PLEASURE-WAY
PROMASTER LEXOR

Lithium Batteries
2000 WATT INVERTER

WARNING

IT IS NOT SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING.
Cooking appliances need fresh air for safe operation.

Before Operation:
Open overhead vent or turn on exhaust fan.
Open Window.
FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.
Unlike homes, the amount of oxygen supply is limited due to the size of the recreational vehicle, and proper ventilation when using the cooking appliances(s) avoids dangers of asphyxiation. It is especially important that cooking appliances not be used for comfort heating, as the danger of asphyxiation is greater when the appliance is used for long periods of time.

WARNING

DO NOT FILL CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY. FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.
Overfilling the propane container can result in uncontrolled propane flow, which can cause fire or explosion. A properly filled container contains approximately 80 percent of its volume as liquid propane.

DANGER

IF YOU SMELL PROPANE:
Extinguish any open flames, pilot lights and smoking materials.
Do not touch electrical switches.
Shut off the propane supply at the container valve(s) or propane supply connection.
Open doors and other ventilating openings.
Leave the area until the odor clears.
Have the propane system checked and leakage source corrected before using again.
Failure to comply could result in explosion resulting in death or serious injury.

WARNING

Propane cylinders shall not be placed or stored inside the vehicle. Propane cylinders are equipped with safety devices that relieve excessive pressure by discharging propane to the atmosphere.
FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

PLEASURE-WAY INDUSTRIES LTD.

Pleasure-Way Industries Ltd. takes great pride in the quality and excellence that the Pleasure-Way name represents. We appreciate having you as a customer and welcome you into the Pleasure-Way family. This manual is provided to introduce you to the many features of your new Lexor including operation, maintenance and warranties. **We strongly advise you to take time to read this manual, the Ram Promaster chassis owners manual as well as those of the motorhome components before you use your new motorhome.** It will help you to better understand the many operational features of this recreational vehicle.

After reading this manual, be sure to keep it in the motorhome as a reference. Your Pleasure-Way dealer will be glad to answer any further questions about the operation of your motorhome and the appliances.

All reasonable precautions have been taken in the preparation of this manual. We have been as accurate as possible at the time of this publication. However, due to our policy of continuous improvement and refinement to our product, Pleasure-Way reserves the right to make product changes at any time without prior notice and without incurring obligations. As a result, Pleasure-Way assumes no responsibility for errors or omissions in the accuracy in the content of this manual.

We know that you will enjoy your new Pleasure-Way and we wish you many miles of pleasant and carefree driving. Happy Travels!

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Pleasure-Way Industries Ltd. Five-Year Limited Motorhome Warranty

CUSTOMER RESPONSIBILITY

It is important you read and understand the information provided to you in the package containing all the manuals and information pertaining to your Pleasure-Way Motorhome.

Familiarize yourself with the applicable warranties. You are responsible for ensuring the procedures for obtaining warranty repairs are followed properly. It is your responsibility and obligation to return your motorhome to your authorized Pleasure-Way dealership for warranty service repairs.

As the owner of the Motorhome, you are responsible for regular and proper maintenance performed in accordance with the Pleasure-Way and OEM manuals provided. Regular and proper maintenance will help prevent conditions arising from neglect that are not covered under warranty.

WHAT THIS LIMITED WARRANTY COVERS:

Pleasure-Way Industries Ltd. warranties the specified new Motorhome free from defects in material and craftsmanship on portions manufactured by Pleasure-Way Industries Ltd. under normal use and service. Pleasure-Way Industries' obligation, under this limited warranty, shall be limited to 60 months / 60,000 miles / 100,000 kilometers (whichever comes first) after the date of purchase by the ***first retail purchaser*** from an Authorized Pleasure-Way Dealer. Warranty shall be fulfilled by an Authorized Pleasure-Way Dealer or Authorized Pleasure-Way service facility. ***This Pleasure-Way Warranty is non-transferable to subsequent owners.***

WHAT THIS LIMITED WARRANTY DOES NOT COVER:

This limited warranty shall not apply to the following:

- If the Motorhome has been altered outside our factory in any way so as, in our sole opinion and discretion, to affect its stability, operation or reliability.
- Deterioration due to wear and or exposure, including but not limited to rust: corrosion, oxidation and cosmetic blemishes.
- If the Motorhome, in our sole opinion and discretion, has been subject to misuse, negligence, or accident.

- If the Motorhome has been declared a total loss by an insurance company, or a motorhome title indicates that is designated as “salvage”, “junk”, or “rebuilt” or word of similar impact.
- The automotive chassis is covered by its own manufacturer’s warranty, including by way of example, but not limited to: power train, engine, drive-train, tires and muffler. To learn more about the specific automotive chassis not covered under the Pleasure-Way warranty please contact your authorized selling dealer, Pleasure-Way Industries Ltd. or review your Ford, Mercedes Benz or GM warranty package information provided with the coach.
- Appliances and components covered by their own manufacturer’s warranties, including but not limited to: the microwave, refrigerator, stove, heater, television, generator and roof air conditioners. To learn more about specific component parts or appliances not covered under the Pleasure-Way warranty please contact your selling dealer, Pleasure-Way Industries or review your warranty package information provided with the coach.
- Unauthorized repairs, alterations or modifications.
- Routine maintenance.
- Items that are working as designed but which you are unhappy with because of the design or function.
- Damages caused by, but not limited to: hail, tornadoes, lighting, floods, earthquakes, hurricanes, fire, rain, and all other environmental conditions, which include but are not limited to, tree sap, tar, chemicals, oils, salts, road hazards, stone chips, infestations, rodents and /or acts of God.
- Defects or repairs required, as an example but not limited due to; improper loading, load distribution, accident, collision, vandalism, abuse, neglect, improper maintenance, rust or corrosion.
- Failure to seek and obtain repairs in a timely manner.
- Failure to use reasonable efforts to mitigate damage caused by defects.
- Failure to comply with the instructions set forth in the owner’s manual.
- Exterior storage compartments may not be moisture free due to weather and humidity conditions. It is advised that you store items accordingly. Pleasure-Way is not responsible for goods damaged while stored in exterior storage compartments.
- Condensation and the results of condensation including, but not limited to, water damage and the growth or mildew or mold. Mold and mildew are natural growths given certain environmental conditions and are not covered by the terms of this warranty
- Failure of the coach and /or chassis resulting in incidental damages, such as but not limited to: goods stored both inside and outside the coach; loss of use and equipment of Motorhome; inconvenience; cost of rental vehicle; cost of accommodations; travel expenses; towing; meals; and other miscellaneous incidental expenses. Some states do not allow exclusions or limitation of incidental or consequential damages, so the above limitations or exclusion may or may not apply to you.

<u>THE CONDITIONS OF THIS LIMITED WARRANTY SHALL NOT APPLY TO DEGENERATION DUE TO WEAR AND TEAR AND EXPOSURE AFTER THESE LIMITATIONS:</u>

- For **ninety (90) days** from the original retail purchase date, adjustments to compartment door latches, light bulbs, fuses, remote and smoke detector batteries.
- For **one (1) year** from the original retail date purchase date or 12,000 miles / 20,000 kilometers (whichever comes first), by the original retail purchaser from an Authorized Pleasure-Way Dealer;
  All seat, curtain, door panel and wall fabrics used in the coach.
  Window seals and caulking.
  Exterior power cable hatch.
  City water fill.
  Porch light.
  Exterior cable TV outlet

Carpet
Linoleum.
Black and grey water termination valves; and
Exterior striping.

For **two (2) years** or 24,000 miles or 40,000 kilometers (whichever comes first) by the original retail purchaser from an Authorized Pleasure-Way Dealer:
Ultraleather fabrics.
Foam used in cushions.

For **three (3) years** or 36,000 miles or 60,000 kilometers (whichever comes first) by the original retail purchaser from an Authorized Pleasure-Way Dealer:
Exterior painted surfaces.

This warranty is expressly in lieu of all other warranties, expressed or implied, and all other obligations or liabilities for alleged representation or negligence. Pleasure-Way Industries Ltd. neither assumes nor authorizes any other person to assume for us any liability in connection with the sale of our Motorhomes other than expressed above.

All correspondence should be directed to the authorized Pleasure-Way dealer from whom the Motorhome was purchased and must specify the serial number and date of purchase of Motorhome in question.

Pleasure-Way Industries Ltd. reserves the right to make changes in Motorhomes built and/or sold by it at any time without incurring any obligations to make the same or similar changes on motorhomes previously built and/or sold by Pleasure-Way Industries Ltd.

For emergency repairs while traveling, you may choose to deal with non-authorized RV service facilities; however, all warranty repairs must be pre-authorized by Pleasure-Way. Pleasure-Way will, at its option, replace or repair free of charge any defective part, including labor. The purchaser shall notify their authorized Pleasure-Way Dealer within the warranty period.

If you obtain warranty repairs from a non-authorized RV service facility without Pleasure-Way pre authorization, it is at Pleasure-Way's sole discretion whether or not to reimburse the claim.

In the event that this Motorhome is used for commercial or rental fleet purposes, the warranty coverage shall be limited to one (1) year 12,000 miles / 20,000 Km (whichever comes first) from the date of original purchase.

Obtaining Warranty Repairs:

To obtain warranty repairs, you must contact your authorized Pleasure-Way dealer and schedule an appointment. It is best if you have a written list of defects or items in need of repair. As the owner, you are solely responsible for the maintenance of the motorhome as required or recommended by the owner's manual and associated costs of that maintenance. Repairs necessitated by failure to maintain the Motorhome as required or recommended are not covered by warranty.

Note: Pleasure-Way does not control the scheduling of service work at authorized or independent dealerships. You may encounter some delay in scheduling or completion of work.

Warranty Policies

Warranty repairs must be within the five year or 60,000 miles / 100,000 kilometers (whichever comes first) limited warranty.

Pleasure-Way warranty registration cards must be on file before any claims will be processed. Claims made without warranty registration cards will be rejected until proof of ownership can be established.

Pleasure-Way Industries Ltd. will not reimburse any claims for work done on any components or appliances that are covered under their respective manufacturer's warranties. These warranties must be claimed through the manufacturer of the appliance or component. Examples include but are not limited to: refrigerator, microwave, roof air-conditioning, water pump, furnace, TV etc.

All warranty work required to be done on the chassis must be done at an authorized Ford , Mercedes-Benz, Chrysler/Dodge or Chevrolet dealership (depending on your chassis make) and processed through their warranty procedures. Pleasure-Way Industries Ltd. will not reimburse any claims regarding the chassis. Pleasure-Way Industries Ltd. will pay for the removal and reinstallation of motorhome components only if it is absolutely necessary to perform Chassis warranty repairs. Pleasure-Way Industries Ltd. will not reimburse any costs in the removal and reinstallation of these components if it is: outside of the warranty period; a non-warranty repair; and /or routine maintenance or service.

SAFETY

For your safety while travelling with your Pleasure-Way motorhome, we have provided safety components throughout the vehicle. In order for your vehicle to maintain the safest possible conditions, these components must be tested and maintained on a regular basis, according to the detailed manufacturer's operating instructions.

All Pleasure-Way Motorhomes in Canada are CSA and CMVSS certified, and may exceed the approved installation criteria.

All Pleasure-Way Motorhomes in the United States are FMVSS certified and bear the R.V.I.A. seal of approval, and may exceed the individual state requirements.

1) **Smoke Detector (image 1)**

A smoke detector is located on the ceiling of your unit near the front. Smoke detectors may give you a warning of fire and smoke, but only if used and maintained in accordance to the manufacturer's instructions.

- This device should be tested after each time your vehicle has been in storage, before each trip, and at least once each week during your travels.
- Do not block air circulation in the area where the smoke detector is located.
- Ensure you connect the battery inside the detector upon receiving your new unit. (9 volt battery located inside the unit.)
- Install a fully charged fresh battery at least once a year.

2) **Fire Extinguisher (image 2)**

A 3-pound capacity fire extinguisher is provided and located at the side door main entrance for ease of accessibility from the interior or exterior.

Warning: This fire extinguisher is a type "BC", which will extinguish flammable liquids and electrical fires, but not wood, paper and cloth fires. You should inspect the extinguisher at least once a month according to the manufacturer's instructions.

Image 1

Image 2

3) LP/ Carbon Monoxide Gas Detector

A liquid propane (LP) / carbon monoxide (CO) gas detector is located near the floor level at the rear of the motorhome interior. This detector will operate to detect liquid propane & carbon monoxide gas as well as other gases that are heavier than air. Your components that require LP gas are provided with complete ventilation to the exterior and are sealed off to the interior for your added safety. This detector is powered by the auxiliary battery and is operating at all times unless the battery is disconnected or the red disconnect switch is turned off.

- The LP/CO gas detector should be tested after each time your vehicle has been in storage, or before each trip and weekly while the vehicle is in use. The test procedure should be performed in accordance to manufacturer's instructions.

- Do not block air circulation in the area where the LP/CO gas detector is located.

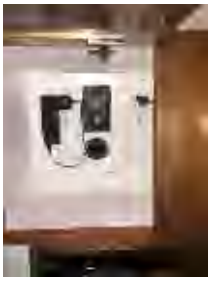
Note: The LP/CO Gas Detector will sound to indicate a low coach battery charge.

(Driver side ottoman)

4) GFCI (Ground Fault Circuit Interrupter) Outlets

A ground fault circuit interrupter (GFCI) 110-volt receptacle located on the driver side ottoman provides protection against line-to-ground electrical shock hazards that could be harmful or even fatal. The outlets that are on this circuit are the exterior, kitchen and rear bench receptacles. The GFCI receptacle must be tested at least once a month in accordance with the manufacturer's instructions.

The GFCI for the microwave and fridge is found in the cabinet above the Blu-ray player.

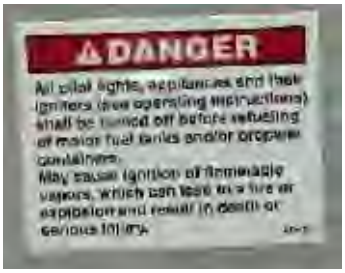


Refueling

When you are refueling your fuel tank or your propane system, ensure that your vehicle and your main LP valve is shut off. Ensure that the pilot lights have been extinguished as well.

Some appliances in your vehicle have auto ignition. Ensure the appliances are shut off so ignition will not activate.

- **Warning: Even with the main LP valve shut off there is enough LP gas in the lines for the pilot lights to continue to burn.**



Filling the LP Gas Fuel Cylinder

The propane tank valve must be closed and all pilot lights and appliances, along with their igniters, must be turned off during refueling of the motor fuel and / or the propane fuel tank. Only qualified personnel should refuel your propane tank.

Do not refuel the propane tank to more than 80% of its capacity. Liquid will appear at the breather valve at 80%.

To reduce the danger of fire and/or explosion, do not store gasoline or other flammable liquids inside your vehicle.

NOTE: Ensure the propane system valve is fully shut when the vehicle is in motion. It is not safe to travel while propane appliances are in use. The Propane switch is located in the driver side utility center.

Seat Belts

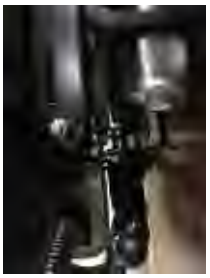
Only forward-facing seats equipped with factory installed seatbelts are to be occupied while the vehicle is in motion. All passengers must be seated in these seats only. Seat belts must be fastened while the vehicle is in motion.

Appliances

It is not safe to use cooking appliances to heat the interior of the coach due to the danger of asphyxiation. It is recommended that you read all of the appliance owner / operating manuals prior to using the appliances.

TV Flat Screen

When the vehicle is in motion, it is necessary to have the flat screen television locked into travel position to prevent damage to the flat screen and to the TV cabinet.



Generator

When launching a boat or some form of watercraft with your Pleasure-Way motorhome, it is imperative to not submerge the generator in water. Please refer to the generator owner / operating manual for proper use and maintenance information. The generator is located behind the rear axle, between the frame rails. The generator access door faces the rear of the vehicle.

Clearance

Your motorhome is equipped with underside holding tanks, waste tanks, plumbing lines, propane lines and other RV related items. Please be careful when driving your motorhome on uneven or poorly maintained roadways.

Emergency Escape

If the need to make an emergency escape from the interior of your motorhome arises, all interior doors are equipped with access latches. Your choices of escape routes are as follows: the main entrance at the side door, the driver and passenger side front doors and the rear doors.

MOTORHOME EXTERIOR

Motorhome Dimensions & Capacities

Dimensions		
Length Bumper to Bumper	251” - 20’ 11”	637.5 cm
Length Bumper to Hitch Receiver	251 ¾”- 20’ 11 ¾”	639.4 cm
Height with AC	111 ½”- 9’ 3 ½”	283.2 cm
Width with Mirrors Extended	98 ½” - 8’ 2 ½”	250.2 cm
Width at Running Boards	84 ½” – 7’ ½”	214.6 cm
Towing Capacity	2150 pounds	975 kg

Bed Area: 73 “ wide X 76” Kitchen and Fridge partition to the back doors

Capacities			Weight
Fuel	24 USA gallons	90 litres	149.3 pounds
Fresh Water / Potable Water	29.9 USA gallons	113.2 litres	250 pounds
Grey Water (Sinks and Shower)	20.4 USA gallons	77.2 litres	170 pounds
Black Water (Toilet)	12 USA Gallons	45.4 litres	100.1 pounds
Liquid Propane (LPG) (at 80%)	4.7 USA gallons	18 litres	20 pounds

Chassis Specs		
GVWR	9350 lbs	4242 kg
GCWR	11,500 lbs	5216 kg
GAWR Front	4629 lbs	2100 kg
GAWR Rear	5291 lbs	2400 kg
Tires (all)	LT 225/75R 16 E	
Rims (all)	16 X 6.0	
Tire Pressure Front	65 psi	450 KPA
Tire Pressure Rear	80 psi	550 KPA
Tire Pressure Spare	80 psi	550 KPA

Note: All measurements and capacities are approximations. Every effort has been made to be as accurate as possible.

Promaster Silver Paint Code – PS2

3.6 litre Pentastar V6 Featuring 283 HP / 260 LB-FT Torque

6 Speed Transmission

159” Wheel Base

2150 lbs Towing Capacity

Appliances	Manufacturer	Model
Generator	ONAN RV QG 2800	2.8HGJBB-1120A
Fridge 4.94 cu ft.	DOMETIC (3 way)	RML8330
Convection oven	HIGH POINT	EC028BMR
Air Conditioner	DOMETIC	640312CXX1CO
Air Conditioner Lower	DOMETIC	3310741.016
Cooktop	SMEV/DOMETIC	P18022
Water Pump	SHURFLO	4008-101-A65
Water Heater	Girard or Truma Aqua Go	GSWH-2 DLE60CP
Toilet	Thetford Aqua Magic II	42051
Furnace	ATWOOD	AFSD16121
Awning	Carefree	BY1575823TM
Solar Panel	Carmanah (95 watt)	CTI - 95
TV	LG	24 LB 4510
Blu-ray	LG	BP340
Inverter	XANTREX FREEDOM XI	807-2000
Converter	INTELLI POWER	PD 9145 AL
ATS Switch	PROGRESSIVE DYNAMICS	5100
In dash stereo/nav	Promatser/ Dodge	U Connect 5.0
Dual Coach Batteries	ECO-ION LITHIUM 100 AH	LIFE PO4
Roof Vent	Fantastic Fan	2200

Notice:

- Appliances and options may change without notice and some appliances and equipment may be optional.
- Due to Pleasure-Way's policy of continuous improvement, Pleasure-Way Industries Ltd. reserves the right to make product changes at any time without incurring obligation.
- The chassis manufacturer may make mechanical and option changes without Pleasure-Way Industry Ltd. incurring any obligation.

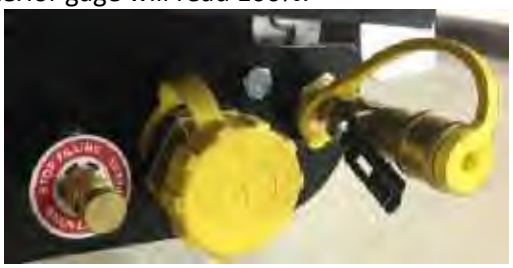
- Pleasure-Way Industries Ltd. cannot be held responsible for changes made to an appliance supplied by another distributor or manufacturer.
- Pleasure-Way Industries Ltd. cannot be held responsible for dealer installed options.

Tire and Loading Information

The tire load information is located on the driver side door pillar.

Passenger Rear Propane Fill, Breather Valve and Quick Connect

This fill valve and breather valve allow the on board propane tank to be filled. Once fluid appears from the breather valve, the tank is filled to 80%. The interior gage will read 100%.

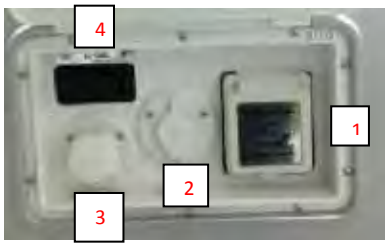


Driver Side Sewer Dump Compartment

Located on the driver side running board, the storage compartment is located behind the driver's door entrance step. This compartment gives ease of access to the gray and black dump handles, as well as the sewer connection. The sewer hose container is to the right hand side of the black water dump handle, mounted below the driver side running board.

Driver Side Utility Center

Located in the middle of the driver side main wall panel, this compartment contains four main components used in your RV: (1) shore power hook-up; (2) cable TV hook-up; (3) pressurized city water hook-up; (4) LP electric valve switch.



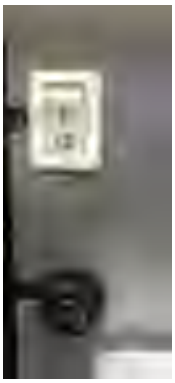
Driver Side Water Heater Vent and Access Door

Located mid-body the driver side, below the fridge vent, this vent gives you access to the exterior working components of the Girard or Truma AquaGo on demand water heater.
During regular use the Off/On switch can be left in the On position; the water heater will only come on when hot water is being used. Turn your water heater off when the motorhome is in storage.

- **Note:** The Girard water heater does not have bypass valves. The non-toxic RV antifreeze is circulated through the water tubes when winterizing.

NOTE: Keep this vent clear from all obstructions.

Girard



Truma

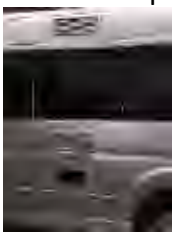
Driver Side Exterior Shower Compartment

Located beside the vehicle fuel fill door, this compartment contains a retractable shower head and hot and cold water taps.

- When winterizing your motorhome be sure to winterize this tap and the shower hose.

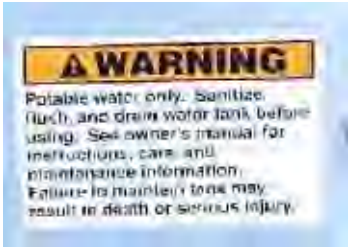
Driver Side Fridge Vents

Located mid-body on the driver side of the vehicle, these fridge vent covers house the back side of the fridge, its electrical connections and propane system. Keep these vents free and clear from debris.



Passenger Side Fresh Water Holding Tank Fill

Located behind the passenger sliding door, this compartment allows you to fill the fresh water holding tank. It also contains the vent tube for your fresh water holding tank.



Driver Side Furnace, Fresh Air and Exhaust Vent (photo 1)

Located in front of the driver side rear wheel next to the water heater, this vent gives off the exhaust of the furnace. **NOTE:** Ensure this vent is free and clear of obstructions at all times.

1)
2)
3)

Passenger Side Exterior 110-Volt Plug (see above photo 2)

Located on the passenger side panel behind the rear wheel, this plug will only function if power is supplied through the generator or shore power. This plug is controlled by the GFCI on the driver side ottoman.

Passenger Side Exterior Porch Light (see above photo 3)

Located above the passenger side sliding door, this light is controlled by the switch on the kitchen end gable.

Passenger Side Power Awning

Located at the roof line of the passenger side, this 10' awning is controlled by the power switch located on the passenger seat base.

*Note: Ensure the awning switch is in the OFF position when the vehicle is in motion. The awning switch should be on when the awning is extended to allow the wind sensor to operate.

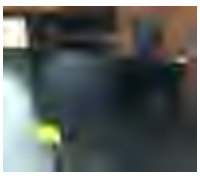
Rooftop Solar Panel

Your vehicle can be equipped with 95 to 285 watt Carmanah solar panels. The solar panels are located over the driver's door and behind the rooftop AC unit. The charge control panel is located on the kitchen end panel facing the rear of the vehicle.

Rooftop Air Conditioner

The vehicle is equipped with an 11,000 BTU Penguin Duo-Therm low profile air conditioner. From the ground to the top of the air conditioner it measures 9' 3 ½". Ensure you have enough clearance before entering areas with height limitations. The control panel for the air conditioner is located in the rear interior of the vehicle above the TV.

*Note: Ensure all air conditioner vents are kept clear on the roof of the vehicle.



Rooftop Fantastic Fan Roof Vent

Located on the center portion of the roof is an exhaust fan. It is recommended that you run the fan when the shower and cooking appliances are being used. The controls for the fan are located on the inside of the vehicle next to the fan screen.

Rooftop Winegard TV Antenna

Located beside the awning on the passenger side near the front of the rooftop. This antenna features a dome enclosure, a booster and a search for frequencies. The control switch for the antenna booster is located in the cabinet above the Blu-ray player.

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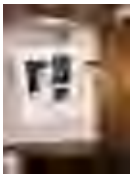


Rooftop Non-capped Sewer Vent Pipes

Located on the diver side above the bathroom. These vent stacks are sealed and connected directly to the black and grey water tanks.

Maintaining Your Motorhome

1) To maintain your exterior painted fiberglass and metal surfaces we suggest you thoroughly clean and wax these pieces regularly. All fiberglass surfaces are painted with automotive paint.

2) When storing your Pleasure-Way motorhome it is recommended that you park the vehicle on a level surface. Avoid parking in a front end down position as rain or snow may collect in the air conditioner area, allowing moisture to enter the vehicle through the air conditioner. Damage to the motorhome as a result of incorrect parking will not be covered under warranty.

3) When storing your Pleasure-Way motorhome, ensure all holding tanks are emptied and flushed, the water system is completely drained, including the water heater, the LP gas valve is turned off, the battery disconnect is switched to the OFF position, and all electrical appliances are turned off.

4) When storing your Pleasure-Way motorhome it is recommended that you run your vehicle engine once a month to allow the engine starting battery to recharge and the vehicle fluids to flow through the engine. Please refer to your vehicle operation manual for more details.

5) It is recommended that you run your generator (if equipped) for ½ hour under load each month. This will allow the system to maintain fresh fuel, the engine to be lubricated and the electronic components to avoid corrosive build up.

ULTRALEATHER CLEANING AND CARE

(Information taken from the Ultra fabrics web-sight)

Our fabrics are engineered to be long-lasting, with surfaces that maintain their top-quality look and feel long after application. To keep any of our materials looking their best, we do recommend regular care and cleaning, especially to keep dirt from accumulating. Below is a general outline to help keep your fabrics looking their best.

Tips

- Clean with soap and water or alcohol based cleaners
- Sanitize using 1:5 bleach/water solution, hydrogen peroxide based, or quaternary-based disinfectants*
- For stubborn stains, wipe the stain off with isopropyl(rubbing alcohol) as soon as possible
- Rinse all solution residue with water

Indoor/Outdoor Fabric Care Instructions

- All our Indoor/Outdoor products should be stored in a dry, well-ventilated area
- Our mildew resistant surfaces do not promote mildew growth, however, mildew may grow on dirt and other foreign substances that are not removed from the fabric
- The frequency of cleaning will vary greatly depending upon the local outdoor environment in which the product is used
- Cushions should not remain wet or be covered, as this will increase the chances of mildew growth occurring
- All of our High UV products perform best when they are paired with an open cell, reticulated, quick drying foam and/or a waterproof, anti-mildew barrier between the fabric and foam and utilize air vents and/or a mesh, open weave fabric bottom

Ultraleather Pro Stain Care Instructions

MARKET	STAIN
Restaurant & Food Service	Ketchup, Mayo, Mustard,** Coffee, Red Wine, Tea
Healthcare	Blood, Urine, Betadine
Contract & High Traffic Areas	Ballpoint Pen Ink**

Clean with soap and water, or alcohol-based cleaners

*This information is not a guarantee. Please use all cleaning and disinfecting agents safely and as instructed.

**For tough stains, clean using isopropyl/rubbing alcohol. Rinse surface with water and dry. Prompt attention is important for successful removal of any stain.

A variety of clothing and accessories may contain dyes that could transfer to lighter colors, depending upon variations in temperature and humidity. Dye transfer is difficult to control, not always fully preventable, and may be irreversible.

TRAVEL PREPARATION

Before You Leave

Prior to heading off on your adventures, you should always check to ensure that:

- the LP gas is turned off at the main valve;
- the black and gray waste water tanks are empty with the dump handles closed;
- all electrical cords and exterior hoses are stored back into their respective compartments;
- chassis fluid levels are at recommended levels;
- chassis tire pressure levels are at recommended levels;
- chassis exterior lighting is functional;
- all exterior components are secure and closed;
- the refrigerator power switch is changed to 12-volt ;
- all interior compartments and drawers are closed and latched;
- all interior components are secure and in place;
- the furnace control switch is off;
- the TV swing-out is locked into the closed position; and
- the site is left in better condition than when you arrived.

While In Motion

- Do not use any appliances while the vehicle is in motion.
- **Warning:** Do not use any propane appliances while the vehicle is in motion.
- For your safety ensure that the main propane valve is in the OFF position.
- While you are in motion, you will have power to all 12-volt components such as the interior lights, water pump, roof vent, 12-volt receptacles and USB ports.
- You will have power to the microwave, 110-volt receptacles and theater system if the inverter is turned on.
- Always remain seated with the seat locked in the forward facing position and the seat belt fastened.

Upon Arrival at Your Site

Once you arrive at a site, please ensure that:

- your motorhome is parked in a level position so that your components will perform optimally (place a bubble level on the freezer shelf of the refrigerator and level your unit according to this);
- all exterior vents are clear from obstructions;
- the black and gray water waste tank valves are closed;
- the AC power cord is attached to the vehicle and to the site receptacle (120 volt 30 amp);
- you hook the fresh water line to the city connection or fill the fresh water tank and turn on your water pump;
- the LP gas switch is turned on;
- the refrigerator is switched to 110-volt power; and
- the water heater switch is turned on.

MOTORHOME SYSTEMS

LP Gas System

Liquid Propane Gas System

Your motorhome is equipped with a Liquid Propane (LP) gas system that provides a fuel source to the appliances which are designed to use this gas for operation. The storage tank is located under the chassis between the hitch rails. Access to the LP tank and regulator is found under the vehicle. The regulator is on the passenger side propane tank bracket.

Driver side

Passenger side

Regulator

An LP gas regulator 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 that the cover is kept in place to minimize vent blockage that could result in excessive gas pressure, causing fire or explosion.

The main propane shut-off switch is located in the driver side utility center**.**

The propane fill, breather valve and BBQ quick connect are located on the driver side rear, exterior corner of the vehicle. The breather valve must be open to fill the propane tank. Liquid will appear through the breather valve when the tank is 80% full.

The propane gage is located inside your coach on the rear electrical switch and display panel. The panel will indicate full or 100% when the LP tank is 80% full.

- Warning: Do not bring or store LP gas containers, gasoline or other flammable liquids inside the vehicle, as a fire or explosion may result. LP gas containers should not be placed or stored inside the vehicle as LP gas containers are equipped with safety devices that relieve excessive pressure by discharging gas into the atmosphere.
- Warning: It is not safe to use cooking appliances for comfort heating. Cooking appliances need fresh air for safe operation. Unlike homes, the amount of oxygen supply in the unit is limited due to the size of the vehicle. Proper ventilation when using the cooking appliance(s) will avoid the danger of asphyxiation. It is especially important that cooking appliances not be used for comfort heating as the danger of asphyxiation is greater when the appliance is used for a long period of time. Therefore, before operation, be sure to open a source of ventilation.
- Warning: Do not use portable fuel burning equipment, including wood and charcoal grills and stoves inside the motorhome. The use of this equipment inside the recreational vehicle may cause fire, or asphyxiation.

DO NOT FILL LP CONTAINER TO MORE THAN 80% CAPACITY. Overfilling the LP gas container can result in uncontrolled gas flow, which can cause a fire or explosion. A properly filled container will contain approximately 80% of its volume of LP gas.

<u>If you smell gas:</u>

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 or gas supply connection;
4. Open all the doors and other ventilating openings;
5. Leave the area until the odor clears and you are sure there is no further risk to you or others;
6. Have the gas system checked and leakage source corrected before using again;

- Do not place the cooktop cover on the stove when the cooktop is lit, or when the burner knobs are in the ON position. Allow the cooktop to cool before closing the glass cover.

LP appliances are: Fridge, Cooktop, Water Heater and Furnace.

NOTE: *Your LP gas appliances may not light on the first try. There may be air in the LP gas lines that will dissipate as the gas pressurizes the lines.*

Fresh Water System

The water system built into your motorhome provides full service similar to the system in your home. A 12-Volt self-priming pump draws pressurized water from the fresh water tank to all cold faucets and the water heater. An automatic pressure switch located in the water pump maintains a positive line pressure between 20 to 30 psi. The fresh and gray water tanks are located underneath the floor of the vehicle. The black water tank is located above the floor directly under the toilet.

Fresh Water Fill and Drain

To fill the fresh water tank, use the gravity water fill located on the passenger side of the van beside the sliding door. First, unlock the water fill compartment and remove the large cap; then place the water hose into the fill. Turn on the water to medium flow. There are two ways of knowing when your water tank is full: (1) by checking the monitor panel located inside your coach; (2) when water flows back through the gravity fill. NOTE: If you notice water running out from underneath the van, check the drain tap located on the side of the fresh water tank to ensure the valve is closed. This tap is there to help you drain your fresh water tank.

City Water Connection

The city water connection is located in the driver side utility center. The city water connection is a convenience for you when you have access to an outside, pressurized water source. To hook up the city water connection you should make sure that the water pump switch is turned off inside the coach and that all faucets are shut. Attach your water hose and turn on the water supply. The city water system bypasses the fresh water holding tank and feeds the water lines directly so that you will not have to use the water pump. To disconnect the city water system, first turn off the water source, then open a faucet to relieve some of the pressure in the lines and then unhook the water line.

NOTE: It is advisable to use a water pressure regulator because excessive pressure may result in water line damage.

Fresh Water System Drains

The fresh water, tank drain is located under the passenger side running board, just under the sliding door. This drain is connected directly to your fresh water tank and will allow you to drain the fresh water tank when the vehicle is not in use.

The vehicle is also equipped with low point drain valves. These valves will allow you to drain all the fresh water lines in the vehicle. The low point drains are located below the passenger side running board above the fresh water drain spigot. To use these drains ensure all water taps and the toilet valve are in an open position. There will be two low point drains for the Girard water heater and three low point drains for the Truma water heater.

Water Pump and Trouble Shooting

Located in the cabinet below the kitchen sink. The water pump has a removable filter that should be checked regularly.

The inline flow filter is located on the inlet side of the water pump.

If the pump will not prime, ensure:

- there is water in the holding tank;
- that the battery is not run down;
- the water lines are tightly connected to the pump and to the filter;
- there are no leaks at the inlet fitting and filter (if air is leaking into inlet fittings, tighten fittings or apply clamps as necessary);
- the inline flow filter is clean.

If the water pressure drops, ensure that:

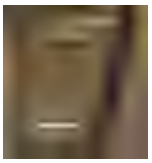
- the faucet aerators are clean;
- there is water in the holding tank;
- the battery is not run down;
- the faucets and connections are free of leaks.

If the pump runs when there is no apparent demand for water, ensure that:

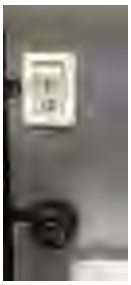
- there is water in the holding tank;
- all faucets and fixtures are shut off and not leaking;
- the water lines are free of leaks.

WATER HEATER:

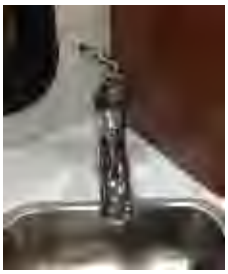
The water heater is located under the fridge or closet, next to the furnace vent. You will have to remove the access panel to inspect water lines or adjust bypass valves. Access to the working mechanism of the water heater is through the outside, vent door located mid-body on the driver side. The coach may be equipped with a Girard or Truma water heater.



GIRARD ON DEMAND WATER HEATING SYSTEM (GSWH-2)



Unlike your home or previous RV water heater system, the on demand system does not have a tank that contains hot water. The on demand system heats water to the desired temperature as needed. The water temperature will depend on the flow rate of the water. A lower flow rate will give you hotter water.



1) **Turn on the battery switch**
2) **Turn on the LP gas switch**
3) **Turn on the water heater switch**
4) **Turn on the inside control panel and adjust**
5) **Start the water flow on hot at a medium rate**

GSWH-2 can operate two different ways:

1) **Operating like a tank water heater, the user turns on the hot and cold water to achieve the desired hot water temperature.**
2) **Select the desired temperature by adjusting the temperature setting up or down. The UPC settings are from 95 to 124 degrees (F). The unit will maintain this temperature, dependant on water flow.**

Note: The recommended and factory setting is 115 (F) or 46 (C)

1) **Turn on the panel power. The panel will display the current temperature at the inlet of the unit.**
2) **Press the temperature selection arrow (up or down) to see the current set temperature.**
3) **Adjust the set temperature to your preference and turn on the faucet.**

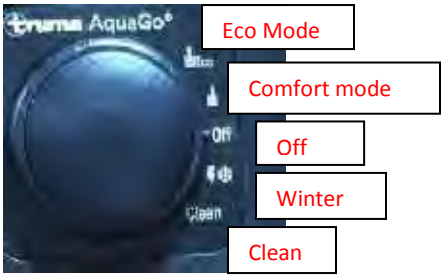
NOTE: See the Girard operating instructions for further information.

Truma AquaGo Comfort Plus DLE60CP

The Truma AquaGo Comfort Plus water heater is a hybrid water heater that combines the instant hot water source with a 1 gallon water tank, and a recirculation system to provide a continuous flow of hot water.

Basic Operation

1) Turn on the battery switch.
2) Turn on the LP gas switch.
3) Turn on the water heater switch inside the exterior water heater door.
4) Turn the water heater switch to eco mode or comfort mode (see the Truma manual to determine which is right for you).
5) Start the water flow on hot at a medium flow and adjust to the desired temperature.



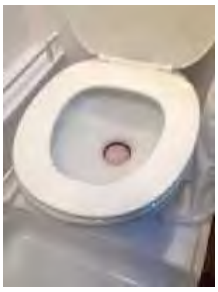
Summer Mode

Winter Mode

1) For summer - all the bypass valves are horizontal.
2) For winter - all the bypass valves are vertical.

- **NOTE: See the Truma manual for operating instructions and for further information, such as information on winter mode, cleaning mode and decalcification.**
- **NOTE: See the winterizing instructions in this manual for winter storage information.**

Toilet Foot Flush



Please refer to the manufacturer's operating instructions.

TOILET

Please refer to the manufacturer's operating instructions.

Toilet Trouble Shooting:

1. Water keeps running in the bowl:
   - check to see if the foot lever is all the way up. Sticking may be caused by foreign material on the waste valve blade seal at the bottom of the toilet bowl. If the problem persists, you may need to replace the water valve.
2. The toilet leaks and there is water on the floor:
   - if the leak is at the back of the toilet, check the water supply line connection and refer to the manufacturer's installation instructions. If the leak is at the toilet flange area (where the toilet mounts to the floor), check the toilet flange nuts and tighten them if necessary.
3. Poor flush pressure:
   - the lever must be held fully down during the flush. An adequate flush should be obtained within 2 to 3 seconds. If the problem persists, remove the water supply line and check the water supply. The water supply rate should be at least 10 litres/2.5 gallons per minute to ensure an adequate flush.

Waste System

The Pleasure-Way Lexor is equipped with two waste tanks:

1) A black water tank is located below the toilet and above the floor of the vehicle. Only the toilet water and solid waste enter this tank. This tank is approximately 12 gal / 45 L.
2) A grey water tank is located on the driver side of the vehicle. This tank holds wastewater from the sinks and the shower. This tank is approximately 20 gal / 75 L.

Before using your black water holding tank, deodorize it by adding one gallon of water mixed with commercial tank deodorizer through the toilet.

DRAINING WASTE HOLDING TANKS

1) Open the sewer compartment door on the driver side. This will expose the sewer dump outlet. Press in the black and gray dump valve handles to ensure the valves are closed. Remove the black termination cap.

2) Locate the sewer hose in its compartment under the running board, next to the dump outlet. Connect the sewer hose to the drain outlet, and put the opposite end into an appropriate sewer dump outlet.

NOTE: Dump your black water first to allow your gray water to flush the black water through the hose.

3) Open the termination valve on the black water holding tank (black handle). Once this tank is empty, open the valve for the gray water holding tank (grey handle). A garden hose may be left running into the toilet with the valve open to further rinse the tank and sewer hose.
4) Close the termination valves and replace the cap. Rinse and replace your sewer hose back in its compartment.
5) Deodorize the empty tank by adding one gallon of water mixed with commercial holding tank deodorizer to the tank.

NOTE: *If the black water holding tank is allowed to overfill, the overflow may back up through the toilet drain.*

NOTE: *If the gray water tank is allowed to overfill, the overflow may back up through the shower drain.*
If you are using a sewer hookup in a RV park, keep the valve closed until the holding tank is at least partially full, then drain. The large quantity of waste flow will provide more effective drainage and reduce tank stoppages.

WINTERIZING

- **Note: Identify which water heater is in your coach. Follow applicable instructions for a Girard or Truma water heater.**

Water System

1) Drain the fresh water tank by opening the drain tap on the fresh water tank.

2) Drain and flush the black and grey water holding tanks.

Girard Water Heater

3) Remove the water line from the inlet side of the water pump (this is the clear plastic line going into the water pump filter). Connect a siphon hose to the inlet side of the water pump and place the other end in a container of non-toxic, RV antifreeze. Turn on the pump. This will pump non-toxic, RV antifreeze through all of your fresh water lines.

NOTE: Siphon hose consists of 40" of ½" clear tubing with a fitting to attach to the water pump. The fitting can be purchased through an RV dealer.

4) Open the kitchen and bathroom faucets one at a time, allowing the antifreeze to flow through both the hot and the cold sides. Be sure to also open the toilet valve and exterior shower faucet. Turn off the water pump and disconnect the siphon hose. Reattach the original fresh water supply fitting.

5) Pour ½ cup of non-toxic, RV antifreeze down each drain (kitchen sink, bathroom sink and shower drain).

Note: The water heater does not have to be bypassed in winter. Non-toxic, RV anti-freeze can be passed through the water heater. Make sure the water heater is turned off in the outside vent door.

LOW POINT DRAIN VALVE (Girard Water Heater)

The vehicle is also equipped with low point drain valves. These valves will allow you to drain all the fresh water lines in the vehicle. The low point drains are located below the center of the vehicle in board of the driver side rear axle front spring mount. Access to the valves is gained from under the vehicle, in front of the driver side rear tire. To use these drains ensure all water taps and toilet valve are in an open position.

<u>Optional Winterizing for Milder Climates</u>

Follow steps above #1-2

3) Open both low point drain valves.

4) Connect a blowout valve to the city water inlet. Connect a compressed air source.

5) Open each tap (bathroom, kitchen, exterior shower and toilet); both hot and cold. Allow the air to blow the remaining water out of the taps and valves. Fully drain the system. Leave all taps and valves and the toilet valve in an open position.

6) Pour ½ cup of non-toxic , RV antifreeze down each drain.

Truma Water Heater

Follow steps above #1 and #2

3) Open the interior access panel under the fridge to access the back of the Truma water heater and the bypass valves.

4) Turn the bypass valves on the top red line, bottom blue line and the white center line to the closed position. (The handle is closed when it is turned 90 degrees to the water line.)

Open the valve that is located where the blue line coming up from the bottom and the red line coming down from the top are connected.

5) Open the exterior door to the Truma water heater. Turn the electrical switch to the OFF position. Open the water heater drain by lifting the black latch on the top of the yellow easy drain lever. Lower the drain lever until the water filter opens.

6) With the filter removed, inspect and clean the water filter. Inspect the "O" rings on the filter as found on page 16 of the Truma water heater manual. Insert the filter and close the water heater drain.

- **It is advised that you follow the Truma recommendations for decalcification of the water heater. These instructions can be found on page 17-21 of the Truma water heater manual.**

7) Remove the water line from the inlet side of the water pump (this is the clear, plastic line going into the water pump filter). Connect a siphon hose to the inlet side of the water pump and place the other end in a container of non-toxic, RV antifreeze. Turn on the pump. This will pump non-toxic, RV antifreeze through all of your fresh water lines.

NOTE: Siphon hose consists of 40" of ½" clear tubing with a fitting to attach to the water pump. The fitting can be purchased through an RV dealer.

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8) Open the kitchen, exterior shower and bathroom faucet one at a time allowing the antifreeze to flow through both the hot and the cold sides. Open the toilet valve and allow antifreeze to flow into the toilet bowl. Turn off the water pump and disconnect the siphon hose. Reattach the original fresh water supply fitting.
9) Pour ½ cup of non-toxic, RV antifreeze down each drain (kitchen sink, bathroom sink and shower drain).

Open the low point drain valve on the white water line for water heater recirculation. The low point drains are located below the center of the vehicle in board of the driver side rear axle front spring mount. Access to the valves is gained from under the vehicle, in front of the driver side rear tire.

<u>Optional Winterizing for Milder Climates (Truma Water Heater)</u>

Follow steps above #1-6

7) Open all three low point drain valves in the location listed above.

8) Connect a blowout valve to the city water inlet. Connect a compressed air source.

9) Open each tap (bathroom, kitchen exterior shower and toilet); both hot and cold. Allow the air to blow the remaining water out of the taps and valves. Fully drain the system. Leave all taps, the toilet valve and drain valves in an open position.

10) Pour ½ cup of non-toxic, RV antifreeze down each drain.

<u>Winter Storage Electrical</u>

1) Fully charge your engine starting and coach batteries.
2) Turn off the charge line red key disconnect switch.

3) Turn off the battery disconnect switch on the entrance end panel.

- It is recommended that you start and run your vehicle for a short period of time each month.
- It is recommended that you start and run your generator under load for at least a ½ hour per month.
- It is recommended that the fridge door be left slightly open to allow air to circulate through the fridge cabinet during a storage period.
- It is recommended that the vehicle be driven or moved forward or backward, if possible, to avoid flat spotting of the vehicle tires.

WINTER USE

We recommend that the water system not be used when the outside temperature drops below the freezing point. You should ensure that your unit is completely winterized by that time. If it is necessary to use the water system, we suggest that you bring containers of fresh water with you and add non-toxic, RV antifreeze to the gray and black water holding tanks. NOTE: Keep in mind that as you add more water to the holding tanks the antifreeze will dilute beyond the recommended amount and may start to freeze earlier at cold temperatures. Do not use the exterior shower.

LIVING AREA ELECTRICAL SYSTEM

The motorhome living area, electrical system is designed for convenience. It is capable of supplying the vehicle with at least two sources of power: 12 volt DC power and 110-120 volt AC power.
The 12 volt auxiliary battery supplies power to the interior components (except the roof air conditioner and fridge while set on AC) for short-term use. The 12 volt or DC, power supplies an AC 110-120 volt current to the interior plug outlets, the entertainment centers and the microwave through the 2000 watt true sine wave inverter.
The auxiliary coach battery is charged when the chassis engine is running and the red key disconnect switch is in the ON position or when you are connected to a 110-120 volt power source (shore power or generator) with the battery switch in the ON position. Your vehicle may also be equipped with solar panels. These solar panels will charge the auxiliary coach battery if the red key disconnect switch is in the ON position.
For long term use, your vehicle may be powered by plugging into a 110-120 volt external power source with the supplied 25 foot power cable. The 25 foot power cable supplied with your coach must be connected and locked to your coach and then to a 110 - 120 volt power source (a 30 amp outlet is recommended). This will supply 110-120 volt power throughout the interior and supply power through a power converter to all 12 volt components. Do not run the air conditioner unless you are plugged into a minimum 20 amp power source.

NOTE*: Connect and lock the power cord to your coach first and then the external power source.*

Your motorhome is equipped with a 110 – 120 /12 volt 45 amp power converter/ charger. The charging portion of the converter is specific to the lithium ion batteries. The converter's function is to take part of the 110 -120 volt current, that is received when the motorhome is plugged into an external power source or the generator is running, and convert it to DC or 12 volt power.

Your motorhome is also equipped with a 2000 watt true sine wave inverter. The true sine wave inverter takes the 12 volt or DC power from your batteries and inverts it up to 110-120 volt AC power. The inverter will enable you to use your 110-120 volt plug outlets, entertainment center and microwave oven when a shore power source or generator source is unavailable. This power source will be limited by the state of charge of your batteries and by the amount of current drawn by each appliance. The inverter has a built in transfer switch that allows the 110-120 volt power to bypass the inverter and power the 110-120 volt plug outlets, entertainment center and microwave directly, when the motorhome is plugged into a shore power source or running on the generator.

Note: *All dash components including the in-dash radio and front map lights are powered through the starting (chassis) battery. Prolonged use of these items when the vehicle is not running will deplete the engine starting battery.*

12 volt or DC Equipment	110 -120 volt or AC Equipment
Pure Sine Inverter	Entertainment Center when on a generator or shore power source
Refrigerator when on LP Gas or DC	Refrigerator on AC
Interior & Exterior Coach Lights	Microwave Oven when on a generator or shore power source
Antenna Booster	Air Conditioner
Water Pump	110 volt Plugs when on a generator or shore power source
Water Heater	110 /12 volt Power Converter
LP Gas & CO Alarms	
Generator Start Switch	
Furnace	
Power Sofa	
Fantastic Fan	
Awning	
Monitor Panel	
Water Heater	
Exterior Blu-ray Player	

AC 110-120 VOLT POWER

A 25 foot, 30 amp power cord is provided under the rear sofa. To activate all power circuits, connect and lock the power cord to your coach in the driver side utility center and to an adequate 110-120 volt power source. The power cord connections are rated for 30-amp 110-120 volts. NOTE: The male end of the power cord is a 30-amp style plug, therefore you may require an adapter to convert the plug into the 110- 15 amp style. Most RV parks are equipped with 30-amp outlets. Remember to always attach the power cord to your coach first, and then to the power source.

AUTOMATIC TRANSFER SWITCH

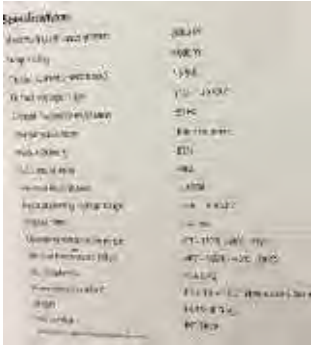
The automatic transfer switch is located under the rear sofa on the driver side, wall panel. To access the transfer switch open the driver side, rear door of the vehicle.

The automatic transfer switch will only allow your coach to get power from one source; either the generator or the shore power cord. This is a safety feature of this vehicle.

2000 WATT TRUE SINE WAVE INVERTER

The true sine wave inverter is located below the passenger side, ottoman cushion. This inverter provides 12 volt DC power inverted to 110-120 volt AC power for the microwave, entertainment center and all AC outlets in and outside the coach. The inverter will be limited by the state of charge of the coach batteries and amperage draw from individual appliances. Ensure all venting for the inverter is kept clear of blockage.

The true sine wave inverter has an automatic transfer switch built into it so that if you are on shore power or generator power it bypasses the inverter. The inverter will draw .6 amps of DC power if it is turned on and no load is being drawn from the inverter. If no load is on the inverter it will turn itself off after 25 hours of continual operation.



The inverter is powered by the large red wires in the battery compartment. There is also a 250 amp mega- fuse in the system to protect the inverter and the coach.

INVERTER DISPLAY/ CONTROL PANEL

This control panel is located on the kitchen upper end panel next to the switch panel.

- **NOTE**: This control panel will turn the inverter on or off. The battery switch or charge line disconnect switch do not turn the inverter on or off. Always insure the inverter is in the off position when not in use. The inverter can draw .6 amps from your battery if left in the ON position while not in use.
- **NOTE**: To turn the inverter on or off you must press and hold the power button on the inverter control panel for at least 1 second.

Battery Voltage Displayed

Amperage Draw

Current Output in KW

Freedom Inverter Operation

Display Panel Operation

The Freedom Xi features a display panel with three-digit LED display to show inverter, AC source, and battery status information.

Feature	Description
1	**Inverter Power button** • Press and hold for one second to turn the Freedom Xi's Inverter operation ON or OFF (when AC Shore Power is NOT present). • Press and hold for five seconds to adjust feature settings. Go back to page 8 for instructions.
2	**Three-digit LED display screen** shows status information and detected fault codes. Upon startup, the screen shows the display board (d LD) and main board (r LD) firmware versions.

3	**Status LED** indicates the mode of operation with a three-color LED.
	• **Green** pertains to **Utility** status.
	  • Solid indicates the Freedom Xi is in shore power mode.
	• **Yellow** pertains to **Battery** status.
	  • Solid indicates the Freedom Xi is in inverter operation and using the battery to provide AC power.
	  • Flashing indicates the Freedom Xi is in inverter operation **but** AC shore power is detected thus transferring to shore power mode within 20 seconds.
	• **Red** indicates that an **Error** condition has been detected and the Freedom Xi has shut down. See "Troubleshooting Reference" on page 26.

4	**Select button** • During inverter operation, press the button to choose what appears in the three-digit LED display: **Battery Voltage**, **Battery Current**, or **Output Power**. See "To change the inverter mode settings:" on page 8.

AC ELECTRICAL DISTRIBUTION PANEL

The Pleasure-Way Lexor is equipped with an AC distribution panel that houses the breakers for the 110-120 volt system. The distribution panel is located on the passenger side ottoman bench face. The breakers act like a household breaker; you must insure the breaker is shut all the way off before you can reset the breaker.

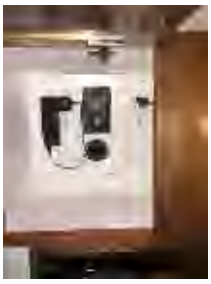
1) 20 Amp Inverter Input
2) 20 Amp Air Conditioner
3) 15 Amp Converter
4) 15 Amp Fridge GFCI Protected
5) 30 Amp Shore Power
6) 20 Amp Inverter Output
7) 15 Amp Microwave Oven GFCI Protected
8) 15 Amp All Receptacles GFCI Protected

Note: Check the GFCI for the individual appliance or plug outlets if the appliance is not operational.

GFCI OUTLETS

A ground fault circuit interrupter (GFCI) 110-volt receptacle located on the lower driver side ottoman provides protection against line-to-ground electrical shock hazards that could be harmful or even fatal. The outlets that are on this circuit are the exterior, kitchen and rear bench receptacles. The GFCI receptacle must be tested at least once a month in accordance with the manufacturer's instructions.

The GFCI for the microwave and fridge are found in the cabinet above the Blu-ray player.



The circuits must be powered to test or reset the GFCI.

12 VOLT DC BREAKERS AND DC LOAD CENTER

This load center is located in the cabinet below the driver side ottoman cushion. This DC load center controls all the multiplex wiring systems and switch panels. This load center also has resettable breakers for the various components.

DC Beakers for the Converter and Generator

These breakers are located next to the DC load center. Remove the cover panel to access the breakers.

The battery disconnect breaker will disconnect battery input to the multiplex wiring control center.
The generator breaker disrupts the battery feed to the generator for the generator starter and generator fuel pump.

12 VOLT BATTERY DISCONNECT SWITCH & CHARGE LINE DISCONNECT

There is 12 volt battery disconnect switch located by the main entrance door in the switch control panel. This switch will stop all 12 volt power supplied to your coach from the auxiliary batteries. The disconnect switch will have to be in the ON position in order to charge your battery from the converter. If your vehicle is going to be parked for longer than a 48 hour period, turn this switch to the OFF position as the CO and the LP detector are hard wired into the coach battery and will eventually drain the battery.

Charge Line Disconnect for Shipping, Storage and Freezing Conditions

The charge line disconnect switch is located above the battery box. Access is through the driver side rear door. This charge line disconnect switch will not allow the batteries to charge from the alternator or solar panels. This battery disconnect can be used during battery servicing. It is off when the red key can be removed from the switch.

<u>Converter and Output Fuses</u>

The converter is located under the power sofa on the passenger side. Access to the converter is through the passenger side rear door of the vehicle. Remove the blue battery cover and pull the carpet covered panel at the top near the battery box.

The converter takes 110 volt power and converts it to operate the 12 volt system. This happens while plugged into shore power or operating off of the generator. The converter is plugged into a 110 volt power outlet under the power sofa.

The converter also has a battery charger built in that is specific to lithium battery charging. This battery charger only charges the coach battery.

The converter fuses will blow if the coach battery is hooked up with reverse polarity. You will have to remove the screw and electrical resistor to access the fuses.

The fan on the converter will only operate once the converter reaches a designated temperature.

Switch Panels and Controls

Kitchen End Panel Switch

Porch Light	Entry Light
	Living Room Lights
Generator Start/Stop	Master/ All Light Switch
Water Pump	Panel Lights
Battery Disconnect	

Driver Rear Upper Switch Panel (3 mode)

Home

Lighting

Utility

Trouble Shooting the DC/12 Volt System

1) Ensure the battery disconnect is in the ON position.
2) Ensure there is 12 volt power from the coach battery (check battery voltage or start the vehicle engine).
3) Ensure the converter is plugged into the wall outlet.
4) Ensure the 30 amp fuses on the converter are good.
5) Ensure the converter breaker is not tripped in the AC breaker panel.
6) To reset the multiplex wiring control system for the coach (this includes all switches and controls), unplug the vehicle from shore power or shut off the generator. Turn off the battery disconnect switch and allow the system to do a complete shutdown (this will only take a couple of minutes). Turn on the disconnect switch and the system will be reset.

Trouble Shooting AC Power:

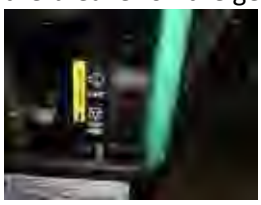
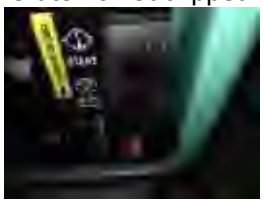
Step 1 – Ensure you have a reliable power source to plug your power cord into. Ensure your power cord is properly attached to your motorhome. Test the outlet with another appliance.

Step 2 – Ensure that the GFCI has not been tripped. Press the TEST button and then reset the GFCI.

Step 3 – Ensure the breakers in your distribution panel have not been tripped.

If you have power from shore power (electrical plug), but not from your generator:

Step 4: Ensure the breaker on the generator is not tripped.

If you have power from your generator, but not from shore power:

Step 5 – Check your shore power source (Step 1).

Ensure your automatic transfer switch is snapping shut. There are several different methods to do this. Inside the transfer switch there is a set of points that are spring loaded. On occasion the points will not make proper contact.

Method 1: Restart your generator, have the power fully engaged by the generator, switch off the generator and plug your power cord into a 120 volt electrical outlet. (You may have to repeat this step a couple of times; always ensure that you unplug your power cord before starting your generator.)

Method 2: Turn off your generator and unplug your motorhome from shore power. Locate and open the transfer switch. Move the points back and forth making sure they have free movement. Check for debris between the points.

If an individual appliance is not working ensure that the appliance is plugged in, check the breaker and GFCI for the individual appliance.

Batteries

Chassis Battery

The engine starting battery is located below the driver's foot board in the cab area of the vehicle. The engine starting battery and the coach battery are separated by the Mercedes battery control system located under the driver's seat.

NOTE: The chassis battery is only charged through the alternator when the motor is running. The converter will not charge the engine starting battery. Please refer to the Ram Promaster manual for information on maintaining and storing the batteries.

Battery Separator

A battery separator is installed to allow both chassis and coach batteries to be charged when the engine is running, but will not allow the chassis battery to discharge when there is a demand from the living area system. The coach battery is automatically charged whenever the vehicle engine is running. The time required to charge it completely will depend on how low the battery is. The auxiliary battery will charge at a slower rate when you are using driving lights, chassis air conditioning, etc. The auxiliary or coach battery will also be charged when plugged into shore power or when operating your generator with the red key disconnect in the On position.

The separator requires no regular maintenance. The separator is located under the vehicle hood.

NOTE: The chassis battery is only charged through the alternator when the motor is running.

Auxiliary or Coach Batteries

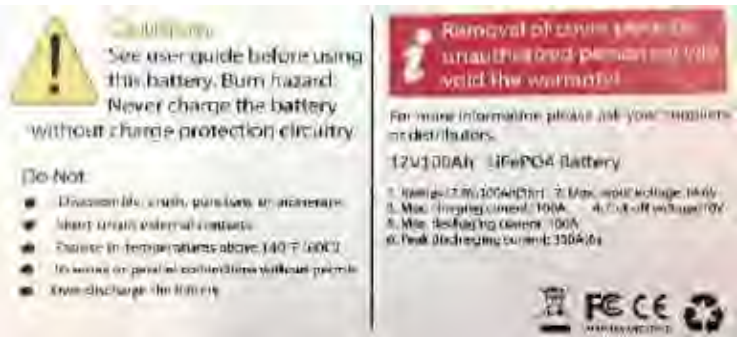
Your motorhome is equipped with two auxiliary coach batteries located under the rear sofa. The batteries will charge from the converter and the engine alternator in order to provide 12 volt power to the interior components in the coach portion of the motorhome.

Lithium Batteries and Charging System

Your vehicle is equipped with two Lithium Ion batteries and a special converter with a built in Lithium charge control.

Battery Type: Eco-Ion (LiFePO4) 12 volt 100 Ah

*WARNING: The OEM batteries can only be replaced with identical Lithium Ion type batteries. The charging system is set up for Lithium Ion cells. Replacing the Lithium Ion batteries with a Lead Acid, Gel, AGM, etc. battery may result in damage to the vehicle, coach, batteries and electrical system. These damages may result in a thermal incident such as fire, electrical short, melting, off gassing, etc.



*WARNING: Do not charge your batteries in temperatures below 32 degrees F or 0 degrees C. When placing your vehicle into storage always ensure your batteries are fully charged and the battery disconnect switch is in the OFF position. Your vehicle is equipped with a charge line disconnect from the vehicle alternator and solar panel.

Access to the batteries is through the rear doors. The batteries are located under the power sofa.

1) Remove the blue cover panel (this panel is held by magnets).
2) Turn the thumb latches and fold down the battery door.

*WARNING: Do not work on the batteries while the vehicle is running, the generator is running, or while the vehicle is plugged into shore power. Ensure the charge line disconnect is in the OFF position.

Please note the warning symbols for all batteries.

All coach batteries are fused with 150 amp fuses for the protection of your coach and the battery system. These fuses are located in the battery area and at the charging source.

Converter: Progressive Dynamics PD 9145 AL with Charger

This converter is only to be used with the Lithium Ion batteries. The Lithium Ion batteries charge at a high amperage rate and the converter is designed for this purpose. The converter is a Progressive Dynamics Lithium converter/charger model 9145AL.

To extend the life of your Lithium Ion batteries it is recommend that the batteries be fully charged and kept above freezing temperatures when in storage. This may involve removing the Lithium Ion batteries from the coach and storing them in temperatures above freezing for winter storage.

NOTE: Please see the battery manufacturer's instructions for detailed maintenance recommendations.

<u>Generator</u>

If your unit is equipped with a generator, it will be located at the rear of the vehicle. Access to the generator is from underneath the chassis. There is no access through the interior so as to prevent exhaust gas from seeping into the living compartment. The generator will provide an added source of power to run the electrical system when you are not plugged into a 110 volt power source. To start your generator, locate the Start/Stop switch on both switch panels. Simply push the button until the generator starts; it may take a few seconds initially for it to start. Your generator is an LP generator that draws its fuel supply from your LP tank. Ensure the LP switch is on before starting the generator. Once the generator is running, it supplies power to the entire electrical system, just as if your unit were plugged into a 110 volt power source.

NOTE: For your safety and protection, all generator or generator-ready units are equipped with an automatic transfer switch that will allow your coach to receive power from either shore power or your generator.

NOTE: It is recommended that you run your generator (if equipped) for ½ hour under load each month. This will allow the system to maintain fresh fuel, the engine to be lubricated and the electronic components to avoid corrosive build up.

Note: If you are running your generator in freezing temperatures and the interior of the coach is below 32 degrees F or 0 degrees C, it is recommended that the 150 amp disconnect breaker is tripped to avoid charging the batteries through the converter. In some cases owners will use the furnace to warm the interior of the coach and allow the batteries to charge.

MOTORHOME INTERIOR

Interior Cockpit Map Light

***Note: This is the Dodge map light system. Please refer to the vehicle manual for operation.**

***Note: The cockpit map lights operate off the chassis/engine starting battery.**

Appliances

COOKTOP:

The vehicle is equipped with a two-burner flush mount cooktop located in the kitchen countertop.

1) Lift the glass cover.
2) Turn the selected burner knob to ignite (flame) position and hold the button in. This allows propane to flow to the selected burner. Hold the button for a couple of seconds before pressing the igniter.
3) Depress the middle ignition spark knob several times until the burner ignites.
4) Turn the burner knob to adjust the flame to the appropriate heat setting.
5) When you have finished using the cooktop, turn the burner knob to the OFF position and allow the burner to cool before closing the cooktop cover.

Please consult the cooktop owner's manual for complete operating and cleaning instructions.

FURNACE:

Your vehicle is equipped with a 16,000 BTU Atwood LP gas Auto Ignition Furnace. The furnace is located near the floor next to the fridge. The thermostat control is located above the interior TV.

1) Ensure that there is propane supplied to the coach.
2) Ensure there is 12V power to the coach.
3) Turn the thermostat to the ON position and set the thermostat to the desired temperature.
4) The furnace fan will come on, the furnace will auto ignite and cycle through the fan and heating process. The furnace will maintain the desired temperature.
5) The furnace reset button is located under the driver side ottoman cushion, below the furnace cover.

*Note: The air conditioner fan may come on when the furnace engages. Set the thermostat in the fan mode to automatic to prevent this from happening.

Note: *When the furnace is not in use, turn the thermostat switch to the OFF position*.

MICROWAVE/CONVECTION OVEN:

Your microwave/convection oven operates off of 110 volt AC power only. To use your microwave you must be plugged into shore power, have the generator operating, or use the 2000 watt inverter.

NOTE: *You will not be able to run your microwave oven at the same time as your rooftop air conditioner if you are running on generator power.*

Please refer to the manufacturer's operating instructions for more information regarding maintenance, operation and cooking.

REFRIGERATOR:

Your vehicle is equipped with a Dometic three way fridge/freezer (LP gas, AC & DC).

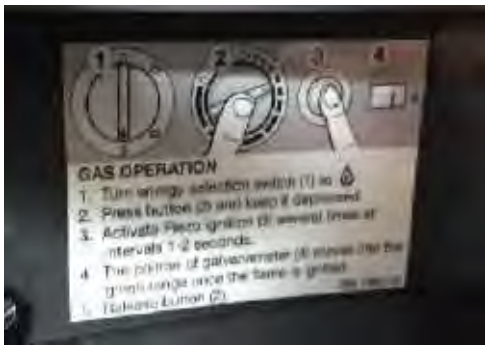
1)To turn the fridge on use the mode dial to select your power source (AC, Gas, DC), then select your desired level of coolness (this may vary slightly with each fridge and weather condition).

2) DC or 12 volt is used for the fridge and should only be used while the vehicle is in motion or for short stops less than 3 hours.

3) The propane is manually lit; please follow the Dometic instructions. You can find the instructions on the inside of the fridge door.

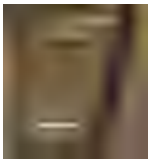
4) The fridge is equipped with a travel and storage lock. Please refer to the Dometic owner's manual.

NOTE: *For the best cooling results your vehicle should be level and the exterior refrigerator vents free from obstructions. Please consult your Dometic fridge operating manual for complete operating and maintenance instructions.*

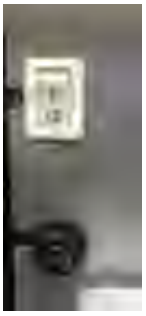


WATER HEATER:

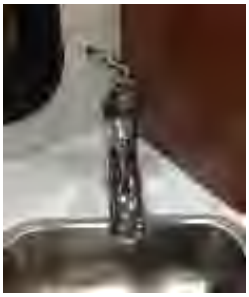
The water heater is located under the fridge, next to the furnace vent. You will have to remove the access panel to inspect water lines or adjust bypass valves. Access to the working mechanism of the water heater is through the outside, vent door located mid-body on the driver side. The coach may be equipped with a Girard or Truma water heater.



GIRARD ON DEMAND WATER HEATING SYSTEM (GSWH-2)



Unlike your home or previous RV water heater system, the on demand system does not have a tank that contains hot water. The on demand system heats water to the desired temperature as needed. The water temperature will depend on the flow rate of the water. A lower flow rate will give you hotter water.



1) Turn on the battery switch
2) Turn on the LP gas switch
3) Turn on the water heater switch
4) Turn on the inside control panel and adjust
5) Start the water flow on hot at a medium rate

GSWH-2 can operate two different ways:

1) **Operating like a tank water heater, the user turns on the hot and cold water to achieve the desired hot water temperature.**
2) **Select the desired temperature by adjusting the temperature setting up or down. The UPC settings are from 95 to 124 degrees (F). The unit will maintain this temperature, dependant on water flow.**

Note: The recommended and factory setting is 115 (F) or 46 (C)

For normal operation:

4) **Turn on the panel power. The panel will display the current temperature at the inlet of the unit.**
5) **Press the temperature selection arrow (up or down) to see the current set temperature.**
6) **Adjust the set temperature to your preference and turn on the faucet.**

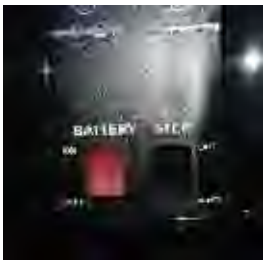
NOTE: See the Girard operating instructions for further information.

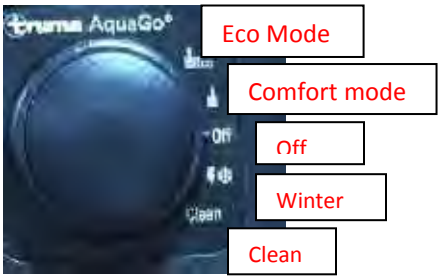
Truma AquaGo Comfort Plus DLE60CP

The Truma AquaGo Comfort Plus water heater is a hybrid water heater that combines the instant hot water source with a 1 gallon water tank, and a recirculation system to provide a continuous flow of hot water.

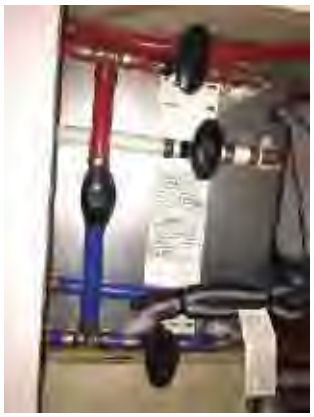
Basic Operation

1)Turn on the battery switch.
2)Turn on the LP gas switch.
3)Turn on the water heater switch inside the exterior water heater door.
4)Turn the water heater switch to eco mode or comfort mode (see the Truma manual to determine which is right for you).
5)Start the water flow on hot at a medium flow and adjust to the desired temperature.





Summer Mode **Winter Mode**

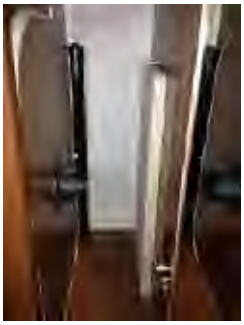


1) For summer - all the bypass valves are horizontal.
2) For winter - all the bypass valves are vertical.

- **NOTE: See the Truma manual for operating instructions and for further information, such as information on winter mode, cleaning mode and decalcification.**

- **NOTE: See the winterizing instructions in this manual for winter storage information.**

TABLE



1) Remove the table and table leg from the front closet.
2) Insert the T end of the table pole into the table base.
3) Turn the table pole clock wise until it is tight and locked into place.
4) Press the table down onto the table pole.

THEATER SYSTEM

TV AND BLU-RAY

Your motorhome is equipped with TV and Blu-ray/ DVD components. You will find these located in the entertainment center. These two components are powered by a 110 volt power source (inverter, shore power or generator).

NOTE: *Your Blu-ray player is a player only as it will not record. To play a CD or MP3 the TV flat screen must be in the ON position.*

BASIC OPERATING PROCEDURE

For the TV, Blu-ray or Antenna, additional information can be obtained through the appliance owner manual.

A) COMPONENTS:

1) 24" Flat Screen Monitor
2) Blu-ray /DVD player
3) Antenna with booster

B) BASIC TV OPERATION:

TV antenna (rotate the TV antenna for best reception) or hook up to park cable.

12 Volt or DC operation

1) Turn the inverter on. Ensure the TV and Blu-ray player are plugged into the wall outlet located above the Blu-ray player in the cabinet.

2) Turn the antenna booster on by pressing the black button on the antenna booster above the Blu-ray player. Press the Search button.

3) Turn the TV on and select DTV-TV using the input button on your TV or remote.

4) Using the menu button select - TV, select Channels, select Scan Channel. This will bring in all local air channels.

4) For Cable TV connect a cable extension cord from the cable hookup in the component compartment to the park cable outlet. Turn the TV antenna booster off. Follow step (4) for auto programing.

5) For Blu-ray operation turn on the Blu-ray player. Using the source button on the TV or TV remote, select HDMI 1. Insert a DVD or Blu-Ray disc. Allow the disc to load and press play.

- To save power while watching TV ensure the Blu-ray player is switched off. Only turn your Blu-ray player on when in use.

For 120 Volt Operation

(Generator or Shore Power):

Switch the inverter off. Use the same programing procedures as the 12 volt operation.

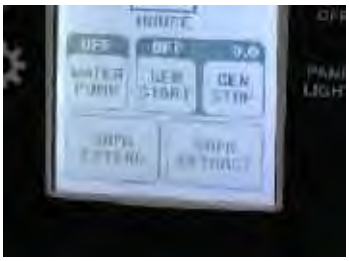
ANTENNA

The antenna is a dome style antenna designed to receive digital signals. The antenna control is located inside the cabinet above the Blu-ray player, it features a search option for bringing in the best reception possible.

*Note: When travelling the TV should be stowed in the locked position.

Bed Layout

1) Lay the power sofa into the extend position by pressing the extend button on the panel above the TV.



2) Remove the bed boards from the front closet.

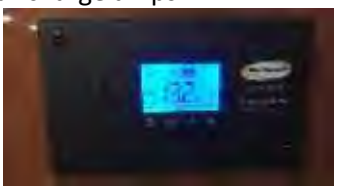
3) Place the two bed boards on the ottoman rails.

4) Place the ottoman backrests between the seat cushions, to complete the bed make up.

SOLAR PANEL

Your vehicle can be equipped with a 95 watt to 285 watt Carmanah solar panel package located on the center of the roof. The solar panel charge controller is located on the kitchen end panel facing the rear of the coach. This control shows battery voltage, battery charge condition and solar charge amps.

Shown with three panels 285 watts



Display panel kitchen rear end panel

(Battery Voltage)

(Battery Charge condition)

(Solar Charge Rate)

1) The solar panels will charge the coach batteries even when the battery disconnect is in the OFF position.
2) To prevent the solar panels from charging coach batteries you must turn off the charge line disconnect switch, located above the Eco-Ion battery box.

(1)

(2)

Ensure the solar panels are clean for optimal charging output.

To ensure you solar panels are not active when servicing the batteries, turn off the charge line disconnect.

TIRE SAFETY

Everything Rides On It

Studies of tire safety show that maintaining proper tire pressure, observing tire and vehicle load limits (not carrying more weight in your vehicle than your tires or vehicle can safely handle), avoiding road hazards, and inspecting tires for cuts, slashes, and other irregularities are the most important things you can do to avoid tire failure, such as tread separation or blowout and flat tires. These actions, along with other care and maintenance activities, can also:

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

This booklet presents a comprehensive overview of tire safety, including information on the following topics:

- Basic tire maintenance
- Uniform Tire Quality Grading System
- Fundamental characteristics of tires
- Tire safety tips.

Use this information to make tire safety a regular part of your vehicle maintenance routine. Recognize that the time you spend is minimal compared with the inconvenience and safety consequences of a flat tire or other tire failure.

Safety First–Basic Tire Maintenance

Properly maintained tires improve the steering, stopping, traction, and load-carrying capability of your vehicle. Underinflated tires and overloaded vehicles are a major cause of tire failure. Therefore, as mentioned above, to avoid flat tires and other types of tire failure, you should maintain proper tire pressure, observe tire and vehicle load limits, avoid road hazards, and regularly inspect your tires.

Finding Your Vehicle's Recommended Tire Pressure and Load Limits

Tire information placards and vehicle certification labels contain information on tires and load limits. These labels indicate the vehicle manufacturer's information including:

- Recommended tire size
- Recommended tire inflation pressure
- Vehicle capacity weight (VCW–the maximum occupant and cargo weight a vehicle is designed to carry)
- Front and rear gross axle weight ratings (GAWR– the maximum weight the axle systems are designed to carry).

Both placards and certification labels are permanently attached to the vehicle door edge, door post, glove-box door, or inside of the trunk lid. You can also find the recommended tire pressure and load limit for your vehicle in the vehicle owner's manual.

Understanding Tire Pressure and Load Limits

Tire inflation pressure is the level of air in the tire that provides it with load-carrying capacity and affects the overall performance of the vehicle. The tire inflation pressure is a number that indicates the amount of air pressure– measured in pounds per square inch (psi)–a tire requires to be properly inflated. (You will also find this number on the vehicle information placard expressed in kilopascals (kPa), which is the metric measure used internationally.)

Manufacturers of passenger vehicles and light trucks determine this number based on the vehicle's design load limit, that is, the greatest amount of weight a vehicle can safely carry and the vehicle's tire size.The proper tire pressure for your vehicle is referred to as the "recommended cold inflation pressure." (As you will read below, it is difficult to obtain the recommended tire pressure if your tires are not cold.)

Because tires are designed to be used on more than one type of vehicle, tire manufacturers list the "maximum permissible inflation pressure" on the tire sidewall. This number is the greatest amount of air pressure that should ever be put in the tire under normal driving conditions.

Checking Tire Pressure

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

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

For convenience, purchase a tire pressure gauge to keep in your vehicle. Gauges can be purchased at tire dealerships, auto supply stores, and other retail outlets.

The recommended tire inflation pressure that vehicle manufacturers provide reflects the proper psi when a tire is cold. The term cold does not relate to the outside temperature. Rather, a cold tire is one that has not been driven on for at least three hours. When you drive, your tires get warmer, causing the air pressure within them to increase. Therefore, to get an accurate tire pressure reading, you must measure tire pressure when the tires are cold or compensate for the extra pressure in warm tires.

Steps for Maintaining Proper Tire Pressure

- Step 1: Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual.
- Step 2: Record the tire pressure of all tires.
- Step 3: If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure.
- Step 4: If the tire pressure is too low, note the difference between the measured tire pressure and the correct tire pressure. These "missing" pounds of pressure are what you will need to add.
- Step 5: At a service station, add the missing pounds of air pressure to each tire that is underinflated.
- Step 6: Check all the tires to make sure they have the same air pressure (except in cases in which the front and rear tires are supposed to have different amounts of pressure).

If you have been driving your vehicle and think that a tire is underinflated, fill it to the recommended cold inflation pressure indicated on your vehicle's tire information placard or certification label. While your tire may still be slightly underinflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive

with a significantly underinflated tire. Since this is a temporary fix, don't forget to recheck and adjust the tire's pressure when you can obtain a cold reading.

Tire Size

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

Tire Tread

The tire tread provides the gripping action and traction that prevent your vehicle from slipping or sliding, especially when the road is wet or icy. In general, tires are not safe and should be replaced when the tread is worn down to 1/16 of an inch. Tires have built-in treadwear indicators that let you know when it is time to replace your tires. These indicators are raised sections spaced intermittently in the bottom of the tread grooves. When they appear "even" with the outside of the tread, it is time to replace your tires. Another method for checking tread depth is to place a penny in the tread with Lincoln's head upside down and facing you. If you can see the top of Lincoln's head, you are ready for new tires.

Tire Balance and Wheel Alignment

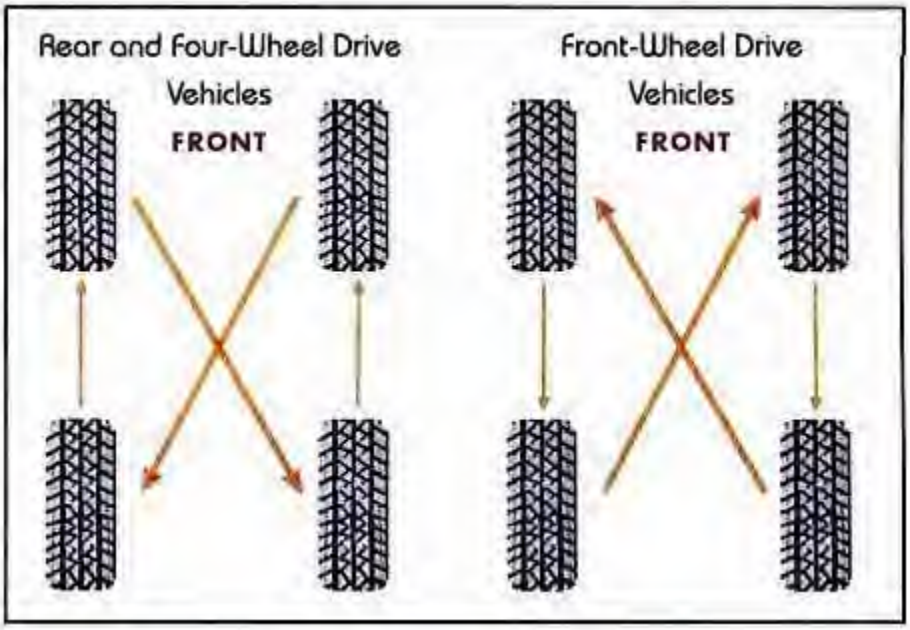
To avoid vibration or shaking of the vehicle when a tire rotates, the tire must be properly balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire assembly. A wheel alignment adjusts the angles of the wheels so that they are positioned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

Tire Rotation

Rotating tires from front to back and from side to side can reduce irregular wear (for vehicles that have tires that are all the same size). Look in your owner's manual for information on how frequently the tires on your vehicle should be rotated and the best pattern for rotation.

A Tire Rotation Example

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



Tire Repair

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

Uniform Tire Quality Grading System (UTQGS)

To help consumers compare a passenger car tire's treadwear rate, traction performance, and temperature resistance, the federal government requires tire manufacturers to grade tires in these three areas. This grading system, known as the Uniform Tire Quality Grading System, provides guidelines for making relative comparisons when purchasing new tires. You also can use this information to inquire about the quality of tires placed on new vehicles.

Although this rating system is very helpful when buying new tires, it is not a safety rating or guarantee of how well a tire will perform or how long it will last. Other factors such as personal driving style, type of car, quality of the roads, and tire maintenance habits have a significant influence on your tire's performance and longevity.

Treadwear grades are an indication of a tire's relative wear rate. The higher the treadwear number is, the longer it should take for the tread to wear down. For example, a tire grade of 400 should wear twice as long as a tire grade of 200.

Traction grades are an indication of a tire's ability to stop on wet pavement. A higher graded tire should allow you to stop your car on wet roads in a shorter distance than a tire with a lower grade. Traction is graded from highest to lowest as "AA", "A", "B", and "C".

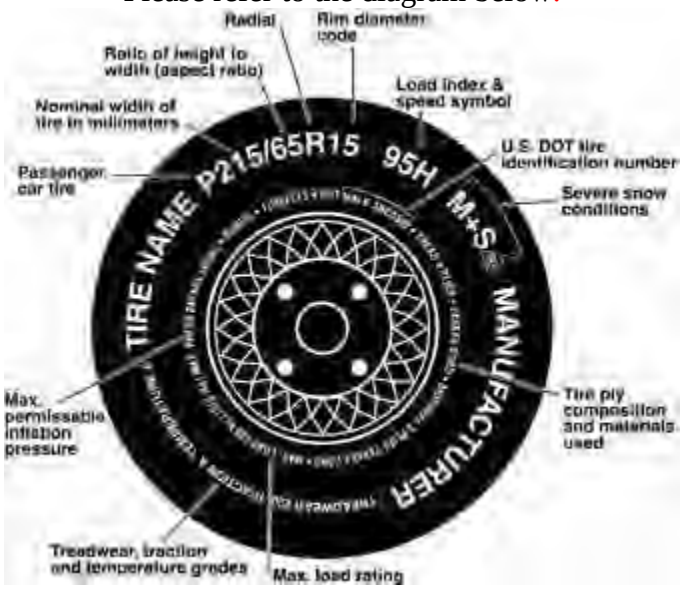
Temperature grades are an indication of a tire's resistance to heat. Sustained high temperature (for example, driving long distances in hot weather), can cause a tire to deteriorate, leading to blowouts and tread separation. From highest to lowest, a tire's resistance to heat is graded as "A", "B", or "C".

Tire Fundamentals

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

Information on Passenger Vehicle Tires

Please refer to the diagram below.



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P
The "P" indicates the tire is for passenger vehicles.

Next number
This three-digit number gives the width in millimeters of the tire from sidewall edge to sidewall edge. In general, the larger the number, the wider the tire.

Next number
This two-digit number, known as the aspect ratio, gives the tire's ratio of height to width. Numbers of 70 or lower indicate a short sidewall for improved steering response and better overall handling on dry pavement.

R
The "R" stands for radial. Radial ply construction of tires has been the industry standard for the past 20 years.

Next number

This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.

Next number

This two- or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support. You may find this information in your owner's manual. If not, contact a local tire dealer. Note: You may not find this information on all tires because it is not required by law.

M+S

The "M+S" or "M/S" indicates that the tire has some mud and snow capability. Most radial tires have these markings; hence, they have some mud and snow capability.

Speed Rating

The speed rating denotes the speed at which a tire is designed to be driven for extended periods of time. The ratings range from 99 miles per hour (mph) to 186 mph. These ratings are listed below. Note: You may not find this information on all tires because it is not required by law.

Letter Rating	Speed Rating
Q	99 mph
R	106 mph
S	112 mph
T	118 mph
U	124 mph
H	130 mph
V	149 mph
W	168* mph
Y	186* mph

* For tires with a maximum speed capability over 149 mph, tire manufacturers sometimes use the letters ZR. For those with a maximum speed capability over 186 mph, tire manufacturers always use the letters ZR.

U.S. DOT Tire Identification Number

This begins with the letters "DOT" and indicates that the tire meets all federal standards. The next two numbers or letters are the plant code where it was manufactured, and the last four numbers represent the week and year the tire was built. For example, the numbers 3197 means the 31st week of 1997. The other numbers are marketing codes used at the manufacturer's discretion. This information is used to contact consumers if a tire defect requires a recall.

Tire Ply Composition and Materials Used

The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon, polyester, and others.

Maximum Load Rating

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

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

UTQGS Information

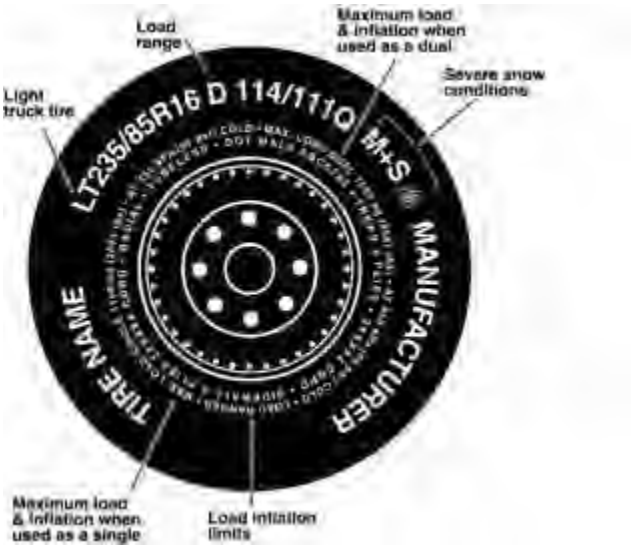
Treadwear Number
This number indicates the tire's wear rate. The higher the treadwear number is, the longer it should take for the tread to wear down. For example, a tire graded 400 should last twice as long as a tire graded 200.

Traction Letter
This letter indicates a tire's ability to stop on wet pavement. A higher graded tire should allow you to stop your car on wet roads in a shorter distance than a tire with a lower grade. Traction is graded from highest to lowest as "AA","A", "B", and "C".

Temperature Letter
This letter indicates a tire's resistance to heat. The temperature grade is for a tire that is inflated properly and not overloaded. Excessive speed, underinflation or excessive loading, either separately or in combination, can cause heat build-up and possible tire failure. From highest to lowest, a tire's resistance to heat is graded as "A", "B", or "C".

Additional Information on Light Truck Tires

Please refer to diagram below.



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Tires for light trucks have other markings besides those found on the sidewalls of passenger tires.

LT
The "LT" indicates the tire is for light trucks.

Max. Load Dual kg(lbs) at kPa(psi) Cold

This information indicates the maximum load and tire pressure when the tire is used as a dual, that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Max. Load Single kg(lbs) at kPa(psi) Cold

This information indicates the maximum load and tire pressure when the tire is used as a single.

Load Range

This information identifies the tire's load-carrying capabilities and its inflation limits.

Snow Tires

In some heavy snow areas, local governments may require true snow tires, those with very deeply cut tread. These tires should only be used in pairs or placed on all four wheels. Make sure you purchase snow tires that are the same size and construction type as the other tires on your vehicle.