1997
BLUE BIRD
WORK STATION
QMC
OWNER'S
MANUAL

Dear Work Station QMC Owner:

Thank you for choosing Work Station QMC.

We want to personally welcome you to the Blue Bird Family and we invite you to visit us at our Fort Valley facilities whenever you wish. We are always happy to see you and we are deeply interested in your experiences as you use and enjoy your Work Station QMC. We recognize that it is our relationship to you, the Work Station QMC owner, that contributes most of the prestige of ownership of this finest over-the-road coach.

We trust that as you become more intimately acquainted with your new coach, the sound design will become increasingly evident and your initial decision to choose the Work Station QMC will be positively reinforced with every hour of use.

We acknowledge the good faith you have demonstrated in our product. All of us at Blue Bird take great pride in our handiwork and want to do everything possible to engender in you what has become the Blue Bird experience; the deep satisfaction that comes from years of sure confidence of having chosen the very best.

TABLE OF CONTENTS

SECTION ... CONTENT

INTRODUCTION

This section of the Owner's Manual contains general hints and recommendations for using your Work Station QMC. Checklists and suggestions are offered that cover just about every phase of the Work Station QMC.

The remaining sections of this manual describe the operation and use of the individual items and systems that comprise the Work Station QMC.

Manufacturer's manuals for components and appliances are included in the owner's kit. Please refer to these for more detailed information.

We hope that this manual will help answer questions that may arise about the operation and maintenance of your Work Station QMC. We always are interested in providing our Work Station QMC owners with the most current information about our product.

CHECKLISTS

A little preliminary planning will go a long way to help make your trips successful. Review the following checklists. If there are any additional items that you should be reminded of, add them where you see fit. You will eventually find that a short walk-around the coach, inside and out, will be adequate to ensure that it is ready for travel.

CHECK THE COACH - OUTSIDE

- Disconnect and stow:
    1. Electrical cord.
    2. Sewer hose (flush out).
    3. Water hose.
- Check all exterior lights for proper operation.
- Check wheel lug nuts for tightness.
- Check tires for correct pressure.
- Check that all external compartments and filler openings are properly closed.
- Check that items stored on exterior of coach are secured. Be sure that these items present no clearance problems.
- Check that there are no obstacles to avoid above or under the coach. Be sure there is sufficient clearance front and rear.

NOTE:

If the trip you are planning will take the coach well past suggested maintenance intervals, it may be advisable to perform these procedures before leaving. This may avoid unscheduled stops or interruptions during the trip.

CHECK THE AUTOMOTIVE SYSTEMS

- Check that fluid levels are normal (oil, power steering, engine coolant, windshield washers, transmissions, etc.).
- Check generator oil level, coolant level, battery condition.
- Check operation of turn signals, emergency flasher, stoplights and backup lights.
- Check that headlight low- and high-beams operate.
- Check horn operation.
- Check fuel gauge, and add fuel if needed.
- Start engine and check gauges for signs of trouble.
- Check operation of foot and parking brakes.

CHECKOUT THE COACH - INSIDE

- Close windows and vents.
- Check that cabinet doors and drawers are secured.
- Check that refrigerator door latch is in locked position.
- Check that no heavy item is stored in an overhead cabinet.
- Store large items in base cabinets.
- Check that counter tops, table tops and shelves are cleared of unsecured items.
- Secure and lock the entrance door.
- Adjust exterior mirrors.

WARNING

Mirrors provide needed additional driver visibility. To be effectively used, mirrors must be properly adjusted for each driver and the driver must be aware of the limitation on viewing areas that exist even when mirrors are properly used.

BEFORE DRIVING AWAY

- Check operation of appliances and special equipment.
- Check that fire extinguishers are fully charged.
- Check operation of all lighting.
- Start generator, check electrical system and wall outlets.
- Adjust driver's seat so that all controls are within easy reach.
- Make sure that seat is locked in position. Do not adjust driver's seat while coach is moving or the seat could move unexpectedly, causing a loss of control
- Check that front passenger's seat is locked in position.
- Fasten seat belts. Belts should be placed as low as possible around the hips. This places the load of the body on the strong hip bone structure instead of around the soft abdominal area and prevents sliding to in case of accident.
- Check that warning lights are lit when the ignition key is turned to on or start position.

SAFETY CONSIDERATIONS

Electrical Systems

The coach has been engineered and checked for complete electrical system safety. Circuit breakers and fuses are installed to protect electrical circuits from overloading. Before making modifications or additions to the electrical system, consult your dealer for assistance in obtaining a safe and secure installation. DO NOT "JUMP" circuit protections.

Emergency Stops

Always carry road flares and/or reflective triangular highway warning markers for emergency warning display Pull off the roadway as far as possible when changing flat tires or for other emergency situations. Turn on the hazard warning flashers when parked alongside of the roadway, even if only for a short while. Have the passengers leave the coach and stand clear of the area when parked on the edge of the highway.

Tire Blowout While Driving

- Quickly remove your foot from accelerator pedal..
- Adjust steering as needed.
- Stay off the brakes.
- Keep driving until you find a safe place to pull over.

Engine Exhaust Gas

Avoid inhaling exhaust gases because they contain carbon monoxide, which by itself is colorless and odorless. Carbon monoxide is a dangerous gas that can cause unconsciousness and is potentially lethal. If at any time you suspect that any exhaust fumes are entering the passenger compartment, determine the cause and correct it as soon as possible.

The best protection against carbon monoxide entry into the coach body is a properly maintained engine exhaust system, body and ventilation system. It is a good practice to have the exhaust system and body inspected by a competent mechanic each time the coach is raised for lubrication or oil change. It should also be inspected whenever a change is noticed in the sound of the exhaust system and if the exhaust system, underbody or rear of the coach has been damaged.

To allow proper operation of the coach's ventilation system, keep ventilation inlets clear of snow, leaves, or other obstructions.

Sitting in a parked vehicle with the engine on for extended periods without proper ventilation is not recommended!

More Safety Considerations

- Sanitize fresh water supply system periodically.
- Prevent water connection fittings from contacting the ground or drain hose to reduce chances of contamination.
- Consider using a qualified technician for repairing gas or electrical appliances.
- Check fire extinguishers periodically for proper charge.
- Avoid overloading the coach.
- Avoid improper load distribution which can adversely affect roadability.

- Ensure that tires are in good condition and properly inflated at all times. Under-inflated tires overheat and are blowout-prone.
- Check and tighten wheel lug nuts; manufacturer recommends after first 100 miles and every 1,000 miles thereafter.

EMERGENCY EXITS

All side windows can be used as emergency exits. Each window has a red release handle located on the left side of the window with simple how-to-operate instruction.

There is also an exit at the ceiling hatch located toward the rear of the coach. To open: push the entire unit through the roof on its support brackets; turn the red locking knob 90 degrees clockwise; push up on the red button (the unit is hinged on the opposite side).

VEHICLE LOADING

The Federal Certification label, located inside and above the driver's windshield, describes the maximum weight-carrying capacities of the coach and of each axle. The Gross Vehicle Weight Rating (GVWR) is the maximum vehicle weight allowable with all systems filled and with passengers and supplies aboard. Each axle also has a maximum load-bearing capacity referred to as the Gross Axle Weight Rating (GAWR). The load capacity is the difference between the GVWR and the actual weight. This means the total weight of all supplies and passengers must not exceed the load capacity.

When loading the vehicle, store heavy gear first. Keep it as close to the floor as possible. Heavy items should be stored centrally to distribute weight evenly between the front and rear axles. Store only light objects on high shelves. Distribute weight to obtain even side-to-side balance. Secure loose items to prevent weight shifts that could adversely affect the balance and roadability of the vehicle.

VEHICLE SERVICE-REPLACEMENT PARTS

A paint color label is located adjacent to the Federal Certification Label above the pilot's sun visor.

Data plates located on the rear of the chassis (raise rear engine compartment door for access) provide information useful for identifying your coach if you are planning on ordering parts. Identification plates provide information such as:

- Body Serial Number
- Model Year
- Body Service Number
- Chassis Serial Number
- Chassis Service Number

TRAVELING IN YOUR COACH

NOTE:

1. **Vehicle height measurements:**
   12' 5" - from ground to tallest antenna
   10' 10" - from ground to roof-mounted units
   9' 10" - from ground to coach roof
2. **It is recommended that compartment doors be secured so they don't open while in transit.**

For short trips the coach has more than adequate holding tanks and water supply capacity. On longer trips, however, it may be necessary to stop to dispose of holding tank wastes and replenish the water supply. Many gas stations have sanitary dumping stations just for this purpose.

When stopping for an extended period, park the coach in a location that is relatively level and where the ground is firm. This will ensure your comfort as well as the leveling of the coach's refrigerator (for most efficient operation). If plugging the electrical cable into the shoreline receptacle, be sure to observe all grounding and connection precautions.

REPORTING SAFETY DEFECTS

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

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

To contact NHTSA, you may either call the Auto Safety Hotline toll free at 1-800-424-9393 or 366-0123 in Washington, D.C. area. Or write to: NHTSA, U.S. Department of Transportation, Washington, D.C. 20590. You can also obtain other information from the hotline.

AIR CONDITIONING/ DEFROSTING SYSTEM OPERATION

ROOF AIR CONDITIONING

The ducted system includes (3) three 13,500 BTU air conditioning units with condensate drains.

Operation: 120 VAC is required from either generator or shoreline. A master thermostat is located in the front area of the vehicle. Refer to the operator's manual in owner's kit for detailed operating instructions.

CHASSIS AIR CONDITIONING

The 28,000 BTU system has an engine driven compressor. Automotive style controls are located on the right hand side of the dash panel.

To operate the air conditioning, depress the black rectangular button on the upper left hand side of the panel. It will become blue in the center, indicating that the air conditioning system is on. To control the temperature, move the thermostat switch arm located at the top of the panel to the left (blue indicator) for cooler air and to the right (red indicator) for warmer air. The fan motor switch at the lower left of the panel controls air flow. The four buttons at the lower right area control where the air flows from. From left to right, the controls are as follows:


Left - Dash face/upper vents only


Middle left - Dash face/upper vents and lower dash/floor vents


Middle right - Lower dash/floor vents only


Right - defroster vent

To operate defroster, depress far right defroster button (see diagram). Move temperature to far right (full heat). Place fan on high. In high humidity situations, it may be necessary to depress upper left air conditioning button (it will become blue).

CAUTION

For proper defroster operation, do not block areas between defroster vents and windshield.

NOTE:

In hot weather, it is recommended to run the roof air units while traveling to help control the heat load inside the coach. This will require running your generator while traveling.

AIR PRESSURE SYSTEMS

INTRODUCTION

The air pressure system on your coach is supplied by an engine driven compressor. It provides pneumatic power for brakes, suspension, and numerous accessories. This complex, but efficient system is not intended to be totally leak free. After overnight parking, you may notice a significant loss of pressure on the air pressure front/rear gauge, or in systems connected to auxiliary air. This condition is normal, and in fact, our air leakage tolerance is tighter than most manufacturers within the heavy duty equipment industry. Once the engine is running, the engine driven compressor will quickly build up the system to the correct pressure.

AIR BRAKES (SEE SPARTAN MANUAL FOR FURTHER DETAILS)

Your coach is equipped with dual service air brake systems for front and rear axle brakes, with integral fail/safe operation; and manual/automatic rear spring (parking) brakes. The service brakes are completely independent systems, each including a reservoir and separate distribution lines and valves. The reservoirs are pressurized from a single compressor. Both service brake systems are brought into operation each time the brake treadle is depressed to slow or stop the coach. Reservoir pressure for each service brake system is monitored by a respective pressure gauge on the front panel; system failure(s) are indicated by low pressure readings, illumination of the Low Air failure lamp and sounding of buzzer.

OPERATION

When the coach is parked, and the engine off, the rear spring brake will normally be set by operating the parking brake. The spring brakes cannot be fully released until the air pressure is above 65 psi. These brakes are in the released position when the control is pushed in. In the event that there is a loss of air pressure, the spring brakes will set automatically, at the brake-applied position, and will not release until the air reserve has again built up to required value. Consequently, there will be a normal delay, after the coach is first started, while the compressor builds up pressure before the brakes can be released and the coach driven. When the brake treadle is depressed, to slow or stop the coach, reservoir air is applied simultaneously to both front and rear service brakes to effect the braking action. The spring brakes are held in a released position by the air pressure supplied from the associated reservoir tank.

CAUTION

Do not attempt to drive the coach until system pressure is above 90 psi.

BRAKE FAILURES

To compensate for normal lining wear, each brake system is individually self-adjusting.

Protection against brake system failures is provided by fail/safe features. If the front brakes fail, operating the brake treadle still activates the rear service brakes to provide stopping capability.

If a failure occurs in the rear, the front service brakes and rear spring brakes provide braking action.

In the unlikely event of a failure where both service braking systems are disabled, the rear spring brakes will apply automatically and bring the vehicle to a stop. As a safety factor, the coach should not be moved until any type of brake failure is corrected.

NOTE

With the front brake system service reservoir fully charged, enough air pressure is available to provide for four full releases of the rear spring brakes. This will allow the coach to be brought to a safe position until repairs can be accomplished.

AIR SUSPENSION SYSTEM

Air suspension bags cushion the front and rear axles. Ride height is automatically maintained by height control valves. Dumping these air bags when the vehicle is parked allows the rubber bumpers to come together and eliminate vehicle springiness.

Refer to the manual in your owner's kit for additional information and maintenance instructions.

ADDITIONAL AIR-OPERATED EQUIPMENT

A compressed air outlet fitting and air gun are contained in a storage compartment on the road side of the coach, convenient for inflating tires, and so on.

COMPRESSED AIR SYSTEM AIR DRYER

The air dryer has three main functions. It cools, filters, and dries the systems air. The air dryer has a filter that needs to be changed once every (2) two years, and is serviceable from either end.

APPLIANCES

INSTANT HOT (OPTIONAL)

Provides an additional hot water source at the galley sink. The switch is located under the galley sink. It operates from generator, shoreline, or inverter.

ICE MAKER

The ice maker, located in the lower shelf of the refrigerator, is designed to provide a continuous automatic supply of ice cubes. It will operate unattended as long as the water supply line is open and AC power is applied to the unit. The AC power can be supplied from shoreline, generator, or inverter.

Operation

1. Turn On the switch located at the lower front of the refrigerator.
2. Open the water supply valve (small T-shaped valve located underneath the sink).
3. Adjust the temperature knob at the lower front of the refrigerator.

The compressor will start. As soon as the ice maker mold reaches the proper temperature, the ice maker mechanism will fill the mold with water. The first cubes may be small because of air in the water line. Subsequent cubes will be of standard size. Approximate time for the first cycle is 45 minutes.

The following suggestions are made for best results.

- When the ice bucket is full, the ice making mechanism will shut off but the refrigeration system will continue to cycle to maintain the cube supply.

IMPORTANT

Never use an ice pick, knife, or other sharp instrument to separate cubes.

- During periods of limited usage or high ambient temperatures, it is common for cubes to fuse together. Ruffle cubes as needed.
- If ice maker is not used regularly, the ice bucket should be emptied periodically to ensure fresh cubes.
- It is normal for cubes to appear cloudy. This is nothing more than air being trapped in the water due to fast freezing. It has nothing to do with the health, taste or chemical makeup of the water. It is the same air that is in every glass of water you drink.
- To provide for higher ice rate (production of more cubes), adjust the temperature control to a warmer setting. If hollow cubes result, adjust temperature somewhat colder. For less cube production, adjust to a colder setting.

NOTE

Use a flat tip screwdriver to turn adjusting screw, located behind the front grill, clockwise for colder, counter-clockwise for warmer.

- Cube size may be adjusted by changing the amount of water injected into the ice maker assembly.

  A. Remove the ice maker assembly cover.
  B. Locate the adjusting screw on the ice maker assembly control box. The adjusting screw is just below the minus (-) and plus (+) signs on the control box.
  C. Turn the adjusting screw toward the minus (-) sign (clockwise) for smaller cubes or toward the plus (+) sign (counter-clockwise) for larger cubes.
  D. Install the ice maker assembly cover.

- To stop ice production, but maintain the existing ice supply, manually raise the bin arm to the full up position.

PERIODIC CLEANING AND MAINTENANCE

- Avoid the use of solvent cleaning agents, abrasives, and all cleansers that may impart taste to the ice cubes. The exterior may be cleaned with cleansers and polish as used on fine furniture.
- The front grill should be kept free of dust and lint to permit free air flow to the condenser.
- The condenser coil, located behind the front grill, should be cleaned three to four times each year. Using a brush or vacuum cleaner, remove dirt, lint and other accumulations from the condenser coil.
- The condenser fins are SHARP. DO NOT run hands over condenser fins.
- The solenoid valve inlet screen must be cleaned at least once each year as follows:
  A. Shut off the water at the water supply valve, located under the galley sink.
  B. Remove the entire hose connector from the solenoid valve.
  C. Use a toothbrush to clean sediment from the inlet screen. DO NOT remove the screen.
  D. Attach the hose connector to the solenoid valve. Tighten connector securely with pliers. Open the water supply valve and check for leakage at the hose connector.

STORAGE

If the unit is to be stored or not used for extended periods, it will be necessary to drain the system of water.

1. Shut off water supply at the main water source.
2. Disconnect the water supply line from the solenoid valve.
3. Disconnect the water line from the solenoid valve outlet.
4. Allow the unit to run for an hour or more to drain all the water.

5. Dry out excess water from the ice maker assembly.
6. Prop the door open at least two inches.
7. Disconnect unit from main electrical power source.
8. Leave water supply line and power cord disconnected until ready to reuse.

NOTE

The use of antifreeze or other products of this nature is not necessary and is not recommended.

REFRIGERATOR

The refrigerator operates from generator, shoreline or inverter. Refer to the manual in your owner's kit for detailed information.

MICROWAVE OVEN

The microwave oven provides programmed microwave cooking. It operates from generator, shoreline or inverter. See the manual in your owner's kit for detailed information.

SHIFTER PANEL

SHIFTER

This is the push button shift selector made available with the Allison Transmission Electronic Control (ATEC). See Transmission Section for detailed description.

DO NOT SHIFT LIGHT

See the manual in your owner's kit for operating instructions.

UPPER DASH PANEL

NOTE

Some items operate at all times, some require the 12 volt master to be on, while others need the 12 volt master and the ignition on. Gauges marked with an * require the engine to be at normal operating temperature for correct readings.

*WATER TEMPERATURE

Normal: 180 degrees to 210 degrees F
Monitors engine coolant temperature.

CAUTION

If the engine temperature gauge indicates excessively high temperatures, the engine may be overheating and should be stopped to prevent damage. Allow the engine to cool before checking the radiator coolant level.

*OIL PRESSURE

Normal: 50 to 70 psi at cruising speed, 5 psi minimum at idle, This gauge indicates the pressure of the oil, not the amount of oil in the engine reservoir.

CAUTION

No oil pressure, or low oil pressure readings (below 25 psi) when engine is operating at cruising speeds are trouble indications! DO NOT Operate the Engine Under These Conditions!

TRANS. OIL TEMPERATURE

Indicates temperature of the transmission oil.

AIR PRESSURE FRONT/REAR

Normal: 110 to 135 psi
The Dual Air Service Brake Pressure systems are engine operated and supply independent brake system air pressure for front and rear service brakes and the parking brake. During normal operation, each air pressure gauge reading will build up to 110 psi to 135 psi shortly after the engine is started. Note that, as a safety feature, the parking brake cannot be released until air pressure readings are at least 65 psi.

FUEL LEVEL

Indicates the amount of diesel fuel remaining in the tank. Note that the generator also gets its fuel supply from this tank. The gauge reads only when the ignition switch is in ON position. As a precaution against generator operation draining the fuel supply, the generator fuel pickup is shorter than the engine pickup. Separate fuel filters are provided for each fuel line.

DC VOLTS ENGINE

Registers the actual voltage at the engine batteries. With the engine running, gauge should read 14 volts (± 0.5).

DC VOLTS COACH

Normal: 14 Volts ± 0.5
Monitors the actual voltage at the coach batteries with the engine running.

SUSPENSION DUMP (LIGHT)

Indicates air suspension is dumped.

LOW AIR FRONT (LIGHT)

Warns of low air pressure on front suspension.

FRONT DOME LIGHT

Turns on or off power to the dome light in driver's area.

REAR DOME LIGHTS

Turns on or off power to the dome lights in rear.

LOW AIR REAR (LIGHT)

Warns of low air pressure on rear suspension.

WAIT TO START (LIGHT)

Indicates engine is going through a system check and glow plugs are being warmed for easier starting.

LOWER DASH PANEL

MIRROR CONTROL

Switch controls both left and right mirror heads. Rotate the switch either left for the left mirror or right for the right mirror. Pushing the switch knob to the left rotates the selected mirror to the left, pushing the switch knob to the right rotates the selected mirror to the right, pushing the switch knob up rotates the selected mirror up, and pushing the switch knob down rotates the selected mirror down. The switch provided control the upper (flat) section of each mirror. The mirrors also contain a heating element to help prevent fogging over in inclement weather. The switch for the heater element is located on the lower dash panel. Just below mirror adjust switch.

MIRROR HEAT

This switch turns on thermostatically controlled heater in right and left outside mirrors. With the switch **on** the mirror heater will automatically come on to defog the mirrors.

LEFT LANDING LIGHT

At the ON position this switch turns on the landing lights on the left side of coach.

RIGHT LANDING LIGHT

At the ON position this switch turns on the landing lights on the right side of coach.

DRIVING LIGHTS

Driving lights will only operate with headlights on high beam.

WINDSHIELD WASHER

Momentary switch.

CRUISE ON/OFF

Turns power on or off for the cruise control.

CRUISE CONTROL

1. When the desired speed is reached, press the SET/ACCEL switch to the SET position, hold for two seconds before releasing. The coach should automatically remain at that speed.

Following disengagement of the cruise control by braking, the previously set cruising speed may be obtained by depressing the Resume-Cancel switch to the Resume position for two seconds. Note that the coach should be at or above 35 MPH before attempting the Resume function. In addition, if the ignition switch has been turned off, the previous cruise speed will be erased from memory and the new cruise speed will be that speed when the Resume switch was pressed.

If a higher cruising speed is desired and the cruise is enabled, press the Set-Accel switch to the Accel position. The coach will begin to accelerate. When the higher desired cruising speed is obtained, immediately release the Accel switch. The coach should remain at the new speed.

2. This switch also acts as a PTO governor allowing selection of a constant engine RPM regardless of engine load.

WIPER DELAY CONTROL

Knob adjust wiper speed from 2 to 20 sweeps per minute when intermittent operation is selected.

WINDSHIELD WIPER

This switch turns on the wiper, windshield either high position or low position - center is OFF wiper returns to the park position.

CLEARANCE LIGHTS

This switch controls the operation of the clearance, identification and marker lights. The switch has three positions and each position has the following function. In the ON position the lights will remain lighted continuously. When the switch is in the middle (OFF) position, these lights are turned on by the headlight switch. The MOM OFF position is to flash lights as a courtesy signal when the headlight switch is ON.

SPEEDOMETER

Indicates speed and accumulated mileage (odometer) and trip meter. This is a solid-state electronic monitor.

TACHOMETER/HOURMETER

Indicates actual engine RPM (Revolutions Per Minute) when scale (0-40) reading is multiplied by 100. Idle RPM should be 600 and full load (uphill) 2500 RPM. May go to 2800 RPM under no-load conditions (downhill).

DASH DIMMER

This control will operate only when the headlight switch is in the ON position. The background lighting (electric-luminescent) for the dash can be dimmed by turning counter-clockwise and brightened by turning clockwise.

HEADLIGHTS

The Headlight switch serves two functions. Pull first position for parking lights and gauge illumination. Pull to second position for headlights, parking lights and gauge illumination. The dimmer controls brightness of all gauges in dash. Turn counter-clockwise to increase or clockwise to decrease the brightness.

A/C HEAT CONTROLS

FAN SWITCH

Slide to right to increase fan speed. Slide all way to left to turn off all functions.

AC SWITCH

Located at the upper left, push for air conditioning. The indicator light in switch will come on.

TEMPERATURE CONTROL LEVER

This lever controls the temperature of the discharged air in all modes of operation.

AIR OUTLET SELECTOR SWITCHES

Use these to select which vents distribute air circulated by the fan. The four switches are vent, bi-level, heat, and defrost.

AQUA-HOT

The hydronic heat switch activates the diesel fueled portion of the Aqua-Hot heating system. Once activated, it takes approximately 30 seconds for the diesel burner to ignite. Allow 20-30 minutes for the system to reach operating temperature upon initial activation. The diesel fueled portion of the Aqua-Hot system may not be required when moderate ambient temperatures exist and/or when there is a low demand for domestic water heat, as the electric heating element is capable of maintaining operative temperatures of 175 to 195 degrees F under these conditions.

The Aqua-Hot's engine preheating system acts as a supplemental heating source, in addition to the diesel burner and electric heating element. While traveling, the engine's heated coolant will automatically pass through the engine preheat loop, transferring heat into the Aqua-Hot's heat tank. This feature reduces the total operating hours of the diesel heater.

ENGINE HEAT

This switch engages the engine preheat pump in the Aqua-Hot heating unit, circulating the engine's coolant through the engine preheat loop, warming the engine for easy starting. Allow approximately 1-2 hours of engine preheating time (longer for colder ambient temperatures). The pump can be allowed to operate overnight if desired.

WARNING LIGHTS

Located on lower dash panel.

CAUTION

When indicators marked with ** are lit, it indicates a problem which could cause engine damage. Stop engine immediately and do not continue until problem has been corrected

LEFT TURN

When the turn signal lever is pulled down into the left turn position, this indicator flashes in conjunction with the outside directional lights.

**LOW OIL PRESSURE

(See operator's manual.)

HIGH BEAM INDICATOR

The indicator is illuminated when high beam is selected using steering column switch.

***LOW COOLANT*

(See operator's manual.)

RIGHT TURN

When the turn signal lever is pushed up into the right turn position this indicator flashes in conjunction with the outside directional lights.

PARK BRAKE

Indicates park brake is still engaged.

***HIGH COOLANT TEMP.*

(See operator's manual.)

***HIGH TRANS. TEMP.*

(See operator's manual.)

GENERATOR START/STOP

See Generator Section for operating instructions

EXHAUST BRAKE

This switch is a MOM ON/OFF/ON switch. In MOM-ON position the exhaust brake operates as long as switch is held. The ON position exhaust brake operates when called for.

COACH MASTER

Controls electrical power to the 12 VDC coach systems. This switch must be On to activate any of the 12 VDC coach systems.

ROOF VENT

Three position pull-push switch; controls the fan in the ceiling emergency exit toward the rear of the coach.

ABS (LIGHT)

(See operator's manual.) For anti-lock brake system.

STEP LIGHT

An on/off switch which controls the light in the stepwell area.

AUXILIARY BATTERY

A three-position switch - On, Off and Momentary On. The Momentary On position connects chassis and coach batteries to aid in engine or generator starting should this need arise. The On position connects both sets of batteries to the battery charger and is primarily intended to maintain all batteries during long-term storage. The Off position is the normal position while the coach is in use either driving or parked.

CAUTION

Use existing panel holes for installation of additional controls or indicators.

LIGHTER

Depress to heat the element; pops out when hot.

RIGHT HAND UPPER DASH

ACCESSORY POSITION (3)

These areas provide for system expansion for special added equipment.

RIGHT HAND LOWER DASH

STEREO AM/FM/CASSETTE

(See video and audio section.)

IGNITION SWITCH

A four-position, standard-type key switch. In OFF position (center), ignition and accessory positions are disabled and the key can be inserted or removed. In ON position (right) the battery is connected to the engine-run ignition circuits and the key can be advanced to START to start the engine, providing that the transmission selector is in neutral N position. The accessory position is not used.

MONITOR PANEL

REAR VIEW TELEVISION MONITOR

This system consists of a rear camera and a video monitor. System is designed to give the driver a full view of the rear of the motor home to aid in backing, parking and monitoring a towed vehicle.

To operate:

1. The ignition switch must be on.
2. With the switch in standby, the system will automatically come on when the transmission is shifted into reverse.
3. To turn system on while driving turn the switch to the ON position.
4. Use the switch at bottom of monitor to adjust system for daytime or night time use.
5. Adjust the contrast and brightness to your preference.

INTERIOR LIGHT SWITCHES

1. Controls the interior lights of the coach; located just inside the front of the lounge areas, on the overhead cabinets.

TWILIGHTS - Controls lights set in the ceiling (optional) and left & right valances (standard). Valances are hinged with inside latches at either end.
UPPER FLUORESCENT - Controls left & right ceiling lights.
AISLE LIGHTS - Controls aisle lights under the lounges.
LOWER FLUORESCENT - Controls lights behind valances.

2. Under overhead-cabinet switches in the galley illuminate galley lights (and activate under-overhead-cabinet electrical outlet).

3. Cabinet-mounted switch in bath illuminates bath light.

GALLEY PANEL

The galley panel is located in the base cabinet of the galley (kitchen).

GENERATOR

To start the generator, push the Generator Start switch to the Start position and hold until the generator starts. DO NOT hold the switch On for longer than 5 seconds at a time. If the generator does not start the first time, wait a minute and try again. Release the switch when the indicator light glows. After starting, there will be a delay of approximately 25 seconds before the automatic changeover switch will permit the generator to pick up the load. The generator can be stopped at any time by holding the switch to the Stop position until the generator stops (light goes off).

In cold weather, it is necessary to activate the cylinder glow plugs before starting. Push the start-stop switch to the Stop position and hold for 15-20 seconds.

The generator can also be started and stopped outside the coach at the switch in the generator (rear road side) compartment.

PUMP

Turns on/off the water pump. This switch must be ON for water to flow through the galley faucets, the bath faucets, and the toilet.

TANK MONITOR

The tank monitor displays the water level of the eater tanks. To verify the tank levels, press the appropriate switch and observe that the E through F indicator segments are lit.

-PURE	Fresh water tank.
-GREY/WASTE	Waste water and toilet water holding tank.
-PROPANE	Not used

KONSTANT HOT (OPTIONAL)

Turns On/Off the optional Konstant Hot water heating system located under the galley sink.

DRIVER & CO-PILOT AREA

HAZARD

This switch turns on the emergency flashers. When switch is used, both left and right turn signals will flash in unison.

HORN

Operate the horn by pressing in on the center section of the wheel.

COMBINATION TURN SIGNAL/HIGH BEAM

Push lever toward dash for right turn signal, pull lever away from dash for left turn signal. Pull lever up toward steering wheel for high beam Pull lever again up toward steering wheel to return to low beam.

TILT LEVER

Pull lever up to release lock mechanism. While holding lever up, adjust the steering wheel to a comfortable position and release lever. Move the steering wheel slightly to make sure the column locks into position.

CAUTION

Always make sure that the lever is in the fully locked position in whichever detent setting is used. Do not change the wheel tilt setting while the coach is in motion.

PARKING BRAKE

The Parking Brake control is located under the lower dash, to the right of the steering column. Note that the parking brake cannot be released unless the system air pressure is at least 65 psi. Pull to set and push to release..

ACCELERATOR PEDAL

Controls engine fuel flow to select power output. See Diesel Engine Section for detailed description.

BRAKE PEDAL

The coach is equipped with a dual air brake system which includes independent systems for the front and rear service brakes. A separate reservoir and panel mounted pressure gauge is provided for each service brake system. Refer to Air Brake System Section.

SEAT CONTROLS

Air operated seat adjustments are built into the pilot's seats.

ELECTRICAL SYSTEMS

There are two interrelated electrical systems used in your motor home ... the 12 volt DC supply system; and the 120 volt AC supply system. The 12 volt DC system is divided into several branches, or zones, each functioning from the common 12 volt battery source. One branch provides the 12 volts required for the automotive starting, ignition and lighting systems; remaining branches supply those motor home circuits and appliances which require 12 volts DC for operation.

The 120 volt AC system includes those motor home appliances which require 120 volts for their operation, supplied from either the internal generator, or from the external 120 volt AC (or a split 240 volt AC) supply, via the shoreline hookup. The inverter will supply 120 volt power from the coach batteries to selected circuits.

12 VOLT DC SUPPLY SYSTEM

Wiring diagrams of the 12 volt supply and distribution system are included in the Illustrations and Diagrams Section.

The 12 volts supplied to all motor home appliances, outlets and accessories is routed from the batteries through a main 12 volt master switch and routed through buses to the individual branches, or zones, that are serviced from this supply. Circuit breakers are located behind the door front of co-pilot seat hood table area. The circuits supplied and fuse or circuit breaker protection at each zone are shown on the diagrams.

COACH BATTERIES

Two (2) 12 volt Marine/RV Deep Cycle batteries are located in the rear compartment on the curb side. These will provide 8.4 hours of operation, at a 25 ampere rate, when a charging source is not available.

BATTERY CHARGING

The 12 volt coach battery supply, is maintained fully-charged by either the engine alternators (when engine operates); or by battery charger. The engine battery system is normally charged by the alternator only. The coach and engine battery systems are separated by an isolator to prevent deterioration of voltage in the event of one or the other supplies becoming defective.

Batteries can become discharged because of coach 12 volt loads, while parked, without a 120 volt AC source. For overnight stops this presents no problem, with judicious use of 12 volt service, because the engine alternator will recharge the batteries rapidly during the next day's travel. When operating from shoreline or generator power, the batteries obtain the major portion of the charge during "sleeping" time, while coach loads are low, so that the battery charger can "top off" the batteries.

If it is planned to leave the coach parked without exterior power for two days or longer turn off the Master switch located on the lower dash. This will ensure that there is minimal drain from the circuits as well as the battery disconnect switch located in the utility compartment.

NOTE: This will disable the refrigerator!

While in transit, the DC volts gauges on the dash panel should reflect an alternator regulated setting of 14 volts (+ 0.5). When parked, with 120 volt source supplied, the DC VOLTS COACH gauge should read between 12.5 and 14.0 volts depending upon load. When parked, without 120 volt source, do not permit voltage to drop below 11.5.

AC SUPPLY SYSTEM

Motor home AC-operated appliances are supplied from either an external shoreline hookup or from the on-board generator. Selection of shoreline or generator power source is determined automatically by a remote changeover switch located in left rear road side compartment above cable storage shelf. The 120 VAC circuits are normally supplied by the shoreline power cable. Whenever the generator is started, the automatic changeover switch will detect the generator voltage and will switch to the generator in approximately 25 seconds.

CAUTION

Use of excessively long and improperly rated extension cords may cause your auto changeover system to fail prematurely. If you must use an extension cord, follow these guidelines:

- **for 30 amp receptacles: USE 10 GAUGE WIRE**
- **for 50 amp receptacles: USE 6 GAUGE WIRE**

NOTE

Occasionally you may hear a slight humming or buzzing noise coming from the vicinity of your auto changeover or relay contractor box. This is completely normal behavior.

AC CIRCUIT BREAKER AND DISTRIBUTION PANEL

The main AC Distribution Panel is located in the bedroom behind the mirrored door on the road side.

BATTERY CHARGER

130 Amp battery charger (integral with the Freedom 2500 inverter) operates when a source of 120 volts AC is supplied either from shoreline or generator and the inverter is turned on. The charger is connected to the coach batteries. The engine batteries may also be charged by enabling the auxiliary battery switch on the lower dash.

INVERTER

A 2500 watt inverter provides auxiliary power to all user accessible interior receptacles, ice maker, front overhead television, rear television, Konstant Hot, microwave and refrigerator, while in transit, from 12 volt source. It is located in the road side rear compartment. See the manual in your owner's kit for operating instructions.

LOAD MANAGEMENT

There are two important 12v system gauges located in the driver's area which, if properly understood and occasionally monitored, will ensure proper operation and prevent an inconvenient and possibly damaging situation of discharged batteries.

On the dash are:

- Engine volt gauge for two engine batteries.
- Coach volt gauge for four coach batteries. Proper charger operation while parked will keep batteries between 12.5 and 14.0 volts depending on load.

Be sure, with load management techniques, that coach load does not exceed charger capacity. This is easily determined by ensuring that dash coach volt gauge does not drop below 11.5 volts. Should battery voltage fall below this range, remember:

CAUTION

Battery voltage below 9v will damage fluorescent light bulbs and possibly the light ballast. Turn off fluorescent lights with low battery voltage!

STORING THE COACH

If you plan to store your coach without 120 v power for (2) days or longer, be sure to turn off your master switch and inverter at both shifter panel and inverter control panel. Your objective is to minimize power drain.

With the master off, you can still expect a battery discharge of 2-4 amps because of non-mastered circuits to refrigerator, and transmission control circuits.

For storage over a (3) week time period, disconnect your batteries if there is no shore power available for the battery charger. The best storage technique is to turn off both master switches and battery disconnect switch located in the utility compartment.

NOTE: Do not attempt to charge the batteries or start the coach with the battery disconnect switch OFF!
The charger will output detrimental AC ripple voltage which could cause damage to RVDC electronics!

ENGINE, DIESEL

(SEE ENGINE OPERATOR'S MANUAL FOR INFORMATION)

FUEL TANK

Tank is a mid-mount tank which can be filled from curb or road side. Fill fuel tanks after completing a run. Partially-filled tanks will collect moisture if the coach is allowed to sit for an appreciable length of time.

FUEL ADDITIVE

Fuel Additive Recommended for use with #2 Diesel Fuel ... US Borax Biobor JF
Fuel Additive to use per 100 gallons ... 2.8 fl. oz.

EXHAUST BRAKE RETARDER OPERATION

(See PACBRAKE Owner's Manual for information.)

POWER STEERING & HYDRAULIC COOLING FAN

(See Chassis Manual for information.)

ENGINE COOLING SYSTEM REFILL

(See Engine Manual for information.)

BATTERY MAINTENANCE

Your motor home is equipped with separate engine and coach battery systems for greater assurance that there will be sufficient voltage to crank the motor home engine.

Two engine batteries are located in the battery compartment top shelf on the curb side. The four batteries located in the curb side battery compartment lower shelf are used for coach loads.

All batteries are charged from either the alternator or battery chargers. In order for the battery chargers to operate, either the generator must be running or the coach must be connected to a shoreline supply.

To make sure that the batteries are always ready for use, periodically check and charge as necessary.

A dirty battery may eventually dissipate its charge through conductive surface contamination. Clean battery top surface with a damp cloth and dry thoroughly. Check that battery terminals and associated battery jumper terminals are tight and free of corrosion. To clean terminals, neutralize corrosive deposits with a solution of baking soda, rinse with clear water, and dry. Note that commercial type spray-on battery cleaners are available at automotive supply stores. Use as directed to keep the batteries clean. Spray-on cable and terminal protective coatings are also available, easy to use, and effective.

CAUTION

Avoid sparking of any form in the vicinity of the batteries.

CAUTION

Do not wear metal rings, watches or jewelry when working on or near the batteries, cables, solenoids, or chassis wiring. These can short out electrical wiring and cause injury.

BATTERY STORAGE IN FREEZING WEATHER

Batteries that are not kept full-charged must be given protection against freezing. Partially-charged batteries will freeze at low temperatures, so batteries must either be left charged or removed from the vehicle and stored in a warm location.

The motor home can be left connected to the shoreline AC supply and the coach battery chargers will keep the coach batteries charged. Note that even in a warm location is advisable to keep the batteries charged to prevent deterioration. The engine and coach batteries are the sealed type and require no electrolyte service.

Coat battery terminals with lubricant or protective coating to inhibit corrosion.

FANS, VENTS, EXHAUST

FANS

-Located in the ceiling emergency exit; controlled by the Roof Vent switch on the upper right dash panel.

-Located in each roof-mounted A/C unit; controlled by master thermostat on the wall.

-A/C and heater fans located in the driver's area.

VENTS

-Located in galley.
-Located in bath ceiling.
-Located in rear storage area.
-Located in emergency exit.

FRESH WATER SYSTEM

WATER SUPPLY AND DISTRIBUTION SYSTEM

The dual purpose Tank Water Fill/Commercial Water inlet connection is located on the road side in the holding tank compartment. Tank Fill valve located in the same compartment, diverts the commercial water input to fill the pure water storage tank. System water pressure is provided by a water pump (located in the same compartment), rather than by tank pressurization. A water filter system filters all the water supplied to the coach.

COMMERCIAL WATER HOOKUP

When facilities are available, the Commercial Water hookup can be used to supply all coach water system requirements. In this manner, the coach water tank and pump system are automatically bypassed and water pressure is developed by the external connection. Water inlet pressure is regulated to 40-psi maximum, by a valve which is part of the city (commercial) water fill.

FILLING THE TANK - STANDARD CAPACITY APPROX. 100 GALLONS

To fill the water supply tank, connect the water hose to the commercial water inlet, open the Tank Fill valve, then turn on the water supply. When tank is full, as indicated by water overflow beneath the coach, close the Tank Fill valve, shut off the water supply and disconnect the hose. At this time, check that the Monitor panel readout indicates a full water tank. To check, press the Pure tank switch and observe that the E through F indicator segments are lit.

NOTE
The Tank Fill valve should be OPEN only when the water tank is being filled. This valve must be closed at all other times.

SANITIZING THE WATER SYSTEM

Water system sanitizing procedures should be followed before the system is used for the first time, after long idle periods, where water may become stagnant; or after any suspected contamination of the water supply. Whenever possible, use a commercially approved tank sanitizer and follow the procedures on the product package. If it is not possible to use a commercial product, prepare your own mixture and sanitize the tank in accordance with the following procedures:

1. **Empty the Water Tank** - To drain tank, open the Water Tank Drain Valve in the holding tank compartment. After tank is completely drained, close Water Tank Drain.

2. **Prepare the sanitizing solution** - using 1/4 cup of household bleach (sodium hypochlorite solution) for each gallon of water. Use one gallon of the solution for each 15 gallons of tank capacity. This procedure will result in a residual chlorine concentration of 50 ppm in the water system. If a 100 ppm concentration is required use 1/2 cup of household bleach with one gallon water to prepare the chlorine solution. Seven to eight gallons of solution will be adequate for the tank. (Approx. 100 Gallons).
3. **Add sanitizing solution to water tank** - Remove one of the 1/2" plugs from top of the f/w tank and pour solution into tank. Reinstall plug in tank. A piece of garden hose and funnel will aid in this step.
4. **Fill tank to capacity** - Connect hose to the commercial water inlet, open the Tank Fill valve and fill water tank completely. Shut off hose, and close Tank Fill valve. Turn on the water pump, open each faucet (hot and cold) and run the water until a distinct odor of chlorine can be detected. Shut off the water pump.
5. **Allow the system to stand** - for at least 4 hours when disinfecting with 50 ppm residual chlorine. If a shorter time period is desired, then a 100 ppm chlorine concentration should be permitted to stand in the system for at least 1 hour.
6. **Drain tank** - Open the Water Tank Drain valve and allow the tank to drain completely.
7. **Refill tank** - Close the Water Tank Drain valve and turn on the water supply to the commercial water inlet, open Tank Fill valve and fill tank completely. When the tank is full, close Tank Fill valve, shut off water supply and disconnect hose, replace fill cap and turn on water pump. When water flows from opened faucets, close them and open other faucets until water flows. This flushes the system, removing trapped air from the piping and ensures that the fresh water supply is ready for use. Run water at faucets until system is flushed of sanitizing solution.

CAUTION

Do not permit sanitizing or antifreeze solutions to enter water filter.

FILTER REPLACEMENT

This filter removes sediment taste and odor and is installed on the output side of commercial water hookup. All water is filtered before it enters the water system. Cartridge life is not more than three months, and should be changed if water flow slows or bad tastes and odor return.

WATER HEATER

With the Aqua-Hot at operating temperature, the domestic water is automatically heated as it is being used. Open any hot water faucet and a continuous supply of domestic hot water will be present within a few seconds. This is accomplished by the Aqua-Hot's domestic hot water loop which is an integral part of the heating system. A mixer valve has been installed to assure that excessively hot water does not flow to the faucets.

CAUTION

The mixer valve is not an anti-scald device. Always exercise reasonable caution when using hot water.

CAUTION

Do not turn water heater off if outside temperature is 32 degrees or lower when potable water system is not drained.

OUTSIDE FAUCET

An outside faucet is provided in the holding tank compartment.

WATER PUMP

The water pump, located in the holding tank compartment, is equipped with a factory-calibrated pressure control switch which is preset to turn the pump on when the system pressure falls below 20 psi; and turn the pump off when the pressure reaches 40 psi. If the pump has been out of service for a period of time, it is advisable to open a faucet before turning on. When water flows steadily from the opened faucet, close faucet and observe that the pump shuts off when system becomes pressurized (It may also be necessary to bleed the air from the other faucets as well.) When the potable water supply tank level is low, or empty, shut the pumps off to prevent possible damage to the pump motor. In addition to integral motor overload protection, the pump mechanism is also protected from damage by the presence of a filter at the water pump inlet. The filter should be cleaned periodically.

Under normal usage, the water pump should require no periodic maintenance other than ensuring that the input water supply is properly filtered of particles that could damage the pump mechanism. Pump failures can generally be tied in to the plumbing system, or to electrical wiring. If a pump fails to operate properly, refer to the general troubleshooting guide. Note that detailed pump repairs and overhaul should be performed by a qualified repair facility.

WATER PUMP SWITCH

Switches enabling the water pump are located on the systems monitor panel and in the bathroom.

The associated indicator is lit whenever power is being supplied to the pump. Turning ON a switch pressurizes the water system, with the pump operating on demand to maintain constant pressure. Continuous or erratic pump operation can indicate an empty water tank, system leakage, or air lock in the water lines.

TOILET SHUT OFF VALVE

Is located behind and below the toilet.

AIR ACCUMULATOR

An accumulator in the water system will smooth out the water flow, and eliminates water hammer and pulsations from the water pump. This accumulator has a diaphragm which separates the air on top from the water so it will not become "water logged."

WATER PUMP TROUBLESHOOTING GUIDE

Symptom:
  Possible Cause:
    Corrective Action:

Pumps operate but no water flows through faucet:
  Low water level in tank.
    Add water.
  Suction line or filter clogged.
    Clear water lines and clean filter.
  Kink in water suction hose.
    Check water hose connections to tank and straighten or replace, as necessary.
  Air leak in suction line.
    Replace suction line.
  Defective water pump.
    Replace diaphragm or jammed check valve.
    (See pump service instructions).

Pump cycles on and off when faucets are closed:
  Water leak in plumbing.
    Check for signs of leakage and tighten or replace fittings, pipe, etc.
  Defective toilet flush valve.
    Repair flush valve.
  Defective water pump.
    Replace upper housing.
    (See pump service instructions).

Pump operates roughly and has excessive noise and vibration:
  Intake line is restricted, kink in suction hose or fittings are too small.
    Check input hose and straighten or replace, as necessary.
  Defective water pump.
    Replace lower housing.
    (See pump service instructions)

Pump fails to start when faucet is opened:
  Clogged pressure piping.
    Blow out water lines with compressed air.
  No voltage to pump.
    Check input wiring circuit breaker and switches.

Defective water pump.
Replace upper housing or check valve.
(See pump service instructions).

Pump gives low water pressure and flow:
Defective water pump.
Replace diaphragm or motor.
(See pump service instructions).

WINTERIZING

If you are planning on storing your motor home in an unheated area during cold weather, it will be necessary to winterize the water system to prevent damage from freezing conditions. Winterizing procedures are covered in the following paragraphs.

DRAINING AND WINTERIZING THE FRESH WATER SUPPLY SYSTEM

The following procedures show the use of the various drain valves and controls to remove the water from the plumbing and appliances in the fresh water supply system.

1. Open the main circuit breaker box and turn off the Water Heater (and Instant Hot if equipped) circuit breakers.
2. Turn on Water Pump switch and open all faucets (galley sink, lavatory, shower, outside hose connection and toilet water valve - after depressing pedal insert block to maintain position). Note that the outside water hose connection should always be left open when freezing temperatures are expected. Also remove drain plugs at rear of toilet and at bottom of (optional) Instant Hot. Refer to the Ice-Maker and Toilet Manuals for winterizing these units.
3. Open the Cold Water Drains, Hot Water Drains, Tank Fill and Tank Drain valves located in road side holding tank compartment. Open Cold and Hot Water Drain valves located in the Aqua-Hot compartment.
4. Allow water to drain completely before proceeding to the next step.
5. Close all valves opened in step 3, except Hot Water Drain valve in Aqua-Hot compartment. Also, close cutoff valve at water filter.
6. Turn ON Water Purge Air Pressure switch to activate the solenoid which applies air pressure to the input water line to purge the water system. Note that it may be necessary to start the engine to build up air pressure.
7. Remove cap from cold water circuit at front of Aqua-Hot compartment and pour in 8 oz. of RV Antifreeze. Replace cap and repeat step 6. The proceed to step 8.
8. When only air remains in the lines, close Hot Drain valve in Aqua-Hot compartment and all faucets. Replace drain plugs in toilet and Instant Hot. Operate the Instant Hot valve to clear the heat exchanger of remaining water.
9. Turn Water Purge Air Pressure Switch and water pump off, and shut down engine.
10. Open all faucets (toilet valve to remain open).

11. At this point, the only water remaining in the system is contained in the P traps beneath the lavatory, shower and kitchen sink. To prevent this water from freezing and damaging the traps, put one pint of RV system antifreeze into each drain. See WASTE SYSTEM winterizing.

NOTE

When reactivating system, make sure (optional) Instant Hot is full of water before switching on.

FREEZE PROTECTION

(See Heating System - Section 13.)

GENERATOR

GENERATOR OPERATION

The generator can be started and stopped from any of two locations within the coach, at the driver's area and at the galley panel. In addition, the generator can also be operated from the switch in the front roadside compartment.

To start the generator, push the Generator switch to the Start position and hold until the generator starts, as indicated by the indicator light. Do not hold switch on for longer than 5 seconds at a time! If the generator does not start the first time, wait a minute and try again. Release the switch when the indicator light glows. After starting, there will be a delay of approximately 25 seconds before the automatic change over switch will permit the generator to pick up the load. The generator may be stopped at any time, by holding the switch to the Stop position until the generator stops (light extinguishes).

In cold weather, it is necessary to activate the cylinder glow plugs before starting. Push start-stop switch to stop position and hold for 15 seconds. See operator's manual for more detailed information.

GENERATOR MAINTENANCE

Refer to Operator's Manual in your owner's kit for inspection maintenance requirements.

CAUTION

The generator tray is electrically operated and extends outward with considerable force. To extend the tray, move around to the road side and operate the tray switch in the front compartment to out position. Be sure that there is sufficient clearance in front of the tray and that nobody is in the way! Use extreme caution when observing and operating generator with tray extended.

AIR CLEANER

Cleaning Instructions:

Donaldson does authorize cleaning the Dura-Lite unit (throwaway type) but this can be impractical in most cases. If it is cleaned, the following should be observed.

Blow air into the Dura-Lite's outlet neck causing dirt to flow off the media and out the dirty air inlet opposite the normal air flow direction. This procedure keeps the abrasive contaminants away from the clean air side.

Do Not use pressurized air higher than 100 psi.

Do Not use compressed air cleaning when the filter media is wet.

OIL CHECK/CHANGE

To be on the safe side, check oil (dipstick located on road side of generator) in engine crankcase daily, or before each start, to ensure that the level is in the safe range between the upper and lower marks on the dipstick. Do not operate generator if level exceeds the upper mark, or is below the lower mark.

CAUTION

Do not check oil level while engine is operating. Engine must be stopped to obtain a true reading, as well as for safety reasons!

Whenever possible, drain the oil while the engine is still warm. To drain, place a container below the unit, open the oil drain and allow sufficient time for the old oil to drain completely. After draining, close drain plug and tighten securely.

COOLING SYSTEM

Cooling system capacity is about 12 quarts of liquid. System should be filled using equal parts of water and ethylene glycol. (A drain petcock is provided on the underside of the radiator.)

When draining the coolant, remove the cap from the top of the engine and open the engine block drain cock located below the fuel injection pump.

Check coolant level frequently and add antifreeze mixture as needed to maintain full system.

HOURS RUN METER

Meter is located on generator control panel.

GENERAL TROUBLESHOOTING

Refer to the Generator Service Manual for repair and maintenance data. Generator repairs should be accomplished by a qualified repair agency.

GENERATOR OVERLOADS

If the rated capacity of the generator is exceeded, the safeguard circuit breaker, located on the front surface of generator electrical box, will trip to protect the generator against damage. This condition could be caused by a short in the coach AC supply circuits, or by operating too many appliances simultaneously, resulting in an overload condition. If the safeguard circuit breaker trips, the generator will continue running but no AC output will be supplied. Before resetting the circuit breakers, turn off some of the coach appliances and lighting to reduce the load to within the operating limits of the generator. If this is done, and the generator breakers still trip, a short circuit is indicated. Turn off the generator, locate and correct the cause of the short circuit.

STORAGE PROCEDURES

If the generator is to be out of service for a long period of time, perform the following procedures before placing the unit in storage:

1. Drain oil from crankcase (while hot) and refill with specified oil. Run generator after change to circulate new oil.
2. Clean exterior surfaces of generator set then spread a light film of oil over any unpainted metallic surfaces which could corrode.

GENERATOR SPECIFICATIONS

Electrical Rating	12.5 KW at 120 VAC
Fuel Supply	Diesel, separate pickup in main tank
Fuel Filter Element	WL P/N 3970860
Cooling System	12 quarts
Crankcase Capacity	6 quarts
Oil Filter	WL P/N 6075923
Oil Specifications for Generator	
API Classification	CD 10W30/10W40 *(See Operator's Manual)*
Air Filter Element	WL P/N 6075931

HEATING SYSTEMS

The Aqua-Hot Motor Coach and Marine Heating System is an on-board heating system that provides a continuous supply of domestic hot water, as well as interior heat where and when it is needed. Both heating features are accomplished by a 50,000 BTU diesel-fired burner and a 1650 watt electric heating element (located at breaker on 110 volt/ AC load center). These two heating sources operate separately or simultaneously (during high heat demand periods) to maintain the temperature of the Aqua-Hot's 50/50 solution of water and antifreeze. In addition to domestic hot water and interior heating capabilities, the Aqua-Hot has also been designed to preheat the vehicle's engine prior to starting. This feature provides easy engine start-up on cool mornings.

NOTE

For freeze protection, leave the furnace operating to supply heat to the interior of the coach as well as the holding tank compartment.

ELECTRIC HEAT

An electric forced air heater (120 vac) is located in the bathroom. Your electric heater is provided for auxiliary heating. Since the heater draws 10-15 AC amps, operator load management becomes an important consideration.

BATHROOM HEATER OPERATION

1. On/Off thermostat control on heater must be turned on and set.
2. Bathroom thermostat must be turned on and set for temperature desired.

HEATING SYSTEM CHASSIS

(See A/C Heat Controls)

INTERIOR & EXTERIOR CARE

SOLID SURFACE COUNTERTOPS

Even stubborn stains, such as grape or beet juices, wipe off with a damp cloth and household cleanser. Because solid surface is solid all the way through, it cannot be harmed by abrasive cleansers and normal household cleaners.

Solid surface is strong and tough, but slicing on it with knives can cause scratches. Use a cutting board.

While solid surface does provide an extra measure of protection (better than ordinary counter tops), it is not recommended as a hot pad. Do not place hot pots and pans directly on your solid surface counter top.

Since it's a solid material with color and pattern all the way through, unusual damage such as cigarette burns, scratches, or other surface abuse can usually be removed using ordinary household cleansers or fine sandpaper. If stain persists, or if the scratch is particularly deep, first use a medium sandpaper (120 or 240 grit) then fine sandpaper (320 or 400 grit) followed by circular motion buffing with a Scotch Brite pad to match the gloss of adjacent surfaces. Household cleanser, steel wool or polishing compound can also be used if higher gloss levels are desired.

CAUTION

Certain chemicals found in the home-such as paint removers, paint brush cleaners, acid drain cleaners and certain brands of nail polish and polish removers - can harm solid surface if left in contact even for short periods of time. These materials should be wiped away promptly and flushed with water. Depending on time of exposure, surface damage caused by these materials can sometimes extend too deeply for practical repairs.

INTERIOR CARE

The interior can be kept in good condition with the use of approved cleaning agents for wall coverings and ceilings, plastic fixtures, stainless steel, formica and so on. Never use abrasive cleaning agents on interior of refrigerators, or on the lavatory, tub/shower, or toilet, as they can cause permanent scratches. Be sure that the cleaning agent will not damage the material. Note that some plastics are incompatible with certain cleaners. Read the directions on the container before using. For the most part, the cleaners and polishes that would normally be used in your home are equally well-suited for use in your coach.

NOTE

Tables can be stored out of the way in the rear storage compartment behind the rear coach wall.

EXTERIOR CARE

Exterior paint finish life can be extended by periodic cleaning and waxing. This will preserve the paint and allow easier removal of dirt and road tar. Use touch-up paint for small areas to keep the coach finish in like new condition.

Frequent washing of the coach is necessary to prevent corrosion in areas where heavy salt sprays are evident. A clear acrylic spray may be used, with care, to control corrosive effects of salt spray on metal surfaces.

CAUTION

Some car/truck wash facilities may use strong detergents or other chemicals that could cause permanent staining or streaking of exterior paint and aluminum trim. A strong alkaline solution, while useful for dissolving dirt, is a suspected harmful ingredient.

Before enlisting any commercial wash service or facility, you should determine that cleaning agents used will not damage the finish of your coach.

OPTIONAL EQUIPMENT

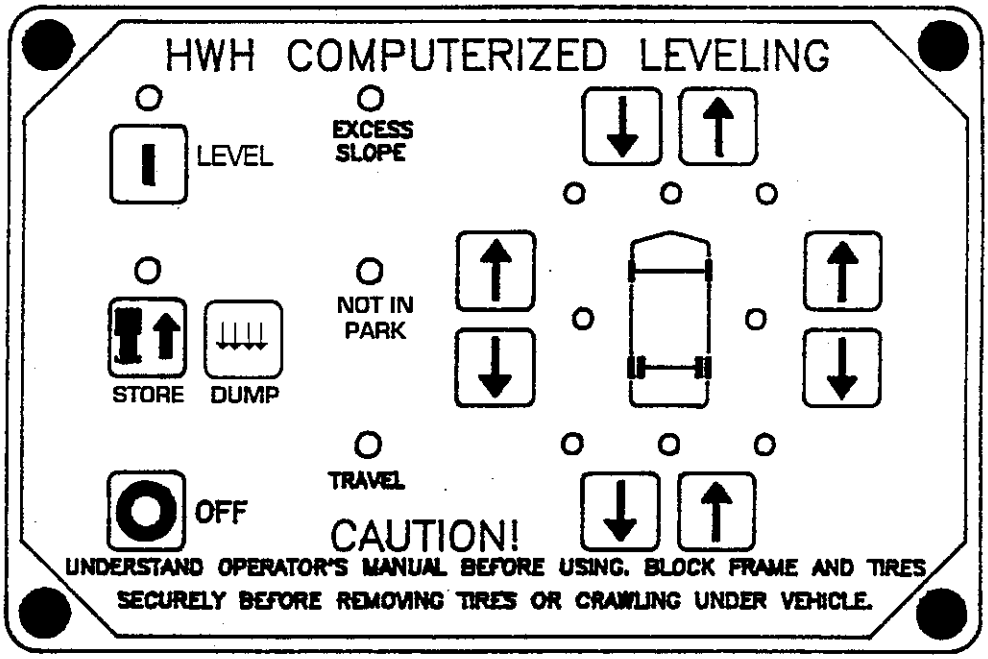
SOLID SURFACE COUNTERTOPS

- Fax machines
- 14" X 14" bubble skylight in bathroom
- Leather barrel chair covering in lieu of fabric
- Leather lounge seating in lieu of fabric
- Intercom
- Konstant Hot in galley
- Vista strip lighting on ceiling and floor

LEVELING JACK OPERATION

AUTOMATIC LEVELING JACKS CONTROL

The control panel is mounted on the sidewall beside the pilot.



CAUTION!

Read and understand entire operators manual before operating.

Block frame and tires securely before changing tires or crawling under vehicle. Do not use leveling jacks (or air suspension) to support vehicle while under vehicle or changing tires. Vehicle may move forward or backward without warning causing injury or death.

Keep all people clear of vehicle while leveling system is in use.

Do not over extend the rear jacks. If the weight of the vehicle is removed from one or both rear wheels, the vehicle may roll forward or backward, off the jacks.

Never place hands or other parts of the body near hydraulic leaks. Oil may cut and penetrate the skin causing injury or death.

Kickdown type leveling jacks may abruptly swing up anytime the foot clears the ground.

PANEL FUNCTIONS

1. CONTROL BUTTONS

The "OFF" button is in the lower left hand corner of the touch panel. Push the "OFF" button to stop hydraulic operation.

Top left is the "I" button with its operating light above it. Below the "I" button is the "STORE" button for retracting hydraulic jacks, with its operating light directly above it.

The remaining buttons on the right hand side of the panel are MANUAL control buttons that operate only during the manual mode. The manual buttons are the eight (8) buttons on the right half of the label, two for each of the FRONT, REAR, LEFT SIDE, and RIGHT SIDE. Pushing UP arrows will cause the coach to raise and DOWN arrows will cause the coach to lower.

2. INDICATOR LIGHTS

The four (4) yellow indicating lights are level sensing indicators. When a yellow light is "ON", it indicates that its side or end of the vehicle is low. No more than two (2) lights should be on at the same time.

The four (4) red lights surrounding the yellow level indicators are jack warning lights. They are functional only when ignition is "ON" or in "ACCESSORY". During the hydraulic mode they light when the respective jack is extended. The vehicle should not be moved while these lights are on.

The "EXCESS SLOPE" indicator will light when the leveling system cannot level the coach.

The "NOT IN PARK" indicator is "ON" when the control panel is "ON" and the park brake is not set.

The "TRAVEL" indicator is "ON" when the control panel is off, the jacks are retracted, and the ignition switch is on. Do not move vehicle unless travel light is "ON".

The "LOW BATTERY" indicator is "ON" when the controls sense low voltage set between 8.0 and 9.0 volts. The system will stop leveling functions when low voltage is detected.

GENERAL INSTRUCTIONS

Press the "OFF" button and turn the ignition switch OFF at any time to stop the operation of the system.

Any time a hydraulic leveling process is interrupted, retract the jacks according to the "JACK RETRACTION" section and then restart the leveling process.

Do not operate the system when the "LOW BATTERY" light is on. If the park brake is

not set when the "I" button is pressed, the "NOT IN PARK" light will come on and the system will not operate. It will remain "ON" only while the "I" button is pressed.

PREPARATION FOR TRAVEL

Before traveling, the red jack warning lights must be "OFF" and the travel light must be "ON". If lights are not correct for travel, retract jack as described in the "JACK RETRACTION" section.

CAUTION

Do not rely solely upon the warning indicator lights. It is the operator's responsibility to check that all jacks are up before moving the vehicle.

SYSTEM OPERATION

AUTOMATIC HYDRAULIC LEVELING

1. Place transmission in neutral position and set parking brake. Turn the ignition to the "ACC" position. Note: Coach engine must be off for leveling.

2. If the vehicle is parked on soft ground, blocks may be placed under the jacks for added support.

3. Press the (I) button to enter the hydraulic operation mode. The (I) indicator light will glow steadily.

4. Press the (I) button a second time. The (I) indicator light will start to flash. The controller starts out dumping the air bags. After 25 seconds, the system automatically extends the jacks to level the vehicle and then extends any remaining jacks until they touch the ground. In the event the jacks are unable to level the vehicle, the (excess slope) indicator light will come "on." One or more yellow level lights will be on indicating that its jack is fully extended.

5. After a pause of ten seconds the system will automatically shut off (warning indicator lights will remain on as long as the ignition is on or in the accessory position and the jacks are in extend position).

6. Turn the ignition switch to the "OFF" position.

JACK RETRACTION

1. The operator must be sure that there are no objects under the vehicle and that all people are clear of the vehicle.

2. Turn the ignition switch to "ACC" and press the (I) button one time. The (I) indicator light will glow steadily.

3. The "I" indicator light will glow steadily. Press the "STORE" button. The store

indicator light will flash. As each jack retracts, its red warning light will go out. Approximately one minute after the four red warning lights are off and the "TRAVEL" light is on the vehicle may be moved.

4. The system will automatically shut off six minutes after the four "Jacks Down" warning lights on the touch panel have gone out. If a "Jacks Down" warning light stays lit, the system will continue to run for thirty minutes. It will then shut off regardless of the touch panel warning lights. Note: DO NOT interrupt power to the control box until the red indicator light above the "I" button has gone out.

5. If jacks cannot be retracted by the above procedure see "VALVE RELEASE OPERATION" section.

MANUAL HYDRAULIC OPERATION

1. Place transmission in neutral and set the parking brake. Turn the ignition to the "ACC" position.

2. If vehicle is parked on soft ground, blocks may be placed under jacks for added support.

3. Press the (I) button. The indicator light will glow steadily.

4. Press the (DUMP) button and hold to dump air from the air bags. After the air is exhausted, advance to the next step.

5. The vehicle may be leveled using the manual raise buttons on the right half of the panel. If a yellow "LEVEL SENSING" light is "ON", that side or end of the vehicle is low. Jacks will extend (or retract) in pairs to raise (or lower) a side or end of the vehicle. When a jack is extended, approximately two (2) inches, the respective jack warning light on the right half of the panel will come on.

IMPORTANT

Do not continue to push a raise button for more than ten (10) seconds after that pair of jacks are fully extended.

6. When leveling is completed, push the "OFF" button on the leveling panel and turn the ignition switch to the "OFF" position.

VALVE RELEASE OPERATION

1. Use the valve release "T" handles for retracting only if the "STORE" button on the control panel will not retract the jacks for travel.

CAUTION

Keep away from the wheels, do not crawl under coach, keep a safe distance in front and rear of vehicle. The vehicle may drop and/or move forward or backward without warning or as the valve release is operated.

2. Locate the valve release "T" handles on the solenoid valves. The solenoid valves are located on the pump manifold assembly.
3. Allow clearance for the coach to lower.

4. Open the two outer valves slowly by turning counter clockwise. The handles may turn easily at first but as an internal spring is compressed, turning may become more difficult. The valves need only be opened enough to retract the jack.

5. Retract the front jacks by opening the two center valves as described in step 4.

6. Check that all four jacks are now retracted.

7. Close the valves by turning the release handles clockwise. Once the internal spring tension has been released, the handles will turn free for several turns. DO NOT tighten the handles past this point as internal damage may occur to the solenoid.

8. The system should now be repaired before being used again.

SERVICING OF LEVELING SYSTEM

HYDRAULIC OIL

Retract the four leveling jacks before checking oil level. Locate the pump/manifold assembly and clean any dirt away from the breather/filler cap on the oil reservoir. Check that the oil is within one (1) inch of the top of the reservoir.

The oil should be checked when the vehicle is first purchased and then once every two years. More often if there is an oil leak in the system. Use universal, multipurpose or Dexron transmission fluid. DO NOT USE brake fluid or hydraulic jack fluid. Use of these fluids can damage seals. The hydraulic tank should be filled to within one (1) inch from the top.

VISUAL INSPECTION

Periodically inspect the leveling jacks for damaged or missing parts such as pivot bolts, springs, or warning switches. Check the hydraulic lines and wiring for damage and wear.

"NOT IN PARK/BRAKE" CHECK

Set park brake. Switch ignition to the "ACC" position. Continuously press "I" button on touch panel to turn on system. Release parking brake and confirm that the "NOT IN PARK/BRAKE" indicator light comes on. Reset parking brake. Switch ignition to "OFF" position.

NOTE

If any of the above checks or inspections reveal a problem or if there are other problems or questions, consult your vehicle or coach manufacturer, or HWH Corporation for service or repair.

OPERATIONAL CHECK

Review operator manual and confirm that the system is operating correctly.

NOTE

If any of the above checks or inspections reveal a problem or if there are other problems or questions consult your nearest service center.

CAUTION

Do not drive the coach unless the air suspension system is correctly pressurized to assure even weight distribution. There must be pressure in the air bags to prevent flat spotting of tires during brake application.

CAUTION

Severe injury or death may result. Do not use the leveling system for changing tires or working under the vehicle. Keep the rear wheels in firm contact with the ground with the parking brake set. With the leveling jacks extended, there is a possibility the vehicle may move either toward the front or rear.

POWER CORD & HOOK UP

Your coach is supplied with a 50 amp single phase power supply inlet on the exterior rear road side and a 50 - 30 amp adaptor for hook up to external power source. Note that the 50 amp cord has a ground pin that provides proper electrical system grounding. The ground pin is your personal protection from electrical shock hazards. DO NOT use any adapter, cheater, or extension cord that will break the continuity of the grounding circuit. Never remove the grounding pin for convenience of being able to make a connection to a non-grounded receptacle.

Never operate the coach with a "hot skin." If you can feel even a slight tingling shock from touching the coach body while standing outside on the ground, immediately disconnect the electrical hookup until the trouble is located. This fault is usually caused by a break in the grounding circuit which should be continuous from the coach skin or frame to the distribution panel board, to the ground pin on the power supply cord, to the park receptacle and earth ground.

SHORELINE OPERATION (COMMERCIAL POWER)

CAUTION

Your coach has been wired in accordance with the National Electric Code. All 120 volt AC wiring is two-wire service with ground. All 240 volt wiring is three-wire service with ground.

During thunderstorms, lightning strikes can detrimentally impact the electrical system of your coach. To avoid potential catastrophic damage to sensitive electronic devices in the coach, disconnect shore power and cable television service prior to electrical storms reaching maximum intensity.

If the ground pin is used as a starting point for insertion of the 50 amp plug, an over voltage condition can occur on the 120 volt lines (i.e. 240 volts can be sent to 120 volt appliances). Therefore, to prevent the possibility of over voltage, switch off the 50 amp main breakers, located behind the main mirror in the rear of the coach, prior to insertion or removal of the 50 amp plug. In addition, insert or remove the 50 amp plug straight into or out of the receptacle instead of tilting the plug

For safety purposes, observe all precautions when making shoreline connections. Poor grounding or incorrectly-wired receptacles can cause personal harm as well as equipment damage or fire hazards.

SAFETY & SECURITY FEATURES

FIRE EXTINGUISHER

A portable, multi-purpose dry chemical extinguisher is located at the entrance door and in outside compartment. To use, release the clamp and remove extinguisher from bracket, pull safety pin from handle, squeeze handle, and apply chemical under flame.

MIRRORS

All interior mirrors meet ANSI A119 and 297.1 codes for safety.

DOOR LOCKS

Automotive up/down type; located in the lower right corner of the window frame on the front coach door.

Bolt type; located near the bottom of the coach door on the right side.

AIR LOCK

Automatic air lock is located at the top of the entrance door.

SEAT BELTS

Driver's, co-pilot's and all lounge seats have lap-type seat belts.

TRANSMISSION

(SEE MAINTENANCE MANUAL FOR IMFORMATION)

VIDEO & AUDIO

TELEVISION RECEIVER

Installed in the overhead cabinet in the fore and aft passenger areas. Operated from a 120 volt source (inverter, shoreline, or generator). See owner's manual supplied with the se. See owner's manual supplied with the set for detailed information.

DRIVER'S STEREO SYSTEM

Installed in the dash panel in the driver's area. It is comprised of a tuner and cassette player with two speakers. The cassette player has auto reverse, electronic tuning sensor, Dolby noise reduction, and metal tape capabilities. Two speakers are located in the driver's area. See owner's manual for detailed information.

PASSENGERS' STEREO SYSTEM

The AM/FM tuner/cassette player with electronic tuning and auto reverse with eight coaxial speakers is located in the rear section of the coach. The speakers are located in the ceiling of the coach. The stereo speakers switch (Both/Rear), located next to the stereo system, activates all speakers or just the four rear speakers.

CB RADIO

The CB radio is in compartment (floor) at driver's right leg. Refer to CB operator's manual for detailed information.

VIDEO CASSETTE RECORDER

Installed in the overhead with the TV. Operates from a 120 volt source (inverter, shoreline, or generator). Refer to owner's manual supplied with the set for detailed information.

TV ANTENNA & ROTATOR SYSTEM

The control components of the radome-type TV roof antenna are a hand held rotator and switch for the antenna or cable inputs.

The antenna rotator is located near the TV. The three-position momentary switch (center off) provides right/left antenna rotation.

The A/B selector switch, located behind the rear coach wall, switches to antenna or cable input.

The radome includes an amplifier and rotator mechanism. The remote power supply operates from 12 volts DC. Low-loss coaxial cable and three wire rotator control cable interconnect the antenna and power supply.

Note that the system is protected by a fuse in the rear load center. In the event that the TV set exhibits problems relating to low antenna input (ghosts, etc.) check fuse before servicing the TV set.

ANTENNA OPERATION

With the TV On and a station tuned in, rotate the antenna by pressing the rocker switch located on the control unit. Press the right side of the switch to run the antenna clockwise; press the left side to turn the antenna counter clockwise. Although the actual antenna movement is not visible, the indicator arrow on the control unit lights and shows the direction of movement. When the antenna has made one full turn (360 degrees), the End of Rotation light comes On. Observe the picture while rotating the antenna, first in one direction then the other, to obtain the best picture quality.

WASTE SYSTEM

Separate holding tanks for gray water and body waste are located in compartments directly in front of the drive wheels. Each holding tank has a separate drain valve, dumping gray water and wastes through a common single discharge connection. Separate vents from each holding tank extend through the roof of the coach.

Holding Tank Capacity: Approx. 50 Gallons Each

DRAINING THE HOLDING TANKS

The body waste (brown) holding tank is drained first, then the gray water tank. Drain the holding tanks as follows:

NOTE

It is advisable to drive your unit for a short distance to agitate the contents of the holding tank before dumping.

1. Check that both drain valves are in a closed position before removing drain cap.
2. Remove the safety cap from the single discharge connection by turning in a counter-clockwise direction and connect the 3-inch sewer hose coupling to the end of the valve. Tighten securely, in a clockwise direction. The sewer hose is stored in a tube in top of compartment. Place the discharge end of the hose into the sewer connection and check that all connections are secure to prevent accidental spillage.
3. Dump the body waste tank by pulling the handle (large valve) on the top of the dump valve assembly. After body waste tank is empty, dump the gray tank by pulling the handle (small valve) on the side of the dump valve assembly.

NOTE

To clean the holding tanks, add a detergent solution to the tanks after they are emptied. The agitation action caused by vehicle movement will clean the tank.

4. Disconnect and wash out the sewer hose. Replace hose and replace safety cap securely.

WASTE TANK LEVEL INDICATORS

Each holding tank has a level detector which provides an electrical input to the Systems Monitor panel in the galley area. Activate the display to read the level of liquid remaining in each tank by pressing the appropriate push button switch.

WINTERIZING HOLDING TANKS

Drain the holding tanks and add RV antifreeze (several quarts) to each tank through the toilet (into the sewage tank), and through the tub/shower drain (gray water tank).

WINTERIZING FIXTURE TRAPS

In addition to the above, pour a pint of RV antifreeze into the kitchen sink and bathroom lavatory drains.

TOILET

The toilet, operates from the fresh water supply, flushing wastes directly into the sewage holding tank. After use, depress bowl drain pedal until water swirls, draining waste into tank, then release pedal. A water saver feature, consisting of a manually operated spray hose, is located at side of bowl. To raise the level of water in the bowl, lift up on the foot pedal.

NOTE

A water pump must be on or coach connected to city water to operate toilet.

WINTERIZING TOILET

See toilet user manual in owner's kit.

BLUE BIRD

AUTHORIZED COMMERCIAL BUS SERVICE CENTERS

United States

Transportation South, Inc.
1400 McCain Parkway
Pelham, **Alabama** 35124
(205) 663-2287

Auto Safety House
2630 W. Buckeye Rd
Phoenix, **Arizona** 85009
(602) 269-9721

A-Z Bus Sales, Inc.
1900 South Riverside Ave.
Colton, **California** 92324
(909) 781-7188

A-Z Bus Sales, Inc.
3117 Coke Street
W. Sacramento, **California** 95691
(916) 372-8710

Colorado/West Equipment
7920 E. 88th Ave., Bldg. #1
Henderson, **Colorado** 80640
(303) 288-1300

Florida Transportation Systems
7703 Industrial Lane
Tampa, **Florida** 33637
(813) 980-0174

National Bus Sales
793 S. Cobb Drive
Marietta, **Georgia** 30061
(404) 422-8920

School Bus Sales, Co.
4537 LaPorte Rd.
Waterloo, **Iowa** 50704
(319) 296-1363

Midwest Transit Equipment
Rt. 45 & 52 South
Kankakee, **Illinois** 60901
(815) 933-2412

Atlantic Transp. Equipment
13553 Baltimore Avenue
Laurel, **Maryland** 20707
(800) 457-2835

Holland Bus Company
670 E 16th Street
Holland, **Michigan** 49423
(616) 396-1461

Grande American Bus Sales
13533 Jay Street
Anoka, **Minnesota** 55303
(612) 757-7630

Central States Bus Sales
2450 Cassens Drive
St. Louis, **Missouri** 63026
(314) 343-6050

Specialty Coach & Bus, Inc.
1515 Columbia Circle
Merrimack, **New Hampshire**
(603) 424-8496

Central New York Coach
R.D. #2, Lakeport Road
Chittenango, **New York** 13037
(315) 687-3969

Ramp Transp. Co., Inc.
Nesconset Highway
Port Jefferson Station, **NY** 11776
(516) 473-1550

Jersey Bus Sales, Inc.
2015 Rt. 206 North
Bordentown, **New Jersey** 08505
(609) 298-2987

Hartley's School Buses
Rt 1, Box 2, Hwy 3 South
Rugby, **North Dakota** 58368
(701) 776-5746

Cardinal Bus Sales & Service
I-75 & US 30 Interchange
Beaverdam, **Ohio** 45808
(419) 643-4561

Ohio Bus Sales
1307 Third Street SW
Canton, **Ohio** 44702
(216) 453-3725

Western Bus Sales, Inc.
13479 SE Highway 212
Clackamas, **Oregon** 97015
(503) 655-8101

M.A. Brightbill Body Works
2701 E Cumberland Street
Lebanon, **Pennsylvania** 17042
(717) 272-7691

BB Bus Sales of Pittsburgh
Box 6, Rd 3, Rt 8
Valencia, **Pennsylvania** 16059
(412) 898-2472

Whatley, Inc.
Hwy 278 East
Allendale, **S Carolina** 29819
(803) 584-2176

Hemphill Bus Sales, Inc.
1012 North Masch Branch Road
Denton, **Texas** 76207
(817) 387-8850

Bryant Motors
1300 Bronson Way N
Renton, **Washington** 98055
(206) 255-3478

Wisconsin Bus Sales
& Service, Inc.
4212 Robertson Road
Madison, **Wisconsin** 53714
(608) 249-6462

Canada

Briggs Bus Sales, Alberta
16103-66 St., Box 107, RR 4
Edmonton, **Alberta**, T5E 5S7
(403) 473-7676

Leeds Transit Sales, Ltd.
RR #2
Elgin, **Ontario** K0G 1E0
(613) 359-5344

A. Girardin, Inc.
Route Transcanadienne
Drummondville, **Quebec** J2B 6V4
(819) 477-3222

INDEX

DESCRIPTION **SECTION**

A

B

C

D

E

F

G

H

I

L

M

O

P

R

S

T

V

W