



GUIDEBOOK TO ENJOYMENT OF YOUR
KZRV RECREATIONAL VEHICLE

DURANGO

THE PURPOSE OF THE OWNER'S MANUAL IS TO PROVIDE THE MOST CURRENT INFORMATION AVAILABLE FOR YOUR NEW RECREATIONAL VEHICLE ABOUT OPERATION AND USAGE.

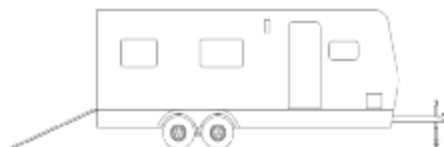
ALSO MINOR MAINTENANCE AND CRITICAL SAFETY WARNINGS ARE INCLUDED AND **MUST** BE UNDERSTOOD AND OBEYED.

ADDITIONAL MAINTENANCE INFORMATION IS FOUND IN 'MAINTENANCE MANUAL' SUPPLIED WITH YOUR COACH. FAILURE TO PROVIDE CARE FOR YOUR R.V. COULD RESULT IN LOSS OF WARRANTY COVERAGE.

ADDITIONAL MANUALS MAY BE SUPPLIED AND AVAILABLE BY THE MANUFACTURER OF PURCHASED COMPONENT'S AND/OR APPLIANCE'S. SEE THE INFORMATION PACKET IN YOUR COACH.



Conventional Travel Trailer



Travel Trailer Toy Hauler



Fifth Wheel



Fifth Wheel Toy Hauler



Hybrid Travel Trailer

KZRV
**“BUILDING QUALITY AND FUN FOR OVER 40
YEARS”**

We congratulate you on your purchase of a KZRV, recreational vehicle. You have chosen a quality built RV, which should provide you with many years of camping memories and fun.

The recreational vehicle you have purchased has been inspected by our trained inspectors and fully meets our high quality standards.

As the owner of a new KZRV, RV you can rest assured that we will do all we can to keep you a “happy camper”. Naturally, your selling dealership is always happy to help you with any questions you may have or service you may need. And should you need assistance when traveling, with over 250 KZRV dealers nationwide, assistance is usually just minutes away.



KZRV
985 N 900 W
Shipshewana, IN 46565

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CHAPTER 1 INTRODUCTION TO RV OWNERSHIP

Welcome to the world of recreational vehicle travel. The purchase of your KZRV product allows you to enter this type of camping and leisure travel. Your coach has been designed and engineered to offer many comforts of home. KZ recreational vehicles are designed and constructed to be used as temporary living quarters for camping and travel uses. The coaches are not intended for hauling cargo.

This owner's manual was prepared to assist you in understanding the proper use and operation of various containment systems, servicing and maintenance of component parts, and explanation of your warranty protection. If this is your first RV travel coach, you will want to acquaint yourself with all aspects and information found in this manual plus manuals supplied by component manufacturers.

These materials will reflect the most current information available for the user. Some components and items may not be in your coach as they may be options on different models.

Keep this owner's manual in your recreational vehicle for handy reference. Get to know your new vehicle and how it operates. You should carefully read and understand these instructions, as well as information supplied by the manufacturers of separately warranted products, since they contain important operating, safety, and maintenance instructions. If you have questions that are not adequately answered by this manual or other booklets, consult your dealer. If he cannot satisfactorily answer your questions, he will call our staff for additional information.

Every effort has been made to provide you with a safe, dependable product. Your vehicle complies with applicable requirements of Federal Motor Vehicle Safety Standards, State Regulations, Canadian Standards Associations (CSA) where applicable, and complies with requirements of ANSI Standard 1192, the nationally recognized "Standard for Recreational Vehicles – Installation of Plumbing, Heating and Electrical Systems." The Recreational Vehicle Industry Association (RVIA) and Canadian Standards Association (CSA) periodically inspect our production lines and assist us in maintaining strict compliance with installation and safety standards for those systems. **Your follow-up with periodic safety inspections and a program of preventive maintenance is**

important for the continuation of safe and trouble-free operation.

Camping is a great way to relax and enjoy the outdoors with your friends and family. Please remember to tread lightly on our beautiful land and leave only your footprints so that others may enjoy nature as much as you did.

SAFETY CONSIDERATIONS

The terms **NOTE**, **CAUTION**, **WARNING** and **DANGER** have specific meanings in this manual as well as component manuals.

A **NOTE** provides additional information to make a step or procedure easier or clearer. Disregarding a **NOTE** could cause inconvenience, but would not be likely to cause damage or personal injury.

A **CAUTION** emphasizes areas where equipment damage could result. Disregarding a **CAUTION** could cause permanent mechanical damage. However, personal injury is unlikely.

A **WARNING** is giving notice to user that potential injuries may occur to a person from equipment and mechanical failure. Disregarding a **WARNING** may result in serious physical injury to occupant.

A **DANGER** alerts owner of areas where safety measures **MUST** be strictly adhered to, as failures can be dangerous, causing serious injury and possible loss of life.

Reporting Safety Defects

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

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

To contact NHTSA, you may either call the Auto Safety Hotline toll-

free at 1-800-424-9393 or write to:
NHTSA
US Department of Transportation
Washington, DC 20590

You can also obtain other information about motor vehicle safety from the Hotline.

Safety When Emergency Stopping

It is wise to carry road flags and/or triangular warning devices to be used when necessary. When pulling off a highway, use your four way hazard lights as warning flashers, even if only to change drivers. Pull off the roadway completely, if at all possible, to change flat tires or any other emergency needs.

Additional Safety Considerations

1. Sanitize the fresh water supply system periodically (see sanitizing instructions).
2. Keep water connection fittings from coming in contact with the ground or drain hose to reduce chance of contamination.
3. Enlist services of a qualified technician to fix gas or electrical appliances.
4. Always have a serviceable fire extinguisher placed in an easily accessible location.
5. Insure that tires are in good condition and properly inflated. Watch tire inflation closely. Under-inflated tires will overheat. Overheated tires are a potential hazard as they may throw rubber and cause a blow-out. Check the tire pressure before each trip while the tires are cold.
6. Check and tighten the wheel lugs regularly (every 50 miles when new until 200 miles are reached and then check the lugs every 500 miles).
7. Check the brakes in a safe area – not while traveling a busy highway.
8. Always block the trailer wheels solidly before unhitching.
9. Before leaving a camp area with a trailer in tow, insure:
 - a. The safety pin or locking lever is seated.
 - b. The breakaway wire is attached to the tow vehicle.
 - c. All jacks are raised so that they cannot touch the ground.
 - d. The 110-volt electrical cord is properly stored.

- e. The safety chains are connected.
 - f. All interior lights are off.
10. Observe and obey the warning labels attached to your vehicle concerning propane, water, electricity and loading.
 11. Extinguish all campfires before leaving your campsite.

EXTENDED OR COLD WEATHER USE

Your KZ recreational vehicle has been built for enjoyment in a recreational manner. This recreational vehicle is not intended to be used as full-time living quarters.

1. For winter use in freezing conditions, more protection may be required. Use skirting and/or insulation below floor level to provide additional protection.
2. Remember, water freezes at 32° Fahrenheit whether fresh or drainage. Proper care must be used to protect any system at 32° F or lower. Local recreational vehicle dealers and campground personnel may be able to advise you on needed protection.
3. Energy requirements, such as propane and electrical supplies must be adequate. Protect your propane regulator from freeze-ups.
4. During cold weather you will experience more condensation than normal. Using ventilation or a dehumidifier may be needed.

CONDENSATION

Where it comes from, what causes it, and various solutions.

Causes:

- A. It occurs when warm moist air contacts a cold surface, such as rain touching a tent, awning fabric with people breathing warm moist air against it from inside due to normal breathing.
- B. When cooking food or taking a shower, warm moist air circulates throughout coach attaching itself to cooler surfaces, forming beads and running down wall or window.
- C. Normal breathing will emit approximately 1/2 pint of moisture into the air per person, per day. The more occupants, the greater quantity of condensation you may find.

Solutions:

1. When taking a shower, open bath roof vent approximately ½ inch allowing moisture to escape.
2. Use the power vent over range when cooking.
3. If condensation is found in cabinet or closets, open door slightly to equalize temperature and provide ventilation.
4. Opening windows and roof vents, when possible, allowing warm moist air to escape is the best way to reduce condensation.
5. Under extreme conditions, you may need to use a dehumidifier to remove moist air condition.

Uncontrolled condensation can cause dampness, mildew, etc., inside your recreational vehicle. Be sure to make strong efforts to control condensation.

**CAUTION**

Continuous living in your recreational vehicle could cause accelerated wear to components above recreational use.

Interior Ventilation

A new coach always has a peculiar aroma in it due to all the components used to build it, such as paneling, plywood, carpet and fabrics.

Allowing fresh air to move and circulate throughout a new recreational vehicle it is very valuable for several reasons.

1. Components used to build RV's always have a "new" smell to them, possibly irritating the respiratory system of a human body, on warm days.
2. Fresh air is always good for the human body unless allergies are a factor.

Numerous ways are provided to exchange air in coaches.

1. Open windows on non-rainy days, allowing air exchange between inside and outside.
2. Power hood vent above cooking stove will send heat and food smells outside.

3. Roof vents; Numerous types:

- A. Standard air flow using gravity flow method.
- B. Power (12v or 110v) vents will move air faster.
- C. Hi-Volume power vents, operation on 12volt power can exchange air in coach in several minutes, if windows are open accordingly. If fan is in the rear, open window(s) in front.

Different brands/models have different features such as, remote control, rain sensor, speeds on control switch, etc.

Read carefully the operating instructions as placed in your coach provided by the manufacturer of various components.

CHAPTER 2 SERVICE PROCEDURES

BASIC SERVICE PROCEDURES

KZRV has a strong interest in maintaining top quality customer relations with owners. By producing high quality products, we want to assure our customers of our support with parts and service availability. Our dealer network is the first choice to serve and supply your needs for your recreational vehicle. Our authorized dealers will pleasantly assist in providing service maintenance needs plus parts, options, and information concerning your recreational vehicle.

Should you experience a problem with service availability, please follow the steps in the order listed below.

1. Contact your selling dealer's service department for an appointment. Describe to the best of your knowledge, the nature of the problem. Please keep appointments to establish a good, workable relationship.
2. Contact the owner or general manager of the dealership should the initial attempt fail with the service department.
3. Contact:
Customer Relations Department
KZRV
0985 N 900 W
Shipshewana, IN 46565

Phone: (866) 472-5460
Hours: (8am-5pm E.S.T.)

E-mail: kz@kz-rv.com
Website: <http://www.kz-rv.com>

Give all the above information as requested along with the serial number of the coach in question. KZ will make every attempt to resolve your problem.

Please bear in mind that most problems arise from misunderstandings concerning warranty coverage and service. In most instances, you will be referred to the dealer level and your concerns will be resolved with the dealer's facilities and personnel.

Dealer

Your authorized KZRV dealer has performed a PDI (pre-delivery inspection) on your recreational vehicle. Since your dealer is authorized to sell KZRV products, he is also there to supply parts, optional equipment, and provide service repairs, warranty or otherwise as needed.

First choice for warranty repairs is your selling dealer. Other dealers can be used, however, prior approval is required.

Some recreational vehicle dealers may be authorized service centers for certain manufacturers of products warranted separately, such as furnace or stove. Check with your dealer before contacting anyone else to reduce delays. If the dealer is not an authorized service center for the product in question, he can assist you in obtaining authorized service.

Factory

Service repairs can be performed at the manufacturing facility in Shipshewana, Indiana. Should your KZRV product be in need of major repairs and your dealer recommends factory repairs, please follow the steps listed below for such work.

1. Your dealer **must** make an appointment with service personnel at the factory PRIOR to your arrival.
2. Any freight costs, as listed on warranty coverage, are the responsibility of the owner.

Parts

Stocking of parts varies from dealer to dealer. Any authorized dealer can order any required part to be shipped to his dealership. All parts are obtained through authorized KZRV dealers only.

Owner's Responsibility

When owning and using a recreational vehicle, it is important to perform regular and normal maintenance. This is recommended twice a year, spring and fall, to prevent undesired deterioration of your coach. Weather elements play an important function on sealants and other components requiring normal maintenance.

As an owner and operator, it is your responsibility and obligation to inspect and return your coach to an authorized dealer for repairs as required. Your authorized selling dealer is always your first choice and he certainly has continued interest in your satisfaction. As your manufacturer, we recommend that inspection and service be performed by your selling dealership.

If you are traveling and are unable to locate an authorized KZRV dealer, or an authorized dealer for the component needing service, please call our customer service office at (866) 472-5460. Service at a non-authorized dealer MUST have prior authorization. You may be asked to return any mechanical parts replaced before reimbursement consideration is made. Unauthorized or improper repairs may void the warranty of that component. Always keep your owner's manual along with a copy of your warranty registration with you when traveling.

Seasonal Site

When placing your unit on a camp site in the spring and returning it in the fall to your home, it's classed as a "seasonal site."

Performing repair work on such a site is not recommended for numerous reasons; available parts, tools, space, weather conditions, etc.

Any service repairs which require a service technician also require the unit to be taken to a service facility, preferably your selling dealer.

Warranty coverage does not include trip or service call costs for such a trip. It is the owners responsibility to provide for such expenses.

TOWABLE LIMITED WARRANTY

Two Year Limited Warranty

SUMMARY OF WARRANTY: KZRV warrants the structure of every towable recreational vehicle or truck camper purchased from an authorized KZRV dealer to the first retail consumer for a period of two (2) years, to be free from substantial defects in materials and workmanship when used for its intended purpose. The warranty period begins on the date of purchase or the date the unit is first placed in service, whichever is earlier. For purposes of this Towable Limited Warranty ("TLW"), the term "structure" includes the interior and exterior sidewalls, floor, roof, and frame.

EXCLUSIONS FROM WARRANTY: Excluded from coverage under the TLW are: (1) items added, changed, or modified after the unit left the possession of KZRV; (2) units used for any commercial purpose; (3) units used for full-time residential use or more than occasional recreational use; (4) wear and tear caused by normal usage by the consumer, including but not limited to fading or discoloration of soft goods [e.g. tents, upholstery, drapes, carpet, vinyl, screens, cushions, and mattresses], fading or discoloration of exterior fiberglass components, tears, punctures, soiling, mildew, mold, and the effects of moisture condensation inside the unit; (5) the effects of alterations, tampering, mishandling, neglect, abuse, misuse, weather, acts of nature, acts of God, or corrosive atmospheres that promote rusting, oxidation, or pitting; (6) minor imperfections that do not interfere or affect the suitability of the unit for its intended use; (7) the effects of consumer's or transferee's failure to perform normal and routine maintenance [e.g. inspections, lubrication, adjustments, tightening of screw and bolts, tightening of lug nuts and wheels, sealing, rotating, cleaning, or other damages resulting from failure to follow the maintenance schedule and procedures in the owner's manual; (8) damages resulting from misalignment or adjustments to axles or spindles caused by improper maintenance, modification, loading, unloading, road hazards, road defects, off road travel, or tire failures; (9) damages caused by the negligent or intentional use or misuse of the unit by the consumer or transferee, including but not limited to occurrences while towing the unit; (10) claims made for alignment of patio doors [Note: any unit with a patio door is not intended to be towed like a travel trailer, and must be permanently parked on a lot. If such a unit is towed, this TLW is voided in regard to the patio door and the surrounding structures.]; (11) loss or damage caused by a person or business as a result of transporting the unit after sale to the customer, delivering the unit, or parking the unit; (12) loss or damages to the plumbing system caused by freezing; (13) claims for personal injuries of any type; (14) costs of transportation of the unit for repairs; and (15) components that are warranted separately by another manufacturer [the warranty provided by a component manufacturer is the sole responsibility of that manufacturer, and KZRV does not warrant those components. Please refer to the warranties issued by the component manufacturers for the terms and conditions of such warranties.]

TO OBTAIN WARRANTY SERVICE: Warranty service may be performed only at KZRV, or at KZRV authorized dealers and service centers. Contact KZRV for a list of authorized dealers and service centers. **REPAIRS OR REPLACEMENTS BY UNAUTHORIZED DEALERS OR SERVICE CENTERS**

WILL VOID THIS TLW. If the consumer believes that a claimed defect is covered by this TLW, contact must be made with an authorized dealer or service center WITHIN THE WARRANTY PERIOD. Sufficient information must be given to attempt to resolve the claimed problem. Should KZRV determine that repair or replacement is appropriate, the consumer must deliver the unit to the dealer or service center as directed. Delivery shall occur no later than thirty (30) days after authorization for repair or replacement. Do not deliver your unit to KZRV, an authorized dealer, or service center without prior authorization. All costs incurred by the consumer for transportation for warranty service shall be the sole responsibility of the consumer. The dealer or service center shall repair or replace any warranted defect within a reasonable time, but no later than ninety (90) days after delivery by the consumer. Should the unit not be repaired or replaced within said period of time, then the consumer must contact KZRV by CERTIFIED MAIL with a written description of the claimed warranted defect and the efforts to remedy it. FAILURE TO SO NOTIFY KZRV IN THIS REGARD, SHALL RENDER THIS TLW VOID AS TO THE CLAIMED DEFECT. After receipt of such notice, KZRV shall repair or replace such warranted defect within a reasonable time, but not later than ninety (90) days after delivery by the consumer. The scheduling of warranty work at an authorized dealer or service center is not controlled by KZRV and delays may be experienced. KZRV is not responsible for loss of use of the unit, expenses for fuel, telephone, food, lodging, travel, loss of income or revenue, or loss of or damages to personal property.

DISCLAIMER AND LIMITATIONS OF WARRANTIES: NEITHER KZRV NOR IT DEALERS SHALL BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND OR ANY OTHER FINANCIAL LOSS ARISING OUT OF OR IN CONNECTION WITH THE SALE OR USE OF THIS PRODUCT, WHETHER BASED IN CONTRACT, TORT, STRICT LIABILITY, EQUITY, OR ANY OTHER THEORY, EVEN IF KZRV HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. KZRV'S ENTIRE LIABILITY SHALL BE LIMITED TO REPAIR OR REPLACEMENT, AT KZRV'S SOLE OPTION.

THE UNITED NATIONS CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS IS HEREBY EXCLUDED IN ITS ENTIRETY FROM APPLICATION TO THIS TLW.

THE TLW, AND THE REMEDIES HEREUNDER, ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, CORRESPONDENCE WITH DESCRIPTION, AND NON-INFRINGEMENT, ALL OF WHICH ARE EXPRESSLY DISCLAIMED BY KZRV. THIS TLW GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY DEPENDING ON LOCAL LAW. SOME STATES LIMIT OR PROHIBIT LIMITATIONS OF WARRANTIES, SO THE ABOVE MAY NOT APPLY TO YOU. YOU SHOULD CONSULT A COMPETENT ATTORNEY FOR LEGAL ADVICE.

MISCELLANEOUS: No repairs or replacement effected shall cause any extension or renewal of the warranty period. KZRV may make parts and /or design changes from time to time without notice and repairs or replacements may be made with new or different parts. KZRV reserves the right to make changes in the design or material of its products without incurring any obligation to incorporate such changes in any product previously manufactured. At KZRV's sole option, any dispute concerning any warranted defect may be resolved through mediation or arbitration. This TLW shall be governed by the laws of the State of Indiana, and any legal action shall be brought only in the Circuit or Superior Court of LaGrange County, Indiana.

WARRANTY REGISTRATION AND CONTACT INFORMATION:
The warrant registration for component parts should be completed and delivered in accordance with the instructions contained therein. The TLW registration must be completed and returned to KZRV within fifteen (15) days of delivery of the unit to the consumer. Failure to do so can void this TLW or cause delays in obtaining benefits. The TLW registration, and all inquiries, must be directed to: KZRV, L.P., Warranty Department, 0985 N 900W, Shipshewana, Indiana 46565, Telephone: (260) 768-4016.

I HEREBY ACKNOWLEDGE THAT I HAVE RECEIVED, READ, AND UNDERSTAND THIS TOWABLE LIMITED WARRANTY, AND THAT I HAVE INSPECTED THE UNIT AND FIND IT IN THE CONDITION REPRESENTED.

Date: _____
Purchaser _____

CHAPTER 3 USING YOUR RV

In this chapter, you will find three areas of useful information to assist you with correct equipment, traveling, and finally, actually using your recreational vehicle.

EQUIPMENT

Tow Vehicle

Begin your camping experiences by obtaining a tow vehicle which will adequately transport your recreational vehicle to and from your chosen destinations. Your most important measuring tool is the GVWR, Gross Vehicle Weight Rating, to cross match the capability of your selected tow vehicle.

Most Truck and Auto Manufacturers provide trailer towing guides for their products. Ask your local automotive dealer for a copy or call the factory's direct lines for information. Many tow vehicles, including mini-vans, have special towing package options available for small travel trailers. Tow vehicles with long wheel bases perform better than those with short wheel bases.

A second factor is GCWR, Gross Combined Weight Rating, which refers to the total weight of the tow vehicle and any vehicle in tow as a "combined" weight. This information, supplied by the tow vehicle manufacturer, is related to the capability and capacity of the tow vehicle.

The condition of the suspension in your tow vehicle is also an important factor. Make sure your tow vehicle is in good operating condition and follow the factory recommended maintenance guidelines.

Hitches – Fifth Wheel

The best type of hitch is one that is bolted thru floor and has brackets to attach to main frame members on truck.

Before installing your hitch be aware of the clearance needed between the truck cab and center of hitch pin. This is very important on short cab trucks.

Hitch Height Specifications – Fifth Wheel

There is no recommended hitch height for fifth wheels. The pin box

is adjustable at two inch intervals for variance in trucks and their suspension systems. For best performance while towing any recreational vehicle, have both as level as possible. When towing out of level, weight on axles will not be equalized. Axle on lowest end will carry more weight approximately 100 lbs. per 1" difference.



CAUTION

Trailers with tandem axles need to travel as level as possible, avoiding different weights on each axle plus handling conditions.



CAUTION

Using an oversized or undersized hitch can cause damage to the frame of your fifth wheel or tow vehicle.

Front Landing Jacks

Before unhooking your tow vehicle, several safety items to remember:

1. Be sure to park the unit on solid ground.
2. Be sure tires are blocked and unit cannot roll.
3. Be sure people and pets are away from camper.
4. Be sure to park on level ground, if at all possible.
5. DO NOT lift the unit off the ground with landing jacks or stabilizer jacks.

Front landing jacks on fifth wheel campers are available in two different types. Mechanical gear driver jacks are operated with a crank (manual) or optional 12-volt DC motor attached to gear box. Power is supplied by "on board" battery or tow vehicle while attached with 7-way connector. A switch is mounted to front wall, spring loaded to raise or lower jacks. Don't forget to block wheels, before you release latch on hitch, raise pin box, and pull tow vehicle away.

Always make sure that the landing gear area is clear of people and objects before and during operation of the landing gear. Always keep away from the landing gear when the system is being operated. Serious personal injury may occur.

Second are hydraulic type and are only available with an automatic leveling system. This leveling method is an electric/hydraulic system. A 12-volt DC motor drives a hydraulic pump that moves fluid through system of hoses, fittings and jack cylinder to raise and lower front end of fifth wheel.

Landing gear jacks can be operated any time the system is "ON" but NOT in the "AUTO MODE". By pushing the "FRONT" button, both landing gear jacks can be extended. By pushing either the "LEFT" or "RIGHT" button, the individual front jacks can be extended. If the touch pad is put in the "RETRACT" mode, indicated by the orange illuminated LED next to the "RETRACT" button, the front jacks can be retracted together by pushing the "FRONT" button or individually by pressing either the "LEFT" or "RIGHT" button.

When camper has been raised, weight off of hitch, move tow vehicle forward as needed. Now raise or lower front end of camper as needed to level unit.

J.B. Strong Arm system, consisting of bars, gives more stability on landing gear jacks. After coach is parked, leveled, and ready for occupancy, you may tighten each screw to anchor and support coach. Don't forget to loosen screws after hooking up to tow vehicle when ready to leave camping site.

Durango 2500 is Hi-Profile with a tall fiberglass cap and has a stripe light just above the pin box. Switch for this light is located under the gooseneck for operation. Durango 1500 Lo-Profile does not have this light.

	WARNING
FAILURE TO ACT IN ACCORDANCE WITH THE FOLLOWING MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH.	

TRAVELING

Weights

For safety reasons and federal regulations, KZRV desires to provide the most accurate weight specifications possible to our new owners. On the exterior left front corner of the coach you will find the Federal

“Vehicle Identification Number” sticker. While required by the federal government, this tag supplies much more information concerning your coach, such as: VIN number, date/month of manufacture, tire size rating, plus information about weights as described below.

Gross Axle Weight Rating (GAWR): is the value specified as the load carrying capacity of a single axle system, as measured at the tire-ground interfaces. One of five components will determine this rating; tires, axle, springs, brakes, or wheels. One of these five is generally rated slightly less than the others, used for the axle rating.

Gross Vehicle Weight Rating (GVWR): is the maximum permissible weight of this trailer when fully loaded. It includes all weight at the trailer axle(s) and tongue or pin on Fifth Wheel. This includes ALL cargo, options and liquids.

Unloaded Vehicle Weight (UVW): is the weight of this trailer as manufactured at the factory and options ordered at the manufacturing time. It includes all weight at the trailer axle(s) and tongue or pin. If applicable, it also includes full generator fluids, including fuel, engine oil and coolants.

Cargo Carrying Capacity (CCC): is equal to the GVWR minus each of the following: UVW, full fresh (potable) water weight (including water heater), and full propane weight.

Cargo Carrying Capacity (CCC): To determine how many pounds of personal cargo you may carry, use this formula:

Take GVWR	_____	>	_____
Subtract UVW	_____	>	_____
Subtract weight of options	_____	>	_____
Subtract liquids (water / propane)	_____	>	_____
Total of your personal cargo	_____	>	_____

Weighing Vehicle (Loaded or Unloaded)

The proper method to weigh the coach is to use a truck scale. Place the coach axles (tires) and tongue jack or landing jacks with front supports, 12” to 24” from the edge. Unhook the tow vehicle and move forward 6” to 8”. Be sure no part of tow vehicle is on the scale. Now record total weight. Re-hook the tow vehicle and remove the weight from the front support. Now record the axle weight only. The difference between the two weights is called “hitch weight.”

The second sticker is "Trailer Weight Information" located on the inside screen entry door. It, again, gives you the GVWR plus two other weight information items, and their descriptions.

SAMPLE DECAL

RECREATIONAL VEHICLE TRAILER CARGO CARRYING CAPACITY
V.I.N. 4EZH02495061659
THE WEIGHT OF CARGO SHOULD NEVER EXCEED
1785 kg or 4725 lbs
CAUTION:
A full load of water equals 452 kg or 996 lbs of cargo @ 1kg/L(8.3lb/gal)

TRAILER WEIGHT INFORMATION

VIN OR SERIAL NUMBER

GVWR (GROSS VEHICLE WEIGHT RATING) IS THE MAXIMUM PERMISSIBLE WEIGHT OF THIS TRAILER WHEN FULLY LOADED. IT INCLUDES ALL WEIGHT AT THE TRAILER AXLE(S) AND TONGUE OR PIN.

UVW (UNLOADED VEHICLE WEIGHT) IS THE WEIGHT OF THIS TRAILER AS MANUFACTURED AT THE FACTORY. IT INCLUDES ALL WEIGHT AT THE TRAILER AXLE(S) AND TONGUE OR PIN. IF APPLICABLE, IT ALSO INCLUDES FULL GENERATOR FLUIDS, INCLUDING FUEL, ENGINE OIL, AND COOLANTS.

CCC (CARGO CARRYING CAPACITY) IS EQUAL TO GVWR MINUS EACH OF THE FOLLOWING: UVW, FULL FRESH (POTABLE) WATER WEIGHT (INCLUDING WATER HEATER), FULL LP-GAS WEIGHT.

	<u>POUNDS</u>	<u>KILOGRAMS</u>
CARGO CARRYING CAPACITY (CCC) COMPUTATION		
GVWR _____		
MINUS UVW _____		
MINUS FRESH WATER WEIGHT OF _____ GALLONS @ 8.3 LB/GAL		
MINUS LP-GAS WEIGHT OF _____ GALLONS @ 4.2 LB/GAL		
= CCC FOR THIS TRAILER* _____		

*DEALER INSTALLED EQUIPMENT WILL REDUCE CCC

CONSULT OWNER MANUAL(S) FOR SPECIFIC WEIGHING INSTRUCTIONS AND TOWING GUIDELINES.

CD-132

Loading the Trailer—Distribution

Your recreational vehicle has been engineered to make maximum use of the available space for living and storage areas. The equipment and supplies you take along while traveling can be carried safely, provided the additional weight is distributed properly. Proper weight distribution within your trailer is an important factor in

safety and efficiency of your trailer brakes, hitching, and how your tow vehicle will pull the trailer. Excessive weight behind axle, tends to develop sway and “fishtailing” of the trailer.

KZRV does not restrict what cargo you choose to carry, providing: weight limits and capacities are not exceeded, distribution of weight is performed as listed in this manual, possibly affecting warranty coverage due to overweight and improper handling during travel.

A reasonable principle in loading your coach is for every two pounds of weight loaded in front of the axle, one pound of weight must be loaded behind the axle. Also remember, improper side-to-side loading affects spring condition, potential sway.

Excess weight behind the axle lightens the hitch weight and will tend to magnify any sway that may occur when passing trucks or when gusty winds are present. Uncalculated weight can and will affect road performance.

Items in the cargo area must be secured and/or loaded on the floor as close to the axle as possible. Store only lightweight items in overhead cabinets. Don't forget, cargo behind the axles will bounce, shift and move more than cargo in front of the axles.

Lightweight and bulky items such as paper products, bedding, clothing, etc., should be stored in overhead cabinets and closets. Heavy items such as cooking utensils should be placed in lower cabinets. Canned goods need to be in a pantry, if so equipped, or in lower cabinets. Also, heavy items should be secured to avoid shifting during travel.

For best traveling while towing a RV, its very important to have the trailer and tow vehicle as level as possible. Actually towing a trailer 1” out of level, transfers 100 # of weight from highest end axle to the other axle.

Towing

In towing your trailer or fifth wheel, you need to recognize the extra weight behind your vehicle. Below is a list of things which you need to remember while traveling.

1. With the trailer attached you will have slower acceleration and will require more distance to stop.
2. Be sure you have enough area at corners when turning, as wider turns are necessary. Be sure to use your turn signals for your own safety and the safety of others.
3. In passing or changing lanes remember you will need a longer distance to pass.
4. Use your rearview mirrors frequently to observe your trailer and traffic conditions.
5. When being passed by a large truck or bus, be prepared for displaced air as it may cause you to sway slightly, especially travel trailers.
6. When climbing steep, long grades and again while descending, use lower gears even before it seems necessary. Use your brakes smoothly and evenly.
7. Remember to drive slower on wet and icy highways to keep control of your vehicle.

Tires

All KZRV towable coaches are equipped with appropriate tires for recreational vehicles. Tires are radial in design using components to offer excellent strength and mileage in all kinds of weather conditions.

Tires on your vehicle (s) are one of the most important components of the towing package. Without inflated tires you will not be moving anywhere

The third sticker you will find on exterior of coach is information on tires and air pressure, on all coaches .

TIRE	SIZE	COLD TIRE PRESSURE
FRONT		
REAR		
SPARE		



CAUTION

It is recommended that the tire pressure be checked at the beginning of each journey, and at least once per week to obtain the maximum life of the tires.

With proper care, the performance of fuel economy and handling on the road will be better.

Safety on the road is very important in avoiding road hazards which can damage your tires plus obeying the speed limits.

On the left front corner of your coach, you will find the (VIN) label along with a placard supplying information on the tires such as tire size and air pressure (maximum).

Both stickers are permanently attached to the trailer on the left front corner of exterior and easily readable from the outside of vehicle without removing any covers.

Due to weather elements, labels may fade over time. You may wish to record this information and keep it inside of your coach, perhaps with owner's manual.

Safety First-Basic Tire Maintenance

Properly maintained tires improve the steering, stopping, traction, and load carrying capability of your vehicle. Under inflated tires and overloaded vehicles are a major cause of tire failure.

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.)

The listed amount of air pressure is for maximum load capacity. When traveling with less than full weight, you may reduce air pressure slightly for smoother ride.

While driving, your tires will get warmer. Causing pressure to rise. To get an accurate reading, you must allow tires to cool down for three (3) hours or more.

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.

Steps for Maintaining Proper Tire Pressure

Step 1: Locate the recommended tire pressure on the vehicle's tire information placard, or certification label.

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 under inflated.

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 under inflated, 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 under inflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive with a significantly under inflated tire. Since this is a temporary fix, 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 placards, 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 tread

wear 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

Since it is not legal to ride inside of a RV trailer except fifth wheels in most states, it is very rare a trailer tire requires to be balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire assembly “using a balance machine”.

A wheel alignment adjusts the angles of the wheels so that they are positioned correctly relative to the vehicle’s frame. This adjustment maximizes the life of your tires.

These adjustments require special equipment and should be performed by a qualified and fully trained technician. These items are not covered by warranty.

Tire Repair

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

Tire 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.

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.

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.

TIRE SPEED RATING Each original tire installed on KZ RV recreational vehicle have a speed rating of 75 MPH or greater, Please note maximum load rating, tire pressure and speed rating as imprinted on the sidewall of tire.

Vehicle Load Limits

Determining the load limits of a vehicle includes more than understanding the load limits of the tires alone.

On a trailer, there is a Federal certification label that is located on the forward half of the left (road) side of the unit.

The certification label will indicate the vehicle's gross vehicle weight rating (GVWR). This is the most weight the fully loaded vehicle can weigh. It will also provide the gross axle weight rating (GAWR). This is the most a particular axle can weigh. If there are multiple axles, the GAWR of each axle will be provided.

In the same location as the certification label described above, there is a vehicle placard. This placard provides tire and loading information. In addition, this placard will show a statement regarding maximum cargo capacity.

Cargo Capacities

Cargo can be added to the vehicle, up to the maximum weight specified on the placard. The combined weight of the cargo is provided as a single number. In any case, remember, the total weight of a fully loaded vehicle can not exceed the stated GVWR.

Water and propane also need to be considered. The weight of fully filled propane containers is considered part of the weight of the RV before it is loaded with cargo and is not considered part of the disposable cargo load. Water however, is a cargo weight and is treated as such. If there is a fresh water storage tank of 100 gallons, this tank when filled would weigh about 800 pounds. If more cargo is being transported, water can be off-loaded to keep the total amount of cargo added to the vehicle within the limits of the GVWR so as not to overload the vehicle. Understanding this flexibility will allow you, the owner, to make choices that fit your travel and camping needs.

When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire. The best way to know the actual weight of the vehicle is to weigh it at a public scale. Talk to your RV dealer to discuss the weighing methods needed to capture the various weights related to the RV. This would include weights for the following: axles, wheels, hitch or pin (in the case of a trailer) and total weight.

How Overloading Affects Your RV and Tires

The results of overloading can have serious consequences for passenger safety. Too much weight on your vehicle's suspension system can cause spring, shock absorber, or brake failure, handling or steering problems, irregular tire wear, tire failure or other damage.

An overloaded vehicle is hard to drive and hard to stop. In cases of serious overloading, brakes can fail completely, particularly on steep hills. The load a tire will carry safely is a combination of the size of tire, its load range, and corresponding inflation pressure.

Excessive loads and/or under inflation cause tire overloading and, as a result, abnormal tire flexing occurs. This situation can generate an excessive amount of heat within the tire. Excessive heat may lead to tire failure.

It is the air pressure that enables a tire to support the load, so proper inflation is critical. Since RVs can be configured and loaded in many ways, air pressures must be determined from actual loads (determined by weighing) and taken from the load and inflation tables provided by the tire manufacturer. These air pressures may differ from those found on the certification label. However, they

should never exceed the tire limitation for load or air pressure. If you discover that your tires cannot support the actual weights, the load will need to be lightened.

Note: Tires are warranted by the manufacturer of their respective brand and are to be serviced and warranted by a service center. Contact your dealer for information on service centers for tires.

How to Change a Tire

1. Place blocking under main rail of frame with hydraulic jack on top of blocking in front of front spring hanger, ALWAYS on main rail.
2. Break lug nuts loose before raising coach-DO NOT remove nuts.
3. Raise coach with jack until tire and wheel is off the ground.
4. Place additional blocking under frame for security support. DO NOT depend fully on jack.
5. Be sure coach is solid and will not move with tire and wheel off.
6. Remove lug nuts when tire is off the ground.
7. Place spare tire and wheel onto hub.
8. Reinstall lug nuts and tighten firmly.
9. Drop tire and wheel onto ground after removing supports.
10. Now fully tighten and torque lug nuts at 90 to 120 foot pounds.
11. Place all equipment, blocking and jack, into coach or tow vehicle.
12. Re-torque lug nuts after traveling 100 miles.

Wheel Lugs

When the wheels are installed on your recreational vehicle, the lug nuts must be tightened at 90-120 foot pounds of torque. Powder coat painted wheels may require more torque attempts due to thickness of paint. You must re-torque the lug nuts at 50 and 200 miles. A decal on the wheel may require torque earlier.

After your first trip, check the lug nuts periodically for safety. The lug nuts should then be checked after winter storage, before starting a trip or following extensive braking.

Over torque lug nuts is as dangerous as under torquing and can damage the wheel and lug nuts.

Wheel Bearings

All wheel bearings are pre-lubricated during assembly of axles and brakes. Your coach (since 2004) may have “ultrulube” method, which includes grease cap and plug. To lubricate bearings, remove rubber cap and use standard grease gun, place 6 to 8 shots of grease into bearings, (if you forgot to repack the bearings), before leaving on your trip. Don't forget to repack bearings as per maintenance manual when you return home.

Brakes – Electrical

Electric brakes on your recreational vehicle are designed to work in conjunction with the hydraulic brakes on your tow vehicle. This means, to have the best brake performance on both systems, the trailer and the tow vehicle must perform and operate together. Any attempt to use either brake system alone, tow vehicle or trailer, will cause accelerated wear and damage.

A brake control is required to operate brake system. The control is mounted under dash of the tow vehicle, using 12 volt D.C. power. Electronic type control is used most commonly. Each brand has their own operating instructions.

Battery in the tow vehicle is your primary power source to operate the brakes in your towable trailer. Keep your battery and charging system in working operation to ensure available energy when required.

Wiring to operate your brakes must be sized in both vehicles, suggesting a minimum of 14 gauge. Your camper has 14 gauge wire from front end to brakes. Brake assemblies are wired in parallel, never in a series. Being parallel, there will be equal voltage and amperage at each brake assembly for equal braking capability and/or performance. 12 gauge may be desired for your tow vehicle.

Braking can be done either manually or by foot brake pedal. Use the foot pedal control for general operation on combined use of both brake systems. Manual control is to be used only in special situations, such as slow movement or icy road conditions. In open position, electrical current will flow to brake assemblies activating them.

Power from the battery is sent to the controller, the “switch” to provide the correct amount of current to brake assemblies on the

coach. As you press harder on the brake pedal. More current will flow, adding more braking capability.

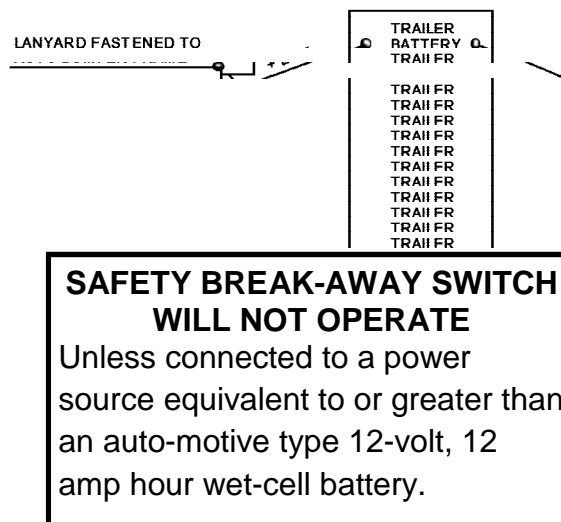
When applying brakes to stop the trailer, begin pressing slowly to avoid quick and sudden stops, or possible “jack-knife” when wet or slippery. Use lower gear ranges to minimize the need of brakes during extended or steep downgrades.

The brakes installed on your unit are self adjusting. Self adjusting brake assemblies will correct any looseness and improve operations as they will adjust in forward or backward motion as needed while unit is being towed.

Breakaway Switch

The breakaway switch is a safety part of your trailer’s electric brake system. The very instant a breakaway occurs, the pull pin which is linked to the tow vehicle is pulled from the switch. The two contacts automatically close to complete the electrical circuit and apply the trailer brakes. This system will apply the brakes of the trailer should it break away from the tow vehicle. A 12 volt battery installed on the coach is required to power the breakaway switch and brakes.

NEVER use this breakaway switch and trailer brake system as a parking brake. There would be a high and unnecessary energy draw on battery and/or convertor, potentially causing damaged wiring, connectors, and breakaway switch.



CAUTION; REMOVING PLUNGER WITH POWER TO BRAKES COULD RESULT IN DAMAGE TO BRAKES.

WARNING; Removing plunger while in storage could result in corrosion to unit points.

WARNING; A tag may be attached to lanyard cable; DO NOT use as a parking brake.

SETTING UP AND USING YOUR RECREATIONAL VEHICLE

We recommend that you select a level or nearly level place for camping. There are two reasons to be level. First, all components in your coach, such as your water drainage system and especially your refrigerator, are designed to operate in a level position. Second, it is more comfortable to live on the level. Should a level site not be available, use short 2 x 6 inch blocks of wood to raise the low side wheels to a level position.

Before unhooking the coach from the tow vehicle, be sure the landing jacks are down firmly and trailer wheels blocked to prevent the trailer from moving.

Before lowering the landing jack, you may wish to place a wood block or hard support under the foot of each jack, unless you are on a cement slab. This helps to prevent the jacks from sinking into the ground.

Fifth Wheel Hook Up

1. Release the pin on hitch.
2. Lower the landing jacks to the ground and remove weight from hitch.
3. Disconnect the 7-way wire connector.
4. Move the tow vehicle away as desired.
5. Level coach as desired.
6. Position stabilizer jacks as equipped.

The use of stabilizer jacks on a recreational vehicle is a popular and useful option. They provide a reasonable amount of stability while using, occupying, and moving around in your camper. It is important to remember that stabilizer jacks are for support of the coach and are not designed to bear the weight of a recreational vehicle.

To operate the stabilizer jack, place crank onto the jack shaft and turn clockwise to lower until the frame begins to raise slightly. Equalize all jacks for best support. You may need to adjust each

jack two or three times.

To raise jack to upper travel position, insert crank and turn counterclockwise until jack is seated in UP travel position.

Upon completing the setup of your coach, you are now ready to make attachments to various facilities:

- ✓ Waste water hose connections.
- ✓ 110-Volt power cord electrical hookup.
- ✓ Turn on propane tanks and light pilot lights, if any, on appliances. Remember there may be air in your propane lines. Be sure to bleed them before planned usage.
- ✓ Open any windows and roof vents as desired for ventilation.

You may have additional accessories and options, such as an awning on the door side which needs to be opened. Separate instructions are provided by the manufacturer of these components.

MyRV CONTROL OPERATION

A new method of computer use has arrived in KZRV products in the GOLD and 2500 Durango models.

System Information:

The MyRV tablet is an Android-based device that uses the MyRV application to bring system controls and monitoring software to a touch screen tablet. The MyRV tablet can access RV videos, product videos, owner's manuals and many more RV owners resources. The systems controlled and monitored in these coaches include slide outs, landing gear, leveling systems, awnings, lights, and components from monitoring panel.

When powering on or waking UP the tablet, the MyRV application will run automatically as it is pre-figured to do so. In order for the MyRV application to present the operator with control panel, there **MUST** be and have power to the coach. This will power the various controllers located through the coach. This will also power the wireless hub and enable connectivity with the tablet, ultimately allowing wireless connectivity. Please note that with power to the coach, the tablet should always be able to gain access to the control panel when placed in the docking station due to it being a wired connection. Use this to assist when diagnosing concerns with the system.

It may take 2 to 5 minutes for the tablet and hub to fully energize and communicate. Please allow this amount of time for the system

to establish communications to ensure swift application operations.

Remove the tablet from the docking station and note the buttons on the same end the charge wire is attached.

1. Is for microphone.
2. Power button—ON/OFF.
3. Headphone jack.
4. Micro USB.
5. Is for charge line.
6. Volume control.

There is also a RESET button on the side.

1. Power ON the tablet, hold button for 2-3 seconds.
2. To enter or exit the sleep mode, press and release the power button.
3. To power OFF tablet, press and hold the power button until a utility screen appears.
4. Select “ power off”.
5. Press “ OK” when confirmation box displays “Your tablet will shut down”.

Note: DO NOT complete the steps to “Factory Reset” in your tablet settings. This will erase all data on your tablet and VOID the warranty on the tablet.

DOCKING STATION is where your tablet is placed to be charged up. To connect the tablet, open the door and slide the tablet into the sleeve about 3/4 way. Then connect the charge wire to the tablet. Slide tablet on in and close door.

GENERAL DETECTOR INFORMATION

As you are confined in a RV which is much smaller than a standard house, you must realize safety detectors will be activated much sooner than in a residential house, due to there being much less air volume.

TEST SAFETY ALARM OPERATION AFTER VEHICLE HAS BEEN IN STORAGE, BEFORE EACH TRIP, AND AT LEAST ONCE PER WEEK DURING USE.

Each listed detectors has it's own manual and instructions sheet, providing more information for it's use and maintenance. Life time of the detector is 10 years and will need to be replaced as per manufacturers instructions. There is a label placed on detector to record your purchase date.

SAFETY DETECTORS

FIRE EXTINGUISHER

A fire extinguisher is installed in each vehicle and is located near the entrance door. Be familiar with it's location and operating instructions as printed on the extinguisher. Inspect your fire extinguisher at least two times per year or more often, as instructed on the extinguisher.

PROPANE/CARBON MONOXIDE DETECTOR

Any recreational vehicle which contains a propane fuel system with propane consuming appliances, requires a propane leak detection device for safety protection. Currently this detector also serves as a carbon monoxide detector, as a combination protection device. A convertor or auxiliary battery is required to supply 12-volt DC energy to operate the leak detector. There is no master cut-off switch to disengage detector.

OPERATION

When the unit is first powered up, the CO sensor requires a ten (10) minute initial warm-up period to clean the sensor element and achieve stabilization. The GREEN LED indicator will flash on and off during the 10 minute warm-up period. This unit cannot go into a CO alarm during the warm-up period. To test your unit during the warm-up period, press the test button. See Test Procedure in this manual. After the warm-up period, the GREEN power ON indicator should glow continuously. If the ON indicator light does not light, see the section, in this manual for further information. **Do not attempt to fix it yourself.**

Gas Alarm— When you power the alarm, it has a warm-up period of approximately 1 minute. This unit cannot go into a gas alarm during the warm-up period. After 1 minute the alarm can detect explosive gas.

Simultaneous Protection— Because the risk of a propane gas explosion is generally a more serious danger, your alarm unit gives the gas alarm a higher priority during simultaneous alarm condition.

If your unit generates alarms for both propane and CO at the same time, the gas LED will flash red and the beeper will sound. The CO LED will be a solid Red until the CO is ventilated out of the RV, at which time the LED will return to the Green operational/safe color.

Brownout Protection— The unit can tolerate short power interruptions and brownouts where the circuit voltage drops as low as 1 VDC. If the brownout lasts too long the unit will reset and operate as described above.

LOW POWER OPERATION

This alarm will operate normally down to 7 VDC. Do not operate this alarm below 7 VDC.

VISUAL AND AUDIBLE ALARM SIGNALS

This SAFE-ALERT™CO/Propane Gas Alarm is designed to be easy-to-operate. The alarm has two indicator lights that display a specific color for each monitored condition. There also is a matching sound pattern for alarm conditions.

CO ALARM

The Red CO LED will flash and the alarm will sound 4 “BEEPS” then silent for 5 seconds. These signals indicates that the CO level is over 70 ppm. **IMMEDIATE ACTION IS REQUIRED.** See **Procedures To Take During An Alarm.** This cycle will continue until the TEST/Mute button on the front of the alarm is pressed. Ventilate the RV. The RED light will stay ON until the CO has cleared, or the alarm will reactivate in approximately 6 minutes if the CO is still present. DO NOT RE-ENTER THE RV. This alarm will return to normal operation after the RV’s properly ventilated.

PROPANE GAS ALARM

The RED LED will flash and the alarm will sound a steady tone whenever a dangerous level of propane or methane gas is

detected. **IMMEDIATE ACTION IS REQUIRED.** See **Procedures To Take During A Gas Alarm.** The detector will continue to alarm until the Test/Mute switch on the front of the alarm is pressed. Ventilate the RV. The RED Gas LED will continue to flash until the gas has cleared, or the gas alarm will reactivate in approximately 5 minutes if the gas is still present. DO NOT RE-ENTER THE RV. This alarm will return to normal operation after the RV is properly ventilated.

MALFUNCTION/SERVICE SIGNAL— If any malfunction is detected, the Propane LED will remain off and the Operational/CO LED will alternate Red/Green and the alarm will sound once every 15 seconds. Press the Test/Mute button. If the Test/Mute button does not clear signals, check the battery voltage. **If the battery voltage is not low and the unit will not return to normal operation, immediately remove the alarm and return for service or warranty replacement.** See the warranty section in this manual.

<u>OPERATION</u>	<u>AUDIBLE SIGNAL</u>	<u>VISUAL SIGNAL</u>
NORMAL	NONE	STEADY GREEN
CO ALARM	4 "BEEPS" 5 SECONDS OFF	STEADY RED
PROPANE ALARM	CONSTANT	FLASHING RED
ALARM MALFUNCTION	"BEEP" EVERY 30 SECONDS	ALTERNATING RED/GREEN
END OF LIFE	"BEEP" EVERY 30 SECONDS	RED/RED GREEN/GREEN FLASHING

WHAT IS CARBON MONOXIDE

Carbon Monoxide (CO) is a highly poisonous gas which is released when fuels are burnt. It is invisible, has no smell and is therefore very difficult to detect with the human senses. Under normal conditions, in a room where fuel burning appliances are well maintained and correctly ventilated, the amount of carbon monoxide released into the room by appliances is not dangerous.

These fuels include: wood, coal, charcoal, oil, natural gas, gasoline, kerosene, and propane.

Such gases can build up in the blood, interfering with the body's ability to supply oxygen to itself.

SMOKE ALARM

Operation, Testing and Maintenance:

Operation and Testing:

Smoke alarm is required when propane is in coach and open flame cooking occurs. Alarm is placed on ceiling between kitchen and bedroom. *Energy is supplied with a 9 volt battery inside of alarm*

Operation: The smoke alarm is in operation once the battery is correctly connected. The LED will flash every minute to show the battery is supplying power to the alarm. When production of combustion is sensed, the unit sounds a loud alarm which continues until the air is cleared.

Testing: Test the alarm by pushing the test button on the smoke alarm cover for at least three seconds, until the alarm sounds. The alarm sounds if all electronic circuitry, horn and battery are working. If no alarm sounds, the unit has a defective battery or other failure and should be replaced immediately.

- Test each smoke alarm weekly to be sure it is installed correctly and operating properly.
- Test smoke alarms upon returning from vacation. Also test when no one has been in the RV for several days.
- Stand at arm's length from the smoke alarm when testing. The alarm horn is loud to alert you to an emergency. The alarm horn may be harmful to your hearing.
- The test button accurately tests all functions. Never use an open flame from a match or lighter to test this smoke alarm. You may ignite and set fire to the smoke alarm and your home.
- **MOBILE HOME AND RV LOCATIONS- TEST SMOKE ALARM OPERATION AFTER VEHICLE HAS BEEN IN STORAGE, BEFORE EACH TRIP, AND AT LEAST ONCE PER WEEK DURING USE.**

A label is attached to record your purchase date. 10 years is life for this detector and then needs to be replaced.



WARNING

Test smoke alarm operation after vehicle has been in storage, before each trip, and at least once per week during use. Failure to comply may result in serious injury.

Steps (Two or Three)

Before entering your recreational vehicle, place your hand in the center of the step assembly. Pull the step outwards. The step assembly will raise slightly and then out, away from the coach. The lower step will unfold 180° to useable position. The arm on the step will meet a positive stop.

Step care, maintenance and lubrication information will be found in Maintenance Manual.

**CAUTION**

After lubrication, be sure no lubricant is remaining on step, causing a person to slip.

Windows —Three Different Types used:

1. Solid picture window, which does not open.
2. Slider window. One panel will open and slide in a horizontal or vertical direction.
3. Egress (Escape)
Required by code to be placed in wall on opposite side of entrance door. These windows have a swing out panel with a screen in the opening. Two latches, one on each side need to be unlatched to swing panel open. Before traveling be sure the latches are latched properly.

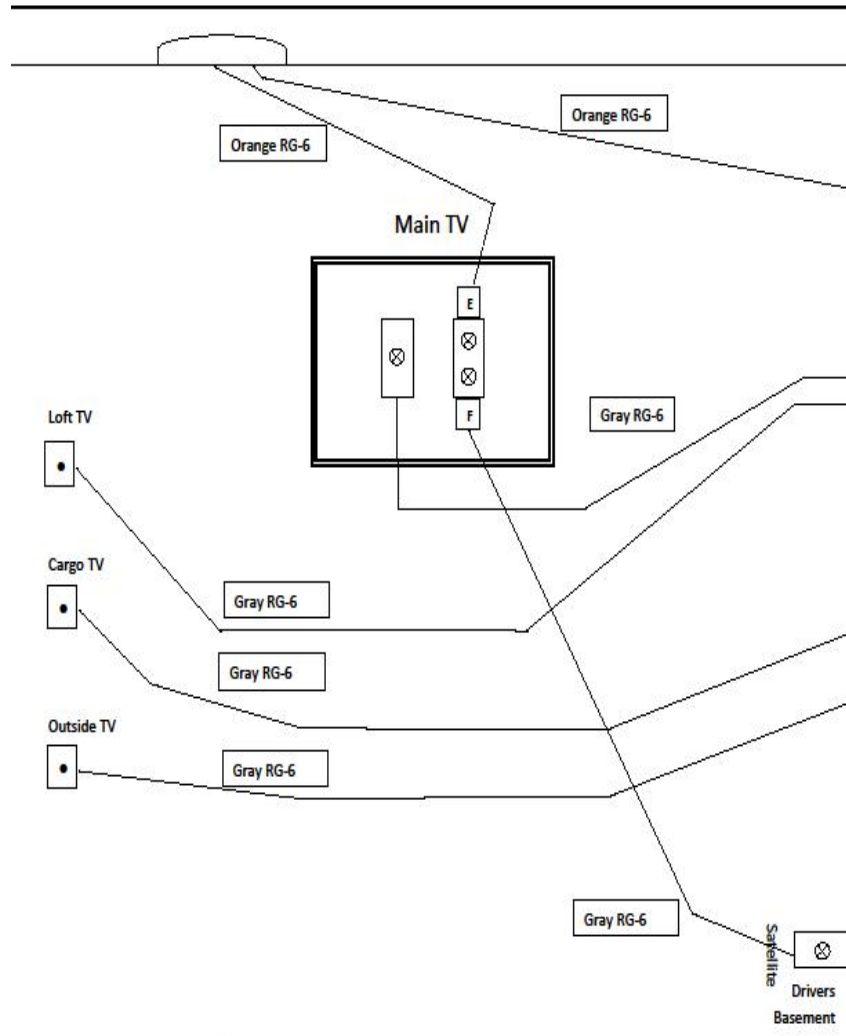
Doors

Locks on entrance doors have two lock mechanisms, a deadbolt in the frame section of lock and a standard lock in the handle. Both locks use the same key.

Screen doors may have two types of latches. First, a "roller" latch and secondly, a "hook" latch which needs to be tripped to open.

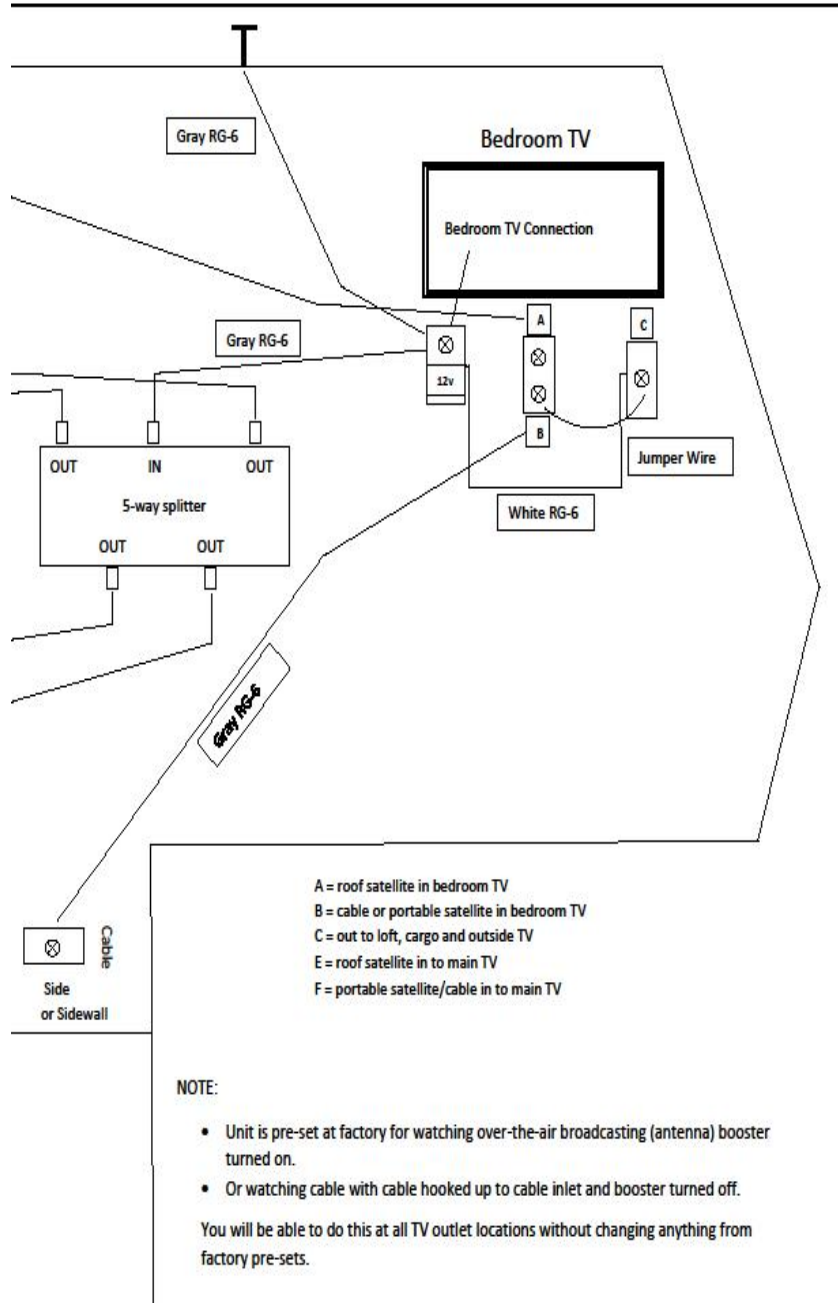
Locks on trunk doors need a small quantity of silicone lubricant sprayed internally two times per year to keep functioning correctly.

The following two pages show the TV Hookup/wiring diagram. This diagram is for all models except the Front Living Room models.



Optional Instructions

- For connecting portable satellite:
Your signal will be coming in through "F" for Main TV and can be routed through coax connection to "B" in bedroom, if needed.
- For rooftop satellite:
Signal will be coming in through "A" in bedroom & "E" in main TV.
- For sending optional signal from bedroom device to rest of outlets, hook up from your coax device to outlet "C" (booster must be turned off)



TV Antennas (Standard Roof Mount)

To raise the antenna, turn crank clockwise in UP direction approximately 13 turns or until some resistance to turning is noted (figure 1).

On amplified models, 12 volt DC power is required for full performance. Turn the power supply ON with the push button switch (figure 2). Power moves to the head of antenna, activating the inbuilt module, returning amplified signal to both coax leads in coach.

After the antenna is in full UP position, pull down on the round knob with both hands until it disengages from the ceiling plate. Rotate for best picture (figure 3). To lower antenna to traveling position, rotate the antenna until pointer on directional handle aligns with pointer on the ceiling plate. Turn the elevating crank counter clockwise in DOWN

direction about 13 turns or until resistance is noted. The antenna is now locked in travel position (figure 4).

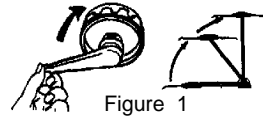


Figure 1

Figure 2

WARNING
DO NOT connect high current devices such as hair dryers to this receptacle. Maximum current rating of this receptacle is 7.5 amps at 12 VDC.

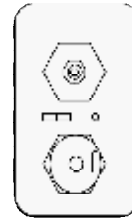


Figure 3

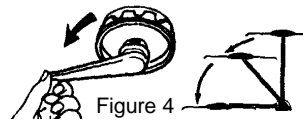


Figure 4

To test system:

1. Make sure the television is working properly.
2. Switch the power supply ON and OFF to see if there is a difference in the picture quality while watching TV. If NO difference, test for 12-volt power at the cable on the roof top.



CAUTION

When lowering the antenna, never lower it into any position except the TRAVEL POSITION. Failure to lower antenna into the TRAVEL POSITION before traveling will very possibly cause damage, not covered by warranty.



CAUTION

The power supply should be turned OFF when connecting/disconnecting cables to power supply and antenna, but should be turned ON when testing for voltage.

SLIDE-OUT SYSTEMS

KZRV builds coaches on frames supplied by several manufacturers using different slide systems and components. All slide-outs require some form of 12-volt DC power, supplied by dealer installed battery and/or convertor requiring 120-volt AC power.

Following are descriptions of several types of slides with electric components, plus a hydraulic system.

MAIN FLOOR SLIDES

First is an under floor slide-out mechanism with a notched track welded to a cross member, matching with a cog gear attached to drive shaft, "LCS" (Lippert Components System.). As the motor turns, a ram moves the gear on the track. A cross shaft, front to rear ram connects the second ram, moving the opposite end of slide. Mechanisms operate same, whether it is flush floor or standard floor.

BEDROOM SLIDES

Two styles of bedroom slides, Schwintek and low profile floor mounted slide are used.

Low profile assembly is placed and attached to the floor of the front bedroom slide. Two nylon blocks and metal brackets are attached to side wall at opening point to ease slide out movement, in or out. This includes all hardware, motor gears, shafts, track and framework all combined into a single unit.

Schwintek system is composed of four tracks placed on the outer sidewall of slide, two at the bottom and two up near the roof line. In the upper corner molding at the top on sidewall has a motor installed into each side. Gears on motor mesh with tracks that move slide-out 'IN' or 'OUT', when power is applied, through a module board from 12-volt DC source.


KZRV does NOT require or suggest using any blocking or supports, jacks, etc. to be used under any slide assembly during extended use as the water seals on walls and roof won't be seated.

Trailer Set-Up Requirements—General

Note:

- 1. Before operating the slide-out room, level the trailer front-to-rear and side-to-side.**
2. Extend all stabilizer jacks to make solid contact with the ground

and/or on solid blocks. Placing stabilizer jacks onto a hard surface allows the coach to remain square and assure a good weather tight seal between the room and trailer sidewall.

WARNING

- ◆ Always make sure that the trailer is level before operating the slide-out room.
- ◆ Always make sure there are no obstructions blocking the path of the room when it is moving.
- ◆ Always make sure that the room path is clear of people and objects before operating.
- ◆ Always keep away from the slide rails under the coach when the room is in motion.
- ◆ Always install transit bars for storage and transportation.

FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN SERIOUS INJURY OR DEATH.

Electrical Components

All power slide systems operate on 12-volt DC power provided by a fully charged auxiliary battery optional on all models and convertor through a 12-volt distribution load center, 30 amp breakers are provided for each slide. For best performance, have 120-volt AC power attached to your coach, feeding the distribution load center.

A silver 30 amp breaker is located in the distribution box, feeding power to the operation switch to motor. Removing this breaker is the only method of removing power to operate slide out. There is no "kill" switch in the system.

Your auxiliary battery, being fully charged, is your main power source.

To supplement your battery use either one of two choices:

1. Hook up a 120-Volt AC power cord to recreational vehicle for convertor operation.
2. Use 12-volt power through the tow vehicle to the recreational vehicle battery(ies).

Either of these methods will help ensure maximum electrical power for the slide-out motor, as well as maintain your battery.

Operation Switch- This switch is a 2 position spring loaded switch, hold "in" or "out" by pressing down or up. Hold operation switch until

room seals tightly on the exterior of the unit. DO NOT distort or bend the exterior flanges or interior fascia by holding the switch in “on” position. Switch is located in monitor panel.

To retract, reverse the procedure and hold button until the room is fully inside with gaskets sealing to the wall. It takes about 20 seconds to move the slide in or out.



WARNING

Stand clear of the room’s interior path and verify that the room’s exterior path is clear before extending or retracting the room.



CAUTION

When opening slide room, DO NOT over-extend. Facia board can be distorted, loosened or bent from correct position.

Do NOT attempt to operate more than one slide-out at a time. Amp draw per slide ranges from 12 to 18 amps to move slide-out “IN” on flush floor slide. Moving both could kick breaker off.

A 12-volt DC motor is located under the floor between main rails and



CAUTION

Because operating the slide-out draws up to 30 amp current from the battery, some source of supplemental charging should be operating while extending or retracting the slide-out.

attached to a ram. As ram turns from motor, an attached gear will mesh with track. Motor and ram are not visible.

Should a power failure occur (no 120-volt AC power or the battery loses its charge), follow the directions listed below:

Manual Override (Flush Floor or Standard)

1. On rack and pinion frames, there is a 1/2” shaft coming through main rail of frame. A 3/4 inch nut is welded to shaft. Use a socket, extension and ratchet to move the slide. You will find this nut on opposite side of the frame that the slide is on, for the slide you use wish to move.

Manual Override for Bedroom Slide

Access to move slide when no power is available is under bed.

1. Lift bed plywood and mattress up.
2. Remove all cargo stored inside.
3. Pull up plywood panel covering mechanism.
4. Use a crescent or 1" wrench to turn tube at foot end of bed.

Manual Override for Schwintek system

1. Locate the circuit board.
2. Press the "mode button" six times quickly, press a 7th time and hold for approximately 5 seconds. The red and green LED lights will begin to flash, confirming the override mode.
3. Release mode button.
4. Back inside coach, use the normal slide control switch to retract the room.
5. Unplug both motors from circuit board. This releases the motor brake.
6. Push or pull slide room in as desired; Larger rooms may require several people to push. Keep both sides relatively even.
7. When room is completely in, plug both motors back into the module board. This will apply brake control for road travel.
8. The room must be travel locked to keep room in during travel time.

HYDRAULIC SLIDE SYSTEM

The hydraulic system provides energy to move any slide-out assembly in or out as you chose. It uses an electric/hydraulic combination with an 12-volt DC electric motor to pump fluid through hoses, valves and cylinders, and back to the reservoir.

Each slide has it's own valve and you may shut individual valves to prevent selected slide-out from operating. Normal procedure is with all valves open to begin movement on door side front, then rear, next is left rear and then come forward. Bedroom slides are not on hydraulic system, but on 12-volt DC power.

These valves are located in front, close to the reservoir. It is also normal for easiest slide to move first.

WARNING—People and pets **MUST** be clear of coach while operating any slide-out.

WARNING—Be sure to keep hands and other body parts clear of any fluid leaks, as the leak may be under high pressure causing skin injuries.

The Hydraulic slide-out portion of this system is a rack and pinion guide system, utilizing a hydraulic actuator to move the room assembly. The power unit drives the cylinder rod in a forward and backward motion to drive the slide room in or out. The system operates as a negative ground.

Motor for hydraulic pump, operates on 12-volt DC power supplied by convertor plugged into 120-volt AC energy or 12-volt battery fully charged. Switch for operation is located on your monitor panel.

Much of your operation equipment is located in the right front compartment.

When checking fluid levels, fluid should be within 1/4" of fill spout lip with all slide-outs retracted or the "IN" position.

Any time you are parked with slide-outs in the "OUT" position for lengthy period of time, it is good to spray the cylinder rods to prevent any rust to accumulate using a silicone lubricant. Access to these rods is underneath the coach with slide-outs in the "OUT" position.

Valves are labeled as follows:

Front = left front

Center = left rear

Center = right rear

Rear = right front

AUXILARY OPERATION;

Should 12-volt power not be available, your system can be operated with power device such as a power screw gun. You will need a 1/4" allen wrench or bit to place into the screw gun. Access is on top of the motor, removing a label and possibly panel installed above the motor to operate the motor.

Supplier has provided additional manual for their product.

EXTERIOR LADDER

A ladder is available to provide access onto your roof. Two different type of ladders are used. One ladder is fully attached to rear wall and lower step is hinged. Another ladder has top portion fully attached to roof at rear corner, The main portion is hooked over top part and is supported with (4) sidewall mounted stands. Be sure to install all four pins, DO NOT attempt to use ladder until it is fully attached to sidewall with four pins. This ladder must be removed during travel time.

DO NOT store articles on the ladder during travel. If you do, warranty will be void on the ladder.

ENTERTAINMENT COMPONENTS & TV'S

All radios, CDs, and DVD players are purchased and arrive with their own operating manuals (some on CD and others with paper manuals). Read them carefully and completely before operating your equipment.

OPTIONAL SPARE TIRE CARRIER

Many owners desire to have a spare tire and wheel for emergency use during travel time, such as a flat tire.

1. With 4" rear bumper, you will be able to carry your spare tire during travel on the bumper with a carrier.

2. On some models, the spare is carried under the floor behind the axles. A steel bracket holds the spare with a cable. A hoist is attached to the floor, the cable drops down through the cover. A rod attached to hoist and 3/4" nut is welded to it, this is the means to raise and lower the spare. Turning clockwise raises the spare and counterclockwise to lower it.

Use a 3/4" socket, extension and ratchet to operate. Hoist is enclosed and not visible.

Should you have any blinds in coach, they **MUST** be in the UP position during travel.

CAUTION

While traveling all mini blinds need to be in the "up" position to avoid swinging and scratching paneling, even with brackets installed on bottom of window.



WARNING

- ◆ These individual tassel cards reduce the strangulation hazard in the pull cord by removing the loop.
- ◆ Do not tie the cords together. Check periodically to make sure the cords have not twisted into a loop.
- ◆ This device will not prevent strangulation hazard if young children wrap pull cords around their necks. Always keep cords out of the reach of young children.

CHAPTER 4 SYSTEMS

WATER AND DRAINAGE PLUMBING



Your KZ recreational vehicle has a complete water system, to carry fresh water, as well as holding tanks for used water. Each group has its own explanation along with its own operation.

FRESH WATER SYSTEM

Tanks

All coaches produced by KZRV have a fresh water supply tank installed. In most models, they are placed under the floor in frame area. On some larger coaches, a second optional tank may be installed. Each tank has its own drain spigot to remove water, when so desired, especially in winter time.

These tanks are NOT designed to hold pressure. See Caution.

	CAUTION
DO NOT leave tank unattended while filling, as an over filled tank will build pressure, causing tank to crack, rupture, and leak or even damage supports holding it in place.	
	WARNING
POTABLE WATER ONLY. SANITIZE, FLUSH AND DRAIN BEFORE USING. SEE INSTRUCTION MANUAL. FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.	

12-Volt Demand Pump

When water is desired and you are not hooked up to city water, your tank will be your supply. On your monitor panel is a switch to turn on the 12-volt demand pump. Energy for the pump is supplied by the auxiliary battery or convertor. The pump will self-prime when started, supply water and continue to run until approximately 40 pounds of pressure is achieved. When pressure drops to 20 pounds, pump will restart. Some cycling in pump may occur. A

check valve is built within the pump to prevent water from flowing into the supply tank.

The pump has a small filter attached on the in-port side to prevent any foreign matter to enter the pump. You need to, annually or even more often, remove the lower cup and clean it out or replace filter.

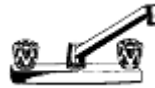
When the pump is not being used, turn the 12-volt power off at the switch, located on the Liquid Control Center, (L.C.C.).

Occasionally your water pump may start/stop quickly, within a second, referred to as "cycling". Cause for this noise may be; a faucet open slightly, water saver washer in the end of faucet spout might be cracked or missing, plus other restrictive issues. If your pump cycles every 10 to 15 minutes, there may be a slight water leak somewhere, check valve in city water fill, plumbing fittings, and/or pressure valve in pump.

Each storage tank has an over flow line. DO NOT install a shut-off valve at lower end of line. Memory failure to operate will cause broken tank.

Faucets

The basic operation of a faucet is the same as in your home. Open the knobs or raise the single lever. Close faucets when sufficient water volume is achieved. It is normal to experience occasional air pockets in the system.



Bath and Shower

Your bathtub and shower are built with ABS or fiberglass material, similar to those in your home. Shower curtains or doors are provided with the coach and must be used to prevent water from spilling onto the floor, possibly causing damage.



The shower head used in the bathroom has a non-positive shutoff valve and will drip slightly in shut-off position. A vacuum breaker is also built into the faucet to permit water in hose to drain out as a code requirement.

Before beginning your shower, be sure the water heater is lit. Adjust the faucet for temperature before entering the tub or shower. When shower is completed be sure to turn water off at the faucet.

Used water will drain through the plumbing pipes into the gray water

holding tank. Remember capacities of your water heater and gray water holding tank. Long showers in a recreational vehicle are NOT suggested due to the amount of water that is available. To conserve water, wet down and turn water off while you soap up, then rinse.

Outside Shower (Optional)

A convenient faucet assembly with hot and cold water is available for exterior use on the outside of camper, such as washing hands and utensils. You will find a “spray port” in your LCC system to use for this operation. To use, attach hose to quick connect adapter.

Fresh Water Lines

Two (2) lines, generally red and blue will move water to any faucet as desired. Valves are located on LCC as listed below. Lines will be attached to each other with plastic or copper connectors. A compression ring clamps line and fittings together.

Low-Point Drains

Low-Point drains are placed on recreational vehicles to drain water from lines, tanks, and water heater to prepare coach for winterization and sanitizing systems.

Fresh water supply tanks will have their own separate drains under floor and/or frame, with a valve to be opened to drain, over flow drain line may be close by.

Plumbing lines also have Low-Point drains located in various areas. You may find them (2) for hot and cold coming out of storage areas, outer metal skirt, through under belly covers, control centers etc.

Water should always drain out to the ground, not into underbelly cover.

Filling Fresh Water System (with LCC system)

In current Durango production there are two (2) different types of fill systems for liquids, first for the 1500 models and then for 2500 and Gold series. Both are located on the left front side of coach.

On the 1500, Liquid Control Center, LCC, each letter identifies what each item will operate.

C—Is where you attach a garden hose from a known good water source to fill both supply tank and water lines referred to as “city water fill”.

A—Is normally closed (off position). To fill fresh water tank, open this valve. When tank is full, close valve.

B— Is normally in closed position. Open only when water pump is used to draw water from supply tank. Close valve when siphon hose

is being used. Siphon hose is 4 to 6 foot long garden hose with male connector on one end and nothing on the other end. Make your own! S—Faucet assembly to be used as outside shower/spray port to wash off before entering your coach.

TF—Is used to attach a hose to rinse holding tanks AFTER they have been drained of wastes.

R—Is a 120-volt AC receptacle to plug any tool, appliance, etc.

TC—Is where cable hook-up may be attached from outside source.

TS—Is where an owner chooses to hook-up a “portable TV satellite dish . See page 36 & 37 for diagram.

FILLING and USING WATER SYSTEM 1500 model

1. With both valves “A” and “B” in “OFF” position, water will flow through entire system lines (blue for cold and red for hot) filling water heater first and then lines. Open faucets to relieve air pockets.

2. When city water is NOT available and supply tank needs to be filled, turn “B” valve on/open. Now pump will supply your water needs throughout camper.

3. To fill tank, valve “A” must be open and “B” off/closed. Now from a known good water source, with hose attached to city water hook-up, supply faucet turned to open, water will flow and fill tank. DO NOT overfill tank or attempt to pressurize tank, it will break.

4. To fill or sanitize lines, follow same steps as in #5 except valve “A” must be “ON” and “B” OFF/closed. This uses pump as agent to move liquids.

5. To winterize or sanitize lines only through siphon hose, have both valves off/closed. Place siphon hose into container of antifreeze or sanitize solution and open valve on siphon hose, located next to the pump. Now go to section “How to winterize your camper.”

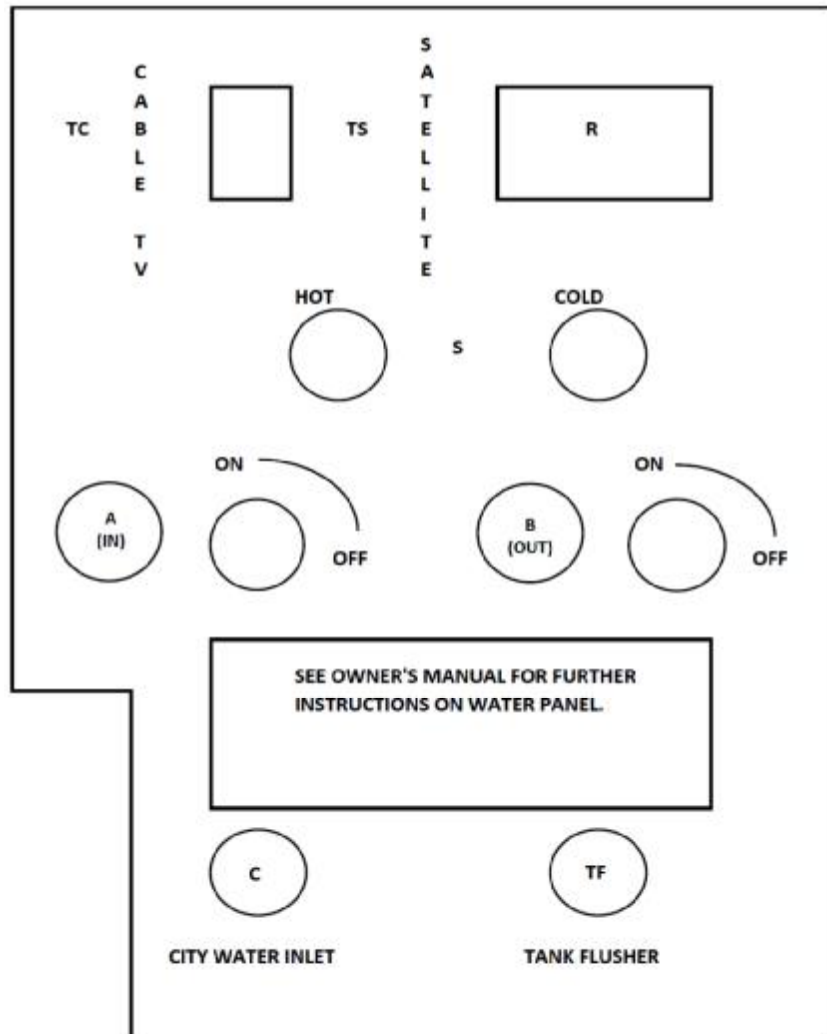
These 5 items will match OR give additional information with 5 items as listed on “LCC” board in your recreational vehicle.


See print on next page for additional instructions to fill system.



CAUTION

DO NOT leave tank unattended while filling, as an over filled tank will build pressure, causing tank to crack, rupture, and leak or even damaging sup-

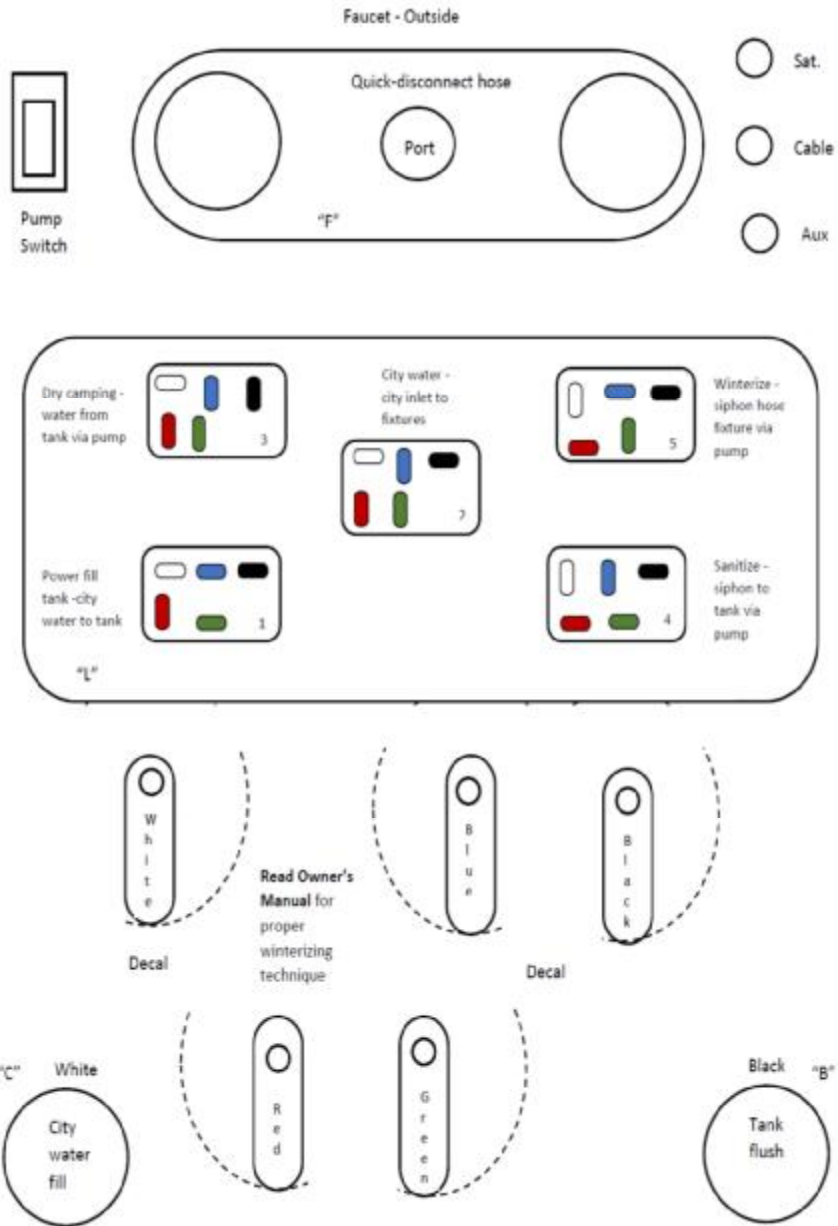



CAUTION

Excessive pressure from water supply systems may be encountered in some parks, especially in mountain regions. Water pressure regulators are available to protect your system against such high pressure. A regulator at 45 pound rating is recommended to prevent damage to the plumbing system or components.

Filling Fresh Water System

On 2500 and Gold models Liquid Control Center (LCC) uses a different board and controls as listed below.



Components listed are:

P— Pump switch to start and stop pump, 12 volt DC.

S— Satellite and cable hook-up.

F— Faucet for exterior use as needed with hose and sprayer.

C— City water fill to attach your hose plus to use as a siphon hose application as described later.

TF— Black tank flush to be used to rinse out any remaining contents from black tank after it has been drained.

There may be a second 'Black Tank' connection for a rear tank at the lower right corner of L.C.C.

L— Main menu to operate the full water system including filling and discharging as desired. Note the 5 VALVES which need to be positioned and/or turned correctly to accomplish your intent on the following diagram and described below and previous page.

1, Power fill Storage Tank: Place all valves in position as shown in #1. Your RV does NOT have a gravity water fill, so filling the tank occurs in this method only.

(a) Attach a garden hose to the city connection "C", lower left corner. Open supply faucet and fill tank. You cannot visually see tank being filled, so use monitor panel as your guide. Tank has an over flow vent line but much smaller than fill. When water begins to come out of overflow line, shut in coming faucet off— IMMEDIATELY.

(b). DO NOT over fill as plastic tank cannot hold pressure. It will break and leak. NOT WARRANTY.

2. Hook-up same as #1 and adjust valves as shown in #2 to fill all water lines, including water heater, as your main source and not using the tank.

3. You have filled the tank, are now ready to 'dry' camp, (with no city water), move your valves as shown in #3 to draw water from tank. Turn switch at top left corner to ON to start pump. 12 volt DC. power is required for operation. Pump will run until 40 pounds of pressure is achieved and stop. When pressure drops to 20 pounds, pump will start again.

4. For your safety, you should sanitize the potable water system when your RV is new or when it has been stored for a period of time such as over winter, as it may have become contaminated. Attach a siphon hose to the city water fill. Take a short garden hose

4 to 6 foot long to attach to city water fill. Attach correct connection to hose and leave the other end open. Insert this end into solution , prepared as instructed below.

5. It's getting cold, winter is coming and you MUST winterize your coach to avoid frozen lines along with water heater. Place valves as shown in #5. You now can by pass the water heater, use same hose as in #4, to place antifreeze into lines. See complete section on winterization on page 59.

NOTE-There is no by-pas kit on heater as it's not needed.

Sanitizing the Potable Water System

For your safety, you should sanitize your potable water system . See #4 on previous page .

Prepare a chlorine solution using 1/4 cup of bleach (5% sodium hypochlorite solution) to one gallon of water. Prepare one gallon of this solution for each 15 gallon capacity of the tank. As designed and constructed, this method will sanitize the plumbing system.

Example: For a 45 gallon tank, put in 3 gallons of solution.

Chlorine smell and taste may NOT be pleasant. To remove any excess chlorine taste or odor, prepare a solution of one quart vinegar to five gallons of water and allow this solution to agitate in the tank for several days by vehicle motion.

Drain the tank again and flush with fresh water.

Your demand water system is now ready for use.

Whenever demand pump is not being used, be sure to TURN OFF the 12-volt power to pump.

Drainage (Fresh Water)

All permanent fresh water tanks can be drained. Two types of drains are used:

1. A push/pull located on top of floor.
2. A turn valve, usually brass may be located above floor or below under belly cover.

Locate the valve placed at the floor level or close to the floor, found under the dinette, storage cabinet, and sofa. These valves will be at the "lowest" point of the water lines. To drain the supply lines and the entire system, you need to follow the steps listed on next page.

To drain system:

1. Open all faucets including optional exterior shower.
2. Open the fresh water tank drain.
3. Open the water heater drain.
4. Open all (two to four) low-point drains.
5. Open the toilet valve, hold or block, if need be.
6. To empty the pump, start and allow to run up to 20 seconds.

Sanitation System

Toilets

Several models of toilets are used on “KZ” recreational vehicles. Aqua Magic “Style Plus” featuring foot pedal for flushing and Aqua Magic 5 are most popular.

Some models use Aqua Magic Style 2 toilet in the bathroom and in several models an Aqua Magic 5, hand flush, is used in rear toilet.

Prior to using your toilet, be sure to add a proper amount of deodorant chemical into the toilet with water. Flush contents into tank plus two or three gallons of water.



Aqua-Magic V
Hand or pedal flush

Foot Flush or Hand Flush

OPERATION: Note the following photos showing movement of pedal down toward the nine o'clock position, you will add water to bowl. Push downward further to eight o'clock position to flush contents into waste tank. Release pedal slowly to close flush operation.

Unlike the toilet in your house which uses four to seven gallons of water per flush, a recreational vehicle uses two to three quarts to save water and space. When insufficient water is used during flushing, waste materials may not evacuate properly from drain lines to tank, causing “clogging” in pipe.

When hooked up to a sewer drain at a camp ground, ALWAYS keep

the termination valve **CLOSED** until the tank is at least 3/4 full. This will provide sufficient water to assist in complete draining of tank.

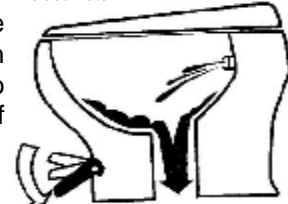
Manufacturer of toilet, Thetford Corp., offers a complete line of deodorants, chemicals, and other convenience products for your use. Your dealer can assist you with these needs and may already have them in stock.

Using Toilet and Tank System

When camping you should always have 4 to 6 inches of water in the toilet bowl. The toilet system performs better when you run water 10 to 20 seconds after flushing to ensure wastes will proceed to the bottom of the tank.



To add water



To flush


Vents

A very important part of your sanitation system is the vent system in your coach. These vents release air from holding tanks



allowing water to enter. Vent pipes are attached to the holding tank, fed through the walls and cabinets to the roof. On some models a portion of vent pipe may be part of the drainage system referred to as a "wet vent". As air flows upward, water will be draining downward in the same pipe.

Outlet for most vents is the "mushroom" cap located on the roof of your coach.



CAUTION

It is important to use adequate water to flush and have several gallons of water with chemicals in the tank. This helps the flow of wastes and reduces solid waste build-up.

Holding Tanks

The final parts of your sanitation system are the holding tanks for waste materials and water. These are located below the floor of your coach.

Gray Tank. Waste water from the bath tub, shower and sinks will drain into this container. No special preparation is required, however, you may wish to add baking soda or a Thetford chemical to reduce odors from food particles in the system.

All drain pipes will have a “P-trap” installed into each line. Water in these traps prevent odors from escaping into the coach. During travel, water from the P-traps may spill and permit odors into the coach. These odors come from fats and food particles decomposing in the tank. By adding water and using a RV approved deodorizing agent, contents will dissolve faster, keeping the drain lines and tanks clean and free flowing. These chemicals are available at a RV supply store.

Waste Tank. The toilet drains into the waste or “black” holding tank. For correct preparation follow the listed steps:

1. Release two quarts of water into the toilet bowl.
2. Place the recommended quantity of chemicals for waste holding tank as per instructions on the bottle into the toilet bowl.
3. Flush liquids into the tank and allow up to two gallons of water to flow into the tank.

Each time you drain the tank, you should follow the above instructions before using.



NEVER leave the gate valve of your coach's sewage tank open when hooked up to a park's sewer system. Open only when you wish to drain system when tank is 75% full or more.



KEEP DRAIN VALVE CLOSED. SEWER GASES MAY BE PRESENT WHEN RV IS CONNECTED TO CAMPGROUND SEWAGE HOOKUP. IF DRAIN VALVE IS OPEN SEWER GASES MAY BE VENTED OUT THE SIDE OF RV.
(SEE OWNER'S MANUAL)

Draining the Tanks

A final part of your sanitation system is the drainage of holding tanks. Realizing dump stations will vary, place the coach as level as possible to make drainage easier. Some tanks drain from the center requiring level or slightly up in front. Others will drain from end, permitting a slight tilting to the side which drains are on.

Remove the cap and attach the adapter onto the valve housing. Turn the adapter 10° to lock onto the pegs. Attach a flexible sewer hose to the adapter and secure with a clamp. Place the other end into the approved sewer system.

You may now open the 3 inch drain, “ B “valve, to drain the sewage tank first. Open the “G “ valve on the gray water tank last to utilize water to wash and rinse the hose and drain lines.

Most states and parks have strict laws and regulations to prohibit dumping of wastes of any kind into anything other than proper disposal facilities or sewer systems. Almost all privately owned parks have either a central dump facility or offer a campsite hookup for sewage. You can find lists of many dump facilities throughout the United States in *Woodall's, Rand McNally Camp Guide, Good Sam Camp Guide, KOA Campgrounds Camp Guide*, or various other publications. Some fuel stations also have dump stations.

Maintenance for Holding Tanks

The following maintenance is recommended by our holding tank suppliers to keep your tanks clean and keep the probes free of debris and build-up.

Gray (Waste-Water) Tank. Fill tank with 10-12 gallons of warm water. Add a degreaser such as a citrus cleaner or Dawn dish soap. Leave solution in tank while you are traveling. Rinse and drain tank.

Black (Sewer) Tank. Fill tank with 10-12 gallons of water. Add one bottle of drain cleaner, such as Drano or Liquid Plumber. Leave the solution in tank while traveling. Rinse and drain tank.

Heated Holding Tanks

Optional heated holding tanks are available on many models. Two (2) methods used to distribute heat are: (1) Placing holes from tank compartment into heat duct built into floor, allowing warm airflow throughout tank area, (2) Heating pads attached to tank with adhesive, operated with 12V power from battery and/or convertor. Switch to turn on pads is normally located in bathroom area.

KZRV uses only heat from furnace through heat ducts in current production.

Winterizing Your Recreational Vehicle

Preparing your trailer for cold weather is very important for most states and Canada. Failure to prepare your coach for cold weather will cause the water systems to freeze resulting in breakage. Damages related to freezing are not covered under the terms of your limited warranty.

NOTE: 1500 model has a by-pass kit as part of winterization equipment. The 2500 and Gold do not have a by-pass kit.

1. First step is to be sure all your holding tanks have been drained completely.
2. You must drain all water from coach system by opening all drain spigots, low-point drains, fresh water tank drain, and faucets to allow air into lines, speeding process up.
3. Drain water heater by removing the anode rod and plug.
4. Start pump and operate until all water has been removed, takes about 10 to 15 seconds.

Two methods may be used to safely protect your water system for cold weather.

Method 1

After completing items 1 thru 4 continue on to 5 and 6.

5. After water has been drained, use an air hose from compressor and an adapter attached to city water fill. In about 3 to 5 minutes all water will be blown out of system.
6. Pour one (1) cup (12 oz.) of non-toxic RV anti-freeze into each P-trap, sink and bathtub.

Method 2 (for model 1500)

1. Turn the pump off.
2. Drain the water heater and entire water system.
3. Change the direction of lower valve on water heater from liquid going into tank.
4. Place siphon hose into container with antifreeze.
5. Valves A and B must be closed.
6. Open all faucets for air to escape.
7. Turn water pump on to supply lines with antifreeze. It will take 2 to 3 gallons or more to fill all lines, depending on size of coach.
8. Place a quart container under each faucet to catch any antifreeze.
9. Closest faucet to pump will fill first.
10. Turn pump off when all faucets emit antifreeze

11. Take contents in container and pour 1 pint of antifreeze in each drain to protect each P-trap.
12. Any left over antifreeze may be placed back into container for future use.

For 2500 and Gold, follow directions as listed on the LCC. System.

Using the Water System During Freezing Weather. Your towable RV was not intended to be used during freezing weather unless special precautions are taken. Water freezes at 32° Fahrenheit in campgrounds or at home.


There is no product that can be added to the water to ensure freeze protection when the system is in use, other than RV antifreeze. DO NOT drink water which contains antifreeze.

FLUSH SYSTEM:

The flush system is designed and built to rinse waste in holding tank AFTER waste tank has been drained completely of water and solids.

Attach a fresh water hose to base connection marked "Sewer Tank Flusher." Be sure termination valves are open on holding tank (s). Open valve to release water into tank for rinsing and cleaning of your waste holding tank.

Rinse for several minutes to remove any foreign matter from tank. Remember the moisture content may give you a false reading on your monitor panel indicating it is full. Allow time to dry out tank or recharge for next usage.

	WARNING
<p>DO NOT use Ethylene Glycol (automotive antifreeze) or Methanol (windshield washer antifreeze) in your fresh water system because they are harmful and may be fatal if swallowed!</p>	

PROPANE FUEL SYSTEM

The fuel system in your recreational vehicle has numerous components such as; piping, copper tubing, brass connectors, hoses, regulators and appliances. Each of these components will be explained in its appropriate area.

Propane is the only fuel permitted to be used in a recreational vehicle and its appliances. This product is refined from crude oil through natural gases. An agent has been added for detection should a leak occur or a valve accidentally be left open. It is important for a recreational vehicle owner to recognize and identify the smell of propane vapor for his or her safety.

Other fuels are available but cannot be used in a RV because:

1. No orifices are available for appliances for either butane or natural gas fuels.
2. Butane CANNOT be used below freezing temperature because boiling point is 30 degrees.

Propane fuel is stored in liquid form under high pressure in special containers. Boiling point is (MINUS) -44°F, the temperature when vapor ceases to flow. Fuel will change to vapor when released from the container. Appliances are not designed to operate with liquid. Liquid will damage o-rings in valves and also leave sticky, oily residue causing poor or no operation in the regulator.

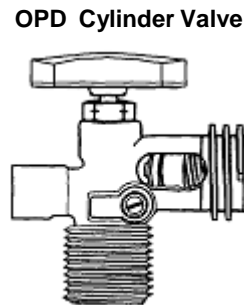
For every 10 degree increase in temperature, the pressure of propane rises 1.5%. Example—fill at 0 degrees in the north, go south to 80 degrees, you now have your container filled at 92%, a potential problem with 10% valve spewing out propane vapor.

Propane Container

The propane cylinder is a D.O.T. approved container to hold liquid under high pressure, normally a 20 or 30 pound capacity.

The open/closing valve, referred to as an OPD cylinder valve, is to be closed at all times unless hooked up to a propane system or when filling the container.

Valve assembly actually has 3 valves in one body



1. Main pass thru portion to fill or draw propane is controlled by upper 3 –sided knob on top.
 2. A small screw on the side of main body referred to as a 10% valve which allows air to be released and indicates when container is filled 80% capacity.
 3. Incoming positive seal valve MUST be pushed inward with fill nozzle or by POL fitting to draw vapor out for appliance use.
- On the bottom/inside is the float which closes when 80% of capacity has been reached. This permits expansion space in tank when temperature rises .See section on main hose.



At any point a container is disconnected, BE SURE to install the “dust cap” over valve entry (if so equipped). Whenever the container is detached from the propane system, DO NOT allow the cylinder to move or roll around transporting to and from the propane supplier.

Servicing and Filling Propane Containers

Filling a propane container must be done carefully and correctly. Only a qualified person, properly trained on inspection, filling and safety procedures, should fill containers.

A new container must be “purged” before placing into service and must NEVER BE OVERFILLED. Purging is an operation performed by your dealer or propane agency to remove any atmospheric air. As an owner you need not be concerned regarding this procedure unless you permit the valve to be in OPEN position when empty.

When refilling propane containers, they are generally removed from propane compartment or tie downs. BE SURE to reinstall correctly, as shown in installation instructions, and test for leaks.

When propane containers are filled to 80% level there is available space for safe expansion of the vaporized liquid. Should your container become slightly overfilled, pressure may rise due to hot sun. It could cause the overflow valve to “blow-off” and emit a small quantity of propane vapor. This can be detected by a strong odor around tanks. Keep open flames away from this area. It is best to

remove the bottle, take it to a safe area, and “burn-off” the excess pressure by using a torch, one to two minutes.

When disconnecting propane containers, you must turn the ACME fitting in a clockwise direction because left-hand threads are utilized. When reconnecting, turn connections counterclockwise. Connections must be tight, however DO NOT over-tighten.

 **WARNING**

Never smoke during the filling of propane tanks. Keep the recreational vehicle away from immediate filling area when possible or extinguish all gas pilots.

 **WARNING**

A warning label has been located near the propane container. This label reads as follows:

DO NOT FILL CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY.

1. Overfilling the propane container can result in uncontrolled gas flow, which can cause fire or explosion.
2. A properly filled container will contain approximately 80 percent of its volume as propane.

 **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 gas to the atmosphere.

FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

Warning labels have been placed near the propane container. These labels above need to be read and obeyed.

Installing Propane Containers

KZ recreational vehicles are equipped with 20 or 30 pound propane containers, depending on floor plan models.

Mounting and attaching instructions are listed below:

1. Thread the long rod into the base plate.
2. Set both bottles into place.
3. Drop the double hook bracket over the rod and hook onto the bottles.
4. Attach the wing-nut to hold the bracket and tighten to hold the bottles to the plate.
5. Attach the regulator with the vent down to the bracket.
6. Attach the main hose from the regulator to the manifold fitting in the frame.
7. Attach two short pigtail hoses to the regulator and bottles at the ACME fitting.
8. Test all propane connections for leakage.

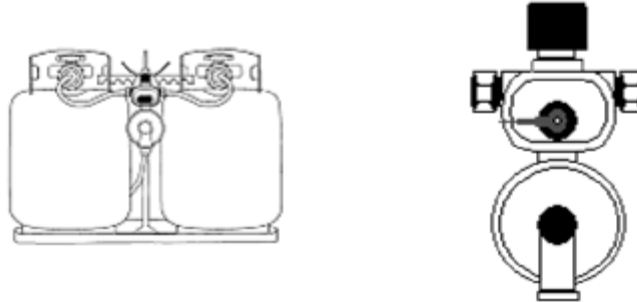
To remove the propane containers for refilling:

1. Remove the bottle covers (if used).
2. Close the main valve on the container.
3. Remove the two hoses at the ACME connection.
4. Install the rubber cap over the valve ACME connection, if so equipped.
5. Remove/loosen the wing nut holding the clamp hook.
6. Remove the clamp hook.
7. Fill the bottle and reverse the procedure to install. Test all connections for leakage.

Regulator

Propane regulators must always be installed with the regulator 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. Should the vent be covered or blocked, regulator CANNOT function.

The regulator has the only moving components in the propane system. It's sole function is to reduce the high and varied pressure from the propane containers to safe and consistent low operating pressure. The small inlet is the first stage, which reduces the container pressure to 10-13 pounds.



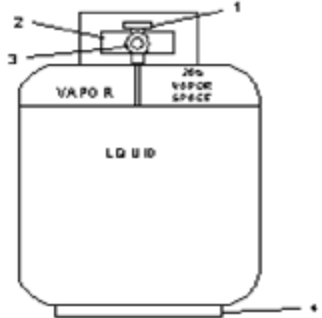
The second stage then reduces the 10-13 pound pressure to an operating pressure of 11 inches w.c. (water column) or 6.35 ounces of outlet pressure to your appliances. The second stage is adjustable and may need to be adjusted for precise operation. We suggest this to be normal maintenance and performed once per year. Do not make this adjustment without a manometer. This instrument is required to read actual pressure.

If pressure is too high, it affects performance and safety. Should pressure be too low, appliances will not operate correctly. An authorized technician with proper equipment should perform such tests and adjustments, as may be required.

The main type of regulator is the “automatic” two stage used on larger coaches. With both cylinders full of propane, turn the lever or slide lever towards the cylinder you wish to use first. This will now be the “supply” cylinder and the other “reserve”. SLOWLY open both cylinder valves.

The indicator on top of the regulator will turn bright green. When the cylinder becomes empty the indicator will change to bright orange. Now turn the lever to the side of the full bottle and the green signal will return. You may now remove the empty bottle to have it refilled without interrupting the flow from the full bottle. After filling the cylinder, connect the pigtail hose and slowly open the bottle valve. Do not forget to check for leakage each time you refill cylinder or disconnect any part on the propane system.

1. Knob to open and close main valve.
2. Complete valve assembly.
3. "10% valve", (small brass knob or slot screw).
4. Container mounting stand.



! WARNING

Your vehicle has exterior combustion air inlets. Appliance pilot lights should be turned off during gasoline or propane refueling. (Required by law in some states.)

! CAUTION

THIS GAS PIPING SYSTEM IS DESIGNED FOR USE WITH PROPANE ONLY. DO NOT CONNECT NATURAL GAS TO THIS SYSTEM. Securely cap inlet when not connected for use. After turning on gas, except after normal cylinder replacement, test gas piping and connections to appliances for leakage with soapy water or bubble solution. Do not use products that contain ammonia or chlorine.

ALL GAS LINES HAVE BEEN CHECKED WITH AIR PRESSURE. DEALERS ARE REQUIRED TO RECHECK BEFORE DELIVERY TO RETAIL CUSTOMERS.

High Pressure Hoses with Acme Connectors

Propane leaves the container through a hose with an ACME connector attached to the bottle, also having a “flow-limiting device”. Designed to sense **excessive** flow. Two functions of this device:
1. Should container valve be opened too quickly, this device may close, stopping the flow of propane. 2. Should there be a rupture in propane line, it will reduce the flow to a maximum of 10 (SCFH) Standard Cubic Feet per Hour.
This valve will equalize normal flow in about 5 seconds, generally not noticeable.

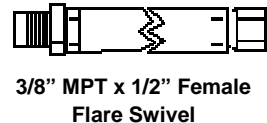
Main Supply Hose – Low Pressure

The main supply hose will be attached from the regulator to the brass manifold fitting in the frame of the coach. The swivel brass nut on the main hose will be your final attachment.



There are several things to remember each time the container is removed:

1. Be sure ALL fittings are tight. Always use two wrenches for brass connections.
2. Be sure ALL connections are tested for leakage.
3. Open the main valve slowly to avoid a fast rush of propane to flow-limiting device causing gas to “freeze”.
4. Listen carefully for a “hissing” sound longer than one second may indicate a gas leak. Close valve and search for leak.



Should you experience a gas “freeze-up”, close the main valve and wait 15 minutes before trying again. Keep the container valve(s) closed when traveling. Some states prohibit traveling with the propane container valves open, especially in underground tunnels or on expressways.

Operation

After the camper is completely set up and you are prepared for camping enjoyment, follow these steps for propane operation.

1. Be sure ALL burner valves, controls, and pilot light valves are closed.
2. Open main valve on propane container slowly to avoid a fast rush through excess flow valve causing "gas freeze".
3. Listen carefully as gas begins to flow. If a "hissing" sound is heard for more than one or two seconds, close valve and search for a potential leak.
4. Light appliances as needed and directed in Chapter Five - Appliances.

Checking for Leaks

The entire propane distribution system and appliances have gone through complete factory and dealer tests for any leakage. When traveling with your RV normal vibrations and road movement may cause connections to loosen and develop leaks.

For normal maintenance we advise all owners to test for leakage at least once per year or more often. You may request your dealer to perform a maintenance check each spring.

Should you encounter an odor, possibly propane, turn off any and all open flames and begin a systematic search for leaks on the complete gas system. NEVER USE A MATCH. Use a soapy water solution which contains NO AMMONIA, or CHLORINE content to check for leaks. If a leak is identified, bubbles will appear. ALWAYS use two wrenches when tightening brass connections to prevent twisting of copper.

For your own protection, the warning label on next page has been placed near the cooking area to remind you of the need of oxygen for combustion and breathing. Due to smaller area in your recreational vehicle, there is less oxygen than in your home. Proper ventilation is required when cooking.

It is especially important that cooking appliances **not be used for comfort heating**, as the danger of asphyxiation and unsafe levels of carbon monoxide are greater when the appliance is used for long periods of time.



WARNING

Portable fuel-burning equipment, including wood and charcoal grills and stoves, shall not be used inside the recreational vehicle. The use of this equipment inside the recreational vehicle may cause fire or asphyxiation.



WARNING

IT IS NOT SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING.

Cooking appliances need fresh air for safe operation.

Before operation:

1. Open overhead vent or turn on exhaust fan
2. 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 appliance(s) avoids dangers of asphyxiation. It is especially important that cooking appliances not be used for comfort heating, as the danger of asphyxiation is great when the appliance is used for long periods of time.



DANGER

If You Smell Gas:

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

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

PROPANE CONSUMPTION

All your propane appliances are operated intermittently. Your furnace is naturally the appliance using the most fuel, especially if freezing conditions are present outside. On a very cold and windy day it is conceivable that your coach could consume most of a 30 pound propane bottle.

Propane consumption depends mostly upon individual use of appliances and the length of time operated. Each gallon of propane produces about 91,500 BTUs of heat energy. Following is a list of typical appliance consumption when turned on fully for one hour of operation.

APPLIANCE	LP GAS CONSUMPTION
Water Heater	8,800-12,000 BTU
Furnace	20,000-35,000 BTU
Stove/Oven	6,500-9,000 BTU
Refer	1,200-2,400 BTU

Note: The above chart represents many different models.



CAUTION

If you have double bottles and a standard regulator on your RV, use only one bottle at a time. Otherwise the gas supply will be drawn equally from both bottles until supply has been totally exhausted. Using one bottle until it is empty, then using the second bottle will allow you to fill the empty bottle at your convenience without being totally out of propane.



DANGER

ALL PILOT LIGHTS, APPLIANCES, AND THEIR IGNITORS (SEE OPERATING INSTRUCTIONS) SHALL BE TURNED OFF BEFORE REFUELING FUEL TANKS AND/OR PROPANE CONTAINERS. FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

ELECTRICAL SYSTEM

General Information

The electrical system in your recreational vehicle is designed using both 120-volt AC (alternating current) and 12-volt DC (direct current) capabilities. All installations and designs are built to comply with safety requirements of AN-SI standard 1192, National Electric Code and Canadian Standards Association.



30-A, 125-V, 2-pole, 3-wire,
grounding type



50-A, 125/250-V, 3-pole, 4-wire,
grounding type

All coaches manufactured by KZ have 30 amp or optional 50 amp service pre-wired into the breaker box.

Changes and Modifications

Any changes, alternations, additions, and/or modifications need to be performed by qualified electrical technicians, using only approved components which meet safety and code requirements. This includes owners, dealers, etc. who desire to make changes. The manufacturer is not responsible for any changes, or alterations, made to the 120 AC system of the coach.

CAUTION

Any electrical installation that does not meet the criteria of the manufacturer's specification will VOID THE WARRANTY on the electrical system.

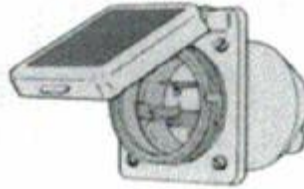
CAUTION

A 50 amp service is a 240-volt hook-up. There is no appliance or other component requiring 240 volts in this coach. For more information, see the section later in this chapter, 50 Amp (Optional).

120-Volt A/C System

Power Cord 30 AMP or 50 AMP

To receive power into your coach, a power of 30 amp or 50 amp rating is required, depending on size and/or floor plan. These cords are available either detachable or prewired into junction box or load center.



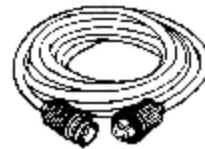
With detachable cord system, cord is removed and stored in coach during travel.

Pre-wired cords will have a small storage compartment where cord is stored. Pull-out cord and attach to correct power source, NOT a 240 volt receptacle.



30A

Energy will enter through the main breaker and is distributed through circuit breakers to the wall receptacles and appliances. This power cord will be approximately 26 to 45 feet in length. Each cord has the correct gauge of wire to carry the correct voltage to coach.



50A

In some hook-ups the power cord may not be long enough and extension cords are required. ALWAYS use a cord with the gauge of wire equal to or greater than the power cord. Should you use a cord with a smaller wire, overheating, loss of amperage, and possible melting could occur.

WARNING

Never use a "cheater" plug or extension cord which breaks the continuity of the ground circuit to the grounding pin.

WARNING

Do not replace breakers or fuses with any that are rated at a higher amperage. Over fusing may cause a fire by overheating the wire.

DO NOT leave any unused portion of an extension cord in a “coil” as it may overheat, short-circuit wires and potentially destroy your extension cord.

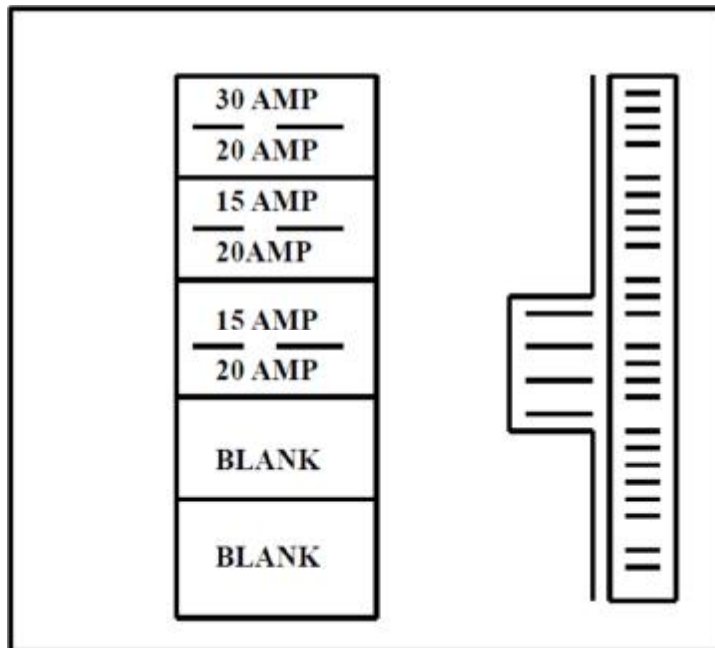
Circuit Breakers and Box

On a 30 amp system, a maximum of six distribution circuits are permitted. All breakers are sized according to power needs on each line.

The following generic drawing shows the circuit breaker alignment with number one being the 30 AMP main breaker on all floor plans. Depending on the size, floor plan and options of your coach, circuit three through six will vary and possibly not all circuits will be used. Number two is generally the 20 amp air conditioner circuit.

An owner must realize and understand that a coach has a total of 30 amp service available to be used. Conserving and choosing which appliance has priority in consumption needs to be part of the planning.

Don't forget loose items such as toasters, electric skillets, and coffee pots also consume power. Include these also in your planning. 50 amp service provides another option.

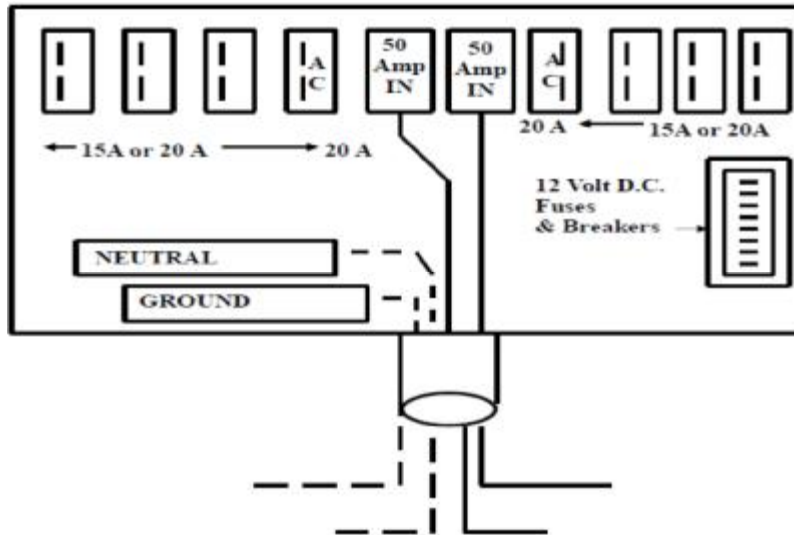


50 AMP (OPTIONAL IN 1500)

On some larger coaches, with more appliances installed, it requires more 120-volt AC power by owners. Availability of 50 amp service is the best method of providing you with an increase of incoming power.

Distribution of 120-volt AC power is accomplished in this manner. No.1 on the top or center breaker is 50 amp incoming breaker of current to supply your coach. Secondly, the No.2 or beside main breaker (20 amp) will power your air conditioner. The remaining 6 to 12 breakers will supply power to appliances as marked on attached label. Quantity of breakers depends on floor plan, options and size of your coach.


KZRV strongly recommends against using a reducing 120-volt pigtail adaptor, (50 to 30 or 30 to 15) when 50 amp service is not available. When using such an adaptor, you have just reduced incoming power and cannot power all your appliances. Should you attempt to draw more power than adaptor can handle, it will overheat, melt and cause a fire hazard.



You may have a “switch” in some coaches to choose which of two appliances you wish to use, referred to as a ‘double pull/double throw’ switch to prevent over loading of wire or panel.

Actually these two positive wires added together are 240-volt AC

service yet serve two separate banks of incoming power as the external sticker indicates. Two (2) 50 Amp breakers will supply 120-volts AC to separate bank in circuit breaker box. There are NO 240-volt AC appliances in this coach.

 WARNING
DO NOT connect your coach into a building 3 prong connection that has 240-volts AC, such as a washer or dryer receptacle

THIS CONNECTION IS FOR 120/240 VOLT AC, 3-POLE, 4-WIRE, 60 HZ
50
AMPERE SUPPLY.

 WARNING
NEVER, under any circumstances, remove a grounding pin in any cord or plug. It may mean the difference between LIFE OR DEATH.

GFCI Protection

Each coach has a GFCI, Ground Fault Correction Interrupter, protection receptacle installed into the circuitry. This GFCI device is designed to protect people from hazards of line to ground electric shock. The purpose is to reduce possible injury caused by electrical shock, resulting from faulty insulation, improper polarity and related to moisture and/or earth ground.

The third “round” pin on the receptacle is very important for this safety device to function correctly. NEVER cut off this pin. When using an appliance in the receptacle without this provision, use an adapter with a pigtail to be attached to the receptacle box to complete the circuit.

This GFCI receptacle will not protect against short-circuits or overloads. The circuit breaker or fuse in the electrical panel which supplies power to the circuit provides this protection.

Polarity is extremely important. You should be certain that the polarity of the external power is not reversed, in order to avoid harm

to appliances and personal electrical shock. Polarity testers may be purchased in most electrical and hardware stores with the GFCI tester built in.

During use of the recreational vehicle it is suggested to test this receptacle once per month. To test, press the "TEST" button. The "RESET" button should pop out. Power should now be turned off at this receptacle and any receptacles down line. To restore power push, then release the "RESET" button.

12-Volt DC System

Your recreational vehicle contains two (2) separate electrical systems. After reviewing the 120-volt AC system, we now move to the 12-volt DC system. There are 2 separate sections in this group. First, the exterior light system, brakes, turn signals, marker lights, plus a power line (if hooked up) all combined in the 7 way connector, trailer to tow vehicle, all receiving power from battery and alternator from tow vehicle.

Second, is the interior lights and appliances which require 12-volt DC power, supplied by a 12-volt converter and/or battery through fuse panel.

Converter/Load Center

A load center is basically a distribution panel with 120-volt breakers and 12-volt fuses plus breakers for slide-outs. Some models have converter built as part of assembly. Others will have converter "free-standing" by itself, amp rating of converter is measured by size and needs of the coach.

All converters are solid state electronic components and are not field repairable. The converter is the "heart" or main component supplying clean 12-volt DC (direct current) for your coaches needs.

Functions of a converter are as follows:

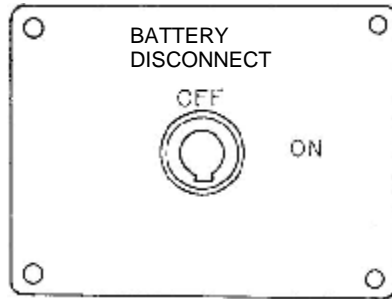
1. Transfer 120-volt AC power into 12-volt DC clean energy.
2. Charge auxiliary battery (if so equipped) as recharging is required.
3. Supplies 12-volt power throughout coach for lighting and appliances.

Converter operates automatically, no switches to operate whenever 120-volt AC power is attached.

Each converter has a "built-in" fan for its own protection from heat.

Some fans run at all times and higher speed during heavy use. Other fans don't start until a designated temperature is reached, controlled by a sensor.

The Battery Disconnect switch, as shown, has one function, to cut-off or supply 12-volt DC power from battery (if so equipped) to 12-volt DC distribution system. Insert attached red plastic key in "off" position and turn 90° to "on" position. Key won't come out in the "on" position. 12-volt DC power now moves from battery, through convertor to coach. When you wish to charge the battery by power convertor, the switch must be in "on" position providing you have 120-volt AC power available.



Auxiliary Battery (Optional on Units)

All travel trailers and fifth wheels are pre-built to accept a battery. Batteries are not supplied as a component of the coach. It is best for a dealer to supply and install the battery as part of prep.

Recommended batteries are of deep-cycle type as you need longer, slow consuming power rather than cold-cranking power. A battery is always required for a break-away switch to function.

A battery requires routine maintenance for long life. First, terminals need to be kept clean to avoid corrosion. Second, a battery used daily will consume water as long as the convertor is in operation. Be sure to check the battery no less than every 30 days and keep the battery filled with distilled (rain) water. Most good deep cycle batteries are NOT maintenance free.

A convertor will not overcharge a battery unless a battery has a dead cell, or the convertor has a malfunction. Some types of convertors have full battery charge shut-off. Other types reduce the rate of charge as battery conditions reach 12.7-volts DC or 1.265 specific gravity at 80°F. By electronic standards, a battery is discharged at 10.5-volts. Dropping voltage lower than 10.5-volts will begin damaging plates in the battery.

The interior lights receive power from convertor and/or auxiliary battery. Slide out switches are on the monitor panel. Bathroom, and rear storage area will have their individual switches.



WARNING

DO NOT replace circuit breakers or fuses with a higher current rating than those supplied with your coach. Over-fusing can cause a fire hazard by overheating the electrical wiring.

Circuit Breakers and Fuses—12-Volt DC

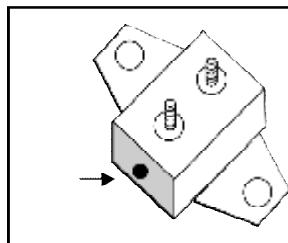
These two items have been installed in your coach to protect circuitry and components:

Fuses are placed into the fuse panel with the convertor or into a separate panel near the convertor with access inside of coach. Fuses are placed in your electrical system to protect wiring and components when overloads or short circuits occur. Radios, stereos, detector devices, and possibly other components may have “in-line” fuses attached to their own wire harness.

Two (2) 40 amp or (4) 20 amp fuses are placed in your convertor for protection should a battery be installed backwards. Fuses will blow instead of your convertor.

Circuit breakers are placed at several locations. A 30 amp breaker is located within 18” from battery as shown. Most do NOT have the reset button and are automatic reset.

Other small breakers are located in the fuse panel operating slide out. Amp rating on these are 30, 20 and 15 amp. Color of breakers will vary.



Automatic reset breakers will “reset” by themselves in 15 to 30 seconds when tripped.

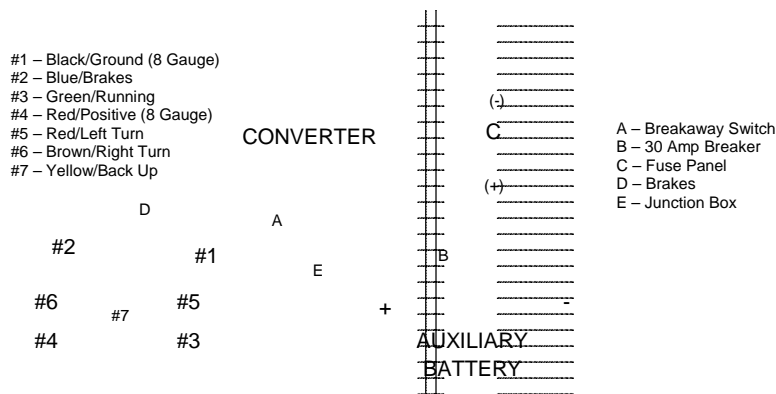
All wiring used in your coach meets correct amp rating correlated with fuses and breakers in respective panels as required by code.

The RV battery is placed in parallel circuitry with the battery on your tow vehicle. Care needs to be exercised not to drain both batteries together. There are two methods of avoiding this condition:

First, disconnect the tow vehicle when parked and/or using your coach.

Second, a battery isolator may be installed in your tow vehicle to prevent power drain from batteries in both vehicles. This device "isolator" has two useful purposes. First, it sends current from the alternator to both batteries simultaneously. Secondly, the isolator prevents draw from the recreational vehicle through the battery of the tow vehicle, preserving power to start the engine.

Contact your dealer should you desire an isolator for your protection. Two types are available, mechanical type, or solid state which is the best and most expensive.



Exterior Lights and Connector, 12 Volt

Power for exterior lights, such as tail lights, turn, clearance, and brake lights, is supplied by the tow vehicle.

Note the diagram above, showing the color code and numbers from the seven way connector and how power is fed to the exterior lights. The positive red wire is attached to the battery to transfer power to the coach.

The connector between the recreational vehicle and the tow vehicle may build up corrosion due to moisture. You may need to clean these terminals occasionally to insure good electrical contact.

Porch Lights

Porch lights are placed on sidewalls, left or right side. Switches for these lights, depending on models, will be on the interior of right sidewall and possibly left sidewall. Occasionally, the switch will be on the light itself.

Brake Wiring

Both 10 and 12 inch electric brakes operate on 12-volt power supplied from the tow vehicle, transferred through the blue-positive and white-negative in the seven way harness. There are no fuses or breakers installed in this brake wiring. More information on the brake system is found in Chapter Three - Using Your RV.

Bulbs

Use the bulb suggested on the light fixture, if listed. Secondly, replace burned out bulb with same number as removed unless a smaller or larger candle power is available.

NOTES:

- LED/RPL= Bulbs not replaceable-Replace Light.
 - 912 and 921 interchange—difference is candle power.
93 and 1141 interchange—difference is candle power.
- As more LED lights are used, which run cooler, last longer, burn brighter, replacement of lights is your only option.

Safety and General Information

All external wire connectors, such as the 7 way pigtail MUST be protected, kept dry and tight, to prevent corrosion.

Loose electrical connections that are loose in any form can cause high heat and potential fire.

Use moisture resistant lubricants on exposed connectors such as the 7 way pigtail and the trailer end connector on the tow vehicle..

CHAPTER 5 APPLIANCES


KZRV places brand name, quality-built equipment, as guided by current codes and standards, in all recreational vehicles. Some appliances are built and equipped to operate on propane gas ONLY. DO NOT attempt to operate on natural, butane or methane gas.

Each appliance has its own specific manual, written and published by its manufacturer. These manuals supply additional information about the appliances in your recreational vehicle.

Most of the appliances in this chapter will use propane fuel for operation. Most information in this chapter pertains to propane and it's use.

IT IS VERY IMPORTANT THAT YOU, AS AN OWNER AND OPERATOR, ARE FULLY AWARE WHAT THE SMELL OR ODOR OF PROPANE IS FOR YOUR PROTECTION.

The below "**DANGER**" information is placed in the manual and a sticker is located inside of your coach.



DANGER

IF YOU SMELL PROPANE

1. Extinguish any open flames .
2. DO NOT touch any electric switches.
3. Shut off propane supply at container valve.
4. Open doors and windows for ventilation.
5. Leave the area until odor clears.
6. Have system repaired before using again.

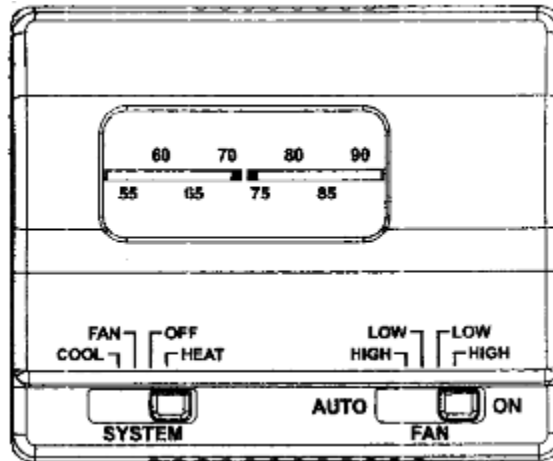
FAILURE TO COMPLY COULD RESULT IN
SERIOUS INJURY, EXPLOSION OR DEATH

FURNACE

The furnace in your recreational vehicle requires 12-volt DC electrical current and propane gas energy for correct operation. The furnace receives 12-volt DC power from a fully charged battery and/or the convertor in the coach. This power must be present before propane gas can enter through the control to the burner tube.

The combustion chamber is completely sealed to prevent any carbon monoxide from entering into the coach. Oxygen is drawn into the chamber through the upper vent and exhaust fumes expelled through the lower vent.

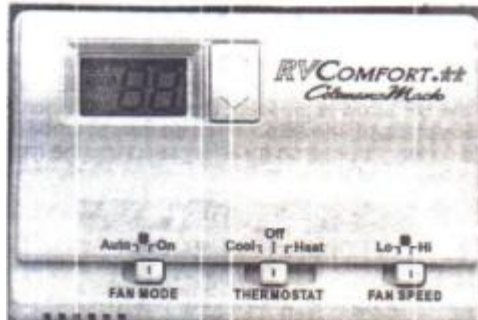
This thermostat is used in coaches having a central air conditioning system. For furnace operation move the slide switch to the "HEAT" position. The furnace has only one fan speed and no adjustment is needed. The furnace is DSI (direct spark ignition) and no pilot light is in operation.



The basic operation of the furnace is performed by the thermostat mounted on an interior wall of your camper.

Another digital thermostat is used on several models of KZ coaches, generally with air conditioners with a heat pump.

Both of these will operate your heating system as well as your air conditioning system. In your paper materials, there should be a small information sheet giving you full operating instructions on both appliances.



OPERATING INSTRUCTIONS

1. Before using your furnace, it is suggested to open entrance door and windows to ventilate camper for any unusual odors such as propane or other.
2. Be sure propane container has fuel and valve is open.
3. Release thermostat from "OFF" position and onto 'HEAT' position.
4. Set temperature on 5 to 8 degrees above room temperature.
5. Blower will start in 0 to 15 seconds, run for 30 seconds during heat chamber 'PURGE' cycle, removing any propane vapor.
6. Second cycle, blower continues to run, module board will: (a) Send spark to burner tube, (b) open valve to release propane to burner tube.
7. Ignition attempt will be for 7 seconds.
8. Failing to ignite, board will make 2 more attempts to light and then go to lockout.
9. If after (3) attempts with no ignition, drop thermostat to lowest setting, wait 1 minute and repeat steps 4 to 7.
10. After burner tube lights, set thermostat at desired setting.
11. To shut burner down, move thermostat to lowest setting or to "OFF".
12. Blower will continue to run for about 2 minutes until heat is removed from chamber.



WARNING

Be sure to follow all directions to operate furnace to prevent any damages or malfunctions. Errors could cause personal injury.

NOTE: During initial firing of this furnace, a burn-off of excess paint and oils remaining from the manufacturing process may cause "smoking" for five to ten minutes. Your dealer may already have performed a "burn off".



WARNING

DO NOT operate furnace while vehicle is in motion or being towed.



WARNING

Do not install screens over the vents for any reason. Screens will become restrictions causing unsafe or inefficient operation.

To Shut Down:

1. Set thermostat to the "OFF" position by moving the lever on the bottom of the thermostat to the "OFF" position.

External Vents. Always be sure these vents are clear of any objects like screens, duct tape, etc.

Ducting. Wall or floor registers, and return air grills MUST be kept clear of any obstructions. Any such restrictions will prevent the furnace from correct operation. Closeable registers will reduce air flow. Never shut registers off completely, possibly causing furnace to over heat, limit out and shut down.

Heat is moved from heat chamber through floor duct work and 4" flexible tubing as per floor plan requirements.

Propane pressure, as defined in Chapter Four - Systems, is extremely important. A dial gauge or U-tube manometer is required to perform tests and adjustments. Pressure must be set at 11 inches W.C.. (water column) plus or minus 1/2 inch. Incorrect gas pressure can cause any appliance to operate inconsistently and cause poor combustion. Only qualified technicians with proper equipment should make any mechanical adjustments.

Voltage must be between 10.5-volts to 13.5-volts at the furnace during operation. Below 10.5-volts the furnace will shut down. Both high and low voltage places excessive wear on the motor and brushes.


Any mechanical adjustments, such as electrode or other internal adjustments, should be performed by a qualified service technician.

RANGE AND OVEN TOP BURNER OPERATION

Numerous types of cooking appliances are used in KZRV products; These appliances operate with propane only, never natural gas, methane or butane.

1. Drop-in stove with 2 or 3 burners. The 2 burner is found in outside kitchens in many models.
2. Top stove and oven combinations are used in two different sizes, a 17" and 22" tall units, depending on available space, floor plans, and models.


- (a) All ovens are lit manually, with matches or handheld lighters
 - (b) All top stoves are lit with two methods (1) With pre-built piezo igniter (2) Matches or hand held igniter.
- Before attempting to light stove or oven, BE SURE the valve is turned open on your propane container.


	WARNING
<p>Be sure all control knobs are turned "OFF" when you are not cooking. Someone could be burned or a fire could start if a burner is accidentally left on or unattended even if only momentarily.</p>	

TOP BURNERS

Know which knob controls which burner. Always be sure all burners are turned off when the stove is not in use.

1. Verify sufficient propane supply before attempting to light the burner ports.
2. Depress knob and turn fully counterclockwise to "LITE" position.
 - A. Air in the propane line will significantly delay burner ignition. The burner may light unexpectedly as the air in the lines clears and is replaced with propane. This unexpected ignition could burn you. Air in the propane lines may occur after servicing other appliances on the propane line, container is refilled, or not used for a period of time. **BEGIN LIGHTING THE BACK BURNERS UNLESS YOU ARE USING ONLY ONE.**
 - B. DO NOT attempt to light more than one burner at a time.
 - C. Upon turning knob on, immediately light the burner by holding a long match or proper handheld lighter near burner ports.
 - D. If the burner should go out while cooking, or if there is an odor of propane, turn control knob (s) "OFF". Wait 3 to 5 minutes for odor to disappear. DO NOT RELITE while odor is still present.
3. To turn burners off, turn control knob (s) clockwise to "OFF".

	CAUTION
<p>Hand held igniters may be used but be sure they are the type designed for lighting open flame burners.</p>	

	WARNING
<p>DO NOT OPERATE THIS APPLIANCE UNLESS THE PRIVACY CURTAIN IS SECURED. FAILURE TO COMPLY COULD RESULT IN FIRE OR SERIOUS INJURY.</p>	



WARNING

When holding the match or lighter to ignite flame, DO NOT position your fingers close to the burner. You could get burned causing injury.

Stoves with ignition system use same directions as previous. Instead of using matches or hand held igniter, the stove is equipped with an electronic piezo lighter . Turn the knob clockwise with only one burner knob turned on at a time. Continue to turn until a flame has been established. Now turn burner number two on to continue.

Oven Burner

Note: Before the oven burner will operate, the oven pilot must be lit.

1. Lighting Oven Pilot
 - a. Be sure ALL valves are in the “OFF” position. The oven control knob should be in the “Off” position.
 - b. Be sure main gas supply is on.
 - c. Open the oven door; search for propane odor. If you smell propane, STOP! Read and follow the instructions in your appliance manual.
 - d. If you do not smell propane, depress and turn the oven control knob to “Push In/Light Pilot”. This will allow fuel to the oven pilot.
 - e. Immediately light oven pilot with a match Hold knob in at least 5 to 7 seconds, this allows propane to flow to pilot and to heat the thermocouple. Release knob, pilot should stay on. NOTE: If the appliance has not been operated for a long period of time, a longer waiting period for ignition of the pilot may be necessary due to air in the pilot and propane line. If pilot goes out, repeat steps a.b.c.d.
2. Operation of Oven Burner
 - a. Depress and turn the oven control knob counter-clockwise to the desired setting. Oven burner will come on immediately and the oven burner will stay on until it reaches the desired setting. Then the oven burner will decrease in size. This is normal for this type of thermostat and this flame size will maintain a constant temperature within the oven.
3. To shut down the oven burner turn the oven control knob clockwise to “PILOT ON” position. At this position, the oven pilot will remain lit.

4. To shut down the oven pilot light, turn the oven control knob to "OFF", at this position, the oven pilot will go out.
5. Always turn oven control "OFF" upon completion of using it.



WARNING

If the user of this appliance fails to maintain it in the condition in which it was shipped from the factory or if the appliance is not used solely for its intended purpose or if the appliance is not maintained in accordance with the instructions in this manual then the risk of a fire and/or the production of carbon monoxide exists which can cause personal injury, property damage or loss of life.



WARNING

If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

WATER HEATER

DSI Models

This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

What To Do If You Smell Gas

Read the instructions at the front of the furnace portion.

Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

Before operating the water heater, check the location of the vent to make sure it will not be blocked by the opening of any door on the trailer. If it can be blocked, do not operate the water heater with the door open.

Operating this appliance without water will damage this appliance beyond any further use.



DANGER

ALL PILOT LIGHTS, APPLIANCES AND THEIR IGNITORS (SEE OPERATING INSTRUCTIONS) SHALL BE TURNED OFF BEFORE REFUELING OF MOTOR FUEL TANKS AND/OR LP-GAS CONTAINERS. FAILURE TO COMPLY COULD RESULT IN DEATH OR SERIOUS INJURY.

BEFORE LIGHTING (switching “on”) search for any odor such as propane or other kinds. Propane is heavier than air and will settle on the floor when given time.

Operating Instructions:

1. Full operation and ignition occurs on the external side of this appliance. By removing outside grill, you will evacuate any odors or propane should there be any. Do not light with grill off.
2. Be sure propane supply and 12-volt DC power is available.
3. Turn on electric power to the appliances.
4. Turn on propane supply.
5. Turn switch marked “WATER HEATER” which is located on the monitor panel to “ON” position. If the burner does not light, the system will automatically attempt two more times for ignition before lock out. NOTE: Each ignition cycle will have a fifteen second “purge” before next spark cycle begins again, if system has three tri-board.
6. If lock-out occurs before main burner lights, turn switch “OFF”, wait five seconds and turn switch to “ON” position. This will restart the ignition cycle. The first start-up of the water heater may require several attempts before all the air is purged from the propane lines.



CAUTION

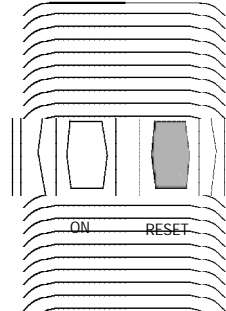
DO NOT operate the water heater with two energy sources in operation or without water.

If the burner will not come on, the following items should be checked before calling a service person:

1. Switch turned off.
2. Gas supply to heater is empty or turned off.
3. Reset button on ECO is tripped.
4. If burner fails to light, call a Suburban Service center or a local RV service agency.

To Turn Off Water Heater:

1. Turn switch to "OFF" position.
2. Turn off the electrical power to the appliance.
3. Turn off gas supply.
4. If the vehicle is to be stored or the heater is going to be turned off while subject to freezing temperature, drain the water heater.



120 Volt AC Option

Electric water heaters are designed to operate with a minimum amount of service problems; however, proper operation and care is essential.

By far, the most common trouble with electric water heaters results from energizing the water heater before it is filled with water. Even brief operation of the electric element without water in the tank will burn-out the electric heating element.

To energize the electric heating element, turn the switch to "ON". The switch is located behind the water heater door in the lower left corner of the control housing. The water temperature will be regulated by the thermostat.

Winterizing Your Water Heater

Your water heater plumbing system is equipped with a bypass kit, use it to close off the water heater. Drain the water heater completely and leave the water heater closed off (out of the system) in the bypass position particularly if you are introducing antifreeze into the plumbing system.

Antifreeze can be very corrosive to the anode rod creating premature failure and leave sediment in the tank. If the plumbing system is not equipped with a bypass kit, and you intend to winterize by adding antifreeze to the system, remove the anode rod (storing it for the winter) and replace it with a 3/4 inch drain plug.

REFRIGERATOR

In current production there are two (2) options available for refrigerators in this group of recreational vehicles. First described, is the absorption system, it is standard, and the second is the compressor type.

1. Absorption system depends on propane and 120-volt AC for operation during camping time and optional 12-volt DC while

traveling. Also venting, unit being level, humidity, and atmospheric heat temperature are necessary but not limited to these. Leveling and venting are the most important.

Leveling

For correct operation, the refrigerator must be within three degrees of level in any direction. Continued operation outside of these limits will result in irreparable damage to the cooling unit in the refrigerator.

Venting

For an absorption unit to operate fully it must have two vents. One vent is on the roof or sidewall at the upper end of the refrigerator, and a second vent is a lower service vent and door at the lower area of the refrigerator. A vent installed on a roof must have a screen in place to avoid birds from entering, building nests and causing problems.

Units with two side vents as in slide-outs, require a 12V fan to be in operation. When upper cooling fins reach 150° Fahrenheit, the fan will automatically start to operate. The positive wire has a **five amp** in line fuse installed. Access to the fuse is inside the lower service vent door.

2. A 120-volt AC compressor type, requires an 1800 watt inverter with 1 or 2 deep cycle batteries, group 27, when traveling on the road. An additional item is to be sure your alternator in tow vehicle is capable of charging battery (ies) during travel and cover tow vehicle requirements.

The section "comprehensive protection" in the inverters "owners manual" is very important, as it features limitations and performance as supplied with your recreational vehicle.

When you parked and attached to 120-volt AC power, the inverter is less important, as it is used mainly for traveling.

Be sure to pay attention to the section on battery (ies), quantity, type of performance, endurance, wire size and volume of power available in battery.

A battery isolator is recommended to avoid tow vehicle battery draining when parked, preventing a dead battery.

Reverse polarity on battery will cause malfunction, possible destruction to inverter.

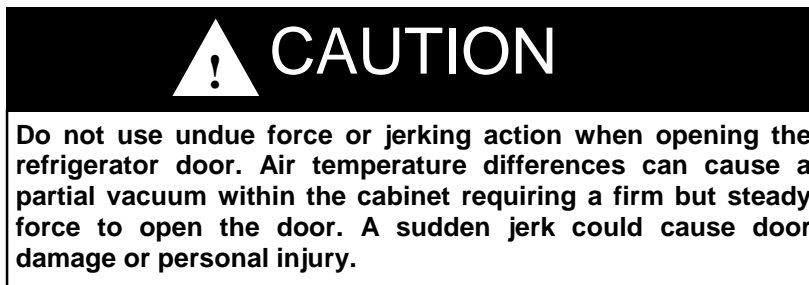
Attempting to use this system without attaching coach to 120-volt AC power during camping use will not be efficient. Dry camping will be limited without 120-volt power.

Door Seal

To maintain cooling efficiency, the door must seal completely on all four sides along the door gaskets. Frequent frost build up or reduced cooling are indicators of air leaks around the doors. Place a strip of paper the size of a dollar bill between the flange and door gasket. Close the door and pull the paper out. There should be a light frictional drag indicating proper seal. Should the paper feel loose, the gasket is not sealing well. Contact your dealer or service center.

Door Latch

A positive or full locking latch is not permitted through codes. Each latch has a rating by pounds of pressure, yet will prevent the door from opening during travel.



Operation in Transit

During camping or parking, the refrigerator must be level for best operation. While traveling, the up and down hill movement of the coach, will not affect the performance of the refrigerator.

Defrosting and Cleaning the Refrigerator Interior

Your refrigerator is not frost free and will require periodic defrosting. To defrost, turn the refrigerator off. Empty the freezer and the fresh food compartments. Placing a pan of hot water in the freezer will reduce the defrosting time. Leave the drip tray under the cooling fins. After frost has melted, empty the drip tray and clean the refrigerator.

Add a small quantity of mild dish detergent to lukewarm water and wash the interior of the refrigerator. **Do NOT use abrasive cleaners; they can damage the interior surfaces of the refrigerator.** Rinsing both compartments in a solution of baking soda and water (one tablespoon of baking soda to one quart of water) will freshen the interior and neutralize odors. Wipe the interior with a soft dry cloth to prevent water spots. Clean the door gaskets in the same manner as the refrigerator interior. This will help to prolong the life of the gaskets.

**IT IS NOT SAFE TO USE COOKING APPLIANCES
FOR COMFORT HEATING.**

Cooking appliances need fresh air for safe operation.

Before operation:

1. Open overhead vent or turn on exhaust fan
2. 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 appliance (s) avoids dangers of asphyxiation. It is especially important that cooking appliances not be used for comfort heating, as the danger of asphyxiation is great when the appliance is used for long periods of time.

MONITOR PANEL

Your panel, through modern technology, will supply the charge condition of your battery and water level information from your water tanks.

Operation requires 12-volt DC power, supplied by the battery or convertor. Sensors, one negative and three positive, attached to a resistor to feed information to the display panel. To operate, place finger on button and push. A light will illuminate indicating the water level of tanks or charge condition of battery. "Galley" will light only when floor plan includes the second gray water holding tank.

The switch on the lower right corner is for water pump operation. When in the "ON" position, pump will run until 40 to 45 PSI is achieved. The pump will shut off and restart at 20 pounds of pressure. Turn pump switch "OFF" when pump is not in use.

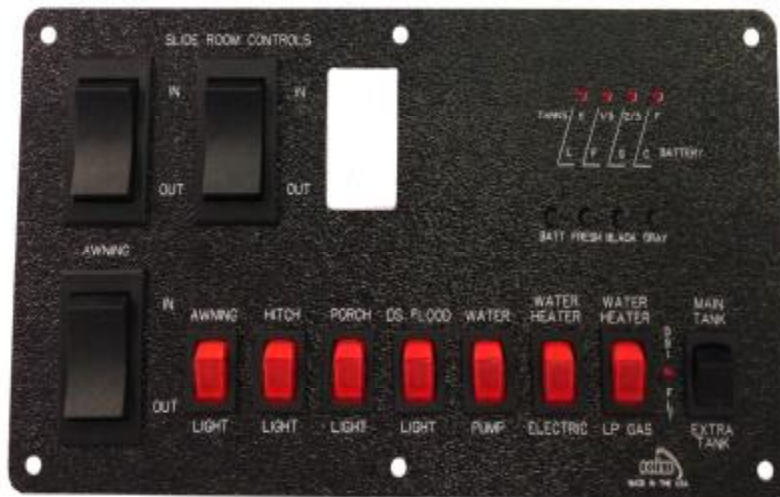
When pushing the battery button, the highest light coming on indicates the battery condition: C-charging at 12.7-volts; G-good at 11.9-volts; F-fair at 11.2-volts; L-low at 6.0-volts. Press only one button at a time as one set of lights serves all functions.

Slide-out switches (3) are used as marked. Should coach have only two slides, the third spot will have a blank. Switches will continue to operate until turned off.

The retaining (2) two switches pertain to generator and fuel cell if installed as factory option.

Your optional generator may require priming. Hold the “start/stop” bottom down until the light comes on. Attempt to start generator. Repeat the priming operation until generator starts successfully.

The below photo is for all DURANGO coaches. There is a possibility all 5 slide out switches may be used on a particular floor plan .All other switches are labeled as to their function. Please note the “level alert”, means a tank needs attention.



OUTSIDE KITCHEN — OPTIONAL

Using this outside kitchen will eliminate traffic inside of your camper and perhaps avoid a food spill.

Two sizes are available, depending on model of camper and space, a short or tall version.

1. Cook top is a two burner hot plate and has no standing pilot light. Each use requires re-lighting the burner. A removable propane hose is required and supplied with quick-connectors for fuel from propane system.
2. A refrigerator is also a part of this package, 120-volt AC, compressor type. Small unit is 1.6 cu ft, and tall unit is 3.2 cu ft. No propane or 12-volt DC is required or available for operation.
3. Small sink and faucet is also a part of kitchen. Drainage of water will go into the holding tank, thru a flexible hose. It also serves as an outside shower/port. A hose is included.
4. A second microwave is included with tall kitchen. You will have to choose which microwave to use. The switch is inside the camper, generally in the ceiling called a "Double pole/Double throw" switch. There is only 30 amp service available, which is why you must make this choice.

FIRE PLACE (OPTIONAL)

Built into your camper is a fireplace, to be used for light heat duty. It produces 5000 BTU and operates on 120-volt AC. A circuit breaker, located in distribution box, supplies power and protection for overload and short circuits.

Use the remote, supplied along with the owners manual, for additional information to operate as desired.

