

TME-N ActiveCore

SKOPE Top Mount Fridge
R290



TME-N ActiveCore
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R290
Service Manual

MAN80128
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1 Servicing Hydrocarbon

Overview

This cabinet uses hydrocarbon R290 propane as its refrigerant. Hydrocarbon is a natural refrigerant that has a very low environmental impact.

Special service requirements are needed as hydrocarbon is a flammable refrigerant.

Safety hazards



The main hydrocarbon safety hazards are:

- Flammable refrigerant.
- Venting of hydrocarbon and compressor oil.
- Asphyxiation.

SKOPE does **not** recommend performing hazardous activities on the refrigeration system. See "Refrigeration Cartridge" on page 32 for more information including examples of hazardous activities.

SKOPE Hydrocarbon Service Requirements

Servicing must only be performed by Approved SKOPE Service Technicians, and must meet all requirements in the SKOPE Hydrocarbon Service Policy (available from SKOPE), including the following:

Hydrocarbon work – SKOPE Service Policy

It is the responsibility of the service technician to follow SKOPE's Hydrocarbon equipment service policy and by accepting a service work order they agree to the following (where applicable):

- MUST – Ensure all workers are trained in the **safety** of hydrocarbon products to the appropriate level for the work required.
- MUST – Follow all Local Safety Regulations relevant to flammable refrigerant gases.
 - Australia should refer to AIRAH Flammable Refrigerants – Safety Guide.
 - New Zealand should refer to Flammable Refrigerant Safety Documentation (Refrigerant Licence NZ).
- MUST – Adhere to all on-site (workplace) Health and Safety requirements.
- MUST – Not modify or alter the design of SKOPE equipment in any way.
- MUST – In cases where the refrigeration system is not readily removable from the cabinet, send the entire cabinet to the hydrocarbon workshop for repair.
- MUST – *Only* use SKOPE OEM spare parts or identical replacement parts. Any variation in replacement part may render the system non-compliant and unsafe.
- MUST – Follow all best practice work activities for servicing hydrocarbon refrigerants (SKOPE recommends attending specific hydrocarbon refrigeration handling training courses). Nitrogen must be used for purging the system before commencing brazing (“hot work”).
- MUST – Adhere to relevant SKOPE Service Manual. If there is any contradiction, the local regulations take precedence over SKOPE requirements.
- MUST – Work only in suitable, safe and compliant workspaces. Personal protective equipment (PPE) must always be used when working on hydrocarbon equipment.
- MUST – Always carry and use flammable gas detectors when diagnosing refrigeration faults in hydrocarbon equipment.
- MUST – Know where and how to safely and quickly isolate the power supply to cabinet before undertaking any service work.
- MUST – Not perform any brazing etc. (“hot work”) in the field. This is to be completed in a suitable service depot or workshop (in a dedicated, specific hazardous work area compliant with local flammable gas regulations).
- MUST – Not transport a refrigeration system with a known active leak. If there is an active leak the refrigerant must be safely removed (by using bullet piercing valves or line tap valves) before transportation. Valves must be removed at the hydrocarbon service depot once the repair is completed.
- MUST – Have an emergency plan for the hydrocarbon workshop area, which includes suitable evacuation and fire control plans and equipment.
- MUST – Only use refrigerant grade hydrocarbon to the precise mass specified on removable refrigeration system serial label.
- MUST – Be accurate with the refrigerant charge. The refrigerant mass is ultra-low charge and must only be measured with scales which are accurate to +/- 1.0 gram. Refrigerant must **not** be overcharged or added to an already charged system.
- MUST – Use identical drier replacement, as any change will affect the gas charge volume and affect reliability compliance and safety.
- MUST – Only replace pipework with parts which are identical to genuine SKOPE parts.
- MUST – Not introduce a sparking device inside a cabinet or inside a removable refrigeration system. Never use battery drills.
- MUST – Not perform any activity that could stress a refrigeration pipe (unless in a workshop).
- MUST – Get customer authorisation to permanently swap a removable refrigeration system.
- MUST – Have the AoFrio SCS Field app installed on a Bluetooth-enabled device carried by the service technician. (This does not apply to cabinets that do not use the AoFrio controller.)
The app should be used for safe, accurate diagnosis of the system, and it is required to complete a controller replacement in the field.
- RECOMMENDED – Have the AoFrio SCS Track app installed on a Bluetooth-enabled device carried by the service technician. This passive app collects system data from the AoFrio SCS Connect controller and transmits it to the cloud.
- PERMITTED – Use a logistics company to transport a complete refrigerator where no separation of the refrigeration system occurs. Logistics companies are not required to be contracted to this SKOPE Service Policy.

2 Specifications

Models

This service manual is applicable to the SKOPE TME ActiveCore top mount cabinets detailed in the table below. Refer to the relevant product specification sheet (available on the SKOPE website: www.skope.com) for specifications.

Table 1: Model specifications

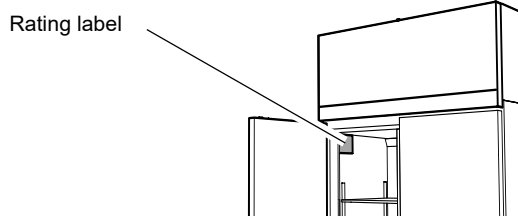
Series	Generation	Model	SKOPE ID	Cartridge
TME650N ActiveCore	ActiveCore 2	TME650N-A	SM65GYN	UTHCNI-0010
		TME650N-AC	SM65BYN	
	ActiveCore 3	TME650N-A	SM65GYA	UTHCNI-0077
		TME650N-AC	SM65BYA	
TME1000N ActiveCore	ActiveCore 2	TME1000N-A	SM10GYN	UTHCNI-0010
		TME1000N-AC	SM10BYN	
	ActiveCore 3	TME1000N-A	SM10GYA	UTHCNI-0077
		TME1000N-AC	SM10BYA	

Note: Cartridges and cabinets are interchangeable, although SKOPE does not recommend this, because there are specific changes required. See Table 17, “Cartridge interchangeability,” on page 40 for detailed information.

Identifying Generations You can tell the generation of cabinet and cartridge from their rating labels or the green R290 label on the front of the cartridge cover.

Procedure 1: To confirm the generation of a cabinet

1. Locate the rating label in the cabinet.



2. Check for the:
 - SKOPE ID. If the ID ends in an:
 - N, it is an ActiveCore 2.
 - A, it is an ActiveCore 3.
 - programme code. If it is:
 - listed, it is an ActiveCore 3.
 - not listed, it is an ActiveCore 2.

SKOPE ID

Designed by SKOPE Industries Limited	
ABN: 73 374 418 306 AU: 1800 121 535 NZ: 0800 947 567 skope@skope.com www.skope.com	
Model: TME1000N-AC	Serial No.: H2410M1234
SKOPE ID: SM10BYA	Year of Manufacture: 2024
Supply: 220-240 V a.c. 50 Hz	Program Code: 672
Rated Current: 1.7 A	Refrigerant: R290 / 111 g
Defrost Power: N/A	Climatic Class: 5
Blowing Agent: Cyclo-isopentane	Trace Heat Input: 8.3 W

Manufactured in China
Refer to the product user guide for installation and maintenance instructions.

Programme code

Example ActiveCore 3 cabinet rating label

Procedure 2: To confirm the generation of a cartridge

- 1. Check which label is on the cartridge cover.
 - The ActiveCore 2 label is only on the back of the ActiveCore 2 cartridge cover.
 - The ActiveCore 3 label is on the front and back of the ActiveCore 3 cartridge cover.



ActiveCore 2 label, only on the back of the ActiveCore 2 cartridge cover



ActiveCore 3 label on the front of the ActiveCore 3 cartridge cover



ActiveCore 3 label on the back of the ActiveCore 3 cartridge cover

- 2. Locate the cartridge rating label, which is attached to the top side of the cartridge cover.

- 3. Check the model ID. If the final two digits are:
 - less than 20, it is an ActiveCore 2.
 - greater than 70, it is an ActiveCore 3.

Model ID



SKOPE-connect

Designed by **SKOPE**
Industries Limited
ABN: 73 374 416 306
AU: 1800 121 535
NZ: 0800 947 567
skope@skope.com www.skope.com

Unit Model: UTHCNI-0077	Serial No.: H-U241012345
Supply: 220-240 V a.c. 50 Hz	Year of Manufacture: 2024
Rated Current: 1.4 A	Refrigerant: R290 / 111 g
Defrost Power: N/A	Patents: 630526
Compressor: Nidec EM2X3125U	Blowing Agent: Pentane



H-U241012345

Manufactured in China

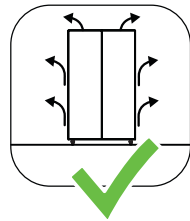
Serial number

Example ActiveCore 3 cartridge rating label

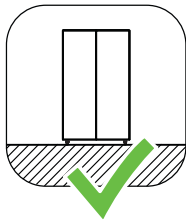
3 Installation

Installation Guidelines

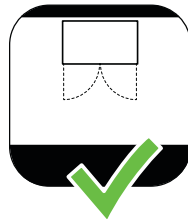
When installing this cabinet, ensure the installation guidelines below are considered and met.



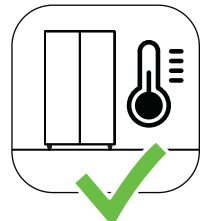
Ventilation
Ensure all ventilation requirements below are met.



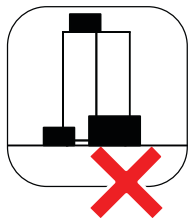
Surface
The installation surface must be capable of supporting the loaded cabinet.



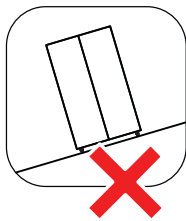
Door Opening
Allow adequate space for the door/s to open and close properly.



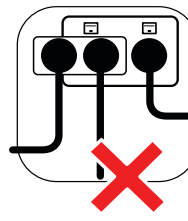
Climate Class
The cabinet must be installed in an environment within its climate class. The climate class is stated on the cabinet rating label inside the fridge.



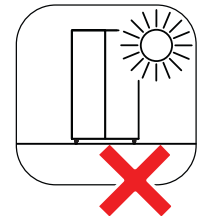
Blocking Ventilation
Do not store boxes or items in front or on top of the cabinet.



Uneven Surface
Do not install the cabinet on an uneven surface.



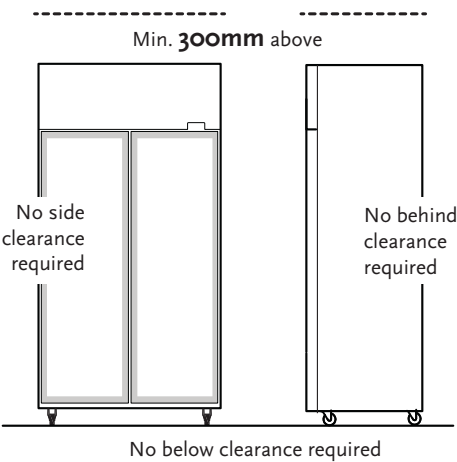
Power Supply
Do not overload the power supply.



Sunlight
Do not install the cabinet in direct sunlight.

Ventilation Requirements

This cabinet must have the following ventilation clearances at all times.



Door Handles

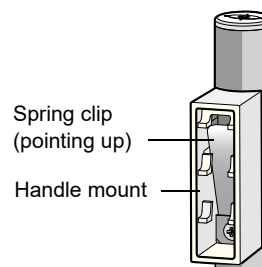
Fitting Door Handles For transit purposes door handles may be packed separately inside the cabinet. If the door handle/s are packed separately, follow the procedure below.

Procedure 3: To fit a door handle

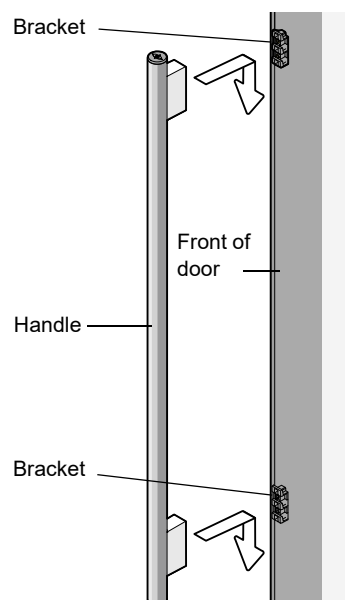
1. Remove the handle/s from inside the cabinet by carefully cutting the cable ties securing the handle/s, and remove the packaging.

A metal spring clip is fitted inside the handle mounts at each end of the handle.

2. Ensure that the spring clips point up.



3. Place **both** handle mounts simultaneously onto both door brackets.



4. Push the handle down onto the brackets until the handle locks into place.

CAUTION

Ensure **both** handle mounts are in position before pushing down.

Troubleshooting

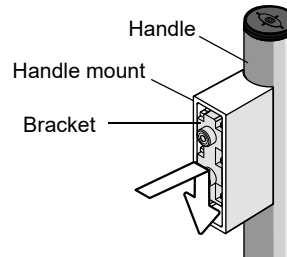
- If the handle does not lock into place, ensure that the spring clips are pointing up and try again.
- If only one end of the handle locks into place:
 - Unscrew the door handle (see "To remove a door handle" on page 11), and refit it.
 - Ensure you place both the handle mounts onto the brackets before pushing the handle down and locking it into place.

Removing Door Handles The door handles can be removed for transporting and moving the cabinet through doorways, or for refitting.

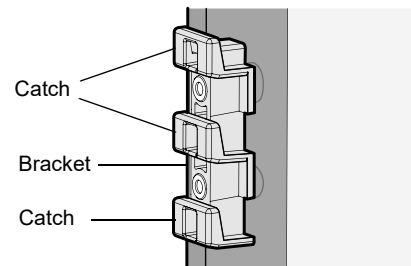
Procedure 4: To remove a door handle

1. Open the door, and peel back the door gasket from behind the handle mounts on the inside of the door frame.
 2. Unscrew the handle mounts through the holes on the inside of the door frame (top and bottom screws only), and remove the handle.
-

3. Remove the brackets from the handle mount by pressing the bracket in and down until it unclips from the handle mount.



4. Fit and screw the brackets back onto the door. Ensure the catches are pointing up as pictured.



5. Refit the door gasket by clipping it back into place on the inside of the door frame.
 6. If the gasket is out of shape after refitting it, use a hair drier to heat and reshape it.
-

Shelves

The cabinet is fitted with five layers of wire shelves which may be positioned at different heights to suit various products.

Shelf Clips Each wire shelf is held in place with four shelf clips, which clip in the shelf support strips and slide up and down to the required shelf position.

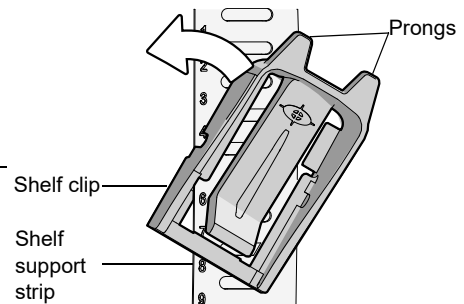
The support strips are numbered to help place the shelf clips. You can see the numbers in the bottom left hand corner of the shelf clip.

Procedure 5: To fit a shelf clip

The shelf clip twists onto the shelf support strip.

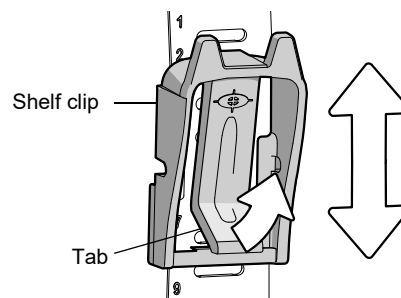
1. Position the shelf clip with the flat side against the shelf support strip and the two prongs pointing up.
-

2. Twist the top of the clip anticlockwise onto the shelf support strip until it locks in place.



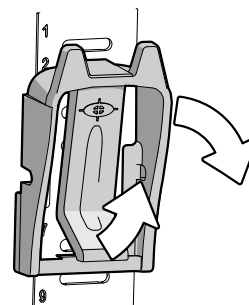
Procedure 6: To slide a shelf clip up and down

1. Pull the shelf clip tab up and slide the shelf clip up or down as required.
-
2. Once in position, ensure the shelf clip is locked into place.
-



Procedure 7: To remove a shelf clip

1. Pull the shelf clip tab up.
-
2. Twist the top of the clip clockwise off the shelf support strip.
-



Repositioning a Shelf

Procedure 8: To reposition a standard shelf

1. Unload the shelf and remove it from the cabinet.
-
2. Slide each shelf clip to the new position in the shelf support strips.
-
3. Replace the shelf back in the cabinet, and sit it on the shelf clips.
-

4 Electronic Controller

Overview

The cabinet is fitted with an AoFrio SCS Connect electronic controller. The controller is located above the door/s and visible from outside the cabinet.

Controller servicing can be performed via the controller faceplate, or the SCS Connect Field app.

Apps

SCS Connect Field App The SCS Connect Field app is designed for service techs, and provides access to the controller from mobile devices with Bluetooth capability. The app provides information on data logging, alarm notification and diagnostic control.

See “SCS Connect Field App” on page 15 for information on setting up and using the app.

SCS Connect Track App The SCS Connect Track app is used to upload data from cabinets fitted with an AoFrio SCS Connect electronic controller.

SKOPE-Connect App The SKOPE-connect app is designed for end-users and provides wireless access to the controller from mobile devices with Bluetooth capability.

The app allows end users to adjust some electronic controller settings including energy saving modes, open/close hours and preset temperature setpoints for specific product.

The app may be useful for diagnostics. Download from the Google Play Store, or Apple App Store.



Apple App
Store



Google Play
Store

Controller Faceplate

Buttons and Display The faceplate includes the front display panel and interface buttons.

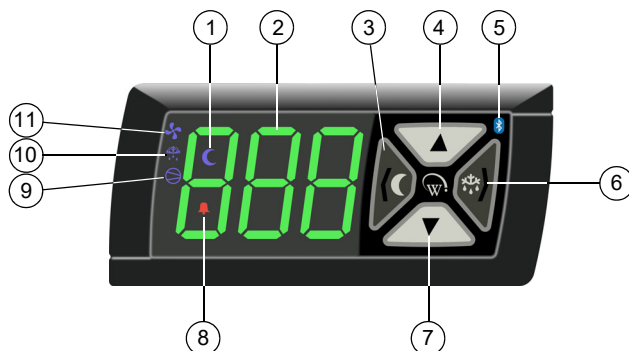


Table 2: Controller faceplate

No.	Description			Use
1	Night mode	Indicator	On during Night mode.	
2	Display	Indicator	Digital display of: <ul style="list-style-type: none"> the cabinet's air (not product) temperature. alarm messages. 	
3	Light switch - Night mode (back/abort)	Button	Used during programming.	<ul style="list-style-type: none"> Press to switch the lights on or off. Press and hold to switch the cabinet between Day and Night modes.
4	Up	Button	Used during programming.	
5	Bluetooth	Indicator	<ul style="list-style-type: none"> On when ready to connect to a device. Flashing when connected to a device. 	
6	Defrost cycle (next/enter)	Button	Used during programming.	Press and hold to start a manual defrost.
7	Down	Button	Used during programming.	
8	Fault - Alarm	Indicator	On during a fault or alarm.	
9	Compressor	Indicator	On when the compressor is running.	
10	Defrost mode	Indicator	On during the defrost cycle.	
11	Fan	Indicator	On when the fans are running.	

Service Mode The service mode can be run using the controller faceplate, but SKOPE strongly recommends using the SCS Connect Field app. You will need a 9-digit PIN to enter the service mode via the controller. If you don't have one, contact SKOPE Customer Services to request a PIN.

Service mode includes:

Parameters

Allows you to access and edit individual controller parameters.

Reset

Returns the controller back to factory or default settings.

Manual test

Allows you to see the input values from the sensors, check the effects of output adjustments to peripherals, and run pre-set test routines.

Statistics

Displays logged values and event counts for diagnostics and fine tuning.

About

Lists the properties of the refrigeration system and the controller, including cabinet model codes, and firmware, hardware and software versions.

Refer to [AoFrio documentation](#) or [MAN80199 “SCS Connect Electronic Controller”](#) for further information.

SCS Connect Field App

Connecting The SCS Connect Field app gives authorised service technicians wireless access to the controller from mobile devices with Bluetooth capability. The app provides data logging, alarm notification, and diagnostic control.

Procedure 9: To install the SCS Connect Field app

Before you start

- When you first run the app, you will need to enter an activation code – a 9-digit PIN. If you don't already have one, contact SKOPE Customer Services to request an activation code. You will need to be connected to the internet at the time of activation.
- Your activation code is unique to you, and determines your personal level of access for the app. **Never** share it with anyone else. The same code will give you access to all SCS apps you are authorised to use.

1. Download and install the Connect Field app:

- | | |
|---|--|
| <ul style="list-style-type: none"> • Apple App Store:
https://apps.apple.com/nz/app/scs-connect-field/id1172570106. | <ul style="list-style-type: none"> • Google Play Store:
https://play.google.com/store/apps/details?id=air.com.wdtl.scs.diagnostic.mobile |
|---|--|



2. Make sure you are connected to the internet, and enter your 9-digit activation code.

3. Once activation is complete, you must define a 4-digit PIN. This can be any code unique to you. Each time you start the app, you will be required to enter this same PIN. This is to prevent other people accessing the app from an unlocked phone.

Procedure 10: To connect to a controller

1. Check that the Bluetooth logo on the top right of the controller faceplate is unlit, indicating that the controller is ready to connect to a device.

Note: A flashing Bluetooth logo indicates that the controller is currently connected to a device.

2. Open the SCS Connect Field app.

3. Select the controller from the list of visible controllers.

Note:

- This list is filtered by your activation permissions, so devices you are not authorised to connect to will not be displayed.
- The signal bars indicate how close each cabinet is.



4. Select "CONNECT" to connect to the controller.

5. Check that the Bluetooth logo on the top right of the controller faceplate is flashing, indicating that the controller is connected.

App Menu Items You can find information and make changes to the connected controller and its cabinet via the app menu.

Home screen

Shows a graphic representation of the cabinet being controlled.

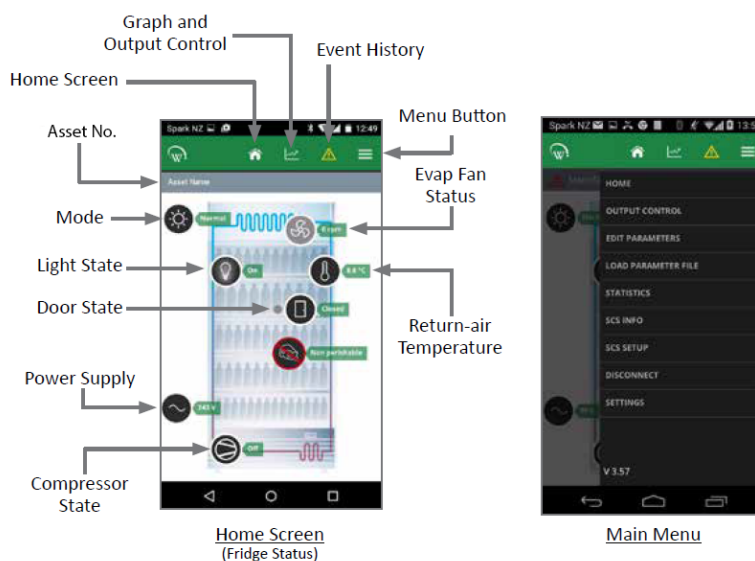


Table 3: SCS Connect Field app main menu

Item	Description	Action
Output control	Gives you control of the input sensors and switches, and output relays.	
Edit parameters	Allows you to access and edit individual controller parameters. SKOPE does not recommended changing parameters unless absolutely necessary.	If you edit a parameter, you must: select "DISCONNECT" from the menu to apply the updated parameter. record the changes on the warranty/job card.
Load parameter file	Allows you to reload a default parameter set or change to new parameter set. SKOPE does not recommended changing parameters unless absolutely necessary.	If you suspect an incorrect parameter setting, reload the complete parameter set. After loading the new parameter set, select "DISCONNECT" from the menu to apply the updated parameters.
Statistics	Displays information from the past seven days about the cabinet's activity, including temperatures, and door openings. Alarm statistics are found on the home screen and events log.	
SCS info	Displays information about the cabinet and the controller version.	
SCS setup	Allows you to add or change SCS info (see above).	
Disconnect	Allows you to disconnect from the currently connected controller.	
Settings	Allows you to change the app's general settings and see which databases you have activated. You can have more than one database activated at the same time.	To add a new database, select ACTIVATE ANOTHER DATABASE, and enter the new database's unique activation code.

Faults and Alarms

The following tables explain faults and alarms that the electronic controller may log and display.

If a fault occurs, the Fault - Alarm indicator is lit on the controller faceplate, but no message is displayed. Faults do not affect product temperature, and require no action from the shop owner.

Alarms are logged and the alarm message is displayed on the controller faceplate. Alarms may result in abnormal product temperature.

Some faults and alarms can be cleared by the shop owner, and others can only be cleared by a service technician. Faults and alarms can be cleared by the shop owner by power-cycling the cabinet. However the fault or alarm will only clear if the problem has been fixed. If the problem still exists after a power-cycle, a service technician will need to fix the problem.

If the cabinet is connected to the power supply and has warm product, check the SCS Connect Field App for active fault or alarm, and investigate. If the cabinet does not have an active fault or alarm, check the app statistics to determine if and when the controller signalled a fault or alarm.

Refer to Table 5, "Faults," on page 18 and Table 6, "Alarms," on page 19 for descriptions and possible causes and actions. The service tech type column refers to the service tech skill level required to complete a task, defined in Table 4 below.

Table 4: Service technician type

Level	Activities
1	<p><i>Hydrocarbon basic service provider</i></p> <p>Can complete limited mechanical work that will not affect safety of the hydrocarbon system, including cleaning the condenser, and repairing non-refrigeration mechanical and cabinet LED lighting parts.</p> <p>May install and remove a new or fully functioning fridge, and may fit and remove a fully functional refrigeration system to and from a cabinet.</p>
2	<p><i>Hydrocarbon field technician</i></p> <p>Can complete fault finding and make limited on-site repairs. May ensure the hydrocarbon system is safe for transportation (including safely venting refrigerant from a leaking system before transportation).</p> <p>Must not service the hydrocarbon sealed system.</p>
3	<p><i>Hydrocarbon service tradesman</i></p> <p>Can complete fault finding and full sealed system service repairs in a hydrocarbon service depot or workshop.</p>
4	<p><i>Hydrocarbon service tradesman Queensland – includes Hydrocarbon Refrigerant Gas Licence</i></p> <p>Can complete fault finding and full sealed system service repairs in a hydrocarbon service depot or workshop.</p> <p>Licensed for specific gas regulations (<i>Petroleum and Gas (Production and Safety) Act 2004</i>) in Queensland.</p>

Table 5: Faults

Description	Service tech type	Possible root cause
Door left open. The door has been open for several minutes.	1, 2, 3, 4	<ul style="list-style-type: none"> Door not self closing (torsion fault) Door switch or circuit Controller
Excessive door open counts		
Over-voltage protection The maximum allowable mains supply voltage has been exceeded. The cabinet has temporarily shut down to prevent damage and will restart once the supply voltage decreases.	1, 2, 3, 4	<p>Should be a one off; if continues, consider:</p> <ul style="list-style-type: none"> Line voltage/rural Voltage setting parameter Controller

Table 5: Faults (continued)

Description	Service tech type	Possible root cause
Under-voltage protection The mains supply voltage has dropped below the minimum allowable level. The cabinet has temporarily shut down to prevent damage and will restart once the supply voltage increases.	1, 2, 3, 4	Should be a one off; if continues, consider: <ul style="list-style-type: none"> • Power supply overloaded or multi-box • Line voltage/rural. • Voltage setting parameter • Controller
High condensing temperature protection The system was operating at an elevated temperature and has temporarily shut down to prevent damage. Extended operation in this condition may result in ALARM 15, increased energy consumption and a reduction in cabinet life. This alarm may be caused by very high ambient temperature.	2, 3, 4	NO swap cartridge required <ul style="list-style-type: none"> • Condenser not clean • Poor installation or ventilation • Condenser fan motor or blade • Controller
Excessive compressor cycling protection The system has been turning on and off too frequently.	2, 3, 4	Take a spare cartridge in case refrigeration system fault. <ul style="list-style-type: none"> • Condenser blocked • Poor installation or ventilation • Cabinet or cartridge gasket seals leaking • Door not self-closing or gasket leaking • Product hot or blocking cabinet airflow • Overloaded from excess door openings/ambient • Fan motor or blade (condenser or evaporator) • Controller • Compressor or gas leak = SWAP cartridge

Table 6: Alarms

Code	Description	Service tech type	Possible root cause
dor	Door left open. The door has been open for several minutes. Will revert to door left open FAULT after 10 minutes (see faults table on previous page).	1, 2, 3, 4	<ul style="list-style-type: none"> • Door not self closing (torsion fault) • Dor switch or circuit • Controller
8	Estimated product temperature below allowable range The estimated product temperature has been below the allowable range for longer than the permissible time. Potential causes are: an empty or partially filled cabinet, or low ambient temperature.	1, 2, 3, 4	<ul style="list-style-type: none"> • Low ambient • App settings • Controller
9	Estimated product temperature above allowable range The estimated product temperature has been above the allowable range for longer than the permissible time. Potential causes are: excessive door openings, door being left open, or warm product loaded into cabinet.	2, 3, 4	NO spare cartridge required to be taken (but may be required as fault could still be with sealed refrigeration system) <ul style="list-style-type: none"> • Condenser blocked • Poor installation or ventilation • Frozen blocked evaporator coil • Cartridge gasket leaking (to cabinet or lid seal) • Door leaking air (bad gasket or door not self-closing) • Product hot or blocking cabinet airflow • Overloaded from excess door openings/ambient • Fan motor or blade (condenser or evaporator) • App settings • Controller • Compressor or gas leak = arrange SWAP cartridge

Table 6: Alarms (continued)

Code	Description	Service tech type	Possible root cause
15	Excessive condensing temperature protection The system was operating at an excessive temperature and has shut down to prevent permanent damage. This alarm may occur due to very high ambient temperature.	2, 3, 4	NO swap cartridge required <ul style="list-style-type: none"> Condenser not clean Poor installation or ventilation Condenser fan motor or blade Controller
17	Control probe failure A critical system sensor has failed and the cabinet can no longer operate.	2, 3, 4	NO swap cartridge required <ul style="list-style-type: none"> Control probe or circuit Controller
18	Electrical over-current protection activated The compressor was drawing too much current and has shut down to prevent permanent damage.	2, 3, 4	Take spare cartridge in case refrigeration system fault. <ul style="list-style-type: none"> Condenser blocked Poor installation or ventilation Cabinet or cartridge gasket seals leaking Door not self-closing or gasket leaking Product hot or blocking cabinet airflow Overloaded from excess door openings/ambient Fan motor or blade (condenser or evaporator) Controller Compressor or gas leak = SWAP cartridge
19	Failed to reach set temperature The refrigeration system has been operating continuously for a long period without reaching the set temperature.	2, 3, 4	Take spare cartridge in case refrigeration system fault. <ul style="list-style-type: none"> Condenser blocked Poor installation or ventilation Frozen blocked evaporator coil Cabinet, door or cartridge seal leaking Product; hot or blocking cabinet airflow Overloaded from excess door openings/ambient Fan motor or blade (condenser or evaporator) Controller Compressor or gas leak = SWAP cartridge
20	Over cooling product The internal temperature is too low. The system has temporarily shut down until the temperature has returned to normal. This can occur if the set temperature has been raised by a large amount.	1, 2, 3, 4	Confirm if really too cold; change parameters accordingly.
22	Evaporator fan over-current protection The current supplied to the evaporator fan motor is too high.	2, 3, 4	<ul style="list-style-type: none"> NO swap cartridge required Faulty fan motor Fan blade fault (imbalance, debris or blockage) Controller
23	Condenser fan over-current protection The current supplied to the condenser fan motor is too high.	2, 3, 4	NO swap cartridge required <ul style="list-style-type: none"> Faulty fan motor Fan blade fault (imbalance, debris or blockage) Controller
24	Controller communication error Controller has lost communication channels.	1, 2, 3, 4	<ul style="list-style-type: none"> App Controller or circuit
25	Controller update failed Controller update could not be completed.	1, 2, 3, 4	<ul style="list-style-type: none"> App Controller or circuit
26	Controller hardware failure Controller hardware has failed.	1, 2, 3, 4	<ul style="list-style-type: none"> App Controller or circuit
27	Probe failure A non-critical system probe has failed. The cabinet will continue to operate with partial function but requires service.	2, 3, 4	NO swap cartridge required <ul style="list-style-type: none"> Evaporator probe or connections Controller

Table 6: Alarms (continued)

Code	Description	Service tech type	Possible root cause
28	No downward tendency The temperature is no longer decreasing.	2, 3, 4	Take spare cartridge in case refrigeration system fault. <ul style="list-style-type: none"> • Condenser blocked • Poor installation or ventilation • Cabinet or cartridge gasket seals leaking • Door not self-closing or gasket leaking • Product hot or blocking cabinet airflow • Overloaded from excess door openings/ambient • Fan motor or blade (condenser or evaporator) • Controller • Compressor or gas leak = SWAP cartridge
29	Compressor cutting out The compressor cut out on its internal protection or pressure switch.	2, 3, 4	Take spare cartridge in case refrigeration system fault. <ul style="list-style-type: none"> • Condenser blocked • Poor installation or ventilation • Cabinet, door or cartridge seal leaking • Product hot or blocking cabinet airflow • Overloaded from excess door openings/ambient • Fan motor or blade (condenser or evaporator) • Controller • Compressor or gas leak = SWAP cartridge
30	Excessive automatic defrosting The system is automatically defrosting too frequently.	2, 3, 4	Take spare cartridge in case refrigeration system fault. <ul style="list-style-type: none"> • Door not self-closing or gasket leaking • Evaporator probe • Evaporator motor or fan • Controller • Compressor or gas leak = SWAP cartridge
31	Compressor stalling The compressor is stalling on start up.	2, 3, 4	Take spare cartridge in case refrigeration system fault. <ul style="list-style-type: none"> • Condenser blocked • Poor installation or ventilation • Cabinet or cartridge gasket seals leaking • Door not self-closing or gasket leaking • Product hot or blocking cabinet airflow • Overloaded from excess door openings/ambient • Fan motor or blade (condenser or evaporator) • Controller • Compressor or gas leak = SWAP cartridge

5 Replacement Procedures

Isolating Electrics

Caution

Disconnect the cabinet from the mains power supply before attempting **any** maintenance.

Correct wiring routing is as important as using the correct components for compliance with safety and radio interference regulations.

In order to maintain safety and compliance with regulations, make sure you replace any wiring that is disturbed during servicing and secure it back in its original position.

Procedure 11: To disconnect the cabinet from the mains power supply

1. Switch the cabinet off at the mains power supply.
2. Unplug the power cord from the mains power supply.

Lighting

The cabinet is fitted with LED interior lights, and TME-AC models are also fitted with an LED sign light. Ensure the lights are replaced with the same light type. Fluorescent or LED tubes cannot be used in place of LED lights.

IMPORTANT

Replace the light with the same SKOPE OEM part.

Do not use alternative LED strip or tube lights, or fluorescent tubes.

The lighting is made up of three components. Refer to Table 7 below to see if the component is replaceable.

Table 7: Lighting component replacement

	ActiveCore 2 original	ActiveCore 2 manufactured after March 2024	ActiveCore 3
LED light	Replaceable	Replaceable	Replaceable
LED power supply (1 per cabinet)	Replaceable	Replaceable	Replaceable
Interior wiring loom (1 per door)	Replaceable	Replaceable	Replaceable

Power is supplied to the lights by the LED power supply (located in the cabinet electrics panel above the door/s) via the wiring loom/s which run down the sidelight channel.

Lighting components are all non-serviceable items. If a component is faulty, remove it and replace it with a SKOPE OEM new replacement component.

Refer to Table 29, "Cabinet and cartridge troubleshooting," on page 73 to determine which component may be at fault, and the procedures over the next few pages for replacement instructions.

Refer to Table 8 below for interior light functionality, depending on which generation cartridge is installed in the cabinet.

Table 8: Interior light functionality

Cabinet	TME650N		TME1000N	
Cartridge	ActiveCore 2	ActiveCore 3	ActiveCore 2	ActiveCore 3
Interior light	1 light	1 light – dimmable	2 lights	2 lights – dimmable

Ensure you disconnect the cabinet from the mains power supply before removing parts.

Procedure 12: To replace an interior light component

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).

2. Unplug the light, and remove the light from the plastic casing.



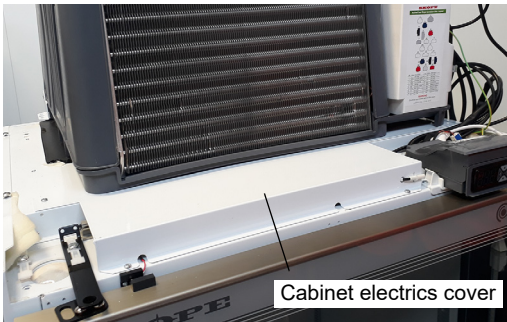
3. Clip the replacement light into place on the plastic casing, ensuring the male end of the light is at the top, and plug the light in.

4. Ensure the light is firmly and completely clipped in.
5. Reconnect the cabinet to the mains power supply and check for correct operation.

Procedure 13: To replace the LED power supply

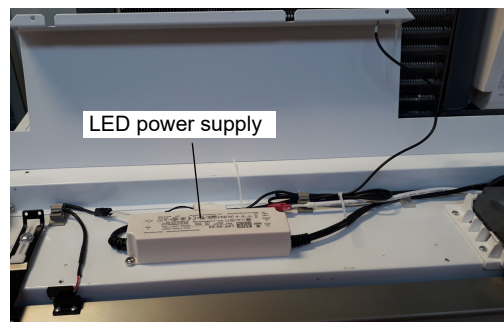
1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the sign panel (see Procedure 15, on page 25).
3. Detach the refrigeration cartridge by undoing the 2 × screws, and carefully push back or remove it (see Procedure 26 on page 39), to allow access to the cabinet electrics cover.

4. Unscrew the cabinet electrics cover.



Procedure 13: To replace the LED power supply (continued)

5. Remove the LED power supply.

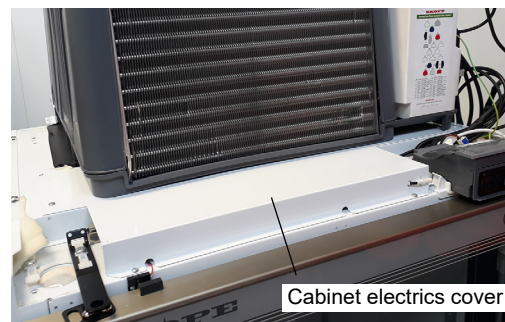


6. Replace the LED power supply.
7. Reassemble the cabinet and check for correct operation.

Procedure 14: To replace an interior wiring loom

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Unplug the light from the wiring loom.
3. Detach the refrigeration cartridge by undoing the 2 × screws, and carefully push back, or remove it (see Procedure 26 on page 39), to allow access to the cabinet electrics cover.

4. Unscrew the cabinet electrics cover.



5. Move up to the cabinet roof, and unplug the wiring loom from the LED power supply, and, if applicable, the sign light.
6. Remove the putty from the loom entry point on the cabinet roof, and pull the loom up through the cabinet ceiling.
7. Refit the new loom and reassemble the cabinet. Ensure that:
 - all plugs are clean, correctly fitted and plugged in.
 - the ceiling and roof hole is completely sealed with putty.

Sign Light (optional)

The sign is lit by an LED light.

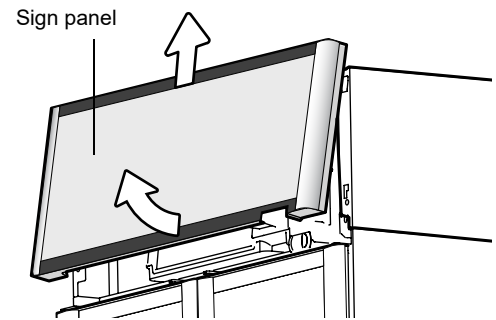
Procedure 15: To remove the sign panel

1. Disconnect the cabinet from the mains power supply (see Procedure 11 on page 22).

-AC models only

2. Unplug the sign light.

3. Remove the sign panel from the top of the cabinet by swinging it out and off.



Procedure 16: To replace the sign light

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).

2. Undo the two fixing screws from the sign's top cover and remove it.

3. Remove the sign/decal by sliding them up and out of the sign.

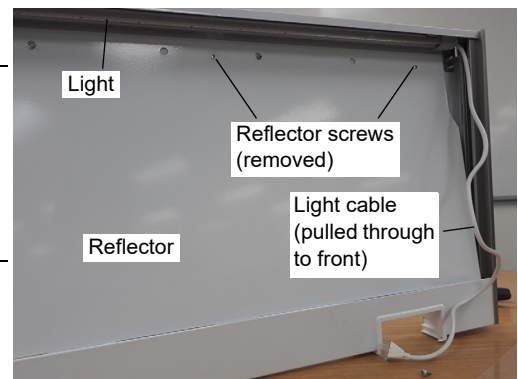
4. Remove the sign cover from the top of the sign.

5. Remove additional sign panel by sliding it up and out of the sign.

6. Cut the cable tie holding the light cable at the back of the sign.

7. Undo the two most right hand sign reflector screws.

8. Carefully pull the light plug and cable through to the front of the sign, manipulating the reflector as required.



9. Unclip and replace the light.

10. Route the light plug and cable back through behind the reflector and hole at the back of the sign, and cable tie in place.

11. Reassemble the sign.

12. Reconnect the cabinet to the power supply and check for correct operation.

Doors

WARNING

For safe door operation the bottom hinge bracket must always be fitted with a split pin.

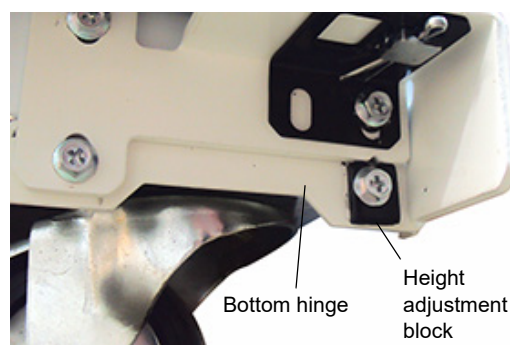
Alignment Adjustment If a door is out of alignment, realign it by loosening the top hinge bracket fixing screws, and move the top of the door as required.

Height Adjustment A height adjustment block is fitted below the bottom hinge. As standard, the notched edges on the bottom of the hinge and the top of the height adjustment block align to set the door to the correct level. If the door is not at the correct height at the standard setting, follow the steps below to adjust the height.

Procedure 17: To adjust the door height

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
-

2. Loosen the bottom hinge, and remove the height adjustment block.



3. Set the door to the correct height, rotate and refit the height adjustment block to the most appropriate setting and tighten up the bottom hinge screws.
-

Replacing the Gasket The one-piece door gasket clips into the door frame and runs around the perimeter of the door. Remove the gasket by peeling it from the door frame, starting at a corner.

If the gasket is out of shape after refitting, use a hair dryer to heat and reshape it.

Removing and Refitting the Door

For ease of servicing and to reverse the hinging, the door can be removed from the cabinet.

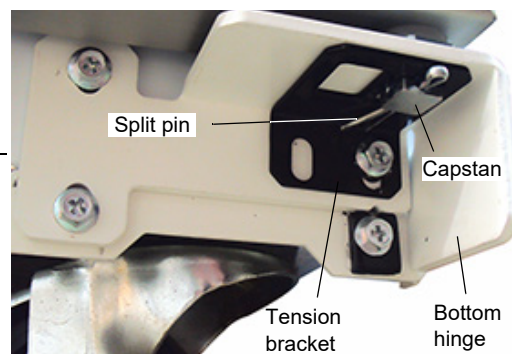
Procedure 18: To remove the door

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the sign panel (see Procedure 15, on page 25) and sides.

Single door cabinets only

3. Detach the refrigeration cartridge by undoing the 2 × screws, and carefully push back, or remove it (see Procedure 26, on page 39) to allow access to the top hinge.

4. Remove the split pin from the capstan at the bottom hinge (outside door pictured).



5. Unscrew and remove the tension bracket. Take care when removing it, as the bracket is under tension.

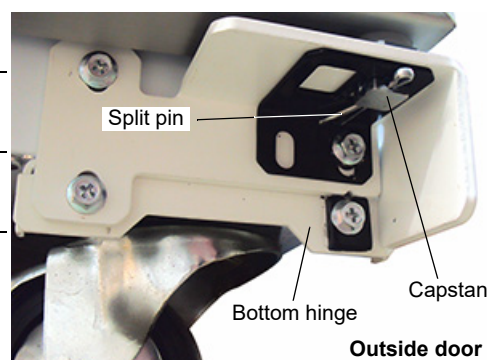
6. Unscrew the top hinge, and lift the door up and off the cabinet.

Procedure 19: To replace the top hinge bracket

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Follow the steps in Procedure 18 above to remove the door.
3. Remove the top hinge from the top of the door and replace it.
4. Follow the steps in Procedure 20 below to replace the door.

Procedure 20: To refit the door

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Lift the door onto the bottom hinge.
3. Place the top hinge spacer on top of the door.
4. Fit the top hinge, on top of the spacer, to the top of the door, and partially fix in place. Align the door with the cabinet and tighten the fixing screws.
5. Apply tension to the door (see Procedure 21 below).
6. Fit the split pin through the hole in the capstan to lock the door in place.
7. Fit the height adjustment block to the bottom screw hole.
8. If necessary, level the door (see Procedure 17, on page 26).



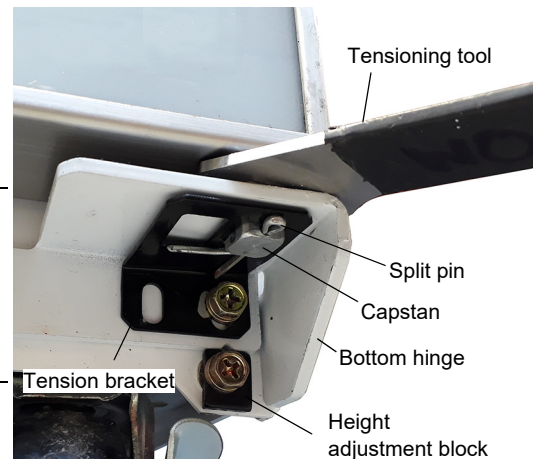
Adjusting Door Tension The door has an internal torsion bar, pre-tensioned at the factory, that lets the door self-close. If necessary, the door tension can be further adjusted by rotating the capstan mounted in the bottom hinge bracket.

Procedure 21: To adjust the door tension

Before you start

You will need a tensioning tool. The top hinge has a cut-out for tensioning, if a spare is available.

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the split pin from the capstan at the bottom hinge.
3. Remove the tension bracket from the bottom hinge.
4. Use a tool to apply tension to the door via the capstan.
 - Rotate the capstan against the door opening direction to remove any slack.
 - Once resistance is felt, continue to rotate 180° to provide tension.



Outside door

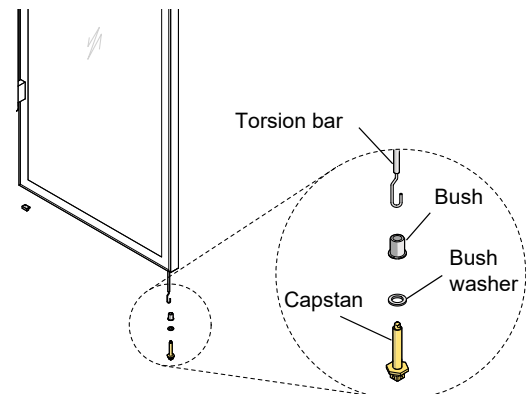
5. While holding door tension on the capstan, fit the tension bracket to the top screw hole so that it supports the door tension on the capstan.
6. Fit the split pin through the hole in the capstan to lock the door in place.
7. Check door tension by holding the door open about 100 mm and letting it go. The door should gently close, with the gasket forming an airtight seal with the cabinet.

Replacing the Torsion Bar When the door tension can no longer be adjusted, replace the torsion bar.

Procedure 22: To replace the torsion bar

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the door from the cabinet (see Procedure 18, on page 27).
3. Lever the capstan, bush and bush washer from the bottom of the door, and unhook from the torsion bar.

Note: The torsion bar cannot easily be removed from the door. Cut the old torsion bar and push it into the door frame.



4. Fit the capstan, bush and bush washer to the new torsion bar, and fit this assembly into the bottom of the door.

5. Refit the door (see Procedure 20, on page 27).

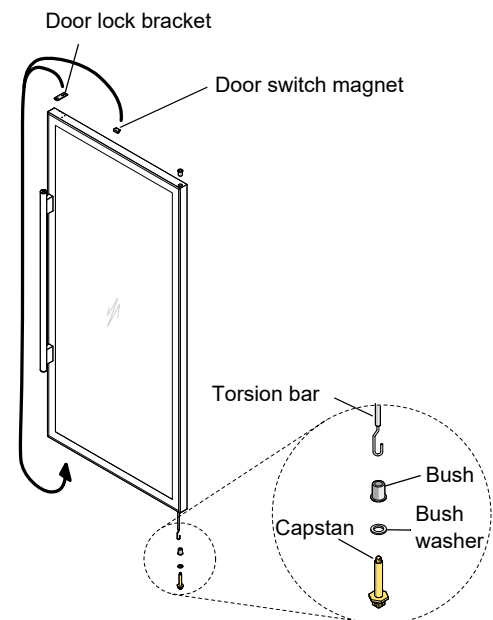
Hinge Reversal The single door cabinet is supplied with the door hinged on the right hand side. If required, the hinge can be swapped to the left hand side. Some spare parts are required to complete the procedure, and are available in the left hand hinge kit (see page 67).

Procedure 23: To reverse the door hinging

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the door from the cabinet (see Procedure 20, on page 27).
3. Remove the door lock bracket from the top of the cabinet.
4. Remove the bottom hinge, tension bracket and height adjustment block.
 - Keep the tension bracket and height adjustment block (these are fitted to the opposite side once the door is refitted).
 - Discard the bottom hinge.
5. Unplug the door switch cable from the cabinet. The door switch is fitted to the door switch bracket, above the door.
6. Fit the new bottom hinge.
7. Remove the door lock bracket from the door, and fit to the opposite end.
8. Remove the bush and keep for the other end of the door.
9. Remove the capstan, bush and bush washer, and unhook from the torsion bar.

Note: The torsion bar cannot easily be removed from the door. Push the torsion bar into the door frame.
10. Fit the capstan, bush and bush washer to the new torsion bar, and fit this assembly to the opposite end of the door.
11. Fit the bush (kept from Step 8) to the end of the door, opposite the capstan.
12. Remove the door switch magnet from the end of the door, and fit to the opposite end.

Note: Ensure the magnet is orientated correctly and does not protrude past the frame edge.
13. Refit the door (see Procedure 20, on page 27).



14. Apply the SKOPE logo label to the top left hand corner of the door. Use the label backing to align the label as pictured.



15. Apply the blanking labels over the upside down logos at the bottom of the door.



Refrigeration System

Before Servicing Overview

- Ensure you have read and understood this manual before starting any servicing.
- Ensure installation complies with electrical wiring regulations or rules, and the relevant part of the applicable refrigeration code of practice: the *Australia and New Zealand Refrigerant Handling Code of Practice 2024*.
 - [Part 1 – Self-contained low charge systems](#).
 - [Part 2 – Systems other than self-contained low charge systems](#).

Important

- SKOPE hydrocarbon refrigeration systems must only be serviced by appropriately skilled and qualified refrigeration mechanics.
- Servicing a sealed refrigeration system must occur at a hydrocarbon workshop or service area with dedicated hydrocarbon equipment and personal protective equipment (PPE).
- All local hydrocarbon storage and handling regulations and procedures must be followed at all times.

Ensure all electronic controller alarms diagnostics and refrigeration system diagnostics are performed to confirm a refrigeration system fault is present.

Check all components including the electronic controller and electrical systems.

Ensure your work area is well ventilated.

IMPORTANT

Use only dedicated hydrocarbon SKOPE OEM spare parts.

Do not use alternative parts.

For safety compliance, use only SKOPE-supplied components specified for the appliance.



Safety hazards

The main hydrocarbon safety hazards are:

- Flammability
- Venting of hydrocarbon and compressor oil
- Asphyxiation

Refrigerant identification

Correctly identifying the refrigerant is critical to maintain safety and the correct functioning of the cabinet.

- The cabinet rating label (located in the upper inside of the cabinet) states the refrigerant type.
- Warning labels are fitted to hydrocarbon refrigeration cabinets to indicate the use of hydrocarbon refrigerant.

Personal protective equipment (PPE)

Correctly wear or use all PPE required by local regulations and procedures during servicing.

Service equipment

Only use dedicated hydrocarbon service equipment which is hydrocarbon-compliant. Electrical equipment that could be exposed to the refrigerant must be intrinsically safe.

In addition to standard tools for accessing and removing parts, specialist tools are required for completing the refrigeration system service tasks in this manual:

- Intrinsically safe refrigeration vacuum pump, rated by the manufacturer as suitable for use with hydrocarbon refrigerant
- Dedicated hydrocarbon gauge set
- Flammable gas detector to warn if flammable refrigerant is present
- Charging scales, rated by the manufacturer as suitable for use with hydrocarbon refrigerant, accurate to 1 gram

Leak detector

A leak detector is used to track and locate the source of hydrocarbon gas leaks. It is:

- recommended for servicing hydrocarbon units on-site.
- required for servicing hydrocarbon units off-site.

Service vehicle

- Must be suitable for transporting flammable gas.
- Vehicle cargo area:
 - Must be well ventilated to outside the vehicle only.
 - Must have no ignition sources, nor any areas where the gas may pool.
- Must be able to transport swap units.
- Should carry minimum SKOPE hydrocarbon service parts.

On-site Work The service technician must have required knowledge, skills, qualifications, and tools before beginning any on-site work on the refrigeration sealed system.

Minimum knowledge and skills

- Qualifications and certifications required by local/state regulatory bodies to service hydrocarbon refrigeration systems
- Safe working practices, including a safe working environment at all times

Minimum tools and equipment

- Safety signs and/or barrier – suitable to create a safe work zone 1.5 m around the cabinet
- Hydrocarbon gas detector
- Dedicated hydrocarbon gauge set
- Bullet valves/line piercing valves suitable for a 6 mm tube

Off-site Work Hydrocarbon workshop

The following tools and equipment are required in the hydrocarbon workshop:

- Dedicated area for hazardous work – suitable for servicing and releasing flammable hydrocarbon refrigerant
- Hydrocarbon leak detector
- Refrigeration gauge set – suitable for flammable hydrocarbon refrigerant
- Dry nitrogen – suitable for purging and high pressure testing
- Intrinsically safe refrigeration vacuum pump, rated by the manufacturer as suitable for use with hydrocarbon refrigerant
- Charging scales, rated by the manufacturer as suitable for use with hydrocarbon refrigerant, accurate to 1 gram
- Hydrocarbon refrigerant supply cylinder

Refrigeration Cartridge

Refrigeration Cartridge Assembly

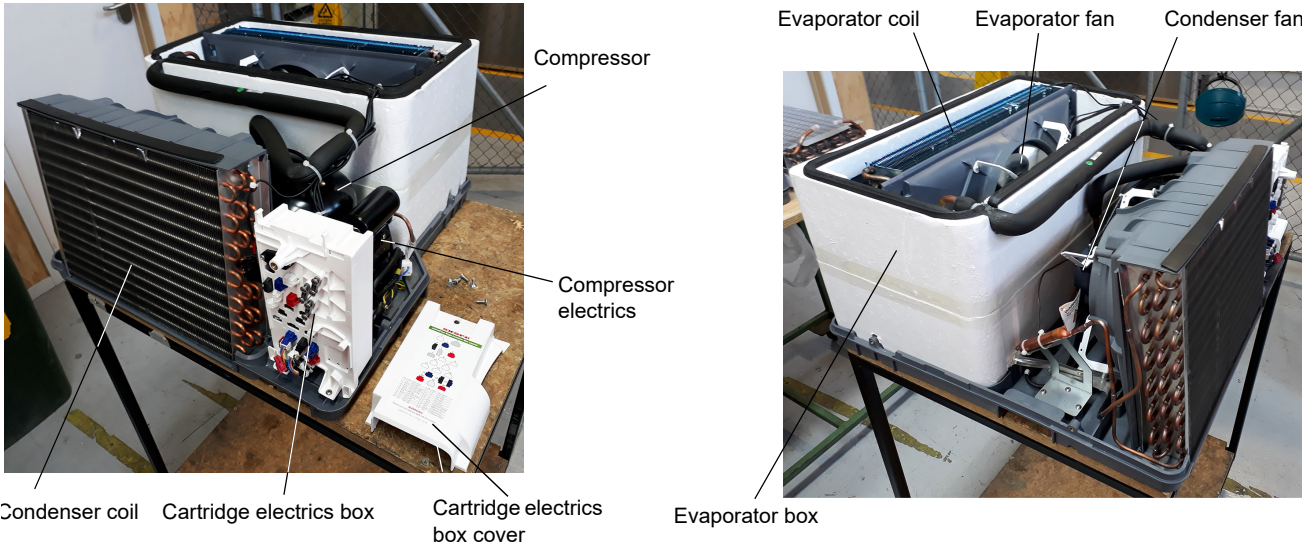
The refrigeration cartridge is a top-mounted, electronically controlled, removable cartridge. For safety and compliance, only SKOPE-supplied parts specifically for this appliance may be used for repairs. Other parts may appear to be suitable, but may not be approved or safe for use in an appliance with hydrocarbon refrigerant.

The cartridge must only be used on a SKOPE hydrocarbon compliant cabinet. Refer to the cabinet rating label to determine if the cabinet is suitable for use with a hydrocarbon cartridge. The rating label **MUST** state refrigerant as R290. If the label states a different refrigerant, or does **not** state a refrigerant, it is **not** suitable for a hydrocarbon cartridge.

WARNING

The hydrocarbon cartridge must only be used on an hydrocarbon-compliant cabinet.

For servicing or transportation, the refrigeration cartridge unplugs and lifts off the cabinet. Some minor servicing can be performed without removing the refrigeration cartridge. The model and serial number are both printed on the unit rating/serial number label attached to the top of the side of the cover.



Specifications for the model are in Table 9. Verify model and basic requirements before servicing.

Table 9: Cartridge specifications

Generation	ActiveCore 2	ActiveCore 3
Cartridge model	UTHCNI-0010	UTHCNI-0077
Compressor	Wanbao FN90M	NIDEC EM2X3125U R290 6.09 CC
Compressor capacity	740 watts	547 watts
Refrigerant/charge	R290/99 g	R290/111 g

Not Cooling Fault

If a customer reports a “not cooling” fault, and it has been established that the cabinet is not cooling, follow the procedure on “On-site Work Procedure” on page 54 when making the service visit.

Diagnostics Use the relevant test below in the workshop to diagnose if the cartridge is short of gas. Perform the test before opening the refrigeration system.

- Procedure 24, "ActiveCore 2 refrigeration system diagnostic test", on page 33
- Procedure 25, "ActiveCore 3 refrigeration system diagnostic test", on page 34

It is useful to have a correctly operating cartridge running beside the cartridge being serviced to compare behaviour.

Note: These diagnostic procedures are indicative only.

Procedure 24: ActiveCore 2 refrigeration system diagnostic test

Before you start

A system with the correct refrigerant charge will frost back towards the compressor. The point where the frost stops is affected by the ambient temperature.

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the refrigeration cartridge (see Procedure 26, "To remove the refrigeration cartridge").
3. Remove the cartridge cover (see Procedure 28, on page 42).
4. Place the cartridge on a bench in a suitable workshop (see "Off-site Work" on page 31).
5. Connect a service probe to the red plug on the cartridge.
6. Connect the refrigeration cartridge to the mains power supply and allow to run for approximately 10 minutes until the evaporator temperature stabilises.
7. Refer to Table 10 below to determine if the system charge is correct.

This table details the frost stop point on a correctly charged system running on the bench.

Table 10: Frost stop point on a correctly charged system

Ambient	50% charged	75% charged	100% charged
10°C	Cold with light sweat	Cold with light sweat	Frosting to compressor
20°C	Cold with light sweat	Sweating 50 mm from compressor	Frosting to compressor
30°C	Dry	Dry	Frosting 20 mm from compressor
40°C	Dry	Dry	Sweating 50 mm from compressor

8. If the suction pipe frosts to the appropriate frost stop point, the charge is likely correct. If the frost does not go back as described in Table 10 above, there may be a capillary blockage or compressor fault.
9. Use Table 11 below to determine whether the system is short of refrigerant or has a blocked capillary.

Table 11: Blocked capillary or short of refrigerant

Frost back after 10 minutes	Diagnosis
None	Blocked capillary
According to Table 10 above	Normal operation

10. Diagnose and repair the fault if possible.
11. Reassemble the refrigeration system and test run.

Procedure 25: ActiveCore 3 refrigeration system diagnostic test**Before you start**

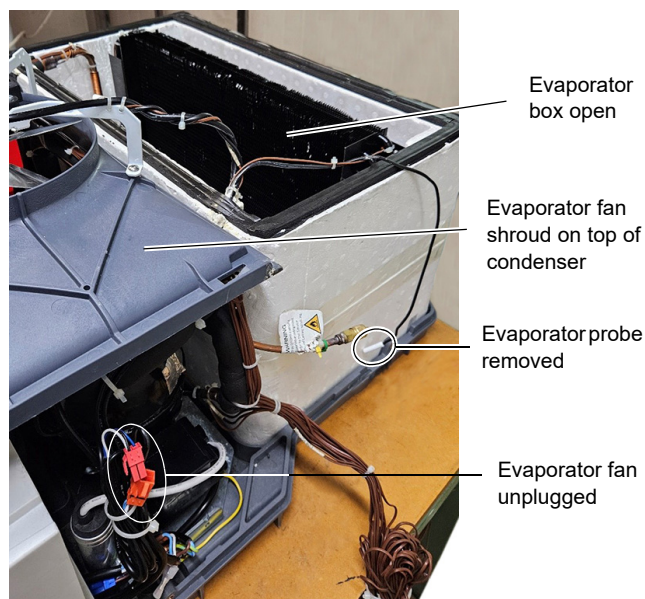
- Before performing this test:
 - Do **not** run the cartridge or compressor for at least four hours.
 - The compressor must be at ambient for at least four hours.
- A system with the correct refrigerant charge will frost back towards the compressor. The point where the frost stops is affected by the ambient temperature.

1. Disconnect the cabinet from the mains power supply (see Procedure 11 on page 22).
2. Remove the refrigeration cartridge (see Procedure 26 on page 39), and the cartridge cover.
3. Place the cartridge on a bench in a suitable workshop (see "Off-site Work" on page 31).
4. Remove the cartridge's top cover.

5. Remove the evaporator probe from the evaporator coil fins and hang it outside the evaporator box.

6. Remove the evaporator fan shroud, and sit it on top of the condenser. This will remove the control probe from the evaporator box.

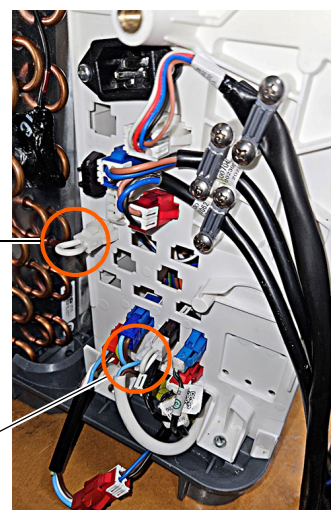
7. Unplug the evaporator fan.



8. Fit the door reed switch jumper.

Door reed switch jumper fitted

Evaporator defrost probe removed, and jumper wire fitted



Procedure 25: ActiveCore 3 refrigeration system diagnostic test (continued)

9. Connect the refrigeration cartridge to the mains power supply and start following the table closest to your ambient temperature below.
- Table 12, "Ambient temperature of 10°C," on page 35
 - Table 13, "Ambient temperature of 20°C," on page 36
 - Table 14, "Ambient temperature of 30°C," on page 37
 - Table 15, "Ambient temperature of 40°C," on page 38

Note: The cartridge and compressor must have been turned off for four hours and the compressor must be at ambient before performing this test.

10. Refer to the relevant table and images below to determine if the system charge is correct.

Table 12: Ambient temperature of 10°C

	Evaporator coil elbows	Evaporator outlet tube	Suction tube into compressor	Compressor shell at suction entry	Compressor shell top
1 min	Ambient	Ambient	Ambient	Ambient	
2 min	Ice	Very cold	Ambient	Ambient	
3 min	Ice	Ice	Ambient	Ambient	
4 min	Ice	Ice	Ambient	Ambient	
5 min	Ice	Ice	Ambient	Ambient	
6 min	Ice	Ice	Ambient	Ambient	
7 min	Ice	Ice	Light ice	Ambient	
8 min	Ice	Ice	Ice varies 5 to 10 mm from compressor shell	Ambient	
9 min	Ice	Ice	Ice varies 5 to 10 mm from compressor shell	Very cold	
10 min	Ice	Ice	Ice varies from 10 to 0 mm to compressor shell	Very cold. May form an ice ring Ø5 mm	Cool



Correct frost back at 10°C

Procedure 25: ActiveCore 3 refrigeration system diagnostic test (continued)

Table 13: Ambient temperature of 20°C

	Evaporator coil elbows	Evaporator outlet tube	Suction tube into compressor	Compressor shell at suction entry	Compressor shell top
1 min	Ambient	Very cold	Ambient	Ambient	
2 min	Light ice	Very cold	Ambient	Ambient	
3 min	Ice	Ice	Cold	Cool	
4 min	Ice	Ice	Cold	Cool	
5 min	Ice	Ice	Very cold	Cool	
6 min	Ice	Ice	Very cold	Cool	
7 min	Ice	Ice	Very cold	Cool	
8 min	Ice	Ice	Very cold	Cold	
9 min	Ice	Ice	Light ice	Cold	
10 min	Ice	Ice	Ice varies from 10 to 0 mm to compressor shell	Cold	Luke warm



Correct frost back at 20°C

Procedure 25: ActiveCore 3 refrigeration system diagnostic test (continued)

Table 14: Ambient temperature of 30°C

	Evaporator coil elbows	Evaporator outlet tube	Suction tube into compressor	Compressor shell at suction entry	Compressor shell top
1 min	Very cold	Cool	Ambient	Ambient	
2 min	Ice	Light ice	Ambient	Ambient	
3 min	Ice	Ice	Ambient	Ambient	
4 min	Ice	Ice	Cold	Ambient	
5 min	Ice	Ice	Very cold	Ambient	
6 min	Ice	Ice	Very cold	Ambient	
7 min	Ice	Ice	Very cold	Cool	
8 min	Ice	Ice	Very cold	Cool	
9 min	Ice	Ice	Ice varies from 25 to 0 mm to compressor shell	Cool	
10 min	Ice	Ice	Ice varies from 25 to 0 mm to compressor shell	Cool	Very warm



Correct frost back at 30°C

Procedure 25: ActiveCore 3 refrigeration system diagnostic test (continued)**Table 15: Ambient temperature of 40°C**

	Evaporator coil elbows	Evaporator outlet tube	Suction tube into compressor	Compressor shell at suction entry	Compressor shell top
1 min	Very cold	Cool	Ambient	Ambient	
2 min	Very cold	Cold	Ambient	Ambient	
3 min	Ice	Ice	Cool	Ambient	
4 min	Ice	Ice	Very cold	Ambient	
5 min	Ice	Ice	Very cold	Ambient	
6 min	Ice	Ice	Very cold	Ambient	
7 min	Ice	Ice	Very cold	Ambient	
8 min	Ice	Ice	Light ice	Cool	
9 min	Ice	Ice	Ice varies from 25 to 0 mm to compressor shell	Cool	
10 min	Ice	Ice	Ice varies from 25 to 0 mm to compressor shell	Cool	Hot



Correct frost back at 40°C

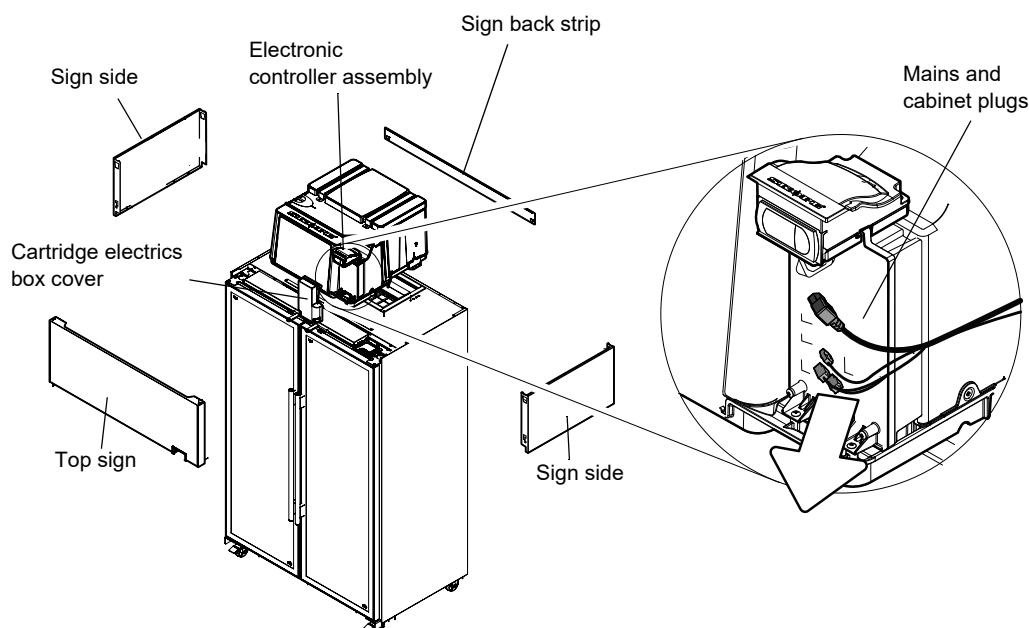
11. Consider the diagnosis.

Table 16: Possible diagnoses

Temperature of suction tube into compressor	Interpretation
Matches the column in the relevant table above	Refrigeration system is functioning correctly
<ul style="list-style-type: none"> • Remains ambient • Does not match the time in the relevant table above 	Possible refrigeration fault, e.g.: <ul style="list-style-type: none"> • Refrigerant impurity • Short of refrigerant • Compressor pumping fault • Capillary restriction
Freezes too much	Possible refrigeration fault: <ul style="list-style-type: none"> • Overcharge (most likely) • Incorrect components

12. After the fault has been diagnosed and repaired, reassemble the refrigeration system and test run.

Removing the Cartridge Follow the instruction sheet attached to the back of the sign panel, or the steps below to remove the refrigeration cartridge from the cabinet. Ensure the cabinet is disconnected from the power supply before removing the cartridge.



Procedure 26: To remove the refrigeration cartridge

Before you start

- The cartridge is heavy and requires a minimum of two people to lift it from the cabinet.
- SKOPE recommends steps or a platform about one metre high to allow you to safely lift, carry and put the cartridge down at waist height.

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the sign panel (see Procedure 15, on page 25).
3. Detach the electronic controller assembly from the top of the cabinet, and clip it onto the top of the cartridge.
4. Remove the cartridge electrics box cover and unplug the mains supply plug and cabinet plugs.
Note: The cartridge plugs (plugs feeding into the cartridge) and electronic controller plugs (plugs feeding to the electronic controller assembly) do not need to be unplugged.
5. Remove the sign back strip.
Note: If necessary the sign sides can also be removed.
6. Undo the two cartridge fixing screws (one on each side of the cartridge), and with two people, lift the cartridge off the cabinet.
7. When refitting the cartridge, ensure that the:
 - gasket on the top of the cabinet is in good condition.
 - mains and cabinet plugs are reconnected.
 - electrics cover is refitted.
 - cartridge is re-fixed in place with the 2 × screws.

- Replacing the Cartridge** The SKOPE ActiveCore 2 and 3 refrigeration cartridges are interchangeable between top and bottom mount hydrocarbon (R290) ActiveCore cabinets, and, if necessary, between each other. SKOPE does not recommend swapping the cartridges between each other because:
- you will need to reprogramme the controller.
 - you will possibly make wiring changes (see Table 17 below).
 - some features of SKOPE-connect will no longer work.

For further information about swapping between ActiveCore 2 and ActiveCore 3 cartridges, see [SBG80668 \(https://tinyurl.com/7v2anree\)](https://tinyurl.com/7v2anree).

In the table

Regular text = requirements for changing between top and bottom mount cartridges

Italic text = requirements for changing between ActiveCore 2 and ActiveCore 3 cartridges

Table 17: Cartridge interchangeability

Cabinet generation	ActiveCore 2		ActiveCore 3	
Cartridge position	Top	Bottom	Top	Bottom
ActiveCore 2 cartridge (top)	–	Remove the evaporator lid, strap brackets and hold down brackets. Fit two bottom evaporator box inserts.	<i>Change the controller wiring (change the signal loom to FLX11931). Reprogramme the controller.</i>	Remove the evaporator lid, strap brackets and hold down brackets. Fit two bottom evaporator box inserts. <i>Change the controller wiring (change the signal loom to FLX11931). Reprogramme the controller.</i>
ActiveCore 2 cartridge (bottom)	Fit an evaporator lid, strap brackets and hold down brackets to seal the top of the evaporator box, and to fix the cartridge to the top of the cabinet. Remove the two bottom evaporator box inserts.	–	Fit an evaporator lid, strap brackets and hold down brackets to seal the top of the evaporator box, and to fix the cartridge to the top of the cabinet. Remove the two bottom evaporator box inserts. <i>Change the controller wiring (change the signal loom to FLX11931). Reprogramme the controller.</i>	<i>Change the controller wiring (change the signal loom to FLX11931). Reprogramme the controller.</i>
ActiveCore 3 cartridge (top)	<i>Reprogramme the controller.</i>	Remove the evaporator lid, strap brackets and hold down brackets. Fit two bottom evaporator box inserts. <i>Reprogramme the controller.</i>	–	Remove the evaporator lid, strap brackets and hold down brackets. Fit two bottom evaporator box inserts.
ActiveCore 3 cartridge (bottom)	Fit an evaporator lid, strap brackets and hold down brackets to seal the top of the evaporator box, and to fix the cartridge to the top of the cabinet. Remove the two bottom evaporator box inserts. <i>Reprogramme the controller.</i>	<i>Reprogramme the controller.</i>	Fit an evaporator lid, strap brackets and hold down brackets to seal the top of the evaporator box, and to fix the cartridge to the top of the cabinet. Remove the two bottom evaporator box inserts.	–

WARNING

The hydrocarbon cartridge must only be used on a hydrocarbon-compliant cabinet.

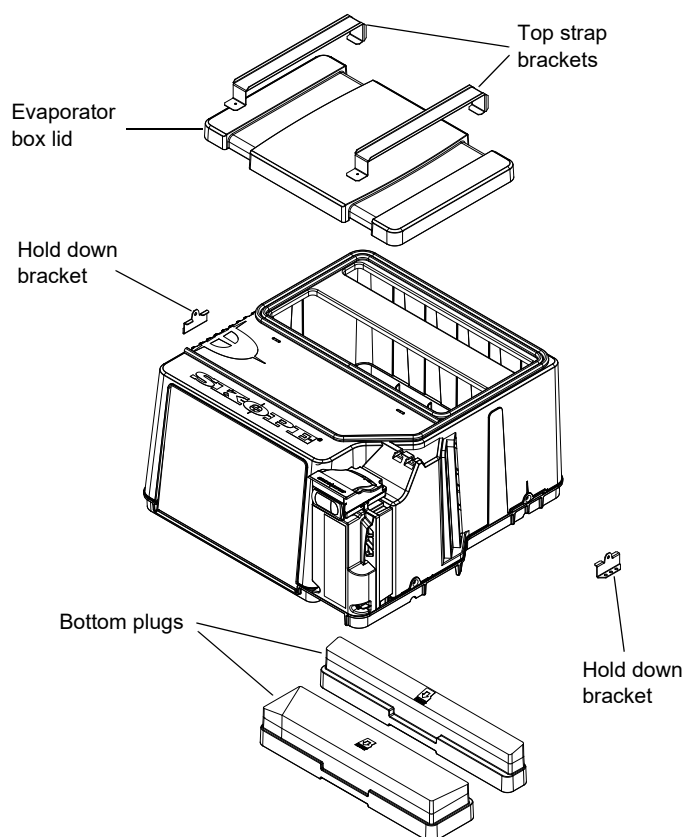
When changing from a bottom mount cabinet to a top mount cabinet, you must:

- fit an evaporator lid, strap brackets and hold down brackets to seal the top of the evaporator box, and to fix the cartridge to the top of the cabinet.
- remove the two bottom evaporator box inserts.

New spare part refrigeration cartridges supplied by SKOPE do not come with the evaporator box lid, top strap brackets or hold down brackets. When replacing a faulty top mount refrigeration cartridge, keep these parts for the new spare part replacement cartridge.

The evaporator box lid, top strap brackets and hold down brackets can be ordered separately from the refrigeration cartridge if required. See spare part numbers:

- Table 27, "Parts – Cartridge assembly: UTHCNI-0010," on page 69
- Table 28, "Parts – Cartridge assembly: UTHCNI-0077," on page 72



Procedure 27: To replace a cartridge

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the existing cartridge (see Procedure 26, on page 39).
3. On the new cartridge, push the bottom plugs out of the bottom of the evaporator box.
4. Swap the evaporator box lid, top strap brackets and hold down brackets from the existing cartridge to the new cartridge.
5. Fit the new cartridge to the cabinet, ensuring that you:
 - check that the gasket on the top of the cabinet is in good condition.
 - reattach the cartridge.
 - reconnect the mains and cabinet plugs.
 - refit the cartridge electrics box cover.

Cartridge Cover

Remove the cartridge cover to access parts within the cartridge assembly.

Procedure 28: To remove the cartridge cover

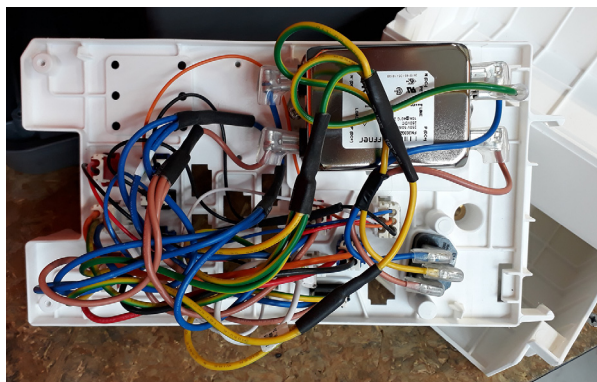
1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the refrigeration cartridge (see Procedure 26, on page 39).

3. Unscrew the four machine screws from the sides of the refrigeration cartridge and lift the cover off the cartridge.

**Cartridge Electrics Box Assembly**

The cartridge electrics box assembly contains the mains supply socket, EMI filter and panel mount socket connectors for the cartridge and cabinet. Refer to the relevant diagram on page 43, or label on the cartridge electrics box cover for socket connection identification.

Due to the confined space within the cartridge electrics box, plugs may come loose as a result of movement and vibrations. Take care when refitting to ensure all plugs are securely attached to the correct sockets.



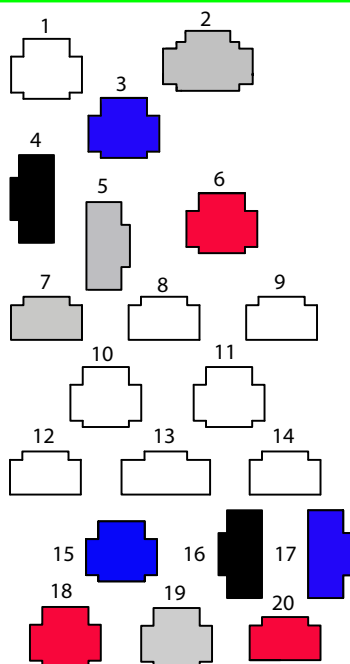
Procedure 29: To remove and open the cartridge electrics box assembly

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. If present, unclip the electronic controller from the top of the electrics box.

3. Undo the fixing screw at the top of the electrics box cover, and remove the cover.

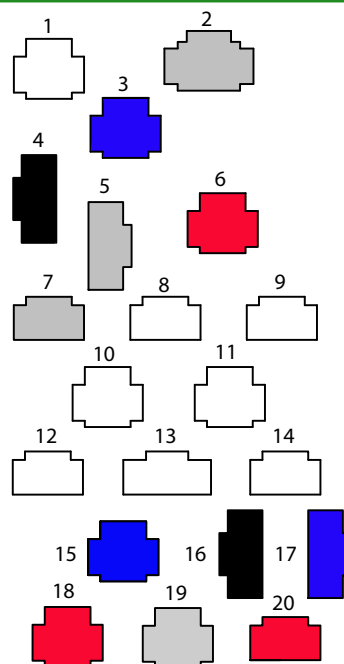


4. Unplug all cartridge plugs from the cartridge electrics box.
5. Undo the two fixing screws at the base of the electrics box, and detach the electrics box from the cartridge.
6. To open the electrics box, undo the two fixing screws on the back of the electrics box and swing the back cover off.

ActiveCore 2 Electrics Box Layout**ActiveCore R290 Junction Box Layout**

LAB80131 | Rev. 2.0 Jul. 2018

Key	Colour	Description	Key	Colour	Description
1	n.a.	Not used	11	n.a.	Not used
2	White	Controller signal	12	n.a.	Not used
3	Blue	Controller return	13	n.a.	Not used
4	Black	Trace heating	14	n.a.	Not used
5	White	Lighting	15	Blue	Compressor
6	Red	Controller power	16	Black	Evaporator sensor
7	White	Door sensor	17	Blue	Appliance sensor
8	n.a.	Not used	18	Red	Condenser fan
9	n.a.	Not used	19	White	Evaporator fan
10	n.a.	Not used	20	Red	Condenser sensor

ActiveCore 3 Electrics Box Layout**ActiveCore R290 Junction Box Layout**

LAB80653 | Rev. 1.1 Jul. 2024

Key	Colour	Description	Key	Colour	Description
1	n.a.	Not used	11	n.a.	Not used
2	White	Controller signal	12	n.a.	Not used
3	Blue	Controller return	13	n.a.	Not used
4	Black	Lighting/Heating	14	n.a.	Not used
5	White	Not used	15	Blue	Compressor
6	Red	Controller power	16	Black	Evaporator sensor
7	White	Door sensor	17	Blue	Appliance sensor
8	n.a.	Not used	18	Red	Condenser fan
9	n.a.	Not used	19	White	Evaporator fan
10	n.a.	Not used	20	Red	Condenser sensor

Condenser Fan For both cartridges, the condenser fan assembly is made up of a fan motor, fan blade and mounting brackets which can be replaced if necessary. The condenser fan flexible cord has a red plug.

The ActiveCore 2 cartridge uses AoFrio fans, and the ActiveCore 3 cartridge uses Saiwei fans.

Table 18: Fan motor manufacturer and torque settings

Cartridge	Generation	Fan motor manufacturer	Torque setting
UTHCNI-0010	ActiveCore 2	AoFrio	1.5 Nm
UTHCNI-0077	ActiveCore 3	Saiwei	1.5 Nm

If the fan stops for any reason, check all connections to ensure no plugs have come loose. Refer to the relevant diagram on page 43, or label on the electrics box cover to identify the condenser fan plug and socket in the electrics box.

IMPORTANT

Replace the motor with the same SKOPE OEM part.
Do not use alternative parts.

It is important that you replace the fan motor and fan blade with the same part to ensure safety, correct alignment and refrigeration performance, and compliance. Tighten the screw holding the fan blade to the fan motor manufacturer's recommended torque settings (shown in Table 18 above).

Procedure 30: To access and remove the condenser fan assembly

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the refrigeration cartridge (see Procedure 26, on page 39).
3. Remove the cartridge cover (see Procedure 28, on page 42).
4. Open the cartridge electrics box and unplug the condenser fan motor plug.

5. Cut the cable ties holding the cables along the cartridge, and free up the condenser fan motor cable.



6. Remove the condenser fan assembly (fan motor, fan blade, mounting brackets) from the cartridge by lifting the shroud up and out.

Procedure 31: To replace the condenser fan blade

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the condenser fan assembly (see Procedure 30 above).
3. Remove the screw and washer from the centre of the fan blade, and lift the blade from the motor.

Procedure 31: To replace the condenser fan blade (continued)

4. Attach the new blade and fix with the screw and washer. Tighten the screw to the fan motor manufacturer's recommended torque setting (1.5 Nm).
5. Reassemble the cartridge.
6. Reassemble the cabinet and test for correct operation.

Procedure 32: To replace the condenser fan motor

Before you start

The cartridge model number is printed on the rating label attached to the front of the cartridge. Before replacing the condenser fan motor, note the generation of the cartridge and fan type (see Table 18 on page 44).

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the condenser fan assembly (see Procedure 30, on page 44) and the fan blade (see Procedure 31 above).
3. Unplug the fan's flexible cord from the cartridge electrics box.
4. Detach the condenser fan motor from the fan mounting brackets by removing the four screws from the mounting brackets.
5. Fit new motor and reattach the fan blade with its washer and screw. Tighten the screw to the fan motor manufacturer's recommended torque setting (1.5 Nm).
6. Reassemble the cartridge, ensuring all cables are neatly cable-tied away from the fan blade.
7. Reassemble the cabinet and test for correct operation.

Evaporator Fan For both cartridges, the evaporator fan assembly is made up of a fan motor and fan blade, both of which can be replaced if necessary. The evaporator fan flexible cord has a red plug with an extension to the white socket on the junction box.

The ActiveCore 2 cartridge uses AoFrio fans, and the ActiveCore 3 cartridge uses Saiwei fans.

Table 19: Fan motor manufacturer and torque settings

Cartridge	Generation	Fan motor manufacturer	Torque setting
UTHCNI-0010	ActiveCore 2	AoFrio	1.5 Nm
UTHCNI-0077	ActiveCore 3	Saiwei	1.5 Nm

The fan motor and fan blade are fixed to the evaporator fan shroud via the brackets. You can lift the shroud (complete with fan motor and fan blade) off the evaporator box once you have removed the refrigeration cartridge cover.

If the fan stops for any reason, check all connections to ensure no plugs have come loose. Refer to the relevant diagram on page 43, or label on the cartridge electrics box cover, to identify the evaporator fan plug and socket in the electrics box.

IMPORTANT

Replace the motor with the same SKOPE OEM part.
Do not use alternative parts.

It is important that you replace the fan motor and blade with the same part to ensure safety, correct alignment and refrigeration performance, and compliance. Tighten the screw holding the fan blade to the fan motor manufacturer's recommended torque settings (shown in Table 19 above).

Procedure 33: To access the evaporator fan assembly

Before you start

Make sure you take note of the control probe's location.

-
1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
 2. Remove the refrigeration cartridge (see Procedure 26, on page 39).
 3. Remove the refrigeration cartridge cover (see Procedure 28, on page 42).
 4. Free the cables from the putty on the edge of the evaporator box.
 5. Cut the cable ties to release control probe from the evaporator fan bracket.
-

6. Lift the evaporator fan assembly up and out of the evaporator box.



Procedure 34: To replace the evaporator fan blade

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
 2. Gain access to the evaporator fan assembly (see Procedure 33 above).
 3. Remove the screw and washer from the centre of the fan blade, and lift the blade from the motor.
 4. Attach the new blade, ensuring it is centred within the evaporator shroud. Tighten the screw to the fan motor manufacturer's recommended torque setting (1.5 Nm).
 5. Reassemble the cartridge.
 6. Reassemble the cabinet and test for correct operation.
-

Procedure 35: To replace the evaporator fan motor

Before you start

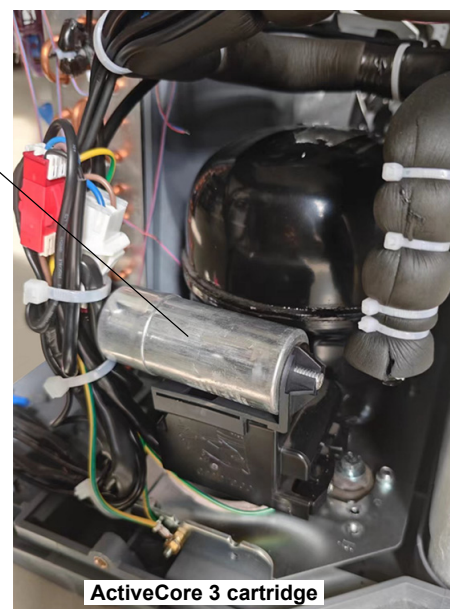
The cartridge model number is printed on the rating label attached to the front of the cartridge. Before replacing the evaporator fan motor, note the generation of the cartridge and fan type (see Table 19 on page 45).

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the evaporator fan assembly (see Procedure 33, on page 46) and fan blade (see Procedure 34 above).
3. Free the fan flexible cord by cutting the cable ties, trace the cable back to the connector (near the compressor electrics) and unplug it.
4. Detach the fan motor from the fan mounting brackets by removing the four screws from the mounting brackets.
5. Attach the replacement motor to the fan mounting brackets. Ensure that the flexible cord points towards the bottom of the evaporator box once reinstalled.
6. Reposition the probe (see "Control Probe" on page 50 for the location if necessary), and re-cable-tie the fan motor and probe flexible cords back onto the mounting bracket to prevent high frequency vibration.
7. Fit the fan blade, ensuring it is centred within the evaporator shroud. Tighten the screw to the fan motor manufacturer's recommended torque setting (1.5 Nm).
8. Reassemble the cartridge.
9. Reassemble the cabinet and test for correct operation.

Compressor The compressor is located at the front of the refrigeration cartridge, beside the condenser.



ActiveCore 2 cartridge



ActiveCore 3 cartridge

If the compressor is causing excessive noise, check the mountings to ensure there is no damage to the rubber or the washers, nuts and screws. A faulty compressor may have a distinct hissing sound and run with a very hot body temperature.

Before replacing the compressor

- Check all plug connections and ensure the compressor electrics are operating correctly.
- Ensure that the compressor is supplied with consistent voltage over 220 volts, and that the voltage does not drop at start-up. If the voltage does drop, ensure the refrigeration cartridge has a direct power supply (not from a multi-box or extension cord).

IMPORTANT

To eliminate possible vibration noise, ensure no pipes touch the plastic base or condenser assembly.

**Compressor
Electrics**

The compressor electrics are located on the front of the compressor.

Procedure 36: To access the compressor electrics

1. Disconnect the cabinet from the mains power supply (see Procedure 11 on page 22).
2. Remove the refrigeration cartridge (see Procedure 26 on page 39).
3. Remove the refrigeration cartridge cover (see Procedure 28 on page 42).
4. Unclip the capacitor from the relay cover (see the relevant image above).
5. Unclip the relay cover from the compressor.

Electronic Controller**Controller
Location**

The electronic controller is located within the electronic controller box assembly.

**Procedure 37: To access the controller**

1. Disconnect the cabinet from the mains power supply (see Procedure 11 on page 22).

One-door cabinets only

2. Undo the 2 × screws to detach the cartridge, and move it back to access the controller box assembly.
3. Open the electronic controller box assembly by undoing the two fixing screws at the rear of the assembly.

Replacing the Controller

Procedure 38: To replace the controller

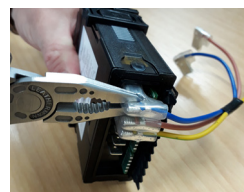
Before you start

Replacement spare part electronic controllers are not supplied with the parameter set loaded. Make sure you have the appropriate parameter file to load into the new controller.

- Open SCS Connect Field app (see “SCS Connect Field App” on page 15) and check if the parameter file is LOCAL.
- If it is not available in LOCAL, ensure you are connected to the internet, search for it in SERVER, and download it to LOCAL.

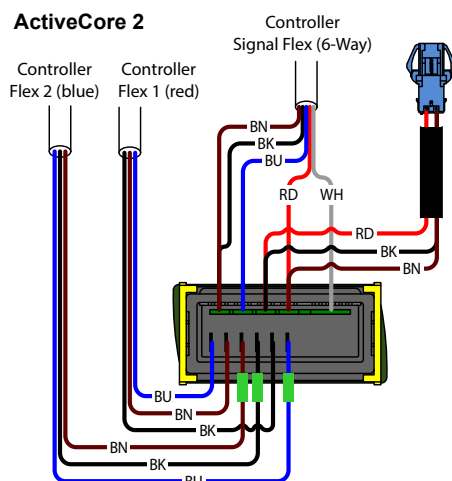
1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Access the electronic controller (see Procedure 37 above).
3. Remove the cable clamps.

4. Use needle nose pliers to press in and unlock the tabs at the back of the electronic controller, and gently remove the QC terminals.

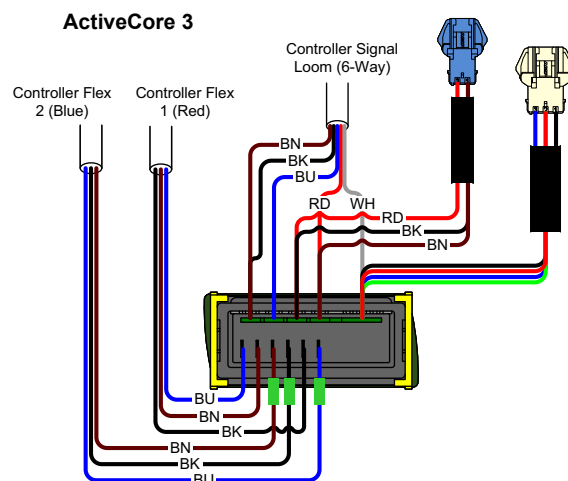


5. Fit the new replacement controller, and connect up the terminals at the back of the controller. Fit low voltage terminals before high voltage terminals.

ActiveCore 2



ActiveCore 3



6. Reassemble the controller box and cabinet, and perform an electrical safety test as required.
7. Reconnect the cabinet to the mains power supply.
8. Use a mobile device to connect to the controller with the SCS Connect Field app (see “SCS Connect Field App” on page 15).
9. Navigate to the LOAD PARAMETER FILE menu.
10. Select the appropriate parameter file from LOCAL.
11. Confirm it is the correct file and select WRITE TO SCS.
12. After WRITE TO SCS is complete, select MENU > DISCONNECT to save the parameter set on SCS Connect Field app.
13. Power cycle the controller and check that correct parameter set has been applied
14. Set up controller and cabinet links as required:
 - **Corporate:** The service tech must link to the controller to the cabinet serial number in the SCS Connect Field app.
 - **General Market:** The owner must set up SKOPE-connect (if in use).

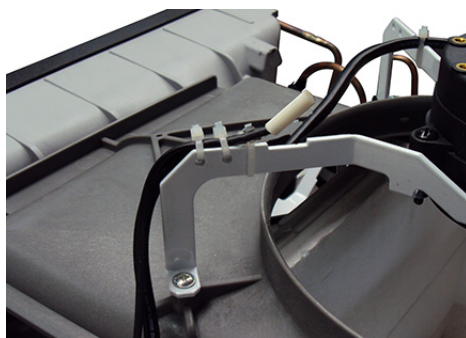
Door Switch The cabinet is fitted with a door switch above each door, which tells the electronic controller when a door is opened. A small magnet in the door frame activates the switch. A cable connects the switch to the electronic controller via an inline connector on top of the cabinet.

Note: The door switch is wired in series with the ambient probe.

Procedure 39: To remove the door switch

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
 2. Disconnect the door switch cable plug from the inline connector on top of the cabinet.
 3. Unscrew the two fixing screws from the door switch and remove it.
 4. Fit the replacement door switch and connect via the inline connector.
-

Control Probe The control probe is cable-tied to one of the evaporator fan motor brackets.



Procedure 40: To replace the control probe

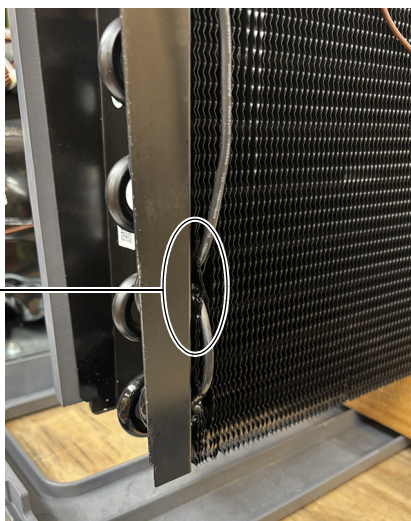
Before you start

Make sure you take note of the original control probe's location and cable path.

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
 2. Remove the evaporator fan assembly (see Procedure 33, on page 46).
 3. Detach the probe from the evaporator fan shroud bracket, trace the probe cable back to the cartridge electrics box, and unplug it.
 4. Following the same path as the original control probe, fit the new probe with cable ties as necessary. Ensure that the:
 - probe cable is securely plugged into the rear of the cartridge junction box.
 - probe cable is cable-tied to the evaporator fan shroud bracket.
 - probe is bent away from the fan bracket at a 45° angle.
 5. Reassemble the cartridge.
 6. Reassemble the cabinet and test for correct operation.
-

Evaporator Probe The evaporator probe is located within the evaporator coil. It controls the refrigeration system defrost initiation and termination.

Evaporator probe
(in the fins)



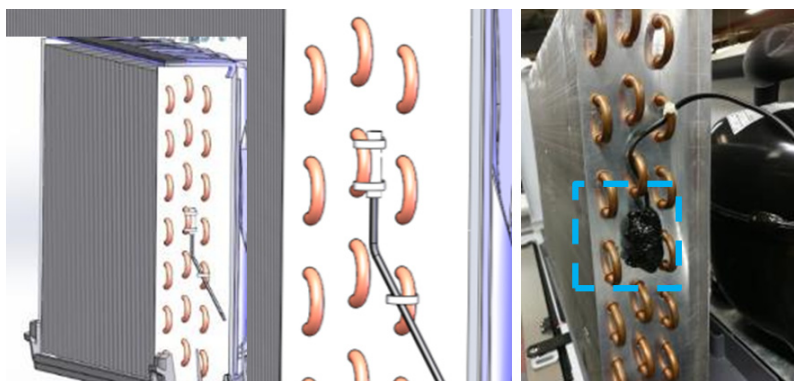
Procedure 41: To replace the evaporator probe

Before you start

Make sure you take note of the original evaporator probe's location and cable path.

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the refrigeration cartridge (see Procedure 26, on page 39).
3. Remove the cartridge cover (see Procedure 28, on page 42).
4. Remove the evaporator fan assembly (see Procedure 33, on page 46).
5. Remove both pieces of putty securing the pipes and cables on the edge of the evaporator box.
6. Carefully lift the coil up and out of the evaporator box. Take care of pipes and cables when lifting it out.
7. Detach the probe from the side of the evaporator coil, trace the probe cable back to the cartridge electrics box, cutting cable ties as required, and unplug it.
8. Following the same path as the original evaporator probe, run the new probe to the evaporator coil and secure it with cable ties.
 - Position the evaporator probe in the same location as the original probe (against the side of the coil above the bottom pipe, as pictured above).
 - Plug the probe cable securely into the electrics box.
9. Reassemble the cartridge.
10. Reassemble the cabinet and test for correct operation.

Condenser Probe The condenser probe is located on the side of the condenser coil. It monitors condenser temperature.



Procedure 42: To replace the condenser probe

Before you start

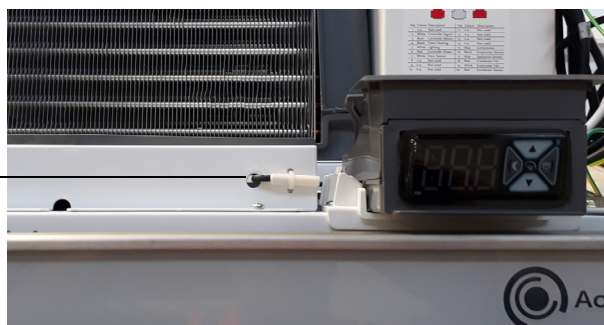
Make sure you take note of the original condenser probe's location and cable path.

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
2. Remove the refrigeration cartridge (see Procedure 26, on page 39).
3. Remove the cartridge cover (see Procedure 28, on page 42).
4. Detach the probe from the side of the condenser coil, trace the probe cable back to the cartridge electrics box, cutting cable ties as required, and unplug it.
5. Following the same path as the original probe, run the new probe to the condenser coil and secure with cable ties.
 - Place the probe in the same location as the original probe (as pictured above) and insulate with cork tape.
 - Plug the probe cable securely into the electrics box.
6. Reassemble the cartridge.
7. Reassemble the cabinet and test for correct operation.

Ambient Probe The ambient probe is located above the door next to the electronic controller. It monitors the temperature around the refrigeration cartridge.

Note: The ambient probe is wired in series with the door switch.

Ambient probe



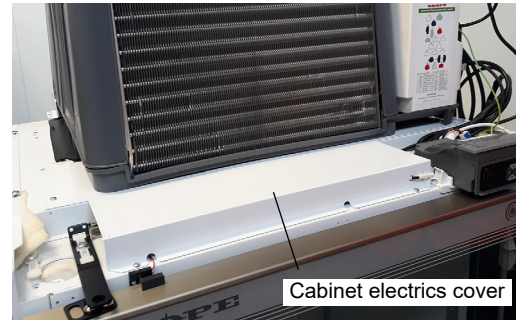
Procedure 43: To replace the ambient probe

Before you start

Make sure you take note of the original ambient probe's location and cable path.

1. Disconnect the cabinet from the power supply (see Procedure 11, on page 22).
 2. Remove the sign panel (see Procedure 15, on page 25).
-

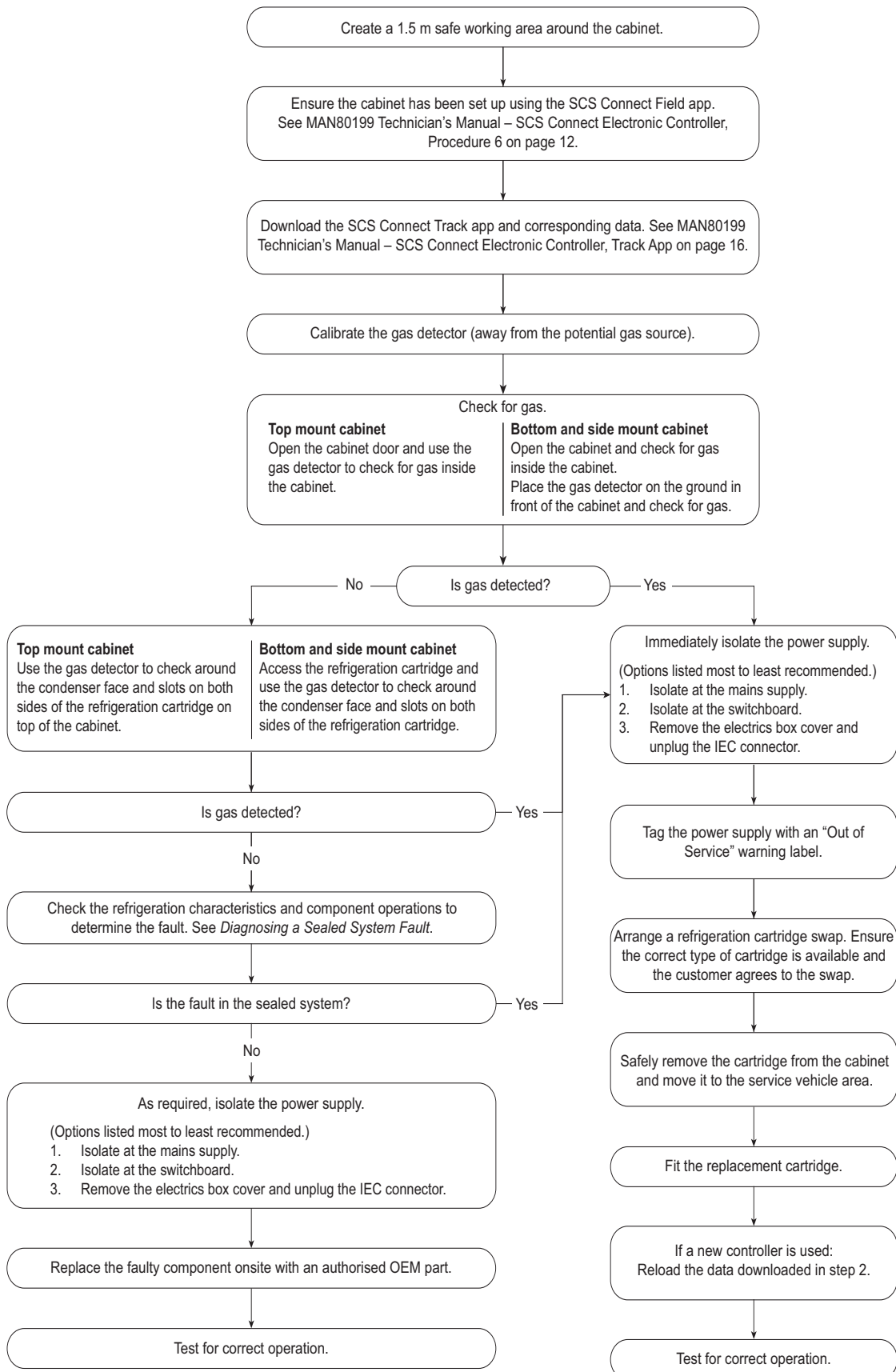
3. Detach the refrigeration cartridge by undoing the 2 × screws, and carefully push back or remove it to allow access to the cabinet electrics cover.



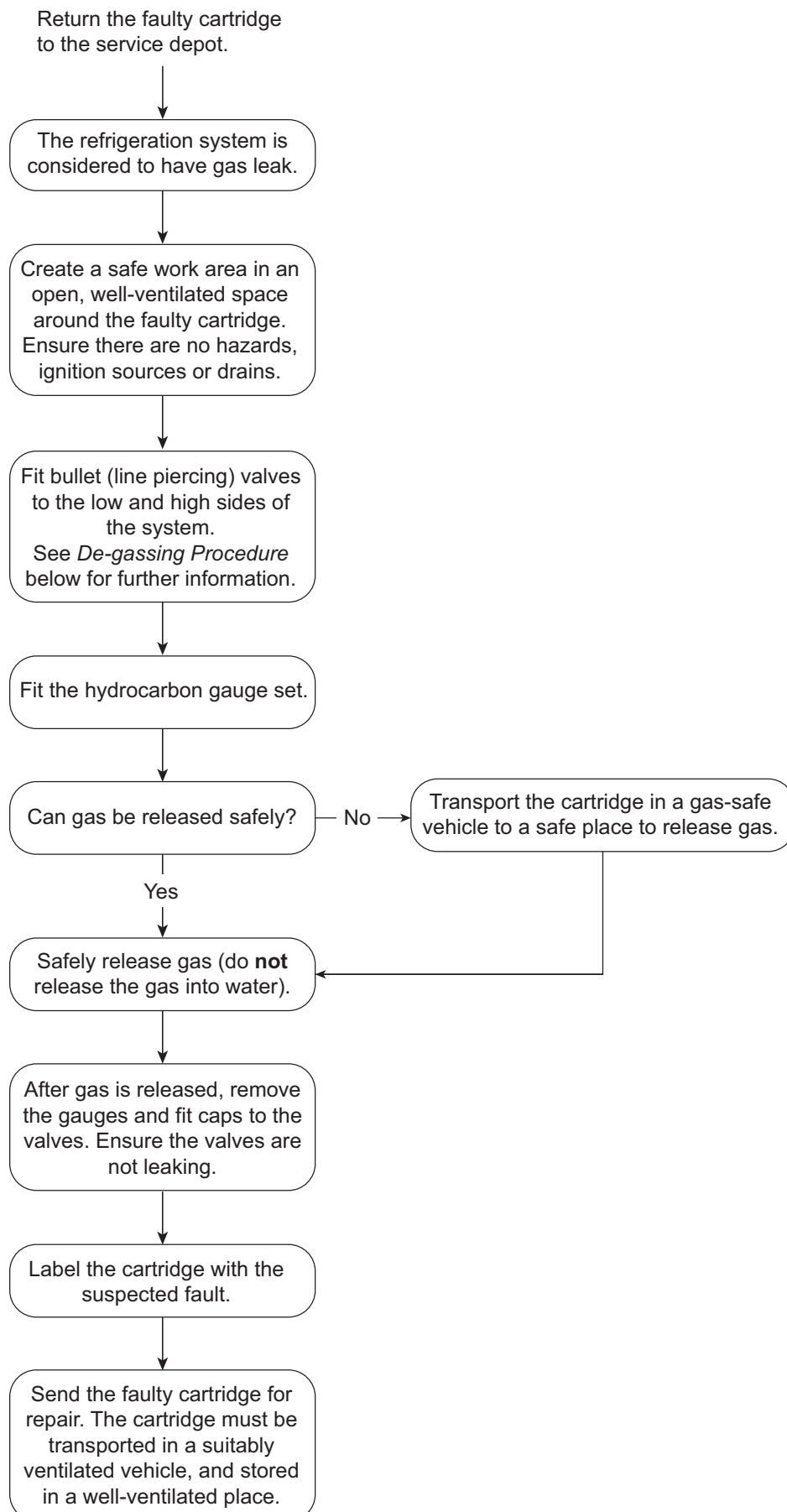
4. Unscrew the cabinet electrics cover.
 5. Detach the probe from the electrics cover, trace the probe cable back to the connector, cutting cable ties as required, and unplug it.
 6. Fit the new probe and secure with cable ties. Ensure you position the probe in the same location as the original probe.
 7. Reassemble the cartridge.
 8. Reassemble the cabinet and test for correct operation.
-

On-site Work Procedure

If a customer reports a “not cooling” fault, and it has been established that the cabinet is not cooling, follow the procedure below when making the service visit.



On-site Work Procedure (continued)



De-gassing Procedure

Follow the procedure below to safely de-gas a hydrocarbon refrigeration cartridge (removable cartridge cabinets only).

Note: Follow all hydrocarbon standard operating procedures when carrying out this procedure.

Procedure 44: To de-gas a refrigeration cartridge

Before you start

You will need:

- 2 × ¼" piercing valve kits
- Align key set
- Hydrocarbon-rated gauge set
- Leak detector

1. Conduct a risk assessment.
 2. Disconnect the cabinet from the mains power supply.
 3. Leak check the cartridge.
 4. Remove the refrigeration cartridge, and place it in a well ventilated area, away from any ignition sources, drains and populated areas.
-

5. Install the one valve on the low side processing tube.



6. Install the one valve on the high side processing tube.



7. Connect the gauge set on the low and high sides and release the refrigerant into the atmosphere.
 8. Once all the refrigerant has been released, cap the valves and leave them in position.
 9. Complete the repairs at a hydrocarbon repair station.
 10. Once the repairs have been completed, remove all piercing valves, and return the system to a sealed state.
-

6 Maintenance

Cleaning

Before any maintenance, unplug the cabinet from the mains power supply.

Cabinet The owner should periodically wipe the inside and outside of the cabinet with a damp cloth, taking care to keep moisture away from electrical parts.

Condenser Coil and Optional Filter To ensure trouble-free performance, SKOPE strongly recommends the cleaning schedule in Table 20, which will depend on:

- the cabinet's location and environment.
- the condition of the condenser coil.

Table 20: Cleaning schedule

Timeframe	Performed by	Action
At least once a month	Owner	Filter Clean with a vacuum cleaner, and wash with cold water. Condenser coil Brush with a soft brush to remove dust and fluff. If debris can no longer be removed, arrange a service call for comprehensive maintenance and coil clean.
Every 6 months, or as required	Service technician	Filter Clean with a vacuum cleaner and wash with cold water. If necessary, discard the old filter and replace it. Condenser coil Comprehensive maintenance based on the condition of the coil, which may include: <ul style="list-style-type: none"> • a nitrogen blow-out. • a PH-neutral chemical clean.

The condenser coil and optional air filter **must** be kept clean for efficient and reliable operation.

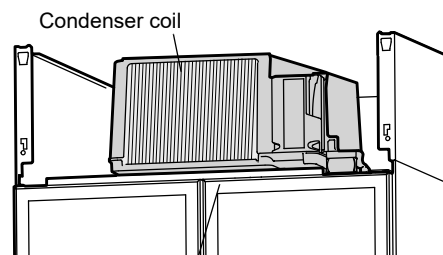
WARNING

Unplug the cabinet from the mains power supply before cleaning the condenser coil or optional filter.

Procedure 45: To clean the condenser coil and optional condenser filter

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 22).
 2. Remove the sign panel (see Procedure 15, on page 25).
-

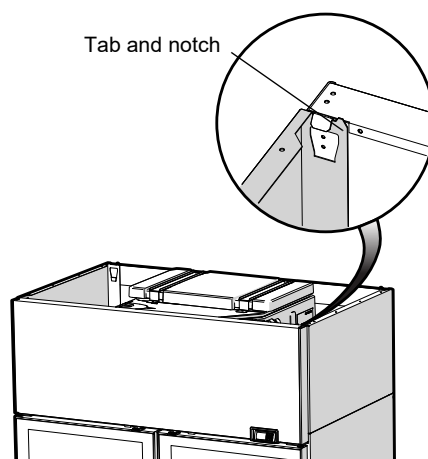
3. Brush the condenser coil with a soft brush to remove any dust and fluff.



4. Refit the sign panel and reconnect to the power supply.

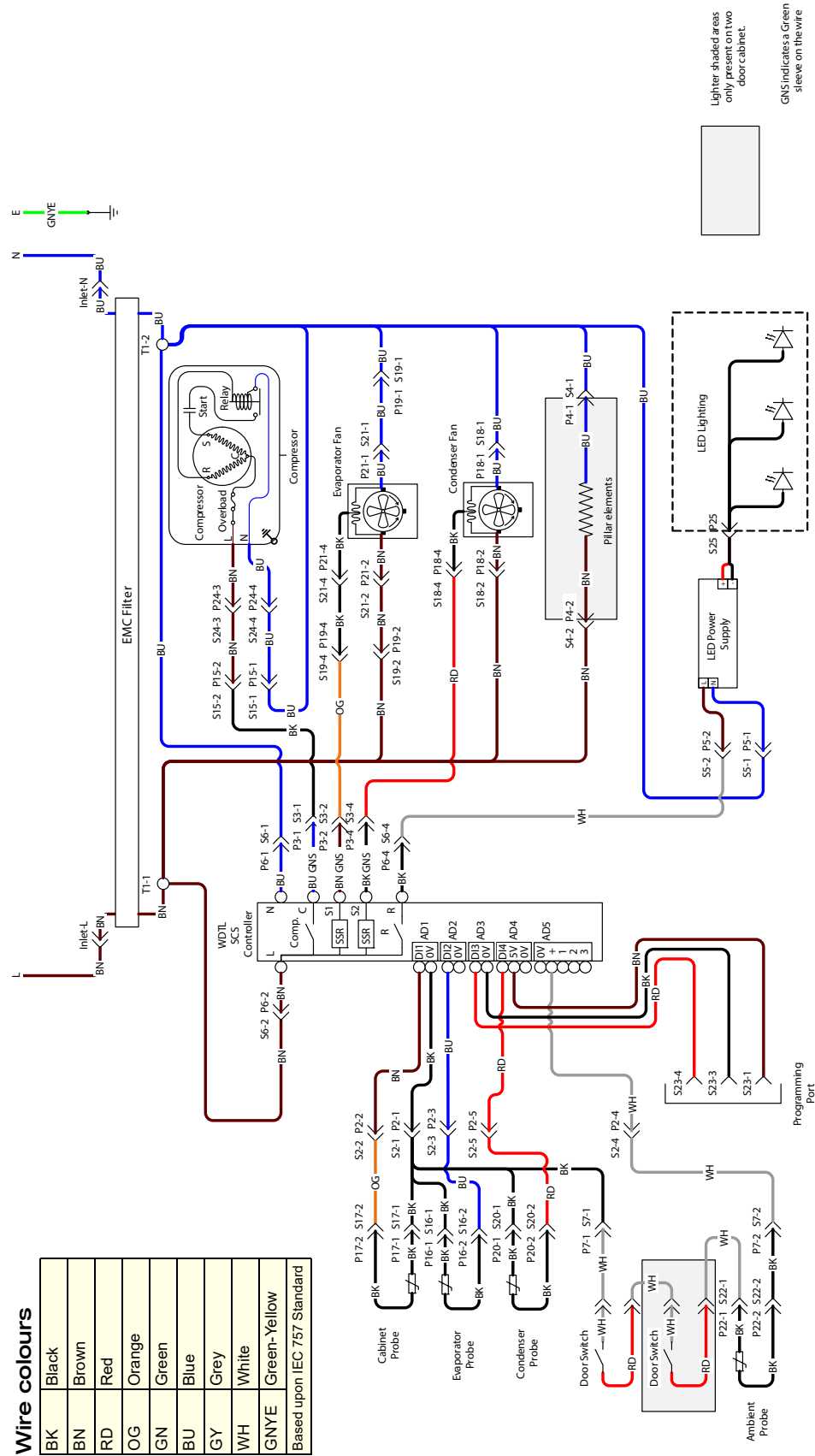
Important

When refitting, ensure the tabs on the back of the sign are positioned in the notches on top of the cabinet, and that the sign is pushed fully in and secure.

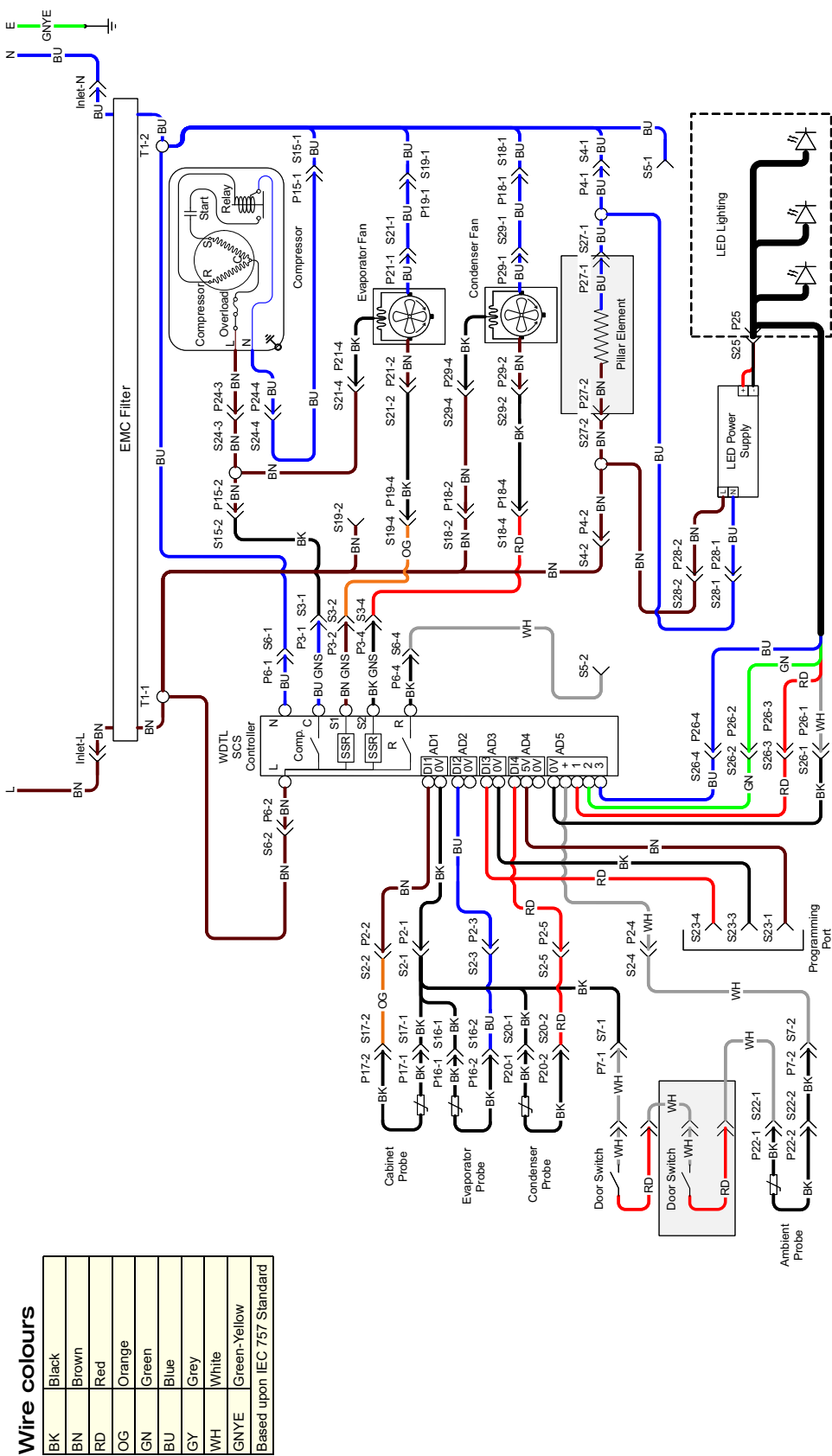


7 Wiring

Cartridge Model: UTHCNI-0010



Cartridge Model: UTHCNI-0077



Legend

Item	Description	Item	Description	Item	Description
Internal Unit Junction Box Sockets/Plugs			External Sockets/Plugs		
Inlet	IEC cabinet socket/plug	S11/P11	Not used	S21/P21	Evaporator motor extension socket/plug (red 4-way)
S1/P1	Not used	S12/P12	Not used	S22/P22	Ambient sensor socket/plug (white 2-way)
S2/P2	Unit junction box to controller signal socket/plug (6-way)	S13/P13	Not used	S23/P23	Programming/comms port socket (blue 4-way)
S3/P3	Unit junction box to controller power socket/plug (blue 4-way)	S14/P14	Not used	S24/P24	Compressor electrics plug
S4/P4	Heater wire unit socket/plug (black 3-way)	S15/P15	Compressor unit socket/plug (blue 4-way)	S25/P25	LED driver DC output socket/plug (red 2-way)
S5/P5	Light unit socket/plug (white 3-way)	S16/P16	Evaporator sensor socket/plug (black 2-way)	S26/P26	LED lighting loom socket/plug (white 6-way)
S6/P6	Unit junction box to controller power socket/plug (red 4-way)	S17/P17	Cabinet sensor socket/plug (blue 2-way)	S27/P27	Solid door heating adaptor socket/plug (black 3-way)
S7/P7	Door sensor socket/plug (white 2-way)	S18/P18	Condenser motor unit socket/plug (red 4-way)	S28/P28	Solid door lighting adaptor (black socket, white plug)
S8/P8	Not used	S19/P19	Evaporator motor unit socket/plug (white 4-way)	S29/P29	Condenser motor extension socket/plug (red 4-way)
S9/P9	Not used	S20/P20	Condenser sensor socket/plug (red 2-way)		
S10/P10	Not used	T1	Unit terminals		

8 Spare Parts

Main Assembly

TME650N Series

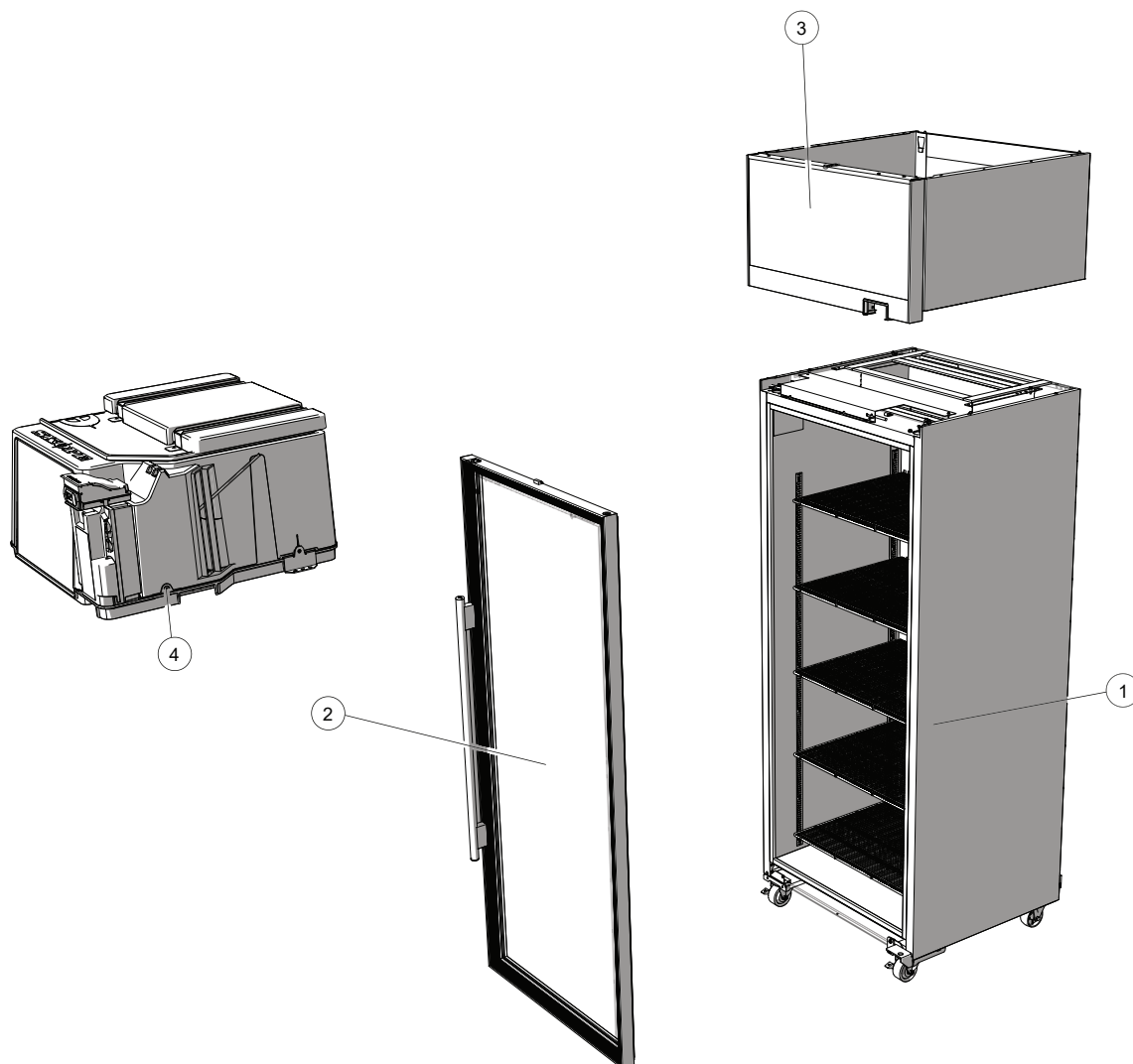


Table 21: Parts – Main assembly: TME650N series

No.	Description	Page
1	Cabinet assembly	Page 63
2	Door assembly	Page 67
3	Sign assembly	Page 68
4	Cartridge assembly – ActiveCore 2	Page 69
	Cartridge assembly – ActiveCore 3	Page 71

TME1000N Series

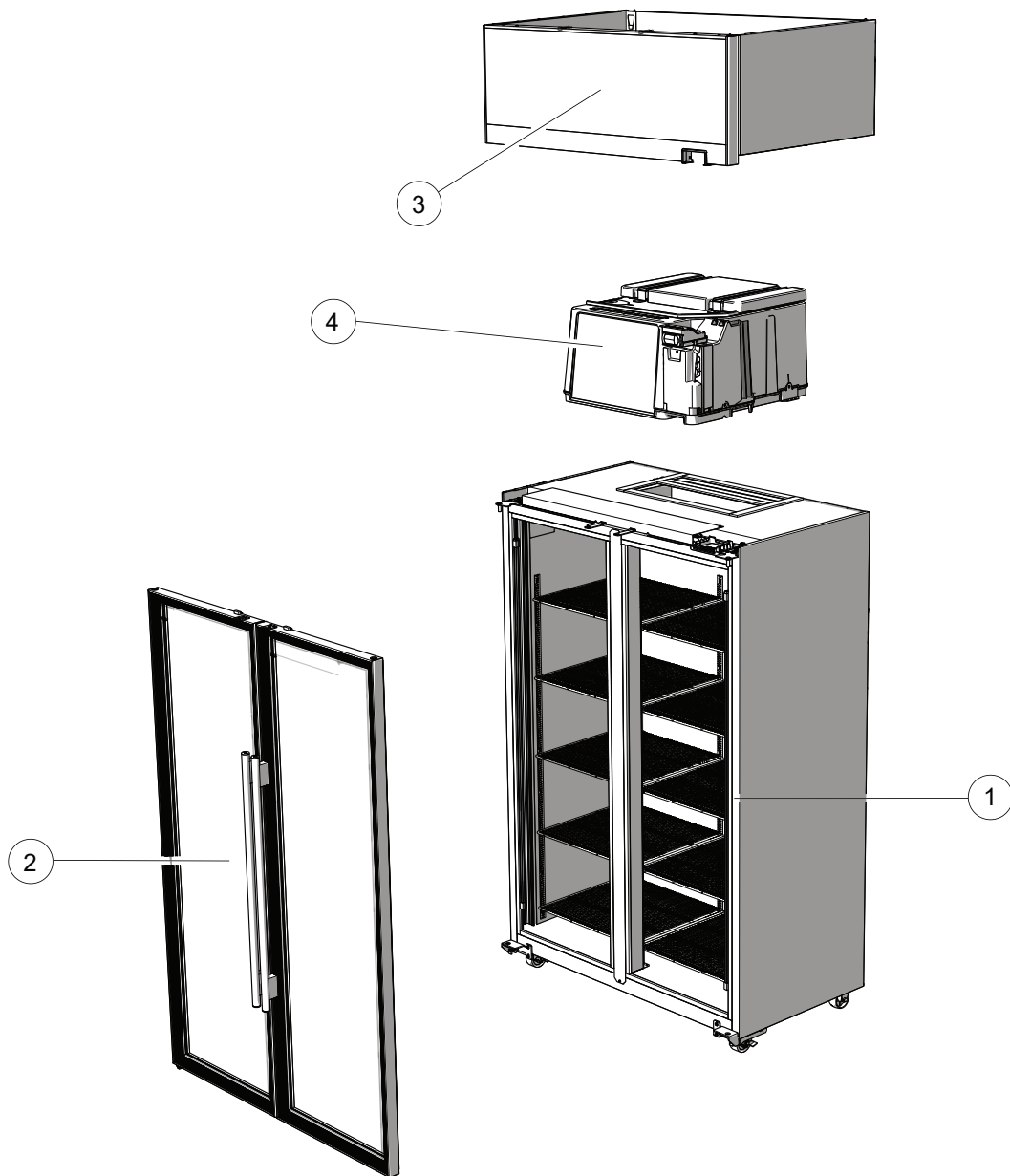


Table 22: Parts – Main assembly: TME1000N series

No.	Description	Page
1	Cabinet assembly	Page 63
2	Door assembly	Page 67
3	Sign assembly	Page 68
4	Cartridge assembly – ActiveCore 2	Page 69
	Cartridge assembly – ActiveCore 3	Page 71

Cabinet Assembly

TME650N Series

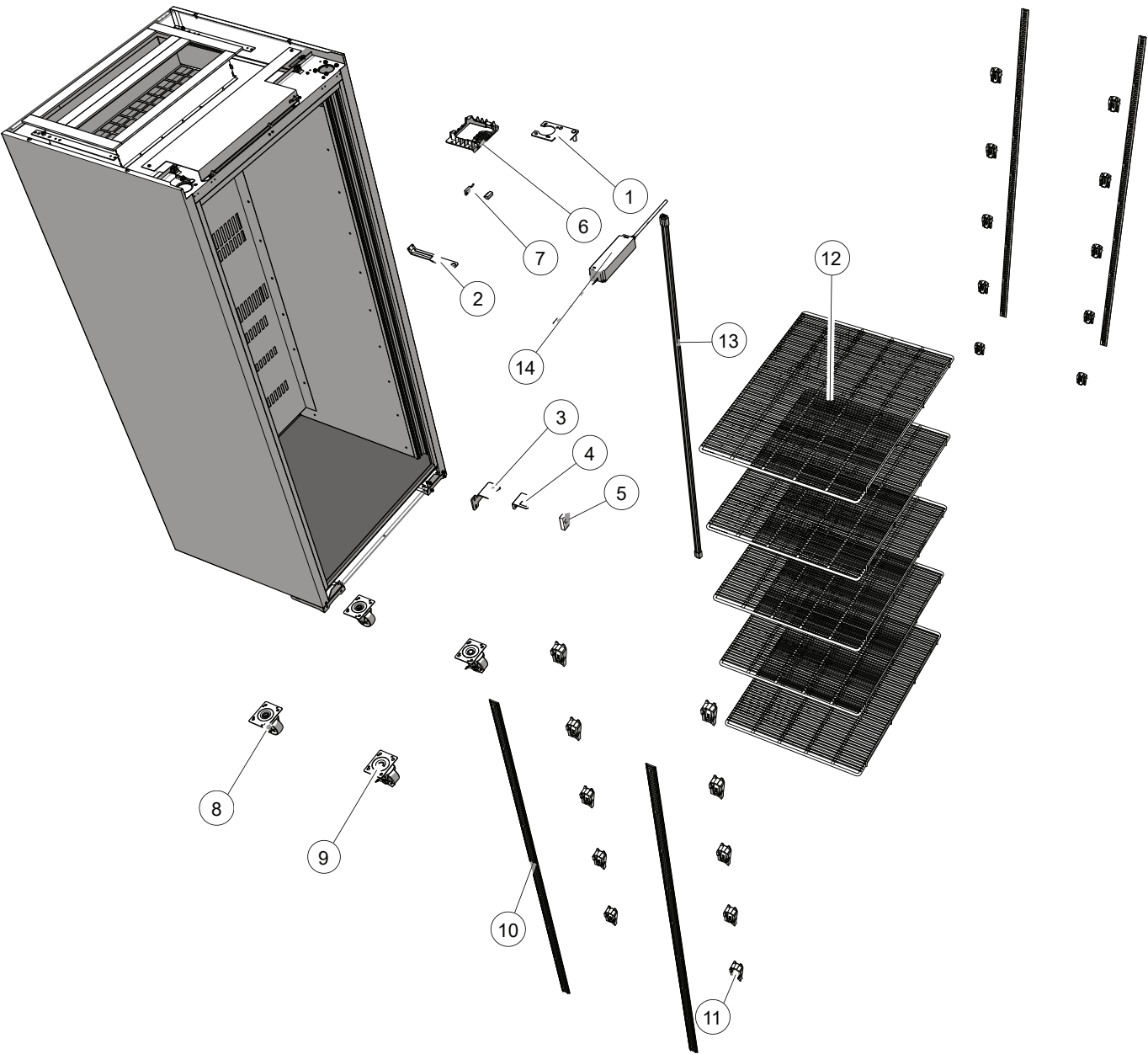


Table 23: Parts – Cabinet assembly: TME650N series

No.	Description	Part no.		
		Unpainted/standard	Colour: White	Colour: Black
1	Top hinge – right hand		HB0070110582B	
2	Cabinet top lock bracket			HB0070111623
–	Sliding door lock bush (not shown)		HB0070206938	
3	Bottom hinge – right hand		HB0070110851	
4	Tension bracket			HB0070110580
5	Height adjustment block lock nut			HB0070110581
6	Controller clip		HB0070206333	
7	Door sensor assembly (includes magnet)	HB0074091496		
8	Rear castor	HB0070105066		
9	Front castor lockable	HB0070105065		
10	Shelf support strip	HB0070110331		
11	Shelf clip		HB0070205867	
12	Wire shelf		HB0070110864	
13	LED light	ELL11771		
14	LED light power supply	ELZ11239		
–	LED light loom (ActiveCore 2 cabinet only, not shown)	SM65BYN/X05		
–	Cabinet top RGB lighting loom (ActiveCore 3 cabinet only, not shown)	FLX11929		
–	Door and ambient sensor loom (not shown)	HB0070401108		

Note: Check the part colour before ordering. If the colour differs from the list above, state the specific colour when ordering.

TME1000N Series

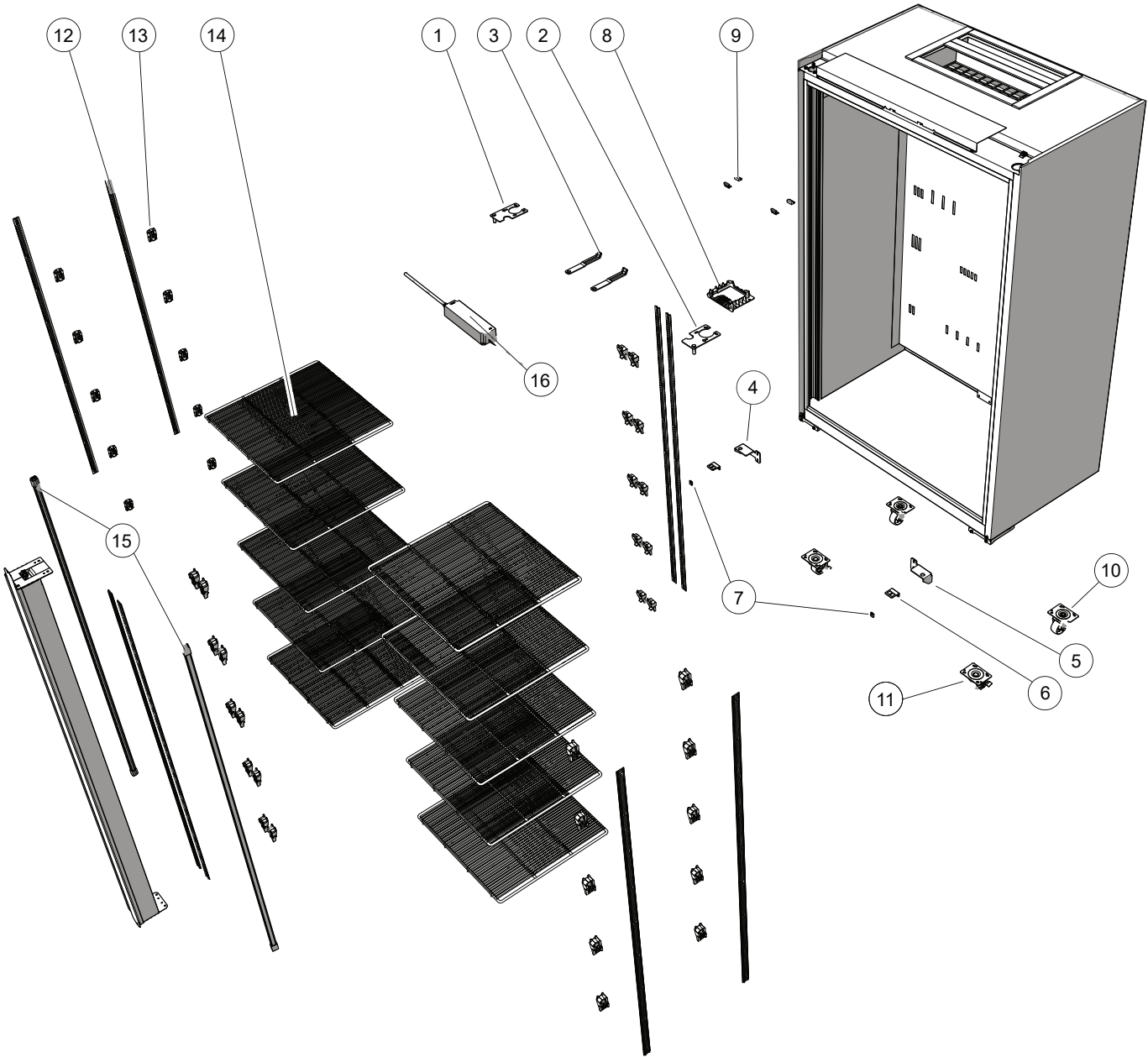


Table 24: Parts – Cabinet assembly TME1000N series

No.	Description	Part no.		
		Unpainted/standard	Colour: White	Colour: Black
1	Top hinge – left hand		HB0070110583B	
2	Top hinge – right hand		HB0070110582B	
3	Cabinet top lock bracket			HB0070111623
–	Sliding door lock bush (not shown)		HB0070206938	
4	Bottom hinge – left hand		HB0070110850	
5	Bottom hinge – right hand		HB0070110851	
6	Tension bracket			HB0070110580
7	Height adjustment block			HB0070110581
8	Controller clip		HB0070206333	
9	Door sensor assembly (includes magnet)	HB0074091496		
10	Rear castor	HB0070105066		
11	Front castor lockable	HB0070105065		
12	Shelf support strip	HB0070110331		
13	Shelf clip		HB0070205867	
14	Wire shelf – split (10 per cabinet)		HB0070110862	
	Wire shelf – wide (5 per cabinet)		HB0070110863	
15	LED light	ELL11771		
16	Light power supply	ELZ11239		
–	Light loom (ActiveCore 2 cabinet only, not shown)	SM10BYN/X05		
–	Cabinet top RGB lighting loom (ActiveCore 3 cabinet only, not shown)	FLX11930		
–	Door and ambient sensor loom	HB0070401107		

Note: Check the part colour before ordering. If the colour differs from the list above, state the specific colour when ordering.

Glass Door Assembly

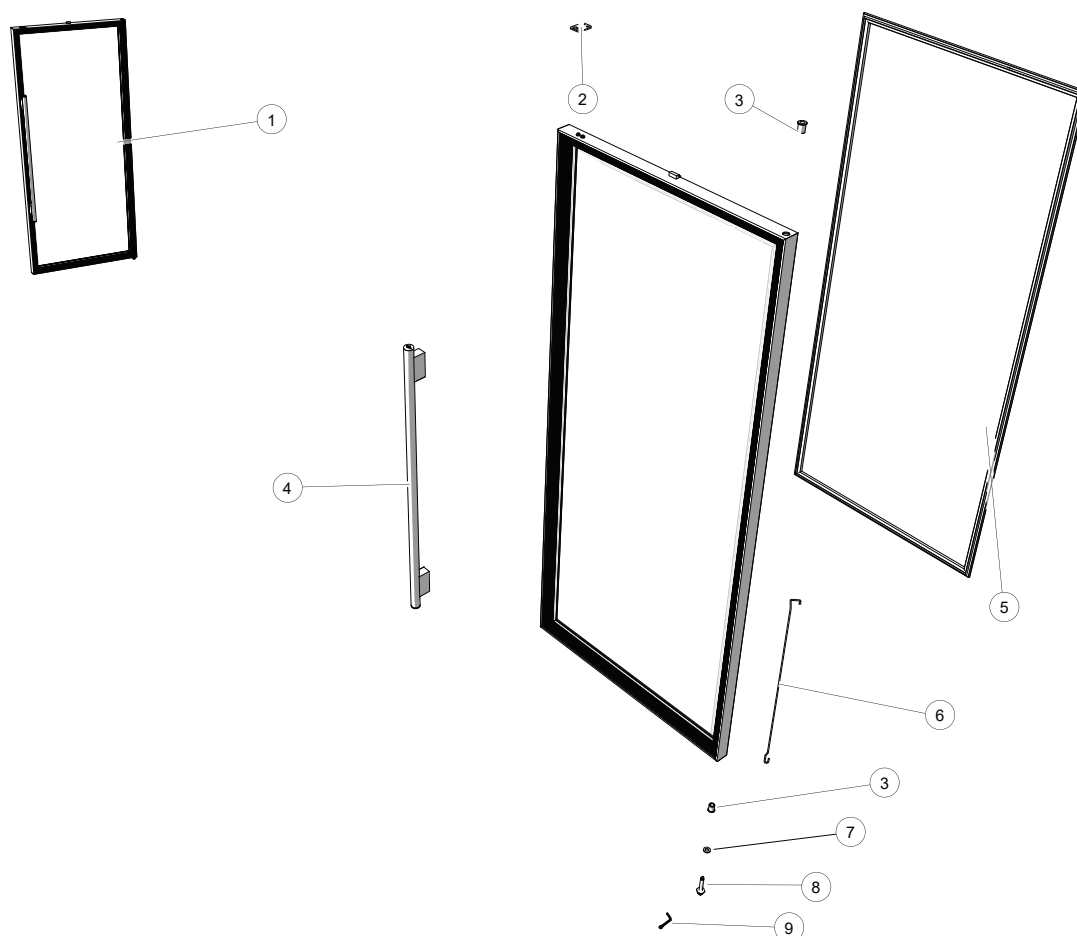


Table 25: Parts – Glass door assembly

No.	Description	SKOPE part no.		
		Unpainted/standard	Colour: White	Colour: Black
1	TME650N door assembly – right hand	–	HB0070832242	–
	TME1000N door assembly – right hand	–	HB0070832243	–
	TME1000N door assembly – left hand	–	HB0070832244	–
2	Door lock bracket – door piece	–	SM60BV/348-WH	SM60BV/348-BK
3	Bush	PLM5075	–	–
4	Door handle	–	HAN11195/0844-AS (silver, for white door)	–
	Door handle mount	STY11484GY		
5	TME650N magnetic gasket	GKT0432SK	–	–
	TME1000N magnetic gasket	GKT0572SK	–	–
6	Torsion bar	REF5014	–	–
7	Bush washer	PLM11298	–	–
8	Capstan	TUR11299	–	–
9	Split pin	FAS5076	–	–
–	Hinge reversal kit (right to left hand, single door only) (not shown)	–	SM65BYN/D100-32	SM65BYN/D100-49

Note: Check the part colour before ordering. If the colour differs from the list above, state the specific colour when ordering.

Sign Assembly

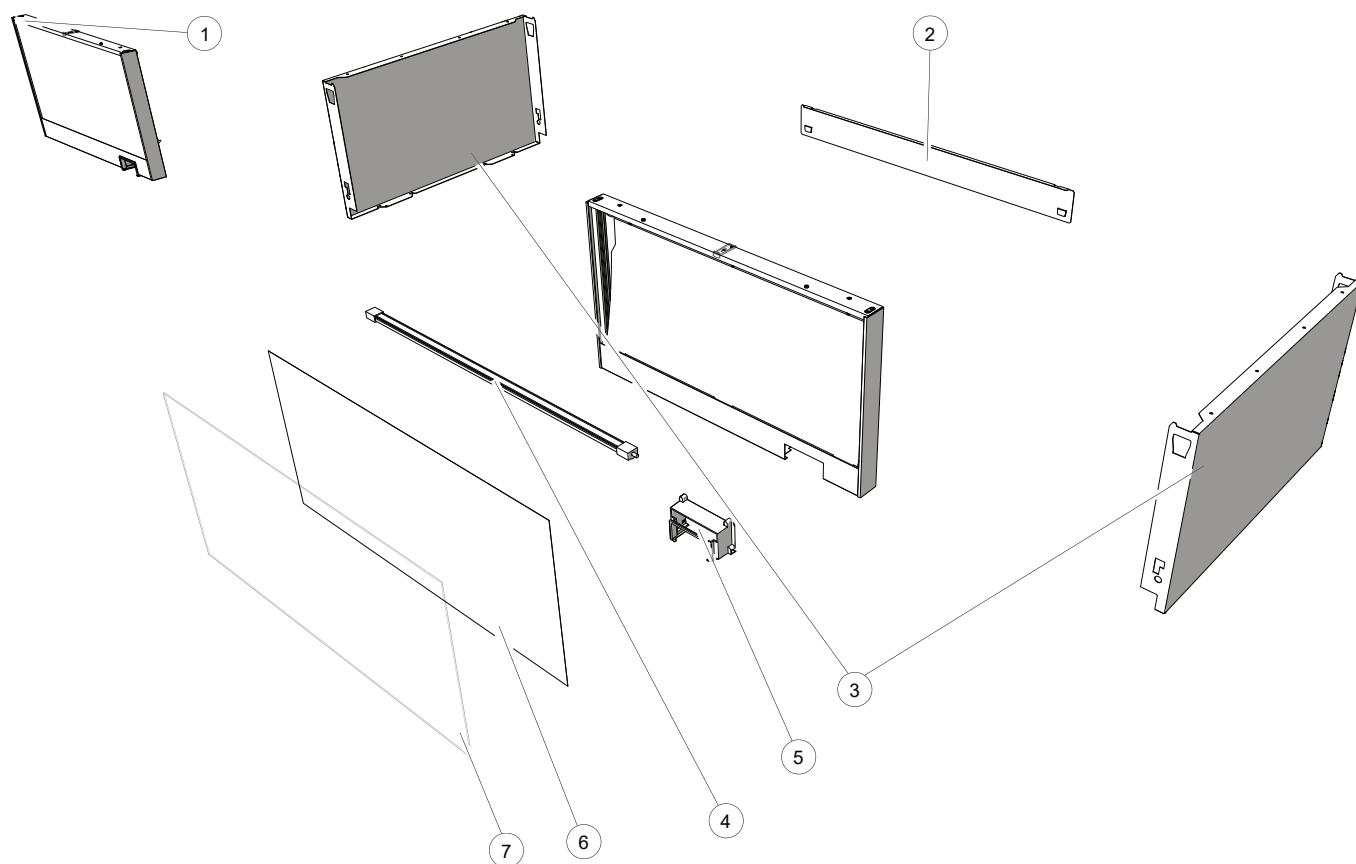


Table 26: Parts – Sign assembly

No.	Description	SKOPE part no.			
		<i>TME650N-A (unlit sign)</i>	<i>TME650N-AC (lit sign)</i>	<i>TME1000N-A (unlit sign)</i>	<i>TME1000N-AC (lit sign)</i>
1	Sign assembly – white	MT65GV/S22-32	MT65BYN/T61-32/00	MT10GV/S22-32	MT10BYN/T61-32/00
	Sign assembly – black	MT65GV/S22-49	MT65BYN/T61-49/00	MT10GV/S22-49	MT10BYN/T61-49/00
2	Sign back strip	HB0070110813	HB0070110813	HB0070110812	HB0070110812
3	Sign side	SM65BV/182	SM65BV/182	SM65BV/182	SM65BV/182
4	Sign light bar	–	ELL11772	–	ELL11773
5	Controller surround	HB0070206332	HB0070206332	HB0070206332	HB0070206332
6	Sign panel (opal)	–	PLY11242-MT65	–	PLY11242-MT10
7	Sign panel (transparent)	–	HB0070206409	–	HB0070206408

Note: Check the part colour before ordering. If the colour differs from the list above, state the specific colour when ordering.

Cartridge Assembly

UTHCNI-0010

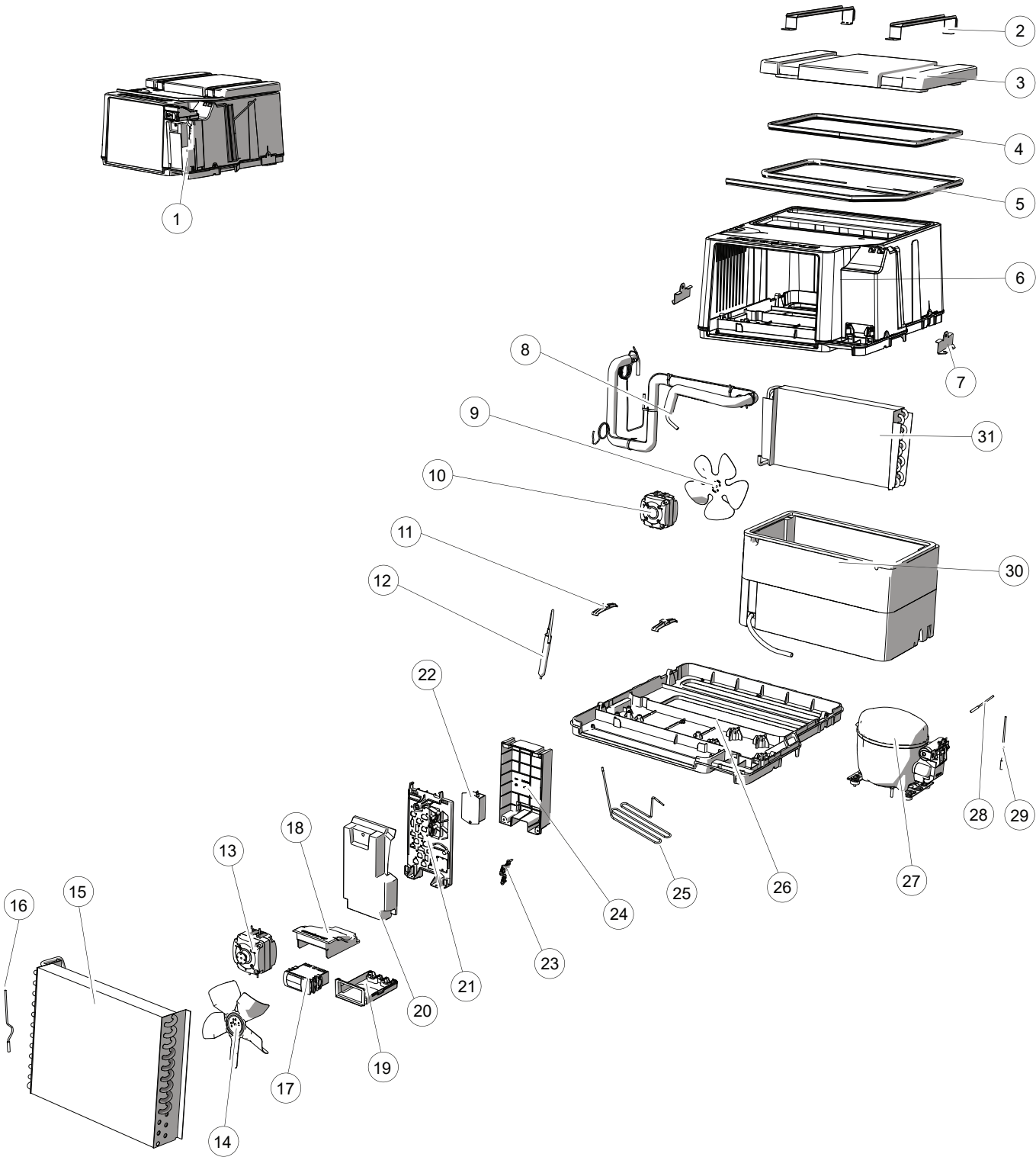


Table 27: Parts – Cartridge assembly: UTHCNI-0010

No.	Description	SKOPE part no.
1	Cartridge assembly*	HB0070832517A
2	Top metal strap bracket	HB0070110816
3	Evaporator box lid	HB0070511356

Table 27: Parts – Cartridge assembly: UTHCNI-0010 (continued)

No.	Description	SKOPE part no.
4	Cartridge gasket seal 1571 mm	PLE11052-1571
5	Cartridge gasket seal 2306 mm	PLE11052-2306
6	Cartridge plastic top cover and base assembly	HB0070847985
7	Hold down bracket	HB0070110815A
8	Suction line assembly	HB0070702718
9	Evaporator fan blade	HB074001790
10	Evaporator fan motor	ELM11309
–	Evaporator fan shroud (not shown)	HB0070206123
11	Condensate pipe support	HB0070110674
12	Dryer	HB0074180006
13	Condenser fan motor	ELM11309
14	Condenser fan blade	HB0074001789
–	Condenser fan shroud (not shown)	HB0070206124
15	Condenser coil	HB0070702720
16	Condenser probe	HB0070401693B
17	AoFrio SCS Connect electronic controller	ELZ11749-1626
18	Controller box cover	HB0070206126
19	Controller box base	HB0070206125
20	Cartridge electrics box enclosure front	HB0070207012A
21	Cartridge electrics box enclosure	HB0070207014
22	EMI filter	HB0074600001
–	Electrical box assembly – ActiveCore R290 Fridge (not shown)	HB0070833377
23	Cable clamp	HB0070206127
24	Cartridge electrics box enclosure rear	HB0070207013A
25	Discharge line assembly	HB0070702717
26	Cartridge plastic bottom	HB0070206212B
27	Compressor – Wanbao FN90M	HB0074000848
28	Control probe	HB0070400542
29	Evaporator probe	HB0070400506
30	Evaporator box	HB0070510928A
31	Evaporator coil	HB0070702232
–	Ambient probe (not shown)	HB0070401693A
–	Mains power cord (not shown)	HB0070400636
–	TME650N Light loom (not shown)	SM65BYN/X05
–	TME1000N Light loom (not shown)	SM10BYN/X05
–	Controller wire loom – blue (not shown)	HB0070401063
–	Controller wire loom – red (not shown)	HB0070401062
–	Controller wire loom – white (not shown)	HB0070401111

***Note:** When ordered as a spare part, the refrigeration cartridge does not include evaporator box lid, top metal strap bracket and hold down bracket. If required, order these items (30, 31 and 21) as well.

UTHCNI-0077

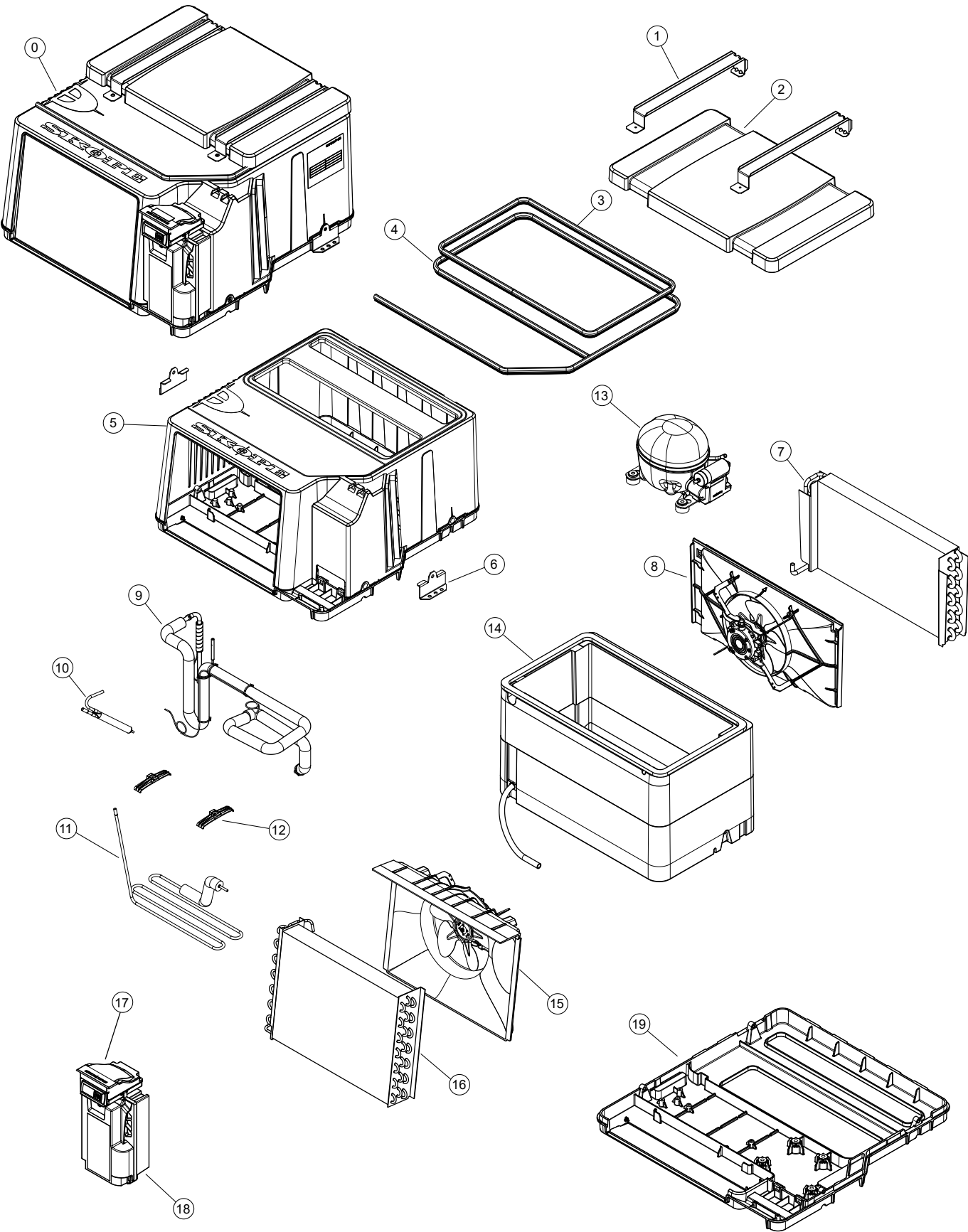


Table 28: Parts – Cartridge assembly: UTHCNI-0077

No.	Description	SKOPE part no.
0	Cartridge assembly	UBHCNI-0076
1	Top metal strap bracket	HB0070110816
2	Evaporator box lid	HB0070511356
3	Cartridge gasket seal 1571 mm	PLE11052-1571
4	Cartridge gasket seal 2306 mm	PLE11052-2306
5	Cartridge plastic top cover and base assembly	HB0070847985
6	Hold down bracket	HB0070110815A
7	Evaporator coil	HB0070702232
8	Evaporator fan shroud	HB0070206123
	Fan motor (Saiwei NEC4810)	HB0074001785
	Evaporator fan blade	HB0074001790
9	Suction line assembly	HB0070703722
10	Dryer	HB0074180006
11	Discharge line assembly	HB0070702717
12	Discharge pipe support	HB0070110674
13	Compressor (Nidec EM2X3125U R290 6.09 cc)	HB0074000790A
	Compressor electrics	HB0074000790AFJ
14	Evaporator box	HB0070510928A
15	Condenser fan shroud	HB0070206124
	Condenser fan motor (Saiwei NEC4810)	HB0074001785
	Condenser fan blade	HB0074001789
16	Condenser coil	HB0070702720
17	AoFrio electronic controller	ELZ11749-1626
	Controller box cover	HB0070206126
	Controller box base	HB0070206125
18	Cartridge electrics box assembly	HB0070833377ABJ
19	Cartridge plastic base	HB0070206212B
-	Ambient probe (not shown)	HB0070401693A
-	Condenser probe (not shown)	HB0070401693B
-	Control probe (not shown)	HB0070400542
-	Evaporator probe (not shown)	HB0070400506
-	EMI filter (not shown)	HB0074600001
-	Mains power cord (not shown)	HB0070400636
-	Controller flex – red (not shown)	UW0100012
-	Controller flex – blue (not shown)	UW0100013
-	Controller signal flex (6-way, not shown)	FLX11931
-	Evaporator fan and compressor flex (not shown)	HB0070403269
-	Condenser fan motor extension flex (not shown)	HB0070403268
-	Heating to light/heating loom (not shown)	HB0070403270

***Note:** When ordered as a spare part, the refrigeration cartridge does not include evaporator box lid, top metal strap bracket and hold down bracket. If required, order these items (2, 1 and 6) as well.

9 Troubleshooting

Electronic Controller

Alarms signal unexpected operational changes in the cabinet. When an alarm is activated, use the service app for the electronic controller to help diagnose the problem, and service as necessary.

Cabinet and Refrigeration Cartridge

For problems with the cabinet and refrigeration cartridge use Table 29.

Table 29: Cabinet and cartridge troubleshooting

Problem	Possible cause	Recommended action
<ul style="list-style-type: none"> Cabinet not operating No controller display 	<ul style="list-style-type: none"> Loss of power supply 	Check the mains power supply.
	<ul style="list-style-type: none"> Loose plug 	Check that all plugs are connected correctly.
<ul style="list-style-type: none"> Cabinet not operating as usual Defrost cycle incorrect length 	<ul style="list-style-type: none"> Incorrect parameters 	AoFrio: Reload the parameter set. The parameter number should be on or near the electronic controller.
<ul style="list-style-type: none"> Fan not working 	<ul style="list-style-type: none"> Loose plug 	Check all plugs are connected correctly.
<ul style="list-style-type: none"> Lights not on 	<ul style="list-style-type: none"> Electronic controller is in Night mode 	<ul style="list-style-type: none"> Switch the light on while keeping the cabinet in Night mode by pressing the light button on the electronic controller faceplate. Change the cabinet into Day mode by pressing and holding the light button on the electronic controller faceplate, or holding the door open for 10 seconds.
	<ul style="list-style-type: none"> Faulty door switch 	Check that the door switch is working. Use the app to help diagnose the problem.
	<ul style="list-style-type: none"> Refrigeration system error (indicated by the electronic controller) 	Diagnose and repair. If a system fault is found contact SKOPE for information on how to proceed.
	<ul style="list-style-type: none"> Light switched off 	<ul style="list-style-type: none"> Open the door. Switch the light on via the light button on the electronic controller faceplate, or the app.
	<ul style="list-style-type: none"> Failed LED light 	Replace the light.
	<ul style="list-style-type: none"> Plug not connected properly 	Check and clean the plugs.
	<ul style="list-style-type: none"> Power supply fault 	Replace the light's power supply.
<ul style="list-style-type: none"> Light component not working 	<ul style="list-style-type: none"> Plug not connected properly 	Check and clean the plug connection.
	<ul style="list-style-type: none"> Faulty light 	Replace the light.
<ul style="list-style-type: none"> Excess noise vibration 	<ul style="list-style-type: none"> Refrigeration pipes transferring vibration into the cartridge 	Re-align the pipes to ensure they are not touching the evaporator box bottom surface, evaporator box support legs, plastic base, or condenser coil assembly.
	<ul style="list-style-type: none"> Refrigeration check valve (only present at low compressor speed) 	No action. This is not a fault.
<ul style="list-style-type: none"> Excess noise vibration 	<ul style="list-style-type: none"> Refrigeration pipes transferring vibration into the cartridge 	Re-align the pipes to ensure they are not touching other parts of the refrigeration cartridge.

Table 29: Cabinet and cartridge troubleshooting (continued)

Problem	Possible cause	Recommended action
• Compressor not operating	• Compressor electrics	<ul style="list-style-type: none"> Check all plug connections and ensure that the compressor electrics are operating correctly. Make sure the compressor is supplied with consistent voltage over 220 volts. Ensure the voltage does not drop at start-up. If the voltage does drop, ensure the cartridge has a direct power supply (not from a multi-box or extension cord).
	• Failed compressor	Replace the compressor.
• Excess compressor noise	• Damaged mountings	Check the mountings to ensure there is no damage to the rubber, or the washers, nuts or screws.
• Frozen evaporator coil	• Evaporator probe fault	Replace the evaporator probe.
	• Setpoint is too low	Check and raise the setpoint.
	• Electronic controller fault	Replace the controller.
	• Short of refrigerant	Perform refrigeration system diagnostics and service as required.
• Ice build-up inside the evaporator box	• Leaking cartridge seal	Check that the evaporator box seals are fully clamped, and the cabinet top seal is good without gaps. Micro-gaps will allow ice build-up in the cabinet.
• Power consumption is higher than expected	• Excessive door opening	Limit door openings.
	• Cartridge is operating too hot	<ul style="list-style-type: none"> Clean the condenser. Ensure the cabinet has good ventilation around the refrigeration cartridge. Ensure the cabinet is within the maximum operating temperature.
	• Product is too cold	Raise the setpoint.
• Product is too warm	• Electronic controller is in Night mode	Change the cabinet into Day mode by pressing and holding the light button on the electronic controller faceplate, or holding the door open for ten seconds.
	• Door not closing properly	<ul style="list-style-type: none"> Check and clean the door gasket. Ensure the cabinet is on a level surface.
	• Excessive door opening	Limit door openings.
	• Refrigeration system error (indicated by the electronic controller)	Diagnose and repair. If a system fault is found contact SKOPE for information on how to proceed.
	• Cartridge is operating too hot	<ul style="list-style-type: none"> Ensure the cabinet has good ventilation around the refrigeration cartridge.
	• Excessive refrigeration heat load	<ul style="list-style-type: none"> Ensure the cabinet is within the maximum operating conditions.
	• Setpoint is too high	Lower the setpoint.
	• The cabinet is recently loaded	Allow the product time to cool down.
	• The cabinet is overstocked	<ul style="list-style-type: none"> Remove some product. Do not allow product to hang over the shelves, or be stocked above the load limit label.
• Moisture build up on cabinet exterior	• Frequent door opening	Limit door openings.
	• Door not closing properly	<ul style="list-style-type: none"> Check and clean the door gasket. Ensure the cabinet is on a level surface.
	• High humidity	Check the ambient operating temperature and reposition the cabinet if necessary.

Table 29: Cabinet and cartridge troubleshooting (continued)

Problem	Possible cause	Recommended action
<ul style="list-style-type: none"> Cabinet door does not close properly 	<ul style="list-style-type: none"> Cabinet is on an uneven surface 	Level the cabinet.
	<ul style="list-style-type: none"> Door is obstructed 	Check the shelves and product.
	<ul style="list-style-type: none"> Door gasket is dirty 	Check and clean the door gasket.
<ul style="list-style-type: none"> Warm cabinet temperatures Compressor operating for long periods (more than 1 hour) 	<ul style="list-style-type: none"> Blocked condenser coil 	Clean the condenser coil.
	<ul style="list-style-type: none"> Poor ventilation around the refrigeration cartridge 	<ul style="list-style-type: none"> Ensure the cabinet has good ventilation around the refrigeration cartridge. Ensure the cabinet is within the maximum operating temperature.

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