Chapter 3: Towing and Leveling

Towing Guidelines

Weight distribution is an important factor when loading your fifth-wheel and travel-trailer. A recreational vehicle with the cargo distributed properly will result in efficient, trouble-free towing. Loading the coach as evenly as possible and then weighing the loaded RV can accomplish proper weight distribution. Keep heavier items as low as possible and distribute evenly (front to back and side to side). Securing your possessions can prevent damage from shifting during towing and maintain the weight distribution balance achieved during preparation for travel.

You must not exceed the GVWR or GAWR of the unit (see definitions). To verify GVWR, total the loaded hitch and axle weights. If this total exceeds GVWR, you must remove items until the vehicle weight is within this limit. You can verify that the coach's axles are not overloaded by comparing the loaded axle weight with the GAWR. If the reading is above this limit, redistribute the item load.

Finally, make sure the pin weight of the loaded fifth-wheel falls within the limits of the tow vehicle.

Weight Ratings - Definitions

GVWR (Gross Vehicle Weight Rating)

The maximum permissible weight of this coach when fully loaded. It includes all weight at the unit's axle(s) and tongue or pin.

UVW (Unloaded Vehicle Weight)

The weight of this fifth-wheel as manufactured at the factory. It includes all weight at the coach's axle(s) and tongue or pin. If applicable, it also includes full generator fluids, 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 LP gas weight.

GAWR (Gross Axle Weight Rating)

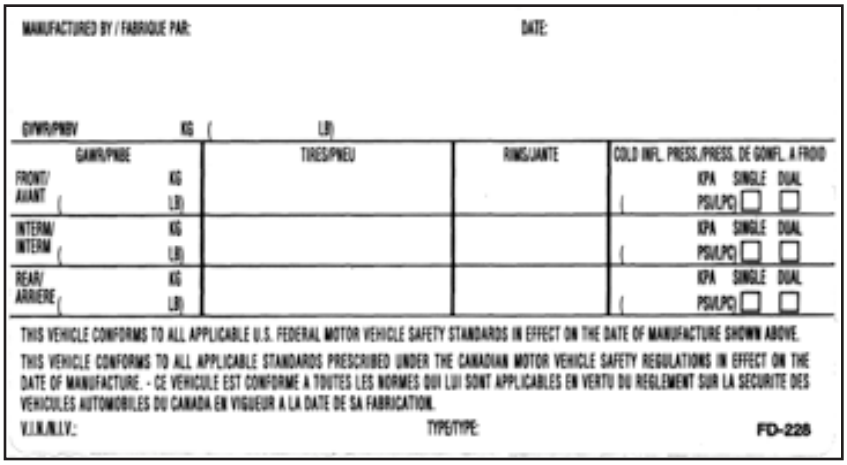
The maximum allowable weight that an axle system is designed to carry.

Weight Ratings - Labels

The information on the weight ratings is contained on two labels: The Federal Certification Tag and the RVIA Weight Label. Each label contains the Vehicle Identification Number (VIN) / Serial Number for the vehicle rated. These ratings are specific for each fifth-wheel and travel-trailer manufactured. Use only the ratings found on these labels:

Passengers are not permitted in the coach while it is in motion.

Federal Certification Label



MANUFACTURED BY / FABRIQUE PAR: DATE:

GVWR/PNBV KG (LB)

GAWR/PNBE		TIRES/PNEU	RIMS/JANTE	COLD INFL. PRESS./PRESS. DE GONFL. A FROID
FRONT/ AVANT	KG (LB)			KPA SINGLE DUAL (PSI/LPC) ☐ ☐
INTERM/ INTERM	KG (LB)			KPA SINGLE DUAL (PSI/LPC) ☐ ☐
REAR/ ARRIERE	KG (LB)			KPA SINGLE DUAL (PSI/LPC) ☐ ☐

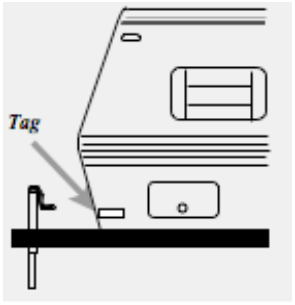
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

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

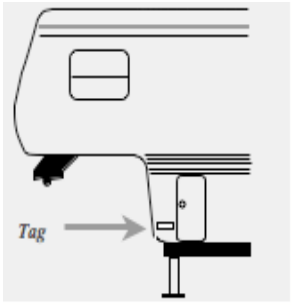
V.I.N./N.I.V.: TYPE/TYPE: FD-228

Location

The Federal Certification Tag on your fifth-wheel or travel-trailer can be located on the road side (off-door side) near the front of the unit as seen in the diagrams below. This tag contains the GVWR, GAWR (front and rear) and tire pressure limits.



Travel-Trailer



Fifth-Wheel

RVIA Weight Label

TRAILER WEIGHT INFORMATION

VIN OR SERIAL NUMBER

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

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

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

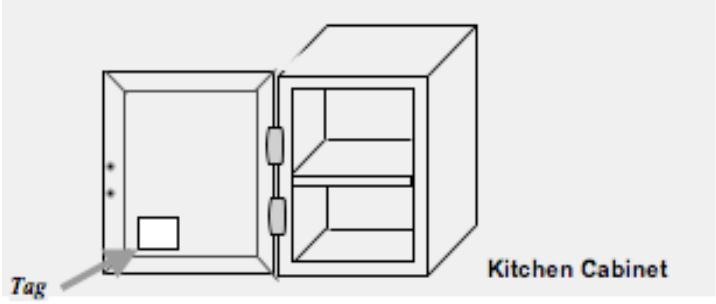
CARGO CARRYING CAPACITY (CCC) COMPUTATION	POUNDS	KILOGRAMS
GVWR		
MINUS UVW		
MINUS FRESH WATER WEIGHT OF GALLONS @ 8.3 LB/GAL		
MINUS LP-GAS WEIGHT OF GALLONS @ 4.5 LB/GAL		
= CCC FOR THIS TRAILER*		

*DEALER INSTALLED EQUIPMENT WILL REDUCE CCC

CONSULT OWNER MANUAL(S) FOR SPECIFIC WEIGHING INSTRUCTIONS AND TOWING GUIDELINES. CD-132

Location

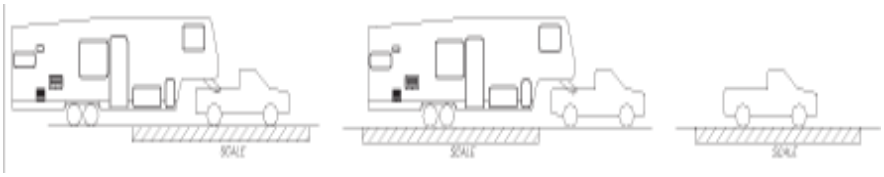
The RVIA Weight Label is located on the inside of an upper kitchen cabinet door. In general, the tag is affixed to the cabinet above or adjacent to the sink. This tag provides the GVWR rating, the UVW (Unloaded Vehicle Weight) and the computation for CCC (Cargo Carrying Capacity).



Weighing Your Unit

Fifth-Wheel

- Pull forward on the scales until only the coach's axles are on the scale. Record axle weight. Pull off the scales and unhook from the fifth-wheel. Weigh the truck by itself and record this weight.
- To determine hitch pin weight subtract the weight of the tow vehicle from the combined truck /coach weight. Write this number down.
- To determine overall weight, add the hitch weight plus axles



Travel-Trailer

- Drive the loaded trailer onto the scales as shown in the picture below, making sure that the hitch will be the only contact point with the scales after unhooking. Unhook and drive the tow vehicle off the scales. Level the trailer and record hitch weight.
- Hookup to the trailer and pull forward on the scales until only the trailer axles are on the scale. Level the trailer and record axle weight.
- To determine overall weight, add the hitch weight plus axles.

Hitches and Towing

Fifth-Wheel

1. Adjust the landing gear jacks until coach is at level for hooking to the tow vehicle.
2. Place wheel chocks behind fifth-wheel's tires.
3. Lower the tailgate on truck.
4. Release the fifth-wheel lock handle on the tow vehicle.
5. Line up the tow vehicle so the fifth-wheel will accept the kingpin.

DANGER

Wheel Separation Can Occur! Exceeding the GVWR and GAWR ratings for your unit could result in serious damage to the suspension, frame or other components.

6. Close and latch tailgate.
7. Back truck slowly until kingpin engages the fifth-wheel and automatically locks
8. Ensure the lock is closed.
9. Connect the power seven-way cord between the tow vehicle and the fifth-wheel.
10. Connect the emergency breakaway switch cable.
11. Test the fifth-wheel brakes and exterior lights
12. Completely raise the landing gear.
13. Store the wheel chocks.
14. Check the tire pressure while the vehicle tires are cold.
15. Re-torque the lug nuts. Refer to “Wheel Nut Torque”

Travel-Trailer

1. Crank the tongue of the trailer jack up until the hitch coupler is high enough to clear the tow vehicle.
2. Back the tow vehicle to the trailer until the hitch ball is directly under the coupler on the trailer.
3. Set the parking brakes, raise the locking latch on the coupler and crank it down on the ball.
4. Move the locking latch down to lock it on the ball.
5. Engage the lock and retainer clip.
6. Raise the tongue by cranking the jack down. (The tow vehicle will come up with it if the high coupler is properly latched.)
7. Connect the power cord between the tow vehicle and the trailer.
8. Connect the breakaway switch, assuring the breakaway cable is not attached to any part of the tow vehicle assembly.
9. Crank the jack all the way up.
10. Install and adjust side mirrors.
11. Check all lights on the trailer and tow vehicle.
12. Pull forward and check the operation of the trailer brakes with the hand control to assure proper operation. (Refer to manufacturer specifications on setting the brake control.)

Before Towing

- Ensure the TV antenna is down and in the correct position.
- Disconnect all park connections and are securely stored.
- Close and secure all doors, windows, awnings and roof vents
- Return the Entry step to the travel position.
- Refer to the “Pre-Travel Checklist” located in the Appendix

Towing

Towing a recreational vehicle can be enjoyable and worry-free if special attention toward safety is applied every time you hit the road and before heading out on our first camping trip, practice turning, stopping and backing in low traffic areas or large parking lots. In time, traveling with a recreational vehicle in tow will be as easy as driving the family car.

Before Heading Out

Weight Distribution

Proper weight and load distribution is absolutely essential to safe towing. It is necessary to maintain a certain percentage of gross vehicle weight on the tow vehicle. Common recommendations place approximately 10% - 15% of a loaded weight on a travel-trailer hitch and approximately 20-25% on a fifth-wheel pin weight, as the weight comes out of the tow vehicle payload capacity. Too much or too little weight upon the hitch leads

CAUTION

Check tires for proper inflation and wheel lug torque to meet manufacturer’s specifications.

to dangerous driving conditions such as sway and reduced tow vehicle control. In no circumstance should the loaded weight ever exceed the GVWR or the GAWRs.

Safety Chains

Always use safety chains when towing. They maintain the connection between the travel-trailer and tow vehicle in the event of separation of the ball and trailer coupling. Safety chains are included with every travel-trailer and, in most states, are required when towing a travel-trailer. Hook them to the frame of the tow vehicle (not the hitch), crossing them under the trailers tongue. Inspect the length of the chains once attached to the tow vehicle frame. They should be long enough to allow for turns, but short enough to avoid any drag.

Breakaway Switch

The breakaway switch is another safety device as it provides a means of automatically slowing and stopping your RV if it should become detached during traveling. The cable from the breakaway switch should be attached to the tow vehicle so that it remains connected in the event the trailer coupling detaches from the hitch ball. The breakaway switch is powered from the RV 12 Volt battery. If separation occurs the pin is pulled out of the switch and current from the RV battery is applied to the trailer brakes.

Tire Pressure

Maintaining proper tire pressure is another key to safety. The Cold Inflation Pressure for each axle is located on the Federal Certification Label. Cold inflation pressure refers to the pressure in the tire prior to traveling. Always check your tire pressure before traveling. Under inflated tires will cause excessive sidewall flexing and produce extreme heat, leading to early tire failure and possible loss of control. Over inflated tires can cause uneven tire where and also lead to early failure. More information on tires and maintenance can be found in the Care and Maintenance section.

Level Towing

Having the tow vehicle and recreational vehicle level with each other will help improve towability as well as safe driving. A hitch that is too low can cause the front to drag. A hitch that is too high can cause the rear to hit those high spots in the road.

Lights

Check all electrical connections to ensure all lights on the tow vehicle and travel-trailer are functioning properly. The break lights, hazards and turn signals should be in synchronization with the tow vehicle.

Mirrors

Adjust the mirrors on the tow vehicle prior to departure. Having someone to assist you will make this safety step quick and easy. First line up the tow vehicle and trailer. Next, sit in the driver's seat and adjust the left mirror to where you can see the entire left side of the trailer and well beyond. Finally, while still sitting in the driver's seat, have someone adjust the right mirror until the same result is achieved.

While Driving

Driving with a trailer in tow is different. Start out slowly, checking the traffic after signaling and being sure the road is clear. Accelerate slowly and evenly, checking the mirrors frequently as you move into the proper

WARNING

Disconnect the unit from the Bargman Seven-Way Tow Vehicle Cord prior to testing the breakaway switch. Failure to do so may cause damage to the brake controller.

lane. Try to drive with an anticipation of problems that may occur way ahead and prepare for them, even though they may never happen. As a motorist sharing the road, you are taller, heavier, longer and require more time and distance to stop. Weather and road conditions will require adjustments to speed. Anticipate dips, gutters, and depressions in the road, slowing down well in advance, these are the hardest jolts of any kind on your vehicle, hitch, recreational vehicle and items stored inside the unit. Take dips and bumps slowly and be certain the trailer wheels have passed the point before accelerating.

Backing

Back with care. Having a person outside to assist is a good idea. If no one is available to help, the driver should inspect the area behind the vehicle to avoid any unseen obstacles and unpleasant surprises.

Braking

Start sooner and lead with your trailer brakes. Prior to beginning any trip, make sure the brake control is adjusted. See your accompanying literature for the brake control you had purchased for your tow vehicle.

Passing and Accelerating

Remember when you pass another vehicle that it takes longer to accelerate and additional time must be allowed due to the added length of the trailer. Passing should be done on level terrain and downshift, if necessary for added acceleration. Whenever deciding to pass another vehicle, exercise caution and always use the turn signals.

Sharply Winding and Narrow Roads

Keep well to the center of the lane, equally away from both the center line and pavement edge. This allows the trailer to clear the edge of the pavement without the likelihood of the wheels dropping onto the shoulder, causing potential dangerous sway. Do not overcrowd or cross the center line.

All sharp turns should be taken at low speeds. Professional drivers, when rounding turns, slow down well in advance of the turn, entering it at reduced speed, and then accelerate smoothly as they come out again into the straightaway.

Steep or Long Grades

Down shifting into a lower gear or range in advance assists braking on descents and adds power on the climb. Avoid situations that require excessive and prolonged use of the brakes. Apply and release brakes at short intervals to give them a chance to cool.

Slippery Pavement

On slippery and icy pavement, reduce speed and drive slowly. Hydroplaning can occur with little water on the pavement. If skidding begins, remove your foot from the throttle and gently apply the trailer brakes only.

Freeways and Highways

Try to pick the lane in which you want to move and stay in it, preferably keeping to the slower lane on the right.

Turning Corners

Here is where you find a first basic difference when towing. The trailer wheels do not follow the path of your tow vehicle's wheels. The trailer will make a closer turn than the tow vehicle. Compensate by pulling further into the intersection so that the trailer will clear the curb or clear any parked vehicles along the road. Left turns require a wider than normal swing into the new lane of traffic to keep the trailer from edging into the opposing lane. Use the turn signals early to communicate to traffic behind and slow down well in advance.

Mud and Sand

Let the momentum of the tow vehicle and trailer carry you through. Apply power gently and stay in the tracks of the previous vehicle. If stuck, tow the trailer and tow vehicle out together without unhitching.

Parking

Whenever possible avoid parking on a grade with a recreational vehicle in tow. If it is necessary, turn the front wheels of your tow vehicle into the curb and set the parking brake. For added safety, place wheel chocks under the trailer wheels on the down roadside.

Fifth-Wheel Leveling Procedures

1. Choose a site that is as level as possible (Some sites are equipped with a prepared surface such as concrete or asphalt). Ensure the ground is not soft and will support the weight of the fifth-wheel on the stabilizing jacks or other support devices.
2. Before uncoupling, level the fifth-wheel from side to side with suitable lengths of 2" x 6" wood blocks under the coach's wheels. Place the wood blocks on the ground forward of the wheels and tow the unit onto the blocks. Block the wheels to be sure the fifth-wheel cannot roll.
3. Lower the "quick drop" landing gear legs before extending the landing gear. The positioning of the "quick drop" legs will depend upon how level your campsite is from side to side and front to rear. The landing gear is then extended. It may be necessary to place a sturdy 2" x 6" wood block under the foot pads to support the landing gear on soft ground surfaces.
4. After stabilizing the unit, be sure the fifth-wheel frame is not twisted, buckled or stressed. Check that all doors and windows operate freely and do not bind.
5. Before resuming travel, be sure the stabilizer jacks are fully retracted.

Ramp Trailer Weight Distribution

All loaded trailers must remain within GVWR and GAWR limits. However, proper load distribution is of particular importance for ramp trailers. These trailers are designed to carry a variety of internal combustion engine vehicles in the transportation storage area. These cargo items are typically heavy and consideration must be given to how they are loaded. Because most storage areas are at the rear of the vehicle the biggest concern is maintaining the correct hitch or pin weight percentage. Vehicles loaded

Due to slower speeds, cars can become trapped behind you on a two-lane road. It is courteous and practical to signal and pull onto the shoulder when possible allowing them to pass. This reduces passing hazards and saves tempers.

Leveling
Put a small round bubble-level inside the refrigerator to determine proper level for refrigerator operation.

Slide-Outs
In extended use situations, it is advisable to add support blocks under the slide- room. Do not raise the room. Just touch the bottom.

WARNING

Secure cargo and vehicles as far forward as possible. Excess weight in the rear of trailers can result in loss of stability when towing.

incorrectly can have too little weight resting on the hitch or pin and can become unstable when towing. Therefore, a hitch weight percentage of 10 – 15% for travel trailers and 20 – 25% for fifth wheels must be maintained. For example, if the loaded vehicle weighs 8000 pounds, the hitch weight for a travel trailer should be between 800 – 1200 pounds (10 – 15% of the 8000 pound total). For a fifth wheel this same 8000 pound vehicle should have a pin weight of 1600 – 2000 pounds (20 – 25%). By maintaining the correct hitch percentage and staying within the limits of the GVWR and GAWR you can insure a safe towing experience with your trailer.

Travel-Trailer Leveling Procedures

1. Chose a site that is level as possible (Some sites are equipped with a prepared surface such as concrete or asphalt.) Ensure the ground is not soft and will support the weight of the trailer on the stabilizing jacks or other support devices.

2. Before uncoupling, level the trailer from side to side with suitable lengths of 2” x 6” wood blocks under the trailer wheels. Place the wood blocks on the ground forward of the wheels, and tow the trailer onto the blocks. Block the wheels to be sure the trailer cannot roll.

3. Put the foot pad on the hitch jack post, uncouple the trailer from the tow vehicle and level the trailer front to rear. It may be necessary to place a sturdy 2” x 6” wood block under the jack post foot pad to support the jack post on soft ground surfaces.

4. Check the level of the trailer with a carpenter’s level both crosswise and lengthwise on the trailer floor.

5. After stabilizing the trailer, be sure the trailer frame is not twisted, buckled, or stressed. Check that all doors and windows operate freely and do not bind.

6. Before resuming travel, be sure all stabilizers are removed or fully retracted.

Stabilizing jacks are designed to level and stabilize your coach. Do not attempt to lift the unit to change a tire or for any other purpose.

Stabilizing Jacks


Scissor Jack


“T”- Type Jack


Telescopic Jack

Dependent upon the type (travel-trailer / fifth-wheel), product and model purchased, the stabilizer jacks included will vary. Although stabilizer jacks come in different types and sizes, all perform the same function: To stabilize the front and rear of all recreational vehicles while parked for camping.

Always park the recreational vehicle on level ground and use tire chocks. It is extremely important to level the trailer front and rear using the tongue jack (travel-trailers) or landing gear (fifth-wheels). Using the crank for the particular stabilizer jack, lower the jack(s) on the lowest side of the trailer first and check the level. Adjust if necessary and then lower the other jack(s) to finish stabilizing the trailer.

WARNING

After-market stabilizer stands must be placed only under chassis frame rails. Stabilizer jacks should not be placed at extreme corners of the frame. Locating stabilizers in these locations can cause slide-room damage if leveling blocks were to shift or settle. Do not attempt to level, raise or otherwise place all of the weight of the unit on the stabilizer jacks. Do not use stabilizer jacks for tire-changing.

Chapter 4: Appliances and Equipment

What to do if you smell gas

Do not try to light any appliance
Extinguish any open flames including cigarettes
Do Not Touch Any Electric Switch
Open windows and doors
Exit trailer
Shut off the gas supply at the gas container (bottle or source)
Immediately call a service center or gas supplier from an outside phone and follow their instructions
Do not turn on the gas supply until the gas leaks have been repaired

Refer to the individual manufacturer's owner's manual for operating instructions on the following equipment.

Air Conditioner (Optional)

Roof mounted air conditioners are operated by an 110V AC power source through a separate circuit breaker. Keep in mind that typically RV electrical systems are designed to handle 30 amps and that the air conditioner takes a sizable portion of that when the compressor starts. (Limited product models have an optional 50 Amp capability. (See Chapter 5, Electrical Systems) Reduce other loads as much as possible when using air conditioning to reduce the chance of overload and possibly tripping the main breaker. (For thermostat operation on the air conditioner, see "Thermostat" in this section)

Capability vs. Environment

The capability of the air conditioner to maintain the desired inside temperature is directly effected by the heat gain of the RV. During extreme high outdoor temperatures, the heat gain of the vehicle may be reduced by:

1. Parking in a shaded area
2. Keeping blinds down or drapes shut
3. Keeping windows and doors shut and minimize usage
4. Operation on High Fan/Cooling mode will provide the maximum efficiency in high humidity or high temperatures
5. Using awnings to block direct sunlight exposure on the unit
6. Avoiding use of heat producing appliances
7. Giving the A/C a "head start" by turning the air conditioner on early in the morning

Care and Maintenance

Periodically remove the return air filter and wash with hot soapy water. During extended use situations, cleaning is recommended after two weeks of daily usage.

WARNING

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

WARNING

When refueling tow vehicle, shut off all LP gas appliances. Most LP gas appliances are vented to the outside. Gasoline fumes could enter the appliance and ignite from the burner flame, causing an explosion or fire.

WARNING

LP Gas containers shall not be placed or stored inside the vehicle. LP Gas containers are equipped with safety devices that relieve excess pressure by discharging gas to the atmosphere.

WARNING

DO not store or use gasoline or other flammable vapors and liquids in the vicinity of any appliance.

CAUTION

Never run the A/C without the filter. This could plug the unit evaporator cell, substantially effecting performance.