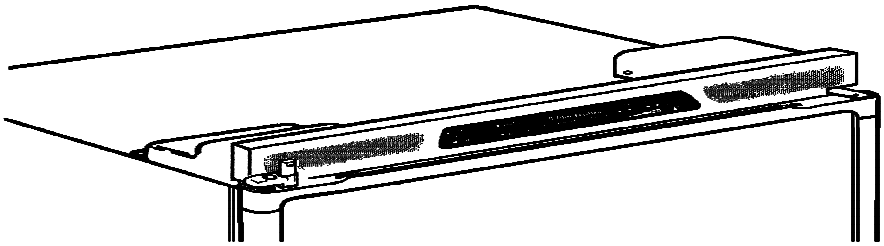
Electrolux

MANUAL CARAVAN

AES II



RM 4185
RM 4215
RM 4235
RM 4265
RM 4275
RM 4285

RM 4365
RM 4405
RM 5215
RM 5275
RM 5405

Deutsch	Seite	1	Svenska	sida	32
English	page	7	Dansk	side	38
Français	page	14	Norsk	side	44
Italiano	pagina	20	Nederlands	pag.	50
Español	pagina	26	Suomi	sivu	57

CE

C 40/ 110

821 2647.12

T.B. 8 '97

OPERATING AND INSTALLATION INSTRUCTIONS FOR ELECTROLUX REFRIGERATORS

INTRODUCTION

We are pleased that you have chosen this refrigerator and hope you will derive much satisfaction from using it, but first a few well-meant words of advice:

It is important to read through these instructions carefully before using the refrigerator.

To ensure good refrigeration and economical operation, the refrigerator must be installed and used as described in these instructions.

The refrigerator is designed for building-in to leisure vehicles such as caravans or motorhomes.

The appliance is certified according to the EU-Gas-Directive 90/396/EEC.

This refrigerator comes with an

Automatic Energy Selector

which controls operation and energy supply. To put the refrigerator in operation, just trip the main switch - AES manages the rest.

TRANSIT DAMAGE

Inspect the refrigerator for damage. Transit damage must be reported to whoever is responsible for delivery not later than seven days after the refrigerator was delivered.

DATA PLATE

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

The data plate contains e. g. the following details:

Model designation RM .....
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.

CONTENTS

OPERATING INSTRUCTIONS 8

CONTROLS 8

STARTING THE REFRIGERATOR 8

SWITCHING BETWEEN ENERGY SOURCES . 8

WINTER OPERATION 8

REGULATING THE TEMPERATURE..... 8

TRAVEL CATCH 9

FOOD STORAGE 9

ICE-MAKING 9

DEFROSTING 9

CLEANING THE REFRIGERATOR 9

TURNING OFF THE REFRIGERATOR 9

IF THE `FRIDGE FAILS TO WORK..... 9

GUARANTEE AND SERVICE..... 10

MAINTENANCE 10

INSTALLATION INSTRUCTIONS 10

REPOSITIONING THE HINGES 10

INSTALLATION /BUILDING-IN 10

VENTILATION OF THE UNIT 10

LP GAS CONNECTION 11

ELECTRICAL CONNECTION 11

INTERIOR LIGHT -BULB -CHANGE..... 12

TECHNICAL DATA 13

OPERATING INSTRUCTIONS

CONTROLS

This refrigerator is equipped with an **A**utomatic **E**nergy **S**elector (**AES**) which controls its operation and energy supply.

The system selects the available energy source in the order 230/240 V – 12 V – LP gas. No manual operation is necessary for selecting the energy source.

The control panel is shown in fig. 3.

The refrigerator is set into operation by pushing button (A) (main switch). The AES LED (C) lights green showing: AES system working. Push- button (B) is used for setting the electronic thermostat. The thermostat LEDs (D) show the choosen temperature position. When there is a demand for refrigeration, AES will connect the most favourable of the available energy sources.

Note: 12 V must always be available to supply the electronics.

STARTING THE REFRIGERATOR

All references are to fig. 3.

LP Gas operation

AES will select LP gas operation under the following conditions:

- No AC (230 V) available
- Engine not running (no high current at 12 VDC available)
- AC available **but too low**
- Engine running **but DC supply too low**

(condition three and four are briefly described in item **Undervoltage operation)**

When the system chooses LP Gas operation, the flame failure device is automatically opened, allowing the gas to flow to the burner. At the same time, the electronic igniter is energized.

After initial installation, servicing, or changing gas cylinders etc., the gas pipes may contain some air which should be allowed to escape by briefly turning on the refrigerator or other appliances. This will ensure that the flame lights immediately.

If the flame goes out (by gust of wind etc), the igniter is immediately activated and reignites the gas.

Note: the control electronics and the igniter must have a DC (battery) supply to operate.

Gas trouble-shooting

If the AES LED (C) is flashing red, the system was not able to start or continue gas operation. Set the switch (A) to 0 and check that there is enough gas in the gas bottle, that its valve is open and that any valves in the gas line to the refrigerator are open.

Then push button (A) to "ON" again. After 10 sec. AES will repeat the ignition sequence. When the AES LED (C) again starts flashing red after 30 sec, the trouble persists (air in the line, no gas?). Switch (A) briefly off and then on again. It might be necessary to repeat this operation 3-4 times if the tubing contains air (after changing gas bottles, repairs etc). If this does not help, you should consult a service technician.

230 V Operation

When a mains connection is available, AES will select this. Please note, that even being in AC mode, 12 V DC is neccessary for the internal supply of the electronics.

12 V operation

AES will select the 12 V mode of operation only when the vehicle engine is running (detected by the alternator connection of the fridge).

SWITCHING BETWEEN ENERGY SOURCES

When switching from one energy source to another, there are some delays implemented in the AES system.

The 15 min. delay between switching off the engine and starting gas mode is intended to to delay the starting of gas mode e.g. when stopping at a filling station.

Nevertheless it is not allowed to have a naked flame at a gas filling station. If you are not sure, that your stop is shorter than 15 min., you are advised to switch off the main switch (A), fig. 3, when stopping at a filling station.

Undervoltage operation

The AES system is designed to guarantee the maximum cooling efficiency under any circumstances. Therefore, the system monitores continously the voltage level while being in either 12 V DC or 230 V AC mode. If the voltage is too low, the system switches to Gas mode shown by the yellow LED (E in fig.3). The system stays in Gas mode, until the electrial supply voltage has recovered to the normal level.

WINTER OPERATION

Please check that the ventilation grilles or the flue outlet are not blocked by snow, leaves etc.

ELECTROLUX ventilation grilles **A 1620** (fig. 2), can be fitted with winter covers, model **WA 120**, to protect the cooling unit against cold air. The covers may be fitted when the outside temperature is below approx. 10°C and should be fitted when the temperature is below the freezing point.

We suggest that you fit the winter covers also in the case that the vehicle is laid up during the winter months.

REGULATING THE TEMPERATURE

The position number refers to fig. 3.

It will take a few hours for the refrigerator to reach normal operating temperature. So we suggest you start it well in advance of a trip and if possible store it with precooled foodstuffs.

The temperature of the refrigerator main compartment is set

for all three sources of energy, by means of the thermostat knob (B). After turning on the refrigeratior the system automatically chooses the mid- position. With some experience you will soon find a suitable setting. This normally does not need resetting because the same thermostat controls the main compartment temperature for any of the three sources of energy.

TRAVEL CATCH

Make sure that the travel catch is engaged when the caravan is on the move, (fig. 1).

The travel catch at the top of the door can be set in two different positions. In one position the door is held tightly shut. In the other position the door is secured ajar so that the refrigerator can be aired when not in use.

FOOD STORAGE

Always keep food in closed containers. Never put hot food in the refrigerator; allow it to cool first.

Never keep items in the refrigerator which might give off flammable gases.

The 2-star (**) frozen food compartment is intended for the storage of frozen food and for making ice. It is not suitable for freezing items of food.

Never put bottles or cans of fizzy drinks in the frozen food storage compartment as they may burst when freezing. Also don't give children ice lollies straight from the frozen food as they could cause frost burns.

Most kinds of frozen food can be stored in the frozen food compartment for about a month. This period of time may vary, however, and it is important to follow the instructions on the individual packets.

ICE MAKING

It is practical to make ice during the night – then the refrigerator is less demanded and the cooling unit has more reserves. Fill the ice tray to just below the brim with drinking water and place it on the freezer shelf.

To speed up the ice making, one can spill one or two spoonfuls of water on the freezer shelf to improve the contact to the ice tray. If you have more than one ice tray it is a good idea to make ice in advance and save the frozen trays in the frozen food compartment.

DEFROSTING

Frost will gradually accumulate on the refrigerating surfaces. It must not be allowed to grow too thick as it acts as an insulator and adversely affects refrigerator performance.

Check the formation of frost regularly every week and when it gets about 3 mm thick, defrost the refrigerator.

To defrost the `fridge, turn it off and remove the ice tray and all food items. **Warning:** normally the temperature of items of fozen foods would rise unduly during defrosting and so they should be consumed within 24 h or discarded.

Do not try to accelerate defrosting by using any kind of heating appliance, as this might damage the plastic surfaces of the refrigerator. Neither should any sharp objects be used to scrape off the ice.

The defrost water runs from a collector channel to a receptacle at the rear of the refrigerator where it evaporates. Defrost water in the freezer compartment should be mopped up with a cloth.

When the ice has melted, wipe the refrigerator dry and restart it. Place the food items back inside but wait until the refrigerator is cold before making ice cubes.

CLEANING THE REFRIGERATOR

Clean the inside of the refrigerator regularly to keep it fresh and hygienic.

Soak a cloth in a solution consisting of a teaspoon of bicarbonate of soda to half a litre of warm water. Wring out the cloth and use it to clean the interior of the refrigerator and its fittings.

Never use detergents, scouring powder, strongly scented products or wax polish to clean the interior of the refrigerator as they may damage the surfaces and leave a strong odour.

The exterior of the refrigerator should be wiped clean now and again, using a damp cloth and a small quantity of detergent. But not the door gasket, which should only be cleaned with soap and water and then thoroughly dried.

The cooling unit behind the refrigerator should be cleaned with a brush from time to time, but make sure that the re-frigerator is switched off when doing this.

TURNING OFF THE REFRIGERATOR

If the refrigerator is not to be used for some time:

1. Set the switch (A), fig. 3, to "OFF".
2. Shut off any on-board valve in the gas line to the refrigerator.
3. Empty the refrigerator. Defrost and clean it as described earlier. Leave the doors of the refrigerator and the frozen food compartment ajar. Use the travel catch to hold in this position.
4. When the vehicle is laid up for a long period of time (e.g. during the winter months), we suggest fitting the winter covers **WA 120**, fig. 2, onto the vent grills.

IF THE `FRIDGE FAILS TO WORK

Check the following points before calling a service - technician:

1. that the green AES LED goes on, when the switch (A) is set to "ON" (12 V must be available).
2. when mains are connected but the fridge stays in gas oeration: Is the refrigerator correctly connected and is the fuse intact?
3. in transit, if the fridge does not operate in DC mode: Is the alternator (D^+) connection made correctly ?
4. if the AES LED flashes red: see chapter **Gas Trouble-Shooting.**

If the refrigerator is not cold enough it may be because:

1. The ventilation is inadequate owing to reduced area of the ventilation passages (partial blockage of grilles from wire mesh etc).
2. The evaporator is frosted up.
3. The temperature control setting is incorrect.
4. The gas pressure is incorrect – check the pressure regulator at the gas container.

5. The ambient temperature is too high.
6. To much food is loaded at one time.
7. The door is not properly closed or the magnetic sealing strip is defective.

If the refrigerator still does not work properly, call a service technician.

The sealed cooling system must not be opened, since it is under high pressure.

GUARANTEE AND SERVICE

The refrigerator is guaranteed for one full year on condition that it is used in a correct manner and in accordance with these operating and installation instructions.

It is also embraced by a **European guarantee** as described in the brochure supplied with the refrigerator.

Service and spare parts are obtainable from your dealer or Electrolux – consult the telephone directory.

MAINTENANCE

Concerning gas- and electric installations, only authorized experts are allowed to carry out maintenance and repair works. Besides, it is recommendable to contact an authorized service if it comes to repair works.

According to the valid regulations G607 of DVGW, the gas installation as well as the connect flue oulets are to be checked every two years by an expert (this has to be arranged by the person responsible).

SOME USEFUL HINTS

Make sure that:

- Defrosting is carried out periodically.
- The refrigerator is clean and dry with the door left open when it is not to be used for some time.
- Liquids or items with a strong odour are well packaged.
- The ventilation openings are unobstructed.
- The door is secured by means of the travel catch when the caravan is on the move.

INSTALLATION INSTRUCTIONS

REPOSITIONING THE HINGES

The door hinges can be moved to the opposite side in the following way:

- Unscrew the upper hinge pin, taking care not to lose the set of washers and bushes.
- Lift the door from the lower hinge pin.
- Unscrew the pin and mount it on the opposite side hinge.
- Unscrew the travel catch and mount it on the opposite side.
- Fit the door on the pin and reassemble the pin with washers and bushes in its new place.
- Check that the door closes properly and seals all round.

INSTALLATION/BUILDING-IN

The refrigerator is intended for installation in a caravan or motorhome, and the description relates to this application.

The refrigerator must not be exposed to radiated heat from hot objects (e.g. below a cooker without proper heat shielding).

Excessive heat irradiation impairs performance and leads to increased energy consumption. For this reason the refrigerator should be installed if possible not at the entrance side of the vehicle – normally orientated south and often with an awning which would impair the dispersion of heat and combustion gases from the ventilation openings.

It is not a good practice to install the refrigerator so that the vent openings are covered by the vehicle's entrance door when this is open. This would reduce the ventilation air flow to the cooling unit and reduce refrigeration performance.

The enclosure

The refrigerator must be installed in an enclosure, the dimensions of which are shown in **TECHNICAL DATA.**

The bottom of the enclosure must be horizontal and even so that the refrigerator can be easily pushed into place. It must be sturdy enough to carry the weight of the `fridge.

Battens should be installed at the enclosure and fitted with sealing strips, as shown in fig. 5. (Other suggestions for a **sealed installation** are shown in a folder which can be obtained from Electrolux).

Slide in the refrigerator until it is flush with the front of the recess. There must be 10-20 mm free space behind the refrigerator.

Four fasteners are fitted in plastic bushings in the side walls of the fridge, fig. 8. They are used for securing the refrigerator in the enclosure.

The side walls of the enclosure and/or any wooden braces installed to hold the refrigerator must be dimensioned to seat the screws securely, also considering the forces due to the movement of the vehicle.

With the refrigerator in place, drive the screws through the bushings in the lining of the refrigerator into the walls of the enclosure. There must not be more than 3 mm of clearance between refrigerator and enclosure on each side. If necessary, wooden strips or similar should be fitted.

Note: This is the only approved means of securing the refrigerator to the enclosure and to the vehicle. Fasteners penetrating other parts of the insulation (PU) foam of the refrigerator might damage components like electric wiring etc.

VENTILATION OF THE UNIT

At high ambient temperatures the refrigeration unit will only perform adequately when properly ventilated.

The refrigeration unit is ventilated via two openings in the wall of the caravan (see fig. 6). Fresh air enters through the lower opening and warm air is discharged through the upper one.

Locate the lower opening immediately above the floor of the recess, and the upper one as high as possible above the condenser (C) of the refrigeration unit, at least as shown in fig. 7b but preferably as shown in fig. 7a.

Ventilation grilles

The openings in the caravan wall must be fitted with the Electrolux Ventilation systems.

Fitting the grilles, model **A 1620,** fig.2, which were specially developed by Electrolux for this purpose. It is a good idea to install the frame **R 1640** (B in fig. 7a) at the same time. Then the grilles can be easily removed, which permits inspection and small repairs to be carried out without the necessity for removing the refrigerator from the recess.

If there is no outer grille at floor level where leaking gas can escape, a 40 mm hole to the outside should be made in the floor of the recess to drain any unburnt gas to the outside.

Fit the hole with wire mesh and an angled plate to protect from stones, mud etc.

Removal of flue gases

The ventilation passage at the rear of the recess, between the outer wall of the vehicle and the refrigerator (fig. 7a/b), is sealed off against the living space, and so cold draughts are excluded (winter camping) and **no flue gases can penetrate into the vehicle.** Thus a special flue outlet is no longer necessary – the gases are dispersed through the upper vent grille.

Note: With this mode of installation the same type of grilles (without an integrated flue outlet), should be installed at the upper as well as at the lower vent opening. The angled T-piece for the flue tube (when delivered) should not be used in this case.

The top of the enclosure above the flue tube (I), fig. 7a/b, should be covered with aluminum sheet metal, as indicated in (B), to facilitate the heat dispersion.

In fig. 7 the letters have the following meaning:

- A. Frame **R 1640** for the grilles
- B. Aluminum cladding
- C. Condenser of cooling unit
- D. Vent grill **A 1620**
- E. Sealing profile (optional extra)
  Width:
  525 mm, part. nr. 295 1147-00
  486 mm 295 1147-10
- F. Refrigerator rear wall
- G. Wooden batten 10 x 20 mm (see also fig. 5)
- H. Height of the enclosure (see **TECHNICAL DATA**)
- I. Flue tube
- K T-piece ("lazy tee")

LP GAS CONNECTION

The refrigerator is designed for operation on LP gas, the pressure of which must be 28 mbar for Butane and 37 mbar for Propane. Check that this is stated on the data plate.

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

The gas installation should only be carried out by an authorized gas fitter. It is recommended that the gas pipe feeding the refrigerator is so arranged that it is possible to turn off the supply of the refrigerator. It must be of a type approved for use with continuously operating bottled-gas appliances, and have threaded compression connections throughout. **PUSH-ON CONNECTIONS MUST NOT BE USED** (We do not approve the use of "rubber" type flexible tubing for connecting permanently operating appliances of this type in the United Kingdom). 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 inlet pipe on the right hand side of the gas control valve by means of a suitable threaded compression coupling.

In making the connection to the refrigerator, a gas cock of an approved type for use on LPG 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.

ELECTRICAL 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. **ALL MAINS VOLTAGE WIRING IN THE CARAVAN MUST BE INSTALLED IN ACCORDANCE WITH CURRENT I.E.E. REGULATIONS INCLUDING THE USE OF AN OUTLET AND COUPLER TO BS4343/-CEE17.**

For connection to a 230 V electricity supply, the refrigerator has a 3-core mains lead which is intended for connection to a properly earthed plug and socket outlet. The socket outlet should be fitted in the caravan in a position readily accessible to the user, within reach of the mains lead. In the United Kingdom, the plug and socket outlet should be of the non-reversible type.

IMPORTANT: The wires in the mains lead of this appliance are coloured in accordance with the following code:

GREEN-AND-YELLOW = EARTH ⏚

BLUE = NEUTRAL

BROWN = LIVE

As the colours of the wires may not correspond with the coloured markings identifying the terminals in your plug, in the United Kingdom, proceed as follows:

The wire which is coloured **GREEN-AND-YELLOW** must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol or coloured green or green-and-yellow.

The wire which is coloured **BLUE** must be connected to the terminal which is marked with the letter **N** or coloured black.

The wire which is coloured **BROWN** must be connected to the terminal which is marked with the letter **L** or coloured red.

WARNING! THIS APPLIANCE MUST BE EARTHED.

In the United Kingdom, the plug or circuit to the refrigerator must be fitted with a fuse not greater than 5 amps. If a 13 amp.(B.S.1363) fused plug is used, it should be fitted with a 3 amp. fuse. In other countries, the fuse rating will depend upon the voltage and local practice.

230 V Supplies.

Check that the voltage stated on the data plate is the same as the mains voltage in use (230 V).

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

12 V and "D+" Connection

The 12 V connection of the refrigerator is shown in fig. 10. The (+12V) and (-) pole have to be connected directly to the auxiliary (house) battery. Do not use the chassis for the return lead. The battery cable must not be connected to a voltage controller or similar device as the AES itself monitors the battery voltage. A relay cutting out 12 V operation when the ignition key is turned off, is not recommended.

All splices should be screwed or soldered to keep voltage drop to a minimum. The positive conductor must be protected by a 16 A fuse.

The connection D+ (alternator) has to be connected to the corresponding outlet of the vehicles electrical system.

Cross- sections

The D+ (alternator) connection does not carry high current, therefore it is no need to use a high cross- section cable.

For the 12 V (+) and (-) leads, we recommend a 6 mm^2 wire. Up to a length a 5 m, 4 mm^2 might be sufficient as well.

Please consult a specialist, if you are not familiar with the 12 V electrical system in your motorhome.

INTERIOR LIGHT- BULB- CHANCE

If a bulb has to be replaced, proceed as follows:

1. Remove cover of the lamp.
2. Put a small screw driver between the case of the lamp and the lamp cover and remove lamp cover.
3. Turn bulb socle for 90 degrees and remove it.
4. Put in new buld and turn it again for 90 degrees.
5. Install lamp cover on the lamp case.

TECHNICAL DATA

RM	4185	4215	4235	4265	4275	4285	4365	4405	
RM		*5215			*5275			5405*	
Overall dimensions, refrigerator									
Height (incl.controls)	595	618	821	821	821	821	821	805	mm
Width	401	486	486	486	486	486	486	525	mm
Depth (incl.cooling unit)									
without door	427	435	435	435	495	435	495	495	mm
with door	461	474	474	474	534	474	533	533	mm
Recess dimensions									
Height	597	620	825	825	825	825	825	810	mm
Width	405	490	490	490	490	490	490	530	mm
Depth	442	450	450	450	505	450	510	510	mm
Step (wheel house)									
Height			220		220				
Width			490		490				
Depth			225		225				
Capacity									
gross	40	60	70	70	77	81	89	103	lit
net	36	51	60	60	72	77	83	92	lit
frozen food compt.	-	6	5	6,5	7	5	7	12	lit
Weight (without packaging)	16,5	20	23	23	23	23	26	30	kg
Electrical data									
Input 230 V	105	105	105	125	125	125	135	135	watt
12 V	100	100	100	120	120	120	130	130	watt
**Energy consumption (in 24h)	1,9	2,3	2,3	2,5	2,5	2,5	2,7	2,7	kWh
		*2,1			*2,3			*2,3	kWh
LP gas data									
Input, max.	186	186	186	232	232	232	232	232	watt
Energy consumption (24h)	240	240	240	270	270	270	270	270	g
		*210			*230			*230	g

Cooling medium Ammoniak

** Power consumption at an anual ambient temperature of 25°C.
Technical details may change without notice.

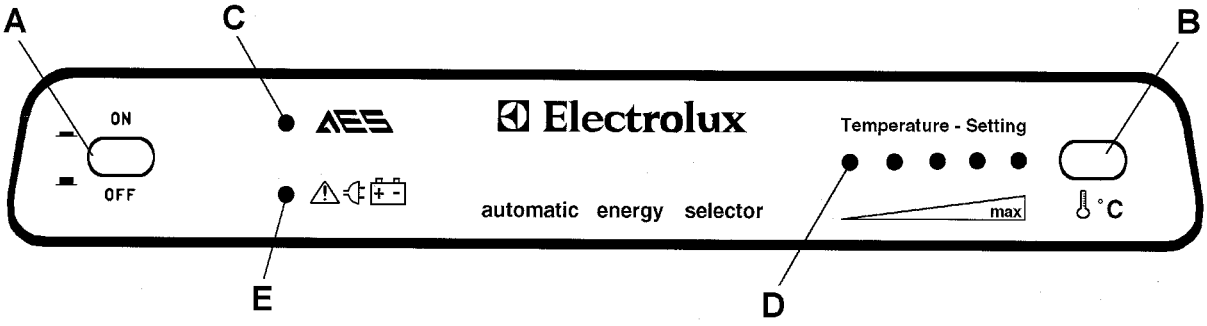


Fig. 3

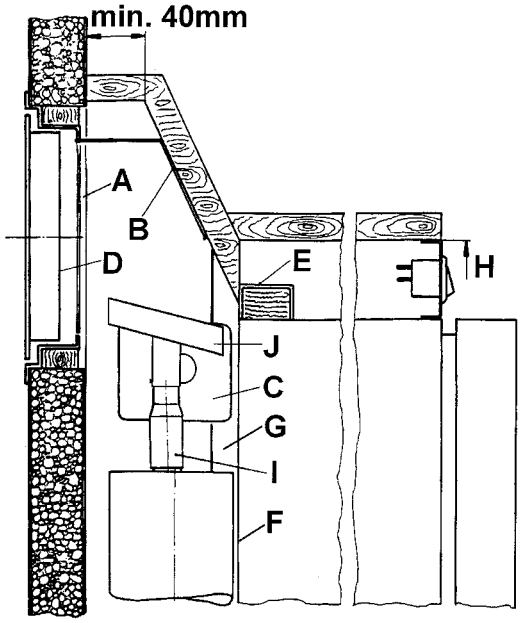


Fig.7a

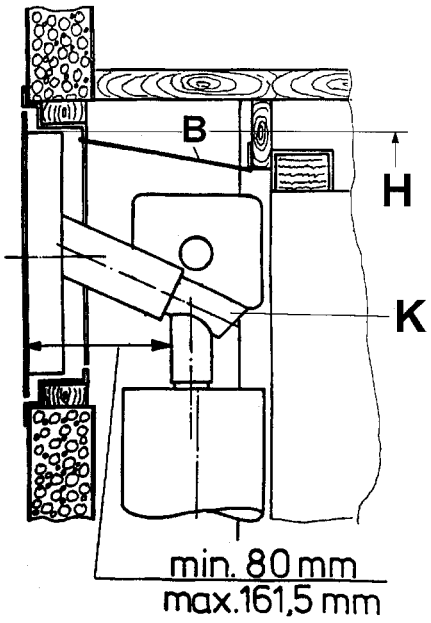


Fig. 7b

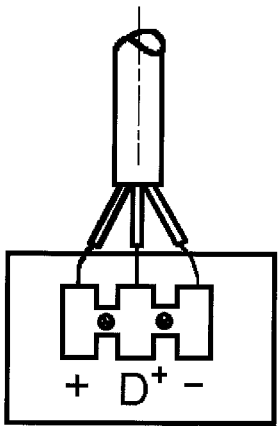


Fig. 10

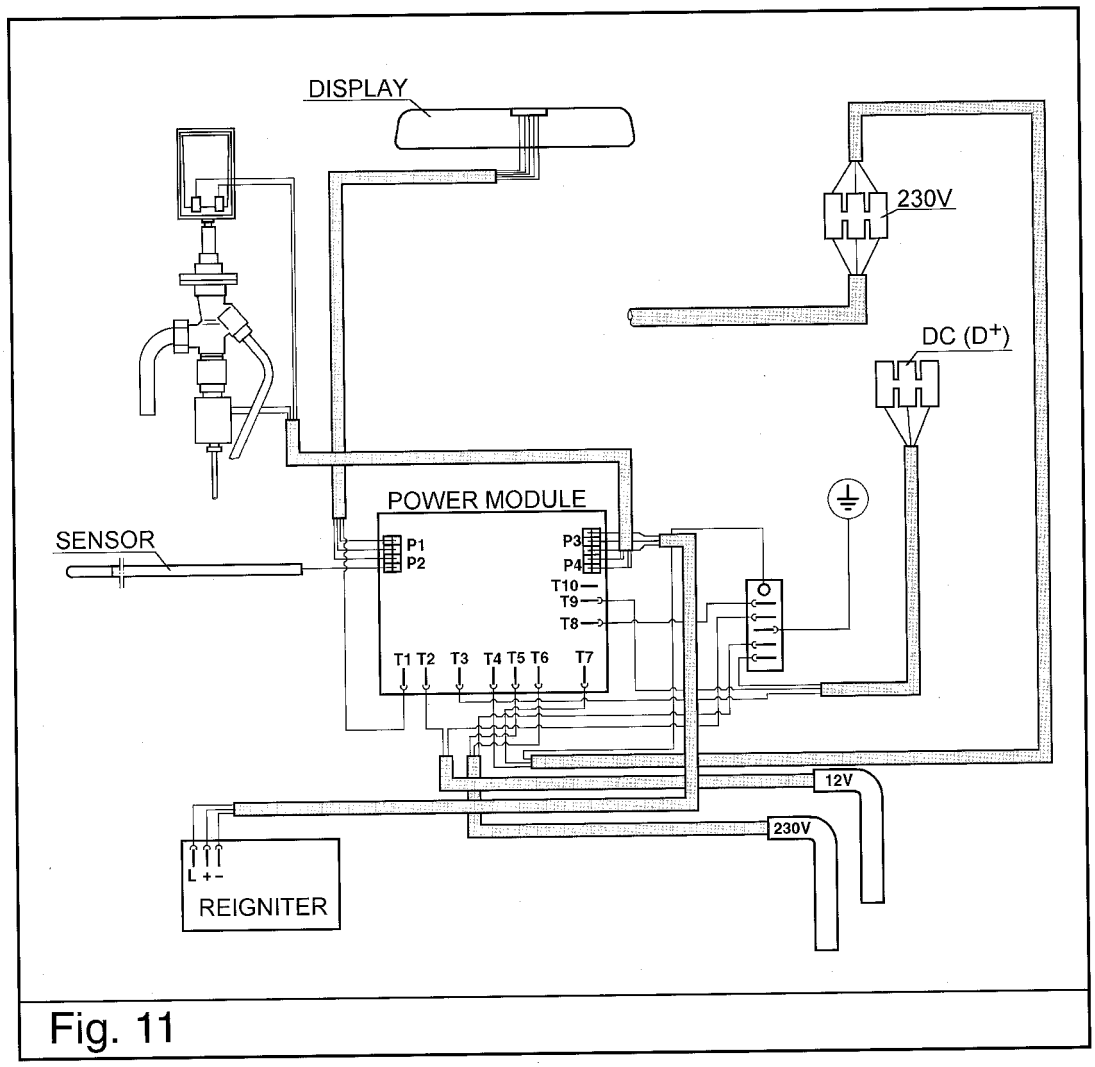

DISPLAY
230V
DC (D+)
POWER MODULE
SENSOR
P1
P2
P3
P4
T10
T9
T8
T1 T2 T3 T4 T5 T6 T7
12V
230V
L + -
REIGNITER

Fig. 11

Electrolux

DECLARATION OF CONFORMITY

according to

Low Voltage Directive 73/23/EEC and
the Amendment to LVD 90/683/EEC
EMC Directive 89/336/EEC
EMC Automotive Directive 72/245/EEC and
the Amendment 95/54/EC Annnex I (Electronic subassembly)
Gas Directive 90/396/EEC
CE Marking Directive 93/68/EEC

Type of equipment	Absorption Refrigerator
Brand Name	ELECTROLUX
Type designation	C 40/ 110 (type family)
Manufacturer' s (Factory) name	ELECTROLUX GmbH
adress	In der Steinwiese 16, D 57074 Siegen
telephone no	INT+49 - 271 692 0
telefax no	INT+49 - 271 692 304

The following harmonized standards or technical specifications (designations) which comply with good engineering practice in safety matters in force within the EEA have been practiced.

EN 60335-1 (IEC 335-1), EN 60335-2-24 (IEC 335-2-24)	Low Voltage Directive
EN 60555-2, EN 60555-3, EN 50082-1, EN 55014	EMC Directive
PR EN 732, DIN 3370, DIN 30694 T4	Gas Directive

The equipment conforms completely with the above stated harmonized standards or technical specifications.

By signing this document, the undersigned declares as manufacturer, or the manufacturer's authorized representative established within the EEA, that the equipment in question complies with the requirements stated above.

Manufacturer

Date	**Signature**	**Position**
04.03.96	G. Bittner	General Manager

Clarification
Gunter Bittner