Appliance Documentation

GGPv 6520 from Index 41A
GGPv 6570 / GGPv 1470 from Index 43A

Gastronorm freezer, ventilated

Legal Notice

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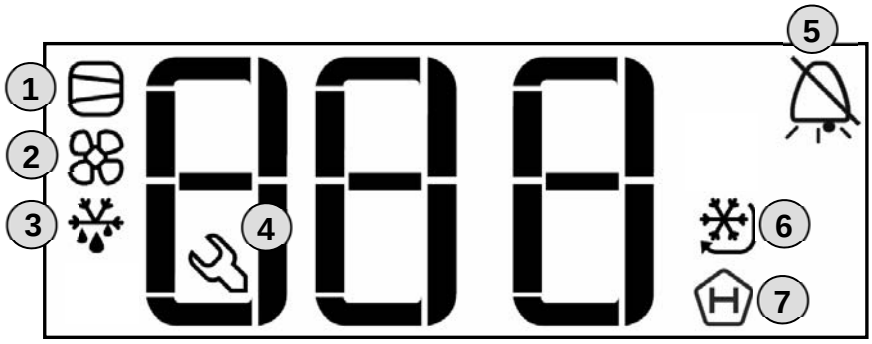
1.0 Operating and control elements

1 **ON/OFF button**
2 **Request button** for stored min./max. temperature
3 **Setting buttons temperature** warmer / colder
4 **SuperFrost button**
5 **OFF button** for audible alarm
6 **Defrost button**
7 **Setting or acknowledgement button**
8 **Temperature display/control elements**



1 **Compressor running**
Note: This symbol flashes during the switch-on delay
2 **Evaporator fans running**
Note: This symbol flashes during the switch-on delay
3 **Defrost phase active**
Note: This symbol flashes during the switch-on delay
4 **Error** (e.g. sensor defective)
5 **Alarm** (e.g. door open, temperature too high)
6 **SuperFrost active**
7 **HACCP active – Min./max temperatures are stored**
Note: This symbol flashes following an event (power failure, temperature alarm)

2.0 Functions at a glance

Control:	Electronics
Temperature display:	Actual value
Temperature range:	-10 °C to -26 °C
Temperature alarm:	Visual and audible
Door alarm:	Visual and audible
Volt-free contact:	Not featured
HACCP / Min./max storage:	Featured
HACCP / Alarm storage:	Not featured
Interface (RS 485):	Not featured
Temperature monitor:	Not featured
Defrosting:	Automatic (hot gas)
Interior light:	Not featured
Service menu:	Not featured
Compressor:	Standard
Solenoid valve refrigeration circuit:	Featured (for defrosting)

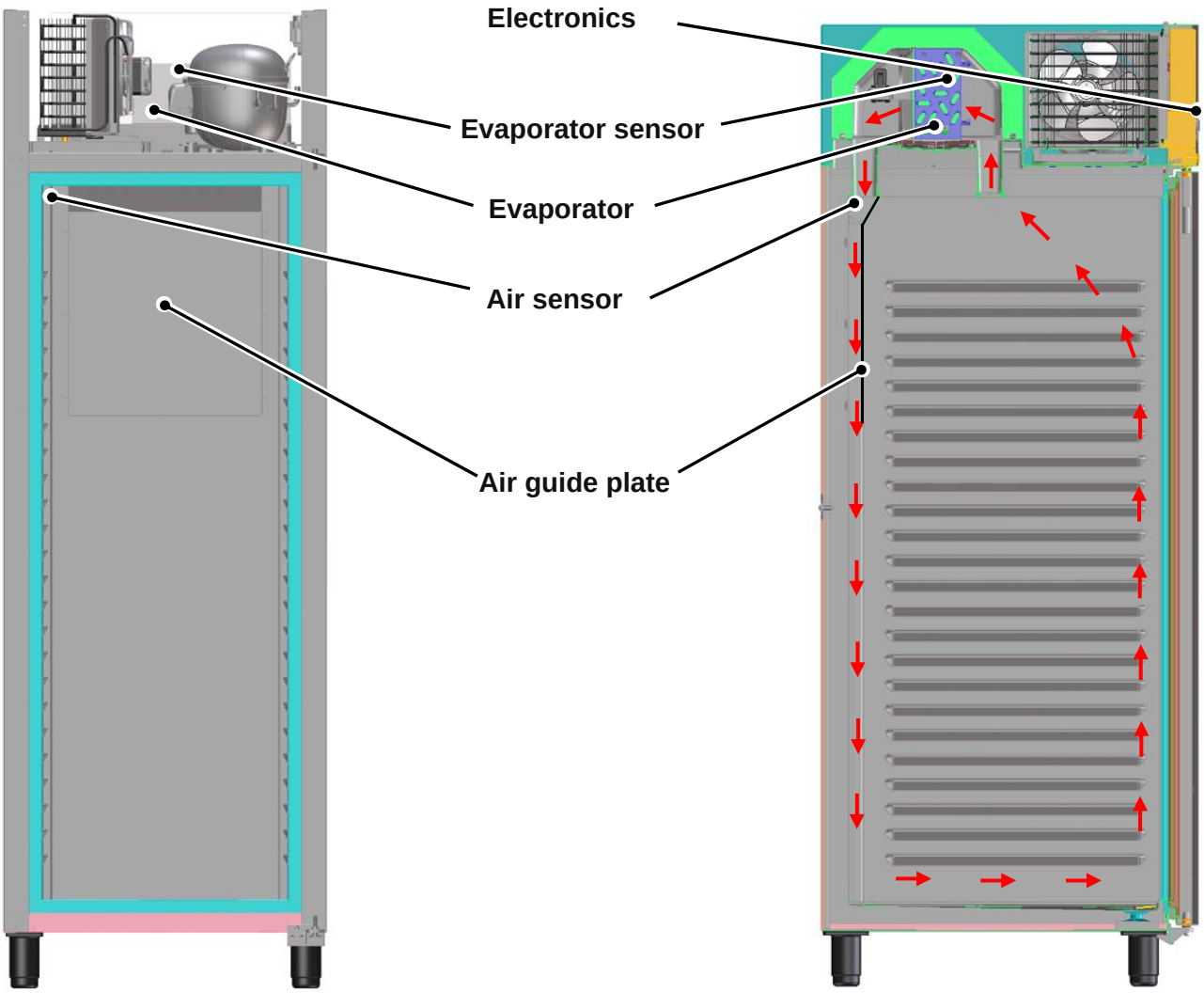
3.0 Description of appliance

The GGPv models are dynamically cooled freezers with fin evaporators. A double fan draws air in from the interior through the evaporator and blows the cold air back into the interior.

The temperature is controlled by an air sensor.

Defrosting is carried out by hot gas.

3.1 Sensor positions, schematic diagrams



4.0 Main components and their functions

4.1 Electrical components and functions

Electronic controller		
Type:	Electronic microprocessor controller manufactured by CAREL with digital display Final parameterisation of the electronics is performed by LIEBHERR	
Components:	Electronics housing + keypad	
Adjusting range:	-10 °C to -26 °C	
Display range:	50 °C to +150 °C	
Functions		
Temperature alarm:	Alarm value:	5 K lower or 8 K higher than the target value.
	Delay:	60 minutes
		Note: The delay time applies for heating instances that were not caused by an operating situation. I.e. A separate parameter delays a possible temperature alarm following a door opening.
	Visual:	Alarm symbol lights up and additionally message “HI” (too warm) or “LO” (too cold) flashes alternately with current internal temperature (suppressed during start-up).
	Audible:	Intermittent beep (suppressed during start-up).
Alarm test:	This test run is used to check the function of the internal and a potentially externally connected alarm device –> Operating instructions or Chapter 7.4. Cooling is not interrupted during this process.	
Door alarm:	Delay:	4 minutes (can be changed from 1–5 minutes -> Operating instructions).
	Visual:	The message “dor” flashes alternately with the temperature display.
		Note: Every time the door is opened, the temperature display and alarm symbol flash.
	Audible:	Intermittent beep.
SuperFrost:	Activation:	Manual by pressing the SuperFrost button (3 seconds).
	Function:	Compressor runs constantly.
	End:	– Manually by pressing the SuperFrost button (5 seconds). – Automatically as soon as the temperature is 5 K below the set target value. However, no later than 2 hours. Note: The temperature alarm is suppressed for 90 minutes after the mentioned threshold is reached.
	Display:	SuperFrost symbol illuminated in the display.

Defrosting:	Activation:	– Automatic, 1 hour after start-up. – Automatic, after a total of 4 hours of compressor run time (but at least 2x/day). – Manual by pressing the defrost button.
	Function:	Defrosting by hot gas (see section 4.2.2.2) The defrost water is collected in the evaporator tray and channeled via a discharge pipe into the defrost water evaporator tray. During the next cooling phase, this tray is heated by hot gas and the water evaporates.
	End:	The defrost phase is generally ended thermally (+10 °C). If thermal termination is not to be performed, the defrost phase is stopped after 10 minutes. – The compressor restarts following a dripping time of 10 minutes. – After a further delay time of 5 minutes, the evaporator fans will restart.
	Display:	The defrost symbol lights up during the defrost phase. During the defrost phase, the value last displayed before the defrosting started is retained. The temperature alarm is deactivated for one hour after the end of the phase. However, two other options are available -> see operating instructions: – Defrost symbol as well as the alternating message “dEF” and the current internal temperature. – Defrost symbol as well as message “dEF”.
HACCP:	Function:	The highest and lowest internal temperatures (min./max.) are saved and can be retrieved by pressing the HACCP button. Note: Following start-up, the values will be automatically updated for the first time after 250 minutes.
	Note:	– If the temperature alarm threshold is exceeded following a power failure (longer than 1 minute), the message “HF” appears and the HACCP symbol flashes. – For temperature alarms longer than 61 minutes (= temperature alarm delay + 1 minute), the message “HA” appears and the HACCP symbol flashes. Note: The date and duration of these events cannot be retrieved. The messages must be acknowledged (see operating instructions).

Sensors

Air sensor:	Position:	In the left rear upper corner of the interior.
	Function:	– Switches the compressor ON/OFF. – Generates the display value.
Evaporator sensor:	Position:	Inserted into the evaporator.
	Function:	Terminates the defrost phase.

Switches

Door switch:	Position:	On the underside of the aggregate housing.		
	Type:	Key button		
	Contact type:	Make contact		
	Function:	Operation by door		
		Switching signal when:		
		Door closed:	Door alarm Evaporator fans	OFF ON
		Door open:	Door alarm Evaporator fans	ON OFF
Thermal fuse:	Position:	Screwed onto the front side of the evaporator.		
	Type:	Safety fuse		
	Contact type:	Serves purely as a safety device! Triggers and thus interrupts the power supply to the compressor when the evaporator heats up to over +84 °C.		

Loads

Heater for defrost water drain pipe and intake opening:	Position:	The heater is first wound around the intake duct and then placed on the drain pipe in the form of a loop.
	Function:	The heater ensures that no layer of ice can form in the drain pipe and that the defrost water can flow into the evaporation tray.
	Special feature:	The heater runs in parallel with the evaporator fans.
Door rail heater (for GGPv 14..):	Position:	Foamed-in in the door rail
	Function:	In the GGPv 14.. model, the door rail is electrically heated.
	Special feature:	The heater runs in parallel with the evaporator fans.
Frame heater (for GGPv 14..):	Position:	Foamed into the two housing halves (+ one reserve heater each)
	Function:	In the GGPv 14.. model the entire frame (one heater per housing half) is electrically heated!
	Special feature:	The heater runs in parallel with the evaporator fans.
Evaporator fans	Position:	Attached to the evaporator
	Function:	Draw in the warm air though the evaporator and blow the cold air through the blow-out opening into the interior. ON: - Continuous run during the compressor run time - Timed (4 minutes off / 1 minute on) during the Compressor standing time OFF: - During defrosting - When the door is open
Condenser fan:	Position:	Next to the condenser
	Function:	Cools the condenser and runs constantly as soon as the mains plug is inserted and only switches OFF during hot gas defrosting. GGPv 6520 from 41E, GGPv 6570 from 43E and GGPv 1470 from 43F: The condenser fan runs parallel to the evaporator fans.
Solenoid valve:	Position:	Next to the compressor
	Function:	Opens a bypass for defrosting
	Type:	2/1 valve
Compressor:	Function:	**ON:** Air sensor switch-on value. **OFF:** Air sensor switch-off value.
	Special features**:**	The compressor switch-on delay time is 9 minutes.
	Type:	Standard

4.2 Refrigeration components and functions

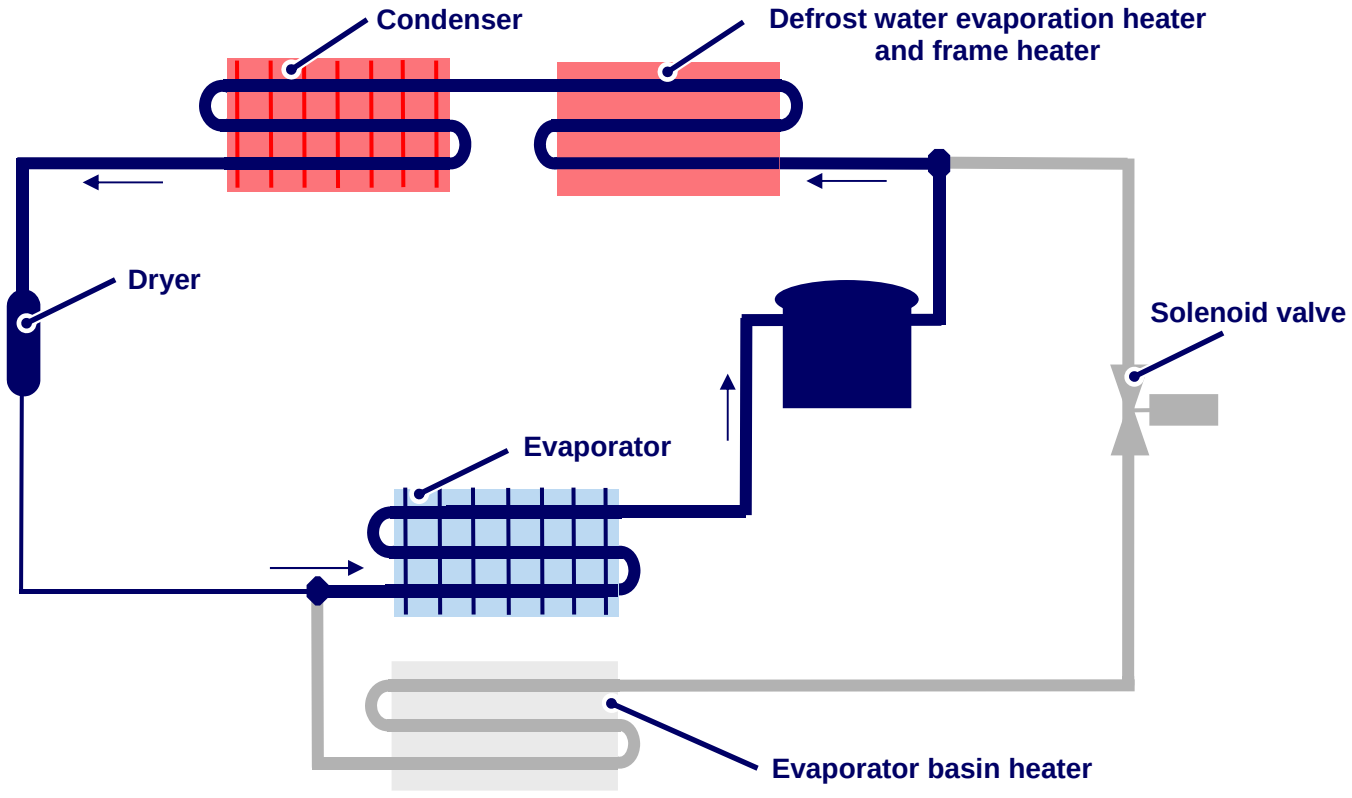
4.2.1 Components

Compressor:	Standard	
Solenoid valve:	2/1 valve	
Evaporator:	Design:	Fin evaporator.
	Type of installation:	Fastened to the evaporator tray with 4 screws.
	Injection point:	Bottom
	Flow sequence:	From bottom to top
Evaporator basin heater	Position:	Beneath the evaporator
	Type:	Hot gas
Frame heater: (GGPv 65..)	Position:	Foamed-in in the frame area
	Type:	Hot gas
Defrost water evaporator heater	Position:	Beneath the defrost water evaporation tray
	Type:	Hot gas
Condenser:	Design:	Block wire tube condenser
	Type of installation:	On the appliance ceiling
Refrigerant:	R290	

4.2.2 Function principle

4.2.2.1 Refrigerating

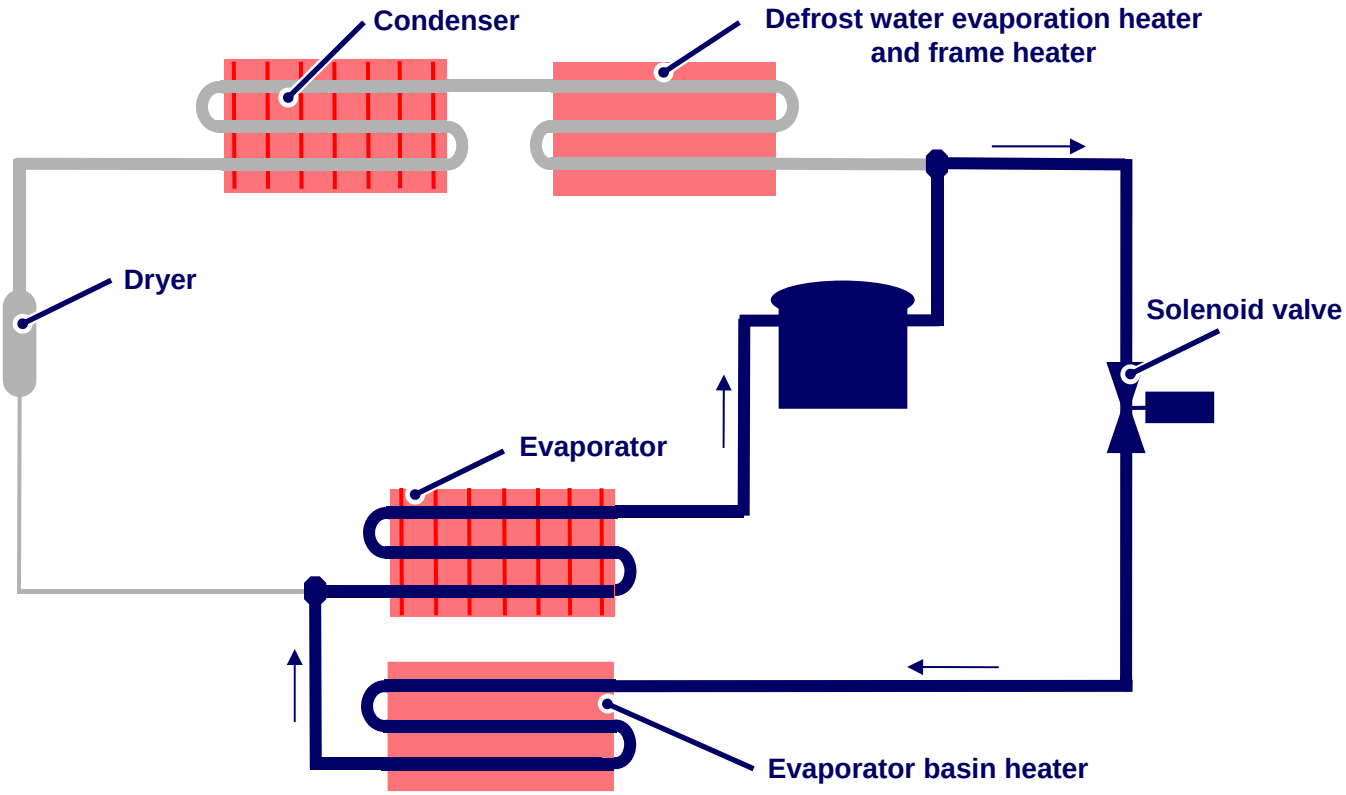
The solenoid valve is closed. The refrigerant is routed through the usual circuit.



4.2.2.2 Defrosting

The evaporator is defrosted by means of hot gas. The compressor has to run before the defrosting phase. If a defrosting request is made during compressor standstill, the appliance therefore cools in the normal way for two minutes before the solenoid valve is triggered.

When the the defrost phase begins, the solenoid valve opens and the hot gas flows into the evaporator basin heater and the evaporator via the bypass. The refrigerant is then briefly cooled by the iced evaporator and consequently liquefied. It is subsequently evaporated in the compressor housing by its heat. The gaseous refrigerant heated by the dissipated heat of the compressor is subsequently pumped through the circuit.



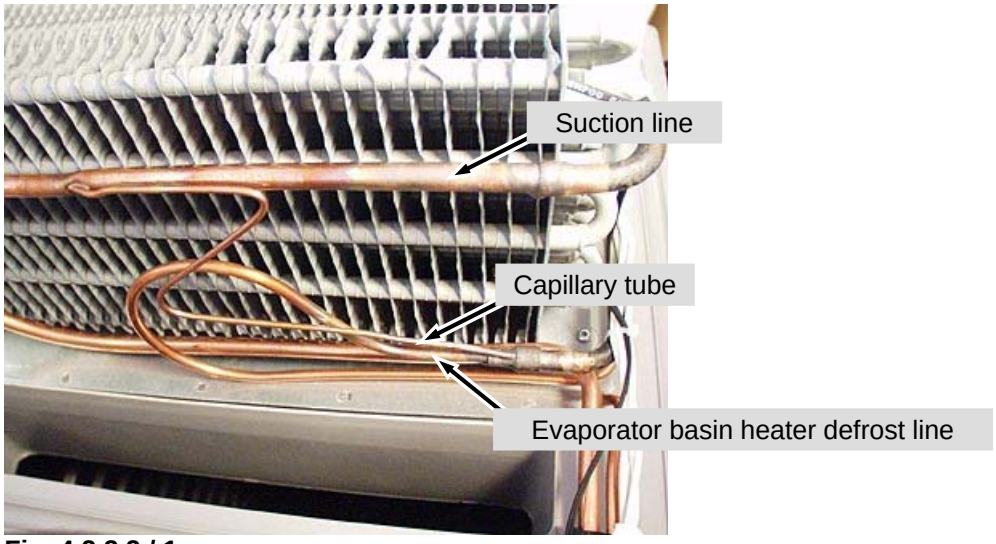


Fig. 4.2.2.2 / 1

4.3 Pressure compensating valve

The pressure compensating valve is fitted on the evaporator cover and enables rapid pressure compensation. The aluminium ribs ensure that the valve is adequately heated by the dissipated heat of the appliance/ambient air and therefore does not have to be electrically heated.

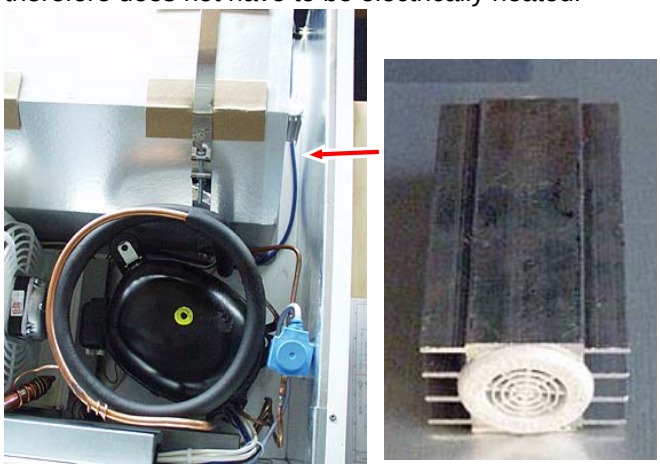


Fig. 4.3 /1

4.4 Defrost water evaporation tray

The tray is fitted beneath the condenser. During the cooling phase, the tray is heated by hot gas to evaporate the defrost water.

Fig. 4.4 /1

4.5 Evaporatorbasin heater

The evaporator tray is fitted under the evaporator and secured by a screw. During the defrosting phase, hot gas flows through the heater and hence ensures that the defrost water can flow into the drain pipe.

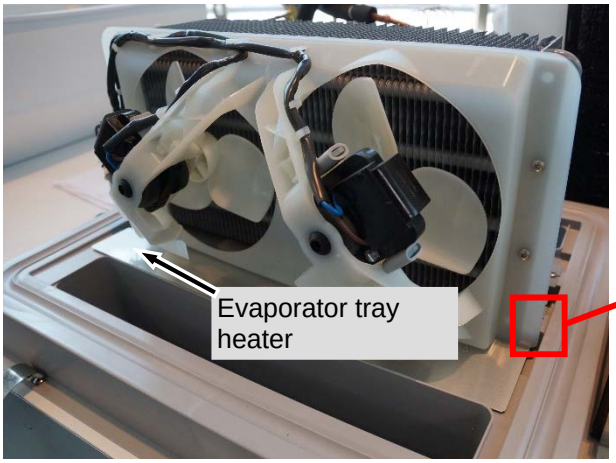


Fig. 4.5 /1

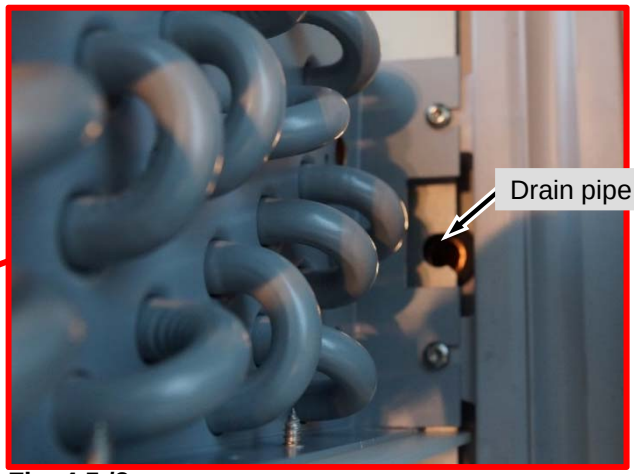


Fig. 4.5 /2

5.0 Assembly instructions / Parts replacement

5.1 Electronics

Aggregate housing: – Remove underside and fold up the housing (**Fig. 5.1 /2**).

Fig. 5.1 /1

Fig. 5.1 /2

Connector strip:
- Remove fastening screw and fold the cover downwards (**Fig. 5.1 /3**).
- Disconnect cable and take off aggregate housing at the hinges (**Fig. 5.1 /4**).

Fig. 5.1 /3

Fig. 5.1 /4

Electronics cover:
- Remove the cover fastening screws (**Fig. 5.1 /5**).
- Remove cover (**Fig. 5.1 /6**).

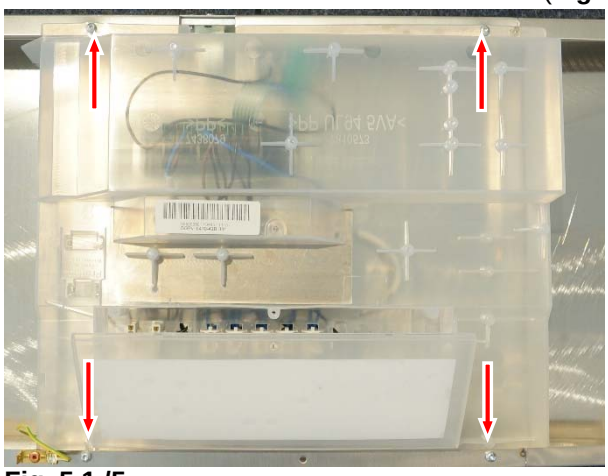


Fig. 5.1 /5

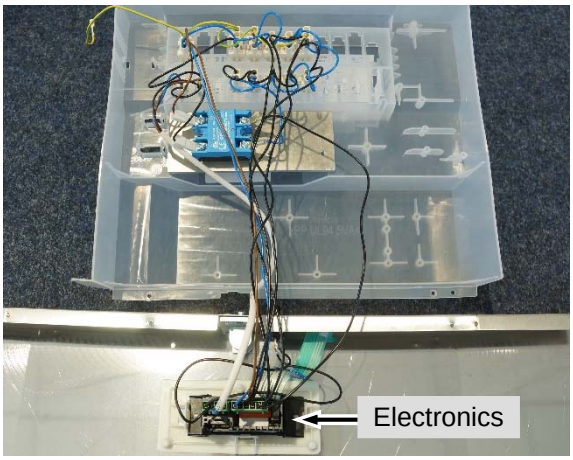


Fig. 5.1 /6

Electronics: – Pull the connector from the electronics. Unclip the electronics (**Fig. 5.1 /7**). **ATTENTION: No coding – mark connectors beforehand.**

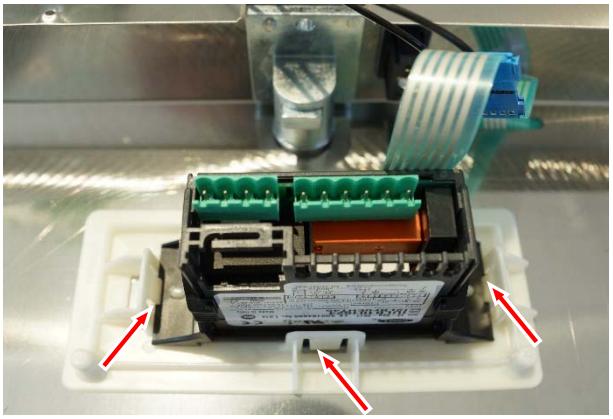


Fig. 5.1 /7

Fig. 5.1 /8

Control panel mat: – The control panel mat (integrated key buttons) is adhered to the front of the aggregate housing (**Fig. 5.1 /9**).

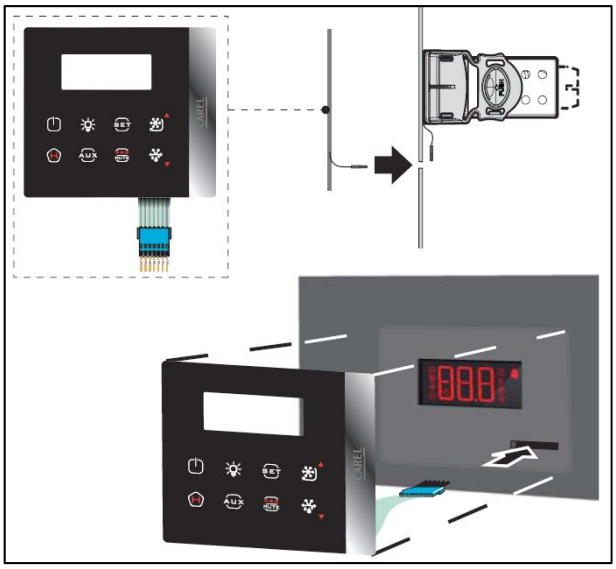


Fig. 5.1 /9

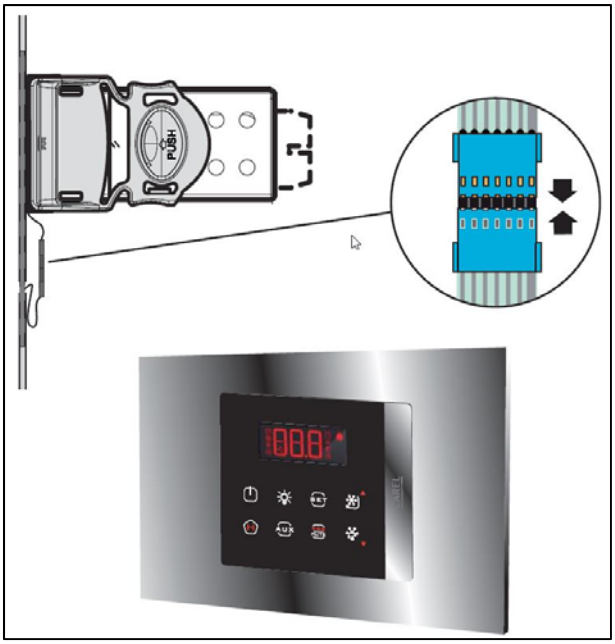


Fig. 5.1 /10

5.2 Sensor, thermal fuse

Connector strip:

- Disconnect sensor (**Fig. 5.2 /1**).
- Press the male connector out of the connector (replacement sensor is supplied without connector).

Fig. 5.2 /1

Air sensor: – Unclip air sensor (**Fig. 5.2 /3**).

Fig. 5.2 /2

Fig. 5.2 /3

Evaporator sensor:

– Loosen tensioning straps and remove evaporator cover (**Fig. 5.2. /4**).
– Draw sensor out of the evaporator (**Fig. 5.2 /5**).
Note: When fitting, the sensor must only be inserted halfway into the evaporator and stopped with a cable tie.

Thermal fuse: Detach thermal fuse from the evaporator and disconnect from the compressor terminal board.

Fig. 5.2 /4

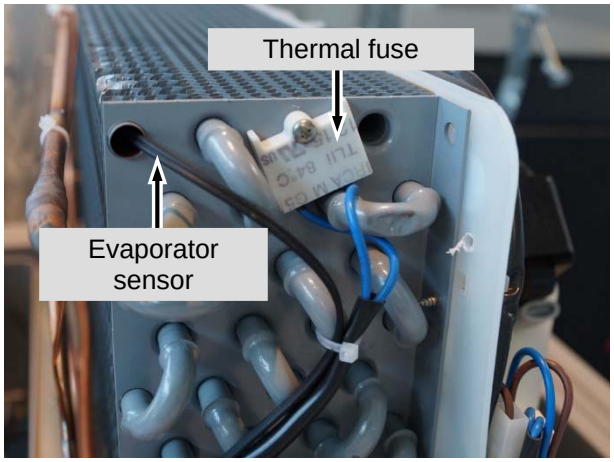


Fig. 5.2 / 5

5.3 Evaporator fans

Fans:
– Remove evaporator cover.
– Undo fan holder screw and remove the fans (**Fig. 5.3 /1**).

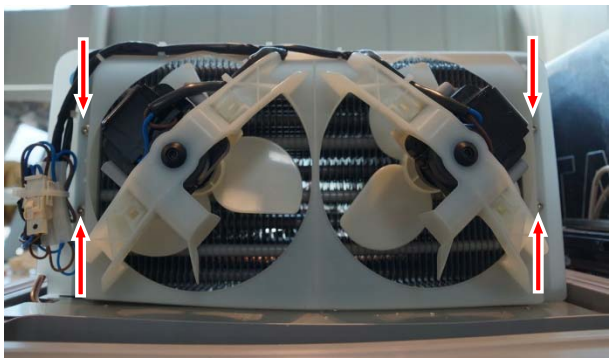


Fig. 5.3 /1

5.4 Condenser fan

Filter:
– Remove dust filter (**Fig. 5.4 /1**).

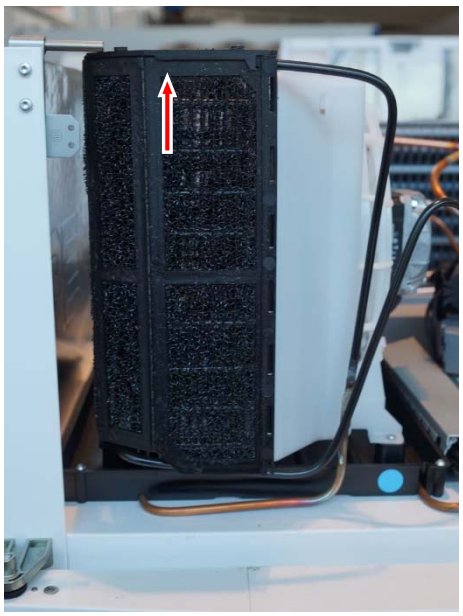


Fig. 5.4 /1

Fan:
– Remove fastening screws of the fan holder (**Fig. 5.4 /2**).
– Unhook the mount from the condenser at the top and remove it.
– Unscrew the motor mount (**Fig. 5.4 /3**).

Fig. 5.4 /2

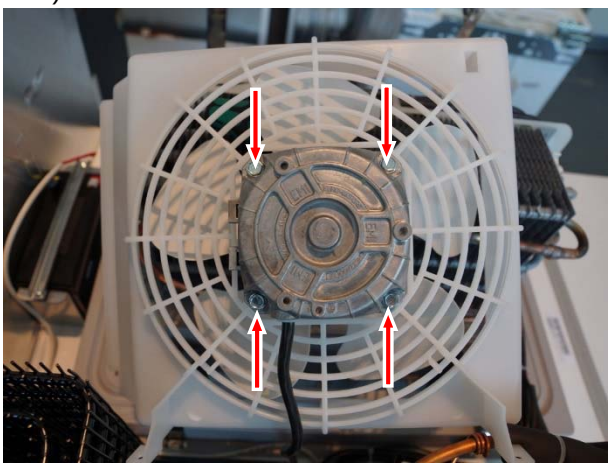


Fig. 5.4 /3

5.5 Solenoid valve

Coil: – The coil of the solenoid valve can be drawn off upwards (**Fig. 5.5 /1**) (i.e. no intervention in the refrigeration circuit is needed).

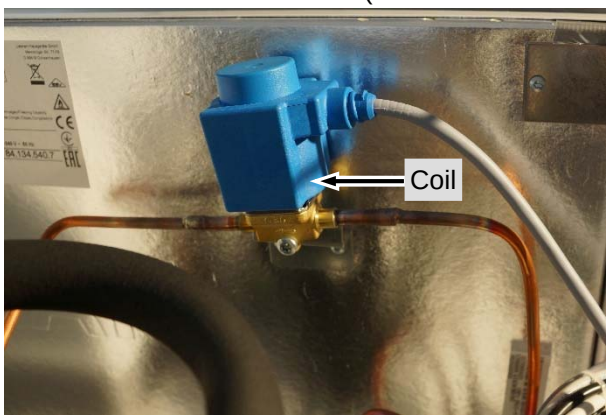


Fig. 5.5 /1

6.0 Technical data

Heater for intake opening and drain pipe	Output:	approx. 12.7 watts
	Voltage:	230 volts
Door rail heater: (for GGPv 14.):	Output:	approx. 26 watts
	Voltage:	230 volts
Door frame heater for left half (for GGPv 14..):	Output:	approx. 25 watts
	Voltage:	230 volts
Door frame heater for right half (for GGPv 14..):	Output:	approx. 25 watts
	Voltage:	230 volts
Condenser fan:	Output:	approx. 38 watts
	Speed:	1300 rpm.
	Voltage:	230 volts
Evaporator fan:	Output:	approx. 34 watts
	Speed:	2200 rpm.
	Voltage:	230 volts

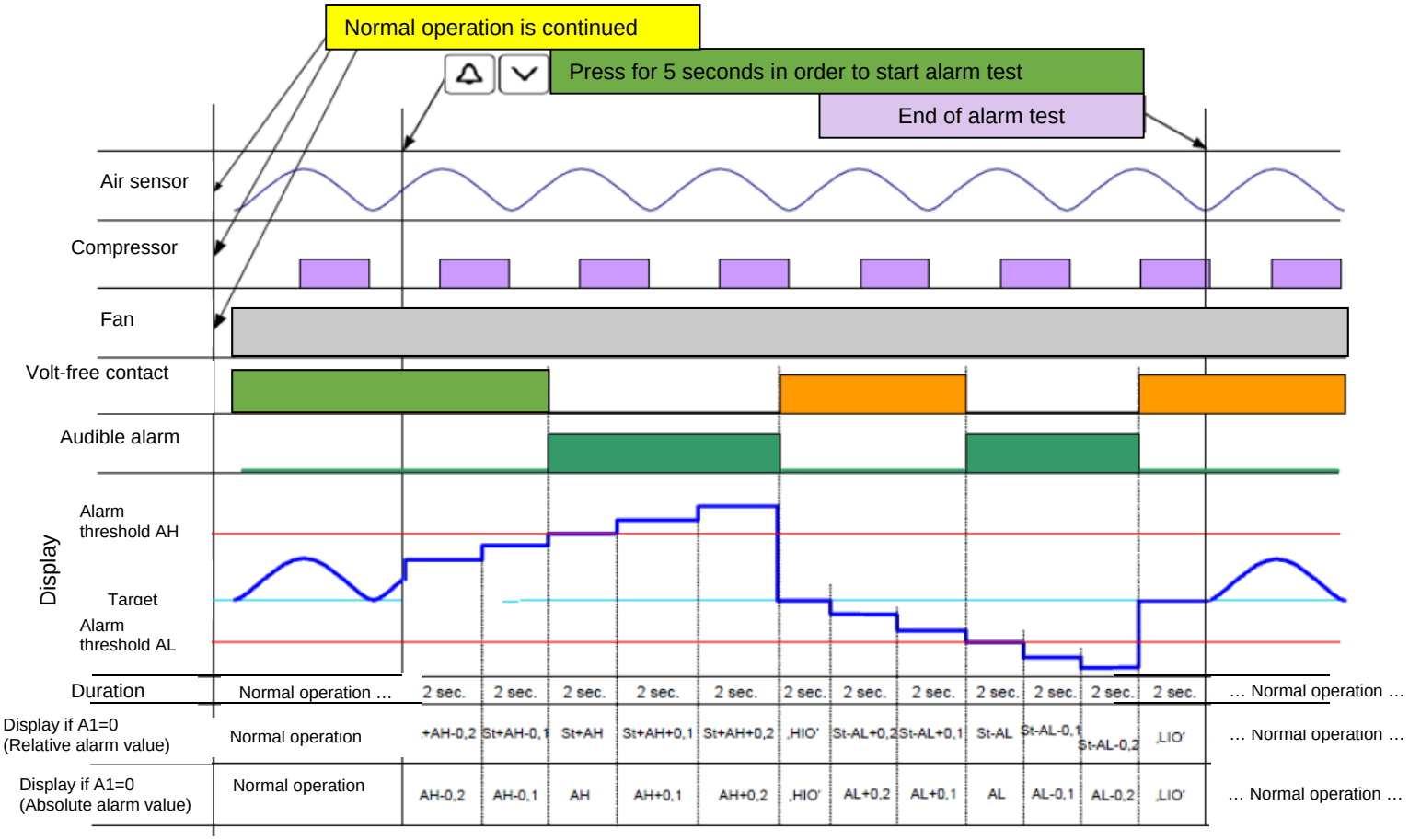
Sensor values:

Temperature [°C]	Approx. resistance value [kOhm]
+50	4
+45	4.9
+40	5.8
+35	6.9
+30	8.3
+25	10
+20	12
+15	14.7
+10	18
+5	22
0	27
-5	33.9
-10	42.3
-15	53.4
-20	67
-25	86.4
-30	111.3
-35	144
-40	185

7.0 Messages and error codes

7.1 Alarm test

Activating the alarm test is described in the operating instructions. Here a schematic diagram of the process.



8.0 Fault and status messages

8.1 Error codes

Error code	Defective component	Audible alarm/ alarm contact	Emergency mode
E0	Air sensor	ON/ON	5 minutes ON, 15 minutes OFF
E1	Evaporator sensor	ON/ON	Normal operation (End of defrosting via time limit)
AFr	Fan does not run	ON/ON	Reference sensor takes over temperature control (AFr must be cancelled after fault has been rectified)
EE	Electronics defective (operating parameters)	ON/ON	All OFF
EF	Electronic unit defective (control parameter)	ON/ON	All OFF

8.2 Status messages

Message	Condition	Audible alarm/ alarm contact
HI	High temperature alarm	ON/ON
LO	Low temperature alarm	ON/ON
Ed1	Defrost phase time-terminated	ON/ON
dEF	Defrosting active	
dFb	Manual defrosting started	
dFE	Manual defrost phase terminated	
On	Appliance switched ON	
OFF	Appliance switched OFF	
HF	Power failure alarm	ON/ON
HA	Temperature alarm	ON/ON