SKYLINE CUSTOMER SATISFACTION

Skyline Customer Satisfaction is more than just a promise — We believe you deserve quality in every aspect of ownership. To ensure your continued satisfaction we’re dedicated to providing you with a quality product along with the very best service available in our industry. Skyline’s ‘Commitment of Excellence’ will be a source of pride and satisfaction for you.
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INTRODUCTION

We’re delighted that you chose to invest in a Skyline-built trailer. Your new travel trailer is designed and constructed to make each trip as safe and carefree as possible, and we won’t be satisfied until you’re completely happy with it.

Before your first trip, please take the time to read this manual and the appliance and other manuals that come with it. They will help you to get the most enjoyment out of your purchase.

All manuals should be kept available for easy reference.

NOTE: Some equipment and features described or shown in this manual may be optional on some Skyline models. The term “travel trailer” as used in this manual includes fifth wheel travel trailers unless otherwise indicated.
FULL ONE-YEAR WARRANTY

Manufacturing defects reported to Skyline within one year after original retail delivery of your new Travel Trailer by an authorized dealer will be corrected without charge and within reasonable times. Excluded are misuse (including lack of reasonable maintenance), minor imperfections, alterations, and dealer or owner improper transportation, installation or hookup.

This warranty gives you specific legal rights. You may have other rights which vary from state to state.

HOW TO OBTAIN SERVICE

Your continued satisfaction with your travel trailer is of utmost importance to Skyline. Please follow these steps for fast, efficient warranty service.

1. Inspect your travel trailer thoroughly to determine exactly what service is required.
2. Make a list of the required service. Be sure to sign it.
3. Call, write or visit your dealer.

If your request is not resolved to your satisfaction, make sure it is brought to the attention of the owner or general manager of the dealership. They will obtain factory assistance, if needed.

NOTE: Your appliances are warranted both by the appliance manufacturer and by Skyline. All appliances furnished with your travel trailer are “name-brands”, and the manufacturer may have a service facility near you. If so, you may be able to obtain even faster service by requesting service directly from the appliance manufacturer.

4. Factory: If your request has not been resolved to your satisfaction within a reasonable time, write (include the complete serial number of your travel trailer and your telephone number with a copy of your list of required service) and/or call the factory service representative below, or E-Mail us at, crelations@skylinecorp.com.

5. In those rare cases in which your dealer and the factory service representative have been unable to resolve the problem, write the Director of Consumer Relations, Skyline Corporation, P.O. Box 743, Elkhart, Indiana 46515-0743, or at crelations@skylinecorp.com. Include the complete serial number of your travel trailer, your telephone number and a complete list of the required manufacturer’s warranty service. Your request will receive prompt attention.

All service under your Skyline warranty will be performed without charge for either parts or labor. Whether service is performed by the dealer, the factory or others, Skyline accepts final responsibility for fulfillment of all its warranty obligations. Skyline will use its best efforts to see that all manufacturer’s warranty service is completed as expeditiously as possible.

Warranty service requests must be made within the warranty period and should ordinarily go to your dealer.
SKYLINE CARES ABOUT YOU

Skyline is a leader in the recreational vehicle industry because Skyline cares about its RV owners. Your investment in your Skyline-built travel trailer is protected by Skyline’s extensive six-point program:

1. **Product design and engineering.** Skyline maintains a complete staff of professional engineers and designers.

2. **Code construction.** Every travel trailer built by Skyline meets or exceeds code standards and features quality components including name brand appliances.

3. **Underwriters Laboratories.** The UL label on your trailer means that America’s most respected independent testing agency has reviewed the plans and inspected the travel trailer during production.

4. **Full one-year warranty.** It’s the no-nonsense guarantee printed in this manual. We urge you to read it.

5. **Full field service.** Skyline and its dealers are pledged to back up the warranty with prompt, courteous service that takes care of problems quickly and effectively.

6. **Financial strength.** Skyline is one of America’s soundest companies financially. You can rely on Skyline today — and tomorrow.

To further ensure your satisfaction:

1. Your travel trailer is inspected by your dealer after it leaves the factory and before it is delivered to you.

2. Upon taking delivery, have your dealer go over your travel trailer with you and instruct you concerning the appliances and other working parts. Be sure to ask your dealer to demonstrate the operation of any appliance or item of equipment which you do not understand.

3. As with your other vehicles, your travel trailer will require regular care and maintenance. This manual, together with the information provided by manufacturers of various components, provides a maintenance schedule that you can and should follow to ensure safe, trouble-free service from your trailer. Studying these instructions carefully and maintaining a good working knowledge of your trailer and how to care for it will help you enjoy it for many miles and many years.

If you should have a problem that is not resolved to your satisfaction by your local dealer, call or write the service manager at the factory nearest you. A list of factories can be found in this manual.

All of us at Skyline join with your dealer in wishing you every happiness in your new travel trailer.
YOUR TRAVEL TRAILER — A TRUE RECREATIONAL VEHICLE

Your travel trailer is a vacation home on wheels. It is carefully designed for every normal recreational use and activity including travel. It is not designed or intended to be used as long-term or permanent, full-time housing. Long-term or full-time occupancy may lead to premature deterioration and may, under the terms of the warranty, constitute misuse and reduce your warranty protection.

Please refer to page 31 of this manual and review the section relating to ventilation and condensation problems that may occur due to long-term occupancy.

WARNING: Never ride in your recreational vehicle.

Skyline strongly recommends that your recreational vehicle not be occupied while traveling. It is unsafe and illegal to ride in a travel trailer in all states and it is illegal to ride in a fifth wheel in most states. Your recreational vehicle is not equipped with seat belts or other highway safety provisions commonly required for passenger vehicles. Also in some emergency conditions cargo could shift suddenly resulting in injury or even death.

DO’S AND DON’TS FOR EQUIPMENT SELECTION AND PREPARATION FOR TOWING

• Be sure the tow vehicle is large enough for your trailer or fifth wheel and has the needed power and heavy duty running gear. It must be rated by its manufacturer to tow the gross weight, and to carry the hitch weight of the fully loaded trailer or fifth wheel.

  NOTE: Heavy duty commercial vehicles larger than one ton may be used only if an energy absorbing hitch, such as the Air Ride Hitch™, is used to couple the recreational vehicle to the tow vehicle. The rough ride of the larger trucks can cause structural problems to develop in recreational vehicles if an energy absorbing hitch is not utilized.

• Use a weight distributing hitch rated not less than the trailer Gross Vehicle Weight Rating (GVWR). Follow the tow vehicle and hitch manufacturers' instructions. Install the hitch ball as close as practical to the rear bumper to minimize rear overhang. (Does not apply to fifth wheels.)

• Do not overtighten the weight distributing hitch spring bars. Follow the instructions of the hitch manufacturer. When in doubt, use the less tight spring bar setting. (Does not apply to fifth wheels.)

• Use a sway control system. Install and adjust according to the instructions of the sway control manufacturer. (Does not apply to fifth wheels.)

• Do not add any type of adapter to the fifth wheel king pin, such as a goose neck adapter. Lengthening the fifth wheel hitch by means of an adapter will transfer greater loads to the chassis, possibly more than the chassis is designed for and could result in structural damage. Damage that is a direct result of the use of such an adapter is not covered by Skyline warranty.

• Use a brake controller that automatically applies the brakes in proportion to the tow vehicle brakes and also has a hand control for applying the trailer brakes only.

• Adjust the brake controller so that the brakes of the trailer come on as quickly as possible without sliding the tires of the loaded trailer during strong braking.

• Inflate the rear tires of the tow vehicle to their maximum cold pressure. (See the maximum pressure rating on the rear tire sidewalls.)

• Load heavy objects and goods as close to the trailer axle(s) as possible. Do not place heavy objects on the rear bumper or on the tongue.

Your trailer may be equipped with an optional spare tire mounted on the bumper. The bumper is designed only to carry the spare tire, approximately 65 pounds. If the trailer is not equipped with a spare, no load greater than 65 pounds shall be placed on the bumper.
The following label has been affixed to the bumper:

**CAUTION: THE BUMPER IS DESIGNED TO CARRY THE SPARE TIRE ONLY. DO NOT PLACE ADDITIONAL CARGO ON THE BUMPER.**

- If possible, totally fill or empty the water tank to minimize “sloshing,” which may affect towing stability.
- If possible, empty holding tanks to minimize “sloshing,” which may affect towing stability.
- Be careful to load the trailer to comply with the specified maximum and minimum tongue weight percentages. Weigh the fully loaded trailer from time to time to verify tongue weight.
- Adjust the hitch ball height so that the fully loaded trailer is level front-to-rear when attached to the fully loaded tow vehicle with hitch spring bars tightened. Do not permit the front to be lower than the rear on trailers with tandem axles. (Fifth wheel trailers are less sensitive to attitude, but should be towed near level to achieve best stability and avoid the possibility of overloading one of the trailer axles.)
- Do not exceed the trailer Gross Axle Weight Rating(s) (GAWR), or Gross Vehicle Weight Rating (GVWR). The fully loaded trailer should be weighed from time to time to verify that trailer GAWR(s) and GVWR are not exceeded, and that the loads on the right and left wheels are approximately equal. When weighing to determine axle loading, the trailer must be fully loaded and hitched to the fully loaded tow vehicle, with spring bars tightened. (Spring bars do not apply to fifth wheels.)
- Do not exceed the tow vehicle Gross Axle Weight Rating(s) (GAWR) or Gross Vehicle Weight Rating (GVWR). Weigh the tow vehicle from time to time to verify these loadings. When weighing, the tow vehicle must be fully loaded with goods, passengers, and driver, and must be hitched to the fully loaded trailer, with spring bars tightened. (Spring bars do not apply to fifth wheels.)

**TRAILER LOADING**

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

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

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

Trailers with a GVWR of 10,000 lbs. or less have a vehicle placard in the same location as the certification label described above. This placard provides tire and loading information. In addition, this placard will show a statement regarding maximum cargo capacity.
Cargo can be added to the vehicle, up to the maximum weight specified on the placard. The combined weight the cargo is provided as a single number. In any case, remember: The total weight of a fully loaded vehicle can not exceed the stated GVWR.

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

**STEPS FOR DETERMINING CORRECT LOAD LIMIT**

1. Locate the statement: "The weight of cargo should never exceed XXX kg or XXX lbs," on your vehicle's placard.

2. This figure equals the available amount of cargo and luggage load capacity.

3. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage load capacity.

**NOTE:** The steps for determining the correct load limit are only applicable to trailers with a GVWR of 10,000 lbs. or less. Trailers with a GVWR over 10,000 lbs. do not have a vehicle placard. For trailers with a GVWR over 10,000 lbs. cargo may be added until the total weight of the trailer is equal to or less than the GVWR of the trailer.

When loading your cargo, be sure it is distributed evenly to prevent overloading front to back and side to side. Heavy items should be placed low and as close to the axle positions as reasonable. Too many items on one side may overload a tire.

All objects should be held securely in place. Loose items can cause interior damage and erratic trailer movements. They can even be a hazard to others if they fall out. Load shifts can affect driving and handling enough to cause serious, unexpected danger. Inspect tie-downs and fastenings, as well as the load at regular intervals every hour or two, depending on roads, curves, hills, and speed. The first check should be made within a half hour after the trip is started or after the first 25 miles, since some initial settling is likely.

If you are going on a long trip, take a “shakedown cruise” of a few miles the weekend before you leave. This will test your load, safety equipment, hitch, and might reveal things you missed or forgot. By getting everything in order before you leave home, you can prevent delays and annoyances that could take the fun out of your trip.

Many owners place luggage, camping equipment, bicycles, and other items in the travel trailer. The weight of everything put on or in a trailer, whether temporarily or permanently built-in, must be included in figuring the total load.

**CAUTION: OVERLOADING OR IMBALANCED LOADING OF YOUR TRAVEL TRAILER CAN AFFECT HANDLING OR CAUSE AN ACCIDENT THAT COULD RESULT IN SERIOUS INJURY OR DEATH.**
How Overloading Affects Your RV and Tires

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

If insufficient weight is placed on the hitch, the trailer will tend to move from side to side, or to “fishtail”, which can be dangerous. Towed trailers are designed to have proper weight on the hitch for balance when the trailer floor is level.

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

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

It is the air pressure that enables a tire to support the load, so proper inflation is critical. Since RVs can be configured and loaded in many ways, air pressure must be determined from actual loads (determined by weighing) and taken from the load and inflation tables provided by the tire manufacturer. These air pressures may differ from those found on the certification label. However, they should never exceed the tire limitation for load or air pressure. If you discover that your tires cannot support the actual weights, the load will need to be lightened.

Please follow procedures on the “Caution” label and reference the following trailer weight information label, which are both located on your kitchen overhead door, to determine actual weight of the loaded trailer.

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**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) AND FULL PROPANE WEIGHT.

CARGO CARRYING CAPACITY (CCC) COMPUTATION

GVWR.......................................................... POUNDS

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.
The following definitions have been provided for reference:

Gross Axle Weight Rating (GAWR) means the value specified by the vehicle manufacturer as the load-carrying capacity of a single axle system, as measured at the tire / ground interfaces.

Gross Vehicle Weight Rating (GVWR) means the maximum permissible weight of this trailer when fully loaded. It includes all weight at the trailer axle(s) and tongue or pin. The GVWR is equal to or greater than the sum of the Unloaded Vehicle Weight (UVW) plus the Cargo Carrying Capacity (CCC).

Dry or Unloaded Vehicle Weight (UVW) means the weight of this trailer as built at the factory. It includes all weight at the trailer axle(s) and tongue or pin. If applicable, it includes full generator fuel, engine oil, and coolants. The UVW does not include cargo, fresh water, Propane, or dealer installed accessories.

Cargo Carrying Capacity (CCC) 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) means the maximum permissible weight of personal belongings, food, fresh water, Propane, tools, and dealer installed accessories. (CCC is equal or less than GVWR minus UVW.)

The total weight, including liquids, groceries, clothing, etc. must not exceed the Gross Vehicle Weight Rating (GVWR) stated on the label on the left front of your trailer. The total load on the front and rear wheels must not exceed the respective Gross Axle Weight Rating (GAWR) shown on the label.

1. The total trailer weight (dry weight of standard unit plus options added plus water stored plus liquid wastes in holding tanks plus all cargo) must not exceed the GVWR stated on the label of your trailer.

2. The total load of your fully loaded trailer on the tires when connected to the towing vehicle must not exceed the combined total Gross Axle Weight Rating (GAWR). The GAWR is also stated on the tag on the front left side of your trailer.

3. Establish the weight of your fully loaded trailer by weighing at a public scale. Contact the police department for the location of the nearest one. Weigh separately:
   a. The load on the front jack.
   b. The total weight on the wheels and jack when disconnected from the towing vehicle.
   c. The weight on the wheels when connected to the towing vehicle.

4. Do not permit tongue weight (“3-a” above) to exceed your hitch manufacturer’s recommendation. It should be eight to 15 percent of the total travel trailer weight.

5. Weight “3-b” must not exceed the GVWR.

6. Weight “3-c” must not exceed the combined total GAWR.

7. Equalize side to side loading. Store heavy objects on or near the floor.
8. Avoid towing with waste holding tank(s) full or partially full. If unavoidable, drive slowly until one or both tanks can be dumped.

9. Keep water tank either completely full or empty when towing to avoid the shifting of weight of a partially filled tank.

**For Fifth Wheel Travel Trailers**

1. Use a fifth wheel hitch for a two-inch SAEJ 700 king pin; an Atwood (or equivalent) 25,000 pound 2-5/16 inch diameter folding ball plate for units factory equipped with the Atwood 25,000 pound GVW gooseneck coupler; and a truck capable of towing the trailer GVWR.

2. The total of your fully loaded trailer on the tires when connected to the towing vehicle must not exceed the combined total Gross Axle Weight Rating (GAWR). The GAWR is stated on the tag on the front left side of your trailer.

3. Establish the weight of your fully loaded trailer by weighing it at a public scale. Contact the police department for the location of the nearest one. Weigh separately:
   a. The load on your truck rear wheels when connected to your trailer.
   b. The total weight on the wheels and jacks when disconnected from the towing vehicle.
   c. The weight on the wheels when connected to the towing vehicle.

4. Do not permit the rear axle load ("3-a" above) to exceed your truck manufacturer’s GAWR for the rear axle or your fifth wheel manufacturer’s recommendations.

5. Weight “3-b” must not exceed your trailer GVWR.

6. Weight “3-c” must not exceed your trailer combined total GAWR.

7. The weight on the hitch, derived from subtracting the weight on the wheels (3c) from the total weight of the fifth wheel (3b), should be between 15 - 25% of the total weight (3b) for good towing.

See your dealer if you have any questions on these rules and other towing tips.

These procedures should be repeated whenever there is any change in vehicles or loading to ensure that you do not exceed the ratings.

**STORAGE**

The storage facilities in your trailer have been designed to remain secure while in motion. Exterior compartments have key operated locks. Drawers rest in small notches or dents when closed; to open lift slightly to clear the dent, then pull open. When storing articles:

- Always keep tools and equipment stored in areas where they will not shift while traveling.

- Wherever possible, place heavy articles in storage compartments which are low and near the axles for better weight distribution.
• Pack articles carefully in the storage compartments to minimize shifting. If necessary, use straps to prevent movement.

• Be sure liquid containers are capped and cannot tip or spill. Secure all glass containers and dishes before traveling.

• Secure all free standing furniture.

• Exterior storage compartments may not be watertight in all climate conditions. Carry any articles which could be damaged by water inside the trailer.

**WARNING: OUTSIDE STORAGE COMPARTMENTS ARE NOT SEALED.** They are vented enclosures, and are accessible from inside the trailer. Therefore, **DO NOT STORE FLAMMABLE, VOLATILE LIQUIDS, HAZARDOUS CHEMICALS OR EQUIPMENT IN THESE AREAS.**

**SPECIAL TRANSPORTATION PROVISIONS**

If your recreational vehicle has been equipped with an entrance door greater than 36 inches in width and an access ramp for that door, only then can your recreational vehicle be used to store motorized vehicles or equipment.

**WARNING: ONLY TRAILERS CONSISTING OF BOTH A DOOR (WIDTH GREATER THAN 36 INCHES) AND AN ACCESS RAMP ARE CAPABLE OF TRANSPORTING OR STORING MOTORIZED VEHICLES OR EQUIPMENT.**

**DANGER: ANY MOTORIZED VEHICLE OR ANY MOTORIZED EQUIPMENT POWERED WITH FLAMMABLE LIQUID CAN CAUSE FIRE, EXPLOSION, OR ASPHYXIATION IF STORED OR TRANSPORTED WITHIN THE RECREATIONAL VEHICLE.**

The following steps should be taken to aid in reducing the risks associated with transporting, storing, or cohabitation with motorized equipment and vehicles:

1. Do not allow passengers to ride inside the vehicle storage area while vehicles are present.

2. Doors and windows in walls of separation are to be closed while the vehicles are present.

3. Run fuel out of engine of stored vehicles after shutting off fuel at the tank.

4. Do not store or transport motor fuel inside this vehicle.

5. Ventilate the interior of the trailer to reduce the risk of fire, explosion, or asphyxiation.
6. Do not operate gas appliances, pilot lights, or electrical equipment when motorized vehicles or motorized equipment are inside the vehicle. 

**FAILURE TO COMPLY COULD RESULT IN AN INCREASED RISK OF FIRE, EXPLOSION OR ASPHYXIATION.**

**WARNING: IT IS NOT SAFE COHABITING IN THE INTERNAL COMBUSTION ENGINE VEHICLE STORAGE AREA WHILE VEHICLES ARE PRESENT. FAILURE TO FOLLOW THESE IMPORTANT PRECAUTIONS MAY RESULT IN SERIOUS INJURY OR DEATH.**

7. Load and store your motorized vehicles and equipment according to the trailer loading and trailer storage sections in this manual.

**WARNING: DO NOT EXCEED THE TRAILER GVWR WHEN LOADING YOUR TRAILER.**

8. During transit, secure motorized vehicles and motorized equipment so that items do not move while in transit.

**NOTE:** Skyline cannot provide instructions for securing every type of vehicle or equipment that might be transported. In many cases the vehicle manufacturer or selling dealer may be able to provide tie-down instructions. For most vehicles, it is imperative the front wheels be secured or blocked in such a manner that prevents them from turning or moving in any direction, in addition to tying down the rest of the vehicle. You are responsible to make sure the vehicles or equipment you transport is properly secured.

9. Remove carpet from section where fueled vehicles or motorized equipment will be stored.

10. Disconnect 12-volt and 120-volt wiring when transporting motorized equipment by use of the 12-volt cutoff switch and 120-volt circuit breakers.

**HITCHING UP**

Hitching your trailer to the tow vehicle will become routine with experience. Make it a habit to examine all hitch components before hitching the trailer. If you have a conventional ball hitch, check for cracked or bent parts, cracked welds, deformed or stripped bolts. Inspect the spring bars and chains. Be sure the ball is tight and well lubricated. Check the trailer tongue for cracks. Be sure the ball locking device works freely. Inspect the safety chains. If you find a defect in any hitch component, correct it before towing the trailer.

If you have a fifth wheel trailer, check all truck-mounted hitch components. Check for worn, cracked, or bent parts. Be sure the locking device works properly. Inspect the pin box assembly on the trailer. Check the king pin. If you find any defective components, repair or replace them before towing. Be sure all moving parts of the hitch are well lubricated.

**HITCHING PROCEDURE FOR CONVENTIONAL TRAILERS**

Before attempting to hitch up your trailer, read the instructions provided by the manufacturer of the hitch. Some Skyline trailers accept a 2 inch ball, while others accept a 2-5/16 inch ball. The following instructions apply in most cases. If the instructions provided with your hitch are different from these instructions, follow those of the hitch manufacturer:

1. Turn the tongue jack crank clockwise. This will raise the tongue and coupler. Raise the tongue sufficiently to clear the hitch ball on the tow vehicle.
2. Back the tow vehicle until the hitch ball is under the hitch ball socket. If you are working alone, a backing aid mirror may be helpful.

3. The coupler latch locking lever on the tongue should be fully open. Lower the tongue jack until the ball is firmly seated in the socket. Close the coupler latch and secure it with a locking pin or bolt.

4. Raise the tow vehicle and trailer with the tongue jack high enough to allow room to install the hitch spring bars.

5. Attach the spring bars according to the hitch manufacturer’s instructions.

   WARNING: FOLLOW THE INSTRUCTIONS OF THE HITCH MANUFACTURER FOR ADJUSTING THE WEIGHT DISTRIBUTING HITCH. OVERTIGHTENING OF HITCH SPRING BARS WILL REDUCE CORNERING AND STOPPING ABILITY AS WELL AS TOWING STABILITY.

6. After adjusting the spring bars, raise the jack to its highest level. Note that the trailer must be relatively level front to back. Tilt in either direction must be kept to an absolute minimum. Having the front lower than the rear reduces towing stability on tandem axle trailers.

7. Install the sway control system according to the manufacturer’s instructions.

8. Connect all safety chains.

   WARNING: NEVER ATTACH SAFETY CHAINS TO THE HITCH BALL OR ANY REMOVABLE PART OF THE HITCH.

Safety chains are extremely important, and should be added to your trailer to protect your investment as well as other people’s lives and property. As a trailer owner, it is your responsibility to be familiar with these devices and their correct use. The hitch on your tow vehicle must be equipped with two chain attachment eyes, on each side of the vehicle’s centerline. Install the chains by threading each one through its attachment eye and hooking it back on itself. Adjust each chain length so that it is as short as possible, but still permits full “jackknife” turns without becoming tight. Both chains should be the same length and crossed under the trailer’s tongue to hold the tongue off the ground if the trailer accidentally becomes uncoupled.

9. Connect the breakaway switch lanyard.

   WARNING: DO NOT CONNECT THE BREAKAWAY SWITCH LANYARD TO THE HITCH BALL OR ANY REMOVABLE PART OF THE HITCH.


11. Check stop lights, turn lights, running lights, and electric brakes before driving off. See ELECTRICAL SYSTEM section in this manual for details of the electrical system and wiring.

12. Reverse the procedure for unhitching, placing blocks at the front and rear of the trailer tires prior to uncoupling the trailer from the tow vehicle to ensure the trailer does not roll away when the coupling is released.
HITCHING PROCEDURE FOR FIFTH WHEEL TRAILERS

1. Raise or lower the front of the trailer so that the king pin height matches that of the coupler assembly in the truck.

2. Open the coupler locking device so the pin will engage the hitch plate jaws.

3. Drop the truck tailgate.

4. Slowly back the truck keeping the king pin and coupler aligned. Fully engage the king pin and coupler.

5. Close the locking device. Engage the safety latch.

6. Close the truck tailgate.

7. Raise the fifth wheel jacks.

8. Plug in the 12-volt connector.

9. Connect the breakaway switch lanyard.

WARNING: DO NOT CONNECT THE BREAKAWAY SWITCH LANYARD TO ANY REMOVABLE PART OF THE HITCH.

10. Run an operational check of stop lights, turn lights, running lights, and electrical brakes before driving off. See “ELECTRICAL SYSTEM” section of this manual for details of the electrical system and wiring.

TIRES

Safety First—Basic Tire Maintenance

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

Finding Your Vehicle's Recommended Tire Pressure and Load Limits

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

- Recommended tire size
- Recommended tire inflation pressure
- Vehicle capacity weight (VCW-the maximum occupant and cargo weight a vehicle is designed to carry)
- Front and rear gross axle weight ratings (GAWR-the maximum weight the axle systems are designed to carry).
Both placards and certification labels are permanently attached to the trailer on the forward half of the left side, and are easily readable from outside the vehicle without moving any part of the vehicle.

**Understanding Tire Pressure and Load Limits**

Tire inflation pressure is the level of air in the tire that provides it with load-carrying capacity and affects the overall performance of the vehicle. The tire inflation pressure is a number that indicates the amount of air pressure—measured in pounds per square inch (psi)—a tire requires to be properly inflated.

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

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

**Checking Tire Pressure**

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

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

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

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

**Steps for Maintaining Proper Tire Pressure**

- **Step 1:** Locate the recommended tire pressure on the vehicle's tire information placard, or certification label.
- **Step 2:** Record the tire pressure of all tires.
• Step 3: If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure.

• Step 4: If the tire pressure is too low, note the difference between the measured tire pressure and the correct tire pressure. These "missing" pounds of pressure are what you will need to add.

• Step 5: At a service station, add the missing pounds of air pressure to each tire that is underinflated.

• Step 6: Check all the tires to make sure they have the same air pressure (except in cases in which the front and rear tires are supposed to have different amounts of pressure).

If you have been driving your vehicle and think that a tire is underinflated, fill it to the recommended cold inflation pressure indicated on your vehicle's tire information placard or certification label. While your tire may still be slightly underinflated due to the extra pounds of pressure in the warm tire, it is safer to drive with air pressure that is slightly lower than the vehicle manufacturer's recommended cold inflation pressure than to drive with a significantly underinflated tire. Since this is a temporary fix, don't forget to recheck and adjust the tire's pressure when you can obtain a cold reading.

Tire Size

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

Tire Tread

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

Tire Repair

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

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

Information on Passenger Vehicle Tires

Please refer to the diagram below.

P - The "P" indicates the tier is for passenger vehicles.

NOTE: Passenger car tires are not recommended for use on trailers, because the capacity ratings are not marked on the sidewalls of these tires. In the event a passenger car tire is used, the capacity must be derated by 10%.

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

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

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

Next number - This two-digit number is the wheel or rim diameter in inches. If you change your wheel size, you will have to purchase new tires to match the new wheel diameter.
**Next number** - This two- or three-digit number is the tire's load index. It is a measurement of how much weight each tire can support. Note: You may not find this information on all tires because it is not required by law.

**M+S** - the "M+S" or "M/S" indicates that the tire has some mud and snow capability. Most radial tires have these markings.

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

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

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

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

**Additional Information on Light Truck Tires**

Please refer to the following diagram.
Tires for light trucks have other marking besides those found on the sidewalls of passenger tires.

LT - the "LT" indicates the tire is for light trucks or trailers.

ST - An "ST" is an indication the tire is for trailer use only.

Max. Load Dual kg (lbs) at kPa (psi) Cold - This information indicates the maximum load and tire pressure when the tire is used as a dual; that is, when four tires are put on each rear axle (a total of six or more tires on the vehicle).

Max. Load Single kg (lbs) at kPa (psi) Cold - This information indicates the maximum load and tire pressure when the tire is used as a single.

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

Tire Safety Tips

Preventing Tire Damage

- Slow down if you have to go over a pothole or other object in the road.
- Do not run over curbs or other foreign objects in the roadway, and try not to strike the curb when parking.

Tire Safety Checklist

- Check tire pressure regularly (at least once a month), including the spare.
- Inspect tires for uneven wear patterns on the tread, cracks, foreign objects, or other signs of wear or trauma.
- Remove bits of glass and foreign objects wedged in the tread.
- Make sure your tire valves have valve caps.
- Check tire pressure before going on a long trip.
- Do not overload your vehicle. Check the Tire Information and Loading Placard, Federal certification label or Owner's Manual for the maximum recommended load for the vehicle.

GLOSSARY OF TIRE TERMINOLOGY

Accessory weight - The combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

Bead - the part of the tire that is made of steel wires, wrapped or reinforced by ply cords and that is shaped to fit the rim.
Bead separation - This is the breakdown of the bond between components in the bead.

Bias ply tire - A pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90 degrees to the centerline of the tread.

Carcass - The tire structure, except tread and sidewall rubber which, when inflated, bears the load.

Chunking - The breaking away of pieces of the tread or sidewall.

Cold inflation pressure - The pressure in the tire before you drive.

Cord - The strands forming the plies in the tire.

Cord separation - The parting of cords from adjacent rubber compounds.

Cracking - Any parting within the tread, sidewall, or inner liner of the tire extending to cord material.

CT - A pneumatic tire with an inverted flange tire and rim system in which the rim is designed with rim flanges pointed radially inward and the tire is designed to fit on the underside of the rim in a manner that encloses the rim flanges inside the air cavity of the tire.

Curb weight - The weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

Extra load tire - A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Groove - The space between two adjacent treads ribs.

Gross Vehicle Weight Rating (GVWR) - The maximum permissible weight of this fully loaded trailer.

Gross Axle Weight rating (GAWR) - The value specified as the load carrying capacity of a single axle system, as measured at the tire-ground interfaces.

Hitch Weight - The vertical trailer load supported by the hitch ball.

Innerliner - The layer(s) forming the inside surface of a tubeless tire that contains the inflating medium within the tire.

Innerliner separation - The parting of the innerliner from cord material in the carcass.

Intended outboard sidewall - The sidewall that contains a white-wall, bears white lettering or bears manufacturer, brand, and/or model name molding that is higher or deeper than the same molding on the other sidewall of the tire or the outward facing sidewall of an asymmetrical tire that has a particular side that must always face outward when mounted on a vehicle.
Light truck (LT) tire - A tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles.

Load rating - The maximum load that a tire is rated to carry for a given inflation pressure.

Maximum load rating - The load rating for a tire at the maximum permissible inflation pressure for that tire.

Maximum permissible inflation pressure - The maximum cold inflation pressure to which a tire may be inflated.

Maximum loaded vehicle weight - The sum of curb weight, accessory weight, vehicle capacity weight, and production options weight.

Measuring rim - The rim on which a tire is fitted for physical dimension requirements.

Non-pneumatic rim - A mechanical device which, when a non-pneumatic tire assembly incorporates a wheel, supports the tire, and attaches, either integrally or separably, to the wheel center member and upon which the tire is attached.

Non-pneumatic spare tire assembly - A non-pneumatic tire assembly intended for temporary use in place of one of the pneumatic tires and rims that are fitted to a passenger car in compliance with the requirements of this standard.

Non-pneumatic tire - A mechanical device which transmits, either directly or through a wheel or wheel center member, the vertical load and tractive forces from the roadway to the vehicle, generates the tractive forces that provide the directional control of the vehicle and does not rely on the containment of any gas or fluid for providing those functions.

Non-pneumatic tire assembly - A non-pneumatic tire, alone or in combination with a wheel or wheel center member, which can be mounted on a vehicle.

Normal occupant weight - This means 68 kilograms (150 lbs.) times the number of occupants specified in the second column of Table I of 49 CFR 571.110.

Occupant distribution - The distribution of occupants in a vehicle as specified in the third column of Table I of 49 CFR 571.110.

Open splice - Any parting at any junction of tread, sidewall, or innerliner that extends to cord material.

Outer diameter - The overall diameter of an inflated new tire.

Overall width - The linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

Pin Weight - The vertical trailer load supported by the king pin of a fifth wheel hitch.

Ply - A layer of rubber-coated parallel cords.
Ply separation - A parting of rubber compound between adjacent plies.

Pneumatic tire - A mechanical device made of rubber, chemicals, fabric and steel or other materials, that when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

Production options weight - the combined weight of those installed regular production options weighing over 2.3 kilograms (5 lbs.) in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

Radial ply tire - A pneumatic tire in which the ply cords that extend to the beads are laid at substantially 90 degrees to the centerline of the tread.

Recommended inflation pressure - This is the inflation pressure provided by the vehicle manufacturer on the Tire Information label and on the Certification / VIN tag.

Reinforced tire - A tire designed to operate at higher loads and at higher inflation pressures than the corresponding standard tire.

Rim - A metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

Rim diameter - This means the nominal diameter of the bead seat.

Rim size designation - This means the rim diameter and width.

Rim type designation - This means the industry of manufacturer's designation for a rim by style or code.

Rim width - This means the nominal distance between rim flanges.

Section width - The linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

Sidewall - That portion of a tire between the tread and bead.

Sidewall separation - That parting of the rubber compound from the cord material in the sidewall.

Test rim - The rim on which a tire is fitted for testing, and may be any rim listed as appropriate for use with that tire.

Tread - That portion of a tire that comes into contact with the road.

Tread rib - A tread section running circumferentially around a tire.

Tread separation - Pulling away of the tread from the tire carcass.

Treadwear indicators (TWI) - The projections within the principal grooves designed to give a visual indication of the degrees of wear of the tread.
**Vehicle capacity weight** - The rated cargo and luggage load plus 68 kilograms (150 lbs.) times the vehicle's designated seating capacity.

**Vehicle maximum load on the tire** - The load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

**Vehicle normal load on the tire** - The load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I or CRF 49 571.110) and dividing by 2.

**Weather side** - The surface area of the rim not covered by the inflated tire.

**Wheel center member** - In the case of a non-pneumatic tire assembly incorporating a wheel, a mechanical device which attaches, either integrally or separable, to the non-pneumatic rim and provides the connection between the non-pneumatic rim and the vehicle; or, in the case of a non-pneumatic tire assembly not incorporating a wheel, a mechanical device which attaches, either integrally or separably, to the non-pneumatic tire and provides the connection between tire and the vehicle.

**Wheel-holding fixture** - The fixture used to hold the wheel and tire assembly securely during testing.
Figure 1 TYPICAL WHEEL CHOCKS

Figure 2 TYPICAL SCISSOR JACK

Figure 3 NEVER USE BUMPER JACKS
CHANGING A TIRE

1. Turn on the tow vehicle’s hazard warning flashers.

2. Set up flares or warning lights.

3. Chock the opposite tire and unhitch the trailer from the tow vehicle, or reduce tension on equalizer bars, if applicable. (See Figure 1)

4. DO NOT use a bumper jack; it may damage the sidewalls or floorboard of the trailer. (See Figure 3)

5. Place scissors-type or hydraulic jack on a block of wood, directly UNDER THE FRAME, close to the tire you intend to change. (See Figure 2)

6. Raise the jack to take some of the weight off the tire.

7. Loosen the lug nuts.

8. Raise the jack until the tire clears the ground.

9. Remove the lug nuts, pull off the old tire, and put the spare on the hub.

10. Replace and tighten the nuts.

11. Lower the jack until the tire just touches the ground.

12. Tighten the lug nuts as specified below.
   - 14" Wheel — 85 ft-lbs.
   - 15" Wheel — 120 ft-lbs.
   - 16" — 6 Lug Wheel — 120 ft-lbs.
   - 16" — 8 Lug Wheel — 130 ft-lbs.
   - 16" — 8 Lug Aluminum Wheel — 180 ft-lbs.

**WARNING:** WHEEL LUGS MUST BE PROPERLY TORQUED. Tighten all lug nuts before first movement and at 10, 25, and 50 miles. **CAUTION:** UNDERTIGHTENING OR OVERTIGHTENING MAY CAUSE LOSS OR DAMAGE TO WHEELS, HUBS, OR BRAKING CAPABILITY, WHICH COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH. Please refer to the instruction and maintenance manual for running gear.

13. Lower and remove the jack.

14. BE SURE TO STOP AT THE NEAREST SERVICE FACILITY AND HAVE THE TORQUE CHECKED.
THE BRAKING SYSTEM

The electric brakes on your trailer are operated by 12-volt current from the tow vehicle. The brakes have been factory-calibrated for smooth, positive response. During the break-in period, brakes may squeak. This is normal, and will cease after a few miles.

BRAKE SYSTEM COMPONENTS

1. **Tow Vehicle Battery.** This is the primary power source for the trailer braking system. The connection is made at the positive post of the battery, or at the tow vehicle starter solenoid battery terminal.

2. **Brake Controller.** The electric trailer brakes are automatically applied by the brake controller, which is usually mounted within easy reach of the tow vehicle driver. Some controllers are connected to the tow vehicle’s hydraulic brake system, and are actuated when tow vehicle brakes are applied. Most experienced drivers prefer to have the trailer brakes set to engage slightly before those of the tow vehicle.

   This is particularly helpful during rainy weather or slippery conditions. If the tow vehicle brakes first, the trailer will have a tendency to push the tow vehicle or possibly “jackknife.” Lag time can be adjusted by turning the brake controller knob according to the instructions provided with the controller. The new setting will be retained until a new adjustment is made. Brake controllers usually have a manual feature, which allows you to apply the trailer brakes independently of the tow vehicle brakes. Connect the controller to the brakes with 12-gauge stranded wire.
WARNING: DO NOT INSTALL A FUSE IN THE CIRCUIT BETWEEN THE TOW VEHICLE BATTERY AND AN ELECTRIC OR ELECTRONIC BRAKE CONTROLLER. A BLOWN FUSE WOULD CAUSE THE CONTROLLER TO CEASE FUNCTIONING BOTH AUTOMATICALLY AND MANUALLY, CAUSING LOSS OF TRAILER BRAKING WITH NO ADVANCE WARNING. PROVIDE CIRCUIT PROTECTION PER INSTRUCTIONS PROVIDED BY THE MANUFACTURER OF THE BRAKE CONTROLLER.

3. **Connector Plug.** The seven-pin connector on the trailer hitch transfers electrical power from the tow vehicle battery to the trailer brakes, exterior lighting system, and battery. Keep the plug clean, tight, and protected from the elements. Inspect it carefully every time you hitch up. Be certain that your dealer has run a “charge line” from the alternator on the tow vehicle to terminal number four on the trailer’s 12-volt connector. This wire should be 10-gauge stranded, insulated copper. A 30 amp circuit protector should be installed near the alternator connection. This charge line will keep the trailer battery charged as you travel.

Because the wiring systems of many tow vehicles use separate wires for turn signals and stop lights, you may need to purchase a taillight converter. This converter will combine these wires so that they can be connected to the trailer lighting system. Most factory-installed towing packages include a trailer wire harness that will perform this function if required. If you tow more than one type of trailer, you also may need to purchase an adapter to accommodate differences in the wiring systems.

4. **Breakaway Switch.** The breakaway switch is located on the trailer tongue. It has a steel cable (lanyard) fastened to it which will reach to the frame of the tow vehicle. This device is one of the most vital components on your trailer’s braking system. It automatically applies the trailer brakes if the tow vehicle and trailer become uncoupled while in motion. The breakaway switch operates when a pull pin linked by the cable to the tow vehicle is separated from the switch. When the switch closes, power for brake application is supplied by the on-board trailer battery. The steel lanyard must be anchored to the tow vehicle when the trailer is hitched up. Secure this cable loop to the permanent frame of the tow vehicle, or a part of the hitch that is non-removable. DO NOT FASTEN THE BREAKAWAY SWITCH LANYARD TO THE HITCH BALL OR ANY OTHER REMOVABLE PART OF THE HITCH.

Test breakaway switch operation before each trip, as follows:

a. Hitch the trailer to the tow vehicle.

b. Pull out the breaker switch actuating pin.

c. Test the breaker by attempting to drive away. If the breakaway switch is functioning properly, the trailer brakes will be activated.

d. If the brakes are not activated, check to make sure that the trailer battery is connected and fully charged, and the trailer brakes are properly adjusted.

e. If the trailer brakes do not operate after making these checks, see your dealer for repair.

f. Reinsert the breakaway switch actuating pin before towing the trailer.

**WARNING: DO NOT TOW A TRAILER WITH A MALFUNCTIONING BREAKAWAY SWITCH. DO NOT LEAVE THE PULL PIN OUT OF THE BREAKAWAY SWITCH FOR MORE THAN A FEW MINUTES, OR THE BATTERY WILL BE DRAINED. DO NOT USE THE BREAKAWAY SWITCH FOR A PARKING BRAKE.**
5. **Trailer Brakes.** Your trailer’s brakes are actuated by electrical energy, which is converted to mechanical energy to provide the braking power for smooth, safe stops. The greater the electrical current from the brake controller, the greater the braking force applied to the trailer brake drums.

6. **Grounding.** The electrical circuit that operates your trailer brakes can be completed only by proper grounding back to the tow vehicle. A POOR GROUND CIRCUIT FROM THE BRAKES TO THE TOW VEHICLE BATTERY CAN BE AS DETRIMENTAL TO EFFICIENT BRAKING AS A POOR PRIMARY CIRCUIT FROM THE BATTERY TO THE BRAKES. Do not rely on the hitch ball/coupler for a good ground. Run a ground in the 12 volt connector to the tow vehicle battery negative post, or the tow vehicle frame. The ground conductor must be the same wire size as the charge line.

**BRAKE INSPECTION**

Inspect all external braking system components before moving your trailer. Also, inspect all wiring connections, and test the breakaway switch as outlined above. Inspect the brake drums and internal components each time the wheel bearings are lubricated. (See MAINTENANCE CHART at the back of this manual.) The magnets and linings should not show excessive or uneven wear. The magnets should move freely in and out on their mounts. After replacing the hubs on the axle, adjust the brakes as outlined below.

**BRAKE ADJUSTMENT**

Brakes should be adjusted after the first 200 miles of operation and every 3,000 miles thereafter. Adjust the brakes as follows using a standard automotive brake tool:

1. Remove the rubber plug from the adjustment hole at the base of the brake drum backing plate.

2. Raise the wheel off the ground. Place the jack under the axle only.

3. With the adjusting tool, turn the adjusting screw while spinning the wheel. When the wheel begins to drag heavily, back off the screw just enough for the wheel to spin freely.

4. Replace the adjustment hole plug. Lower the wheel, remove the jack, and repeat the sequence for the other wheels.

**BRAKING TIPS**

1. Never use the trailer brakes alone for extended periods. They were designed to stop the trailer, not the tow vehicle. Such use places excessive loads on the brakes causing overheating, fading, and premature wear of magnets, brake shoe linings, and drums.
2. Never use the tow vehicle brakes alone. The added weight of your trailer more than doubles the load placed on the vehicle’s brakes, with the same results as using trailer brakes alone. Driving control is also severely affected when tow vehicle brakes are used alone, due to the force of the trailer pushing against the tow vehicle. This is especially true on slippery pavement or loose gravel, and “jackknifing” can occur.

3. Always use the automatic brake controller. The synchronized braking system enables you to drive in a safe manner with both hands on the steering wheel. If the brake controller is properly adjusted, there will be a slight “lead” on the trailer brakes. This braking resistance, combined with the tow vehicle’s engine pulling power, will help keep the two vehicles correctly aligned and help bring them to a safe, straight stop.

**TRAILER DRIVING TECHNIQUES**

**TOWING SPEED**

Reasonable speed is probably the greatest factor in safe and pleasant towing. Towing stability is increased and emergency stopping distances are reduced with a reduction in speed. Reduce your driving speed substantially while towing. Slow down for grades and turns. Towing stability is reduced downhill and around bends. With experience, you will develop the special driving skills needed for safe trailer towing.

**WARNING:** TOW AT MODERATE SPEEDS ALLOWING FOR ADVERSE HIGHWAY AND WIND CONDITIONS. INCREASED SPEED REDUCES TRAILER TOWING STABILITY, AND HANDLING AND STOPPING ABILITY.

**STABILITY IN TOWING**

Speed, cargo weight distribution, and wind conditions are the principal factors affecting trailer towing stability. It is an indication of reduced stability if the trailer sways from side to side after quick course changes, in cross winds, or while being passed by trucks or buses.

If the trailer begins to sway strongly from side to side, make as little steering correction as possible while maintaining vehicle control. Oversteering to counter trailer sway will increase sway and cause loss of control. Reduce speed gradually by using the hand control on the brake controller. Forceful tow vehicle braking may increase trailer sway. Locking tow vehicle wheels will cause loss of control.

**WARNING:** DO NOT ATTEMPT TO STOP THE TRAILER SWAYING BY MAKING QUICK STEERING CHANGES, OR BY FORCEFULLY APPLYING THE TOW VEHICLE BRAKES.

Stop as soon as possible after any sign of reduced stability. Make sure all tires are fully inflated, the sway control is properly adjusted, and the hitch bars are adjusted according to the hitch manufacturer’s instructions. Check for mechanical failures. If cargo is not properly loaded, shift some weight forward in the trailer. If you can’t stop immediately, reduce speed until control can be maintained.
Heavy cross winds, particularly gusts in canyons or at other exposed locations, can cause excessive trailer swaying or loss of control. Under these conditions, reduce speed to maintain control.

Small but sudden course changes can occur when a vehicle towing a trailer is passed by a large flat-fronted vehicle such as a truck or bus. This happens when the side wind from the flat front of the truck blows against the side of the trailer. As the truck's front passes the rear of the trailer, the tow vehicle will tend to turn away from the truck; as the truck's front passes the trailer wheels, the tow vehicle will turn back toward the truck.

When a large flat-fronted vehicle passing from behind causes your vehicle to change course, make as little steering correction as possible. The tow vehicle will be turned back toward its original course as soon as the truck's front passes the trailer wheels. Avoid quick steering corrections that can magnify these course changes and start trailer swaying.

**PASSING**

When passing another vehicle, remember that acceleration will be slower than usual because of the added weight of the trailer. Allow ample time and distance when passing. Once past the other vehicle, allow for clearance of the trailer before returning to the original lane. Use your outside rear view mirror and proper turn signals to assure safe maneuvering.

**TURNING**

Make wider turns at curves and corners. Because your trailer's wheels are closer to the inside of a turn than the wheels of your tow vehicle, they are likely to hit or ride up over curbs.

**STOPPING**

The increased weight of the tow vehicle-trailer combination requires greater stopping distances. Maintain at least twice the normal following distance while towing your trailer. Avoid strong braking on turns and prolonged braking on downgrades.

**BACKING UP**

Place your hand at the bottom of the steering wheel. To turn the trailer to the left, move your hand to the left, turning the steering wheel clockwise. To turn the trailer to the right, move your hand to the right, turning the steering wheel counterclockwise. Your tow vehicle should go the opposite way that you want the trailer to turn. In time, and with a little practice, you will be able to back your trailer with little effort. Always be aware that you have poor visibility to the rear. Have someone stand outside at the rear of the trailer to guide you.

**DOWNGRADES AND UPGRADES**

1. Downshift to assist with braking on downgrades and to add power for climbing hills.

2. On long downgrades, apply brakes at intervals to keep speed in check. Never leave brakes on for extended periods of time or they may overheat.

3. Some tow vehicles have specifically calibrated transmission tow-modes. Be sure to use the tow-mode recommended by the manufacturer.
PARKING ON A GRADE

You should not park vehicles with trailers on a grade or hill. However, if you must park on a grade, follow these steps:

1. Apply the tow vehicle foot brake.
2. Have someone place wheel chocks under the trailer wheels.
3. When the wheel chocks are in place and the assistant is clear, release the brakes until the chocks absorb the load.
4. Apply the parking brake.
5. Shift the transmission to “P” (PARK, with automatic transmission) or low or reverse with manual transmissions.

If the vehicle is parked on a grade, don’t shift the transmission to “P” (PARK) until the trailer wheels are chocked and the parking brake is set. If you do, the weight of the vehicle and trailer may put so much strain on the transmission that it may be hard to shift out of “P” (PARK).

When starting after being parked on a grade:

1. Apply the foot brake and hold.
2. Start engine in “P” (for automatic transmission).
3. Shift into gear and release the parking brake.
4. Release the foot brake and drive until the chocks are free.
5. Apply the foot brake and have someone remove the chocks.

MIRRORS

There are many types of outside mirrors that can be used on tow vehicles. Most states require mirrors extending on both sides of the tow vehicle to provide the driver a clear view when passing or being passed. Check specific requirements in the states where you will travel. Install mirrors as close to the driver as possible to provide the maximum field of view.

STABILIZATION

SETUP

Leveling your trailer can greatly enhance your comfort. More importantly, the unit must be level in order for the refrigerator and drainage system, both of which function by gravity, to operate properly. Place a level on the bottom of the refrigerator’s freezer compartment or in a normally level location inside the vehicle.

NOTE: AFTER THE TRAILER HAS BEEN LEVELED SIDE-TO-SIDE AND FRONT-TO-BACK, YOU MAY WISH TO PERMANENTLY ATTACH LEVELS ON THE FRONT AND/OR BACK AND SIDES OF THE RV. THIS WILL ALLOW YOU TO TELL AT A GLANCE IF YOU HAVE PARKED ON A LEVEL SITE AND WILL HELP SPEED UP THE LEVELING PROCESS.
If side-to-side leveling is required, dig a shallow hole under the tire(s) on the high side, or make a step leveling ramp using 1" x 6" or 2" x 6" boards of varying lengths. Pull forward or back onto the leveling ramp until the tire(s) on the low side are level.

If front-to-back leveling is required, unhitch the trailer from the tow vehicle, install the jack pad and crank or run the front jack down. The front jack should always rest on the jack pad and if the ground or surface is soft, place a board under the jack pad. Disconnect the safety chains, the pigtail, and breakaway cable from the tow vehicle. Move the front jack up or down until the trailer is level.

If the trailer is not equipped with stabilizing jacks, jack stands (available from your dealer) may be placed under the frame to eliminate sway when persons move about inside the trailer. When using jack stands, lower the front jack about 2 inches below level. Place a jack stand under both main frame members—NEVER AGAINST THE FLOOR—at the rear of the trailer. Raise each jack until it touches the frame. Raise the front jack about 2 inches above level and place jack stands under the main frame members near the front of the trailer. Raise the jacks until they touch the frame, then lower the front jack to level. (See Figure 4)

If your trailer is equipped with a power front jack, you may have to run the jack up or down. The switch is spring-loaded and will return to the OFF position when released. If your power jack has a switch cover, be certain to replace it when not using the switch. Familiarize yourself with the direction of travel of the jack post and the corresponding switch direction.

If the trailer has permanently-mounted stabilizing jacks, (See Figure 5), level the trailer as outlined above, lower the stabilizers to the ground, and firm up. Before moving your trailer, crank stabilizers to the FULLY CLOSED position, then give another quarter turn to snug up.

CAUTION: Stabilizer jacks are designed for FINE LEVELING AND STABILIZING ONLY. Do not attempt to use them for jacking purposes or to support the full weight of the trailer.

To level the fifth wheel, lower front jacks, place a board under each jack skid on soft or frozen ground. Disconnect the pin hitch, pigtail, and breakaway cable. Drive the tow vehicle away. Level the unit by moving the jack up or down. Install jack stands at the rear of the fifth wheel by lowering the front jacks 2 inches below level and placing jacks under the rear main frame members — NEVER AGAINST THE FLOOR. Raise the jacks until they touch the frame, then raise the front jacks to level.
REAR DOOR OPERATION (Rampage Models)
If your recreational vehicle has been equipped with a rear entrance door/loading ramp, the following steps should be taken in operating the door to prevent injury or damage.

CAUTION: CAPACITY OF REAR DOOR/LOADING RAMP IS 3000 POUNDS.

1. Select a parking site where the edge of the rear door/loading ramp will rest entirely on a flat, level surface.
2. Level the trailer according to the Stabilization section of this manual.
   NOTE: ALL STABILIZER JACKS MUST BE USED.
3. Unlock the rear door/loading ramp and carefully lower it to the ground.
   CAUTION: REAR DOOR WEIGHS APPROXIMATELY 200 POUNDS AND IS DESIGNED FOR TWO PERSON OPERATION.
4. Use caution while loading or unloading items from the cargo area so as not to damage the door seals.
5. Make certain that the door seals and the hinge area are cleared of any debris, such as sand or snow, before closing the rear door/loading ramp.
6. Before moving the trailer, make certain the rear door/loading ramp is closed and securely locked.
7. Inspect the hinges, assist springs, and latch mechanism before each trip for signs of wear or damage, and make any needed repairs for safe operation and towing.

UTILITY SYSTEMS

The utility systems in your travel trailer have been carefully engineered for maximum effectiveness and trouble-free operation. This section of your Owner’s Manual outlines these systems to clarify their operation and function. It is not intended to be a service guide. If you have a problem, contact your Skyline dealer.

WATER SYSTEM (Self-Contained Models)

You can now have clean, fresh water anywhere you go with a minimum of trouble and difficulty. This is due, more than anything else, to modern developments in plastics. Your water tank and fresh water lines, as well as the drain lines, are made of durable, tough, lightweight plastics which are impervious to the corrosion and chemical reactions of other materials. They are clean and highly leak resistant. (See Diagram 1)

The fitting for filling the water storage tank is located on the side of your travel trailer and has a plastic sanitary closure.

All fresh water pressure lines are listed high pressure plastic tubing.

The water pump is the demand type. When a faucet is opened, the pump automatically pumps until the faucet is closed and the demand is met. This pump is electrically operated on the 12-volt system and is protected by its own fuse.
While away from your travel trailer or while sleeping, the pump should be switched OFF in order to avoid having it run unnecessarily.

If any of the listed conditions arise, try the following step-by-step procedures. If these do not solve the problem, consult a service center.

1. Pump will not prime (it should do this automatically):
   a. Check to be sure that there is water in the tank.
   b. Check to be sure that the battery is not run down.
   c. Check water pump fuse.

2. Pressure drops:
   a. Check faucets and connections for leaks.
   b. Check to be sure faucet aerators are clean.
   c. Check to be sure there is water in the tank.
   d. Check to be sure that the battery is not run down.
   e. Check storage tank vent.

3. Pump runs when there is no apparent demand for water:
   a. Check all faucets and fixtures to make sure they are shut off and not leaking.
   b. Check to be sure there is water in the tank.
   c. Check lines for leaks.

The water system may also be supplied from “city water”. A connection is built into the side of your unit, so that water can be piped in to bypass the pump and the water storage tank. The water pump should be switched OFF in order to avoid having it run unnecessarily.

This connection has a sanitary plastic cover for protection when not in use. Carry a clean 50 foot section of good potable water hose for hookup in parks.

**SANITIZING POTABLE WATER SYSTEMS**

**WARNING: A CONTAMINATED WATER SUPPLY CAN CAUSE SERIOUS INJURY OR DEATH.**

To assure complete sanitation of the potable water system, perform the following procedures:
1. Prepare a chlorine solution using one gallon of water and one-quarter cup of household bleach (five percent sodium hypochlorite solution). Pour one gallon of solution into the tank for each 15 gallons of tank capacity. The tank capacity equals the capacity of the fresh water tanks plus the water heater capacity.

**NOTE:** One brand of household bleach is now six percent sodium hypochlorite solution. When using bleach with six percent sodium hypochlorite prepare solution as above and add to tank at a rate of one gallon for each 18 gallons of tank capacity.

2. Complete filling the tank with fresh water. Turn on the pump and open each faucet and drain until the air has been released from the pipes and entire system is filled. Do not forget the hot water taps.

3. Allow to stand for four hours.

4. **COMPLETELY** drain and thoroughly flush with potable fresh water.

**DRAINAGE SYSTEM OPERATION (Self-Contained Models)**

The key to the entire drainage system is the valve(s) located under the travel trailer on the traffic side. This valve(s) has its own attached cap closure which should be kept in place whenever your travel trailer is moving or not attached to a sewer drain or container. All wastes are contained in your holding tank(s) on most units. (See Diagram 2)

The holding tank should not be allowed to drain directly into the sewer drain continuously. Otherwise, only liquid waste may drain out, while solids collect and harden in the bottom of the tank. The surging movement of normal travel usually prevents this if the holding tank valve is kept closed and opened only for dumping and cleaning. The slide valve has a fully-closed and locked position that should be used while traveling to prevent accidental opening.

An adapter is used to connect the sewer hose to the drain opening. This hose may be stored in the rear bumper on most models; other models have a separate compartment.

The holding tank should be emptied every two or three days when in use and cleaned well before storage to avoid solidification of waste. Antifreeze should be added to the tank if temperatures are expected to go below freezing (See WINTERIZING PROCEDURES).

The following is a helpful procedure for dumping: To completely evacuate the tank be sure the unit is level. Drain the solid waste tank first and proceed with the liquid waste tank(s). After draining, close the gates and partially refill the solid waste holding tank with water. Do this simply by going into the bathroom and depressing the toilet foot pedal, allowing enough water to run into the tank to fill it one-quarter to one-half full. Then go back outside to reopen the gate. This not only flushes the tank but cleans the hose and the outlet nozzle, making them less objectionable to handle.

To locate the most convenient dumping station, consult your copy of Woodall’s Travel Directory or a nearby recreational vehicle dealer or campground.

**TROUBLESHOOTING TIPS FOR THE DRAINAGE SYSTEMS**

If the toilet will not flush:

1. Holding tank may be full and need dumping, or toilet needs mechanical servicing.

2. Drains may be clogged. Use a good plunger or remove and clean the drain trap.
If holding tank will not dump or only partially dumps:

1. Be sure unit is level before dumping.

2. Waste may have solidified and clogged drain valve. Partially fill tank with water and soap and tow unit for about 10 miles. Surging motion of soapy water in tank should loosen the solid matter and allow dumping. Always rinse tank thoroughly after dumping.

3. Check handle on slide dump valve to be sure it is operative.

For problems with marine toilet, consult manufacturer’s manual.

**PROPANE SYSTEM (Self-Contained Models)**

The refrigerator, furnace, oven, range, and water heater all operate on Propane. Propane is stored in your tank under very high pressure. Before it is used in the appliances it passes through a regulator which reduces it to less than one pound of pressure. (See Diagram 3)

Propane burns readily and yields a great deal of energy. Under proper conditions and careful handling it is safe, economical, and ideally suited for use where conventional fuels are not easily utilized. A strong odor has been added to the gas for safety.

Your travel trailer heating, refrigeration, and cooking system are equipped to operate best on Propane. Make sure your Propane tanks are NOT FILLED WITH STRAIGHT BUTANE, which has a higher boiling point than Propane. Butane will convert to a gas only at temperatures above 32 degrees Fahrenheit and will not function as a fuel below that. On the other hand, Propane can be used as a fuel at temperatures down to -44 degrees Fahrenheit.

Both butane and Propane are heavier than air. When released they flow downhill like water and will tend to fill depressions. Both diffuse readily and will dissipate quickly into the atmosphere if not allowed to be trapped in a depression or closed chamber.

**CAUTION: PROPANE IS HIGHLY FLAMMABLE AND DANGEROUS.** It is not poisonous, BUT WILL INDUCE DROWSINESS AND MAY CAUSE SUFFOCATION. Under ordinary circumstances, breathing small amounts should not be harmful. Use extreme caution — and see that others do — when filling the storage tank(s). There should be no flame or spark or anything which might induce a spark within at least 25 feet of the filling operation.

**WARNING: Do not bring or store Propane containers, gasoline, or other flammable liquids inside the vehicle because a fire or explosion may result.**

Propane containers are equipped with safety devices which relieve excessive pressure by discharging gas to the atmosphere.
A warning label has been located near the Propane container. This label reads:

**WARNING:** DO NOT FILL PROPANE CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY. FAILURE TO COMPLY COULD RESULT IN A FIRE OR PERSONAL INJURY.

Overfilling the Propane container can result in uncontrolled gas flow which can cause fire or explosion THAT COULD CAUSE SERIOUS INJURY OR DEATH. A properly filled container will contain approximately 80 percent of its volume as liquid Propane.

**CAUTION:** CLOSE THE GAS SHUT-OFF VALVE ON YOUR PROPANE TANK WHEN TRAVELING. THIS IS REQUIRED BY LAW IN SOME STATES AND IS A GOOD SAFETY PRACTICE. FAILURE TO SHUT OFF THE VALVE WHILE TRAVELING MAY RESULT IN EXPLOSION OR ACCIDENT AND SERIOUS INJURY OR DEATH.

**WARNING:** WHEN FILLING GASOLINE TANK(S), MAKE CERTAIN THAT THE PROPANE TANK VALVE IS SHUT OFF TO REDUCE THE POSSIBILITY OF OPEN FLAME IGNITING GASOLINE VAPOR WHICH COULD RESULT IN AN ACCIDENT OR EXPLOSION THAT COULD CAUSE SERIOUS INJURY OR DEATH.

**INSTALLATION OF MANUAL REGULATOR**

**WARNING:** Propane regulators must always be installed with the diaphragm vent facing downward. Regulators that are not in compartments have been equipped with a protective cover. Make sure that the regulator vent faces downward and that the cover is kept in place to minimize vent blockage which could result in excessive gas pressure causing fire or explosion THAT COULD CAUSE SERIOUS INJURY OR DEATH.

This regulator is factory adjusted to give proper line pressure for operating appliances.

**BLEEDING AIR FROM PROPANE LINES**

If the tank is completely emptied, it is possible that air has gotten into the gas lines. If this happens, you will probably find it difficult to light the pilots on the appliances. Air can be forced from the lines by lighting the appliance closest to the Propane cylinders, and then the next closest, etc. This will cause the Propane pressure to force the air out of the lines completely. You will find that pilots will not light as readily when air is escaping through them — be patient and they will light.

**PURGING AND MOISTURE REMOVAL**

All new containers (and in some cases used containers) may contain water, air, or other contaminants, and it is essential that these be removed before filling the container and placing it into service. Water vapor present in the gas vapor may cause regulator freeze-up at the inlet orifice and interrupt the gas service. Also, it may have an effect on the ability of the odorant to meet the present standards, as water can cause oxidation (rusting) on the inside of the container and result in “odorant fade.” Air in the container will
cause abnormally high pressure, with the result that the pressure relief valve may open. Air in the system is also likely to cause pilot flames to go out and result in a service call. Additionally, air in the container carries moisture, which can cause service problems. If a container is suspected of being depressurized or open to the atmosphere for a period of time, it must be repurged as if it were a new container.

CHECKLIST

For safe use of your trailer and its appliances:

PLAY IT SAFE AT ALL TIMES. Know the distinctive odor of Propane. The following label has been placed in the vehicle near the range area:

DANGER

IF YOU SMELL GAS:

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

FAILURE TO COMPLY COULD RESULT IN EXPLOSION AND CAUSE SERIOUS INJURY OR DEATH.
Diagram 3 TYPICAL PROPANE SYSTEM

- CONNECTION TO PROPANE TANK(S)
- FRONT OF TRAILER
- REFRIGERATOR
- BLACK IRON PIPE (BELOW FLOOR)
- GROMMET-USED WHERE TUBING RUNS THRU FLOOR (TYPICAL)

LEGEND:
- BLACK IRON PIPE
- COPPER TUBING

- WATER HEATER
- RANGE (CONNECTION IS BELOW RANGE TOP)
- FURNACE (CONNECTION AT REAR OR SIDE)
- CONNECTION AT REAR OR SIDE
Diagram 4: TYPICAL 120 VOLT ELECTRICAL SYSTEM

- **Refrigerator Outlet, Access from Outside**
- **GFCI Protected Outside Recept**
- **30 AMP Main Breaker (REF.)**
- **12 V. DC/110V. AC Load Center**
- **GFCI Protected Kitchen Outlet**
- **Microwave Outlet, Inside Kitchen Overhead**
- **Power Supply Cord**
- **Junction Box**
- **(Circuit Breakers)**
- **Decor Light & Dimmer Switch (Some Models)**
- **A/C**
- **Roof Mounted Air Conditioner (Optional)**
- **Power Supply Cord**
- **(Dimmer Sw.)**

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- **Bath Recept**
- **Kitchen Outlet**
- **Refrigerator Outlet, Access from Outside**

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Diagram 5 TYPICAL 12 VOLT ELECTRICAL SYSTEM
ELECTRICAL SYSTEM

The electrical system is a marvel of adaptability. It can be operated directly from battery power for 12-volt current or connected to “city power” which is available in most campgrounds.

Your travel trailer connects to an outside power source through a heavy duty cable coiled in the storage compartment. This cable can be extended through an opening in the wall of the trailer. This cable is designed to ground the electrical system.

CAUTION: Extreme care should be used if adapter plugs are added. Polarity must be checked before connecting the plug. NEVER use a “cheater” adapter unless an additional ground is provided, park management is consulted, and polarization is determined.

The 120-volt electrical system is protected by circuit breakers located in the 120-volt/12-volt load center located inside your travel trailer. If you own a travel trailer equipped with the optional 240-volt electrical service, there is a main electrical box with breakers in addition to the 120-volt/12-volt load center. In the event a circuit breaker opens a circuit (the same effect as a fuse blowing out) HAVE A QUALIFIED PERSON LOCATE THE TROUBLE (either an overloaded system or electrical short) AND CORRECT IT before restoring the circuit breaker to normal position. Failure to do so may result in SERIOUS INJURY OR DEATH. All outlet receptacles are wired for 120-volt power. They conform to NFPA 1192, Standard on Recreational Vehicles, and the National Electrical Code.

Protection against ground fault is provided on lavatory, kitchen, and outside receptacle circuits with a special GFCI receptacle, or by a GFI circuit breaker. These devices are designed to break the circuit when it detects an imbalance in the current flow. The imbalance can be due to an appliance failure which could result in serious injury or death to the user.

Familiarize yourself with the operation and testing of the GFCI. It is an important device which could save your life. If the GFCI breaks the circuit, be sure to have the appliance you were using serviced prior to using it again.

CAUTION: There is no known device that offers complete protection against the hazard of electrical accidents under all conceivable conditions. For example, the GFCI does not protect a person who simultaneously contacts both “hot” wire and the neutral wire.

Even with the protection of a GFCI, electrical shock may be felt but will usually be of less than normally dangerous duration, except for persons with heart problems or other conditions that may make them particularly susceptible to serious injury or death from electrical shock. While the GFCI affords a degree of protection not previously available, there is no substitute for remembering that ELECTRICITY CAN BE DANGEROUS WHEN HANDLED CARELESSLY OR MISUSED AND CAN CAUSE SERIOUS INJURY OR DEATH.
12-VOLT ELECTRIC POWER

This system offers the user maximum lighting efficiency under all conditions. Most lights operate on 12-volt current. (See Diagram 4)

All 12-volt lights, furnace fans, exhaust fans, and 12-volt refrigerators (if provided) are protected by fuses located in the electrical compartment.

Your travel trailer is equipped with a load center. The load center has a built-in converter that automatically converts 120-volt current to 12-volt current for use by those circuits which require it and also recharges your battery. (See Figure 6) Have your dealer go over your load center with you and instruct you concerning the battery charging features. No switching is necessary. If an exterior source of power is connected, the converter automatically switches to this source rather than the trailer battery. If the converter is not connected to a 120-volt power source your 12-volt system will draw power from the battery.

Whenever city power (120V) is available it should be used to avoid discharging the trailer battery (See Diagram 5). When the power cord between the travel trailer and the tow vehicle is connected, the trailer and tow vehicle electrical systems operate as one. The trailer battery is recharged by the tow vehicle’s alternator and when parked, the tow vehicle battery can be discharged by prolonged power usage in the trailer. Consequently, when parked and operating from the trailer batteries, the cord between the tow vehicle and travel trailer should be disconnected to avoid running down your tow vehicle battery. The trailer battery can be recharged by starting the tow vehicle and reconnecting the power cord. When operating off batteries it is wise to use lights and power sparingly.

VENTILATION AND CONDENSATION

The following steps should be taken to aid in eliminating internal moisture condensation:
USE STORM WINDOWS

Storm windows are available from your Skyline dealer. The interior surface of the storm windows will be at least 20 degrees warmer, reducing moisture condensation. DO NOT COVER EMERGENCY EXIT WINDOWS. The emergency exit windows must be accessible at all times.

VENTILATE WITH OUTSIDE AIR

Ventilate your recreational vehicle regularly by partially opening roof vents and one or more windows. Use vents when using the range or bathroom. While this venting will increase the furnace heating load, it will greatly reduce, or eliminate, water condensation. NOTE: Even when it is raining or snowing, ventilation air from outside will be far drier than interior air and will effectively reduce condensation.

REDUCE MOISTURE RELEASED INSIDE THE TRAILER

Remember to run the range vent fan when cooking and the bath vent fan (or open bath vent) when bathing to carry water vapor out of the trailer. Avoid excessive steam resulting from boiling water or use of hot water. Remove snow or water from shoes or boots before entering the trailer to avoid soaking carpet.

Also avoid drying overcoats or other clothes inside the trailer.

WARNING: DO NOT HEAT THE TRAILER WITH RANGE OR OVEN.

In addition to the dangers of toxic fumes and oxygen depletion which makes heating with the range or oven very dangerous, open flames add moisture to the interior air, increasing condensation. Do not use an air humidifier inside the trailer.

VENTILATING CLOSETS AND CABINETS

During prolonged use of the recreational vehicle in very cold weather, closet and cabinet doors should be left partially open in order to ventilate the interiors of storage compartments built against exterior walls. The air flow will aid in warming exterior walls, assist in reducing or eliminating condensation, and prevent possible ice formation.

MOLD

Mold is a fungus that occurs naturally in the environment, and it is necessary for the natural decomposition of plant and other organic material. It spreads by means of microscopic spores borne on the wind and is found everywhere life can be supported. Recreational vehicle construction is not, and cannot be, designed to exclude mold spores. If the growing conditions are right, mold can grow in your recreational vehicle. Most people are familiar with mold growth in the form of bread and cheese mold, and the mold that may grow on bathroom tile.

In order to grow, mold requires a food source. These food sources might be supplied by items found in the recreational vehicle, such as fabric, carpet, wallpaper, or building materials (i.e., drywall, wood, and insulation). Also, most mold growth requires a temperate climate. The best growth occurs at temperatures between 40°F and 100°F. Finally, mold growth requires moisture. Moisture is the only growth factor that can be controlled. By minimizing moisture, an owner can reduce or prevent mold growth.
Moisture can stem from a variety of sources such as spills, leaks, overflows, condensation, damp or standing water and human activity such as showering or cooking. Good housekeeping and maintenance practices are essential in the effort to prevent or reduce mold growth. You should keep the humidity in your unit below 40%. If optimal growth conditions persist, mold can develop within 24 to 48 hours.

**CONSEQUENCES OF MOLD**

Experts disagree about the level of mold exposure that may cause health problems, as well as the exact nature and extent of the health problems that may be caused by mold. Some people are allergic to mold and may suffer hayfever like allergic symptoms. Other, more serious health effects have also been attributed to exposure to mold. The immunocompromised (people with immune deficiencies or on chemotherapy), elderly, children and persons with asthma or other chronic respiratory disease may be at greater risk of adverse health effects. If you have any of these conditions or are concerned that you may be exposed to mold which could cause adverse health conditions you should consult with a qualified health care provider.

**WHAT YOU CAN DO**

Take positive steps to reduce the occurrence of mold growth, and thereby minimize any possible adverse effects that may be caused by mold. These steps include the following:

1. Before bringing items into the recreational vehicle, check for signs of mold. Potted plants (roots and soil), furnishings, or stored clothing and bedding material, as well as many other household goods, could already contain mold growth.

2. Regular vacuuming and cleaning will help reduce levels of settled mold spores. Detergent solutions and most tile cleaners are effective in controlling mold growth on surfaces. If other biocides or mild bleach solution are used, care must be taken in handling these solutions.

3. Keep the humidity below 40%. Do not hang clothes to dry indoors. Ventilate kitchens and bathrooms by opening windows, using exhaust fans, or running the air conditioning if so equipped to remove excess moisture in the air and to facilitate evaporation of water from wet surfaces. In general, windows or doors throughout the unit should be opened periodically to provide ventilation.

4. Promptly clean up spills, condensation, and other sources of moisture. Thoroughly dry any wet surfaces or material. Do not let water pool or stand in your unit. Promptly replace any materials that cannot be thoroughly dried, such as drywall or insulation.

5. Inspect for leaks on a regular basis. Look for discolorations or wet spots. Repair any leaks promptly. Take notice of musty odors and any visible signs of mold growth.

6. In many cases, mold growth that develops on surfaces can be thoroughly cleaned with a mild detergent solution (other biocides and bleach solutions can be used, but should be handled with caution) and dried completely. Porous materials with mold growth such as fabric, upholstery, or carpet should be discarded. Avoid exposing yourself or others to mold. A professional should be consulted if mold growth is extensive, a persistent musty odor is present, or evidence of ongoing water intrusion and dampness, leaks, unusual discoloration on walls or ceilings, or other concerns persist.
The information provided herein is merely a general guide to basic background information about mold and is not intended to be a complete discussion of possible problems relating to mold, methods for determining if a problem exists or of correcting mold problems. If you believe mold is present in your recreational vehicle you should immediately consult a qualified expert who will advise you on the proper steps for your specific situation.

**USE A DEHUMIDIFIER**

During prolonged and continuous usage of the trailer, a dehumidifying appliance may be more comfortable and effective in removing excess moisture from interior air. While use of a dehumidifier is not a cure-all, operation of a dehumidifier will reduce the amount of outside air needed for ventilation. Thus, the heating load on the furnace will be reduced and the interior will be less drafty.

**WARNING:** Use of kerosene or other aftermarket space heaters is NOT recommended and is at your own risk. Such heaters may discharge moisture and gases from combustion into your trailer or cause excessive indoor humidity. SUCH HEATERS MAY ALSO CAUSE A FIRE, DEPLETE OXYGEN, OR RELEASE CARBON MONOXIDE OR OTHER HARMFUL GASES WHICH CAN CAUSE SERIOUS INJURY OR DEATH.

**CONVENIENCE AND SERVICE ITEMS**

Termination valve(s) are provided for hookup to the liquid waste and body waste tanks. The drain hose may be stored in the rear bumper. Connections are provided to fill the potable water tank and to provide city water through a clean potable water hose.

A breaker is provided on the front of your unit to protect the main 12-volt power line.

Permanent storage is provided for the 12-volt battery and Propane bottles.
THE EXTERIOR OF YOUR TRAVEL TRAILER

ACCESS DOORS

Convenient access doors are provided for storage of items you do not wish to bring inside. All baggage doors have key locks for safe storage.

DOORS, WINDOWS, AND SLIDING STEP

**Door Catches** — The main entrance door is built of heavy gauge material and is fully insulated. The door lock design reflects the latest safety regulations. It is very important that the door be completely closed and locked during travel. If you find it is difficult to lock the door, push in to release pressure on the door latch while turning the key. The door is locked from the inside by pushing or turning a button near the door handle.

Windows and window glass meet or exceed all federal safety standards. They require only normal care and may be cleaned with any good glass cleaner.

Window screens are made of plastic for longer wear and ease of maintenance. They can be easily cleaned with a mild cleaning solution. They will not rust and, in case of damage, can be replaced by your dealer.

The sliding step may be extended by grasping firmly, lifting, and pulling all the way out. The runners on the edge of the step should be lubricated periodically. Be sure the step is fully retracted while in transit. (See Figure 7)
Generator Option — Some Skyline models have a generator option. If a generator is installed at a later date, the storage pan in the generator compartment must be removed before installing the generator. When installing the generator be sure to follow the generator installation instructions and all applicable codes and standards for a safe trouble free installation.

Propane — If your unit is factory equipped with this type of generator, one of the Propane tanks will supply the generator and the second Propane tank will supply the rest of the vehicle.

Gasoline Generator — If your unit is factory equipped with this type of generator, your unit will be equipped with a chassis mounted fuel tank with an automotive type fuel fill in the side wall of the unit. This tank may be filled at a filling station using the same precautions recommended for fueling your tow vehicle. Always remove the fuel cap slowly, allowing pressure built up in the tank to escape gradually before completely removing cap. If you spill fuel on the side of your vehicle, clean it up immediately since fuel can dull or soften paint and damage other surfaces. Never overfill your tank, fuel will expand as temperatures increase. Stop filling when the automatic pump shuts off. Should you lose your fuel cap it must be replaced as soon as possible, with a cap of the same type. Consult the generator owner's manual for the proper type and octane of fuel for your generator and use only what is specified.

For either generator please follow the instructions in the owner manual for the generator in your owner package.

WARNING
Be extremely careful when fueling a tank. Do not smoke or allow others to smoke within 20 feet of the fueling system or the fuel filler spout of the vehicle tank being fueled. Always shut off all engines, including but not limited to, the vehicle being fueled, the generator, and the tow vehicle, all fuel burning appliances and their pilot lights. Also make certain all auto-ignition appliances such as refrigerator, furnace, water heater, and so forth are in the off position before fueling. Do not dispense fuel within 20 feet of any ignition source. Fuel spills represent a serious hazard, and should be cleaned up immediately. Never restart any engine or fuel burning appliances, relight any pilot lights, or turn auto ignition appliances back to the on position while raw fuel is present. Failure to comply could result in fire, serious injury or death.

Also remember when operating the generator that exhaust gas is deadly! It contains carbon monoxide, a poisonous gas that can cause unconsciousness or even death. It is an odorless, tasteless gas formed during the combustion of fuel in the generator engine. Never run the engine unless you are sure the exhaust gases will be safely dispersed into the atmosphere. Always be sure the tail pipe remains unblocked, extends beyond the side of the unit and windows near the exhaust are closed. Never situate your vehicle in a position where exhaust gases have any possibility of accumulating outside, underneath, or inside your vehicle or any vehicles near you. Outside air movements can even carry exhaust gases inside the vehicle through
windows or other openings that are remote from the exhaust outlet. Operate the engine only when safe dispersion of exhaust gases can be assured. DO NOT alter or modify any component of the exhaust system at any time. If you locate or suspect damage to the system, have it repaired immediately or discontinue use of the generator until it can be repaired.

Be aware of carbon monoxide poisoning and its symptoms which include dizziness, intense headache, vomiting, nausea, weakness, sleepiness, incoherence, muscular twitching or throbbing in the temples. If anyone in the recreational vehicle experiences any of these symptoms, shut off the generator and immediately go outside into fresh air. Get medical attention as soon as possible.

Never sleep while the engine is running. It is impossible to know if you are being affected by carbon monoxide gas while asleep.

For your safety a carbon monoxide detector is installed in vehicles equipped with generators. Please see the section in this manual that describes the operation and care of the detector.

Fueling Station

Some sport utility models are equipped with an optional fueling station that can be used for fueling small motorized vehicles. Please observe the following precautions when using the fueling station:

- Review all warnings in the Generator section of this manual for gasoline generators. The same warnings apply to the use of this fueling station. Failure to follow them could result in serious injury and even death.
- All parts of the fuel transfer system including but not limited to the hoses, pump, nozzle, fittings, and tank have been selected for their quality, safety, and intended application. Any alteration or replacement of any part other than Skyline Corporation parts could jeopardize the integrity of the system and may result in serious injury or even death.
- If your fueling system is not working properly or you need additional information on the use of the system contact your authorized Skyline dealer immediately or call Skyline directly using the information in the front of this manual.
- Do not operate the pump for more than five (5) minutes with the nozzle closed.
- Do not operate the pump continuously for more than thirty (30) minutes in a one hour period.
- Do not operate the pump when the tank is empty.

Operating instructions:

1. Turn the switch labeled "Fuel Pump" located inside the recreational vehicle to the on position.
2. Turn the switch lever at the pump by moving the switch lever in a clockwise direction.
3. Insert the nozzle into the tank and actuate the nozzle to dispense fuel.
4. Immediately turn the pump power off by moving the switch lever in a counter clockwise direction.
5. Turn the switch labeled "Fuel Pump" located inside the recreational vehicle to the off position.

Maintenance:

The inlet strainer in the pump housing must be cleaned after every 50 hours of use. Refer to the maintenance section in the PBL Industries, Inc. fuel transfer pump owner's manual for the inlet strainer removal and cleaning procedure.

**ROOF**

Periodic cleaning and inspection of the rubber roof is the primary maintenance recommended. Skyline recommends cleaning rubber roofs three or four times a year and inspecting the roof after every cleaning. To clean EPDM rubber roofs use household cleaners such as Comet™, Spic-N-Span™, Ajax™, etc. as granulated cleaners do a better job than liquid cleaners. It is also recommended that a soft bristled scrub brush be used in place of a sponge. For more stubborn stains (i.e. oak leaves, pine sap) the use of a kitchen cleanser with bleach can help remove the stain. Remember to rinse the roof completely to remove any soap residue and also rinse the sidewalls completely to remove any streaking. After cleaning the roof check the membrane for possible damage and check the caulk/lap sealant at exhaust stacks, vents, and fasteners.

**DO NOT USE ACETONE OR ANY PRODUCTS CONTAINING PETROLEUM DISTILLATES ON THE RUBBER ROOF.**

Rubber roofing is quite inert and will resist weathering well. However it can be cut or punctured by sharp objects. Avoid walking on the roof except when absolutely necessary. Caution should be used when placing any articles on the roof and care should be exercised when working on top of the vehicle. The rubber roofs may become slippery when wet. If damage does occur, the membrane can be easily patched. If patching should be necessary contact your dealer.

EPDM rubber roofing does not require periodic application of any product to protect it from ultraviolet light or ozone. These products may cause damage to the rubber roof membrane. If you have questions, please contact Skyline for verification.

Substantial accumulation of snow should be removed from any roof especially on a trailer not occupied during the winter.

**EXTERIOR FINISH**

Aluminum and fiberglass exteriors are designed to provide for low maintenance. The finish can be made to last longer by keeping the exterior cleaned and waxed. Clean with a mild soap solution followed by a clear water rinse.
FRAME

The steel frame under your trailer has been factory protected with rust inhibitive coating. Under some conditions, corrosion can form on the steel surface so the frame should be inspected yearly. If rust is found, remove it and touch up the area with asphaltic base, zinc chromate base, or other paint or equivalent protection.

EXTERIOR GRILL (Optional Some Models)

The exterior grill is a Propane operated unit designed specifically for outdoor use. It must be mounted to the sidewall of the trailer using the bracket provided with the grill. See the manufacturer's manual for operating information. Allow grill to cool adequately prior to dismounting grill. Put in storage when not in use.

THE INTERIOR OF YOUR TRAVEL TRAILER

INTERIOR SURFACES

The interior wood paneling is prefinished plywood, laminated with a film. It may be cleaned with a mild commercial cleaner containing wax.

CAUTION: Avoid use of kerosene, naphtha, carbon tetrachloride, lighter fluid, or abrasive cleaners or commercial cleaners containing them. They will harm the finish on unprotected surfaces.
1. **Drapes, Upholstery and Carpets.** All fabrics have been carefully selected by interior decorators to provide you with a pleasing, stylish interior. The upholstery fabrics are treated with a moisture and stain repellent. Therefore, most dirt stains can be easily removed with a damp cloth. If and when they become badly soiled, use good quality upholstery cleaner. The drapes should be dry cleaned. When storing the trailer, it is a good idea to protect the upholstery and interior from fading due to sunlight by putting aluminum foil between the window and the drapes.

2. **Work Surfaces.** The work surfaces are plastic laminate and will resist alcohol, fruit stains, scratches, acid, household alkali, and heat up to 275 degrees Fahrenheit. Waxing will help preserve the luster. Never use these surfaces for cutting or slicing, and protect them from hot vessels.

3. **Bathroom.** The bathroom fixtures should only be cleaned with a mild solution of soap and water. Never use scouring pads or powder.

4. **Appliances.** Manufacturers’ manuals are enclosed with this Owner’s Manual. Study them carefully and follow their directions for cleaning and operation.

5. **Floors.** Vinyl flooring requires only washing and periodic waxing. Vacuum carpeting regularly, and clean it with a quality carpet cleaner.

6. **Decorative Glass.** Decorative glass should be cleaned with a mild glass cleaner. The decorative material is a polymer, and will be damaged by ketone, alcohol, lacquer thinners, abrasives, or strong detergents. Never use these substances to clean the decorative glass. Dampen a clean, soft cloth with the glass cleaner. Avoid spraying the glass directly with the cleaner solution. Wipe the surface dry with a second clean cloth. Do not leave the cleaner on the glass surface for more than five minutes. The etched or frosted effect will disappear temporarily when wet, and will reappear when dry.

**INTERIOR TABLES AND BEDS**

A variety of tables and sofas, some of which can be made into sleeping accommodations, are installed in Skyline travel trailers and fifth wheel vehicles. Some of these are stored in enclosures at the sidewalls (exterior type), while others are a part of a dinette arrangement. The following explanations and illustrations explain the operation of these accommodations.

**EXTENSION TYPE** — To operate this type of table, swing the table top up and pull the leg down. If the table has an extension leg, push the release and allow the inner leg to drop to the length necessary to make the top level. Let the lock pin seat in the hole to hold the leg at the proper length. Some extension tables have leaves provided. To add leaves, pull the latch on the underneath side of the table top and pull out the sliding portion of the table. Insert the desired leaf (or leaves) and push the table together. (See Figures 8 and 9)
SWING-DOWN TABLE — Pull the table towards you and up, then push it toward the wall. Insert the brackets (tabs) at the back of the table into the wall support brackets. Pull the leg down into place. (See Figure 10)
PEDESTAL TYPE — Simply insert the table leg (or legs) into the base plate or plates. Lower the table support bracket into the legs.

GAUCHO BEDS — Lift the front edge of the lounge platform and slide it forward. Arrange cushions on the platform to serve as a mattress. (See Figure 12)

CABINET BUNK — Open the cabinet doors at each end of the cabinet and release the latches on the inside of the cabinet facing. After releasing the latches, close the cabinet doors and drop the cabinet facing to a position level with the cabinet bottom. Secure the doors in the closed position with the hook & eye fasteners to prevent doors from opening unexpectedly, causing injury to someone below the bunk. (The facing should rest on the supports provided.) Place the reinforcing boards on top of the cabinet face and arrange the mattress sections to complete a bed. (See Figure 13)
ROLLOVER SOFA — Pull the back of the sofa forward until the back rolls over to form the front half of the bed. (See Figure 14)

LOVESEAT SLEEPER, QUEEN SLEEPER, AND CONVERT-A-BED — To adapt these into a bed, remove the seat cushions, lift the mechanism, and pull forward. The mattress, which is folded and stored under the cushions, will unfold to form a bed. (See Figure 15)
**JACKKNIFE SOFA** — Lift the front edge of the sofa seat and pull forward. The seat will lift and move forward as the back of the sofa drops to make into a bed. (See Figure 16)

![Figure 16 JACKKNIFE SOFA](image)

**INTERIOR MISCELLANEOUS**

**BATHROOM DOOR LOCK** — The bathroom door may be locked or unlocked by positioning the lever to the left or right. If the lock-set should be accidently locked or there is a need to unlock the door from outside the room, simply insert a thin object into the slot (screw driver, coin, etc.) and turn counterclockwise. (See Figure 17)

![Figure 17 TYPICAL BATHROOM DOOR LOCK](image)
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.

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

**RANGE EXHAUST HOOD**

The exhaust hood allows vapors and cooking odors to escape, and serves as a vent for the galley area. The hood has a grease filter screen which will require periodic cleaning. To clean the screen, remove and wash in soapy water. Rinse with water and let the screen drain dry. Replace the cleaned filter in the exhaust hood. Be sure the vent damper at the exterior of the trailer is not latched in the closed position.

**AIR CONDITIONER**

The optional roof-mounted air conditioning unit can operate only when the trailer is connected to a 120-volt AC power source. Be sure that the air conditioner’s circuit breaker is turned ON. For best performance, park the trailer in the shade and keep the curtains closed. Before operating any model of roof A/C, close all doors and windows. (The optional heat unit on some models is not a substitute for a primary heating system. It is designed to warm the air during moderately cool days or nights.)

Refer to the air conditioner manufacturer’s instructions for detailed operation and preventive maintenance requirements. Remember that this appliance requires a large portion of your available electric power.

**NOTE:** Many units include dealer installed air conditioning units rather than factory installation. Check carefully to make sure there are no leaks around the air conditioning unit.

**REFRIGERATOR (Self-Contained Models)**

Your travel trailer has a gas-electric refrigerator powered by a Propane flame, 12-volt or a 120-volt electric heating element, permitting silent refrigeration wherever you go.

Before operating the refrigerator when the trailer is parked, make sure it is level. If it is not level, the refrigerant will not circulate, cooling action will stop, and the refrigeration system may be damaged.
In many areas, television reception can be improved with an optional TV antenna. The TV antenna hookup includes an amplifying system, a coaxial connection for the antenna cable to your TV set, and a antenna crank for inside control. Some systems also have a 12-volt receptacle for TV sets designed to run on 12-volt DC power.

The cable connection, amplifying system switch and power ON indicator light are on a wall plate. Several different types of wall plates are used, so refer to the manufacturer’s instructions for details. The antenna crank handle should be turned in the UP direction until some resistance is felt. Pull down the rotating knob to disengage it from the ceiling plate and rotate it until you have located the best sound and picture.

Always lower the antenna before moving your unit. Turn the rotating portion so that its pointer lines up with the ceiling plate pointer. Turn the crank handle in the DOWN direction until some resistance is felt. Always turn the amplifier power switch off. (See Figures 18 and 19)
AM/FM RADIO, CD PLAYER

Refer to your radio and CD/tape player manufacturer’s instruction manual for specific operating and cleaning instructions.

SYSTEMS MONITOR PANEL

The monitor panel allows you to check the volume of fresh water, solid and liquid water in your holding tanks, and the condition of your RV battery. The panel may also include a clock and water pump switch. The monitoring panel shown is typical; the one in your unit may look and function differently. Be certain your dealer explains the operation of the monitoring panel in your unit.

Be sure to check the panel reading when the fresh water tank is filled. Water with a very low mineral content can cause an erroneous indication on the panel, but this is rare. (See Figure 20)

TOILET

Your trailer is equipped with either a hand control lever or foot pedal operated marine-type toilet.

To operate the hand lever control model:
• To flush, pull the black lever located on the right side of the toilet forward until rinse water clears the bowl, then slowly release the lever.
• The water fill lever (white lever) can be operated independently of the flush to adjust the level of water in the bowl. (See Figures 21, 22 and 23)

To operate the foot pedal model:
• Depress the small pedal to add water to the desired level, then slowly release the pedal.
• To flush, depress the large pedal until the rinse water clears the bowl, then slowly release the pedal. (See Figures 24, 25 and 26)
Figure 21 TYPICAL HAND CONTROL MARINE-TYPE TOILET

Figure 22 FLUSH LEVER

Figure 23 WATER LEVER

Figure 24 TYPICAL FOOT PEDAL MARINE-TYPE TOILET
If your trailer is equipped with a toilet other than these models, please follow the operating instructions provided.

**TOILET MAINTENANCE**

The toilet does not require any routine maintenance. Clean the unit with a high grade, nonabrasive cleaner. DO NOT use highly concentrated or high acid or alkaline household or toilet bowl cleaners. These products can damage the finish and valve components in the flush seal.

**TOILET TROUBLESHOOTING**

**Water Keeps Running Into the Bowl**

- On the hand lever models, be sure the levers return all the way. If they do not, there may be foreign matter on the waste blade valve or the seal in the bottom of the bowl preventing the bowl from fully closing.

- On the foot pedal models, clean out any foreign material in the groove where the valve blade seats in the bottom of the bowl.

**Foot Pedal Hard To Operate or Blade Sticks**

- Spray a light film of silicone on the blade.

**Poor Flush**

- The lever or pedal must be held fully open during the flushing for two or three seconds.

- Be sure a sufficient quantity of water is in the bowl to carry waste into the holding tank.

**Toilet Leaks, Water On Floor**

- Check the water inlet connection. Tighten, or clean and tighten if necessary.

- Refer other toilet leaking conditions to an authorized Skyline dealer.
WATER HEATER

The water heater in your trailer operates on Propane, and is similar to the one in your home. It contains an automatic shut-off valve which stops the gas flow if the water temperature rises too high. The water heater is reached through an access panel on the outside of the trailer.

**CAUTION: DO NOT OPERATE THE WATER HEATER UNTIL IT IS FILLED WITH WATER.**

If an electric water heater is installed, the water heater circuit breaker should not be turned on until the water heater tank is completely filled. Turn on the hot water faucet at the galley sink. If water flows continuously, the heater is full. For detailed operating instructions, please refer to the manufacturer’s instruction manual.

To light the pilot light on your gas water heater, first open the propane bottle’s service valve. Turn the water heater gas cock knob to the OFF position. ALWAYS wait five minutes to allow Propane which may have collected in the burner compartment to dissipate. Then turn the gas cock knob to the PILOT position and ignite. After 30 to 60 seconds, turn to the ON position. (Refer to water heater instruction manual.)

If your water heater is equipped with an electronic ignition, place the switch in the ON position. If the switch light comes on, place the switch in the OFF position and wait five minutes before proceeding. After the required delay, again place the switch in the ON position.

To completely shut down the unit, place the switch in the OFF position. It may take more than one attempt to start when the unit is being used for the first time or after the refill of the Propane tanks.

**CAUTION: Hydrogen can be produced in the water heater system if the heater has not been used for a long time, generally two weeks or more. This is especially true if the water heater has been drained. Hydrogen gas is extremely flammable. Due to the risk of SERIOUS INJURY OR DEATH under these conditions it is recommended that the hot water faucet be opened for several minutes at the kitchen sink before using any electrical appliances. If hydrogen is present there will probably be an unusual sound, like air escaping through the pipe as the water begins to flow. There should be NO SMOKING OR OPEN FLAME near the water faucet when it is opened.**

GAS FURNACE

The gas furnace operates on Propane. It is controlled by a thermostat, as in a home. There is a separate OFF switch on the thermostat to completely shut down the furnace. (See Figure 27)
Consult your Furnace Instruction Manual and the instructions on the furnace for details of lighting.

Once the furnace is on, its operation may be controlled entirely with the thermostat. You will not need to touch any of the other furnace switches or valves.

The furnace is a forced-air system which pushes warm air throughout your travel trailer. The blower is wired to operate directly from your 12-volt or 120-volt system.

IN CASE OF TROUBLE: Consult your furnace manufacturer’s operation and service manual in your Owner’s Kit for troubleshooting tips and information, and the location of your nearest service center.

WARNING: Use of kerosene or other aftermarket space heaters is NOT recommended and it is at your own risk. Such heaters may discharge moisture and gases from combustion into your travel trailer and cause excessive indoor humidity. SUCH HEATERS MAY ALSO CAUSE A FIRE, DEPLETE OXYGEN, OR RELEASE CARBON MONOXIDE OR OTHER HARMFUL GASES WHICH CAN CAUSE SERIOUS INJURY OR DEATH.

IMPORTANT SAFETY MESSAGE

Don’t take chances with safety. The heating, cooking, electrical, and other systems and appliances in your travel trailer must be operated and maintained ONLY as specified in this manual and in other manuals furnished with it. Check your manual and be sure you clearly understand how to operate any system before you try it. If you are at all uncertain, contact your dealer, the Skyline factory, the system or appliance manufacturer’s local representative, or Skyline’s Director of Consumer Relations BEFORE you operate any system or appliance. Please read with special care the FIRE AND EMERGENCY PROCEDURES section beginning on page 64-66 of this manual. It explains important safety features such as emergency exits and fire precautions.
Also please read all instructions, notices and warnings on the travel trailer, its systems and appliances.

**FAILURE TO FOLLOW THESE IMPORTANT PRECAUTIONS MAY RESULT IN SERIOUS INJURY OR DEATH.** If you sell your travel trailer, please make certain that this manual and the other manuals furnished with your travel trailer are given to the new owner. NOTE: Please refer to the label on the front of your Skyline trailer in the area of the Propane tanks which refers to safety precautions pertaining to the Propane system.

**PROPANE, CARBON MONOXIDE DETECTORS, AND SMOKE ALARMS**

Your travel trailer was designed and built to meet all applicable standards for normal recreational use. For your safety a Propane detector, carbon monoxide detector and a smoke detector have been installed in the kitchen/hall/living area.

Since Propane is heavier than air, the Propane detector has been mounted near the floor. Test the detector after the trailer has been in storage, before each trip, and once a week during use. Follow the test procedure recommended in the manufacturers operating instructions. (See figure 28)

The carbon monoxide detector warns of excessive levels of carbon monoxide given off by internal combustion engines and some other fossil fuel burning appliances. Test the carbon monoxide detector after the trailer has been in storage, before each trip, and once a week during use. Note, the carbon monoxide detector requires a ten (10) minute warm up period once it is energized. See the manufacturer's operation instructions for operation and testing procedures. If the detector does not operate properly, have the detector repaired or replaced. (See figure 30)

Both the Propane detector and the CO detector are wired to the 12 volt system of your trailer. They will function properly whenever 12 volt power is available from the tow vehicle through the 7-way power cord, the RV battery, or when the converter is energized through the 120 volt shoreline. **For protection in all circumstances (i.e. dry camping) a fully charged RV battery must be properly installed.**

A battery-powered smoke alarm complying with NFPA 1192 is mounted on the wall in the living / cooking area of your trailer. Please read the smoke alarm's Owner's Manual for details on testing and caring for this important safety device. Test the smoke alarm after the trailer has been in storage, before each trip, and once a week during use. Depress and hold the test button on the cover for up to 20 seconds. The horn should sound a loud alarm. If the horn does not sound, check that the battery is inserted properly and is fresh. If the battery is dead, replace it promptly and retest the alarm. If the alarm still does not sound, have it replaced. (See figure 29)

**WARNING:** Actuation of your CO alarm indicates the presence of carbon monoxide (CO) which can KILL YOU. If the alarm sounds; 1) Operate the reset/silence button; 2) Call your emergency services (Phone Number __________________) (fire department or 911); 3) Immediately move to fresh air - outdoors or by an open door/window. Do a head count to check that all persons are accounted for. Do not reenter the premises nor move away from the open door/window until the emergency responders have arrived, the premises have been aired out, and your alarm remains in its normal operation. 4) After following steps 1-3, if your alarm reactivates within a 24 hour period, repeat steps 1-3 and call a qualified appliance technician. (Phone Number __________________) to investigate for sources of CO from fuel burning equipment and appliances, and inspect for proper operation of this equipment. If problems are identified during this inspection have the equipment serviced immediately. Note any combustion equipment not inspected by the technician and consult the manufacturers' instructions, or contact the manufacturer directly, for more information about CO safety and this equipment.
Every trailer is designed to the Standard for Recreational Vehicles—NFPA 1192, with a minimum of two exits which are remote from one another. They are either two doors or a door and a window, which is marked as an exit. Be sure that these exits are accessible and left free for exit. Be certain that you and your family know the location of the “egress” window and understand its operation as described on the window label. “Egress” windows are specially designed to make escape faster and easier in an emergency. Do not place furniture in front of this window so that it might become blocked.
FIRE PRECAUTIONS

The safety features built into your new trailer will be of little value if fire should strike, and you and your family are not prepared. Every member of your family should know how to prevent fires and how to escape if a fire occurs.

Before a Fire Starts

• Remove trash and stored items of outlived usefulness, particularly from the vicinity of furnaces and heaters and from hallways and exit areas.

• Exercise care in the use of electricity. Do not overload electrical outlets with many appliances, use only appropriate fuses, and do not hang electrical cords over nails or run under carpets. Have cords replaced when they begin to fray or crack and have electrical work done by competent electricians.

• Do not store gasoline or flammable cleaners in glass containers which can break, and avoid storing them inside the trailer. Do not keep more flammable liquids on hand than you really need.

• To avoid the danger of spontaneous ignition, dispose of rags wet with oil, polishes, or other flammable liquids in outdoor garbage cans.

• Inspect your trailer often for these and other hazards.

• Plan for escape from every area of the trailer; discuss escape routes with your family, and actually rehearse escape. You might have to find your way out in thick smoke or darkness.

• Learn how to extinguish common fires in early stages. Your unit is equipped with a fire extinguisher. Everyone should know how to operate it. The gauge on the extinguisher shows whether it needs to be replaced. It should be checked regularly. A minor (kitchen) flare-up may be extinguished with ordinary baking soda. It’s inexpensive, easy to clean up, and has lots of other uses. NEVER use water.

• Clothing afire is a prelude to tragedy. Do not wear (or permit children to wear) loose, frilly garments if there is any chance at all of accidental contact with a stove burner or other source of fire.

• Exercise extreme care with smoking materials and matches, major causes of destructive fire. Do not leave these where children can reach them.

IF A FIRE STARTS AND YOU HAVE ANY DOUBT ABOUT WHETHER YOU CAN EXTINGUISH IT, IMMEDIATELY GET EVERYONE OUT OF THE TRAILER AND A SAFE DISTANCE AWAY TO REDUCE THE RISK OF SERIOUS INJURY OR DEATH. NEVER REENTER A BURNING TRAILER.

• If you see, smell, or hear any hint of fire, evacuate everyone immediately, but don’t compound tragedy by attempting a rescue through a gauntlet of flames or thick smoke. Call the fire department as soon as possible. Don’t attempt to extinguish a fire unless it is confined to a small area and your extinguishing equipment is equal to the task.
• If your clothing ignites, roll over and over on the ground or the floor. Running will just fan the flames. Teach the proper procedure to your children.

• Before opening a door if you suspect fire in another part of the trailer, feel the inside of the door with the palm of your hand. If it’s hot, don’t open it. If smoke is pouring into the room under the door, stuff bedding or clothing into the crack; and get out of the trailer quickly. Identify egress windows and familiarize yourself with how to open all windows in your trailer. You may need to exit from a window if a fire or other emergency occurs.

• In smoke, keep low. Gases, smoke, and air heated by fire rise, and the safest area is at the floor. Cover mouth and nose with a damp cloth, if possible. Don’t assume that clean air in a fire situation is safe. It could contain carbon monoxide, which, before it kills you, affects judgment, hampering escape.

FIRE SAFETY REMINDERS

Fire is an unexpected event even with the best of housekeeping, safety features, and fire prevention procedures. Remember these helpful hints when faced with a fire:

• When reporting a fire, speak calmly, don’t panic, and give all the needed information.

• Remember to feel the door before you exit. If it is hot, don’t open it. The smoke and heat may knock you out. Look for another route of escape.

• If the door seems to be cool enough, open the door cautiously, ready to slam it shut if flames should burst in. If the path is clear, then escape.

• Remember to close the door after you — this will slow down the spread of the fire.

• Never reenter a burning trailer.

• Above all, don’t panic.

If you have small children, you should also consider the following

• Make sure children are never left unattended.

• Teach your children how to dial the emergency number “911” and ask for assistance.

• Instruct the baby-sitter to follow the evacuation plan and rendezvous point which you have established for your family if a fire should occur.

In general, plan ahead for safer living

• Know your new trailer.

• Learn the “do’s” and “don’ts” of safer living as outlined in this manual.

• Follow the instructions provided with your trailer and the equipment in it.
• Be sure that all members of your family are safety conscious.

• Finally, take a few minutes with your family to read and understand the safety tips we have given you.

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

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

To contact NHTSA, you may either call the Auto Safety Hotline toll-free at 1-888-327-4236 (or 366-0123 in Washington, D.C. area) or write to NHTSA, U.S. Department of Transportation, Washington, D.C. 20590. You can also obtain other information about motor vehicle safety from the hotline.
SLIDE-OUT ROOMS
(Manual or Motor Driven)

SLIDE-OUT ROOM SETUP AND OPERATION:

This section covers the recommended setup procedure and operation of slide-out rooms which are available in Skyline trailers. FAILURE TO CAREFULLY FOLLOW THESE INSTRUCTIONS COULD CAUSE AN UNSAFE CONDITION THAT MAY RESULT IN SERIOUS INJURY OR DEATH. Your trailer and factory slide-out assembly were designed as a unit; thus, satisfactory performance of both is contingent on the correct setup procedure as follows:

Prior to extending the slide-out room, the trailer must be unhitched from the tow vehicle and the trailer must be in its final level position. (See STABILIZATION on Pages 25 and 26). It is highly recommended to use stabilizing jacks or jack stands as mentioned in the section STABILIZATION. Travel locks are installed either on the top or sides of the slide-out room to stabilize the room during transit. They must be removed prior to operation. Be sure that nothing will interfere with the room movement and that all people are kept clear.

The slide-out room may be a manual crank or operate on a 12-volt system. The 12-volt system is protected by a 12-volt circuit breaker located in a cabinet near the slide-out room. The electrical system must have a fully charged 12-volt battery in the wiring system prior to operating the slide-out. DO NOT OPERATE THE SLIDE-OUT ROOM WITH THE CONVERTER ONLY. DAMAGE TO THE SLIDE-OUT MOTOR WILL OCCUR.

To operate the 12-volt electric slide-out, locate the switch near the slide-out room. The switch is spring-loaded and will return to the OFF position when released. To extend or retract the slide-out room hold the switch until it reaches its final position then release the switch. Familiarize yourself with the direction of travel of the room and the corresponding switch direction.

If the slide-out mechanism does not operate due to loss of power or electrical failure, the slide-out room may be moved manually. Please refer to slide-out room manual in owner's packet for instructions to operate room manually.

NOTE: On sofa slides, it may be necessary to remove an access panel below the sofa to gain access to slide out mechanism.

On some models a hand crank may be the standard means of operation. To operate the hand crank, first locate the shaft for the crank handle. It can be found on the exterior near the bottom center of the slide-out room. When units are supplied with the crank handle, place the crank handle over the shaft and turn the crank clockwise to retract or counter clockwise to extend the slide-out room. When units are not supplied with a crank handle a typical socket wrench may be used.
SLIDE-OUT ROOM ADJUSTMENT

Slide-out rooms, which are available in many Skyline trailers, are adjusted at the factory and should not require readjustment. However, if adjustment is needed this section covers the basic techniques. If you do not have adequate training or experience in adjusting slide-out rooms, consult someone who has experience and ask them to adjust the slide-out room. If you have any doubt, contact your dealer, the factory, or Skyline’s Director of Consumer Relations as outlined in this manual before trying to adjust your slide-out room.

The slide-out room may be adjusted in three directions: the height, length of travel, and front to back. It may be necessary to adjust the room in one direction or any combination of directions. THE TRAILER MUST BE LEVEL PRIOR TO ADJUSTING THE SLIDE-OUT ROOM.

LENGTH OF TRAVEL

The length of travel of the slide-out room (electric motor driven) may require adjusting if:

A) the entire slide-out room does not fully extend, or

B) the entire slide-out room does not close completely when retracted.

Please refer to slide-out room manual in owner’s packet for instructions.

FRONT TO BACK / HEIGHT

The slide-out room has been adjusted from front to back and for height and should not require readjustment. Trying to adjust your slide-out may result in damage to the slide-out mechanism. However, if adjustment is needed, contact your dealer, the factory, or Skyline’s Director of Consumer Relations as outlined in this manual.
SLIDE-OUT ROOMS
(Hydraulic)

SLIDE-OUT ROOM SETUP AND OPERATION

This section contains information that pertains only to hydraulic powered slide-out rooms. Read this section first. Additional information which pertains to both hydraulic and motor driven slide-out rooms can be located in the (motor driven) slide-out room section of this Owner's Manual (Page 68).

The slide-out room operates on a 12-volt system. The system is protected by a 12-volt fuse located near the converter. The electrical system must have a fully charged 12-volt battery in the wiring system prior to operating the slide-out. **DO NOT OPERATE THE SLIDE-OUT ROOM WITH THE CONVERTER ONLY. DAMAGE TO THE HYDRAULIC PUMP WILL OCCUR.**

**WARNING:** Plugging into the tow vehicle through the seven way connector is not a substitute for a fully charged RV battery. This charge line from the tow vehicle is only rated for thirty (30) amps. The fuse protecting this wire under the seven-way junction box cover will blow if the room is operated from the tow vehicle battery only. Never replace this fuse with a fuse larger than thirty (30) amps — fire, serious injury or death could result!

The switch that operates the slide-out room is conveniently located on an interior wall. Some models also have a switch at the hydraulic pump. The switch is spring-loaded and will return to the OFF position when released. To extend or retract the slide-out room, hold the switch until the room reaches its final position before releasing the switch. When extending the slide-out room on trailers with the optional front bedroom slide-out, the smaller room will travel first and the larger room will follow. Familiarize yourself with the direction of travel of the room with the corresponding switch direction.

If the slide-out mechanism does not operate due to loss of power or electrical failure, the slide-out room may be closed manually. Please refer to the slide-out room manual in owner's packet for instructions to operate the room manually.
SLIDE-OUT ROOM ADJUSTMENT

HEIGHT

To adjust the height of the slide-out room find the height adjustment assemblies. They are located under the slide-out room along the outermost wall. (See Figure 31) Loosen bolts “C” (two per assembly) shown in Detail 1 of Figure “A.” Turn the height adjustment bolts “D” as needed; clockwise to raise the room, counterclockwise to lower the room. After making the adjustments, retighten bolts “C.” To adjust the height of the optional front bedroom slide-out, refer to the slide-out room section in the owner's manual. When adjusting the height of the room, blocks and/or jacks to help support the room may prove helpful.

LENGTH OF TRAVEL

To adjust the length of travel of the slide-out room, locate the self-locking nuts on the end of the hydraulic ram. They are located under the slide-out room near the outermost wall (See Figure 31). When adjusting the length of travel of the slide-out room it is important to understand that when the hydraulic ram is in its final position (either fully extended or retracted), the slide-out room should be in its final position (the room seals should make a tight fit). To adjust the extent of the slide-out room see Detail 2 of Figure 31. Adjusting nut “E” in the direction shown will increase the travel of the room when extending (open the room further). The opposite direction will decrease the travel. Turning nut “F” in the direction shown will increase the return travel of the room (close the room tighter). The opposite direction will decrease the travel. To adjust the length of travel of the optional front bedroom slide-out, follow the above procedure. The adjustment nuts are located under the bed inside the trailer.

SIDE-TO-SIDE

The slide-out room has been adjusted side-to-side at the factory and should not require readjustment. Attempting to adjust your slide-out room side-to-side may result in permanent damage to the slide-out mechanism. However, if adjustment is needed contact the dealer, the factory, or Skyline’s Director of Consumer Relations as outlined in this manual.

For additional information regarding the operation and adjustment of the hydraulic slide-out room refer to the (motor driven) slide-out section of this Owner’s Manual.

CHECKLIST TO WINTERIZE YOUR TRAVEL TRAILER

The main concern in winter operation or storage is to guard against freezing damage to the hot and cold water systems including water tanks, water lines, water heater, drain lines, holding tanks, traps, and battery. When using your travel trailer at or below freezing levels, put NONTOXIC antifreeze in the holding tank. DO NOT use alcohol or alcohol-based solutions, but use only glycerin and propylene glycol based solutions. See your dealer for permanent-type antifreeze recommended for your area.
Figure 31

**Figure A**

**Detail 1**
- NUT "E" ADJUST NUT "E" IN DIRECTION SHOWN TO INCREASE EXTENT OF ROOM
- Piston rod must be held here to tighten nuts. Be sure to hold the rod as close to the threads as possible without touching them.
- ADJUST NUT "F" IN DIRECTION SHOWN TO INCREASE RETURN OF ROOM
- BOLTS "C" (SUPPORT ROOM BEFORE LOOSENING BOLTS "C")
- HEIGHT ADJUSTMENT
- BOLT "D"

**Detail 2**
- FREE TRAVEL
To completely winterize your travel trailer for storage follow this procedure to drain the water system:

1. Be sure the travel trailer is level. Use blocks or stabilizing jacks.

2. Be sure your toilet waste holding tank has been drained and flushed clean with soapy water.

3. Turn the water pump switch to the OFF position.

4. Open all faucets, including the water heater, and leave them open. After opening the hot and cold water faucets, open the drain valves on the HOT and COLD water pipes. These valves are located under interior cabinets at floor level and drain through the floor. (See Figure 32) Note: Some models may have capped lines rather than valves.

5. Drain all water from the tank by opening the drain on the side of the trailer.

6. Pour about a cup of NONTOXIC antifreeze in each drain, including the toilet, to prevent freezing.

**NOTE: YOUR ANTIFREEZE SOLUTION MUST BE EITHER GLYCERIN BASED OR PROPYLENE GLYCOL BASED (HAVING 30% OR LESS PROPYLENE GLYCOL). USE OF ANOTHER SOLUTION OF ANTIFREEZE WOULD VOID YOUR WARRANTY.**

7. Be sure all water is drained from the toilet; check and follow the manufacturer’s recommendations.

8. Close all windows, vents, and doors.

9. Clean the refrigerator and block the door open.

10. Check to see that the Propane valves are shut off at the tanks.
NOTE:

Since it is difficult to assure that all water has drained from any low spots in the water or drainage systems, we highly recommend performing steps one through five above and then installing special NONTOXIC antifreeze, such as “Winterize” (available from many Skyline dealers), in the water tank along with water in the ratio recommended by the antifreeze supplier. Thereafter, follow this procedure:

1. Turn on your demand water pump.
2. Open each faucet, including the shower head, one at a time, until the mixture comes out of the fixture.
3. Flush the toilet.
4. Turn off your demand pump.

Before using the water system after storage you should SANITIZE YOUR WATER SYSTEM AS INDICATED ON PAGES 30 AND 31. DO NOT DRINK WATER FROM A WINTERIZED SYSTEM UNTIL THE SYSTEM HAS BEEN COMPLETELY FLUSHED AND SANITIZED. INGESTION OF EVEN NONTOXIC ANTIFREEZE COULD CAUSE A SEVERE ADVERSE REACTION.

GENERAL

You should perform the following procedures if you will not be using your trailer for an extended period.

PROPNANE SYSTEM

Close the Propane container’s service valve. Extinguish all pilots and close all appliance Propane valves (oven/range, water heater, refrigerator, furnace). Light a range burner (or range pilot on eye-level models) to consume any gas remaining in the lines. When the flame burns out, turn the range burner (or pilot) OFF.

WATER HEATER

Drain the water heater. To drain, see water heater operation and installation manual included with trailer.

SMOKE DETECTOR

Remove batteries.

WATER TANK

To drain the water tank, switch the water pump ON and open all faucets. Remove the water tank’s exterior drain cap or open the tank’s drain valve. Open all hot and cold water line drain valves. When the tank is empty, close all faucets and drain valves and replace the drain cap (if so equipped).
WATER PUMP

When the water tank and water lines have been drained, remove the outlet hose from the pump. Turn the pump ON, allowing it to pump out any remaining water, usually about a cupful. Use a towel or rag to catch this water. You can reattach the outlet hose now or later.

ELECTRICAL SYSTEM

Turn off all circuit breakers at the service panel. If the trailer is equipped with a generator, turn off the generator at the switch in the generator compartment.

EXTERIOR

Place the unit in a garage or other shelter. If this is not possible, cover it with a tarpaulin or plastic.

INTERIOR

Close and secure all doors and windows. Open a roof vent or window slightly to allow circulation, but not so far that rain or snow can enter.
Travel Checklist

**FOOD—BEVERAGES**

- Bread
- Milk
- Sugar
- Coffee
- Tea
- Salt
- Pepper
- Catsup
- Mustard
- Eggs
- Bacon
- Butter
- Cheese
- Lunch Meat
- Meat Dinners
- Potatoes
- Vegetables
- Fruit
- Cereals
- Cookies
- Beverages
- Soups
- Crackers
- Pancake Mix

**GALLEY**

- Dishes, Cups
- Silverware
- Tumblers
- Coffee Pot
- Pots, Covers
- Pans, Covers
- Utensils, Flipper
- Paper Plates, Cups
- Napkins
- Paper Towels
- Can Opener
- Bottle Opener
- Sponges
- Dish Towels, Drainer
- Liquid Detergent
- Soap Powder
- Window Cleaner
- Wax Paper/Foil
- Plastic Bags
- Large Trash Bags
- Portable BBQ
- Charcoal Starter Fluid
- Clothesline
- Clothes Pins
- Matches
- Water Pail
- Candles

**TOILETRIES—PERSONAL**

- Face Soap
- Wash Cloths
- Hand Towels
- Bath Towels
- Bath Mat
- Rubber Shower Mat
- Bathroom Tissue
- Toothbrushes
- Toothpaste
- Hair Brush
- Combs
- Lip Balm
- Sun tan Lotion
- Razor & Blades
- Nail Clippers
- Insect Repellent
- First Aid Kit
- Snake Bite Kit
- Sunglasses

**CLOTHING**

- Underwear
- Jackets
- Sweaters
- Socks
- Bathing Suits
- Various Shoes
- Hats, Caps
- Rainwear
- Handkerchiefs
- Pajamas
- Pillows
- Pillow Cases
- Sheets
- Blankets
- Sleeping Bags
## Camping Checklist

### COMFORT—ENTERTAINMENT

<table>
<thead>
<tr>
<th>Item</th>
<th>Marked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playing Cards</td>
<td>✔️</td>
</tr>
<tr>
<td>Jigsaw Puzzles</td>
<td>✔️</td>
</tr>
<tr>
<td>Games</td>
<td></td>
</tr>
<tr>
<td>Books, Magazines</td>
<td></td>
</tr>
<tr>
<td>Writing Pads, Pencils</td>
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<tr>
<td>Canopy or Awning</td>
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<tr>
<td>Battery Radio</td>
<td></td>
</tr>
<tr>
<td>Folding Chairs</td>
<td></td>
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</table>

### SPORTS

<table>
<thead>
<tr>
<th>Item</th>
<th>Marked</th>
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<tbody>
<tr>
<td>Fishing Rods</td>
<td>✔️</td>
</tr>
<tr>
<td>Tackle Box, Bait</td>
<td>✔️</td>
</tr>
<tr>
<td>Baseball, Bat &amp; Gloves</td>
<td>✔️</td>
</tr>
<tr>
<td>Football</td>
<td></td>
</tr>
<tr>
<td>Frisbee</td>
<td></td>
</tr>
<tr>
<td>Hiking Boots</td>
<td>✔️</td>
</tr>
<tr>
<td>Backpack</td>
<td>✔️</td>
</tr>
<tr>
<td>Hunting Knife</td>
<td>✔️</td>
</tr>
<tr>
<td>Pocket Knife</td>
<td>✔️</td>
</tr>
<tr>
<td>Pocket Compass</td>
<td></td>
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<tr>
<td>Swim Fins</td>
<td></td>
</tr>
<tr>
<td>Air Pump</td>
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<tr>
<td>Kite &amp; String</td>
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### MISCELLANEOUS

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<td>Road Maps</td>
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<tr>
<td>Directory, Trailer Camps</td>
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</tr>
<tr>
<td>Camera &amp; Film</td>
<td>✔️</td>
</tr>
<tr>
<td>Dishes, Cups</td>
<td>✔️</td>
</tr>
<tr>
<td>Sewing Kit, Patches</td>
<td>✔️</td>
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<tr>
<td>Clothes Hangers</td>
<td>✔️</td>
</tr>
<tr>
<td>Firewood</td>
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</table>

### TOOLS

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<tbody>
<tr>
<td>Screwdriver</td>
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</tr>
<tr>
<td>Adjustable Wrench</td>
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<tr>
<td>Pliers</td>
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<tr>
<td>Small Saw</td>
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</tr>
<tr>
<td>Hammer</td>
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</tr>
<tr>
<td>Folding Shovel</td>
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<td>Lantern, Fuel, Mantles</td>
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<tr>
<td>Flashlight</td>
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<tr>
<td>Hatchet</td>
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<tr>
<td>Spare Batteries, Bulb</td>
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</tr>
<tr>
<td>Spare 12V Bulb</td>
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</tr>
<tr>
<td>Spare 12V Fuses</td>
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<tr>
<td>Voltmeter</td>
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</tr>
<tr>
<td>Circuit Test Light</td>
<td>✔️</td>
</tr>
<tr>
<td>Jumper Cables</td>
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<tr>
<td>Tire Air Gauge</td>
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</tr>
<tr>
<td>Water Can</td>
<td>✔️</td>
</tr>
<tr>
<td>Gas Can</td>
<td>✔️</td>
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<tr>
<td>Holding Tank Disposal Hoses</td>
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</tr>
<tr>
<td>Water Drain Pail</td>
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<tr>
<td>Flares or Reflectors</td>
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<tr>
<td>Holding Tank Chemicals</td>
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<tr>
<td>Fresh Water Hose</td>
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### BEFORE YOU LEAVE ON THE TRIP

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<thead>
<tr>
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<tbody>
<tr>
<td>Fill Water Tank</td>
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<tr>
<td>Fill Propane Tank</td>
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</tr>
<tr>
<td>Check Tires</td>
<td>✔️</td>
</tr>
<tr>
<td>Check Wheels Lugs</td>
<td>✔️</td>
</tr>
<tr>
<td>Check Batteries</td>
<td>✔️</td>
</tr>
<tr>
<td>Check Running Lights</td>
<td>✔️</td>
</tr>
<tr>
<td>Check Safety Chains</td>
<td>✔️</td>
</tr>
<tr>
<td>Check Brakes</td>
<td>✔️</td>
</tr>
<tr>
<td>Check Sway Control</td>
<td>✔️</td>
</tr>
<tr>
<td>Check Coupler</td>
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</tr>
</tbody>
</table>
## Maintenance Requirements

Maintenance intervals, checks, and inspections as prescribed in this manual are necessary to keep your vehicle in good working condition. Any damage caused by failure to follow recommended maintenance may not be covered by warranty.

**Recommended Maintenance Schedule**

<table>
<thead>
<tr>
<th>Service To Be Performed</th>
<th>Service Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Each Trip Weekly</td>
</tr>
<tr>
<td>Pack Wheel Bearings</td>
<td></td>
</tr>
<tr>
<td>Inspect Brakes</td>
<td></td>
</tr>
<tr>
<td>Inspect Safety Chains</td>
<td></td>
</tr>
<tr>
<td>Inspect Brake Wiring</td>
<td></td>
</tr>
<tr>
<td>Inspect Tires</td>
<td></td>
</tr>
<tr>
<td>Inspect Hitch Components</td>
<td></td>
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<tr>
<td>Lubricate Locks</td>
<td></td>
</tr>
<tr>
<td>Lubricate Coupler Latch &amp; Socket</td>
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<tr>
<td>Lubricate Hinges</td>
<td></td>
</tr>
<tr>
<td>Inspect + Clean Vents</td>
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</tr>
<tr>
<td>Torque Lug Nuts</td>
<td></td>
</tr>
<tr>
<td>Sanitize Water Tanks (if trailer has been stored)</td>
<td></td>
</tr>
<tr>
<td>Clean Drapes + Interior Fabrics</td>
<td></td>
</tr>
<tr>
<td>Clean Battery Cables &amp; Terminals / Check Fluid</td>
<td></td>
</tr>
<tr>
<td>Inspect Suspension</td>
<td></td>
</tr>
<tr>
<td>Check All Seams + Openings Reseal as Needed</td>
<td></td>
</tr>
<tr>
<td>Check Water System Components</td>
<td></td>
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</tbody>
</table>
Warranty Information

Air Conditioner
Manufacturer ____________________________________________________________
Model _________________________________________________________________
Serial Number ___________________________________________________________

Microwave Oven
Manufacturer ____________________________________________________________
Model _________________________________________________________________
Serial Number ___________________________________________________________

Stereo
Manufacturer ____________________________________________________________
Model _________________________________________________________________
Serial Number ___________________________________________________________

Generator
Manufacturer ____________________________________________________________
Model _________________________________________________________________
Serial Number ___________________________________________________________

Miscellaneous
Key Number _____________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
_______________________________________________________________________
Skyline Recreational Vehicle Manufacturing Locations

California

LAYTON TRAVEL TRAILERS
P.O. Box 2195
425 S. Palm
Hemet, CA 92543-5834
1-800-733-4250
1-951-925-0401

NOMAD TRAVEL TRAILERS
P.O. Box 933
920 W. Mayberry St.
Hemet, CA 92543-5834
1-888-442-0997
1-951-658-7106

Oregon

NOMAD-MCMINNVILLE, OR
P.O. Box 360
750 Booth Bend Rd.
McMinnville, OR 97128-0360
1-800-929-1080
1-503-472-3101

Texas

SKYLINE RV DIVISION
P.O. Box 119
606 S. Second Ave.
Mansfield, TX 76063-1917
1-800-962-7773
1-817-477-3161

Indiana

NOMAD/LAYTON - ELKHART, IN
P.O. Box 1068
401 C.R. 15
Elkhart, IN 46516-9623
1-800-736-2573
1-574-294-2573

SKYLINE CORPORATE OFFICE
P.O. Box 743
2520 By-Pass Road
Elkhart, IN 46514-1584
1-800-755-6521
1-574-294-6521
crelations@skylinecorp.com
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Of course, you love the RV lifestyle. And your Skyline-built RV. But you still need a home base. A place you can head for when your holiday is history.

You need a home loaded with style, comfort, and convenience. A low-maintenance home with all the space and features you want. At a price you can afford.

So if you’re thinking about owning a home that won’t own you, it’s time to check out the homes built and backed by Skyline. For more than 54 years, Skyline’s been building America’s best. Because Skyline people understand that even for an RVer, nothing’s more important than home sweet home.

For the name of your nearest retailer of Skyline-built homes, write Marketing Department, Skyline Corporation, Post Office Box 743, Elkhart, Indiana 46515-0743. Or visit us at our Web Site, at www.skylinecorp.com.

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CORPORATE MISSION STATEMENT

Skyline Corporation is a leader in the development, manufacture, and marketing of high quality, innovative manufactured homes and recreational vehicles that meet customer needs for housing and leisure lifestyles.

Our mission is to continually improve the quality of our products and the way we do business in order to meet customers’ expectations. By pursuing this mission, we will be able to grow and prosper as a business, provide stable employment and a high quality of work life for our people, be a responsible community citizen, and return a reasonable profit to our shareholders.

Our mission reflects our deeply held Corporate values and principles and its achievement involves these areas:

SAFETY...
We will provide a safe work environment for our people and safe products for our customers.

QUALITY...
We will provide products and services that consistently meet customer needs and exceed expectations for quality.

CONTINUOUS IMPROVEMENT...
We will continually strive for excellence in everything we do. We will constantly seek day-to-day and long-term improvements and not settle for short-term “fixes.”

CUSTOMER FOCUS...
Customers are the ultimate reason Skyline is in business and everyone at Skyline must direct his or her efforts to the production of products that exceed customer expectations. Every activity and every job in the Company is part of this process.

PEOPLE...
People are our greatest asset. We will listen to and respect ideas from everyone and will involve our people in the decisions that affect the areas in which they work. We will continually encourage and provide training and educational opportunities for our people, so that they can optimize their performance, their individual development, and their contribution to the Company.

TEAMWORK...
Teamwork is the driving force of the Skyline organization, enabling us to coordinate the Company’s resources to achieve the Company’s mission. The essence of teamwork is breaking down barriers between departments and treating each person and each job as a customer whose needs must be met if the ultimate customer, the buyer of a Skyline product, is to be satisfied.

INTEGRITY...
We will conduct all of our activities in a manner which is at all times fair, moral, ethical, and legal. We will hire, reward and promote without discrimination and without regard to age, sex, ethnic origin, physical condition, or religious belief.

DEALERS & SUPPLIERS...
We view our dealers and suppliers as extensions of our Company. We will conduct our business in an atmosphere of trust and work to form mutually beneficial long-term partnerships.

PROFITS...
Profits are the ultimate measure of how efficiently we satisfy our customers’ desire for products of superior value. We will strive to achieve the profits required for survival and growth and to provide jobs and security for our people.