALED LEAD ACID BATTERY OFF GAS IS DANGEROUS IF NOT PROPERLY VENTED

Dry camping

Consider the charge condition of the auxiliary battery when dry camping. If the auxiliary battery is not being re-charged and power is being drawn, it will eventually discharge. A battery will discharge at a faster rate as its energy level becomes depleted. It is recommended you plan your electrical usage accordingly.

For accuracy, test the auxiliary battery voltage using a volt-ohm meter. A fully charged auxiliary battery will read 12.7 volts DC and 1.265 specific gravity at 80°F (32°C).

The battery is considered discharged at 11.8 volts, and dead at 11.65 volts. When voltage drops below those levels, permanent damage may occur. Typically, a deep cycle battery has an amp-hour rating of 75-100 amps.

If the furnace and refrigerator are operating simultaneously, approximately (12.0 + 3.0) 15.0 amps are used. This does not include any 12V lights, water pump or any other 12V component.

In the above example, if the furnace and refrigerator operated constantly, a 75 amp-hour battery would become fully discharged in 5 hours (75ah/15a=5h).

The auxiliary battery should be installed in parallel with the battery in your tow vehicle. When the 7-way trailer plug is connected, both batteries power the RV so it is important not to discharge your tow vehicle battery below the level required to start the engine. To prevent this from occurring, disconnect the 7-way trailer plug or install a battery isolator. When the tow vehicle engine is operating with the RV connected, the tow vehicle charging system will charge both batteries.

Replacement and maintenance

Even when the battery disconnect is turned OFF, some equipment in your RV will draw small amounts of current. To prevent the auxiliary battery from being discharged when your RV is not connected to shore line power, disconnect the battery negative cable at the battery. During storage, it is important to check the voltage monthly and recharge the batteries as needed. If you remove the batteries from your RV, store it in a dry, cool area (40-60° F) per the manufacturer's instructions.

When it is time to replace the batteries, replace it with a Group 27 deep cycle battery only. Contact the battery manufacturer for further information. Do not reverse the positive and negative battery cables (doing so will blow the reverse polarity fuse(s) that protect the converter).

BATTERY DISCONNECT

A convenient battery disconnect is located in the exterior, curb-side storage compartment in your RV.

When the RV is in storage or auxiliary power will not be needed:

- Shut OFF the Battery Disconnect Switch, and
- Disconnect the battery cables from the auxiliary battery terminals.
- Disconnect the 120-VAC electrical power cord and the negative terminal from the coach batteries BEFORE working on the electrical system.
- If the unit ever requires any welding operations on the frame, first disconnect the chassis battery.

⚠ DANGER

REMOVE RINGS, METAL WATCHBANDS, AND ANY OTHER METAL JEWELRY BEFORE WORKING AROUND BATTERIES. IF ANY METALLIC OBJECT (TOOL, JEWELRY, ETC.) CONTACTS THE POSITIVE BATTERY TERMINAL OR ANY CONNECTION MADE TO THAT TERMINAL AND ALSO CONTACTS THE NEGATIVE TERMINAL OR ANY OF ITS CONNECTIONS, A SEVERE ELECTRICAL SHORT WILL OCCUR WHICH COULD RESULT IN AN EXPLOSION, FIRE, AND/OR PERSONAL INJURY.

Figure 31. *Battery Disconnect Switch*

NOTE: *Remember to reconnect the battery cables and turn ON the battery disconnect switch when you are ready to use the RV or perform periodic maintenance checkups.*

BATTERY INSPECTION AND CARE

When batteries are not used for extended periods of time, they will gradually lose their electrical charge. Therefore, it is necessary to periodically recharge the batteries to extend the operational lives of the batteries and necessary to check the external condition of batteries.

Look for cracks in the battery case and cover. Check the vent plugs and replace them if they are cracked or broken. Keep the battery posts clean.

Since accumulation of dirt and acid residue around the battery terminals may provide an electrical path for discharging the battery, the area around the terminals should be cleaned regularly. One can use an old toothbrush and a sparse amount of a diluted solution of baking soda (sodium bicarbonate) and water (distilled or de-ionized preferred; tap water, acceptable) to clean and neutralize any acidic build-up around the battery terminals. If there is any foaming on the top of the battery, this indicates that acidic residues are being neutralized. Rinse the cleaned areas thoroughly with distilled or de-ionized water (tap water is okay, too).

Avoid getting the baking-soda solution into the battery fill plugs to each battery cell; this would drastically reduce the effectiveness of the battery (by neutralizing the sulfuric acid in the battery cells) or, worse, "kill" the battery. Dry the battery cables and terminals to prevent corrosion. To protect those terminals further, use a plastic ignition spray on the terminals. Do not use grease on the terminals, especially on the metal-to-metal connections,

as grease may act as an insulator and keep the battery electrical power from entering the cables.

Removing the battery

If the battery is not going to be used for an extended period of time, it should be removed from the RV and stored in a cool, dry place (40-60° F). A removed battery would require periodic recharging to maintain its charge.

Check battery water level

Following your battery manufacturer's recommendations, periodically check the fluid levels in all the cells of the batteries (be sure to use safety eyewear during this process) and fill those that are low with water (distilled or de-ionized water is preferred; tap water, okay). Don't overfill the cells; follow the filling directions exactly. This battery checkup should be done on a regular basis and will ensure optimum performance.

⚠ WARNING

LEAD-ACID BATTERIES CONTAIN DILUTED SULFURIC ACID WHICH CAN BE DANGEROUS; AVOID DIRECT CONTACT WITH ANY BATTERY FLUIDS. WEAR EYE PROTECTION.

SPYDER CONTROL SYSTEM

The Sypder controls are found on the interior, wall-mounted Command Center.

The Spyder control touchscreen is the "brain" of the 12V electrical system within your RV. This system and its extensions control a majority of the electrical processes within your unit. The home screen displays the battery voltage, as well as lighting controls.

Vanleigh RV does not recommend you attempt to fix an electrical circuit yourself. The information provided by the Spyder can be used to assist an authorized service technician in the event of a problem. If there is a problem with your 12V electrical system, contact Vanleigh RV customer service or your authorized service technician.

Figure 32. *Spyder Control Unit*

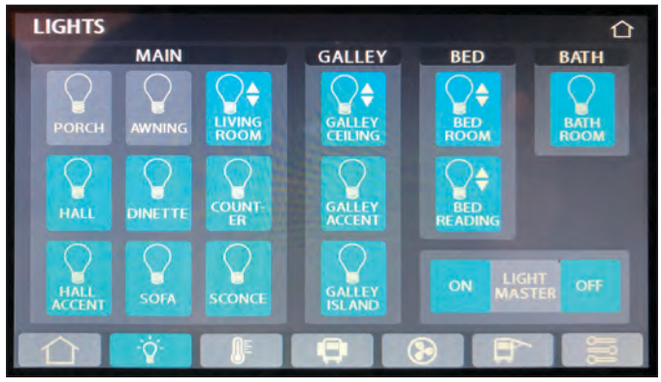


Figure 33. *Spyder Lights Screen*

IMPORTANT: **Some lights are on a dimmer switch. Press and hold the light button and to access the Dimming Control Screen.**

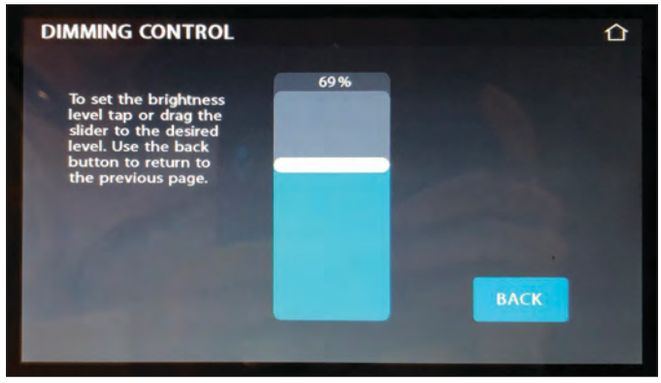


Figure 34. *Spyder Dimming Control Screen*

NOTE: *A **Mira Module** can be purchased which will enable you to control the Spyder system via Bluetooth from your phone or tablet.*
Contact Firefly Integrations for additional information. Phone: (574) 825-4600 http://www.fireflyintegrations.com/ or email: support@fireflyint.com.

CALCULATING ELECTRICAL LOAD

While connected to external power and using appliances, remember that the 120-volt electrical system can run a maximum of 100 amps. If you overload the RV and/or campground electrical system, a circuit breaker trip may occur.

- **The combined amperage draw from all appliances and components must NOT exceed 100 amps.**

To calculate the amperage rating for each individual appliance, divide the wattage by the voltage (both should be listed on the appliance). For example: **1200 watts** *divided by* **120-volts** *equals* **10 amps**.

See "Approximate Electrical Load Ratings" on page 134.

SOLAR PORT

- The Furrion quick connect solar charging inlet is designed for use with the (customer supplied) Furrion 95W portable solar power charging system (FSPP10SA-BL).

Figure 35. *Solar Port*

NOTE: *The Furrion solar system is intended to be used to maintain your auxiliary battery. It is not designed to power the entire RV.*

APPROXIMATE ELECTRICAL LOAD RATINGS

Refer to the actual amperage of the appliance when possible. (Watts ÷ 120)

Table 19. *Approximate Electrical Load Ratings—120 Volt System*

120 Volt System	
Air Conditioner	11 amps
Coffee Maker	6–12 amps
Converter	8 amps
Curling Iron or Hair Dryer	10–14 amps
Blu-Ray/DVD System	3 amps
Microwave	12 amps
Refrigerator	6 amps
Satellite Receiver	2 amps
TV	2-4 amps
Vacuum Cleaner	8 amps
Wine chiller	6 amps
Washer/Dryer	12 amps
Water Heater	12 amps

Table 20. *Approximate Electrical Load Ratings—12 Volt System*

12 Volt System	
Baggage Compartment Lights	1.4 amps
Decorative Wall Lights	1.5 amps
Dinette Light	4.5 amps
Exterior Entertainment Center	5–7 amps
Fantastic Fan	1.5 amps
Furnace	12.0 amps
Generator Start	95.0 amps*
Illuminated Switch	.125 amps
Inverter	Variable
Leveling System	95.0 amps*
LP Detector	.125 amps
Porch Light	1.5 amps
Power Awning	10.0 amps
Power Vent	5.0 amps
Refrigerator	3.0 amps
Shower Light	1.4 amps
TV Plate / Antenna Booster	1.0 amps
Vanity Light	1.5 amps
Water Heater	6.0 amps
Water Pump	7.0 amps
* Momentary load	

PLUMBING SYSTEMS

There are two separate water systems in your RV, the Fresh Water System and the Waste Water System.

- The **Fresh Water System** consists of the fresh water holding tank, fresh water connections, water pump, water heater, faucets, shower or tub, water filter system and outside shower assembly.
- The **Waste Water System** consists of the waste water holding tank (gray), drains, toilet and sewage holding tank (black). This plumbing permits the drainage of these fixtures to an outside terminal. The vehicle should be reasonably level for the best operation of both wastewater systems.

The wastewater system is divided into to subsystems, each with its own tank and control valve. Both drain through a common sewer drain hose.

- The gray water system is for wastewater from the sinks, shower, and washing machine.
- The black water system is for sewage waste from the toilet.

Before each trip or vehicle storage, and as part of normal maintenance, inspect the following for leaks:

- ALL fittings on BOTH water systems. See
- ALL water pump and water heater connections.

At the end of each trip, ALWAYS completely drain your fresh water system. See "Draining the Fresh Water System" on page 147.

FRESH WATER SYSTEM — FIRST USE

Your new RV may have been winterized, as indicated by temporary labels located in the wet bay.

- BEFORE first use, the system should be ***Sanitized***, even if it has NOT been ***Winterized***. See "Sanitizing the Fresh Water System" on page 149.
- Sanitizing the fresh water system will kill all bacteria and organisms that can contaminate your water supply.

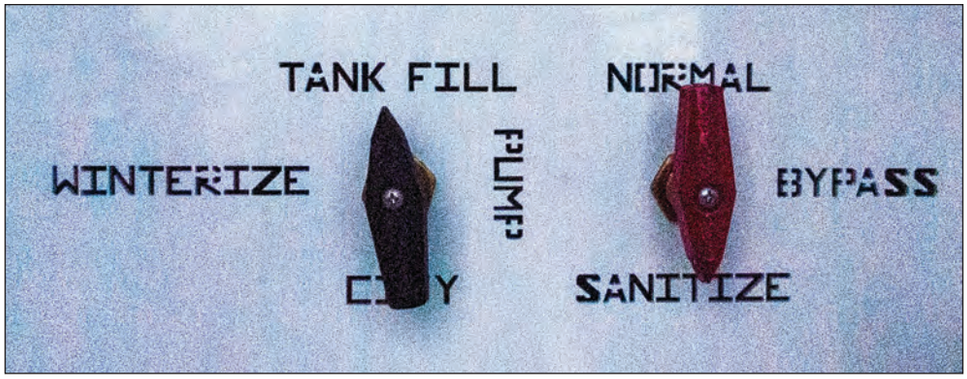


Figure 36. *Sanitize the Water Tank before First Use*

Small amounts of contaminants and minerals are found in ALL water. They can sometimes cause your fresh water to have an odor. Usually, untreated well water is the source of water system odors. See "Sanitizing the Fresh Water System" on page 149.

Water pump switch

When the water pump switch is turned ON, the water pump runs until 45 pounds of pressure has been achieved. Turn the water pump switch OFF when it is not in use.

The Water Pump switches illuminate, when in the ON position.

Tank heat button

This button will activate heaters for the tanks to prevent them from freezing. The tank heater does not turn on automatically. You will need to manually turn on the tank heater if there is a risk for freezing weather. The tank heaters will keep all three types of tanks (fresh water, gray water, and holding tank), at just above freezing.

PLUMBING FUNCTIONS WITHIN THE SPYDER CONTROLS

The plumbing-related functions include displaying the levels of fresh water, gray water, black water. Sensors installed in the holding tanks relay the tank level to the Spyder controls. These functions are controlled using the labeled buttons on the touchscreen.

Figure 37. *Spyder Control Unit*

12V WATER PUMP

Once activated, the water pump will self-prime and provide water. The water pump continues to run until approximately 45 lbs. of pressure is achieved and shut off. The water pump will automatically restart when pressure drops. Some cycling may occur, depending on the volume of water being released. The water pump has a built-in check valve to prevent water from back flowing.

Water pump filter is a screen filter located on the inlet side. This reusable screen must be cleaned periodically.

Water Pump Filter Screen

Figure 38. *Water Pump*

FRESH WATER HOLDING TANK

The fresh water tank can be pressure filled using the fresh water inlet, with the valve pointed to "Tank Fill." A plastic overflow tube is plumbed into the fresh water holding tank to allow water to flow out of the water tank. Occasionally, you may see water coming from the overflow tube (located underneath the RV) when the fresh water holding tank is filled. This is normal, and is caused by external circumstances, including the RV being parked on an incline, or the motion caused by starting or stopping the RV during travel.

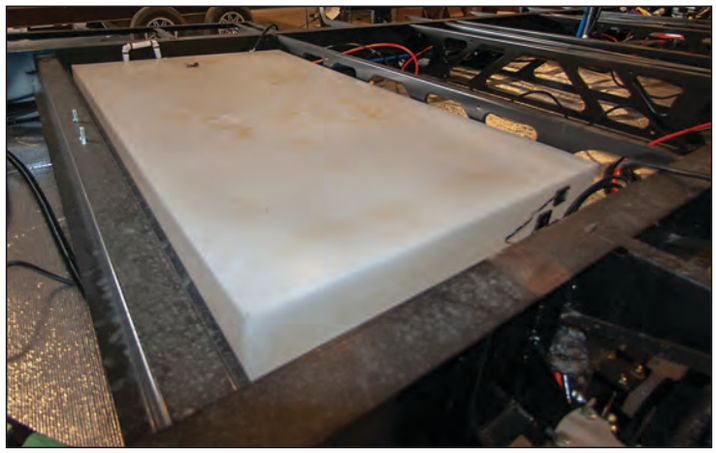


Figure 39. *Fresh Water Holding Tank*

DO NOT cap, block ,or modify the fresh water tank overflow tube in any way. If the overflow tube is obstructed, enough water pressure can build up during the filling process to damage the plumbing system.

Figure 40. *Water Tank Drain and Overflow*

WATER PRESSURE REGULATOR (CUSTOMER SUPPLIED)

Excessive pressure from water supply systems may be encountered in some parks, especially in mountain regions. Water pressure regulators can protect your system against such high pressure. Water pressure regulators are available for purchase from your RV dealer to protect the plumbing system against such high pressure. The water pump has a built in regulator at 65 PSI.

WATER HEATER

The water heater is designed to heat water quickly and efficiently. The water heater manufacturer has preset the sensing limit to maintain the water temperature when the water heater is activated. Read the safety and operating information provided in the manufacturer's manual before attempting to activate the water heater.

- Before the water heater is to be used, fill the freshwater lines and purge the water lines to and from the water heater by opening all the hot-water faucets until water steadily flows from each one and no "spurting" or "hissing" sounds are heard.

Proper and safe operation of the water heater requires that all safety information provided in the owner's manual be read and understood before placing the water heater in service.

⚠ WARNING

DO NOT STORE ANY COMBUSTIBLE OR FLAMMABLE SUBSTANCES NEAR OR ADJACENT TO THE WATER HEATER. PROVIDE ADEQUATE SPACE FOR VENTILATION AND AIR CIRCULATION.

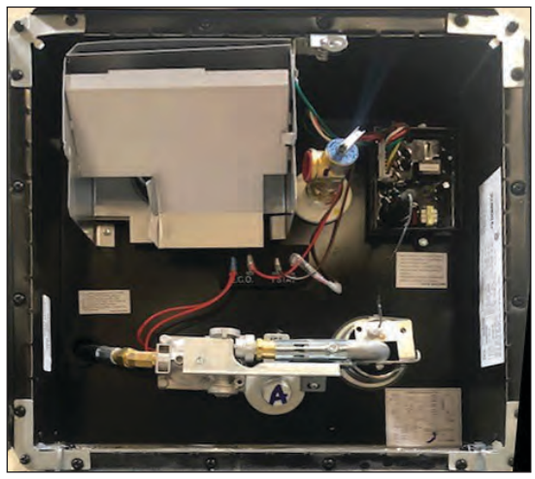


Figure 41. *Water Heater—Atwood (Standard)*

Figure 42. *Water Heater—Truma (Optional)*

Near the water heater (behind an access panel) are hot and cold water shutoff valves that isolate the water heater. These valves are to be used when the water heater is being worked on.

Figure 43. *Hot and Cold Water Shutoff Valves Behind Water Heater*

Operating the Atwood Water Heater

You can choose either LP or electric on the master keypad. If you turn on both LP and electric on the Spyder screen, the water heater will default to LP, then switch to electric when you run out of LP.

⚠ WARNING

MAKE SURE THE WATER HEATER IS FILLED WITH WATER BEFORE USE; EVEN MOMENTARY OPERATION OF THE WATER HEATER WITHOUT WATER IN IT MAY RESULT IN DAMAGE TO THE TANK AND/OR CONTROLS.

- Always open both the hot and cold water faucets when filling the fresh water tank to allow air pockets to be forced out of the water system.

Operating the Truma AquaGo Comfort water heater

NOTE: *The Truma AquaGo heats using propane only (but uses electricity for ignition). Using the Truma water heater in Eco mode conserves propane consumption.*

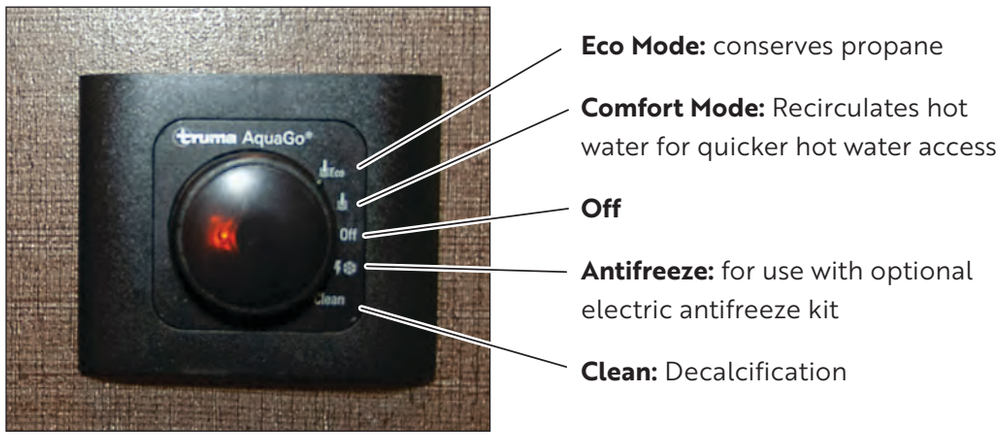


Figure 44. *Truma Interior Control Dial*

NOTE: *In addition to the interior control dial, there is a secondary on/off switch for the Truma water heater, located behind an access hatch on the exterior forward driver's side of the RV.*

Figure 45. *Truma Water Heater Exterior On/Off Switch*

Odor from the hot water system

Many water sources provide running water with a rotten egg smell. Often called *sulfur water*, it contains hydrogen sulfide gas caused by bacteria or chemical action. Generally, sulfur water is not harmful, only unpleasant to smell. Sulfur water odor is not a service problem.

Refer to the water heater manufacturer's owner manual for details on eliminating the odor from sulfur water.

High altitude deration

Operation of the water heater at high altitudes may require derating. If the water heater is not properly derated, lack of sufficient oxygen for combustion may produce improper burner operation. Pilot outage caused by burner lift-off or sooting from a yellow burner may occur, indicating the possibility of carbon monoxide. You may also notice a lack of efficiency in heating the water because of incomplete combustion of the burner at these higher altitudes.

Consult your dealer or the water heater manufacturer for proper derating of the water heater. Change out of the orifice (derating) should be done by the dealer or a qualified service agency.

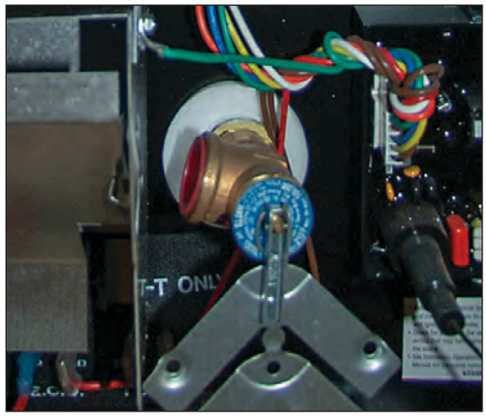
NOTE: *Once the RV is returned to lower elevation (below 4500 feet) any high altitude deration or other the water heater adjustments must be reversed for proper operation.*

Pressure and temperature relief valve

A pressure and temperature (P& T) relief valve is a safety requirement for all water heaters. This valve releases any unsafe pressure in the water heater tank created as cold water is heated. It is normal for the P& T relief valve to release a small quantity of water during the heating cycle.

One way to reduce water dripping from the P& T relief valve is to maintain an air pocket at the top of the water heater. This air pocket will form in the tank by design; however, it will be reduced over time by the everyday use of your water heater (refer to the manufacturer's manual); If the weeping persists, consult your dealer or a service agency authorized by the water heater manufacturer.

Atwood



Truma

Figure 46. *Pressure and Temperature Relief Valve*

For information on draining and winterizing the water heater, see "Water Heater Draining and Winterization" on page 160.

BATHROOM SHOWER

Unlike your home, the RV does not contain a water pressure balance valve.

1. Keep aware of the water heater and holding tank capacities. All water used will drain through the plumbing lines into the gray water holding tank.
2. Be sure the water heater is ON and has had sufficient time to heat the water.
3. If dry camping, be sure the 12V water pump is ON.
4. Turn ON the hot and cold knobs, and adjust the water temperature before showering.
5. To conserve water while showering, wet down and turn OFF the water while using soap, then rinse.
6. After use, the showerhead may still drip slightly, even in the OFF position. This is normal and does not indicate a leak or defect.

Figure 47. *Shower*

Shower surround maintenance

The shower walls in your RV are fiberglass. Use a mild detergent soap and warm water to clean. NEVER use gritty or abrasive particle soaps or scouring compounds to clean the plastic.

OUTSIDE SHOWER

A handheld shower assembly with both hot and cold water is available for washing or rinsing outside the RV at the wet bay.

1. Be sure the water heater is ON and has sufficient time to heat the water.
2. If dry camping, be sure the 12V water pump is ON.
3. Remove the handheld showerhead and hose from its holder.
4. Turn ON the hot and cold knobs, and adjust the water temperature as desired.
5. To activate the hand-held shower, turn ON the sprayer head attachment.

After the water has been allowed to drain from the sprayer head, replace it in the wet bay. Any remaining water in the shower hose will drip or run out; this is not a leak but performs as intended. Make sure that the hose is not pinched and the sprayer head is not damaged when the compartment door is closed.

Figure 48. *Handheld Outdoor Shower*

FAUCETS

The faucets inside your RV operate much the same way as the faucets in your home. Make sure there is sufficient water available and, if dry camping, the 12V water pump is turned ON before operating.

Figure 49. *Faucets*

SHUTOFF VALVES

Shutoff valves are located under the sinks. When there is a double vanity, tees in the hot and cold water lines allow one set of shutoff valves to be used for both bathroom sinks.

Figure 50. *Bathroom Sink Shutoff Valves*

Figure 51. *Bathroom Sink Shutoff Valves*

Figure 52. *Kitchen Sink Shutoff Valves*

WATER CONTROL SYSTEM

Your Vilano Fifth Wheel is equipped with an Anderson Brass Kantleak Valve System.

NOTE: *The pointed end of the valve points to what is selected.*

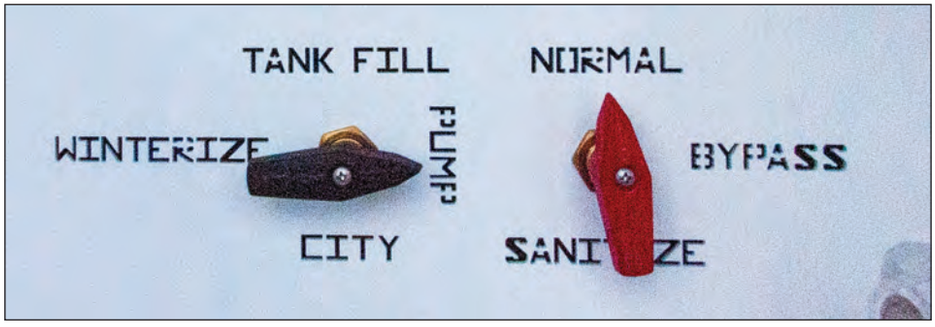


Figure 53. *Andersen Kantleak Valve System*

Draining and winterizing

If the RV is to be exposed to freezing temperatures while stored, the water heater must be drained to prevent damage from freezing. The water heater must also be drained and bypassed during the winterizing process.. For instruction on winterizing, see "Winterization" on page 160.

DRAINING THE FRESH WATER SYSTEM

Figure 54. *Low-Point Drains (Located in the Wet Bay)*

1. Open all faucets, including the outside shower.
2. Open the fresh water tank drain valve. See "Figure 40. Water Tank Drain and Overflow" on page 138.
3. Open red and blue low point drain lines, located in the wet bay.
4. Set the *water heater bypass* valve to **Normal** (vertical).

Figure 55. *Water Heater Bypass Valve*

5. Drain the water heater.
   - Atwood Water Heater: Remove the water heater drain plug.
   - Truma Water Heater:
     A. Make sure the water heater 12V interior control switch is off.
     B. Turn off the exterior 12V switch.
     C. Pull the yellow drain lever and remove cartridge.

⚠ WARNING

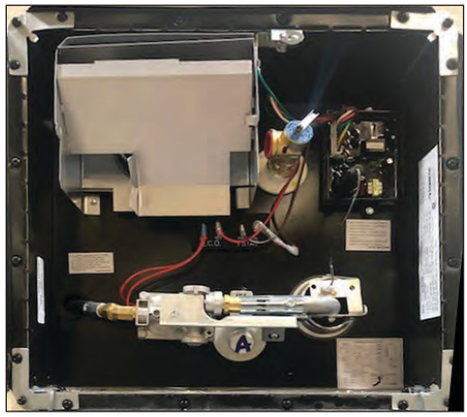
THE WATER IN THE TANK MAY BE HOT.

Figure 56. *Truma Water Heater Control Dial and On/Off Switch*

NOTE: *ALWAYS use the water heater* **P & T Valve** *(pressure and temperature valve) to relieve the water pressure, BEFORE you remove the water heater drain plug. If you do not relieve the water pressure, water will spray out of the opening when the drain plug is removed.*

6. After draining the fresh water system, close all faucets and drain valves. It is normal for some liquid to remain in the fresh water tank after drainage procedure.

Atwood



Truma

Figure 57. *Water Heater Drain*

SANITIZING THE FRESH WATER SYSTEM

Use the following procedures to sanitize your Fresh Water System when it is new, becomes contaminated, or has not been used for a period of time.

If you RV does not have a SANITIZE function, do the following steps to sanitize your fresh water system:

1. Set your wet bay valves to NORMAL and TANK FILL.

NOTE: *Don't charge your water hose in the wet bay yet.*

2. Take your water filter housing off, take the filter out and fill the water filter with cleaning solution (bleach or any sanitizing solution).
3. Reattach the water filter housing.
4. Charge the city water housing with your water hose.

NOTE: *As an option, several commercial solutions are available, and should be used as directed on the package.*

Figure 58. *Water Filter Housing*

To sanitize the fresh water system:

1. Level the RV.
2. Drain fresh water system.
3. Make sure the low point drain valves are closed.
4. Connect a hose to the city water port.
5. Put the other end of the hose into a container of sanitizing solution.
6. Turn the selector valves to SANITIZE and TANK FILL.

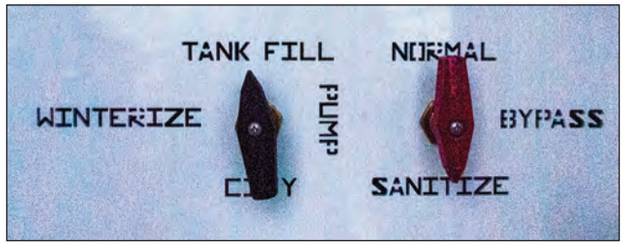


Figure 59. *Sanitizing the Fresh Water System*

7. Turn on the water pump.

8. Turn the selector valve to PUMP.

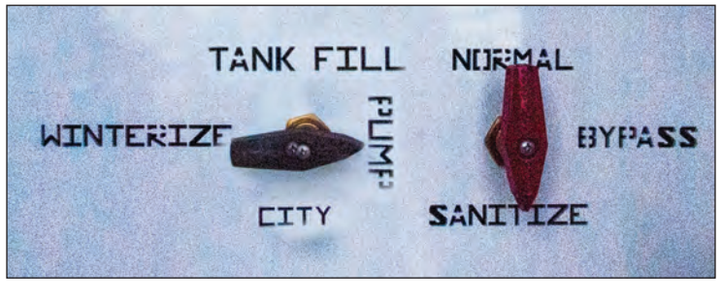


Figure 60. *Sanitizing the Fresh Water System*

9. Operate all faucets until the sanitizing fluid has come through, then Turn OFF the pump.

10. Allow solution to stand for three (3) hours.

11. DRAIN tank and FLUSH the system with fresh water.

To remove excessive chlorine odor or taste which may remain:

12. Prepare a solution of one (1) quart vinegar to five (5) gallons water and repeat steps 5-11 above.

    - **At step** 5, place the hose in the container of vinegar solution. Allow solution to agitate in tank by intermittent vehicle motion (several days if possible).

13. Drain tank and flush with fresh potable water.

⚠ WARNING

BOTH AUTOMOTIVE ANTIFREEZE (ETHYLENE GLYCOL) AND WINDSHIELD WASHER ANTIFREEZE (METHANOL) ARE POISONOUS.

NEVER USE THESE PRODUCTS IN YOUR FRESH WATER SYSTEM. THEY ARE HARMFUL AND MAY BE FATAL IF SWALLOWED.

Water filter

The water filter is located in the wet bay on the outside of the RV. The water filter is not guaranteed to remove the tastes and odors of iron and sulfur. To remove these impurities, you need to sanitize the water. Replacement filters are available that will filter iron and sulfur. Ask your dealer or RV supply center about purchasing an iron and sulfur filter.

If you are traveling in an area where the water has high iron and sulfur content, add to the water filter housing one tablespoon of chlorine bleach to every 10 gallons of water in your tank.

If you are at a site where the unit is connected to a city water supply, you will not be able to chlorinate the system because the water flows straight to your faucets and not through the freshwater tank.

Filters should be changed every 6-12 months depending on the quality and quantity of the water that is used in your RV.

As installed, the water filter will remove chlorine, dirt, and other matter. The filter will also eliminate most phenol (or similar) odors and tastes while delivering sparkling, taste-free water for drinking and cooking.

BLACK/GRAY WATER SYSTEM

The sinks, shower, and washing machine all drain into the gray water (waste water) holding tank. The toilet drains into the black water (sewage) holding tank.

- When possible empty the gray and black water holding tanks before traveling to avoid carrying unnecessary weight.
- If you are dry camping and cannot immediately empty your holding tanks, reduce your vehicle speed until you reach a dumping station.

The RV's stated cargo carrying capacity is based on empty holding tanks. Any additional weight for the contents of the holding tank(s) will reduce your cargo carrying capacity by the same amount.

Traveling with your holding tank(s) full could result in the following dangers:

- Reduced available cargo capacity.
- Exceeding individual tire ratings and/or the GAWR or GVWR.
- Potential damage to suspension components, such as springs, tires and axles.
- Reduced hitch weight, if your RV holding tank(s) are located behind the axles.
- Trailer sway and other handling difficulties, as a result of the hitch weight being too light.

Driving to a disposal site will normally loosen any accumulated waste debris or solids from the sides of the holding tanks.

BEFORE using the RV or after dumping the gray and black water holding tanks, ALWAYS add the proper amount of tank treatment to the black water tank (unless winterizing). This will help to control odor and break down tank contents.

TOILET

Aquamagic Tecma

Figure 61. *Toilet*

Operation: AquaMagic Toilet

- BEFORE use: FLUSH the toilet several times, releasing enough water to cover the bottom of the holding tank.
- ALWAYS maintain four to six inches (10-15 cm) of water in the toilet for better sanitation system performance.

Operation: Tecma Toilet

- FLUSH NORMAL Button: Starts an add water and macerate sequence that runs the motor and adds water twice for maximum cleansing and minimum water usage. Sequence ends with a small amount of water added to the bowl to provide an odor seal. Recommend for flushing solids and toilet paper.
- FLUSH WATER SAVER button: Only recommended for flushing liquids and small amounts of toilet paper.

Not lighted: System Off

Green: Toilet System On and tank less than half full

Yellow: Toilet system is on and holding tank is at least half full

Red: Toilet system is on and holding tank is full

Red Warning Light: Tank is full and lockout is disabled.

Figure 62. *Tecma Toilet Controls*

To help prevent a toilet blockage: ALWAYS use RV grade, single-ply toilet paper. NEVER flush paper towels, diapers, sanitary napkins or any foreign objects down the RV toilet.

NOT using enough water while flushing, could result in clogged pipes or tanks. The average recreation vehicle toilet uses only one to three quarts (1-3 liters) of water per flush, about ten times less than a toilet in a home. The toilet system will perform better when water is run for an additional ten to fifteen seconds after flushing. More water may be needed to thoroughly flush solids and ensure that waste materials empty from the drain line into the tank.

Sewage (black) tank preparation

1. Release one to two quarts (1 or 2 liters) of water into the toilet bowl.
2. Pour the recommended quantity of holding tank chemical (customer supplied) into the toilet bowl, per the manufacturer's directions.
3. Flush the toilet and allow at least two gallons (8 liters) of water to flow into the holding tank.

Waste (gray) holding tank preparation

No special preparation is required, however, placing a small quantity of chemicals into this tank, such as baking soda or an approved RV chemical, will reduce odors from food particles in the system.

NOTE: *Limiting the amount of grease and food particle going into the sink drain will greatly reduce tank residue and odors.*

Cleaning and maintenance

Clean the toilet regularly. DO NOT use chlorine (undiluted) or caustic chemicals in the toilet system (i.e., laundry bleach or drain opening chemicals). These products damage the seals in toilets and dump valves. For a sticky toilet ball valve, apply petroleum jelly; this will provide waterproof lubrication without damaging the seals.

DRAIN PIPES WITH HEPVO VALVE

Your RV may be equipped with a HEPVO valve that prevents the escape of odors from your waste system and eliminates the need for P-traps. The HEPVO valves are used underneath some showers, as well as at the washing machine. The HEPVO valves work as inline P-traps, and are used where there is not enough room to use a traditional P-Trap.

NOTE: *Remove the HEPVO before using a clean out tool.*

DRAIN PIPES WITH P-TRAPS

The drain pipes may be equipped with a P-trap installed to help prevent odors from escaping into the RV. During travel, water from the P-traps may spill and permit odors into the RV. By adding water and using a RV approved deodorizing agent you will dissolve the contents faster and will keep the drain lines and tanks clean and free flowing. These chemicals are available at an RV supply store or your dealer.

VENTS & VENT PIPES

Another important part of this system is the vent pipes and vents that release air from the gray and black water holding tanks. The exterior vent cap is attached to the roof and must be kept clear of obstructions to perform as intended.

Figure 63. *Roof Vent*

BLACK/GRAY WATER HOLDING TANKS

When connected to the sewer drain line at a campground, keep the black tank drain valve closed until the holding tank is at least 3/4 full. This should provide sufficient water to assist in complete draining of the black water holding tank. Repeat as needed.

NOTE: *Never leave the black tank drain in the open position continuously when connected to the campground sewer system.*

EMPTYING THE BLACK & GRAY WATER TANKS

The switches for the gray tank and black tank drain valve (also called dump valves) are located in the outside wet bay. Always drain the black water holding tank first so the following gray tank waste water can help rinse any solids or debris from the dump outlet and sewer hose.

NOTE: *The 375FL has 2 dump outlets.*

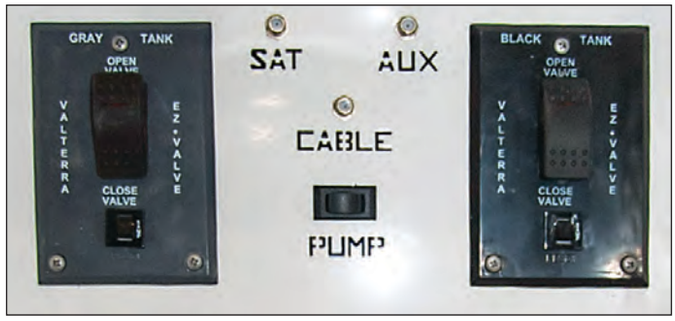


Figure 64. *Black and Gray Tank Drain Valve Switches*

1. To make drainage easier, level the RV.
2. Locate the Sewer Outlet Connection and remove the sewer hose housing dust cap, and attach your sewer hose (customer supplied).

Figure 65. *Sewer Outlet Connection (Termination Valve)*

3. Place the other end of the sewer hose into the approved dump station.
4. Open the gate valve by flipping the switch "on." The tank will start to drain as soon as the switch is flipped.
5. After the black tank is empty, close the black tank valve.
6. Open the gray tank valve.
7. Pour a few gallons of water into a sink drain to flush the gray tank with a freshwater rinse before you close the valve.
8. Close the gray tank valve.
9. Remove and store the sewer hose.
10. Reattach the sewer outlet cap.

You can locate many dump stations throughout the United States and Canada in Woodall's, Rand McNally Camp Guide, Good Sam Camp Guide, KOA Kampgrounds Camp Guide and various other publications. Some fuel stations also have dump stations. Please contact your dealer for assistance in the purchase and installation of a sewer hose or sewer hose extension (if needed).

BLACK TANK FLUSH

The black tank flusher is designed to rinse the interior of the black (waste) tank. A separate water hookup is located in the wet bay.

To flush the tank after dumping:

1. Leave the sewer hose connected to the outlet pipe. Ensure that it is routed to the dump station inlet.
2. Attach a garden hose to the black tank flusher inlet.
   DO NOT use your fresh water hose.
3. Be sure the black tank gate valve is in the OPEN position.
4. Open the water supply to full pressure to flush tank.
5. When the water runs clear from the sewer hose, shut off the water supply and disconnect the garden hose from the water source.
6. Do not disconnect hose from flush inlet until all water has drained from the system.

DO NOT add any check valves to this system or leave any hose connected when not in use.

Figure 66. *Black Tank Flush Line*

Manually dumping the black and gray tanks

- Remove the basement wall on the road side of the coach.
- You will see two 8×8 cutouts (black, gray) for the valves.

NOTE: *The 375FL black tank drain is toward the rear of the RV. The outlet is just right underneath, rear of the wheels.*

- Disconnect the grenade pin and turn the handle sideways. Pull handle straight up to dump tank.

Figure 67. *Gate Valve*

WINTERIZATION

Preparing your RV for cold weather storage is very important for most states and Canada. Failure to prepare your RV may cause water supply lines and the water heater to freeze.

IMPORTANT: *Freezing of the water system can cause major system damage.*

No commodity or product should be added to the fresh water system to ensure freeze protection other than RV antifreeze. The RV should be winterized at the end of the camping season or when the RV will be exposed to temperatures that will fall at or below 32°F (0°C). Repairs due to freezing are not covered under warranty.

It is important to read all instructions and understand each step before beginning the winterization process. It may be easier to winterize the RV with another person to assist you. If needed, contact your dealer for assistance.

WATER HEATER DRAINING AND WINTERIZATION

If the RV is to be exposed to freezing temperatures while stored, the water heater must be drained to prevent damage from freezing. The water heater must be drained and bypassed during the winterization process. See "Figure 74. Anderson Valve Position for Winterizing" on page 164.

Draining the water heater

1. Turn "off" all electrical power to the water heater.

NOTE: *For the Truma water heater, you will need to turn on BOTH the exterior on/off switch as well as the interior control dial.*

2. Turn "off" the LP gas going to the water heater.
3. Turn "off" the water pump.
4. Open both the hot and the cold-low point drains to drain the water lines.

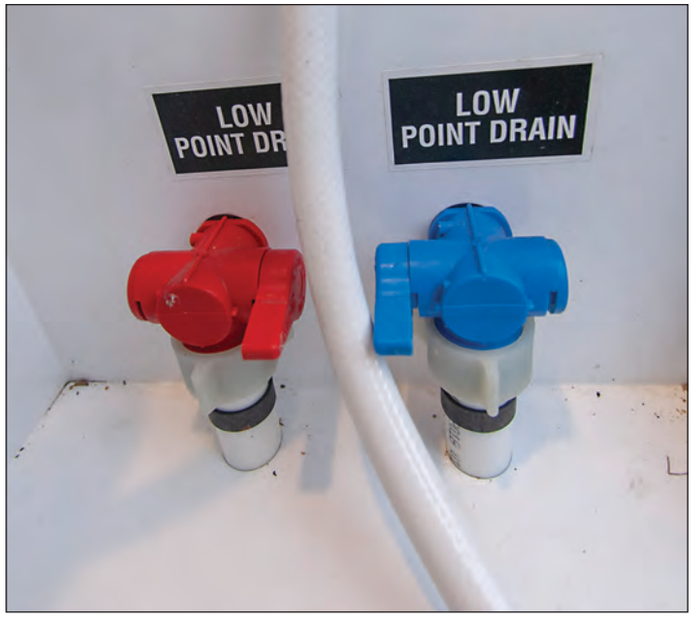


Figure 68. *Low-Point Drains located under the RV*

5. Relieve pressure on the water heater, by lifting the pressure relief valve.

> **⚠ WARNING**
>
> **THE WATER IN THE WATER HEATER MAY BE HOT AND CAN CAUSE SEVERE BURNS.**

6. Remove the drain plug to drain on the water heater.

NOTE: *For Truma: Pull down on the yellow lever, remove cartridge.*

NOTE: *When reactivating the water heater after the RV is taken out of storage, make sure that the entire water system, including the water heater, has been filled with water and the lines have been purged of any entrapped air before relighting the water heater. Failure to do so may allow the water-heating element to be turned "on" before it is immersed in water; thereby, causing the permanent failure of the heating element and voiding the warranty.*

WINTERIZING

1. Level the RV and drain the fresh water plumbing system.
   A. Open all faucets, including the outside shower.

B. Open the fresh water tank drain valve. See "Figure 40. Water Tank Drain and Overflow" on page 138.

C. Open red and blue low point drain lines located in the wet bay.

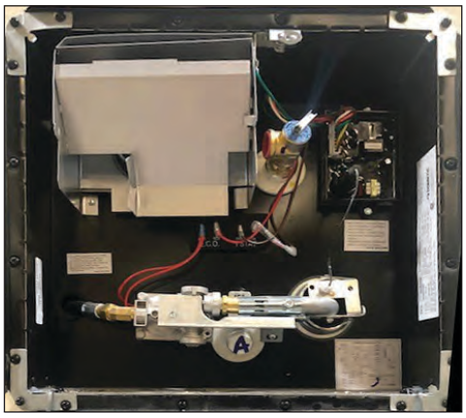
D. Turn ON the water pump and allow it to run as needed.

Figure 69. *Water Pump Switch*

NOTE: *ALWAYS use the water heater* ***P & T Valve*** *(pressure and temperature valve) to relieve the water pressure, BEFORE you remove the water heater drain plug. If you do not relieve the water pressure, water will spray out of the opening when the drain plug is removed.*

2. Remove the water heater drain plug.

Atwood



Truma

Figure 70. *Water Heater Drain*

3. Turn the Ice Maker valve to the OFF position.

Figure 71. *Ice Maker Valve in Wet Bay*

4. Drain the water supply line for refrigerator's ice maker. A drain is located behind the forward end of the galley slide.

Figure 72. *Ice Maker Drain behind Galley Slide*

5. Make sure the water heater 12V interior control switch is off.

6. Turn off the exterior 12V water heater switch.

Figure 73. *Truma Water Heater Control Dial and On/Off Switch*

7. At the wet bay, turn the red Anderson Valve to *Bypass* and the black Anderson Valve to *Winterize*.

Figure 74. *Anderson Valve Position for Winterizing*

8. OPEN the fresh water tank drain

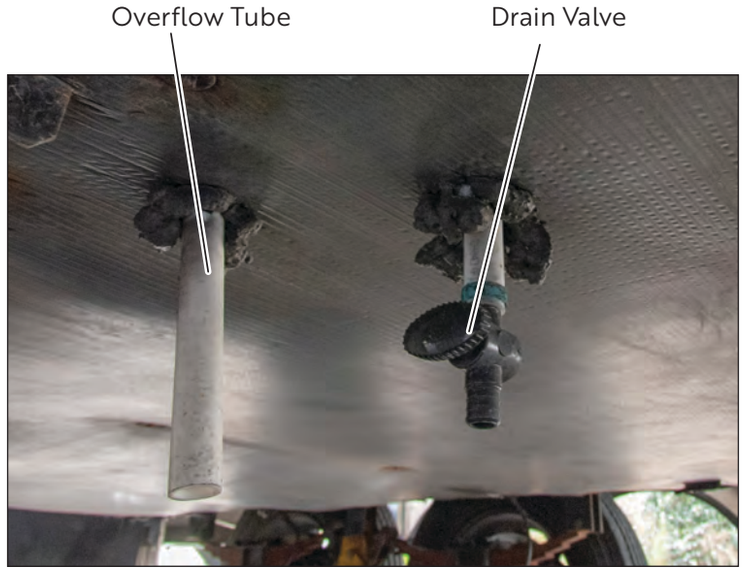


Figure 75. *Water Tank Drain and Overflow*

9. CLOSE both low point drains.

Figure 76. *Low-Point Drains*

NOTE: *Make sure to have enough RV antifreeze to winterize all fresh water lines. Several gallons may be required.*

10. Remove the water filter from the water filter housing and reattach the filter housing.
11. Insert the short hose into a container of RV antifreeze solution attach the other end to the winterization fill.

Figure 77. *Winterization Fill*

12. Turn the water pump ON.
13. Open the hot water line on all the faucets (lavatory, inside and outside showers, kitchen) until RV antifreeze begins to flow continuously.
14. Close the faucet hot water lines and repeat with the cold water lines on all the faucets. Do not forget to run RV antifreeze through the toilet, sink and shower drains.

NOTE: *Remember, the RV also has an exterior shower; be sure to run antifreeze through the hot and cold lines for that as well.*

Winterize the washing machine

1. With washer-dryer power OFF, pour ½ quart of RV-type antifreeze into washer drum;
2. Close door. Advance Cycle Selector to 'Spin';
3. Press ON/OFF button, then press START. let the washer-dryer run for 1 to 2 minutes;
4. Press ON/OFF button to turn power OFF.
5. Unplug washer-dryer from electrical outlet (or disconnect power)
6. Turn water supply faucets OFF. Disconnect inlet hoses from faucets;
7. Drain remaining water from the hoses.

When you are done adding RV antifreeze

8. To prevent staining, wipe the RV antifreeze out of the sinks, shower (or tub), sink and toilet using a soft, dry cloth.

NOTE: *As an alternative to adding antifreeze, you can blow out the fresh water lines with compressed air (max 70 PSI).*

DEWINTERIZING

1. To dewinterize your vehicle, open both of the low point drains to allow the antifreeze solution to drain from the water system.
2. Next, close the low point drains and connect your vehicle to the available water source.
   - Put water in the freshwater tank and pump at least one gallon through to remove the antifreeze from the pump.
   - Keep the water heater in the bypass mode.
3. As in winterizing, open the kitchen faucet, bath faucet, inside and outside showers, turning ON both the hot- and cold-water valves to the ON position, and flush the toilet until the antifreeze solution is flushed out of the system and the water flow is clear.
4. Once the system has been flushed, open the water heater bypass valve. Open the freshwater tank supply valve from the pump and the ice maker valve.
5. Reinstall the (optional) water filter. Fill the water heater and hot water lines before turning the water heater on.
6. Before igniting the water heater, purge the air from the water heater tank by opening the water faucet while the tank fills.

NOTE: *Now is a good time to open up the refrigerator's icemaker and thoroughly clean it inside and out. Refer to the Refrigerator manual for cleaning instructions.*

PROPANE SYSTEM

PROPANE GAS

The propane system includes the propane cylinders, propane regulator, hoses, piping and copper tubing lines to each gas appliance. Follow the manufacturer's instructions for each propane appliance and all safety precautions.

In your RV, propane or LP (liquefied petroleum) gas is used for cooking, heating and hot water. Propane is a colorless and odorless gas that is stored under pressure in its liquid state. As a warning agent the odorant Mercaptan is added. Many people describe this odor as similar to rotten eggs.

When a propane cylinder is low, there may be a different odor (like onions or garlic) that can be mistaken for a propane gas leak. This odor will usually disappear when the cylinders are filled. If not, turn off the valve(s) and have the propane system inspected by your dealer or qualified propane service representative.

Figure 78. *Propane Gas Cylinder*

Maintenance

Although both Vanleigh RV and your selling dealer carefully test the propane system for leaks, travel vibrations can loosen fittings. Have the RV's propane system checked at all con-

nections soon after your purchase. System should also be checked when the propane tanks are filled for the first time, and again after 5,000 miles of travel.

Continue propane system checks by a qualified propane service representative (at least once a year) as part of your normal maintenance.

IF YOU SMELL PROPANE

1. Extinguish any open flames, pilot lights and all smoking materials.
2. Do not touch electrical switches.
3. Shut off the propane supply at the container valve(s) or propane supply connection.
4. Open doors and other ventilating openings.
5. Leave the area until odor clears.
6. Have the propane system checked and leakage source corrected before using again.

⚠ DANGER

FAILURE TO COMPLY COULD RESULT IN EXPLOSION RESULTING IN DEATH OR SERIOUS INJURY.

PROPANE GAS CYLINDERS

Propane gas, while under pressure in the cylinder, is compressed into its liquid form. As the fuel is released from the cylinder, it changes from liquid to gas. Propane will not run through the appliances in the liquid state. Propane expands 1½ percent for every ten degrees of increase in temperature.

IMPORTANT: *Sufficient space MUST be left inside the container to allow for natural expansion of gas during warmer weather.*

Propane cylinders are filled by weight, expressed in pounds. For filling, a qualified propane facility is required, and cylinders must be removed from the RV.

When the propane system is not in use, each tank shutoff valve must be kept closed. To close the propane tank shutoff valves: **HAND TIGHTEN ONLY, do not use tools.** Over-tightening may damage the interior seals on the cylinder valve seat. If this type of damage occurs, the cylinder will not close properly.

DOT (Department of Transportation) cylinders are the most common for use on RV trailers. DOT cylinders equipped with an OPD and ACME type 1 service valve are identified by the triangular service valve knob.

Max output is 200,000 BTU/hr. It is used to connect propane cylinders to regulators, hoses and other fittings. **It is not for use on gas grills and other low-pressure devices.**

Removal and storage of propane tanks

- ALWAYS close the shutoff valve and install a dust cap or plug when transporting or storing disconnected containers whether full or empty.

NOTE: *DOT cylinders are typically marked with "top" or an arrow indicating the correct orientation of the cylinder(s.)*

- ALWAYS mount, store, and transport the cylinder(s) in the position specified.
- ALWAYS securely re-install DOT cylinder(s) to the RV after they have been removed for filling or replacement.

Filling

- Any LP-gas tanks associated with the RV should never be filled to more than 80 percent of total capacity.

NOTE: *When you have a new cylinder filled for the first time, make sure your propane supplier purges your new cylinder of trapped air. Otherwise, an improper mixture of gas and air will make it impossible to light your propane appliances. For best performance the new propane cylinder must be carefully purged before filling.*

LP gas container overfill

NEVER allow your propane cylinder(s) to be filled beyond the maximum safe level marked on the cylinder. Your propane system is designed for gas vapor only. An overfilled cylinder could force liquid propane into the system, creating a hazardous condition.

PROPANE LEAK TEST

ALWAYS test for leaks with a solution of dish soap and water. Apply the solution with a spray bottle, to the outside of all gas line joints and fittings. If a leak is present, the soapy solution will bubble at the leak point. As a general rule, small bubbles indicate a small leak while large bubbles indicate a larger leak.

NEVER use a solution containing ammonia or chlorine when locating leaks. These products are corrosive to copper gas lines and brass fittings, which could result in deterioration of the copper and brass components.

If a leak is not fixed by tightening the connection, shut OFF the propane system valve(s) and immediately contact your dealer.

PROPANE ALARM

Your RV is equipped with a propane alarm. For detailed information on this alarm, see "Occupant Safety" on page 43.

INSTALLING THE PROPANE CYLINDERS

The position of the propane cylinder(s) and hoses is critical to proper operation and propane flow. Follow these instructions to make sure your propane container(s) are connected properly.

1. Make sure all the RV appliances are shut off.
2. Make sure each LP cylinder shut-off valve is closed.
3. Connect the 3/8" low-pressure hose to the outlet of the two-stage regulator.
4. Place the cylinder on the bracket in the recess compartment or housing and secure it so the outlets of the cylinder valve are facing the "sidewall" of the compartment or housing.

Remember each time the propane container is reconnected:

- Check that ALL fittings are tight.
- Check that ALL connections are tested with a propane leak detector (or soapy water) solution.
- Open the main shut-off valve on the LP cylinder ***slowly***. This avoids *propane freeze up*, caused by a fast rush of propane to the excess flow valve.
- If you do experience a *propane freeze up*, close the main valve and wait at least fifteen (15) minutes before trying again. *For more information, refer to the regulator manufacturer's operator manual.*
- Listen carefully. A *hissing* sound longer than one second, may indicate a propane leak. If you suspect that there is a leak, close the shut-off valve, then contact your dealer or qualified propane technician for repair assistance.

PROPANE REGULATOR

The two-stage regulator has the only moving components in the propane system. Its sole function is to reduce the pressure from the propane containers to a safe and consistent low operating pressure.

The first stage reduces the container pressure to 10-13 lbs. The second stage further reduces the 10-13 lbs. of pressure to an operating pressure of 11î W.C. (water column) or 6.35 oz. of outlet pressure to your appliances.

- If the pressure is too high, the propane system's performance and safety will be affected.
- If the pressure is too low, the appliances will not operate correctly.

Your RV is equipped with an *automatic* two-stage regulator. With both cylinders full of propane, turn the lever on the regulator towards the cylinder you wish to use first. This will now be the *supply* cylinder and the other the reserve.

NOTE: *With the lever in the middle, it draws off of both tanks at the same time. If the lever pushed to the front, it draws off the passenger side first. If the lever is pushed rear, it draws off the road side first. If the lever is pushed toward the center, facing you, it will draw off of both tanks.*

Figure 79. *Regulator Lever Positions*

Slowly open both cylinder valves. The indicator on top of the regulator will change to ***green***. When the supply cylinder is empty, the indicator will change to ***red***. Now turn the regulator lever to the reserve cylinder side and the green signal should return. You may now remove

the empty cylinder to have it refilled without interrupting the flow from the full bottle. After filling the cylinder, connect the pigtail hose and slowly open the bottle valve.

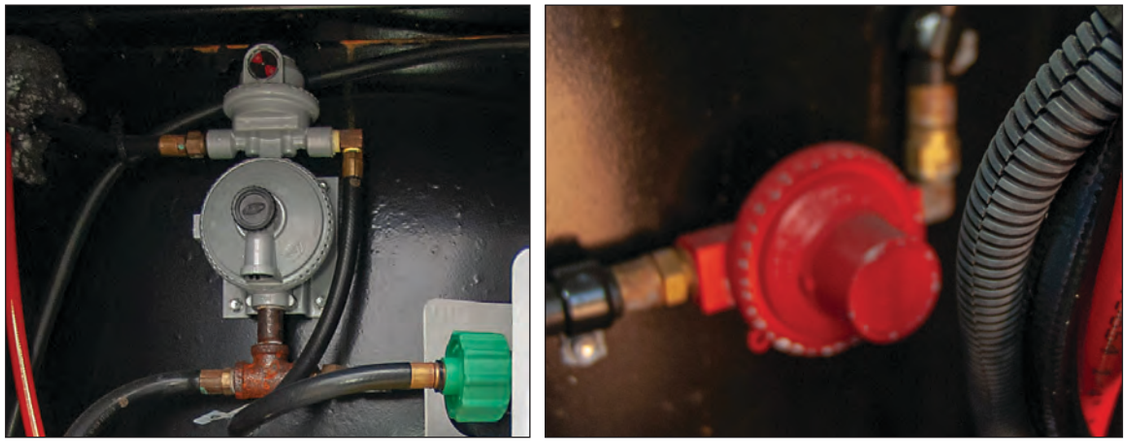


Figure 80. *LP Gas Regulators*

The regulator has a vent to relieve excess pressure on the inlet side of the regulator should excess pressure develop in the gas tank and connecting gas line to that regulator inlet. The vent would normally release the excess LP gas to the atmosphere until the over-pressurization condition is eliminated.

The regulator vent should be regularly checked to assure that it is not clogged or obstructed. If that vent is blocked from normal operation, component or system failures may result. If periodic visual inspection indicates any sign of corrosion or degradation, contact a qualified service technician to repair the regulator as soon as possible. DO NOT operate the LP-gas system with any faulty component in place.

- When the LP-gas regulator is installed or reinstalled, the regulator must always be installed with the gas diaphragm vent facing ***downwards***.
- Always keep the main valve to the LP-gas tank closed when the system is not in use.
- When the LP tank is empty, keep the main valve closed until refilling is to be performed; this process will keep any moisture-laden air from back-flowing into the gas system and trapping unwanted moisture in the LP-gas tank.
- If an empty LP-gas tank has been exposed to the atmosphere for an extended time, let a qualified service technician purge the tank before its next filling operation.

LP DISTRIBUTION SYSTEM

NOTE: *If any of the gas lines break, do not attempt to splice them—new lines must be run to maintain the safety of the RV. It is* ***strongly*** *recommended that only qualified service technicians perform this work.*

Remember, the main valve at the LP-gas tank must be closed whenever any gas appliance is to be installed, removed, or serviced. This process prevents LP-gas leakage which could result in a possible harmful explosion. If the odor of the LP gas is ever detected, immediately discontinue use of any gas appliances and seek the services of a qualified service technician.

- The LP-gas distribution system in your RV is designed for liquefied petroleum (LP) gas ONLY. DO NOT attempt to connect and use any natural gas or butane gas system with this LP-gas system.
- Carbon monoxide gas—derived from products of combustion of diesel fuel, LP gas, and other petroleum-based products, is a deadly gas which can kill RV occupants if allowed to accumulate in sufficient concentration. Additionally, any accumulation of exhaust gases outside or underneath the vehicle should be avoided as such may enter through the windows or vents—be careful how and where the RV is parked to avoid such conditions. Regularly monitor outside conditions to assure that all exhaust gases can readily be dissipated and not enter the RV inadvertently. See "Carbon Monoxide (CO)" on page 50.

RECOMMENDED PRACTICES

The following practices are recommended to assure continued safety and reliability of the LP-gas system. These are, of course, representative, not necessarily exhaustive. In all cases, use common sense in the use of the LP system.

- Visually inspect the LP-fill valve before any refueling operation to look for foreign materials or debris. Remove, as necessary, to assure a leak-proof connection.
- Prior to any refueling operation of the LP-gas system, shut off all the pilot lights.
- Periodically inspect visually the entire LP-gas distribution system; do so at least annually and before any major trips.

⚠ WARNING

NEVER, UNDER ANY CIRCUMSTANCES, CHECK FOR LP-GAS LEAKS WITH ANY TYPE OF OPEN FLAME; DOING SO COULD CAUSE EXPLOSION AND/OR FIRE.

Should problems be noted, seek the services of a qualified service technician to make necessary repairs and perform any maintenance.

PROPANE SYSTEM HOSES, TUBES, PIPES & FITTINGS

The hoses, pipes, tubes and fittings used in your propane system are designed to withstand pressures exceeding those of the propane system. However, because environment and time

can both contribute to the deterioration of these components, they must be inspected for wear at regular intervals. Be sure to inspect the hoses before each season and when having the tank refilled. Look for signs of deterioration such as cracks or loss of flexibility. When replacing the hose or other propane components, always replace them with components of the same type and rating (check with your dealer).

Fittings are used to connect the various system components to each other. The P.O.L. fitting at the end of the propane supply hose is made of brass so that pipe sealants are not necessary to prevent leaking. It also has a left-handed thread, which means that it is turned clockwise to remove, and counter-clockwise to tighten. The P.O.L. fitting has been designed to help restrict the flow of LP gas in the event of a regulator failure or hose malfunction.

Figure 81. *P.O.L. Fitting*

COOKING WITH PROPANE

Unlike homes, the amount of oxygen supply is limited due to the size of the RV. Proper ventilation when using the cooking appliance(s) will help you avoid the danger of asphyxiation.

For additional safety instructions, see "Appliances" on page 177***.***

TRAVELING WITH PROPANE

⚠ CAUTION

BEFORE TOWING YOUR RV, CONFIRM THAT THE PROPANE CONTAINERS ARE PROPERLY FASTENED IN PLACE. TURN OFF THE GAS AT THE LP BOTTLE. THIS DISABLES ALL GAS APPLIANCES AND PILOT LIGHTS.

DO NOT OPERATE THE PROPANE SYSTEM WHEN THE RV IS IN MOTION. SOME STATES PROHIBIT PROPANE APPLIANCES TO BE OPERATED DURING TRAVEL (ESPECIALLY IN UNDERGROUND TUNNELS). MAKE SURE TO KNOW THE LAWS FOR THE AREAS WHERE YOU TRAVEL.

USING THE PROPANE SYSTEM

After the RV is completely set up and you are prepared for camping enjoyment, use the following steps for propane operation:

1. Close ALL burner valves, controls and pilot light valves.
2. Open the main valve in the propane container slowly to avoid a fast rush of propane vapor through the excess flow valve causing propane "freeze-up." Should you experience propane "freeze-up," close the main valve and wait 15 minutes before trying again.
3. Listen carefully as propane begins to flow. If a hissing noise is heard for more than one or two seconds, close the main valve and contact your dealer to have the propane system tested.
4. Light the appliances as directed in the appropriate manufacturer manual from your Owner Information Package.

BEFORE using the propane system, make sure that you read and understand ALL instructions and safety requirements. The Owner Information Package contains operator manuals for the various appliances hooked to your pro-pane system.

If you have additional questions or concerns, consult with your dealer and/or the specific manufacturer.

CALCULATING PROPANE USE

Your Vilano fifth wheel's furnace, water heater, and range all use propane to operate. Use the BTU rating of each appliance to determine how long your propane supply will last. Propane consumption depends on their individual use and the length of time operated.

Most RV gas appliances are operated intermittently. Unless there is heavy use of hot water, the water heater consumption of propane is minimal. During cool temperature or high wind conditions, furnace consumption can be extremely high.

To calculate your propane supply, take the BTU ratings for your propane appliances and divide that into the BTU availability. Each gallon of propane (3.86 liters) produces about 91,500 BTUs (46,514 kilojoules) of heat energy.

Table 21. *Average Propane Consumption Information*

Appliance	Average BTU Consumption/ HR.	Kilojoules/HR.
Water Heater	8,800	9,280
Furnace	16,000–35,000	16,880–36,930
Range w/ Oven	7,100	7,490
Range — Rear Left Burner	6,000	6,860
Range — Front Left Burner	9,000	6,860
Range — Right Rear Burner	3,500	3,692
Range — Front Right Burner	12,000	12,660

Appliance	Average BTU Consumption/ HR.	Kilojoules/HR.
Water Heater	8,800	9,280
Furnace	16,000–35,000	16,880–36,930
Range w/ Oven	7,100	7,490
Range — Left Burner	6,500	6,860
Range — Center Burner	9,000	9,490
Range — Right Burner	9,000	9,490

APPLIANCES

The following is a brief overview of the factory-installed, RV appliances and equipment. For detailed operating instructions for each specific component, please refer to the manufacturer's owner manuals (found in your Owner Information Package) or visit that manufacturer's website.

If there have been modifications or replacements made to your RV, then these instructions may not apply. Please contact the service center or technician who performed the modifications or substitutions if assistance is required.

MICROWAVE

All microwave ranges operate on 120-volt AC power, supplied either by the shore power hookup or by the onboard generator in the RV. Make sure there is sufficient 120-volt power available before operating the microwave. To prevent damage, ensure the microwave turntable is secured prior to traveling.

For basic operating instructions, care, and maintenance for the proper use of the microwave, please consult the manual in the Owner's Information Package.

Figure 82. *Microwave Oven*

REFRIGERATOR

The 110-volt style refrigerator included with your RV operates very similarly to the refrigerator found in residential homes. The refrigerator is powered either from an outside source, your RV's generator, or by the inverter, which is located on the passenger side, inside the baggage compartment, overhead. (The Inverter is not applicable on the Gas/Electric Refrigerator).

NOTE: *The inverter is wired is to only power the refrigerator. Prior to departure, check to make sure that your inverter is powered ON after disconnecting from shore power.*

Figure 83. *Refrigerator*

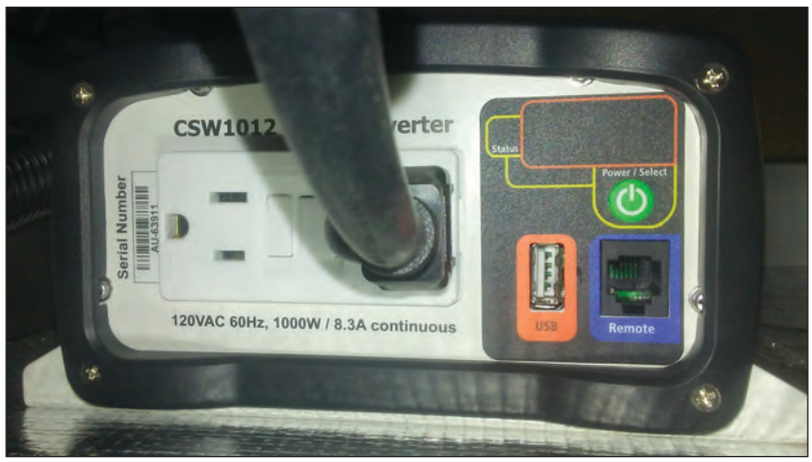


Figure 84. *Inverter*

WINE CHILLER

A 12 bottle wine chiller is installed in the galley (select floorplans only).

NOTE: *Always remove any beverage from the wine chiller before storing the RV for winter.*

Figure 85. *Wine chiller*

WASHER/DRYER PREP

If your RV was built with this feature, be aware the cabinet space provided is intended for the installation of an after-market RV-rated washer/dryer (customer supplied) only. Please consult your dealer or the appliance manufacturer for installation assistance.

Shutoff valves for the washer are located in the wash/dryer cabinet, next to the unit.

Figure 86. *Washing Machine Shutoff Valves*

GAS COOKTOP

The RV is equipped with a standard, four-burner range.

Figure 87. *Gas Cooktop and Oven*

Igniting the cooktop

While holding down the red direct spark ignition, press down on the gas control knob and turn it counter clockwise. Once the flame has ignited, continue holding the gas control knob for 2-3 seconds.

If the burner does not start after a few attempts, discontinue the process, let the released gas dissipate, then try the process again. The burner knobs operate in a counter-clockwise manner and must be gently pushed inwards as they are being turned. Never use the cook top when the RV is in motion.

OVEN

The oven is equipped with a piezoelectric ignition source instead of a pilot light. Therefore, you do not need to light a pilot light when operating your oven.

Cooktop and oven safety

It is wise to have a qualified service technician periodically check the entire LP-gas distribution system in the RV. Scheduling such an inspection annually would be a recommended, preventative-maintenance routine for each RV owner.

- DO NOT USE cooking appliances as heating sources for the RV. Cooking appliances require fresh air for safe operation. Before using any cooking appliance, make sure that an overhead vent or window is open and/or turn "on" an exhaust fan.
- All LP-gas operated appliances in the RV will consume oxygen. If the unit is totally closed during such operation, the oxygen level may be reduced and the associated carbon monoxide level may be increased, thereby causing possible harm or death to the occupants through asphyxiation. Always use these appliances with proper ventilation.
- Portable fuel burning equipment, including wood and charcoal grills and stoves, should NEVER be used inside the RV. The use of this equipment inside the RV can cause fire or asphyxiation and could result in serious injury or death.
- IF YOU SMELL GAS, YOU SHOULD IMMEDIATELY: Extinguish any open flames, pilot lights, and all smoking materials. Do not touch or operate any electrical appliances or switches. Immediately shut off the gas supply at the main tank valve or supply connection. Open doors, windows, and other ventilation openings. Exit the RV to allow entrapped LP gas to dissipate. Have the LP-gas system checked to locate and fix the source(s) of the leakage.

RANGE HOOD

In the RV, the "exhaust" or air-filtration fan is built into the microwave, it's called the range hood, and its function is to filter the air and exhaust to the outside.

The range hood (located on the bottom of the microwave) has both a light and fan control switch on the front panel. The aluminum mesh grease filter(s) (located on the underside range hood) of the can be gently hand-washed using mild soap and water.

Consult the microwave owner's manual in the Owner's Information Package.

Figure 88. *Range Hood Exhaust*

COOKING WITH PROPANE

To prevent damage, always use the manufacturer recommended size flat bottom pan(s). Generally, the pan should be large enough to cover the range top burner, but not be more than one inch larger than the burner grate.

Do not use a broiler pan, griddle or any other large utensil that covers more than one range top burner at a time. This will create excessive heat that may cause melting, sooting or discoloration.

In addition, the use of undersized pans could expose a portion of the heating element to direct contact and may result in ignition of clothing. Proper relationship of pans to burner will improve efficiency.

In Case of a Grease Fire

Grease is flammable. Never allow grease to collect around the burners or on the cook top surface. Wipe spills immediately. If a fire does start, follow these basic safety rules:

1. Have everyone evacuate the RV immediately.
2. After everyone is clear and accounted for, check the fire to see if you can attempt to put it out. If it is large or the fire is fuel-fed, get clear of the RV and have the Fire Department handle the emergency.
3. Try to smother a flaming pan with a tight-fitting lid or cookie sheet.
4. Never pick up a flaming pan.

5. Flaming grease outside of the pan can be extinguished with baking soda or a multi-purpose dry chemical or foam-type fire extinguisher.

CENTRAL VACUUM

A Dirt Devil vacuum is installed in the passthru.

Starting the vacuum cleaner

1. Lift the inlet valve cover on the wall.
2. Insert the hose cuff with a twist and push. The vacuum cleaner will start automatically.
3. To remove, turn the hose in either direction while pulling the hose toward you.

Changing the dust bag

1. Open the door on the vacuum cleaner by pushing the latch upward and removing the door completely.
2. Remove the full bag and discard.
3. Next, locate the pipe inside the vacuum chamber. Holding the new bag's cardboard collar at approximately a 45-degree angle, then insert the cardboard part of the bag against the upper back of the vacuum cleaner chamber behind the pipe.
4. Lift the front of the collar over the pipe as far as possible.
5. When closing the door, tuck in the left and right corners of the bag so the door is properly sealed and the latch clicks into place.

The central vacuum has a THERMAL PROTECTOR built into the motor to prevent overheating. If the motor will not operate or shuts down while in operation, wait 30 minutes; it will reset automatically. Turn unit off while it resets. If the motor does not come on, or the THERMAL PROTECTOR trips off again after a short period, service may be needed. Contact a Dirt Devil for service.

The vacuum cleaning system comes with an array of attachments that can be connected to the hose ends for multiple cleaning purposes. Make sure they are firmly pushed in and twisted to hold them in place.

Switch on the VacPan automatic dustpan by pushing the raised tab with your foot. Switching on the VacPan activates your central vacuum. Brush dirt and debris toward the VacPan. When cleaning is complete, switch off the VacPan and the central vacuum system by pushing the raised tab with your foot.

Figure 89. *VacPan Automatic Dust Pan*

Figure 90. *Central Vacuum Hose Connection*

Figure 91. *Central Vacuum Bag Exchange Location*

ELECTRONICS

The following is a basic overview of the audio/visual (A/V) electronics operation. The information in this section is written for original factory-installed equipment usage. If there have been modifications or replacements made to your electronics system then these instructions may not apply (please contact the service center or technician who performed the modifications or substitutions if assistance is required).

Refer to the manufacturer's user guides included in your Owner Information Package for detailed operating instructions for each specific component, or visit that manufacturer's website.

AUDIO/VISUAL SYSTEM GUIDE

CD/DVD Player

The Radio/DVD Furrion player is equipped with following features:

- Digital AM/FM tuner with weather band (WB)
- Compatible with DVD/CD-R/RW/MP3/MP4/WMA formats
- Auxiliary inputs on the front and rear
- USB input with charging function
- Bluetooth capability and hands-free functions
- 3-zone output
- The three zones, A, B, and C, can be controlled separately by simply pressing the zone button (located on the radio) that you would like to turn off or on. When A, B, and C are all displayed, every zone is on.

  A. Zone A is located in the living area. Only when the "A" button on the radio is lit are the living room speakers active.

  B. Zone B is the soundbar or speakers mounted in the entertainment center cabinet. Zone C is located outside on the curbside wall. Zone C is intended for outdoor listening.

NOTE: *Whenever the DC power to the RV is turned off, when turned back on, the stereo system will return to its factory-default settings, resulting in audio that comes out of all three zones simultaneously.*

- Clock/Alarm clock

- 1x HDMI output for HD viewing
- 2x RCA Audio/Video outputs for connecting 2 additional TVs
- Coaxial and optical audio input connections on the rear of the CD/DVD player
- The coaxial and optical inputs are for the TV or satellite receiver to use the CD/DVD player as a surround sound tuner. The coaxial input comes from us, prewired to use with the TV's output alone. This means you will only have surround sound from the TV or DVD player.

Figure 92. *Furrion Radio/DVD Player*

Figure 93. *Sound Bar*

Radio operation

1. Turn ON the radio.
2. Select speaker output using the controls on the radio face.

CD operation

1. Turn ON the radio.
2. Select speaker output using the controls on the radio face.
3. Insert CD to play.

TV Operation

1. Turn on the TV power supply.
2. Turn on the TV and select your signal input using the "source" button.

DVD operation

1. Turn off the TV power supply.
2. Turn ON the radio (the TV speakers are not used).
3. Insert DVD to play.
4. Turn on the TV and select your signal input using the "source" button.
5. Select speaker output using the controls on the radio face (the TV speakers are not used).

TELEVISION SETS

Your TV is high definition (HD) ready and is capable of receiving channels that are broadcasting in high definition.

In order to receive a clear picture from your satellite dish, you must subscribe to high-definition service.

The television sets are located in different areas of the RV. All TV sets are high definition.

The televisions are powered by 120-volt AC electricity; therefore, the RV must either be plugged into an external source of AC power or using onboard power from the generator.

Detailed operation of the television(s) is provided in the accompanying owner's manuals found in the Owner's Information Package included with the RV.

49" Full HD LED TV (Living Room TV)

The 49" TV 1080p HDTV comes from us linked to the Furrion CD/DVD player via HDMI cable for the viewing of DVDs or any other input from the CD/DVD player. We include a second HDMI cable for a HDMI satellite receiver. (Select floorplans have a 55" TV.)

NOTE: *If your receiver is not HDMI compatible, you will need a set of RCA cables to link the receiver to your television. An RCA cable is NOT provided with your RV. Coaxial from the receiver is not an option due to the direct line cable and roof antenna using the only coaxial input on the TV.*

Figure 94. *Living Room TV*

32" HD LED TV (Bedroom TV)

The 32" TV HDTV is located in the bedroom curbside wall. We install the TV with a coaxial cable with three different viewing options:

1. SAT2 – Satellite two input is coming from the AUX port located in the exterior wet bay. This port gives you the capability of having another satellite receiver that is dedicated to the bedroom TV alone.

2. Antenna/Cable – Roof antenna/cable is the signal from the direct line cable or the roof antenna.

NOTE: *To cycle between the antenna/cable you will need to use the button located on the booster. Turn the button "on" (green light illuminated) to receive picture from the roof antenna. Turn the button "off" (green light off) to get picture from the direct cable.*

3. Living room TV input – This port is the signal that is coming from your satellite receiver in the main living area of the unit. If this signal is hooked up correctly, you will have the same picture that is playing on the living room TV.

Figure 95. *Bedroom TV*

TV RECEPTION BASICS

TV broadcasting is a point-to-point communication. Any obstructions between the transmitter and the antenna will degrade the signal, affecting picture quality.

- Television stations transmit their broadcast signal "over the air" to surrounding areas.
- TV antennas are designed to receive the broadcast signals.
- Picture quality depends on the antenna type and your distance from the transmitter.
- The further you are from the transmitter, the weaker the signal becomes, affecting picture quality.

TV SIGNAL BOOSTER

- **The TV Signal Booster must be turned ON for improved *antenna* reception.**
- The TV Signal Booster sends 12VDC power to the TV roof antenna. This voltage energizes the transistors in the antenna head amplifier.
- To view cable/satellite, or to use a DVD/Blu-ray player, turn OFF the TV Signal Booster.

Figure 96. *Antenna Signal Booster Switch*

TV ROOF ANTENNA

On the roof of the RV is an AIR 360+ HDTV television antenna for receiving over-the-air television stations.

Figure 97. *Winegard 360+ Antenna*

To watch over-the-air stations, **you must turn ON the antenna booster**.

Turn ON power to **TV Roof Antenna**.

Once the antenna is activated, you may automatically search for channels that are active in your area by editing and scanning the channels by using your remote control.

Searching for channels

1. Press the power button to turn the television ON.
2. Press Settings.
3. Go to Channels, press "OK"
4. Go to Auto Tuning, press "OK".
5. Press "OK" on Start.
6. After Auto Tuning is complete, press the "EXIT" button.

NOTE: *You will have to search for TV stations when moving to a new location or cycling between a cable connection and the over-the-air antenna.*

CABLE/SATELLITE OUTLET

Figure 98. *Water Pump Switch*

Located in the exterior wet bay compartment are three ports for providing your RV with television service. The three ports are:

- The **Cable** input connects to an RG6 cable run through in-line splitters to provide service at multiple locations.
- The **Satellite** inputs connect to RG6 cables run directly to specific locations (no splitters). This allows for clean trans-fer of HD signals from the satellite dish.
- The **Aux** input connects to the SAT2 port in the bedroom.

When hooking up cable, make sure that the antenna booster is off (meaning, the green light is not illuminated). When hooking up a satellite receiver, the feed from the exterior satellite comes from a port above the radio labeled SAT1. When you hook a coaxial cable from the

SAT1 to the receiver, then you will have a signal. The port labeled LRTV out is there if you want to connect the same receiver to the other two service ports located in the RV. One is located in the bedroom and the other is in the pass through storage compartment for outside viewing.

Figure 99. *Cable/Satellite Outlet—Bedroom*

Please refer to the (customer supplied) satellite manufacturer manual for setup, care and maintenance instructions.

SATELLITE PREP

Your RV is prepped for a satellite receiver without the hassle of setting up a tripod or stand-alone satellite dish. This comes prewired with a setup that is capable of being used with any satellite or receiver. This is done so that you are not limited to any particular satellite service provider.

HEATING & COOLING

This section contains an overview of the RV heating and cooling components. It applies only to the original factory-installed equipment. For more information on each specific component, please refer to the manufacturer's operating instructions, or visit that manufacturer's website.

DUCTING & RETURN AIR

All heat discharges, registers, and return air grills must be free and clear of obstructions. The adjustable registers are only intended to reduce airflow as needed, they should NOT be completely closed.

ROOF VENT/FANS

The 12VDC roof vent fans allow fresh air to circulate through your RV. Make sure that roof vent lids are closed while traveling, and when you will be away from the RV, to prevent unexpected weather damage.

The vent fan should only be left in the ON mode when the RV is parked and in use. The fan will not operate until the vent is open.

The galley fans are turned ON and OFF using the Spyder controls. The speed of the fan is controlled by a three-speed control switch. Additional bathroom fan controls are located on the Spyder touch pad in the bathroom.

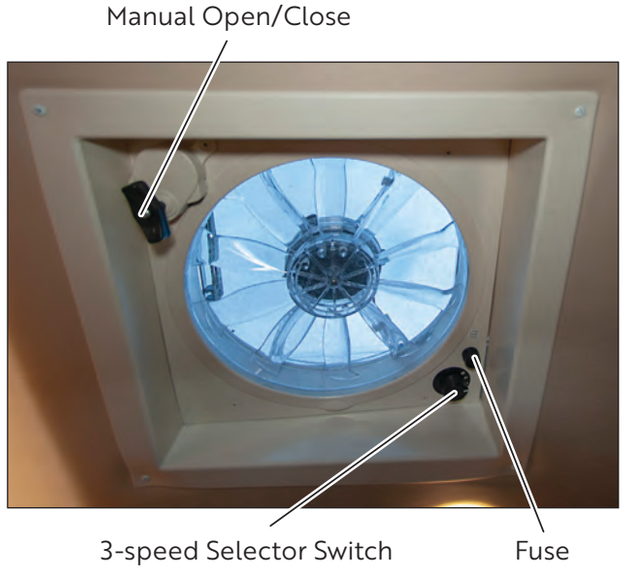


Figure 100. *Roof Vent Fan*

Figure 101. *Spyder Controls - Fans*

Figure 102. *Bathroom Fan Touchpad Controls*

THERMOSTAT

The following is a brief overview of how best to use the thermostat. For more detailed instructions, please consult the thermostat literature in the Owner's Information Package.

Mode of Operation: Cooling

1. Use the Spyder controls to select the desired function (e.g., A/C, HEAT PUMP, FURN, or OFF).
2. Press the Up and/or Down buttons to set the desired temperature for each zone (Front, Mid, Rear).

NOTE: *In the "A/C" mode there will be a delay of several minutes before the refrigerant in the air conditioning system begins to cool the RV, as the compressor is on a time-delay circuit and it must also cool the ductwork to the vents first.*

NOTE: *When the fan mode is in A/C FAN AUTO, the fan will cut on and off when the temperature reaches the desired setting. When the fan mode is on HIGH or LOW, it will continue to run even though the compressor cycles on and off when it reaches the desired temperature. If the RV temporarily loses its 110 power, the air conditioning system will resume operation at its last programmed setting once power is restored. If 12V power is lost to the thermostat, it will automatically reset to 72 degrees once power is restored.*

Figure 103. *Spyder Controls—Climate*

The Spyder system controls both the heating and air conditioning for the unit. In the gas (furnace) heating mode, the furnace heats air which, in turn, is circulated through ductwork in the floor. If any obstruction(s) block the floor vents or air-return registers, then the furnace will not function properly.

Mode of Operation: Heat

NOTE: *After turning off the furnace, the system will continue to run for about a minute or so to permit a gradual cool-down of the heating system, which is normal.*

Figure 104. *Temperature Sensor*

FURNACE

The RV is equipped with a forced-air furnace fueled by LP gas. The furnace requires both 12V power and propane gas for full operation. Make sure you have sufficient power available before operating your furnace.

⚠ DANGER

NEVER ATTEMPT TO MODIFY THE FURNACE. TO DO SO MAY CAUSE FIRE, EXPLOSION, CARBON MONOXIDE POISONING, OR ASPHYXIATION. IF THE FURNACE IS MALFUNCTIONING, IMMEDIATELY SHUT THE UNIT "OFF" AND CALL A TRAINED SERVICE TECHNICIAN AS SOON AS POSSIBLE.

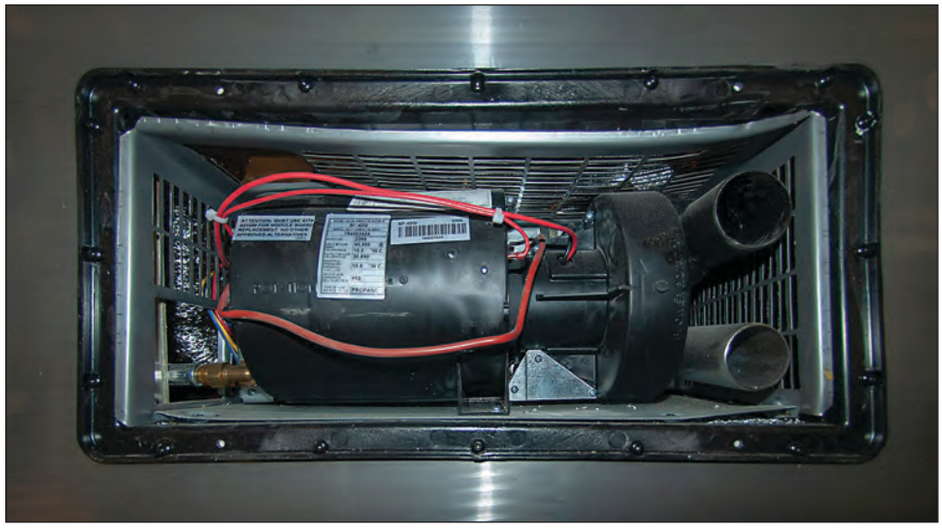


Figure 105. *Furnace*

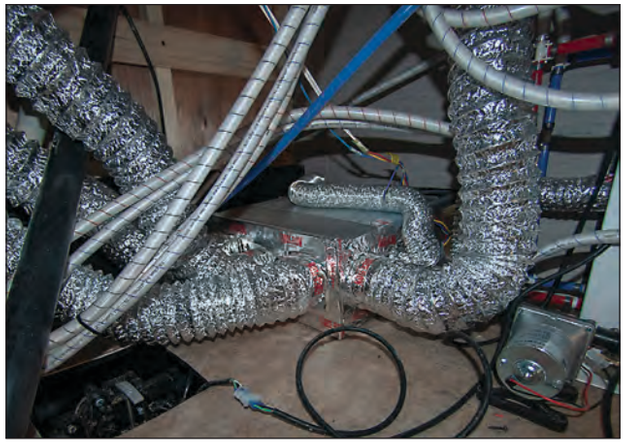


Figure 106. *Furnace Ductwork*

Figure 107. *Furnace Discharge—Galley*

Figure 108. *Furnace Discharge—Bedroom*

Using the furnace for the first time

When the furnace is being used for the first time, there may be an initial "burn-off" of manufacturing compounds or residues left on the heat exchanger or in the ductwork which could produce odors, fumes, and possibly some smoke. This is normal and should not cause concern, unless it persists for an excessive amount of time.

To minimize the after-effects of this "burn-off" process, the initial use of the furnace should be done with all the doors and windows open to permit normal air circulation to dissipate these odors and fumes.

NEVER attempt to repair the furnace yourself. ALWAYS have your furnace maintenance completed by a qualified technician at least once a year (more often depending on furnace use).

Furnace maintenance

- On a regular basis, thoroughly clean the complete furnace unit and air-tube passageways to remove dust, lint, and any other possible obstructions.
- Leak-test the entire LP-gas system at least annually.
- Also check and clean the air-blower system annually.

Any access hatches to the furnace are for authorized service personnel only, as there are no user-serviceable parts on the furnace. Accordingly, do not attempt to tamper with the interior of the furnace.

NOTE: *Be cautious when washing the exterior of the RV. Water should never be sprayed directly into the furnace vent. Should any water be force beyond the rain baffles into the furnace, the furnace may rust which, in turn, may cause improper combustion and produce unwanted by-products of combustion.*

Figure 109. *Furnace Vent*
(Shown with Customer Supplier Insect Screens)

Before the beginning of each travel season

- Thoroughly clean and inspect the furnace.
- Remove any obstructions, debris, or lint which may obstruct free air flow or impede the operation of the air-circulation system. For example, accumulated dust or lint could possibly obstruct the orifices for the pilot light or may accumulate on the blower blades and unbalance the operation of the blower. Additionally, any debris in the ductwork, when heated by the furnace, could emit unpleasant odors or possibly become a fire hazard.

HEAT PUMP

Your RV may be equipped with the optional heat pump. The heat pump is built into the air conditioning unit, and operates on electricity only, allowing you to conserve propane. Performance of the heat pump begins to degrade at around 40° F. The heat pump will shut down at conditions which would cause outdoor coil freeze-up, generally near freezing temperatures.

Because the heat pump is built into the air conditioning unit, when using the heat pump, the warm air discharges out the ceiling vents (not the floor registers).

AIR CONDITIONING

Power Requirements

The factory-installed air conditioning system is designed for 120-VAC power supplied either from the external power cord or from the generator.

NOTE: *ALWAYS check that you have sufficient power available before operating the air conditioner.*

Figure 110. *Air Conditioning Unit*

Vents and Ducting

The air-conditioned, cooled air is discharged through the louvered vents which are located in the ceiling throughout the entire RV. The return air vents run parallel to the discharge vents. The return vents contain foam filters that keep dust from flowing back through the air conditioning system. The return filters can be easily removed and cleaned with warm water and a mild cleaning solution. To remove the filer, simply twist and pull the vent down and lift the filter from inside the opening.

Figure 111. *Air Conditioning Discharge Vents (Adjustable Registers)*

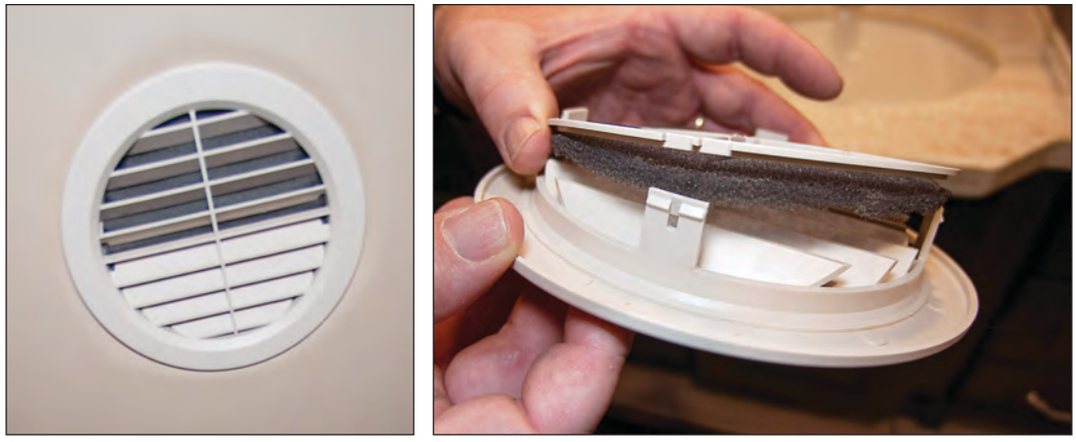


Figure 112. *Air Conditioning Return Vents*

Figure 113. *Galley Return Air*

Cooling vs. heat gain

The roof air conditioner can, at best, cool the air it intakes by 20°F. During hot weather, through the day, your RV will absorb heat, increasing the inside temperature. This is referred to as heat gain.

To keep the inside temperature comfortable, reducing heat gain of the RV is just as important as the cooling ability of your air conditioner. To reduce heat gain, follow these steps:

1. Park the RV in a shaded area.
2. CLOSE the blinds or drapes.
3. Use the awnings to shade your RV from sun exposure.

4. Avoid the use of heat producing appliances.
5. SET the air conditioner Fan/Cooling mode to HIGH. In high humidity or high temperatures, this will provide maximum efficiency.
6. Turn ON the air conditioner early in the morning, to give it a head start on cooling.

FIREPLACE

Please refer to the fireplace manual for operation, service and maintenance information.

Figure 114. *Fireplace*

SLIDEOUT SYSTEMS

BEFORE operating your slideout system:

- Check that you have sufficient power available.
- Level and stabilize the RV.

- Leveling helps to keep the RV square, enabling the slideouts to extend, retract, and seal correctly.
- If the RV is NOT level, the slideout rooms and/or mechanisms may become damaged.
- The slideout rooms DO NOT need additional support. Non-warranty damage can occur from improper use of aftermarket support jacks.

SLIDEOUT OPERATION

It is normal for the slide rooms to make creaking or squeaking noises while moving. These noises are especially common during the break-in period while the components are seating properly. This will decrease after a few extend/retract cycles. Note that there will always be some noticeable noises when operating the slideout.

1. **ALWAYS level and stabilize the RV, BEFORE operating your slideout system.**
2. Check that your auxiliary battery is fully charged or the RV is connected to shore power. Turn off all unnecessary lights to maximize available power.
3. Close all cabinet doors and drawers.
4. BEFORE extending or retracting:
    - Check that the *interior* path of the slideout room is clear of people, pets, furniture, clothing, etc.
    - Check that the *exterior* path of the slideout room is free from any obstructions.

NOTE: *While the slideout room is extended, the roof of the slideout room may collect dirt and debris. The slideout seals are not designed to remove the debris.*

    - When you **retract** the slideout, any debris on the outside of the room, is brought inside your RV.
5. Inspect the sides, top and bottom of the extended slide-out room. If the outside of the slideout room is wet, wipe it dry before retracting.

6. Immediately clean any water puddles or debris brought inside your RV from slideout operation.

7. Press and hold the appropriate slide room button to either IN or OUT, until the room is completely extended or retracted.

- The galley and dinette slides are hydraulic. DO NOT hold these slide room buttons past the point the room is fully extended/retracted or damage may occur.
- For the weather seals to be effective, the slideout room MUST be completely extended/retracted.

Figure 115. *Slideout Controls*

HYDRAULIC SLIDE-OUT MANUAL OVERRIDE

In the event you must manually override the hydraulic slideouts, Vanleigh RV recommends that you do not attempt the process yourself. Instead, contact your authorized dealer, authorized service center, or Vanleigh RV customer service if there are problems with your hydraulic slide-outs.

Figure 116. *Hydraulic Reservoir for Slides and Leveling*

Under normal In normal operation, the galley and dinette slides are both operated using the single button on the Spyder touchpanel. The hydraulic slide bleed valves allow you to open up just one slide (as opposed to opening both at the same time) This is useful if you are in a tight parking lot and only have enough room to open a single side.

For example, if you only want to open the dinette slide, close the bleed valve for the galley slide and it will remain closed when you press the Galley Slide button on the Spyer touch-panel.

Figure 117. *Hydraulic Slide Bleed Valves*

NOTE: *If your slideout system:*

- Stalls out before reaching end of stroke, or
- Does NOT close and seal tightly.

Contact your dealer or Vanleigh RV Customer Service for trouble shooting and/ or repair.

Maintenance

Although the system is designed to be almost maintenance free, actuate the room once or twice a month to keep the seals and internal moving parts lubricated. Check for any visible signs or external damage before and after movement of the RV.

- For the best performance, the slideout system requires the auxiliary battery be fully charged.
- Check for corrosion, and loose or damaged terminals/ connections at the battery, the control switch, and the electronic actuator motor.
- Check that the motor leads under the RV chassis are in good condition. These connections are subject to damage from road debris.
- When operating the slideout system in harsh environments (i.e., road salt, ice buildup, etc.) keep all moving parts clean, washing them as needed, with mild soap and water.

NOTE: *The vanity slide and the bedroom slides are electric. The galley slide is hydraulic.*

- Grease or lubrication is NOT necessary. It could even harm the long-term dependability of the slideout system.

Service and adjustments

Any slideout room adjustments must be performed by a certified RV service technician. Adjustments made by non-certified persons may void any and all warranty claims.

SCHWINTEK IN-WALL SLIDEOUT SYSTEM MANUAL OVERRIDE

If the electric IN-WALL slideout does not extend or retract, follow these steps to override the system (it will be easier if you have one or more persons to assist you):

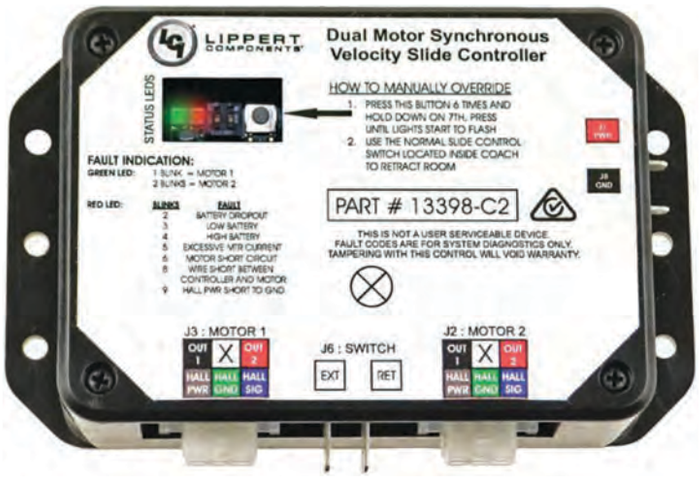


Figure 118. Typical In-Wall Slide Controller
(Located in the front facing compartment of your fifth wheel)

Electronic manual override (for board revision C1 and newer):

1. Locate the circuit board.
2. Press the MODE button six (6) times quickly, press a seventh (7^{th}) time and hold for approximately five (5) seconds.
3. The RED and GREEN LED lights will begin to flash, confirming the override mode.
4. Release the MODE button.
5. Back inside the RV, press and hold the appropriate Slide IN button until the room retracts completely.

Manually push the slide room in override:

1. Locate the circuit board.
2. Unplug both motors from circuit board (this releases the motor brake).
3. Push or pull slide room in as desired.
   - Larger rooms may require several people to push.
   - Keep both sides of room relatively even.
4. When the slide is completely in, plug both the motors back in to the control board (this applies the motor brake for road travel).

Disengage motors, manually retract room and travel lock:

1. On the outside of the slide, Locate and remove motor retention screw located near the top of each vertical column on the side.

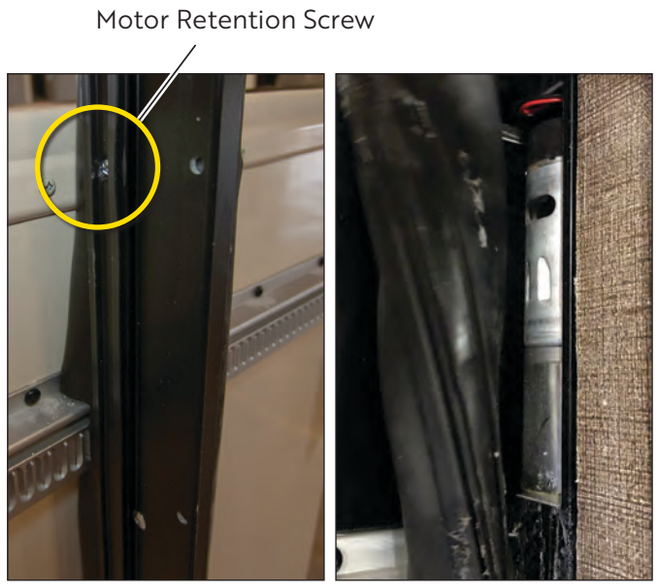


Figure 119. *Disengaging the Slide Motors*

2. On the inside of the slide, bend back the wipe seal and visually locate motor.
3. Pull the motor up until disengaged, about ½". Replace the motor retention screw to hold the motor in this position.
4. Repeat this process for both sides of the slide room.
5. Push or pull the slide room back in to the opening, keeping the side of the slide room relatively even.
6. Re-engage motor to be ready for travel.

TROUBLESHOOTING THE SCHWINTEK IN-WALL SLIDE SYSTEM

Error codes

During operation, when an error occurs the board will use the LEDs to indicate where the problem exists.

- For motor specific faults, the GREEN LED will blink once for motor 1, and twice for motor 2.

- For error codes, the RED LED will blink between two and nine (2-9) times to indicate the error code (see below).

Table 22. *Error Codes for the Schwintek In-Wall Slide System*

Red LED Error Code	Error Code Description
2	Battery drop out; battery capacity low enough to drop below 6 volts while running.
3	Low battery; voltage below 8 volts at start of cycle.
4	High battery; voltage greater than 18 volts.
5	Excessive motor current; high amperage, also indicated by one (1) side of slide continually stalling.
6	Motor short circuit; motor or wiring to motor has shorted out.
8	Hall signal not present; encoder is not providing a signal.
9	Hall power short; power to encoder has been shorted to ground. Usually a wiring problem.

When an error code is present, the board needs to be reset. Energizing the extend/retract switch resets the board. Energize the extend/retract switch again for normal operation.

Checking fuses

The IN-WALL slide system requires a minimum of 30-amp fuse. Check the fuse box (located in the command center) for blown fuses, and replace as necessary. If the fuse blows immediately upon replacement, there may be a problem with the wiring to the control box (contact your dealer for assistance).

Low voltage

The IN-WALL slide controller is capable of operating the electric slide room with as little as 8-volts. But at these lower voltages the amperage requirement is greater. Check the voltage at the controller; if the voltage is lower than 11-volts, it is recommended that the auxiliary battery be placed on a charger until it is fully charged.

Only one (1) side moving

The IN-WALL slide system has a separate motor to operate each side of the room. If only one side of the room moves a short distance (2 to 4 inches) and stops:

- **Will the non-moving side move with help?**
  If only one (1) side of the room is moving, then with someone's assistance press the switch to extend or retract the room while pushing the non-moving side in the appropriate direction. On larger rooms it may be necessary to have two (2) or more people pushing the room.

- **Non-moving side moved manually.**
  Try to push the non-moving side in and out. If a motor shaft has broken then it will be possible to move that side of the room several inches by hand. Larger rooms may require several people to push.

IN-WALL slide system maintenance

- Check all four (4) gear racks installed on the exterior sidewalls of the slide room for debris (if found, remove debris immediately).
- Clean with mild soap and water. No lubricant is necessary.
- Operate the slides once or twice per month to keep the slides lubricated.

EXTERIOR FEATURES

EXTERIOR LIGHTS

Figure 120. *Switch for Front Cap Light*

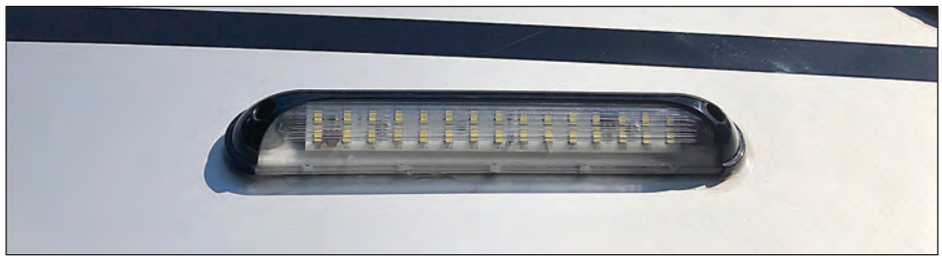


Figure 121. *Porch Light*

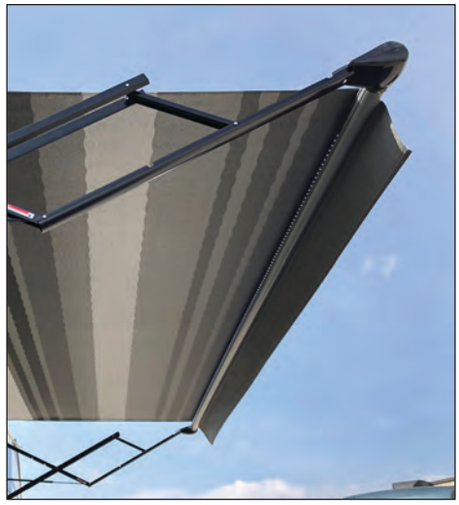


Figure 122. *Awning Light*

Figure 123. *Motion Lights in Closets*

ROOF & LADDER

The RV is manufactured with a thermoplastic polyolefin (TPO) roof membrane, accessed by a ladder.

Proper care and routine maintenance of your roof will assure many years of trouble-free performance. See "Exterior Roof" on page 227.

A roof ladder (rated capacity: 250 pounds, maximum) is a standard feature.

Do not exceed the maximum load-limit of the ladder (i.e.: 250-pound load limit). Do not attempt to walk on the roof either while it is wet or when condensation is present from the air-conditioning system, as the surface will be slippery.

Figure 124. *Roof Ladder*

AWNING

It is very important to keep your awning clean. The power patio awning is extremely durable and can be operated during light rain and light wind conditions. However, when periods of heavy rain or wind are expected, the awning should be closed. ALWAYS close the awning into the travel mode position, if you will be away from the RV for an extended period of time.

NOTE: *Damage caused by wind and rain is not covered by the limited warranty.*

For more information about operation, cleaning and maintenance, please refer to the awning manufacturer's user manual.

Figure 125. *Patio Awning*

Opening the awning

> **⚠ CAUTION**
>
> **CHECK FOR OBSTRUCTIONS BEFORE OPENING THE AWNING.**

1. Locate the AWNING page on the Spyder control screen.
2. Press and hold the EXTEND button and the awning will automatically open. If the button is released the awning will stop. Keep the button depressed until the awning is fully extended, then release.
3. Verify that the valance is in the correct orientation (see awning instructions found in the Owner's Information Package). Allowing the valance to remain in a hyper extended orientation may create a pooling water, especially in larger (17'-21') awnings.

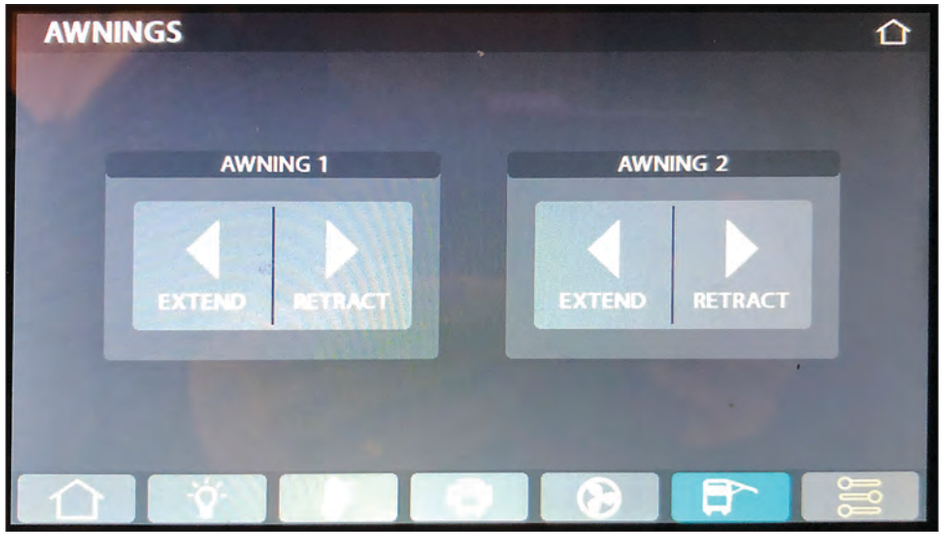


Figure 126. *Spyder System Awning Control*

Adjusting the awning

The Longitude arms have 6 pitch adjustment settings. The awning can be extended and retracted in any of these positions without having to reset the pitch between uses. See the NOTICES in the Carefree of Colorado awning manual about unequal pitch settings.

Figure 127. *Awning 6-point Adjustment Pins*

Closing the awning

NOTE: ***Pinch Hazard*** *– when closing the awning, the bottom arm will fold down and against the back channel. This area must be kept clear of people and objects. Failure to heed this warning could cause severe personal injury and/or property damage.*

1. Locate the AWNING page on the Spyder control screen.
2. Press and hold the RETRACT button to automatically close the awning. If the button is released the awning will stop. Keep the button depressed until the awning is fully retracted, then release.

IMPORTANT: *As an extra safety precaution, visually verify that the awning is fully closed.*

In the event that the awning will not extend or retract, the awning fuse may be blown. The fuse is located in the front leg of the awning. Various circumstances can cause the awning fuse to blow: such as a bind in the awning fabric or a bent arm from a windstorm. When this happens, one side could come out freely and the other isn't free.

The awning uses a 2A buss fuse.

Figure 128. *Awning Fuse*

INSTALLING A HITCH BELOW THE BUMPER

There are tabs on the chassis for a bolt-on hitch that is available from Vanleigh. It will have a 2" receiver and has a tongue weight of 350 lbs. Contact Lippert for pricing.

NOTE: *This hitch is not intended for towing a vehicle.*

Figure 129. *Bolt-On Hitch*

INTERIOR CARE

CLEANING THE INTERIOR

To keep the value of your RV, perform regular maintenance using the proper materials and procedures.

- Check the component manufacturer's information for the recommended cleaning agent.

Using the wrong cleaner may result in damage to the surfaces in your RV. To check if a cleaner will cause damage, test it in a small, out of sight area, or contact your dealer for assistance.

DO NOT use flammable liquids or sprays to clean your RV.

CABINETRY & TABLES

- To keep them looking like new, regularly dust the hardwood doors, cabinet fronts and tables.
- Use a soft cloth dampened with a cleaning polish or mild detergent solution.
- Avoid using ammonia based products or silicone oils as they may cause damage if used over a long period of time.
- Although the finish is durable and resistant to most household spills, they should be wiped up promptly to avoid any potential problems.
- Avoid prolonged exposure to direct sunlight, high temperatures or high humidity. These conditions can cause damage to both the finish and the wood itself.

PANTRY

- Use the pantry to store items you wish to take with you as you travel and camp.
- The cabinetry has been designed to accommodate normal camping items (i.e., paper plates, flatware, cookware, etc.) which are bulky but not necessarily heavy.
- Ensure items stored in the pantry are secured so they do not shift during travel.

Remember your RV's load capacity is designed by weight, not volume, so you may not necessarily use all available space.

PANELING

- To clean, use a mild solution of soap and lukewarm water with a soft sponge or cloth.
- Do not use abrasive cleaners as they could cause the vinyl to scratch and turn dull.
- Grease spots and stubborn dirt can be cleaned off with an all-purpose spray.

CEILING

The ceiling in the RV is covered with a padded vinyl headliner which can be easily cleaned with a damp, soft cloth and a mild detergent.

Clean around all vent areas to prevent any build-up of dirt, grease, or other accumulations.

COUNTERTOPS

To prevent permanent damage:

- Always use hot pads or trivets under hot pans, dishes, or heat producing appliances such as frying pans.
- Always use a cutting board; never use a knife on the countertop.
- Avoid harsh chemicals such as drain cleaners, oven cleaners, etc.
- Do not let cleaners with bleach set on the top. Wipe them off promptly.

Solid surface countertops

Solid surface materials are easy to care for. Use soapy water, ammonia based cleaners (not window cleaners as they can leave a waxy build up that may dull the surface) or commercially available solid surface cleaners will remove most dirt and residue from all types of finishes. A damp cloth followed by a dry towel will remove watermarks. Disinfect the surface periodically with diluted household bleach (one-part water to one-part bleach).

For additional information on the removal of difficult stains or surface damage repair, contact the countertop manufacturer.

FLOORING

Always test a cleaning agent in an inconspicuous area for colorfastness.

Carpet

Vacuum regularly with a vacuum cleaner with a revolving brush or beater bar. Be sure the vacuum does not have teeth, combs or rough edges as they may damage the carpet. It is

important to remove loose soil and debris while it is on the surface. Heavily traveled areas (i.e., walkways, areas in front of the furniture) may be protected with small throw rugs to prolong the life of the carpet.

Some spills contain chemicals that will destroy carpet fibers and dyes. If you have doubts about what caused the spot, contact a professional carpet cleaner. Because of the additional dirt typically associated with camping, we recommend that you vacuum the carpet frequently. Have tough and deep stains professionally steam cleaned. Use spot removers for minor spills. Always test the carpet for color fastness in an inconspicuous area before using any product.

Linoleum Floors

Most floors only require a mild detergent and warm water for cleaning. More water on the floor is not always better for cleaning. Use a damp cloth to clean on a regular basis rather than wet mopping each time.

Figure 130. *Linoleum Floor*

TABLE & CHAIRS

The dinette table can seat up to four people. To prevent damage, the free-standing chairs should be fastened down securely or laid on their sides when you are traveling.

Figure 131. *Table and Chairs*

FURNITURE UPHOLSTERY

To retain the value of your RV, maintain the furniture upholstery carefully and keep the interior clean. Vacuum the furniture regularly using a soft brush attachment to remove any loose dirt or debris.

Fabric upholstery

Fabric should be professionally cleaned if it becomes stained or soiled. For more information, refer to the specific furniture manufacturer's care instructions.

Suede

Suede should be professionally cleaned if it becomes stained or soiled.

*Clean the **suede** upholstery ONLY as recommended. Using other processes than those listed may produce undesired results and possibly damage the upholstery. This type of damage is not warrantable.*

RECLINER SOFA OR LOVESEAT

Like a residential recliner, the recliner sofa or loveseat sections have controls allowing you to recline the individual sections. Contact Franklin Corporation for care instructions for this product.

NOTE: *For specific cleaning instructions, you will need the information located on **your** furniture tag.*

- For the Recliner chairs, the tag is located in the underside of the footrest.
- For the sleeper sofa, the tag is located underneath the sofa.

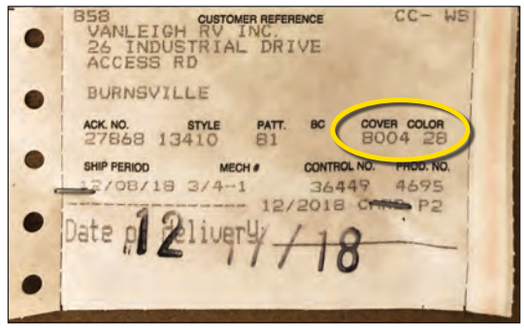


Figure 132. *Furniture Tag—Example*

Figure 133. *Sofa and Loveseat*

Figure 134. *Recliner/Sofa Controls*

ABS PLASTIC

ABS plastic components will retain their original beauty with reasonable care. Dust and wipe clean with soft, damp cloth or chamois, wiping gently. Do not use gritty or abrasive particle soaps or scouring compound to clean ABS plastic.

AVOID using *Citrus or biodegradable cleaners* containing D-Limonene; these cleaners may damage plastic materials.

DECOR ITEMS

Decor glass

Use a glass cleaner to remove smudges, smears and spots. If there is any decorative etching on the decor glass, use care when cleaning around that area.

Window treatments, curtains, blinds and shades

Throughout the RV, the window treatments consists of a blackout shade, which creates complete privacy for nighttime. Each shade can be raised and lowered simply by pulling down on the shade.

Dust occasionally with a vacuum and soft brush attachment. Professionally clean only.

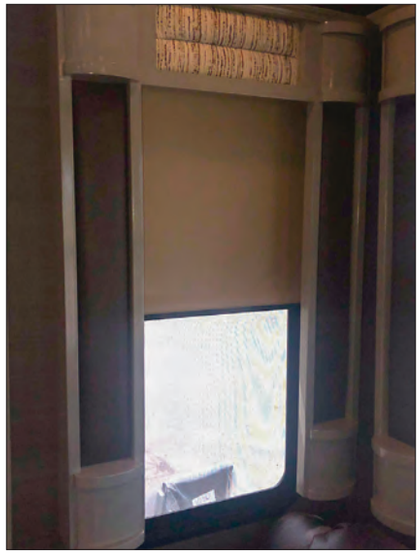


Figure 135. *Shades*

⚠ CAUTION

DO NOT OVEREXTEND THE SHADE; THIS WILL DAMAGE THE ROLLER TUBE. TO OPERATE THE SHADES, PULL THE SHADE DOWN TO THE DESIRED LEVEL AND SLOWLY RELEASE TO LOCK THE SHADE IN PLACE. TO RETRACT, GENTLY PULL DOWN ON THE SHADE AND RELEASE.

The shades can be adjusted in two ways:

- Upper stop adjustment
- Roller speed

Bedspread

For the bedspread and pillow shams, cleaning instructions are "for dry-cleaning only." As the bedspread was made with materials treated for stain resistance, dry-cleaning will prolong the life of these materials.

KITCHEN SINK

The kitchen sink installed is a double-bowl sink equipped with a sink cover to provide additional counter space when the sink is not in use.

For the sink, cleaning care consists of washing only with mild detergents and water. Use a soft cloth for subsequent drying and polishing.

BATHROOM SINK, SHOWER, & ACCESSORIES

The RV is equipped with a fiberglass shower surround. Use fiberglass cleaning or mild cleaning supplies to avoid scratching its surface. NEVER use gritty or abrasive particle soaps or scouring compounds to clean the plastic.

STAINLESS STEEL SINK & APPLIANCES

- DO NOT use abrasive cleaners, scouring pads or steel wool.
- DO NOT use oven cleaner or any cleaners containing bleach or chloride.
- Hard water that evaporates on a stainless-steel surface can leave spots.

1. Dampen a soft cloth in warm water mixed with a mild dish soap.
2. Wipe the surface. Clean with the grain, not across.
3. Rinse the cloth and wipe again.
4. Blot the surface dry with a towel to prevent water spots.

Glass cleaner or a cleaner made specifically for stainless steel may also be used. BEFORE cleaning the entire surface, test the cleaner on a small hidden area.

EXTERIOR CARE

The RV exterior is comprised of many different materials including; fiberglass gel-coat, automotive grade paint finishes, plastics, glass, sealant, and aluminum.

There is an increased chance of damage to the exterior finish, the longer a foreign substance remains on the surface. Frequent washing and waxing is the best way to protect your RV from this damage.

The following materials deposited on the RV's surface may result in corrosion, staining, and/or chemical spotting:

- Road Tar, Dirt, and Dust
- Road Salt and Sodium Chloride
- Bird Droppings / Bugs / Tree Sap
- Acid Rain / Industrial Fallout / Pollution
- UV Exposure and Moisture

CLEANING THE EXTERIOR

Frequent washings also protect your RV from environmental elements, such as rain, snow and salt air.

- Wash your RV as soon as possible if it becomes contaminated with foreign material.
- Avoid parking under trees or near ocean sea salt.
- DO NOT *scrape* ice or snow from the painted surface, brush off the affected area.
- If anti-freeze, gasoline or any solvents are spilled on the painted surface, rinse the area with water immediately.
- Bugs and bird droppings should be rinsed off daily.

Washing

Paint manufacturers advise against using harsh cleaners such as Simple Green, Mr. Clean, or liquid dish washing soaps. The degreasing agents in these cleaners often leave a residue on the sealant which can soften and damage the clear coat over time.

- DO NOT wash the RV in direct sunlight. Park in the shade and spray RV with water to remove dust.
- Use a high quality RV wash soap, such Meguiar's.

Vanleigh RV recommends the lambswool pad sold by Mary Moppins. This allows you to safely wash your RV from the ground by placing the pad on an extension.

Do not mistake lambswool with imitations. Imitation pads are made from 100% polyester, which is plastic. Plastic imitations will scratch the finish of the RV. For this same reason, avoid microfiber products to wash or dry your RV, car, boat, airplane, motorcycle, vehicle, furniture, or cabinets. Microfiber is made from 80% polyester.

- Avoid washing with brushes, as they will damage the paint.
- Washing in the morning or evening will help prevent water spots. Water spots damage the exterior of your RV the same way they damage glass shower doors. They etch their way into the surface and removal becomes difficult. Prevention is key.
- Wash one section so that the soap does not dry on the paint.
- To remove oil and grease, remember an important rule of cleaning: Give your product time to work. Dab a bit of concentrated cleaner, like CleanEz by Mary Moppins, never an orange based cleaner or one with petroleum distillates, onto a soft cloth. Apply to the oil spot and wait 10 to 15 minutes before rubbing lightly to remove the oil. Rinse immediately.
- Some types of hot water washing equipment apply high pressure and *heat* to the RV. Excessive heat can cause distortion or damage to resin parts. Excessive *pressure* can flood the RV's interior.
- DO NOT take your RV through automatic car washes.
- Avoid forcing water inside the RV, which could possibly damage component parts.
- Extreme caution should be used with any type of pressure sprayer around all attachments, doors, windows, appliance vents, etc.
- Keep the washing nozzle about 36 inches or more away from the RV body.
- When washing around the door, vent and glass areas, hold the nozzle at right angles to the surface.

During cold weather

If the slideout or door is frozen, opening it by force may tear off or crack the rubber gasket that is installed around the slideout or door. Pour warm water on the gasket to melt the ice (wipe off the water thoroughly after opening the slideout or door). To prevent the weather stripping from freezing, treat it with a silicone spray.

Salt and other chemicals spread on winter roads can have a detrimental effect on the RV's underbody. If your RV is exposed to these conditions:

- Wash the exterior of your RV.

- Carefully spray the underbody with a high-pressure hose, remove any mud or debris that could trap and hold salt or moisture.
- After washing your RV, wipe off all water drops from the rubber parts around the slide-out and doors.

Waxing your RV

Wax your RV once or twice a year, or when painted surfaces do not shed water well. Use a soft cloth to apply a small amount of wax to the painted surfaces. After the wax has dried, polish the RV with a dry, soft cloth. Do not wax your RV in direct sunlight. Wax it after the surfaces have cooled. Do not apply wax to any area having a flat black finish as it can cause discoloration. If the finish has been stained with wax, wipe off the area with a soft cloth and warm water.

When waxing the area around the various openings, do not apply any wax on the weather strip. If it is stained with wax, the weather strip cannot maintain a weatherproof seal around the opening.

Polishing your RV

If painted surfaces have surface scratches or have lost their original luster, polish the surface lightly with a fine polishing compound. Avoid limiting your polishing to the damaged surface only; polish a somewhat wider area, moving the polishing cloth in one direction. After polishing, apply a coat of wax to protect the paint.

Damaged paint

To prevent corrosion, touch up small cracks and scratches in the paint of the RV front cap as soon as possible with touch-up paint. Carefully check the body areas facing the road and the tires for damage to the paint coat caused by flying stones, etc.

EXTERIOR ROOF

3–4 times per year, clean the roof and inspect all roof sealant. While you are cleaning, also clean and inspect the roof vents (including the sealant) for cracks.

- **Do not use sharp tools (putty knife) that could puncture the roof membrane.**
- If any voids or cracking are found, remove any loose sealant by hand.
- If the loose sealant cannot be pulled off by hand, it still has good adhesion to the roof membrane and should be left alone.
- Using a soft-bristled scrub brush, clean all areas to be resealed with a non-abrasive household cleaner or degreaser, such as Top Job® or Spic-N-Span®.

IMPORTANT: *DO NOT use a pressure washer or a hard bristle brush on the TPO roof.*

- This area must be dry before continuing.
- Solvents should not be used during cleaning. Solvents can damage existing sealant and may weaken plastic roof components.
- If a whole section of sealant is pulling up, remove the sealant and apply new sealant.
- If there are voids in the sealant, apply a generous amount of ***Alpha Systems 1010 Non-Sag Sealant*** over top of any existing sealant.

NOTE: *Only HAPS free based silicone and self leveling lap sealant should come in contact with the roof membrane.*

Your Vilano has a TPO roof.

Table 23. *Sealant Types and Locations for Use*

Location for Use	Sealant Type
Roof	Use **only** HAPS-free silicone
Around the 360 vent, the skylights, and the antenna	Self-leveling lap sealant (Dicor)
Front cap and other vertical surfaces	Non-leveling lap sealant
Sides	Trim-Pro brand silicone

SIDEWALL VENTS

Water heater, furnace, and refrigerator exterior doors need to be kept clean and free of obstructions while the appliances (if so equipped) are in use. Inspect the refrigerator and holding tank vents for blockages from bird or insect nests, spider webs, leaves, etc.

Figure 136. *Exterior Appliance Doors*

WINDOWS

Any ventilating window may permit water inside, especially during heavy rainstorms. Condensation will also cause water to accumulate on windows and in the tracks. The window glass can be cleaned normally with a sponge and water. Use glass cleaner to remove wax, oil, grease, dead insects, etc. After washing the glass, wipe it dry with a clean, soft cloth.

Maintenance

During transportation, the emergency window should always be locked in place. To avoid the seal in the window from sticking, the windows will need to be opened frequently.

Figure 137. *Windows*

DOORS

The primary entrance door to the RV has a key lock and a dead bolt for additional security. When the door is fully opened, the door hinge automatically holds the door in an "open" position.

A screen allows increased air circulation when the entrance door is open.

NOTE: *Always secure the dead bolt lock while the RV is in motion to prevent accidental opening of the entrance door.*

Figure 138. *Front Door*

TRAILER FRAME

Rocks, sand, road debris, climate (salt air exposure) and ice inhibiting chemicals used during the winter months will damage your frame's painted exterior, inviting rust and other deterioration.

- Regularly inspect all exposed areas of the frame.
- To maintain protection, **clean** and **repaint** any chipped areas or rust spots.

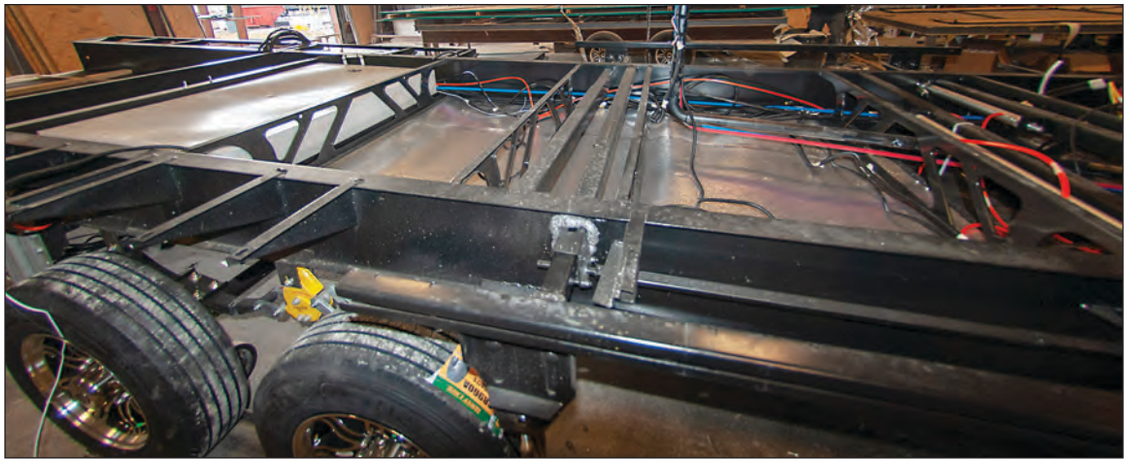


Figure 139. *Trailer Frame*

SEALANT

Sealants perform a very important function and should be inspected closely and regularly maintained. Many different types of sealants are incorporated, including butyl/putty, black butyl-encapsulated foam, silicone (clear and colored), roof sealant and foam. In general, sealants do not have a "set" lifetime. Varying environmental factors affect the pliability and adhesiveness of sealants.

The sealants may become damaged due to exposure to the elements, freezing temperatures, ultraviolet, and air pollution. If deteriorated, repair immediately to prevent damage. A quick walk around the RV before leaving may help prevent potential problems during trips and vacations. Your dealer service or parts manager can help you obtain the correct sealant(s).

You or your dealer MUST:

- Inspect all sealants, a minimum of every six months. Make sure to check the roof and all four sides of the RV including all moldings, doors, vents and exterior attachments.
- Replace the sealant if you notice any cracks, peeling, voids, gaps, breaks, looseness or any sign of physical deterioration.
- Reseal at least one time each year as preventative maintenance. Always use the same type of sealant that was removed.

If you notice water inside the RV, immediately have the dealer check for the source of the leak. Failure to correct the leak may result in serious damage to your RV; this damage may not be warrantable. If you have questions and/or need assistance with sealing your RV, consult with your RV dealer.

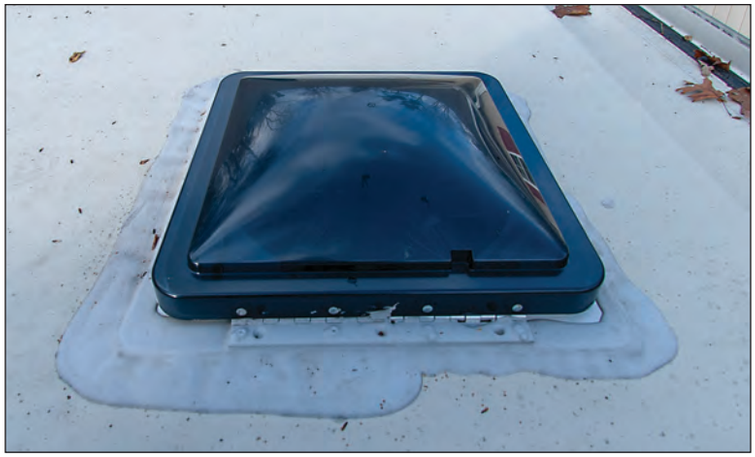


Figure 140. *Roof Sealant*

RV STORAGE

Properly preparing your RV for storage during periods of non-usage will prevent problems from arising. It will also make it easier to get started again for the following camping trip or season. To prevent costly freeze-ups, winterize the plumbing system when it will not be in use for an extended period of time, especially if it is stored in colder climates.

Periodically inspect your RV for damage during storage, and seal off any area that can offer an entry point for rodents, birds or insects. When storing your RV, it is recommended that the auxiliary battery (customer supplied) be disconnected to avoid battery discharge.

WINTER STORAGE

BEFORE storing for the winter, be sure your RV is properly winterized.

1. Check your roof and other surfaces for any damage or potential leaks that could go unnoticed until it is too late.
2. Close all windows and roof vents.
3. Clean the refrigerator.
4. Use crumpled newspaper, dryer sheets, or open boxes of baking soda in the refrigerator to eliminate odors during storage.
5. Shut OFF the propane cylinder valve(s).
6. Cover all external outlets/vents (furnace, exhaust, etc.) to prevent mice or other rodents from entering.
7. Disconnect 120-volt AC power to the RV.

8. Use the leveling legs during storage.
9. Drain all water lines.
10. Open the gate valves to flush the gray tank and black tank.
11. Drain the freshwater tank.
12. Open low point drains for the water heater.
13. Flush the black tank.
14. Remove all (customer supplied) batteries from the RV, and store in a place where they will not freeze. Batteries that have been frozen will never hold a proper charge.
15. Thoroughly clean the interior and the exterior of your RV.
16. To prevent weather checking and other UV damage, cover tires that are exposed to sunlight.

Snow removal

During the storage period, remove snow from the top of your RV to prevent damage to the unit's structure.

SUGGESTED MAINTENANCE CHECKLIST

This list is a quick reference sheet for suggested areas of regular maintenance. Review all manufacturer's operator's manuals supplied with your RV to perform these listed maintenance items.

Prior to First Trip

- Inspect and reseal as needed.
- Have the propane system checked for leaks by your dealer.
- Check wheel lug nuts at specified intervals to listed torque specifications. Retorque as needed.
- Sanitize the fresh water system.
- Test the safety alarms.

First Two-Hundred Miles

- Check wheel nuts at specified intervals to listed torque values. Re-torque as needed.
- Have brakes adjusted by a qualified service technician.

Each Trip

- Inspect and reseal as needed.
- Check the auxiliary battery. Have the propane system checked for leaks by your dealer.
- Check running lights.
- Check tire pressure and wear, including spare. Make sure the tires are cold when checking the tire pressure.
- Check wheel nuts at specified intervals to listed torque values, using "Table 11. Wheel Nut Torque" on page 86. Re-torque as needed.
- Flush out water heater tank.
- Test brakes.
- Test safety alarms.

BASIC TROUBLESHOOTING

AIR CONDITIONER (ROOF)

Will not operate

- Make sure unit is turned on.
- Check circuit breakers in coach.
- Have your dealer check to see if there is proper voltage from shoreline or generator.

Unit runs, but coil freezes and compressor cycles too soon

- Control setting may be too low, cycles too soon.
- Make sure the filter is clean and unobstructed.
- Have the coolant level checked by a qualified service facility.

Does not get cold enough

- Start the unit before the day gets too hot.
- To offset heat gain:
  - Close all windows and blinds.
  - Keep entrance doors closed.
  - Use awnings.
  - Avoid using heat-producing appliances.
- Make sure that the outside coil is not blocked or damaged.
- Have your dealer check to make sure that you have the proper voltage.

Should your air conditioner still not work after completing the above checks, contact a qualified service facility to perform more extensive testing.

BATTERIES

Batteries are dead when the RV is coming out of storage

The batteries are dead because the hydraulic pump asks to remain energized, thus taking power from the batteries. Additionally, this is also true of any appliance in the coach with an internal clock.

- Either disconnect your batteries before departure OR
- Trip the 100A breaker on the left wall of the battery compartment.

BLACK AND GRAY TANKS

Tank Will Not Drain

- Buildup or debris in tank. Check for buildup in tank at stool.
- Listen to see if you hear the gate valves opening if so the handle has come loose. Call Vanleigh tech support for assistance: 662.331.2933 or 256.275.2091.
- Always use a minimum amount of biodegradable toilet paper.
- Always use plenty of water when flushing.

ELECTRICAL POWER - 110 V

No AC power to RV

- Check the shoreline power pole for power.
- Check circuit breakers at the breaker box. The 120-volt circuit breaker may be off or tripped.
- Check the GFCI outlets and make sure they are not tripped.
- Call Vanleigh Tech Support if there is still no AC power to the RV.

FURNACE

Furnace does not ignite and/or cycles frequently

- Check that propane tank is full.
- Light the stove top to ensure all air is out of the system
- Remove any obstruction over furnace exhaust.

- Inspect exhaust tube for any obstructions.
- Check furnace fuse in fuse panel. Replace if necessary.
- Check that the return air grill is unobstructed. Remove anything that is stored in the furnace compartment that could block airflow.
- Check that all heat outlet registers are open and unobstructed.
- Make sure 12V power is going to the outlet.
- Contact Vanleigh Tech Support if the problem persists.

INTERIOR LIGHTS

Lights flicker

- Loose connection at Harness/Light. Have connection checked by an authorized service center.
- Converter is overheating. Open the cover to cool down and reduce the load by turning off some 12V lights.

Lights dim or are half bright

NOTE: The lights are on a dimmer switch. Brighten the lights using the dimmer switch.

- Low battery voltage. Check battery condition and recharge if necessary.
- Possible converter malfunction. Have the converter checked by an authorized service center.
- Possible loss of ground. Check for loose wire connection.

JACKS/LEVELING SYSTEM

No power to control panel on basement door

- Make sure your battery has 12V charge.
- Check the connection at the control panel and make sure it hasn't come unplugged.
- Check the 10A fuse located behind the hydraulic pump (if blown replace it).
- Call Tech Support if no resolution.

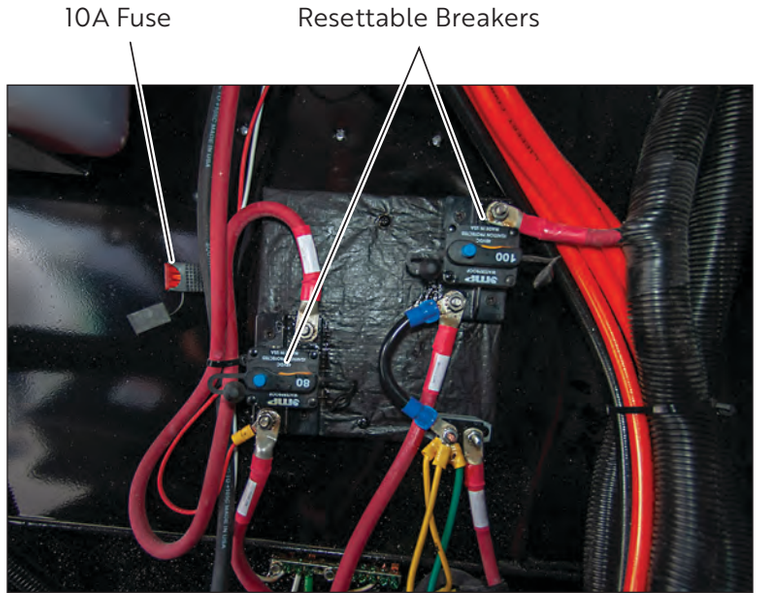


Figure 141. *10A Fuse and Resettable Breakers for Jacks/Leveling System*

Overriding Use of the Hydraulic Legs

⚠ WARNING

IN THE EVENT THAT YOUR HYDRAULIC LEVELING LEGS BECOME STUCK OR OTHERWISE INOPERABLE, ATTEMPTING TO FORCE OR MANUALLY OVERRIDE THE LEGS YOURSELF IS BOTH NOT RECOMMENDED AND CAN BE HAZARDOUS TO YOUR RV.

TO PERFORM A MANUAL OVERRIDE, YOU MUST HAVE ACCESS TO AN EXTERNAL HYDRAULIC PUMP. MOST RV SERVICE TECHNICIANS WILL HAVE ACCESS TO AN EXTERNAL HYDRAULIC PUMP.

VANLEIGH RV DOES NOT RECOMMEND YOU ATTEMPT TO REPAIR THE HYDRAULIC LEGS YOURSELF; INSTEAD, CONTACT AN AUTHORIZED SERVICE TECHNICIAN FOR ANY SERVICE THAT MAY BE REQUIRED.

MICROWAVE

Will not power on

- Make sure circuit breaker is not tripped.
- Make sure the microwave is plugged in.

- Make sure the GFCI is not tripped.
- Door open or timer OFF. Close door and turn ON timer.
- Call Tech Support if no resolution.

OUTSIDE RECEPTACLE

No power to outside receptacle

- Make sure you have power at the power pole.
- Check breaker on generator.
- GFCI receptacle switch may be off or tripped. Reset GFCI at receptacle in bathroom or kitchen.
- Check the breaker in the power center or panel box.
- Contact Vanleigh or qualified technician if the problem is not resolved.

OVEN

Oven slow to heat up, poor baking, poor ignition of burners, pilots won't stay lit, popping sound from top burners, carbon on pilot shield or burner flame too low or too high

- A defective gas pressure regulator may cause these conditions. Have the regulator tested by your gas dealer or a certified RV technician.

Top burner or oven burner won't light or won't stay lit

- Check position of top burners and flash tubing.
- Clean clogged burner ports with a toothpick.
- See Oven Owner's Manual for proper care and maintenance.

Gas smell

- Check all connections with leak detector solution.

Food burns on the bottom

- Oven too full for proper circulation. Use smaller pans or put less food in the oven.

PORTABLE GENERATOR (CUSTOMER SUPPLIED)

Starter engages while holding the start button down, but generator does not start

- Generator may be out of fuel. (Generator will not operate when the fuel tank is less than ¼ full).
- Generator may be low on oil. Check the oil level.

Nothing happens when the generator start button is pushed

- Check that the battery disconnect switch button is pushed.
- Check the 12 Volt fuse on generator.
- Reset the circuit breaker if necessary.
- Contact your dealer or a qualified RV technician if the problem is not resolved.

Generator starts, but lacks electrical power

- The breaker switches may be off or tripped at generator. Reset the breaker if necessary.
- The breaker may be off or tripped inside power center. Reset the main breaker if necessary.

Generator makes clicking sound when trying to start

- Battery condition may be low. Recharge if necessary.
- Check for poor ground or poor battery connection.

PROPANE GAS

Smell gas in or around unit

- Propane tanks may be overfilled.

IF YOU SMELL PROPANE

1. Extinguish any open flames, pilot lights and all smoking materials.
2. Do not touch electrical switches.
3. Shut off the propane supply at the container valve(s) or propane supply connection.
4. Open doors and other ventilating openings.
5. Leave the area until odor clears.
6. Have the propane system checked and leakage source corrected before using again.

⚠ DANGER

FAILURE TO COMPLY COULD RESULT IN EXPLOSION RESULTING IN DEATH OR SERIOUS INJURY.

REFRIGERATOR

The control panel lights are not illuminated

- Check coach circuit breakers and GFCI receptacle.
- Verify that refrigerator is plugged into the 120-volt outlet.
- If using propane gas, verify house batteries have adequate charge.

Lights are illuminating, but no cooling

- Use a proper power source that is available and cooling operation to specification.
- Allow sufficient time for proper cool down and try to load with food that is already cold.
- Have a qualified RV technician make sure the burner jets or burners are not dirty or damaged.

RUNNING LIGHTS

Running lights not working

- Possible blown fuse. Check the fuse in the pin box to make sure fuse is not blown. Replace fuse with one of the same ampere rating.
- Check 7-way plug for good connection.
- Loose connection at light. Have connection checked by an authorized service center.
- Call Vanleigh Tech Support if no resolution.

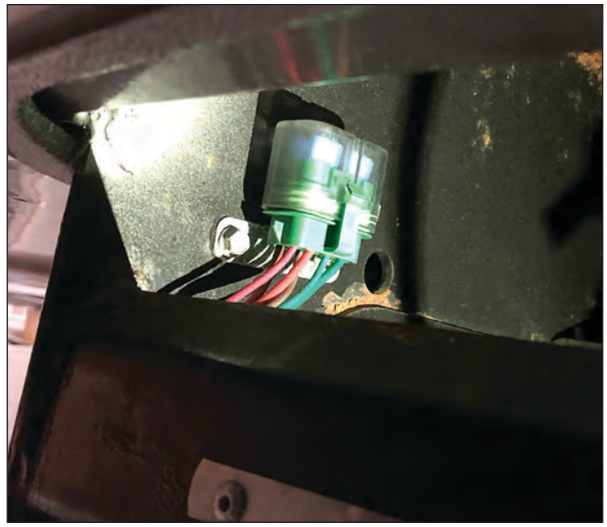


Figure 142. *Running Lights Fuse*

SCHWINTEK ELECTRIC SLIDEOUTS

Room moves in and out very slowly, binds or squeaks

- Lubricate the slide-out tubes and rollers with light spray lube.

Figure 143. *Slide Out Tubes and Rollers*

Water is getting in at the bottom corners of the room

- Verify exterior seals are against the room at the top corners and not turned in when the room is out (horizontal seal overlaps vertical). Also, check for voids in the seal on the slide roof and side panels. If there are voids in the seals, fill with sealant. See "Table 23. Sealant Types and Locations for Use" on page 228.
- Make sure weep hole is in the windows open and unobstructed.
- Make sure the ramp pan under the dinette slide is open and unobstructed. (The galley slide is heavy and so it has rollers instead of a ramp pan.)

Room will not move in or out

- Check the auto-resetting fuse located by the slide out motor. (See the manufacturer's manual).
- Check battery condition and state of charge. Recharge if necessary.

TV ANTENNA

Poor TV reception

- Power jack is OFF. Turn ON power jack switch. See "TV Reception Basics" on page 189.
- Bad connections at TV or wall plate. Make sure the connections are good at both TV and wall plate.
- A signal booster is in a cabinet near the TV. **Turn off** the booster. The antenna booster runs interference with the Satellite/Cable signal.
- Cut or torn cable. Have your dealer or qualified RV technician replace bad cable where needed at TV and antenna.

WASTE TANK

Waste tank (black) will not drain

- Buildup or debris in tank. Check for buildup in tank at stool.
- Always use a minimum amount of biodegradable toilet paper.
- Always use plenty of water when flushing.
- Check termination valve for proper operation.

WATER HEATER

Temperature-pressure relief valve weeping

- Weeping or dripping of relief valve while water heater is running does NOT mean it is faulty.

There is an odor that smells like rotten eggs

- If your fresh water source has a rotten egg odor, you will need to find another source of fresh water before flushing or refilling the entire RV water storage system.

To remove the hydrogen sulfide (rotten egg) odor:

1. Turn off your main water supply; that is your pump or your water hookup source.
2. Drain your water heater tank by removing the drain plug. Approximately two quarts of water will remain in the bottom of the tank. If you notice during the draining that the water is flowing sporadically or slowly, instead of flowing freely, you should open your relief valve to allow air into the tank.
3. If the water does not flow freely, take a small gauge wire or coat hanger and push through the drain opening to eliminate any obstructions (At wood water heater only).
4. After completely draining the tank, flush the entire system from the water inlet all the way to the holding tank. To flush, use four parts vinegar mixed with two parts of water.
5. If you decide to use air pressure (55 PSI max.), it may be applied either through the inlet or outlet on the rear of the tank. It may also be applied through the relief valve port.
    - First remove the relief valve. You may then insert your air pressure through the relief valve support flange.
    - With the drain valve open, the air pressure will force the remaining water out of the tank.
    - If air pressure is unavailable, you may flush the tank with fresh water. Water should be pumped into the tank with the assistance of the on-board water pump or with the assistance of external water pressure.
    - External pressure may be pumped into the unit either through the inlet or outlet found on the rear of the water tank or using the relief valve inlet located on the front of the unit.

6. Continue this flushing process for approximately five (5) minutes allowing ample time for the fresh water to agitate the stagnant water on the bottom of the tank and force the deposits through the drain opening.

7. Upon completion of the steps above, close the drain plug as well as the relief valve. Refill with fresh water, circulate and rinse.

If you use your vehicle frequently or for long periods of time, flushing the water heater several times a year will pro-long the life of the water heater storage tank.

Water heater will not fire up

- Check for obstructions in burner tube and exhaust.
- Check 12 Volt power for possible blown fuse.
- Bad circuit board. See your dealer or Vanleigh Tech Support.

Water heater has disappeared from the main control pad

1. Go to the settings menu on your main touch panel.
2. Select screen settings.
3. Disable the screen power saver.

WATER PUMP

Pump will not start

- Check that house battery disconnect switch is on.
- Check pump button at the Spyder contols.
- Check fuse in power center. See "Figure 30. 12V Fuse Panel" on page 127.
- Check to see if water is frozen.

Will not prime, sputters (no discharge, but the motor runs)

- Check to see if there is water in the tank, or if air collected in the hot water heater.
- Check for frozen water lines or water tank.

Pump will not shut off, runs when faucet is closed

- Turn off the pump or city water supply.
- Check for damp areas around plumbing appliances.

- Check plumbing for leaks and inspect for leaky valves on toilet.
- Have the pump checked by your dealer or a qualified RV technician.

WATER SYSTEM

Wet areas near water connections, pump runs while the faucets are closed, and no other fresh water fixtures are being used

- There is a possible leak,
- Close all low point water drains and tank drains.
- Turn off all fixtures.
- Check all fixtures and connections for tightness.
    - Do not over tighten fittings as this may cause additional leakage.

MAINTENANCE DATA AND CHARTS

RV OWNER'S DATA SHEET

The following is a table to for you to keep better records of your appliances, etc.
Some items may be optional equipment

Unit: Vilano	**Year:**	**Model #:**	
VIN#:			
Appliance	**Brand**	**Model Number**	**Serial Number**
Refrigerator			
Water Heater			
Microwave			
Oven			
Wine Chiller			
Inverter			
Converter			
Television/Front			
Television/Bedroom			
Backup Monitor			
Stereo DVD Combo			
Air Conditioner			
Generator			
Dishwasher			
Vacuum Cleaner			

RV OWNER'S MAINTENANCE RECORD

The following is a table to for you to keep better records of maintenance on your RV:

Appliance	Brand	Model Number	Serial Number

GLOSSARY

AC ELECTRICITY — Alternating current also known as shoreline power. For purposes of this manual, it refers to 120-volt AC (abbreviated 120 VAC).

AMP — Short for ampere, the electric current unit of measure. RV sites with electric hookup will specify the maxi-mum amps supported, which generally come in units of 20, 30, or 50 amps. The RV power connector must match the various plugs of the site amp rating.

ANODE ROD — An anode rod, when used in a water heater, attracts corrosion causing products in the water. These products attack the anode rod instead of the metal tank itself. The anode rod should be inspected yearly and changed when it is reduced to about 1/4 of its original size. The rods are used in steel water heater tanks — an aluminum tank has an inner layer of anode metal to accomplish the same thing. Anode rods should not be installed in aluminum tanks!

AUXILIARY BATTERY — For purposes of this manual, the term refers to the 12VDC group 27 deep cycle battery (customer purchased) that should be installed in your RV.

AWNING — A roof-like structure made of canvas or other artificial materials which extends from the RV body to provide shade. Awnings are generally placed over entrances. Some extend and stow manually while others are operated electrically.

BLACK WATER — Term associated with the sewage holding tank. The toilet drains directly into this tank.

BLUE BOY — Also known as a honey pot. Refers to a portable waste holding tank that has wheels on one end. These tanks often are manufactured out of blue plastic, hence the nickname.

BOON DOCKING — Also known as dry camping. Camping without electrical and water hookups.

BREAKAWAY SWITCH — An electrical switch on trailers designed to engage the breaks in case the trailer breaks away from the tow vehicle. The switch is connected by a cable to the tow vehicle. Breakaway is detected when the switch cable is pulled out during vehicle separation.

BRAKE CONTROLLER — A device (customer supplied) mounted under the dash of a towing vehicle to control the braking system of the RV. Most brake actuators are based on a time delay application; the longer the brakes are applied tighter the trailer brakes react

BRITISH THERMAL UNIT (BTU) — Measurement of heat that is the quantity required to raise the temperature of one pound of water 1°F. RV air-conditioners and furnaces are BTU-rated.

CAMBER (WHEEL ALIGNMENT) — The number of degrees each wheel is off of vertical. Looking from the front, tops of wheels farther apart than bottoms means "positive camber". As the load pushes the front end down, or the springs get weak, camber would go from positive to none to negative (bottoms of wheels farther apart than tops).

CAMPER — For purposes of this manual, this term refers to your fifth wheel RV.

CAMPING — An outdoor recreational activity involving the spending of one or more nights in a tent, primitive structure or RV at a campsite with the purpose of getting away from civilization and enjoying nature.

CAMPSITE — The term usually means an area where an individual or family might go camping.

CARBON MONOXIDE — A colorless, odorless and poisonous gas.

CARGO WEIGHT — The actual weight of all items added to the Curb Weight of the vehicle or trailer. This includes personal cargo, optional equipment, and tongue or king pin weight.

CARGO CARRYING CAPACITY (CCC) — Equal to GVWR minus each of the following: UVW. full fresh (potable) water weight (including water heater), full propane weight and SCWR.

CITY WATER — Term associated with the water supply you hook up to at the campsite. It is called city water because water is pulled from a central outside source (like a city) and not the fresh water tank.

CONDENSATION — A result of warm moisture laden air contacting the cold window glass. Keeping a roof vent open helps to reduce the humidity levels. Added roof vent covers help to prevent cold air from dropping down through the vent while still allowing moist air to escape. Using the roof vent fan when showering or the stove vent fan when cooking also helps prevent excess moisture buildup.

CONVERTER — A device that converts 120 volt A/C (alternating current) to 12 volt DC (direct current). The RV devices mostly run on 12 volt DC power that is supplied by the battery, which allows the RV to function independently. When "shore power" (an electrical supply) is available, the converter changes the voltage from 120 to 12 volt to supply the appliances and to recharge the battery. The converter is located in the bottom portion of the 110V breaker box.

CURB WEIGHT —The actual weight of a vehicle or trailer, including all standard equipment, full fuel tanks, full fresh water tanks, full propane bottles, and all other equipment fluids, but before taking on any persons or personal cargo.

CURBSIDE — This refers to the side of the camper that faces the curb when parked. Also referred to as the door side or DS.

DC ELECTRICITY — Direct current also known as auxiliary battery power. For purposes of this owner's manual, it refers to 12-volt DC (abbreviated 12 VDC).

DEALER — For purposes of this manual, this refers to the independent dealer authorized to sell and/or service your camper by Vanleigh RV. This term will be used in this context unless specified otherwise.

DINETTE — Booth-like dining area. Table usually drops to convert unit into a bed at night.

DRAIN TRAP — This is the curve that is in all drains. Water is trapped in the curve and creates a barrier so tank odors cannot escape through the drain.

DRY CAMPING — Camping when there is no city water hookup or shore power (i.e., using only the water and power available in the camper and not from any other source).

DRY WEIGHT — The actual weight of a vehicle or trailer containing standard equipment without fuel, fluids, cargo, passengers, or optional equipment.

DSI (DIRECT SPARK IGNITION) — This term refers to the method of igniting the main burner on a propane fired appliance. The burner is lit with an electric spark and the flame is monitored by an electronic circuit board. This ignition system is used in refrigerators, furnaces and water heaters. There is now a version of stove tops that light the burners with a DSI ignition.

DUAL ELECTRICAL SYSTEM — RV equipped with lights, appliances which operate on battery power when self-contained, and with a converter, on 110 AC current when in campgrounds or with an on-board generator

DUALLY — A truck having two wheels on each side of the rear axle for a total of four wheels

DUCTED A/C — Air conditioning supplied through a ducting system in the ceiling. This supplies cooling air at various vents located throughout the RV.

DUCTED HEAT — Warm air from the furnace supplied to various locations in the RV through a ducting system located in the floor (similar to house heating systems).

DUMP STATION — Site where you drain your gray water (waste) and your black water (sewage) tanks. In most states, it is illegal to drain your tanks anywhere except dump stations.

DUMP VALVE — Another name for the T-handle valve used to release and drain the black tank (sewage) and gray tank (waste).

EGRESS WINDOW — The formal name for the emergency escape window. Egress windows are identified by their labeling.

FIFTH WHEEL (FW) — A trailer and hitch configuration connected to the tow truck directly above the rear axle by way of a special fifth wheel hitch. This causes several feet of the connected trailer to hang over the tow truck, placing about 15 to 25% of the trailer's weight on the rear axle of the truck. Commercial trucks and trailers use this hitch configuration. Also commonly spelled as 5th wheel.

FIVER — Another name for a fifth wheel RV.

FRESH WATER — The fresh water system provides potable water to the fresh water tank, kitchen sink, shower, bath-room lavatory, toilet, water heater and outside shower.

FRESH WATER TANK — Tank for holding fresh water for drinking, cooking, and bathing while not connected to a city water supply.

FULL HOOK-UP SITE — A campsite that has city water, shore power and sewer hook-ups or connections available

FULL TIMERS OR FULL TIMING — The term used for people who live in their RV full time, or at least the vast majority of their time.

GALLEY — The kitchen in an RV.

GENERATOR — An engine powered device fueled by gasoline or diesel fuel, and sometimes propane, for generating 120-volt AC power.

GENSET — Abbreviation for generator set.

GOOSENECK — A trailer and hitch configuration connected to the tow truck directly above the rear axle by way of a standard ball hitch in the truck bed and a vertical, slender arm on front of the trailer. Gooseneck hitching is common on horse and utility trailers, but rarely found on RV's.

GRAY WATER — Term associated with the waste water holding tank. Water from the sink drains, shower and washer/dryer (if so equipped) go into this tank.

GROSS AXLE WEIGHT RATING (GAWR) — The MAXIMUM ALLOWABLE WEIGHT each axle assembly is designed to carry, as measured at the tires, therefore including the weight of the axle assembly itself. GAWR is established by considering the rating of each of its components (tires, wheels, springs, axle), and rating the axle on its weakest link. The GAWR assumes that the LOAD IS EQUAL ON EACH SIDE.

GROSS CARRYING CAPACITY (GCC) — Means the maximum carrying capacity of your camper. The GCC is equal to the GVWR minus UVW. The GCC will be reduced by the weight of fresh water or other tanks, propane, occupants, personal items or dealer installed accessories.

GROSS COMBINED WEIGHT RATING (GCWR) — The MAXIMUM ALLOWABLE COMBINED WEIGHT of the tow vehicle and attached towed vehicle. GCWR assumes that both vehicles have functioning brakes, with exceptions in some cases for very light towed vehicles, normally less than 1,500 pounds. (Check your tow vehicle's towing guide.)

GROSS TRAILER WEIGHT RATING (GTWR) — The MAXIMUM TOWED VEHICLE WEIGHT. Each component (receiver, drawbar, ball) of a ball-type hitch has its own rating. Some balltype hitches have separate ratings when used with a weight distributing system.

GROSS VEHICLE WEIGHT RATING (GVWR) — The MAXIMUM ALLOWABLE WEIGHT of the fully loaded vehicle, including liquids, passengers, cargo, and the tongue weight of any towed vehicle.

HEAT EXCHANGER — A device that transfers heat from one source to another. For example, there is a heat ex-changer in your furnace — the propane flame and combustion products are contained inside the heat exchanger that is sealed from the inside area. Inside air is blown over the surface of the exchanger, where it is warmed and the blown through the ducting system for room heating. The combustion gases are vented to the outside air.

HEAT STRIP — A heat strip is an electric heating element located in the air conditioning system with the warm air distributed by the air conditioner fan and ducting system. They are typically 1500 watt elements (about the same watt-age as an electric hair dryer) and have limited function. Basically they "take the chill off."

HIGH PROFILE — A fifth-wheel trailer with a higher-than-normal front to allow more than 6 feet of standing room inside the raised area.

HITCH — The fastening unit that joins a movable vehicle to the vehicle that pulls it.

HITCH WEIGHT — The amount of the camper's weight that rests on the tow vehicle. It should be approximately 12% – 15% with conventional trailers; approximately 18% -21% for fifth wheels.

HOLDING TANKS — There are three different holding tanks on most RVs; fresh water tank, gray water tank and black water tank. The fresh water tank holds fresh water that can be stored for later use. The gray water tank holds the waste water from the sinks and showers. The black water tank holds the waste from the toilet.

HONEY WAGON — Euphemism for the sewage pumping truck. Honey wagons are used to empty RV holding tanks in places where full hookups and dump stations are not available.

HOOKUPS —The ability of connecting to a campground's facilities. The major types of hookups are electrical, water and sewer. If all three of these hookups are available, it is termed full hookup. Hookups may also include telephone and cable TV in some campgrounds.

HOUSE BATTERY — One or more batteries in a RV for operating the 12 volt lights, appliances, and systems. House batteries can be 12 volt units tied in parallel or pairs of 6 volt batteries tied in series (to double the voltage). The term house battery is of more significance in motor homes because they contain one or more other batteries for the operation of the engine, referred to as the chassis or starting batteries.

HULA SKIRT — Term used for a type of dirt skirt accessory some RVers use on the back of their motorhome to aid in the protection from debris thrown from their rear wheels to the vehicles directly behind them or being towed behind them. This dirt skirt is usually the length of the rear bumper and resembles a 'short' version of a Hawaiian 'hula-skirt', hence the term.

INVERTER — An inverter is a device that changes 12 volt battery power to 120 volt AC power. It is used when "boon docking" (camping without hookups) to power certain 120 VAC only devices like a microwave oven. The amount of available power depends on the storage capacity of the batteries and the wattage rating of the inverter. The inverter uses power from the batteries and inverts DC to AC to power the refrigerator while towing. The inverter is normally located in the passthrough compartment mounted on the ceiling

IRON RANGER — A fee collection box used at campgrounds that do not have full time attendants. Upon entrance to the campground, you deposit your nightly fee(s) in an envelope with your name and site number and drop this in the collection box. At some time during the day, a park ranger will make rounds of the campgrounds and collect the fees. You will often see these in National Park and National Forest campgrounds.

ISLAND QUEEN OR ISLAND KING — A king or queen-sized bed with walking space on both sides.

JACKKNIFE — 90% angle obtained from turning/backing fifth wheel or travel trailer with tow vehicle. Jackknifing a short bed truck towing a fifth wheel without the use of a slider

hitch or extended fifth wheel pin box can result in damage to the truck cab or breaking out the back window of the truck cab from the truck and fifth wheel "colliding".

KING PIN — The pin by which a fifth wheel trailer attaches to the truck. It slides into the fifth wheel hitch and locks in place.

KING PIN WEIGHT — The actual weight pressing down on the fifth wheel hitch by the trailer. The recommended amount of King Pin Weight is 15%-25% of the GTW, also called Pin Weight.

LAMINATE — A sandwich of structural frame members, wall paneling, insulation and exterior covering, adhesive-bonded under pressure and/or heat to form the RV's walls, floor and/or roof.

LANDING GEARS — See *Leveling Jack*.

LEVELING — Positioning the RV in camp so it will be level, using ramps (also called levelers) placed under the wheels, built-in scissors jacks, or power leveling jacks.

LEVELING JACK — A jack lowered from the underside of trailers and motor homes for the purpose of leveling the vehicle. A leveling jack is designed to bear a significant portion of the RV's weight.

LP GAS — Liquefied Petroleum Gas, commonly written as "LP Gas". Two examples of LP Gas are propane and butane. LP Gas is heavier than air in gas form and about half the weight of water in liquid form. LP gas is used to fuel appliances in the RV, such as the stove, oven, water heater and refrigerator. Propane tanks are usually rated as pounds or gallons.

LOW POINT — The lowest point in the plumbing. Drains are placed here so that water will drain out of the lower end of the camper when flushing or winterizing the water system. These drains must be closed when you fill the water tank.

MOTORHOME (MH) — A motor vehicle built on a truck or bus chassis and designed to serve as self-contained living quarters for recreational travel.

NET CARRYING CAPACITY (NCC) — The MAXIMUM WEIGHT of all personal belongings, food, fresh water, propane, tools, dealer installed accessories, etc., that can be carried by the RV.

NONPOTABLE WATER — Water not suitable for human consumption.

OEM — This refers to the original equipment manufacturer of the individual appliance or component.

PARK MODEL — A travel trailer that requires park facilities to function. It lacks holding tanks and dual-voltage appliances, requiring to be plugged into water, sewage, and electrical facilities. A park model is more of a small mobile home than a recreational vehicle, in appearance and function.

PART TIMERS — The term used for people who use their RV more than usual (more than just a few weekend trips a year), but who still use it less than full time.

PATIO MAT — Carpet or woven mat for use on ground outside of RV. Used whether or not a concrete patio pad is available where camping.

PAYLOAD CAPACITY — The maximum allowable weight that can be placed in or on a vehicle, including cargo, passengers, fluids and fifth-wheel or conventional hitch loads.

PILOT — A pilot is a small standby flame that is used to light the main burner of a propane fired appliance when the thermostat calls for heat. Pilots can be used in furnaces, water heaters, refrigerators, ovens and stove tops.

PORPOISING — A term used to define the up and down motion in an RV while traveling

POWER SOURCE — Also referred to as shore power, this refers to the receptacle outlet you are using to plug in your shoreline power cord. This can be a campsite power box or electrical box, a residential receptacle outlet specifically wired for your camper or a generator (customer supplied).

PRIMITIVE SITE — A campsite that may have city water, shore power or sewer hook-ups but not all of them; primitive sites may have no hook-ups or connections at all.

PROPANE — LPG, or liquefied petroleum gas, used in RVs for heating, cooking and refrigeration. Also called bottle gas, for manner in which it is sold and stored. This is the proper term in the RV industry when referring to "LP Gas."

PULL-THROUGH SITES — Campsites you can drive through and park (without having to back up into the site).

REFER — Slang for "refrigerator". Refrigerators are often found in either a "two-way" or "three-way" operating mode. Two-way: has a gas mode and an AC mode. Three-way: has a gas mode, AC mode, and 12V DC mode. The coolant used in RV refrigeration is ammonia. The two most common manufacturers of RV refrigerators are Norcold and Dometic.

RIG — What many RVers call their units.

ROADSIDE — This refers to the side of the camper that faces the road when it is parked. Often called the off-door side.

ROOF AIR CONDITIONING — Air conditioning unit mounted on roof of RV, to cool the RV when it is parked. When moving, most RVs are cooled by separate air conditioning units which are components of the engine, or they may be cooled by a roof top if a proper size generator is installed.

RV — Short for Recreation Vehicle, a generic term for all pleasure vehicles which contain living accommodations. Multiple units are RVs and persons using them are RVers.

RVDA — Abbreviation for Recreational Vehicle Dealer's Association.

RVIA — Abbreviation for Recreational Vehicle Industry Association

SELF CONTAINED — RV which needs no external electrical, drain or water hookup. Thus, it can park overnight any-where. Of course, self-contained units can also hook up to facilities when at campgrounds.

SANITIZATION — Refers to the camper's fresh water system that has been sanitized with chlorine bleach before use or after storage.

SHORELINE POWER CORD — This is the electrical power cord that runs from the camper to the campsite shore power outlet.

SLEEPING CAPACITY WEIGHT RATING (SCWR) — The manufacturer's designated number of sleeping positions multiplied by 154 pounds (70 kilograms).

SLIDEOUT — A compartment added to an RV to increase interior space. It slides into the body during travel and slides out when parked

SNOWBIRD — Term for someone in a northern climate that heads "south" in winter months.

STINKY SLINKY — Slang for the sewer hose, constructed from a spiral wire covered with vinyl. One end attaches to the RV piping and the other into the local sewer dump facilities

STREETSIDE — The part of the vehicle on the street side when parked. (Also referred to as the off door-side or ODS.)

SURGE PROTECTOR — Device (customer supplied) that is installed at the power supply location designed to prevent "surges" or "spikes" in electrical current that may damage the RV's electrical/electronic components.

SWAY — Fishtailing action of the trailer caused by external forces that set the trailer's mass into a lateral (side-to-side) motion. The trailer's wheels serve as the axis or pivot point. Also known as "yaw."

THERMO COUPLE — A thermocouple is a device that monitors the pilot flame of a pilot model propane appliance. If the pilot flame is extinguished the thermocouple causes the gas valve to shut off the flow of gas to both the pilot flame and the main burner.

TIP OUT — The term used for an area or room in an RV that tips out for additional living space. The Tip-Out was general-y used in older RVs. Newer RVs mainly use a slide-out.

TIRE RATINGS — The MAXIMUM LOAD that a tire may carry is engraved on the sidewall, along with a corresponding COLD inflation pressure. A reduction in inflation pressure requires a reduction in load rating. Tire manufacturers publish charts that establish the load capacity at various inflation pressures.

TOE (WHEEL ALIGNMENT) — Toe is the measure of whether the front of the wheels (looking down from the top) are closer (toe-in) or farther (toe-out) than the back of the wheels.

TONGUE WEIGHT, TONGUE LOAD, VERTICAL LOAD (TWR/TLR/VLR) — Tongue Weight, Tongue Load, Vertical Load Rating Different terms for the MAXIMUM VERTICAL LOAD that can be carried by the hitch UNLOADED.

TRAILER BRAKES — Brakes that are built into the trailer axle systems and are activated either by electric impulse or by a surge mechanism. The overwhelming majority of RVs utilize electric trailer brakes that are actuated when the tow vehicle's brakes are operated, or when a brake controller is manually activated. Surge brakes utilize a mechanism that is positioned at the coupler, that detects when the tow vehicle is slowing or stopping, and activates the trailer brakes via a hydraulic system (typically used on boats).

TRAVEL TRAILER (TT) — Also referred to as "conventional trailers," these types of rigs have an A-frame and coupler and are attached to a ball mount on the tow vehicle. Travel trailers are available with one, two or three axles. Depending upon tow ratings, conventional trailers can be towed by trucks, cars or sport-utility vehicles.

UMBILICAL CORD — Wiring harness which connects the trailer to the tow vehicle during transport. The umbilical cord supplies the trailer with DC power for charging the batteries and operating DC equipment. It also operates the trailer brakes and signal lights. (Also referred to as the 7-way power cord.)

UNDERBELLY — The RV's under-floor surface, which is protected by a weatherproofed material.

UTQGL (UNIFORM TIRE QUALITY GRADE LABELING) — A program that is directed by the government to provide consumers with information about three characteristics of the tire: tread wear, traction and temperature. Following government prescribed test pro-

cedures, tire manufacturers perform their own evaluations for these characteristics. Each manufacturer then labels the tire, according to grade.

UV DEGRADATION — A breaking down of material due to the sun's harsh ultraviolet rays.

UNLOADED VEHICLE WEIGHT (UVW) — The weight of a vehicle as built at the factory with full fuel, engine (generator) oil and coolants. It does not include cargo, fresh water, propane, occupants, or dealer installed accessories.

WALLY WORLD — Slang term used by RVers to describe a Wal-Mart.

WASTE WATER TANKS — The gray water tank holds the waste water from the sinks and showers. The black water tank holds the waste from the toilet.

WATER PRESSURE REGULATOR — Device (customer supplied) installed on the water hose attached to city water to limit the water pressure entering the RV. Most regulators limit water pressure to 40 psi.

WEEKENDERS — People who own their RV's for weekend and vacation use.

WEIGHT & LOAD — These terms are generally used interchangeably. For the purposes of understanding RV applications: Vehicles have WEIGHT, which impart LOADS to tires, axles and hitches. Scale measurements taken when weighing, are LOADS carried by the tires. The measured "loads" are used to calculate Gross Vehicle Weight (GVW), Gross Axle Weight (GAW), Gross Combination Weight (GCW), and hitch loads.

WET WEIGHT — The weight of the vehicle with the fuel, freshwater and propane tanks full.

Note these important weights:

Propane	**4.2** lbs. per gallon
Water	**8.3** lbs. per gallon
Gasoline	**6.3** lbs. per gallon
Diesel Fuel	**6.6** lbs. per gallon

WIDE BODY — An RV having an external body width greater than 96 inches (8 feet). The most common wide-body widths are 100" and 102."

WINTERIZED — Refers to a camper that has been prepared for storage. The water systems have been drained and RV antifreeze has been added to protect the water lines and drains. The low point drains should be in the open position.

WORK CAMPER — A person living in an RV and working. Many spell it as "workamper" after the web site and service by that name.

YAW — Fishtailing action of the trailer caused by external forces that set the trailer's mass into a lateral (side-to-side) motion. The trailer's wheels serve as the axis or pivot point. Also known as "sway."

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