AVION
TRAVEL TRAILER

Operation and Service Manual

Keep this book with your Avion at all times

AVION COACH CORPORATION
1300 E. Empire Avenue, Benton Harbor, Michigan 49022
39661 Esplanade Avenue, San Jacinto, California 92383

AVION COACH
LIFETIME WARRANTY

AVION COACH CORPORATION WARRANTS the basic construction of AVION TRAILER SERIAL NO. 6825111 including the Smooth-Glide suspension system consisting of axles, brakes, hubs, spindles, shock absorbers, rubber springs and frame, against defective material or workmanship.

Avion Coach Corporation will repair or replace defective parts at no charge for parts or labor.

All repairs to be made or authorized under the terms of this warranty shall be made or authorized by Avion Service Corporation, 1576 E. Empire Ave., Benton Harbor, Michigan 49022, or, the Avion factory at 39661 Esplanade Ave., San Jacinto, California 92383.

Appointments or authorization for such work must be obtained in advance.

Transportation of the trailer to and from the service center will be the responsibility of the owner.

For service under the terms of individual manufacturer warranties for the various appliances or equipment in your Avion it is necessary that you contact an authorized service company of the appliance or equipment involved.

This warranty shall in no event be construed to cover damage caused by collision, negligence, act of God, riot, improper use, or normal wear and tear.

The above warranty shall be limited to the original purchaser.

AVION COACH CORPORATION

_____

Dealer's Name

_____

Original Owner's Name

_____

Date of Purchase

AVION TRAVEL TRAILER

OPERATION AND SERVICE MANUAL

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SECTION I

GENERAL PROCEDURE FOR "HOOKING-UP" BEFORE A TRIP

The following steps are suggested as a check list before starting on your trip with your Avion Coach.

1. See that all clothing, dishes, golf clubs, fishing gear, etc., are properly stored. Heavy gear should be located near the floor and as near to the center of the coach as possible. It is wise to use square plastic containers in your refrigerator. DO NOT leave ice cubes in the freezer compartment unless the regrigerator is operating while traveling. Pack rolled towels in front of the containers in the refrigerator so they will not move about or spill over. Insert the safety pin in the refrigerator door to prevent it from opening while traveling. Unless you plan extended stays far off the beaten path, there is no need to store up on food.

2. Be sure all drawers, cupboards and closet doors are securely latched.

3. Radios, T.V. sets, books, folding chairs, etc., should not be placed on top of beds while traveling. The vibration of the mattress and springs has a tendency to move everything forward and, if the brakes are applied quickly, they may be thrown to the floor. Loose items should be placed on the floor near the center of the trailer.

4. If your utilities are hooked up, disconnect the 120 volt Power Cord at the receptacle and store in the cord storage compartment. Close the range top pilot valve, if pilot has been used, close the oven shut-off valve. See instructions for Range and Oven in Section IV.

5. Flush the holding tank, refill with 2" of water and add a commercial holding tank chemical, if desired. Disconnect the sewer and water hoses, drain and store. The sewer hose may be kept in the rear bumper. Be sure to lock the holding tank valve into closed position, and turn off the water pump switch.

6. Close all windows and ventilators and lock the enterior door. When traveling on extremely dusty roads it is advisable to leave the front roof vent slightly open into the wind. This has a tendency to create an air pressure inside the coach and prevents dust from filtering in. Be sure the front awning is closed and latched on both sides.

7. Remove the stabilizing jacks or blocks from under the coach and fold the step into the "stored" position.

7. A 2 5/16" hitch ball should be mounted on your car so that the top of the ball is 20" from the ground. At this height, and with an equalizing hitch properly adjusted, your Avion coach will ride level. Although the Avion will tow properly even if the coach is not perfectly level, we recommend that trailer and car ride as level as possible.

To hook the coach to the towing vehicle, raise the front of the coach with the post jack and have your partner back the car into place.

After the ball has been positioned under the hitch socket, check to be sure that the locking lever has been raised and pulled to the rear, then lower the front end of the coach onto the ball. Rock the car back and forth enough to be sure that the socket and ball are fully engaged, and put the ball lock in place. The lock should be secured by placing a safety pin or small lock through the hole just to the rear of the latch.

Jack up the front of the coach again (the car will come up with it) and put on the balance of the hitch, adjusting for level in both units. It is advisable to use an equalizer type hitch. Make all adjustments according to the manufacturers instructions.

Lower the coach onto the hitch, remove the dolly wheel, or any blocks that may have been used under the post, and crank the jack post to the highest possible position. Hook up the electric connections from the car to the coach, connect the safety chains and anchor the break-away switch cable to the auto.

8. Check the brakes and lights.

9. Re-check all previous steps and be sure to leave your parking area clean. It is a good practice to pull your coach a short distance from the parking spot and inspect the area.

SECTION II

PARKING AND SET-UP PROCEDURE

1. When positioning the coach, try to select as level a spot as possible. Do not use jacks to level the coach. It should be levelled by driving up on a board, or by using a shovel to level the area under the wheels before positioning. Jacks can then be used to stabilize the coach.

CAUTION: When locating jacks or blocks, DO NOT place them under the aluminum underbelly or skin. Stabilizing jacks for Avion coaches should be placed under the frame at the front and rear of the coach. Extend the jacks only enough to support the frame.

2. Make water, sewage, and electric hook-ups if available, and if your stay will be long enough to require them.

3. Light pilot lights, raise front awning and lock in place.

SECTION III
PROTECTION FROM FREEZING WEATHER

1. Level the coach

2. Disconnect water supply hose from the coach. If already disconnected, unscrew small cover cap to be sure water is not trapped in the filler pipe. Tap the water inlet fitting, or insert a wire in the inlet pipe to break the vacuum so that the water will drain from the line.

3. Drain the water storage tank by opening the drain valve which is located at left end of the tank. The storage tank may also be drained by opening one or more of the faucets and pumping the water into the sinks, where it will drain through the sewer hose.

4. Shut off water pump at switch and drain water heater tank. The valve for this tank can be reached by removing the panel on the outside of the water heater. Be sure that the gas heater has been turned off before draining.

5. Remove water from the stool.

6. Pull up on shower spray valve to open. Hold shower hose up above faucets, open shower head valve and allow all water to drain from the hose.

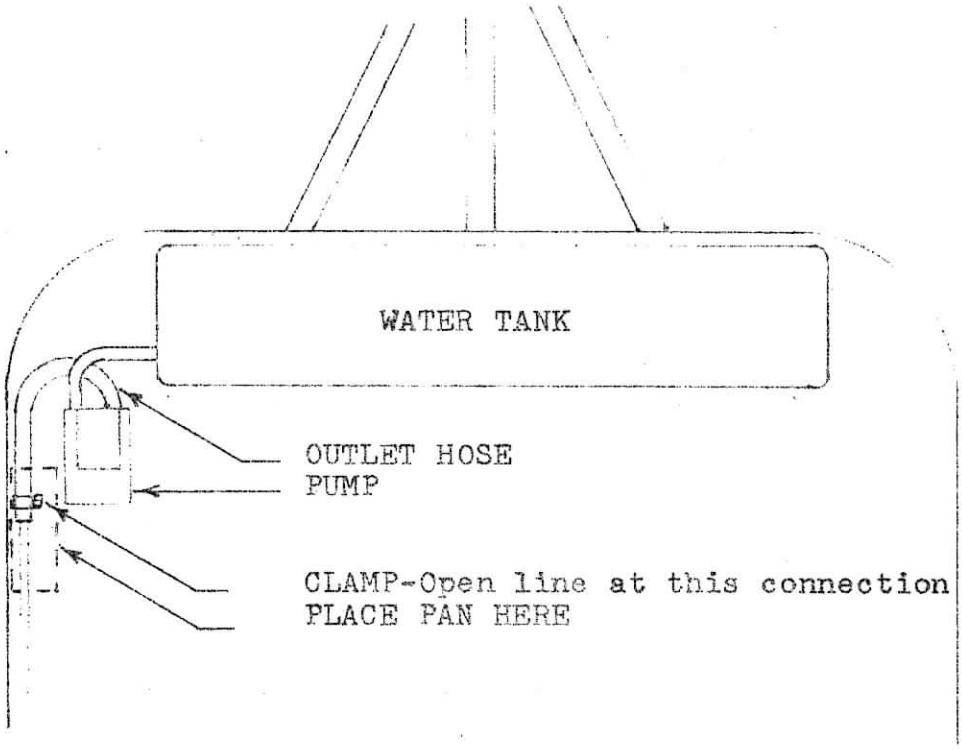
7. Open the holding tank valve and drain tank completely. (Drain should be connected to sewer for this operation.)

8. Raise the front end of the coach as high as it will go by cranking the jack all the way up and allow the water to drain. Then crank jack to lowest position and allow water to drain. Return to level position.

9. Use suction pump to remove water from traps, or pour about one cup of any Ethylene Glycol type anti-freeze in each of the three traps---one in the kitchen sink, one in the bathroom sink, and one in the bathtub. Use caution to avoid spilling the solution on plastic surfaces where discoloration may occur. DO NOT use an alcohol base anti-freeze.

10. If your trailer is equipped with a purifier, remove the cartridge, allow to dry and store until ready to use again.

11. Drain the water pump as illustrated:



Turn pump off. Place a small pan under the end of the water line where it connects to the pump outlet hose. Loosen the clamp and disconnect the hose from the water line. Allow any remaining water to drain from the copper line into the pan.

Lay the pump outlet hose flat on the coach floor and start the pump. Use a rag or sponge to wipe up the small amount of water that is expelled by the pump.

Turn the pump off and do not connect the hose to water line until warm weather, or until coach is prepared for use.

12. If it is practical to remove the battery, store in a warm place during freezing weather. If the battery is kept on the coach, be sure it has a full charge to prevent freezing.

13. CAUTION - Do not travel with the anti-freeze solution in the tub or lavatory drains, unless drain plugs are securely inserted to prevent the solution from splattering on the plastic.

SECTION IV

OPERATION - CARE - MAINTENANCE

Item	Description
1.	Exterior
2.	Interior
3.	Electrical Systems
4.	Water System
5.	Water Heater
6.	Water Closet
7.	Waste Holding Tank
8.	Space Heater
9.	Gas-Electric Refrigerator
10.	Range and Oven
11.	Range Hood
12.	Running Gear
13.	Air Conditioner
14.	Water Purifier
15.	Break-away Switch

(1) EXTERIOR

Your coach has an anodized exterior aluminum skin. Anodizing provides a thin, hard film of aluminum oxide. This film protects the metal against stains, scratches and corrosion. To preserve the protective film, your coach should be washed and cleaned in the same manner that you care for your automobile. Extended exposure to chlorides, road salts or concentrated industrial fall-out may cause discoloration of the exterior surface. Washing with a mild soap or detergent will aid in keeping your coach clean. Road tars may be removed with Kerosine, turpentine or naptha. Follow the cleaning with a soap and water rinse and then dry with soft, absorbent material. CAUTION: when using these liquids, do not allow them to get on the window panes. Do not use cleaners containing caustic or ammonia.

A polish may be used on the exterior surface to provide additional protection. A cleaner-wax-polish type material should prove satisfactory, if the manufacturers instructions are followed. Be sure to do the polishing in the shade, rubbing in the same direction as the grain in the metal.

A more permanent protection may be obtained by applying a coating of clear wax after the polishing is completed.

Exterior seams should be examined periodically for holes or cracks which may result from shrinkage of the sealer after prolonged exposure to the elements. The sealer for all exterior seams of your Avion carries the brand name of "Ten-X". It is manufactured by Electro-Cote Company, Minneapolis, Minn., and can be purchased from most trailer dealers and automotive supply stores.

(2) INTERIOR

The interior walls of the coach are covered with vinyl. They may be cleaned by washing with a mild soap or deturgent and water. DO NOT use an abrasive cleaner or a solvent as it may damage the vinyl or dull the finish.

The Bathtub, Vanity and Lavatory are molded plastic. They should have the same care as the interior walls.

The Cabinets and Woodwork deserve the same care as the furniture in your home. A furniture wax or polish will aid in maintaining the fine factory finish.

The Windows are Plexiglass acrylic plastic, providing outstanding resistance to breaking. They are tinted to filter out heat and afford privacy. These windows should be dusted and cleaned with a damp cloth or chamois, wiping the surface gently. Wash with a mild soap or deturgent and water. Use as much water as possible, applying with a clean soft cloth, sponge or chamois. The best method of drying is with a clean damp chamois.

Your Plexiglass windows may be protected with a good grade of commercial wax. Apply and bring it to a high polish by rubbing with a soft dry cloth.

To remove or reduce minor scratches, hand polish with a small cloth or pad dampened in water. Deep scratches may be removed by sanding with a very fine sandpaper, keeping wet while sanding. Use a 320 or 400 grade sandpaper. Buff with a fine abrasive after sanding and then polish to a high gloss with wax.

Removal of the screen is accomplished by pushing upward on the screen frame until it clears the bottom channel. It can then be pulled out from the bottom and removed.

Optional Storm Sash may be installed without removal of the screens. Small clips around the inner frame are used to secure the storm sash in place.

(3) ELECTRICAL SYSTEMS

Each Avion coach is provided with three separate electrical circuits: (A) 12 volt exterior lights and brakes; (B) 12 volt interior lighting system; (C) 120 volt interior system.

(A) Exterior Lights - The cluster lights and clearance lights are I.C.C. regulation double bulb system. Check these lights periodically to be sure that both bulbs are burning. Replacement bulbs are G.E. type 1895 or equivalent.

The tail lights and turn lights are in single lamps at the rear of the coach. They use double filament bulbs, G.E. type 1157 or equivalent.

Power for the lights and brakes is supplied from the automobile battery, through the 7-wire connector. The coach wires appear in a heavy cable at the trailer hitch.

Pontiac 69

WIRING CODE FOR AVION COACHES

Yellow #1 - White	Connects to:	Brake - Ground
Brown #2 - Blue		Brake - Hot
Green #3 - Green		Clearance Lights
Red Center #4 - Black		Optional Back Up Lights
Small Yellow #5 - Red		Left Turn Light
& Brown #6 - Yellow		Right Turn Light
Green wire -		

A separate wire is provided to connect the automobile alternator to the coach battery. This wire is taped to the 6-wire cable. It is connected to the positive battery terminal at the factory for cars with the standard "negative ground" system.

(A) Brakes - Your coach is equipped with 12 volt Dayton electric brakes. The 22 ft., 25 ft. and 28 ft. tandem axle models are equipped with 10" brakes; the 22 ft. single axle and the 31 ft. tandem axle models are equipped with 12" brakes.

These brakes have been adjusted at the factory for smooth, positive braking. The brake drums have been coated by the manufacturer to reduce the length of the break-in period. If brake adjustment becomes necessary it should be done by your dealer's service department or by a competent automotive mechanic. The method of adjustment is the same as most automotive brakes.

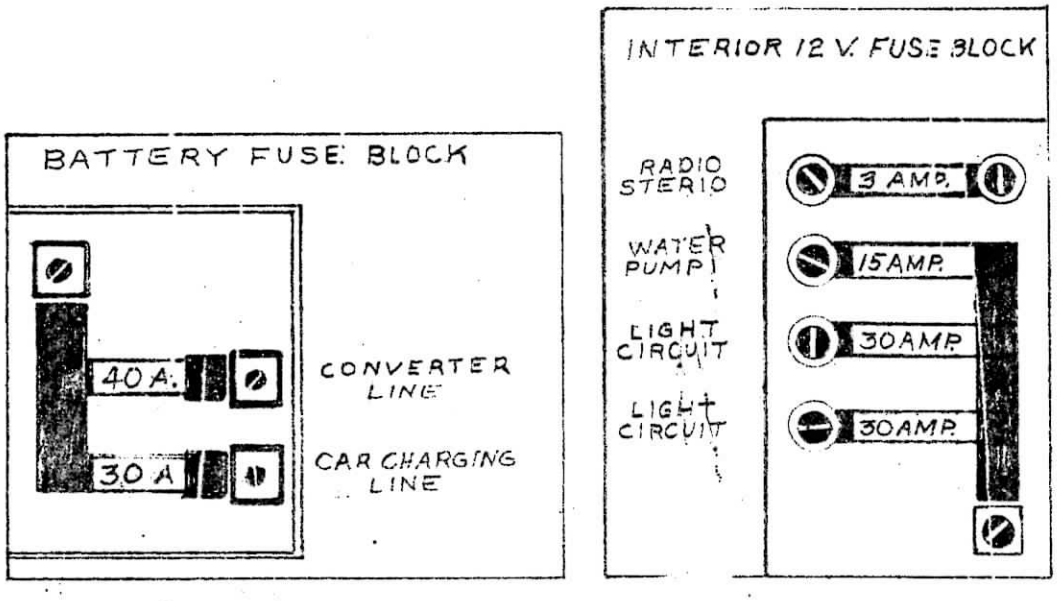
(3) ELECTRICAL SYSTEMS cont'd.

(B) - Interior Lighting - The lights, fans and water pump are operated on 12 volts direct current. This energy may be provided by the standard equipment battery which is located at the front of the trailer, or by the Converter.

The Converter, or Charger, provides 12 volt direct current whenever the power cord is plugged into a standard 120 volt, 60 cycle source. It also provides the energy to charge the battery. As a battery charger, the unit senses the state of the battery charge and will automatically charge and shut off as required. The Converter is protected by a built-in circuit breaker. It may be disconnected from the 120 volt source by removing the cord from the wall outlet located adjacent to the unit. The Converter is located on the floor at the right front corner of the coach.

Two fuse blocks are provided to protect the 12 volt system. One block is located in the battery box. The top fuse on this block protects the battery in the event of accidental short between the battery and the converter. The lower fuse protects the battery against accidental shorting through the automobile charging line.

The second fuse block is located inside the coach, underneath the front shelf. The four fuses on this block protect the interior lights, water pump and optional stereo tape player. For fuse sizes and locations, refer to the illustrations below.



(3) ELECTRICAL SYSTEMS - cont'd.

(B) Interior Lighting - The 12 volt battery should be checked periodically to be sure that it is being kept at the proper charge level. Use a hydrometer to test the individual battery cells. A fully charged battery will have a specific gravity reading of 1.260 to 1.280 at 80 degrees fahrenheit.

When checking the battery, be sure that the level of the electrolyte (water) is adequate to cover the tops of the separators. Permanent damage may occur from charging and-or from travelling with plates not fully covered. When the electrolyte is low, add filtered or distilled water to obtain the proper level. Keep the battery terminals clean by wiping with a cloth wetted in baking soda or ammonia and water. Inspect wire and battery terminals for corrosion or poor connections.

To prevent damage to the battery, never allow it to become fully discharged. The specific gravity should not be allowed to drop below 1.150. Be sure that the 120 volt Power Cord is fully plugged into the outlet whenever AC service is available. The use of 120 volt service will not only save battery energy, but it will also provide automatic charging to keep your battery in top condition.

The battery is warranted for one year. A list of Independent Battery Manufacturers is provided in the Warranty Kit supplied with each coach. Consult this list and contact the nearest manufacturer to obtain the name of a retailer that can provide service and make adjustments.

(C) Interior 120 Volts - The numerous wall outlets in your coach are located to provide convenient electricity for the various 110-120 volt appliances such as an iron, toaster, percolator, etc. These outlets can be used whenever the 25 ft. Power Cord is plugged into a 120 volt alternating current source. The Power Cord is stored under the left rear side of the coach. When connecting it to an outlet, arrange the cord so that the weight of it does not cause a poor connection.

Weatherproof outlets are located on the exterior of your coach for convenience in using tools and appliances outdoors.

The 120 volt system is protected by circuit breakers. These are located in a box at the back of the bathroom closet. When the coach is equipped with factory-installed air conditioning a separate breaker is used to protect this circuit.

(4)

Your Avion coach is equipped to provide water service from a city water system or from the self-contained fresh water tank.

Connection to a city water supply is made through a water hose connected from the city supply to the water fitting on the trailer. This fitting is located in the storage door on the left side of the coach. A pressure reducing valve is installed to protect the water system against excessive city pressures.

A molded plastic water tank is located at the front of the trailer, behind the sofa or dinette. The fill spout appears on the outside of the coach at the front.

The coach is equipped with a Peters & Russel water pump to supply water pressure whenever a faucet is turned on. A wall switch is provided to turn the pump off while the coach is unattended, or when connected to a city water supply. DO NOT TRAVEL WITH THE WATER PUMP SWITCH IN THE "ON" POSITION. The surge of water, which can occur during starting and stopping, may cause the pump to turn on. Since no water can run and allow the pump to properly cycle, it will continue to run and not shut off.

The pump is mounted on the floor at the left front corner of the coach. It acts as a check valve to prevent water from backing up into the storage tank when the system is connected to a city water source.

A filter is located in the water line between the tank and the pump. Inspect this filter periodically to be sure that an accumulation of foreign matter does not impair the water flow. The filter may be cleaned by removing it and backflushing, rinsing in a pail of water, or by disassembling the two halves and removing the screen to clean it. In reassembling the filter be sure that the rubber gasket is properly seated before tightening the screws.

The tank may be filled by removing the filler cap and using a hose or bucket to add fresh water. It may be drained by opening any faucet with the pump turned on or by opening the drain valve which is located at the left end of the tank. This valve is accessable by removing the cushion and pulling out the sofa, or by removing the cushion and lifting the storage lid in the left seat of dinette models.

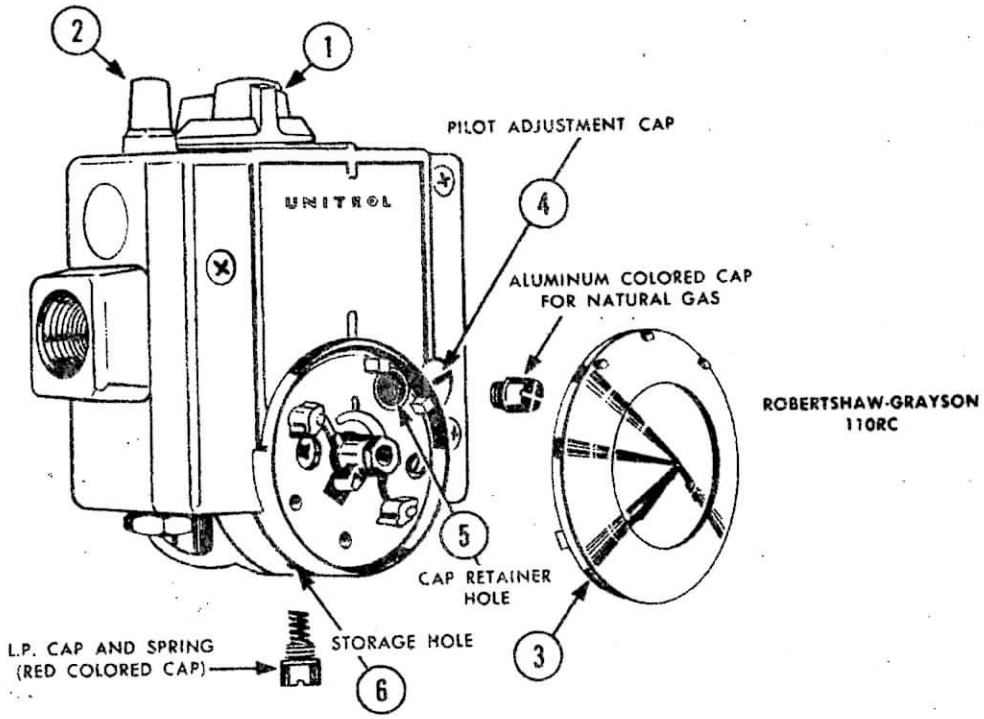
(5) WATER HEATER

Your coach is equipped with a Bowen Gas Water Heater. It is located near the rear of the coach on the left side. The heater has a six gallon capacity. It is lighted and serviced through an access panel on the outside of the coach.

PROCEDURE FOR LIGHTING

1. Be sure that the heater is filled with water and that the gas bottles are filled and the valves open.
2. Turn the Gas Cock Dial "1" to the "Off" position.
3. Wait sufficient length of time to allow gas which may have accumulated in burner compartment to escape. (At least 5 minutes, if re-lighting.)
4. Turn Gas Cock Dial "1" to "Pilot" position.
5. Depress and hold Reset Button "2" while lighting pilot burner. (The pilot burner is located just inside the hole in the heater jacket.) Allow pilot to burn approximately one-half minute before releasing Reset Button. If pilot does not remain lighted, repeat operation allowing longer period before releasing Reset Button.
6. Turn Gas Cock Dial "1" to "On" position and turn Temperature Dial "3" to desired position.

Your Gas Water Heater has been adjusted at the factory, with proper mixture for both the pilot and main burner. Should it become necessary to change these adjustments, follow the instructions provided with the Atwood Bowen warranty or consult your Avion dealer. A list of the many Atwood Bowen Service Stations is included in Section VI of this manual.



(6) WATER CLOSET (TOILET)

Your Avion coach is equipped with a Mansfield Pedal-Operated Water Closet. This unit features a water-saving design, requiring two quarts or less for each flush.

A separate foot valve is provided to permit the addition of more than the regular 2" of water to the bowl before flushing. The small pedal operates the water level valve. Water will run into the bowl as long as this pedal is depressed.

Full depression of the small pedal also depresses the large pedal, opening the ball seal and allowing the closet to flush. Upon release of the pedals, the closet will automatically refill with 2" of water.

The water seal ball should be lubricated periodically to keep the pedal moving easily and to prevent deposits. A silicone lubricant, available from any hardware store, should be used for this purpose.

A parts list for the Mansfield Water Closet is included in Section VI of this manual.

(7) WASTE HOLDING TANK

Your coach is equipped with an Avion molded styrene waste holding tank. This tank is installed with a Thetford Valve and Cap located on the outside of the coach at the left rear. Close the valve, to retain waste from the toilet, by pushing the valve "T" handle all the way in.

To prevent a build-up of solids the tank should always have about 2" of water in it before using. Run water into the tank by depressing the stool flushing valve. To flush, open the valve by pulling the "T" handle all the way out. Flush every few days, depending upon usage. After flushing a full tank, run water through the tub drain and the sink drain to dislodge any backed-up sewage that may have been forced into the drain openings.

Waste water from the tub, lavatory and sink will drain through the sewer hose, even when the holding tank valve is closed. Running water through the sink or lavatory drain while the holding tank cap is in place may cause water to back up into the tub. Always remove the cap before using water in the coach.

When preparing to travel, flush and refill with water. Add a commercial cleaner if desired. Be sure that the tank valve is closed and locked with the two wire clips to prevent accidental opening while driving.

When two trailers are travelling together it is sometimes necessary to share water and/or sewage disposal facilities. A standard garden hose "Y" fitting, available at any hardware store, will permit two trailers to share a single water source. Connect the "Y" directly to the coach water inlet faucet. Trailer supply stores can provide a sewage connection "Y" that will also permit sharing a single sewage disposal system.

(8) SPACE HEATER

Your Avion coach is equipped with a Duo-Therm furnace and ducted heat. The furnace has been designed to permit use as a forced air furnace, and also as a radiant heater. It has been tested and adjusted at the Avion plant after installation.

The furnace controls are located behind the access panel at the bottom of the heater. To open the panel, grasp the knob and slide the panel upward until it clears the slot at the bottom. Pull the bottom out and down to remove it completely.

The furnace blower is controlled by a 3-position toggle switch located on the junction box at the bottom of the heater cabinet. In the "Automatic" position the blower will turn on automatically when the furnace reaches the correct temperature. In the "Manual" position the blower will run continuously, regardless of the furnace temperature. In the "Off" position the blower is turned off completely, permitting the furnace to be used as a radiant heater when it is necessary to conserve battery energy. The correct setting for normal operation is in the "Automatic" position.

The hot air is carried to the bathroom area through a flexible duct located above the floor. Registers are located in the broom closet wall adjacent to the living room area, and in the side of the bath tub at the rear of the trailer. The flow of hot air to the bathroom can be increased by partially or fully closing the register at the broom closet.

To light the furnace, follow these instructions:

1. Turn thermostat to lowest setting.
2. Be sure the valves on the gas tanks are open.
3. Turn gas control dial to "Off", open lighter door and wait 15 minutes.
4. Rotate dial to pilot. Depress dial and push electric ignitor lever to left repeatedly until pilot is lit.
5. Keep dial depressed for 1 minute after pilot starts burning. Allow pilot to burn for 2 minutes and rotate dial to "On" position.
6. Close lighter door after lighting heater.
7. Adjust thermostat dial to desired temperature.
8. If pilot goes out, open lighter door and wait 15 minutes before repeating lighting procedure. If pilot needs adjusting, remove pilot adjusting cap and adjust screw so flame completely envelopes the end of the thermocouple--(approximately 3/8").
9. For complete shut down, rotate dial towards the "Off" position, depress slightly and rotate to the "Off" position.

(8) SPACE HEATER cont'd.

Clean control compartment and blower wheel periodically to remove dust and lint. The blower can be removed by taking out the four large screws that hold it in place. The blower motor should be lubricated every 2 to 3 months. Insert a small amount of light lubricating oil in the two holes located at the ends of the motor.

(9) GAS-ELECTRIC REFRIGERATOR

You will find lighting instructions for the refrigerator on the inside of the panel below the refrigerator door. These instructions are duplicated in the Instruction Booklet that is supplied with each unit.

It is important that the refrigerator be level in all directions for proper operation. Place a small level on the freezer shelf and observe with the aid of a small mirror. For levelling instructions refer to Section II of this manual.

During hot weather DO NOT turn the thermostat to the highest position. If the unit is turned on "high" in hot weather it will freeze and then begin to defrost. It will not start to freeze again until the unit is turned off and allowed to cool. In hot weather the thermostat should not be set more than one or two numbers higher than usual.

Periodic maintenance procedures are described in the Instruction Booklet that is supplied with each refrigerator.

)10) RANGE AND OVEN

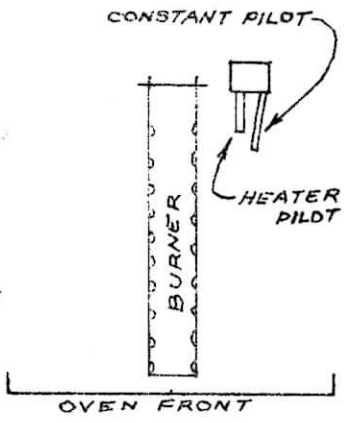
The Magic Chef range installed in your coach is equipped and adjusted for use with LP gas. To light the range burner hold a lighted match to the edge of the burner orfice ring and turn the burner control knob to the "On" position. The primary cone of the flame should be approximately ½" long. Refer to the Adjustment and Cleaning Instruction Sheet in Section VI for information on adjustment.

The range top pilot valve has been turned off at the factory to prevent accidental gas build-up in the coach. Under normal conditions it is best to use a match to light the burners. When stopping for any length of time the top pilot may be turned on for added convenience. BE SURE IT IS TURNED OFF BEFORE LEAVING THE CAMP SITE.

The following Procedure should be followed when lighting the oven:

(a) Open the Shut Off Valve on the Safety Control gas supply line. This valve is slotted so that it may be turned with a screwdriver or coin. It is located under the range top, to the right of the oven control. Turn the valve until the slot is in line with the gas line to turn the gas on. The slot should be at right angle to the gas line when in the "Off" position. See illustration below.

(b) Light the Constant Pilot. This is the small tube located at the back of the oven, just to the right of the main oven burner. Use a match or straw to introduce a flame to the end of the pilot tube. See illustration at right.



(c) Turn the oven Control Knob to 300° F. temperature setting on the dial. This will allow gas to flow to the Heater Pilot Tube, to be ignited by the Constant Pilot.

The Range Oven is equipped with a safety ignition system that requires a minimum of 30 seconds to operate after turning the oven knob on.

After the oven burner has lighted, set the control knob to the desired temperature. The Constant Pilot flame may be allowed to burn during the period that the coach is parked. BE SURE TO CLOSE THE SHUT OFF VALVE AND ALLOW THE PILOT FLAME TO BURN OUT BEFORE LEAVING THE CAMP SITE.

(11) RANGE HOOD

The Range Hood is equipped with a filter, fan and sidewall duct to filter and discharge fumes and cooking odors from the coach. The filter may be removed for cleaning by sliding it out.

A small damper locking lever is located under the deflector on the outside of the coach. Pull down on the lever to lock the damper closed while travelling. Be sure to unlock the damper before using the fan.

(12) RUNNING GEAR

Avion Coaches are equipped with Fayette axles, Dayton brakes and More/ryde suspension. The rubber suspension units require no lubrication. They may be washed with soap and water to remove road dirt.

The tandem running gear is equipped with chain hooks which make it possible to change a flat tire without the aid of a jack or to "chain" the axle so that you can drive with tire left on or removed, to a tire repair station. For instructions on how to use this exclusive feature see "Flat tire" in section V of this manual.

All suspension mounting bolts should be checked periodically to be sure they are tight. The wheel bearings should be packed with grease and adjusted every 5,000 miles. Lug bolts should be torqued to 80 or 90 foot pounds. Check these at the end of the first 100 miles and before starting each trip.

The brakes on your coach are Dayton 12 volt D.C. electric brakes. The 25 and 28 foot coaches are equipped with 10" brakes. The 22 ft. single axle and the 31 ft. tandem axle models are equipped with 12" brakes. Adjustment of the coach brakes should be done by your dealer's service department, or by a competent automotive mechanic. The method of adjustment is the same as most automotive brakes.

The Firestone Tires on your coach are rated to carry the weight of your Avion plus ample allowance for clothes, dishes and personal items. For long life and maximum load-carrying capacity your tires should be inflated as follows: 7.00 X 15, 6 ply - 45 pounds; 7.00 X 15, 8 ply - 60 pounds.

If you should require an adjustment on a faulty or defective tire, take the tire to a Firestone store and they will make an adjustment according to the terms and conditions of the guarantee. Refer to the information sheet in Section VI of this manual. DO NOT THROW A DEFECTIVE TIRE AWAY. You must have it to get an adjustment.

When storing trailers for any extended period of time, block up the axles and take the weight from the wheels to prevent flat spots from forming on the tires. These flat spots can cause a rough ride for a considerable distance, even in the summer.

(13) AIR CONDITIONER - optional

If your coach is equipped with a Duo-Therm Air Conditioner a Warranty Sheet will be found in the Instruction Package included with your coach. A warranty registration card is also enclosed in this package. Be sure to fill out this card and mail it within 30 days of the purchase date.

To operate the air conditioner, set the temperature dial to the desired temperature and place the toggle switch in the "On" position.

To circulate air without cooling, set the temperature dial to the warmest setting.

The filter should be cleaned or replaced periodically. It is removed by taking out the two small screws holding the filter panel to the air box inside the coach. To clean the filter, wash in warm suds water. Be sure to let it dry before replacing.

(14) OGDEN WATER PURIFIER - optional

The Ogden water purifier is designed to remove harmful bacteria, odors and impurities from your drinking water. It uses replaceable cartridges which have a capacity of from 200 to 500 gallons. The cartridge should be changed when the water begins to run slow.

Use the following procedure to install a new cartridge.

1. Turn off water supply and open nearby water faucet to relieve the water pressure.
2. Remove wingnut and cover from the purifier.
3. Remove used cartridge and clean inside of unit with stiff brush and rinse thoroughly.
4. Clean upper and lower seals in cover and bottom of purifier body. Replace seals if broken or deformed.
5. Install new cartridge in purifier and replace cover and wingnut.
6. Turn on water and allow it to enter unit and wet the new cartridge.
7. After cartridge is wet, tighten wingnut firmly by hand. DO NOT USE A WRENCH.
8. Allow water to flow from purifier for about 5 minutes for purpose of activation.

Replacement cartridges, Type SM-1, may be obtained from many trailer supply stores, from many Avion Dealers, or from:

Avion Service Corp.,
1576 E. Empire Ave.,
Benton Harbor, Mich. 49022

Avion Coach Corp.,
39661 Esplanade Ave., Box 457
San Jacinto, Calif. 92383

Ogden Filter Co., Inc.,
Los Angeles, Calif.

(15) BREAK-AWAY SWITCH

The Break-away Switch is provided as a safety feature. It is equipped with a steel cable which must be anchored to the towing vehicle at the time of hook-up. If the coach should be accidentally disconnected from the towing vehicle, the cable will pull the switch pin causing the coach brakes to be applied automatically.

The removal of the pin from the switch closes the brake circuit, applying electrical energy from the coach battery to the brake magnets. Replacing the switch pin opens the circuit, releases the brakes, and allows the coach to roll free again.

SECTION V

TROUBLE SHOOTING

AIR CONDITIONER

Trouble: Will not run.

Cause and Remedy:

a. Power Cord not making good connection at parking area service receptacle. Make sure that plug is fully inserted and the weight of the cord does not pull it from the receptacle.

b. Circuit breaker is in "Off" position. Reset.

Trouble: Does not cool properly.

Cause and Remedy:

a. Dirty filter. Clean and replace.

b. Low voltage from source and compressor will not run. Move to spot where voltage is proper.

BATTERY:

Trouble: Battery does not charge while coach is being towed.

Cause and Remedy:

a. Blown fuse in battery box. Replace with correct size.

b. Poor connection at hitch. Clean 7-wire connector contacts and reconnect.

c. Charge wire not "Hot". Rewire car so charge wire is "Hot".

Trouble: Battery does not charge when 25 ft. Power Cord is connected to 120 volt source.

Cause and Remedy:

a. Power cord is not making good contact at receptacle. Check connection.

b. Blown fuse in battery box. Replace with correct size.

C. Low line voltage at 120 volt source. Use outlet nearer to power source.

d. Circuit Breaker is in "Off" position. Check and reset.

BRAKES

Trouble: No brakes.
Cause and Remedy:

a. Broken wire in brake circuit. Use continuity tester or voltmeter to trace brake wires and splice.
b. Poor connection between car and coach. Clean terminals and check for broken wire at the 7-wire connector.

Trouble: Unequal brakes.
Cause and Remedy:

a. Broken wire at the brake drum. Locate and splice.
b. Improper shoe adjustment. See a service shop.

Trouble: Poor brakes, brakes inadequate.
Cause and Remedy:

a. Inadequate voltage to brake magnets. Check brake control for good connection to battery.
b. Brake shoes need adjusting. See service shop.

Trouble: Brakes lock and will not release.
Cause and Remedy:

a. Short in break-away switch. Replace.
b. Breakaway switch pin has been pulled. Replace Pin.
C. Incorrect brake adjustment. Too much shoe clearance. Have brakes re-adjusted.

REFRIGERATOR - DOMETIC

Trouble: Refrigerator does not freeze satisfactorily.

Cause and Remedy:

a. Jet orifice clogged. Remove burner barrel, unscrew jet and blow clear or wash in alcohol. Do not use a pin or wire to clean orifice.

b. Check the leveling of the refrigerator.

c. Flame has gone out. 1) Gas in the bottle is used up - refill. 2) Feeler point of the flame failure device is not heated enough by flame - refer to figure "5" in the Dometic Instruction Booklet. 3) Clogged by-pass screw-clean or exchange it.

d. Air circulation around cooling unit is restricted. Be sure that refrigerator is properly ventilated.

e. The evaporator is heavily coated with frost. Defrost by setting thermostat to zero.

f. Flue Baffle not inserted into the central tube of the cooling unit.

g. The thermostat is incorrectly used. See paragraph on thermostat in the Instruction Booklet.

h. Gauze in burner head clogged. Clean.

i. Burner damaged. Replace.

j. Burner may be dislocated. Relocate.

k. Wrong gas pressure at burner. Have pressure checked at burner and at the gas bottle. Pressure at the burner must not fall below 11" W.C. when thermostat is set on "Max."

l. Improper operation of the thermostat. Thermostat will have to be changed.

Trouble: Odor from fumes.

Cause and remedy:

a. The flame touches side of the boiler due to dislocation of the burner. Relocate. Burner dislocation may also cause smoke and discoloring of walls and ceiling.

b. Burner damaged. Replace.

c. The flame touches flue baffle. 1) Burner damaged. Replace. 2) Flue baffle too low. Correct the position of baffle.

d. Flue tube is dirty. Clean flue as follows: Remove burner barrel and cover the jet. Remove flue top and baffle. Clean flue with special flue brush. Clean baffle and burner head before putting them back in place.

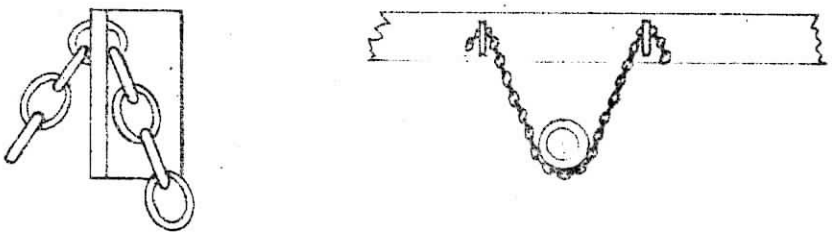
TIRES

Trouble: Overheating or wearing unevenly.
Cause and Remedy:
Improperly inflated. Inflate 7.00 X 15, 6 ply to 45 lbs. and 7.00 X 15, 8 ply to 60 lbs.

Trouble: Flat tire.
Cause and Remedy:
On a single axle trailer the only solution is to remove the tire from the coach and have it repaired. This would require the use of a jack.

On a tandem axle trailer with the exclusive chain hooks, supplied as standard on all 1968 Avions, it is possible to "chain up" the axle with the flat and drive to a tire repair station on three wheels. The flat tire may be left on or removed from the trailer while "limping in" when the axle is chained up. By utilizing the chain hooks it is also possible to remove a flat tire and replace it with a spare when no jack is available.

If you have a jack you can "chain up" the axle by placing the jack under the axle at the end which has the flat and raising it as high as it will go. Take the chain, which is supplied and which is exactly like the safety chains on the front of the coach, and insert one end into the slotted angle iron welded to the frame of the trailer. Place the chain under the slot of the other angle iron as tightly as possible. Be sure to hook the chain as illustrated below.



Remove the jack and the tire should clear the road slightly. If it is convenient you can remove the tire, if not you may leave it on the axle. In any case you should drive slowly while the axle is "chained up" and refrain from driving any further than necessary.

TIRES - Continued

To change a tire when no jack is available, the following steps will permit lifting the flat tire off the ground:

1. Drive the flat tire up on a wedge or stack of boards that is approximately 5" high.
2. Chain up the axle as described on the preceding page. Adjust the chain as tight as possible.
3. Pull the wheel with the flat tire off the blocks and pull the good wheel up on the same blocks. This should raise the flat tire off the ground to permit changing.

WARNING! Do not get under the trailer in such a manner that personal injury might occur if the wheel should slip from the blocks. THIS PROCEDURE IS SUGGESTED AS AN EMERGENCY MEASURE ONLY.

Caution: Do not discard a defective tire, it will be necessary to present it if an adjustment is sought.

WATER CLOSET (TOILET)

Trouble: Pedal works hard.
Cause and Remedy:
Water seal requires adjustment and/or lubrication. See Mansfield Instruction Sheet in Section VI for illustrated instructions.

Trouble: Bowl loses water.
Cause and Remedy:
Water seal needs adjustment. See Mansfield Instruction Sheet in Section VI for illustrated instructions.

WATER PUMP

For trouble shooting information on the pump, refer to the Peters and Russell Installation, Operating and Maintenance Instruction sheet in Section VI of this manual.

WATER PURIFIER

Trouble: No water flow, or very slow flow rate.
Cause and Remedy:

a. Restriction in water line. Make sure all valves are open and there are no kinks in copper tube lines.
b. Low water pressure. Use low pressure cartridge if water is pre-chlorinated.
c. Plugged cartridge. Install new one.

Trouble: Very short cartridge life.
Cause and Remedy:

a. Large amount of suspended matter in raw water. Install new cartridge.

Trouble: Off-taste, color, or odor in purified water. 1) Install new cartridge. 2) Reduce flow rate through purifier.

Trouble: Suspended matter in purified water.
Cause and Remedy:

Purifier is leaking internally. Install new rubber kit.

WATER HEATER

Trouble: Pilot light will not stay lit.
Cause and Remedy:

a. Pilot burner needs adjustment. See Atwood Bowen Operating and Installation Manual for adjustment instructions.

SECTION VI

WARRANTY INFORMATION

Service, repairs and parts for your Avion Coach may be obtained through any of the many Avion dealers across the country, or from Avion Coach Corporation at either of the addresses listed below:

Avion Service Corporation
1576 E. Empire Avenue
Benton Harbor, Mich. 49022
Telephone - 616 927 2271

Avion Coach Corporation
39661 Esplanade Ave. Box 457
San Jacinto, Calif. 92383
Telephone - 654 3711
or 654 3712

The Avion Service Corporation and the service department of the California plant are able to perform virtually any of the service work in accordance with our suppliers warranty.

These service centers operate on an appointment basis only. For a service or repair appointment call or write either of the above addresses.

* - * - * - * - *

Warranty service and parts for many components that are manufactured by Avion suppliers may be obtained direct. In this section you will find warranty information provided by the suppliers, parts lists and lists of addresses of service centers and factories where suppliers have arranged to provide service for Avion Coach owners.

SECTION VII

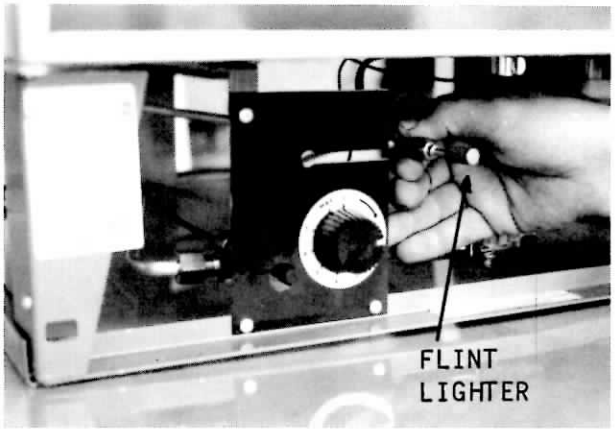
INDEX

Instamatic CORPORATION
530 McDONALD STREET
ELKHART, INDIANA 46514
AC(219) 522-1607

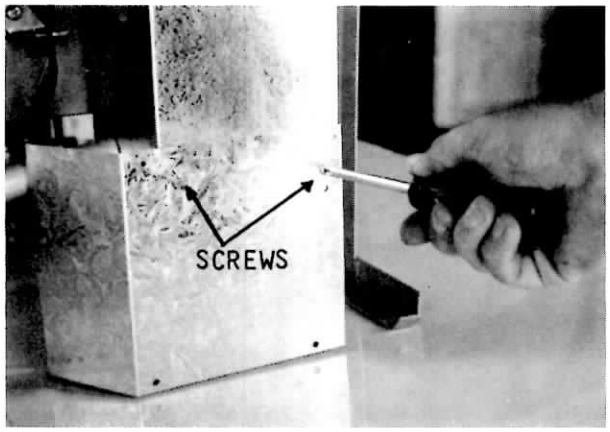
DOMETIC REFRIGERATOR
SERVICE BULLETIN
****

BURNER MAINTENANCE
(IMPORTANT for proper performance!)

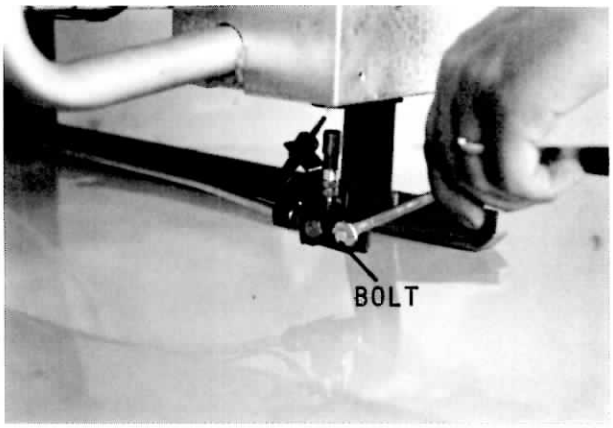
SERVICE BULLETIN
number 566
Date 8-9-66



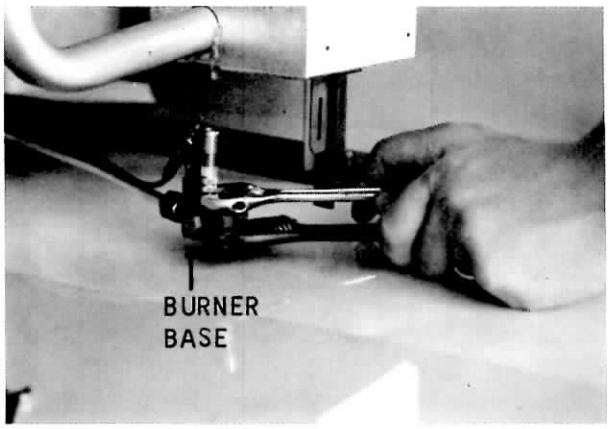
(1) Remove flint lighter assembly from the refrigerator by unscrewing the knurled nut, behind the black thermostat bracket.



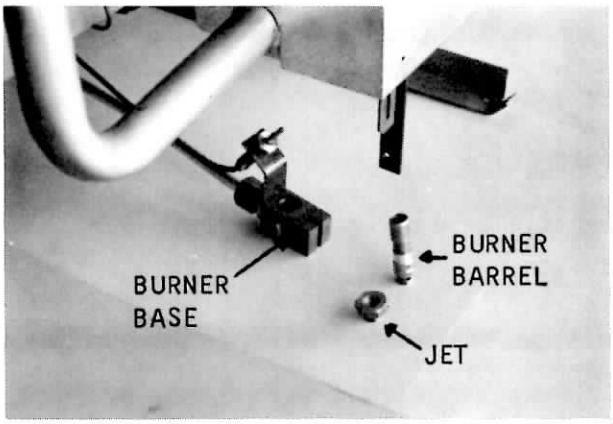
(2) From the rear of the refrigerator, through the access door of trailer, remove the two screws holding the flame guard.



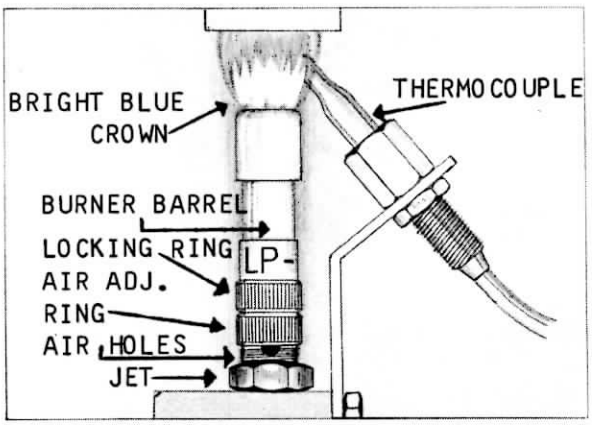
(3) Remove the chrome-plated bolt from the left side of the burner base and let the base drop down from the holder.



(4) Pull the base assembly to the left and with two crescent wrenches remove the jet and burner barrel from the burner base.



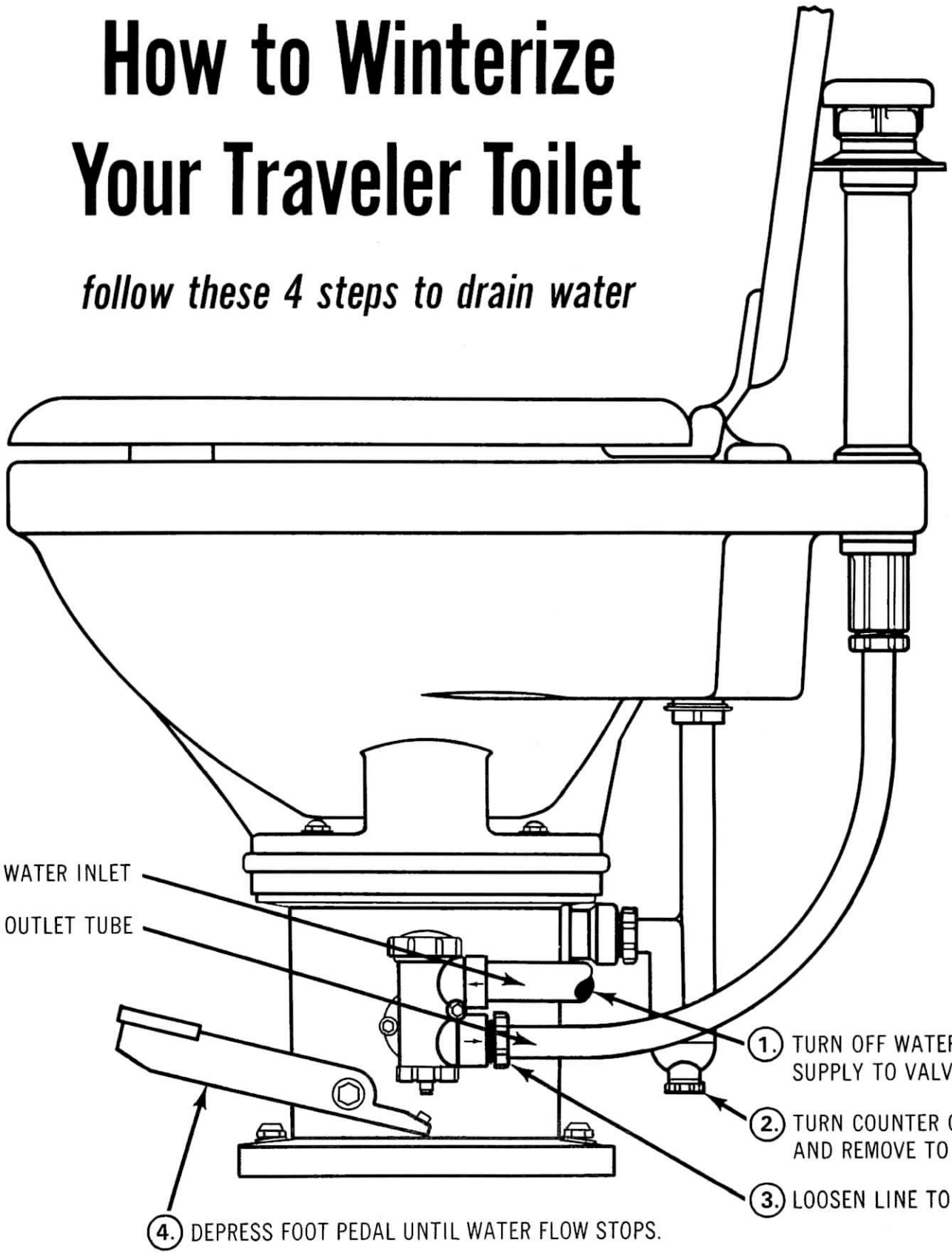
(5) Seperate the jet and burner barrel and clean both with alcohol and air pressure ONLY. Do not use wires or other objects to clean the jet. If the jet is obstructed, replace it.



(6) The air-intake of the burner should be adjusted by means of the air adjustment rings so that a slight roaring sound is heard and so that the flame has a bright blue crown at it's base. (See above)

How to Winterize Your Traveler Toilet

follow these 4 steps to drain water



Mansfield

MANSFIELD SANITARY, INC.
PERRYSVILLE, OHIO

6090-L

Litho in U.S.A.

Traveler® 904 AND 905

Lifetime Mirror China Compact Water Closets

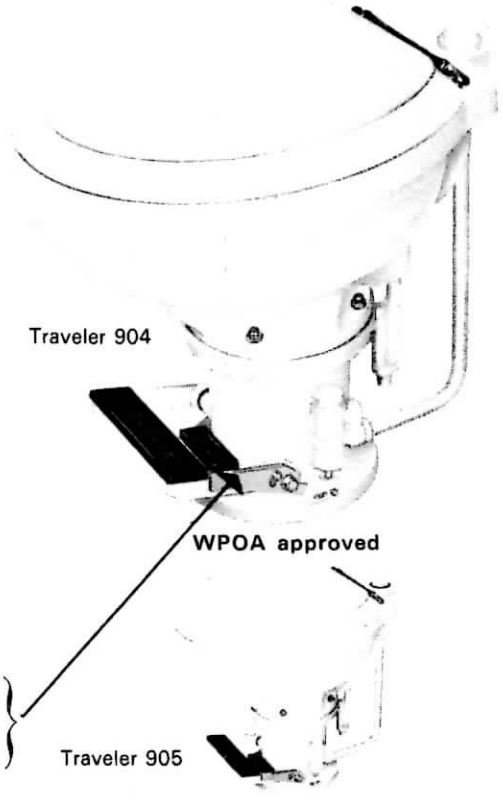
Foot-Controlled Water Level Valve • Water-Saving Pedal Operated • Efficient Swirl Flushing • Easy to Install

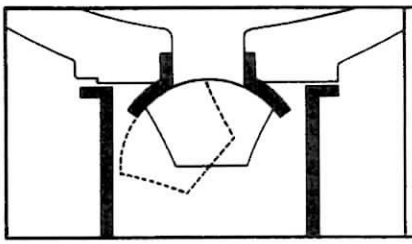
Modern, compact Travelers are perfect for mobile homes, cottages, camps, attics, basements . . . every type of space saving installation. Attractive, as well as practical, they offer many of the advantages of the finest home fixtures.

Compare these important Traveler® features:

- High-fired lifetime mirror china is scratchproof, fadeproof, stainproof . . . easy to clean and keep clean.
- Save water. Flush on 2 quarts or less.
- Compact. Only 14¾″ high and 14¼″ wide.
- Efficient swirl flushing action assures cleaner, more sanitary bowl.
- Odor-free
- Epoxy-coated base.
- Operate efficiently on high or low water pressure.
- Shipped assembled, ready for installation with floor flange and rubber seal.
- Perfect for new installation or replacement of standard water closets.

Extra sanitary feature is foot-controlled water level valve. This permits addition of more than regular 2″ of water to bowl before flushing . . . works independently of large pedal.



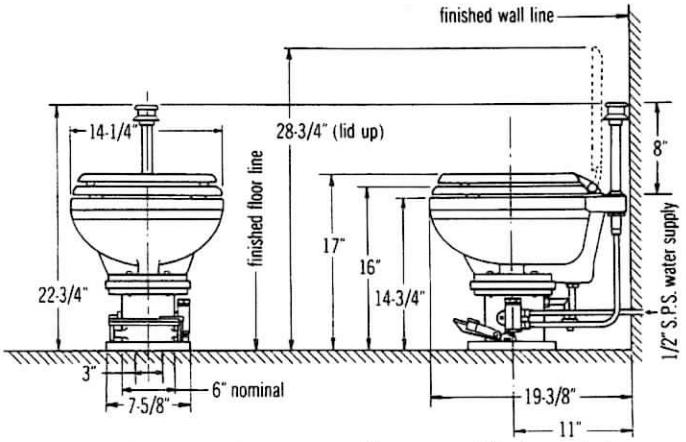


◀ *Mansfield® leakproof ball seal*

Each Traveler is equipped with an exclusive, self coved cleaning "ball". This rolls across the coved rubber seat and forms a positive water seal. There are no metal-to-metal contacts to cause excessive wear or encourage corrosion.

Use these specifications to order Travelers®

Order No.	*Description*	*Approx. Weight*
904	Traveler pedal-operated mirror china bowl with flushing mechanism, independent foot-operated water control valve, epoxy-coated aluminum base, ball water seal, 3″ male floor flange, rubber floor seal, vacuum breaker and bolt package. Seat not included unless specified.	31 lbs.
905	Same, less vacuum breaker.	30 lbs.



NOTE: above are roughing measurements. They may vary 1/4" (plus or minus).

Mansfield PLUMBING FIXTURES

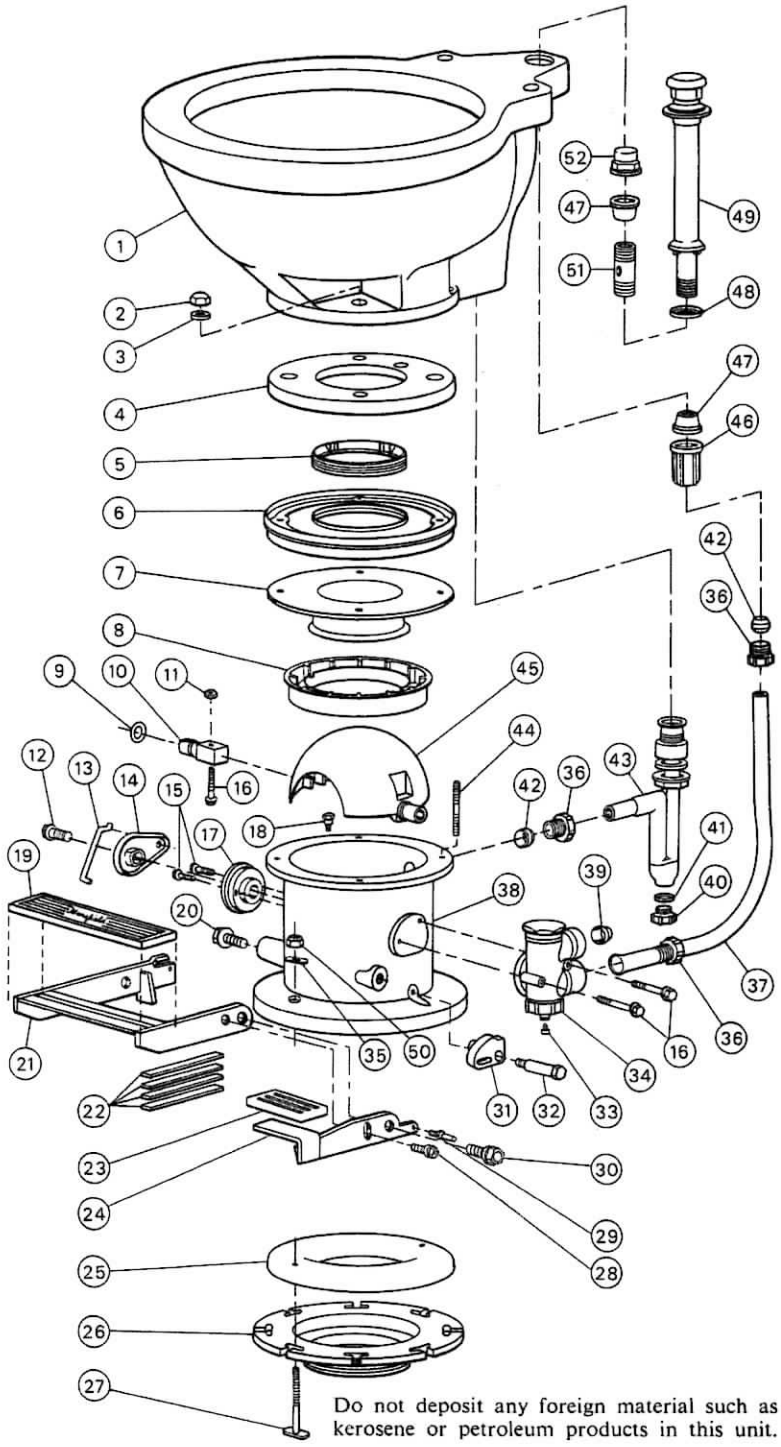
MANSFIELD SANITARY, INC.

PERRYSVILLE, OHIO 44864

Traveler® 904 and 905 Components and Parts List

Item	Part No.	Description	No. Req'd.
1	3545	Bowl	1
2	3593	Acorn Nut	4
3	1994	Washer	4
4	2947	Sponge Seal	1
5	2528	Adjusting Ring	1
6	2637	Plastic Plate	1
7	2554	Rubber Ball Seal	1
8	2542	Spider	1
9	2766	"O" Ring	1
10	2750	Activating Shaft	1
11	2003	Hex. Nut	1
12	2917	Round Hd. Screw	1
13	2930	Link	1
14	2757	Pivoting Arm	1
15	2936	8-32 Pan Hd. Screw	2
16	2935	Hex. Hd. Screw	3
17	2310	Bearing—Open End	1
18	3282	Pin-Spring Support	1
19	2186	Plastic Pedal Cover	1
20	2928	Bolt	1
21	3519	Foot Treadle Assembly	1
22	3245	Spring	4
23	3521	Plastic Cover—Extra Pedal	1
24	3536	Extra Pedal Assembly	1
25	2025	Sponge Gasket	1
26	1927	Male Floor Flange	1
27	941	Bolt Floor Flange	2
28	3523	Cap Screw	1
29	3492	Cam Lever Pin	1
30	3516	Hex. Hd. Screw	1
31	3533	Cam	1
32	3742	Shoulder Bolt	1
33	2774	Plastic Bump Pin	1
34	3758	Manual Valve Assembly	1
35	940	Washer Oval	2
36	2760	Seal Adjustment Nut	3
37	2761	Plastic Tubing	1
38	1706	Aluminum Base	1
39	2853	Tapered Seal-Water Inlet	1
40	2763	Drain Plug	1
41	2764	Drain Plug Gasket	1
42	2759	Plastic Seal Washer	2
43	3700	Trap Assembly	1
44	2786	Stud	4
45	2537	Ball Seal	1
46	2758	Nut	1
47	2768	Rubber Seal	1
48	2656	Top Bowl Rubber Seal (904 only)	1
49	2703	Vacuum Breaker Assembly (904 only)	1
50	3577	Hex. Hd. Castle Nut	2
51	3339	Pipe (905 only)	1
52	2987	Plastic Nut (905 only)	1

When ordering, please refer to part number and name.



Do not deposit any foreign material such as kerosene or petroleum products in this unit.

Water Seal Adjustment

Each Traveler water closet has a visible adjustable ring (part 5) which screws into the plastic plate (part 6). When this ring is turned clockwise, the water seal is tightened. A counter-clockwise turn loosens the seal.

The ring is notched and can be turned easily with a long-handled screw driver or similar tool. Overtightening of the ring will result in a hard-to-operate pedal.

The ball should be lubricated periodically to prevent build-up of water deposits and to keep the pedal moving easily. Any hardware store can supply a good silicone lubricant for this purpose.

Mansfield PLUMBING FIXTURES

MANSFIELD SANITARY, INC.

PERRYSVILLE, OHIO 44864

PETERS AND RUSSELL, INC. SPRINGFIELD, OHIO

WATER PRESSURE SYSTEMS

PUMP SPECIFICATIONS

INSTRUCTIONS FOR	MODEL	NUMBER OF OUTLETS	SUCTION LIFT FT., MAX.	DISCH'GE HEAD FT., MAX.	*MAX. OPERATING AMPS. INTERMITTENT		FUSE SIZE SLOW BLOWING		SIZE OF UNIT
					12 V	32 V	12 V	32 V	
	6969-J	1	5	6	5.2	2.2	4	2	4 11/16 w. x 7 5/16 lg. x 7 1/4 hi.
	6970-J	2	5	6	6.2	2.6	6 1/4	3	6 5/16 w. x 7 13/16 lg. x 7 1/4 hi.
	6950-J 6955-J	4	5	7	6.2	2.6	6 1/4	3	6 5/16 w. x 5 5/16 lg. x 8 1/16 hi.
	6800-J 6850-J	5	5	12	9.9	3.8	6 1/4	3	8 5/16 w. x 5 5/16 lg. x 8 1/16 hi.
	6900-J	6	5	10	9.9	3.8	10	5	8 5/16 w. x 5 5/16 lg. x 8 1/16 hi.

*If installed pump draws in excess of these ratings, motor burn-out will result.

INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

PLEASE LEAVE THESE INSTRUCTIONS FOR THE OWNER

READ CAREFULLY

IMPORTANT: To insure your warranty and receive automatic trouble-free water with a minimum amount of maintenance, these instructions must be followed carefully.

1. MOUNTING:

1.1 Unit is self-priming, securely mount in a dry ventilated location in an upright position above or below (above preferred) the fresh water tank in accordance with specification chart on page 1.

1.2 IMPORTANT – Keep outlets of Model 6969-J at least 6" above fresh water tank to avoid siphoning action.

2. WIRING:

2.1 Wire in independent circuit in accordance with NFPA Standard No. 302, table 6, or select size from the following charts which give AWG wire size determined by load and total length of wire.

USE 5 amp chart for all 32-volt models.

USE 10 amp chart for all 12-volt models.

LENGTH OF CONDUCTOR IN FEET FROM SOURCE OF CURRENT AND RETURN

AWG WIRE SIZE – COPPER

Total Current in Amps	— feet — 10	20	30	40	50	60
12 volts @ 10 amp	12	12	10	8	8	6
32 volts @ 5 amp	16	16	16	16	14	14

AWG WIRE SIZE – ALUMINUM

Total Current in Amps	— feet — 10	20	30	40	50	60
12 volts @ 10 amp	10	10	8	6	6	6
32 volts @ 5 amp	14	14	14	14	12	12

2.2 FUSING:

a. Protect by a separate overcurrent fuse located in live lead from power source.

b. Rate fuse as per specification chart or not over 115% of full motor load.

2.3 Use 10 amp manual switch in circuit to turn off unattended pump.

2.4 a. Connect power leads as shown in fig. 1 and fig. 2. Connections must be electrically, mechanically and galvanically sound to withstand normal service.

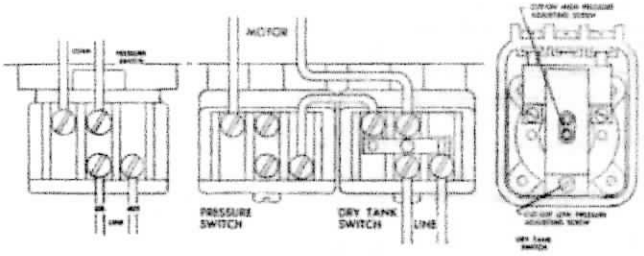


Fig. 1 Fig. 2 Fig. 3

b. When aluminum wire is used, make connection to switch by using 3 to 4 inch pigtails of 12 ga. copper wire attached to the solid aluminum wire with 3M Scotch Grab R10-16 twist type connections or equivalent. CAUTION: Use a Burndy or equivalent connector paste to avoid galvanic action between dissimilar metals.

2.5 D.C.V. converter charger pack must be wired so pump is operating directly from battery at all times.

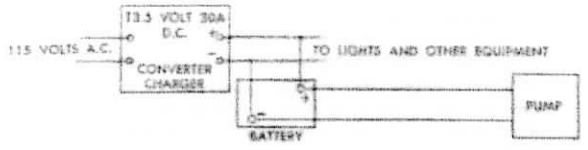
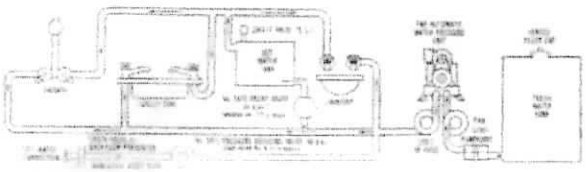


Fig. 4

2.6 It is recommended after installation, voltage be checked at the motor under full load with all other appliances used in the circuit operating. Be sure it is not less than 11 volts on a 12 volt system or 30 volts on a 32 volt system with a fully charged battery.

2.7 Check amperage draw of the installed pump. This reading should be taken at the motor with the pump operating under its worst working condition. Amperage must not be in excess of limits stated on specification chart, "Maximum operating amps intermittent," page 1.

WARNING: Our warranty does not cover motor and/or pressure switch burnout caused by low voltage or error in installation. It is very important that wiring and plumbing be as per instructions and enough current is received at the pump for proper operation.



TYPICAL PAR WATER PRESSURE SYSTEM INSTALLATION

3. PLUMBING:

Pump is designed to deliver trouble-free water with a minimum amount of maintenance if installed properly. Follow plumbing instructions carefully.

3.1 To keep pressure drop to a minimum, calculate pipe and tubing sizes in accordance with the number of outlets as per the following chart.

	Tubing		Pipe
	Inner	Outer	Iron Pipe
Number of Fixtures	Diameter (Inches)	Diameter (Inches)	Size (Inches)
1	¼*	⅜*	½
2	⅜	½	½
3	⅜	⅝	½
4	½	⅝	½
5 or more	⅝	⅞	¾

*6-feet maximum length.

3.2 Valves, tees, elbows, etc. used must be same size as pipe or tubing. Use gate valves only.

3.3 Water purifiers must be installed in separate outlet for drinking water only due to the high restriction.

3.4 Use household type faucets. Remove aerator screens. Remove sealing washer from faucets when used with Model 6969-J.

3.5 Fresh water tank must be vented. Locate or baffle to prevent water from getting away from outlet causing airlock in pump.

3.6 a. RELIEF VALVE — Systems equipped with a storage water heater or closed hot water tank must incorporate a pressure relief valve sized to a BTUH rating equivalent to the BTUH rating of the water heater, or larger. This valve must be a combination pressure-temperature type with a full size drain and located within three inches of the hottest part of the tank. Valve should be adjusted to relieve at a maximum pressure of 75 PSI and a maximum temperature of 210°F.

b. Systems using engine heat exchanger must be equipped with a 75 PSI maximum relief valve located at the cold inlet of exchanger.

c. It is also recommended a simple pressure only relief valve be placed in the cold water line of the system and set at 60 PSI to relieve thermal expansion.

3.7 PRESSURE REDUCING VALVE — Systems having a connection for an outside source of water must be equipped with a pressure reducing valve, regulated at approximately 40 PSI to avoid damage to pump and plumbing from excessive city pressure.

CAUTION: MAX. WORKING PRESSURE 125 PSI.

3.8 Pump must be connected to plumbing using both lengths of hose supplied. Use a minimum of 8' of metal pipe or tubing between discharge hose and water heater to avoid backflow of hot water into hose which is intended for cold water use only.

3.9 STRAINER: Use a PAR #5280 Pumpgard in inlet line to pump to avoid tank accumulation from entering pump and system.

4. OPERATION:

4.1 To start pumps equipped with pressure switch only:

a. Check level of fresh water tank.

b. Be sure all valves and strainers are open.

c. Open all outlets and turn on power to pump.

d. Keep outlets open until all air is cleared from lines, close outlets, pump is ready for operation.

4.2 To start pumps equipped with dry tank switch follow the above procedure and depress and hold red starting button for approximately one minute. If switch does not hold in, refer to adjustment instructions for dry tank switch.

NOTICE: It is necessary to restart pumps equipped with dry tank switches if pressure drops below 2 PSI.

CAUTION: DO NOT ADJUST PRESSURE SWITCH FOR HIGHER PRESSURE.

5. DRY TANK SWITCH:

The dry tank switch on #6850-J and 6955-J pumps only has been regulated at the factory to hold in at 5 PSI and turn unit off at 2 PSI. Due to differences in installation the settings may require changing if the following symptom occurs.

SYMPTOM: SWITCH OPENS, STOPPING PUMP WHEN FAUCET IS OPEN OR WHEN PUMP HAS BEEN MANUALLY TURNED OFF FOR SOME TIME.

CURE:

a. Check system for leaks which will allow a drop in pressure.

b. Check pump valves for foreign material which would hold them open and not allow enough pressure to develop to hold the switch in.

c. Check voltage. Low voltage will not allow the unit to develop enough pressure to hold switch in.

d. If it is found that the trouble is other than the above, then the low water cut-off switch must be adjusted as follows: Remove cover and turn high pressure screw (socket head) out or counterclockwise until pump will run with all faucets open. After making this adjustment if pump does not turn off when tank is out of water, turn low pressure screw (large slotted) clockwise. See fig. 3.

6. MAINTENANCE AND TROUBLE-SHOOTING:

6.1 SYMPTOM: PUMP DOES NOT PRIME OR BUILD UP PRESSURE.

CURE:

a. Check level of fresh water tank.

b. Check pump and system for leaks.

c. Be sure all valves and strainers are open.

d. Check power supply to see that voltage is up.

e. Under certain conditions on systems having outlets in excess of 7', it is necessary after refilling fresh water tank to bleed all air from system by opening both highest and lowest outlets with pump running. This may also be accomplished by the addition of a drain valve located as per fig. 5 to bleed off excessive head.

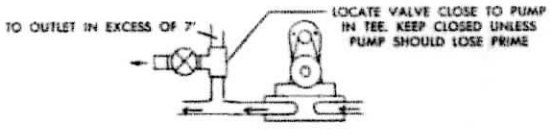


Fig. 5

f. Dismantle unit and check valve assemblies for foreign material between the valve and valve seat causing

loss of suction. This is done without disturbing plumbing or wiring as follows:

1. Close line between fresh water tank and pump.
2. Turn pump off and bleed pressure through faucet.
3. Remove tie-down screws.
4. Lift motor, drive and diaphragm assembly off base.
5. Lift valve assemblies from pockets and clean all foreign material from valve and valve seat.
6. Replace valve assemblies back in same pockets, being sure rubber valve with small hole is UP on intake and rubber valve without small hole is DOWN on discharge. CAUTION: Do not use valve with small hole in rubber on discharge side of pump. Diameter of hole must not be increased.

6.2 **SYMPTOM:** PRESSURE DROPS AND PUMP COMES ON PERIODICALLY WHEN WATER IS NOT BEING DRAWN.

CURE:

a. Check pump, pressure reliefs, all connections and faucets for leaks.

b. Remove four tie-down screws and check valves for foreign material as per paragraph 6.1 f.

6.3 **SYMPTOM:** PUMP IS ROUGH AND HAS EXCESSIVE NOISE.

CURE:

a. Check to see that plumbing (especially inlet) is not restricted.

b. Be sure both pieces of hose supplied have been used as per plumbing instructions.

c. Remove aerator from faucet, these cause restriction (especially when blocked by dirt).

d. Check balance of plumbing to see that it is not hitting anywhere and amplifying what may be normal pump vibration.

e. Check pulsation dampeners for ruptures or loss of air. Dampeners may be replaced as follows, Models 6969-J and 6970-J.

1. Remove #5686 plate and remove dampener. Place new dampener in place and refasten plate making sure flange of dampener is correctly seated to effect a proper water and air seal.

f. Models 6950-J and 6955-J:

1. Pulsation dampeners are replaced in same manner as above by removing #5686 bottom.

g. Models 6800-J, 6850-J and 6900-J have two independent dampeners, one inlet and one discharge. Discharge dampener may be replaced by removing #5623 bottom. It is also advisable at this time to replace the inlet dampeners by removing three additional screws and #5628 plate.

IMPORTANT: All dampener flanges must be properly seated to effect a good water and air seal.

6.4 **SYMPTOM:** BROKEN CASTING.

CURE:

a. Always drain pump and system to prevent breakage from freezing.

b. Install pressure relief valves and regulators as instructed. Pump castings can be broken from either thermal expansion of heated water or if unit is attached to city water in areas having high pressure. This condition is also true for the balance of the plumbing and fixtures used in the system.

6.5 **SYMPTOM:** MOTOR AND/OR PRESSURE SWITCH BURNOUT.

CURE:

The normal cause of motor and switch burnout is either low voltage, overpressure or a combination of both. Use proper wiring and plumbing as shown in the previous instructions and keep battery charged. The pump, like any other piece of machinery cannot operate properly unless it receives enough power and is installed correctly.

6.6 **SYMPTOM:** DECREASE IN BELT LIFE.

CURE:

Belt has proper tension if it can be moved in and out on one side a total of ¼" at a point halfway between pulleys.

ADJUST BELT AS FOLLOWS: Loosen #4681 nuts on end of motor and slide motor up or down until desired tension is gained and retighten nuts.

6.7 **SYMPTOM:** CONNECTING ROD NEEDS RE-OILING (Models 6969-J and 6970-J)

CURE:

The connecting rod bearing is made of grease-impregnated iron and cover is packed with enough lubricant to last approximately 500 hours. Relubricate by removing cover and packing built-in reservoir with black chassis lube which may be obtained at most automotive service stations.

6.8 PRESSURE SWITCH AND/OR DRY TANK SWITCH REPLACEMENT:

To remove either or both switches, relieve pressure from pump and disconnect motor wires and power leads.

Remove front cover and two screws located at bottom corners inside switch case.

Replace new switch being sure "O" Ring is seated properly around bottom stub on back of switch case. Care must be taken to avoid thread damage when reinstalling switch. Rewire per Fig. 1 and 2.

7. FALL LAY-UP:

7.1 Whenever possible, it is preferable to store PAR Water Systems in a warm, dry place free from freezing and condensation. The complete unit need not be removed, only the motor, diaphragm, and valve assemblies. This is done as follows:

a. Pump system dry as possible through faucets, open drains, including ones in rear of pump.

b. Remove (4) tie-down screws, and leads to pressure switch.

c. Lift motor and diaphragm assembly from pump.

d. Remove valves from pockets and clean.

e. Store in warm, dry place.

7.2 When removal for winter storage is not possible, the unit should at least be drained as follows to prevent freezing.

a. Pump tank and plumbing dry through faucets, open drains, including ones in rear of pump.

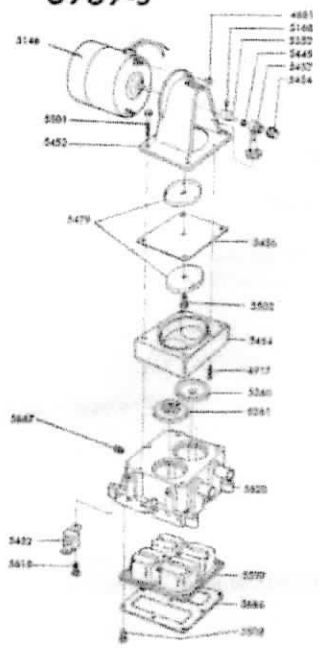
b. Leave faucets open and turn pump off.

c. Disconnect outlet connection.

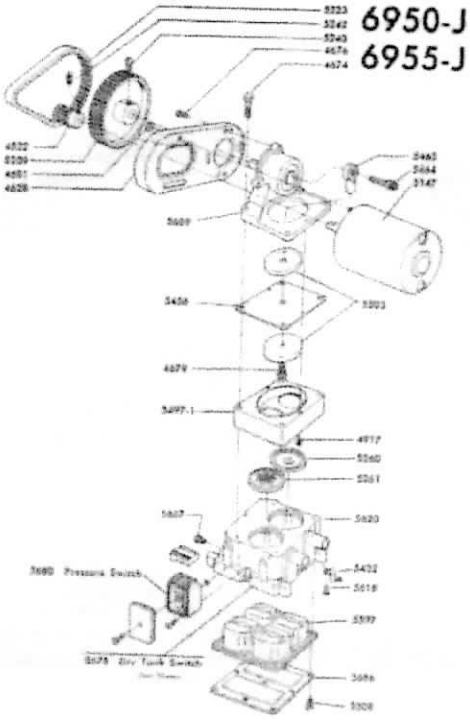
d. Start pump and allow to run until all water is expelled from unit. (Running dry will not harm the pump.)

e. Do not reconnect unit until warm weather unless plumbing is completely void of water.

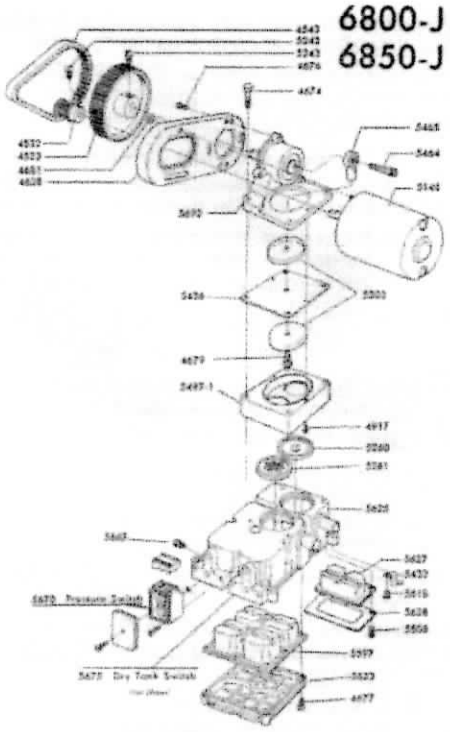
6969-J



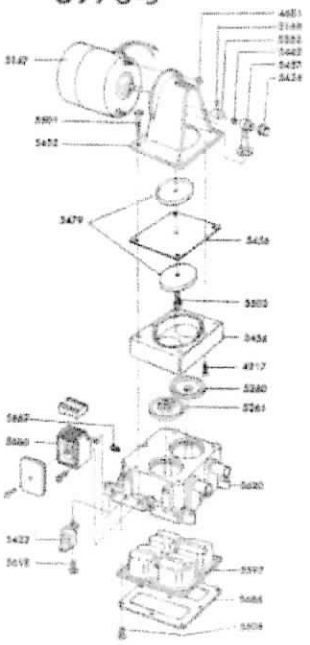
6950-J
6955-J



6800-J
6850-J



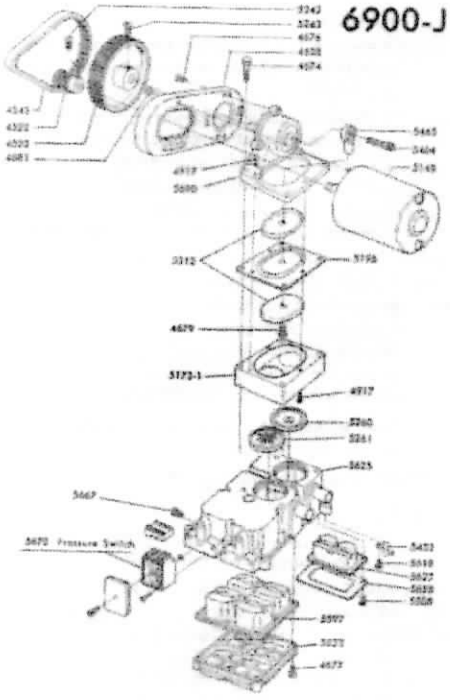
6970-J



PUMP PARTS LIST

Part No.	Description		Price
4522	Small Pulley		$ 2.50
4523	Large Pulley		3.25
4543	Belt		4.00
4628	Motor Mount D.C.		1.95
4674	Tie-Down Screw		.15
4676	Motor Bracket Screw		.10
4677	Screw		.10
4679	Diaphragm Screw		.50
4681	Motor Nut		.10
4684	Screw		.10
4741	Motor (115 Volt A.C. - D.C.)		55.00
4741-1	Brushes for 115 Volt Motor		5.00
4809	A.C. Motor Mount		1.95
4917	Screw		.10
5146	Motor (Kit #202)	12-volt	14.50
		32-volt	19.00
5147	Motor (Kit #201)	12-volt	17.00
		32-volt	19.00
5148	Motor (Kit #200)	12-volt	17.00
		32-volt	19.00
5168	Eccentric Screw		.10
5196	Diaphragm (Kit #16)		3.50
5209	Pulley		3.50
5212	Diaphragm Plate		.60
5223	Belt		3.25
5242	Screw		.10
5243	Screw		.10
5260	Intake Valve Assy.	(Kit #4) pr.	2.25
5261	Discharge Valve Assy.		
5352	Eccentric		1.50
5432	Vibration Pad		.35
5434	Connecting Rod Cover		.25
5445	Thrust Washer		.10
5452	Motor Mount		2.75
5454	Diaphragm Ring		4.50
5456	Diaphragm (Kit #15)		1.75
5457	Connecting Rod		1.90
5464	Connecting Rod Screw		.30
5465	Connecting Rod Assembly		6.00
5479	Diaphragm Plate		.50
5173-1	Diaphragm Ring		3.00
5497-1	Diaphragm Ring		3.00
5501	Tie-Down Screw		.15
5502	Diaphragm Screw		.15
5503	Diaphragm Plate		.50
5508	Screw		.10
5597	Pulsation Dampener		2.50
5618	Screw		.10
5620	Base Assembly		10.50
5623	Bottom Cap		3.75

6900-J



5625	Base Assembly	11.50
5627	Pulsation Dampener	1.75
5628	Bottom Plate	1.00
5660	Pressure Switch	10.95
5667	Pipe Plug	.15
5670	Pressure Switch	10.95
5675	Dry Tank Switch	10.95
5680	Pressure Switch	10.95
5686	Bottom Plate	1.00
5689	Jack Shaft Assy.	12.75
5690	Jack Shaft Assy.	12.75
5692	Jack Shaft Assy.	12.75