BME-N ActiveCore

SKOPE Bottom Mount Fridge
Hydrocarbon

Service Manual

MAN80157 Rev. 2.2 Sep. 2022

SKOPE® Refrigeration

BME-N ActiveCore
SKOPE Bottom Mount Chiller
Hydrocarbon
Service Manual

MAN80157
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Trademark Infringement

The SKOPE trademark on this product is infringed if the owner, for the time being, does any of the following:

- Applies the trade mark to the product after its state, condition, get-up or packaging has been altered in any manner
- Alters, removes (including part removal) or obliterates (including part obliteration) the trade mark on the product
- Applies any other trade mark to the product
- Adds to the product any written material that is likely to damage the reputation of the trade mark

Notice of the above contractual obligations passes to:

- Successors or assignees of the buyer
- Future owners of the product

Contents

1 Servicing Hydrocarbon

Overview

This cooler 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 System” on page 46 for more information including examples of hazardous activities.

SKOPE HC 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 reference - AIRAH Flammable Refrigerants – Safety Guide
    - New Zealand should reference – Flammable Refrigerant Safety Documentation (Refrigerant License 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; then the entire cabinet MUST be sent 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 recommend attending specific hydrocarbon refrigeration handling training courses). Nitrogen must be used for purging system before commencing "Hot Work" – brazing.
- MUST – Adhere to relevant SKOPE Service Manual. If any contradiction, the local Regulations take precedence over SKOPE requirements
- MUST – Work only in suitable, safe and compliant work spaces. Personal Protective Equipment must always be used when working on Hydrocarbon equipment.
- MUST – Service people diagnosing refrigeration faults must always carry and utilise Flammable Gas detectors when working on Hydrocarbon equipment.
- MUST – Prior to any service work; know where and how to safely and quickly isolate power supply to cabinet
- MUST – Not perform any Hot Work (brazing etc.) in the field. These are to be completed in a suitable service depot / workshop (in a dedicated specific Hazardous Work Area compliant to 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 (with use of Bullet Piercing Valve or Line Tap valves) before transporting. Valves must be removed at the hydrocarbon service depot once repair is completed.
- MUST – All hydrocarbon workshop areas must have emergency plans; that includes suitable evacuation and fire control plans and equipment.
- MUST – Only use refrigerant grade hydrocarbon, to precise mass specified on removable refrigeration system serial label.
- MUST – Be accurate refrigerant charge; The refrigerant mass is ultra-low charge and must only be measured in by accurate scales to +/- 1.0gram. Refrigerant MUST not be overcharged; or added to an already charged system.
- MUST – Use identical drier replacement; as any change will affect gas charge volume; and effect reliability compliance and safety.
- MUST – Any pipework replacement, must be identical to genuine SKOPE parts.
- MUST – Not introduce a sparking device inside a cabinet or inside a removable refrigeration system. Battery drills should not be used.
- 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 Wellington Drive SCS Field app installed on a Bluetooth enabled device carried by the service technician (exception is for cabinets that do not utilise the Wellington Drive Controller). The app should be utilised for safe, accurate diagnosis of the system and it is required to complete a controller replacement in the field.
- RECOMMENDED – Have the Wellington Drive SCS Track app installed on a Bluetooth enabled device carried by the service technician. This passive app collects system data from the Wellington Drive SCS Connect Controller and transmit it to the cloud.
- Logistics companies may be used 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 detailed in the table below. Refer to the relevant product specification sheet (available on the SKOPE website: www.skope.com) for specifications.

Table 1: Model specifications

Series	Model	SKOPE ID
BME600-A ActiveCore	BME600N-A	SM60GYN
	BME600N-AC	SM60BYN
BME1200-A ActiveCore	BME1200N-A	SM12GYN
	BME1200N-AC	SM12BYN

3 Electronic Controller

Overview

The cooler is fitted with a Wellington Drive SCS Connect electronic controller. The controller is located below the door/s and visible from the outside of the cabinet.

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

Controller Faceplate

Buttons and Display

The controller faceplate includes the front display panel and interface buttons.

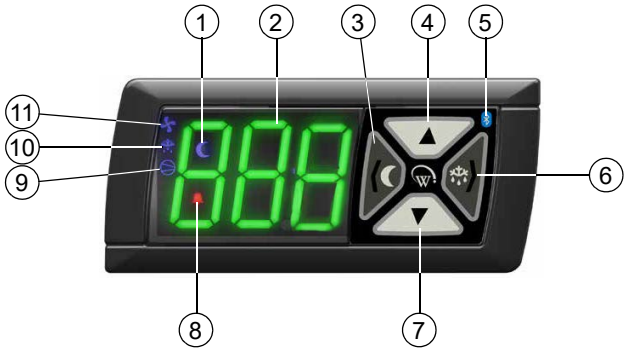


Table 2: Controller faceplate

No.	Description
1	**Night Mode:** Indicator. On during cooler night mode.
2	**Display:** Indicator. Digital display of cabinet air temperature or messages. The temperature is what the sensor inside the cooler detects, and not necessarily the product temperature. However, they may be very close depending on how the controller is set to sense temperature.
3	**Light Switch - Night Mode (back/abort):** Button. Press to switch the lights on or off. Press and hold to switch cooler between day and night mode. Used during programming.
4	**Up:** Button. Used for programming.
5	**Bluetooth:** Indicator. On when ready to connect to a device. Flashing when connected to a device.
6	**Defrost Cycle (next/enter):** Button. Press and hold to initiate manual defrost. Used during programming.
7	**Down:** Button. Used for programming.
8	**Fault - Alarm:** Indicator. On during fault or alarm. Note: Alarm message is also shown on the display during alarm.
9	**Compressor:** Indicator. On when the compressor is running.
10	**Defrost Mode:** Indicator. On during defrost cycle.
11	**Fan:** Indicator. ON when evaporator fan running.

Service Mode

Service mode can be accessed and used via the SCS Connect Field app (see “Wellington Drive SCS Field App” on page 9), or the controller faceplate (see below).

Note: A 9 digit pin code is required to access service mode via the controller buttons. Contact your User Manager or SKOPE Customer Services to receive your activation code.

Procedure 1: To enable and use service mode via the controller faceplate

1. Press and hold the up and down buttons simultaneously until prompted to enter the 9 digit pin code.
2. Enter the service mode pin code.
3. Use the up, down, back/abort and next/enter buttons to navigate to the required category.

There are 5 main service mode categories when accessing and using service mode via the controller faceplate:

Parameters

Allows you to access and edit individual controller parameters.

It is not recommended that parameters are changed unless absolutely necessary. If incorrect parameter settings are suspected, reload the complete parameter set.

Reset

Returns the controller back to factory settings. The parameter set must be reloaded after performing a reset.

Manual test

Allows you to see the input values from 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 cabinet model codes, firmware, hardware and software versions.

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.

Wellington Drive SCS Field App

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

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

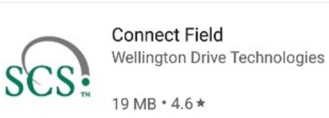
All technicians who service SKOPE equipment fitted with the Wellington Drive SCS Connect electronic controller are required to have the Wellington Drive Field app installed on their

Bluetooth-enabled mobile device. SKOPE also recommends that all technicians have the Wellington Drive Track app installed.

Installation and Connecting

Procedure 2: Installing the SCS Connect Field app

1. Download the SCS Connect Field app from Google Play Store or Apple App Store.



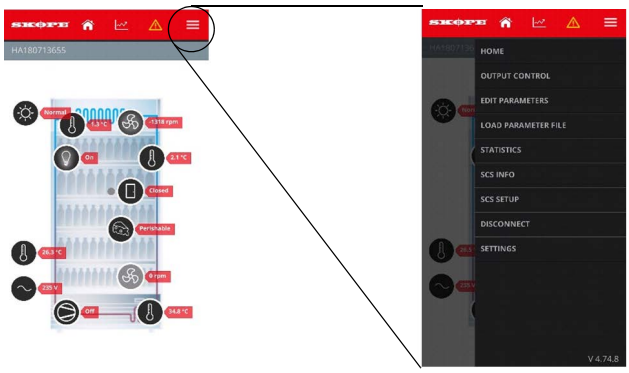
Note: The two app versions have minor differences in appearance.

2. Enter your unique activation code and press “Activate”. The code is provided to you by your company’s User Manager or SKOPE Customer Services.
3. Enter a 4-digit PIN code, re-enter the code, and press “SET PIN CODE”.

Procedure 3: Connecting to a cabinet

1. Ensure Bluetooth is enabled on your mobile device.
2. The app shows a list of nearby SKOPE cabinets. The signal bars and number in brackets indicate how close each cabinet is.

3. Select the cabinet of interest and press ‘CONNECT’.
4. When successfully connected, a blue light flashes on the controller faceplate and the home screen is displayed in the app.



Home screen

Menu screen

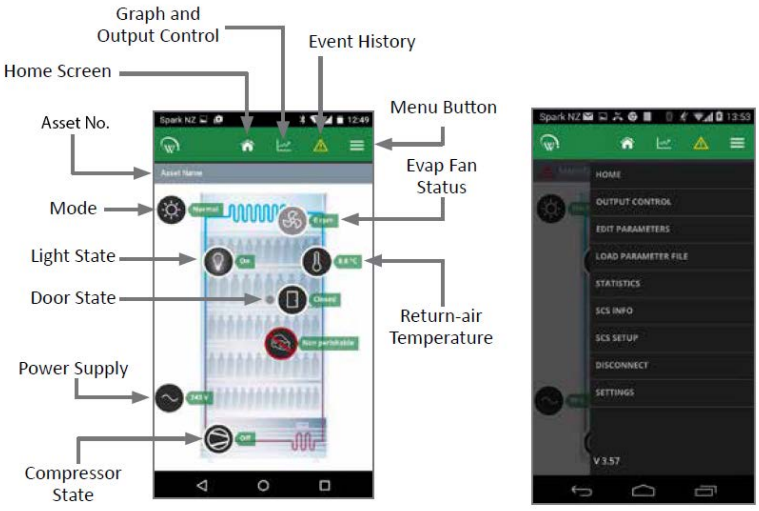
Note: Available menu options will differ depending on user access levels

App Categories

Various options are available in the app menu to provide information about the connected controller and its cooler. Depending on user access level, some menu options may not be available.

Home screen

The home screen shows a graphic representation of the current state of the cooler being controlled.



Home Screen (Fridge Status) | Main Menu

Output control

Provides control of the controller input sensors and switches, and output relays.

Edit parameters

Provides access and editing of individual controller parameters.
Note: Parameter changes must be recorded on warranty/job card.

It is not recommended that parameters are changed unless absolutely necessary. If incorrect parameter settings are suspected, reload the complete parameter set. **Note:** Updated parameters are not applied until DISCONNECT has been selected from the menu (after loading new parameter set).

Load parameter file

Allows reloading of cooler default parameter set or changing to new parameter set. See “Replacing the Controller” on page 47 for instructions. **Note:** Updated parameters are not applied until DISCONNECT has been selected from the menu (after loading new parameter set).

Statistics

Information from the past seven days on cooler activity including temperatures, door openings and alarms.

SCS info

Controller version and cooler asset information.

SCS setup

Add or change SCS info (see above).

Disconnect

Disconnect from currently connected controller.

Settings

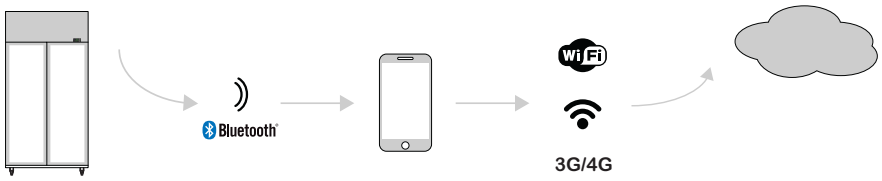
Change app general settings.

Wellington Drive Track App

The Wellington Drive 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 Wellington Drive SCS Connect electronic controller have the Wellington Drive Track app installed on their Bluetooth-enabled mobile device. All technicians are also required to have the Wellington Drive Field app installed on their Bluetooth-enabled mobile device.

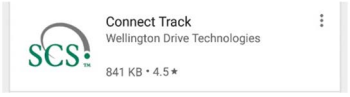


Installation and Use

Procedure 4: Installing the SCS Connect Track app

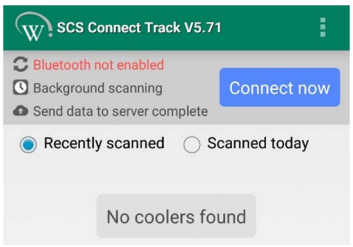
1. Download the SCS Connect Track app from Google Play Store or Apple App Store.

   Note: The two app versions have minor differences in appearance.



2. Enter your unique activation code and press “Activate”. The code is provided to you by your company’s User Manager or SKOPE Customer Services.

3. Respond to any dialogue boxes that appear and the app should be ready to use.
   If you see the pictured screen you will need to turn on Bluetooth (Android).



4. The app is passive and runs in the background (it can track automatically). When servicing a cabinet, the app should be opened to ensure tracking has finished before servicing.

Faults and Alarms

The following table explains faults and alarms that the electronic controller may log and display.

If a fault occurs, the fault - alarm indicator is lit on the controller faceplate, but no message is displayed. Faults do not affect product temperature.

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

Some faults and alarms can be cleared by the shop owner, and others can only be cleared by a service technician.

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

Refer to the tables below for faults and alarm descriptions and possible causes and actions. The service tech type column refers to the service tech skill level required to complete a task. Refer to the SKOPE HC Service Policy for service tech type details.

Table 3: Faults

Description	Service tech type	Possible root cause
Door left open. The door has been open for several minutes. Excessive door open counts.	1, 2, 3, 4	- Door not self closing (torsion fault) - Door switch / circuit - Controller
Over-voltage protection. The maximum allowable mains supply voltage has been exceeded. The cabinet has temporarily shut down to prevent damage and will restart once the supply voltage decreases.	1, 2, 3, 4	Should be a one off; if continues: - Line voltage / rural - Voltage setting parameter - Controller
Under-voltage protection. The mains supply voltage has dropped below the minimum allowable level. The cabinet has temporarily shut down to prevent damage and will restart once the supply voltage increases.	1, 2, 3, 4	Should be a one off; if continues: - Power supply overloaded / multibox - Line voltage / rural - Voltage setting parameter - Controller
High condensing temperature protection. The system was operating at an elevated temperature and has temporarily shut down to prevent damage. Extended operation in this condition may result in ALARM 15, increased energy consumption and a reduction in cabinet life. This alarm may be caused by very high ambient temperature.	2, 3, 4	NO swap unit required - Condenser not clean - Poor installation / ventilation - Condenser fan motor / blade - Controller
Excessive compressor cycling protection. The system has been turning on and off too frequently.	2, 3, 4	Take spare unit in case refrigeration system fault. - Condenser blocked - Poor installation / ventilation - Cabinet / unit gasket seals leaking - Door not self closing / gasket leaking - Product; hot / blocking cabinet airflow - Overloaded from excess door openings / ambient - Fan motor / blade (condenser / evaporator) - Controller - Compressor / gas leak = SWAP unit

Table 4: Alarms

Code	Description	Service tech type	Possible root cause
dor	Door left open. The door has been open for several minutes. Will revert to door left open FAULT after 10 minutes (see the “Faults” table above).	1, 2, 3, 4	- Door not self closing (torsion fault) - Door switch / circuit - Controller
8	Estimated product temperature below allowable range. The estimated product temperature has been below the allowable range for longer than the permissible time. Potential causes are an empty or partially filled cabinet, or low ambient temperature.	1, 2, 3, 4	- Low ambient - App settings - Controller
9	Estimated product temperature above allowable range. The estimated product temperature has been above the allowable range for longer than the permissible time. Potential causes are excessive door openings, door being left open, or warm product loaded into cabinet.	2, 3, 4	NO Swap unit required to be taken (but may be required as fault could still be with sealed refrigeration system) - Condenser blocked - Poor installation / ventilation - Frozen blocked evaporator coil - Unit gasket leaking (to cabinet seal / lid seal) - Door leaking air (bad gasket / door not self closing) - Product; hot / blocking cabinet airflow - Overloaded from excess door openings / ambient - Fan motor / blade (condenser / evaporator) - App settings - Controller - Compressor / gas leak = arrange SWAP unit

Table 4: Alarms (continued)

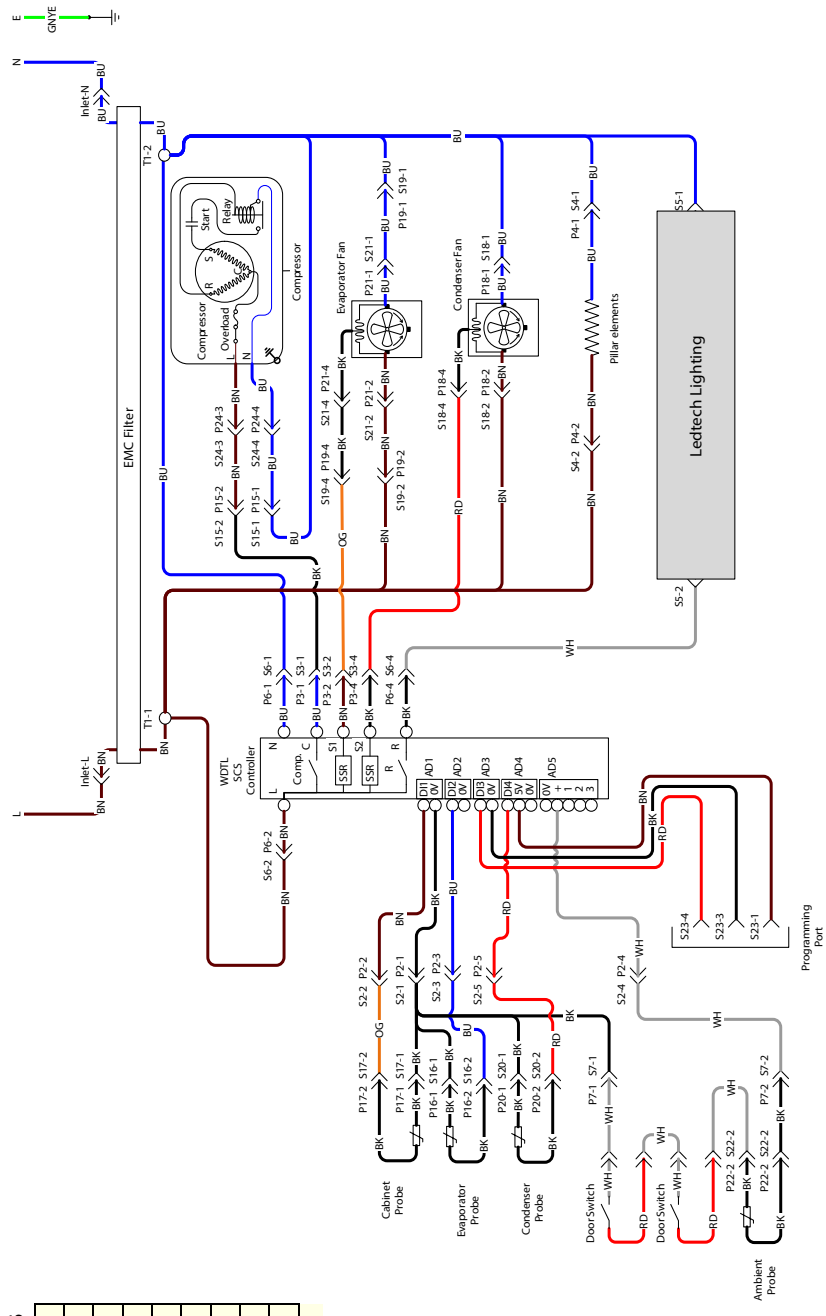
Code	Description	Service tech type	Possible root cause
15	Excessive condensing temperature protection. The system was operating at an excessive temperature and has shut down to prevent permanent damage. This alarm may occur due to very high ambient temperature.	2, 3, 4	NO swap unit required - Condenser not clean - Poor installation / ventilation - Condenser fan motor / blade - Controller
17	Control probe failure. A critical system sensor has failed and the cabinet can no longer operate.	2, 3, 4	NO swap unit required - Control probe / circuit - Controller
18	Electrical over-current protection activated. The compressor was drawing too much current and has shut down to prevent permanent damage.	2, 3, 4	Take spare unit in case refrigeration system fault. - Condenser blocked - Poor installation / ventilation - Cabinet / unit gasket seals leaking - Door not self closing / gasket leaking - Product; hot / blocking cabinet airflow - Overloaded from excess door openings / ambient - Fan motor / blade (condenser /evaporator) - Controller - Compressor / gas leak = SWAP unit
19	Failed to reach set temperature. The refrigeration system has been operating continuously for a long period without reaching the set temperature.	2, 3, 4	Take spare unit in case refrigeration system fault. - Condenser blocked - Poor installation / ventilation - Frozen blocked evaporator coil - Cabinet seal leaking / door / unit - Product; hot / blocking cabinet airflow - Overloaded from excess door openings / ambient - Fan motor / blade (condenser / evaporator) - Controller - Compressor / gas leak = SWAP unit
20	Over cooling product. The internal temperature is too low. The system has temporarily shut down until the temperature has returned to normal. This can occur if the set temperature has been raised by a large amount.	1, 2, 3, 4	- Confirm if really too cold; change parameters accordingly
22	Evaporator fan over-current protection. The current supplied to the evaporator fan motor is too high.	2, 3, 4	NO swap unit required - Faulty fan motor - Fan blade fault (imbalance / debris / blockage) - Controller
23	Condenser fan over-current protection. The current supplied to the condenser fan motor is too high.	2, 3, 4	NO swap unit required - Faulty fan motor - Fan blade fault (imbalance / debris / blockage) - Controller
24	Controller communication error. Controller has lost communication channels.	1, 2, 3, 4	- App - Controller / circuit
25	Controller update failed. Controller update could not be completed.	1, 2, 3, 4	- App - Controller / circuit
26	Controller hardware failure. Controller hardware has failed.	1, 2, 3, 4	- App - Controller / circuit
27	Probe failure. A non-critical system probe has failed. The cabinet will continue to operate with partial function but requires service.	2, 3, 4	NO swap unit required - Evaporator probe / connections - Controller
28	No downward tendency. The temperature is no longer decreasing.	2, 3, 4	Take spare unit in case refrigeration system fault. - Condenser blocked - Poor installation / ventilation - Cabinet / unit gasket seals leaking - Door not self closing / gasket leaking - Product; hot / blocking cabinet airflow - Overloaded from excess door openings / ambient - Fan motor / blade (condenser / evaporator) - Controller - Compressor / gas leak = SWAP unit

Table 4: Alarms (continued)

Code	Description	Service tech type	Possible root cause
29	Compressor cutting out. The compressor cut out on its internal protection or pressure switch.	2, 3, 4	Take spare unit in case refrigeration system fault. - Condenser blocked - Poor installation / ventilation - Cabinet seal leaking / door / unit - Product; hot / blocking cabinet airflow - Overloaded from excess door openings / ambient - Fan motor / blade (condenser / evaporator) - Controller - Compressor / gas leak = SWAP unit
30	Excessive automatic defrosting. The system is automatically defrosting too frequently.	2, 3, 4	Take spare unit in case refrigeration system fault. - Door not self closing / gasket leaking - Evaporator probe - Evaporator motor / fan - Controller - Compressor / gas leak = SWAP unit
31	Compressor stalling. The compressor is stalling on start up.	2, 3, 4	Take spare unit in case refrigeration system fault. - Condenser blocked - Poor installation / ventilation - Cabinet / unit gasket seals leaking - Door not self closing / gasket leaking - Product; hot / blocking cabinet airflow - Overloaded from excess door openings / ambient - Fan motor / blade (condenser / evaporator) - Controller - Compressor / gas leak = SWAP unit

4 Wiring

Model: BME600/1200N-A Series



WIRE COLOURS

BK	Black
BN	Brown
RD	Red
OG	Orange
GN	Green
BU	Blue
GY	Grey
WH	White
GNYE	Green-Yellow

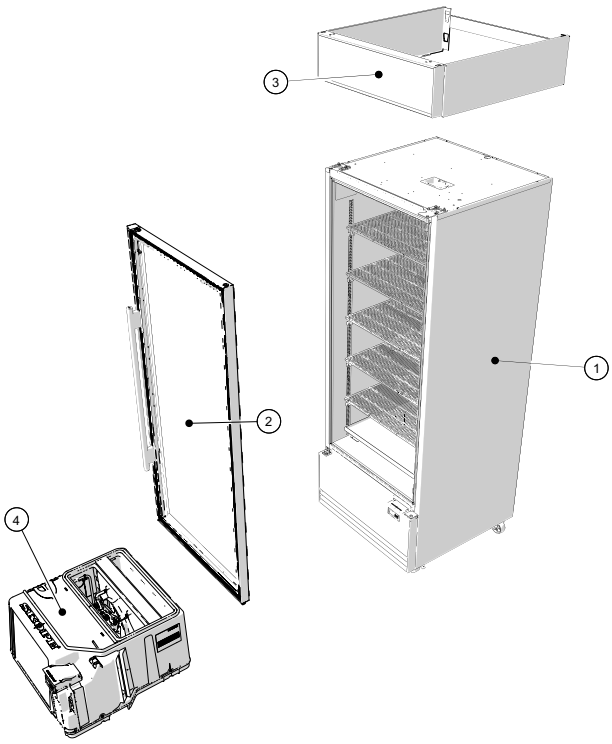
Based upon IEC 757 Standard

LEGEND

Internal Unit Junction Box Sockets/Plugs		S9/P9	Not Used	S19/P19	Evaporator Motor Unit Socket/Plug (White 4-way)
Inlet	IEC Cabinet Socket/Plug	S10/P10	Not Used	S20/P20	Condenser Sensor Socket/Plug (Red 2-way)
S1/P1	Not Used	S11/P11	Not Used	T1	Unit Terminals
S2/P2	Unit Junction Box to Controller Signal Socket/Plug (6-way)	S12/P12	Not Used	**External Sockets/Plugs**	
S3/P3	Unit Junction Box to Controller Power Socket/Plug (Blue 4-way)	S13/P13	Not Used	S21/P21	Evaporator Motor Extension Socket/Plug (Red 4-way)
S4/P4	Heater Wire Unit Socket/Plug (Black 3-way)	S14/P14	Not Used	S22/P22	Ambient Sensor Socket/Plug (White 2-way)
S5/P5	Light Unit Socket/Plug (White 3-way)	S15/P15	Compressor Unit Socket/Plug (Blue 4-way)	S23/P23	Programming/Comms Port Socket (Blue 4-way)
S6/P6	Unit Junction Box to Controller Power Socket/Plug 1 (Red 4-way)	S16/P16	Evaporator Sensor Socket/Plug (Black 2-way)	S24/P24	Compressor Electrics Plug
S7/P7	Door Sensor Socket/Plug (White 2-way)	S17/P17	Cabinet Sensor Socket/Plug (Blue 2-way)	S25/P25	LED Driver DC Output Socket/Plug (Red 2-way)
S8/P8	Not Used	S18/P18	Condenser Motor Unit Socket/Plug (Red 4-way)	S26/P26	Heater Wire Extension Flex Socket/Plug (Black 3-way)

5 Spare Parts

Main Assembly – BME600N-A Series



Parts – Main Assembly BME600N-A Series

No.	Description	Page
1	Cabinet assembly	Page 19
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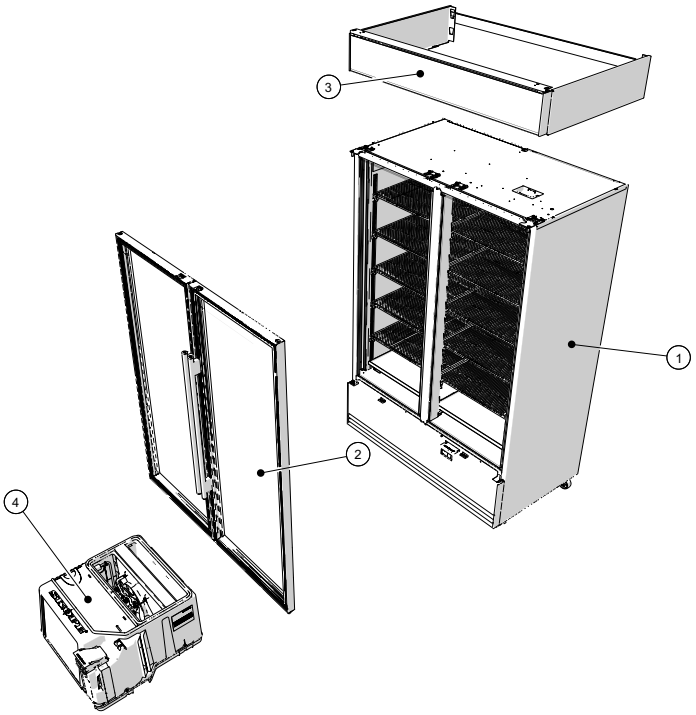
3	Sign assembly	Page 22
4	Unit assembly	Page 23

Main Assembly – BME1200N-A Series



Parts – Main Assembly BME1200N-A Series

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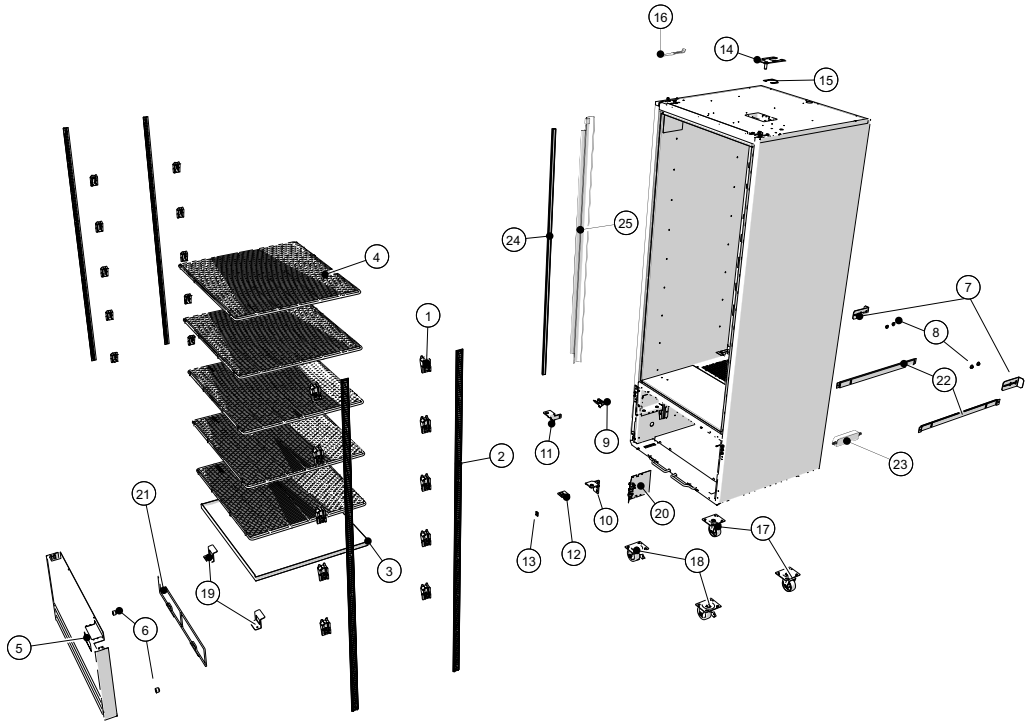
Cabinet Assembly – BME600N-A Series



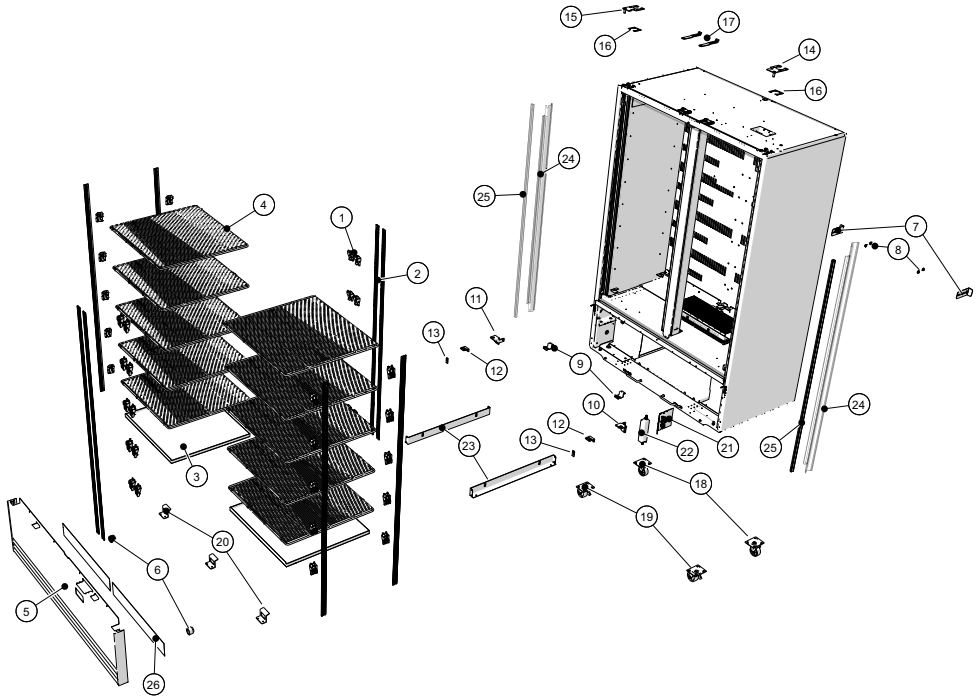
Parts – Cabinet Assembly BME600N-A Series

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 – RH		HB0070110578	
11	Bottom hinge – LH (hinge reversal kit)		SM60BYN/D100-32	SM60BYN/D100-49
12	Tension bracket		HB0070110580	
13	Vertical lock nut		HB0070110581	
14	Top hinge – RH		HB0070110582	
15	Top hinge spacer		B15RW/115	
16	Door lock bracket – cabinet piece		HB0070111623	
17	Rear castor	HB0070105066		
18	Front castor – lockable	HB0070105065		
19	Bottom shelf support bracket	HB0070110664		
20	Mains electrical box assembly	HB0070833872		
21	Condenser filter	HB0070204892		
22	Unit rear stop	SM12BV/327		
23	Light power supply	ELZ11887		
24	LED light bar – 1370mm	ELL11799		
25	Light holder – no notches	HB0070208596		

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.

Cabinet Assembly – BME1200N-A Series



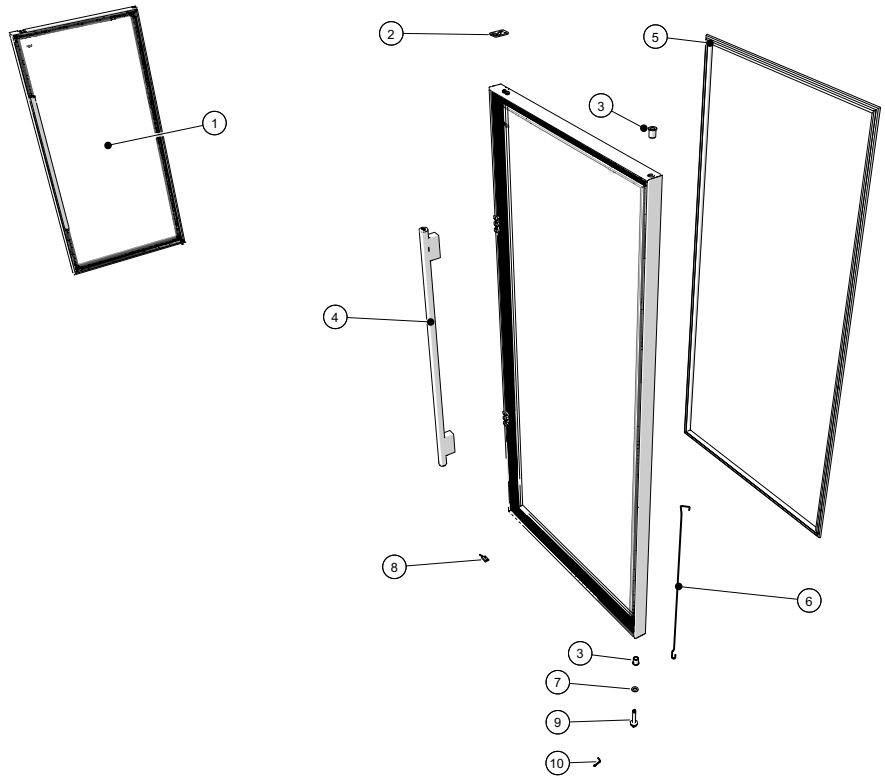
Parts – Cabinet Assembly BME1200N-A Series

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	Rear stopper	HB0070110666		
8	Rear stopper bush	HB0070110592		
9	Door sensor bracket		HB0070110663	HB0070110663A
10	Bottom hinge – RH		HB0070110578	
11	Bottom hinge – LH		HB0070110579	
12	Tension bracket		HB0070110580	
13	Vertical lock nut		HB0070110581	
14	Top hinge – RH		HB0070110582	
15	Top hinge – LH		HB0070110583	
16	Top hinge spacer		B15RW/115	
17	Door lock bracket – cabinet piece		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	Unit rear stop	SM12BV/327		
24	Light holder – no notches	HB0070208596		
25	LED light bar – 1370mm	ELL11799		

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.

Door Assembly

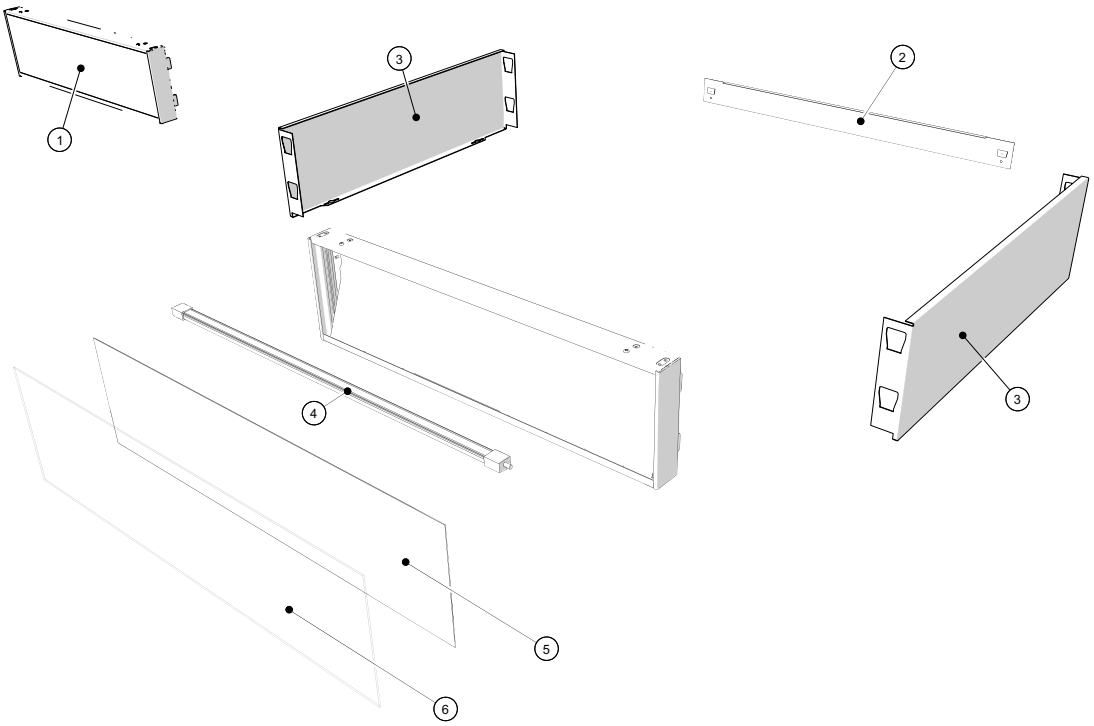


Parts – Glass Door Assembly

No.	Description	SKOPE Part No.		
		Unpainted/standard	*Colour: White*	*Colour: Black*
1	BME6000N-A Series door assembly – RH	-	HB0070832963	-
	BME12000N-A Series door assembly – RH	-	HB0070832964	-
	BME1200N-A Series door assembly – LH	-	HB0070832965	-
2	Door lock bracket – door piece	-	HB0070111623	-
3	Bush	PLM5075	-	-
4	Door handle	-	HAN11195/0844-AS (silver, for white door)	HAN11195/0844-49
5	BME600N-A Magnetic gasket	GKT0482SN	-	-
	BME1200N-A Magnetic gasket	GKT04899N	-	-
6	Torsion bar	REF5014	-	-
7	Bush washer	PLM11298	-	-
8	Door sensor switch	HB0074091496	-	-
9	Capstan	TUR11299	-	-
10	Split pin	FAS5076	-	-
-	Hinge reversal kit (RH to LH) (single door only, not pictured)	-	SM60BYN/D100-32	SM60BYN/D100-49

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

Sign Assembly



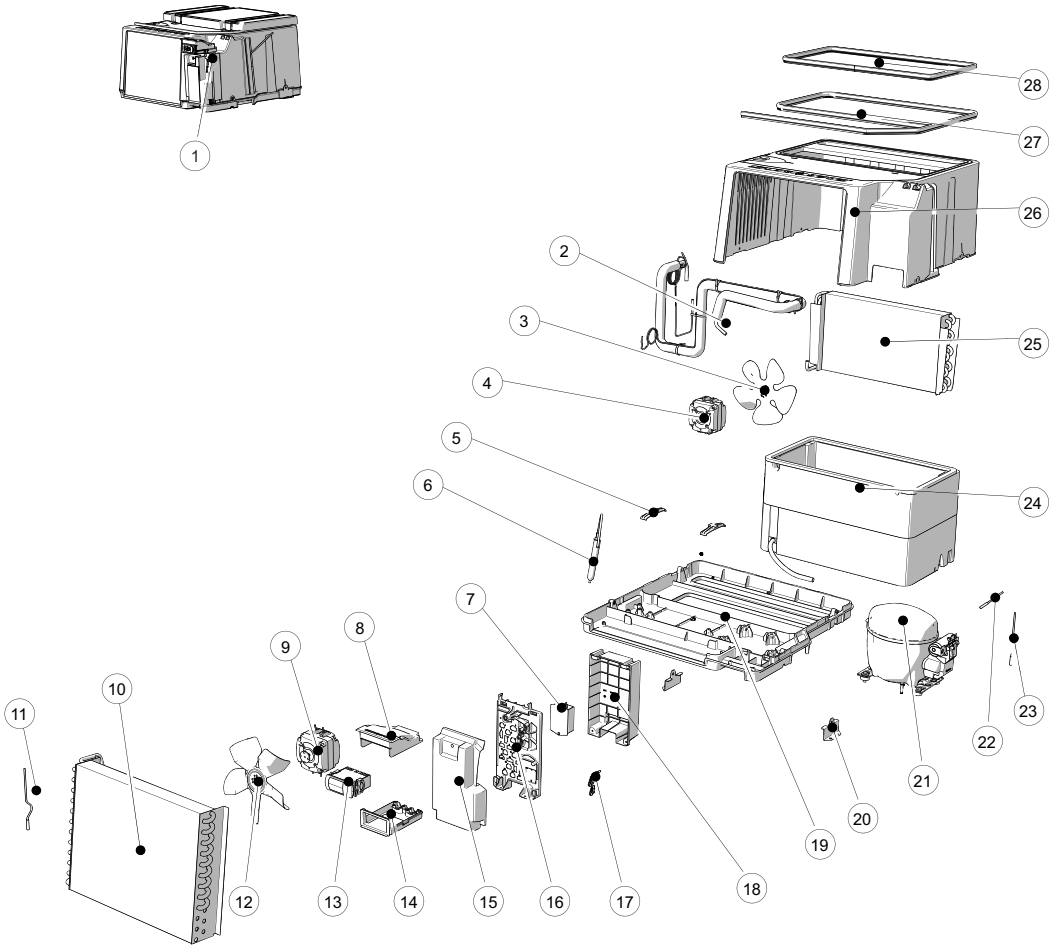
Parts – Lit Sign Assembly BME600N-AC

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)	SM60BV/S17	-	-

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)	SM12BV/S17	-	-

Unit Assembly UBHCNI-0008



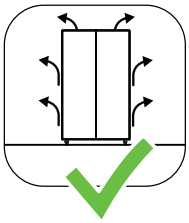
Parts – Unit Assembly

No.	Description	SKOPE Part No.
1	Unit assembly*	HB0070832517
2	Suction line assembly	HB0070702718
3	Evaporator fan blade	HB0074000313A
4	Evaporator fan motor	ELM11309
5	Condensate pipe support	HB0070206128
6	Drier	HB0074180006
7	EMI filter	HB0074600001
8	Controller box cover	HB0070206126
9	Condenser fan motor	ELM11309
10	Condenser coil	HB0070702720
11	Condenser temperature probe	HB0070401693B
12	Condenser fan blade	HB0074000313
13	W/Drive SCS Connect electronic controller	ELZ11749-1626
14	Controller box base	HB0070206125
15	Unit electrics box enclosure front	HB0070207012A
16	Unit electrics box enclosure	HB0070207014
–	Electrical box assembly – ActiveCore R290 Fridge (not pictured)	HB0070833377
17	Cable clamp	HB0070206127
18	Unit electrics box enclosure rear	HB0070207013A
19	Unit plastic bottom	HB0070206212B
20	Hold down bracket	HB0070110815A
21	Compressor – Wanbao FN90M	HB0074000848
22	Control temperature probe	HB0070400542
23	Evaporator temperature probe	HB0070400506
24	Evaporator box	HB0070510928A
25	Evaporator coil	HB0070702232
26	Unit plastic top cover	HB0070206133
27	Unit gasket seal 2306mm	PLE11052-2306
28	Unit gasket seal 1571mm	PLE11052-1571
–	Ambient temperature probe (not pictured)	HB0070401693A
–	Mains power cord (not pictured)	HB0070400636

6 Installation

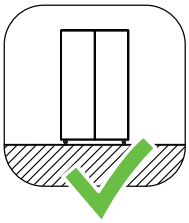
Installation Guidelines

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



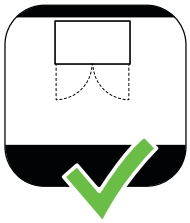
Ventilation

Ensure all ventilation requirements below are met.



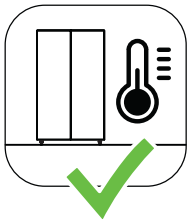
Surface

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



Door Opening

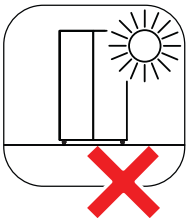
Allow adequate space for the door/s to open and close properly.



Climate Class

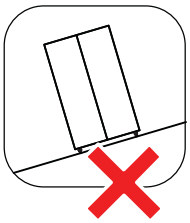
The fridge must be installed in an environment within its climate class.

The climate class is stated on the cabinet rating label inside the fridge.



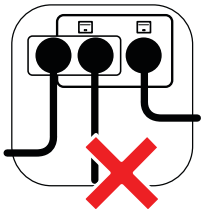
Sunlight

Do not install the fridge in direct sunlight.



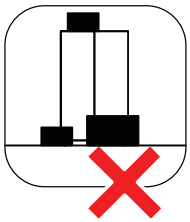
Uneven Surface

Do not install the fridge on an uneven surface.



Power Supply

Do not overload the power supply.

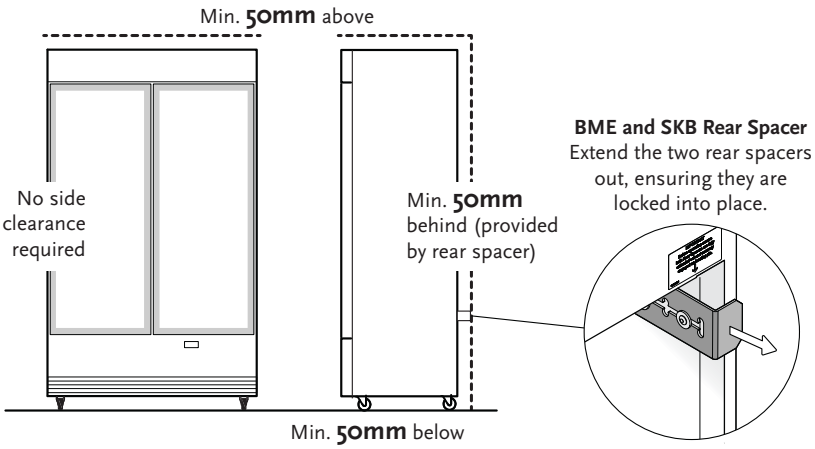


Blocking Ventilation

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

Ventilation Requirements

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



Sign Assembly

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

For sign lighting information, refer to page 31.

Procedure 5: To remove the sign assembly

1. Unplug the cabinet from the power supply.
2. Unplug the sign plug (located behind the sign assembly).
3. Lift the sign assembly off the cabinet.
4. The sign sides can also be removed if required. Remove the sign back strip and loosen the sign side fixing screws to remove the sign sides.

Procedure 6: To refit the sign assembly

1. Refit the sign sides and sign back strip (if removed).
2. Slot the sign assembly onto the front of the sign sides.
3. Reconnect the sign plug.

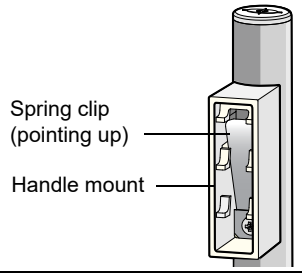
Door Handles

Fitting Door Handles

For transit purposes the door handles may be packed separately inside the cabinet. If the door handles are packed separately, follow the steps below to fit them to the door/s.

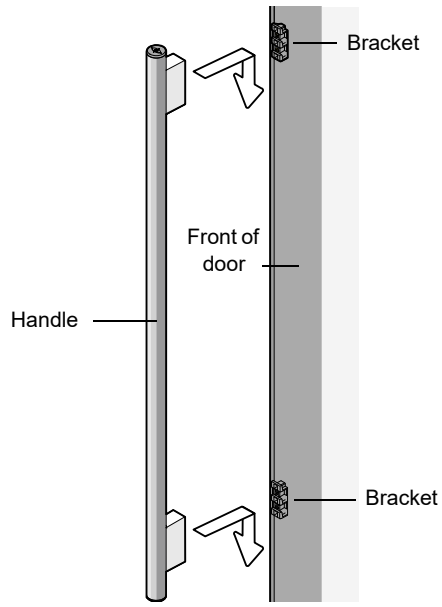
Procedure 7: To fit a door handle

1. Remove the handle/s from inside the cabinet by carefully cutting the cable ties securing the handle, and remove the packaging.
2. A metal spring clip is fitted inside the handle mounts at each end of the handle.
   Ensure that the spring clips point up.



Procedure 7: To fit a door handle (continued)

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



4. Then push the handle down onto the brackets, until the handle locks into place.

CAUTION
Ensure **BOTH** handle mounts are located before pushing down.

Troubleshooting

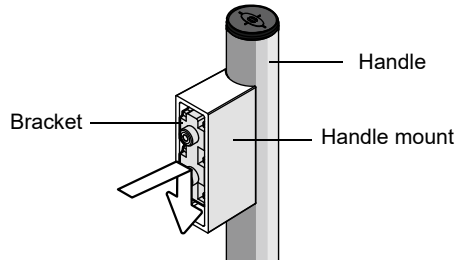
- If the handle does not lock into place, check that the spring clips are pointing up and try again.
- If only one end of the handle locks into place, unscrew the door handle (see over page), and refit ensuring both of the handle mounts are located onto the brackets before pushing the handle down and locking into place.

Removing Door Handles

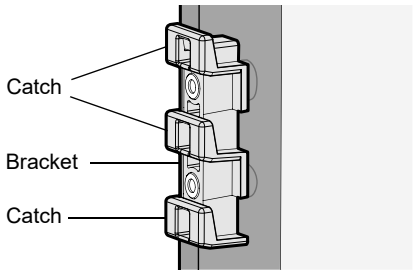
The door handles can be removed for transporting and moving the cabinet through doorways, or for refitting.

Procedure 8: 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.



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

Shelves

The fridge is fitted with five wire shelves per door, which may be positioned at different heights to suit various products.

Shelf Clips

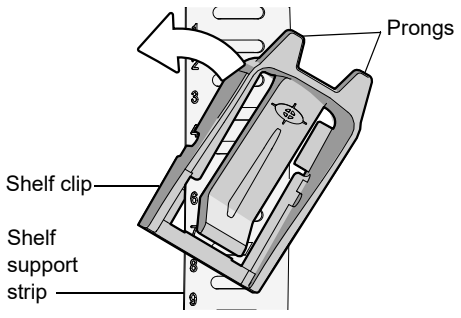
Each wire shelf is held in place with four shelf clips, which engage in the shelf support strips and slide up and down to the desired shelf position.

The support strips are numbered for easy location of shelf clips. View the numbers in the bottom left hand corner of the shelf clip.

Procedure 9: To fit a shelf clip

The shelf clip twists onto the shelf support strip.

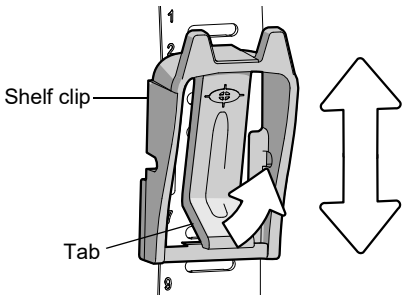
1. Position the shelf clip with the flat side up against the shelf support strip and the two prongs pointing up.
2. Twist the top of the clip anticlockwise onto the shelf support strip until it locks in place.



Procedure 10: To adjust the shelf clip height

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 11: To remove a shelf clip

1. Pull the shelf clip tab up and twist the top of the clip clockwise off the shelf support strip.

Repositioning Shelves

When repositioning standard shelves, unload and remove the shelf, establish the desired position and slide the shelf clip in each of the shelf support strips to the desired position (see “To adjust the shelf clip height” above). Sit the shelves on the shelf clips.

7 Replacement Procedures

Lighting

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

IMPORTANT

Replace the light with the same SKOPE OEM part.

DO NOT use alternative LED strip or tube lights, or fluorescent tubes.

Refer to the table below for replacement light specifications.

Table 5: Light specifications

Model	Interior light		Sign light	
	Description	*Part No.*	*Description*	*Part No.*
BME600N-A	Interior light	ELL11799	n.a.	n.a.
BME600N-AC			Sign light	ELL11772
BME1200N-A			n.a.	n.a.
BME1200N-AC			Sign light	ELL11800

The lighting is made up of three components which are replaceable:

- LED modular light
- Light power supply (1 per cabinet)
- Interior wiring loom (1 per door)

Power is supplied to the lights by the power supply (located in the refrigeration unit compartment) via the wiring loom/s which run up the sidelight channel.

Lighting components are all non-serviceable items. If a component is faulty, it should be removed and a SKOPE OEM new replacement component fitted.

Refer to the diagnostics table below to determine what component may be at fault, and the procedures over the next few pages for component replacement instructions.

Ensure the cabinet is isolated from the power supply before cleaning or removing parts.

Table 6: Lighting fault diagnostics

Problem	Possible Cause	Repair
No lights working. Cabinet is dark.	Lights switched off.	Switch the lights on via the electronic controller faceplate (see page 8), or the app.
	Controller is in Energy Saving mode.	Open the door to bring the controller into Normal mode.
	Controller alarm.	Check the controller for the alarm code.
	Plug not connected properly.	Check and clean the plugs on top of the cabinet.
	Light power supply fault.	Replace the light power supply.

Table 6: Lighting fault diagnostics (continued)

Light component not working.	Plug not connected properly.	Check and clean the plug connection in the side light channel, behind the loom cover.
	Faulty light.	Replace the light.
Segment of light not working.	Faulty light.	Replace the light.

Procedure 12: To replace an interior light component

1. Unplug the cabinet from the power supply.
2. Unplug the light, and remove the light from the plastic casing.
3. Clip the replacement light into place on the plastic casing, ensuring the male end of the light is at the bottom, and plug the light in.
4. Ensure the light is firmly and completely clipped in.
5. Reconnect to the power supply and check for correct operation.

Procedure 13: To replace the light power supply

1. Unplug the cabinet from the power supply.
2. Remove the front panel to gain access to the refrigeration unit compartment. If required (one door models), remove the refrigeration unit (see page 39).
3. Remove the light power supply.
4. Replace the light power supply and reassemble.

Procedure 14: To replace an interior wiring loom

1. Unplug the cabinet from the power supply.
2. Unplug the light from the wire loom.
3. Gain access to the light power supply (see procedure above).
4. Unplug the wiring loom from the light power supply, and if applicable the sign light.
5. Remove the loom by pulling it through the hole in the cabinet interior base.
6. Refit the new loom and reassemble. 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 modular light which can be replaced by following the steps below.

Procedure 15: To replace the sign light

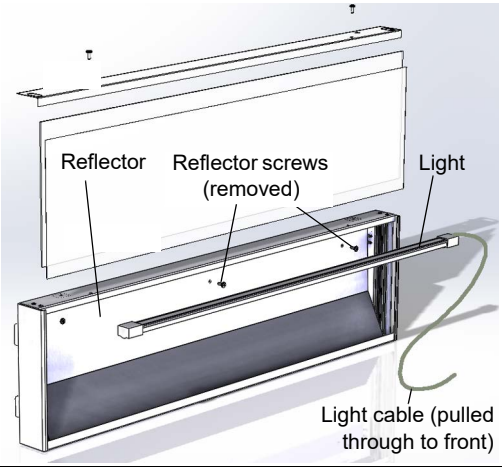
1. Unplug the cabinet from the power supply.
2. Undo the two fixing screws from the sign top cover and remove the top cover.
3. Remove the front sign panel/decal by sliding them up and out of the sign.
4. Remove the sign cover from the top of the sign.
5. Remove additional sign panel by sliding up and out of the sign.
6. Cut the cable tie holding the light cable at the back of the sign.

Procedure 15: To replace the sign light (continued)

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, reconnect to the 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.

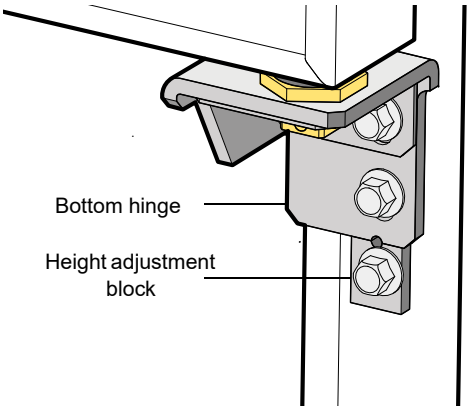
Height Adjustment

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. Unplug the cabinet from the power supply.

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



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

Replacing the Gasket

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

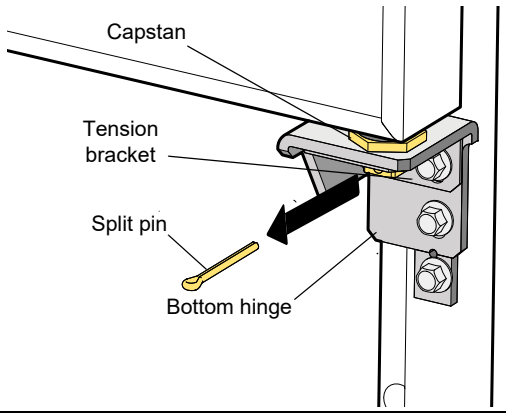
If the gasket is out of shape after refitting, use a hair dryer to heat and reshape it.

Removing and Refitting the Door

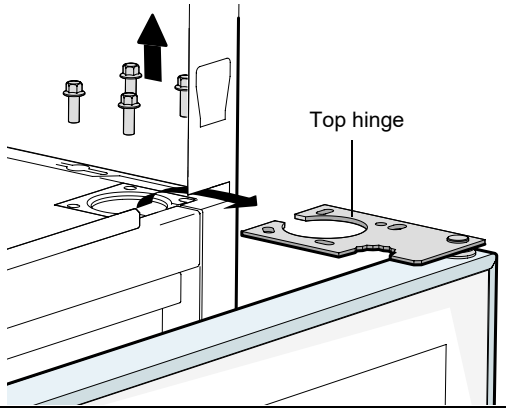
For ease of servicing and to reverse the hinging (hinge reversal on one-door cabinets only), the door can be removed from the cabinet. Refer to image below for door hinging components.

Procedure 17: To remove the door

1. Isolate the fridge from the power supply.
2. If present, remove the sign panel and front 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 replace the top hinge bracket

1. Follow the above steps to remove the door.
2. Remove the top hinge from the top of the door and replace.

Procedure 19: To refit the door

1. Lift the door onto the bottom hinge.
2. Fit the top hinge spacer to the top of the door, to fit under the top hinge.
3. 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.
4. Apply tension to the door (see steps 3, 4 and 5 over page).

Outside doors only, not applicable to middle door.

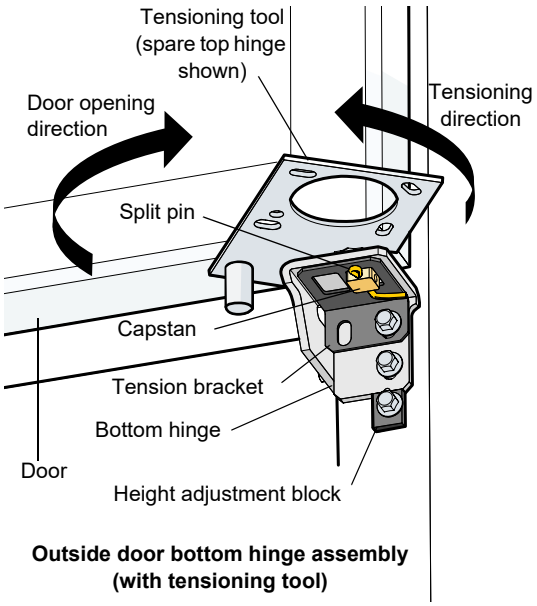
5. Fit the height adjustment block to the bottom screw hole. As standard, the notched edges on the bottom of the hinge and the top of the height adjustment block align to set the door to the correct level.
6. If necessary, rotate the height adjustment block to level the door.

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

1. Remove the split pin from the capstan at the bottom hinge.
2. Remove the tension bracket from the bottom hinge.
3. Use a tool to apply tension to the door via the capstan. The top hinge has a cut out for tensioning (if a spare top hinge is available), however this is not suitable for the middle door bottom hinge on three door models.
4. First, 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.



Outside door bottom hinge assembly (with tensioning tool)

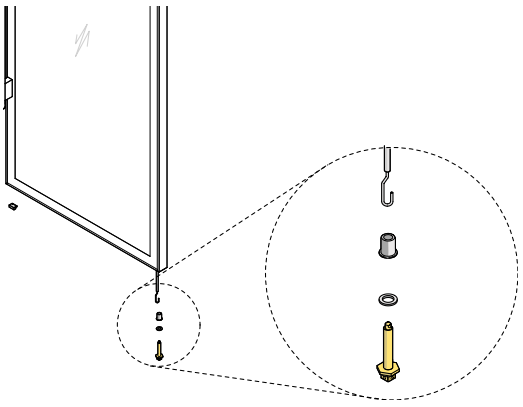
7. Check door tension by holding the door open about 100 mm and letting it go. The door should gently close, with the gasket forming an airtight seal with the cabinet.

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. Remove the door from the cabinet (see page 33).
2. 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.
3. Fit the capstan, bush and bush washer to the new torsion bar, and fit this assembly into the bottom of the door.



4. Refit the door (see page 33).

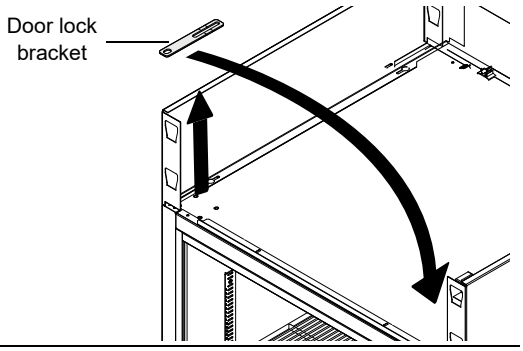
Hinge Reversal

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 19 for part kit numbers).

Procedure 22: To reverse the door hinging

1. Remove the door from the cabinet (see page 33).

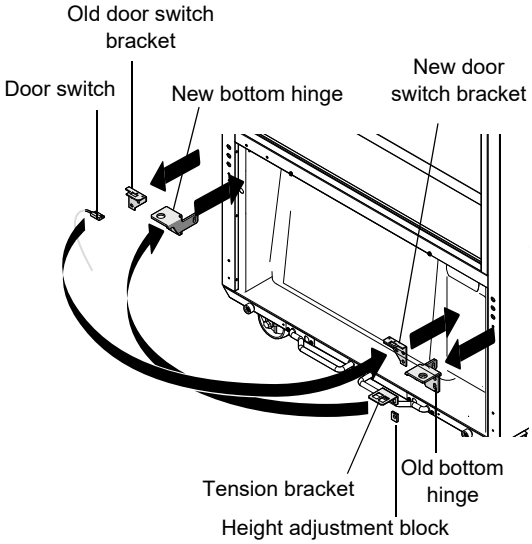
2. Remove the door lock bracket from the top of the cabinet and fit to the other side.



3. Remove the bottom hinge, tension bracket and height adjustment block. Retain the tension bracket and height adjustment block (these are fitted to the opposite side once the door is refitted). The bottom hinge can be discarded.

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

5. Fit the new bottom hinge.
Note: The topmost screw can be left off until the tension bracket is fitted, later on in the procedure.



6. Remove the door lock bracket, and fit to the opposite end of the door.

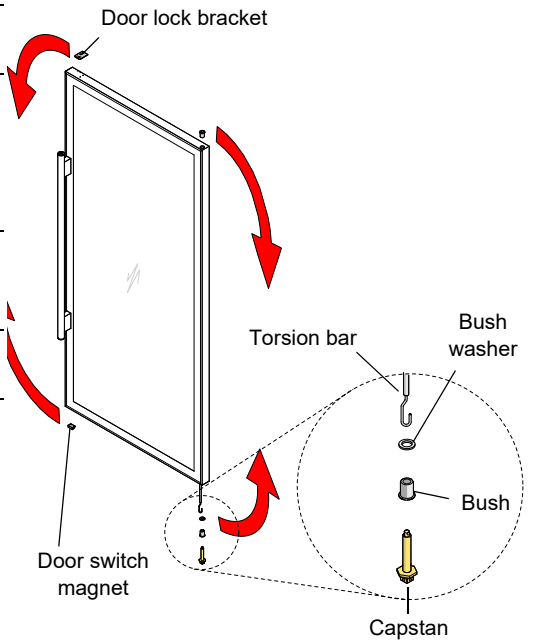
7. Remove the bush and keep for the opposite end of the door.

8. 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.

9. Fit the capstan, bush and bush washer to the new torsion bar, and fit this assembly to the opposite end of the door.

10. Fit the bush (retained from step 7) to the end of the door, opposite the capstan.

11. Remove the door switch magnet from the end of the door, and fit to the opposite end.
Note: Ensure the magnet is orientated correctly and does not protrude past the frame edge.



Procedure 22: To reverse the door hinging (continued)

12. Refit the door (see page 33).

13. Apply the SKOPE logo label to the top LH corner of the door. Use the label backing to align the label as pictured.

14. 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 coolers 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 1.0 gm

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 signage 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 1.0 gm
- Hydrocarbon refrigerant supply cylinder

Refrigeration Unit Assembly

The refrigeration unit is a bottom mounted, electronically controlled removable unit.

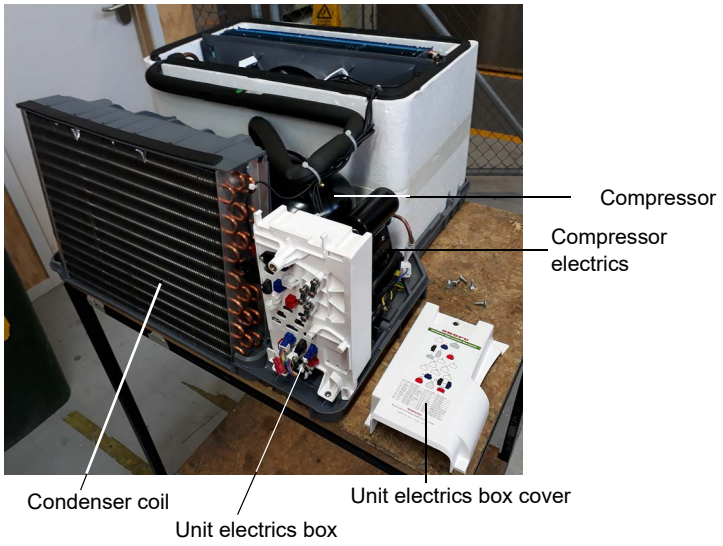
For safety and compliance, only SKOPE-supplied parts specifically for this appliance may be used for repairs. Other parts may appear to be suitable, but may not be approved or safe for use in an appliance with hydrocarbon refrigerant.

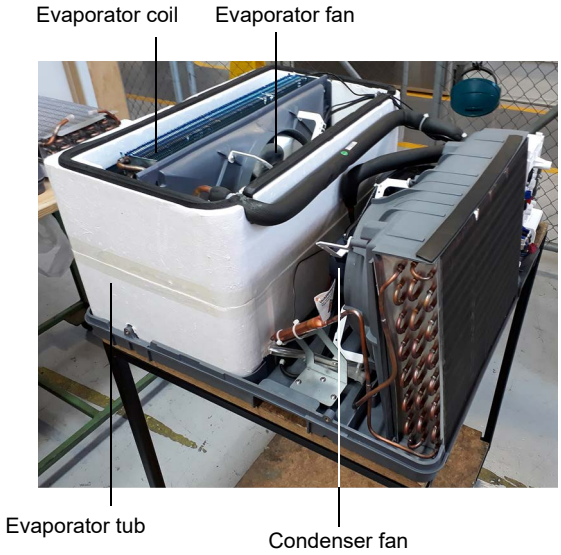
The unit must only be used on a SKOPE hydrocarbon-compliant cabinet. Refer to the cabinet rating label to determine if the cabinet is suitable for use with a hydrocarbon unit. The rating label MUST state refrigerant as R290. If the label states a different refrigerant, or does NOT state a refrigerant,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

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

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

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





Specifications for the model are in the following table. Verify the model and basic requirements before servicing.

Table 7: Unit specifications

Unit Model	UBHCNI-0008 (spare part number HB0070832517)
Compressor	Wanbao FN90M
Compressor capacity	740 Watts
Refrigerant / Charge	R290 / 99 g

Not Cooling Fault

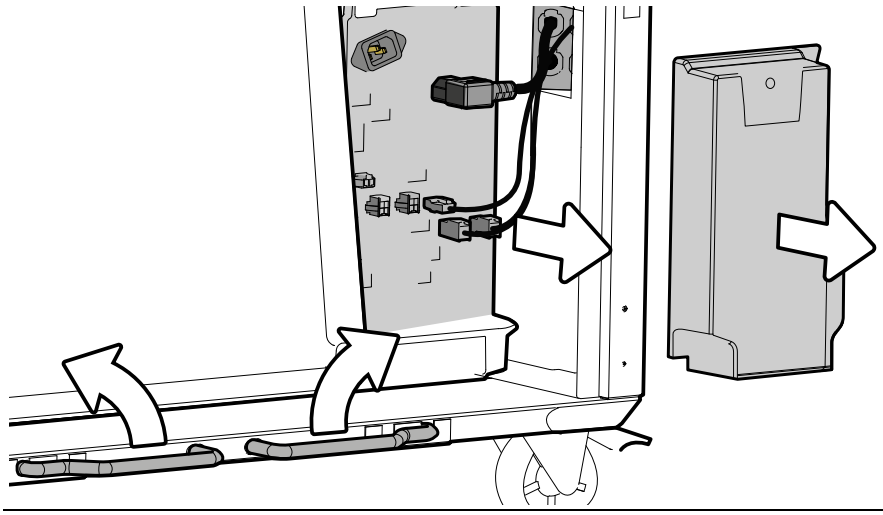
If a customer reports a '"Not cooling" fault, and it has been established that the cabinet is not cooling, follow the procedure on page 54 when making the service visit.

Removing the Unit

Follow the steps below to remove the refrigeration unit from the cabinet. Ensure the fridge is disconnected from the power supply before removing the unit.

Procedure 23: To remove the refrigeration unit

1. Unplug the cabinet from the power supply. If unable to access the plug, refer to the on-site work procedure on page 54.
2. Remove the front kick panel, and unplug the ambient probe (located on the back of the panel).
3. Detach the electronic controller assembly from the front kick panel. To do this, **PUSH** at the base of the electronic controller assembly where it meets the front kick panel. See the arrow on the front kick panel label.
4. Remove electrics cover and unplug the mains supply plug and cabinet plugs.
   Note: The unit and electronic controller plugs do not need to be unplugged.



5. Pull the two cassette lifting levers forward to release, and rotate outwards to lower the refrigeration cassette.
6. The refrigeration unit can now be pulled from the cabinet. Take care of the cables when removing the unit.
7. When refitting the unit, ensure that the gasket is in good condition, the electronic controller is refitted to the front kick panel, all plugs are securely reconnected, the electrics cover is refitted, and the unit lifts up and seals correctly.

WARNING

- Ensure no wires or plugs are trapped or damaged.
- All plugs must be fully inserted and locked. Pull the plugs to check.
- Electrics cover must be refitted and secured with screw **before** reconnecting power supply.
- Follow all applicable local regulations.

Unit Interchangeability

The SKOPE ActiveCore refrigeration unit is interchangeable between bottom and top mount hydrocarbon (R290) ActiveCore fridges.

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

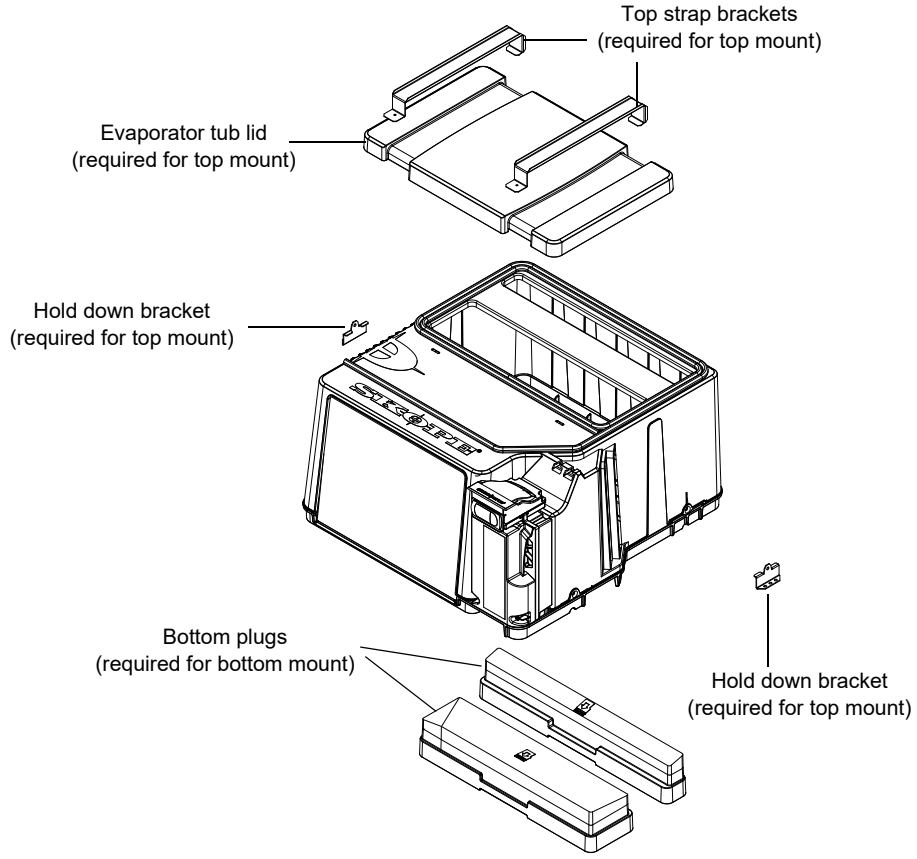
Top mount to bottom mount

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

The plugs are included with new replacement units.

Bottom mount to top mount

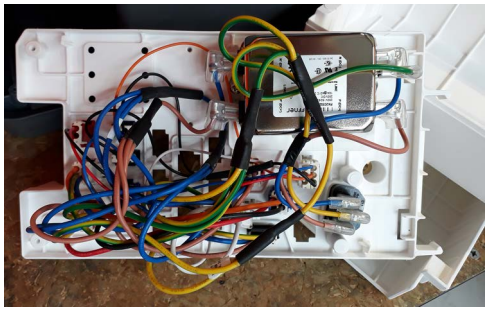
When changing from a bottom mount fridge to a top mount fridge, an evaporator lid, strap brackets and hold down brackets must be fitted to seal the top of the evaporator tub, and to fix the unit to the top of the cabinet. See the TME-N ActiveCore service manual (MAN80128) for more information.



Unit Electrics Box Assembly

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

Due to the confined space within the unit 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.

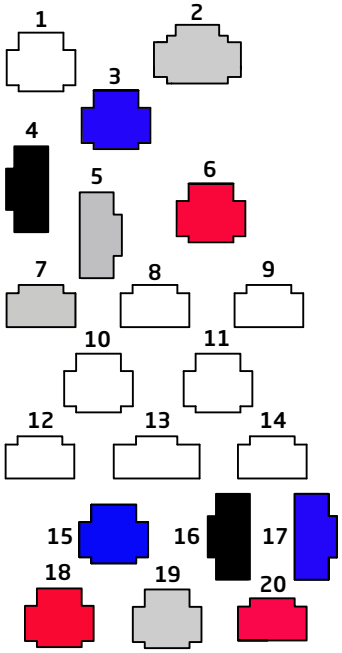


Procedure 24: To remove and open the unit electrics box assembly

1. Disconnect the fridge from the power supply.
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 unit plugs from the unit electrics box.
5. Undo the two fixing screws at the base of the electrics box, and detach the electrics box from the unit.
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 R290 Junction Box Layout



Key	Colour	Description	Key	Colour	Description
1	n.a.	Not used	11	n.a.	Not used
2	White	Controller Signal	12	n.a.	Not used
3	Blue	Controller Return	13	n.a.	Not used
4	Black	Trace Heating	14	n.a.	Not used
5	White	Lighting	15	Blue	Compressor
6	Red	Controller Power	16	Black	Evaporator Sensor
7	White	Door Sensor	17	Blue	Appliance Sensor
8	n.a.	Not used	18	Red	Condenser Fan
9	n.a.	Not used	19	White	Evaporator Fan
10	n.a.	Not used	20	Red	Condenser Sensor

Unit Cover

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

Procedure 25: To remove the unit cover

1. Disconnect the fridge from the power supply and remove the refrigeration unit (see page 39).
2. Unscrew the four machine screws from the sides of the refrigeration unit and lift the cover off the unit.

Condenser Fan

The condenser fan assembly is made up of a fan motor, fan blade and mounting brackets which can be replaced if necessary.

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 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 the fan blade and/or fan motor is replaced with the same part to ensure safety, correct alignment and refrigeration performance, and compliance. Tighten fan blades to the fan motor manufacturer's recommended torque settings (shown in the table below).

Table 8: Fan motor manufacturer recommended torque settings

Fan motor manufacturer	Torque setting
Wellington Drive	1.5 Nm

Procedure 26: To access and remove the condenser fan assembly

1. Isolate the fridge from the power supply and remove the refrigeration unit (see page 39).
2. Remove the unit cover (see page 42).
3. Open the electrics box and unplug the condenser fan motor plug (see page 40).
4. Cut the cable ties holding the cables along the unit, and free up the condenser fan motor cable.

5. Remove the fan assembly (fan motor, fan blade, mounting brackets) from the unit by lifting the shroud up and out.

Procedure 27: To replace the condenser fan blade

1. Remove the condenser fan assembly (see above).
2. Remove the screw and washer from the centre of the fan blade, and lift the blade from the motor.
3. Replace the new blade and fix with a 12mm flat washer and serrated head screw. Tighten the blade to fan motor manufacturer recommended torque setting.
4. Reassemble the unit and test.

Procedure 28: To replace the condenser fan motor

1. Remove the condenser fan assembly and the fan blade (see above).
2. Unplug the fan flexible cord from the electrics box (see page 40).
3. Detach the fan motor from the fan mounting brackets by removing the four screws from the mounting bracket.
4. Fit the new motor and reattach the fan blade with a 12mm flat washer and serrated head screw. Tighten the blade to 1.5Nm.
5. Reassemble the unit, ensuring all cables are neatly cable-tied away from the fan blade, and test for correct operation.

Evaporator Fan

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 white plug.

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 to identify the evaporator fan plug and socket in the electrics box.

The fan motor and fan blade are fixed to the evaporator shroud via the brackets. The shroud (complete with fan motor and fan blade) can be lifted off the evaporator tub once the refrigeration unit cover has been removed.

IMPORTANT

Replace the motor with the same SKOPE OEM part.

DO NOT use alternative parts.

It is important that the fan blade and/or fan motor is replaced with the same part to ensure safety, correct alignment and refrigeration performance, and compliance. Tighten fan blades to the fan motor manufacturer's recommended torque settings (shown in the table below).

Table 9: Fan motor manufacturer recommended torque settings

Fan motor manufacturer	Torque setting
Wellington Drive	1.5 N m

Procedure 29: To access the evaporator fan assembly

1. Isolate the fridge from the power supply and remove the refrigeration unit (see page 39).
2. Remove the refrigeration unit cover.
3. Free the cables from the putty on the evaporator tub edge.
4. Cut the cable ties to release the control probe from the fan bracket.
5. Lift the assembly up and out of the evaporator box.

Procedure 30: To replace the evaporator fan blade

1. Isolate the fridge from the power supply and remove the refrigeration unit (see page 39).
2. Gain access to the evaporator fan assembly (see above).
3. Remove the screw and washer from the centre of the fan blade, and lift the blade from the motor.
4. Fit the new blade, ensuring it is centred within the evaporator shroud. Tighten the blade to fan motor manufacturer recommended torque setting.
5. Reassemble the unit and test for correct operation.

Procedure 31: To replace the evaporator fan motor

1.	Access the evaporator fan assembly (see page 44) and remove the fan blade.
2.	Free the fan's flexible cord by cutting the cable ties, trace the cable back to the connector (near the compressor electrics), and unplug.
3.	Detach the fan motor from the fan mounting brackets by removing the four screws from the mounting bracket.
4.	Attach to the replacement motor. Ensure that the flexible cord points towards the bottom of the evaporator tub once reinstalled. Take care to re-cable tie the fan and temperature probe flexible cords back onto the mounting bracket to prevent high frequency vibration.
5.	Fit the fan blade, ensuring it is centred within the evaporator shroud. Tighten the blade to 1.5Nm.
6.	Reassemble unit and test for correct operation.

Compressor

The compressor is located at the front of the refrigeration unit, 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.

Before replacing the compressor, check all plug connections and ensure the compressor electrics are operating correctly (see "Compressor Electrics" on page 45). The compressor must be supplied with consistent voltage over 220 volts. Ensure the voltage does not drop at start-up. If the voltage does drop, ensure the unit has a direct power supply (not from a multi-box or extension cord). Generally a faulty compressor may have a distinct hissing sound and run with a very hot body temperature.

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

Compressor Electrics

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

To access the compressor electrics, remove the refrigeration unit (see page 39) and unit cover (see page 42). The capacitor unclips from the relay cover, and the relay cover unclips from the compressor.

Refrigeration System

Unit Removal

For detailed instructions on removing the unit, refer to the unit removal instructions on the instruction sheet attached to the back of the cabinet, or on page 39 of this service manual.

Diagnostics

The following test is useful in the workshop to diagnose a short of gas situation. Perform the test before opening the refrigeration system.

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

Note: These diagnostic procedures are indicative only.

Procedure 32: Refrigeration system diagnostic test

Before you start
Make sure you are in a suitable workshop.

1. Isolate the fridge from the power supply. Remove the refrigeration unit and unit cover.
2. Place the unit on bench and connect the service probe to the red plug on the unit.
3. Connect the refrigeration unit to the power supply and allow to run for approximately 10 minutes until the evaporator temperature stabilises.
4. Refer to the table below to determine if the system charge is correct.
5. 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.
6. The table below details the frost stop point on a correctly charged system running on the bench.

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 50mm from 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 correct. If the frost does not go back to the point shown there may be a capillary blockage or compressor fault.
8. Use the table below to determine whether the system is short of refrigerant or a has blocked capillary.

Diagnosis	Frost back (after 10 mins)
Blocked capillary	None
Normal operation	Refer to table above

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

Electronic Controller

Controller Location

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

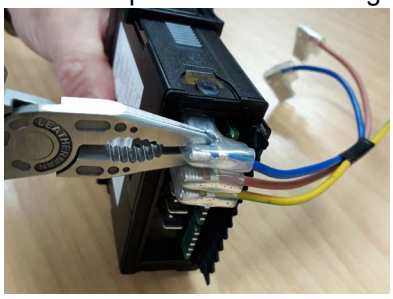
Procedure 33: To access the controller

1. Disconnect the fridge from the power supply.
2. Open the electronic controller box assembly by undoing the two fixing screws at the rear of the assembly.
   Note: On one-door cabinets you need to move the unit back to access the controller box assembly.

QC Terminals

The terminals at the back of the controller are locking QC terminals, which cannot be pulled off without pressing in the locking tabs.

Use needle nose pliers to unlock and gently remove the terminals.



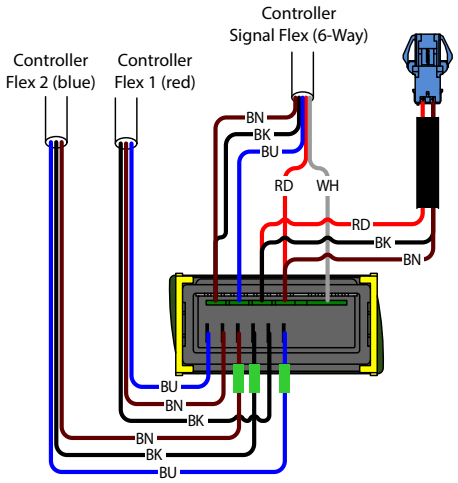
Replacing the Controller

Follow the steps below to replace the controller.

Note: Replacement spare part electronic controllers are not supplied with the parameter set loaded. This must be loaded via the SCS Connect Field app after replacing the controller. Internet access may be required.

Procedure 34: To replace the controller

1. Disconnect the fridge from the power supply and access the electronic controller (see “Controller Location” on page 46).
2. Remove the cable clamps and disconnect the terminals from the back of the controller.
3. Fit the new replacement controller, and connect the terminals at the back of the controller. Fit low voltage terminals before high voltage terminals.



4. Reassemble the controller box and cabinet, perform electrical safety test as required, and reconnect to the power supply.
5. Use a mobile device to connect to the controller with the SCS Connect Field app (see “Wellington Drive SCS Field App” on page 9).

Procedure 34: To replace the controller (continued)

6. Navigate to the LOAD PARAMETER FILE menu.
7. Select the appropriate parameter file from LOCAL. If it is not available in LOCAL, search for the parameter file in SERVER (internet access required), and download to LOCAL.
8. Confirm it is the correct file and WRITE TO SCS.
9. After WRITE TO SCS is complete, select MENU DISCONNECT to save parameter set on SCS.
10. Power cycle the controller and check that the correct parameter set has been applied
11. 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 fridge 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.

Procedure 35: To replace a door switch

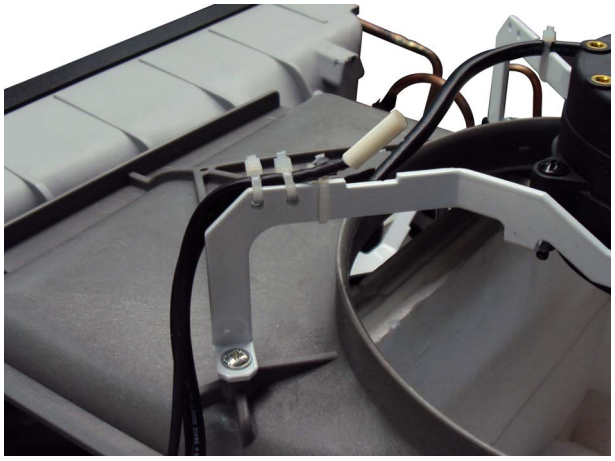
1. Disconnect the fridge from the power supply.
2. Disconnect the door switch cable plug from the inline connector.
3. Unscrew the two fixing screws from the door switch and remove.
4. Fit the replacement door switch and connect via the inline connector.

Control Probe

The control probe is cable-tied to a bracket on the evaporator fan motor bracket (see image below).

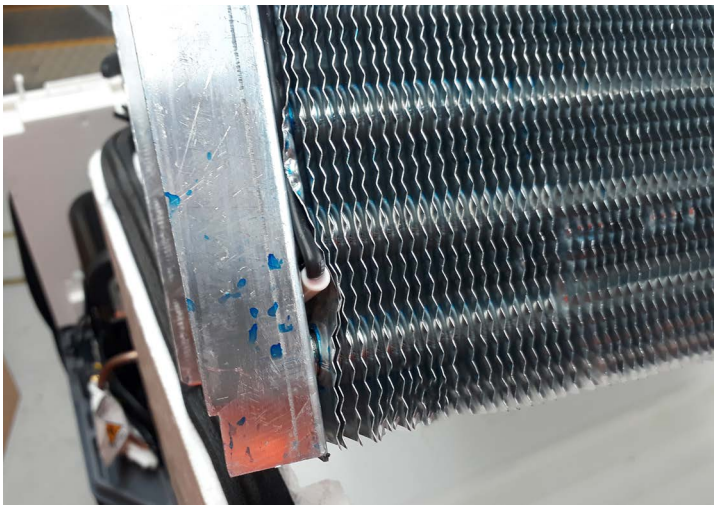
Procedure 36: To replace the control probe

1. Remove the evaporator fan assembly (see page 44).
2. Detach the probe from the evaporator fan shroud bracket and trace the probe cable back to the unit electrics box and unplug (see page 40).
3. Following the same path as the original probe, fit the new probe with cable ties as necessary. Ensure the probe cable is securely plugged into the rear of the unit junction box, and that it is cable-tied to the evaporator fan shroud bracket, with the probe bent away from the fan bracket at a 45° angle.



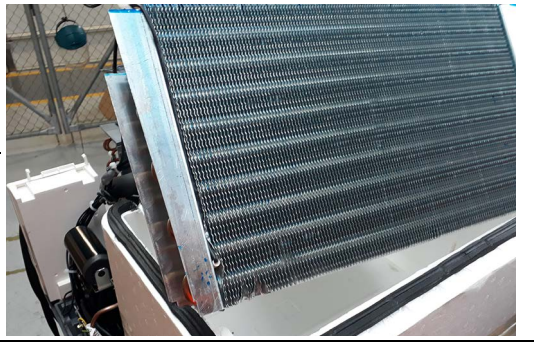
Evaporator Probe

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



Procedure 37: To replace the evaporator probe

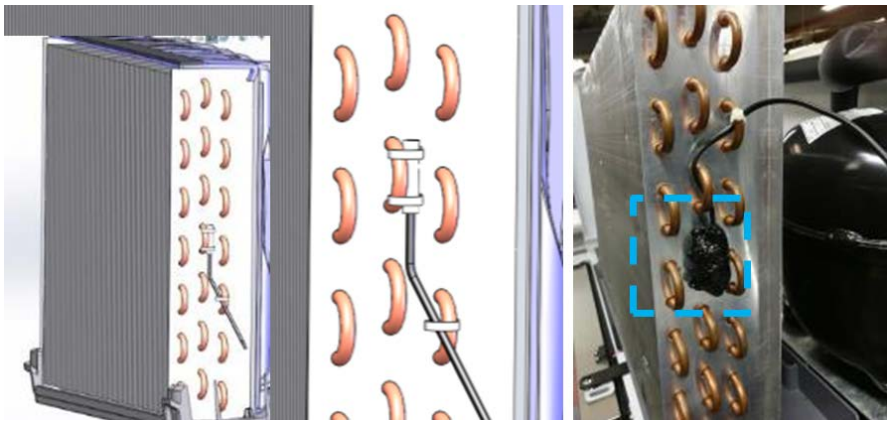
1. Disconnect the fridge from the power supply and remove the refrigeration unit.
2. Remove the unit cover (see page 42).
3. Remove the evaporator fan assembly (see page 44).
4. Remove both pieces of putty securing the pipes and cables on the evaporator tub edge.
5. Carefully lift the coil up and out of the evaporator tub. Take care of pipes and cables when lifting out.



6. Detach the probe from the side of the evaporator coil, and trace the probe cable back to the unit electrics box, cutting cable ties as required, and unplug (see page 40).
7. Following the same path as the original probe, run the new probe to the evaporator coil and secure with cable ties. Locate the 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.
8. Reassemble the unit and test for correct operation.

Condenser Probe

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



Procedure 38: To replace the condenser probe

1. Disconnect the fridge from the power supply and remove the refrigeration unit.
2. Remove the unit cover (see page 42).
3. Detach the probe from the side of the condenser coil, and trace the probe cable back to the unit electrics box, cutting cable ties as required, and unplug (see page 40).
4. 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.
5. Reassemble the unit and test for correct operation.

Ambient Probe

The ambient probe is located on the back of the front kick panel, in front of the condenser coil.

Procedure 39: To replace the ambient probe

1. Unplug the cabinet from the power supply.
2. Remove the front kick panel to access the probe.
3. Unplug and replace probe. Ensure the probe is located in the same location as the original probe and secured in place with a cable tie.
4. Reassemble and test for correct operation.

Cleaning

Ensure the fridge is isolated from the power supply before cleaning.

Cabinet

Periodically wipe the inside and outside of the cabinet with a damp cloth, taking care to keep moisture away from electrical parts.

Condenser and Air Filter

To ensure trouble-free performance, we strongly urge monthly cleaning with a soft brush to remove dust and fluff. A more thorough cleaning is required by qualified service personnel every six months. The condenser and filter **must** be kept clean for efficient and reliable operation.

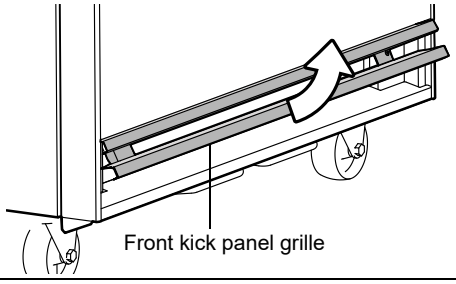
The condenser coil is located on the front of the refrigeration unit. The optional filter is located on the front panel in front of the condenser coil.

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.

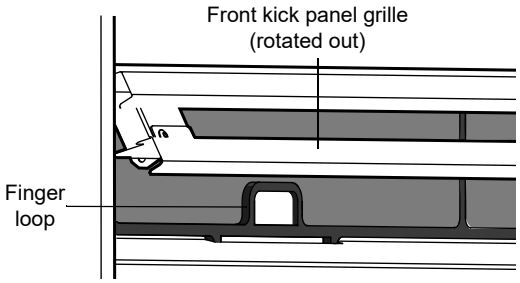
WARNING
Unplug the cabinet from the power supply before cleaning the condenser coil.

Procedure 40: To clean the optional filter

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



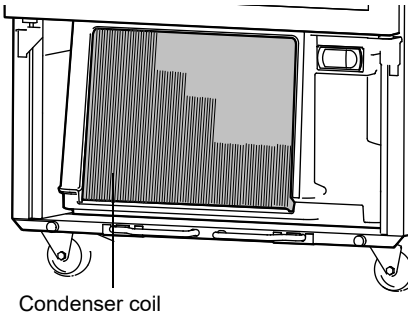
2. To remove the filter, use the finger loops to pull the filter up and detach from the front kick panel.



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

Procedure 41: To clean the condenser coil

1. Unplug the cabinet from the power supply.
2. Remove the front panel and brush the condenser coil with a soft brush to remove any dust or fluff.



3. Refit the front panel and reconnect to the power supply.

8 Troubleshooting

Electronic Controller

Alarms signal unexpected operational changes in the cooler. When an alarm is activated, use the electronic controller app to assist with fault diagnosis and service as necessary. See page 9 for information.

Cabinet and Refrigeration Unit

Diagnostic Table

For problems with the cabinet and refrigeration unit use the following table.

Table 10: Troubleshooting

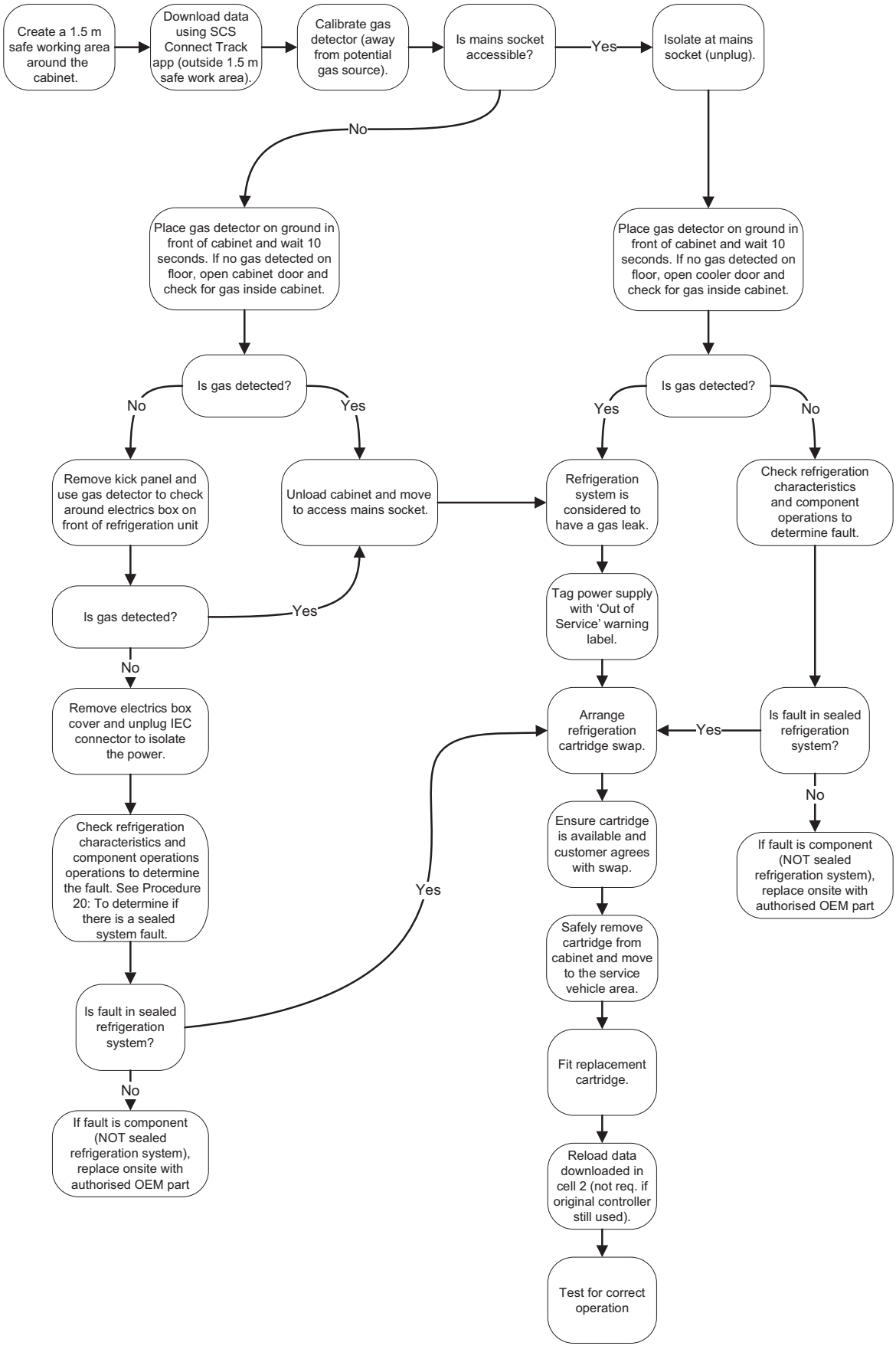
Problem	Possible cause	Repair
• Cabinet not operating • No controller display	• Loss of power supply	• Check mains power supply.
	• Loose plug in electrics box	• Check all plugs in electrics box are connected correctly.
• Sign and/or Interior lights not on	• Electronic controller is in 'Night' mode.	• Switch the light on while keeping the fridge in night mode by pressing the light button on the electronic controller faceplate. • Change the fridge into 'Day' mode by pressing and holding the Day-Night button on the electronic controller faceplate, or hold the door open for ten seconds.
	• Light switched off.	• Switch light on via button on the electronic controller faceplate.
	• Electronic controller displays alarm indicating a refrigeration system error.	• Diagnose and repair. If a system fault found, return to SKOPE.
	• Failed LED light.	• Service the light.
• Excess noise vibration	• Refrigeration pipes transferring vibration into unit.	• Re-align pipes.
• Frozen evaporator coil	• Set point is too cold	• Check and raise.
	• Evaporator probe fault.	• Check and replace evaporator probe.
	• Controller fault	• Replace controller.
	• Short of refrigerant	• Perform refrigeration system diagnostics (see page 46) and service as required.
• Power consumption is higher than expected	• Unit operating too hot.	• Clean the condenser. • Ensure the cabinet has good ventilation around the refrigeration unit. • Ensure the cabinet is within the maximum operating temperature.
	• Cabinet door is opened excessively.	• Ensure the door is closed more often.
	• Product too cold.	• Raise the set point

Table 10: Troubleshooting (continued)

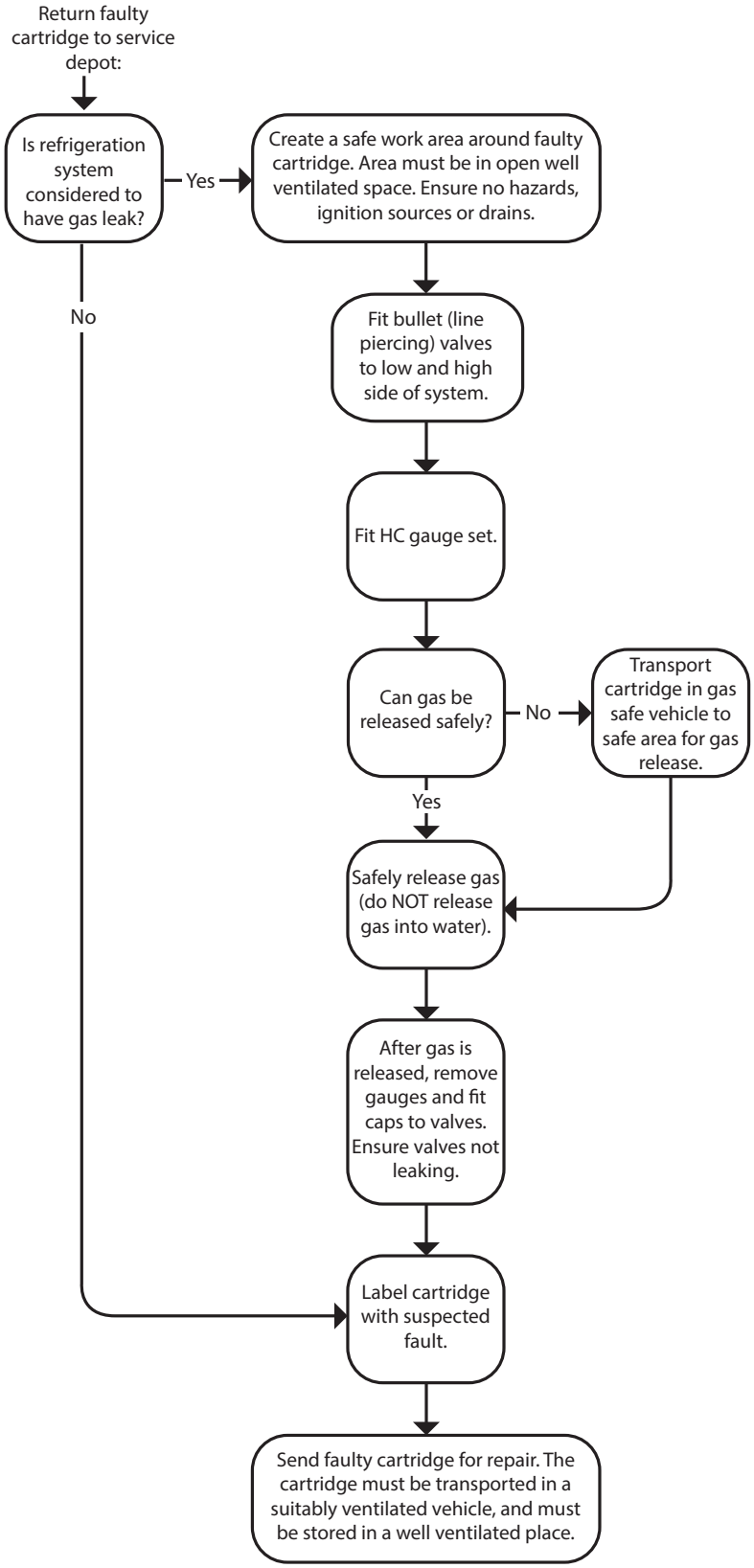
Problem	Possible cause	Repair
• Product is too warm	• Frequent door opening.	• Limit door openings.
	• Recently loaded.	• Allow time for the product to cool down.
	• Door not closing properly.	• Check and the clean door gasket.
	• Refrigeration unit operating too hot. • Excessive door opening or refrigeration heat load.	• Ensure the cabinet has good ventilation around the refrigeration unit. • Ensure the cabinet is within the maximum operating conditions.
	• Set point is too high.	• Lower the set point.
• Moisture build up on door or exterior	• High humidity.	• Check ambient operating temperature and reposition fridge if necessary.
	• Frequent door opening.	• Limit door openings.
	• Door not closing properly.	• Check and clean door gasket.
• Chiller door does not shut properly.	• Chiller is on an uneven surface.	• Level the fridge.
	• Door is obstructed.	• Check shelves and product.
• Warm cabinet temperatures • Compressor operating for long periods (more than 1 hour)	• Blocked condenser	• Clean the condenser.
	• Poor ventilation around refrigeration unit	• Ensure the cabinet has good ventilation around the refrigeration unit. • 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)



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