



08/2005 Revision 1

**COMPLETE THIS REGISTRATION CARD WITH THE SELLING DEALER AND RETURN WITHIN
10 (TEN) DAYS OF THE PURCHASE DATE**

| PRESIDIO OWNER REGISTRATION CARD | | | |
|--|-----------|--|-----------|
| Date of Purchase | | Presidio Serial Number | |
| Chassis Serial Number | | Chassis Manufacturer | |
| Model | | Year | |
| Mileage | | | |
| OWNER Mr. <input type="checkbox"/> Mrs. <input type="checkbox"/> Ms. <input type="checkbox"/> | | DEALER | |
| Owner's Name (Last, First Middle) | | Selling Dealer | |
| Address (Street or P.O. Box) | | Address (Street or P.O. Box) | |
| City | State | Zip | |
| City | State | Zip | |
| Country | Telephone | Country | Telephone |
| Owner's Signature (MUST BE SIGNED) | | Please type or print and mail this form within 10 (ten) days of purchase to: Mandalay Luxury Division P.O. Box 1486 Elkhart, Indiana 46515 | |

**COMPLETE THIS REGISTRATION CARD WITH THE SELLING DEALER AND KEEP IT FOR
REFERENCE WHEN WARRANTY SERVICE IS REQUIRED**

PRESIDIO OWNER REGISTRATION CARD

| | | | |
|-----------------------|------------------------|---------|------|
| Date of Purchase | Presidio Serial Number | Model | Year |
| Chassis Serial Number | Chassis Manufacturer | Mileage | |

OWNER Mr. ☐ Mrs. ☐ Ms. ☐

DEALER

Owner's Name (Last, First Middle)

Selling Dealer

Address (Street or P.O. Box)

Address (Street or P.O. Box)

City State Zip

City State Zip

Country Telephone

Country Telephone

PRESIDIO LIMITED WARRANTY TRANSFER APPLICATION

Date of Purchase Presidio Serial Number Model Year

Chassis Serial Number Chassis Manufacturer Mileage at Time of Transfer

PRIOR OWNER Mr. ☐ Mrs. ☐ Ms. ☐

NEW OWNER Mr. ☐ Mrs. ☐ Ms. ☐

Name (Last, First Middle)

Name (Last, First Middle)

Address (Street or P.O. Box)

Address (Street or P.O. Box)

City State Zip

City State Zip

Country Telephone

Country Telephone

New Owner's Signature (MUST BE SIGNED)

Selling Owner's Signature (MUST BE SIGNED)

DEALER INFORMATION

Name (Last, First Middle)

Address (Street or P.O. Box)

City State Zip

Country Telephone

Selling Dealer Signature (MUST BE SIGNED)

Mail Presidio Limited Warranty
Transfer Application to:

**Mandalay Luxury Division
P.O. Box 1486
Elkhart, Indiana 46515**

TERMS & REPRESENTATIONS

By your signature(s) on this form, and in order to induce Four Winds International/Mandalay Luxury Division to transfer the Limited Warranty, you represent the following:

That you have received and read a copy of the Presidio Limited Warranty.

All information provided by you on this application is true and correct.

You understand that you are purchasing a pre-owned recreation vehicle and Four Winds International/Mandalay Luxury Division does not make any representation as to its present condition.

You understand that the Limited Warranty does not cover the chassis, component parts and appliances if they are covered by a separate warranty issued by the chassis, component part or appliance manufacturer.

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PRESIDIO LIMITED WARRANTY

WHAT IS COVERED

The Presidio, manufactured by the Mandalay Luxury Division of Four Winds International Corporation, Limited Warranty covers this recreation vehicle (hereafter "RV"), when used only for recreational travel and camping, for three (3) years, or the first thirty six thousand (36,000) miles of use, which ever occurs first. In addition, this Limited Warranty covers the steel or aluminum frame structure of the floor, sidewalls, roof and rear and front walls for five (5) years or the first sixty thousand (60,000) miles of use, which ever occurs first. The warranty period begins on the date that the RV is delivered to the first retail purchaser by an independent, authorized dealer of Mandalay Luxury Division products. In the event that a substantial defect in material or workmanship, attributable to Mandalay Luxury Division, is found to exist during the warranty period, Mandalay Luxury Division will repair or replace the defective material or workmanship, at its option, at no charge to the RV owner, in accordance with the terms, conditions and limitations of this Limited Warranty.

This Limited Warranty applies to the first owner and can be transferable to the second owner only, however it is not transferable beyond the second owner of the RV. Subsequent owner's warranty coverage period is the remaining balance of the warranty coverage period that the first owner was entitled to under this Limited Warranty. The subsequent owner must complete the Warranty Transfer Form contained in the Owner's Manual and send it to Mandalay Luxury Division.

Mandalay Luxury Division's obligation to repair or replace defective materials or workmanship is the sole obligation of Mandalay Luxury Division under this Limited Warranty. Mandalay Luxury Division reserves the right to use new or remanufactured parts of similar quality to complete any work. Mandalay Luxury Division makes no warranty as to the future performance of this RV, and this Limited Warranty is not intended to extend to the future performance of this RV, or any of its materials, components or parts. In addition, the RV owner's obligation to notify Mandalay Luxury Division, or one of its authorized, independent dealers, of a claimed defect does not modify any obligation placed on the RV owner to contact Mandalay Luxury Division directly when attempting to pursue remedies under state or federal law.

HOW TO GET SERVICE

To obtain warranty service the owner must do all of the following:

1. Complete and return the Owner Registration Card within ten (10) days of purchase;
2. Notify Mandalay Luxury Division, or one of its authorized, independent dealers, in writing, of any claimed defect within the warranty coverage period;
3. Provide the notification mentioned in (2), above, within ten (10) days of discovery of the defect; and
4. Promptly return the RV to an authorized dealer for repairs.

For warranty service; contact one of Mandalay Luxury Division's independent, authorized service centers for an appointment and then deliver your RV to the service center on the specified appointment date. If you need assistance contact Mandalay Luxury Division at: (866) 919-4444. The mailing address is: PO Box 1486, Elkhart, Indiana 46515.

If two (2) or more service attempts have been made by an authorized service center, to correct any covered defect that you believe impairs the value, use or safety of the RV, you must, to the extent permitted by law, notify Mandalay Luxury Division directly, in writing, of the unsuccessful repair of the alleged defect so that Mandalay Luxury Division can become directly involved in making sure that you are provided service pursuant to the terms of this Limited Warranty.

Because Mandalay Luxury Division does not control the scheduling of service work, at any authorized service center you may encounter delays in scheduling and/or the completion of work. All costs associated with transporting the RV for any warranty service shall be the sole responsibility of the RV owner.

WHAT IS NOT COVERED

This limited warranty does not cover any material, component or part of the RV that is warranted by another entity, including by way of example, the automotive chassis and power train, including the engine, drive train, steering, handling, braking, wheel balance, muffler, tires, tubes, batteries and gauges, generator, hydraulic jack, inverter, range, carbon monoxide detector, furnace, and roof air conditioner. Please refer to the respective chassis or component owner's manual for warranty coverage and contact information.

Minor adjustments such as adjustments to the interior or exterior doors, drawers, latches, etc. will be performed by the dealer during the first 90 days of warranty coverage. Thereafter, such adjustments are the owners' responsibility as normal maintenance.

In addition, by way of example only, this Limited Warranty does not cover any of the following: items that are added or changed after the RV leaves Mandalay Luxury Division; any RV used for rental or other commercial purposes; normal wear, tear or usage, such as fading or discoloration of fabrics or the effects of condensation inside the RV; items that are working as designed but that you are unhappy with because of the design; problems related to misuse,

including failure to maintain RV in accordance with the owner's manual, or other routine maintenance; damage due to accident, whether or not foreseeable, including any acts of weather or damage or anything due to the environment, rust, theft, vandalism, fire, or other intervening acts not attributable to Mandalay Luxury Division; cost related to transportation, lodging, loss or damage to personal property, loss of owner's product, inconvenience, loss of income, rental vehicles; glass breakage; damage from misuse of equipment used for purposes other than intended design; damage resulting from tire wear or tire failure; defacing, scratches, dents, chips on any surface or fabric of the RV; damage caused by off road use, overloading the RV or alteration of the RV, or any of its components or parts. Maintenance parts and labor including but not limited to; windshield wiper blades, fluids, light bulbs, and fuses.

It is the owner's responsibility to take any necessary preventative maintenance measures, as described in the Care and Maintenance section of the Mandalay Luxury Division Owner's Manual including periodic maintenance of exterior caulking and sealers. It is the responsibility of the owner to take necessary measures to prevent secondary damage from rain water, plumbing leaks, condensation, and the natural accumulation of moisture in the RV. Failure to do so may result in stains, damage, separation, and formation of mold to the floor, walls, upholstery, carpeting, furniture, drapes and other components. Mold is a natural growth given certain environmental conditions and is not covered by the terms and conditions of the Mandalay Luxury Division Limited Warranty.

LIMITATIONS AND DISCLAIMER OF IMPLIED WARRANTIES

The following limitations and disclaimers apply to the original purchaser of the RV, any person to whom the RV is transferred and any person who is an intended or unintended user or beneficiary of the RV.

ANY IMPLIED WARRANTY ARISING BY WAY OF STATE OR FEDERAL LAW, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR ANY IMPLIED WARRANTY OF FITNESS, ARE LIMITED IN DURATION TO THE LENGTH OF THIS LIMITED WARRANTY AND ARE LIMITED IN SCOPE OF COVERAGE TO THOSE PORTIONS OF THE RV COVERED BY THIS LIMITED WARRANTY. PERFORMANCE OF REPAIRS OR NEEDED ADJUSTMENTS IS THE EXCLUSIVE REMEDY UNDER THIS LIMITED WARRANTY OR ANY IMPLIED WARRANTY. Mandalay Luxury Division makes no warranty of any nature beyond that contained in this Limited Warranty. No one has the authority to enlarge, amend or modify this Limited Warranty. The dealer is not Mandalay Luxury Division's agent, but is an independent entity.

In addition, **MANDALAY LUXURY DIVISION SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES THAT MAY RESULT FROM BREACH OF THIS LIMITED WARRANTY OR ANY IMPLIED WARRANTY. THIS EXCLUSION OF CONSEQUENTIAL AND INCIDENTAL DAMAGES SHALL BE INDEPENDENT OF ANY FAILURE OF THE ESSENTIAL PURPOSE OF ANY LIMITED WARRANTY, AND THIS EXCLUSION SHALL SURVIVE ANY DETERMINATION THAT THIS LIMITED WARRANTY OR ANY IMPLIED WARRANTY HAS FAILED OF ITS ESSENTIAL PURPOSE.**

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitations of incidental or consequential damages. Therefore, the above limitations may not apply to you.

LEGAL REMEDIES/ARBITRATION

Four Winds International Corporation participates in the Consumer Arbitration Program for Recreation Vehicles (CAP-RV). This third-party dispute resolution program is available, at no charge to you, to settle unresolved warranty disputes for recreation vehicles. This dispute resolution program reviews eligible product and service related complaints involving warranty covered components.

To find out more about the program, or to request an application/brochure, please call the Arbitration Administration office toll-free 800-279-5343.

For recreation vehicles purchased in the State of California: The CAP-RV program operates as a certified mechanism under the review of the California Arbitration Certification Program. You must utilize the arbitration program before claiming rights conferred by 15 USC section 2310 (Uniform Commercial Code) or Civil Code section 1793.22(b) (Song-Beverly Warranty Act). You are not required to use the program if you choose to seek redress by pursuing rights and remedies not created by those laws.

Any action to enforce any portion of this express, Limited Warranty, or any implied warranty, shall be commenced within one (1) year after expiration of the warranty coverage period designated above or as required by state law. Any performance of repairs shall not suspend this one-year limitation period from expiring. Any performance of repairs after the warranty coverage period has expired, or performance of repairs regarding any thing excluded from coverage under this Limited Warranty, shall be considered "good will" repairs, and they will not alter the express terms of this Limited Warranty, or extend the warranty coverage period or this limitation period. In addition, this warranty is not intended to extend to future performance, and nothing in this warranty, or any action of Mandalay Luxury Division, shall be interpreted as an extension of the warranty or this limitation period. **THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY HAVE OTHER RIGHTS THAT VARY FROM STATE TO STATE.**

Four Winds International Corporation
P.O. Box 1486 Elkhart, Indiana 46515
Phone: (866) 919-4444 • Fax: (574) 522-4276 • Website: www.mandalaycoach.com

ROADSIDE ASSISTANCE PROGRAM

A special peace-of-mind roadside assistance plan is provided free of charge by Mandalay Luxury Division for the first year of ownership. (Rental and lease back vehicles are excluded from this program.) Some companies will tell you customer satisfaction is a nine to five job, we know better!

When you take delivery of your new Presidio motorhome it's just the beginning of our exclusive around the clock Customer Care Roadside Assistance Program. Our extensive support program provides complete and fully paid roadside assistance, emergency road service (just show your card and go) and special support benefits that follow you wherever your travels take you.

Mandalay Luxury Division has teamed up with Coach Net, the largest RV emergency roadside service provider in the country, to give you immediate access to fast, dependable service when and where you need it. *To request service contact Coach Net at: 888-890-1738.*

EMERGENCY ROADSIDE ASSISTANCE

Simply show your Thor Industries Customer Care Card for payment of covered benefits with no out-of-pocket expense throughout the U.S. and Canada. (Includes one additional family car!)

24-HOUR TOLL FREE EMERGENCY/MESSAGE SERVICE

In the event of an emergency, stay in touch with family and friends with no cost emergency message service. Getting in an accident while traveling in your RV means you're stuck. We take care of you by paying for a car rental, meals and lodging. Even helping with a plane ticket home!

FREE CUSTOM TRIP ROUTING AND FULL COLOR MAP SERVICE

Member Services provides trip routing with detailed full color maps.

TOLL FREE NATIONWIDE SERVICE APPOINTMENT ASSISTANCE

A "no-hassle" way of arranging a service appointment when and where you travel. We make an appointment for you; give you directions and the time that fits your schedule best. Want an appointment in a town you'll be visiting next week? We're just a phone call away!

SERVICE ASSISTANCE

Over 6,800 qualified service agencies throughout North America. A simple phone call gives you expert direction on where the closest qualified service agency is located. Free dispatch of on-site mechanical service in the event of a breakdown

- Free jump starts
- Free tire changes
- Free fuel delivery
- Free lock-out service

SERVICE NUMBERS FOR OWNER'S REFERENCE

For further details and instructions on how to access your Customer Care Benefits, please refer to your Comprehensive Member Benefit Guide which you will receive in the mail within 30 days from the date your registration card is received by Mandalay Luxury Division, or call 888-890-1738. You may continue your Thor Industries Customer Care Benefits in following years at a special discount rate, as a continued benefit of the Thor Customer Satisfaction Program.

NOTE: The Customer Care Roadside Assistance Program is not available on rental vehicles or lease back vehicles.

INTRODUCTION

It's exciting taking ownership of a new purchase as substantial and full of nearly unlimited possibilities for the future as a motorhome. Thank you for choosing a Mandalay Luxury Division product.

We take your choice seriously. That's why we have engineered this vehicle to meet and, in many cases, exceed federal and state regulations and requirements for vehicles of this type. Our primary concern has been to provide our customers with a beautiful motorhome that is not only dependable and cost effective, but also safe.

To keep this vehicle at peak performance and to obtain the maximum pleasure from its use over an extended period, the owner must take a personal interest in its care and operation. Therefore, before operating it, we suggest that you review the entire contents of this manual.

The Owners Manual outlines the operation of the motorhomes various systems and offers many helpful hints that will enable you to obtain the most pleasure from this motorhome. Review both this manual and the chassis manufacturer's owner's manual with the dealer. Be sure to ask them any questions you have at that time. Also make sure to read all warranty and registration information carefully. Read all component manufacturers' owner's manuals, and validate any individual warranties by completing and mailing individual warranty cards as required. Refer to the chassis owner's manual supplied by the chassis manufacture for complete information on the care and maintenance of the chassis.

NOTE: Complete the Warranty Registration Card in this manual and return to us within 10 days from the date of purchase.

Always keep this owners manual with the motorhome for easy reference, making sure to observe all notes and warnings associated with the use of this motorhome.

The motorhome is thoroughly inspected prior to shipment to the dealer. However, to insure your complete satisfaction, the dealer must also perform an inspection of various components and operations based on a pre-delivery inspection list. Take this opportunity to cover the operation of all components of the motorhome with the dealer. This will help familiarize you with the motorhome and its operation, as well as assure you that the motorhome is in excellent working condition.

A road test by the dealer should be included as part of the pre-delivery inspection. The dealer can then check for and correct any steering problems before you take delivery of the motorhome. After this road test has been completed, front end alignment and/or vibrations will not be covered as part of the new vehicle warranty.

This motorhome has been designed for short term recreational use. It is not intended to be used as a permanent dwelling or as a rental vehicle. If you intend to use the motorhome as a permanent dwelling or rental vehicle, it could cause the carpet, drapes, upholstery, and interior surfaces to deteriorate prematurely. This premature wear caused by long term or permanent residency may, under the terms of the new vehicle warranty, be considered abnormal and abusive and could reduce your warranty coverage.

Should a problem develop for which you need assistance, contact your dealer. If the problem is automotive, the motorhome should be taken either to a chassis manufacturer service center or dealer. If the problem is with an appliance, check the appliance manufacture's information supplied with the motorhome for information regarding warranty work and/or location of appliance service centers.

If, when traveling, you experience a breakdown or problem while the motorhome is under warranty, and an authorized service center or dealer is not available, if possible, contact the dealer you purchased the motorhome from, or a Mandalay Luxury Division Technical Service Advisor at (866) 919-4444 before having any service work performed. By notifying Mandalay Luxury Division, you will be aware of what is covered under the terms of the warranty, as well as informing Mandalay Luxury Division of your problem.

NOTE: Any parts that require replacement, that are covered under the terms of the warranty should be retained and returned to your dealer along with your invoice. This way, they are able to check what has occurred, and also make sure you are properly reimbursed.

Repairs made without prior authorization may be subject to denial or partial reimbursement. Modifications made to the vehicle without proper authorization can result in reduction or loss of warranty coverage. Please make sure to contact your dealer before making such changes.

DISCLAIMER

The following information reflects product design, fabrication, and component parts at the time of printing. Four Winds International/Mandalay Luxury Division reserves the right, at anytime, to make changes in product design, material or component specifications at its sole option without notice. This includes the substitution of components of different brand or manufacturer name, which results in comparable performance.

Your actual motorhome may vary from this document as a result of optional equipment offered on this model and year of motorhome. In the case that you are not the initial retail owner of this unit, this document will not reflect modifications that may have been performed by previous owners. Photographs, line art, and diagrams contained herein may reflect both standard and optional equipment at the time of printing.

All information printed in this document is subject to change after the date of printing. As a result of product improvements, changes during model year production and/or transcription errors that may occur, information represented within the owner's manual and/or this document may not be the most current information available at the time of purchase. Please consult with your independent Presidio dealer to confirm this information.

IDENTIFICATION & SAFETY

REPORTING SAFETY DEFECTS

If you believe that your vehicle has a defect that could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying the manufacturer.

To contact NHTSA, you may either call the Auto Safety Hot-line toll free at 1-888-327-4236 or go to their website at www.nhtsa.dot.gov. You can also obtain other information about motor vehicle safety from these sources.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or the manufacturer.

MOTORHOME SERIAL NUMBER DECAL & DATA PLATES

The motorhome serial number label is mounted on the inside wall next to the driver seat. Refer to the chassis owner's manual for the location of the chassis vehicle identification number on all motorized recreation vehicles.

IMPORTANT: Always give model, year, and the V.I.N. number information when ordering parts. Also, we recommend that you keep a copy of this information separate from the motorhome in the event that theft or vandalism requires you to supply a copy to authorities.

Decal and data plates are used throughout the motorhome to aid in its safe and efficient operation; others give service instructions. Read all decal, data, and instruction plates before operating the motorhome. When any decal, data, or instruction plate is damaged, painted over, removed, etc. it should be replaced.

| | | | | | |
|---|--------------|-------------------|------------------------------------|-------------------------------------|-------------------------------------|
| MANUFACTURED BY: FOUR WINDS INTERNATIONAL INC. VEH. MFG. BY: | | MODEL: SERIAL: | | Offline: Received: | |
| <u>KG (LB)</u> | <u>TIRES</u> | <u>RIMS</u> | <u>COLD INFLATION PRESSURE</u> | <u>SINGLE</u> | <u>DUAL</u> |
| GVWR: | | | | | |
| GAWR FRONT: | | | | <input checked="" type="checkbox"/> | |
| GAWR INTERM: | | | | <input type="checkbox"/> | <input type="checkbox"/> |
| GAWR REAR: | | | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT IN:
V.I.N.: TYPE: MULTI PASSENGER VEHICLE

MANUFACTURER'S WARRANTIES

The following list of components has been compiled to help you know which products within the motorhome may have their own warranties. If you have any of these components within the motorhome, be sure to check the literature supplied by the manufacturer to see if they require that you register your purchase with them to validate their warranty. We recommend that you send the various warranty registration cards immediately before any time constraints on registration expire. Manufacturers' literature is contained in a separate packet furnished with the owner's manual on newly delivered units. Only those products and options which are within the motorhome will be included in this packet. Review the literature with your dealer during the pre-delivery inspection. Any shortages of literature should be reported to the dealer at this time.

| APPLIANCES | | |
|-----------------------|----------------|---------------------|
| Air Conditioner | Water Heater | Home Theater System |
| Furnace | Televisions | DVD Player |
| Range | VCR/VCP | Washer/Dryer |
| Range Hood | Radio | Satellite System |
| Microwave Oven | Ice Maker | Spot Light |
| Refrigerator | Coffee Maker | Satellite Radio |
| Exterior Deep Freezer | Central Vacuum | |
| CB Radio | Awnings | |

| ELECTRICAL | | |
|--------------------------|-----------------|----------------------|
| 110/12 volt Inverter | LP Gas Detector | Ceramic Space Heater |
| Generator | Battery | |
| GFCI Recepts | Smoke Detector | |
| Carbon Monoxide Detector | Cord Reel | |

| WATER & DRAINAGE | | |
|------------------|---------------|--|
| Toilet | Water Filter | |
| Water Pump | Water Faucets | |

| LP GAS | | |
|-----------|-------------------|--|
| Regulator | Gas Leak Detector | |
| Gas Tank | | |

| CHASSIS | | |
|-----------------|-----------------|-----------------|
| Air Conditioner | Back-up Monitor | Hydraulic Pumps |
| Cruise Control | Leveling Jacks | Batteries |

SAFETY REGULATIONS FOR LP GAS SYSTEMS & APPLIANCES

The following warnings are posted throughout the motorhome to provide information on LP Gas safety. They have been installed not only because of the requirement to do so, but also as a constant reminder to occupants of the motorhome to exercise proper caution when using or being around LP Gas appliances and equipment. We are listing them here so you may study them and make sure that you and your family understand and follow them.

WARNING: It is not safe to use cooking appliances for comfort heating.

WARNING: Cooking appliances need fresh air for safe operation. Before operation:

- 1. Open overhead vent or turn the exhaust fan on***
- 2. Open windows***

This warning label has been located in the cooking area to remind you to provide an adequate supply of fresh air for combustion. Unlike homes, the amount of oxygen supply is limited due to the size of the motorhome, and proper ventilation when using the cooking appliances will avoid dangers of asphyxiation.

Over-filling the LP Gas container can result in uncontrolled gas flow which can cause fire or explosion. A properly filled container will contain approximately 80% of its volume as liquid LP Gas. An 80% automatic shut-off valve is installed on the LP Gas tank which will automatically prevent further filling when the gas volume has reached 80% of tank capacity.



CAUTION: This tank is equipped with an automatic valve designed to close at 80% liquid full. Always open 20% fixed liquid level bleeder gauge while filling. Stop filling if liquid appears before valve shuts off.



WARNING: All LP Gas is contained under pressure. Due to the dangerous potential of any compressed gas, it is mandatory that the following requirements for the use of this tank be followed: Tanks are to be installed, fueled and maintained in accordance with the state and local codes, rules, regulations or laws and in accordance with the NFPA Pamphlet 58, division IV.



WARNING: Only personnel trained in the handling of LP Gas may fill, test or repair the LP Gas system.



WARNING: If you smell gas, extinguish any open flames, pilot lights, and all smoking materials. DO NOT touch electrical switches. Shut off the gas supply at the tank valve(s) or gas supply connection. Open doors and other ventilation openings. (do not use the range hood) Leave the area until the odor clears.

Have the system checked and leakage source corrected before using again. LP Gas regulators must always be installed with the diaphragm vent facing downward. Regulators that are not in compartments have been equipped with a protective cover. Make sure that the regulator vent faces downward and the cover is kept in place to minimize vent blockage which could result in excessive gas pressure causing fire or explosion.



WARNING: Portable fuel burning equipment including wood or charcoal burning grills and stoves should not be used inside the motorhome because they may cause fire or asphyxiation.

FIRE SAFETY

Fire safety is an important part of owning a motorhome. Make sure that everyone traveling in the motorhome is familiar with the location of exits, including emergency exit windows should an emergency arise. The following basic rules of fire prevention can help eliminate the possibility of a fire.

- Never store flammable liquids within the motorhome
- Keep cooking surfaces clean
- Never clean with a flammable liquid
- Never leave cooking food unattended
- Never smoke in bed, and always use an ashtray
- Never allow children to play with LP Gas or electrical equipment
- Never use an open flame as a flashlight
- Always repair faulty or damaged wiring and electrical components
- Never overload electrical circuits
- Locate and repair LP Gas leaks immediately
- Don't allow rubbish to accumulate
- Spray fabrics annually with a flame retardant

If a fire does start, make sure to follow these basic rules of safety:

1. Have everyone evacuate the motorhome as quickly as possible
2. After everyone is clear, 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 motorhome and have the fire department handle the emergency.
3. DO NOT attempt to use water to put out the fire. Water can spread some types of fire, and electrocution is possible with an electrical fire.

FIRE EXTINGUISHER

Underwriter Laboratories classify fires into three types:

- Class A – Fires in wood, paper, fabric, rubber, and certain plastics.
- Class B – Flammable liquids such as grease, cooking oils, gasoline, or kerosene.
- Class C – Electrical fires started from live electrical wires, from short circuits motors or switches.

The fire extinguisher, which is located by the entry door of the motorhome, is a chemical type suitable for extinguishing small fires of the class B or C type. Extinguishers are designed to put out fires in the initial stage, not when it is blazing out of control. If a fire cannot be approached within 10', the extinguisher will not be effective.

To fight a fire with an extinguisher, first remove the tamper tape which covers the discharge push button. Hold it upright and stand six to ten feet from the fire with a clear path to an exit. Press the button down all the way, aimed at the base of the fire and spray with quick motions from side to side.

Avoid inhaling the dry chemicals. Although non toxic, they could cause temporary irritation and vomiting. When the fire is out, clean up the area as soon as possible. The dry chemicals are non-corrosive, but some residue may cause surface damage if left too long.

In the case of an electrical fire, disconnect the battery and throw off the main circuit in the unit. It is important that everyone knows where to find the main circuit and how it operates. If the shoreline power cord is connected, disconnect it.

To keep the fire extinguisher in proper operating conditions:

1. CHECK PRESSURE - monthly or more often. Check the nozzle for obstruction. Press the green pin below the nozzle. If it returns and sticks out from the extinguisher, it is operable. If the pin does not come back, discard extinguisher. Refillable models have a pressure gauge to check.
2. TAMPER TAPE - Check the tape to make sure it is intact. DO NOT test the extinguisher. Even a partial discharge may cause leakage.
3. INSPECTION TAG - when checking the extinguisher for pressure, enter the date checked on the inspection tag furnished with the RV. Regular inspections will help insure the condition.
4. AGITATE DRY CHEMICAL - every six (6) months, by inverting the bottle and lightly shaking for several seconds. This will help prevent the dry chemical from settling due to in-motion vibrations.

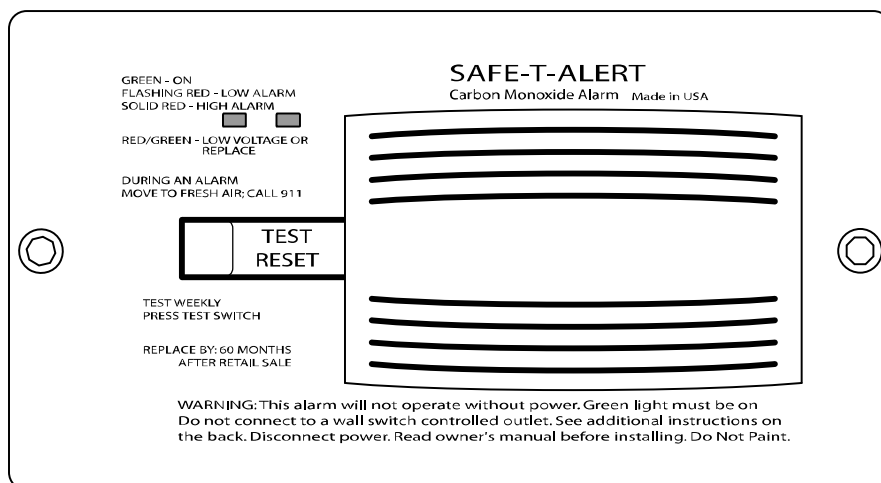
CARBON MONOXIDE DETECTOR

See the instructions sheet which came with the detector for complete information. Once power is supplied, the detector will run through a warm-up and self-check cycle for ten minutes before beginning to monitor for CO gas. There are no switches to allow the unit to be accidentally turned off, so the detector will provide reliable protection (providing that the test procedure is performed) by alerting you to the buildup of potentially dangerous levels of CO gas on a continuous basis.

NOTE: The battery disconnect switch controls the power supply to the carbon monoxide detector.



WARNING: Carbon Monoxide cannot be seen or smelled and can kill you. If alarm sounds: Turn off appliances, as well as, other sources of combustion at once (furnace, water heater, stove, motorhome, automobile, etc.) and call the fire department. Get fresh air into the premises or vehicle. Have the problem corrected before starting any appliances or vehicle.



TESTING THE DETECTOR

To properly check the detector, the use of a butane lighter will be required. Butane is a combustible gas and should be used with caution. When operating normally, the detector will not indicate the presence of combustible gases, such as butane. Using the TEST button, as described in the following test procedure, the sensitivity of the detector can be changed to identify the presence of butane temporarily. If the detector responds to the presence of the butane gas during this test procedure, the detector is working properly, and will respond to the presence of CO gas during normal operation.

TESTING PROCEDURE

This test must be performed quickly. Be sure that you read and are familiar with this test procedure before beginning.

- Be sure that the detector has been powered for a minimum of 10 minutes.
- Press and hold test button for approximately 10 seconds.
- Without releasing the button, aim nozzle of a butane lighter towards the gas sensor area.
- Press the gas release quickly (not more than 1 second). Do not rotate the flint wheel.
- Release the test button
- The alarm should sound. If it does not, repeat this test then see the troubleshooting section in the instructions that came with your unit.
- Wait 1 minute.
- Press and release the test button to silence the alarm. If the alarm continues to sound, wait 30 seconds and press and release the test button again.

NOTE: The alarm will reset within 5 minutes without pressing the test button.

Test this detector at least once per week during occupancy of the motorhome, as well as after periods of storage and prior to each trip.

CARBON MONOXIDE SAFETY PRECAUTIONS

Never run the engine unless you are sure that exhaust gases will be safely dispersed into the atmosphere. Always be sure that tail pipes remain unblocked and windows near the exhaust are closed.



WARNING: DO NOT alter or modify any component of the exhaust system at any time. Inspect the exhaust system at regular intervals for damage. If you suspect or locate damage to the system, have it repaired immediately.



WARNING: Exhaust gas is deadly. It contains carbon monoxide, a poisonous gas that can cause unconsciousness and death. It is an odorless, colorless, and tasteless gas formed during combustion of fuel in either the motorhome or generator engines.



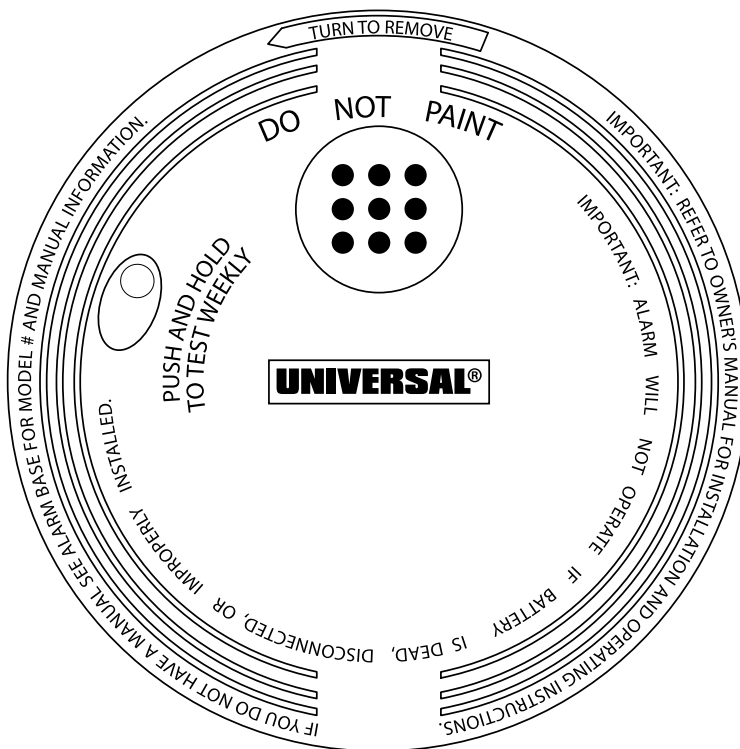
WARNING: Never sleep while the engine is running. Be aware of carbon monoxide poisoning and its symptoms: Dizziness, Severe Headache, Vomiting, Weakness, Sleepiness, Muscular Twitching, and Throbbing in Temples. If anyone in the motorhome experiences any of these symptoms, shut off the engine, and immediately go outside into fresh air. Get medical attention as soon as possible.

SMOKE DETECTOR

An ionization detector offers a broad range of fire sensing capabilities. However, they do possess limitations. A fire could start in a location that would prevent smoke from reaching the detector. They are also better at detecting fast flaming fires than the slow smoldering variety. They are also not a cure for poor fire safety habits. Smoke detectors need occasional maintenance for reliable service. A smoke detector is designed to be relatively maintenance free, but there are three things you can do to keep a detector in reliable working order:

1. **TEST** - at least once a week by firmly pressing the button located near the center of the cover. The alarm should sound briefly. If it does not work, replace the battery and test again.
2. **CLEAN** - the detector if grease or dust accumulates. The following procedure should be followed once a year.
 - a. Remove the cover and battery.
 - b. Clean dust from sensing chamber openings with a vacuum and soft brush attachment.
 - c. Replace the battery and depress the test switch. The alarm should sound briefly. If it does not work, try a new battery.
3. **SERVICE** - the detector if it does not work by sending it to the manufacture or their repair center. **DO NOT** attempt to make the repairs yourself (other than battery replacement).

NOTE: When the battery is low, the detector will make a “chirping” noise for seven days to remind you to change it.



LP GAS DETECTOR

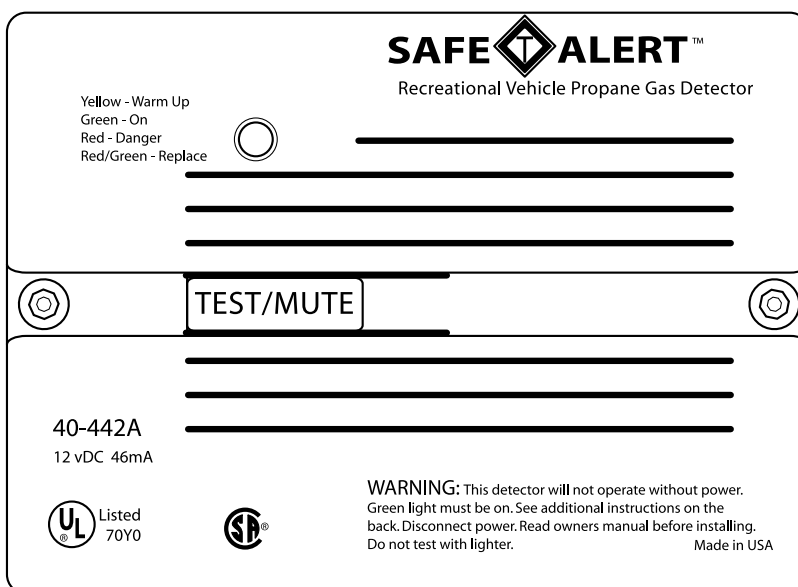
The LP Gas Leak Detector is powered at all times when the coach battery disconnect switch is in the ON position. When power is supplied to the detector the green indicator light will illuminate. After 60 seconds, the detector will begin monitoring the air in the motorhome for combustible vapors. The propane you use to cook, refrigerate, and heat is combustible. Should a leak occur, the detector will produce a pulsating alert sound when the gas reaches the detector. This alert will continue to sound until the gas has dissipated or until the reset button is pressed. When the alert sounds, open all doors and major windows to air out the motorhome and turn the gas off at the tank. Do not reenter the motorhome until the alert stops sounding. If the alert sounds a second time after the gas is turned back on, leave the gas off and have a qualified LP Gas Dealer or RV Service Center make the necessary repairs. The reset button only stops the alert from sounding for 60 seconds. This device is intended for detection of LP Gas ONLY.

HOW TO TEST

The detector must be operating for at least 60 seconds before it can be tested. Expose the detector to gas* and observe that the alert sounder will begin to alarm. The alert will continue to sound until:

1. The gas mixture at the detector returns to a safe level.
2. The reset button is pressed. If the reset button is pressed, the detector cannot be retested for at least 60 seconds.

NOTE: This test procedure should be repeated every week or every time the coach is taken on a trip, whichever occurs first. Call MTI Industries at (800) 383-0269, if you have any questions about the LP Gas Detector.



**One method of simulating gas is to use a butane lighter (i.e.: BIC). DO NOT rotate the flint wheel. Just press on the gas release button and point the exit nozzle into the gas sensing area below the green light of the detector.*

CHECKING THE LP GAS SYSTEM FOR LEAKS

Road vibration can loosen LP Gas fittings. It is important to check the LP system for leaks at least every 5,000 miles, and whenever the tank is filled. It is also a good idea to have the entire LP Gas system checked annually by a qualified LP Gas service representative.

Use the following steps when checking the system for leaks:

1. Open all the windows and vents.
2. Open the gas tank service valve.
3. Use non-ammoniate, non-chlorinated soap solution, or an approved leak detection solution on all line connections (ammoniate soap solutions can cause cracking on copper or brass lines and fittings).
4. If a leak is detected, tighten the connection with two open end wrenches until bubbling stops. DO NOT over tighten, or use excessive force. If the leak continues, contact the recreation vehicle dealer, or a qualified LP Gas service representative to have an 11" Water Column Test performed.



WARNING: *Never check for leaks with an open flame. The scent of LP Gas (a garlic-like odor) is actually ethyl mercaptan, an additive that allows you to detect the presence of a leak, since LP Gas is naturally odorless. Do not rely upon being able to detect the smell of the gas, as the odor may fade.*

ABOUT THE LP GAS DETECTOR

Liquid Propane Gas (LP Gas) is heavier than air and will settle to the lowest point which is generally the floor of the coach. The detector is also sensitive to other fumes such as hair spray of which most contain butane as the propellant. Butane, like propane, is heavier than air and will settle to the floor level where it will be detected. When this occurs, press the reset button to stop the alert sound for 60 seconds.

Other combustibles which will be detected include alcohol, liquor, deodorants, colognes, perfumes, wine, adhesives, lacquer, kerosene, gasoline, glues, most of all cleaning agents and the propellant's of aerosol cans. Most are lighter than air in their vapor state and will only be detected when the coach is closed up. Glues and adhesives may exhaust hydrocarbon vapors for months after they are applied. They are easily activated by high temperatures.

The LP Gas Detector is powered by the motorhome coach batteries and/or the inverter. It draws less current than drawn by one instrument panel lamp. The detector will operate properly until the battery is drained down to 10 volts. (A low battery condition is 10.4 volts.) If the power source (battery and/or inverter) is disconnected, or if the power is otherwise interrupted, the detector will not operate.

The LP Gas Detector has a self check circuit which runs at all times when the detector is powered. In the event that the circuitry fails, a failure alarm will sound. It is a continuous series of short beep tones between long intervals and is distinctively different from the alert sound.

MOST COMMON CAUSES OF APPARENT MALFUNCTION:

- **New Coach Odor:** The glues and other materials used in manufacturing the coach produce vapors which may be detected when the coach is closed up on a warm day. Air out the coach thoroughly.
- **Keeps Beeping:** The gas detector beeps about once every minute, even when it is turned off. The problem is a weak battery in the smoke detector which causes the smoke detector to produce short beeps which sound similar to the alert sound of the LP Gas Detector. This is a high pitch tone and bounces off the walls, making its location very hard to pinpoint. If the sound is not coming from the LP Gas Detector identify the source and refer to the sources section in this manual for means of repair.
- **Hair Spray Triggers the Detector:** Most aerosol hair sprays use butane gas as the propellant. Butane, like propane, is heavier than air and will settle to the floor level where it will be detected. The detector is doing its job as butane is combustible.
- **Other Gases:** Other gases which can cause the detector to respond with an alert include the vapors from any fuel, liquor, alcohol, deodorants, colognes, perfumes, wine, adhesives, lacquer, and most cleaning agents.
- **Slow Beep Rate:** This could be the failure alarm and will occur in the event that the circuitry fails. It is a continuous series of short beep tones between long intervals and is distinctively different from the alert sound.
- After reviewing the above, if the problem still exists, contact MTI Industries for assistance.

NOTE: The LP Gas Detector enters a cleaning and initializing mode every time it is powered. If turned off for less than 15 minutes, the LP Gas Leak Detector may produce several short “chirps” within the first 80 seconds of operation. This is normal.

SERVICE

See your Presidio Dealer or a qualified LP Gas Service Center should service be required. If they are not familiar with this product, have them call MTI Industries for assistance. If service is not available in your area, call MTI Industries.

SEAT BELTS

To fasten seat belts, insert the tongue into the buckle until you hear a snap and feel the latch engage. Adjust the belt to the proper position; snug and as low as possible around the hips, not around the waist. To unfasten the seat belt, push the release button in the buckle and allow the belt to unlatch.



WARNING: Failure to adjust the seat belt properly could increase the chance of injury in the event of a collision.



WARNING: In addition to the seat belt operating instructions given here, it is extremely important that you also review and follow all the instructions for seat belt and child restraints in the chassis owners manual provided with your motorhome.



WARNING: All motorhome occupants should wear their seat belts for maximum protection in the event of a collision. For young children, infant and child restraints should be obtained and used in accordance with the instructions provided for, by the manufacturer of the restraint. In some areas, seat belt and/or child restraint use is required by law.



WARNING: The sleeping accommodations in this vehicle are designed for occupancy only while the vehicle is NOT in motion. All occupants in this vehicle must be seated at a designated seating position and must wear seat belts at all times while this vehicle is in motion. Failure to do so may result in serious injury.



WARNING: Pilot and Co-pilot seats must be locked in a forward facing position with seat belts fastened while the motorhome is in motion. Avoid seat rotation while in transit. Children must not be transported unrestrained. Infants must be placed in approved safety seats. Small children must be restrained in child safety seats. Failure to comply with these rules can lead to injury or death.

NOTE: Seat belts have been provided at most seating locations within the motorhome to allow the user the flexibility and convenience to choose which seat location they would like to occupy. However, it is not intended for all seats to be simultaneously occupied while the vehicle is in motion without regard to the total loaded weight of the vehicle. **DO NOT EXCEED THE CARRYING CAPACITY OF THIS VEHICLE.**

EGRESS WINDOW

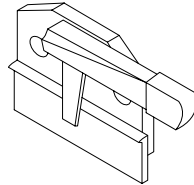
An egress window is designated for use as an exit in the case of an emergency. Inside the motorhome the egress window is easily identified by the red locking handle. It is also marked as an "EXIT". The glass slider in the egress window operates the same as all other windows;

- To open the egress window, lift the red handle and push outward on the window.
- To close the egress window, pull the window closed and lower the handles to lock window in place.

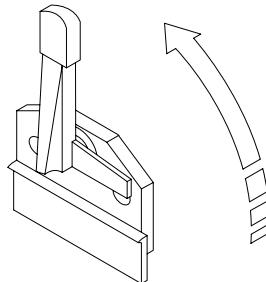


CAUTION: The egress window should be opened twice a year to ensure proper operation. Over time, the rubber seal will tend to stick to the egress window. Occasional operation will help prevent the rubber seal from sticking.

HANDLE IN LOCKED POSITION



RAISE HANDLE TO OPEN



CHASSIS OPERATIONS & PROCEDURES

The chassis is an integral part of the motorhome and with proper care and maintenance can provide many miles of reliable travel. The following section is for reference only, for detailed information regarding, product information and proper maintenance of the chassis, refer to the chassis manufacturer's owner's manual.

You as the owner are the key to keeping your motorhome in good operating condition, as well as being responsible for taking the proper precautions when attempting any repair or maintenance activities. If you are not sure what action to take, or uncomfortable with performing a maintenance or repair function, contact your dealer, or a designated chassis manufacturer servicing dealer. Check information supplied by chassis manufacturer for a service dealer near you.

NOTE: Make sure to read all chassis information supplied by the chassis manufacturer, paying particular attention to precautionary notes and warnings, as well as all maintenance procedures and schedules.

NEW VEHICLE BREAK IN

Special procedures or schedules for breaking in your new motorhome are minimal. Make sure to follow the recommendations as outlined in the chassis owner's manual to ensure proper future performance and economy.

BRAKES

Operation and maintenance of the brake system is covered in the chassis owner's manual. Always be sure to keep your brakes in proper working condition, following the service schedule in the chassis literature, and the recommendations of your chassis service representative.

WHEELS & TIRES

The motorhome tires play an important role in the load carrying capacity of the vehicle. To ensure good tire life, check tires often. Inspect the general condition of the tires, as well as the air pressure.

Always check the air pressure when the tires are cold. Tires that are hot from traveling will show higher pressures. The maximum tire pressure and the load carrying capacity of the tire are imprinted on each tire sidewall as well as on the vehicle serial number I.D. tag. Always inflate the tires to their correct pressure. Do not over or under inflate. Under inflated tires will run hot, shorten the tire's life and decrease the motorhomes safe load limit. Over inflated tires will cause a rough and bouncing ride that could damage motorhome components or cargo. It is a good idea to always carry an accurate tire pressure gauge in the motorhome to make these checks. If pressure checks indicate that a tire is losing air, check for signs of valve leakage, penetration, or wheel and rim damage.

The way you drive can have a significant effect on the wear and life of tires also. High speeds, unusual use of the brakes, taking corners too quickly, quick starts, and surfaces in poor condition all can attribute to the early wear and failure of your tires.

DAMAGED OR FLAT TIRES



CAUTION: When replacing a tire, make sure to replace it with a tire of the same size and specifications.

If you notice damage to a tire such as a bulge, uneven wear, or damage by a foreign object or the road, have it inspected and repaired or replaced as needed. Remember that tires should be taken to an authorized tire repair facility.

If you experience a flat tire, it is recommended that you have qualified personnel with the proper equipment handle the problem. Due to the size and weight of a motorhome wheel and tire assembly, as well as the amount of torque needed to tighten wheel nuts securely, it is best to call in a professional. It is for this reason that a jack has not been included in this motorhome.

WHEEL NUT TORQUES



WARNING: Failure to torque wheel nuts as specified could allow wheels to come off while the motorhome is in motion, causing loss of control and possible collision.

Follow the schedule for regular wheel nut checks as outlined in the chassis manufacturer's owner's manual. If you suspect that the wheel nuts have loosened at any time, have the wheel nuts checked, and if necessary torque the nuts to the proper limits immediately.

If you suspect or notice wheel stud bolts are cracked or broken, they must be replaced, along with adjacent bolts that have probably also been weakened due to additional stress placed on them. You, as the owner of the motorhome, need to make frequent inspections of the wheels and tires, looking for signs of wear or damage. Avoid abusive driving such as impacting curbs and pot holes at high speeds.

NOTE: The proper way of tightening wheel nuts is with a torque wrench, not with an impact wrench or by hand. Because of the importance of having the proper torque on wheel nuts, you should have wheels mounted by authorized personnel with the proper tools.

WHEEL & TIRE BALANCING

Handling and tire wear can be enhanced by maintaining the proper balance of wheel and tire assemblies. It is important to have wheel and tire balancing checked on a regular basis. If you experience handling problems or abnormal tire wear, it may be easily corrected by proper balance. Specialized equipment is required to achieve proper balancing, and the motorhome should be taken to a shop that is qualified to perform this service.

FRONT SUSPENSION & ALIGNMENT

The term alignment refers to the adjustment angles on the steering axle, as well as, the suspension and the tracking of the rear axle. Many factors are considered when establishing proper alignment. Steering components, suspension, wheel bearings, and even proper loading all effect alignment.

Maintaining proper wheel alignment will result in increased steering ease and stability of the motorhome. As a result of proper alignment, tires and suspension will last longer and fuel economy can be increased. Any time you notice unusual tire wear or experience poor handling of the motorhome, it would be wise to suspect improper alignment along with the various other possibilities that might be causing the problem (check the chassis owner's manual). Always have the alignment of the motorhome checked and adjusted by a qualified service technician with the proper equipment to handle heavy vehicles.

NOTE: The front end alignment of the motorhome has been set by the motorhome chassis and body builder to the specification for the front and rear GVW of the motorhome. However, since alignment is affected by not only how much weight you add to the motorhome in the way of cargo and how you disperse the cargo, we advise you to have the motorhome alignment checked in the loaded condition (the way you would travel down the road). Not having the alignment set in the loaded condition could result in abnormal tire wear.

POWER PLANT & DRIVE TRAIN

Full operating and service information may be obtained by consulting the engine and drive train operating and service manuals provided by the chassis manufacturer. For maximum engine efficiency and long service life, always follow recommendations, as outlined by the chassis manufacturer. Regular visual inspections can help detect minor adjustments and needed maintenance. All other components of chassis should be inspected regularly per schedules set by chassis manufacturer.

ENGINE COOLING SYSTEM



WARNING: Ethylene glycol is a petroleum derivative which can ignite if exposed to high temperature, such as occurs on an exhaust manifold. The possibility of ethylene glycol igniting is increased if it is not diluted with water. It is important to properly dilute antifreeze with the proper mixture of water. Make sure to discuss the coolant needs of the motorhome with the chassis engine service representative.

The engine cooling system requires regular, periodic service to operate at maximum efficiency. The condition of the engine coolant, hoses, and clamps should be checked annually. Make sure to follow the cooling system recommendations as outlined in the chassis engine owner's manual. If you notice, or suspect cooling system problems, make sure it receives immediate attention. Proper and safe operation of the chassis engine cooling system and other chassis functions depends on maintaining the vehicle per the instructions and schedules published by the chassis and engine manufacturers.

ENGINE ACCESS

The engine fluid level checks which are located at the exterior rear of the motorhome, can be accessed by lifting the top half of the engine grate. For service personnel, additional access areas are located in the bedroom. The first location is in the wardrobe closet on the floor, remove the four screws to remove the access panel. The second access panel is located on the floor between the bed and the wardrobe closet. Remove the four mounting screws to remove the access panel.

PROPER LOADING & WEIGHT DISTRIBUTION

The motorhome has been designed to carry loads within specified limits. Exceeding these limits will greatly affect the handling of the motorhome, create an unsafe condition and may void warranties. These limitations are defined in three ways:

1. **Gross Vehicle Weight Rating (GVWR)** - Maximum permissible weight of this motorhome. The GVWR is equal to or greater than the sum of the Unloaded Vehicle Weight plus the Net Carrying Capacity.
2. **Gross Axle Weight Rating (GAWR)** - Maximum load carried by an axle: sum of rating may be more than GVWR to allow for load variations.
3. **Gross Combined Weight Rating (GCWR)** - Means the maximum allowable loaded weight of this motorhome with its towed trailer or towed vehicle.

NOTE: Check the weight ratings of the motorhome on the serial number identification tag.

Additional terms used when discussing weight and distribution include:

- **Gross Vehicle Weight (GVW)** - The total loaded weight of the RV
- **Gross Axle Weight (GAW)** - The total axle weight under any given load condition
- **Unloaded Vehicle Weight (UVW)** - Weight of this motorhome as built at the factory with full fuel, engine oil, and coolants. The UVW does not include cargo, fresh water, LP Gas, occupants, or dealer installed accessories.
- **Net Carrying Capacities (NCC)** - Maximum weight of all occupants including the driver, personal belongings, food, fresh water, LP Gas, tools, tongue weight of towed vehicle, dealer installed accessories, etc., that can be carried by this motorhome. (NCC is equal to GVWR minus UVW).

NOTE: When establishing the NCC, weigh the motorhome with both a full fresh water and LP Gas tank. Do not allow anyone to be in the motorhome when establishing this rating. To determine the allowable tow rate subtract the GVWR from the NCC.



NOTE: Do not assume that you can fill all tanks and storage areas and be within the GVWR. Weights of stored items and passengers will vary greatly and will affect total weight of the motorhome. For calculation purposes fresh water weighs 8.33 pounds per gallon. LP Gas weighs 4.5 pounds per gallon.

WEIGHT INFORMATION LABEL

A weight information label, similar to the following diagram, has been placed inside a wardrobe closet in within the motorhome. These weights are based on calculations involving similar vehicles as yours and will not be the exact weight of the motorhome. Weigh the motorhome to determine the exact weights and carrying capacities.



CAUTION: Do not overload the motorhome.

| | | | |
|---|---------------------------------------|---|--|
|  Mandalay LUXURY DIVISION | | 701 CR 15 PO Box 1486 Elkhart, IN 46516-9731 | |
| MOTORHOME WEIGHT SPECIFICATIONS SPÉCIFICATIONS DE POIDS CONCERNANT LES MOTOR-HOMES | | | |
| PRODUCT: <small>Produit:</small> | | SERIAL #: <small>N° de série:</small> | |
| MODEL: <small>Modèle:</small> | YEAR: <small>Année:</small> | CHASSIS VIN #: <small>N° d'identification du véhicule sur le châssis:</small> | |
| Gross Axle Weight Rating - GAWR Maximum permissible load carried by an axle - (sum of rating may exceed GVWR). Estimation du poids brut de l'essieu Poids maximum permit pouvant être supporté par un essieu (le total de l'estimation peut excéder l'estimation du poids brut du véhicule). | | LBS - livres KG / kilos Front: Avant: Rear: Arrière: | |
| Gross Vehicle Weight Rating - GVWR Maximum permissible weight of this fully loaded motorhome. Estimation du poids brut du véhicule Poids maximum permit de cet motor-home chargé à fond. | | | |
| Gross Combined Weight Rating - GCWR Maximum allowable load weight of this motorhome and any towed trailer or towed vehicle. Estimation du poids brut combiné Poids maximum de charge alloué pour cette motorhome et toute remorque ou voiture remorquée. | | | |
| Unloaded Vehicle Weight - UVW Weight of this motorhome as manufactured at the factory with full fuel, engine oil and coolants. Poids du véhicule sans charge Poids de cet motor-home tel que fabriqué à l'usine avec un plein d'essence, d'huile de moteur et des fluides de refroidissements. | | | |
| Sleeping Capacity Weight Rating - SCWR Motorhome manufacturer's designated number of sleeping positions multiplied by 154 pounds (70 kilograms). Estimation du poids de capacité de couchage Le nombre de position de couchage tel qu'indiqué par le fabricant du motor-home multiplié par 154 livres (70 kilogrammes). | | | |
| Cargo Carrying Capacity - CCC Equal to GVWR minus each of the following: UVW, Full fresh (potable) water (including water heater), full LP gas weight and SCWR. (Note: dealer installed equipment and towed vehicle tongue weight will reduce CCC) Capacité de transportation de cargo Égal à l'estimation du poids brut du véhicule moins chacun des suivants: le poids du véhicule sans charge, le poids du plein d'eau potable (incluant chauffe-eau), le poids du plein d'essence et l'estimation du poids de capacité de couchage. (Note: les équipements installés par le concessionnaire et le poids du véhicule remorqué sur la boule de remorque vont réduire la capacité de transportation de cargo.) | | | |
| Fresh water w/ water heater @ 8.33 lbs./gal. Eau potable avec chauffe-eau @ 1 kg/litre | | Gals. litres. | |
| LPG capacity @ 4.2 lbs./gal Capacité d'essence @ 0.54 kg/litre | | Gals. litres. | |
| WARNING: This information is intended as a guide only. Weights of individual vehicles may vary. Consult Owners Manual(s) for specific weighing instructions and towing guidelines including auxiliary brake requirements for any towed trailer or towed vehicle. Caution: Consulter le manuel du propriétaire pour les instructions spécifiques de pesage et les directions de remorquage incluant les exigences de freins auxiliaires pour toute remorque ou voiture remorquée. | | | |
| | |  THOR AMERICA'S BEST RV VALUE | |

COMPUTING THE LOAD & LOAD DISTRIBUTION

When loading the motorhome, give careful consideration to the weight of all items. Evenly distribute the weight of stored items from one side to the other. Do not store heavy items near the front or rear of the motorhome. Following these suggestions will benefit both the handling and ride of the motorhome, as well as increasing fuel economy.

It is recommended to empty the waste holding tanks before leaving on a trip, and as often as possible when traveling, to help reduce unnecessary weight while traveling. Try to carry only as much fresh water as you will use when traveling.

It is also important to keep in mind when traveling, that all items stored inside and outside the motorhome are secure, and all drawers and doors are secure. DO NOT add any type of rack or frame to any motorhome frame or chassis part. Alterations to the length and/or weight distribution may result in unstable handling, be a safety hazard, or could damage motorhome components. In any case, the motorhome warranty may be affected.

In order to properly compute the load and load distribution, you must know both actual scale weights, and the GAWR and GVWR found on the Federal Certification Label on the motorhome. Weigh with all passengers, equipment, luggage, and fluids on board as you plan to travel with. To weigh the motorhome properly, use the following procedure:

1. All passengers must be in their seats and the motorhome level. Place the front axle only on the scale. Check the weight against the front gross axle weight rating.
2. Pull forward so that both axles are on the scale. Check the weight against the gross vehicle rating.
3. Pull forward again so that only the rear axle is on the scale. Check the weight against the rear axle weight rating.

NOTE: The motorhome must be setting on level ground when weighing the front or rear axle separately. The weight distribution will be greatly affected if this is not done and the weights will be inaccurate.

Compare scale weights with capacities as shown in the following example:
(This example is hypothetical only)

| | |
|------------------------------|--|
| GVWR | 14,500 lbs. |
| GVW | <u>12,570 lbs.</u> (Weight from Scale) |
| Carrying Capacity | 1,930 lbs. |
| Front GAWR | 5,000 lbs. |
| Front GAW | <u>4,000 lbs.</u> (Weight from Scale) |
| Front Axle Carrying Capacity | 1,000 lbs. |
| Rear GAWR | 10,000 lbs. |
| Rear Gaw | <u>8,890 lbs.</u> (Weight from Scale) |
| Rear Axle Carrying Capacity | 1,110 lbs. |

DRIVING

The motorhome is equipped with more than adequate brakes; however, the stopping distance may be much greater than that of an automobile. Keep this in mind at all times and be alert to changing road conditions.

It would be helpful to take the motorhome to a stadium parking lot and spend some time getting the feel of the wider and longer vehicle.

NOTE: Small fluorescent sports cones, available at sporting goods and toy stores, can be used to create turns and parking spaces. Dowels with small flags can be attached to make the cones more visible in the passenger's side rear view mirror. Afterwards, the cones can become an addition to your safety equipment.

Practice parallel parking, backing and turns. Have a person work with you, having them help guide you from both the passenger seat and a position outside using hand signals.

Another motorhome characteristic that needs to be taken into consideration immediately is the height. Read all "clearance" signs when approaching parking garages, drive-through windows and even underpasses on older highways. Also be careful of overhanging trees. Always use caution and when in doubt get out and look. Don't forget any added equipment that may protrude higher than the standard factory height.

Passing and pulling out into traffic in the motorhome is going to be different than driving your everyday vehicle. Generally speaking, it will take more time, thus, more distance to pass when it necessitates driving in an on-coming lane of traffic. It will take more time to clear an intersection from a dead stop. Allow more distance between vehicles.

Because the motorhome is longer and wider than other vehicles, more attention must be paid to cornering. Practicing in a stadium lot is helpful, as indicated earlier.

To assist with turning follow these steps:

Right Hand Turns:

- As the turn approaches, move as far to the left of your lane without crossing the center line.
- When you are prepared to make the turn, the left rear wheel should touch the center line of the lane and your hips should be parallel to the roadside curb of the corner in which you are turning into. This will aid in preventing a premature turn.
- Make the turn slowly checking the rear view mirrors frequently for proper clearance.

Left Hand Turns:

- Do not start turning until the center of the intersection is reached with your hips. If there are two lanes available, use the right hand lane. A vehicle on the left hand side is easier to see while turning.

HILLS, DALES & MAKING THE GRADE

Driving in hilly or mountainous terrain isn't any more difficult than driving on the flat plains of Kansas if the driver uses the vehicle properly. The main culprit of hilly or mountainous driving problems is overheating. Preventing problems is as simple as following your chassis manufacturer's driving instructions for this type of terrain. The main thing to remember is to reduce speed and drive in the appropriate gear, usually something other than drive.

TRAILER TOWING



WARNING: The motorhome fully loaded and the trailer, or towed vehicle, must not exceed the motorhome chassis' Gross Combination Weight Rating (GCWR). Consult with your selling dealer to determine the GCWR of the motorhome. Do not exceed the motorhomes Gross Combined Weight Rating (GCWR) or the hitch rating. The tongue weight, the weight pushing down on the hitch, must not exceed 10% of the hitch capacity.



WARNING: The towing vehicle's braking system is rated for operating at GVWR, NOT at GCWR. A separate functioning brake system is required for any towed vehicles or trailers weighing more than 1000 lbs when fully loaded. NEVER exceed the GVWR, or the GAWR specified on the motorhome certification label. Also NEVER exceed the weight ratings of the trailer hitch installed on the motorhome. Failure to heed any part of this warning could result in loss of control of the motorhome and towed vehicle or trailer and may cause an accident and serious injury. For specific towed vehicle braking requirements, consult the chassis owners manual.



CAUTION: Always use safety chains between the motorhome and the towed trailer or vehicle. Cross chains under the trailer tongue and allow slack for turning corners. Connect safety chains to the trailer or vehicle frame or hook retainers. Never attach chains to the bumper of a vehicle.



CAUTION: Tow bars or car dollies generally are made to travel in a forward direction only. Most towing equipment of this type is not designed for backing. Never attempt short back up distances with a tow bar or tow dolly. Damage to the motorhome, vehicle or towing device will result.

Four Winds International/Mandalay Luxury Division accepts no responsibility for damage to the chassis and other components resulting from towing loads greater than its designated class specifications. Also consider the gross combined weight rating of the motorhome before towing a trailer or vehicle. Towing an object such as a boat and trailer or a vehicle behind the motorhome results in added driving considerations that you must contend with.

TOWING PROCEDURES

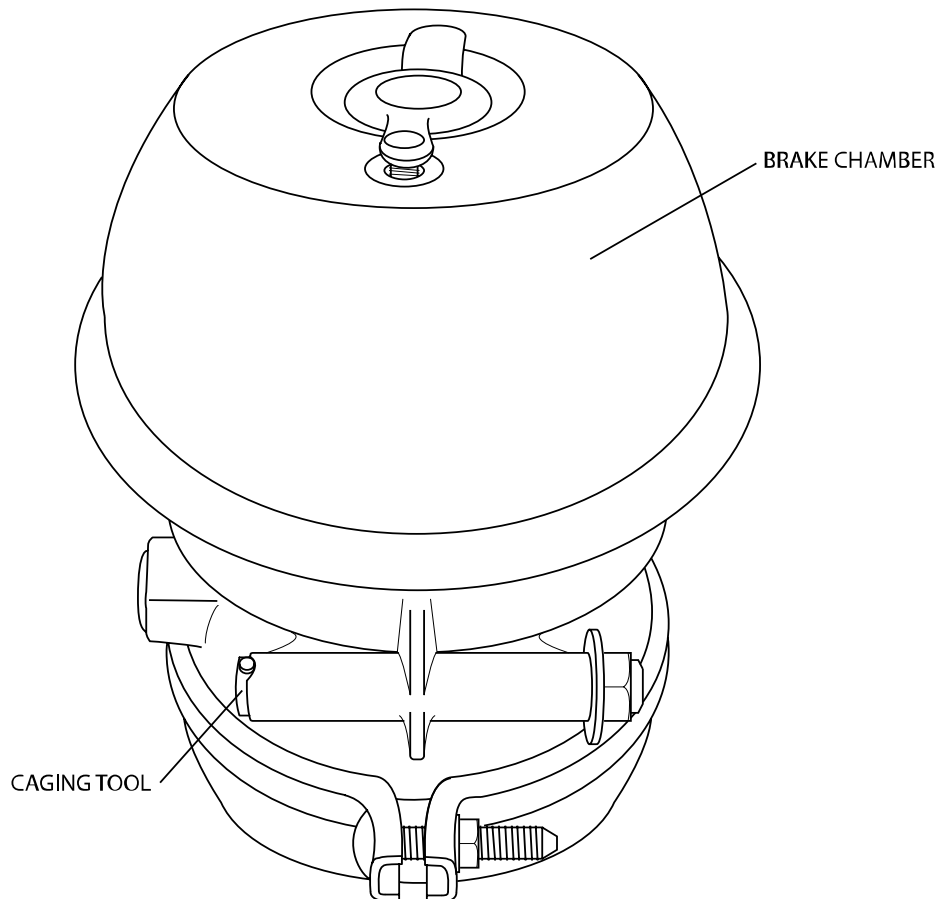
WARNING: In case the motorhome requires towing, ensure all precautions are followed. The drive shaft must be disconnected and the mud flap may need removed. The manufacturer **WILL NOT** cover damage to the motorhome caused by a towing company.



WARNING: Never tow the motorhome at a speed greater than 50 mph. Never allow anyone to ride in the motorhome while it is being towed. Make sure to review the chassis owner's manual for any additional requirements or cautions concerning the towing of the motorhome.

When the motorhome needs towed for service it is recommended to use a lowboy/landall type of trailer. If a tow truck is used it needs to have a support arm that goes under the motorhome and secures to the front axle. Inform the tow company of the axle weights and total weight of the motorhome. Other important information is the length of the motorhome, number of passengers and mile-post location.

If the motorhome loses air pressure, it will be necessary to disable the parking brakes for towing. Do not try to disable the brakes. The towing service will be qualified to cage the brakes properly for transit. The following drawing is for reference only.



If the motorhome needs to be towed:

- Secure any loose or protruding parts if the motorhome is damaged.
- Inspect the points of attachment on the disabled motorhome. If attachment points are damaged, select other attachment points at a substantial frame structural member.
- Never allow anyone to go under a motorhome while it is being lifted by towing equipment unless the disabled motorhome is adequately supported by safety stands.
- Do not tow the motorhome from the rear. Towing from the rear will severely overload the front tires and suspension possibly resulting in tire and/or front suspension failure. Rear frame extensions are not designed to support weight loads imposed by lifting the motorhome from the rear.
- If the rear wheels are disabled, place the motorhome on a flat bed trailer or use a heavy duty dolly under the rear wheels and tow the motorhome from the front.
- The drive shaft must be removed to prevent damage to the transmission. Secure the end caps to prevent losing or contaminating the needle bearings.
- The mud flap may need to be removed to prevent damage due to limited ground clearance.
- Review the chassis owner's manual for proper towing guidelines.
- Use an approved tow truck normally used for towing large vehicles.
- Tow with the parking brake released and the transmission in neutral.
- Make sure the front wheels are lifted at least four inches off the ground, and that the rear of the motorhome has adequate clearance.

EMERGENCY STOPPING

If an emergency ever requires you to be stopped, be sure to follow these guidelines:

1. Pull off the road as far as possible.
2. Select the Neutral position on the shift selector and apply the Parking Brake.
3. Turn on the hazard warning flashers.
4. Use three red warning indicators such as flares, reflectors, or lanterns as required by the Uniform Vehicle Code and Model Traffic Ordinance as follows:
 - a. Place the first indicator on the traffic side of the vehicle, directed at the nearest approaching traffic.
 - b. Place the second 100 feet behind the RV in the center of the lane and toward approaching traffic.
 - c. Place the third 100 feet in front of the RV in the center of the lane and away from the traffic approaching from behind.
5. Always stand off the road.

NOTE: Curves and/or hills may effect the safe placement of warning indicators.

FUELING THE MOTORHOME

For your convenience there are two fuel fills on the motorhome. They are located on both sides of the motorhome, towards the front of the unit. This allows access into filling stations from either side of the motorhome.

NOTE: Always remove the fuel cap slowly and pay close attention to the fuel recommendations outlined in your chassis literature.



WARNING: Be extremely careful when fueling the motorhome. Always shut off the engine, do not smoke, or use cellular phones and shut off all pilot lights before adding fuel. Fuel spills represent a serious fire hazard, and should be cleaned up immediately. Never restart the engine, or relight pilot lights while raw fuel is present. When weather gets cold or the motorhome has not been used for a while, a fuel anti-gel additive will be needed.

TRAVEL PREPARATION

Like any vacation trip, pre-planning will pay big dividends. In addition to routine trip preparations such as having newspaper delivery stopped and mail held at the post office, there are now more vehicle-related preparations than there are with an automobile.

CHASSIS CHECKS

Under Hood:

- Fluid levels (oil, power steering, radiator, transmission, windshield washer, etc.)
- Belts (tension and condition)
- Battery (electrolyte level if applicable, connections, charge)
- Hoses (clamps tight, condition, leakage)
- Seals, gaskets (leaks)

Exterior:

- Tire pressure/condition and lug nut torque
- Headlights, running and safety marker lights including brake and turn signal and also any trailer light connections
- Security of any auxiliary equipment such as TV and CB antennae, awning, etc.
- Windshield wiper blades
- Generator compartment
- Fresh and waste water connections/drains and supplies such as high pressure hose
- Liquid Petroleum Gas compartment/tank

Under Vehicle:

- Drive train condition, specifically leaks (U-joints, differential, transmission)
- Brakes, including lines, pads/shoes, seals
- Engine area for pan gasket or other leaks
- Anything unusual hanging or tangled with road debris such as tree limbs
- Tank condition (gas, fresh water, waste water)

Inside Driver's Compartment:

- Check operation of all systems, including: Wipers, windshield, horn, brakes, steering, transmission, heater, defroster, air conditioner, and seat adjustment.
- Also idle engine long enough to check cooling system and alternator operation. Be sure to turn on headlights and climate controls to see if alternator handles the additional drain on the electrical system (should not show discharge).

MOTORHOME SYSTEM CHECK

As an owner you now have the added responsibility to prepare the living quarters for a trip. Preparations include:

- Filling fresh water tank. In winter make sure that system is freeze protected.
- Check list of food, utensils and clothing needs.
- Check storage of all items, making sure that everything is secured and that heavy items are stored low so they don't fall.
- Check operation of stove and refrigerator.
- Check paperwork such as owners registration card, vehicle registration, proof of insurance, driver's license and names/phone numbers of individuals you are to contact during the trip, such as ranger stations.



WARNING: Pay careful attention to where and what type of flammable materials you store. Certain storage areas are clearly labeled DO NOT STORE COMBUSTIBLE MATERIALS. Examples of spark producing areas, depending on the motorhome model, are: base kitchen cabinets, front dinette base, exterior refrigerator service compartment, as well as refrigerator cabinet. Please use discretion as to what potentially dangerous products your motorhome contains while traveling. Be sure all canisters and bottle tops are secure and leak free.

FIRST SHORT TRIPS

Our suggestion is to take a weekend trip to a camp location that is close to home. Be sure to have a note pad and pen available to write down items you feel will be needed in the future as well as equipment that you may need to learn more about.

The experience gained from these short trips will assist you in determining the proper supplies and equipment you may need for your first long duration trip. It is understandably upsetting having to purchase a needed item on the road knowing that one is sitting at home unused.

Not all owner's need the same equipment or supplies. For one thing, North America presents a wide variety of climates and terrain. For another, personal needs and taste come into play.

Also, if most of your trips will be made in the summer and your shake down trip is made during some other season, there will be some adjustments to take into consideration. Talk to other owner's and learn from their experiences.

If you are an experienced owner it is still necessary to thoroughly read this manual. New and improved equipment is coming onto the market every day and, at the same time, not every motorhome manufacturer builds vehicles the same way.

This manual is packed with detail, however, after you have worked with the various systems during a couple of shake down trips, you will be capable of conducting a pre-trip check in less time than it takes to read this manual.

When preparing for your trip always consider vehicle weight when loading the motorhome.

Because of different options available, your motorhome may not include all of the systems in this manual.

DASH CONTROLS & INSTRUMENT PANELS

Thoroughly familiarize yourself with the various controls, instruments, and indicators located on the dash. Performance and safety can be enhanced by a driver who fully understands each one, and how to use them.

IMPORTANT: The following information is a quick reference guide for chassis functions, and is not a replacement for the chassis owner's manual. The chassis owner's manual furnished with the motorhome has complete information for operating and maintaining chassis functions.

NOTE: The appearance or placement of the gauges, instruments and controls may not exactly match the illustrations within the chassis owner's manual however, the instructions for their use will still apply.

TRANSMISSION CONTROL PANEL

R (Reverse):

Selection will display an "R". This selection provides one range for backing the motorhome.

D (Drive):

Selection will display a "D". This selection provides six forward ranges allowing the motorhome to accelerate to highway speeds efficiently and smoothly.

N (Neutral):

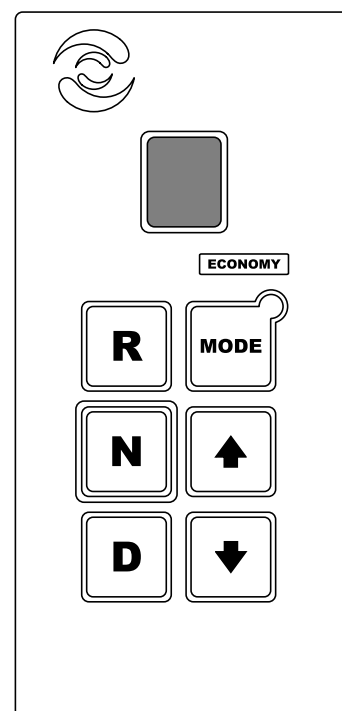
Selection will display an "N". This selection allows the engine to run without causing the vehicle to move (disengaged). It is also the selection used during engine starts.

UP ARROW / DOWN ARROW:

Used to select maximum gear that will be used (ex. when traveling down a mountain, a lower gear can be selected, such as 2nd and the motor will keep the coach at a lower speed rather than using the brakes constantly to slow the coach).

Mode:

Selects between normal operation and economy (when economy is selected an indicator light will illuminate and the coach will shift differently to conserve fuel).

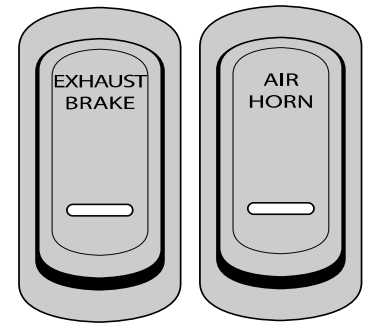
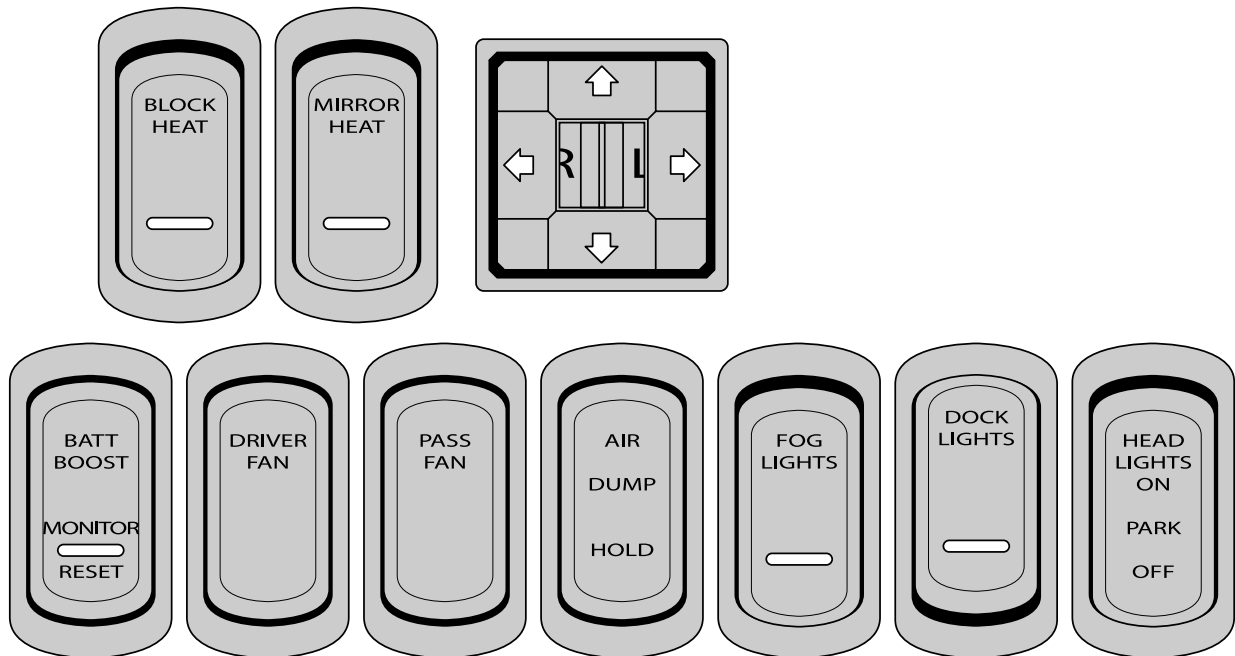


SHIFTER PANEL SWITCHES**Exhaust Brake:**

Enables or disables the engine braking aid. Refer to the Workhorse Chassis Owner's Manual for detailed information regarding the usage of the Exhaust Brake.

Air Horn:

Activates air horn system (press horn pad on steering wheel to sound air horn).

**DASH PANEL SWITCHES & CONTROLS****Block Heat:**

Activates the motorhome engine block heater (for use in cold weather).

Mirror Heat:

Activates heating element to defrost the outside rearview mirrors.

Mirror Control Button:

Used to adjust outside mirrors for visibility. Push the side selector left to adjust the curbside exterior mirror, or right to adjust the roadside exterior mirror.

Battery Boost/Monitor Reset:

Temporarily connects the coach and chassis batteries if either bank of batteries goes dead for some reason. This feature is designed to be used momentarily to start the engine. DO NOT hold the switch down for extended periods of time. overheating will occur causing serious electrical failure and damage to electrical components.

Driver Fan:

Provides power to the driver's side overhead fan.

Passenger Fan:

Provides power to the passenger side overhead fan.

Air Dump/Hold:

Used to dump air suspension prior to leveling the motorhome. Hold will stop the dump action.

Fog Lights:

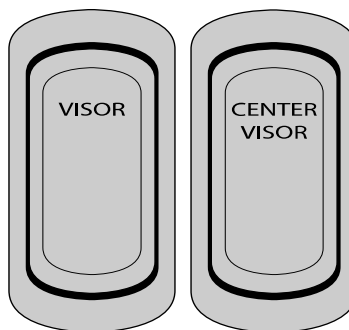
Switches fog lights on (fog lights will not function with high beams).

Docking Lights:

Switches side docking lights on or off which are located on the rear wheel wells.

Head Lights On/Park/OFF:

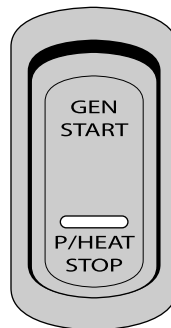
Turns park lights on (first position). Turns headlights and parklights on (second position).

**Visor:**

Raises or lowers the driver side visor.

Center Visor:

Raises or lowers the center visor.

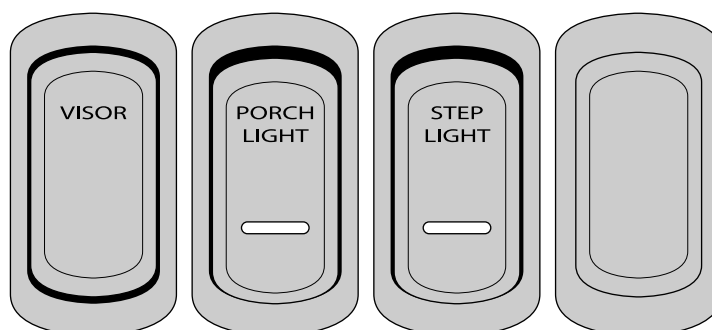
**Gen Start/Pre-Heat/Stop:**

Depress and hold the top of the switch to start the generator. Depress the bottom of the switch to stop the generator. Depress and hold the bottom of the switch to pre-heat the generator prior to starting.

PASSENGER ARMREST SWITCHES

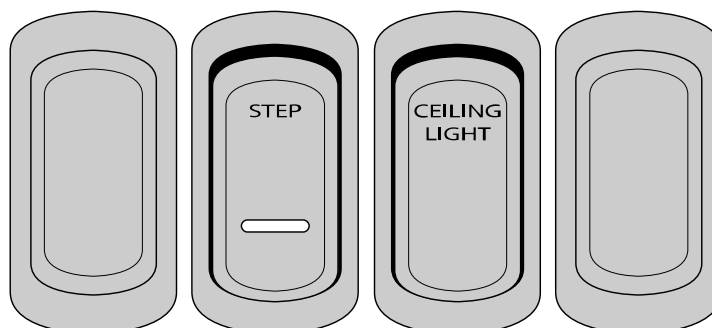
TOP

- **Visor:** Raises and lowers the passenger side power sun visor.
- **Porch Light:** Controls the exterior light on the door side of the motorhome.
- **Step Light:** Controls the entry step courtesy lighting.



FRONT

- **Step:** Activates power for the entry steps.
- **Ceiling Light:** Controls the front ceiling lights.
- **Main Awning (Optional):** Extends or retract the main patio awning.
- **Door Awning (Optional):** Extends or retracts the entry door awning.



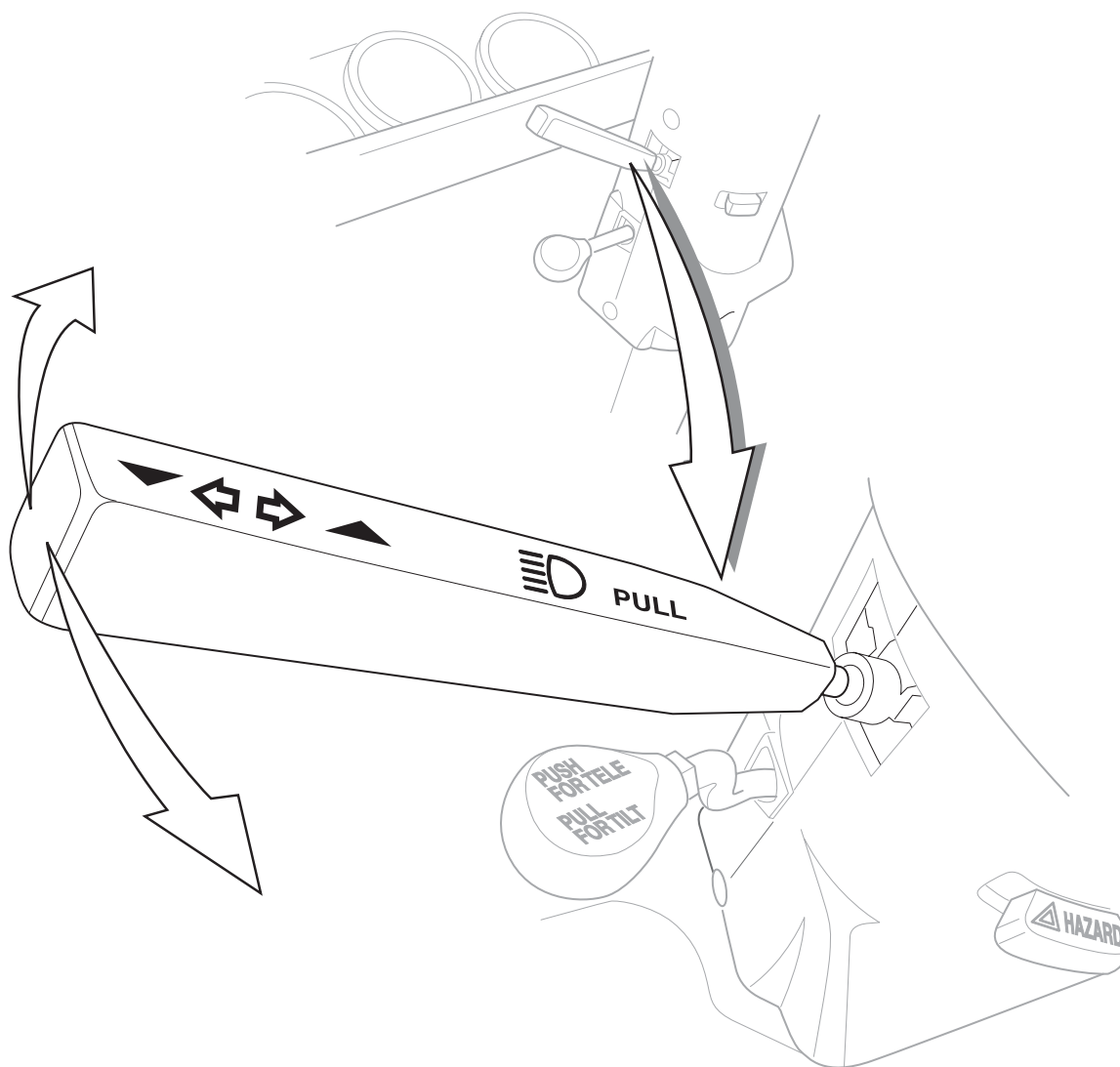
TURN SIGNAL/LANE CHANGE/HIGH-LOW BEAM LEVER

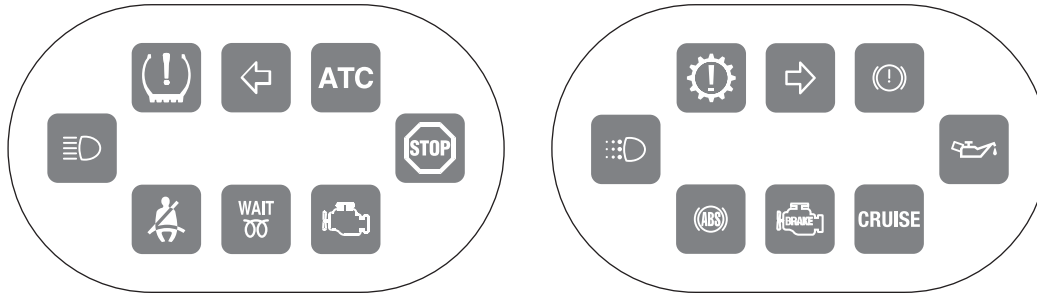
The lever on the left side of the steering column controls the turn signal with lane change feature, as well as the Headlamp high/low beam toggle.

The turn signal lever has four off-center positions, two positions upward (for right and two downward (for left). To signal a turn, move the lever all the way up or down. These are latching positions. The lever will stay in one of these positions until the steering wheel returns back to center (off) as the turn is completed.

To signal a lane change, raise or lower the lever to the first resistance point. This is not a latching position. If released, the lever will quickly return to the center (off) position.

To change the headlamps from low to high beams, pull the same lever used for turn signal operation up toward the driver and release the lever. This is a self-returning action. Repeating this toggle action will return to the low beams.



INSTRUMENT PANEL INDICATOR LIGHTS**TOP ROW****Tire Pressure:**

An optional chassis pressure monitoring system, which illuminates if pressure is too low in one or more of the tires.

Left Arrow:

Illuminates and flashes when the left turn signal is activated.

Automatic Traction Control (ATC):

Indicates that the ATC system is in action.

Check Transmission:

Indicates that a fault code has been recognized by the transmission ECU. If this light stays on have the motorhome serviced as soon as possible.

Right Arrow:

Illuminates and flashes when the right turn signal is activated.

Park Brake:

Illuminates when the ignition switch is in the ON position and the parking brake is set.

MIDDLE ROW**Headlamp Symbol:**

Illuminates when the high beams are in use. The fog lamps will not work when the high beams are on per federal regulation.

Stop Engine:

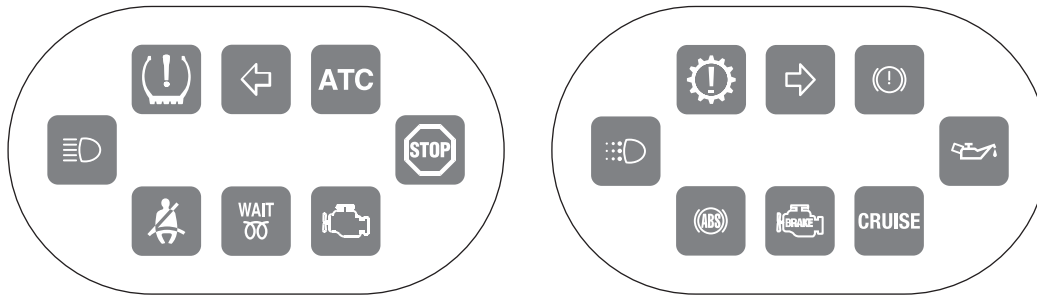
Illuminates when the engine ECU (Electronic Control Unit) detects a fault within the engine. Shut the engine down immediately. Be sure to pull off the road out of the flow of traffic.

Daytime Running Lamps:

Provide headlamp illumination at reduced brightness during daylight.

Engine Oil Pressure:

Indicates when oil pressure is low. An audible alarm will also sound when this indicator lamp is illuminated.

**BOTTOM ROW:****Seat Belt:**

A lamp with audible alarm indicates that the seat belt in the driver's seat has not been buckled.

Wait to Start:

Illuminates when the air intake pre-heater is on.

Check Engine:

Indicates that a fault code has been recognized by the engine ECU. If this light stays on have the unit serviced as soon as possible.

ABS:

Will illuminate and go off every time you start the motorhome as a self-test. If the light does not come on and go off after starting the coach or stays illuminated while driving, have the motorhome serviced as soon as possible.

Auxiliary Engine Brake System:

Illuminates with the switch in the ON position.

Cruise:

Illuminates when the cruise control feature is engaged.

NOTE: For detailed information regarding these indicator lights and their meanings, refer to the chassis manufacturer's owner's manual.

SMART WHEEL**LEFT SIDE:****Headlamp Flashing:**

To turn the high beam headlights ON or OFF.

Cancel:

To turn cruise control OFF and save speed setting.

ON/OFF:

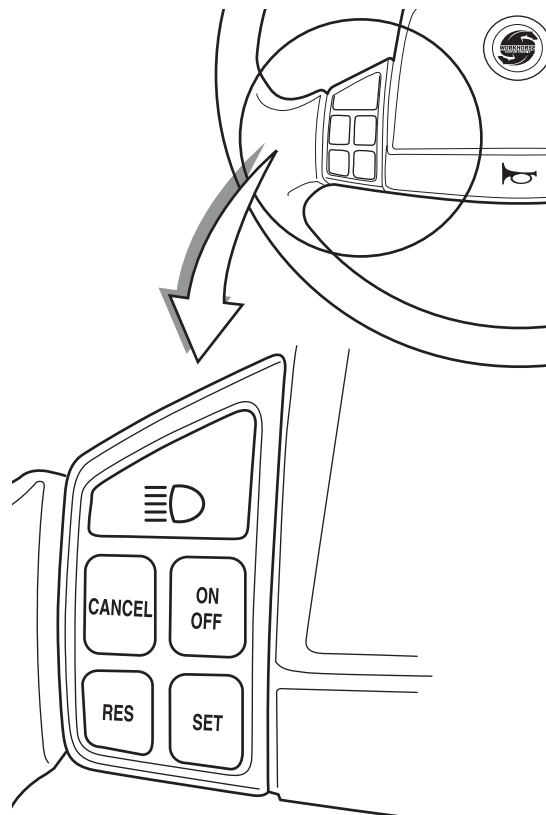
To turn cruise control function ON or OFF.

Resume (RES):

To resume to previous speed setting.

Set:

To capture desired speed setting.

**RIGHT SIDE:****Markerlamp:**

To turn the markerlamps ON or OFF.

Wipers OFF:

To turn the wipers OFF.

Wipers HI-LO:

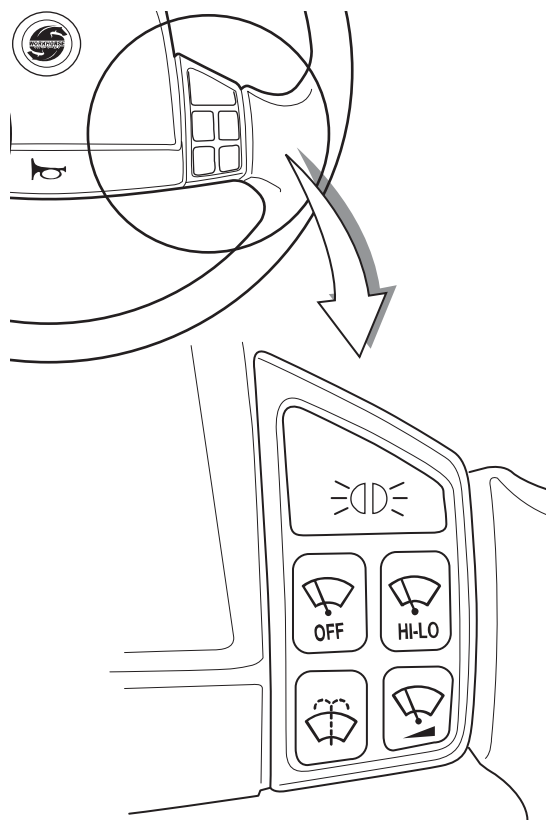
To toggle the sweep speed high or low.

Wiper Fluid:

To activate wash flow, press and hold button.

Wiper Delay:

To change wiper cycle delay intervals.



NOTE: For detailed information regarding these buttons and their meanings, refer to the chassis manufacturer's owner's manual.

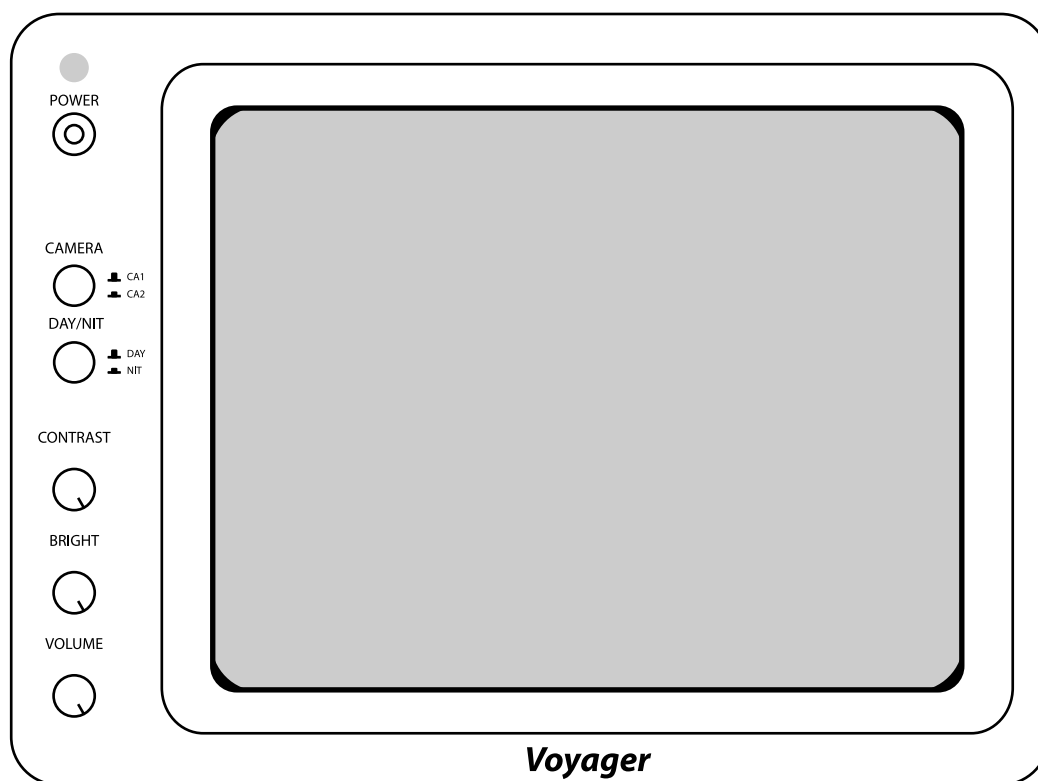
REAR VISION SYSTEM

This system gives a televised view of what is behind the motorhome. It is used as an aid in backing the motorhome, and can also be used for greater field of vision when driving in heavy traffic.

The motorhome ignition must be on to power the system. The picture is automatically activated when the motorhome is shifted in reverse. Push the standby switch down to receive the picture at any time. Push the switch out to receive in reverse gear only. Picture brightness can be controlled by rotating the reception switch. A contrast control is also provided to adjust the picture further. Adjust by rotating the switch.

Contrast and bright controls are provided to compensate for changes between day and night use. Push the light/darkness switch in for day use, push again to release for night use. Never operate the monitor in the on position for extended periods of time, this may result in an "image burn" on the monitor.

Make sure to check the mirrors when driving and backing, for a more complete field of vision. The camera is equipped with a wide angle lens that can initially present an image that may be deceiving. Make sure to practice backing in a safe place, using the monitor to become accustom to it's operation



HYDRAULIC POWER LEVELERS (OPTIONAL)

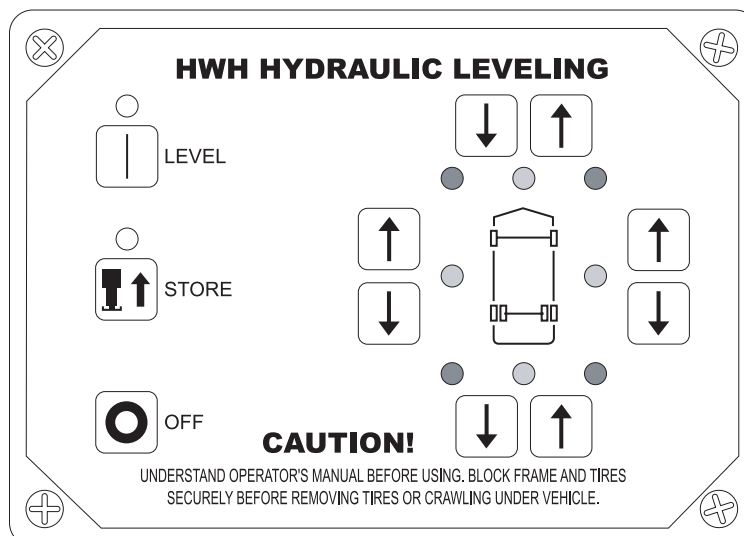
The hydraulic power leveling system allows you to quickly level the motorhome from the driver's seat by adjusting levers and watching a panel of indicating lights. The following instructions are general instructions. Refer to the hydraulic power leverlars owner's manual for additional information.

Leveling Procedure:

1. Place the transmission gear selector in the neutral position, apply the park brake, and block the wheels. Ensure the front tires are pointing forward and not to the left or right.
2. Turn the ignition switch to the accessory position and dump the air from the air suspension using the air dump switch, located on the left side of the dash panel.
3. Once the air is dumped, press the level button on the HWH control panel. The level mode light should illuminate.
4. A lit yellow level light indicates low points. Push an extend (up arrow) button to extend jack pairs according to a lit yellow indicator light.

NOTE: Ensure all four jacks are in contact with the ground before leveling the motorhome. Always level the motorhome from sided to side, before leveling the motorhome front to rear.

5. After the motorhome is leveled, jacks that have not been used may be extended until they touch the ground. These jacks should only lift the vehicle slightly as they are only used to provide additional stability. Do this by pushing the front and/or rear extend buttons. Do not use the right or left extend buttons.
6. Push the OFF button on the touch panel.
7. Turn the ignition switch OFF.



NOTE: The arrows indicate the motorhomes movement during the leveling process, not the leveling jack movement.

NOTE: While in transit ensure the "STORE" LED light is illuminated.

NOTE: Read the HWH Owner's Manual before operating the leveling system.



CAUTION: *Block the frame and tires securely before attempting any maintenance under the vehicle. Do not use the leveling jacks or air suspension to support the weight of the vehicle while under the vehicle or changing tires.*



CAUTION: *Keep all people clear of the motorhome while operating the leveling system.*



CAUTION: *Never place hands or other parts of the body near hydraulic leaks. Oil may penetrate skin causing severe injury or death. Wear safety glasses when inspecting or servicing the system to protect eyes from dirt, metal chips, or leaks, etc. Follow all other applicable shop safety practices.*



CAUTION: *Do not over-extend the rear jacks. If the weight of the vehicle is removed from one or both rear wheels, the vehicle may roll forward or backward off of the leveling jacks.*

NOTE: The leveling system should be cycled once a month or whenever the motorhome is used, to keep the system in operating condition.

INTERIOR CONTROLS & OPERATIONS

MONITOR PANEL

Located above the entry door, the monitor panel provides quick and easy access to several different motorhome systems.

POWER INVERTER & SMART EMS:

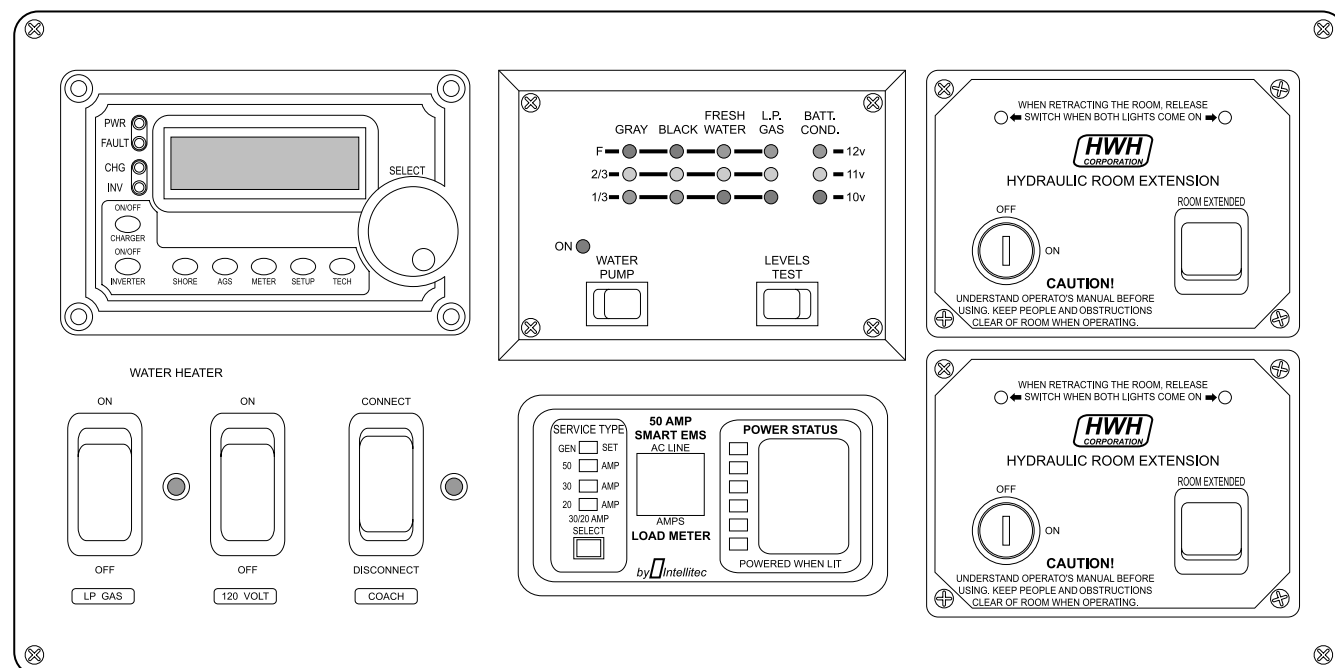
Refer to the “Electrical Systems” section for a detailed description of the Power Inverter Remote panel, as well as the Smart EMS panel.

TANK CAPACITIES:

The monitor panel allows you to quickly check the levels in the fresh water and waste water tanks. Electrical sensors at various points on the tanks send signals to the monitor panel. To check fluid levels, press and hold the test switch designated for the tanks, and read the level indicators on the panel. The indicator is proportioned in thirds with each indicator light illuminating to the level that the tank contains. Indicator lights and there meanings:

- Red - Full
- Yellow - 2/3 Full
- Green - 1/3 Full
- None - Empty

Sometimes, residue on the sides of a tank, or water with a low mineral content will give a false reading. Check the levels occasionally when you are sure of a tank's contents to double check the accuracy of the monitor panel.



COMMON FIELD PROBLEMS

Inaccurate Holding Tank Level Readings:

The accuracy of two wire holding tank monitoring systems can be adversely affected by dirty tanks, unusual mineral content in the water, or improper holding tank probe location. These conditions can cause the monitoring system to have oversensitive (read higher than actual level) or under sensitive (read lower than actual level) readings.

Oversensitive Readings:

Oversensitive readings can occur as a result of scum buildup on the tank walls, abnormally high mineral content in the water, or incorrectly located holding tank probes. In these situations, the monitoring system indicates higher levels than are actually present in the holding tank. Certain cleaning products and food by-products can build up on the inside walls of the holding tanks, producing a layer of scum that can cause the monitoring system to read higher than the actual level. To correct this problem, the holding tanks should be cleaned periodically (consult dealer for cleaning instructions). If the problem persists after cleaning the holding tank, the ground probe can be moved farther away from the other tank probes. The increased distance between the ground probe and the other probes will decrease the sensitivity of the monitoring systems.

Under Sensitive Readings:

Under sensitive readings can occur if the mineral content of the water is abnormally low or if the holding tank probes are located incorrectly. In this case, the monitoring system indicates lower levels than are actually present in the holding tank. This problem can be corrected by moving the ground probe closer to the other probes. Moving the ground probe closer increases the sensitivity of the monitoring system.

The Ventline Adjustaboard™:

In response to requests from the field for a means to adjust monitor sensitivity without relocating holding tank probes, Ventline has developed the Ventline Adjustaboard™ (patent pending). This adjustable circuit board allows for field adjustments to monitor sensitivity. As tank conditions or water mineral content changes, the monitor circuitry may be made more or less sensitive as required.

SWITCHES

- **Water Heater LP:** Switches water heater to LP Gas mode.
- **Water Heater 110-volt:** Switches water heater to 110-volt mode.
- **Coach Disconnect:** Connects or disconnects house batteries during usage or storage.
- **Water Pump:** Turns the water pump ON or OFF (Refer to the “Water Systems” section under the heading “Fresh Water System” for more information).
- **Level Test Switch:** Press and hold to check tank levels as well as the LP Gas level.

SLIDEOUTS

In order for the flush floor slideout to level properly when extended, the slideout will tilt while in motion. During travel the slideout travels up and then down the flush floor slideout ramp.

NOTE: Refer to the HWH Hydraulic Space Maker Room Extension System Operator's Manual for complete details and trouble shooting guide.

ROOM EXTENSION PROCEDURE



CAUTION: Operating the room with any room-locking device locked can cause personal injury and vehicle damage. It is the operator's responsibility to ensure that all room-locking devices are disengaged before operating the room.



CAUTION: Keep people and obstructions clear of room when operating. The Pilot and Co-Pilot seats must be in their most forward position, with seat backs in the vertical setting.

NOTE: Perform the slideout room operation with the air suspension system full.

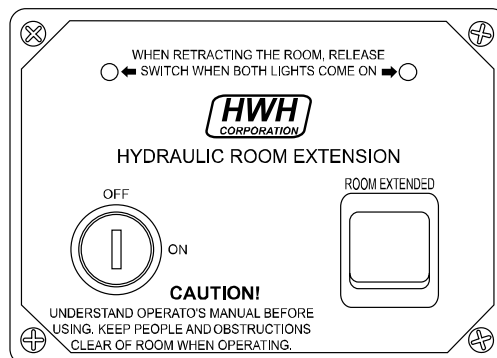
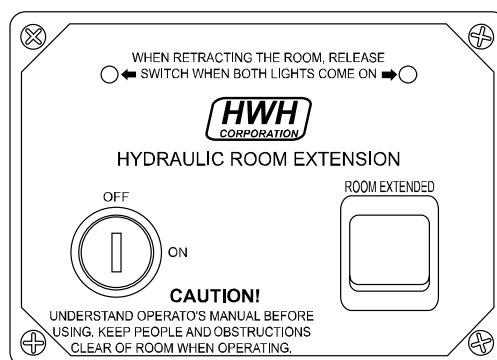


CAUTION: Extensive damage could occur to the slideout room and awning when extending the slideout room in snow, sleet, ice or freezing rain. In such conditions, if the slideout room is extended, clear the awning and ensure free movement prior to operating the slideout room.

NOTE: Make sure there is adequate clearance to fully extend the room.

NOTE: The motorhome must be level before extending the slideouts.

1. Apply the parking brake and activate the coach battery disconnect switch.
2. Insert the SLIDEOUT CONTROL PANEL KEY and turn the KEY SWITCH to the "ON" POSITION.
3. To extend the room, press and hold the ROOM CONTROL SWITCH in the "EXTEND" POSITION. The room-locking device will disengage and retract into the slideout housing. When the room is fully extended, continue to hold the switch for an additional 4-5 seconds then release the ROOM CONTROL SWITCH.
4. Turn the KEY SWITCH to the "OFF" POSITION.



NOTE: The bottom of the room will begin to move prior to the top of the room.



CAUTION: Do not hold the room control switch in the “extend” position for more than ten seconds after the room is fully extended or stops moving. If either side or the room stops moving, release the room control switch immediately.

NOTE: Releasing the ROOM CONTROL SWITCH will halt the operation of the room.



CAUTION: Debris trapped under the slideout room could result in damage to the floor. Continuous operation of the slideout could cause a drain on the coach batteries and damage to the slideout motor.

NOTE: Do not leave the slideout in the extended position during severe weather. Conditions such as high winds or heavy rain may cause damage to an extended slideout.

ROOM RETRACTION PROCEDURE



CAUTION: Keep people and obstructions clear of room when operating The Pilot and Co-Pilot seats must be in their most forward position, with seat backs in the vertical setting.

1. Ensure the parking brake is engaged.
2. Insert the SLIDEOUT CONTROL KEY and turn the KEY SWITCH to the “ON” POSITION.
3. To retract the room press and hold the ROOM CONTROL SWITCH in the “RETRACT” POSITION. The room-locking devices will extend from the slideout housing and then engage. When the slideout control panel illuminates both LED light indicators, release the ROOM CONTROL SWITCH.
4. Turn the KEY SWITCH to the “OFF” POSITION.
5. Remove the KEY to prevent undesired operation of the room.

NOTE: Once the LED's are on, the system will take 2-3 minutes to reset before the rooms will extend again.

NOTE: The top of the room will come into contact with the body of the motorhome first. The leading edge of the room floor will rise up as the bottom of the room is drawn in.

NOTE: Releasing the ROOM CONTROL SWITCH will halt the operation of the room.



CAUTION: *Dirt and grit trapped under the slideout room could result in damage to the floor. Continuous operation of the slideout could cause a drain on the coach batteries and damage to the slideout motor.*

MAINTENANCE OIL LEVEL

It is important that all rooms are fully retracted, except the bedroom slideout which should be fully extended, before checking the hydraulic oil level. To check the oil supply, remove the breather cap from the top of the hydraulic oil reservoir and read the oil level on the dipstick. Use DEXRON III® or a high quality multi-purpose automatic transmission fluid.

WINDOWS

Windows that open in the motorhome are operated by sliding them back and forth or up and down, depending on the style and location of the window. To operate, pivot the latch to release it from the locked position, and slide the window to open. When closing, slide the window fully closed, and pivot the latch back to the fully locked position. The screens will also slide open if required for an emergency exit.

NOTE: Check window sealant during normal coach washing and as per the “Care & Maintenance” section of this manual.



WARNING: *To avoid exhaust gas entry into the motorhome, keep windows closed when the chassis or generator engines are running.*

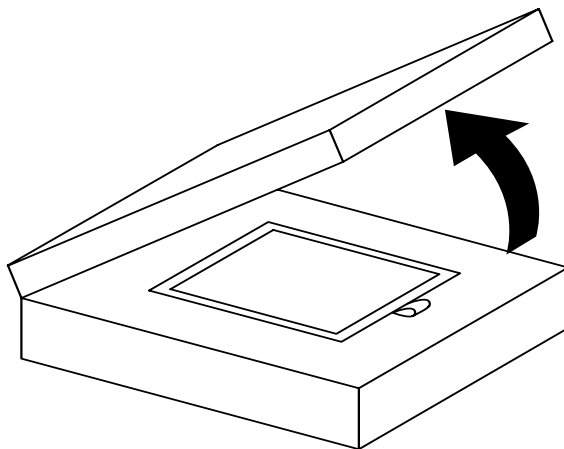
DOORS, DRAWERS, & STORAGE COMPARTMENTS

Cabinet and closet doors within the motorhome have door fasteners, or pneumatic stops, which prevent them from accidentally opening during travel. Drawers throughout the motorhome have travel stops which keep them from sliding out when in motion, under normal driving conditions.

Make sure before operating the motorhome that all cabinet doors and drawers are closed, and cabinet contents are secure. Retract and secure sliding doors in the bath area, as well as the bath door, to prevent noise and/or damage while traveling.

UNDER BED STORAGE:

There is a large storage area located under the bed. It is accessed by first lifting the mattress up, then locate the pull strap and lift the storage door up. Make sure before lifting, that there is nothing on the bed that will restrict its movement, or add extra weight.



Pneumatic struts on both sides of the storage compartment aid both in lifting, and holding the mattress in the upright position. When storing items under the bed, be sure to leave space in the storage compartment for the struts when the bed is closed.

When closing the storage compartment door, there will be some resistance felt at first, because of the struts. Press down on the storage compartment door, and lower the mattress.



WARNING: Keep hands and fingers clear of the storage door edges while closing, as to avoid pinch points.

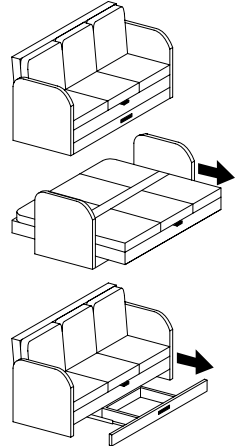
SEATING, TABLES & ADDITIONAL BEDS

Depending on the floor plan and the options selected for the motorhome, seating will include some combination of the following:

EASY BED SOFA & LOVE SEAT:

Sofa to Sleeper:

- Release the sofa locking mechanism by pushing the black handle, located under the center seat cushion, to the right.
- Pull out on the seat base until the seat base and backrest are flat.
- Fold the seat belts out of the way.



Sleeper to Sofa:

- Push the seat base towards the back rest until the locking mechanism engages.
- Position the seat belts for use.

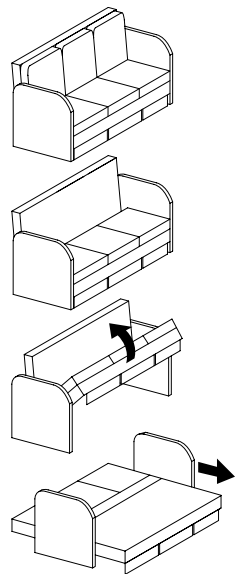
Storage Access (Optional):

- Release the handle latching mechanism located under the center seat cushion along the kick panel.
- Pull the storage drawer out to access stored items.
- To close, push the storage drawer into the sofa until the latching mechanism engages.

MAGIC BED SOFA (Optional):

Sofa to Sleeper:

- Remove the back rest cushions.
- Raise the sofa seat base until the seat base and backrest form a "V" shape by lifting up from the center of the sofa just below the seat cushions.
- Pull out and push down on the seat base until the seat base is flat.
- Fold the seat belts out of the way.
- Flip the seat cushions back to expose the mattress.



Sleeper to Sofa:

- Pull the seat cushions back to cover the mattress.
- Lift the seat base up until the seat and back rest form a "V" shape.
- Push back and down on the seat base.
- Position the seat belts for use.
- Replace the back rest cushions.

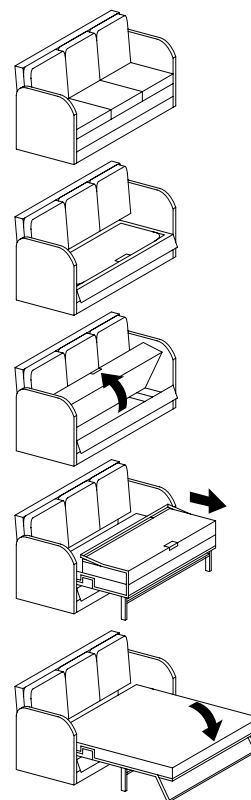
HIDE-A-BED SOFA (Optional):

Sofa to Sleeper:

- Remove the seat cushions.
- Release the lock on the right side of the metal bar, grasp the front metal bar and lift up, pulling out on the bar slightly until the leg of the bed is resting on the floor.
- Fold the seat belts out of the way.
- When the legs of the bed are on the floor another lifting bar will be exposed, grasping and pulling the lift bar will open the bed fully.

Sleeper to Sofa:

- Remove all bedding from the hide-a-bed.
- Grasping the foot of the hide-a-bed in the center using the metal lifting bar, lift the front portion of the lifting bar to raise and then lower the hide-a-bed back into the sofa base.
- Position the seat belts for use.
- Replace the seat cushions.



J-LOUNGE SOFA (Optional):

The J-Lounge will seat 3 adults, and by using the built in seat belts, can be used while in transit.

RECLINER (Optional):

The recliner operates just like a standard household recliner. By pulling the footrest lever, the footrest will extend. Since a seat belt is not provided on the recliner it is not to be used while in transit.

EURO RECLINER WITH OTTOMAN (Optional):

To recline, sit down, grasp the armrest and lean back to recline. Since a seat belt is not provided, do not use the Euro Recliner while in transit.

BOOTH DINETTE:

The dinette can also be converted into an additional bed if required, to convert, lift the table top off of the two support posts. Remove the support posts from the floor and lay them down between the seats. Insert the table top between the seats on the ledges provided. Loosen the seat cushion from the velcro fasteners and slide together to form the bed. Reverse this process when reconverting to the dinette configuration.

FREE STANDING DINETTE (Optional):

Unhook the latch and slide table out to increase table space. Since the free standing dinette chairs are not permanently attached to the floor, and not equipped with seat belts, they should not be occupied while the recreation vehicle is in motion. These chairs should be stored securely while the vehicle is in motion.

EXTERIOR OPERATIONS

ENTRY DOOR

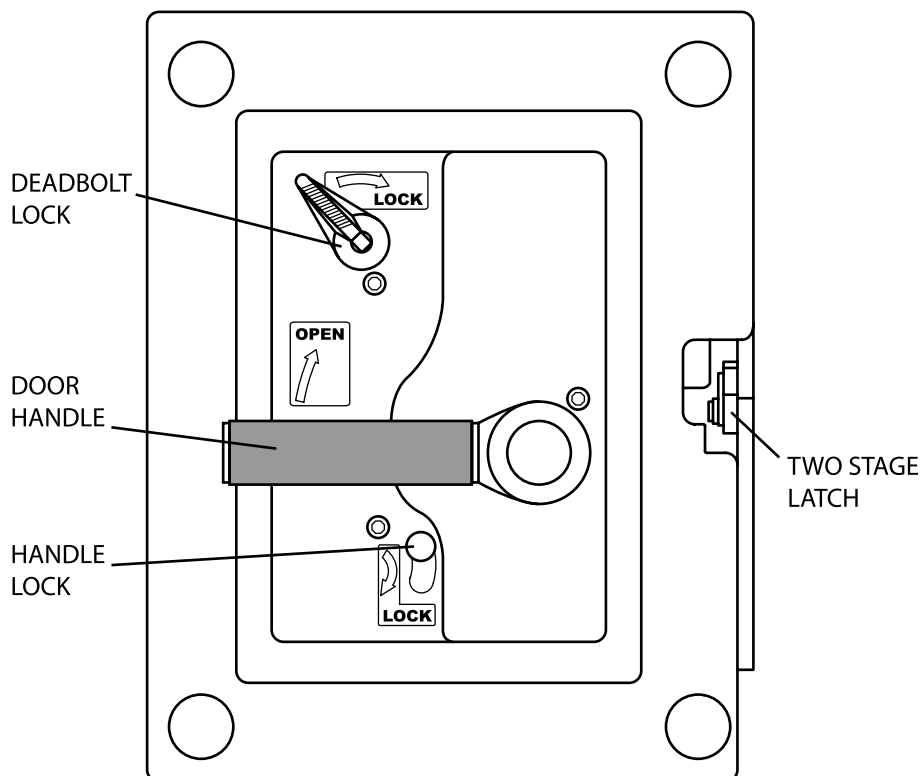
The entry door is designed to provide security and comfort while traveling in the motorhome. The entry door utilizes three separate locks for these reasons. The first locking system is the door handle, the second is the independent deadbolt lock, the third lock is the automatic air lock. When the motorhome shift selector is placed in DRIVE or REVERSE, the entry door will automatically engage the air lock mechanism. This lock's primary feature prevents accidental opening of the entry door while in transit. Secondly, the lock also improves the seal around the door, reducing wind and exterior noise from entering the motorhome while traveling. The lock will automatically disengage when the shift selector is placed in the NEUTRAL position. An audible noise will be heard when the air lock mechanism engages and disengages.

The entry door is equipped with a movable latch system. This latch system is designed to keep the latch from binding if parked on an uneven surface causing the door to become wedged within the door frame. The door latch also incorporates a primary and secondary latching system. This ensures secure and safe latching.

NOTE: Separate keys for both the latch and deadbolt locks are provided. Keep a record of the key numbers in a safe place, should it become necessary to have duplicates made.

SCREEN DOOR

The screen door can be used with the entry door, or independently while parked. A sliding panel on the screen door permits access to the latch handle on the outer door to prevent unnecessary handling of both doors.



POWER ENTRY STEP

WARNING: Make sure before exiting the motorhome, that the step is activated and/or extended. Due to the height of the motorhome, you may accidentally slip or fall if attempting to exit without use of the step. If the step will not operate, use extra care when exiting. Never activate the step when someone is using it, and be sure to keep hands, feet, children, and pets away from the mechanism when activated.

When the power step is activated, it extends and retracts automatically when the door is opened or closed. There are two ways to control the operation of the step:

Switch Panel — Power to the step, provided by the chassis batteries, may be turned on and off with the rocker switch located just inside the door. When on, the step will extend whenever the door is opened, and retract when the door is closed. The step may be kept in the extended position by turning the switch off after the step is lowered. To maintain the battery life this switch should be turned off while in storage.

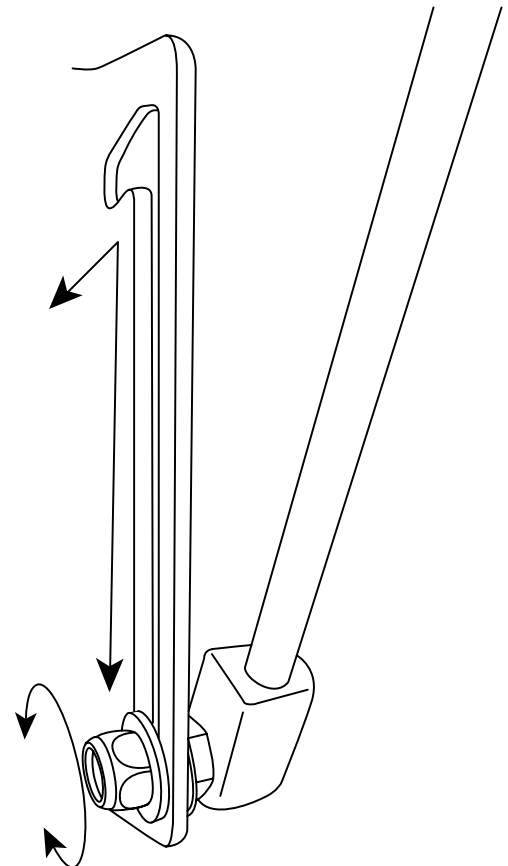
Ignition Switch — Whenever the ignition switch is in the ON position, the power step is automatically activated. This will prevent accidentally driving with the step extended, since it will retract with the door closed.

STORAGE COMPARTMENTS

The motorhome is equipped with numerous exterior storage compartments. The storage compartment doors are equipped with gas struts which assist with opening and holding the doors in the open position, if these struts become weak, contact your dealer for proper replacement. If the wrong size strut is used it could cause damage to the door.

On compartment doors located under the slideout rooms there are adjustable gas struts, these will allow the door to open at two different angles. One position can be used to open the door at 90° from the closed position (when slideout is extended), and the other setting is to open the door greater than 90° from the doors closed position.

To adjust the gas struts, loosen the strut anchor nut, located on the strut bracket, and position the strut in the desired bracket inlet. Tighten the strut anchor nut. Repeat procedure for the other gas strut as well. Do not close the compartment door until both gas struts are secure and in the same inlet setting.



Do not overload outside storage compartments with heavy densely packed items. Remember that any weight added to the motorhome effects the overall vehicle weight. Also remember to check side to side weights, since putting an extremely heavy item on one side or the other will effect proper load distribution.

Keep any emergency items stored in outside storage compartments easily available, where they can be reached without unloading the entire contents of the compartments.

NOTE: Make sure that all compartment doors are closed, latched, and contents secure before starting and moving the motorhome.



CAUTION: When closing the storage doors make sure that hands and fingers are clear of hinges and openings.

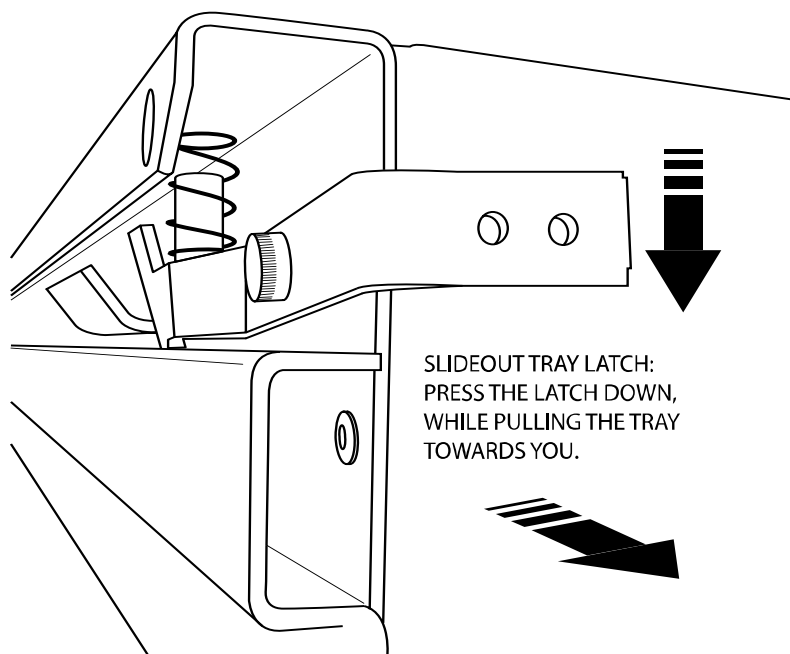
STORAGE COMPARTMENT SLIDEOUT TRAY (OPTIONAL)

The optional slideout tray allows the stored payload to slide outward for easier access to those items. The motorhome must be level before operating the slideout tray. To release the slideout tray from it's locked position, press the latch handle down to disengage the locking mechanism, while pulling the tray towards you.

NOTE: The slideout tray load capacity is 800 lbs.



WARNING: The motorhome must be level when releasing the slideout tray mechanism. If the motorhome is not level the tray can abruptly slideout possibly causing serious bodily injury.



REAR LADDER/ROOF ACCESS

The exterior rear ladder provides access to the roof for maintenance of the roof and roof mounted items only. When ascending and descending the ladder, ensure the ladder is clear of debris, such as water, ice and other slippery substances. Always wear shoes that provide good traction, and do not wear sandals or other types of slip-on footwear when ascending or descending the ladder.



WARNING: Do not climb on or walk on the roof while wet. The roof could be very slippery causing you to fall, which can result in serious injury or death. Do not use the roof as an observation platform or storage area, as it is not designed for these purposes.



The rear ladder maximum weight capacity is 250 lbs.

TELEVISION ANTENNA



WARNING: Prior to raising the antenna, visually inspect for any obstructions or overhead electrical wires. Damage to the antenna, severe shock, personal injury or death can occur from inadequate clearance.

To Raise the Antenna:

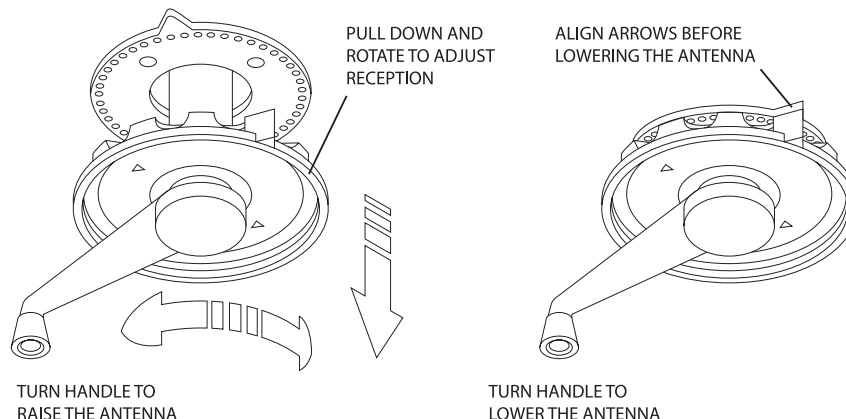
- Rotate the crank handle clockwise to raise the antenna.
- Pull down on the outside directional wheel and rotate the antenna until the best picture is obtained.



WARNING: Do not move the motorhome with the antenna in a raised or partially raised position. Damage to the antenna, the worm gear, or the motorhome roof may result.

To Lower the Antenna:

- Pull down on the directional wheel and align the arrows together.
- Rotate the crank handle counterclockwise to lower the antenna fully into the cradle. Ensure the antenna is properly stowed before traveling.



AWNINGS

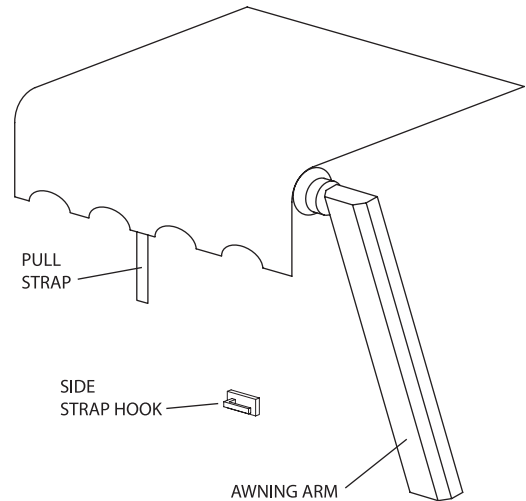
WINDOW AWNING:

To Extend:

- Hook loop of pull strap with awning rod and pull awning, reel assembly and side arms to extend fully away from the motorhome.
- Hook pull strap on side strap hook, remove the awning rod from pull strap and store.

To Retract:

- Hook awning rod on pull strap, remove pull strap from side strap hook and slowly allow awning to retract.
- Remove awning rod from pull strap and store.



MANUAL ENTRY DOOR AWNING:

To Extend:

- Place the hook of the crank into the eye of the gear.
- Turn gear counter-clockwise to unroll the awning.

To Retract:

- Place the hook of the crank into the eye of the gear.
- Turn gear clockwise to roll awning up (case is self locking).

AUTOMATIC ENTRY DOOR AWNING (Optional):

To Extend:

- Press and hold the remote switch (located on the front of the passenger arm rest) in the extend position until the awning is fully open.
- Release switch to prevent awning from rolling up backwards.

To Retract:

- Press and hold the remote switch in the retract position until the awning is fully closed.

NOTE: In the event of power loss or awning motor failure the Automatic Entry Door Awning can be retracted by following one of these procedures. If you do not feel comfortable performing these procedures, contact the nearest authorized service center for assistance. Do not drive the motorhome with the awning in the extended position.

Loss of 12 Volt Power:

Remove the left-end cover and disconnect the motorhome wiring. Use and 12 VDC axillary power to close the awning (reversing the wires may be required).

Awning Motor Failure:

Remove the left-end cover and disconnect the wiring. Remove the fasteners (3/8 socket will be required) that secure the awning to the sidewall, then slide the awning towards the front of the motorhome and out of the rail. Once out, the awning can be collapsed and held together with tape.

NOTE: Removal of the awning from the motorhome requires more than one person.

NOTE: For detailed information regarding the Entry Door Awning refer to the A&E Systems, Oasis Automatic and Manual RV Door Awning System Installation & Operating Instructions Manual.

SLIDE OUT AWNING:

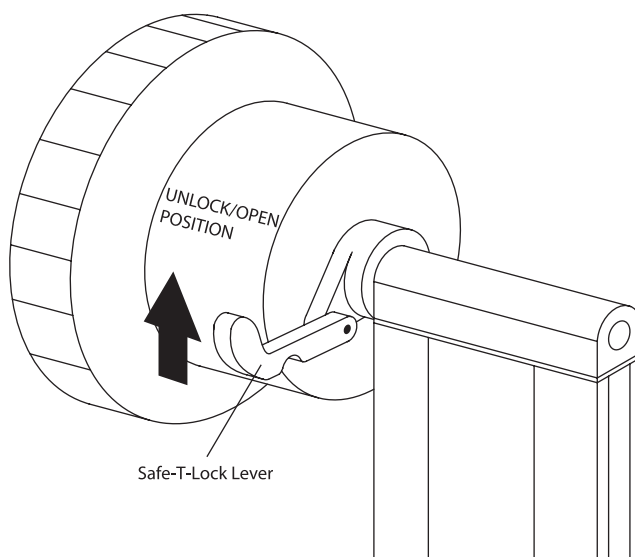
The Slideout Topper will automatically open and close as the slideout room opens and closes. Because the awning is level, water may puddle on top of the canopy. As the slideout room is closed and the awning rolls up, these puddles may spill over the sides of the awning.

NOTE: For detailed information regarding the Slideout Topper Awning refer to the A&E Systems, Slide Topper Installation & Operating Instructions Manual.

MANUAL PATIO AWNING:

To Extend:

- Release both travel straps (one on each arm, about midway up) by squeezing the travel strap buckle to pull both pieces apart.
- Using the provided awning rod, rotate the Safe-T-Lock lever up to the UNLOCK/OPEN position.
- Hook the awning rod into the pull strap loop securely and pull the awning out. Once extended, slide the pull strap to the right and wrap the strap around the awning arm.



NOTE: Prior to closing, remove tie downs and screen if used. Ensure that the travel strap and buckle are clear of the back channel.

To Retract:

- Unwrap the pull strap from the awning arm and slide it slightly to the left.
- With one hand, firmly grip the awning pull strap and gently pull down, while at the same time, using the awning rod to rotate the Safe-T-Lock to the UNLOCK/CLOSE position.
- While holding the pull strap firmly, hook the awning rod into the pull strap loop and slowly allow the awning to retract, controlling the speed with the awning rod in hand.
- Once the awning has fully retracted, reconnect the travel straps and tighten by pulling on the loose end of the strap.

AUTOMATIC PATIO AWNING:

To Extend:

- Press and hold the remote switch (located on the front of the passenger arm rest) in the extend position until the awning is fully open or utilize the remote control.

NOTE: Do not press more than one “EXTEND” button at the same time. Awning will not work and/or may cause control box fuse to blow.

To Retract:

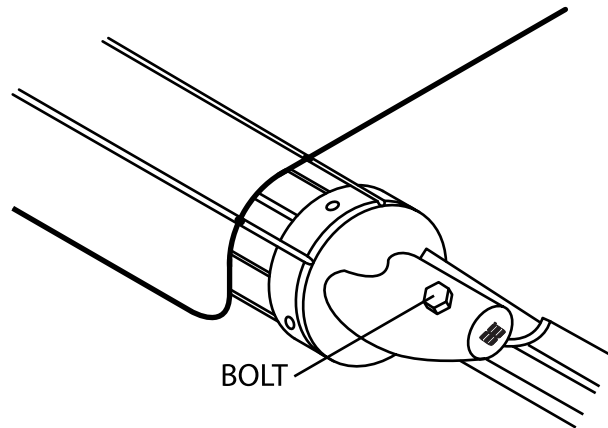
- Press and hold the remote switch in the retract position. When awning is fully closed release the switch.

NOTE: Do not press more than one “RETRACT” button at the same time. Awning will not work and/or may cause control box fuse to blow.

NOTE: In the event of power loss or awning motor failure the Automatic Patio Awning can be retracted as explained below. If you do not feel comfortable performing this procedure, contact the nearest authorized service center for assistance. Do not drive the motorhome with the awning in the extended position.

Manually Closing the Automatic Awning:

- Two people will be needed to perform this procedure.
- Slide the provided pull strap into the utility slot of the Fabric Roller Tube Assembly.
- Make sure that one person is securely holding onto the pull strap, while the other person removes the bolt in the top of the right top casting. Once the bolt is removed the FRTA will want to roll in on its own. This is why it is very important to hold the strap securely.



- While holding the strap, let the FRTA slowly retract until it is in the closed position.
- Once the awning is in the closed position, align the hole where the bolt was removed and reinstall to secure the awning. The bolt must be reinstalled to prevent the awning from opening during travel.

NOTE: The awning must be serviced by a Dometic Service Center or a qualified service technician before attempting to open the awning after this procedure has been performed.

NOTE: If threatening weather approaches, you need to retract all awnings. If the awnings are rolled up wet, open them back up as soon as possible to allow them to dry. Also, do not drive during periods of high winds.

HEATING & AIR CONDITIONING

DASH PANEL HEATER/AIR CONDITIONER



WARNING: The air conditioning system contains refrigerant 134a under high pressure and should be serviced by qualified personnel only. Improper service methods could cause serious personal injury.

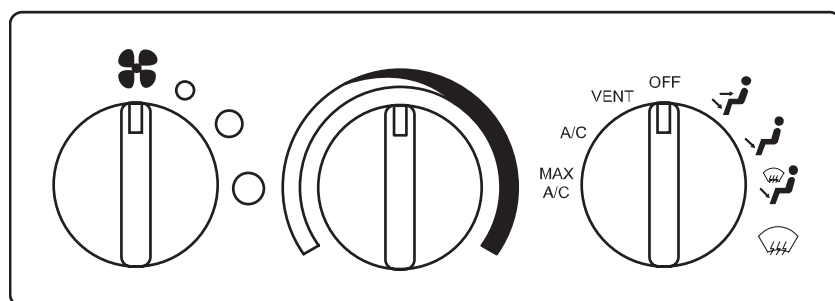
The motorhome is equipped with the industry's highest performance integrated heating/air conditioning system. While this system is much more powerful than those used in passenger cars, it is not capable of heating and cooling the entire motorhome. This system is designed to provide windshield defrost as well as heating and cooling for the front seat occupants only. By following the operating instructions and tips, this heater/air conditioner will provide many years of comfort and dependable service.

The heater/air conditioner unit is located beneath the dash on the passenger side of the vehicle with heating and cooling coils located on the outside of the firewall. In most modes of operation the unit takes fresh air from outside, and heats or cools it before discharging into the motorhome. Only when operated in the MAX A/C mode does the system take air from inside the motorhome.

Control Panel Operation - The control panel enables the driver to control the temperature, volume and direction of the air discharged from the heating/air conditioning system.

Blower Control - One of the best ways of controlling temperature is by changing the speed of the blower. The blower knob (left of center) provides 4 speeds in any mode except OFF.

Temperature Control - The center knob controls the temperature of the discharge air. Turn the knob to the right (red area) for warmer air, and to the left (blue area) for cooler air.



A/C CONTROL PANEL

OPERATING FEATURES

The air conditioning system is designed to operate in all modes except VENT, FLOOR and OFF. This provides significant moisture, dust and pollen removal for enhanced passenger comfort. Use MAX A/C and HI blower for quick cool down. A lower blower speed produces cooler air. Close all windows and vents to hot, humid outside air.

NOTE: The A/C will not function if the outside air temperature is below approximately 40° Fahrenheit.

NOTE: In the event control vacuum is lost, the system is designed to discharge through the defrost vents.

AIR DISTRIBUTION – MODE CONTROL

To achieve the maximum comfort in the motorhome, the air must be directed where it is needed. The mode switch (right of center) gives the driver the ability to select where the air will flow.

**MAX
A/C**

Air is drawn from the passenger compartment (Recirculated Air) and discharged through the dash louvers. These louvers can be adjusted for maximum comfort. This setting should be used to reduce interior humidity.

A/C

Outside air (Fresh Air) is drawn into the system and discharged through the dash louvers.

VENT

Outside air is drawn into the system and discharged through the dash louvers. For enhanced passenger comfort, upper-level ventilation air is also discharged through the defrost opening.

OFF

The blower motor does not operate in this mode. The fresh air inlet door closes, minimizing outside air infiltration into the vehicle.



Outside air is drawn into the system and discharged through the dash louvers, floor and defrost outlets. The A/C system operates in BI-LEVEL mode.



Outside air is drawn into the system and discharged through the floor outlets. In some models a small amount of air is directed to the windshield for defrost. The A/C system does not operate in FLOOR mode.



Outside air is drawn into the system and discharged through the floor and defrost outlet. The A/C system operates in MIX mode to provide windshield defogging.



Outside air is drawn into the system and discharged through the defrost outlets. The A/C system operates in DEFROST mode to provide windshield defogging.

NOTE: The discharge air will heat up faster if the blower is operated on lower speeds, until the engine is hot. For windshield de-icing use DEFROST mode.

CARE AND SERVICE

Keep the condenser and radiator free of bugs and debris. During periods of little use, operate the A/C system monthly to keep the compressor lubricated. Periodically inspect belts and hoses for wear and proper tension.

WARRANTY/SERVICE

If repairs are necessary during the terms of the motorhome warranty, please contact the nearest authorized Mandalay dealer for service. In the event repairs are necessary during transit, contact Mandalay Customer Service. Certain individual parts of the Heating and Air Conditioning System such as the compressor, dryer and condenser are covered under the chassis manufacturer's warranty.

NOTE: Components covered under the Presidio Limited Warranty must be Original Equipment Manufacturer (OEM) parts. The installation of after market components, or unauthorized repairs may void the warranty.

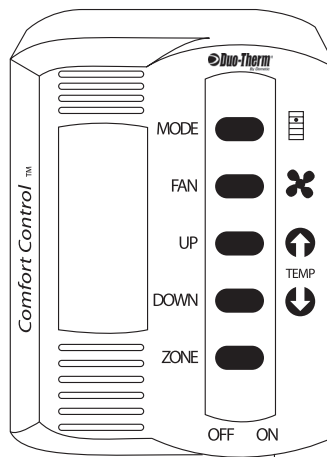
OVERHEAD VENTS

Vents are provided in the recreation vehicle to circulate fresh air and exhaust odors.

Bathroom Power Vent – The power bath vent has dual controls to operate both opening and closing, as well as the exhaust fan. A hand crank controls opening and closing and adjustment of the vent cover, while a push button turns the exhaust fan on and off. Make sure to turn the fan off before closing the vent. Also be sure to remove any debris that falls into the vent that may restrict its operation.

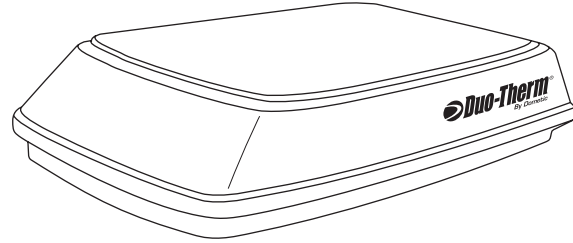
CLIMATE CONTROL

The comfort control panel operates the individual components which together create the motorhomes HVAC (Heating, Ventilation, and Air Conditioner) system. For a detailed description of how to operate and understand the climate control panel refer to the Duo-Therm owner's information.



ROOF MOUNTED AIR CONDITIONERS

The motorhome is equipped with two roof mounted air conditioner's. These air conditioner's operate from 110 volt AC only, either from shore power or the on-board generator. Air conditioner functions are controlled by the comfort control panel.



RETURN AIR FILTERS:

Clean the return air filters as needed for the environment in which they operate. The return air filters are inside the air intake vent covers located on the motorhome ceiling. Never operate the air conditioners without the return air filters in place. Doing so may result in the build-up of dirt on the evaporator core affecting the performance of the air conditioner.

To Clean:

- Remove the vent cover and filter.
- Wash the filter and cover in warm soapy water.
- Rinse the filter and cover thoroughly with fresh water. Allow to dry.
- Reinstall the filter and cover

NOTE: Do not use harsh chemicals or solvents to clean the filter.

FURNACE

The furnace and all related components are 12 volt DC operated, using LP Gas as the fuel source. The furnace functions are controlled by the comfort control panel.

The following items must be done for the furnace to operate.

1. The LP Gas tank must be filled and the house batteries should be fully charged.
2. The LP Gas valve located on the LP Gas tank must be in the open position. The valve should only be opened or closed by hand. If the valve cannot be turned by hand, have the valve checked by a qualified service technician.
3. All power to the appliance should be on. Breakers and 12 volt fuses are located at the foot of the bed.
4. Set the thermostat to the desired function and temperature setting.

NOTE: This appliance is equipped with an electric ignition device which automatically lights the burner. Do not try to light the burner by hand.

ELECTRICAL SYSTEMS

The electrical power supply provided for the motorhome is a dual operating system with 110 volt AC and/or 12 volt DC.

The 110 volt power may be provided by either connecting the motorhome to an outside power source when parked, or by use of a motorhome generator. When the 110 volt system is operational, power also passes through a system inverter, allowing the full use of all 12 volt functions in the motorhome.

110 volt appliances in the motorhome include the refrigerator, ice maker (optional), air conditioning, TV's, VCR, DVD player, microwave oven, inverter, washer/dryer (optional), and water heater. The refrigerator and water heater also have the option to run on LP Gas when 110 volt is not available. All other lights and functions are supplied with 12 volt power.

When it is not possible to access 110 volt power, the 12 volt system functions can be supplied by the coach batteries. The chassis battery is protected by a battery isolator controller to prevent discharge from excessive electrical consumption when motorhome is not running. The coach batteries are recharged by the power inverter when the motorhome is attached to an outside 110 volt power source, or by the generator when it is running, and by the chassis alternator when the chassis engine is running.

SHORE CORD

A 50 amp shoreline power cord is provided to connect the motorhome to a grounded external power source. The shore cord is located in a compartment on the roadside of the motorhome behind the rear wheels. There is a porthole in the bottom of the compartment to allow the power cord to be in use while leaving the storage compartment door closed.

If 50 amp service is not available, connect the proper electrical adapters to the shore cord. Only UL approved adapters are to be used. The most common adapter is a 50-30 amp adapter. Always connect the adapter to the shore cord prior to making the connection to the outlet. Never use a two-wire extension cord, a cheater adapter with the ground pin removed, or install a lower amperage plug on the power cord in place of the molded plug.

When connecting or disconnecting from a grounded external power source, always turn off the shore power breaker to the power supply outlet. This will prevent accidental shock and flashing of electrical contacts. After connecting the motorhome to the grounded external power source, wait a few minutes for the inverter/charger to stabilize charging of the batteries before starting large AC loads such as the air conditioners.



WARNING: Connecting the shore cord to a non-grounded or improperly grounded power source can result in dangerous and possibly fatal electric shock. Due to the potential danger in failing to heed this warning, the motorhome manufacturer cannot be responsible should damage, injury, or death result from failure to connect the power cord to a properly grounded power source.



WARNING: If shore power service is limited to 15 or 10 amps, use of light duty extension cords and electrical adapters will create a voltage loss through the cord and at each electrical connection. Line voltage loss and the resistance at each electrical connection can be a hazardous combination. Damage to sensitive electronic equipment may result.

CIRCUIT BREAKERS

The 110 volt system is protected by circuit breakers which automatically shut the circuit off if the circuit load is too heavy, or a short circuit occurs. If a circuit breaker has been tripped, do not reset the breaker until the cause of the problem is identified and corrected.

The generator also has one or two circuit breakers, and a DC fuse on the generator control panel. If an interruption in generator operations occurs, check to see if any of these have been tripped. Consult the manuals provided with the generator before attempting maintenance on the generator.

NOTE: Some electrical appliances may have their own circuit breakers. If there is an interruption in electrical service of an appliance, consult the manual for that appliance to determine what action to take.

GROUND FAULT CIRCUIT INTERRUPTER

The 110 volt outlet in the bath is equipped with a protective circuit interrupter. The ground fault circuit interrupter (GFCI) is designed to break the flow of current to the protected outlet when an imbalance of current is detected. Imbalances include electrical leakage in an appliance such as a shaver or hair dryer that have developed a weak spot in electrical insulation. The possibility of electrocution exists when using a faulty appliance, while at the same time being in contact with an electrical ground such as water, plumbing, or the earth. If an imbalance is detected, the GFCI will trip and shut off power to the outlet. Even with GFCI protection, the electrical shock will still be felt, but to a lesser degree. It also does not protect against short circuits or system overloads. Circuit breakers in the main panel which supply power to the circuit, will trip if either of these conditions exist.

The GFCI receptacle should be tested initially when the motorhome is purchased and at least monthly thereafter.

To test the circuit, use the following procedure:

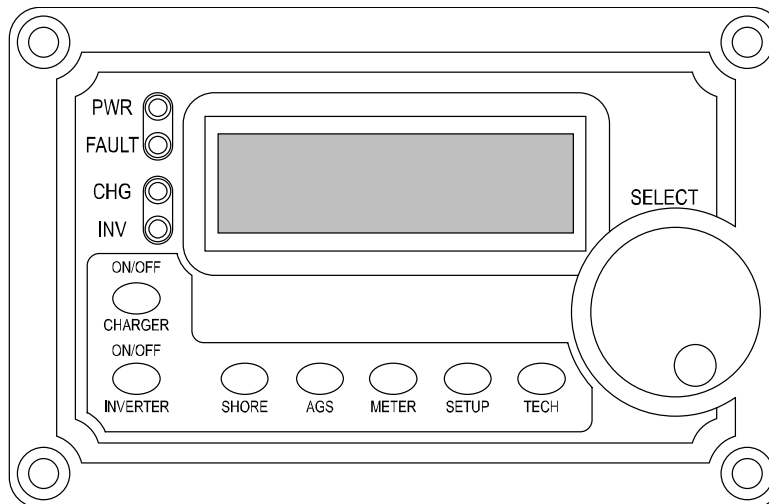
1. Make sure power is on to the circuit. A test light or a 110 lamp will work.
2. Push the test button.
3. The red reset button should pop out.
4. All power should be interrupted to outlets that are protected by the GFCI.
5. Verify by plugging in a light at these outlets, and pushing in the reset button. If the red reset button does not pop out after pushing the test button, or GFCI circuit continues to trip, or if the power is not interrupted to the test light, immediately turn off power at the circuit breaker panel and have a qualified electrician check it out.



WARNING: Even with the GFCI protection, persons with heart or other health problems may still be seriously affected by an electrical shock. The GFCI outlet is not a substitute for good electrical safety. It does not protect against contact of the hot and neutral wire at the same time.

POWER INVERTER (OPTIONAL)

A remote control located above the entry door allows you to customize the operating parameters of the inverter/charger, thus maximizing performance and increasing the life of the batteries. The remote also controls all of the operating and programming functions. The inverter/charger owner's manual outlines all of the functions in an easy to use format.



When doing any type of service to the generator, make sure to disable the AGS (Auto Gen Start) function so the generator will not automatically start while being serviced. This function, like the rest, can be turned off or on at the remote control above the entry door.

NOTE: The following is a brief overview of the remote control. For more information refer to the inverter/charger owner's manual.

Rotary Knob - Used to move between menus to select program options. Turn clockwise to increase selections and counterclockwise to decrease selections. Push the knob to “save” the selection displayed in the LCD screen.

Inverter ON/OFF:

Used to switch the inverter function ON and OFF. The green “INVERTER” LED turns ON and OFF with the switch.

Charger ON/OFF:

Used to switch the charger function ON and OFF. The green “CHARGER” LED turns ON and OFF with the switch.

Soft Keys:

Press the soft keys to access the required function. Then use the rotary knob to scroll through the selections. Press the rotary knob to save the selection. Options include:

- **Shore**

Sets the appropriate breaker size for the incoming shore power and is used to control the amount of AC amps the battery charger uses from HOT 1 IN. Selection options are 5, 10, 15, 20, 30, and 50 amps.

- **AGS**

Turns the optional Auto Gen Start function ON and OFF. Selection options include OFF, ENABLE, and TEST.

- **METER**

This function is display only and indicates DC volts and DC amps.

- **SETUP**

Configures the inverter/charger. Options include:

- Search - Used to set the watts at which the inverter will come out of sleep mode.
- LBCO - (Low Battery Cut Out) - Used to set the DC voltage level to shut down the inverter to protect the batteries from over discharge.
- Battery Size - Used to select the approximate battery bank capacity.
- Battery Charge Rate - Used to set the maximum charge rate during bulk, absorption or float charge.
- Battery Type - Used to select battery type for the battery charge profile.
- Contrast - Used to adjust the LCD contrast.
- AC Dropout Voltage - Used to select the AC threshold (60, 90, and 100 VAC) where the inverter transfers from AC line to inverter mode.

NOTE: Additional information for “setup” is in the inverter/charger owner’s manual.

- **TECH**

Reserved for future, this feature is used for troubleshooting the inverter/charger.

The inverter only supplies power to specific outlets within the motorhome. Those outlets are listed below by floor plan.

- 39A - Bedroom vanity area outlet, kitchen GFCI outlet above the sink, flush floor overhead outlet, microwave outlet, and front and rear televisions.
- 39B - Bedroom vanity area outlet, kitchen GFCI outlet above the sink, flush floor overhead outlet, microwave outlet, and front and rear televisions.
- 39C - Bedroom vanity area outlet, kitchen GFCI outlet above the sink, flush floor overhead outlet, microwave outlet, and front and rear televisions.

Please see manufacturer instructions for further information and instructions.

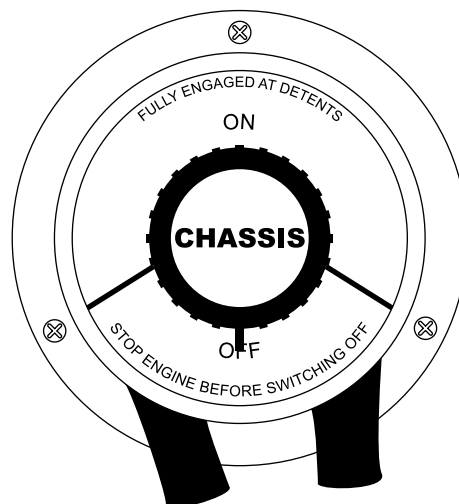
BATTERY ISOLATOR CONTROLLER

The battery isolator is designed to protect the coach batteries and chassis batteries from discharging each other. This is done by separating the two sets of batteries until a charging source is available. Once a charging source of at least 13.3 volts has been detected, the isolator controller will then connect both sets of batteries so they will charge. There are three possible charging sources that will provide the necessary voltage to connect the batteries. The three charging sources are; the chassis alternator, the generator which will power the inverter, and shore power which will also power the inverter. The inverter has a built in charger that will work off both generator and shore power to charge the batteries. Unless the controller senses a charge from one of the above sources the two sets of batteries will not be connected. Some additional characteristic of the isolator system include:

1. Delays connecting the coach batteries to the charging system for approximately 15 seconds to allow the alternator time to reach full charging ability.
2. If the charging voltage drops below 12 volts for a period of 4 seconds due to low idle speed and/or excessive load, the isolator will disconnect the coach batteries until the voltage returns to a level of 13.3 volts for about 10 seconds.
3. In the event the automotive battery is low or fully discharged, it will be necessary to press and hold the auxiliary start button located on the dash. By pressing the auxiliary start button, power from the coach batteries will assist with starting the motorhome.

BATTERY DISCONNECT SWITCHES

The battery disconnect switches allow you to easily disconnect the coach and chassis batteries from electrical circuits, preventing unwanted discharge during short periods of non-use. For long periods of non-use: Walk through the RV and manually shut off all 12 volt powered items by their independent power switch, then turn the coach and chassis disconnect switches to the OFF position. The coach switch is mounted in an overhead cabinet above the passenger seat. The chassis switch is located within the battery compartment.



There are three main uses for the battery disconnect switches:

1. Prevent unwanted discharge of batteries during extended periods of storage.
2. Prevent shorts or fire hazards while working on the 12 volt electrical system.
3. Can help protect the batteries in the case of overcharging.

When activating, place the switch for the desired battery system in the ON position. This battery system will now be operational.

The disconnect switches must be in the ON position while plugged into shoreline power to charge the batteries.

Place the coach switch in the OFF position to disconnect 12 volt circuits.

NOTE: It is not necessary or advisable to use the battery disconnect switches as a substitute for turning off the various 12 volt applications available in the motorhome.

NOTE: If 12 volt functions are not working, be sure to check that the battery disconnect switch has been placed in the ON position.

BATTERY CHARGING

The inverter also operates as a battery charger when it is connected to a 110V power source. If the battery is below its full charge, the inverter charger will begin operation at a rate that reflects the level of discharge. When the battery is again fully charged, the inverter charger drops its charge level back to a maintenance level to keep the battery fully charged.

If for any reason you charge a battery with a source outside the motorhome, make sure to follow the rules of battery maintenance and safety outlined in this section. Also observe these additional safety precautions related to battery charging.

1. Disconnect the battery from the motorhome.
2. Check electrolyte before charging. Be sure that each cell is properly filled with distilled water.
3. Make sure to use care when connecting and disconnecting the cables from charger. A poor connection can cause an electrical arc, which can result in an explosion.
4. Remove the battery vent caps before charging, and make sure that the electrolyte does not splash out as a result of charging too quickly.
5. Check literature supplied by the battery manufacturer, and follow warnings or cautions outlined.

BATTERY MAINTENANCE

The batteries for the motorhome are located on the passenger's side in a rear storage compartment designated for the batteries. This compartment is water tight for the proper storage of batteries.

It is important to make sure that the batteries are kept charged. Take time to turn off all lights or other 12 volt functions when not in use. Connect the motorhome to a 110 volt power supply when possible, instead of draining the batteries.

The charge condition of the batteries can be checked with the monitor panel. To check, press and hold monitor test switch while reading the charge level on the battery gauge. Charge levels indicated are divided into sections from weak through fully charged.

Checking the condition of a battery at regular intervals is very important and will help insure its proper operation. Here are some recommendations for checking and servicing batteries.

1. Keep the battery mounted securely. Vibrations cause early failure of many batteries.
2. Check the electrolyte level of the batteries at regular intervals.
3. Keep the battery terminals clean.
4. Check the outside of the battery for cracks. If you find cracks replace the battery.
5. Watch for overcharging.
6. Make sure the battery hold downs and carrier are kept clean and free of corrosion.

When removing a battery, disconnect the battery ground terminal first. When installing a battery, always connect the grounded terminal last.

When a battery needs to be replaced, make sure to replace it with a battery of the same characteristics as the original equipment. Consult your dealer for advice on battery replacement.

NOTE: The coach battery disconnect must be in the ON position in order to charge the batteries.

NOTE: Deep cycle batteries require a slow charge, resulting in charge times which may exceed 18 hours. When charging the deep cycle batteries, use shore power and allow the inverter to charge the batteries to a full charge.

BATTERY SAFETY



WARNING: Always wear safety glasses when working with batteries.



WARNING: BATTERIES CAN EXPLODE! Do not smoke or expose any battery to electric sparks or flame. Batteries when charging or discharging generate hydrogen. Hydrogen and air is a very explosive mixture.



WARNING: Do not short across the battery terminals. The spark could ignite the gases. Do not wear metal jewelry or a watch when working on a battery.



WARNING: Before doing any work on electrical systems, disconnect battery cable and the 110 volt power cord. Do not reconnect the cables until all work has been completed. This will avoid the possibility of shorting or causing damage to electrical components or shock to the servicing person.



WARNING: Battery electrolyte is a corrosive, poisonous, sulfuric acid. Avoid contact with skin, eyes, clothing, or any painted surface.

12 VOLT FUSES

INTERIOR 12 VOLT SYSTEM

A 12 volt DC distribution panel is located next to the 110 volt circuit breakers. The panel contains circuits with replaceable fuses for protection of the motorhome 12 volt lines. If any line is loaded beyond the capacity of its fuse, the fuse will “blow”. A portion of the 12 volt load on the line must be turned off to reduce the total load on the line to a level below the capacity of the fuse. Replace the fuse with the same size fuse. DO NOT replace with larger fuse than indicated.

If the reduction of load on the line does not stop the “blowing” of the fuse, there may be a “short” somewhere along the 12 volt line, or at a non-fused 12 volt component on the line. Check the 12 volt line and any components along the line. Locate the “short” and take necessary steps to repair it. If you cannot locate the problem, have a qualified electrician check it out.

It is a good idea to keep additional fuses on hand in the motorhome. Replacement fuses are available at most service stations, hardware and automotive supply stores. Remember that the replacement fuse must be the same amperage rating as the original.

AUTOMOTIVE 12 VOLT SYSTEM

The primary point to keep in mind about the unit's 12 volt system is that the automotive chassis alternator supplies power to both the automotive systems as well as any coach battery and directly to the motorhome living quarters while the vehicle's motor is running. Thus, of primary concern to you is the condition of the motorhomes electrical system and especially the alternator.

The alternator compensates for electrical usage in the motorhome, the power drawn by the appliances, lights, fans and other 12 volt powered items as well as the charging of the automotive and coach batteries.

If the alternator isn't keeping pace with the draw on the motorhomes electrical system, while driving down the road, it means you are working in a negative mode: more power is being used than the unit is putting out.

This means that you are taking power out of the batteries. If you draw too much power from the batteries there may not be enough power left in the battery to start the motorhome or run any of the appliances when you stop for a break or for the night.

So, always be aware of the alternator's output. Also check the monitor panel frequently to see that the coach batteries are at full charge. To insure an accurate reading, utilize a 12 volt tester on the batteries.

The alternator will charge at a higher rate right after the vehicle has been started, replacing the power that was used to start the vehicle, but the charging should quickly go back to "normal" and hold its own even when you turn on lights or appliances.

When stopped at a campsite that allows you the use of the shoreline, the 120 volt electrical system will recharge your coach battery.

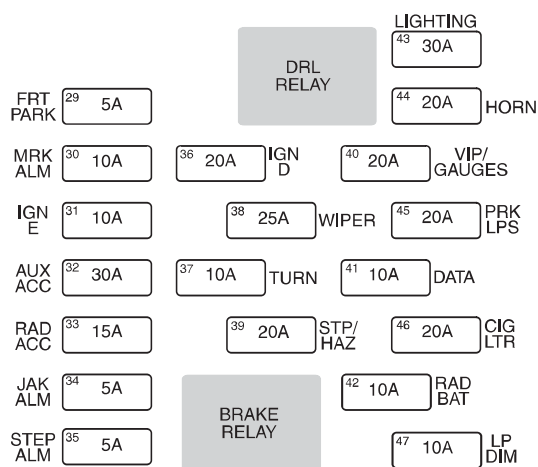
When checking coach battery condition, turn on several interior lights to place a load on the battery. Under heavy usage in warm weather, check the fluid level of the batteries often. Low battery fluid level is very harmful to the battery's longevity.

If the alternator shows a discharge while the motor is running, turn off appliances or lights to see if a charge comes on or if the alternator indicates not charging. Then apply a drain on the system to see if a discharge returns. If a discharge persists, contact your dealer.

FUSE PANELS

IN DASH FUSES

The in dash fuse panel is located under the dash on the wall. A circuit board with blade type fuses and breakers will be visible. The fuse and breaker locations are labeled below.



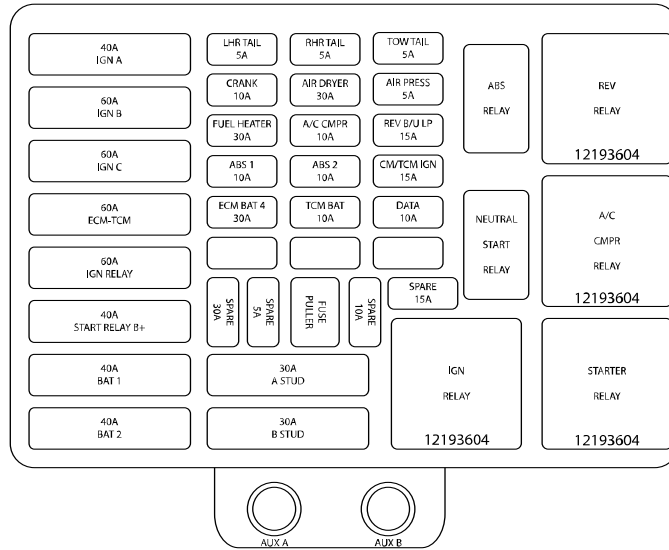
| REF | IDENTIFIER | AMP | PROTECTED CIRCUIT |
|-----|------------|-----|------------------------------|
| 29 | FRT PARK | 5 | FRONT PARK LAMP SUPPLY |
| 30 | MKR LPS | 10 | FRONT MARKER LAMP SUPPLY |
| 31 | IGN E | 10 | IGNITION SUPPLY |
| 32 | AUX ACC | 30 | AUX ACC SUPPLY |
| 33 | RADIO ACC | 15 | RADIO ACC SUPPLY |
| 34 | JAK ALM | 5 | JACKS ALARM SUPPLY |
| 35 | STEP ALM | 5 | STEP ALARM SUPPLY |
| 36 | IGN D | 20 | IGNITION SUPPLY |
| 37 | TURN | 10 | TURN SIGNAL SUPPLY |
| 38 | WIPER | 25 | WIPER SUPPLY |
| 39 | STOP/HAZ | 20 | STOP LAMP/HAZARD SUPPLY |
| 40 | VIP/GAUGES | 20 | VIP MODULES/GAUGES SUPPLY |
| 41 | DATA | 10 | FRONT DATA LINK SUPPLY |
| 42 | RAD BAT | 10 | RADIO BAT SUPPLY |
| 43 | LIGHTING | 30 | PARK LAMP SUPPLY |
| 44 | HORN | 20 | HORN SUPPLY |
| 45 | PRK LPS | 20 | FUEL HEATER SUPPLY |
| 46 | CIG LTR | 20 | CIG LTR SUPPLY |
| 47 | LP DIM | 10 | REVERSE RELAY CONTACT SUPPLY |

EXTERIOR FUSES

Located in the inverter compartment bay is the exterior 12 volt systems fuse panel. The six slots might not all be used depending on equipped options.

| 12 VOLT | | | | |
|---------|----|-----------|---------|---------------------|
| # | GA | COLOR | FUSE | POWER TO |
| 1 | 14 | GREEN | 15 | DRIVER CARGO LIGHTS |
| 2 | 14 | YELLOW | 15 | PASS CARGO LIGHTS |
| 3 | 14 | ORANGE | 15 BRKR | CORD REEL |
| 4 | 10 | RED | 30 | SYSTEMS HEAT |
| 5 | 10 | GRAY | 15 | FREEZER |
| 6 | 18 | RED/BLACK | 5 | COACH BATT SIGNAL |

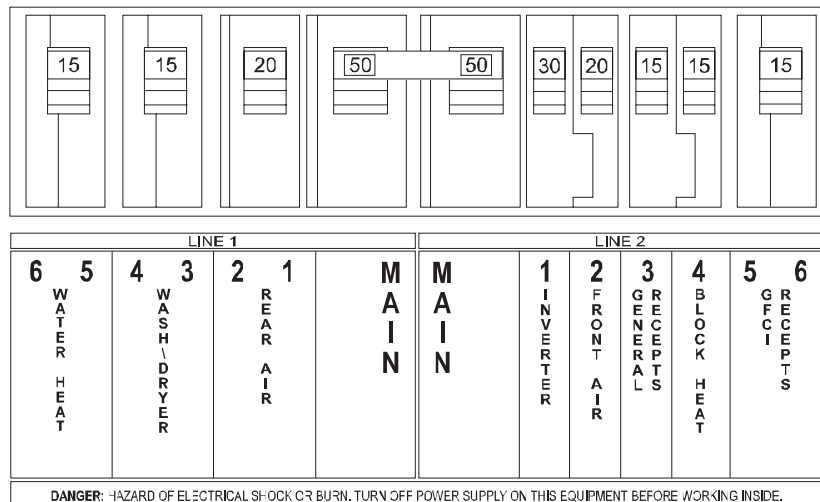
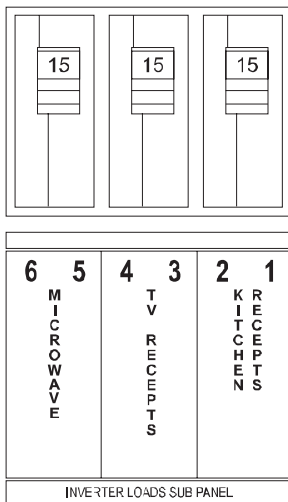
Located in the inverter compartment bay is the Workhorse fuse panel. For more information regarding this fuse panel, consult the Workhorse Chassis Owner's Manual.



BEDROOM FUSE PANELS

Located at the foot of the bed are the 110 volt breaker panel and the 12 volt fuse panel. Each panel has its own label for identification. The smaller of the two 110 volt breaker panels is supplied power from the inverter which changes 12 volt to 110 volt to power such items as TV's, microwave, and specific outlets in the coach.

| # | GA. | COLOR | FUSE | CIRCUIT |
|----|-----|--------|------|----------------------|
| 1 | 12 | RED | 15 | WATER PUMP |
| 2 | 14 | GRAY | 15 | DRIVERSIDE FRONT |
| 3 | 12 | VIOLET | 15 | FRONT CEILING LIGHTS |
| 4 | 14 | BROW | 15 | PASS SIDE REAR |
| 5 | 14 | BLUE | 15 | DRIVERSIDE REAR |
| 6 | 14 | ORANGE | 15 | APPLIANC |
| 7 | 18 | RED | 5 | RADIO |
| 8 | 16 | GREEN | 7.5 | TV BOOST/SATELLITE |
| 9 | 18 | ORANGE | 5 | MONITOR/CO & LP DET |
| 10 | 14 | RED | 15 | AWNING |
| 11 | 14 | BLACK | 15 | PASS SIDE FRONT |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |



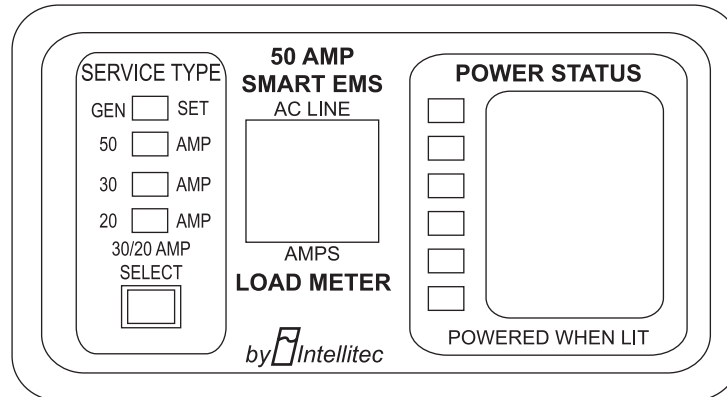
**SMART ENERGY MANAGEMENT SYSTEM
MODEL 800
50 AMP SERVICE MAIN & SUB PANEL
ENCLOSED ENERGY MANAGEMENT EQUIPMENT**

by **I**ntellitec
MADE IN THE U.S.A.



EMERGENCY MANAGEMENT SYSTEM (OPTIONAL)

The Energy Management System (EMS) consists of two parts: the display panel and the distribution panel. The display panel is mounted above the entry door for visibility and use. The distribution panel is located at the foot of the bed in the bedroom and is a 120/240 volt power distribution and energy management system.



The system will automatically sense the available power to the vehicle and will determine whether it is connected to a 120 VAC - 30 Amp shore power source, 240 VAC - 50 Amp shore power source, or Generator source. Depending on the available power, it controls four loads: 1 - Water Heater, 2- Rear A/C, 3 - Washer/Dryer, and 4 - Front A/C. The system will shed or turn off these appliances in the same order if the system senses that the load is larger than the supply. Shedding simply means that power to that appliance had been turned off to lower the Amp draw. These appliance are loads whose use can be postponed until a time when current is available for their use. For example: if the power source is 120 VAC - 30 Amp shore power, the system will attempt to keep the total 120 volt current draw to less than 30 Amps. The 20 Amp service mode is not automatically detected and the operator must manually select the 20 Amp mode when 20 Amp service is available.

The display panel above the entry door will show what type of service is providing power on the left side of the panel under "Service Type". The center of the panel indicates how many amps are being drawn at any given moment. If you are connected to 30 Amp shore power and the panel shows 28 amps, and you decide to turn on or plug in an additional item, the system may or may not begin the shedding process. If the amp draw would rise above the supplied 30 Amps the shedding process would begin with shedding the Water Heater first to lower the Amp draw back down to the supplied 30 Amps. If the draw does not lower enough then the system would shed the next item to lower the Amp draw and so forth.

When connected to 50 Amp - 240 VAC service or generator service, the Energy Management features of the unit are disabled and the unit switches all controlled loads "ON" and will not shed loads. In either of these modes if the load usage should require more than is present, you will trip the supply line breaker. If connected to a 50 Amp - 240 VAC a signal is sent to the display causing the load meter to go blank, the 50 Amp service indicator to light, and all power status indicator to light. If the Generator is running, the energy management feature is disabled and a signal is sent to the display causing the load meter to display actual load current, the GEN SET service indicator to light, and all power status indicator to light.

NOTE: There is a two minute minimum delay period after a load is shed before the load will be turned back on again to prevent air conditioners from turning on with a head of pressure.

GENERATOR

The generator is located behind the large access door on the front cap. Two latches secure the door for travel and when unlatched will let the door open from the top with hinges on the bottom. There are two pressurized cylinders to help with opening and also to hold the door from falling to the ground.

The generator does not slide out, however all of the controls and fluid check areas are easily reached from the front of the unit. With the proper care and maintenance, the generator should provide many years of dependable use.

Never operate the motorhome, generator engine, or the engine of any vehicle, longer than necessary when the vehicle is parked.

DO NOT simultaneously operate generator and a ventilator which could result in the entry of exhaust gas. When exhaust ventilators are used, we recommend that a window on the opposite side of the unit “up wind” of exhaust gases be opened to provide cross ventilation. When parked, orient the vehicle so that the wind will carry the exhaust away from the vehicle.

DO NOT open nearby windows, ventilators, or doors into the passenger compartment, particularly those which can be “down wind”, even part of the time.

DO NOT operate the generator when parked, so that vegetation, snow, buildings, vehicles, or any other object could deflect the exhaust under or into the vehicle.

DO NOT touch the generator when running, or immediately after shutting off. Heat from the generator can cause burns. Allow the generator to cool before attempting maintenance or service.

DO maintain the generator at the scheduled intervals so it will be ready when you need it.

DO check your operating fluids in-between scheduled maintenance checks.

DO periodically check under the generator for any objects that could have hit or been lodged against the generator during driving.

WATER SYSTEMS

The motorhome plumbing system has the dual ability to be self-contained with on-board storage, or use facilities provided by an external pressurized source. In either case, the components of the system operate like those in your home. Components of the plumbing system consist of strong, lightweight, corrosion-resistance materials that provide long life, and easy cleaning. By following the instructions outlined here, you can expect efficient operation with a minimum of maintenance.

FRESH WATER SYSTEM

EXTERNAL HOOKUP

Water provided from outside the motorhome is pressurized by the system from which it is delivered. When you connect the motorhome to an outside source, the fresh water tank and water pump are kept separate from the remainder of the system by in-line check valves. To connect the motorhome to an outside source of water:

1. Run a potable water hose through the porthole in the bottom of the systems compartment.
2. Attach one end to the water supply and the other end into the city water connection inside the systems compartment.
3. Turn the lever on the bypass valve to the city water position.
4. Turn the outside source on. Open various faucet's in the motorhome gradually to clear the air from the lines. Close the faucet's when the water flows freely.

NOTE: Do not turn the water pump on when using water from an external supply.

FRESH WATER TANK

When an outside source of water is unavailable, water can be drawn from the fresh water storage tank for use in the motorhome. To fill fresh water tank proceed as follows.

1. Attach a potable water hose to the city water connection inside the systems compartment, and an outside water supply.
2. Turn the lever on the bypass valve to the fresh tank position.
3. Begin filling the fresh water tank.
4. When the tank is full, turn off the water supply.



WARNING: Never leave the hose unattended while you are filling the fresh water tank.

NOTE: There is an overflow line that will drain onto the ground if the tank is filled beyond capacity. Always fill the tank with potable water from a known safe source using a hose designated for potable water.

WATER PUMP

The self contained water system is a demand only system. This means the system must be pressurized. A self-priming 12 volt DC pump is provided to handle this function. This means that the water pump will run whenever there is a need for water. If the pump runs when all faucet's are closed, there may be a leak in the system. If this happens turn the pump OFF, and have the systems checked by a qualified service center. When initially starting up the self contained water system, follow this procedure:

1. Make sure the tank is filled with water.
2. Open all the faucet's in the motorhome, both hot and cold.
3. Place the pump control switch to the ON position. There are two water pump switches, one in the systems compartment and the other is located on the monitor panel. Both switches must be ON for the water pump to operate.
4. Allow time for the hot water tank to fill. Shut off each faucet as the flow becomes steady and free of air. When the last faucet is shut off, the pump should also shut off
5. The system is now ready for use.

NOTE: When filling the system, you may want to add additional water to the tank to replace the water used when filling the hot water tank and water lines.

When traveling, you may want to drain the tank, or keep the quantity of water to a minimum. This reduces the total weight of the motorhome for travel. Make sure when draining the tank, that the water pump has been turned off. The fresh water tank valve is located in the systems compartment in the bottom by the fresh water tank. Water in the tank can be drained by turning the drain cock to the open position. When trying to drain entire on-board fresh water system, make sure to open faucet's, water heater drain, and system low point drains to remove all fresh water from the system. When the system is finished draining, be sure to close all drains before filling again.

SANITIZING THE FRESH WATER SYSTEM

The following items will be required to perform this procedure:

- 1 - battery powered drill (do not use an electric drill)
- 1 - drill powered water pump
- 1 - five gallon bucket to prepare solution
- 2 - four foot sections of ½" inside diameter hose
- 2 - female hose ends for ½" hose with ¾" threaded end (compression style)
- 1 - male hose end for ½" hose with ¾" threaded end (compression style)
- 1- cup of household bleach

1. Install one male and one female hose end to one of the four foot sections of hose. When completed, the section of hose will have a male hose end on one side and a female hose end on the other side.
2. Connect this hose to the outlet side (usually marked with an arrow) of the pump. The other end of the hose will connect to the city water fill, located on the motorhome. Prior to attaching the hose to the city water fill, remove the pressure regulator first, otherwise the pump will not be able to push the water past the regulator. The hose will attach to where the regulator use to be.
3. Install one female hose end to the other four foot section of hose.
4. Connect this hose to the inlet side of the pump. the end of the hose that does not have hose end will go into the five gallon bucket to pump out the sanitizing solution.
5. Fill the bucket half full with water and add one cup of household bleach. Attach the battery drill to the pump insuring that the drill rotation matches the rotation needed to work the pump.
6. Using the drill, pump the solution from the bucket into the fresh water tank until solution is gone. Remove the pump/drill apparatus and complete filling the tank with water.



7. Switch the water pump to the ON position. Open all faucet's one at a time until all air is purged, and the water flows freely. Once the tank is half empty turn off the water pump, open the gray water tank drain valve and leave the valve open.
8. Again, add water to the tank until it is full. Allow the system to stand undisturbed for at least 15 minutes.
9. Turn the water pump on to drain the system by opening all faucet's, and the fresh water tank drain valve, while flushing the system with potable water.
10. Continue flushing the system, allowing the water to flow for several minutes, and then turn off the water pump. Close the fresh water tank valve, gray water tank valve, and faucet's. Refill the system with potable water.

NOTE: If you would rather not do the above, having your dealer perform this operation would be another option you could choose.

WASTE WATER SYSTEM

The waste water system in the motorhome can be described as two separate systems. A gray water system that consist of the drain lines and holding tank for waste water from the sink and tub, and a black water system which includes the holding tank and drain for toilet waste. In some cases the bathroom lavatory may drain into the black tank. Each system is self contained, and allows disposal of waste at designated dump stations at your convenience.

Components of the gray water system have drain traps, and both tanks are vented to equalize air pressure and disperse odors caused by drain water and wastes outside. Sometimes, the rocking movement of the motorhome while driving may empty the drain traps of their water, and allow the odors of the gray water tank to come into the coach. Residue in the drain water lines can also produce odors. To combat gray water holding tank odors, an approved deodorizing agent should be used. An agent that dissolves grease and fats and contains a detergent will help keep tank drain lines clean and free-flowing.

HOLDING TANKS

Both holding tanks are located under the bathroom area. The drain valves are located in the systems compartment on the driver side of the motorhome.

Each tank has a separate drain line and dump valve, which permits dumping tanks individually or together. Each tank should be emptied often at a dump station designated for this purpose. Most national, state, and private campgrounds have dumping facilities. Many have hookups on the campsite, while some have portable dump collectors. Many service stations, particularly along interstate highways, also have these facilities. Many campground directories list dumping station locations across the nation.

If possible, dump holding tanks before a trip, to reduce the gross weight of the vehicle. Enough water should be kept in the black water tank to cover the bottom, to prevent hardening of any residue that may remain.

Do not dump black water tank until it reaches $\frac{3}{4}$ full. This practice makes sure that enough water is in the tank to flush all waste into sewer lines. If necessary, fill tank to the $\frac{3}{4}$ mark with additional water before draining.

Never put anything into the holding tanks other than normal drain water, waste, and biodegradable products. Paper wrappers, gum, cigarettes, etc., no matter how small they might be, should never be placed into either the gray or black tanks.

NOTE: It is important to note that harmful and toxic materials can accumulate if the holding tanks are not regularly drained and thoroughly rinsed. It is also important to use holding tank deodorizing and cleaning agents in the waste water tanks to reduce odors and keep the lines open and free-flowing.

NOTE: Always remember to clean up the dumpsite before leaving. NEVER empty your holding tanks directly on the ground, a roadway, river or stream. DO NOT POLLUTE.

TO EMPTY THE HOLDING TANKS

1. Remove the sewer drain hose from its storage compartment inside of the systems compartment.
2. Remove the cap from the vehicle sewage drain, and connect the drain hose to it.
3. Attach the other end of the flexible drain line to the dump station inlet. Make sure both ends of the flexible drain lines are securely attached.
4. Drain the black tank first, by pulling the termination valve handle toward you. Make sure to allow sufficient time for the tank to completely drain, and then rinse the tank with several gallons of water by flushing the stool. Close the valve on the stool and let it fill before releasing the tank. This creates additional force to flush the tank more completely.
5. Drain the gray water tank by pulling the termination valve handle toward you. Draining the gray water tank last, with its soapy water helps to further rinse the drain and flexible hose.
6. When tanks are emptied, close termination valves by pushing handles back to the closed position.
7. Remove flexible drain hose and wash it thoroughly with clean water. Remove the other end from the dump station inlet, and replace it in the storage compartment. Secure the sewer hose storage cover, and replace the caps on both the motorhome outlet and the dump station inlet.

The following guidelines will help to ensure trouble free operation:

1. Never put anything in the black water tank other than toilet paper specifically for Recreation Vehicle systems.
2. Do not put automotive antifreeze, household toilet cleaners or drain cleaners, or any solid material into the waste water system.
3. Always use chemicals in the black water system that are made especially for this purpose.
4. When cleaning components of the waste water system, use cleaners made for Recreation Vehicle systems.
5. Always keep the drain cap in place, and termination valves closed.
6. After every third time the holding tanks are emptied, fill and flush both tanks with clean fresh water a couple of times to keep them clear and clean.

NOTE: If connecting to a campsite sewer inlet, DO NOT open termination valves until tanks are $\frac{3}{4}$ full. DO NOT keep black water valve open while parked. Wastes are NOT flushed directly into the sewer system. Only liquid waste is drained, therefore, water must accumulate, and chemicals in tank need time to break down solids before they can be released. If draining gray water tank directly into sewer inlet while parked, make sure to close termination valve for a period of time before leaving, allow some water to accumulate in tank to use for flushing drain line and flexible hose.

TOILET**SEALAND TOILET (39A & 39B Only)**

How to Use:

- To add water to the toilet, lift or raise the flush lever until desired water level is reached.
- To flush toilet, push lever all the way down until contents leave bowl. Water flow pressures vary at different locations, therefore holding the flush lever down for 4-8 seconds may be required.
- Release flush lever by allowing it to snap back, which permits positive sealing around the flush ball.
- A small amount of water should remain in the bowl.



Unnecessary frequent flushing of the stool will quickly deplete your fresh water supply and fill your holding tank. If the black water tank becomes full, you will no longer be able to flush the stool until the tank can be drained.

NOTE: Refer to the Sealand Fine China Toilet Owner's Manual for detailed information regarding usage and maintenance of the toilet.

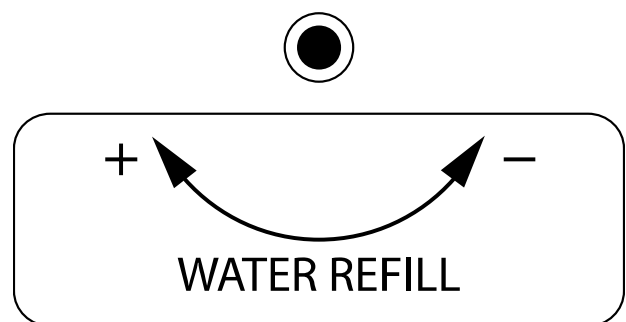
TECMA TOILET

How to Use:

- After flush button is pushed, bowl will begin to fill with water.
- Contents of the bowl will then be evacuated.
- A dry bowl will appear while a short flushing of the internal mechanism occurs.
- Bowl refill will automatically begin after several seconds. Once refill is complete, toilet is ready to flush again as needed.

Water Refill Level Control:

- The water level refill is factory preset.
- This toilet has an adjustable dial, located on the back side of the flush control panel, to control the water refill level and water usage.
- To adjust the water refill up or down, adjust dial to desired level. Lower refill levels will use less water and vice versa.



NOTE: Refer to the Tecma Silence Plus Owner's Manual for detailed information regarding usage and maintenance of the toilet.

WATER SYSTEM WINTERIZATION

If you intend to store the motorhome through periods of sub-freezing weather in an unheated environment, it will be necessary to winterize the water system. Damage to water system components will result if proper winterization steps are not taken.

- Level the motorhome for good system drainage.
- Drain the waste water tanks (black then gray following drainage guidelines).
- Turn the water pump switch OFF.
- Open all faucet's, and the water heater drain.
- Open low point drains on the water lines, including the exterior shower.
- Drain the fresh water tank.
- When all lines are drained, close the water tank valve, all faucet's, the water heater drain, and the low point drains on water lines.
- Turn the water heater bypass valve ON so the tank does not fill with antifreeze.
- Remove the water filter (if installed) and replace with bypass cap to protect the filter.
- If unit is equipped with an ice maker, turn OFF the water valve.
- Position antifreeze container so siphon hose can be connected to the winterizing connection.
- Turn valve to position which will allow the water pump to pump antifreeze from the container.
- Turn on the water pump and let each faucet run until antifreeze flows freely from both the hot and cold supply lines. Also, run the shower and toilet until antifreeze is visible.
- If motorhome is equipped with a washer/dryer turn the washer ON and let run until antifreeze is visible and continue to run for 15-20 seconds. Turn the cycle selector to rinse cycle to ensure the antifreeze gets into the pump to protect it.
- Turn OFF the water pump.
- Pour one cup of antifreeze in every drain to protect the P-traps.
- Before using the system again in warmer weather, completely flush the systems with water, flush the toilet, and sanitize the entire fresh water system. When using the motorhome during cold weather, and water in a tank or drain line should happen to freeze, you should take immediate steps to thaw it before damage to the system occurs. DO NOT continue to use the water system components if such a condition exists. If damage has occurred, make sure to have it repaired before using again.

WATER SYSTEM MAINTENANCE & TROUBLESHOOTING

As with any mechanical system, the plumbing is subject to the development of problems. Most of these problems can be greatly reduced if not altogether eliminated by following a schedule of planned inspections and maintenance. Neglect of proper maintenance procedures is the usual cause of most water system problems.

Road vibrations and shocks, as well as excessive pressure from some city water sources are the main physical causes of water system damage. It is important to inspect all plumbing joints and fittings often for cracks and leaks. Water leaking from a plumbing joint can cause considerable damage if left unchecked.

A leak in the fresh water system should be suspected whenever the pump is running and all faucet's and valves are closed. When the leaking fitting has been identified, attempt to stop the leak by tightening. DO NOT over tighten. Plastic fittings rarely need to be tightened with a wrench. If these fittings leak after being tightened by hand, disconnect the fitting and check for dirt, scale, or other foreign substance which may be causing the leak. Clean the fitting thoroughly and reinstall. If leaking persists, shut off the water supply until the fitting can be properly replaced. Check with your dealer for correct method of replacement, and replacement parts.

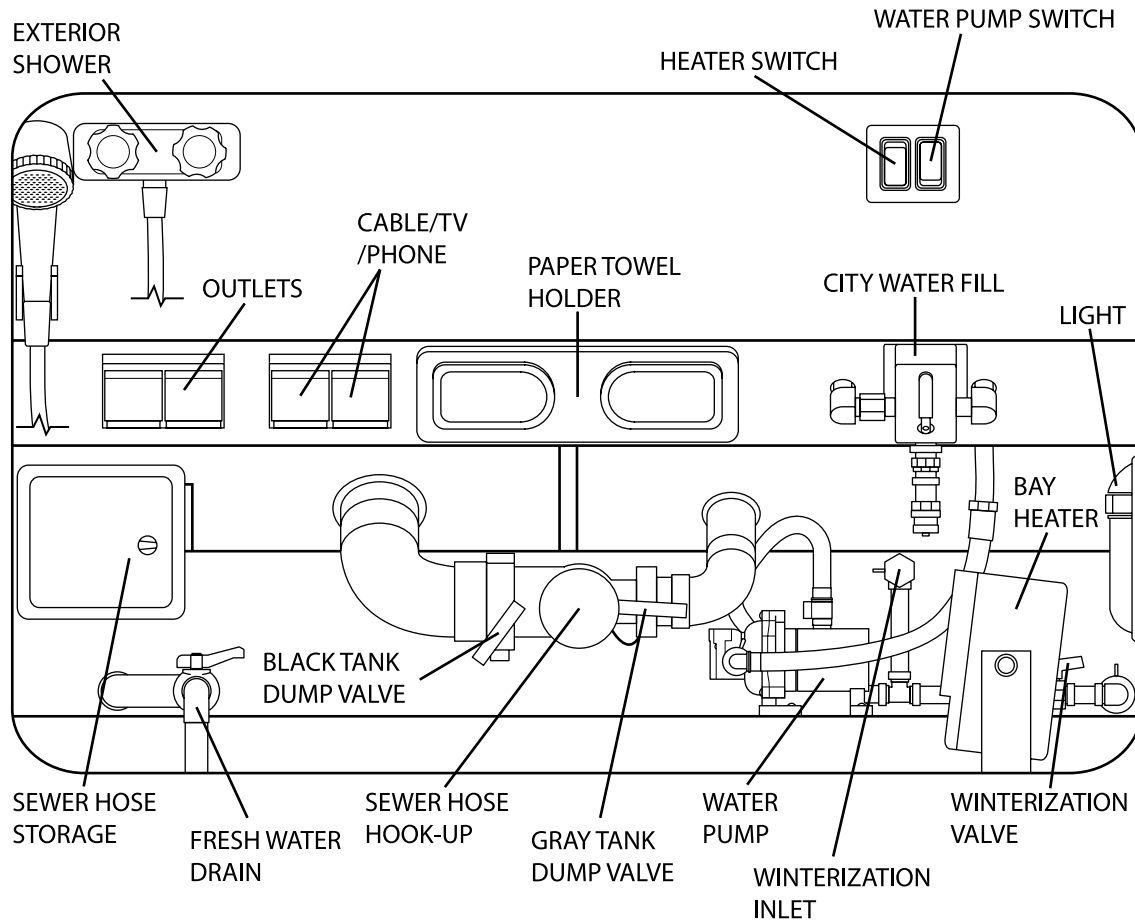
Proper winterization procedures of plumbing systems will normally be all that is necessary to prevent the damage caused by freezing. Freezing damage can harm any component of the system, including the water tanks, toilet, pump, and all piping. Be sure to follow the winterization procedures outlined in this manual. Also be sure to discuss any additional precautions that should be taken to winterize the water systems with your dealer. Local climates vary; and winter maintenance needs may be affected.

Be sure to read the literature supplied with plumbing components, such as the pump, for troubleshooting tips. Also remember that it is possible for an electrical problem to cause water system problems. Lack of power to the pump can be caused by a variety of reasons. If you are unsure of how to locate and/or repair a plumbing problem, contact your dealer.

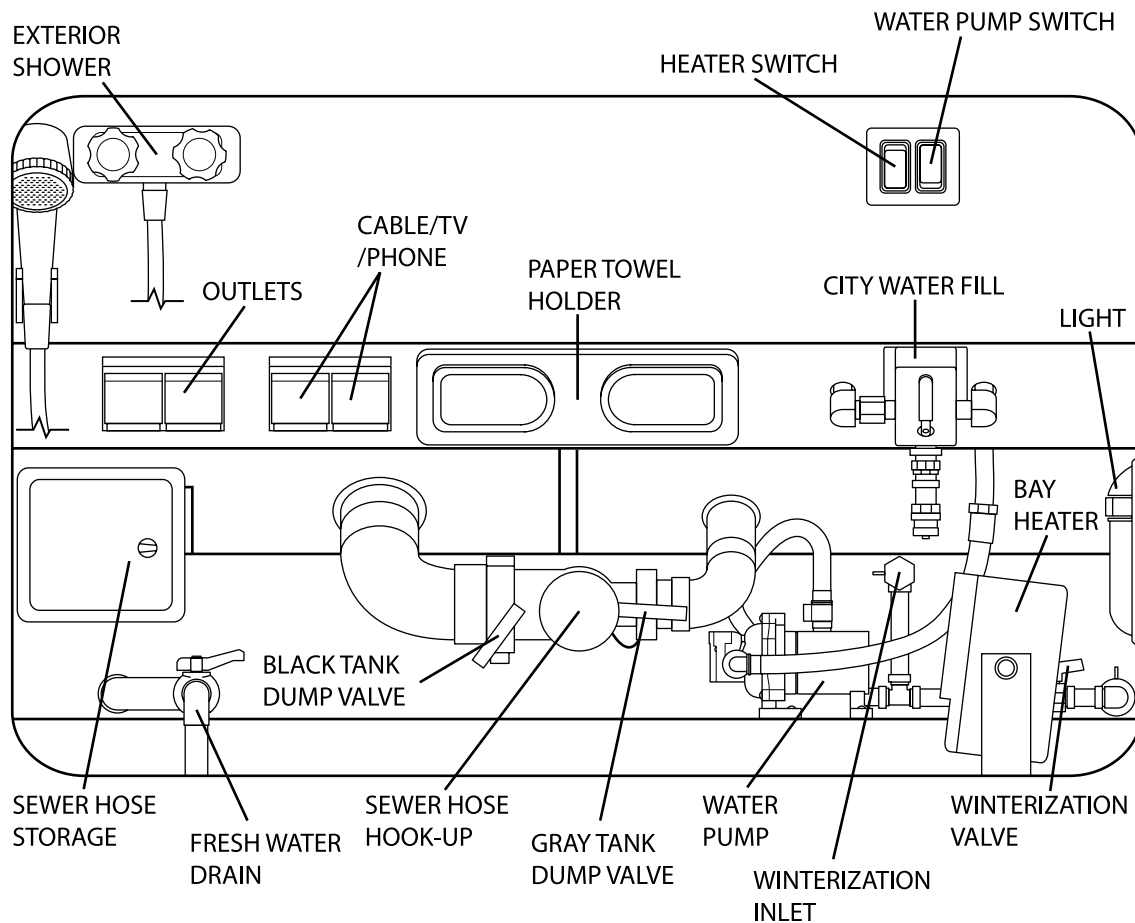
TANK CAPACITIES

| | 39A | 39B | 39C |
|---------------------------------|------------|------------|------------|
| FRESH WATER HOLDING TANK | 90 gallons | 90 gallons | 90 gallons |
| BLACK HOLDING TANK | 68 gallons | 68 gallons | 68 gallons |
| GRAY HOLDING TANK | 70 gallons | 70 gallons | 70 gallons |
| LP GAS TANK | 121.5 LB. | 121.5 LB. | 121.5 LB. |

* Capacities are approximate and specifications are subject to change without notice.

SYSTEMS COMPARTMENT

- **Exterior Shower**
Provides hot or cold water to the exterior of the motorhome.
- **110 volt Outlets**
- **Cable/TV Hook-up**
When available, provides cable and/or satellite to interior of motorhome.
- **Phone Jack Hook-up**
Supplies phone service to RV interior when available.
- **Paper Towel Holder**
Holds paper towel rolls to assist with cleanup.
- **Heater Switch**
Provides power to the bay heater.
- **Water Pump Switch**
Provides power to water pump.
- **City/Fresh Tank Water Fill Valve**
Two way directional valve which controls city water between filling the fresh water tank and direct interior usage.
- **Compartment Light**
Manual ON/OFF light that provides light to service bay.



- **Sewer Hose Storage**
Place the sewer hose here when not in use.
- **Fresh Tank Drain Valve**
Turn handle to the left to drain excess water from the fresh tank.
- **Black Tank Dump Valve**
Pull T-handle out to dump solid waste from the black tank.
- **Sewer Hose Hook-up**
Attach sewer hose to this fitting to assist with drainage.
- **Gray Tank Dump Valve**
Pull T-handle out to dump waste water from the gray tank.
- **Water Pump**
Provides water pressure when not connected to a pressurized exterior system.
- **Winterization Inlet**
Antifreeze inlet for winterization.
- **Bay Heater**
Used to maintain compartment ambient temperature above freezing.
- **Winterization Valve**
To winterize, rotate the handle on the valve so that it is perpendicular to the water line. Refer to winterization procedure for winterizing.

LP GAS SYSTEMS



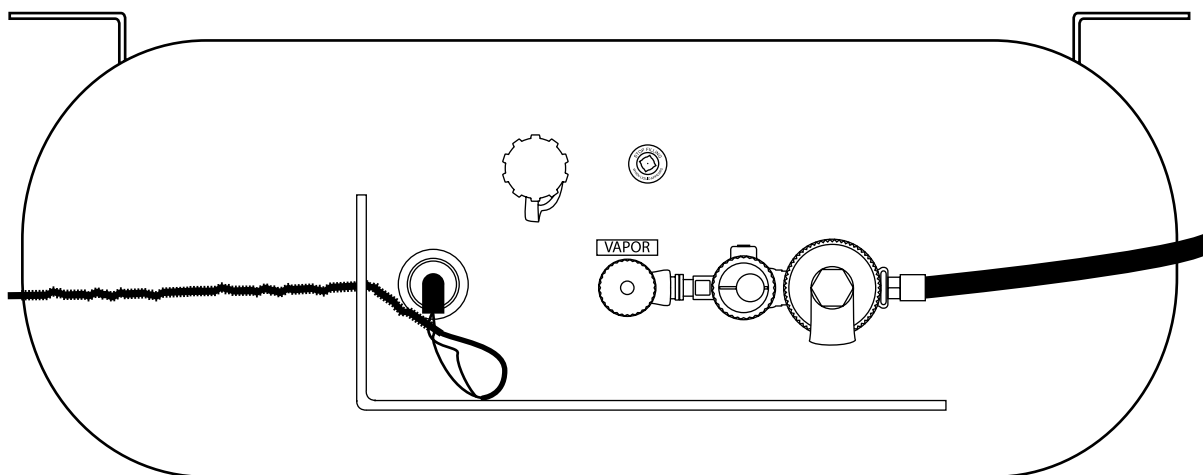
WARNING: LP Gas is highly volatile and extremely explosive. Do not use matches or a flame to test for leaks. Use only approved LP Gas leak testing solution for leak detection. Unapproved solutions can damage copper tubing and brass fittings. Never attempt to adjust LP Gas regulators. Only qualified personnel should perform any maintenance or repair to the LP Gas system.

The liquid petroleum (LP) gas system furnishes the fuel for cooking, heating, and hot water. LP Gas can also be used as an alternate energy source for refrigeration. LP Gas is a clean, efficient, safe form of energy when proper handling and safety precautions are observed.

The gas is stored under extreme pressure in the tank, with space in the tank to allow for expansion into vapor. This vapor is reduced in pressure by passing through a regulator. This reduction in pressure is a two step process which assures consistent pressure for use, regardless of outside temperatures, weather, or altitude.

NOTE: For detailed information regarding LP Gas, and it's use consult a qualified LP Gas service representative.

NOTE: Even though the tank is equipped with an automatic 80% shut-off which prevents over-filling beyond 80% tank capacity, it is a good idea to have the supplier monitor the 20% liquid gauge, and stop the filling process if liquid does appear.



FILLING THE LP GAS TANK

1. Before entering the LP Gas bulk plant or service station, make sure all pilot lights are extinguished. Shut off gas to all appliances by closing the LP Gas main shut off valve.
2. Extinguish open flames and smoking materials.
3. Never remove the LP Gas tank from the motorhome. Always drive the motorhome to the gas supplier to fill.
4. Have the supplier connect the fill nozzle to the tank fill connection.
5. Always remember to close the supply valve, and open the 20% liquid level valve.
6. Never use a wrench to close the service or the 20% liquid level valve. If when closing by hand, leaking occurs, have the valve repaired or replaced.
7. Drive at least one mile from the LP Gas supplier before relighting pilot lights or appliances. This will allow any minimal leakage which occurred while filling the tank to dissipate. DO NOT light pilot lights if you continue to smell LP Gas. Shut off the Supply Valve. Allow the motorhome to ventilate for 30 minutes. If you still detect LP Gas odor, have the source of the leak located and repaired.

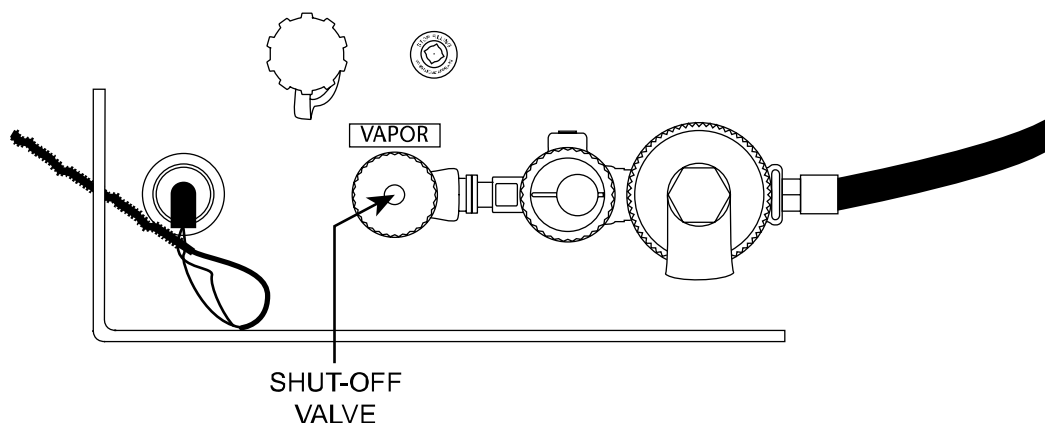
Never use any other tank than the one furnished with the motorhome. If the tank must be replaced, check with your dealer for correct tank specifications and replacement procedure.



WARNING: Make sure that the tank is not filled beyond the 80% liquid level. If the tank has been over-filled, make sure the LP supplier bleeds out the excess. Over-filling the LP Gas container does not allow for the necessary 20% vapor expansion space that can result in uncontrolled gas flow which can cause fire or explosion.



WARNING: Make sure the tank service valve is accessible at all times. In an emergency, it may be necessary to shut off the valve quickly.



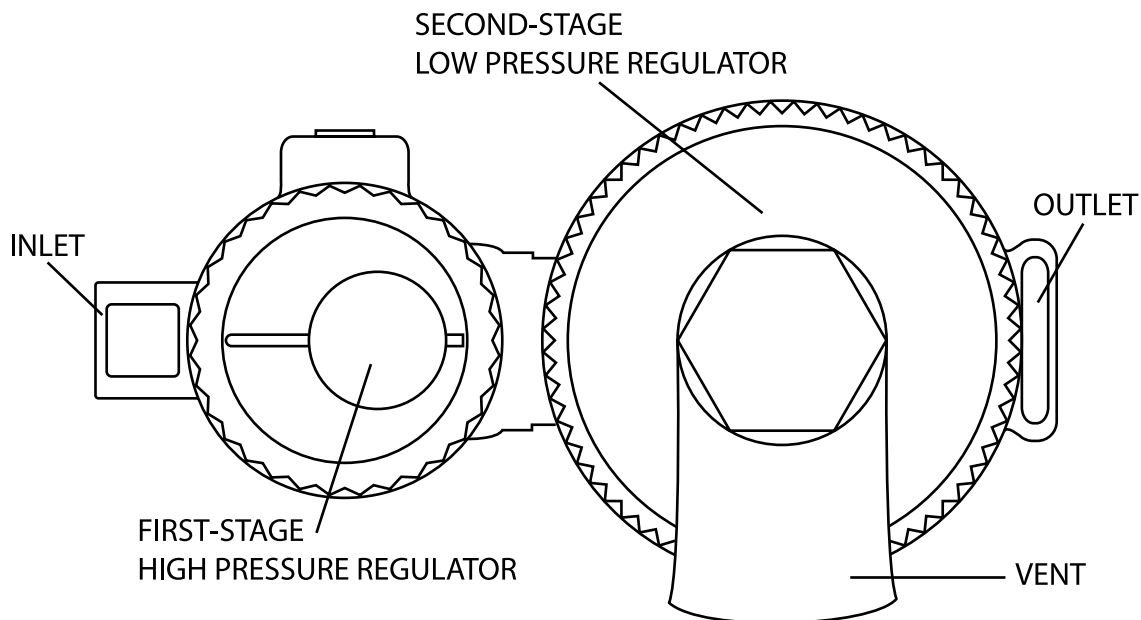
LP GAS REGULATOR

The regulator reduces the pressure of the LP Gas vapor from the pressure in the tank, to the pressure required for use at the appliances. This reduction in pressure is performed by a two-stage regulator. Two regulators are used in the same body to reduce the pressure of the LP Gas in the tank for use by the appliances in the motorhome. The regulator seldom requires service, but it should always be protected from the elements and extremes of hot and cold.

The high pressure regulator (first stage) is used to reduce the pressure to approximately 10 to 13 PSI before sending it along to the low pressure regulator (second stage). This second stage regulator reduces the pressure further to 11 inches water column, or 6.35 ounces per square inch. The two stages regulator does not have to work as hard since the second stage receives consistent pressure rather than inlet pressure which varies. The result is an efficient safer system that helps to eliminate problems such as freeze up and pilot outage.

The regulator has been preset by the manufacturer of the regulator, and adjustment should not be necessary. If adjustment should be required however, DO NOT attempt to adjust it yourself. Adjustment must be made with special equipment by a qualified LP Gas service technician. Have the regulator checked annually, or whenever you suspect a problem. The correct line pressure should be 6 ¼ oz. or 11 inches of water column.

Because air is required for proper operation of the regulator, it is very important that the regulator vent is kept clean and free of dirt and debris. This is why it is necessary to keep the vent facing downward and the regulator covered to protect it from contamination. A toothbrush can be used to clean the vent if it becomes clogged by foreign matter.



During cold weather, it is important to keep ice from forming in the regulator, which will shut off the flow of LP Gas to the appliances. Have the supplier add a hydrous Methanol when filling the tank for use during cold weather. Regulator freeze-up can occur in any weather if there is moisture in the tank, or if the tank has been over-filled. Always use moisture-free LP Gas, and make sure the tank has not been filled beyond 80% of capacity. If moisture has entered the tank, have the tank purged, or have hydrous methanol added by an authorized LP supplier.

If you believe a regulator has been damaged or otherwise is not functioning, have it replaced by a qualified LP Gas service representative.



WARNING: Never alter the positioning of the regulator. LP Gas regulators must always be installed with the diaphragm vent facing downward. Also make sure to keep the regulator cover in place to minimize vent blockage which could result in excessive gas pressure causing fire or explosion. Do not rely upon being able to smell LP Gas leaks, as the odor may not be sufficiently strong to detect.

REGULATOR FREEZE-UP

The term regulator freeze-up is a misleading one. Regulators and LP Gas do not freeze. However, the moisture that can be contained in the gas will freeze as the gas expands and cools passing through the regulator. This freezing of the moisture in the gas can build up and partially or totally block the passage of the gas through the regulator. Freezing can also occur when outside temperatures are low enough to contribute to the freezing of the moisture in the gas.

The source of the moisture is varied. It can occur at the refinery or gas bulk plant, in the rail cars used to transport the gas, or even within the motorhome LP tank. Moisture in an LP tank can occur when a tank service valve is left open, allowing moist air to enter and become trapped.

A two-staged regulator helps to reduce the possibility of freeze-up because of its larger orifice size, and the fact that heat is transferred through the walls of two regulators instead of just one.

There are several steps that can be taken to inhibit or prevent this from happening:

1. Make sure that the LP tank is free of moisture before refilling.
2. DO NOT overfill the LP tank.
3. Make sure to keep the service valve on an empty tank closed.
4. If freezing has occurred, have your LP dealer purge the LP tank before refilling.
5. Add a hydrous methanol or other approved LP antifreeze or de-icing agent to the LP tank.
6. Keep the regulator covered at all times.

NOTE: If freeze-up does occur, shut off the LP Gas at the tank. A frozen regulator may permit LP Gas to flow at high pressure, resulting in leaks at appliances or in the lines. If freeze-up does occur, **NEVER** attempt to thaw with an open flame. A small light bulb can sometimes be useful to provide heat and aid the thawing process. Once thawed, be sure to take the proper steps to prevent a reoccurrence. Have the system checked by your LP supplier if freeze-up continues.

Remember that as outside temperatures drop, the BTU value of the LP Gas is lessened, since the colder liquid LP in the tanks requires the heat from the surrounding air to vaporize. This lowering of BTU value can significantly affect the performance of the system. You can help insure proper performance by keeping your LP tanks as full as possible in cold weather, and reviewing the BTU/hr plates on LP appliances for proper LP management.

HOSES, PIPES, TUBES AND FITTINGS

The hoses, pipes, tubes, and fittings used in the LP system are designed to withstand pressures far exceeding those of the LP 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 hose 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 LP components, make sure to always replace them with components of the same type and rating (check with your dealer).

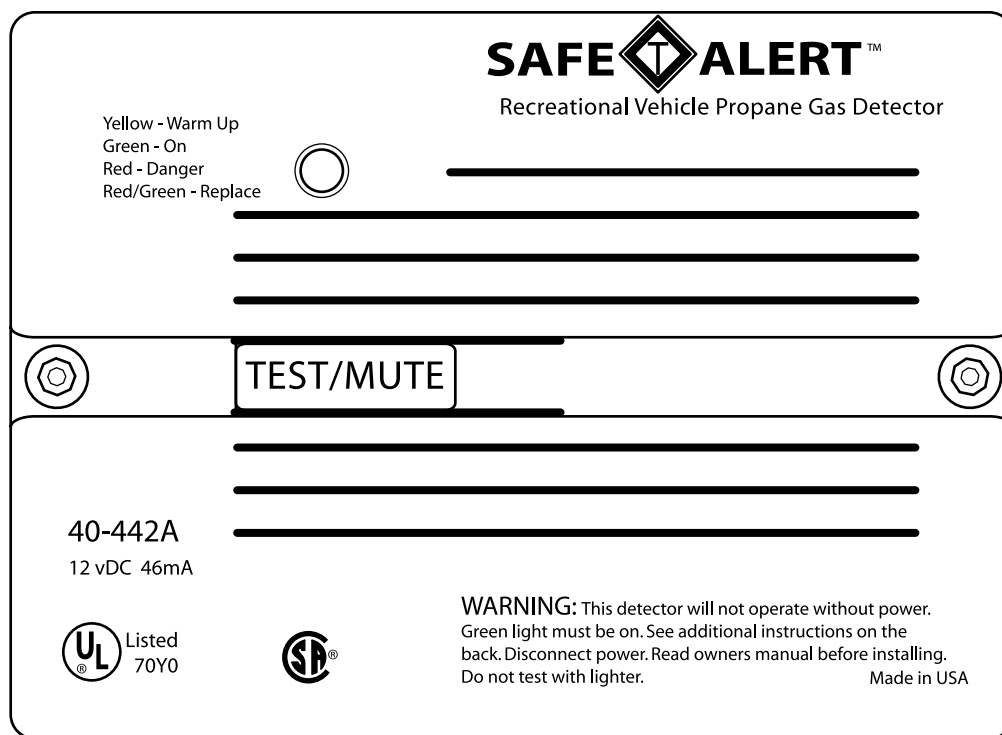
Fittings are used to connect the various system components to each other. The P.O.L. fitting at the end of the LP supply hose is made of brass so that pipe sealants are not necessary to prevent leaking. It also has a left-handed thread, which means that it is turned clockwise to remove, and counter-clockwise 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.

LP GAS DETECTOR

The LP Gas Leak Detector is powered at all times when the coach battery disconnect switch is in the ON position. When power is supplied to the detector the green indicator light will illuminate. After 60 seconds, the detector will begin monitoring the air in the motorhome for combustible vapors. The propane you use to cook, refrigerate, and heat is combustible. Should a leak occur, the detector will produce a pulsating alert sound when the gas reaches the detector. This alert will continue to sound until the gas has dissipated or until the reset button is pressed. When the alert sounds, open all doors and major windows to air out the motorhome and turn the gas off at the tank. Do not reenter the motorhome until the alert stops sounding. If the alert sounds a second time after the gas is turned back on, leave the gas off and have a qualified LP Gas Dealer or RV Service Center make the necessary repairs. The reset button only stops the alert from sounding for 60 seconds. This device is intended for detection of LP Gas ONLY.

HOW TO TEST

The detector must be operating for at least 60 seconds before it can be tested. Expose the detector to gas* and observe that the alert sounder will begin to alarm. The alert will continue to sound until:



1. The gas mixture at the detector returns to a safe level.
2. The reset button is pressed. If the reset button is pressed, the detector cannot be retested for at least 60 seconds.

NOTE: This test procedure should be repeated every week or every time the coach is taken on a trip, whichever occurs first. Call MTI Industries at (800) 383-0269, if you have any questions about the LP Gas Detector.

CHECKING THE LP GAS SYSTEM FOR LEAKS

Road vibration can loosen LP Gas fittings. It is important to check the LP system for leaks at least every 5,000 miles, and whenever the tank is filled. It is also a good idea to have the entire LP Gas system checked annually by a qualified LP Gas service representative.

Use the following steps when checking the system for leaks:

**ONE METHOD OF SIMULATING GAS IS TO USE A BUTANE LIGHTER (I.E.: BIC). DO NOT ROTATE THE FLINT WHEEL. JUST PRESS ON THE GAS RELEASE BUTTON AND POINT THE EXIT NOZZLE INTO THE GAS SENSING AREA BELOW THE GREEN LIGHT OF THE DETECTOR.*

1. Open all the windows and vents.
2. Open the gas tank service valve.
3. Use non-ammoniate, non-chlorinated soap solution, or an approved leak detection solution on all line connections (ammoniate soap solutions can cause cracking on copper or brass lines and fittings).
4. If a leak is detected, tighten the connection with two open end wrenches until bubbling stops. DO NOT over tighten, or use excessive force. If the leak continues, contact the recreation vehicle dealer, or a qualified LP Gas service representative to have an 11" Water Column Test performed.



WARNING: *Never check for leaks with an open flame. The scent of LP Gas (a garlic-like odor) is actually ethyl mercaptan, an additive that allows you to detect the presence of a leak, since LP Gas is naturally odorless. Do not rely upon being able to detect the smell of the gas, as the odor may fade.*

ABOUT THE LP GAS DETECTOR

Liquid Propane Gas (LP Gas) is heavier than air and will settle to the lowest point which is generally the floor of the coach. The detector is also sensitive to other fumes such as hair spray of which most contain butane as the propellant. Butane, like propane, is heavier than air and will settle to the floor level where it will be detected. When this occurs, press the reset button to stop the alert sound for 60 seconds.

Other combustibles which will be detected include alcohol, liquor, deodorants, colognes, perfumes, wine, adhesives, lacquer, kerosene, gasoline, glues, most of all cleaning agents and the propellant's of aerosol cans. Most are lighter than air in their vapor state and will only be detected when the coach is closed up. Glues and adhesives may exhaust hydrocarbon vapors for months after they are applied. They are easily activated by high temperatures.

The LP Gas Detector is powered by the coach battery and/or the inverter. It draws less current than drawn by one instrument panel lamp. The detector will operate properly until the battery is drained down to 10 volts. (A low battery condition is 10.4 volts.) If the power source (battery and/or inverter) is disconnected, or if the power is otherwise interrupted, the detector will not operate.

The LP Gas Detector has a self check circuit which runs at all times when the detector is powered. In the event that the circuitry fails, a failure alarm will sound. It is a continuous series of short beep tones between long intervals and is distinctively different from the alert sound.

MOST COMMON CAUSES OF APPARENT MALFUNCTION:

- **New Coach Odor:** The glues and other materials used in manufacturing the coach produce vapors which may be detected when the coach is closed up on a warm day. Air out the coach thoroughly.
- **Keeps Beeping:** The gas detector beeps about once every minute, even when it is turned off. The problem is a weak battery in the smoke detector which causes the smoke detector to produce short beeps which sound similar to the alert sound of the LP Gas Detector. This is a high pitch tone and bounces off the walls, making its location very hard to pinpoint. If the sound is not coming from the LP Gas Detector identify the source and refer to the sources section in this manual for means of repair.
- **Hair Spray Triggers the Detector:** Most aerosol hair sprays use butane gas as the propellant. Butane, like propane, is heavier than air and will settle to the floor level where it will be detected. The detector is doing its job as butane is combustible.
- **Other Gases:** Other gases which can cause the detector to respond with an alert include the vapors from any fuel, liquor, alcohol, deodorants, colognes, perfumes, wine, adhesives, lacquer, and most cleaning agents.
- **Slow Beep Rate:** This could be the failure alarm and will occur in the event that the circuitry fails. It is a continuous series of short beep tones between long intervals and is distinctively different from the alert sound.
- **After reviewing the above, if the problem still exists, contact MTI Industries for assistance.**

NOTE: The LP Gas Detector enters a cleaning and initializing mode every time it is powered. If turned off for less than 15 minutes, the LP Gas Leak Detector may produce several short “chirps” within the first 80 seconds of operation. This is normal.

SERVICE

See your RV Dealer or a qualified LP Gas Service Center should service be required. If they are not familiar with this product, have them call MTI Industries for assistance. If service is not available in your area, call MTI Industries.

LP GAS SAFETY PRECAUTIONS

IF YOU SMELL GAS:

1. Extinguish any open flames, pilot lights and all smoking materials.
2. DO NOT touch any electrical switches.
3. Shut off the gas supply at the tank valve(s) or gas supply connection.
4. Open all doors and other ventilating openings. (DO NOT USE THE RANGE HOOD).
5. Leave the area until the odor clears.
6. Have the system checked by a trained professional before using again.

Be careful when doing any work or maintenance in the motorhome, that you do not puncture a gas line with a nail, screw, or drill bit.

Warning labels and decals are used throughout the motorhome in locations where the potential for a dangerous situation is present. They have been installed not only because of the requirement to do so, but also as a constant reminder to occupants of the motorhome to exercise proper caution when using or being around LP Gas appliances and equipment. Make sure that you and your family understand and follow all of them. Never remove these warning labels and decal's. If one should be lost, it should be replaced as soon as possible.



WARNING: DO NOT store LP Gas containers inside the motorhome. LP Gas containers are equipped with safety devices which relieve excessive pressure by discharging gas to the atmosphere.

CARE & MAINTENANCE

Periodic maintenance and cleaning of the motorhome is necessary to retain the dependability, safety, and appearance that will provide you with many miles of trouble free operation, as well as protecting your investment.

Make sure to read and follow all the maintenance tips and schedules that appear in this manual. Keep accurate records of maintenance functions performed, and perform all owner obligations as may be required by the chassis manufacturer to keep the warranty in force.

It is also important to note that operating conditions will affect service timetables. Driving in extreme conditions such as heavy dust, continuous short trips, or start and stop heavy traffic means that service durations will be shortened. Discuss service timetables with both your dealer and chassis service representative. Preventative maintenance will pay for itself many times over by catching or preventing problems before they occur. Many repair costs are greatly increased due to the fact a small problem can begin to affect other parts and systems of the motorhome if left unattended.

If a situation arises involving maintenance or a cleaning activity for which you are not sure of the proper procedure, do not hesitate to contact your dealer, or chassis service representative for information.

EXTERIOR PAINT

The exterior painted finish on the motorhome is of the finest quality. Proper maintenance will assure a long lasting durable finish.

NOTE: Do not wax or polish the exterior for the first 60 days.

Pressure Washing:

Extreme caution should be used when using a pressure washer to wash the motorhome, as severe damage to the paint could result. The tip of the pressure washer should never be adjusted to a "pin point" type spray. A fan type spray which disburses the water over a larger area should be used. Also, if the pressure is adjustable set it to the lowest setting. The spray tip should remain approximately 30" away from the surface of the motorhome to ensure safe cleaning.

NOTE: Do not use rubbing compound or other abrasive cleaners on the motorhome exterior. If using a tar and/or insect remover, insure it is safe for painted surfaces and decals.

Precautionary Measures:

- Avoid parking under trees or near ocean salt spray.
- Ice or snow should not be scraped from the painted surface: Brush off.
- If the motorhome sets more than 24 hours, remove any front protective covering (bra) while not being driven.
- Commercial washes should be avoided. Wash with cold water using a mild liquid soap. Dry wiping with a dry cloth is not recommended.

Driving:

- Avoid gravel roads.
- Anti-freeze, gasoline, or window solvent spilled on painted surfaces should be rinsed off with water immediately.
- Rinse off bugs and bird droppings daily with water.

Any exterior finish will deteriorate with time. Dulling and fading can be increased by prolonged exposure to extreme sunlight, air pollutants, and excessive moisture. Surface weathering of fiberglass will not diminish structural integrity. Regular monthly washing and polishing of exterior surfaces is the best insurance against surface deterioration such as fading, yellowing, or chalking.



CAUTION: Take care to avoid spraying water directly into refrigerator and furnace vents when washing the motorhome.

If surface deterioration is apparent, contact a Presidio dealer for assistance with finish restoration. Physical damage to the fiberglass, such as cracks, holes, and chips, must be attended to immediately to avoid moisture from entering and causing problems with interior walls and components. Cover these areas with plastic, sealing the edges with tape until proper repairs can be made.

SEALS & ADHESIVES

It is important to maintain the seals and adhesives of the motorhome to prevent moisture from entering and destroying the motorhome components. When washing the motorhome, inspect the seals for signs of dry rot and wear. Be aware that weather, sun, and road vibration will have an effect on seals, causing them to dry, crack, or separate. If you are unsure what to look for, have your dealer instruct you, and also show you the correct method for renewing the seals. All exterior seals should be checked and resealed as needed at least every 6 months. This also includes the individual roof components as well. The rubber seals around the slideout opening can be wiped with 100% silicone spray to help prevent cracking. Check with your dealer for the type of caulking required, different areas require different types of seals.

Inspection of roof components at least twice a year is very important to make sure seals are not cracked or worn. Proper maintenance of seals is necessary to keep moisture from entering and causing severe damage such as rot, mold, or mildew. If you encounter drying, cracked, or weathered seals, make sure to reseal as necessary. Use a self leveling sealer to repair voids/cracks in the roof sealant.

NOTE: It is especially important to check the seals before and after periods of extended storage or non-use. Fall and spring inspections are recommended.



WARNING: Some products may contain hazardous materials which require special handling. Read labels carefully. Follow all of the product manufacturer's safety requirements.

NOTE: If the roof should somehow be punctured, cover the puncture to seal out moisture, and have it repaired as soon as possible (check with your dealer).

Check the clear exterior trim sealant around windows at regular intervals. Follow previous instructions for checking the condition of seals and repairing as necessary. Make sure that the windows remain operative by adjusting and lubricating latches and moving parts annually. Also check the condition and operation of the door locks, adjusting and lubricating as necessary. Use powdered graphite or light oil to lubricate moving parts on doors and windows. Vinyl seals around windows and doors should be cleaned regularly, and kept supple by use of a silicone spray.

Keep screens and window slides clean and free of debris, to maintain proper operation, and avoid component road damage. Test the operation of all windows occasionally to make sure they are working properly, including closing flush and locks holding tight. Check with your dealer if you are unsure about the correct methods of lubrication and adjustment.

NOTE: Be aware that moisture can accumulate in locks and hinges of windows and doors, causing damage or faulty operation. Do not force the operation of these components in sub-freezing weather.



WARNING: Failure to maintain seals through regular maintenance can lead to damage of motorhome components, and may be considered abusive treatment under the terms of the motorhome warranty.

FRAME

Check the condition of the frame regularly. Keep it clean, and repaint as necessary to help avoid rust. It is especially important to keep underbody components clean, when driving the motorhome in the winter in areas where road salts are used.

EXTRUSIONS & ALUMINUM SURFACES

Clean and wax all extrusions when waxing the motorhome sidewalls, to help avoid surface pitting. Special aluminum cleaners are available to restore the original luster to aluminum surfaces. Make sure to follow the instructions for use as outlined on the product package. Chrome surfaces can be restored with special chrome polish if regular cleaning methods are not successful. Again, make sure to follow product instructions for use.

TIRES & RIMS

Using soap, water, and a medium bristle brush will keep the sidewall clean and the whitewall looking bright.

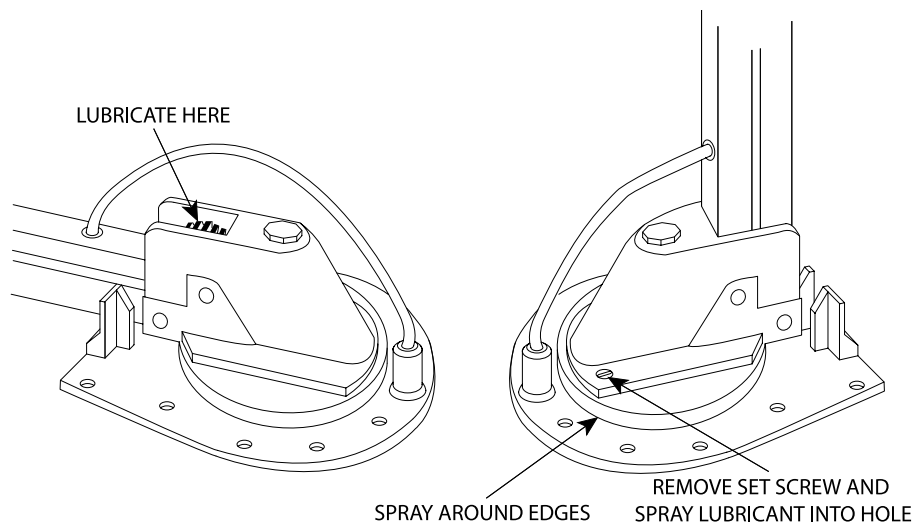
To keep the rims of the motorhome looking their best, follow these simple steps:

1. Rinse the wheel with high-pressure water to remove any debris, grit or dirt particles.
2. Use a 100% cotton cloth dipped in a mild soap solution to help remove stuck on dirt and grease.
3. Rinse the remaining soap residue from the wheel.
4. Dry the wheel thoroughly with a 100% cotton cloth.

NOTE: For more information regarding the care and maintenance of the motorhome rims contact Accuride Corporation at 800-869-2275.

TV ANTENNA

To lubricate the elevating gear, apply a liberal amount of silicone spray lubricant to the elevating gear with the lift in the down position. Run the lift up and down a few times to distribute the lubricant over the gears.



If rotating the antenna becomes difficult, normal operation can be restored by lubricating the bearing surface between the rotating gear housing and the base plate. Any spray type silicone lubricant may be used.

Elevate the antenna and remove the set screw from the rotating gear housing (see illustration). Spray lubricant into hole and around the edges of the gear housing. Rotate the gear housing until the lubricant coats the bearing surfaces and the antenna rotates freely.

EXTERIOR LIGHTS

Make sure to check the operation of all exterior lights often. Check identification, clearance, turn signal, brake, and backup lights to make sure they are working correctly. Replace burnt out bulbs as soon as possible.

APPLIANCES, SINKS & COUNTERTOPS

Clean with hot soapy water or a good liquid cleaner. Avoid using abrasive cleaners. Never use steel wool on stainless steel, since the steel particles left in the sink can rust and become unsightly. When cleaning stainless steel with a mild cleanser, rub gently with the grain, and rinse well. Rinse after each use and wipe dry.

Be sure to remove all food and ice from the refrigerator at the end of each trip. Prop the door open slightly to keep the interior dry, and free of mold, mildew, and odors.

Make sure to read all literature provided with each of the appliances, and follow the maintenance instructions included. Pay particular attention to any cautions or warnings included. Also read the rest of this manual, following the instructions for the care and use of appliances.

NOTE: Do not place hot pans directly on countertop surfaces. Extreme heat can cause scorching, and may also deteriorate the bonding agents which secure the countertop to the base cabinets.

PRE-FINISHED PANELS & WOOD SURFACES

Treat cabinetry and wood surfaces as you would any fine furniture product in your home. Proper care and maintenance of wood products will keep them looking like new for many seasons of use.

Clean pre-finished panels with a spray-type furniture polish. Avoid getting wood surfaces wet. Do not use abrasive cleaners around wood finishes. Clean regularly with a soft cloth and cleaner designed for wood products such as lemon oil or any oil based wood cleaning product. Avoid constant exposure to direct sunlight which can cause fading and drying of wood surfaces.

WATER SYSTEM

Check all hoses, fittings, and connections regularly for leaks and signs of wear. Make sure to keep the system sanitized, and take care to winterize during cold weather (see instructions elsewhere in this manual). Do not allow water to remain in system for extended periods of time.

ELECTRICAL SYSTEM

The electrical system requires minimal maintenance under normal circumstances. Most electrical maintenance in the motorhome involves the chassis and auxiliary batteries. Keeping the batteries properly maintained will help to eliminate many frustrating electrical problems. Make sure to refer to the index for the location of electrical and battery maintenance information elsewhere in this manual.

The generator is another area in which simple preventive maintenance can “head off” problems before they happen. Read the manual supplied with the generator for the care and maintenance required on a regular basis. The first scheduled maintenance should be at 50 hours, followed thereafter with regular service intervals of 150 hours.

If you experience electrical problems with the motorhome, make sure to have it checked by a qualified electrician.

ROOF VENTS

Check roof vents regularly for debris that may block air flow or jam the cranking mechanism. Lubricate the cranking mechanism with light oil.

ABS PLASTIC

Many components of the motorhome are constructed of strong, lightweight ABS plastic. Sometimes, it may be necessary to remove stains, or generally clean. A mild solution of soap and water will clean many stains and should be used initially. Tougher stains may require stronger cleaners, but be sure to read the label to determine if the product is recommended for use on plastics.

Avoid abrasive cleanser (even the liquid and cream types), alcohol based products, and solvents such as acetone and MEK. Gasoline and kerosene should not be used because of the damaging effect they have on the plastic surface, as well as the fire hazard they present. Often the damage caused by solvents, alcohol, and oil or citrus based products may not be immediately noticeable, but the plastic is made weaker, and prone to stress cracking.

WINTER PRECAUTIONS

Water Systems – If the fresh water storage tank is located inside the coach, the normal heating of the coach during cold weather should be enough to insure its not freezing. In severe cold weather (40°F or Lower) however, it is wise to monitor the water temperature in the tank, and take appropriate steps to drain and winterize if necessary. In severe cold it may be necessary to open lower cabinet doors at night in both the bath and kitchen areas to keep warmer air circulating around water fixtures.

If you are going to leave the coach unheated for any length of time in severe cold conditions, it is best not to keep water in the fresh water tank. It may work best to carry cooking and drinking water with you in plastic jugs instead.

If you will be using your motorhome when conditions fall below the freezing level, it will be necessary to protect the drainage system components from damage by the addition of an approved antifreeze solution as outlined on the product directions. Drain lines which are exposed outside the motorhome are especially susceptible to freezing, and steps should be taken to protect them from damage.

Food Storage – In the event the motorhome is left for a period of time without the furnace in operation, canned goods and other foods packed in water should be stored as high as possible, since heat rises. They might also be stored in the refrigerator as insulation against the cold. Store dry foods, and other items that are not damaged by freezing, in the lower storage areas.

LP Gas System – Make sure to use an LP Gas that will vaporize properly in the colder temperatures. Check with your LP Gas representative for the proper fuel, and reread the information on LP Gas selection in the LP Gas section of this manual (check the Index for the location).

NOTE: It is important to remember that heating with LP consumes gas rapidly, so refill the tank immediately when low, to avoid running out completely.

Heating – Use ONLY the furnace to heat the motorhome. It is properly vented to the outside.



WARNING: Never use the range for heating - Asphyxiation could result.

Condensation – Cooking produces large amounts of moisture. Not just steam from pots and pans, but also as a product of combustion. Make sure to use the exhaust vents and open a window slightly to control the humidity. At night, leave a roof vent and/or a window slightly open.

STORAGE PREPARATION

When storing the motorhome for the winter (or other extreme conditions), certain precautions need to be made to protect it until you open it again for use. Make sure to talk with your local dealer concerning any special requirements for storage in your particular geographic area. The following steps are general, and your dealer can help you choose those that are most appropriate for your needs.

- Make sure to park the motorhome on a level surface.
- Make sure to winterize the chassis as outlined in the chassis owner's manual, and also the 110 volt generator as outlined in the generator's owner's manual.
- Clean the motorhome thoroughly, as previously outlined, including the refrigerator.
- Make sure all electrical switches and appliances are turned off.
- Close all the drapes and curtains, and protect the curtains from sun fading by placing foil, or paper between the windows and the screens.
- Make sure all windows, doors, and vents are closed securely. Cover exterior vents on appliances to prevent moisture and insects from entering during storage.
- Check the interior of the motorhome periodically while in storage to make sure leaks have not developed, or condensation formed that can cause damage to interior components. Condensation can most readily be observed as moisture accumulation on windows and mirrors. To reduce condensation, make sure to air the motorhome out occasionally during storage.

- Be sure that both the chassis and coach batteries have the proper electrolyte level and that they are fully charged (specific gravity of 1.260). A discharged battery will freeze and crack the case, ruining the battery. In storage, a battery will lose charge gradually over a 30 to 45 day period, even when disconnected by use of the battery disconnect switch. We recommend that at least monthly the batteries be checked for charge. If the charge is 80% (specific gravity of 1.235) or less, it must be recharged. You may wish to remove the batteries from the motorhome and store them in a heated area. However, even when warm, the battery charge level must still be maintained. A warm battery accepts charge much more readily however, than a cold one. Make sure to follow all precautions associated with battery care and maintenance outlined in the electrical section of this manual.
- Store with as much fuel as possible in the fuel tank to limit condensation buildup.
- Check engine coolant, making sure antifreeze is sufficient for local temperature extremes.
- Make sure the tires are inflated to correct pressures.
- Store the windshield wiper arms and blades inside the motorhome.
- Let the engine run for a period of time until it is warm. Change the oil and oil filter.
- Run the air conditioner during the final engine warm up to ensure the compressor seal is lubricated.
- If snow accumulates on the motorhome, try to remove it as often as you can.

A primary concern when winterizing the motorhome is to make sure the water systems are protected against damage caused by freezing. Follow the water system winterizing procedure outlined in the Water and Drainage section of this manual (check the index for location).

NOTE: Be sure to read the rest of this manual, and follow any additional information on storage, cleaning and winterizing procedures.

MOLD

What are molds?

Molds are microscopic organisms that naturally occur in virtually every environment, indoors and out. Outdoors, mold growth is important in the decomposition of plants. Indoors, mold growth is unfavorable. Left unchecked, molds break down natural materials, such as wood products and fabric. Knowing the potential risks is important for an owner to protect their investment.

What factors contribute to mold growth?

For mold growth to occur, temperatures, indoor or outdoors, must be between 40° and 100° Fahrenheit and also have a source of moisture, such as humidity, standing water, damp materials, etc. Indoors, the most rapid growth occurs with warm and humid conditions.

How can mold growth be inhibited?

By controlling relative humidity, the growth of mold and mildew can be inhibited. In warm climates, use of the air conditioner will reduce the relative humidity. Vents are located in the bathing and cooking areas and constant use is advised during food preparation and bathing, even during cold weather. Additionally, opening a window during these activities will assist in ventilation. In extremely humid conditions, the use of a dehumidifier can be helpful.

NOTE: If using a dehumidifier, please read and follow all manufacturer instructions and recommendations to the use and cleaning of the dehumidifier.

EFFECTS OF PROLONGED OCCUPANCY:

The motorhome was designed primarily for recreational use and short-term occupancy. If you expect to occupy the motorhome for an extended period, be prepared to deal with condensation and the humid conditions that may be encountered. The relatively small volume and tight compact construction of modern recreation vehicles mean that the normal living activities of even a few occupants will lead to rapid moisture saturation of the air contained in the trailer and the appearance of visible moisture, especially in cold weather.

CONDENSATION:

Just as moisture collects on the outside of a glass of cold water during humid weather, moisture can condense on the inside surface of the motorhome during cold weather when relative humidity of the interior air is high. This condition is increased because the insulated walls of a recreation vehicle are much thinner than house walls. Estimates indicate that a family of four can vaporize up to three gallons of water daily through breathing, cooking, bathing, and washing. Unless the water vapor is carried outside by ventilation, or condensed by a dehumidifier, it will condense on the inside of the windows and walls as moisture, or in cold weather as frost or ice. It may also condense out of sight within the walls or the ceiling where it will manifest itself as warped or stained panels. Appearance of these conditions may indicate a serious condensation problem. When you recognize the signs of excessive moisture and condensation in the motorhome, action should be taken to minimize their effects. For tips on controlling condensation see the "Tips To Controlling Condensation" section.

NOTE: The motorhome is not designed, nor intended, for permanent housing. Use of this product for long term or permanent occupancy may lead to premature deterioration of structure, interior finishes, fabrics, carpeting, and drapes. Damage or deterioration due to long-term occupancy may not be considered normal, and may under the terms of the warranty constitute misuse, abuse, or neglect, and may therefore reduce the warranty protection.

Due to the physical size of a recreation vehicle, moisture condensation can be more of a problem in a motorhome than in the average home. However, utilizing proper condensation reduction techniques will greatly reduce the possibility of issues relating to condensation problems.

Therefore, it is imperative that roof vents, windows, and/or range hood vents are opened while cooking, using the shower, washing or drying clothes, or any other steam or moisture-generating activity. Opening vents or windows on opposite sides or ends of the motorhome is an effective method of creating a "cross-flow" of air movement, and assisting in the reduction of water or steam within the living quarters. Use of dehumidifiers may be advisable or required in high humidity climates, dependent on the cooking or water use habits of the motorhome owner. Any water spills from showers, sinks, open windows, or leaks must be dried immediately utilizing dehumidifiers, fans and vacuum sweepers rated for wet use, to prevent further damage to the vehicle and contents. Professional carpet cleaning water extraction services are recommended to remove moisture from carpeting. Parking the motorhome in a shaded area during the summer will also reduce the resultant condensation from operating the air conditioner during high humidity and high temperature situation. Avoid overfilling closets and always load the drawers and cabinets in a manner, which allows air circulation. Clothes must be completely dry prior to storage and should be hung loosely in closets to allow air circulation within the closet. Dirty laundry must be stored in well-ventilated areas and must not lie around while wet or damp. The clothes dryer must be vented to the exterior of the motorhome.

Reduction of condensation will also diminish the possibility of the motorhomes insulation from becoming damp and dropping in efficiency.

TIPS TO CONTROLLING CONDENSATION:

To avoid condensation problems, try to follow these tips to help alleviate excess moisture.

- Allow excess moisture to escape to the outside when bathing, washing dishes, hair drying, laundering, and using appliances and non-vented gas burners.
- Always use the vent hood when cooking.
- Keep the bathroom door closed and the vent or window open when bathing and for a period of time after you have finished.
- Do not hang wet clothes in the motorhome to dry.
- In hot weather, start the air conditioner early as it removes excess humidity from the air while lowering the temperature.
- Keep the temperature as reasonably cool during cold weather as possible. The warmer the vehicle, the more cold exterior temperatures and warm interior temperatures will collide on wall surfaces, thus creating condensation.
- Use a fan to keep air circulating inside the vehicle so condensation and mildew cannot form in dead air spaces. Allow air to circulate inside closets and cabinets (leave doors partially open). Please keep in mind that a closed cabinet full of stored goods prevents circulation and allows the exterior temperature to cause condensation.

The natural tendency would be to close the vehicle tightly during cold weather. This will actually compound the problem. Simply put, you need to remove some of the warm air, and allow some cool outside air to get inside the vehicle, so the furnace will not recycle the humid interior air.

Use fluorescent lights and minimize prolonged use of incandescent lights, which produce heat and contribute to condensation in the roof above the ceiling lights.

VENDOR CONTACT INFORMATION

| | |
|------------------------|---------------|
| A & E Awnings | .800-216-5115 |
| ASA | .800-688-3135 |
| Atwood Mobile Products | .800-825-4328 |
| Dometic | .800-544-4881 |
| Esco | .574-264-4756 |
| Evans | .800-878-7147 |
| Fantastic | .800-521-0298 |
| Flexsteel | .574-831-4050 |
| Freightliner LLC | .800-385-4357 |
| Hehr Windows | .574-935-5122 |
| HWH Corporation | .800-494-3213 |
| Intellitec Products | .800-251-2408 |
| KIB Enterprises | .574-262-0578 |
| KVH Industries | .410-847-3327 |
| Kwikkee Products | .800-736-9961 |
| Magnum Teknologies | .425-353-8833 |
| Mor/Ryde | .574-293-1581 |
| Nappanee Window | .574-773-5667 |
| Norcold | .800-543-1219 |
| Onan | .800-888-6626 |
| Sharp | .800-237-4277 |
| Shurflo | .800-854-3218 |
| Sony | .800-442-7717 |
| Splendide | .800-356-0766 |
| Thetford | .800-354-4135 |
| Trimark | .800-477-0343 |
| Velvac | .800-783-8871 |
| Viracon | .800-533-0482 |
| Visteon | .800-847-8366 |
| Winegard | .800-288-8094 |

