

Appliance Documentation

GNP ..76from Index 20
with DuraFreeze

and

GN(P) ..56from Index 21
(GN(P) 2056 / 2456 / 2956 / 3356)

width 66 cm

NoFrost freezer, upright



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1.0 Operating and control elements



- 1 : **Setting button** temperature **higher**
- 2 : **Setting button** temperature **lower**
- 3 : **ON/OFF button**
- 4 : **SuperFrost function**, button lit = function switched on.
DuraFreeze function, DF lit = function switched on. **(only with GNP ..76)**
- 5 : **Alarm OFF button** for audible alarm

2.0 Functions at a glance

Control:	Electronic control system
Temperature display:	Digital
Temperature alarm:	Visual and audible
Door alarm:	Audible
Fan:	Yes
Defrosting:	Automatic
Interior light:	In the control panel housing
SuperFrost:	Automatic (quantity-controlled)
Service menu:	Start by button combination
Refrigerating system:	VCC compressor, frequency-controlled, lamellar evaporator

3.0 Description of the appliance

Unlike the freezers with static cooling (e.g. G), the GNP has dynamic cooling. As the air flows through the lamellar evaporator arranged under the ceiling, it is cooled and then distributed uniformly over all the drawers. The air circulation is generated by an axial fan situated behind the lamellar evaporator.

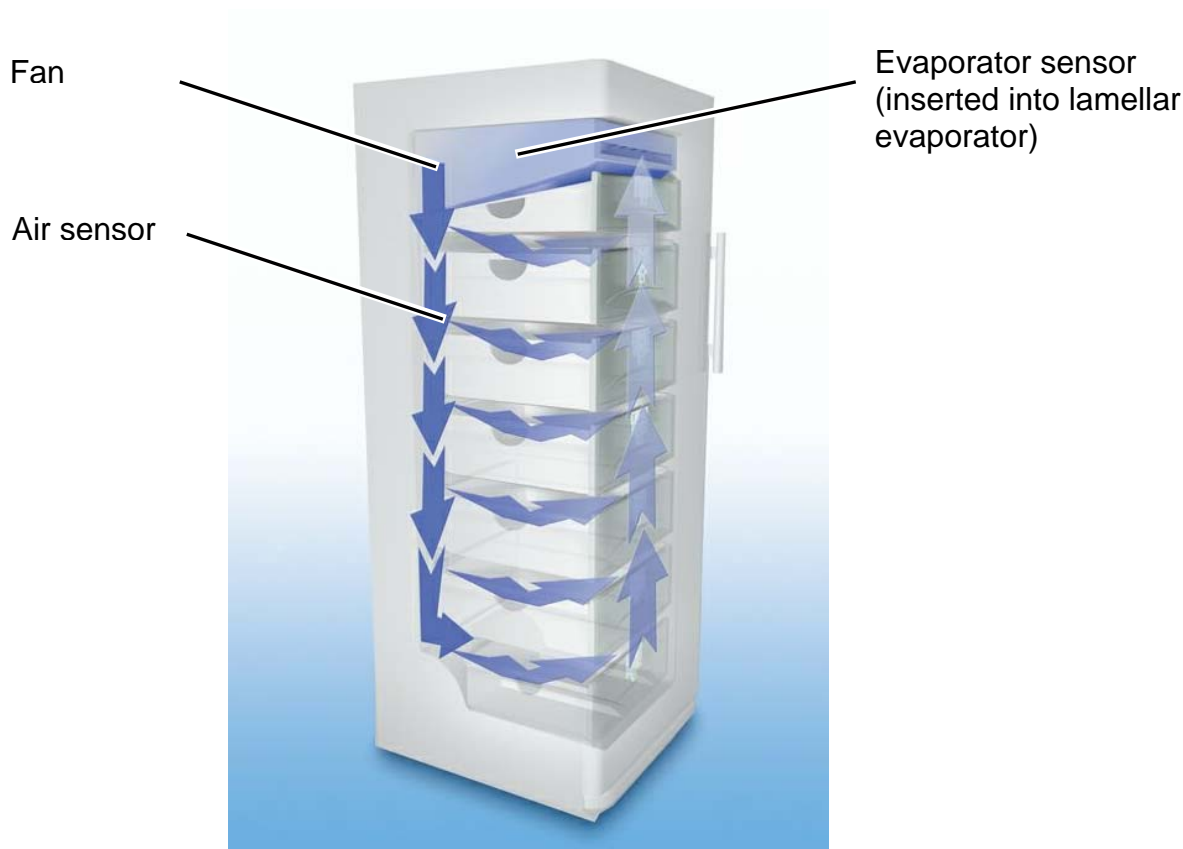
Moisture enters the freezer particularly when the door is opened and when fresh food is placed inside. This moisture always condenses at the coldest point. The coldest point is the lamellar evaporator, i.e. the moisture in the freezer condenses on it in the form of frost.

Heavy frosting of the evaporator would result in reduced air throughput and in an extreme case, if the evaporator were fully frosted over, would even result in full stoppage of the air current required for cooling. For this reason, the evaporator is defrosted at regular intervals.

The heat necessary for defrosting is generated by an electric heater which is arranged within the evaporator for optimal heat transmission. The draining defrost water is conducted from the water drain tray, via the water drain, into the evaporation tray of the condenser. The water drain valve on the water drain hose prevents that humidity is taken in by way of the water drain hose and condenses as frost on the lamellar evaporator.

The appliance is equipped with a fluid frame heater (between condenser and drier), which also heats the cable conduit in the worktop.

3.1 Schematic diagram NoFrost air flow



4.0 Control and functional components

Electronic control system:	Series 6 electronic control system, integral PCB
Display range:	0°C to -50°C
Setting range:	-14°C to -28°C
Temperature alarm:	<p>When: Set value: -14°C to -23°C Alarm value: Actual value 4K warmer than set value.</p> <p>Set value: -24°C to -28°C Alarm value: Actual value warmer-equal to -20°C.</p> <p>SuperFrost alarm value: Actual value = -10°C.</p> <p>20 min. after actual value reach alarm value, the temperature alarm is active. (e.g. set value: -18°C , actual value: -14°C for 20 min. → alarm is activ)</p> <p>Audible: 4 beeps (suppressed during initial operation).</p> <p>Visual: Flashing temperature display.</p> <p>During start-up the temperature display flashes until switch-off value has been reached, the audible alarm is deactivated.</p> <p>The temperature alarm is suppressed for 1.5 hrs. from the beginning of the defrosting phase.</p>
Door alarm:	<p>When: After the door has been open for 60 seconds.</p> <p>Audible: 3 beeps.</p>
Reed PCB:	<p>Position: In front panel.</p> <p>Function: <ul style="list-style-type: none"> - Turns off the fan when the door is opened. - Switches the interior light on when the door is opened. - Switching contact for door alarm. </p>
Interior light:	<p>Position: In front panel.</p> <p>Function: <ul style="list-style-type: none"> - Is switched on as soon as door is opened. - Is switched off after door has been open 15 minutes. </p>
Fan:	<p>Position: In evaporator module, centre, back.</p> <p>Function: The fan runs, when the following conditions are fulfilled: Compressor ON. - Freezer compartment door closed. - Evaporator sensor switch-on value reached.</p> <p>Switch-on value evaporator sensor: a) During start-up: -25°C b) In normal mode 2K colder than air sensor.</p>
Air sensor:	<p>Position: Engaged in sensor holder on air duct cover.</p> <p>Function: <ul style="list-style-type: none"> - Switches the compressor on/off. - Forms the temperature display value. </p>
Evaporator sensor:	<p>Position: Inserted into lamellar evaporator.</p> <p>Function: <ul style="list-style-type: none"> - Ends the defrosting phase. - Switches the fan on/off. </p>

SuperFrost:	Cooling of freezer compartment to -32°C (quantity-controlled, 30 - 65 hours).	
DuraFreeze: (only with GNP ..76)	Cooling of freezer compartment to -28°C. The inverter controls the compressor to various speeds in continuous operation to prevent temperature fluctuations.	
Defrost heater evaporator:	Position:	Clipped into lamellar evaporator.
	Function:	Activated via electronic control system.
		<u>Defrost heater ON:</u>
		- Depending on the number/duration of the door openings, the electronic control system computes defrost cycles which are between 12-60 hours cumulative compressor running time.
		- During start-up after a period of 3 hours cumulative compressor running time.
		- After 60 hrs. continuous compressor operation.
		<u>Defrost heater OFF:</u>
		- When the evaporator sensor reaches +10°C.
		- When max. time of 50 mins. is exceeded.
Compressor:	Function:	ON: Air sensor switch-on value Note: On-delay time (8 mins.) must have elapsed.
		OFF: Air sensor switch-off value <i>or</i> during defrosting

5.0 Refrigeration circuit

Evaporator:	The lamellar evaporator is arranged in a closed module on the ceiling of the freezer. (see 7.2 Assembly instructions -Evaporator module-)
Compressor	VCC compressor, frequency-controlled.
Frame heater:	Foamed-in liquid heater in the area of the door and cable conduit in the worktop.

6.0 Special features

6.1 Drawers on pull-out rails

Remove drawer: Lift drawer at the back and draw it out forwards.

Pull-out rail:

- For detaching the pull-out rails, press the locating lug down and the pull-out rail inwards as in **Fig. 6.1/ 2**.
- Push rail towards the rear to detach hook (**Fig. 6.1/ 3**).

Holder pull-out rail: Separately replaceable.



Fig. 6.1/ 1 Glass shelves with pull-out rails

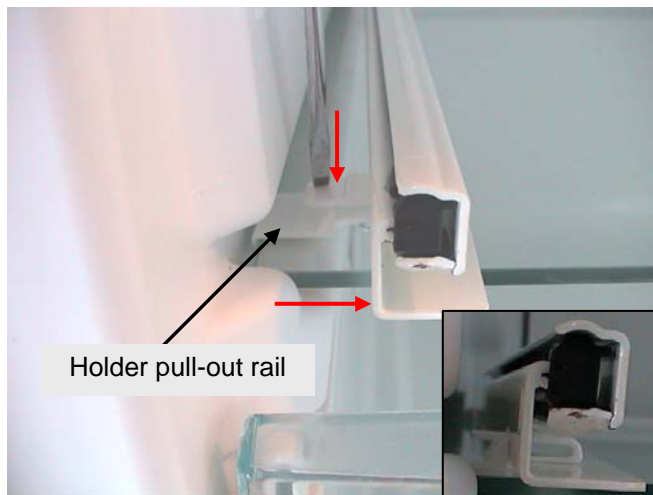


Fig. 6.1/ 2 Disengage pull-out rail



Fig. 6.1/ 3 Detach pull-out rail



Fig. 6.1/ 4 Pull-out rail

6.2 Water drain valve

Water drain valve:

Fitted to end of defrost water drain hose. This water drain valve replaces the previous siphon. Prevents hot, humid air being sucked out of the compressor niche by the evaporator module.



Fig. 6.2 Water drain valve

6.3 Net@Home module

The appliances are equipped with an interface at the rear of the worktop. A TeleSafe/communication module available as an accessory can be plugged into this interface.

6.3.1 TeleSafe module

This TeleSafe module has a floating alarm contact (Contact rating: 1A max. 30VDC) which is closed in case of temperature alarm, fault signal or power failure.

Connected to the TeleSafe module is a two-core cable (length: 2 m) which conducts the alarm contact to the outside. This cable can either be connected to an existing telephone system with signal input or to a dialler (available as an accessory). The customer is called by way of this dialler in case of a fault scenario.

6.3.2 Communication module

Using the communication module the appliance can be integrated into an existing home network with EHS powerline.

Together with a corresponding terminal, all the functions of the appliance can be operated by remote control or the appliance status can be queried.

6.4 VCC compressor, frequency-controlled

- Compressor with 4 different speeds (1600 / 1900 / 3000 / 3600 rpm).
- The inverter electronic module is attached directly to the compressor. The inverter electronic module actuates the compressor with a pulse-width modulated square wave voltage.
- For speed value input, the inverter electronic module receives a square wave frequency signal from the integral PCB. This frequency signal is output with 71, 87, 100 or 117 Hz, depending on the speed at which the compressor is to run.



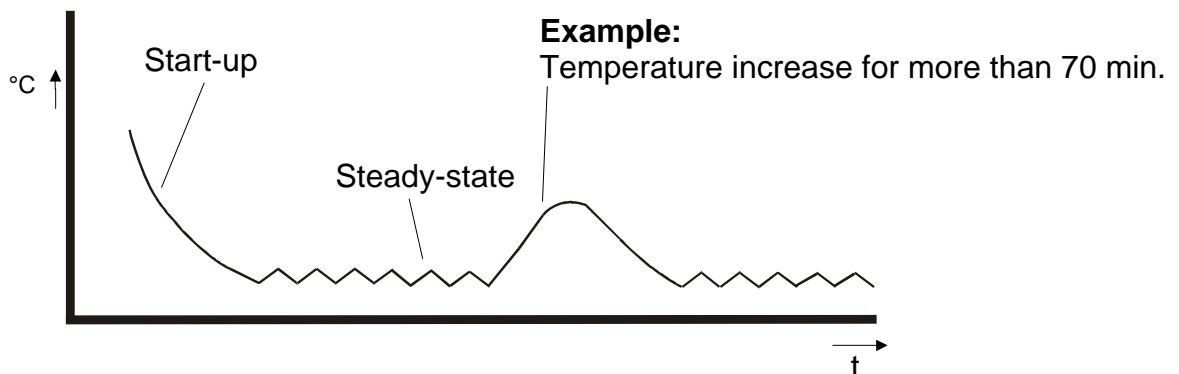
Fig. 6.4 Inverter

6.4.1 Speed control

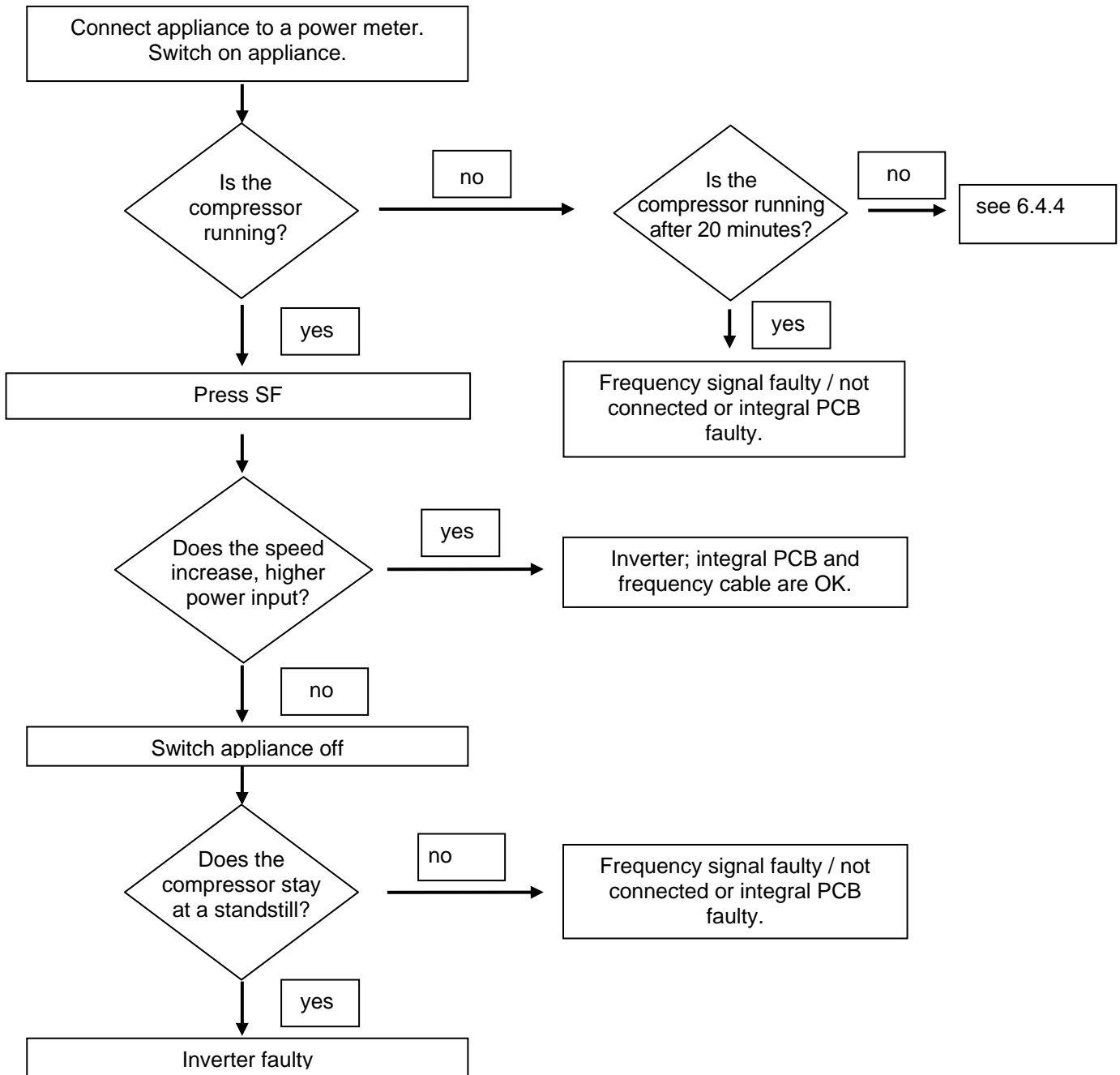
Frequency in Hz	Speed in rpm	Operating
56	Compressor OFF	Compressor OFF
71	1600	Ideal case
87	1900	Regular operation
100, 0(signal interruption), other values than the defined frequencies	3000	Start-up, signal interruption, signal fault
117	3600	SuperFrost

- **Operating time longer than 70 minutes:** Speed increase by 1 step during compressor operation.
- **Operating time shorter than 40 minutes:** Speed reduction with next start-up.

6.4.2 Control response



6.4.3 Checking the inverter and the frequency signal

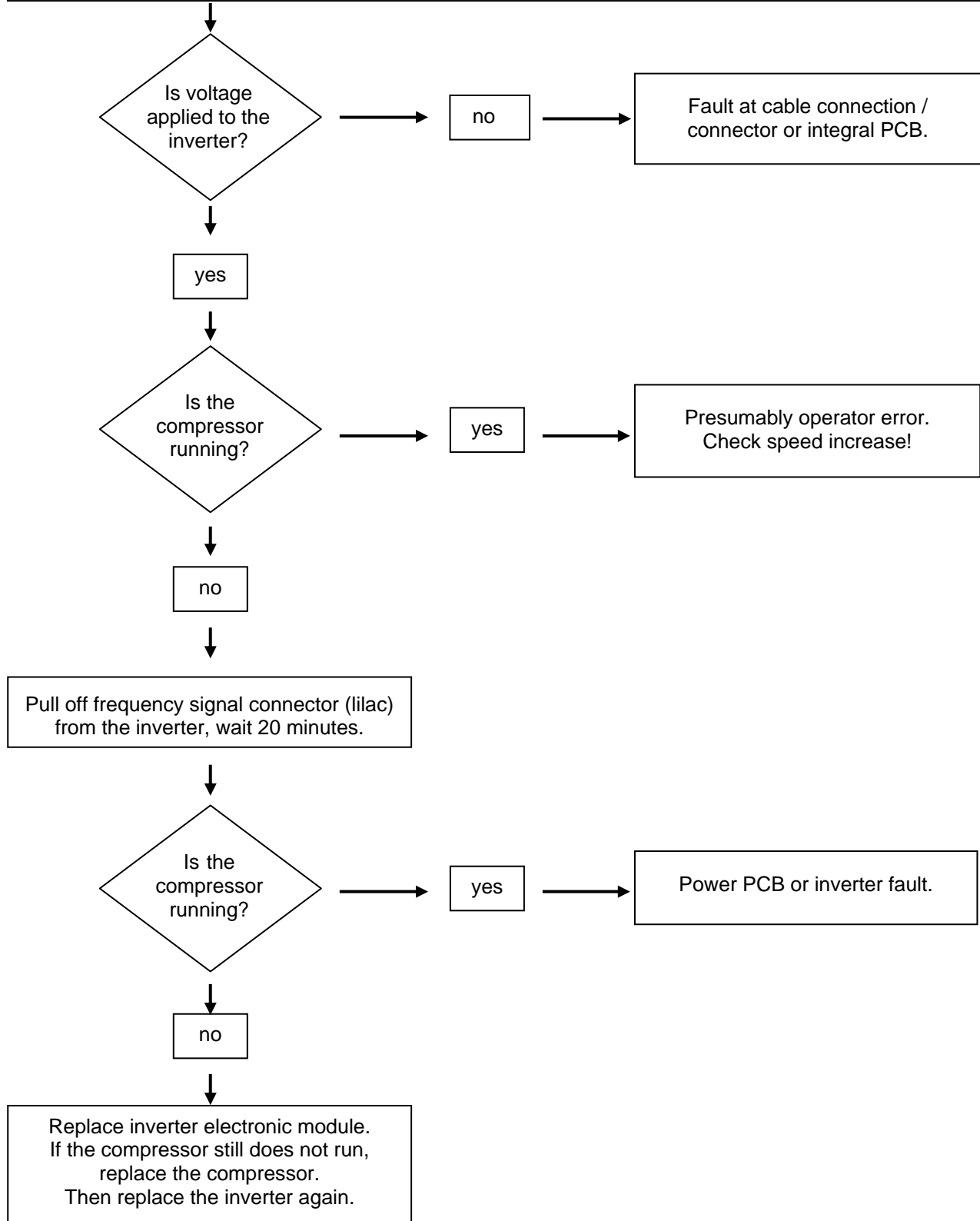


Attention: In case of interruption of the frequency signal, the compressor starts only after 20 minutes!!

6.4.4 Troubleshooting

Fault profile: Compressor does not run (not even after a waiting time of 20 minutes)

In the service menu select service mode L1 (compressor). If the compressor now starts there was probably an operator error. Otherwise proceed as described below.
At the inverter, line voltage (230V) must be applied between N and 1/C.



7.0 Assembly instructions

7.1 Electronic control system

Covers: Remove with screwdriver.



Fig. 7.1/ 1 Cover left fastening screw



Fig. 7.1/ 2 Cover right fastening screw

Front panel: Undo screws of front panel.



Fig. 7.1/ 3 Left screw



Fig. 7.1/ 4 Right screw

PCB carrier: Remove front panel face-up and disengage PCB carrier.

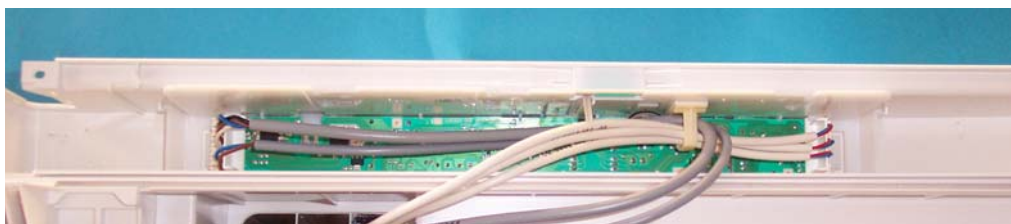


Fig. 7.1.5/ Disengage PCB carrier

Electronic control system: Disengage electronic module from PCB carrier.



Fig. 7.1/ 6 Disengage electronic module

7.2 Evaporator module

7.2.1 Press in rivet pins, remove plastic rivets

Rivet pins: Have to be pressed into the plastic rivets at the right and left.

Plastic rivets: Lever out plastic rivets.

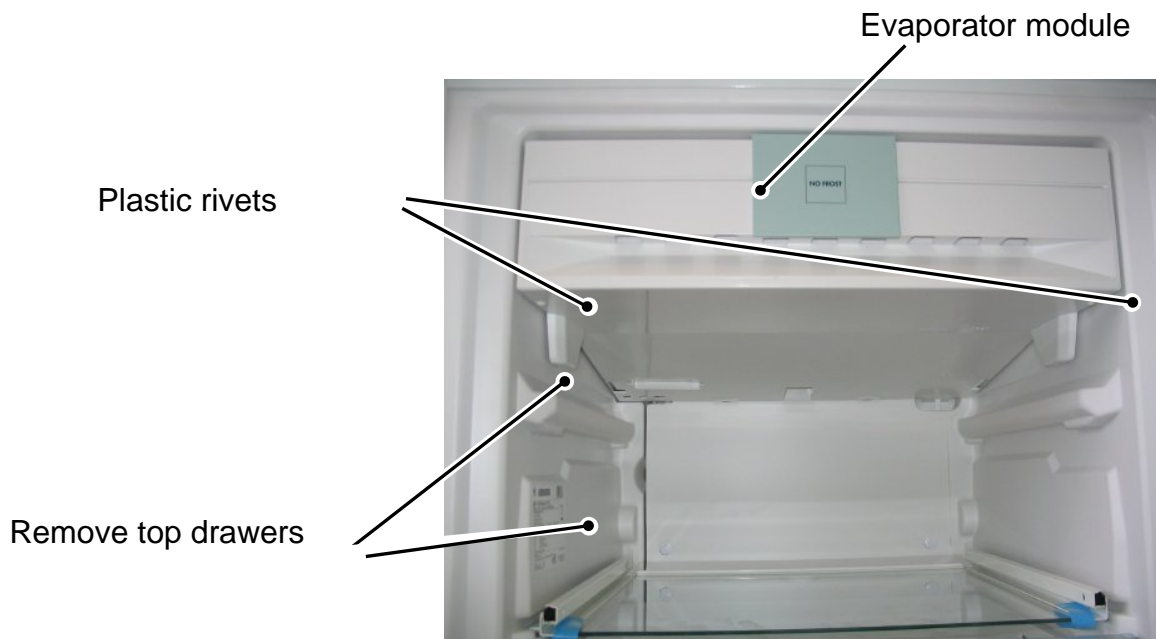


Fig. 7.2.1/ 1 Evaporator module



Fig. 7.2.1/ 2 Press in rivet pins



Fig. 7.2.1/ 3 Remove plastic rivets

7.2.2 Push in locating lugs

Locating lugs: The evaporator module is held by locating lugs, one at the right and one at the left. For disassembly push locating lugs in with screwdriver.



Fig. 7.2.2/ 1 Locating lug



Fig. 7.2.2/ 2 Push in locating lug

7.2.3 Remove top moulded polystyrene part

Top moulded polystyrene part: First press upwards at the front and then lift the back off in an upward direction, then remove "top moulded polystyrene part" to the fore.



Fig. 7.2.3 Lowered evaporator module

7.3 Evaporator sensor

Evaporator module: Dismantle evaporator sensor as described under **7.2 Evaporator module**.

Evaporator sensor: Inserted into lamellar evaporator and in case of defect has to be cut off and repaired with repair kit (Art.No. 9590 064).

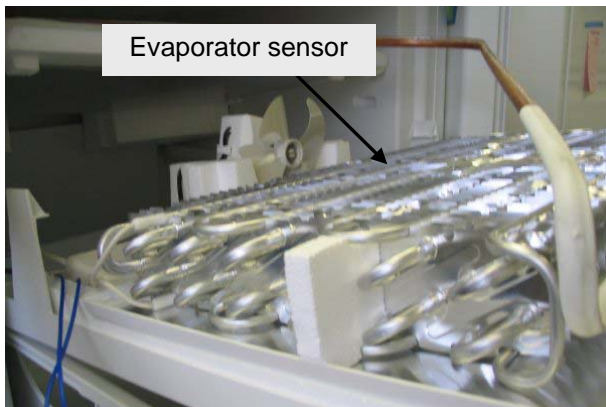


Fig. 7.3/ 1 Evaporator module

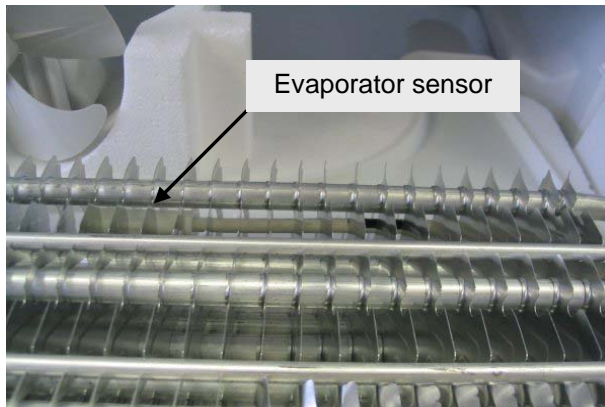


Fig. 7.3/ 2 Evaporator sensor

7.4 Air sensor

Air sensor: Is engaged in sensor holder on air duct cover and in case of defect has to be cut off and repaired with repair kit (Art.No. 9590 064).



Fig. 7.4/ 1 Air sensor



Fig. 7.4/ 2 Cable reserve

7.5 Temperature fuse

Evaporator module: Dismantle evaporator sensor as described under **7.2 Evaporator module**.

Temperature fuse: Blows at a temperature of +93°C.
After it has blown, it has to be replaced with repair kit.

Attention:

Always attach the compression joint to the red and blue lines of the temperature fuse. As soon as the white line of the defrosting heater is cut, the defrosting heater is destroyed.



Fig. 7.5/ 1 Temperature fuse installed

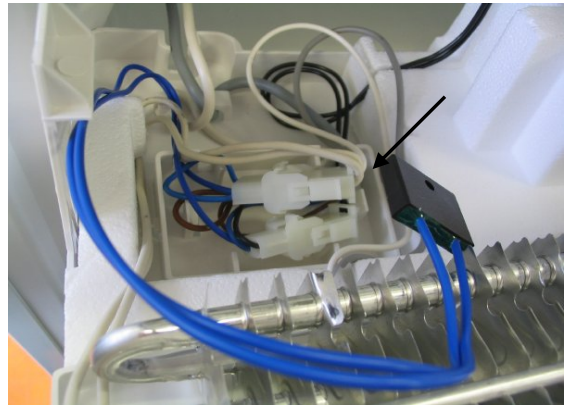


Fig. 7.5/ 2 Temperature fuse

7.6 Fan

Evaporator module: Dismantle evaporator sensor as described under **7.2 Evaporator module**.

Fan:

- Pull off fan blades to the fore, see **Fig. 7.6/ 1**.
- Swing out fan from the mount. Bend open fan retaining lug, see **Fig. 7.6/ 2**.

Attention: When the fan is swung out, the lower clip of the fan housing may get caught in the bearing rubber.



Fig. 7.6/ 1 Remove blades

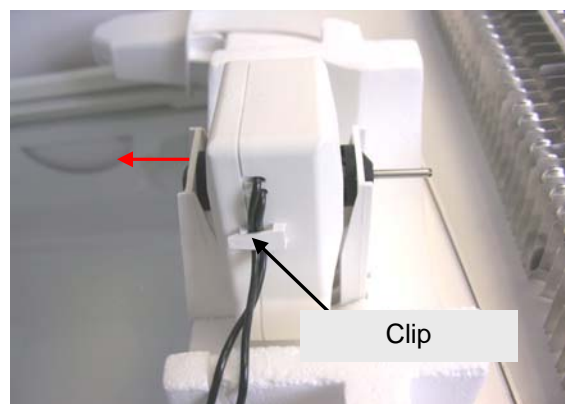


Fig. 7.6/ 2 Detach fan

8.0 Technical data

Interior light: Wattage: 15 watts
Voltage: 230 volts
Socket: E14

Fan:

Note!

In these devices were used three different fans.

Fan 1:	or	Fan 2:	or	Fan 3:
Wattage: 3.9 watts		Wattage: 2 watts		Wattage: 1.9 watts
Voltage: 230 volts		Voltage: 230 volts		Voltage: 230 volts
Speed: 2400 rpm		Speed: 2500 rpm		Speed: 2500 rpm

Defrosting heater:

Note!

In these devices were used two different defrost heaters.

Defrosting heater 1:	or	Defrosting heater 2:
Wattage: 202 watts		Wattage: 237 watts
Voltage: 230 volts		Voltage: 230 volts
Current: 0.88 amperes		Current: 1.03 amperes
Resistance: 261 ohms, (+23°C)		Resistance: 210 ohms, (+23°C)

Temperature fuse:

- +93°C, in series with defrost heater
- Cannot be reactivated and, once actuated, it has to be replaced.

Defrosting water tray heater:

Note!

This heater is not fitted with evaporator modules:

- GNP 2076, 2476 from -20C
- GNP 2976, 3376 from -20D
- who are ordered as a spare part from LIPARTS

Wattage: 43 watts
Voltage: 230 volts
Current: 0.19 amperes
Resistance: 1,2 kohms, (+23°C)

Sensor values:

Air and evaporator sensor

Temperature [°C]	Resistance value [kOhm]
+35	3.1
+30	3.8
+25	4.7
+20	5.9
+15	7.3
+10	9.3
+5	11.9
0	15.3
-5	19.8
-10	25.9
-15	34.1
-20	45.3
-25	60.8
-30	82.3
-35	112.8

9.0 Service menu

The service menu may be used only by customer service technicians.



9.1 NoFrost freezer compartment defrosting "H" (evaporator must be cold)

- Press freezer compartment ON/OFF and SuperFrost simultaneously for 3 seconds.
- "H" flashes in the display, SuperFrost flashes.
- Press SuperFrost, the appliance is now in the defrost mode.
- The defrosting phase is started, indicated by a flashing "A".
- The defrosting phase ends as soon as the evaporator reaches +10°C or after 50 minutes.
- The appliance reverts automatically to normal mode.
- By pressing ON/OFF for 2 seconds the defrosting phase is ended prematurely.

9.2 Demo mode "d1" or "d0"

- Press ON/OFF and SuperFrost simultaneously for 3 seconds.
- "H" flashes in the display, SuperFrost flashes.
- Press "Up"; "d1" or "d0" and SuperFrost flash.
- d1 = demo mode is deactivated. To activate the demo mode, press SuperFrost.
- d0 = demo mode is activated. To deactivate the demo mode, press SuperFrost.
- If no change is required, SuperFrost must not be pressed, but ON/OFF.
- When the demo mode is active, the compressor, fan and heater are not activated.
- **Attention:** the demo mode cannot be deactivated by power OFF/ON. This is possible only via the service menu.

9.3 Service mode "L"

- Press ON/OFF and SuperFrost simultaneously for 3 seconds.
- "H" flashes in the display, SuperFrost flashes.
- Press "Up" twice, "L" and SuperFrost flash.
- Press SuperFrost, you are now in the service mode.
- "rd" flashes.
- Open and close door.
- All segments / LEDs are lit.
- Press all the buttons. Every press of a button is confirmed by a signal tone.
- 2 seconds signal tone.
- Display L0: No load addressed
- All the loads can be individually addressed using "Up" or "Down".
 - L0: No load
 - L1: Compressor (initial speed high, then change over to low speed)
 - L3: Fan
 - L4: Defrost heating
 - L5: Interior light.
- **End with ON/OFF.**

9.4 Sensor test (temperature display) and door contact test "E"

- Press ON/OFF and SuperFrost simultaneously for 3 seconds.
- "H" flashes in the display, SuperFrost flashes.
- Press "Up" three times, "E" and SuperFrost flash.
- Press SuperFrost.
- The appliance is in sensor test mode and operates in the service mode.
- "E3" display and the temperature value of the NoFrost freezer compartment air sensor alternately.
- All the sensor values and the door contact can be queried with "Up" and "Down".
 - E3: Air sensor
 - E4: Evaporator sensor
 - E8: Door contact freezer compartment (0 = door closed, 1 = door open).
- **End by pressing ON/OFF twice.**

10.0 Table of error codes

Error code	Defective component	Emergency operation
F3	Air sensor	Freezer compartment compressor and fan in continuous operation
F4	Evaporator sensor	Freezer compartment compressor and fan in continuous operation
FA, FC, Fd, FP	Only for factory testing.	-
F6, F7, F8, F9, SE	Only for factory testing.	-