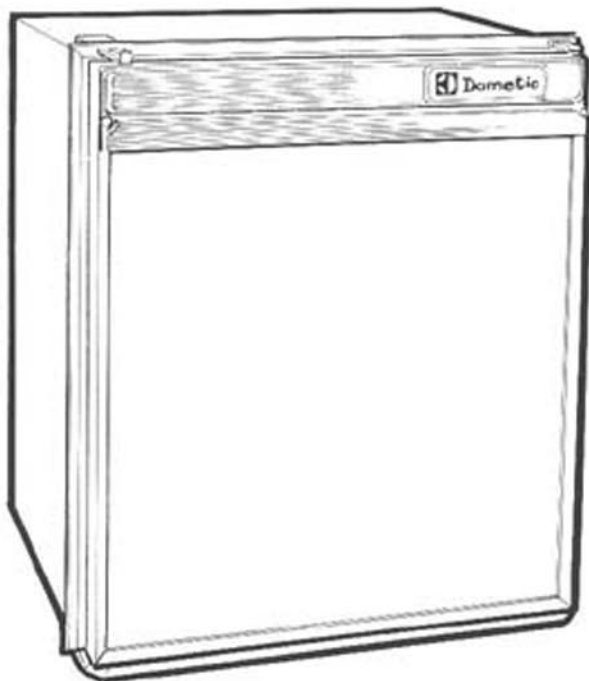




REFRIGERATOR MODEL RM211



OPERATION BY L.P. GAS OR ELECTRICITY (DUAL VOLTAGE, 12/110V)

FOR USE IN A MOBILE HOME OR RECREATIONAL VEHICLE

INSTRUCTIONS FOR INSTALLATION AND USE

INSTRUCTIONS FOR INSTALLATION

The design of this refrigerator has been certified by the American Gas Association and the Canadian Gas Association for mobile home or recreational vehicle installation. This certificate is contingent, however, upon proper installation and the use of the venting components as shown in these instructions.

1. CHANGING THE OUTER DOOR PANEL

If required, the outer door panel can be removed and replaced by one of a different material or color. To do this, take out the screw from each end of the plastic nameplate strip, then pull one end of the strip outwards for $\frac{3}{4}$ " and downwards until it is disengaged from the door.

Slide the outer door panel upwards until there is sufficient space to insert the fingers underneath it. Holding the top and bottom edges of the panel, bow out its center until it can be removed from the aluminum door frame.

If desired, a replacement door panel can be made from materials such as rust-proofed metal, suitable plastic, or plastic coated hardboard, with a finish to match other equipment in the vehicle. The material should be from $\frac{1}{32}$ " to $\frac{1}{8}$ " thick, and $18 \frac{5}{16}$ " wide x $19 \frac{1}{8}$ " high.

Fit the door panel by locating one side behind the aluminum door frame and bowing out its center until its other side can be engaged. Slide the panel down as far as it will go, then refit the nameplate strip, engaging the retaining section of its rear top edge under the aluminum door frame, and sliding it up until its lower retainers can be located over the top of the door panel. Finally, replace the two screws.

2. TO CHANGE THE DOOR HINGES FROM ONE SIDE TO THE OTHER

- Unscrew and remove upper hinge pin, open door and lift it off lower hinge pin. Transfer lower hinge pin to opposite side of foot-plate.
- Transfer plastic stop for travel catch, and upper hinge-pin bush, to opposite sides of top of door. (Remove them as follows. (i) From left-hand top corner, turn plastic stop or hinge pin bush approximately 45° counter-clockwise and pull it out; (ii) from right-hand top corner, turn plastic stop or hinge pin bush approximately 45° clockwise and pull it out. Fit in reverse order).
- Engage door on lower hinge pin, then refit upper hinge pin. Check door closure. If necessary adjust the seal by loosening upper hinge pin, and the four screws under the foot-plate, and move the door inwards or outwards a little until a satisfactory seal is obtained, then tighten the screws.

3. INSTALLATION

The installation of the refrigerator must comply with the following American National Standards and Canadian Standards, as applicable:-

- National Fuel Gas Code ANSI Z223.1 - 1974
- Mobile Homes, Latest Edition of A119.1
- Recreational Vehicles, Latest Edition of A119.2
- (a) Canadian Standard CGA 10.1/CSA Z240.4 "Gas Equipped Recreational Vehicles and Mobile Housing"
(b) Canadian Standard CSA Z240.6.1 "Electrical Requirements for Mobile Housing", or Standard CSA Z240.6.2/C22.2 No. 148 "Electrical Requirements for Recreational Vehicles"

The refrigerator should be installed on a solid base and must be level in relation to the trailer so that when the trailer is level, the refrigerator is level, — see item 9.

The overall dimensions of the refrigerator are given below, and the dimensions of the recess to house it are given in fig. 3. These allow sufficient clearances for the refrigerator to be inserted and withdrawn.

The following minimum clearances must be allowed at the back and over the top for air circulation over the cooling unit.

Clearance from rear edge of outer casing of refrigerator — 4 inches.

Clearance over top of unit condenser fins — $1 \frac{1}{8}$ inches. (This is the minimum height which can be allowed over the condenser fins. Wherever possible, this height should be increased up to 12 inches, — the more ventilation you provide, the better the performance you can expect from the refrigerator).

The refrigerator should be installed in accordance with the illustrations on page 3. Both the flue gases and the ventilation air must pass

to the outside, and the joints between the body of the refrigerator and the vehicle, and in any ventilation ducts, must be effectively sealed to prevent exhaust gases from the combustion system entering the living space. The rear of the metal frame at the front of the refrigerator, and the underside of the lower front plate, have foam sealing strips attached in order to seal the joints between the refrigerator and the front of the recess at the top, sides, and bottom. **Before installing the refrigerator, make sure that these sealing strips are in place and are not damaged.**

Surfaces adjacent to, and above, the flue outlet must be of, or covered with, fireproof material.

The refrigerator can be secured in the recess by screws or bolts through the holes in the rear base plate.

Vents

The absorption cooling unit is of the air-cooled type and it is of the utmost importance that air circulates freely over the unit at the back of the refrigerator. To ensure this, two vents must be provided in the wall of the trailer so that air passes in through the lower vent, over the cooling unit, and out through the upper vent. Details of the vents are given in fig. 3. These vents have been tested for use with this refrigerator and contain the proper size openings; they must be installed and must not be modified in any way.

Any joints in the floor of the recess must be sealed to prevent gas, in the event of a leak, entering the cavities or cupboards below the refrigerator.

The lower vent has to be opened to gain access to the gas and electric controls which are accessible only from the rear of the refrigerator.

4. FLUE BAFFLE

The flue baffle should be in position in the boiler tube, suspended by its support wire, so that the lower end of the baffle is 3 inches from the bottom of the boiler tube. This is correctly positioned during manufacture and should not become displaced during normal use.

5. GAS PRESSURE

The gas bottle must be fitted with a pressure regulator to reduce the pressure to 11 inches water gauge. The burner is fitted with a size 4 jet which is suitable for use on Propane and Butane gas at a supply pressure of 11 inches water gauge.

6. GAS CONNECTIONS

The supply pipe from the pressure regulator on the gas bottle to the refrigerator should preferably be of copper, or of another type approved for use with continuously operating L.P. gas appliances, and should be connected to the inlet of the gas valve (A, fig. 4) at the back of the refrigerator.

After connecting, all gas connections should be checked for leaks in accordance with item 9.

7. ELECTRICAL CONNECTIONS

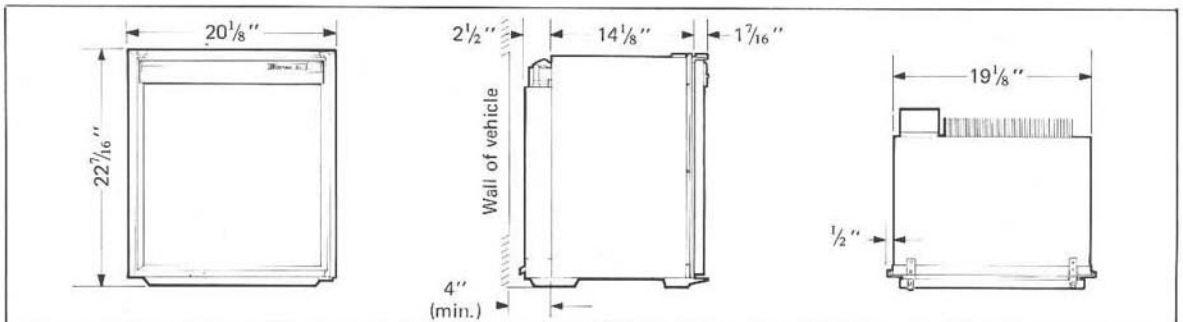
The heating element which operates the cooling unit on electricity is rated at 95 watts and has two windings, one for use on 110 volts a.c., the other for use on 12 volts d.c.

The unit must be electrically grounded in accordance with the National Electrical Code, ANSI C1-1975, when installed if an external alternating current electrical source is utilized.

(a) 110 Volts a.c.

The connection cord for the 110V a.c. supply has a three-prong (grounding) plug for your protection against shock hazards and is intended to be plugged directly into a properly grounded three-prong receptacle. Do not cut or remove the grounding prong from this plug.

The cord is approximately 5' 6" long and a grounded three-prong receptacle should be installed in an accessible position within reach of the plug.



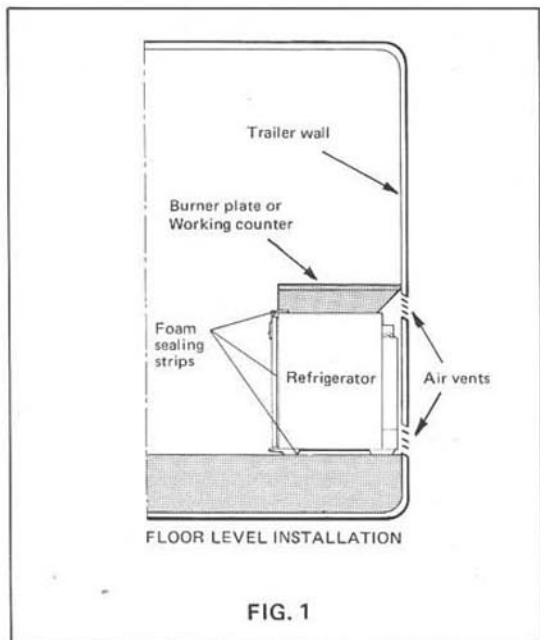


FIG. 1

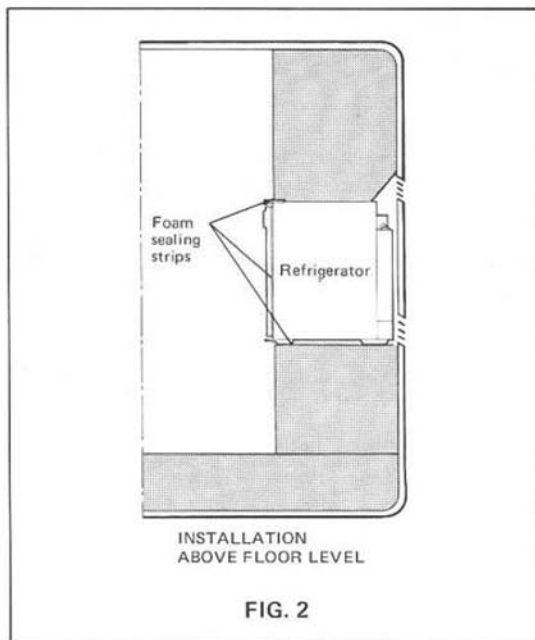


FIG. 2

VENTILATION

The air vents, illustrated below, are contained in the following kits. These vents must be used and must not be modified in any way.

USA: Dometic Kit No. 1 (containing 1 upper vent 123, and 1 lower vent 183).

CANADA: Dometic Kit VT24 (containing 1 upper vent VT24-I, and 1 lower vent VT24-II).

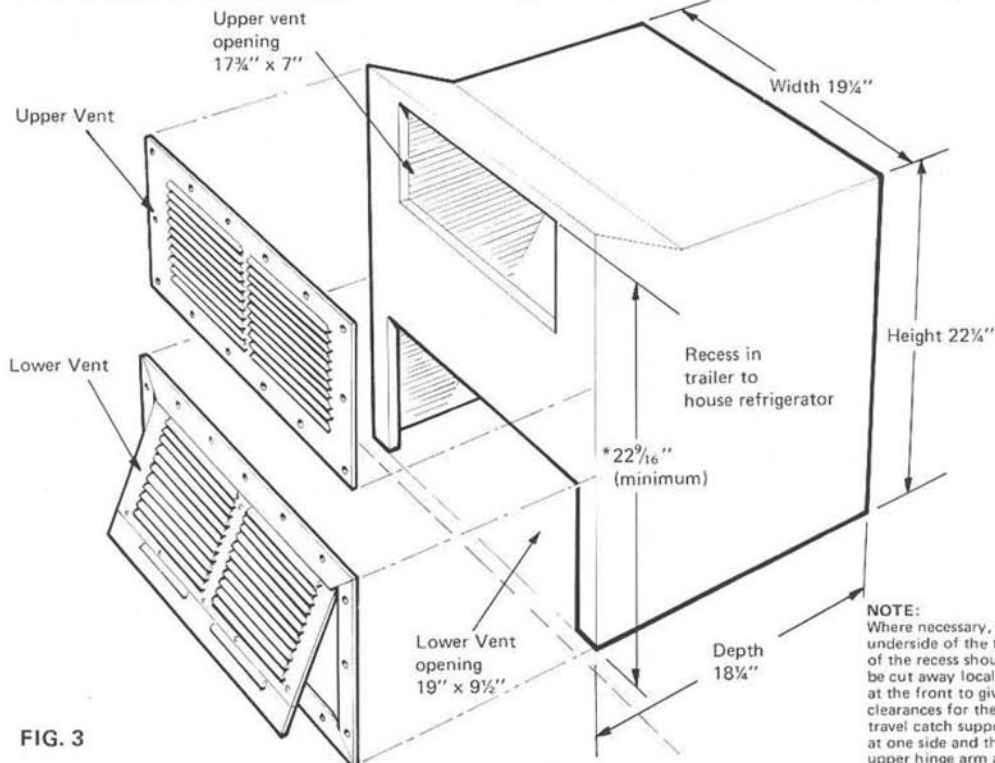


FIG. 3

* This is the minimum height allowable. Where possible, this height should be raised by up to 12 inches in order to increase the natural air-flow over the cooling unit.

(b) 12 Volts d.c.

At the back of the refrigerator, at the lower left-hand corner, is the electric equipment control box (I, fig. 4). Take off the cover from the box by removing the screw (H), and the terminal block will be visible.

The two terminals at the left-hand end of the terminal block are the 12 volt supply connections. From these, the refrigerator must be connected to the main battery in the vehicle by means of two wires, passing through the entry opening (temporarily sealed with a dust-cap) in the top of the box. Polarity is not important, but the body or chassis of the automobile or trailer should not be used as a substitute for one of the wires.

The current is 8 amps when the refrigerator is operating on 12 volts therefore the wiring from the battery to the refrigerator must be heavy enough to carry this load satisfactorily without voltage drop. The minimum size of wiring to be used is 14 A.W.G.

The connections to the battery should be made using ring type clamps with tightening bolts to ensure good contact with the battery poles.

To prevent the refrigerator operating and draining the battery when the engine is switched off, it is recommended that an automatic cut-out relay is installed between the battery and the refrigerator so that the refrigerator will not draw current from the battery when the ignition is switched off.

Do not connect lights or any other electrical components to the wiring from the battery to the refrigerator.

(c) Fuse

Inside the control box (I, fig.4), in an insulated holder, is a 10 amp fuse, which is to protect the 12 volt circuit in the event of a short. If the fuse burns out, trace the cause and correct it before fitting a similar type 10 amp fuse and reconnecting.

8. DEFROST WATER DRAIN PIPE

The metal pipe (C, fig.4) at the back of the refrigerator is for defrost water disposal. When installing, connect a suitable length of rubber or plastic tubing to this pipe, passing the free end through the floor to the outside of the trailer. The tubing must slope downwards all the way and must not be pinched or kinked.

9. TESTING AND STARTING UP

When the installation is complete, check all gas connections and fittings on the refrigerator for tightness in case they have loosened during shipping. After lighting the burner (see item 11), all gas connections should be checked for leaks by applying a soap/water solution over them and watching for bubbles. Do not use a flame. Thereafter, all connections should be checked at least once a month. The refrigerator gas equipment must not be subjected to an internal pressure exceeding 22 inches of water column.

See that the trailer is level in both directions then check that the ice-tray shelf in the top of the frozen food storage compartment is also level, from side to side and from front to back, by means of a small bubble level placed on the ice-tray shelf. This is important for satisfactory operation of the cooling unit.

INSTRUCTIONS FOR USE

10. LEVELING

In the boiler of the cooling unit, ammonia vapor is distilled from an ammonia-water mixture and carried to the finned condenser where it liquifies. The liquid flows to the evaporator inside the cabinet where it creates cold by evaporating into a circulating flow of hydrogen gas. If the evaporator is not level, the liquid may accumulate forming pockets which can impair the gas circulation, or block it completely, in which case cooling will stop.

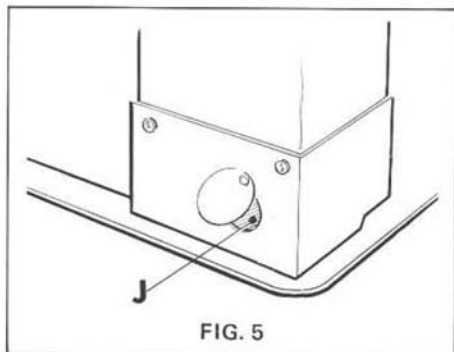
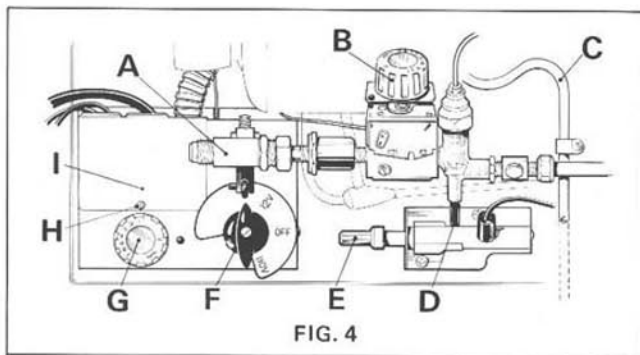
When the trailer is stationary for a period, it must be level so that the refrigerator can operate properly. When the trailer is being parked, therefore, the level should be checked, preferably by means of a small bubble level placed on the ice-tray shelf, and the position of the bubble observed. If necessary, the level of the trailer should then be adjusted so that the ice-tray shelf is level from side to side, and from front to back.

When the trailer is on tow, the continuous rolling and pitching movement will not normally affect the operation of the refrigerator, but when the trailer is parked for more than a short period, the sensitivity of the refrigerator should be remembered.

- (iii) Push in the blue plunger (D) of the flame failure device for 10 to 15 seconds to clear air from the pipe-line. (When starting initially, or after changing a gas bottle, it may be necessary to depress the plunger for a minute or longer to clear all the air from the pipes). Still pressing in the plunger (D), push in the button (E) of the piezo igniter. The burner should light, but continue to press in the plunger (D) for a further 15 seconds then release it and check that the burner is alight by looking at the flame through the opening (J). If the burner has not lit, repeat the lighting procedure.
- The ice-tray shelf should show signs of cooling after about an hour.

Note: If the gas has to be re-lit when the ice-making compartment is still cold, the thermostat dial (B) must first be turned to MAX and returned to its normal setting only after the burner is alight.

The refrigerator has a flame failure device which will automatically shut off the gas to the burner if the flame is blown out. While the blue plunger (D) is being held in, this device is temporarily inoperative.



11. STARTING THE REFRIGERATOR

The gas and electric controls are located at the rear of the refrigerator and are accessible through the lower ventilator in the wall of the vehicle. The gas shut-off valve and the electric voltage-change switch are interlocked so that both methods of operation cannot be inadvertently used at the same time.

The lower ventilator is removed by turning the handle of its catch 90° counter-clockwise, then pulling it out.

(a) L.P. Gas Operation — Lighting the burner (See figs. 4 & 5)

- Check that the voltage change switch (F) is at the 'off' position, then turn on the gas valve (A).
- Turn the gas thermostat knob (B) to setting No. 4.

(b) Electric Operation — (See fig.4)

The refrigerator can be operated on 12 volts d.c. or 110 volts a.c. provided the voltage-change switch (F) is set at the appropriate position.

- To start the refrigerator on electric operation:-
- Turn off the gas valve (A), — its handle will then be pointing away from the back of the cabinet.
 - Turn the voltage change switch (F) to the required setting, then connect the refrigerator to the appropriate voltage supply. *When the electrical supply cord is connected to a 110 volt a.c. supply, the voltage on the switch (F) should show 110V; when connected to the battery, the voltage on the switch (F) should show 12V.*
 - Turn the electric thermostat knob (G) to No. 4. The ice-tray shelf should show signs of cooling after about an hour.

12. REGULATION OF TEMPERATURE

With the appropriate thermostat knob set at number 3 or 4, the cabinet will automatically maintain a suitable temperature for ordinary food storage. Usually, no further adjustment will be needed, but in hot weather, or when more cooling is required, the knob must be turned to a higher figure. If less cooling is required, the knob should be turned to a lower figure.

13. STORING FOOD IN THE REFRIGERATOR

To prevent drying out and the transfer of flavors from one food to another, foods should always be stored in covered dishes, plastic bags or wrapped in foil of waxed paper. NEVER PUT HOT FOOD INTO THE REFRIGERATOR.

Avoid using large dishes and do not stack food or food containers too closely as this interferes with the circulation of cold air within the cabinet. The lower cabinet shelf has a retaining rail at the front which can be slid back to help hold containers etc. when the vehicle is on the move.

14. ICE-MAKING

Fill the ice-tray with water to within 1/8" from the top, and place it on the upper shelf in the frozen food compartment. When ice has formed, the ice-tray can be released from the shelf by lifting one corner. Do not use a lever. Any unwanted ice should be left in the divider and replaced in the tray, empty spaces being refilled with water.

Ice will be made more quickly when the appropriate thermostat knob is set to one of the higher numbers or 'MAX'. When ice has formed, be sure to turn back the knob to its normal setting, otherwise the food in the cabinet may become too cold.

15. DEFROSTING

Frost will form gradually on the cooling fins and in and on the frozen food compartment. It is a mistake to assume that an accumulation of frost gives a colder cabinet; for the most efficient and economical operation, the refrigerator should be defrosted regularly, — about every ten to fourteen days depending on the particular conditions of use.

To defrost, turn off the gas valve or switch off the electricity supply to the refrigerator, depending upon which is being used, remove the ice-tray, empty the frozen food compartment and leave the cabinet door open. The frost will melt and run through the tube at the back to the outside.

Any remaining drips in and on the frozen food compartment, and in the refrigerator should be wiped up with a clean cloth.

When defrosting is completed refill the ice-tray with fresh water, place it in its shelf in the frozen food compartment and restart the refrigerator.

Note:- Do not attempt to defrost more quickly by means of any form of heat otherwise the plastic surfaces may be damaged.

16. CLEANING

Clean the refrigerator thoroughly, as necessary, particularly when it is to be out of use for any period.

First, defrost the cabinet as described in the previous item, then clean the shelves, cabinet interior and door with a clean cloth wrung out in warm water to which a little mild, non-scented washing-up liquid detergent has been added. Wipe over with a clean cloth and dry thoroughly.

Do not wash any plastic parts in water that is more than hand hot, and do not expose them to dry heat.

The outside of the cabinet should be wiped with a clean, damp cloth, and polished with a clean, soft duster.

NEVER USE STRONG CHEMICALS OR ABRASIVE CLEANING MATERIALS ON ANY PART OF THE REFRIGERATOR.

17. TO SHUT DOWN THE REFRIGERATOR

Switch off the electricity or turn off the valve controlling the gas supply to the refrigerator, as applicable.

When not in use, the refrigerator should be emptied, cleaned and dried and the door left slightly open by using the alternative position of the travel catch, so that fresh air can circulate inside. The ice-tray should also be emptied, dried, and left handy on a shelf in the cabinet.

POINTS TO REMEMBER

- If the trailer has been out of use for a period, make sure all air vents are free from obstructions (e.g. birds' nests, etc.) before starting the refrigerator. Also check connections for gas leaks using soapy water, — see item 9.
- Never cover or partially cover the air vents with cardboard or anything else.
- Remember to level the trailer when stopping for more than about an hour otherwise the cooling unit could be permanently damaged due to overheating if it is left 'on'.
- If possible, start the refrigerator some hours before putting in the food to allow time for the interior to be cooled. It is then preferable to load the refrigerator with food which has been pre-cooled in your household refrigerator, or in the market.
- Before moving the trailer, make sure all containers are tightly covered to avoid spills, and see that the sliding retainer on the lower cabinet shelf is positioned to restrict movement of containers etc. If required, crumpled paper may also be packed between bottles and other items to prevent shifting while under way.
- Engage the travel catch at the top front corner of the door before moving off. The travel catch has two alternative positions; the first holds the door tightly closed for use when travelling, and the second keeps the door slightly open, — useful when the cabinet is out of use so that fresh air can circulate inside.

MAINTENANCE

18. L.P. GAS EQUIPMENT

(a) Flue Baffle

The flue baffle is suspended in the flue tube of the cooling unit on a length of stainless steel wire and is positioned so that the bottom edge of the baffle is 3 inches above the bottom of the flue tube. To gain access to the baffle, the flue top must be lifted off (note retaining strip over back edge) and the support wire will be seen. The flue baffle is correctly positioned during manufacture and should not normally become displaced.

(b) The Burner and Thermostat By-Pass Screw

The burner is fitted with a size 4 jet (4, fig. 6) which is suitable for use on Propane or Butane gas at a supply pressure of 11 inches water gauge. The orifice in the jet is very small, and must never be cleaned by means of a pin or similar instrument, as this could damage the orifice. Should, for some reason, the jet require cleaning, it should be washed in alcohol and blown through with air.

The hexagonal headed (brass) thermostat by-pass screw is located under the thermostat body but should not be disturbed unless necessary — see item 20 (e) iii.

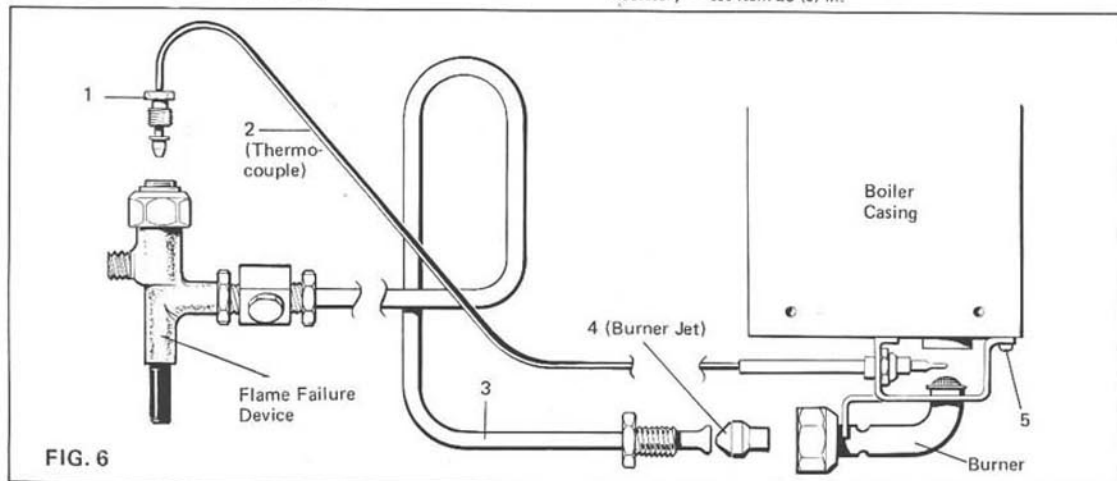


FIG. 6

(c) Flame blows out

If trouble is encountered with the flame blowing out under specially windy conditions, try to place the vehicle so that the wind does not blow directly into the vent outlets. If the trouble persists, set the gas thermostat to 'MAX'. This can of course, only be a temporary measure as after a time at this setting, the foodstuffs in the cabinet may become too cold.

(d) Cleaning Flue, Burner and Jet (See fig. 6)

Once or twice a year, depending on use, examine the appearance of the flame which should be predominantly blue when the gas thermostat is set at MAX. If this is not the case, the flue, burner, and jet should be cleaned, as follows.

1. Take off flue top, then lift out flue baffle on its support wire which will then be visible.
2. Remove burner shield which is held to bottom of boiler casing by two screws.
3. Disconnect and remove gas pipe (3) from between flame failure device and burner.
4. Pull out burner jet (4) and clean it by washing in alcohol or blowing through with air. **DO NOT USE A PROBE.**
5. Disconnect end of thermocouple (2) from flame failure device by unscrewing union (1). Leave other end of thermocouple secured to burner bracket.
6. Remove burner bracket with burner and thermocouple attached, by undoing screw (5) holding it to bottom of boiler.
7. Clean burner, making sure its gauze head and aeration ports are clear.
8. Clean flue tube, preferably by means of a special brush available from your supplier.
9. Refit all parts, ensuring the burner bracket is properly retained, but do not overtighten the thermocouple union when connecting it. Gas connections should be tight but not overtightened. After re-installing, check all gas joints for soundness as described in the next item.

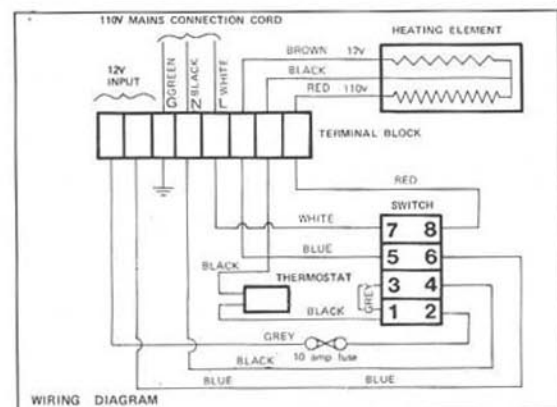
(e) Checking for Gas Leaks

Periodically, the entire gas installation should be checked for leaks. Test all pipe connections with soapy water (not with a flame), watching for bubbles, — see item 9.

19. ELECTRIC EQUIPMENT

(a) Heater

Heat is supplied to the boiler of the cooling unit by a 95 watt heater which has two separate windings, one for use on 12V d.c., the other for 110V a.c. If a new heater has to be fitted at any time, it will be necessary to disconnect from the electricity supply and to gain access to the back of the refrigerator.



1. Take off the cover from the electric equipment control box by removing the screw (H, fig. 4). Disconnect the three heater leads from the terminal block, taking a written note of their respective positions and being careful not to disturb other connections.
2. Release the armoured sleeve protecting the heater leads from the top of the control box by removing the retaining plate held by one screw.
3. Take out the screws and remove the cover from the opening in the back of the boiler casing through which the heater is fitted.
4. Remove sufficient insulation from the boiler through the opening to gain access to the heater in its metal pocket. Bend back the retaining wire clip at the top of the pocket, and lift the heater from the pocket at the same time withdrawing its leads from the armoured sleeve.
5. Check that the new heater is of the correct type, then fit it in the metal boiler pocket, at the same time threading the three leads through the armoured sleeve. (This operation will be assisted if the ends of the leads are temporarily taped together). Push the heater fully down in the pocket, then bend the retaining wire clip over the top to prevent it rising in use.
6. Connect the leads to the terminal block as before, fix the armoured sleeve to the top of the control box with the retaining plate and screw, and replace the control box cover.
7. Put back the boiler insulation, packing it around the tubes, refit the cover, reconnect the refrigerator and test. If gas connections have been disturbed, test for leaks as in item 9.

(b) Fuse

If there is no circuit when connected to 12 volts, check that the fuse has not burnt out — see item 7 (c).

20. TROUBLE SHOOTING

If refrigerator does not freeze satisfactorily:-

- (a) Check that the refrigerator is level in both directions, and that the proper clearances for air circulation over the cooling unit at the back have been allowed — see item 3.
- (b) Thermostat incorrectly used ... see item 12.
- (c) Evaporator heavily coated with frost ... see item 15.
- (d) Air circulation around cooling unit restricted ... see item 3.
- (e) Flame has gone out:
 - i Gas in bottle used up ... fit new bottle.
 - ii Connection between thermocouple and flame failure device body loose ... tighten union (1, fig. 6) but do not overtighten.
 - iii Clogged thermostat by-pass screw ... clean or exchange it.
- (f) Flue baffle not inserted into central tube of the cooling unit ... see item 18 (a).
- (g) Wrong gas pressure at burner ... have pressure checked. Pressure at burner must not fall below 11 ins w.g. when thermostat is set on 'MAX'.
 - (h) Burner assembly loose ... refit.
 - (i) Jet orifice or burner gauze clogged ... see item 18 (d).
 - (j) Faulty operation of the thermostat ... thermostat will have to be exchanged for new one.
- (k) Electric operation ... burnt out winding in heater, see item 19 (a).
- (l) 12V operation ... voltage drop due to defective battery, or wiring from battery to refrigerator not heavy enough ... see item 7 (b).
- (m) 12V operation ... burnt out fuse, see item 7 (c).

Odor from fumes:-

- (n) Flame touches side of the boiler due to displacement of burner through loose screw or bent bracket ... correct position or fit new burner and bracket. Burner displacement may cause smoke and sooting of the flue.
- (o) Burner damaged or gauze choked.
- (p) Flame touches flue baffle:-
 - i Baffle too low in flue ... see item 18 (a).
 - ii Gas pressure too high ... see item 20 (g).
 - iii Jet orifice has been opened out ... fit new jet of correct size (size 4).
- (q) Dirty flue tube; clean flue, burner and jet as described in item 18 (d).

All the above instructions are to be followed closely. This 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 if required.

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