

# Pacific Coachworks™

## RECREATIONAL VEHICLES OWNER'S MANUAL



TRAVEL TRAILERS  
TOY HAULERS  
FIFTH WHEELS

[www.pacificcoachworks.com](http://www.pacificcoachworks.com)

## **LIMITED ONE YEAR WARRANTY**

### **Warranty Coverage**

**Pacific Coachworks Inc.**, 3411 N. Perris Blvd., Perris, CA 92571 (**Warrantor**) warrants to the **ORIGINAL CONSUMER PURCHASER** for a period of **ONE (1) YEAR** from the date of retail delivery. Pacific Coachworks warrants that all parts of our manufacturer are free from substantial defects in material and workmanship under normal use and service, and only if the unit is used for the intended purpose of recreational travel and camping. **Pacific Coachworks Inc.** makes no warranty with regard to any product used for any other purpose including but not limited to: rental unit, permanent residence or commercial use.

Written notice of defects must be given to the selling dealer or the manufacturer no later than ten (10) days after the expiration of the applicable warranty.

In addition, the warranty only applies to units sold, used and registered in the United States or Canada.

### **Exclusions to this warranty**

To the extent that any or all of the following exclusions or provisions of this warranty are prohibited by any federal, state or municipal law which cannot be preempted, those exclusions or provisions shall not be applicable.

#### **Not covered by this warranty:**

1. Tires, batteries, appliances and other equipment which are covered by the separate warranties of the respective manufacturers of these components.
2. Damage caused by or related to:
  - Accidents, misuse, abuse or negligence.
  - Failure to comply with instructions contained in the owner's manual or component instructions.
  - Alteration or modification to the product.
  - Environmental conditions (wind, hail, mold, salt, chemicals in the atmosphere, etc.).
  - Failure to inspect and maintain all exterior sealants.
3. Normal deterioration due to wear, or fading of fabrics due to exposure to the sun.
4. Condensation and or damage caused by condensation.
5. Normal maintenance and service items such as light bulbs, fuses, lubricants, sealants, etc.
6. Additional expenses including but not limited to: transportation costs, loss of use, inconvenience, towing charges, vehicle rental, lodging, incidental charges or other consequential damages.
7. Cuts or gouges in flooring or fabric part unless noted at time of initial delivery to the dealer. Such damages will be remedied by repair or replacement at the discretion of the Warrantor.

### **Owners Obligations**

**Owner must complete and return the warranty registration form within ten (10) days of purchase. Failure to return the registration to the Warrantor will invalidate this warranty.**

Owner is responsible for transporting the unit to the selling dealer or an authorized service center at owner's expense. Owner also agrees to allow the dealer or authorized service center reasonable time to correct the defects, and it must also be understood that the Warrantor has no control over scheduling of work at the repair facility.

The owner is responsible for normal maintenance and adjustments as described in the owner's manual. Adjustments can include items such as entry and screen doors, baggage doors, LP regulator pressure, cabinet latches, drawer alignment etc.

If a dealer or service center is unable or unwilling to resolve a problem which the owner feels is covered by warranty, the owner should contact the Warrantor at the address above and provide a written explanation of the problem and the attempts to resolve it.

Upon receipt of a claim, where a dealer was unwilling or unable to resolve a problem, the Warrantor will at its discretion repair or replace any parts necessary to correct substantial defects in material or workmanship.

### **Dealer Obligations**

Dealer is required to maintain the unit prior to retail sale and to perform biweekly visual inspections of unit for any signs of sealant deterioration. Dealer is also required to perform a thorough pre delivery inspection and correct any defects found in material or workmanship. All repairs must follow proper authorization process.

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## INTRODUCTION

Your new **Pacific Coachworks** recreational vehicle is an investment in family fun. It has been designed to provide homelike conveniences for your family while you travel and camp. This owner's manual provides helpful suggestions and useful information to help you get maximum enjoyment from your new recreational vehicle.

The recreational vehicle, like the automobile, will require some care and regular maintenance. The few minutes spent reading these instructions will result in you knowing what to expect and how to correct and prevent minor difficulties plus give you a good working knowledge of the unit.

Should you have any additional questions as to operation, maintenance, or service, please contact your **dealer**.

Your new **Pacific Coachworks** recreational vehicle has been constructed to conform with or exceed federal and state safety requirements. The seal affixed to the outside of your RV next to main entrance door is the Recreational Vehicle Industry Association (RVIA) seal (or Canadian Recreational Vehicle Association /Canadian Standards Association (CRVA/CSA) seals in Canada). It certifies that your vehicle complies with these nationally recognized requirements: ANSI A119.2/NFPA 501C Standard on Rec. Veh. (for RVIA units), or CAN/CSA-Z24ORV Recreational Vehicles (for CRVA/CSA units).

In addition, a seal issued by a State building code agency may be next to the RVIA seal. It certifies that your vehicle complies with the RV regulations of that State.

The label affixed to the outside of your RV on the forward half of the left side is the Federal Certification label. It indicates compliance with these requirements:

- Federal Motor Vehicle Safety Standards  
(for U.S. units),
- or Canadian Motor Vehicle Safety Standards  
(for Canadian units).

**Pacific Coachworks** recommends that you thoroughly read this owner's manual before using your recreational vehicle. We have made every effort to make this manual as accurate as possible in order to reflect information available at the time of publication. Products are constantly being improved, and manufacturers upgrade their installations accordingly. In the event of conflicting instructions, illustrations, or other descriptions, the information furnished by the respective manufacturer's separate publications should be followed.

## WARRANTIES

### *Pacific Coachworks Limited One Year Warranty*

Your **Pacific Coachworks** recreational vehicle limited warranty and warranty registration card are included in your owner information package. In order for **Pacific Coachworks** to have a record of your warranty, send the warranty registration card back to **Pacific Coachworks** as soon as possible. To obtain warranty service, you should contact the dealer that sold you the unit and follow the instructions on your warranty card.

### *Appliance and Other Component Warranties*

All appliances and tires and many other components are warranted separately by their respective manufacturers. All warranty certificates and warranty registration cards are included in your owner information package. We strongly recommend that you complete each warranty card and promptly mail them to their respective manufacturers.

## WARNING

**Modifications made to your RV will void Pacific Coachworks warranty and could cause a safety hazard or even cause a serious personal injury. When service is required, use only qualified service personnel to repair Pacific Coachworks products.**

## DELIVERY CHECKLIST

Your **Pacific Coachworks dealer** has been trained to properly condition and service your unit before making delivery to you. Do not hesitate to ask questions about anything you do not understand concerning your unit. Your dealer will be glad to give advice and demonstrate the operation of all appliances and accessories.

**Check for these items:**

1. \_\_\_\_\_ Entry Door and Dead Bolt Keys
2. \_\_\_\_\_ Access Door Keys
3. \_\_\_\_\_ LP Gas Containers
  - \_\_\_\_\_ Regulator
  - \_\_\_\_\_ Spud Nut Assemblies
4. \_\_\_\_\_ Tow Vehicle Cord Connector
5. \_\_\_\_\_ Sewer Hose Adapter
6. \_\_\_\_\_ Fire Extinguisher
7. All Instruction and/or Warranty Manuals:
  - \_\_\_\_\_ Range
  - \_\_\_\_\_ Refrigerator
  - \_\_\_\_\_ Microwave Oven
  - \_\_\_\_\_ Water Heater
  - \_\_\_\_\_ Water Pump
  - \_\_\_\_\_ Furnace
  - \_\_\_\_\_ Air Conditioner
  - \_\_\_\_\_ Toilet
  - \_\_\_\_\_ Monitor Panel
  - \_\_\_\_\_ Converter
  - \_\_\_\_\_ Other
  - \_\_\_\_\_ Other
  - \_\_\_\_\_ Other
  - \_\_\_\_\_ Other
  - \_\_\_\_\_ Other

- Furnace -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Air Conditioner -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Toilet -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Monitor Panel -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Converter -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Awning -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Other -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Other -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Tires –
  - Make and size \_\_\_\_\_
  - Serial Number DOT \_\_\_\_\_

**IMPORTANT SERIAL NUMBERS**

For future reference, listed below are standard items and many commonly ordered optional items. At this time, fill in the make model and serial number of the items installed on your unit.

- Range -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Refrigerator -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Microwave -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Water Heater -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_
- Water Pump -
  - Make and Model \_\_\_\_\_
  - Serial Number \_\_\_\_\_

**WARNING**

**Most new recreational vehicles (RVs) are made with wood products containing minute amounts of Urea Formaldehyde used as a wood bonding agent. If Urea Formaldehyde bothers you, the remedy is to keep the RV well ventilated with fresh air. Urea Formaldehyde gives off gasses while the RV is new. For the majority of RV owners minute amounts of Formaldehyde in new RVs is not a problem. For a prospective buyer that is chemically sensitized, a used RV that no longer contains measurable amounts of Formaldehyde may be the answer.**

# ***SECTION I***

## ***RV SYSTEMS, FAMILIARIZATION & OPERATION***

SECTION I  
RV SYSTEMS,  
FAMILIARIZATION & OPERATION

*LPG (Liquefied Petroleum Gas) System*

The furnace, range/oven, water heater and refrigerator all operate on LPG **Caution: LPG is a colorless and highly flammable gas which could cause suffocation or explosion.** It has been treated chemically to give it a pungent garlic-like odor in order to assist LP gas users in detecting its presence. LP gas is slightly heavier than air and in undisturbed air will tend to drift downward and pool into low spaces.

Propane is the most common type of LP gas. Butane is not readily available in the U.S. or Canada. Propane can be used down to a temperature of -44°F -42°C (the dew point of Propane). Butane can only be used down to a temperature of 32°F 0°C (the dew point of Butane). However, both work equally well in the LP gas system of your recreational vehicle. Your LP gas service station will supply you with the fuel blend best suited for your area.

*LPG Safety Precautions.* Historically, LP gas has proven to be a safe and reliable fuel. Because it is highly volatile, explosive, and flammable, LP gas must be handled and used with caution and respect. Observe the following:

1. Observe all labels and tags;
2. Inspect the entire LP gas system for leaks and/or damage before each trip;
3. When testing for leaks, use a non-ammoniated, non-chlorinated soapy water solution or approved leak detection solution and watch for enlarging soap bubbles;
4. **WARNING - Never check for LP gas leaks with an open flame.**
5. Never lock the LPG tank compartment or housing doors. In an emergency, the tank service valve should always be easily accessible;
6. Have the LPG tank filled only at an authorized LPG service station by qualified personnel.

7. **WARNING - Do not bring, place or store LP gas containers, gasoline, or other flammable liquids inside the vehicle because a fire or explosion can result. LP gas containers are equipped with safety devices that relieve excessive pressure by discharging gas to the atmosphere.**

8. Make certain the LPG tank is always properly fastened in place;

9. Always use LPG tanks in their proper position. Never use, install, transport or store a vertical LPG tank in a horizontal or upside down position or a horizontal LPG tank in a vertical position or on its improper side;

10. Extinguish all LP gas appliance pilot lights before refueling your tow vehicle's gasoline tanks;

11. Be careful when drilling holes or fastening objects to the wall or floor of your RV. LP gas lines could be damaged and present an extreme safety hazard.

12. **WARNING - Natural gas must never be used in your LPG system.**

13. The following label has been placed in the vehicle near the range in the galley area:

**WARNING**

**This vehicle is equipped with a liquefied petroleum gas system. LP gas is highly explosive and must be treated with respect to avoid serious accidents!**

**Components of your LPG system, including supply tanks and appliances, are manufactured to the latest standards set by appropriate governing agencies, but due caution must be exercised!**

- **Never tamper with or attempt to modify gas equipment, lines or connections.**
- **Never check for leaks with lighted match.**
- **Don't store explosive or flammable material such as lighter fluid or gasoline in or near a gas appliance.**
- **All repairs, adjustments or modifications must be done by a qualified gas service technician.**
- **Have your gas system checked by a qualified gas service technician at least once a year, and more often if you use your vehicle a great deal**
- **Always turn off LP gas supply at the tank before entering a gasoline station or LP gas supply outlet.**

- **Never over tighten the tank outage valve. It must only be finger tight.**
- **Please read all sections regarding LPG in your vehicle owner's manual and owner's manuals provided by appliance manufacturers.**

#### **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 the area until odor clears.**
6. **Have the gas system checked and leakage source corrected before using again.**

#### **Think SAFETY!**

*LPG Tank Removal and Installation.* The LP gas tanks are tested high pressure cylinders. LP gas is stored in these tanks under high pressure, which maintains the LP gas in a liquid/vapor condition.

To remove a tank from your trailer:

1. Observe all labels and tags;
2. Remove the tank cover (if equipped);
3. Close the service valve on the tank you wish to remove;
4. Switch the regulator change-over valve to the other tank (2-tank systems only);
5. Loosen and remove the hose fitting and hose;
6. Install a plug into service valve (keeps contaminants out of the valve);
7. Loosen the clamp holding the tank to the RV;
8. Remove the tank from the RV.

To install a tank on your trailer:

1. Reverse the above procedure;
2. When connecting the hose fitting and hose to the service valve on the tank, tighten it snugly with a properly sized wrench (do not use pliers) - do not force, jam, or cross thread it. This is a machined male brass fitting which seats securely against a female seat in the service valve - no pipe dope is necessary;
3. Before installing the tank cover, check the

connection for leaks using a non-ammoniated, non-chlorinated soapy water solution or approved leak detection solution and watch for enlarging soap bubbles;

4. Observe all labels and tags.

*LPG Tank Filling.* To fill LPG tanks, the tanks must be removed from the RV and taken to an authorized LPG service station. Only qualified personnel should fill your LPG tanks. **Caution: Overfilling is hazardous!** Never allow your LPG tanks to be filled above the maximum safe level of 80 percent liquid. A warning label has been located near the LPG tank(s) which reads:

#### **DO NOT FILL LP-GAS CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY**

1. Overfilling the LP gas container(s) can result in uncontrolled gas flow, which can cause fire or explosion. A properly filled container will contain approximately 80 percent of its volume in liquid LP gas.

2. Pressure Regulator. The two-stage regulator is the heart of the LP gas system. It reduces the high pressure of the LP gas vapors from the tank to a nearly constant pressure of 6 1/4" oz. per sq. in. (11" water column) for use by the LP gas fired appliances.

3. The regulator is efficient and highly reliable and rarely requires service. Any regulator adjustments should be made only by authorized and qualified LP gas service station personnel. **Care must be exercised to protect the vent from the elements. LP gas regulators must always be installed with the diaphragm vent facing downward (within 45°).** Regulators that are not enclosed in a housing or compartment have been equipped with a protective vent cover. **Make sure that the regulator vent faces downward and that the cover is kept in place to minimize vent blockage that could result in excessive gas pressure causing fire or explosion.** The vent must be kept clean and free of obstructions. It should be checked periodically to make sure that it has not become partially blocked or plugged by insects, debris, dirt, mud, ice, snow, etc. which could cause regulator malfunction. This is caused by the freezing of moisture or water vapor which has been trapped within the system. When this moisture freezes ice may partially or totally block the flow of LP gas through the regulator.

Some precautions you can take to prevent freeze-up are:

1. Keep the tank service valve closed when the tank is not in use or is empty;
2. Have the tanks purged by an authorized LP gas service station;
3. Have an approved antifreeze (such as anhydrous methanol) injected into the tanks.

**WARNING**

**NEVER SMOKE WHEN LP TANK IS BEING FILLED. SMOKING CAN CAUSE PROPANE TO EXPLODE.**

On dual tank systems, the regulator will be an automatic changeover type. Start with both tanks full. Open the service valves of both tanks. The tank to which the manual changeover knob points is the initial one in service. The "empty" indicator at the top of the regulator will show white as long as there is fuel in the tank to which it points. When this tank is empty, the regulator will sense it and automatically switch service to the other tank and the indicator will change to red. Close the service valve of the empty tank and move the manual changeover knob to the full tank (the "automatic" feature switched the internal valve but not the manual changeover knob). The indicator will again show white. The empty tank may now be removed from the system for refilling. Regularly check the indicator.

*LP Gas Detector:* An LP gas detector has been located near the floor in the main living area of your RV. The green light on the front panel indicates the unit is on. When even a low level (1/5 LFL) of LP gas reaches the sensor in the detector an alarm will sound alerting you to its presence.

Be sure to read the LP gas detector manufacturer's instructions (found in your owner information package) for testing, operating, maintenance and troubleshooting guidelines. These detectors will detect other combustible gases including the propellants of aerosol cans.

The detector is a 12 volt DC powered device and is always "on" as long as electrical power is available to it. The 12 volt DC system works when the trailer is electrically connected to the tow vehicle, a charged 12

volt battery, or the 120 volt AC power cord is connected to shore power and the converter is plugged in. If the trailer is in storage or is otherwise not being used, disconnect the battery.

***Start-Up and Operation of LP Gas Fired Appliances.***

All LP gas fired appliances use oxygen from the air. Also, breathing itself consumes oxygen from the air. Be sure to provide adequate ventilation when occupying and using your RV. For best ventilation, open a window and roof vent, or an entry door.

To light up your appliances:

1. Check to be sure all appliance LP gas supply valves are in the "off" position.
2. Carefully read the appliance manufacturer's operating instruction manual for each respective appliance.
3. Your LP gas fired appliances are now ready to be lighted.

The initial lighting of LP gas fired appliances may be hindered by air trapped in the system. To purge the air from the system, we recommend lighting the range first. After several seconds the air will escape and the gas will ignite. The other appliances will then be easier to light.

***Appliances***

Most LP gas fired appliances have lighting procedures on a plate that is permanently attached to the appliance.

For further information, please refer to the specific appliance manufacturer's manual included in your owner information package. All appliances are guaranteed by separate warranties from each of their manufacturers.

**WARNING ON GAS FURNACES, STOVES, OVENS, WATER HEATERS AND REFRIGERATORS**

**Manufacturers producing LP gas fired appliances generally adjust them for the location in which they are manufactured. With an increase in altitude of just 2,000 or 3,000 feet, gas appliances may be out of adjustment and burn too rich. A gas appliance burning too rich is getting too much gas or not enough air (fuel/air ratio is too high). When**

**this happens the flame will burn cooler and produce carbon-rich black smoke (indicating incomplete burning). If left unattended for long periods of time, the gas orifice will clog with carbon and appliance components can be damaged.**

**At higher altitude, less air is available to mix with the gas at the burner. The fuel/air mixture should be reduced to achieve the most efficient burning. If the appliance does not have a mixture valve, and you intend to use your RV mostly at high altitudes, you will need to contact an appliance service company or the local gas company for service.**

**WARNING - DO NOT DO THIS CONVERSION YOURSELF. ONLY QUALIFIED APPLIANCE SERVICE COMPANIES OR YOUR LOCAL GAS COMPANY SHOULD ADJUST OR REPAIR APPLIANCES.**

**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 CAN CAUSE FIRES OR ASPHYXIATION.**

*Refrigerator.* The refrigerator operates on LP gas or 120 volt AC electricity..

**NOTE:** The refrigerator must be fairly level to operate properly. You can check this by placing a small bubble-type level on the freezer shelf. You may need to level the RV by jacking and using adequate blocking.

**NOTE:** Pacific Coachworks recommends that you do not operate the refrigerator on LP gas while towing your RV. Check with your dealer for regulations in your area. Certain states prohibit the use of LP gas while towing.

For further information, refer to the refrigerator manufacturer's manual included in your owner information package.

*Water Heater:* The water heater operates on LP gas only or a combination of LP gas and 120 volt AC electricity. If so equipped, 12 volt DC electricity is required to operate the igniter. Check the name plate located behind the water heater cover door on the outside of the RV to find out which model you have.

**NOTE:** Before operating the water heater, be sure it is filled with water. You can check this by turning on the hot water faucet at the sink. When water flows, the water heater tank is full. Any remaining air in the tank can be removed by briefly opening the temperature/pressure relief valve.

**NOTE:** You may notice water dripping occasionally from the temperature/pressure relief valve. This condition is normal and does not indicate a defective valve. The water system is a closed system and during the heating cycle the pressure build-up will cause the T-P valve to open and water will drip from it. When the pressure goes down the valve will close and the dripping will stop.

**NOTE:** Hard water limits the life of a water heater by depositing minerals on the heating element and water heater container. Flush water heater out often to get rid of mineral deposits. Also, when filling water tank, a good filter will eliminate many of the minerals in water from ever getting into the fresh water system.

For further information, refer to the water heater manufacturer's manual included in your owner information package.

*Furnace.* The furnace is fueled by LP gas and the blower and gas control valve are powered by 12 volt DC electricity. Operation of the furnace is controlled by a wall mounted thermostat.

**NOTE:** Proper operation depends upon the free flow of air through the ducting, at the register outlets, and at the return air grill. When storing personal items do not crush ducting or block register outlets and returns.

For further information, refer to the furnace manufacturer's manual included in your owner information package.

## 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 the area until odor clears.
6. Have the gas system checked and leakage source corrected before using again.

*Range and Oven.* The top burners and oven operate on LP gas. The basic methods of operation are the same as the operations of a house type gas range.

In contrast to the refrigerator, water heater and furnace which draw their source of combustion air from the outside, the range draws its source of combustion air directly from the interior of the RV and, therefore, competes with you for the available oxygen supply. The following warning label has been located in the cooking area to remind you to provide an adequate supply of fresh air for combustion:

### 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.**

Unlike homes the amount of oxygen supply is limited due to the size of the recreational vehicle. Proper ventilation when using the cooking appliance(s) will avoid the dangers of asphyxiation. It is especially important that cooking appliances not be used for comfort heating as the danger of asphyxiation is greater when the appliance is used for long periods of time.

For further information, refer to the range manufacturer's manual included in your owner information package.

## WARNING

This vehicle is equipped with a liquefied petroleum gas system. LP gas is highly explosive and must be treated with respect to avoid serious accidents!

Components of your LPG system, including supply tanks and appliances, are manufactured to the latest standards set by appropriate governing agencies, but due caution must be exercised!

- Never tamper with or attempt to modify gas equipment, lines or connections.
- Never check for leaks with a lighted match.
- Don't store explosive or flammable material such as lighter fluid or gasoline in or near a gas appliance.
- All repairs, adjustments or modifications must be done by a qualified gas service man.
- Have your gas system checked by a qualified gas service man at least once a year, and more often if you use your vehicle a great deal.
- Always turn off LP gas supply at the tank before entering a gasoline station or LP gas supply outlet.
- Please read all sections regarding LPG in your vehicle owners manual and owners manuals provided by appliance manufacturers.

*Range Hood Exhaust Vent.* The range hood exhaust vent operates on 12 volt DC electricity. Remove the filter screen for cleaning.

*Microwave Oven (if equipped).* The microwave oven operates on 120 volt AC electricity. It is a cord connected appliance and must be plugged in to work. A dedicated receptacle for the microwave is located in the cabinet above the microwave.

For further information, refer to the microwave manufacturer's manual included in your owner information package.

*Air Conditioner (if equipped).* The air conditioner operates on 120 volt AC electricity. Depending on the type of AC installed on your vehicle, operation is controlled by controls mounted on the ceiling shroud or a wall mounted thermostat.

For further information, refer to the air conditioner manufacturer's manual included in your owner information package.

### *Fresh Water System*

The fresh water system in your **Pacific Coachworks** recreational vehicle is designed to utilize two alternate sources of fresh water; either a "city water" source or a self-contained (onboard) water tank source.

**NOTE:** Check valves built into the system prevent city water from entering the self-contained water source and vice versa. Only one source may be used at a time.

**City Water Connection.** To use city water, simply connect a water hose from the campground, RV park or other outside water source to the 3/4" swivel female water hose service connector fitting located on left side (or back) of your vehicle. A plug is provided with this fitting to close it off when not in use.

Because water pressure from outside sources can vary, it is recommended you use a pressure regulator at the water source. If the pressure from your source is over 60 psi, you must use a pressure regulator. The recommended pressure range for a regulator is from 35 psi to 45 psi.

**NOTE:** The water pump switch must be OFF when using the city water source.

**Self-Contained Water System.** The self-contained portion of the water system consist of a large fresh water storage tank and a 12 volt DC powered electric water pump.

The water pump is a self-priming, on-demand pump. A pump switch is located in the galley area. Turn the pump switch ON while using the self-contained system. This will deliver water to the water heater and faucets and pressurize the system. The pump will automatically activate whenever a faucet is opened and run only as long as needed. It is recommended the pump switch be turned OFF whenever you are away from your RV. For further information, refer to the water pump manufacturer's pamphlet included in your owner information package.

**NOTE:** Do not run the pump without water in the system (e.g., water tank empty).

A fill spout for the water tank is located on the outside of your vehicle. Please notice the small vent hole next to the filler spout. This vent allows air to escape as water fills the tank. Never block this vent hole.

Use potable water only in the water tank. The system should be sanitized before using for the first time, after a period of non-use, or if the system has become contaminated. The following warning label has been located near the fill spout which reads:

**WARNING:**  
**POTABLE WATER ONLY**  
**SANITIZE, FLUSH, AND DRAIN BEFORE**  
**USING**  
**SEE INSTRUCTION MANUAL**  
**FAILURE TO COMPLY COULD RESULT IN**  
**DEATH OR SERIOUS INJURY**

To properly fill the water tank follow these guidelines:

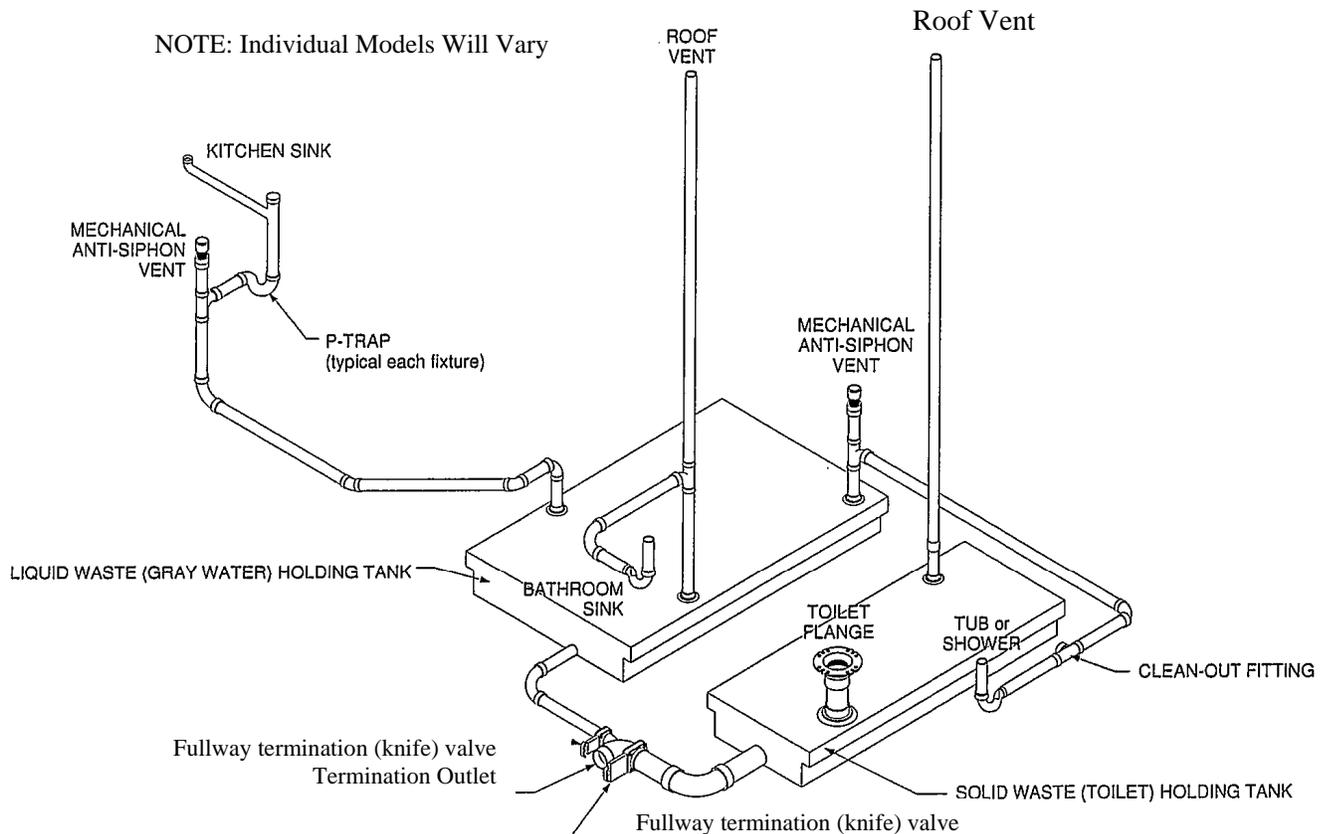
- Do not wedge the water hose into the filler pipe;
- Do not leave the water hose unattended while filling the water tank;
- Do not overflow the water tank;
- Discontinue filling immediately upon observing the tank "full" indicator. The tank "full" indicator is water back-filling out the filler pipe and vent hole.

**WARNING: DO NOT OVERFILL THE WATER TANK. Excess water entering the tank under normal pressure will expand the tank and loosen the retainer devices or even break them. This would allow the tank to slide causing damage to water lines and the surrounding structure.**

**Sanitizing the Potable Water System.** The following procedures are recommended to assure complete sanitation of your potable water system.

1. Open tank and line drains and faucets to empty system then close them.
2. Pour 1/4 cup of household liquid chlorine bleach into the tank for each 15 gallons of system capacity (tank + water heater).
3. Fill the tank with fresh potable water.
4. Turn the pump ON and open a hot water faucet until water flows. This will fill the water heater.
5. Open each faucet (hot and cold) briefly to purge the system of air then close them.
6. Top off the tank with water.
7. Wait at least three (3) hours. (Note: if a shorter time period is needed, double the amount of chlorine and wait one (1) hour.)
8. Drain the entire system, then flush with fresh potable water.

If an excessive chlorine after-taste or odor remains, pour a solution of 1 quart vinegar and 5 gallons water into the tank. Allow this solution to agitate in the tank (by vehicle motion), then drain through the faucets. Once again, flush with fresh water.



**Typical Self-Contained Waste Sewage System**

### ***Waste Drainage System***

All **Pacific Coachworks** recreational vehicles feature a fully self-contained sewage system. The RV system functions very similar to a house system. It consists of trapped and vented drain lines from each inside plumbing fixture, a vented solid waste (or toilet) holding tank, one (or two) vented liquid waste (or gray water) holding tank(s), tank termination valves (one for each tank), and a drain line termination (outlet) fitting with cap.

**WARNING: Sewer drain termination cap must be kept securely in place when the vehicle is in motion.**

*Toilet.* A standard marine type toilet is installed on your RV. Toilets operating on different principles may be installed as an option.

For further information, refer to the toilet manufacturer's manual included in your owner information package.

*Holding Tanks.* Two (and in some cases three, depending upon the floor plan) holding tanks are installed on all **Pacific Coachworks** recreational vehicles. Each tank is equipped with a termination (knife) valve. The knife valves should be kept closed except when emptying the tanks. Also, the termination (outlet) cap should be kept tightly secured to the termination (outlet) fitting, except when emptying the tanks or the vehicle is connected to an RV sewer system or dump station.

To help prevent clogging in the holding tanks (especially the toilet tank) and termination drain lines and to maintain the system in good working order, follow these suggestions:

- Use only bio-degradable toilet tissue or toilet tissue made especially for septic tank or RV sewer systems;
- Do not put facial tissue, paper, grease, sanitary napkins, or similar items into the holding tanks;
- Do not use harsh household drain cleaner chemicals or solvents;
- Use only holding tank deodorant cleaner chemicals approved for use in septic tanks or RV sewer systems (these aid in the breakdown of wastes);
- Maintain some water in the toilet tank **enough to keep the tank bottom covered.**

**Tank Dumping.** RV holding tanks should only be emptied into an approved RV dump station or RV park sewer system. Many newer RV campgrounds and parks have a sewer inlet at each campsite. RV dump stations can be found at many highway rest areas, gas stations, and campgrounds. They are usually indicated by an appropriate road sign. Locations are also listed in many camping guide books.

Do not dump more than one tank at a time. Always empty the toilet tank first, then the gray water tank(s). This will aid in flushing the system. Be sure your vehicle is level. The RV drainage system is gravity based and drain line slope is designed in with the vehicle chassis level.

To empty the holding tanks:

1. Be sure the knife valves are closed;
2. Remove the outlet cap;
3. Attach the sewer adapter fitting and sewer drain hose to the drain line termination fitting;
4. Put the outlet end of the drain hose securely into the RV sewer or dump station inlet;
5. Be sure the toilet tank is at least 1/2 full of water (add water if necessary);
6. Empty the toilet tank first by opening the knife valve with a quick pull on the T-handle (a quick pull will enhance the flushing effect);
7. Close the knife valve;
8. Add several gallons of water to the tank;
9. Empty the tank again to rinse the tank and drain hose; be sure there is water on the bottom of the black tank before resuming use.

10. Close the knife valve;
11. Repeat these steps for each gray water tank.

If using a dump station (or when disconnecting from an RV park sewer system):

12. Remove the sewer drain hose and adapter fitting from the termination fitting and replace the cap;
13. Rinse out the sewer drain hose with fresh water;
14. Remove the sewer drain hose from the dump station inlet and store away;
15. Replace the dump station sewer cover.

### ***Electrical System***

Your **Pacific Coachworks** recreational vehicle is powered by two basic electrical systems: a 12 volt DC system and a 120 volt AC system (similar to a house). With good planning, these systems will provide you with electrical power in almost all situations.

**12 volt DC.** There are two parts to this; the "automotive" circuits and the RV circuits.

The "automotive" circuits are an extension of the tow vehicles and provide the power to operate the electric trailer brakes, tail lights, stop lights, license plate lights, turn signal lights, side marker lights, front and rear clearance lights and identification lights on the RV. These "automotive" lighting circuits are protected by the tow vehicle's fuses located in the tow vehicle's fuse panel box (see tow vehicle's owner's manual). Their only source of power is the tow vehicle electrical system through the connector cord. The trailer brakes have an additional source of power from the RV battery. It is activated only when the trailer break-away switch pin is pulled. Read the section on Breaking Systems later in this manual.

The RV circuits get their power from a deep cycle RV battery, from the tow vehicle through the connector cord, or from the AC-to-DC power converter. These circuits provide the power to operate the slide-out motor(s), slide-out relay switch(s), range hood fan, roof vent fan, radio, TV antenna booster, water pump, LP leak detector, monitor panel, refrigerator, water heater (electronic ignition), furnace (electronic ignition), most of the lights, and any other 12 volt equipment your vehicle may be equipped with.

All of these circuits are protected by fuses and/or type II circuit breakers. The fuses protect the individual circuits inside the RV and are located on the 12 volt side of the distribution panel board (power center). The type II breakers protect the 12 volt wiring between the source (tow vehicle cord, battery, converter) and the distribution panel board and are located where the 12 volt wiring enters the vehicle near the battery and near the distribution panel board. Replacement fuses should always be of the same type and amperage. The type II circuit breakers will automatically reset, but only after all power is completely removed from them.

**WARNING: Do not install 12 volt fuses with amperage ratings greater than that specified on the fuse box or fuse holder label.**

*120 volt AC.* The 120 volt system (similar to household power) provides power to the air conditioner(s), water heater, some lights and the ceiling fan (if equipped), all receptacle outlets, all cord connected appliances such as the AC-to-DC power converter (and therefore all 12 volt equipment), Microwave oven, refrigerator, washer and dryer (if equipped) and any user supplied equipment.

120 volt power is supplied through a long heavy duty weatherproof power cord with a molded attachment plug containing a grounding pin. To obtain 120 volt power, this cord must be plugged into a matching receptacle from an outside source such as an RV park or generator.

**WARNING: Never connect this plug to an ungrounded receptacle or bend or break off the ground pin in this cable connector plug. Never plug this power cord into ungrounded extension cords. If you have to use an adapter to plug into an electrical service, be sure that appropriate and adequate ground is maintained.**

Pacific Coachworks uses either a 30 amp or a 50 amp electric cord from the trailer to power supply. Be sure the power supply is also 30 amps for the 30 amp power cord and 50 amps of power is available for a 50 amp power cord.

**WARNING: Never connect power cord to a power supply with a lower amp rating than the electric power cord. Doing so may cause a fire!**

**WARNING: Never use an adapter or an electrical extension cord with an amp rating that is less than trailer power cord. Using an adapter or extension**

**cord with an amp rating that is lower than the Pacific Coachworks electric power cord, 30 or 50 amp rating, can cause a fire!**

A distribution panel board (power center) located inside your RV contains the circuit breakers which protect the internal wiring. There is a main breaker with an amp rating equal to the rating of the power cord and several 15 amp and/or 20 amp breakers, one for each branch circuit in your RV. Circuit breakers are sized in accordance with Electrical Code regulations for the size of wiring each is protecting. If a circuit breaker trips, it means the power demand (load) on that circuit is too high, more than the circuit and breaker are rated for. This high load is from either too many appliances turned on or a fault in the circuit (short circuit). Reduce the load on that circuit by turning off or unplugging some appliances, wait a short period of time for the breaker to cool, then reset the breaker. If you believe a fault exists, have the system checked by a qualified electrician.

*Ground Fault Interrupter:* Receptacles which may be subject to dampness (in the bathroom, galley area and outside) are protected by a GFCI (Ground Fault Circuit Interrupter) device. This device helps protect you from the hazards of line to ground electric faults and electrical leakage shocks, which are possible when using electrical appliances in damp or wet areas. Should a circuit or appliance (shaver, hair dryer, etc.) develop a potential shock hazard of this type, the GFCI device is designed to disconnect the receptacle outlet, limiting your exposure time to the shock hazard. You will notice that only one receptacle has the GFCI device built into it. However, all receptacles wired "downstream" from the GFCI receptacle are also similarly protected and are labeled as such. If one of these receptacles is not working check the GFCI receptacle to see if it has tripped. Reset it if necessary.

**NOTE:** The GFCI device does not prevent electric shock, does not protect a person who comes in contact with both "hot" and neutral sides of the circuit, and does not protect against electrical circuit overloads.

Test the GFCI at least once a month if operating continuously on 120 volt power or before each trip. Use a card to record your test dates. Keep the card in a conspicuous place and keep it up to date.

To test the GFCI:

1. Push the "Test" button. The "Reset" button should pop out, indicating that the protected circuit has been disconnected.
2. To restore power, push the "Reset" button.

**WARNING: If the "Reset" button does not pop out when the "Test" button is pushed, a loss of ground fault protection is indicated. Do not use the GFCI receptacle or other GFCI protected receptacles. Have a qualified electrician check the electrical system. Do not use the system until the problem has been corrected.**

#### *Slide-Out Room(s) (if equipped)*

**General Operation.** Each slide-out room has dual weather seals that automatically seal when the slide out room is in either the full "OUT" or full "IN" position. Make sure your trailer is as level as possible before operating the slide-out room.

**WARNING: Never move your trailer with a slide out room extended. Damage could occur to the slide out room and/or the trailer. Make certain the slide-out room is retracted to the full "IN" position.**

ALWAYS double check to be certain the slide pathway is clear of any obstructions before moving the slide out room in either direction. Slide-out rooms fit tightly and many potential "pinch points" exist along the slide path which can be very dangerous. Caution all people and pets to stand clear when operating a slide out room.

The slide-out room does not require any supports at the outer corners. However, for extended periods of use, some means of support at the outer corners may be desirable to reduce the natural side-to-side rocking motion of the RV as people use the vehicle. If supports are used, do not lift the room above its normal resting position because the upper

weather seal may be broken. When it is time to move the slide-out back into the trailer be sure leaves, twigs and debris are cleaned off slide-out roof.

If roof is not cleaned it may cause slide to form an improper seal when in the travel mode.

**Electrical Operation.** Your trailer battery must be hooked up and fully charged to operate the slide-out room electrically. A low battery charge is the most common cause of slide-out room operation problems. The trailer converter will not operate the slide-out room without the trailer battery hooked up and fully charged.

Each slide-out room is electrically operated by a 12 volt DC motor. A wall mounted rocker switch inside the RV activates the motor. Push and hold the switch in the "OUT" position to move the slide-out room out for use. Push and hold the switch in the "IN" position to move the slide-out room in for travel. Release the rocker switch as soon as the slide-out room becomes fully extended or retracted.

**Manual Operation.** Each slide-out room has a square ended cranking rod which can be used to manually move the slide-out room in or out.

Single slideout models (couch only) require a ½ inch socket wrench for manual retraction. The cranking rod is located underneath the couch and can be accessed by removing the front couch paneling. Disconnecting the motor wiring harness from the control box will make manual operation easier however will still require considerable leverage or torque.

Super-slideout models (couch and dinette) require a 5/8 inch socket wrench for manual retraction. The cranking rod is located on the articulating drive arm and can be accessed from underneath the trailer.

**Adjustments.** Each slide-out room has been factory adjusted for your convenience. However, if a problem does occur with alignment or operation contact your dealer for service.

**Converters.** Pacific Coachworks uses a 55 amp converter on all trailers. Converters take the incoming 120 volt electricity from the plugged in power cord and convert 120 volts to 12 volt current. The 55 amp converter uses 2-30 amp fuses.

If battery connections are reversed it will blow-out the converter fuse(s) so be sure to check battery connections. Power converters produce a lot of heat and generally have a fan that goes on during heavy use of electrical equipment in the trailer.

***Electronic over current shut-down.*** The converters have built-in electronic over current protection to prevent damage due to short circuits or other overload conditions. This system operates much faster than fuses and will automatically reset itself, when the overload condition is removed. Please note there is a possibility that the customer's battery is completely discharged when customer tries to operate lights and other 12 VDC appliances before the battery has taken on sufficient charge. The converter may shut down due to overload. Have the customer turn off all 12 VDC lights and appliances until the battery has taken on a charge for an hour or two. Only then should customer try to operate his 12 volt system.

***Automatic over temperature shut-down.*** In the unlikely event of a fan failure or insufficient ventilation in the power converter compartment, these converters will automatically shut down. This safety feature is self resetting and will automatically turn the converter back on when the temperature returns to a safe level. If the power converter seems to be cycling on and off suspect a bad fan or insufficient converter ventilation causing an over temperature shutdown.

## ***SECTION II***

# ***TOWING AND LOADING***

## SECTION II TOWING & LOADING

Your towing equipment, its adjustments and how you load your trailer will have a large impact on your trailer towing stability and handling. The following guidelines will help you select, adjust and operate your equipment in a manner that will help produce acceptable towing characteristics. You should also check the specific requirements in the states and provinces where you will be traveling.

### *Tow Vehicle Selection*

The tow vehicle must have sufficient power and equipment and be rated by its manufacturer to handle the total combined weight of itself and the trailer and to carry the tongue weight of the trailer under fully loaded conditions.

The tow vehicle manufacturer has rated the tow vehicle for Gross Axle Weight Rating (GAWR) - each axle (this rating is for a specific wheel/tire combination), Gross Vehicle Weight Rating (GVWR), Gross Combination Weight Rating (GCWR), maximum trailer weight and maximum bumper to hitch weight. These maximum weight limits are listed on the tow vehicle certification label located either on the driver's door post or inside the glove compartment door and/or in the tow vehicle Owner's Manual.

**Pacific Coachworks** recommends you refer to your tow-vehicle manufacturer for tow vehicle ratings and capacities to determine safe towing guidelines. Consult your tow vehicle dealer to make sure your tow vehicle is equipped with the proper towing package to handle the trailer you have selected;

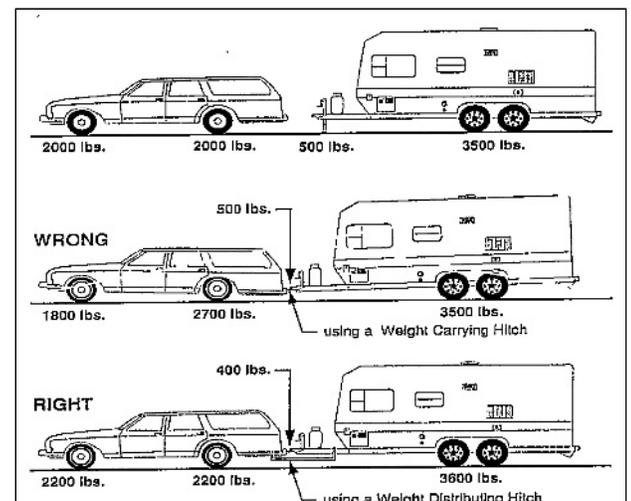
### *Hitch Selection*

**Pacific Coachworks** recommends you consult your dealer or trailer supply store to select the correct hitch that will properly match your travel trailer to your tow vehicle.

The installation must follow the tow vehicle and hitch manufacturer's installation instructions. For your own safety and comfort **Pacific Coachworks** recommends having your hitch, cord connector receptacle, sway control, mirrors, and brake controller installed and adjusted by a competent installer. Have them instruct you on the proper operation of all hitch related connections and any required safety devices, for both hitching and unhitching.

**Conventional hitch trailers.** Use a weight distributing (or load equalizing) hitch rated not less than the trailer Gross Vehicle Weight Rating (GVWR). The hitch must be equipped with a 2-5/16" diameter ball. The ball should be installed as close as practical to the rear bumper. In addition, it may be desirable to attach a sway control system along with the load equalizing hitch. This device helps reduce side sway in heavy winds or when passing or being passed by a large truck.

When being towed, the trailer should be as level as possible. The examples shown in the illustrations



demonstrate the essential difference in using a "weight carrying" versus a "weight distributing" hitch. The top drawing shows the individual weights of the trailer and tow vehicle. The middle drawing shows what happens when a "weight carrying" hitch is used. The combination vehicle has a distinct sag at the hitch point. The bottom drawing shows a "weight distributing" hitch in action. Both the trailer and tow vehicle weights are only slightly changed.

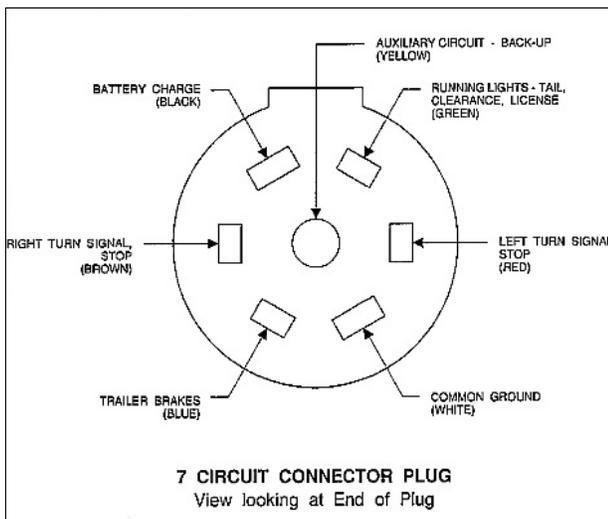
**WARNING**

**Follow the hitch manufacturer's instructions for adjusting the weight distributing hitch. Over tightening of the hitch spring bars will reduce cornering and stopping ability.**

*Fifth wheel hitch trailers.* Use a fifth wheel hitch assembly sized for a 2" SAE kingpin and rated not less than the fifth wheel trailer Gross Vehicle Weight Rating (GVWR). Weight distributing and sway control devices are not used with a fifth wheel hitch.

**Connector Cord**

Your new **Pacific Coachworks** recreational vehicle comes equipped with a 7-pin male connector cord and plug. Your dealer or hitch installer can install the female connector receptacle to your tow vehicle. This cord transfers 12 volt DC electrical power from the tow vehicle to the trailer brakes, brake lights, battery, turn lights, clearance and running lights, and all 12 volt DC interior lights and equipment.



Keep the plug and receptacle clean, tight fitting, and protected from the elements. Inspect it each time you hitch up.

**Safety Chains** (applies to conventionally hitched trailers only)

Your new **Pacific Coachworks** recreational vehicle comes equipped with two safety chains welded to the underside of the tongue A-frame. Each chain should be fed through an appropriate attachment ring on the tow vehicle.

Safety chains are not used with fifth wheel hitched trailers.

**Braking System Components**

**Tow vehicle battery.** The tow vehicle battery is the primary source of 12 volt DC power for the trailer braking system. Keep it and the tow vehicle charging system fully operational at all times.

**WARNING**

**Your new Pacific Coachworks trailer or fifth wheel will need brakes adjusted after the first 200 miles of operation and another adjustment every 3,000 miles after the first 200 mile brake inspection. Maintenance is very important. Brakes that have not been properly maintained can cause premature shoe liner failure due to excess heat. Failure to maintain brakes is not covered by Pacific Coachworks warranty.**

**Trailer brakes.** The electric brakes on your **Pacific Coachworks** recreational vehicle are activated by the brake controller, which must be installed on your tow vehicle. The brakes use 12 volt DC power from your tow vehicle. Make sure the connector cord is properly attached to your tow vehicle and the trailer is properly grounded to your tow vehicle. Braking performance can be degraded by a poor ground as much as by a poor primary circuit. **Pacific Coachworks** recommends a periodic safety check and adjustment be made to your recreational vehicle brake system by your dealer or authorized brake service center.

**Brake controller.** The brake controller should be mounted within easy reach of the driver. The brake controller is connected to the tow vehicle's brake system and will automatically activate the trailer brakes whenever the tow vehicle's brakes are applied. In addition, the brake controller has a lever to manually apply the trailer brakes. Automatic operation is recommended for normal driving. However, the manual control may be used to control sway. By lightly moving the manual brake control lever, the trailer can be stabilized. **Pacific Coachworks** recommends having your brake controller installed and adjusted by a competent installer. The controller is properly adjusted when the trailer brakes slightly lead the tow vehicle brakes. This will help keep the towing combination aligned for a smooth, straight stop. Never use the tow vehicle brakes alone.

The weight of the trailer can more than double the load to be stopped. Always use the automatic synchronized braking provided by the brake controller.

**Breakaway switch.** The breakaway switch on your Pacific Coachworks recreational vehicle is located near the hitch. This switch automatically activates the trailer brakes if the trailer becomes separated from the tow vehicle. The steel cable lanyard from the breakaway switch must be securely anchored to a non-removable part of the tow vehicle. The breakaway switch is activated when a pin connected to the steel cable lanyard is pulled out of the switch, thus completing a circuit from the trailer battery to the trailer brakes. Pacific Coachworks recommends checking the operation of this switch before each trip. The breakaway switch should never be used as a parking brake.

**Trailer battery.** The trailer battery is the sole source of power for the trailer brakes in case the trailer becomes separated from the tow vehicle. There must be a fully charged and operational battery on the trailer side of the system. (Battery not supplied by trailer manufacturer.)

#### Tires/Wheels/Hubs

**Tires.** Your new Pacific Coachworks recreational vehicle comes equipped from the factory with major brand name tires. The tires on your trailer were chosen specifically for that trailer and are matched to the wheels. When replacing tires or choosing a spare, Pacific Coachworks recommends using tires of the same size, rating and construction as the originals at all trailer wheel positions. Never mix tires of different size, rating or construction on the same axle. And never use tires of a lesser rating than the originals. Doing so can be dangerous and may invalidate the trailer GAWR and GVWR as listed on the federal certification label located on the forward half of the left side of your trailer. Proper inflation pressure must be maintained. Check your tire inflation pressures periodically when the tires are cold to see that they conform to the cold inflation pressures recommended by the tire manufacturer and stamped on the tire sidewall. Remember to give your spare tire the same consideration and care as your mounted tires.

**Wheels.** The wheels (or rims) on your trailer were chosen specifically for that trailer and are matched to the tires.

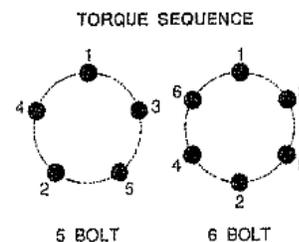
Never use wheels of a lesser rating. Doing so can be dangerous and may invalidate the trailer GAWR and GVWR as listed on the federal certification label. Pacific Coachworks recommends the following wheel nut torque requirements:

#### TORQUE REQUIREMENTS

**It is extremely important to apply and maintain proper wheel mounting torque on your trailer axle. Torque is a measure of the amount of tightening applied to a Fastener (nut or bolt) and is expressed as length times force. For example, a force of 90 pounds applied at the end of a wrench one foot long will yield 90 ft.-lbs. of torque. Torque wrenches are the best method to assure that the proper amount of torque is being applied to a fastener. NOTE: Wheel nuts or bolts must be installed and maintained at the proper torque level to prevent loose wheels, broken studs, and possible dangerous separation of wheels from their hubs. When replacing wheel nuts or bolts, be sure to use only ones matched to the cone angle of your wheels (usually 60 or 90 degrees).**

The proper procedure for attaching your wheels is as follows:

1. Start all nuts or bolts by hand to prevent cross threading.
2. Tighten nuts or bolts in the sequence shown below.
3. Tightening should be done in stages. First, tighten all nuts or bolts to 20-25 ft.-lbs. Then, tighten them to 50-60 ft.-lbs. Finally, tighten them to 90-95 ft.-lbs.
4. Wheel nuts or bolts should be torqued before first road use and after each wheel change. Check and retorque after the first 25 miles and again at 75 miles. Check periodically thereafter.



Proper wheel nut torque is very important. In general, trailer wheels carry much higher loads than passenger car or truck wheels. And, as you may have surmised, wheels on tandem axle trailers do not

steer and are subjected to high side loads whenever the trailer makes a turn, especially a tight turn. This may tend to gradually loosen wheel nuts.

**Hubs.** The hubs rotate on the axle spindles by means of wheel bearing. **Pacific Coachworks** recommends the wheel bearings on your trailer be cleaned and repacked every 6,000 miles or 12 months, whichever occurs first. Use an **automotive** type wheel bearing grease. **IF STRIPS OF GREASE ARE SEEN RADIATING FROM HUB ALL AROUND WHEEL, THIS IS AN INDICATION OF A FAILING BEARING. REPLACE BEARING AS SOON AS POSSIBLE. A WORN BEARING CAN GENERATE ENOUGH HEAT TO BIND WHEEL TO AXLE.**

### **Towing Guidelines**

**Carrying passengers.** **Pacific Coachworks** recommends that no one ever ride in a trailer while it is being towed and you should never allow anyone to ride in your trailer while it is being towed. It is a very dangerous practice.

**WARNING:** Do not occupy a travel trailer or fifth wheel trailer while it is moving. The motion of the trailer can cause an occupant to fall, causing a possible serious injury or even death. This Pacific Coachworks recreational vehicle is not designed nor intended to be used as a passenger carrying vehicle. Pacific Coachworks assumes no liability for any person who chooses to occupy a Pacific Coachworks travel trailer or fifth wheel trailer while it is moving.

**Driving tips.** Your **Pacific Coachworks** recreational vehicle has been designed to be towed at legal highway speeds without any unusual handling characteristics. Driving with a recreational vehicle may be a new experience for you. Consequently, we are outlining here some important driving tips to assist you.

1. Try your trailer out on very short trips to get the feel of it before you leave on extended travels.
2. Be sure you have traffic clearance before pulling away from the curb. Apply power slowly and evenly and avoid over acceleration.
3. Watch out for dips or obstructions in the road. They can cause serious damage to the underside of a trailer.
4. Safe stopping depends upon speed, brake condition, tire condition, road condition, driver condition, and other factors. Be sure to keep your distance from the traffic ahead of you since the additional weight of your recreational vehicle adds an additional burden

to your vehicle.

5. Start your turn slightly outside and beyond your usual turning position to give yourself safe side clearance. The wheels on a trailer do not follow the path of the front wheels of the tow vehicle. You will need to learn the art of the "wide turn" similar to what large trucks use. Practice these in a large empty parking lot to get the feel of how much room you will need.

6. Allow plenty of distance in front of you before attempting to pass. Trailers take up a long stretch of road space. These units are also heavy and will detract from the normal acceleration of your vehicle.

7. The engine and transmission on your vehicle may overheat when you are driving in hilly or mountainous terrain. If this happens, pull off to the side of the road and allow your engine to idle while your transmission is in neutral. This will help return engine and transmission temperatures to normal.

8. Emergency maneuvers sometimes get RV owners into trouble because they are not sufficiently familiar with the handling characteristics of their rig. The best prevention is to explore and learn the limits of handling under controlled conditions. On a wide, isolated road with good visibility in both directions and no other vehicles in sight, practice a few lane changes while staying well within the bounds of safety. Gradually increase the pace of the lane changes until you get an idea of the vehicle's capabilities. You may also have a better appreciation of your own capabilities. Too many drivers have no idea of their own capabilities until they're faced with a real emergency evasive maneuver, and they often over steer the vehicle.

9. Emergency braking may under certain road conditions cause a skid. Turn the front wheels of the vehicle in the direction of the skid to counteract its effects. Never lock the brakes on the tow vehicle or the trailer. Apply them lightly until the skid is reduced.

10. When traveling off the highway in the country or mountains, you must be careful of overhanging tree limbs and other overhead or side obstacles. Light branches will probably brush aside, but heavier ones may cause damage to the roof or sidewall of your trailer.

Remember to consider your roof vents, roof rack, antennas, and air conditioner when you are figuring vertical clearance.

11. When pulling up to or away from a curb, watch for obstructions beyond the curb because the front and rear of the trailer can swing wider than the tow vehicle. Avoid parking too close to the curb, as signs, poles, and other obstructions can cause problems. Fast Food drive-ins and gas station islands have crunched more than their share of roofs. Watch for sharply crowned roads and steeply sloped shoulders which can tip your unit into obstructions when parking close to a curb or roadside. Keep in mind your trailer is wider than your tow vehicle.

12. Be careful when driving down steep mountain roads or long downgrades under normal highway conditions. The tendency to travel too fast and apply brakes too quickly can cause the vehicle to go out of control. Should this occur, don't panic. Apply more force on the trailer brakes than on your tow vehicle to help "drag" the trailer back into line. This will correct any "jackknife" or trailer swaying that might occur.

13. Reduce speed and shift to a lower gear **before** starting downhill. Brake "fade" may occur while traveling on downgrades if frequent or prolonged brake application is required to hold down your speed to the desired level. Brake "fade" is a result of overheating the brake surfaces to the point where friction is greatly diminished or lost. The result is a brake pedal that is still firm to the foot when pressure is applied but little or no stopping action is produced. Overheating of brakes may occur after repeated brake application in a short period of time. To avoid this problem, use lower gears to slow vehicle speed to the point where only occasional brake application will be necessary. If the combined vehicle weight is so great that downhill speed increases even when the lowest gear is used, apply brakes when necessary but pull over to the side of the road often to allow the brakes to cool.

**Sway control.** Trailer sway has several possible causes such as improper trailer loading, improper sway control equipment adjustment, improper load

equalizer hitch adjustment, bad tires, flat tire, excessive speed, excessive braking, strong side winds, wind gusts, road dips, being passed by heavy trucks/buses, sudden and/or severe steering wheel movement, etc. If you notice your trailer beginning to sway, take immediate steps to regain vehicle stability.

1. Steer as straight as possible. Quick steering movements may actually cause increased swaying.
2. Reduce speed gradually. Use the manual trailer brake controller lever to gradually apply the trailer brakes to "drag" the trailer back into alignment. Tow vehicle braking alone can increase the swaying.
3. Once stability has been regained, stop as soon as possible. Check your weight distribution, tire pressure, sway control adjustment, and/or load equalizer adjustment.
4. Until the problem has been identified and corrected, drive at a reduced speed that permits full control.

**Backing.** Backing a trailer is not difficult, but many inexperienced owners tend to find it frustrating. Practice in a large empty parking lot. After a few practice runs the driver is usually skilled enough to back into most campground spaces.

1. The most important item to remember is that the trailer will go in the opposite direction of the tow vehicle. Turning the tow vehicle's wheels to the right will cause the rear of the trailer to go left, and vice-versa. One method is to steer with one hand at the bottom of the steering wheel. Using this technique, the trailer will go in the same direction your hand moves.
2. Always get out and inspect the area you intend to back into. Don't forget to look for overhead obstacles. Evaluate the area for width and well as length.
3. Use both rear view mirrors when backing.
4. If possible, station another person near the rear of the trailer to help you avoid obstacles. Be aware that you have poor or no visibility directly behind the trailer.
5. Use small steering wheel movements to

keep the tow vehicle following in line with the trailer. This will work along a curved line as well as a straight line. Large steering wheel movements may cause the trailer to jackknife, possibly causing damage to the trailer and tow vehicle.

**Parking.** When parking on a grade, use wheel chocks to absorb the trailer load before setting the tow vehicle parking brake and putting the transmission into "P" (park). Remember, when the tow vehicle is turned off or completely disconnected from the trailer, the trailer will have no brakes.

**Travel Trailer Loading**

**Terminology.** The following terminology is commonly used in the RV industry. You should familiarize yourself with the following terms.

- **GAWR** (Gross Axle Weight Rating): The maximum weight that an individual axle assembly can carry. An axle assembly consist of the axle w/hubs and the springs, wheels, and tires mounted on that axle. For trailers with more than one axle, there is a GAWR for each axle.
- **GVWR** (Gross Vehicle Weight Rating): Is the maximum permissible weight of this trailer when fully loaded. It includes all weight at the trailer axles(s) and tongue or pin.
- **GCWR** (Gross Combination Weight Rating): The overall maximum that the combined towing vehicle and towed vehicle can weigh.
- **Hitch Dry Weight:** The approximate vertical weight as measured at the tongue coupler or fifth wheel kingpin with the trailer empty and dry. This is an average weight for this model and may include the weight of commonly ordered options installed at the factory. It may not be equal to the actual hitch weight of your trailer.
- **Standard Dry Weight:** The approximate overall weight of this model trailer as measured with the trailer empty, all tanks empty (dry), and with standard equipment only - no options (the 'standard-dryempty' configuration). It may or may not be equal to the actual weight of your trailer.
- **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. •

**Payload:** Pacific Coachworks term for the maximum capacity (by weight) available for filling all tanks, adding options and accessories (factory, dealer and /or customer), personal belongings, camping gear, food, tools and other discretionary cargo. It is calculated by subtracting the Standard Dry Weight from the GVWR . It may or may not be equal to the actual available capacity of your trailer.

- **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.

**Cargo Capacity Formula.** The following formula illustrates the relationships between these terms:

•  $CCC = GVWR - UVW - \text{fresh water weight} - LP \text{ gas weight}$

**Weight label examples.** The following labels affixed to your recreational vehicle give you specific information about this recreational vehicle.

**Federal Certification label:**

MANUFACTURED BY / FABRIQUE PAR: \_\_\_\_\_ DATE: \_\_\_\_\_

GVWR/PAYS	KG (LB)	TIRE/SWEE	ROUSJANTE	COLD INFL. PRESS. PRES. DE CONF. A FROID
FRONT / AVANT	KG (LB)			KPA SINGLE DUAL PSI(LBS)
MID/FRW / INTERM	KG (LB)			KPA SINGLE DUAL PSI(LBS)
REAR / ARRIERE	KG (LB)			KPA SINGLE DUAL PSI(LBS)

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.  
 THIS VEHICLE CONFORMS TO ALL APPLICABLE STANDARDS PRESCRIBED UNDER THE CANADIAN MOTOR VEHICLE SAFETY REGULATIONS IN EFFECT ON THE DATE OF MANUFACTURE. - CE VEHICULE EST CONFORME A TOUTES LES NORMES QUI SONT APPLICABLES EN VERTU DU REGLEMENT SUR LA SECURITE DES VEHICULES AUTOMOBILES DU CANADA EN VIGUEUR A LA DATE DE SA FABRICATION.

V.I.N.: \_\_\_\_\_ TYPE/TYPE: \_\_\_\_\_ FD-228

- **Federal Certification label:** This label is located outside on the forward half of the left side of your trailer. The label is identified by Model and V.I.N. The official GVWR and GAWR for this specific recreational vehicle are listed here. For Canadian units this label will be configured slightly differently and include Standard Dry Weight, Hitch Dry Weight, and Payload.

**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 PROPANE WEIGHT.

CARGO CARRYING CAPACITY (CCC) COMPUTATION		POUNDS	KILOGRAMS
GVWR	.....		
MINUS UVW	.....		
MINUS FRESH WATER WEIGHT OF	GALLONS @ 8.3 LB/GAL		
MINUS PROPANE 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.**

- RVIA Trailer Weight Information label: This label is located inside on the back of a cabinet door over the kitchen sink area. The label is identified by Model and V.I.N. The GVWR is reprinted on this label. Trailer weight and capacity information for this specific recreational vehicle are listed here. **Loading and weight distribution guidelines.**

Loading your Pacific Coachworks recreational vehicle and tow vehicle will become second nature to you after you've had a little practice. Use the following guidelines to obtain the proper weight distribution.

Cargo Capacity: Between various governments, industry associations and manufacturers there are several opinions and methods of ways to calculate the capacity of a trailer. For your specific recreational vehicle, use formula #3 as listed in *Cargo Capacity Formula* on page 25. There is no substitute for actually weighing your trailer to get the straight scoop.

- **Never exceed weights:** Do not exceed the individual GVWRs of your tow vehicle and your trailer; the GCWR of your combined vehicles; the GAWRs of any axle; the maximum rating of any tire; the towing capacity of your hitch; the vertical capacity of your hitch, or the weight limits of any cargo areas.

- **Recommended Hitch Weight Percentage:** Load your trailer in such a manner that the loaded hitch weight, when compared to the overall loaded trailer weight, is within these ranges

	<u>min.</u>	<u>max.</u>
- for conventional trailers	10%	15%
- for fifth wheel trailers	15%	25%

These percentages should be calculated with the trailer loaded the way you anticipate traveling, hitched to the tow vehicle, and the load equalizing spring bars tightened.

- **Roof Cargo Storage:** Heavy items stored high and behind the axles may adversely affect your trailer's towing stability. Cargo carried on the roofs of models equipped with a roof rack and ladder is **limited to 100 pounds** while traveling. If a cargo pod is used, its weight must be included in the 100 pound limit.

**How to Load your Trailer:**

**Do-**

1. Start by loading most of your cargo just ahead of the trailer axles, then adjust your load as needed. You may have to experiment with various cargo configurations in order to balance the load on the axles and keep the hitch weight percentage within the recommended range.
2. Distribute your cargo as low as possible. The lower the center of gravity, the better your towing stability will be.
3. Load your cargo as evenly as possible from side to side. Each tire has its own maximum load rating stamped on its sidewall. It is theoretically possible to stay under an axle's GAWR and still overload an individual tire on that axle if you are not careful. Tire manufacturers have complained that RV tire overloading is one of the major causes of tire failure.
4. Brace and/or secure all cargo so that it will not shift during travel. Shifting cargo can cause damage to your trailer, as well as degrade your towing stability by unbalancing your load.
5. Remember your tow vehicle is an important part of your total towing combination. Load it and weigh it with the same considerations as your trailer.

**Don't -**

6. Do not load heavy items in upper cabinets.
7. Do not leave any item unsecured, especially heavy items.
8. Do not add another trailer behind your trailer.

### SCALE WEIGHTS WORKSHEET

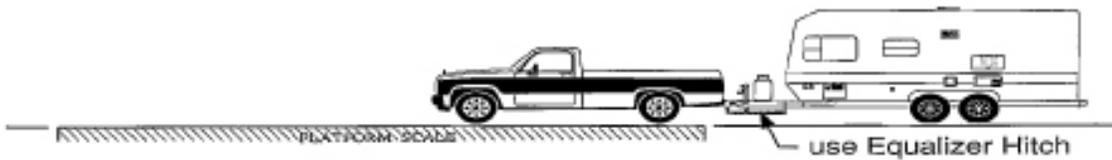
DATE \_\_\_\_\_

#### PROCEDURE TO ESTABLISH WEIGHTS OF VEHICLES WHEN UTILIZING COMMERCIAL PLATFORM SCALES (for both conventional and fifth wheel trailers)

**REMEMBER: Load and hitch your vehicles the way you anticipate traveling.**

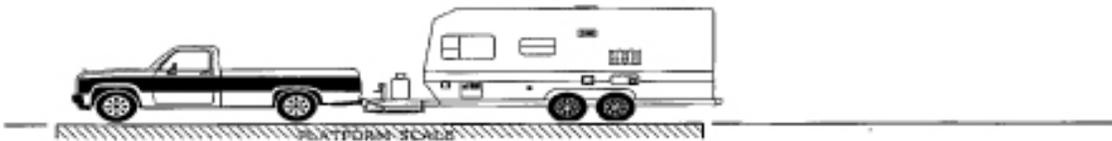
1. WITH THE TRAILER HITCHED,  
DRIVE THE TOW VEHICLE ONLY ONTO THE SCALE,  
RECORD WEIGHT #1.

Weight #1



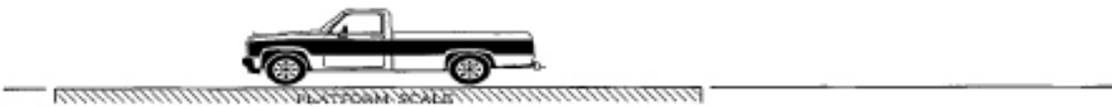
2. WITH THE TRAILER HITCHED,  
DRIVE THE COMBINATION VEHICLE ONTO THE SCALE,  
RECORD WEIGHT #2.

Weight #2



1. WITH THE TRAILER UN-HITCHED,  
DRIVE THE TOW VEHICLE ONTO THE SCALE,  
RECORD WEIGHT #3.

Weight #3



<b>WEIGHT and BALANCE WORKSHEET</b>		DATE _____
<p><b>STEP 1</b> LIST YOUR RIG'S "NEVER EXCEED" WEIGHTS HERE (get from Wt. Labels &amp; Owner's Manuals)</p>	<p><b>STEP 2</b> CALCULATE YOUR RIG'S ACTUAL WEIGHTS HERE (use weights from scale worksheet)</p>	
<p>combination GCWR</p> <div style="border: 1px solid black; height: 25px; width: 100%; margin-top: 10px;"></div>	<p>A. Actual Combination vehicle total loaded weight:</p> <div style="text-align: center; margin-top: 10px;">             WT. #2  <div style="border: 1px solid black; display: inline-block; width: 100px; height: 25px;"></div> </div>	
<p>tow vehicle GVWR</p> <div style="border: 1px solid black; height: 25px; width: 100%; margin-top: 10px;"></div>	<p>B. Actual Tow vehicle total loaded weight:</p> <div style="text-align: center; margin-top: 10px;">             WT. #1  <div style="border: 1px solid black; display: inline-block; width: 100px; height: 25px;"></div> </div>	
<p>trailer GVWR</p> <div style="border: 1px solid black; height: 25px; width: 100%; margin-top: 10px;"></div>	<p>C. Actual Trailer total loaded weight:</p> <div style="text-align: center; margin-top: 10px;">             WT. #2      WT. #1  <div style="border: 1px solid black; display: inline-block; width: 100px; height: 25px;"></div> - <div style="border: 1px solid black; display: inline-block; width: 100px; height: 25px;"></div> = <div style="border: 1px solid black; display: inline-block; width: 100px; height: 25px;"></div> </div>	
<p>vertical capacity of HITCH</p> <div style="border: 1px solid black; height: 25px; width: 100%; margin-top: 10px;"></div>	<p>D. Actual Loaded vertical hitch weight:</p> <div style="text-align: center; margin-top: 10px;">             WT. #1      WT. #3  <div style="border: 1px solid black; display: inline-block; width: 100px; height: 25px;"></div> - <div style="border: 1px solid black; display: inline-block; width: 100px; height: 25px;"></div> = <div style="border: 1px solid black; display: inline-block; width: 100px; height: 25px;"></div> </div>	
<p>recommended hitch weight percentage</p> <p><b>CONVENTIONAL</b> 10%-15%</p> <p><b>FIFTH WHEEL</b> 15%-25%</p>	<p>E. Actual Loaded hitch weight percentage:</p> <div style="text-align: center; margin-top: 10px;">             D      C  <div style="border: 1px solid black; display: inline-block; width: 100px; height: 25px;"></div> ÷ <div style="border: 1px solid black; display: inline-block; width: 100px; height: 25px;"></div> x 100% = <div style="border: 1px solid black; display: inline-block; width: 100px; height: 25px;"></div> </div>	

## ***SECTION III***

# ***GENERAL INFORMATION***

### SECTION III GENERAL INFORMATION

#### *Code of Ethics*

All recreational vehicles owners share a common set of values and standards because we are all judged by the actions of each other.

The Recreational Code of Ethics is as follows:

#### *When Camping, I will...*

1. Dispose of sewage in recommended places only; such as approved dumping stations - never contaminate lakes or streams.
2. Discharge my kitchen sink and shower waste only in designated and approved locations.
3. Use extreme caution with any fire, insuring that it is never unattended and is properly extinguished when I leave.
4. Be especially careful with matches, cigarettes, cigars, or pipe heels and will obey all regulations pertaining to "No Smoking" areas.
5. Place all garbage and trash in the receptacle provided, leaving no refuse on the grounds.
6. Never damage trees, shrubs or other items of natural beauty.
7. Leave my campsite as clean or cleaner than I found it.
8. Position my recreational vehicle so that I do not disturb or interfere with others.
9. Always ask permission to park on private property when other facilities are unavailable.
10. Comply with all rules and regulations of the forests and parks where I am staying.

#### *When Driving, I will...*

11. Realize that common courtesy and many laws require that on a two lane highway where passing is unsafe because of traffic in the opposite direction or other conditions, a slow moving vehicle, behind which three or more vehicles are formed in line, shall turn off the roadway wherever sufficient area for a safe turnout exists, in order to permit the vehicles following to proceed. A slow moving vehicle is one which is proceeding at a rate of speed less than normal flow of traffic at the particular time and place.
12. Never be a litterbug, storing all refuse in

my vehicle until it can be disposed of in a proper container.

13. Be especially careful to always use my ashtray for cigarettes, cigars, and matches - not the open window of my vehicle.

14. Keep in the right hand lane except when passing.

15. Adhere to all recreational vehicle traffic regulations.

#### *On maintaining my recreational vehicle, I will...*

16. Frequently check the operation of the brakes and break-away device on my trailer.

17. Properly secure my LPG bottles, battery, and accessories before traveling.

18. Grease wheel bearings and other moving parts of my recreational vehicle periodically.

19. Check the tires, wheel lugs, directional signals, and lights frequently

20. Carry sufficient insurance to protect others in case of accident.

21. Encourage my neighbors to follow this Code of Ethics.

#### *Helpful Hints for the New Owner*

**Safety Considerations.** Here is a list of some important safety checks to always review and keep in mind while you travel:

1. Never overload your vehicle. Improper load distribution can cause serious handling problems while on the road.
2. Do not modify your unit without consulting us first. External modifications such as motorcycle racks, boat racks, and extended trailer bumpers have a direct effect upon the balance and handling of your recreational vehicle and may void your warranty.
3. Be sure that your tires are in good condition, have adequate tread, and are properly inflated.
4. Check State and Provincial Laws in advance regarding their requirements for brakes, vehicle length and weight, mirrors, break-away devices, reflectors flares, fire extinguishers, etc.
5. Never attempt to repair or alter a gas or electric appliance. Always consult an authorized and qualified service agency.
6. Thoroughly test your travel trailer brakes while off the road – not on the freeway.

**Pacific Coachworks** Recreational vehicles are designed for temporary shelter purposes. Trailers are not designed for the transportation of people, and many laws forbid their use for such purposes. **Pacific Coachworks** recommends that all passengers be carried only in the motor vehicle towing your trailer.

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

9. Do not bring or store LPG containers, gasoline, or other flammable liquids inside the vehicle because a fire or explosion may result.

**The Campsite.** A public or private campsite will be your home and neighborhood while vacationing. Making new friends and relaxing with old friends is a rewarding and enjoyable experience. To make your stay comfortable and convenient, we suggest that you review these important considerations:

1. Select a space large enough in which to maneuver your vehicle without disturbing or crowding your neighbors.
2. Park in the space, lining up as closely as possible to available water, electrical, and sewer facilities.
3. Block the wheels of your vehicle, and level it as needed.
4. Attach necessary water, electrical, and sewer services to your recreational vehicle.
5. Check all gas fueled appliances to be sure they are off; vent your unit well; then open the valve on your LPG tank.
6. Light gas appliances as necessary – range, refrigerator, water heater, furnace.
7. Unpack household goods and move your family in. Now enjoy yourself!

**Consumption of LP Gas.** Your LPG system uses liquefied gas which contains approximately 92,000 BTU's of heat energy per gallon. To find out how long a gallon of gas will last, compute the total BTU input as shown on all of your gas appliances. Divide this figure into 92,000 - the result will give you the total hours of usage per gallon when all your appliances are operating at full capacity.

**Condensation.** Condensation may occur in your trailer whenever the temperature outside is lower than the temperature inside. This can cause the warm moist air to form (or condense) as water droplets on colder interior surfaces, such as roof vents, windows, metal moldings, and cabinet hardware.

Moisture is put into the air through various means, such as the combustion of LP gas, cooking food, washing dishes, and the breathing of people. The following facts indicate how rapidly moisture is generated:

1. Four people discharge into the air approximately one cup of water per hour.
2. An open flame from your range top can also discharge approximately one cup of water per hour.

Condensation on windows is a visible warning that there is too much moisture in your trailer. This excessively high humidity can cause mildew, staining, and deterioration of woodwork and paneling.

Follow these helpful hints to help reduce excessive humidity from the interior air:

1. Ventilate with outside air by keeping a roof vent or window open. Even when it is raining, outside air will be drier than interior air.
2. Turn on the range hood fan when cooking.
3. Turn on the bath vent fan when showering and close the bath door.
4. Open a window while washing dishes.
5. Avoid air drying damp or wet clothing inside the trailer. If you must, hang them in the bathroom with the door closed and the bath vent fan on.

6. If your trailer is washer/dryer equipped, be sure the exhaust hose is vented properly to the outside.
7. Consider using a dehumidifier.

*Dust Seepage.* Travel over unpaved, ungraded or rough roads inevitably generates quantities of dust which has a way of leaking into trailers. The problem can be reduced by partially opening your roof vent, which helps keep dust out. From time to time, it is advisable to adjust the striker plate on your entrance door. Road vibration can cause it to loosen up and allow dust and moisture to leak in.

*Overhead Bunk Safety.* Remember, the higher you climb, the farther and harder you fall.

**WARNING: Upper bunks and convertible beds can be dangerous for children and adults that are active sleepers. Falling from a high bed could cause severe injury, or even death.**

Never leave a small child unattended in an upper bed or inside the recreational vehicle due to the hazards of climbing to the beds, turning on gas appliances, etc. Allowing children to play or wedge themselves between mattress liner and base can cause suffocation, especially if a plastic liner is on the mattress.

### ***Traveling Checklists***

#### ***Pre-Travel checklist.***

1. When loading your trailer for travel, distribute the weight equally and towards the wheels. Do not load heavy items near either end of the trailer or on the rear bumper. If your trailer is equipped with a roof cargo rack, limit the cargo to 100 pounds while traveling. Carry only as much water as needed or to balance the load. Whenever possible, empty the waste holding tanks before travel at an approved dump station.
2. Visually inspect the running gear, including hitch and springs. Make sure the coupler latch is closed, and secure it with a locking pin.
3. Check wheel lug nut torque.

4. Check tire pressure.
5. Check safety chain hookup and break-away hookup.
6. Remove and store wheel blocks.
7. Raise hitch jack and store jack pad.
8. Check batteries.
9. Check running lights, brake lights, and turn signals.
10. Check LPG tanks. Refill if necessary. Turn tank valves OFF.
11. Lower TV antenna.
12. Lock refrigerator door.
13. Turn off water heater, furnace, range pilot, and water pump.
14. Secure free standing furniture.
15. Close doors and drawers.
16. Close windows, and lower and latch rock guard.
17. Retract steps and lock dead bolts in entry door.

*Emergency equipment checklist.* Remember to bring -

1. First aid kit.
2. Fire extinguisher.
3. Road emergency reflectors.
4. Flashlight with fresh batteries.

### ***Severe Weather Travel Safety Tips***

**Severe weather can be dangerous.** Always listen for local weather conditions and remember the following:

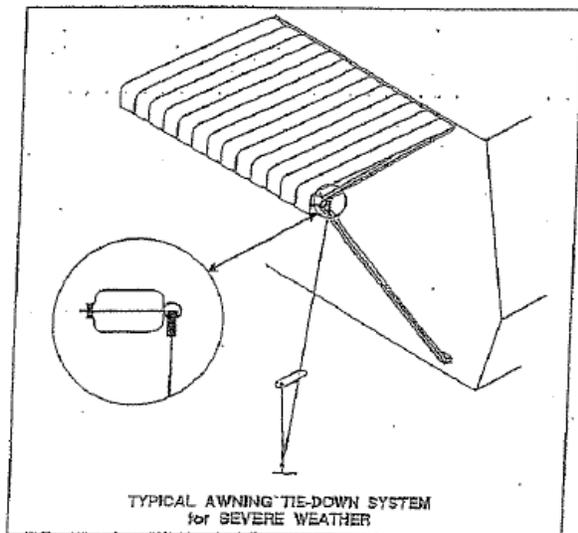
*Wind.* When local radio or an area has posted wind warnings, believe it! Strong winds may make the driver lose control of the vehicle and trailer. Slow down - a strong wind, mini tornado, or severe downdrafts can even overturn your trailer. Be aware that high velocity wind downdrafts, called "down-bursts" and "micro-bursts", are associated with thunderstorms. When parked, stay in your car or truck. Be careful to avoid flying objects carried by the wind.

### **WARNING - AWNINGS**

**Even with the awning partially extended and especially fully extended, a strong wind can lift the awning, or even pull the awning arm out of the sidewall of the trailer. A strong enough wind could even cause the awning to become a sail, lifting the trailer and tipping it over.**

**Also, a strong wind can bend the awning arms even if the awning is anchored to the ground. Keep the awning rolled up if there are strong winds in the area, at night, or when you are away from the trailer. In addition, rain or snow collecting in the awning can bend the roller and support mechanisms. A bent roller will not allow the awning to retract correctly or fully.**

**In light to moderate winds it makes good sense to tie both awning arms at the top with rope and stake the rope to the ground, as in the following illustration. But, always watch for sudden changes in weather and be ready to react appropriately.**



***Snow and heavy rain.*** Speed, snow and rain do not mix. When you go too fast, you have poor traction with the road surface. Sudden stops can jackknife your trailer even when the road is dry, but when it is wet, or snowing, extreme caution is necessary.

***Hail.*** During severe hailstorms, the force and size of hailstones can damage the metal skin or crack the fiberglass skin of your travel trailer and has been known to break glass windows. If you are traveling, seek shelter, such as an under pass or bridge. If you cannot avoid hail, stop or slow your vehicle so your forward speed does not increase the force of the hail hitting your vehicle and trailer.

***Lightning.*** Do not take a lightning storm for granted.

Listen for local weather broadcasts and avoid storms, if possible. If you are parked and there is a lightning storm in the area, remember the following:

1. Avoid standing outside in or near water, as water may attract lightning.
2. Avoid standing on or near high places, as they may attract lightning.
3. Avoid standing under tall trees, as they may attract lightning.
4. Your truck or car and the aluminum exterior of your trailer may also attract lightning. Avoid standing outside against them.

***Heat.*** When the weather is extremely hot it is important to open vents and windows to help reduce the temperature inside the trailer. During storage or even if just parked for a few hours, summer heat can bring the temperature inside the trailer up to 160°F or even higher. Intense heat can cause windows to crack, vinyl wall or ceiling coverings to bubble and wood to dry out and crack.

For more information, call the local office of the National Weather Bureau.

### ***Exterior Maintenance***

***Siding.*** The exterior sides of your trailer are made of fiberglass. To minimize weathering from the sun, moisture, and airborne pollutants, wash the exterior of the trailer monthly using mild soap and water (avoid abrasive cleaners). Wax the exterior at least once a year. Use a wax that is formulated for fiberglass on any fiberglass materials. Use an automotive wax-polish on all aluminum metal materials.

***Windows, Doors, Moldings, Locks.*** Vibration occurs through normal use of your recreational vehicle. Screws holding windows, doors, and moldings should be checked and tightened periodically. Inspect the sealants around windows, doors, and moldings every three months. See your dealer for approved sealants. Lubricate all locks with graphite once a year.

*Rubber Roof* Periodically wash the roof with soap and water.

**WARNING: Rubber roof material is slippery when wet.**

If a tear or puncture should occur, see your dealer for the appropriate repair kit. Use only compatible rubber roof material, adhesive, and sealant when repairing tears or punctures.

Inspect vents and moldings yearly for tight seals. Reseal around all roof vents, seams, and moldings once a year, or more often if needed. When resealing, use only compatible sealants. See your dealer for the proper sealants, or have your dealer perform this inspection and resealing work for you.

***Interior Maintenance***

*Floor Coverings.* Vinyl floor covering should be cleaned with a mild detergent.

Carpeting should be vacuumed after each trip. Stains can be removed with a good carpet type cleaner.

*Paneling.* The interior wall and ceiling paneling may be cleaned with a damp cloth.

*Table and Counter- Top Surfaces.* The counter surfaces are the finest high pressure laminate and will retain their original luster indefinitely. Clean with soapy warm water.

*Upholstery.* The hard wearing fabrics in your recreational vehicle should not be washed or dry cleaned. To remove spots or stains, use a foam type spot remover.

*Draperies.* The privacy drapes are not washable and should be dry cleaned only.

*Cabinet door maintenance.* Your wood cabinet door will maintain beauty and appearance if given a periodic cleaning. There are many products commonly used to protect and care for a finish such as furniture polish and lemon oils. The most effective material is a coat of furniture wax properly applied and buffed.

**WARNING**

Severe damage can occur to cabinet doors exposed to periods of high humidity. This can occur when a recreational vehicle is kept closed up for a long period in wet/humid weather. Wood swells and shrinks primarily across the grain with changes in humidity. A 5% change in the moisture content of the wood over a 20 inch wide oak cabinet door will increase the dimension of the center raised panel by 1/4". This will result in the door literally pushing itself apart. Since this damage is not the result of defective material or poor workmanship, it is not covered by our standard warranty.

***Winter Freeze Protection***

*In Use.* When using your trailer in cold weather, be sure there is adequate circulation of warm air from the furnace around all water pipes. This can be done by leaving the bath door and cabinet doors open. Also, keep a ceiling vent slightly open. Even in the coldest weather the moisture-laden interior air will escape keeping the unit more evenly heated and comfortable.

*In Storage.* Protecting the plumbing system from freezing is one of the most important areas of long term winter storage.

**Caution:** Draining the water system alone will not provide adequate freeze protection. A special non-toxic RV type anti-freeze must be used in the system to give your trailer adequate winter freeze protection.

Your dealer can supply you with an approved RV type non-toxic anti-freeze or can winterize your trailer for you.

**WARNING: Never use ethylene glycol automotive type anti-freeze or windshield washer anti-freeze in the trailer water system. These could be harmful or fatal if swallowed.**

***Anti-Freezing Procedure.*** To winterize your trailer yourself, follow these guidelines:

1. Thoroughly drain and rinse the toilet and graywater holding tanks at an approved dump station.
2. Open the drain on fresh water tank.
3. Open the drain on water heater tank.
4. Open the drain on cold and hot water lines.
5. Open all faucets, hot and cold.
6. Drain the shower/tub faucet diverter and shower flex hose.
7. Drain the outside wash station flex hose.
8. Turn the water pump on to remove water from the pump and lines; then turn the pump off.
9. Close all drains and faucets.
10. Turn water heater bypass valves to "bypass" position.
11. Put anti-freeze bypass valve on pump to bypass. Dip pickup line in non-toxic anti-freeze and proceed. Note: If pump is not equipped with bypass valve then disconnect suction line from water tank and dip in non-toxic anti-freeze. This can also be done by removing suction fitting from pump and adding short pickup line.
12. Turn water pump on.
13. Open each faucet, hot and cold. Let run until you see anti-freeze solution flowing continuously. Be sure city water line hose hook-up has been relieved.
14. Flush the toilet until anti-freeze solution flows continuously.
15. Turn water pump off.
16. Open a faucet to relieve pressure, then close.
17. Pour a cup of anti-freeze down each drain to protect the P-traps in sinks and shower drains.
18. Remove filter cartridge (if water purifier equipped).

### ***Winter and Summer Protection***

For extended storage of your RV, follow these general maintenance guidelines:

#### *Exterior:*

1. Perform all winter freeze protection procedures.
2. Turn off LP gas at the tank valve(s).
3. Disconnect the batteries. Remove and store in a cool dry place.
4. Cover all exterior vents - water heater, furnace, range hood, refrigerator. Remember to uncover before using appliances again.
5. Cover the tires to prevent cracking from the sun's rays.
6. Support the trailer on appropriate blocks, jack stands, or stabilizer jacks.
7. Cover the LPG regulator to prevent moisture or insects from entering the vent opening.
8. Cover the air conditioner shroud (if A/C equipped).
9. Close all windows and roof vents. Note - in high summer heat, you may want to open a window to prevent intense heat build-up inside the RV.
10. Always remove excessive snow accumulations from the roof as needed. In any locale where snow is a possibility, your RV should be protected from heavy snow loads accumulating on the roof.
11. Many RV owners buy a large plastic sheet that can completely cover a trailer when not in use. Most plastic covers have brass or reinforced holes in the sides so the cover can be tied down. A cover will protect and keep the RV clean.
12. When storing RV in winter, remember to open windows a little to get rid of excess humidity.

#### *Interior:*

1. Thoroughly clean the interior of the trailer.
  2. Remove all perishables.
  3. Clean the refrigerator and prop the door(s) open to allow circulation of air.
  4. Open closet and cabinet doors and drawers so air can circulate through them.
  5. Cover the windows on the inside with paper or foil to reduce upholstery, drapery, and floor covering fading from sunlight.
- Place two or three boxes of baking soda throughout the trailer to help absorb musty odor.

**NATIONAL HIGHWAY TRAFFIC SAFETY  
ADMINISTRATION (NHTSA) STATEMENT**

**If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, immediately notify the National Highway Traffic Safety Administration in addition to notifying Pacific Coachworks**

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

**Contact information for NHTSA :**

**NHTSA Headquarters  
400 Seventh Street, SW  
Washington, DC 20590**

**[www.NHTSA.gov](http://www.NHTSA.gov)**

**Hotline 1-888-327-4236: 8 AM to 10 PM Eastern Time Monday - Friday**

**Spanish speaking operators are available on the Hotline.**

**Contact information for Pacific Coachworks:**

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