

BME-N ActiveCore

SKOPE Bottom Mount Fridge
R290



BME-N ActiveCore
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R290
Service Manual

MAN80157
Rev. 3.5 Dec. 2024

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1 Servicing Hydrocarbon

Overview

This fridge uses hydrocarbon (HC) 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:

- Flammability
- Venting of hydrocarbon and compressor oil
- Asphyxiation

SKOPE does **not** recommend performing hazardous activities on the refrigeration system. See "Refrigeration Cartridge" on page 26 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 HC Service Policy (available from SKOPE), including:

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 BME ActiveCore bottom mount fridges listed in Table 1 below. Refer to the relevant product specification sheet (available on the SKOPE website: www.skope.com) for specifications.

Table 1: Model specifications

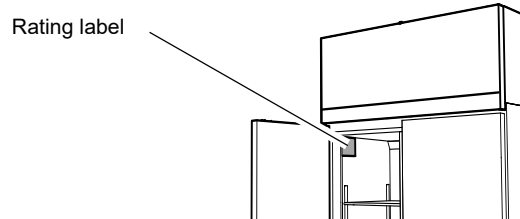
Series	Generation	Model	SKOPE ID	Cartridge
BME600-A ActiveCore	ActiveCore 2	BME600N-A	SM60GYN	UBHCNI-0008
		BME600N-AC	SM60BYN	UBHCNI-0008
	ActiveCore 3	BME600N-A	SM60GYA	UBHCNI-0076
		BME600N-AC	SM60BYA	UBHCNI-0076
BME1200-A ActiveCore	ActiveCore 2	BME1200N-A	SM12GYN	UBHCNI-0008
		BME1200N-AC	SM12BYN	UBHCNI-0008
	ActiveCore 3	BME1200N-A	SM12GYA	UBHCNI-0076
		BME1200N-AC	SM12BYA	UBHCNI-0076

Note: Cartridges and cabinets are interchangeable, although SKOPE does not recommend this, because there are specific changes required. See Table 13, “Cartridge interchangeability,” on page 34 for specific 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
skopec@skopec.com www.skopec.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

Programme code


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

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
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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

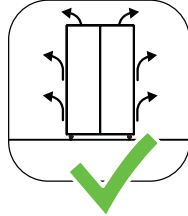
Serial number

Example ActiveCore 3 cartridge rating label

3 Installation

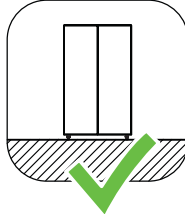
Installation Guidelines

When installing this cabinet, ensure you consider and meet the installation guidelines below.



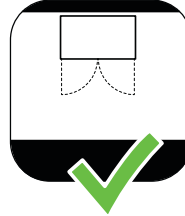
Ventilation

Ensure all ventilation requirements below are met.



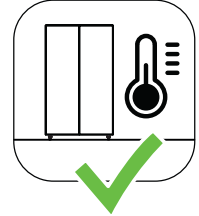
Surface

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



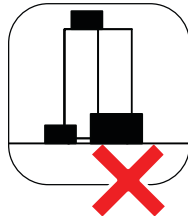
Door Opening

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



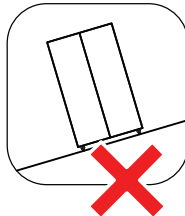
Climate Class

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.



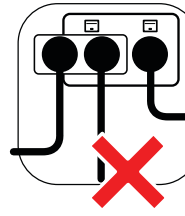
Blocking Ventilation

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



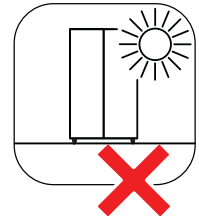
Uneven Surface

Do not install the cabinet on an uneven surface.



Power Supply

Do not overload the power supply.

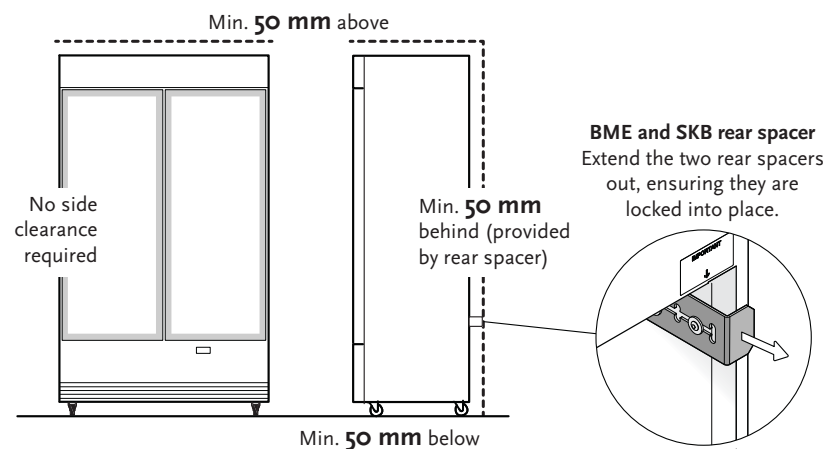


Sunlight

Do not install the cabinet in direct sunlight.

Ventilation Requirements

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



Sign Assembly

Depending on the model, the cabinet may be fitted with a lit sign. The sign can be removed for transporting the cabinet, or moving it through confined spaces. Refer to the procedures below to remove and refit the sign assembly.

For sign lighting information, refer to page 19.

Procedure 3: To remove the sign assembly

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Unplug the sign plug (located behind the sign assembly).
3. Lift the sign assembly off the cabinet.
4. If required, remove the sign sides:
 - Remove the sign back strip.
 - Loosen the sign side fixing screws to remove the sign sides.

Procedure 4: To refit the sign assembly

1. If removed, refit the sign sides and sign back strip.
2. Slot the sign assembly onto the front of the sign sides.
3. Reconnect the sign plug.

Door Handles

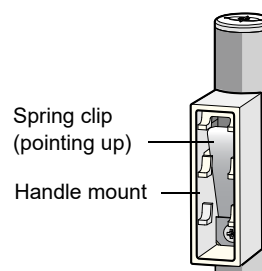
Fitting Door Handles For transit purposes door handles may be packed separately inside the cabinet. If the door handle/s are packed separately, follow the procedure below.

Procedure 5: To fit a door handle

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

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

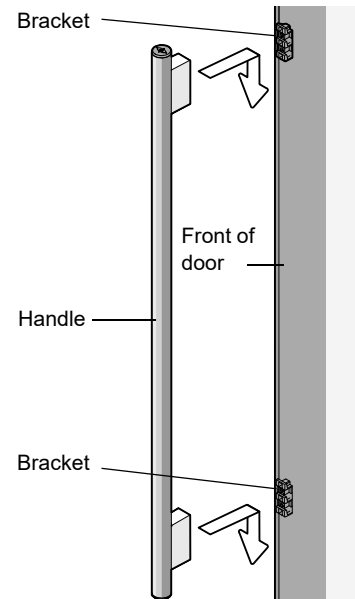
2. Ensure that the spring clips point up.



Procedure 5: To fit a door handle (continued)

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 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, ensuring both the handle mounts are placed onto the brackets before pushing the handle down and locking into place.

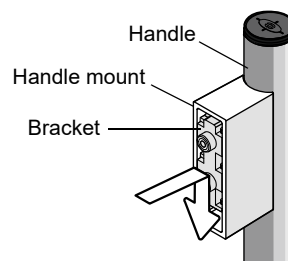
Removing Door Handles

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

Procedure 6: To remove a door handle

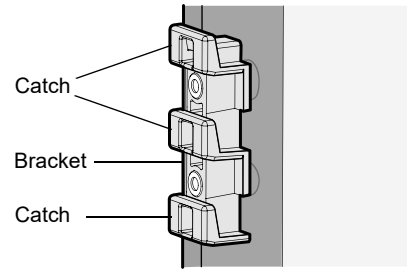
1. Open the door, and peel back the door gasket from behind the handle mounts on the inside of the door frame.
2. Unscrew the handle mounts through the holes on the inside of the door frame (top and bottom screws only), and remove the handle.

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



Procedure 6: To remove a door handle (continued)

4. Fit and screw the bracket/s 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.

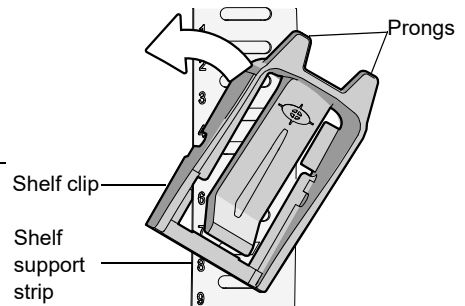
Shelf Clips Each wire shelf is held in place with four shelf clips, which clip in the shelf support strips and slide up and down to the required shelf position.

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 7: To fit a shelf clip

The shelf clip twists onto the shelf support strip.

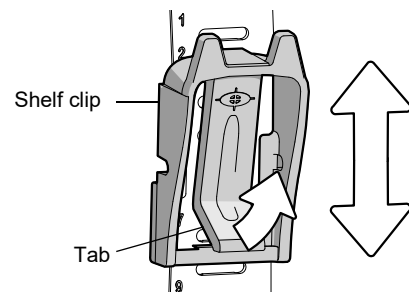
1. Position the shelf clip with the flat side against the shelf support strip and the two prongs pointing up.



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

Procedure 8: To slide a shelf clip up and down

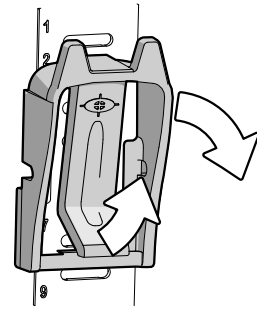
1. Pull the shelf clip tab up and slide the shelf clip up or down as required.
2. Once in position, ensure the shelf clip is locked into place.



Procedure 9: 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 10: 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 below the door/s and is visible from the outside of the cabinet.

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

The controller is pre-programmed. SKOPE does not recommend changing the settings unless it is absolutely necessary. To ensure efficient operation, the controller automatically forces a defrost cycle when required.

IMPORTANT

The controller must only be adjusted by an authorised service agent.

Controller Faceplate

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

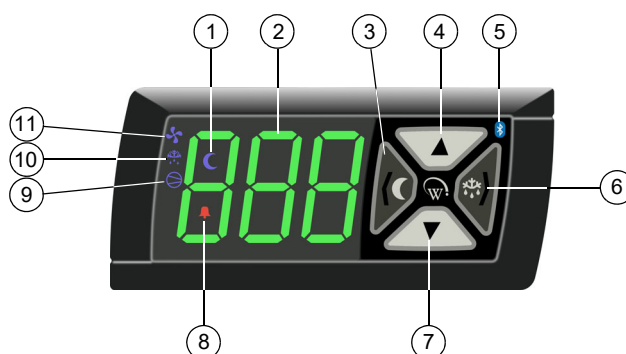


Table 2: Controller faceplate

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.	

Table 2: Controller faceplate (continued)

No.	Description			Use
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 preset 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 fridge model codes, and firmware, hardware and software versions.

Refer to AoFrio documentation or [MAN80199 "SCS Connect Electronic Controller"](https://tinyurl.com/2s7macbk) (<https://tinyurl.com/2s7macbk>) for further information.

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 set points for specific product

Download from the Google Play Store, or Apple App Store.



Apple App
Store



Google Play
Store

SCS Connect Field App

The AoFrio Field app for mobile devices allows technicians to connect and interact with SKOPE equipment that uses the AoFrio SCS Connect electronic controller. The app allows technicians to:

- View the current state of cabinet components (temperatures, compressor and fan motor).
- View a 7-day history of those states.
- Manually change the state of the components.
- Update and change controller parameters.
- Update controller firmware.

All technicians who service SKOPE equipment fitted with the AoFrio SCS Connect electronic controller are required to have the AoFrio Field app installed on their Bluetooth-enabled mobile device. SKOPE also recommends that all technicians have the AoFrio Track app installed.

SCS Connect Track App

The AoFrio Track app for mobile devices transfers data from SKOPE equipment that uses the SCS Connect controller to a cloud-based server.

The app works automatically in the background. When the app detects a controller, it connects via Bluetooth to receive data from the controller and send data to the cloud. If no mobile data connection is available, the app stores data until a connection becomes available.

SKOPE recommends that all technicians who service SKOPE equipment fitted with the AoFrio SCS Connect electronic controller have the AoFrio Track app installed on their Bluetooth-enabled mobile device. All technicians are also required to have the AoFrio Field app installed on their Bluetooth-enabled mobile device.

5 Replacement Procedures

Electrical Safety

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 BME-AC models are also fitted with an LED sign light. Ensure the light is 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 3 below to see if the component is replaceable.

Table 3: 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	Foamed in	Foamed in

Power is supplied to the lights by the LED power supply (located in the refrigeration cartridge compartment) via the wiring loom/s which run up 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 26, "Cabinet and cartridge troubleshooting," on page 63 to determine which component may be at fault, and the procedures over the next few pages for replacement instructions.

Refer to Table 4 below for interior light functionality, depending on which generation cartridge is installed in the cabinet.

Table 4: Interior light functionality

Cabinet	BME600N		BME1200N	
<i>Cartridge</i>	<i>ActiveCore 2</i>	<i>ActiveCore 3</i>	<i>ActiveCore 2</i>	<i>ActiveCore 3</i>
Interior light	1 light	1 light – dimmable	2 lights	2 lights – dimmable

Ensure the cabinet is isolated 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 17).
2. Unplug the light, and remove the light from the plastic casing.
3. Clip the replacement light into place in the plastic casing, ensuring the male end of the light is at the bottom, 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 light power supply

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Remove the sign panel to gain access to the refrigeration cartridge compartment.

One door cabinets only

3. Remove the refrigeration cartridge (see Procedure 25, on page 32).
4. Remove the LED light power supply.
5. Replace the light power supply.
6. Reassemble the cabinet, and test for correct operation.

Original ActiveCore 2 cabinets only

Procedure 14: To replace an interior wiring loom

1. Confirm that the cabinet is an ActiveCore 2 (see Procedure 1, on page 7).
2. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
3. Unscrew and remove the kick panel.
4. Unplug the light inside the cabinet.
5. On the right hand side only, remove the electrics cover in the side of the cabinet.
6. Disconnect the loom in the cartridge compartment.
7. Remove the loom by pulling it through the hole in the cabinet interior base.
8. Fit the new loom and reassemble the cabinet. Ensure that:
 - all plugs are clean, correctly fitted and plugged in.
 - the hole is completely sealed with putty.

Sign Light The sign is lit by an LED light which can be replaced by following the steps below.

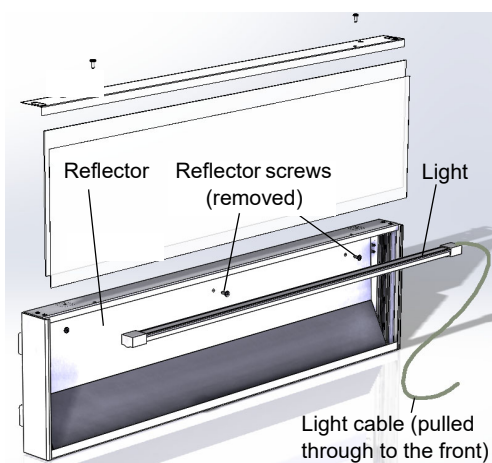
Procedure 15: To replace the sign light

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
 2. Undo the two fixing screws from the sign's top cover and remove the top cover.
 3. Remove the sign panel/decals by sliding them up and out of the sign.
 4. Remove the sign cover from the top of the sign.
 5. Remove the 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. Push 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 mains power supply and check for correct operation.
-

Doors

WARNING

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

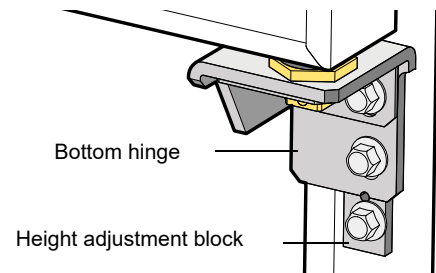
Alignment Adjustment If a door is out of alignment, realign it by loosening the top hinge bracket fixing screws, and move the top of the door as required.

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.

Procedure 16: To adjust the door height

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Unscrew and remove the kick panel.

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



4. 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.
5. Refit the kick panel.

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.

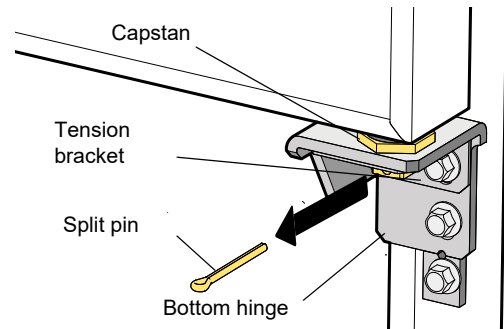
Removing and Refitting the Door

For ease of servicing and to reverse the hinging (hinge reversal on one-door cabinets only), you can remove the door from the cabinet.

Procedure 17: To remove the door

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. If present, remove the sign panel (Procedure 3, on page 10) and kick panel.

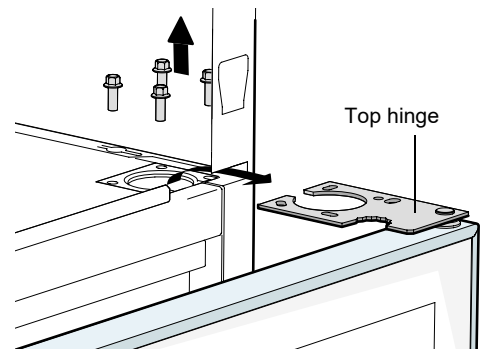
3. Remove the split pin from the capstan at the bottom hinge.



4. Undo the top bolt from the hinge, and carefully remove the tension bracket.

Warning: Take care of the capstan, which will spin as tension is relieved.

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



Procedure 18: To refit the door

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Lift the door onto the bottom hinge.
3. Fit the top hinge spacer to the top of the door.
4. Fit the top hinge on top of the spacer, and partially fix in place on the top of the cabinet. Align the door with the cabinet and tighten the fixing screws.
5. Apply tension to the door (see steps 3, 4 and 5 in Procedure 20).
6. Fit the height adjustment block to the bottom screw hole.
7. If necessary, rotate the height adjustment block to level the door.
8. If required, refit the kick panel.

Procedure 19: To replace the top hinge bracket

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Remove the door (see Procedure 17, on page 20).
3. Remove the top hinge from the top of the door and replace it.
4. Refit the door (see Procedure 18, on page 21).

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 20: 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.

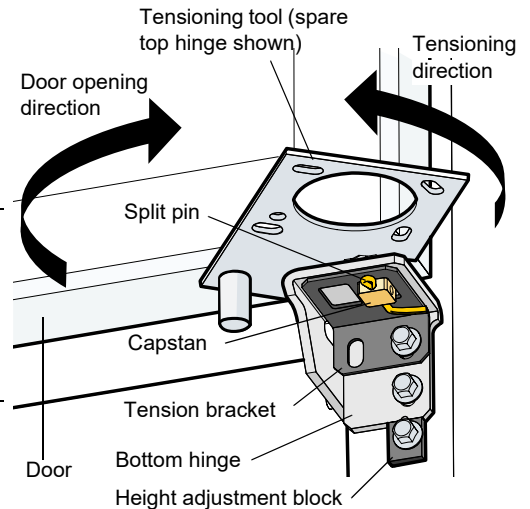
1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Remove the split pin from the capstan at the bottom hinge.
3. Remove the tension bracket from the bottom hinge.

Procedure 20: To adjust the door tension (continued)

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.

5. While holding door tension on the capstan, fit the tension bracket 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.



Bottom hinge assembly (with tensioning tool)

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.

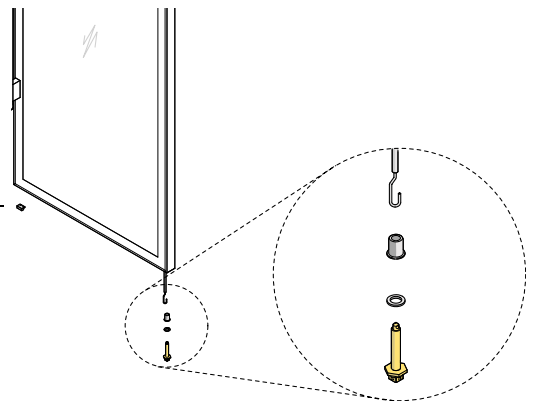
Procedure 21: To replace the torsion bar

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Remove the door from the cabinet (see Procedure 17, on page 20).

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. 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 18, on page 21).

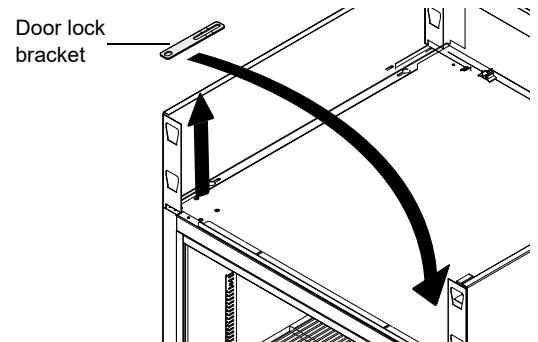
Hinge Reversal Single glass door standard (non-tropical) cabinets only

The 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 Reversal Kit (see page 51 for part kit numbers).

Procedure 22: To reverse the door hinging

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Remove the door from the cabinet (see Procedure 17, on page 20).

3. Remove the door lock bracket from the top of the cabinet and fit it to the other side.

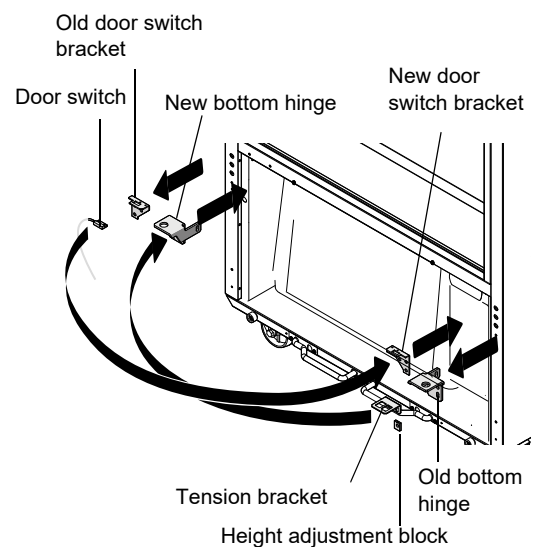


4. Remove the bottom hinge, tension bracket and height adjustment block.
 - Keep the tension bracket and height adjustment block (these are fitted to the opposite side once the door is refitted).
 - Discard the bottom hinge.

5. Unplug the door switch cable from the cabinet. The door switch is fitted to the door switch bracket, below the door.

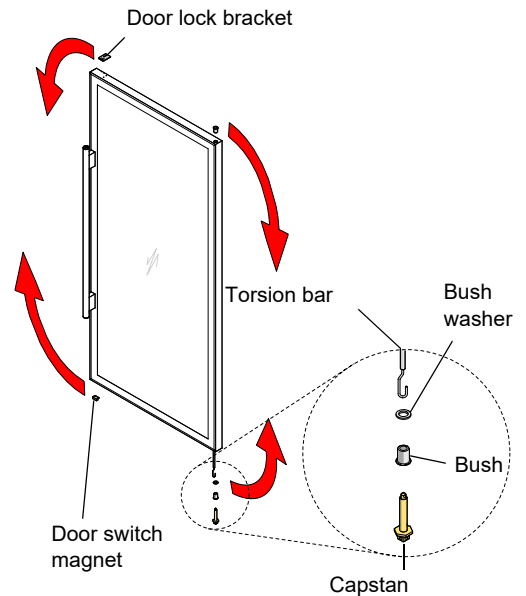
6. Remove the door switch and door switch bracket. Discard the door switch bracket.

7. Fit the new bottom hinge.



Procedure 22: To reverse the door hinging (continued)

8. Remove the door lock bracket, and fit it to the opposite end of the door.
9. Fit the door switch, and new door switch bracket.
10. Disconnect the existing in-wall door flex, and leave it hanging. Plug the door switch into the now free connector.
11. Remove the bush and keep it for the opposite end of the door.
12. 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.
13. Fit the capstan, bush and bush washer to the new torsion bar, and fit this assembly to the opposite end of the door.
14. Fit the bush (kept from Step 11) to the end of the door, opposite the capstan.



15. 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 edge of the frame.

16. Refit the door (see Procedure 18, on page 21).

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



18. 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.

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 bottom-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.

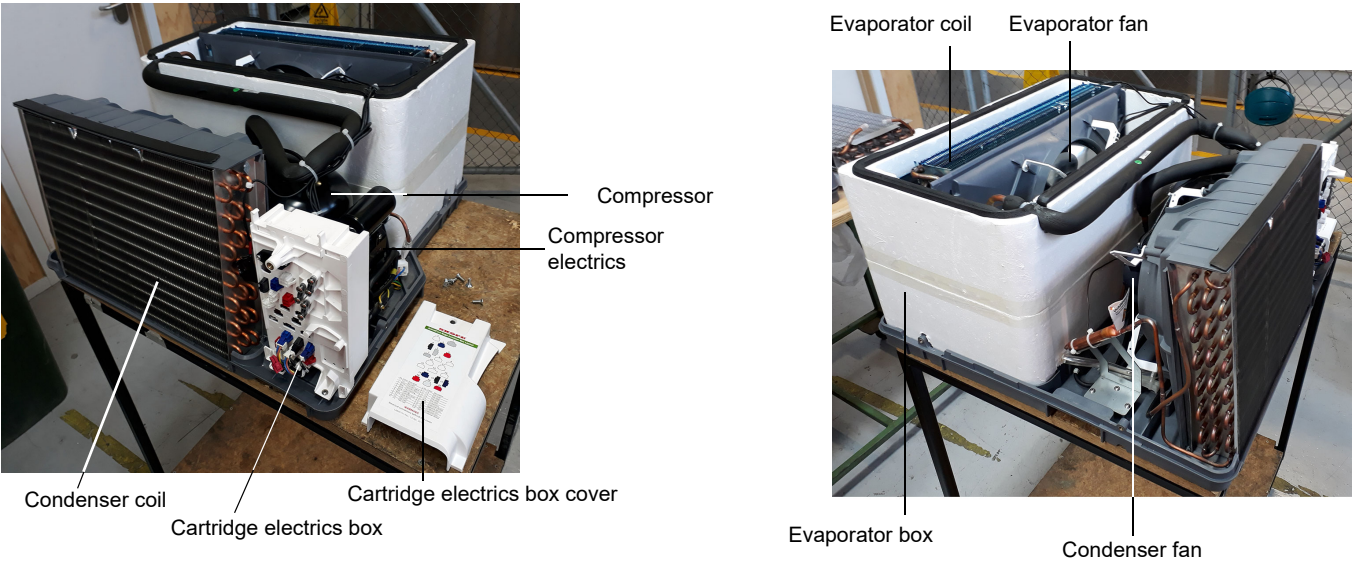
The cartridge must only be used on a SKOPE hydrocarbon-compliant cabinet. Refer to the cabinet rating label to determine if the cabinet is suitable for use with a hydrocarbon cartridge. The rating label **must** state refrigerant as R290. If the label states a different refrigerant, or does not state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

WARNING

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

For servicing or transportation, the refrigeration cartridge unplugs and slides out of the cabinet. Some minor servicing can be performed without removing the refrigeration cartridge.

The model and serial number are both printed on the cartridge rating label attached to the side of the cover.



Specifications for the model are in Table 5. Verify the model and basic requirements before servicing.

Table 5: Cartridge specifications

Generation	ActiveCore 2	ActiveCore 3
Cartridge model	UBHCNI-0008	UBHCNI-0076
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 page 66 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 23, “ActiveCore 2 refrigeration system diagnostic test”, on page 27
- Procedure 24, “ActiveCore 3 refrigeration system diagnostic test”, on page 28

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 23: ActiveCore 2 refrigeration system diagnostic test

Before you start

- Make sure you are in a suitable workshop (see page 26).
 - 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 17).
 2. Remove the refrigeration cartridge (see Procedure 25, on page 32).
 3. Remove the cartridge cover (see Procedure 26, on page 35).
 4. Place the cartridge on bench and connect the service probe to the red plug on the cartridge.

Procedure 23: ActiveCore 2 refrigeration system diagnostic test (continued)

5. Connect the refrigeration cartridge to the mains power supply and allow to run for approximately 10 minutes until the evaporator temperature stabilises.

6. Refer to Table 6 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 6: Frost stop point

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 the compressor	Frosting to compressor
30°C	Dry	Dry	Frosting 20mm from compressor
40°C	Dry	Dry	Sweating 50mm from compressor

7. If the suction pipe frosts to the appropriate frost stop point, the charge is likely to be correct. If the frost does not go back as described in Table 6 above there may be a capillary blockage or compressor fault.

8. Use Table 7 below to determine whether the system is short of refrigerant or a has blocked capillary.

Table 7: Blocked capillary or short of refrigerant

Frost back after 10 minutes	Diagnosis
None	Blocked capillary
According to Table 6 above	Normal operation

9. Diagnose and repair the fault if possible.

10. Reassemble the refrigeration system and test run.

Procedure 24: 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 17).

2. Remove the refrigeration cartridge (see Procedure 25, on page 32), and the cartridge cover (see Procedure 26, on page 35).

3. Place the cartridge on a bench in a suitable workshop (see "Off-site Work" on page 26).

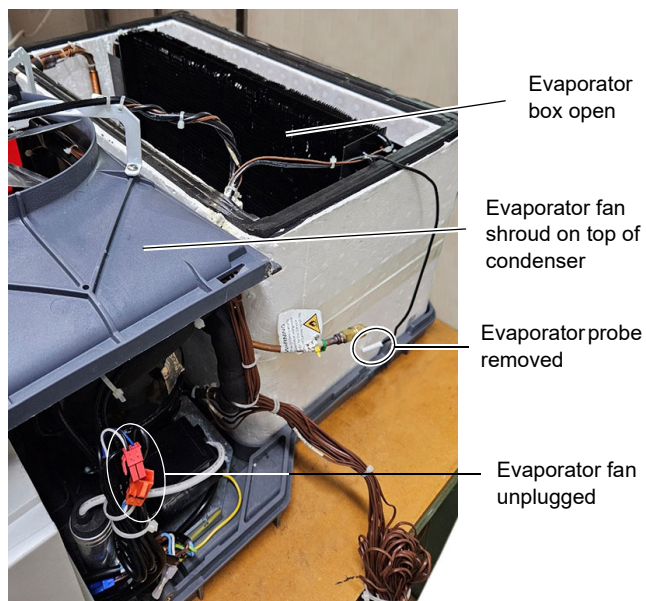
4. Remove the cartridge's top cover.

Procedure 24: ActiveCore 3 refrigeration system diagnostic test (continued)

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).

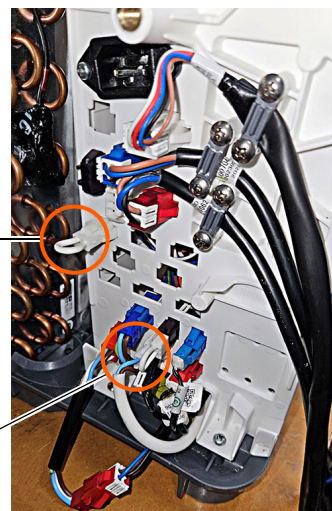
7. Unplug the evaporator fan.



8. Fit the door reed switch jumper.

Door reed switch jumper fitted

Evaporator defrost probe removed, and jumper wire fitted



9. Connect the refrigeration cartridge to the mains power supply and start following the table closest to your ambient temperature below.

- Table 8, "Ambient temperature of 10°C," on page 30
- Table 9, "Ambient temperature of 20°C," on page 30
- Table 10, "Ambient temperature of 30°C," on page 31
- Table 11, "Ambient temperature of 40°C," on page 32

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

Procedure 24: ActiveCore 3 refrigeration system diagnostic test (continued)

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

Table 8: 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 at 5 mm	Cool



Correct frost back at 10°C

Table 9: 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 24: ActiveCore 3 refrigeration system diagnostic test (continued)

Table 10: 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 24: ActiveCore 3 refrigeration system diagnostic test (continued)**Table 11: 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 12: 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 steps below to remove the refrigeration cartridge from the cabinet. Ensure the cabinet is disconnected from the mains power supply before removing the cartridge (see Procedure 11, on page 17).

Procedure 25: To remove the refrigeration cartridge

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17). If you are unable to access the plug, refer to the on-site work procedure on page 66.
2. Unscrew and remove the kick panel.
3. Unplug the ambient probe (located on the back of the panel).

Procedure 25: To remove the refrigeration cartridge (continued)

4. Detach the electronic controller assembly from the kick panel. To do this, **push** at the base of the electronic controller assembly where it meets the kick panel. See the arrow on the kick panel label.

5. Remove the electrics cover and unplug the mains supply plug and cabinet plugs.

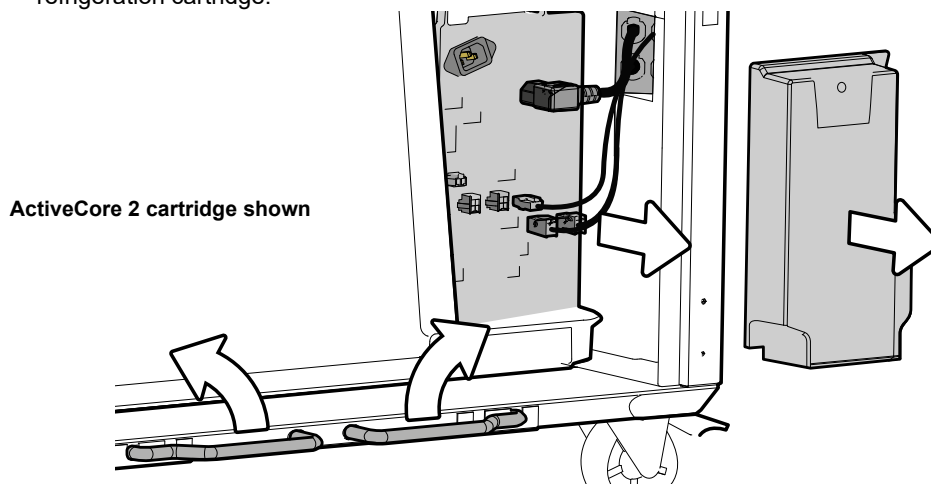
Note: You do not need to unplug the cartridge and electronic controller plugs.

ActiveCore 3 only

6. Disconnect the dimmable lighting plug from the back of the controller.

All cartridges

7. Pull the two cassette lifting levers forward to release them, then rotate them outwards to lower the refrigeration cartridge.



8. Pull the refrigeration cartridge from the cabinet. Take care of the cables when removing the cartridge.

9. When refitting the cartridge, ensure that:
 - the gasket is in good condition.
 - the electronic controller is refitted to the kick panel.
 - all plugs are securely reconnected.
 - the electrics cover is refitted.
 - the cartridge lifts up and seals correctly.

WARNING

Ensure no wires or plugs are trapped or damaged.
Fully insert and lock all plugs. Pull the plugs to check.
Refit and secure the electrics cover with screws **before** reconnecting the mains power supply.
Follow all applicable local regulations.

Cartridge Inter-changeability

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 13 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 13: 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.

Top mount to bottom mount

When changing a cartridge from a top mount cabinet to a bottom mount cabinet, 2 bottom plugs are required to seal the base of the cartridge. The plugs can be ordered in addition to the refrigeration cartridge if required.

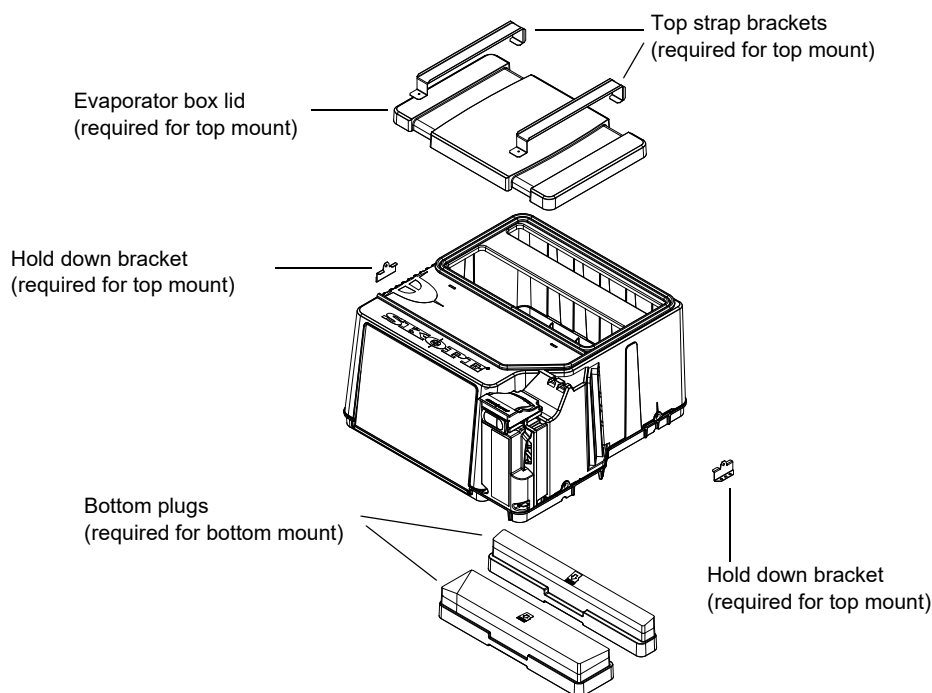
The plugs are included with new replacement cartridges.

Bottom mount to top mount

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.

See the TME-N ActiveCore service manual ([MAN80128](#)) for more information.



Cartridge Cover

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

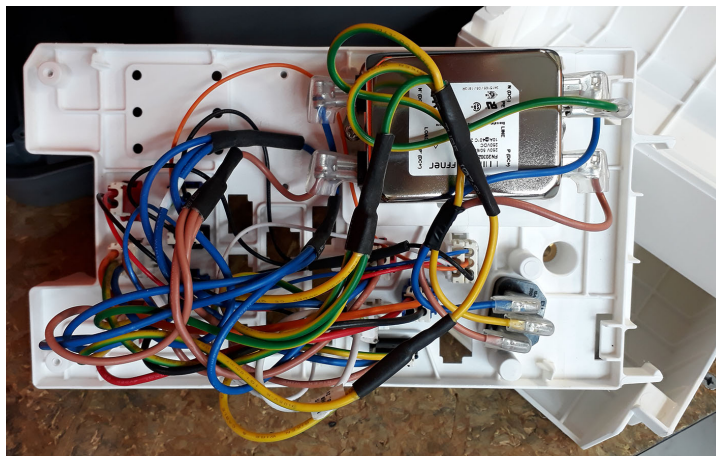
Procedure 26: To remove the cartridge cover

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Remove the refrigeration cartridge (see Procedure 25, on page 32).
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 37 or label on the 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 27: To remove and open the cartridge electrics box assembly

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
 2. If present, unclip the electronic controller from the top of the electrics box.
-

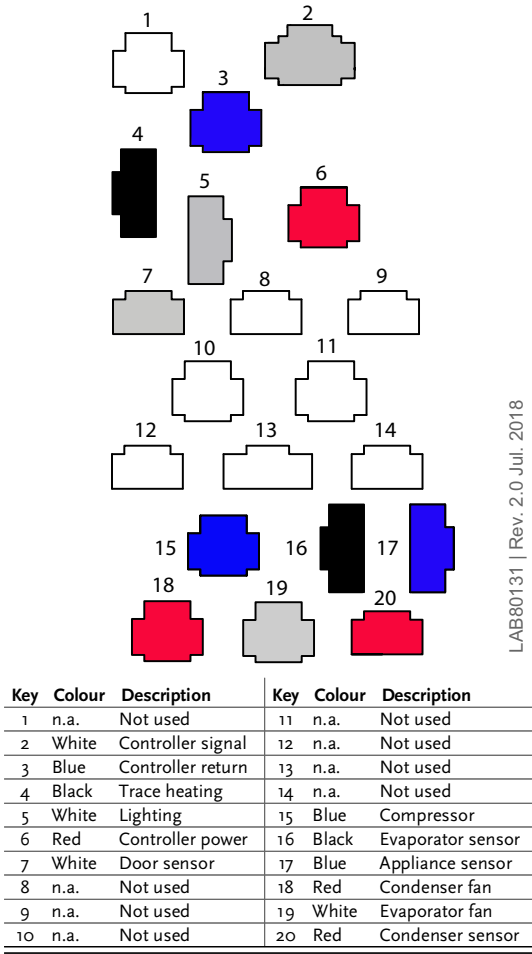
3. Undo the fixing screw at the top of the electrics box cover, and remove the cover.



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.
-

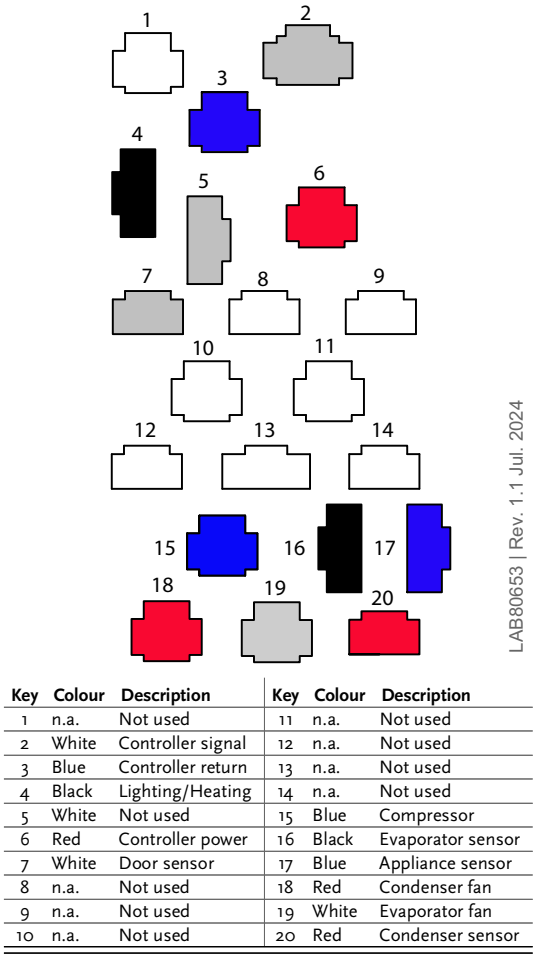
ActiveCore 2 Electrics Box Layout

ActiveCore R290 Junction Box Layout



ActiveCore 3 Electrics Box Layout

ActiveCore R290 Junction Box Layout



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 cassette uses AoFrio fans, and the ActiveCore 3 cassette uses Saiwei fans.

Table 14: Fan motor manufacturer and torque settings

Cartridge	Generation	Fan motor manufacturer	Torque setting
UBHCNI-0008	ActiveCore 2	AoFrio	1.5 Nm
UBHCNI-0076	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 label on the electrics box cover, or page 37, 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 blade and fan motor 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 14 above).

Procedure 28: To access and remove the condenser fan assembly

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
 2. Remove the refrigeration cartridge (see Procedure 25, on page 32).
 3. Remove the cartridge cover (see Procedure 26, on page 35).
 4. Open the electrics box and unplug the condenser fan motor plug (see page 37).
-

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



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

Procedure 29: To replace the condenser fan blade

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
 2. Remove the condenser fan assembly (see Procedure 28, on page 38).
 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 and fix with the washer and screw. Tighten the screw to the fan motor manufacturer recommended torque setting (see Table 14 on page 37).
 5. Reassemble the cabinet and test for correct operation.
-

Procedure 30: 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 motor type (see Table 14 on page 37).

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
 2. Remove the condenser fan assembly (see Procedure 28, on page 38).
 3. Remove the condenser fan blade (see Procedure 29 above).
 4. Unplug the fan flexible cord from the electrics box (see page 37).
 5. Detach the fan motor from the fan mounting brackets by removing the four screws from the mounting bracket.
-

Procedure 30: To replace the condenser fan motor (continued)

6. Fit the new motor and reattach the fan blade with its washer and screw. Tighten the screw to the fan motor manufacturer recommended torque setting (see Table 14 on page 37).
7. Reassemble the cartridge, ensuring all cables are neatly cable-tied away from the fan blade.
8. 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 when 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 15: Fan motor manufacturer and torque settings

Cartridge	Generation	Fan motor manufacturer	Torque setting
UBHCNI-0008	ActiveCore 2	AoFrio	1.5 Nm
UBHCNI-0076	ActiveCore 3	Saiwei	1.5 Nm

The fan motor and fan blade are fixed to the evaporator 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 make sure no plugs have come loose. Refer to the label on the electrics box cover, or page 37, 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 blade and fan motor 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 15 above).

Procedure 31: To access the evaporator fan assembly

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Remove the refrigeration cartridge (see Procedure 25, on page 32).
3. Remove the refrigeration cartridge cover (see Procedure 26, on page 35).

Procedure 31: To access the evaporator fan assembly (continued)

4. Free the cables from the putty on the evaporator box edge.
 5. Cut the cable ties to release the control probe from the fan bracket.
-

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



Procedure 32: To replace the evaporator fan blade

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
 2. Remove the refrigeration cartridge (see Procedure 25, on page 32).
 3. Gain access to the evaporator fan assembly (see Procedure 31).
 4. Remove the screw and washer from the centre of the fan blade, and lift the blade from the motor.
 5. Attach the new blade, ensuring it is centred within the evaporator shroud. Tighten the screw to the fan motor manufacturer's recommended torque setting (see Table 15 on page 39).
 6. Reassemble the cartridge
 7. Reassemble the cabinet and test for correct operation.
-

Procedure 33: 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 condenser fan motor, note the generation of the cartridge and fan motor type (see Table 14 on page 37).

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
 2. Remove the evaporator fan assembly (see Procedure 31, on page 39).
 3. Remove the evaporator fan blade (see Procedure 32, on page 40).
 4. Free the fan's flexible cord by cutting the cable ties, trace the cable back to the connector (near the compressor electrics), and unplug it.
 5. Detach the fan motor from the fan mounting brackets by removing the four screws from the mounting brackets.
 6. Attach to the replacement motor to the fan mounting brackets. Ensure that the flexible cord points towards the bottom of the evaporator box once reinstalled.
 7. Re-cable-tie the fan and control probe flexible cords back onto the mounting bracket to prevent high frequency vibration.
-

Procedure 33: To replace the evaporator fan motor (continued)

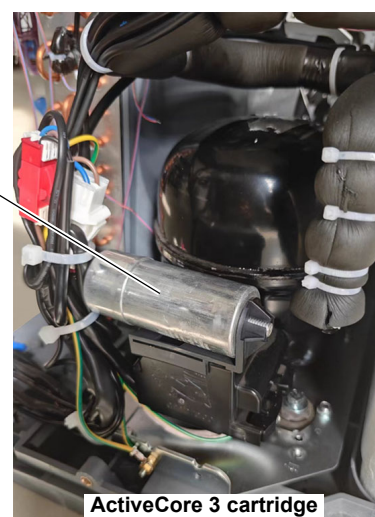
8. Fit the fan blade, ensuring it is centred within the evaporator shroud. Tighten the screw to the fan motor manufacturer's recommended torque setting (see Table 15 on page 39).
9. Reassemble the cartridge.
10. Reassemble the cabinet and test for correct operation.

Compressor The compressor is located at the front of the refrigeration cartridge, beside the condenser. If the compressor is causing excessive noise, check the mountings to ensure there is no damage to the rubber or the washers, nuts or 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 a consistent voltage over 220 volts and that 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).



Capacitor

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 34: To access the compressor electrics

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Remove the refrigeration cartridge (see Procedure 25, on page 32).
3. Remove the refrigeration cartridge cover (see Procedure 26, on page 35).
4. Unclip the capacitor from the relay cover.
5. Unclip the relay cover from the compressor.

Electronic Controller

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



Procedure 35: To access the controller

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).

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 36: To replace the controller

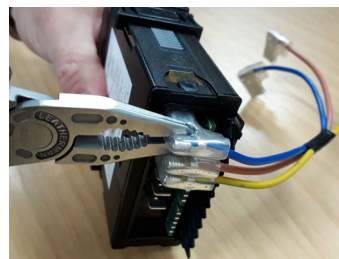
Before you start

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 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.

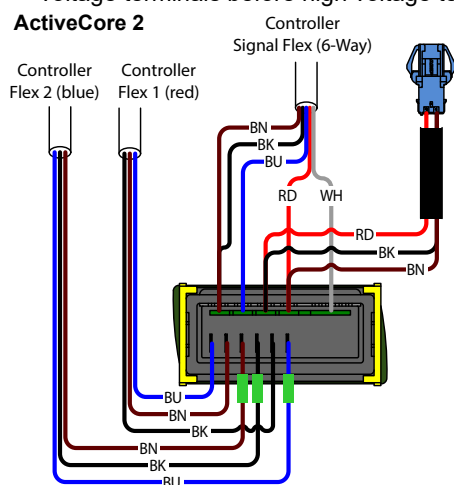
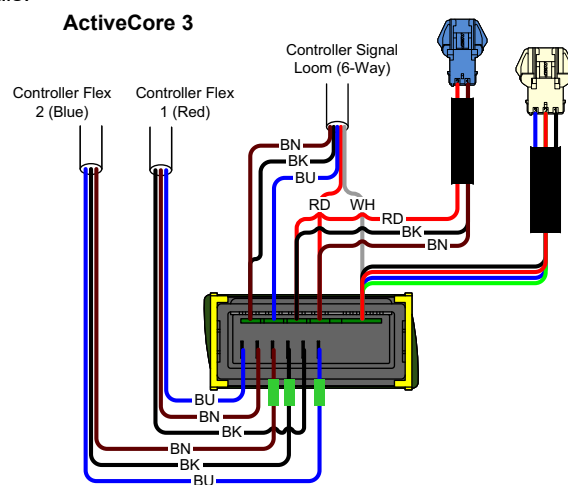
1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Access the electronic controller (see Procedure 35 above).
3. Remove the cable clamps.

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.



Procedure 36: To replace the controller (continued)

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

ActiveCore 2**ActiveCore 3**

- Reassemble the controller box and cabinet, and perform an electrical safety test as required.
- Reconnect the cabinet to the mains power supply.
- Use a mobile device to connect to the controller with the SCS Connect Field app (see "SCS Connect Field App" on page 15).
- Navigate to the LOAD PARAMETER FILE menu.
- Select the appropriate parameter file from LOCAL.
- Confirm it is the correct file and WRITE TO SCS.
- After WRITE TO SCS is complete, select MENU > DISCONNECT to save the parameter set on SCS Connect Field app.
- Power cycle the controller and check that the correct parameter set has been applied
- Set up controller and cabinet links as required:
 - Corporate:** The service tech must link 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).

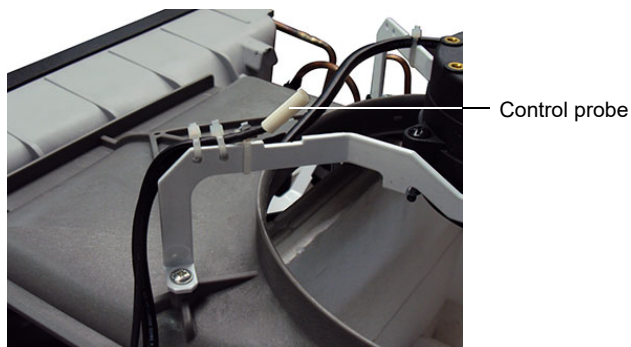
Door Switch The cabinet is fitted with a door switch below each door, which tells the electronic controller when a door is opened. A small magnet in the door frame activates the switch. A cable connects the switch to the electronic controller via an inline connector.

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

Procedure 37: To replace a door switch

- Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
- Disconnect the door switch cable plug from the inline connector.
- Unscrew the two fixing screws from the door switch and remove it.
- Fit the replacement door switch and connect it via the inline connector.

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



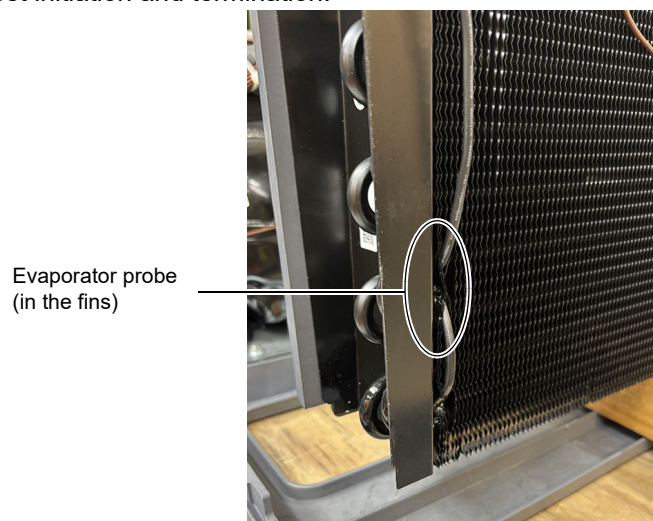
Procedure 38: To replace the control probe

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 17).
2. Remove the evaporator fan assembly (see Procedure 31, on page 39).
3. Detach the probe from the evaporator fan motor 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.
 - the probe cable is cable-tied to the evaporator fan shroud bracket.
 - the 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.

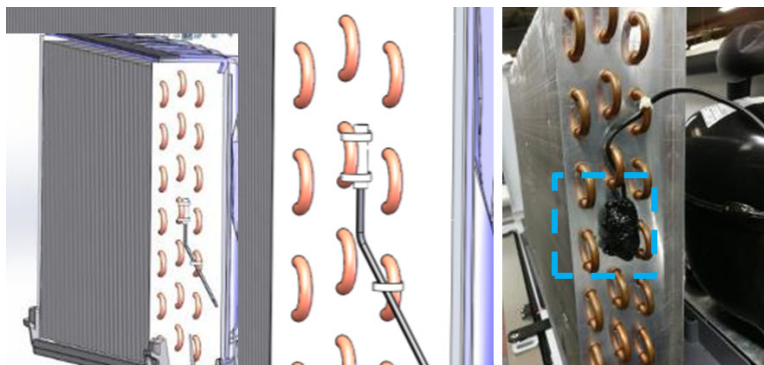


Procedure 39: To replace the evaporator probe**Before you start**

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 17).
2. Remove the refrigeration cartridge (see Procedure 25, on page 32).
3. Remove the cartridge cover (see Procedure 26, on page 35).
4. Remove the evaporator fan assembly (see Procedure 31, on page 39).
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 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 probe, run the new probe to the evaporator coil and secure 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 and test for correct operation.

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

**Procedure 40: 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 17).
2. Remove the refrigeration cartridge (see Procedure 25, on page 32).
3. Remove the cartridge cover (see Procedure 26, on page 35).
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.

Procedure 40: To replace the condenser probe (continued)

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 on the back of the kick panel, in front of the condenser coil.

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



Procedure 41: To replace the ambient probe

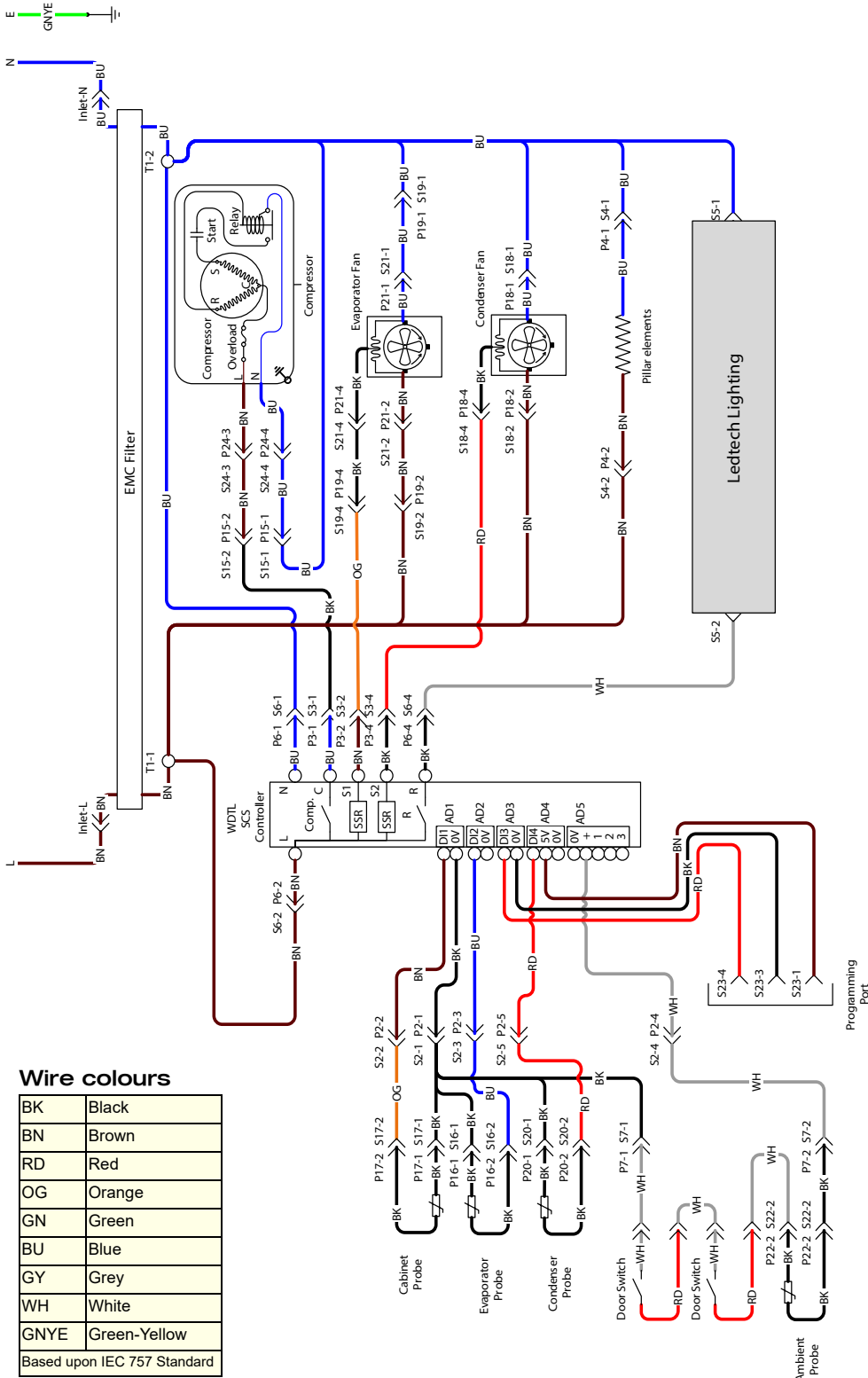
Before you start

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

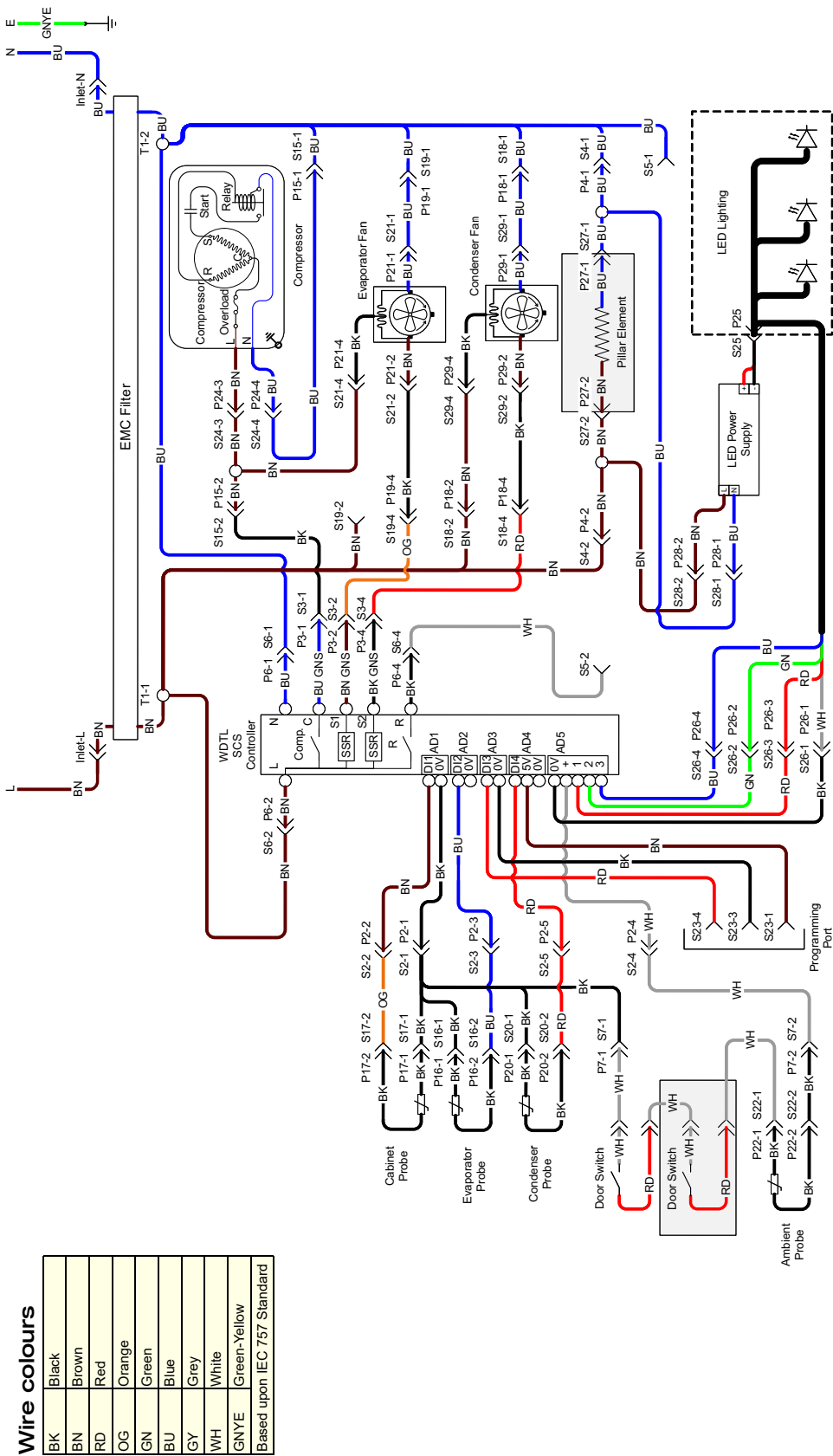
1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Unscrew and remove the kick panel to access the probe.
3. Unplug and replace the probe. Ensure you position the probe in the same location as the original probe and secure it in place with a cable tie.
4. Reassemble the cabinet and test for correct operation.

6 Wiring

Cartridge Model: UBHCNI-0008



Cartridge Model: UBHCNI-0076



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		

7 Spare Parts

Main Assembly

BME600N-A Series

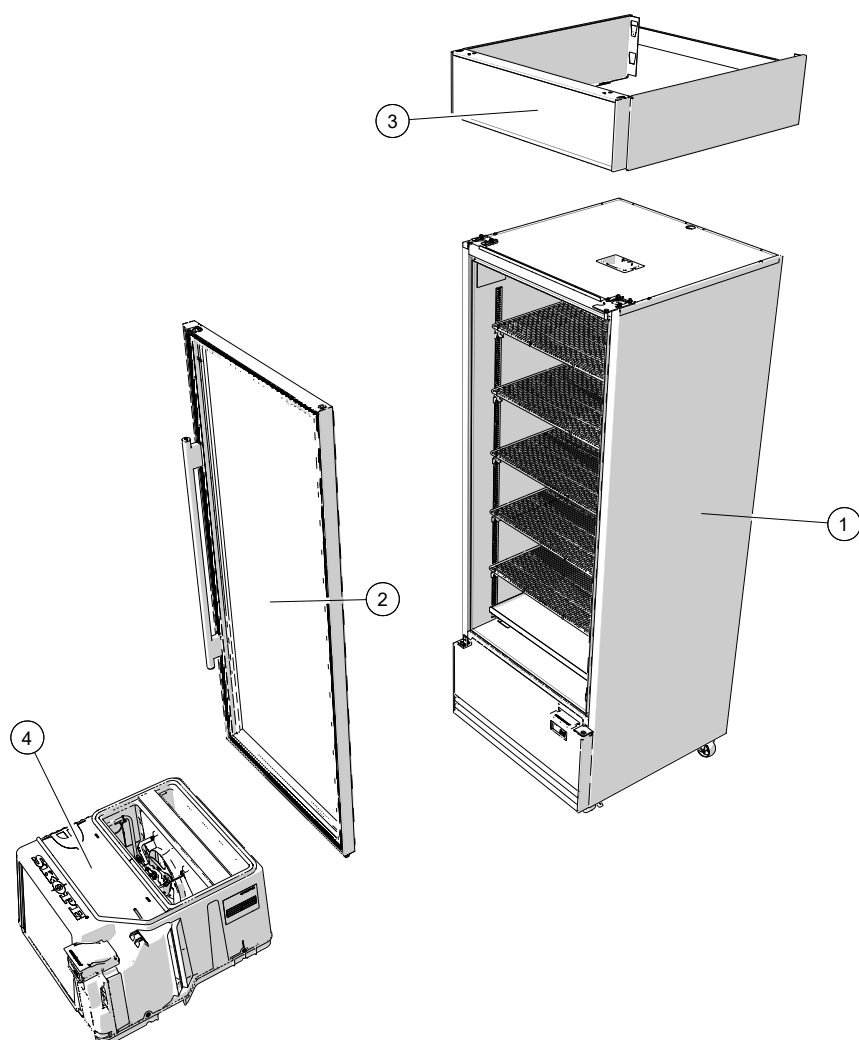


Table 16: Parts – Main assembly: BME600N-A series

No.	Description	Page
1	Cabinet assembly	Page 51
2	Door assembly	Page 55
3	Sign assembly	Page 56
4	Cartridge assembly – ActiveCore 2	Page 57
	Cartridge assembly – ActiveCore 3	Page 59

BME1200N-A Series

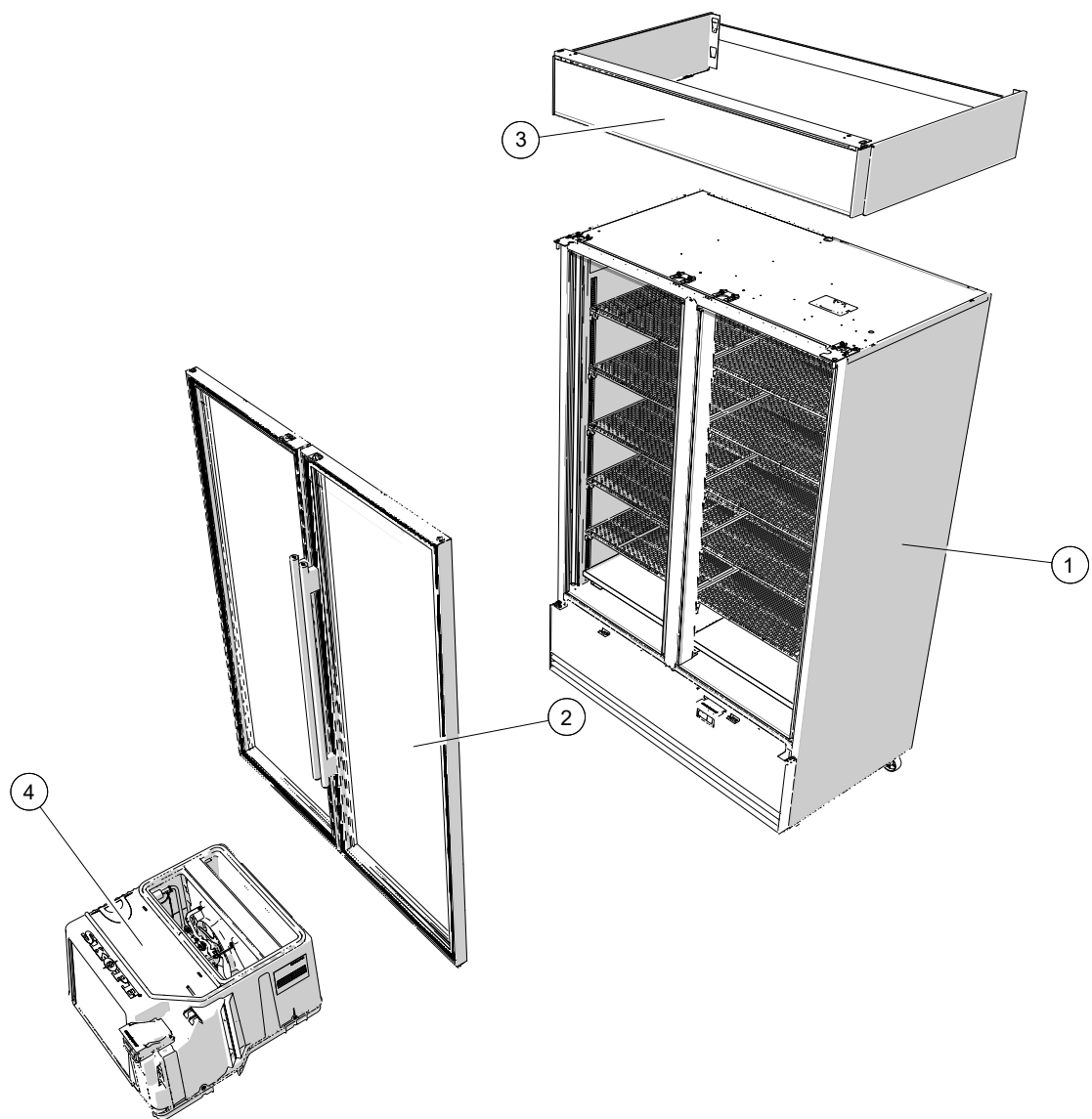


Table 17: Parts – Main assembly: BME1200N-A series

No.	Description	Page
1	Cabinet assembly	Page 53
2	Door assembly	Page 55
3	Sign assembly	Page 56
4	Cartridge assembly – ActiveCore 2	Page 57
	Cartridge assembly – ActiveCore 3	Page 59

Cabinet Assembly

BME600N-A Series

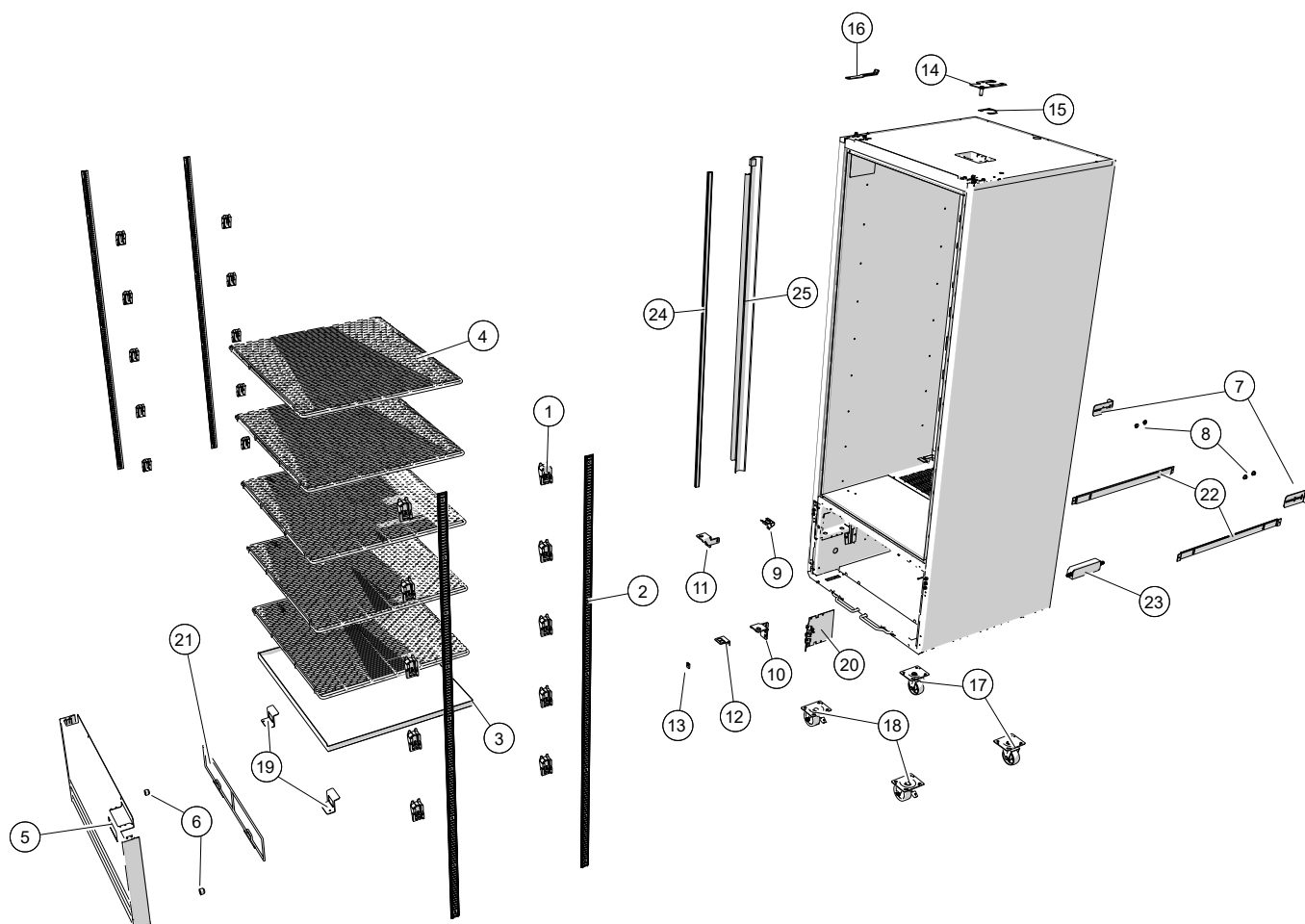


Table 18: Parts – Cabinet assembly: BME600N-A series

No.	Description	SKOPE Part No.		
		Unpainted/standard	Colour: White	Colour: Black
1	Shelf clip		HB0070205867	
2	Shelf support strip	HB0070110331		
3	Bottom Shelf Solid	HB0070109270		
4	Wire shelf		HB0070109245	
5	Kick panel		HB0070833176B	HB0070833176C
6	Kick panel stop	HB0070203535		
7	Rear stopper	HB0070110666		
8	Rear stopper bush	HB0070110592		
9	Door sensor bracket	HB0070110662		
10	Bottom hinge – right hand		HB0070110578	
11	Bottom hinge – left hand (hinge reversal kit)		SM60BYN/D100-32	SM60BYN/D100-49
12	Tension bracket		HB0070110580	
13	Vertical lock nut		HB0070110581	
14	Top hinge – right hand		HB0070110582B	
15	Top hinge spacer		B15RW/115	
16	Cabinet top lock bracket			HB0070111623
17	Rear castor	HB0070105066		

Spare Parts

Table 18: Parts – Cabinet assembly: BME600N-A series (continued)

No.	Description	SKOPE Part No.		
		<i>Unpainted/standard</i>	<i>Colour: White</i>	<i>Colour: Black</i>
18	Front castor – lockable	HB0070105065		
19	Bottom shelf support bracket	HB0070110664		
20	Mains electrical box assembly	HB0070833872		
21	Condenser filter	HB0070204892		
22	Cartridge rear stop	SM12BV/327		
23	Light power supply	ELZ11887		
24	LED side light bar – 1370 mm	ELL11799		
25	Side light holder – no notches	HB0070208596		
–	Interior wiring loom (not shown)	FLX11807		
–	Side light cover (not shown)	PLE11569		

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

*If key lock/s are fitted, please contact SKOPE for a part number.

BME1200N-A Series

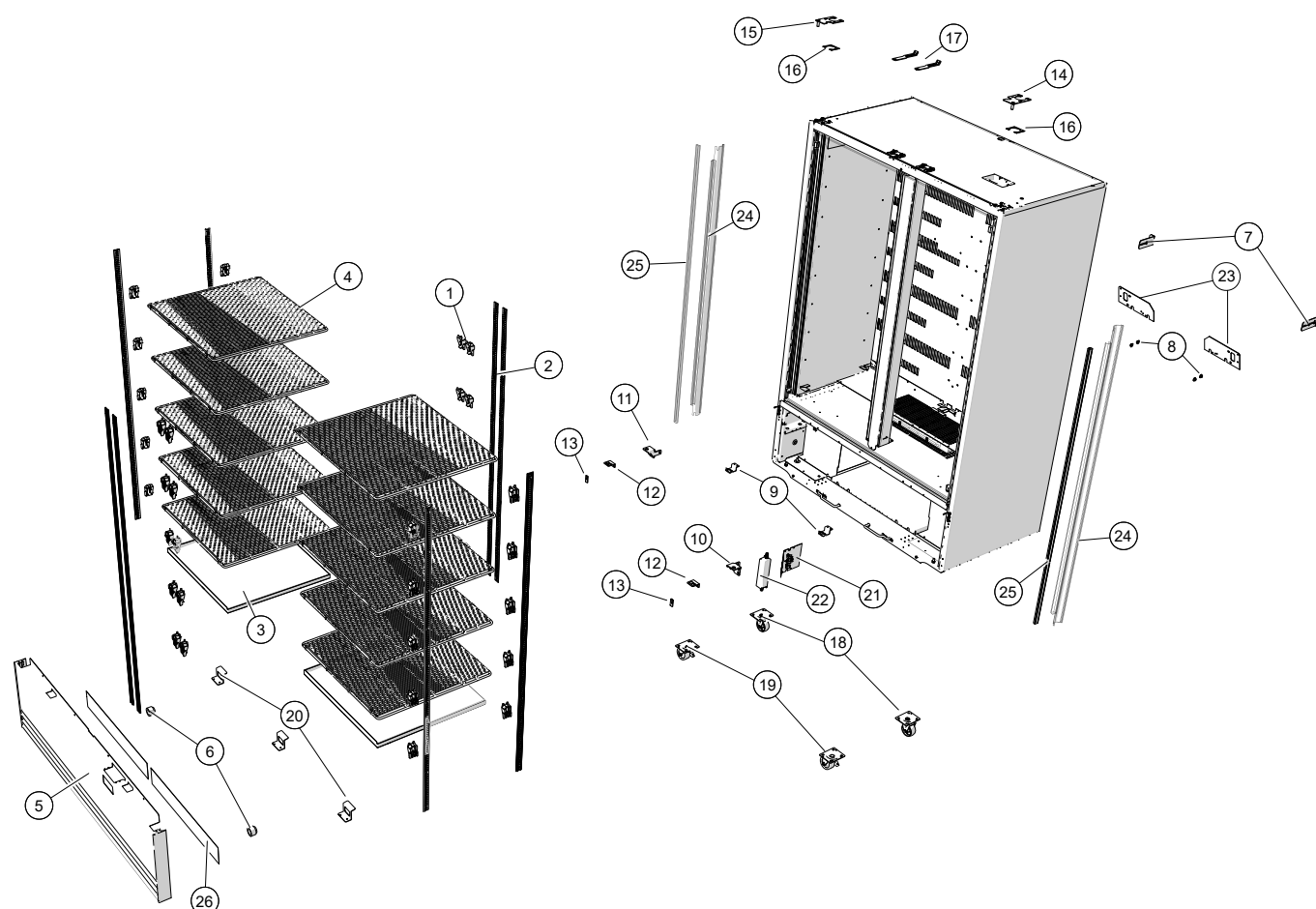


Table 19: Parts – Cabinet assembly BME1200N-A series

No.	Description	SKOPE Part No.		
		Unpainted/standard	Colour: White	Colour: Black
1	Shelf clip		HB0070205867	
2	Shelf support strip	HB0070110331		
3	Bottom Shelf Solid	HB0070108452		
4	Wire shelf		HB0070108448	HB0070112271
5	Kick panel		HB0070833179B	HB0070833179C
6	Kick panel stop	HB0070203535		
7	Cabinet rear stand-off	HB0070110666		
8	Rear stopper bush	HB0070110592		
9	Door sensor bracket		HB0070110663	HB0070110663A
10	Bottom hinge – right hand		HB0070110578	
11	Bottom hinge – left hand		HB0070110579	
12	Tension bracket		HB0070110580	
13	Vertical lock nut		HB0070110581	
14	Top hinge – right hand		HB0070110582B	
15	Top hinge – left hand		HB0070110583B	
16	Top hinge spacer		B15RW/115	

Table 19: Parts – Cabinet assembly BME1200N-A series (continued)

No.	Description	SKOPE Part No.		
		<i>Unpainted/standard</i>	<i>Colour: White</i>	<i>Colour: Black</i>
17	Cabinet top lock bracket			HB0070111623
18	Rear castor	HB0070105066		
19	Front castor – lockable	HB0070105065		
20	Bottom shelf support bracket	HB0070110664		
21	Mains electrical box assembly	HB0070833872		
22	Light power supply	ELZ11887		
23	Cartridge rear stop	SM60BV/327		
24	Side light holder – no notches	HB0070208596		
25	LED side light bar – 1370 mm	ELL11799		
–	Interior wiring loom (not shown)	FLX11807		
–	Side light cover (not shown)	PLE11569		

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

*If key lock/s are fitted, please contact SKOPE for a part number.

Glass Door Assembly

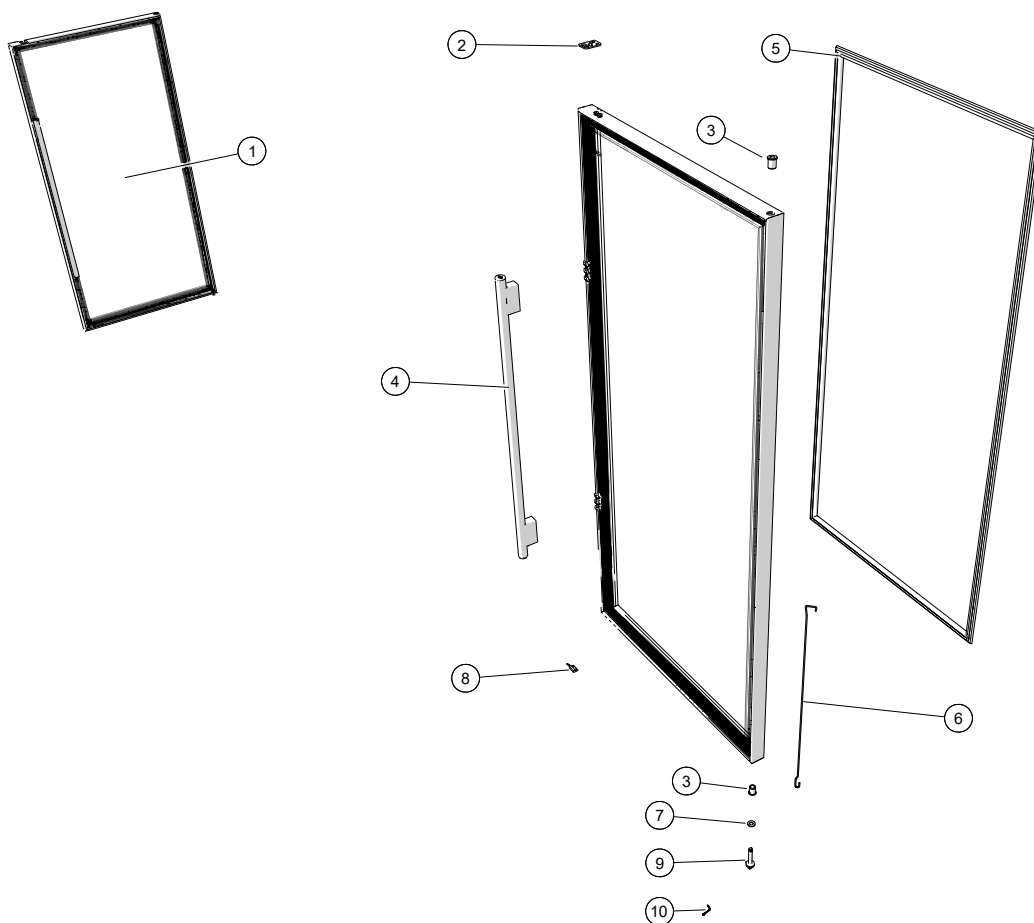


Table 20: Parts – Glass door assembly

No.	Description	SKOPE Part No.		
		Unpainted/standard	Colour: White	Colour: Black
1	BME6000N-A Series door assembly – right hand	–	HB0070832963	–
	BME12000N-A Series door assembly – right hand	–	HB0070832964	–
	BME1200N-A Series door assembly – left hand	–	HB0070832965	–
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)	HAN11195/0844-49
	Door handle mount	STY11484GY	–	–
5	BME600N-A magnetic gasket	GKT0482SK	–	–
	BME1200N-A magnetic gasket	GKT4899SK	–	–
6	Torsion bar	REF5014	–	–
7	Bush washer	PLM11298	–	–
8	Door sensor switch	HB0074091496	–	–
9	Capstan	TUR11299	–	–
10	Split pin	FAS5076	–	–
–	Hinge reversal kit (right to left hand) (single door only, not shown)	–	SM60BYN/D100-32	SM60BYN/D100-49

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

Lit Sign Assembly

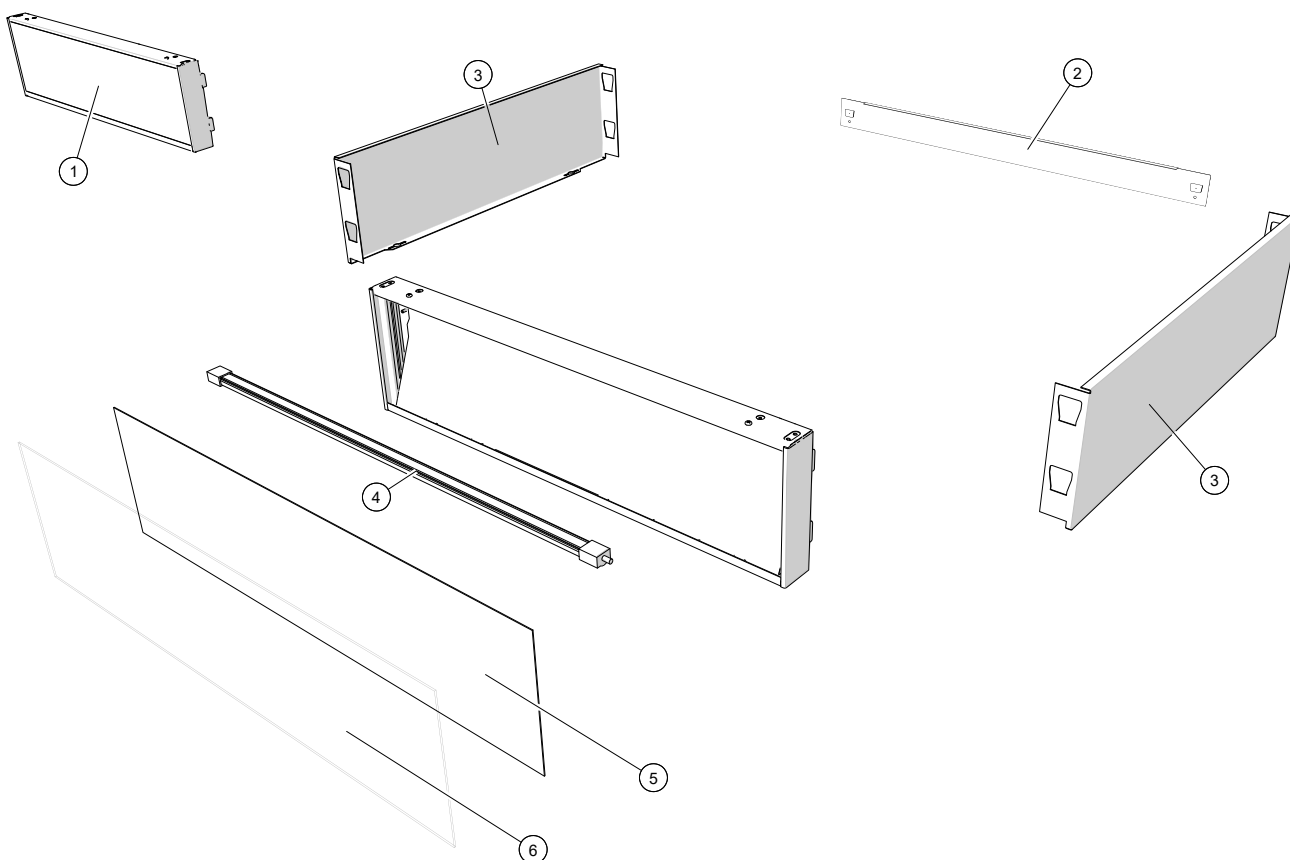


Table 21: Parts – Lit sign assembly: BME600N-AC

No.	Description	SKOPE Part No.		
		Unpainted/standard	Colour: White	Colour: Black
1	Lit sign assembly	–	MB60BYN/T61-32/00	MB60BYN/T61-49/00
2	Sign back strip	–	HB0070105692P	HB0070105692Q
3	Sign side	–	SM12BV/S20-32	SM12BV/S20-49
4	Sign light bar	ELL11772	–	–
5	Sign panel (transparent) (lit sign)	PLY11241-MB60	–	–

Table 22: Parts – Lit sign assembly: BME1200N-AC

No.	Description	SKOPE Part No.		
		Unpainted/standard	Colour: White	Colour: Black
1	Lit sign assembly	–	MB12BYN/T61-32/00	MB12BYN/T61-49/00
2	Sign back strip	–	HB0070108524P	HB0070108524R
3	Sign side	–	SM12BV/S20-32	SM12BV/S20-49
4	Sign light bar	ELL11800	–	–
5	Sign panel (transparent) (lit sign)	PLY11241-MB12	–	–

Cartridge Assembly

UBHCNI-0008

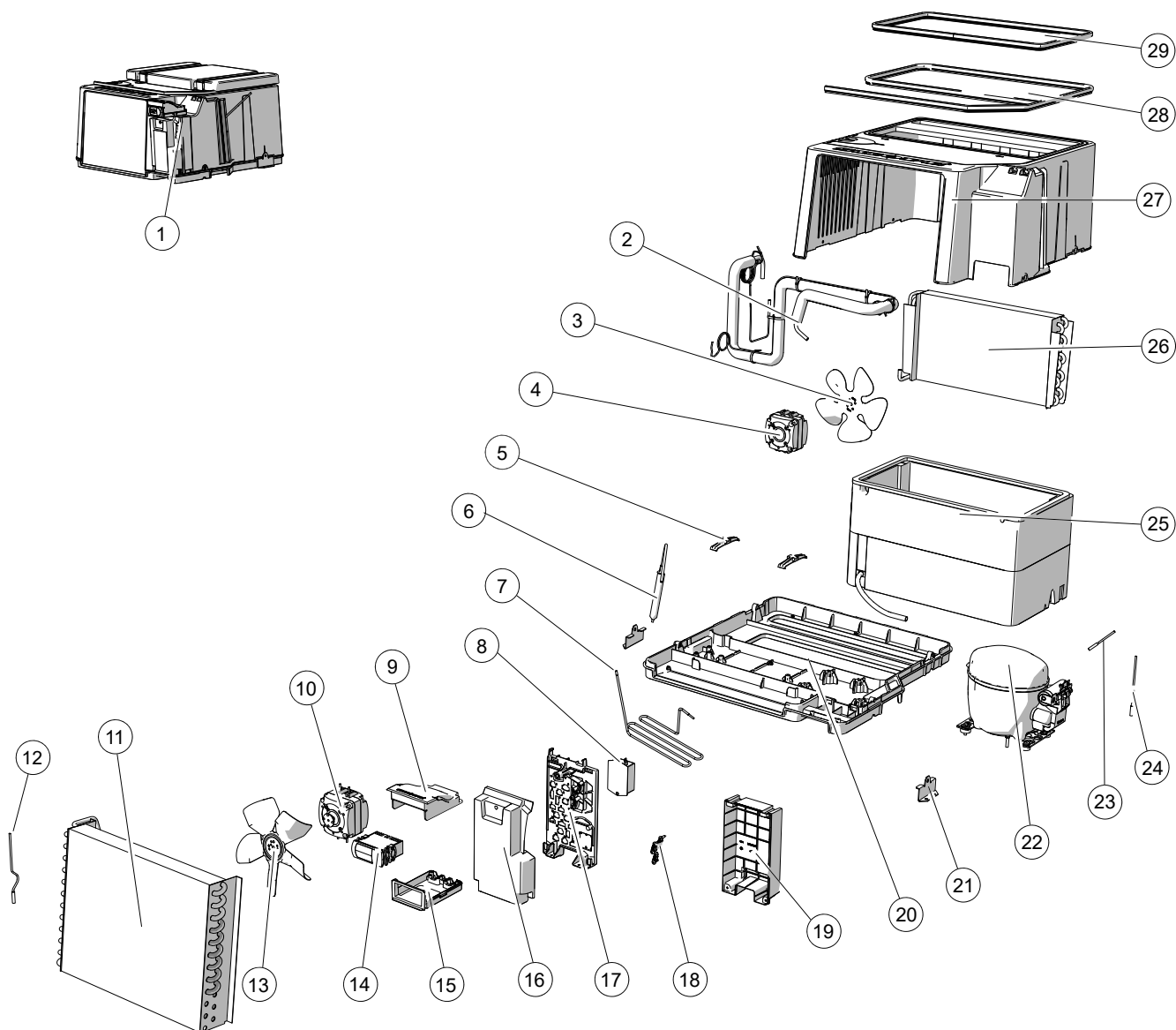


Table 23: Parts – Cartridge assembly: UBHCNI-0008

No.	Description	SKOPE Part No.
1	Cartridge assembly	HB0070832517A
2	Suction line assembly	HB0070702718
3	Evaporator fan blade	HB074001790
4	Evaporator fan motor	ELM11309
–	Evaporator fan shroud (not shown)	HB0070206123
5	Condensate pipe support	HB0070206128
6	Drier	HB0074180006
7	Discharge line assembly	HB0070702717
8	EMI filter	HB0074600001
9	Controller box cover	HB0070206126

Table 23: Parts – Cartridge assembly: UBHCNI-0008 (continued)

No.	Description	SKOPE Part No.
10	Condenser fan motor	ELM11309
11	Condenser coil	HB0070702720
12	Condenser temperature probe	HB0070401693B
13	Condenser fan blade	HB0074001789
–	Condenser fan shroud (not shown)	HB0070206124
14	AoFrio electronic controller	ELZ11749-1626
15	Controller box base	HB0070206125
16	Cartridge electrics box enclosure front	HB0070207012A
17	Cartridge electrics box enclosure	HB0070207014
–	Electrical box assembly – ActiveCore R290 Fridge (not shown)	HB0070833377
18	Cable clamp	HB0070206127
19	Cartridge electrics box enclosure rear	HB0070207013A
20	Cartridge plastic bottom	HB0070206212B
21	Hold down bracket	HB0070110815A
22	Compressor – Wanbao FN90M	HB0074000848
23	Control temperature probe	HB0070400542
24	Evaporator temperature probe	HB0070400506
25	Evaporator box	HB0070510928A
26	Evaporator coil	HB0070702232
27	Cartridge plastic top cover	HB0070206133
28	Cartridge gasket seal 2306 mm	PLE11052-2306
29	Cartridge gasket seal 1571 mm	PLE11052-1571
–	Ambient temperature probe (not shown)	HB0070401693A
–	Mains power cord (not shown)	HB0070400636
–	Controller wire loom – blue (not shown)	HB0070401063
–	Controller wire loom – red (not shown)	HB0070401062
–	Controller wire loom – white (not shown)	HB0070401111

UBHCNI-0076

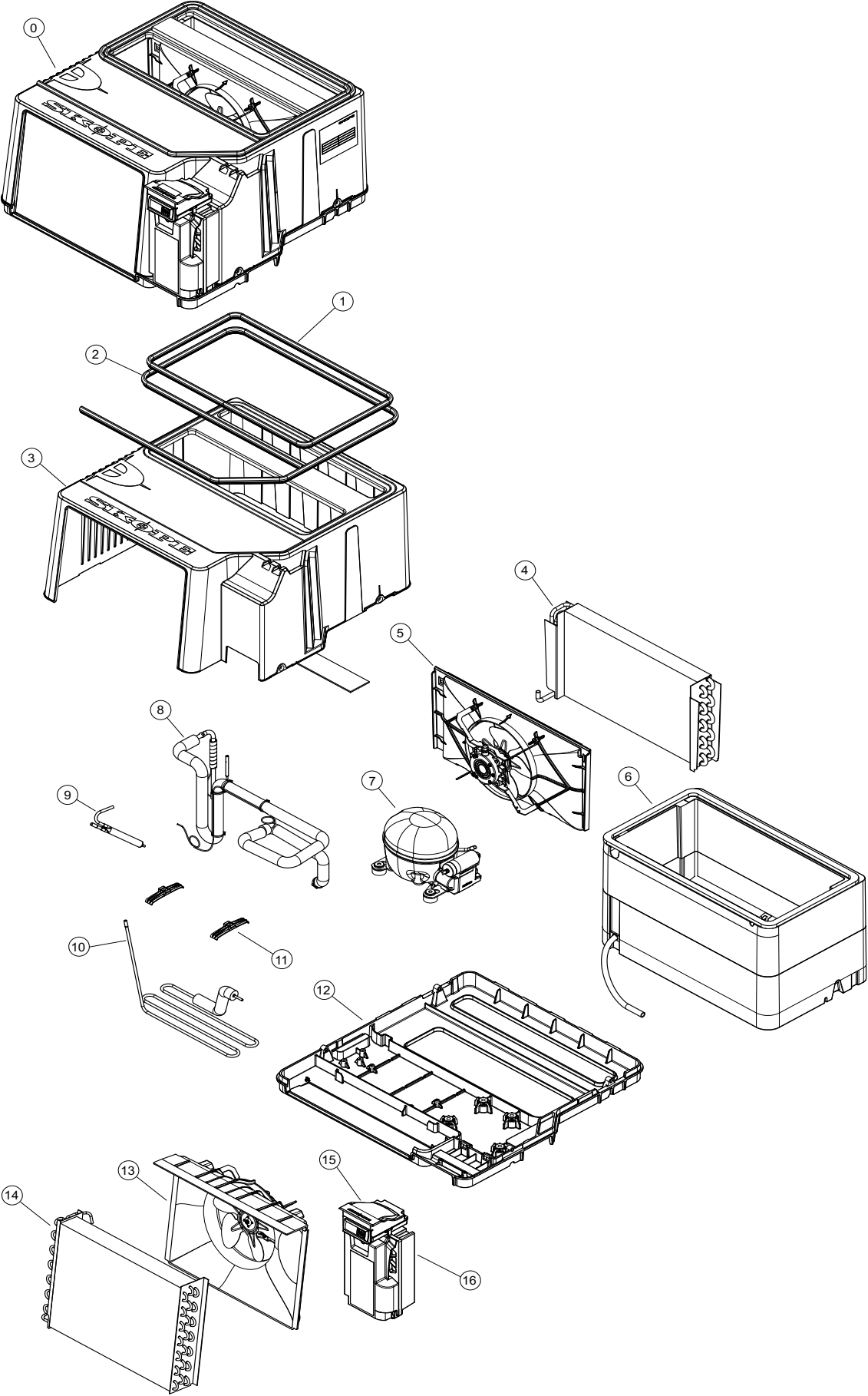


Table 24: Parts – Cartridge assembly: UBHCNI-0076

No.	Description	SKOPE Part No.
0	Cartridge assembly	UBHCNI-0076
1	Cartridge gasket seal 1571 mm	PLE11052-1571
2	Cartridge gasket seal 2306 mm	PLE11052-2306
3	Cartridge plastic top cover	UP02N00002
4	Evaporator coil	HB0070702232
5	Evaporator fan shroud	HB0070206123
	Evaporator fan motor	HB0074001785
	Evaporator fan blade	HB0074001790
6	Evaporator box	HB0070510928A
7	Compressor – Nidec EM2X3125U R290 6.09 cc	HB0074000790A
	Compressor electrics	HB0074000790AFJ
8	Suction line assembly	HB0070703722
9	Dryer	HB0074180006
10	Discharge line assembly	HB0070702717
11	Condensate pipe support	HB0070110674
12	Cartridge plastic bottom	HB0070206212B
13	Condenser fan shroud	HB0070206124
	Condenser fan motor	HB0074001785
	Condenser fan blade	HB0074001789
14	Condenser coil	HB0070702720
15	Controller box cover	HB0070206126
	Controller box base	HB0070206125
	AoFrio electronic controller	ELZ11749
16	Cartridge electrics box assembly	HB0070833377ABJ
–	EMI filter (not shown)	HB0074600001
–	Ambient probe (not shown)	HB0070401693A
–	Condenser probe (not shown)	HB0070401693B
–	Control probe (not shown)	HB0070400542
–	Evaporator probe (not shown)	HB0070400506
–	Cable clamp (not shown)	HB0070206127
–	Mains power cord (not shown)	HB0070400636
–	Door and ambient sensor loom – BME600N (not shown)	HB0070401108
–	Door and ambient sensor loom – BME1200N (not shown)	HB0070401107
–	Controller wire loom – blue (not shown)	HB0070401063
–	Controller wire loom – red (not shown)	UW0100012
–	Controller wire loom – white (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

8 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 25, which will depend on:

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

Table 25: 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

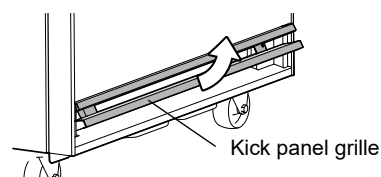
Unplug the cabinet from the mains power supply before cleaning the condenser coil or optional filter.

The condenser coil is located on the front of the refrigeration cartridge. The optional filter is located on the front panel in front of the condenser coil.

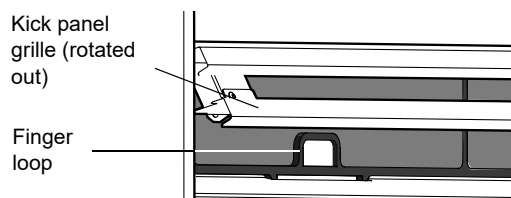
The filter is disposable and should be replaced when it shows signs of wear. Do **not** apply hot water, blow dry, or place in dishwasher.

Procedure 42: To clean the optional filter

1. Rotate the grille at the bottom of the kick panel out to gain access to the filter.



2. To remove the filter, use the finger loops to pull the filter up and detach from the kick panel.



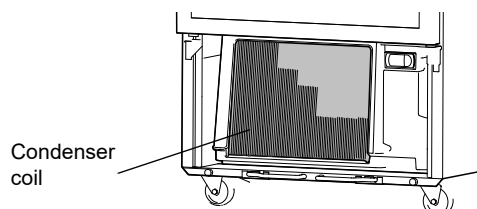
3. Clean the filter with a vacuum cleaner, wash with cold water and shake excess water off before refitting.
 - Do not apply hot water, blow dry, or place in dishwasher.
 - If necessary, discard and refit a new air filter.

4. To refit the filter, insert it up into the kick panel vent with the finger loops facing out. Then clip the into the slots on the bottom face of the kick panel vent.

Procedure 43: To clean the condenser coil

1. Disconnect the cabinet from the mains power supply (see Procedure 11, on page 17).
2. Unscrew and remove the kick panel.

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



4. Refit the kick panel and reconnect the cabinet to the mains power supply.

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 26.

Table 26: Cabinet and cartridge troubleshooting

Problem	Possible cause	Recommended action
• Cabinet not operating	• Loss of power supply	Check the mains power supply.
• No controller display	• Loose plug	Check that all plugs are connected correctly.
• Cabinet not operating as usual	• Incorrect parameters	AoFrio: Reload the parameter set. The parameter number should be on or near the electronic controller.
• Defrost cycle incorrect length		
• Fan not working	• Loose plug	Check all plugs are connected correctly.
• Lights not on	• 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.
	• Light switched off	<ul style="list-style-type: none"> Switch the light on via the app. Open the door.
	• Failed LED light	Replace the light.
	• Faulty door switch	Check that the door switch is working. Use the app to help diagnose the problem.
	• Plug not connected properly	Check and clean the plugs.
	• Power supply fault	Replace the light's power supply.
• Light component not working	• Plug not connected properly	Check and clean the plug connection.
	• Faulty light	Replace the light.

Table 26: Cabinet and cartridge troubleshooting (continued)

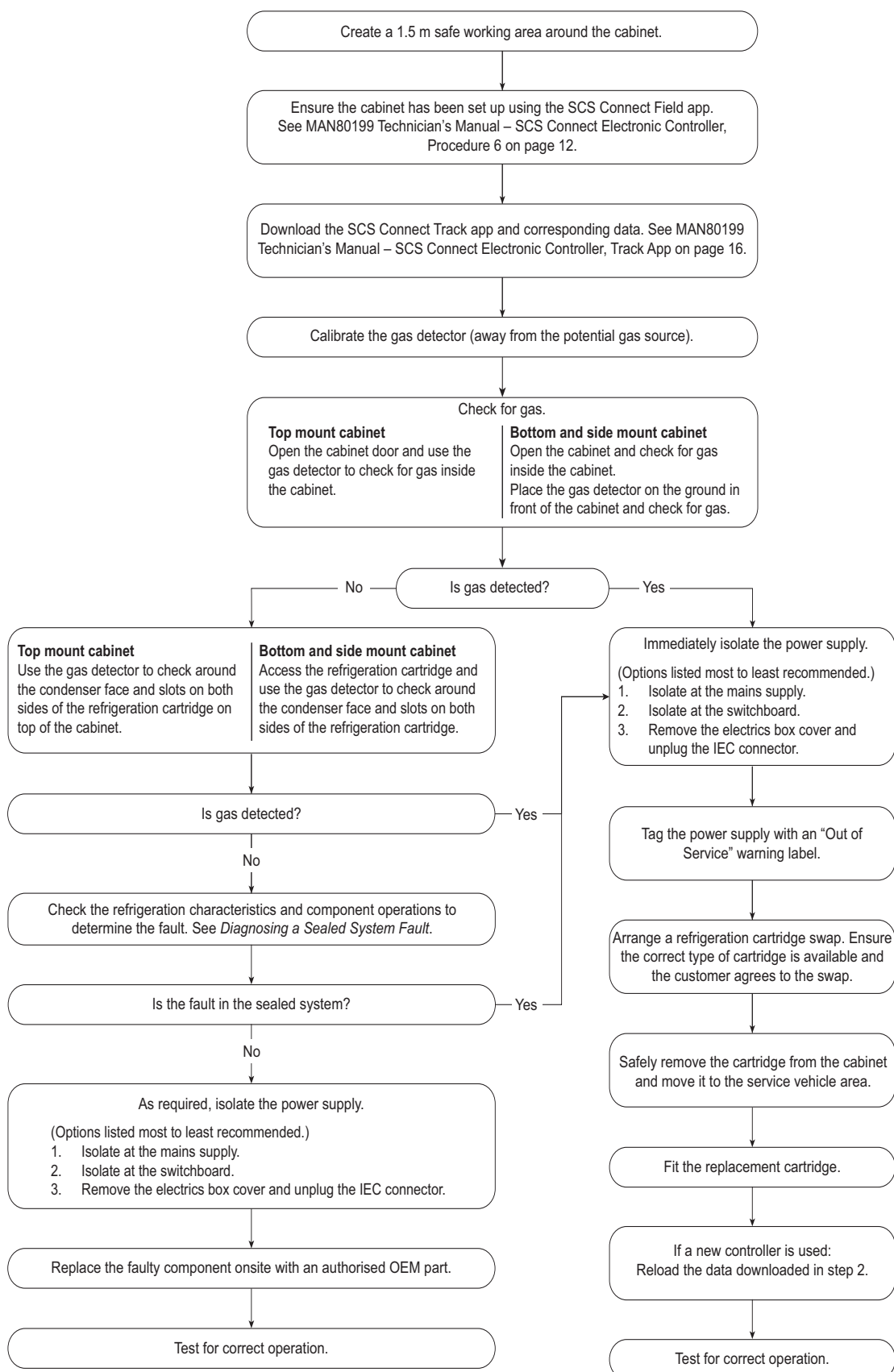
Problem	Possible cause	Recommended action
• Lights not on	• Light switched off	• Switch the light on via the light button on the electronic controller faceplate, or the app.
	• Failed LED light	Replace the light.
	• Refrigeration system error (indicated by the electronic controller)	Diagnose and repair. If a system fault is found contact SKOPE for information on how to proceed.
	• Plug not connected properly	Check and clean the plugs.
	• Power supply fault	Replace the light's power supply.
• Light component not working	• Plug not connected properly	Check and clean the plug connection.
	• Faulty light	Replace the light.
• Excess noise vibration	• 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.
• Excess compressor noise	• Damaged mountings	Check the mountings to ensure there is no damage to the rubber, or the washers, nuts or screws.
• 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.
• Frozen evaporator coil	• Evaporator probe fault	Replace the evaporator probe.
	• Setpoint is too cold	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.

Table 26: Cabinet and cartridge troubleshooting (continued)

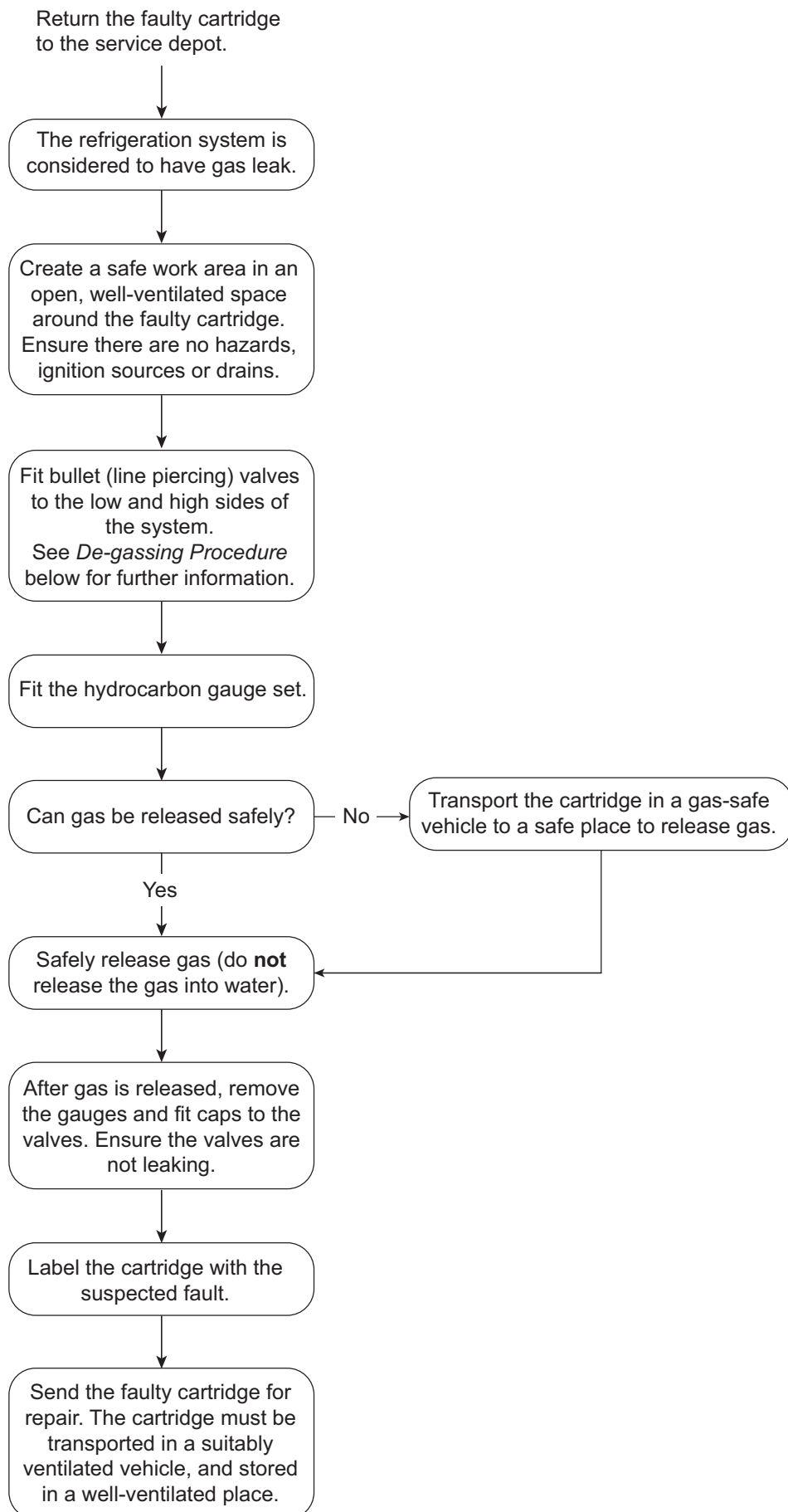
Problem	Possible cause	Recommended action
<ul style="list-style-type: none"> Product is too warm 	<ul style="list-style-type: none"> Door not closing properly 	<ul style="list-style-type: none"> Check and clean the door gasket. Ensure the cabinet is on a level surface.
	<ul style="list-style-type: none"> Excessive door opening 	Limit door openings.
	<ul style="list-style-type: none"> 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.
	<ul style="list-style-type: none"> Refrigeration system error (no active fault alarm) 	Check the SCS Connect Field app statistics to see if and when the controller signalled a fault or alarm.
	<ul style="list-style-type: none"> Cartridge is operating too hot 	<ul style="list-style-type: none"> Ensure the cabinet has good ventilation around the refrigeration cartridge.
	<ul style="list-style-type: none"> Excessive refrigeration heat load 	<ul style="list-style-type: none"> Ensure the cabinet is within the maximum operating conditions.
	<ul style="list-style-type: none"> Setpoint is too high 	Lower the setpoint.
	<ul style="list-style-type: none"> The cabinet is recently loaded 	Allow the product time to cool down.
	<ul style="list-style-type: none"> The cabinet is overstocked 	<ul style="list-style-type: none"> Remove some product. Do not allow product to hang over the shelves.
	<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"> Moisture build up on cabinet exterior 	<ul style="list-style-type: none"> Frequent door opening 	Limit door openings.
	<ul style="list-style-type: none"> Door not closing properly 	<ul style="list-style-type: none"> Check and clean the door gasket. Ensure the cabinet is on a level surface.
	<ul style="list-style-type: none"> High humidity 	Check the ambient operating temperature and reposition the cabinet if necessary.
<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.

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.

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.
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