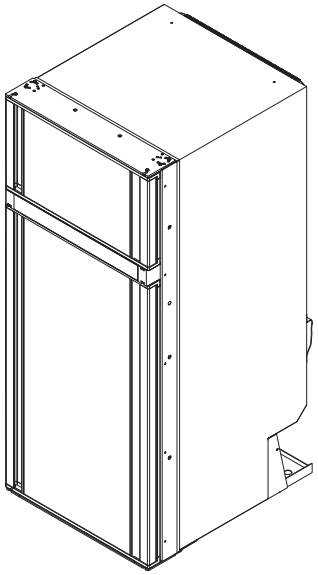
DOMETIC

REFRIGERATION

10-SERIES



RCD10.5XEP

EN **Compressor Refrigerator**

Service Manual.....3

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1 Explanation of symbols

A signal word will identify safety messages and property damage messages, and also will indicate the degree or level of hazard seriousness.

WARNING!
› Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION!
› Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

NOTICE!
› Indicates a situation that, if not avoided, could result in property damage.

NOTE Supplementary information for operating the product.

2 Target group

The instructions in this manual are intended for OEM installers and technicians at authorized service centers who are familiar with the applicable guidelines and safety precautions, and who have demonstrated skills and knowledge of best practices in refrigeration technology, as well as experience in the proper use of the tools and materials required for the maintenance and repair of refrigeration systems.

3 Related documents

Installation and operating manual for RCD10.5XEP

Find the corresponding installation and operating manual online.

qr.dometic.com/bgyCYI

4 Safety instructions

4.1 Supplemental directives

To reduce the risk of accidents and injuries, observe the following directives before proceeding to install or operate this appliance:
- Read and follow all safety information and instructions.
- Read and understand these instructions before installing, operating, or performing maintenance on this product.

The installation must comply with all applicable local or national codes, including the latest edition of the following standards:

USA
- ANSI/NFPA70, National Electrical Code (NEC)
- American Boat and Yacht Council (ABYC) E-11 AC and DC Electrical Systems on Boats
- ANSI/NFPA1192, Recreational Vehicles Code

Canada
- CSA C22.1 Parts I and II, Canadian Electrical Code
- CSA Z240 RV Series, Recreational Vehicles

4.2 General safety instructions

WARNING! Electrocution hazard
› This device may only be repaired by qualified personnel. Inadequate repairs can lead to considerable hazards.
› Perform maintenance and repair work on the device only in accordance with the instructions in the service documentation.
› Disconnect the device from the power supply before performing any electrical maintenance or installation work.
› Do not touch exposed cables with your bare hands.

WARNING! Fire hazard

› For devices with flammable refrigerant: The refrigeration circuit contains a small quantity of an environmentally friendly but flammable refrigerant. The refrigerant does not damage the ozone layer and does not increase the greenhouse effect. Any leaking refrigerant may ignite.
› The refrigerant in the refrigerant circuit is highly flammable and in the event of a leakage combustible gases could build up if the device is in a small room. In the event of any damage to the refrigerant circuit:
  • Keep naked flames and potential ignition sources away from the device.
  • Ventilate the room well.
  • Switch off the device.
› Keep the installation recess for the device free of any electrical components and light sources which during normal or abnormal operation produce sparks or arcs (i.e., relays or fuse boxes).

CAUTION! Risk of injury/Health hazard

› Do not put your fingers into the hinge.
› The cooling system at the back of the device becomes very hot during operation. If the device is equipped with ventilation grilles, protect yourself from contact with hot parts when removing the ventilation grilles.
› To avoid a hazard due to instability of the device, it must be fixed in accordance with the installation instructions.
› Do not open or damage the refrigerant circuit under any circumstances.
› Do not use electrical devices inside the device unless they are recommended by the manufacturer for that purpose.
› Keep ventilation openings, on the device and in its enclosure or in the built-in structure, clear of obstruction.

NOTICE! Damage hazard

› Use only Dometic replacement parts and components that are specifically approved for use with the appliance.
› During transport, hold the refrigerator only by the housing. Never hold the refrigerator by the compressor unit, cooling fins, door, or control panel.
› Ensure that other objects **cannot** cause a short circuit at the contacts of the device.
› Do not reverse the polarity.
› Ensure that the negative and positive poles never come into contact.
› Do **not** lay the cables so that they are loose or heavily kinked. Lay the cables so that they cannot be damaged by doors or hoods.
› Use ductwork or cable ducts if it is necessary to lay cables through metal panels or other panels with sharp edges.

NOTE Also observe the safety instructions and stipulations issued by the vehicle manufacturer.

5 General information

5.1 Intended use

The refrigerator is intended for:

- Installation in recreational vehicles (motor homes, caravans, boats and similar)
- Cooling and storing food
- Storing pre-frozen food

The refrigerator is **not** suitable for:

- Storing medications
- Storing corrosive substances or substances that contain solvents
- Quick-freezing food

The refrigerator is intended for installation in a piece of cabinetry or an installation niche. Once it is installed, only the front of the refrigerator may be accessible.

This product is only suitable for the intended purpose and application in accordance with these instructions.

This manual provides information that is necessary for proper installation and/or operation of the product. Poor installation and/or improper operation or maintenance will result in unsatisfactory performance and a possible failure.

The manufacturer accepts no liability for any injury or damage to the product resulting from:

- Incorrect installation, assembly or connection, including excess voltage
- Incorrect maintenance or use of spare parts other than original spare parts provided by the manufacturer
- Alterations to the product without express permission from the manufacturer
- Use for purposes other than those described in this manual

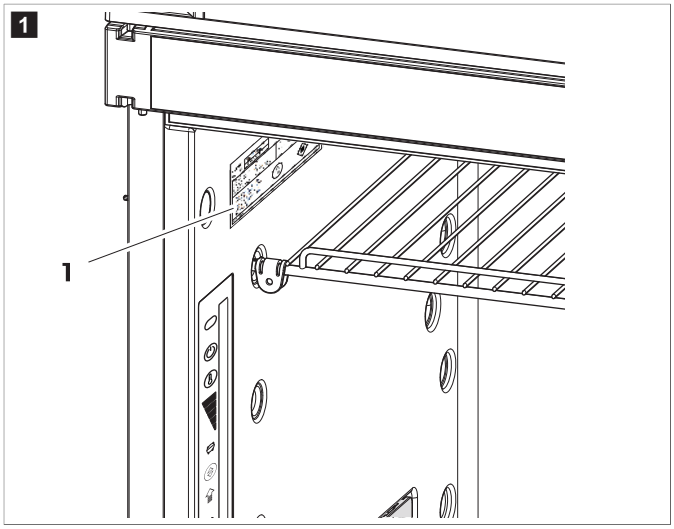
Dometic reserves the right to change product appearance and product specifications.

5.2 Technical description

The refrigerator is a compressor refrigerator and is designed for operation:

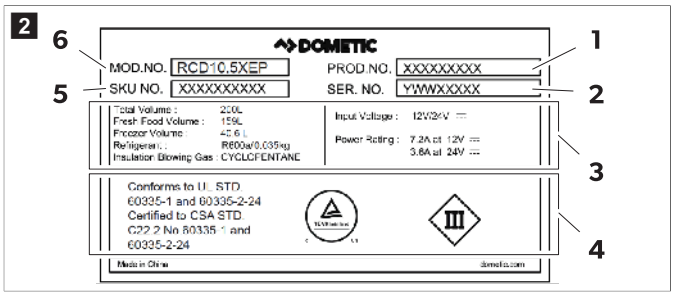
- On a 12 V or 24 V DC power supply.

5.3 Model identification



The rating label (**1**) is located in the upper left corner of the refrigerator compartment, above the Thermostat Assembly.

The rating label indicates basic information about the device, such as the model number, product number, and serial number.

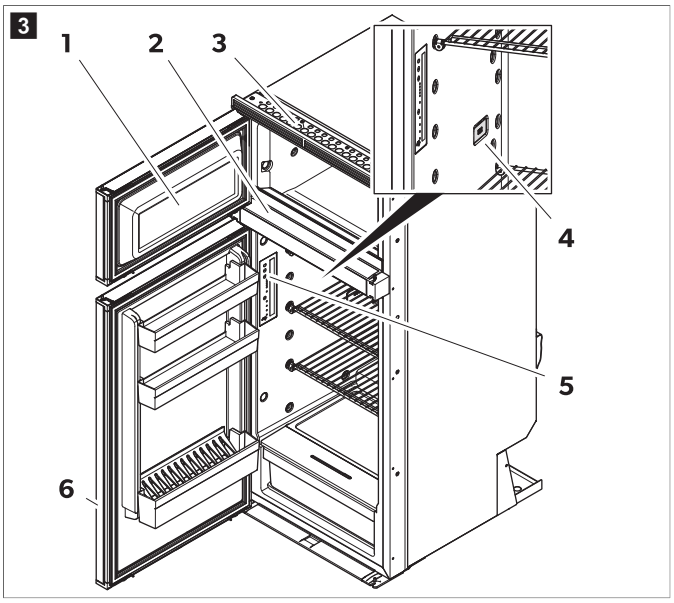


No.	Designation	No.	Designation
1	Product number	**4**	Certification
2	Serial number	**5**	Reference number
3	Technical data	**6**	Model number

5.4 Parts identification

Front view

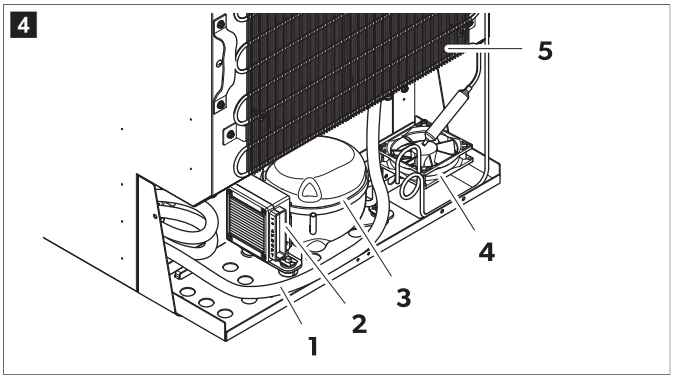
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No.	Designation	No.	Designation
1	Freezer door	**4**	NTC sensor
2	Center bar	**5**	Thermostat assembly
3	Ventilation grille	**6**	Refrigerator door

Rear view

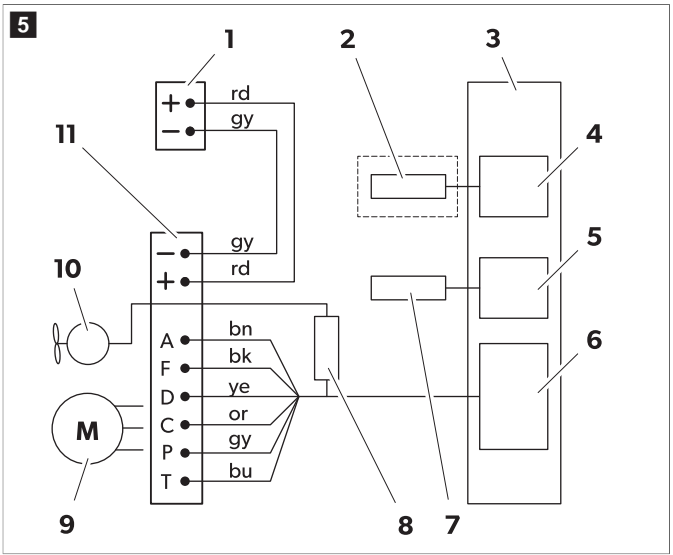
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No.	Designation	No.	Designation
1	Drain hose	**4**	Condenser fan
2	Control module	**5**	Condenser
3	Compressor		

5.5 Wiring diagram

5



No.	Designation	No.	Designation
1	DC Connector	**7**	Air sensor
2	Frame heater (optional)	**8**	Connector
3	HMI	**9**	Compressor
4	CN3-Red-2P	**10**	Condenser fan
5	CN1-White-2P	**11**	Controller unit
6	CN4-White-8P		

Code	Definition	Code	Definition
bk	black	**or**	orange
bn	brown	**rd**	red
bu	blue	**ye**	yellow
gy	grey		

5.6 General terminology

Concept	Definition
Airing Catch	Selector wheel on the refrigerator handle assembly that can be rotated to normal and door airing position.
Capillary Tube	A thin tube in the refrigeration circuit that meters the flow of refrigerant from the high-pressure side to the low-pressure side. It creates a pressure drop so the refrigerant expands and cools before it enters the evaporator.
Capillary Tube Filter	A small filter installed in the refrigerant circuit before the capillary tube that traps moisture and particles. It helps prevent the capillary tube from clogging and protects the refrigerant circuit from damage.
Compressor	A motor-driven pump that compresses the refrigerant and circulates it through the refrigerant circuit. By increasing the refrigerant pressure, heat is dissipated at the condenser and cooling occurs in the evaporator.

Concept	Definition
Condenser	A heat exchanger on the high-pressure side of the refrigerant circuit that removes heat from the incoming refrigerant after it has left the compressor. As the refrigerant cools in the condenser, it changes from a gas to a liquid.
Condenser Fan	A fan that provides air circulation, thereby ensuring proper operation of the condenser.
Control Module	Electronic unit that monitors and controls refrigerator functions (reads sensor values, executes the control logic, switches the compressor and fan, and performs protective functions).
Evaporator	A heat exchanger on the low-pressure side of the refrigerant circuit that absorbs heat from the refrigerator interior to warm the refrigerant. As the refrigerant flows through the evaporator, it changes from a liquid to a gas.
Load Dump Board	An electronic circuit board that protects the refrigerator control electronics from voltage spikes ("load dump") in the vehicle power supply. It reduces the risk of damage and helps ensure reliable operation.
Negative Temperature Coefficient (NTC) Sensor	A temperature sensor that measures the refrigerator temperature and sends the value to the control module. Its electrical resistance decreases as the temperature increases, which activates the refrigerant circuit to maintain the set temperature.
Printed Circuit Board (PCB)	A board on which conductive pathways are etched or "printed", that mechanically supports and electrically connects electronic components.
Thermostat Assembly	A set of parts that measures the refrigerator temperature and controls cooling to maintain the selected setpoint.

5.7 Tools and materials

Dometic recommends using the following tools and materials when performing maintenance on the refrigerator:

Multimeter	Jumper Wire with Battery clamp, 18-Gauge
Needle-nose pliers	Control Module (Secop)
#1 and #2 Phillips-Head Screwdrivers	Current clamp
Flat-head screwdriver or similar prying tool	

5.8 Replacement Parts

For up-to-date information on replacement parts, visit www.dometic.com.

Description	Ref. no.
Control module	4472010166
Refrigerator door	4450027715
Freezer door	4450027716
Refrigerator door handle	4472010152
Freezer door handle	4472010144
Refrigerator door panel	4472010153
Freezer door panel	4472010147
Decorative strip refrigerator door (2x)	4472010151
Decorative strip freezer door (2x)	4472010146
Refrigerator door gasket	4472010150
Freezer door gasket	4472010143
Latch mechanism	4472010145
Ventilation grille	4472010161
Top hinge	4472010145
Center control box and Middle hinge	4472010156
Lower hinge	4472010154
Decorative trim	4472010158
Condenser fan	4472010167
Thermostat assembly	4472010162
NTC sensor	4472010163
Top door shelf	4472010148
Bottom door shelf	4472010149
Refrigerator shelf	4472010159
Freezer shelf	4472010157
Crisper	4472010160
Crisper lid	4472010155

6 Identifying the problem

WARNING! Electrocution hazard

› Before performing any mechanical or electrical inspection, disconnect the device from the power supply.

6.1 Common issues

This section describes the most common issues with refrigerators and helps to identify possible causes.

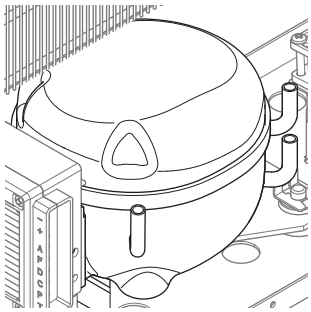
Problem	Possible cause	Suggested remedy
The refrigerator will not start.	The vehicle fuse has blown.	Replace the vehicle fuse. (Refer to the operating manual of the vehicle.)
	The vehicle battery is discharged. The refrigerator switches off automatically if the voltage is insufficient (end-of-discharge voltage: 10.4 V / 22.8 V).	Test the battery and charge it. The refrigerator will start again automatically (cut-in voltage: 11.7 V / 24.2 V).
	The temperature at the compressor is too low (≤ 32 °F).	1. Close/cover all external ventilation grilles completely with insulation material. Ensure that the insulation does not come into contact with the compressor. 2. Remove the insulation as soon as the temperature is > 32 °F to ensure proper ventilation at all times.
	The control module is faulty.	Perform component-based error diagnostics on the control module (see chapter Component-based error diagnostics on page 9).
	Over voltage protection	The refrigerator switches off automatically if the voltage exceeds 31.5 V. The refrigerator will start again once the DC voltage has returned to normal (cut-in voltage: 11.7 V / 24.2 V).
	The thermostat assembly is faulty.	Perform component-based error diagnostics on the thermostat assembly (see chapter Component-based error diagnostics on page 9).
	Insulation faults, breaks or loose connections at the live cables.	Check live cables for insulation faults, breaks or loose connections. Establish a connection. Replace the DC connection cable if necessary (see chapter Replacing the DC connection cable/the power supply terminal on page 21).
The refrigerator tries to start, but it immediately shuts off.	The vehicle battery is discharged. The refrigerator switches off automatically if the voltage is insufficient (end-of-discharge voltage: 10.4 V / 22.8 V)	Test the battery and charge it. The refrigerator will start again automatically (cut-in voltage: 11.7 V / 24.2 V).
	The control module is faulty.	Perform component-based error diagnostics on the control module (see chapter Component-based error diagnostics on page 9).
	The compressor is faulty.	Perform component-based error diagnostics on the compressor (see chapter Component-based error diagnostics on page 9).
	The thermostat assembly is faulty.	Perform component-based error diagnostics on the thermostat assembly (see chapter Component-based error diagnostics on page 9).

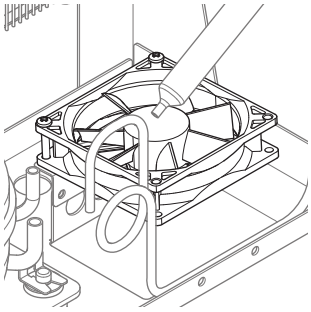
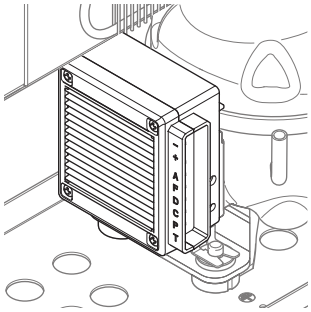
Problem	Possible cause	Suggested remedy
	Insulation faults, breaks or loose connections at the live cables.	Check live cables for insulation faults, breaks or loose connections. Establish a connection. Replace the DC connection cable if necessary (see chapter Replacing the DC connection cable/the power supply terminal on page 21).
The compressor runs, but the refrigerator is not cooling adequately.	The ventilation around the cooling unit is not sufficient.	› Check that the ventilation grille is not covered or obstructed. › Check whether the installation conditions meet the ventilation and airflow requirements. Refer to the installation and operating manual (see chapter Related documents on page 3).
	The ambient temperature is too high.	› Remove the ventilation grille for a while so that warm air can escape again. › Move the refrigerator to another location.
	The condenser is dirty.	Clean the condenser (refer to the Installation and Operating Manual, see chapter Related documents on page 3).
	The condenser fan is faulty.	Perform component-based error diagnostics on the condenser fan (see chapter Component-based error diagnostics on page 9).
	Refrigerant fluid has leaked from the device.	Replace the refrigerator (see chapter Replacing the Refrigerator on page 15).
An excessive amount of frost has formed inside the device.	The thermostat assembly is faulty.	› Perform component-based error diagnostics on the thermostat assembly (see chapter Component-based error diagnostics on page 9). › Defrost the refrigerator (see chapter Defrosting the refrigerator on page 22).
	The NTC sensor is faulty.	› Perform component-based error diagnostics on the NTC sensor (see chapter Component-based error diagnostics on page 9). › Defrost the refrigerator (see chapter Defrosting the refrigerator on page 22).
	The refrigerator door/frozen compartment door does not close properly.	› Identify and remedy the cause (see section "Refrigerator door/frozen compartment door does not close" in the table). › Defrost the refrigerator (see chapter Defrosting the refrigerator on page 22).
Water accumulates in the refrigerator.	The drain hole on the rear interior wall of the refrigerator compartment is clogged.	1. Clear any dirt or lint from the opening (for example, with a flexible pipe cleaner). 2. Pour 0.676 – 1.014 fl oz US warm water into the drain hole to rinse away any residue. Do not rinse with too much water, as this may cause the water in the evaporation tray behind the refrigerator to overflow and spill onto the floor behind the kitchen cabinets.
	The drain hose is blocked or kinked.	1. Remove the refrigerator from the recess (see chapter Removing the Refrigerator from the Cabinet or Niche on page 15).

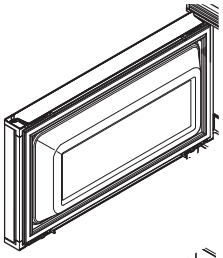
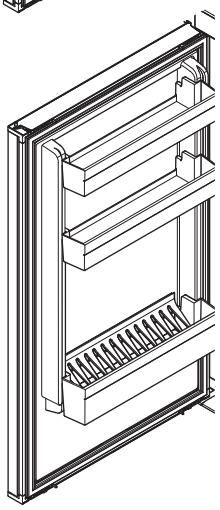
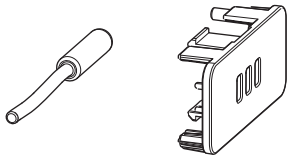
Problem	Possible cause	Suggested remedy
		2. If the hose is clogged, carefully remove it from the fittings and rinse it out in the sink under a strong stream of warm water. 3. If the hose is kinked, carefully straighten it out. 4. Pour a small amount of water (0.676 – 1.014 fl oz US) into the drain hole to check whether it flows smoothly down into the evaporation tray. 5. If the drain hose is severely kinked or clogged, replace it.
Refrigerator door/frozen compartment door does not close.	The door handle is blocked on the opened side.	› Remove the door handle blockage.
	The door assembly is faulty.	› Perform component-based error diagnostics on the door assembly (see chapter Component-based error diagnostics on page 9).
There is a loud humming noise.	The compressor motor is locked.	Perform component-based error diagnostics on the compressor (see chapter Component-based error diagnostics on page 9).
	The condenser fan motor is faulty.	Perform component-based error diagnostics on the condenser fan (see chapter Component-based error diagnostics on page 9).

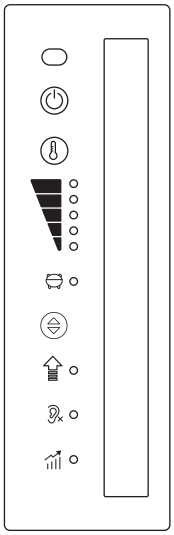
6.2 Component-based error diagnostics

NOTE For information on the wiring and/or power supply, see chapter Wiring diagram on page 5.

Component	Diagnostic question	Remedy
Compressor 	Does the compressor run?	• Ensure that the compressor is properly wired and connected to the power supply. • Correct any issues with the wiring and/or power supply as needed.
		• Ensure that the thermostat works correctly. • Correct any issues as needed.
	Does the compressor turn on/off frequently?	• Ensure that the compressor is properly wired and connected to the power supply. • Correct any issues with the wiring and/or power supply as needed.
		• Ensure that the door seals properly. • Correct any door and/or seal issues as needed.
		• Ensure that the thermostat works correctly. • Correct any issues as needed.
	If the compressor still does not function properly after performing the above diagnostic tests, replace the refrigerator (see chapter Replacing the Refrigerator on page 15).	

Component	Diagnostic question	Remedy
Condenser fan 	Is the condenser fan receiving power from the control module?	• Manually test the condenser fan to ensure that it works correctly. • Ensure that the control module is properly wired so that the fan receives power. • Correct any issues with the wiring as needed.
	Does the condenser fan make loud or uncharacteristic sounds, such as humming?	• Ensure that the fan is clean and that it moves freely without obstruction. • Clean the fan and remove any debris as needed. Refer to the installation and operating manual for instructions on cleaning (see chapter Related documents on page 3).
	If the condenser fan still does not function properly after performing the above diagnostic tests, replace the condenser fan (see chapter Replacing the Condenser Fan on page 19).	
Control module 	Is the control module properly connected to and receiving supply power?	• Ensure that the control module is properly connected and receiving power from the 12 V⎓ / 24 V⎓ power supply. • Correct any issues with the power supply as needed.
	Is the polarity correct?	• Ensure that the positive and negative inputs are correctly wired. • Correct any issues with the polarity as needed.
	Are all the other cables connected correctly?	• Ensure that the control module inputs and outputs are correctly wired. • Correct any issues with the wiring as needed.
	Are the LED lights on the thermostat assembly illuminated or flashing?	• If the error indication LED on the thermostat is flashing, refer to the chapter Error diagnostics based on the error indication on page 12. • Correct any issues as needed.
	If the control module still does not function properly after performing the above diagnostic tests, replace the control module (see chapter Replacing the Control Module on page 15).	

Component	Diagnostic question	Remedy
Door assembly  	Does the compressor run constantly or turn on/off frequently?	1. Ensure that the door seals and closes properly (see chapter Testing the Door Gasket on page 18). Adjust any door and/or seal issues as needed. 2. Set thermostat to the coldest setting, and let the unit run for 15 min. 3. Ensure that the unit is cooling according to the specified settings.
	Does condensation form in the refrigerator compartment or around the door frame?	
	Does the unit reach the appropriate cooling temperature?	
	Does the unit not hold the set temperature or does it warm too quickly?	
	Is there excessive frost inside the unit?	
	Does the door seal and latch properly to the unit?	• Ensure that the refrigerator seal fits correctly and is not damaged (see chapter Testing the Door Gasket on page 18). If damaged, replace the seal. • Check each door hinge for warping or other damage. If damaged, replace the door hinge (see chapter Replacing the Hinges on page 17). • Ensure to close the door completely until you hear a double click. • Ensure that the airing catches are in normal position and not rotated to door airing position. • Inspect the door for warping or other damage that would prevent it from closing properly. If damaged, replace the door (see chapter Replacing the Door Assembly on page 15).
	If the door still does not function properly after performing the above diagnostic tests, replace the door (see chapter Replacing the Door Assembly on page 15).	
NTC sensor 	Does the unit not hold the set temperature or does it warm too quickly?	Ensure that the resistance of the NTC sensor is within specification. If out of specification, replace the NTC sensor.
	Is the unit attempting to start, but then stops?	• Ensure that the NTC sensor is properly wired and connected to the power supply. • Correct any issues with the wiring and/or power supply as needed.
	Are the LED lights on the thermostat assembly illuminated or flashing?	If the error indication LED on the thermostat is flashing, refer to the chapter Error diagnostics based on the error indication on page 12.
	If the NTC sensor still does not function properly after performing the above diagnostic tests, replace the NTC sensor (see chapter Replacing the NTC Sensor on page 21).	

Component	Diagnostic question	Remedy
Thermostat assembly 	Are the LED lights illuminated on the thermostat?	• Ensure that the thermostat assembly has power and that the LED lights are illuminated. • Correct any power or wiring issues as needed.
	Is there excessive frost inside the unit?	• Ensure that the door is closing properly. • Adjust the door as needed.
	Does the unit respond appropriately to the specified cooling setting?	• Set thermostat to the coldest setting, and let the unit run for 15 min. • Ensure that the unit is cooling according to the specified settings.
	Is the temperature inside the unit too cold?	Ensure that the correct cooling mode and level are set.
	If the thermostat assembly still does not function properly after performing the above diagnostic tests, replace the thermostat assembly (see chapter Replacing the Thermostat Assembly on page 19).	

6.3 Error diagnostics based on the error indication

Faults are indicated by the error indication LED flashing orange (🚗) and a beep (audio alarm). The number of flashes depends on the type of fault. After the sequence of flashes, a pause follows. The sequence for the fault is repeated every 5 s.

NOTE To mute the audio alarm, press the ⏏ button and the 🌡 button at the same time.

Flashing frequency	Audio alarm	Error type	Error description	Possible cause	Remedy
1	✓	**W**	Under voltage shutdown (see chapter Battery Voltage Thresholds on page 23)	The supply voltage is outside of the set range	Check and monitor the supply voltage at the two upper terminals of the control module (gray (–) and red (+)). Ensure that there is not a voltage drop below 0.2 V⎓ when the compressor attempts to start. If the voltage drop is greater than 0.2 V⎓: • Inspect the wiring and all connections for loose or corrosive terminals. • Check for a weak cell in the vehicle battery.
2	✓	**W**	Overload of the Condenser fan	The fan draws more than 1 A.	1. Locate and remove the wire from terminal "F" on the control module (black (-)). 2. Place a current clamp around the condenser fan cable to verify that the operating current is < 300 mA. 3. Restart the refrigerator. • When the flashing stops: Replace the condenser fan (see chapter Replacing the Condenser Fan on page 19). • When the flashing continues: Replace the control module[1] (see chapter Replacing the Control Module on page 15).

Flashing frequency	Audio alarm	Error type	Error description	Possible cause	Remedy
3	✓	**E**	Start-up failure of the Compressor[1]	The rotor is jammed. The pressure difference in the cooling system is too high (> 5 bar).	1. Turn off the refrigerator and restart it after 15 min. 2. Use a multimeter to check whether a reading of 0.05 – 0.2 Ω (DLC52A2N) is displayed at all 3 terminals of the compressor, and ensure that there is no short circuit to ground. 3. When the ohm readings are within specification and the flashing continues: Replace the control module[1] (see chapter Replacing the Control Module on page 15). 4. When the flashing continues after replacing the control module: The compressor is faulty. Replace the refrigerator (see chapter Replacing the Refrigerator on page 15).
4	✓	**E**	Overload of the Compressor	Excessive load, causing the motor to be unable to run at the target speed. Poor contact at a connector pin, causing the compressor speed to spiral out of control.	
5	✓	**E**	High temperature protection	High ambient temperatures Poor ventilation High power consumption of the cooling system. Controller unit hardware failure or compressor failure	1. Turn off the refrigerator and restart it after 15 – 30 min. 2. If the flashing continues: Check the ambient temperatures[2]. Refer to the technical data for optimal ambient temperatures. 3. When the ambient temperature is within specification and the flashing continues: Check whether the installation conditions meet the ventilation and airflow requirements[2]. Refer to the installation and operating manual (see chapter Related documents on page 3). 4. When the installation conditions meet the ventilation and airflow requirements and the flashing continues: Use a multimeter to check whether a reading of 0.05 – 0.2 Ω (DLC52A2N) is displayed at all 3 terminals of the compressor, and ensure that there is no short circuit to ground. 5. When the ohm readings are within specification and the flashing continues: Replace the control module[1] (see chapter Replacing the Control Module on page 15).
Continuous	✓	**E**	NTC sensor error	The NTC sensor is defective.	1. Ensure that the NTC sensor is properly wired and connected to the power supply. 2. If the flashing continues: Check the ohm readings (see chapter Testing Resistance of the NTC Sensor on page 21). 3. When the ohm readings are within specification and the flashing continues: Replace the NTC sensor (see chapter Replacing the NTC Sensor on page 21).

[1] There is no way to bypass the control module, attempting to do so will damage the compressor.

[2] If necessary, remove the refrigerator from the cabinet or niche (see chapter Removing the Refrigerator from the Cabinet or Niche on page 15) and place it in a well-ventilated area for testing.

6.4 Installation-based error diagnostics

Many refrigerator problems are caused by issues outside of the product itself. When diagnosing a refrigerator problem, always check the power supply, the installation, and the surrounding conditions (ambient temperatures, humidity) before replacing any components.

Voltage readings can provide insight into the cause. Use a multimeter to take voltage measurements and compare the values with the table below. For more information, see the relevant chapter.

Problem	Potential issue
U_{Term} = 0 V	Power supply issue Refer to chapter Power Supply Issues on page 14.
$U_{Term} < U_{ON}$	
Start attempt with $U_{Term} < U_{OFF}$	
Start attempt with $U_{Term} < U_{ON}$	Ambient temperature issue (The ambient temperature is too high.) Refer to chapter Ambient Temperature and Humidity Issues.
	Mounting issue (There is insufficient ventilation.) Refer to chapter Issues related to mounting on page 14.

U_{Term} Voltage between positive and negative terminals

U_{ON} Cut-in voltage

U_{OFF} End-of-discharge voltage

6.4.1 Power Supply Issues

Use the multimeter to take voltage readings. Refer to the following table to diagnose possible power supply issues.

NOTE

- For information on the wiring and/or power supply, see chapter Wiring diagram on page 5.
- This device must be installed with a load dump board. Refer to the manufacturer's specifications for troubleshooting and/or replacement.

Problem	Possible cause	Remedy
	There is an interruption in the battery or electronics connection.	Establish a connection.
	The main switch is faulty.	Replace the main switch.
	The supply line fuse has blown (if installed).	Replace the supply line fuse.
	Insulation faults, breaks or loose connections at the live cables.	Check live cables for insulation faults, breaks or loose connections. Replace the DC connection cable if necessary (see chapter Replacing the DC connection cable/the power supply terminal on page 21).
$U_{Term} < U_{ON}$	The battery voltage is too low.	Charge the battery.
Start attempt with $U_{Term} < U_{OFF}$	Insulation faults, breaks or loose connections at the live cables.	Check live cables for insulation faults, breaks or loose connections. Replace the DC connection cable if necessary (see chapter Replacing the DC connection cable/the power supply terminal on page 21).
	The battery voltage is too low.	Replace the battery.
	The cable cross-section is too small.	Replace the wiring according to the recommended cable cross-sections (see chapter Replacing the DC connection cable/the power supply terminal on page 21).

U_{Term} Voltage between positive and negative terminals

U_{ON} Cut-in voltage

U_{OFF} End-of-discharge voltage

6.4.2 Issues related to mounting

When installing the refrigerator, specific clearances and requirements regarding ventilation and airflow must be observed. Refer to the installation manual (see chapter Related documents on page 3) for the correct measurements, and ensure that the installation meets the requirements.

NOTICE! Damage hazard

› Improper clearances and/or ventilation can lead to heat buildup, causing cooling issues and possible damage to equipment electronics.

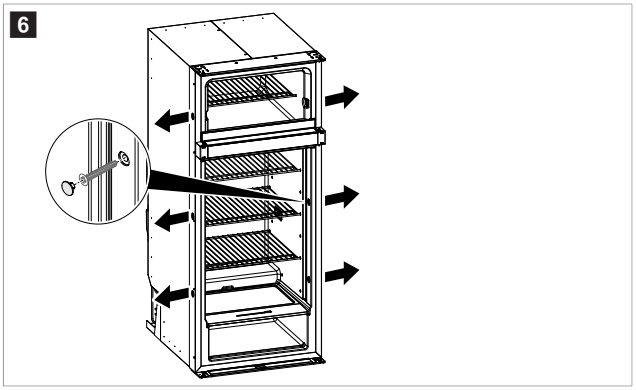
7 Performing maintenance on components

NOTE Before replacing any parts, first check the possible causes of the problem to see if any apply, and try to resolve the issue using the suggested remedies (see chapters Identifying the problem on page 7).

7.1 Removing the Refrigerator from the Cabinet or Niche

1. Remove the screws that secure the refrigerator to the walls of the recess.

6

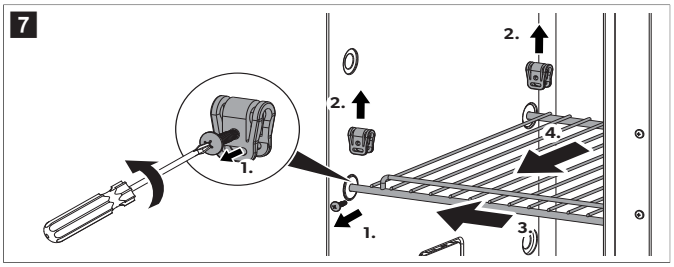


2. Slide the refrigerator out of the recess.
3. Follow these steps in reverse order to reinstall the refrigerator in the recess.

7.2 Removing The Shelves

Replacement part	Ref. no.
Refrigerator shelf	4472010159
Freezer shelf	4472010157

7



1. Loosen the screws on the brackets and remove the brackets.
2. Push the shelf to the left so that the right side comes out of the slots in the side panel.
3. Tilt the shelf downward on the right side and release it from the slots on the left side.
4. Pull the shelf out.

7.3 Replacing the Refrigerator

Replacement of the refrigerator will vary according to the installation location, the cabinetry, and distributor specifications.

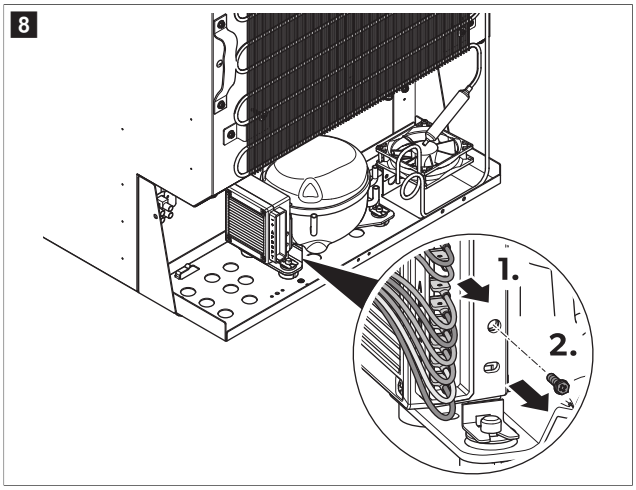
If replacement of the device is required for any reason (such as physical damage, loss of refrigerant liquid, or a faulty compressor), refer to the installation manual for specific guidelines, and ensure that installation complies with all applicable local or national codes.

7.4 Replacing the Control Module

Replacement part	Ref. no.
Control module	4472010166

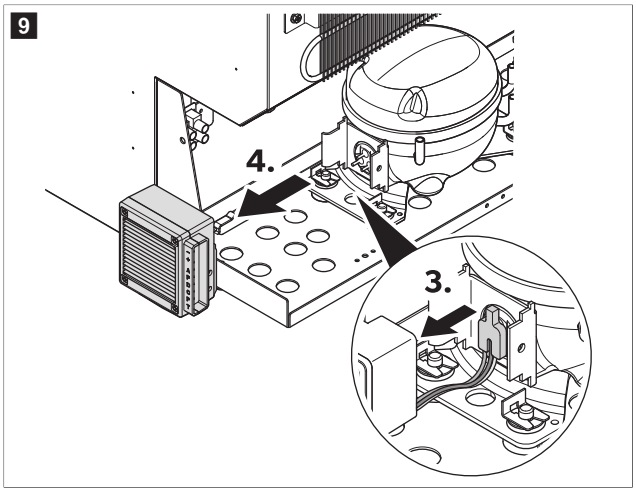
1. Disconnect the refrigerator from the power supply.
2. Make note of all designated wire locations on the control module and remove all connected terminals.
3. Remove the screw securing the control module to the compressor and rotate the control module away from the compressor.

8



4. Disconnect the 3-pin connector on the side of the compressor.

9



5. Remove the control module.
6. Follow these steps in reverse order to install the new control module.

7.5 Replacing the Door Assembly

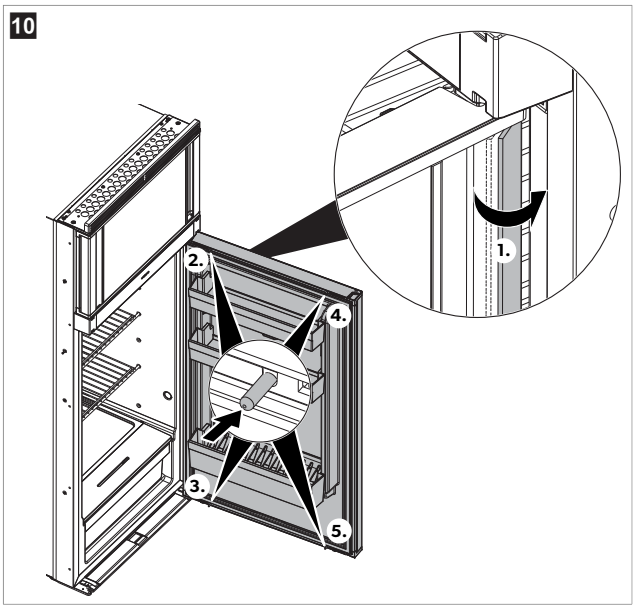
The refrigerator door and the freezer door can be replaced.

Replacement part	Ref. no.
Refrigerator door	4450027715
Freezer door	4450027716

1. Open the door.

2. Pull the handle on the hinge side of the door and press down on the 4 release pins. Follow the order shown in the figure.

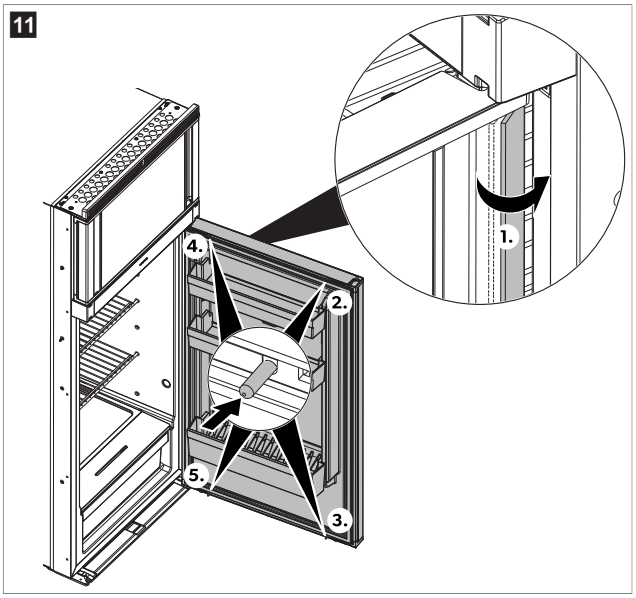
10



˅ The door locks are released.

3. Close the door.
4. Hold the door on both sides and lift it off the refrigerator.
5. Set the new door in place on the hinge side.
6. Pull the handle on the latch side of the door and press down on the 4 release pins. Follow the order shown in the figure.

11



7.6 Replacing the Door Panel

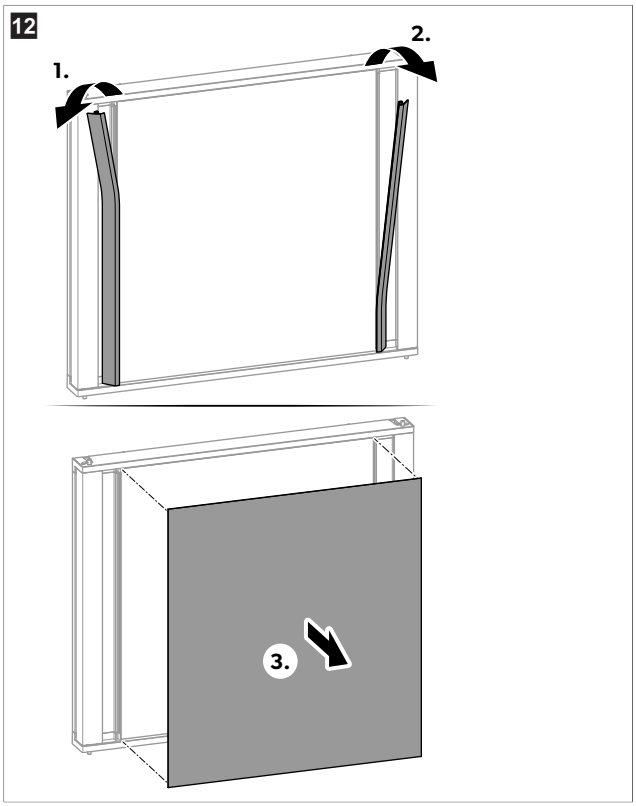
CAUTION! Risk of injury

› The metal door panel is very sharp, so use care when handling.

Replacement part	Ref. no.
Refrigerator door panel	4472010153
Freezer door panel	4472010147
Decorative strip refrigerator door (2x)	4472010151
Decorative strip freezer door (2x)	4472010146

1. Pull out the 2 decorative strips on the sides of the door and remove the door panel.

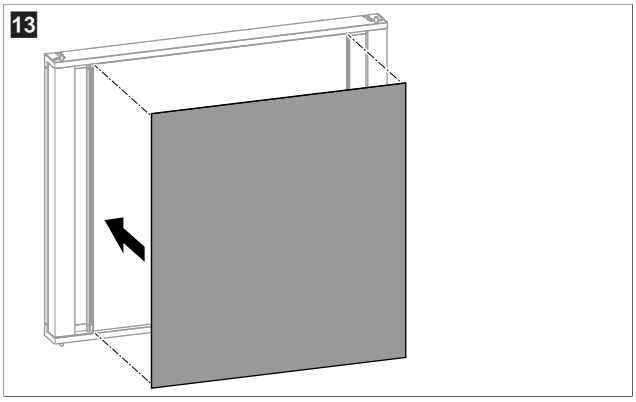
12



2. Replace the door panel.

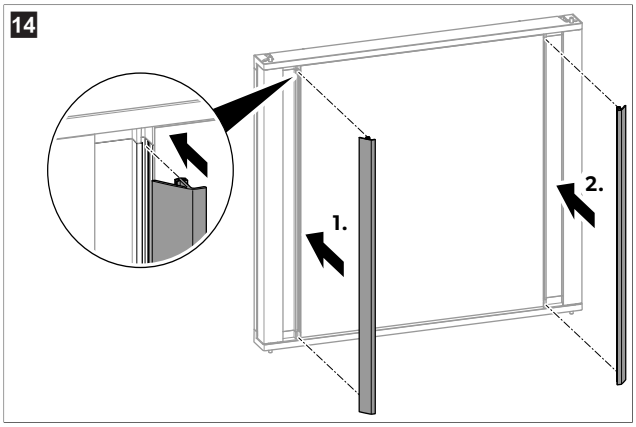
NOTE The new door panel should have a thickness of: 0.04 – 0.11 in.

13



3. Re-attach the 2 decorative strips to the sides of the door to secure the door panel.

14

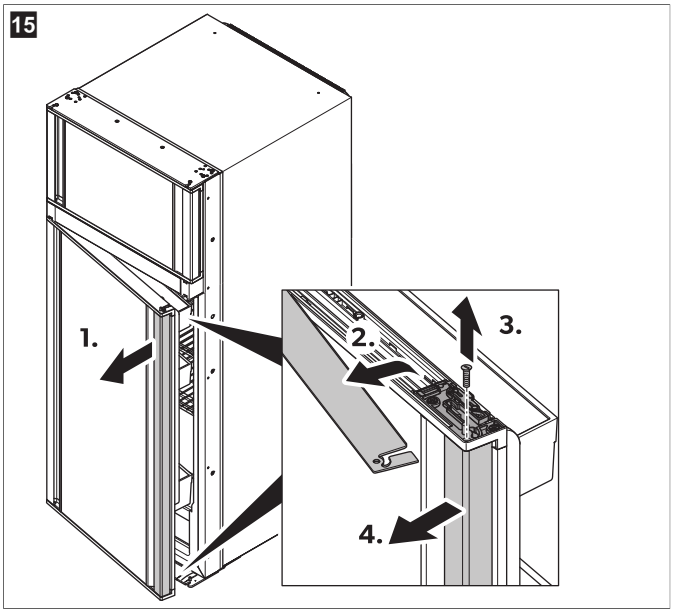


7.7 Replacing the Door Handle

NOTE Refrigerator door only: If the bottom of the door is difficult or impossible to reach, remove the door to replace the handle (see chapter Replacing the Door Assembly on page 15).

Description	Ref. no.
Refrigerator door handle	4472010152
Freezer door handle	4472010144

15



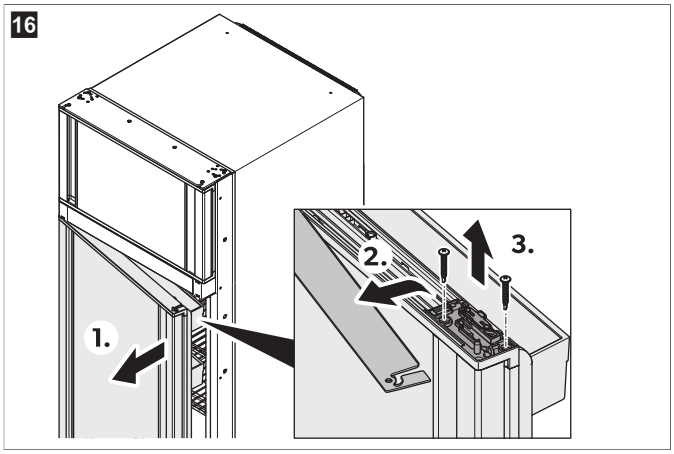
1. Open the door on the side with the door handle that is to be replaced.
2. Remove the snap-on cover on the top and bottom of the door.
3. Use a flathead screwdriver to remove the handle screws on the top and bottom of the door.
   ˅ The door handle is detached.
4. Remove the handle.
5. Follow these steps in reverse order to install the new door handle.

7.8 Replacing the Latch Mechanism

The latch mechanism is located on the top and bottom of the freezer door and on the top of the refrigerator door.

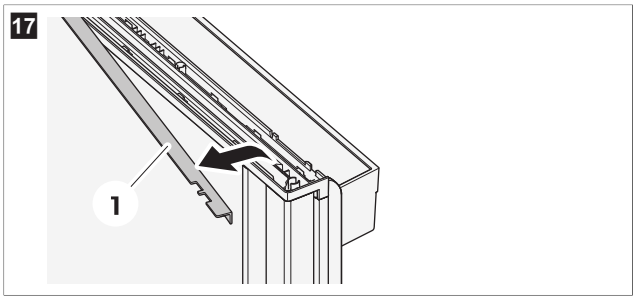
Replacement part	Ref. no.
Latch mechanism	4472010145

16



1. Remove the snap-on cover on the top or bottom of the door, depending on which side of the door the latch mechanism is to be replaced.
2. Loosen the 2 screws securing the latch mechanism and remove it.
3. If the slider bar (**1**) is to be replaced: Slide the slider bar toward the removed latch mechanism to remove it, and insert the new slider bar.

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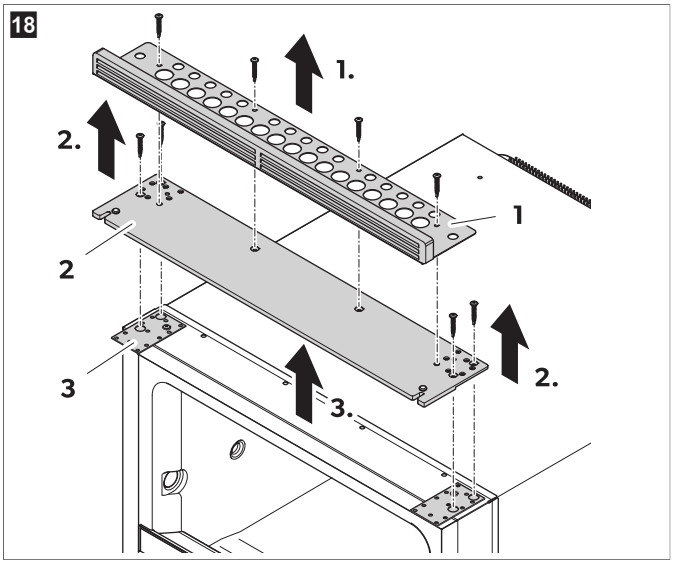


4. Follow these steps in reverse order to install the new latch mechanism.

7.9 Replacing the Hinges

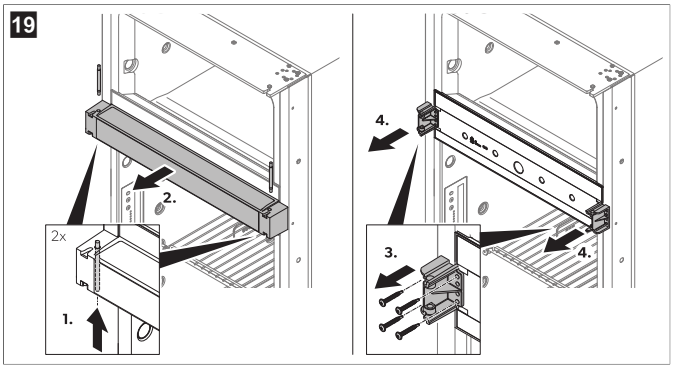
Replacement part	Ref. no.
Ventilation grille	4472010161
Top hinge	4472010145
Center control box and Middle hinge	4472010156
Lower hinge	4472010154
Decorative trim	4472010158

Replacing the Top Plate and Top Hinge



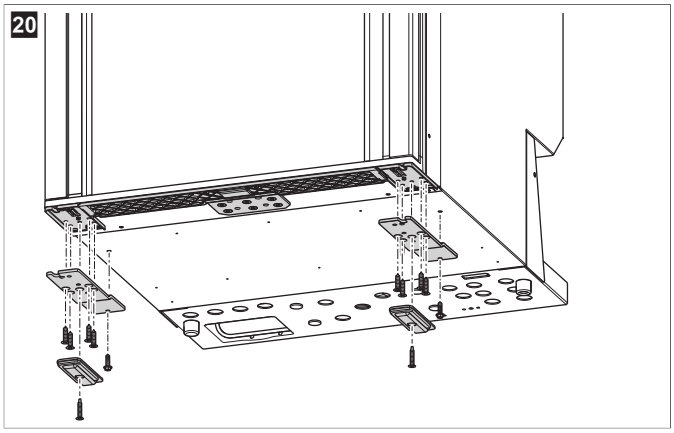
1. Remove the freezer door (see chapter Replacing the Door Assembly on page 15).
2. If installed, remove the ventilation grille (**1**) (see chapter Replacing the ventilation grille on page 21).
3. Remove the 4 screws at top of the refrigerator and remove the top plate (**2**) and top hinge (**3**).
4. Follow these steps in reverse order to install the new top hinge and top plate.

Replacing the Middle Hinge and the Center Control Box



1. Remove the refrigerator door and the freezer door.
2. Press the hinge pins from the bottom up to release them.
3. Remove the hinge pins and pull out the center control box.
4. If necessary, replace the decorative trim.
5. Loosen the 4 screws on each hinge to remove the middle hinges.
6. Follow these steps in reverse order to install the new middle hinges and center control box.

Replacing the Lower Hinge



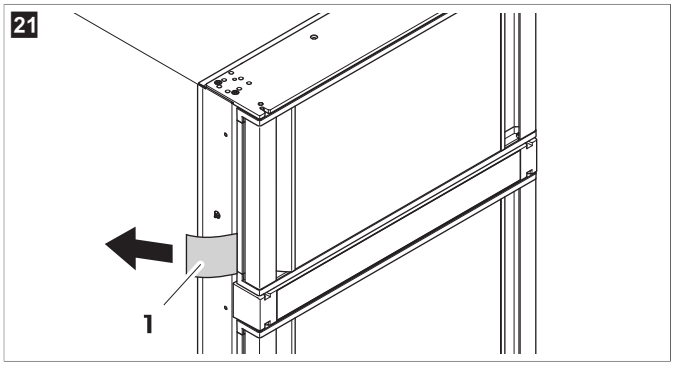
1. Remove the refrigerator from the recess, disconnect it from the power supply, and take off the refrigerator door (see chapter Replacing the Door Assembly on page 15).
2. Loosen the screws on the front support feet and remove the front support feet.
3. Loosen the 4 screws on the lower hinge and remove the lower hinge.
4. Follow these steps in reverse order to install the new lower hinge.

NOTICE! Damage hazard

› Let the refrigerator stand upright for at least 2 h before reconnecting it.

7.10 Testing the Door Gasket

NOTE Weak spots in the door gasket lead to high power consumption and frost build-up.

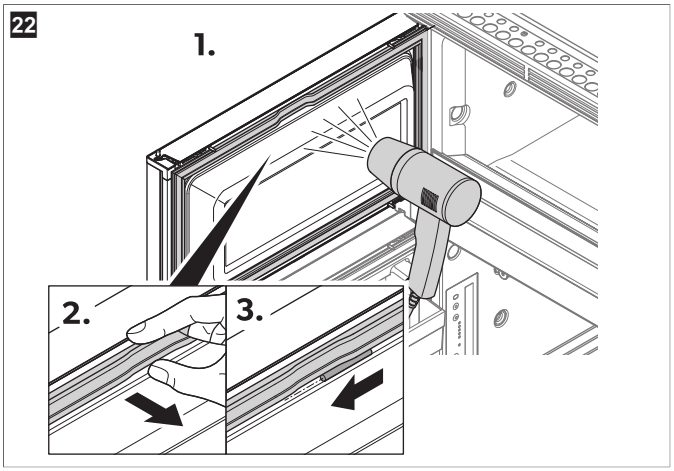


1. Open the refrigerator/freezer door and place a piece of paper (**1**) near the door hinge and between the gasket and the interior panel of the refrigerator.
2. Close the door on the paper.
3. Try to pull out the paper.

NOTE If the paper slips out with no resistance, the gasket is weak at that spot.

4. Repeat this test at various spots around the door.
5. For the weak spots identified, determine the cause:
   - The gasket is dented or deformed: Repair the gasket, see chapter Repairing the Door Gasket on page 19
   - The gasket is porous or torn: Replace the gasket, see chapter Replacing the Door Gasket on page 19

7.11 Repairing the Door Gasket



1. Warm the gasket with a heat gun.

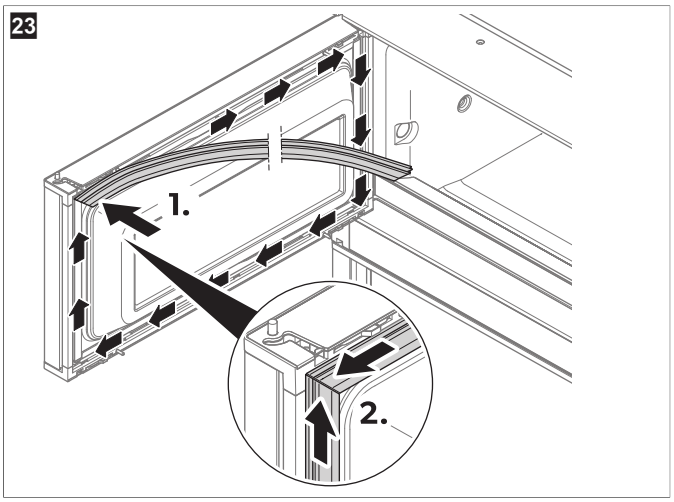
NOTICE! Damage hazard
› Do not direct the heat gun too close to the plastic interior panel, and do not heat it in one spot for too long.

2. Once the gasket is pliable, pull it out of the groove and slide a round rod (or similar) with a diameter of 0.24 in behind the gasket.
3. Close the door with the round rod in position and leave it closed for 24 h.
4. Check that the gasket is securely in place and that the door is properly sealed (see chapter Testing the Door Gasket on page 18).

7.12 Replacing the Door Gasket

NOTE
- Before installing the new gasket, let it lie flat for 24 h so that it can return to its normal shape.
- Remove any dirt, dust, or old adhesive residue from the groove before inserting the gasket.

Replacement part	Ref. no.
Refrigerator door gasket	4472010150
Freezer door gasket	4472010143



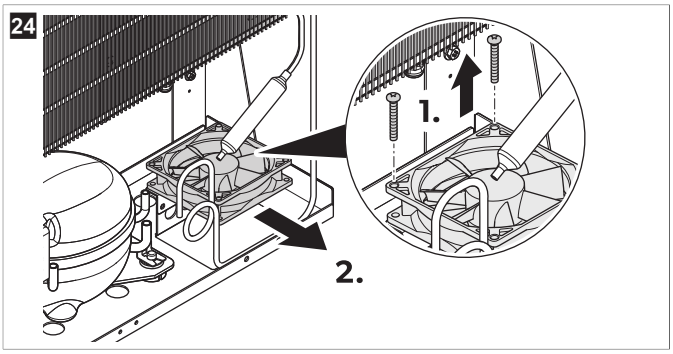
1. Pull the defective door gasket out of the groove.
2. Press the new gasket firmly into the groove, starting from the corners and working toward the sides.
3. Check that the gasket is securely in place and that the door is properly sealed (see chapter Testing the Door Gasket on page 18).

7.13 Testing the Amperage of the Condenser Fan

1. Locate and remove the wire from terminal "F" on the control module (black (-)).
2. Place a current clamp around the condenser fan cable.
3. Check if the operating current is ≤ 300 mA. If the reading is > 300 mA, the Condenser Fan indicates a defect.

7.14 Replacing the Condenser Fan

Description	Ref. no.
Condenser fan	4472010167



1. Disconnect the refrigerator from the power supply.
2. Loosen the 2 screws that secure the fan to the fan bracket.
3. Disconnect the fan terminals.

NOTE The terminals are located near the control module.

4. Remove the fan.

NOTE Check the condenser fins for deposits or dirt. Clean the fins before proceeding with the installation.

5. Follow these steps in reverse order to install the new condenser fan.

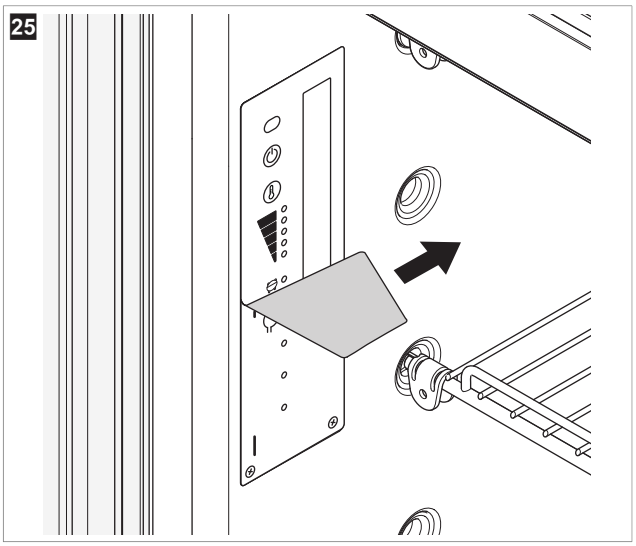
7.15 Replacing the Thermostat Assembly

Description	Ref. no.
Thermostat assembly	4472010162

1. Carefully peel the self-adhesive control panel film from the plastic cover of the PCB and remove it.

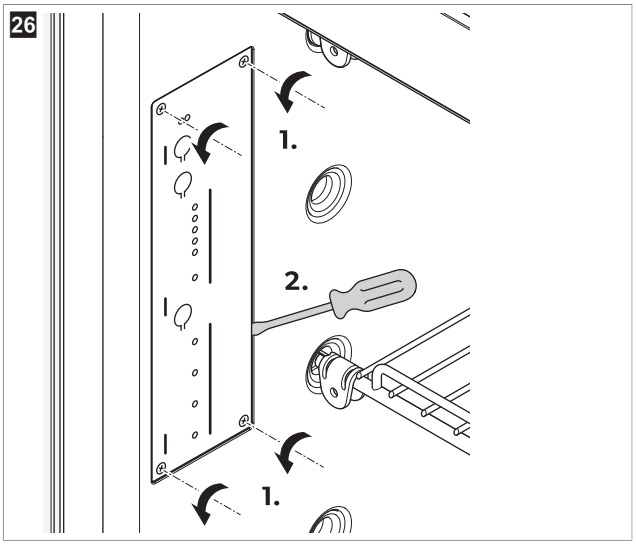
NOTE The self-adhesive film is no longer needed.

25



2. Loosen the 4 screws securing the plastic cover.

26



3. Remove the plastic cover along with the PCB attached to it.

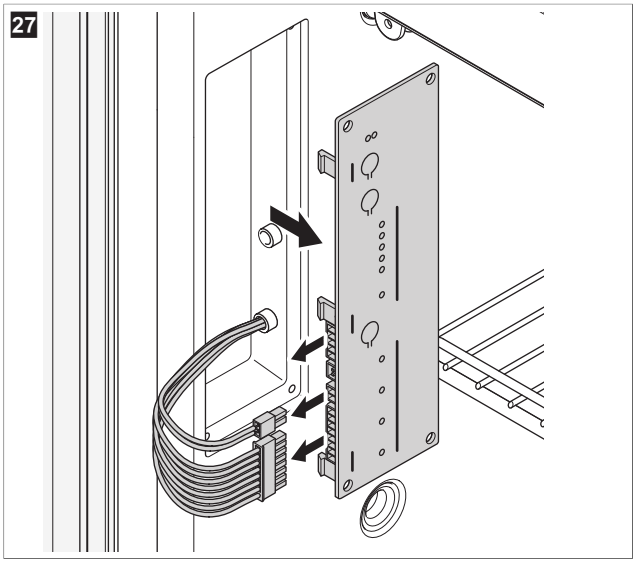
NOTE Use a small flat-screwdriver to carefully pry under the cover and lift it off.

4. Make a note of the connection diagram on the PCB.

5. Disconnect the connectors from the PCB.

NOTE The plastic cover with the PCB attached to it are no longer needed.

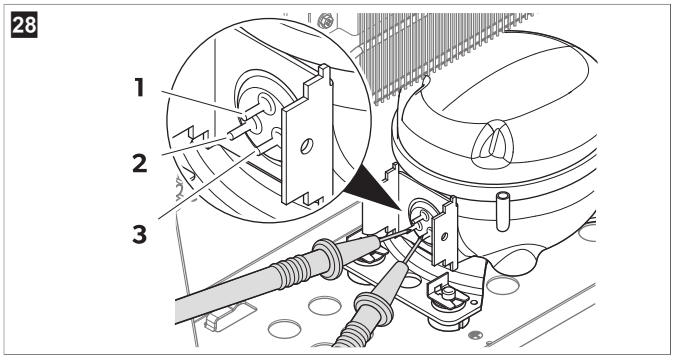
27



6. Follow these steps in reverse order to install the new thermostat assembly.

7.16 Testing the Resistance of the Compressor

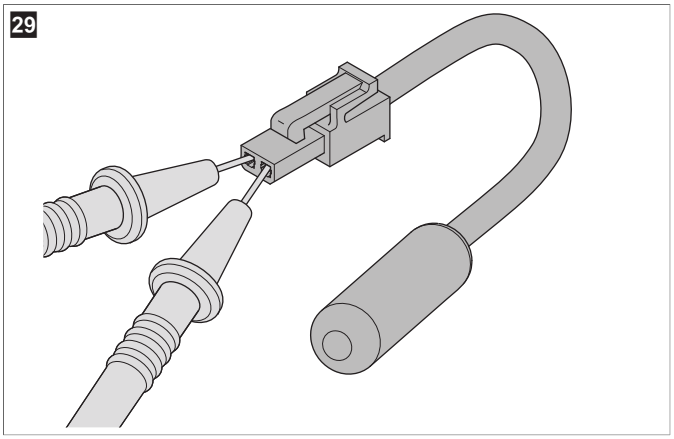
28



1	C (Common)	**3**	R (Run)
2	S (Start)		

1. Set the multimeter to the resistance measurement (ohms) setting.
2. Connect the measuring leads of the multimeter to each pair of the 3 pins of the compressor:
   - Pin S to Pin R (auxiliary and main windings)
   - Pin C to Pin S (auxiliary winding)
   - Pin C to Pin R (main winding)
3. Check if the reading is 0.05 – 0.2 Ω. If the reading is outside the specification range, the compressor indicates a defect.

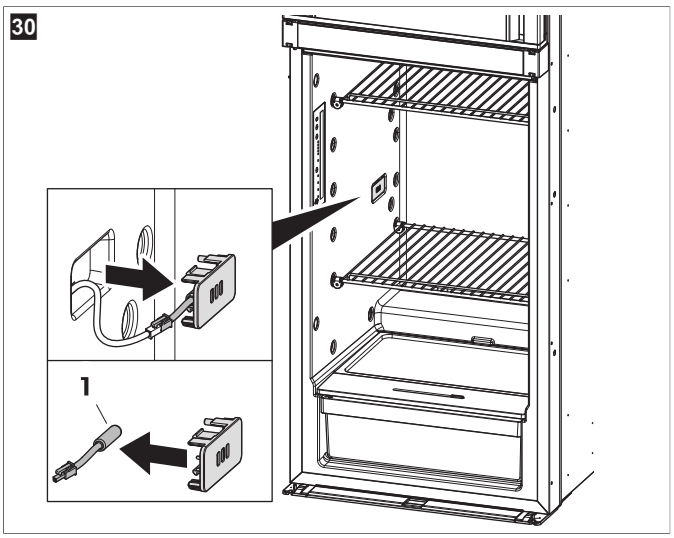
7.17 Testing Resistance of the NTC Sensor



1. Remove the NTC sensor (see chapter Replacing the NTC Sensor on page 21).
2. Set the multimeter to the resistance measurement (ohms) setting.
3. Submerge the NTC sensor in a glass of water at 77 °F for 10 min.
4. Connect the measuring leads of the multimeter to the terminals of the NTC sensor.
5. Check if the reading is 8000 – 10000 Ω. If the reading is outside the specification range, the NTC sensor is defective. Replace the NTC sensor (see chapter Replacing the NTC Sensor on page 21).

7.18 Replacing the NTC Sensor

Description	Ref. no.
NTC sensor	4472010163



1. Carefully insert a screwdriver into the slot provided on the cover and pry it off the wall.

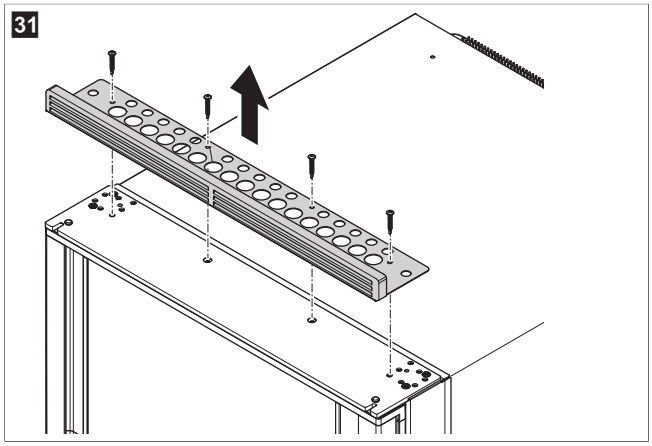
NOTE The NTC sensor (**1**) is attached to the cover.

2. Disconnect the NTC sensor from the corresponding wiring harness at the refrigerator.
3. Remove the NTC sensor from the cover.
4. Follow these steps in reverse order to install the new NTC sensor.

7.19 Replacing the ventilation grille

Description	Ref. no.
Ventilation grille	4472010161

› Loosen the 4 screws that secure the ventilation grille to the top of the refrigerator.

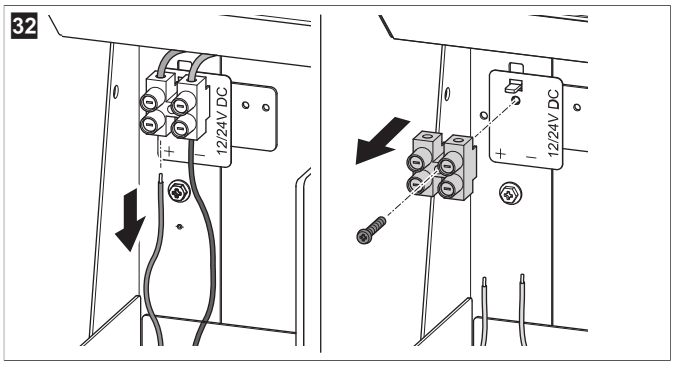


› Secure the new ventilation grille to the top of the refrigerator using the 4 screws.

7.20 Replacing the DC connection cable/the power supply terminal

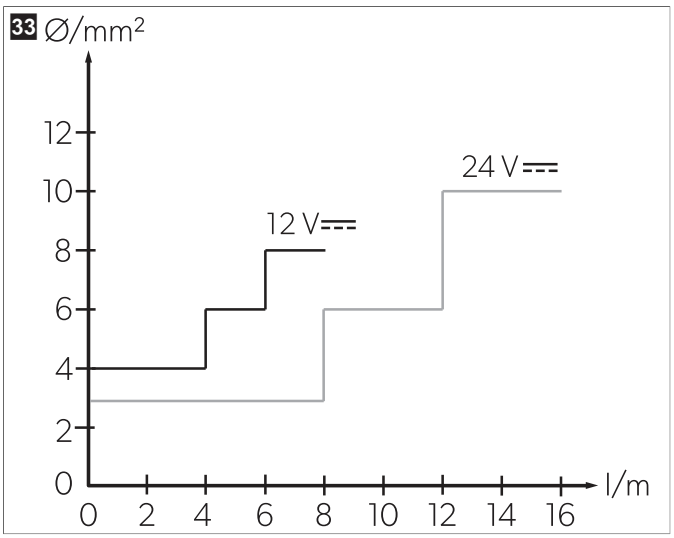
NOTICE! Damage hazard
› Do not reverse the polarity.
› Ensure that the negative and positive poles never come into contact.

NOTE Perform a functional test after servicing the power supply. Switch on the refrigerator and check that the compressor runs smoothly and does not shut off after a few seconds.



Replacing the DC connection cable

CAUTION! Fire hazard
› Select the cable cross-section according to the total length of the connection cable (**Fig. 33** on page 22).



1. Disconnect the refrigerator from the power supply.
2. Use a suitable screwdriver to unscrew the screw on the terminal (red or black) counterclockwise until the old cable can be pulled out.
3. Strip about 0.20 – 0.31 in of insulation from the end of the new cable.
4. Insert the stripped end of the cable all the way into the open terminal.
5. Tighten the screw by hand. Gently pull on the cable to check that it is secure.

Replacing the power supply terminal

1. Disconnect the refrigerator from the power supply.
2. Use a suitable screwdriver to unscrew the screws on the terminal counterclockwise until the cables can be pulled out.

NOTE Make a note of the wiring diagram.

3. Loosen the screw on the old terminal and remove the terminal.
4. Attach the new terminal and reconnect the cables.

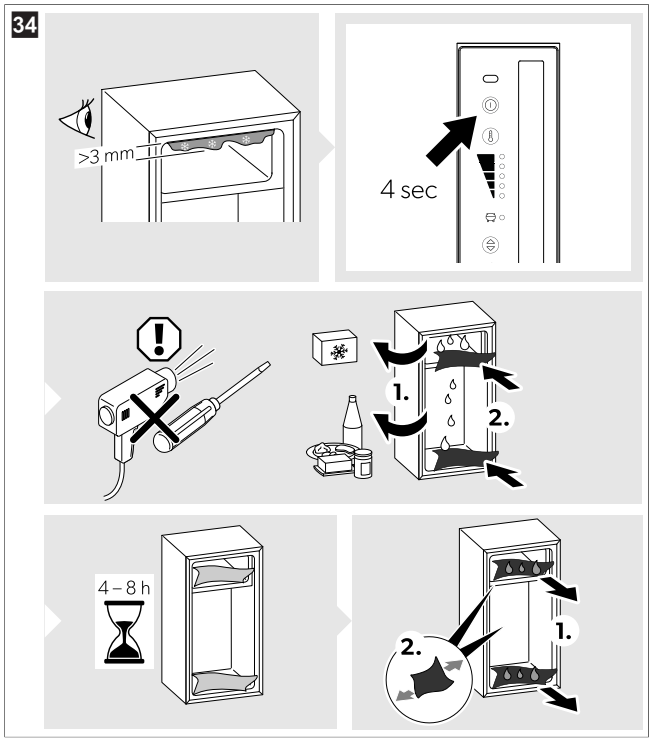
7.21 Defrosting the refrigerator

CAUTION! Health hazard

› Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.

NOTE Over time, frost will develop on the cooling fins inside the refrigerator. Once the layer of frost is about 0.12 in thick, defrost the refrigerator.

› Defrost the refrigerator as shown.



8 Disposal

WARNING! Risk of child entrapment

› Before disposing of your old product:
- Dismantle the lid.
- Leave the baskets in place so that children may not easily climb inside.

Place the packaging material in the appropriate recycling waste bins wherever possible. This separation is necessary, as packaging is valuable resource and improper disposal may impact human health and the environment.

Consult a local recycling center or specialist dealer for details about how to dispose of the product in accordance with the applicable disposal regulations.

The product can be disposed free of charge.

9 Technical data

Total volume	52.84 gal
Refrigerator compartment volume	42.01 gal
Freezer compartment volume	10.73 gal
Connection voltage	12 … 24 V⎓
Rated current	7.2 A at 12 V⎓ 3.6 A at 24 V⎓
Cooling temperature range:	
• Refrigerator compartment	32 °F … 46 °F
• Freezer compartment	– 4 °F … 14 °F
Noise emission	
• Performance mode	34 dB(A)

• Quiet mode	33 dB(A)
Climatic class	N or T (61 °F … 109 °F)
Refrigerant	R600a
Refrigerant quantity	1.23 oz
Dimensions (W×H×D):	
• With top vent grille	20.59 in × 50.51 in × 23.94 in
• Without top vent grille	20.59 in × 49.45 in × 23.94 in
Weight	89.3 lb

9.1 Battery Voltage Thresholds

	12 V⎓	**24 V⎓**
End-of-discharge voltage	10.4 V⎓	22.8 V⎓
Cut-in voltage	11.7 V⎓	24.2 V⎓

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