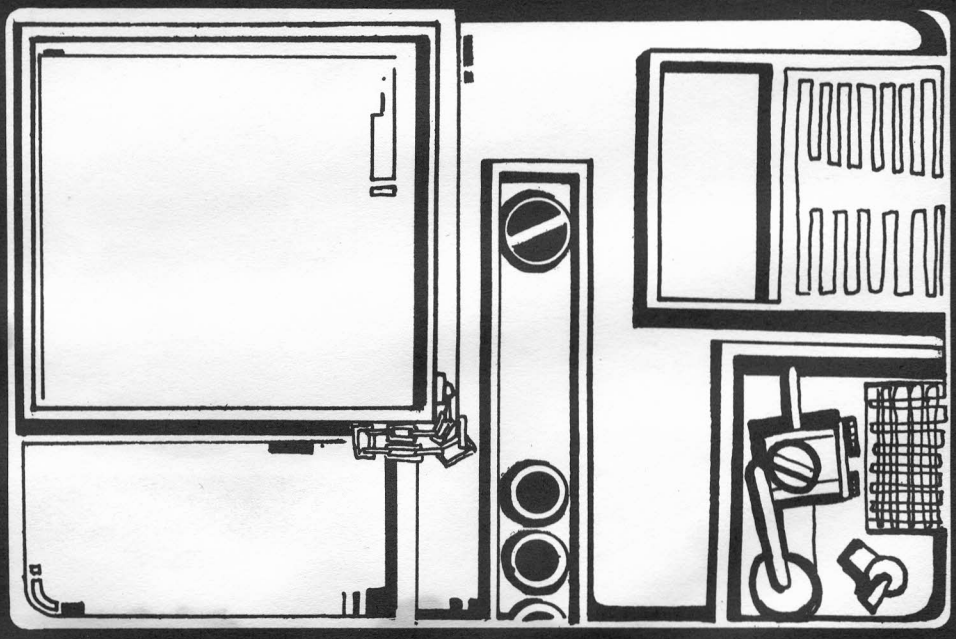
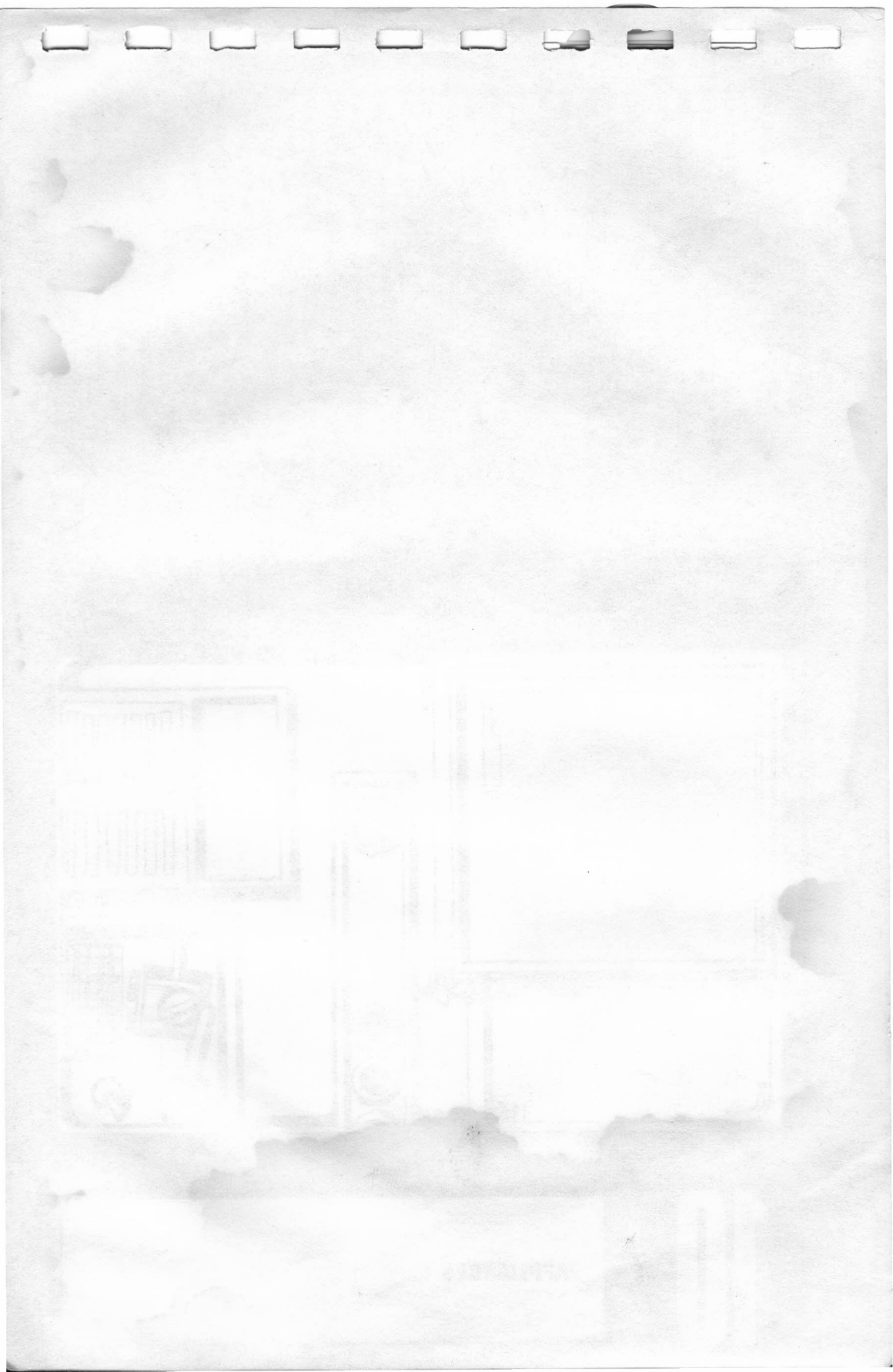


10

APPLIANCES



This chapter will review the operation of the various appliances furnished with your Airstream. Appliances which are an integral part of a system (such as the toilet is part of the drainage system) are discussed in chapters on that particular system.

THE FURNACE

The furnace in your Airstream is a Suburban sealed combustion system furnace approved by the American Gas Association, for safety and performance, for installation in travel trailers. This furnace utilizes a sealed combustion system with a patented dual blower. One blower circulates room air while the other furnishes outside air for combustion. The combustion air blower then forces the flue products to the outside for maximum safety and heating efficiency.

The unit incorporates an advanced design for circulating the warm air. All trailer models have registers located near both ends of the trailer. These are heat registers; their function is to circulate warm air. The register which serves the living room area has adjustable louvers. Return cold air for the furnace is drawn through openings in galley cabinet toe kick.

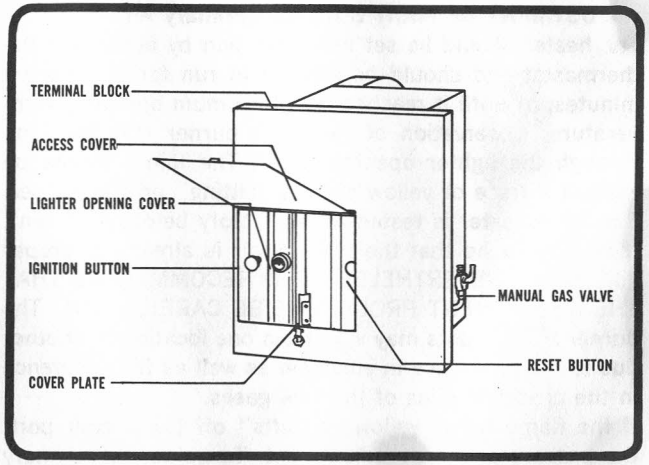
During freezing weather, to insure that the water tank does not freeze, leave open the doors under the front lounge. This will allow additional warm air to circulate around water tank.

The heat duct system incorporates a special duct which feeds warm air around the holding tank and one stop service center, as this area contains a great deal of water and drainage lines.

OPERATION (see figure on this page).

If the furnace has just gone out, turn the manual gas valve off and wait five minutes before attempting to relight the pilot. Set the thermostat to the OFF position. Open the latch on the furnace door and raise the door. Turn on the manual gas valve and depress the reset button (P) and hold. Light the pilot by pressing in quickly with a pumping action on the ignition button (I). After the pilot is lit, keep the reset button depressed for thirty seconds. Release the reset button (P) and the pilot should remain lit. If the pilot goes out, repeat the above operation and keep the reset button depressed for a longer time. Close the front access door.

Set the thermostat at the desired temperature. **NOTE:** The pilot may not light immediately due to the air in the gas line. If such is the case, it may be necessary to hold the reset button (P) in for a minute or more before the pilot ignites.



Lighting the furnace with a match or a gas-lighter can be accomplished by opening the front access cover, removing the lighter opening cover and lighting the pilot (using the reset button as mentioned before). In isolated cases, it may be found that the difference in pressure between the air in the room and the air outside the trailer will cause a strong draft through the heater when the light opening cover is removed, resulting in a difficult lighting operation. When this condition exists the pressure may be equalized by opening a window or door, as near as possible to the heater. The desired result may not be obtained unless the door, or window is on the same wall as the heater. After the pilot has been lit and the lighter opening cover replaced, this difference in pressure will not effect the operation of the heater. Close the front access door and set the thermostats to the desired temperature.

ADJUSTMENT OF MAIN BURNER (Primary Air).

The heater should be set into operation by advancing the thermostat and should be allowed to run for at least 10 minutes, or until it reaches near-maximum operating temperature. Observation of the main burner may be done through the lighter opening cover. The flame should be without a trace of yellow and be "sitting" on the burner. Since the heater is tested at the factory before shipment, it may be found that the primary air is already in proper adjustment. NEVERTHELESS, IT IS RECOMMENDED THAT THE ADJUSTMENT PROCEDURE BE CARRIED OUT. The burner adjustments may vary from one location to another due to the difference in elevation as well as the difference in the characteristics of the fuel gases.

If the flame burns yellow or "lifts" off the burner port, the primary air needs adjustment. To adjust the primary air, raise the front access cover and take out the screws that retain the rectangular cover plate (see figure on page 87 . Inside the opening, created by removing the cover plate, is a threaded rod with the visible end slotted. This rod controls the position of the main burner air shutter. With a screw driver, turn the rod until the flame sits on the burner. The air shutter should be adjusted to the point where a slight trace of yellow remains in the tip of the flame. Final observation should be made with the cover plate in place, at which time the yellow tips should have disappeared. **CAUTION:** It should be remembered that the lighter opening cover and the primary air adjustment cover plate must be in place for proper operation of the furnace.

SEQUENCE OF NORMAL OPERATION.

When the thermostat calls for heat, the blower is energized immediately. As the blower reaches approximately 75% of full speed, a microswitch will engage, opening the solenoid valve, and thus turning on the main burner. If within a period of approximately two minutes after the main burner is lit, the thermostat is turned back, both the motor and solenoid valve are de-energized. However, if the heater is allowed to operate longer than the period of approximately two minutes, a slight snap can be heard from within the casing. This snap is caused by the fan switch as it changes its position. After this occurs, if the thermostat is turned back (or when the thermostat is satisfied), the solenoid valve will close, the flame on the main burner will go out, but the blower will continue to run. The purpose of this is to remove most of the remaining heat from the heater as well as force the combustion gases from the heat exchanger. The blower will continue to run for a short time and will then shut off. It is perfectly normal

for the blower to continue in operation for a time after the burner is off. To turn off the heater, turn the thermostat to its OFF setting and turn the manual gas valve to its OFF position.

The furnace fan can be used to circulate air during hot weather simply by turning the thermostat up to a setting higher than the temperature in the trailer. However, be sure you always turn the thermostat to the OFF setting whenever the heater is not in use. Otherwise during cool evenings the fan might turn on and run your battery down.

REMOVING MOISTURE.

When humidity is high inside your trailer, turn on the trailer exhaust fan in the roof vent or open a roof vent if you do not have a fan and open a window slightly to get cross ventilation. This will not affect the operation of the furnace.

TROUBLESHOOTING.

If the heater does not perform normally, the following list of some of the most probable causes and their corrections will be helpful in an emergency situation. Normally, this type of servicing should be done by your dealer.

If cool air is constantly discharged while the blower is in operation, it is obvious that the main burner is not on. This condition is caused by one or any combination of the following:

1. Pilot outage. **2.** Defective microswitch. **3.** Defective limit control. **4.** Defective fan switch. **5.** Loose connection in terminal block. **6.** Defective solenoid valve. **7.** Low supply voltage. **8.** Out of fuel.

PILOT OUTAGE.

Pilot outage is the most common cause of failure. It is found that the pilot will not stay lit unless the reset button is depressed, a series of checks may be performed to quickly determine the cause.

The trouble is most likely in the thermocouple. First, check to see that the end of the thermocouple lead is screwed firmly into the safety pilot valve and the joint is clean. If this is not the cause, the burner assembly should be removed. A visual inspection of the thermocouple may show that it is defective. If the copper sheath of the lead is broken or if the thermocouple tip shows signs of being bent or ruptured, it should be replaced with a new part. The new part must be of the same part number as the old one, or it may not fit or function properly. Replacement parts are available through any Certified Service Center.

Sometimes a safety pilot system will hold part of the time but will drop out during operation of the heater. This is commonly caused by either a weak pilot, a weak thermocouple, or a weak power unit in the safety valve. A simple but very effective check can be made to detect such a condition. Light the pilot and allow it to burn for two or three minutes; then blow it out. Using a watch with a second hand, measure the time required for the safety pilot valve to drop out. (This drop out is evidenced by a clicking sound from the safety pilot valve.) The time should not be less than 30 seconds. If it is, we recommend that a service representative be consulted.

In the case of low pilot flame, where the thermal element is not bathed in flame, the pilot may be too low. This is caused by either a partially stopped-up pilot orifice or pilot line, or possible a partially blocked passage in the safety pilot valve.

A common cause of pilot failure, especially on LP gas, is in the failure or freeze-up of the pressure regulator located on the gas bottles. If only enough gas to supply a pilot flame is being drawn through a regulator, it could and sometimes does allow higher pressures to build up. This may be for only a short period of time and for that reason it is often hard to detect. This condition is evidenced by a blue flame which is blowing hard. If such is suspected, it is recommended that the regulator be checked and adjusted. If the pilot should fail during operation, the cause could be that either the controls compartment cover or the base of the blower assembly is not properly secured. This condition is evidenced by a "floating" main burner flame and sometimes by a strong undesirable odor from the heater.

DEFECTIVE MICROSWITCH.

The microswitch operates in response to the current of air generated by the blower. Hence, if for any reason the air from the blower is not sufficient, the microswitch will not operate. This may be caused by dirt accumulation in the blower wheels or by damage or dislocation of the cabinet insulation so as to block passage of air. If the switch is activated by the air but still fails to operate, it should be replaced.

DEFECTIVE FAN SWITCH.

The purpose of the fan switch is to control the sequence of operation of the blower. In the cold position the contacts are closed. This allows current to be supplied to the motor through the thermostat. When the combustion chamber heats up, heating the element of the fan switch to the operating temperature, the switch changes position to complete a circuit through the motor from a direct source. Because of this, the blower will continue to run as long as the combustion chamber is hot, even though the thermostat is satisfied. If blower performance is other than described, or if the snapover in either direction causes even the slightest interruption in the normal hum of the motor, the control should be replaced.

DEFECTIVE LIMIT CONTROL.

The purpose of the limit control is to turn off the gas to the main burner if for any reason the heater becomes excessively hot. Improper operation of the heater due to the limit control does not always indicate a defective control. If the circulating air is blocked or only partially so, the limit control will function and cause the main burner to cycle. Cycling on the limit is not always undesirable — if it happens only occasionally .This is a good indication of safe operation and will sometimes happen on a cold day. If cycling happens too often or for an extended period, it indicates insufficient movement of air through the system. Check to be sure that the front louvers are not closed. If cycling persists, it may be necessary to clear the heat ducts. If for any reason the limit control is found to be defective, there is no recommended method of repairing it. Because of its importance for safety reasons it should be replaced with a new one. **CAUTION:** NEVER BYPASS THE LIMIT CONTROL EVEN FOR TEMPORARY OPERATION.

LOOSE CONNECTION IN TERMINAL BLOCK.

If the heater does not function as described under "Sequence of Normal Operation," a likely source of trouble is in a loose electrical connection. All wiring is furnished with a pressure-type terminal. The ends which engage with the terminal block are of the friction type and must be

pressed securely into the opening of the block. In most cases the trouble is quickly located and corrected.

DEFECTIVE SOLENOID VALVE.

Any evidence of improper performance may be checked by applying voltage directly to the leads. This voltage should, of course, correspond with the furnace rating plate data.

POWER SUPPLY.

The furnace operates from a 12-volt DC power supply. On self-containment as the battery voltage drops, the blower circulation will decrease until the microswitch in the blower finally "drops out." This condition prevents the furnace from operating until the rated battery voltage is restored.

THE REFRIGERATOR.

Your Airstream is equipped with an A.G.A. approved Dometic gas-electric refrigerator. These are the finest refrigerators available for travel trailer use and will give you many years of faithful service. Whenever you park your trailer, care should be taken that it is level for best operation of this refrigerator. When parking try to avoid having a strong wind blowing directly against the vent outlet for most efficient operation.

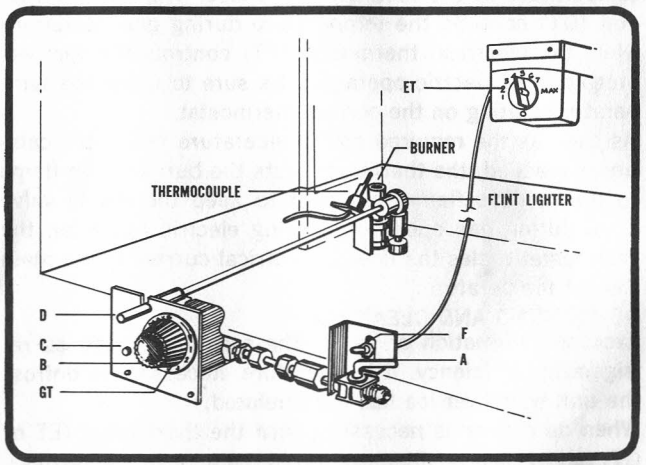
The figure on this page is an illustration of the working parts of your refrigerator which will be referred to in the following operating instructions.

FOR GAS OPERATION

The gas tap must always be fully opened whenever the refrigerator is in use. A partially opened tap effects no saving and may interfere with the operation of the unit.

To light —— Open kick plate on bottom front of refrigerator by pulling outward.

1. Before the Refrigerator is started on gas, check that the switch lever (F) is in off position. Turn gas valve handle (A) to open position and turn thermostat knob (B) to setting (4).
2. Press red button (C) of the automatic pilot and after about 15 seconds turn the lighter rod (D) clockwise with a rapid movement. This will create a spark which lights the burner.
3. After the burner is lit, keep the button (C) depressed for an additional 15 seconds.
4. Release the button (C) and check that the burner is operating. If not, repeat the lighting procedure.



Incorporated in the burner bracket is an automatic flame failure device which allows gas to pass only when the burner is lighted, keeping the thermocouple hot. Should the flame be blown out, the thermocouple will cool and the device will cut off the flow of gas to the burner.

IMPORTANT: Always make certain that electric switch "F" is off before operating the refrigerator on gas

FOR ELECTRIC OPERATION

1. To start the refrigerator, turn the gas valve (A) to the shut-off position.
2. Check to be sure the electric cord is plugged into 110-volt outlet (at rear bottom of refrigerator). Turn the switch lever (B) to "on" position.
3. Turn the electric thermostat knob (C) to setting 4.

THE THERMOSTAT.

This refrigerator has automatic thermostatic control of the temperature in the food storage space. The gas thermostat (GT) controls the temperature during gas operation, while the electrical thermostat (ET) controls the temperature during electric operation. Be sure to make the temperature setting on the correct thermostat.

As soon as the required cold temperature inside the cabinet is reached, the thermostat cuts the burner main flame to the by-pass flame sufficient to keep the safety valve open during gas operation. During electric operation the thermostat cycles the flow of electrical current to maintain the set temperature.

DEFROSTING AND CLEANING.

Excessive formation of ice on the evaporator reduces refrigeration efficiency. It is, therefore, necessary to defrost the unit whenever ice has accumulated.

When defrosting is necessary, turn the thermostat (ET or GT) to warmest position and leave the door of the refrigerator open. See that the drip tray is in position below the evaporator.

This is a good time to remove all food and clean the interior and all other plastic parts with warm water adding detergents. Never use abrasive or caustic cleaning powders, polishes, cleaning paste or any gasoline, turpentine and the like.

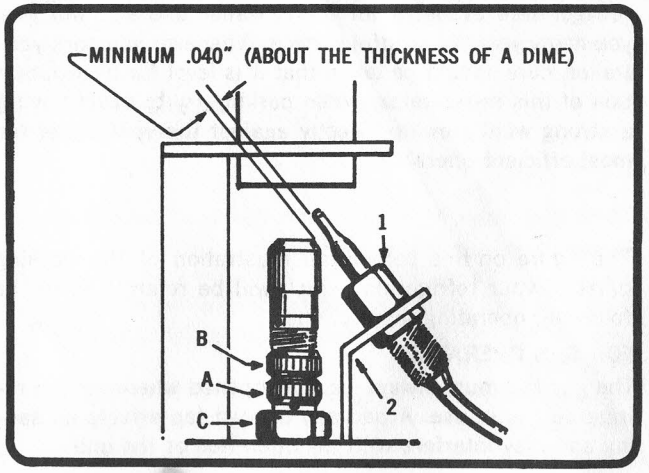
Use a damp cloth for cleaning and finish with a soft dry cloth. After the defrosting has been completed, turn the control knob to its normal position.

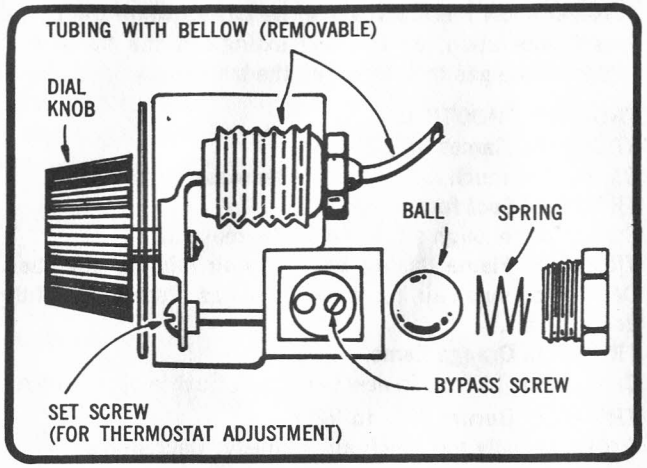
When the refrigerator is to be out of operation for some time, always leave the door slightly open or place a pie tin with some barbeque charcoal on the shelf.

TROUBLE SHOOTING (GAS OPERATION)

For emergency only — this normally should be done by dealer.

TROUBLE: Flame is noisy with buzzing sound.





Causes and Remedies. a. Burner is getting too much air. Screw down the lower ring "A" on the burner to partially cover the air holes at the base, until the noise stops (figure on page 92). Lock in position with the upper ring "B." Make certain that the flame remains blue. Blocking the air holes "C" completely will cause the flame to become yellow and to smoke.

TROUBLE: When lighting the gas flame it goes out as soon as the push button is released.

Causes and Remedies. a. The thermocouple tip may not be in the flame. The thermocouple should be at an approximate 45° angle to the burner (See figure on page 92).

TROUBLE: Flame goes out.

Causes and Remedies. a. Flame blow-outs can be caused by excessive wind. If there has been no wind to cause the flame to repeatedly go out, go to a Certified Service Center to have the thermocouple and safety valve checked.

TROUBLE: Overfreezing.

Causes and Remedies. a. The thermostat sensing tube is incorrectly located in the pocket inside the ice making compartment. Push the tubing back as far as it will go. **b.** The thermostat is out of adjustment. To adjust it turn the dial to "zero." If the flame does not go down to the "low" by-pass setting, follow this procedure (see figure on this page).

1. Unscrew the large cap screw at the rear of the thermostat and remove the ball. Clean seat and ball and replace.
2. If procedure (1) does not correct the problem, remove the dial knob with the dial plate and turn the exposed set screw out (in counterclockwise direction) until the flame goes down to the by-pass (see figure on this page).

c. If the flame keeps going out when the dial is turned to (0), remove and clean the by-pass screw which is located inside the gas connection on the left side of the thermostat.

TROUBLE: Burner does not light.

Causes and Remedies. a. Remove and clean burner barrel. **b.** Check gas supply.

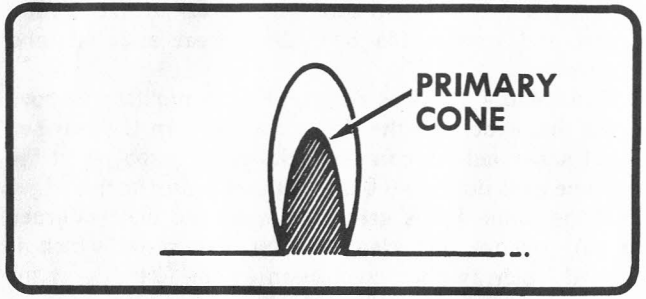
ACCESS DOORS.

The small door on the side of the trailer behind the refrigerator is for access to the refrigerator elements for maintenance and service. They provide access to clean and service the burner, to clean the burner flue stack, and to perform other forms of maintenance and service. The doors are opened by unlocking and turning the handle approximately ¼ turn counterclockwise.

THE RANGE AND OVEN.
Your Airstream is equipped with a Magic Chef gas range and oven. Following are some hints on how to keep them operating at their best.

RANGE TOP.

1. Your range is equipped with coaxial orifices for use with LP gas. The flame will be approximately ½ inch long. Do not attempt to adjust gas to burner. The orifices have no adjustment.

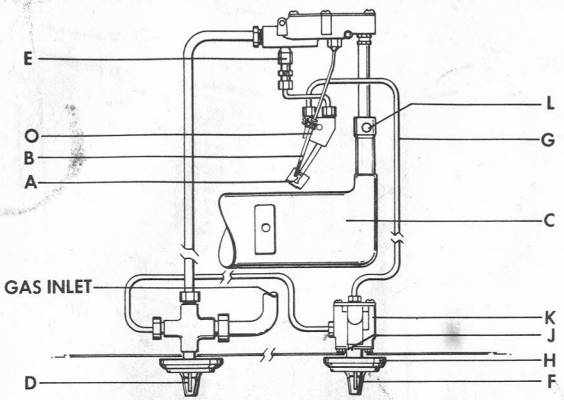


2. Air shutters on top burners are to be adjusted so that each cone of the flame is separate and distinct and appears as illustrated in figure on this page. Air shutters set too far open will cause flame to lift away from burner head and will be difficult to light. If air shutters are closed too much, the flame will look hazy and the distinct cones will be missing.
3. On 23, 25 and 27 foot LAND YACHT models, adjust the top pilot so that the tip of the flame is just over the edge of the inner cone. The burners should light within 4 seconds. If lighting is difficult, refer back to the previous step.
4. Never allow the top cover to be closed while the range is in operation, as this will extinguish the flame and permit the gas to escape into the trailer.

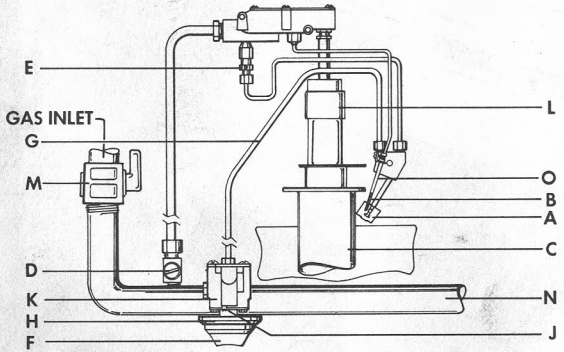
TROUBLE SHOOTING.
TROUBLE: Flames lift off ports.
Cause: Too much air. Remedy: Decrease air.
TROUBLE: Soot formations.
Cause: Not enough air. Remedy: Increase air.
TROUBLE: Flame flashes back into air mixture chamber.
Cause: Too much air in proportion to gas. Remedy: Slightly decrease air.
TROUBLE: Orange flame.
Cause: Small filings in new burners or dust in air. Remedy:
TROUBLE: Burner fails to light.
Cause: Usually too much air. Remedy: Decrease air.

OVEN SECTION (Refer to figures on page 95).
IMPORTANT: Your oven is equipped with a safety ignition that requires a minimum of 30 seconds to operate after turning oven control knob (F) on. The oven pilot may be slow in lighting due to air in gas lines.
The automatic oven burner pilot in your oven consists of a constant pilot and a heater pilot. The small constant pilot (A), which should be burning at all times when parked, ignites the heater pilot (B) adjacent to the oven burner (C).

1. **To adjust the constant pilot (A):** Open shut-off valve (D), open pilot valve (E), light constant pilot (A) with match and by adjusting pilot valve (E), reduce flame on constant pilot (A) until yellow tip disappears.
2. **To adjust the heater pilot (B):** Turn control knob (F) to 300 degree temperature setting. This will permit gas



OVEN CONTROLS
MODELS 27, 29, 31 FT. (INTL.)



OVEN CONTROLS
MODELS 23, 25, 27 FT. (L.Y.)

to flow through the heater pilot tube (G) to the heater pilot (B) where the gas is ignited by the constant pilot (A). Remove control knob (F) and bezel (H) and open heater pilot gas supply by turning green heater pilot adjusting screw (J) on front of control valve (K) until flame on heater pilot (B) yellows. Now close adjusting screw (J) until yellow tip disappears. See that flame envelops temperature responsive element (O). Replace bezel and control knob.

3. **To adjust main burner:** Your oven is equipped with a coaxial orifice for use on LP gas. The main burner when adjusted to the proper rate will have a flame approximately 3/8 inch long. The air shutter (L) on the main burners should be adjusted so the cone of each flame is separate and distinct (see figure on this page).

IMPORTANT: The thermostat on your range does not have a by-pass setting. It will cycle off and on at all temperature settings. No by-pass adjustment is necessary.

CLEANING INSTRUCTIONS AFTER RANGE IS IN USE.

1. To assist in cleaning the area around the top burners, the main top has been hinged from the back so that it can be raised. On 23-ft. through 27-ft. L.Y. models, care should be taken during the cleaning operation that you do not touch the hot pilot shield, and also when the cleaning operation is completed, be sure that the flash tubes are back in place.
2. If top burner heads are cleaned with any cleaning compound, care should be taken to see that all ports are opened up with a toothpick to assure proper operation. It is especially important that the lighter ports on the side of the burner head are kept clear (23-ft. through 27-ft. LY models only).

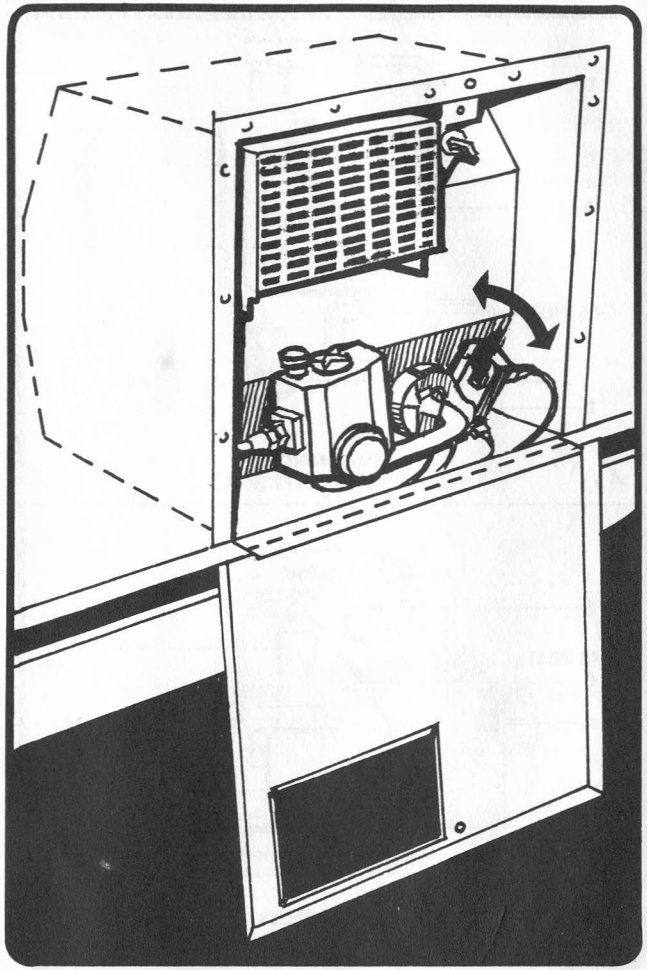
3. Spill over or spotting in oven or broiler are more easily removed when done promptly after they occur. Never wash porcelain when warm. Never use cleaning powder containing grit or acid.

   If oven bottom is removed for cleaning or servicing, be sure that oven bottom is locked in place when it is put back in the range. The front return flange on the oven bottom must hook under the side support angles to prevent warpage.

NOTE: On 23-ft. through 27-ft. L.Y. models, the range gas line shut-off valve (M) located under the top of the range at the left end of the manifold pipe (N) must be turned off when towing the trailer, when changing the gas tanks, or if the gas supply is turned off for any reason. Be absolutely sure oven pilot light has been relighted as soon as range shut-off valve is turned on. On 27-, 29- and 31-foot International models, the oven gas shut-off valve is the left-hand knob on the face of the oven. It should be turned off when traveling, or when gas tanks are being changed. You need not turn on the shut-off valve and relight the pilot unless you want to use the oven. The shut-off for the top burners is located under the range top and also should be turned off while traveling.

RANGE EXHAUST HOOD.

The range exhaust hood provides venting of cooking heat and smoke from the trailer. The vent is opened by flipping open the filter cover on the under-surface of the hood. The optional fan (standard in International) is turned on by pressing the push button switch next to the filter cover. The filter should be cleaned periodically with warm water and dish soap. It can be removed for cleaning by sliding it up inside the roof locker. The inside of the vent housing



should also be kept free of grease and dirt accumulation by periodic washing.

THE WATER HEATER.

Your Airstream is equipped with a Bowen gas water heater which is built to give you long years of trouble-free performance. It is equipped with a Robertshaw control that has a 100% shut-off safety valve which shuts off the gas supply in the event of pilot flame being extinguished or if excessive water temperature occurs. It is lighted and serviced from outside through an access panel at the left rear of the trailer.

PROCEDURE FOR LIGHTING OR RELIGHTING:

1. Be sure the heater is filled with water. Open hot water faucet at sink — when water flows, heater is full.
2. Turn gas cock knob to OFF position and temperature indicator to lowest temperature position.
3. Wait sufficient length of time to allow gas, which may have accumulated in burner compartment, to escape (approximately 5 minutes).
4. Turn gas cock knob to pilot.
5. Depress knob and actuate lever of spark igniter back and forth between its stops until the pilot flame ignites — this may require several movements of the lever.
6. Keep knob depressed for 1 minute after pilot flame ignites.
7. Turn the gas cock knob to ON.
8. Set the lever indicator for the desired water temperature.
9. To shut down the heater, turn gas cock to OFF position.

PILOT FLAME ADJUSTMENT.

If the pilot flame does not have a small orange tip, the pilot is not getting enough gas. The flame should be about ¼ inch in vertical height when the water in the tank is cold and the burner is off, ¼ to ⅜ inch in horizontal length when the tank is warm.

A large orange flame indicates excessive gas supply, which will result in short pilot life and early replacement. The pilot has been properly adjusted at the factory and should operate with a blue, orange tipped flame enveloping the pilot thermocouple. Removal of the pilot adjustment cap in lower right corner of control will reveal the pilot adjustment screw. Turning this screw clockwise reduces the flow of gas to the pilot (blue flame) and counterclockwise the gas supply is increased (orange flame). Always replace the "pilot adjustment cap" to prevent gas leakage.

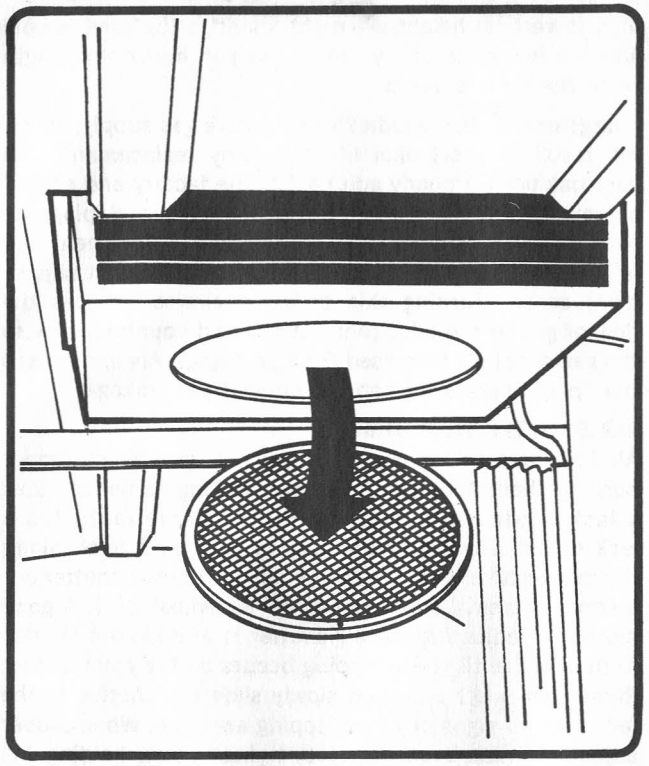
AIR SHUTTER ADJUSTMENT.

All fuels depend upon air (oxygen) to give them proper burning characteristics. A yellow, smoking flame indicates a lack of air and a noisy hard blue flame indicates a lack of air. The air shutter slides back and forth along the burner tube and is held in place by a small shutter adjustment screw. Loosen the screw for adjustment. A good method of adjusting the air shutter is to slide the shutter to the right until yellow tipping occurs on the main burner flame (not pilot) and then slowly slide the shutter to the left, until all signs of yellow tipping are gone. When proper adjustment has been obtained, tighten screw holding the air shutter.

AIR CONDITIONER (OPTIONAL).

TO PLACE UNIT IN OPERATION.

1. Close doors, windows and ventilators.
2. Set thermostat to desired temperature. 75° is a normal setting. Do not make frequent setting changes.
3. Push fan switch (located under thermostat on left side)



to HI position.

4. Push main switch (located under thermostat on right side) to "cool."

NOTE: After the inside temperature has reached thermostat setting and the outside temperature is 90° or less and is expected to stay so for a period of time, unit may be operated on LO speed.

TO OPERATE UNIT AT LOW SPEED.

Push fan switch to LO position. This may be done while unit is running on HI speed.

If unit cannot maintain thermostat setting, push fan switch to HI.

TO SHUT DOWN UNIT.

Push main switch to OFF position.

CLEANING OF FILTER.

SHUT DOWN UNIT BEFORE REMOVING OR REPLACING FILTER.

Remove filter by taking out screw. Brush off loose lint. Run water through filter or slosh it up and down in a pan of mild detergent or soapy water. Rinse thoroughly. Shake out excess water and wave through the air to dry. Replace filter. Lock in place with screw.

The Air Conditioner comes equipped with a low voltage starter kit. This will permit you to start the Air Conditioner at current as low as 90 volts.

For additional information see Air Conditioner Service Manual.

TOILET EXHAUST FAN

The toilet exhaust fan is located in the ceiling of the bathroom, to operate push switch on.

CAUTION: The fan is very quiet and easy to forget. Make it a habit to check to make sure fan is off after using to avoid running battery down.