

1990-1994

# *ALLEGRO BAY*

Built by  
Tiffin Motor Homes, Inc.

*Owner's  
Manual*

### **ATTENTION:**

This book is not intended to cover all options, but only the basic operation of your new motor home. In the warranty packet you will find many different manuals that explain in greater detail the various operations of the different appliances and creature comforts, both optional and standard, that are included on your new motor home.

## IMPORTANT NOTICE

Certain of our forest product suppliers have advised that urea-formaldehyde is used in the production of particle board, hardwood plywood or paneling which they supply us and which we utilize in our finished product. These suppliers have requested that we communicate this to our customers.

For your information, we are reproducing samples of statements which have been provided to us by our suppliers.

**WARNING:** THIS PRODUCT IS MANUFACTURED WITH UREA-FORMALDEHYDE RESIN. FORMALDEHYDE VAPOR MAY IN SOME PEOPLE CAUSE HEADACHES, EYE, NOSE AND THROAT IRRITATION, AND AGGRAVATION OF ALLERGIES AND RESPIRATORY PROBLEMS, SUCH AS ASTHMA. PROPER VENTILATION SHOULD REDUCE THE RISK OF SUCH PROBLEMS.

*Champion International Corporation*

**WARNING: IRRITANT:** THIS PRODUCT CONTAINS A UREA-FORMALDEHYDE RESIN AND MAY RELEASE FORMALDEHYDE VAPORS IN LOW CONCENTRATIONS. FORMALDEHYDE CAN BE IRRITATING TO THE EYES AND UPPER RESPIRATORY SYSTEM OF ESPECIALLY SUSCEPTIBLE PERSONS SUCH AS THOSE WITH ALLERGIES OR RESPIRATORY AILMENTS. USE WITH ADEQUATE VENTILATION. IF SYMPTOMS DEVELOP, CONSULT YOUR PHYSICIAN.

*Georgia-Pacific Corporation*

**WARNING:** THIS PRODUCT IS MANUFACTURED WITH A UREA-FORMALDEHYDE RESIN AND WILL RELEASE SMALL QUANTITIES OF FORMALDEHYDE. FORMALDEHYDE LEVELS IN THE INDOOR AIR CAN CAUSE TEMPORARY EYE AND RESPIRATORY IRRITATION, AND MAY AGGRAVATE RESPIRATORY CONDITIONS OR ALLERGIES. VENTILATION WILL REDUCE INDOOR FORMALDEHYDE LEVELS.

*Weyerhaeuser Company*

Ventilation is important in maintaining a comfortable environment and we direct your attention to the discussion of ventilation contained in your Owner's Manual.

## SAFETY REGULATIONS REGARDING LP GAS SYSTEMS AND LP GAS APPLIANCES

The manufacturer of this recreational vehicle is required to furnish the following consumer information as provided by the National Fire Protection Association and the American National Standards Institute. The information and warnings found here may also be found in other sections of this Owner's Manual. Please see sections "Liquid Petroleum Gas System" and "Appliances" for other safety and operating information.

**WARNING:** LP GAS CONTAINERS SHALL NOT BE PLACED OR STORED INSIDE THE VEHICLE. LP GAS CONTAINERS ARE EQUIPPED WITH SAFETY DEVICES WHICH RELIEVE EXCESSIVE PRESSURE BY DISCHARGING GAS TO THE ATMOSPHERE.

**WARNING:** IT IS NOT SAFE TO USE COOKING APPLIANCES FOR COMFORT HEATING. COOKING APPLIANCES NEED FRESH AIR FOR SAFE OPERATION, BEFORE OPERATING:

1. OPEN OVERHEAD VENT OR TURN ON EXHAUST FAN AND
2. OPEN WINDOW.

THIS WARNING LABEL HAS BEEN LOCATED IN THE COOKING AREA TO REMIND YOU TO PROVIDE AN ADEQUATE SUPPLY OF FRESH AIR FOR COMBUSTION, UNLIKE HOMES. THE AMOUNT OF OXYGEN SUPPLY IS LIMITED DUE TO THE SIZE OF THE RECREATIONAL VEHICLE AND PROPER VENTILATION WHEN USING THE COOKING APPLIANCE(S) WILL AVOID DANGERS OF ASPHYXIATION. IT IS ESPECIALLY IMPORTANT THAT COOKING APPLIANCES NOT BE USED FOR COMFORT HEATING AS THE DANGER OF ASPHYXIATION IS GREATER WHEN THE APPLIANCE IS USED FOR LONG PERIODS OF TIME.

**WARNING:** PORTABLE FUEL-BURNING EQUIPMENT, INCLUDING WOOD AND CHARCOAL GRILLS AND STOVES, SHALL NOT BE USED INSIDE THIS RECREATIONAL VEHICLE. THE USE OF THIS EQUIPMENT INSIDE THE RECREATIONAL VEHICLE MAY CAUSE FIRES OR ASPHYXIATION.

**WARNING:** DO NOT BRING OR STORE LP GAS CONTAINERS, GASOLINE, OR OTHER FLAMMABLE LIQUIDS INSIDE THE VEHICLE BECAUSE A FIRE OR EXPLOSION MAY RESULT.

A warning label has been located near the LP gas container. This label reads: DO NOT FILL CONTAINER(S) TO MORE THAN 80 PERCENT OF CAPACITY.

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

The following label has been placed in the vehicle near the range area: IF YOU SMELL GAS:

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

LP gas regulator must always be installed with the diaphragm vent facing downward. Regulators that are not in compartments have been equipped with a protective cover. Make sure that regulator vent faces downward and the cover is kept in place to minimize vent blockage which could result in excessive gas pressure causing fire or explosion.

# FULL ONE-YEAR/12,000 MILE WARRANTY

FOR MOTOR HOMES MANUFACTURED BY TIFIN MOTOR HOMES, INC.  
SOLD IN THE UNITED STATES

## COVERAGE PROVIDED

Your new motor home, including the structure, plumbing, heating and electrical systems, and appliances and equipment installed by the manufacturer, is warranted under normal use to be free from manufacturing defects in material or workmanship.

The warranty extends to the first retail purchaser and begins on the date of original retail delivery or the date the motor home is first placed into service as a rental, commercial or demonstrator unit (whichever occurs first). The warranty extends for a period of one year from such date or until the unit has 12,000 total miles of use as determined by the mileage shown on the odometer (whichever occurs first). Written notice of defects must be given to the selling dealer or the manufacturer not later than ten (10) days after the expiration of the applicable warranty period.

## OWNER'S OBLIGATIONS

The owner is responsible for normal maintenance as described in the Owner's Manual, however, minor adjustments (such as adjustments to the interior or exterior doors, LP regulator pressure, cabinet latches, TV antenna control, etc.) will be performed by the dealer during the first 90 days of warranty coverage. Thereafter, such adjustments are the responsibility of the owner as normal maintenance unless required as a direct result of repair or replacement of a defective part under this warranty.

If a problem occurs which the owner believes is covered by this warranty, the owner shall contact the SELLING DEALER, or other authorized dealer, giving him sufficient information to resolve the matter. The owner shall deliver the motor home to the DEALER or manufacturing plant location for warranty service.

## DEALER'S OBLIGATIONS

By agreement with the manufacturer, the dealer is obligated to maintain the motor home prior to retail sale, to perform a detailed pre-delivery inspection and to repair or replace any parts necessary to correct defects in material or workmanship.

## WHEN THE DEALER DOES NOT RESOLVE THE PROBLEM

If the dealer is unable or unwilling to resolve a problem which the owner is convinced is covered by the warranty, he should contact the MANUFACTURING PLANT at the address listed below and provide the manufacturer with a description in writing of the problem and attempts made to resolve it.

## MANUFACTURING PLANT OBLIGATIONS

Upon receipt of notice of a claim, where the dealer was unable or unwilling to resolve the problem, the manufacturing plant will repair or replace any parts necessary to correct defects in material or workmanship, or will take other appropriate action as may be required.

## WHEN THE MANUFACTURING PLANT DOES NOT RESOLVE THE PROBLEM

If the representatives of the manufacturing plant are unable to resolve the problem and the owner is convinced that it is covered by the warranty, the owner should contact the plant.

## WHAT IS NOT COVERED BY THE EXPRESS WARRANTY

### THIS WARRANTY DOES NOT COVER

1. THE AUTOMOTIVE SYSTEM (INCLUDING THE CHASSIS AND DRIVE TRAIN), TIRES AND BATTERIES, WHICH ARE COVERED BY THE SEPARATE WARRANTIES OF THE RESPECTIVE MANUFACTURERS OF THESE COMPONENTS.
2. DEFECTS CAUSED BY OR RELATED TO:
  - A. ABUSE, MISUSE, NEGLIGENCE OR ACCIDENT;
  - B. FAILURE TO COMPLY WITH INSTRUCTIONS CONTAINED IN THE OWNER'S MANUAL;
  - C. ALTERATION OR MODIFICATION OF THE MOTOR HOME;
3. NORMAL DETERIORATION DUE TO WEAR OR EXPOSURE, SUCH AS FADING OF FABRICS OR DRAPES, CARPET WEAR, ETC.
4. NORMAL MAINTENANCE AND SERVICE ITEMS, SUCH AS LIGHT BULBS, FUSES, WIPER BLADES, LUBRICANTS, ETC.
5. MOTOR HOMES ON WHICH THE ODOMETER READING HAS BEEN ALTERED.
6. TRANSPORTATION TO AND FROM DEALER OR MANUFACTURING PLANT LOCATION, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOSS OF USE, TOWING CHARGES, BUS FARES, CAR RENTAL, INCIDENTAL CHARGES SUCH AS TELEPHONE CALLS OR HOTEL BILLS, OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY UNDERTAKING REPRESENTATION, OR WARRANTY MADE BY ANY DEALER OR OTHER PERSON BEYOND THOSE EXPRESSLY SET FORTH IN THIS WARRANTY.

Brand Name: \_\_\_\_\_

Model: \_\_\_\_\_

Serial No.: \_\_\_\_\_

TIFIN MOTOR HOMES, INC.

P.O. Box 596 • Golden Road Red Bay, AL 35582

205-356-8661 • 800-443-7881

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# INTRODUCTION

Thank You for purchasing an \_\_\_\_\_ Motor Home. You have purchased an RV of great quality which will give you years of enjoyment and service.

This manual has been published to give you an overview of the basic operation of your new RV. Please read the complete manual before operating your motor home. Your RV meets or exceeds the American National Standard Institute A119.2, NFPA 501C. This code covers plumbing, heating, electrical and other safety requirements.

Your motor home is like any new vehicle or home—it requires a certain degree of preventive maintenance. Therefore, you should follow a service routine for both the chassis and the house portion of your RV.

After reading the manual, if you have questions about the operation of the coach, please contact your dealer for assistance. Your dealer's service department can repair any normal problems your RV might have.

Your motor home is covered under a warranty of 12,000 miles or one year, which ever comes first. This applies to the home portion of the RV only. Major appliances and chassis are warranted by the manufacturer of those products and may have a different warranty.

If you have your RV in for warranty service and cannot resolve the problem, please write Tiffin Motor Homes, Inc., Customer Relations Department, P.O. Box 596, Red Bay, AL 35582 or phone 205-356-8661. Before you write or call, please have the serial number, make, size and year model of your RV.

Note: This manual is an overview of standard equipment. You will need to refer to your information packet on the operation of optional equipment.

## Chassis and Vehicle Identification

Your RV has been constructed on either a Chevrolet, Oshkosh, or Ford chassis. The serial number of the chassis and the serial number of the RV is located on a plate just inside the driver's door.

Please take a few moments to complete the following. It will be helpful for future reference.

Model of Motor Home \_\_\_\_\_

Serial Number \_\_\_\_\_

Date of Purchase \_\_\_\_\_

Dealer Name \_\_\_\_\_

Dealer Address \_\_\_\_\_

### RANGE/OVEN:

Manufacturer \_\_\_\_\_

Model \_\_\_\_\_

Serial Number \_\_\_\_\_

### REFRIGERATOR:

Manufacturer \_\_\_\_\_

Model \_\_\_\_\_

Serial Number \_\_\_\_\_

### FURNACE:

Manufacturer \_\_\_\_\_

Model \_\_\_\_\_

Serial Number \_\_\_\_\_

### WATER HEATER:

Manufacturer \_\_\_\_\_

Model \_\_\_\_\_

Serial Number \_\_\_\_\_

**AIR CONDITIONER:**

Manufacturer \_\_\_\_\_

Model \_\_\_\_\_

Serial Number \_\_\_\_\_

**RADIO:**

Manufacturer \_\_\_\_\_

Model \_\_\_\_\_

Serial Number \_\_\_\_\_

**HYDRAULIC LEVELER**

Manufacturer \_\_\_\_\_

Model \_\_\_\_\_

Serial Number \_\_\_\_\_

**GENERATOR:**

Manufacturer \_\_\_\_\_

Model \_\_\_\_\_

Serial Number \_\_\_\_\_

**MICROWAVE OVEN:**

Manufacturer \_\_\_\_\_

Model \_\_\_\_\_

Serial Number \_\_\_\_\_

**MISCELLANEOUS:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Check List

**BEFORE MOVING RV CHECK THESE ITEMS:**

- Disconnect water and electrical connection.
- Remove block or raise leveling system.
- Check hitch and hitch ball.
- Check tire pressure.
- Check exterior lights.
- Check engine systems.
- Check windshield wiper and washer fluid.

- Retract step.
- Lower TV antenna.
- Lock refrigerator door.
- Close roof vents.
- Close all doors, drawers, and windows.

**WARNING: Never store or carry flammable gases (i.e. gasoline, LP cylinders) in your RV.**

## Hitches and Towing

Your motor home has been supplied with a factory installed trailer hitch. The hitch is rated at 250 lbs. tongue weight and 2500 towing weight. Exceeding this weight can cause damage to the transmission and the chassis itself.



# Cockpit and Driver's Controls

(Consult your chassis manual for further details.)

## DASH SWITCH PANEL

### • WINDSHIELD WIPER SYSTEM

Class C Motor Homes - Refer to Chassis Manual.

Class A Motor Homes - 2 speed Windshield Wiper/Washer System:

First notch - Slow wiping action

Second notch - Fast wiping action.

Press the left wiper knob for washer. The washer nozzles are located on the wiper arms close to the wiper blades. They move with the blades and provide continuous washer coverage.

### • AUXILIARY START SWITCH

Please note: This feature is not available on the Allegro Bay Pusher model.

This switch permits using the auxiliary batteries to start the motor home engine if the vehicle battery has discharged. To use the auxiliary start, follow these steps:

- (1) Apply the Park Brake
- (2) Press the Auxiliary Start Switch
- (3) Start the engine with the ignition switch
- (4) Release the Auxiliary Start Switch.

### • HEATER - A/C CONTROL

(For Class C Motor Home, see chassis manual.)

Both the heater and air conditioner controls are located within the same panel. This system will operate the dash unit only.

Temperature Control, Heat/Cool lever. Push lever to left for cool air or right for hot air.

Air Flow: This can be directed out of 1) the dash vents only, 2) the floor vents only, 3) the dash and floor vents at the same time or 4) Defrost vent only. Four buttons on the control panel indicate the settings.

When the dash A/C or heat is in the off position, the fan will continue to operate at a low speed.

Fan Speed: Three fan speeds to utilize—low, medium and high.

## DRIVER'S/PASSENGER'S SEATS

The driver and passenger seats are designed to swivel, recline and slide forward and backward.

**WARNING:** Do not adjust the seats while the vehicle is in motion.

**Forward/Back:** The forward/back lever is located on the right hand side of the seat portion of the chair. It is the rear lever—depress and the seat will slide forward or backward.

**Swivel:** This lever is located just in front of the Forward/Backward lever. Depress lever and the seat will swivel left and right.

**Recline:** The recline lever is located on the left side of the seat on the back rest. Depress lever to recline and when released, the seat back will lock into place at the chosen position.

### • SEAT BELTS

When your RV is in motion, it is necessary for all passengers to use a seat supplied with safety belts. For your protection, always use these belts.

**WARNING:** Seats that are not equipped with safety belts are never to be used while vehicle is in motion. Never occupy beds or bunks while vehicle is in motion.

Class C Motor Homes, see chassis manual.

Driver and passenger seats are equipped with automatic roll-up lap belts. The length of the belt can be adjusted by the amount of belt you pull out.

Sofa and dinettes are equipped with regular, manual adjusting safety belts.

### • CHILD RESTRAINTS

Most state laws require that infants and small children be restrained in carriers designed for that purpose. For every one riding in this vehicle it is imperative that they wear a restraining device. Children cannot be restrained by an adult holding them while traveling. An unrestrained child can be injured in an RV even if an accident does not occur, such as when the RV makes a sudden turn or shift. Therefore, please restrain children at all times when the vehicle is in motion.

Infants and small children should be restrained in a carrier. The carrier and child should face the back of the seat which is supporting the carrier. The carrier must be fastened down by the vehicle's safety belts.

Most children above the age of four can be restrained by regular safety belts. However, laws vary from state to state regarding the age at which a child can be restrained by a regular safety belt, so please check with local authorities while traveling to determine proper restraining methods.

## SUNVISORS

The sunvisors at the driver and passenger positions swing down and adjust to provide relief from glare and bright skies. The visors do not adjust to shade the side windows.

Swivel tension may be adjusted with a flat blade screwdriver at the tension adjusting screw.

## FRONT/SIDE PASSENGER SLIDER WINDOW

Grip handle to unlock and slide window to open and close. The screen can be operated in the same manner as the window.

# DRIVING AND PARKING

Your new RV is much larger than a car or many other vehicles. Therefore it maneuvers and handles quite differently than a car. Once you become familiar with the controls and their operation, take the RV for a short drive to become acquainted with the way it handles. Keep in mind the length and width of the RV when making turns at traffic lights and stop signs. Always turn wide enough to avoid curbs and signs into which the overhang of the RV may crash.

Always observe highway speed and safety regulations. The speed you drive the RV may need to be reduced in hazardous weather conditions.

While traveling in windy conditions, your RV will wander across the road. This is due to the wide surface area of the RV. When this problem occurs, slow the RV down until you are comfortable with the way it handles. Always remember that your RV weighs several thousand pounds more than a car and is more difficult to stop. Begin slowing down sooner before an anticipated stop than you would in a car. Also, due to the weight of

your RV, you must allow much more distance when passing other vehicles on the highway than you would in a car.

When traveling in the mountains or hilly conditions, you should use your transmission to aid in climbing and descending hills. Lower gears while climbing hills will give you more power and less strain on the engine. Lower gears while descending hills, coupled with the use of brakes will keep the RV under control. Also, while traveling in the mountains your engine and transmission may become hot. If this occurs, turn the vehicle's dash air conditioner off.

Overhead clearance is an important factor when driving your motor home. Make sure you have enough room to go under overpasses and bridges. Watch for low hanging limbs and other obstructions which may damage the roof of your RV.

When parking the RV, always put the transmission in "Park" and set the park brake. Also, when parking on an incline, turn wheel into curb for additional support of the RV.

# FUEL AND FUEL SYSTEMS

Consult your chassis manual for fuel recommendations. In most cases the "optional" generator operates off of the same fuel supply as does the RV. Consult the generator manual before selecting a fuel.

## • FUEL FILL

The fuel filler cap may be located on either the driver's or passenger's side of the RV. To fill the tank, slowly remove the cap to allow pressure which may build

up in the fuel tank on a warm or hot day to escape. Warning: quick removal of the fuel cap can cause gasoline to spray out of the fuel fill. Caution: extinguish all smoking material when adding fuel to the RV tank.

In order to protect you and to maintain a proper functioning fuel system, replace lost or broken fuel caps with the same design as the original.

### • **ALTERNATIVE FUEL TYPES**

Gasohol and Methanol are both acceptable fuel for gasoline engines. Never use blends that contain both Methanol and Ethanol and never use blends containing

more than 5% Methanol or 10% Ethanol. If you find the use of alternative fuel blends affect the performance of your engine, discontinue use.

## OVERHEATING

Servicing the engine and cooling system at regular intervals suggested by the chassis manual will help prevent overheating.

## CARBON MONOXIDE SAFETY PRECAUTIONS

Carbon monoxide is an odorless, colorless, tasteless gas. Carbon Monoxide is a by-product of engine combustion. It is produced by fuels that are not completely used up in combustion or burning. Carbon monoxide takes the life of thousands of people annually. Please pay careful attention to the following.

**WARNING:** Carbon monoxide is extremely toxic and very deadly. Never block or cover the exhaust system of your RV or generator. Never alter the design of either exhaust system under any circumstance. Don't allow generator to run while parked next to other RVs or

next to a building. The deflection of exhaust fumes could re-enter your RV. Never operate any engine on your RV while sleeping, including the generator.

If you experience the following, exit the RV and seek medical attention: intense headache, dizziness, sleepiness, vomiting, throbbing in temples and muscular twitching.

Whenever possible, inspect your exhaust system for damage. If damage is found have it repaired at once. Damaged exhaust systems can leak lethal amounts of carbon monoxide into your RV.

## ENGINE ACCESS

Your engine access cover is hinged or screwed directly to the floor for easy access to the engine. To gain access to the engine from inside the RV on Class A motor homes, swivel both driver and passenger seats so they face each other. This will give the engine access cover clearance to swing upward. (See chassis manual on Class C Motor Home Engine Access.)

**WARNING:** When operating the engine, don't allow floor mats and other obstructions to enter between the floor and the access cover. Be sure doors and windows are open if the engine is worked on with the cover off.

## TIRES

Your motor home is equipped with heavy-duty truck tires. With the proper maintenance, you should receive trouble free service for several thousand miles.

Check wheel covers often. Retainers that hold wheel covers on may work loose. (Note: 16" wheels do not require retainer, only 19.5" wheels)

### • **MAINTENANCE OF TIRES**

Proper inflation is crucial for long tire life and safety. Before and after every trip, you should check the tire pressure and add air as needed. Stamped on the outside of the tire is the maximum PSI. Keep tires pressurized at that level.

**WARNING:** Proper Inflation of tires is crucial. If tires are not properly inflated, a blow-out or fire may result.

### • **REPLACING TIRES**

Always replace tire with exactly the same size and profile tire which originally came on the vehicle. Be sure the load range rating is the same as the original tires. If a different size tire is used, your speedometer will not register properly and the gross axle weight may not be met.

### • CHANGING A FLAT TIRE

First, refer to chassis operating manual.

When you have a flat tire, it is best to summon professional help through an auto club, travel-service or truck service facility. However, there may be occasions when these services are not available to you. If you are not familiar with changing a truck tire, listed are several things you **MUST** be aware of:

1) The wheel and tire itself is very heavy. If you are not physically able to handle a wheel and tire that weighs in excess of 100 pounds, do not attempt to change the tire.

2) The wheel nuts are tightened up to 500 lb./ft. of torque. If you are not physically able to break loose the wheel nuts, do not attempt to change the flat tire yourself.

3) The motor home itself is very heavy, not to mention your belongings in the motor home. Therefore, the jack provided with your motor home can only lift one wheel off the ground. Also, if the ground is soft and not level, do not attempt to change the tire. If it is absolutely necessary to change a flat tire on soft ground, you should support the jack with a strong wide board.

### • DAMAGED TIRES

**CAUTION:** To help avoid personal injury and property damage if a wheel must be changed, obtain expert tire service if you can. If you must remove the wheel without such help, do as follows:

• Take off the tire and rim assembly and install the spare wheel and tire assembly following the instructions in this section.

• Never add air to your tires unless an accurate pressure gauge is also used. Do not put air back in a tire that has been run flat, or is seriously low on air, without first having the tire taken off the wheel and the tire checked for damage. In choosing the right tire pressure, be careful not to go past the maximum pressure capability shown on the tire.

### • TOOLS FOR CHANGING A FLAT TIRE

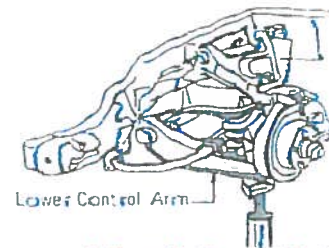
- 1) 6 ton hydraulic jack
- 2) Proper sized lug-wrench with two foot breaker bar handle
- 3) Torque wrench with at least 500 lb./ft. capacity.
- 4) Wheel blocks
- 5) Wheel chocks

**WARNING:** Never crawl under motor home when the vehicle is suspended by the jack.

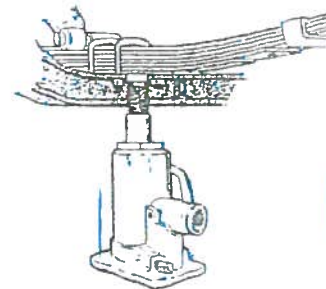
Consult the operator's manual for more information on changing a flat tire.

### • CHANGING FRONT WHEEL

- 1) Be sure the motor home is on a smooth, firm, level surface.
- 2) To provide clearance for the jack, carefully drive the flat tire up on the wheel chock.
- 3) Turn off the engine. Place the transmission selector in Park and set the park brake.
- 4) Scotch the front and back wheels on the opposite side of the flat tire so the vehicle cannot move.
- 5) On soft surfaces, use a board beneath the jack.
- 6) On a Chevrolet chassis, slide the jack under the front lower control arm. On a Ford or Oshkosh chassis, slide the jack under the leaf spring. Turn the extension screw until it touches either the control arm or leaf spring. See illustrations below.
- 7) Operate the jack until the jack is firmly in position. Do not lift tire off the ground.

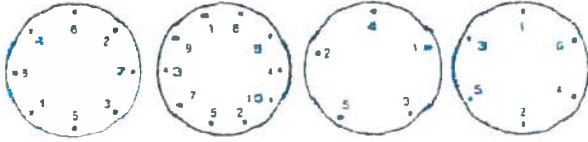


JACK POSITION - FRONT AXLE



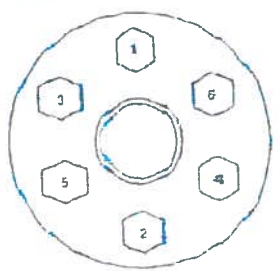
- 8) Loosen all the wheel nuts, but do not remove.
- 9) Operate the jack until the tire clears the ground.
- 10) Remove wheel nuts and wheel. Put spare on Lugs
- 11) Replace wheel nuts. Tighten wheel nuts snugly, not completely.

- 12) Lower the tire back to the ground not allowing the full weight of the vehicle to rest on the tire.
- 13) Tighten the wheel nuts as shown in the following diagram.



Tighten in two steps:  
 1. 155 ft./lbs.    2. 175 ft./lbs.

- a) Lug nuts must be retightened to proper torque specifications at 50 miles (80 km) and then at 500 miles (800 km) of new vehicle operation and at the intervals specified in the Maintenance Schedule.
- b) Also retighten to proper torque specifications at 50 miles (80 km) and then at 500 miles (800 km) after (1) any wheel change or (2) any other time the wheel lug nuts have been loosened.
- c) Tighten lug nuts in the proper sequence, as illustrated, to 450 - 500 lb-ft (610-678N-m).
- d) Failure to retighten wheel lug nuts as required could allow wheels to come off while the vehicle is in motion, causing loss of control and possible collision.



- 14) Again, check the tightness of the wheel nuts every 20 miles until you can reach a professional. Have the professional check the torque and tire pressure before continuing.

### • CHANGING A REAR WHEEL

(If only one of the dual tires goes flat, you may drive the RV to a tire service station if it is within 5 miles.

**Note:** check the tire often and do not exceed speeds of 25 mph.)

- 1) Be sure the motor home is on a smooth, firm and level surface.
- 2) Turn off engine, place transmission selector in Park and set the park brake.
- 3) Scotch the front and rear wheels on the opposite side of the flat tire so the vehicle cannot move.
- 4) On soft surfaces, use a board beneath the jack.
- 5) Position the jack as shown in the illustration. Screw the extension out until it touches the torsion bar hanger. Never get under the vehicle while positioning the jack.
- 6) Raise the jack until it is firmly positioned against the torsion bar, but don't lift the tire off the ground.
- 7) Loosen, but don't remove the wheel nuts.
- 8) Raise the vehicle until the tire clears the ground.
- 9) Remove wheel nuts and wheel. Wheel nuts on both wheels could be loose, so be sure nuts are tight on both wheels after replacing the damaged tire.
- 10) When replacing the outside dual, see that dual wheels line up properly. An alignment stud and hole are machined in the wheel mounting flange. If they are aligned, the wheel is properly lined up.
- 11) Replace wheel nuts. Tighten the nuts snugly.
- 12) Apply the proper amount of torque. Dual wheel nuts must be completely tightened with both wheels off the ground.
- 13) Seek a tire professional to check the torque on the wheel and the tire pressure.

## TOWING

Before towing your RV, please carefully read lifting instructions.

**WARNING:** Never lift the motor home by the front bumper. Damage to the fiberglass cab is possible.

The towing company can block down from the frame so there is no pressure on the front bumper. The bumper cannot support the weight of the motor home.

Never allow any person under the motor home while it is supported by the towing vehicle.

The front suspension is not strong enough for the motor home to be towed from the rear. Always lift the

motor home from the front so the motor home will be supported by the rear dual tires. If the rear axle or tires are damaged, place the motor home on a flat bed trailer to transport.

**NOTE:** See chassis manual for more towing information.

Before towing, place the transmission in neutral and do not exceed speeds of 35 mph and a distance of 50 miles. If you must exceed this speed and distance, you must disconnect the drive shaft. Never tow in excess of 50 mph with the driveshaft disconnected.

**WARNING:** Do not allow any person to ride in the towed vehicle.

# ENTRANCE STEPS

## • MANUAL ENTRANCE STEP

Beneath the passenger side entrance door is either a single or double sliding step. You can extend the step(s) by sliding out and letting down completely. Reverse to retract.

## • POWER ENTRANCE STEP

The optional power entrance step has a switch located in the doorway. It can be left in the "on" position, and will work automatically when the door is opened or closed.

# STORAGE AND CONVENIENCE FEATURES

## • LOCKS

Entrance door lock, deadbolt lock and driver's door lock are all keyed differently. Compartment doors are all keyed alike, except for the power cord door.

## • EMERGENCY EXIT

The rear window is your emergency exit. You will notice two red tabs located at the bottom of the window. Pull the red tabs completely out, and remove the rubber insert from around the window. Push firmly at the base of the window. The entire window should fall out. This exit is to be used when all doors are blocked in an emergency situation.

## • EXTERIOR STORAGE

Exterior compartments are located all around the motor home for storage of items you do not wish to keep inside the RV. Many of these compartments are large enough to carry an excessive amount of cargo. It is very important not to overload the compartments with heavy items. Also, distribute the cargo equally, as best you can, throughout the RV.

Your exterior storage compartments are not designed to be 100% watertight. Therefore, items which must not become damp should be stored inside the RV.

**WARNING:** Do not store flammable or combustible liquids in the storage compartments of the RV.

## • INTERIOR STORAGE

Overhead cabinets, closets and drawers are all designed for interior storage. Drawers in the RV are notched to prevent accidental opening while traveling. To open, lift up and pull.

When loading the interior of your motor home, distribute weight equally throughout the RV.

## • DINETTE CONVERSION

To convert the dinette into a bed:

- A) Remove all cushions.
- B) Remove leg(s) from table.
- C) Lower table top to the dinette frame to create the bed base.
- D) Replace all cushions in the dinette to form a bed.

## • SOFA CONVERSION

To convert the sofa into a bed:

- A) Remove cushions.
- B) Lift the seat portion of sofa up until the release mechanism is engaged.
- C) Slowly lower the seat portion back down. The sofa should now be converted to a bed.
- D) Repeat these same steps to convert back into a sofa.

## • INTERIOR LIGHTING

All of the lighting inside of the RV consists of 12 VDC fixtures. 110 VAC bulbs will not operate in these fixtures. A slide switch selects either single or dual brightness. Lenses can be cleaned in soapy water.

## • OVERHEAD VENTS

14" x 14" roof vents are located throughout your RV. These vents allow passage of hot, stuffy air out of the motor home and allow fresh air to enter.

*Note:* When traveling be sure vents are completely closed. Lubricate vent mechanism yearly.

# EFFECTS OF PROLONGED OCCUPANCY

If you plan to use your motor home for extended periods of time, be prepared to deal with excess moisture and condensation inside your RV.

This build up of moisture is due to breathing, cooking, bathing and washing. The only way to reduce the

moisture is by opening roof vents to allow moisture to escape or using a dehumidifier. When dehumidifying your RV, open closets and cabinets as moisture can build-up in these closed small spaces, causing mildew.

## FIRE SAFETY

Fire is always a possibility when using a recreational vehicle. Cooking, wiring, fuel and other elements can cause a fire to start in your RV. Therefore, always be aware of the danger and threat of fire.

If you are cooking, never leave stove or oven unattended. Make sure you know where the fire extinguisher is located and how to use it.

If you experience a fire while traveling, carefully stop the RV and exit as quickly as possible. See Emergency Exit on page 8.

### • SMOKE DETECTOR

Your RV has a smoke detector installed from the factory. Please check the battery before each trip you make in the RV.

## FRESH WATER SYSTEM

Two sources of water are available for use: city water and stored water.

The connection for city water is located on the outside of the RV and has a standard garden hose fitting. When connected, this system will supply water pressure without using the water pump.

An onboard storage for water is also available. This water storage tank can be filled by a water gravity inlet located near the city water inlet, or can be filled by turning a manual valve next to the water tank while connected to city water. When using the latter method, watch the tank closely and avoid overfilling.

The first time you use the fresh water storage tank, it should be filled with water and drained. An odor of plastic may be present in the water from the tank and water lines. This is harmless, however, water tank fresheners are available at your RV supply store to correct this problem.

### • EXTERIOR SHOWER (OPTIONAL)

An exterior shower may be located inside the water tank compartment. This shower is operated by pressure from the water pump or city water pressure.

### • WATER PUMP

Your RV is supplied with a demand system water pump. When you are not connected to city water, turn the water pump on for running water. When the faucets are on the water pump will automatically operate. When the faucets are turned off, the pump will automatically stop.

A switch on the monitor panel supplies 12 vDC electricity to the water pump.

### • MONITOR PANEL

The monitor panel allows you to instantaneously check the condition of the house batteries and fluid levels of black, gray and fresh water. The monitor panel is located on the range hood.

Press the button labeled "Monitor." Lights will indicate the present level of fluid in each tank and the condition of your house batteries.

The "E" or empty indicator light will always be on when the monitor button is depressed. If the tank is full, all lights will be on. Lights are sequential, and indicate levels in approximate  $\frac{1}{3}$  tank increments. If the tank is approximately  $\frac{2}{3}$  full, for example, lights "E," " $\frac{1}{3}$ ," and " $\frac{2}{3}$ " will be on.

To avoid false monitor readings, use biodegradable toilet paper and rinse out your holding tank often.

#### • SANITIZING THE FRESH WATER SYSTEM

You should sanitize your water tank and lines annually. It is simple to do with water and bleach.

Pour ½ cup of household bleach into the potable water tank fill and completely fill the tank with water. Next, drive motor home forward and backward a couple of times to move mixture around inside the tank. Turn water pump on and open all faucets to allow water into the lines. Let this sit for three hours. Drain water tank. Connect system to city water and flush the system for several minutes.

#### • WATER SYSTEM LEAKS

With "today's" water lines, leaks are no longer a major problem. However, they still sometimes can occur from the twisting and vibration from an RV. If you experience a leak in your water lines, you should take the RV to your local dealer, who will have proper crimping equipment required to repair leaking water lines.

#### • WATER PRESSURE

Excessive water pressure can cause damage to water lines and faucets. Therefore, water pressure should be regulated from 40 to 50 psi before entering the city water inlet. This can be done by placing a small portable regulator on the potable fill hose.

#### • WATER PUMP TROUBLE SHOOTING

If the water pump fails to operate, the first thing to check is the on/off switch located on the monitor panel. Check the condition of the house batteries. 12 vDC must be present to operate the pump. Check the fuse located on the electrical converter panel. If it needs replacing, do not replace with a fuse larger than 15 amps. Check wiring connected to the pump. In cold weather, if pump is frozen, thaw with a light bulb placed near the pump.

##### • Pump Motor Runs, Won't Pump Water

Check water level in water tank. Check filter, as it could be clogged, restricting flow of water. Check water lines coming in and out of the water pump making sure there are no kinked lines.

##### • Pump Runs, Water Sputters

After filling the water tank, this will be normal due to air in the water lines. Sputtering can also be caused by a near empty water tank.

##### • Pump Cycles On and Off When Faucets are Closed

Check that all faucets are closed tightly. Next, check for leaks in the water lines. Otherwise, there may be an internal leak in the pump.

##### • Pump Will Not Turn Off

This problem can be caused by an empty or near empty water tank. If that is not the problem, check for low batteries. Otherwise, the internal switch in the pump could be stuck.

## THE WASTE WATER SYSTEM

The waste water system consists of a "Black Water Tank", "Grey Water Tank", vent lines, toilet, shower, tub and plumbing drain. This system allows the RV to be fully self contained without the need of being connected to external sources. A flexible sewer hose is required for emptying holding tanks in approved waste dump stations.

Your motor home is equipped with a marine-type toilet. This toilet has a foot pedal for flushing and filling with water. To flush, depress both pedals located at the base of the toilet.

#### • CLEANING TOILET

Do not use household cleaners with abrasives or high acid content. Use a high grade non-abrasive cleaner.

#### • TOILET TROUBLESHOOTING

If water continues to run after flushing the toilet, check the valve blade and grooves for foreign matter that may hinder the closing of the valve blade.

If carpet is wet around toilet, check water connection at the water valve.

#### • EMPTYING HOLDING TANKS

The Black and Grey water holding tanks each have their own termination valve. These valves are joined together to permit dumping separately or together. The Grey tank has an 1½" valve and the Black tank has a 3" valve. These valves should always be closed and termination cap in place when not dumping.



**To dump:** You must have a flexible sewer hose with a 3" adapter to join the termination point of the dump valve. Place bare end of sewer hose into the sewer outlet and attach adapter to termination point. Slowly slide the 3" valve open. Then slowly open 1 1/2" valve. When the two tanks are emptied, go inside the motor home and flush clean water through the toilet and sink. Close both valves and remove sewer hose. Rinse out the sewer hose.

**WARNING:** Holding tank must be dumped only at approved dump stations. While camping at facilities where each site has it's own dump station, you should not leave termination valve on the black water tank open continually. Allow 3/4 of a tank to build up and then empty the tank.

Approved holding tank chemicals are good for breaking up solid waste and maintaining fresh smelling holding tanks.

#### • WINTERIZING WATER SYSTEM

If your motor home is to be stored in temperatures below freezing, the water system should be drained and winterized.

- 1) Open the valve between the water pump and water tank. This will drain the fresh water tank.

- 2) Open the cold water faucet and turn the water pump on until all water is pumped out of the lines. Leave faucet open.
- 3) Open the cold and hot water faucets and drain valves to drain both the hot and cold lines. (Located in the water utility compartment.)
- 4) Open the outside door of the water heater. Near the bottom of the heater is the drain plug. Remove the plug to drain water heater.
- 5) Flush the remaining water in the toilet.
- 6) After all the fresh water lines and tank have been drained, close the water line drain valves.
- 7) Drain both holding tanks.

**CAUTION:** Draining water system is not adequate protection from cold weather. RV antifreeze should be pumped into the fresh water lines to provide protection from extreme cold.

**WARNING:** Never use automotive antifreeze or any other antifreeze that is not formulated for use in Recreation Vehicles. Antifreeze must be NON-TOXIC.

## ELECTRICAL SYSTEMS

The electrical system in your motor home complies with all regulations, codes and standards in existence at the time the motor home was built.

#### • CHASSIS ELECTRICAL SYSTEM

This system includes turn signals, headlights, tail lights, heater, air conditioner, instruments, ignition system, vehicle battery, and charging system.

#### • CHASSIS FUSES

12 volt fuses for the chassis are located in a fuse block beneath the dash. Other 12 volt fuses can be found in the electrical breaker and fuse panel.

#### • 12 VOLT COACH SYSTEM

All lighting, vents, fans and motors operate off of 12 vDC current. 12 vDC power is supplied from two 120 amp deep cell batteries on Class A motor homes and one deep cell battery on Class C motor homes. These batteries remain charged by an AC/DC power converter.

**WARNING:** Always replace 12 volt fuses and breakers with the same size as the original fuse or breaker.

#### • COACH BATTERIES

These batteries operate the living area of your RV. While the Chassis engine is in operation, the alternator will charge the coach batteries allowing you to use 12 vDC lights and outlets while traveling.

Condition of the house batteries can be checked on the monitor panel, located on the range hood. Press "Battery" button on the panel. Condition of battery will light up on the monitor.

**WARNING:** Disconnect all power sources from the RV while working on the electrical system. Disconnect the positive terminal from the coach batteries while working on the 12 vDC wiring or appliances.

**WARNING:** Before working around the batteries, remove all jewelry and metal objects. Do not touch the battery post with any metal object as explosion and fire may result.

**WARNING:** Always wear eye protection when working with batteries and avoid contact of battery acid with skin. Do not allow battery acid to contact clothing, paint or any surface.

#### • BATTERY MAINTENANCE

Check batteries often, making sure they contain plenty of water and are free of corrosion and dirt. To remove corrosion, use baking soda and water. Wet the terminals and corrosion area, apply ample amount of baking soda. Rinse corrosion and baking soda with water. Spray terminals with a plastic ignition spray to protect terminals from corrosion.

#### • BATTERY CHARGING

If for any reason you must charge the batteries of your motor home from an external charging system, observe the following precautions:

**WARNING:** Do not allow sparks or open flames to contact the battery. Do not allow battery acid to contact eyes, skin, clothing or painted surfaces.

- 1) Do not smoke near the batteries.
- 2) Do not allow charger to be plugged into a power source while connecting and disconnecting cable leads from the battery charger. Do not break live circuits at the terminals of the battery.
- 3) Before charging, fill each battery cell with distilled water.
- 4) Remove vent caps before charging and charge slowly.

#### • SELECTING A REPLACEMENT BATTERY

A replacement battery should be the same size and have the same specifications as the original battery.

#### • A/C ELECTRICAL SYSTEM

This system provides electrical service to air conditioners, microwave and other 120 vAC electrical appli-

ances. This power is carried to the motor home through either a 30 amp or 50 amp heavy duty electrical power cord. The cord is weather proof and should never be altered in any way. If you use an adapter to plug the cord into shore power, be sure the ground is in tact.

**WARNING:** Never operate the 120vAC electrical system without a proper ground.

#### • POWER CONVERTER

The power converter is designed to maintain fully charged batteries while connected to 120vAC. When you are using 12vDC appliances and light fixtures, the power converter will automatically charge the 12vDC system. Once the batteries are fully charged, the power converter will decline to only a trickle charge. If the motor home is not to be used for more than 10 days, disconnect the batteries.

#### • GROUND FAULT INTERRUPTER

A ground fault interrupter is provided in the bathroom and outside wall of your motor home. The purpose of this device is to protect you from the hazards of line to ground electric faults and electrical leakage when using appliances. If the GFI is tripped, the entire circuit will not work. A reset button in the center of the receptacle must be pushed in order to restore power to the circuit.

The GFI does not prevent electric shock, nor does it protect you from coming into contact with both the "hot" and neutral sides of the circuit. The GFI must be tested once a month. To test: Press the test button. The reset button should pop out, indicating the protected circuit has been disconnected. If the reset button does not pop out, do not use the circuit until it can be checked by a certified electrician. Press the reset button to restore power.

**NOTE:** If the patio outlet, bathroom outlet or regular receptacles in the hallway fail to work, push the reset button on the GFI. If the GFI continues to trip, have it checked by a qualified electrician.

## TV ANTENNA

Your RV is equipped with a TV antenna mounted on the roof. This antenna is designed for the reception of VHF and UHF TV signals.

Operating instructions are included in your owner's information package. Never travel with the antenna in the up position. Before leaving, always be sure the antenna has been lowered.

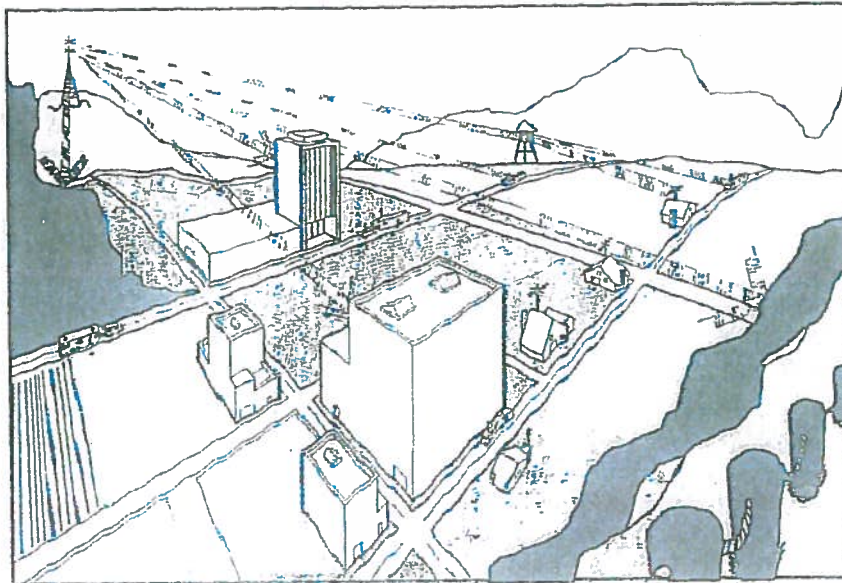
## TV "GHOSTS" AND FM "FLUTTER"

The television and radio systems in your motor home have been chosen to provide good performance under many varied signal conditions. Occasionally, though, you may experience "ghosts" on TV, or "flutter" when listening to FM broadcasts. In many cases, multipath distortion is responsible for these phenomena.

Both television and FM signals are broadcast at very high frequencies—from 50 million cycles per second up to the microwave region. These signals are easily reflected by buildings, hills, towers, aircraft, and even other vehicles. Consequently, at any location, a TV or FM signal could be occurring at your antenna from not only the broadcast tower, but also via several different reflected paths. In some cases, a reflected signal could be an advantage—you may be situated in the shadow of a hill or mountain and the only signal you can receive is a reflected one.

Television and FM signals are exceedingly complex. When mixed with reflections of themselves, their complexity increases even more. Phase cancellations and beat-frequency components add up to cause the interference associated with multipath distortion. This type of distortion is compounded by the fact that your vehicle may be moving, causing an infinite series of direct and reflected signals. The fault is normally not with your receiver, although receivers with inadequate multipath compensation circuitry may compound the problem. Neither is your antenna usually at fault. The idea that antennas, whether amplified or unamplified, "pull-in" a signal is a popular misconception. An antenna does not pull a signal out of the air by virtue of its "power." The antenna only responds to signals present at the antenna elements. A good antenna design can improve the rejection of multipath signals, though.

Since the distance from the broadcast tower is critical to reception clarity, remember that TV and FM signals have a range of only about 75 miles under the best atmospheric and geographic conditions. The good reception you get at parks located at great distances from broadcast facilities is probably the result of satellite, microwave, or other cable distribution systems. The antenna on your RV is no competition for these very expensive installations. The very best RV antenna systems compromise performance and efficiency for light weight and compactness. The amplifiers used in these systems attempt to overcome these compromises by presenting a reasonably good sig-



nal to the TV or FM radio terminals. But these antennas have a usable range of only about 50 miles under the best of condition. Beyond that distance, or in marginal conditions, antenna performance falls off rapidly. In that case, the amplifier only amplifies the noise, or "snow" being picked up by the antenna elements.

### *Minimizing Multipath Distortion and Improving Signal Quality*

There is obviously very little you can do about geography while you travel—except to enjoy it. But if multipath distortion becomes a nuisance, try these tips:

- Re-orient the receiving antenna. Sometimes turning the antenna will pick up the stronger of either the direct or reflected signal. Try turning or rotating the antenna through its range. You may find your signal in a very unexpected direction.
- With FM stereo signals, switch the unit to MONO, if possible. Some of the phase and noise components of a stereo signal will disappear in MONO mode.
- Reduce the treble setting to reduce background noise. Although not yielding the best high-frequency performance, at least you may be able to reduce the irritation of the distortion.

### **GENERATOR POWER PLANT**

Your motor home may be equipped with a gasoline powered generator which will provide complete electrical self-containment when regular public utility AC power is unavailable. Controls are at the generator and at a remote control panel located inside the motor home.

The 120-volt output of the generator is connected directly to an automatic change-over switch. With the generator power plant operating, power is available at all of

the 120-volt power outlets in the motor home, just as if the cord were connected to an external source. Gasoline for the generator is taken from the main fuel tank through a special feeder tube which is higher in the tank than the feeder tube to the motor home. This arrangement prevents the generator from running the motor home fuel tank dry.

**NOTE:** Refer to your Generator Power Plant Manufacturer's Instruction Manual (provided in your Owner's Information Package) for service information before starting the generator. Do not start unit with a heavy power load. Always wait at least three minutes after starting generator before turning on (or plugging in) heavy electrical loads, such as the roof air conditioner.

To start the generator, hold the switch in the START position until the unit starts, then release the switch. If the unit is slow to start, DO NOT hold the switch in the START position for more than 10 seconds. Release the switch, wait 15 seconds, then repeat. This will help avoid overheating and damaging the generator starting system. If this system fails to start the generator, manual starting instructions are discussed in the generator power plant manufacturer's instructions. To stop the unit, hold switch to the STOP position until the engine stops. Be sure to hold it until the engine stops. If you release the switch too soon, the engine will continue to run.

#### *Generator Operating Safety Precautions*

- Read and understand the generator operating, maintenance and safety instructions furnished in your Owner's Information Package.
- Do not smoke or use an open flame near the generator unit or fuel tank.

**WARNING: DO NOT BLOCK THE GENERATOR VENTILATING AIR INLETS OR OUTLETS. THE AIR-COOLED ENGINE REQUIRES A CONSTANT SUPPLY OF COOLING AIR. RESTRICTED VENTILATING AIR INLETS OR OUTLETS CAN CAUSE ENGINE FAILURE OR FIRE FROM ENGINE OVERHEATING.**

- Do not use generator ventilating air for heating any interior living space. Ventilating air can contain high concentrations of lethal gases.

**WARNING: DO NOT PLACE FLAMMABLE MATERIAL OR STORE ANY OTHER MATERIALS IN THE GENERATOR COMPARTMENT.**

- Check engine fuel lines often. Fuel leakage in or around the compartment is an extreme fire hazard. Do not use the generator until fuel leaks are repaired.

**WARNING: EXHAUST GASES ARE DEADLY. INSPECT THE GENERATOR EXHAUST SYSTEM THOROUGHLY BEFORE STARTING THE GENERATOR ENGINE. DO NOT BLOCK THE TAIL PIPE OR SITUATE THE MOTOR HOME IN A PLACE WHERE THE EXHAUST GASES HAVE ANY POSSIBILITY OF ACCUMULATING EITHER OUTSIDE, UNDERNEATH, OR INSIDE YOUR VEHICLE OR ANY NEARBY VEHICLES. OUTSIDE AIR MOVEMENTS CAN CARRY EXHAUST GASES INSIDE THE VEHICLE THROUGH WINDOWS OR OTHER OPENINGS REMOTE FROM THE GENERATOR EXHAUST. OPERATE THE GENERATOR ONLY WHEN SAFE DISPERSION OF EXHAUST GASES CAN BE ASSURED, AND MONITOR OUTSIDE CONDITIONS TO BE SURE THAT EXHAUST GASES CONTINUE TO BE DISPERSED SAFELY.**

- Be aware of exhaust gas (carbon monoxide) poisoning symptoms:
  - Inability to think coherently Dizziness
  - Vomiting
  - Intense headache
  - Muscular twitching Weakness and sleepiness Throbbing in temples
- If symptoms indicate the possibility of carbon monoxide poisoning, turn off the generator immediately, get out into fresh air at once, and summon medical assistance.

**WARNING: DO NOT UNDER ANY CIRCUMSTANCES OPERATE THE GENERATOR WHILE SLEEPING. YOU WOULD NOT BE ABLE TO MONITOR OUTSIDE CONDITIONS TO ASSURE THAT GENERATOR EXHAUST DOES NOT ENTER THE INTERIOR, AND YOU WOULD NOT BE ALERT TO EXHAUST ODORS OR SYMPTOMS OF CARBON MONOXIDE POISONING.**

- Check the generator exhaust system after every 8 hours of operation and whenever the system may have been damaged, and repair any leaks or obstructions before further operation.

**WARNING: DO NOT OPERATE THE GENERATOR WHEN PARKED IN OR NEAR HIGH GRASS OR BRUSH, EXHAUST HEAT MAY CAUSE A FIRE.**

- Do not modify the generator installation or exhaust system in any way without first consulting both the generator and RV manufacturers.
- Disconnect the generator starting battery before performing any maintenance on the generator.
- Allow the generator to cool sufficiently before performing any maintenance on the generator.
- Do not use the generator as an emergency power source to a general residential or industrial utility line.

### Warm Weather Operation

When operating the generator system in temperatures above 75 degrees F:

- Keep cooling fans clean and free of obstructions.
- Be sure air flow to and from the generator set is unobstructed.
- Use proper grade and weight oil. See generator operating manual.
- Check oil level each 8 hours of operation.
- Use lead-free, regular grade gasoline. See operating manual.
- Keep the generator and compartment clean and uncluttered.
- Be sure ignition timing is properly adjusted. See operating manual.

### Cold Weather Operation

When operating the generator system in temperatures below 30 degrees F:

- Use proper grade and weight oil for cold temperature operation. See generator operating manual.
- Use intake air preheater (if equipped) in temperatures below 40 degrees F. See operating manual.
- Change oil only when the engine is warm, and after the exhaust system has cooled.
- Keep the fuel system clean. Check fuel filters.
- Be sure fuel is fresh and water free.
- Be sure batteries used in the system are fully charged at all times.

### Preparation For Storage

If the motor home will be stored for more than 30 days, the following procedures will help prevent generator engine or electrical component damage during the storage period. Also see "Preparation For Long Term Storage" section of this manual.

- Run the generator until it reaches normal operating temperatures.
- Turn off fuel supply and run engine until it stops.
- Disconnect battery cable or otherwise disable starting circuit.
- Drain oil from warm engine.
- Refill engine crankcase with fresh oil and change oil filter. Use a grade and weight appropriate for your next operating season temperature range. See generator operating manual. Attach reminder tag with weight and grade.
- Remove spark plug(s). Place corrosion inhibitor oil in cylinder(s). Rotate crankcase a few times. Reinstall spark plug(s).
- Service air cleaner as outlined in operating manual.
- Clean governor linkage and cover with clean cloth.
- Plug exhaust outlet.

- Wipe off entire unit. Coat rustable parts with light oil or grease.
- Remove batteries. See "Preparation For Long Term Storage."

### Reactivating Generator System After Long Term Storage

- Remove all covers and protective wrappings.
- Wipe off oil or grease from exposed engine pads.
- Remove plug from exhaust outlet.
- Visually inspect unit for damage, insect or animal intrusion. Be sure carburetor and governor linkages are free.
- Check oil tag to be sure oil of the proper grade and weight is in crankcase. Check oil level.
- Remove spark plug(s), clean and gap (see operating manual). Turn the engine over by hand several times. Reinstall spark plug(s).
- Install batteries. Be sure the batteries are fully charged. Observe proper polarity. Ground is negative terminal.
- Remove all load and start generator with the controls at the unit. This initial start may be slow due to oil or rust inhibitor in the cylinders. Excessive smoke and rough operation is normal until the oil or rust inhibitor is burned off.
- Apply a 50% load after the generator runs smoothly. Allow the generator to warm up for one hour with the load connected. Unit is now ready for service.

### Generator Maintenance and Service

The generator system is a complex electromechanical device. Although routine maintenance and service procedures are not beyond the capabilities of most users, some adjustments and service procedures are best performed by authorized generator service facilities. They have the required tools and equipment necessary to keep your generator operating at peak efficiency. If you experience repeated difficulty in starting or signs of incorrect power output or speed voltage fluctuations, refer these problems to an authorized generator service center. You can contact the generator manufacturer for the location of a service facility near you.

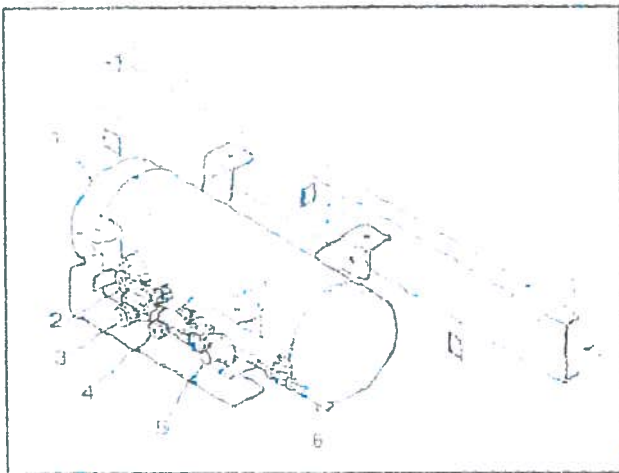
### ELECTRICAL SYSTEM WIRING

Because of the many model, floor plan, and option variations available, it is beyond the scope of this manual to include all wiring diagrams possible. In certain situations, specific wiring diagrams may be available to help troubleshoot a problem. If you need specific wiring information, please contact your dealer. Complete wiring diagrams are not available.

# LIQUID PETROLEUM GAS SYSTEM

Liquefied petroleum (LP) gas is available from an approved storage tank to operate your range, oven, furnace, and water heater, and as an alternate energy source for some refrigerators. With proper handling precautions, LP gas is safe and provides modern conveniences wherever you travel. The LP gas storage tank is mounted on the motor home chassis. It is stored as a liquid under pressure and vaporizes under the control of a pressure regulator.

A typical LP gas tank installation is illustrated below. Although specified details of the system may differ in your motor home, the major components and their relationship will be similar to those shown.



- |                    |                        |
|--------------------|------------------------|
| 1. LP gas tank     | 4. Main shut-off valve |
| 2. Sight gauge     | 5. Regulator assembly  |
| 3. Auto-Stop valve | 6. LPG hose            |

## LP GAS SAFETY PRECAUTIONS

Historically, LP gas is a safe and reliable fuel. As with any other volatile and flammable material, common sense dictates that LP gas be handled and used with respect and caution. Because LP gas systems are so reliable, they are often taken for granted. Neglect can be a very dangerous habit. If the system is maintained regularly, you can expect almost trouble free operation.

**WARNING: LP GAS IS FLAMMABLE AND POTENTIALLY EXPLOSIVE. USE PROPER HANDLING, LIGHTING, AND VENTILATION PROCEDURES.**

1. The distinctive odor of LP gas indicates a leak. **IF YOU SMELL GAS:**
  - Extinguish all open flames, pilot lights and all smoking materials

- Do not touch electrical switches.
  - Shut off the gas supply at the tank valve(s) or gas supply connection.
  - Open all doors, windows, and vents.
  - Leave the area until the odor clears.
  - Have the gas system checked and the cause of the leak corrected before using the system again.
2. Inspect the entire LP gas system for leaks or damaged parts before each trip.
  3. Always be careful when drilling holes or fastening objects to the motor home. The gas supply lines could be punctured by a nail or screw.
  4. Do not restrict access to LP tanks. In an emergency, the tank service valve must be easily accessible. The tank compartment door must always be unlocked.
  5. Do not carry or store filled or empty LP gas containers inside your motor home. LP gas containers are equipped with a safety device that relieves excessive pressure by discharging gas to the atmosphere. Leaks can occur at valves and fittings. Always store LP tanks with the valves closed.
  6. Do not use any LP gas tank other than the one furnished with your motor home without being sure that all connecting components are compatible.
  7. **WARNING: TURN OFF LP GAS MAIN VALVE AND INDIVIDUALLY TURN OFF ALL GAS APPLIANCES OR ELECTRICALLY DISCONNECT AUTOMATIC IGNITION APPLIANCES BEFORE ENTERING AN LP GAS BULK PLANT OR MOTOR FUEL SERVICE STATION.**
  8. **WARNING: DO NOT FILL LP GAS CONTAINERS TO MORE THAN 80% CAPACITY. OVERFILLING CAN RESULT IN UNCONTROLLED GAS FLOW WHICH CAN CAUSE FIRE AND EXPLOSION. A PROPERLY FILLED CONTAINER HOLDS ABOUT 80% OF ITS VOLUME AS LIQUID.**
  9. Never check for leaks with an open flame. Use an approved leak detection solution or a nonammoniated, non-chlorinated soap solution only. If the leak cannot be located, take the unit to an LP gas service representative.
  10. LP gas regulators must always be installed with the diaphragm vent facing downward. Make sure that the regulator vent faces downward and that the cover is kept in place to minimize vent blockage which could result in excessive gas pressure causing fire or explosion.

11. Do not use a wrench or pliers to close the service valve. This valve is designed to be closed leak-tight by hand. If a tool is required to stop a leak, the valve probably needs repair or replacement.
12. Use proper tools to tighten fittings. Don't force, jam or cross-thread fittings. Always check fittings for leaks after tightening.
13. Be sure the tank is securely fastened in its mounting rack before each trip.
14. If you do not have the special tools and training necessary, do not attempt to repair LP gas system components.
15. Always think safety.

## SYSTEM COMPONENTS

### Hoses and Fittings

The hoses used in your LPG system are UL or CGA listed, and are rated to withstand many times the pressures encountered in the system. Although they are designed for efficient and trouble free use, they can deteriorate from the effects of the sun and impurities in the air. The average life of LP hoses is two to three years. Consequently, check the hoses for weather checking or other signs of deterioration every time you have the gas tank filled or serviced. Protect the hoses and other parts of the system from sunlight whenever possible. When you replace hoses, be sure that replacements are properly rated and approved for RV use.

### LP Gas Regulator

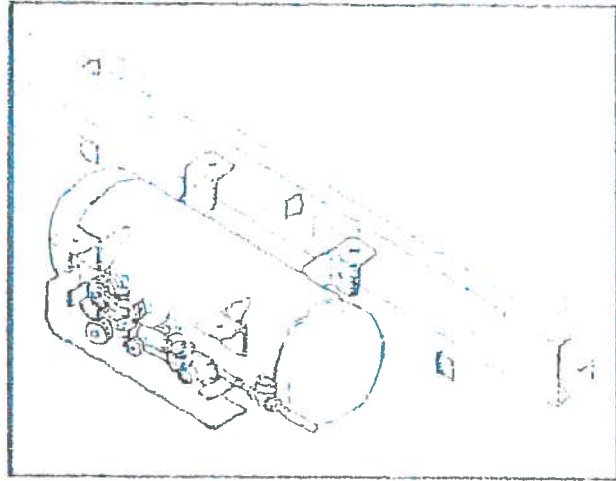
The regulator is the heart of the LP gas system. It works continuously and requires more care and attention than any other part of the system.

Its main job is to reduce the high and varying pressure of the gas from the tank to a low, consistent pressure to serve the appliances in the motor home. Normal tank pressure can range from 250 psi to 7 psi depending on the outside temperature. The regulator smooths out these wide variations and supplies your gas appliances with a steady 6.35 ounces, or 11 inches water column pressure.

It does this smoothing in two stages. The first stage reduces the high pressure to about 10-13 psi. This allows the second stage to be much more efficient and accurate in controlling the pressure to the appliances. This two-stage reduction also helps reduce the likelihood of freeze-up or pilot outage.

Because the regulator is constantly "breathing" it is equipped with a vent. When the diaphragm inside the regulator moves up and down, air is drawn into or expelled from the chamber through this vent. If excess pressure builds up in the regulator, a relief mechanism allows it to escape through the vent. It is therefore very important that the vent is clean and free of obstruction. Clogging from

corrosion, dirt, insect nests, or other debris is the most common cause of regulator malfunction. Even a small piece of material that finds its way into the inlet can result in improper pressures in the system and possible damage to or failure of components. The regulator is mounted so that the vent is facing downward and is protected from freezing road spray and other foreign matter by a water-resistant cover. Be sure the cover is on at all times. If the vent does become clogged, it can be cleaned with a toothbrush.



LP Gas Tank

**WARNING: DO NOT ATTEMPT TO ADJUST THE REGULATOR. IT HAS BEEN PRESET BY THE REGULATOR MANUFACTURER. IF ANY ADJUSTMENT IS REQUIRED, IT MUST BE MADE BY A QUALIFIED LPG SERVICE TECHNICIAN USING SPECIAL EQUIPMENT.**

### USING LP GAS SYSTEM AT LOW TEMPERATURES

Your gas system will function at low temperatures, provided the system components are kept at a temperature above the vapor point of the LP gas. NOTE: Butane vaporizes at about 32°F and propane vaporizes at about 40°F. Choose a type of LP gas which has a boiling point approximately 40°F lower than any temperature you expect to encounter. Ask your LP gas supplier or your motor home dealer for information on product blends available in your area.

LP gas systems can and do freeze up in very cold weather. It is a common misconception that the regulator or the gas itself freezes. Actually, it is the moisture or water vapor that gets trapped in the system or absorbed by the gas that freezes and causes the problem. This ice can build up and partially or totally block the gas supply.

Where does the water come from? From a variety of sources: The gas can be saturated with water when it comes out of the gas plant or refinery unless care is taken to see that it is thoroughly dehydrated; the gas can absorb water while it is transported if the tank cars contain water; the gas storage tanks may have water in them because moist air has been trapped in the tank because a valve was left open.

There are a number of things you can do to prevent freeze up:

1. Be sure the gas tank is totally moisture-free before it is filled.
2. Be sure the tank is not overfilled. This is also a safety consideration.
3. Keep the valve on an empty tank tightly closed.
4. Have the gas tank purged by the LP gas service station if freeze-up occurs.
5. Have the LP service station inject an approved antifreeze or deicer into the tank. Be sure you have the proper gas blend for your traveling area. If you have the proper gas blend, it is very unlikely that the gas is at fault.

If, despite precaution, you do experience freeze up, try melting the ice by warming the regulator using a small light bulb. **DO NOT USE AN OPEN FLAME.** Once flow is restored, make certain that the regulator cover is properly reinstalled to prevent water from entering the regulator which will cause it to freeze again. If the problem persists, ask your LP gas supplier to service the tank or regulator as required.

Aside from the possibilities of freezing during cold temperatures, your LP gas system performance is affected significantly as the temperature drops. The liquid in the tank is, of course, much colder than the air that normally surrounds the tank. The liquid in the tank vaporizes by absorbing heat from the surrounding air. But as the air temperature drops closer to the temperature of the liquid in the tank, the liquid doesn't vaporize as easily. Consequently, the BTU value of the LP drops dramatically.

The following chart shows the reduction in BTU availability of propane gas as the temperature falls:

% FULL	20 lb. Bottle*				
	20°	0°	-5°	-10°	-15°
60%	36,000	18,000	12,750	8,500	4,250
50%	32,400	18,200	12,150	8,100	4,050
40%	28,800	14,400	11,400	7,600	3,800
30%	25,200	12,600	10,450	7,300	3,150
20%	21,600	10,800	8,100	5,400	2,700
10%	18,200	8,100	6,075	4,050	2,025

\*30 lb. Bottle multiply x 1.40

The chart clearly shows how the availability of the gas is reduced at lower temperatures. With this in mind, keep your LP tank as full as possible during cold weather. Check the BTU/hr rating plates on your LP appliances. This information will help you manage your LP gas requirements efficiently.

### FILLING LP GAS TANKS

To fill the chassis-mounted storage tank, drive the vehicle to an LP gas supplier or one of the service stations which sell LP gas.

**WARNING: TURN OFF LP GAS MAIN VALVE BEFORE FILLING LP GAS TANK OR ENTERING AN LP GAS BULK PLANT OR MOTOR FUEL SERVICE STATION. TURN OFF ALL PILOT LIGHTS AND APPLIANCES INDIVIDUALLY BEFORE REFUELING OF MOTOR FUEL TANKS AND/OR PERMANENTLY MOUNTED LP-GAS CONTAINERS. WHEN NOT INDIVIDUALLY TURNED OFF, AUTOMATIC IGNITION APPLIANCES MAY CONTINUE TO SPARK WHEN LP GAS IS TURNED OFF AT THE CONTAINER. DO NOT FILL LP GAS CONTAINERS TO MORE THAN 80% OF CAPACITY.**

### LP GAS SYSTEM LEAK CHECKS

The smell of LP gas (actually, an additive, ethyl mercaptan) indicates a leak. Obvious leak sources are fittings, valves, and couplings.

For your safety, check for leaks in your gas system each time the tank is filled or before each trip. Always check the system any time you detect a garlic-like odor.

To perform a leak check, swab a mixture of a non-ammoniated, non-chlorinated soap solution or an approved leak detection solution over each fitting, joint, and connection in the system. Open the tank service valve. Inspect each joint. If even the smallest bubbles appear at any joint, this joint must be remade. Refer repairs to an authorized Allegro Bay Service Center or your LP gas service facility. Never attempt to repair gas piping without proper tools and know-how.

Potential trouble spots for leaks are areas where piping runs close to chassis and frame members. Look for chafes and cracks around pipe hangers. If you find defects in any LP gas system component, have it repaired or replaced before using the system.

As an added precaution, do a visual check of all exposed piping and fittings after you have arrived at a destination and before you use the LPG system. Travel and road shocks may have caused damage to the system that you will need to repair before using the appliances.

**WARNING: NEVER CHECK FOR LEAKS WITH AN OPEN FLAME. DO NOT CHECK COPPER AND BRASS PLUMBING**



**LINES AND FITTINGS FOR LEAKS USING AMMONIATED OR CHLORINATED HOUSEHOLD TYPE DETERGENTS. THESE CAN CAUSE CRACKS TO FORM ON THE LINE AND BRASS FITTINGS. IF THE LEAK CANNOT BE LOCATED, TAKE THE UNIT TO AN LP GAS SERVICE REPRESENTATIVE.**

Keep the tank valve closed and turn off all appliances if the unit is not being used. **WARNING: DO NOT USE PLIERS OR A WRENCH TO TIGHTEN VALVES. IF A VALVE IS NOT LEAK-TIGHT WHEN CLOSED BY HAND, SEE AN LP GAS SERVICE REPRESENTATIVE.**

LP gas leak detectors are available that sense the presence of LP gas and automatically sound an alarm. You may want to consider this type of device as an accessory

add-on. They are available from most RV accessory distributors.

### **LIGHTING LP GAS APPLIANCES**

Detailed operating information for the LP appliances can be found in your Owner's Information Package. Please read and follow these instructions.

Air trapped in the gas lines may delay the initial lighting of any appliance. It could take several seconds or minutes for the gas to reach the appliance. To purge some of the air from the gas system, first light a burner on the range. The other appliances will then light more quickly.

**ALWAYS FOLLOW THE APPLIANCE MANUFACTURER'S LIGHTING AND OPERATING INSTRUCTIONS.**

# APPLIANCES

The appliances installed in your motor home are tested by independent laboratories and comply with rigid standards established by these organizations. All appliances installed by the manufacturer in your motor home are covered under Tiffin Motor Home's Warranty program. Each appliance is also warranted by its manufacturer, and a warranty registration card for each appliance is included in your Owner's Information Package. Fill out the designated portions of the cards and mail them to the respective appliance manufacturers. Please consult the manufacturer's instructions for additional detailed information.

**WARNING: THE WATER HEATER AND FURNACE COMBUSTION AIR EXHAUST PORTS MAY BE EXTREMELY HOT DURING WATER HEATER AND FURNACE OPERATION. DO NOT TOUCH THESE OUTLETS OR ALLOW ANY MATERIAL TO COME IN CONTACT WITH OR COVER EITHER THE AIR INTAKE OR EXHAUST PORTS WHILE OPERATING THE WATER HEATER AND/OR FURNACE.**

## WATER HEATER

The water heater operates on LP gas, and is much like the one in your home. It contains an automatic shut off valve which stops the gas supply if the water temperature rises too high. The water heater is reached through an access panel on the outside of the motor home. **CAUTION: DO NOT LIGHT WATER HEATER UNTIL IT IS FILLED WITH WATER.** Turn on the hot water faucet at the galley sink. If water flows continuously, the heater is full. For detailed operating instructions, refer to the manufacturer's instruction manual.

Occasionally you may experience "weeping" of the pressure/temperature relief valve on the water heater. This is not a defect. It is caused by the normal expansion of water while it is being heated in the closed water system of your motor home. The water heater tank is designed internally with an air gap at the top of the tank to reduce this weeping phenomenon. In time, though, the heating and expansion of the water will absorb this air. To replace the air, and reduce relief valve weeping:

- Turn off the water heater.
- Turn off incoming water supply.
- Open a faucet in the motor home.
- Pull the handle of the relief valve straight out and let water flow until it stops.
- Release the relief valve handle and let the valve snap shut.

- Turn on the water supply.
- Close the faucet when water flows continuously without sputtering.
- Turn on the water heater.

## Water Heater Bypass System

A water heater bypass system may be installed on your water heater. See the Winterization section of this manual.

## FURNACE

The furnace is a forced-air unit fueled by LP gas. All furnaces are equipped with a wall thermostat for individual temperature settings. The operating manual included in your Owner's Information Package contains detailed operating and maintenance instructions.

**WARNING: PORTABLE FUEL-BURNING APPLIANCES ARE NOT SAFE FOR HEATING INSIDE THE MOTOR HOME. ASPHYXIATION OR CARBON MONOXIDE POISONING CAN OCCUR.**

## RANGE

The gas oven and burners are operated with LP gas. The basic operation is the same as the range in your home. For additional information, please refer to the operating manual in your Owner's Information Package.

A warning label has been located in the cooking area to remind you to provide an adequate supply of fresh air for combustion. Unlike homes, the amount of oxygen is limited in an RV due to the size and construction of the vehicle. Proper ventilation when using the cooking appliances will prevent the dangers of asphyxiation.

**WARNING: DO NOT USE OPEN FLAMES TO WARM THE LIVING AREA. GAS COMBUSTION CONSUMES THE OXYGEN INSIDE THE MOTOR HOME.**

## RANGE EXHAUST HOOD

The exhaust hood allows vapors and cooking odors to escape, and provides a vent for the galley area. Switches for the fan and light are located on the front of the hood. The hood has a grease filter screen which requires periodic cleaning. To clean, remove the screen and wash in soapy water. Rinse with water and let the screen drain dry. The fan blades may also be cleaned with soapy water. Replace the cleaned filter in the exhaust hood.

Replace the light bulb with an equivalent type.

## **AIR CONDITIONER (optional on some models)**

The optional roof-mounted air condition(s) can operate only when the motor home is connected to 120-volt AC power from either a public utility or the generator. Be sure to turn the air conditioner circuit breaker(s) ON.

For best performance, park the motor home in the shade and close curtains. Close doors and windows and turn the temperature control knob for desired coolness. Refer to the air conditioner manufacturer's instructions for detailed operation and preventive maintenance requirements. Remember that air conditioners require a large portion of your available electric power.

## **REFRIGERATOR**

Consult the operating instructions furnished in your Owner's Information Package. Before operating the refrigerator when the motor home is parked, make sure it is level. If it is not level, the refrigerant will not circulate, cooling action will stop, and the refrigeration system may be damaged.

The refrigerator uses the absorption principle of operation. If you plan to cool food or drinks in high outside ambient temperatures, pre-cool the food, and park the motor home with the refrigerator vent door in the shade. Once the interior of the refrigerator is cool, the refrigeration system will usually maintain this temperature. If the inside of the refrigerator is hot, the food is not pre-cooled, and the outside temperature is high, be prepared for longer cooling times.

## **SMOKE DETECTOR**

A battery-powered smoke detector complying with ANSI A119.2/NFPA 501C is mounted on the ceiling in the living/cooking area of your motor home. Please read the smoke detector Owner's Manual for details on testing and caring for this important safety device.

Test the smoke detector after the motor home has been in storage, before each trip, and at least once a week during use. Depress and hold the test button on the cover for up to 20 seconds. The horn should sound a loud alarm. This indicates that the detector is functioning properly. If the horn does not sound, check that the battery is inserted properly and is fresh. If the battery is dead, replace it promptly and re-test the detector.

Twist the cover of the smoke detector counterclockwise to remove it from the wall bracket.

Your smoke detector may be equipped with a "SILENCE" button. This is especially handy for quieting a "nuisance alarm", such as excessive cigarette smoke, hair spray, etc. where a real fire or smoke hazard does not exist.

A "chirp" every 40 seconds indicates the silence mode. Also during the silence mode, the "TEST" function is inactivated for 15 minutes. The unit will automatically reset after 15 minutes, and test function will be restored.

If the smoke detector fails to operate with the new batteries, replace it with a new unit, available through an authorized Allegro Bay dealer.

# MAINTENANCE

Your motor home has been engineered to provide you with many years of trouble free service with a minimum amount of maintenance. This section will familiarize you with the areas of your motor home that require scheduled care. A few minutes spent taking care of your motor home on a regular basis will pay for itself in extended service and will protect your investment. If you are mechanically inclined and regularly perform routine maintenance and repairs on your car or truck, you may want to do the mechanical work on your motor home. If you prefer, your dealer can perform these services for you. His trained personnel will assure that your motor home is maintained and repaired in keeping with original performance expectations.

This section is intended to provide the owner and operator with a general overview of service and maintenance information for the motor home. In addition to providing information for proper maintenance of the motor home, some inspection and diagnostic procedures are included to help detect and identify problem conditions. Detailed service and maintenance information may be found in the chassis operator's manual and chassis manufacturer's service and maintenance manuals, available from the chassis manufacturer.

While the information contained in this section is intended to establish proper maintenance and inspection procedures, there may be times when more detailed diagnostic and repair procedures may be required. Consult your dealer or an authorized Allegro Bay Service Center in these situations.

## LUBRICATION

Various components of the motor home chassis must have the proper lubrication to operate as designed. The lubrication must be done in accordance with the intervals specified in the appropriate Maintenance Schedule for the vehicle. Consult the chassis manufacturer's operator's or maintenance manual for specific information concerning lubricants and lubrication.

## WHEELS AND TIRES

The factory installed tires and wheels are designed to operate satisfactorily with loads up to and including the full rated load capacity when inflated to the recommended inflation pressures.

Correct tire pressures and driving techniques have an important influence on tire life. Heavy cornering, excessively rapid acceleration, and unnecessary sharp braking increase tire wear.

## Tire Inspection and Rotation

Front and rear tires perform different jobs and can wear differently depending on the type of roads driven, individual driving habits, etc. To obtain maximum tire life, inspect tires for wear and damage regularly. If general tread wear indicates only 1/16" between any two adjacent tread ribs, replace the tire. Look for abnormal wear patterns such as cupping or leathering of the tread or rapid wear on either the inside or outside of the tread surface. If these conditions exist, an inflation, bearing adjustment or alignment problem is evident. Replace the tire if cuts, bulges, peeling tread or other signs of damage or failure are evident. Remove stones and other objects lodged in the tread. Be certain to check wheel nut tightness (using a torque wrench) and to adjust the tire pressures, front and rear, after rotation to agree with the recommended pressures. Recheck the torque at 100 and 1,000 miles of operation after wheel installation and once every 6,000 miles thereafter.

Due to their design, radial tires tend to wear faster in the shoulder area particularly in the front positions. This makes regular rotation especially necessary. Consult your dealer or the chassis manufacturer's operator's or maintenance manual for proper tire rotation procedures.

## Inflation Pressure

Tires must be inflated to the maximum cold inflation pressures for the tires when the GVWR or an axle GAWR is reached. Improper tire inflation pressures for the load the vehicle is carrying can adversely affect tire life and vehicle performance. The most common cause of tire failure is improper inflation.

Too low an air pressure can result in tire overloading, abnormal tire wear, adverse vehicle handling, reduced vehicle stability, and reduced fuel economy. The tire flexes more and can build up excessive heat, weakening the tire and increasing susceptibility to damage or failure. Too high an air pressure can result in abnormal wear, harsh vehicle ride, and increased susceptibility to damage from road hazards. Lower inflation pressures should be used only with reduced vehicle loads. After determining the load on each tire by weighing the vehicle on a scale, inflate the tires to the correct cold inflation pressures for the actual tire loads. Refer to the chassis operator's manual for additional information on inflation pressure. Keep an accurate tire gauge in your tool kit. Check tire pressures cold. **DO NOT BLEED AIR OUT OF WARM TIRES.**

## Wheel and Tire Balancing

From the standpoints of tire wear and vehicle ride and handling ease, maintain proper balance of wheel and

tire assemblies. The two types of balancing systems in current use balance wheels either on or off the vehicle. The "on the vehicle" type, however, is the more desirable in that all rolling components (rotating brake components, bearings, seals, etc.) are included in the balancing process. Because of the specialized equipment required, wheel and tire balancing should be performed by a qualified service shop.

### *Tire Replacement*

When replacing tires, be sure to consult your chassis operator's manual for information regarding the proper tire selection. Use of the incorrect size or type tire may affect load carrying capacity, ride, handling, speedometer/odometer calibration, vehicle ground clearance, and tire clearance to the body and chassis. If replacing only a single tire, it should be paired on the same axle with the least worn tire of the others.

**WARNING: DO NOT MIX DIFFERENT TYPES OF TIRES ON THE SAME VEHICLE SUCH AS RADIAL, BIAS, AND BIAS-BELTED TIRES EXCEPT IN EMERGENCIES, BECAUSE VEHICLE HANDLING AND TIRE LIFE MAY BE SERIOUSLY AFFECTED AND MAY RESULT IN LOSS OF CONTROL OR TIRE FAILURE.**

### *ENGINE (Refer to Chassis Operator's Manual)*

Your motor home is equipped with either a 454 CID (Chevrolet chassis) or 460 CID (Oshkosh or Ford chassis) gasoline engine. Refer to the chassis operator's manual for specific fuel recommendations.

### *Engine Oils*

Refer to the chassis operator's manual and vehicle maintenance schedule for the oil type, viscosity and change intervals recommended for the operating conditions encountered.

### **ENGINE FUEL SYSTEMS**

#### *Fuel and Air Filters*

Inspect and replace fuel and air filters according to the chassis manufacturer's Maintenance Schedule.

Inspect and maintain the fuel and emission control systems in accordance with the chassis manufacturer's Maintenance Schedule. Check fuel lines for signs of leakage, damage or deterioration. Tighten clamps if they are loose. Replace filters in the fuel line and the evaporative control system at the recommended intervals.

#### *Air Cleaner Element Replacement*

Replace the air cleaner element according to the chassis manufacturer's maintenance schedule.

### **COOLING SYSTEM**

#### *Maintenance and Inspection*

Check the coolant level, appearance, and strength periodically. Drain and replace at the intervals recommended in the Maintenance Schedule, or sooner if it is dirty. Check hoses regularly for signs of damage or deterioration, and tighten hose clamps if necessary.

Check hoses for cuts or abrasion damage. If the hoses have become hard and brittle and show signs of cracking as a result of engine heat, replace them. Replace hoses if they are soft and spongy, or swollen as a result of exposure to oil and grease. Any flaking or deterioration of the inner lining of the hose is also a reason for replacement. Such particles can clog the cooling system, reducing its efficiency.

Wash the radiator cap with clean water and pressure check every 12 months.

#### *Coolant Level*

The coolant level can be seen in the "see through" recovery bottle while the engine is at normal operating temperature. The radiator cap need not normally be removed.

The coolant level should be at the "Full Cold" mark when the system is cool or at ambient temperature. After the vehicle has been driven sufficiently to obtain normal operating temperatures, the level should be above the "Full Cold" mark.

Remove the radiator cap periodically to observe coolant level in the radiator.

**WARNING: TO HELP AVOID THE DANGER OF BEING BURNED, DO NOT REMOVE THE RADIATOR CAP WHILE THE ENGINE AND RADIATOR ARE STILL HOT. SCALDING FLUID AND STEAM CAN BE BLOWN OUT UNDER PRESSURE IF THE CAP IS TAKEN OFF TOO SOON.**

Maintain coolant levels in the radiator to the top of the filler neck. Be sure the recovery bottle is at its appropriate mark when checking.

Regardless of whether freezing temperatures are expected or not, maintain cooling system protection to at least -34°F, to provide adequate corrosion protection and loss of coolant from boiling.

When adding solution due to loss of coolant for any reason or in areas where temperatures lower than -34°F occur, use a sufficient amount of an ethylene glycol base antifreeze that meets the chassis manufacturer's specification.

- Alcohol or methanol base antifreeze, or plain water, are not recommended for your engine at any time. They will not provide proper protection against corrosion.
- Additives in addition to a good quality ethylene glycol base antifreeze meeting the chassis manufacturer's specification are not required or recommended. Many of the claims for additives are associated with better heat transfer or cooling, but these claims are not supported by test data. In some instances, the ingredients may be incompatible with the recommended coolant. Also, when used alone with water as is sometimes suggested, the additive may not provide the corrosion protection given by the recommended coolant solution.

### Flushing Cooling System

Various methods and equipment may be used to perform this service. If special equipment such as a back flusher is used, follow equipment manufacturer's instructions.

## ENGINE ELECTRICAL

### Jump Starting

**NOTE:** Do not push or tow the vehicle to start. There are no provisions in the automatic transmission for engagement of the transmission to turn over the engine. Efforts to push or tow the vehicle to start it will have no effect.

Both booster and discharged battery should be treated carefully when using jumper cables. Follow the conditions and procedure outlined below, being careful not to cause sparks. Departure from these conditions or procedures could result in serious personal injury (particularly to eyes) or property damage caused by battery explosion, battery acid, or electrical burns; and/or damage to electronic components of either vehicle.

#### CAUTION:

- Be sure the jumper cables and clamps to be used for jump starting do not have loose or missing insulation. Do not proceed if suitable cables are not available.
- If either battery has filler caps, check the fluid level. (Do not check with an open flame.) If low, fill to the proper level with clear drinking water. Replace all caps before jump starting.
- Do not route the cable (or attach the clamp) on or near pulleys, fans, or other parts that will move when the engine is started.

1. Set the parking brake firmly and place the automatic transmission in PARK. Turn off the ignition, turn off lights, and all other electrical loads.
2. Only 12-volt batteries can be used to start the engine. Do not use 24-volt charging equipment. Using such equipment can cause serious damage to the electrical system or electronic parts.
3. Attach the end of one jumper cable to the positive terminal of the booster battery and the other end of the same cable to the positive terminal of the discharged battery. Do not permit vehicles to touch each other as this could cause a ground connection and counteract the benefits of this procedure.
4. Attach one end of the remaining negative cable to the negative terminal of the booster battery, and the other end to a solid ground at least 18 inches from the battery of the vehicle being started. **DO NOT CONNECT DIRECTLY TO THE NEGATIVE TERMINAL OF THE DEAD BATTERY.**
5. Start the engine of the vehicle that is providing the jump start and turn off electrical accessories. Then start the engine in the vehicle with the discharged battery.
6. Reverse these directions exactly when removing the jumper cables. Disconnect the negative cable from the engine that was jump started first.

## TRANSMISSION

### Maintenance and Inspection

Check the automatic transmission fluid level regularly (at each engine oil change) and change it at the intervals recommended in the chassis manufacturer's Maintenance Schedule for your vehicle.

**WARNING: AT NORMAL OPERATING TEMPERATURES, THE DIPSTICK WILL BE EXTREMELY HOT TO THE TOUCH. USE CARE TO AVOID BURNS.**

In addition, check the oil (fluid) cooler lines, electrical lines, vacuum lines, control linkage and transmission periodically for leaks, damage or deterioration.

**NOTE:** Transmission problems can be the result of poor engine performance. If the engine requires a tune-up, this should be done before extensive transmission testing.

## HEATING AND AIR CONDITIONING

The heater/air conditioner system consists of a heater core and evaporator housed in a case which, typically, includes an air inlet, blower motor assembly, air distribution ducts and doors to control the flow of air through the case.

### Inspection

Perform the following checks regularly:

1. Check outer surfaces of radiator and condenser cores to be sure they are not plugged with dirt, leaves or other foreign material. Be sure to check between the condenser and radiator as well as outer surfaces.
2. Check the metal tubing lines to be sure they are free of dents or kinks which can cause a loss of system capacity due to a line restriction.
3. Check the flexible hose lines for brittleness or deterioration which can be the source of a system leak.
4. Check for proper drive-belt tension.

### Air Conditioner Operational Quick Checks

The following checks may indicate if the amount of refrigerant (charge) in the system is low. The ambient temperature should be above 70°F.

**NOTE:** Engagement of the compressor clutch in both of the tests below indicates that the clutch electrical circuit is OK. If the clutch does not engage, then check for a blown fuse, loose connections or damaged or deteriorated wires. If these checks are OK, then the problem may be in the compressor clutch or switch. Take the vehicle to a qualified shop for further testing.

### Troubleshooting the System

Problems of too little or no heat, poor air circulation, or inadequate defrosting action are sometimes encountered with a heater system.

### Electrical Circuit Diagnosis

The blower electrical circuit and motor is OK if the blower operates at all of the designated speeds. If the blower does not work at all, then check for a blown fuse, loose connections, and for damaged or deteriorated wires. If these checks are OK and/or the blower does not operate at all speeds, then the problem may be in the switch, relay or motor. Take the vehicle to a qualified shop for further testing.

### Vacuum System Diagnosis

If the air is not flowing through the proper outlets (doors, dash, or defroster), then there may be a problem in the vacuum system, or with the diverter doors. Check the doors to see that they operate properly and do not bind.

Next check all vacuum hoses and connections between the vacuum source, A/C control and vacuum motors for leaks. If any hoses are damaged or deteriorated, replace them. If the hoses are OK, the problem may be in the control assembly or vacuum motor(s). Take the vehicle to a qualified shop for further testing.

### Refrigeration Section

**WARNING: BECAUSE OF THE NATURE OF REFRIGERANT-12 AND THE HIGH PRESSURES WHICH ARE PRESENT IN THE REFRIGERANT SECTION OF THE SYSTEM, PERSONAL INJURY CAN RESULT IF PROPER DIAGNOSTIC AND SERVICE PROCEDURES ARE NOT FOLLOWED. THEREFORE, REFER ALL SUCH WORK REQUIRED ON THE SYSTEM TO A QUALIFIED SHOP WITH THE NECESSARY TRAINED PERSONNEL AND EQUIPMENT.**

## FRONT SUSPENSION AND ALIGNMENT

The term "front alignment" refers to the angular relationships between the front wheels, the front suspension attaching parts and the ground.

Several factors can affect front alignment, including tire inflation pressures, wheel bearing condition, steering and suspension components. The following checks can indicate problems that should be corrected.

1. Check all tires for proper inflation pressures and approximately the same tread wear.
2. If the unit is equipped with air suspension components, be sure to inspect them according to the literature included in the Owner's Information Package. Be sure to keep them inflated to the recommended pressures.
3. Check front wheel bearings for looseness.
4. Check for looseness of ball joints, tie rod ends and steering relay rods and damper.
5. Check for excessive run-out of wheels and tires.
6. Check for a difference in the ride height between right and left sides of the vehicle.

**NOTE:** Excessive or unevenly distributed loads also affect ride height and alignment. This should be taken into consideration when making the check. Also, if the motor home is equipped with air bag cylinders, it is important that the cylinders be inflated to the proper pressure for the load being carried in order to maintain adequate ride height.

7. Check for steering gear looseness at frame.
8. Check for improperly operating shock absorbers. There may be evidence of a leaking shock(s).

9. Check for loose control arms.
10. Check for loose or missing stabilizer bar attachments.

## **BRAKES**

On Chevrolet chassis, the master cylinder is located under the driver's compartment floor, and is reached through the left front wheel well.

On John Deere chassis, the master cylinder is located near the left front of the transmission between the chassis rails.

Fill the master cylinder with a squeeze bulb or pump. Check and fill the master cylinder according to instructions in the chassis operator's manual.

### **Brake Hose Inspection**

Inspect the flexible hydraulic brake hoses which transmit hydraulic pressure from the steel brake pipe on the frame to the brake assemblies at the wheels regularly in accordance with the chassis manufacturer's Maintenance Schedule. Check for road hazard damage, cracks and chafing of the outer cover, and for leaks and blisters. A light and mirror may be needed for an adequate inspection. If any of the above conditions are observed on any brake hose, have it replaced.

### **Lining Inspection**

Inspect the brake linings per the chassis manufacturer's Maintenance Schedule and any time that the wheels are removed (tire rotation, etc.)

## **DRIVE BELTS AND SPECIFICATIONS.**

Proper care and maintenance of drive belts is an important part of good engine maintenance. Proper belt tension and the condition of the pulley grooves are of primary concern.

Since belts and pulleys wear with use, look to all frictional surface areas for signs of wear. Normal wear can be recognized as even wear, both on the belt and the grooves of the pulley. Even with normal wear, belts will eventually show evidence of cracking. Replace belts before or as soon as cracking becomes evident. Unusual signs of wear indicate some corrective action is necessary.

When checking, remember failed or partially failed belts may have been damaged by a bad pulley, a misaligned drive or by some faulty mechanical component.

Always check the condition of pulleys before replacing belts. Inspect the pulleys for chips, crack, bent sidewalls, rust, corrosion, etc. Replace any defective pulleys.

## **EXTERIOR**

Some exterior parts of your motor home are made of fiberglass. The finish on these pads is durable, but not indestructible. Any material and finish will deteriorate in

time. Exposure to sunlight, moisture, and airborne pollutants can chemically alter the composition of the base and finish materials causing dulling and fading of the finish. Generally, changes in the finish due to weathering are cosmetic — they are on the surface of the part and do not affect its strength. Weathering can take several forms:

- Chalking — The surface finish has broken down into a fine powder. It usually will wash off.
- Fading — The color of the finish has changed. This can be caused by chemicals spilled on the surface, staining it, or by changes in the pigments used in the finish.

The best insurance against these effects is routine maintenance. If the finish is not washed thoroughly and waxed, the surface can deteriorate very rapidly. The following maintenance guidelines can help you reduce these weathering effects:

1. Wash the exterior of the motor home monthly, at least. Wash with a mild soap. Avoid strong alkaline cleaners and abrasives.
2. Wax the exterior aluminum and fiberglass at least once a year — twice if possible — with a wax formulated for fiberglass and aluminum. When waxing, always read and follow the instructions and precautions on the container. Some cleaners and waxes are recommended for use on only certain types of surfaces. Sometimes one pad may weather more rapidly than others. In cases where this has happened, a light rubbing compound may be required. Always follow rubbing compound with a high-quality wax.

### **GENERAL INSTRUCTIONS ON WAXES:**

1. Read the directions on the can.
2. Do not use in direct sunlight.
3. Use clean cloths.
4. Work in a small area, 3' x 3', at a time.

Normally, the harder the wax is in the can, the higher the wax content it has. The softer waxes have a higher proportion of silicones and solvents in them. If a power buffer is used, use a low RPM with light pressure. Keep it moving at all times to prevent heat build up.

### **Scratches, Nicks and Dents**

Scratches occur with normal use. On scratches use the simplest method first. Keep the area that you are working on as small as possible. The first thing to try is a little rubbing compound. This may not completely remove the scratch but may make it hardly noticeable. If rubbing compound does not take it out, then you are forced to go to the wet or dry sandpaper. Again, both these procedures have to be followed by waxing to get the original sheen.



If the scratch has gone all the way through the gel coat, then a repair will have to be done. For instructions on repairs, see our "Repair Guide for Polyesters Reinforced Fiberglass," or contact the manufacturer of the part (Hamilton Plastic Products, Inc., P.O. Box 530, Hamilton, AL 35570, phone 205-921-7858). Repairs can be done easily, if you have the knowledge on how to work with polyesters. A good repair is almost invisible. If done poorly, it will look worse. These repairs should be done by a professional.

### **Painting the Paris**

In cases where there is extensive damage, it may be necessary to paint the fiberglass pad. In all cases, read the paint manufacturer's literature and directions on the cans. Recommendations should be read and followed.

With a little care and maintenance you can keep your fiberglass paris looking like new.

### **Stains**

Staining can generally be caused by two types of substances — water soluble and non-water soluble. Water soluble stains can usually be washed away with water and mild detergents or a fine cleanser. If you use a cleanser powder, first mix it with water forming a runny paste. Start with a small spot, and use light, circular rubbing motion. Follow the washing with wax.

Non-water soluble stains are usually oil-based. Removal of this type of stain may require the use of highly flammable or poisonous solvents. Refer this type of service to your dealer or an authorized Allegro Bay Service Center. Wash the exterior of the motor home as you would your car or truck. Never use strong solvents or harsh abrasives to clean the exterior metal or fiberglass surfaces. A good quality automotive wax-polish will help maintain the finish.

### **Windows, Doors, Vents, & Locks**

Keep moving parts of windows and latches adjusted and maintained. Lubricate the windows with a light oil or powdered graphite at least once a year. Check and tighten the screws holding the windows in place periodically. Check the weather sealant. See SEALANT RENEWAL. Clean screens by gently wiping with a damp cloth or soft lat brush.

Inspect the sealants around doors and windows every three months. See SEALANT RENEWAL.

Lubricate locksets, latches and hinges in entry doors and exterior storage compartments at least annually with powdered graphite. If the motor home is located at a beach or is exposed to salt air, more frequent lubrication may be required. Record the identification number of the keys in the records space provided in this manual. This information will help you get duplicate keys in the event of loss.

### **Sealant Renewal**

The adhesives and sealants used in the construction of your motor home were developed to remain waterproof under sustained effects of weather and vibration. However, even the finest materials will eventually dry out and lose their effectiveness under the constant heat of the sun and attack by other elements. This section outlines the procedures that you must follow to maintain the weather-proof integrity of your motor home. Leak damage caused by neglect to follow these procedures may affect your warranty coverage.

Your dealer can perform the resealing inspection and work for you. He has current information on sealants used in your motor home, and can recommend the appropriate sealants for you if you prefer to do the work yourself. Always use recommended sealants.

### **RUBBER ROOF SYSTEM**

#### **Cleaning**

For normal cleaning, standard household detergents or cleaners may be used. Use any non-abrasive, common household detergent and plenty of water. Be sure to keep the sidewalls wet to reduce streaking.

Very stubborn stains may require solvents or non-water based cleaning agents. Consult your dealer for more information.

#### **Care**

The roof does not require annual coatings or additional sealants. Periodic washing with soap and water is all that is required.

The rubber roof material can be cut by sharp objects. Use caution when loading sharp articles on the roof. If you add accessories or new equipment on the roof, be sure the installer is qualified to work on the rubber roof material. This is required under the terms of the warranty.

Repair kits are available through your dealer. The roof requires special adhesives and material.

Please see your Owner's Information Kit for additional material on the roof system.

**WARNING: RUBBER ROOF MATERIAL IS SLIPPERY WHEN WET.**

### **Door & Window Resealing**

Inspect the sealants around windows and doors at least every three months. If any of the following defects are evident during inspection, the affected areas must be resealed.

- Excessive amount of sealant protruding from joints
- Sealant cracked or peeling
- Voids in sealant

**NOTE:** Do not seal the bottom flanges of windows and doors. Two sealant voids have been intentionally left in the bottom flange sealant to provide exterior drainage in the event of leakage.

If you find any of the above defects:

1. Use a plastic scraper to remove excess sealant.
2. Clean all areas to be resealed with mineral spirits and clean rags. **WARNING: MINERAL SPIRITS IS A FLAMMABLE LIQUID. USE EXTREME CARE WHEN HANDLING AND USING. DO NOT EXPOSE TO OPEN FLAME, SPARKS, OR SMOKING MATERIALS. DO NOT USE IN UN-VENTILATED AREAS.**

Make sure that all areas to be resealed are absolutely dry before new sealant is applied.

## **INTERIOR**

### ***Upholstery & Drapes***

Professionally clean only. Frequent vacuuming or light brushing between cleanings will help prevent accu-

mulation of dirt and grime. Use of a water-based or detergent based cleaners may cause shrinking or other fabric damage. Water stains may become permanent. **WARNING: DO NOT USE LACQUER THINNER, NAIL POLISH REMOVER, CARBON TETRACHLORIDE, SPOT REMOVER, GASOLINE, OR NAPHTHA FOR ANY CLEANING PURPOSE. THESE PRODUCTS MAY CAUSE DAMAGE TO THE MATERIAL BEING CLEANED, AND MAY BE HIGHLY FLAMMABLE OR POISONOUS.**

### ***Wall and Ceiling Panels***

The paneling and the ceiling of your motor home may be any of several finishes and textures. Never use harsh detergents or abrasive cleaners on walls or ceilings. Most surfaces will clean with a soft cloth moistened with mild liquid detergent in warm water. Do not use large amounts of water which could saturate the material.

### ***Carpeting***

Vacuum carpeting regularly, and clean it with a quality carpet cleaner.

# PREPARING THE MOTOR HOME FOR LONG-TERM STORAGE

## STORAGE CHECK LIST

The following check lists will help you perform the steps necessary to prepare your motor home for storage. Storage conditions vary, and several check lists are provided: a) Short-term Storage Above Freezing, b) Long-term Storage Above Freezing, c) Winter Storage Below Freezing. Use the check list that applies to the storage conditions you anticipate. These check lists can not include every detail required and you may want to expand them to suit your needs.

### *Short-term Storage (less than 60 days) Above Freezing*

- Wash the motor home exterior and underside. Hose off accumulations of mud and road salts. Rinse the exterior weekly to remove accumulations of dust and debris.
- Inflate tires to maximum rated cold pressure.
- Park the motor home as level as possible front to rear and side to side. Block wheels front and rear, and leave the parking brake OFF.
- Check the charge in both the vehicle and auxiliary batteries with a hydrometer. Hydrometer reading should be 1.255. Add colorless, odorless drinking water if necessary, and charge to a reading of 1.255.
- Remove battery cables. Clean terminals, top and sides of batteries and battery boxes. Reinstall cables, dress with a plastic ignition spray.
- Drain holding tanks, toilet, and living area water systems. Turn off water pump and water heater master switches.
- Turn off LP gas at tank valve.
- Turn off refrigerator and furnace.
- Turn all range and oven burner valves and pilot valves (if equipped) off.
- Remove all perishables from refrigerator and galley cabinets. Block refrigerator open to reduce odor buildup. An open box or tray of baking soda in the refrigerator will help absorb odors.
- Open closet doors, drawers, and cabinets so air can circulate through them.
- Slightly open one window toward the front and one toward the back for ventilation.
- Close all roof vents. Be sure vent fan and range hood fan switches are off.

- Cover exterior vents (water heater, furnace, range hood, refer) to prevent insects from getting in. Be sure to remove all covering material before using appliances or vents.
- Cap or close holding tank drain, city water inlet and fresh water fill spout.
- Turn off all radios, TVs, interior and exterior lights.
- Close drapes and curtains.
- Check motor home weekly. Start and run the engine for about 15 minutes weekly. Check engine oil, transmission fluid, coolant levels.

### *Long-term Storage Above Freezing*

- Perform all the preceding, except run engine to normal operating temperature. Drain engine oil, replace filter, refill engine with fresh oil. Operate air conditioner to lubricate compressor seals.
- Remove windshield wiper blades and store them inside the motor home.
- Disconnect batteries and check charge (Specific Gravity) with a hydrometer every 30 days. Recharge if necessary.
- Rather than run the engine every week, run the engine every 30 days. Turn the vehicle air conditioner ON during this run. Check fluid levels as for Short-term Storage.
- Shield tires from direct sunlight.
- Check tire inflation pressures every 30 days. Maintain maximum rated cold inflation pressure.
- Remove high grass or weed growth.

## WINTERIZATION AND WINTER STORAGE

Winter in most parts of North America can be harsh, and can take its toll on almost all types of vehicles and equipment. The rigors of winter should not discourage you from enjoying the RV life-style, though. Thoughtful planning and preparation for the winter season can help eliminate equipment failures and breakdowns, and can extend the life of your motor home and its systems.

Your dealer can advise you concerning specific winterization procedures and products for your climate area or the areas through which you will be traveling. Your dealer may also provide winterization service for all appliances and systems in the motor home. Before the winter traveling season starts, service the motor home chassis thoroughly. Follow the lubrication schedule and be sure

all chassis components are ready for the stress of winter driving. Thoroughly wash and wax the motor home body. Check windshield wiper blades and replace them if they are broken, torn, or fatigued. Check tires, brakes, and lights. A "physically fit" motor home will stay in shape much better through the winter.

If you choose not to travel during the winter and will be storing your motor home during periods of freezing temperatures, follow a thorough Winter Storage procedure.

### Winter Storage Below Freezing

Protecting the plumbing systems in your motor home is the most important aspect of long-term winter storage. Extensive damage to the plumbing fixtures and components, as well as other potential problems can be avoided by proper draining and antifreeze protection. The following is a procedure check list you can follow if you prefer to winterize your vehicle yourself. (See PLUMBING Section)

### Water System Winterizing

Read this section completely before performing winterization.

- Perform a complete chassis service and lubrication as outlined in the Chassis Operator's Manual.
- Drain the fresh water tank by opening the water tank drain valve. Leave valve open.
- Turn water pump on (12-volt DC power on.) Open a cold water faucet. When the flow of water stops, turn the pump off.
- After opening hot and cold water faucets, open the drain valves on HOT and COLD water pipes. These valves are located in the water utility compartment and drain out the bottom of the motor home. Leave these valves open.
- Drain the water heater by opening the drain valve at the bottom of the heater and open the safety valve. Open the hot water faucets.
- Open all cold water faucets, and depress the flush pedal or pull the flush levers on the toilet.
- When each faucet has been opened, drained, and closed, close the water line drain valves, and the fresh water tank drain valve.
- Drain the shower head by opening the valve. Let all water drain out the tub spout. Leave the valve open.
- Drain the waste water system by following the normal procedure for draining the holding tanks. (See PLUMBING Section)
- Apply graphite lubricant to the knife valve actuator rod(s).

- Be sure ALL water from ALL plumbing fixtures has been drained.

**CAUTION: DRAINING THE WATER SYSTEM ALONE WILL NOT PROVIDE ADEQUATE COLD WEATHER PROTECTION. IF THE MOTOR HOME IS TO BE UNHEATED DURING FREEZING TEMPERATURES, CONSULT YOUR DEALER FOR THE BEST WINTERIZING PROCEDURE FOR YOUR CLIMATE. YOUR DEALER CAN WINTERIZE YOUR MOTOR HOME FOR YOU OR CAN SUPPLY YOU WITH ONE OF THE SPECIAL ANTIFREEZES WHICH ARE SAFE AND APPROVED FOR USE IN RV WATER SYSTEMS. FOLLOW THE INSTRUCTIONS FURNISHED WITH THE ANTIFREEZE.**

**WARNING: DO NOT USE AUTOMOTIVE OR WINDSHIELD WASHER ANTIFREEZE IN THE MOTOR HOME WATER SYSTEM. THESE COULD BE HARMFUL IF SWALLOWED.**

- Pour approximately five gallons of approved RV water system antifreeze into the fresh water tank. Be sure tank drain valve is closed.
- Turn the water pump master switch ON.
- Open each cold water faucet, run the water pump and let about a cup of antifreeze solution flow continuously through each faucet. Close each cold water faucet.
- Check the antifreeze level in the water tank. Add antifreeze solution if necessary.
- Depress the flush pedal (or otherwise operate the flush mechanism) on the toilet until the antifreeze solution flows continuously. Release flush mechanism.
- Check the antifreeze level in the water tank. Add antifreeze solution if necessary.

**NOTE: A water heater bypass allows you to turn off the flow of cold water to the water heater. You can choose to either completely fill the water heater with antifreeze solution or bypass it and drain the water from it when you winterize and store the vehicle.**

The bypass valve is located on the back of the water heater in most cases. Consult your dealer for location. You may need to remove a panel or drawer for access.

When filling the plumbing systems with antifreeze, be sure to open and operate all fixtures and valves allowing the antifreeze solution to flow freely.

- Pour another cup of antifreeze solution down each drain.

- Remove water purifier filter cartridge (if equipped).
- Install all protective caps:
  - Water tank fill
  - City water inlet cap
  - Waste tank drain outlet cap

### *General Vehicle Winter Storage Check List*

- Thoroughly service the motor home chassis as discussed above.
- Perform steps as listed under Long-term Storage check list.
- Check engine coolant level and antifreeze protection. Drain and flush engine cooling system and add antifreeze to protect the system to the lowest expected storage temperature (at least -20°F).
- Close and cover all vents to prevent entry of snow or small animals and insects.
- Service and winterize the AC generator (if equipped) as outlined in the generator operating manual included in your Owner's Information Package.
- Check the sealant around all roof and body seams and windows. Reseal if necessary. See "SEALANT RENEWAL" section.
- Lubricate all locks and hinges with light oil or graphite. If you expect to store the motor home for an extended period, you may want to support the weight of the motor home on appropriate blocks or jack stands. This will take the weight off the tires and reduce the formation of flat spots. Do not use hollow core concrete blocks for blocking. Cover the tires with cloth or cardboard. You may also choose to coat them with a special tire dressing to reduce deterioration from ultraviolet rays and weather. If you block the vehicle this way, you may reduce tire pressure to about 10-20 psi. Be sure to reinflate the tires up to the specified pressure before you remove the blocks or jack stands.
- Winterize the LP gas system. Your LP dealer or service station can perform this for you. Cover the regulator to prevent moisture from entering and freezing in the vent opening.
- During extended storage, charge and remove both the vehicle and auxiliary batteries. Store them in a cool, dry place, and check the charge and water level every 30 days.
- Remove all perishables and canned goods.
- Clean refrigerator, and prop door open to allow circulation of air.
- Remove, clean and replace air conditioner filters.
- Cover the air conditioner shroud(s).

- Mask the windows on the inside to reduce curtain, drape, and carpet fading.
- Thoroughly clean the interior of the motor home, including carpets, counter tops, lavy, tub & shower, and galley.
- Remove batteries in clocks or other battery-powered devices.
- Remove snow accumulations as often as possible.

### *Reactivating The Motor Home After Storage*

If the motor home was properly and carefully prepared for storage, taking it out of storage will not be difficult. You should not experience any but minor surprises such as animal nests underneath or minor body scratches, and of course dirt accumulations on the outside. The following procedure check list assumes that you stored the motor home with care. If you didn't, and extensive freeze damage or other serious deterioration has occurred, please consult your dealer or an Authorized Allegro Bay Service Center for advise.

- Thoroughly inspect the outside of the vehicle. Look for animal nests in wheel wells, under the hood, or in other out of the way places.
- Open all doors and compartments. Check for animal or insect intrusion, water damage, or other deterioration.
- Remove all appliance vent, ceiling vent and air conditioner coverings. Be sure all furnace, water heater, and refrigerator openings are clear and free of debris or insect nests, webs, etc.
- Check all chassis fluid levels - engine oil, engine coolant, power steering fluid, brake fluid, transmission fluid, rear axle oil.
- Check charge level in batteries. Refill and recharge as necessary. Reinstall batteries if necessary. Be sure cable ends and terminals are clean and free of corrosion.
- Check tire pressures. Reinflate to specified cold pressure.
- If the motor home has been stored on blocks or jacks, remove these.
- Disconnect vehicle air conditioner clutch wires. Turn A/C compressor by hand a few turns to loosen the seal. If you can turn the compressor, reconnect the wires. If the compressor can not be turned by hand, do not reconnect the clutch wires, and do not operate the vehicle air conditioner until the system is checked by a qualified air conditioning technician.
- Remove masking from inside windows.
- Open vents and windows for ventilation.

- Be sure all 12-volt DC and 120-volt AC circuit breakers are off.
- Start engine. Check instruments for proper readings. If oil pressure indicator does not indicate sufficient oil pressure, shut down engine immediately. Have problem diagnosed by your dealer, or other qualified chassis technician.
- Be sure all other engine instruments indicate proper readings. Run engine up to operating temperature. Shut engine down. Check all fluids. Top up if necessary.
- During engine run, check the operation of headlights, taillights, turn signals, backup lights, clearance lights, license plate light, emergency flashers. Operate the vehicle air conditioner.
- Drain, flush, and sanitize the fresh water system as outlined in the "PLUMBING" section.
- Drain the holding tanks as outlined in the "PLUMBING" section. Inspect the drain hose for leaks. Replace if necessary - repairs are usually not effective.
- Install a new water purifier cartridge (if equipped).
- Operate all faucets and fixtures in the fresh water system. Check for leaks at all joints and fittings. Repair if necessary.
- Inspect the LP gas system. Remove the regulator cover, check for damage. Inspect all pipes and fittings in the system. Check for leaks as outlined in the "LP GAS" section. If the LP tank shows signs of rust or corrosion, sand and paint if as necessary.
- Turn on 12-volt DC circuit breakers and inspect fuses. Operate all 12-volt lights and accessories.
- Install new batteries in battery-operated devices.
- Check monitor panel operation.
- Open and operate vents and vent fans, including the range hood fan.

- Operate each LP gas appliance. Observe all burner/pilot flames for proper color and size. In any case, have the LP gas regulator adjusted for proper pressure.
- Inspect the 120-volt electrical system — power cord, converter, all outlets, and any exposed wiring. If defects are found, refer service to your dealer or an Authorized Allegro Bay Service Center.
- Prepare the AC generator for operation following instructions in the generator operating manual in your Owner's Information Package.
- Turn on 120-volt AC circuit breakers.
- Start and run generator.
- Operate 120-volt AC appliances and air conditioners. Be sure to uncover air conditioner shroud(s).
- Inspect and clean the interior.
- Check the sealant around all roof and body seams and windows. Reseal if necessary. See "SEALANT RE-NEWAL" section.
- Lubricate all exterior locks, hinges, and latches.
- Reinstall windshield wiper blades. Check wiper/washer operation.
- Wash and wax the exterior. Inspect the body for scratches or other damage. Touch up or repair as necessary. Flush the underside thoroughly.
- Run thorough operational checks of steering, brakes, engine and transmission. Operate vehicle slowly during these checks to allow sufficient circulation of fluids and reseating of components.

Your motor home should now be ready for a new traveling season. If you choose, your dealer can double check your preparation and correct any defects or make any necessary adjustments.

# MAINTENANCE CHART

## SERVICE TO BE PERFORMED

## SERVICE INTERVAL

	Each Trip	1,000 Miles	3 Months	6 Months	10,000 Miles Yearly
Wash Exterior	X				
Inspect Tires	X				
Rotate and Balance Wheels				X	
Lubricate Locks					X
Lubricate Hinges					X
Inspect and Clean Vents					X
Clean Battery Cables and Terminals			X		
Inspect Suspension					X
Service Chassis (See Chassis Manual)				X	
Torque Lug Nuts (See Chassis Manual)		X			
Sanitize Water Tank			X		
Clean Drapes and Interior Fabrics					X
Service Power Plant (See Power Plant Manual):					
Check all exterior seams, roof, windows, sidewall, windshield, etc.			X		
Reseal roof if necessary				X	
Reseal windows, sidewalls, doors				X	

# LIFTING INSTRUCTIONS

**CAUTION:** Do not attempt to lift motor home by the front bumper. Damage to front fiberglass cap is possible.

## *How to Tow*

In the event it is necessary to have your motor home towed, have the towing company block down from the frame, so no pressure is applied to the front bumper. The bumper is not designed to support the weight of the motor home.

## *All Chassis Models*

The vehicle may be towed on the rear wheels with the parking brake released and the transmission in neutral provided a speed of 35 MPH and a distance of 50 miles is

not exceeded. If this speed or distance must be exceeded, disconnect the driveshaft or place the rear wheels on a dolly. **DO NOT TOW ANY VEHICLE AT SPEEDS OVER 50 MPH.**

The safety of the operator and all others in the vicinity of the tow truck and the towed vehicle must be considered at all times during a towing operation. **DO NOT ALLOW ANY PERSON TO RIDE IN THE TOWED VEHICLE.** Safe operating speeds depend on weather, road, traffic, visibility conditions, and the condition of the towed vehicle. Avoid panic stops. Obey all state and local laws regarding items such as warning signals, night illumination, speed, etc.