

1982-1984

ALLEGRO®

MOTOR HOME OWNERS MANUAL

ALLEGRO
BUILT BY TIFFIN MOTOR HOMES, INC.

P.O. Box 596
Red Bay, Alabama 35582

TO THE OWNER

Congratulations, we welcome you to the exciting world of motor home travel and camping. You will find it convenient and enjoyable to have all the comforts of home and still enjoy the great outdoors, wherever you choose to go.

Your motor home has been carefully designed, engineered and manufactured to provide dependability as well as safety. Before sliding into the driver's seat, take a few minutes to become familiar with its features and operation. This manual has been prepared to aid you in the proper care and operation of the vehicle and equipment aboard. We urge you to read it completely. In addition, spend some time with the dealer when you take delivery, you will want to learn all you can about your new Allegro.

Your Allegro motor home is covered by a factory warranty against defects in material and workmanship. This warranty should be validated at once and returned to the factory by your dealer.

Throughout this manual, reference is made to the following terms: Important, Caution and Warning. These terms indicate important information which should be understood and followed. The definition of these terms are:

IMPORTANT

Indicates a special point of information.

CAUTION

Indicates that a failure to observe can cause damage to equipment.

WARNING

Indicates that failure to observe can cause damage to equipment or personal injury.

IMPORTANT SERIAL NUMBERS

You Will Want to Make a Record for Future Reference.
Look for Them and Fill in Immediately.

Motor Home Serial Number _____

Chassis Serial Number _____

Air Conditioner Serial Number _____

Range Model and Serial Number _____

Refrigerator Model and Serial Number _____

Furnace Model and Serial Number _____

Water Heater Model and Serial Number _____

Converter Model and Serial Number _____

Optional 110-Volt Generator Model and Serial Number _____

When writing to the factory be sure to include your motor home serial number and chassis number. When writing to a component manufacturer for information, be sure to include the model and serial number of the item.

EMERGENCY INFORMATION

Dealer

Name _____

Address _____

Phone _____

Insurance Policy

Company _____

Policy Number _____

Phone _____

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 Prevention 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 titled "Liquid Petroleum Gas System" and "Appliances" for other safety 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 OPERATION:

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 APPLIANCES(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 THE 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 as 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 regulators must always be installed with the diaphragm vent facing downward. Regulators that are not in compartments have been equipped with a protective cover. Make sure that 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.

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Notes

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drivetrain. When driving on ice or snow, any acceleration or deceleration should be made gradually.

ROCKING OUT

If the vehicle is stuck in deep sand, snow or mud, it may be possible to "rock" it out. Shift to (D) and apply a steady light throttle (approx. 800-900 rpm — never full throttle). Then by moving the range selector between drive and reverse, rock the vehicle free. Time the shifts to take advantage of the forward and reverse momentum. If the driving wheels spin, apply less throttle.

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(3 and 2) Occasionally, the road, load, or traffic conditions will make it desirable to restrict the automatic shifting to a lower range. When the conditions improve, return the range selector to the normal driving position. These positions also provide progressively greater engine braking power (the lower the gear range the greater the braking effect.)

(1) This is low gear — use this one when pulling through mud and snow or driving up steep grades. This position also provides maximum engine braking power.

In the lower ranges (1, 2, and 3), the transmission will not upshift above the highest gear selected unless the recommended engine governed speed for the gear is exceeded.

WARNING

Allowing your vehicle to coast in neutral is not recommended. This practice can result in severe transmission damage. Also no engine braking is available.

ACCELERATOR CONTROL

The pressure of your foot on the accelerator pedal influences the automatic shifting. When the pedal is fully depressed, the transmission will automatically upshift near the governed speed of the engine. A partially depressed position of the pedal will cause the upshifts to occur at a lower engine speed.

DOWNSHIFT OR REVERSE INHIBITOR FEATURE

The transmission can be downshifted or upshifted, even at full throttle, and although there is no speed limitation on upshifting, there is on downshifting and reverse. Downshifting should be avoided when the vehicle is above the maximum speed attainable in the next lower gear. However, protection against improper downshifts and reverse shifts is inherent in the design of the hydraulic system. If a downshift or reverse shift is made at too high a speed, the hydraulic system automatically prevents the shift taking effect until a safe, lower speed is reached.

USING THE ENGINE TO SLOW THE VEHICLE

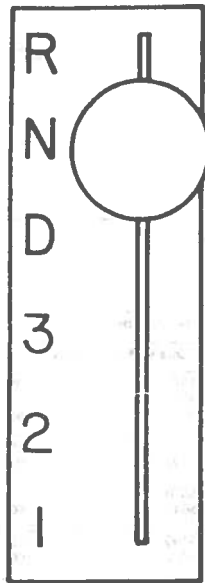
To use the engine as a braking force, shift the range selector to the next lower range. If the vehicle is exceeding the maximum speed for a lower gear, use the service brakes to slow the vehicle to an acceptable speed where the transmission may be downshifted safely.

PARKING BRAKE

There is no "park" position in the transmission shift pattern. Therefore, always put the selector in neutral and apply the parking brake to hold the vehicle when it is unattended.

DRIVING ON ICE OR SNOW

The automatic continually provides proper balance between required power and good traction. The driver can have better control of his vehicle because of this smooth, constant flow of power through the



ALLISON AUTOMATIC TRANSMISSIONS

When your vehicle is equipped with an automatic transmission, you do not require the experience and skill necessary to select the right moment to upshift or downshift during changing road and traffic conditions as the transmission does it for you.

However, a knowledge of the gear ranges available at your range selector will make the control of the vehicle and your job even easier.

The best performance is obtained by using the correct gear range for the particular driving condition.

The gear ranges in which your vehicle will operate are determined by the position of the range selector.

(R) Use this for backing the vehicle. The vehicle should be completely stopped before shifting from a forward gear to reverse gear or from reverse to forward. The reverse warning signal is activated when the range selector is in this position. Reverse has only one gear. Reverse operation provides the vehicle with its greatest tractive advantage.

(N) Use this position when you start the engine. If the engine starts in any other position, the neutral start switch is malfunctioning. Neutral position is also used during stationary operation of the power takeoff (if your vehicle is equipped with a PTO). Use neutral when the vehicle will be left unattended while the engine is running — always apply the parking brake.

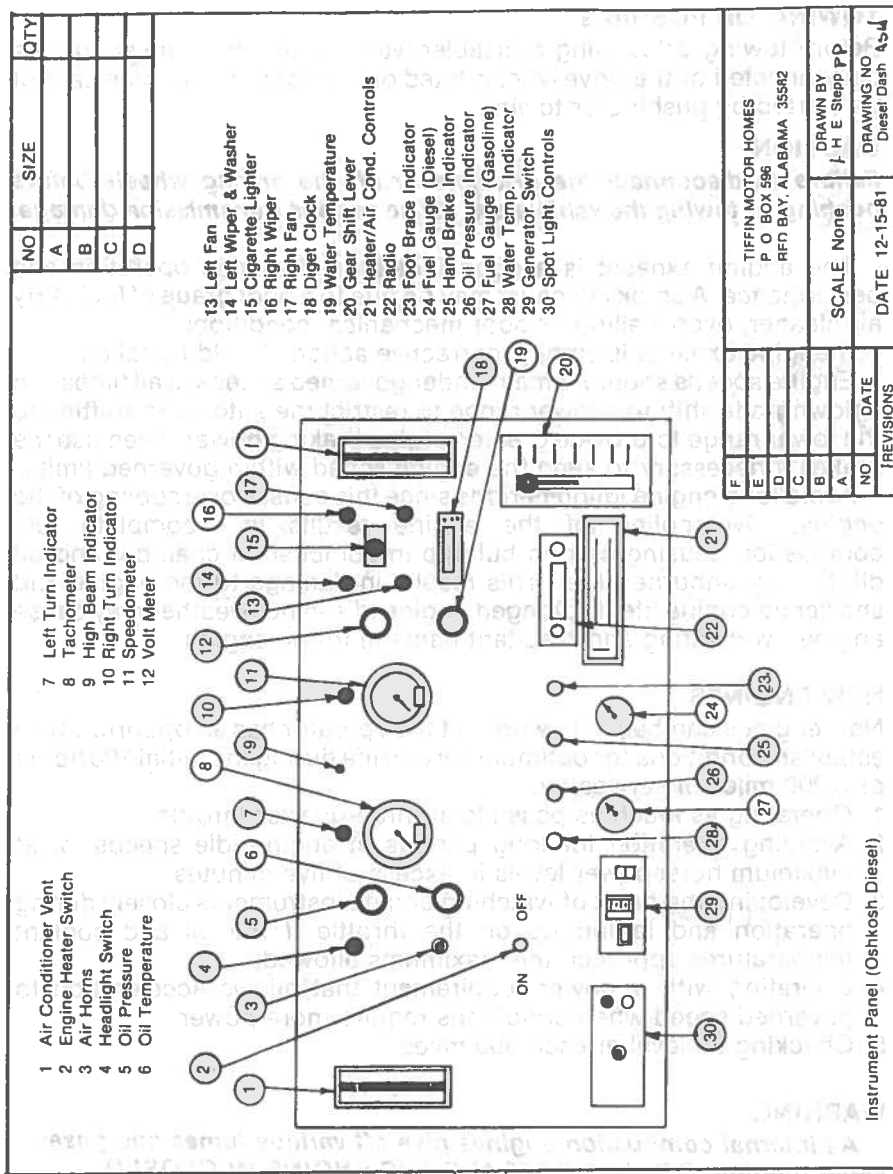
(D) Use this one for all normal driving conditions. The vehicle will start in 1st gear, and as the accelerator is depressed, the transmission will upshift to 2nd gear, automatically. As the vehicle slows down, the transmission will downshift, within the driving range, to the correct gear automatically.

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PARTIAL LISTING OF FREQUENTLY USED SIZES(e)					
BIAS PLY TIRE DATA(f)					
Normal Highway Service 60 MPH Max					
Tire Size	Load Range	Max Load Rating @ Max Inflation Per Tire (b)			
		Singles @ Infl Press		Duals @ Infl Press	
07 50-20	E/10	1760	85	1340	85
09 00-20	E/10	4610	80	4040	70
	F/12	5150	95	4520	85
10 00-20	F/12	5430	85	4760	75
	G/14	6040	100	5300	90
10 00-22	F/12	5780	85	5070	75
	G/14	6430	100	5640	90
11 00-20	F/12	5920	85	5190	75
	G/14	6590	100	5780	90
11 00-22	F/12	6290	85	5520	75
	G/14	7000	100	6140	90
11 00-24	F/12	6680	85	5860	75
	G/14	7430	100	6520	90
12 00-20(d)	G/14	7000	90	6140	80
	H/16	7500	100	6790	95
12 00-24(d)	G/14	7880	90	6910	80
	H/16	8450	100	7640	95
	J/18	8450	100	7870	100
14 00-24	J/18	24460	95	---	---
15-22.5(c)	E/10	5640	55	---	---
	F/12	6670	70	---	---
	G/14	7600	85	---	---
	H/16	8460	100	---	---
16 5-22.5(c)	H/16	9230	90	---	---
18-22.5(c)	H/16	9860	85	---	---
	J/18	10970(a)	100	---	---



INTRODUCTION

Driving a motor home the first few times will require a somewhat different driving attitude than when driving an automobile. Your Allegro motor home has been equipped with such standard features as power steering and power brakes to make it handle as easily as your family car. You must remember the weight, length, width and height are greater.

The motor home will require greater stopping distances, more space for parking and maneuvering, and more acceleration time when passing other vehicles than an automobile. However, after a few miles of careful and alert driving, you should easily adapt to the larger size of the motor home.

This manual was written with the owner in mind. It is intended to provide you with information needed to properly operate and care for your new motor home. It also contains tips and information that will help you enjoy your motor home while on trips.

Before getting into the driver's seat, always observe the area around your motor home. A small auto or motorcycle may have parked behind or to the side of your vehicle and remain unseen until it is too late. It is advisable to have a passenger check the area around your vehicle as you maneuver out of a difficult parking space, especially when backing.

Always be aware of the dimensions of your motor home. These are listed in the specifications section of this manual. Low hanging canopies and signs in service stations and restaurants can cause clearance problems. Keep in mind the added height of any options on the roof such as air conditioner units or a TV antenna. Remember that some old bridges may not accept the weight of your Allegro.

When planning a trip to another state, write ahead for a booklet detailing the laws for the state. Some states have specific laws pertaining to recreational vehicles.

For safety sake, always use your seat belt and instruct your passengers to do so as well. Frequent rest stops are advised to relieve stress on the driver, the family, and the vehicle.

After reading this manual, be sure to keep it in your motor home as a reference. Your Allegro dealer will be glad to provide any further information you feel you need, as well as answer any questions about operating the equipment in your motor home. Your dealer is also prepared to perform any service or repair work required to maintain your Allegro motor home in top condition.

NOTE: The description, illustrations, and specifications in this manual were correct at the time of printing. We reserve the right to change specifications or design without notice and without incurring obligation to install the same on motor homes previously manufactured.

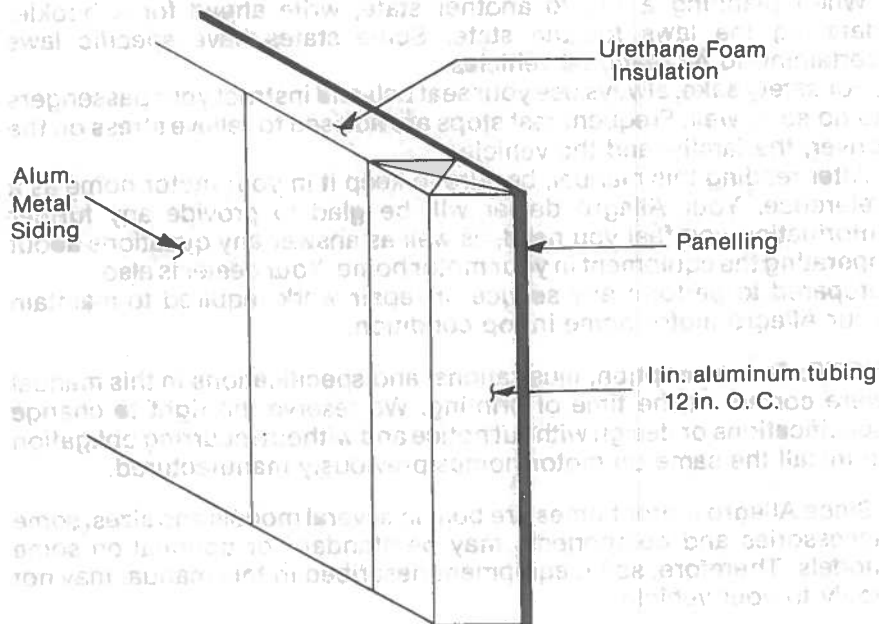
Since Allegro motor homes are built in several models and sizes, some accessories and components may be standard or optional on some models. Therefore, some equipment described in this manual may not apply to your vehicle.

IMPORTANT

Some sections of this manual refer only to an A body, or a C body motor home. An A body vehicle is one that is "box" shaped and provides access to the driver's seat only through the motor home entrance door on the right side. A C body motor home is one that is built on a truck or van type chassis with a similar front end. In addition to the entrance door, there is a door on each side of the cab for access to the driver's and passenger's seats. You need refer only to those sections which apply to your motor home for operation or adjustment.

ALL ALUMINUM AND STEEL CONSTRUCTION

IT ALL STARTS HERE . . . with the careful consideration seen in each Tiffin motor home. The all steel and aluminum construction is your assurance of maximum safety and durability. Each step in the construction process is a further effort to provide better, safer motor homes. The body of the unit will begin with aluminum cage construction. The construction is of one inch aluminum tubing built on twelve inch centers. Before the final stage is completed the entire unit will be insulated with a jet spray of urethane foam. In addition to providing a quieter, safer ride, this insulation keeps out noise, dust and moisture . . . while reducing heating and cooling costs. Using the best, long life insulation available, combined with all steel and aluminum construction, is further evidence of the Tiffin standard. A standard to strive for the highest quality in the construction of every Tiffin product.



IMPORTANT:

To register the chassis for warranty coverage, a completed chassis inspection report form SE-50-2 is to be filled out by the dealer and then returned to Tiffin Motor Homes

TOWING OR PUSHING

Before towing or pushing a disabled vehicle, the driveline should be disconnected or the drive wheels lifted off the road. The engine cannot be started by pushing or towing.

CAUTION

Failure to disconnect the driveline or lift the driving wheels before pushing or towing the vehicle can cause serious transmission damage.

The engine exhaust is a good indicator of engine operation and performance. A smoky exhaust may be due to a poor grade of fuel, dirty air cleaner, over-fuelling or poor mechanical conditions.

If engine exhaust is smoky, corrective action should be taken.

Engine speeds should remain under governed speeds at all times. On a downgrade shift to a lower range to restrict the automatic shifting to the lower range to provide greater engine braking power. Then use the brakes if necessary to keep the engine speed within governed limits.

Avoid long engine idling periods since this causes overcooling of the engine. Overcooling of the engine results in incomplete fuel combustion causing carbon buildup in combustion chamber and oil dilution by unburned fuel. This results in damage to the engine and shortened engine life. Prolonged engine idle in hot weather may cause engine overheating and resultant damage to the engine.

NEW ENGINES

New engines can be put to work but the operator has an opportunity to establish conditions for optimum service life during the initial 100 hours or 3,000 miles of service by:

1. Operating as much as possible at three-quarter throttle.
2. Avoiding operation for long periods at engine idle speeds, or at maximum horsepower levels in excess of five minutes.
3. Developing the habit of watching engine instruments closely during operation and letting up on the throttle if the oil and coolant temperatures approach the maximums allowed.
4. Operating with a power requirement that allows acceleration to governed speed when conditions require more power.
5. Checking oil level at each 300 miles.

WARNING

All internal combustion engines give off various fumes and gases while running. DO NOT OPERATE THE ENGINE IN CLOSED AREAS.

SITTING IN A PARKED OR STOPPED VEHICLE FOR ANY EXTENDED AMOUNT OF TIME WITH THE ENGINE RUNNING SHOULD BE AVOIDED.

SPECIFICATIONS FOR OSHKOSH CHASSIS

33' Wheel Base	35' Wheel Base	38' Wheel Base
228" Wheel Base	250" Wheel Base	250" Wheel Base
Dry Weight 14,000 lbs	Dry Weight 15,600 lbs	59'-6" Front Overhang
Gross Vehicle Weight 20,000 lbs	Gross Vehicle Weight 20,000 lbs	Dry Weight 17,600
Cargo 6,000 lbs.	Cargo 4,400 lbs	Gross Vehicle Weight 24,000 lbs
		Cargo 6,000 lbs

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ALLEGRO Diesel Motor Home built on the Oshkosh Chassis in Oshkosh, Wisconsin

SPECIFICATIONS AND FEATURES	33	35	38	SPECIFICATIONS AND FEATURES	33	35	38
All Aluminum & Steel Construction	X	X	X	Cruise Control		X	X
10 cu. ft. Gas/Electric Two Door	X	X	X	Sun Visors		X	X
4 Burner Range w/doven w/iglass door	X	X	X	Front Bunk (k/w/et Spring Loaded)		X	X
Eye Level Oven	N	N	N	Spray Urethane Foam Insulation		X	X
Power Range hood w/light	X	X	X	Dual Rear Wheels		X	X
Double Stainless Steel Sink	X	X	X	Michelin Tires 7.50 x 20.5 B		X	X
Marine Toilet	X	X	X	Generator Bored and Wired		X	X
6 Gallon Water Heater	X	X	X	RH Code Appvd Heating Plumbing & Elect Systems		X	X
15 Deluxe Foam Cushions	X	X	X	Ice Maker		X	X
110V to 12V Automatic Converter	X	X	X	TV Antenna		X	X
Spot Light	X	X	X	636 cu. in. Caterpillar Diesel Eng. *1300 175 H.P. V.8		X	X
3 Lumadome Roof Vents (one in each bath w/power vent)	X	X	X	Fill Wheels		X	X
100 Gallon Fresh Water Tank	X	X	X	Welded Steel Chassis		X	X
12V Demand Water Tank	X	X	X	Automatic 4 Speed Transmission AT545 Allison		X	X
Color Coordinated Drapes and Fabrics	X	X	X	Power Steering and Power Brakes		X	X
Pleated Drapes w/tie backs	X	X	X	Bucket Seats (Driver & Passenger)		X	X
Front and/or Rear Privacy Drapes	X	X	X	Padded Instrument Panel		X	X
Front and Side Roll Around Curtain	X	X	X	High Output Heater		X	X
Bus type Sliding Windows	X	X	X	Heavy Duty Battery		X	X
Window over Sink	X	X	X	Dual Battery		X	X
52 Gallon Holding Tank	X	X	X	100 Amp Alternator		X	X
Tinted Windshield	X	X	X	Air Ride Suspension		N	N
12V Entrance Light	X	X	X	22 Gallon Diesel Fuel Tank		X	X
80 lb. Frame Mount Propane Tank	X	X	X	22 Gallon Tank - Gasoline for Generator		X	X
Double Front Seal	X	X	X	14,000 lb. Rear Axle		X	X
Steel Engine Cover	X	X	X	8,000 lb. Front Axle		X	X
30M BTU Furnace - Main	X	X	X	Barbecue Grill		X	X
24M BTU Furnace - Aux	X	X	X	Heavy Duty Shock Absorbers		X	X
50 Amp Entrance Cable	X	X	X	Rear Access to Water and Oil		X	X
Back Up Lights	X	X	X	Driver Door		X	X
Exterior Rearview Mirrors	X	X	X	Island Bed w/Entrance Door (Side Bath Only)		X	X
KCC Lights	X	X	X	Vacuum Cleaner		X	X
Rear Hose Bumper	X	X	X	Michio Wave Oven		X	X
Seat Armrests	X	X	X	Monitor Panel		X	X
Air Horns	X	X	X	Black Out Curtains		X	X
Automatic AM/FM Radio or AM/FM Stereo w/Tape	X	X	X	Screen Door		X	X
Rear Speakers	X	X	X	Heavy Plush Carpet		X	X
2 13,500 BTU Roof Air Conditioners	X	X	X	Wall Clock		X	X
6,500 Auxiliary Generator Gasoline	X	X	X	Food Processor		0	0
Dash Air Conditioner	X	X	X	Washer & Dryer		N	0
Roof Deck and Ladder	X	X	X	Trash Compactor		0	0
Polished Aluminum Wheels	X	X	X	Jenn Air Convection Oven		0	0
12.5 K.W. Diesel Generator	0	0	0	Air Brakes		N	N

X STANDARD 0 OPTIONAL N NOT AVAILABLE

REPAIRS

One of the many outstanding features of all aluminum and steel construction is the ease of repairs. If your motor home should receive extensive damage, to a section of one side, for example, that section can be cut out and another panel quickly cut to size and spliced into place. Many Allegro dealers are prepared to make the repair.

If there is extensive damage, we recommend your motor home be delivered to the Red Bay factory or to a factory recommended repair shop. For prompt service at Red Bay, schedule four weeks in advance by telephone or letter to our Customer Service Department.

ALLEGRO LIMITED WARRANTY

WARRANTY COVERAGE TO OWNER

A. Warranty Coverage - Tiffin Motor Homes, Inc. of Red Bay, Alabama, warrants each new Allegro motor home to the owner as follows:

Warranty Period

For the period of one year or 12,000 miles of use, whichever occurs first from date the vehicle is delivered to the first retail purchaser or first placed in service as a demonstrator or company vehicle, whichever is earlier.

Items Covered

The all aluminum and steel construction as pertains to the outer skin metal to the side wall and roof construction.

Plus the following list of equipment.

Auxiliary Batteries
Air Compressor
Air Conditioner (auto)
Air Conditioner (115-V)
T.V. Antenna
Converter (110-12V)
Speed Control
Demand Pump
Furnace
L.P. Gas Bottle(s)
Power Range
Pre-finished Paneling
Range
Radio
Refrigerator
Sink
Stereo
Vacuum Cleaner

Toilet
Water Heater
Carpet
Cushion Foam
Compartment Doors
Driver and Passenger Seats
Electrical Systems
Cushion Fabric
Fire Extinguisher
Hood Faucets
Light Fixtures
Plumbing System
Switches
Shower Door
Vinyl
Sealants
Windows
Showerhead

Engines
Headlight Seal Beams
Lenses
Interior and Exterior Light Bulbs

L.P. Gas Valves

Items Not Covered

Chassis
Tires
Service Items
Oil or air filters
Vacuum cleaner bags
Oil or lubricants
Windshield wiper blades
115V Power Plant (ONAN)

This warranty shall not apply to failures due to normal wear, accident, misuse, abuse or negligence.

Implied Warranties

In addition, each new Allegro home shall be subject to warranties implied by law including the implied warranties of merchantability and fitness for any particular purpose but such implied warranties are limited to the owner for the period of one year or 12,000 miles, whichever occurs first, from date the vehicle is delivered to the first retail purchaser or first placed in service as a demonstrator or company vehicle, whichever is earlier. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Allegro's Responsibility

3. Any part of the Allegro Motor Home subject to this warranty which is found to be defective in material or workmanship, will be repaired or replaced at Tiffin Motor Homes' option, within thirty (30) days of notice of defect by the selling dealer without charge to the customer for parts or labor. If the owner of the motor home has moved to a different locality and cannot return to the selling dealer, the owner may obtain warranty repairs or replacement of such items at any authorized Allegro dealership. If the owner of the motor home is traveling and is in excess of 100 miles from the selling dealer, or if the selling dealer has ceased to do business as an authorized Allegro dealer, the owner may obtain warranty repairs or replacement of such items at any authorized Allegro dealership.

Care and Maintenance

Under this warranty the owner must perform the care and maintenance duties discussed in the Owner's Manual which accompanied your Allegro motor home. Any damage which results to your motor home as a result of your failure to perform such

OSHKOSH DIESEL

WARRANTY

OSHKOSH CHASSIS WARRANTY REGISTRATION PROCEDURE

Warranty registration of your vehicle chassis is accomplished through your motor home manufacturer's warranty registration form.

The warranty registration form is filled out by the retail dealer and signed by the end user when taking delivery of a new vehicle. A copy of this form will also be kept on file at the OSHKOSH TRUCK CORPORATION as a record of the original owner of each new vehicle. This form will also indicate the starting date of the warranty period.

OSHKOSH CHASSIS WARRANTY CLAIMS PROCEDURE

If a service problem is encountered during the warranty period, the following steps should be taken:

- 1) Contact a reputable service outlet for diagnosis and necessary repairs.
- 2) Upon completion of the repair, the service outlet completes a Warranty Service Report form SE-41.
- 3) Submit the SE-41 form, together with a copy of the repair invoice and any failed parts to the motor home retail dealer for warranty consideration.

ENGINE WARRANTY

Each engine is covered by the respective engine manufacturer under a separate warranty. Warranty registration forms and order forms for other publications are included in the engine manual furnished with each vehicle. Warranty claims concerning the engine must be handled through the nearest engine dealer. Refer to the engine identification plate for the model, arrangement number and serial number when requesting service.

TRANSMISSION WARRANTY

Contact your area Detroit Diesel Allison Dealer for all warranty claims and service. Refer to the transmission identification plate for the Model Number, arrangement number and serial number when requesting service.

TIRE WARRANTY

Tires are covered by the respective manufacturer under a separate warranty. Warranty claims concerning tires must be handled through the nearest tire manufacturer representative.

CODE OF ETHICS For Recreational Vehicle Owners

1. I recognize that everyone will judge all recreational vehicle owners by my own actions.

When parking I will . . .

2. Dispose of sewage in recommended places only, such as approved sanitary dumping stations, and not throw plastic bags into toilets or garbage pits.
3. Discharge my kitchen sink and shower waste water only in designated and approved places, and watch my drain pail to see that it does not overflow.
4. Not pollute streams, lakes, and other water supplies.
5. Use extreme caution with fire, leave no campfire unattended, and put out my campfire before leaving it.
6. Always thoroughly extinguish matches, cigarettes, cigars, or pipe heels before discarding, not smoke when walking or riding through forests or parks, unless regulations specifically allow otherwise.
7. In campgrounds, I will place all garbage and other refuse in the receptacles provided, leaving no bottles or broken glass.
8. Not damage trees, shrubs, or other natural beauty.
9. Leave my campsite as clean or cleaner than I found it.
10. Spot my recreational vehicle so that I do not interfere with others.
11. Keep fire away from my LP gas bottles.
12. Ask permission to park on private property when no other facilities are available.
13. Comply with all rules of forests and parks where I am staying.
14. Encourage my neighbors in parks to follow this Code of Ethics.

On the highway I will . . .

15. Pull off two-lane highways periodically, if I see a string of cars behind me.
16. Not be a litterbug.
17. Use my ashtray and not toss flammable material from windows.
18. Drive in right lane except when passing, and allow extra room for passing.
19. Comply with and study all traffic regulations.
20. Watch my speed.
21. Make every effort to prevent swaying by proper driving, and suitable weight distribution in the recreational vehicle.
22. Check lights, directional signals, and wheel lugs daily.
23. Carry sufficient insurance to protect others in case of accident.

duties, will not be covered by this warranty. The care and maintenance duties described in the Owner's Manual will be done at your expense.

Installation Not Covered

Tiffin Motor Homes, Inc., cannot, however, and does not accept any responsibility in connection with any of its motor homes for additional equipment or accessories installed at any dealership or other place of business, or by any other party other than Tiffin Motor Homes, Inc. Such installation of equipment or accessories by any other party will not be covered by the terms of this warranty.

If Repairs Are Needed

- C. If a part of the system covered by this warranty fails to function or requires service during the warranty period:
 1. Take the motor home to the selling dealer or other authorized Allegro dealer, as specified in this warranty, for repair.
 2. If the dealer is incapable of making the repair, request that he contact Tiffin Motor Homes, Inc., Owner Relations Department, for technical or parts assistance.

Customer Responsibility

If, after the above steps are completed and the repair is not made, the customer should contact Tiffin Motor Homes, Inc., P.O. Box 596, Red Bay, Ala. 35582, Attention: Owner Relations Department, and furnish the following information:

Contacting Allegro Owner Relations Department

—The complete serial number of the motor home.

—Date of retail purchase

—Selling dealer's name.

—Nature of the service problem, and a brief explanation of the steps or services the dealer has performed, and the results obtained. The customer may be directed to another dealer or service center for repairs to be completed, if such dealer or service center is better able to complete the repair.

4. If all attempts to repair the motor home at the dealer level fail to accomplish the repair, Tiffin Motor Homes, Inc. may request that the motor home be allowed to be brought back to Tiffin Motor Homes, Inc. Customer Service Department at Red Bay, Ala. at Tiffin Motor Homes' expense to complete the repairs. In such event, Tiffin Motor Homes, Inc., shall be allowed an additional thirty (30) days to perform its obligations under this warranty.

If the customer refuses to allow the motor home to be brought back to Tiffin Motor Homes, Inc., for such repairs, or refuses to go to the designated service center or dealer for repairs, the warranty on that repair will be voided.

5. If after the above steps are completed and the repairs are not completed, the customer can:

—Contact the General Service and Parts Manager of Tiffin Motor Homes, Inc. and request a customer relations board meeting to resolve the problem. This action, however, is not mandatory.

—This warranty gives you specific legal rights, which vary from state to state. In the event of a problem with warranty service or performance, you may be able to go to a small claims court, a state court, or a federal district court.

Dealer Representation Excluded

D. Tiffin Motor Homes, Inc., does not undertake responsibility to any purchaser of its products for any undertaking, representation or warranty made by dealers selling its products beyond those herein expressed.

Consequential Damages

Without regard to the alleged defect, Tiffin Motor Homes, Inc., under any circumstances, does not assume any responsibility for loss of time, inconvenience, or other consequential damage including expense for gasoline, telephone, travel, lodging, loss or damage to personal property, or loss of revenue. 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.

Changes in Design

Tiffin Motor Homes, Inc. reserves the right to make changes in design and changes or improvements upon its product without imposing any obligation upon itself to install the same upon its products theretofore manufactured.

CAUTION Do not attempt to lift motor home by the front bumper. Damage to front Fibra-Glass cap is possible.

MISCELLANEOUS

- | | |
|---|--|
| ___ String | ___ Bird Watching Books |
| ___ Clothes Line | ___ Boy Scout and/or Girl Scout Manuals |
| ___ Fly Swatter | ___ Geology or Rock and Mineral Type Books |
| ___ Insect Repellent | ___ Stamps for Post Cards and Letters |
| ___ Masking Tape | ___ Address Book |
| ___ Small Barbecue Grill | ___ Heavy-Duty Electric Extension Cord |
| ___ Charcoal | ___ Wash and Dry Napkins |
| ___ Lighter Fluid | |
| ___ Notebooks | |
| ___ Pencils | |
| ___ Crayons or Other Books on Areas You Plan to Visit | |

FOOD

Enough for first couple of days or so - buy as you go. Use plastic, paper or other disposable containers. Remember seasonings.

CLOTHES TIPS

One "good" outfit for each traveler (hang in plastic bag in closet). Remember - it can get cold in the mountains even during summer. Send for information on the areas you are going to visit and plan accordingly.

QUICK LOADING CHECKLIST

LINENS

- ___ Sleeping Bags
- ___ Sheets
- ___ Pillow Cases and Pillows
- ___ Mattress Pads
- ___ Extra Blankets
- ___ Laundry Bags

COOKING

- ___ Can Opener
- ___ Bottle Opener
- ___ Spatula
- ___ Long Fork
- ___ Service Spoon
- ___ Measuring Spoon
- ___ Skillet
- ___ Pot with Cover
- ___ Oven Pan
- ___ Plastic Shaker
- ___ Mixing Bowl and Cover
- ___ Aluminum Foil
- ___ Wood Type Matches
- ___ Plastic Bags
- ___ Plastic Waste Baskets
- ___ Sharp Knife
- ___ Coffee Pot
- ___ Scissors
- ___ Shot Glass
- ___ Hot Pads and Mitts
- ___ Paper Towels
- ___ Storage Dishes

PERSONAL

- ___ Credit Card
- ___ Traveler's Check
- ___ Money
- ___ Driver's License
- ___ Binoculars
- ___ Extra Eye Glasses
- ___ Sun Glasses
- ___ Pocket Knife
- ___ Sewing Kit

- ___ Proof of Citizenship For Canadian or Mexican Crossing
- ___ Camera Equipment and Film
- ___ Games, Toys, Coloring Book
- ___ Fishing Equipment

CLEANING

- ___ Scouring Pads
- ___ Cleanser
- ___ Dish Soap
- ___ Sponge
- ___ Laundry Soap
- ___ Cleaning Rags
- ___ Air Freshener
- ___ Broom and Small Hand Vacuum Cleaner

BATHROOM

- ___ Hand Soap
- ___ Shampoo
- ___ Tooth Brushes and Paste
- ___ Combs and Brushes
- ___ Bath Towels that can, Double as Beach Towels
- ___ Shower Caps
- ___ Toilet Kits
- ___ Shaver
- ___ Toilet Tissue

BABY NEEDS

- ___ Porta-Crib
- ___ Car Bed or Similar
- ___ Expanding Gate with Rubber Bumpers on End - Like Fits in Door Jamb
- ___ Child Back Carrier

PET NEEDS

- ___ Food
- ___ Leash
- ___ Water and Food Dishes

SPECIFICATIONS FOR CHEVROLET AND GMC CHASSIS

SPECIFICATIONS AND FEATURES	23				28				27				30				33			
	137" Wheel Base Dry Weight 7500 lbs Gross Vehicle Weight 12,800 lbs Chevrolet Cargo 3500 lbs	158" Wheel Base Dry Weight 8750 lbs Gross Vehicle Weight 12,800 lbs Chevrolet Cargo 3100 lbs	157" Wheel Base Dry Weight 9000 lbs Gross Vehicle Weight 12,800 lbs Chevrolet Cargo 3000 lbs	307" Wheel Base Dry Weight 10,000 lbs Gross Vehicle Weight 14,000 lbs. Cargo 4000 lbs.	337" Wheel Base w/Ta Dry Weight 13,000 lbs Gross Vehicle Weight 18,000 lbs. Cargo 5,000 lbs.															
AN Aluminum & Steel Construction	X	X	X	X	X						Dash Air Conditioner	0	0	0	0					
L.P. Conversion 54 Gallon-Chevrolet	0	0	0	0	0						Roof Deck and Ladder	0	0	0	0					
10 cu. ft. Gas/Electric-Two Door	0	0	0	0	0						Hub Caps	0	0	0	0					
4 Burner Range w/oven, w/glass door	X	X	X	X	X						Cruise Control	0	0	0	0					
Eye Level Oven	N	0	0	0	0						Sun Viscors	0	0	0	0					
Power Range Hood w/light	X	X	X	X	X						Front Bunk (Kwiksee Spring Loaded)	X	0	0	0					
Double Stainless Steel Sink	X	X	X	X	X						Spray Urethane Foam Insulation	X	X	X	X					
Marine Toilet	X	X	X	X	X						Dual Rear Wheels	X	X	X	X					
6 Gallon Water Heater	X	X	X	X	X						Tires 7.50 x 16-Chevrolet	X	X	X	N					
Second Water Heater	N	N	N	0	0						Generator Based and Wired	X	X	X	X					
1 pc. Shower, Steel and Lavatory	X	X	X	N	N						RVI Code Apped. Heating, Plumbing & Elect. Systems	X	X	X	X					
Tub in Side Bath	N	0	X	X	X						Ice Maker	N	0	N	0					
5' Deluxe Foam Cushions	X	X	X	X	X						TV Antenna	0	0	0	0					
110V to 12V Automatic Converter	X	X	X	X	X						350 cu. in. Chevrolet Engine	X	X	X	N					
Prefinished Paneling	X	X	X	X	X						454 cu. in. Chevrolet Engine	X	X	X	X					
Shag Carpeting (indoor/outdoor not available)	X	X	X	X	X						T1H Wheels	X	X	X	X					
3 Lumadome Roof Vents (one in bath w/power vent)	X	X	X	X	X						Electronic Ignition	X	X	X	X					
45 Gallon Water Tank	X	X	X	X	X						Chevrolet Welded Steel Chassis	X	X	X	X					
12V Demand Water Tank	X	X	X	X	X						Automatic 3-Speed Transmission	X	X	X	X					
Color Coordinated Drapes and Fabrics	X	X	X	X	X						Power Steering and Power Brakes	X	X	X	X					
Pleated Drapes w/lie backs	X	X	X	X	X						Bucket Seats (Driver & Passenger)	X	X	X	X					
Front and/or Rear Privacy Drapes	0	0	0	0	0						Padded Instrument Panel	X	X	X	X					
Front and Side Roll Around Curtain	X	X	X	X	X						High Output Heater	X	X	X	X					
Bus-type Sliding Windows	X	X	X	X	X						Heavy Duty Battery	X	X	X	X					
Window over Sink	X	X	X	X	X						Dual Battery	0	0	0	0					
62 Gallon Holding Tank	N	X	X	X	X						60 Amp Alternator	X	X	X	X					
Tinted Windshield	X	X	X	X	X						23 Gallon Fuel Tank-Chevrolet	X	X	X	N					
12V Entrance Light	X	X	X	X	X						40 Gallon Fuel Tank-Chevrolet	N	N	N	X					
Convertible Dinette 1F, W96D	X	X	X	X	X						Auxiliary Fuel Tank - Chevrolet	0	0	0	0					
58 lb. Frame Mount Propane Tank	X	X	X	0	0						7,500 lb. Rear Axle	X	X	X	N					
80 lb. Frame Mount Propane Tank	0	0	0	X	X						8,500 lb. Rear Axle	N	N	N	X					
Double Front Seat	0	0	0	0	0						4,500 lb. Front Axle	X	X	X	N					
Steel Engine Cover	X	X	X	X	X						5,500 lb. Front Axle	N	N	N	X					
30M BTU Furnace	0	X	X	X	X						Heavy Duty Shock Absorbers	X	X	X	X					
24M BTU Furnace in 33" or 16M in 27" & 30"	X	N	0	0	0						Front Access to Water and Oil	X	X	X	X					
30 Amp Entrance Cable	X	X	X	X	X						Driver Door	0	0	0	0					
Back Up Lights	X	X	X	X	X						(Island Bed w/Entrance Door (Side Bath Only)	N	N	N	0					
Exterior Rearview Mirrors	X	X	X	X	X						67" Bed in Rear (Side Bath Only)	N	0	0	0					
ICC Lights	X	X	X	X	X						Vacuum Cleaner	N	0	N	0					
Rear Hose Bumper	X	X	X	X	X						Micro-Wave Oven	0	0	0	0					
Seat Armrests	0	0	0	0	0						Monitor Panel	0	0	0	0					
2 Trunks (No Generator)	X	X	X	X	X						Black-Out Curtains	0	0	0	0					
Automatic AM/FM Radio or AM/FM Stereo w/Tape	0	0	0	0	0						Screen Door	0	0	0	0					
Rear Speakers	0	0	0	0	0						Heavy Push Carpet	0	0	0	0					
11,000 or 13,500 BTU Roof Air Conditioner	0	0	0	0	0						Wall Clock	0	0	0	0					
4,000, 5,000 or 6,500 Auxiliary Generator	0	0	0	0	0															

X STANDARD 0 OPTIONAL N NOT AVAILABLE

ALLEGRO is registered trademark which identifies only the product of Tiffin Motor Homes, Inc.

SAFETY PRECAUTIONS

WARNING

Read and understand all instructions and precautions in this manual before operating your new motor home. The symbol WARNING is used throughout the manual to alert you to precautions that involve your safety. Read and follow them carefully. Listed are some safety precautions that must be adhered to. These precautions, as well as others that involve damage to equipment are also listed in the appropriate areas in this manual.

Never allow a passenger to stand or kneel on the seats when the vehicle is in motion.

Make sure all passengers have seat belts fastened in a low and snug position so the force exerted by the belt in a collision will be spread across the strong hip area.

Do not attempt to adjust the driver's seat while the vehicle is in motion.

Do not adjust tilt steering in a moving vehicle.

Lock the vehicle doors when traveling for additional safety.

Avoid inhaling exhaust gases. They contain carbon monoxide, which by itself is odorless, colorless and poisonous.

Use care when accelerating or downshifting on a slippery surface. Abrupt speed changes can cause skidding and loss of control.

Do not alter the LP gas system at any time or in any way.

Never use an open flame to test for LP gas leaks. Replace all protective covers and caps on LP system after filling.

Never allow your LP tank to be filled above the 90 percent level. Make sure the vehicle is level when filling the bulk tank so that it is not accidentally overfilled.

All pilot lights and appliances must be turned off while refilling the fuel or LP tank.

Never load the motor home in excess of the gross vehicle weight rating or the gross axle weight rating for either axle.

Do not remove radiator cap while engine and radiator are still hot.

Always check coolant level visually at the see-through coolant reservoir.

Never get beneath a vehicle that is held up by the jack only.

Do not mix different construction types of tires on your vehicle such as radial, bias, or belted tires as vehicle handling may be affected.

Do not attempt to start the vehicle by hot wiring.

Never carry extra gasoline inside the motor home.

Driving through water deep enough to wet the brakes may affect stopping distance or cause the vehicle to pull to one side. Check brake operation in a safe area to be sure they have not been affected.

Only seats equipped with seat belts are to be occupied while the vehicle is in motion.

When lighting range burners do not turn burner controls to "On" and allow gas to escape before lighting match.

11. Make sure all compartment doors have been closed and the door step has been stowed in the correct position before moving the vehicle.
12. Before traveling make sure the refrigerator door has been secured. Use care when opening the refrigerator door after you have stopped. Any articles that have shifted may fall out when the door is opened.
13. During peak tour seasons and holidays, it is best to phone ahead and make reservations at the park where you plan to stop.
14. Some states or cities will not permit you to pass through highway tunnels because of the LP gas containers in your vehicle. If your route includes a tunnel, check with the highway patrol or department of highways before venturing forth.
15. Do not leave food or odor causing material in your vehicle for extensive periods of time. Always allow damp clothing, hunting gear and etc., to dry before putting it away.
16. Become familiar with your fire extinguisher and make sure it is always fully charged. Remove and replace it and read the instructions so you know the correct operating procedure before an emergency.
17. Make a list of all groceries, fresh meats, vegetables, newspapers, and etc., that you may need and try to pick them up during your last gas stop of the day. This will prevent leaving a good parking spot once you have arrived at your destination.
18. When you sit over the front wheels while driving, as in the motor home, you may have a tendency to crowd the middle of the road. Check your rear view mirror frequently to observe how close you are driving to the center line.

EQUIPPING FOR TRAVEL

When beginning a trip, several items should be taken in addition to the basic clothes, food, and recreational items. A checklist is provided for your convenience. Remember, it is important to distribute weight and store all heavy items near the floor.

EMERGENCY EQUIPMENT CHECKLIST

Flashlight
First Aid Kit
Road Emergency Flares
Tool Box with Assortment of Hand Tools
Plastic Bucket
Tow Chain or Rope
Wheel Blocks for Leveling or Extra Jacks
Water Hose
100 - 150 Feet of Electrical Cord
with at Least 30 Amp Capacity
Fire Extinguisher
Lug Wrench
Spare Tire

3. Cover vinyl seats and cushions with towels to absorb cold air.
4. Place newspaper under the entrance door throw rug to soak up melting snow.
5. Position throw rugs against the bottom crevice of the entrance door to cut off cold air blowing in from the outside.
6. Place an old rug outside the motor home and another inside to prevent snow and moisture from being carried inside.
7. Carry an adequate supply of LP gas. A partially filled tank may last only a short time.
8. Carry a can of lubricant or graphite to free frozen locks, etc.
9. Try to keep a window partially open to prevent carbon monoxide buildup inside the motor home. Roof vents can easily become covered with snow.
10. For added warmth, insulate the window side of the drapes.
11. A temporary skirting can be made by piling snow up along the lower edge of the motor home to keep air from blowing under the unit.
12. Tire chains are helpful when road conditions become bad, and are required in some states.
13. Make sure all heating ducts are clean and lint free. Clogged ducts can restrict air flow and, in some cases, are a fire hazard.

TRAVEL TIPS

As you travel around the country in your motor home you will pick up various tips from other motor home owners.

A number of tips can also be picked up by reading articles and regular columns in some of the outdoor and camping magazines. Some magazines and publishing companies print an annual park and campground directory. These can be found at your local newsstand or trailer supply dealer. Following are just a few travel tips for you to start out with:

1. Be sure to always check for sufficient clearance. Remember the height and width of your unit.
2. Taste the water before filling the water tank in an unfamiliar location. The water in some areas contains a salt or a sulfur taste.
3. Never use a new hose to fill your water tank. It leaves a distinct taste.
4. Showers can take a lot of water. Conserve water by taking a "sea shower". This is done by; wet down, turn off the water, soap thoroughly and then rinse.
5. Put a bucket under the holding tank drain connection for good camp etiquette.
6. Dump sewage only at approved dumping stations.
7. Plastic containers with tight fitting caps should be used for storing liquids.
8. Keep an eye on the water and holding tank levels. It is a good idea to dump the holding tank at least every two days.
9. When traveling with children, it is helpful to plan their wardrobe for a week. Place each day's clothing in a plastic bag and label the name and day on the bag.
10. Use sleeping bags whenever possible. They save laundry and take up less storage space.

IMPORTANT - AIR BAGS

All Allegro motor homes front suspension are equipped with rubber air bags inside the coil springs. Air pressure in these air bags may be increased or decreased to adjust vehicle trim and minimize "crash through" on large road bumps or depths. Inflation pressure must be maintained between 50 psi minimum and 75 psi maximum.

CAUTION

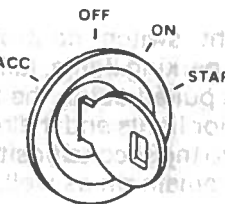
Failure to maintain air in the air bags will result in out of alignment condition and will cause the front tires to wear out in about 2000 miles.

CHASSIS - OPERATION - CHEVROLET

INSTRUMENTS AND CONTROLS

Ignition Switch

The key operated ignition switch has four positions-Accessory, Off, On, and Start. When the key is turned to the "Acc" position, all electrical accessories, such as the radio, will operate without the engine running. Turned clockwise to the "On" position, the switch activates the ignition system. To engage the starter, turn the key to the "Start" position. As soon as the engine starts, release pressure on the key and it will return to the "On" position. See starting section for additional information on starting the engine under various conditions.



Keys

An identification number on Chevrolet chassis accompanies each new ignition key and is stamped on a knock out plug in the key head. Record the identification number and discard the plug. Keep the identification number in a safe place, never in the vehicle. Should the original key become lost, your dealer or locksmith can provide a duplicate using the identification number.

Power Steering

Power steering is provided as standard equipment in your Allegro motor home. By maintaining proper fluid level and ensuring that the drive belt is always tight, the power steering system should function properly. However, should the system fail due to a malfunction or because the engine has stalled, the vehicle can still be steered, but with a greater amount of force.

Tilt Steering

Your motor home is equipped with a tilt steering wheel or steering column tilt which can be tilted above the normal position to provide additional room for entrance or exit as well as selected driving positions below normal height. This permits individual selection of the most natural position for driving. On long trips, the steering wheel position can be changed to minimize tension and fatigue.

WARNING

Do not adjust steering mechanism while vehicle is in motion.

The tilt mechanism is operated by lifting up on the small control lever on the left side of the steering column below the turn signal, moving the steering wheel to the desired position and releasing the lever.

Headlight Switch

The three position light switch controls the instrument lamps, headlights, marker lights, parking lights, tail lights, tag light and interior lights. When the switch is pulled out to the first position, all lights with the exception of the interior lights and the headlights come on. Pulling the switch all the way out to the second position turns on the headlights; however, all other lights remain on as well.

WARNING

Do not use park lights when vehicle is in motion. Parking lights denote a parked vehicle.

Instrument light intensity can be varied by turning the light switch knob clockwise or counterclockwise. Full counterclockwise rotation will turn on an interior light to illuminate the driver's compartment. The back-up lights operate only when the transmission is in reverse.

REMOVAL FROM STORAGE AND NEW SEASON PREPARATION

1. Completely air out the motor home.
2. Check window operation.
3. Check cabinet and door hinges and lubricate with penetrating oil, if necessary.
4. Fill the water tank and check for leaks. Sanitize the water system as outlined under system purification.
5. Check operation of all faucets to be sure faucet washers have not hardened during storage.
6. Check the sealing valve in the toilet for proper operation and lubricate with silicone spray.
7. Add water to the holding tanks and check to be sure dump valves seal tightly.
8. Check the entire LP gas system and appliances for leaks using the leak detector. Check the connections at the LP tank for leaks using soapy water.
9. Check around all appliances for obstructions and ensure that all vent openings are clear.
10. Start refrigerator and check for proper cooling.
11. Clean paneling and counter surfaces and apply a thin coat of wax.
12. Check out the electrical system to make sure all lights and electrical components operate.
14. Check the unit for leaks at all seams, especially the roof. The sealant becomes brittle with age and cold temperatures. If there are any cracks, have them cleaned thoroughly and resealed with silicone. DO NOT use lacquer thinner to clean seams.
15. Check tires for proper cold inflation pressure.

SUMMER MAINTENANCE

1. Check your wheels and tires often during the summer months.
2. Check the exterior seams periodically and reseal if necessary.
3. Wash and wax the motor home occasionally to protect the finish. This is particularly important if salt, road tar, tree sap, etc., have accumulated on the exterior.
4. Give your motor home a thorough mid-summer cleaning.

WINTER CAMPING TIPS

1. Cut out transparent heavy plastic sheets and attach to the inside of the window with duct tape, or buy storm windows.
2. The holding tank and plumbing system are the most vulnerable part of your motor home in winter. Exposed piping, etc., can be wrapped with heat tape (12 volt) and covered with insulation and plastic to keep out air and moisture. This same procedure can be used to limited extent on holding tanks. The best protection for holding tanks is the use of non-toxic antifreeze and limited use of the drainage system.

NOTE: The water system may also be winterized with the use of non-toxic antifreeze added to the storage tank and pumped throughout the system. Follow the directions on the container to determine the correct amount of antifreeze to be used.

6. Completely drain both the waste water and sewage holding tanks. Thoroughly rinse tanks and drain again. It is recommended that when rinsing the tanks, you drive the vehicle a few blocks to make sure all material has been loosened. The waste valves and cap on the holding tanks should be closed to prevent the dump valve shafts from rusting and to prevent rodents from entering the holding tanks.
7. Turn furnace thermostat to "Off" position.
8. Lubricate all hinges and door locks.
9. Clean refrigerator and leave the door slightly ajar.
10. Seal all appliance vent openings.
11. Disconnect the battery cables from all batteries.
12. Whenever possible, the batteries should be removed and stored indoors. When they are left in the vehicle, the state of charge of all batteries must be checked regularly in areas where freezing temperatures occur. A battery will discharge by itself in time and a discharged battery, or even one with one half charge or less can freeze. Since the discharge time varies with temperatures, battery age and other conditions, batteries should be checked at least every two weeks.
13. Have the chassis completely lubricated.
14. Make sure the antifreeze level in the automotive radiator is sufficient to protect against freezing.
15. After water lines have been drained, winterize the fresh water toilet by one of these methods:

- a. Leave water supply line valve to toilet open. Depress foot pedal or turn flush knob, and insert a round object such as a soft drink bottle into the outlet located at the bottom of the bowl. Release the pedal or knob slowly until the blade touches and holds the object. This will hold the water control valve open and prevent any residue water from being trapped there where it can freeze.

IMPORTANT

Tie the soft drink bottle securely to prevent it from dropping into the holding tank.

- b. Use non-toxic antifreeze to winterize the entire motor home fresh water plumbing system. Follow the directions on the antifreeze container.
16. To extend the life of the automotive air conditioner unit when so equipped, start the motor home engine and run the air condition a few minutes every two weeks.
17. Prepare the optional 110-volt generator for storage by following the instructions given in the generator maintenance section.

Turn Signals

Turn signals should be used whenever a right or left turn is made, when changing lanes or when pulling away from the curb. Always signal your intentions before making a maneuver.

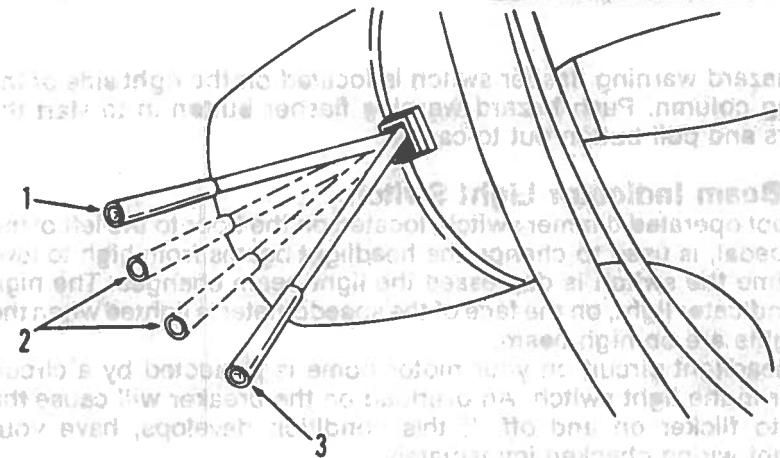
The ignition switch must be in the "On" position for the turn signals to operate. The turn signals can be used in two ways:

Lane Change - The first position up or down may be used for changing lanes or when making a gradual turn. The lever must be held in the lane change position; it will return to the neutral position when released.

Full Turn - The fully engaged or second position, up or down, is for use when making a normal turn. The turn signal will automatically cancel when the turn is completed.

IMPORTANT

When the turn indicator lights on the instrument panel do not light, it is an indication that the turn signals are not flashing. The probable cause is a burned out bulb, but until the bulb can be replaced or the system serviced the appropriate hand signals should be used.

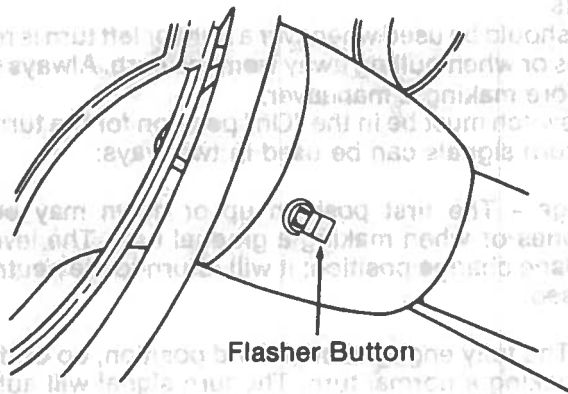


TURN SIGNAL LEVER

1. Right Turn
2. Lane Change Positions
3. Left Turn

Hazard Warning Flasher

The hazard warning flasher provides additional safety when you are forced to stop on the side of the roadway and present a hazard to other motorists. When the flasher is on, it serves as a warning to other drivers to approach and overtake your vehicle with caution.



HAZARD WARNING FLASHER

WARNING

Operating the hazard warning flasher system while moving on the highway is prohibited by law.

The hazard warning flasher switch is located on the right side of the steering column. Push hazard warning flasher button in to start the flashers and pull button out to cancel.

High Beam Indicator Light Switch

The foot operated dimmer switch, located on the floor to the left of the brake pedal, is used to change the headlight beams from high to low. Each time the switch is depressed the light beam changes. The high beam indicator light, on the face of the speedometer is lighted when the headlights are on high beam.

The headlight circuit on your motor home is protected by a circuit breaker in the light switch. An overload on the breaker will cause the lights to flicker on and off. If this condition develops, have your headlight wiring checked immediately.

Automatic Transmission

An automatic transmission is provided as standard equipment on your Allegro motor home. The gear selector lever is located on the dash to the right of the steering column on C Body motor homes and on the steering column on A Body vehicles.

The selector lever should remain in Park position when the vehicle is parked. For driving, a choice of Reverse, Drive, Low 1, and Low 2 is available. A neutral position can be used when the vehicle is stopped temporarily, such as at a stop light.

For further information on gear selection for various driving conditions refer to the Gear Selection section.

STORAGE

After each use it is advisable to prepare your motor home for non-use just as you would if you left your house or apartment vacant for a period of time. Make sure all perishables have been removed from the motor home and proper ventilation has been provided. Always check to be sure that the LP gas cylinders have been turned off. It is also advisable to drain the water heater, water tank, and holding tanks. Pull the shades closed to protect the upholstery from the direct rays of the sunlight. When preparing the motor home for winter storage in cold climates, it is extremely important that you accomplish the following section on winterization of the motor home. If the water and drain systems are not properly prepared, damage to various components and systems could occur because of freezing.

WINTERIZATION

The objective in winterization of the motor home is to protect against freezing. The most vulnerable areas are the water system, the waste drain system, the holding tanks, the water heater, and the battery.

1. Level the motor home.
2. Remove all foods and equipment that could cause odors.
3. Clean entire vehicle. Dirt and stains are much easier to remove when they are fresh.
4. Close all windows and roof vents.
5. Drain the complete water system:
 - a. Open all faucets.
 - b. Open the water tank drain, located between the tank and demand water pump (water drains under the vehicle).
 - c. Allow demand water pump to operate until all water lines have been drained.
 - d. With water pump running, operate toilet flush mechanism hold until water stops flowing.
 - e. After water has stopped draining, leave all drain valves and faucets open and force air through the water system. Use a hand pump or pressure pump at a gas station to provide pressure.

CAUTION

To avoid possible damage to the pump or water lines, limit air pressure to 30 psi.

- f. Disconnect discharge and intake hoses from demand water pump. Start pump and allow to run until all water is expelled from the unit. (Running dry will not harm the pump.) Then reconnect the hoses. Close all drains but leave all faucets open.
- g. Pour dealer recommended non-toxic antifreeze into the bathroom sink drain, shower drain and both the kitchen sink drains.

WARNING

Do not use automotive type radiator antifreeze. It is poisonous.

GALLEY SINK

The stainless steel sink can be cleaned with soap or detergent. Rinse thoroughly with warm water and wipe dry to avoid streaks.

Use a mild abrasive for stubborn stains. Work in the direction of the polish lines. To keep the original finish, polish with a wax cleaner, and rub with a soft dry cloth.

CAUTION

Salt, mustard and mayonnaise may cause pitting. If spilled, clean immediately.

WALLS AND CEILING

Walls and panel ceiling can be cleaned with a mild soap or detergent solution. Use a damp cloth but do not saturate the walls with water. To minimize fingerprints and smudges on wood paneling, use a cleaner that leaves a film of thin wax. Wipe the wax cleaner on and then remove any excess with a dry cloth. After this application, fingerprints and etc., can be wiped off with a dry cloth, or one moistened with a little additional wax cleaner. Always clean the wall surface thoroughly before applying wax.

RANGE AND REFRIGERATOR

For care and appearance maintenance of the range and refrigerator, refer to the operation and maintenance section for each of the individual appliances.

BATHROOM

The shower walls in the bathroom should be cleaned with a mild soap and water solution or to obtain maximum lustre, use a good quality wax cleaner. Do not use an abrasive cleaner on the shower walls. However, a mild abrasive cleaner may be used to clean the shower floor or bathtub.

For instructions on the care of the fresh water toilet, refer to Toilet Maintenance.

The bathroom vanity in some models is also constructed of a plastic material and should be cleaned with a mild soap and water solution. Abrasive cleaners or harsh detergents should not be used. If the vanity in your motor home has a stainless steel sink, follow the directions given for care of the kitchen sink.

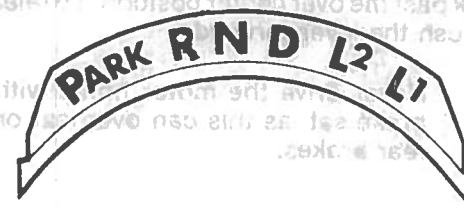
DOORS AND WINDOWS

Windows can be periodically cleaned with a good quality glass cleaner or mild soap solution and a soft cloth. Use care when removing ice or frost from the windows. Always use a plastic type ice scraper, never one made of metal. Use care when removing ice from the mirrors to protect the reflective surfaces.

The door locks and hinges should be lubricated periodically with powdered graphite to ensure trouble-free operation and to protect against freeze up.



Turbo Hydra-Matic Shift Positions
TRANSMISSION SELECTOR LEVER
(A Body Motor Homes)



TRANSMISSION SELECTOR LEVER
(C Body Motor Homes)

Power Brakes

Your motor home is equipped with power brakes to make stopping easier and smoother. The braking system is combined with the power steering system which in turn provides power assist to the brakes (hydroboost). However, the fluids in each system are separate. Therefore, DO NOT add hydroboost power steering fluid to the brake master cylinder, or brake fluid to the power steering reservoir. In the event that power assist to the brakes is interrupted due to a stalled engine or a system malfunction, reserve power assist is available for stopping the vehicle. However, the reserve power assist is partially depleted each time the brake pedal is applied and released. Do not pump the brake when stopping in this manner, except when necessary to maintain steering control on slippery surfaces.

When reserve power assist is exhausted, the motor home can be stopped manually by applying a greater amount of force to the pedal

WARNING

Driving through water deep enough to wet the brakes can affect braking performance and cause the vehicle to pull to either side. Always test brakes in a safe area if you suspect this condition exists.

Automatic Brake Adjustment

All individual wheel brakes with the exception of the parking brake are self adjusting. The rear wheel drum brake adjustment is made each time the brakes are applied while the vehicle is moving backward. Front wheel disk brakes are adjusted automatically each time the brakes are applied.

Should excess brake pedal travel develop, drive alternately in forward and reverse several times and apply the brakes firmly in each direction. See your dealer if this procedure does not restore normal pedal travel.

Parking Brake (A Body Motor Homes)

The parking brake control is mounted under the instrument panel to the left of the steering column. The amount of force required to apply the parking brake can be adjusted by turning the adjustment knob on the end of the lever. This will also adjust the degree of brake application. To set the parking brake, depress the service brake pedal with foot while pulling the lever back past the over center position. To release, apply the service brake and push the lever forward.

CAUTION

Never drive the motor home with the parking brake set, as this can overheat or damage the rear brakes.

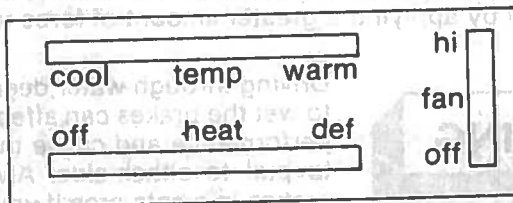
IMPORTANT

The parking brake should be set before moving the selector lever to "Park" whenever leaving the driver's seat. When this is not done, the weight of the vehicle may exert so much force on the parking pawl in the transmission that it can be difficult to pull the selector lever out of "Park".

Heater and Air Conditioner Controls (A & C Body Motor Homes)

Heater

To provide heat to the driver's compartment, slide the "Heater-Def" control to the "Heater" position, adjust "Temp" control lever as required to give the desired amount of heat, and move vertical fan switch up for the desired fan speed. Moving the temperature control all the way to the right provides maximum heat. The fan switch provides three speeds in addition to the "Off" position. Moving the switch to the full upward position provides maximum air flow through the heater.



Moving the "Heater-Def" lever to the full right or "Def" position directs the warm air through the defroster vents to defrost or defog the windshield. You can regulate the distribution of warm air between the defroster and heater by positioning the air flow selector lever between "Heater" and "Def"

CAUTION

Never use a strong solvent such as lacquer thinners or harsh abrasives on painted surfaces.

Always be sure to check for sufficient overhead clearance before entering a car wash area.

It is recommended that a coat of automotive wax be applied to the surface occasionally to provide added protection against harmful deposits coming in contact with the paint.

UPHOLSTERY AND CARPETING

Dust and loose dirt that accumulates on upholstery and carpeting should be removed frequently with a vacuum cleaner, whisk broom, or soft brush. Wipe any vinyl plastic surfaces with a soft damp cloth. Always remove spots and stains as soon as possible. Stains or soils such as lipstick, inks, grease, and mustard are extremely difficult to remove. Consult a professional carpet and upholstery cleaner for assistance.

CAUTION

When cleaning upholstery, carpeting, and fabric, do not use lacquer thinner, nail polish remover, laundry soaps, or bleach. Never use carbon tetrachloride, gasoline, or naphtha for any cleaning purpose.

These materials may cause damage to the material being cleaned, and most are highly flammable.

When cleaning any stain, use a small amount of cleaner, light pressure, and a clean cloth. Work from the outside of the stain toward the center, frequently changing the cloth to a clean section. Immediately wipe the area briskly with a clean absorbent towel or cheese cloth to dry the area. Any stains or soils in the carpet should be removed by following the directions on a good quality carpet cleaner or shampoo.

IMPORTANT

To minimize fading of upholstery caused by excessive sunlight, the drapes should be pulled closed when the motor home is parked for an extended period of time.

WORK SURFACES

Work surfaces are covered with a plastic laminate that is resistant to solvents and stains. A coat of wax applied to these surfaces on the counter and table will help preserve their beauty and make cleaning easier. Always clean the surface before applying the wax.

DRAPERY

Drapes must be dry cleaned only.

OVERHEAD SLIDER BUNK (C Body Motor Homes Only)

The slider bunk located above the driver's compartment allows easy access to and from the driver's compartment seats when in the stored position, but easily converts to a full-size bed as follows:

1. Grasp edge of slider board and pull out to cover driver's compartment.
2. Position thick mattress on front half of bed and thin mattress on slider board.
3. To stow the bed after use, push the slider board all the way forward and place mattresses on top of each other on the board.

MOTOR HOME CARE AND MAINTENANCE

ROOF

The roof, like the walls and floor, is made of all aluminum construction. It will support your weight, should it become necessary to repair the roof or roof mounted components. It is not recommended, however, that very large or heavy objects be carried on the roof when the vehicle is in motion. Always have cracks in the roof seams or damage to the roof area repaired by your dealer immediately. Putting off roof repairs can result in further damage to interior ceiling panels, upholstery, etc., by water leakage.

CAUTION

IT IS THE RESPONSIBILITY OF THE OWNER TO CHECK ROOF SEAMS AND JOINTS AT LEAST ONCE A YEAR AND HAVE THEM RESEALED IF NECESSARY.

UNDERBODY MAINTENANCE

Corrosive materials such as those used for ice and snow removal and dust control often accumulate on the underside of the vehicle. The buildup of mud under the body not only can cause rust, but also adds weight which contributes to the gross vehicle weight of the vehicle. This, in effect, reduces the amount of cargo you can carry to stay within the GVWR and GAWR limits.

These materials should be removed by flushing the underbody regularly with water. Be sure to thoroughly flush those areas where mud and other foreign materials collect.

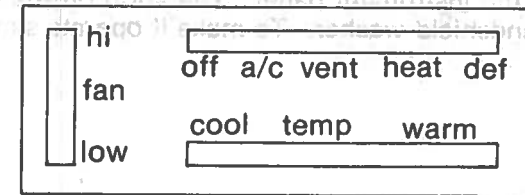
EXTERIOR

The exterior surface of your motor home has an automotive enamel finish. Frequent washing and thorough cleaning is recommended to prevent damage to the vehicle after exposure to damaging salts, calcium chloride, road tar, tree sap, insects, and other foreign material. Never wash the vehicle with hot water, in the direct rays of the sun, or when the sheet metal is hot. Never wipe dirt from a dry painted surface without first washing the vehicle, as this may scratch the surface.

Do not use strong soaps or detergents for washing the motor home. Always use a mild soap in warm water, a commercially prepared product for cleaning automotive finishes, or your local car wash.

Heater and Air Conditioner Controls

Control levers for fresh air vent, heater and air conditioner are all on single control panel. Refer to the instructions below for the use of the individual controls.



HEATER AND AIR CONDITIONER CONTROLS

Fresh Air Vent Controls - To provide outside air to the interior of the motor home, move the top lever to "vent" position. This will allow fresh air to flow into the motor home through the air conditioner vents. The vent is closed when lever is moved back to "Off" position.

Heating - To heat the driver's compartment, move the air flow selector lever to Panel (heat) and the temperature control lever to warm. Set the fan control lever to the desired fan speed, and as the interior warms, adjust the temperature control lever to the left to obtain a comfortable temperature.

Defrosting and/or Defogging - Move the temperature control lever to warm, and the air flow selector lever to the defrost position. Set the fan control lever to the desired fan speed for air flow to the windshield. You can regulate the distribution of warm air between the defroster and the heater by positioning the air flow selector lever between "Heat" and "Def."

Automotive Air Conditioner (optional) - To cool the driver's compartment move top lever to "Max A/C" position. Set the fan control lever to the desired fan speed.

IMPORTANT

The automotive heater and air conditioner were designed to heat and cool only the driver's compartment and not the entire interior of the motor home.

Windshield Washer and Wiper (All C Body Motor Homes)

The two speed windshield wiper is controlled by a rocker switch located on the left side of the instrument panel. Pushing the left side of the switch turns on the wipers at low speed. When the right side of the switch is fully depressed, the windshield wipers will operate at the high speed. A switch located next to the wiper control operates the windshield washer. Water will be directed onto the windshield as long as the switch is depressed.

Windshield Washer and Wiper (All A Body Motor Homes)

The two speed electric wipers are controlled by individual knobs on the right side of the instrument panel. The knob on the left has the switch for the windshield washer. To make it operate simply push it



INSTRUMENT PANEL

Main Auxiliary Fuel Switch (A Body Motor Homes with optional auxiliary fuel tank only)

Fuel may be used from the main or auxiliary tank by use of the fuel selection switch.

Battery Condition Meter and 110V Onan Generator Switch (Optional)

This gauge is a voltmeter which allows you to monitor the state of charge in all storage batteries in the motor home. To obtain an accurate reading, the automotive engine and optional 110 Volt generator must be running. This meter and switch are located on the dash of the motor home.

Auxiliary Generator Switch (On motor homes equipped with 110V generator option)

This On, Off, Start switch controls the 110V auxiliary generator allowing the generator engine to be started without leaving the motor home. This also permits the generator engine to be started while the vehicle is in motion.

Auxiliary Generator Hourmeter (On motor homes with 110V generator option)

This meter registers the number of hours the auxiliary generator has operated. Use it as a reminder of when the generator unit is due for periodic lubrication and routine maintenance. This meter as well as the generator switch and hourmeter and battery condition are located on the dash of the motor home.

Brake Warning Light

The service brake system in your motor home is a dual system which provides a reserve braking capability in the event of failure of one half. Failure of either half of the dual system is indicated by the brake system warning light, which will glow and remain lit until the brake system failure is corrected. The light is connected to the ignition switch and would glow during engine starting to verify that the bulb is operating properly. The light will then go off when the engine starts unless a brake

INTERIOR FURNISHINGS

SPRING BALANCED PULL-DOWN BUNK

Spring balanced pull-down bunks can be of either the front or rear type.

The bunk is moved into position by pulling downward in an arc against the counter tensioned springs. The bunks have a seat belt type fastener which ensures against bunk movement while traveling. Unsnap them before pulling down on the bunk and be sure they are properly snapped again before traveling. Make sure the sun visors are out of the way before lowering a front bunk. When returning the bunk to the raised position, check to be sure there are no loose items on it that may strike the ceiling when it is raised.

DINETTE/BED

A combination dinette and bed is provided in some models. To convert to a bed:

1. Fold table leg up against the bottom side of the table by releasing the catch.
2. Relocate the table by lifting the end nearest the aisle to release it from the support bracket on the sidewall. Then lower the table to rest on the cleats attached to each dinette bench.
3. Arrange dinette back and seat cushions over bed area.
4. To convert the dinette/bed back to a table, reverse the above procedure.

PULL-OUT GAUCHO BED

To convert a gauchio seat into a bed: pull out the support tray by grasping the edge and pulling it out to the full extent as you would a drawer. Then arrange the folded back cushion and seat cushion to make the bed. To convert the gauchio back to a seat, simply reverse the procedure.

PEDESTAL DINETTE TABLE

To convert the pedestal dinette table, found in some models, to a bed:

1. Remove the table top by lifting while also giving a gentle twisting or rocking motion to the top.
2. Remove the pedestal(s) from the socket with a gentle lifting, turning motion. The Allegro has two pedestals which support the table.
3. Store the pedestal(s) in one of the closets or wardrobes.
4. Place table top in position to complete base for bed. Cleats on the sides of the dinette benches are provided for this purpose.
5. Arrange seat and back cushions over bed area.
6. Reverse the above procedure to convert the bed back to a table.

NOTE: The double pedestal table found on the rear bath models unit can be moved closer to or away from the benches.

IMPORTANT

Do not use highly concentrated or high acid content household cleaners on the toilet. They may damage the seal.

IMPORTANT

Do not put facial tissue or regular toilet tissue in the toilet. They will not deteriorate and often cling to the sides of the holding tank. Toilet tissue made specifically for use in recreational vehicle toilets is available from a recreational vehicle equipment dealer. Do not put automotive anti-freeze, laundry bleach, or heavy detergents in the toilet or the sewage holding tank. These products may damage the plastic or rubber parts in the system.

Toilet Trouble Shooting

Problem

Water keeps running into bowl.

Probable Cause

The blade in the bottom of the bowl is not closing completely because the groove into which the blade seats is clogged. This in turn keeps the water control valve partially open.

Solution

Carefully remove the foreign material. Use care to avoid damaging the rubber seal on the foot pedal model.

Defective valve

Have toilet valve replaced by your dealer.

Foot pedal operates harder than normal or the blade sticks on foot pedal model.

Blade does not slide smoothly in the guide.

Apply a light film of silicone spray to the blade.

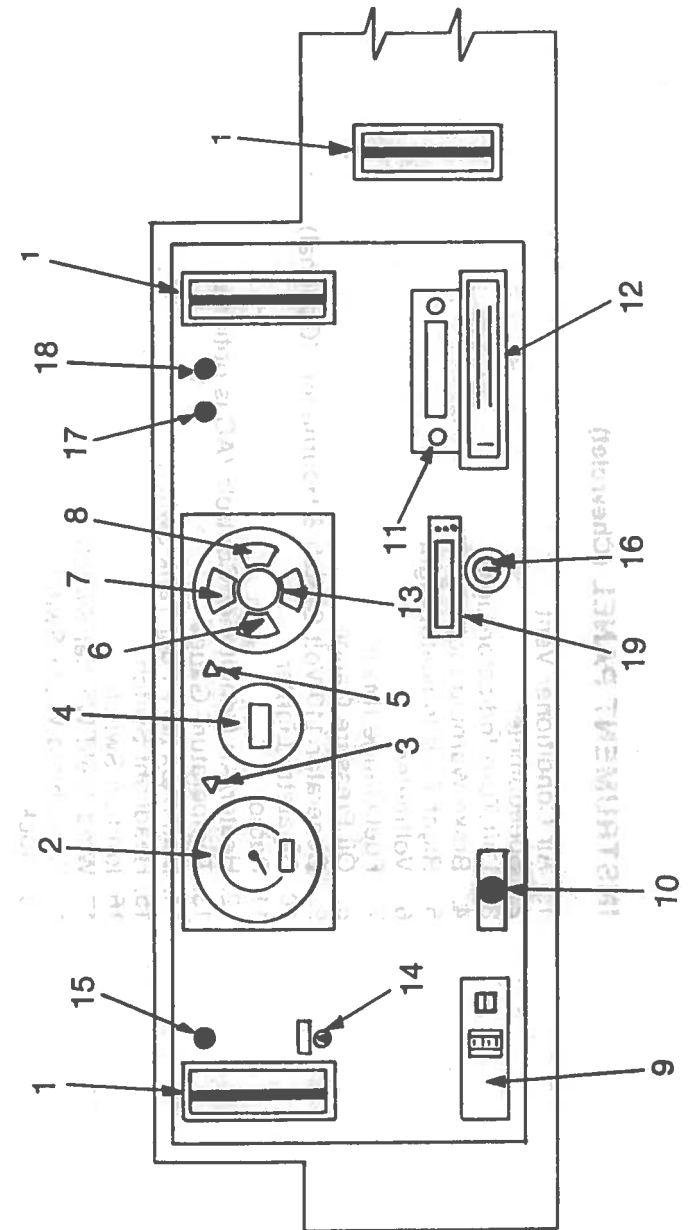
Poor flush.

The knob on the hand flush model is not being held fully open.

Hold knob fully open for five seconds.

Foot pedal on pedal model is not being held for a sufficient flush.

Fully depress pedal.



INSTRUMENT PANEL (Chevrolet)

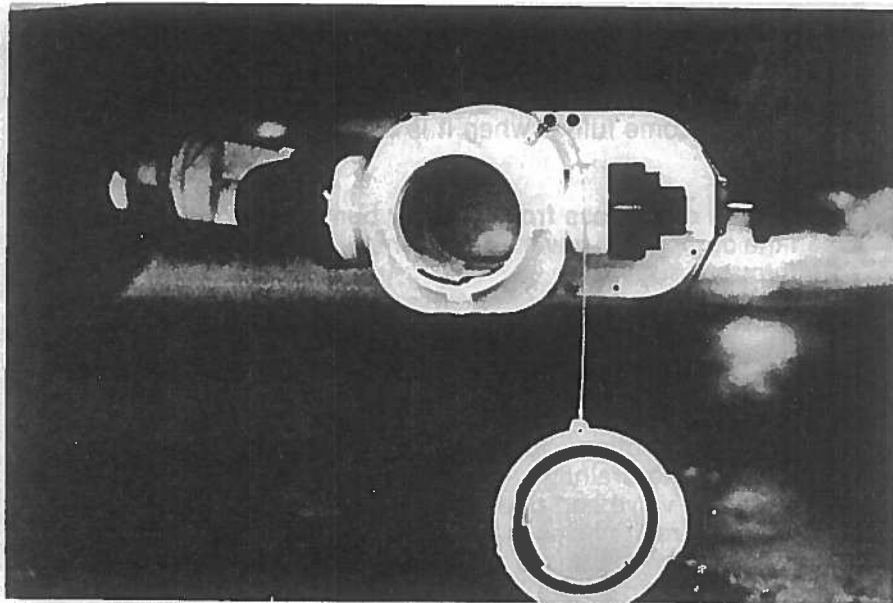
1. Air Conditioner Vent
2. Speedometer
3. Left Turn Indicator Light
4. Brake Warning Light
5. Right Turn Indicator Light
6. Voltmeter
7. Fuel Gauge (Main)
8. Oil Pressure Gauge
9. Generator 110 Volt Switch & Hourmeter (Optional)
10. Cigarette Lighter
11. Radio
12. Heater/Air Conditioner Controls (AC is optional)
13. Temperature Gauge
14. Main/Auxiliary Fuel Tank Switch
15. Headlight Switch
16. Ignition Switch
17. Windshield Washer Switch
18. Windshield Wiper Switch
19. Clock

Toilet Maintenance

Routine maintenance of the toilet is not required. To clean the fresh water toilet, use a high grade non-abrasive cleaner, or a commercially prepared product intended for use in portable toilets. Do not use conventional bowl cleaners, as they can damage or scratch plastic surfaces.

If after extended use, the bowl sealing blade on the foot operated toilet, does not operate freely, it can be restored to its original smooth operating condition by applying a light film of silicone spray to the blade.





FRESH WATER TOILET

The fresh water toilet operates on the same principle as a household toilet except that it is designed to use a small amount of water. It utilizes high velocity water injection which produces a swirl effect in the bowl. Since each flush uses fresh water, chemical additives are not required. Two types of toilets have been used. Refer to the appropriate instructions for the toilet in your vehicle.

Foot Pedal Model - Operation

To flush the toilet, step on the large pedal until the water swirls, completely rinsing the bowl, then release the pedal. Additional water may be added to the bowl by depressing the small pedal. This pedal should be used when you want to add water to the holding tank for rinsing the tank.

This warning light is not to be used as a substitute for the visual check of brake fluid level required as part of normal maintenance.

WARNING

If brake failure is indicated, immediate repair service is necessary. Continued operation of the vehicle in this condition is dangerous.

Speedometer

The speedometer hand indicates the vehicle's forward speed in miles per hour. The six figure odometer located in the lower center section of the speedometer indicates the accumulated mileage. The odometer should be used as a reminder of when the vehicle is due for periodic lubrication and routine maintenance.

Cigarette Lighter

When you wish to use the cigarette lighter, simply push and release the knob. As soon as the element is hot, the knob will "pop" out partway to the normal position and is ready for use.

Clock

Clock (Dash) - Clock lights up when you turn ignition on or push-in top button on clock. To set time, push-in bottom or middle button. Bottom button changes time slow, middle button changes time fast.

Oil Pressure Gauge

The oil pressure gauge indicates the pressure at which oil is being delivered to the various parts of the engine. Upon starting the engine, the pointer should move to the normal range of the gauge. However, higher or lower readings may be indicated under different operating conditions such as outside air temperature and weight of oil being used. If the pointer drops below the normal range while the engine is running, it is an indication of a loss of pressure and the motor home should be stopped as soon as possible and the engine shut off.

Check the oil level in the engine and add oil when necessary. The oil pressure gauge should not be used as an indicator of the engine's oil level. Several factors could cause loss of oil pressure even though the oil level is normal. Do not operate the engine when the gauge pointer is below the normal operating band. Operating without oil pressure can quickly destroy the engine bearings and other engine parts.

Temperature Gauge

This gauge indicates the engine coolant temperature. As the engine becomes warm, the pointer will move to the normal range of the gauge. Coolant temperature and, therefore, gauge readings, may vary depending on weather and traffic conditions. There is no danger to the engine unless the gauge pointer moves all the way right to the H (hot) position. If it does, stop the vehicle or reduce speed to permit the engine to cool.

WARNING

Never add coolant to the radiator when the engine is overheated. Do not loosen or remove the cap to cool an overheated engine. Refer to section on Cooling System Maintenance for further cautions and instruction on adding coolant to the radiator.

Fuel Gauge

With the ignition switch in the "On" or "Acc" position, the fuel gauge registers the approximate fuel level in the tank. When the gauge registers empty, some fuel is still available as a reserve and when the gauge registers full, some additional fuel can still be added to the tank. It is a good practice to keep the fuel tank at least half full at all times to help prevent condensation in the tank. If your motor home is equipped with an auxiliary fuel tank, the fuel gauge is capable of registering the fuel level in that tank as well. Whenever the fuel selector switch is changed to a different position, the fuel is then drawn from the selected tank and the fuel gauge registers the level of that tank.

Voltmeter Gauge (Alternator Indicator)

The voltmeter indicates the state of the charging system. A regulator connected to the alternator, controls the amount of voltage produced by the alternator. Under normal conditions, the voltage will range between 11 and 15 volts depending on temperature and electrical requirement. For example, voltage requirements will be higher when operating the lights or the auto air conditioner. When voltage is within its normal range, it indicates proper alternator operation and consequently will maintain battery at the proper state of charge. A drop in the voltage output could indicate a malfunction in the charging system and should be checked as soon as possible.

Dual Battery Isolator

The dual battery isolator permits connecting the auxiliary battery to the automotive electrical system permitting it to be charged by the engine alternator as you drive.

RADIO (Optional or standard depending upon motor home model) Basically, all radios are tuned and operated in a similar manner. Refer to the directions below and to the specific illustration of the radio in your motor home.

IMPORTANT

Radios have an in-line fuse between the radio and the fuse block to protect the radio wiring. A second protection fuse is located in the fuse block itself. If the radio fails to operate, check both fuses and replace the new fuse of the same value if found to be defective.

models, the lavatory sink. Each of the systems and holding tanks empty through a common fitting located on the left side of the vehicle. The drainage system is self contained allowing use of the toilet, sinks, or shower even in areas where sewage hook-up is not available. When the holding tanks become full or when it is convenient to empty a partially filled tank:

1. Remove the drain hose from the rear bumper.
2. Open the dump valve cover door on the driver's side of the vehicle if so equipped.
3. Remove the dust cap from the drain and connect drain hose. Be sure it is firmly attached.
4. Place the other end of the sewer hose into the disposal connection.
5. Open the valve handle access door or unsnap the valve handle clips and open valve with a quick pull. **OPEN ONE VALVE AT A TIME.** Move the hose gently about to dislodge any waste in the hose and to ensure complete drainage.
6. Close sewage valve and open waste water valve with a quick pull. Make sure there are no sags in the hose during drainage. Close the valve and snap the locks over the handle (on all models so equipped) as soon as the tank is drained.
7. After both tanks have been drained, run several gallons of water into the sewage tank through the toilet. Then open the sewage dump valve and drain the tank again. Close the valve and lock handle in place using clips, on models so equipped, or close handle access door securely.
8. It is also advisable to add approximately a half gallon of water and some odor control chemical to the sewage holding tank.

CAUTION

Although many detergents and bleaches have a deodorizing effect, they should not be used to clean or deodorize the toilet or holding tank. These could damage the seal in the toilet or the holding tank valve.

9. Rinse the sewer hose thoroughly with water and stow.

USE OF IN-PARK SEWER SYSTEM

When you are using a sewer hook-up while parked, such as in a trailer park, keep the dump valves closed, and open only when preparing to leave or when the tank becomes full. This is important so that the solids in the tank are kept in suspension allowing them to be carried out with the rush of liquids when the dump valve is opened. If the valve is left open, the liquids will run off leaving the solids in the tank. Should this accidentally happen, disconnect the hose, fill the tank about half full with water, and drive a few miles to dislodge the solids. A few starts and stops will aid in this process. Then reconnect the hose and drain in the normal manner.

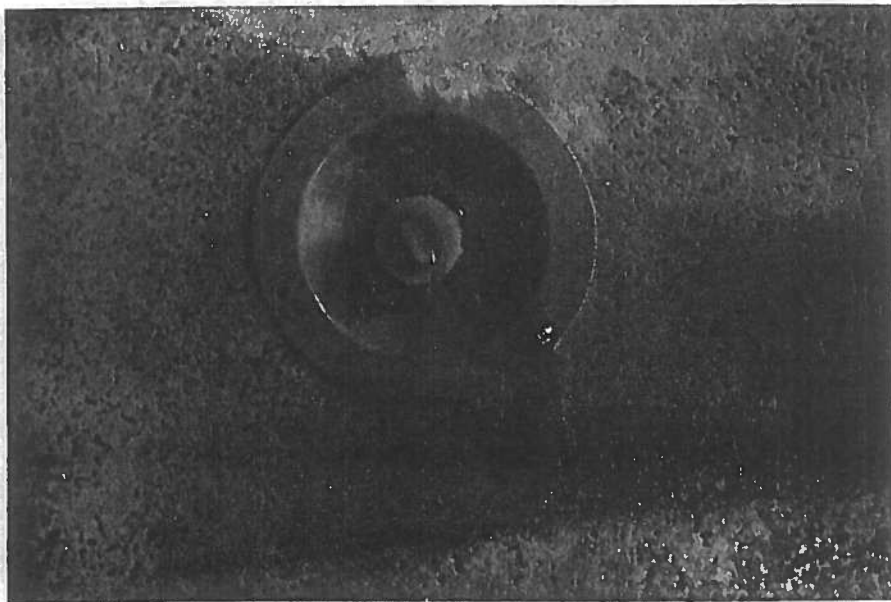
EXTERNAL WATER SUPPLY-OPERATION

To operate from a city water supply, turn the electric demand pump switch off. Then attach a hose to the city water hose connection on the side of your vehicle and to the source of water. The hose connection should be capped when not in use.

CAUTION

Because of the variance of water pressures, it is suggested you install a pressure regulator. The pressure should not exceed 60 pounds on the line, as the lines could rupture or the fixtures could leak.

A regulator should be installed to the water hook-up where the hose is connected and the hose then connected to the regulator. The pressure will be lowered before it enters the lines.

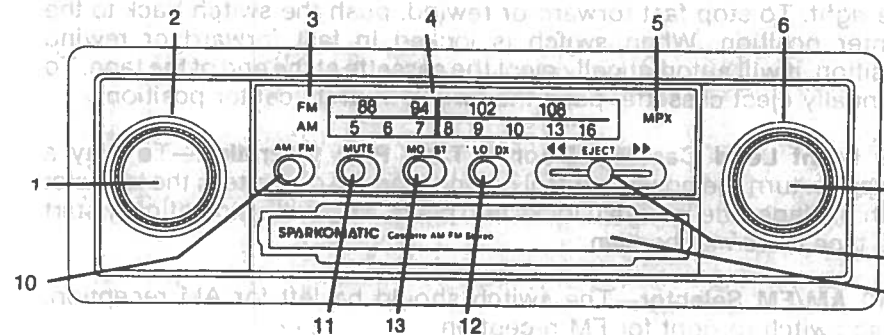


When connected to an outside source of water, the water bypasses the demand water pump and supplies pressure directly to the individual faucets and toilet. A check valve built into the pump prevents water from entering the pump and filling the storage tank. Therefore, the storage tank must be filled separately.

DRAINAGE SYSTEM

The drainage system has two separate holding tanks and dump valves; one for sewage waste from the toilet and on some models, the lavatory sink. The other is for waste water from the galley, shower, and on most

AM/FM Stereo Radio/Cassette



USE OF FRONT PANEL CONTROLS

1 Power/Volume/Balance Control—Turn clockwise until the unit “clicks” on. Volume is increased as you continue to turn this control to the right. Volume is decreased as the control is turned counterclockwise. Continue to rotate to the left to turn the unit off. To operate balance control, pull and turn the control clockwise. This will increase right speaker volume. To increase left speaker volume, pull and turn the control counterclockwise. Once the balance is set, further adjustment is not necessary.

2 Tone Control—Rotate the control clockwise to emphasize high tones. Turn counterclockwise to emphasize low tones.

3 AM/FM Indicator—The AM or FM will light to indicate in which mode the unit is playing.

4 Illuminated Dial—When the unit is turned on, the dial scale will light for convenient tuning.

5 Stereo Indicator Light—The MPX will light when a stereo broadcast is being received.

6 Fader Control—Rotate the control clockwise to increase rear speaker volume. Turn counterclockwise to increase front speaker volume. This feature is operative only with a 4 speaker system.

7 Tuning Control—Rotate the control clockwise to tune to a higher frequency and counterclockwise to tune to a lower frequency. To optimize reception, tune past the station and notice loudest signal. Usually, this is done by “rocking” the tuning knob back and forth and determining the loudest signal, then returning to loudest point.

8 Locking Fast Forward/Rewind/Eject Switch—To rapidly advance the cassette, push this control to the left. To rewind, push the control to the right. To stop fast forward or rewind, push the switch back to the center position. When switch is locked in fast forward or rewind position, it will automatically eject the cassette at the end of the tape. To manually eject cassette, push the switch in at its center position.

9 Front Load Cassette Door & Tape Play Operation—To play a cassette, turn the power control on and load the cassette in the tape slot with the tape side in until it locks into place. This will automatically start the tape drive mechanism.

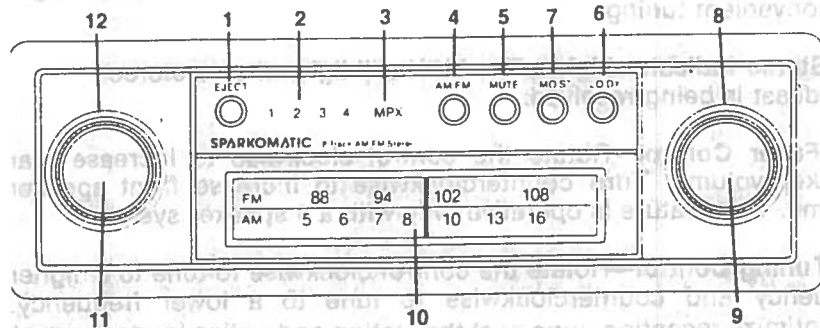
10 AM/FM Selector—The switch should be left for AM reception. Push switch to right for FM reception.

11 FM Muting Switch—To eliminate annoying static between FM stations while tuning, push this control to the right.

12 Local/Distance Switch—The switch should be "left" for strong local stations. Push the switch to the "right" to increase the unit's sensitivity for weak distant stations.

13 Mono/Stereo Selector—In the "left" position, the unit operates in the monaural mode. For stereo, push the switch to the "right." Stereo requires a stronger signal than mono for reception. Oftentimes, a weak FM station can be heard in mono when it might not even be received in stereo.

AM/FM STEREO RADIO/CARTRIDGE TAPE



USE OF FRONT PANEL CONTROLS

1 Push Button Eject—To remove the cartridge, depress this button. A "key-off" feature will automatically eject the cartridge when the ignition key or volume control is turned off.

Pump operates but no water flows through faucet.

Insufficient water supply.

Check water tank level and refill if low.

Pump cycles on and off when faucets are closed.

Water leak in plumbing.

Check for leaks and have them repaired immediately.

Toilet valve not shutting off.

Check for foreign material in groove into which the blade seats. Remove any material.

Have your dealer check to be sure valve isn't defective.

Pump fails to stop when faucets are closed.

Water tank is empty.

Shut off pump and refill water tank.

SANITIZING THE POTABLE WATER SYSTEM

To sanitize a new potable water system, systems that have not been used for a period of time, water systems that may be soured due to mineral deposits, a fill-up of bad water or the remains of water system antifreeze, the following procedure is recommended:

1. Prepare a chlorine solution using one gallon of water and ¼ cup of household bleach (5 percent sodium hypochlorite solution). With tank empty, pour chlorine solution into tank. Use one gallon of solution for each 15 gallons of tank capacity.
2. Complete filling of tank with fresh water. Open each faucet and drain cock and operate demand pump until system is filled.
3. Allow to stand for three hours.
4. Drain and flush with potable fresh water.
5. To clean and deodorize the potable water system, add a solution of cup baking soda dissolved in five gallons warm water for every ten gallons of tank capacity. Example: For 30 gallon tank, use 3 cups baking soda and 15 gallons warm water.
6. Agitate the solution by driving vehicle 3-4 miles or more, including stops and starts.
7. Drain the tank and flush with fresh water.
8. For a complete system treatment, run two gallons of clean soda water solution through kitchen and bathroom faucets to clean hoses and connections.

pressure as it is needed. The switch should be turned off when the motor home is connected to an external water supply. It is advisable to keep the pump switch turned off when you are away from the vehicle or are not using the water system. A slow leak in a faucet could drain your water system, as well as the battery.

Initial Start-Up

1. Turn water pump power switch to "Off" position. Open water fill spout and fill with hose or suitable container.
2. Open all faucets, hot and cold.
3. Turn on power to pump at control switch.
4. Close each faucet as it starts to deliver a steady stream of water. (Close cold water first). Leave hot water faucets on until they too deliver a steady stream of water. This will ensure that the water heater is filled with water as well. Make sure the water heater drain valve is closed.
5. Check to be sure pump stops soon when all faucets are closed.
6. Pump is now ready for automatic operation. Pump will start when a faucet is opened and stop when a faucet is closed.

A pump guard located between the water storage tank and the water pump contains a screen for filtering out any foreign material that may have entered the water tank. This prevents damage to the pump and avoids clogging of any of the components of the water system.

A check valve is included in the system to prevent backflow through the city water connection when the water pump is operating.

DEMAND WATER PUMP MAINTENANCE

The sure flow water pump is used in all models of the Allegro motor home. When the water pump switch is in the "On" position, it will pump water on demand through the motor home. The water pump has a built in pressure switch which turns the pump on and off automatically when water is needed. However, when the water pump is not in use, it is wise to turn the switch off, because you may develop a leak and flood the motor home.

CAUTION: Do not run the water pump with no water in the tank. This causes the pump to heat up and may result in interior damages.

Trouble Shooting Demand Pump

Problem	Probable Cause	Solution
Pump will not prime (It should do this automatically.)	Insufficient water supply.	Check water tank level and refill if low.
	Insufficient charge in auxiliary battery.	Recharge battery.

2 Program Indicator Lights—These light individually to indicate which program is playing.

3 Stereo Indicator Light—The MPX will light when a stereo broadcast is being received.

4 AM/FM Selector—The switch should be "out" for AM reception. Push switch "in" for FM reception.

5 FM Muting Switch—To eliminate annoying static between FM stations while tuning, push this control to the "in" position.

6 Local/Distance Switch—The switch should be "out" for strong local stations. Push the switch to the "in" position to increase the unit's sensitivity for weak distant stations.

7 Mono/Stereo Selector—In the "out" position, the unit operates in the monaural mode. For stereo, push the switch to the "in" position. Stereo requires a stronger signal than mono for reception. Oftentimes, a weak FM station can be heard in mono when it might not even be received in stereo.

8 Fader Control—Rotate the control clockwise to increase rear speaker volume. Turn counterclockwise to increase front speaker volume. This feature is operative only with a four speaker system.

9 Tuning Control—Rotate the control clockwise to tune to a higher frequency and counterclockwise to tune to a lower frequency. To optimize reception, tune past the station and notice loudest signal. Usually, this is done by "rocking" the tuning knob back and forth and determining the loudest signal, then returning to loudest point.

10 Illuminated Dial & Tape Play Operation—When the unit is turned on, the dial scale will light for convenient tuning. To play an 8 track cartridge, turn the power control on and load the cartridge in the tape slot with the label up and the tape side in until it locks into place. This will automatically start the tape drive mechanism.

11 Power/Volume/Balance/Program Selector—Turn clockwise until the unit "clicks" on. Volume is increased as you continue to turn this control to the right. Volume is decreased as the control is turned counterclockwise. Continue to rotate to the left to turn the unit off. To operate balance control, pull and turn the control clockwise. This will increase right speaker volume. To increase left speaker volume, pull and turn the control counterclockwise. Once the balance is set, further adjustment is not necessary. For program selection, push and release.

12 Tone Control—Rotate the control clockwise to emphasize high tones. Turn counterclockwise to emphasize low tones.

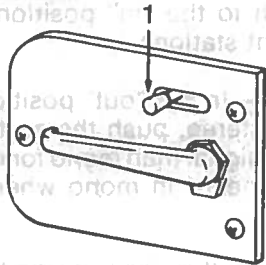
EAT AND DOOR PANEL CONTROLS

Entrance Door Lock

The entrance door can be locked or unlocked from outside the vehicle by inserting the key in the lock and turning. To lock the door from the side, push the lock button to the right. Push the button to the left to unlock the door. Lubricate the lock periodically with graphite to keep it in good working condition.

WARNING

Lock the door when driving for greater safety.



ENTRANCE DOOR HANDLE

1. Door Lock

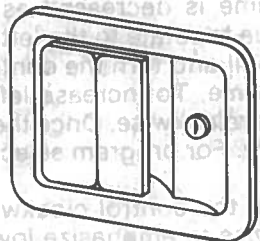
The bolt lock is for added security and should be used when the vehicle is in motion.

Entrance Door Handle

The entrance door can be opened from the outside by pulling the door handle outward. To open the door from the inside, the door handle could be lifted. When the door is locked, neither the inside or the outside door handle can be operated.

CAUTION

Do not force the inside door handle down, as damage could occur.



EXTERIOR ENTRANCE DOOR HANDLE

WATER SYSTEM

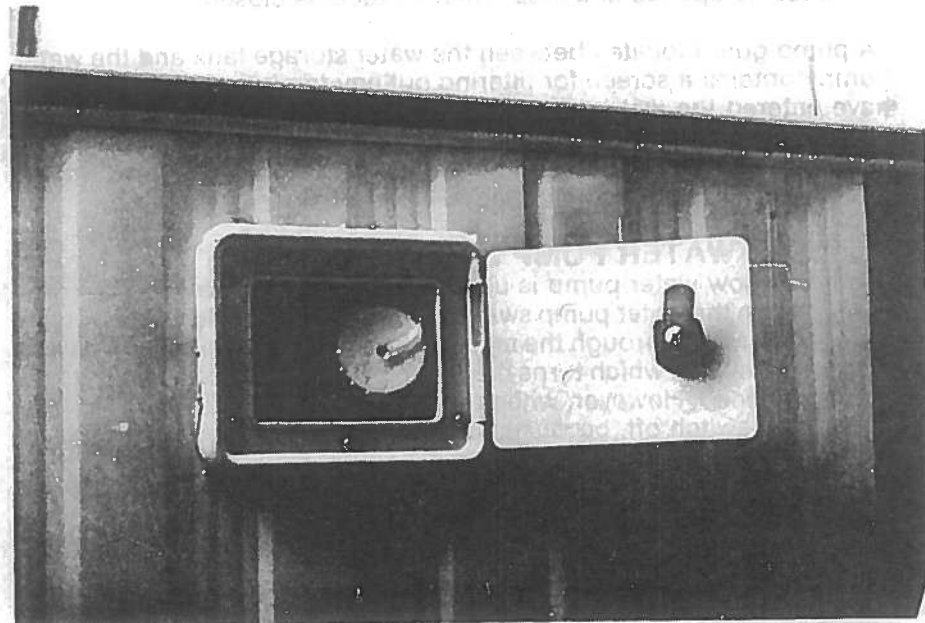
The water system in your motor home can be supplied from either of two sources: a water tank located within the motor home, or from an outside city or campground water source. The water from either source supplies the kitchen sink, shower, bathroom vanity, toilet and water heater.

INTERNAL WATER SYSTEM

The internal water system consists of a lightweight polyethylene water storage tank and a self priming water pump which automatically turns on and off to supply water when the faucets are opened and closed.

Filling Procedure

The tank fill access is located on the right exterior sidewall of the vehicle. The tank may be filled with a hose, or when city water or a hydrant is not available a bucket and funnel may be used.



Water Pump

Pressure for the water system is supplied by a water system demand pump. The water pump is fully automatic after initial priming. When a faucet is opened, the pump instantly begins operation to provide a constant flow from the tank. As soon as the faucet is closed, the pump automatically shuts off.

The water pump switch is located in front of the galley sink. When the switch is in the "On" position, the pump will automatically supply water

TURN AIR SHUTTER TO OBTAIN PROPER BLUE FLAME.

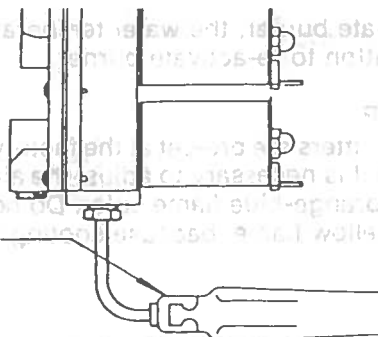


FIGURE 9a

In cases where sooting has occurred, there is a possibility that this condition may be corrected by making the correct air shutter adjustment. If the burner flame continues to burn yellow after adjusting the air shutter, check for an obstruction in the burner or the flue box. A stiff brush is recommended for the removal of soot deposits. If there is soot in the burner, check to make sure the gas valve is shutting off clean. This can be checked by turning the off-onn switch to the off position. There should be no flame at the burner orifice or at the burner.

DRAINING AND STORAGE INSTRUCTION

If RV is to be stored during winter months, the water heater must be drained to prevent damage from freezing.

1. Turn off power & gas.
2. Turn off pressure pump on water system.
3. Open both hot & cold water faucets.
4. Open drain on water heater.
5. Follow RV manufacture instructions for draining entire water system.

NOTE: Be certain to refill water heater with water before re-lighting.

WARRANTIES

If the ignitor is damaged due to mishandling, or is not applied or installed properly, warranties will be voided. The 05-15 and 05-16 ignitors are not field repairable. All ignitors that fail to function properly should be returned to the attention of customer service.

CAUTION

The Fenwal series 05-15 (12 VDC) and 05-16 (24 VAC) direct spark ignition systems are designed for use on new gas fired equipment or as replacements for an existing Fenwal spark ignitor. Any substitution or other application must be expressly approved in writing by the manufacturer of the equipment improper substitution or application may result in a malfunction of equipment, and the creation of an explosive atmosphere.

Driver Compartment Door Lock (C Body Only)

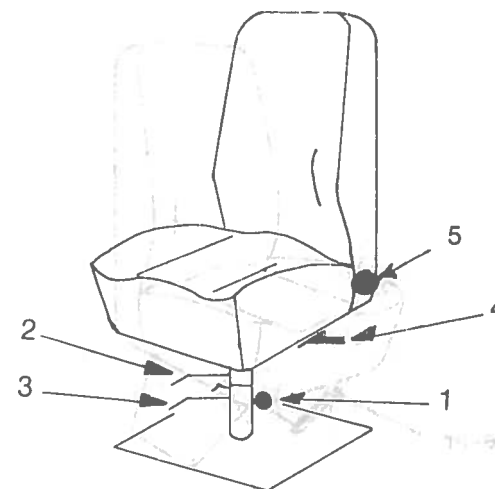
The driver's compartment door can be locked from the inside by depressing the door lock buttons located on the upper door panel. The doors can be locked and unlocked from outside the vehicle with a key. The doors can also be locked by simply pushing the inside door lock button down and then closing the door.

IMPORTANT

The keys should always be removed from the motor home when leaving the vehicle. Since the doors can be locked without the keys, make sure they have been removed from the ignition before locking the driver's compartment.

Seats (All A Body Motor Homes)

The driver's seat assembly has a two way adjustment which allows the seat to be raised or lowered and moved forward or back to obtain the most comfortable position. To move the seat forward or back, push back on the lever located to the left under the seat to release the seat and move the seat to the desired position. Release the lever; it will engage in the closest notch to lock the seat in place.



A BODY SEAT

1. Knob
2. Swivel lever
3. Height lever
4. Slider lever
5. Recliner

IMPORTANT

Before making adjustments for height and/or swivel, turn large knob (#1) counterclockwise until it stops. To swivel, swing lever (#2) and move seat to desired position. (Note: locks in two positions) To adjust for height, swing lever (#3) and seat will move up or down, under spring tension. (Note: pedestal locks in four positions.) To slide seat forward or backward pull slider lever back.

After swivel and height adjustments have been made, turn knob (#1) clockwise and tighten. This locks all controls.

WARNING

Do not attempt to adjust the driver's seat while the vehicle is in motion. The seat could move unexpectedly, causing the loss of control.

Seat (All C Body Motor Homes)

The front seats can be independently moved forward or back to the most comfortable position. Push the seat release lever, located below the front of the seat to the right and move the seat forward or back as desired. Then release the lever and the seat will lock in place.



C-BODY SEAT

Seat Belts

The driver and passenger seat and all seats in the motor home are designed to carry passengers while in motion are equipped with seat belts. These are installed for the protection of you and your passengers and must be fastened whenever the vehicle is in motion. The lap belts must be worn as low as possible and fit snugly across the hip area. Always sit well back and erect in the seat.

To activate burner, the water temperature must be below 100°F, push reset button to re-activate burner.

BURNER

All air shutters are pre-set at the factory to obtain a blue or orange-blue flame. If it is necessary to adjust the air shutter, be sure to maintain the blue or orange-blue flame color. Do not allow the burner flame to burn with a yellow flame, because sooting will occur.

LIGHTING INSTRUCTION

Figure (7) - Purge air by loosening manifold nut at gas valve. When air is purged, tighten nut and check for leaks using a soap solution. Figure (7A) - Air cannot be purged by above process. Lighting instructions must be repeated until air is purged. Turn gas supply "on". Turn switch to "on" position, spark should begin and main burner should light. If spark stops before main burner lights, turn switch to off, wait 5 seconds and turn switch to "on" position. This will re-start the ignition cycle. The first start-up of the heater may require several ignition cycles before all air is purged from the gas lines.

If the burner will not come on, the following items should be checked before calling a service man.

1. Switch turned off.
2. Gas supply to heater empty or turned off.
3. Reset button on ECO tripped.
4. Fuse blown.

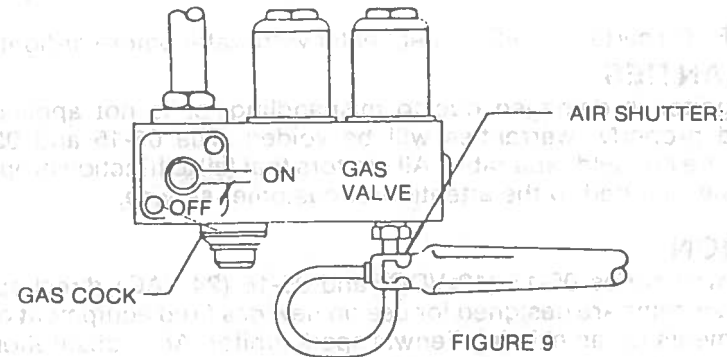


FIGURE 9

MAINTENANCE

Periodically check control compartment and screen in door to see that no foreign material has accumulated to prevent flow of combustion and ventilating air. Periodically check burner flame visually, and compare with sketch under the burner adjustment section.

WARNING:

Do not store or use combustible materials or liquids near or adjacent to this heater. The appliance shall not be installed in any location where flammable liquids or vapors are likely to be present.

DESCRIPTION

The Fenwal series 05-15 (12VDC) and 05-16 (24VC) direct spark ignition systems operate through a thermostat to provide a means of ignition for the main burner on gas-fired equipment. This is accomplished by generating a spark between high voltage electrode and ground. Once the flame is established, a flame rod monitors the main burner flame.

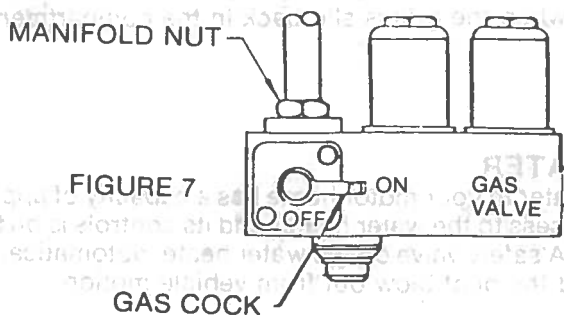


FIGURE 7

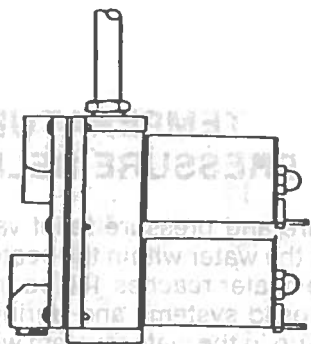
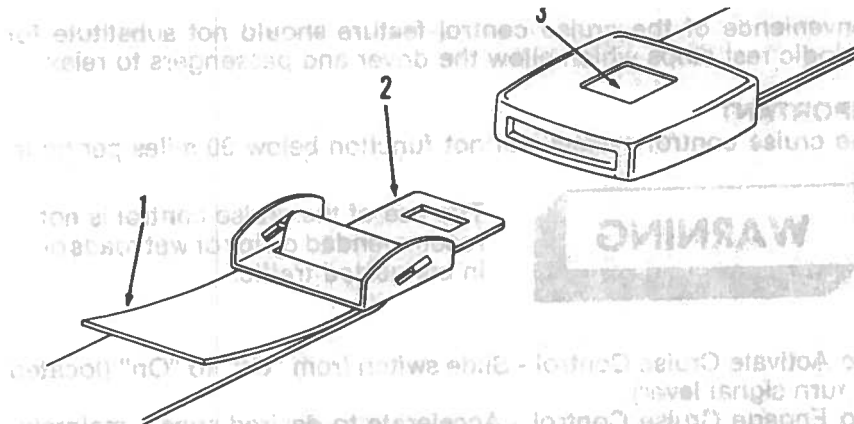


FIGURE 7a

THERMOSTAT AND MANUAL TEST

This water heater is provided with a high temperature cut-off device in the event of thermostat failure. Temperature above 190°F will cause manual reset button to trip shutting down main burner.



SEAT BELT

1. Adjustment Strap
2. Tongue
3. Release Button

Adjustment: To lengthen belt, turn tongue at a right angle to belt and pull to desired length. To shorten, pull loose end of belt.

To Fasten: Be sure belt is not twisted. Grasp each part of the belt assembly and push tongue into buckle. Adjust to a snug fit by pulling the loose end away from the tongue.

To Unfasten: Depress button in center of buckle and slide tongue off of buckle.

WARNING

Snug and low belt positions are essential. This will ensure that the force exerted by the lap belt in a collision is spread over the strong hip area and not across the abdomen, which could result in serious injury.

Only seats equipped with seat belts are to be occupied while vehicle is in motion. Seats not equipped with seat belts will be labeled: "This seat not intended for occupancy when vehicle is in motion."

OPTIONAL EQUIPMENT - OPERATION

Cruise Control (Optional on some models)

The cruise control decreases the amount of strain on the driver from constant and steady highway driving. However, the comfort ar

Convenience of the cruise control feature should not substitute for periodic rest stops which allow the driver and passengers to relax.

IMPORTANT

The cruise control system will not function below 30 miles per hour.

WARNING

The use of the cruise control is not recommended on icy or wet roads or in congested traffic.

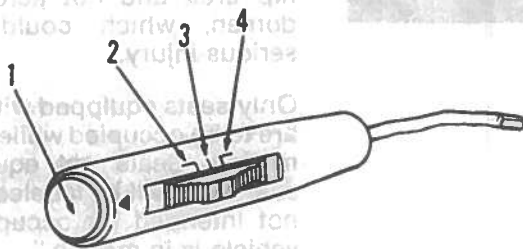
To Activate Cruise Control - Slide switch from "Off" to "On" (located near turn signal lever).

To Engage Cruise Control - Accelerate to desired speed, maintain, push in the "Set Speed" button (located in the end of the engagement switch), and release. You may also engage the cruise control by moving the slide switch to "Resume" and releasing. As soon as the speed has been set by either method, you may remove your foot from the accelerator pedal and the speed will automatically be maintained to within two miles per hour of the set speed.

To Disengage Cruise Control - The cruise control system can be disengaged by two methods; Stepping on the brake, either when stopping or by lightly depressing the brake pedal while driving. Or by turning the slide switch to the "Off" position. The system also disengages when the Ignition switch is turned off.

To Increase Vehicle Speed - Speed can be increased at any time with normal pressure on the accelerator pedal. When the accelerator pedal is released the vehicle will return to the previously set speed.

To Resume Previously Set Speed - When the system is engaged and the brakes have been applied, the previously set speed can be resumed by sliding the switch to "Resume" momentarily and releasing.



CRUISE CONTROL

1. "Set Speed" Button
2. "Resume" Position
3. "On" Position
4. "Off" Position

BAR-B-Q GRILL — OPERATING INSTRUCTIONS

Open the grilled door on the side of the Motor Home and fasten it secure to the side wall with the hook clip that is provided. Pull the grill out far enough so it will not touch the door when the lid of the Bar-B-Q Grill is opened.

CAUTION

Lid of Bar-B-Q Grill MUST be OPEN to light.

Before lighting check all connections of the gas valve on the Bar-B-Q Grill and flexible line attached to the Motor Home inside the metal compartment for the Bar-B-Q Grill. Make sure the control knob reads "off" on the Bar-B-Q Grill and go inside the Motor Home and turn the inline gas valve "on" that is provided for double safety. Next, go outside and turn the control knob to the "high" position and light the Bar-B-Q Grill from the bottom putting the match flame near the holes on the Bar-B-Q Grills burner. After cooking is accomplished, let the grill stay on approximately 10-15 minutes in the pulled out position. This lets all the excess grease that drops on the lava rocks burn off. Then turn the inline gas valve inside the Motor Home to the "off" position. Let the grill cool approximately 15-20 minutes before sliding it back into the compartment. Make sure the control valve on the Bar-B-Q Grill is in the "off" position when the grill is slid back in the compartment.

WATER HEATER

The water heater in your motor home has a capacity of approximately six gallons. Access to the water heater and its controls is on the outside of the vehicle. A safety valve on the water heater automatically shuts off the gas should the pilot blow out from vehicle motion.

TEMPERATURE AND PRESSURE RELIEF VALVE

The temperature and pressure relief valve is designed to open if the temperature of the water within the heater reaches 210° F, or if the water pressure in the heater reaches 150 pounds. Recreational vehicle water systems are closed systems and during the water heating cycle, the pressure build-up in the water system will reach 150 pounds. When this pressure is reached, the pressure relief valve will open and water will drip from the valve. This dripping will continue until the pressure is reduced to below 150 pounds, and the valve closes. This condition is normal and does not indicate a defective relief valve.

Cleaning The Refrigerator

It is important to keep the cabinet clean to minimize the possibility of food odor. Cleaning the interior of the refrigerator should only be done using a mild soda solution. Do not use hard or abrasive type cleaners as they will attack the surface of the plastic and aluminum surfaces.

NOTE: For an undetermined length of shut down, set the thermostat to "OFF", and disconnect the AC power supply.

FAILURE OF REFRIGERATION

Failure of refrigeration does not necessarily indicate that the cooling system is defective. Other factors governing its operation must be checked.

If the refrigerator has been operating on gas and a loss of cooling is noted, convert the refrigerator to electric operation, AC power (see start up instructions, electric operation). If the refrigerator has been operating on electric, switch it to gas operation. This will determine if a component failure in the electric or gas controls is causing the cooling fault.

After the refrigerator has been converted from one power source to the other (gas to electric, or electric to gas) allow time to assure the unit is cycling properly. At the end of this period the freezer plate should start to cool providing the following items have been checked out thoroughly.

- 1) The evaporator plate is level in each direction.
- 2) The controls have been properly set for the power source utilized.
- 3) The power source is at the correct 10 to 13 inches water column (3.2kPa) for gas (main tank supply) and 120 volts AC for electric.
- 4) The upper and lower vents are not obstructed restricting ventilation.

(Do not attempt to operate the system on DC when analyzing the system performance as this power source is designed for short period operation only and does not power the system at its full capabilities).

If no cooling is evident after a reasonable time period, the cause of failure may be due to a blocked system. This blockage is caused when the refrigerator is operated for extended periods in an off-level condition beyond the range of 3 degrees left to right and 6 degrees front to back. This does not mean the system is non-functional, but, correction requires the refrigerator to be removed from the vehicle and placed on its left side for a minimum of one hour. This will allow the ammonia and water to mix with one another which is necessary in the absorption system operation.

Once the system has been relieved of its blockage, operation on AC should once again be initiated for a reasonable time period to determine if the cooling process has been restored. If after this period the freezer plate has no indication of cooling, the cooling system must be removed and replaced. Replacement of the cooling system should be done only by an authorized Norcold Service Center.

NOTE: The greater the difference between the previously set speed or the speed at which you engage "Resume", the faster the vehicle will accelerate. Rapid acceleration can be eliminated by accelerating with the gas pedal to within ten miles per hour of the former set speed or then engaging the resume switch.

IMPORTANT

The resume feature will not operate if the slide switch has been moved to "Off" to disengage the system or if the ignition switch has been turned off.

TV Antenna (Optional on some models)

The TV antenna is a full size model which can be easily raised, lowered and rotated a full 360° from inside the motor home by simply turning the crank. Always lower the antenna when driving. Overhead obstructions striking the antenna can strip the antenna lift gears.

To Raise Antenna - Pull handle down and rotate it counterclockwise (looking up) until the stop is contacted.

To Rotate Antenna - Turn handle clockwise at least half a turn and the grasp the body of the crank. Push crank up with a slight clockwise turning motion to engage the rotation pin. Then with the TV on, turn the body of the crank counterclockwise until the best TV picture is received.

To Lower Antenna - Turn the antenna clockwise to the stop. Then pull handle down and crank it clockwise until the antenna drops into the travel support. There is a lower stop on the crank, but the antenna will be heard contacting the travel support at the same time the stop is contacted.

NOTE: Due to various locations used by motor homes, TV reception will not be consistent as it is in a fixed location because of the variations in terrain encountered throughout the country. Generally, TV and F radio signals travel in a straight line. Therefore, hills or mountains, etc between your vehicle and the transmitting station may severely reduce the amount of signal reaching the antenna.

MINI-STATE ANTENNA SYSTEM

The TANDY-DC Mini-State is a completely new type of TV antenna system designed for use on recreational vehicles, boats and residential dwellings. Under average conditions, the reception range of the antenna is 35 miles from the TV transmitter antenna. The system contains a miniaturized unidirectional antenna, special solid state amplifier and an electrical rotating mechanism, all housed inside a weatherproof "radome". The remote power supply is designed to operate from power source. The package also includes a VHF/UHF band separator, rotator control unit with illuminated directional indicators, and stainless steel hardware.

A 30-foot length of low loss coaxial cable with a screw-type F-connector at each end, and a 3-wire rotator cable to interconnect the antenna and power supply are supplied to complete the installation. Both of these cables are contained in a prefabricated, single jacket cable assembly included with this unit.

2 VDC Operation

The DC power cord supplied with the system contains an in-line protective fuse.

CAUTION: For continuous protection against fire hazard, replace fuse with only the same type 0.8 amper/250 volt rating.

Insert the 2-pin plug of the DC power cord into the mating 2-pin DC receptacle on the power supply unit. Attach the red wire to the positive terminal and the black wire to the negative terminal of the DC source used. The power cord is supplied with spade lugs. These may be easily removed if your installation requires another type of connector.

NOTE: Due to various locations used by motor homes, TV reception will not be consistent as it is in a fixed location because of the variation of terrain encountered throughout the country. Generally, TV and FM radio signals travel in a straight line. Therefore, hills or mountains, etc., between your vehicle and the transmitting station may severely reduce the amount of signal reaching the antenna.

OPERATION

With the TV set on and a station tuned in, rotate the antenna by pressing the rocker switch located on the control unit. Pressing the right side of the switch will turn the antenna in a clockwise direction. Pressing the left side will turn it counterclockwise. Although the actual antenna movement cannot be seen, the indicator arrow on the control unit will point, showing the direction of antenna rotation.

When the antenna has made one full turn (360 degrees), the End of Rotation light will come on.

Observe the picture while rotating the antenna first in one direction and then the other, until the best picture quality is obtained.

Antenna Orientation

Because of the built-in rotator, the antenna orientation is not critical; however, a double arrowhead is molded into the outer rim of the radome that indicates the center of rotation of the system. In a residential or fixed location, pointing the double arrowhead toward the TV transmitter antenna will reduce the amount of rotation required for best reception.

For non-fixed locations such as recreational vehicles or boats, the antenna may be installed with the double arrowheads facing in any direction. Optimum TV reception may be obtained by orienting the antenna with the built-in rotator.

Start Up Instructions - Electric Operation EG3 Models (See Figure 1)

1. Set the thermostat (A) to the maximum cold position (fully clockwise).
2. Turn the operational selector knob (C) so that the knob indicator is pointing directly to the word "electric".
3. Position the selector switch (B) to the desired power source, either "AC" or "DC".

NOTE: DC operation is designed to minimize battery drain and only intended to sustain cooling (after refrigerating temperatures have been attained on AC operation).

4. Set the thermostat knob to desired temperature setting.

Start Up Instructions - Electric Operation EG2 Models (See Figure 1)

1. Set the thermostat (A) to the maximum cold position (fully clockwise).
2. Turn the operational selector knob (C) so that the knob indicator is pointing directly to the word "electric".
3. Set the thermostat knob to desired temperature setting.

If after a period of time, (usually 2 to 4 hours) the refrigerator does not appear to be functioning or a cooling performance loss is noted, check the following:

- 1) Make sure the AC supply cord is plugged into the electrical outlet provided and that the vehicle is connected to the proper voltage and frequency supply of 120 V. A.C. 60 Hertz.
- 2) On motor generator operation or shoreline connection check that the circuit breakers or fuses are not open or tripped.
- 3) Make sure the instructions governing electrical operation have been properly followed.
- 4) Check the thermostat and make certain that it is in the full clockwise or maximum cold setting.

If, after checking all of the above, the refrigerator does not cool, have a service man check the heater for continuity. This may be done with the unit plugged in using a watt meter or with the unit unplugged using an ohmmeter.

SUGGESTIONS FOR EFFICIENT OPERATION

The Freezer Compartment

This compartment is not designed for the quick freezing of food but to retain frozen food in that state. As with the food compartment, foods purchased for storage in the freezer compartment should be frozen when purchased to reduce the load of the refrigerator system. Ice will be made more rapidly if the thermostat is set at its highest position.

Defrosting The Refrigerator

After a period of operation, frost may gradually accumulate on the freezer plate and the cooling fins, thereby impairing cooling efficiency.

To defrost the refrigerator on gas or electric operation turn the thermostat to its "OFF" position and operational knob to "ELECTRIC". Fill trays with hot water, placing them on the cooling plate.

When all the frost has melted, empty the drip tray from beneath the finned evaporator and wipe up the excess moisture with a clean cloth. Replace the drip tray, all the food stuffs, and place the refrigerator into operation. Set the thermostat to its coldest setting for a few hours for maximum cooling before returning it to its normal position.

**Lighting Instructions - Gas Operation
(See Figure 1)**

1. Turn the thermostat (A) to the maximum cold position (full clockwise).
2. Place electrical selector switch (B) at "off" position (EG3 models only).
3. Turn the operational selector knob (C) so that the knob indicator is pointing to the word "Gas".
4. Turn on the igniter switch (D). A flashing indicator lamp (F) shows that an ignition spark is present at the burner.
5. Hold the safety valve button (E) in until the indicator lamp glows steady. Continue to hold the safety valve in for fifteen seconds and then release. The indicator lamp should continue to glow steady. If the lamp starts flashing, repeat this step. (On initial start-up ignition may require a longer safety valve hold in period due to presence of air in the gas line. The air must be replaced by gas before burner ignition is possible.)
6. Turn the thermostat to the desired temperature setting.

**Shut Off Instructions - Gas Operation
(See Figure 1)**

1. Turn the thermostat knob (A) to "off". This will interrupt all electrical power to the heater.
2. Turn the operational knob (C) to "electric". This shuts the gas supply off at the control manifold.
3. Turn ignitor switch (D) to "off".

**Shut Off Instructions - Electric Operation
All Models (See Figure 1)**

1. Turn the thermostat knob (A) to "off". This will interrupt all electric power to the heater and stop the refrigerator operation.

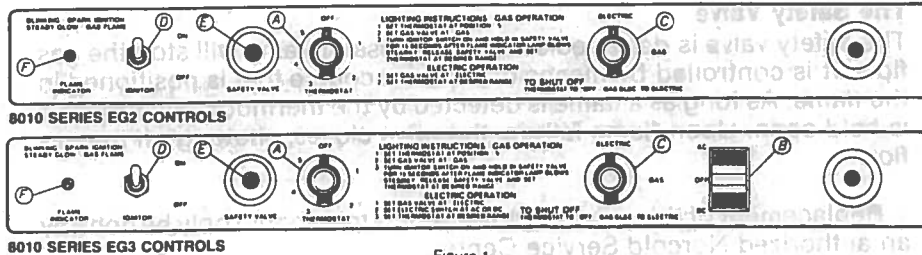


Figure 1

OPERATION ON ELECTRIC

Power Source

The 8010 EG2 Model operates on 120 volts AC. 8010 EG3 Models are capable of operation on 120 volt AC or 12 volt DC, depending on the position of the selector switch (Fig. 1, Item B)

DC OPERATION IS RECOMMENDED ONLY WHEN THE VEHICLE ENGINE IS OPERATING OR DURING IN-TRANSIT PERIODS. OPERATION ON DC WITHOUT THE BENEFIT OF THE ENGINE ALTERNATOR WILL CAUSE BATTERY DISCHARGE AT A RAPID RATE.

Roof Air Conditioning (Optional on some models)

The roof air conditioner is operated totally from the control panel on the inside ceiling assembly. The temperature control regulates the on and off temperature setting at which the compressor (or heater, if you have the Elect-A-Heat model) will operate. The selector switch operates the air conditioner on the desired mode (off, heat on Elect-A-Heat models, fan only and cooling). Those air conditioner units with the controls on one end, have a lever control which operates the damper to regulate the volume of air being circulated during the "Fan Only", "Cooling" or "Heating" (if you have the Elect-A-Heat model) cycle. Those units with two dial controls on the bottom of the ceiling panel, have the damper (air volume) control incorporated in the selector switch. Moving the control within the "Fan Only" or "Cooling" range on these models, opens and closes the damper.

VACUUM CLEANER (Option)

To operate vacuum cleaner, lift the metal inlet/switch cover, insert hose and press the control switch to start the motor. When you have completed cleaning, remove hose, turn off motor and close cover.

To remove dust bag from cleaner, lift canister cover, move release lever away from canister and lift canister out of compartment. Remove dust bag from canister and replace with new one of identical size. Always check the dust bag if the vacuum cleaner seems to be losing suction.

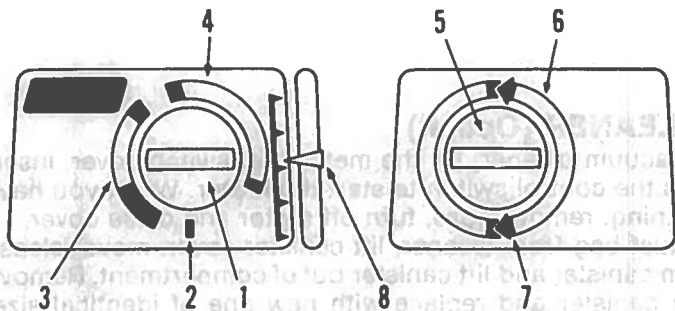
MICROWAVE OVEN

On some models, you have a double throw switch above the microwave oven marked AC and MW. To get power for the microwave oven, flip switch to MW. To get power to the front air conditioner, flip switch to AC. Both items will not work at the same time. This is to keep the circuit from being overloaded.

Operate For Cooling.

Set the selector switch to the "Cooling" position of the dial. The fan will continuously and filter the air while keeping it circulating through the vehicle. Setting the selector switch or damper control lever, as so equipped, at "High" will give you the greatest volume of air circulation, while setting it at "Low" will give you a lower volume of air. Turning the control any place between "High" and "Low" can provide almost unlimited control over the volume of cooling air flowing from the conditioner.

Set the temperature control to the temperature level that is the most comfortable for you. The compressor will automatically turn on when the temperature of the air entering the air intake vents rises a few degrees above the setting you have selected. The compressor automatically turns off when the air temperature drops a few degrees below this setting. The air conditioner will keep cycling the compressor on and off in this fashion until you change the selector switch to another mode of operation. During this time, both the air recirculating system and the refrigerant system will be in operation to provide you with fresh, dehumidified, cold air in the volume you desire.



COOLING ONLY MODELS

1. Selector Switch
2. "Off" Position
3. "Fan Only" Range
4. "Cooling" Range
5. Temperature Control Switch
6. Temperature Range
7. "Colder"
8. Damper Control Lever (Air Flow)
(Incorporated in selector switch on some models)

Operate For Heating (Elect-A-Heat model only)

Set the selector switch to the "Heat" position. The fan will automatically start circulating air continuously at a low volume.

Set the temperature control to the temperature level that is the most comfortable for you. The heater automatically turns on when the temperature of the air entering the air intake vents drops below this setting a few degrees and automatically turns off when the air

The electronic module, located at the rear of the refrigerator, is powered by 12 volts DC and controlled by the igniter switch located on the control panel. When this switch is in the "off" position, no ignition is present. When this switch is in the "on" position, it energizes the spark ignition at the burner. The spark occurs at the rate of one to three times per second until a flame is present. The flame indicator, also located on the control panel, flashes each time a spark is generated, or at the rate of one to three times per second. This spark will continue until a flame is sensed or until the igniter switch is placed in the off position.

When a flame is sensed, the ignition ceases and the indicator lamp glows steadily. The indicator lamp will glow steadily only if a flame is present.

The current draw of this ignition system is a minimal 25 milliamperes.

The Gas Pressure Regulator

The gas regulator located in the manifold system reduces the pressure from the propane tank(s), usually 12 to 13 inch (2.98kPa-3.23kPa) water column, to the Norcold operating design pressure. Adjustment of this regulator should be done only by an authorized Norcold Service Center.

The Safety Valve

The safety valve is designed so that any loss of flame will stop the gas flow. It is controlled by means of a thermocouple that is positioned in the flame. As long as a flame is detected by the thermocouple the valve is held open. Upon flame failure, the valve closes, shutting off the gas flow.

Replacement of this valve or its thermocouple should only be done by an authorized Norcold Service Center.

Thermostat

The thermostat on the Norcold refrigerator controls both the gas and electric operation thereby eliminating the necessity of resetting each time a different power is employed.

At the maximum cold setting the thermostat valve remains open and the gas flows at the maximum pressure. At the minimum cold setting the valve is closed and the unit will operate on bypass pressure to maintain the burner at a low flame.

Between the maximum and minimum extremes is a numbered section of the thermostat dial over which temperatures may be obtained. The higher the number the colder the setting. Once the temperature in the refrigerator cabinet has reached the point of the thermostat setting the thermostat valve closes and the unit operates on low fire until once again the thermostat calls for cooling.

Replacement of the thermostat should only be done by an authorized Norcold Service Center.

1. Air Circulation - Gas ovens must have free circulation of air to operate properly. Heated air comes in through openings in the oven bottom to give even temperature cooking. Anything which blocks or changes this air flow can cause poor results. A pan touching the side of the oven can block air flow as well as conduct heat from the side which it is touching. This can result in uneven baking on one side. The use of pans that are too large or sheets of aluminum foil to catch drippings or spillover will have the same effect and block air flow as well as reflecting heat from the bottom.

IMPORTANT

There should be at least one or two inches between the edge of a utensil and any oven surface.

2. Oven Cleaners - Oven cleaners (particularly the spray type) can coat the thermostat sensing device and cause it to malfunction. If you must use oven cleaners, protect the sensing device from the spray or wipe it off immediately.

If a commercial oven cleaner is used, protect aluminum gas tubing, thermostat sensing bulb, and electrical components from the cleaner. (Masking tape can be used.) Thoroughly rinse oven with a solution of one tablespoon vinegar to 1 cup of water.



POWER RANGE HOOD AND VENT

The power range hood is used to eliminate cooking odors and to expel gas fumes

The power range hood is used to eliminate cooking odors and to expel gas fumes. A vent to the outside of the motor home automatically opens and closes when the fan is turned on and off. There are two knobs or switches on the top panel of the hood, one for the light and the other for the fan. The fan should always be operated when the oven is in use.

A filter located on the underside of the vent must be cleaned periodically for efficient operation. Remove the filter and wash with hot water in any household detergent, rinse thoroughly and dry. While the filter is removed, clean dust and grease from the fan blades.

REFRIGERATOR OPERATING AND USERS INSTRUCTIONS

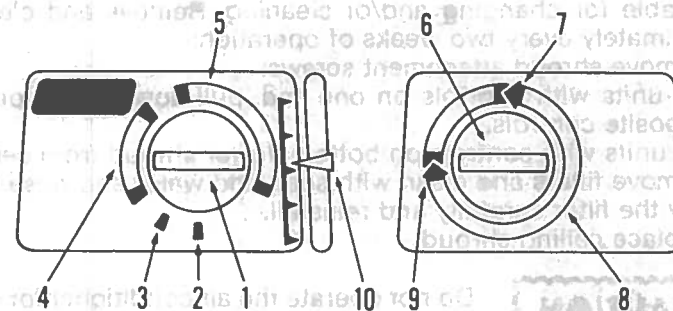
OPERATION ON GAS

Electronic Ignition

The 8010 EG Model is equipped with electronic ignition offering the following features:

- (A) Automatic re-ignition in case of flame blow-out
- (B) Positive Flame Sensing
- (C) Easier Gas Start-Up

temperature rises a few degrees above the temperature setting you have selected. The air conditioner will keep cycling the heat on and off in that fashion until you change the selector switch to another mode of operation.



ELECT-A-HEAT MODELS

- 1. Selector Switch
- 2. "Off" Position
- 3. Heat Position
- 4. "Fan Only" Position
- 5. "Cooling" Position
- 6. Temperature Control Switch
- 7. "Warmer"
- 8. Temperature Range
- 9. "Colder"
- 10. Damper Control Lever (Air Flow)

To Operate For Air Recirculation Only

Set the selector switch to the "Fan Only" position on the dial. The fan will run continuously and filter the air without either cooling or heating the air. To obtain a lower or higher volume of circulating air, simply turn the selector switch to a lower or higher setting in the "Fan Only" position on the dial, or raise or lower the damper control lever depending on the type of control on your unit. This will close or open the damper in the conditioner unit to provide almost unlimited control over the volume of air being recirculated in your motor home.

To Operate as a Dehumidifier

In some areas where higher relative humidities are experienced, it is desirable to operate your unit primarily for humidity control. To operate the air conditioner as a dehumidifier, set the selector switch at the "Cooling" range with the air damper at either medium or high setting.

Set the temperature control to the warmest position at which the compressor will cycle on and off for cooling. When operated in this position, your air conditioner will remove high quantities of moisture from the air without cooling the motor home.

At any time the unit is operated on either full cooling or as a humidity control appliance, the excess moisture removed from the air stream in your motor home will be diverted onto the roof of your vehicle. Do not be alarmed as this excess moisture is allowed to escape from the area around the air conditioner to the ground.

Roof Air Conditioner Maintenance

Filters

The filters are located in the interior ceiling shroud and are easily accessible for changing and/or cleaning. Remove and clean filters approximately every two weeks of operation:

Remove shroud attachment screws.

On units with controls on one end, pull down on shroud at end opposite controls.

On units with controls on bottom, lower shroud from ceiling.

Remove filters and clean with soap and water and rinse clean.

Dry the filter carefully and reinstall.

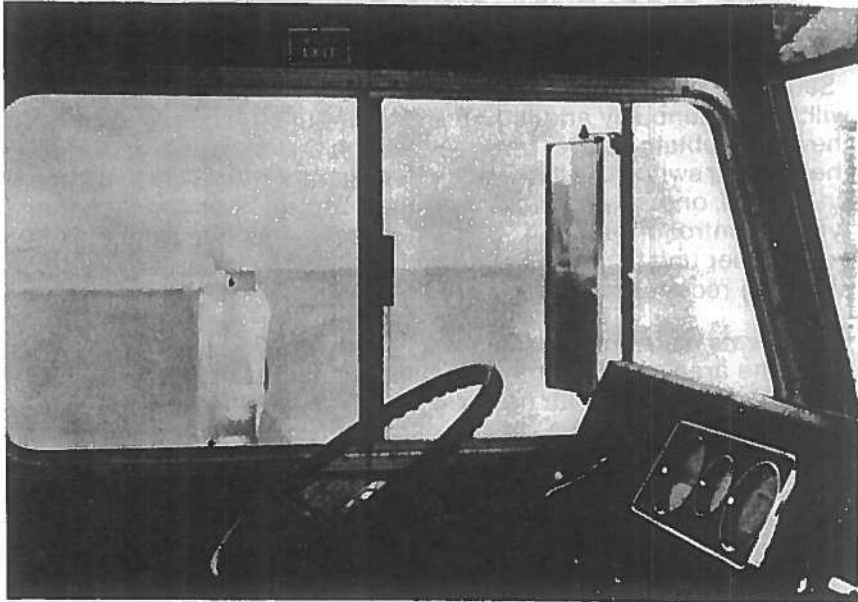
Replace ceiling shroud.

CAUTION

Do not operate the air conditioner for extended periods of time without the filters installed.

Circuit Breaker

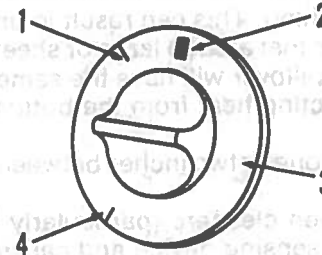
The air conditioner unit is protected from current overload by a circuit breaker located on the motor home's electrical control panel. Move switch to "Off" position and back to "On" to reset breaker.



Use of Slider Windows as Emergency Exits

Most single and double slider windows along the sides of the motor home can also be used as an emergency exit, should the need arise. To use the windows as exits, slide the window open, then strike the screen at one corner to loosen it and push out.

is also normal for the oven burner flame to cycle off and on at all set temperatures except broil. This is to maintain a constant temperature in the oven.



OVEN CONTROL

1. "Pilot Off" Position
2. "Off"
3. Temperature Range
4. "Broil" Position

Using Low Temperature

The oven in your motor home is capable of maintaining temperatures in the low range of 140 to 225 degrees. Therefore, it can be used as a warming oven.

Shut Down Instructions

Turn the thermostat dial to the "Off" position. In this position, the oven standby pilot flame will remain lit.

When the motor home is not in use, or while traveling, turn the thermostat dial to the "Pilot Off" position and turn off the main gas supply.

IMPORTANT

Make sure glass surfaces are cool before wiping with a detergent and water solution.

Range Troubleshooting

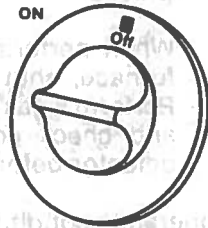
With proper care, your range should give you good service. Should difficulties occur, it is suggested that you contact your dealer for assistance. However, before seeking service, it may save time and money to check to make sure the problem is not caused by misuse:

soon as a burner is lit; as opposed to an electric element heating up. The opposite occurs when the burner is turned off, as no heat remains when the flame is turned off. Your range has a "Pilot Off" position on the oven control which allows the oven pilot to be turned off when traveling or refilling the LP tank.

Use of Top Burners

To operate top burners:

1. Light match.
2. Turn control knob left (counterclockwise) to the full "On" position.
3. Apply lighted match immediately to the burner.
4. Adjust the flame height by turning the knob toward the "Off" position.



BURNER CONTROL

WARNING

Do not turn burner control knob to "On" and allow gas to escape before lighting match.

Use of the Oven

The oven is controlled by a low temperature thermostat which has no by-pass setting and will cycle off and on at all temperatures setting except broil ("B").

Lighting Instructions:

1. Make sure oven thermostat dial is set at "Pilot Off" position.
2. Make sure LP gas tank or bottle valve is open.
3. Depress and turn the oven thermostat dial to the "Off" position.
4. Open door and light oven pilot with a match. A small flame will be noted at the top of the pilot burner.

Operating the Thermostat

Depress and turn the thermostat dial left (counterclockwise) to the desired temperature setting. There is a delay of about 45 seconds before the main burner ignites; this is normal, no gas is escaping at this time. It

PRE-TRAVEL CHECKLIST

Before starting the engine in preparation for an outing, be sure your motor home has been properly prepared and maintained. This will ensure an enjoyable trip and help avoid delays. Use this checklist as guide:

Fluid levels - Check and fill if necessary; engine oil, transmission power steering, radiator, brake, battery, and windshield washer
Wheel lug nuts - Check for tightness.

Tires - Check for proper cold inflation pressures as specified in pressure chart.

110-Volt generator (Option) - Check oil level in generator engine

WARNING

Never check oil level in generator while engine is operating.

Lug Wrench is properly stowed.

Fire Extinguisher - Make sure it is fully charged and secured mounting bracket.

Lights - Make sure all headlights, tail lights, and clearance lights are operating.

Seat - Adjusted for comfortable position.

Mirrors - Adjust for maximum visibility from driver's seat.

Exterior doors and step - Make sure doors are closed, locked, and step retracted.

Sewer and water supply hose - Unhook and stow.

Loose items inside the coach - Stow or secure items and make sure all doors are closed and latched.

Pilot lights - Make sure all pilots are off.

Fuel Tanks - Check level.

Water Tank - Fill with fresh water.

LP gas tank or bottles - Make sure valve is closed and door latched securely.

CARBON MONOXIDE WARNING

WARNING

Avoid inhaling exhaust gases, they contain carbon monoxide, which by itself is colorless and odorless, and poisonous.

If you suspect that exhaust fumes are entering the passenger compartment, have the cause determined and corrected as soon as possible. If you must drive under these conditions, drive only with ALL windows FULLY open.

The best protection against carbon monoxide entry into the vehicle body is a properly maintained engine exhaust and ventilation system. It is recommended that the exhaust system and body be inspected by a competent mechanic:

- Each time the vehicle is raised for oil change.
- Whenever a change is noticed in the sound of the exhaust system.
- Whenever the exhaust system, underbody or rear of the vehicle is damaged.

To allow proper operation of the vehicle's ventilation system, keep front ventilation inlet grille, clear of snow, leaves, or other obstructions at all times.

STARTING IN A PARKED VEHICLE WITH ENGINE RUNNING FOR AN EXTENDED PERIOD IS NOT RECOMMENDED.

Do not run engine in confined areas such as garages except to move vehicle in or out of area. When vehicle is stopped in an UNCONFINED area with the engine running for any more than a short period, adjust heating or cooling system to force outside air into the vehicle.

1. Set fan to medium or high speed and control for vent to air.
2. On vehicles equipped with air conditioning, set fan to medium or high speed, and set control to obtain maximum vent air.

Doors and rear windows should be closed while driving to avoid drawing dangerous exhaust gases into the vehicle. If for some reason they must remain open for a period while driving, or electrical wiring or other cable connection to a trailer must pass through the seal between them and the body, the following precautions should be observed:

- Close all windows.
- Adjust heating or cooling system to force outside air into the vehicle as described in item 1 or 2 above but with fan set at high speed.
- Fully open outside air vents in or under the instrument panel.

STARTING THE ENGINE

Different climatic conditions, as well as other factors, can play a part in determining what method should be used when starting the engine. The following instructions have been provided for various starting conditions. Read all of them carefully and choose the appropriate method. The engine will start with the selector lever in the Neutral or Park position. Before engaging the starter:

- Apply the parking brake.
- Make sure the gearshift selector is in Neutral or Park position.
- Depress accelerator pedal and activate the starter as outlined.

CAUTION

The starter should not be operated longer than 15 seconds at a time. If the engine fails to start, always wait a few seconds before trying again to protect the starter from overheating.

Cold Engine

Fully depress accelerator pedal and slowly release. With foot off the pedal, crank the engine by turning the ignition key to the Start position, and release when the engine starts. If engine starts, but fails to run, repeat this procedure.

Thermostat

The operation of the furnace is controlled by the thermostat. The furnace main burner and blower will automatically cycle on and off to maintain the motor home interior temperature at the desired setting.

Since the main burner valve is opened by an electro-magnet, the furnace will not operate unless there is sufficient electrical charge in the in the auxiliary battery or the 110-volt power cord is connected to an outside electrical source or optional 110-volt generator.

Furnace Maintenance

We recommend that the furnace be inspected and thoroughly cleaned by a qualified service agency before each heating season. This would include the combustion chamber, the main burner, the blower assembly, and all control parts. A careful inspection of all gaskets should be made and if any gaskets shown signs of leakage or deterioration, they should be replaced.

WARNING

When performing maintenance on furnace, shut off gas at the tank. Perform a gas leak test on tank valve and check connection using leak detector before relighting.

To keep your furnace in top operating condition, occasionally vacuum out the inside of the furnace casing to remove lint and dust that has accumulated.

Furnace Troubleshooting

Should difficulties occur with the furnace, it is suggested that you contact your dealer for assistance. However, a great number of service calls are unnecessary and could be avoided by first checking these areas of the LP gas and electrical systems:

1. Make sure there is gas to the furnace. Turn all gas valves to "On" position.
2. Make sure electrical fuse for furnace, located on control panel, is not blown. Replace if necessary.
3. When operating on battery power, make sure auxiliary battery is fully charged.
4. Check gas supply to make certain tank is not empty or that regulator is not frozen.
5. Make sure registers are full open and not blocked, pinched or bent closed.
6. See suburban service instructions.

RANGE AND OVEN

The range and oven in your Allegro motor home are operated on LP gas and will provide nearly all of the functions that the range in your home does. One of the features of gas burners is that heat is available as

If your LP gas supply has been depleted, it is possible that air has entered the gas lines. When this is the case, the pilots will be difficult to light. The gas will eventually force the air from the lines, but to speed up the process, light the pilot nearest the supply first and proceed to the furthest. After the first pilot is lit, the increased gas pressure will force the air out of the lines throughout the system.

EQUIPMENT OPERATION AND MAINTENANCE

GAS FURNACE-OPERATION (Suburban)

The gas furnace in your Allegro is designed to provide safe and efficient heat in your motor home through the use of the LP gas and 12-volt electrical systems. The LP fuel is converted to heat at the burner and heats the metal heat exchanger. The blower then delivers this heat to the motor home interior through connected heat ducts.

A fan switch, incorporated in the furnace, turns on the blower automatically when the temperature of the heat exchanger reaches a pre-set point. It is normal at the end of an operational cycle for the blower to cycle on once or twice to extract all the heat possible from the exchanger.

LIMIT SWITCH

The purpose of the limit control is to turn off the gas to the main burner if for any reason the furnace becomes hotter than that which is safe.

LIGHTING INSTRUCTION

1. To light the furnace, turn the manual valve to the "off" position and wait 5 minutes with blower running. (Set thermostat above actual temperature to operate blower.)
2. After 5 minutes, set the thermostat to the "off" position.
3. Open manual valve. (Correct operating characteristics depend on this valve being positioned fully open. Never attempt to operate with valve partially closed.)
4. Set thermostat on desired temperature.
5. Allow 15 seconds for main burner to light.
6. If burner does not light, set thermostat on "off" and repeat steps 1 thru 5.
7. If after 3 tries and no ignition, go to shut down and determine cause.

Shut Down Instructions

Furnace shut down is recommended when your motor home is left unused for any length of time.

To Shut Down

1. Turn Manual valve to the "off" position.
2. Set thermostat on off.

speed may be reduced by slightly depressing the accelerator pedal and then slowly releasing.

CAUTION

Extended running of engine (5 minutes or more) without reducing idle speed, could cause damage to engine or exhaust system due to overheating.

Extremely Cold Weather (Below 0° F.) Or After Vehicle Has Been Standing Idle Several Days

Fully depress and release accelerator pedal two or three times before starting the engine. With foot off the accelerator pedal, start the engine by turning the key to the Start position and release when engine starts.

Warm Engine

Depress accelerator pedal approximately halfway and hold while starting the engine.

Engine Flooded

Depress accelerator pedal and hold to floor while starting until engine is cleared of excess fuel and is running smoothly. Never "pump" the accelerator pedal.

Warm-Up

Always let the engine idle for 20 to 30 seconds after starting and drive at moderate speeds for several miles, particularly during cold weather.

GEAR SELECTION

When ready to drive, move the selector lever from "P" or "N" to the desired position. Your automatic transmission provides you with either fully automatic operation in the "D" (drive) position or manual control by allowing you to start in the "1" (first) or "2" (second) position and shift to higher gears manually. The explanations of the selector positions will help you determine the best operating position.

"P" Park - This position supplements the parking brake by locking the transmission, whether or not the engine is running. The engine may be started in this position. Make sure vehicle is stopped before placing the transmission in "P" (park).

"R" Reverse - This position is used to back the motor home from a stopped position. The vehicle should be brought to a stop from forward travel before shifting into reverse except when rocking the vehicle to free it from mud, snow, sand and etc. Do not spin the wheels in excess of 35 MPH when freeing a stuck vehicle.

"N" Neutral - Shift to neutral when stopping for a prolonged period with the engine running to avoid overheating the transmission. The engine may also be started with the selector in this position.

"D" Drive - This position is used for most normal city and highway driving. As stated previously, the transmission will start in first and shift automatically through second and to drive when the selector is in this

position. You may downshift for extra acceleration below 65 miles per hour by depressing the accelerator pedal to the floor, or by depressing the pedal halfway to the floor below 30 miles per hour.

'2" Second - This position is particularly useful when driving in heavy city traffic or on mountain roads where more control over speed is necessary. Use it also when driving up moderately steep grades and for "engine braking" when descending downgrades. To prevent excessive engine speed, do not exceed 45 miles per hour in this range.

"1" First - This position should be used for driving up very steep hills and for "engine braking" at low speeds (25 miles per hour or less) where the "2" position does not prove sufficient. This position is also useful in conditions such as sand, snow or mud where hard pulling at low speeds is required.

To prevent excessive engine speed, do not exceed 25 miles per hour in this range.

CAUTION

Using a driving gear to hold on an upgrade can cause the engine and transmission to become overheated. Do not idle the engine for more than one minute with transmission in gear. Longer periods of idling, while in gear, can cause overheating of the engine. Use service brake to hold vehicle.

NEW VEHICLE BREAK-IN

By following a few simple break-in precautions, you can contribute greatly to a longer life for your motor home chassis and add to its future performance and economy of operation. The road speed should not exceed 50 miles per hour for the first 500 miles. Work up to this speed gradually during the first 200 miles. Then vary your speed periodically rather than driving a steady rate of speed for long periods. During the next 2,000 miles of operation, the speeds may be gradually increased up to the lawful speed limit to complete the break-in process. Follow the recommended oil change schedule in the maintenance section of this manual during the break-in period.

WEIGHING THE MOTOR HOME

The frame and load carrying components of your motor home have been designed to provide satisfactory service as long as the vehicle is not loaded in excess of the gross vehicle weight rating (GVWR) or the gross axle weight rating (GAWR) for the front and rear axles. These ratings are listed on the vehicle certification label located on the driver's sidewall to the left of the dash on all A body motor homes and on the cab body just above the door striker on all C body motor homes. The GVWR is the total permissible weight of the motor home, including driver, passengers, the vehicle itself with all options, and the load it is carrying including all liquids. The GAWR is the total permissible weight allowable for each axle.

Weigh your motor home periodically at any state weighing scale or at a local weighing station. The front and rear axles must be weighed

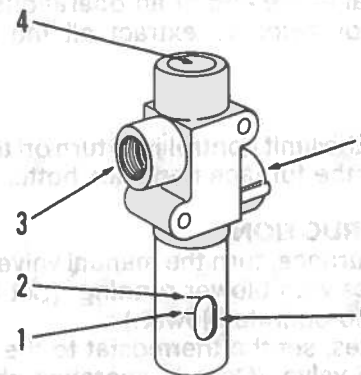
IMPORTANT

Liquid level in leak detector must be between minimum and maximum marks to operate properly. Have liquid replenished by your dealer if necessary.

6. Conduct a soapy water test at all joints. Tighten if necessary and retest.
7. If test still indicates a leak, contact your Allegro dealer or a qualified LP gas service facility.

IMPORTANT

If detector indicates a leak, recheck to be sure all appliance gas valves have been shut off.



LEAK DETECTOR

1. Minimum Liquid Level
2. Maximum Liquid Level
3. Inlet Port from Regulator
4. Red Actuation Plunger
5. Outlet Port to LP Gas System
6. Sight Glass Port

WARNING

Never use an open flame to test for gas leaks.

In very cold weather when a large volume of gas is being used for heat production, it is possible to experience a loss of gas pressure. At first occurrence this problem may appear to be caused by a regulator freeze-up, but is actually caused by failure of the liquid gas to vaporize as fast as it is needed. As the temperature becomes colder it is increasingly harder for the liquid LP gas to "boil off" into a vapor. At the same time, your demand for LP to produce heat increases to the point that the demand becomes too great. The only actual solution to this problem is to reduce the consumption of gas where possible. Adjusting the temperature on the gas/electric refrigerator may be a first step. Reducing the water temperature at the hot water heater and using less hot water will help as well.

LP GAS SYSTEM MAINTENANCE

Leak Detector

An LP gas leak detector is installed on all Allegro motor homes as standard equipment to detect gas leakage in the gas plumbing and appliance system. The leak detector is installed next to the regulator with the outlet port of the detector connected to the plumbing system into the motor home. In this way, every joint beyond the leak detector is quickly checked whenever the detector is activated.

IMPORTANT

This device does not prevent leaks. It detects leakage only when activated.

The connections at the regulator and at the main shut off valves should be checked with a soapy water solution each time the bulk tank is refilled. The leak detector should also be activated after each tank refill.

1. Close LP gas tank valve.
2. Ventilate motor home by opening doors and windows.
3. Shut off all LP gas appliances, including pilots.
4. Open one stove burner valve and light burner to deplete any pressure in your LP system. (This will take a minute or two depending on the size of your vehicle.) Close valve when the flame goes out. (If the flame continues to burn, your LP gas tank valve may not be closed.)
5. While depressing red button on top of leak detector, open LP gas tank valve. A stream of bubbles will be visible in the leak detector sight glass immediately, but these should disappear in about two seconds. Continue to depress plunger for 5 to 10 seconds.
 - A. If no bubbles are visible during the 5 to 10 second period, your system is secure at this time.
 - B. If bubbles are visible during the 5 to 10 second period, there is a leak.

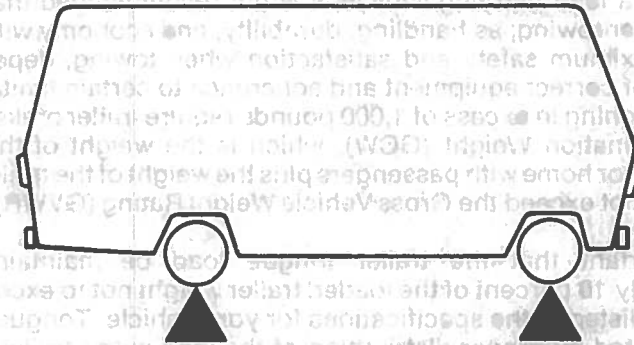
separately with the vehicle's weight (including occupant) and ready for operation. This process will determine the actual gross axle weight (GAW) for front and rear axles. Next weigh the entire motor home fully loaded, or add the front and rear gross axle weights to determine the gross vehicle weight (GVW). The GVW or actual weight of the vehicle must never be allowed to exceed the GVWR, nor should either of the GAW's be allowed to exceed the GAWR figures. Overloading the vehicle can produce safety hazards, poor handling, and also reduce the life of all load carrying components such as tires, springs, shock absorbers, etc.

IMPORTANT

The vehicle must be level when weighing either of the axles and when weighing any of the wheel locations separately.

The accompanying figure illustrates a typical vehicle in the loaded condition. Note that the front and rear GAWR's and the GVWR are not exceeded.

Maximum GVWR - 12,300 lbs.
 Front GAWR - 4880 lbs.
 Rear GAWR - 7500 lbs.



Rear Curb	6130	Front Curb	2780 lbs.
Rear Cargo and		Rear Cargo and	
Passenger Load	<u>1250 lbs.</u>	Passenger Load	<u>820 lbs.</u>
	7380 lbs.		4600 lbs.

Total Weight at Ground 11,980 lbs.

When loading the vehicle, it is important that the load be properly distributed over both the front and rear axles within the GAWR limit. Note that the total of both GAWR figures may exceed the GVWR listed on the certification label. Therefore, both axles must not be loaded to maximum capacity, or the GVWR may be exceeded. If the vehicle

weight is greater than capacity, remove unnecessary cargo. To load the motor home properly, it is recommended that you first determine its empty weight by weighing each wheel and tire location separately. Load the heavier items low and toward the lighter side to distribute the weight as equally as possible from side to side. It is possible for the GAW of an axle to be below capacity and still experience poor vehicle handling if the majority of the weight is on one side.

Always maintain tire inflation pressure at the designated value specified in the tire inflation chart. Check pressures after the motor home has been parked overnight and before driving any great distance. Check tire pressure again anytime the load is increased.

WARNING

Total loaded motor home weight including options, attachments, personnel, water, and waste must not exceed the GVWR or the gross axle weight rating (GVWR) of either axle.

TRAILER TOWING

Since your motor home was designed and intended to be used primarily as a load carrying vehicle, it is not recommended that it be used for trailer towing; as handling, durability, and economy will all be affected. Maximum safety and satisfaction when towing, depend on proper use of correct equipment and adherence to certain limitations. Trailers weighing in excess of 1,000 pounds require trailer brakes. The Gross Combination Weight (GCW), which is the weight of the fully equipped motor home with passengers plus the weight of the trailer with cargo, must not exceed the Gross Vehicle Weight Rating (GVWR) of the motor home.

It is important that the trailer tongue load be maintained at approximately 10 percent of the loaded trailer weight not to exceed the tongue load listed in the specifications for your vehicle. Tongue loads can be adjusted by proper distribution of the load in the trailer.

An auxiliary transmission oil cooler connected in-series with the radiator bottom tank cooler is mandatory.

CAUTION

It is essential that the auxiliary cooler installation does not create an oil flow restriction to the transmission cooling system.

Before descending a steep or long grade when towing a trailer, reduce speed and shift into a lower gear to control vehicle speed. Avoid prolonged or frequent application of the brakes which could cause overheating.

ROOF LOADING

The roof on your motor home is constructed of 1" aluminum tubing on

WARNING

Never use an open flame to test for gas leaks.

Because of the extreme flammability of LP gas, and its heavier-than-air qualities, you must not smoke or expose the tank to an open flame while near a refueling area.

CAUTION

Replace all protective covers and caps on LP system after filling.

LP GAS DEALERSHIP

There are many LP gas refueling stations located throughout the country. These stations are listed in the telephone directory in the Yellow Pages under "Gas-liquefied petroleum-bottled and bulk".

WARNING

Make sure all pilots lights have been extinguished before refilling LP gas tanks.

TRAVEL WITH LP GAS

It is recommended that all LP gas appliances be turned off and the valve on the LP tank be closed before traveling for a number of reasons:

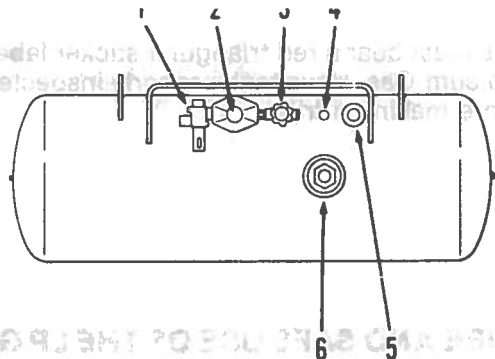
Safety - Should your vehicle be involved in an accident and a gas supply line broken, LP gas would be free to escape from an open line, creating a fire hazard.

State Regulations - Many states are becoming increasingly regulatory about LP tanks and their use. For example, it is illegal for motor homes to pass through certain tunnels in the nation because of the LP tank or bottles aboard, even if the outlet valve is closed. We suggest you always check the local regulations of the states through which you plan to travel.

REGULATOR FREEZE-UP

Regulator freeze-ups are caused by the presence of moisture in the fuel. This moisture will pass through the cylinder valve and into the regulator where it freezes. Fuel producers, tank manufacturers, and LP gas dealers take every precaution to keep moisture out, but sometimes only a fraction of an ounce in a tank of gas can cause problems. To help avoid the possibility of freeze-up, always keep tank valve closed when not in use, even when tank is empty, to prevent moisture from collecting inside.

If moisture begins causing problems, have your LP gas dealer inject a small amount of dry methyl alcohol in your tank (approximately one ounce to 20 pounds of fuel or one pint to 100 gallons) to help guard against regulator freeze-up.



BULK LP TANK

1. Leak Detector
2. Regulator
3. Shut-Off Valve
4. 20% Fixed Level Overflow Valve
5. Filler Valve
6. Float Gauge

WARNING

Do not alter or remove LP tank gauge at any time.

Refilling Bulk LP Tank

Since the bulk LP container is permanently mounted to the frame, the motor home must be taken to an LP dealership for filling. Do not attempt to remove the LP tank from the motor home. The bulk tank is equipped with a fill adapter with both internal and external threads which allows easy filling by almost any LP filling equipment.

WARNING

Never allow your LP bulk tank to be filled above the 80 percent level. Make sure the motor home is level when filling. It is possible to accidentally overfill the tank if it is not level; especially if the fill valve is on the uphill side. Twenty percent of the tank area must remain empty to allow the gas to vaporize.

When the pressure gauge on the tank indicates about 10 percent of the full capacity, it is recommended that the tank be refilled at an authorized LP gas dealership.

articles while the vehicle is in motion. However, maximum weight being carried while the vehicle is in motion is not to exceed 80 pounds per square foot. A roof mounted luggage carrier designed for this purpose is available as an option.

When the vehicle is stationary, a load of 225 pounds per square foot or maximum of 1500 pounds is permissible, thus allowing you to walk on the roof to periodically inspect the seams.

Both weight added to the roof and that added to a trailer hitch contribute to the Gross Vehicle Weight which must not exceed the vehicle's GVWR.

Total weight added to the roof, trunk (when existing), hitch and bumper must not exceed 250 pounds.

Note: When figuring the total weight added to the roof, do not include weight of the optional roof air conditioner.

VEHICLE MAINTENANCE

FUEL REQUIREMENTS

The engine in your motor home is designed to operate on unleaded or leaded gasoline to minimize spark plug fouling. The engine does not require premium grade fuel. If engine knocking persists, have the engine checked by your dealer. Continuous knocking can result in engine damage.

Use an unleaded or leaded gasoline having a research octane number of at least 91 and an average octane rating of at least 87. It is a requirement of the Federal Energy Administration that the average octane rating be posted on service station pumps.

WARNING

Make sure all pilot lights have been extinguished before refilling LP gas tanks or bottles.

ENGINE ACCESS (All A Body Motor Homes)

On all models, the oil dipstick, oil fill, radiator fill, and the windshield washer fluid reservoir are accessible through the grille. To open, simply swing the grille upward. On some units, it will also be necessary to unlatch a catch on the right side (facing the door) before opening the access door.

Engine Cover

The engine cover located in the driver's compartment can be removed by releasing the clamps at the near end. Access to the transmission fluid dipstick, fluid fill tube, air cleaner, and other engine parts can be gained through this opening.

To Be Serviced	When to Perform
A—GENERAL MAINTENANCE	
Chassis Lubrication	Every 4 Months or 6,000 Miles (9 600 km)
Fluid Levels	See Explanation for service intervals
Engine Oil and Filter*	See Explanation for service intervals
Clutch	Every 4 Months or 6,000 Miles (9 600 km)
Steering and Suspension	Every 4 Months or 6,000 Miles (9 600 km)
Exhaust System	Every 4 Months or 6,000 Miles (9 600 km)
Brakes	Every 4 Months or 6,000 Miles (9 600 km)
Disc Brakes	Every 4 Months or 6,000 Miles (9 600 km)
Brake Lines	Every 4 Months or 6,000 Miles (9 600 km)
Drum and Parking Brakes	Every 4 Months or 6,000 Miles (9 600 km)
Engine Drive Belts*	Every 12,000 Miles (19 200 km)
Fuel Tank, Cap and Lines*	Every 24 Months or 24,000 Miles (38 400 km)
Throttle Linkage	Every 12 Months or 12,000 Miles (19 200 km)
Cooling System*	Every 12 Months or 12,000 Miles (19 200 km)
Manual Steering Gear	Every 36,000 Miles (57 600 km)
Final Drive	See Explanation for service intervals
Wheel Bearings	Every 12,000 Miles (19 200 km)
Automatic Transmission	Every 24,000 Miles (38 400 km)
B—EMISSION CONTROL MAINTENANCE	
Engine Idle Speed Adjustment	At 1st 4 Months or 6,000 Miles (9 600 km) — then at 12 Months 12,000 Mile (19 200 km) intervals
Idle Stop Solenoid Check	At 1st 4 Months or 6,000 Miles (9 600 km) — then at 12 Months 12,000 Mile (19 200 km) intervals
Spark Plug Wire Check & Plug Replacement	Every 12,000 Miles (19 200 km)
Engine Timing Adjust. & Distributor Check	Every 12,000 Miles (19 200 km)
Air Cleaner Element Replacement	Every 12 Months or 12,000 Miles (12 200 km)
Carburetor Mounting Torque	Every 12 Months or 12,000 Miles (12 200 km)
Thermo. Controlled Air Cleaner Check	Every 12 Months or 12,000 Miles (12 200 km)
Manifold Heat Valve Check	Every 12 Months or 12,000 Miles (12 200 km)
Carburetor Fuel Filter Replacement	Every 12 Months or 12,000 Miles (12 200 km)
Throttle Return Control Check	Every 12 Months or 12,000 Miles (12 200 km)
PCV System Check	Every 12 Months or 12,000 Miles (12 200 km)
— PCV Valve & Filter Service	Every 12 Months or 12,000 Miles (12 200 km)
ECS System Check	Every 24 Months or 24,000 Miles (38 400 km)
Engine Idle Mixture Adjust (4.8 L, L-6 only)	Every 24 Months or 24,000 Miles (38 400 km)
EFE System Check	Every 24 Months or 24,000 Miles (38 400 km)
Vacuum Advance System Check	Every 24 Months or 24,000 Miles (38 400 km)
Carburetor Choke Check	Every 24 Months or 24,000 Miles (38 400 km)
C — NOISE EMISSION CONTROL MAINTENANCE (Applicable only to vehicles sold only in the United States)	
Thermostatically Controlled Engine Cooling Fan	Every 12 Months or 12,000 Miles (19 200 km)
Shields and Underhood Insulation	Every 12,000 Miles (19 200 km)
Air Intake System	Every 12,000 Miles (19 200 km)
Governor	Every 48 Months or 48,000 Miles (76 800 km)

* an Emission Control Service
 a noise Emission Control Service

IMPORTANT

All LP gas tanks must bear a red triangular sticker labeled, Flammable Liquefied Petroleum Gas. Have tank properly inspected and labeled if necessary, before making a trip.

TROUBLE-FREE AND SAFE USE OF THE LP GAS SYSTEM

Be safe at all times. Know the distinctive odor of LP gas. If a leak is suspected, turn off the tank valve immediately. Ask the LP gas dealer to check the system.

Have the entire LP gas system inspected for possible leaks, and missing or damaged parts at the time of filling. Inspect before and after each trip, and any time trouble is suspected.

Do not tamper with the LP gas piping system, pressure regulator, or appliances. Use caution when drilling holes or attaching objects to the wall. Gas lines and electrical wiring could be seriously damaged and present an extreme safety hazard.

Be sure appliance, and outside vents are open and free from obstruction when using LP gas operated appliances.

Never allow your tank to be filled above the 80 percent level indicated by the flow of liquid gas out the overflow valve.

Never attach a lock or device requiring a key to open the LP gas compartment door. In an emergency the tank valve must be accessible.

When not using the gas system, turn off the gas at tank.

Never use a wrench to tighten the tank service valve. It is designed to be closed leak-tight by hand. If a wrench is required to stop a leak, replace the valve.

BULK TANK SYSTEM

The LP bulk tank furnishes gas to the water heater, furnace and on some models, the 110-volt/LP gas refrigerator. The tank is permanently mounted to the vehicle frame. Access to the LP gas tank control valve is through a door on the outside of the motor home.

- Clean exterior surfaces of generator set, then coat any unpainted metallic surfaces with light oil.

LP GAS SYSTEM

LP GAS SUPPLY

LP gas (Liquefied Petroleum Gas) is a true gas, compressed into liquid form for easy transportation and storage. It is also known as bottled gas or tank gas; or simply as butane or propane which are the two types of LP gas.

The LP gas system supplies fuel for the range, water heater, furnace, and 110-volt/LP gas refrigerator (on some models).

Under proper conditions and handling, the system is safe, economical, and provides modern living conveniences wherever you travel.

Butane and propane gas are commonly used in recreational vehicles. Butane burns hotter than propane, but will not become a useable gas vapor at temperatures lower than 32°F. Propane will not become a useable gas vapor at temperature lower than -44°F. For this reason, propane is popular in cold climates, while butane is used most widely in mild climates. LP is stored in the tank under very high pressure. The pressure is reduced to under one pound when it passes through a regulator. When the LP reaches the atmosphere, it expands many times and turns into a vapor. Your Allegro motor home uses the LP in a vapor form only.

IMPORTANT

Most LP dealers normally handle only the type of LP gas used in their area and climate. Butane will normally be sold in the warmer southern states, while propane, which vaporizes down to -44°F will be sold in the northern states. If you are filling your tank in one of the warmer states, but anticipate traveling into a colder area, it is advisable to request propane. Otherwise your LP system may fail to operate the first time the temperature drops below 32°F since the butane will not vaporize below this point.

Each gallon of liquid LP gas contains approximately 92,000 BTU's of heat energy; or, putting it another way, each gallon of LP gas produces approximately 36 cubic feet of dry gas for cooking, heating, lighting, water heating, and refrigerating.

To find out how long a gallon of LP gas will last, you should determine the total BTU input on all your LP gas appliances. Let's say you have a heater that has a 10,000 BTU input per hour of operation, a gallon of LP gas would last 9.2 hours of continuous operation. (92,000—10,000=9.2) To estimate how long a gallon of LP gas lasts, try to determine what your total daily BTU input is, then divide into 92,000 to arrive at an approximately daily LP gas consumption.

RECOMMENDED FLUIDS & LUBRICANTS*

USAGE	FLUID/LUBRICANT
Engine	"SF" or SF/CC" or "SF/CD" Engine Oil conforming to GM spec 6048-M
Engine coolant	Mixture of water and a high quality Ethylene Glycol base type anti-freeze conforming to GM spec 1825-M (GM Part No 1052753) or equivalent
Brake system and master cylinder	Delco Supreme 11 fluid or DOT-3
Parking brake cables	Chassis grease meeting requirements of GM spec 6031-M
Power steering system and pump reservoir	GM power steering fluid Part No 1050017 or equivalent
Manual steering gear	Lubricant GM Part No 1051052 or equivalent
Automatic transmission	DEXRON® II Automatic Transmission Fluid
Differential—standard or locking Manual transmission	SAE-80W GL-5 or SAE-80W-90 GL-5 gear lubricant (SAE-80W—GL5 in Canada)
Manual transmission shift linkage column shift, Propeller Shaft Slip Joint	Chassis grease meeting requirements of GM spec 6031-M
Key Lock Cylinders	WD-40 Spray Lubricant or equivalent
Automatic transmission shift linkage	Engine oil
Clutch linkage (Man. trans. only) a Pivot points b Push rod to clutch fork joint, and cross shaft pressure fitting	a Engine oil b Chassis grease meeting requirements of GM spec 6031-M
Shift linkage, floor shift	Engine oil
Chassis lubrication:	Chassis grease meeting requirements of GM spec 6031-M
Windshield washer solvent	GM Optikleen washer solvent Part No 1051515 or equivalent
Hood latch assembly a Pivots and spring anchor b Release pawl	a Engine oil b Chassis grease meeting requirements of GM spec 6031-M
Hood and Door hinges	Engine oil
Front wheel bearings	Lubricant GM Part No 1051344 (one pound) or equivalent
Body door hinge pins, tailgate hinge and linkage, folding seat, fuel door hinge	Engine oil
Transfer case	DEXRON® II Automatic Transmission Fluid
Constant Velocity Universal Joint	GM Lubricant Part No 1052497 or equivalent

*Fluids and lubricants identified with GM part numbers or GM specification numbers may be obtained from your GM dealer.

ENGINE ACCESS (C Body Motor Homes)

Access to the engine is gained by removing the hood latch pins and lifting the hood. While holding hood in the fully-open position, insert end of support rod in left latch pin hole to hold the hood open.

Access to the oil dipstick, oil fill, radiator fill and overflow, power steering fill, windshield washer reservoir, automotive battery, and the brake fluid reservoir can be reached through the hood opening.

BRAKE FLUID RESERVOIR (A Body Motor Homes)

The brake master cylinder is located above and to the right of the left front wheel and is covered by a metal shield for protection against mud and foreign material. Have your dealer or local garage remove the shield and check master cylinder fluid level in both reservoirs every 4 months or 6,000 miles.

ENGINE OIL AND FILTER

Checking Oil Level

The engine oil should be maintained at proper level. The best time to check it is as the last step in a fuel stop. This will allow the oil accumulation in the engine to drain back into the crankcase. To check the level, remove the oil dipstick, wipe it clean, and reinsert it firmly for an accurate reading. The dipstick is marked "FULL" and "ADD." The oil level should be maintained in the safety margin, neither going above the FULL line nor below "ADD" line. Reseat the dipstick firmly after taking reading.

Oil Change

Engine oil should be changed at regular intervals to ensure a long and troublefree engine life. If the motor home is driven only a few miles at a time and at low speeds, moisture will condense in the crankcase and form a sludge. Under these conditions, which includes frequent or prolonged idling, oil changes are recommended every 1,000 miles. Operating in very dusty conditions also calls for more frequent oil changes. Since the frequency will depend on the severity of dust conditions, no definite recommendation can be made. However, operation in a severe dust storm may require an immediate oil change. When changing engine oil, always use an oil that conforms to the requirements of the API (American Petroleum Institute) classification or Service SE. The oil should also be of the proper SAE number to meet the climatic temperature range that is anticipated before the next oil change. Under normal operating conditions, change engine oil every two months or 3,000 miles, whichever comes first.

Replace the oil filter on all models the first oil change and every second oil change after that time. When changing the oil filter, add one additional quart of oil.

DRIVE BELTS

Every second oil change the drive belts should be inspected for wear, fraying, cracking, and tension. Belts which are in poor condition should

Oil Capacity For Each Of The Onan Model Units Are:

4000 watt - 3 quarts

5000 watt - 3 quarts

6500 watt - 3 quarts

Oil Filter Change

On 6500 watt generator it is necessary to change the oil every 100 hours and change oil filter every 200 hours. When the oil filter is changed, it is necessary to add an additional one-half quart of oil to the crankcase.

AIR CLEANER ELEMENT

Check and clean element at least every 100 hours. Loosen wing nut to remove. Clean by tapping base lightly on a flat surface. Replace element at least every 200 operating hours; clean or replace more often in dusty conditions.

COOLING SYSTEM

The generator set is cooled by a flywheel blower fan which pulls air over the cylinders and cooling fins. The air path is directed by sheet metal shrouds and plates. These shrouds and plates must always be installed properly so unit does not overheat.

Check and clean (if necessary) the cooling fins at least every 200 hours of operation. Remove any dust, dirt or oil which may have accumulated. Check compartment air inlet and generator set air outlet for buildup of dirt, chaff, etc.

Fuse Replacement on "4000", "5000", "6500" Onan Power Plant 110 Volt

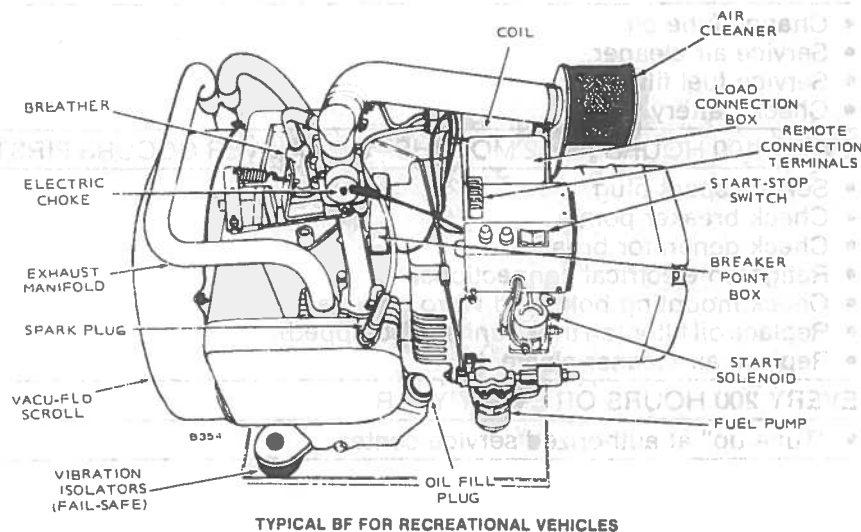
When generator will not turn over or start, be sure to check the fuse that is directly over the start and stop switch on the generator.

STORAGE PROCEDURE (All Units)

If your generator set is to be out of service for more than 30 days, the following steps should be taken to preserve the set before placing it in storage:

1. Run the generator set until thoroughly warm.
2. Shut off fuel supply and allow the engine to run out of fuel. Also operate the choke manually as the engine stops to help drain the carburetor.
3. Drain oil from crankcase (while hot), then flush with clean light-weight oil. Refill crankcase with regular weight oil after flushing with light oil. Replace oil filter on those engines so equipped.
4. Remove the spark plugs, pour one tablespoon of oil into the hole, crank the engine several times, then reinstall the spark plugs.

oil fill cap securely.



Oil Change

Change the engine oil every 50 hours or every six months- whichever comes first. Change oil more frequently when operating under dirty or dusty conditions. The lubricating oil used for replacement must meet requirements of the API (American Petroleum Institute) service classification SC. Oil weight should be selected to meet the expected climatic temperature range. Use a single weight SAE 30 oil when temperatures are above 32 degrees F, SAE 10W-30 when temperatures are in the 32° F to 0° F range, and SAE 5W-20 when temperatures are below 0° F.

NOTE: When temperatures are above 32° F, a single weight oil is best. However, multi-viscosity 10W-30 may be used, provided it has the API SC or CC rating.

pressure midway between pulleys. If the center-to-center distance between pulleys is 13 to 16 inches, the belt should deflect approximately 1/2 inch.

ENGINE COOLING SYSTEM

The engine's cooling system has been filled at the factory with a high quality coolant containing a rust inhibitor. This coolant solution provides freezing protection to at least -20 degrees Fahrenheit. It has also been formulated to be used without replacement for two years or 24,000 miles. At the end of this period, the coolant should be drained to prevent rust or corrosion in the radiator and engine, then refilled with a quality antifreeze/water solution.

To check coolant level, visually inspect the coolant overflow recovery tank. **DO NOT** remove the radiator cap. With the engine idling and warmed to the normal operating temperature, the level of the coolant in the recovery tank should be between the two marks on the side. When additional coolant is needed, a minimum of 50% concentration of ethylene glycol antifreeze in water should be added to the overflow recovery tank. A higher concentration (not to exceed 70%) should be used if a lower freeze point is required.

IMPORTANT

Do not use additional rust inhibitors or antirust products, as they may not be compatible with the radiator coolant.

WARNING

The radiator cap should be removed only when checking coolant freeze point or for complete replacement with antifreeze coolant. **DO NOT** remove radiator cap until the radiator has cooled completely. Use caution with hot coolant or steam. Place a cloth over the cap, turn left to first stop, pause to allow any pressure to release through overflow tube, then press down and turn left to remove cap.

AUTOMATIC TRANSMISSION

The fluid in the automatic transmission should be checked at least every oil change. Be sure the engine has been run long enough to thoroughly warm the transmission before checking the fluid level. Also ensure that the engine is running and the vehicle is level. Automatic transmissions are often overfilled because the fluid level is checked when the fluid is cold and the dipstick indicates that fluid should be added.

If fluid is required, use **ONLY** fluid of the type labeled "DEXRON" Automatic Transmission Fluid, available from your local dealer or service station.

IMPORTANT

DO NOT OVERFILL. It takes only about one pint to raise the level on the dipstick from Add to Full with a hot transmission.

Whenever the transmission fluid level is checked, especially on a vehicle used in severe conditions, the condition of the fluid should be noted. If the fluid is dark and has a strong odor, fluid and filter should be changed. It is also advisable to have the bands adjusted at this time.

To check the fluid level:

1. Warm transmission thoroughly by driving several miles.
2. Park vehicle on a level surface and engage parking brake.
3. Place gear selection lever in park.

Check fluid level by removing the dipstick, wiping clean and reinserting. Remove again for accurate reading. The fluid level should be between "Full" and "Add One Pint."

Refer to the service maintenance schedule in this manual for the frequency of transmission fluid and filter change on your motor home. Fluid should be changed more frequently if the vehicle has been used for off-the-highway operation, towing trailers, or operated frequently under a heavy load, especially in hot weather.

BRAKES

Brakes should be properly maintained for the correct adjustment by following the instructions under brake operation. If the brakes can no longer be adjusted by backing up and applying the brakes, the brake pads and linings should be checked for wear by your dealer.

The fluid level in the dual master cylinder should be checked at each lubrication period and maintained to within ¼ inch of the top of the reservoir.

Only brake fluid conforming to DOT-3 specification may be used. Use only brake fluid that has been kept in a closed container to avoid contamination from foreign material or moisture.

CAUTION

Hydraulic fluids not conforming to this specification must never be used. A fluid with a lower boiling point or one that is unidentified may result in sudden brake failure under hard braking conditions. Never use a petroleum base fluid in the brake fluid reservoir, as seal damage to the system may occur.

POWER STEERING

Check the power steering fluid level when the engine is warmed to operating temperature. Before removing the reservoir cap, wipe off cap and outside of the reservoir to prevent dirt from contaminating the fluid. Fluid level should be maintained at the proper level indicated on the cap dipstick. When adding fluid to the power steering reservoir, use only General Motors Power Steering Fluids.

SERVICE SCHEDULE FOR ALL ONAN GENERATORS

DAILY (OR BEFORE EACH START UP)

- Check oil level.
- Keep cooling air inlets and outlets clean.
- Remove loose dirt from compartment.

EVERY 50 HOURS (OR 6 MONTHS--WHICHEVER OCCURS FIRST)

- Change lube oil.
- Service air cleaner.
- Service fuel filter.
- Check battery.

EVERY 100 HOURS (OR 12 MONTHS--WHICHEVER OCCURS FIRST)

- Service spark plug.
- Check breaker points.
- Check generator brushes.
- Retighten electrical connections.
- Check mounting bolts and vibro mounts.
- Replace oil filter (on those units so equipped).
- Replace air cleaner element.

EVERY 200 HOURS OR EVERY YEAR

- "Tune up" at authorized service center.

ONAN 110-VOLT GENERATOR - MAINTENANCE (All Onan Units)

Oil Check

Check oil level in engine crankcase daily. The oil dipstick is part of the oil fill cap located on the outboard side of the engine. Oil level should be between the "L" and "F" marks on the dipstick. If additional oil is required, add oil to bring the level to the full mark. **DO NOT** overfill. The generator should not be operated when oil level exceeds the full mark or is below the low mark.

WARNING

Do not check the oil level when the generator is operating. Hot oil may be forced out the filler neck.

found to be defective replace with an identical fuse of the same value, available from your dealer.

CIRCUIT BREAKER

On those generator units equipped with a circuit breaker, a breaker switch is located on an electrical box within the generator compartment. If electrical power is suddenly lost but the generator continues to operate, check the breaker switch to see if it has "thrown." Move switch to "off" position and then back to "on" to reset breaker.

ONAN 110-VOLT GENERATOR - OPERATION

Pre-start checklist:

- Oil level - at or near full mark
- Air inlets - clear and unobstructed
- Compartment interior - clean
- Air cleaner - clean
- Exhaust system - tailpipe clear, muffler and piping tight

Starting (2500-, 4000-, 5000-, and 6500-watt units-)

Push in on the start side of start/stop switch; release as soon as the engine starts. Do not hold the switch down for an extended period of time if the engine fails to start. Allow a few seconds interval before re-energizing.

IMPORTANT

The engine will normally start within five seconds. However, if it fails to start in ten seconds, release the switch and wait a few seconds before trying again. This will allow the automatic choke to reset in the full choke position.

Should the generator engine run out of fuel, activate the start switch at ten second intervals to prime the system and set the full choke.

Stopping (All Onan Units)

When possible, allow a brief cooling period by running the generator at low or no load for a few minutes just prior to shutdown. Then move the start/stop switch to the "Stop" position and hold until the unit stops completely.

CAUTION

These models are equipped with a power steering system which also supplies hydraulic power assist to the brake system (Hydroboost). This combine system requires the use of **ONLY** the fluid specified. **DO NOT** put hydroboost fluid in the brake master cylinder or brake fluid in the power steering reservoir.

TIRES

Properly cared for, the tires on your motor home should last for several thousand miles. One important factor that contributes to tire life is inflation pressure. Low air pressure not only results in tire overload and abnormal wear, but also affects handling and fuel economy. The tire flexes more from the overload and builds up heat which weakens the tire, making it more susceptible to failure. Excessive air pressure causes the tire to wear abnormally in the center of the tread, produces a rough ride, and increases the chance of a tire failure from a road hazard. After determining the weight of your motor home and the load on each tire by weighing the vehicle at a scale, the proper inflation pressure can be obtained from the chart in this section.

Tire pressure should be checked at least monthly and preferably more often, especially during periods of frequent use. Inspect the tires often for any foreign objects embedded in the tread which could work into the tire and result in failure. Always check inflation pressure when the tires are "cold," when the vehicle has not been driven for three hours or more or driven less than one mile. It is normal for tire pressure to increase a few pounds when the tires become hot from driving. **DO NOT** reduce this pressure, as doing so reduces the "cold" pressure, resulting in under-inflation.

Any excessive or abnormal wear may indicate worn or out of alignment suspension, excessive camber, incorrect toe, out of balance tires, other tire and suspension problems. Have your dealer inspect the vehicle for the source of the problems and repair it immediately.

IMPORTANT - AIR BAGS

All Allegro motor homes front suspension are equipped with rubber air bags inside the coil springs. Air pressure in these air bags may be increased or decreased to adjust vehicle trim and minimize "craze-through" on large road bumps or depths. Inflation pressure must be maintained between 50 psi minimum and 75 psi maximum.

CAUTION

Failure to maintain air in the air bags will result in out of alignment condition and will cause the front tires to wear out in about 2000 miles.

TIRE AND WHEEL LOAD LIMIT CHARTS (CHEVROLET)

(TIRE & WHEEL LOAD LIMITS ARE SHOWN BELOW. VEHICLE LOADING MUST BE LIMITED SUCH THAT NEITHER THE WHEEL OR TIRE INFLATION PRESSURE OR LOAD LIMITS ARE EXCEEDED)

RADIAL TIRE SIZE AND LOAD LIMITS — LBS (kg)

Tire Size	Load Range	Inflation Pressure - PSI (kPa)						
		36(250)	44(300)	51(350)	58(400)	65(450)	73(500)	80(550)

METRIC RADIAL TIRES USED AS SINGLES

Tire	Load	Inflation Pressure - PSI (kPa)						
Size	Range	36(250)	44(300)	51(350)	58(400)	65(450)	73(500)	80(550)
LT215/85R16	C	1532 (695)	1742 (790)	1940 (880)				
LT215/85R16	D	1532 (695)	1742 (790)	1940 (880)	2127 (965)	2315 (1050)		
LT235/85R16	D	1742 (790)	1984 (900)	2205 (1000)	2425 (1100)	2623 (1190)		
LT235/85R16	E	1742 (790)	1984 (900)	2205 (1000)	2425 (1100)	2623 (1190)	2844 (1290)	3042 (1380)

METRIC RADIAL TIRES USED AS DUALS

Tire	Load	Inflation Pressure - PSI (kPa)							
Size	Range	45(310)	50(345)	55(379)	60(414)	65(448)	70(483)	75(517)	80(552)
LT215/85R16	C	1389 (630)	1587 (720)	1764 (800)					
LT215/85R16	D	1389 (630)	1587 (720)	1764 (800)	1918 (870)	2105 (955)			

Tire Size	Load Range	Inflation Pressure - PSI (kPa)							
		45(310)	50(345)	55(379)	60(414)	65(448)	70(483)	75(517)	80(552)

RADIAL TIRE USED AS SINGLES

Tire	Load	Inflation Pressure - PSI (kPa)							
Size	Range	45(310)	50(345)	55(379)	60(414)	65(448)	70(483)	75(517)	80(552)
8R19 5	D			2110 (957)	2270 (1030)	2410 (1093)	2540 (1152)	2680 (1216)	2800 (1270)

RADIAL TIRES USED AS DUALS

Tire	Load	Inflation Pressure - PSI (kPa)							
Size	Range	45(310)	50(345)	55(379)	60(414)	65(448)	70(483)	75(517)	
8R19 5	D	1850 (839)	1990 (903)	2110 (957)	2230 (1012)	2350 (1066)	2460 (1116)		

BIAS TIRE SIZE AND LOAD LIMITS — LBS (kg)

Tire Size	Load Range	Inflation Pressure - PSI (kPa)									
		30(207)	35(241)	40(276)	45(310)	50(345)	55(379)	60(414)	65(448)	70(483)	75(517)

BIAS TIRES USED AS SINGLES

Tire	Load	Inflation Pressure - PSI (kPa)									
Size	Range	30(207)	35(241)	40(276)	45(310)	50(345)	55(379)	60(414)	65(448)	70(483)	75(517)
7 50-16	C	1620 (735)	1770 (803)	1930 (875)	2060 (934)						
7 50-16	D	1620 (735)	1770 (803)	1930 (875)	2060 (934)	2190 (993)	2310 (1048)	2440 (1107)			
7 50-16	E	1620 (735)	1770 (803)	1930 (875)	2060 (934)	2190 (993)	2310 (1048)	2440 (1107)	2560 (1161)	2670 (1211)	2780 (1261)
8-196	D E					2110 (957)	2270 (1030)	2410 (1093)	2540 (1152)	2680 (1216)	2800 (1270)

BIAS TIRES USED AS DUALS

Tire	Load	Inflation Pressure - PSI (kPa)											
Size	Range	30(207)	35(241)	40(276)	45(310)	50(345)	55(379)	60(414)	65(448)	70(483)	75(517)		
7 50-16	C	1430 (649)	1565 (710)	1690 (767)	1815 (823)								
7 50-16	D	1430 (649)	1565 (710)	1690 (767)	1815 (823)	1930 (875)	2040 (925)	2140 (971)					
8-19 5	D					1850 (839)	1990 (903)	2110 (957)	2230 (1012)	2350 (1066)	2460 (1116)		
8-19 5	E					1850 (839)	1990 (903)	2110 (957)	2230 (1012)	2350 (1066)	2460 (1116)	2570 (1166)	2680 (1216)

WHEEL CODE AND LIMITS

Code	Wheel Size	Max Load Lbs (kg)	Max Pressure PSI (kPa)
AA	16x6.5L	3045(1381)	90(621)
AF	16x6 K	2440(1107)	75(517)
BF	16x6.5L	2780(1261)	85(586)
ZT	19.5x6	2540(1152)	80(552)
ZY	19.5x6	2780(1261)	95(655)

WARNING

The 110-volt AC generator produces electricity. Careless handling of electrical components can be fatal. Never touch electrical leads or appliances when your hands are wet, when standing in water or on wet ground. Do not attempt to repair the generator yourself. Service should be performed by a dealer or authorized service center.

There is carbon monoxide (CO) in the exhaust of all internal combustion engines. This gas is colorless, odorless, tasteless, lighter than air, and poisonous. The exhaust systems of both your motor home engine and your generator engine have been installed with your safety in mind. However, certain precautions must be taken in their use to protect you from conditions beyond the control of the manufacturer.

1. Never operate your motor home engine or engine of any vehicle longer than necessary when the vehicle is parked.
2. Do not simultaneously operate your generator engine and a ventilator which could draw air into the vehicle resulting in the entry of exhaust gases.
3. Do not open windows or ventilators on the end or side of the vehicle where exhaust of the generator is located.
4. When parked, orient the vehicle so that the wind will carry the exhaust away from vehicle. Also, note the position of other vehicles parked nearby.
5. Do not operate the generator engine when parked so that vegetation, snow, buildings, vehicles, or any other object can deflect the exhaust under or into the vehicle.

OVERLOAD PROTECTION DEVICES

The auxiliary 110-volt generator is equipped with either a circuit protection fuse or a circuit breaker to protect the generator unit and wiring from damage by an electrical overload.

CIRCUIT PROTECTION FUSE

The circuit protection fuse, used on some models, is located on the side of an electrical connection box installed in the generator compartment.

If the generator continues to operate but does not provide electrical power, remove the fuse cover from the side of the box and check fuse. If

8. Reverse the above sequence **EXACTLY** when removing the jumper cables, taking care to remove the cable from the ground location on the motor home first. Discard the cloth used to cover the filler holes of each battery and replace the filler caps.

AUXILIARY 110-VOLT GENERATOR (optional)

The use of the auxiliary 110 V generator in your motor home allows you to use the lights and all 110-volt appliances when utility services are not available. The generator may be operated when the vehicle is moving or stationary and can be run continuously, if necessary.

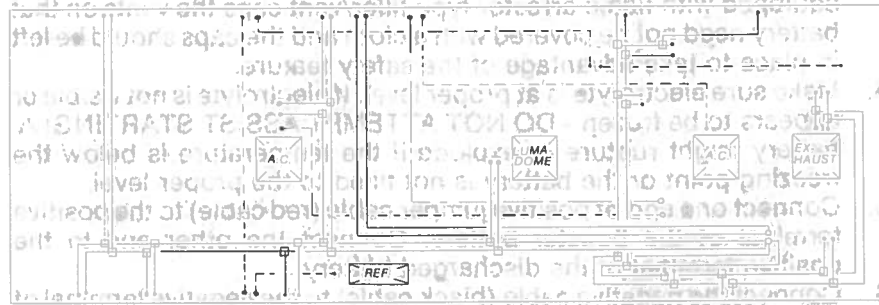
Gas for operation of the generator engine is taken directly from the vehicle's auxiliary fuel tank. However, the generator fuel line does not draw from the bottom of the tank. This feature prevents generator operation from draining the tank. There are two start/stop switches which control the generator. The remote control switch, located on the dash, allows you to start the generator engine without leaving the vehicle and permits starting the generator while the vehicle is in motion. A light incorporated in the switch will glow when the generator is running. A second switch, located on the unit itself, can be used to start the engine at the generator location.

WARNING

To prevent the possibility of electrical shock, properly ground the motor home. Securely drive a metal ground rod into the ground and connect it to the bumper by means of a metal grounding strap.

110-VOLT GENERATOR (Optional)

Before starting generator, go to power converter and switch over to utility main. Then push start/stop switch to the "start" position and hold until the engine starts. Then go back to power converter and switch over general main.

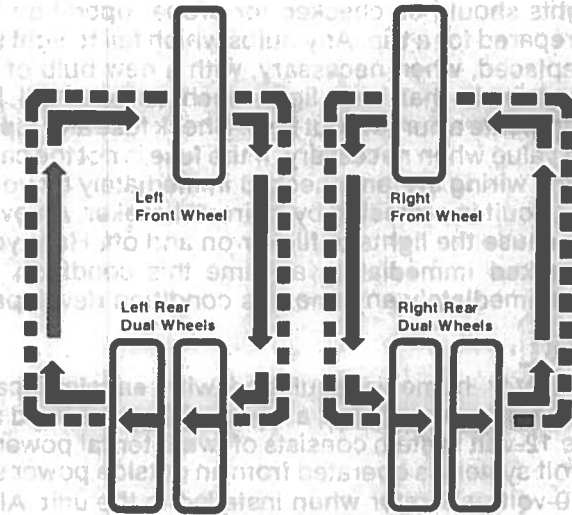


gauge, wire, overhead lights, and power exhaust.

12-2 wire, air conditioner, plug-in, and ref.

10-2 wire, power plant.

To control certain types of tire wear which are caused by road crown type of road, or individual driving habits, the tires on your motor home should be rotated periodically. Rotating the tires as illustrated will even out the amount of wear on each tire and extend the life of the entire set. If excessive or uneven wear on any of the tires occur, have the vehicle checked for tire balance, alignment or suspension problems. Bias or bias-belted tires should be rotated every 6,000 miles. It is suggested that disk brake pads be checked for wear each time the tires are rotated.



CONVENTIONAL TIRE ROTATION (All tires same ply)

FUSES

Those accessories, lights, etc., in your motor home which are powered by the automotive battery are protected from short circuits by a group of fuses located in a junction box beneath the driver's side of the dash. Should any of the automotive electrical systems fail because of a blown fuse, replace the fuse at once with one of the same type and size. Repeated blowing of a fuse may indicate a malfunction and should be checked by your dealer immediately.

CAUTION

Never replace a fuse with one of higher amperage rating than those specified.

WINDSHIELD WASHERS AND WIPERS

During cold weather, at least half of the windshield washer solution in the reservoir should be an antifreeze formulated for windshield washer use. Inspect the windshield wiper blades periodically for wear and replace when the wipers cause streaking on the windshield. The windshield washer nozzles should be adjusted so that the stream is directed to the upper part of the wiper pattern when the vehicle is not moving. If you require assistance, contact your dealer.

LIGHTS

All exterior lights should be checked for proper operation each time the vehicle is prepared for a trip. Any bulbs which fail to light should be checked and replaced, when necessary, with a new bulb of the same size. A failure of more than one light, such as both tail lights not operating, may indicate a burned-out fuse. Check fuse and replace with one of the same value when necessary. If the fuse is not the cause of the problem, have the wiring system checked immediately by your dealer.

The headlight circuit is protected by a circuit breaker. An overload on the breaker will cause the lights to flicker on and off. Have your headlight wiring checked immediately anytime this condition develops. wiring checked immediately anytime this condition develops.

ELECTRICAL

Your Allegro motor home is equipped with an electrical system consisting of two separate voltages; a 12-volt DC system and a 110-volt AC system. The 12-volt system consists of two internal power sources, while the 110-volt system is operated from an outside power source, or the optional 110-volt generator when installed in the unit. All systems operate through a single power converter control center to provide electrical power to the motor home.

12-VOLT DC SYSTEM

The DC voltage system consists of the automotive battery under the 12-volt motor home auxiliary battery. The automotive battery is used solely to operate the engine starter and all of the automotive accessories and control found on the instrument panel. This includes the headlights, horn, speed control, tail lights and all clearance lights, radio, windshield wipers, etc.

The auxiliary battery operates all 12-volt equipment located in the living area of the motor home. This includes; interior lights, range exhaust fan, furnace, water pump, generator starting and the dual voltage refrigerator (on some models).

110-VOLT AC SYSTEM

The 110-volt system operates from an outside 110-volt utility service such as those at campgrounds or from the optional 110-volt generator on units so equipped. When the power cord is connected to an outside power source, or when the generator is in operation, the power converter automatically converts 110-volt AC power to 12-volt DC power to operate all equipment in the motor home that is normally powered by the auxiliary battery.

CAUTION

To prevent wiring damage, it is essential when replacing the cables on the battery, or when using a "booster" battery, that the positive post and the positive cable be attached and the negative post and negative cable be attached. The posts are marked (+) plus and (—) minus. If a "fast charger" is used while battery is in the motor home, disconnect both battery cables before connecting the charger. Never attempt to charge or boost a frozen battery.

EMERGENCY STARTING

Should it become necessary to use assist starting to start your motor home engine, the following instructions and cautions must be followed carefully. Before attempting to use booster or jumper cables for assist starting, always make sure the battery in the other vehicle is 12-Volt and has a negative ground.

WARNING

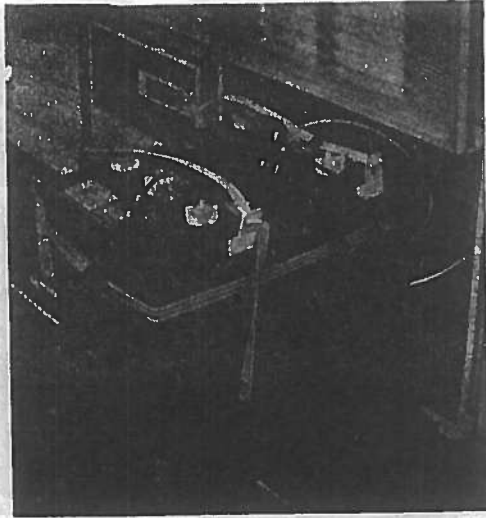
Never expose battery to open flame or electric spark. Batteries generate a gas which is flammable and explosive. To avoid personal injury or damage to your clothing, do not allow battery fluid to contact eyes, skin or fabric. Don't lean over battery when attaching clamps or allow the clamps to touch each other.

1. Wear eye protection and remove rings, metal watch bands and other metal jewelry as it could conduct an electric current.
2. Turn off the lights, heater, and other electrical loads. Place transmission in park in both vehicles. Don't let the vehicles touch.
3. Remove the vent caps from the booster and discharge battery and lay a cloth over the vent wells. Of either or both of the batteries are equipped with flame arrestor type filler/vent caps the vents on that battery need not be covered with a cloth and the caps should be left in place to take advantage of the safety feature.
4. Make sure electrolyte is at proper level. If electrolyte is not visible or appears to be frozen - DO NOT ATTEMPT ASSIST STARTING! A battery might rupture or explode if the temperature is below the freezing point or the battery is not filled to the proper level.
5. Connect one end of positive jumper cable (red cable) to the positive terminal of the booster battery. Connect the other end to the positive terminal of the discharged battery.
6. Connect the negative cable (black cable) to the negative terminal of the booster battery and then to a location at least 12 inches from the battery on your vehicle.
7. Start the engine in the vehicle that is providing the jump start (if it is not already running). Let it run for a few minutes, then start the engine in your vehicle.

BATTERY ACCESS

The auxiliary battery is located in a compartment on the outside of the motor home. a slide-out tray within the compartment makes the batteries easily accessible for checking and maintenance.

To service or remove any of the batteries on the slide-out tray, remove retainer pin and slide tray-out. Be sure to always reinstall retainer pin when sliding the tray back in, so it remains stable while the vehicle is in motion.



BATTERY MAINTENANCE

The battery is not a source of electricity, but only a storage reservoir. As soon as the energy required to start the engine is removed from the battery, it should be replaced by the alternator system. To ensure that the battery will always properly accept and hold a charge, some minor maintenance practices should be followed.

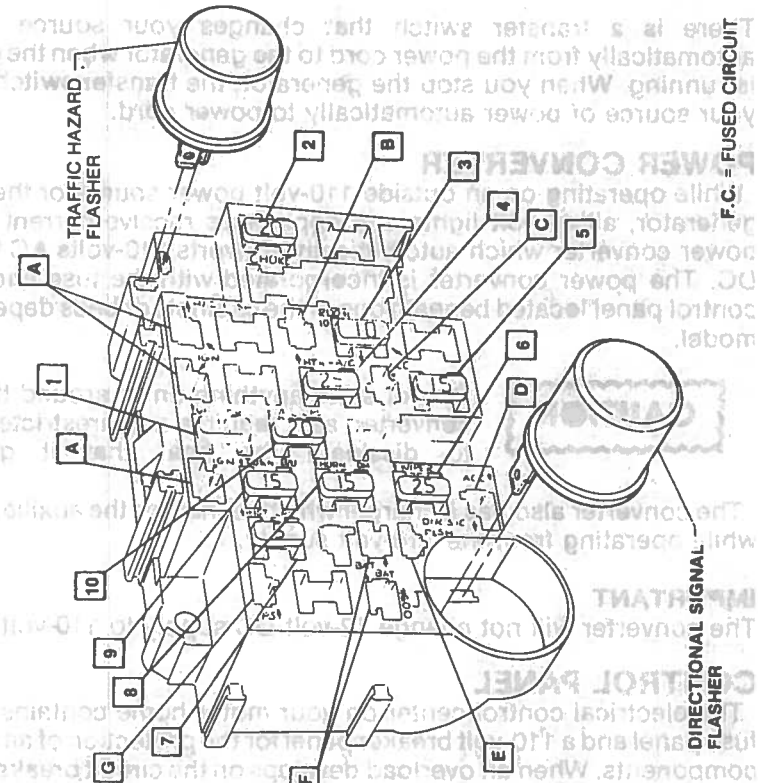
Make sure that the batteries always remain securely clamped in the battery tray and that the cable clamps are tight on the terminal posts and free of corrosion. Any corrosion build up on the battery can be neutralized by washing with a solution of baking soda and water and then rinsing with clear water.

IMPORTANT

Make sure vent caps are on securely to prevent baking soda solution from contaminating the battery electrolyte.

Clean and tighten battery terminals and have the specific gravity checked at least once a year. Every two months, or more often in hot weather, check the battery fluid level. Fill to approximately $\frac{3}{8}$ inch above the plates. **DO NOT OVERFILL.** If fluid is added during freezing weather, the motor home should be driven several miles to mix water and electrolyte and prevent freezing.

FUSED CIRCUITS	
1	10 AMP - GAUGES
2	20 AMP - ELECTRIC CHOKE
3	10 AMP - ACCESSORY/RADIO
4	25 AMP - HEATER/AIR CONDITIONING
5	15 AMP - STOP LAMP/HAZARD FLASHER
6	25 AMP - WIPER
7	05 AMP - INSTRUMENT PANEL LAMPS
8	15 AMP - HORN/DOME LAMP
9	15 AMP - DIRECTIONAL SIGNAL FLASHER BACK-UP LAMPS
10	20 AMP - TAIL LAMPS
OPEN RECEPTACLES	
A	IGNITION/AUTOMATIC TRANSMISSION/CHOKE HEATER WARNING LP (F.C. 10 AMP)
B	ACCESSORY/HEATER/AIR CONDITIONING (F.C. 25 AMP)
C	IGNITION SWITCH/ACCESSORY/RADIO (F.C. 10 AMP)
D	IGNITION SWITCH/ACCESSORY (F.C. 10 AMP)
E	ACCESSORY/WINDSHIELD WIPER AND WASHER (F.C. 25 AMP)
F	BATTERY/LIGHTER (F.C. 15 AMP)
G	PANEL LAMPS/RADIO DIAL/WINDSHIELD WIPER SWITCH/TRANSMISSION INDICATOR LAMP/TILT WHEEL (F.C. 5 AMP)



In addition, the following equipment is entirely dependent on the 110-volt generator or outside source: optional roof air conditioner, refrigerator (when placed on 110-volt mode), and other 110-volt electrical equipment used at convenience outlets.

110-VOLT AC UTILITY SUPPLY

A U.L. approved heavy-duty cable is provided for the electrical system to connect to a utility supply. The three prong plug is designed to ground the electrical system. The motor home is equipped with a circuit breaker on the 110-volt supply. If the breaker opens (same effect as blowing a fuse), locate the trouble. Either the system is overloaded or there is a short. Reset the circuit breaker to its normal position.

WARNING

When utilizing the 110-volt AC utility supply cable, the polarity of the motor home utility cable must match that of the power receptacle

to which it is to be connected. To accomplish this, it is recommended that a commercial polarity tester be obtained. This is an inexpensive, commercially distributed device available through most retail outlets. Improper polarity matching could cause personal injury or damage to equipment.

There is a transfer switch that changes your source of power automatically from the power cord to the generator when the generator is running. When you stop the generator, the transfer switch changes your source of power automatically to power cord.

POWER CONVERTER

While operating on an outside 110-volt power source or the 110-volt generator, all 12-volt lights and appliances receive current from the power converter which automatically converts 110-volts AC to 12-volt DC. The power converter is incorporated with the fuse and breaker control panel located beneath one of the cabinets or beds depending on model.

CAUTION

Do not store anything on or around the power converter, as it requires an unrestricted air flow to dissipate the heat that it generates.

The converter also has a charger which recharges the auxiliary battery while operating from the 110-volt supply.

IMPORTANT

The converter will not change 12-volt DC supply to 110-volt AC.

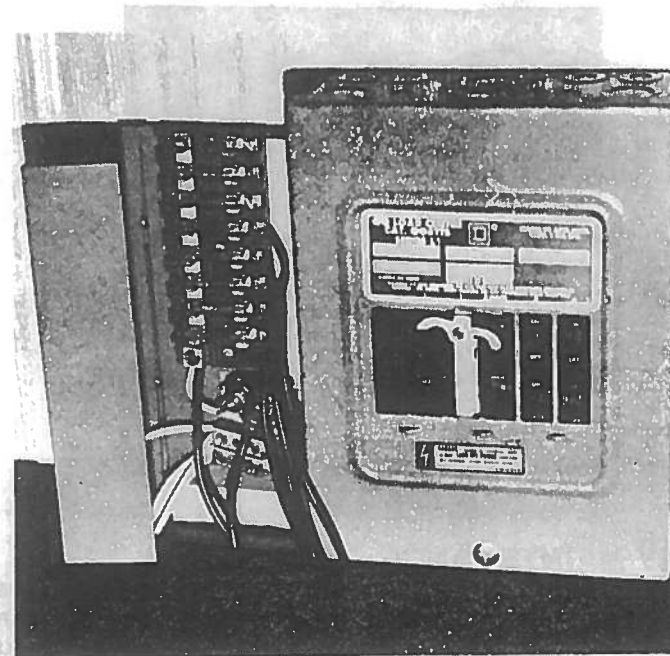
CONTROL PANEL

The electrical control center on your motor home contains a 12-volt fuse panel and a 110-volt breaker panel for the protection of all electrical components. When an overload develops on the circuit breaker system, the breaker will open. After correcting the overload, the breaker can be

reset. If the breaker is continually thrown and no overload is evident, have the system checked for a short in the wiring or the appliance.

The 110-volt system can be operated from an outside source by plugging the power cord into a 110-volt AC receptacle. If the motor home is equipped with the 110-volt generator, the power cord is simply connected to a receptacle from the generator.

The 12-volt fuse panel protects all 12-volt equipment on the motor home. When a circuit overloads, the fuse will burn out and must be replaced before the system can be operated. A label located on the control panel provides the amperage of each fuse and indicates which circuit or appliance each fuse and breaker protects.



WARNING

When utilizing the 110-volt supply cord, make sure all three prongs of the supply cord are plugged into the receptacle. If they are not or you suspect for any reason that the motor home is not grounded through the power cord, a ground rod should be securely placed in the ground and attached to the motor home bumper by means of a metal grounding strap. Improper grounding of the motor home could result in personal injury or damage to equipment.