Electrolux

INSTALLATION AND OPERATING INSTRUCTIONS

REFRIGERATOR FOR LP-GAS AND ELECTRIC OPERATION.

RM 2330

RA/RM-1D

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.

FOR YOUR SAFETY
Do not store or use gasoline or other flammable vapours and liquids in the vicinity of this or any other appliance.

WARNING: Improper installation, adjustment, alteration,service or maintenance can cause injury or property damage. Refer to this manual. For assistance or additional information consult a qualified installer, service agency or the gas supplier.

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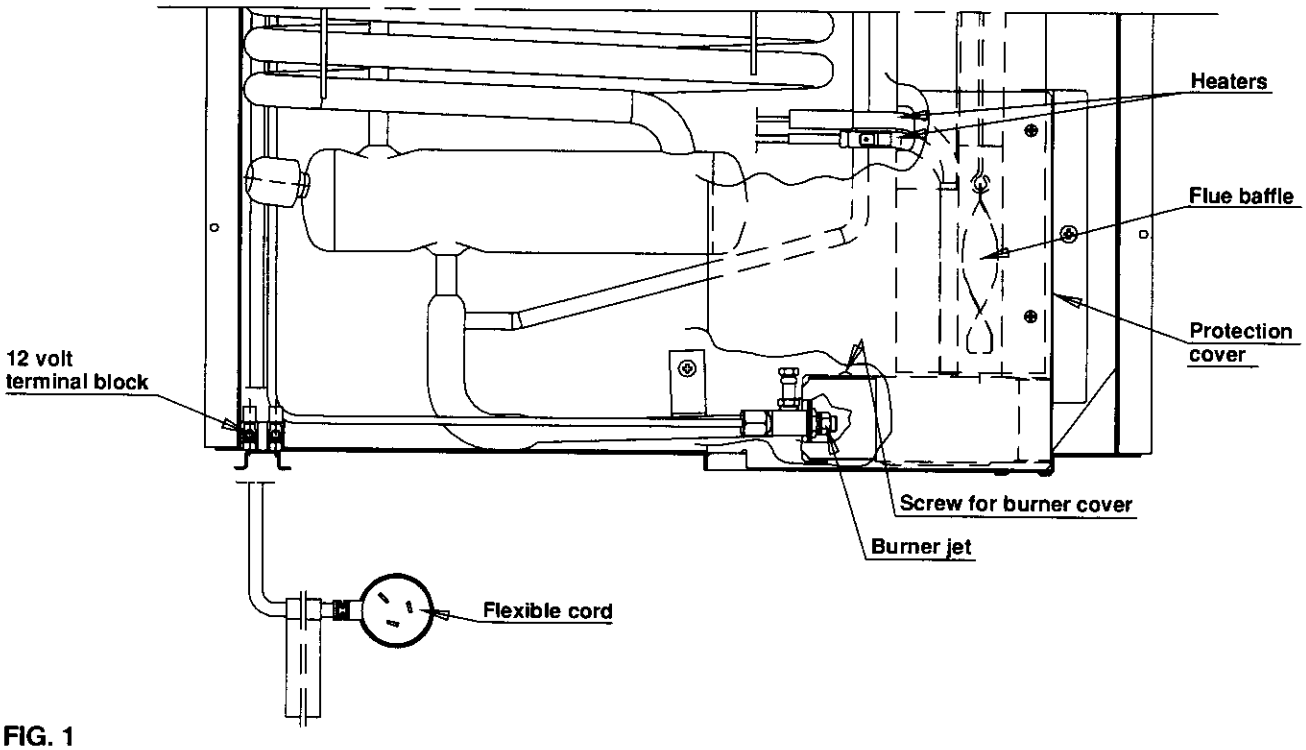
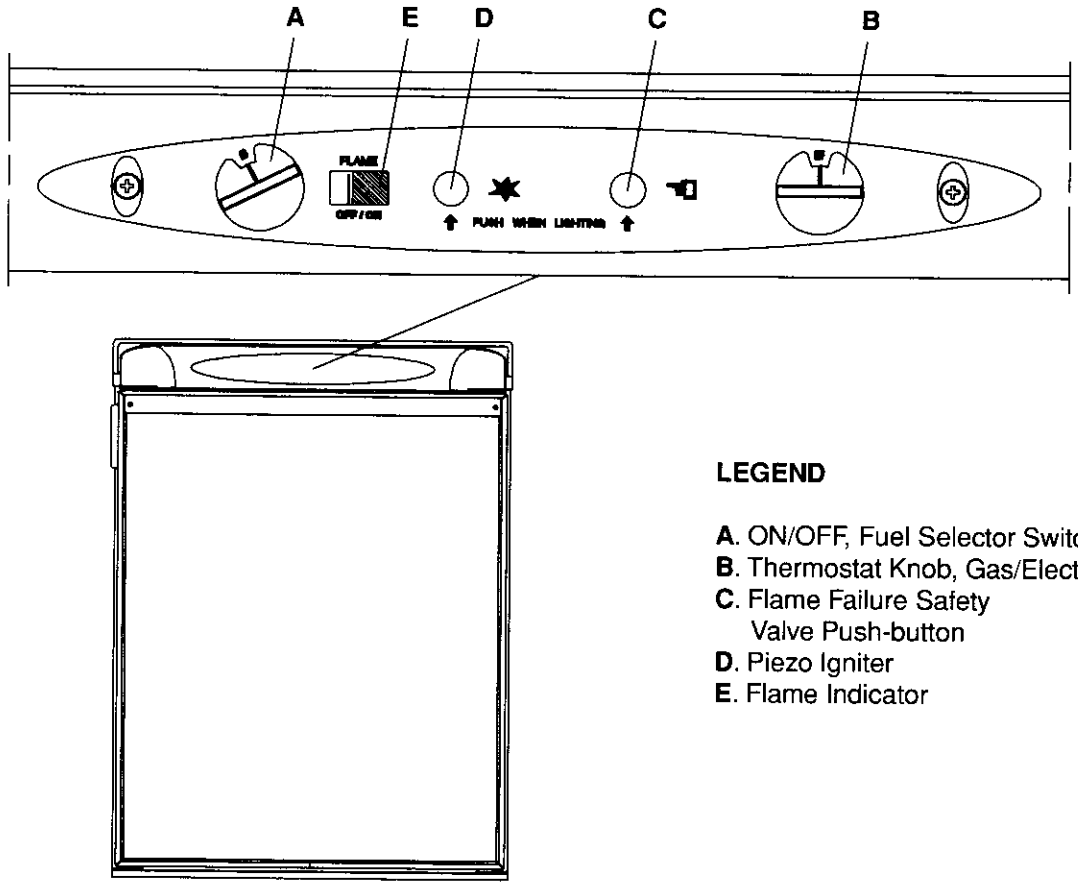


FIG. 1

Refrigerator control panel



LEGEND

A. ON/OFF, Fuel Selector Switch
B. Thermostat Knob, Gas/Electric
C. Flame Failure Safety Valve Push-button
D. Piezo Igniter
E. Flame Indicator

FIG. 2

INSTALLATION

GENERAL INSTRUCTION

This appliance must be installed by an authorised person and conform to all relevant local authoritles.

The refrigerator must be installed on a solid floor and must be level. With the vehicle carefully levelled, the refrigerator should level both ways in the freezer compartment.

Free air circulation over the fins of the cooling unit is essential.
In case detailed instructions on the installation and connection to the gas supply are required, contact your dealer or distributor.

DATA PLATE

Check the data plate, inside the refrigerator, to ensure that you have received the right model.

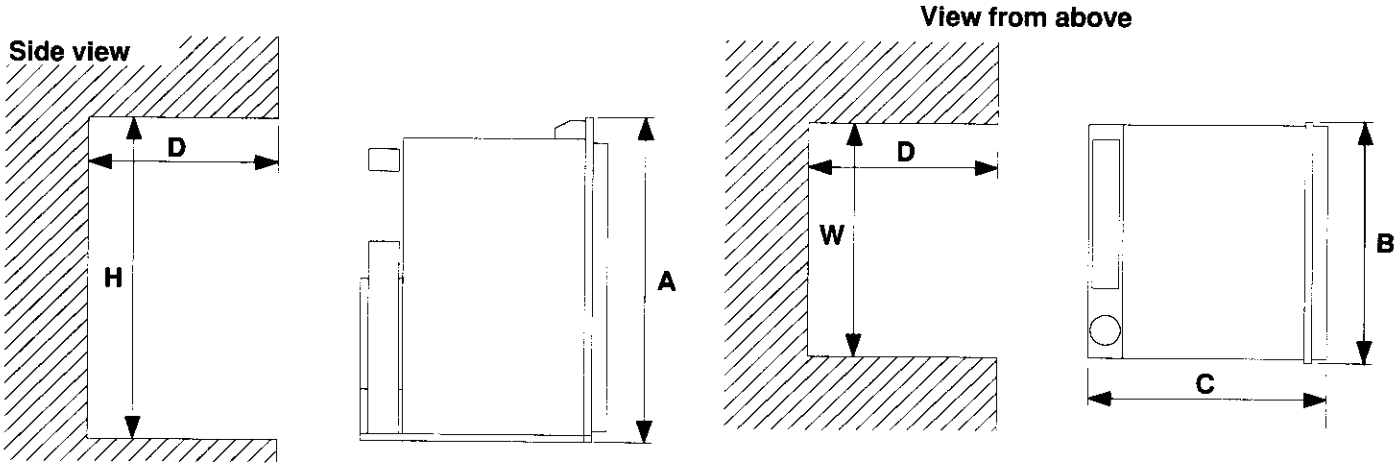
The right gas pressure is ..... 2.72 kPa.
The right voltage is ..... 230 - 240 volt.
The data plate contains e.g. the following details:

Model designation .....
Product number .....
Serial number .....
Since these details will be needed if you have to contact service personnel, it is a good idea to make a note of them here.

IMPORTANCE OF LEVELLING A REFRIGERATOR

In an absorption refrigerator system, ammonia is liquefied in the finned condenser coil at the top rear of the refrigerator. The liquid ammonia then flows into the evaporator (inside the freezer section) and is exposed to a circulating flow of hydrogen gas, which causes the ammonia to evaporate, creating a cold condition in the freezer.
The tubing in the evaporator section is specifically sloped to provide a continuous movement of liquid ammonia, flowing downward by gravity through this section.
If the refrigerator is operated when it is not level and the vehicle is not moving, liquid ammonia will accumulate in sections of the evaporator tubing. This will slow the circulation of hydrogen and ammonia gas, or in severe cases, completely block it, resulting in a loss of cooling.
Any time the vehicle is parked for several hours with the refrigerator operating, the vehicle should be levelled to prevent this loss of cooling. The vehicle needs to be levelled only so it is comfortable to live in (no noticeable sloping of floor or walls).
When the vehicle is moving, the levelling is not critical, as the rolling and pitching movement of the vehicle will pass to either side of level, keeping the liquid ammonia from accumulating in the evaporator tubing.

FIG. 3



Refrigerator Model	Overall Dimensions			Recess Dimensions		
	Height A	Width B	Depth C	Height H	Width W	Depth D
RM 2330 mm	766	556	561	756	521	542

This methods of installation and these clearances will give you adequate space for service and proper installation.

INSTALLING REFRIGERATOR IN ENCLOSURE

NOTE: DO NOT install the appliance directly on carpeting. Carpeting must be removed or protected by a metal or wood panel beneath the appliance which extends at least full width and depth of the appliance.

The refrigerator must be installed in a substantial enclosure and must be level. When installing the refrigerator in the enclosure, all areas within the recess in which the refrigerator is installed must be sealed.

Make sure that there is a complete seal between the front frame of the refrigerator and the top, sides and bottom of the enclosure. A length of sealing strip is applied to the rear surface of the front frame for this purpose. Also apply a sealing strip to the foremost floor of the enclosure as shown in fig. 4. The sealing should provide a complete isolation of the appliance's combustion system from the vehicle interior.

NOTE: Be careful not to damage the sealing strip when the refrigerator is put in place.

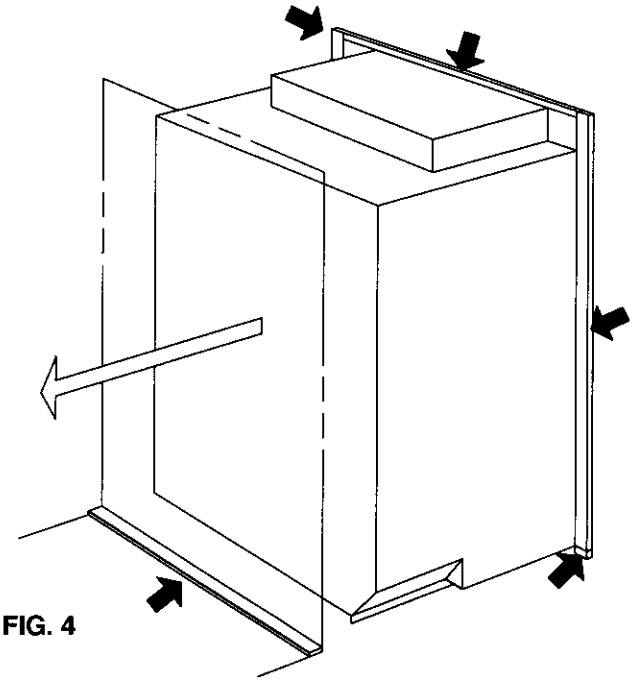


FIG. 4

Securing the Refrigerator

After the refrigerator is put in place, (insuring a combustion seal at the front frame), the refrigerator is to be secured in the enclosure with five screws. The screws have to be installed in the following order:

STEP 1: Four screws installed through the front frame. See fig. 5.

STEP 2: One screw installed in the rear base, on the left side (viewed from the rear). See fig. 5.

In the parts bag there are plugs to be snapped in the front frame to cover the four screw heads.

Failure to follow the sequence in securing refrigerator in enclosure can cause leakage between the frame and cabinet. When installing the refrigerator, the installer must block the space between the storage cabinet and the top of the refrigerator, otherwise heat will become trapped in this space, making the top of the refrigerator hot, thus reducing the efficiency of the unit.

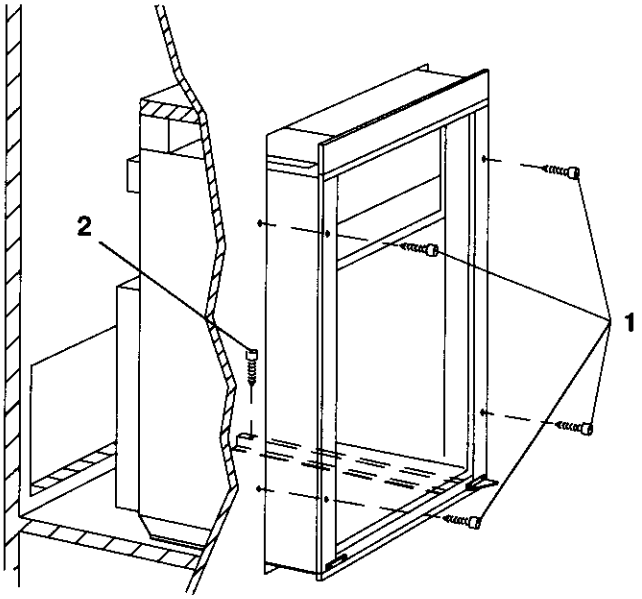


FIG.5

LP GAS CONNECTION

The refrigerator is designed for operation on LP gas, the pressure of which must be 2.72 kPa for Propane.
Check that this is stated on the data plate.

The refrigerator is **not** designed for operation on town gas or natural gas.

CAUTION! CHECK THAT THE GAS SUPPLIED TO THE REFRIGERATOR IS AT THE CORRECT PRESSURE. SEE THE REDUCING VALVE ON THE LP GAS CONTAINER

The gas installation and servicing should only be carried out by an authorised, qualified person and must conform to all relevant national and local regulations.

The gas supply system must incorporate a pressure regulator to maintain a supply pressure of not more than 2.72 kPa.
The supply pipe should preferable be of copper. If any other material is used, it must be of a type approved for use with continuously operating bottled- gas appliances, and have threaded connections throughout.
All connectors etc. should be of a type specifically designed for the type and diameter of the connection pipe used, and screwed joints should be sealed with a joining compound approved for use with bottled gas.

The gas supply pipe should be connected to the gas valve at the top of the refrigerator, by means of a suitable threaded coupling.
The gas valve is furnished with an ISO 7/1 - Rp 1/8 internal pipe thread connection.
In making the connection to the refrigerator, a union gas cock of an approved bottled- gas type must be incorporated in the supply line in a position which is readily accessible to the user. For eventual servicing purposes, the union should be on the outlet side of the cock and the pipework should be positioned so as not to prevent the refrigerator from being readily withdrawn.
All completed connections should be checked for leaks with soapy water.

WARNING

DO NOT use a flame to check for gas leaks.

TESTING LP GAS SAFETY SHUTOFF

The gas safety shutoff must be tested after the refrigerator is connected to the LP gas supply.

To test the gas safety shutoff, proceed as follows:

1. Start the refrigerator according to the instructions for Gas Operation. See section Operating Instructions.
2. Check that the gas flame is lit. This can be observed on the flame indicator **E**. The gas is lit when the red indicator is in the green field, (ON).
3. Close the gas valve by turning the knob **A** back to **"OFF"** position.
4. Wait for one minute.
5. Remove burner cover plate. (See fig. 1). Open the gas valve by turning knob **A** to position **"GAS"** without pushing the buttons **C** and **D**.
   Apply a non-corrosive commercial bubble solution to the burner jet.
6. No bubbles should appear at the opening of the burner jet. The presence of bubbles indicates a defective gas safety shutoff, and service is required.
7. If no bubbles were present at the burner jet, the gas safety valve is working properly. Rinse jet thoroughly with fresh water before proceeding. Be careful not to damage the burner jet.
   Replace cover and turn the main switch OFF and back ON. See instruction for Gas Operation section Operating Instructions. Normal operation of the burner should return. Allow the burner to operate for a minimum of 5 minutes.

ELECTRICAL CONNECTION

230-240 Volts Connection

The electrical installation must be carried out in a proper and durable manner, taking into account all relevant regulations and codes of practice.

For mains voltage operation, it is important that the circuit to and in the caravan is effectively earthed.

The refrigerator is equipped with a three-prong (grounded) plug for protection against shock hazards and should be plugged directly into a properly grounded three-prong receptacle. DO NOT cut or remove the grounding prong from this plug. The free length of the cord is 1.8 m and therefore recommended that the receptacle be located to the left side of the refrigerator (viewed from the rear) and approximately 100 -150 mm from the floor (see fig. 6). This allows easy access through the vent door.

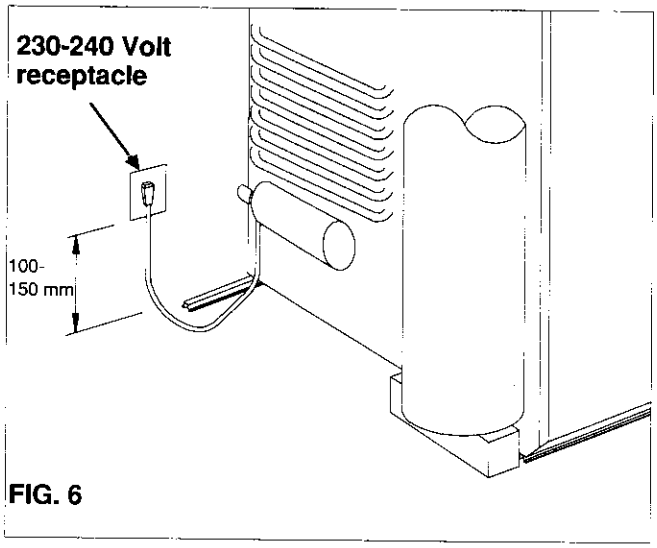


FIG. 6

230-240 Volts Supplies.

Check that the voltage stated on the data plate is the same as the main voltage in use (230-240 V).
Plug the 230-240 V refrigerator power cord into an easily accessible wall socket.

Electrical leads must be routed and secured so that they cannot come into contact with hot or sharp parts of the refrigerator.

12 Volts Supplies.

This connection is made to the terminal block marked "12 volts DC", located at the bottom left corner on the back of the refrigerator.
Correct polarity must be observed when connecting to the 12 V supply. To avoid a voltage drop, the cross sectional area of the connecting wires between battery and refrigerator must be at least 4 mm^2 if the total wire length (+ and - wire together) is less than 7 meters, and at least 6 mm^2 if the total wire length (+ and - wire together) is more than 7 meters but max. 12 meters.

To ensure satisfactory operation, the positive lead must be fitted with a fuse rated at max. 15 A.
Correct polarity must be observed when connecting to the 12 V supply.

DO NOT use the chassis or vehicle frame as one of the conductors.
The connections must be clean, tight and free from corrosion. If not, a resulting voltage drop will cause a decreased cooling capacity.

CAUTION

Do NOT operate the refrigerator on 12 volt when the vehicle is parked. The amperage draw of the 12 volt heating element can discharge a battery in a very short time. The installation of a 12 volt operated refrigerator requires a relay to be installed on the tow vehicle or in the caravan. The relay will automatically shut off the 12 volt power to the refrigerator when the ignition is turned off. (See fig. 7).

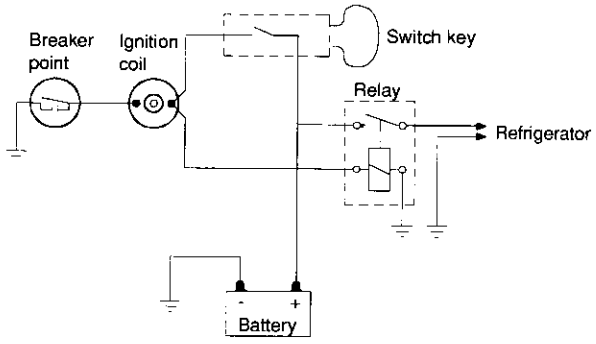
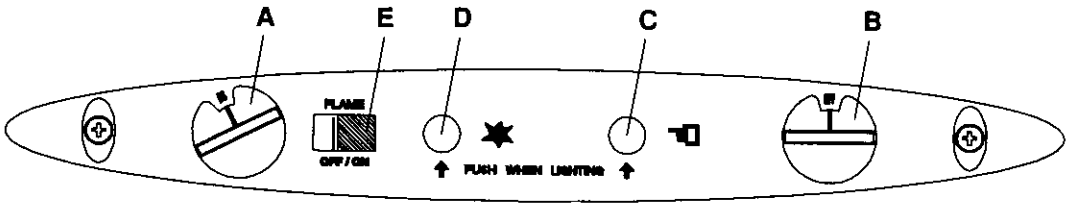


FIG. 7

Wiring diagram RM 2330 see last page.

OPERATING INSTRUCTIONS

FIG. 8



CONTROLS

The refrigerator can be run on 230-240 V, 12 V or LP gas. Changing between these modes of operation is carried out by means of the control button (A) of the control panel shown in fig. 8.
The energy selector (A) can be set at either "AC" (230-240 V), "DC" (12 V), "GAS" (LP gas) or "OFF".

The refrigerator temperature is controlled by a thermostat (B) when the refrigerator runs on 230-240 V and LP gas. Please not that the thermostat has no "off" position when the refrigerator runs on LP gas.

The refrigerator is fitted with a flame safety device, that automatically shuts off the supply of gas if the flame goes out. The flame safety device can be operated manually by pressing the button (C).

A manual piezo-electric igniter is used. When the button (D) is pushed, sparks are generated at the burner.

The flame indicator (E) shows if the gas flame is lit. The gas is lit when the red indicator is in the green field, ON.

STARTING THE REFRIGERATOR

The position numbers refer to fig. 8.

LP GAS OPERATION

Before starting the refrigerator, open the shut-off valve of the gas bottle (check that there is enough gas). Open any on-board shut-off valve.

1. To start the refrigerator, turn knob **A** to the "GAS" position.
2. Turn the thermostat knob **B** to position 4.
3. Press the button **C** to stop and push the button **D** of the piezo igniter. The pushing has to be repeated until the gas is lit at the burner. This can be observed on the flame indicator (**E**), on the refrigerator. When the flame is on, the red indicator is on the green field.
4. After the flame lights, continue to hold button (**C**) for an additional 10 seconds. Release the button (**C**) and check the flame indicator (**E**) to make sure the burner does not go out. If the burner goes out, repeat the lighting procedure.
5. **To shut off the refrigerator** turn the knob **A** to **"OFF"** position.

NOTE: After changing an LP tank, or after a long shut off period, the gas line is likely to be filled with air. You may have to repeat the lighting procedure several times to purge the air out of the gas lines.

WARNING!

DO NOT OPERATE THE REFRIGERATOR ON LP GAS WHILST TRAVELLING.

230-240 V OPERATION

Before operating the refrigerator, check that the voltage stated on the data plate is the same as the main voltage in use.

1. Check to be sure the power cord is properly connected to the power supply. (See fig. 6).
2. Turn the knob **A** to the position marked **"AC"** for 230-240 volts operation.
3. Turn the thermostat knob (**B**) to position 4.
4. **To shut off the refrigerator** turn the knob **A** to **"OFF"** position.

12 V OPERATION

Only operate your refrigerator on 12 V when the engine of the vehicle is running - otherwise your battery will soon be discharged.

1. Turn the knob **A** to the position marked **"DC"** for 12 volts operation.
2. **Note:** there is no thermostat function on 12 V operation, the refrigerator works continuously.
3. **To shut off the refrigerator** turn the knob **A** to **"OFF"** position.

REGULATING THE TEMPERATURE

The refrigerator is equipped with a thermostat that can be adjusted by turning the knob **B** to different setting to maintain the desired cabinet temperature.

At **OFF** In gas operation, the thermostat closes its main valve and the burner runs continuously at the bypass rate, just enough to keep the burner lit. In electrical operation (230-240 V), the contacts in the thermostat are open and the heating elements are off.

At **MAX** In gas operation, the thermostat allows the burner to remain on high flame continuously. In electrical operation (230-240 V), the heating element is "ON" continuously. Lowest cabinet and freezer temperatures are obtained at this setting.

The thermostat can be adjusted between "MAX" and "OFF" to obtain the desired cabinet temperature.
The closer the knob is to "MAX" - the colder the cabinet temperature.
The closer the knob is to "OFF" - the warmer the cabinet temperature.

When the thermostat reaches the set temperature, it will cut the burner back to bypass or, in electrical operation, shut off the heating element.
The setting of the thermostat is not critical, but we recommend it be adjusted to maintain a dry frost on the cooling fins. Adjust the thermostat knob closer to "MAX" when the outside temperature becomes warm.

HOW TO USE THE REFRIGERATOR

FOOD STORAGE COMPARTMENT

The food storage compartment is completely closed and unventilated, which is necessary to maintain the required low temperature for food storage. Consequently, foods having a strong odour or those that absorb odours easily should be covered. Vegetables, salads etc. should be covered to retain their crispness. The coldest positions in the refrigerator are under the cooling fins and at the bottom of the refrigerator. The warmer areas are on the upper door shelves. This should be considered when placing different types of food in the refrigerator.

FROZEN FOOD STORAGE COMPARTMENT

Quick frozen soft fruits and ice cream should be placed in the coldest part of the compartment which is at the bottom of the aluminium liner. Frozen vegetables, may be stored in any part of the compartment.
This compartment is not designed for deep or quick freezing of food. Meat or fish, whether raw or prepared, can be stored in the frozen food storage compartment provided they are precooled first in the refrigerator. They can be stored about three times longer in the frozen food compartment as compared to the fresh food compartment. To prevent food from drying out, keep it in covered dishes, containers, plastic bags or wrapped in aluminium foil.
Ice cubes can be made in the freezer compartment.
For faster ice making, the tray should be placed in direct contact with the bottom of the freezer compartment.

Ice making is accelerated if the thermostat knob **B** is turned to the "MAX" setting.
It is a good idea to do this a few hours before the anticipated need for ice, but be sure to turn the thermostat back to normal setting, usually about mid-setting when the ice is formed. Food in the lower compartment may be frozen if the setting is left on "MAX" position.

DEFROSTING

After a period of operation, frost may gradually accumulate on the freezer plate and the cooling fins, thereby impairing cooling efficiency.
To defrost the refrigerator. Turn it off and remove the ice tray and all food items, leaving the drip tray under the finned evaporator and the cabinet and freezer doors open. Defrosting time can be reduced by filling the ice tray with hot water and placing it on the freezer shelf.

When all the frost is melted, empty the drip tray and dry the interior of the refrigerator with a clean cloth.

Replace all food and set thermostat to "MAX" for a few hours. Then reset the thermostat to the desired setting, usually at mid-setting.

CAUTION

<u>DO NOT</u> use a hot air blower. Permanent damage could result from warping the metal or plastic parts. DO NOT use a knife or an ice pick, or other sharp tools to remove frost from the freezer compartment. They can create a leak in the ammonia system.

CLEANING THE REFRIGERATOR

Cleaning the refrigerator is usually done after it is defrosted or put into storage. To clean the interior liner of the refrigerator, use lukewarm weak soda solution. Use only warm water to clean the finned evaporator, gasket, ice tray and shelves.
NEVER use strong chemicals or abrasives to clean these parts as the protective surfaces will be damaged. It is important to always keep the refrigerator clean.

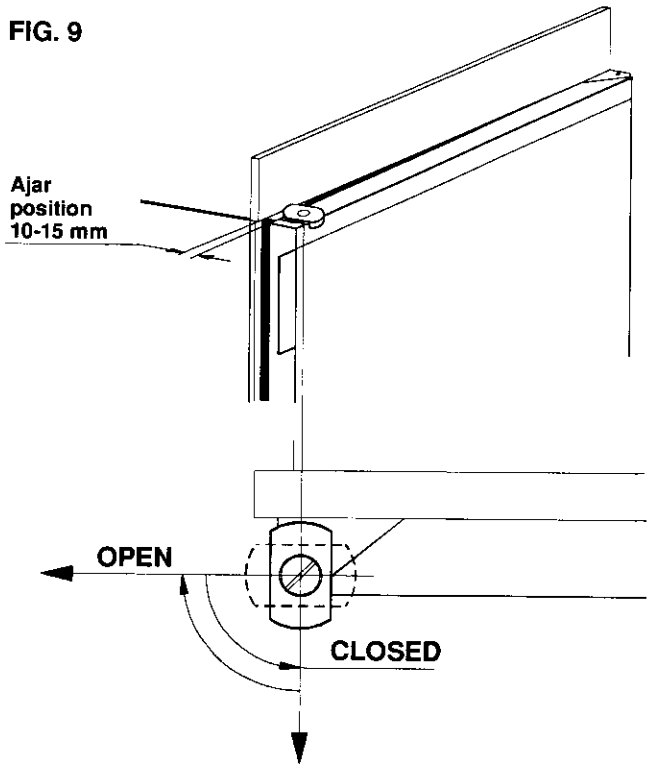
SHUT-OFF (STORAGE PROCEDURE)

To shut off the refrigerator, turn the knob **A** to "OFF" position. If the refrigerator will not be in operation for a period of weeks, it should be emptied, defrosted, cleaned and the doors left ajar. Use the travel catch to hold in this position. (See fig. 9). The ice tray should also be dried and kept outside the cabinet.

WARNING

DO NOT store explosive substances in the refrigerator, such as cigarette lighter gas, petrol, ether or the like.

FIG. 9



MAINTENANCE AND SERVICE

1. REFRIGERATOR REMOVAL

Before working on the refrigerator, make sure the 230-240 V and 12 V leads are disconnected. Shut off the gas supply at the LP tank. Disconnect the gas supply line. Always use a back up wrench when loosening and tightening connections.
Cap the gas supply line, loosen the screws anchoring the refrigerator to the enclosure and slide the refrigerator out of the compartment.
When replacing the refrigerator make sure that the sealing strips are properly positioned.
Replacement is the reverse of removal. Check all connections for gas leaks.
Refer to section **INSTALLATION**, page 3 to 6.

2. PERIODIC MAINTENANCE

To keep your refrigerator operating efficiently and safely, periodic inspection and cleaning of several components once or twice a year is recommended.

A. It is important to keep the area at the back of the refrigerator clean. Check the lower vent, upper vent and area between these openings for any obstructions such as bird/insect nests, spider webs, etc. Clean the coils on the back of the refrigerator. Use a soft bristled brush to dust off the coils.
It is important to keep the refrigerator area free from combustible material, gasoline and other flammable vapours or liquids.

NOTE: The following maintenance is required once or twice a year, but should only be done by a qualified serviceman who is familiar with LP gas systems and refrigerators.

B. Check all connections in the LP gas system (at the back of the refrigerator) for gas leaks. The LP gas supply must be turned on. Apply a non-corrosive bubble solution to all LP gas connections. The appearance of bubbles indicates a leak and should be repaired **immediately** by a QUALIFIED SERVICEMAN WHO IS FAMILIAR WITH GAS SYSTEM AND REFRIGERATORS.

WARNING

DO NOT use a flame to check for gas leaks.

C. The LP gas pressure should be checked and the main regulator readjusted if pressure is incorrect. The correct operating pressure is 2.72 kPa. The correct place to take the LP gas pressure is at the test port just ahead of the burner jet. (See fig. 10).

D. Inspect the flue baffle. It should be reasonably clean and free of soot. Heavy soot formation indicates improper functioning of the burner. The flue and burner both require cleaning in the following manner:

1. Unplug the refrigerator power cord from the 230-240 volt outlet. (See fig. 6).
2. Disconnect the 12 volt power to the refrigerator.
3. Close the gas valve by turning the knob A to "OFF".
4. Remove cover from the burner housing. (See fig. 1).
5. Disconnect the wire from the high voltage electrode.
6. Remove the burner mounting screw and remove the burner assembly. (See fig. 10).
7. Remove the wire and flue baffle from the top of flue tube. Clean the flue from the top using a flue brush. Blowing compressed air into the flue **will not** properly clean soot and scale out of the flue tube. Replace the flue baffle.
8. Clean burner tube with a brush. Blow out burner with compressed air.
9. Before removing burner jet, clean burner area of soot and scale that fell out of flue tube. Remove the burner jet. Soak the jet in wood alcohol and blow it out with compressed air. Reinstall and tighten burner jet.

GAS EQUIPMENT ASSEMBLY

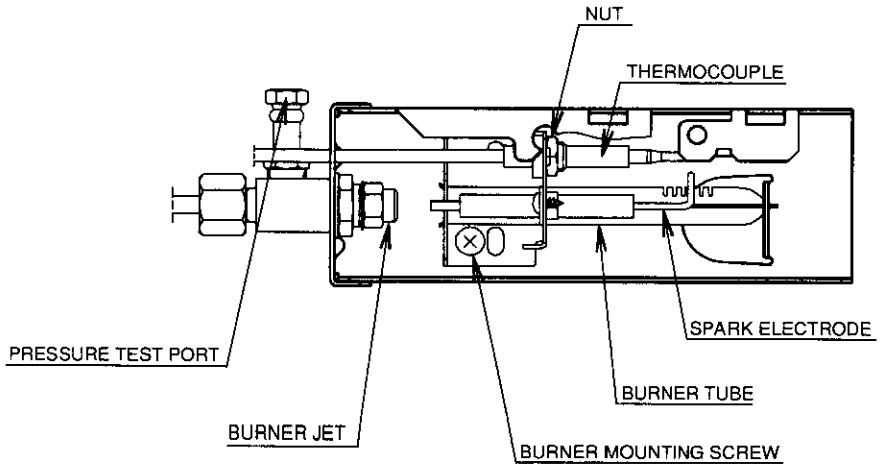


FIG. 10

NOTE: The colour of the flame shall be clear blue over the slots of the burner. (See fig. 11).

Clear blue colour of flame

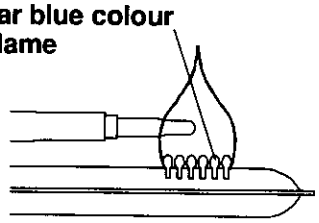
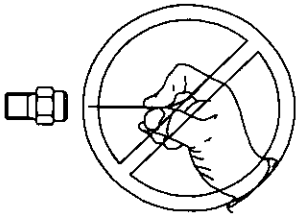


FIG. 11

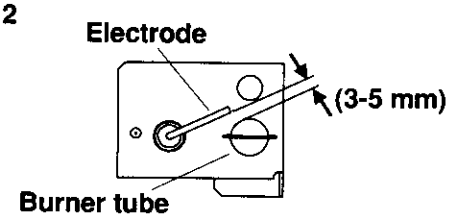
WARNING

DO NOT use a wire or pin when cleaning the burner jet as damage can occur to the precision opening. This can cause damage to the refrigerator or create a fire hazard.



10. Reinstall burner, being careful that the end of the burner fits into the slot on the burner bracket. Check to make sure slots are centred under the flue tube and the thermocouple is positioned properly (tip of thermocouple extends over two slots of burner).
11. Be sure to reconnect the wire to high voltage electrode. Check the electrode for proper location and gap. (See fig. 12).

FIG. 12



12. Open the gas valve by turning knob A to position "GAS" and check all fittings for leaks with soapy water.
13. Connect 230-240 volt power cord to the outlet and reconnect the 12 volt power.
14. Check LP gas safety shutoff. See page 5.

3. TROUBLESHOOTING

Refrigerator Does Not Cool Properly

Check the following points before calling a service technician.

A. Burner jet clogged.
Clean. (See section Maintenance & Service, Item 2. Periodic Maintenance, Paragraph D. Item 1-14.

B. Check level of refrigerator.

C. Venting problem.

D. Heavy frost build-up on evaporator fins.
Defrost

E. Flue baffle not inserted properly in flue tube.

F. Improperly set thermostat.
(See Operating Instructions, part Regulating the temperature).

G Burner dirty.
Clean. (See section Maintenance & Service, Item 2. Periodic Maintenance, Paragraph D. Item 1-14.

H. LP gas pressure low at burner.
Set main regulator so pressure does not drop below 2.72 kPa at the pressure tap.

I. Burner not located properly under flue tube.
Relocate

J. Burner damaged.
Replace

K. Odour from fumes.
1. Dislocated burner
2. Damaged burner
3. Dirty flue tube

NOTE: AVOID SPRAYING WATER THROUGH THE REFRIGERATOR VENTS WHILE WASHING YOUR RV.

The sealed cooling system must not be opened, since it contains corroding chemicals under high pressure.

All the above instructions are to be followed closely. The refrigerator is quality-guaranteed. However, we are not responsible for any failures caused by improper adjustments and unfavourable installation conditions. Contact service point or distributor service dept. for assistance.

CHANGING DOOR SWING TO OPPOSITE SIDE

- Remove the top hinge pin and lift out the door.
- Remove the lower hinge bracket, unscrew the hinge pin (use a flat blade screwdriver), save the pin and washers for reassembly later.
  Remove the cover plate on the opposite side, and relocate it in the holes just exposed by the removal of the hinge bracket.
- Take the new hinge bracket (from the parts bag) and fasten the hinge pin. Using the same screws, attach the hinge bracket to the refrigerator where the cover plate previously was.
- Unscrew the travel latch and re-fasten it on the opposite side. The nylon bushing and the latch retainer on the top of the door should be shifted.
- Unscrew the handle and re-fasten it on the opposite side of the door. Insert the plastic caps (from the parts bag) into the holes left open on the door.
- Remount the door and the top hinge pin.
- Check travel latch to make sure it works properly and that the door closes easily and the gasket seals well on all sides.

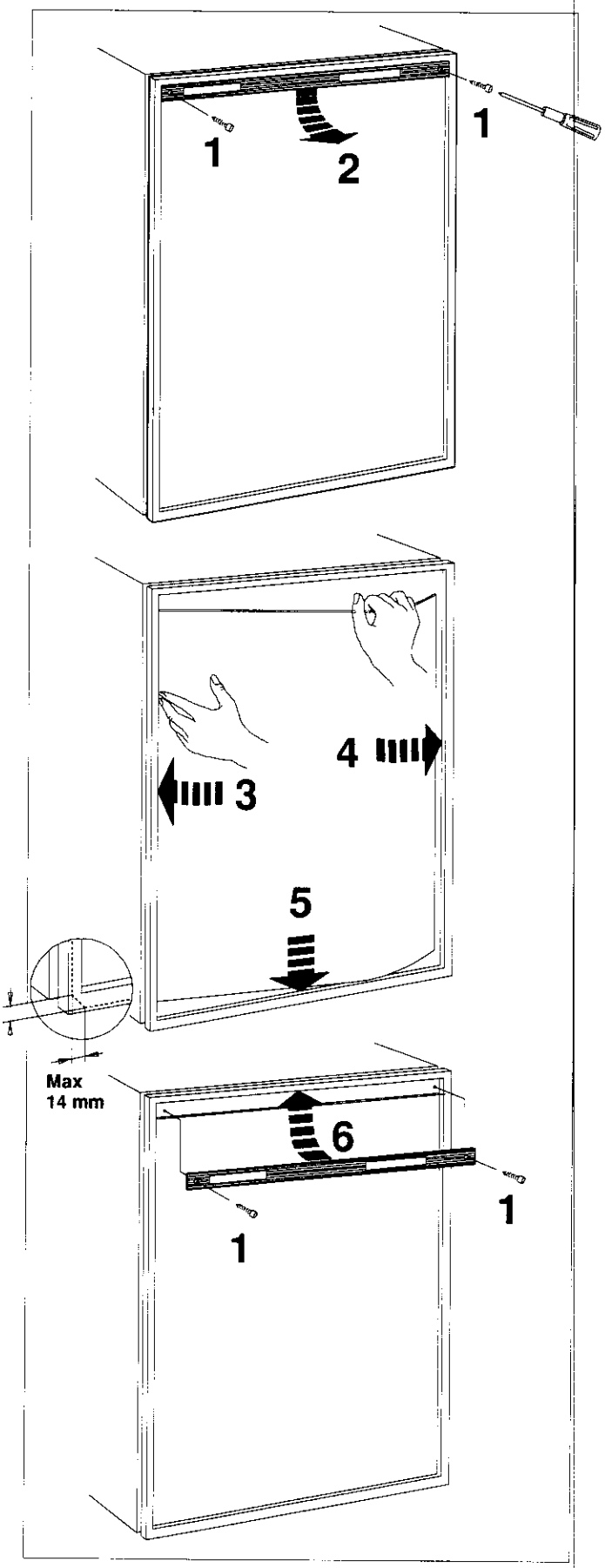
INSTRUCTIONS FOR MOUNTING THE DOOR PANEL

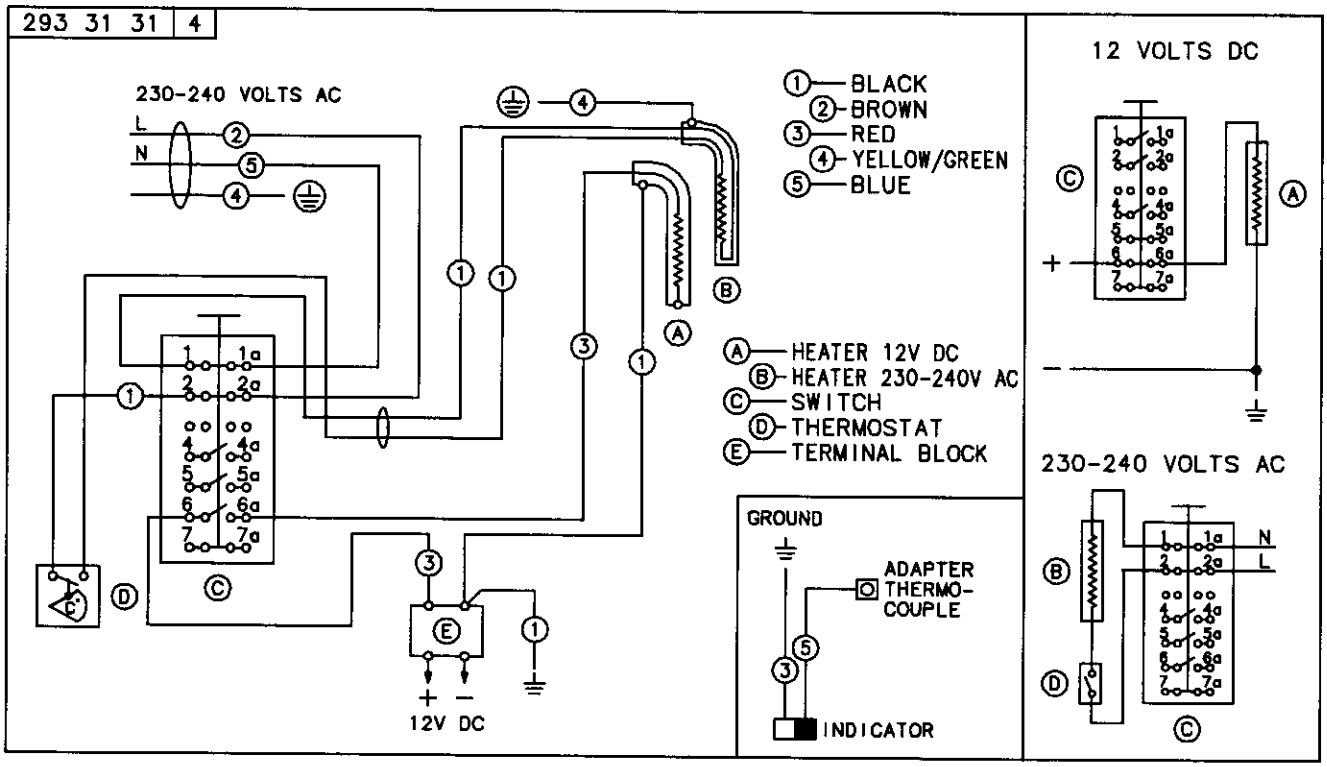
The refrigerator is normally delivered without door panels. Before starting the mounting work, check that the panel dimensions are in compliance with those given in the Table and the instructions are read thoroughly.
When mounting the panel, proceed as follows:
See figure 13.

A. On new refrigerators, the decoration strip is taped inside the door; if installed on the door, remove the door decoration strip (2) by removing its two screws (1).
B. The lower corners of the panel has to be cut according to the sketch. Insert one vertical edge of the panel into the groove of the door frame (3).
C. Bend the panel gently so that the free side of the panel can be slipped into the corresponding groove of the door frame (4). Slide the panel down into the groove of the bottom frame.
D. Between the upper edge of the panel and the door frame there is a gap which should be covered by the decoration strip.
E. Put the decoration strip across the door so that the gap is covered and push it upward (6) The tabs on the inside of the strip should fit behind the flange of the door frame. Secure the decoration strip with the two screws removed in Step A (1).

PANEL DIMENSIONS MAX. THICKNESS (4 mm)				
REFR.MODEL TYPE	HEIGHT MAX.	HEIGHT MIN.	WIDTH MAX.	WIDTH MIN.
RM 2330 mm	649	647	536	534

FIG. 13




293 31 31 | 4
230-240 VOLTS AC
L
N
12V DC
1 BLACK
2 BROWN
3 RED
4 YELLOW/GREEN
5 BLUE
A HEATER 12V DC
B HEATER 230-240V AC
C SWITCH
D THERMOSTAT
E TERMINAL BLOCK
GROUND
ADAPTER THERMO-COUPLE
INDICATOR
12 VOLTS DC
230-240 VOLTS AC

Electrolux