

# **AVION TRAVEL TRAILER**

## **Operation and Service Manual**

**Keep this book with your Avion at all times**

### **AVION COACH CORPORATION**

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A V I O N T R A V E L T R A I L E R

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 refrigerator 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 entrance 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.

8. 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.

9. Check the brakes and lights.

10. 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 before departing.

## SECTION II

### PARKING AND SET-UP PROCEDURE

1. When positioning the coach, try to select a spot as level as possible. Do not use jacks to level the coach. It should be leveled 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 by holding both foot pedals down and allowing the system to drain. Be sure the water supply has been turned off and that the cold water faucet in the bathroom sink is open. This will vent the water line to the stool and allow it to drain.
- Lay the water saver spray gun on the floor and put a rubber band around the thumb button to hold the valve open and allow it to drain. The spray head may also be removed from the hose to prevent damage from freezing.
- Should water accidentally be left in the stool, damage may be prevented by allowing the unit to thaw out at room temperature before using. DO NOT ATTEMPT TO FLUSH A FROZEN 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 on the opposite page. Turn the pump off. Place a small pan under the end of the water line at the connection to the pump discharge hose-Location "A". Loosen the brass flare nut and disconnect the hose fitting from the copper line. Allow any remaining water to drain from the line into the pan. Keep the sink faucet open to vent this line while draining.

Remove the two pump drain plugs which are located on the side of the pump body, lay the pump discharge hose flat on the floor and start the pump. Use a rag or sponge to wipe up the small amount of water that will be discharged from the three openings.

Turn the pump switch off and do not connect the hose to the water line until warm weather, or until the coach is prepared for use. The drain plugs may be replaced in the pump.

Open the cold water faucet at the kitchen sink. Open the water fill bi-pass valve which is located under the kitchen sink-Location "B". Open the drain valve at the left end of the water tank and allow the water in the bi-pass line to drain-Location "C". Remove the hose connection from the left end of the plastic water filter-Location "D" - to provide a vent and permit water trapped in the filter to drain out through the tank drain.

12. If it is practical, remove the batteries and store in a warm place during freezing weather. If the batteries are kept on the coach, be sure that they have a full charge to prevent freezing.

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

SECTION IV

OPERATION - CARE - MAINTENANCE

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## (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.

The entrance door is equipped with a "Dead-bolt" lock. Turn the key to the right (clockwise) to lock the door, and to the left (counter-clockwise) to unlock it.

The door can only be locked when the bolt is full engaged. When locked, the bolt cannot withdraw or vibrate back and allow the door to come open. Always lock the door before towing the trailer. Check the lock by attempting to open the door with the outside handle.

If the door does not lock when the key is turned as far as possible it indicates that the bolt is not fully extended into the striker plate. Push in on the edge of the door, near the handle, to compress the rubber seal and allow the bolt to engage. When closing the door, use a "follow-through" pressure at the handle, rather than a forceful slam.

The door can be locked from the inside by depressing the button under the handle. Turning the inside handle will automatically unlock the door. Do not attempt to lock the door while open and then close it.

## (2) INTERIOR

The interior walls of the coach are covered with vinyl. They may be cleaned by washing with a mild soap or detergent 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 Plexiglas 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 horizontally. Wash with a mild soap or detergent 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 Plexiglas 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.

Factory installed carpeting may be cleaned with any good grade of foam carpet cleaner. Follow the instructions on the container. The Johnson Wax product "Glory" has been found to work well.

### (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.

#### WIRING CODE FOR AVION COACHES

#1 - White <i>RT</i>	Connects to:	Brake - Ground <i>Bul/Brake</i>
#2 - Blue <i>Ground</i>		Brake - Hot <i>Y</i>
#3 - Green <i>LT</i>		Clearance Lights <i>B</i>
#4 - Black <i>✓</i>		Optional Back Up Lights <i>B</i>
#5 - Red <i>Brake</i>		Left Turn Light
#6 - Yellow		Right Turn Light

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.

*Y - Brake*

### (3) ELECTRICAL SYSTEMS, Continued

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

Two 12 volt, 65 ampere-hour batteries are provided to give a greater amount of reserve energy for self-contained operation. These batteries are connected in parallel. Should one battery fail to function, the other battery will continue to provide power, to the limit of its capacity. If, for any reason, one battery is removed from the circuit be sure that it is correctly re-connected, as illustrated on page 10-A.

The batteries should be checked periodically to be sure that they are 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 a 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 traveling 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 wires and battery terminals for corrosion or poor connections.

To prevent damage to the batteries, never allow them 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. Use of 120 volt service will not only save battery energy, but it will also provide automatic charging to keep your batteries in top condition.

The batteries are warranted for one year. A list of Independent Battery Manufacturers is provided in the Warranty Kit supplied with your coach. Consult this list and contact the nearest manufacturer to obtain the name of a retailer that can provide service and make adjustments. The battery group number is 24H.

### (3) ELECTRICAL SYSTEMS

(B) - Interior Lights, continued - The converter, or charger, provides 12 volt direct current whenever the power cord is plugged into a standard 110-120 volt, 60 cycle AC source. It also provides the energy to charge the batteries. 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. If a short, or overload is occurring, a 7 to 10 second clicking sound will be heard as the automatic reset breaker clicks off and on. The converter may be disconnected from the 120 volt source by removing the cord from the wall outlet adjacent to the unit. The converter is located on the trailer floor at the right front corner.

Two fuse blocks are provided to protect the 12 v olt system. One block is located in the battery box. The top fuse on this block protects the battery against accidental shorting through the automobile charging line. The center and lower fuses on this block protect the battery in the event of a short between the battery and the converter. It is essential that both of these fuses be in place at all times so that the load is divided between them.

The second fuse block is located inside the coach, underneath the front shelf. Circuits and fuse sizes are shown on page 10-A.

(C) Interior 120 volt - 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 AC 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. The cord storage opening has a slot in it so that the storage door may be kept closed while the cord is in use. A weatherproof outlet is 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. The main breaker is 30 amps. Turning it off will disconnect all 120 volt wiring in the trailer. Separate breakers are provided for: (1) Appliance Circuit, (2) Air Conditioning Circuit and (3) General Purpose Circuit.

#### (4) WATER SYSTEM

Your Avion 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 tank may be filled by removing the filler cap and using a hose or bucket to add fresh water. A bi-pass line is also provided to permit filling the tank while connected to a city water supply. To fill the tank, remove the front spout cap to prevent pressure build-up, and then open the bi-pass valve which is located under the counter top. - - See illustration on page 5A. The tank will overflow at the front fill spout when full. When this happens, close the valve and replace the spout cover. DO NOT LEAVE THE TRAILER UNATTENDED WHILE FILLING THE TANK. Turn off the water pump switch during BI-PASS FILLING.

The water tank may be drained by opening any faucet with the pump turned on or by opening the drain valve at the left end of the tank. This valve is accessible by removing the cushion and lifting the storage lid in the left seat on dinette models, or by removing the cushion and pulling out the sofa.

The coach is equipped with a Peters & Russell 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 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 has a built-in 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 rinsing or back-flushing, or by disassembling the two halves and removing the screen to clean it.

The kitchen sink is equipped with a Model 7525 Moen faucet, with a 12 month warranty. Complete and mail the warranty card in the Warranty Envelope provided with your trailer. For warranty service or parts consult the classified section of the telephone book for the name of a plumbing contractor, or write the manufacturer: Standard Screw Company, 377 Woodland Avenue, Elyria, Ohio 44035.

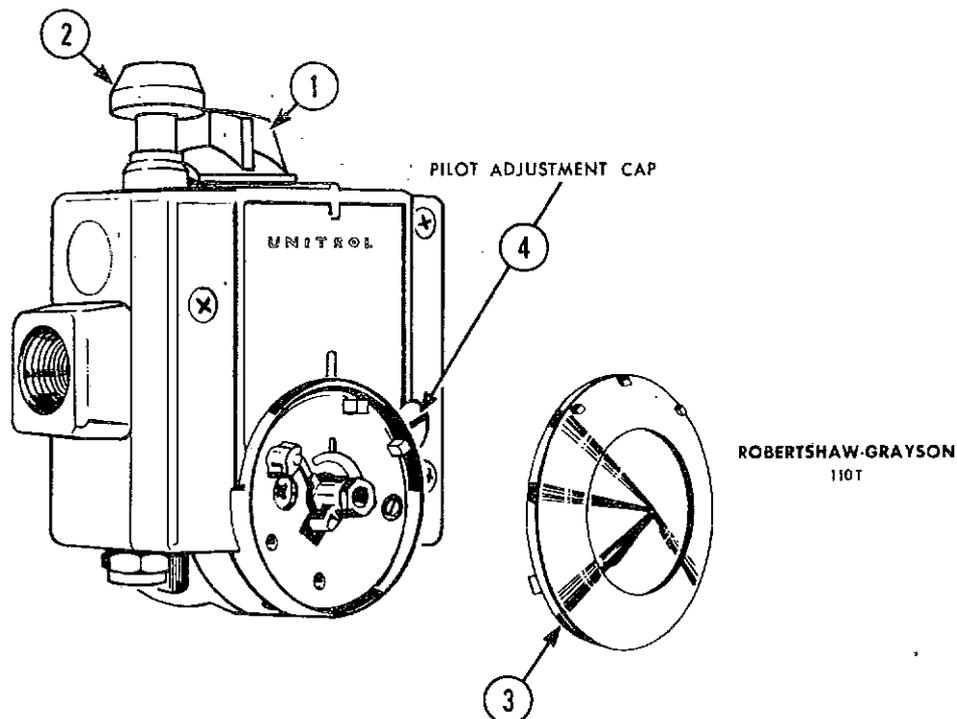
## (5) WATER HEATER

Your coach is equipped with a 6 gallon Bowen Brand Water Heater. It is located on the left side, near the rear of the coach. It has a one piece exterior door which is easily removed for lighting or service.

### LIGHTING PROCEDURE

1. The water heater should be filled with water, gas bottles should be full and valves open.
2. Gas cock dial (1) should be in "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 (5). Allow pilot to burn approximately one-half minute before releasing reset button. If pilot does not remain lit, repeat operation allowing longer period before releasing reset button.
6. Turn gas cock dial (1) to "on" position and set temperature dial (3) to desired temperature.
7. To shut down the heater turn gas cock knob to "off".

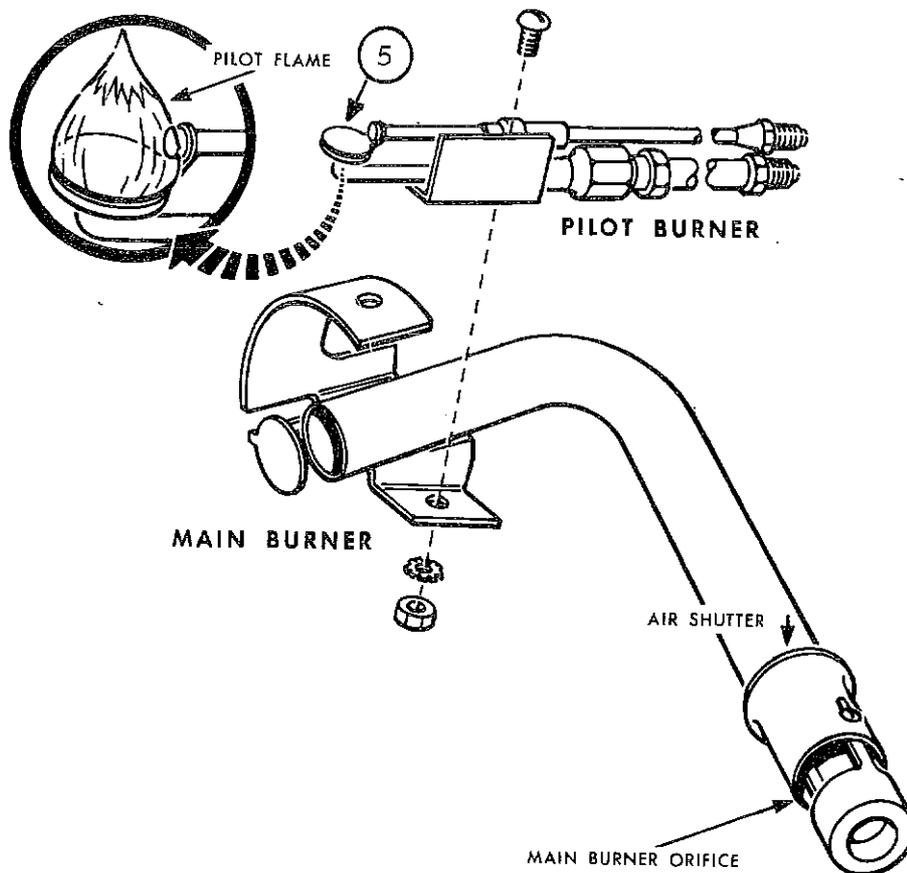
Your BOWEN WATER HEATER has been adjusted at the factory with proper air and gas mixture for both pilot and main burner. Should it be necessary to change these adjustments, use the following procedure:



1. Pilot Adjustment: Adjust pilot flame to 1/2" high or until a slight yellow tip appears in pilot flame. Pilot adjusting key is located beneath the pilot adjusting cap (item 4).
2. Gas Line Venting: When unit is new or has run out of gas it may be necessary to repeat steps 4 and 5 in the lighting procedure to remove air in the gas line. It is recommended that appliances such as the range or space heater be lighted first. This assures a supply of gas in the main gas line.
3. Main Burner Adjustment: Proper combustion depends on the gas & air mixture at the main burner, this is obtained by sliding the air shutter. A yellow smoking flame indicates a lack of air and noisy hard flame indicates an excess of air. A good method of adjusting the air shutter is to slide the shutter closed enough for yellow tipping to occur on the main burner (not pilot) then slowly open air shutter until yellow tipping is gone, then tighten screw.

The drain valve is located in the front of the heater, the unit should be drained as required per Section III in this manual.

For additional information consult your Avion Dealer or Atwood Bowen Service Station list in Section VI of this manual.



## (6) WATER CLOSET (TOILET)

Your Avion is equipped with an Aqua Magic pedal-operated water closet. Operating instructions are as follows:

### I. Directions for Automatic Flush and Refill:

- A. Depress both foot pedals, thus opening the slide valve and dropping the waste into the holding tank. The small pedal turns the water on.
- B. Keep both foot pedals depressed from one to three seconds until water begins to swirl in the bowl, rinsing it. This short time lag fills the rim storage (for bowl refill) and allows the bowl to drain.
- C. Release both foot pedals. This closes the slide valve and stops the usage of fresh water. The rim storage now drains and refills the bowl.

### II. Directions for Flushing with the Slide Valve Open a Minimum Amount of Time:

- A. Depress the small pedal on the right and hold it down until the water begins to swirl in the bowl.
- B. Release the small pedal.
- C. Step on the large pedal, thus opening the slide valve and dropping the waste into the holding tank. The water will immediately swirl in the bowl, rinsing it. Note that the large foot pedal carries the small pedal down with it, when it is depressed. The time lag in the flush is eliminated, because the small pedal actuates the water inlet valve; and the rim storage is filled, when both pedals are depressed.
- D. Release both foot pedals. This closes the slide valve and stops usage of fresh water, and the bowl refills automatically from the rim storage.

### III. Directions for Flushing with the Water Saver Package installed:

- A. Hold the hand spray in ready position over the bowl.
- B. Depress thumb button on the hand spray.
- C. Depress both foot pedals, thus opening the slide valve, dropping the waste into the holding tank, and sending fresh water through the hand spray.
- D. Spray the bowl clean with the hand spray. Release the foot pedals, thus closing the slide valve, and shutting off the water flow through the hand spray.

The Aqua Magic Toilet does not require lubrication. Ordinary household cleaners may be used for routine cleaning. Common toilet bowl cleaners may be used; however, they should be flushed on through the system within four hours, and should not be left in the holding tank for any extended period of time.

## (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.

It is not wise to keep the tank valve open. The volume of water used with each flush may not be adequate to flood away all of the solids. The result can be a build up that becomes hard to remove. Keep the dump valve closed, run about 2" of water in the tank before using and flush every few days.

To flush, open the valve by pulling the "T" handle all the way out. This will send a large volume of sewage through the drain hose at one time, setting up a swirling action that will flush away the solids.

After flushing, run water through the tub or sink drains 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 traveling 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 - 22, 25 and 28 Foot Models

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.

Contact the manufacturer, at the address listed below, for warranty instructions and service information.

Motor Wheel Corporation  
Service Department, Duo-Therm Division  
LaGrange, Indiana 46761  
Telephone: 219 463-2191

(8) SPACE HEATER - 31 ft. Model Only

The 31 ft. trailer is equipped with a Suburban Dyna-Trail forced air furnace. It is located on the right side of the trailer, just back of the entrance door. The furnace controls are located behind the cold air return door. To light the furnace, open first the cabinet door and then the metal door on the furnace jacket. Lighting instructions are located on the back side of the metal door, and also explained in detail in the Operation & Service Manual provided in each Owners Package.

A door is provided in the bottom of the closet, above the heater, to give access to the furnace gas line and shut-off valve.

For warranty service or repair information contact:

Mr. Darrel Sweet, Sales & Service Mgr.  
Suburban Manufacturing Co.  
Box 399  
Dayton, Tenn. 37321

Both the Warranty and the Service Policy will be found on the back cover of the Operation and Service Manual. Collect calls regarding warranty problems will be accepted. The telephone number is: 615-755-2131.

(9) GAS-ELECTRIC REFRIGERATOR

Lighting instructions for the refrigerator are located 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 leveling instructions refer to Section II of this manual.

For best results operate the refrigerator on "gas". Some locations have wide fluctuations in the line voltage which can cause unsatisfactory operation when switched to "electric".

If your trailer is equipped with the 7 cu. ft. refrigerator it will require a little longer to cool the interior when first turned "On". This initial 5-6 hour cooling period is caused by the unit going through the defrost cycle before starting to cool. This model will automatically defrost the main compartment every 24 hours.

Refrigerator Models M-40 and M-60 require periodic manual defrosting. To defrost, turn the thermostat knob to zero (0). Check the drip tray to be sure that it is positioned to collect the melting frost. When defrosting is completed, set the thermostat to the normal position and empty the tray.

Periodic maintenance procedures are described in the Instruction Booklet that is furnished 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 orifice ring and turn the burner control knob to the "ON" position. The primary cone of the flame should be approximately 1/2" long. For adjustment instructions refer to the Installation and Service Manual which is provided with each range.

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 THIS VALVE IS TURNED OFF BEFORE LEAVING THE CAMP SITE. Turn the valve clockwise to close it. Turn only enough to cause the pilot flame to go out. Excessive tightening of the valve screw will damage the seat.

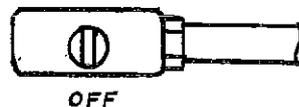
### HOW THE OVEN SYSTEM OPERATES

When the oven thermostat is turned on, gas will flow to the heater pilot, which will be ignited by the standby pilot flame. The flame from the heater pilot will heat the responsive element of the safety valve and open the valve seat allowing gas to flow to the oven burner. The burner then is ignited by the standby pilot flame.

When the oven reaches the set temperature, the thermostat will shut the gas off to the heater pilot, the capillary will cool closing the valve seat and shut off the gas to the oven burner. When the temperature drops, the thermostat will again allow gas to flow to the heater pilot, activating the safety valve and allow the oven burner to be relit. This action will continue throughout the cooking period.

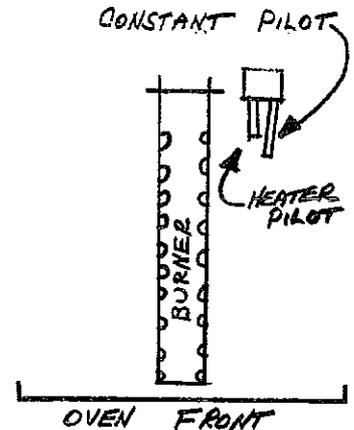
### OVEN LIGHTING PROCEDURE

- (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 screw driver 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.



(10) RANGE AND OVEN - Continued

- (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.

## (12) RUNNING GEAR

Avion Coaches are equipped with Smooth-Glide suspension. The rubber springs require no lubrication. They may be washed with soap and water to remove road dirt.

The wheels on each trailer are electronically balanced on the drums. Should it be necessary to remove a wheel from a drum, place a reference mark on both parts so that the wheel may be re-mounted in the original position. This precaution will maintain the factory balance, as long as the tire is not removed from the wheel.

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 the 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. Wheel lug bolts should be torqued to 100 lbs. Check these at the end of the first 100 miles and before starting each trip.

The 22 ft., 25 ft. and 28 ft. tandem axle coaches are equipped with 10 inch electric brakes. The 22 ft. single axle and the 31 ft. tandem axle models are equipped with 12 inch brakes. Adjustment of the coach brakes should be done by a 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 warm weather.

(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 Model 512 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 Model 52712 "XL" air conditioner has a 2-speed blower control. It can be set for "HI" or "LOW" Fan, or "HI" or "LOW" cooling. A separate thermostat control knob is located to the right of the blower control. It can be set to maintain your temperature choice -- automatically.

The filter on both air conditioner models 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 slowly.

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 Corporation  
1576 E. Empire Avenue  
Benton Harbor, Michigan 49022

Avion Coach Corporation  
39661 Esplanade Avenue  
San Jacinto, California 92383

Ogden Filter Company, Inc.  
Los Angeles, California

(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.

## (16) CONVERTER

The converter, or charger, provides 12 volt direct current whenever the power cord is plugged into a standard 110-120 volt, 60 cycle AC source. It also provides the energy to charge the batteries. 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. If a short, or overload is occurring, a 7 to 10 second clicking sound will be heard as the automatic reset breaker clicks off and on. DO NOT PERMIT THE BREAKERS TO CONTINUE TO CYCLE. Prolonged cycling will cause the heat to build up in the 12 volt circuits, resulting in burned wiring. The converter is located on the trailer floor at the right front corner of the trailer.

The model PD-709 converter is equipped with a removable electronic circuit board. Should the converter fail to operate properly, the board can be replaced without the necessity of exchanging the complete converter.

The circuit board may be removed by loosening the two nuts which retain it, and by disconnecting the wiring plug attached to it. These parts are located behind the converter end panel. Do not attempt to remove them until the converter is disconnected from the wall outlet.

The converter is manufactured by Progressive Dynamics, Inc., P.O. Box 168, Marshall, Michigan 49068. Should it fail to function properly, check the wall outlet to be sure that incoming 115 volt A.C. is available. Service may be obtained direct from Progressive Dynamics, Inc. Their telephone number is 616-781-4241. The unit is warranted for a period of one year against defective materials or poor workmanship.

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: Batteries do 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: Batteries do 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.

Trouble: Both batteries dead; power cord not plugged in

Cause and Remedy:

- a. Check for light or fan left turned on while trailer was unattended for an extended period. Turn off the fixture or appliance which was accidentally left on. If unable to find the cause of discharge, remove the battery box fuses until a service man can correct the trouble.

Recharge dead batteries as soon as possible. Allowing them to remain in a state of discharge for any length of time will cause permanent damage.

When plugging in the trailer power cord to charge dead batteries, be sure to do so at a time when the batteries can be observed during the charging cycle. Inspect the battery cases periodically for signs of heating or boiling of the electrolyte. IF HEATING OCCURS, DISCONTINUE CHARGING AT ONCE TO AVOID CAUSING PERMANENT DAMAGE.

Contact your local auto service station, or your nearest Avion Dealer for assistance in recharging batteries that have a tendency to heat up. This condition may be a sign of temporary battery damage.

## BATTERY - Continued

### Trouble: One battery dead

#### Cause and Remedy:

- a. Poor battery connections. Clean terminals and tighten connections.
- b. Defective battery. Replace. See warranty procedure on page 11.

## 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 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.

## FUSES.

### Trouble: Replaced fuses continue to blow

#### Cause and Remedy:

- a. Loose wiring connections. Tighten all wire clamps and terminals.
- b. Poor fuse contact. Inspect fuse clips to be sure they are not bent. In the battery box two 20 amp fuses are used in parallel. When replacing these fuses, disconnect the wire from the positive battery terminal to prevent throwing the full load into a single fuse while making the replacement.
- c. Improper fuse size. See page 10-A for recommended fuse sizes.
- d. Incorrect wiring of batteries or fuse block. Refer to wiring illustration on page 10-A.
- e. Short in wiring. See nearest Avion Dealer.

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.

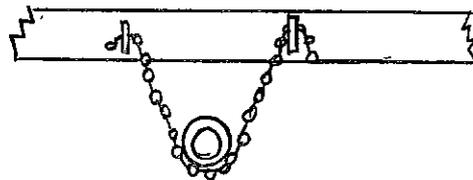
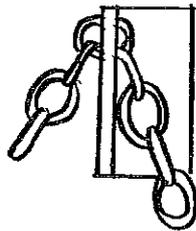
Trouble: Flat tire

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, 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. 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

For ease in removing a wheel from a tandem axle trailer, first jack up the good wheel on the same side as the flat. Place a 4" or 5" block under the good tire and lower the wheel onto the block. Now place the scissor jack under the axle with the flat tire and lift it off the ground just enough to allow removal of the wheel, and mounting of the spare.

When re-tightening the lug bolts, torque them first to about 25 FP skipping every other one so that the wheel is pulled into the drum uniformly. Continue around the wheel in the same order, increasing the torque until all bolts are torqued to 110 - 115 Foot Pounds.

**WARNING:** Be sure to place blocks against both wheels on the side of the trailer opposite the flat tire to prevent the trailer from rolling while the wheel is being changed.

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.

The above procedure is suggested as an emergency measure only.

**WARNING:** Never get under the trailer when it is blocked up.

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

## 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

#### Cause and Remedy:

- a. Install new cartridge.
- b. Reduce flow rate through purifier.

### Trouble: Suspended matter in purified water

#### Cause and Remedy:

- a. 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.

## WATER PUMP

Trouble: Water from city pressure passes back through the pump and causes water storage tank to overflow at fill spout.

Cause and Remedy:

- a. Improper seating of pump valves. Drain or pump water system dry. Remove, disassemble and clean dirt from valves. Inspect for damage and replace. When reassembling be sure to tighten the four bolts evenly to prevent cracking the pump base. All hose clamps should be tightened securely.
- b. Bi-pass valve under the sink may not be completely closed. Tighten as needed.

Trouble: Pump runs, but does not deliver full supply of water.

Cause and Remedy:

- a. Dirt in filter. Clean and replace. See instructions in Section IV, Item 4.
- b. Severe kinking in pump hose. Adjust the hose to eliminate the restriction.
- c. Water tank empty. Refill.

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

## STEREO TAPE PLAYER

Trouble: Excessive hum.

Cause and Remedy:

- a. Blown fuse between batteries and trailer 12 volt electric system. Replace fuse or fuses.
- b. Loose wire connections at battery or at fuse block. Tighten connections. Batteries must be in the 12v. circuit to reduce hum.

Trouble: Does not play.

Cause and Remedy:

Blown fuse. Check the line fuse located behind the player, and the fuse block at the front of the trailer.

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, Michigan 49022  
Telephone - 616-927-2271

Avion Coach Corporation  
39661 Esplanade Avenue, Box 457  
San Jacinto, California 92383  
Telephone - 714-654-7367

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.

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Warranty service and parts for many components that are manufactured by Avion suppliers may be obtained direct.

Addresses of these suppliers are found in your AVION WARRANTY, OPERATION and SERVICE KIT envelope.

SECTION VII  
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