2007

Allegro

Owner's Manual

Tiffin Motorhomes, Inc.

105 2nd Street NW

Red Bay, AL 35582 U.S.A.

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[20060430]

Volume

3

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DISCLAIMER

Many of the features and appliances described in this manual may or may not be reflected in the actual motor home purchased, depending on the options and models selected by the motor-home owner. All items, materials, instructions, and guidance described in this manual are as accurate as possible at the time of printing. However, because of Tiffin Motorhomes' ongoing and dedicated commitment to excellence, improvement of Tiffin's motor homes is a continuing process. Consequently, Tiffin Motorhomes reserves the right to make substitutions and improvements in its makes and models of motor homes without prior notification. Substitutions of comparable or better materials, finishes, appliances, instrumentation, and instruction may be made at any time it is deemed prudent to provide the customer with the best possible motor home meeting the customer's requirements.

Printed in the United States of America: Fourth U.S. Printing: November, 2004

[20060430]

Table of Contents

Chapter 5

Cabinets & Furniture

Chapter 6

Structural Features

Chapter 7

Electrical Features

Chapter 8

Slide-Out Features

Chapter 9

Exterior Features

Chapter 10

Interior Features

Chapter 11

Plumbing & Bath Features

Chapter 12

Construction Features

Chapter 13

Windows, Awnings, Vents & Doors

Chapter 14

Routine Maintenance

Chapter 15

Maintenance & Data Charts

Chapter

1

GENERAL INFORMATION

TIFFIN MOTORHOMES: "WHEREVER YOU GO…WE GO"

Delivery

Throughout the entire manufacturing process your Tiffin motor home has been regularly inspected by our qualified personnel to assure you of the finest product of the highest quality, **without exception**. However, the final inspection at our factory is not to be the last one. The pre-delivery inspection and system check that your dealer performs are the final inspections done to your particular motor home prior to your actually receiving your new Allegro motor home. Your dealer is also available to assist you in understanding the warranties and completing the necessary forms to activate the warranties for the various appliances and accessories installed in your motor home.

Dealer Responsibilities

1. **A pre-delivery inspection and systems check** is performed to assure a thorough inspection of the motor home and to assure the proper operation of all factory-installed components.

2. **A customer walk-through** is performed to familiarize the new customer with the motor home, its systems and components, and their proper and safe operation.

3. Delivery of the **Owner's Information Package** which contains warranty cards and registrations for the vehicle and all factory-installed components from other vendors and suppliers to Tiffin Motorhomes. The detailed operation instructions and maintenance instructions on these components are also included in this package.

4. Assisting the customer in **completing the registration forms** to avoid loss of warranty coverage. The dealer should review the limited-warranty provisions with the customer to stress the importance of completing the warranty cards and registration forms for the components in the motor home to enable the manufacturers to receive them within the prescribed time limits.

5. Providing the customer with **information regarding warranty and non-warranty work** on the vehicle and its separately warranted components.

Customer Responsibilities

The customer is responsible for regular and proper maintenance of the motor home. Properly maintaining your motor home will prevent conditions arising from neglect that are not covered by your Tiffin Motorhomes limited warranty. The maintenance guidelines in this manual and any other, applicable manual(s) should be followed. It is your responsibility and obligation to return the vehicle to an authorized dealer for repairs and service.

To assist you in avoiding problems with your motor home, it is recommended that you do the following:

1. **Read the warranty**. Go over it thoroughly with your dealer to make sure you understand all the terms and conditions of the warranty.

2. **Inspect the motor home**; do not accept delivery until after you have gone through the motor home with the authorized Tiffin Motorhomes dealer. Ask questions about anything unfamiliar to you.

3. **Please ask questions** about anything you don't fully understand about your Allegro; Tiffin Motorhomes is here to serve you and assure that you have all the information necessary for your safe and enjoyable use of your new motor home.

4. When you are taking delivery, **set an appointment for adjustments**. This appointment should be within two weeks after you accept delivery.

5. You are responsible for and expected to **use your Allegro in a responsible, safe manner**. Please take the time to familiarize yourself with the proper operation of the motor home and all its features before you attempt to use your motor home.

Tiffin Motorhomes Limited Warranty

The Tiffin Motorhomes limited warranty was provided to you by your authorized Tiffin Motorhomes dealer during the pre-delivery inspection. When you inquire about your Tiffin Motorhomes warranty, please refer to this document.

Should you need or desire an additional copy or other information, please contact**:**

Tiffin Motorhomes, Incorporated

105 2nd Street NW

Red Bay, AL 35582 U.S.A.

Telephone: (256) 356-8661; Facsimile: (256) 356-8219

E-Mail: info@tiffinmotorhomes.com

Tiffin Motorhomes will be pleased to send you an additional copy or any other information requested, as may be warranted.

Major Equipment Manufacturers

The following list is a compilation of the vendors and suppliers of the major subsystems and components of your Allegro. This list is provided for your convenience and is not meant as a complete substitution of the literature and accompanying "how to contact us" information supplied by those vendors and suppliers in your Owner's Information Package [see below for particulars]. Where appropriate, web-site information is provided for computer users.

- Atwood Mobile Products (800) 646-8557 www.atwoodmobile.com
  - CO Alarm (800) 880-6788 www.atwoodmobile.com
  - LP Gas Detector (815) 877-5700 www.atwoodmobile.com
  - LP Gas Water Heater (815) 877-5700 www.atwoodmobile.com
- Denso Corporation (248) 350-7500 www.globaldenso.com
- The Dometic Corporation (574) 294-2511 www.dometic.com
- Flexsteel Industries (319) 556-7730 www.flexsteel.com
- HWH Corporation (800) 321-3494 www.hwhcorp.com
- Kwikee (541) 942-3888 www.kwikee.com
- Norcold, Inc. (800) 543-1219 www.norcold.com
- Onan Corporation (612) 574-5944 www.onanindiana.com
- Panasonic Corporation (800) 211-7262 www.panasonic.com
- Power Gear (800) 334-4712 www.powergear.com
- RV Products (Coleman A/C) (316) 832-3400 www.airxcel.com
- Sharp Corporation (800) 237-4277 www.sharp-usa.com
- Suburban Manufacturing Co. (423) 775-2131 www.suburbanmanufacturing.com

For those wishing more information (e.g., locations of authorized subsidiaries), the following web site, **www.rvamerica.com/data/s_alist.htm**, should be helpful. This site provides complete, alphabetic listings of all suppliers and vendors for all contemporary recreational vehicles and motor homes.

Warranty Service

If any warranty service may be required, that service needs to be completed during the warranty period (basic warranty: 12 months or 12,000 miles). Tiffin Motorhomes provides a limited warranty on its unitized construction for 10 years and its laminations for 5 years. Any service work performed after the expiration of the Tiffin Motorhomes warranties WILL NOT be covered by those warranties. Exceptions may be made, on an individual basis, to this deadline on account of the unavailability of parts and/or service appointment time where work is to be performed. However, don't rely on the possibility of an exception; please schedule any desired in-warranty work before your warranty expires.

Owner's Information Package

The Owner's Information Package (Figure 1-2) includes valuable documents about your Allegro and its components and systems. By consulting the booklets and instruction manuals included in the Owner's Information Package, you will learn how to operate, maintain, and troubleshoot these items safely and effectively. The Tiffin Motorhomes Allegro Owner's Guide does not cover every possible detail of equipment—standard and/or optional—installed on or in your vehicle.

Figure 1-2. Owner's Information Package

As with all valuable documentation, please keep them in a safe, secure place for your later use and consultation. Please complete the warranty registration form and return to Tiffin Motorhomes, Inc. within five working days. A stamped copy will be returned to your for your records. Again, please keep this document in a safe, secure place for your later use and consultation.

Customer Relations

If you wish to schedule maintenance or service or wish to order parts, you should notify your local authorized Tiffin Motorhomes Dealership to set up an appointment. If you are unsure of the location of your nearest, authorized Tiffin Motorhomes Dealership; please access the Tiffin Motorhomes website at www.tiffinmotorhomes.com and then click on the "find a dealer" button, then click on the appropriate section of the United States nearest your location, then select the closest dealer by clicking on that dealer's number—the dealer's name, address, and telephone number will then be displayed for your use.

Specification Labels

There are two main numbers used to identify your Allegro. The Vehicle Identification Number (VIN) is the legal identification of the completed vehicle. The VIN is the number used by the state for vehicle identification and registration. Additionally, there is a Tiffin serial number (Figure 1-3). The Tiffin number is needed when you plan to make an appointment for service or order parts through your Tiffin Motorhomes Dealership or Service Center. This number can be found on the side of the dashboard. A typical sample of this identification label is shown on the right.

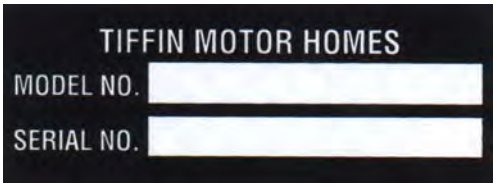


Figure 1-3. Tiffin Serial Number

Another label affixed to your Allegro is the Recreational Vehicle Industrial Association (RVIA) Weight Label (Figure 1-4) which is a required label for your vehicle. Tiffin Motorhomes, a manufacturer-member of RVIA, has the obligation to disclose the following information, at minimum, to the purchaser of the motor home:

- An indication of the contents of the RVIA affixed to the motor home.

- A concise explanation of the following items:

  - o Vehicle Weight (VW) distribution

  - o Proper weighing techniques to be used to weigh the vehicle.

  - o Specific definitions for the following terminology:

    ▶ **Gross Vehicle-Weight Rating** (**GVWR**) – This is the maximum permissible weight of the motor home when it is fully loaded.

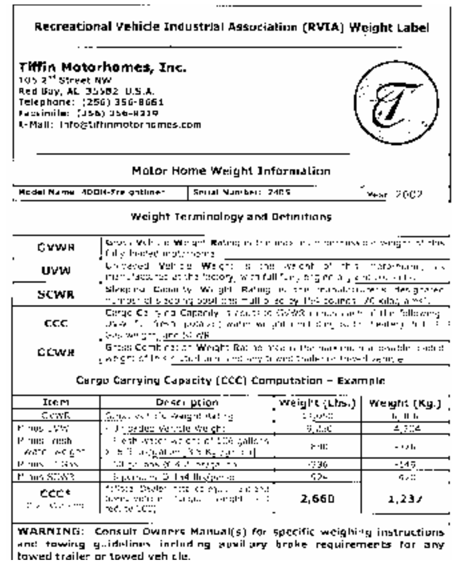


Figure 1-4. RVIA Weight Label

    ▶ **Unloaded Vehicle Weight** (**UVW**) – This is the weight of the motor home, as built at the factory, with full fuel, engine oil, and coolants. The UVW does not include cargo, fresh water, LP gas, or any dealer-installed accessories.

    ▶ **Cargo-Carrying Capacity** (**CCC**) – This is the maximum weight of all occupants including the driver, personal belongings, food, fresh water, waste water, LP gas, tools, tongue weight of towed vehicle [if any], dealer-installed accessories, and the like. The CCC is equal to or less than the GVWR minus the UVW.

    ▶ **Gross Combination-Weight Rating** (**GCWR**) – This is the value specified by the chassis manufacturer as the maximum allowable loaded weight of the motor home with a towed trailer and/or vehicle [if any].

    ▶ **Sleeping-Capacity Weight Rating** (**SCWR**) – This is the maximum weight capacity of the combined number of persons (i.e., number of people multiplied by 154 pounds per person) permitted to sleep within the vehicle.

    ▶ **Gross Axle-Weight Rating** (**GAWR**) – This is the maximum allowable weight for an axle; the GAWR considers the weakest link in the tire, wheel, brakes, hubs, axle, springs, and attaching parts. To illustrate, if the axle is rated at 15,000 pounds and the tires are rated at 3,200 pounds each as a dual installation; then the maximum GAWR would be 12,800 pounds for a four-tire vehicle

- Towing Guidelines – Specific weighing instructions and guidelines are furnished in the Owner's Manual (see below and also in Chapter 2).

Weighing Procedures for the Allegro

To weigh the motor home properly, the motor home should be level when the weighing process is performed. Your Allegro motor home has been designed and built in compliance with the recommended limits of the major-component/system suppliers to provide a realistic CCC. It is up to the final user to provide even distribution of the loads brought into the motor home to prevent uneven loading. Once the vehicle is loaded, it can be taken to any drive-on scales or individual-wheel scales to determine that the final weight is within specified limits for the motor home. The procedure which can be used is as follows:

First, drive the motor home onto the scales so that all wheels are on the scales; this provides the gross vehicle weight (GVW) of the vehicle and can be recorded as such. The GVW should not exceed the GVWR specified for the vehicle. Second, drive the motor home so that the front wheels are off the scales and only the rear wheels remain on the scales; this provides the total weight of the vehicle, save for the front axle. This weight should not exceed the total rating of the axles remaining on the scales. The front axle weight is determined by subtracting the weight from the GVW that was obtained in the first step which was performed earlier. The result should not exceed the listed front-axle weight rating. Chapter 14 contains more specific axle-weight determinations.

Weight Distribution Throughout the Motor Home

To assure the maximum stability of the motor home under static (i.e., parked) and dynamic (i.e., moving) conditions, the distribution of the items to be carried and stored within the motor home and in the storage bays underneath the motor home should be performed in such a manner to strive for reasonably even side-to-side and front-to-rear dispersion of the weight of the stored items. This process will assure that the motor home is not "lop-sided" in weight distribution (i.e., all the stored weight on one side and/or mainly towards the front or the rear)—keeping a center of mass of the motor home essentially centered on a front-to-rear and side-to-side basis will also provide better control of the motor home when it is in motion.

Chapter

2

Driving & Safety Instructions

Safety Considerations

Prior to using your motor home, especially for the first time or after a long period of non-use, please read thoroughly all the instructions in the Owner's Manual and the chassis-manufacturer's manual before attempting to operate your motor home. There are several safety considerations which you should realize and follow while your Allegro is in motion. These safety considerations, as well as others meant to preclude any damage to the motor home, are listed in this chapter. Besides the driver, it would be helpful for the passengers to be familiar with these safety considerations and precautions, too.

Warning

Before your motor home is to be towed, be sure that you have read the entire Owner's Manual and that you fully understand the equipment on your motor home and how to use that equipment safely.

General Warning

Warning

Any portable, fuel-burning equipment (e.g., charcoal, propane, butane, wood) must not be used inside the motor home. Any use of such equipment inside the motor home may readily cause fires and/or asphyxiation by carbon-monoxide poisoning. Further, such unauthorized use would probably invalidate your motor-home insurance policy.

In general, there are several "common-sense" safety precautions that should be taken every time the motor home is to be used on the road. These precautions include:

- Only seats with seat belts should be used while the motor home is in motion; those seat belts should be worn by all people (driver, passengers) in the motor home at that time.
- While the motor home is moving, lock all seats in the forward-facing position to provide maximum safety for the users.
- While the motor home is moving, no one inside should ever stand or kneel on seats (e.g., young children).

- In the majority of states, it is the law that seat belts must be used (fastened snugly about the chest and hip areas), anytime the motor home is in motion, to provide desired protection in the event of a crash.

- Any fire extinguisher(s) should be inspected on a monthly basis to assure that each extinguisher is properly charged and ready for operation.

- Any smoke and/or carbon-monoxide (CO) alarm(s) should be regularly inspected and tested. If being used for the first time, the smoke and/or CO alarm should be properly activated and fresh batteries installed before the motor home is placed into service. Prior to any trip, the smoke and/or CO alarm(s) should be manually tested to assure their correct operation. Immediately replace any defective components (e.g., weak batteries). Never sleep in a motor home not having functional smoke and/or CO alarm(s).

- While the motor home is moving, the sleeping facilities are not to be used.

- In the event of an emergency, be sure to be familiar with all escape exits (doors, escape window). Do not use the emergency window as a routine exit; this is strictly to be used for emergency purposes only.

Prior to Departure

For your continued safety and convenience, the following is a representative "check list" designed to assure your safety while driving:

- Clean all windows, mirrors, and light lenses (front, back, side) to assure that you can "see" and "be seen." Reposition any mirrors or other fixtures to provide an unobstructed view (front, sides, and back) from the driver's seat.

- Remove or secure all loose fixtures (e.g., awnings, flags, antennas, portable lights) to keep them from falling from the motor home when the motor home is in motion.

- Make a "walk-around" visual inspection of the motor home to note any irregularities (e.g., loose trim) or problems (e.g., low tires); correct noted problems accordingly.

- Check all exterior storage-compartment and generator-compartment doors to make sure that they are properly latched. If need be, check inside all exterior compartments to make sure that all cargo and equipment are properly secured so that they won't work loose and become hazards during sudden starts and stops.

- Check tires for proper inflation (i.e., cold inflation pressure: 100 psig); if the motor home has not been used, make sure that the "cold inflation" pressure is maintained. If the motor home has very recently been used, make sure that the "hot inflation" pressure (see the tire-manufacturer's literature to determine appropriate "hot inflation" pressure) is maintained. All tire pressures should be within 1-2 pounds (psig) of each other.

- Examine wheel lug nuts to assure their proper tightness. If any lug nuts were found to be loose, first check the fit of the wheel to the hub to make sure that the wheel is not mis-mounted which would produce a "wobbly" wheel when the motor home is in motion, then tighten the lug nuts.

- Check all fluid levels (e.g., engine oil, transmission fluid, coolant, power-steering fluid, brake fluid, battery fluid [if applicable], windshield-washer solvent) to assure correct levels are maintained. Fill any low reservoirs, as needed.

- DO NOT SUBSTITUTE any other fluids for specified oils, transmission fluid, brake fluid, or other hydraulic fluids—in most instances, substitutions are not acceptable and may void warranties.

- Prior to starting the motor-home engine, make sure that all lines (e.g., water, sewer) and electrical-power cords are disconnected and properly stowed.

- Assure that the leveling jacks are in the "travel" position.

- After entering the motor home, make sure that the electrically-actuated, retractable step has properly operated to retract the step fully before starting the engine of the motor home.

Driving

Various adjustments need to be made to assure the driver's comfort and the safety of the motor home before starting and moving the motor home; these include:

- The driver should adjust the driver's seat, the tilt steering, the exterior rear-view mirrors, and the instrumentation panel lighting (if nighttime) for the driver's comfort and safety. This is especially important for first-time use so that the driver may become accustomed to the "feel" of the motor home and know where the various adjustments are located "before the fact"; not after some need arises while the motor home is in service.

Figure 2-1. Driver's Instrumentation Panel

- The driver should be familiar with all gauges, instruments, switches, and indicators on the instrument panel (Figure 2-1) prior to driving. Should the driver encounter any "unknowns" on the panel, they should be investigated (via the Owner's Manual) prior to departure so that the driver fully understands these items and their functions.

- One should never adopt a "learn as you go" philosophy, as there are too many controls and switches to be understood before the motor home is actually used. Please take the time to become thoroughly familiar with the entire instrument panel prior to using the motor home.

- Do not operate the cruise-control function during any extreme weather situations (e.g., snow, ice, sleet, heavy rain) or when road conditions are hazardous (icy, snowy, winding roads, city traffic) or when a constant speed of the motor home is not possible or if traffic conditions don't warrant such.

- Avoid driving the motor home through any standing water. If deep enough, such water can wet the brake pads and cause fading of the brakes (i.e., loss of braking power) and lead to excessive sliding or pulling to one side or another. If one has driven through standing water, at the first opportunity safely to do so, check the braking action. If braking has degraded, lightly apply the brakes to allow the brake pads to dry—don't use the motor home when the braking function is significantly reduced.

- Know the limits of operation of the motor home. Don't try to achieve excessive speeds, climb overly steep hills, traverse overly long grades, attempt to use the motor home as an "off-the-road" (OTR) motor home, rapidly switch lanes, or rapidly accelerate or decelerate the motor home. When in doubt about the handling characteristics of the motor home, consult your chassis manual for information.

Fuels for the Motor home

Warning

Liquid Propane (LP) gas containers (Figure 2-2), gasoline, or other flammable liquids are not to be placed or stored inside the motor home because a fire or explosion may occur. LP gas containers are equipped with safety valves that may relieve excess pressure by discharging gas into the atmosphere—any containment of that vented LP gas constitutes an explosive hazard.

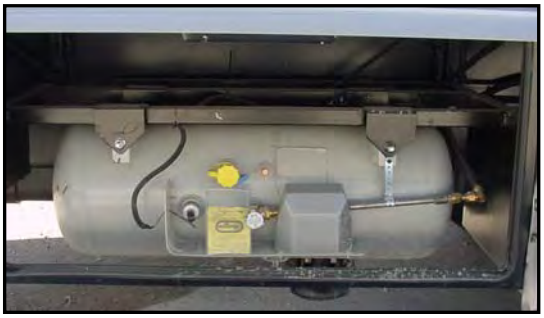


Figure 2-2. Liquid Propane Tank

Your motor home is designed to have several types of petroleum-derived fuels used in the routine operation of the motor home—these require prudent and safe handling to assure safety of the motor home and its occupants; namely:

- Anytime the motor fuel (i.e., gasoline, see Figure 2-3) or the LP tank is to be filled, the motor home engine is to be turned off, all pilot lights must be extinguished, and appliances turned off. Further, during any filling operation or connecting/disconnecting of any LP tanks, a NO SMOKING policy should always be observed. In a similar manner, any other comparable devices of the motor home users (e.g., butane camp-lights, propane lights and grills) should be treated in a similar manner to assure the safety of all concerned.

Figure 2-3. Fuel Tank Fill Door

- NEVER use an open flame to test for LP gas leaks or to examine the fluid levels in the fuel tanks.
- After filling any LP system, immediately replace and secure all protective covers and caps.
- After closing the LP valve, close and securely latch the LP door to prevent unintentional access or damage.
- NEVER connect natural gas to the LP gas system—LP gas and natural gas are not interchangeable.
- NEVER use any other "burning" equipment (e.g., charcoal grills, wood stoves, butane lights, propane lights inside the motor home—doing so may cause fires and/or asphyxiation.

Liquid Propane (LP) Gas System

A warning label is conspicuously located near the LP gas container (Figure 2-4); that label reads:

Warning

DO NOT FILL the LP Container(s) to more than 80% of capacity.

Any overfilling of the LP gas container(s) can result in uncontrolled gas flow—a prime condition for a fire or explosion. The LP container should only be filled to 80% of its capacity; the remainder of the cylinder space is an air space to contain expansion of that liquid when subjected to varying ambient-temperature conditions. Filling in excess of 80% of the liquid volume of the container reduces that air space and, thus, creates a condition for possible over-pressurization of the container.

All LP appliances in your motor home have been approved for use in motor homes by a nationally recognized testing laboratory (i.e., UL and CSA certified). When properly used, LP gas is a clean-burning fuel which can be dependably used. In actuality, the LP container contains liquid propane under high pressure. The liquid, when it passes through the tank valve to a lower pressure, vaporizes into a gas, and then passes through a regulator used to maintain a constant pressure. This gas, then, is the actual fuel distributed through the LP-gas manifold system to the LP-based appliances used in your motor home.

Figure 2-4. Liquid Propane Tank

LP-appliance lighting problems are typically caused by an improperly adjusted gas regulator. NEVER attempt to adjust or reset the gas regulator yourself, as an authorized service technician is needed to make these adjustments. As a good preventive-maintenance activity, the regulator should be checked annually by a service technician and also before every extended trip.

Even though the LP-gas system is leak-checked and verified at the factory at the time of manufacture, normal usage

(travel vibrations, etc.) could loosen the fittings. Consequently, it is wise to check the gas fittings periodically for leak tightness. One can daub some leak-detector solution (e.g., a "liquid-soap"-like solution) on all the fittings, connections, and junctures when the system is under pressure. Should there be any leaks, small bubbles will appear at any leak sites.

Generally, loose fittings can be tightened to stop the leaks. If this process doesn't work, then one must shut off the main gas valve at the LP cylinder(s) and immediately consult an authorized service technician to determine what repairs are necessary. Leaks may also be detected by noting a sulfurous odor (i.e., rotten eggs). DO NOT search for a leak by using a match or open flame.

Warning

When the motor home is not in use, be sure to close the main LP gas valve at the tank. When the LP gas tank is to be refilled, close the main valve to preclude the chance of pilot lights possibly igniting fumes from the LP fuel. As some LP-gas appliances (e.g., refrigerator, furnace, water heater) have Direct Spark Ignition (DSI) systems, it is very important that these appliances be turned off when the LP gas is off. The DSI boards will continue to work (i.e., emit an ignition spark) even when there is no LP gas available.

LP Gas Regulator

The LP gas regulator is the most critical element of the LP-gas distribution system. The regulator converts the high-pressure LP gas from the tank into a reduced-pressure LP-gas supply suitable for use in the various appliances in the motor home. One should regularly inspect visually the regulator system. If any damage or corrosion is noted, contact an authorized service technician to inspect and repair or replace the regulator. Do not attempt to adjust the regulator yourself; the regulator has been pre-set at the factory. Only a qualified LP service technician using specialized equipment should adjust the regulator.

LP Distribution System

The primary LP distribution system in the motor home is a pipe manifold running the length of the motor home. The secondary distribution lines running from this main distribution system are usually copper tubing with flare fittings. If any of the gas lines break, do not attempt to splice them—always run new lines to maintain the safety of the motor home. It is strongly recommended that only qualified service technicians perform this work. Remember, the main valve at the LP gas tank must be closed whenever any gas appliance is to be installed, removed, or serviced—this process prevents LP gas leakage which could result in a possible harmful explosion. If the odor of LP gas is ever detected, immediately discontinue use of any gas appliances and seek the services of a qualified service technician.

Recommended Precautionary Practices

The following practices are recommended to assure continued safety and reliability of the LP gas system; these are, of course, representative; not necessarily exhaustive. In all cases, use common sense in the use of the LP system.

- Visually inspect the LP fill valve before any refueling operation to look for foreign materials or debris; remove, as necessary, to assure a leak-tight connection.
- Prior to any re-fueling operation of the LP gas system, shut off all the pilot lights.
- NEVER, under any circumstances, check for LP gas leaks with any type of open flame; doing so would probably cause an explosion and subsequent fire.
- Periodically inspect visually the entire LP gas distribution system; do so at least annually and before any major trips. Should problems be noted, seek the services of a qualified service technician to make necessary repairs and perform any maintenance.

Warning

The LP gas distribution system in your motor home is designed for liquefied petroleum (LP) gas ONLY. DO NOT attempt to connect and use any natural-gas or butane-gas systems with this LP gas system.

Fire Safety

As with any enclosed system containing the three required conditions for fire (i.e., combustible materials, oxygen, ignition sources), there will exist the possibility of fire. Tiffin Motorhomes has taken every precaution and design practice to minimize or negate this possibility, but the final determination rests with the owner and user of the motor home. Accordingly, it is in the best interests of the owners, users, and their guests to be aware of basic fire-safety practices and procedures and those particular features that Tiffin Motorhomes has provided for fire safety.

Fire Extinguisher

The Allegro is equipped with a fire extinguisher (located on the wall next to the entrance door) rated for both Class B (i.e., grease, gasoline, diesel fuel, flammable liquids) and Class C (i.e., electrical) services—these are typically the most likely types of fires to be expected in motor homes. Read and understand the accompanying owner's manual on that extinguisher (found in your Owner's Information Package) and remember the location of the extinguisher. In an emergency, you won't have the time or presence of mind to do so then.

These types of fire extinguishers (Figure 2-5) are pressurized, mechanical devices and require that appropriate care be used in their safe storage and use. The owner's manual will provide necessary guidance for the proper storage, handling, and use of the extinguishers. Prudent preventive maintenance suggests monthly inspection of any fire extinguisher to assure that it is sufficiently pressurized (i.e., the needle on the gauge is in the "normal" zone) and that the mechanical components are not blocked in any way.

Figure 2-5. Fire Extinguisher

Do not test a fire extinguisher by partially discharging the unit—this will cause a loss of pressure and may lodge some fire-retardant materials in the valve mechanism and cause the extinguisher to continue to vent slowly down to zero pressure. Rather, if an extinguisher is ever partially used; continue its use until the unit is completely discharged then have the fire extinguisher fully recharged at an appropriate service center (one can call any fire department for information on having an extinguisher recharged in that particular locality). DO NOT wait a long time to recharge an empty fire extinguisher; you'll never know when it may be needed.

Should a fire occur inside or around the motor home, evacuate the motor home quickly and calmly—do not panic. In the event of heavy smoke or extensive flames, keep low (crawl if you must) and make your way to the nearest exit (door, emergency window) and leave. If the fire involves a fuel source (e.g., diesel fuel, LP gas); consider the probability of an explosion and move sufficiently far away to minimize personal harm. If such is available, immediately place a call to the local fire department (or ask someone nearby to do so) to report the fire. Consider the cause and the consequences of the fire and the risks associated with possibly fighting the fire yourself before trying to extinguish it—DO NOT expose yourself or others to unnecessary danger.

Smoke Detector

The Allegro motor home is equipped with a battery-operated smoke detector (Figure 2-6) located on the ceiling in the living area of the motor home (left-hand side of picture). Read and become familiar with the operation and periodic testing of this detector. The smoke detector should be tested on a weekly basis, before each trip, and after any period of storage of the motor home. If a low-battery condition is noted or the alarm "chirps" to indicate a low-battery condition, immediately replace the battery. It would be prudent to keep replacement batteries in the motor home for any in-transit replacements so that the smoke-alarm capability is never compromised. DO NOT disable the smoke detector for any transient, false alarm (e.g., cooking smoke, dusty furnace, tobacco smoke); rather, ventilate the motor home with fresh air and the alarm will reset.

Figure 2-6. Smoke Detector

Emergency Exit Window

In the rear of the motor home, there is an emergency exit window (Figure 2-7) in the bedroom—this window is designed for an emergency exit when it is not practical to exit by the door [also an emergency exit] in the front of the motor home. This window is readily noticeable by its red handle and the red "EXIT" label on that window. To use this window as an emergency exit, lift the handle and push outward on the window. As required, the window can

Figure 2-7. Emergency Exit Window

be closed by pulling the window inwards and then lowering the handle to latch the window back in place. When the motor home is to be parked, it would be wise to note where this window will be so that this exit won't be blocked (e.g., against a tree, pole, or wall).

Parking Procedures

To park the motor home in any unfamiliar terrain, examine the prospective site for surface irregularities, slopes or inclines, and other discontinuities (i.e., stumps, rocks, external connections for power/water/sewage) and also examine the area immediately above the proposed parking site for obstructions (e.g., tree branches and limbs, signs, overhead wiring). If the motor home is to be backed into the proposed parking site, strive to have that site be on the driver's left-hand side, as this will allow the driver to watch the rear of the motor home. Back up slowly and use the side mirrors and, if installed, the optional back-up camera as a guide or, better yet, have another person outside provide supplemental guidance to help park the motor home.

When the motor home is finally situated, shift the transmission into "park," then set the emergency brake, and then turn "off" the engine. If installed, activate the optional, leveling-jack system (see Chapter 9 for more detail) to level and stabilize the motor home.

If the motor home is to be powered externally, connect the 120 VAC power to the motor home. Turn "on" the LP gas valve at the LP tank. Connect the fresh-water supply and sanitize the water systems (see Chapter 11), as needed. Connect the waste drain hose to the external sewer hook-up. Start the refrigerator, water heater, and furnace; as warranted. Light the oven pilot light, as needed. Certain appliances, such as the refrigerator, will not work properly, if the motor home is not level; so be sure to complete the motor home-leveling process before activating any of the appliances.

Towing Hitch

The Allegro is fully capable of towing typical motor vehicles; the motor home is equipped with a 5,000-pound towing hitch (Figure 2-8) and associated seven-pin wiring connector. The motor home is capable of towing light loads and instructions for such are found in the chassis-manufacturer's literature in the Owner's Information Package provided with the Allegro.

Figure 2-8. Towing Hitch

The total weight of the motor home and any vehicle towed by that motor home must not exceed the Gross Combined Weight Rating (GCWR). When the motor home is being weighed, remember to account for passengers and their locations in the motor home**. Any vehicles to be towed by the motor home should have adequate active braking**. The wiring connector provided is a standard seven-pin connector (see Chapter 7, p. 7-9 for more detail).

Chapter

3

Heating & Air Conditioning

Furnace

Warning

Never attempt to modify the furnace. To do so may cause fire, explosion, carbon-monoxide poisoning, or asphyxiation. If the furnace is malfunctioning, immediately shut the unit "off" and call a trained service technician to make necessary repairs as soon as possible.

The Allegro motor home is equipped with a forced-air furnace fueled by LP gas. The furnace is controlled by the wall-mounted thermostat (Figure 3-1) located inside the motor home—this thermostat controls both the heating and air conditioning for the motor home.

Figure 3-1. Thermostat

In the heating mode, the furnace heats air which, in turn, is circulated through ductwork in the floor of the motor home. If any obstruction(s) block the floor vent(s) or air-return register, then the furnace will not function properly. Therefore, any items stored under the cabinets should be carefully stowed to prevent damaging or crushing the furnace ducting or blocking the warm-air return.

When a furnace is being used for the first time, there may be an initial "burn-off" of manufacturing compounds or residues left on the heating exchanger or in the ductwork which could produce odors, fumes, and possibly some smoke. This occurrence is normal and should not cause concern, unless it persists for an excessive amount of time.

To minimize the after-effects of this "burn-off" process, the initial use of the furnace should be done with all the doors and windows open to permit normal air circulation to dissipate these odors and fumes.

For routine operation of the furnace, set the thermostat to the desired temperature setting and then turn "on" the thermostat; in about a minute, the furnace should begin to operate and warm or hot air should be coming through the ductwork.

To shut down the furnace, turn the thermostat to the "off" position. Even though the thermostat may be turned "off," the furnace system will continue to run for about a minute or so to permit a gradual cool-down of the heating system which is normal.

On a regular basis, thoroughly clean the complete furnace and air-tube passageways to remove dust, lint, and any other possible obstructions. Leak-test the entire LP gas system at least annually. Also check and clean the air-blower system annually.

Any access hatches to the furnace are for authorized service personnel only, as there are no user-serviceable parts on the furnace. Accordingly, do not attempt to tamper with the interior of the furnace.

Warning

Be cautious when washing the exterior of the motor home; water should never be sprayed directly into the furnace vent. Should any water be forced beyond the rain baffles into the furnace vent, the furnace may rust which, in turn, may cause improper combustion and produce unwanted by-products of combustion.

Before the beginning of each travel season, the furnace should be thoroughly cleaned and inspected. Any obstructions, debris, or lint which may obstruct free air flow or impede the operation of the air-circulation system should be removed. For example, accumulated dust or lint could possibly obstruct the orifices for the pilot light or may accumulate on the blower blades and unbalance the operation of the blower. Additionally, any debris in the ductwork, when heated by the furnace, could emit unpleasant odors or possibly become a fire hazard.

Consequently, the furnace system (including ductwork) should be periodically cleaned; annually is recommended unless the motor home is subjected to dust levels significantly greater than average; in which case more frequent cleaning is recommended. The Owner's Information Package provides recommended cleaning tips and procedures; when needed, a more thorough cleaning should be performed by a qualified service technician.

Air Conditioning System

It is designed for 120 VAC power supplied either from the external power cord or from the generator. Any unnecessary heat loading (e.g., exposure to direct sunlight for long periods of time; transmittance of sunlight through the windows) will work the air conditioning system harder and may compromise the desired results. Accordingly, if the air conditioning system is to be used, park the motor home in a shady location whenever possible and close drapes on those windows exposed to direct sunlight. Additionally, any heat-producing sources (e.g., oven, unnecessary lights) within the motor home will work against the air conditioning system; so strive to minimize their use.

The air conditioning system is the major consumption device of electrical power in the motor home. When this system is being used in an RV park, cumulative use of these air-conditioning systems by the resident vehicles can create a bigger demand for electrical power than is actually available. Accordingly, at times a "brown-out" condition may arise—this is when the AC voltage normally available drops to a lesser value (e.g., 10-20% below normal or more).

"Brown-out" conditions cause appliances to draw greater currents to make up for the reduced voltage; thereby causing circuit breakers to trip or fuses to blow. Under such conditions, your own motor home is not at fault; simply reset your breakers and/or replace your fuses. Should such conditions continue, one may wish to turn reduce the electrical load (in this case, turn "off" the air conditioning system for awhile) or start the electrical generator.

To cool the motor home, the thermostat inside the Allegro is used—this is the same thermostat which controls the furnace functions (described earlier). The air-conditioned, cooled air is emitted through the vents which are located in the roof throughout the entire coach. The discharge and return air vents run parallel, front to back, on the ceiling. Note that the return vents are similar to the air conditioning vents. This system allows even distribution for the returns instead of forcing an excess amount of return air through two smaller openings. The even return system takes more of the hot air from the motor home, thereby providing cooler air throughout the unit. The air conditioning vents that are mounted on the ceiling are round vent filters (Figure 3-2) that need to be periodically checked for dust accumulation. When dust has accumulated on the filters, remove them and wash in a mild detergent and warm water.

Figure 3-2. Round Vent/Filter

Thermostatic Controls

The following is a brief overview of how best to use the thermostat (Figure 3-3). For more detailed instructions, please consult the thermostat literature in the Owner's Information Package.

Figure 3-3. Thermostat

1. Use the "System" switch to select either air-conditioning ("cool") or heating ("furnace").
2. Select the desired temperature by adjusting the slide switch to the proper temperature setting (e.g., 72 F) on the right-hand side of the thermostat.
3. Use the "Fan" switch to select either the "on" (i.e., the fan will run continuously whether the AC/heating function is running or not) or the "auto" (i.e., the fan will run as long as the AC/heating function is operating; it will then turn "off" when the AC/heating function stops when the desired temperature set point is reached).
4. Choose the desired fan speed by selecting either "hi" or "lo"; this will determine the relative air flow of the cooling and/or heating function.

NOTE: If the electrical system is turned "off" or the thermostat loses power (i.e., power failure), the air-conditioning or heating system will resume operation at the last settings programmed into it when electrical power is again restored.

Liquid Propane (LP) Tank

The Allegro is equipped with an ASME (American Society of Mechanical Engineers)-approved LP tank (Figure 3-4) which is equipped with an automatic pressure regulator. This tank contains liquid petroleum fuel under high pressure. As this fuel passes through the main valve and through the regulator, it is converted into a gas and its pressure is reduced to a safe level for use within the motor home.

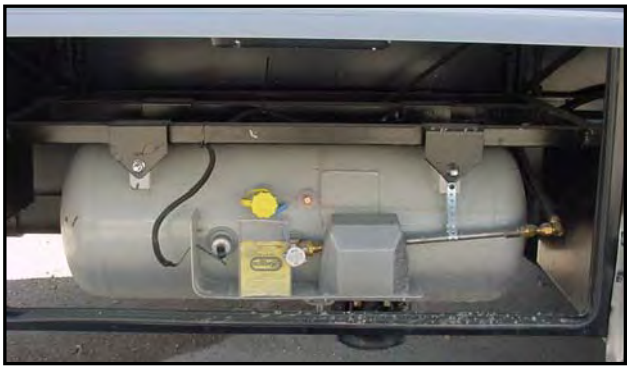


Figure 3-4. Liquid Propane Tank

A LP gas-distribution system distributes the gas to those

appliances using such in the motor home. The "heart" of this LP gas distribution system is the regulator and that regulator should only be adjusted by a qualified service technician. Most of the problems encountered in lighting the pilots of these appliances are caused by regulator mis-adjustments.

The major component of the LP gas supply is a manifold pipe which runs lengthwise underneath the motor home floor. From this manifold, the various gas appliances are connected by copper tubing with flared fittings so that connections and dis-connections can readily be made, as needed.

Should any of the secondary tubing develop a leak, either on the tubing proper or at the fittings, do not attempt to splice any of these lines. Instead, have a qualified service technician run a new length of tubing to the appliance of concern and then have that line leak-tested before placing it in normal operation.

To remove, repair, or replace any gas-operated appliance; always close the main gas valve at the LP tank—this measure will provide an additional element of safety to prevent gas leakage and possible, subsequent explosion hazards.

However, if a gas leak is noted or suspected, turn "off" the main valve and keep the LP gas system "off" until that system is inspected by a qualified service technician as soon as possible. Do not delay in addressing any possible gas leaks with appropriate service because of the inherent hazards to safety.

Warning

When the motor home is not being used, the main LP gas valve must be turned "off." Also, turn "off" the main valve when the LP gas tank is to be refueled to avoid the possibility of ignition fuel fumes by the pilot lights. All gas valves on the gas-operated appliances with Direct Spark Ignition (DSI) should also be in the "off" position during refueling and/or maintenance operations. DO NOT store LP, diesel, propane, butane, or other flammable liquids inside the vehicle as these represent a very real fire hazard and possible threat to life.

LP Tank Filling Practices

Any LP gas tank associated with the motor home should never be filled to more than 80% of total capacity; filling should always be done only when the motor home is leveled. If the motor home is not level, the tank may be overfilled (i.e., more than 80% of capacity) and, thus, subject the motor home to possible fire or explosion from resultant uncontrolled gas flows.

LP Gas Regulator

As noted earlier, the LP gas regulator is the "heart" of the LP gas distribution system. This regulator reduces and controls the pressure of the gas on the outlet end to provide a constant supply of gas at a constant pressure to the gas-operated appliances. The regulator has a vent to relieve excess pressure on the inlet side of the regulator, should excess pressure develop in the gas tank and connecting gas line to that regulator inlet. The vent would normally release the excess LP gas to the atmosphere until the over-pressurization condition is eliminated.

This vent should be regularly checked to assure that it is not clogged or obstructed. If that vent is blocked from normal operation, component or system failures may result. If periodic visual inspection indicates any sign of corrosion or degradation, contact a qualified service technician to repair the regulator as soon as possible; DO NOT operate the LP gas system with any faulty component in place.

Occasionally, the inherent moisture in the LP gas can cause a freeze-up of the regulator when the gas passes through the regulator. The regulator reduces the high pressure of the gas on its inlet side to a reduced pressure on its outlet side by permitting a controlled expansion of the gas through the regulator—this gas expansion necessarily cools the gas (by means of the Joule-Thompson effect) and, if cooled enough, may cause any moisture content to freeze.

To minimize or negate this possibility, always keep the main valve to the LP gas tank closed when the system is not in use. When the LP tank is empty, keep the main valve closed until re-filling is to be performed—this process will keep any moisture-laden air from back-flowing into the gas system and trapping unwanted moisture in the LP gas tank. If an empty LP gas tank has been exposed to the atmosphere for an extended time, let a qualified service technician purge the tank before its next filling operation.

Important

When a LP gas regulator is installed or re-installed, the regulator must always be installed with the gas diaphragm vent facing downwards. For more information, consult the manufacturer's literature in your Owner's Information Package that came with the motor home.

Carbon Monoxide/LP Gas Detector

Warning

Liquid propane (LP) is extremely flammable and, when contained, explosive when mixed with air. Consequently, never check for leaks in LP gas lines or appliances with

an open flame or sparking devices. Do not use any ammoniated or chlorinated household-type detergents for "bubble testing" possible leak sites—these detergents may generate fissures or cracks on the metal tubing (e.g., copper) and flared fittings (e.g., brass). Have your LP gas system leaks repaired ONLY by a qualified service technician; do not attempt these yourself. Keep the main valve to the LP gas tank closed and all appliances turned "off" when the motor home is stored. If any of the valves do not close "leak-tight" by hand, have those valves examined and repaired by a qualified service technician. DO NOT, under any circumstances, attempt to use a faulty LP gas system and/or appliances as such represents a safety hazard.

Since LP (i.e., liquid propane) gas is more dense than air, the LP gas will naturally settle to the lowest point in an enclosed space—in the motor home, this would be the floor. Because of this fact, the CO/LP gas detector (Figure 3-5) is necessarily mounted close to the floor. To activate the LP-gas sensor on this detector for the first time, remove the sensor activation strip, if such was not performed during the pre-delivery inspection. Please check the CO/LP gas detector to verify that the detector was properly activated and is ready to provide the necessary protection. If in doubt, please contact any qualified service technician for more detailed assistance.

Figure 3-5. CO/LP Gas Detector

If the alarm persists in re-arming and giving further alarms; ventilate the motor home (by opening doors and windows) and then check for possible LP gas leaks. If the leak cannot be readily found, then close the main valve to the LP tank and turn "off" all gas appliances and then take the motor home to a qualified service technician after the ventilation process is concluded and the doors and windows again shut.

Chapter

4

Major Appliances & Accessories

Refrigerator

The Allegro motor home will contain a refrigerator manufactured by either of these two manufacturers: Norcold, Incorporated or The Dometic Corporation. As each of these operates somewhat differently from the other, each will be individually addressed in this section to permit the motor-home owner to use the one installed in his motor home.

When the refrigerator is in the "LP gas" mode, make sure that the main LP gas valve is in the "on" position before attempting to start the refrigerator. Please note that the refrigerator is equipped with a semi-automatic energy selector (AES) control system which can set automatically to switch between a 120-volt AC system or a LP-gas operation system.

Warning

The majority of LP gas appliances used in motor homes normally vent to the outside of the motor home. When your motor home may be parked in close proximity to a fuel pump (i.e., during re-fueling operations), it is possible that the fuel fumes could enter this type of appliance and possibly be ignited by the burner flame thereby causing a fire or explosion. Accordingly, please use extreme caution when re-fueling the motor home.

A 12-volt power supply (e.g., 12 VDC system of the motor home, auxiliary battery, or converter) is required for proper operation of the electronic control panel; the 12 VDC power supply must be "on" for the refrigerator to operate correctly. For electrical operation of the refrigerator, either the external electrical power line must be connected to the motor home or the on-board electrical generator must be running to provide the necessary 120-volt AC power. To operate the refrigerator in the LP-gas mode, the main LP gas valve must be "open."

Norcold Refrigerator

To start the Norcold refrigerator (Figure 4-2), press the main power "on/off" button [right-hand side, Figure 4-1] to the "on" position which starts the refrigerator in the "automatic" mode. When this is done, if 120-volt AC is available to the motor home, the AC mode indicator light will light and indicate that the AC power is available to the motor home.

Figure 4-1. Norcold Refrigerator Control Panel

However, if the 120-volt AC is not available, then the gas mode indicator light will be illuminated indicating that

Figure 4-2. Norcold Refrigerator

the refrigerator will be operating on the LP gas supply. To turn the refrigerator "off," push the "on/off" button for two seconds to shut down the refrigerator.

The "temp set" button [left-hand side, Figure 4-1] controls the temperature adjustment of both the freezer and the refrigerator compartments; the selections chosen will not change if the operation mode (AC power or propane gas) changes. To select the desired degree of coldness push and hold the "temp set" button—this will step through numbers "1" through "9" where "9" represents the coldest setting attainable. Hold the button until the desired setting number is realized, then release the button.

The "mode" button [the middle button, Figure 4-1] controls the operation mode of the refrigerator—there is one automatic mode and three manual modes of operation. To select the desired mode, push the "mode" button and release it when the desired mode (e.g., **AU** = automatic, **AC** = AC-powered, **LP** = propane gas mode, **DC** = DC electric) is realized.

In the **automatic** (**AU**) **mode**, the refrigerator automatically selects the most efficient energy source available for operation. Should a more efficient energy source become available during the operation of the refrigeration, the automatic mode will then select it for continued operation of the refrigerator.

When 120 VAC power is available, it will be selected and the display will show "AU" "AC" flashing in the display. In about ten seconds, the display goes "off" and only a power indicator light remains "on." If there is not any 120 VAC power available, the display will flash "AU" "LP" to indicate that LP gas is the energy source being used.

Should the refrigerator be a three-way model and neither 120 VAC nor LP gas is available, the display will flash "AU" "DC" to indicate that the refrigerator is being powered by a DC energy source (the batteries). Should there be any improper operation of the refrigerator, the display will show various error codes—the user should become familiar with those codes in the manufacturer's literature for the refrigerator.

Manual operation can also be selected by pressing the "mode" button for the desired type of operation.

In the "LP" mode (either manual or automatic), on initial start-up of the refrigerator, ignition of the propane gas may not occur for 30 seconds. If gas ignition doesn't occur within 30 seconds, the gas safety valve in the refrigerator will close. Then either the refrigerator selects another mode of operation (in the automatic mode) or an audible alarm sounds (in the manual LP mode) which will remain "on" until the "mode" switch to cancel that alarm. In this case, push the "on/off" switch two times to stop and re-start the refrigerator; then attempt the LP gas ignition process once more. If the gas still doesn't ignite, check the gas supply line and consult a qualified service technician.

Should a failure occur, the display will indicate various failure codes to help the owner determine what fault or faults may have occurred so that they may be expediently addressed. Not all failure codes will have an accompanying audible alarm, so the owner should not rely solely on the audible alarm for fault indications.

NOTE: To operate the refrigerator in the LP-gas mode, the 12 VDC power source must be operational; otherwise, the refrigerator will not operate on LP gas. If the refrigerator is operating in the LP-gas mode and the 12 VDC power is disconnected, the refrigerator will cease operating.

On the refrigerator, the "thermostat" function controls both the gas and electrical operations—this eliminates the necessity of resetting the temperature each time one switches from gas to electrical service or vice versa. Press the temperature selector button until the light near the desired setting is illuminated ("1" through "9"). After initial start-up, the "thermostat" should be moved from the coldest setting to the desired setting, which is usually around mid-range on the scale (i.e., "4" or "5").

Dometic Refrigerator

To start the Dometic refrigerator, press the main power "on/off" button [left-hand side of panel, Figure 4-3] to the "down" position. Then press the "temperature selector" button [right-hand side of the panel] until the desired setting is illuminated (i.e., one has selected one of the indicator lamps, each being numbered "1" through "5," where "1" represents "cold" and "5" represents "coldest").

Figure 4-3. Dometic Refrigerator Control Panel

For **automatic mode** operation, press the "AES/Auto/Gas" mode selector [to the right of the "on/off" switch] to turn "on" the "AES/Auto" lamp [just above that switch]. If 120 VAC is available, the AC mode indicator lamp will illuminate to indicate that the 120 VAC is being used. If 120 VAC is not available, the Gas indicator lamp will illuminate indicating that the control has automatically switched to the "Gas" mode.

If the Check indicator lamp [center of panel] illuminates and the "Gas" mode indicator lamp is "off," the controls have failed to ignite the burner in the "Gas" mode. "Gas" operation may be reset by pressing the main power "on/off" button first to the "off" position and then back to the "on" position. Finally, press the "temperature selector" button to select the desired temperature level in the refrigerator.

For operation in the **LP Gas mode**, press the "AES/Auto/Gas" mode selector button to turn "off" the "AES/Auto" lamp. The "Gas" mode indicator lamp will then illuminate to indicate that the refrigerator is now being powered by LP gas. Within 45 seconds the burner should be ignited and the unit operating normally. However, on the initial start-up of the refrigerator, it may take longer than 45 seconds to allow trapped air to be purged from the LP gas line.

If the gas doesn't ignite within 45 seconds, the CHECK indicator lamp will illuminate and the "Gas" mode indicator lamp will go out. To reset when the CHECK indicator lamp is illuminated, press the main power "on/off" button first to turn "off" the refrigerator, then again to turn "on" the refrigerator again. NOTE: If successful operation isn't realized after one or two additional tries, do not continue attempting to use the "Gas" mode.

Finally, press the "temperature selector" button to choose the desired level of coldness in the refrigerator. After initial start-up, the thermostatic control should be moved from the "coldest" setting to the desired temperature range (usually "3"—the mid-point on the scale).

To turn the refrigerator "off," press the main power "on/off" button to the "off" (i.e., UP) position—this will shut off all DC power to the refrigerator including the interior light.

Microwave/Convection Oven

The Allegro contains either a microwave oven (Figure 4-4) or an optional convection oven. All microwave ovens operate on 120-volt AC electrical power, supplied either by the external electrical hookup or by the onboard electrical generator in the motor home.

Figure 4-4. Microwave/Convection Range

Between the power source(s) and the microwave oven may be a surge protector to protect the unit from electrical transients and power surges. Touch-pad controls on the microwave oven are used for operating the oven (i.e., cooking temperature, mode, power level, and cooking time). For basic operating instructions on the proper use of the microwave or convection oven, please consult the specific manual in the Owner's Information Package.

Air-Filtration Fan

In the Allegro, the "exhaust" or air-filtration fan functions to filter the air only; it does not exhaust to the outside. If the Allegro is equipped with the microwave/convection oven, the fan is built into the microwave/convection oven. If the Allegro is equipped with a standard microwave oven, then the fan is in the range hood above the range.

This air-filtration fan should be used whenever any cooking is performed to filter any airborne cooking residues and heated air. Additionally, the fan can be used for supplemental filtration of other odors and gases including tobacco smoke, candle fumes, and related vapors. The fan contains filters which can be removed and either cleaned or replaced to assure normal operation. To determine how frequently to service the filters, please consult the particular owner's manual contained in the Owner's Information Package.

Oven and (Optional) Cook Top

The Allegro is equipped with a standard oven with a three-burner range or it may have an optional, three-burner, recessed cook top (Figures 4-5,6). The oven may have a piezoelectric ignition source, rather than a pilot light, to start the oven. If the oven doesn't have a piezoelectric ignition source, light the oven by pushing inward on the oven control knob and rotating it counter-clockwise (CCW) to the "pilot on" position, then light the oven pilot light located at the back left-hand side of the oven burner—this may take a few seconds until the air in that line is purged and replaced with the LP gas.

Figure 4-5. Three-Burner Recessed Cook Top

Do not attempt to adjust the oven pilot light as it has been factory-adjusted and factory-set. To extinguish the oven pilot light when use of the oven is concluded, push inwards on the oven control knob and turn that knob clockwise (CW) to the "off" position.

To operate either the three-burner range or the optional, three-burner, recessed cook top; light the burners by turning "on" the gas control knob, wait a couple of seconds, then push the red DSI (direct-spark ignition) button until a flame appears.

Figure 4-6. Top View of Three-Burner Recessed Cook Top

If the burner does not start after a few attempts, discontinue the process, let the released gas dissipate, then try the process again. The burner knobs operate in a CCW manner and must be gently pushed inwards as they are being turned. Never use the cook top when the motor home is in motion.

As a safety feature, the following label will be noted in the cooking area:

Warning

DO NOT USE cooking appliances as a heating source for the motor home. Cooking appliances require fresh air for safe operation. Before using any cooking appliance, make sure that an overhead vent or window is open and/or turn "on" an exhaust fan.

Remember that any LP gas-operated appliance in the motor home will be consuming oxygen in the motor home. If the motor home is totally closed during such operation, the oxygen level may be reduced (and the associated carbon monoxide level may be increased) thereby causing possible harm or death to the occupants through asphyxiation.

Always use these appliances with proper ventilation. Never leave these appliances operating unattended for any length of time.

DANGER – Notice -- DANGER

IF YOU SMELL GAS, YOU SHOULD IMMEDIATELY:

Extinguish any open flames, pilot lights, and all smoking materials. Do not touch or operate any electrical appliances or switches. Immediately shut off the gas supply at the main tank valve or supply connection. Open doors, windows, and other ventilation openings. Exit the RV to allow entrapped LP gas to dissipate. Have the LP gas system checked to locate and fix the source(s) of the leakage.

It is wise to have a qualified service technician periodically check the entire LP-gas distribution system in the motor home. Scheduling such an inspection annually would be a recommended, preventive-maintenance routine for each motor home owner.

TELEVISION SYSTEM OPERATION

Television Antenna

The Allegro motor home is equipped with a retractable antenna (Figure 4-7) for television (TV) reception of all VHF (i.e., channels 2-13) and UHF (i.e., channels 14 upwards) channels. To deploy the antenna for proper reception of TV signals, turn the TV-antenna crank clockwise (CW) to raise the antenna; this should take about 10-15 turns until some resistance is noted.

Figure 4-7. TV Antenna

Once the antenna has been raised, slowly rotate the antenna to receive the best picture on the channel of choice—this rotation is accomplished by pulling down on the directional handle with both hands until it disengages from the ceiling plate and then rotating the antenna until optimal reception is realized. There is an antenna power-booster switch (left-hand side of the audio-video control console—see picture on p. 4-9) which, when pushed, strengthens the signals to be received.

If your location is within a metropolitan area, you may need to rotate the antenna for each different station desired to aim the antenna towards each particular station. If the location of the motor home is remote from any metropolitan area; the antenna, once positioned for a particular station, should be adequate for all other stations capable of being received. Some experimentation may be required to determine the "best" setting for each location of the motor home and the stations desired to be viewed.

Prior to moving the motor home, the TV antenna must be retracted. To lower the antenna, rotate the directional handle until the pointer on that handle is aligned with the pointer on the ceiling plate; then turn the elevating crank counter-clockwise (CCW) about 10-15 turns (until some resistance is noted) to lower the antenna and lock it into its retracted position for travel. DO NOT partially lower the antenna; it must be either fully deployed (raised) or retracted (lowered)—any intermediate position will lead to damage to the antenna itself or to the motor home.

When the TV antenna is raised and adjusted, if the TV reception is weak, blurred, or of inferior quality; examine the connections from the TV to the antenna and make sure that the power-boost switch (see Figure 4-10, p. 4-9) is actually "on." If the symptoms persist, then consult your authorized service dealer.

Television Set(s)

The television set(s) (Figure 4-8) furnished with the motor home are cable-ready; one (standard) is in the overhead bay above the dash and the other (optional) would be in the bedroom, depending on the particular floor plan of the Allegro purchased. The television(s) are powered by

Figure 4-8. Television Set

120-volt AC electricity; therefore, the motor home must either be plugged into an external source of AC power or using the on-board power from the generator.

Detailed operation of the television(s) is provided in the accompanying owners manuals found in the Owner's Information Package included with the motor home. Generic operations of the television would include a basic "on/off" switch, volume "up/down" control, channel "up/down" selector, and menu "up/down" selector—these functions are found both on the television set itself and on the accompanying remote that comes with the television set.

VHS Video Cassette Recorder (VCR) (*Optional*)

Figure 4-9. VHS Video Cassette Recorder

The Allegro motor home may be equipped with a VHS VCR (Figure 4-9) as part of the total entertainment system. The VCR operation is controlled by controls both on the VCR proper and the remote furnished with the VCR. To determine the best use of the capabilities of the VCR, consult the owner's manual furnished in the Owner's Information Package that came with the motor home. Specialized functions (e.g., operating all video equipment with one remote) may require specialized programming of the remote of choice to provide ease of operation.

Audio-Video Control Console

The Allegro contains an audio-video control console (AVCC) (Figure 4-10) to enable one to select where the TV signal is routed (i.e., front and/or rear televisions) and the VCR. The TV antenna power booster is located on the left-hand side of this console. To make the desired selection, simply press the appropriate button(s) to select what is to be viewed and where. The front television is selected by pushing button "TV 1" and the rear television (and outside television, as warranted) is selected via button "TV 2."

Figure 4-10. Audio-Video Control Console

One can view a different channel or input source on each of the television systems. For instance, if one should select the "ANT" option for the front television, any channels available on the antenna system can be viewed on the front television. At the same time, if one selects "VCR" for the rear television, any VHS VCR tape can be viewed on the rear television. The "AUX" position permits connection to an external cable system, satellite dish, video games, or DVD player.

AM / FM Stereo System

An AM-FM stereo system (Figure 4-11) with cassette-tape and optional compact-disc (CD) player may be included in the motor home. This system is powered by the 12-volt DC system of the motor home and

Figure 4-11. AM / FM Stereo System

operates like any conventional car-stereo system.

Cable & Telephone Jack

The Allegro contains an exterior cable jack (Figure 4-12, top) and also a telephone hookup (Figure 4-12, bottom). This telephone connection permits the owner to access external telephone services (e.g., RV parks) so that these services are available for use within the motor home proper.

Figure 4-12. Telephone & Cable Connectors

Within the motor home there are several telephone jacks (e.g., living room) for connecting telephone(s), as desired. Inexpensive telephones can be purchased at any retail electronics store to provide one with a suitable telephone to have for traveling.

Water Heater

Before the water heater is to be used, first fill the fresh water system and purge the water lines to and from the water heater by opening all the hot-water faucets until water steadily flows from each one and no "spurting" or "hissing" sounds are further heard. The water heater holds 6 gallons of water and uses either the LP gas system or the 120-volt AC electrical system to operate the heater.

Warning

DO NOT APPLY 110 VAC POWER to or LIGHT the water heater until after the water heater is filled with water and the water lines and heater tank are purged of any trapped air. Failure to do so will damage the water heater and may cause additional damage to the motor home.

NOTE: If the Allegro is equipped only with a 4-KW generator and a 30-Ampere service panel, then the "electrical" side of the water heater will not be operational.

Proper and safe operation of the water heater requires that all safety information provided in the owner's manual be read and understood before placing the water heater in service. Take the time to become familiar with this manual (provided in the Owner's Information Package).

The water heater is designed for operation either with LP gas or 120-volt AC electricity. Both modes of operation are now presented.

LP Gas – Electronic Ignition Operation (6-Gallon Models)

1. Turn the remote switch to the "on" position.

2. If the remote-switch light stays "on" longer than 15 seconds, turn the remote switch to the "off" position and wait 5 minutes.

3. Repeat Step One.

4. (**For 6-Gallon Models only**): For complete shut-down and also before any servicing:

    a. Turn the remote switch to the "off" position.

    b. Remove the red wire from the left-hand terminal of the ECO switch (ECO to valve).

5. If the water heater fails to operate because of high water temperature, the heater will go into a lockout condition (indicator light "on"). When the water eventually cools, reset the system by turning the switch to the "off" position for at least 30 seconds, then turn the switch back "on."

6. If a lockout condition persists, contact your authorized dealer.

120-Volt AC Electrical Operation

1. For electrical operation (if the motor-home electrical service is rated greater than 30 Amperes), use the power switch on the water heater; depending on the particular model, that switch may be located either at the front or at the rear of the water heater.

2. Completely fill the water heater with water and purge the hot-water lines of any trapped air.

3. Turn the power switch located on the water heater "on." NOTE: Turning the power "on" to the water heater without having previously covered the water-heating element with water may burn out the element and void the warranty.

4. After awhile, check the water heater for proper operation; the water temperature should be approximately 140°F (60°C).

5. If the manual-reset, high-temperature-limit switch should trip the circuit breaker; reset the switch by depressing the reset button--use a pencil or other non-metallic object to depress the reset button. If the high-temperature-limit switch should again trip the circuit breaker, contact an authorized service technician or an authorized dealer.

6. Both the electrical and gas operations of the water heater may be used simultaneously to reduce recovery time of heating water up to desired temperature.

For general maintenance of the water heater or specific information about select steps in operating the water heater, please refer to the owner's manual for this appliance contained in the Owner's Information Package.

Warning

DO NOT STORE any combustible or flammable substances near or adjacent to the water heater. Provide adequate space for ventilation and air circulation.

Water Heater Storage

If the motor home is to be stored during the winter months, the water heater should be drained (Figure 4-13) to prevent damage caused by freezing water contained in the water heater. To drain the water heater, first turn "off" all electrical power, turn "off" the LP gas going to the water heater, then turn "off" the water pump. Open both the hot- and the cold-water faucets to drain the water lines and open the drain on the water heater to drain the entire system.

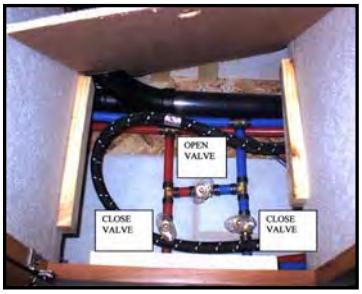


Figure 4-13. Water Heater Drain

When re-activating the water heater after the motor home is taken out of storage, make sure that the entire water system, including the water heater, has been filled with water and the lines have been purged of any entrapped air before relighting the water heater. Failure to do so may allow the water-heating element to be turned "on" before such is immersed in water; thereby, causing the premature failure of the heating element and voiding the warranty.

Pressure-Relief Valve

The relief valve for over-pressure and over-temperature conditions is located on the exterior of the water heater. This valve will operate if the water temperature reaches or exceeds 210°F or if the water pressure reaches or exceeds 150 psig. Since the water system in the motor home is a closed system when all water valves are shut, the water-heating cycle can raise the temperature (and, consequently, the pressure) of the water in the water heater; thereby realizing pressure increases approaching 150 psig. Should this pressure be reached, the pressure-relief valve will begin "weeping," that is, minor dripping or leakage from that valve until the pressure drops below 150 psig, at which time the pressure-relief valve will re-seat itself and restrict the water flow. This is normal operation and should not be a cause for alarm. Do not obstruct or block the pressure-relief valve in any way, as this would keep the valve from functioning normally and protecting the hot water system.

CB Radio System Antenna Connection (*Optional*)

The Allegro may be equipped with an antenna and coaxial-cable connection (Figure 4-14) to enable the owner to install a Citizens Band (CB) radio of choice and operate it conveniently from the Allegro. The coaxial-cable connection for the radio is found beneath the dashboard on

Figure 4-14. CB Antenna Installation

the driver's side. Accordingly, with an owner-provided CB radio, that radio can be used to communicate with other travelers on the road. To use one's CB system of choice, simply follow the directions furnished with the CB radio. (Note: Channel 11 is considered an emergency channel and monitoring this channel may give one information about road conditions, accidents, and related matters potentially affecting the travels of the motor-home operator).

To talk with someone, simply press the "push-to-talk" switch and speak. To listen to any reply, release the "push-to-talk" switch and listen to the speaker. Remember that communications are "one-way," not "two-way" simultaneously—one must talk, then allow some listening time for others to talk. Consequently, it's better to make brief transmissions and allow others to comment; rather than making prolonged speeches and possibly not having anyone answer.

Observe the common courtesies (see the owner's manual for more details) and acceptable speech. Several states have their Highway Patrols monitor the CB frequencies (check for exact channels for each state of interest) to learn about highway problems and emergencies. Be aware of these throughout one's travels, in the event that they may be needed.

Rear-View Camera Monitor System (*Optional*)

The rear-view monitoring system (Figure 4-15) is an option to aid the driver in backing and parking the motor home. A camera mounted on the rear of the vehicle feeds a televised view of the rear of the motor home to the monitor located on the right side of the dashboard. If the mode switch is in the "manual" mode, the monitor will be "on" when the ignition switch is turned "on."

Figure 4-15. Rear-View Monitoring System

If the mode switch is in the "automatic" mode, the monitor will display the picture from the rear-mounted camera only when the transmission is in "reverse" gear. To use this system effectively, please consult the owner's manual for this system; this manual is in the Owner's Information Package.

Carbon Monoxide/LP Gas Detector

To protect the driver and other occupants of the motor home, the Allegro is equipped with a carbon monoxide/LP gas detector (Figure 4-16). Carbon monoxide (CO) is a colorless, odorless, tasteless gas which, when breathed, bonds to the hemoglobin in the red blood cells and, thus, drastically reduces or blocks the transfer of oxygen from the lungs to the rest of the body. In sufficient concentrations, CO kills by asphyxiation. In lesser amounts, CO makes the victim groggy, lethargic, and unable to think clearly or quickly.

Figure 4-16. Carbon Monoxide/LP Gas Detector

CO is one of the products of combustion for many materials including petroleum-based products (e.g., gasoline, diesel fuel, propane, butane; among others). Since many of the appliances and the engines associated with the motor home produce CO in their normal operations, it is necessary to assure that CO

levels do not rise to dangerous levels within the motor home. In sufficiently high concentrations, CO can kill in minutes.

The most susceptible people to CO poisoning are unborn babies, small children, pregnant women, senior citizens, and people with cardiovascular or respiratory problems. Consequently, it is prudent to check the CO monitor regularly for normal operation and to remain aware of the symptoms of CO poisoning which include dizziness, nausea, vomiting, muscular twitching, throbbing in the temples, incoherent thinking and speech, weakness, sleepiness, and intense headaches.

Warning

Carbon monoxide gas—derived from products of combustion of diesel fuel, LP gas, and other petroleum-based products—is a deadly gas which can kill motor-home occupants, if allowed to accumulate in sufficient concentration. Assure that all engine operations are not restricted—tailpipes and exhaust ports should not be blocked or restricted in any way. Additionally, any accumulation of exhaust gases outside or underneath the vehicle should be avoided as such may enter the motor home through windows or vents—be careful how and where the motor home is parked to avoid such conditions. Regularly monitor outside conditions to assure that all exhaust gases can readily be dissipated and not enter the motor home inadvertently.

Warning

Never sleep in a motor home when the engine is running—engine exhaust fumes could enter the motor home and cause disability or death. Regularly check the exhaust system to note any leakage sites and, if found, discontinue use of the motor home until they are repaired by a competent, qualified service technician. Do not attempt repairs on the exhaust system yourself and do not modify (temporarily or permanently) the exhaust system at all.

Should any of these symptoms be experienced in the motor home, one should IMMEDIATELY evacuate the motor home and seek medical help. Shut down the motor home and do not attempt to operate it again until the source(s) of the CO are located and fixed.

In the event of an alarm, the following steps should be taken quickly:

1. If the alarm signal sounds (4 beeps and flashing or solid red light), operate the Test/Mute button.

2. Immediately move to a source of fresh air, either outdoors or by an open door or window. Do a "head count" to make sure that all people (and pets!) within the motor home have moved to a source of fresh air, too. Do not reenter the motor home or move away from the source(s) of fresh air until the emergency responders have arrived, the motor-home interior is sufficiently aired out, and the alarm has reverted to its normal monitoring function (i.e., no alarms).

3. Call the local emergency services (i.e., 911 in most locales) to summon help -- don't go back into the motor home to make this call, but use a cell phone, if available, or have someone else nearby make this call.

4. Should the CO Detector Alarm again activate within a 24-hour period, repeat Steps 1 through 3 and also call a qualified service technician to investigate the possible sources of CO (e.g., fuel-burning equipment and appliances) to locate, identify, and fix such.

Chapter

5

Cabinets & Furniture

Cabinets

Your Allegro contains cabinetry (Figure 5-1) installed throughout the entire motor home from the driver's area, through the kitchen/dining areas, and back into the bedroom. The cabinetry has been designed and built to provide ample storage space, to be easily accessible, and to be conveniently located to support the areas of concern.

Figure 5-1. Cabinetry in the Allegro

Construction of these cabinets incorporates various materials, cabinet doors, and supports. Door pulls, handles, and knobs are installed in a style complementing the particular décor of each Allegro so that an aesthetically-pleasing, as well as fully functional, storage capacity is realized.

For the many floor plans available in the Allegro product line, cabinet design has been optimized to provide maximal storage for each and every floor plan available. Accordingly, the Allegro can readily accommodate the routine materials, supplies, and customer-specific items desired for any travel requirements. Further, these cabinets are designed to contain stored supplies quite securely during travel to minimize or eliminate the possibility of shifting or spilling of cabinet contents during travel. Yet, when the motor home is parked, all stored items are readily available in the cabinets for the convenience of the users.

As the storage requirements will vary somewhat from one floor plan to another, general observations can be made about the Tiffin-supplied cabinetry which may or may not be applicable for your specific Allegro configuration.

Cabinets are provided in the kitchen/dining area to accommodate the routine cooking utensils and groceries normally desired for travel. Storage space within these cabinets (Figure 5-2) has been so designed to accommodate the typical sizes and configurations of food supplies (e.g., cereal boxes, condiments, canned goods, bottled liquids) normally taken on travel trips.

Figure 5-2. Storage Cabinetry

Based on Tiffin Motorhomes' extensive experience with travel requirements of the seasoned motor-home users and from Tiffin Motorhomes' own research and development in cabinet-design requirements, the resultant cabinets offer the greatest storage capacity possible.

Figure 5-3. Bathroom Cabinets

In the bathroom (Figure 5-3) and bedroom, additional cabinets are available for storage of sundries and toiletries specific to these areas.

In the kitchen, a color-coordinated countertop (Figure 5-4) is provided on top of the floor-mounted cabinets. To maintain the appearance of the countertop, clean with a damp cloth. If spotting occurs, clean the countertop with a damp cloth and a mild liquid soap. Should some dried-on residue

still persist, let a damp cloth moistened with the liquid cleaner stand directly on top of that residue for 15-30 minutes to loosen the residue, then clean that spot accordingly. Please note that strong chemicals, solvents, and cleaners (e.g., oven cleaner) may damage the surface; so do not use any products not specifically designed for countertop cleaning.

Figure 5-4. Kitchen Sink Countertop

The countertop may be physically damaged, too, if proper care is not taken. Do not cut anything (e.g., vegetables, fruits) directly on the countertop; rather, use a cutting board on top of the countertop to provide necessary protection to the countertop. Excessive heat may also damage the countertop; therefore, any pots or pans taken directly from the range or oven should not be placed directly on the countertop; rather, use trivets or some other form of fireproof heat insulators to hold very hot pots or pans on the countertop.

All drawers are equipped with metal slides to provide additional load-bearing strength for the drawers and to permit effortless opening and closing of those drawers, even when they are fully loaded. These metal guides have a slight "locking" action, when closed. To open those drawers, slightly lift up on the drawer handle and then pull the drawer open. To close, push the drawer closed until it "clicks" back into place (i.e., the locking action is engaged).

Any commercial furniture polish or cleaner can be used to clean and polish the cabinetry. Do not try to soak these wooden surfaces with any water or any other liquid; be sure to wipe up spills or residues of any fluids that contact these surfaces to preclude any staining or discoloration of the cabinet surfaces.

Furniture

Kitchen, Dining, & Living Room Areas

On all the various floor plans of the Allegro, a built-in dinette booth (Figure 5-5) is standard. This dinette provides additional storage under the seat area of the booth, in addition to providing additional sleeping facilities (Figure 5-6).

Figure 5-5. Dinette Booth

The sleeping area is realized by lowering the dinette-table top to seat level and then rearranging the seating cushions to form a bed. Specific directions for converting the booth dinette into a bed are:

Figure 5-6. Dinette Converted into Bed

1. Remove the seat cushions.
2. Next, remove the wooden fill blocks.
3. Fold the table leg upwards, while slightly lifting the table, and allow the table to swing down and rest between the two booth seats; thus, forming the bed.

4. A "filler strip" (Figure 5-7) is attached to the seat position (via a long Velcro strip) of the sofa. Simply pull these two pieces apart. The filler strip can be conveniently stored underneath the dinette until you are ready to re-convert the bed back into a sofa.

5. Reinstall the seat cushions and back rests to make up the mattress for the bed.

Figure 5-7. Filler Strip Attached to the Seat Portion

The living room contains a standard sofa (Figure 5-8) which converts into a bed, as required. The sofa is custom coordinated with the décor of the motor home. To convert the sofa into a bed, follow these directions:

1. Remove the accent pillows.

2. Under a seat cushion locate the "black tab" and slide the tab to the left or the right and then pull upwards on the seat portion of the sofa—this will cause the sofa seat to open, extend, and convert into a bed.

Figure 5-8. Sofa Bed

There may also be a swivel rocker with adjustable headrest (or barrel chair on some models), also coordinated with the décor of the motor home.

The driver's seat is manually operated and has swivel features. When the motor home is parked, the driver's seat can be swiveled to face into the living room. To swivel this chair, first extend the slide-out room (see Chapter 8 for additional detail). Then move the chair backwards as far as possible to gain clearance from the steering wheel. Now the chair can be swiveled without interference. The control switch for the driver's chair is located on the left-hand side in front of the power base controls.

In a comparable manner, the passenger's seat is also a manually operated seat having essentially the same controls as that of the driver's seat and it is operated accordingly.

Bedroom Area

If a décor-coordinated, quilted bedspread with accessorized pillow shams and accent pillow(s) are included with the bedroom suite (Figure 5-9), it is recommended that the bedspread be dry-cleaned only to preserve the quality and integrity of the bedspread for the longest time possible.

Figure 5-9. Bedroom Decor

Treatment of the bedspread with any of the stain-resistant sprays (e.g., Scotchgard or its equivalent) will also make the bedspread more resistant to the possibilities of stains and fabric damage. If maintained properly, the bedroom soft-goods accessories will provide years of dependable service and maintain the desired décor established by the motor-home owner.

Chapter

6

Structural Features

Chassis Features

The chassis (Figure 6-1) of your Tiffin Motorhomes Allegro was built and is warranted by either Workhorse or Ford, the chassis manufacturers. The operating instructions for that chassis are included in the Chassis Owner's Manual which is provided with your Allegro and is a part of the Owner's Information Package furnished to you by your Tiffin Motorhomes Dealership.

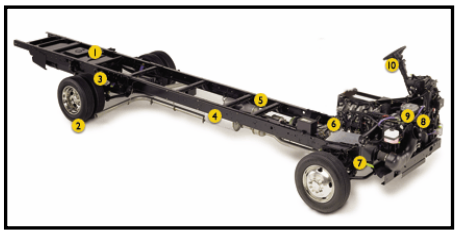


Figure 6-1. Workhorse Chassis

Before you begin using your Allegro, please read and follow all recommendations for the proper care, operation, and maintenance of the chassis—this will assure you of pleasant, trouble-free use of the motor home. Should you have any questions about the chassis, however, you should contact your chassis manufacturer as noted earlier.

TYPICAL FEATURES OF CHASSIS ITEMS PROVIDED BY THE CHASSIS MANUFACTURER
Large 75- gallon gas tank, combined with better fuel efficiency, for less-frequent fill-ups.
Four-wheel, anti-lock, disc brakes providing dependable, quick stopping under almost all conditions.
Gas-charged shock absorbers on all four wheels.
Dual exhausts to help the high-performance engine "exhale" faster for greater efficiency.
Electrical wiring is routed inside the frame members for greater safety and reliability.
Four-speed transmission with overdrive and electronic-controlled shift points for smooth shifting, excellent performance, and fuel economy. Auxiliary cooler to dissipate more heat.
Steering damper.
Horizontal-mount radiator with either dual, side-by-side cooling fans (GVWR weights 17,000 pounds and higher) or one large, cooling fan (GVWR weights 15,000 and lower).
One of the largest, most powerful RV engines ever built.
"Comfortilt" feature permits adjusting the angle of the steering wheel for greatest comfort.

Alignment

The Allegro motor home you have purchased has been aligned at the factory prior to shipment to you. During the first 10,000 miles of operation of your Allegro, the chassis will have a tendency to "settle" and readjust itself in response to the loading of your vehicle.

Although it normally is not necessary to realign the Allegro before the first 10,000 miles of use; it is, nonetheless, recommended that you have the Allegro alignment checked after the first loading of the vehicle. However, if you feel that you have noted some discrepancy or anomaly in steering operation, please contact your chassis manufacturer or call Tiffin Customer Service at (256) 356-0261 to address your concerns.

Chapter

7

Electrical Features

General Information

There are two electrical systems in your Allegro motor home—these are the 12-volt DC (VDC) system and the 120-volt AC (VAC) system. Most standard appliances require the 120-VAC system, while the majority of the lighting systems used in the Allegro use the 12-VDC system. The electrical power for the 12 VDC system is supplied by the batteries of the Allegro; those batteries are, in turn, charged by a power converter.

The electrical power for the 120 VAC is supplied either by the power cord when the Allegro is connected to an external power source or when the on-board electrical generator is in operation.

Caution

Failure to turn off the 120 VAC appliances when starting or stopping the generator may damage the transfer switch and/or electrical appliances.

To connect the Allegro to an external source of 120 VAC electrical power, it is first recommended that all of the circuit breakers are in the "off" position—this is done to prevent any power surge upon connecting the motor home to the external power source. Then unwind the power cord from the electrical compartment located in the compartment behind the driver's-side rear tires. The flexible, power cord supplied with the Allegro is designed to handle up to either 30 or 50 amperes, depending on the configuration ordered.

Make sure that the pins in the male end of the plug are oriented correctly so that they match the power cable, and that they are in good condition (i.e., aren't bent or damaged). If there is a circuit breaker switch at the "plug" end of the power cord, that breaker should be turned "off" before making the connection. Insert the plug into the mating outlet and then turn the circuit breaker "on." Close and lock the electrical compartment door to protect the contents and to keep them clean and dry. Close the cover on the power box, if so equipped, to avoid an unintentional disconnection and to keep the contents clean and dry. Then switch the main breaker to the "on" position. When properly connected, the 120 VAC system provides power to all the 120 VAC circuits and outlets when the main breaker is turned "on."

Circuit-Breaker Boxes

For the Allegro, the 120 VAC and 12 VDC breaker boxes (Figure 7-1) are typically located beneath the refrigerator or in the bedroom [*if inside the vehicle*] or in the storage box [*if outside the vehicle*]. The circuit breakers and associated fuses are installed to protect the electrical system of the Allegro from any overloads. Do not attempt to change the electrical circuitry or to add appliances yourself.

Figure 7-1. Circuit Breaker Box

Please consult an authorized Tiffin Motorhomes Dealership or Tiffin Motorhomes, Incorporated in Red Bay, AL to determine

whether any changes you desire are appropriate and acceptable. Tiffin Motorhomes' qualified staff of electricians can readily determine whether any changes sought (e.g., CB radio, amateur radio, satellite television receiver, personal computer system, and the like) are possible or not and can advise you on how best to realize these enhancements.

Please note that the 12 VDC fuses and breakers are located in a separate compartment adjoining the 120 VAC breakers. Fusing is provided for the following 12 VDC circuits: All interior/decorative/overhead lighting, water heater, TV switching box, slideouts, power roof vents, monitor panel, and 12 VDC disconnect panel.

Auxiliary Start Switch

Figure 7-2. Aux. Start Switch

The auxiliary start switch (Figure 7-2) is located on the driver's-side console box. This switch briefly connects the Allegro coach batteries to the chassis batteries—this allows the chassis batteries to "borrow" power from the coach batteries to assist in starting the engine. If the chassis batteries cannot themselves start the engine in the "normal" mode, hold down the battery-boost switch and retry starting the engine.

By using the battery-boost switch while trying to start the Allegro engine, a jump-start situation is realized between the coach and chassis batteries. If the battery-boost switch is required to start the engine on a regular basis, ask your Tiffin Motorhomes Dealership to check the chassis batteries and the associated charging system.

Battery Inspection and Care

As the batteries contain a significant amount of electrical energy, they must be handled with due diligence and care. Some of the routine precautions include:

Warning

Remove rings, metal watchbands, and any other metal jewelry before working around batteries. If any metallic object (tool, jewelry, etc.) contacts the positive battery terminal or any connection made to that terminal AND also contacts the negative terminal or any of its connections, a SEVERE ELECTRICAL SHORT will occur which could result in an explosion, fire, and/or personal injury. Lead-acid batteries contain diluted sulfuric acid which can be dangerous; avoid direct contact with any battery fluids. Wear eye protection.

Caution

Disconnect the 120 VAC electrical power cord and the negative terminal from the coach batteries BEFORE working on the Allegro electrical system.

Caution

If the Allegro ever requires any welding operations on the frame, first disconnect the chassis batteries. Failure to do so will destroy all of the chassis computer system.

The motor-home batteries which constitute the 12 VDC system are contained inside the motor-home entrance step well (Figure 7-3, top). To access these batteries, open the access panel (figure 7-3, bottom) on these steps. When access to the batteries is no longer needed, close and securely fasten the access cover to place these steps back in service.

Figure 7-3. Stairwell (Top) and Battery Storage Underneath (Bottom)

When batteries are not used for extended periods of time, they will gradually lose their electrical charge. Therefore, it is necessary periodically to recharge the batteries to increase the operational lives of the batteries. It is also necessary to check the external condition of the batteries on a regular basis. Look for cracks in the battery case and cover. Check the vent plugs and replace them if they are cracked or broken. Keep the battery clean.

Since accumulations of dirt and acid residue around the battery terminals may provide an electrical path for discharging the battery, the area around the terminals should be cleaned periodically. One can use an old toothbrush and a sparse amount of a diluted solution of baking soda (sodium bicarbonate) and water (distilled or de-ionized, preferred; tap water, acceptable) to clean and neutralize any acidic build-up around the battery terminals. If there is any forming on the top of the battery, this indicates that acidic residues are being neutralized. Rinse the cleaned areas thoroughly with distilled or de-ionized water (tap water is okay, too).

Avoid getting the baking-soda solution into the battery fill plugs to each battery cell; this would drastically reduce the effectiveness of the battery (by neutralizing the sulfuric acid in the battery cells) or, worse, "kill" the battery. Dry the battery cables and terminals to prevent corrosion; to protect those terminals further, use a

plastic ignition spray on the terminals. Do not use grease on the terminals, especially on the metal-to-metal connections, as grease may act as an insulator and keep the battery electrical power from entering the cables.

If the batteries are not going to be used for an extended period of time, they should be removed from the Allegro and stored in a warm, dry place. IT IS STRONGLY RECOMMENDED that this service be performed by a qualified service technician, as the process is usually too complicated for the average owner to perform. For those who may wish to perform this service themselves, the following procedure is described: Mark the battery cables ("+" sign or "red" for the positive cable; " - " sign or "black" for the negative cable) so that they can be properly reconnected again later. These batteries would require periodic recharging to maintain their full charge.

Additionally, the batteries will, over time, lose some of the water used with the sulfuric acid in the batteries. Following manufacturer's recommendations as found in the Owner's Information Package, periodically check the fluid levels in all the cells of the batteries (be sure to use safety eyewear during this process) and fill those that are low with water (distilled or de-ionized water is preferred; tap water is okay). Don't overfill the cells; follow the filling directions exactly. This battery checkup should be done on a regular basis to realize the fullest service possible from the batteries over the longest time possible.

If the Allegro is to be stored for an extended period of time, the 12 VDC battery system should be disconnected—this procedure will prevent unnecessary drain and corrosion of the batteries and their terminals.

Battery Disconnect Panel

The battery disconnect panel (Figure 7-4) is located near the interior step. There is a switch on the right-hand side of the panel which can disconnect the battery when the vehicle is to be stored for any appreciable time. Turning this switch "off" disconnects the coach batteries only, not the chassis batteries. This feature is designed to prevent the coach batteries from being drained during storage. This switch also disconnects all the 12 VDC circuitry from the batteries; thus removing the total electrical load from those batteries, with the exception of the LP detector.

Figure 7-4. Battery Disconnect Panel

When the Allegro is removed from storage, turn the switch "on" to reconnect the 12 VDC circuitry to the coach batteries again and the 12 VDC systems are now reactivated.

Figure 7-5. Typical AC Receptacle

120-Volt AC (VAC) Receptacles

Your Allegro Motor Home is equipped with several 120 VAC receptacles (Figure 7-5) located throughout the interior of the motor home. These 120 VAC receptacles are of the "three-prong" variety; the third prong being a grounding pin which provides adequate grounding to protect one from any electrical shock.

For these receptacles to work properly, do not use an adapter, cheater, or extension cord which defeats the function of the grounding pin. For the same reason, never remove or

bend away the ground prong or pin from any three-prong AC plug so that it would fit a two-prong AC receptacle (i.e., an ungrounded AC receptacle).

Never operate the Allegro if there is an electrical short present, as an electrical short may deliver an electrical shock to anyone coming in contact with the exterior of the unit. If you should feel even the slightest of electrical shock, immediately disconnect the unit from the 120 VAC power source and locate the electrical fault (i.e., typically, it is a break in the grounding circuit).

Do not reconnect the 120 VAC power until after that electrical fault is fixed—the grounding circuit must be continuous from the frame to the distribution panel, to the power cord, and to the earth ground so that electrical-shock protection is realized.

12-Volt DC (VDC) Receptacles

Your Allegro Motor Home may be equipped with a 12 VDC receptacle conveniently located on the dashboard or bulkhead (Figure 7-6, black receptacle, bottom half of the picture). This 12 VDC receptacle can be used for providing power to various items, such as cellular phones, personal computers, or portable communications equipment.

This receptacle is usually found on the bulkhead in front of the passenger's seat so that it is conveniently available to be used by the personnel in the cockpit area This receptacle accommodates the "cigarette-lighter" type of connector.

Figure 7-6. Typical 12VDC Receptacle (Bottom)

Ground-Fault-Circuit-Interrupt (GFCI) Receptacles

Figure 7-7. GFCI Receptacle

In the kitchen and bath areas, there are 120 VAC GFCI receptacles (Figure 7-7) which provide greater protection against inadvertent electrical shocks. These specialized GFCI receptacles provide both overload and short-circuit protection for the user. The electrical receptacles located in the slide-out are wired through the kitchen GFCI. The exterior receptacles are wired through the bathroom GFCI. Consequently, if an appliance plugged into a slide-out or exterior receptacle is not working, check for a tripped GFCI in the kitchen or bathroom.

All GFCI-protected receptacles are marked as such, but only one of them may have two pushbuttons on the receptacle (as shown in the picture). The upper pushbutton is a "test" button which can be used to assure that the GFCI function is working—all one need do to test this function is to push that upper button: There will be a momentary "click" and the circuit will be disconnected (i.e., no power is available at the GFCI-protected receptacles). To reset this GFCI breaker, push the lower button (the "reset" button) to restore power to all the GDCI receptacles on this circuit.

In addition, these receptacles protect the user from ground faults between an electrically "hot" wire and ground. The GFCI will not reduce the shock hazard if the short is between a neutral and "hot" wire, or two "hot-load" wires.

The GFCI should be tested at least once a month. The 120 VAC electrical system must be "on" for the GFCI to be tested. To test the GFCI the reset button needs to be pushed in fully before starting the test. Push the test button; this will cause the reset button to pop out which means that the protected circuits have been disconnected. Push the reset button back in until a "click" is heard—this will re-activate the protected circuit. If the GFCI is working properly, the reset button will remain in the "in" position.

Converter

As a standard feature on the Allegro, a converter is provided to convert 110 VAC to provide the necessary 12 VDC power for those appliances plugged into that 12 VDC power system. In this manner, most DC-powered appliances can be used inside or outside the Allegro when connected to an external 120 VAC power hookup; this prevents undue drain on the on-board 12 VDC battery system. The converter is conveniently situated in one of the external storage lockers underneath the Allegro. One should not store anything else in this locker to preclude any accidental electrical short circuits.

Electrical Generator

The electrical generator (either a 4.0 Kilo-Watt [KW], 5.5 KW, or 7.0 KW; depending on the particular Allegro model chosen) is conveniently located in one of the side compartments in the Allegro motor home. Prior to starting or stopping the generator (Figure 7-8), make sure that all the 120 VAC appliances are turned "off."

Figure 7-8. Electrical Generator

NOTE: The 4.0 KW generator is capable of operating only one air conditioner at a time. The 5.5 KW generator is capable of operating two air conditioners at the same time, but does not have any additional capacity to operate any other appliances in conjunction with both air conditioners running.

After the generator has been started, wait until the transfer switch has connected before turning "on" any of the appliances.

The generator can be started from either the remote-start switch located on the dash or directly at the generator itself. The hour meter installed on the generator records the number of hours of operation of the generator motor—this elapsed time is needed for observing necessary maintenance schedules on the generator.

Caution

Failure to turn "off" the 120 VAC appliances when starting or stopping the generator may damage the transfer switch and/or electrical appliances.

For more detailed operating instructions and to determine necessary preventive-maintenance schedules and procedures, review the manufacturer owner's manual.

Automatic Transfer Switch

Your Allegro may be equipped with an automatic transfer switch (exception: Any Allegro having a 4,000-watt generator will not have an automatic transfer switch). When the generator is turned "on," this switch automatically transfers from external power to generator power. There will be a slight delay between the start of the generator and the electrical connection being made—this delay allows the generator to reach normal operating speed without needing to supply a required load. When the Allegro is plugged into an external source, a "click" will be heard in the transfer switch box—this is a normal function and merely indicates that the unit is changing over from an external power source to the generator.

Resettable Circuit Breakers

The resettable circuit breakers (Figure 7-9) are located in the external storage compartment just forward of the entrance door. When the circuit breakers are shut down or electrically tripped, they must be manually reset.

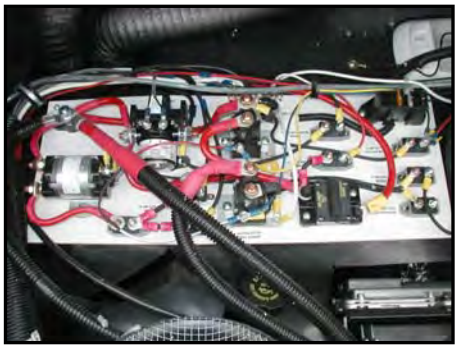


Figure 7-9. Resettable Circuit Breakers

These breakers protect the slide-outs, the AC ignition, the electric step, the 30-amp ignition system, and the 12 VDC disconnect system. As needed, manually reset the circuit breaker or breakers as shown in the accompanying figure.

Be careful when working around these connections as an accidental electrical short to ground (i.e., momentarily connecting the "positive" or "hot" terminal to any part of the chassis) can be hazardous and harmful.

Fuse Blocks

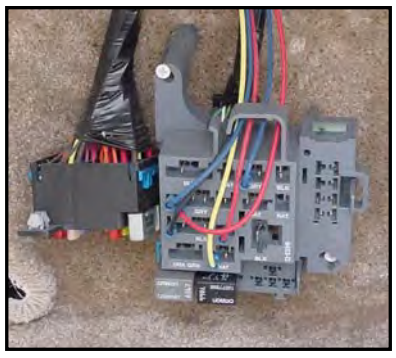


Figure 7-10. Fuse Blocks

Some of the electrical circuitry within the motor home is protected by various fusing systems. Some of these fuse blocks (Figure 7-10) are immediately accessible from the driver's side underneath the dashboard.

The electrical circuits protected by the under-dash fuse block include: headlights, panel light for dashboard, tail lights, optional jacks, turn signals, cruise control, engine computer, accessory fuses, heater and dash air conditioning. Additionally, there is another chassis fuse panel which works in conjunction with the chassis fuse panel and provides comparable protection for the above-listed circuits.

Located beneath the access panel on the dashboard (see Figure 7-11) are two additional fuse panels; these panels protect the following electrical systems: mirrors, optional satellite jacks, camera, optional power windows, dash trim, lighter, map light, optional power seats, and radio.

Should there be any electrical failure of these components or systems, the first troubleshooting procedure should be to check the fuses and have available replacements to replace any blown fuses, as may be warranted.

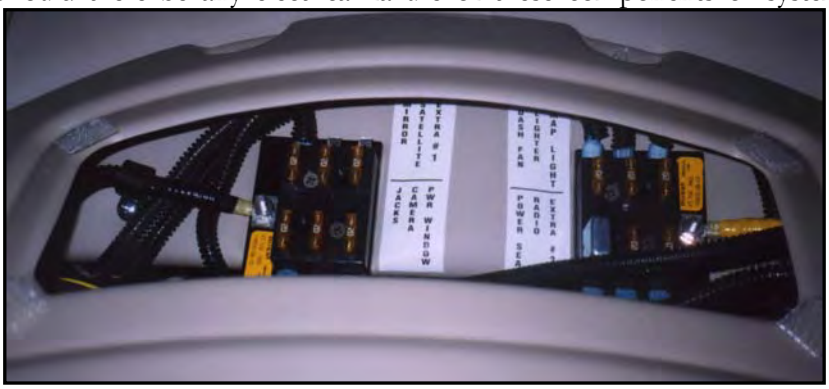


Figure 7-11. Underdash Fuse Panels

As an aid to extracting and/or installing fuses in the fuse blocks, one may wish to buy an inexpensive fuse puller at any electronics or hardware store. This tool makes the installation or removal of fuses much easier and prevents inadvertent damage to nearby fuses or the fuse block itself.

Warning

Never replace a fuse with a fuse rated larger than that which originally came from the factory. To do otherwise will cause serious damage, overheating of the wiring, and possible ignition of nearby materials resulting in a fire.

Whenever a fuse has been "blown" and is to be extracted and replaced, it is good practice to examine the wiring going to that particular fuse to see if there is any noticeable degradation (e.g., wiring insulation nicked, missing, or melted) which may indicate damage beyond the fusing proper.

Seven-Pin Towing Connector

Your Allegro is equipped with a standard, 7-pin connector (Figure 7-12) near the towing hitch at the rear of the motor home to supply the necessary circuitry to control a towed vehicle. The wiring of that connector is shown in the accompanying diagram.

Make sure that any cable from the vehicle to be towed is wired correctly to mate properly with the connections shown in the connector. If in doubt about proper wiring, have a qualified service technician

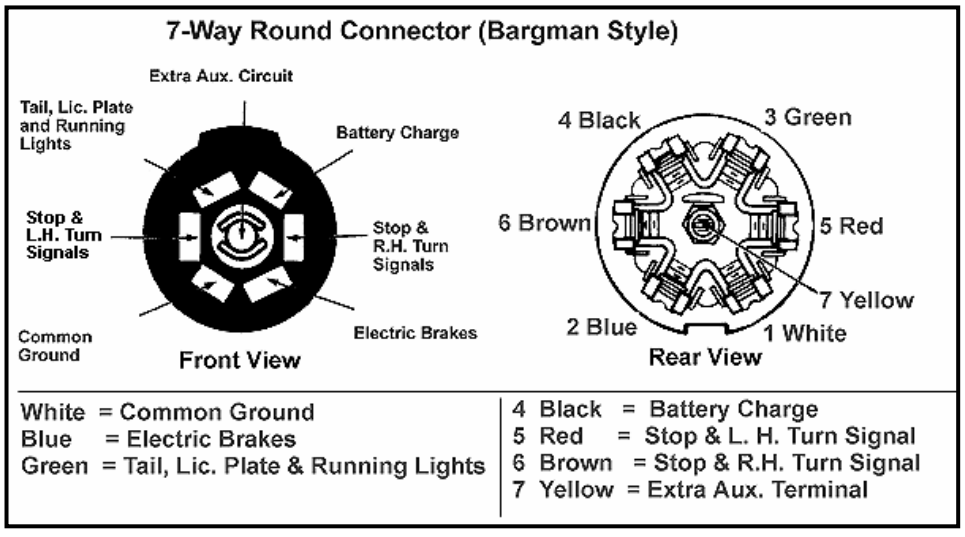


Figure 7-12. Bargman Seven-Pin Towing Connector

prepare and install the necessary cable to mate with the 7-pin connector on the motor home to assure proper operation subsequently when any vehicle is actually towed by the motor home.

When the towed vehicle is uncoupled from the motor home and the cable is disconnected from the 7-pin connector, be sure to close the spring-hinged cover plate on the connector to protect the contact pins from dirt or debris. In a similar manner, protect the cable end from similar damage, weather, or debris—one such method could be to place the connector end in a heavy-gauge plastic bag (e.g., polypropylene, polyethylene, etc.) and secure the bag tightly around the cable with a stout elastic band or tape and then mount the secured cable in a manner to keep it both from mechanical damage and water intrusion.

When the towed vehicle is again coupled to the motor home via the towing hitch and the cable is again connected to the 7-pin connector, make sure the resultant connection is tight and solid so that the connection won't jar loose during use. Several supplemental methods to secure that connection have been used; some of which include securing the connection with a strong rubber band or with Velcro-type fasteners to provide a supplemental mechanical backup to the actual electromechanical connection.

Should a conversion adapter to convert the round, seven-pin connector to a flat, four-pin connector be needed; such an adapter may be purchased from any RV after-market store.

Chapter

8

Slide-Out Features

SLIDE-OUT OVERVIEW

Warning

BEFORE ACTIVATING THE SLIDE-OUT FEATURES, please read the slide-out room instruction manual first. Additionally, the motor home must be parked and the leveling jacks must be used to level the motor home PRIOR to activating the slide-out features.

General Considerations

Please Note

The Slide-Out Room requires semi-annual inspection (i.e., every six months) to assure that the slide-out mechanism is properly aligned and functioning correctly. Please make sure that this inspection is performed every six months to correct any possible misalignments.

Any slide-out-room feature is actuated by means of a readily accessible, slide-out switch (Figure 8-1). The rocker switch must be manually held down in the desired position (i.e., either "in" or "out") to activate the desired action of the slide-out room and continue to be held down until the desired action is concluded. Releasing the rocker switch before the slide-out is fully extended or retracted will stop the slide-out at some intermediate position. **NOTE: The slide-out switch will only operate when the ignition switch is in the "off" position**—there is an interlock which keeps the slide-out mechanism from operating when the ignition is "on."

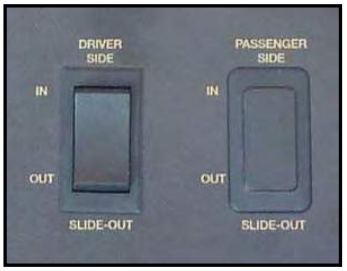


Figure 8-1. Slide-Out Switches

Operating Precautions

Warning

Before attempting to extend the slide-out room, check outside and make sure that there is at least a five-foot clearance around the area where the slide-out room will be extended.

Before the slide-out-room mechanism is to be used, make sure that the motor home is parked and the leveling process has been properly completed. Verify that no obstacles (e.g., branches, trees, telephone poles, power/water hookups, trash bins, and the like) are within a five-foot space envelope of the slide-out room to preclude damaging the slide-out room when it is finally deployed.

Extending the Slide-Out Room

1. All windows in the slide-out room (Figure 8-2) must be closed and secured before the slide-out room is to be extended or retracted. Also any loose materials or possible obstructions should be removed from the immediate slide-out room area. Make sure the motor home has been leveled. Make sure that the battery is fully charged and connected to the electrical system.

Figure 8-2. Typical Slide-Out

2. Verify that there are no obstructions outside which may interfere with the operation of the slide-out room.

3. Prior to moving the slide-out room in either direction, make sure that the driver's chair is moved forward into the driving area as far as possible and is locked into position.

4. Make sure that the ignition switch is in the "off" position prior to using the slide-out function; if the ignition switch is "on," the slide-out mechanism won't work.

5. Push the "out" portion of the rocker switch; allow the slide-out room to go to its fully extended position—at this point, release the rocker switch (this locks the room into position).

Retracting the Slide-Out Room

1. Before attempting to move the motor home, the slide-out room must be fully retracted.

2. Verify that the battery is fully charged and connected to the electrical system.

3. With the ignition switch in the "off" position, push the "in" portion of the rocker switch; allow the slide-out room to go to its fully-retracted position—at this point, release the rocker switch (this locks the room into position).

Manual Operation: Slide-Out Room

Your Power Gear slide-out system is equipped with a manual override that allows one to extend or retract the room in the event of a loss of power.

Please Note

If the slide-out room doesn't move when the rocker switch is depressed, check the following:

Make sure the ignition switch is turned "off."

Make sure the battery is fully charged and connected.

Make sure the slide-out breakers haven't been "tripped." These breakers are located on the circuit panel on the exterior of the firewall.

After the previous items have been checked and verified and the slide-out room still does not move when the rocker switch is pressed, follow these simple steps to override the slide-out room manually (Figure 8-3).

Figure 8-3. Manual Slide-Out Deployment Sequence

1. Turn "off" the ignition switch. Locate the slide-out electrical controller (refer to your Tiffin Motorhomes dealer or the Tiffin Motorhomes factory for its location). There are two versions of the controller. For version 1, unplug the six-pin wiring harness to the controller. For version 2, remove one of the motor leads (either the motor I or the motor II lead from the controller).

2. Locate the slide-out motor; it will be mounted to one side of the slide-out rails. NOTE: If the motor home has an underbelly or a cover over the motor, these parts must be removed to access the motor.

3. Rotate the brake lever, on the backside of the motor, counter-clockwise (CCW) (looking from the rear of the motor) about 1/8 of a turn to the

released position. This action will release the brake that holds the room in place.

4. Locate the manual override for the slide-out system.

5. The room is now free to move. Using a crescent wrench, crank the room either "in" or "out" completely (depending on your needs). NOTE: If the slide-out system is supplied with a gearbox override (optional), use the crank handle to move the room.

6. When the room is fully "in" or "out," apply pressure to the wrench and return the brake lever to its engaged position—this will assure that the room is locked into a secured position. Take the motor home to an authorized dealer for service.

Chapter

9

Exterior Features

Towing Hitch

On the rear of the Allegro can be found a 5,000-pound towing hitch (Figure 9-1) capable of handling a tongue weight of 250 pounds. This hitch is installed for towing a passenger car to be used when the vehicle is parked. The wire connector installed with this hitch is a standard, seven-pin connector. For more information on the connector, please see Chapter 7 of this Owner's Manual.

Figure 9-1. Towing Hitch

Exterior Sides

The sides (Figure 9-2) of your Allegro are constructed of gel-coated fiberglass. To add to this feature, the end caps are also gel-coated fiberglass. To clean these fiberglass surfaces, only use warm water and a mild cleanser; gently wash with soft cloths. Use of stiff bristle brushes or other harsh abrasives may cause scratches in the fiberglass surfaces. Please note: Tiffin Motorhomes is NOT responsible for the weathering and/or oxidation of gel-coated surfaces.

Figure 9-2. Typical Allegro Exterior

Spacious storage compartments are located on the exterior sides of your Allegro. These external compartments provide ample, additional space for your belongings while you are traveling. When stowing materials in these storage compartments, try to "balance" the resultant weight load from front to rear and from side to side—this will keep the center of gravity of the motor home essentially unchanged and should not adversely affect the handling characteristics of the motor home when it is in motion.

Security Lights

On the Allegro, exterior security lights (Figure 9-3) are standard features. A light is installed on the passenger side of the coach to help light that side of the Allegro for added protection.

This light can serve as a "porch light" when the motor home is parked and the awning is deployed so that various activities (e.g., sitting outside, grilling, visiting) at dusk and later can be enjoyed by the motor-home owners and their guests.

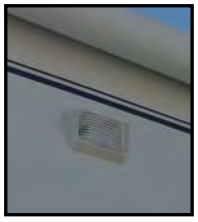


Figure 9-3. Security Light

Roof & Ladder

The Allegro is manufactured with a rubber (optional: fiberglass) roof. Proper care and routine maintenance of your roof will assure many years of trouble-free performance. Please see Chapter 14 for details on recommended cleaning instructions. On the Allegro, a roof ladder (rated capacity: 200 pounds, maximum) may also be included as an additional feature. The ladder is typically used to permit easy access to the roof for routine maintenance and periodic inspections.

The ladder (Figure 9-4) is hinged so that its lower half can be folded up onto the upper half when the motor home is in transit.

Figure 9-4. Ladder

When folding up that ladder and securing it, be sure that the ball-lock pin is securely fastened through the locking device to secure the ladder in transit.

Warning

Do not exceed the maximum rating of the ladder (i.e., 200-pound load limit). Do not attempt to walk on the roof either while it is wet or when condensation is present from the air-conditioning system, as that surface would be quite slippery.

Leveling System (Electric)

Warning

If the vehicle is equipped with a slide-out, DO NOT OPERATE any room extension until the leveling and stabilizing procedure has been properly completed. DO NOT RETRACT the leveling system until the slide-out room has been retracted. NEVER operate the leveling system when the slide-out is extended.

Caution

DO NOT LIFT the wheels of the motor home off the ground when leveling—if done, the motor home can tilt forwards or backwards when supported only by the leveling jacks. Never use the jacks to lift the motor home off the ground to change the tires or perform any under-chassis maintenance—these jacks are not meant for this type of service and misuse would be very dangerous to the operator.

ELECTRIC LEVELING SYSTEM

If the Allegro is equipped with an electric leveling system (e.g., Atwood control panel); then the process of leveling the stationary motor home requires the following procedure.

Atwood Leveling Control Panel

The electric leveling system requires only minimal effort from the motor-home user. For manual leveling of the motor home, perform the following steps:

Extension Mode:

On the leveling system control panel (Figure 9-5), press the "on/off" switch to turn "on" the leveling system; this will activate the control panel and a green LED will come "on" to indicate the control system is ready.

Manual Leveling:

1. Press both the "ALL" switch and the "Extend" (EXT) switch simultaneously and then release them simultaneously—this will cause all four levelers to extend automatically. The four levelers will each extend automatically and, when each contacts the ground, each will stop automatically. **NOTE**: This "all extend" command must be performed first before any other commands will function.

Figure 9-5. Leveling Control Panel on Dashboard

2. PANIC STOP: If it is necessary to stop the leveling process rapidly, any switch can be pressed to initiate a "panic stop" of all four levelers. The total system is still activated. To reset the system, press the "Retract" (RET) and the "ALL" switches simultaneously.

3. Once the levelers have stopped extending, look at the bubble level and adjust the levelers. If the bubble in the bubble level is towards the front of the motor home, either extend the rear levelers or retract the front levelers, until the bubble is centered. If the bubble is towards the rear of the motor home, either extend the front levelers or retract the rear levelers, until the bubble is centered.

4. To extend or retract the levelers in adjacent pairs, one can level the motor home in either the "extend" or the "retract" mode. To do so, press the extend or retract switch and then release it; then press and hold down the "FRONT," "DRIVER," "PASS," or "REAR" switch to activate the corresponding pair of levelers (i.e., the jacks). Note the bubble level while performing this operation to make sure tha the leveling process is going the way that is intended.

5. Activate the levelers in pairs until the motor home is level. Remember that the levelers can be retracted to facilitate the leveling process.

6. Outside, visually inspect the leveled motor home to assure that all levelers are contacting the ground. If not, activate those needing such until they contact the ground.

7. When the leveling process is completed, press the "on" switch to turn "off" the control panel.

Auto Position Controls:

If the "Auto" position is already set or programmed:

1. Press the "on/off" switch to activate the system.

2. Press the "AUTO" switch. The levelers will extend and automatically reach the pre-set position.

3. Auto Position bump back at completion of Auto Position, the system will check each leveler to assure that its foot is in contact with the ground. During this period, the control panel "WAIT" LED will be lighted.

To set the Auto Position:

1. Look at the control panel; you have an automatic controller if there is a switch labeled "AUTO."

2. To set the "AUTO" position: (a) Manually adjust the motor home to the position desired. (b) Then press the "on" switch one time to turn the controls "off." (c) Press the "EXT" switch five times. (d) Press the "RET" switch five times. All control panel LED lights will blink "on" and "off." (e) Press the "ALL" switch three times. All the control panel LED lights will turn "off." (f) Turn the controls "on" and simultaneously push the "ALL" and "RET" switches.

Retraction Mode:

1. Assure that the slide-out rooms are fully retracted (i.e., they are in their inboard positions).

2. Press the "on/off" switch.

3. Whether using Manual Controls or the Auto Position Controls, simultaneously press both the "ALL" switch and the "RET" switch and then release those switches. The levelers will automatically retract to their fully retracted positions. The leveler indicator LED light will blink red during this activity.

4. Once the levelers are fully retracted, the level indicator LED light (green) will be "on" continuously.

5. Press the "off" switch to turn the power "off" to the control panel.

NOTE: In becoming familiar with the leveling process, consult both this Owner's Manual and the specific operating instructions that came with the particular leveling system to gain proficiency.

Important

The leveling system should be cycled once a month or whenever the motor home is used to keep the leveling system in good operating condition.

Electric Steps

The Allegro is equipped with electric door steps (single- or double-step versions). As such, the switch to operate these steps is located in the door stairwell. When the power switch for the steps is in the "on" position, simply open the door and the steps will automatically extend. Detailed operation for the electrical, double-entrance, door steps (Figure 9-6) is as follows:

Figure 9-6. Electric Steps Switch (Left)

1. Turn the step power switch (left-hand side) "on."
2. Close the door. The step should retract and lock into the UP position.
3. Open the door. The step should extend and lock into the DOWN position.
4. Turn the step power switch "off." The step should remain in an extended position when the door is closed. Turning "off" the power with the step retracted will hold the step in a retracted position, as well.
5. With the step extended (Figure 9-7), turn the step power switch "off" and close the entrance door. Turn the vehicle ignition switch "on." The ignition override system will go into effect and the step will automatically retract.

Figure 9-7. Electric Steps Deployed

Caution

If the motor home is driven with the step in the extended position, there is the possibility of causing major damage to both the step and the motor home.

6. With the step switch in the "on" position, turn the vehicle ignition switch "off" and open the door. The step will extend and lock in the DOWN position.

Caution

If the door is opened and closed without allowing the step to extend fully and lock in the "DOWN" position, the step will retract and lock in the "UP" position. When the door is re-opened, the step will not extend. The power switch must be turned "on" for the step to extend.

7. This feature is only operative the first time the door is opened after the vehicle ignition switch is turned "off." When the ignition switch is "on," the step will always activate with the door movement, regardless of the position of the step power switch.

Caution

Always be sure to "look before you leap"! When opening the entrance door from the inside, be sure that the step has fully deployed before trying to step outside to avoid falling and possible injury.

Mirrors

This motor home is equipped with black, convex, manually-controlled, exterior, rear-view mirrors (Figure 9-8). Always adjust the mirrors for maximum rear visibility prior to driving. If another driver is to drive, be sure the mirrors are readjusted to accommodate the second driver. The bottom half of each mirror is convex and is also adjusted manually.

Detailed instructions for these manual adjustments can be found in the manufacturer's literature available in the Owner's Information Package. However, this brief overview of mirror adjustment can begin the process: The top portion of the mirror should be adjusted horizontally so that you can see your own motor home in the one-inch surface closest to the motor home; the remaining portion of the mirror now permits you to see the road behind you. The mirror should be adjusted vertically so that you can see the rear bumper on the bottom of the plane portion of the mirror.

Figure 9-8. Rear View Mirror

The convex mirrors should be adjusted horizontally so that you can see your own motor home in 1/3 of the mirror. These convex mirrors should then be adjusted vertically to allow you to see any other vehicles alongside your motor home.

These mirrors also contain heating elements to defog or de-ice the mirror glass during cold weather operation. The "on/off" switch for this feature is located by the adjustment control. Further adjustment of the mirror may be necessary at the swivel portion of the mirror arm.

NOTE: Objects viewed in convex mirrors appear to be smaller and farther away than they actually are. Consequently, when one is driving, be sure to make allowances for the nearness of other vehicles or obstructions when one is driving or parking, especially when one is "backing up" the motor home.

Chapter

10

Interior Features

Bedspread

As a furnished part of the bedroom suite (Figure 10-1), the bed is covered with a bedspread and matching accent pillows. For the bedspread and pillow shams, cleaning instructions are "for dry-cleaning only."

As the bedspread was made with materials treated for stain resistance; dry-cleaning will prolong the life of these materials.

Figure 10-1. Bedroom Decor

Flooring

The living room and bedroom floor areas (Figure 10-2) are carpeted with filament-nylon carpeting treated with Scotch-guard, a stain-resistant coating. In the Owner's Information Package, there is additional literature from the manufacturer concerning the specifics of caring for the carpeting which, if followed, will prolong the appearance and life of the carpeting (Figure 10-3). Please become familiar with the recommended care and cleaning of the carpeting to assure its prolonged life.

Figure 10-2. Typical Flooring

Figure 10-3. Typical Carpeting

Vinyl tile flooring is standard in the kitchen and bathroom areas of the motor home. For routine cleaning, sweeping or vacuuming the floor would be sufficient. If more thorough cleaning is warranted, the flooring can be cleaned with a damp mop and water.

For more stubborn stains, a mixture of soap-free household cleaner (e.g., vinegar, ammonia, or comparable products) and water can be used to advantage. One should not unduly saturate the floor surfaces with water, as this could damage the flooring substrate.

Ceiling

The ceiling in the Allegro motor home is covered with a vinyl headliner which can be easily cleaned with a damp, soft cloth and a mild detergent. Take care to clean around any vent areas to prevent any buildup of dirt, grease, or other accumulations.

Window Treatments (*Optional*)

Throughout the Allegro, the window treatments may consist of optional, pleated, day/night window shades (Figure 10-4) which have two sections. When closing the shade, the first section to become visible is the "day" section which is translucent and permits outside, ambient lighting to come into the motor home while blocking visibility.

Figure 10-4. Window Treatments

If the shade is continued to be closed, one encounters the "night" section which places a heavier, more opaque material over the window to block out even more light from the outside. The "night" setting is generally used in the evening or when a greater degree of privacy is sought.

All of the curtains installed in the Allegro are to be dry-cleaned only; no water-based cleaning agents are recommended as they may cause undue shrinking or fading of the fabric. On some windows, mini-blinds may be installed. Instructions for the proper use and cleaning of any mini-blinds will be found in the Owner's Information Package furnished with the Allegro.

Chapter

11

Plumbing & Bath Fixtures

FRESHWATER SYSTEM

Monitor Panel

Figure 11-1. Monitor Panel (Water, LP Gas, Battery)

The monitor panel (Figure 11-1) permits checking the approximate levels in the fresh, gray, and black water holding tanks; the LP-gas level; and the condition of the battery. For Allegro models equipped with a regular microwave oven, the monitor panel is located on the front of the range hood. To use this monitor, simply press the desired status button to obtain a read-out of the fresh, gray, and black water tanks and the condition of the batteries.

The "empty" indicator light will momentarily light when the button is pressed. If the tank is full, all of the lights will be "on." Lights are sequentially arranged to indicate fluid levels in approximately third-tank increments. For example: if the tank selected is approximately two-thirds full, then the indicator lights "E" (for "empty"), "1/3", and "2/3" will be lit.

On the right hand side of the monitor panel is the water pump switch. The switch controls the power going to the pump and is used to turn that power either "on" or "off."

Kitchen Sink

The kitchen sink (Figure 11-2) installed is an acrylic, double-bowl sink equipped with two sink covers to provide additional counter space when the sink is not in use. For the sink, cleaning care consists of washing only with mild detergents and water and using a soft cloth for subsequent drying and polishing. The faucet in the kitchen may be a single-handle faucet.

Figure 11-2. Kitchen Sink

Bath Sink, Shower & Accessories

Figure 11-3. Bath Sink

Since the sink (Figure 11-3) in the bathroom is plastic; when cleaning this surface, use care to prevent scratching or marring it. The dual-handled faucet in the bathroom was chosen to match the specified decor. The bathing facilities installed may be a fiberglass shower (Figure 11-4) or combination shower/tub with a glass shower door. Some floor plans have fiberglass tubs with shower curtains, rather than glass doors.

The tub faucet with showerhead, hose, and bracket are coordinated with the sink faucet.

Figure 11-4. Shower

Water Pump

The water pump is self-priming and totally automatic, operating on demand whenever water is required. The water pump is used to pressurize the freshwater system when the unit is not connected to city water. The switches (Figure 11-5) to this pump may be located in the bathroom and on the monitor panel. To start the pump, follow these instructions:

1. Fill or partially fill the fresh water supply tank.
2. Open the kitchen and bathroom faucets.
3. Turn the water pump switch "on" and allow the water to fill the water line and the hot water heater.
4. Close each faucet after it delivers a steady stream of water (close the cold-water faucet first). Leave the hot-water faucets "on" until they also deliver a steady stream of water. This procedure will assure that the water heater is filled with water.
5. The water pump should stop running once all faucets are closed.
6. The water pump is now ready for automatic operation. The pump will run when a faucet is open and stop when a faucet is closed.
7. Never allow the pump to run for long periods of time without water being present in the supply tank, as doing so may cause physical damage or blow fuses.

Figure 11-5. Water Pump Switch

If water does not flow when a faucet is turned "on" while using the demand system, use the following troubleshooting chart:

Troubleshooting Chart of Automatic Demand Water System for No Water Flow	
SITUATION	**SOLUTION**
Pump running, but no water flow	1. Fill Tank 2. Clear the water line to the pump
Pump not running	1. Check the pump switch 2. Check the 12-VDC fuses 3. Check the electrical connections 4. Check the battery

All of the water should be drained from the freshwater system when the unit is not in use for extended periods. For more detailed information regarding the water pump, one should refer to the water pump manufacturer's brochure in your Allegro Owner's Information Package.

City Water Connection

When connecting your unit to city water, be certain to use the water hose manufactured and labeled for potable water service--this will assure that the hose selected for use will not alter the taste of the

water. To connect the city water supply to the vehicle, connect one end of the hose to the city water supply; this connection will usually be to a faucet or valve similar to your garden hose valve at home.

Turn the city water supply "on" for a few seconds to clear the line. Once the hose has been flushed, turn the supply "off." Connect the other end of the hose to the city-water connections (Figure 11-6) on the motor home. Once the city water fill valve is opened, water is supplied to the freshwater system including the hot water heater, faucets, and toilet.

Figure 11-6. City Water Connection

Turn "on" the water supply and open all of the faucets to clear any trapped air within the plumbing lines within the motor home. Once any air pockets have purged from the water lines and water flows freely, close all of the faucets. The city water supply is pressurized; therefore, the water pump is not needed when the water system of the vehicle is connected to the city water system.

To disconnect from the city water supply on the motor home, close the valve and remove the hose from the city water supply. Disconnect the hose from the city water connection and store the hose in the water compartment.

Filling the Freshwater Tank

The freshwater tank is normally filled from the potable water connection; although certain Allegro models may have an additional valve to permit filling from the city water connection. The valve (Figure 11-7) located in the service compartment near the water connection determines whether the city water is going through the water system or into the freshwater tank.

Figure 11-7. Water Fill Valve

Since there is not an automatic shut-off when filling the freshwater tank, check the level from the monitor panel while filling the freshwater tank on the motor home. The excess water will be vented from an overflow in vent pipe onto the ground when the capacity of that tank has been reached. This pipe is installed in the freshwater tank to prevent possible tank rupture from inadvertent overfilling.

Important

Be sure the potable water fill cap is removed when filling the water tank from a city water supply (which is typically under 60-80 psig pressure). Failure to do so may result in inadvertent expansion of and possible rupture of the water tank.

All of the water should be drained from the freshwater system when the motor home is not in use for an extended period of time.

Sanitizing

To assure complete disinfecting of the freshwater system, it is recommended that the following procedure be performed on a new system, on one that has not been used for a length of time, or one that may have become contaminated. This procedure is also recommended before long periods of storage, such as during the winter months:

1. Drain the freshwater tank by opening the drain valves. There is one valve for each water tank. All of the faucets should be in the closed or "off" position.

2. Prepare a chlorine solution using one gallon of water and one-half cup of chlorine bleach (5% sodium-hypochlorite solution). Prepare enough of the chlorine solution to administer one gallon of solution for every 15 gallons of tank capacity. For sanitizing this unit, prepare 4½ gallons of the chlorine solution. This mixture puts a 50 ppm (parts per million) residual chlorine concentration in the water system that will act as a quick-kill dosage for harmful bacteria, viruses, and slime-forming organisms. Concentrations greater than 50 ppm may damage the water lines and/or the tank.

3. Once the freshwater tank is empty, close the drain valves in the water tank.

4. Pump the chlorine solution into the tank by first placing the winterizing hose into the chlorine solution. Close the valve from the fresh water tank to the pump and open the valve from the solution to the pump. Turn the tank fill valve from "city water" to "tank fill." Turn "on" the water pump until all of the solution is pumped into the freshwater tank.

5. Turn "off" the water pump. Then close the valve to the solution. Open the valve from the tank to the water pump. Fill the water tank with the city water tank fill (or by using the same method as was used to put the sanitizing solution into the tank). Remove the water filter (from the drink dispenser faucet, if installed) and install the bypass pipe to allow the sanitizing solution access to the faucet. Open each faucet, in turn, including the kitchen faucet, bath faucet, inside and outside showers, turning "on" both the hot and cold faucets,

and flushing the toilet until all of the air has been purged from the pipes and the water runs freely. The entire system will then be filled with the sanitizing solution.

6. Allow the 50 ppm disinfecting solution to stand in the system at least four hours.

7. Drain the system and flush it with freshwater. The water system needs to be flushed with water repeatedly, if necessary, until there is no chlorine taste or smell left in the system. To remove any excessive chlorine taste or odor that might remain, prepare a solution of one quart of vinegar to five gallons of water. "Rock" the tank containing the solution by moving the vehicle forward and backward several times to clean the tank; then drain that tank and refill with clean water.

Water Heater Bypass System

The water heater bypass valve (Figure 11-8) is located next to the water heater. By closing the water heater supply valve and opening the bypass valve, one can divert water away from the water heater. This process is performed when winterizing your motor home. Using the bypass valve will keep antifreeze out of the water heater when winterizing the motor home. Draining the water heater during winterizing is a MUST. As shown in Figure 11-8, one should close the two outside valves and open the center valve. To prepare the motor home for reuse, open the two outside valves and close the center valve.

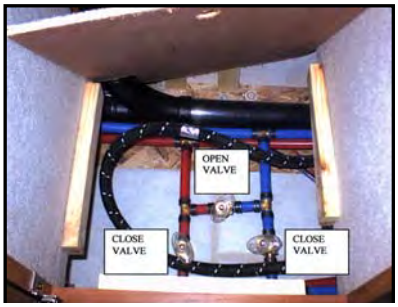


Figure 11-8. Water Heater Bypass System

Freshwater Lines

Vibration and flexing encountered when the motor home is traveling can cause pipes and fittings to become loose. Check all of the plumbing connections for leaks at least on an annual basis. If the water pump runs when all faucets are turned "off," check for a possible leak. Be sure that the drain valves are closed. Connections at the kitchen and bathroom faucets normally seal by hand-tightening them and then making an additional half-turn with a wrench.

If a fitting leak persists, disconnect it completely and visually inspect it for mineral deposits or foreign material stuck on the sealing surfaces. Clean the surfaces thoroughly and reinstall the fitting. Take the motor home to an authorized Tiffin Motorhomes service center for additional repairs if the water system continues to leak. Follow the winterizing instructions given in Chapter 14 to reduce risk of leaks caused by cracks from freezing pipes. Left unchecked, freezing damage can be extensive and expensive.

WASTE WATER SYSTEMS

General Information

The waste drainage system was designed to provide adequate and safe storage and/or disposal of waste materials. All of the materials used in the fabrication of this system are tested by a nationally-recognized testing laboratory. The drainage system uses plastic piping and fittings connected to the sinks, toilet, and holding tanks. This plumbing permits the drainage of these fixtures to an outside termination.

The vehicle should be reasonably level for best operation of both of the wastewater systems (there are two, separate wastewater systems). The gray-water system is for wastewater from the sinks and shower. The black-water system is for sewage waste from the toilet. Each wastewater tank has its own control valve and both drain through a common sewer-drain hose.

Toilet

The toilet (Figure 11-9) operates with water from either the fresh water tank with the water pump "on" or the city water supply. Before using the toilet, add water to the bottom of the tank. Refer to the "BLACK WATER TANK" instructions elsewhere in this chapter. The toilet flushes waste directly into the black-water holding tank. The toilet uses high-velocity water injection to produce swirl effect in the bowl.

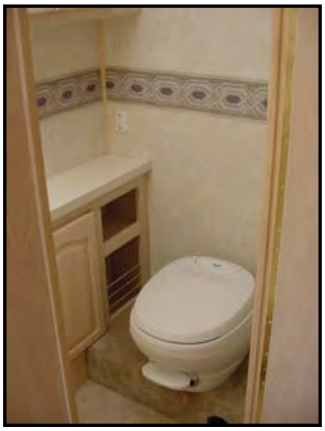


Figure 11-9. Toilet

The greatest problem that causes stool solids to accumulate in the holding tank is lack of liquids. When using your toilet, it is wise to fill the toilet 3/4 full of water--this will help wash the solids away from directly below the toilet and to assure complete dumping of the holding tank. To add water to the toilet bowl, push down on the flush lever. To flush the toilet, push down on the lever until the water swirls. A small amount of water should remain in the bowl.

The toilet should be cleaned regularly for maximum sanitation and operational efficiency. Clean the toilet bowl with a mild bathroom cleaner. **DO NOT USE CHLORINE OR CAUSTIC CHEMICALS, SUCH AS LAUNDRY BLEACH OR DRAIN-OPENING TYPES, AS THEY WILL DAMAGE THE SEALS IN THE TOILET AND DUMP VALVES**.

Refer to the toilet-manufacturer's owner's manual in your Allegro Owner's Information Package for complete instructions and a detailed troubleshooting guide.

P-Traps

Each of the sink drains, the shower drain, and the washing-machine drain (if so equipped) has a water trap (P-trap) to prevent holding-tank odors from entering the vehicle. These traps must have water in them to trap odors. When the vehicle is in motion, the water may splash out of the sink and shower drains. When the

vehicle is stored, the water may evaporate from these traps allowing odors to enter the vehicle. If this occurs, run water from the faucet into the drain, thus allowing water to fill the traps again.

Black-Water Holding Tank

The "black water" (i.e., sewage) holding tank is located directly beneath the toilet. Before using the toilet, you will need to treat the tank with water that is mixed with an odor-controlling chemical. These chemicals are readily available at any RV supply store. Be careful not to spill the chemicals on your hands, clothing, or the carpet because such may cause a permanent stain. Pull the toilet levers forward to allow the chemicals to mix with the toilet water. Continue pulling the toilet levers until a depth of at least one inch of solution is directly under the toilet. Release the levers and the waste tank is now ready for use.

Caution

It is important that you use as much water as possible with each flush. This will help prevent tissue and other solids from clogging the holding tank outlet.

Caution

Use only approved RV odor-controlling chemicals in the holding tanks. Products containing ammonia and petroleum will damage the ABS plastic holding tanks and seals.

Gray-Water Holding Tank

The gray-water holding tank is located in the underbelly of the vehicle. It is primarily used for the drainage from the kitchen and bath sinks and the shower.

Wastewater Disposal

Both of the holding tanks terminate in a valve arrangement that permits draining each tank separately or together. It is recommended to drain the black-water tank first before draining the gray-water tank. This procedure permits the water from the gray tank to wash the black-water residue from the drain lines and hose. The valves that open to release the water are called gate valves.

The blade that closed the opening in the sewer drainpipes is connected to the T-handle to release contents of the tank(s) when pulled. The sewer line must be securely capped during self-containment use to prevent leakage of waste materials onto the ground or pavement. Do not pull the holding-tank gate valve "open" when the protective cap is installed on the pipe. Always drain the tank into an acceptable sewer inlet or dump station.

Whenever possible, drain both the holding tanks prior to traveling. The carrying capacity of your vehicle will be reduced if water is left in the black or gray tanks.

The holding tanks should only be drained when they are at least ¾ full. Doing this will provide a sufficient volume of water to allow the complete flushing of waste materials in the drain lines and hose. If the tanks are not ¾ full, add enough water to allow for sufficient flushing.

To empty the wastewater tanks, connect the adapter, supplied with your vehicle, to the drain hose (Figure 11-10). If the adapter is lost or broken, another one can readily be purchased from any RV supply store. Once you have placed the adapter on the drain hose, it can remain there for the life of the hose. One end of the hose threads up through the hole in the bottom of the service compartment and the other end of the hose feeds into the sewer at the dump station.

Figure 11-10. Wastewater Drain Hose and Connection in Sanitation Compartment

Unscrew the cap from the drain. Connect the hose, with the adapter in place, to the drain fitting. Open the gate valve completely by pulling on the T-handle. The tank will start to drain as soon as the T-handle is pulled. After you have drained the black-water tank, immediately drain the gray-water tank. This procedure helps to flush the black water from the sewage hose.

When both of the tanks are empty, flush them with a freshwater rinse before you close the valves. The gray tanks are easily flushed by pouring a couple of gallons of water into a sink drain. The drain outlet is engineered for quick release of the drain hose adapter. Always close the gate valves and secure the end cap to prevent leakage while the vehicle is in transit.

After draining the black-water tank, it is recommended to add a holding-tank deodorant to help control the odor and break down the solids. Follow the instructions given on the holding-tank deodorant package.

When using dump stations for draining the holding tanks, keep other travelers in mind. Please practice good housekeeping! Leave the dump stations in good order. Above all, **do not pollute**!

Sewer Connection and Camping

When camping at parks with sewer connections, it is important to keep the black-water, holding-tank, gate valve closed at all times, except when dumping. The gray tank can be kept open while hooked to a sewer connection, but again, the black-water tank must be kept closed. This is done so that an ample quantity of liquid remains in the tank to provide a smooth flow through the gate and drain valves when dumping. Sufficient liquid in the tank causes a swirling action that should take any accumulated solid wastes with it.

Accumulation of solid wastes in the black-water tank can be avoided by keeping the gate valve closed when connected to the sewer connection. If the valve is open, solid wastes may accumulate in the tank which may eventually result in costly repairs.

No-Fuss Flush

This vehicle may be equipped with a flushing system for the black-water holding tank. When draining your sewer tank, attach a water hose to the sewer spray connection. After the tank is drained, leave the gate valve "open" and open the water valve to allow water to spray inside the black-water tank; this will clean the inside of the tank of any debris that may be left inside the tank. After this is done, disconnect the freshwater hose and close the gate valve.

Caution

Be sure the gate valve is "open" when flushing the tank. Do not use the same hose for the No-Fuss Flush that is used for filling the freshwater tank.

Exterior Shower

Your Allegro has an exterior shower (Figure 11-11, left side) for your use and convenience outside. That exterior shower is located in the service compartment, which is located on the driver's side of the motor home. The exterior shower feature allows you to do such things as rinse off sand or grass, muddy shoes, or bathe yourself outside of your motor home.

The faucet (Figure 11-11, upper right) operates just as it would in your kitchen or bathroom. In addition to the shower itself, there is a light to permit use of the shower under low-light conditions.

Figure 11-11. Exterior Shower in Outside Sanitation Compartment

Chapter

12

Construction Features

Construction Notes

Your Allegro manufactured by Tiffin Motorhomes is constructed of the finest materials available by well experienced craftsmen at the Tiffin Motorhomes manufacturing facilities in Red Bay, AL. Every care and concern has been taken throughout the total manufacturing process to assure you of the finest motor home available in the marketplace today. To give you a better appreciation of the features of the Allegro motor home, some of its construction features are now presented.

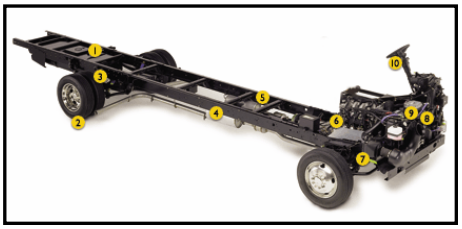
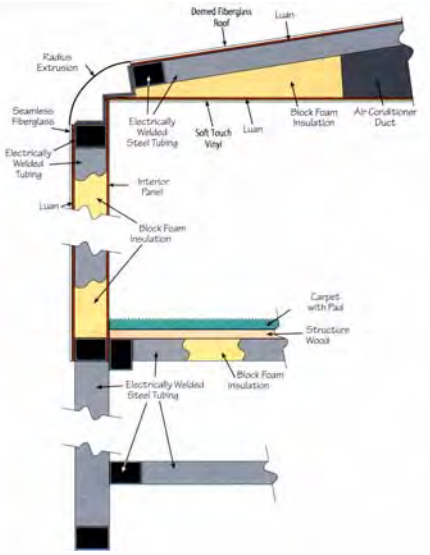


Figure 12-1. Workhorse Chassis (Typical)

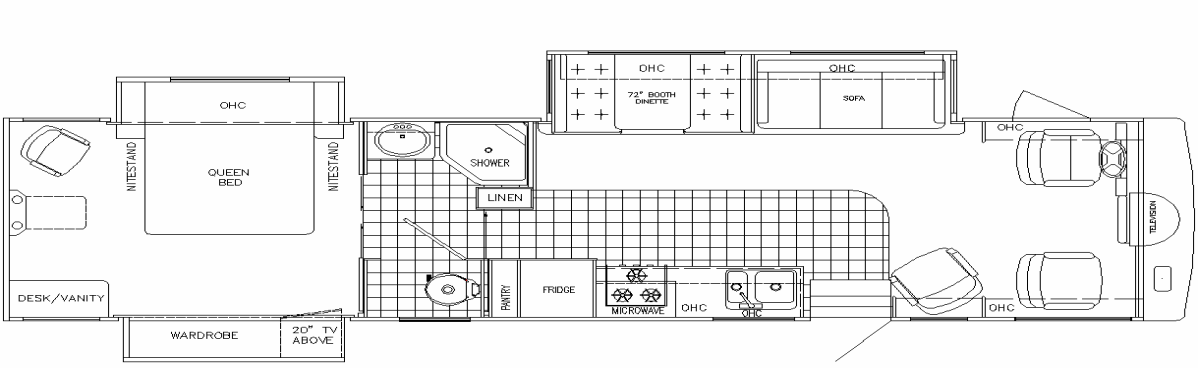
The Allegro is built either on a Ford or Workhorse chassis (Figure 12-1) and powered by a gasoline engine. The floor decking is constructed of ½" OSB board to provide desired rigidity and firmness in the floor of the motor home. The floor is insulated with block foam to provide both thermal insulation and sound deadening. The motor-home roof is also insulated with block foam to provide an adequate barrier to heat loss or gain.

In the Allegro, each sidewall is manufactured to provide essential strength and durability and is also insulated to assure the comfort of the enclosed spaces. Sidewalls are constructed of aluminum or steel framing, insulated with 1½"-thick block foam insulation. Framing and insulation are laminated between interior décor board and gel coat fiberglass on the exterior to provide superior strength and rigidity. The insulation provides a sound-deadening barrier from outside noises and more effective thermal control of the enclosed cabin in the motor home, thus allowing greater efficiency of the heating and air-conditioning systems.



Typical Floor Plan

Although there are many variations of the floor plans for the Allegro, a "typical" floor plan is presented to show the relative components of the Allegro.



Chapter

13

Windows, Awnings, Vents, & Doors

Windows

The windows on the Allegro are of the sliding type. Double-pane windows are available as an option to provide additional thermal control (i.e., insulation) to maintain interior temperatures better. In the double-pane windows, a "dead air" space (filled with a dry, inert gas) is sealed between two panes of glass—this "dead air" space provides additional thermal insulation for the windows and prevents them from fogging internally. Additionally, there may be a reflective coating on the windows to reflect back a portion of the sunlight to reduce the heating of the motor-home interior and to reduce the effects of the sun's "bleaching" of interior fabrics (curtains, upholstery).

For both the driver's and passenger's windows (Figure 13-1), additional sun shades are available to permit blockage of the sun's rays which may interfere with driving. These shades can be deployed, as needed, and then moved out of the way when no longer desired.

Figure 13-1. Driver's and Passenger's Section

In the bedroom, one particular window will be marked with an "EXIT" label (Figure 13-2)—this is an emergency escape only to be used when normal exits are blocked or inaccessible. To use this emergency escape, merely lift the red handles at the bottom of the window and push outwards to open the window. Should it be necessary to use this exit, please look for a secure footing when exiting so that no personal injury is sustained in the process. It is also prudent, when parking the motor home, to be aware of where this "emergency-exit" window will be situated so that it is not inadvertently blocked or impeded from its normal, intended operation, should such become necessary.

Figure 13-2. Emergency Exit Window

Awnings (*Optional*)

The patio awning (Figure 13-3) is optional on the Allegro. If it is installed, use the following directions to operate the awning properly:

Extending the Awning

1. Loosen the black, adjustment-lock knob on either side of the main arm of the awning. Flip the travel lock latches upwards.

2. By using the pull rod provided with the awning, reach up and pull the locking lever forward to release the awning.

3. Hook the rod unto the loop of the pull strap and pull the awning all the way out to its fully extended position.

Figure 13-3. Optional Patio Awning

4. Slide one rafter arm up until that arm snaps into place. Push down on the main arm to remove any slack that may remain in the fabric of the awning; then tighten the black adjustment knob. Repeat this process for the other side.

5. Slide the pull strap to the right end of the roller and wrap that strap around the main arm.

6. Pull up on the lift handle and raise the arm assembly to the desired height. Swing the handle "in" and allow the lock button to snap into one of the holes. Repeat this process on the other side of the awning.

7. Press the release lever at the bottom end of one main arm; pull the arm assembly outward to a vertical position and readjust the height. Repeat this process on the other side of the awning. During any rain, lower one end to permit water runoff.

Caution

Since damage resulting from weather is not under warranty, anytime a heavy or prolonged rain or blustery winds are anticipated, it would be advisable to close the awning. Similarly, if the awning is to be left unattended for any prolonged length of time, it would be prudent to close that awning.

Retracting the Awning

1. Raise the lift handle to release the lock button. Lower the main arm to the stop plug. Swing the handle "in" to engage the lock button in a hole. Repeat on the other side of the awning.

2. Loosen the black adjustment knob, lift the slider catch, and then slide the rafter arm downwards to the bottom of the main arm. Leave the black adjustment knob loose. Repeat this process on the other side of the awning.

3. Grasp the pull strap and pull towards you. Flip the locking lever to the "ROLL UP' position. Hold the awning in the "down" position until you are ready to roll up the awning. BE CAREFUL – the awning will try to roll up as soon as the locking lever is flipped to the "ROLL UP' position.

4. Slide the pull strap to the center and, by using that strap to control speed, allow the awning to return to the side of the motor home. Allow the strap to wind diagonally to prevent a bulge in the fabric of the awning.

5. Tighten the black adjustment knob and flip the travel lock latch down. Repeat this process on the other side of the awning. The awning is now fully retracted and is ready for travel.

NOTE: Be sure that the awning is fully locked into position on both arms before travel. Failure to do so may cause the awning to deploy when the motor home is in motion.

Vents

The kitchen has a 12 VDC Fantastic vent fan (Figure 13-4) installed to exhaust kitchen odors. When the external cover is raised (via turning the knurled knob), and the vent power switch is in the "on" position, the vent fan will operate. When the desired temperature is reached; one can then turn "off" the vent fan. Even when the fan is "off," there will still be some natural convection while the external cover of the fan is still open. The vent fan should only be left in the "on" mode when the motor home is parked and in use.

Figure 13-4. 12 VDC Vent Fan

If the motor home is to be unattended for long periods of time or is to be in storage, make sure that the vent fan is turned "off." Were the fan left "on," blustery winds or severe storms may prevent the vent from closing and, consequently, may permit leakage, with possible damage, into the motor home. The bathroom also contains a 12 VDC, vent fan which is controlled by an "on/off" switch mounted on the bathroom wall.

Doors

Caution

Always secure the dead bolt lock while the motor home is in motion to prevent accidental opening of the entrance door.

Figure 13-5. Front Door

The primary entrance (Figure 13-5) to the motor home is a radius door having a key lock and a dead bolt for additional security. There is also a screen door (Figure 13-6) associated with the entrance door; the screen door will permit increased air circulation when the entrance door is open. To enjoy this benefit, the screen door is operated independently of the entrance door.

Figure 13-6. Front Door & Screen Door

To protect the contents of the motor home and the very motor home itself, it is prudent to lock the motor home when one is to be away for any length of time. Both the key lock and the dead bolt

should be used for maximum security of the motor home.

The Allegro may also have an optional, driver's-side door (Figure 13-7), which permits the driver to enter and exit the motor home more conveniently for the routine requirements of motor-home use (e.g., periodic re-fueling operations).

This door may also be regarded as an "emergency" door to be used if the main door is otherwise inaccessible. Make sure that all occupants of the motor home are aware of this exit option, should it ever become necessary, and never park the vehicle in such a manner as to block this exit, even temporarily.

When one leaves the motor home, be sure to secure and lock the driver's-side door, as well as the front door, for the desired level of security. Additionally, be sure to close and secure the sliding window in the driver's-side door, too.

Figure 13-7. Driver's Side Entrance Door

Chapter

14

Routine Maintenance

EXTERIOR CARE

Important

Damage caused by improperly performed maintenance or inadequate maintenance is not covered by your Tiffin Motorhomes Limited Warranty.

Washing

Figure 14-1. Exterior of Allegro (Typical)

The exterior (Figure 14-1) of your new motor home is made of pre-finished fiberglass. Frequent washings and thorough cleanings are required to prevent damage to the motor-home finish after exposure caused by damaging salts, calcium chloride, road tar, tree sap, insects, and other foreign material. Damage caused by exposure to these items is not covered by your warranty agreement. Never wash the motor home in direct sunlight, while the motor home is hot, or with hot water.

Any accumulation of mud and dirt under the body can cause damaging rust on steel parts. Corrosive materials, such as those used for ice and snow removal and dust control, also can accumulate on the underside of the motor home. These accumulations, especially in vehicular areas where mud and other foreign materials could collect, should be removed by flushing those areas (e.g., the underside) of the motor home regularly with water. The chance of corrosion can be minimized with frequent washings of the motor home.

When washing the motor home, make certain that the undercarriage and the wheel wells are thoroughly cleaned, as well as the exterior of the motor home. Do not use strong soaps or detergents for washing the motor home. Always use a mild soap in warm water, a commercially-prepared product for automotive finishes, or your local car wash to wash your motor home properly.

Be careful when using any pressurized washer to avoid loosening any exterior decals or sealants and the like. After washing, carefully inspect the caulking around the window frames and vents and any other joints to see if any seal separations have occurred. Should any re-caulking be necessary, it is relatively simple and is considered to be routine maintenance which is the responsibility of the owner.

Important

Never use a strong solvent, such as lacquer thinner or harsh abrasives on any of the exterior painted surfaces.

Waxing

The exterior finish will require a routine waxing. When water will not bead and roll off a freshly washed motor home, a new coat of wax is needed. Wax not only improves the appearance of the motor home, but it also protects the finish against oxidation and corrosive materials.

The recommended type of wax is one that is compatible with painted and gel-coated fiberglass finishes and contains an UV (ultra-violet) inhibitor. Buffing with a polishing compound will improve a dull or discolored finish.

Important

When using a polishing compound that does not contain a wax preservative, reapplying a coat of hard wax after polishing is recommended.

Seals

The seals (Figure 14-2) around the doors, windows, vents, slide-out trim, and external seams should be checked at least semiannually. Additionally, the roof seams should be inspected for cracking or peeling semiannually. If deterioration is noted during a routine maintenance inspection, reseal the seams or seals with an approved sealant to prevent leaks.

Figure 14-2. Window Seals

Your Tiffin Motorhomes dealer can perform the resealing inspections and subsequent work, if any, for you. It is recommended that a Tiffin Motorhomes authorized service center perform these inspections periodically and perform necessary resealing when necessary.

Proper Sealants for Application

The following sealants are recommended for specific sealing applications, as noted in the table:

Recommended Sealants for Specific Sealing Applications

SEALANT	APPLICATION
Plas-T-Cote	Metal or fiberglass roof
Surebond #SB-140	Rubber laminated to metal roof and ALL SKYLIGHTS
Carlisle #502-LSW Self-Leveling Sealant	Rubber roof over wood base
Silicone Sealant	To cover butyl and other sealants; not to be used as the main sealant
Parbond	To seal across tops of windows and the like on exterior surfaces where silicone is not used

Striping and Decals

The striping and decals (Figure 14-3) on your motor home normally require very little maintenance. Treat these as you would any painted surface on your motor home. Wash them with mild soap and warm water or any retail car soap. Never wash the motor home in direct sunlight, while the motor home is hot, or with hot water. Rinse thoroughly to prevent accumulation of any soap residues. Use caution with high-pressure wash nozzles. Keep such nozzles at least 18 inches from the edge of the decals during any washing operations. If this is not followed, high-pressure water nozzles may cause the decals to loosen and subsequently to peel. Test small sections of decals when using any type of cleaning solution.

Figure 14-3. Allegro Detailing

Important

Do not use solvents such as acetone, MEK, toluene, and the like on the decals. Any solvent including alcohol may soften and smear colors. Do not use lacquer thinner or paint thinner on decals. Do not overcoat the decals with clear paint. Do not allow gasoline or other fuels to come into prolonged contact with the decals. However, if this should occur, immediately flush the affected area with water.

Important

Do not use harsh detergents, acids, or abrasives which may scratch or dull the surfaces. The applicator cloth, sponge, or soft-bristled brush should be non-metallic and non-abrasive.

Important

Remember to check periodically the tightness of your wheel lug nuts.

Roof Care and Maintenance

Proper care and maintenance of your motor home, including your roof, is important for sustained, trouble-free performance. Normal maintenance is simple and easy and does not require special materials. The roof of the motor home is fiberglass and can be cared for in the conventional manner. Keep the roof clean; one should clean the roof at least every three months. The roof should be professionally inspected on an annual basis for leaks. Sealant may be necessary in the second year of ownership.

Warning

Use caution when working on the top of your motor home. The wet roof may be extremely slippery and, as such, a possible safety hazard.

Moisture Management

This section outlines important recommendations to manage moisture in your motor home to avoid moisture-related damage, such as mold, which is caused by moisture. The materials and methods used to construct your motor home were selected in part to minimize air leakage and to create a weather tight exterior shell. However, in order to protect your investment and reduce the risk of moisture-related

damage and costly repairs, attention and care has to be taken to manage moisture inside your RV. **Note**: These are only suggestions intended to minimize moisture-related issues with your motor home. If any concerns arise, contact Tiffin Motorhomes' Service Department at (256) 356-0261.

Interior Care of Your RV

Signs of excessive moisture can be obvious, such as water droplets forming on surfaces or wet carpet. Conversely, signs of excess moisture can be subtle, such as condensation forming on metal surfaces. When symptoms appear it is important to timely determine the cause of the excess moisture and take appropriate corrective action to prevent moisture related damage.

Control Relative Humidity

Monitoring and controlling relative humidity within the motor home is one of the most important steps to minimize the risk for moisture-related damage. Ideally, relative humidity should be at 60% or less. Relative humidity can be monitored utilizing a portable hygrometer (Figure 14-4), a small device that measures temperature and relative humidity. Hygrometers are available at electronics or building supply stores. Use exhaust fans, the air conditioner, and/or a portable dehumidifier to manage moisture inside the RV to maintain relative humidity at 60% or less. In cold climates, relative humidity may need to be at 35% or less to avoid window condensation issues. If the motor home is used the majority of the time in a hot-humid climate, it may be difficult to keep relative humidity below 60%. A dehumidifier will help, but is important to check the condensation (water) collection bucket regularly or discharge the condensation (water) directly to a drain.

Figure 14-4. Portable Hygrometer

Avoid Drastic Thermostat Setbacks

Cooler surface temperatures increase the potential for condensation and surface mold growth. To minimize the opportunity for condensation to form on interior surfaces, maintain a comfortable temperature in your RV, and avoid nighttime setbacks of 10 degrees or more. Drastic setbacks that reduce the indoor air temperature quickly can increase the chance for airborne moisture to condense on cool surfaces such as windows. If you are away from your RV for an extended number of days, it is recommended that you do not set the temperature back without taking other measures to manage relative humidity, including operating a dehumidifier with a continuous drain.

Manage Window Condensation

Window condensation issues can be identified by water or ice-build up, usually at the base of the window. The majority of these problems can be addressed by managing moisture generated inside the motor home. Minor condensation issues are not unusual, especially for RVs used in colder climates. The key is to manage this small amount of moisture if evident by wiping the surface, and as discussed in the "Control Relative Humidity" section, maintaining a reasonable relative humidity within the unit. To help minimize window condensation, use exhaust fans vented to the outside, avoid drastic changes in thermostat

settings, do not use "vent-free" heaters and use window coverings wisely. For example, make sure to open curtains or blinds during the day to allow air to circulate and warm the window surface.

Carpet Care and Moisture Management

To keep your carpet serviceable and looking new for years to come, the carpet should be cleaned when it shows signs of discoloration or traffic patterns. A steam cleaning system should be used to clean the carpet unless other noted in your warranty information. To manage moisture from the cleaning process, the cleaning system needs to be capable of extracting the excess water from the carpet after it has been cleaned. **Important**: Be sure the carpet is thoroughly dry before closing up the RV for storage. Water from the cleaning process can cause significant damage to the RV if the carpet is not completely dry before closing up the motor home for an extended period.

Cleaning Tile and Wood Floors

Most floors only require a mild detergent and warm water for cleaning. More water on the floor is not always better for cleaning. Use a damp cloth to clean on a regular basis rather than wet mopping each time. For more information regarding the maintenance of the tile and wood floors, see the section entitled, "Woodwork and Floors."

Storage and Other Isolated Areas within the RV

Storage areas are more difficult to condition since the areas are isolated from the main body of the RV. The surfaces of these areas are more at risk for condensation and surface mold growth. To minimize this risk, clean storage areas regularly, and allow an air space between stored items and the exterior wall to promote air circulation.

Use of Un-Vented Combustion Equipment

Un-vented combustion equipment, such as propane stovetops are a source of moisture within the RV. For every gallon of fuel consumed, approximately one gallon of water vapor is evaporated into the air. Whenever possible, operate an exhaust fan in combination with the use of any un-vented combustion appliance within the RV. Water vapor and other combustion byproducts should be vented to the exterior of the RV. The RV owner should strictly follow use and maintenance instructions for safe operation of any combustion equipment, particularly un-vented equipment.

Exterior Care of Your RV

Figure 14-5. Inspecting Slide Out Gasket

The exterior shell of the RV is the primary weather and moisture barrier. Over the life of the vehicle, the shell will require regular care and maintenance in accordance with other instructions for exterior care. The shell includes the roof, sidewalls, windows, doors, and under-floor of the vehicle. Particular attention needs to be devoted to ensure these components are maintained to ensure a tight barrier against bulk water intrusion. The shell should be inspected periodically for tears, gaps, and condition of sealants in accordance with this owner's manual. Areas that require maintenance should be resealed utilizing

a similar, high quality sealant used by the manufacturer. Particular attention should be devoted to ensure the slide outs are functioning properly. Each time a slide out is used it should be inspected to ensure proper operation and sealing (Figure 14-5). The slide out gaskets should also be inspected to ensure proper sealing when the slide out is operated.

Use of Your RV

It is important to remember that the square footage of an RV is significantly less than that of a single family residence. This fact alone will elevate the relative humidity because there is less volume of air to help absorb dissipate the humidity. For example, showering and cooking create a lot of humidity in a small area. In these instances, use of an exhaust fan and opening windows should reduce the relative humidity, particularly when living in the RV for an extended period.

Severe Environments

Prolonged use of your RV in severe environments—for example in extremely cold or hot-humid climates, will require extra care and maintenance to avoid moisture-related issues. In both extremely cold and hot-humid climates more attention needs to be focused on controlling relative humidity within the RV. It also may require the use of a portable dehumidifier to manage relativity humidity within an acceptable range. This is discussed further in the "Interior Care of Your RV" section. If you have any questions about moisture-related issues in the environment you plan to use the RV in for a majority of the time, contact Tiffin Motorhomes' Service Department at (256) 356-0261.

Storage of Your RV

During those periods when your motor home is not in use, care must be taken to ensure moisture sources are addressed. Ideal storage of your RV would be in an enclosed climate controlled environment. When this is not possible, the following steps should be taken to ensure moisture is controlled:

- Turn off all water sources
- Turn off all combustion appliances
- Drain the water tank(s)
- Drain the water heater
- Open all closets, cabinet doors and drawers
- Close all windows and entrance doors
- Open a vent or a window enough to allow for some limited ventilation air flow, but not so far as to allow snow or rain to enter

- When storing the RV in high humidity climates (ambient relative humidity is greater than 60% year round), add a dehumidifier drained to exterior to control humidity inside the RV during storage

- Refer to other sections of this owner's manual for additional recommendations

Modifications to your RV

Consult Tiffin Motorhomes for guidance prior to making any modifications to your RV. It is important that changes be completed by a qualified service firm to ensure moisture intrusion or accumulation problems do not occur.

Wet Areas

Areas that are exposed to water spills or leaks should be dried as soon as possible and definitely within 24-48 hours. Drying areas quickly minimizes the chance for moisture damage and possible mold growth, which can begin to form colonies within 48 hours. A variety of methods can be used to help the drying process:

- Remove excess water with an extraction vacuum

- Use a dehumidifier to aid drying

- Use portable fans to move air across the surface

- Because moisture is key to mold issues, treat all signs of condensation and spills seriously and deal with promptly. Failure to deal with a moisture issue promptly may cause more severe issues where none initially existed, or may make a small problem much worse.

- Learn to recognize signs of mold—don't paint over or cover up suspicious discoloration until you are sure it is not mold. The affected surface must first be cleaned and dried; residual staining may be painted.

- Be sure to understand and eliminate the source of moisture accumulation as a part of the clean-up. Otherwise, the same issues will simply reoccur.

- Small amounts of mold should be cleaned as soon as it appears. Small areas of mold should be cleaned using a detergent/soapy solution or an appropriate RV household cleaner. Gloves should be worn during cleaning. The cleaned area should then be thoroughly dried. Dispose of any sponges or rags used to clean mold.

Tire and Tire Safety Information

This portion of the Owner's Manual contains tire safety information as required by 49 CFR 575.6. The National Traffic Safety Administration (NHTSA) can be contacted at 1-888-327-4236. Their web site is: http://www.safecar.gov and their address is: NHTSA, 400 Seventh St, S.W., Washington, D.C. 20590.

Section One:

The National Traffic Safety (NHTSA) has published a brochure (DOT HS 809 361) that discusses all aspects of Tire Safety, as required by CFR 575.6. This brochure is reproduced in part below. It can be obtained and downloaded from NHTSA, free of charge, from the following web site: http://www.nhtsa.dot.gov/cars/rules/TireSafety/ridesonit/tires index.html

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

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

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

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

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

Safety First-Basic Tire Maintenance

Properly maintained tires improve the steering, stopping, traction, and load-carrying capability of your vehicle. Under-inflated 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)

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

Understanding Tire Pressure and Load Limits

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

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 under-inflation by visual inspection

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

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

Steps for Maintaining Proper Tire Pressure

- Step 1: Locate the recommended tire pressure on the vehicle's tire information placard, certification label, or in the owner's manual

- Step 2: Record the tire pressure of all tires

- Step 3: If the tire pressure is too high in any of the tires, slowly release air by gently pressing on the tire valve stem with the edge of your tire gauge until you get to the correct pressure

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

- Step 5: At a service station, add the missing pounds of air pressure to each tire that is under-inflated

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

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

Tire Size

To maintain tire safety, purchase new tires that are the same size as the vehicle's original tires or another size recommended by the manufacturer. Look at the tire information placard, the owner's manual, or the

sidewall of the tire you are replacing to find this information. If you have any doubt about the correct size to choose, consult with the tire dealer.

Tire Tread

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

Tire Balance and Wheel Alignment

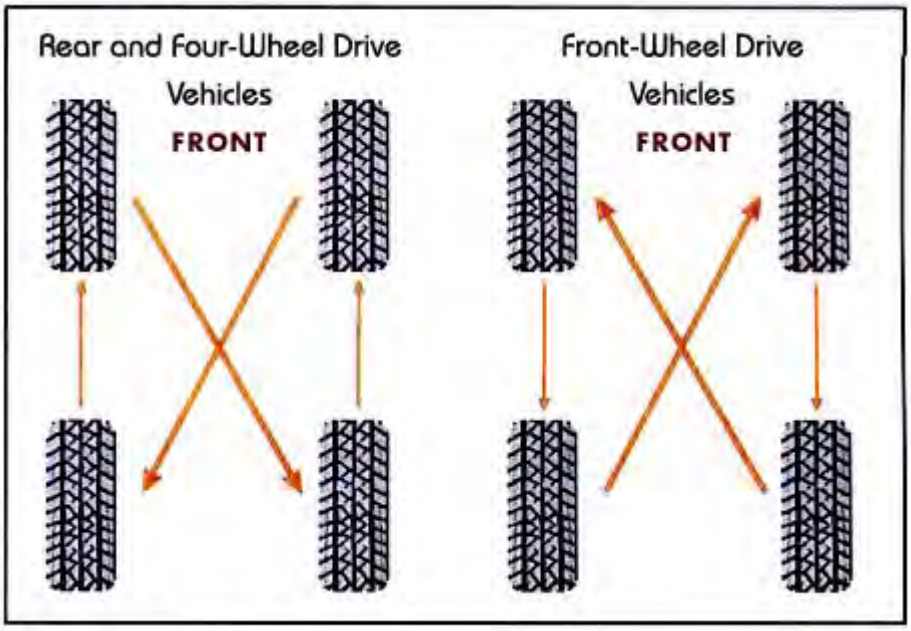
To avoid vibration or shaking of the vehicle when a tire rotates, the tire must be properly balanced. This balance is achieved by positioning weights on the wheel to counterbalance heavy spots on the wheel-and-tire assembly. A wheel alignment adjusts the angles of the wheels so that they are positioned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

Tire Rotation

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

A Tire Rotation Example

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



Tire Repair

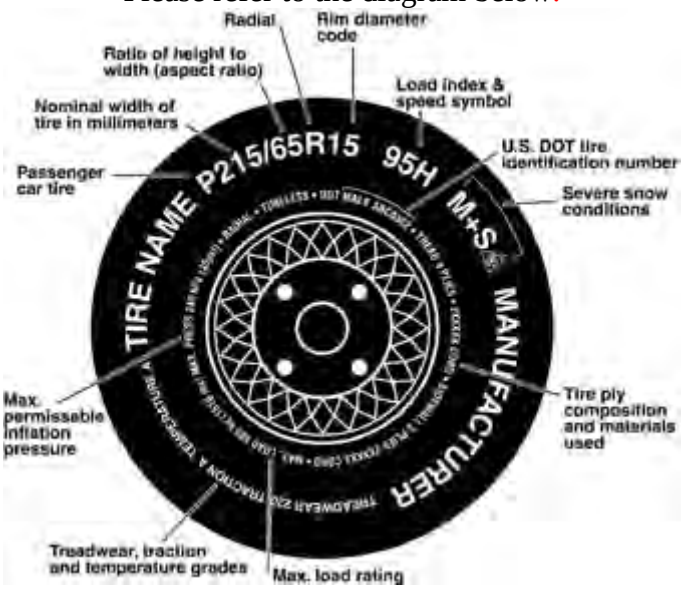
The proper repair of a punctured tire requires a plug for the hole and a patch for the area inside the tire surrounds the puncture hole. Punctures through the tread can be repaired if they are not too large, but punctures to the sidewall should not be repaired. Tires must be removed from the rim to be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

Tire Fundamentals

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

Information on Passenger Vehicle Tires

Please refer to the diagram below.



P—The "P" indicates the tire is for passenger vehicles. **NOTE**: Passenger car tires are not recommended for use on trailers, because the capacity ratings are not marked on the side walls of these tires. In the event a passenger car tire is used, the capacity must be de-rated 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 number.

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

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

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

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

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

U.S. DOT Tire Identification Number—This begins with the letters "DOT" and indicated 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 customers if a tire defect requires a recall.

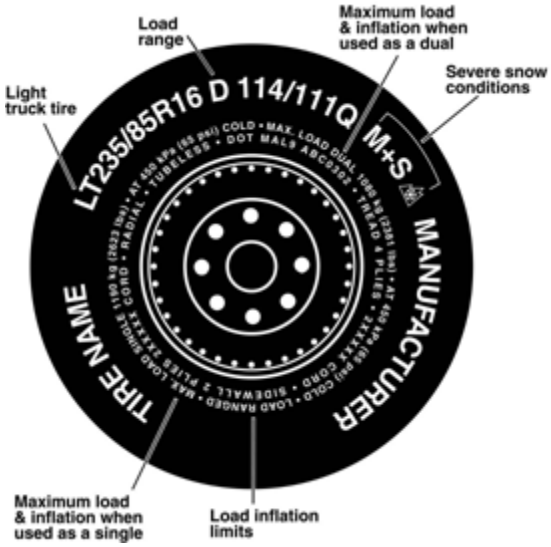
Tire Ply Composition and Materials Used—The number of plies indicates the number of layers of rubber-coated fabric in the tire. In general, the greater the number of plies, the more weight a tire can support. Tire manufacturers also must indicate the materials in the tire, which include steel, nylon,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



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

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

Vehicle Load Limits

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

On a motor home, there is a Federal certification label that is affixed to either the hinge pillar, door-latch post, or the door edge that meets the door-latch post, next to the driver's seating position. If none of these locations is practicable, this label will be located to the left side of the instrument panel, or affixed to the inward-facing surface of the door next to the driver's seating position.

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

For motor homes, in the same location as the certification label described above, there is a vehicle placard. This placard provides tire and loading information. In addition, this placard will show the vehicle's seating capacity for people and a statement regarding maximum cargo capacity.

Cargo Capacities

For motor homes, cargo can be added to the vehicle, up t the maximum weight specified on the placard. For motorized vehicles, the combined weight of passengers and cargo is provided as a single number. If fewer people are traveling, more cargo can be added. If more people are involved, the weight of cargo must be reduced. In any case, remember: the total weight of a fully loaded vehicle, including passengers, can not exceed the stated GVWR.

For motor homes, the 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 people or 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 or people are being transported, water can be off-loaded to keep the total amount of cargo added to the vehicle within the limits of the GVWR so as not to overload the vehicle. Understanding this flexibility will allow you, the owner, to make choices that fit your travel and camping needs.

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

How Overloading Affects Your RV and Tires

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

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

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

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

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 or User's Manual for the maximum recommended load for the vehicle.

<u>Section Two:</u>

Steps for Determining Correct Load Limit

1. Locate the statement "The combined weight of occupants and cargo should never exceed XXX lbs" on your vehicles placard.
2. Determine the combined weight of the driver and passengers that will be riding in your vehicle.
3. Subtract the combined weight of the driver and passengers from XXX kilograms or XXX pounds.

4. The resulting figure equals the available amount of cargo and luggage capacity. For example, if the "XXX" equals 1400 lbs. and there will be five 150 lb. passengers in your vehicle, the amount of available cargo and luggage capacity is 650 lbs. (1400-750 (5 x 150) = 650 lbs.)

5. Determine the combined weight of luggage and cargo being loaded on the vehicle. That weight may not safely exceed the available cargo and luggage capacity calculated in Step #4.

6. If your vehicle will be towing a trailer, load from your trailer will be transferred to your vehicle. Consult this section to determine how this reduces the available cargo and luggage capacity of your vehicle.

Section Three:

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 tread ribs.

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

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 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 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—The 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 of CFR 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 attached, either integrally or separably, 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.

Tire Pressure

Correct tire inflation pressure is essential to maximizing the life of the tires (Figures 14-6,7) and assuring the safety of the vehicle and its occupants. Driving with tires that are not correctly inflated for the load of the motor home is dangerous and may cause premature wear, tire damage, and/or loss of control of the motor home.

An under inflated tire will build up excessive heat that may actually approach the vulcanization temperature of the rubber and lead to tread separation and/or disintegration of the tire.

Additionally, under inflated tires will also cause poor handling of the motor home, rapid and/or irregular tire wear, and an increase in rolling resistance of the motor home which, in turn, produces a decrease in fuel economy of operation.

Figure 14-6. Rear Tires

An over inflated tire will reduce the tire's "footprint" (i.e., its actual contact with the road); thus, reducing the traction, braking capacity, and handling of the motor home. A tire that is over inflated for the load that it is carrying will also contribute to a harsh ride, uneven tire wear, and the tire itself will be more susceptible to impact damage.

Figure 14-7. Front Tires

Maintaining correct tire pressure for each loaded wheel position on the motor home is critically important and must be a part of regular vehicle maintenance.

Tire Maximum Load Rating

Federal law requires that the maximum load rating be molded into the sidewall of the tire. If one looks at a tire sidewall, one may see some typical information, such as:

Max. Load Single 3640 Lbs at 85 psi cold

Max. Load Dual 3415 Lbs at 85 psi cold

The maximum load allowed for the size tire and load rating and the minimum cold air-inflation pressure needed to carry that stated maximum load are noted on the tire. Using less air pressure would reduce the load-carrying capacity of the tire.

The amount of air pressure one needs depends on the weight of the fully loaded motor home. Consequently, one cannot determine the correct air-inflation pressure, unless one knows the actual weight of the motor home.

Weighing the Motor Home

Earlier, in Chapter 1, the procedures for weighing the motor home were presented (see p. 1-7). These procedures provided the weighing of a "non-loaded" (i.e., not stocked with the possessions and provisions the user would normally have onboard for travel) motor home. Obviously, any additional weight stored onboard (inside and underneath) the motor home will contribute to the overall weight of the motor home.

If not stored uniformly throughout the motor home, additional weight of the possessions and provisions of the motor-home user will load each axle and each tire differently (front-to-rear and side-to-side distribution of that additional weight). Accordingly, **it is necessary to weigh the motor home fully**

loaded as the user would have it for travel. Moreover, **it is necessary to weigh each tire position individually**.

Overloading the motor home can produce problems with the tires, wheels, springs, brakes, drive train, and other motor home assemblies. In addition, an overloaded motor home uses more fuel, is more difficult to handle properly, and can lead to driver fatigue more quickly. In a worst-case condition, if any component should fail, this could result in loss of control of the motor home and subsequent damage.

In certain states, the Highway Patrol routinely weighs motor homes to check for overloaded axle weights. Therefore, there are many good reasons for assuring that the motor home is properly loaded and not overloaded—this can be accomplished through a proper weighing of the fully loaded motor home.

One can find various places that have certified public scales where one's motor home can be weighed. For example, moving and storage company lots, farm suppliers with grain elevators, gravel pits, recycling companies, and large-scale commercial-truck stops are some of the possible locations for weighing the motor home. One can also check the Yellow Pages of the telephone book for "scales – public" or "weighers" to determine other locations for weighing the motor home.

A brief overview of the procedure for weighing the motor home is shown in Figure 14-8.

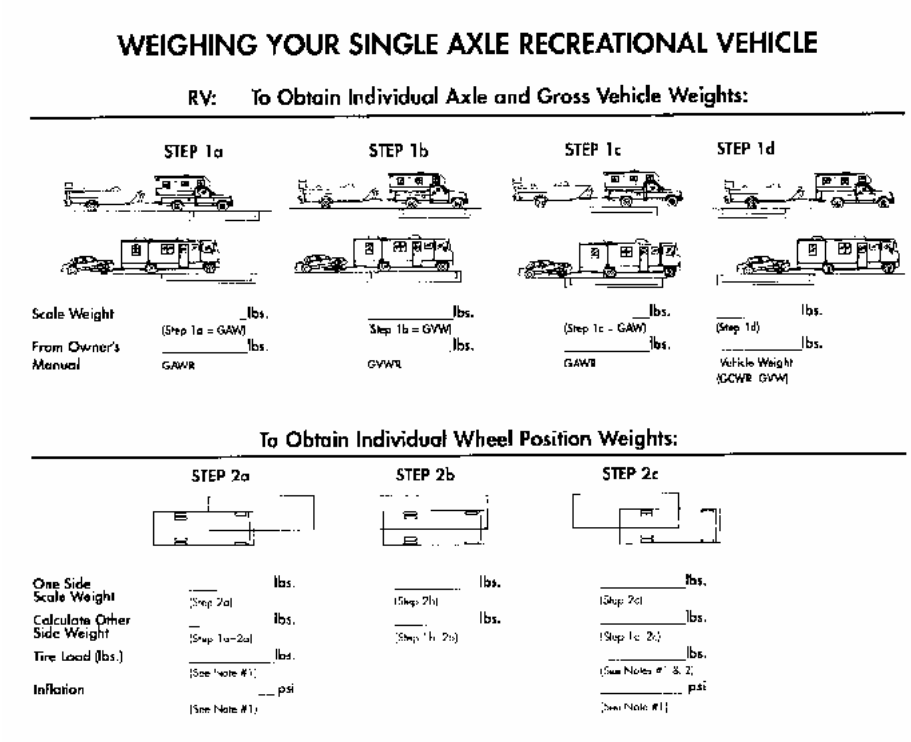


Figure 14-8. Procedure for Weighing the Motor Home (Each Tire Position Individually)

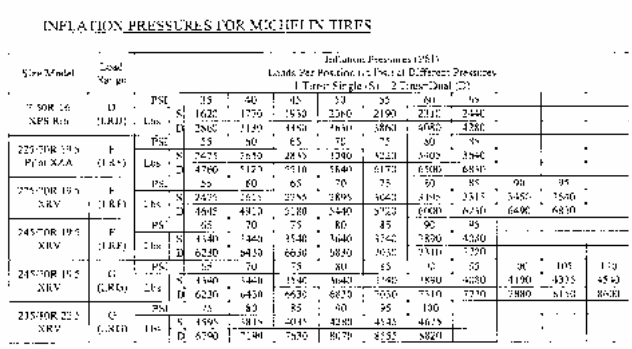
Note 1: From the tire manufacturer's load and inflation tables or the sidewall of the tires mounted on the motor home.

Note 2: If the motor home has duals, read dual capacity from the tire and multiply by 2 (two) to obtain dual-assembly load-carrying capacity.

More detailed information can be found in the manufacturer's literature associated with the chassis and/or the tires provided with the motor home. For example, the following table (Figure 14-9) illustrates the inflation pressures for Michelin tires as a function of the loads per position for a specified speed of the motor home. In this manner, one can determine the appropriate inflation pressures for each of the tires on the motor home, as a function of the loads they are to carry on the trip(s) the motor home is to take. Whenever there is a significant change in the loading regimen of the motor home, it would be wise to recalculate the load weights of the tires to assure optimal use of the motor home.

Frequency of Checking Tire Inflation Pressures

When one has determined the "correct" tire inflation pressures for each of the motor-home tires (as a function of the "fully loaded" condition, of course) and inflated the tires under "cold" (i.e., tires haven't been driven for more than one mile) conditions; then the air pressures in the tires should be periodically checked to make sure that they retain their proper pressures. It is recommended that tire pressures be checked at least once a month (every two weeks would be better) and before any major trip. On long trips, the tires should be checked every "drive" morning. On short trips (a day or less), the tires should be checked before one departs on the trip and again before one returns home.



INFLATION PRESSURES FOR MICHELIN TIRES

Figure 14-9. Typical Inflation Pressures for Motor Home Tires

Check tire pressures when they are "cold"; that is, the tires haven't been driven at all or, at most, less than one mile before being measured. In this manner, the tire pressure has not been increased by the heating associated with both tire sidewall and tread flexure associated with traveling. If one must check tires that are warm or hot, remember that they will necessarily read higher than normal. Do not "bleed" these tires down to the "cold pressure" readings, as they will probably then be underinflated when they are actually cool. Don't make any adjustments to tire pressures when the tires are warm or hot, if such can be avoided.

To make these tire-pressure measurements, it is recommended that one purchase a quality, truck-tire air gauge which has an angled dual head. This type of gauge allows one to check inflation pressures of both the inner dual wheel which has the valve stem pointing towards one and of the outer wheel which has the valve stem pointing away from one. Pressure-sealing valve caps should always be used to protect the valve stems and prevent air from escaping from the valve stems.

Tire Wear, Balance, and Wheel Alignment

In addition to tire inflation considerations, the tires should also be periodically examined for other types of normal "wear and tear." If installed and maintained properly, all tires mounted on the motor home should wear in a smooth, even pattern. If the tires begin to show irregular wear patterns and the motor-home alignment is still correct, then sometimes just rotating the tires by changing wheel position and rotation of the tires will allow the tires to wear evenly. Check with the chassis manufacturer (Ford or Workhorse) and its literature (in the Owner's Information Package) for particulars on maintaining proper wheel alignment. Tire rotation should include the spare tire in the rotation pattern and changing the direction of rotation of the tires. Tires can be rotated front-to-rear and side-to-side.

Tire Cleaning

Proper cleaning of the tires will assure maximum years of service. A soft brush and the normal mild soap should be used to clean the tires. Use care in applying any tire "dressing" product as these contain petroleum derivatives, alcohol, or silicones which may cause deterioration of the rubber, possibly leading to cracking, and accelerate the aging process. In many instances it isn't the actual dressing itself, but the reaction of that product with the antioxidant in the tire. Heat can compound this problem also.

INTERIOR CARE

Important

The fading of upholstery, carpet, and other interior fabrics is generally caused by excessive sunlight. The drapes, blinds, or other shades should be kept closed when the vehicle is parked for an extended period of time to minimize the fading. Normal deterioration of the appearance of such items caused by wear and/or exposure to strong lighting is not covered by the Tiffin Motorhomes Limited Warranty.

Carpet

A weekly routine of vacuuming the carpet and fabrics throughout the vehicle is recommended. Doing such will prevent an undue accumulation of dirt which can detract from the appearance of the carpeting and, thus, shorten its expected life. Remember to empty or replace vacuum bags before they become nearly full—this practice will assure that sufficient vacuuming capability is readily available to handle any and all cleaning situations that may arise. In carpet areas that receive

the most sunlight, close the curtains frequently to prevent fading. Also act quickly when anything is spilled or dropped onto the carpet to prevent or minimize staining.

Included in the Tiffin Motorhomes Owner's Information Package is the carpet manufacturer's Carpet Care Guide. The Carpet Care Guide lists detailed information on cleaning soiled areas and removing stains from the carpet installed in the vehicle.

Fabrics

The fabrics used in this Tiffin motor home for the bedspread, draperies, headboard, and valances (Figure 14-10) contain fire-retardant additives that may be damaged by use of improper cleaning products. Cleaning instructions for these items are DRY CLEAN ONLY.

Figure 14-10. Fabrics in Bedroom

Water-based products are not recommended for cleaning the fabrics in your new vehicle. Most water-based, household-cleaning products are not formulated for use on these fabrics and may cause excessive shrinkage or fading. For best results, the fabrics in this vehicle (Figure 14-11) should be cleaned by a professional carpet and upholstery cleaner.

Figure 14-11. Fabrics in Living Room

Spills, spots, or stains should be treated as soon as possible to avoid permanent damage to the fabrics. If a spill occurs, blot the fluid with a dry towel; do not rub the spill as rubbing may cause the liquid to "set" in the fabric and cause a stain. When attempting to clean a spot or stain, always start from the outside and work inward to avoid spreading the stain further.

Some stains or soils are extremely difficult or impossible to be removed completely. These stains should receive immediate, professional attention. Spills, spots, stains, or soiled areas are the responsibility of the owner and are not covered by Tiffin Motorhomes Limited Warranty.

Warning

When cleaning the upholstery and fabric of the motor home, do not use lacquer thinner, nail polish remover, laundry soaps, or bleach. Never use carbon tetrachloride or gasoline for cleaning purposes. These substances may cause damage to the materials being cleaned and most are high flammable.

Walls and Ceiling

The wall and ceiling coverings should be cleaned periodically to maintain a new appearance. Use a non-abrasive cleaner with a soft cloth on the walls. Do not use solvents of any kind, as those solvents may damage the surfaces being so cleaned.

Dashboard

To keep the dashboard (Figure 14-12) in like-new condition, follow these guidelines:

Figure 14-12. Dashboard and Instrumentation Panel of Allegro

DO:

- Dust and clean the dash with a soft, damp cloth or chamois, wiping the service gently.
- Use a mild detergent and lukewarm water.
- Dry the surface, after washing and rinsing, by blotting with a damp cloth or chamois.

DO NOT:

- Use harsh chemicals that may damage the dashboard.
- Use cloths containing grit or abrasive particles or kitchen-scouring compounds to clean or dust the dashboard.
- Subject the dashboard to hard, direct blows.
- Use boiling water, strong solvents, or other such materials to clean the dashboard as they will soften the plastic.

Woodwork & Floors

The wood cabinetry (Figure 14-13) should be cared for with furniture polish to sustain the natural beauty and luster of the wood. This procedure will also keep the cabinetry looking new, prevent the wood from drying, and reduce chances of accidental staining or aging.

Figure 14-13. Bathroom Cabinetry

Figure 14-14. Typical Floors

Use area rugs and floor mats by the entrance door to trap dirt. Use soap and water to clean the vinyl flooring (Figure 14-14), begin by vacuuming the floor to remove loose dust and dirt. Then, damp mop the floor with a cleaning solution consisting of any standard cleaning solution available through retail sales outlets (e.g., Wal-Mart, Kmart, Target) or grocery stores. The mop should be damp, but not dripping. To remove candle wax or chewing gum, carefully scrape off when the material has

hardened. For further tips, please see the manufacturer's information sheet in your Tiffin Motorhomes Owners Information Package.

Countertops

To care properly for the countertops (Figure 14-15) in your new vehicle, always use a heat pad or trivet to protect the surface from hot objects that may mar or damage the countertop surface. Hot pans and heat-producing appliances (such as electric skillets), when set directly on top of the countertop, can possibly mar the beauty and finish of the product.

Figure 14-15. Kitchen Sink

Be sure to use a cutting board, rather than cutting directly on the countertop surfaces. Although minor scratches and cuts can be repaired, a little care will assure that the countertop surfaces will keep looking new for years.

Avoid using harsh chemicals on the countertop. Wipe the countertop with a damp cloth to remove water spots. For most dirt and stains, wipe with a damp cloth and use soapy water or ammonia-based cleaners (e.g., Windex).

Do not expose the surface to harsh chemicals, such as paint remover, turpentine, nail polish remover, or any stove and drain cleansers. If these chemicals should come into contact with the countertop surfaces, immediately wash off these chemicals, using appropriate safety measures to avoid injury.

Accessories

The brass light fixtures, bath accessories, and faucets can be cleaned by wiping with a soft, damp cloth. Washing with warm water will remove dry water spots. Do not use cleaners that contain harsh or abrasive chemicals. Alcohol or other similar solvents should never be used.

Detectors

The CO/LP combination detector is self-contained and DOES NOT require any maintenance other than normal cleaning and periodic testing. The smoke detector installed in the motor home is a nine-volt, battery-operated detector. The CO/LP detector is 12 volt operated.

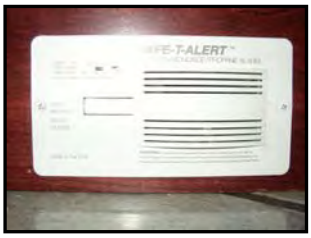


Figure 14-16. Carbon Monoxide Detector

The batteries in the smoke and CO detectors (Figure 14-16) need to be tested periodically and replaced when necessary (usually semiannually). When cleaning the case on any of the detectors, use a damp cloth or paper towel. Do not spray cleaners or wax directly into the case as this action may cause false alarms or hinder the normal operation of the detectors.

An inexpensive battery tester, available from any local electronics retailer, would be a good investment to make. This tester would allow checking of the batteries in the various alarms, any flashlights used in the motor home, and batteries in other appliances (e.g., portable radios, MP3 players, CD players, PDAs, and various electronic games) which may be in the motor home during travels.

Condensation

Important

Since surface condensation within the motor home cannot be controlled by the manufacturer, damage caused by condensation is not covered by the Tiffin Motorhomes Limited Warranty.

Damage may occur to your vehicle if excessive condensation exists. Accumulation of condensation on surfaces within your motor home occurs when warm, moist air contacts a cool surface. It is most evident on the inside of windows, but this problem can be controlled by:

1. Slightly opening a window or roof vent to allow the moisture to escape from the motor home.

2. Using a small dehumidifier which is also effective in removing moisture from the air.

Condensation levels are highest during times when a person is cooking or taking a shower in the motor home, but these occasions are not the only times condensation is present. Walls and ceiling panels may become wet when the moisture accumulates on these surfaces. Tiffin Motorhomes does not recommend the use of any catalytic heaters because of resulting extensive condensation.

ROUTINE MAINTENANCE SCHEDULES

Important

Always follow the chassis maintenance guidelines found in the chassis manufacturer's owner's manual.

All routine maintenance is the responsibility of the owner and is not covered by the Tiffin Motorhomes Limited Warranty. Use the maintenance record found in Chapter 15 to record all performed maintenance as required.

Please note that any damage caused by improper or unperformed maintenance is not covered by the Tiffin Motorhomes Limited Warranty. Items supplied by other manufacturers may require specific individual maintenance not listed herein. Please refer to the manufacturers' suggested maintenance guidelines in the Owners Information Package.

Important

Cosmetic adjustments and alignments must be performed within the first three months from date of original purchase for warranty consideration. Thereafter, these items are considered routine maintenance.

Monthly

- Check the water levels of the batteries.

Every Three Months

- Check LP gas lines for leaks with soap solution or leak detector.
- Clean the microwave hood exhaust fan filter and blades.
- Test smoke alarm, carbon monoxide detector, and LP gas detector.
- Check operation of windows, latches, and hinges.
- Clean the roof ducted air conditioner filter or filters.
- Clean and inspect door and window seals; reseal where necessary.
- Inspect and reseal around the tub and shower area where necessary.
- Lubricate the exterior door hinges and latches with a graphite (silicone) lubricant.
- Check, clean, and tighten battery cables and inspect batteries for proper fluid levels.

Every Six Months

- Inspect the slide-out for proper seal. If realignment is necessary, please contact an authorized Tiffin Motorhomes Service Center.
- Inspect the exterior rubber slide-out seals and apply an UV inhibitor, such as 303 Protectant.
- Change the battery in the smoke detector.
- Rotate tires as recommended by the tire manufacturer.
- Check all gas appliances for proper operation.

- Have the LP system inspected by a qualified technician.
- Lubricate the movable parts on the entrance step.
- Change the batteries in both the smoke detector and the CO detector.
- For the *optional* washer/dryer, inspect the water hoses (both the hot and cold supply lines) to note any bulges, kinks, cuts, wear, or leaks. Especially note the hot-water hose, as this tends to degrade faster than the cold-water hose. Replace if hose feels "soft" or "spongy."

Annually

- Inspection of roof seams and joints should be performed by an authorized Motorhomes Service Center. If resealing is necessary, it is the owner's responsibility and is not covered by the Tiffin Motorhomes Limited Warranty.
- Sanitize the fresh water system.
- Wax and buff all gel-coat surfaces on the vehicle as described previously in this chapter.

Winterizing

To store your vehicle for the winter months, it is necessary to winterize the water system to help prevent freezing of this system. To do this, follow these instructions:

1. Drain all the water from the water system including the holding tank(s), the hot water heater, and the water tank; also drain the *optional* water filter, if installed. For the holding tank(s), open the gate valve(s) to drain the tanks. (NOTE: this procedure is to be performed **only** at a wastewater pumping station to prevent dumping of contaminated water elsewhere). For the hot water heater, remove the outside cover and then remove the drain plug. When this tank is drained, replace the drain plug and then replace the cover. For the water tank, open the green-handled valve to drain the tank; then close the green-handled valve. If an *optional* water filter is installed, remove the filter cartridge and store it in a clean environment (e.g., resealable plastic bag); empty any excess water from the filter housing and replace the housing.

2. Turn the by-pass valves at the water heater to the "by-pass" position to prevent filling the water heater tank with antifreeze.

3. Disconnect the inlet connection to the water pump [in the sanitary service compartment under the motor home] (Figure 14-17). Attach the supplied, vinyl hose (via the plastic coupling on the hose) to the inlet connection and hand-tighten that connection; do not over-tighten.

Figure 14-17. Wintering Process for the Motor Home

4. Place the other end of the hose into a gallon of freshwater system antifreeze (one can refer to the local Tiffin Motorhomes dealer or representative for the freshwater antifreeze formulation for your specific area). NOTE: Do not use automotive antifreeze; use only antifreeze approved for RV applications; otherwise, damage to the systems being protected may result.

5. Turn "on" the water pump to start the flow of the antifreeze. Turn "on" each faucet, one at a time, and allow pure antifreeze to run through that piping. Let about one cup drop into the drains to protect the traps.

6. When all the antifreeze is withdrawn from the bottle, disconnect the clear vinyl hose from the water-pump inlet connection and reconnect the inlet line to the water pump. (This may require more than one gallon of antifreeze).

7. When the winterizing process is completed, turn the water pump "off" and then reconnect the water line. Store the vinyl hose for future use.

8. Open the water supply valve that controls flow from the pump to the tank to help prevent freezing on that water line.

Note: Remember, the motor home also has an exterior shower; therefore, this system must be winterized, as well.

If the motor home is equipped an optional ice maker and/or an optional washer/dryer, the following additional steps should be taken:

Washer/Dryer (*optional*)

1. With the washer/dryer power in the "off" position, put ½ quart of R.V.-type antifreeze in the drum; then close the door.

2. Turn the Program Selector knob to "spin." Then turn the power "on" and let the machine go through the spin cycle for one or two minutes.

3. Turn the power "off" and then unplug the washer/dryer or disconnect the power cord.

4. Shut off both water faucets and then disconnect the water-inlet hoses from the faucets and drain them. This completes the process.

Alternative Washer/Dryer Winterization through the Freshwater System

1. If one is currently pumping antifreeze through the freshwater system, follow these steps to winterize the washer/dryer:

2. With the washer/dryer power "off," turn the Wash Temperature knob to "Warm."

3. Turn the Program Selector knob to "Regular Wash" (located in the "Cotton Heavy Duty" section of the knob). Then turn the power "on."

4. When you see antifreeze in the drum, turn the power "off." Then advance the Program Selector knob to "Spin."

5. Turn the power "on" and allow the drum to spin for about 30 seconds.

6. Turn the power "off." This completes the process.

Depending on whether your particular motor home has a Dometic or a Norcold refrigerator, there are some steps to be taken in winterizing the optional ice maker associated with that refrigerator. For each refrigerator model, the proper steps to be taken are these:

Dometic Refrigerator Ice Maker (*optional*)

1. Shut off the water supply to the ice maker.

2. Place a shallow pan under the water solenoid valve.

3. Remove the inlet fitting to the ice-maker water solenoid valve. Then drain the water from the supply line.

4. Remove the plastic nut and water line from the outlet side of the water solenoid valve. Then drain the water from that line. **Note**: Do not lose the metal insert from the plastic water line. One recommended way to secure this insert is to place it into a "zip lock" bag, seal the bag, punch a small hole through the top of the bag above the zip-lock, insert any type of "twist-tie" (i.e., paper-coated, flexible metal wire) fastener through the hole, and then secure that bag to the outlet line for safekeeping.

5. Connect a source of compressed air (up to 20 psig, maximum) onto the inlet fitting of the water solenoid valve. Apply AC power to the solenoid valve for forcing the icemaker mold assembly through several harvest cycles.

6. Remove the plastic cover from the mold assembly. The bail arm must be in the "down" (or "on") position.

7. Start the harvest cycle with a flat-blade screwdriver inserted into the center of the small gear.

8. Turn the gear counterclockwise (CCW), when the hold switch closes, the mold assembly will continue to operate through the harvest cycle. During the water-fill sequence of the harvest cycle, the compressed air will blow out the water trapped in the solenoid valve.

9. Repeat the harvest cycle operation (i.e., steps 7 and 8) several times. Note: Damage to the solenoid valve can occur if the AC power is applied for more than 20 seconds.

10. Reconnect and tighten the lines on the water solenoid valve. The metal insert must be installed in the plastic water line going to the outlet side of the water solenoid. Leave the water supply turned "off" until temperatures are above 0º F (-18º C).

11. Dry out the ice-maker mold assembly with a soft cloth. Place the bail arm in the "up" ("off") position.

Norcold Refrigerator Ice Maker (*optional*)

1. Push the ice maker arm up to the "off" position.

2. Close the water shut-off valve of the motor home.

3. Remove the water supply line and the ice maker water line from the water solenoid valve.

4. Drain the water from both lines.

5. Connect both lines to the water solenoid valve in their original locations.

6. Dry the inside of the ice maker with a clean cloth.

De-Winterizing

1. To de-winterize your vehicle, open both of the low-point drains to allow the antifreeze solution to drain from the water system.

2. Next, close the low-point drains and connect your vehicle to the city water system. Put water in the freshwater tank and pump at least one gallon through the water pump to remove the antifreeze from the water pump. Keep the water heater supply valve closed and the water heater bypass valves open. The supply valve for the freshwater tank from the pump must remain closed.

3. As in winterizing, open the kitchen faucet, bath faucet, inside and outside showers, turning "on" both the hot- and the cold-water valves and flushing the stool until the antifreeze solution is flushed out of the system and the water flow is clear.

4. Once the system has been flushed, open the water heater supply valve and close the water heater bypass valve. Open the freshwater tank supply valve from the pump and the icemaker valve. Be sure that the water heater tank is completely filled with water

before turning "on" the water-heater power or else significant damage to the tank and its plumbing may result.

5. Reinstall the (*optional*) water filter.

6. Be sure to close the fresh water tank drain valves to allow the tank to fill.

Washer/Dryer (Optional)

1. Flush the water pipes.

2. Reconnect the water inlet hoses to the corresponding HOT and COLD faucets; then turn "on" both water faucets.

3. Plug in the washer/dryer and /or reconnect the power.

4. Run the washer through the "Express" cycle with ½ tablespoon of powder detergent (or liquid equivalent) to clean out the antifreeze. This completes the process.

Chapter

15

Maintenance & Data Charts

RV Owner's Data Sheet

Please enter the following information in the table for your future use:

Allegro: Year: _____ Model #: _____ Tiffin Serial #: _____

Appliance	Brand	Model Number	Serial Number
Refrigerator			
Air Conditioner			
Water Heater			
Microwave			
Generator			
Television, Front			
Back-Up Monitor (*optional*)			
AM/FM/CD Stereo			
VHS VCR (*optional*)			
DVD Player (*optional*)			

Reproduction Master – Copy this sheet and use copy to maintain your maintenance records. You may wish to keep the completed sheets in a three-ring binder for your permanent record.

RV Owner's Maintenance Record

Please enter the following information in the table for your future use:

Allegro: Year: _____ Model #: _____ Tiffin Serial #: _____

Date / Mileage	Service Work Performed	Performed by	Cost ($)

Reproduction Master – Copy this sheet and use copy to maintain your maintenance records. You may wish to keep the completed sheets in a three-ring binder for your permanent record.

RV Owner's Maintenance Record

Please enter the following information in the table for your future use:

Allegro: Year: _____ Model #: _____ Tiffin Serial #: _____

Date / Mileage	Service Work Performed	Performed by	Cost ($)

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