1992 TRAVEL TRAILER OWNER'S MANUAL

AIRSTREAM

INTRODUCTION

The Owners Manual for your new Airstream trailer is designed to explain the operation, function and care of the many systems that make modern trailering a joy.

Airstream realizes our customers possess varying degrees of expertise in the area of repairing and maintaining the appliances in their trailer. For this reason, the service and trouble-shooting information found in this manual is directed toward those with average mechanical skills. We also realize you may be more familiar in one area than you are in another. Only you know your capabilities and limitations.

We want you to use this manual, and hope you will find the information contained in it useful; however, should you ever feel you may be "getting in over your head" please see your dealer to have the repairs made.

The operation of the appliances such as refrigerator, furnace, water heater and others are explained in this manual. However, you will also find manufacturer's information supplied in a packet included with this manual.

All information, illustrations and specifications contained in the literature is based on the latest product information available at the time of publication approval.

Throughout this manual **CAUTION** and **WARNING** notations are used. Failure to observe "caution" can damage equipment. "Warning" notes the possibility of personal injury if not observed.

Note: If and when new materials and production techniques are developed which can improve the quality of its product, or material substitutions are necessary due to availability, Airstream reserves the right to make such changes.

§§

*1000 Mile Check or 60 Day Check-Out

AUTHORIZATION CARD

This card entitles you, under the exclusive Airstream Certified Performance Checkout Program, to a 1000 mile (or 60 day....whichever comes first) Performance Check of your Airstream trailer.

*After delivery of your trailer.

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LIMITED WARRANTY - AIRSTREAM TRAVEL TRAILERS

Warranty Coverage

When you buy a new AIRSTREAM TRAVEL TRAILER from an authorized Airstream dealer, Airstream, Inc. warrants the trailer from defects in material and workmanship as follows:

Warranty Period

The warranty extends for a period of one year from the date of original retail purchase.

Items Covered

Any part of the trailer or any component equipment installed by the factory is covered by the warranty except the following items which are not covered:

* Tires
* Battery
* Fuses and Light Bulbs
* Radio and Cassette Players
* Microwave Oven

The tire, battery, radio/cassette and microwave oven warranties will be handled by their respective service points and according to their written policy. This limited warranty does not include failure caused by accident, abuse, normal wear, overload or any cause not attributable to a defect in original material or workmanship of the trailer or component equipment as installed by the factory.

Limitation of Implied Warranties

All warranties of merchantability and fitness for a particular purpose, whether written or oral, express or implied, shall extend only for a period of one year from the date of original purchase. There are no other warranties which extend beyond those described on the face thereof and expressly excludes conditions resulting from normal wear, accident, abuse, exposure or overload. Some states to not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

Airstream's Responsibility

The Airstream Limited Warranty applies for a period of one year from the date of original purchase, and the applicable date of all warranties is that indicated on the Owner's Identification Card. Defects in items covered under this warranty will be corrected without cost upon the return at the owner's expense of the trailer or defective part to an authorized Airstream dealer.

Care and Maintenance

This warranty covers only defective material and/or workmanship; adjustments and checking are excluded. All adjustments are made at the factory prior to shipment, and rechecked by the dealer prior to delivery to the customer. An additional check up, including adjustments, is given at the 1,000 mile or 60 day inspection. Adjustments thereafter become a customer responsibility.

Each Airstream exterior (not including the underside) is sprayed with paint or plasticoat to prevent oxidation. This application is covered by the one year warranty against peeling. Prolonged exposure to salt air or industrial fall-out will permit penetration through the coating material causing damage to the exterior finish. Since Airstream, Inc. has no control over these conditions, it is necessary for the owner to wash and maintain his trailer as instructed in the Owner's Manual.

The owner is also responsible for following all recommendations, instructions and precautions contained in the Airstream Owner's Manual and the individual manuals furnished by the appliance manufacturers.

Installations not Covered

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

If Repairs are Needed

If your trailer needs repairs under the terms of the Airstream Limited Warranty, you should:

1. Take your trailer to your selling dealer or other Authorized Airstream dealer.

2. If the dealer is incapable of making the repair, request that he contact the Service Administration Department at Airstream, Inc. for technical assistance.

3. If repairs are still not made, the customer should contact Airstream, Inc., 419 W. Pike Street, Jackson Center, Ohio 45334, Attention: Owner Relations Department and furnish the following information:

    * The complete serial number of the trailer.
    * Date of original purchase.
    * Selling dealer
    * Nature of service problem and steps or service which have been performed. (The owner may be directed to another dealer at the owner's expense.)

4. If, after taking the above steps, repairs are still not complete, the Airstream owner may request the trailer be allowed to be brought to the Factory Service Center at the owner's expense.

Dealer Representation Excluded

The full extent of Airstream's Limited Warranty is set forth in detail in this folder, and in the Explanation of Airstream Limited Warranty covered in the Airstream Trailer Owner's Manual. Airstream, Inc. will not be responsible for additional representations or implied warranties made by any of its dealers to the extent those representations are not a part of, or are contrary to, the terms and conditions of the Airstream Limited Warranty.

Consequential and Incidental Damages

Airstream, Inc. will not be responsible for any consequential or incidental expenses or damages resulting from a defect. Incidental expenses include, but are not limIted to, travel expenses, gasoline, oil, lodging, meals, telephone tolls, loss of work and loss of use of the trailer. Some examples of consequential damages would be: stained curtains due to rain leaks or delaminated floor caused by a plumbing leak. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Warranty Transfer

This limited warranty is transferable to subsequent owners for the duration of the warranty period. Warranty transfer application forms are available from your dealer or the Airstream, Inc. Service Administration Department.

Changes in Design

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

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Thor Industries
Airstream, Inc.
419 West Pike
Jackson Center, Ohio 45334

EXPLANATION OF AIRSTREAM LIMITED WARRANTY

The Airstream Limited Warranty is detailed in a separate folder. A plastic WARRANTY IDENTIFICATION CARD is sent to you after Airstream receives notification from your dealer of the sale. Since this I.D. card is necessary to obtain warranty, it should be kept in the trailer or on your person during the warranty period.

EXCLUSIONS:

Normal Wear

Items such as tires, water purifier packs, curtains, upholstery, floor coverings, window, door and vent seals will show wear or may even wear out within the one year warranty period depending upon the amount of usage, weather, and atmospheric conditions.

Accident

We strongly urge our dealers and customers to inspect the trailer upon receipt of delivery for any damage caused by accident while being delivered to the dealer, or while it is on the dealer's lot. Damage of this nature becomes the dealer's or customer's responsibility upon acceptance of delivery, unless Airstream is notified and the damage is verified by the person making the delivery. Glass breakage, whether obviously struck or mysterious, is always accidental and covered by most insurance policies.

Abuse

Lack of customer care and/or improper maintenance will result in early failure for which Airstream cannot be held responsible.

Exposure

Not unlike a car, the steel parts of a trailer can and will rust if subjected to prolonged exposure to moisture, salt air, or corrosive air-borne pollutants without repainting. Aluminum oxidizes when unprotected under similar conditions, and refinery chemicals of a sulfurous nature are harmful to finishes if not washed off periodically. Extremely hot or direct sunlight will deteriorate rubber and fade curtains and upholstery. Conditions of this nature, although they may be normal for the area, are beyond Airstream's control and become the responsibility of the owner.

Although it is our obligation to correct a rain or plumbing leak within the terms of the limited warranty, it is the owner's responsibility to use reasonable, prudent care to minimize foreseeable secondary damage, such as a delaminated floor, stained upholstery, carpeting, drapes etc.

Overload

Damage due to loading, either beyond capacity or to cause improper towing because of improper balance, is beyond Airstream's responsibility. The Airstream trailer is engineered to properly handle the gross vehicle load rating on the certification label. Load distribution has a definite effect upon the towing characteristics and attitudes of the trailer. Level hitch installations are a necessity, and very important on a tandem axle trailer. There are limits to the amount of load that can be safely transported depending upon speed and road conditions, and reasonable cause to believe these factors have been exceed could void the Airstream warranty. For additional information on the loading of your trailer, consult your Owner's Manual or gross vehicle weight rating plate.

The Airstream axle is manufactured to a tolerance of 1° camber and 1/8" toe-in. These tolerances will only change if the trailer is subjected to abuse, such as dropping off a sharp berm, striking a curb, or hitting a deep hole in the road. Such damage could be considered as resulting from an accident which risks are not covered under the warranty. Abnormal tire wear and/or wheel alignment resulting from such damage is not covered under the terms of the warranty.

SERVICE:

The Airstream Silver Key Delivery Program is an exclusive Airstream program. Before leaving the factory, each and every vital part of the trailer is tested for performance. Each test is signed and certified by an inspector. After the trailer arrives on your dealer's lot all of these vital parts and systems are again tested. When you take delivery of your new trailer you will receive a complete check out.

Silver Key Delivery does not stop here. After you have traveled with your trailer for 1,000 miles or 60 days (whichever comes first) you can make an appointment with any one of the Airstream dealers for still another check out of your trailer. At that time a specified list of performance checks on your trailer equipment will be conducted and any deficiencies you have experienced since taking delivery will be corrected.

Please contact your dealer if you need service. Major service under your Airstream Limited Warranty is available through our nationwide network of Airstream Dealer Service Centers. An up-to-date list of Dealer Service Centers has been provided with your new trailer. This list is current as of the date of publication.

Occasionally dealerships change, or new dealers are added who may not appear on this list. For this reason, it is suggested that you contact your local dealer from time to time and bring your list up to date. He can also provide you with additional copies if you need them. ALL CENTERS OPERATE ON AN APPOINTMENT BASIS FOR THE UTMOST EFFICIENCY.

When you require service from the Airstream Factory Service Center, or a Certified Dealer Service Center, please contact the service manager for an appointment, and kindly inform him if you are unable to keep the appointment date or wish to change it.

Service may be arranged at the Factory Service Center by contacting the Service Coordinator at:

Airstream Factory
Service Center
419 W. Pike Street
Jackson Center, Ohio 45334
513-596-6111

REPORTING SAFETY DEFECTS

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

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

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

MAINTENANCE SCHEDULE

Note: See appliance manufacturer's literature for further information.

EVERY 1,000 MILES OR 60 DAYS

Escape Window	Check operation of latches and upper hinge.
Battery	Check water level.
Smoke Alarm	Test and replace battery as required.
Tires	Check tire pressure (See Specifications)).
Hitch	Check for loose bolts or unusual wear.
GFI Circuit Breaker	Test and record.
Auto Fill Valve	Check operation.

WARNING: On new trailers check lug bolts at 200 miles and 1,000 miles. Torque 90-95 ft. lbs.

EVERY 5,000 MILES OR 90 DAYS

Exterior Door locks	Lubricate with dry graphite.
Exterior Hinges	Lubricate with light household oil.
LPG Hold Down	Lubricate with light household oil.
LPG Regulator	Check bottom vent for obstructions.
Main Door Striker Pocket	Coat with paraffin.
Wheel Lug Bolts	Torque to 90-95 ft. lbs.
Break Away Switch	Pull pin and lubricate with household oil.
7-Way Plug	Spray with contact cleaner.
Hitch Ball Latch	Lubricate with non-detergent motor oil.
Hitch Ball	Lubricate with hitch ball lube or wheel bearing grease.
Range Exhaust Hood	Clean fan blades and wash filter.
Roof Vent Elevator Screws	Lubricate with light household oil.
Main Door Step	Lubricate moving parts and check.

EVERY 10,000 MILES OR 6 MONTHS

Brakes	Inspect, adjust or replace as necessary.
Wheel Bearings	Clean and repack.
Tires	Inspect and rotate.
Spare Tire Carrier	Lubricate moving parts.
Seals, Windows & Door	Clean with mild detergent and coat with "Slipicone".
TV Antenna	Lubricate all moving parts with WD-40.
Exterior	Wax.
Escape Window	Lubricate latches with WD-40.
Hitch Jack (Manual)	Lubricate with light household oil. (Put oil can spout up under handle.)

EVERY YEAR

Battery	Clean, neutralize and coat terminals with petroleum jelly.
A-Frame, Step	Wire brush and paint A-frame, step, rear frame.
LP Bottles	Have purged by LP supplier.
Seams	Check and reseal exterior seams, windows, lights and vents if necessary. Use Kool Seal or equivalent.

SUGGESTED MAINTENANCE PARTS AND LUBRICANTS

BULBS, EXTERIOR

Taillight	#1157
Back Up	#1156
License Plate	# 67
Clearance Light	# 194
Flood Light	#1156
Step Light, Upper	#1141
Step Light, Lower	# 53
Convenience Light (Dump Valve)	# 53
Convenience Light (Hitch)	# 194

BULBS, INTERIOR

Ceiling Light (Incandescent)	#1141
Ceiling Light (Fluorescent)	#F14T8-CW
Ceiling Light (Small Fluorescent, Thin Lite)	#F8T5-CW
Indirect, Dining & Bedroom (Fluorescent)	#Fl8T8-CW
Bath Mirror, Excella & Limited	Jensen J12B-Small Base, Large Bulb
Reading & Wardrobe Light	#1141
Oven	Standard Screw-in Base 12 Volt - 15 Watt
Refrigerator	E5

FUSES

Entertainment Center (Excella)	SOV 1 Amp SOV 3 Amp
Entertainment Center (Excella, Limited)	SOV 3.5 Amp and SOV 1 Amp

MISCELLANEOUS

Water Hose Gaskets

Extra Hair Pin Clips for Hitch

Dry Graphite

Touch-Up Paint (DuPont Centari #44146A - Metallic Gray) (Airstream #28174W - Clear Acrylic Spray)

Oil Can with 30 Weight Non-Detergent Oil

Light Household Type Oil

Hitch Ball Lube (May use wheel bearing grease.)

Wheel Bearing Grease

Grease Seals

WD-40 or Equivalent Aerosol Lubricant

Spray Contact Cleaner

Sealer - Kool Seal

MAINTENANCE RECORD

Date	Dealer	Service Performed

NOTES

TOWING YOUR AIRSTREAM

TOW CAR EQUIPMENT

If you plan to buy a new vehicle to tow your trailer we suggest that you include in your purchase the trailer towing options offered by most automobile manufacturers. These include such things as heavy duty alternator and radiator, heavy duty springs **(See Note:)** and shock absorbers, automatic transmission cooler, heavy duty fan and flasher unit and others, depending upon the make of the vehicle.

Transmissions may be manual or automatic, but an automatic transmission may prolong your car's engine life and generally does a better job of controlling engine loads than the average driver using a manual shift.

Having adequate power is very important when considering the purchase of a new vehicle or the trailer towing capability of your present one. Emission controls that are required by the Federal Government have reduced overall engine power.

American manufacturers realize more than 30% of the vehicles they sell will be used for towing some type of trailer. The dealers are provided with guidelines to use when helping a customer decide on a tow vehicle. The guidelines are not just determined by the power output of the engine. The gear ratio of the differential is also a very important part of the guideline.

Inspect your vehicle's hitch regularly for loose bolts or nuts, cracked welds, loose ball mounts, worn parts, etc.

New trailerists often carry more food and other supplies than really needed. Remember that every item you take along is one more thing to stow and adds weight to the total load you must pull. Consolidate items in shelves, lockers, and in the refrigerator. It is better to have one full and one empty locker than two half empty ones. Special care must be taken not to overload the front and rear ends of the trailer.

Note: Be realistic when ordering heavy duty springs. Only springs heavy enough to support your loaded vehicle (not including trailer) are necessary. Too harsh of spring rate will only shorten the life of the tow vehicle and trailer, and will make your journeys less enjoyable.

ELECTRIC BRAKES

The brakes are operated by 12 volt current from your tow vehicle and MUST BE HOOKED UP SO THAT YOU HAVE AN INTEGRAL SYSTEM WITH YOUR TOW VEHICLE BRAKES. To prevent problems and insure satisfactory braking action, install a Kelsey Hayes Controller (or equivalent) in line with the controller in your tow vehicle.

A Kelsey Hayes Controller (or equivalent) installed in your tow vehicle will synchronize the trailer brakes with your tow vehicle brakes. It is designed to apply the trailer brakes with your tow vehicle brakes.

The controller handle adjustment affects the rate of application of the trailer brakes. This adjustment has no bearing on the maximum braking capacity of the trailer brakes. Because of the wide variety of tow vehicles and trailers it is necessary to balance the trailer brakes with the towing vehicle brakes to provide for a safe, comfortable stop. This adjustment should be made to provide for a slight lead of the trailer brakes over the tow vehicle brakes. Turning the handle clockwise will decrease the rate of application of the trailer brakes, while counterclockwise will increase the rate of application. When the desired setting is reached, the controller will hold the adjustment, but may be varied at any time by rotating the handle as described above. After this adjustment there should be no sensation of the trailer pushing the tow vehicle during a stop, nor should there be an excessive sensation of the trailer pulling the tow vehicle during a stop.

Due to normal brake lining wear, the brakes and the controller setting should be checked and readjusted, if necessary, during the trailer manufacturer's recommended inspection intervals.

Note: Brake lining adjustment should be periodically checked (fully) to be sure trailer brakes are in the same adjustment as the tow vehicle's.

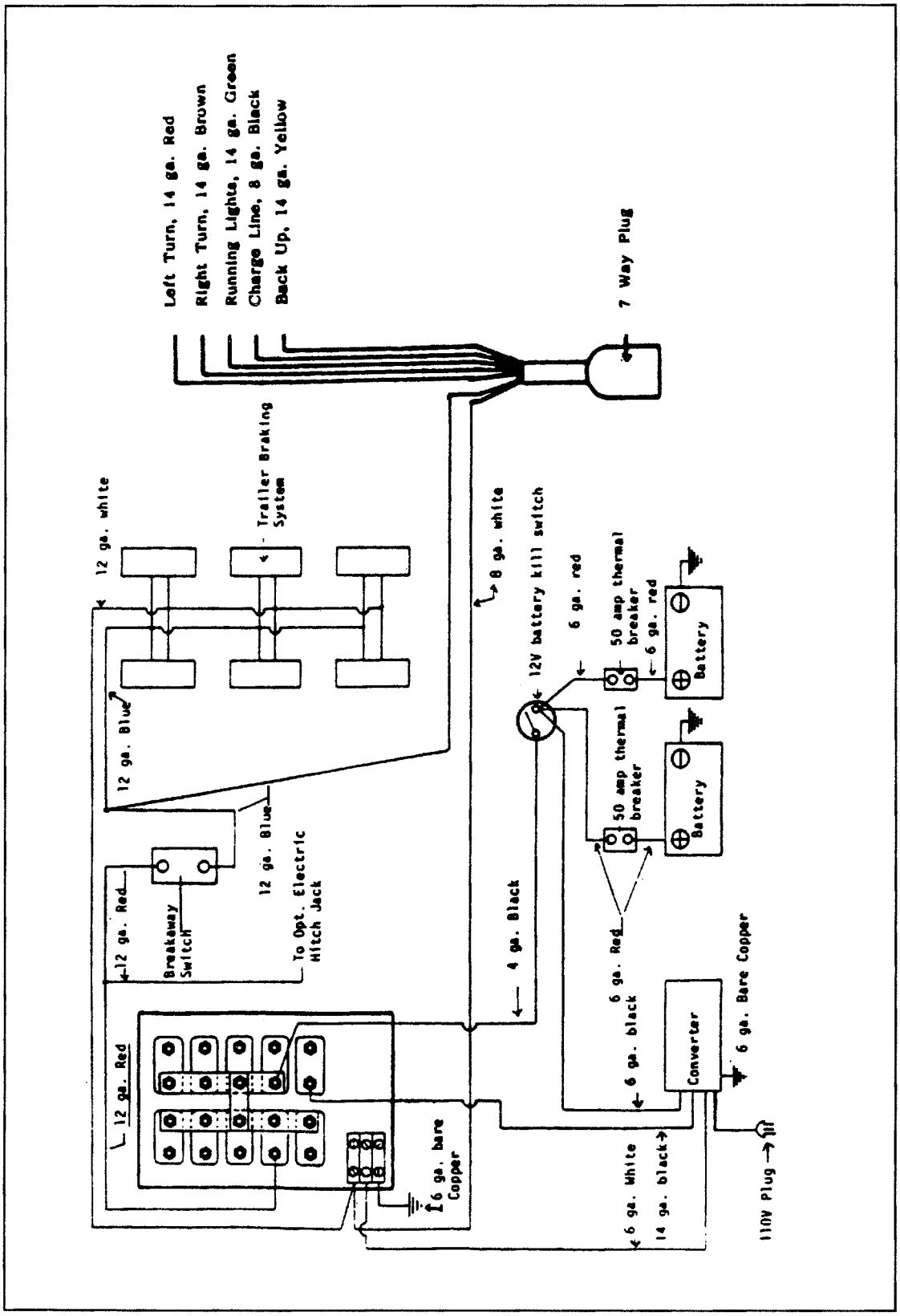
Properly set these adjustments will provide for safe comfortable stops. They will also help assure optimum brake and tire life for both the tow vehicle and the trailer.

In THE EVENT OF AN ACCIDENTAL SEPARATION of the tow vehicle and the trailer, the BREAKAWAY SWITCH will set and lock the trailer brakes for a sufficient length of time to stop the trailer. The switch is activated when the small pin in the front of the unit is pulled out by the wire attached to it and to the tow vehicle. THIS PIN SHOULD BE PULLED OUT, LUBRICATED WITH LIGHT HOUSEHOLD OIL, AND REPLACED EVERY 90 DAYS.

To prevent corrosion within the breakaway switch, pull the switch's pin straight forward and spray the inside of the switch through the hole with an electric contact cleaner (such as Spra-Kleen) and reinsert pin. A drop of light household oil on the groove near the base of the pin will allow the pin to operate freely. WHEN THE TRAILER IS CONNECTED TO THE TOW VEHICLE, THE BREAKAWAY SWITCH LOOP SHOULD BE ATTACHED TO THE PERMANENT FRAME OF YOUR HITCH. When disconnecting the trailer from the tow vehicle remove wire loop from the frame. DO NOT REMOVE PIN FROM SWITCH BECAUSE THIS WILL APPLY THE TRAILER BRAKES.

CAUTION: Do not use breakaway switch for parking brake.

WIRE ROUTING SCHEMATIC - 7 WAY PLUG TO BATTERIES AND 12 VOLT DISTRIBUTION PANEL



LOADING

There are two important factors to keep in mind when loading your trailer. Total weight and balance.

On the roadside front corner of your trailer is a manufacturing data plate listing two weights.

G.V.W.R.	Gross Vehicle Weight Rating	Total Weight Capacity
G.A.W.R. (Ea. Axle)	Gross Axle Weight Rating	For Each Axle

WARNING: The gross weight rating is the maximum load carrying capacity allowed by the vehicle or axles. DO NOT overload your vehicle.

At first glance it does not seem logical for the carrying capacity of the axles. The other weight bearing member, besides the axles, is the tongue.

To find the actual weight (See Note) of the trailer it must be weighed on scales. Scales capable of weighing your trailer may be found at grain elevators, stone quarries or at a state operated truck scales along the highway. If you are not sure of the location of scales in your area contact your local state highway patrol post for assistance.

The total cargo you can safely carry in the trailer is the difference between the weight of the trailer and the Gross Vehicle Weight Rating. For instance, if the GVWR on your trailer is 6,200 lbs. and the total weight of your trailer is 4,5000 lbs., you could carry an additional 1,700 lbs. of water, clothes, utensils etc.

Note: The dry weight is listed in the Specifications Section.

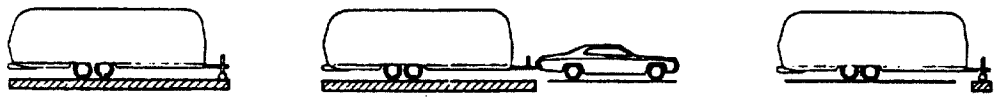
When loading heavy objects such as tools, skillets, irons, boxes of canned goods, etc. keep them as low as possible - preferably on the floor. Try to hold additional weight behind the axle to a minimum.

WARNING: Never add items such as generators, heavy tool boxes or motorcycle racks to the back of the trailer. Weight behind the axle will tend to magnify any sway that may occur when passing trucks or in gusty wind. If a heavy generator is mounted on the rear bumper what may have been an almost unnoticeable sway turns into a severe sway you may not he able to control.

CAUTION: Damage to your trailer caused by mounting heavy objects on the rear is considered abuse, and is not covered by warranty.

WEIGHING YOUR TRAILER

The diagram below shows how to weigh the trailer on scales.



1. Trailer's Total Weight (Cannot exceed GVWR)
2. Trailer's Weight on Axle Assemblies (cannot exceed GAWR)
3. Weight on Trailer's Tongue.

The allowable personal cargo, determined above, must be distributed in your trailer in such a manner that the Gross Axle Weight Rating is not exceeded.

To determine this it is necessary to load all of your allowable personal cargo (example above 1,700 lbs. total) and variable weights. Then hitch the trailer to the tow vehicle with load equalizing hitch properly adjusted as shown on the following pages.

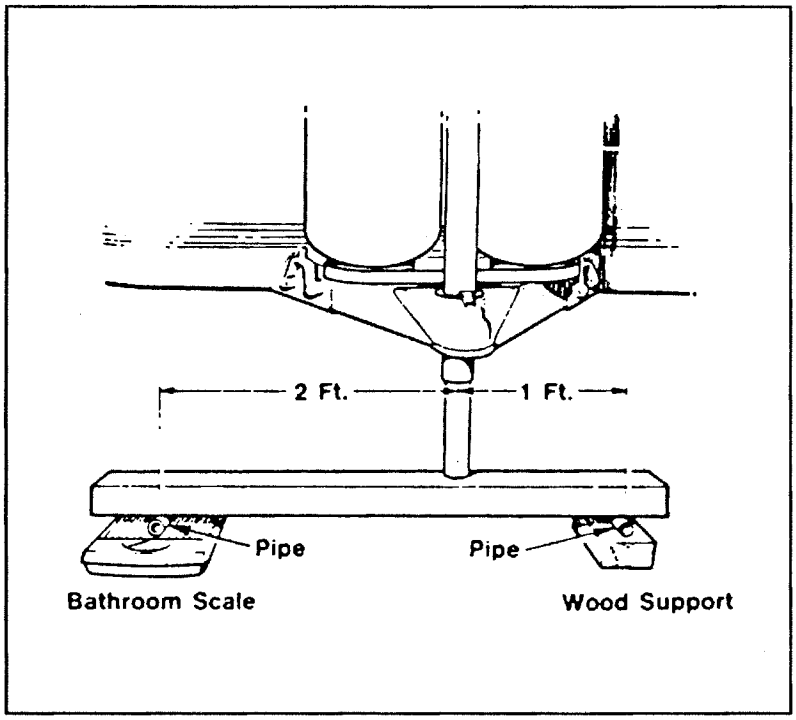
Place trailer on scale with both axles only on scale (see 2). If the weight on the axles exceeds the axle system G.A.W.R. then some of the personal cargo must be redistributed forward in order to place some of this weight on the tongue.

The tongue weight should be between 10% - 15% of the trailer's total weight, but must not exceed 1,000 lbs. Some tow vehicle manufacturers may restrict the amount of tongue load to a lower value. To determine tongue load, unhitch tow vehicle and place tongue hitch post on scale (see 3). The trailer must be properly loaded as determined above, with your allowable personal cargo and variable weights.

A scale which has a lower weight limit than your tongue load, such as a bathroom scale, may be used to check the tongue weight by using the following method (see illustration).

Place a piece of wood of approximately the same thickness as the bathroom scales on the ground in line with the trailer hitch jack as shown. It should be so spaced that a short piece of pipe or other round piece will lay exactly one foot from the center line of the jack extension. Place the scales so that another round piece can be exactly two feet from the center line of the jack extension in the other direction. Place a 4 x 4 on the two round pieces and screw the jack extension down on the top of the 4 x 4 until the tongue of the trailer is supported by it. Multiply the scale reading by three. This will be the tongue weight of your trailer. If you exceed the capacity of the bathroom scales, increase the two foot dimension to three or four more feet, but always multiply the scale reading by the total number of feet between the wood and scales.

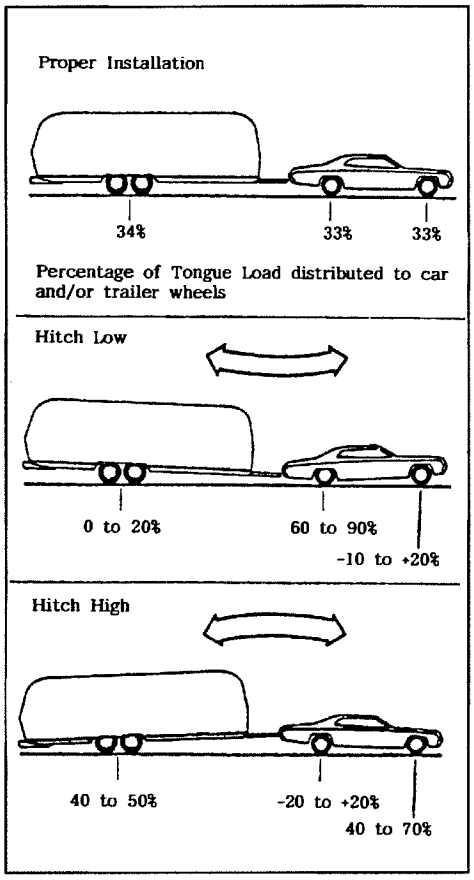
CAUTION: Be sure trailer is level when you read scales.



HITCHING UP

Hitching up your trailer is something that will become almost second nature with practice. The following section includes proper hitch load distribution and a procedure for hitching up.

The electric jack is strongly recommended for anyone who, for any reason, should not physically exert himself. Available as an option, the electric jack makes hitching and unhitching a much easier operation. On Limited model trailers be sure that the front jacks are used in unison.



Equalizing Hitch Load Distribution

When a trailer is hitched up properly to a tow vehicle with a load equalizing hitch, approximately 1/3 of the trailer's tongue weight will be on the trailer's axles and 2/3 will be transferred to the tow vehicle, 1/3 of this weight transfer will be carried by the front wheels and 1/3 by the rear wheels of the tow vehicle (See diagram). Thus, the tire load of each wheel on the tow vehicle will be increased by 1/6 of the trailer's tongue weight. The tire air pressure of the tow vehicle should be increased to compensate for this additional weight. Refer to the vehicle's owners manual for this information.

CAUTION: The tongue weight should he approximately 10% - 15% of the trailer's total weight, but MUST NOT EXCEED 1,000 lbs. And, under no condition should it exceed the hitch rating. Your hitch rating information should he provided to you by your hitch installer.

Steps for Hitching Up

Jack up the trailer hitch until there is clearance for the HITCH BALL to slide under. Remove safety pin and raise the LOCKING LEVER. Back the tow vehicle straight back to the hitch. (See Fig. 2). This can best be accomplished through the use of prearranged hand signals with the help of another person; but, if you are hitching up by yourself we recommend the use of a HOOK-UP VIEW MIRROR.

Lower the trailer hitch onto the hitch ball. Then close the locking lever and insert safety pin. (See Fig. 3)

Now raise the trailer and tow vehicle to the full height of the hitch jack (See Fig. 7) and then attach the LEVELING BARS. (See Fig. 4, 5 & 6). Lower the tow vehicle and trailer (See Fig. 7). The hitch ball should be level to slightly higher. Readjust leveling bars until this condition is correct by increasing or decreasing the length of chain engaged in "A" frame saddle bracket. Short chain raises hitch ball, longer chain lowers it. A level condition will result in the best balance for towing and steering control as the weight equalizing hitch distributes the hitch load. A low hitch ball increases tail wagging tendencies by lowering the nose of the trailer, thus

changing the center of support for the trailer and reducing the weight on the front wheels of the tow vehicle. With proper hitch installation and hitching up, the bar should have a noticeable amount of deflection or bending. (See Fig. 8) A little practice with your rig will teach you how far to pull the bar, and you may wish to mark the chain links that match your rig.

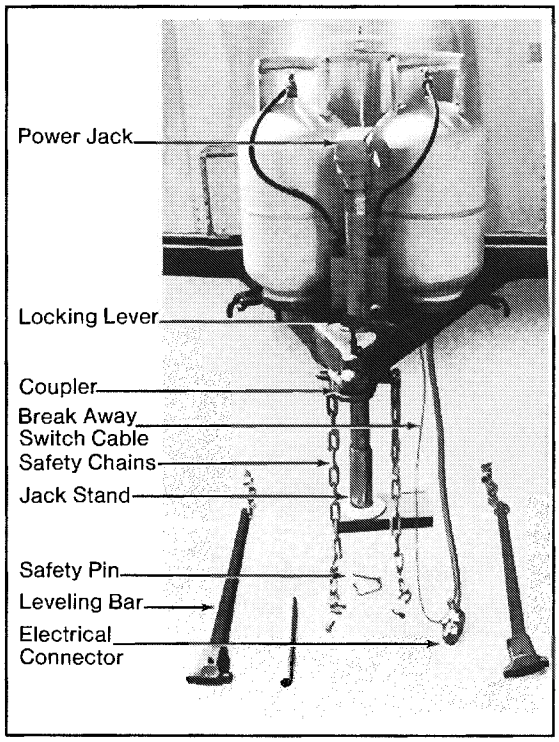


Fig. 1 - Hitching Up Equipment

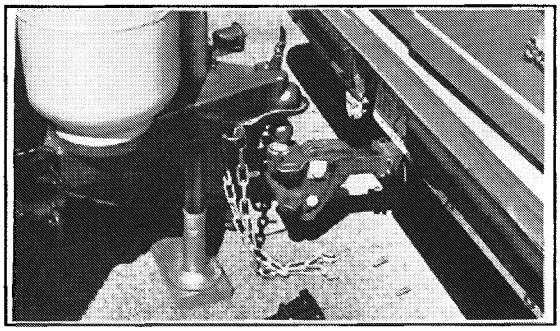


Fig 2 - Hitching Up

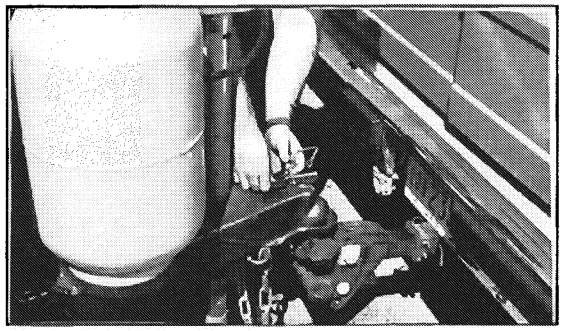


Fig 3

Always choose level ground for checking correct hook up. For further information see hitch manufacturer's literature.

Note: If your tow vehicle is equipped with adjustable load leveling air shocks, you must load the tow vehicle first with typical luggage and passengers and bring it back to level. Then attach the trailer and adjust the load leveling bars. Otherwise the air shocks on your tow vehicle will overload the rear wheels. DO NOT USE AIR SHOCKS TO LEVEL TOW VEHICLE AND TRAILER AFTER HITCHING UP.

Note: Coupler height on the trailer is determined by leveling the trailer end to end, then measuring from the ground to the top of the ball socket.

Attach the safety chains (See Fig. 10) to the welded portion of the hitch or the tow vehicle's frame, but never to the removable ball mount. Cross the safety chains under the hitch.

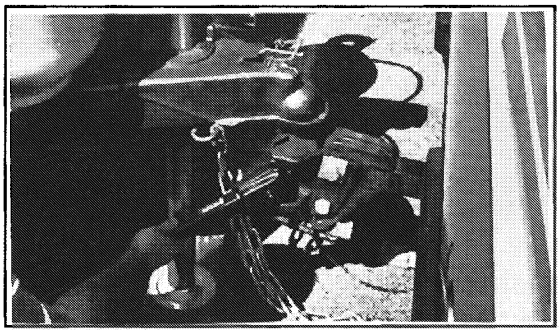


Fig. 4

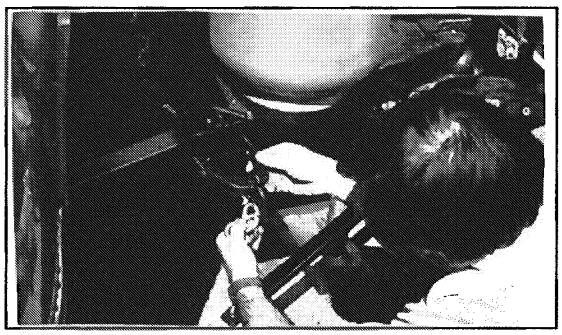


Fig. 5

CAUTION: Retract the hitch jack completely for maximum ground clearance. Remove the jack pad (See Fig. 12) and stow in the car's trunk along with leveling jack. and other gear used when stopped. NEVER TOW YOUR TRAILER WITH THE JACK DOWN. Check that the fold-away step is up and that the main door is completely closed and LOCKED for towing. If it is not locked the constant vibration of travel may cause it to open with possible damage.

Move the rig ahead about 50 feet and test the trailer brakes, then check the ground for forgotten objects. Regularly check the condition of your tires, air pressure and the tightness of the lug bolts.

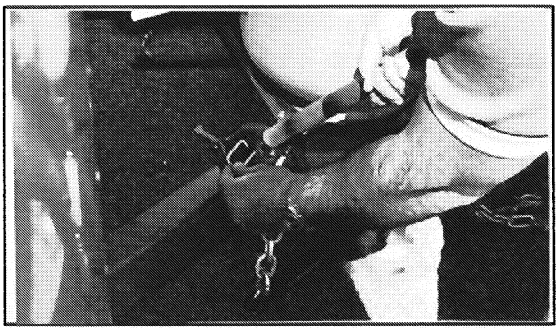


Fig 6

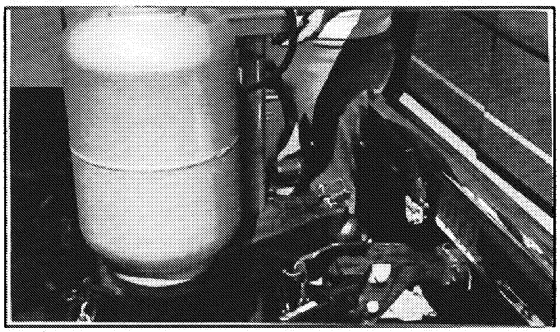


Fig 7

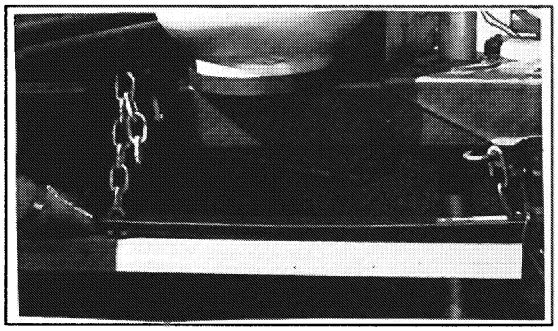


Fig 8

Fig 10

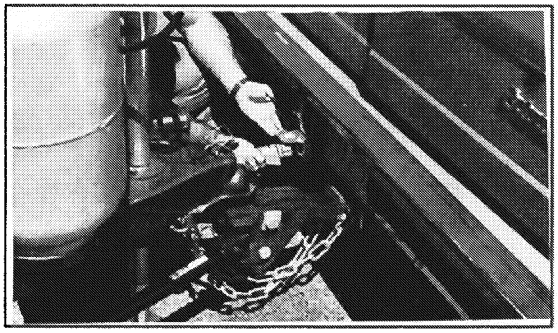


Fig 9

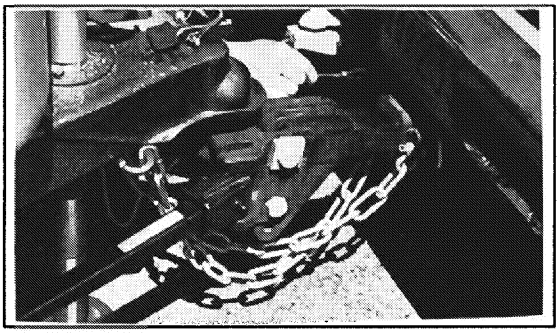


Fig 11

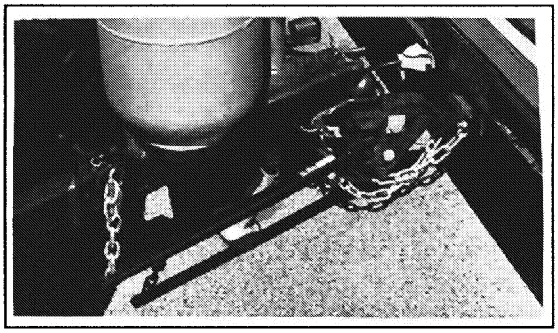


Fig 12

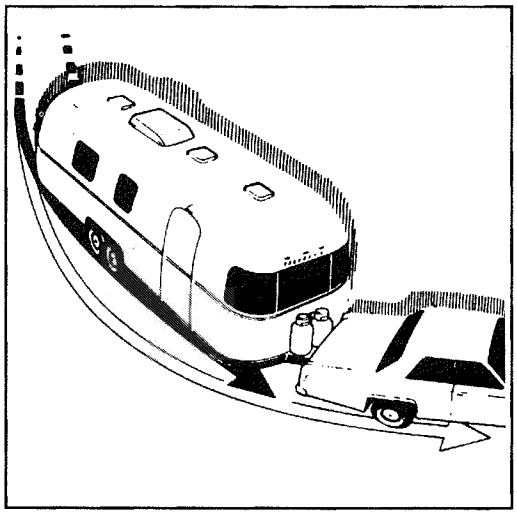
TOWING TIPS

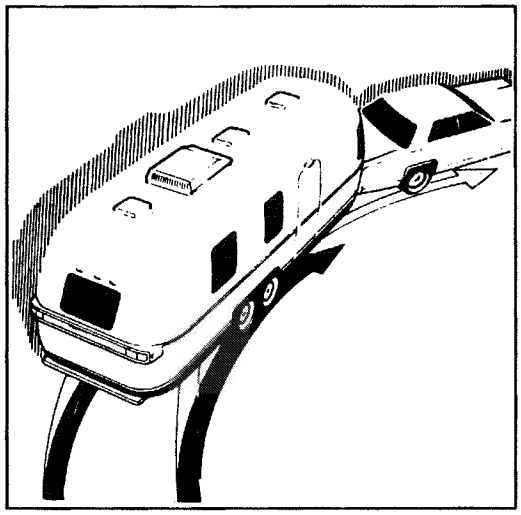
We want every owner to be a safe and courteous driver. A few hours of towing practice in a large empty supermarket lot will make pulling your trailer over the road much easier. Line out two corners for left and right turns. You may also use these corners to practice backing and parking.

OBSERVE THAT THE TRACKS MADE BY THE TRAILER WHEELS ARE DISTINCTLY DIFFERENT FROM THOSE MADE BY THE TOW VEHICLE. Studying this will make it easier for you to correct mistakes. Truck or trailer type fender or door grip rear view mirrors are a must for maximum visibility and in most states they are required by law.

After thoroughly inspecting your hitch, brakes and tires you should be ready to tow. Check traffic, signal that you are about to pull away, and start slowly. Look often in your mirrors, and observe the action of the trailer, then carefully move into the proper lane of traffic. Remember that the trailer wheels will not follow the path of the tow vehicle wheels; therefore, WIDER TURNS ARE NECESSARY WHEN TURNING TO THE LEFT OR TO THE RIGHT.

ON FREEWAYS OR EXPRESSWAYS try to pick the lane you want and stay in it. Always maintain plenty of space between you and the car ahead, at least the length of the tow vehicle plus trailer for every ten miles per hour. Remember that in order to pass another vehicle you will need longer to accelerate. You must also allow for the length of the trailer when returning to the right hand lane.





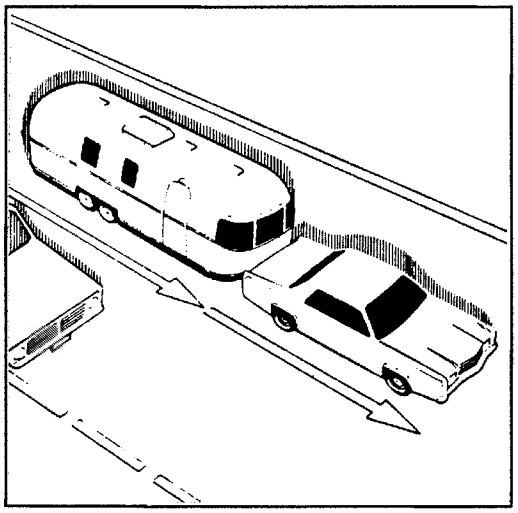
Tracking

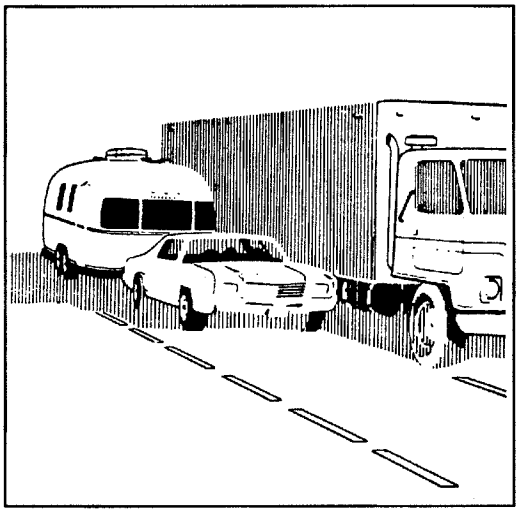
On a two lane road cars will be lining up behind you because you travel at a lower speed. It is both courteous and sensible to signal, pull onto the shoulder, and let them pass. Your trailer is designed to be towed easily at any legal speed, so if you are not careful you may be inclined to forget it is there.

The BRAKE CONTROLLER is activated when you apply the brakes of the tow vehicle. Your tow vehicle brakes will automatically apply the trailer brakes first when properly adjusted. This will help keep your tow vehicle and trailer in a straight line and make you stop as if you were driving the tow vehicle alone.

When trailering you might encounter a temporary cooling system overload during severe conditions such as hot days when pulling on a long grade, when slowing down after higher speed driving, or driving long idle periods in traffic jams. If the hot indicator light comes on, or the

temperature gauge indicates overheating and you have your air conditioner turned on, turn it off. Pull over in a safe place and put on your emergency brake. Don't turn off the engine. Increase the engine idle speed. Lift the engine hood and check for fluid leaks at the radiator overflow outlet. Check to see that all drive belts are intact and the fan is turning. If you have a problem have it fixed at the next opportunity. If there is no problem the light should go off or temperature should come down within one minute. Proceed on the highway a little slower. Ten minutes later resume normal driving.





Passing

WARNING: Never open a radiator cap when the tow vehicle is hot. Check the coolant level when the vehicle is cool.

When going downhill in dry weather, down shift so that engine compression will slow the whole rig down. Take dips and depressions in the road slowly and do not resume normal driving speeds until you are sure that the trailer wheels are clear of the dip.

WARNING: On slippery pavement do not use engine drag to help slow down as this may cause the rear wheels of the tow vehicle to skid. On icy pavement drive slowly and if you feel the tow vehicle skidding gently apply the trailer brakes only. This will bring the tow vehicle and trailer back into a single line. Chains do not help trailer wheels.

When driving in mud and sand let the momentum carry the rig through. Apply power gently and use as little as possible. Stay in the tracks of the vehicle ahead and keep the tow vehicle in the highest possible gear. If you get stuck it is best to tow out the entire rig together without unhitching.

If you have to tow long distance over bad roads, the stones and gravel thrown back by your tires will dent and scratch the finish of your trailer. To prevent this use masking tape to secure heavy cardboard to the lower front end of the trailer. Remove tape from trailer as soon as possible to avoid damage to the finish.

Despite the best hitch you will notice that whenever a large bus or truck overtakes your rig the displaced air first pushes the trailer rear slightly to the right and then affects the front. It may be necessary to steer very slightly, momentarily, toward the bus or truck to help compensate for the sway induced by the passing vehicle. Do not apply the vehicle brakes as this can tend to exaggerate the situation. You may find, however, that briefly applying the trailer brakes with your manual control will help eliminate sway.

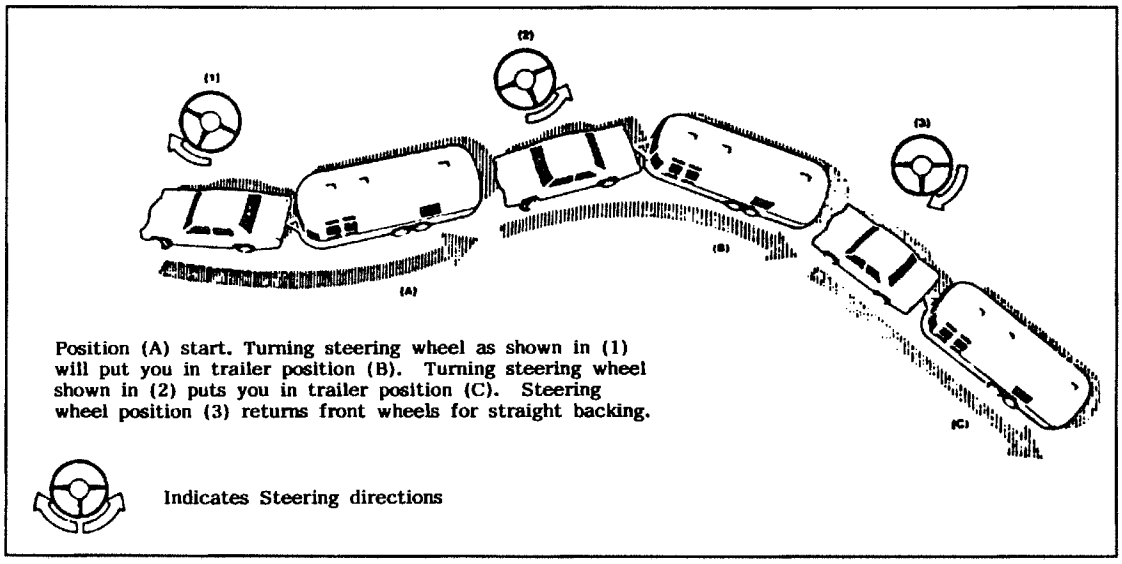
CAUTION: When stopping on a hill or slope, leaving your car in gear is not enough for standstill safety. CHOCK THE TRAILER WHEELS to he double sure. Do not use trailer brakes as parking brakes.

Backing Up

In BACKING UP the important thing to remember is to DO EVERYTHING SLOWLY and to correct immediately if you see the trailer turning the wrong way. Concentrate on the rear of the trailer. With your tow vehicle and trailer in a straight line back up slowly and turn the bottom of the steering wheel in the direction you want the trailer to go. Watch out the window or in the mirror until the rear of the trailer is pointing in the desired direction. Your car will be following the trailer in an arc. Straighten the car and trailer by turning the steering wheel more sharply, then when they are in line, straighten the steering wheel.

ALWAYS TRY TO BACK TO YOUR LEFT BECAUSE THE VISIBILITY IS MUCH BETTER. (See Illustration) When you don't make it on the first try it is usually much easier to pull forward to your original position and start over.

If your spouse or traveling companion normally directs you when backing they should position themselves forward of the tow vehicle so they can easily be seen by the driver. Their directions should always indicate to the driver the direction the rear of the trailer should go. A little practice in a parking lot with the person giving directions can save a lot of frustration when backing into a campsite.



Position (A) start. Turning steering wheel as shown in (1) will put you in trailer position (B). Turning steering wheel shown in (2) puts you in trailer position (C). Steering wheel position (3) returns front wheels for straight backing.

Indicates Steering directions

SUGGESTED PRE-TRAVEL CHECK LIST

Interior

1. Turn off water pump switch.
2. Check battery water level.
3. Close windows and vents.
4. Turn off gas.
5. Lock all interior cabinet doors.
6. Latch refrigerator door. (Seal containers first.)
7. Hold down or stack securely all loose, hard and sharp objects.
8. Fasten sliding and foldette doors.
9. Drain toilet bowl.
10. Turn off interior lights.
11. Set table in upright position.
12. Pull up or retract step.
13. Lower blinds and turn slats vertically.
14. Secure and lock main door.

Exterior

1. Disconnect and stow the electrical hookup cord, the sewer hookup hose (flush out), and the water hookup hose.
2. Turn off gas line shut off valve to appliances.
3. Remove or stow leveling jacks and wheel chocks.
4. Check Hitch: It must be properly attached.
5. Check safety chains and breakaway switch cable.
6. Fully retract jack. Remove and stow jack stand or wood block.
7. Check clearance and stop lights.
8. Check lug nuts.
9. Check tires for correct pressure.
10. Check that TV antenna is pointed forward and dipoles closed.
11. Adjust tow vehicle mirrors.
12. Pull forward some 50 ft., test brakes, and check site for forgotten objects and cleanliness.

Home

1. Leave house key with your neighbor.
2. Store valuables and important papers in a safe place.
3. Discontinue newspaper, milk and other deliveries.
4. Ask the Post Office to hold your mail for you.
5. Arrange with the telephone company for discontinued or "vacation service".
6. Arrange care for your pets.
7. Have your lawn, garden and houseplants cared for.
8. Lock all windows and doors securely. Keep shades open for a lived in look.
9. Cover all food to keep out mice and insects.
10. Eliminate all fire hazards. Place matches in a tin box or glass jar.
11. Store oil, gasoline and other flammables properly.
12. Destroy all newspapers, magazines and oily rags.
13. Notify police.

Trailer Equipment and Accessories

1. Water hose, 5/8" high pressure, tasteless, odorless, non-toxic.
2. "Y" connection - water hose.
3. Sewer hose with clamp.
4. Drain cap with hose drain.
5. Holding tank cleaner and deodorizer.
6. Power cord adapter 30 amp capacity.
7. 50 ft. electric cord, 12-3 wire.
8. 25 ft. electric cord, 10-3 wire, 30 amp capacity.
9. Wood blocks for leveling.
10. Wheel chocks.
11. Hydraulic jacks.
12. Cross type lug wrench.
13. Quality tire gauge.
14. Emergency road warning triangle.

Personal

1. Automobile insurance to cover you and your family fully.
2. Avoid cash. Use travelers checks and credit cards.
3. Confirm reservations.
4. Have sunglasses for everyone.
5. Pack cameras and films.
6. Make a check list of clothing for everyone, and toilet articles.

Motoring Essentials

1. Display car and trailer registration properly.
2. Carry driver's license. In Canada you will need a non-resident liability insurance card.
3. In Mexico you must have special auto insurance.
4. Carry an extra set of ignition and trunk keys in a separate pocket, or in your wallet.
5. Keep an operating flashlight with fresh batteries in the glove compartment.
6. Pack the trunk so that you can reach the tools and spare tire without completely unpacking.
7. Keep sharp or hard articles securely packed wherever they may be.
8. Do not pack things in the passenger seating area. You need the maximum space for comfort.
9. Wear easy-wash, drip-dry traveling clothes.
10. Do not make your vacation trips a mileage marathon. Stop and relax frequently.
11. Carry a first aid kit.
12. Carry your pet's dish, food, leash and health and registration papers.

NOTES

CAMPING

SAFETY

As always, safety should he one of your top priorities. Make sure you, and everyone traveling with you, can operate the main door and exit window rapidly without light.

WARNING: **The escape window(s) identified by red release latches, are opened by lifting up both latches, then turning toward the center. Push out on the glass and it will swing clear. The window operation should be checked each trip and the latches lubricated with WD-40 or equivalent every six months. A loop is provided in the SCREEN RETAINING SPLINE so it can be rapidly removed. Models with two doors will not have the exit window.**

WARNING: **At each campsite make sure you have not parked in such a manner as to block the operation of the escape window by being too close to trees, fences or other impediments. Scenic views are one reason for traveling, but don't park so the beautiful lake or steep cliff is just outside your escape window.**

WARNING: **Read the directions carefully on the fire extinguisher. If there is any doubt on the operation, you and your family should practice, then replace or recharge the extinguisher. You will find your local fire department will be happy to assist you and answer any questions.**

WARNING: **Don't smoke in bed!**

Keep matches out of reach of small children!

Don't clean with flammable material!

Keep flammable material away from open flame!

We have all heard these warnings many times; but, they are still among the leading causes of fires.

Other safety information on the LPG system of your trailer is located in the Plumbing Section of this manual.

OVERNIGHT STOP

Airstream owners have parked virtually every place imaginable from filling stations to farm lands. In time you will develop a knack for spotting wonderful little roadside locations by turning off the main highway and exploring.

There are many modern trailer parks including State, County and Federal parks with good facilities where you may obtain hookups of electrical, water and sewer connections. Directories are published which describe in detail these parks and tell what is available in the way of services and hookups.

On overnight or weekend trips chances are you will not use up the capacity of the sewage holding tank, deplete the water supply or run down the battery which supplies the 12 volt current.

On a longer trip, when you have stayed where sewer connections and utility hookups were not available, it will he necessary for you to stop from time to time to dispose of the waste in the holding tank and replenish the water supply. Many gas stations (chain and individually owned) have installed Sanitary Dumping Stations for just this purpose. Booklets are available which list these dumping stations.

When stopping for the night your Airstream is built to be safely parked in any spot that is relatively level and where the ground is firm. Your facilities are with you. You are self-contained. Unless the tow vehicle is needed for transportation, it is not necessary to unhitch.

WARNING: Do not park in a manner that would prevent the rear escape window from opening.

Try to pick as level a parking spot as possible. Stabilizing jacks or blocks probably won't be required for an overnight stay. However, if you put the jack pad on the hitch jack and run the hitch jack down to take the weight off the car's springs this will provide some stability. If you must park on a slope, PARK FACING DOWNHILL. It is easier to level the trailer this way.

All you need to do to enjoy the self-contained luxury of your Airstream is to turn on the LP gas and light any appliances with pilots.

Before moving on, check your campsite both for cleanliness and also to be sure you haven't left anything behind. Turn off the gas supply and make sure everything is properly stowed. Use your PRE-TRAVEL CHECK LIST and you are ready for more travel adventure.

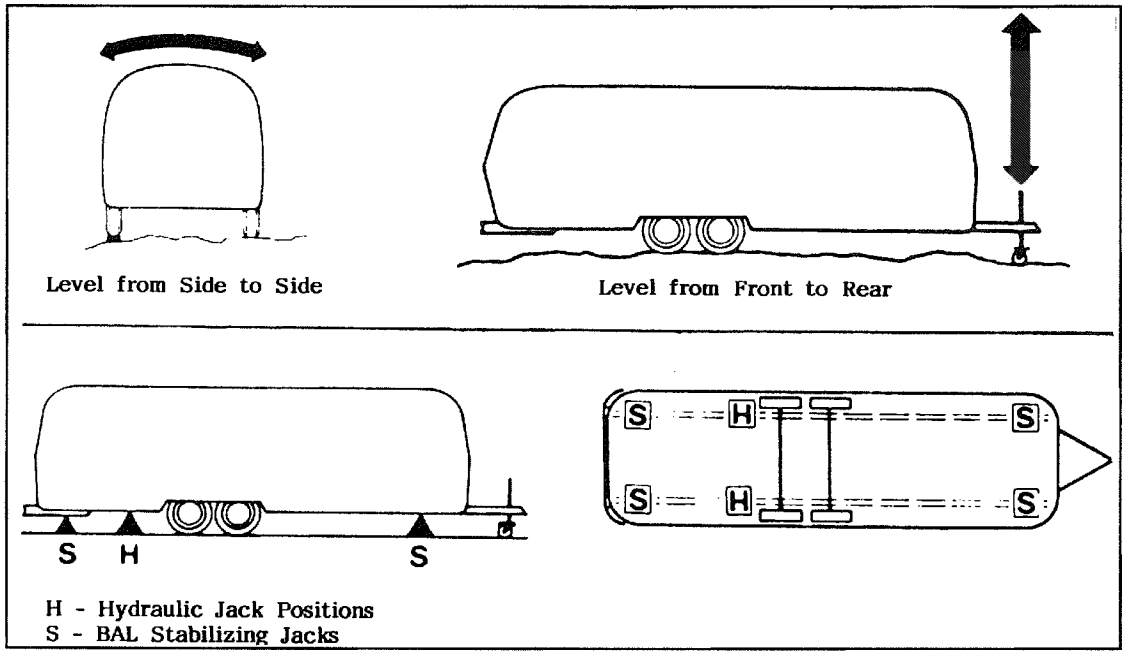
EXTENDED STAY

Making a long trip in your Airstream is not very different from making a weekend excursion. Since everything you need is right at hand, you are at home wherever you go. When packing for an extended trip take everything you need, but only what you need.

When you plan to stay in the same place for several days, weeks or months, you will want your trailer to be as level and steady as possible. Check the attitude with a small spirit level set on the inside work counter or the trailer hitch "A-Frame". (See Diagram Below) If a correction is necessary then YOU MUST LEVEL FROM SIDE TO SIDE FIRST This can he done easily by backing the trailer up one or more 2" x 6" boards. (See Diagram) We do not recommend placing tires in a hole for leveling.

LEVEL FROM FRONT TO REAR by disconnecting the hitch from the tow vehicle, putting the jack pad under the hitch jack and adjusting the jack up or down until you are level. Block or chock the wheels to keep the trailer from rolling. Use STABILIZING JACKS at all four corners as shown in the diagram to eliminate the natural spring action of the axles. Optional STABILIZING JACKS, whether manual or power, should only he used to stabilize trailer.

WARNING: Whenever the trailer must be lifted with a jack, as when changing a tire or leveling on very rough terrain, ALWAYS PLACE THE LIFTING JACK UNDER THE MAIN FRAME RAIL. A label is provided to indicate the proper position for the jack. NEVER USE STABILIZING JACKS TO LIFT THE TRAILER.



HOOK UP TO WATER (See Fig. 4) by attaching a 1/2" minimum high pressure water hose to the city water service.

Plug the ELECTRICAL CABLE (See Fig. 5) which is stored in the bumper storage compartment into the CITY POWER SERVICE. If your trailer is equipped with a power cord reel do not pull it out more than a foot or two past the white tape wrapped on the cord. Pulling the cord completely out to the stop will make rewinding difficult, if not impossible.

Hook your WATER DRAIN HOSE (See Fig. 6) in the SEWER DISPOSAL FACILITY and attach to the drain outlet in your trailer.

Turn on gas supply. Light the range and oven pilots. Turn on the water heater, refrigerator and furnace.

When you stay for an extended period where electric or water hookups are not available, you must make regular checks on the condition of your 12 volt battery by hooking up the tow vehicle/trailer electrical connector and running the tow vehicle engine at a fast idle. 45 minutes per day should provide about 3-4 hours of power. Carry drinking water in a clean bucket to refill your tank. When your waste tank nears capacity move to a dumping location.

The CABLE TV and TELEPHONE hookups, if so equipped, are located in the small aluminum access door on the roadside rear of the trailer. The interior telephone jack will be located in close proximity to the TV antenna control module.

WARNING: Check your escape window(s) to make sure they will open completely. Also make sure the terrain under the window is suitable for rapid exiting.

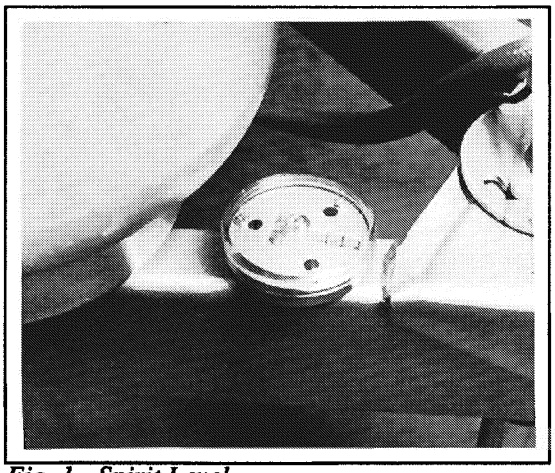


Fig. 1 - Spirit Level

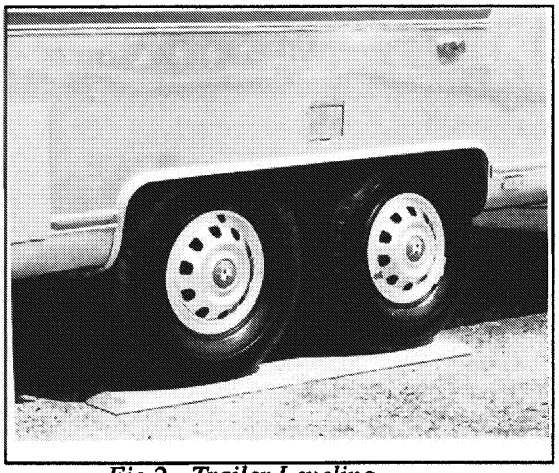
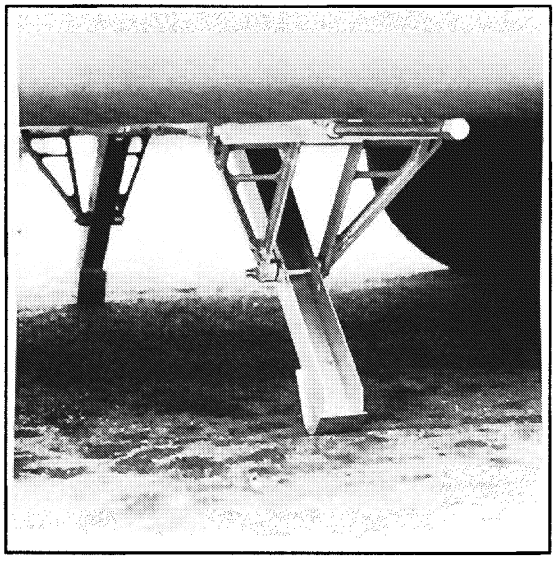


Fig 2 - Trailer Leveling



Pig. 3 - B.A.L. Stabilizing Jack

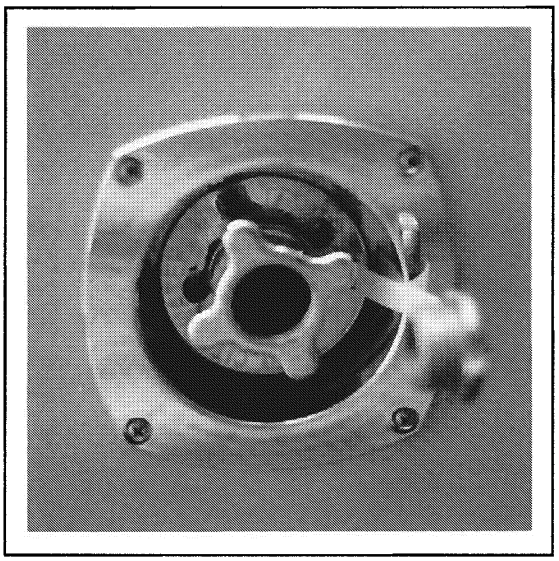


Fig. 4 - City Water Hook-Up

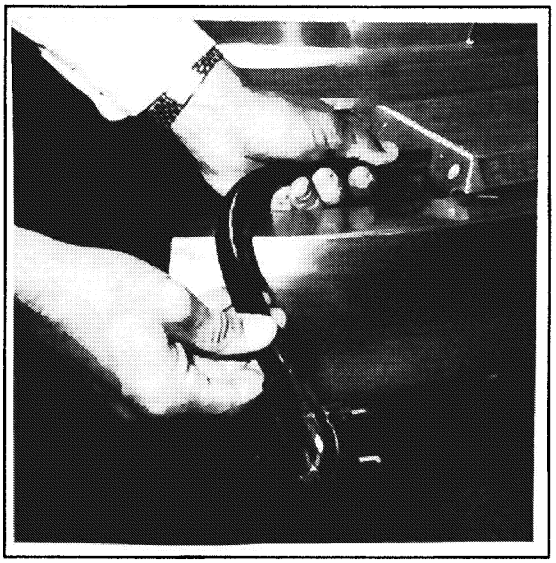


Fig. 5 - 120 Volt Electrical Cable

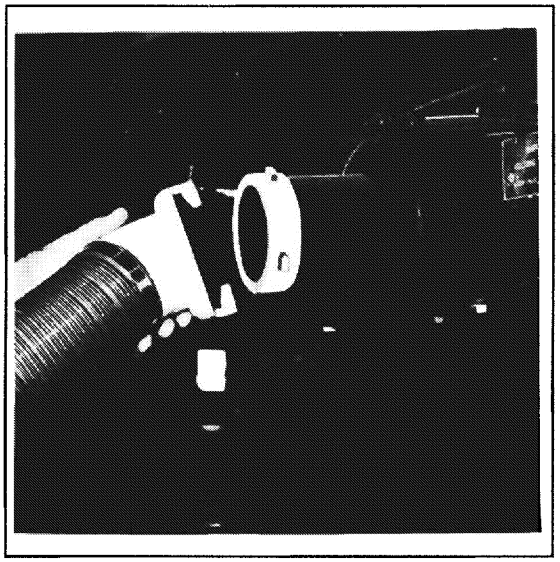


Fig. 6 - Waste Drain Hose Hook-Up

WINTER TRAVELING

Traveling in sub-freezing temperatures will require certain precautions to protect the plumbing system and your personal belongings from being damaged by freezing.

Whenever possible the heat should be kept on at a constant temperature. It is easier for the furnace to keep a constant room temperature than for the trailer temperature to be allowed to drop to 50 degrees Fahrenheit then attempt to raise it to room temperature.

WARNING: Always shut off the LP gas when gasoline is added to the tow vehicle.

Some states do not allow LPG to be turned on while moving. While traveling in these states you must use your common sense. How cold is it? How long will it be before you can turn the heat back on? Is the temperature dropping or raising? Remember, when towing at 50 MPH the wind chill factor will cause the interior of the trailer to cool much faster than a trailer that is parked.

When parked in sub-freezing temperatures make sure you keep a full supply of LP gas and plug into a 110 volt power source whenever possible. A fully charged battery will not last more than 8 to 10 hours if the furnace is running almost constantly and 110 volt power is not available.

Leave cabinet doors, wardrobes and bed doors partially open to allow warm air to circulate around plumbing lines and fixtures. Insulate and/or wrap your exterior water lines with heat tape.

It is also important to guard against excessive humidity. Cold air will not hold the moisture, and "sweating" will occur around window frames, on window glass and may occur where structural beams connect the inner and outer walls of the trailer. The best method to combat sweating is to hold water vapor producing functions to a minimum. Boiling water, baths, showers, washing dishes are necessities, but usually can be reduced. Opening windows just slightly on opposite sides of the trailer will also help alleviate the problem. In severe conditions you may want to use a small dehumidifier to aid in reducing condensation.

NOTE: The Airstream trailer is built as a recreational vehicle and is not intended as a permanent dwelling or for more than temporary use in sub-freezing temperatures.

NOTES

EXTERIOR

Cleaning

The clear plasticoat finish applied to the outer surfaces has been specifically formulated by Airstream to provide maximum protection for the shiny aluminum surface. The plasticoat formula includes special plasticizers used to keep the coating flexible so that it can cope with aluminum's high coefficient of expansion. This flexibility, however, results in a surface coat which is of necessity somewhat softer than automotive acrylic lacquer finishes.

CAUTION: For this reason, ABRASIVE POLISHES OR CLEANING SOLVENTS SUCH AS AUTOMATIC DISHWASHER OR ACID ETCH CLEANERS ARE TOO STRONG AND SHOULD NEVER BE USED.

As a general rule of thumb we recommend the trailer be washed about every four weeks and waxed in the spring and fall. To make sure your new unit is always protected you should wax it immediately or have your dealer wax it just prior to delivery. In industrial areas cleaning and waxing should be done on a more frequent schedule.

ALWAYS CLEAN YOUR TRAILER IN THE SHADE OR ON A CLOUDY DAY WHEN THE ALUMINUM SKIN IS COOL. Oil, grease, dust and dirt may be removed by washing with any mild non-abrasive soap or detergent. Cleaning should be followed by a thorough clean water rinse. Spots and streaks may be prevented by drying the unit with a chamois or a soft cloth. WHEN WASHING OR POLISHING YOUR TRAILER, ALWAYS WIPE "WITH" THE GRAIN OF THE METAL.

After cleaning and drying, a good grade of non-abrasive automotive paste or liquid wax will increase the life of the finish, especially in coastal areas where the finish is exposed to salt air or in polluted industrial areas. It will also protect the shell from minor scratches and make subsequent cleaning easier.

It is important to remove sap, gum, resin, asphalt, etc. as soon as possible after they appear by washing and rewaxing. Sunlight and time will bake-harden these materials making them almost impossible to remove without heavy buffing. If asphalt remains on the trailer after washing, use a small amount of kerosene on a rag and wipe the spots individually, being careful not to scratch the finish.

There is no painting process today that has an indefinite life. Plasticoat is no exception to this rule. If the plasticoat loses its flexibility it will tend to crack and peel and the resulting aluminum exposure is subject to oxidation. If cracking or peeling do occur, temporary repairs may be made by applying "Clear RV Acrylic" available in aerosol containers through the Wally Byam Store at your Airstream dealer. It's important that you protect the aluminum from oxidation to keep its original appearance.

To keep your trailer looking new, paint the "A" frame, LPG tanks, and rear frame periodically.

It is recommended that the caulking and sealant used in external seams and joints such as end shell segments and around window frames, light bezels, beltline and rub rail molding, etc. be checked regularly. If this material has dried out and become cracked or checked, or if a portion has fallen out, it should be replaced with fresh material to prevent possible rain leaks. Caulking and sealing material is available from your Airstream dealer.

Main Door

When towing, both the door lock and dead bolt lock must be secured. If they are not both locked, the constant vibration of travel may cause the door to open with possible damage.

All trailers have two locking features on the main door. One is the passage set lock that prevents the main door latch handle from being operated. The second is a keyed dead bolt. The dead bolt tumbler may be part of the main door lock or it may be separate.

Keyless Entry System

The optional keyless entry system is locked by depressing the last two pads (7/8 and 9/0 on the code pad) just to the left of the main door. To open, press the five digit code given you at the time of purchase. We would suggest you make note of these numbers in your wallet or purse just in case a sudden memory lapse happens.

The system can be overridden by the manual key. Since 12 volt power is required to operate the keyless entry system it is a good idea to keep an extra key hidden on the exterior of the vehicle. This way a dead battery can't keep you from entering the coach.

A convenience like this can really spoil you, and the back up key hidden on the exterior will give you extra peace of mind.

SERVICE INFORMATION

There are four major electrical components used to operate the keyless entry system.

* Key Pad
* Dash Switch
* Drive Motor
* Control Module

The CONTROL MODULE is the heart of the system. Twelve volt power from the battery supplies power to the module, and is distributed by the control to the key pad drive motor and aisle lights.

The control module and the connections shown on the wiring diagram are located under the galley back against the wall.

If any failure occurs the first check is to look for power at the key pad. Does it light when a key pad is depressed? If not, check the battery for charge. If it is okay check for 12 volt positive and negative. Perform this check at the red and white wires providing power to the module as shown on the wiring diagram.

Listen! Depress key pads 7/8 and 9/0. Can you hear the drive motor trying to work the plunger?

Does the dash switch work the lock when the key pad doesn't? If this is the case depress each key pad button one at a time. Pause long enough for the light illuminating the pad to go out between each test. Did each pad make contact indicated by the light being activated?

The dash switch is a simple grounding device. Grounding either wire going to the switch should extend or retract the lock plunger.

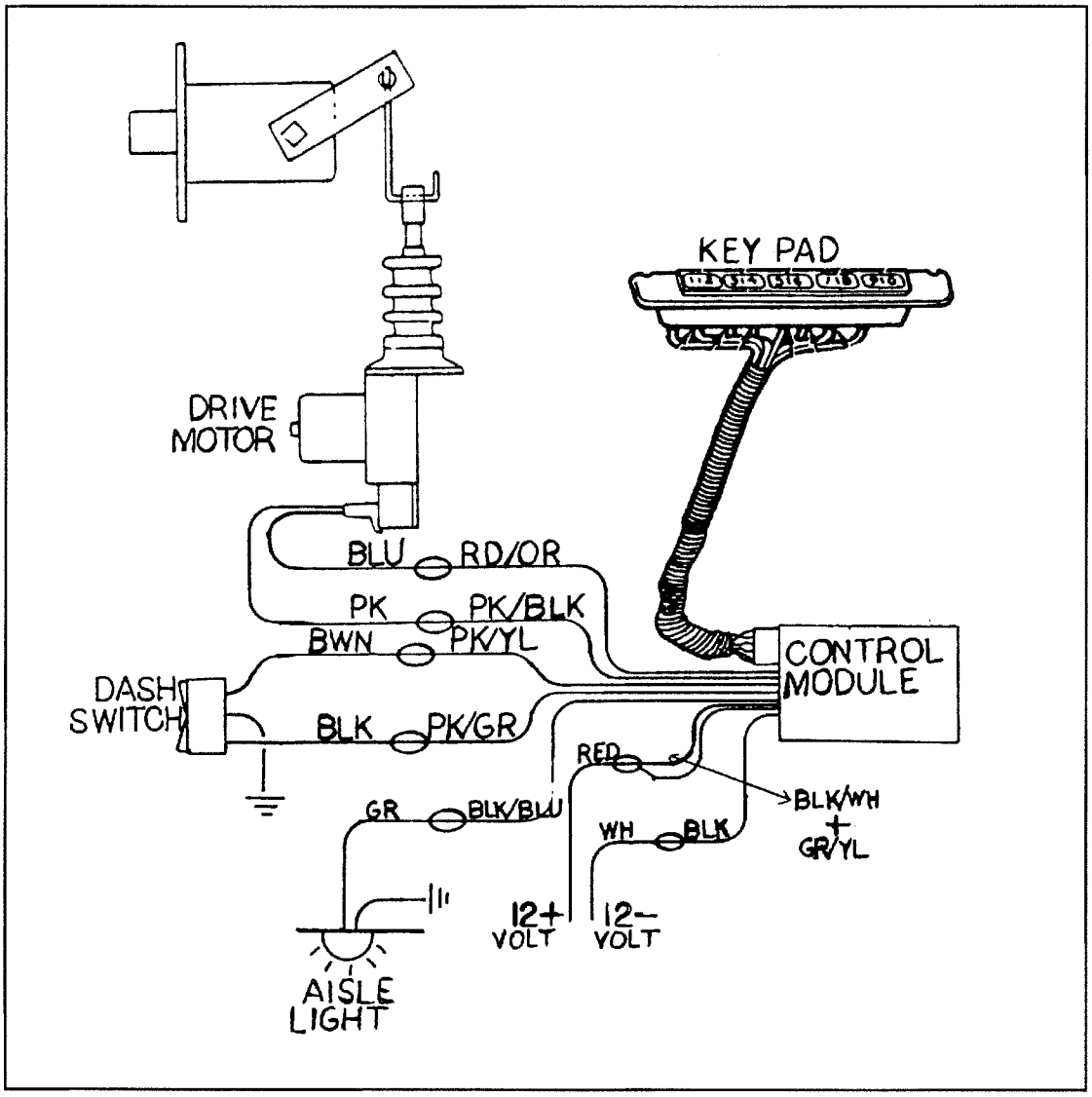
CAUTION: Do not ground both wires simultaneously to prevent damage to the control module.

When performing simple tests like these it is important to realize the drive motor is polarity sensitive. This means either wire to the motor may be negative or positive according to the mode. When the mode is reversed (open to close or close to open) the wire that was positive becomes negative and the negative becomes positive.

The drive motor can he tested by providing positive and negative current to the blue and pink wires. Just touching the wires will be enough to active the motor. Switch the polarity to the wires. Did the drive motor reverse?

Performing these simple tests will isolate 95% of any problems. Don't let the number of wires at the control module scare you. Close examination will show we've only used a few of the functions the module is capable of performing, and the only wires you need to be concerned about are those shown on the following diagram.

If more detailed information is required a 30 page diagnostic booklet has been produced by Ford. A copy may be obtained upon request through your dealer.



Screen Door

The screen door secures to the main door by means of a slide bolt type latch. It can be operated independently by releasing the slide bolt and swinging the screen door away from the main door. A roller catch is provided to secure the screen door to the frame when closed.

Step

To operate the fold-away step just press down on either side of the latch bar and the step will automatically drop into position. To stow the step simply lift the front edge and then push it up under the trailer to its stowed position.

The optional extension step available with fold-away step is permanently attached to the main step and when needed it is simply flipped out.

CAUTION: Never travel with step lowered or extended.

Exterior Windows

The windows in your trailer are of tempered safety plate glass. To open: release the two lever locks at the bottom, lift up on the two side operator handles until the window is in the desired position, and place the operators into one of the three positioning slots on the side of the frame. To lock the windows reverse this position

Note: Some windows are designed as an emergency escape exits. The rubber spline holding the screen in place is looped so it can be pulled out in one swift motion.

You and all your family should practice escape procedures so they can be rapidly accomplished even in total darkness.
WARNING: Never park your trailer so the escape windows cannot he easily used for emergency exits.

Clean your trailer windows the same way you clean the windows in your home. Clean the seals with a damp cloth or mild detergent every three to six months, taking care not to use strong solvents as they will damage the seals. A coat of natural silicone lubricant applied after the seal has dried will keep it flexible. Spread the lubricant evenly with a brush or finger, working it into the surface.

This is a good practice for all rubber seals in your trailer. For replacement of a damaged window contact an Airstream Service Center.

Your PLASTIC SCREENS are easy to maintain. Just clean occasionally with a damp cloth. **Note:** They will melt at the point of contact if touched by a cigarette.

Vista View Windows

Vista view windows, optional on some models, allow for interior lighting while maintaining privacy. They are equipped with integral shades.

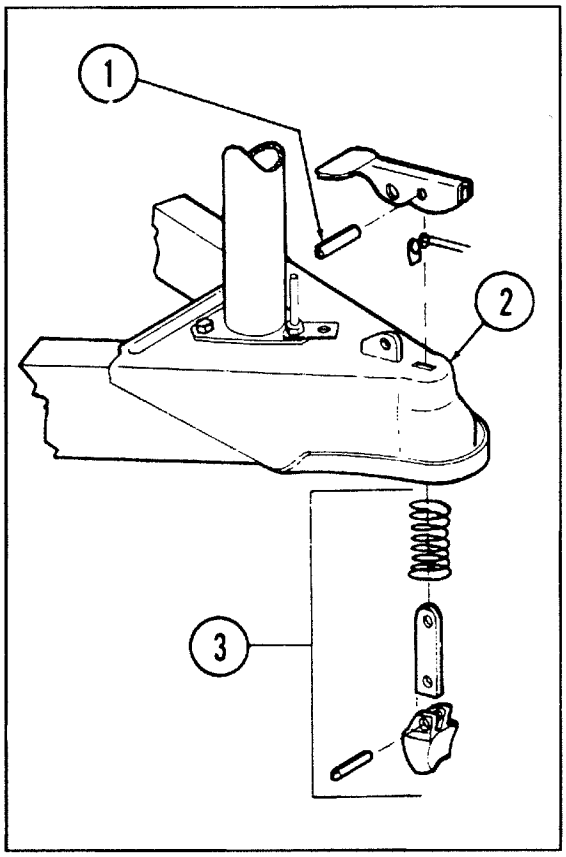
Awnings

Complete instructions have been provided with your awning. You should make sure your traveling companion is familiar with the operation of the awning. If a sudden wind should come up, or if high wind is forecast, the awning should be retracted and stowed.

Chassis

The standard RECOMMENDED HITCH BALL HEIGHT for your Airstream is 18 3/4". If you plan long trips with the trailer heavily loaded you should check your trailer, after loading, to determine the optimum height. To check, park the trailer on a level surface and crank the front jack up or down until the measurement from the frame to the ground is the same front and rear. Measure from the ground to the upper surface of the hitch ball coupler Add one inch to this figure when setting the ball height on the tow vehicle to allow for the suspension settling under the added weight.

The LATCH ASSEMBLY on your coupling is a relatively simple mechanism, easily removed for cleaning. To remove use a proper size punch to drive the roll pin (see illustration) out of the latch handle. The tongue and spring will then fall free from the housing. When reassembling, compressing the roll pin with vice grip type pliers will make it easier to start through the hole.



1. Roll Pin
2. Coupler Housing
3. Tongue & Spring Assy

OPTIONAL POWER JACK

The optional power jack is operated by a switch located on the bottom of the housing. There is a protective cover screwed over the switch to discourage children from operating the jack and running the battery down. When the jack is fully extended or retracted internal limit switches automatically shut off the motor.

Should an electrical failure occur, remove the power head by loosening the two allen set screws. The jack post may now be operated manually by inserting the emergency handle into the coupling on top of the post.

Replacing Power Head

It is essential that the following procedure is used before the power head is replaced on the post.

I. With 12 volts connected, ground the power head to trailer "A" frame. Operate main switch in "post retracting direction" until the motor stops automatically.

2. Using emergency handle, crank post clockwise by hand until fully retracted, then turn crank one turn counterclockwise.

3. Replace head on post and make sure that drive pin is engaged with post coupler. Tighten allen set screws.

Maintenance

1. Every two years remove screws and cover and check grease condition. Use a HMP grease similar to Lubriplate 630AA and spread on gear teeth. Grease is not required on the nylon timing gears. No internal lubrication of the post is required, but an occasional external application of a silicone or WD-40 spray lubricant on the inner tube of the post when extended is permissible.

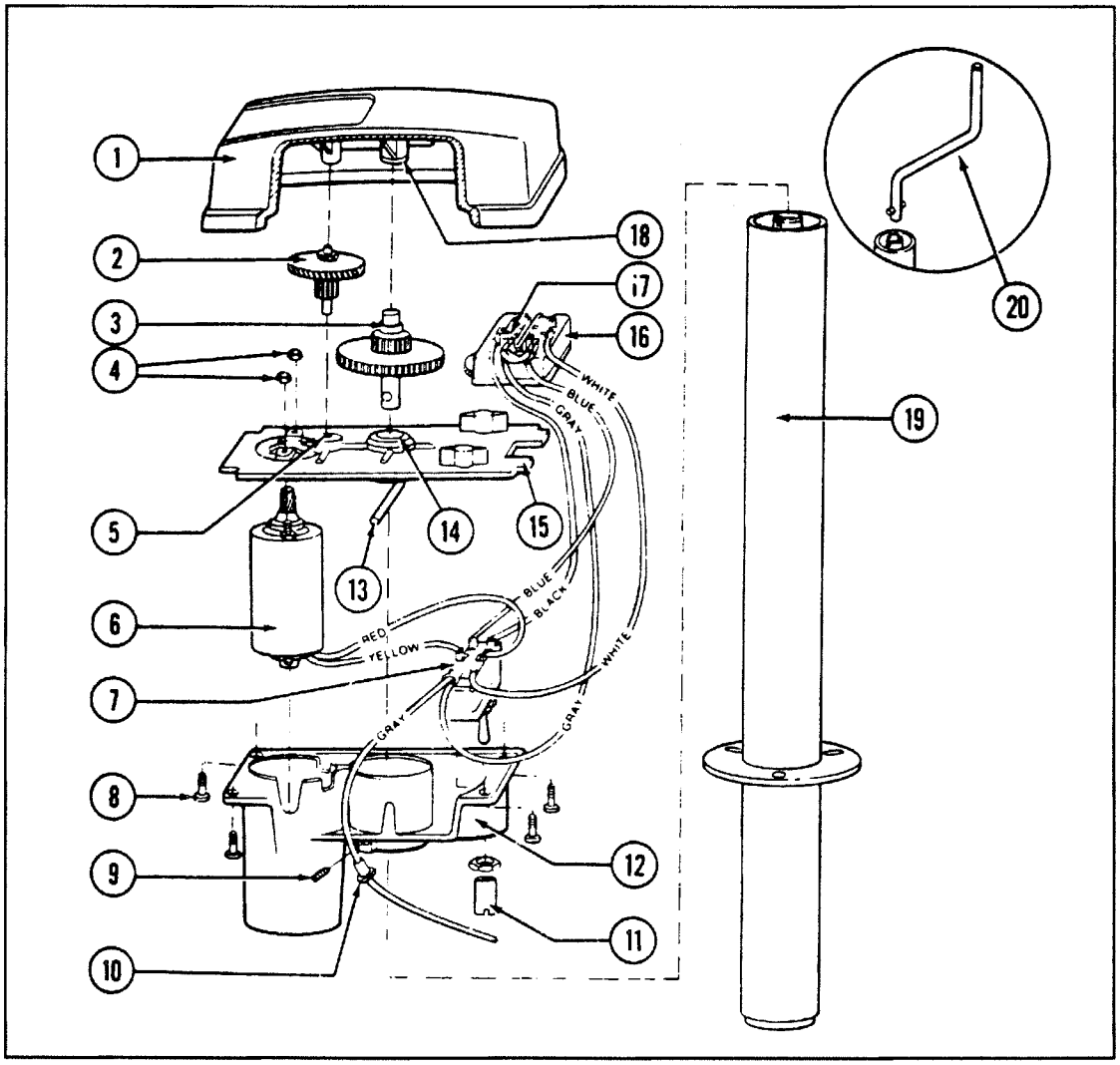
2. Before replacing the cover ensure that the plate and limit switch unit are located correctly.

3. Apply a little sealing compound around the mating surface of the gear cover and replace screws tightening them diagonally. Check synchronization if head has been removed from the post.

4. A little penetrating oil on the allen set screws occasionally will help prevent corrosion and difficult removal.

Note: Leave tow vehicle transmission in neutral when lifting both units. Dolly wheels are not recommended. Always retract stabilizing jacks before using your Super Jack under load.

SUPER POWER JACK ASSEMBLY



1. Cover
2. 2nd/3rd gear assy
3. Drive gear assy
4. Lock nut, No 10-24
5. Bushing, No 3, 3/16" ID x 5/16 OD x 1/4"
6. Motor assembly
7. Toggle Switch
8. Screw No 8 x 1/2" type 23 PH Phillips
9. Set screw 1/4" -20 x 5/16"
10. Strain relief bushing
11. Metal switch cover
12. Motor and switch housing
13. Groove type pin
14. Bushing 7/16" ID x 5/8 OD x 5/8"
15. Plate centering
16. Limit switch assembly
17. Micro switch
18. Bushing No 2, 5/16" ID x 7/16" OD x 3/8"
19. Mechanical ball jack post (less power head)
20. Emergency handle
21. Hex wrench (not shown)
22. Power jack stand (not shown)

TIRES

Your trailer is equipped at the factory with name brand trailer tires. Airstream dealers cannot make adjustments to tires. This must be done by a dealer who handles that particular brand. If you ever have tire problems check the local telephone directory for the nearest dealer.

To get the maximum performance from your tires check the air pressure often, but only when the tires are cool. Never bleed out air immediately after driving. Recommended tire pressures vary with tire type and size. For pressures refer to the SPECIFICATION TABLE.

WARNING: It is also important to periodically check on the tightness of lug nuts. They should he tightened to a torque of 90 to 95 ft. pounds on both the steel and forged aluminum wheels. Care should he taken- at all times when handling the forged aluminum wheel because of possible damage to its appearance.

In warm climates park out of the sun whenever possible. In desert regions use the tire covers to prevent ultra-violet deterioration to tires.

TO CHANGE A TIRE with a jack see the label affixed to the underbelly just to the rear of the wheels. This label, Jack points to the plate rivetted to the main frame where the jack head must be placed. A flat tire may also be changed without the aid of a jack. Drive the unit up a ramp 8" wide, 6" high and about 3 fee long at the base. Position the good tire on the ramp. This will raise the flat tire clear of the ground.

WARNING: Never attempt to change any tire without securely chocking remaining wheels. Never position yourself in a manner where a raised trailer can come down on you if it should become dislodged from a jack or ramp.

All tire, wheel, hub and drum assemblies are balanced at the factory. Be sure to rebalance the tire, wheel, hub and drum assemblies each time a tire is changed or rotated.

WARNING: When removing aluminum forged wheels from spindle, it is very important to mark them to assure the wheel is placed in the same position of the drum when reinstalling. If the aluminum forged wheel is to he mounted on a different drum it is important to sand all loose corrosion from the mating surfaces.

In an emergency remove the flat tire. The independent suspension of the Dura-Torque Axle allows four or six wheel units to be safely towed on three or five wheels for a short distance (100 miles maximum) and only at a low speed (30 MPH).

Be especially cautious in crossing holes or dips in the road. Under these circumstances it is good practice to set your rear view mirrors so that you can observe your tires at all time.

Tips on Tire Care

Any tire, no matter how well constructed, may fail in use as a result of punctures, impact damage, improper inflation or other conditions resulting from use. Tire failures may create a risk of property damage or personal injury. To reduce the risk of tire failure we strongly recommend the following:

I. Check the pressure in your tires, including your spare, at least monthly when the tires are cool (after the vehicle has stopped three hours and then driven less than one mile.) Do not reduce pressure when tires are hot. Use a tire gauge to check pressure and maintain it at the recommended level.

2. Never overload your tires. The maximum load carrying capability of your tires is molded on the sidewall of the tire.

3. Check your tires frequently for scrapes, bulges, separations, cuts or snags resulting from use. See your tire dealer immediately if any such condition is discovered.

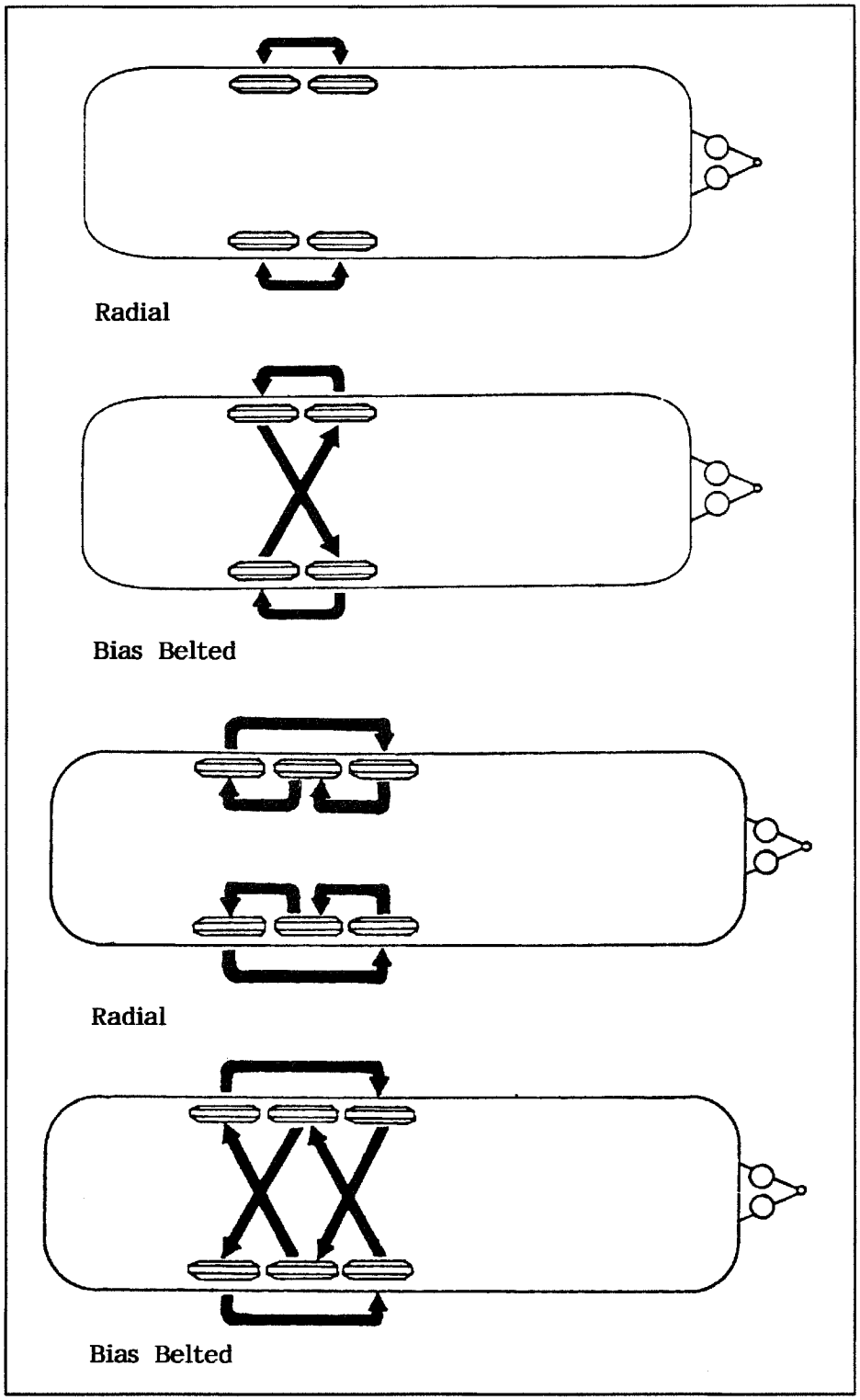
4. Never operate your vehicle in excess of lawful speeds or the maximum speeds justified by driving conditions, or in excess of speeds recommended for the tire you are using.

5. Make every effort to avoid running over objects that may damage the tire through impact or cutting, such as chuckholes, glass, metal, etc.

6. Never drive on smooth tires. Tires should be removed when 2/32nds inch of tread depth remains. In most states it is illegal to drive with less than 2/32nds inch remaining tread depth.

TIRE ROTATION

(10,000 Mile Intervals)



AXLE AND RUNNING GEAR ASSEMBLY

Each Airstream DURA TORQUE axle is aligned during manufacturing, and double checked on a random basis. Alignment after delivery is the customer's responsibility.

Hitting chuck holes or rough railroad tracks while going straight will only cause misalignment after the tire has been struck many repetitive times. Of course, a deep enough hole can affect the alignment immediately.

The worse culprit is curbs because they are normally struck at an angle. Surprisingly rear axles are occasionally damaged when people are attempting to park beside a curb and are backing up their trailer.

As you look under your trailer is it normal for the axle to be bent up in the middle. This bend is how the camber is obtained.

Toe-in is built into the axle by very slight bends in the axle tube on each end.

Should tire wear ever indicate misalignment check with your dealer for the nearest location having the proper equipment.

CAUTION: Never allow heat to he applied to the axle tube since the rubber providing the spring torsion action will he severely damaged.

Dura Torque Axle Alignment Specifications

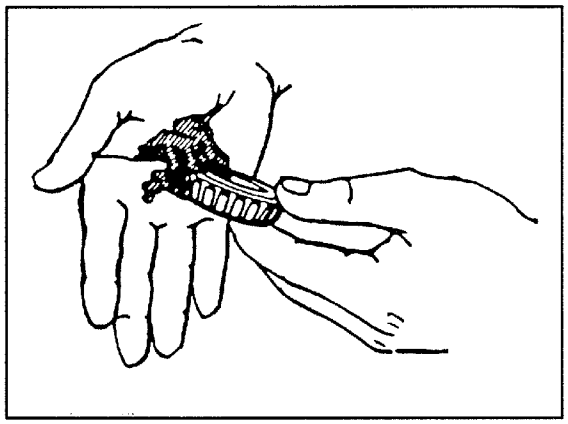
Toe-In each side 1/16"	Tolerance 1/16" + or -
Camber each side 3/4° Pos	Tolerance 3/4° + or -

Wheel Bearing Maintenance

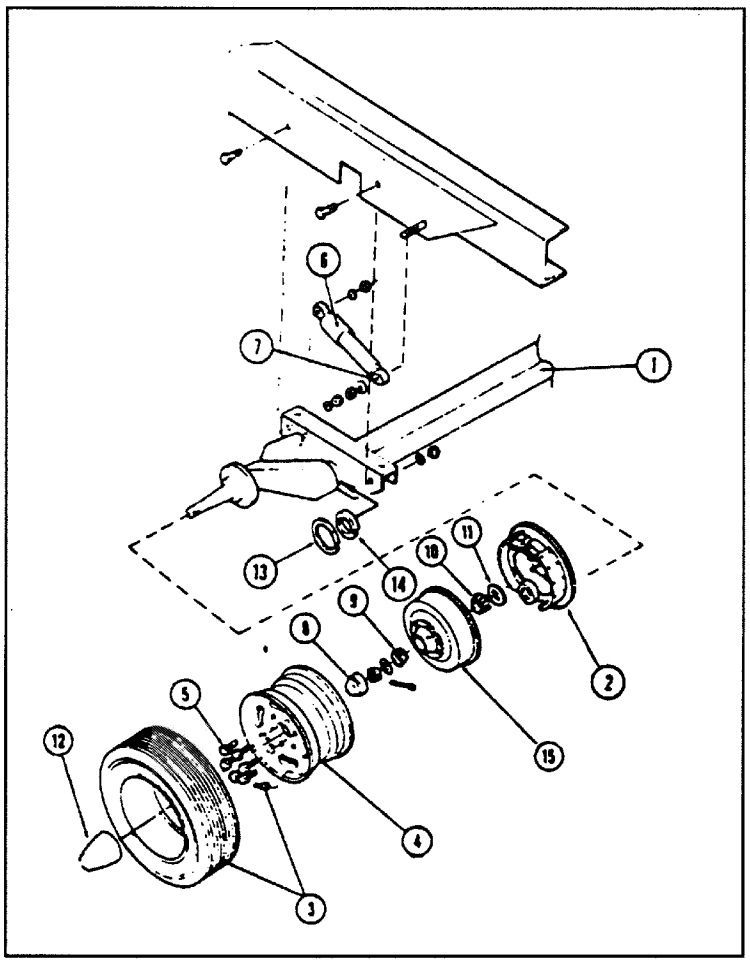
1. Jack trailer at marked jack location pad behind axle on main frame.
2. Remove hub cap or spindle cover, wheel and tire.
3. Remove dust cap.
4. Remove cotter pin.
5. Remove spindle nut and washer.
6. Remove bearings, hub and rotor.
7. Lay down hub and rotor with inside grease seal down. Knock out inner bearing and grease seal using wood or plastic dowel and hammer.
8. Clean all parts thoroughly with kerosene.
9. Check all bearings and races for chips or roughness of any kind. Any damaged component must be replaced.
10. Pack bearing with a good grease (No 2 grade-265 ASTM penetration or equivalent).
11. Install inner bearing.
12. Install new grease seal in hub and rotor using wooden or rawhide mallet.
13. Install hub and drum on spindle.

14. Install outer bearing.
15. Install washer and spindle nut.
16. While rotating the wheel, tighten the spindle nut with a 12" wrench until there is a slight tension. Then back off one notch and install cotter pin. There should now be from .001" to .010" end play in hub. If not, back off one more notch.
17. Check and retighten the lug bolts, if necessary, every 50 miles for the first 200 miles of travel. They should be tightened to torque of 90-95 ft. lbs.

When greasing bearings by hand, place a glob of grease in the palm of one hand and push the large end of the bearing down into the grease (see illustration). Keep turning the bearing around and forcing it down through the grease until the grease is extruded up through the opposite end. Wipe the extra grease in your hand around the outside of the bearing. It's not necessary to fill the hub and dust cap with grease.



AXLE AND RUNNING GEAR ASSEMBLY



1. Dura Torque Axle
2. Brake Set
3. Valve Stem
4. Wheel
5. Lug Nuts
6. Shock Absorber
7. Shock Absorber Bushing
8. Dust Cover
9. Outer Bearing
10. Inner Bearing
11. Grease Seal
12. Spindle Cover
13. Retainer Ring
4. Nylon Bushing
5. Unicast Hub and Drum

ELECTRIC BRAKES

A CONTROLLER installed in your tow vehicle will synchronize the trailer brakes with your car brakes. It is designed to apply the trailer brakes whenever the tow vehicle brakes are applied.

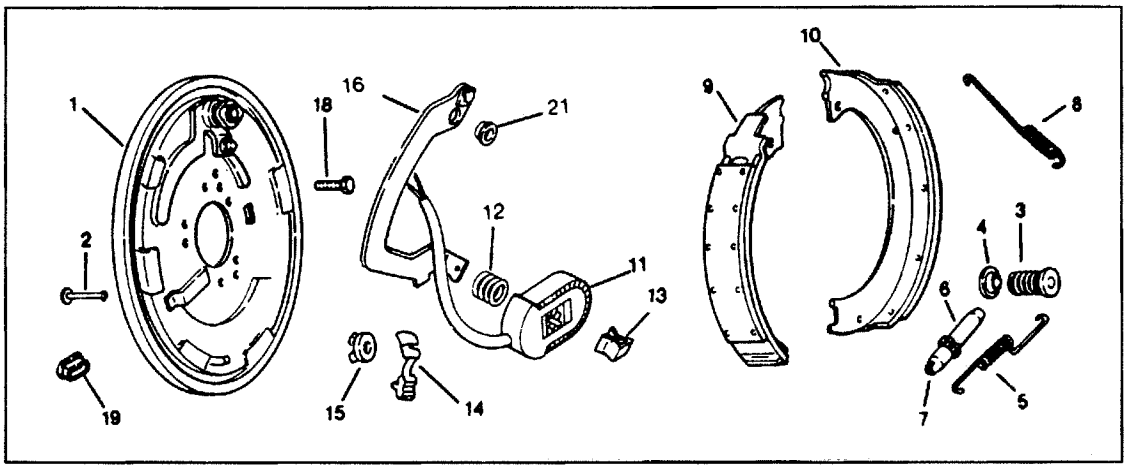
The controller handle adjustment affects the rate of application of the trailer brakes. This adjustment has no bearing on the maximum braking capacity of the trailer brakes. Because of the wide variety of towing vehicles and trailers it is necessary to balance the trailer brakes with the tow vehicle brakes to provide for a safe, comfortable stop. This adjustment should be made to provide for a slight lead of the trailer brakes over the tow vehicle brakes. Turning the handle clockwise will decrease the rate of application of the trailer brakes, while counterclockwise will increase the rate of application. When the desired setting is reached, the controller will hold the adjustment, but may be varied at any time by rotating the handle as described above. After this adjustment there should be no sensation of the trailer pushing the car during a stop, nor should there be an excessive sensation of the trailer pulling the car during a stop.

In THE EVENT OF AN ACCIDENTAL SEPARATION of the tow car and trailer, the BREAKAWAY SWITCH will set and lock the trailer brakes for a sufficient length of time to stop the trailer. The switch is activated when the small pin in the front of the unit is pulled out by the wire attached to it and to the car. THIS PIN SHOULD BE PULLED OUT, LUBRICATED WITH LIGHT HOUSEHOLD OIL AND REPLACED EVERY 90 DAYS.

To prevent corrosion within the breakaway switch, pull the switch's pin straight forward and spray the inside of the switch through the hole with an electric contact cleaner (such as Spra-Kleen) and reinsert the pin. A drop of light household oil on the groove near the base of the pin will allow the pin to operate freely. WHEN THE TRAILER IS CONNECTED TO THE TOW CAR, THE BREAK-AWAY SWITCH LOOP SHOULD BE ATTACHED TO THE PERMANENT FRAME OF YOUR HITCH. When disconnecting trailer from tow vehicle remove wire loop from the frame. DO NOT REMOVE PIN FROM SWITCH BECAUSE THIS WILL APPLY THE TRAILER BRAKES.

CAUTION: **Do not use break-away switch for parking brake.**

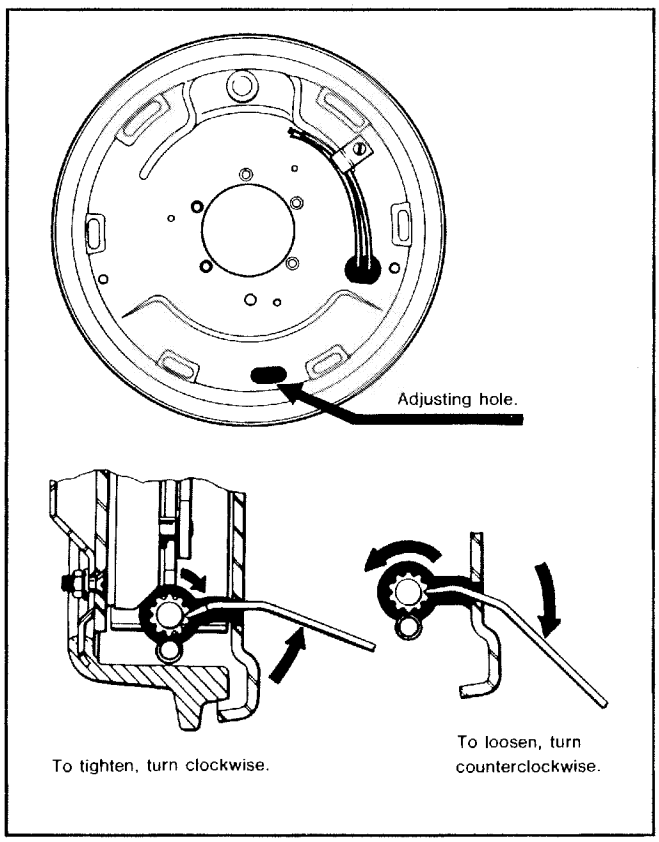
Backing Plate and Shoe Assembly



1. Backing Plate Assy
2. Hold Down Pin
3. Hold Down Cup w/Spring
4. Hold Down cup
5. Adjusting Screw Spring
6. Adjusting Screw Assembly
7. Adjusting Socket
8. Shoe Retractor Spring
9. Primary Shoe & Lining
10. Secondary Shoe & Lining
11. Grooved Magnet 12"
12. Magnet Spring
13. Magnet Retaining Clip
14. Strain Relief
15. Strain Relief Adapter
16. Magnet Lever Arm Assy
17. Wire Loom
18. Bolt - 3/8 for 5 Bolts
19. Plug, Adj. Slot
21. Bushing Lever Arm

Brake Adjustment

1. This should be done- at least every year or 10,000 miles whichever comes first.
2. Jack trailer at marked jack location pad behind axle on main frame.
3. Remove the small rubber plug at the base of the backing plate.
4. While turning the wheel and tires, tighten the brakes (See Diagram) using a brake adjusting tool or a screw driver bent to a 90 degree angle until the wheel has a heavy drag. Then back off until the wheel turns freely.
5. Replace rubber plug.
6. Repeat this operation with all trailer wheels.



Brake Assembly Removal and Installation

1. Jack trailer at marked- jack location and behind axle on main frame.

2. Index marks should be added to wheel and drum. Realign these marks when replacing wheel, thus eliminating the need for wheel/drum rebalance.

3. Remove hub cap or spindle cover, wheel and tire.

4. Remove dust cap.

5. Remove cotter pin.

6. Remove spindle nut and washer.

7. Remove hub/drum and outer bearing.

8. Remove brake by taking off five bolts attaching brake to brake flange and spindle.

9. To install, reverse procedure. Be sure bearings are clean before installing.

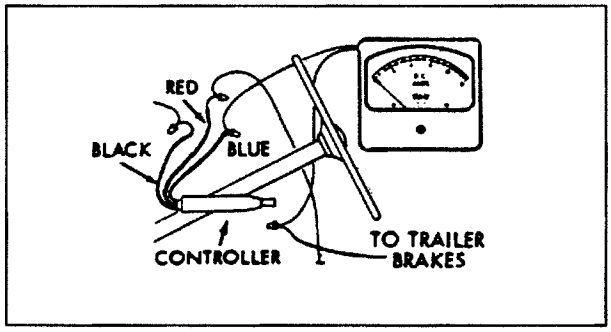
Checking, Repairing and Replacing Electrical Components (After brake assembly removal.)

1. Test Instrument.

   In order to properly check the electrical circuit and components, a D.C. ammeter having a range of approximately 0-15 amps should be used.

2. Test the circuit.

   First check the continuity of the system. To do this connect the trailer to the towing vehicle, then place the ammeter in the circuit as shown in diagram below.



Note: You can avoid possible damage to the ammeter by connecting one lead, then just touch the other lead quickly. If the needle goes the wrong way you have reversed the polarity. To correct, simply reverse the leads, then complete the connection. Now operate the controller slowly. The cut-in, or lowest current should read from 2 to 3 amps. Move lever completely to right. Amp reading should be 12.0 or 13.0 amps. These values are without the selective resistor in the circuit. It should be bypassed by putting both wires on a common terminal.

If the ammeter registers the correct high and low reading and shows smooth current modulation, you may assume that the controller is functioning properly. If you do not show the correct high and low, or the modulation is poor, check the following electrical circuit problems.

A. Circuit Check

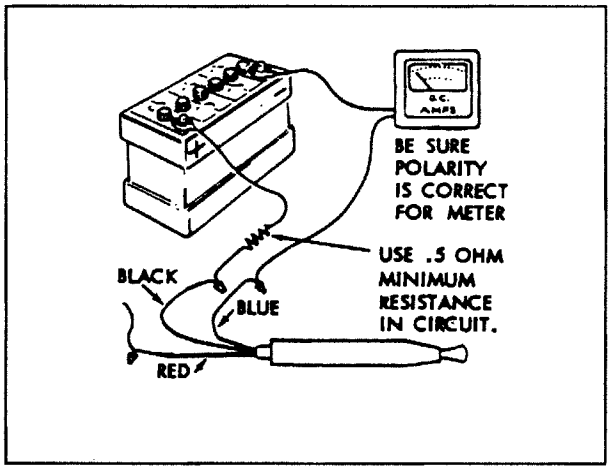
Check 9-way connector for proper engagement and cleanliness.

Check all terminal points and splices in both tow vehicle and trailer.

Note: Sometimes a fuse has been installed in tow vehicle portion of brake circuit. (This is not recommended.)

B. Controller Check

Remove controller from tow vehicle and connect the ammeter as shown in diagram below. The ammeter should vary smoothly from "OFF" to "ON". If it does not vary smoothly or shows no current when the controller is at full "ON", remove the controller cover and inspect the resistor coil. If the coil is burned out it must be replaced. A burned out coil can be detected by visual inspection.

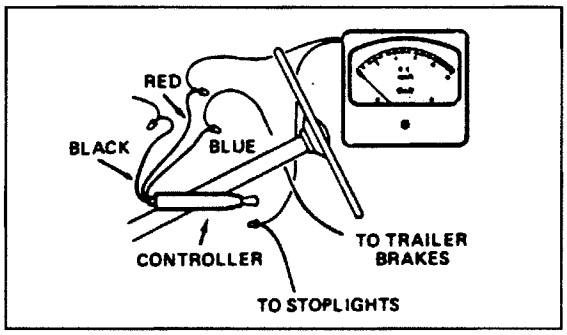


CAUTION: The resistor coil should last indefinitely under normal operating conditions. If the coil is burned out, carefully check the entire electrical system for a short circuited condition. A short circuit can damage any electric brake controller.

After replacing the coil be sure there is at least .020" clearance between the contact strip and the coil when the controller handle is unapplied.

C. Stop Light Switch

First check the continuity of the system. To do this connect the trailer to the towing vehicle, then place the ammeter in the circuit as shown in diagram.



Note: Whenever connecting the ammeter you can avoid possible damage to the ammeter by connecting one lead then just touching the other lead quickly. If the needle goes the wrong way you have reversed the polarity. To correct simply reverse the leads, then complete the connection.

All controllers are equipped with a separate stop light switch which allows full current to flow to the trailer stop lights throughout brake application. It should be at .020" gap when the controller handle is unapplied. This gap can be adjusted by loosening one screw through an access hole in the bottom on the controller case.

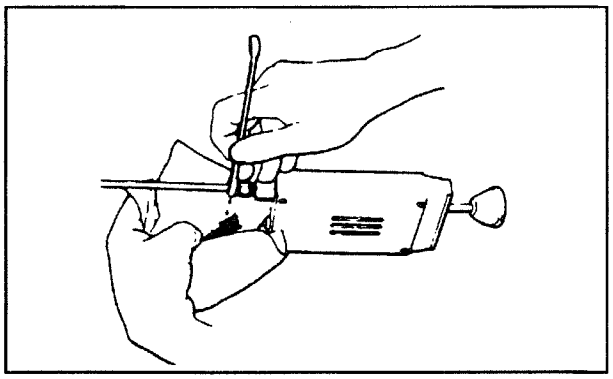
D. Hydraulic Cylinder Leakage

When checking the electrical circuit of the controller it is advisable to check its hydraulic cylinder at the same time to be sure it is tight and free of leakage.

If leakage does occur it is recommended that the complete hydraulic cylinder assembly be replaced. When reconnecting the controller into the hydraulic system of the tow car, bleed and check connection.

C. Bleeding the Hydraulic Brake Line

Removing air from the brake system is easy to do and very important. Follow the procedure given below carefully. Then wipe away all excess of brake fluid to avoid damage to painted surfaces. Refill the master cylinder reservoir.



1. Apply continuous pressure on brake pedal.
2. Loosen fitting at the controller to allow fluid (and air) to bleed out.
3. Bleed until fluid flows continuously (all air removed).
4. If pedal goes to floor board, tighten fitting before raising pedal and repeat Steps I thru 3.
5. With all fittings tight, press pedal hard for 10 seconds. Check for leaks at adapter tee and controller.
6. Refill master cylinder reservoir.

Note: If pedal is spongy after bleeding at controller it may be necessary to bleed the system at the wheel cylinders. All automotive hydraulic brakes have a bleeder screw on the backing plates or disc brake for this purpose.

F. Special Note on Failure Switch Reset

All 1967 and later vehicles have a brake failure warning lamp on the instrument panel. This lamp should remain unlit during brake applications after the installation of the controller. It may inadvertently be switched "on" if excess pressure is applied during the controller hydraulic line bleeding, and must be reset.

G. Procedure for Resetting Switch

Ford Motor Company vehicles must be reverse bled in order to reset this switch. To do this, loosen a front connection on the safety switch and rebleed the system. If any difficulty occurs in resetting the switch refer to the vehicle manufacturer's shop manual.

Chrysler and General Motors vehicles have failure lamp switches which are self-resetting and therefore should require no adjustments after controller installation. -

American Motors and Kaiser Jeep failure lamp switches do not require bleeding. However, they do require loosening the connector where the failure lamp wire contact the switch. This allows the switch to center and be reset. Consult the vehicle manufacturer's shop manual if detailed procedure is required.

H. Break-Away Switch

The break-away switch can be checked simply by placing an ammeter in the circuit between the break-away switch and the brakes, then pulling out the break-away pin. If no current flows to the brakes, check to be sure the break-away switch contacts are clean. If the contacts are clean, check the trailer battery for adequate charge. Recharge or replace battery if necessary.

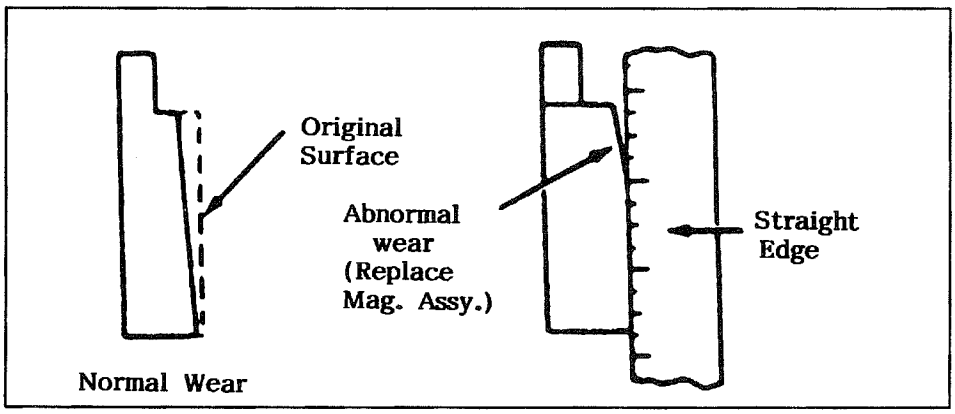
Note: Break-away switch is an emergency device only, and is not to be used as a parking brake. Pull pin and lubricate with light household oil and replace every 90 days.

I. Magnet Assembly

Without removing the magnet assembly from the brake, inspect the magnet for wear and flatness.

If the magnet rubbing surface is flat it need not be replaced until the friction element shows signs of wearing through.

A magnet that is not wearing flat must be replaced since it cannot function efficiently. To check the wearing surface for flatness, lay a scale or straight-edge on the magnet as shown in diagram below.



Before replacing with a new magnet determine the cause of the improper wear. First check the magnet lever pivot. A worn pivot bushing can cause the magnet lever to cock, thus allowing the magnet to tip against the armature plate. If this condition exists, the lever assembly should be replaced. When reinstalling magnets be sure to install the loom (lead wires) properly, avoiding kinks and allowing ample clearance for the lever to move

through its full travel. Operate the lever in both directions to be sure the loom moves properly without binding, kinking, or interfering with lever movement.

J. Magnet Bench Check

To check electrically remove the magnet for bench test. To check for a possible coil to case short connect the magnet with the ammeter as shown in Fig. 7. Since the short may be intermittent, move the leads and rap the magnet while checking. If the ammeter shows current a short is present. Replace with a new magnet assembly.

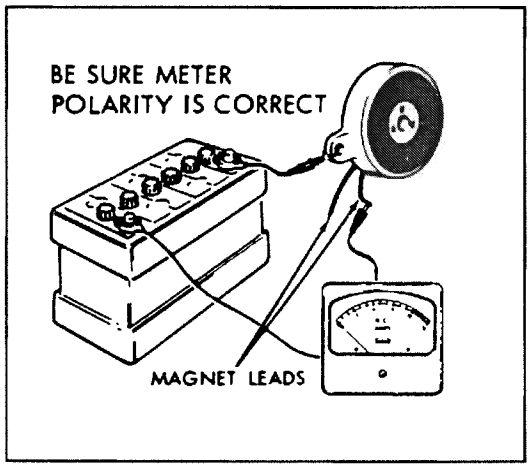


Fig. 7

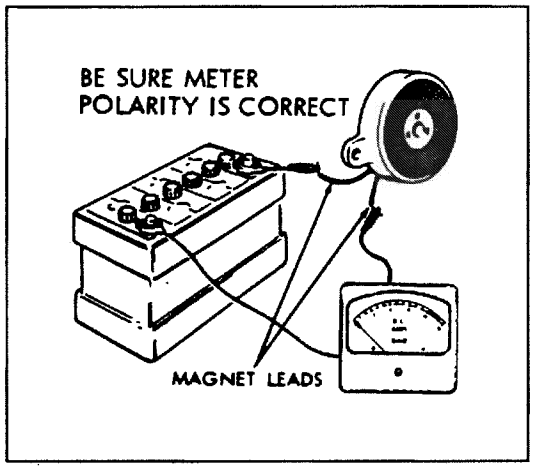


Fig. 8

To check for possible shorts within the magnet coil, connect as shown in Fig. 8. Check current. It should be approximately 2.0 amps on 10" brake magnets; and, 3.0 to 3.5 amps on 12" magnets. If not, replace magnet.

NOTES

INTERIOR

The interior of all Airstream trailers has been designed for comfort, convenience, durability and appearance. How you use it and how you take care of it naturally depends on you. However, if you learn to operate the interior components and take care of them and the trailer properly, this knowledge will add to your pleasure as well as the long life of your trailer.

All materials should be professionally dry cleaned to remove any overall soiled condition. However, these materials may be spot cleaned using the cleaning code instructions as listed. Sample swatches are furnished to our dealers. The dealer will be able to give you the name of the fabrics used in your particular trailer. Each swatch will show the cleaning code in parenthesis.

Upholstery

The following are the cleaning code instructions for the various fabrics used in the Airstream trailers:

Code WS

Fabric Care: Spot clean this fabric either with a mild solvent or a water based cleaning agent. When using a solvent or dry cleaning product follow instructions carefully and clean only in a well ventilated room. Avoid any product which contains highly toxic carbon tetrachloride. You may also use an upholstery shampoo product or the foam from a mild detergent. With either method pretest a small area before proceeding. Use a professional furniture cleaner when an overall soiled condition is reached.

Code S

Fabric Care: Spot clean, using a mild water free solvent or dry cleaning product. Carefully follow instructions on such product. Clean only in a well ventilated room. Avoid any product containing carbon tetrachloride which is highly toxic. Pretest small area before proceeding. Use a professional furniture cleaner when an overall soiled condition is reached.

Code W

Fabric Care: Spot clean, using the foam only from a water based cleaning agent such as mild detergent or non-solvent upholstery shampoo product.
Apply foam with a soft brush in a circular motion. Vacuum when dry. Pretest small area before proceeding. Use a professional furniture cleaner when an overall soiled condition is reached. The above code was designed by the manufacturer of the fabric.

CAUTION: Never remove cushion cover for separate dry cleaning or washing. Any tumble cleaning method can destroy the backing, shrink or otherwise damage upholstery fabric.

SMOKING WARNING: Keep your furniture and family safe from fires caused by careless smoking. Do not smoke when drowsy. Remove immediately any flowing ash or a lighted cigarette which falls on furniture. Smoldering smoking material can cause upholstered furniture fires.

Draperies

CAUTION: All drapery materials and mattress covers must be professionally dry cleaned.

Draperies are removed by unsnapping from the wall, removing a screw or pop rivet from the end of the curtain track, and sliding them out. The pop rivets are removed by drilling through the head with a 1/8" drill bit.

To prevent damage to the draperies while traveling, the VENETIAN TYPE BLINDS should be lowered, secured at the bottom and the slats turned vertically.

Carpet

The carpet can be cleaned with any good commercial carpet cleaner, or with a detergent and water. BE CAREFUL NOT TO SOAK THE CARPET WITH WATER.

Hardwood Flooring (Optional)

The hardwood flooring in the trailer is maintained the same as you would in your home. The flooring may be waxed by using any common floor wax and cleaned using any detergent with water. Should you get any scratches in your floor it can be resurfaced by sanding, using a common floor sander, and then finishing it as you see fit. Polyurethane can also be used as a sealer for your floor. Remember that too much finish on the floor can make it slippery.

Counter Area

Laminate: The high pressure laminate counter top can be cleaned with just soap and water. On tough spots you can use a common cleaning solvent. Be sure no abrasive cleaner is used as there is the possibility it could scratch the surface. A protective pad should always be placed under hot utensils.

Corian (Optional)

Corian is very easy to care and maintain. Conventional cleaning techniques, including abrasive cleaners, can be used on Corian. Common household and commercial cleaners such as powered cleansers, ammonia, strong detergents, oxalic acid solutions, dilute hydrochloric acid, and dilute trisodium phosphate have no affect on Corian. Acid drain cleaners and paint removers should not be used.

Cuts and scratches can be repaired with no permanent damage. A 400 grit sandpaper, and then rubbing with a "Scotch Brite" pad will restore Corian to its original gloss level. DO NOT USE CORIAN FOR A CUTTING BOARD. DO NOT PLACE HOT PANS DIRECTLY ON A CORIAN SURFACE.

Sinks

Stainless Steel: Stainless steel sinks cannot be harmed by boiling water. However, salt, mustard, mayonnaise and ketsup can cause pitting. Stubborn stains will yield to paste made of water and slightly abrasive household cleaner. Be sure to work in the direction of the polish lines on the steel to keep the original finish. Fingerprints are sometimes a problem. They can be minimized by applying a cleaner that leaves a film of thin wax: Simply wipe it on and remove the excess with a dry cloth. After this, fingerprints can be wiped off with a soft dry cloth, or one moistened with a little wax cleaner. The surface should always be washed before wax is applied. Regular cleaning will prevent build-up of scale and film. Ordinary soaps or detergents are best for routine cleaning

of the stainless steel sinks. Rinse thoroughly with warm water and wipe dry with a cloth to avoid streaks and spots.

Porcelain (Optional) Be careful in using your porcelain sink. Dropping objects on it can chip the porcelain. Cleaning can be accomplished using normal household cleaners. Stubborn stains can be removed by using scouring powder if necessary.

Lounges

To convert the Deluxe sofa used in the trailers into a bed, it is only necessary to grasp the top of the back rest and pull it toward the aisle of the trailer. The back rest will raise and pivot out of the seat, becoming the front section of the bed.

The large front drawers can be secured by engaging the "hide-a-lock", accessible by raising the seat of the lounge. Once found it is easy to open the slide bolt arrangement. The hide-a-lock can be used for securing the drawer for travel, or to keep casual lookers out of your belongings.

Dinette

The dinette is made into a bed by raising up on the front of the table and folding the table leg up against the bottom of the leaf. As the table is raised it will unhook from the upper wall brackets. Once it is unhooked it can be pulled out and the wall hinge will let it be lowered on the supports of the dinette seats. The back rest of the seats are placed over the table to complete the conversion.

Table

To open the folding table, lift into a horizontal position and pull the table leg down toward the vertical position until it snaps into place. The leg is hinged at the front edge of the table and is held against the bottom of the table with Velcro. To extend into the double leaf position, lift the table slightly so the leg clears the carpet, and slide the leg and center support out toward the center of the trailer. The leaf then unfolds and rests against the leg support.

Airstream recommends that during travel the table be left in the upright position.

Central Control Panel

The solid state central control panel has two different configurations. The Deluxe panels include two LP tank gauges and auto water tank fill controls. The water and holding tanks and battery check is common to both panels. Also common are the water pump switch, range hood light, range hood fan, and power on light.

To check the tank capacities depress the button for the tank you wish to check and read the status by the LEDs directly above the switches. The power on light will automatically glow whenever you are connected to 120 volt power.

Battery Condition Tester

The battery condition tester, used when not plugged into 110 volt power, will indicate whether the trailer batteries are in good, fair or poor condition. When they show weak or bad condition you should take every reasonable step to conserve power by using as few lights as possible and switching off appliances. The battery should be charged as soon as practical with the tow vehicle charging system, or by connection to 110 volt power.

Water Pump Switch

The water pump switch operates the pump. Once the switch is turned on the pump will run until the water pressure reaches about 35 psi. At this point an internal pressure switch will shut it off. When a faucet is opened the water pressure will drop and the pump will start to run again. The water pump switch should be turned off when you are on city water or when the trailer is left unattended.

LP Gauge Switch

The LP gauge switch reads the status of the LP tanks by movement of the rocker switch. Moving the switch in the upward direction will read the roadside bottle. Downward movement of the switch reads the curbside. The contents of the tanks is indicated by the LED read out above the holding tank and battery condition buttons.

Automatic Water Fill Switch (Optional on some models)

The water tank fill switch controls a solenoid. The solenoid is normally closed. By depressing the water tank fill switch voltage is applied to the solenoid, opening it and allowing water to fill the fresh water tank. The valve is designed so that it automatically shuts off when the tank reaches three quarter full. Do not expect it to fill your tank to the "brim". Try to remember to shut your switch off after filling. As long as the switch is left on, the gauge for the fresh water tank will read its condition.

Microwave/Air Conditioner Switch

Some states require trailers built with both microwave ovens and air conditioners have a switch located under the galley rooflocker designed to prevent operation of both high amperage draw appliances at the same time. The switch provides current to the air conditioner in one position and microwave oven in the other.

If equipped with two air conditioners a second power cord is used because of the high loads involved. If both cords are plugged into the same circuit it will probably not have sufficient power For this reason, heavy duty (10 ga.) 25 ft. and 50 ft. extension cords should be used to plug the air conditioner power cord into a separate circuit.

Bathroom Exhaust Fan

The bathroom exhaust fan is in the bathroom ceiling and is operated by pushing up on the handle running across the fan opening and turning on the switch located at the sink. To shut the fan off, shut off switch and pull the handle back down.

Telephone Shower Head

The telephone shower head is designed to give maximum flexibility in usage, and provides for water saving techniques when using your trailer on self containment. It can be held in the hand and moved about the body. Normally the best water conservation procedure is to wet the entire body and then turn the water off. Apply soap, lather thoroughly, then rinse the soap off. The telephone shower head is also used to fill the tub for taking a bath. When you have finished using the shower be sure to shut the water off at the faucet.

Bath Area Remote Switches

Two remote switches for appliances are located on the bathroom wall. One is for the water pump, and duplicates the pump switch on the central control panel. Either pump switch may be used to turn the pump on or off at any time.

The second remote switch, with a red indicator, is for lighting the water heater. Refer to the appliance section for complete instructions.

Zone Heating

The optional zone heating is two separate furnaces and thermostats. In winter months, when leaving the heat on low to prevent freeze-ups, be sure both furnaces are used. Detailed information on the operation of the furnaces is included under the Appliance Section of this manual and in the literature supplied with your trailer.

Ceiling Light Fixtures

The ceiling light fixture has a high-low switch located on the end of the fixture. By sliding the switch to the first position only one half of the light is turned on. Moving the switch further will turn the entire light on. The LENS may be removed by gently squeezing in the middle and pulling down. During cold weather it is a good idea to leave the light on a few minutes prior to removing the lens.

Fluorescent Light Bulbs

Fluorescent light bulbs are removed by rotating one quarter turn and bringing the bulb straight out of the fixture. This would be straight out on bed lights, straight down on ceiling lights, and straight up on the indirect lights located behind the curtain valance. The switch for the indirect lighting is located forward of the roadside living room window.

Fresh Air Vents

The fresh air vents are operated by a control handle. Turning clockwise will raise the vent and at the maximum extension, vents with fans will automatically turn on. For maximum air without fan, open until fan starts and back up just enough to turn fan off. Turning counterclockwise will close the vent. Screens should be removed for periodic cleaning.

Storage

The kitchen cabinet should have the heaviest items on the bottom and lighter items overhead. After loading you should have the skillets and can goods on the floor or bottom shelf, and the cereals and crackers in the overhead rooflocker. Use the unbreakable type plates and saucers, and consider storing your dish towels around them. Better yet, use paper plates. Who wants to wash dishes when on a trip or vacation?

A good place to store heavy items is in the front drawer assembly. It is rated for a 100 lb. capacity, plus adding weight to the front of the trailer may even improve towing slightly.

Clothes hung in wardrobes should be kept on hangers that snap over the clothes rods to keep them from "jumping" off on rough roads. Evening dresses should be kept in the plastic bags like dry cleaning businesses use. No matter how hard you try, if you travel a long dusty section of road the dust will work its way into the trailer and soil clothes. Try to avoid large bulky coats. Layers of lighter clothing will usually keep you warmer, are more versatile and easier to store.

Some additional storage is available under the shelf in the bottom of the wardrobe, but you must be sure it is loaded so the drain lines and heat ducts can't be damaged.

WARNING: Keep flammable material away from the furnace.

Remember, heavy items should be stored low and toward the front. Lighter items in the rear and overhead cabinets.

SMOKE DETECTOR

A smoke detector is centrally located in the ceiling of your Airstream.

The alarm horn and the indicator light on your detector lets you know whether your detector is working right.

When the indicator light, which you can see through the clear push button of the test switch, flashes once a minute, the detector is operating normally. (Model 83P has a white push button and does not flash.)

When the alarm is sounding the detector has sensed smoke or combustion particles in the air. The alarm will automatically turn off when the smoke in the air is completely gone.

If the alarm horn beeps once a minute the detector's battery is weak and needs to be replaced immediately.

How to Take Care of Your Detector

Your smoke detector has been designed to be as maintenance free as possible. To keep your detector in good working order you must:

Test the detector regularly (weekly is recommended) by pressing on the test switch for up to 10 seconds until the alarm sounds. It's a good idea to test the detector after storage and before each trip. Make sure your family hears the detector and knows how to react.

Replace the battery once a year or immediately when the low battery "beep" signal sounds once per minute. The low battery signal should last at least 30 days.

This detector uses standard nine volt batteries. The detector will work properly with the following batteries.

Eveready #522, #1222, #216
Duracell #MN1604
Gold Peak #1604P, #16045

Eveready and Duracell batteries are available at any retail store that sells batteries.

WARNING: 110 not use any other kind of battery. The detector may not operate properly with other batteries.

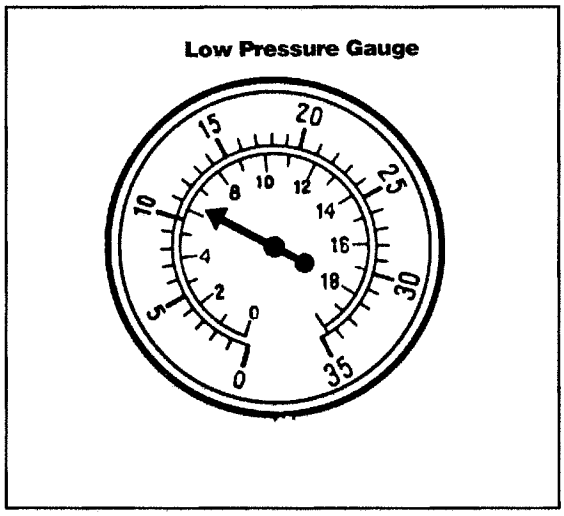
Vacuum the dust off the detector sensing chamber at least once a year. This can be done when you open the detector to replace the battery. Remove the battery before cleaning. Use a soft brush attachment and carefully remove any dust on the detector components, especially on the openings of the sensing chamber. Replace the battery after cleaning.

Clean the detector's cover when it becomes dirty. First open the cover and remove the battery. Then hand wash the cover with a cloth dampened with mild soapy water, rinse it with a cloth dampened with clear water, and dry it with a lint-free cloth. Be careful not to get any water on the detector components. Replace the battery and close the cover.

Test the detector after closing the cover whenever you have opened it to replace the battery or clean it.

LPG System Pressure Check

Use a pressure gauge. (See Illustration Below)



This gauge is calibrated to read in "inches of water column pressure" or kilopascals. Our reference figures will always use the American inches of water column.

It can be viewed by opening the exterior refrigerator access compartment. Since it is permanently plumbed into the system it constantly monitors the pressure. The optimum pressure is 11.5 inches of water column. The pressure should never be less than 11.0, nor higher than 12.0 inches with all appliances operating or off.

To use the gauge to check for leaks:

* Turn all appliances and pilots off. After two minutes shut main valve off at LP tank.
* Loosen fitting at main valve so high pressure is released from line between tank and LP regulator.
* No pressure drop should be seen on the gauge within 10 minutes.

Note: The American Gas Association allows some gas leakage through valves. Reference their regulations A-119 and Z-21.21. This allowable seepage may cause some pressure drop within the 10 minute check period.

WARNING: Have a professional check your system if you have any doubts.

FIRE EXTINGUISHER

The fire extinguisher just inside your forward door should have the charge checked on a regular basis. Make sure your family, especially the cook, knows how to release the extinguisher storage bracket, and how to properly operate the extinguisher. If you find the directions on the extinguisher unclear, check with your local fire department. We're sure they will be happy to assist you and your family.

SAFETY:

Many things can be construed as safety related, but the most important is your common sense. If you are careless with matches, cigarettes, flammable material or any other hazardous material, we are sure you realize your potential for accidents is greatly increased.

EXTERIOR WINDOWS

The windows in your trailer are of tempered safety plate glass. To open: release the two lever locks at the bottom, lift up on the two side operator handles until the window is in the desired position, and place the operators into one of three positioning slots on the side of the frames. To lock the windows, reverse this procedure.

Note: Some windows are designed as emergency escape exits. The rubber spline holding the screen in place is looped so it can be pulled out in one swift motion.

You and all your family should practice escape procedures so they can be rapidly accomplished even in total darkness.

WARNING: **Never park your trailer so the escape windows cannot be easily used for emergency exits.**

These windows are cleaned in the same manner that ordinary windows are. Clean the seals with a damp cloth or mild detergent every three to six months, taking care not to use strong solvents as they will damage the seals. A coat of natural silicone lubricant applied after the seal has dried will keep it flexible. Spread the lubricant evenly with a brush or finger, working it into the surface. This is a good practice for all rubber seals in your Airstream. For replacement of a damaged window contact an Airstream Service Center or the factory.

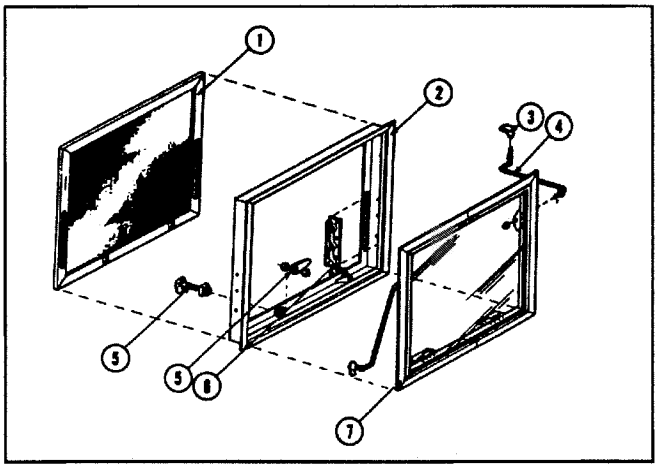
SCREENS

Your plastic screens are easy to maintain. Just clean occasionally with a damp cloth. **Note:** They will melt at the point of contact if touched by a cigarette.

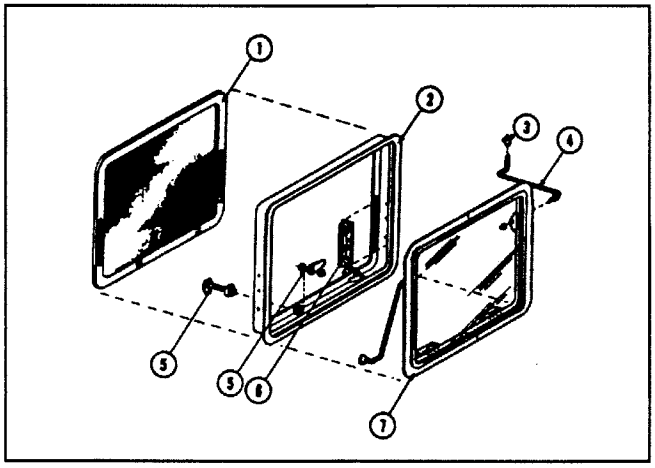
VISTA VIEW WINDOWS

Vista view windows, optional on some models, allow for interior lighting while maintaining privacy. They are equipped with integral shades.

FRONT WINDOW



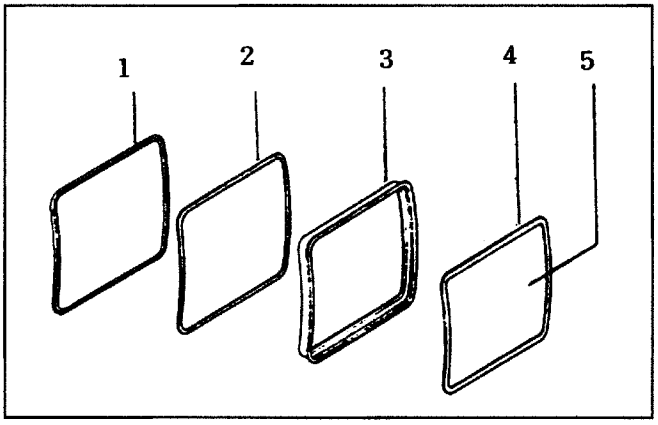
1. Screen Assembly
2. Frame Assembly
3. Handle Assembly
4. Push Arm Assembly RH
5. Push Arm Assembly, LH
6. Nylon Guide LH/RH
7. Sash Assembly



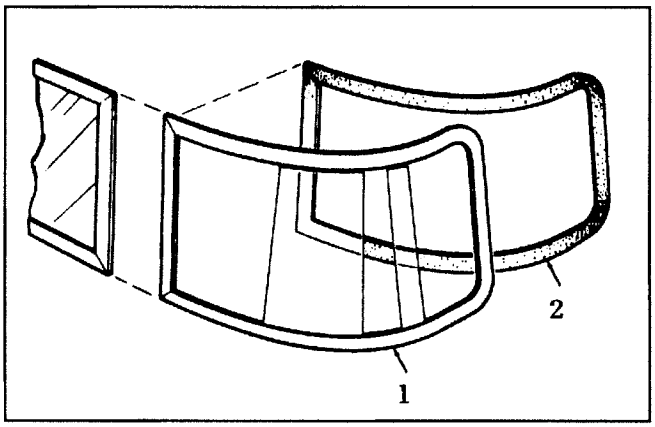
SIDE WINDOW

1. Screen Assembly
2. Frame Assembly
3. Handle Assembly
4. Purh Arm Assembly LH/RH
5. Latch Assembly
6. Nylon Guide, LH/RH
7. Sash Assembly

FIXED WINDOW



1. Trim Ring
2. Scotchmate Tape
3. Curved Window Frame
4. Glass Bead Assembly
5. Curved Glass Pane



PANORAMIC WINDOW

1. Panoramic Window Assy (C$/RS)
2. Gasket, Vinyl Foam Tape

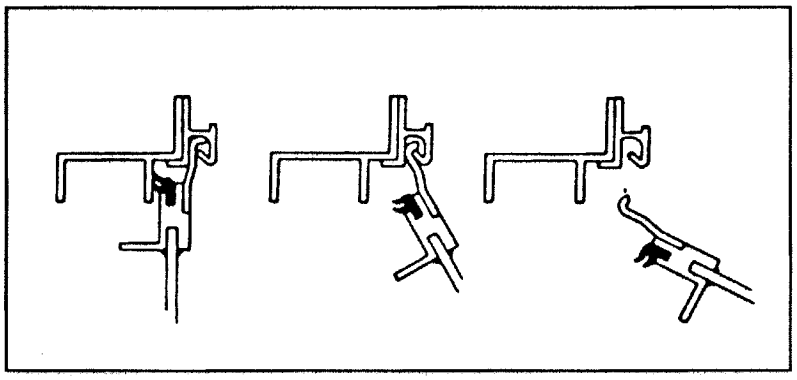
GLASS AND SASH REPLACEMENT (OPENING WINDOWS)

1. Remove nuts from lifting arms and slip arm out of pivot mounts.

2. Rotate window upward past horizontal and it will drop out of stationary hinge.

3. To replace, reverse the above, being sure hinge on window is inside locations on stationary hinge.

WINDOW REMOVAL



Step 1 **Step 2** **Step 3**

Lifting Arm Replacement

1. Remove inside lifting grip by loosening Allen screw.

2. Remove nut from lifting arm and slip out of pivot mounts.

3. Rotate out through plastic guide.

4. To replace, reverse the above procedure.

Window Lock Replacement

1. From outside of trailer:

   a. Remove locking pawl and retainer nuts from shaft.

   b. Remove large nut from threaded housing.

2. From inside of trailer:

   a. Pull old lock inside trailer.

   b. Replace new lock through window frame.

3. From outside trailer:

   a. Replace large nut on threaded housing.

   b. Replace locking pawl and retainer nuts on shaft.

   c. Adjust pawl on shaft to give proper tension on window.

SCREEN REPLACEMENT

1. Remove inside lifting grip by removing #10-24 x 1/2" set screw.

2. Remove No. 8 sheet metal screws attaching screen to window frame.

3. Turn window locking arms to horizontal position and slide screen off.

4. To replace reverse the above procedure.

WINDOW FRAME REMOVAL (ALL)

Front, Rear, Side (moveable), Vista View and Fixed

1. Remove glass and sash (moveable windows).

2. Remove screen (moveable windows).

3. Using No. 30 drill, remove any pop rivets attaching interior skin to window frame.

4. On outside, using No. 30 drill, remove rivets attaching window frame to exterior skin.

   Note: On front window, vertical tie bar between front window and wing window must be removed.

WINDOW FRAME INSTALLATION

1. Apply foam type gasket under window flange.

2. Insert window in opening.

3. Rivet window flange to side of trailer using Olympic rivets.

   Note: On front window, install new vertical tie bar mating center window to wing window.

4. Inside vinyl metal is to be trimmed to window frame (cut out for lift arm movement (moveable only) and fasten with colored pop rivets if inside skin has been replaced.

5. Using rawhide or plastic mallet, tap down any high areas between exterior rivets. Remove excess ribbon caulking and Ten-X the perimeter.

FIXED WINDOW REMOVAL AND REPLACEMENT

1. Remove lower curtain track.

2. Remove interior window trim by drilling out pop rivets.

3. Remove rivets from exterior window frame by drilling out with No. 30 drill.

4. Reverse procedure for reinstallation.

   Note:(1) You may use solid rivets when installing new windows since the back side is open for bucking. (2) Caulk liberally between exterior window flange and side of trailer to prevent rain leakage.

PANORAMIC WINDOW REMOVAL AND REPLACEMENT

1. Using No. 30 drill, drill out rivets around periphery of Panoramic window.

2. Using putty knife, gently pry window loose from shell.

3. To install, apply foam tape gasket under window flange.

4. Place window onto trailer and install screws about every fourth hole, mating the panoramic window and center window.

5. Rivet window flange to side of trailer using Olympic rivets.

   Note: Use stop on drill to prevent drilling inside closeout.

NOTES

PLUMBING SYSTEM

LIQUID PETROLEUM GAS (LPG)

Your trailer is equipped with two tanks for LPG (Liquid Petroleum Gas). LPG burns with a clean blue flame. There are two basic types of LPG in common use: BUTANE AND PROPANE. Butane is widely used where temperatures are normally above freezing the year round, and Propane is used when subfreezing temperatures are common since Butane freezes at 32° as compared to -40° for Propane.

How long a full tank of gas will last is dependent on usage. In cold weather, when you are using the furnace, large amounts of hot water, and are doing extensive cooking, you will naturally use more than you will in warm weather when you may do limited cooking. On the average, with normal cooking and other appliance use you can probably count on two to three weeks service from each tank.

AUTOMATIC GAS REGULATOR

All models are equipped with an automatic gas regulator. Both tanks are connected to this regulator. Open both tank valves completely, then close about 1/4 turn. This will allow you to easily check to see if valves are open or closed.

When the gas is turned on it is drawn from only one tank at a time. When the tank being used is depleted the regulator automatically switches to the full tank. An indicator in the regulator knob points toward the tank which was being used to give you a visual reminder when one tank is empty.

Note: The tank in use is not completely empty until the red warning flag is fully visible in the indicator window. The empty tank can be removed for refilling without disturbing the tank being used.

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

CAUTION: The LPG bottles are securely mounted on the front "A" frame of your trailer. If these bottles must be removed for service or replacement it is important that they be reinstalled correctly in order to prevent any possibility of their falling off or becoming dislodged during travel.

VERTICAL BOTTLES

The following step by step procedure gives you the proper method of removing and installing these bottles:

1. Turn the knob on your automatic regulator so the arrow points to the tank opposite the one to be removed. Shut off the gas valve on the bottle to be removed.

2. Disconnect the rubber gas line at the bottle to be removed. (This fitting has a left hand thread and turns in the opposite direction to most threaded fittings.)

3. Turn the large clamping "T" handle counterclockwise until the hold down bracket is loose enough to remove the bottle. If your trailer is equipped with a gas bottle cover the "T" handle must be removed, and then remove the cover before removing the bottle.

   DO NOT REMOVE THE CENTER HOLD DOWN ROD.

To Install

I. Place the bottle in position on the "A" frame and bottle crossmember so that it rests on the upper collar of both bottles with the collar rims engaged in the grooves on the underside of the bracket. If your trailer is equipped with a gas bottle cover it should be positioned over the bottles next. Make sure the hold down rod projects up through the hole in the shroud center bracket.

2. Replace the "T" handle and tighten down until the bottles are held firmly in place.

3. Turn on gas shut off valves and test all fittings with a soap suds or detergent solution and watch for bubbles.

   If you have allowed both tanks to run out, air may have gotten into the lines. In this event, the air must be forced out through the lines by gas pressure before you will be able to light the pilots. Hold a match to the pilot of the appliance closest to the tanks until it lights and stays lit. Then move to the next closest, etc.

HORIZONTAL BOTTLES

LP Tank Cover

The LPG tank cover is easily removed by turning the two locks at each upper corner one half turn. Then slide the cover forward until it is free from the hold down bracket.

Tank Removal

To remove the tank shut the valve firmly; but, excessive pressure should not be required. Next remove the hose connection at the valve.

Note: The LP hose connection has a left hand thread. Turn clockwise to remove.

A tubing wrench or box end wrench is recommended. Pliers should never be used, and even expensive adjustable wrenches will damage the fitting if not perfectly adjusted.

Raise the latch handle on the hold down strap until the hook can be freed. After noting the direction the bottles are turned, lift up slightly and roll out until it can be lifted clear of the trailer

frame.

WARNING: Your LP tanks must be filled as directed by the tank manufacturer. Instructions are located on a decal near the fill valve. The decal must not be defaced.

WARNING: Your LP tank must be, and can only be, placed in the proper position when remounting on the front of the trailer. In any other position the base of the tank will not fit into the recess.

WARNING: Use only the gas bottles furnished with your trailer. If replacement is required it must be a bottle of the same size and design.

WARNING: The vent at the bottom of the regulator must be kept free of any obstructions and must be pointed downward. A good habit is to check the vent each time a bottle is removed for filling. It is especially important to check the vent if the trailer has not been used regularly.

If you have allowed both tanks to run out, air may have gotten into the lines. In this event the air must be forced out through the lines by gas pressure before you will be able to light the pilots. Hold a match to the pilot of the appliance closest to the tanks until it lights and stays lit. Then move to the next closest, etc.

Twice a year, or after a long storage period, we suggest you take your unit in for a checkup and cleaning of the gas operated appliances.

BASIC RULES FOR SAFETY

WARNING: Do not store LP containers within vehicle. LP containers are equipped with safety devices that vent gas should the pressure become excessive.

WARNING: Do not use cooking appliances for comfort heating. Cooking appliances need fresh air for safe operation. Before operation open overhead vent or turn on exhaust fan and open window.

A warning label has been located in the cooking area to remind you to provide an adequate supply of fresh air for combustion. Unlike homes, the amount of oxygen supply is limited due to the size of the recreational vehicle; and, proper ventilation when using the cooking appliances will avoid dangers of asphyxiation. It is especially important that cooking appliances not be used for comfort heating as the danger of asphyxiation is greater when the appliance is used for long periods of time.

WARNING: Portable fuel burning equipment, including wood and charcoal grills and stoves, shall not be used inside the recreational vehicle. The use of this equipment inside the recreational vehicle may cause fires or asphyxiation.

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

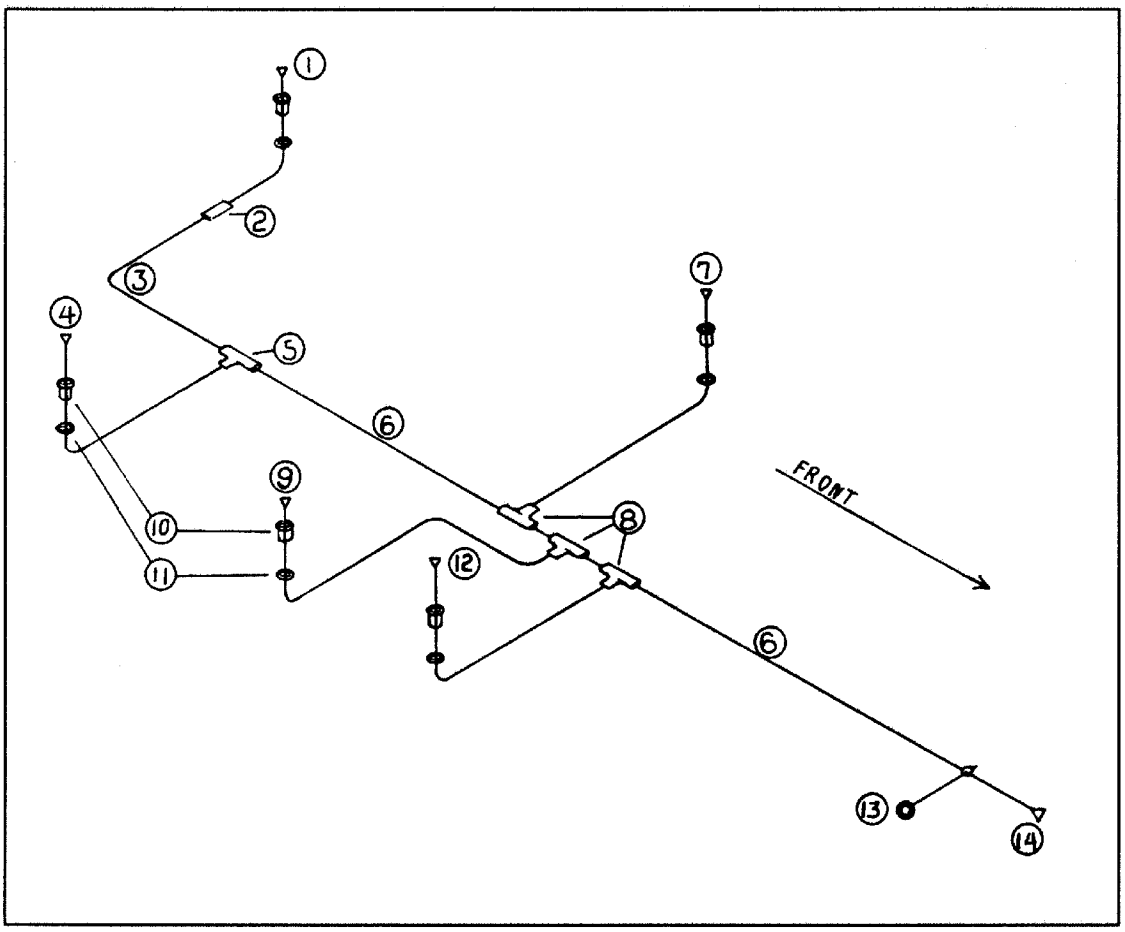
Overfilling the LP gas container can result in uncontrolled gas flow which can cause fire or explosion. A properly filled container will contain approximately 80 percent of its volume as liquid LP gas.

WARNING: Do not bring or store LP gas containers, gasoline or other flammable liquids inside the vehicle because a fire or explosion may result.

WARNING: IF YOU SMELL GAS:

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

TYPICAL GAS LINE SYSTEM



1. Connection, Water Heater
2. 3/8 Flare Coupler
3. 3/8 OD Copper Tubing
4. Connect, Second Furnace
5. 5/8 x 3/8 x 3/8 Brass Tee
6. 5/8 OD copper Tubing
7. Connection, Refrigerator
8. 5/8 x 5/8 x 3/8 Brass Tee
9. Connection, Range
10. Grommet, Floor Level
11. Grommet, Underbelly
12. Connection, Front Furnace
13. Ground Lug
14. Connection, LP Regulator

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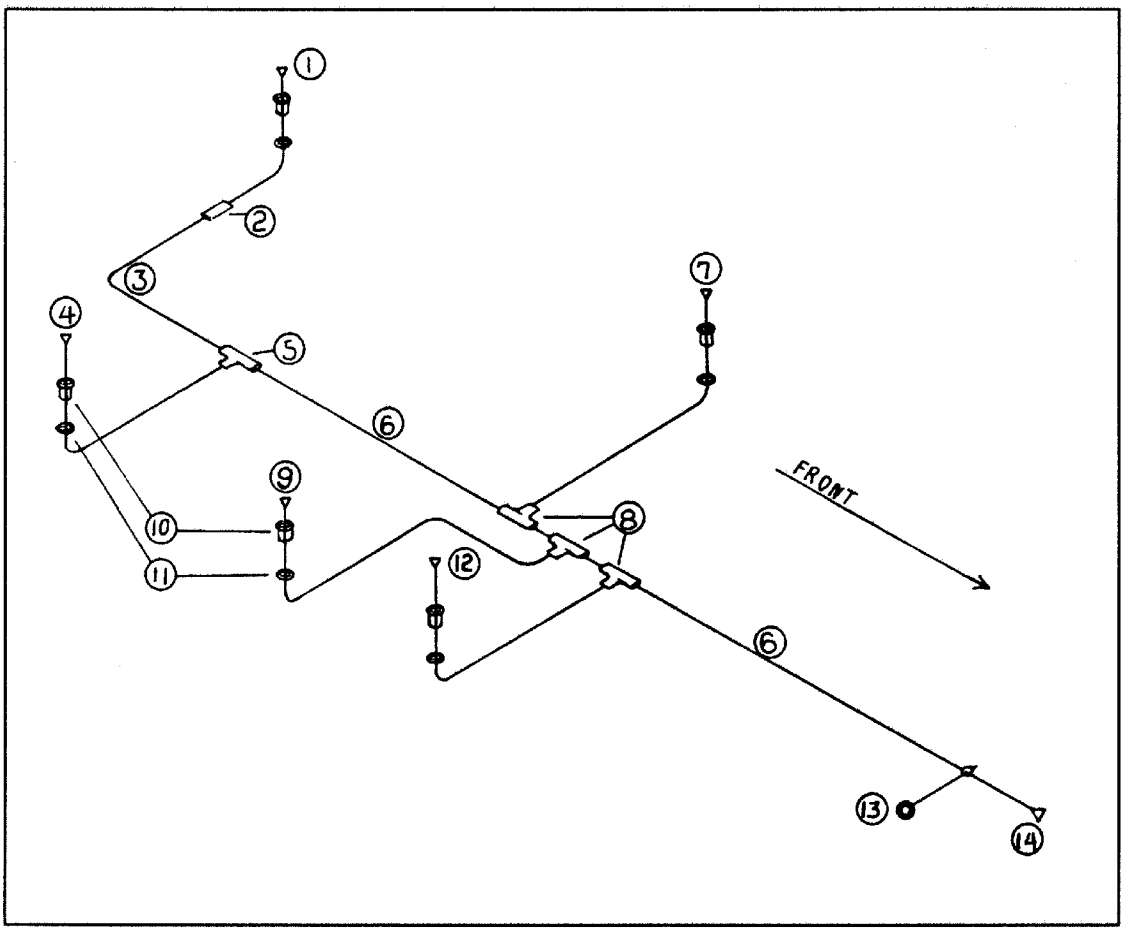

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WATER SYSTEM - SELF CONTAINED

Fill the water tank by opening the exterior access door, remove screw cap and pull the vent plug. A garden hose can now be inserted. It's a good idea to let the water run through the hose for a short time to flush it out. Experienced RVers usually fill their tanks with "home" water to avoid strange water that may be distasteful to them.

The amount of water in the tank may be checked on the Monitor Panel, or you may fill the tank until water overflows out of the fill.

Open the hot side of the galley or lavatory faucet and turn on the water pump switch located on the monitor panel. For some time the open faucet will only sputter. This is because the water heater is being filled and air is being pushed out through the lines. Once the water heater is full a steady stream of water will come from the faucet. Now open a cold faucet. It will sputter for a short time, but will soon expel a steady stream. All other faucets can now be opened until all air is expelled. Be sure to open your Insta-hot water faucet if your trailer has this option.

Once the system is filled with water and the faucets closed, the water pump will shut off. When a faucet is opened the pump will come back on automatically. If the faucet is just barely open it is normal for the pump to cycle on and off rapidly.

CAUTION: The water pump must be turned off when hooked up to city water supply and when you leave your Airstream unattended.

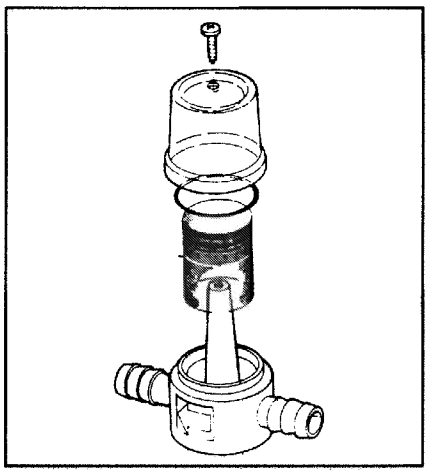
WATER PUMP AND FILTER

The water pump and filter are adjacent to the water heater in the bathroom cabinet on rear bath models, and in the roadside double wardrobe on center bath models. The pump and filter on the 25 ft. trailer is located in the curbside wardrobe.

The filter screen should be cleaned periodically to prevent accumulation of dirt and sand. To remove the screen, disconnect the rubber hoses from both ends, separate the screen housing, remove the screen, clean and replace.

Disassemble Pump Filter

1. Remove screw through top.
2. Pull top from base. Do not damage "O" ring seal.
3. Remove screen to clean or replace.
4. Lift "O" ring from its cavity. Lubricate with silicone grease.
5. Assemble by reversing above procedure.



Cleaning the Fresh Water Tank

To clean the tank pour some bicarbonate of soda into the filler spout with several gallons of water, and allow to stand for a minimum of four hours. Then flush the tank out by opening a faucet, allowing the water pump to drain the system. Then refill with fresh drinking water. If the water tank must be cleaned further, the following procedure is recommended.

1. Prepare a sodium hypochlorite solution using potable water and household bleach (5 1/4 to 6%) in a ratio of 1/4 cup of bleach to one gallon of water. (Common household bleaches are Purex and Chlorox.)

2. Pour 1 gallon of hypochlorite solution for each 15 gallons of capacity into the empty water tank.

3. Add enough potable water to completely fill the water system.

4. Allow closed system to stand for three hours.

5. Drain the hypochlorite solution from the system and refill with potable water. (See Note.)

6. Excessive hypochlorite taste or odor remaining in the water system is removed by rinsing the system with a vinegar solution mixed in a ratio of I quart of vinegar to 5 gallons of water.

7. Drain the system and flush with fresh drinking water.

8. Drain the system and refill with fresh drinking water.

Note: A petcock, visible between the tires, will drain the tank sufficiently for most purposes. Total drainage may be achieved by removing the large Allen Head Plug located on the bottom of the tank. An access plate must be removed to expose the plug.

AUTO FILL VALVE (Optional on some models)

The fresh water tank on the trailer is equipped with an automatic filling device. Anytime you are hooked up to city water you can fill your fresh water tank by turning the switch, located on the monitor panel, to "ON". The system automatically stops filling when the 3/4 level is reached. The switch should then be turned "OFF".

The system is operated by a solenoid valve plumbed into the water system. When the switch is "ON" the solenoid opens and water from the high pressure lines will flow into the tank. When the tank monitoring system senses 3/4 full, current to the solenoid is cut and the valve closes.

It is normal for the solenoid to be hot to the touch if it has been left on for a long period of time.

When operating the water pump, the auto fill valve must be in the off position. Otherwise the pump will simply pump water from the tank into the higher pressure lines and the auto fill valve will allow the water to go back into the tank again.

Maintenance

The valve should be operated at least once a month when the trailer is in use. Turning the switch on for just a few seconds will suffice. If the valve is sluggish (you should hear a good solid click), makes unusual sounds when tank is being filled, or if it fails to shut the water off completely, it would indicate the valve needs cleaned. Procedures are given in the following text.

Causes of Improper Operation

1. FAULTY CONTROL CIRCUIT: Check the electrical system by energizing the coil. A metallic "click" signifies that the solenoid is operating. Absence of the "click" indicates loss of power supply. Check for loose or blown fuses, open circuits or grounded coil, broken lead wires or splice connections.

2. BURNED OUT COIL: Check for open circuited coil. Replace coil if necessary. Check supply voltage. It must be the same as specified on nameplate.

3. LOW VOLTAGE: Check voltage across the coil leads. Voltage must be at least 85% of nameplate rating.

4. INCORRECT PRESSURE: Check valve pressure. Pressure to valve must be within range specified on nameplate.

5. EXCESSIVE LEAKAGE: Disassemble valve and clean all parts. If parts are worn or damaged, replace valve.

Valve Disassembly for Inspecting and Cleaning

(Refer to Fig. 1)

WARNING: Turn off electrical power supply and depressurize valve before inspecting and cleaning. Then proceed as follows:

1. Disassemble valve in an orderly fashion. Use exploded view for identification and placement of parts.

2. Disconnect coil lead wires.

3. Remove retaining spring by dislodging the top spring coil and prying the spring upward.

4. Slip coil off plugnut/core tube sub-assembly.

5. Remove mounting screws, cover, plugnut/core tube sub-assembly, gasket and core assembly with core spring.

6. All parts are now accessible for cleaning.

Valve Reassembly

1. Reassemble in reverse order of disassembly. Use exploded view for identification and placement of parts.

2. Lubricate gasket with Dow Corning Ill compound lubricant or an equivalent high grade silicone grease.

   Note: If core spring has been removed from core assembly be sure to install small diameter end of core spring on core assembly first. The core spring should snap in place and remain engaged.

3. Replace core assembly, core spring, gasket, plugnut/core tube sub-assembly, cover and mounting screws. Torque mounting screws in a crisscross manner to 9 t 2 inch pounds.

4. Replace coil and retaining spring. Make electrical hookup and restore electrical power and line pressure.

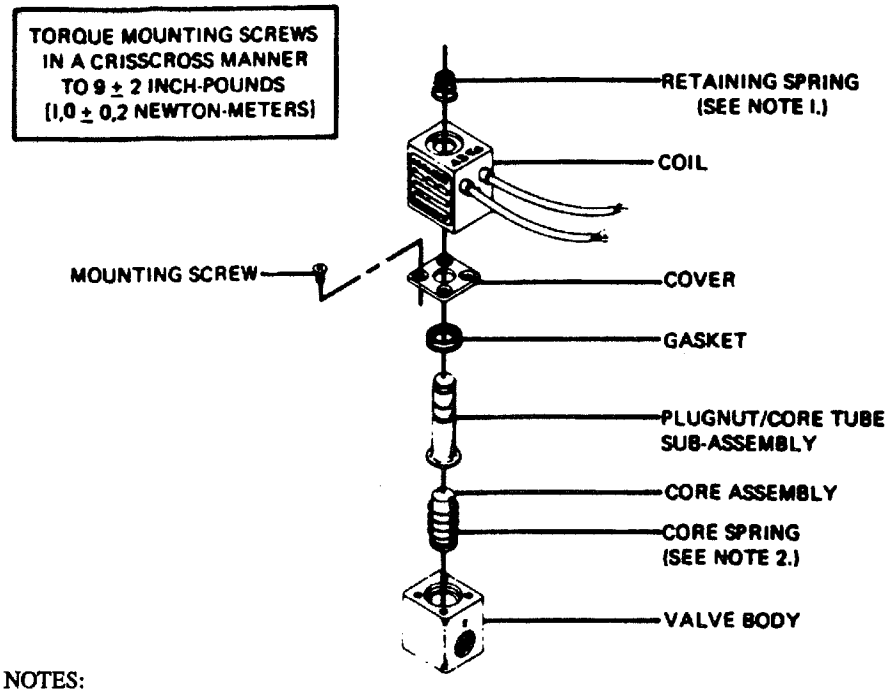
5. After maintenance is completed, operate the valve a few times to be sure of proper operation.

Coil Replacement

(Refer to Fig. 1)

WARNING: Turn off electrical power supply. Then proceed as follows.

1. Disconnect coil lead wires.
2. Remove retaining spring by dislodging the top spring coil and prying the spring upward.
3. Slip coil off plugnut/core tube sub-assembly.
4. Install new Coil and replace retaining spring.
5. Make electrical hookup and restore electrical power.

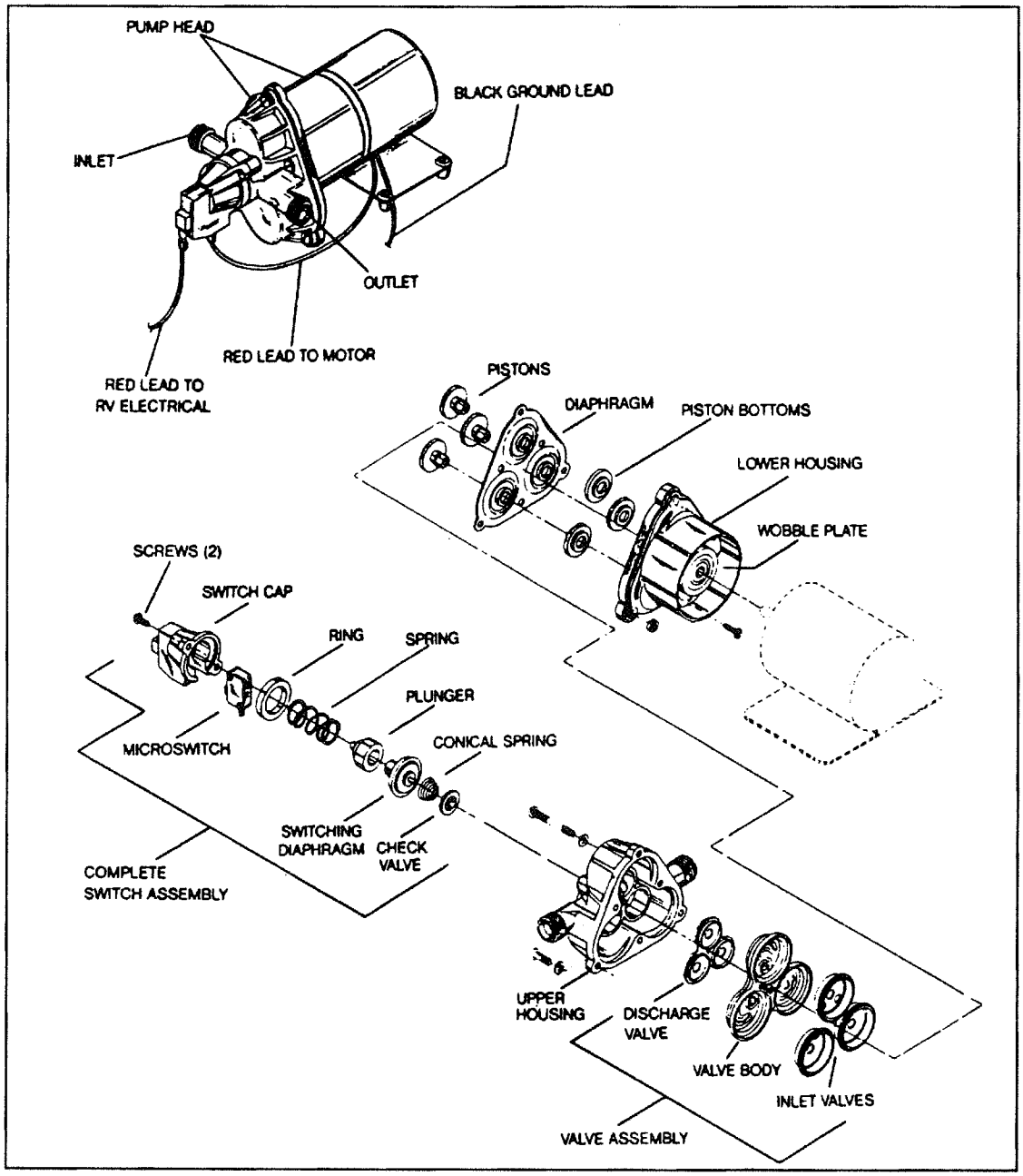


NOTES:

1. TO REMOVE RETAINING SPRING, DISLODGE TOP SPRING COIL AND PRY THE SPRING UPWARD.
2. IF CORE SPRING HAS BEEN REMOVED FROM CORE ASSEMBLY, BE SURE TO INSTALL SMALL DIAMETER END OF CORE SPRING ON CORE ASSEMBLY FIRST. THE CORE SPRING SHOULD SNAP In PLACE AND REMAIN ENGAGED.

WATER PUMP

Manufacturer: Shur-Flo
1740 Markle Street
Elkhart, Indiana 46514
Phone: 219-294-7581



Switch and Check Valve Repair

The check valve, hydraulic switch mechanism and micro switch are accessible by removing the switch cover.

CAUTION: Care should be taken in removing the switch cover screws. Within the mechanism is a spring under compression.

Replacement of Micro Switch

Occasionally the micro switch fails or an electrode is broken off. Proceed as follows: Remove the two screws holding the cap to the main body. Remember, a spring under compression is retained by this cap. With both screws out, allow the spring to extend fully. Then carefully lift off cap and spring. If only the micro switch is at fault avoid disturbing the hydraulic elements remaining. in the head. If examination of the hydraulic parts is required, remove them carefully by pulling. Be sure to note the order of removal.

To replace the micro switch remove the spring and pull out the black retaining ring. This will allow the micro switch to fall free. Replace parts in the reverse sequence: Micro switch, black retainer, and the spring.

Reassemble cover to the main body. Switch cap may be pointed up or down as desired, providing wire has not been shorted.

Having replaced the micro switch be careful to rewire correctly.

Note: If the positive wire from the battery is connected to the "B" terminal the switch is bypassed and the pump cannot shut off. Pressure will build up until the motor stalls. If the proper fuse has been used it will blow. If a larger fuse than recommended has been used the motor will stall and may burn out.

Check Valve Problems

Due to contamination from debris or lime build-up, the check valve may fail to properly seat. To correct, clean out the area and replace the check valve element. If checking the check valve with air be certain to moisten the check valve to get an accurate check. The rubber seals more effectively when wet.

Properly Installed, the Pump will:

PRIME: The pump will automatically prime itself.

Al R-LOCK: Pump will not air-lock as the compression stroke is powerful enough to pressurize the entrapped air and force the check valve open.

RUN DRY: Pump will run dry for extended periods without damage.

BATTERY DRAIN: At free flow the pump draws a mere 7 to 7 1/2 amps.

CHECK VALVE: Built-in check valve prevents back flow and can protect the pump from the dangers of high city water pressure (up to 200 PSI).

FULLY AUTOMATIC: The pump will automatically come on when the faucet or valve is opened. It delivers a smooth steady flow of water and shuts off automatically when the faucet is closed.

Trouble Shooting

MOTOR DOES NOT OPERATE.

- Is battery discharged?
- Are any wires disconnected?
- Are terminals corroded?
- Is switch in "ON" position?
- Is fuse good?
- Is water frozen in pump head?

MOTOR RUNS BUT NO WATER FLOWS.

- Is water tank empty?
- Are there kinks in the inlet hose?
- Is air leaking into inlet hose fittings?
- Is inlet line or in-line filter plugged?
- If using a filter, check the line just before the filter.
- Is outlet hose kinked?

MOTOR RUNS BUT WATER "SPUTTERS"

Check to be certain that air has been bled off the lines and water heater. Also check for air leaks in the input side of the pump.

PUMP CYCLES ON AND OFF WHEN ALL OUTLETS ARE CLOSED.

The pump will normally cycle (go on and off) when a faucet is partially opened. If, however, it cycles when all valves are closed, check for a leak in the lines. It may be a leaky toilet valve or a dripping faucet. Do not forget to check the outside city water entry valve. It may be leaking.

If no leak can be detected, shut pump off. Remove the output hose where it joins the system (not at the pump). Insert a plug in the hose and clamp it. (You can make a perfect plug from a barb fitting. 1/2" size with a cap tightly screwed on the threads.) Turn the pump switch on. The pump should come on, run a few seconds, and then shut off. If it remains off, the problem is NOT the pump. The problem is in the system. If, however, the pump goes on and off there may be a problem in the pump.

There may be an internal leak in the pump which allows water to escape from the high pressure area back into the low pressure area. Look for a pump valve held open or a crack in the plastic parts.

PUMP DOES NOT ACHIEVE SHUT OFF

The wall switch may be used for temporary control of the pump. A low battery charge may be the cause. Or the pump switch mechanism may be stuck. Try tapping the switch cap on the end of the pump with the handle of a screwdriver. If the pump appears in all other respects to run normally, but fails to shut off, you may have to replace the switch mechanism.

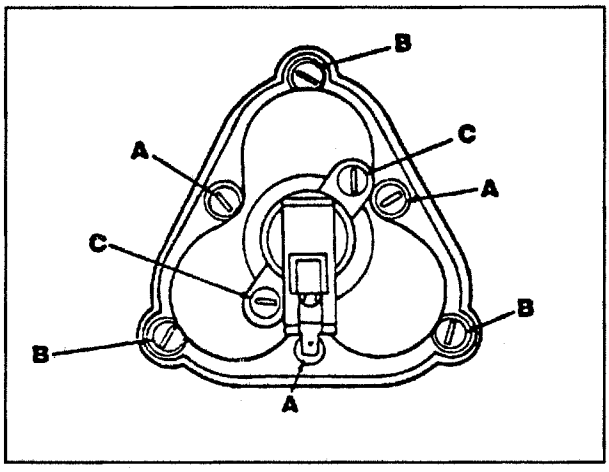
PUMP HEAD LEAKS

If the pump head leaks, first try to tighten the screws in the pump head assembly until they are snug.

CAUTION: Do not overtighten. The leak may be from a crack in the pump head assembly. If so, then replace.

One cause of the pump head cracking may be water freezing inside the pump head. If the leaking water is escaping back near the motor, check for a leaking or broken piston.

Pump Repair



Screws (A) hold the entire pump head assembly to the motor.

Screws (B) hold the pump head face to the pump head main body.

Screws (C) hold the switch assembly to the front of the pump head.

Screws (A) would be removed to correct a problem in the "drive train" between the motor and pump head.

Screws (A) and (B) would be removed to correct a problem in the pump head valves or pumping chambers.

Screws (C) would be removed to correct a problem in the automatic switch or check valve.

PUMP HEAD REPAIR

Motor and drive train area. Rarely does a problem occur in this area of the pump head. If a part does fail, it is quite easily replaced. Just be certain to follow closely the sequence of parts as shown in the figure. Also be careful to align the flat surface in the drive adapter with the flat surface on the motor shaft.

LUBRICATION

If the lubricant appears dried out it should be be wiped off the bearing assemblies. A small amount of automotive wheel bearing grease should be applied to both sides of each bearing.

FAILURE TO PRIME

Failure to prime can be caused by the presence of some foreign matter lodged in the valve preventing it from seating. To correct, remove any such foreign bodies.

CAUTION: Do not remove the stainless steel screens. These filter screens should be cleaned without removing them from the plastic housing.

PUMP CHAMBER REPAIR

Replacement of broken piston.

To remove a piston, back out the screw holding the defective piston.

Now lift the corner of the diaphragm and remove the broken piston. Insert the new piston through the diaphragm and slide the retaining ring on. Rotate the piston until it drops into place in the drive plate. Replace the screw and tighten until snug.

CAUTION: Do not attempt to re-use a piston once it has been removed. The plastic stem, if used a second time, may not hold securely. The second thread path removes additional material and there is then no real bite.

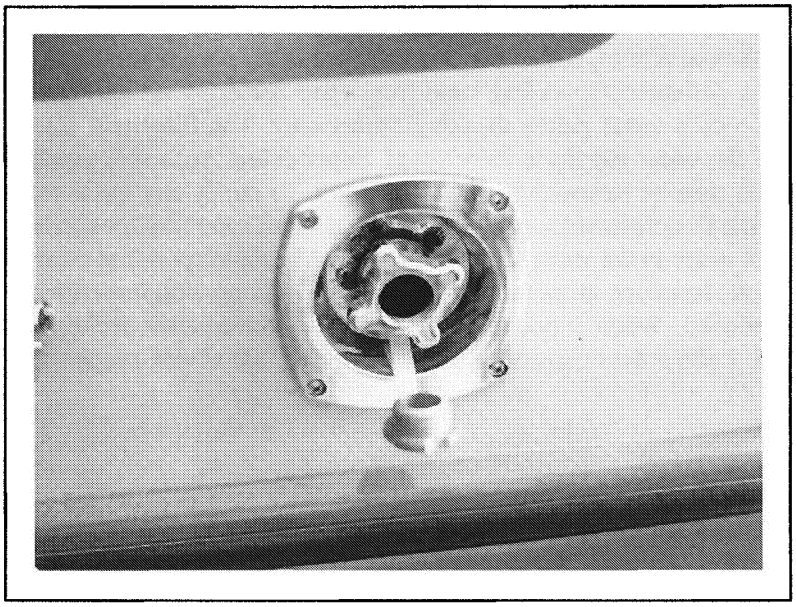
REPLACE A DIAPHRAGM

To replace a diaphragm follow the procedure used in removing the pistons. After removing the three pistons the diaphragm is loose and easily removed.

Screws (A) hold the piston.

Screws (B) hold the drive mechanism and should not be removed when replacing piston.

CITY WATER HOOKUP



Use a high pressure hose of at least 1/2" diameter. It should be one that is tasteless, odorless and non-toxic designed for RV use. The city water inlet is a standard garden hose thread. We suggest you carry two lengths of hose. This way you have the ability to reach hookups further away than normal, plus you have a spare hose should one fail or become damaged unexpectedly.

After hooking up the hose and turning on the city water valve provided in the park, slowly open a faucet. There will be a lot of spurts and sputtering until all the air is expelled from the trailer system. If the water heater is empty it will take some time before all the air is expelled and you get a steady flow of water at the faucet. Once a steady flow is achieved at one faucet the others should be opened long enough to expel the air in the lines going to them. Be sure to include the Insta-Hot water faucet if your trailer has this option.

During city water operation the water pump switch should be in the off position. A check valve built into the pump protects it from city water pressure.

Your plumbing system has a built in pressure regulator to protect your lines and faucets from extremely high pressures on some city water systems.

WATER FILTER

The optional Everpure QC-2 water filter is located under the galley sink. It will remove even very fine dirt and colloidal matter, and eliminates most chlorine, phenol and similar distasteful odors and tastes while delivering sparkling taste-free water for drinking and cooking. The filter is connected to the cold water galley drinking faucet only. The filter will also remove iron and sulfur provided the water supply is chlorinated. Super-chlorination will precipitate the iron and sulfur which will then be removed by the QC-2 filter. To purify any questionable water, fill the Everpure Chlorine Disinfectant Dispenser with liquid bleach and add 1/6 ounce (one teaspoonful) per 10 gallons of water in the water tank. The water will remain sparkling clear even to the end of the filter pack life, however, as the minute pores slowly fill up with impurities the flow rate will be gradually reduced. When it becomes too slow for convenience, the cartridge can be very simply changed. Follow the instructions on the cartridge. We advise keeping a spare cartridge at all time.

To remove used cartridge:

1. Shut off water by lifting valve handle counterclockwise as far as possible.

2. Turn colored ring all the way to the left. Ring will drop about 5/8".

3. Lift cartridge slightly and turn it further to the left until it can be disengaged.

4. Lower cartridge to disengage it from ring. Discard used cartridge.

To Install New Cartridge:

1. With colored ring in lowered position (turned all the way to the left), orient lug on cartridge with cutout under label on ring.

2. Insert cartridge straight up into ring as far as it will go. Holding colored ring steady, turn cartridge as far to the right as possible, without forcing.

3. Then turn colored ring far to right to drive cartridge up into head.

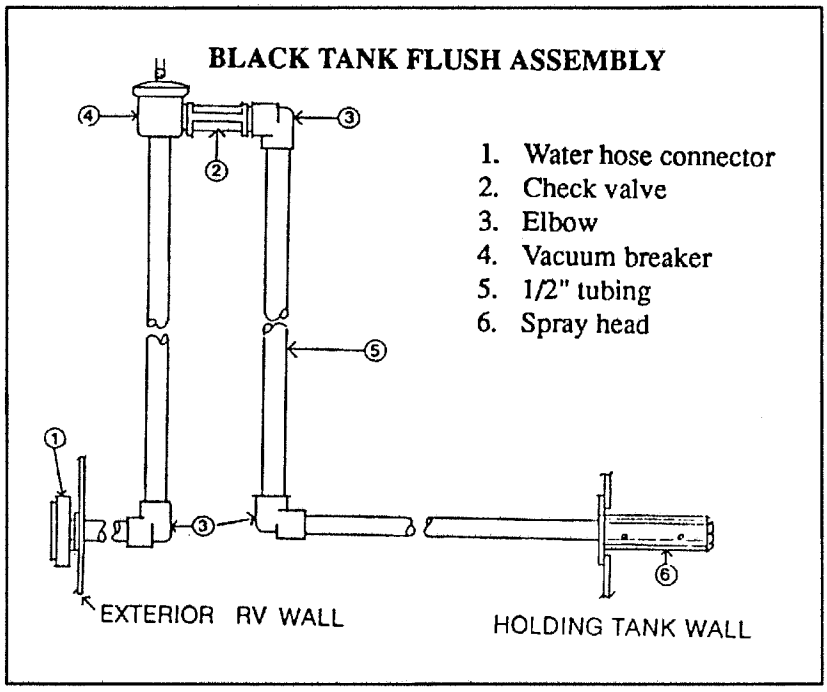
4. To lock ring in place and turn water on, move valve handle down. Be sure handle leg engages ring locking-lug.

BLACK TANK FLUSH

On the left rear lower side is a water hose connector marked "black tank flush". To use, hook up a hose and turn on full force. Within the tank a spray head with a multiple holed head will spray the interior surface of the tank.

The gate valve should be closed for the first couple of minutes, then opened to let the water out in a rush. Repeat as needed.

BLACK TANK FLUSH ASSEMBLY



INSTA-HOT WATER DISPENSER

Manufacturer: In-Sink-Erator Division
Emerson Electric Company
4700-21st Street
Racine, Wisconsin 53406
Phone: 414-554-5432

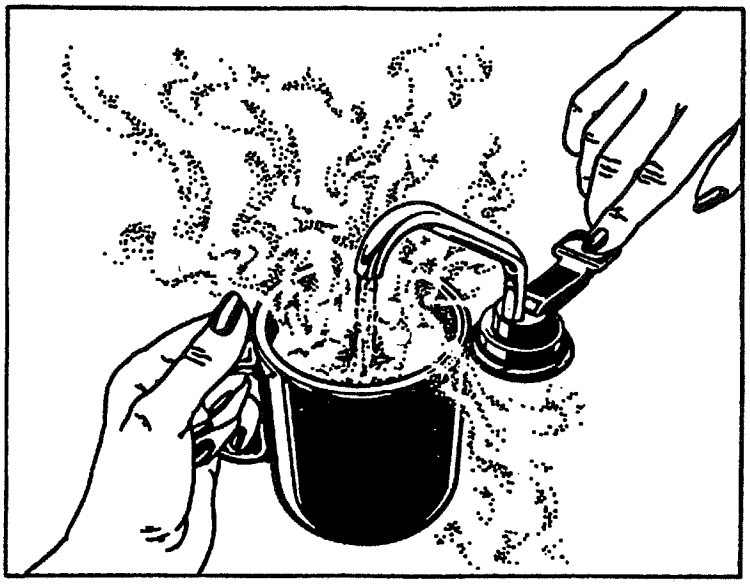
The optional Hot Water Dispenser is provided current through a wall switch above the galley. After the switch has been on a short while one third gallon of hot water is available for coffee, tea, chocolate and soups.

WARNING: This water is HOT. Contact to the skin will cause discomfort and may cause injury.

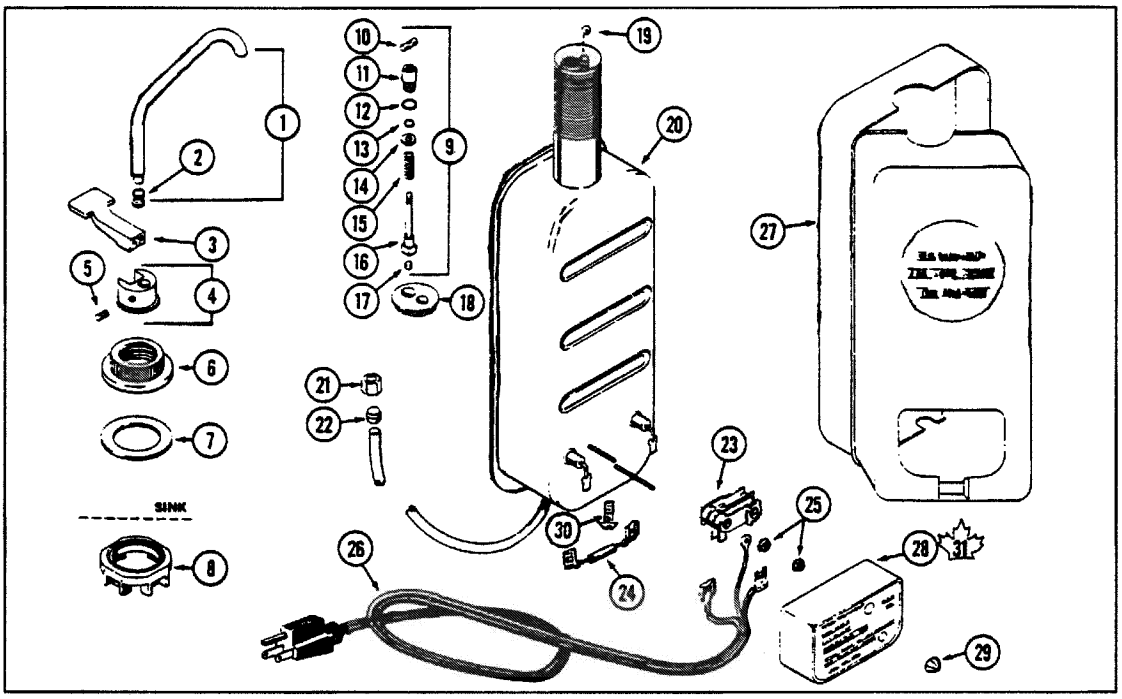
WARNING: Do not store paper towels or other flammable materials against the Insta-Hot Water Dispenser.

The water dispenser is filled by simply opening the faucet when water pressure is available from your pump or city water. The faucet will spit and sputter while filling until a steady stream of water indicates it is full.

CAUTION: Do not turn the dispenser on until you are sure it is filled with water.



Parts Diagram - Insta-Hot Water Dispenser



1. Spout Assy
2. Gasket
3. Handle
4. Cover
5. Screw, Set
6. Nut, mounting, upper
7. Gasket, mounting
8. Nut, mounting, lower
9. Valve guide & Stem Assy
10. Nut, tee
11. Bushing, valve guide
12. "O" ring 29/64 OD
13. "O" ring 9/32 OD
14. Washer
15. Spring
16. Valve stem assy
17. Disc, Valve Stem
18. Gasket, Expansion Tube
19. Ball, aspirator
20. Tank Assy
21. Nut compression
22. Sleeve, ball
23. Thermostat
24. Thermal fuse assy
25. Nut
26. Plug & Cord Set
27. Case
28. Electrical Cover Assy
29. Nut, Cap
30. Plug, Drain

CANADIAN

31. Electrical Cover Assy

Valve Stem Assembly Removal

1. Turn dispenser on, drawing off all hot water. Shut off water supply. Disconnect electrical power supply.

2. Remove handle.

3. Remove top mounting nut.

   CAUTION: The dispenser may drop thru the sink and should be supported from under the sink.

   Suggestion: Turn the lower mounting nut further down (I" or more).
   This allows the dispenser to be pulled upward and held while removing the top mounting nut. Hold the dispenser and assemble another lower mounting nut flat side down in place of the top mounting nut.

   CAUTION: DO NOT support dispenser by grasping spout.

4. The valve stem assembly is now exposed for removal.

5. Note position of tee from valve stem.

7. The valve stem assembly is screwed down securely and a special tool is used to remove it. The tool is 1/4" Hex x 7/8" long, and at one end has two tips 180 degrees apart. A magnetic 1/4" Hex screwdriver (or 1/4' socket wrench) must be used with the valve stem removal tool. Purchase from your hardware store.

8. Position the tool straight down over the valve stem assembly. Engage the two tips of the tool into the two mating notches in the valve stem bushing. Turn screwdriver counterclockwise unscrewing the valve stem assembly from the dispenser.

   Note: Inspect the valve stem assembly for the large "O" ring (see diagram). If the "O" ring is missing, it became lodged under the expansion tube gasket. It need not be removed unless it needs replacing. Retrieving the "O" ring requires removal of the spout and expansion tube gasket. A very thin film of silicone grease applied to the spout OD (gasket end) and spout gasket will assure easier and positive reassembly. (See Diagram) REPEAT: USE ONLY A VERY THIN FILM OF SILICONE GREASE.

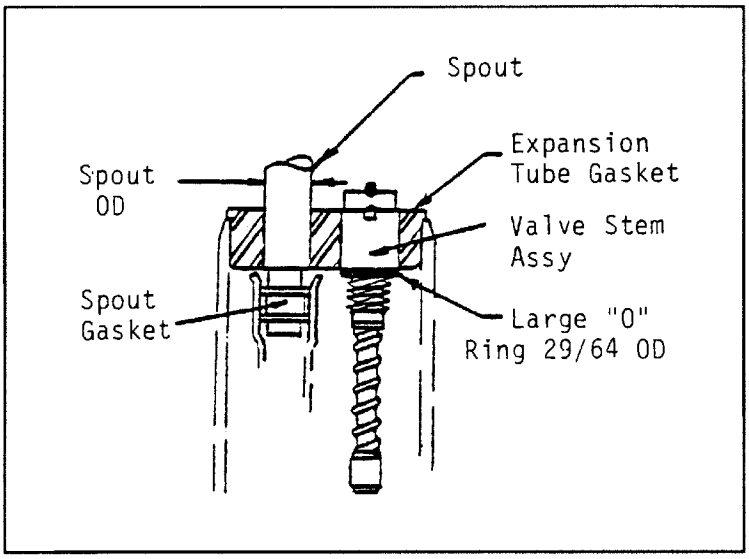
9. Reassemble in reverse. Turn on water supply. Turn on electricity.

Recovery Time/Hot Water Delivery

The recovery time of the hot water dispenser, that is the required time for the water in the tank to reach 190 degrees after drawing hot water, depends on:

* Ambient temperature of the incoming water to the dispenser.

* The amount of water drawn off at one time.



Some people find the taste from a hot water supply objectionable, and may insist on cold water supply. I-S-E suggests cold water supply.

A cold water supply requires an increase of recovery time while a hot water supply decreases recovery time.

You can expect up to forty 6 oz. cups of 190° water per hour by allowing a 1 1/2 minute recovery time between cups. If you draw three 6 oz. cups of hot water at once, there will be a noticeable drop in the next cup of water. After drawing 3 or 4 cups of water, a 4 (approx) minute recovery time is necessary. If all the water in the tank is drawn off, a 10 to 15 minute recovery time is necessary.

Temperature Checking

Water temperature should be checked immediately after the thermostat shuts off. (Draw off three cups of water. A rumble in the tank will be heard in a few moments. Wait (approx 3 1/2 minutes) until the rumble stops. You can hear the thermostat click open. Hot water is now ready for checking.

Place an accurate high quality thermometer (refrigeration type is suggested) in a styrofoam cup. Do not use any cup made of china, ceramic, clay or glass. They are normally cold and will cause a water temperature drop, resulting in an inaccurate reading of the hot water flowing from the dispenser.

Draw 6 oz. of hot water into the styrofoam cup. Allow the thermometer to remain in the cup approximately 15 seconds, then read the thermometer.

Adjusting the thermostat will increase or decrease the water temperature. Allow a few minutes for recovery and test water again if necessary.

Trouble Shooting

PROBLEM: <u>No water or slow flow. (Normal flow is one ounce per second.)</u>

CAUSE/ REMEDY: Main water supply off. Turn on main water supply.

Saddle valve not open. Open saddle valve.

Copper water line not punctured by self-piercing saddle valve. Close saddle valve completely to puncture copper water supply line. After turning valve in fully, open valve completely.

Saddle valve plugged. Close saddle valve completely. Disconnect 1/4" copper tube at saddle valve. Open saddle valve fully to assure a good strong flow of water. If good strong flow, close valve and reconnect 1/4" copper line. If flow is slow or not at all, saddle valve is plugged where it attaches or water supply line is not drilled or punctured completely.

Valve stem disc stuck to valve seat. Disassemble unit. Remove disc from seat area. Install new disc in valve stem. Reinstall and reassemble.

Dirt at dispenser valve seat. Shut off water at saddle valve. Disassemble and clean seat area. Reassemble and open saddle valve.

Tee nut not adjusted properly. Remove handle and adjust tee nut.

Handle broken. Will not raise valve stem. Replace handle.

PROBLEM: No water, or slow flow.

CAUSE/ REMEDY: Obstruction in tank fill tube at venturi hole. Disconnect electricity by removing plug, fuse, or open circuit breaker. Shut off water supply at saddle valve. Disconnect 1/4" water inlet supply line at saddle valve. Depress valve handle, and at the same time blow into spout outlet. Reconnect 1/4" water supply line to saddle valve. Depress valve handle. If water flows, obstruction has been removed. If no water flows, replace complete assembly.

PROBLEM: Water is cold.

CAUSE/ REMEDY: Plug not installed in outlet. Install plug in outlet.

Circuit breaker open or fuse not installed. Close circuit breaker or install fuse.

Wire loose and/or disconnected at thermostat or heating element. Reconnect wire.

Thermostat not adjusted properly. Adjust thermostat.

Thermostat defective. Replace thermostat.

Thermal fuse open. Replace thermal fuse.

Open heating element. Replace complete assembly.

PROBLEM: Water not hot enough.

CAUSE/ Thermostat not set high enough. Turn thermostat adjusting

REMEDY:	screw clockwise to increase operating temperature.
	Thermostat defective. Replace thermostat.
	Tank hot water supply exhausted. Allow tank to recover to full operating temperature.
PROBLEM:	Unit spits when drawing first cup of water.
CAUSE/ REMEDY:	No aspirator ball. Install aspirator ball.
	Aspirator ball stuck in tube. Dislodge and replace ball.
	Thermostat set too high. Water boils. Adjust thermostat.
	Thermostat set too high. Will not respond to adjustment. Replace thermostat.
	No water in expansion chamber. Continued use will fill expansion chamber.
	Air in water supply line. Correct household water supply.
PROBLEM:	Unit spits after drawing four or five cups of water.
CAUSE/ REMEDY:	Aspirator orifice not round. Replace complete assembly.
	Aspirator ball not round, flat spots. Replace aspirator ball.
	Aspirator ball tube not attached properly. Replace tank assembly.
	Note: Some "spitting" is normal when drawing quantities of water.
PROBLEM:	Unit drips every 20 minutes when thermostat comes on.
CAUSE/ REMEDY:	Thermostat set too high. Adjust thermostat.
	Expansion chamber full. Check for low water pressure.
	Spout not fully seated. Loosen set screw, push spout down until it bottoms. Tighten set screw.
	Thermostat mounting stud bent. Not perpendicular to tank face. Straighten stud. Should be 90 degrees to tank face.
PROBLEM:	Water continuously drips from spout.
CAUSE/ REMEDY:	Valve not seated due to foreign object. Disassemble and remove foreign object.
	Tee nut not adjusted properly. Adjust tee nut.
	Valve disc missing. Install valve disc.
	Metal valve seat defective. Replace unit.
PROBLEM:	Water leaks around spout.
CAUSE/ REMEDY:	Valve stem bushing not tight. Tighten bushing.

Large and/or small "O" ring damaged, cut, missing, etc. Install or replace both large and small "O" ring.

PROBLEM: Water continues to flow for one to two seconds after handle is released.

CAUSE/ REMEDY: Normal

PROBLEM: Unit is loose in sink.

CAUSE/ REMEDY: Upper and lower nuts not tight. Loosen bottom nut. Tighten top nut firmly, then retighten bottom nut.

Top nut has bad threads. Replace top nut.

Expansion chamber tube threads not formed properly. Replace unit.

FAUCETS

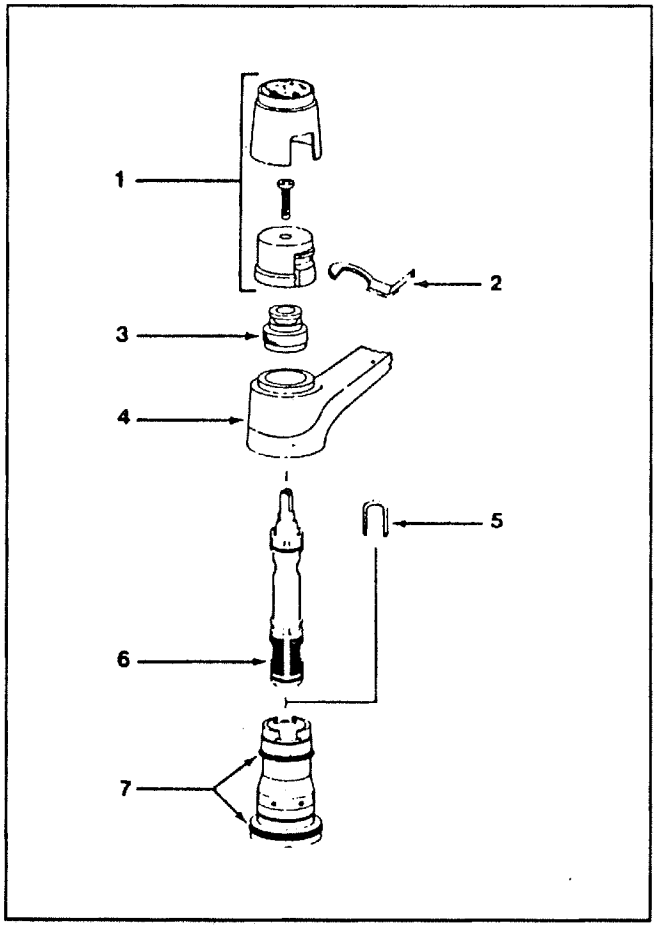
Care and Cleaning

The surface of the faucets will stay bright and resist wear with a minimum of care. Strong detergents may tend to dull the finish, so when cleaning a faucet use only mild soap and water.

The finish on the faucets has been designed to retain its polished appearance without scouring. Stains and dirt remove easily without the use of scouring powders or abrasive polishes and cleaners. Use of such agents may cause scratches which mar the finish, and in time become dirt catchers and unattractive.

Airstream uses two manufacturers of faucets in our travel trailers. Repair instructions for both models are included. Be sure to check the manufacturer of your faucet for the appropriate instructions.

MOEN GALLEY FAUCET



1. Handle Assembly Kit
   Handle Cap
   Handle Screw
   Handle Body
2. Handle Lever
3. Retainer Pivot Nut
4. Spout Assembly
5. Retainer Clip
6. Cartridge
7. Spout Seal Kit

Moen Galley Faucet Disassembly and Assembly

To Disassemble: (Need pliers and screwdriver.)

1. Turn "OFF" both hot and cold water supplies and remove handle screw.
2. Pull handle down. Place screwdriver in screw hole and press down on cartridge stem. Lift and tilt handle housing off.
3. Remove pivot nut with pliers.
4. Lift and twist spout off.
5. Pry out retainer clip with screwdriver.
6. Grasp cartridge stem with pliers. Lift cartridge out.
7. To flush supply lines turn on both hot and cold water supplies slowly.

To Assemble:

1. With cartridge stem up, insert cartridge and push down by its ears.
2. Turn cartridge ears to front and back.
3. Turn red (notched) flat of cartridge stem toward sink (Note: for cross piping installations where supply piping is reversed, red (notched) flat faces back of sink.)
4. Replace clip all the way.
5. Replace spout. Push down until it nearly touches the faucet escutcheon.
6. Screw on pivot nut. Do not cross thread. Tighten with pliers.
7. Press cartridge stem down. Holding handle up, hook ring in handle housing into groove on sleeve.
8. Swing handle back and forth until it drops down into place.
9. Replace handle screw. Tighten securely.

To Flush the Installation:

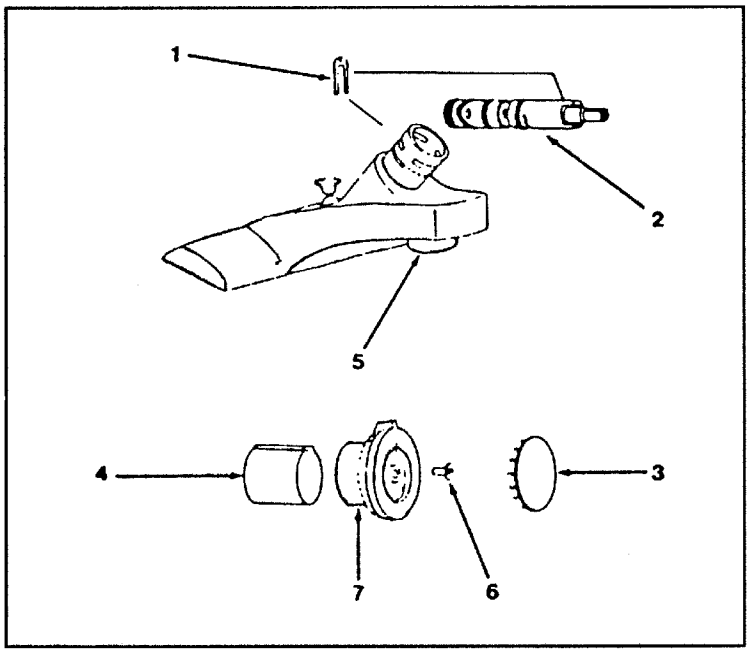
1. Faucet body and supplies should be flushed under pressure to remove pipe chips or other foreign material that might clog the faucet when in service. To do this make sure the water supplies are "OFF". Follow the detailed instructions below and disassemble the faucet. Turn on both hot and cold water supplies slowly, and thoroughly flush the installation. Reassemble faucet as shown in the instructions below.

A. If the handle won't operate properly you have not hooked handle ring into sleeve groove. (See Step 7)

B. If hot and cold are reversed, the red (notched) flat is not toward the sink. Remove handle assembly. Turn red (notched) edge of stem so it faces sink. (See Step C)

C. For proper water flow, aerator must be free of foreign particles. If flow is weak or irregular, unscrew aerator, clean and replace.

MOEN LAVATORY FAUCET



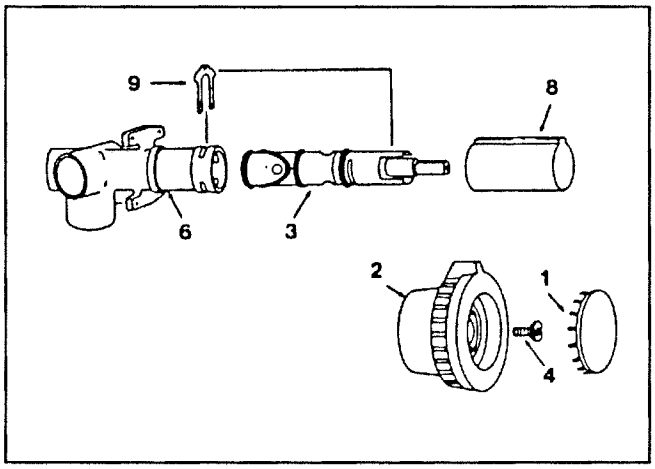
1. Retainer Clip (Knob Handles)
2. Valve Cartridge
3. Handle Cover (Knob Handles)
6. Stop Tube (Knob Handles)
7. Aerator - Male Thread
8. Handle Screw (Knob Handles)
9. Handle Assembly (Knob Handles)

Removal and Replacement

1. Disconnect City water supply.
2. Shut off pump switch.
3. Open Faucets
4. Open drain valves
5. Remove hose clamps holding plastic hot and cold water lines to copper pigtails on faucet. Remove lines.
6. Form lines from faucet so they are paralleled with one another.
7. Remove nuts and washers securing faucet in place.
8. Remove faucet by lifting it from its position.
9. To replace, reverse above procedure.
10. Check for leaks.

Note: See end of faucet section for removal of cartridge.

MOEN SHOWER MIXING VALVE ASSEMBLY



1. Handle Cover
2. Handle
3. Cartridge
4. Handle Screw
5. Valve Body
6. Stop Tube
7. Retainer Clip

Removal and Replacement

1. Cover carpet and cover bottom of shower pan to protect them from damage.
2. Disconnect city water. Shut off water pump.
3. Open drain valves
4. Open galley, lavatory and shower faucets and allow water to drain from lines.
5. Remove screws from top of faucet inspection cover in wardrobe. Tip back and remove water lines from faucet.
6. Pop out metal insert in control valve handle. Remove screw and pull knob off.
7. Remove screws in escutcheon plate.
8. Disconnect shower hose.
9. Wrap masking tape on chrome fitting so as not to scratch chrome.
10. Using wrench, remove fitting.
11. Mixing valve, shower outlet, tube and hot and cold feed line assemblies may then be removed through wardrobe inspection hole.
12. Replace by reversing above procedure.

Note: If existing hose clamps were destroyed in removal, they should be replaced with screw type clamps.

LAVATORY FAUCET AND SHOWER MIXING VALVE CARTRIDGE REMOVAL

Shut off water pressure for entire system.

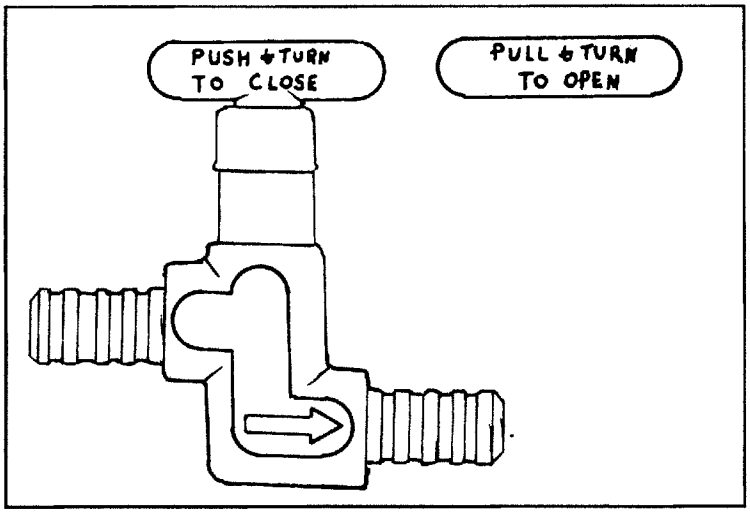
Disassemble: Remove handle cover. Take out handle screw and remove handle and stop tube. Lift out retaining clip and pull the cartridge out of the body by the stem.

CAUTION:

Reinsert cartridge by pushing it all the way into the body and until the front of the ears on the cartridge shell are flush and aligned with the body. Replace the retainer clip so that the legs straddle the cartridge ears and slide down into the bottom slot in the body. This prevents the cartridge from rotating and locks it in the body. Reinstall stop tube and handle. Tighten handle screw securely, and replace the handle cover. The red flat on the stem must point UP when mounting the knob handle (down for lever handle).

If cold water is on left side and hot water is on right side (red flat pointed down), remover cartridge and reinstall 180°.

DRAIN VALVES



To the right is an illustration of a line drain valve used by Airstream. They are made out of a gray nylon material. The illustration is close to the actual size of the valves.

The valves are opened by pulling up on the handles while turning them counterclockwise. About five complete turns will open them completely.

To close, push down and turn clockwise about five complete turns.

Note: These valves do not have stops. You can just keep turning them.

Most line drain valves are located in what we commonly call the tank well. This is a rectangular cut-out in the floor that exposes the end of the fresh water tank. In the "well" is where the fill pipe is connected, the intake pump hose, the probe wires to indicate the water level, and most of the drain valves.

To see the valves a flash light will normally be required. In your first attempt to identify the valves you may find a small mirror helpful.

To Empty Fresh Water Tank

The fresh water tank may be emptied by pumping the water out with the self-contained water pump. Simply turn on the pump switch and open a couple of faucets until the water will no longer come out. On all models there is also a petcock type drain valve located in the wheel well and extended out through the tank support pan. Some are seen by looking between the tires, but others are directly behind the tire.

They are located on the same side of your trailer as the water fill pocket.

An additional drain plug is located on the bottom of the tank, accessible under the inspection plate that can be seen on the bottom of the tank support pan. A large allen wrench is required for its removal.

Note: For winterizing purposes, only the petcock behind the tires need to be opened to drain the tank.

Water Heater Draining

All models have a drain plug or petcock on the water heater. Access is from the exterior. The plug or valve is usually located in the lower left corner, viewed as you face the exterior of the water heater.

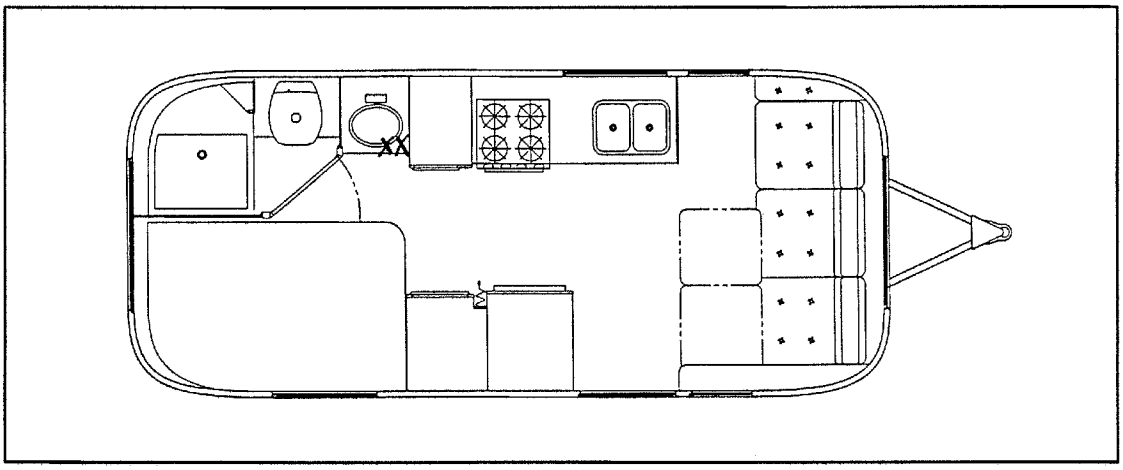
Hot Water Dispenser Draining

If your trailer is equipped with the hot water dispenser there will be a brass drain plug on the bottom of the dispenser accessible in the galley cabinet.

DRAIN VALVE LOCATIONS

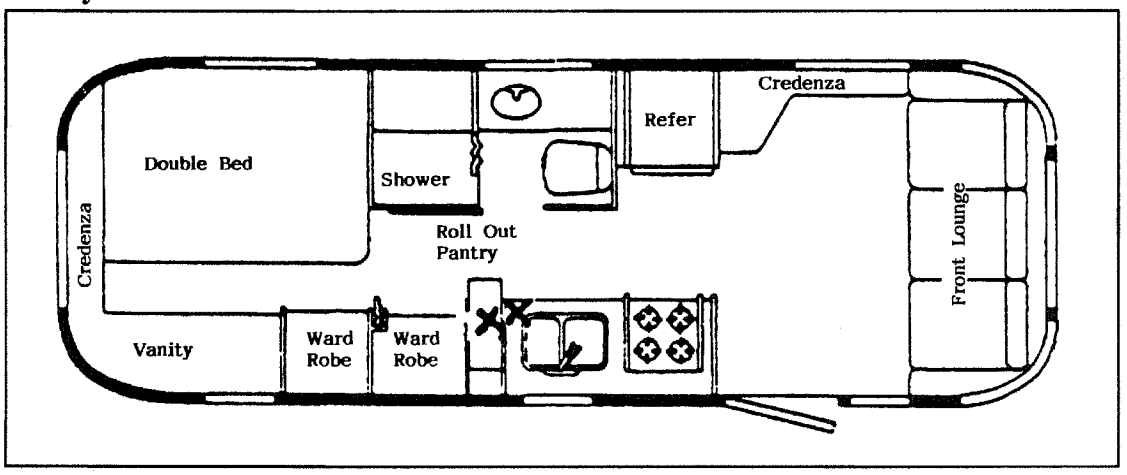
The following illustrations will help you locate the valves in your trailer. The "X" indicates the position of the line drain valves relative to the cabinetry.

Twenty-One Foot



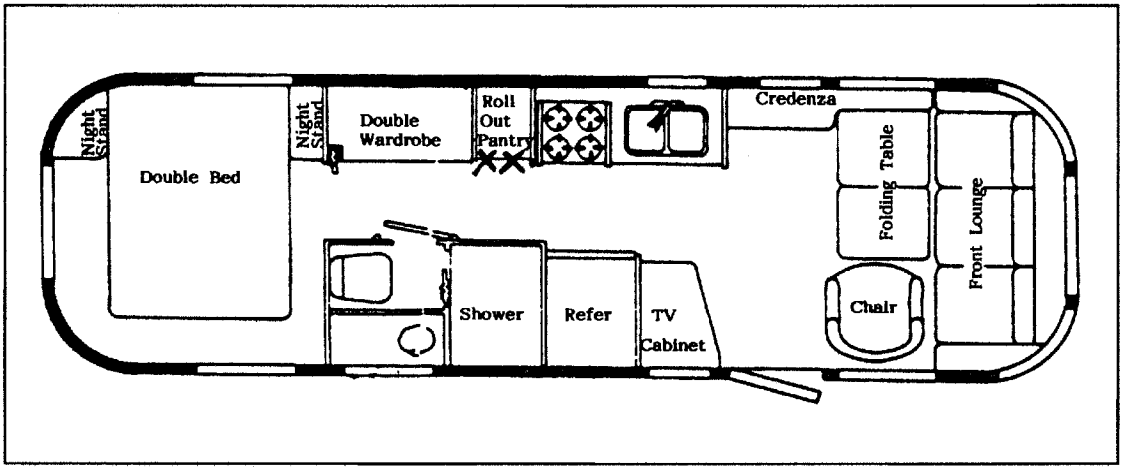
The two line drain valves are found down in the tank well located under the pantry or microwave cabinet.

Twenty-Five Foot



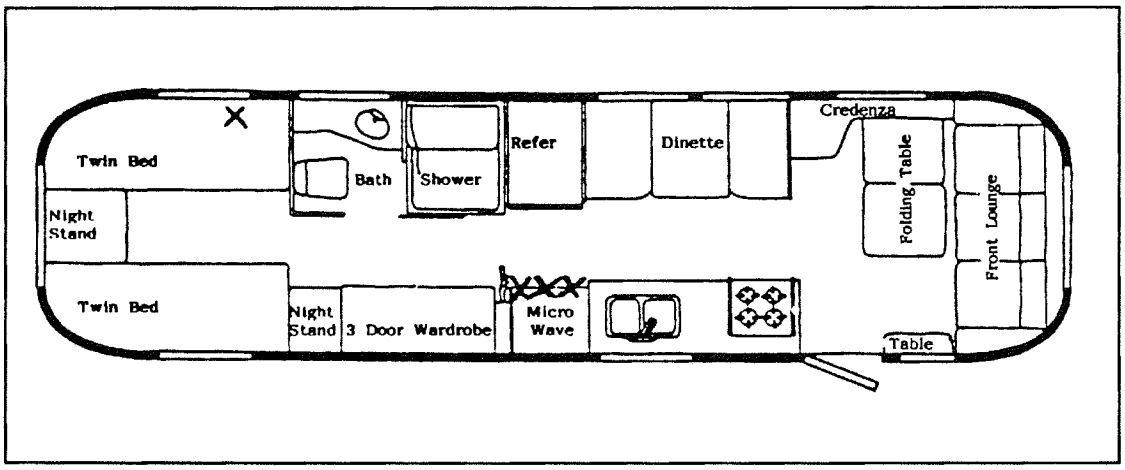
The two line drain valves are located in the tank well almost directly under the roll out pantry. There is an access panel screwed to the bottom shelf of the galley cabinet.

Twenty-Nine Foot



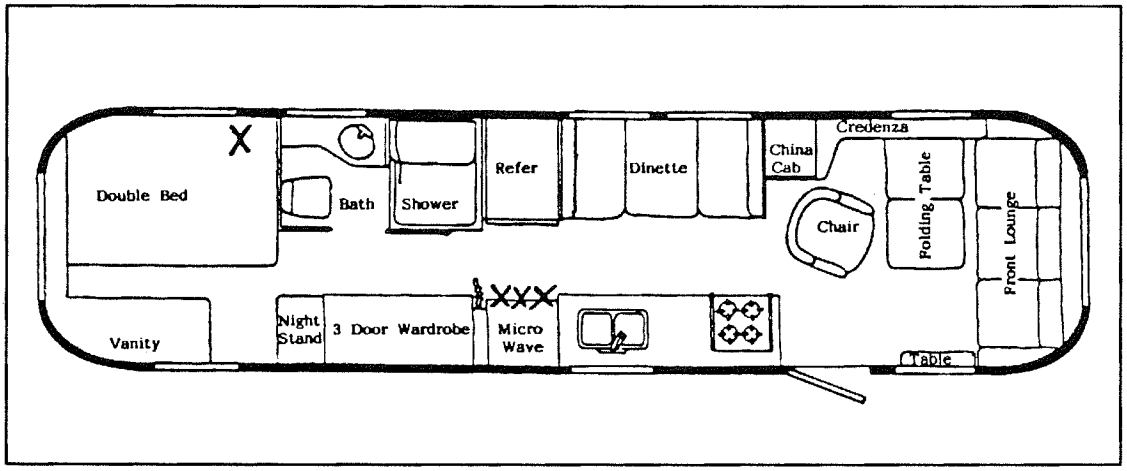
The two line drain valves are found down in the tank well located under the pantry or microwave cabinet.

Thirty-Two Foot



The thirty-two foot center bath models have four line drain valves. Three are located close together in the tank well. Lifting the false bottom of the microwave cabinet will give you access. The fourth valve is located under the rear bed (no matter what style) on the roadside of the trailer. An access panel in the bed top can be found by sliding the mattress to one side, or the complete bed top can be removed. On 32L models the tank well would be located under the galley. A false bottom panel lifts up for access.

Thirty-Four Foot



The thirty-four foot center bath models have four line drain valves. Three are located close together in the tank well. Lifting the false bottom of the microwave cabinet will give you access. The fourth valve is located under the rear bed (no matter what style) on the roadside of the trailer. An access panel in the bed top can be found by sliding the mattress to one side, or the complete bed top can be removed.

WINTERIZING AND STORAGE

When storing your trailer for short or long periods use the same precautions as you would in your own home in regard to perishables, ventilation and rain protection. In addition, for prolonged storage periods, flush out all the drain lines and the holding tanks. Also drain the entire water system including the water heater and the water storage tank. Instructions for draining the water system are explained in the following paragraphs on winterizing.

THE MAIN CONSIDERATION IN WINTERIZING IS TO GUARD AGAINST FREEZING DAMAGE TO THE HOT AND COLD WATER SYSTEMS, THE WASTE DRAIN SYSTEM (INCLUDING THE TRAPS), THE WATER HOLDING TANKS, THE WATER HEATER AND THE BATTERY.

To completely winterize your trailer follow this procedure:

1. Level the trailer from side to side and front to rear. Open all faucets.

2. Turn the water pump switch to the ON position to expel water from the storage tank.

3. Open all drain valves including drain plug or valve on water heater.

4. While the water is draining from the system, open and flush the toilet flushing valve. Depress hand spray lever while holding the spray head down inside the bowl. Depress hand spray thumb button on the telephone shower head while holding down inside the tub and drain all water from the flexible hose. Unscrew the heads on both spray units and store.

5. After all water has been removed from the storage tank, turn the pump switch OFF.

6. Remove exhaust hose from water pump.

7. Disconnect the water pump inlet connection and turn the pump on until all the water is expelled. This water, about 1/2 cup, can be caught in a towel or rag.

8. Lower the front of the trailer as far as the jack will allow until water ceases to drain, then crank the jack up as high as it will go and let any remaining water drain out.

9. After the water has stopped running from the drain lines, apply at least 60 lbs. of air pressure at the city water inlet. An air to city water adapter is available from your dealer's RV accessory store. Be sure the toilet valve and all drain valves and faucets are open and pump outlet hose is disconnected. This can be accomplished at a service station and will force any remaining water from the water heater and remove any water which may be trapped in low areas.

10. Pour a cup of *approved non-toxic antifreeze into the lavatory, sink and tub drains to prevent trap freeze-up.

    *Approved and listed by a recognized testing authority such as UL (Underwriter Lab).

11. Be sure to open the waste holding tank drain valves and drain and flush the tanks thoroughly (THIS IS VERY IMPORTANT AS THE SEWAGE IN THE TANKS, IF FROZEN, COULD SERIOUSLY DAMAGE THE TANKS.)

12. Remove the cartridge of the water purifier and leave the purifier valve in the open position. (If so equipped.)

13. Remove the batteries from your trailer and store in a cool dry place where there is no danger of freezing. It is very important for `optimum life of a battery to check it periodically and to keep it fully charged.

14. Remove any items (food, cosmetics, etc.) from trailer interior that might be damaged by freezing - or might damage the trailer if containers break.

For additional winterizing protection add a non-toxic antifreeze (approved for drinking water system) to the water lines using the following procedure;

1. Reconnect all lines except the hose to the pump inlet port. Close all drain valves (See Steps 3 and 12).

2. Turn by-pass valve to by-pass position.

3. Attach a length of hose to the pump inlet port. This piece of hose should be long enough for the free end to be inserted into and reach the bottom of the antifreeze container.

4. Dilute the antifreeze solution in accordance with the manufacturer's instructions.

5. Open all water faucets.

6. Insert hose length into the antifreeze container, turn the pump switch on, and run the water pump until the antifreeze solution fills all water lines and the water heater. Flush toilet, work hand spray while holding down in bowl. Work hand shower spray while holding down in tub.

7. Shut off the pump and close all faucets.

8. Disconnect the hose length from pump inlet fitting and reconnect water system inlet line.

DRAIN AND WASTE SYSTEM

Your trailer has a drain and waste system that includes waste holding tanks made from molded plastic, free from corrosion problems, with trouble-free dump valves.

The MAIN HOLDING TANK enables you to use the toilet for several days away from disposal facilities. The waste water from the sink, shower, bath and lavatory drains in the AUXILIARY HOLDING TANK. Each tank has its own dump valve, however, both tanks drain through a common outlet. Therefore, you need to make only one connection when hooking up in a trailer park with sewer facilities.

CAUTION: Never put wet strength paper towels or tissues in your holding tank since they won't dissolve and can "catch" in the mechanism of the dump valve. Colored toilet tissue is slower to dissolve than white. Most RV accessory stores offer tissue designed for RVs that will completely dissolve.

Deodorizers

There are many deodorizers on the market in tablet, liquid and powder form. These not only combat odor, but stimulate the bacteria that works to dissolve the solids in your tank.

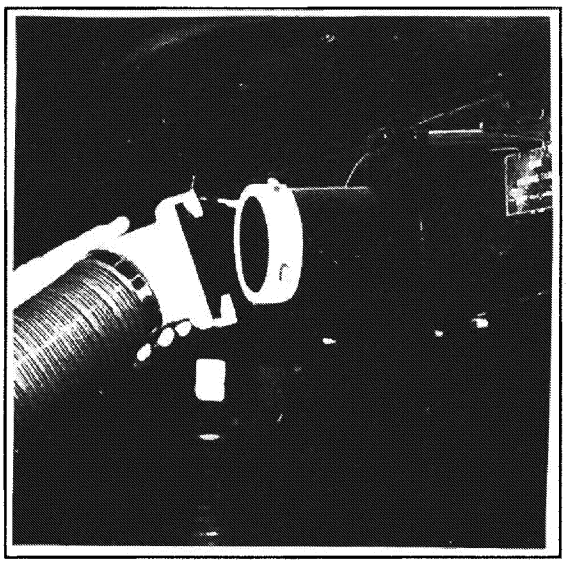
Monitor Panel

Check your monitor panel frequently. When the MAIN HOLDING TANK is completely full, sewage cannot be emptied from the toilet bowl. If the AUXILIARY HOLDING TANK is overfilled, drain water will "backup" into the tub and cause an unpleasant cleaning job. Never drain the tanks at any place other than an approved dumping station.

Emptying Tanks

Almost all campgrounds will have dumping facilities. Park directories such as Woodalls and Rand McNally also list dumping stations.

To empty one or both tanks attach the sewer hose by pressing the bayonnet fitting onto the dump valve outlet and rotate clockwise until it feels solid and secure. Attach the outlet end of the hose to the sewage outlet, making sure that the hose is placed so it will drain completely.



Pull the dump valve handle as far as it will go and wait until the tank is drained. When dumping, the main holding tank should be dumped first; then the auxiliary holding tank. This will help to rinse out the sewer line with auxiliary holding tank water.

The main holding tank must be flushed out until all paper and waste material is removed. Close the dump valve and refill the tank with clean water and repeat until clean. Replace the cap prior to traveling.

When Parked and Connected to Sewer Outlet

When you are in a park and connected to a sewer outlet keep the main holding tank dump valve closed, and empty the tank every few days or whenever it becomes almost full. ONLY BY SENDING A LARGE VOLUME OF LIQUID THROUGH THE MAIN HOLDING TANK AT A TIME WILL TOILET PAPER AND OTHER SOLIDS COMPLETELY WASH AWAY.

This practice will avoid the accumulation of solids in the main holding tank which could lead to an unpleasant cleaning job. Should solids accumulate, close the dump valve, fill the tank about half full with water, then tow the trailer for a few miles. The turbulence and surging of the water will usually dissolve the solids into suspension so the tank can be drained. Keep the auxiliary tank valve open when connected to a sewer outlet.

Draining the tanks as described will protect them from freezing during storage. When traveling in sub-freezing temperatures use a winterizing solution designed for RV use. Follow the directions on the container.

Drain Systems Cleaning

The only cleaning agents that can be used without causing harm to the system are household ammonia and trisodium phosphate in small quantities. Do not use any product that contains any portion of petroleum distillates. This attacks the rubber seals of your toilet and dump valve. Also, do not use any dish detergent or abrasive cleaners. All products should be marked approved for ABS drainage systems.

When winterizing drains use only trailer plumbing system type antifreeze. These are sold through your dealer.

Drain System Repair

Fittings are cemented together with ABS corlon cement; therefore, cannot be successfully separated. Section to be repaired must be cut out of the drain system using a hacksaw. Surfaces to be cemented must be clean and dry. Use a small 1/2" paint brush to apply the cement. Fittings must be installed immediately as the cement dries rapidly and bonding action is in seconds. For this reason it is best to have all pieces pre-cut and a trial assembly made without the use of cement.

Dump Valve Removal

To remove the valves, aircraft type snips are used to cut out the metal under the valves. Don't skimp on the hole size. It is easier to put on a little larger inspection plate when you are done than it is to try to work through a small opening.

No matter which installation is in your trailer, a rubber union will always be between the two gate valves. Loosen the clamps on the rubber unions and the clamp on the dump valve furthest from the union. The gate valve, tee, wye and corlon extension is all removed as an assembly. Once the large assembly is removed, the other dump valve is easily removed. In many instances the nuts for the clamps will be facing upward, and a short open end wrench will be the easiest tool to use when loosening them.

We don't normally replace the valves, but repair them while they are still glued to the assembly. Each repair kit includes instructions for working on the valve itself.

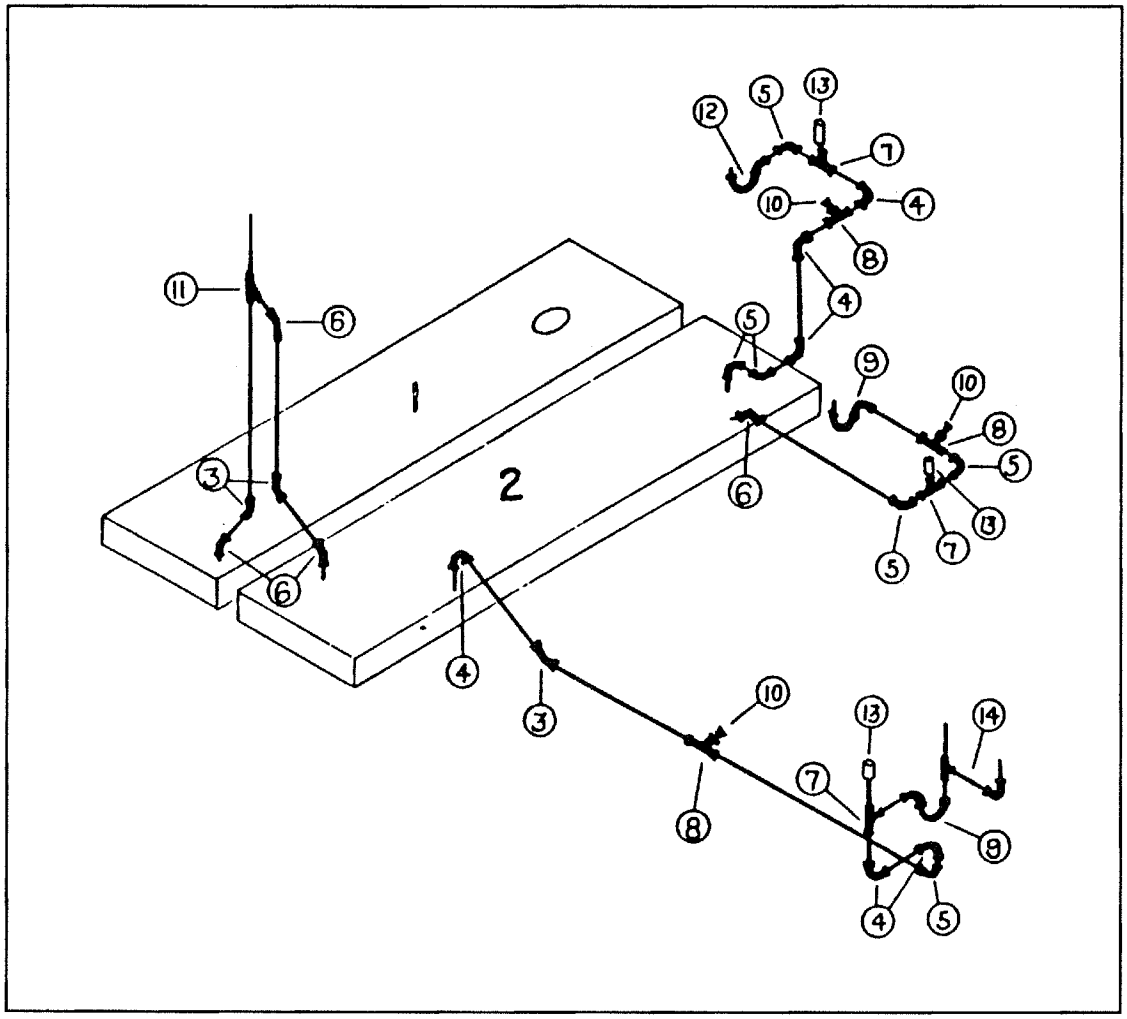
If a valve must be replaced, a hacksaw or hacksaw blade is used to cut the valve off flush with

the black corlon. Work your way around the fitting, driving the screw driver and little deeper each time. About the second time around the glue will usually "pop" loose.

Be sure to note the position of the original valve so the new one will be glued in the same direction.

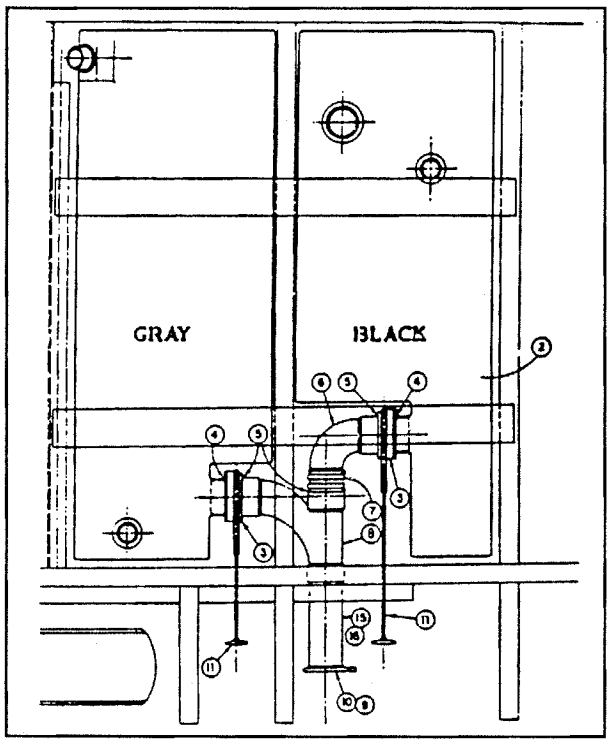
Once the valve repair is completed use sheet metal screws or pop rivets to fasten a flat piece of aluminum over the hole you cut in the bottom of the tank pan. Almost all Airstream dealers will have the aluminum you need for your new inspection plate.

DRAIN LINES - ABOVE FLOOR



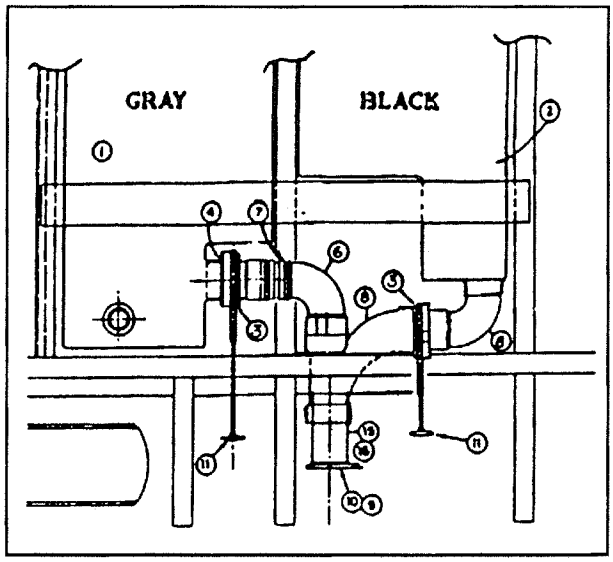
1. Holding Tank, Black
2. Holding Tank, Grey
3. 1 1/2" 45° Ell
4. 1 1/2" 90° LT Ell
5. 1 1/2" 90° ST Ell
6. 1 1/2" 45° ST Ell
7. 1 1/2" Sanitary Tee
8. 1 1/2" Cleanout, Bi-Directional
9. 1 1/2" P Trap
10. Clean Out Plug
11. 1 1/2" 45° Wye
12. 1 1/2" P trap w/slip
13. 1 1/2" Auto Vent
14. 1 1/2" Continuous Waste (Galley)

DRAIN LINES - BELOW FLOOR



1. Tank, Grey Water
2. Tank, Black Water
3. Dump Valve
4. Caulking, Duribbon
5. Cement, IPS Weld On, ABS Pipe
6. Fitting, 3" Dia. 90° Ell
7. Union, Rubber 3" Dia.
8. Fitting, 3" Dia. Wye, Tee ABS
9. Ring and Cap, Sewer Hose
10. Bayonet, Sewer Hose
11. Handle, Dump Valve, Ext. 19"
12. Pad, Slope, Grey Water
13. Pad, Slope, Black Water
14. Pan, Septic Tank Holding
15. Corlon, 3" Dia. IAPMO Approved
16. Corlon, 3" Dia. CSA Approved
17. Styrofoam 1/2" thick
18. Screw, 5/16-18 X 7/8 H.H. Cap

Typical Installation A



Typical Installation B

TOILET

Manufacturer: Thetford Corporation
7101 Jackson Road
Ann Arbor, MI 48103
313-769-6000

The RV toilet in your Airstream is a design that has been used for many years. There are two pedals. The large pedal opens and closes the slide mechanism, and the smaller pedal opens and closes a water valve.

In normal use, when you are hooked up to city water, both pedals are depressed together. This dumps the sewage and fresh water and flushes down the side of the bowl. Water will continue to run into the bowl for a short time after the pedals are released.

When you wish to conserve water hold the handspray head over the bowl and hold down the thumb operated lever. Now when you depress the pedal all the water is routed through the handspray.

CAUTION: When you dump the bowl of the toilet make sure all paper and solids have cleared the slide mechanism before you allow it to close. Failure to do so can cause the groove for the slide to become jammed and the slide will no longer close completely.

If the problem should occur a small nail or bent clothes hanger can be used to "pick" the material out of the groove.

TROUBLE SHOOTING

PROBLEM: Water Keeps running into bowl.

CAUSE: The blade in the bottom of the bowl is not closing completely, which in turn keeps the water control valve partially open. The groove into which the blade seats when completely closed is clogged with foreign material.

REMEDY: Insert the end of a coat hanger or similar object into the sealing groove and remove the foreign material. Avoid damaging the rubber seal while cleaning.

PROBLEM: Toilet leaks. There is water on the floor. Specify the problem. Determine if water is leaking from:

CAUSE: a. Vacuum breaker

b. The water control valve

c. Bowl to mechanism seal (if this is the problem the water would not stay in the bowl.)

d. Closet flange base seal

REMEDY: a. The vacuum breaker. If the vacuum breaker leaks when flushing the toilet, replace vacuum breaker.

b. If the vacuum breaker leaks when the toilet is not in operation replace the water control valve.

c. Leaks at the bowl to mechanism seal . Remove mechanism and replace seal

d. Leaks at closet flange area. Check front and rear closet flange nuts for tightness. If leak continues remove the toilet, check the closet flange height. The height should be between 1/4" and 7/16" above the floor. Adjust closet flange height accordingly and replace closet flange seal

PROBLEM: Foot pedal operates harder than normal or the blade sticks.

REMEDY: a. Apply a light film of Silicone spray to blade.

b. Check closet bolt tightness. If closet bolts are over tightened the mechanism may be distorted.

PROBLEM: Bowl will not hold water. IE: Water leaks from bowl down into the holding tank.

REMEDY: Using a bent screwdriver or similar object, scrape the groove in front of the mechanism blade. Generally paper or other foreign material is lodged in this groove causing the leak.

CAUTION: Use care not to damage the blade seal Always make certain that the tool is under the lip of the seal , not above it.

The tool can easily be made by bending a coat hanger or screwdriver over about 7/8".

MAINTENANCE

If the bowl sealing blade does not operate freely after extended use, it may be restored to its original, smooth operating condition by applying a light film of silicone spray to the blade. To clean the toilet use Thetford Auqa Bowl or any other high grade, non- abrasive cleaner. Do not use highly concentrated or high acid content household cleaners. They may damage the rubber seals.

REMOVAL

1. Shut off water valve behind toilet or main water supply.

2. Disconnect water supply line from toilet. You will probably find a small mirror very useful.

3. Depress pedal and remove nut located in pedal recess.

4. Reach behind toilet and remove nut on opposite side of base from pedals. In some situations you may want to remove the plug in top of the seat designed to give access from above to this nut.

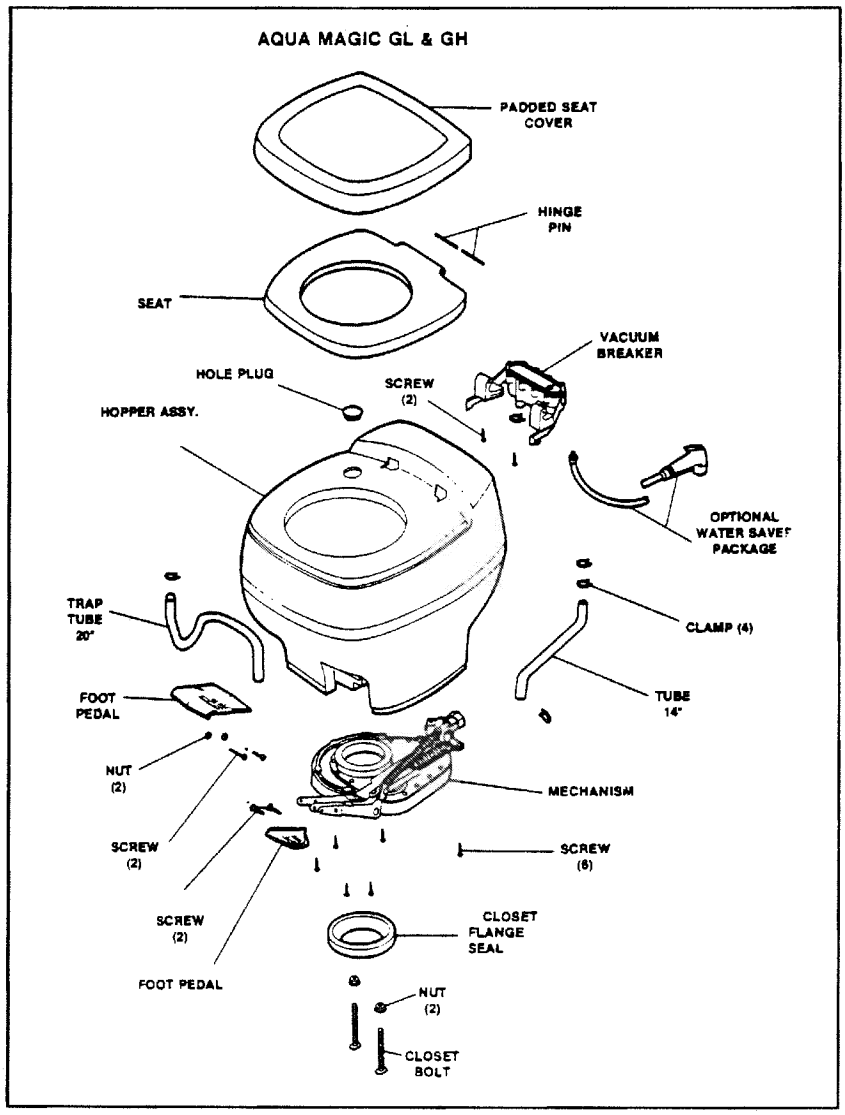
NOTE: Always replace flanqe seal when toilet has been removed.

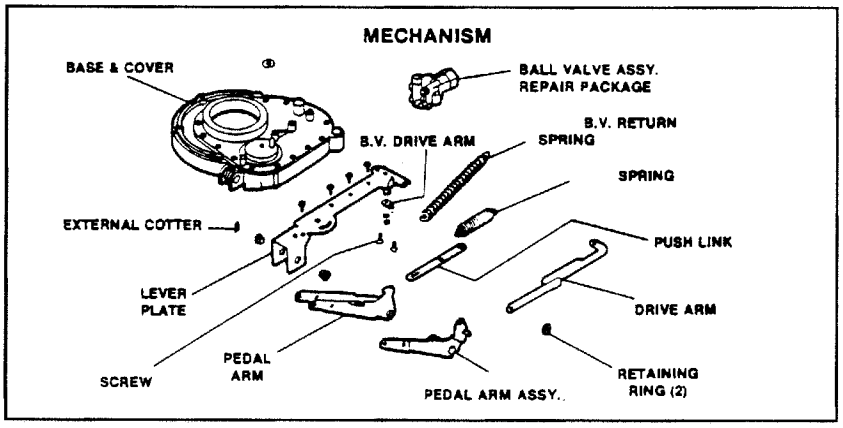
VACUUM BREAKER ASSEMBLY AND DISSEMBLY

Remove vacuum breaker from toilet. Remove 10 screws holding the cover to the housing. This exposes the vacuum breaker float, float seal and cover seal. The float is free in its chamber and is easily lifted or dumped out.

NOTE: When reassembling the unit make sure the housing is free of dirt and the raised collar that the float sits on is clean and free of burrs.

When the cover is reinstalled it is important that the screws be turned backwards until they jump so that when they are tightened they are in the original thread.


AQUA MAGIC GL & GH
PADDED SEAT COVER
HINGE PIN
SEAT
VACUUM BREAKER
HOLE PLUG
SCREW (2)
HOPPER ASSY.
OPTIONAL WATER SAVER PACKAGE
TRAP TUBE 20"
CLAMP (4)
FOOT PEDAL
TUBE 14"
NUT (2)
MECHANISM
SCREW (2)
SCREW (6)
SCREW (2)
CLOSET FLANGE SEAL
FOOT PEDAL
NUT (2)
CLOSET BOLT


MECHANISM
BASE & COVER
BALL VALVE ASSY. REPAIR PACKAGE
B.V. RETURN SPRING
B.V. DRIVE ARM
SPRING
EXTERNAL COTTER
PUSH LINK
LEVER PLATE
DRIVE ARM
SCREW
PEDAL ARM
RETAINING RING (2)
PEDAL ARM ASSY.

NOTES

ELECTRICAL

OPERATION

The major portion of electrical power in your Airstream is 12 volt. Your lights, fans, furnaces, water pump and water heater ignition are all powered by the 12 volt current. Some exceptions are the roof air conditioner, sweeper and table lamp (options) that are powered by 110 volt.

All 12 volt current comes through the battery system in the front of your trailer. The battery or batteries are accessible from the exterior on the front of your trailer. Power from the battery first goes to a master or "kill" switch inside the trailer below the front window. On models with a couch across the front the switch is located in the shelf behind the backrest. If your trailer has a cabinet across the front, the master switch is in the table storage recess. The master switch should be left in the ON position except when storing, or a mechanic may use the switch when servicing the trailer. On Limited models the batteries are side mounted and the kill switch is located in the dinette seat.

Power from the main switch continues on to the 12 volt distribution panel, and from there to the rest of the trailer. The 12 volt distribution panel has automatic circuit breakers and does not require routine servicing. If a short should occur the breaker in that circuit will "click" off and on and you may notice some lights or appliances losing power. If this should happen, immediately turn the lights and appliances off that are on the shorting circuit. If the breaker continues to "click" turn the main power off until your trailer can be serviced by a qualified technician.

The charge in the 12 volt batteries is replenished when towing, or whenever you are plugged into 110 volt city power. As you read further in this section you will find more detailed explanations, wiring diagrams and component information.

BATTERY

CAUTION: A normal battery can discharge by itself in 30 to 40 days when not in use, therefore, IT IS NECESSARY TO PERIODICALLY CHECK THE BATTERY AND CHARGE IT AS IS NECESSARY.

We suggest checking the battery at least every two weeks in freezing weather. The temperature at which a battery will freeze depends on the condition of its charge. As an example: a fully charged battery with a specific gravity of 1.265 will not freeze until the electrolyte temperature drops to -71.3°F, while a discharged battery will freeze at +19°F. The following table shows the freezing points of batteries at various specific gravity readings, temperature corrected 80°F.

1.265	-71.3°F
1.250	-62°F
1.200	-16°F
1.150	+5°F
1.100	+19°F

Do not add water to a battery in freezing temperatures unless the vehicle will be put to use at once, otherwise the added water may freeze. Neglect is expensive. Care costs little. Check your batteries regularly.

MAINTAIN A CLEAN BATTERY TOP AND CHECK TERMINALS AND CABLES FOR TIGHTNESS AND CLEANLINESS. A dirty battery will dissipate its charge through surface contamination. Clean battery top with a damp cloth and dry thoroughly.

The terminals should be tight and free of corrosion. To clean terminals, neutralize with a solution of baking soda, rinse in clear water, and dry.

Note: Care must be used to make sure soda is not allowed to enter battery cells.

To insure maximum battery capacity on both charge and discharge, the battery terminals and the inside portion of the cable connector should be scraped or brushed until both of these surfaces are shiny bright. The cable connectors should then be reconnected to the battery and tightened. The complete assembly, battery post and cable connector should be coated with a heavy body mineral grease, petroleum grease or a petroleum jell.

CAUTION: RECONNECT THE BATTERY CABLES TO THE CORRECT BATTERY POSTS. The black cable should be connected to the negative (-) post and the red cable to the (+) post. The polarity of your tow vehicle must also be negative (-) ground since it must always match the trailer. Most tow vehicles are negative grounded, but always check your vehicle owner's manual to be sure.

ADD WATER TO CELLS AS NECESSARY. Check the electrolyte level at least once a month. When you are traveling steadily and for an extended period of time, or if you are in climates above 90°F, check the electrolyte level about every two weeks.

CAUTION: Do not fill battery above the split ring in filler opening. DO NOT MEASURE SPECIFIC GRAVITY IMMEDIATELY after adding water. The water must mix with the electrolyte by charging or by driving a few miles.

WARNING: The gases generated within a storage battery cell may be ignited by an open flame or spark in the vicinity of the battery. Do not use a match or flame to provide light for checking the level of the water.

During the winter the battery should be removed from the trailer and stored in a cool, dry place, where there is no danger of freezing. It should be kept full of water, cleaned and charged monthly. A battery which is allowed to completely lose its charge will never regain its original power or a full charge.

Slide the battery out onto the opened compartment door for service and removal.

For battery service or replacement, go to any service station or dealer who sells and services the make battery installed in your trailer.

When being towed, the 12 volt battery in your trailer is receiving a constant charge from the car's generator or alternator through the seven way connector.

The charge rate is controlled by your automobile's voltage regulator. It is important to keep the seven way connector clean. One method is to use "Spra-Kleen".

Whenever possible use the automatic built in charge of the univolt system for charging. The charging circuit automatically controls the current, reducing it as the battery increases in charge.

At service stations make certain they give your battery a slow charge because quick charges will drastically shorten the life of the battery, as will allowing repeated complete discharges.

UNIVOLT

The univolt system is the interior low voltage electrical system which enables you to use the interior lights, fans, pumps and 12 volt appliances whether operating on self-contained battery power or 120 volt city power.

CAUTION: Plugging the trailer into 120 volt city power with the master switch off will blow radio fuses and may damage other 12 volt components. The master switch is meant to be used when storing the vehicle for long periods of time.

12V Power Circuits

The current in the univolt system is 12 volts direct current (l 2VDC) negative grounded.

Power sources which supply 1 2VDC current to the system are as follcws:

A. Main charge line from tow vehicle.

B. Trailer Battery

C. Univolt Converter

The power sources above are all electrically connected to the 12 volt distribution fuse panel which distributes current to interior branch circuits. The circuits provide power to operate all 12 volt DC lights, pumps, motors and appliances.

Univolt Converter

The univolt converter transforms 120 volt alternating current (AC) into 12 volt nominal direct current (DC). This provides power to charge the trailer battery and to operate the 12 volt interior lighting, fans, and appliances.

The converter is energized only when the trailer is hooked up to 120 volt city power.

Univolt Testing

A. Confirm 120 volt power is going into univolt.

B. Disconnect 12+ wire from master switch.

C. Using a volt meter check voltage output between heavy positive and negative wires coming out of univolt.

D. The voltage must be within 13.8 and 14.2 volts. (The meter of the tester should be calibrated periodically.)

E. If univolt is not within these voltages, replace it.

Univolt Repair

The case cover to the univolt must not be removed. (There is high voltage within the case which is dangerous.) The univolt should be returned to Airstream for repair.

Univolt Removal

1. Disconnect power cord for 120 volt supply.

2. Switch circuit breakers to off position.

3. Remove the front lounge, or open credenza door.

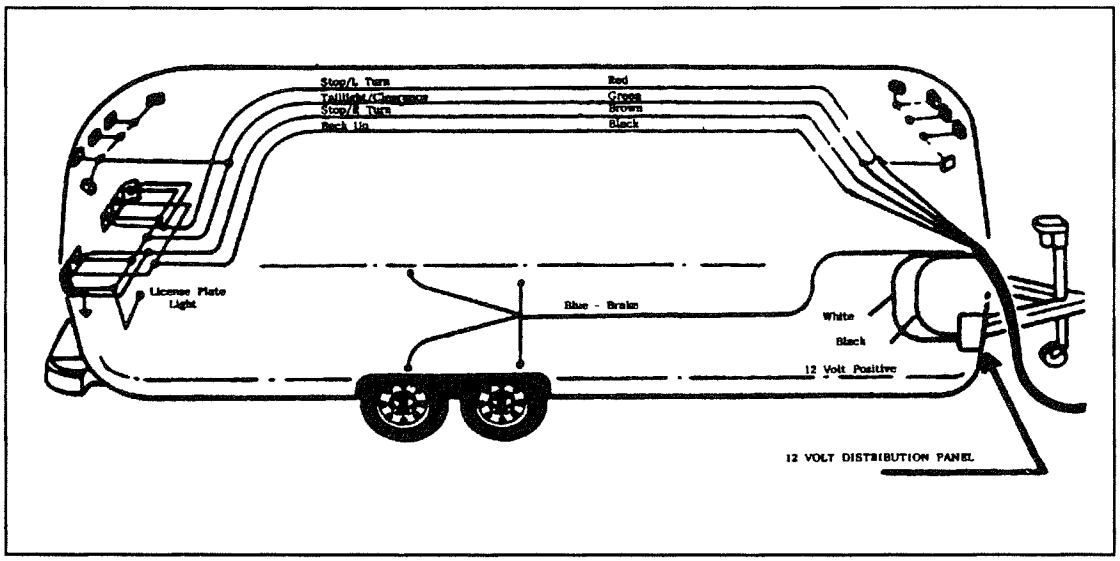
4. Disconnect lead-in wires running from univolt assembly to 12 volt fuse distribution panel.

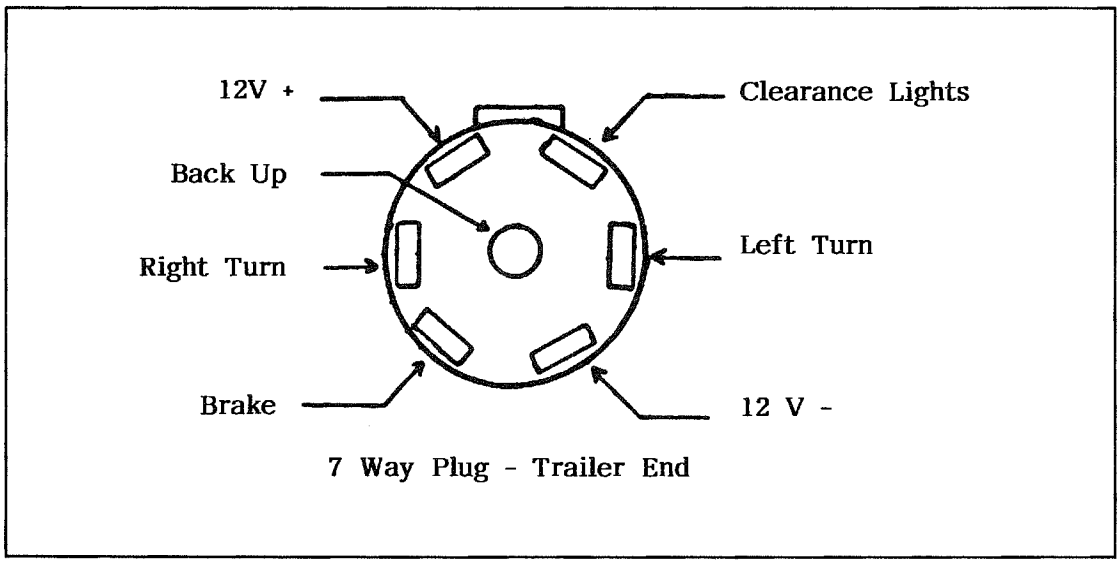
5. Remove four screws mounting the univolt assembly to the floor.

6. Remove the univolt assembly.

7. To install, reverse the removal procedures.

12 VOLT EXTERIOR



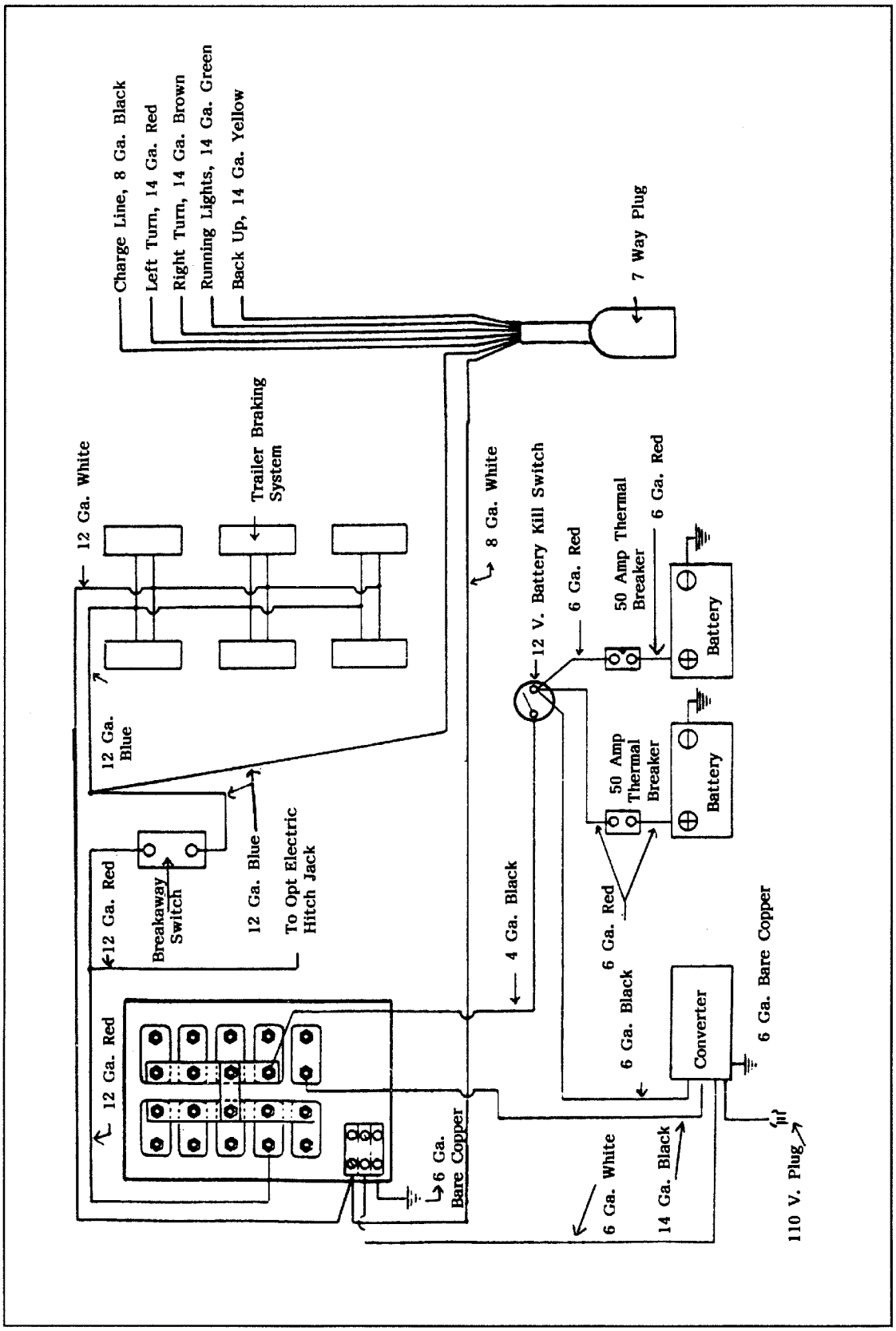


Note: The 7 way wire is spliced to the main harness in the area of the 12 volt distribution panel in front of the trailer.

One of these wires is not spliced onto a wire of the same color. It is the back up wire which is yellow in the cable and black in the harness.

Wire Routing Schematic - 7 Way Plug to Batteries and 12 Volt

Distribution Panel



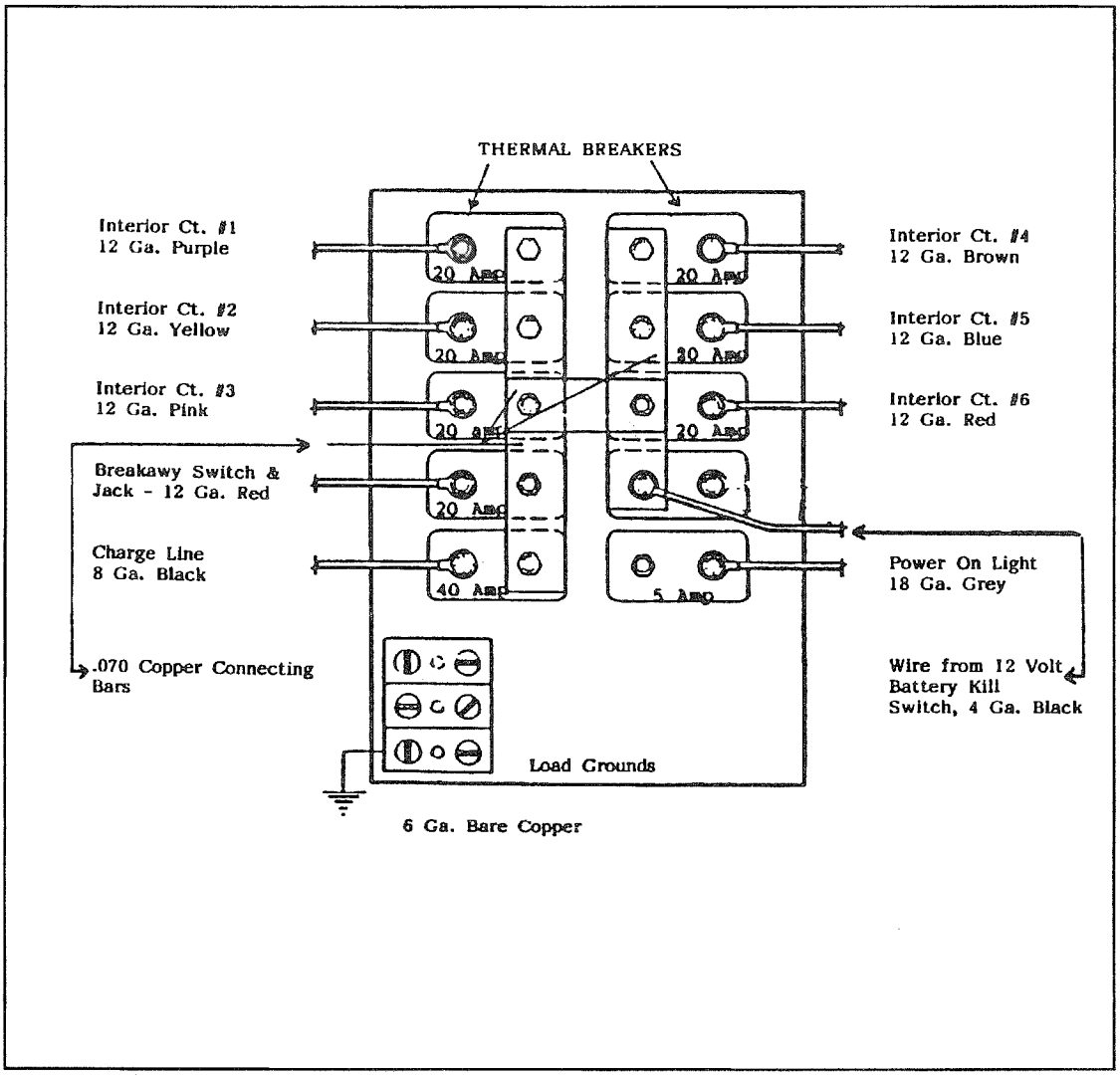
12 VOLT INTERIOR

Distribution Panel

The low voltage distribution panel is located on the interior front panel below the window. On Limited models it is under the roadside curved window, and on the Excella models it is under the center window. In some cases it is covered by a wall pad that unsnaps to remove. The 12 volt circuits are all protected by automatic resetting circuit breakers. If a breaker trips, an audible click will be heard, and you will probably see lights or hear appliances or fans quit working. In a short time the breaker will reset and power will resume. If the breaker trips a second time some of the lights or appliances on that circuit should be shut off. The questionable breaker can either be identified by the audible click or it may be much warmer than the others.

Each trailer has a master 12 volt switch often called a "kill switch". On Limited trailers the switch is located in the face of the dinette seat and on other models it is located in the front of the trailer below the window. This switch should only be used when storing or servicing the trailer.

WARNING: Do not allow circuit breakers to cycle rapidly for long period of time. Either remove the wire from the breaker or unplug the trailer and disconnect the battery until the wiring is corrected.



TROUBLE SHOOTING

The most common failure in the exterior electrical system is an open circuit. An open circuit is an interruption in the current flow which may be in either the wire to the component or in the ground return. Check the following areas for open circuits:

1. Light bulb (filament open.)

2. Loose or corroded connections at lighting device.

3. Loose or corroded connections at 7 way connectors.

4. Improper grounding at the lighting device.

A continuity light or an ohm meter will help you isolate the point of the "open" on the circuit.

Another cause of failure is a short circuit usually resulting in a blown fuse or cycling circuit breaker at the power source. A short is usually caused by the wire coming in contact with a sharp edge. The sharp edge wears the wire's insulation away until the "hot" wire shorts to ground.

Locating Shorts and Opens

The key in locating shorts and opens is isolation. The first step is to isolate the circuit with the short or open and then isolate the section of the circuit with the fault. Once the section is identified, the specific problem can be located. The cause may be a loose or corroded connection, cut wire, worn insulation, defective component, etc. The following paragraphs describe methods of isolating shorts and opens. There are several other approaches that may be used; however, these may be used as a guide.

Shorts

1. Locate circuit which has short by noting fuse blown or cycling breaker.

2. Remove fuses or wire from breaker, and open all switches. Check for continuity between (+) 12 volt wire or shorted circuit and ground. (If it cannot be determined if switch is in open position, remove lead from switch.) Continuity to ground indicates there is a short.

3. Remove leads of shorted circuits from univolt and components one at a time. After disconnecting each component, check continuity of the (+) 12 volt wire to ground. If there is no continuity the short is in the component removed. If continuity still exists, continue with the following steps.

4. Inspect leads carefully where they pass through the skin or near sharp edges.

5. Note objects attached to skin after manufacturing. The mounting screws or rivets may be causing the short.

6. Remove multidome to expose main body of harness. Inspect harness for cause of short, such as rivets or screws in harness or evidence of drilling.

7. If short cannot be found, cut circuit into sections, checking each section for

continuity. Shorts can be isolated by this method.

8. Examples of shorts are:

   * The (+) 12 volt wire contacting (-) negative wire or grounded surface.

   * Internal short in a 12 volt component or appliance.

Opens

1. Check all components on circuit which has open. If all components are without power, begin to look for open on distribution panel.

2. Check for voltage on each side of the breaker. Check for tightness of crimp on connector and nut.

3. After inspecting all accessible wire on circuit for opens, remove multidome. Remove tape and inspect splices for poor connection.

A continuity light is a useful tool in locating an open. Each section of circuit can be checked for continuity. By a process of elimination the open may be found.

4. Examples of open are:

   * Wire is cut.
   * Connector falls off component's terminal.
   * Loose or corroded connection.
   * Contacts in switch do not touch.

COMMON ELECTRICAL PROBLEMS

PROBLEM: No 12 volt power. (Lights and appliances do not work.)

CAUSE & REMEDY:

1. Input line and/or battery not connected. Make necessary connections.
2. Master (Kill) switch not turned on.
3. Discharged trailer battery. Charge battery.
4. Trailer battery on wrong polarity. Make proper connections to battery terminals.

PROBLEM: Tripping Breaker

CAUSE & REMEDY:

1. Overloaded circuit. Turn off switches to reduce load.
2. Electrical short. Find tripping breaker distribution panel and identify circuit. Check the circuit for defective wiring, lamps or motors.
3. Shorted battery. Replace battery.
4. Battery terminals not properly connected to univolt and - terminals. Make proper connections.

PROBLEM: Dim lights or sluggish fan motor.

CAUSE & REMEDY:

1. 25- or 50- cycle power (some foreign countries). Use 60- cycle power.
2. Discharged battery (when operating without 110 volt line) Charge battery.
3. Battery is low on water. Add distilled water to battery.

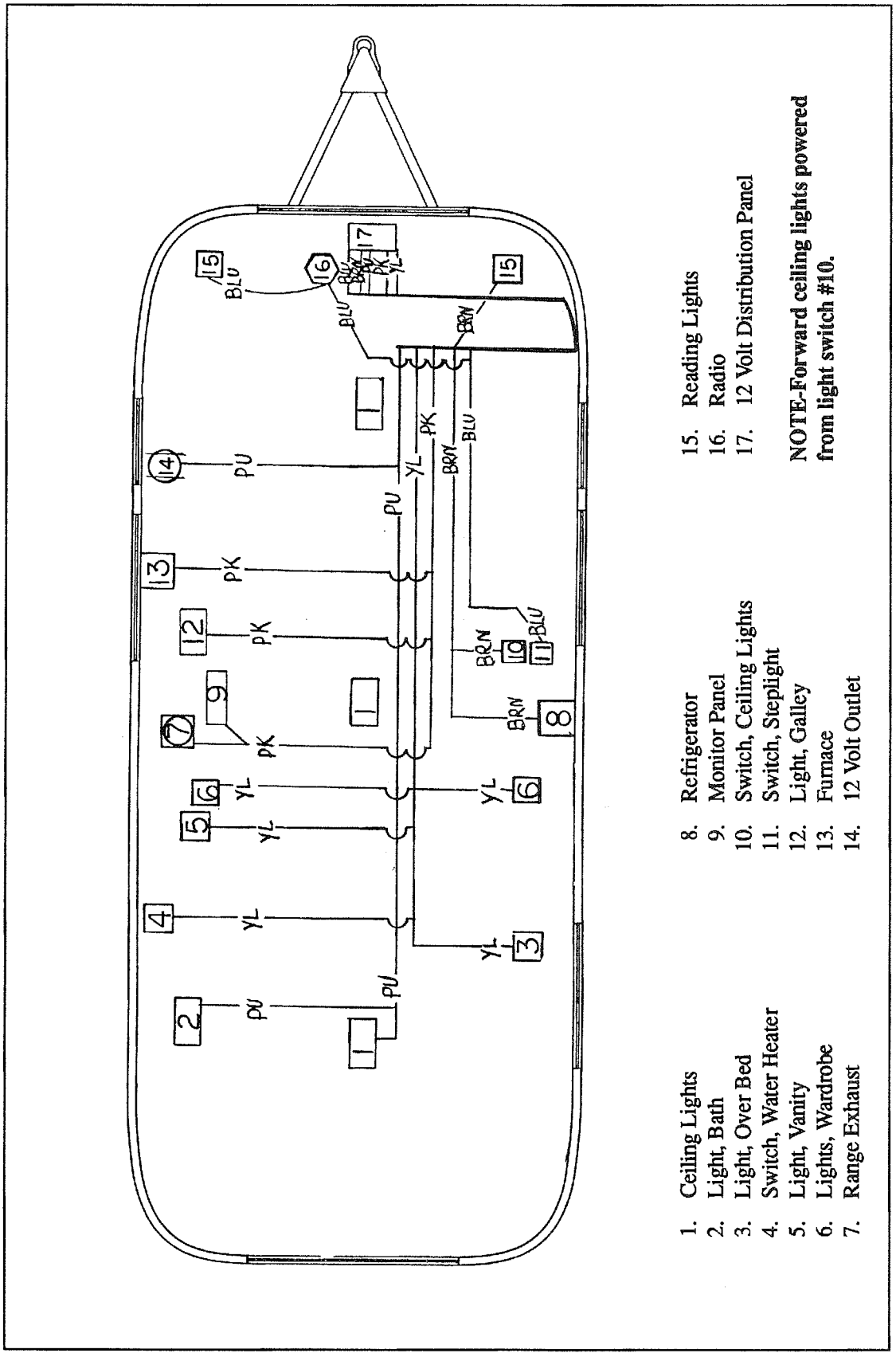
PROBLEM: Univolt will not charge battery.

CAUSE & REMEDY:

1. In put line not connected. Connect.
2. Battery not connected or polarity reversed. Connect battery to univolt (Check polarity).
3. Bad Battery. Replace.
4. Too many lights and appliances. Reduce electrical load.

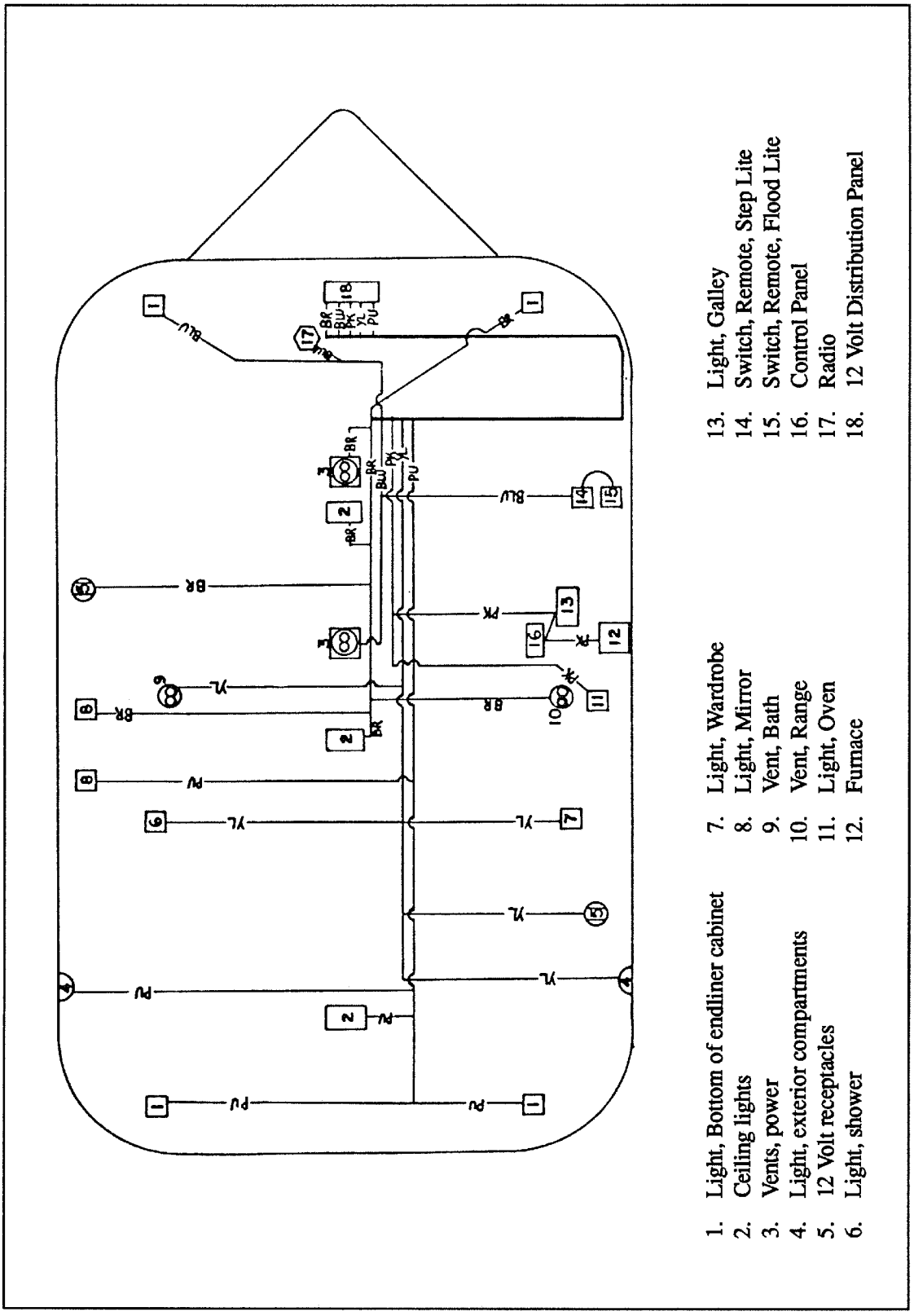
12 VOLT DISTRIBUTION PANEL TO SWITCH OR APPLIANCE

21 FOOT MODEL



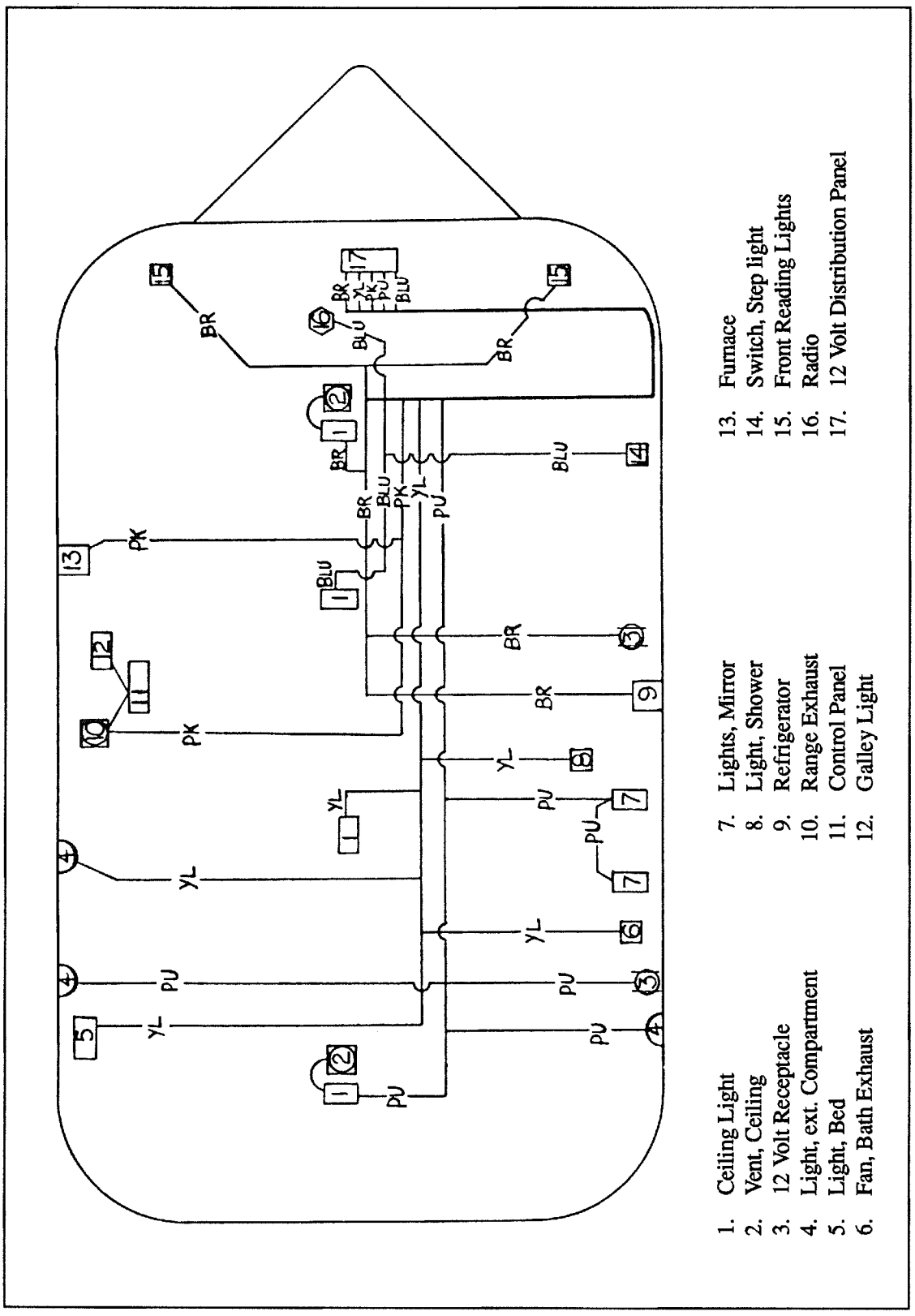
12 VOLT DISTRIBUTION PANEL TO SWITCH OR APPLIANCE

25 FOOT MODEL



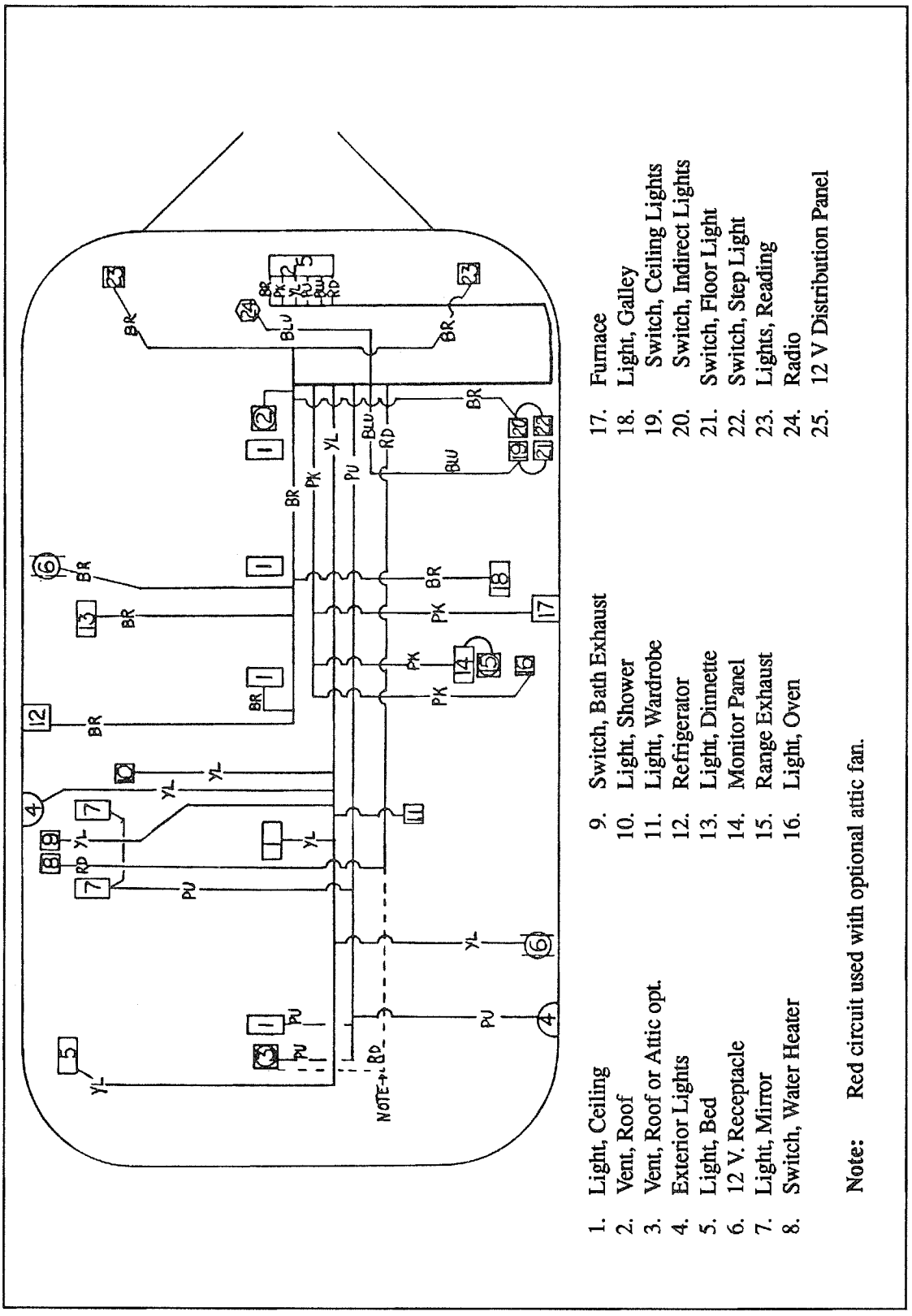
12 VOLT DISTRIBUTION PANEL TO SWITCH OR APPLIANCE

29 FOOT MODEL



12 VOLT DISTRIBUTION PANEL TO SWITCHES OR APPLIANCES

32 & 34 FOOT MODELS

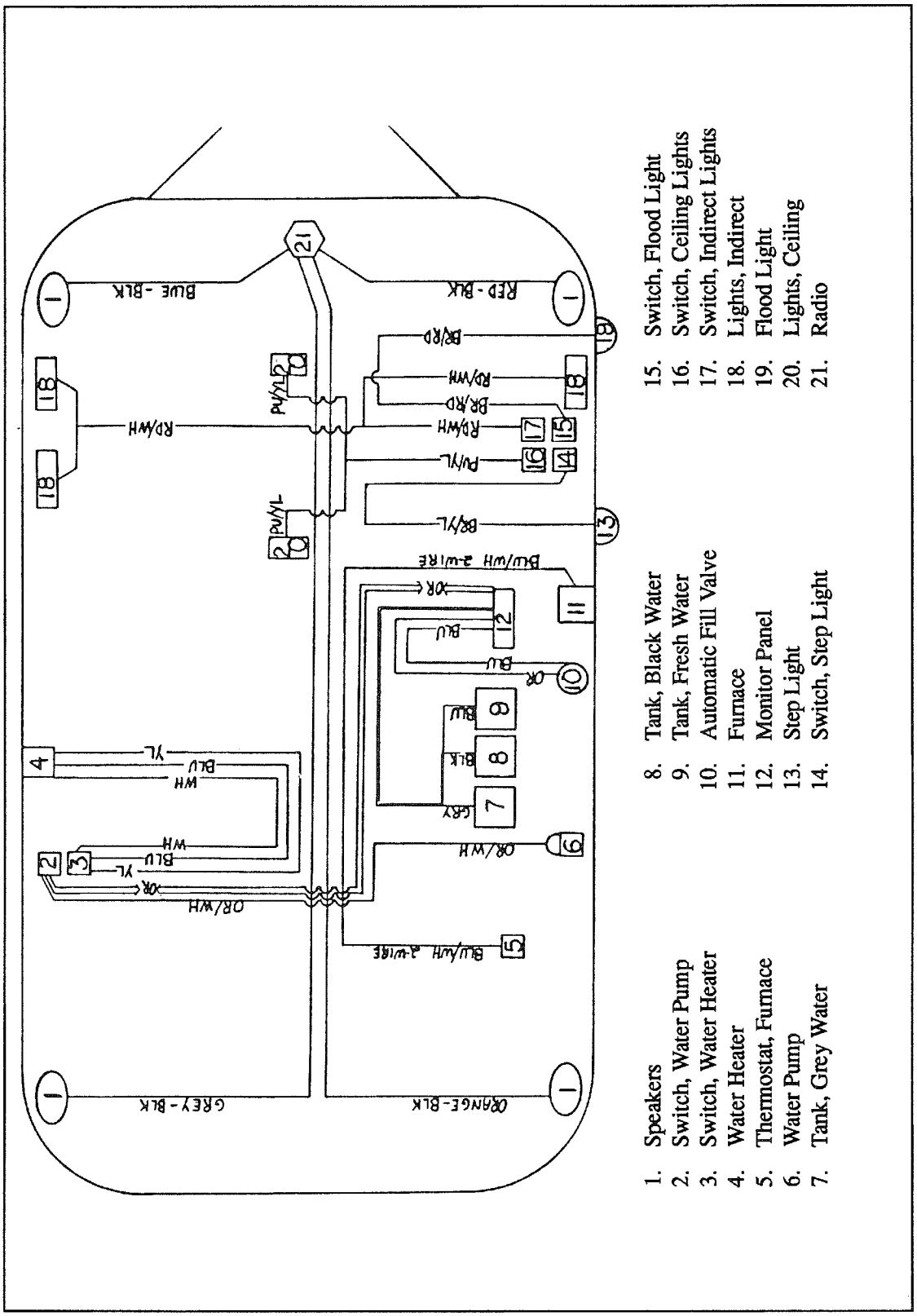


1. Light, Ceiling
2. Vent, Roof
3. Vent, Roof or Attic opt.
4. Exterior Lights
5. Light, Bed
6. 12 V. Receptacle
7. Light, Mirror
8. Switch, Water Heater
9. Switch, Bath Exhaust
10. Light, Shower
11. Light, Wardrobe
12. Refrigerator
13. Light, Dinnette
14. Monitor Panel
15. Range Exhaust
16. Light, Oven
17. Furnace
18. Light, Galley
19. Switch, Ceiling Lights
20. Switch, Indirect Lights
21. Switch, Floor Light
22. Switch, Step Light
23. Lights, Reading
24. Radio
25. 12 V Distribution Panel

Note: Red circuit used with optional attic fan.

TYPICAL 12 VOLT SWITCH TO LIGHTS OR APPLIANCES

Speakers - Control Panel - Furnace

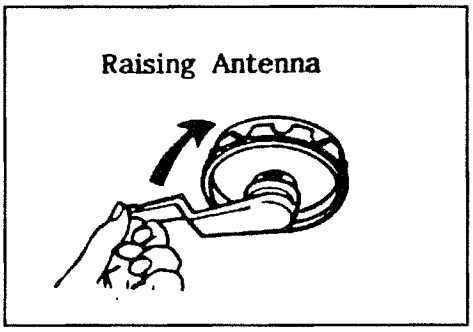


TV ANTENNA

Manufacturer: Winegard Company
3000 Kirkwood Street
Burlington, Iowa 52601
Phone: 800-843-4741

Raising Antenna to Operating Position

Turn elevating crank in "UP" direction until some resistance to turning is noted. Antenna is now in operating position. Check to make sure switch on front TV jack is on.



Rotating Antenna

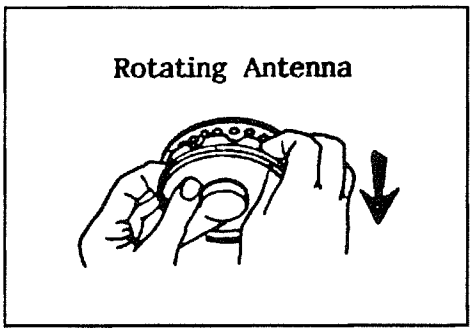
Make sure antenna is in "UP" position. Pull down on directional handle with both hands until it disengages ceiling plate and rotate for best picture and sound on television set.

Lowering Antenna to Travel Position

Rotate antenna until pointer on directional handle aligns with pointer on ceiling plate.

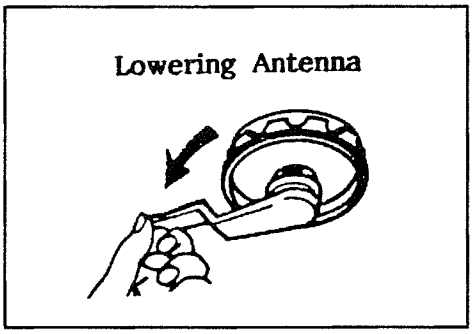
WARNING: Antenna must be in "down" position while traveling to prevent damage.

Turn elevating crank in the "Down" direction until resistance is noted. Antenna is now locked in travel position.



Checking Operation

1. Tune TV receiver to nearest station and rotate antenna for **lowering Antenna** best picture and sound.
2. Turn off switch on power supply. Picture on TV receiver should be considerably degraded with power off.



DO'S

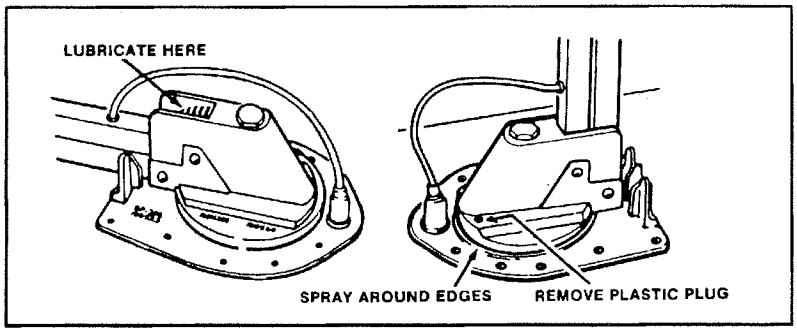
1. Do check parking location for obstructions before raising antenna.
2. Do carefully raise, lower and rotate - if difficult, check for cause.
3. Do rotate slowly when selecting station and check fine tuning on TV set to make sure it is properly adjusted.
4. Do lower antenna before moving vehicle.

DON'TS

1. Don't force elevating crank up or down. Check for cause of trouble.
2. Don't rotate directional handle hard against stops.
3. Don't travel with lift in up position.
4. Don't leave lift part way up or down.
5. Don't apply sealing compound or paint over top of base plate or anywhere on lift.

Maintenance

Lubrication



To lubricate the elevating gear apply a liberal amount of silicone spray lubricant to the elevating gear with the lift in the down position, then run the lift up and down a few times to distribute lubricant over gears.

Lubricating Rotating Gear Housing

In the event that rotating the antenna becomes difficult, normal operation can be restored by lubricating the bearing surface between the rotating gear housing and the base plate. Any spray type silicone lubricant may be used.

Elevate antenna and remove set screw from rotating gear housing as shown. Spray lubricant into hole and around edges of gear housing. Rotate gear housing until lubricant coats bearing surfaces and antenna rotates freely.

Elevating Shaft Worm Gear Assembly Replacement Procedure

STEP 1: Lower antenna to travel position and refer to drawing to identify parts indicated in steps below.

STEP 2: Loosen set screw on elevating crank (#1) and remove crank (#1), spring (#2), directional handle (#3).

STEP 3: Go to roof of vehicle and remove retaining ring from pin (#5) holding top elevator tube in rotating gear housing and remove pin.

STEP 4: Remove bearing plug (#4) from top of rotating gear housing. Disengage elevating gear (#6) and remove elevating shaft assembly (#7).

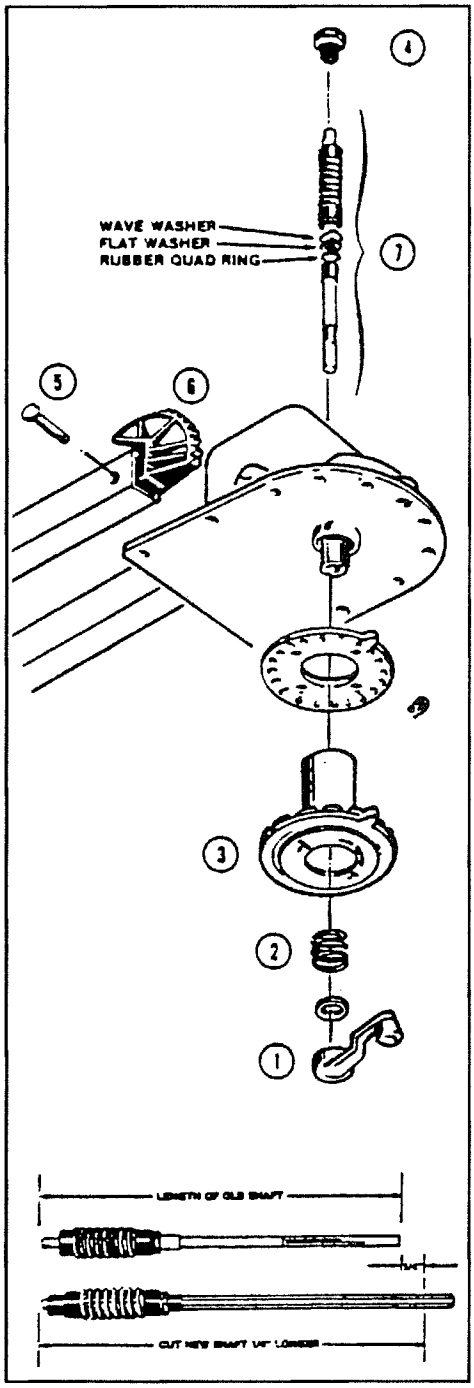
Note: Make sure all parts below worm gear are removed from rotating gear housing. These include bearing, quad ring and one or two washers.

STEP 5: Cut new shaft 1/4" longer than old shaft. See Illus: Discard old bearing plug item (#4).

STEP 6: Lubricate worm gear on new elevating shaft assembly with spray silicone lubricant, make sure quad ring, washer and wave washer are on lower bearing and insert assembly in housing.

STEP 7: Install new plastic bearing plug in top of housing. Re-engage elevating gear in worm gear. Replace pin and retaining ring.

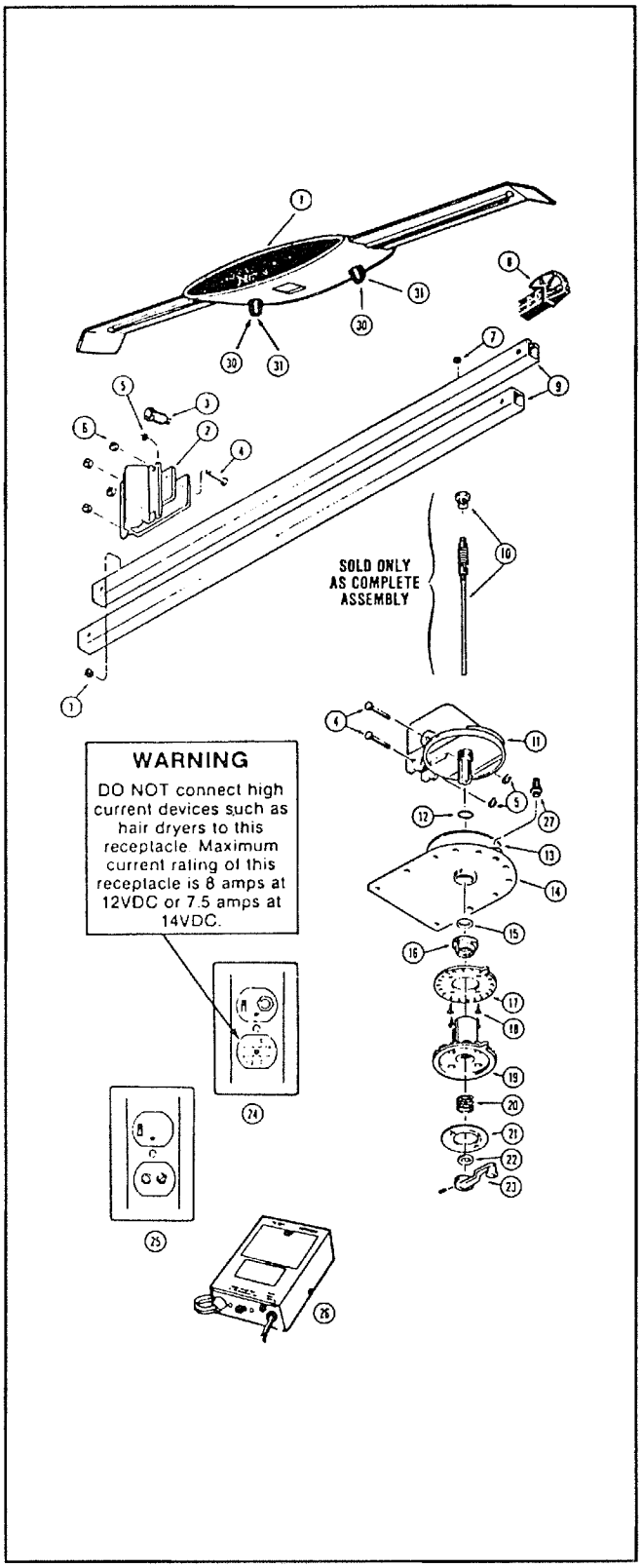
STEP 8: Replace directional handle, spring and elevating crank.



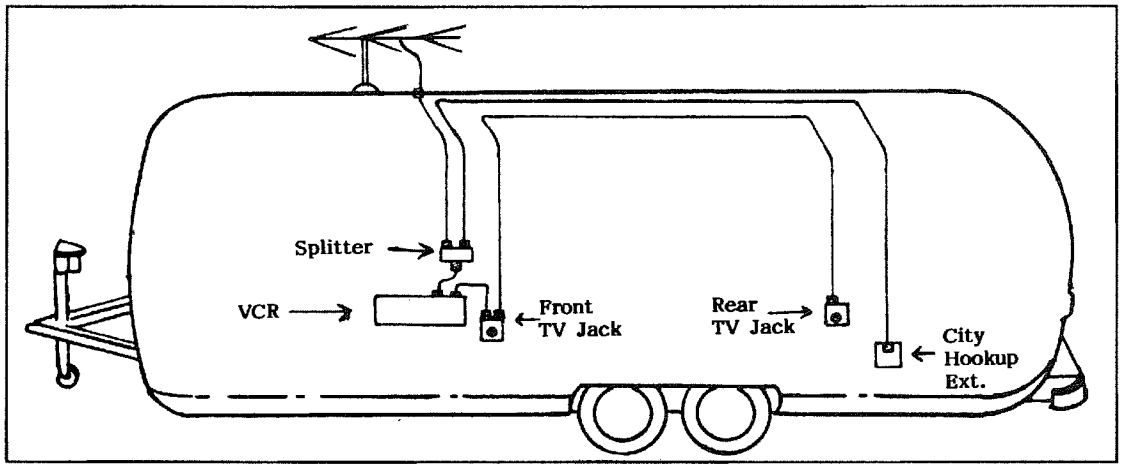
Make sure set screw contacts flat on shaft before tightening.

PARTS DESCRIPTION

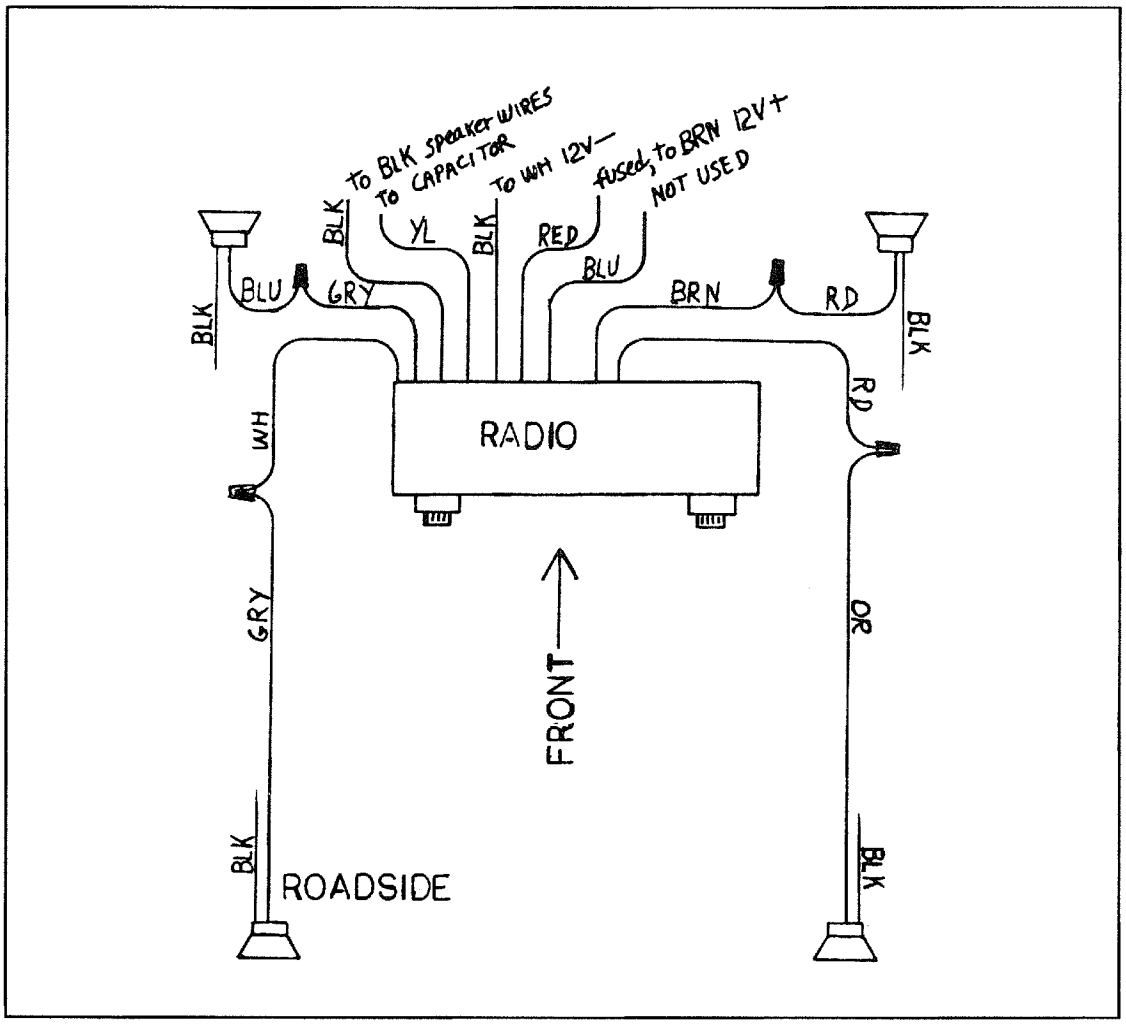
1. Antenna Head
2. LM-300 Leveling Mount
3. Boot, Coax Cable
4. Pin, Headed/Grooved
5. Ring, Retaining Snap
6. Spacer, Plastic
7. Grommet, Plastic
8. EG-87 Elevating Gear
9. Tube, Square Elevator
10. Elevating Shaft Assy
11. Housing, Rotating Gear
12. Ring, Quad Seal
13. Bearing, Nylon
14. Housing, Base Plate
15. Bearing, Nylon
17. Plate, Ceiling
18. Screw
19. Handle, Directional
20. Spring, Handle
21. Decal, Crank Cover
22. Bearing, Nylon
23. Elevating Crank/Set Screw
27. Boot, Gear Housing
30. Bumper, Rubber
31. Screw



Coaxial Cable Wiring Schematic



Radio Schematic



POWER VENTILATION SYSTEM (Optional)

Manufacturer: Kool-O-Matic Corporation
1831 Terminal Road
Niles, Michigan 49120
Phone: 616-683-2600

The optional ventilator removes hot stuffy air and cooking heat, and replaces it with cool fresh outdoor air. By simply opening the windows and turning the ventilator on the complete trailer is rid of stuffiness.

WARNING: DO NOT operate ventilator without providing an opening such as a window, another ceiling vent, or the main door. If an opening is not provided a vacuum may form and affect the ventilation and operation of the appliances.

The thermostat has an "ON" position which provides a thermostat control override for manual fan operation. This switch position is normally used to quickly cool the trailer when first entering it, or to remove smoke, cooking heat, moisture and odors.

Automatic Switch

The automatic switch position provides automatic fan operation with the fan operating at or above the thermostat set point temperature. Fan operation terminates at approximately 2°F below the thermostat set point temperature.

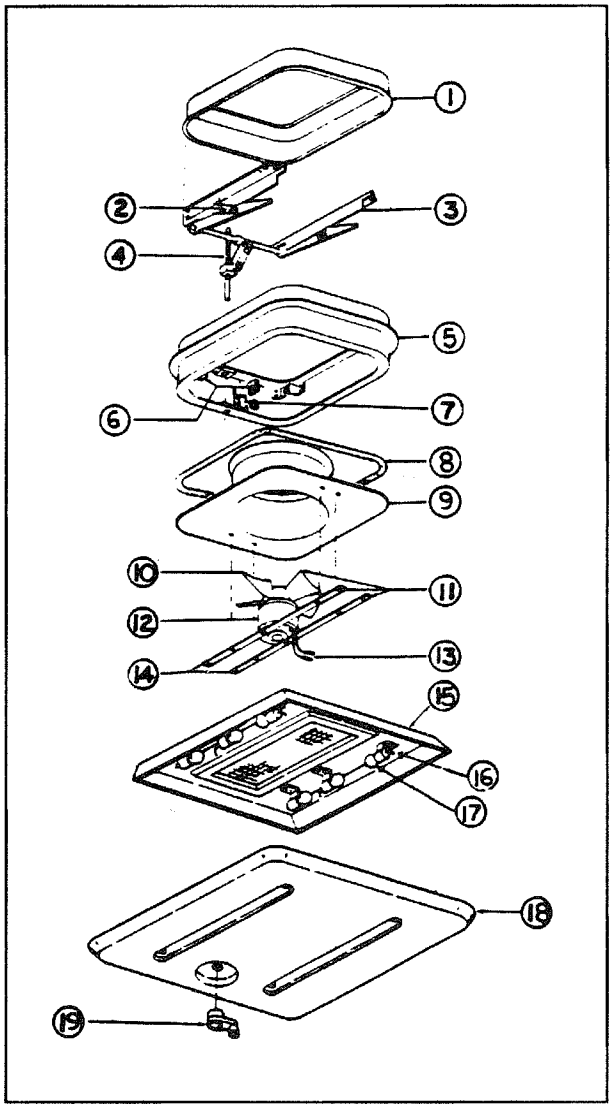
The thermostat also has an "OFF" position to eliminate the fan from accidentally operating while the trailer is completely closed up or in storage.

The power ventilator has a magnetic cover which must be removed during operation. During cooler weather, or when the furnace is used, the cover should be replaced. To replace the cover, set the cover in place and compress it slightly. It will automatically lock and adhere to the opening.

The grille on your power ventilator fan should be cleaned periodically. A soft bristled brush and a vacuum cleaner will clean the grille.

COMBINATION CEILING LIGHT & VENT ASSEMBLY

1. Vent Cover
2. Spring, vent mechanism
3. Vent linkage assembly
4. Elevator screw
5. Vent frame
6. Support Blocks
7. Fan micro switch
8. Gasket, vinyl foam
9. Vent shroud
10. Fan blade
11. Power kit assembly
12. Fan motor
13. Terminal, Bulb
14. Support brackets, motor
15. Light base with screen
16. Lamp socket
17. Bulb 1141-F (Frosted)
18. Light shade
19. Crank handle



Bulb Replacement

1. Remove crank handle.

2. Remove four screws holding light shade to base.

3. Depress bulb down into socket and turn counterclockwise approximately one quarter turn.

4. Pull bulb out of socket. Number 1141 F frosted bulbs are normally used, but you may use #1141 clear bulbs if you desire.

Fluorescent Bulbs

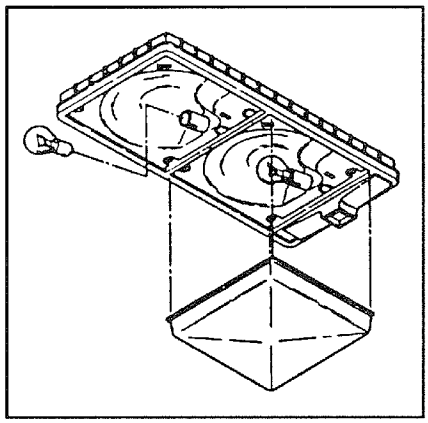
The optional fluorescent bulbs are just as easy to replace. Remove lens as described above, then turn bulb one quarter turn in either direction. Pull bulb straight down. The replacement bulb is GE Fl 4T8-CW or equivalent.

CEILING LIGHT ASSEMBLY

The light fixture shown is commonly called a ceiling light. However, you will also find this basic light used in many other applications.

You will see the light in single, double and even triple stack configurations. The base may or may not be highlighted with hardwood trim.

Bulb Replacement

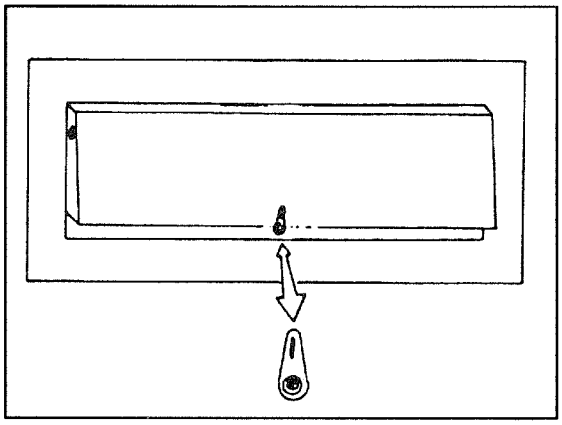


Lens and bulb replacement are the same in all applications.

1. Squeeze the lens in on each side and it will be free of the base.

2. Depress bulb into socket and turn counterclockwise about one quarter turn.

3. Replacement bulb is #1141.



Range Exhaust

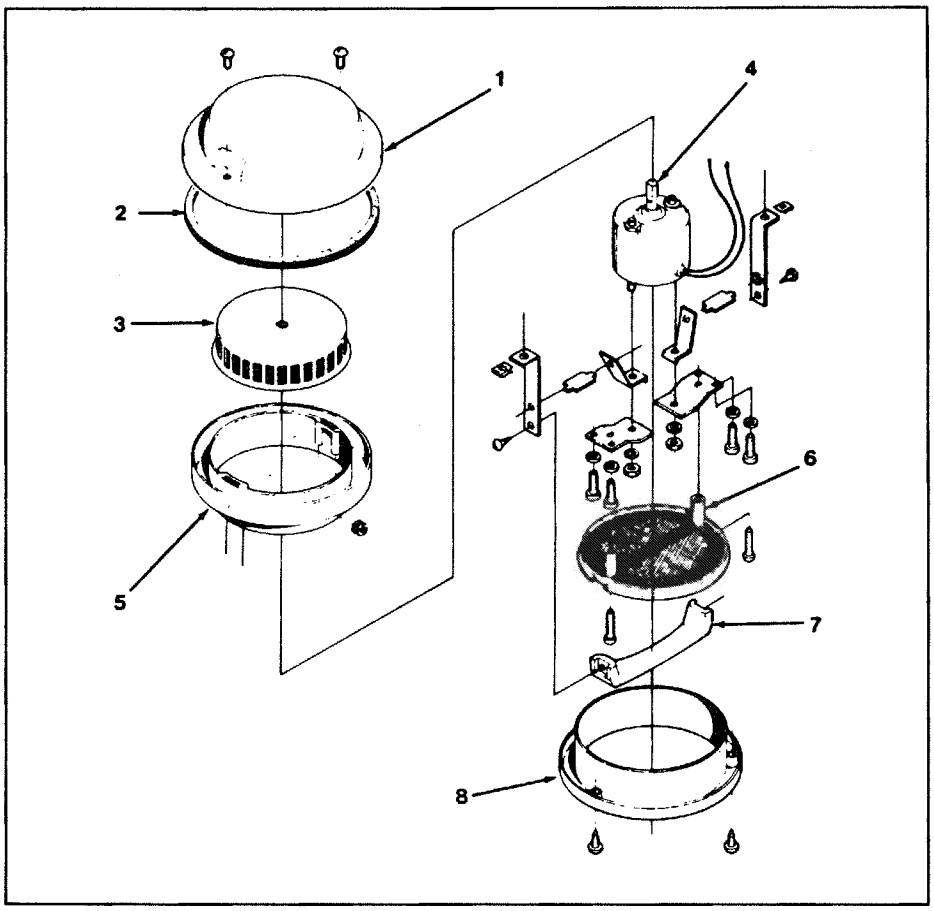
The switches for the range exhaust fan and light are located on the monitor panel.

CAUTION: Under the exterior range vent cover is a swinging door with a pivoting latch on the bottom. The latch should be turned horizontally for normal operation. In some windy conditions the swinging door may flap annoyingly, and by turning the latch vertically the door will be held closed. Operating the fan with the door latch closed may cause premature motor failure.

As shown in the diagram the latch is mostly hidden up underneath the hood. Operate the latch a few times when the weather is decent. That way, when the cold, icy wind is blowing and your fingers are stiff and numb with cold you will be able to quickly latch the door shut.

The range exhaust filter should be cleaned every couple of months. The filter is removed from inside the coach. Slide the filter toward the wall and the front edge of the filter will come down and out. Clean the filter in dishwater by letting it soak for a while, then slosh back and forth. Rinse thoroughly then air dry.

BATHROOM EXHAUST FAN ASSEMBLY



1. Cover Assy w/gaskets
2. Gasket Assy
3. Blower wheel Assy
4. Motor Assy
5. Ring Body Assy
6. Grille Assy
7. Handle Assy
8. Trim Ring Assy

Removal and Replacement

1. Working from the outside top of trailer remove the screws holding the fan protective cap, and remove the cap.

2. Remove the 6 screws securing the fan flange to the outer skin.

3. Pull the fan out to the extent of the wiring harness and unplug the harness.

4. Remove the fan assembly.

5. To install, reverse the removal procedures.

MONITOR PANEL

Jensen Industries
1946 East 46th Street
Los Angeles, CA 90058
Phone: 213-235-6800

Operation

To check tank capacities or battery condition depress the switch marked "monitor". In order to obtain a true reading on the batteries you must be unplugged from city power and disconnected from your tow vehicle.

The red indicator light on the left marked "AC Power" will be illuminated when 120 volt alternating current is available. The light will be illuminated whether you're plugged into city power or if your generator is running. There is a built in delay if your switching back and forth between the two power sources.

The "Auto Fill" switch is to enable you to fill your fresh water tank by depressing this switch any time you're hooked into a city water system. Water will flow into the tank until the tank registers 3/4 then will automatically shut off. The switch will remain on and illuminated until it's shut off even though the plumbing valve has already closed.

The two speed "Hood Fan" has an exterior door that must be unlatched to be effective. You'll see the two small twist latches if you look at the fan from outside the motorhome. In most circumstances you can leave the door unlatched. During storage or adverse weather conditions latching the door is recommended.

Trouble Shooting Guide

Be sure the wiring to the panel is correct and that the house battery is well charged. All electrical connections must be correct.

NOTE: RV's are subjected to a lot of vibration from traveling on the highways, so always look for broken wires and loose or broken connections.

NOTE: If a RV has exposed holding tanks under the vehicle and the vehicle is operated in the rain, sleet or snow, the panel may show incorrect tank levels due to electrical conductivity on the outside of the tanks. Washing the tanks and sealing the connections on the outside of the well nuts with silicon sealer should correct this condition.

PROBLEM: Fan does not operate.

CAUSE: A. No voltage to switch.

B. Defective switch, defective motor.

REMEDY: 1. Check for voltage, test switch, test motor.

PROBLEM: Fan operates on high speed but not on low speed.

CAUSES: A. Defective circuit board.

REMEDY: 1. Replace circuit board.

PROBLEM: Hood light does not operate.

CAUSES:
A. Burned out bulbs.
B. No voltage to switch
C. Defective switch.

REMEDY:
1. Test for voltage.
2. Test switch.
3. Test bulbs.

PROBLEM: Water pump does not operate.

CAUSES:
A. No voltage to pump.
B. Defective switch or pump.
C. Pump not grounded.

REMEDY:
1. Test for voltage at switch.
2. Check ground.

PROBLEM: Water pump operates but red indicator light does not come on.

CAUSES:
A. Faulty LED.
B. Faulty circuit board.

REMEDY:
1. Replace circuit board.

PROBLEM: "E" LED shows but indicator lights for amount of liquid in tank don't show.

CAUSES:
A. Faulty connection in lead to tank.
B. Faulty circuit board.

REMEDY:
1. Check leads and connections at tank.
2. Replace circuit board.

PROBLEM: Condition of battery is not indicated when switch is pushed.

CAUSES:
A. Faulty switch.
B. Faulty circuit board.
C. Circuit board not grounded.
D. Dead battery.

REMEDY:
1. Test Test switch, check ground.
2. Change circuit board.
3. Charge battery.

PROBLEM: No display on digital clock when switch is on.

CAUSES:
A. Defective switch.

B. Defective clock.

REMEDY: 1. Check switch.

2. Replace clock.

PROBLEM: Partial clock display.

CAUSES: A. Defective clock module.

REMEDY: 1. Replace clock.

PROBLEM: Hour or minute set will not function when switch is operated.

CAUSES: A. Defective switch or clock.

REMEDY: 1. Check switches.

2. Replace clock.

PROBLEM: Improper or inaccurate time display.

CAUSES: A. Defective clock.

REMEDY: 1. Replace clock

PROBLEM: No "E" light on water tanks when switch is pushed.

CAUSES: A. No power to panel.

B. Defective circuit board.

REMEDY: 1. Check fuses and power leads.

2. Repair or replace panel.

PROBLEM: Improper level indication on one or two tanks.

CAUSES: A. Faulty wiring from panel to sensors.

B. Faulty circuit board.

C. Dirty sensors and/or tank.

REMEDY: 1. Check wiring to sensors.

2. Clean sensors and tank.

3. Replace tank sensor harness.

4. Replace or repair circuit board.

PROBLEM: Improper level indication on all water tanks.

CAUSES: A. Faulty circuit board.

REMEDY: 1. Replace or repair circuit board.

PROBLEM: Panel shows LPG tank to be full all of the time.

CAUSES:
A. Connection between tank and panel faulty.
B. Poor or no ground between tank and vehicle.
C. Faulty tank sending unit or faulty circuit board.

REMEDY:
1. Check and repair wiring from tank to panel and tank to ground.
2. Repair or replace tank sending unit.
3. Repair or replace circuit board.

PROBLEM: Panel shows LPG tank to be empty all of the time.

CAUSES:
A. Short to ground in wire between panel and tank sending unit.
B. Faulty tank sending unit.
C. Faulty circuit board.

REMEDY:
1. Repair shorted wire.
2. Repair or replace sending unit.
3. Repair or replace circuit board.

NOTE: If the wire from the panel is removed from the tank, the panel indicator should show the tank full. If the panel wire to the tank is grounded, the panel should show the tank empty.

PROBLEM: Appliance switches on panel appear not to work.

CAUSES:
A. Faulty switch.
B. No voltage to switch.

REMEDY:
1. Remove panel to expose switches.
2. Test operation of switches with an ohm meter, volt meter or a 12 volt test light.

PROBLEM: Appliance switches make contact and voltage is available but appliance does not operate.

CAUSES:
A. Faulty wiring from panel to appliance.
B. Faulty appliance.

REMEDY:
1. Check wiring to appliances.
2. Troubleshoot and repair or replace according to the appliance manual.

NOTE: When voltage is not available when and where it should be, check for loose or blown fuses and/or for tripped circuit breakers.

110 VOLT ELECTRICAL SYSTEM

City Power

The Airstream univolt system enables you to use the lights and appliances whether operating on self-contained battery power or hooked up to 110 volt city power. The 12 volt light bulbs give off the same light as regular household bulbs, so that when operating on self-contained battery power, everything works normally except the 110 volt convenience outlets and 110 volt appliances.

Exterior outlets for 110 volts are located on the curbside exterior wall between the wheels and above the wheel well.

CAUTION: **When operating with city power make very certain that the service is 110 volt and not 220 volt. Open the bumper storage compartment lid, uncoil only the needed amount of cord and plug it Into the city power source. Before closing the lid, carefully place the cord in the opening provided for it.**

The univolt system is a transformer designed to maintain constant output voltages regardless of the variances that occur in city power systems. The transformer design eliminates the need for complex electronic sensing systems to charge the battery, minimizing the possibility of failures and greatly increasing its overall reliability.

WARNING: **When the three pronged plug can be used there will be no problems with proper polarity or grounding.**

In some older parks and other locations where three pronged outlets are not available, certain precautions to insure proper grounding and polarity must be taken. These precautions are listed below:

1. Attach the three pronged plug to a two pronged adapter. The third conductor line of this adapter has a short wire lead which must be grounded.
2. For proper grounding connect the short ground lead to a grounded outlet box or to a cold water pipe. When no water pipe is available drive a metal rod two feet into the ground and attach the ground lug to it, thus providing the unit with proper grounding.

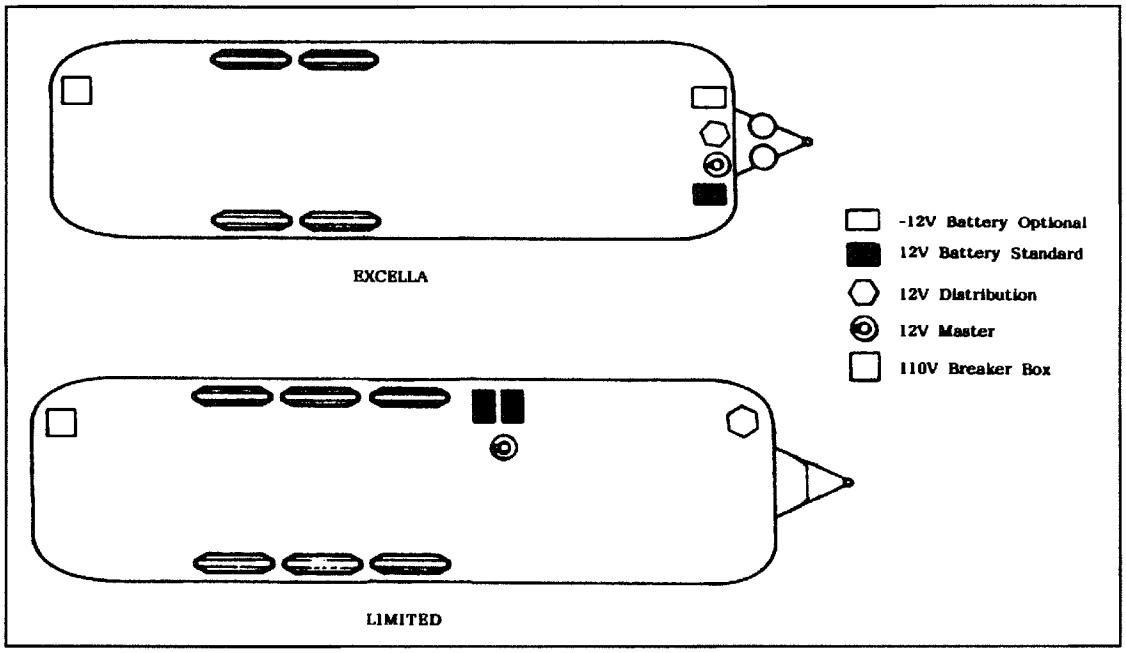
To operate self-contained, simply disconnect the power supply cable.

When your trailer is hooked up to 110 volt AC the univolt system automatically charges the trailer batteries; and, if it is hooked up, your automobile battery as well. The speed and degree of charge depends on how much power is used for lights and appliances, as only the surplus goes to charging the battery. If you are making an extended stay, then you should, if it is available, keep your trailer hooked up to a 110 volt current.

Circuit breakers for the 110 volt system are located in the roadside rear corner of the trailer. In most instances they are in the overhead rear cabinet. Trailers with CSA approval may have the circuit breaker box under the bed or lower cabinet.

While you are connected to the 110 volt receptacle the wiring is protected by circuit breakers in the breaker panel. In the event of a failure of a 110 volt circuit check your circuit breakers first. If a breaker continues to trip after you have reset it several times, your circuit may be overloaded with appliances or there may be a short in the circuit. If lessening the load does not solve the problem consult an Airstream Service Center.

ELECTRICAL COMPONENT LOCATIONS



The 110 volt electrical system provides power to operate the air conditioner, univolt converter and 110 volt receptacles for portable appliances. The power is carried through the 110 volt city power flexible cord to the 110 volt distribution panel, and then is distributed to each appliance or receptacle.

All wire, components and wiring methods conform to federal, state and Canadian requirements.

United States and Canadian requirements vary in type of components, approved listing agencies and wiring methods. Therefore, there are special trailers manufactured for Canadian sales. Figure 30 on the following page illustrates the proper wiring for 110 volt distribution panels for US trailers. Figure 40 illustrates panels for Canadian trailers.

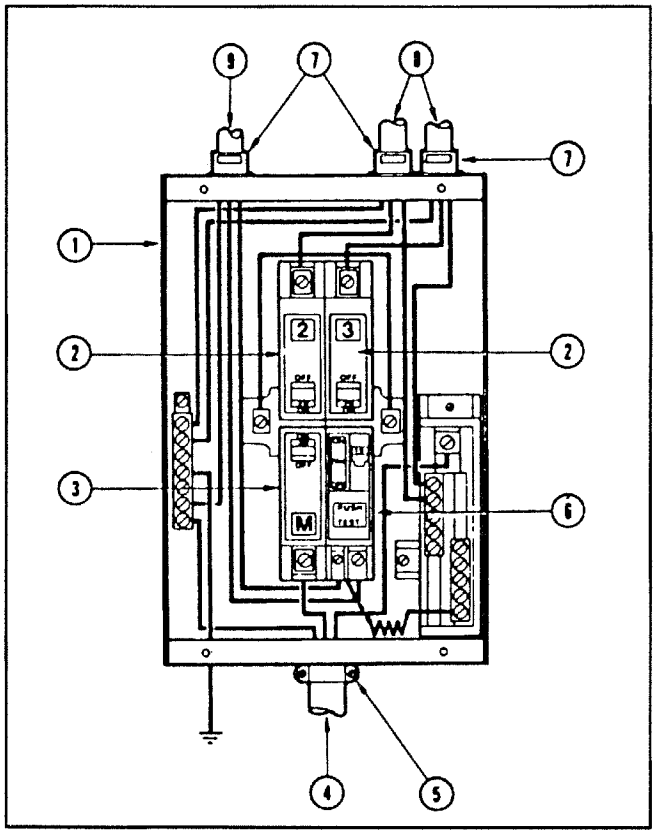


Fig. 39

110 VOLT ELECTRICAL PANELS

UNITED STATES

1. Breaker Box G.E. T141OST
2. Breaker TIIQP 120, 20 Amp
3. Breaker THQP 130, 30 amp main
4. Power supply cord
5. Clamp Romex 3/4"
6. Ground Fault Breaker THQL 1115 GF, 15 amp
7. Romex clamp T&B 3300
8. Romex
9. Romex

CANADIAN

1. Clamp Romex 3/4"
2. Power supply cord, Romex NMD -7
3. Romex Clamp T&B 3300
4. Romex NMD -7
6. Breaker THQP 115 15 amp
7. Breaker THQP 120 20 amp
8. Ground fault breaker THQL Il15GF, 15 amp
9. Breaker TIIQP 130 30 amp main
10. Breaker box G.E. TL410ST

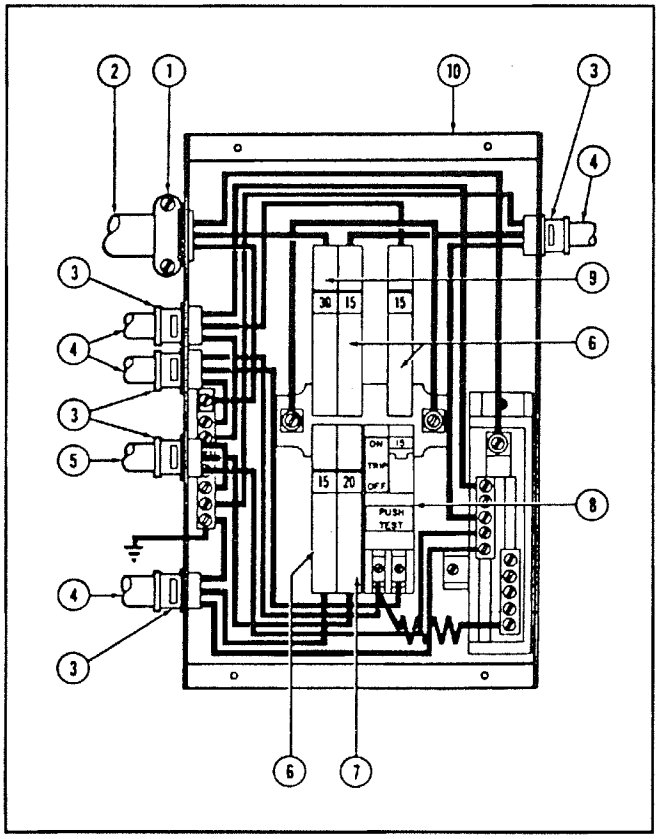
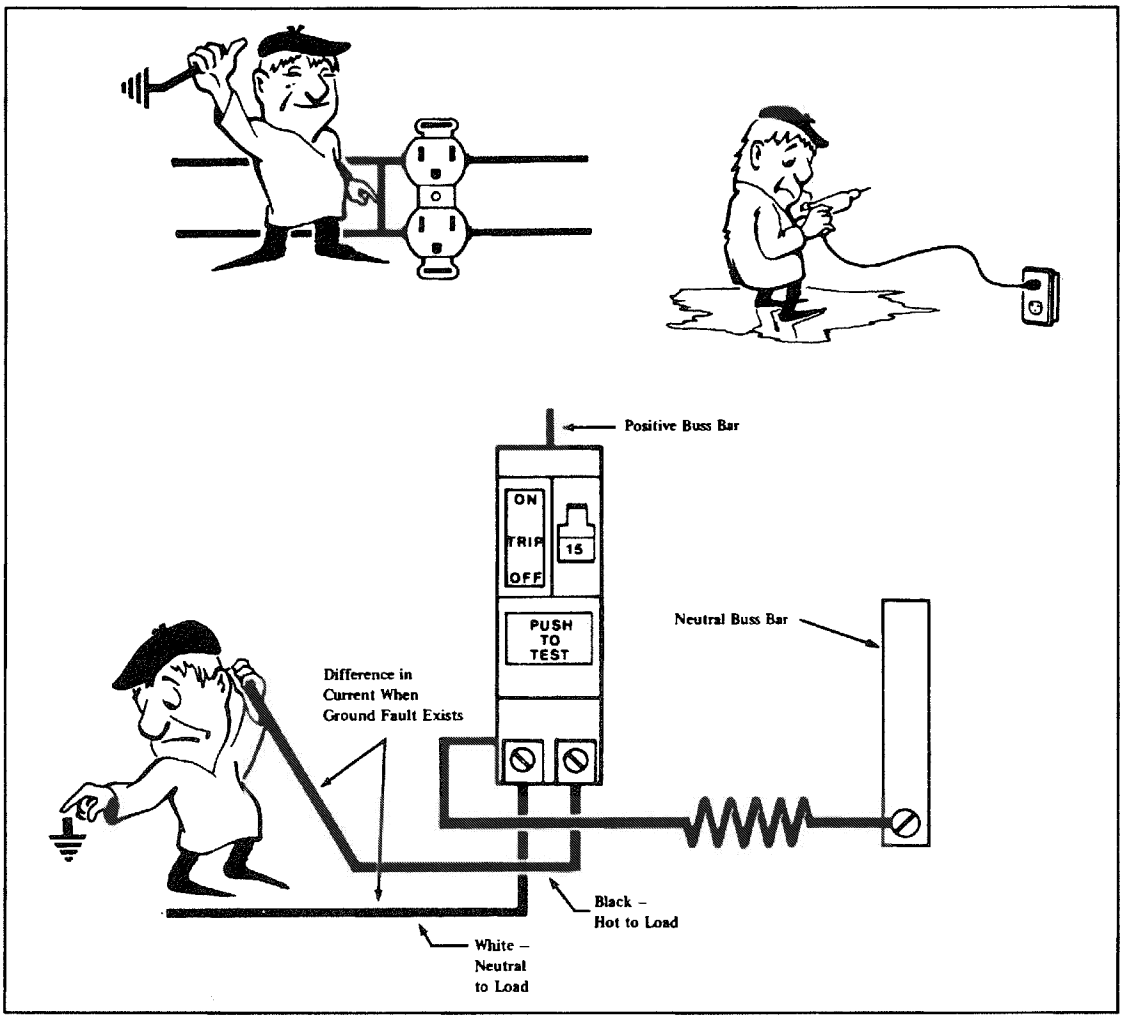


Fig. 40

GROUND FAULT CIRCUIT INTERRUPTER (GFCI)

Many states require trailers which are sold in their state, and which have exterior 110 volt receptacles, to have a ground fault circuit interrupter.

Trailers manufactured for sale in these states have type THQL IS amp G FCl breakers installed on the general circuit, since the exterior breaker is on this circuit. The breaker replaced the standard TQL-15 amp breaker.



When properly installed, the GFCI circuit breaker provides reliable overload and short circuit protection PLUS protection from Ground Faults that might result from contact with a "HOT" load wire and ground.

IMPORTANT NOTE: The GFCI circuit breaker will NOT reduce shock hazard if contact is made between a "HOT" load wire and a neutral wire or 2 "HOT" load wires.

Each GFCI circuit breaker is calibrated to trip with a ground current of 5 milliamperes or more. SInce most persons can feel as little as 2 milliamperes, a distinct shock may be felt if the need for protection exists. However, the shock should be of such short duration that the effects will be reduced to less than the normally dangerous level. However, persons with acute heart problems or other conditions that can make a person particularly susceptible to electric shock, may still be seriously injured.

While the GFCI circuit breaker affords a high degree of protection, there is no substitute for the knowledge that electricity can be dangerous when carelessly handled or used without reasonable caution.

WARNING: **The GFCI circuit breaker provides protection only to the circuit to which it is connected. It does NOT provide protection to any other circuit.**

OCCUPANT:

Make this test each month and record the date on the chart.

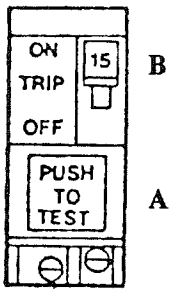
1. With handle B in "ON" position, press PUSH TO TEST button A.

2. Handle B should move to TRIP position, indicating that GFCI breaker has opened the circuit.

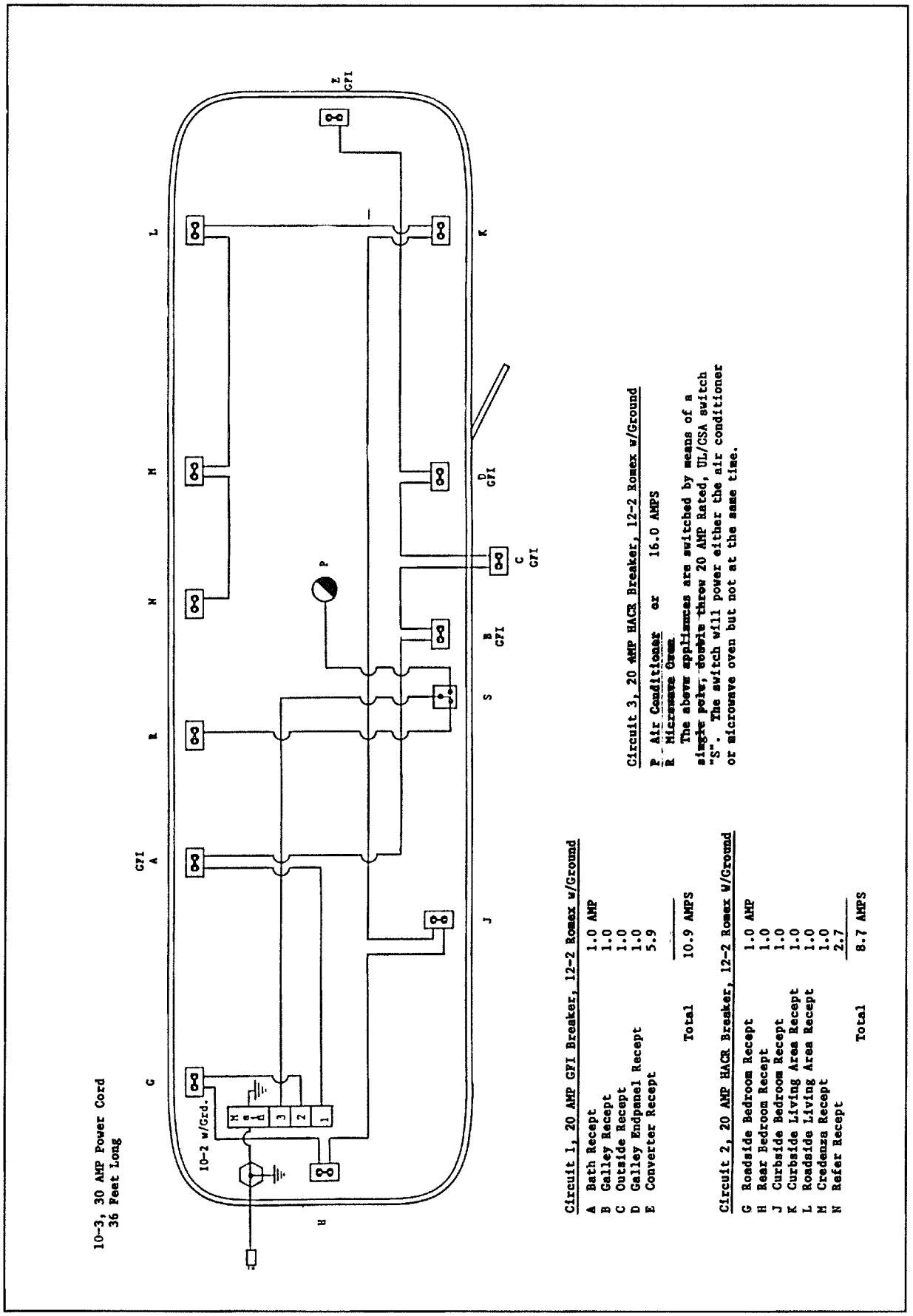
3. To restore power move handle B to "OFF" and the to "ON".

Important: If handle B does not move to TRIP position when test button is pressed, the GFCI breaker protection is not complete. If this happens, replace GFCI breaker.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1991												
1992												
1993												



TYPICAL 110 VOLT DISTRIBUTION SYSTEM



Circuit 1, 20 AMP GFI Breaker, 12-2 Romex w/Ground

A	Bath Recept	1.0 AMP
B	Galley Recept	1.0
C	Outside Recept	1.0
D	Galley Endpanel Recept	1.0
E	Converter Recept	5.9
	Total	10.9 AMPS

Circuit 2, 20 AMP HACR Breaker, 12-2 Romex W/Ground

G	Roadside Bedroom Recept	1.0 AMP
H	Rear Bedroom Recept	1.0
J	Curbside Bedroom Recept	1.0
K	Curbside Living Area Recept	1.0
L	Roadside Living Area Recept	1.0
M	Credenza Recept	1.0
N	Refer Recept	2.7
	Total	8.7 AMPS

Circuit 3, 20 AMP HACR Breaker, 12-2 Romex w/Ground

P Air Conditioner or 16.0 AMPS
R Microwave Oven

The above appliances are switched by means of a single pole, double throw 20 AMP Rated, UL/CSA switch "S". The switch will power either the air conditioner or microwave oven but not at the same time.

NOTES

APPLIANCES

AIR CONDITIONER

Manufacturer: Dometic Sales Corporation
2320 Industrial Parkway
P.O. Box 490
Elkhart, IN 46515
Phone: 219-295-5228

Note: Review the air conditioning literature supplied in your Owner's Packet before proceeding.

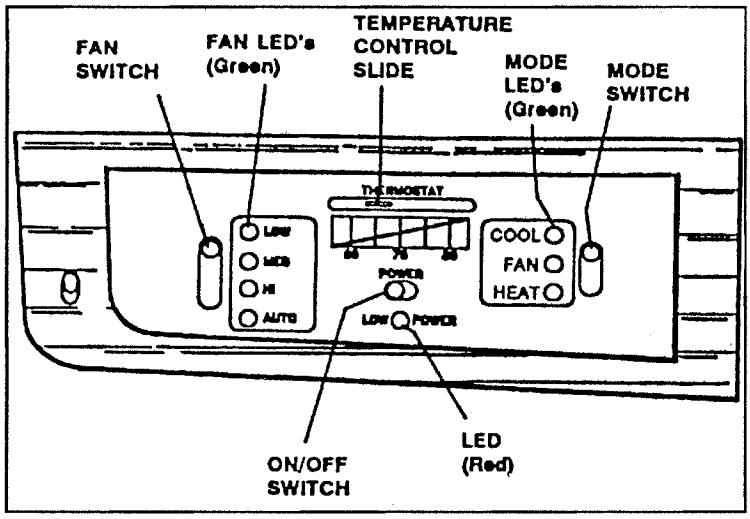
The roof air conditioner used on Airstream trailers is one of the most popular on the market today. In your Owner's Packet is a set of literature covering all operating and maintenance instructions. If the literature is misplaced please contact the air conditioner manufacturer or your Airstream dealer for replacement.

The voltage to the air conditioner is critical. We commonly refer to 110 or 120 volts, but a check with a volt meter may find voltage much lower. Your air conditioner will probably not function if the current drops below 105 volts. Low voltage is usually associated with older or poorly maintained trailer parks, but many people have found their homes, built only twenty or thirty years ago, may not be capable of operating the air conditioner on some receptacles. Parking your motorhome so the power cord can be plugged into a receptacle close to the fuse or circuit breaker box can alleviate the problem. Avoid extension cords and adapters whenever possible. If an extension cord must be used it should be as short and heavy as possible to provide the most current to the air conditioner.

If high temperatures are expected you should make an effort to park in a shaded area. Starting the air conditioner early in the morning also helps. It is much easier to hold a comfortable temperature than it is to lower the temperature after the interior of the trailer is already hot.

OPERATING INSTRUCTIONS (Model 610015.405)

CONTROL DESCRIPTION:



1. Power Switch:
   a. Located lower center of control.
   b. Turns air conditioner ON to set condition of FAN and MODE switch.
   c. Turns air conditioner OFF.
   d. Green LED lights next to FAN and MODE switch light up to indicate power ON.
   e. No LED lights on when control is OFF.

2. Mode Switch:

   a. Three position switch located on right side of control.
   b. Used to select COOLING, FAN or HEAT mode of air conditioner operation.
   c. Mode selected is indicated by green LED light when control is turned on.

3. Fan Switch:

   a. Four position switch located on left side of control.
   b. Used to select HIGH, MEDIUM, LOW or AUTOMATIC FAN operation.
   c. Fan speed selected is indicated green LED light when control is turned on.

4. Temperature Slide:

   a. Located top center of control.
   b. Moveable arm on control selects temperature at which the refrigerant compressor or electric heater (if so equipped) is turned ON and OFF.
   c. User sets to position to maintain temperature level desired.

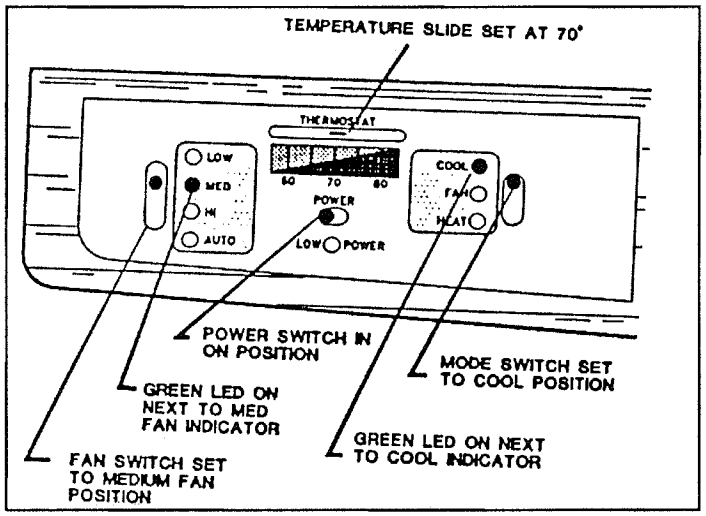
5. Low Power Light:

   a. Red indicator light located lower center of control.
   b. When on it indicates AC voltage is below 97 volts AC.
   c. Unit continues to operate (see Special Control Features E.4)

G. Remote Power Switch Connection:

   a. Two screw terminals located on back side of control.
   b. Used to connect a remote ON/OFF switch.
   c. Remove ON/OFF switch, if used, operates same as power switch. (See Special Control Features E.5)

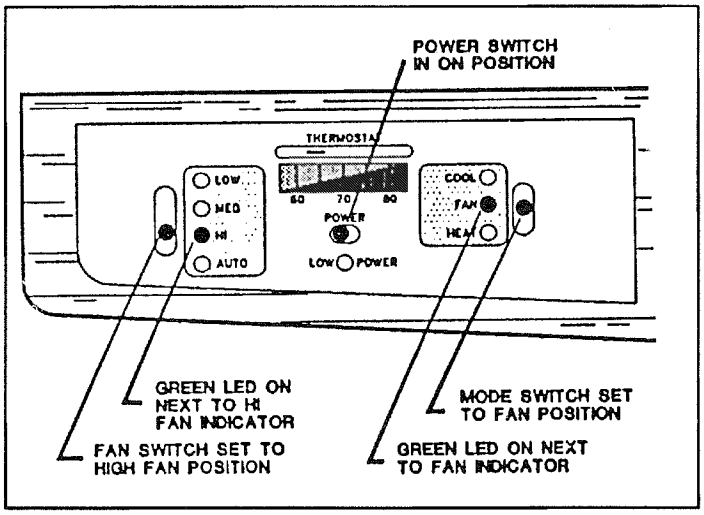
COOLING MODE OPERATION



1. Turn POWER switch (or REMOTE switch if used) to ON position.
2. Place mode switch COOL position.
3. Set temperature slide switch to your desired temperature level.
4. Select your desired fan speed. NOTE: See Special Features Section E.1 for AUTO fan operation.
5. The fan starts immediately and after a delay of approximately two minutes, the compressor will start.
6. The fan runs continuously with the compressor cycling ON/OFF per the set point to maintain an even comfort range.

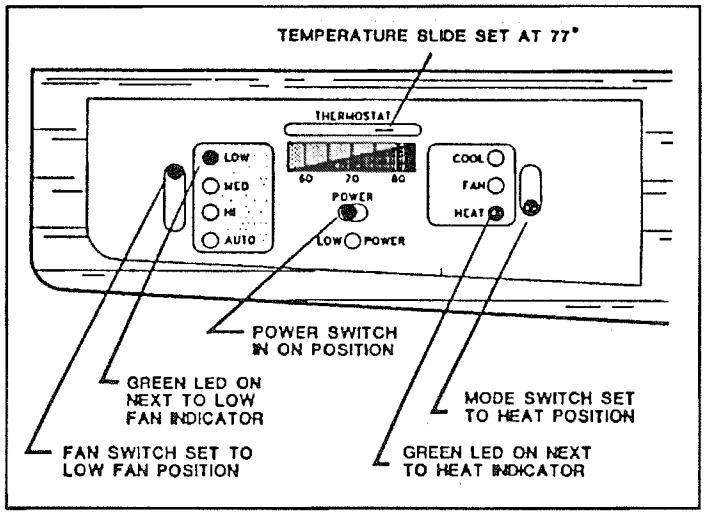
FAN MODE OPERATION

1. Turn POWER switch (or REMOTE switch if used) to ON position.
2. Place MODE switch in FAN position.
3. Select the desired fan speed: FIlMED-LOW-AUTO. NOTE: in AUTO position the fan operates only at low speed in FAN mode of operation



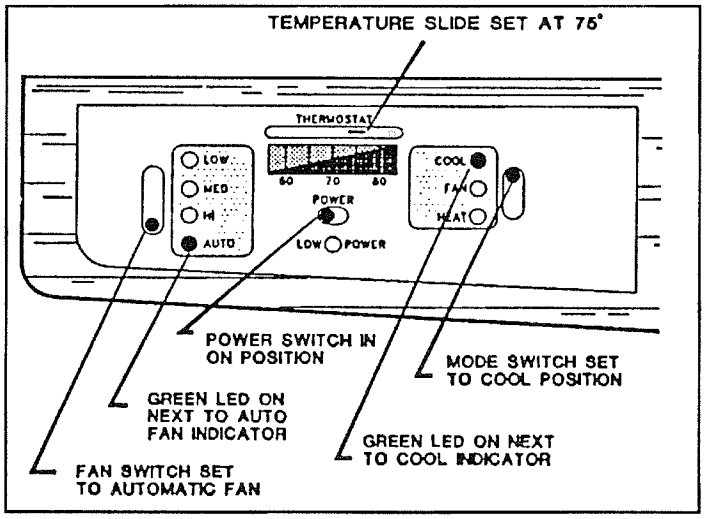
HEAT MODE OPERATION

1. Turn POWER switch (or REMOTE switch if used) to ON position.
2. Place mode switch in HEAT position.
3. Set temperature slide switch to your desired temperature level.
4. Select your desired fan speed HIM ED-LOW-AUTO) NOTE: in AUTO position the fan operates only at low speed in HEAT mode of operation.
5. The fan runs continuously with the electric heater cycling ON/OFF per the set point to maintain an even comfort range.



SPECIAL CONTROL FEATURES:

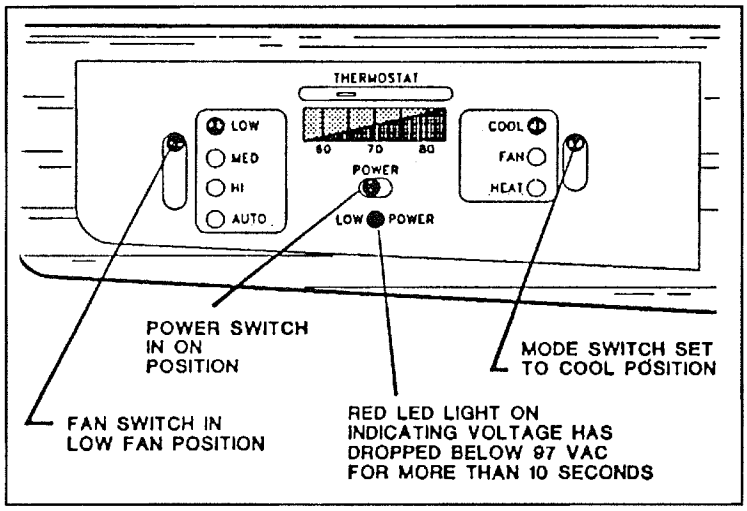
1. <u>Auto Fan:</u> When selected, FAN switch will:
   a. Automatically select the fan speed depending on the difference between set temperature and room temperature.
   b. Temperature difference of:
      8° or more
      Fan operates on HIGH
      4° to 8°
      Fan operates on MEDIUM
      4° or below
      Fan operates on LOW



2. Refrigerant Compressor Time Delay:
   The compressor will always have a delay ill starting of approximately two minutes any time it is required to start.

3. Power Interruption:
   In the event power to the air conditioner is interrupted for any reason, the system will restart ill the condition previously set by user.

4. Low Power Indicator:
   The red light will come on any time AC voltage drops below 97 volts AC for more than ten seconds. The light will remain on until the voltage is above 103 volts AC. The air conditioner will continue to run when red light is on as long as sufficient power is available to compressor to keep it running. NOTE: If red light is on, investigate the cause of the low voltage condition and correct to insure efficient operation of the air conditioner.



5. Remote ON/OFF Switch:
   This switch is user supplied and may be installed up to 40 feet from the control. Two screw terminals are located on the back of the control for this connection. The remote switch acts in conjunction with the power switch and when installed acts like a three way switch in your home.

MAINTENANCE

Air Filters: Periodically remove the return air filters. Wash the filters with soap and warm water, let dry and then reinstall or replace as required.

NOTE: Never run the air conditioner without return air filters in place. This may plug the unit evaporator coil with dirt and may substantially affect the performance of the unit.

Frost Formation on Cooling Coil: Under certain conditions frost may form on the evaporator coil. If this should occur, inspect the filter and clean if dirty. Make sure air louvers are not obstructed. Air conditioners have a greater tendency to frost when the outside temperature is relatively low. This may be prevented by adjusting the thermostat slide to a warmer setting. Should frost continue, operate on LOW, MED, or HIGH FAN setting until the cooling coil is free of frost.

SERVICE

If your unit fails to operate or operates improperly, check the following before calling your service center:

A If RV is connected to motor generator, check to be sure motor generator is running and producing power.

B. If RV is connected to power supply by a land line, check to be sure line is sized properly to run air conditioner load and it is plugged into power supply.

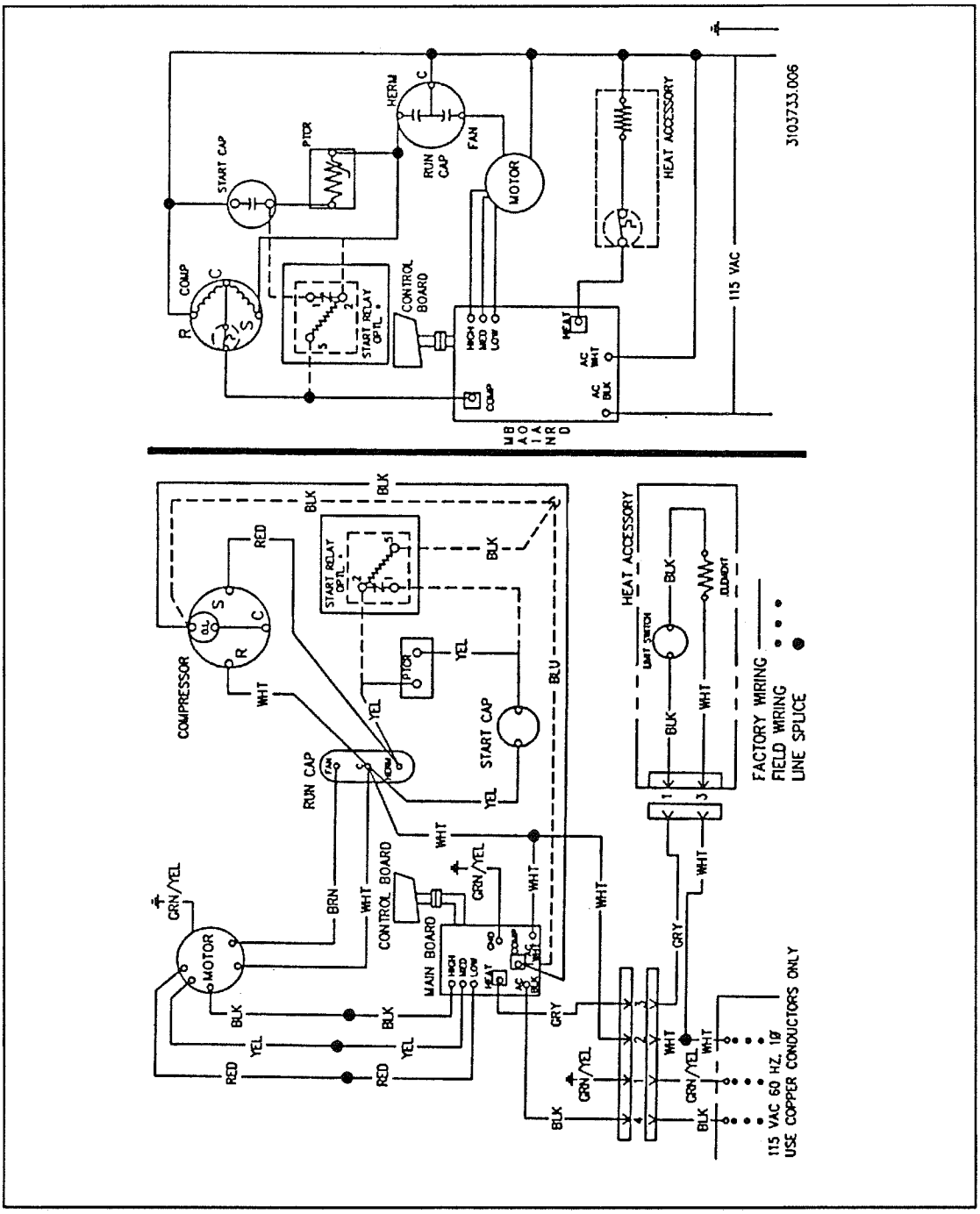
C. Check your fuse or circuit breaker to see if it is open.

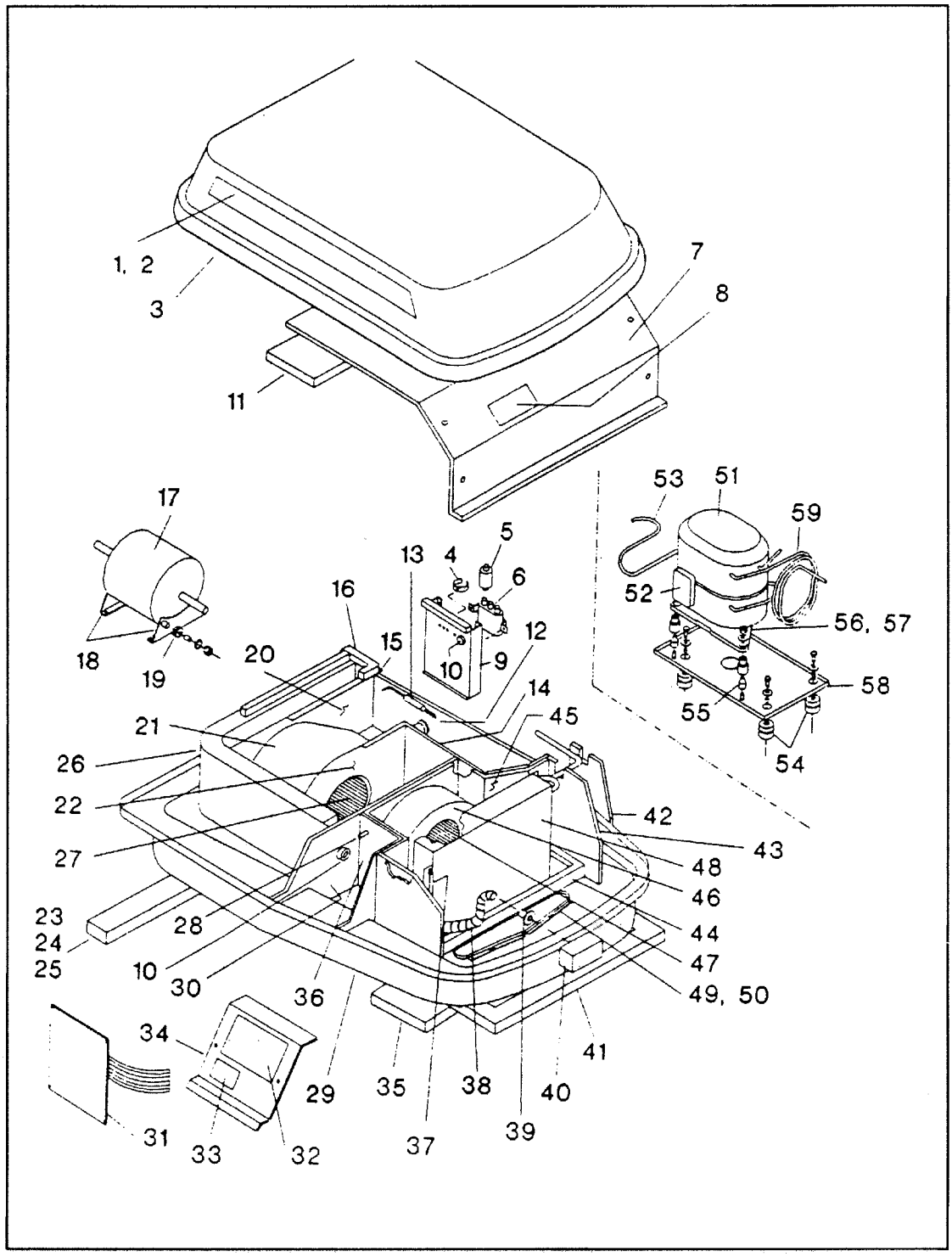
D. In the air conditioner air box, check to be sure the air conditioner conduit is plugged into the junction box and ribbon cable is connected.

E. After the above checks call your local service center for further help. This unit must be serviced by qualified service personnel only.

When calling for service always give the air conditioner model number and serial number. This information can be found on the unit rating plate located on the air conditioner base pan.

WIRING DIAGRAM

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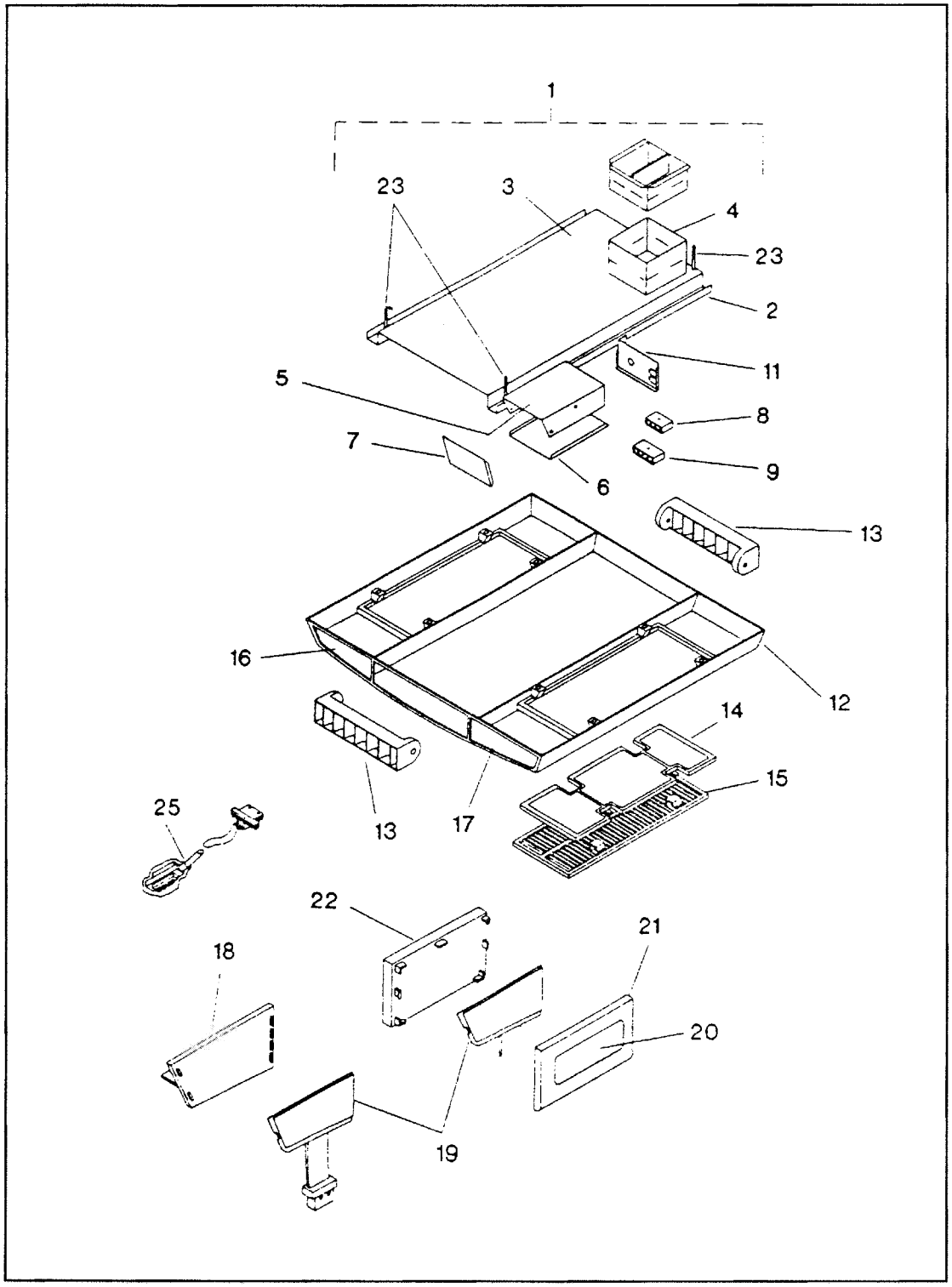
PARTS DESCRIPTION FOR PRECEDING PAGE

1. Decal, LH (not shown)
2. Decal, RH
3. Shroud
4. Bracket, PTCR device
5. PTCR device
6. Capacitor fan/run
7. Cover, evap. w/insulation
8. Decal
9. Panel, Capacitor
10. Bushing, snap in
11. Insulation
12. Capillary tube (2 req)
13. Drier
14. Bulkhead, compressor
15. Plate, close-off
16. Tape, foam
17. Motor
18. Bracket, motor
19. Grommet
20. Blower side, rear
21. Blower scroll
22. Blower side, front
23. Gasket (16 x 1.5")
24. Gasket (16 x 1.5") not shown
    Gasket (10 x 1.5") not shown
26. Coil, condenser
27. Wheel, condenser
28. Support, PC board (4 req.)
29. Base pan
30. Bulkhead, evaporator
31. Board, main
32. Decal, wiring
33. Decal, caution
34. Cover, electrical
35. Insulation, blower housing
36. Bulkhead, electrical box
37. Clamp, cable
38. Conduit
39. Anti short device
40. Plug, male 4 pole
41. Gasket 14 x 14
42. Insulation, evaporator
43. Plate, evaporator close-off
44. Pan, drain
45. Insulation, Evaporator
46. Blower housing evaporator
47. Wheel, evaporator
48. Coil, evaporator
49. Bracket, mtg. less nuts (3 req)
50. Nut with clip (3 req)
51. Compressor
52. Overload
53. Line, discharge
54. Grommets, 7 req.
55. Sleeve
56. Plate, compressor
57. Spring
58. Plate, weldment, compressor mount
59. Line, suction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PARTS DESCRIPTION FOR PRECEDING PAGE

1-24	Box, assembly complete
2-11	Ceiling Template, complete
2.	Ceiling template less insulation
3.	Insulation
4.	Duct, discharge lower
5.	Junction box
6.	Cover, junction box
7.	Box front
8.	Plug, female 3 pole
9.	Plug, female 4 pole
10.	Decal, wiring (not shown)
11.	Box back
12-18	Complete air box assembly
12.	Air box only (not available)
13.	Louver, 3 req
14.	Air filter, 2 req
15.	Return air grill, 2 req
16.	Decal, left side
17.	Decal, right side
18.	Mounting, control board
19-22	Thermostat, Complete
19.	Board, control
20.	Decal, thermostat
21.	Cover, thermostat
22.	Base, thermostat
23.	Bolts, mounting, 3 req
24.	Small parts bag (not shown)
25.	Cable, control

FURNACE

Manufacturer: Suburban Manufacturing Company
P.O. Box 399
Dayton, Tennessee 37321
Phone: 615-775-2131

Listed below are several safety related items that you should follow to assure continued safe operation of the furnace. Read the information supplied by Suburban in your Owner's Packet for more detailed instructions.

1. Keep the furnace area clear of any combustible materials, gasoline or other flammable vapors and liquids.

2. Before operating the furnace, check the location of the furnace vent to make sure it will not be blocked by the opening of any door on the trailer. If it can be blocked, do not operate the furnace with the door open.

3. Do not restrict the flow of combustion air or the warm air circulation to the furnace. To do so could cause personal injury and/or death.

4. Never operate the furnace if you smell gas.

5. Immediately shut furnace down and call a service agency if furnace cycles erratically or delays on ignition.

6. Always follow the lighting instructions. Do not deviate from the step by step procedures.

7. Never attempt to repair damaged parts. Always have them replaced by a qualified service agency.

8 Never attempt to repair the furnace yourself. Seek the help of a qualified service agency.

9. Never restrict the ducting installed by your trailer manufacturer. To do so could cause improper furnace operation.

10. Do not install air boosters in the duct system. Such devices will cause the furnace to cycle on limit and to have erratic sail switch operation.

11. Clothing or other flammable material should not be placed on or near the appliance.

WARNING: Should overheating occur, or the gas supply fail to shut off, shut off the manual gas valve to the furnace before shutting off the electrical supply.

Operating Instructions

1. Turn the manual valve to the "OFF" position (See Fig. 1). Do not force.

2. Move OFF lever located at bottom of thermostat to the right if set on "OFF" position.

3. Set thermostat above room temperature to begin blower operation. A slight delay will occur before the blower comes on. Allow blower to run for 5 minutes for combustion chamber purge cycle.

4. After 5 minutes, move thermostat lever below room temperature. Blower will remain on. Wait. approximately 2 minutes for blower to go off.

5. Open manual shut-off valve. Correct operating characteristics depend on this valve being positioned fully open. Never attempt to operate with valve partially closed.

6. Set thermostat lever to desired setting. If set above room temperature blower will come on.

7. Allow 30 seconds for main burner to light after blower comes on. This furnace is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

8. If burner does not light, repeat steps 1 through 5.

8. If after three (3) attempts with no ignition, go to shutdown and contact your dealer or a local recreational vehicle service agency. Do not continue to cycle furnace through thermostat in an attempt to get ignition.

To Shut Down

1. Set thermostat to positive off position. (Move "OFF" lever on bottom of thermostat to "OFF" position.)

2. Turn manual shut off valve to the "OFF" position. Do not force.

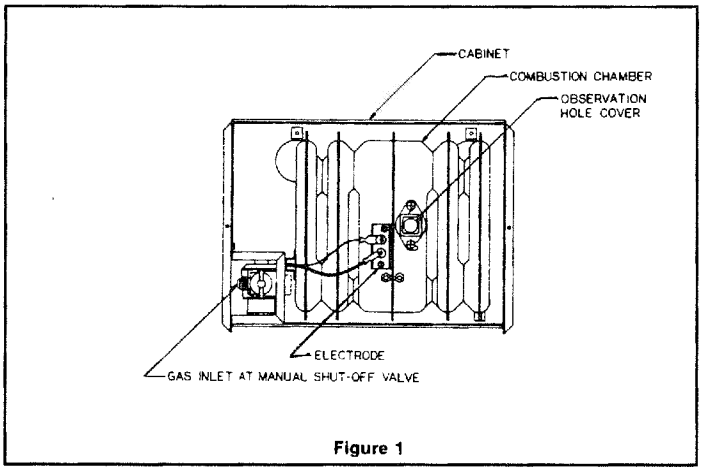
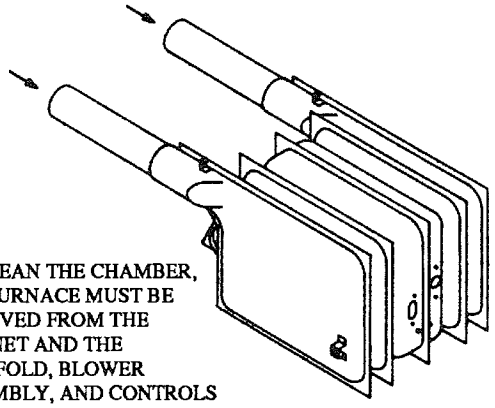


Figure 1

MAINTENANCE AND CLEANING

You, as the owner/user should inspect the furnace monthly during the heating season for (1) presence of soot on vent (2) proper burner operation to assure flame is not yellow and erratic as illustrated in Figure 2. Operating the furnace under either of these conditions could lead to serious property damage, personal injury oR loss of life. If either condition is present, shut furnace down and contact a qualified service agency.



TO CLEAN THE CHAMBER, THE FURNACE MUST BE REMOVED FROM THE CABINET AND THE MANIFOLD, BLOWER ASSEMBLY, AND CONTROLS REMOVED, LEAVING CHAMBER ONLY AS SHOWN. USING A HIGH COMPRESSION AIR HOSE, BLOW THROUGH THE EXHAUST TUBES, AS SHOWN BY ARROWS. TO REMOVE SOOT OR LOOSE DEBRIS.

Figure 3

Your furnace should be inspected before use at least annually by a qualified service agency. Particular attention should be given to the following items.

1. Inspect combustion chamber for restrictions in exhaust or intake. It is imperative that the flow of intake combustion air and the flow of exhaust gases being expelled to the outside atmosphere not be obstructed. Any soot or loose debris should be blown out using compressed air. (See Figure 3.) Also, have the combustion chamber and vent tubes inspected for cracks, rusting and burn-out. (Replace if found to be defective)

2. Inspect all gaskets. If any gaskets show signs of leakage or deterioration, replace them. Safe operation of the furnace depends on all gaskets being tight.

3. Inspect return air inlet openings to the furnace. Remove any restrictions to assure adequate air flow.

4. Periodically observe the main burner flame to assure it is burning with a hard blue flame with well defined burner ports (See Figure2). If flame appears yellow or burner has a lazy flame, shut furnace down. It is possible that burner needs cleaning or replaced. To inspect the main burner, remove the four (4) screws (A, B, C and D) securing the burner access door to the combustion chamber (See Figure 1.) If excessive rust and corrosion are present on burner surface, the burner must be thoroughly cleaned or replaced. The burner may be cleaned using a steel wire brush and blown clean using high compression air. Contact a qualified service person for assistance.

NOTE: To observe flame, cabinet front must be removed. Operation of burner can then be observed through the viewing window on front of chamber (See Figure 1).

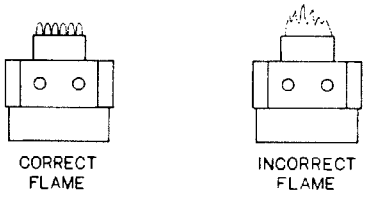


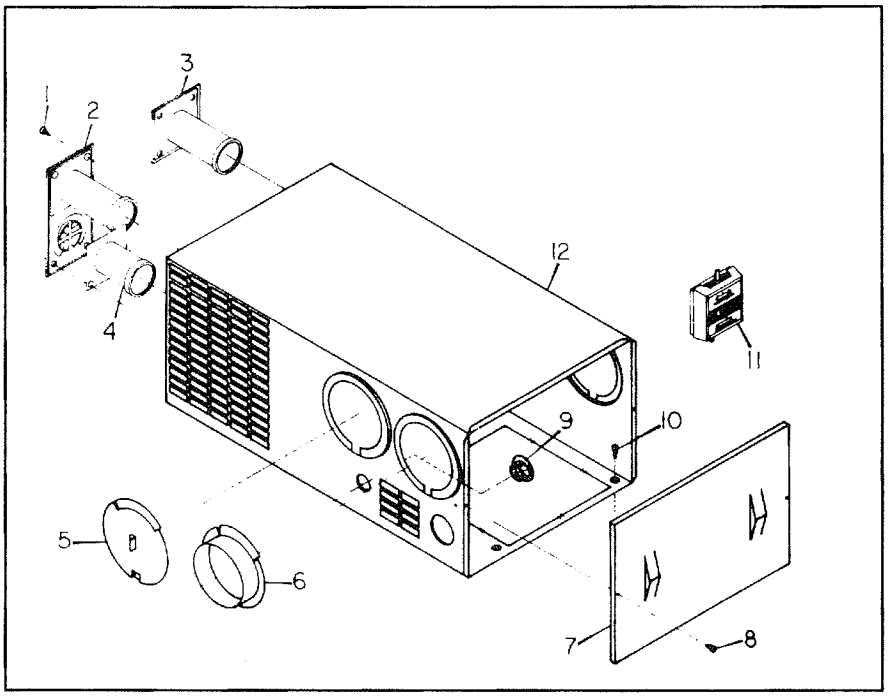
Figure 2

5. Periodically inspect outside vent cap for obstructions or presence of soot. If soot is present, immediately shut furnace down and contact a qualified service person.

6. Keep furnace clean. More frequent cleaning may be required due to excessive lint from carpeting, bedding material, etc. It is imperative that control compartments, burners and circulating air passageways of the appliance be kept clean.

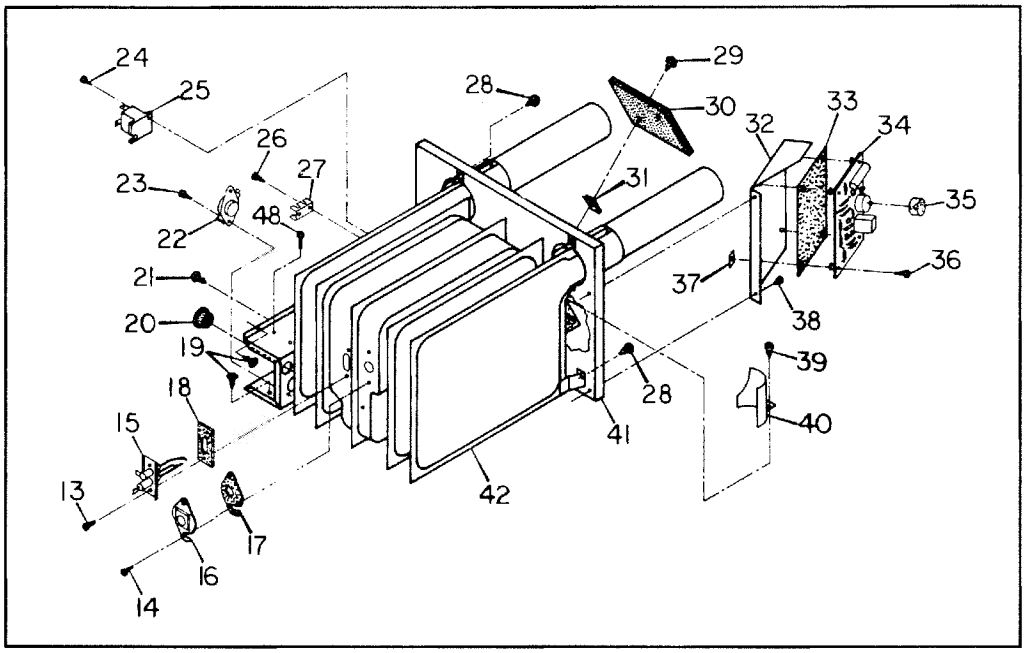
7. The motor is permanently lubricated and requires no oiling.

Cabinet Assembly Parts



Item No.	Description	Part Number NT-25K	NT-30K	NT-35K
1.	Screw, #10 x 3/4 (8 req.)	121224	121224	121224
2.	Vent Cap and Exhaust Tube Assembly (Full Cap - 6" Tube Length)	260156	260156	260156
3.	Vent Cap and Exhaust Tube Assembly (Half Cap - 6" Tube Length)	260157	260157	260157
4.	Tube Assembly Air Intake (23/4" Tube Length)	X050869	X050869	X050869
5.	Duct cover Assembly	X050819	X050819	X050819
6.	Collar, Duct (3 required for Models NT-25K and NT-30K- 4 required for Mode NT-35K)	050715	050715	050715
7.	Cabinet Front	101082	101082	101082
8.	Screw, #8 x 3/8 (2 required)	120158	120158	120158
9.	Bushing	070472	070472	070472
10.	Screw, #10 x 3/4 (2 required)	121224	121224	121224
11.	Thermostat	160902	160902	160902
12.	Cabinet Assembly	X101087	X101087	X101087

Combustion Chamber



13.	Screw, #10 x 1/2 (2 required)	121388	121388	121388
14.	Screw, #8 x 3/8 (2 required)	120158	120158	120158
15.	Electrode	231168	231168	231168
16.	Observation Hole Cover Assembly	X290117	X290117	X290117
17.	Gasket, Observation Hole Cover	070367	070367	070367
18.	Gasket, Electrode	070163	070163	070163
19.	Screw, #8 x 3/8 (2 required)	120158	120158	120158
20.	Bushing	070362	070362	070362
21.	Screw, #10 x 3/8	121252	121252	121252
22.	Limit Switch	231203	231203	231203
23.	Screw, #8 x 3/8 (2 required)	120158	120158	120158
24.	Screw, #6 x 3/8 (2 required)	121502	121502	121502
25.	Relay, Time Delay	230625	230625	230625
26.	Screw, #6 x 1/4 (2 required)	121244	121244	121244
27.	Splicer	230714	230714	230714
28.	Screw, #8 x 3/8 (3 required)	120158	120158	120158
29.	Screw, #10 x 1/2 (2 required)	121388	121388	121388
30.	Cover Assembly, Burner Access	090320	090320	090320
31.	Tinnerman (2 required)	121378	121378	121378
32.	Pane, Module Board Mounting	101081	101081	101081
33.	Insulator, Module Board	070538	070538	070538
34.	Module Board	230587	230587	230587
35.	Cap. Insulator	070549	070549	070549
36.	Screw, #6 x 5/8 (2 required)	121357	121357	121357
37.	Tinnerman (2 required)	121336	121336	121336
38.	Screw, #8 x 3/8 (2 required)	120158	120158	120158
39.	Screw, #8 x3/8	120158	120158	120158
40.	Baffle, Burner Air	040341	040341	040341
41.	Firewall Assembly	X110529	X110529	X110529
42.	Combustion Chamber Assembly	X020988	X020988	X020988

Burner Assembly

43.	Gasket, Manifold	070698	070698	070698
44.	Orifice, Main Burner	180215	180215	180215
45.	Screw, #8 x 3/8 (4 required)	120158	120158	120158
46.	Manifold Pipe Assembly	X170961	X170961	X170961
47.	Valve	160832	160832	160832
48.	Screw, #8 - 32 x 3/8 (2 required)	121407	121407	121407
49.	Bracket, Valve Mounting	062711	062711	062711
50.	Tinnerman (2 required)	121595	121595	121595
51.	Valve , Manual Shut-off	160740	160740	160740
52.	Nut, 10 - 24 Hex Keps (2 required)	120717	120717	120717
53.	Burner Assembly	X010693	X010693	X010693

Blower Assembly

54.	Screw, #8 x 3/8 (11 required)	120158	120158	120158
55.	Housing, Combustion Air (Left Half)	390365	390365	390365
56.	Wheel, Combustion Air	350118	350118	350118
57.	Motor Assembly	231166	231166	231166
58.	Gasket, Combustion Air Housing	070406	070406	070406
59.	Combustion Air Housing Assembly	X390376	X390376	X390376
60.	Gasket, Motor	070706	070706	070706
61.	Screw #8 x 3/8 (2 required)	120158	120158	120158
62.	Gasket, Crossover Tube (Housing)	070704	070704	070704
63.	Screw, #8 x 3/8 (2 required)	120158	120158	120158
64.	Crossover Tube Assembly	X050825	X050825	X050825
65.	Gasket, Crossover Tube (Chamber)	070705	070705	070705
66.	Screw, #8 x 3/8 (3 required)	120158	120158	120158
67.	Bushing	070362	070362	070362
68.	Nut, 10 - 32 Hex Lock (2 required)	120716	120716	120716
69.	Blower Housing Assembly (Room Air)	X390371	X390371	X390371
70.	Screw, #8 x 3/8 (4 required)	120158	120158	120158
71.	Fastener, Tinnerman (2 required)	121661	121661	121661
73.	Microswitch Assembly	X230509	X230509	X230509
74.	Screw, #2 - 56 x 5/8 (2 required)	121247	121247	121247
75.	Wheel, Room Air	350105	350105	350111

Burner Assembly

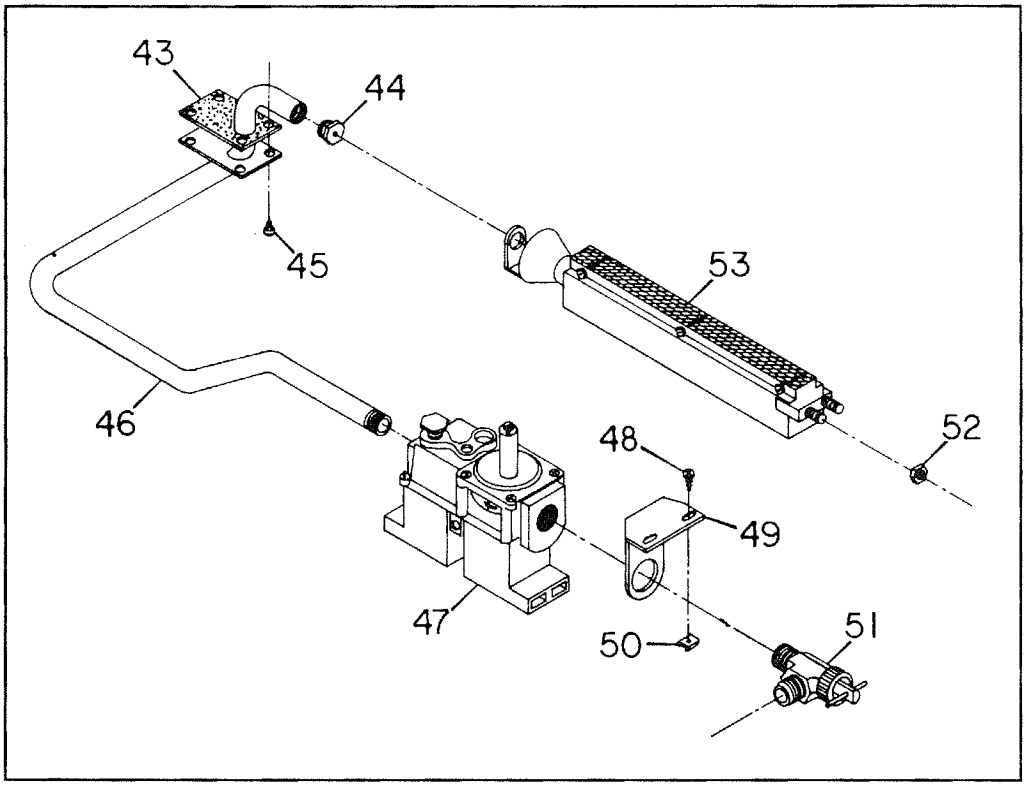


Figure 6

Blower Assembly

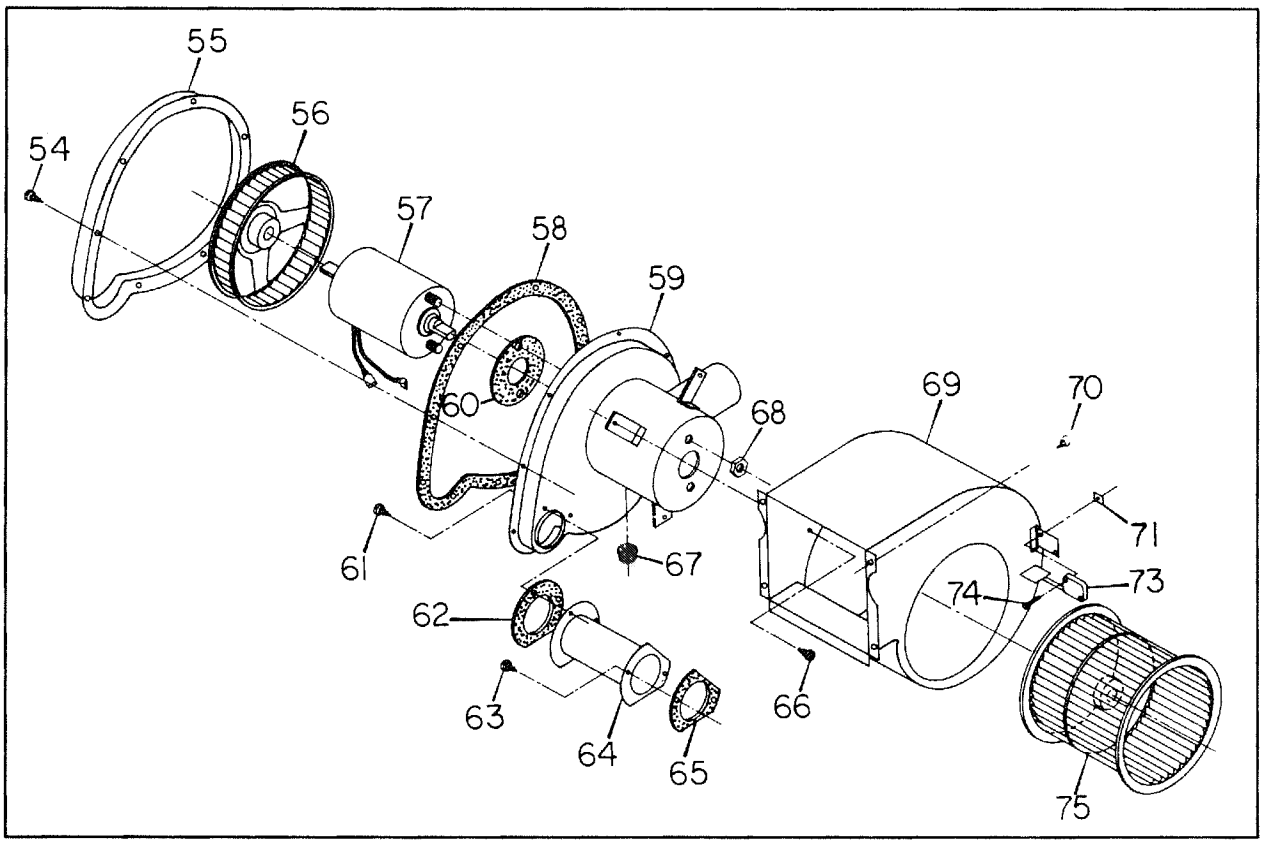
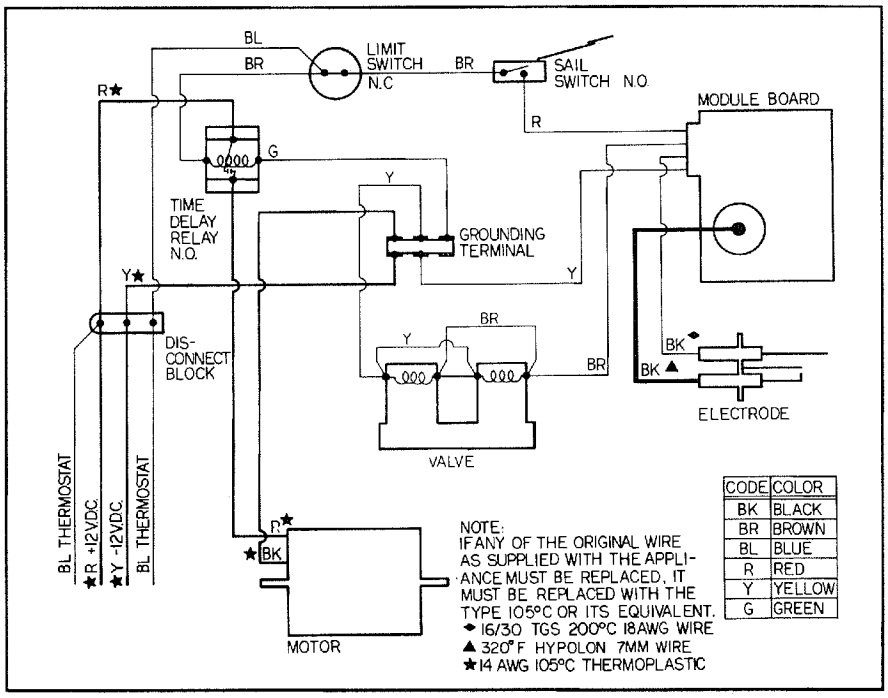
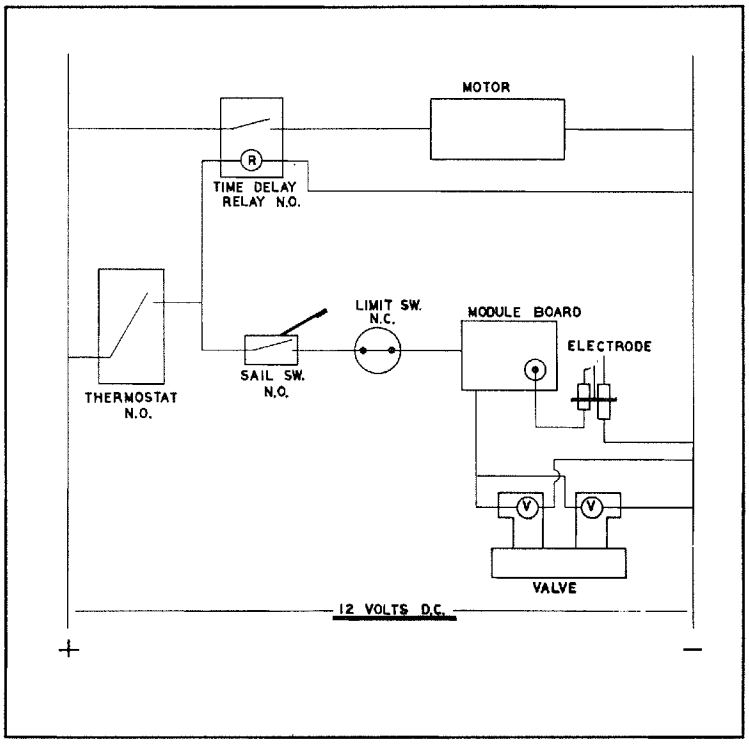
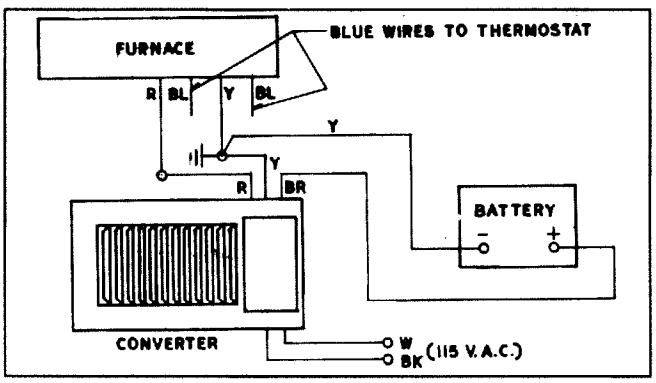


Figure 7

Furnace Wiring Diagrams







RANGE AND OVEN

Manufacturer: Magic Chef, Inc.
28812 Phillips Street
Elkhart, Indiana 46514
Phone: 219-264-9578

The range and oven in your Airstream works on LP gas. Electrical power used is the by 12 volt oven light in some models.

People using gas ranges in their home will find little difference in the operation of the range in the trailer. Other customers, used to electric ranges may be a little apprehensive at first; but, will quickly gain confidence. The basic operation of the gas ranges have been the same for many years, but please be sure to read all the directions furnished by the manufacturer and located in the Owner[1] s Packet. Excellent service and parts manuals are available from the manufacturer.

We find many experienced RVers do not use the pilot light for the top burners, preferring the flint type hand lighters instead. The main reason the pilots aren't used is due to the size of the trailer and the climate in which most trailers are used. The pilots are very small, but, of course, produce heat that may be noticeable in the trailer. With limited counterspace it is normal to set articles on the closed top of the range. If the day is hot and the article is plastic it may become deformed from the low but constant heat of the pilot.

Operation Principle

Top Burners

The manifold along the front of the top burner section is continually pressurized as long as the LP tank valve is open. Upon opening any of the burner valves this gas is injected through the burner orifice and into the venturi (mixing tube) where it mixes with primary combustion air and flows on to the burner. At this point, the gas-air mixture is evenly discharged through the ports in the burner cap where ignition occurs (by use of a match or pilot light if applicable). The amount of primary air may be adjusted on earlier models to alter combustion characteristics.

Oven

(Main Burner)

The fuel supply for the oven burner is taken from the manifold in the top section of the range. The tube leading from the right hand side of the manifold extends down the rear of the range and into the automatic oven safety valve. (On newer models this gas flow is taken at the thermostat mounted on the manifold. A tube leads from the thermostat to the oven safety valve.) When this valve opens, gas passes through it to the burner orifice. The orifice meters the gas flow into the burner venturi, where it mixes with primary combustion air and enters the burner casting. The oven pilot ignites this mixture resulting in flame evenly spread around the burner.

(Pilot Burner)

The pilot burner is actually two pilots in one:

1. The STANDBY PILOT is that portion of the pilot light which burns constantly, providing that the LP tank and manifold valve (if applicable) are on. It ignites the gas-air mixture at the burner when the oven valve opens. It also provides the base for the heater pilot.

2. The HEATER PILOT is actually an extension of the standby pilot. It is on only when the oven thermostat "calls for heat". The purpose of the heater pilot is to open the oven safety valve thereby enabling gas to flow to the oven burner.

(Thermostat)

The thermostat is probably the most important component part in the functioning of the oven. It regulates the temperature of the oven keeping it at the desired cooking temperature. Thus, the thermostat is conducive to excellence in oven cooking. It is the thermostat (directly behind the oven control knob) that increases the "Standby Pilot" to the "Heater Pilot" flame.

The thermostat "senses the oven temperature by means of a "thermal bulb" located in the top of the oven. This bulb is filled with gas and connected to a bellows in the thermostat by a capillary tube. When the oven is on: (1) the bulb heats up, (2) the gas expands, (3) causing the bellows in the thermostat to expand, (4) a mechanical linkage within the thermostat shuts off the higher flow of gas to the pilot burner and throttles the amount down considerably. The pilot flame ceases to burn at the heater position, but continues at standby.

As the temperature begins falling in the oven, the above described re-occurs, except now (1) the bulb cools, (2) the gas contracts, (3) the bellows in the thermostat contracts, (4) the mechanical linkage in the thermostat then causes an increasing amount of pilot gas to flow and the pilot goes to the heater flame position.

Note: On the new model ranges the thermostat will have a "pilot off" or "pilots off" position on the thermostat knob. With the thermostat set at this position, all gas is shut off from the oven pilot "pilot off". When the thermostat is set on the "pilot off" position all gas to the top pilot and oven pilot is shut off.

(Oven Safety Valve)

This valve controls the gas flow to the main burner. The valve is operated by a thermal bulb in the heater pilot flame. This bulb is connected to a bellows in the valve by a capillary tube. When the bulb is heated it expands the mercury in it, expanding the bellows and opening the valve. The opposite occurs when the heater pilot flame subsides.

Sequence of Oven Operation:

With the thermostat set at 3500, for example, the following steps automatically occur:

a. The thermostat "calls" for heat (see thermostat operation principle).

b. The pilot flame increases to the heater position (see thermostat operation principle).

c. The oven valve opens (see "Oven Safety Valve") and lets gas into main burner.

d. Burner heats up oven and thermostat quits calling for heat.

e. Pilot heater flame subsides.

f. Oven safety valve closes.

g. Oven is ready for another cycle.

Trouble Shooting

(Top Burners)

The possibility that a service call on the top burner portion of the range will require anything more than minor adjustments and/or cleaning is very remote.

Combustion problems may occasionally arise, but these can normally be attributed to an accumulation of dirt, grease, dust, or spider webs etc. in the venturi or the burner.

(Pilot Adjustment)

On models ordered from the factory with top burner pilots, these pilots may need to be checked in cases of (l) burners not lighting, or (2) soot accumulating within top burner section. The proper setting for this pilot is when the flame burns blue with a slight yellow tip. The tip of the flame should be about even with the top of the body of the lighter.

Trouble Shooting

PROBLEM: No constant pilot.

CAUSE/ 1. No gas to range.

REMEDY: Use top burner or other constant gas supply outlet to check gas supply.

2. Constant pilot adjustment turned off. Adjust constant pilot adjustment.
   a) Single tube pilot - set either to Natural (N) or LP GAS (LP) position.

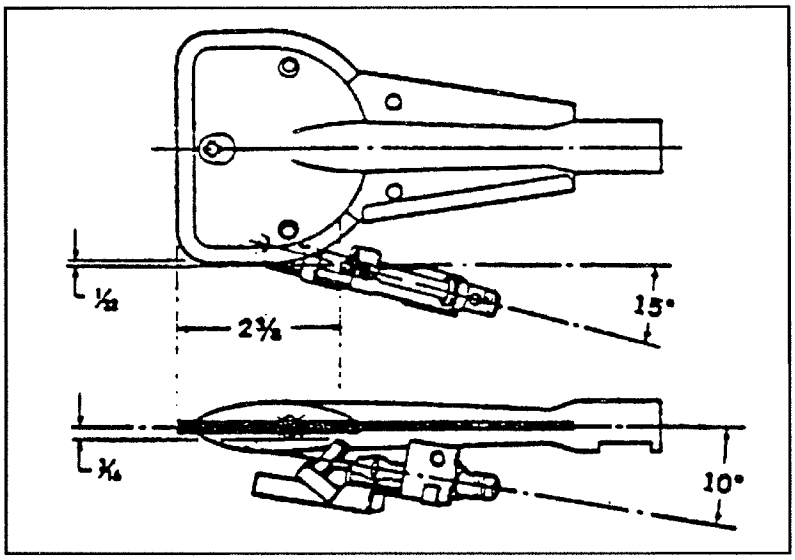
   b) Two tube pilot - turn adjustable cartridge to obtain stable blue flame approximately 3/8" long.

3. Tubing supply line blocked.
   Disconnect tubing at source and at pilot end and blow out to clear passageway.

4. Orifice blocked.
   a) Single tube pilot - disconnect tubing from pilot and blow out to clear orifice. **Note:** DO NOT ream or drill out orifice hole.
   b) Two tube pilot -disconnect tubing from pilot and blow out to clear orifice. **Note:** These orifices may be reamed out with a small needle to clear blockage.

5. Pilot blocked.
   Disconnect tubing from pilot. Remove orifice from pilot and clean out blockage or replace pilot.

6. Pilot too close to oven burner flame. Adjust position of pilot assembly (See Illus. below).



PROBLEM: Unstable constant pilot flame (pilot flame flutters - two tube pilot only).

CAUSE/ REMEDY:
1. Insufficient gas.
   a) Reset constant pilot adjustment and/or check for blockage of orifice.
   b) If gas pressure too low check pressure regulator (if applicable) and increase pressure.

2. Shield under constant pilot too close to pilot tube. Check spacing by inserting a quarter between shield and pilot tube. Snug fit indicates proper spacing. Carefully bend shield to obtain proper spacing.

PROBLEM: No heater pilot.

CAUSE/ REMEDY:
1. Thermostat turned off
   Turn thermostat knob to setting above oven temperature.

2. Heater pilot adjustment turned off.
   Reset heater pilot adjustment until flame just envelopes flame responsive element.

3. Tubing supply line blocked.
   Refer to "Tubing Supply Line Blocked" under `No constant pilot".

4. Orifice blocked.
   Refer to "Orifice blocked" under "No constant pilot".

5. Pilot blocked.
   Refer to "Pilot blocked" under "No constant pilot".

PROBLEM: Oven will not maintain proper baking temperatures.

CAUSE/ REMEDY:
1. Oven bulb not in proper location (on its oven clips).
   Secure oven bulb in clips that hold it in proper location.

Oven bulb should not touch any surface. Approx. 1/2" away from surface of oven drum top.

2. Oven bulb coated with foreign material, oven cleaner, etc.
   Use fine steel wool or scouring pad and gently clean surface of bulb.
   Note: Recheck location of bulb.

3. Oven bottom improperly positioned.
   Reposition according to range manufacturer's instructions.

4. Oven bottom covered with aluminum foil.
   If foil blocks holes or slots in oven bottom, oven heat distribution will be affected. Remove foil.

5. Heater pilot flame not cycling off.
   a) (Single tube pilot) High pressure could cause the constant pilot flame to act as a heater pilot flame. Check pressure and proceed as follows:
      (1) Pressure Regulated Appliance.Check pressure and adjust regulator if necessary, according to range manufacturer's instructions.
      (2) Non Regulated Appliance. Turn constant pilot selector cartridge to LP position to correct for high pressure natural gas.
   b) Replace thermostat if problem is not due to Step a.

6. Safety device not closing. Flame responsive element (Mercury bulb) is being heated by the oven burner flame due to either improper location or an over-rated oven burner. Check the following:
   a) Flame responsive element must be properly located on pilot burner.
   b) Pilot burner must be properly located on bracket.
   c) Bracket must be in proper location. (See Illus. under "No Constant Pilot")
   d) Oven burner rate.

7. Safety device not closing (when flame responsive element is not being heated).
   Replace safety device with an exact replacement.

PROBLEM: No main burner flame.

CAUSE/ REMEDY:

1. Thermostat set lower than actual oven temperature. Reset knob to higher temperature.

2. Oven burner orifice closed.
   Readjust to range manufacturer's rated input.

3. Flame responsive element (mercury bulb) not hot enough.
   a) Check position of flame responsive element. It MUST be enveloped in the heater pilot flame. If not, adjust flame.
   b) Check gas pressure. Low pressure may give insufficient heater pilot flame.
   c) Check pressure regulator (if applicable). An erratic or malfunctioning pressure regulator may cause pressure to be low.

4. Defective thermostat. No heater pilot flame, no main burner flame at any setting.
   Replace thermostat. **Note:** No heater pilot flame could be due to 3b or 3c above. Check pressure before replacing thermostat.

5. Defective safety.
   Replace safety. **Note:** No field adjustments on this control.

Oven Thermostat Removal and Replacement

1. Shut off gas at LP gas tanks.

2. Remove main top and grates.

3. Disconnect pilot fuel lines and 1/4" main fuel line at thermostat.

4. Remove two screws mounting thermostat to manifold pipe.

5. Open oven door and remove capillary bulb clips in top of oven.

6. Pull capillary bulb up through top of stove and remove thermostat.

7. To install, reverse above procedure. Be sure thermostat gasket is in place before installing thermostat.

8. Check for gas leaks at all connections with soap solution.

Oven Automatic Shut Off Valve Removal and Replacement

1. Shut off gas.

2. Remove oven racks and oven bottom. Oven bottom is removed by pushing oven bottom toward back of oven. Then lift up front of oven bottom to release catches, pull oven bottom forward.

3. Remove mounting screw from oven burner and remove burner.

4. Disconnect 1/4" supply tube from shut off valve.

5. Loosen screw holding sensing bulb to pilot light assembly.

6. Remove sensing bulb.

7. Remove 2 screws attaching automatic oven shut off valve support and remove automatic oven shut off valve.

B. To install, reverse above procedure.

9. Check for gas leaks at all connections with soap solution.

Oven Burner Removal and Replacement

1. Shut off gas.

2. Remove oven racks and oven bottom.

3. Remove mounting screw from oven burner and remove burner.

4. To install, reverse above procedure.

Oven Pilot Light Assembly Removal and Replacement

1. Shut off gas.
2. Remove oven racks and bottom.
3. Remove screw holding sensing bulb to pilot assembly.
4. Remove sensing bulb from pilot assembly.
5. Remove pilot fuel tube.
6. Remove nut and bolt attaching pilot assembly to support.
7. Remove pilot assembly.
8. To install, reverse above assembly.
9. Check for gas leaks at all connections with soap solution.

Remove of Range Top Burner Valve

1. Shut off gas supply at bottles.
2. Remove knobs.
3. Remove burner grates, main top and top burners.
4. Remove two bolts from thermostat and raise slightly to permit removal of manifold.
5. Remove gas inlet tube from half union and move tube out of way.
6. Remove two screws, one from each end of manifold assembly.
7. Remove manifold assembly from range.
8. Remove defective valve (Screw counterclockwise).
9. To install, reverse above procedure.
10. Before installing new valve, apply LP pipe sealant to threads.
11. Check for gas leaks at all connections with soap solution before igniting burners.

Range Top Pilot Light Adjustment for Range so Equipped

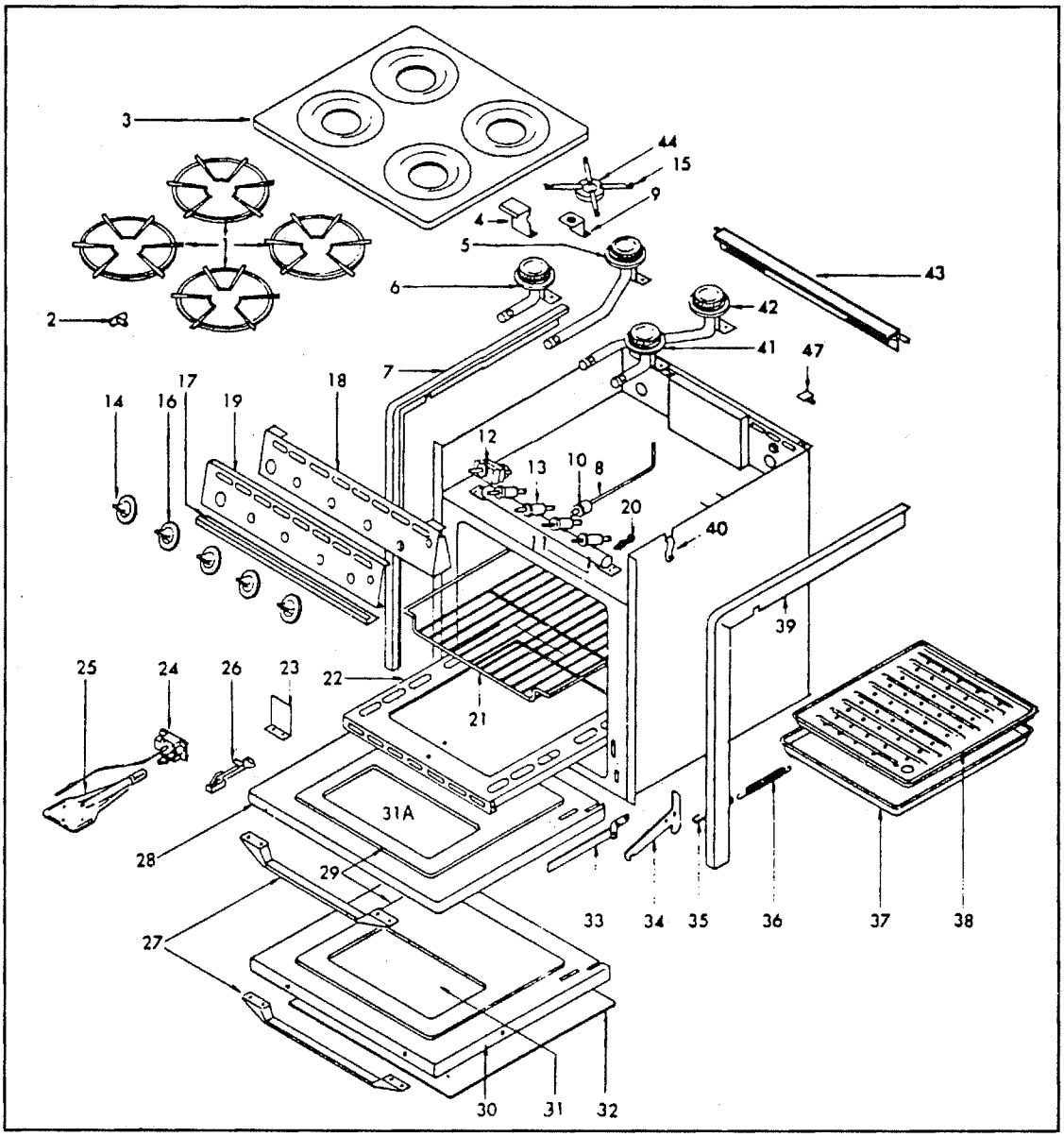
1. Remove thermostat knob to provide access at adjusting screw. Adjusting screw is located at bottom right corner of thermostat.
2. Adjust so that the tip of the flame is just over the edge of the inner cone and the top burners light within four seconds.

Range Removal

1. Turn off gas at LP bottles.
2. Raise burner cover and disconnect gas line from manifold.
3. Remove 4 Phillips head screws going through side trim into edge of countertop.
4. Slide range out.

WARNING: Check gas connection with soap solution when range is reinstalled.

Range/Oven Parts Diagram



Parts Description for Preceding Page

1. Top Burner Grate
2. Tee Nut
3. Main Top
4. Top Pilot Shield
5. Left Rear Burner
6. Left Front Burner
7. Left Side Trim
8. Pilot Tube
9. Top Pilot Support
10. Pilot Filter
11. Manifold Pipe
12. Thermostat
13. Top Burner Valve
14. Thermostat Dial
15. Flash Tube
16. Top Burner Knob, Front
17. Top Burner Knob, Rear
18. Manifold Panel Back Up
19. Manifold Panel Trim
20. Half Union
21. Oven Rack
22. Oven Bottom
23. Broiler Pan Stop
24. Mercury Control Valve (LP Gas Only)
25. Oven Burner
26. Oven Pilot
27. Door Handle
28. Door Panel
29. Door Liner
30. Glass Door Frame
31. Inside Glass

31A. Window Assembly

32. Outside Glass
33. Door Hinge Assembly
34. Spring Hinge Arm
35. Spring Hook
36. Door Spring
37. Broiler Panel
38. Broiler Pan Insert
39. Side Trim, Right
40. Main Top Hold Down Clip
41. Right Front Burner
42. Right Rear Burner
43. Flue Deflector
44. Top Pilot Lighter
45. Oven Rack Clip
46. Grate Clip, Package
47. Spring, Main Top Rear

Microwave Ovens

Only technicians specifically trained and equipped for servicing microwave ovens should work on your unit.

The microwave information provided with your coach will provide you with a list of service facilities, or the manufacturer's phone number to obtain this information.

REFRIGERATOR

Models 3604 & 3804

Manufacturer: Dometic Sales Corporation
2320 Industrial Parkway
P.O. Box 490
Elkhart, Indiana 46514
Phone: 219-295-5228

How to Start the Refrigerator

Note: Review all Dometic Literature supplied in your Owner's Packet or stored in the refrigerator prior to operating.

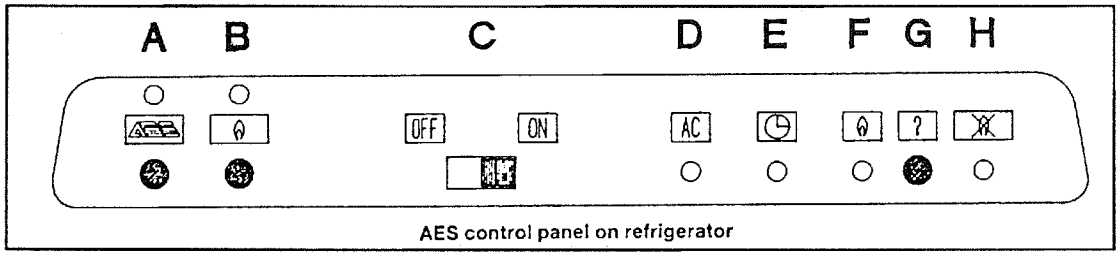
Leveling

In an absorption refrigerant system ammonia is liquified in the finned condenser coil at the top rear of the refrigerator. The liquid ammonia then flows into the evaporator (inside the freezer section) and is exposed to a circulating flow of hydrogen gas, which causes the ammonia to evaporate, creating a cold condition in the freezer.

The tubing in the evaporator section is specifically sloped to provide a continuous movement of liquid ammonia, flowing downward by gravity, through this section. If the refrigerator is operated out-of-level when the vehicle is not moving, liquid ammonia will accumulate in portions of the evaporator tubing. This will slow the circulation of hydrogen and ammonia gas, or in severe cases, completely block it, resulting in a loss of cooling.

Any time the vehicle is parked for several hours with the refrigerator operating the vehicle should be leveled to prevent this loss of cooling. The vehicle needs to be leveled only so it is comfortable to live in (no noticeable sloping of floor or walls). When the vehicle is moving the leveling is not critical, as the rolling and pitching movement of the vehicle will pass to either side of level, keeping the liquid ammonia from accumulating in the evaporator tubing.

Gas Operation



AES control panel on refrigerator

Before starting the refrigerator check the gas valve in the piping. Do not forget the valve on the rear of the refrigerator.

1. To start the refrigerator set the switch C to position ON. The lamp above push button A will now turn green.

2. Turn the thermostat knob inside the cabinet to a suitable setting, e.g. start with normal position.

3. To shut off the refrigerator set the switch C to position OFF.

General Information

This refrigerator is equipped with an Automatic Energy Selector (AES) control system, which can automatically select the most suitable energy source which is available - either 120 volt AC, or LP gas operation. The system can be set by the user to be fully automatic, or if desired, LP gas only.

Fully Automatic Mode 

When switch C is set to ON the lamp above push button A will light up (green) indicating that the control system is in the fully automatic mode.
In this mode 120 volt AC operation has first priority, meaning the refrigerator will operate on 120 volt AC whenever it is available. If 120 volt AC is not available, the system will switch to LP gas operation.

LP Gas only 

If push button B is pressed the refrigerator will operate only on LP gas, even if 120 volt AC is available.

Mode Indicator Lamps

At the right side of the AES control panel are 3 indicator lamps which give you information about the operation of the AES system. When the push button G is depressed one of these indicators will light up, showing which operating mode the system is using. There is an additional indicator lamp H at the far right side of the control panel. This indicator will light only when there has been a flame failure in the LP gas operation mode. (For further information see flame failure during LP gas operation.

120 Volt AC Operation

Since 120 volt AC is usually the most economical energy source for operation of the refrigerator the AES control system is designed to select this mode whenever it is available (except when the push button B, LP gas only mode is selected). A 120 volt heating element attached to the boiler tube provides the heat to operate the cooling system. The thermostat inside the refrigerator cabinet turns power on and off to this element as required to maintain the desired temperature.

LP Gas Delay Mode

When the vehicle engine is turned off the AES system initiates a delay cycle which prevents the refrigerator from operating on LP gas for about 25 minutes. The purpose of the delay cycle is to avoid having a gas flame present during a refueling stop at a gas station. (See WARNING)

If the vehicle engine is restarted during this delay period the LP gas operation will not start until the delay period is over. This means that each time the vehicle engine is stopped, the complete 25 minute delay cycle will take place.

If 120 volt AC becomes available during this delay cycle the AES system will start operating in the 120 volt AC mode immediately.

If the RV is stopped somewhere other than at a gas station you may wish to cancel the delay cycle. To do this set the main system switch C to OFF for several seconds, then back to ON, and the system will start operating in the LP gas mode.

LP Gas Operation

When there is no electrical power available (120 Volt AC) or if the indicator lamp above push button B is lit, the AES system will switch to LP gas operation. When the thermostat in the refrigerator cabinet calls for cooling the following sequence takes place:

1. A high voltage spark is created above the burner.

2. Power is sent to a solenoid which opens the gas control, allowing LP gas to flow to the burner. The spark ignites the LP gas and the small flame then provides heat for the boiler, and the cooling process begins.

3. A sensor electrode mounted above the burner tube monitors the flame continuously. If the flame should fail for any reason, the high voltage spark will start immediately, and relight the flame.

When the desired temperature is reached the thermostat will shut off the gas flame completely, and the system will remain on standby until cooling is required again.

WARNING: Most LP gas appliances used in recreational vehicles are vented to the outside of the vehicle. When parked close to a gasoline pump it is possible that gasoline fumes could enter this type of appliance and ignite from the burner flame, causing a fire or an explosion. For your safety it is recommended that all LP gas appliances that are vented to the outside should be shut off when refueling.

The AES system is designed to avoid an LP flame during refueling stops by use of the delay cycle explained above. However, you must remember that this delay cycle will be activated only if the refrigerator is properly connected to the vehicle engine electrical circuit (see INSTALLATION, Ignition Lock Connection).

If the refrigerator is not connected to the engine electrical circuit, the refrigerator must be shut off during refueling stops. Set the main system switch C to OFF, and after the vehicle has been moved away from the refueling area set the switch back to ON.

Flame Failure During LP Gas Operation

If the gas flame does not ignite when the burner cycle begins, or if the flame fails during the burner cycle, the high voltage spark will continue sparking up to 3 minutes. At that time the gas control will completely shut off the gas flow, the high voltage spark will cease and the indicator lamp H will light up. LP gas operation will not restart as long as this indicator is lit. This shutdown is to make sure that the LP gas flow does not continue for a long time.

To restart LP gas operation, first set switch C to OFF for five seconds, then back to ON. The flame failure indicator will go off, and the system will start another cycle for ignition.

If the refrigerator has not been used for some time, or if the supply tanks have just been refilled, air may be trapped in the LP gas supply line. To purge this air from the lines may require resetting the ON/OFF switch three or four times.

If repeated attempts to start LP gas operation are not successful, check to make sure the LP supply tank is not empty. Also check all manual shut off valves in the LP gas supply line to make sure they are open. If the problem is still not corrected, contact a service center for assistance.

When the flame failure indicator lamp H comes on the mode indication lamp (green light) will go

off, indicating that all operation has stopped. However, if 120 volt AC becomes available during this period, the mode selection lamp (green light) will come on, indicating that the refrigerator is operating on another energy source, the indicator lamp H will remain lit until there is an OFF/ON operation off the main system switch C.

Low Voltage Monitor on 12 Volt DC Control System

The AES system requires 12 volt DC power at all times to operate on any energy source, and to operate properly this DC power must be at 9.5 volts or higher. If this voltage should drop below 9.5 volts the AES system will switch to an emergency cooling mode:

1. The mode indicator lamp (green light) will go off.

2. The system will revert to continuous LP gas operation - with no thermostat control.

The refrigerator will continue operating in this mode, without the thermostat in the circuit, until the DC power supply is increased to 10.5 volts. At that time the mode indicator lamp (green light) will come on and normal operation will resume. During this low voltage condition the interior light will continue to operate normally.

HOW TO USE THE REFRIGERATOR

Food Storage Compartment

The food storage compartment is completely closed and unventilated, which is necessary to maintain the required low temperature for food storage. Consequently, foods having a strong odor or liable to absorb odors should be covered. Vegetables, salads etc., should be covered to retain their crispiness. The coldest positions in the refrigerator are underneath the cooling evaporator and at the bottom of the refrigerator. The least cold positions are on the upper door shelves. This should be considered when different types of food are placed in the refrigerator.

Frozen Food Storage Compartment

Quick frozen soft fruits and ice cream should be placed in the coldest part of the compartment, which is on or just below the freezer shelf. Frozen vegetables, on the other hand, may be stored in any part of the compartment.

This compartment is not designed for the deep or quick freezing of food. Meat or fish foods, whether raw or prepared, can however, also be stored in the frozen food storage compartment, provided they are precooled in the refrigerator. They can then be stored about three times as long as in the fresh food storage compartment. To prevent food from drying out, keep it in covered dishes, containers, plastic bags, or wrapped in aluminum foil.

Ice Making

Ice cubes can be made in the ice trays. These should be filled with water to within 1/4" (Smm) from the top. For faster ice making, the trays should be placed in direct contact with the freezer shelf.

To release the ice cubes seize the tray with both hands and twist the tray. Cubes not required should preferably be replaced in the tray. Refill the tray with water and replace the tray on the freezer shelf.

Ice making is accelerated if the thermostat knob is turned to setting MAX. It is a good idea to do this a few hours before an anticipated need for ice, but be sure to turn the knob back to normal setting when the ice is formed or the food in the lower cabinet may be frozen.

Defrosting

Shut off the refrigerator by setting switch C to OFF. Empty the refrigerator, leaving the drip tray under the finned evaporator, and the cabinet and freezer doors open. If desired, defrosting may be speeded up by filling the ice trays with hot water and placing them on the freezer shelf. When all frost is melted, empty the drip tray and dry the interior of the refrigerator with a clean cloth. Replace the drip tray and ice tray. Replace all food and set the thermostat to MAX for a few hours. Then reset the thermostat to its normal position. NOTE: On the RM 3804 the drip tray is placed on the rear side of the refrigerator.

Cleaning

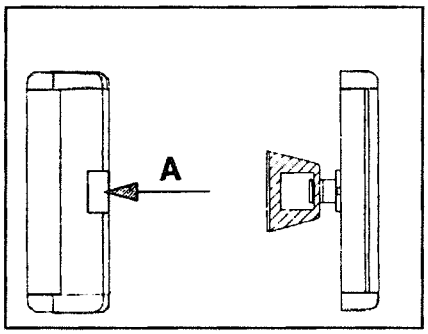
To clean the interior lining of the refrigerator, use lukewarm weak soda solution. The evaporator, ice trays and shelves must, however, be cleaned with warm water only. Never use strong chemicals or abrasives to clean these parts or the protective surface will be damaged. It is important to always keep the refrigerator clean.

To Shut Off the Refrigerator

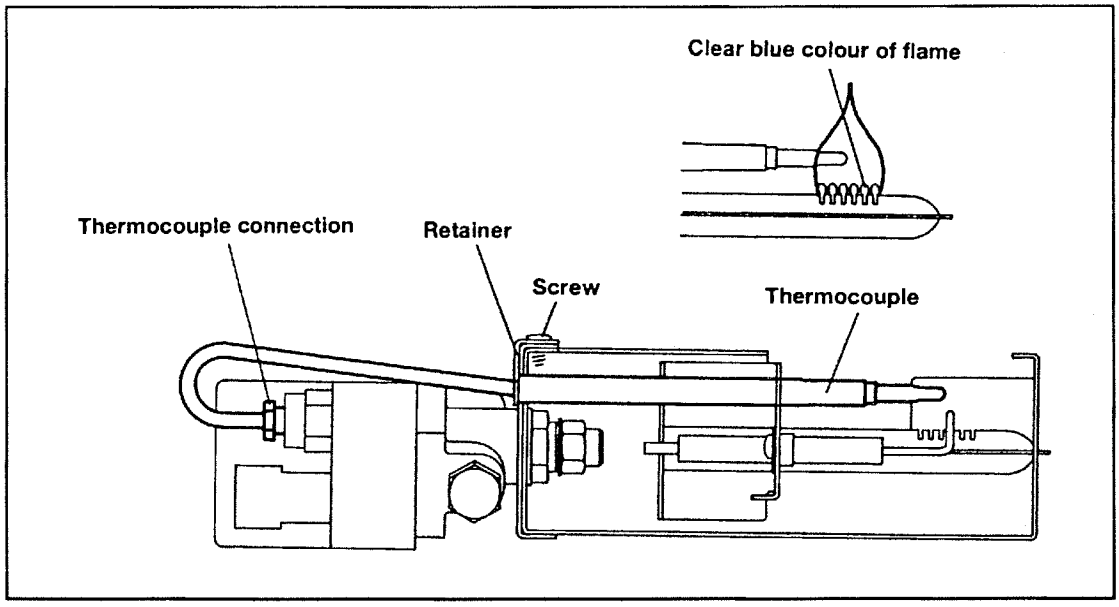
To shut off the refrigerator, set switch C to the OFF position. If the refrigerator will not be in operation for a period of weeks, it should be emptied and cleaned and the doors left ajar. Use the travel latch, integrated in the handle, to lock the doors in the open position (See Fig. 12).

To activate the airing position of the hook, push the square button A forward at the same time as you fit the hook into the clamp. To release the door from airing position, pull the handle, release, and the hook will return to rest position.

Fig. 12



CAUTION: Do not store explosive substances in the refrigerator, such as cigarette lighter gas, petrol, either or the like.



Flue Cap and Baffle

1. The flue cap on the top of the flue tube must be in position to guide the flue away from the condenser.

2. The flue baffle is suspended from the top of the flue tube and must be in position in the flue tube of the cooling unit.

The Flame Failure Safety Device (Fig 13)

The tip of the thermocouple shall reach in over two slots of the burner. To replace the thermocouple proceed as follows:

1. Remove the cover.
2. Disconnect the thermocouple connection and pull the thermocouple straight out.

3. Remove screw and retainer.

4. Remove the thermocouple by pulling it left, then outward.

5. Bend the new thermocouple to the same shape as the old one.

6. Reassemble in reverse order. Check that the tip of the thermocouple has been correctly refitted in relation to burner.

7. Tighten the thermocouple connection finger-tight plus 1/4 turn. The plug must be properly tightened to the solenoid valve to ensure good contact. Do not over-tighten.

The Thermostat knob (inside the cabinet)

The refrigerator is equipped with a thermostat which is regulated by turning the knob to different settings in order to obtain the desired cabinet temperature.

By choosing a setting from MIN to MAX various temperatures can be obtained. The closer to MAX the lower the temperature. As soon as the required cold temperature inside the cabinet is reached, the thermostat cuts the burner. At MAX the burner is running continuously at full gas rate. Lowest cabinet and freezer temperatures are obtained at this setting.

Electric Equipment

Cartridge heater

These models are equipped for 120 volt AC operation. There is an electric heater mounted in a pocket of the boiler system. To replace the heater proceed as follows:

1. Disconnect the wall plug and the 12 volt wires.
2. Remove the cover.
3. Remove the cover item 19 Fig 1.
4. Disconnect the heater leads.
5. With a pair of pliers unfold the lug holding the lid of the boiler casing and open the lid.
6. Remove some insulation wool so that the heater is accessible.
7. Turn and lift the heater out of its pocket.
8. Fit the new heater into the pocket.
9. Connect the leads and put on the cover.
10. Reset the insulation and close the lid of the boiler.
11. Replace the cover.

PERIODIC MAINTENANCE

Note: Before working on the refrigerator make sure that 120 volt AC and 12 volt DC leads are disconnected. Shut off gas valve.

The Burner and the Burner Jet

The color of the flame shall be clear blue over the slots of the burner'. Once or twice a year, depending on use, it is necessary to clean and adjust the burner assembly. Proceed as follows:

1. Remove cover.
2. Disconnect the electrode wire from the spark electrode.
3. Remove the two burner mounting screws, and remove the burner assembly.
4. Clean burner tube with a brush. Blow with compressed air.
5. Remove the burner jet item 48 and clean with alcohol. Blow with compressed air. Never use a wire or pin to clean the burner jet.
6. Reassemble.
7. Be careful that the end of the burner fits into the slot on the bracket. The slots of the burner must be centrally located under the flue tube.

The Electrode

For a proper ignition function it is necessary to keep the electrode insulation dry and free from dirt. The gap between burner Abe and electrode shall be max 3/16" and min. 1/8".

WARNING: If the refrigerator is used intermittently it should be checked at least once a year. It is important to keep the appliance area clear and free from combustible materials, gasoline and other flammable vapors and liquids. Check the venting system. The flow of combustion and ventilating air must not be obstructed.

Check that the flue baffle is clean and reasonably free from soot. Heavy soot formation indicates improper functioning for the burner. Clean baffle and flue. Further, clean cooling unit and floor under the refrigerator. The entire gas installation should be checked for leaks at intervals. Test all pipe connections with soapy water, not with an open flame.

Check the energy selector system by connecting/disconnecting main voltage, start/stop the engine etc.

FAULT TRACING

The Refrigerator Does Not Cool Properly

Causes and Remedies

A. Burner jet clogged. Unscrew burner jet and blow clear or wash in alcohol. **Do not** use a wire or pin to clean the burner jet.

B. Flame has gone out. Remedy: **l.** Gas in bottles used up. 2. Tip of thermocouple is not heated enough by flame. 3. Clogged by pass screw. Clean or exchange it.

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

D. The evaporator is heavily coated with frost. Defrost.

E. Flue baffle not in flue tube.

F. The thermostat is incorrectly used. See paragraph on thermostat. In hot weather the setting should be closer to MAX than usual.

G. Burner head clogged. Clean.

H. Burner damage. Replace.

I. Burner not located under center of flue tube. Relocate.

J. Wrong gas pressure at the burner. Have pressure checked at burner and at gas bottle. Pressure at burner must not fall below "11" W.C.

ODOR FROM FUMES

Causes and Remedies

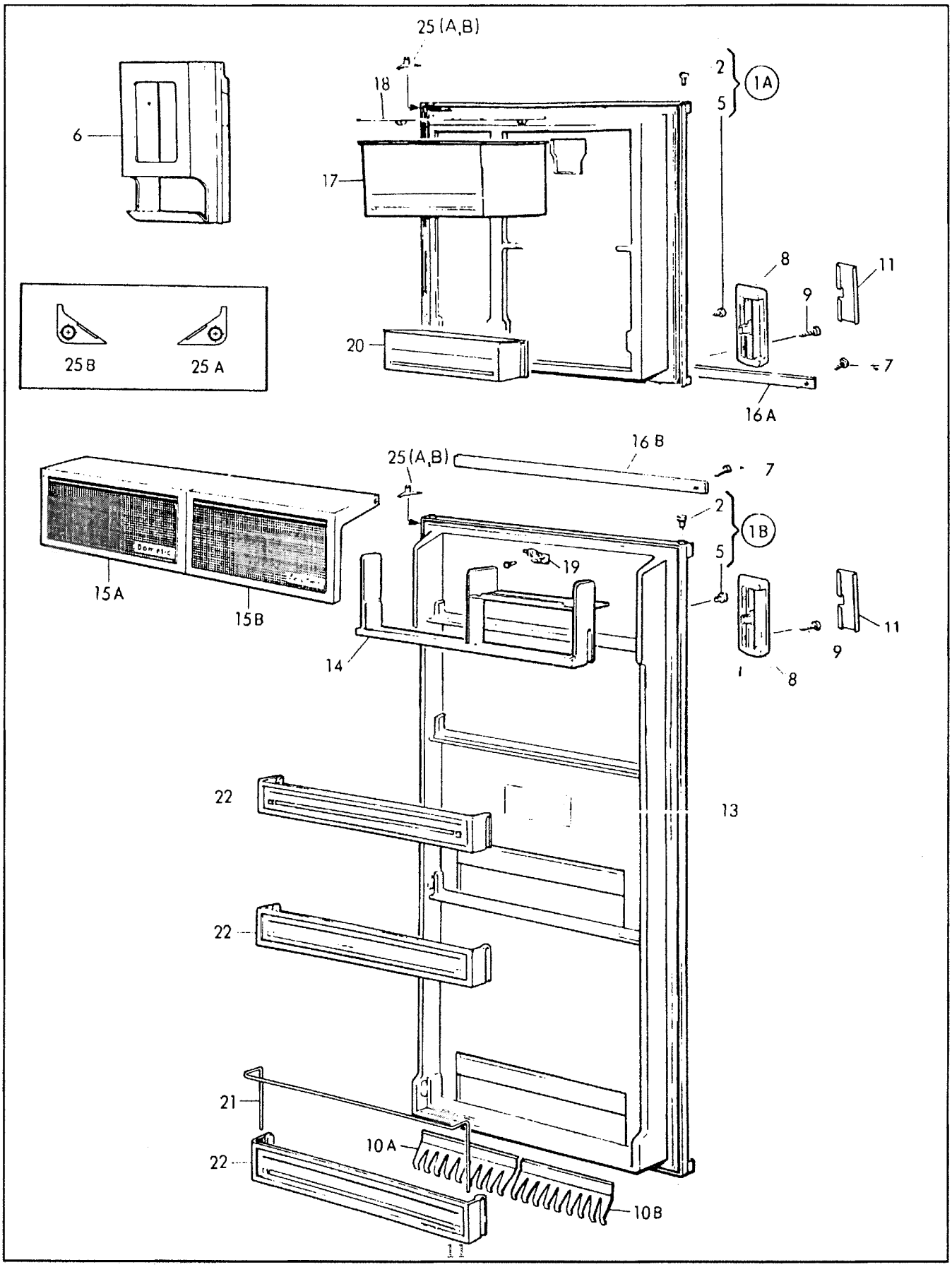
A. The flame touches side of the boiler due to dislocation of the burner. Relocate. Burner dislocation may also cause smoke and discoloring of walls and ceiling.

B. Burner damaged. Replace.

C. The flue tube is dirty. Clean flue as follows: Cover burner and jet. Remove the flue cap from the top of the flue tube, and lift out the flue baffle. Clean the flue from the top using a flue brush. Clean baffle before putting back in place.

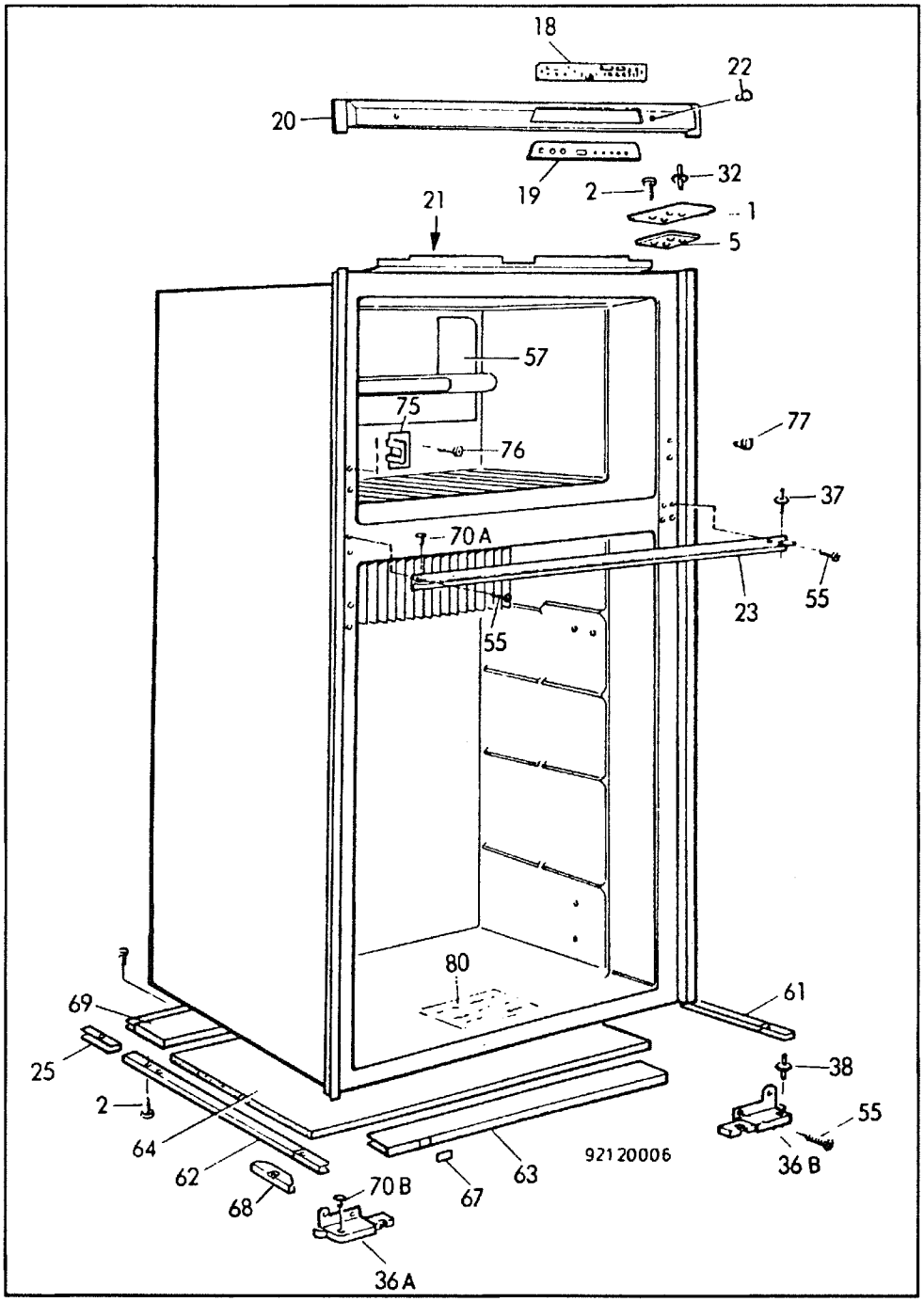
All the above instructions are to be followed closely. The refrigerator is quality guaranteed. However, we are not responsible for any failures caused by improper adjustments and unfavorable installation conditions. Contact service point or distributor service department for assistance.

DOMETIC Model RMI 3804



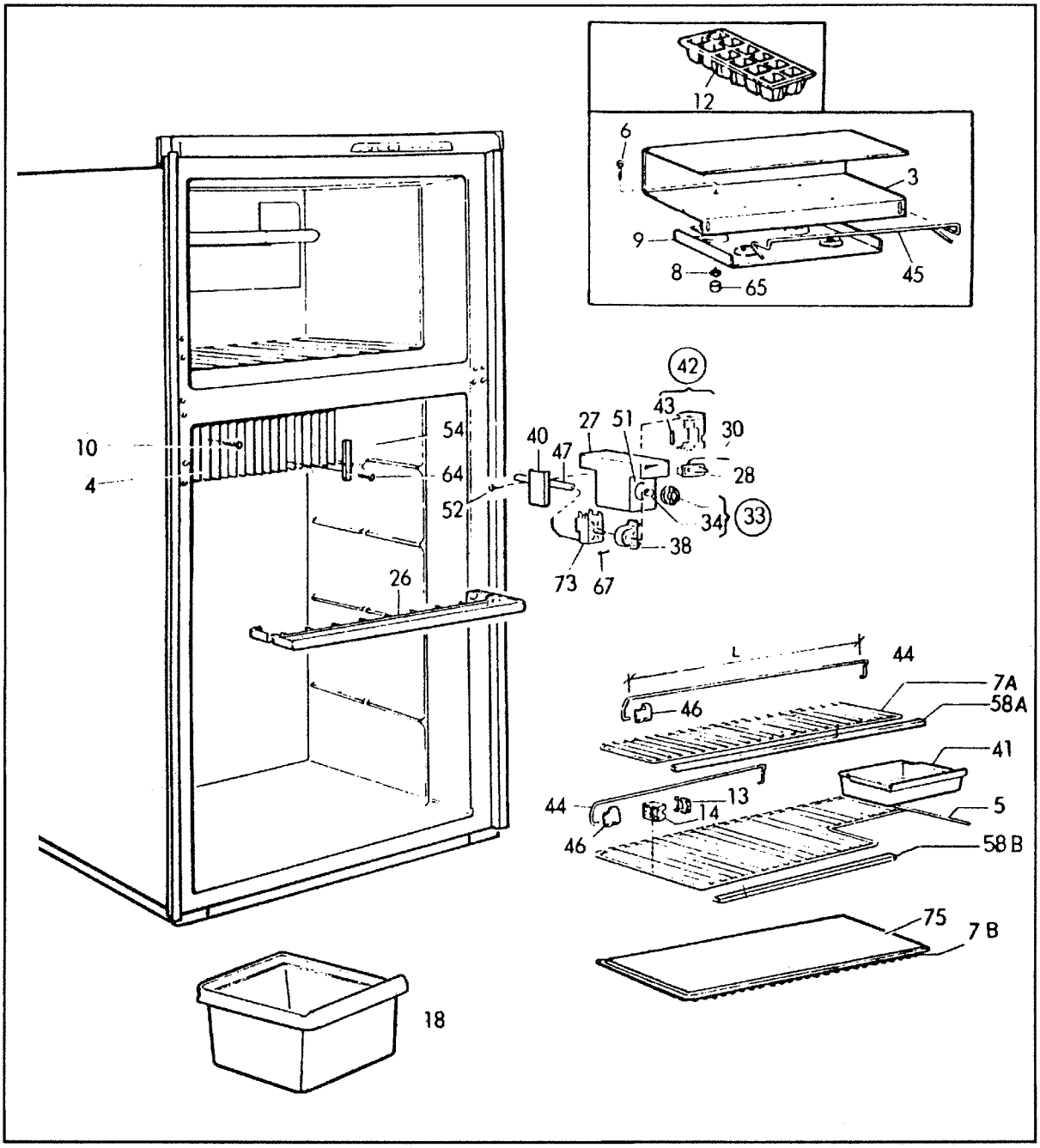
PARTS DESCRIPTION PRECEDING PAGE

1A	Door, upper
1B	Door, lower
2	Bushing
5	Plug
6	Retainer
7	Screw
8	Handle
9	Screw
10A	Holder Bottle approx 7 1/2
1OB	Holder bottle approx 8"
11	Coverplate
13	Label
14	Shelf
15A	Cover butter compartment
1 5B	Cover butter compartment Dairy
16A	Strip decoration
16B	Strip decoration
17	Box
18	Lid
19	Flap bracket
20	Shelf door
21	Rack
22	Shelf door
25A	Washer
25B	Washer



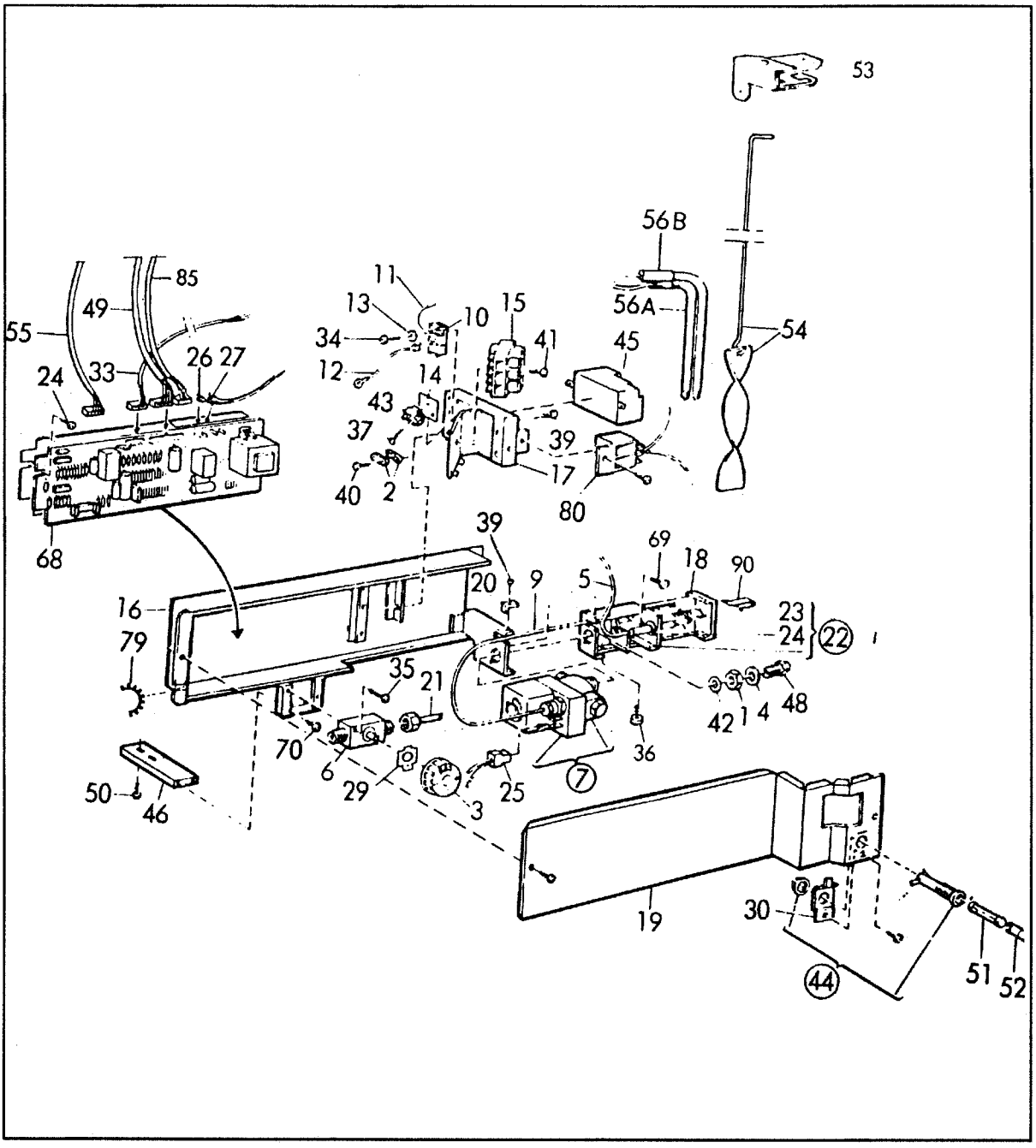
PARTS DESCRIPTION

1.	Hinge upper	32.	Hinge pin, upper	64.	Isolation
2.	Screw	36A.	Hinge, lower left	67.	Coverplate
5.	Washer	36B.	Hinge, lower right	68.	Reinforcement
18.	Printed assembly1y	37.	Hinge pin, middle	69.	Protection Plate
19.	Operating Panel	38.	Hinge pin, lower	70A.	Plug, light grey
20.	Front	55.	Screw	70B.	Plug, dark grey
21.	Label	57.	Plate cover	75.	Bracket
22.	Plug	61.	Runner, right	76.	Screw
23.	Center beam	62.	Runner, left	77.	Plug
25.	Reinforcement	63.	Base front	80.	Sign plate



PARTS DESCRIPTION PRECEDING PAGE

3.	Shelf	14.	Shelf lock, inner	45.	Rack
4.	Cooling flange	18.	Box vegetable	46.	Retainer
5.	Shelf	26.	Drip tray	47.	Cover
6.	Screw	27.	Cover	51.	Index
7A	Shelf approx 7.5"	28.	Switch door	52.	Screw
75	Shelf, approx 12"	30.	Conductor	54.	Clamp
8.	Nut	33.	Knob	58A	Strip decoration
9.	Plate	34.	Spring	585	Strip decoration
10.	Screw	38.	Support thermostat	64.	Screw
12.	Ice tray	40.	Lamp screen	65.	Lid
13.	Shelf lock, outer	41.	Box	67.	Locking pin
		42.	Lighting	73.	Thermostat
		43.	Lamp, lOw, 12V	75.	Shelf
		44.	Rack,L		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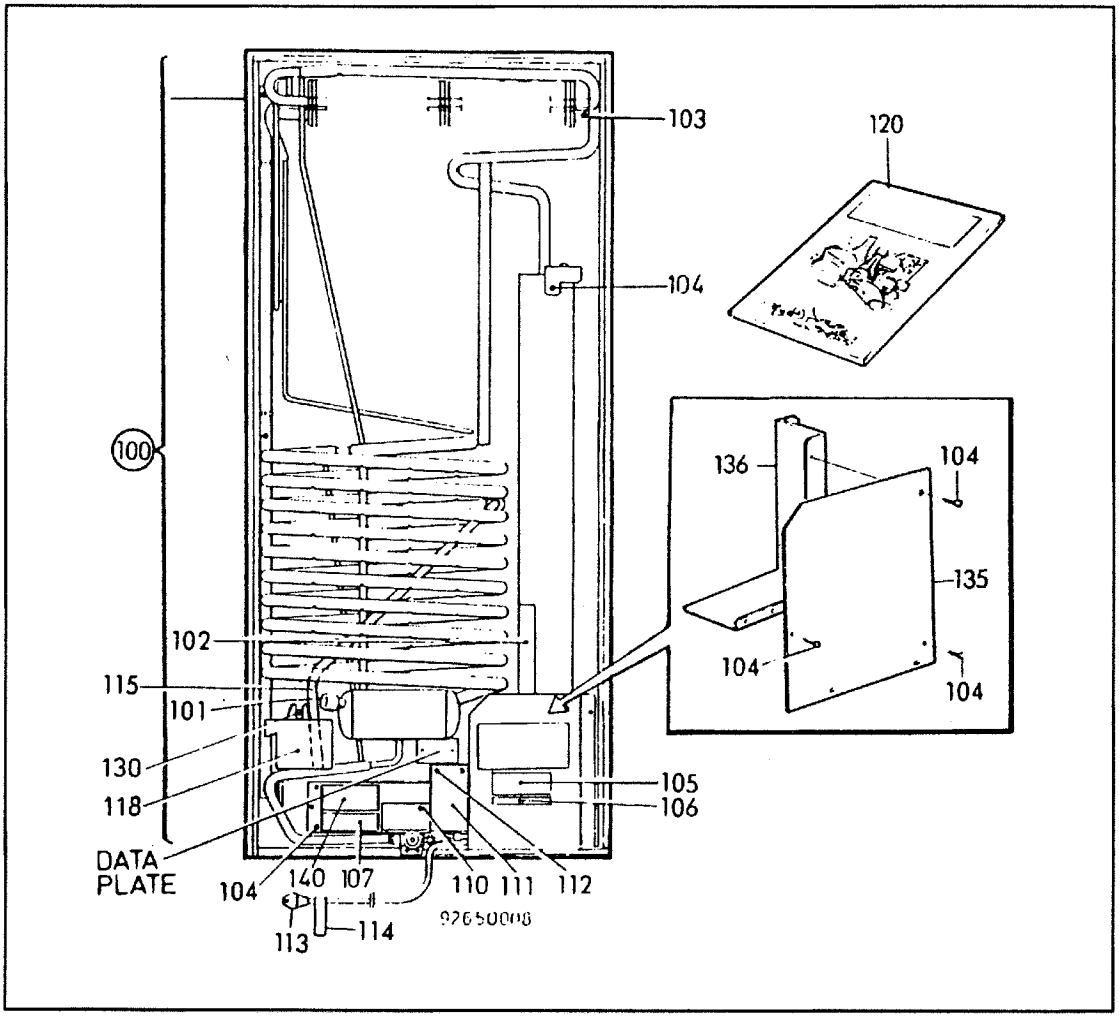
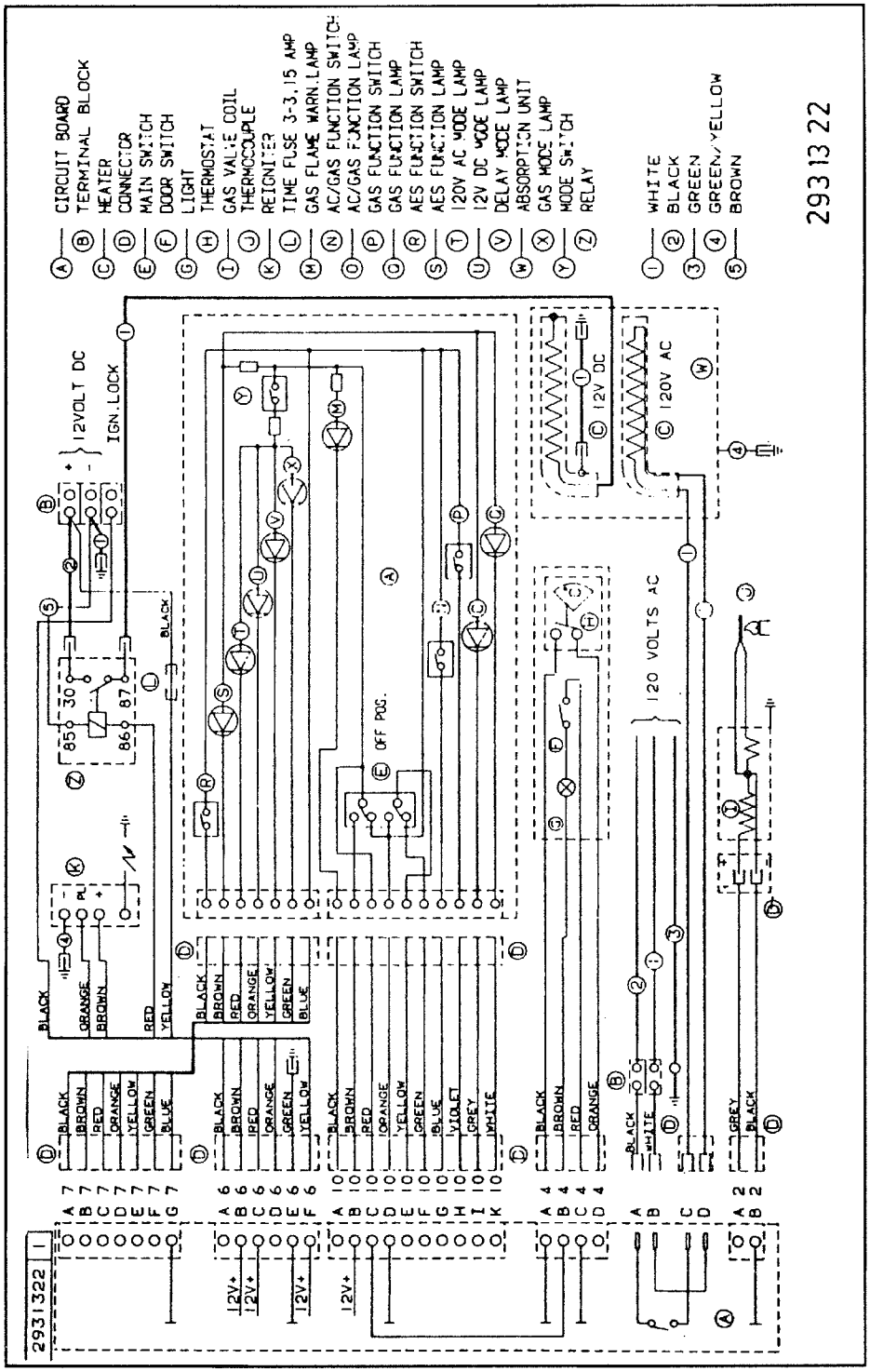
PARTS DESCRIPTION PRECEDING PAGE

1. Nut
2. Anti-strain clip
3. Knob
4. Washer
5. Conductor
6. Cock gas
7. Valve solenoid
9. Thermocouple
10. Terminal rail
11. Conductor, cpl
12. Conductor
13. Washer
14. Insulating plate
15. Terminal block
16. Box
17. Mounting plate
18. Burner housing
19. Lid
20. Retainer
21. Tube gas
22. Burner
23. Electrode
24. Screw
25. Conductor, cpl
26. Conductor, cpl
27. Conductor, cpl
29. Protect washer
30. Retainer
33. Conductor, cpl
33. Conductor, cpl
34. Screw
35. Screw
36. Screw
37. Screw
39. Screw
40. Screw
41. Screw
42. Washer
43. Terminal block
44. Retainer fuse
45. Spark ignition device
46. Retainer
48. Jet
49. Conductor
50. Screw
51. Fuse
52. Insert
53. Flue
54. Baffle
55. Conductor, cpl
56. Immersion heater
68. Printed assembly
69. Screw
70. Screw
79. Strip
80. Relay
85. Conductor
90. Clips



100. Cooling unit
101. Cap
102. Flap
103. Screw
104. Screw
105. Sign plate
106. Sign plate
107. Label
110. Label
111. Protection
112. Screw
113. Cord set
114. Label
115. Hose
118. Evaporation tray
120. Instructions for use
130. Screw
135. Protection plate
136. Protection plate
140. Label



PRODUCT NO.	MODEL	MARKET	VOLTAGE	REMARKS
921 60 01-01	RM3804	US, CA	120V, 12V	2931322-00
921 60 02-01	RM3804	US, CA	120V	2931321-00

WATER HEATER

Manufacturer: Atwood Mobile Products
4750 Hiawatha Drive
P.O. Box 1205
Rockford, IL 61105
Phone: 815-877-7461

Operating Instructions

Note: Review the water heater literature supplied in you Owner's Packet before proceeding.

***WARNING*: Hydrogen gas can be produced in a hot water system served by this heater that has not been used for a long period of time (generally two weeks or more). Hydrogen gas is extremely flammable. To reduce the risk of injury under these conditions it is recommended that the hot water faucet be opened for several minutes at the kitchen sink before using any electrical appliance connected to the hot water system. If hydrogen is present, there will probably be an unusual sound such as air escaping through the pipe as the water begins to flow. There should be no smoking or open flame near the faucet at the time it is open.**

Electronic Ignition

1. Check to make sure heater is full of water by opening a "hot" faucet. A full water heater is indicated by a steady, full stream of water. If faucet sputters allow water to run until sputtering stops.

2. Place remote switch, located on bathroom exterior wall, in the "ON" position.

3. If switch light comes on, place switch in "OFF" position and wait 5 minutes.

4. Repeat step one.

5. For complete shutdown and before servicing:

   a. Place remote switch in "OFF" position.

   b. Remove red wire from left hand terminal of E.C.O. switch (E.C.O. to valve).

6. If heater fails to operate due to high water temperature it will go into a lockout condition (indicator light on). When water cools, reset by opening switch for at least 30 seconds, then close. If this condition repeats, contact Atwood Service Center.

Operating Instructions

Pilot Models

How to Light Pilot

1. Turn lighting control to "OFF" position.

2. Wait at least five minutes to allow gas which may have accumulated in burner compartment to escape.

3. Your water heater may have either Robertshaw "unitrol" or a Jade control.

   Robertshaw "Unitrol" (Fig. 1)

   A. Turn lighting control dial to "pilot" position.

   B. Depress and hold reset push button while lighting pilot burner. Allow pilot to burn for one half minute before releasing button.

   C. Turn control dial to "ON" position. If pilot does not remain lit, repeat operation allowing longer period before releasing push button.

   Jade Control (Fig. 2)

   A. Turn lighting control dial to "pilot" position and hold against stop while lighting pilot burner. Allow pilot to burn approximately one half minute before releasing dial.

   B. Turn knob to "ON" position. If pilot does not remain lit, repeat operation allowing longer period before releasing button or knob.

4. The temperature knob or lever is factory adjusted to its lowest dial setting. On the Robertshaw control we recommend the mid-point position between warm and hot. On the Jade control, set the lever at the mark between the warm and hot position. Settings at a higher position will produce a higher temperature and also increase the scald hazard.

Pilot Burner Adjustments

1. Remove cover screw.

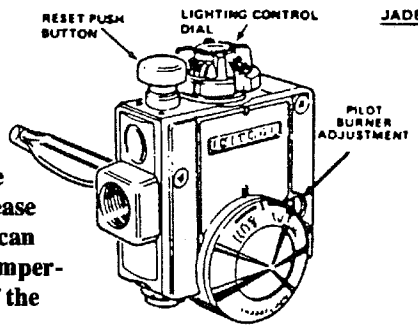
2. Observe flame size while turning pilot burner adjusting screw.

3. Flame size should be as shown in pilot burner illustrations.

4. Replace cover screw.

Main Burner Adjustment

Loosen air shutter set screw. Slide main burner air shutter to the right until some yellow appears in main flame, then move to left until yellow disappears and tighten set screw.



CAUTION
Tampering with the pilot orifice to increase the pilot flame size can cause high water temperature and failure of the gas control.

Figure 1

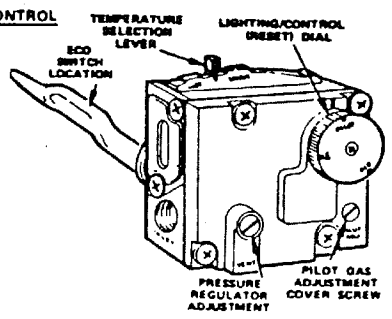


Figure 2

Suggested Maintenance

1. Keep the control compartment clean and free of combustible material and flammable liquids.

2. Keep the vent and combustion air grille clear of any obstructions.

3. Compare Main (Fig. 5) and pilot Burner (Fig. 4) flame illustration periodically.

4. Manually operate the pressure temperature relief valve at least once a year. Operate only when storage water in tank is cool.

5. Should overheating occur, or the gas supply fail to shut off, turn off the manual gas control valve to the appliance.

6. Clean the burner assembly at least once a year.

   A. Remove the air shutter screw and slide the air shutter down the burner tube.

   B. Run a flexible wire brush down the burner tube until it is visible at the end of the burner tube.

   C. Vacuum in and around the burner where it enters the combustion tube.

   D. Return the air shutter to its original position and replace the screw.

A temperature and pressure relief valve is installed on your water heater. This relief valve is designed to open if the temperature of the water within the heater reaches 201 degrees F., or if water pressure in the heater reaches 150 psi. RV water systems are closed systems and during the water heating cycle, the pressure build up on the water system will reach 150 psi. When this pressure is reached, the pressure relief valve will open and water will drip from the valve. This dripping will continue until the pressure is reduced below 150 psi and the valve closes. This condition is normal and does not indicate a defective relief valve. DO NOT plug, cap or reduce the outlet of the temperature and pressure relief valve.

It is possible to prevent a lot of the dripping in the following manner. An air chamber is designed into the top of the water heater, but in use the air is slowly absorbed by the water. If you will turn the water pressure off to the trailer, open a faucet to relieve the pressure, then open the lever on the relief valve on the water heater and allow it to drain, the chamber will again be filled with air. The next few times the pressure is relieved only air will be expelled and there won t be any drip. In time the air will be displaced by water and it will be necessary to repeat the above procedure if you wish to alleviate the drip.

CAUTION: No valve is to be placed between the relief valve and the tank. If a discharge line is used, no reducing coupling or other restriction can be used. The line must be installed to allow complete drainage of both valve and line. Do not plug the relief valve under any circumstance. Manually operate the relief valve at least once a year. Operate only when the water in the tank is cool.

Checking, Removal, Replacement and Maintenance

Water Heater Removal and Replacement

1. Shut off water supply and open hot water faucets.
2. Open drain valve on water heater tank and drain completely.
3. After tank is drained, disconnect inlet and outlet water lines. These are located inside trailer by opening cabinet door. With a wrench, loosen the two flare nuts connecting these lines to the tank.
4. Shut off gas supply and disconnect gas lines, both at control valve of water heater and shut off valve under trailer. Remove gas line completely.
5. Drill pop rivets from rub rail along bottom of water heater using a No. 30 drill bit. Drill to gain access to Phillips screws in bottom of water heater flange.
6. Remove screws along heater mounting flange, top, bottom and both sides.
7. Heater is now ready for removal and can be moved from trailer body. Sealers used to prevent rain leaking around installation flange may bind heater to body of trailer. With a putty knife or screwdriver carefully pry heater loose.
8. Install by reversing above steps. Before pushing heater into place remove all the old gasket from the flange and replace with new gasket material.
9. When installing gas line be careful not to get any dirt into line when pushing through the underbelly.
10. Check all gas connections for leaks, using soapy water.

Thermostat Removal and Replacement - Pilot Model

1. Shut off water supply.
2. Open water heater drain valve. Open hot water faucets.
3. Shut off gas valve.
4. Disconnect gas at thermostat control valve.
5. Disconnect pilot gas line and thermocouple lead at thermostat control.
6. Using thermostat wrench remove thermostat.
7. Replace by reversing above procedure.

Main Burner and/or Orifice Removal and Replacement

1. Remove hex nut.
2. Remove main burner assembly and flint lighter.
3. Remove main burner orifice.
4. Clean with alcohol and compressed air or replace.
5. Replace by reversing above procedure.

Main Burner Air Adjustment

1. Loosen screw.
2. Slide air adjustment sleeve to gain proper air adjustment. (Primary air should be adjusted so that slight yellow streaks may be seen in the flame. This flame should have slightly forceful noise.)

Thermocouple and Pilot Assembly Removal and Replacement

I. Remove main burner assembly.
2. Remove pilot line and thermocouple lead at thermostat control valve.
3. Remove screw.
4. Replace by reversing above procedure. The thermocouple nut should be started and turned all the way in by hand. An additional quarter turn with a small (4") wrench will then be sufficient to seal the lock washer. **CAUTION:** Over tightening may cause damage to the thermocouple or magnet and is unnecessary.

General Description

The Unitrol R103-Rv-LP-78 is a combination water heater thermostat, 100G automatic pilot built-in automatic over temperature "ENERGY CUT OFF" device, balanced adjustable main gas pressure regulator, pilot filter, separate fixed setting pilot gas regulator, with main and pilot gas cock in one compact unit.

Balanced Pressure Regulator

The main gas regulator, located within the manual valve, has a balancing diaphragm in addition to the main pressure regulator diaphragm to balance the effect of pressure differential across the regulator valve.

The location of the regulator in the normal gas flow pattern, without materially diverting the normal flow, minimizes the pressure drop within the control.

The combined advantages of using a balanced regulator plus its optimum regulator location within the control makes possible a combination control with improved characteristics using a regulator of greatly reduced size.
The unitrol R110R-LP-TP for LP gas has a pressure adjustment range of 10"-12" W.C.

Built in E.C.O. Operation

In addition to the previous features of the Unitrol, the new Unitrol RII0RT-P with built in E.C.O. provides the following additional function. In case of excessive water temperature in the heater a switch inside the tank assembly shuts off the automatic pilot and all gas to the heater. The Unitrol R110RT-P provides a completely self-contained automatic gas shut off system.

Pilot Regulator

A separate pressure regulator for pilot gas is located in the control downstream of the pilot filter to control pilot gas pressure independently. No pilot adjustment key is provided or needed on controls with pilot regulators.

Installation Instructions

Piping

Make sure that the piping is clean and free from scale and burrs. Apply a small amount of good quality pipe thread compound which is suitable for the type gas being used. Thread compound should be used sparingly and on male threads only, leaving the first two threads clean. Pipe dope or thread compound should never be used on female threads as it may be pushed into the valve body.

Thermocouple

The thermocouple nut should be started and turned all the way in by hand. An additional quarter turn with a small (4") wrench will then be sufficient to seat the lock washer. **CAUTION: Over tightening may cause damage to the thermocouple or magnet and is unnecessary.**

Pressure Regulator Adjustment

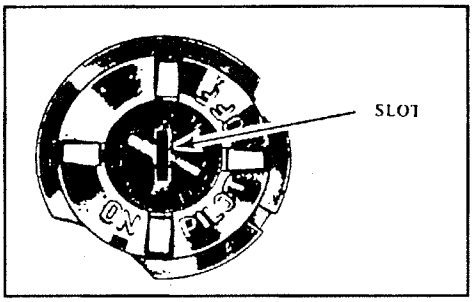
The main burner pressure regulator adjustment screw slot is filled to seal the factory pressure setting. The regulator should never need readjustment. If, however, adjustment should be necessary a qualified serviceman can proceed as follows:

1. Remove regulator adjustment cap by inserting screwdriver in slot and rotating counterclockwise (See Fig. 1).

2. With small screwdriver, remove sealant from adjustment screw slot if necessary.

3. Rotate adjustment screw "clockwise" to increase, or "counterclockwise" to decrease pressure.

4. Replace regulator adjustment cap.



Note: Pilot pressure regulator is non-adjustable.

Fig. 1

Built In E.C.O. Test Procedure Unitrol 110T Series

Follow standard procedure for lighting or relighting.

1. If heater does not start up immediately under standard procedure for lighting, check the following:

   A. Check thermostat valve action. Thermostat valve leaks can result in overheating of tank water and result in shutdown due to E.C.O. action. If valve is found to leak, clean valve. If valve still leaks, replace thermostat.

   B. Check thermostat calibration at highest setting. 160° thermostats (Hot-Warm Dial). If top temperature exceeds 160° F at shut-off, shutdown was likely due to E.C.O. action. Recalibrate so top setting is in 155°F range. 180° thermostats (Very Hot Dial). If top temperature exceeds 180° F at shut-off, recalibrate so top setting is in 175°F range.

   C. If none of the above conditions exist, shutdown was most likely due to other causes.

2. If standard procedure for lighting does not result in start up, proceed to Sections 3, 4 and 5 if test kit is available; or Sections 6, 7 and 8 if test kit is not available. A proven "good" magnet is required for tests outlined in Sections 6, 7 and 8.

If Test Kit is Available.

3. Make closed circuit millivolt check as follows:

   A. Use Graysen Test Kit No. B165-34 or equivalent millivolt meter.

   B. Connect Adapter No. 75036 and Test Kit as shown in Fig. 2, being sure connections are tight.

   C. Follow standard lighting procedure.

   D. Check closed circuit output, if less than eight millivolts replace the thermocouple.

   E. Repeat standard lighting procedure after thermocouple replacement.

   If closed circuit millivolt check is greater than eight millivolts, or Section C does not secure start up, proceed to Section D.

4. With adapter connected as in Fig. 2, check as follows:

A. Follow standard lighting procedure.

B. With closed circuit output in excess of eight millivolts, blow out pilot.

C. A good magnet should remain locked up for a drop of five millivolts or more from original stabilized output.

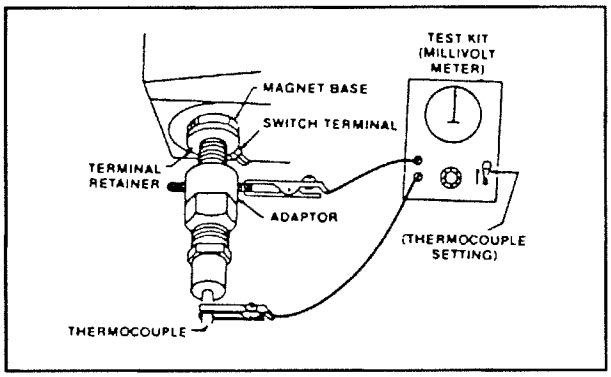


Fig. 2

D. If magnet does not operate properly replace magnet.

E. Repeat standard lighting procedure.

If Section D does not result in start-up, proceed to Section 5.

5. Check E.C.O. Switch for closure.

A. Be sure water at thermostat level is below 120 degrees F. To insure this, draw water from hot water faucet until thermometer registers 120 degrees F or less.

B. With Test Kit on "Magnet" setting and dial set for maximum amperage, check for switch closure and continuity through the switch by touching clips to opposite switch terminal contacts as shown in Fig. 3.

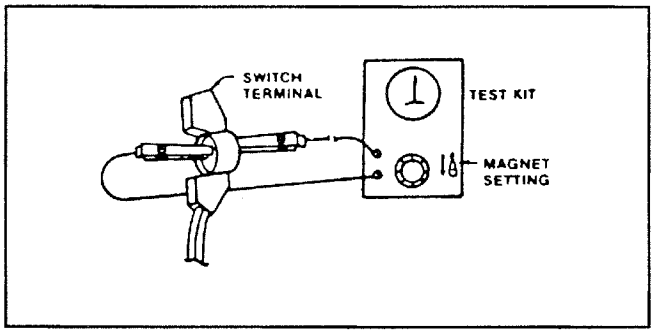


Fig. 3

1. If switch is closed, essentially full amperage reading will be obtained (approaching maximum needle deflection to the right.)

2. If switch is open, no current will be shown (no meter needle deflection).

C. If switch contacts are open, replace control

D. If switch contacts are closed, follow standard lighting procedure. If these checks do not result in start up, replace control.

<u>Without Test Kit</u>

6. To check thermocouple:

A. Remove thermocouple nut from Magnet base and connect "known good magnet" to thermocouple.

B. Follow standard lighting procedure, holding reset button down at least 30 seconds after lighting pilot.

C. Lock up "known good magnet" by depressing magnet valve face. If thermocouple is good, magnet should remain locked up for at least 30 seconds after pilot is extinguished.

D. If thermocouple does not lock up "known good magnet" replace thermocouple.

E. If thermocouple is good, proceed to Section G.

7. To Check Magnet

A. With small screwdriver remove E.C.O. terminal retainer.

B. With narrow blade screwdriver pry E.C.O. terminal from magnet base slot, working from both sides to avoid terminal damage.

C. Follow thermocouple installation instructions, leaving switch terminal out of magnet base.

D. Follow standard lighting procedure.

E. After thermocouple temperature is stabilized (pilot burning at least 2 minutes) blow out pilot. If magnet is good it should remain locked up for at least 30 seconds after pilot is extinguished.

F. If magnet will not lock up, or will not remain locked up for at least 30 seconds after pilot is extinguished, replace magnet following Magnet Replacement Instructions. If magnet is good, proceed to Section 8.

CAUTION: Never leave water heater with switch terminal disconnected from magnet at conclusion of service call.

8. To check E.C.O. switch:

A. Be sure water at thermostat level is below 120 degrees F or less.

B. Light Pilot. If pilot does not remain lit when reset button is released, proceed as follows:

C. Remove thermocouple from magnet base.

D. Remove E.C.O. terminal retainer.

E. Remove E.C.O. switch terminal.

F. Install thermocouple in magnet base.

G. Light pilot. If pilot remains lit when reset button is released, and if tests in Section 6 and 7 prove thermocouple and magnet are good, E.C.O. switch is not closing. Replace entire control.

CAUTION: Never leave water heater with switch terminal disconnected from magnet at conclusion of service call.

Ordering Information

When ordering control specify:

1. Model - Unitrol (See smooth side of casting for stamped model number.)

2. Outlet size - 1/2" inverted flame 3/8" pipe.

3. Shank length (See Fig. 4)

4. Temperature Dial:

   Hot - RllORTP
   Very Hot - R11)RT8P
   (Dials not interchangeable.)

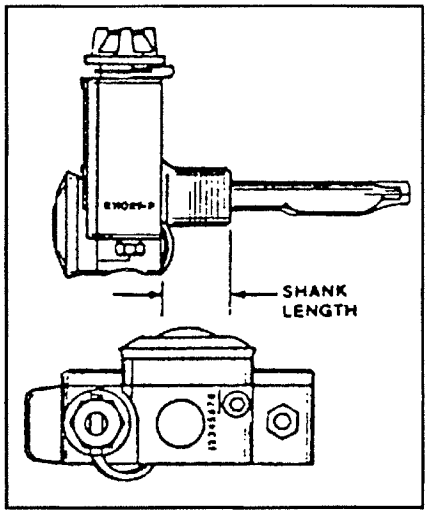


Fig. 4

Water Heater Service Analysis			
EFFECT			
Pilot will not stay on	Not enough hot water	0ver heated water	CAUSE
X			Too much primary air
	X		Dirt in orifice
X			Defective magnetic valve
X			Need new thermocouple lead
X			Thermocouple lead connection loose
X			Pilot line clogged
	X		Dirt in pilot orifice
X	X		Improper pressure on regulator
X			Pilot not striking thermocouple properly
		X	Thermostat set too hot
	X		Thermostat set too low
		X	Dirt on thermostat seat
X			Wrong pilot burner
	X		Heater too small for the job
	X		Sediment or lime in tank
	X		Wrong piping connections
	X		Leaky faucets
	X		Long runs of exposed piping
X	X		Heater subjected to strong cold drafts
	X	X	Defective thermostat
	X	X	lmproper calibration
X			E.C.O. switch contacts open (see test procedure forE.C.0.)

Electronic Ignition

Principle of Operation

When the switch is turned on power is supplied to the thermostat (located inside the junction box at back of water heater). When the thermostat senses the water in the tank requires heat (below 120 degrees F) its contacts close and completes the circuit to the circuit board.

This will energize the coils in the dual solenoid gas valve allowing gas to flow out of the main burner orifice, mix with air at the ventura (air adjusting slots), the flow out of the end of the main burner.

Simultaneously the coil on the circuit board provides a high voltage current to reach the spark probe at the main burner. This ignites the gas. When the flame is sensed by the probe, current is conducted to the relay and the valve remains energized. Sparking ceases when the electrode to ground current path is altered by the presence of flame. The water heating process begins.

When the water in the tank drops below 120 degrees F the process will automatically repeat itself.

Safety

E.C.O. Switch: The unit is equipped with an E.C.O. (Energy Cut-Off) switch. This is located next to the thermostat and should the water exceed 190 degrees F, the contacts in the ECO switch will open and completely shut off the power to the unit.

It is unlikely, but should this occur it is necessary to move the rectangular cover from the back (inside) of the unit and manually depress the red button. The unit should then be checked before continuing use to determine why the water overheated. Refer to trouble shooting section.

Relief Valve: Each unit is equipped with a temperature pressure relief valve. Should the water in the tank exceed 210 degrees F., or 125 PSI, the valve will open and allow cold water to enter and reduce the temperature of the water or release the pressure build-up.

Circuit Board Lock-Out: Should the spark not ignite the gas, a built in timing circuit in the circuit board will shut down and the red light next to the interior switch will come on. It is necessary to shut this switch "off", wait 30 seconds, then turn switch back on. If unit again fails to light, check trouble shooting section.

Storage and Winterization Procedure for Water Heaters

Normal storage and winterization procedures would be as follows:

1. Thoroughly drain the inner tank. Simply open the pet-cock drain valve or remove plug contained at the front base of the unit. To assist in draining, plus to eliminate the chance of developing an air lock, also open your relief valve.

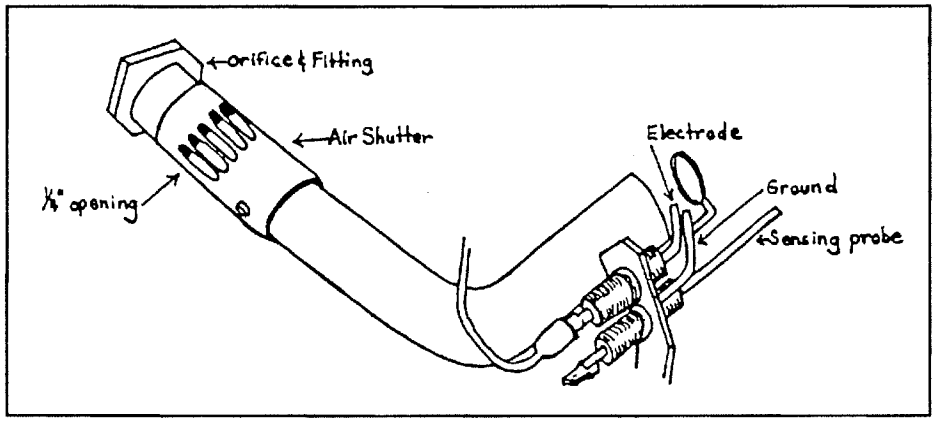
2. Once the unit has been thoroughly drained, approximately two quarts of water will remain in the base of the tank due to the position of the drain. Strictly for winterization precautions, these remaining two quarts of water will not harm the unit. As these two quarts of water freeze, it has ample room for expansion without causing freezing damage.

Adjustment for Direct Ignition Water Heater

The following are adjustments that can be made to all direct ignition water heaters. These adjustments will improve initial start up and recycling capabilities of the unit.

Air Shutter Positioning

The air shutter should be positioned in such a manner that will allow the main burner flame to be blue with a trace or flash of yellow appearing through the flame. Approximate positioning is 1/4 way open. (Note Illustration) The importance of this adjustment is to allow an adequate air/gas mix to be ignited by the electrode at the end of the burner tube. If the air shutter is not positioned properly this will minimize the unit's start up and recycling capabilities.



Main Burner Alignment

It is important that the air shutter is fitted over the orifice holder. It is also important that the orifice is centered in the main burner tube. This adjustment allows for the proper air/gas mix.

Electrode Positioning

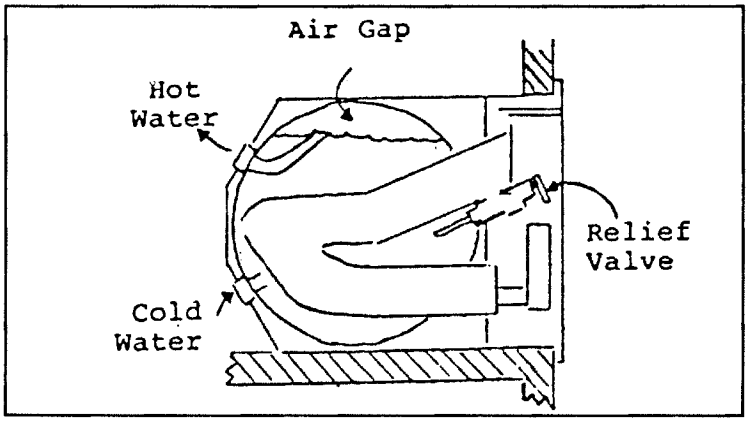
The electrode and the ground probe should be positioned in the area between the end of the burner tube and the flame spreader. This adjustment allows for instantaneous start up and recycling. The flame sensing probe should not be grounded on the flame spreader or any other metal object in the combustion chamber. The sensing probe is the component part of the electrode that relays to the circuit board that a flame is present and everything is functioning properly. The flame sensing probe sends microamps to the circuit board. When the circuit board receives the proper amount of microamps it allows the gas valve to stay open and the main burner flame to stay on. The male connector on the back of the flame sensing probe should be clean and free of corrosion; also, the female connector on the white wire. If the water heater initially starts up, runs for one minute or less, the probe could be at fault. First clean it. If this does not correct the problem, replace the electrode assembly. It is important to note that the air adjustment shutter positioning plays an important part in the functioning of the flame sensing probe. When the main burner flame is blue and not roaring, the flame spreads correctly and the sensing probe is heated quicker.

Trouble Shooting

Temperature/Pressure Relief Valve

PROBLEM: Weeping or dripping of relief valve while water heater is running DOES NOT mean it is defective. This is caused by the normal expansion of water as it is heated in the closed water system of a recreational vehicle.

The Atwood water heater tank is designed internally with an air gap at the top of the tank to reduce the possibility of this occurring.



In time, the expanding water will absorb this air. To replace the air:

REMEDY:

1. Turn off water heater.
2. Turn off incoming water supply.
3. Open a faucet in the coach.
4. Pull handle of P & T valve straight out and allow water to flow until it stops.
5. Allow P & T valve to snap shut. Close faucet and turn on water supply.

Electronic Ignition System

PROBLEM: Switch on red light does not flash.

REMEDY:

A. Water in tank at 160 degrees. Drain off water below 160 degrees then observe unit for start up.

B. Unit must be connected direct to battery. Battery must produce at least 10 volts DC. If lower, charge battery.

C. Remove cover from back of water heater and manually depress red reset button.

D. Check wiring of switch with diagram.

E. Defective interior switch. Replace.

F. Defective ECO switch. Check for closed contacts with continuity tester. Replace.

G. Defective thermostat. Contacts should be closed when thermostat is cooled. Replace.

PROBLEM: Switch on red light remains on (not a flash).

REMEDY:

A. Inadequate voltage. Check battery.

B. Improper wiring. Check with diagram.

C. Circuit board ground wire or ground at back of unit broken or disconnected.

D. Flame sensing probe grounding to flame spreader or burner. Check by removing lead from probe. If unit goes through lock-out cycle, bend sensing probe away from flame spreader and replace lead.

E. Top of 5CR contacting sheet metal casing with power off. Bend 5CR top until contact with sheet metal is broken.

PROBLEM: Switch on red light flashes then stays on.

A. No gas supply. Check all valves to open. Unit must have minimum of 11" water column pressure.

B. Check connection to solenoid valve with volt meter. Should have 12V DC.

C. Defective solenoid valve. Test with good battery. One lead on - case, one lead on white wire. An audible click should be heard.

D. Water temperature may be 160 degrees, causing contacts to fluctuate.

E. Defective circuit board. Replace.

PROBLEM: Switch on red light flashes one time, then goes out. Unit not lit.

REMEDY:

A. Spark probe grounded. Proper gap 1/8" from center wire, burner tube and/or flame spreader.

B. Broken or shorted spark probe lead wire (heavy insulated, light brown.)

C. Temperature of water at 160 degrees allowing thermostat contacts to fluctuate.

D. Possible defective circuit board. Replace.

PROBLEM: Yellow main burner flame.

REMEDY:

A. Improper air adjustment.

B. Partially plugged main burner orifice. Remove and clean. DO NOT ENLARGE.

C. Obstruction in main burner tube. Spiders, rust etc. Remove and clean.

D. Bent or missing flame spreader. Straighten or replace.

E. Inadequate gas pressure into valve. Check with manometer. 11" water column minimum.

F. Inadequate gas pressure at outlet side of valve. Remove pressure tap lug located at right front of solenoid valve. Insert 1/8" NPT pipe nipple. Hook up manometer, turn on unit.

G. Grill in upper left hand side of grille obstructed. Filters, tape, etc. should not be used to block any portion of this grille.

11. Gas solenoid bracket bent. Orifice not pointed up center of main burner.

PROBLEM: Tank leaks water.

REMEDY:

A. Check all plumbing fittings for leaks.

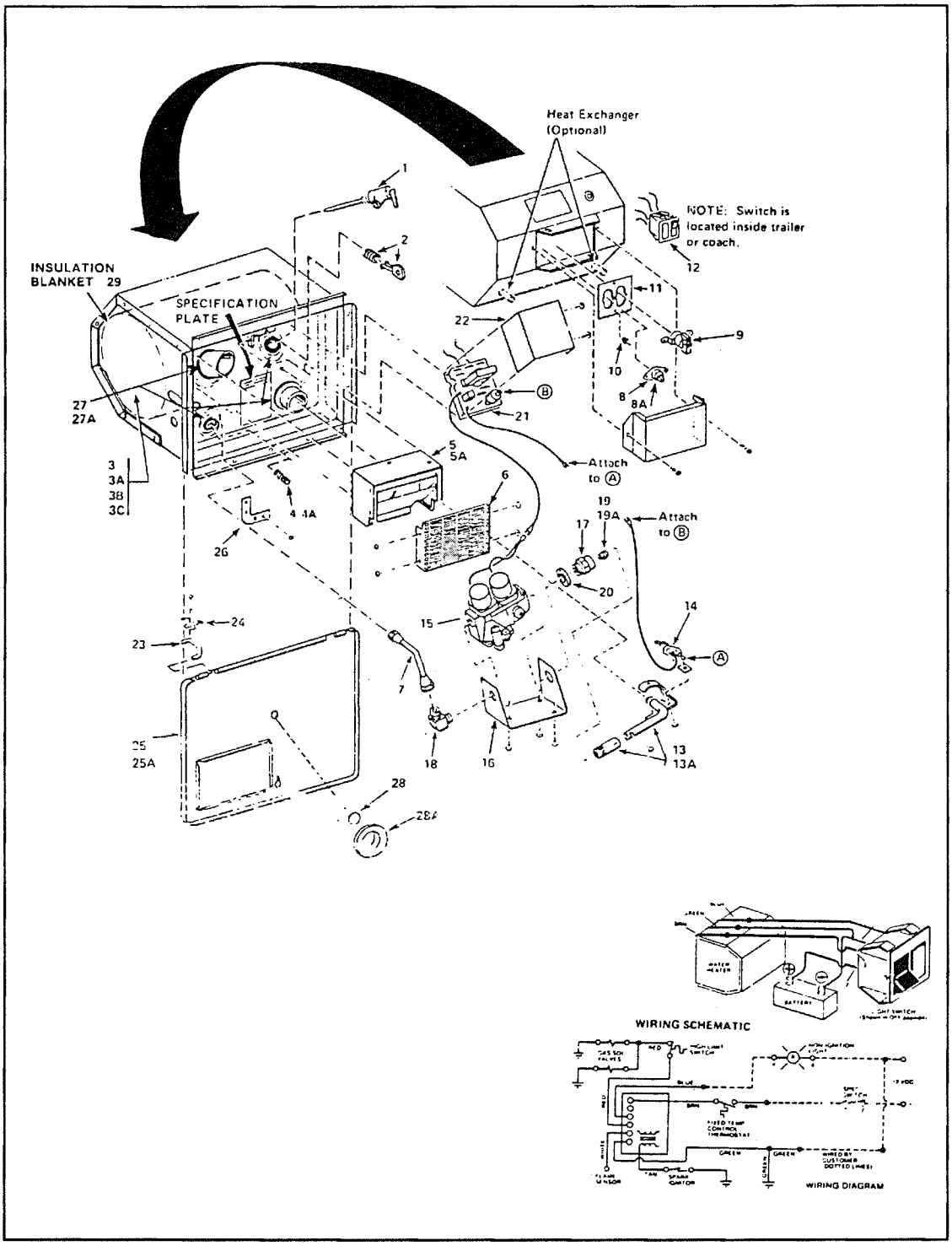
B. Tank corrosion. Refer to warranty with unit.

PROBLEM: Spark igniter continues to spark while burner is on.

REMEDY:

A. Flame sensor not correctly positioned in flame.

PARTS DESCRIPTION WATER HEATER MODEL G6A-6E

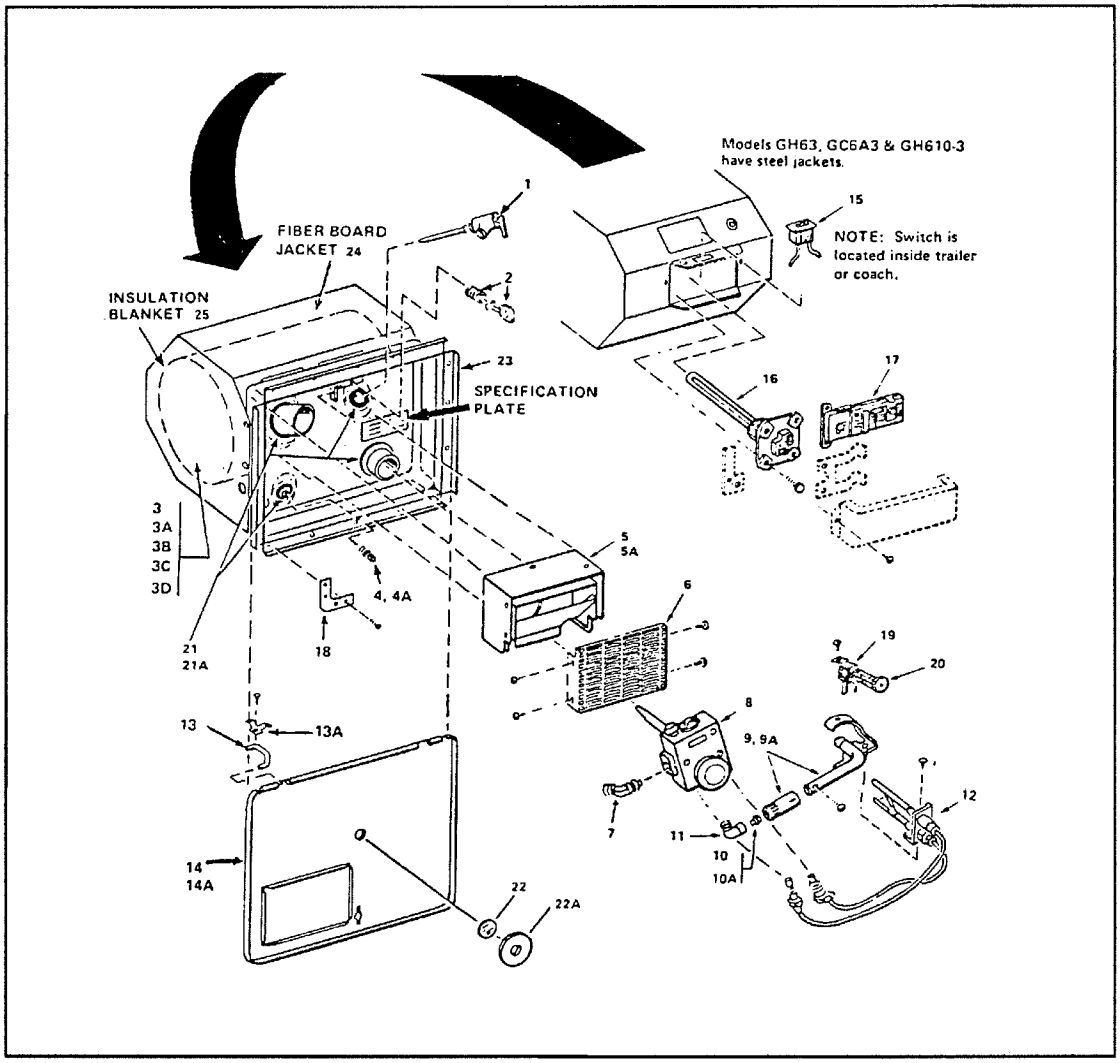


Parts Description for Preceding Page

1. Relief Valve 1/2" fitting
2. Cam-loc fastener
3. Inner tank
4. Drain Plug
5. Flue Box
6. Exhaust Grille
7. Gas inlet tube
8. Thermostat 12V DC, 140° preset
9. ECO Switch
10. Lock-nut
11. Control retainer plate
12. Switch package
13. Main burner
14. Spark probe assembly
15. Gas valve
16. Valve bracket
17. Orifice holder
18. Elbow fitting
19. Main burner orifice
20. Washer gasket
21. Circuit board
22. Circuit board cover
23. Hinge pin
24. Hinge clip
25. Access cover
26. Corner brackets (set of 4)
27. Gasket kit (Standard or high performance)
28. Casket for sight window

28A. Access cover, sight window

29. Insulation blanket



Parts Description

1. Relief valve 1/2" fitting
2. Cam-loc fastener
3. Inner Tank
4. Drain plug
5. Flue box
6. Exhaust grille
7. 45° elbow fitting 3/8" NPT x 3/8" flare
* 8. Thermostat 3/8" NPT, inlet
9. Main Burner
10. Main burner orifice
11. Main burner orifice elbow
**12. Safety pilot assembly (Jade) Includes thermocoupler & Tubing
13. Hinge pin/clip
14. Access cover
15. On/Off switch
16. Heating element
17. Thermostat
18. Corner brackets (Set of 4)
19. Spark igniter bracket
20. Spark igniter
21. Standard gasket kit
21A. High performance gasket kit
22. Gasket for sight window
22A. Access cover for sight window
23. Drawn pan
24. Fiberboard jacket
25. Insulation blanket

* The two types of thermostats, Robertshaw and ITT, are interchangeable.

** Item 12, Jade Pilot, mounts on the right side of burner and has flexible gas lines.

NOTES

SPECIFICATIONS

WEIGHTS & LENGTHS

Length	Model	Dry Weight	Hitch Weight	Additional Allowable	Actual Length
21'	Sovereign	3900	550	1600	21' 10"
25'	Excella	51001	7001	17001	25' 11"
29'	Excella	56001	7001	12001	29' 2"
32'	Excella w/Dinette	65001	8001	18001	32' 9.5"
32'	Excella w/o Dinette	63001	7001	20001	32' 9•5"
34'	Excella WTB	67001	7401	22001	34' 7"
34'	Excella w/Dinette	71001	8001	18001	35' 2"
34'	Limited WTB	70251	8001	18751	34' 7"
34'	Limited w/Dinette	74001	8001	15001	35'

DIMENSIONS

Exterior Width	95.5"
Exterior Height	With A/C 115.5", Without A/C 103" (except 21 ft.)
Exterior Height 21 ft. only	With A/C 114.0", Without A/C 101.5"
Interior Height	With A/C 75.25", Without A/C 78.75"

CAPACITIES

Size/Model	Fresh Water Tank	Main Holding Tank	Auxiliary Holding Tank
21' Corner Bath	50 gal.	23 gal.	35 gal.
25' Side Bath	50 gal.	30 gal.	35 gal.
29' Side Bath	50 gal.	30 gal.	35 gal.
32' All Models	50 gal.	30 gal.	35 gal.
34' All Models	50 gal.	30 gal.	35 gal.

Note: All weights and measurements were made on prototype vehicles. Your production trailer may vary slightly.

Alignment

Toe In 0 - 1/8" (All Models)

Camber 0 - 1 1/2 degree positive (All Models)

Battery

12 Volt Deep cycle (All Models)

Tire Inflation (PSI) Cold

ST225/75R15LRC	50	psi
ST215/75R14LRC	50	psi (21 foot only)

Hitch Ball height

The proper height will vary according to the weight you carry and the tires you use. However, checking the height on your trailer is relatively easy:

1. With trailer on fairly level ground measure from ground to bottom of frame, front and rear.

2. Adjust front jack until measurements are equal.

3. Now measure from ground to the inside top of ball coupler. This figure is the hitch height. The hitch ball is then usually set 1/2" to 1" higher, according to the spring weight of your tow vehicle, to allow for it to settle when the trailer is hitched up.

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