TECHNICAL INFORMATION
FNS 37492 iE
(All US Models)

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Technical Information

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A Warning and Safety Instructions

1 Personal Injury

Risk of death! These machines are top-heavy and must be secured against tipping forward. Follow the installation instructions.

2 General Safety Instructions

Service and repair work should only be carried out by suitably qualified persons in accordance with all appropriate local and national safety regulations.

Service and repair work should only be carried out by suitably qualified persons in accordance with all appropriate local and national safety regulations.

Commissioning, servicing, modification, testing and maintenance of electrical appliances should only be carried out in accordance with all appropriate legal requirements, accident prevention regulations and valid standards. All regulations of the appropriate utility supply companies and standards relating to safety (not limited to electrical safety) are to be complied with.

Unless absolutely essential, e.g., fault finding with supply voltage, working on a machine connected to the power supply should always be avoided. If working on a machine with an applied voltage at a potentially dangerous level is unavoidable, special safety measures must be taken into consideration and complied with.

Warning!
Even with the machine switched off, voltage may be applied to some components.
Before starting any service work, the machine must be disconnected from power. Suitable measurements must be made to ensure that this is the case.

A general visual check should always be carried out.

3 Risk of Electric Shock on Electronic Modules

Voltages of more than 300V can exist on electronic modules (e.g., inverter module, power electronic, control module, LED power supply, icemaker module, etc.) for up to 30 s after disconnection from power.

After disconnection from power, wait for at least 60 s before touching electronic modules.

4 Risk of Injury due to Sharp Edges and Protruding Parts

Danger!
Always wear safety glasses when working near the copper tubing and all sealed-system components.
Do not move the copper tubing or sealed-system components if it's not necessary.
Remove heavy objects from the drawers and shelves when servicing or uninstalling the appliance.
There may be a risk of injury due to sharp edges. Protective gloves should be worn and the edge protection, mat. no. 05057680, should be used.

5 Touch Current Measurement

Note:
On machines with a ground connection, touch current leakage measurements should be carried out on all accessible conductive parts that are not connected to ground.

Warning!
Touch current measurement should only be carried out after the ground connection of the machine under test has been checked and found to be satisfactory!
Dangerous voltages may exist on defective machines as well as on accessible conductive parts that are not connected to ground!

Note:
If covers/fascias, etc., can be removed without tools and have accessible conductive parts behind them, then touch current measurement should also be carried out on these parts.
Touch current measurement does not need to be carried out on components which, in the opinion of the tester (on his responsibility), could not have voltage applied to them. The following are examples of such components:

- Appliance doors
- Door hinges
- Compressor support
- Nonmetallic rear panel
- Metal screws installed in plastic
- Feet
- Holding rails and shelves in the door
- Edge strips on glass shelves
- Similar parts.

6 Refrigerant

These models use the refrigerant R 600a ($CH(CH_3)_3$, isobutane). When working directly on the cooling circuit, it is essential that all special safety regulations regarding procedures for working with highly inflammable material be fully complied with.

B Modification History

When?	Who?	What?
6/22/2020	Jessica Naples	Icemaker electronic connections modified (page 41)
10/23/2018	Jessica Naples	Evaporator defrost instructions added
11/15/2016	Jessica Naples	Minor changes throughout
9/4/2015	Jessica Naples	Compilation for Website

C Technical Data

Model	FNS 37492 iE
Energy efficiency classification	A++
Annual energy consumption	242kWh
Features	
Climatic classification	SN-T
Door alarm, acoustic	after 60 s
Defrosting	Automatic
Construction	Built-in/can be integrated
Door hinge	Left, interchangeable
Decor frame	No
Dimensions	
Appliance height	69.7”
Appliance width	22”
Appliance depth[1]	21.5”
Niche height	69.8-70.4”
Niche width	22.0-22.4”
Niche depth[1]	21.7”
Weight (lbs (kg))	173.8 (79)
Electrical connection - US models only	
Voltage	110/120 VAC
Fuse rating	15A (single) or 20A (2 individual units installed side by side w/duplex outlet)
Frequency	60Hz

Table C-1: Technical Data

[1] Without wall spacers; +1.4” with wall spacers. Wall spacers are included with some models.

Technical Information

010 Miscellaneous

1 Technical Data

Air/Evaporator NTC resistance values		
Temperature [°F]	**Temperature [°C]**	**Resistance [kΩ]**
+95	+35	3.1
+86	+30	3.8
+77	+25	4.7
+68	+20	5.9
+59	+15	7.3
+50	+10	9.3
+41	+5	11.9
+32	0	15.3
+23	-5	19.8
+14	-10	25.9
+5	-15	34.1
-4	-20	45.3
-13	-25	60.8
-22	-30	82.3
-31	-35	112.8

Table 010-1: Air/Evaporator NTC Resistance Values

Freezer (circulation) fan	
Voltage [VDC]	9 (in service mode: 6VDC at low speed, 12VDC at high speed)

Table 010-2: Freezer Fan

Defrost heater temperature limiter[1]	
Temperature resistance limit [°C (°F)]	93 (199)

Table 010-3: Defrost Heater Temperature Limiter

[1] Connected in series with defrost heater. Must be replaced after tripping.

Icemaker valves	
Power [W]	12.3
Voltage [V]	120
Frequency [Hz]	60
Flow rate [L/min]	1
Resistance at 68°F [kΩ]	2

Table 010-4: Icemaker Valves

Icemaker motor		
Voltage [V]	10-13 DC	
Current [mA]	empty	100
	with load	300
	with blocked rotor	500

Table 010-5: Icemaker Motor

Icemaker NTC resistance values		
Temperature [°F]	Temperature [°C]	Resistance [kΩ]
+86	+30	1.8
+77	+25	2.2
+68	+20	2.6
+41	+5	4.8
+32	0	6.0
+14	-10	9.4
-0.4	-18	14.4

Table 010-6: Icemaker NTC Resistance Values

2 Function

2.1 Freezer Air NTC

Position: Inserted in a holder in the front of the evaporator assembly.

Function:

- Switches the compressor on and off.
- Responsible for temperature display.

2.2 Evaporator NTC

Position: Inserted in the evaporator.

Function:

- Switches the fan on/off.
- Switches the defrost heater off and stops the defrost phase.

2.3 Ambient-Air NTC

Position: Soldered onto the power electronic.

Function: Matches the maximum compressor speed to suit the ambient temperature.

2.4 Temperature Range

5°F to -18°F.

2.5 Actual-Temperature Display

30°F to -26°F. With temperatures warmer than 30°F, a dash is shown in the display. With temperatures cooler than -26°F, -26°F is displayed.

2.6 Sabbath Mode

The following applies with the Sabbath mode:

- Only the Sabbath mode symbol is displayed.
- When the door is opened, the fan remains switched on if it was

already in operation.
- The fan remains switched off if it was already switched off, even if the door remains open for longer than 15 min.
- The interior lighting remains off when the door is opened.
- The defrost intervals are not affected by how often the door is opened.
- The function of the door contact reed switch is inactive.
- All audible signals (door alarm, temperature alarm, button activation confirmation signal) are inactive.
- The temperature display does not change.
- A power failure is not indicated in the display. When power is restored, the appliance remains in the Sabbath mode.
- The appliance cannot be switched off.

The Sabbath mode is not ended automatically.

2.7 Freezer Fan

Position: Top middle behind evaporator cover.

Function:

Compressor	Evaporator NTC	Door	Freezer fan
Off	Switch-on point reached[1,2]	Closed	Off
On	Switch-on point reached	Closed	On
Off/On	Switch-on point reached	Open	Off
Off/On	Switch-off point reached	Closed/Open	Off

Table 010-7: Freezer Fan Function

[1] During commissioning and after defrost phase -13°F. In normal operation 4 degrees colder than freezer air NTC.
[2] When the compressor is running, the fan is switched off for 15 min.

2.8 Interior LED Lighting

Position: In the control panel housing.

Function:
- Lights up when the door is opened.
- Switches off once the door has been open for 15 minutes.

2.9 SuperFrost (Quantity-Controlled)

Depending on the quantity to be frozen, **SuperFrost** is ended after at least 50 h or maximum 65 h.

The freezer compartment is cooled for at least 50 h to -38°F. **SuperFrost** is ended automatically if, in the following 15 h, cooling to within 27°F of the desired value is achieved, or at the latest after 65 h.

When **SuperFrost** has ended, the freezer is cooled depending on the set temperature.

If the **SuperFrost** function is switched on during a defrost phase, the defrost phase is not interrupted. **SuperFrost** is activated when the defrost phase has

finished.

2.10 Defrosting

During the defrost phase the compressor and fan are switched off and the defrost heater activated. At the end of the defrost phase, the compressor is only switched on again after a pause of 10 min. The fan is activated when the freezer evaporator NTC registers -13°F.

The defrost heater is activated as follows:

- At initial startup after the compressor has operated for a total of 3 h.
- During normal operation when the compressor has operated for a total of 10 h to 65 h, depending on the number and duration of door openings.

The defrost heater is deactivated as follows:

- When the freezer evaporator NTC has registered 77°F or
- If the maximum defrost time of 40 min has elapsed.

2.11 Defrost Heater

Position: Clipped in the freezer evaporator.

Function: Keeps the evaporator free of ice.

2.12 Door Alarm

Depending on the customer programming mode setting, the audible door alarm (3 beeps) is either deactivated or operates after 2 min or after 4 min.

2.13 Temperature Alarm

The temperature alarm is activated under the following circumstances:

- If the actual temperature is 7°F warmer than the desired temperature for 20 min.
- During **SuperFrost** when 14°F is reached.

Example: The temperature alarm will be activated, if with a desired temperature of -0.4°F, the NTC registers a temperature of 6.8°F for 20 min.

Optical temperature alarm: The alarm symbol ⚠ flashes in the display.

Audible temperature alarm: 4 beeps.

The audible temperature alarm is suppressed during initial startup. The temperature display flashes until the evaporator NTC has reached its switch-off point.

After the defrost heater is switched on, the alarm function is suppressed for 90 min.

2.14 Door Reed Switch

Position: The switch is located on the electronic in the door frame fascia, in

front of the icemaker. This switch is replaceable. The magnet is set in polystyrene in the door and cannot be replaced.

Function:

- Switches the fan off when the door is opened.
- Switches the door alarm on if the door is open for more than 60 s.
- Switches the fan on when the door is closed.

2.15 Compressor Activation

The compressor is switched on when the freezer air NTC has reached its switch-on point.

> **Note:**
> The compressor only switches on when the switch-on delay time has elapsed.

The compressor is switched off as follows:

- The freezer air NTC has reached its switch-off point **or**
- During defrosting.

2.16 VCC Technology with AC Protocol

2.16.1 VCC Compressor

Position: In the compressor niche.

Function: The VCC compressor is a compressor with variable cooling capacity (VCC: variable-capacity compressor). Depending on requirements the cooling capacity can be varied by varying the compressor motor speed.

> **Warning!**
> The VCC compressor can only be operated via the electronic inverter. Direct activation with supply voltage will destroy the compressor winding.

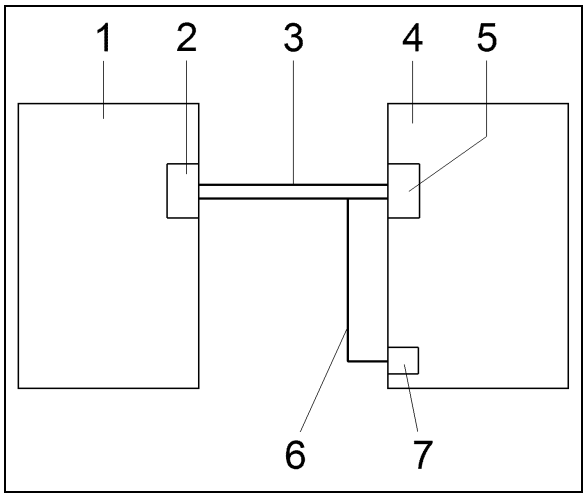
2.16.2 Inverter Module

Position: Next to the compressor in the compressor niche.

Function:

- The inverter module provides power to the power module.
- The inverter module receives a signal (120V half-waves) from the power module to switch on the compressor.
- Depending on the half-waves, the inverter module uses a stored protocol to calculate the required speed for the compressor.
- The inverter module has an integrated overload protection device.
- If the compressor does not switch on immediately during operation, e.g., due to counter pressure in the cooling system, the inverter module attempts to switch on the compressor several times. If the compressor does not switch on, the switch-on function is blocked for 8 min.

2.16.3 Speed Control via an AC Protocol



1 Power electronic
2 Compressor connection
3 Connection cable
4 Inverter electronic
5 Power connection
6 Signal wire
7 Connection point on inverter electronic

Figure 010-1: Speed Control Schematic

Depending on the compressor running time, the power module generates defined half-waves (signal), Figure 010-2, and transfers these via the signal wire to the inverter module. The inverter module interprets these half-waves using a stored AC protocol and then defines the compressor speed.

The speed range and the compressor operating times are matched individually for each appliance.

If the compressor is, e.g., switched on for > 70 min, the speed is increased by one level during compressor operation.

If the compressor, e.g., is switched on for < 40 min, the speed is reduced by one level when the compressor is next switched on.

With the **SuperFrost** function, the compressor operates immediately at its highest speed, providing the switch-on delay time has elapsed.

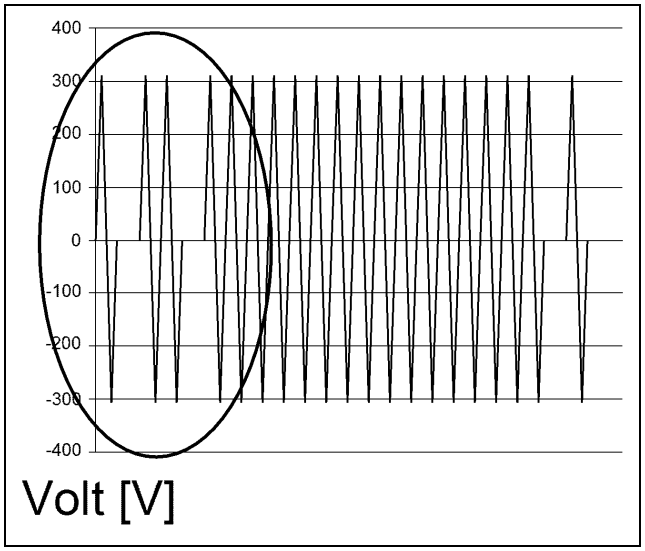


Figure 010-2: Half-Waves

2.16.4 Fault Diagnosis LED

A fault diagnosis LED is located under a transparent cover on the inverter; see Figure 010-3, Item 1. If a fault is detected, it will be indicated via a flashing pattern of this LED.

If no fault is registered by the inverter module, the LED does not flash.

If the component test is activated in the service mode, the LED flash pattern indicates the state of the inverter module for 60 min:

- LED flashes **once** if a **valid** signal is received.
- LED flashes **twice** if **no** signal or an **invalid** signal is received.
- LED flashes **3 times** if an inverter module fault is detected.
- LED flashes **4 times** if a compressor fault is detected.

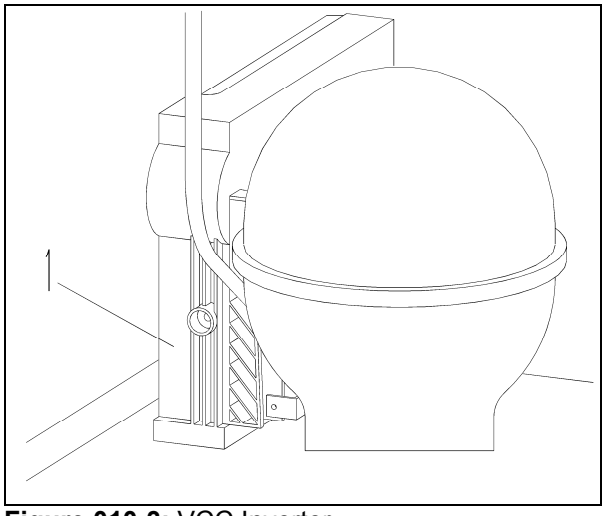


Figure 010-3: VCC Inverter

2.17 Refrigerant Injection Point and Direction of Flow

The louvre (fin-style) evaporator is at the top of the freezer compartment, underneath a cover.

Injection point: Front middle.

Direction of flow: Front to back.

2.18 Delayed Switch-On

After the compressor has been switched off, it can only switch on again after the switch-on delay time of 5 min has elapsed.

2.19 Frame Heater

The pressure section of the cooling circuit is foamed-in (set in polystyrene) in the following areas of the casing:

- Left side panel
- Right side panel
- Front frame

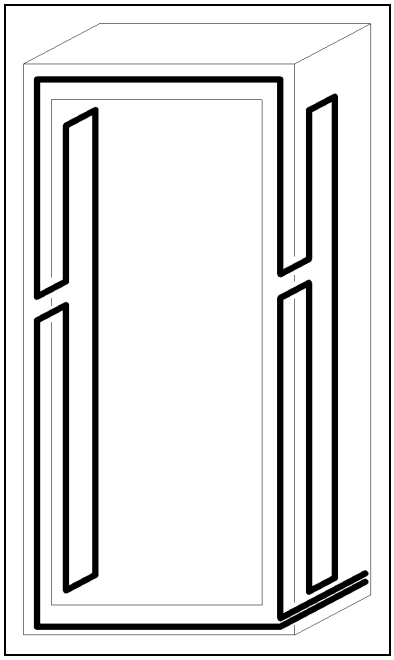


Figure 010-4: Door Frame Heater

Frame heating prevents condensation buildup in the machine.

2.20 Refrigerant Stop Valve (S11/1)

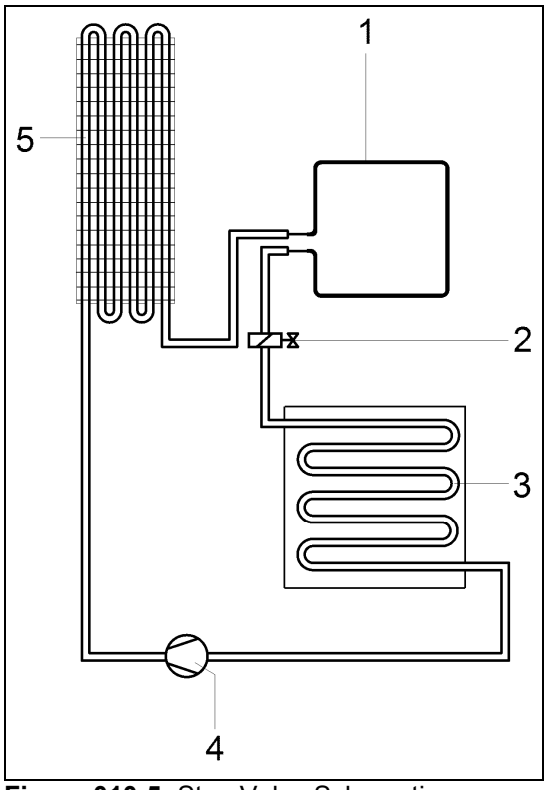
Position: In the compressor niche on the compressor pressure side.

Function:

- Stop valve closed: When the compressor is switched off, the stop valve is closed and thus prevents pressure equalization in the cooling

circuit.

- Stop valve open: When the compressor is activated, the stop valve is opened. The compressor is operating against high pressure in the cooling circuit.
- After power is switched on, the solenoid valve is closed and then immediately opened.



1 Freezer door frame heater
2 Stop valve
3 Freezer evaporator
4 Compressor
5 Condenser

Figure 010-5: Stop Valve Schematic

Note:
If the machine is switched off via the on/off touchpad, the stop valve is opened.
If the machine is not switched off and is disconnected from power, the stop valve remains in the switched position.
The short activation pulses cannot be measured with a voltmeter.
Activation of the stop valve can be checked in the service mode. When the compressor is activated, the stop valve is opened. Switching of the stop valve can be heard.

2.21 Icemaker NTC

Position: Under the ice tray.

Function: When the NTC reaches -10°C (14°F), ice production is started via the electronic. The inlet valves are activated and water intake started.

2.22 Water Hose with Non-Return Valve

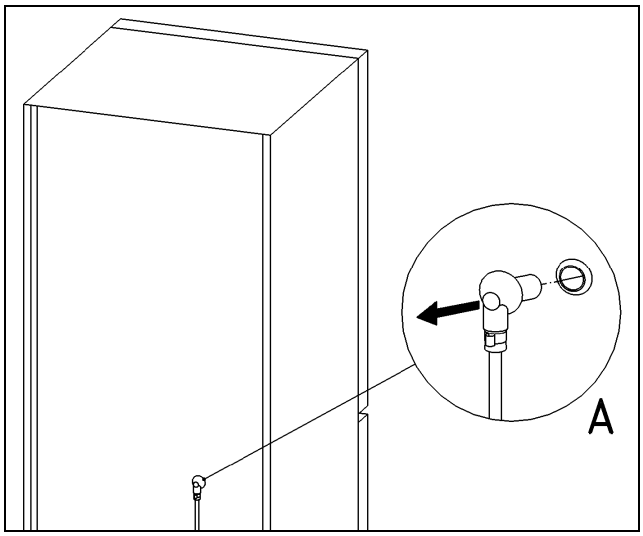


Figure 010-6: Non-Return Valve

There is a non-return valve in the water hose (Figure 010-6, Item A). This keeps water in the hose between the inlet valve and the icemaker. No air can get into the system, so the water is kept free of bacteria and germs.

2.23 Icemaker Startup

The icemaker electronic performs an automatic self-test when the icemaker is switched on/activated; see Section 010-2.30.1.

When the NTC reaches -10°C (14°F), the ice tray is emptied. When -10°C (14°F) is reached depends on the set temperature in the freezer.

With initial icemaker startup it can be up to 24 hours before temperature is reached. After subsequent switching off and on of the icemaker, this process will take only 6 hours maximum.

After emptying the ice tray the inlet valves are activated to take in water; see Section 010-2.30.2.

2.24 Icemaker Normal Operation

When the NTC reaches -10°C (14°F), the ice tray is emptied. The inlet valves are activated and water flows in; see Section 010-2.30.2.

2.25 Ice Production

When the NTC reaches -10°C (14°F), the ice tray rotates and the ice cubes fall into the ice bin. If the ice bin is removed during ice production (as detected by the ice bin reed switch), ice production is interrupted and the ice tray goes back to its home position.

If the ice tray was in the “emptying” position when the bin was removed,

no water is taken in after the ice tray returns to the home position (ice cubes are still in the ice tray). The ice tray stays in the home position for 95 minutes because the NTC has not warmed up (see Section 010-2.30.2). After this, ice production will start again.

If the ice tray has returned to the home position after emptying, the ice tray rotates back to the home position, the inlet valves are activated and water flows in.

If the icemaker is switched off during ice production, the ice cubes are ejected and the ice tray rotates back to the home position. The inlet valves are not activated.

At the start of each ice production there is an automatic fault check; see Section 010-2.30.1.

2.26 Icemaker Reed Switch

Position:
Located in the holder securing the icemaker to the glass plate. The magnet is located inside the catch bin and is replaceable.

Function:
Catch bin pushed in: The reed switch in the icemaker is closed. Ice can be dispensed.
Catch bin pulled out: The reed switch in the icemaker is open. Ice cannot be dispensed. A pulled-out catch bin is detected after approx. 6mm (0.25”) air gap between its magnet and the icemaker electronic.

2.27 Icemaker Inlet Valves

Position:
Two monostable solenoid valves located near the compressor niche.

Function:
Inlet valve open: Ice tray is filled with water.
Inlet valve closed: Water intake is stopped.

If one inlet valve is defective, the other can still control water flow.

2.28 Icemaker Overflow Lever

After every ice production the overflow lever moves down and measures the amount of ice cubes in the ice bin. If the ice bin is filled with the maximum amount of ice cubes, the overflow lever will press a microswitch and ice production is stopped.

With a **full ice bin**:
- the ice tray remains in the home position.
- the inlet valves are not activated.

Next ice production:
- if the ice bin was emptied (after pressing the reed switch),

- or immediately after a power failure, without a “wait time”,
- or immediately after switching the electronic **on/off**, without a “wait time”.

2.29 Icemaker Electronic Self-Test

The self-test takes place at initial startup or after disconnecting from power.

The icemaker motor is started and the NTC temperature checked.

During the self-test there is an automatic fault check; see Section 010-2.30.1.

2.30 Safety Features

2.30.1 Automatic Icemaker Fault Check

The self-test involves a 60-second check of the electronic and the ice dispensing system. If a fault occurs during this self-test or ice dispensing cycle (e.g., internal motor switch defective, mechanism iced up, etc.), the test time will have elapsed before the ice tray has returned to its starting setting. The icemaker LED will flash 1x slowly every 2 seconds (see Section 010-3.15). Motor and inlet valves are not actuated.

2.30.2 Automatic Water Intake Check

After each water intake the NTC temperature is checked 3x within 95 min. If this temperature does not increase, then there is a water intake problem. Ice production is stopped and the icemaker LED flashes slowly 1x every 2 seconds (see Section 010-3.15).

The temperature difference between the ice tray and the incoming water must be at least 8 degrees Celsius (14 degrees Fahrenheit).

2.30.3 Inlet Valves

If the inlet valves are activated for longer than 120 s, they will be shut off by the electronic.

2.31 Icemaker Function after a Power Failure

After a power failure:

- the ice tray goes back to the home position.
- a self-test of the electronic is carried out; see Section 010-2.30.1.
- the ON or OFF setting remains unchanged.
- the set water intake time remains unchanged.
- If ice production was interrupted, after restart the ice tray returns to the home position. When the NTC reaches -10°C (14°F), the ice tray is emptied. After emptying the ice tray the inlet valves are actuated and water flows in.
- Icemaker emptying is blocked for 4 hours in order to prevent the machine from running out of water.

3 Fault Repair

3.1 Inverter Electronic LED Does Not Flash

Cause:
The LED only flashes in the service mode component test.
Remedy:
None.

3.2 Inverter Electronic LED Flashes 1x

Symptom:
The inverter electronic LED flashes 1x every 5 s (in the service mode component test, the LED flash pattern indicates the state of the inverter module for 60 min).

Cause:
No fault. The inverter electronic is in order and receiving a valid signal.
Remedy:
No remedy required.

3.3 Inverter Electronic LED Flashes 2x

Symptom:
The inverter electronic LED flashes 2x every 5 s (in the service mode component test, the LED flash pattern indicates the state of the inverter module for 60 min).

Cause:
The inverter is not receiving a frequency signal or is receiving an invalid signal.
Remedy:
1. Check the frequency cable connection and repair/reestablish as necessary.
2. Check if the power electronic is providing a signal (60Hz).
3. If the signal is being provided, replace the inverter electronic. See Section 010-4.21
4. If the signal is not being provided, replace the power electronic. See Section 010-4.6.

3.4 Inverter Electronic LED Flashes 3x

Symptom:
The inverter electronic LED flashes 3x every 5 s (in the service mode component test, the LED flash pattern indicates the state of the inverter module for 60 min).

Cause:
Inverter electronic is defective.
Remedy:

Replace the inverter. See Section 010-4.21.

3.5 Inverter Electronic LED Flashes 4x

Symptom:
The inverter electronic LED flashes 4x every 5 s (in the service mode component test, the LED flash pattern indicates the state of the inverter module for 60 min).

Cause:
Compressor is defective.
Remedy:

Warning!
The inverter module must only be operated with the compressor connected.

1. Check the compressor's power consumption.
2. Check the winding resistance between the compressor's 3 connection tags (2 at a time).
3. If the resistance readings and power consumption **are not in order**, replace the compressor. See Section 010-4.22.
4. If the resistance readings and power consumption **are in order**, check the following:
   a. Compressor and inverter wiring for open circuits.
   b. Disconnect the inverter electronic from the power supply.
   c. Reconnect the inverter electronic to power after 2 minutes and wait another 12 minutes.
   d. If the inverter electronic LED flashes 4x afterward and the compressor is still switched off, replace the compressor. See Section 010-4.22.

3.6 Fault Code F111 - Freezer Air NTC Defective

Symptom:
Emergency operation: Compressor is on permanently.

Cause:
Freezer air NTC is defective (short- or open-circuited).
Remedy:
1. Check the NTC resistance; see Table 010-1.
2. Replace any defective NTCs. See Section 010-4.10.

3.7 Fault Code F116 - Evaporator NTC Defective

Symptom:
Emergency operation: Compressor is on permanently.

Cause:
Freezer evaporator NTC is defective (short- or open-circuited).
Remedy:
1. Check the NTC resistance; see Table 010-1.

2. Replace any defective NTCs. See Section 010-4.9.

3.8 Fault Code F122 - Ambient-Air NTC Defective

Symptom:
Emergency operation: Compressor operates 5 min on, 20 min off.

Cause:
Ambient-air NTC defective.
Remedy:
Replace the power electronic. See Section 010-4.6.

3.9 Fault Code F166 - Icemaker NTC Defective

Ice production is set.
The icemaker is in its basic setting.
The fault code is saved in the fault memory and not shown in the display for the customer.

Cause:
Icemaker NTC is defective.
Remedy:
Replace the NTC. See Section 010-4.18.

3.10 Fault Code FE

Cause:
EEPROM fault.
Remedy:
Replace the power electronic. See Section 010-4.6.

3.11 Fault Code FF

Cause:
The power electronic and the control electronic are incompatible.
Remedy:
Install electronic modules in accordance with the spare-parts list.

3.12 Noises from Toekick Area

Cause:
The evaporation tray is not seated correctly on the compressor.

Series modification:
The evaporation tray has been modified.

Remedy:
Stick the evaporation tray onto the compressor using silicone sealant.

3.13 Freezer Fan Switches On When Door is Open

Symptom:

After 15 min with the door open, the fan is switched on.

Cause:
Normal operation. This is not a fault.
Remedy:
None.

3.14 Shrunken Ice Cubes

Cause:
Normal physical process (sublimation).
Remedy:
None. See the general DTD for an explanation.

3.15 Ice Cubes Disappear; Dust-Like Residue Remains

Cause:
Normal physical process (sublimation).
Remedy:
None. See the general DTD for an explanation.

3.16 Icemaker LED Flashes 1x Every 2 Seconds

Cause:
Ice tray cannot rotate/mechanical parts are iced over.
Remedy:
Clear the ice.

Cause:
Water intake fault. Inlet valves and motor are not activated.
Remedy:
1. Check water intake.
2. Unscrew the water line from the solenoid and clean the filter on the inlet side of the valve.
3. If necessary, test the inlet valve in service mode. See Section 010-4.4.

Cause:
Icemaker NTC defective.
Remedy:
Check NTC resistance; see Table 010-6.

Note:
An NTC fault will be saved in the fault memory as "F166" and will not be shown in the display for the customer.

Cause:
Motor switch defective.
Remedy:
Replace the motor. See Section 010-4.17.

Cause:

Too much water came in and froze into a big chunk of ice. The ice tray can no longer rotate.

Remedy:

Program a shorter water intake time; see Section 010-4.2.

4 Service

4.1 Demo Mode Activation/Deactivation

Initial requirements:

Switch off the machine.

Accessing:

1. Press and hold the ∨ touchpad.
2. Press the on/off ⏻ touchpad.
3. Press and hold the ∨ touchpad until the ▮ symbol lights up.

Acknowledgement indicator:

The ▮ symbol lights up. Demo mode is now active.

Options:

To deactivate demo mode, repeat the above procedure (the ▮ symbol will go out and the machine will revert to normal operation).

4.2 Customer Programming (Settings)

Initial requirements:

Switch the machine on.

Accessing:

Press the menu ▸≡ touchpad.

Acknowledgement indicator:

The lock symbol 🔒 flashes and all selectable symbols light up.

Options:

1. Use the ∧ and ∨ touchpads to scroll through the programming functions. Press the **OK** touchpad to select a function.
2. Use the ∧ and ∨ touchpads to scroll through the list of settings for that function.
3. Press the **OK** touchpad to select/save a setting.
4. A flashing value indicates that that setting can be selected; a steadily lit value indicates that that setting is the current one.

Function		Setting	Description	Notes
♪♪	Audible signal	0	Audible signal off, door alarm off	
		1	Audible signal off, door alarm on after 4 min	
		2	Audible signal off, door alarm on after 2 min	
		3	Audible signal on, door alarm on after 2 min	
	Sabbath mode	0	Sabbath mode off	In the Sabbath mode all appliance functions are deactivated and can no longer be selected. The appliance continues to cool; see Section 010-2.6.
		1	Sabbath mode on	
	Air filter replacement confirmation	n 0	Press the **Super** touchpad. “n” lights up in the display. The air filter symbol goes out.	This icon will be displayed only when the air filter needs to be replaced.
☼	Display brightness	1	Minimum display brightness	
		2	Medium display brightness	
		3	Maximum display brightness	
°C °F	Temperature units	°C	Temperature displayed in degrees Celsius	
		°F	Temperature displayed in degrees Fahrenheit	
	Lock	0 (standard)	Lock off	With lock switched on, the lock symbol will be displayed when the appliance is switched on.
		1	Lock on	
	Icemaker settings	0	Icemaker deactivated	
		1	Icemaker activated	
		2[1]	Water intake setting	See Table 010-9.
		3[1]	Icemaker tray cleaning position setting	Press the **OK** touchpad. The icemaker carries out a dispensing cycle and the tray remains in a slanted position.

Table 010-8: Customer Programming Functions

[1] These options will be displayed only if the icemaker has been activated.

Display	Water intake [s]
E1	3.5
E2	4
E3 (standard)	4.5
E4	5
E5	5.5
E6	6
E7	6.5
E8	7

Table 010-9: Water Intake Settings

Quit without saving:
Press the menu touchpad.

4.3 Programming Mode

Initial requirements:
Switch off the machine.

Accessing:

Note:
If the accessing procedure is not completed within 10 s, the appliance reverts to normal operation.

1. Press and hold the **v** touchpad.
2. Press the touchpad once.
3. Release the **v** touchpad.
4. Immediately press and release the **v** touchpad 5 times and on the fifth time hold it pressed until **P** is displayed.

Acknowledgement indicator:
P lights up in the display. The alarm and power plug symbols flash rapidly.

Options:

Note:
Paging: Press the **v** or **v** touchpads as appropriate.
Flashing display: Setting can be selected.
Constantly lit display: Setting has been selected.
Back: Scroll through until "**.. -**" is displayed (e.g., **C-**), then confirm the selection. Other programmable or service functions can then be selected.
OK/Confirm selection: Press the **OK** touchpad.

Programming function		Setting		Notes
n	Demo mode	0	Demo mode deactivated	
		1	Demo mode activated	
A	Resetting standard settings	0	Standard settings set. No setting has been modified.	
		1	Settings have been modified. Reset standard settings.	Press and hold the **OK** touchpad for 3 s. Factory default settings are restored.

Table 010-10: Service Programming Functions

Save and quit:
Press the **OK** touchpad. The selected option is saved.

Press the ⏻ touchpad. The appliance reverts to normal operation.

Quit without saving:

Press the ⏻ touchpad. The appliance reverts to normal operation.

Note:
If temperatures in the appliance have become too warm during the programming or service mode, then when the programming or service mode is quit, a temperature alarm is indicated.

4.4 Service Mode

Initial requirements:
Switch off the machine.

Accessing:

Note:
If the accessing procedure is not completed within 10 s, the appliance reverts to normal operation.

1. Press and hold the **v** touchpad.
2. Press the ⏻ touchpad once.
3. Release the **v** touchpad.
4. Immediately press and release the **v** touchpad 3 times and on the third time hold it pressed until **S** is displayed.

Acknowledgement indicator:
S lights up in the display. The alarm ⚠ and power plug ⏚ symbols flash slowly.

Options:

Technical Information

Note:
Paging: Press the **v** or **v** touchpads as appropriate.
Flashing display: Setting can be selected.
Constantly lit display: Setting has been selected.
Back: Scroll through until "**.. -**" is displayed (e.g., **C-**), then confirm the selection. Other programmable or service functions can then be selected.
OK/Confirm selection: Press the **OK** touchpad.

Function	Submenu	Options	Notes
C	Control electronic ID	The control module ID number is displayed, e.g., ID 97 will be displayed as follows: **_C 00 97**.	
F	Fault memory display, saving and deletion	F- = Back to list of service functions/Save all faults	Press the **OK** touchpad. **F** is displayed.
		F0 = No faults registered	
		F1 = At least one fault registered[1]	Press **OK**. The fault code is displayed, e.g., fault code F116 will be shown as **_F 01 16**. Press the **^** touchpad to page through the list of fault codes. After the last fault, **F1** is displayed.
		F2 = Delete all faults	Press and hold the **OK** touchpad for 2 s. All faults will be deleted.
II	Manual defrost	II 1 = Defrost phase is activated	Defrost heater will switch off automatically when the defrost parameters are met.

Function		Submenu	Options	Notes
U	Component test	U' = Freezer components	'0 = All components switched off (1.4W)	Press the ∧ or ∨ touchpad until the desired component is displayed. Component test will automatically start after 2 s.
			'1 = Compressor on (low speed)[2]	
			'2 = Compressor on (high speed)[2], stop valve closed	
			'3 = Fan on (low speed, 2.3W)	
			'4 = Defrost heater on (249W)	
			'5 = Interior lighting on (3.8W)	
			'] = Fan on (high speed, 4.8W)	
U	Component test	U = Icemaker components	2 flashes alternately with -0 = All components switched off (1.2W)	Use ∧ and ∨ to scroll through the component list. Press **OK** to start test.
			2 flashes alternately with -1 = The ice tray makes an emptying motion and goes back to the home position (1.7W). The water inlet valve is activated for **3 s** (13.5W).	
			3 flashes alternately with -0 = All components switched off (1.2W)	
			3 flashes alternately with -1 = The ice tray makes an emptying motion and goes back to the home position (1.7W). The water inlet valve is activated for **25 s** (13.5W).	
		U = Inlet valve on for 10 s	1. Scroll through until 2 flashes alternately with -0. All components are switched off (1.2W). 2. Press the **OK** touchpad. 2 flashes alternately with -1. The inlet valve is activated for 10 s (13.5W).	Press **OK** to stop test.

Function		Submenu	Options	Notes
L	Sensors	L'	'3 = Freezer air NTC	Current temperature at selected NTC is displayed.
			'4 = Freezer evaporator NTC	
			'7 = Ambient-air NTC (on power electronic)	
			'A = Freezer door reed switch	o P = Door open c L = Door closed
		L	1 = Icemaker NTC	Current temperature at icemaker NTC is displayed.
			A = Ice bin reed switch	o P = Ice bin not installed; reed switch open c L = Ice bin installed; reed switch closed
E	Operating hours	E 1	The operating hours are displayed, e.g., 50 h will be displayed as **_E 00 50**.	
J	Display elements	J 1 = Display test	Press the **OK** touchpad. All symbols are backlit. All display segments are switched on. If everything is in order, a beep sounds and **J-** is displayed.	The appliance will revert to normal operating mode if this test was successful.
		J 2 = Touchpad and door switch test	1. Press the **OK** touchpad. Touchpads that can be backlit are backlit one after the other. 2. Press each backlit touchpad. Each press should be confirmed with a beep. For touchpads that cannot be backlit, a symbol is shown in the display; see Table 010-12. 3. **d1** is displayed. Open and close the freezer door. This should be confirmed with a beep.	

Table 010-11: Service Functions

[1] A maximum of 10 faults can be saved.
[2] The compressor may switch on after a delay.

Display	Press the ... touchpad.
–⊏	⏻
	v
_ _	OK
	^
	▸≡ or (the two touchpads occupy one field on the electronic)

Table 010-12: Touchpad Test Symbols

Quit:

Press the ⏻ touchpad. The appliance reverts to normal operation.

Note:
If temperatures in the appliance have become too warm during the programming or service mode, then when the programming or service mode is quit, a temperature alarm is indicated.
Quitting of the service mode is confirmed automatically by a beep.

4.5 Control Electronic Removal

Note:
The control electronic and its housing form one assembly and cannot be replaced separately.

1. Disconnect the appliance from power.
2. Unsnap the left and right trim pieces using a lid opener or similar (Figure 010-7).

Figure 010-7: Control Electronic Trim Pieces

3. Unsnap the right side of the control electronic's housing using a lid opener or similar (Figure 010-8, Item A), then remove the housing (Figure 010-8, Item B). Repeat for the left side.
4. Release the control electronic.

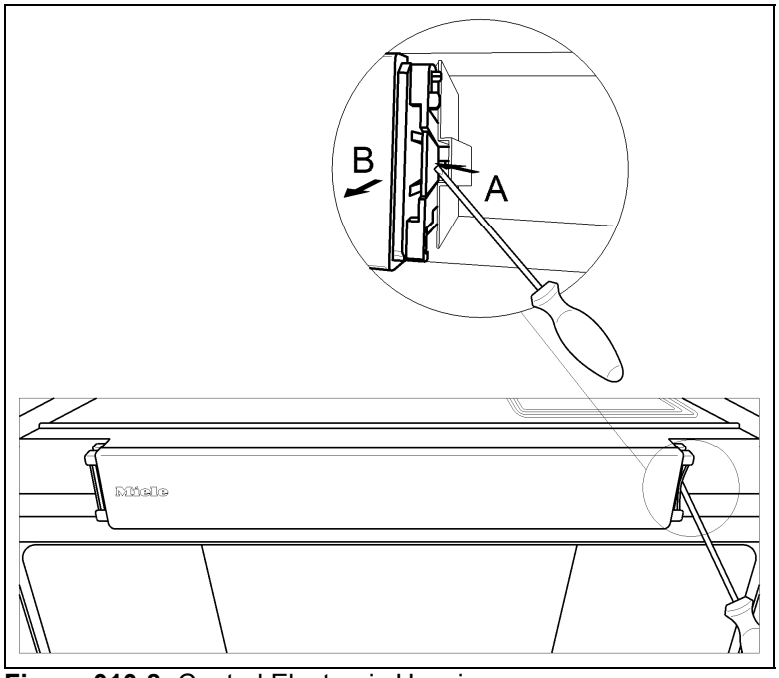


Figure 010-8: Control Electronic Housing

5. Disconnect the four-pin wiring harness (Figure 010-9, Item 1) from the control electronic.
6. Unsnap the control electronic.

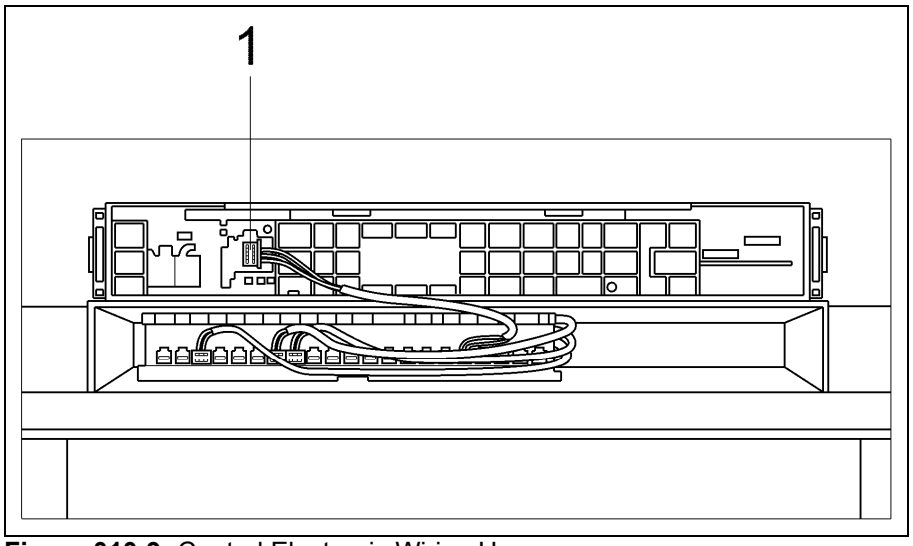


Figure 010-9: Control Electronic Wiring Harness

4.6 Power Electronic Removal

1. Disconnect the appliance from power.
2. Remove the control electronic; see Section 010-4.5.
3. Unclip and remove the power electronic housing, Figure 010-10, Items 1

and B.

4. Disconnect the power electronic connections.

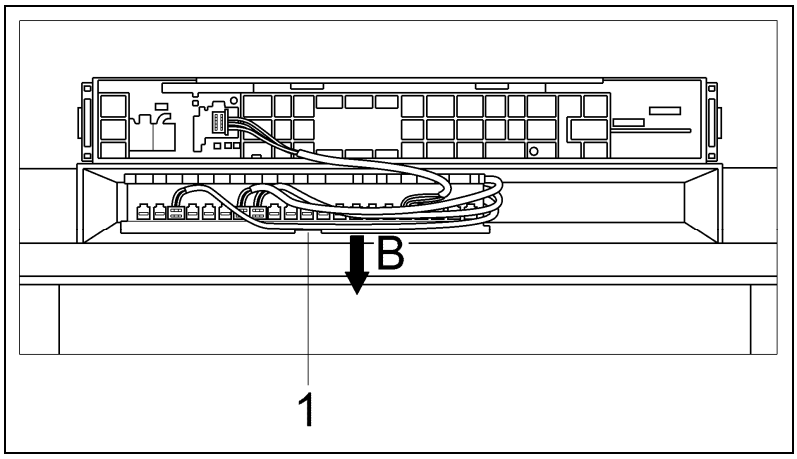


Figure 010-10: Power Electronic Connections

5. Unclip the cover; see Figure 010-11, Items 1 and 2.

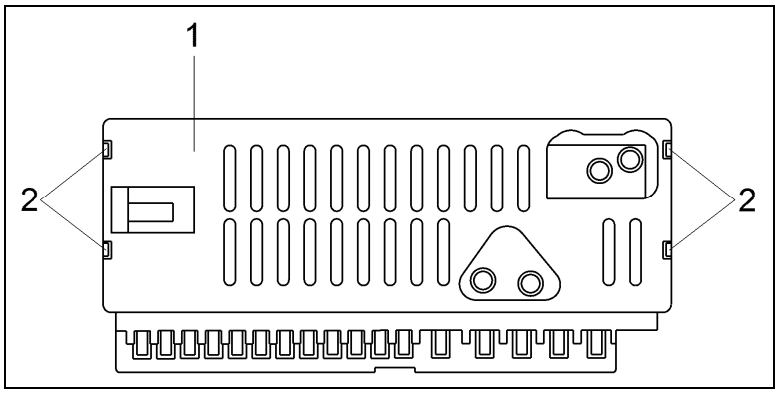


Figure 010-11: Power Electronic Cover

6. Unclip the power electronic; see Figure 010-12, Items 1 and 2.

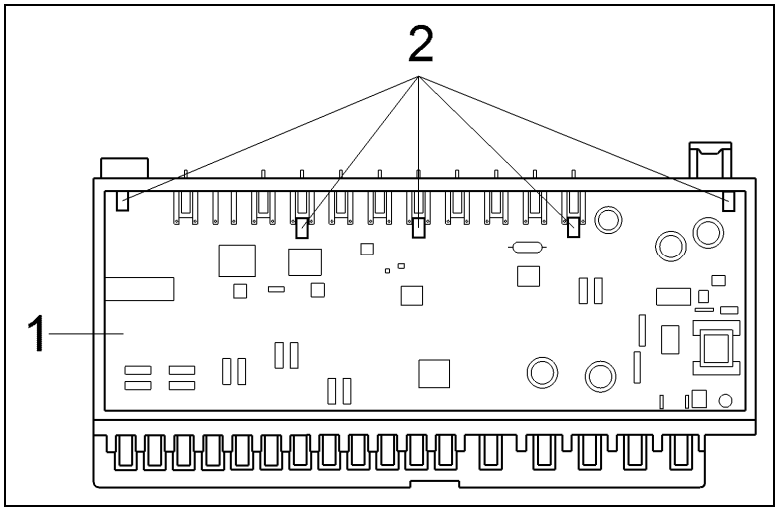


Figure 010-12: Power Electronic Retainers

4.7 Strain Relief Cover Removal

1. Disconnect the appliance from power.
2. Unclip the strain relief cover at the front; see Figure 010-13, Item A.
3. Tilt the cover up and remove it; see Figure 010-13, Item B.

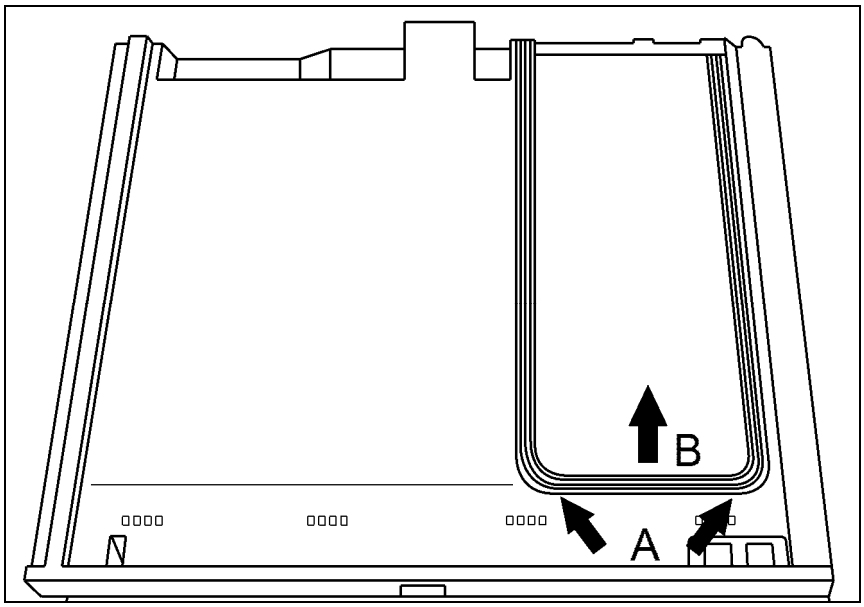


Figure 010-13: Strain Relief Cover

Note:
Live cables are laid in a separate compartment; see Figure 010-14, Item 1.

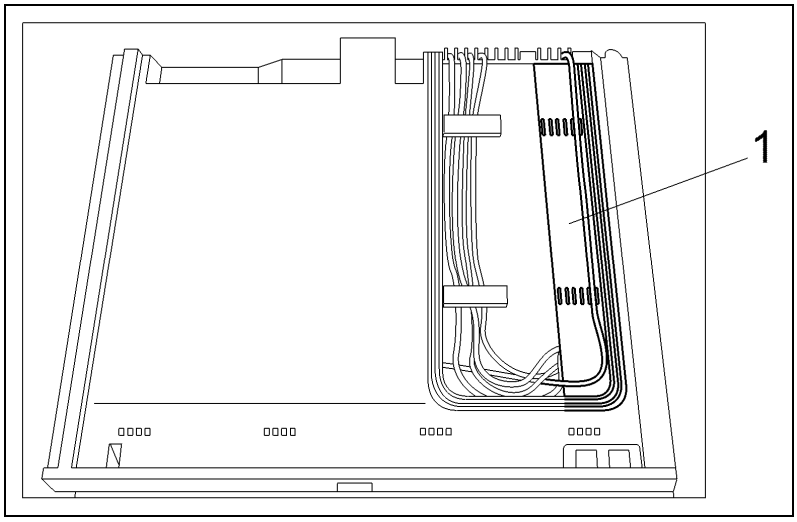


Figure 010-14: Live Cables under Strain Relief Cover

4.8 Evaporator Assembly Removal

1. Disconnect the appliance from power.
2. Remove the top drawers.
3. Lever off the covers (Figure 010-15, Item 1) by pressing the retainers out of the way with a small flathead screwdriver (Figure 010-15, Item 2).

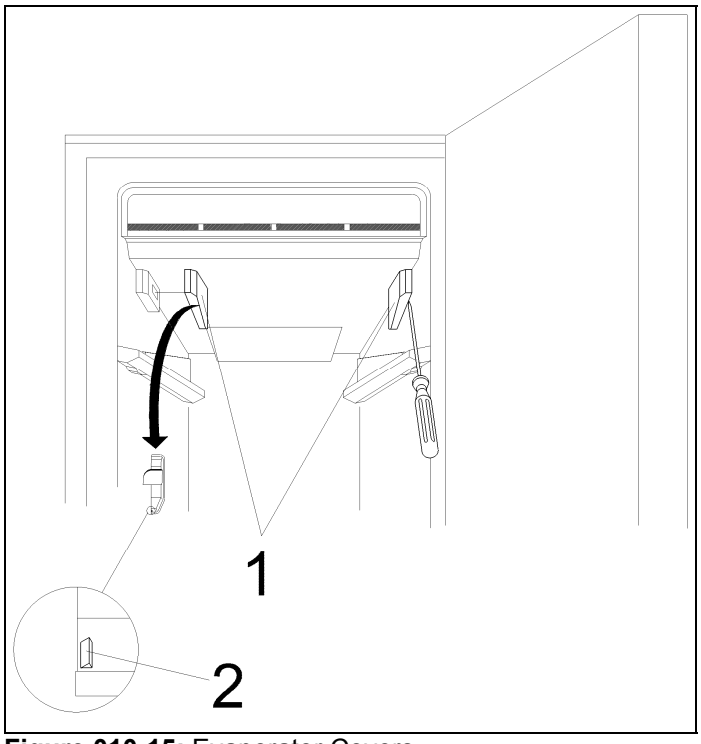


Figure 010-15: Evaporator Covers

4. Carefully tilt the evaporator assembly downward.

5. Remove the pieces of tape securing the polystyrene insulation to the evaporator assembly; see Figure 010-16, Items A and B. The tape is used only for protection during shipping and will not be required during evaporator reinstallation.

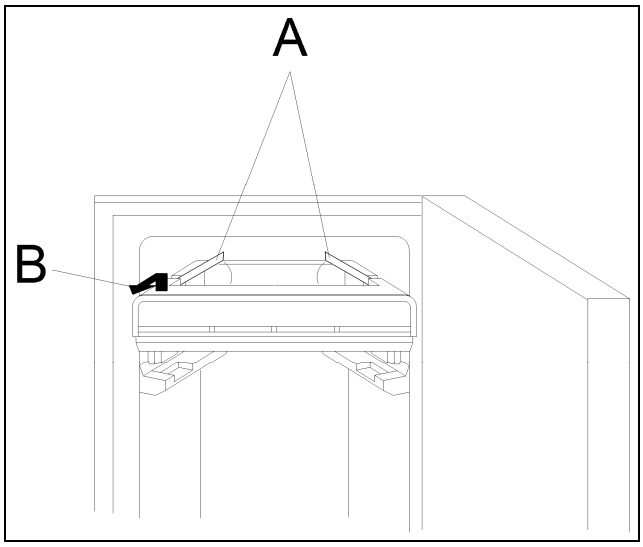


Figure 010-16: Evaporator Insulation and Tape

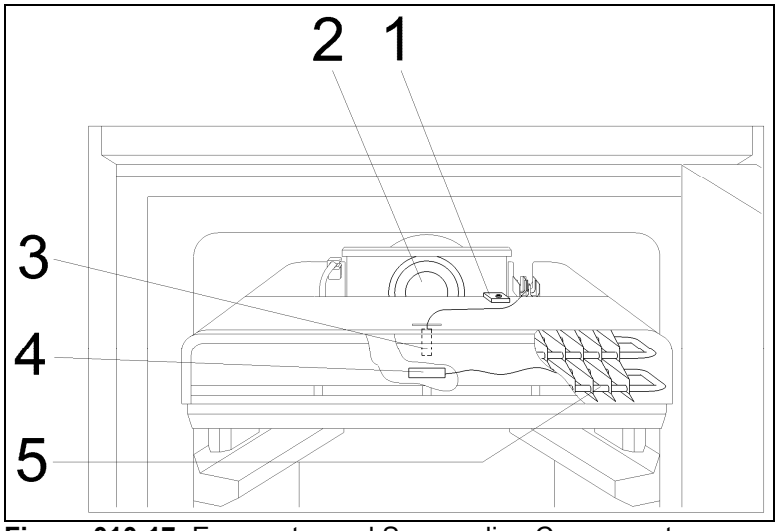


Figure 010-17: Evaporator and Surrounding Components

1 Temperature limiter/fuse
2 Fan
3 Evaporator NTC
4 Air NTC
5 Defrost heater

4.9 Evaporator NTC Replacement

1. Remove the evaporator assembly; see Section 010-4.8.
2. Remove the NTC from the evaporator, Figure 010-17, Item 3.

3. Install the NTC conversion kit (see the parts CD for the current part number).

4.10 Air NTC Replacement

1. Remove the evaporator assembly; see Section 010-4.8.
2. Remove the polystyrene cover, Figure 010-18, Item 1.
3. Unclip the NTC from the front of the evaporator cover; see Figure 010-18, Item 2.
4. Install the NTC conversion kit (see the parts CD for the current part number).

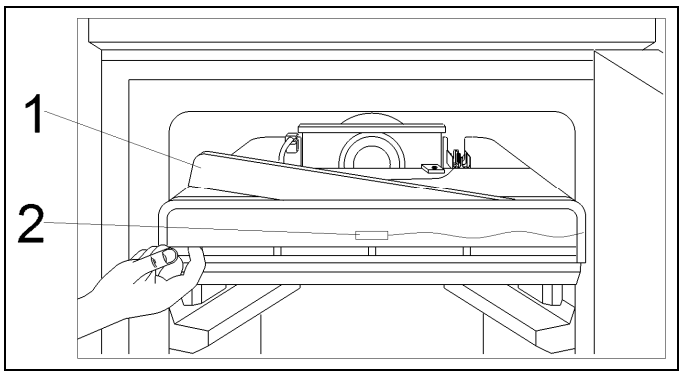


Figure 010-18: Air NTC

4.11 Evaporator Fuse Removal

Note:
The replacement evaporator assembly includes a new fuse, but the fuse can also be replaced separately.

1. Remove the evaporator assembly; see Section 010-4.8.
2. Remove the T10 screw securing the fuse to the evaporator.
3. Remove the fuse from the evaporator.
4. Install the fuse conversion kit.

4.12 Fan Removal

1. Remove the evaporator assembly; see Section 010-4.8.
2. Disconnect the fan connection, Figure 010-19, Item 1.
3. Remove the black polystyrene insulation from the front of the fan assembly.
4. Lift the fan assembly upward out of its holders and tilt it forward; see Figure 010-19, Item 2, Item A.

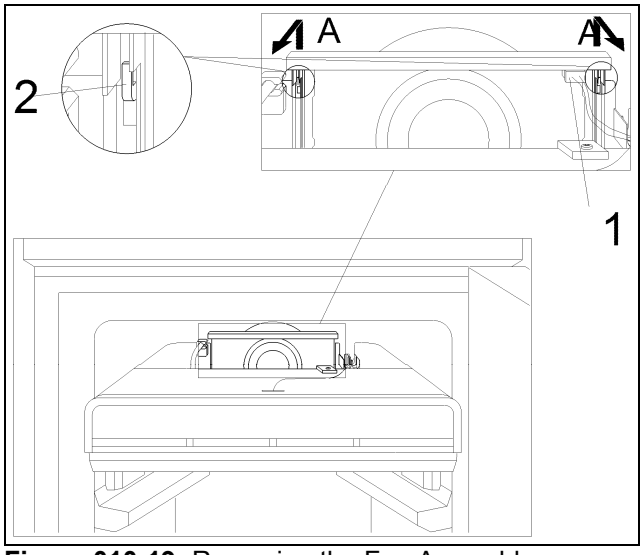


Figure 010-19: Removing the Fan Assembly

5. Remove the rubber seal from the fan; see Figure 010-20, Item 1.
6. Remove the left and right rubber brackets from the fan.
7. Unclip the fan and its wiring harness from the plastic casing.

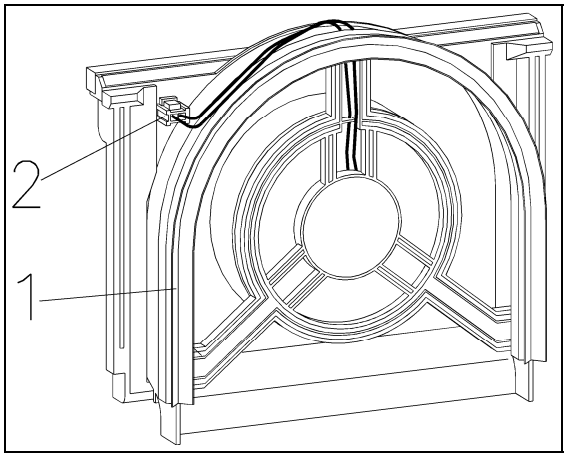


Figure 010-20: Fan Assembly

4.13 Defrost Heater Removal

Note:
The defrost heater is part of the evaporator assembly and cannot be replaced separately.
Replace the evaporator assembly. See Section 010-4.8.

4.14 Freezer Door Reed Switch Removal

1. Disconnect the appliance from power.
2. Open the door.

3. Use a flathead screwdriver to release the retainers securing the sides of the reed switch assembly to the glass shelf. See arrows, Figure 010-21.
4. Remove the reed switch assembly from the glass shelf.
5. Disconnect the wiring harness from the reed switch and release the reed switch from its housing.

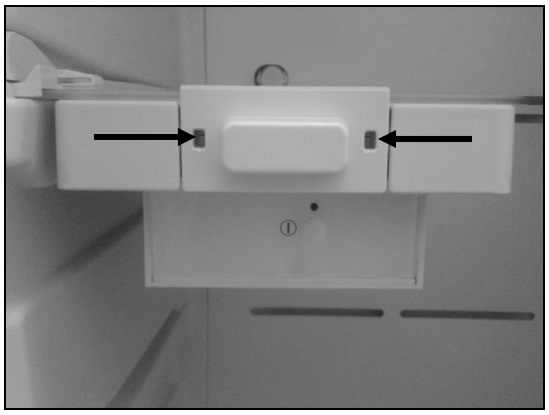


Figure 010-21: Reed Switch

4.15 Icemaker Removal

Danger!
Disconnect the appliance from the power supply because, even when the icemaker is switched off, supply voltage is applied to the connection at Figure 010-22, Item 1.

1. Remove the freezer door reed switch; see Section 010-4.14.
2. Using a small flathead screwdriver, press the retainer in on one side and pull the icemaker assembly slightly forward, then repeat for the other side. See Figure 010-22.
3. Release the icemaker partially from its housing. The inlet channel heater's wiring harness will prevent the icemaker from being removed completely.
4. Remove the inlet channel heater; see Section 010-4.19.
5. Disconnect all wiring harnesses from the icemaker; see Figure 010-22, Item 1.

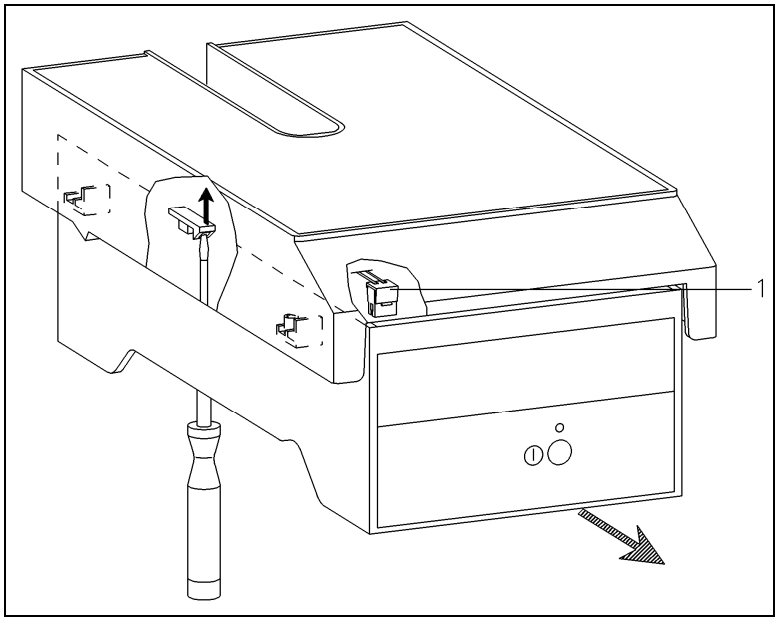


Figure 010-22: Icemaker Removal (Similar Illustration)

4.16 Icemaker Electronic Removal

Danger!
Disconnect the appliance from the power supply because, even when the icemaker is switched off, supply voltage is applied to the connection at Figure 010-22, Item 1.

1. Remove the icemaker; see Section 010-4.15.
2. Carefully lever off the icemaker switch fascia with a knife or lid opener; see Figure 010-23.

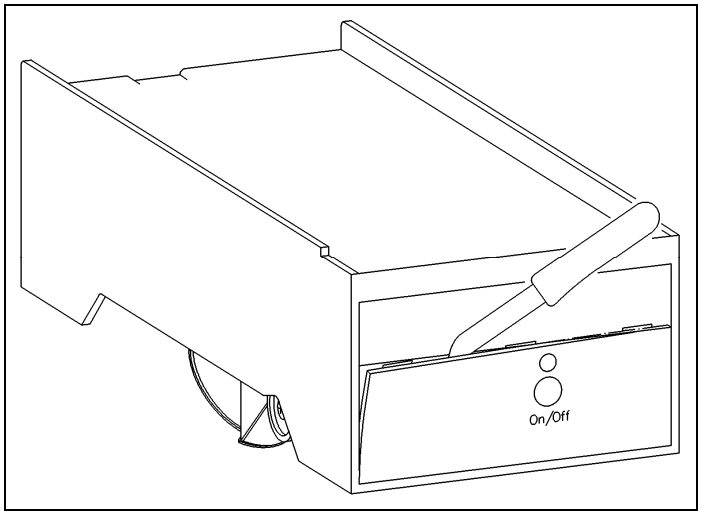


Figure 010-23: Icemaker Switch Fascia Removal

3. Remove the retaining screw (T10), Figure 010-24.

4. Carefully lever off the inner fascia panel, Figure 010-24.
5. Remove the reed switch from the inner fascia panel, Figure 010-24.

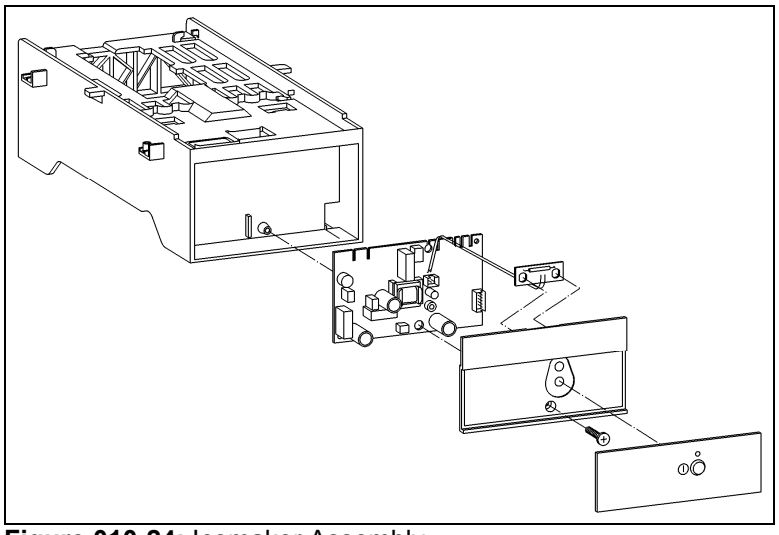
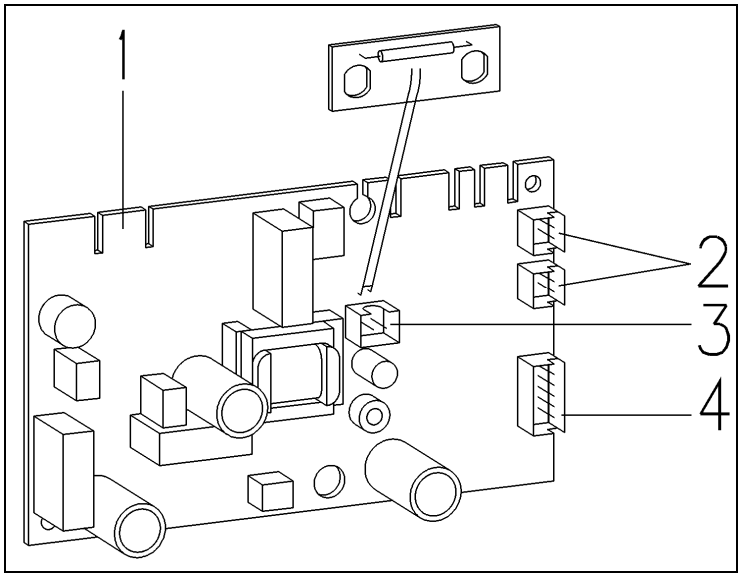


Figure 010-24: Icemaker Assembly

6. Disconnect the four wiring harnesses from the icemaker electronic (Figure 010-25, Items 1 through 4).
7. Unclip the electronic and remove it from the icemaker assembly.



1 Water valve
2 Heaters (rod and inlet; may vary by model)
3 Icemaker NTC
4 Icemaker motor

Figure 010-25: Icemaker Electronic Connections

4.17 Icemaker Motor Removal

Danger!
Disconnect the appliance from the power supply because, even when the icemaker is switched off, supply voltage is applied to the connection at Figure 010-22, Item 1.

1. Remove the icemaker; see Section 010-4.15.
2. Carefully lever off the switch fascia with a knife; refer to Figure 010-23.
3. Remove the retaining screw (T10); see Figure 010-24.
4. Carefully lever off the fascia panel; see Figure 010-24.
5. Remove the reed switch; see Figure 010-24.
6. Disconnect the motor from the icemaker electronic; see Figure 010-25, Item 4.
7. Press the retainer down and pull the motor out of its holder, Figure 010-26.
8. Remove the motor and ice tray.

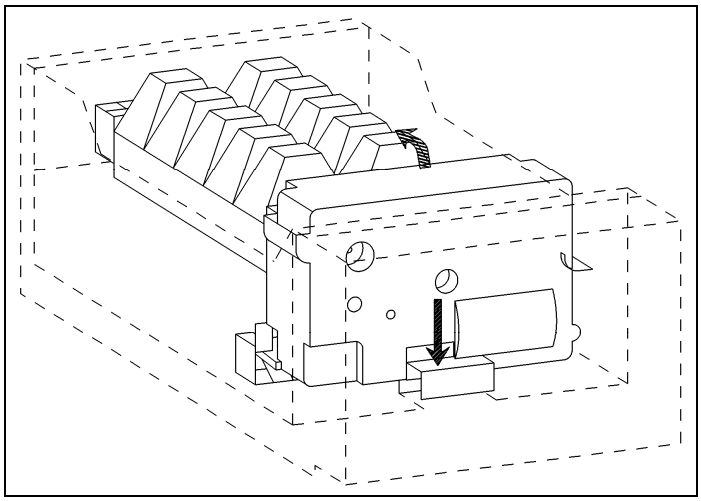


Figure 010-26: Icemaker Motor Removal

4.18 Icemaker NTC Removal

Danger!
Disconnect the appliance from the power supply because, even when the icemaker is switched off, supply voltage is applied to the connection at Figure 010-22, Item 1.

1. Remove the icemaker; see Section 010-4.15.
2. Carefully lever off the switch fascia with a knife; refer to Figure 010-23.
3. Remove the retaining screw (T10); see Figure 010-24.
4. Carefully lever off the fascia panel; see Figure 010-24.
5. Remove the reed switch; see Figure 010-24.
6. Disconnect the NTC from the icemaker electronic; see Figure 010-25, Item 3.

7. Remove the spring clip, Figure 010-27.
8. Remove the holder, Figure 010-27.
9. Remove the polystyrene piece, Figure 010-27.
10. Remove the NTC, Figure 010-27.

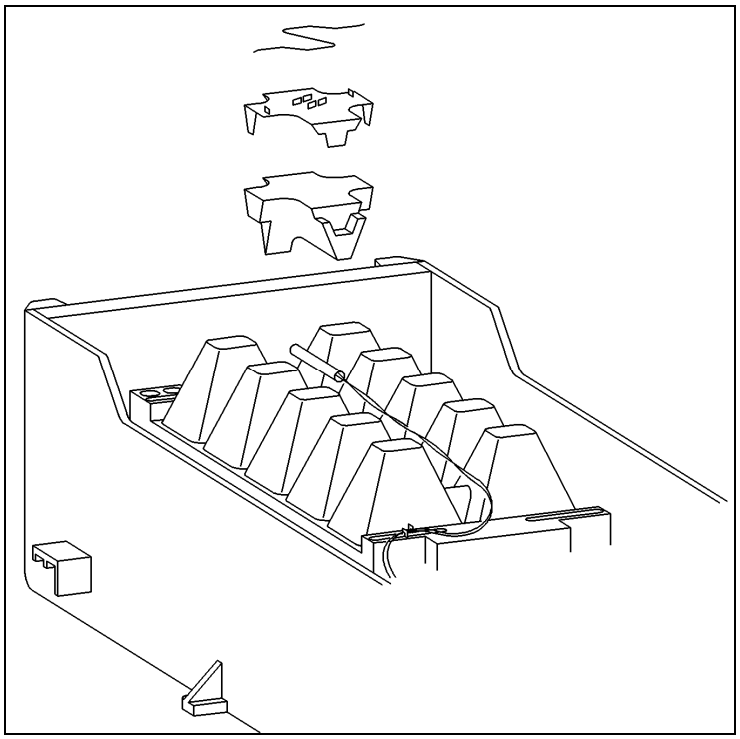


Figure 010-27: Icemaker NTC Removal

4.19 Inlet Channel Heater Removal

Danger!
Disconnect the appliance from the power supply because, even when the icemaker is switched off, supply voltage is applied to the connection at Figure 010-22, Item 1.

1. Remove the icemaker; see Section 010-4.15.
2. Carefully lever off the switch fascia with a knife; refer to Figure 010-23.
3. Remove the retaining screw; see Figure 010-24.
4. Carefully lever off the fascia panel; see Figure 010-24.
5. Remove the reed switch; see Figure 010-24.
6. Disconnect the heater from the icemaker electronic; see Figure 010-25, Item 2.
7. Remove the shelf supporting the icemaker housing (pop out the two side holders using a small flathead screwdriver and slide the shelf out). See arrows, Figure 010-28.

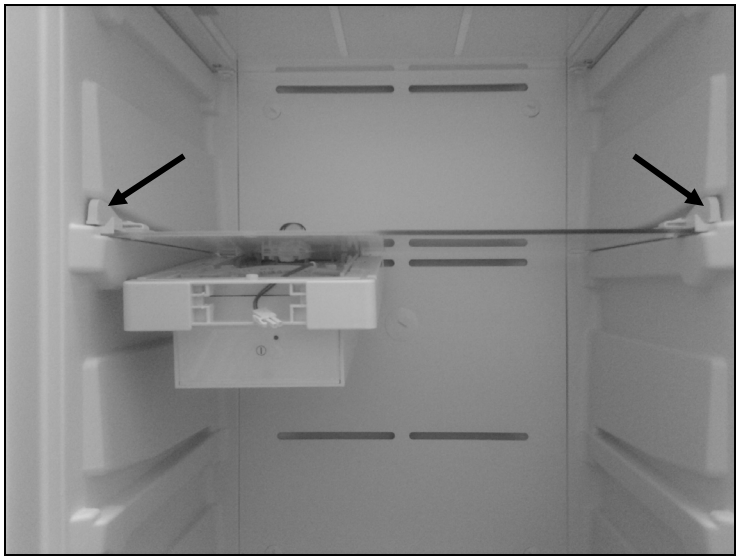


Figure 010-28: Icemaker Shelf

8. Insert a lid opener between the inlet channel heater and the inlet channel, and press the heater away from the channel to release the retainers and remove the heater. (This will also free the icemaker from its housing.) See Figure 010-29.
9. Feed the heater wiring harness out through the icemaker housing and separate the heater from the icemaker assembly.

Figure 010-29: Inlet Channel Heater Removal

4.20 Inlet Valves and Non-Return Valve Replacement

Note:
The inlet valves are supplied as one assembly complete with housing and hose connection to the icemaker.

1. Uninstall the appliance and disconnect it from power.
2. Unclip the cover using a flathead screwdriver; see Figure 010-30, Item 1.

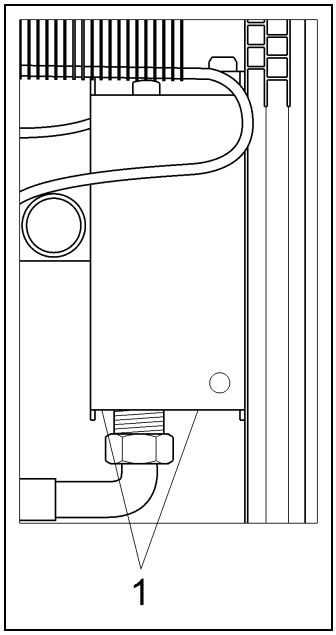


Figure 010-30: Inlet Valve Cover

3. Release the inlet valve assembly from the rear of the machine, Figure 010-31, Item 1.

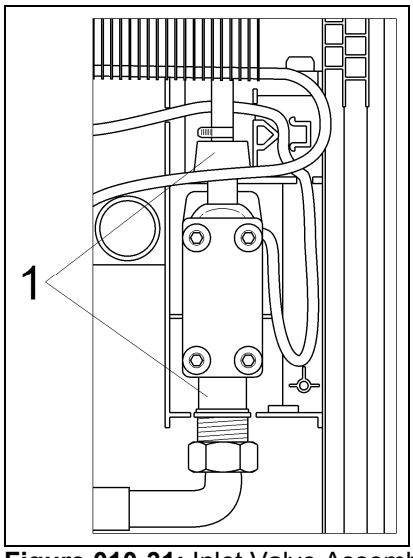


Figure 010-31: Inlet Valve Assembly

4. Unscrew the hose connection, Figure 010-32, Item 1.
5. Unscrew the hose retaining nut, Figure 010-32, Item 2.
6. Disconnect the hose and seal.

Warning!
A new seal must be installed.

7. Disconnect the inlet valve connections, Figure 010-32, Item 3.

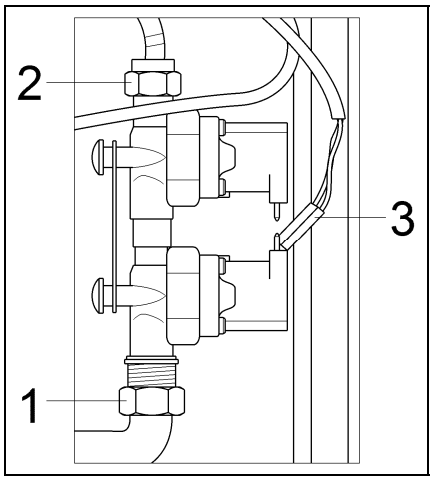


Figure 010-32: Inlet Valve Connections

8. Remove the six 7mm bolts securing the condenser to the rear panel. Take off the condenser.

Warning!
Do not lay the condenser flat on the ground but support it in an upright position. Ensure that the copper tubing is not kinked.

9. Remove the hose from the rear panel, Figure 010-33, Item A.
10. Remove the inlet valves and water hose.

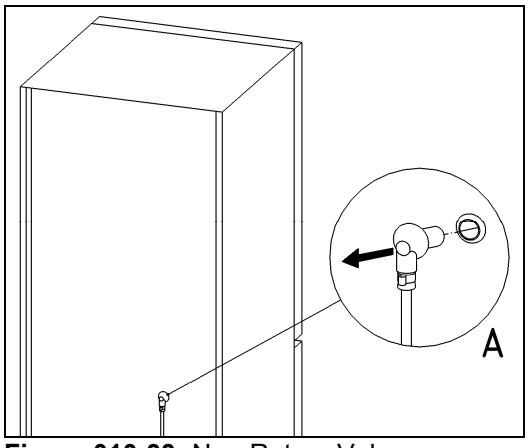


Figure 010-33: Non-Return Valve

11. For installation, follow the above instructions in reverse order.

Warning!
Before connecting the water supply hose, ensure that the filter is installed in the inlet valve intake. The valves must not be operated without the filter in place.

4.21 Inverter Removal

1. Uninstall the appliance and disconnect it from power.
2. Remove the two T15 screws securing the inverter cover (circles, Figure 010-34). Take off the cover.

Figure 010-34: Inverter Cover

3. Remove the Phillips screw securing the inverter to the compressor. See Figure 010-35, Item 1.
4. Remove the ground screw (T20) and green ground wire from the grounding plate on the appliance rear panel. See Figure 010-35, Item 2.

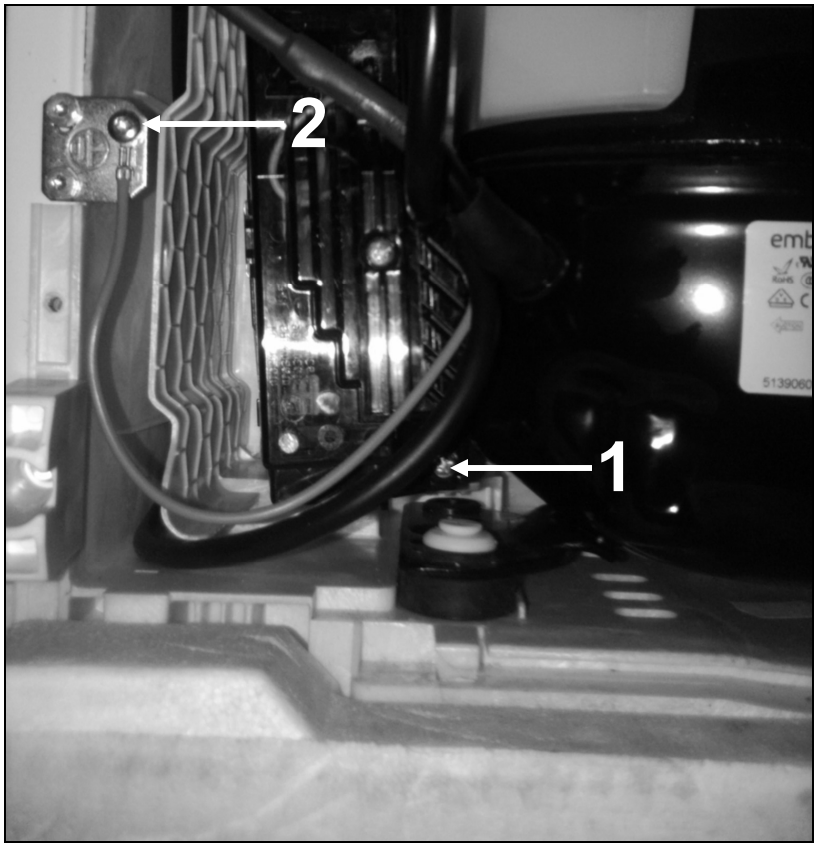


Figure 010-35: Inverter Screws

5. Slide the inverter out of the niche, moving copper tubing out of the way as necessary.
6. Disconnect the inverter from the compressor.

4.22 Compressor Removal

1. Uninstall the appliance and disconnect it from power.
2. Remove the inverter. See Section 010-4.21.
3. Using a flathead screwdriver, remove the two plastic pins securing the compressor to the base of the appliance. See Figure 010-36, Item 1.
4. Using the same flathead screwdriver, remove the two plastic bushings securing the compressor to the base of the appliance. See Figure 010-36, Item 2.
5. Slide the compressor out of the niche, moving copper tubing aside as necessary.
6. Remove the evaporator tray from the compressor. See Figure 010-36, Item 3.

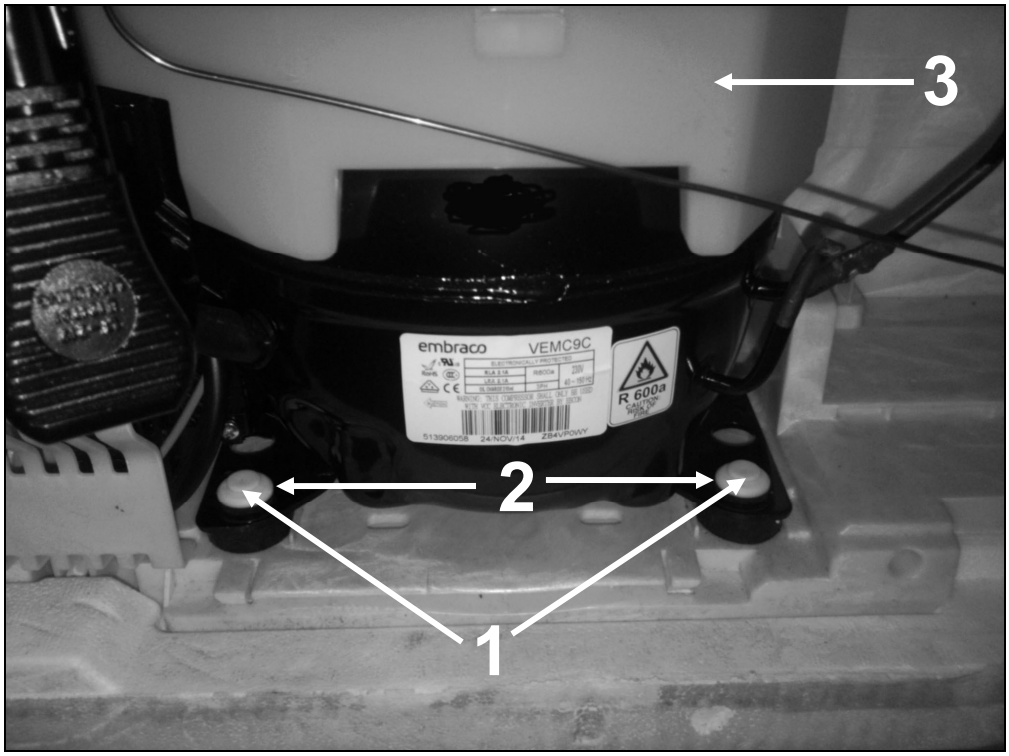


Figure 010-36: Compressor Removal

4.23 Manually Defrosting the Evaporator

1. Disconnect the appliance from power and remove all food items.
2. Remove the evaporator assembly (see Section 010-4.8).
3. Place towels in the bottom of the appliance to absorb the excess water.
4. Using a steam gun, carefully defrost the evaporator. Avoid leaving the steam gun in one spot for too long as it could damage the appliance.
5. When the evaporator is completely defrosted, diagnose why the evaporator froze up.
6. Reinstall the evaporator assembly.

Note:
Do not use any sharp or metallic instruments (e.g., screwdrivers or knives) to remove frost from the evaporator. Do not use a heat gun or hair dryer to defrost the evaporator, as excessive heat could damage the supports and the temperature limiters/sensors in the evaporator.