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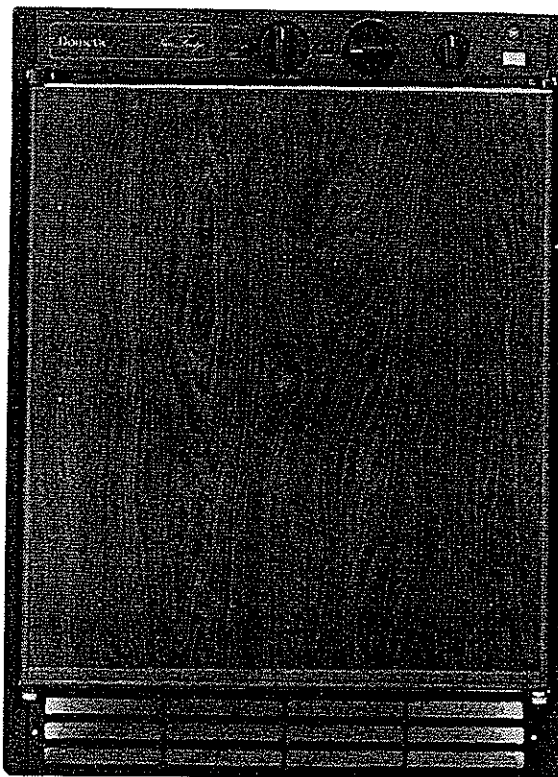
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OPERATING AND INSTALLATION INSTRUCTIONS

RM215 VAN-FRIDGE

(with direct vent sealed combustion system)
For Recreational Vehicle Installation



Dual Operation by L.P. Gas or 12 Volts

FOR YOUR SAFETY

If you smell gas:

1. Open windows
2. Don't touch electrical switches
3. Extinguish any open flame
4. Immediately call your gas supplier

September 1980

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INSTRUCTIONS FOR INSTALLATION

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

1. INTRODUCTION

The RM215 Van-Fridge has been designed especially for use in a recreational vehicle. It has a dual-operated absorption cooling unit which is for use on L.P. gas when parked, or from the vehicle's 12 volt battery when traveling.

For L.P. gas operation, the refrigerator has a sealed combustion system through which air is fed to the burner and products of combustion vented to the outside via a single two-way 5/8" diameter balanced flue terminal in the wall of the vehicle (fig. 2).

When operating, the cooling unit at the rear of the refrigerator generates a certain amount of warmth and this must be dispersed by a continuous circulation of air over the back. The air for this purpose is obtained from within the vehicle, the air entering at the bottom front, passing over the unit at the back, and emerging from the ventilator fitted over the top rear, as shown in fig. 3.

The door of the refrigerator is designed to accept your own decor panel. Instructions for fitting it are given in item 3. Also, the hinge pins can be changed from one side to the other to reverse the door hang, — see item 4.

Flue Baffle

The flue baffle (fig. 1) should be in position in the central tube of the boiler, suspended by its support wire over the burner so that the lower end of the baffle is 3" (75mm) above the bottom of the tube. The baffle is correctly positioned during manufacture and should not become displaced during normal use. Any strapping tape holding the top of the baffle wire in place during transit should be removed before installation.

Gas Pressure and Burner Jet

The burner is fitted with a size J jet which is suitable for use on Propane gas at a supply pressure of 11" water column.

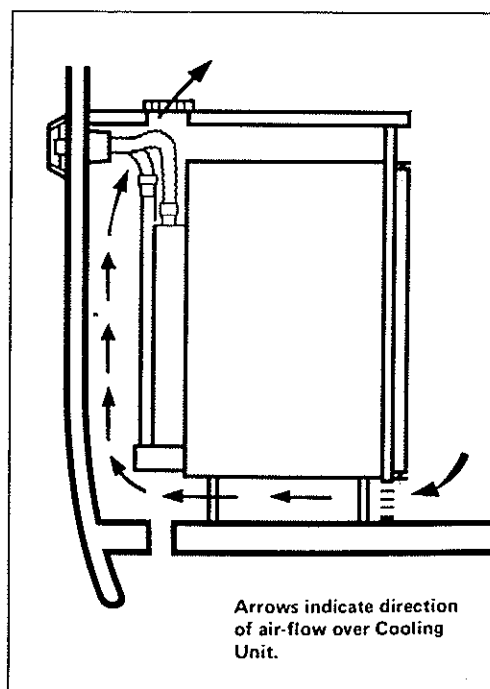
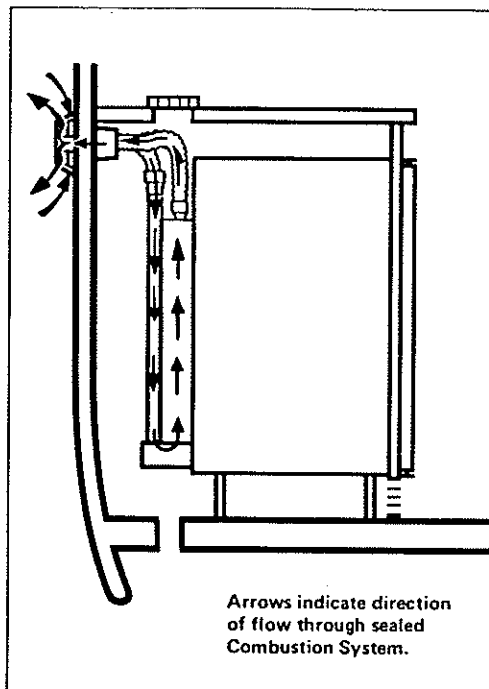
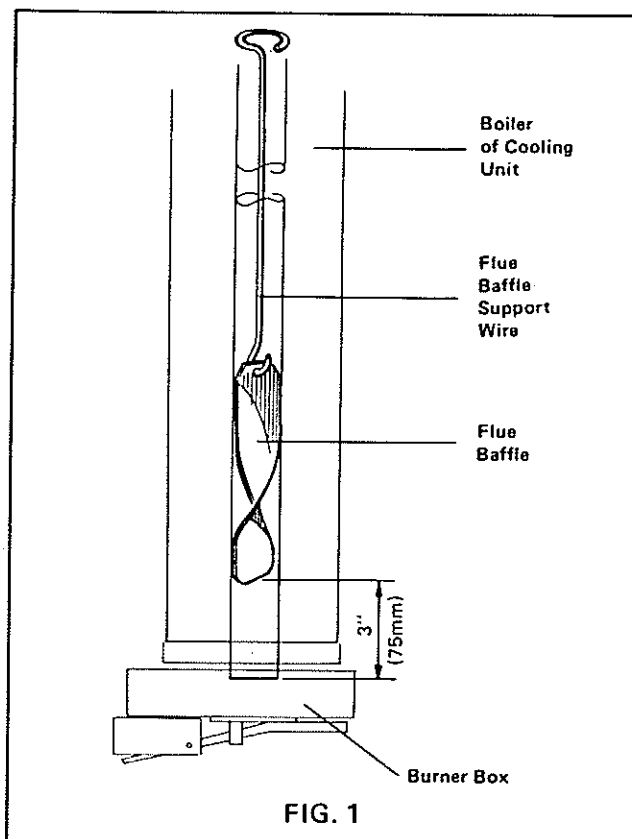
The gas bottle which you use must be fitted with a 2-stage pressure regulator to reduce the pressure of the gas to 11" water column. The refrigerator must not be connected to a supply without the appropriate pressure regulator being fitted.

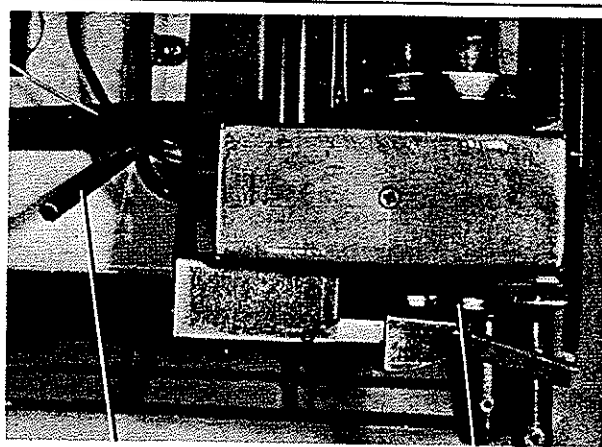
2. CHECKING THE CONTROLS

Before starting to install the refrigerator, examine it carefully to make sure that no damage has occurred during transit. Also check the action of the lighting controls, as follows, to see that they are correctly adjusted.

1. Push in the ignition knob (C, fig. 14) and see that the flap underneath the burner box at the bottom rear opens (fig. 4). Release the knob and check that the flap immediately springs back to the closed position (fig. 5).
2. Open the refrigerator door. Again push in the ignition knob (C, fig. 14) and twist it in a clockwise direction. A distinct "click" should be heard as the piezo igniter is operated, creating

a spark over the burner head. (The spark should be visible through the flame viewer situated *inside* the refrigerator near the bottom left-hand corner). Any malfunction of these controls must be rectified before installation.

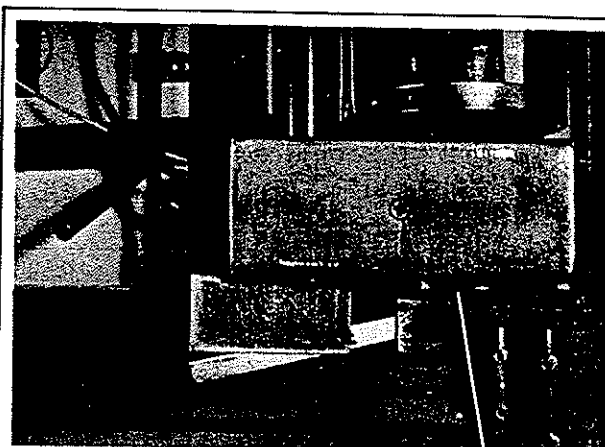




(Defrost water
drain pipe)

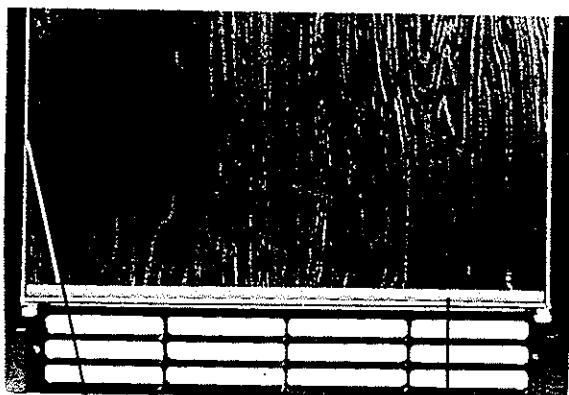
Burner Box Flap Open

FIG. 4



Burner Box Flap Closed

FIG. 5



Metal
Door Frame

Plastic
Strip

FIG. 6

3. DECOR PANEL FOR DOOR

A decor panel of a color or pattern of your choice is intended to be fitted to the door. The panel can be of plastic laminate or rust-proofed metal and its size should be as follows:

- Thickness — up to $\frac{1}{8}$ " (3mm)
- Width — $18\frac{7}{16}$ " (465mm)
- Height — $20\frac{3}{4}$ " (523mm)

- a) To fit the panel, first remove the plastic strip (fig. 6) which has been temporarily taped in position against the metal frame along the bottom edge of the door. Note which way up it is fitted.
- b) Engage one side edge of the decor panel under the flange of the metal door frame, then bow out the center of the panel until its opposite edge can be located under the flange of the door frame on the other side.
- c) Slide the decor panel up, under the door frame at the top, as far as it will go, then fit the plastic strip along the bottom between the door frame and the lower edge of the panel. Slide the panel down so that it locates against the plastic strip.

4. DOOR HANG

If required, the door hinge pins can be changed to the opposite side. Do this as follows:

- a) Unscrew and remove the upper hinge pin, open the door and lift it off the lower hinge pin. Transfer the lower hinge pin to the opposite side.
- b) Transfer the plastic stop for travel catch, and the upper hinge pin bush, to the 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).
- c) Engage the door on the lower hinge pin, then refit the upper hinge pin. Check door closure. If necessary, adjust the seal by loosening the upper and lower hinge blade screws and moving the door inwards or outwards a little until a satisfactory seal is obtained. Tighten the screws and check the seal again.

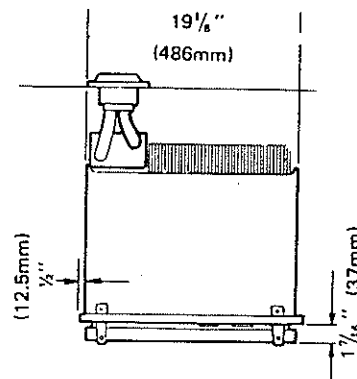
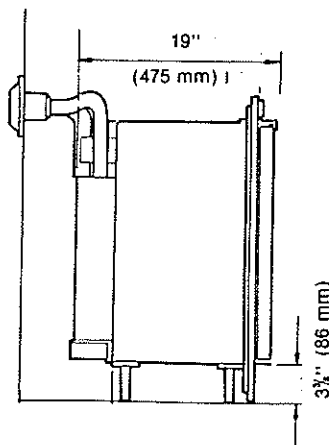
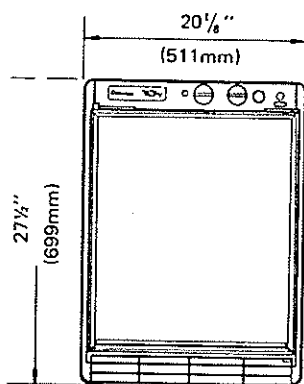


FIG. 7

DIMENSIONS OF REFRIGERATOR

5. INSTALLATION

General

The installation must comply with the following, as applicable:

- Local codes, or, in the absence of local codes, the National Fuel Gas Code, ANSI Z223.1-1974.
- Federal Standard for Mobile Home Construction and Safety, Title 24, HUD (part 280) or, when such standard is not applicable, American National Standard for Mobile Homes, A119.1-1975.
- Local codes, or, in the absence of local codes, American National Standard for Recreational Vehicles, A119.2-1975.
- Standard CSA Z240.4.2 - Gas Equipped Recreational Vehicles and Mobile Housing.
- Standard CSA Z240.6.1 - Electrical Requirements for Mobile Housing.
- Standard CSA Z240.6.2 - Electrical Requirements for Recreational Vehicles.

The refrigerator should be installed on a firm base and must be level in relation to the vehicle, in both directions, so that when the vehicle is level, the refrigerator is level. When installed, the following minimum clearances must exist from combustible or other surfaces.

- At each end - NIL.
- From rear edge of casing - $6\frac{1}{8}$ " (155mm).
- Above casing, for entire depth of recess - $2\frac{9}{16}$ " (65mm).

The feet of the refrigerator must not be removed.

The clearances specified for air circulation over the cooling unit must not be reduced in any way otherwise the performance of the cooling unit may be affected.

The Recess

The construction of the recess should be sufficient to ensure that the refrigerator will be held firmly in place when installed, particularly on mobile installations.

The area of floor immediately below the burner box at the rear left hand corner should be covered with metal or other non-combustible material as a protection against falling hot deposits should the burner box flap be inadvertently operated while the burner is lit.

Upper Ventilator

The upper ventilator (supplied) must be fitted over the top rear of the refrigerator in the position shown in fig. 8. The size of the

opening to accept the ventilator is $2\frac{1}{4}$ " x $17\frac{1}{4}$ " (70mm x 438mm). This will ensure that the ventilator is raised above the surface of the top of the recess, as illustrated, to prevent articles from being inadvertently pushed over the louvers. The ventilator should be removable in order to give access to the top rear of the refrigerator for future servicing purposes.

The Flue Terminal

The refrigerator must only be installed using the vent/air intake system supplied and the parts must not be modified in any way. The flue terminal is suitable for wall thicknesses of $\frac{1}{8}$ " (3mm) minimum to $1\frac{1}{4}$ " (44mm) maximum.

Referring to fig. 10, the position and shape of the openings in the inner and outer skins of the wall of the vehicle for the flue terminal must be determined and accurately marked on the wall before cutting. The opening must be just large enough to allow the casting (1), including the two lugs with screw holes, to pass through it.

CAUTION: Do not make the opening in the outer wall appreciably larger than is required to give clearance for the casting (1), shown full size in fig. 10, to pass through, particularly near the smaller end, otherwise the outer plates (2 & 5) of the flue terminal may not cover the opening completely.

To assist in marking the position of the opening on the inner skin of the vehicle, separate the components of the flue terminal and fit the two flexible tubes and the casting (1), to the refrigerator as described in item 8, sections, a, b & c.

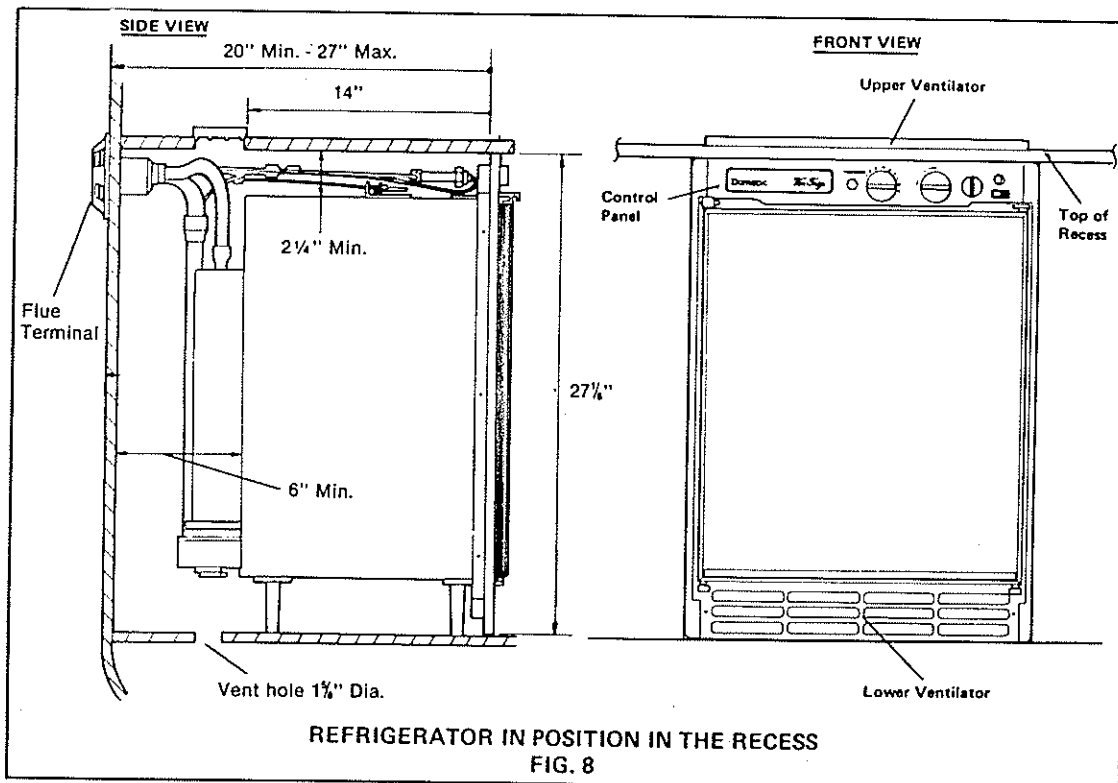
Check the outside of the vehicle to ensure that the surface is flat and unobstructed where the flue terminal is to be positioned.

Push the refrigerator into the recess until the casting comes into contact with the inner skin. Make adjustments to the flexible tubes, as necessary, to ensure that, when assembled and finally fitted, the flue terminal will be at the correct angle to fit flush against the outer skin of the vehicle.

When you are completely satisfied that the flue terminal casting is in the correct position, draw a line round it on the inner skin. Withdraw the refrigerator and carefully cut the openings in both the inner and outer skins of the vehicle.

Depending on the type of construction of the vehicle, it will usually be advisable to line the edges of the openings with a strip of metal or other suitable material to bridge the gap and seal the cavity between the two skins.

DO NOT INSTALL THE REFRIGERATOR IN THE RECESS AT THIS STAGE.



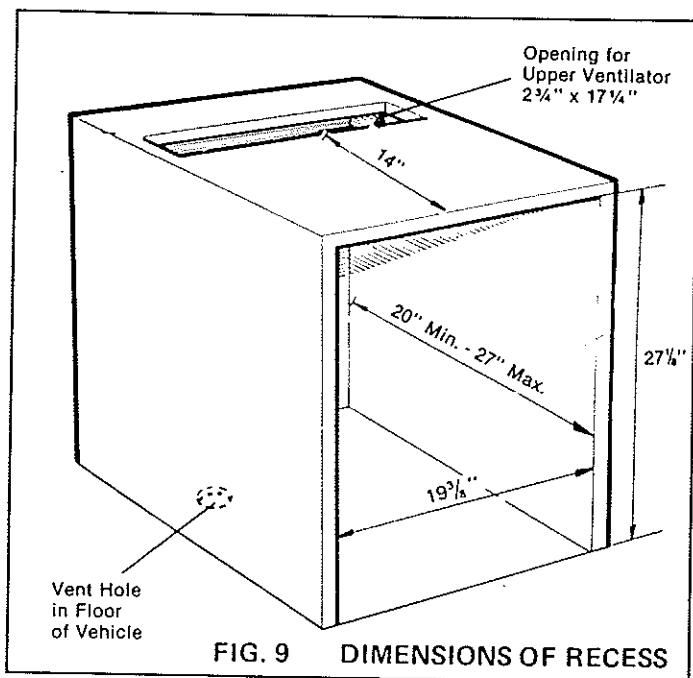


FIG. 9 DIMENSIONS OF RECESS

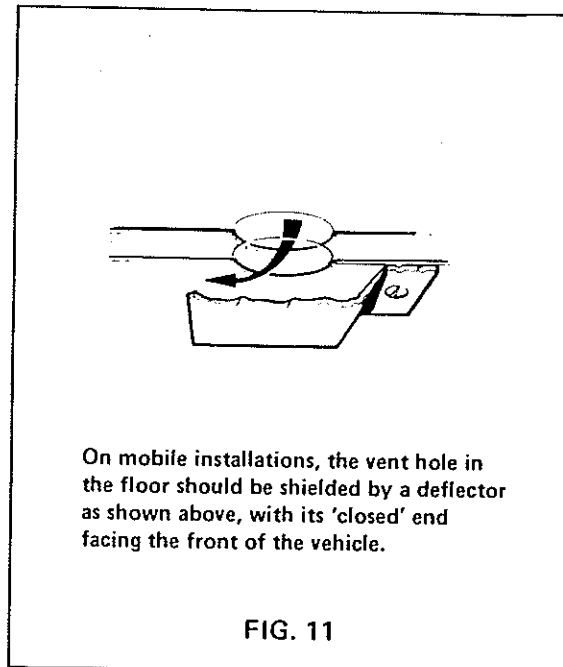
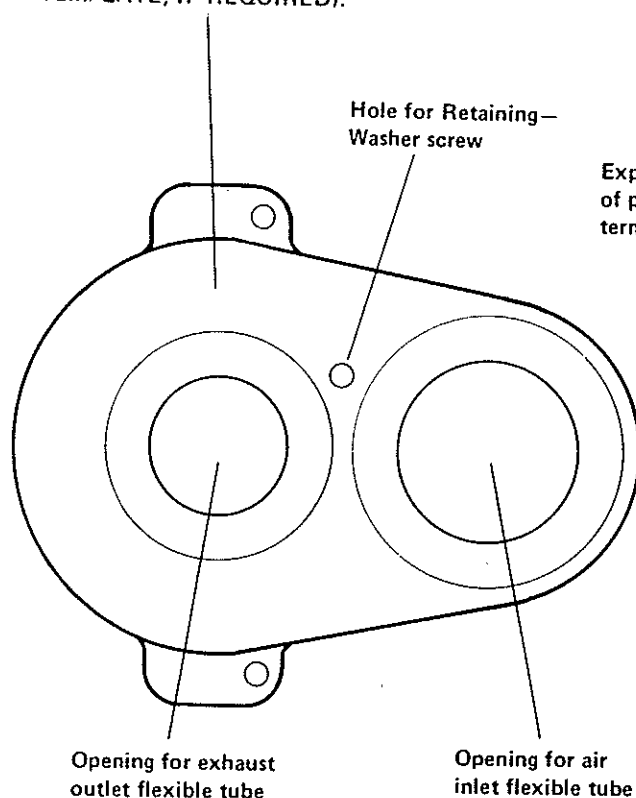
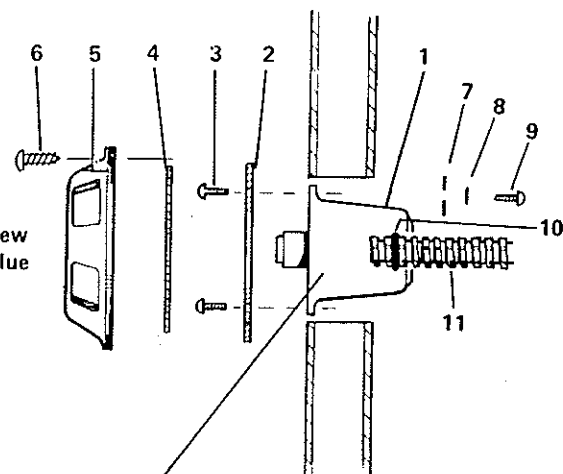


FIG. 11

FULL SIZE VIEW OF FLUE TERMINAL CASTING AS SEEN WHEN LOOKING AT WALL FROM INSIDE VEHICLE. (THIS ILLUSTRATION MAY BE CUT OUT AND USED AS A TEMPLATE, IF REQUIRED).



Exploded view of parts of flue terminal



- 1 - Casting for flue terminal
- 2 - Locating Plate
- 3 - Screw, Rd. Hd., M4 X8
- 4 - Separator Disc
- 5 - Outer Cover Plate
- 6 - Screw, Pan Hd., self tapping, 1 1/4" No. 6
- 7 - Flexible tube retaining washer
- 8 - Lockwasher, 3/16", internal tooth
- 9 - Screw, Rd. Hd., self tapping, 1/2" No. 10
- 10 - Rubber 'O' Ring
- 11 - Flexible Tube

THE OPENING IN THE WALL OF THE VEHICLE SHOULD BE JUST LARGE ENOUGH FOR THE CASTING (1), INCLUDING THE TWO LUGS FOR SCREWS, TO PASS THROUGH IT.

FIG. 10

Vent Hole Under Refrigerator

A ventilation hole of not less than 2 in² (13 cm²) effective area (i.e. 1 5/8" or 40 mm diameter) must be provided in the floor under the burner box at the back of the refrigerator as shown in fig. 8. The hole must lead directly to the outside air through the floor or wall so that, in the event of a gas leak, it would provide a direct escape outlet for the heavier-than-air gas. If the base of the

recess is above floor height, the vent should be extended by means of a tube through the wall or floor. The tube must slope downwards all the way so that gas cannot be trapped inside. On mobile installations, the vent hole should be shielded against entry of mud etc. by a deflector, fitted underneath, with

NOTE: There is no text on this page so that the illustration overleaf in fig. 10 may be cut out and used as a template, if required.

its 'closed' end facing the front of the vehicle. A suggested type of deflector is illustrated on fig. 11.

Defrost Water Drain Pipe

The metal pipe (fig. 4) at the back of the refrigerator is for disposal of defrost water. It has an outside diameter of $\frac{7}{16}$ " (8mm) and a suitable length of rubber or plastic tubing of appropriate diameter should be pushed over the end of this pipe. A hole should be made in the floor of the van in a position where, after the refrigerator is in the recess, the free end of the tubing can be passed through the hole so that defrost water will drain to the outside.

The tubing should slope downwards all the way and must not be pinched or kinked at any point.

6. GAS CONNECTIONS

The supply pipe from the pressure regulator on the gas bottle to the gas inlet on the refrigerator should be of copper or of an approved flexible type suitable for use with continuously operating L.P. gas appliances.

The gas inlet connection (fig. 12) on the refrigerator, to which the supply pipe is to be connected (after the refrigerator has been fitted into the recess), has a male $\frac{3}{8}$ " 18 U.N.F. thread. This is accessible through the upper ventilator opening at the top rear of the refrigerator, — see fig. 12. The route of the supply pipe should be considered and any preparatory work carried out before finally securing the refrigerator in the recess and connecting.

After connecting, all gas connections must be checked for leaks as described in item 9.

7. 12V ELECTRICAL CONNECTION

The heating element which operates the cooling unit when the refrigerator is connected to the 12V battery of the vehicle is rated at 110 watts. It has a continuous current rating of 9.5 amps therefore the wiring from the battery to the terminal block on the top rear of the refrigerator (fig. 12), must be of heavy enough gauge to carry this load satisfactorily without undue voltage drop. To ensure this, the minimum size of wire 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 terminals. Polarity is not important therefore it does not matter which wire goes to which terminal of the battery.

To prevent the refrigerator from being left on and draining the battery when the vehicle's engine is not running and charging the battery, 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 when the ignition is switched off. Alternatively, a suitable size switch or plug and receptacle should be installed in the 12V supply line near the refrigerator.

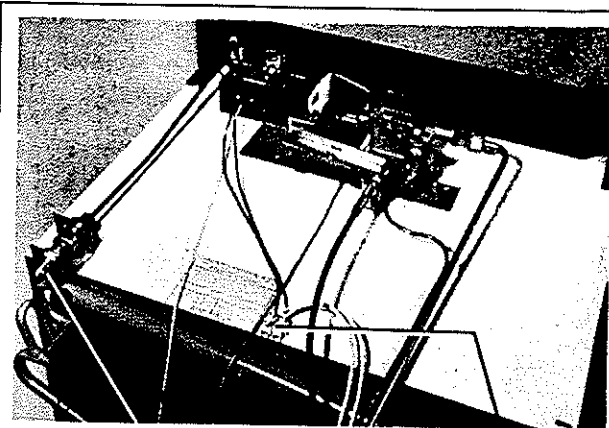
Fuse

A 10 amp (continuous rating) fuse should be incorporated in the wiring of the 12V supply, as near to the battery as possible. The fuse must be in the side of the wiring which is not connected to the chassis of the vehicle. For example, if the vehicle has a negative ground, the fuse must be in the positive side of the wiring.

8. INSTALLING IN THE RECESS

When the recess has been constructed and all other requirements described earlier have been completed or prepared for, the refrigerator can be installed in the recess. Do this in the following sequence.

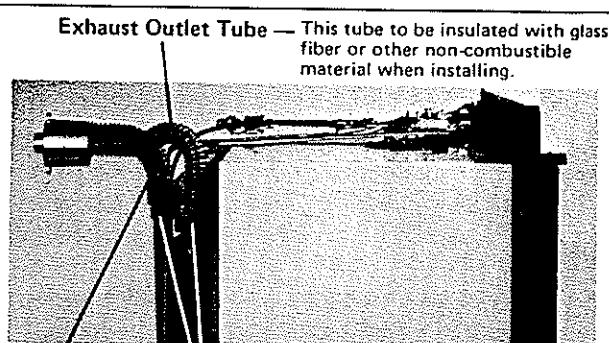
- Remove the components of the flue terminal from the envelope packed inside the refrigerator.
- Fit the larger ends of the rubber sealing sleeves over the plain end of the flexible tubes, then connect these tubes to the air inlet and exhaust outlet tubes at the top of the boiler of the cooling unit as shown in fig. 13. (The air inlet tubes are of larger diameter than the exhaust outlet tubes).
Push the flexible tubes down as far as they will go, align the screw hole in the side of the flexible exhaust tube with the hole near the top of the boiler exhaust tube, then screw in and tighten the hexagon headed $\frac{1}{4}$ " No. 6 screw supplied.
Check that the rubber sealing sleeves are positioned to seal the joints.
- Push the rubber 'O' rings (10, fig. 10) onto the upper ends of the flexible tubes, locating them in the second corrugation of each tube. Wet the 'O' rings and casting to ease assembly, then push the casting (1, fig. 10) firmly onto the ends of the two flexible tubes, the larger tube entering the larger of the two holes.
Secure the flexible tubes to the casting by locating the retaining washer (7) against the face of the casting, over the tubes, with the lower edge of the washer engaging corrugations in both tubes. Secure the retaining washer to the casting by means of the lock-washer and screw (8 and 9). A hole to accept the screw is already in the casting.
- Wrap the exhaust outlet tube with a layer of glass fiber or other suitable non-combustible insulating material, and secure it with wire ties or clips.
- Push the refrigerator into the recess, at the same time guiding the casting towards the opening in the wall. Adjust the flexible tubes as necessary so that the outer face of the casting is flush with the outside surface of the vehicle wall.
- From the outside, position the locating plate (2, fig. 10) against the casting so that the screw holes line up with each other, and secure with the two screws (3).
- Drill suitable size holes through the three existing holes in the outer edge of the locating plate (2), into the van wall, to accept the $\frac{1}{4}$ " No. 6 self-tapping fixing screws.



Gas Inlet Connector

FIG. 12

12V terminal block



Air Inlet Tube

FIG. 13

Rubber Sealing Sleeves

Place the separator disc (4) on the exhaust spigot of the casting (1), position the outer cover plate (5) over the assembly and secure with the three self-tapping screws (6).

Securing in the Recess

The refrigerator must be firmly secured so that it will not move and cause damage to the gas supply pipe or loosening of gas connections when the vehicle is mobile.

Fixing can be achieved by means of metal brackets screwed to the refrigerator legs and to the floor at the bottom, and to the outer casing and the rear wall or recess at the top. Alternatively, holes may be drilled through the main side members of the recess at the front, into the sides of the refrigerator outer casing, and self-tapping screws of appropriate length used to secure the refrigerator.

Caution: When drilling holes into the refrigerator casing, take great care that the drill does not break through too far and damage the inner plastic lining.

Whichever method of fixing is adopted, make certain that the refrigerator is level in relation to the vehicle, in both directions, before drilling holes and securing. If necessary, adjust the level by fixing firm packing pieces under the appropriate feet.

Note that the refrigerator must be readily removable for subsequent servicing purposes.

Connecting to the Supplies

Connection to the gas and 12V electrical supplies should be as directed in items 6 and 7.

Feed the defrost water drain tube through the hole in the floor to the outside.

9. TESTING AND STARTING UP

When the installation is complete, check gas connections for tightness, but do not overtighten.

After lighting the burner (as described in item 11), the gas connections etc., should be checked for leaks by applying a soap/water solution over them, with a small brush for instance, and watching for bubbles. **DO NOT USE A FLAME TO CHECK FOR LEAKS.** Thereafter, all connections should be checked at least once a month.

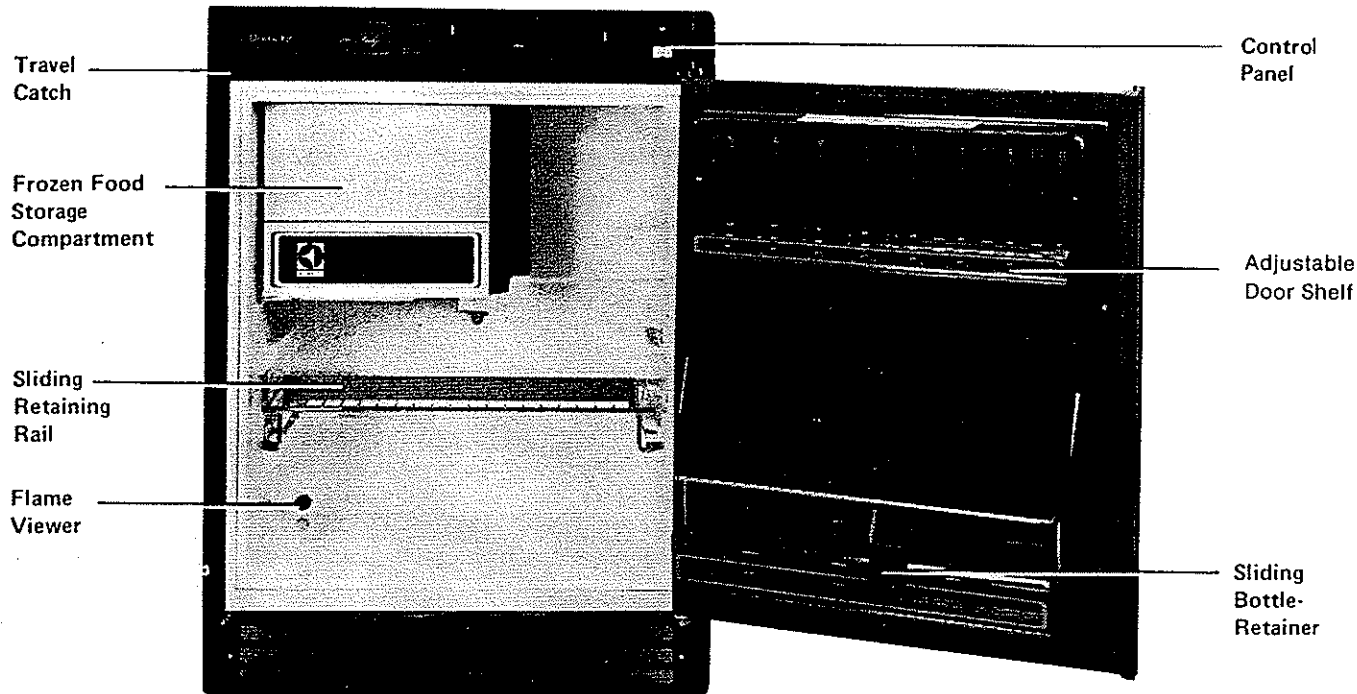
The refrigerator gas equipment must not be subjected to an internal pressure exceeding 22 inches of water column.

See that the vehicle is level in both directions, then check that the ice-tray shelf in the top of the frozen food 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. (A small mirror will help you to view the bubble). This is important for satisfactory operation of the cooling unit.

After the burner has been lit and the gas control left at setting '0' for several minutes to allow the flue system to warm up, the gas thermostat knob should be turned to MAX and the refrigerator left on test. The ice-tray shelf inside the frozen food compartment should show signs of cooling after about an hour.

INSTRUCTIONS FOR USE

The area in the vicinity of the refrigerator must be kept clear and free from combustible materials, gasoline and other flammable vapours and liquids.



10. CONTROLS

The controls for operating the refrigerator are located in the panel at the top front of the cabinet and consist of the following (see fig. 14).

- Button for Flame Failure Device
- Knob for Gas Thermostat, with settings '0' (used when lighting the burner and for defrosting), 1 to 9, and MAX; see also item 12, 'Temperature Regulation'.
- Double-action Ignition Knob — press to open flap under burner box, and twist to activate piezo spark igniter.
- Knob for Gas Cock, with positions 'on' and 'off'.
- "Flame-on" Indicator. This has a needle which moves into the green zone of the dial soon after the burner has lit, and stays there to confirm that the burner is still alight. (If the flame goes out, the needle will move back, away from the green zone).
- 12 Volt Indicator Light. This will glow when the refrigerator is connected to the 12V supply.

*Note: (i) The flame failure device will automatically shut off the gas to the burner if the flame is blown out. While the button (A) is being pushed in, this device is temporarily inoperative.
(ii) A flame viewing window is located inside the refrigerator at the lower left hand corner, to enable the flame to be seen directly.*

11. STARTING THE REFRIGERATOR (see fig. 14)

a) L.P. Gas Operation — Lighting the Burner

There are basically two different procedures for lighting the burner, depending on the prevailing circumstances. It is important to select the appropriate method that applies on each particular occasion that the burner is being lit.

Note: After the burner has been lit, especially in calm weather conditions, leave the thermostat knob at position '0' for several minutes before turning it up to a higher setting, so that the flue warms up gradually. If the thermostat knob is turned to a position above '0' too soon after lighting, the flame may have a tendency to go out.

Method I

This method of lighting should be used after the initial installation or when the refrigerator has been out of use for some time and air may be in the gas supply pipe to the refrigerator.

- Turn on gas at supply bottle, and set gas cock knob (D) to position 'on'.
- Turn thermostat knob (B) to position MAX.
- Fully depress flame failure device button (A) and ignition knob (C), to allow gas to flow to burner and to open flap under burner box. Keep both button and knob held in long enough for air to

be purged from gas line, then release them. (This could take up to a minute, or longer, depending on the length of the supply pipe to the refrigerator).

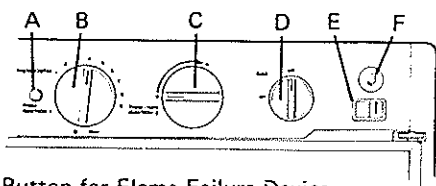
- Turn gas cock knob (D) to 'off', and thermostat knob (B) to '0'.
- Depress ignition knob (C) and, keeping it depressed, quickly turn it clockwise and back several times in succession to operate piezo igniter which should be heard to click each time it is actuated. (This operation should ignite and disperse any excess of gas which may have accumulated in the burner box during operation 3).
- Turn gas cock knob (D) to 'on'. Depress, and keep depressed, flame failure device button (A). At the same time, push in fully ignition knob (C) and, still pushing it in, turn it clockwise and back several times in succession to actuate the piezo igniter. Release ignition knob (C), but keep button (A) pressed in for 10 to 15 seconds after burner has lit to allow time for end of thermocouple, located over burner, to heat up and the valve to become self-holding.
- Release button (A) and check that burner is alight by observing that needle of flame-on indicator (E) has moved into the green zone, or by looking directly at flame through viewer inside refrigerator.
- If burner has not lit, check that gas is available from gas bottle, then repeat operations 4 to 7.

Method II

This method is for normal lighting, when the refrigerator has recently been in use on gas.

- Turn on gas at supply bottle and set gas cock knob (D) to position 'on'.
- Turn thermostat knob (B) to position '0'.
- Depress, and keep depressed, flame failure device button (A). At the same time, push in fully ignition knob (C) and, still pushing it in, turn it clockwise and back several times in succession to actuate the piezo igniter. A click will be heard each time it operates. After burner has lit, release ignition knob (C), but keep button (A) pressed in for a further 10 to 15 seconds for thermocouple to heat up, then release button (A).
- Check that burner is alight by observing that needle of flame-on indicator has moved into green zone, or by looking at flame through viewer inside refrigerator.

In windy conditions, proceed as given in the appropriate instructions above, but set thermostat knob (B) to MAX (instead of '0'), and operate ignition knob (C) without pushing it in. (The flame failure device button (A) must still be held in).



- A — Button for Flame Failure Device (Ignition 1)
- B — Knob for Thermostat (gas)
- C — Double-action Ignition Knob (Ignition 2)
- D — Knob for Gas Cock
- E — 'Flame-on' Indicator
- F — 12V Indicator Light

FIG. 14

(b) 12V Electric Operation

Before driving the vehicle on any road, turn off the gas cock (D, fig. 14) and switch over to 12V operation.

Whenever possible, the cabinet should be pre-cooled, together with its contents, by starting up and running the refrigerator on gas for several hours, or overnight, before switching over to 12V and starting on a journey.

The 12V heating element is rated at 110 watts and has a current consumption of 9.5 amps. The refrigerator should not therefore be left operating on 12V when the engine is not running and charging the battery.

If an automatic cut-out relay as recommended in item 7 has not been installed, the refrigerator should be disconnected from the 12V supply manually, soon after the engine is switched off, otherwise the battery may become discharged.

12 volt operation is not thermostatically controlled but over-cooling is unlikely to occur due to the relatively short periods of a few hours at a time that this mode of operation will normally be used.

DO NOT ATTEMPT TO OPERATE THE REFRIGERATOR BY BOTH GAS AND ELECTRICITY AT THE SAME TIME. ALWAYS ENSURE THAT ONE METHOD OF OPERATION IS TURNED OFF BEFORE USING THE ALTERNATIVE.

12. TEMPERATURE REGULATION (Gas Operation)

With the thermostat knob set at No. 3 or 4, suitable temperatures will be obtained for the storage of both fresh and frozen foods under average conditions of use.

Usually, no further adjustment will be required, but, in hot weather, or when more cooling is required for some reason, the knob should be turned to a higher setting, — the higher the number, the colder will the temperature become.

If less cooling is required, turn the thermostat knob to a lower number.

13. 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 and form pockets which can impair the refrigerant gas circulation, or block it completely, in which case cooling will stop.

When the vehicle is stationary for a period, it must be level so that the refrigerator can operate properly. When the vehicle 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 vehicle should then be adjusted so that the ice-tray shelf is level from side to side, and from front to back.

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

14. STORING FOOD IN THE REFRIGERATOR

This refrigerator is designed for the storage of fresh foods, the storage of frozen foods, and the making of ice.

The total refrigeration volume of the refrigerator is 1.7 cubic feet, net.

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

Avoid using large dishes and don't stack food or food containers too closely as this interferes with the circulation of cold air within the cabinet.

The 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. There is also a sliding bottle-retainer on the lower door shelf.

Packets of frozen food should be placed in the lower part of the frozen food storage compartment, soon after purchase. *If frozen foods are allowed to thaw they should not be re-frozen but should be consumed or disposed of within 24 hours.*

15. 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 storage 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 (on gas operation) if the 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.

16. DEFROSTING

Frost will form gradually on the cooling fins and in and on the frozen food storage 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, if the burner is alight, either turn off the gas cock (D, fig. 14) or, if you wish to continue to use the refrigerator on gas immediately after defrosting, simply turn the thermostat knob (B) to position '0'. (This will keep the burner alight so that it will not need re-lighting). Ensure that the 12V supply is not 'on'.

Remove the ice-tray and any foods etc. from the frozen food storage compartment. Leave both the frozen food storage compartment door and the refrigerator door open. The frost will melt and run through the tube at the back and drain away to the outside.

When all the frost has melted, wipe the interior of the refrigerator and frozen food storage compartment with a clean cloth and re-start the refrigerator, turning the thermostat knob to its normal setting.

Re-fill the ice-tray with fresh water and place it on the upper shelf in the frozen food storage compartment.

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

17. CLEANING

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

First, defrost the cabinet as described in the previous item, then clean the shelf, 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.

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

18. TO SHUT DOWN THE REFRIGERATOR

Disconnect from the 12V supply and turn off the gas cock, (D, fig. 14).

The refrigerator should then be emptied, cleaned and dried and the door left slightly open by using the position of the travel catch shown in fig. 15b, so that fresh air can circulate inside. The ice-tray should also be emptied and dried.

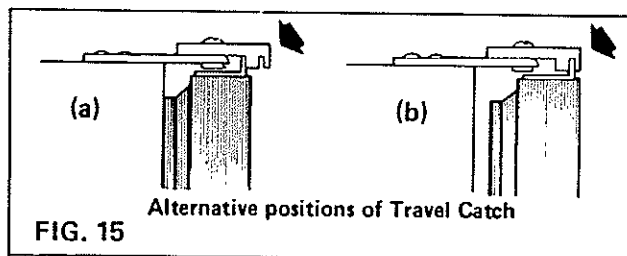


FIG. 15

19. POINTS TO REMEMBER

- If the refrigerator has been out of use for a period, make sure all air vents are free from obstructions before starting up. 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 vehicle 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 on gas some hours before it is to be used 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 vehicle, make sure all containers are tightly covered to avoid spills. Also see that the sliding retainers on the cabinet shelf and door shelf are 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 (fig. 15a) holds the door tightly closed for use when traveling, and the second (fig. 15b) keeps the door slightly open, — useful when the cabinet is out of use so that fresh air can circulate inside.

MAINTENANCE

20. GAS EQUIPMENT

a) Examination and cleaning of Flue, Burner, and Jet

Once or twice a year, look through the flame viewer (inside the refrigerator) and examine the appearance of the burner flame which should be predominantly blue in color when the thermostat is set at MAX. If this is not the case, the flue, burner, and jet, etc., should be examined and cleaned as follows:

1. Turn off gas at gas bottle and disconnect refrigerator from gas and 12V supplies. Remove all loose items from inside refrigerator.
2. From outside vehicle, take out screws and remove outer components of flue terminal, (2, 4 & 5, fig. 10).
3. Remove screws and brackets securing refrigerator in the recess and withdraw refrigerator.
4. Take off casting (1, Fig. 10) and the two flexible tubes from top of the cooling unit boiler and clean off any deposits from these and the other flue terminal components.
5. Lay refrigerator on its right-hand side (on some soft material to protect the cabinet), to give easier access to the burner box, then remove front cover (5, fig. 16) by undoing screw (4).
6. From bottom of the burner box, take out two screws (6), then swing burner (3) on its bracket (7) away from under the central tube, carefully easing thermocouple (1) and igniter cable (2) inwards through the openings in gasket at side of burner box just far enough for burner to be examined and cleaned, if necessary, by brushing, and blowing out with air.
7. Undo gas pipe union (10) and then lock-nut (9), which will enable jet (8) to be removed from inside burner box. Clean jet by washing it in alcohol and blowing through with air.

Note: The jet fitted to this refrigerator is a size 'J' which is suitable for use on propane gas at 11 inches water column. The orifice in the jet is very small and must never be cleaned by means of a pin or similar instrument as this would damage the orifice. It must only be cleaned as described above.

8. Stand refrigerator upright and place a piece of paper or cloth in bottom of burner box to catch dislodged flue deposits. From top of central tube, lift out flue baffle (fig. 1) on its support wire, then clean central tube, preferably with the aid of a special flue brush available from your supplier. Carefully clean out any deposits etc. from burner box, then open and close the flap (fig. 4) several times to ensure that no particles of dirt are trapped preventing proper closure of the flap.

9. Re-fit flue baffle in central tube, then reassemble all parts in the reverse order to that described for removal.

IMPORTANT: All sealing gaskets and 'O' rings on the burner box and flue terminal connections that have been disturbed must be carefully examined and replaced by new ones if there are any signs of damage or deterioration. The components must not be fitted without an appropriate gasket being in place.

10. Re-install refrigerator in recess, connect to gas and 12V supplies, and check for gas leaks as described in item 9. Light burner, check appearance of flame through flame viewer inside cabinet

to ensure it is predominantly blue when thermostat is at setting MAX, then leave on test for at least one hour.

b) Thermostat By-pass Screw

The size '14' hexagonal headed brass by-pass screw is located in the upper part of the thermostat body at the top of the cabinet. The by-pass screw should not be disturbed unless necessary, — see item 23, (e) iii. (If the orifice in the by-pass screw becomes blocked, the burner flame will go out as soon as the refrigerator becomes cold enough inside for the thermostat valve to close).

c) Flue Baffle

The flue baffle is located in the central tube of the boiler as described in item 1 and illustrated in fig. 1. If the flue baffle is missing or wrongly located, the cooling unit will not function properly on gas.

21. LUBRICATION

Lubrication of moving parts of the controls is not normally required although an occasional spot of oil may be applied to the pivot point of the lever of the ignition mechanism at the top of the cabinet if it becomes stiff to operate.

22. ELECTRIC EQUIPMENT

The heater which operates the cooling unit when the refrigerator is connected to the 12V supply is rated at 110 watts and has a current consumption of 9.5amps at 12 volts.

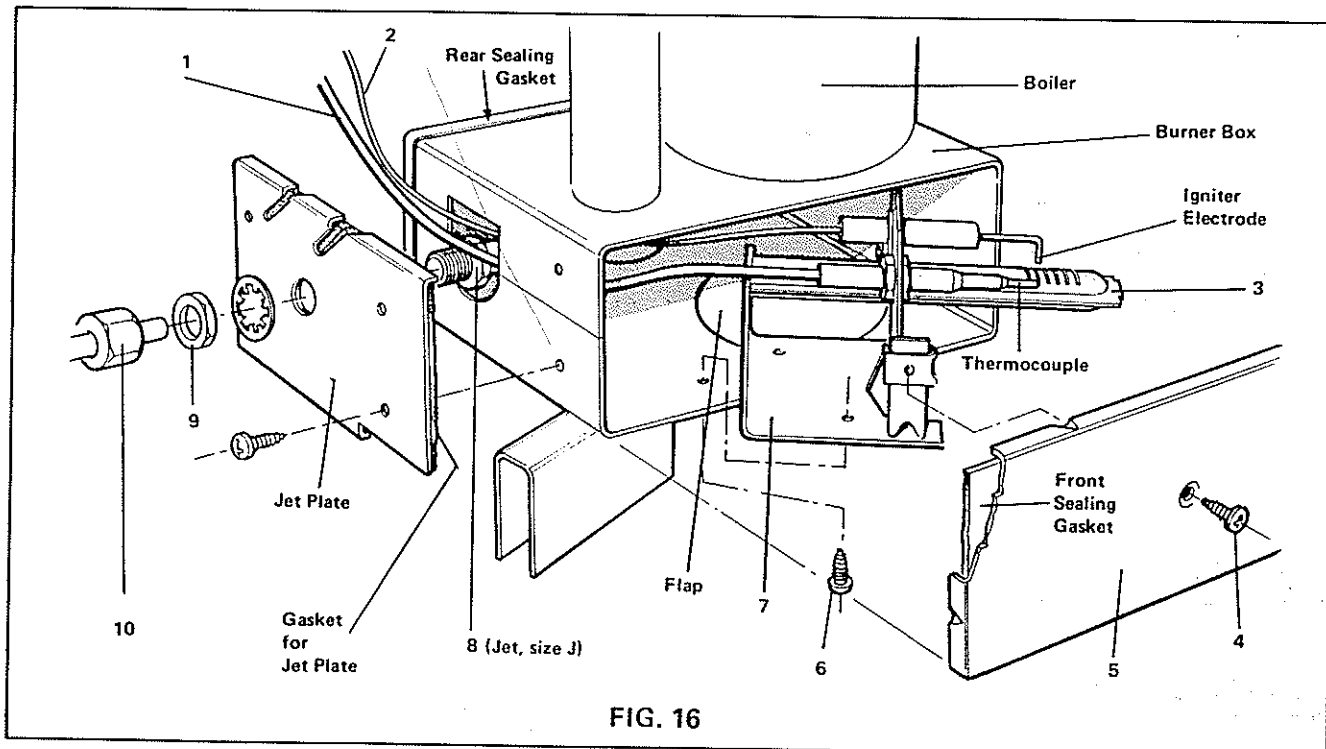
If there is no circuit when the refrigerator is connected to the 12V supply, first check that the fuse (fitted during installation) is intact and that current is available to the terminal block on the top rear of the refrigerator (fig. 12). If the fuse has blown, examine the supply wiring, cut-out relay, etc. (if fitted) and repair any fault before fitting a new fuse and re-connecting.

If current is available to the refrigerator, but the boiler of the cooling unit at the back does not heat up after being 'on' for at least half an hour, this indicates that the heater has an open circuit and needs replacing by a new one. (If an electrical test-meter is available, the two heater leads can be disconnected from the terminal block on the refrigerator and the heater tested for continuity).

To fit a new heater it will be necessary to disconnect the refrigerator from the gas and electricity supplies and remove it from the recess as described in item 20(a), sections 1, 2 and 3. Take off the flue terminal casting and the flexible tubes.

Remove the faulty heater and fit the new one as follows (see fig. 17).

1. Slide up the long clip (1) which holds the edges of the boiler casing together, to within 2 or 3 inches of the top of the boiler casing. *Do not remove clip completely.*
2. Disconnect faulty heater leads then pull heater (2) out of metal pocket on boiler tube, taking care not to damage boiler insulation.



3. Check that new heater is of the correct type and voltage and fit it in the boiler tube pocket in the same way as the original was fitted.
4. Ensuring that boiler insulation is correctly in place, secure boiler casing edges together by sliding on the metal clip (1).
5. Connect heater leads to terminal block and re-install refrigerator as described in item 8. Check for gas leaks in accordance with item 9 and test refrigerator for satisfactory operation.

23. TROUBLE SHOOTING

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 flue terminal. 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.

If refrigerator does not cool satisfactorily

- a) Check that the ice-tray shelf 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 5. See that the upper and lower ventilators are not obstructed.
- b) Thermostat incorrectly used ... see item 12.
- c) Evaporator heavily coated with frost ... see item 16.
- d) Air circulation around cooling unit restricted ... see item 5.
- e) Flame has gone out:
 - i Gas in bottle used up.
 - ii Connection between thermocouple and flame failure device body loose ... tighten union, but do not over-tighten.
 - iii Clogged thermostat by-pass screw ... clean or exchange it, see item 20(b).
- f) Flue baffle not inserted into central tube of the cooling unit ... see item 20(c).
- g) Wrong gas pressure at burner ... have pressure checked (see item 1). Pressure at burner must not fall below 11 ins w.c. when thermostat is set on 'MAX'.
- h) Burner assembly loose ... re-assemble correctly.
- i) Jet orifice or burner clogged ... see item 20(a).
- j) Faulty operation of the thermostat ... have new one fitted.
- k)
 - i Electric operation ... heater open circuit, see item 22.
 - ii Voltage drop due to defective battery, or wiring from battery to refrigerator not heavy enough ... see item 7.
 - iii Burnt out fuse, see item 22.
- l) 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.
- m) Burner damaged.
- n) Flame touches flue baffle:
 - i Baffle too low in flue ... see item 1.
 - ii Gas pressure too high ... see item 1.
 - iii Jet orifice has been opened out ... fit new jet of correct size (size J). See item 20(a).
- o) Dirty flue tube; clean flue, burner and jet as described in item 20(a).

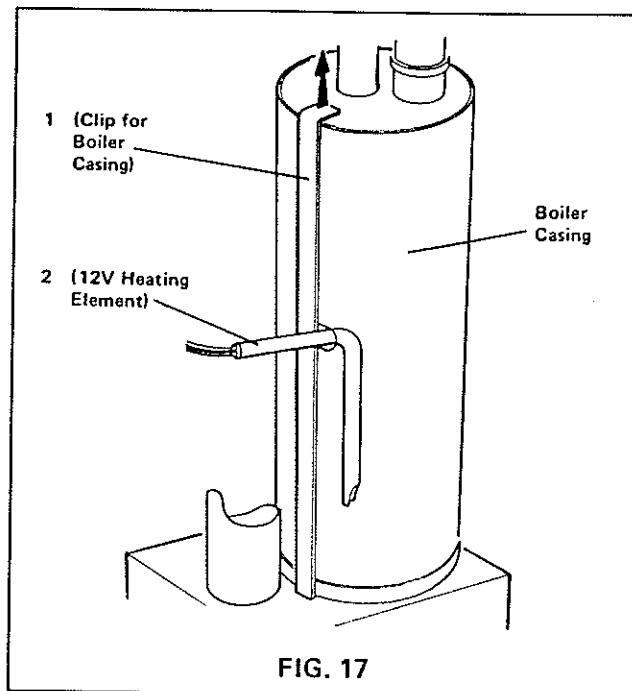


FIG. 17

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. If assistance is required, contact the service point or distributor service department.