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SERVICE MANUAL

REFRIGERATOR for recreational vehicles	
RM24A	RM36C
RM46	RM47
RM66	RM67
RM76	RM77

Edition¹

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When ordering SPARE PARTS always state:

MODEL. QUANTITY. PART NUMBER. DESCRIPTION

For electric details also:

VOLTAGE. WATTAGE

Service Instructions for Dometic Absorption Refrigerators

The absorption refrigerators described in this manual are primarily for installation in recreational vehicles.



Since the vehicles in which the refrigerators are located may be driven to remote camp sites where electrical power is not available, the refrigerators have been designed to operate by propane or butane gas as well as by electricity 12/110V.

These Service Instructions cover the Dometic Models RM24, RM36C, RM46, RM47, RM66, RM67, RM76, RM77.

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1. TECHNICAL FEATURES

RM24

The cabinet has a so called "Full Finish Casing" and can be used freestanding or built-in. RM24 is a compact refrigerator, ideal for campers, fitted with front frame and seals.

This refrigerator is fitted with right-hand door with change over facility to left-hand door and exchangeable front door panel in an aluminium framed door.

Exchange can be made without the removal of the door. A full range of equipment is available operated from the rear of the cabinet. A blow-out protection flue is fitted as standard to assist in maintaining flame stability under adverse wind conditions. A sealing frame is fitted around the cabinet for building-in **purposes**,

The refrigerator has one basic casing which is Foamed in place with a lining. Insulation material polyurethane.

The construction of the door, complete, is an aluminium extruded door frame foamed in place with the door pan and magnetic gasket.

Equipment

Fool-proof electric/gas interlock system. Thermo-electric flame failure device. Flint lighting system. The electric and the gas thermostats are of the English Ranco-make .

The gas/e1 controls are located at the rear of the refrigerator and are accessible through the service door in the wall, when installed in a vehicle.

Version

Gas/110 volts A.C. and 12 volts D.C.

RM36C, RM46, RM47, RM66, RM67, RM76, RI.177

Cabinet

Thin wall polyurethane insulation. All models except RM76 and RM77 have foamed in place insulation. RM76 and RM77 are foamed against mould.

Lining of vacuum-foamed ABS plastic, except RM36C, which has a lining of injection moulded SB plastic.

Distinct stop for evaporator door at 90° opening, RM46, RM47, RM66 and RM67

Cabinet shelf with hinge for big bottles,

The shelves run in grooves and will not move during transport of the vehicle.

Freezer compartments are, of aluminium sheet, except RM36C, where it is an injection moulded part of the lining.

Accessible control panel inside the fresh food compartment.

Door

All models will be delivered with right hand door hinging, but it is possible for the customer to change the door hinging from right to left hand.

Replacement of **door** panel is possible without removing the door. Only the side profile of the door frame has to be removed.

Equipment

All models incorporate a thermo-electric flame failure safety device and a piezo lighting system.

The equipment for electric and gas operation is located at the rear of the cabinet and manipulated from inside the cabinet.

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 electric and gas thermostats are of the Ranco-make.

Version

All models will be available with combination equipments for LP gas and 110 volts A.C. or LP gas/110 volts A.C. and 12 volts D.C.

2. INSTALLATION INSTRUCTIONS

For LP-gas and electric operation in Motor Homes and Recreational Vehicles.

General instructions

The refrigerators outlined herein have been design certified under ANS 221.19 Refrigerators by the American Gas Association for installation in a mobile home or recreational vehicle and are approved by the Canadian Gas Association.

The certifications are, however, contingent on the installation being made in accordance with the following instructions,

The installation must conform with:

In U.S.A.:

1. Installation of Gas Appliance and Gas Piping, 221.30 - 1964.
2. Mobile Homes A 119.1 - 1969.
3. Recreational Vehicles A 119.2 - 1970. The unit must be electrically grounded in accordance with the National Electrical Code ANSI CI - 1968, when installed if an external alternating current electrical source is utilized.
4. Any applicable local code,

In Canada:

1. C S A Standard B 149. "Installation Code for Gas Burning Appliances and Equipment"
2. C S A Standard B 210.1/Z 240.4. "Gas equipped recreational vehicles and mobile homes"

Ventilation

The installation shall be made in such a manner as to separate the combustion system from the living space of the recreational vehicle. Openings for air supply or for venting of combustion products shall have a minimum dimension of not less than 1/4 inch.

Approved installation requires one lower fresh air intake and one upper exhaust vent. The accessory ventilation kits shown in these instructions have been tested and approved for use with the refrigerator models identified. Their use is recommended, and when employed, the ventilation kits must be installed and used without modification,

An opening to the outside at floor level of the refrigerator compartment must be provided for ventilation of heavier-than-air fuel gases. The lower vent in the Dometic kits is provided with proper size openings.

Gas connect ion

Hook-up to the gas supply line is accomplished at the manual gas valve, which is furnished with a 3/8" (SAE) male flare connection. All completed connections should be checked for leaks with soapy water.

CAUTION: When connecting the gas line to the gas valve on the gas/e1 equipment at the rear of the refrigerator, use a back-up wrench to prevent undue rotation of the gas cock,

For hook-up and servicing purpose the **lower** vent is constructed as a lift out panel.

The gas supply system must incorporate a pressure regulator to maintain a supply pressure of not more nor less than 11 inches water gage.

Electrical connections

110 V A.C.

The 110 V electric cord should be plugged into an approved receptacle in the refrigerator compartment. The cord should be routed to avoid coming in contact with the burner cover, flue cover or other hot components.

12 V D.C.

On "Tri-Power" units there is an additional terminal block marked "12 V". The refrigerator must be connected to the battery circuit with two wires of adequate capacity to avoid voltage drop.

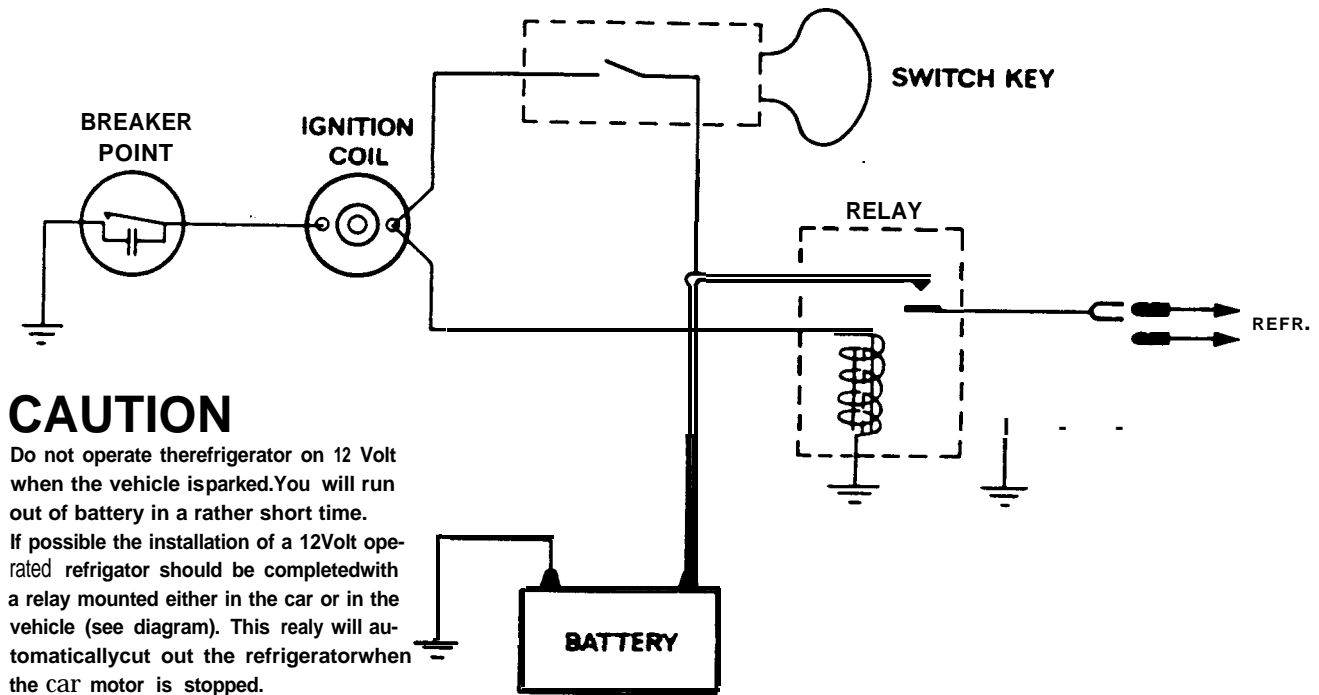
Do not use the body or chassis as a substitute for either of these wires (possibly only in motor homes). No other electrical equipment or lighting should be connected to the refrigerator circuit.

When estimating length and **area** of conductor cable, see table, page 6.

CAUTION:

Do not operate the refrigerator on 12 Volt when the vehicle is parked. You will run the battery dead in a rather short time.

If possible the installation of a 12 Volt operated refrigerator should be completed with a relay mounted either in the car or in the vehicle (see diagram). This relay will automatically cut out the refrigerator when the car motor is stopped.



CAUTION

Do not operate therefrigerator on 12 Volt when the vehicle is parked. You will run out of battery in a rather short time.

If possible the installation of a 12Volt operated refrigerator should be completed with a relay mounted either in the car or in the vehicle (see diagram). This realy will automatically cut out the refrigerator when the car motor is stopped.

Fig. 1

The figures below are guiding valuer calculated in consideration of 0.5 V voltage drop (about 7 % input loss) in the connection cables without taking into account the losses at the terminals,

AWG	Maximum length of two conductor cable in feet from power supply						AWG in mm (solid cooper wire)	
	95 W	125 W	150 w	175 w	225 W	275 W	∅ mm	Area mm ²
14	28	21	17	15	11	-	1.628	2.082
12	45	34	28	24	18	-	2.052	3.307
10	72	54	45	38	30	24	2.588	5.260
8	-	87	72	62	48	39	3.264	8.367
6	-	-	99	77	62	62	6.115	13.299

mm ²	Maximum length of two conductor cable in meter from power supply					
	95 w	125 W	150 w	175 w	225 w	275 W
1.5	6.0	4.5	-	-	-	-
2.5	10.5	7.5	6.5	5.5	4.0	-
4	16.5	12.5	10.5	9.0	6.5	5.5
6	25.0	18.5	15.5	13.5	10.0	8.0
10	-	32.0	26.5	22.5	17.0	14.0

Special hints

The refrigerator must be installed in a substantial enclosure and must be level. A spirit Level is supplied with each refrigerator and by placing it in the freezer compartment the refrigerator can be leveled both ways front to back and side to side. When installing the refrigerator in the enclosure, care should be taken to ensure a complete sealing between the front frame of the refrigerator and the top, sides and bottom of the enclosure. For this purpose a length of sealing strip is delivered with each refrigerator. The sealing strips should be applied to the rear surfaces of the front frame of the refrigerator. See fig. 2. (RM24 is supplied with this sealing already fitted on the front frame of the refrigerator).

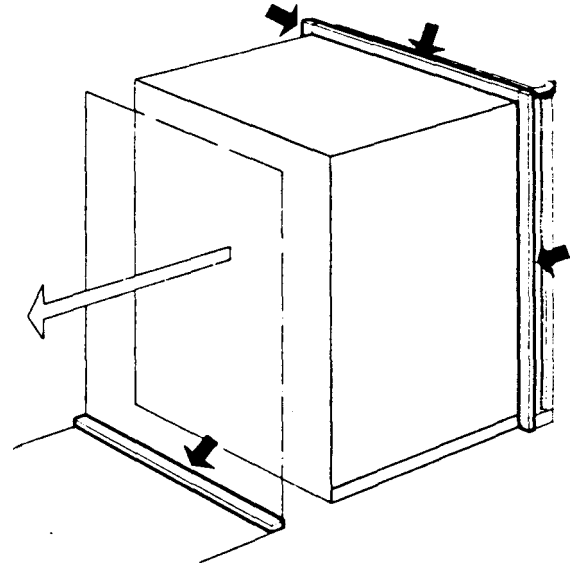


Fig. 2

Be careful not to damage the sealing strip applied to the bottom of the enclosure when the **refrigerator is put** in place.

Any space between the counter or storage area and the top of the refrigerator must be blocked. The heat produced at the rear of the refrigerator will otherwise become trapped in this space making the top of the refrigerator hot and reducing the efficiency of the refrigerator,

Approved installations

Approved installations require one roof vent and one lower side vent as optional, one upper side vent and one lower side vent, as shown in the figures 4, 5 and 6.

- | | | |
|-----------|-------------|---|
| Kit No. 1 | comprising: | Upper side vent (Dometic 123) |
| | | Lower side vent (Dometic 183) |
| Kit No. 2 | comprising: | Upper side vent (Dometic RM122) |
| | | Lower side vent (Dometic RM2217) |
| Kit No. 3 | comprising: | Roof vent (Dometic V 2019) |
| | | Lower side vent (Dometic RM2217) |

When installing the refrigerators full consideration should be taken to the sealing instructions and the specified minimum clearances and ventilation heights tabled below:

MINIMUM INSTALLATION CLEARANCES IN INCHES

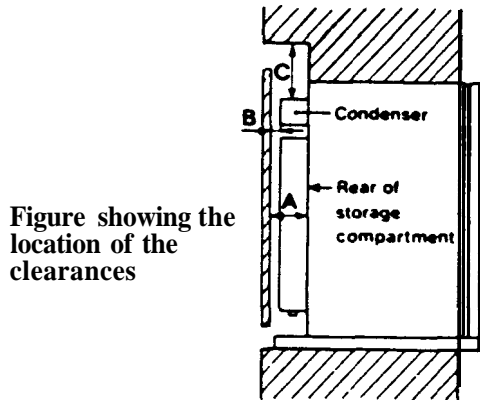


Figure showing the location of the clearances

Fig. 3

	Refrigerator model				
	RM24	RM36C	RM46 RM47	RM66 RM67	RM76 RM77
Clearances on sides, top and bottom	0	0	0	0	0
Clearance A from the rear of storage compartment	4	4	4	4	5
Clearance B from rear of condenser	1	1	1	1	1
Clearance C on top of condenser	See minimum ventilation height figures				

MINIMUM VENTILATION HEIGHT FIGURES

Refrigerator model	Installation type		
	Kit No. 1	Kit No. 2	Kit No. 3
RM24	22 9/16"		
RM36C		37 1/16"	29"
RM46, RM47		39 5/8"	32"
RM66, RM67		47 1/2"	41"
RM76, RM77		70 1/4"	59"

PROPER VENTING IS REQUIRED TO ENSURE BEST PERFORMANCE

Kit No. 1 - RM24

comprising:

- Upper side vent (Dometic 123)
- Lower side vent (Dometic 183)
- (see Fig. 4)

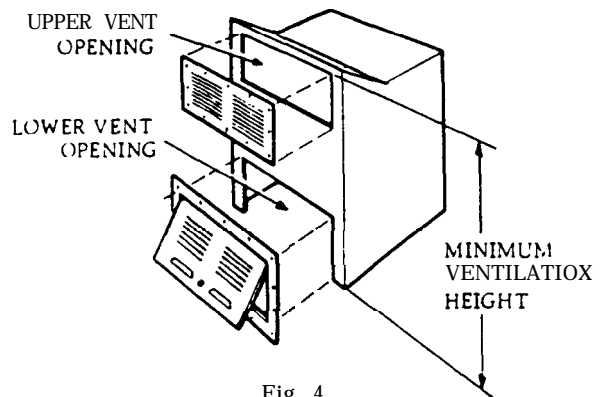


Fig. 4

Kit No. 2 - RM36C

comprising:

- Upper side vent (Dometic RM122)
- Lower side vent (Dometic RM2217)
- (see Fig. 5)

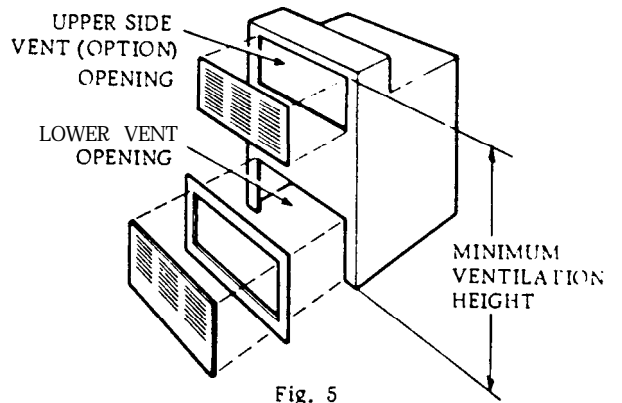


Fig. 5

Kit No. 3 - RM36C, RM46, RM47
RM66, RM67, RM76, RM77

comprising:

- Roof vent (Dometic V 2019)
- Lower side vent (Dometic RM2217)
- (see Fig. 6)

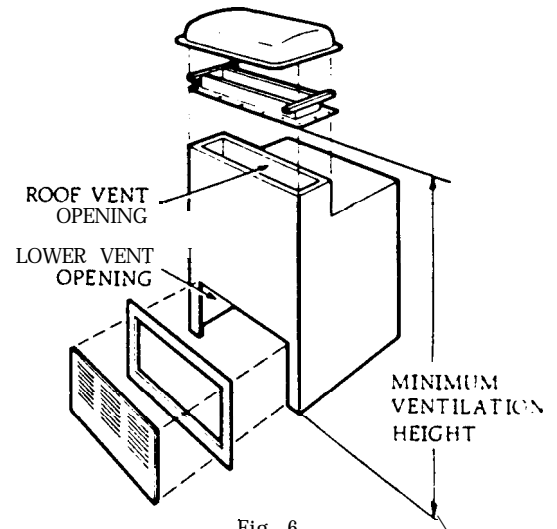


Fig. 6

Dimensions pertaining to the installation are shown under measurements.

VENTING MEANS

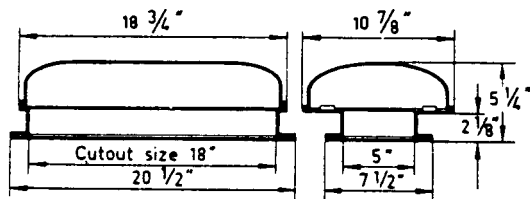


Fig. 1

Roof vent for Kit No. 3
Dometic V 2019

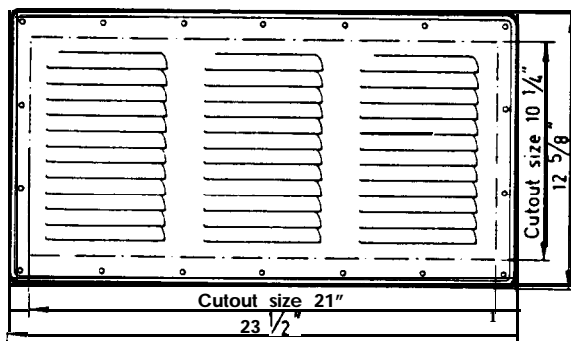


Fig. 8

Upper side vent, Kit No. 2
Dometic RM122

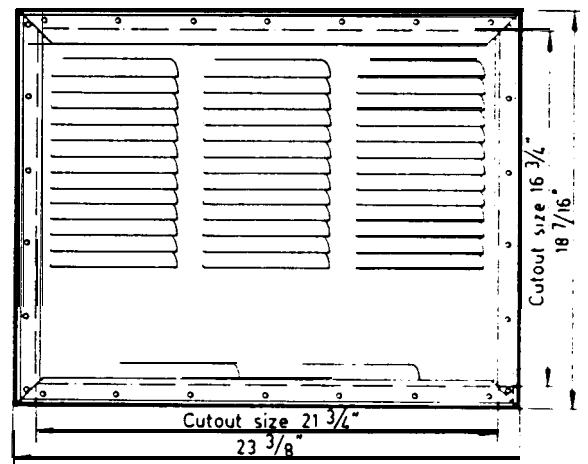


Fig. 9

Lower vent, Kits No, 2 and No, 3
Dometic RM2217

MEASUREMENTS

Cabinet and recess dimensions in inches.

Refrigerator models	Cabinet Overall dimensions			Door projection	Built-in space required		
	A Depth	B Width	C Height		D Depth	E Width	F Height
RM24	18 13/16	19 1/8	22 1/8	1 7/16	18 1/4	19 1/4	22 1/4
RM36C	21 7/8	20 1/4	28 3/8	1 3/4	20 1/4	20 1/4	28 3/4
RM46, RM47	24 7/8	21 9/16	30 7/8	1 3/4	23 1/4	21 7/8	31 1/4
RM66, RM67	24 7/8	21 9/16	38 13/16	1 3/4	23 1/4	21 7/8	39 3/16
RM76, RM77	24 5/8	23 7/16	56 1/2	1 3/4	23 5/8	23 13/16	56 7/8

Cabinet and recess dimensions in mm.

Refrigerator models	Cabinet Overall dimensions			Door projection	Built-in space required		
	A Depth	B Width	C Height		D Depth	E Width	F Height
RM24	478	486	562	37	460	489	572
RM36C	556	513	720	45	515	521	729
RM46, RM47	631	547	785	45	590	555	794
RM66, RM67	631	547	985	45	590	555	994
RM76, RM77	625	595	1435	45	599	605	1444

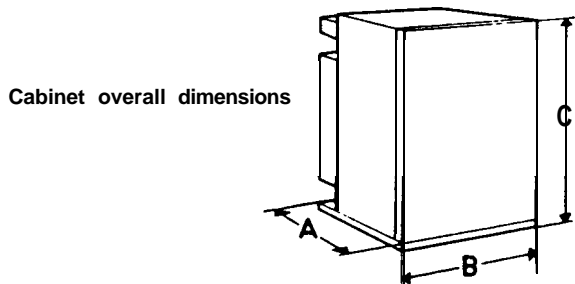


Fig. 10

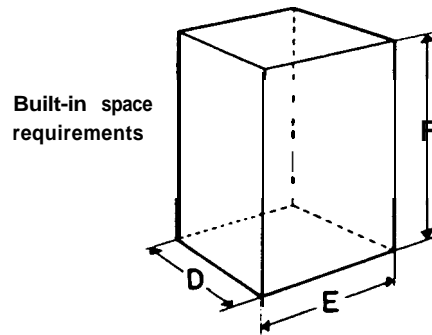


Fig. 11

Grounding

It is imperative, for personal **safety**, that all refrigerators equipped with a three-prong (Grounding) plug be used only with properly grounded wall receptacles. See fig. 12.

If there is any doubt as to whether the wall receptacle is properly grounded, the customer should have it checked by a qualified electrician. DO NOT, UNDER ANY CIRCUMSTANCES, CUT OR REMOVE THE THIRD (GROUND) PRONG FROM THE POWER CORD PLUG,

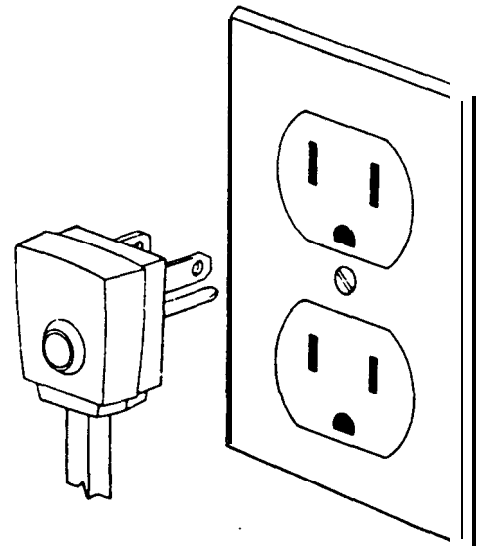


Fig. 12

Proper fusing

Fusing of any circuit should be in accordance with local electrical code. The refrigerator should be plugged into a separate branch circuit. Use of extension cords should be avoided on refrigeration equipment. In the event an extension cord is used, the cord should not exceed six feet and be of sixteen gauge or heavier wire.

Gas line

L.P. gas is highly inflammable and it is of extreme importance to ensure that all joints in piping carrying the gas from the storage bottle to the burner on the refrigerator are - and will remain - absolutely gas tight. Check at least twice a year.

The gas line should be free of kinks and sharp ends.

After installation, the gas should be turned on and all joints in the gas line checked for leaks up to the burner using soapy water. This check should be repeated periodically ,

Do not fit any extension to the top of the flue. This is not only unnecessary, but can create draught conditions which can adversely affect correct combustion at the burner and consequently, the functioning of the cooling unit,

The refrigerator should be operated at an inlet gas pressure of 11" W.G. (280 mm W.G)

Incoming gas pressure is controlled by the pressure regulator on the propane/butane bottle.

CAUTION :

When connecting the gas line to the gas cock on the gas/el equipment at the rear of the refrigerator, use a back-up wrench to prevent undue rotation of the gas cock.

It is of utmost importance for correct functioning of the gas/el control on RM36C, RM46, RM47, RM66, RM67 and RM76, RM77, that the gas cock lever is correctly engaged in the slot "E" (see Fig, 16) on the plastic driving disc "A" of the gas/el control mechanism.

If for **any reason** the gas cock lever has come off position in the driving plastic disc, check alignment, Proceed as follows:

1. Turn downwards the driving plastic disc "A" to stop "B" (see fig. 13).
2. Turn downwards the lever "C" of the gas cock as far as possible (fig. 13).
3. Pull the driving disc "A" outwards (fig. 14).

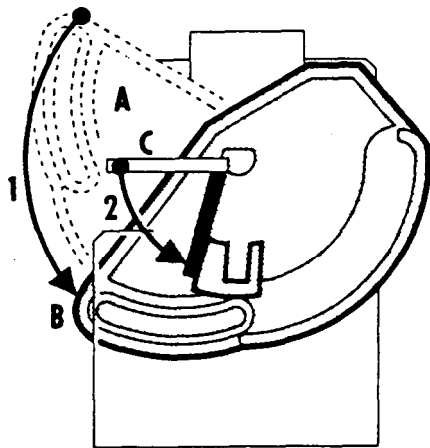


Fig. 13

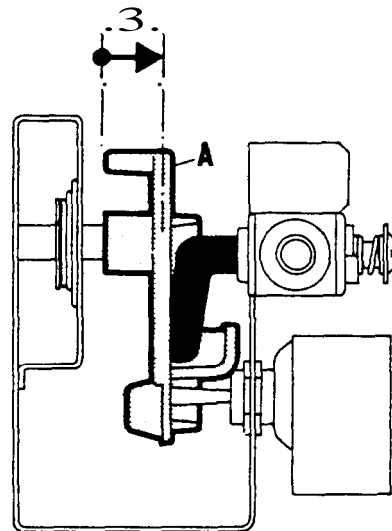


Fig. 14

4. Turn the lever "C" of the gas cock into vertical position "D" (see fig. 15).
3. Release the driving disc which is then pulled inwards by spring action, whereby the lever of the gas cock snaps into its slot "E" on the driving disc "A" (fig. 16).

iiote: If the gas **cock lever sluggishly snaps** into its position in the driving disc "A", adjust the two fastening screws "F" of the mechanism.

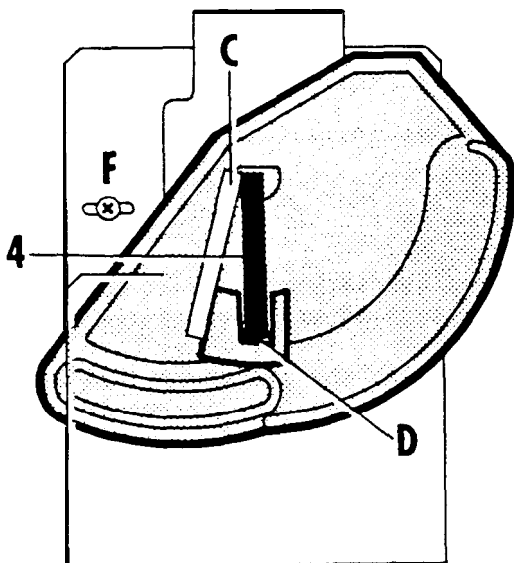


Fig. 15

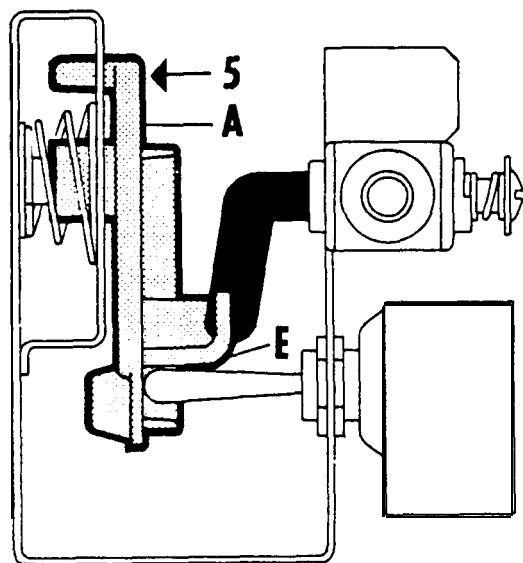


Fig. 16

Combustible Material Storage

Combustible material such as ether, gasoline, hexane, naphtha, benzine, butane, propane, alcohols, acetone, benzol, lacquer solvent, or natural gas **SHOULD NOT BE** stored in a refrigerator. These materials are classified as hazardous and constitute a dangerous application of the refrigerator.

Keeping sealed system area free of litter,

Litter, including paper or rags, woodshavings or other combustible material, should not be stored in the area of the absorption system behind the refrigerator. Often rags or paper towels (etc.) will be saturated with a combustible cleaning solvent. Such materials must not be allowed in the space behind the refrigerator because of the gas flame which is used to power the refrigerator. Even when the refrigerator is operated on electricity, litter must not be stored in this area because of heat given off by the refrigerating absorption **system**. It is also of utmost importance that the air circulation round the unit's parts behind the cabinet is unrestricted. Good refrigeration performance is dependent upon adequate ventilation of the refrigeration unit.

3. UNUSED OR ABANDONED REFRIGERATORS

An unused or abandoned refrigerator or freezer in your basement or garage poses a hazard to children.

When you discard a refrigerator or freezer . . .

COMPLETELY REMOVE THE DOOR. In many municipalities, this is the law. At any rate, it takes only a moment with a screwdriver. Do this as soon as possible. *Also*, as soon as you can, have the old unit carted away and destroyed before it attracts a child's curiosity and endangers his life.

4. TO CHANGE THE DOOR PANELS

on models RM36C, RM46, RM47,
RM66, RM67, RM76, RM77

Remove the screws holding one side member of the aluminium door frame. Pull out the outer door panel, replace panel, reassemble and refit the door,

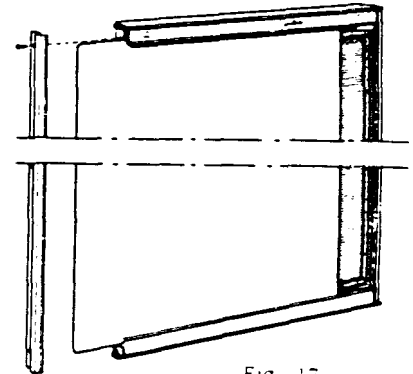


Fig. 17

Panel dimensions

Type	Height		Width		Thick- ness Max.
	Max.	Min.	Max.	Min.	
RM24	18 9/16"	18 1/2"	18 3/16"	18 1/8"	1/8"
RM36C	25 7/32"	25 3/32"	20 5/32"	20 1/32"	5/32"
RM46, RM47	27 25/32"	27 21/32"	21 1/2"	21 3/8"	5/32"
RM66, RM67	35 21/32"	35 17/32"	21 1/2"	21 3/8"	5/32"
RM76, RM77	11 11/32"	11 1/4"	23 13/16"	23 3/4"	1/8"
RM76, RM77	41 1/32"	40 15/16"	23 13/16"	23 3/4"	1/8"

To change the door panel. Model RM24.

- A. Remove the top decoration strip (2) with its two screws (1). pull outward on the top of the door panel and lift slightly to free the panel from the bottom groove.
- B. If a new panel is being installed, assure that it is the same size as the old panel,
- c. Install the new panel by inserting one of the vertical sides of the panel into the groove of the door frame (4).
- D. Bend the panel gently so that the free side of the panel can be slipped into corresponding groove of the door frame (5).
- E. Push the panel downwards so that the lower horizontal edge of the panel is fitted in the bottom groove (6).
- F. Between the upper edge of the panel and the door frame there is now a gap which should be covered by the decoration strip,
- G. Put the strip across the door so that the gap is covered and push it upwards (7). The tabs on the inside of the strip should fit in behind the flange of the door frame.
- H. When put in place, secure the decoration strip by means of the two screws (1). The panel is then locked in proper position.

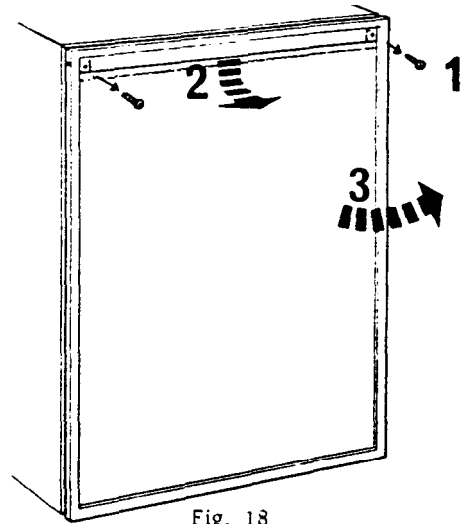


Fig. 18

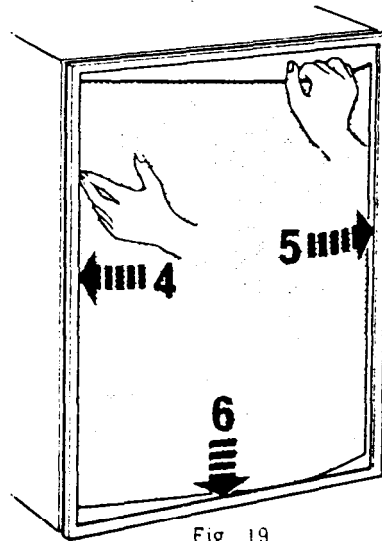


Fig. 19

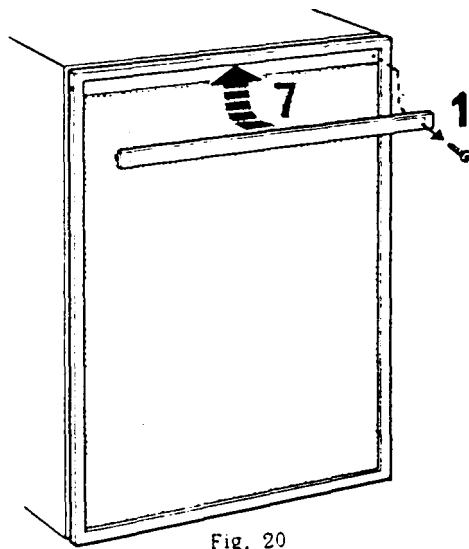


Fig. 20

5. REPLACEMENT OF DOOR GASKET ON RM24

The construction of the door complete is an aluminium extruded door frame foamed in place with the door pan and magnetic door gasket, i.e. the door pan cannot be removed,

Therefore, a special door sealing gasket for service purposes has been produced for the above model. The gasket is delivered in a set consisting of the gasket and of necessary fastening strips and *screws* and is ordered under part No. 290 07 33-00/3.

The replacement is made as follows:

1. Remove the door and place it with its front downwards on a soft surface.
2. Cut off the defective door sealing gasket, (Cut as near to the door pan as possible).
3. Drill $7/64$ " holes for the screws of the fastening strips. Use the holes of the door pan as pattern.
4. Fit the sealing gasket as shown in the figure 21.
5. Fit the door and adjust it so that it seals properly.

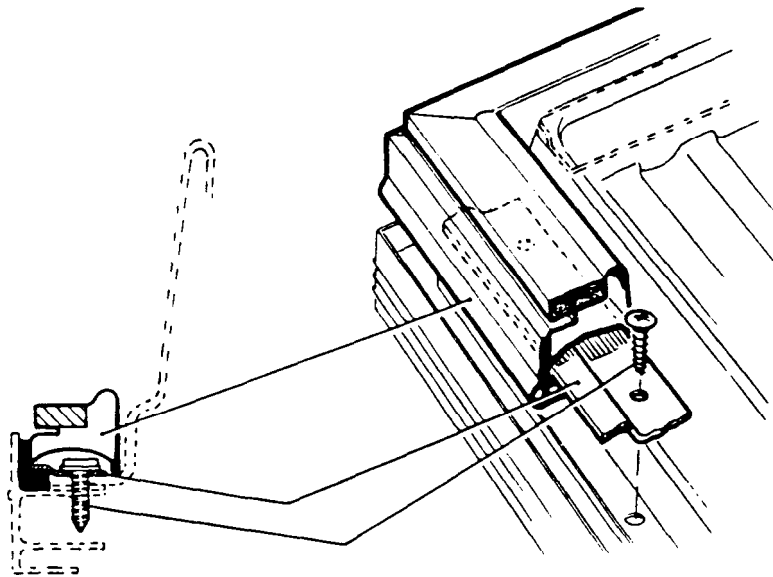


Fig. 21

Replacement of door gasket on models
RM36C, RM46, RM47, RM66, RM67, RM76, RM77

1. Remove the door shelves.
2. Unscrew the upper hinge bolt, incline the door outwards and lift off the door.
3. Lay door on flat surface with door pan facing up.

CAUTION: Be sure to protect door panel to prevent scratches and dents.

4. The screws holding the door pan in place are hidden by the door gasket. Pull the door gasket to one side and remove all screws "A" (see fig. 24) from the door plate.

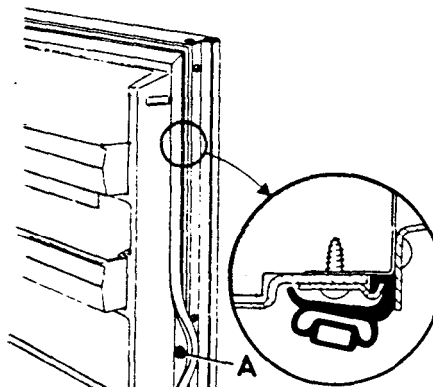


Fig. 24

6. REPLACEMENT OF EVAPORATOR DOOR ON RM36C

Unscrew the retainer (fig. 25) and remove the door.

REPLACEMENT OF EVAPORATOR DOOR CASKET - RM36C

1. Put evaporator door on a flat surface with the sealing gasket up,
2. Pry the door front away from the inner pan by means of a screwdriver (fig. 26).

CAUTION: It is of great importance that the screwdriver is applied in front of one of the plastic tongues which hold the inner panel and the door front together.

3. Replace the sealing gasket round the inner panel and snap the inner panel and the door front together.
4. Mount the evaporator door and refit its retainer.

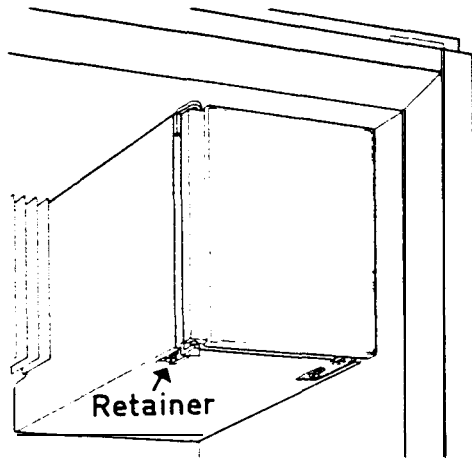


Fig. 25

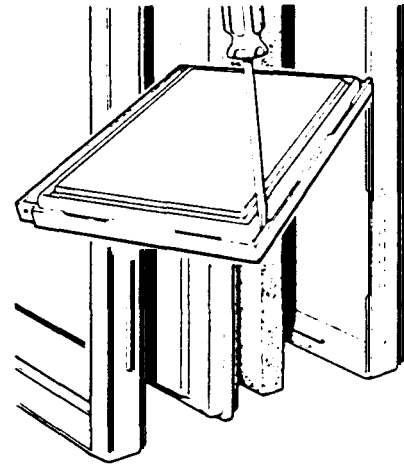


Fig. 26

REPLACEMENT OF EVAPORATOR DOOR ON RM46, RM47, RM66, RM67

1. Push the carrier (A) inwards by means of a blunt mandrel or pin (fig. 27) and remove the shutter.
2. Pry the spring housings (B fig. 27) away from the lining so that it snaps out and turn the spring housings downwards 180° (fig. 28).
3. Mount the new shutter in close position first on one side, making sure that the cross slots engage in the cross on the hinge plate (C fig. 27).
4. Press the carrier on the opposite side so that the hinge plate on the shutter can be pushed over it. See that the crosses engage.
5. Turn the spring housings round and up until the small tag (A fig. 28) snaps into the slot in the lining.

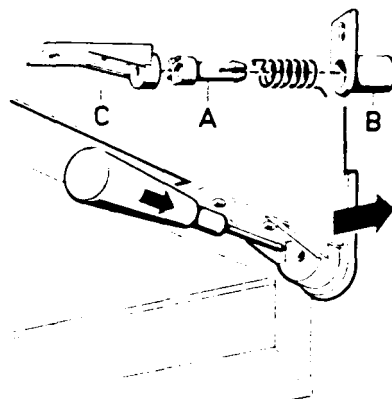


Fig. 27

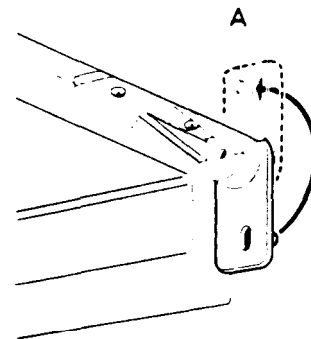


Fig. 28

REPLACEMENT OF EVAPORATOR DOOR GASKET ON
RM46, RM47, RM66, RM67

1. Remove the door as previously described.
2. Unscrew the hinge plates (A fig. 29).
3. Put shutter on a flat surface with the sealing gasket up.
4. Pry the shutter front away from the inner pan by means of a screwdriver (fig. 29).

CAUTION: It is of great importance that the screwdriver is applied in front of one of the plastic tongues (B fig. 29) which hold the inner panel and the shutter front together.

5. Replace the sealing gasket round the inner panel and snap the inner panel with sealing gasket into the shutter front until the tongues snap in position.
6. Mount the shutter as described above,

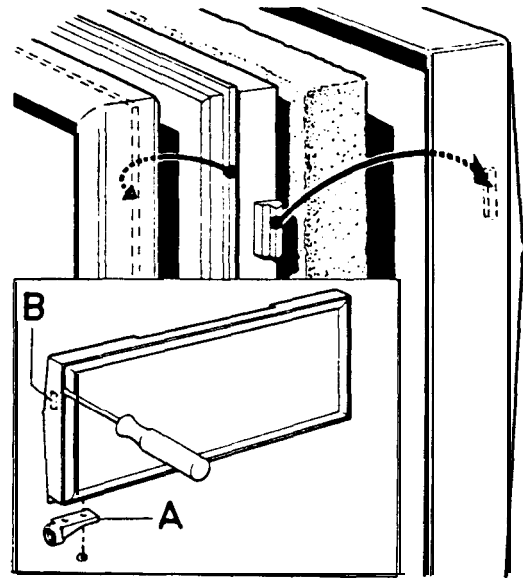


Fig. 29

7 TO CHANGE THE DOOR FROM RIGHT TO LEFT-HAND OPENING AND VICE VERSA -RM21

- (a) With the door closed,
- (b)
- (c)

the door seal can be adjusted. Loosen the front screws hinge arm and the four

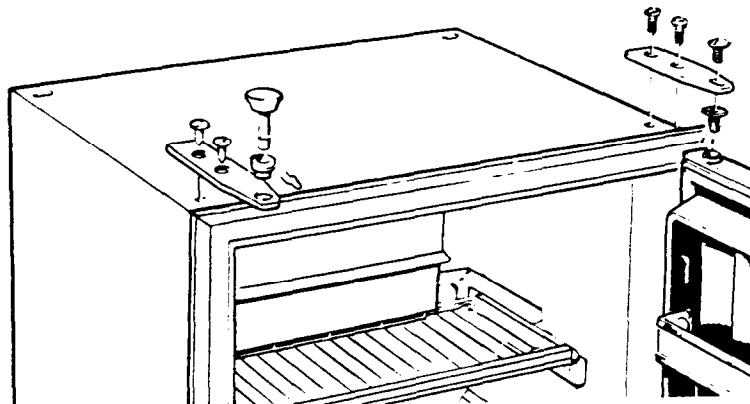


Fig. 30

To change the door from right to left-hand opening and vice versa on models RM36C, RM46, RM47, RM66, RM67

1. Unscrew and remove upper hinge bolt (A fig. 31), incline the door outwards and lift off the door. (Check that washer and nylon bushings are in the right positions).
2. Move the lower hinge bolt (B) to the opposite side.

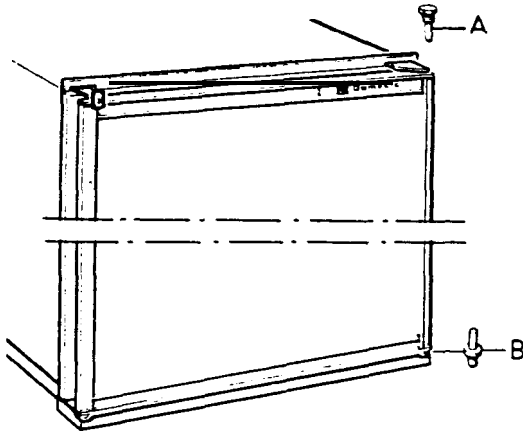


Fig. 31

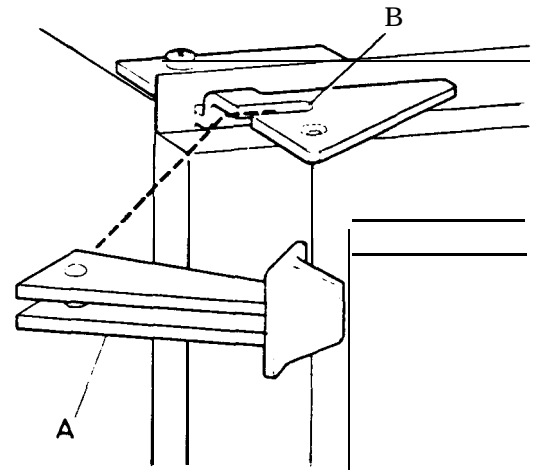


Fig. 32

3. Remove the plastic travel latch (A fig. 32) by means of turning it towards the cabinet opening and slide it out from its slot in the hinge plate (B). Turn the travel latch the opposite way and fit it on the hinge plate on the other side of the cabinet. When the travel latch is in locked position the fluted side of the latch should face the cabinet opening.
4. Refit the door and the upper hinge bolt,

CAUTION: Check that the door closes easily and that the door gasket seals well on all sides, If necessary, adjust by resetting the top hinge.

To change the door from right to left-hand opening and vice versa on RM76 RM77

1. Unscrew and remove the upper hinge bolt (A) on the freezer door, incline the door outwards and lift off the door (fig. 33).
2. Remove the middle hinge bolt (B) and lift off the cabinet door.
3. Move the lower hinge bolt (C) to the opposite side.
4. Unscrew the middle hinge (D) and the holder with travel latch (E) and change their positions to opposite side.
5. Refit the cabinet door and the middle hinge bolt.
6. Refit the freezer door and the upper hinge bolt,

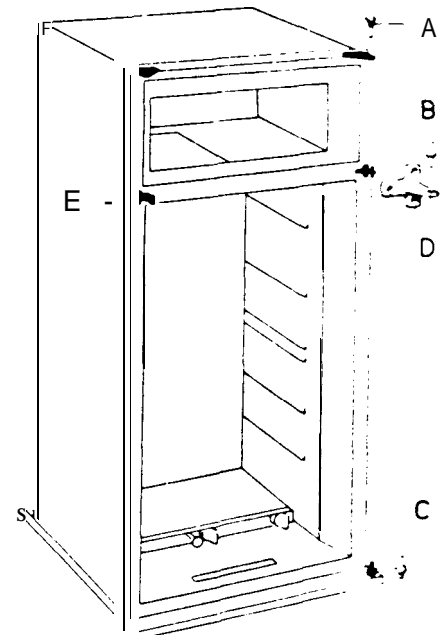


Fig. 33

CAUTION: Check that the door closes easily and that the door gaskets seal well on all sides.

8. THE ABSORPTION REFRIGERATOR SYSTEM

Sealed system construction

The sealed system of the absorption refrigerator is constructed of velded steel piping which contains the refrigerant charge. The charge consists of ammonia, hydrogen and water. There are no moving parts associated with the absorption system,

CAUTION:

When servicing an absorption system refrigerator, do not puncture or break the piping. Should a break occur and ammonia contact the skin, wash the affected area immediately with clear water. Do not attempt to open the valve on the absorber vessel. The valve is covered with a plastic cap and should never be removed.

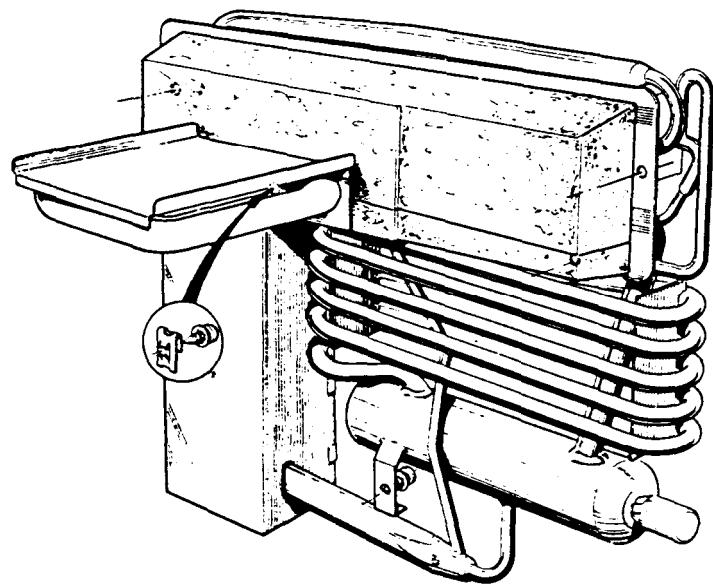


Fig. 34

Cooling Unit 257A -
gas/electric operation
for model RM24
without defrosting device

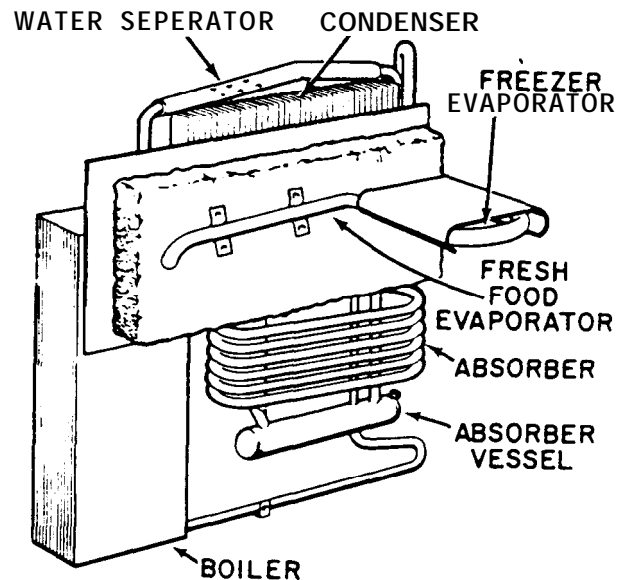


Fig. 35

Cooling Unit 270A -
gas/electric operation
for model RM36C
without defrosting device

Cooling Unit 315A
gas/electric operation
for model RN47
with defrosting device

Cooling Unit 317A
gas/electric operation
for model RM46
without defrosting device

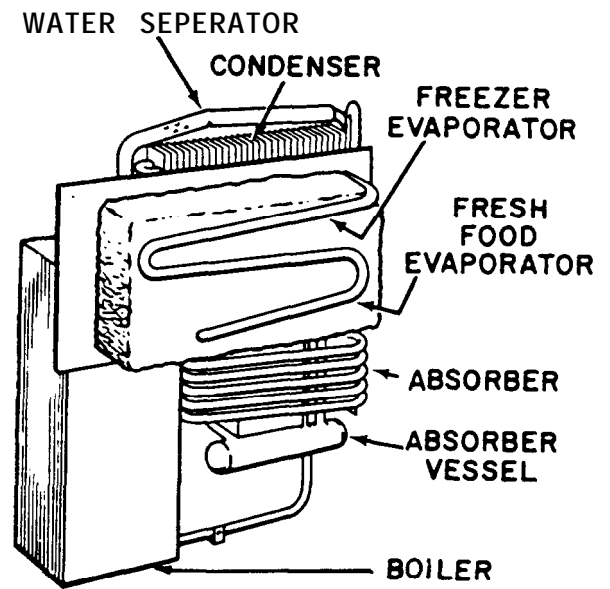


Fig. 36

Cooling Unit 351A
gas/electric operation
for model RM67
with defrosting device

Cooling Unit 352A
gas/electric operation
for model RM66
without defrosting device

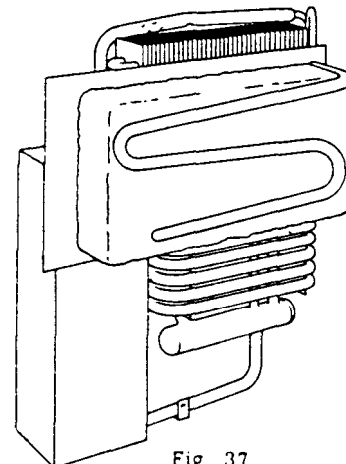


Fig. 37

Cooling Unit 513A
gas/electric operation
for model RM77
with defrosting device

Cooling Unit 515A
gas/electric operation
for model RM76
without defrosting device

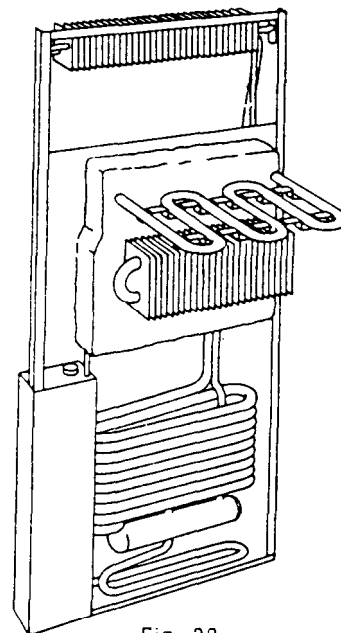


Fig. 38

9. OPERATION ANALYSIS FOR COOLING UNIT

It is obviously important that all external factors affecting the unit should be checked properly before a unit is condemned as faulty and that emphasis has been placed upon the necessity for correct installation, upright refrigerator, **correct** heat input, baffle position, etc. Check the size and the wattage of the electric heater and make sure that the heater element is inserted to its full length in its pocket. If the electric heater is only partly inserted, the heat distribution will be incorrect, causing an excessive vaporizing of the ammonia within the boiler when operating on electricity. The same symptom can show up with too much or too little heat input either on electric or on gas operation and also if the refrigerator had been operating in an off-level position or with inadequate ventilation.

If an excessive vaporizing of the ammonia within the boiler occurs due to the reasons above, the liquid mixture in the boiler becomes very weak and the pump will cease to operate, which means that the circulation of liquid stops with the result that the evaporator inside the cabinet ceases to produce cooling,

Such a blockage of the unit in the liquid circuit is most usually made evident by signs of overheating on the vapour pipe leading from the boiler to the condenser, the paint on this pipe being blistered and the metal becoming discoloured.

To remedy this fault it is recommended to remove the unit or refrigerator complete whenever possible and to allow sufficient **time** to cool down the unit. Turn the unit **or** refrigerator upside down several times, so that the liquid in the absorber vessel can be mixed with the liquid in the boiler. This procedure will restore the liquid balance to the unit.

The temperatures on various parts of a unit vary continuously **when** it is operating on thermostatic control and it is impossible **to** base a judgment on the symptoms given unless the refrigerator has been operating continuously on fully correct heat input for at least 5 hours, and preferably 12 hours, prior to examination. In many cases this can be arranged by a telephone call to the customer, asking him to switch the thermostat to "MAX" on the day before the inspection call, If after 12 hours' operation on "MAX" the performance is satisfactory, the unit is not at fault unless the complaint is one of varying or intermittent performance, In this connection the room temperature at the time of the complaint must be considered, as a unit which is satisfactory at an ambient temperature of 65°F ($+18^{\circ}\text{C}$) may not be satisfactory at 95°F ($+35^{\circ}\text{C}$).

In cases where satisfactory performance is obtained on "MAX" but not on other settings, the thermostat is to be suspected,

When a normal unit is working on "MAX" the absorber coil will be warmer at the bottom than it is at the top, The absorber vessel will be warmer, The vapour cooling pipe from the boiler to the condenser will be warm, bearably to the hand, at the bend where it joins the condenser, with a gradual rise in temperature towards the boiler end,

Unit filling valve

The needle valve used for admitting the filling charge to a cooling unit is fitted to the unit's absorber vessel and is covered by an aluminium or plastic cap. It is strictly applied provision of the warranty extended on the unit to the customer, that any interference with the filling valve will automatically void the warranty.

Unsatisfactory unit performance due to an ammonia leak can be determined in the **case** of a visible leak by traces of a yellow deposit at the point where the ammonia is escaping, If there is a leak on the evaporator inside the cabinet, a smell of ammonia may be noticeable,

10. COOLING UNIT REPLACEMENT RM24

If it is necessary to replace the cooling unit, proceed as follows:

1. Turn off the gas bottle.
2. Disconnect gas line to inlet valve,
CAUTION: Use a back-up wrench to prevent undue rotation.
3. Unplug the electric line.
4. Check that refrigerator is empty and remove ice tray.
5. Remove the evaporator cover with its flap "A" by means of pulling it outwards which will release it from the evaporator. (See Fig. 39).
6. Release the capillary clamp by removing the plastic rivet "B" and straighten the thermostat capillary tubes.
7. Remove the plastic cover "C" by means of pulling it towards the right hand side which will release it from the evaporator window.
8. Remove the refrigerator from its recess and place its front downwards on a soft surface.
9. Pull out the capillary tubes.
10. Loosen mount screws "A" holding the blow out kit, Fig. 40.
11. Remove the heater (see Fig. 13).
12. Remove mount screws "B" holding the unit.
13. Loosen screws "C" holding the bracket for the gas/e1 equipment and the screws "D" holding the burner housing and remove the gas equipment,
14. To replace unit, reverse above procedure,

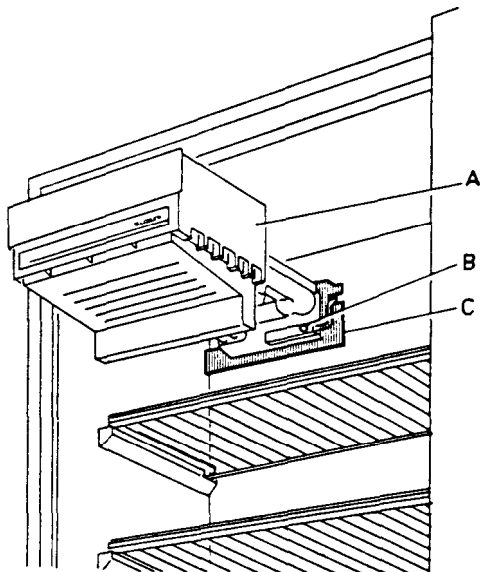


Fig. 39

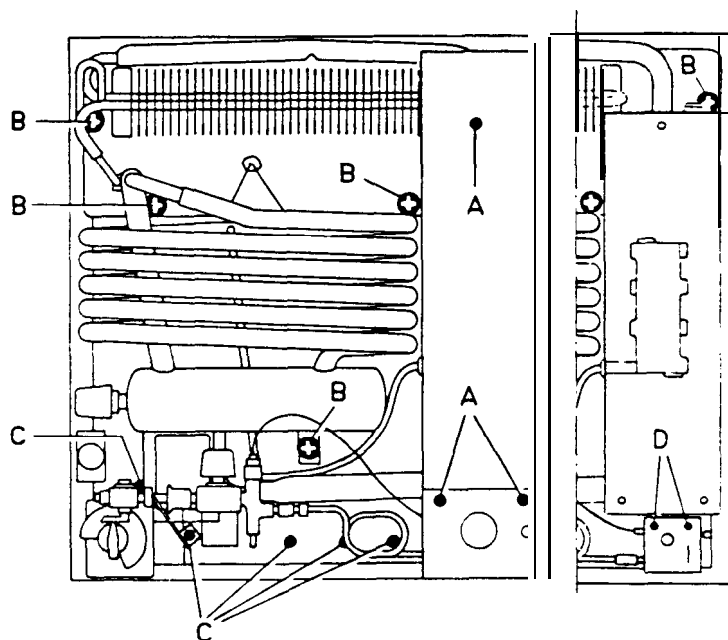


Fig. 40

COOLING UNIT REPLACEMENT - RM36C, RM46, RM47, RM66, RM67

Remove the refrigerator from its recess as follows:

1. Check that refrigerator is empty and remove ice tray.
2. Turn off gas bottle.
3. Disconnect gas line to inlet valve

CAUTION: Use a backup wrench to prevent undue rotation.

4. Unplug the electric line from the trailer outlet.
5. Remove the 4 screws in rear front of frame.
6. Check for any additional screws which the vehicle manufacturer may have used to fasten the refrigerator in place.
7. Carefully slide the refrigerator straight out of its recess.

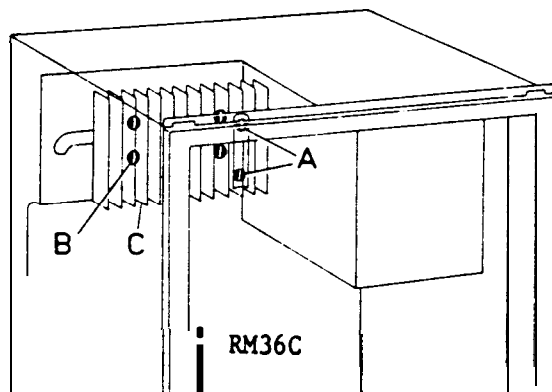


Fig. 41

To remove the cooling unit from the cabinet, proceed as follows:

1. Place the refrigerator on a work bench of suitable height.
2. Remove the thermostat capillary tubes by loosening the two screws "A" on the evaporator fins (Fig. 41 and fig. 42).

CAUTION: The locations of the thermostat capillary tubes should be noted at this time for relocation later on. The tubes must be placed in the right position, otherwise, improper performance may result.

3. Remove the two sealing plugs for capillary tubes, one on the back and one inside the cabinet, and straighten the tubes.
4. Remove the capillary tubes by going to the back of the refrigerator and gently pulling the tubes straight out.
5. Remove the 4 screws "B" and take away the evaporator fins "C". (On RM46, RM47 and RM66, RM67, 6 screws and 2 screws in the freezer compartment).
6. Remove the plastic cover "A" (Fig. 43) by means of pulling it upwards on the right hand side which will release it from the cabinet liner (only on RM36C).

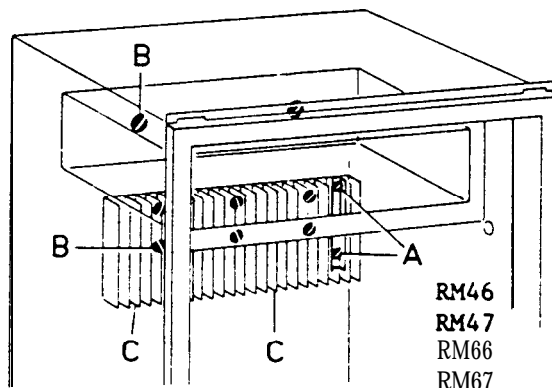


Fig. 42

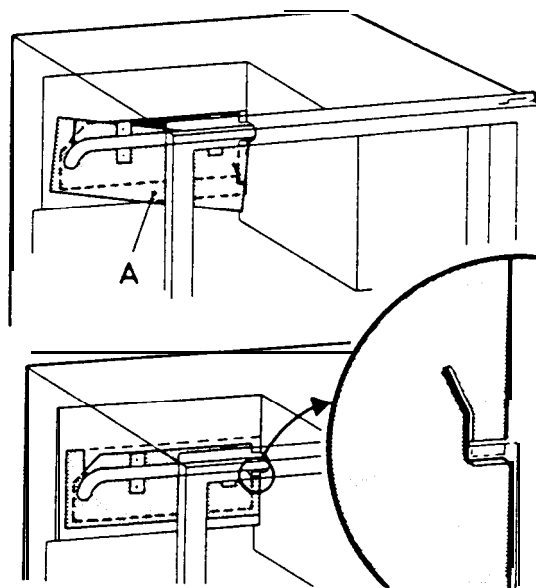


Fig. 43

7. Remove the connection block cover on the side of the boiler case and disconnect the two electrical wires where they join the heater leads in the connection block.
8. Remove the grounding screws "A" (see Fig. 46) on the lower part of the boiler case.
9. Remove the flue and the flue baffle.
10. Remove the screws "B" (see Fig. 46) holding the absorption unit onto the back of the cabinet.
11. Release the piezo electrode.
12. Carefully slide absorption unit out of cabinet. Be careful not to damage the inner liner of the cabinet,
13. To replace absorption unit, reverse above procedure.

CAUTION:

1. Be sure to apply sealing permagum "A" (fig. 44 and fig. 45) on the unit mounting plate and on the high evaporator inlet tube (B).
2. Be sure to fit insulation pad (C) and sealing (D) (only on RM36C).
3. Be sure to apply proper amount of "Thermal Mastic" on the evaporator coil "E" (fig. 44 and fig. 45).
4. When fitting the evaporator flange(s) be sure to tighten the screws properly in order to obtain a perfect contact between the evaporator coil and evaporator flange, otherwise improper cabinet performance may result.

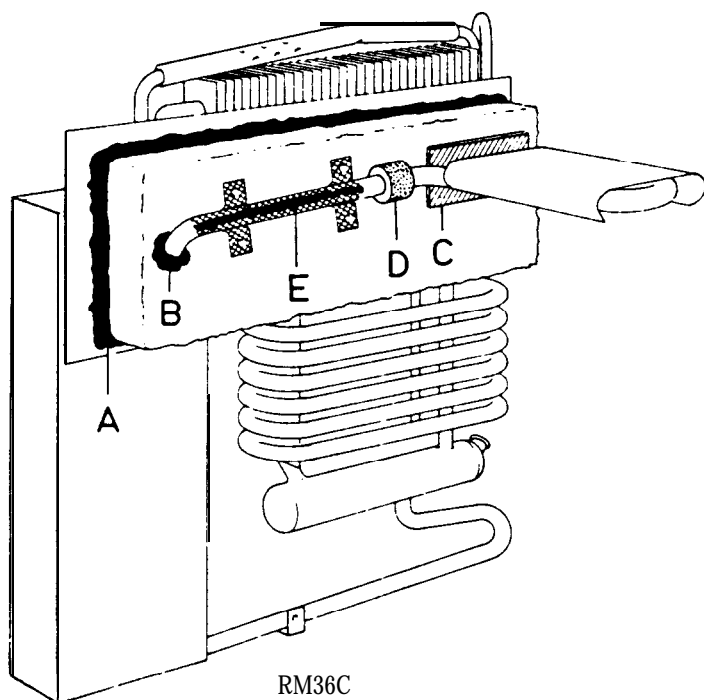


Fig. 44

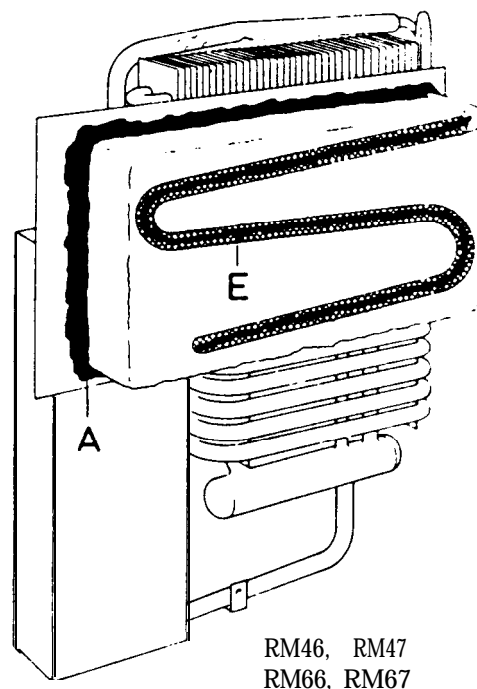


Fig. 15

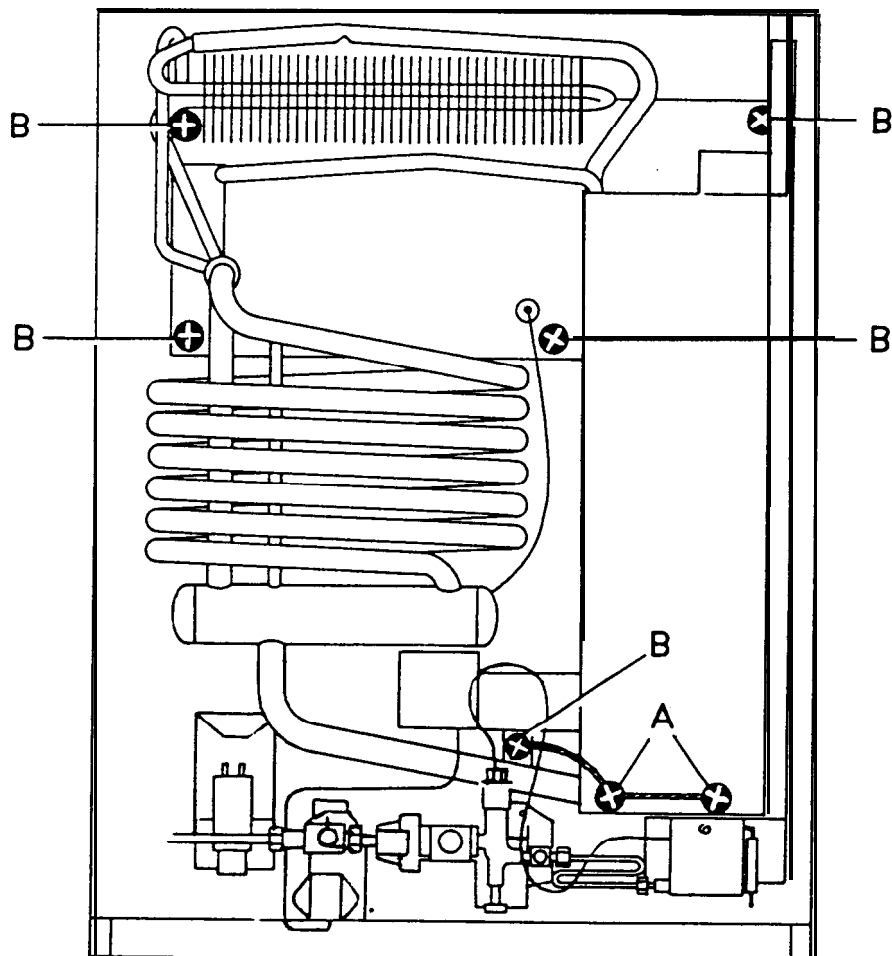


Fig. 46

Replacement of absorption unit on models RM76, RM77

When replacing the absorption unit it will be necessary to remove the refrigerator from its recess (paragraph 10).

1. Remove the 6 screws at the bottom of the freezer compartment ("A" fig. 47).
2. Remove the thermostat capillary tubes by loosening the two screws "B" on the evaporator fins (fig. 47).

CAUTION :

The locations of the thermostat capillary tubes should be noted at this time for relocation later on. The tubes must be replaced in the right position, otherwise improper performance may result,

3. Remove the two sealing plugs for capillary tubes, one on the back and one inside the cabinet, and straighten the tubes out.
4. Remove the capillary tubes by going to the back of the refrigerator and gently pulling the tubes straight out,

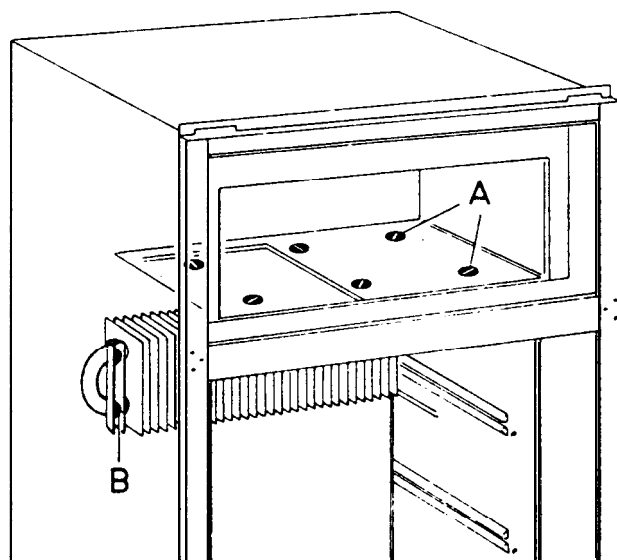


Fig. 47

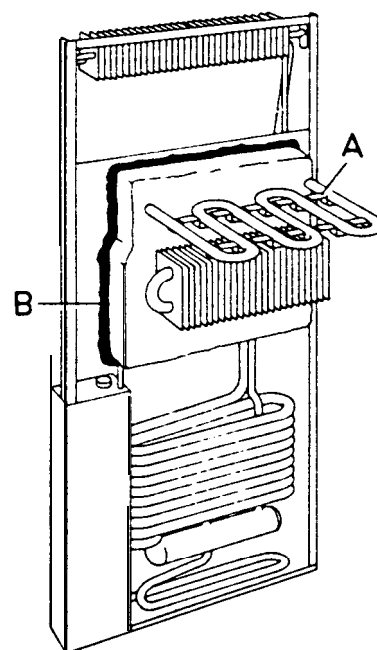


Fig. 48

5. Remove the connection block cover on the side of the boiler case and disconnect the two electrical wires where they join the heater leads in the connection block.
6. Remove the grounding screw,
7. Remove the flue and the flue baffle,
8. Remove the screws "B" holding the absorption unit onto the back of the refrigerator (fig. 46).
9. Release the Piezo electrode from burner housing.
10. Remove the fastening screw on the burner housing and remove the burner housing from the boiler case,
11. Carefully slide absorption unit straight out of the cabinet.

CAUTION :

Be careful not to damage the inner liner and the locations of the fastening strips ("A" fig. 48) on the evaporator should be noted at this time as they have to be fitted on the new unit,

12. To replace absorption unit, reverse above procedure.

CAUTION :

Be sure to apply sealing permagum ("B" fig. 48) on the unit mounting plate. Be sure to fit the fastening brackets (A) on the evaporator coils in the right positions, otherwise it will be difficult to refit the 6 fastening screws inside the freezer.

11. GAS EQUIPMENT FOR RM24

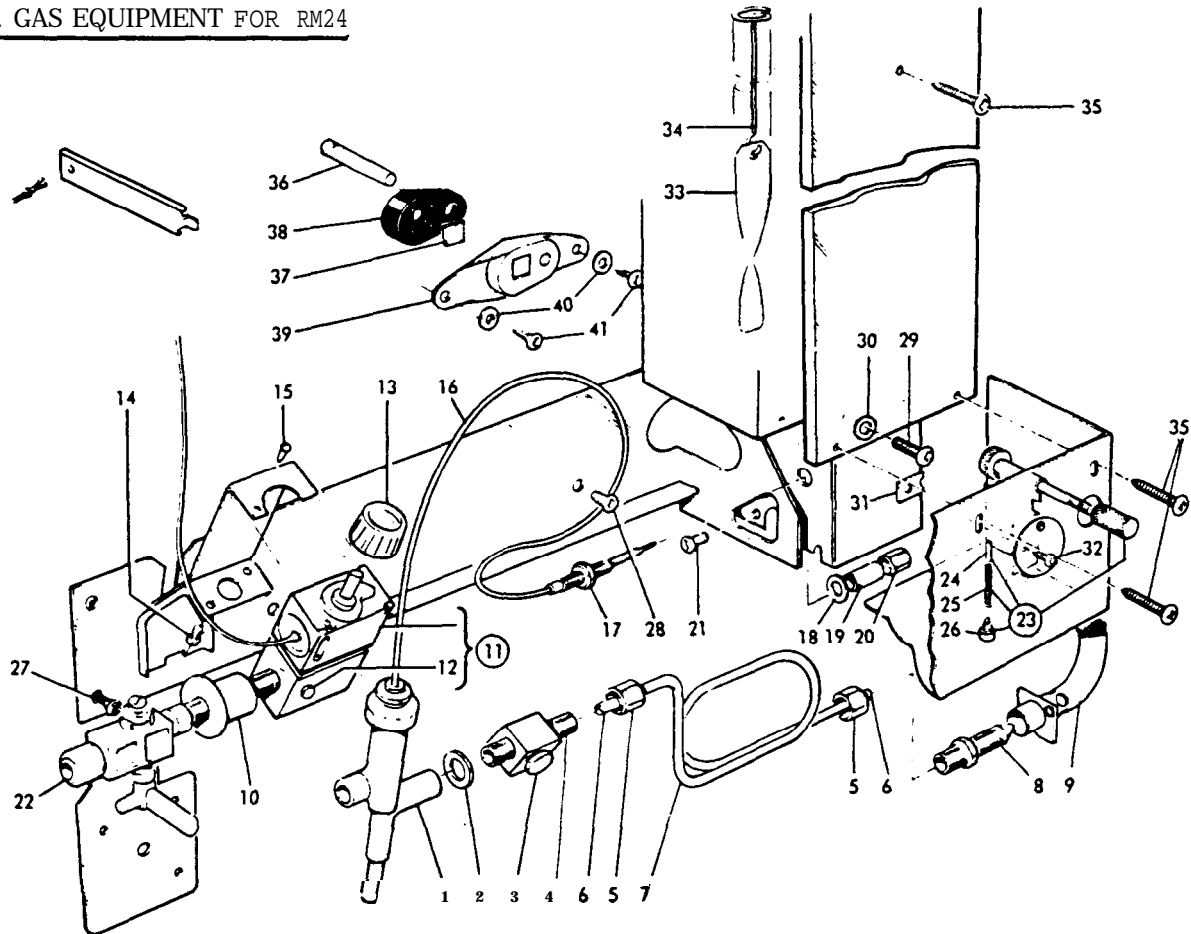


Fig. 49

Item No.	Description	Item No.	Description
1	S.I.T. thermo-electric flame failure device	21	Screw
2	Lock nut	22	Gas cock
3	Pressure test connection	23	Flint lighter, compl.
4	Housing for test connection	24	Flint
5	Union nut	25	Spring
6	Olive	26	Screw
7	Gas pipe	27	Screw
8	Burner jet	28	Screw
9	Burner pipe	29	Screw
10	Filter with nipple & nut	30	Washer
11	Thermostat Ranco V35	31	Spire speed nut
12	By-pass screw	32	Screw
13	Thermostat knob	33	Baffle
14	Screw	34	Baffle support wire
15	Indicator	35	Screw
16	Thermo-couple	36	Viewing glass
17	Lock nut	37	Window
18	Washer	38	Seal for viewer and flint lighter
19	Distance tube	39	Metal shield
20	Distance nut	40	Washer
		41	Screw

12. DUAL ELECTRIC EQUIPMENT 12/110V FOR RM24

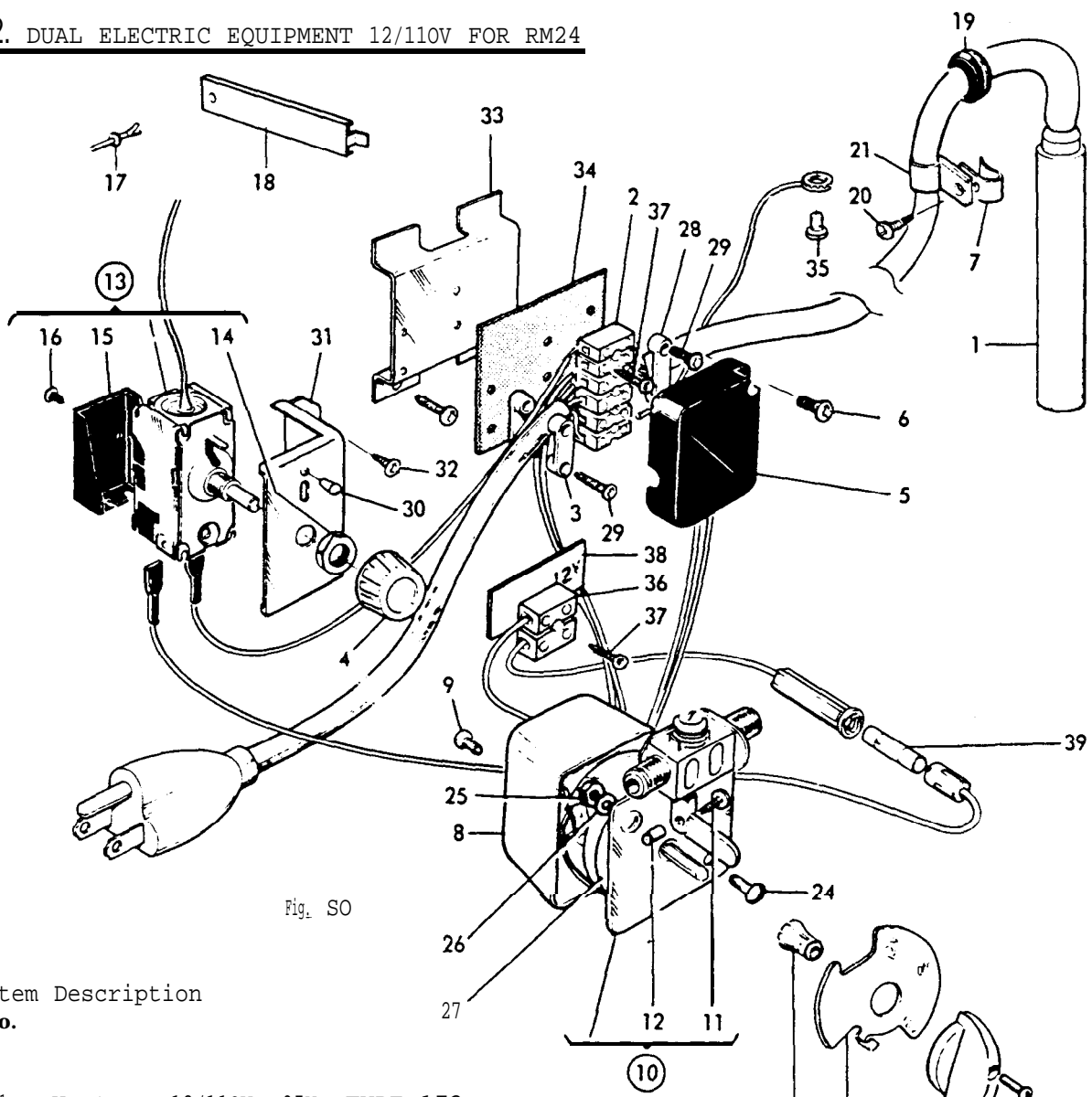


Fig. 50

Item Description
No.

- 1 Heater, 12/110V, 95W, TYPE 173
- 2 Terminal block
- 3 Cable clamp
- 4 Thermostat knob
- 5 Terminal block cover
- 6 Screw
- 7 Spire speed nut
- 8 Switch cover
- 9 Screw
- 10 Gas cock with bracket
- 11 Screw
- 12 Protection tube
- 13 Thermostat Ranco A50
- 14 Nut
- 15 Thermostat cover
- 16 Screw
- 17 Plastic rivet
- 18 Capillary clamp
- 19 Grommet
- 20 Screw
- 21 Clip
- 22 Switch knob with dial

- Item Description
- No. .
- 23 Dial
- 24 Screw
- 25 Nut
- 26 Washer
- 27 Switch
- 28 Cable clamp
- 29 Screw
- 30 Indicator
- 31 Thermostat bracket
- 32 Screw
- 33 Fastening plate
- 34 Insulation
- 35 Screw
- 36 Terminal block
- 37 Screw
- 38 Insulation
- 39 Fuse 10A

13. GAS/ELECTRIC EQUIPMENT 12/110V FOR RM36C, RM46, RM47, RM66, RM67, RM76, RM77
(See Fig. 51)

GAS EQUIPMENT PARTS

1. Flue baffle
2. Blow out protection
3. Burner tube
4. Burner housing
5. Burner jet
6. Feeler point
7. Flame failure safety device
8. By-pass screw
9. Gas thermostat
- LO. Knob for fuel selector
11. Pressure test gage connection
12. Gas filter
13. Plugs for capillary tubes
14. Capillary tube for gas thermostat
15. Shut-off valve
16. Push button for lighter
17. Piezo lighter
18. Lighter electrode
19. Knob for releasing safety device
20. Knob for gas thermostat
21. Fuel selector, LP-gas/110 Volts A.C.

ELECTRIC EQUIPMENT PARTS

22. Flexible cord with moulded plug
23. Junction box
24. Electric thermostat
25. Knob for electric thermostat
26. Toggle switch (110 Volts operation)
27. Heater
28. Capillary tube for electric thermostat

12 VOLTS OPERATION

29. Terminal block
30. Fuse
31. Fuel selector, LP-gas/110 Volts A.C./12 Volts D.C.
32. Change-over switch, 110 Volts A.C./12 Volts D.C.

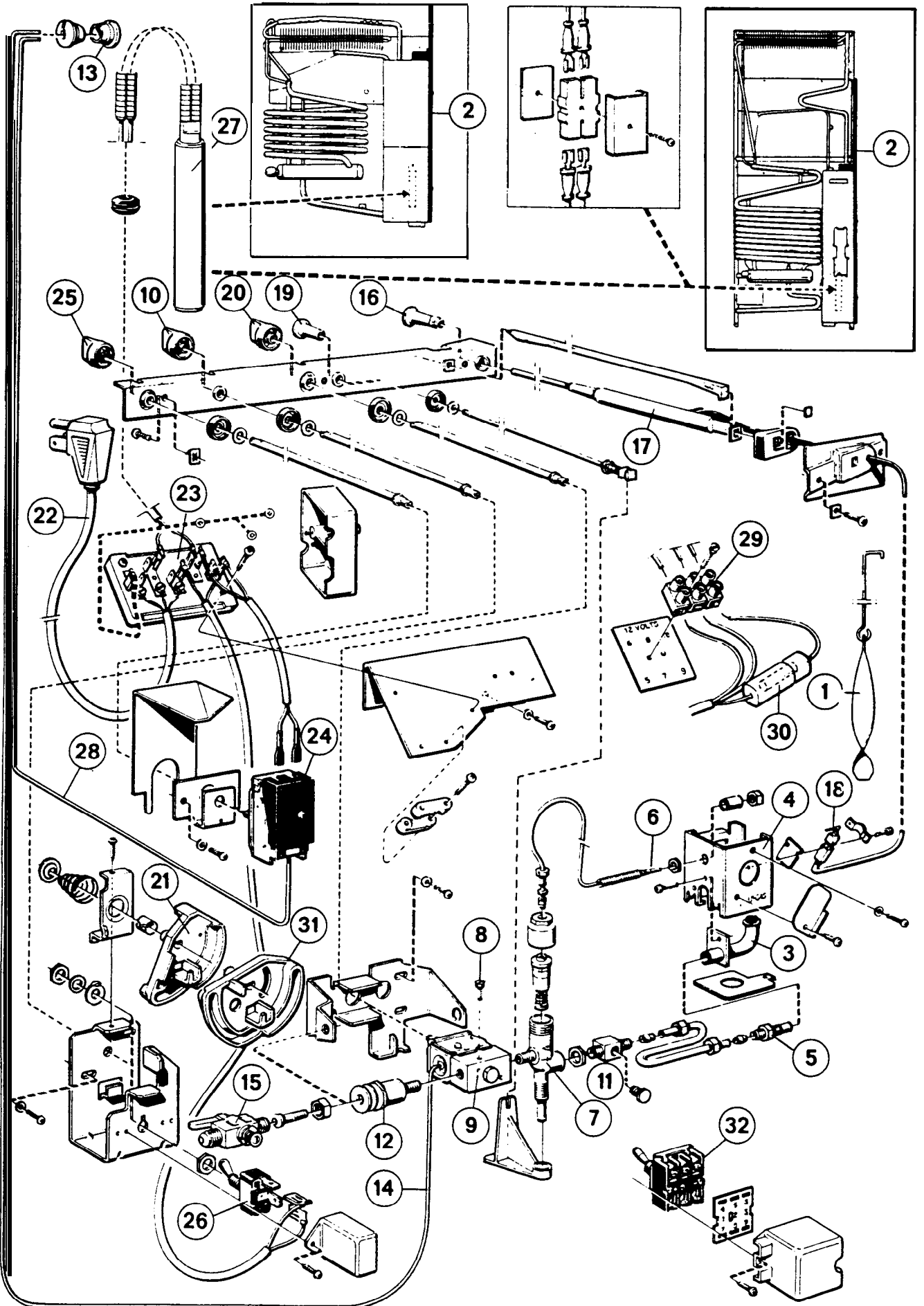


Fig. 51

14. THE GAS THERMOSTAT V- 35

The gas thermostat V-35 consists of three main parts:

Be 1 lows system

Mechanism

Valve housing, see fig. 52 and fig. 53.

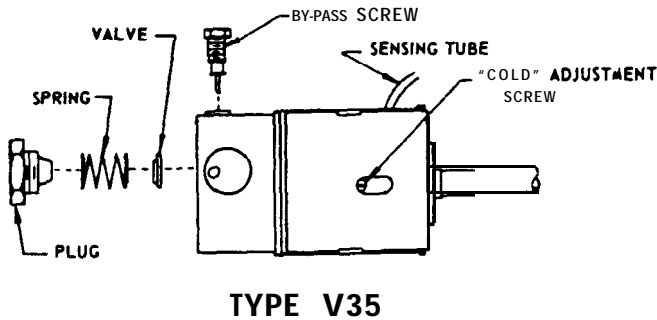


Fig. 52

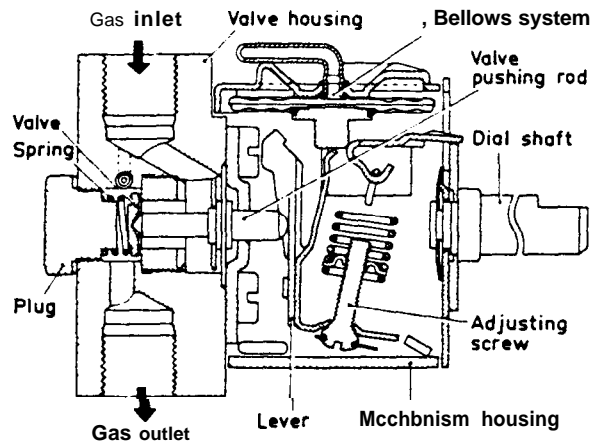


Fig. 53

Cleaning valve or valve seat in the V-35 thermostat

Dirt on the thermostat gas valve or seat prevents the thermostat valve from completely closing, consequently it lets through some gas when in closed position. This condition may prevent reducing the flame to the required minimum. It will cause too low cabinet temperature. This can be controlled by turning the thermostat dial to "0". If the flame does not go down to the low flame (by-pass flame) it will be necessary to clean the thermostat valve and valve seat. Note: The thermostat will not close to by-pass on setting "0", unless the thermostat bulb is cooled down to at least 5°C (40°F).

Proceed as follows:

- a) Remove the plug, spring and valve and clean the valve and the valve seat.
- b) Also check that the size of by-pass screw is in accordance with table below.

Note: The adjusting screw on the thermostat is preset at the factory and should never be readjusted.

LOST THERMOSTAT CHARGE

If the thermostat control assembly loses its charge, it will become inactive. To test for a lost charge, while the flame is reduced to minimum and the temperature control is set at a numbered position on its dial: Remove thermostat capillary tube from its clamp in the evaporator and warm capillary end with the hand. If the flame fails to increase in size, the thermostat has lost its charge and the thermostat must be replaced.

THERMOSTAT REPLACEMENT

To replace the thermostat, remove capillary from its clamp on the fresh food evaporator fins. Remove the two sealing plugs, one on the outside and one on the inside of the cabinet. Straighten the capillary and pull it through the cabinet. Remove the thermostat by unscrewing it from the gas filter and the flame failure safety device.

NOTE : Always, shut off the gas supply before removing any gas part from the refrigerator,

By-pass screw sizes and part No.

Mode 1	By-pass screw	Part No.
RM24	14	34 19 13-14/3
RM36C	S17	17 28 19-02/1
RM46 ,RM47	S17	17 28 19-02/1
RM66 ,RM67	s17	17 28 19-02/1
RM76 ,RM77	s17	17 28 19-02/1

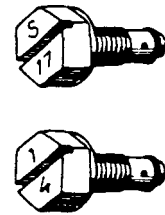


Fig. 54

15. THE GAS BURNER (see fig. 55)

The burner has the jet horizontally located and the burner mixing tube is formed as a bend with vertical outlet.

The primary air inlets are pre-set and therefore not adjustable. The burner and the burner holder are made in one piece.

The burner is provided with the thermo-electric failure safety device and the thermocouple tip is pre-set.

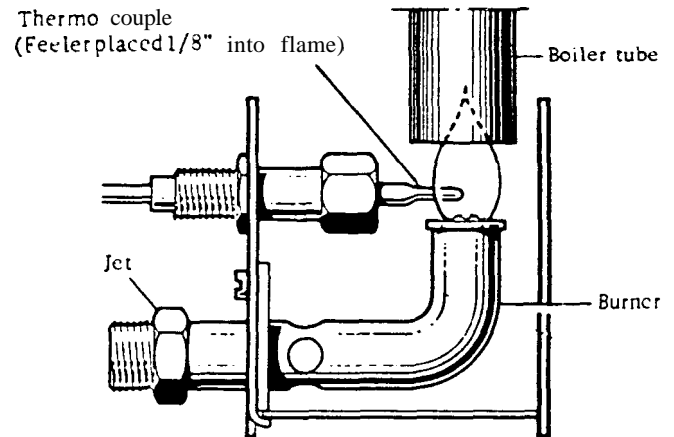


Fig. 55

To check for a correct flame, set thermostat to "AX". Flame should have a bright blue crown at the base of the flame.

Burner jet sizes and input BTU/h.

Mode 1	Butane	Part No.	Propane	Part No.	Input BTU/h
RM24	24	289 00 39-10/6	24	289 00 39-10/6	600
RM36C	34	200 26 60-15/3	43	200 26 60-16/1	1000
RM46 ,RM47	43	200 26 60-16/1	51	200 26 60-17/9	1100
RM66 ,RM67	51	200 26 60-17/9	52	200 36 60-18/7	1200
RM76 ,RM77	51	200 26 60-17/9	53	200 26 60-19/5	1360

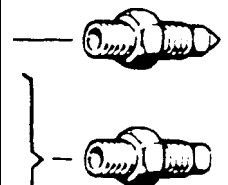


Fig. 56

16. TEE FLUE SYSTEM

The flue system consists of the following parts:

- 1) Central tube (built-in part of the boiler system and cannot be removed)
- 2) Flue
- 3) Flue baffle with support wire

The purpose of the flue system is to provide a draft which **will** pull the burner flame in to the central tube and supply sufficient primary and secondary air to the flame.

The flue baffle which is inserted in the central tube distributes the heat produced by the burner to the boiler system.

It is important that the correct size of baffle is used and that it is correctly located in the central tube in order to obtain the best cooling performance. The size and the distance between the lower end of the baffle and the lower end of the central tube for different refrigerator models are shown in table,

Baffle sites, height, and part No.

Model	Baffle Width x Length		Baffle Height		Part No. Baffle with support wire
	mm	inches	mm	inches	
RM24	10 x 100	3/8 x 4	75	3	290 06 82-00/2 x:
RM36C	20 x 100	3/4 x 4	75	3	289 00 28-00/0
RM46, RM47	20 x 100	3/4 x 4	75	3	289 00 28-00/0
RM66, RM67	20 x 100	3/4 x 4	75	3	289 00 28-00/0
RM76, RM77	20 x 150	3/4 x 6	75	3	17 21 74-00/5

x) Baffle only

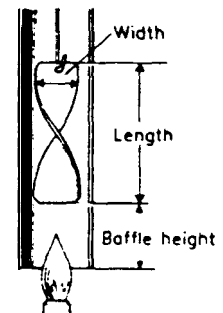


Fig. 51

Flue obstructions

On gas refrigerators, the flue will require cleaning occasionally. To do this it will be necessary to gain access to the back of the cabinet. When cleaning the flue proceed as follows:

Unscrew the outer burner shield and the burner housing, release the flue and lift out the baffle on its support wire from the top of the boiler tube.

From the top, clean the flue with a suitable flue brush. Also clean the baffle, before putting back in place.

An obstruction in the flue will reduce or stop flue draft. Flue obstructions will cause odors outside refrigerator, slow freezing and higher cabinet temperatures. Flue stoppages may also cause the flame to burn outside the central tube,

17. THERMOELECTRIC FLAME FAILURE SAFETY DEVICE (see fig. 58)

All models equipped with an automatic failure device.

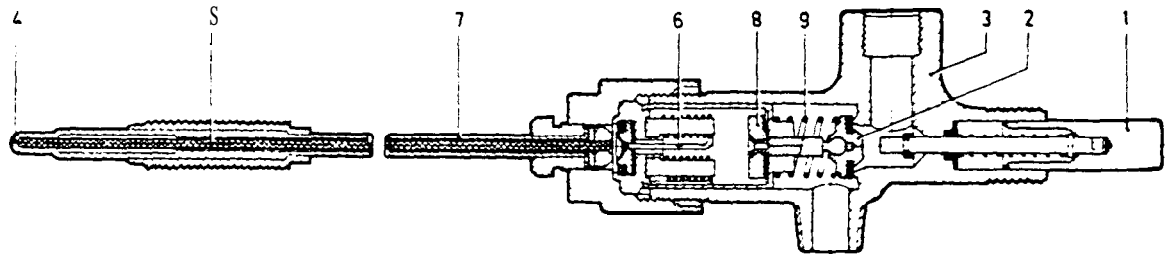


Fig. 58

All gas operated or combined gas/electric refrigerator models dealt with in this service instruction are equipped with an automatic failure device.

The purpose of incorporating an automatic flame failure device in the burner assembly is to prevent unburned gas to escape from the burner and to avoid a fire hazard, if, for some reason or other, the flame has been extinguished or blown out,

The safety device consists of the following parts:

1. Spring loaded push button
2. Gas valve
3. Housing
4. Sensing element with the hot junction of the thermocouple (Feeler)
5. Enamel insulated copper thread
6. Electromagnet
7. Outer tube
8. Armature
9. Spring

The thermoelectric safety device functions as follows:

By pressing the push button (1) the gas valve (2) is opened and the gas can pass through the housing (3) on to the burner. At the burner the feeler (4) is located. When the gas flame of the burner is lit, some heat is transferred to the feeler (4). The hot junction of the thermocouple is thus heated and an electric current is generated. This current passes through the copper wire (5) to the electromagnet (6) and back through the outer tube (7). As soon as the electric current is generated, the electromagnet attracts the armature (8) with the valve (2). The push button can then be released,

As long as current is flowing, the valve is kept open and allows gas to pass to the burner.

When the flame is extinguished, the heat transfer to the hot junction is interrupted and no electric current is generated. The armature (8) with the valve (2) is then forced back by the spring (9) and the gas flow through the valve (2) is closed.

Important: When lighting the burner the push button (1) should be pressed firmly and held in that position about 10 seconds, otherwise the gas may not get to the burner properly.

REPLACEMENT OF THE THERMO-ELEMENT OF THE THERMOELECTRIC FLAME FAILURE SAFETY DEVICE

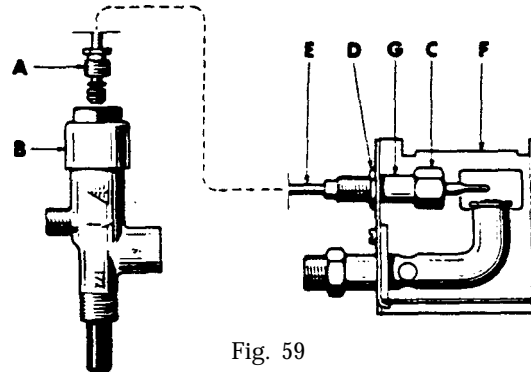


Fig. 59

How to replace the thermo-element of the thermoelectric flame failure safety device (see fig. 59).

1. **Unscrew** plug A from the valve housing B.
2. **Loosen** the position nut C and lock nut D.
3. **Screw off** nut C, remove spacer G and nut D. Release the thermo-element E from burner housing F.
4. Bend carefully the new thermo-element to the same shape as the old one. Screw nut D into **the new** element,
5. Put the feeler through the hole in the burner housing F, refit the spacer G and screw the position nut C tight against the shoulder on the feeler, making sure the nut D is free during this operation,
6. Tighten the lock nut D **against the burner housing** with a small wrench, if necessary holding nut C with **another wrench, Make sure the feeler is located as in figure.**
7. Check that no burrs are inside valve housing B which may cause leaks, Screw plug A onto the valve housing B, taking care not to damage the threaded hole in the **aluminium** cap of the housing, Plug A must be properly tightened to the valve housing to ensure contact between the thermo-element and the **magnetic** coil within the housing,

REPLACEMENT OF THE SAFETY VALVE MAGNET

If **the** safety valve magnet is defective, it cannot be repaired but **must** be replaced, When the safety valve magnet needs replacement, proceed **as** follows (see fig. 60).

1. Unscrew the connection plug (A) on the thermocouple from the housing nut (B).
2. Unscrew the housing nut (B) and remove the defective safety valve magnet (C) from the housing (D).
3. Fit a new magnet valve and ensure that it is properly inserted in the housing (D).
4. Fit the housing nut (B) and the **connection plug (A) and check that a good contact** between the contact plug (E) on the thermocouple and the contact (F) on the safety valve magnet is obtained.

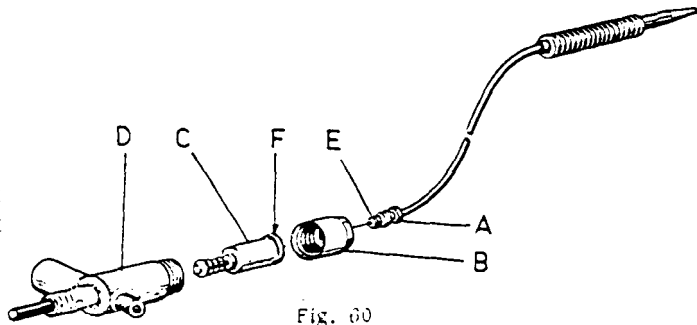


Fig. 60

18. REPLACEMENT OF HEATER

The electric heater is positioned in a pocket which is welded to the boiler tube, A wire clip holds the heater securely in the pocket (see fig. 61).

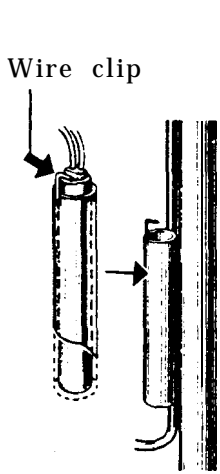


Fig. 61

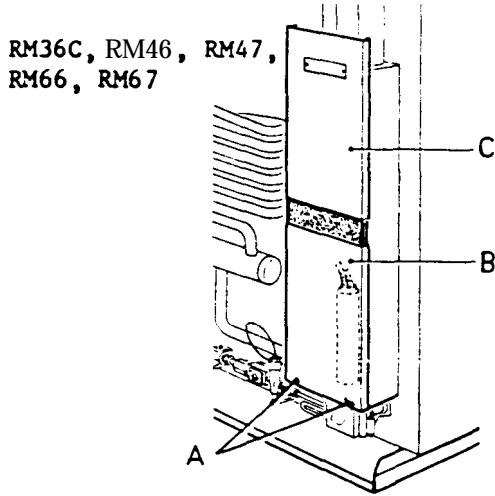


Fig. 62

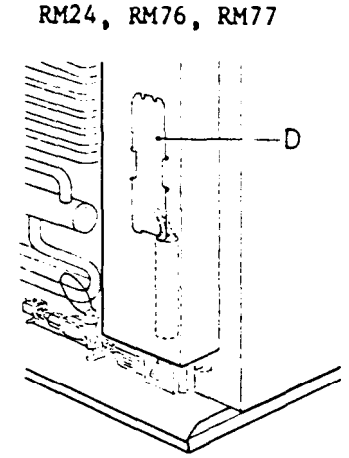


Fig. 63

To replace the **heater**, first check that the wall plug is disconnected, then unscrew lock screws **A** (Fig. 62) on the Lower lid B and upper lid C. Push the lid B downwards and the upper lid C upwards (on **RM24** and **RM76**, RM77 remove the plate D, Fig. 63). On the RM24 model it will also be necessary to remove the blow-out protection flue,

Remove the fibre glass insulation around the heater so that the heater is accessible for removal. Then bend aside the wire clip keeping the heater in proper position, disconnect the heater leads from the cord and remove the heater.

Make sure the new heater is fully inserted before bending back the wire clip (with caution, or it might snap off), Reset the electric connections. Be careful to put the Pibre glass insulation back in its proper place and in such a way that the heater leads will not be in direct contact with hot boiler tubes.

It is essential that the replacement heater be of the proper rating in order to provide the correct heat input for the particular model.

The table below shows the correct heater for each model:

Model	Prod. No.	Voltage	Amps	Watts	Part No.
RM24	926 39 02	12/110	810.85	95	290 07 09-00/3
RM36C	926 45 03	110	1.1	125	17 37 11-01/1
RM36C	926 45 04	12/110	9/1.1	125	17 37 07-00/1
RM46 ,RM47	926 46 03	110	1.2	135	17 37 12-01/9
RM46 ,RM47	926 46 04	12/110	10/1.2	135	17 37 08-00/9
RM66 ,RM67	926 47 03	110	1.4	150	17 37 13-01/7
RM66 ,RM67	926 47 04	12/110	11/1.4	150	17 37 09-00/7
RM76 ,RM77	926 48 03	110	2.1	225	17 30 74-01/4

19. WIRING DIAGRAMS

12V/110V
for RM24

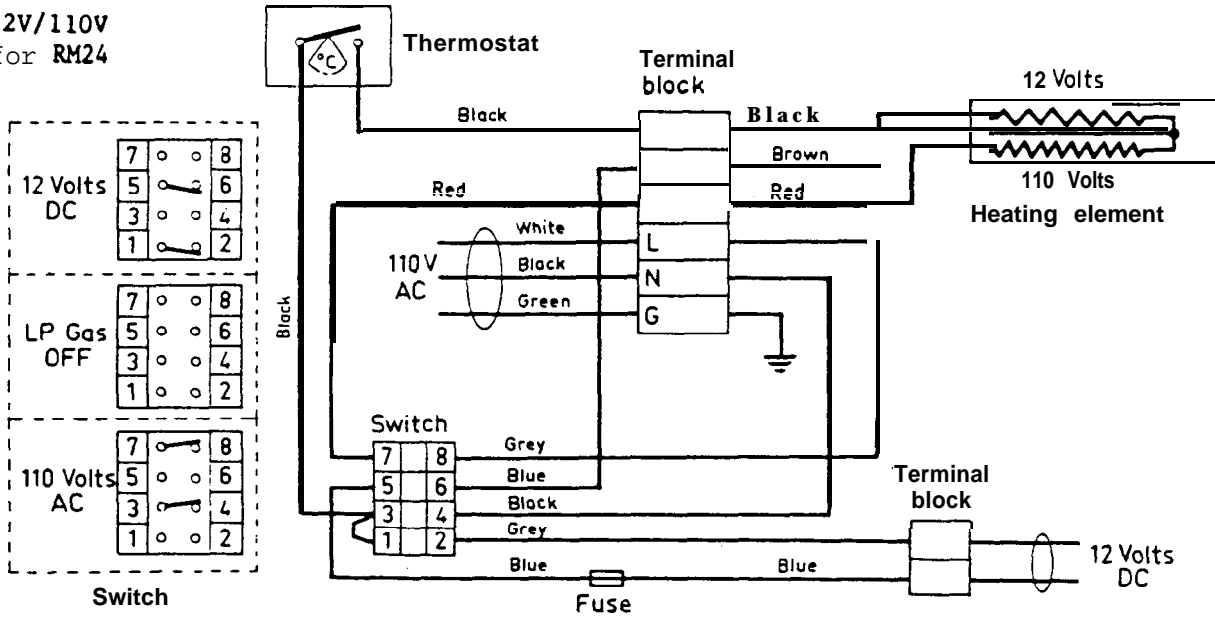


Fig. 64

110V for
RM36C, RM46, RM47
RM66, RM67, RM76, RM77

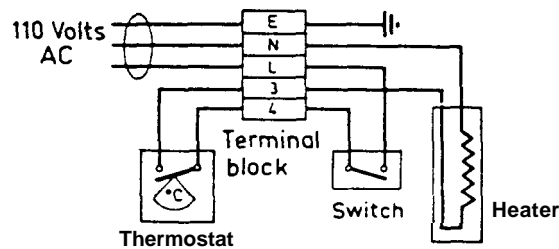


Fig. 65

12V/110V for RM36C, RM46, RM47, RM66, RM67

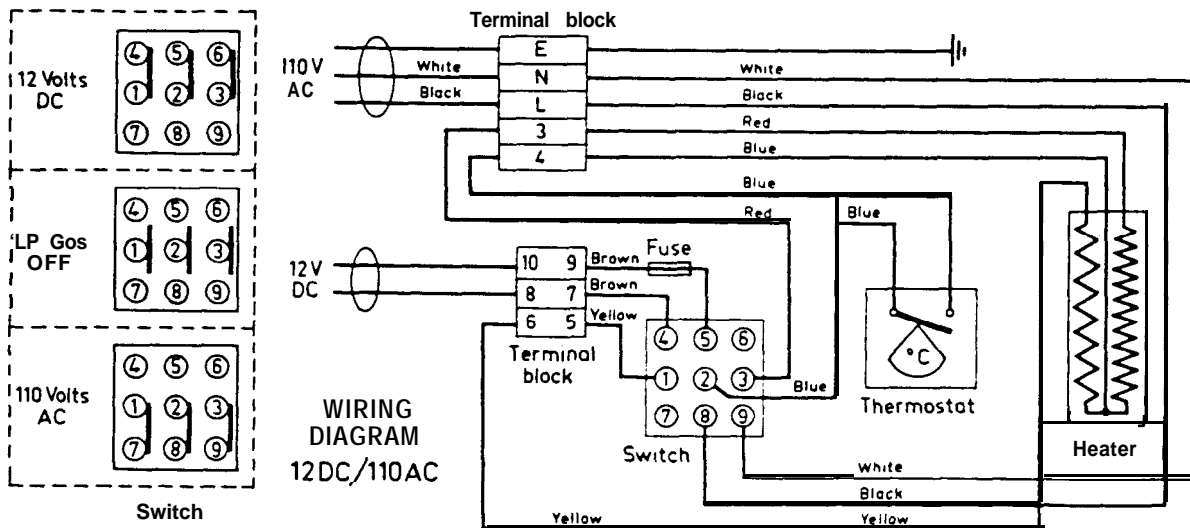


Fig. 66

20. PRESSURE MEASURING DEVICES

The pressure at the burner should be checked at the time the refrigerator is started up. After connecting the pressure gauge, set the thermostat dial at "MAX". Turn on the gas at the union cock and light the burner. At the "MAX" setting the pressure reading should be 11" (280 mm). The L.P. gas is supplied directly to the thermostat from the regulator fitted on the gas bottle at pressure of 11" (280 mm).

Water U gauge (fig. 67)

The water gauge consists of a glass U tube filled to mid-point with water. When gas pressure is exerted on one side of the gauge, the water on that side is forced down and there is a corresponding rise of water on the other side.

Water column pressure per square inch is indicated by the difference of the two columns of water measured in inches.

A convenient scale reading in inches and tenths of an inch is mounted between the two columns.

When reading the gauge proceed as follows :

If the gauge is filled with water to zero and the lower column is 5.5 inches (140 mm) below zero, the other column will also be 5.5 inches (140 mm). By adding the two together $5.5 + 5.5 = 11$ inches (280 mm) water column,

For accuracy of measurement a water U gauge is far superior to a low pressure gauge. If a low pressure gauge is used, it should be checked for accuracy against a water U gauge occasionally .

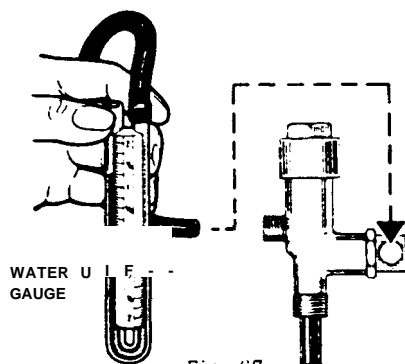


Fig. 67

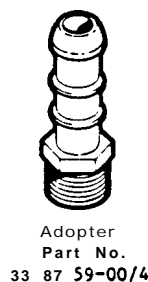


Fig. 68

LOW PRESSURE GAUGE

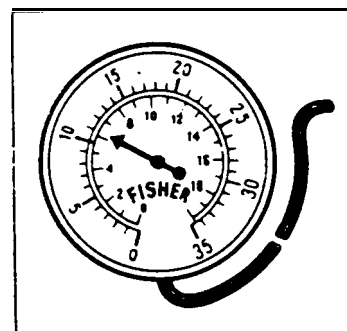


Fig. 69

Low pressure gauge (Fischer) (fig. 64)

This gauge is calibrated to read in "inches of water column pressure". It is a standard manometer reading and is colored red.

How to use the pressure gauge

When testing the pressure at the burner, remove the plug indicated with an arrow in fig. 67 and fit the hose from the pressure gauge. Use adapter, part No. 33 87 59-00/4. It is very important that the gas operated refrigerators operate at correct pressure i.e. at the pressure stipulated for the refrigerator.

21. OPERATING RECOMMENDATIONS

Experience over many years shows that incorrect installation and adjustments are major causes for unsatisfactory refrigeration.

Unsatisfactory refrigeration also results from improper operation by the user due to misunderstanding or carelessness. Each refrigerator contains a pamphlet called "INSTRUCTIONS FOR USE" which should be followed to assure the best refrigeration results. The servicer, as well as the user, should become thoroughly acquainted with the contents.

A study of the following instructions will help the servicer to better instruct the user, and will also help him to answer questions which may be asked.

22. STARTING THE REFRIGERATOR RM24

The gas and electric controls are located at the rear of the refrigerator and are accessible through the service door 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.

23. GAS OPERATION (See Fig. 70 and 71)

1. Ensure that the voltage change switch (A) is at the "OFF" position.
2. Turn the gas valve (C) so that the handle is in line with the valve body and turn the gas thermostat dial (B) to No. 4 setting.
3. Push in the blue button (D) of the flame failure device for 5-10 seconds to clear air from pipe line.
4. Still pressing in the button (D), twist the knob of the flint lighter (G) sharply in a clockwise direction.
5. Continue pressing in the blue button (D) for another 5 seconds, then release it and check that the burner is alight by looking at the flame through the opening (F).
6. If the burner has not lit,

the thermostat dial (B) must first be turned to MAX and returned to its normal setting only after the burner is alight.

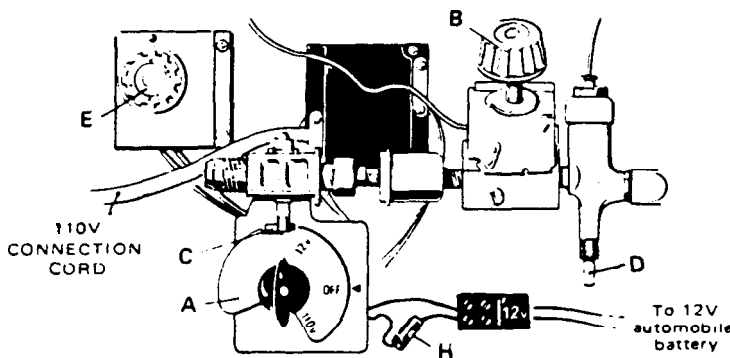


Fig. 70

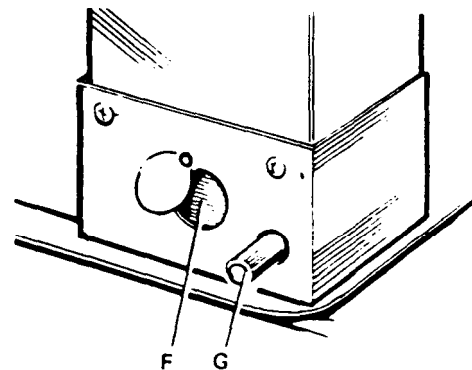


Fig. 71

24. ELECTRIC OPERATION (See Fig. 70)

The RM24 refrigerator can be operated on 12 volts D.C. or 110 volts A.C., provided the voltage change switch (A) is set at the appropriate position.

1. Turn off the gas valve (C), its handle **will** then be pointing away from the back of the cabinet.
2. Turn the voltage change switch (A) 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 (A) should show 110V, when connected to the battery, the voltage on the switch (A) should show 12V.

3. Turn the electric thermostat knob (E) to No. 4.

HOW TO START THE REFRIGERATOR -

25. RM36C, RM46, RM47, RM66, RM67, RM76, RM77

26. GAS OPERATION (Fig. 72)

1. To start the refrigerator turn the knob A to position "Gas". The gas valve is now opened and the electric circuits are disconnected.
2. Turn the gas thermostat knob C to setting 4.
3. Pull the knob D of the flame failure safety device and after 5-10 seconds press the button E to the piezo lighter. The pressing may have to be repeated. Through the reflector F it can be observed that the burner is lit.
4. After the burner has been lit keep the knob D in pulled out position for another 5 seconds. Then release the knob and check through the reflector **that** the burner stays lit,

Note: After a replacement of the gas container or a long shut-off period the gas pipes are likely to be filled with air, In such a case the lighting procedure has to be repeated until the air is pushed out of the pipes and the gas has reached the burner.

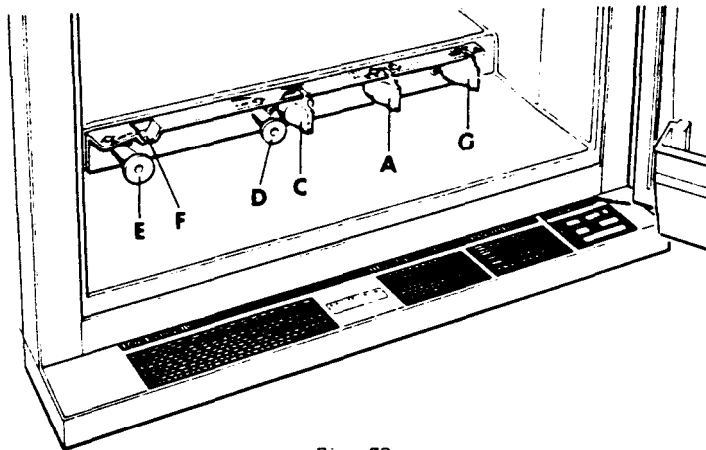


Fig. 72

27. ELECTRIC OPERATION (Fig. 72)

1. Check that the attachment plug of the flexible cord is correctly connected to the main supply. The 12 volt connection is made at the marked terminals at the rear of the refrigerator.
2. Turn the knob A to "off" position, then press the knob in to bottom and turn to desired electric position.

- Turn the thermostat knob G to setting 4.

Note: When the refrigerator is equipped for 110 volts and 12 volt operation the turning movement of the knob A should be made as follows:

In gas OFF position the knob is pressed and turned clockwise to the 12 volt position, If 110 volt operation is desired press once more and continue the clockwise turning to the 110 volt position marked "ELEC".

28. 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 liquefies. 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 readily accumulates forming pockets **which** can impair the gas circulation or block it completely, in which case, of course, cooling will stop.

When the vehicle is stationary it must be leveled to be comfortable to live in. If the refrigerator is properly installed, i.e. the ice-tray compartment shelf is parallel with the floor, the refrigerator will operate properly. To check this, a bubble level (see Fig. 73) is supplied with the refrigerator. The level should be placed on the ice-tray compartment shelf and the position of the bubble observed (if necessary, with the aid of a small mirror). Adjust the position of the vehicle so that the bubble is in the center ring of the level.



Fig. 73

When the vehicle is on tow, the continuous rolling and pitching movement **will not** affect the refrigerator as long as the movement passes either side of level but when the vehicle is temporarily parked, the sensitivity of the refrigerator should be remembered.

29. TEMPERATURE CONTROL (THERMOSTAT)

- When the temperature control (thermostat) is set at a higher number, refrigerating effect will be increased. This will tend to lower the temperature in the freezing compartment and in the food storage compartment.

When the temperature control is set at a lower number, refrigerating effect will be reduced.

When the temperature control is set at mid-dial position, medium refrigerating effect will be produced.

- The position of the temperature control should depend upon the refrigerator load. **When** the food load is heavy, turn the temperature control to a higher number. A higher setting of the temperature control will be required in summer than in winter.

The setting of the temperature control determines the action of the thermostat in relation to freezing compartment temperatures.

30. THE THERMOSTAT CAPILLARY TUBE

On the fresh food evaporator is a sleeve in which the end of the thermostat capillary tubing must be inserted. Check that the capillary tube is firmly in place. If the capillary tube is not properly inserted in its sleeve (see Fig. 74), the burner will operate continuously at maximum flame. It will cause too low cabinet temperatures.



Fig. 74

31. STORING FOOD IN THE REFRIGERATOR

1. Proper refrigeration requires free air circulation within the food storage **com-**partment. Restricted air circulation within the food storage compartment will cause higher cabinet temperatures, Rearrange foods.
2. It is also essential that the shelves are not covered with paper or large storage containers.
3. Odorous foods or highly flavored foods should always be stored in covered dishes, plastic bags or wrapped in foil or wax paper, to prevent food odors. Vegetables, lettuce, etc., should be covered to retain their crispness, **Never put hot food into the refrigerator.**
4. To reduce frost formation in and on the freezing compartment, cover stored liquids and moist foods and do not leave the door **open** longer than necessary,
5. When the refrigerator is heavily loaded, it takes longer for refrigerator **tem-**peratures to lower, also increasing the ice making time. A very heavy load may also cause defrosting.

32. CLEANING

The cabinet interior should be cleaned regularly. Remove the shelves and wash the lining with lukewarm water to which a little baking soda may be added. Dry thoroughly, especially around door frames and door gasket, **Warm** water only should be used to wash the cooling evaporator, **ice-trays** and shelves.

Plastic dishes may be washed in warm soapy water - not hotter **than** is bearable to the hand. Do not expose them to dry heat, (**Never use strong chemicals or abrasive cleaning materials on any part of the cabinet.**)

33. ICE CUBES

1. Do not use warm water, as it takes longer to freeze.
2. Faster freezing will result if **precooled** water is used.

34. TRAVEL LATCH

The travel latch may be fitted to hold the door closed while in transit.

35. TO SHUT OFF THE CABINET

If for any reason refrigeration is not required over a period of weeks, the gas taps or electric switch should be turned off,

The cabinet and ice trays should be emptied, **cleaned** and dried and the door left ajar,

36. DOOR SEAL

1. It is essential, for correct operation, that the door gasket makes a good seal all around, against the front of the cabinet.

The compression of the gasket down the hinge side must not be **too** great: The gasket should just contact the front of the cabinet when the door is closed. This is normally allowed for during manufacturing.

Failure of the door gasket to contact the front of the cabinet can be determined visually when the door is closed. Run a piece of thin cardboard along the door seal, inserted between the seal and the cabinet front. Nowhere should the cardboard feel loose.

2. Improper door sealing on cabinets can be corrected by slackening the upper and lower hinge fixing screws and moving the door inwards or outwards as required until a satisfactory seal is obtained.

If a good seal cannot be obtained, a new gasket should be installed.

3. It is also essential to check that the cabinet opening through which the freezing compartment enters the cabinet should be properly sealed by sealing compound. If this seal leaks, warm air enters the cabinet causing high cabinet temperatures and **excessive** frost formation on the freezing compartment.

37. ODORS INSIDE THE REFRIGERATOR

Odors inside the refrigerator are caused by improper food storage.

They may also be caused by too infrequent cleaning of the food compartment or the refrigerator has been shut off for some time with the door closed.

38. ODORS FROM FUMES

1. Odors outside the refrigerator may be caused by gas leaks. **Make** sure that all gas appliances are closed. Test gas connections and all joints in the gas line with soap and water solution, up to and including gas cock. Never look for a leak with an open flame. Use a flashlight when necessary in looking for soap bubbles caused by leaks. The gas line should be free of kinks and sharp ends.

Turn on gas cock, light burner and test connections between the gas cock and the burner carefully with soap and water.

2. Odors outside the refrigerator may be caused by improper burner flame.
3. The flame touches side of the boiler due to dislocation of the burner. Relocate. Burner dislocation may also cause smoke and **discolouring** of walls and ceiling.
4. Burner damaged. Replace.
5. The flame touches flue baffle. Correct position of baffle.
6. The flue tube is dirty, Clean the flue,

39. 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 thermostat on "**MAX**". This latter measure can of course only be temporary such as when the vehicle is on tow, for after several hours at this setting the foodstuffs in the cabinet may become too cold,

40. THE FLINT LIGHTER RM24

If after some time of use the sparks from the lighter weaken, the flint will probably have to be replaced.

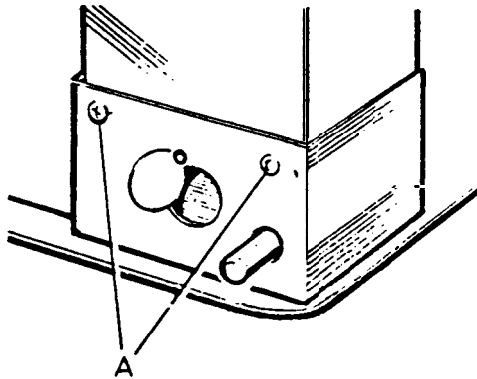


Fig. 75

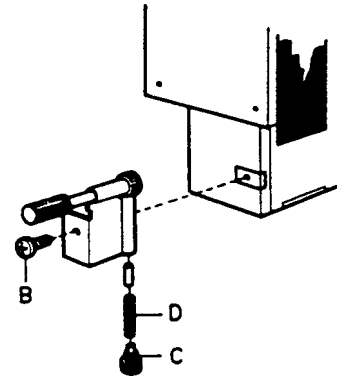


Fig. 76

To replace flint, follow these steps:

1. Remove the outer burner shield by means of loosening the **two** screws A (Fig. 75).
2. Remove the lighter by loosening the screw B retaining the lighter (Fig. 76).
3. Remove cap C and **remove** the spring D and **tap out any remaining piece of flint** and fit a new **flint**.

Be sure not to lose the small helical spring which presses the flint against the serrated wheel.

Replacement of the serrated wheel - RM24

If after several years of use the lighter does not function properly even with a new flint, the serrated wheel might be worn out and needs to be replaced.

1. **Release the lighter as described above.**
2. Unscrew the rod from the serrated wheel and fit a new wheel.

CAUTION: The rod has to be unscrewed anti-clockwise.

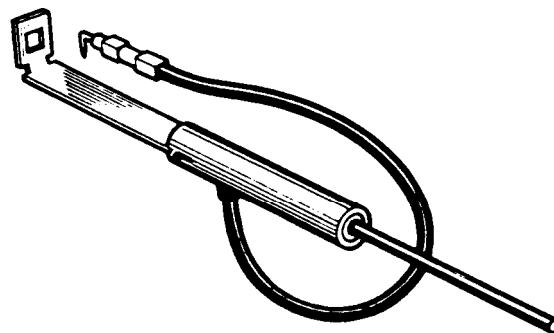


Fig. 77

41. PIEZO LIGHTER (Fig. 77)

The **RM36C**, RM46, RM47, **RM66**, RM67, **RM76** and RM77 models are equipped with a Piezo crystal lighting device which creates a spark over the burner when the button E is pushed in fully (see fig. 72).

The Piezo lighter does not normally need any maintenance.

If by any reason the electrode or the lighter must be replaced, proceed as follows:

Replacement of electrode only.

1. Unscrew burner outer shield.
2. **Loosen** fastening screw "A" (Fig. 78) holding the electrode against side of burner housing.
3. Loosen the electrode from its cable by unscrewing the electrode anti-clockwise.
4. Fit a new electrode,

CAUTION : When fastening the electrode on the burner housing make sure that the insulation plate is properly fitted between the burner housing and the electrode (see fig. 78).

Replacement of Piezo lighter complete

1. Release the Piezo lighter knob "E" (see fig. 72) inside the cabinet by means of pulling the knob outwards.
2. Loosen outer burner shield and burner housing.
3. Loosen the fastening screw "A" (Fig. 78) holding the electrode against side of burner housing.
4. Loosen the **two** screws "B" on holder "C". Now the lighter complete can be pulled out at the rear of the cabinet.
5. To fit new lighter, reverse above procedure.

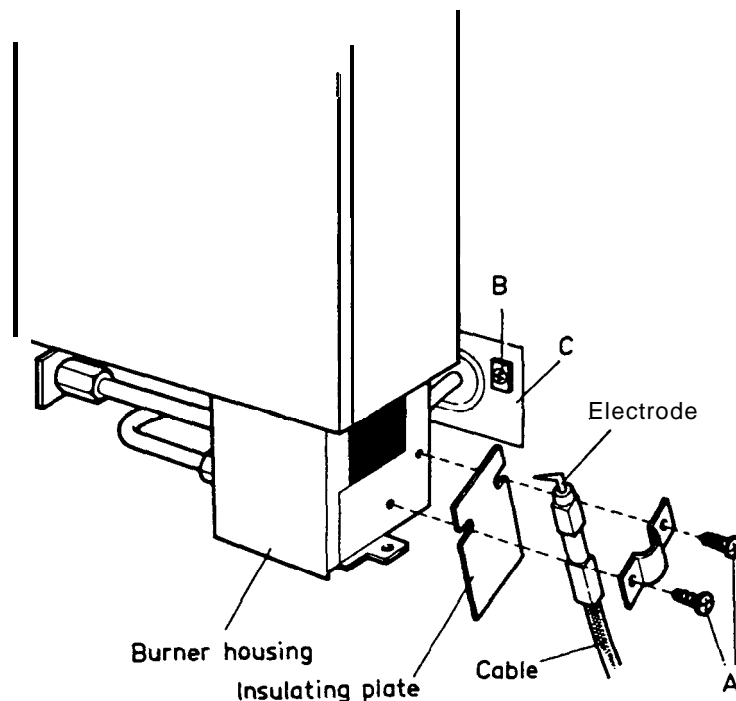


Fig. 78

42. TROUBLE SHOOTING - ELECTRIC OPERATED REFRIGERATORS

<u>Cause</u>	<u>Remedy</u>
<u>The refrigerator does not cool satisfactorily</u>	
a) Thermostat at wrong setting.	Turn the thermostat dial to a higher number.
b) Air circulation over cooling unit restricted.	Remove any restriction.
c) Refrigerator not level.	The refrigerator must be level in both directions to operate properly. If in a trailer, always make sure it is level when parked. See par. 28.
d) Air leakage into cabinet.	Check fit of door gasket, and that the sealing plug is in the hole for the thermostat capillary in the rear wall of cabinet. See par, 36.
e) Evaporator heavily coated with frost.	Defrost at more frequent intervals.
f) Heater faulty, wrong voltage or type.	Use a new heater of appropriate voltage (see table page 37).
g) Intermittent electricity supply.	Look for loose connections or other reason for interruption and correct.
h) Drop in supply voltage.	The supply voltage should be maintained at the full rate.
i) Thermostat at too low setting.	Turn thermostat dial to higher number.
j) Break in electrical circuit.	Check fuses, switches, wiring, etc., and repair the fault.
k) Heater faulty (open circuit).	Replace with a new heater (see table page 37).
l) Thermostat faulty.	Fit a new thermostat.
m) Failed cooling unit.	See par, 44.
<u>The refrigerator is too cold</u>	
a) Thermostat at wrong setting.	Turn the thermostat dial to a lower number.
b) End of thermostat capillary tube incorrectly located.	Re-insert the capillary end of thermostat fully in the sleeve under the ice-tray compartment. See par, 30.
c) Thermostat faulty.	Have new thermostat fitted.
d) Heater wrongly connected to terminal block.	See wiring diagrams par. 19.

43. TROUBLE SHOOTING - GAS OPERATED REFRIGERATORS

<u>Cause</u>	<u>Remedy</u>
<u>The refrigerator does not cool satisfactorily</u>	
a) Air circulation over cooling unit restricted.	Remove any restriction,
b) Refrigerator not level.	See par. 28.
c) Gas in bottle used up.	Fit new bottle.
d) Feeler point of the flame failure device not heated enough by flame.	Adjust position of feeler point in flame See par, 15,
e) Clogged by-pass screw.	Clean by-pass screw with alcohol and by blowing through with air. If necessary, replace by-pass screw.
f) Burner jet or burner head clogged.	Clean burner jet with alcohol and by blowing through with air, If necessary, replace burner jet, Clean the head with a brush.
g) Flue baffle not inserted into central tube of the cooling unit.	Position of baffle (see table <i>on page 34</i>).
i) Baffle too low in flue.	Position of baffle (see table on page 34).
j) Wrong gas pressure at the burner.	Have pressure checked. Pressure must not fall below 11" (280 mm) water columns when thermostat is set on max.
k) Burner assembly may be adrift.	Refit burner.
l) Thermostat at wrong setting.	Turn the thermostat dial to a higher number, If necessary, replace thermostat.
m) Failed cooling unit.	See par, 44,
<u>The refrigerator is too cold</u>	
a) Thermostat at wrong setting.	Turn the thermostat dial to a lower number.
b) End of thermoatat capillary tube incorrectly located,	Re-insert end of capillary tube in the clamp on the fresh food compartment. See par. 30.
c) Incorrect size of by-pass screw.	Replace by-pass screw to <i>correct</i> size (see table page 33).
d) Dirt in valve of the thermostat.	Clean the valve and valve seat in the thermostat (see par. 14).

44 FAILED REFRIGERATING UNIT

There are many things to consider before determining that the unit is faulty.

1. Leveling of the refrigerator
2. Ventilation
3. Cleaning and proper size of burner orifice
4. Cleaning and proper size of by-pass screw
5. Cleaning of thermostat valve
6. Proper gas pressure
7. Correct flame
8. Correct position of baffle in boiler tube
9. No burnt-out heating element
10. Heating element in correct position
11. Correct size and wattage of heating element
12. Supply voltage corresponds to voltage stamped on heating element
13. No fluctuation in voltage supply
14. No loose electric connections
15. Thermostat intact
16. No unit leaks
17. Safety valve intact

45. PACKING OF DEFECTIVE UNITS

Particular attention must be paid to the packing of a replaced defective unit to ensure during its return to the distributor that it will not be damaged in transit.

When the replacement unit is supplied cased, careful note should be taken of the manner in which it is packed, to ensure **that** the form of packing adopted, i.e. the use of wood bracing and cardboard pads, is used when the defective unit is packed into the case.

Structural distortion, particularly with the smaller units not having an angle iron frame, can easily occur if the case containing the unit is roughly handled and if internal braces are not in position.

46. OPERATION ANALYSIS FOR REFRIGERATORS OPERATING ON ELECTRICITY

SYMPTOM					CAUSE						
Refrigerator too cold	Refrigerator not cold enough	No refrigeration	Frost forms rapidly	Odour inside cabinet	See paragraph No.	Note: It will be noted in this tabulation that several causes can be responsible for the one effect. The real cause or causes should be determined by a process of elimination, investigating each possible cause, starting at the top of the tabulation and proceeding to the bottom.					
						x	x			2	Not adequate ventilation
						x	x			28	Refrigerating unit not level
						x	x			18	Heater faulty, wrong voltage or type
						x	x			42	Voltage not constant
								x		42	Electric connections loose
						x	x			18	Heater not inserted correctly in its pocket
						x	x			31	Improper food storage
						x	x			29	The thermostat incorrectly used
									x	31	Improper storage of liquids and moist foods
						x	x	x		36	Leaky cabinet seals
									x	32	Infrequent cleaning of food compartment
									x	35	Refrigerator shut off with closed door
									x	31	Unwrapped odorous food
						x			x	30	Incomplete contact of thermostat capillary tube
						x	x			14	Lost thermostat charge
						x	x			44	Failed refrigerating unit
x				29	Room temperature too low						

The correct flame, at "MAX" setting., should have a bright blue crown at the base of the flame. See Fig. 79.

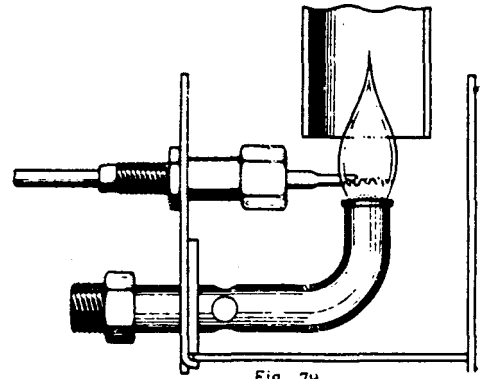


Fig. 79

47. OPERATION ANALYSIS FOR LP GAS REFRIGERATORS

SYMPTOM				CAUSE				
Refrigerator too cold	Refrig. not cold enough	No refrigeration	Frost forms rapidly	Burner flame goes out	odor inside cabinet	odor outside cabinet	See paragraph No.	Note: It will be noted in this tabulation that several causes can be responsible for the one effect. The real cause or causes should be determined by a process of elimination, investigating each possible cause, proceeding to the bottom.
						x	2, 38	Gas leaks
	x	x					2	No adequate ventilation
	x	x					28	Refrigerating unit not level
	x	x		x			48	Jet orifice clogged
				x			15	The thermocouple tip not in position
				x			17	No contact between thermocouple and safety valve magnet
				x			17	Faulty safety valve magnet
	x	x					15	Improper maximum flame
	x	x		x			14	By-pass flame too small
	x	x		x			48	Gauze in burner head clogged
	x		x				14	Dirt in thermostat or valve seat
	x		x				14	By-pass flame too large
	x	x		x			16	Improper position of the flue baffle
	x	x					16	Unstable burner flames
	x	x					31	Improper food storage
x	x	x					29	The thermostat incorrectly used
			x				31	Improper storage of liquid and moist foods
	x	x	x				36	Leaky cabinet seals
	x	x	x			x	16	Obstructed flue
						x	38	Flame contacts central tube
						x	16	Insufficient primary air
					x		32	Infrequent cleaning of food compartment
					x		35	Refrigerator shut off with closed door
					x		31	Unwrapped odorous food
x			x				30	Incomplete contact of thermostat capillary tube
	x	x					14	Lost thermostat charge
	x	x					44	Failed refrigerating unit
x							29	Room temperature too low

48. PERIODIC MAINTENANCE

Once or twice a year depending on use, it is recommended to clean and adjust the burner assembly. Proceed as follows:

1. Disconnect the gas pipe from the burner assembly,
2. Remove the burner housing.
3. Remove the jet,
4. Clean the jet with alcohol and compressed air ONLY.
5. Clean the burner tube and especially the gauze with a **brush**. Blow with compressed air,
6. At the same time, check the flue baffle: that it is clean and free from soot. Heavy soot formation indicates improper functioning of the burner. Clean baffle and flue. Further, clean cooling unit and floor under refrigerator.
7. Reassemble.
8. The entire gas installation should be checked for leaks at intervals. Test all pipe connections with soapy water, not with an open flame.
9. Check the burner with full flame (MAX) and with by-pass flame (0).
Note: The thermostat will not close to by-pass on setting "0" unless the refrigerator has been working for a few hours and the thermostat bulb is cooled down to at least 6°C (40°F).