ReFlex Underbench

SKOPE Fridge and Freezer
Hydrocarbon

Service Manual

MAN80191 Rev. 1.6 Apr. 2023

SKOPE® Refrigeration

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Hydrocarbon
Service Manual

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SKOPE INDUSTRIES LIMITED
Head Office
PO Box 1091, Christchurch
New Zealand
A.B.N. 73 374 418 306
AU: 1800 121 535
NZ: 0800 947 5673
E-mail: skope@skope.com
Website: www.skope.com

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.
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- 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 cabinet uses hydrocarbon (HC) R290 as its refrigerant. R290 is a natural refrigerant that has a very low environmental impact.

Special service requirements are needed, as R290 is a flammable refrigerant.

Safety hazards

The main hydrocarbon safety hazards are:

- Flammability
- Venting of hydrocarbon and compressor oil
- Asphyxiation

Service requirements

Do not interfere with the refrigeration system. All refrigeration maintenance and repairs must be undertaken according to the SKOPE Hydrocarbon Service Requirements. See the “SKOPE Hydrocarbon Service Requirements” below for more information, including examples of hazardous activities.

Electrical safety precautions

To comply with safety and radio interference regulations, make sure you route wiring correctly and use the correct components. In order to maintain safety and compliance with regulations, any wiring that is disturbed during servicing must be replaced and secured in its original position.

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 the following:

Hydrocarbon work – SKOPE Service Policy

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

- MUST – Ensure all workers are trained in the SAFETY of hydrocarbon products to the appropriate level for the work required.
- MUST – Follow all Local Safety Regulations relevant to flammable refrigerant gases.
  - Australia should 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 applies to the SKOPE ReFlex Underbench models listed in Table 1. Refer to the relevant product specification sheet (available on the SKOPE website: www.skope.com) for specifications.

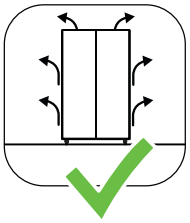
Table 1: Cabinet specifications

Model	SKOPE ID	Product Description
RF7.UBR.2.GD	RB2R/T1007	2 Glass Door Underbench Fridge
RF7.UBR.2.SD	RF7UBR2-SCLH-SD	2 Solid Door Underbench Fridge
RF7.UBR.2XL.SD	RB2R/T1182	2 Solid Door Underbench Fridge, 1500 mm wide
RF7.UBF.2.SD	RF7UBF2-SCLH-SD	2 Solid Door Underbench Freezer
RF7.UBR.3.GD	RB3R/T1014	3 Glass Door Underbench Fridge
RF7.UBR.3.SD	RF7UBR3-SCLH-SD	3 Solid Door Underbench Fridge
RF7.UBF.3.SD	RF7UBF3-SCLH-SD	3 Solid Door Underbench Freezer
RF7.UBR.4.GD	RB4R/T1168	4 Glass Door Underbench Fridge
RF7.UBR.4.SD	RF7UBR4-SCLH-SD	4 Solid Door Underbench Fridge
RF7.UBR.2.D6	RB2R/T1042	6-Drawer Underbench Fridge
RF7.UBR.3.D9	RB3R/T1049	9-Drawer Underbench Fridge

3 Installation

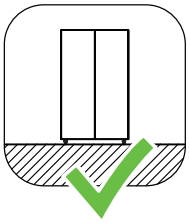
Installation Guidelines

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



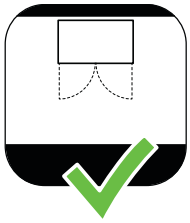
Ventilation

Ensure all ventilation requirements below are met.



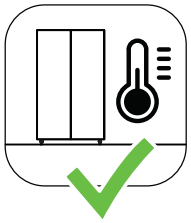
Surface

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



Door Opening

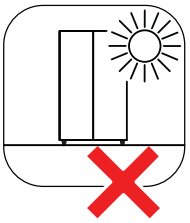
Allow adequate space for the door/s to open and close properly.



Climate Class

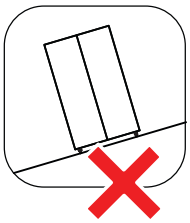
The cabinet must be installed in an environment within its climate class.

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



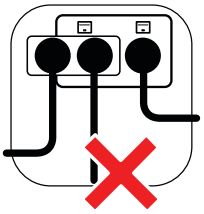
Sunlight

Do not install the cabinet in direct sunlight.



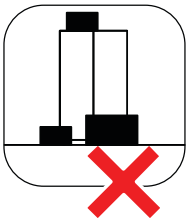
Uneven Surface

Do not install the cabinet on an uneven surface.



Power Supply

Do not overload the power supply.

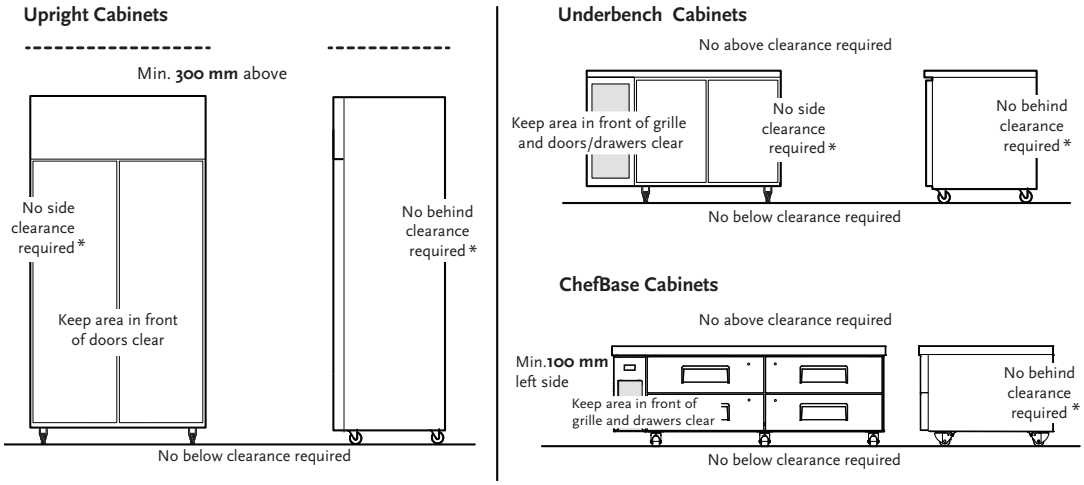


Blocking Ventilation

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

Ventilation Requirements

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



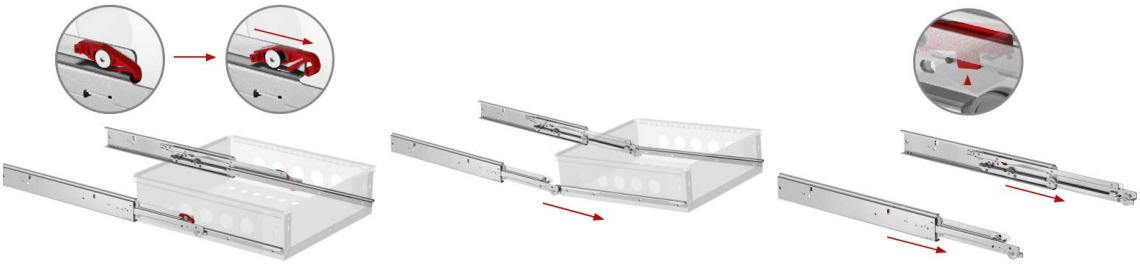
*When installed for continuous duty in climate class 7 environment (35°C ambient/ 75% relative humidity), SKOPE recommends providing 50 mm clearance around the sides and back of the cabinet.

Cleaning Before First Use

Clean and thoroughly sanitise the cabinet interior and food contact surfaces, such as the worktop, before first use. Disconnect the cabinet from the mains power supply before cleaning, and use only standard stainless steel cleaners suitable for food preparation areas. Clean the outside of the cabinet as instructed in the cleaning section of this service manual (see “Cabinet” on page 57).

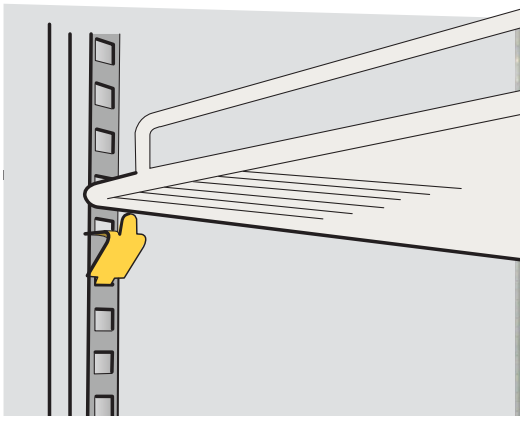
Drawers

Where fitted, remove the drawers when cleaning. Pull the drawer out of the cabinet, release latches at side of drawer as shown, and lift the drawer out at an angle. You can also remove the drawer slider by releasing the side catches as shown. Reverse the procedure to refit drawers in the cabinet after cleaning.



Shelves

Each shelf is held in place with four shelf clips, which clip into the shelf support strips, or on shelf feet on the cabinet floor. The shelf clips may be positioned at different heights to suit various product.

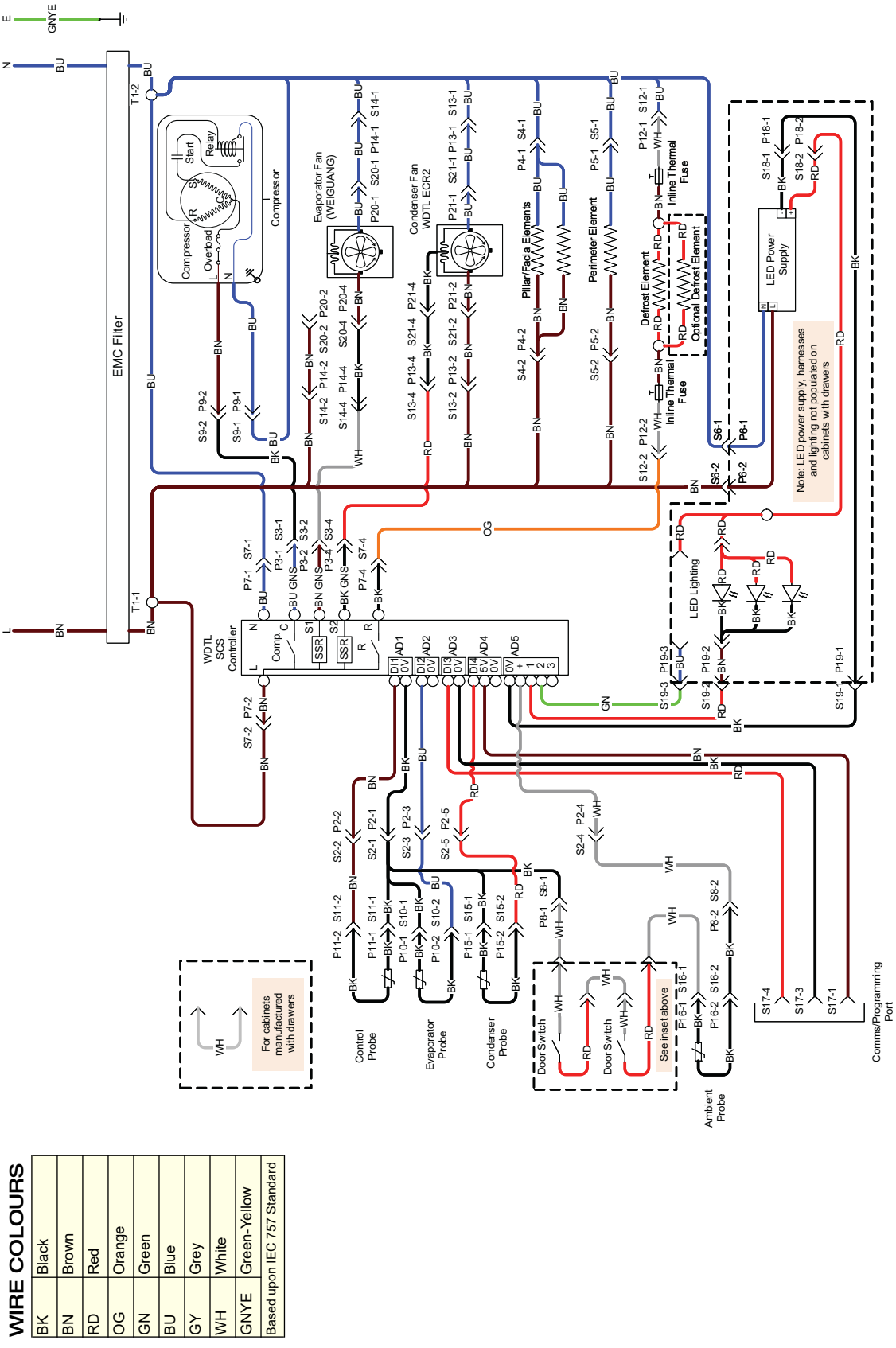


Power Cord

Before final positioning of the cabinet, pull the power cord out and connect to the mains power supply.

4 Wiring

ReFlex Underbench Fridge and Freezer



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	

CAUTION

Some connector colours vary depending on date of manufacture.
Refer to the Plug type/colour column in the table below for colour variations.
After unplugging connectors, **ALWAYS** ensure you have reconnected the plugs correctly, as operational faults may occur if incorrect. SKOPE recommends photographing the wiring setup before unplugging for future reference.

LEGEND

Internal Cartridge Junction Box Sockets/Plugs			
Name	**Description**	**Plug type/colour**	
		Before Feb. 2020	*From Feb. 2020*
Inlet	IEC Cabinet Socket/Plug	IEC	IEC
S1/P1	Not Used	–	–
S2/P2	Cartridge Junction Box to Controller Signal Socket/Plug	White 6-way	White 6-way
S3/P3	Cartridge to Controller Power Socket/Plug	Blue 4-way	Black 4-way
S4/P4	Heater Wire Cartridge Socket/Plug	Black 3-way	Black 3-way
S5/P5	Heater Wire Cartridge Socket/Plug 2	Black 3-way	Black 3-way
S6/P6	Light Cartridge Socket/Plug	White 3-way	White 3-way
S7/P7	Cartridge to Controller Power Socket/Plug 1	Red 4-way	Orange 4-way
S8/P8	Door Sensor Socket/Plug	White 2-way	White 2-way
S9/P9	Compressor Cartridge Socket/Plug	Blue 4-way	Blue 4-way
S10/P10	Evaporator Sensor Socket/Plug	Black 2-way	Black 2-way
S11/P11	Cabinet Sensor Socket/Plug	Blue 2-way	Blue 2-way
S12/P12	Defrost Element Socket/Plug	Yellow 4-way	Yellow 4-way
S13/P13	Condenser Motor Cartridge Socket/Plug	Red 4-way	Red 4-way
S14/P14	Evaporator Motor Cartridge Socket/Plug	White 4-way	White 4-way
S15/P15	Condenser Sensor Socket/Plug	Red 2-way	Orange 2-way
S16/P16	Ambient Sensor Socket/Plug	White 2-way	White 2-way
S17/P17	Programming/Comms Port Socket	Blue 4-way	Blue 4-way
S18/P18	LED Driver DC Out Put Socket/Plug	Red 2-way	Red 2-way
S19/P19	LED Lighting Loom Socket/Plug	Yellow 4-way	Green 4-way
S20/P20	Evaporator Extension Flex Socket/Plug	White 4-way	White 4-way
S21/P21	Condenser Extension Flex Socket/Plug	Red 4-way	Red 4-way
T1	Cartridge Terminals	–	–

5 Electronic Controller

Overview

The fridge is fitted with an SCS Connect electronic controller. The controller is located behind the kick panel, in the electrics junction box, which is at the front of the refrigeration cartridge.

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.

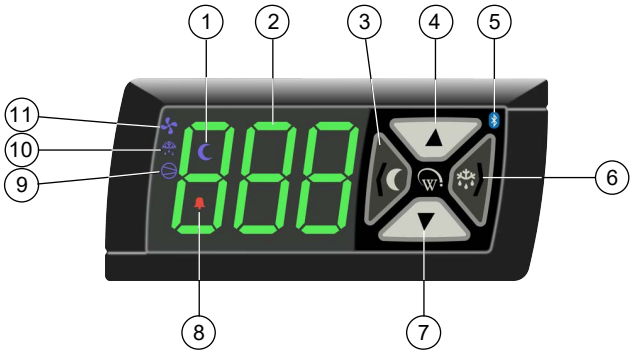


Table 2: Controller faceplate

No.	Description			Use
1	**Night mode**	Indicator	On during Night mode.	
2	**Display**	Indicator	Digital display of: • the cabinet's air (not product) temperature. • alarm messages.	
3	**Light switch - Night mode (back/abort)**	Button	Used during programming.	• 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	• 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.	

Table 2: Controller faceplate (continued)

No.	Description			Use
8	**Fault - Alarm**	Indicator	On during a fault or alarm.	
9	**Compressor**	Indicator	On when the compressor is running.	
10	**Defrost mode**	Indicator	On during the defrost cycle.	
11	**Fan**	Indicator	On when the fans are running.	

Service Mode

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

Service mode includes:

Parameters

Allows you to access and edit individual controller parameters.

Reset

Returns the controller back to factory or default settings.

Manual test

Allows you to see the input values from the sensors, check the effects of output adjustments to peripherals, and run 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.

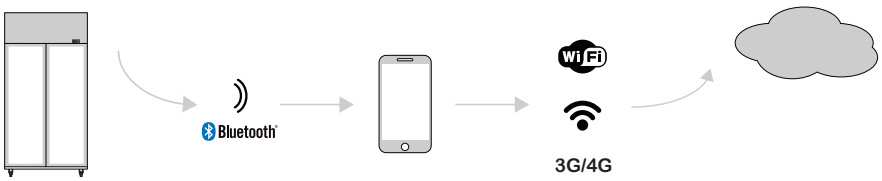
Refer to AoFrio documentation for further information.

Apps

SCS Connect 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-connect App

The SKOPE-connect app is designed for end users only, 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, opening and closing hours, and preset temperature set points for specific product.

SCS Connect Field App

Connecting

The SCS Connect Field app gives authorised service technicians wireless access to the controller from mobile devices with Bluetooth capability. The app provides data logging, alarm notification, and control over inputs (probes, switches) and outputs (e.g. relays).

Procedure 1: To install the SCS Connect Field app

Before you start

When you first run the app, you will need to enter an activation code – a 9-digit PIN. If you don't already have one, contact SKOPE Customer Services to request an activation code. You will need to be connected to the internet at the time of activation.

Your activation code is unique to you, and determines your personal level of access for the app. **Never** share it with anyone else. The same code will give you access to all SCS apps you are authorised to use.

1. Download and install the Connect Field app:
   - Apple App Store: https://apps.apple.com/nz/app/scs-connect-field/id1172570106
   - Google Play Store: https://play.google.com/store/apps/details?id=air.com.wdtl.scs.diagnostic.mobile
2. Make sure you are connected to the internet, and enter your 9-digit activation code.
3. Once activation is complete, you must define a 4-digit PIN. This can be any code unique to you. Each time you start the app, you will be required to enter this same PIN. This is to prevent other people accessing the app from an unlocked phone.

Procedure 2: To connect to a controller

1. Check that the Bluetooth logo on the top right of the controller faceplate is unlit, indicating that the controller is ready to connect to a device.
   Note: A flashing Bluetooth logo indicates that the controller is currently connected to a device.
2. Open the SCS Connect Field app.
3. Select the controller from the list of visible controllers.
   Note: This list is filtered by your activation permissions, so devices you are not authorised to connect to will not be displayed.
4. Select "CONNECT" to connect to the controller.
5. Check that the Bluetooth logo on the top right of the controller faceplate is flashing, indicating that the controller is connected.

App Menu Items

You can find information and make changes to the connected controller and its fridge via the app menu.

Home screen

Shows a graphic representation of the fridge being controlled.

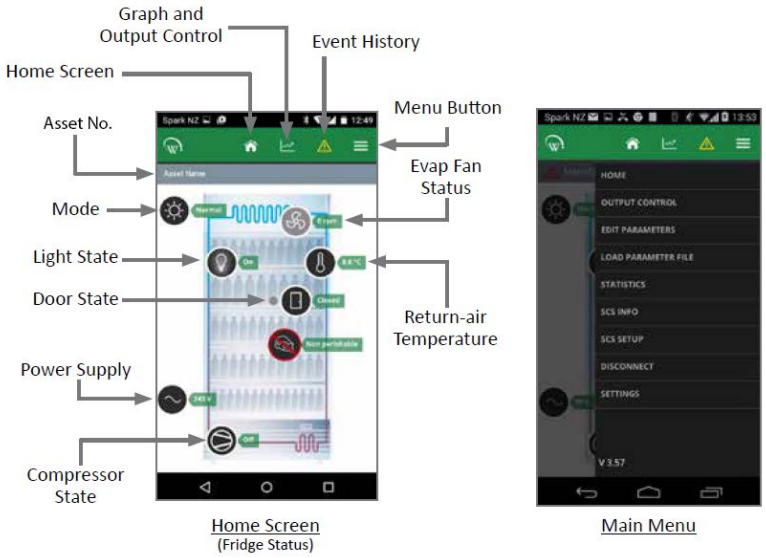


Table 3: SCS Connect Field app home screen

Item	Description	Action
Output control	Gives you control of the input sensors and switches, and output relays.	
Edit parameters	Allows you to access and edit individual controller parameters. SKOPE does not recommended changing parameters unless absolutely necessary.	If you edit a parameter, you must: • select “DISCONNECT” from the menu to apply the updated parameter. • record the changes on the warranty/job card.
Load parameter file	Allows you to reload a default parameter set or change to new parameter set. SKOPE does not recommended changing parameters unless absolutely necessary.	1. If you suspect an incorrect parameter setting, reload the complete parameter set. 2. After loading the new parameter set, select “DISCONNECT” from the menu to apply the updated parameters.
Statistics	Displays information from the past seven days about the cabinet’s activity, including temperatures, door openings and alarms.	
SCS info	Displays information about the cabinet and the controller version.	
SCS setup	Allows you to add or change SCS info (see above).	
Disconnect	Allows you to disconnect from the currently connected controller.	
Settings	Allows you to change the app's general settings and see which databases you have activated. You can have more than one database activated at the same time.	To add a new database, select ACTIVATE ANOTHER DATABASE, and enter the new database's unique activation code.

Table 4: Controller parameters

	Model ID	RF7.UBR.2.GD	RF7.UBR.2.SD RF7.UBR.2XL.SD	RF7.UBF.2.SD	RF7.UBR.3.GD	RF7.UBR.3.SD	RF7.UBF3.SD	RF7.UBR.4.GD	RF7.UBR.4.SD	RF7.UBR.2.D6	RF7.UBR.3.D9
Parameter numbers	610		✓								
	611					✓			✓		
	612			✓			✓				
	614	✓									
	615				✓			✓			
	624									✓	
	625										✓

Faults and Alarms

If a fault occurs, it is logged, the Fault - Alarm indicator is lit on the controller faceplate, and a message may be displayed. Faults do not affect product temperature, and do not require action from the shop owner, unless they turn into an alarm.

If an alarm occurs, it is logged, the Fault - Alarm indicator is lit, and the alarm message is displayed on the controller faceplate. Alarms may result in abnormal product temperature.

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

Table 5: Faults

Description	Possible root cause	Actions
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.	Should be a one-off. If it continues, consider: • poor line voltage	Test the incoming voltage to ensure it is correct. The test voltage needs to be between 198 and 264 volts. • If outside this, the controller will shut the system down until the voltage returns to between these measurements. • If the voltage is correct and the controller is still showing a fault, replace the controller.
	• rural location	
	• voltage setting parameter	• Check the voltage parameter settings are between 198 and 264 volts. If this parameter is outside the correct voltage, changing it may damage the controller.
	• controller	• The controller may be reading incorrectly and need replacing.

Table 5: Faults (continued)

Description	Possible root cause	Actions
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.	Should be a one-off. If continues, consider: • power supply overloaded	Test the incoming voltage to ensure it is correct. The test voltage needs to be between 198 and 264 volts. • If outside this, the controller will shut the system down until the voltage returns to between these measurements. • If the voltage is correct and the controller is still showing a fault, replace the controller.
	• poor line voltage	
	• multi-box use	• Check that there are not too many plugs using the same multi-box adaptor causing the voltage to drop.
	• rural location	
	• voltage setting parameter	• Check the voltage parameter settings are between 198 and 264 volts. If this parameter is outside the correct voltage, changing it may damage the controller.
	• controller	• The controller may be reading incorrectly and need replacing.
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.	• Condenser not clean	Cartridge swap is not required. • Remove and clean the condenser filter. • Check that the condenser is free of debris. • If the coil is dirty, clean it with a vacuum cleaner or soft brush.
	• Poor installation or ventilation	• Check the installation guidelines. • If fitted, check the rear stand-offs are extended.
	• Condenser fan motor or blade	• Check that the condenser fan blades are in place and all condenser fans are operating correctly.
	• Controller	The controller may be reading incorrectly and need replacing. • Confirm the temperature reading with an independent thermometer.
	• Very high ambient temperature	• Check if the probes are faulty and reading incorrectly.

Table 5: Faults (continued)

Description	Possible root cause	Actions
Excessive compressor cycling protection The system has been turning on and off too frequently.	• Door not self-closing	• Open the door and let it go. If it does not close on its own, repair the self-closing mechanism.
	• Blocked condenser	• Remove and clean the condenser filter. • Check that the condenser is free of debris. • If the coil is dirty, clean it with a vacuum cleaner or soft brush.
	• Poor installation or ventilation	• Check the installation guidelines.
	• Cartridge or cabinet gasket seals leaking	• Remove the cartridge and check the integrity of the gaskets and seals. • If required, replace the door gasket.
	• Hot product	• Check if the product has been recently loaded, and is causing the extra heat.
	• Product blocking cabinet airflow	• Check if the return air grille is covered by product. If so, move the product from the grille and observe.
	• Compressor is overloaded from excess door openings or ambient temperature	• Ensure that the cabinet is operating in its climate class.
	• Condenser or evaporator fan motor or blade	• Inspect the condenser and evaporator fans safely, and replace if faulty.
	• Controller	• The controller may be reading incorrectly and need replacing.
	• Compressor or gas leak	• Swap the cartridge.

Table 6: Alarms

Code	Description	Possible root cause	Action
8	Estimated product temperature below allowable range The estimated product temperature has been below the allowable range for longer than the permissible time.	• Low ambient temperature	• Ensure that the cabinet is operating in its climate class.
		• App settings	• Check all app settings, and reinstall the parameters if required.
		• Controller	• Check the probe calibration to make sure that the controller is reading the temperature correctly.

Table 6: Alarms (continued)

Code	Description	Possible root cause	Action
9	Estimated product temperature above allowable range The estimated product temperature has been above the allowable range for longer than the permissible time.	• Excessive door openings	• Make sure the door is not opened unnecessarily.
		• Door being left open	• Ensure the door is closed.
		• Door leaking air (bad gasket or door not self-closing)	• Open the door and let it go. If it does not close on its own, repair the self-closing mechanism. • If required, replace the door gasket.
		• Sealed refrigeration system	• Consider a cartridge swap.
		• Incorrect setpoint	• Reload the correct parameters using the SCS Connect Field app.
		• Too much product	• If the cabinet is overloaded, remove the excess product.
		• Blocked return air grille	• Check if the return air grille is covered by product. If so, move the product from the grille and observe.
		• Warm product loaded into cabinet	• Wait for the product to cool down.
		• Blocked condenser	• Remove and clean the condenser filter. • Check that the condenser is free of debris. • If the coil is dirty, clean it with a vacuum cleaner or soft brush.
		• Poor installation or ventilation	• Check the installation guidelines.
		• Frozen or blocked evaporator coil	• De-ice the coil and check the that evaporator fan motor is working. • Check the defrost cycle and that the defrost probe are working correctly. • Check that the drain is clear.
		• Cartridge gasket leaking (to cabinet seal or lid seal)	• Check that the gasket is intact and not broken and leaking. • Ensure the installation levers are lifting the cartridge up onto the case correctly.
		• Compressor is overloaded from excess door openings or ambient temperature	• Ensure that the cabinet is operating in its climate class.
		• Condenser or evaporator fan motor or blade	• Inspect the condenser and evaporator fans safely, and replace if faulty.
		• Incorrect parameter settings	• Use the SCS Field app to check that the correct setpoint and parameters have been selected.
		• Controller	• Check the probe calibration to make sure that the controller is reading the temperature correctly.
		• Compressor or gas leak	• Swap the cartridge.

Table 6: Alarms (continued)

Code	Description	Possible root cause	Action
15	Excessive condensing temperature protection The system was operating at an excessive temperature and has shut down to prevent permanent damage.	• Very high ambient temperature	Cartridge swap is not required. • Ensure that the cabinet is operating in its climate class.
		• Condenser is not clean	• Remove and clean the condenser filter. • Check that the condenser is free of debris. • If the coil is dirty, clean it with a vacuum cleaner or soft brush.
		• Poor installation or ventilation	• Check the installation guidelines.
		• Condenser fan motor or blade	• Inspect the condenser and evaporator fans safely, and replace if faulty.

		• Incorrectly placed condenser probe	• Either:
			  • Measure the probe resistance to make sure it is within the range.
			  • Compare the probe's temperature with the known temperature, using an external trusted thermometer.
			• Replace the probe if required.

17	Control probe failure
	A critical system sensor has failed and the cabinet can no longer operate.
		• Control probe or circuit	Cartridge swap is not required.
			• Either:
			  • Measure the probe resistance to make sure it is within the range.
			  • Compare the probe's temperature with the known temperature, using an external trusted thermometer.
			• Replace the probe if required.

		• Controller	• If you have replaced the probe and it is still reading incorrectly, replace the controller.
18	Electrical over-current protection activated The compressor was drawing too much current and has shut down to prevent permanent damage.	• Blocked condenser	• Remove and clean the condenser filter. • Check that the condenser is free of debris. • If the coil is dirty, clean it with a vacuum cleaner or soft brush.
		• Product blocking cabinet airflow	• Check if the return air grille is covered by product. If so, move the product from the grille and observe.
		• Compressor is overloaded from excess door openings or ambient temperature	• Ensure that the cabinet is operating in its climate class.
		• Compressor or gas leak	• Swap the cartridge.

Table 6: Alarms (continued)

Code	Description	Possible root cause	Action
19	Failed to reach set temperature The refrigeration system has been operating continuously for a long period without reaching the set temperature.	• Blocked condenser	• Remove and clean the condenser filter. • Check that the condenser is free of debris. • If the coil is dirty, clean it with a vacuum cleaner or soft brush.
		• Poor installation or ventilation	• Check the installation guidelines.
		• Frozen or blocked evaporator coil	• De-ice the coil and check the that evaporator fan motor is working. • Check the defrost cycle and that the defrost probe is working correctly.
		• Cartridge, cabinet, or door gasket leaking	• Check that the gasket is intact and not broken and leaking. If required, replace the door gasket. • Ensure the installation levers are lifting the cartridge up onto the case correctly.
		• Product blocking cabinet airflow	• Check if the return air grille is covered by product. If so, move the product from the grille and observe.
		• Compressor is overloaded from excess door openings or ambient temperature	• Ensure that the cabinet is operating in its climate class.
		• Condenser or evaporator fan motor or blade	• Inspect the condenser and evaporator fans safely, and replace if faulty.
		• Controller	• The controller may be reading incorrectly and need replacing.
		• Compressor or gas leak	• Swap the cartridge.
20	Over-cooling product The internal temperature is too low. The system has temporarily shut down until the temperature has returned to normal.	• Set temperature has been raised by a large amount	1. Confirm if really too cold. 2. Change parameters accordingly.
		• Controller	• The controller may be reading incorrectly and need replacing.
22	Evaporator fan over-current protection The current supplied to the evaporator fan motor is too high.	• Faulty fan motor	• Replace the fan motor.
		• Fan blade fault (imbalance, debris, blockage)	• Visually inspect the fan blades and replace if faulty.
23	Condenser fan over-current protection The current supplied to the condenser fan motor is too high.	• Faulty fan motor	• Replace fan motor.
		• Fan blade fault (imbalance, debris, blockage)	• If the fan motor is working correctly, update the controller firmware to the latest version.
		• Controller	• The controller may be reading incorrectly and need replacing.
24	Controller communication error Controller has lost communication channels.	• Parameters	• Load the correct parameter settings.
		• Controller or circuit	• The controller may be reading incorrectly and need replacing.
25	Controller update failed Controller update could not be completed.	• Parameters	• Load the correct parameter settings.
		• Controller or circuit	• The controller may be reading incorrectly and need replacing.
26	Controller hardware failure Controller hardware has failed.	• Parameters	• Load the correct parameter settings.
		• Controller or circuit	• Replace the controller.

Table 6: Alarms (continued)

Code	Description	Possible root cause	Action

27	Probe failure
	A probe other than the control probe has failed. The cabinet will continue to operate with partial function but requires service.
		• Evaporator probe or connections	Cartridge swap is not required.
			• Either:
			  • Measure the probe resistance to make sure it is within the range.
			  • Compare the probe's temperature with the known temperature, using an external trusted thermometer.
			• Replace the probe if required.

		• Controller	• The controller may be reading incorrectly and need replacing.
28	No downward tendency The temperature is no longer decreasing.	• Blocked condenser	• Remove and clean the condenser filter. • Check that the condenser is free of debris. • If the coil is dirty, clean it with a vacuum cleaner or soft brush.
		• Poor installation or ventilation	• Check the installation guidelines.
		• Cartridge or cabinet gasket seals leaking	• Check that the gasket is intact and not broken and leaking. If required, replace the door gasket. • Ensure the installation levers are lifting the cartridge up onto the case correctly.
		• Door not self-closing or door gasket leaking	• Open the door and let it go. If it does not close on its own, repair the self-closing mechanism. • If required, replace the door gasket.
		• Product blocking cabinet airflow	• Check if the return air grille is covered by product. If so, move the product from the grille and observe.
		• Compressor is overloaded from excess door openings or ambient temperature	• Ensure that the cabinet is operating in its climate class.
		• Condenser or evaporator fan motor or blade	• Inspect the condenser and evaporator fans safely, and replace if faulty.
		• Controller	• The controller may be reading incorrectly and need replacing.
		• Compressor or gas leak	• Swap the cartridge.
29	Compressor cutting out The compressor cut out on its internal protection or pressure switch.	• Blocked condenser	• Remove and clean the condenser filter. • Check that the condenser is free of debris. • If the coil is dirty, clean it with a vacuum cleaner or soft brush
		• Poor installation or ventilation	• Check the installation guidelines.
		• Cabinet, door, or cartridge gasket leaking	• Check that the gasket is intact and not broken and leaking. If required, replace the door gasket. • Ensure the installation levers are lifting the cartridge up onto the case correctly.
		• Product blocking cabinet airflow	• Check if the return air grille is covered by product. If so, move the product from the grille and observe.
		• Compressor is overloaded from excess door openings or ambient temperature	• Ensure that the cabinet is operating in its climate class.
		• Condenser or evaporator fan motor or blade	• Inspect the condenser and evaporator fans safely, and replace if faulty.
		• Controller	• The controller may be reading incorrectly and need replacing.
		• Compressor or gas leak	• Swap the cartridge.

Table 6: Alarms (continued)

Code	Description	Possible root cause	Action
30	Excessive automatic defrosting The system is automatically defrosting too frequently.	• Door not self-closing or door gasket leaking	• Open the door and let it go. If it does not close on its own, repair the self-closing mechanism. • If required, replace the door gasket.
		• Evaporator probe	Either: • Measure the probe resistance to make sure it is within the range. • Compare the probe's temperature with the known temperature, using an external trusted thermometer.
		• Evaporator motor or fan	• Check that the fan motors are working and the fan blades are not damaged.
		• Controller	• The controller may be reading incorrectly and need replacing.
		• Blocked drain	• Clear the blockage with a wet vacuum. • Clear the debris to prevent a blockage.
		• Defrost setting too high	• Reload the correct parameters using the SCS Connect Field app.
		• Compressor or gas leak	• Swap the cartridge.

6 Replacement Procedures

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 3: 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 modular interior lights. Ensure the light is replaced with the same light type. Fluorescent or LED tubes cannot be used in place of LED modular lights.

Note: There are no lights on drawer cabinets.

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 which are replaceable:

- LED modular light/s
- Light power supply
- Interior wiring loom

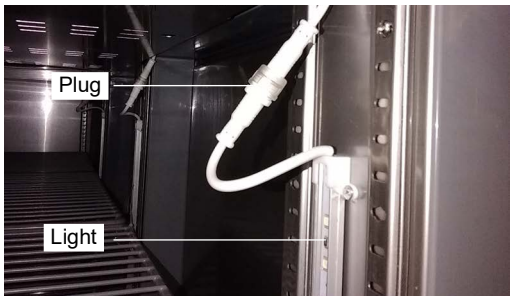
Lighting components are all non-serviceable items. If a component is faulty, it should be removed and a SKOPE OEM new replacement component fitted.

Refer to Table 14, “Cabinet and cartridge troubleshooting,” on page 58 to determine what component may be at fault, and the procedures over the next few pages for component replacement instructions.

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

Procedure 4: To replace an interior light component

1. Disconnect the cabinet from the mains power supply.
2. Remove the shelves from either side of the light.
3. Unplug the light.
4. Unscrew and replace the light.
5. Plug the light in and reassemble the shelves.



6. Reconnect to the mains power supply and check for correct operation.

Procedure 5: To replace the LED driver

1. Disconnect the cabinet from the mains power supply.
2. Gain access to the cartridge electrics panel (see “Cartridge Electrics Panel” on page 36).
3. Unplug, unscrew and replace the LED driver.
4. Reassemble and test for correct operation.

Drawers

Adjust Drawer Alignment

If a drawer is out of alignment, realign it by loosening the top and/or bottom drawer bracket fixing screws, move the drawer as required, and re-tighten the bracket screws.

Doors

Adjust Door Alignment

If a door is out of alignment, realign it by loosening the top and/or bottom hinge bracket fixing screws, move the door as required, and re-tighten the hinge bracket screws.

Door 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, the door can be removed from the cabinet.

Procedure 6: To remove the door

1. Disconnect the cabinet from the mains power supply.
2. Unscrew the top and bottom hinges and remove the door from the cabinet.

3. If necessary, remove the top and bottom hinges, and self-closing mechanism (see “Door Hinges” on page 26).

Procedure 7: To refit the door

1. If necessary, refit the self-closing mechanism and top and bottom mechanism. Ensure all bushes and washers are present, and the bottom hinge is fitted in closed position for correct self-closing.
2. Refit the door to the cabinet.
3. Check that the door seal gasket is fitted correctly and forms a complete seal with the cabinet when the door is closed.

Door Tension

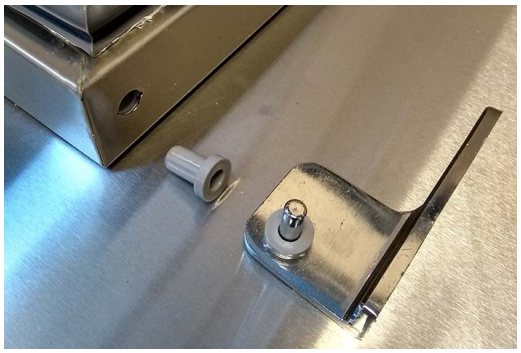
The door is fitted with a self-closing mechanism which allows the door to self-close. If door tension is lost, check that the self-closing mechanism is installed correctly, and if necessary replace (see “Door Hinges” on page 26).

Door Hinges

Each door is fitted with top and bottom hinges, and an additional self-closing mechanism which allows the door to self-close. The hinges and self-closing mechanism are replaceable.

Procedure 8: To remove the hinges

1. Remove the top hinge, washers and bush from the top of the door.



2. Unscrew and remove the bottom hinge and washers from the bottom of the door.

3. Unscrew and remove the self-closing hinge from the bottom of the door.

Door and Drawer Locks

Each door or drawer is fitted with a key lock. The lock bolt can be removed and replaced. The lock is foamed into the door and cannot be removed.

Procedure 9: To replace a door lock bolt

1. Unlock and open the door.

2. Use a slotted screwdriver to remove or fit the lock bolt to the lock mechanism inside the door.

Castors and Legs

The cabinet is supplied fitted with swivel castors. The front castors are lockable, the rear castors are free. A set of adjustable height legs is also included in the cabinet.

The castors can be removed for plinth mounting or for fitting the height-adjustable legs.

Procedure 10: To remove the castors

1. Raise the cabinet off the ground, and unbolt the castors from the bottom of the cabinet.

Procedure 11: To fit the adjustable height legs

1. Fit the supplied legs into the castor mounting holes.

Procedure 12: To plinth mount

1. The underside of the cabinet is completely flat for plinth mounting.

Cartridge End Panel

The panel at the left hand end of the cabinet can be replaced.

Procedure 13: To replace the end panel

1. Disconnect the cabinet from the mains power supply.
2. Unscrew and remove the front panel:
   - two screws at the bottom
   - two screws at the top.
3. Unscrew and remove the end panel:
   - two screws at the back of the cabinet
   - four screws at the side of the cabinet
4. Fit the replacement end panel, and refit the front panel.

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

The following test is useful to do in a hydrocarbon-compliant workshop (see “Off-site Work” on page 30) to work out if the system is short of gas. Always perform it before opening the refrigeration system.

It is helpful to have a correctly operating cassette running beside the cassette being serviced to compare behaviour

Note: This diagnostic procedure is indicative only.

Procedure 14: To diagnose lack of gas

1. Disconnect the cabinet from the mains power supply (see page 24).
2. Remove the refrigeration cartridge (see “Removing the Cartridge” on page 31), including the controller and wiring loom assembly.
3. Unplug the evaporator fan motor (white 4-pin plug) from the wiring loom.

Procedure 14: To diagnose lack of gas (continued)

4. Install the door switch jumper (white 2-pin plug) into the wire harness.
5. Remove the evaporator tub cover and install a blocker to prevent the condenser airflow from affecting the evaporator coil.
6. Connect the refrigeration cartridge to the mains power supply and allow to run for approximately 10 minutes until the evaporator temperature stabilises.
7. Optional: For enhanced diagnostics, connect to the controller via a Bluetooth-enabled device with the WDT SCS Connect Field app installed.
8. Use the relevant table below to determine if the system charge is correct at typical ambient conditions around 25°C for a cartridge running on the bench. The point where the frost stops is affected by the ambient temperature.
   - Generally, a system with the correct refrigerant charge will frost back to the compressor.
   - If the frost does not go back as described there may be a capillary blockage or compressor fault.

Table 7: RF7.UBR.2.SD, RF7.UBR.2XL.SD, RF7.UBR.2.GD (cartridge ULKCNI-0021, ULKCNI-0027, ULKCNI-0040-P)

Observation	50% charged	75% charged	100% charged
Suction pipe at compressor	Suction dry	Suction dry	Suction cold
Evaporator coil	Top row return bends frosted	½ return bends frosted	All return bends frosted
Cartridge power	Less than 100 W	110 W to 115 W	Greater than120 W
Evaporator temperature	Greater than -10°C	-10°C to -12°C	Less than -15°C

Table 8: RF7.UBR.3.GD, RF7.UBR.3.SD, RF7.UBR.4.GD, RF7.UBR.4.SD (cartridge ULKCNI-0022, ULKCNI-0028, ULKCNI-0041-P)

Observation	50% charged	75% charged	100% charged
Suction pipe at compressor	Suction dry	Suction dry	Suction cold
Evaporator coil	No return bends frosted	½ return bends frosted	All return bends frosted
Cartridge power	Less than 13 5W	135 W to 145 W	Greater than 145 W
Evaporator temperature	Greater than -10°C	-10°C to -12°C	Less than -15°C

Table 9: RF7.UBF.2.SD, RF7.UBF.3.SD (cartridge ULKCNI-0023)

Observation	50% charged	75% charged	100% charged
Suction pipe at compressor	Suction dry	Suction cold	Suction cold and wet
Evaporator coil	Top row return bends frosted	½ return bends frosted	All return bends frosted
Cartridge power	Less than 27 5W	290 W to 300 W	Greater than 300 W
Evaporator temperature	Greater than -15°C	Less than -30°C	Less than -30°C

9. Determine whether the system is short of refrigerant, blocked capillary or compressor fault.

A dry suction could indicate either short of gas, blocked capillary or compressor fault, and further analysis may be required.

- If there is no frost present at the evaporator coil inlet pipe a blocked capillary is likely.
- If frost is forming at evaporator coil inlet pipe system, and suction/compressor is behaving as shown in the relevant table above at 50% or 75%, the system is likely to be short of gas.

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

Removing the Cartridge

Note: The electronic controller and electrics panel (including light power supply) is matched to the cabinet, and must be left with the cabinet when exchanging the cartridge. Replacement spare part cartridges are not supplied with controller and electrics panel.

Follow the steps below and image over the page to remove the refrigeration cartridge from the cabinet. Ensure the cabinet is disconnected from the mains power supply before removing the cartridge.

WARNING

The cabinet body is connected to installation earth via the refrigeration cartridge. Removing the cartridge removes the cabinet earth. **NEVER** connect cabinet heating leads to the electrics box or any other power supply with the cartridge removed or risk of electric shock may be created.

CAUTION

Some connector colours vary depending on date of manufacture.

After unplugging connectors, **ALWAYS** ensure reconnection has been undertaken correctly as operational faults may occur if incorrect. SKOPE recommends photographing the wiring setup for future reference before unplugging.

Procedure 15: To remove the refrigeration cartridge

Before you start

If a customer reports a “not cooling” fault, and it has been established that the cabinet is not cooling, follow the “On-site Work Procedure” on page 48 when making the service visit.

1. Unplug the cabinet from the mains power supply, and cut the cable tie at the back of the cabinet to release the power cord.
2. Unscrew the front panel (Phillips head screwdriver):
   - two screws at the bottom of the front cover
   - two screws at the top of the front cover
3. Unscrew the cartridge (Allen key):
   - two screws at the bottom of the cartridge
   - four screws on the right hand side of the cartridge
4. Partially slide the cartridge out.
   - Use the handles at the front of the cartridge, and take care of loose plugs, cables and the evaporator box gasket when sliding the cartridge.
   - Release the electrical cables on the left hand side of the cartridge by cutting the cable ties securing the cables.
5. Photograph the wiring setup for reference when refitting the cartridge.
6. Unplug the cartridge from the cabinet (see “6. Electrics panel and loom electrical connections.” on page 35):
   - Black 3-way plugs (heater wire cartridge sockets).
   - White 2-way plug (door sensor socket/plug)
   - Red 2-way plug (cabinet lighting plugs)
   - White 6-way plug (cartridge junction box to controller signal socket/plug)
   - Black 4-way plug (cartridge to controller power socket)
   - Orange 4-way plug (cartridge to controller power socket 1)
   - Green 4-way plug (LED lighting loom socket/plug)

Procedure 15: To remove the refrigeration cartridge (continued)

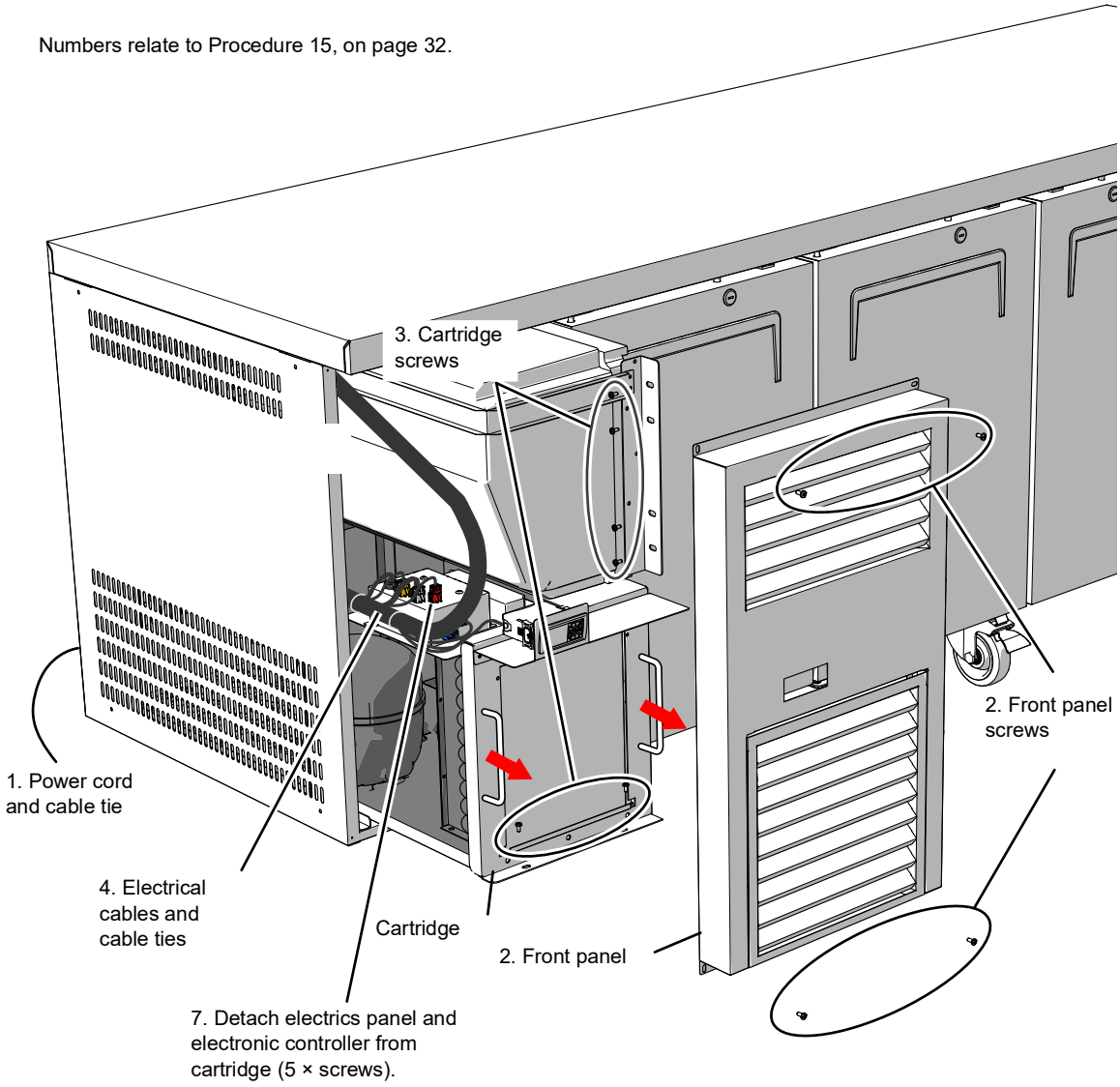
7. The cartridge can now be removed from the cabinet.

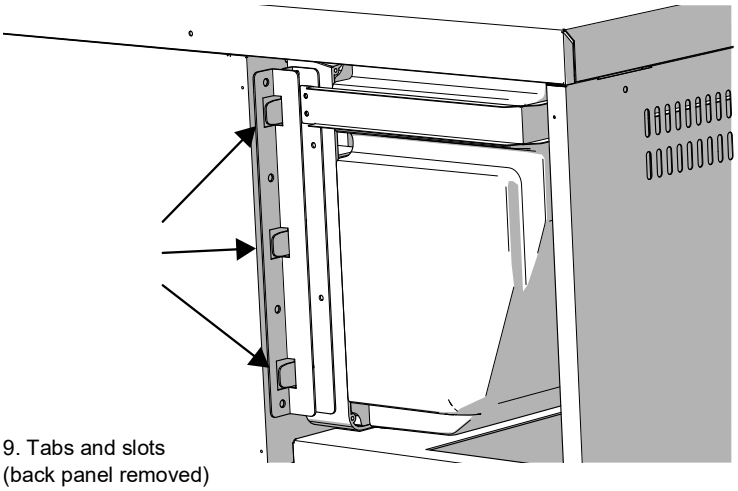
8. When swapping cartridge, detach the electrics panel and electronic controller from the cartridge.
   - To remove the electrics panel, unscrew the five screws (Phillips head screwdriver) around the perimeter of the panel.
   - To remove the controller, press and hold the tabs on each side of the electronic controller to unlock, and push the controller through the front of the controller box. Unplug the electronic controller from the cartridge.

9. Reverse the steps above to refit the cartridge. When refitting, ensure that:
   - the evaporator box gasket is in good condition.
   - all plugs and cables are re-connected to the correct socket and cable-tied back into place.
   - wires and cables are clear of the cartridge when moving it.
   - the cartridge is pushed fully in the cabinet and screwed in place.
     Ensure the tabs on the back of the cartridge are located in the slots at the back of the cabinet.
   - the front cover is refitted.

IMPORTANT: Ensure that you reconnect the plugs correctly, as operational faults may occur otherwise. Refer to the relevant image on page 35, wiring diagram on page 10, and your photograph for reference.

Numbers relate to Procedure 15, on page 32.

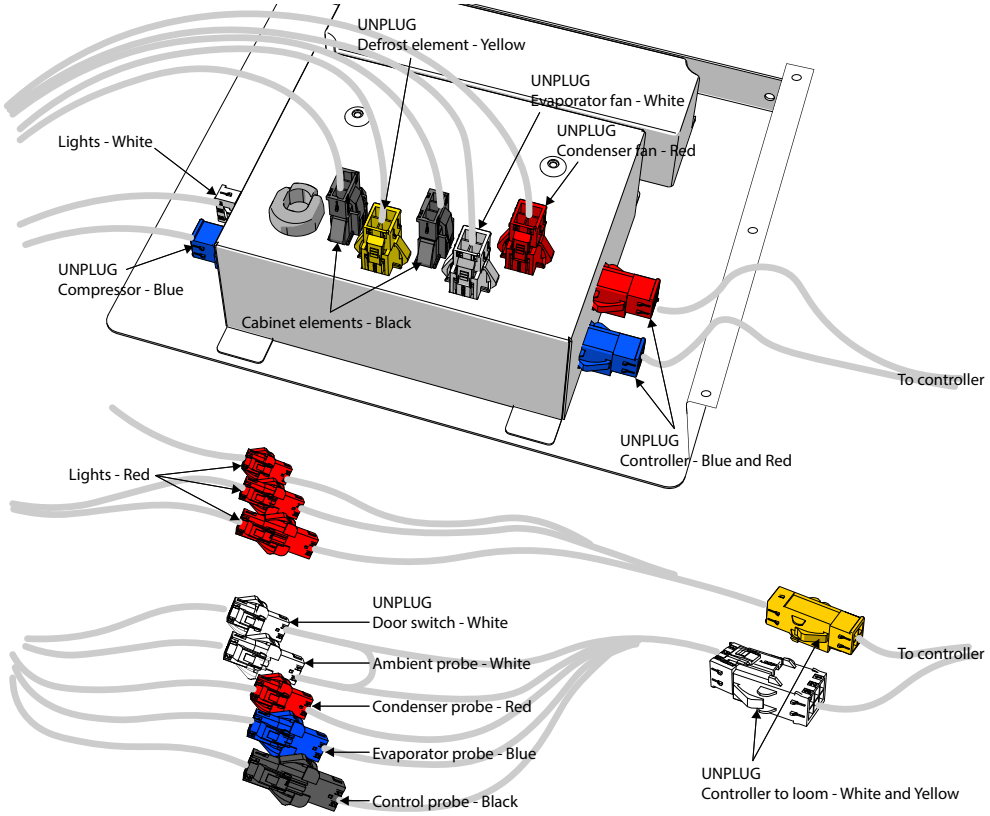




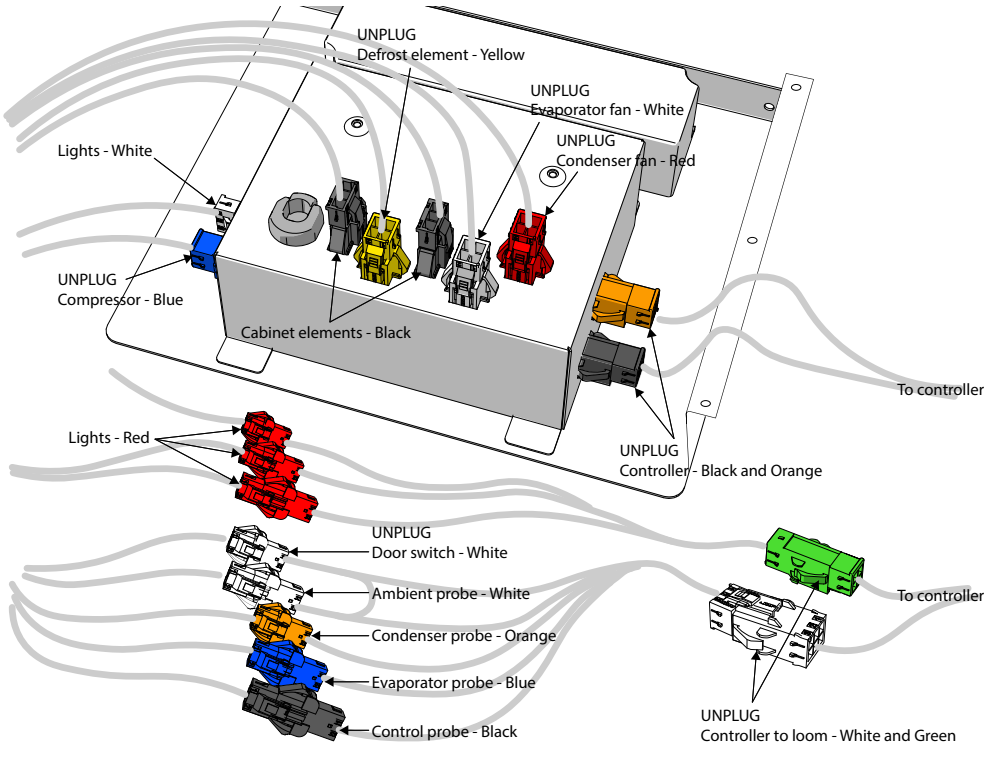
6. Electrics panel and loom electrical connections.
Unplug as pictured

Manufactured before February 2020

Due to the use of limited colour connectors, 2 × red 4-way and 2 × yellow 4-way connectors have been used. **Always** ensure that you reconnect the plugs correctly, as operational faults may occur otherwise.



Manufactured from February 2020 onwards



Refrigeration Cartridge Assembly

The refrigeration cartridge is an end-mounted, electronically controlled removable cartridge.

The electronic controller and electrics panel (including light power supply) is matched to the cabinet, and must be left with the cabinet when exchanging the cartridge. Replacement spare part cartridges are not supplied with controller and electrics panel.

For safety and compliance, only repair the cartridge with SKOPE-supplied parts made specifically for this cabinet. Other parts may appear suitable, but may not be approved or safe for use in an appliance with hydrocarbon refrigerant.

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

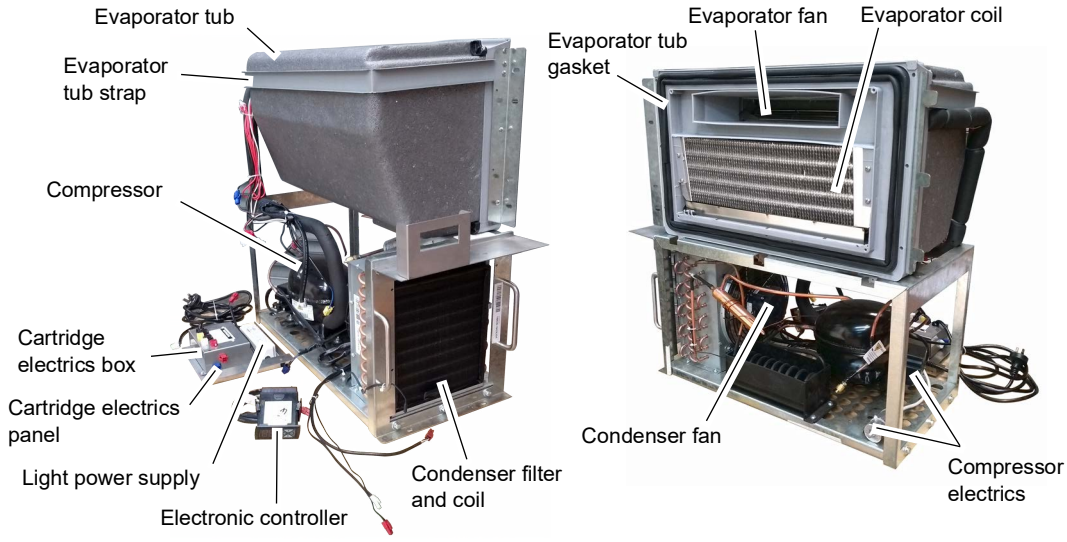
WARNING

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

For servicing or transportation, the refrigeration cartridge unplugs and lifts off the cabinet. Some minor servicing can be performed without removing the refrigeration cartridge.

The model and serial number are both printed on the cartridge rating/serial number label attached to the panel above the condenser coil.

Different fridge and freezer cartridges are used across different models, and cartridge spare parts vary between different cartridges. Refrigeration system pipe routing varies between different model releases.



Defrost Cycle

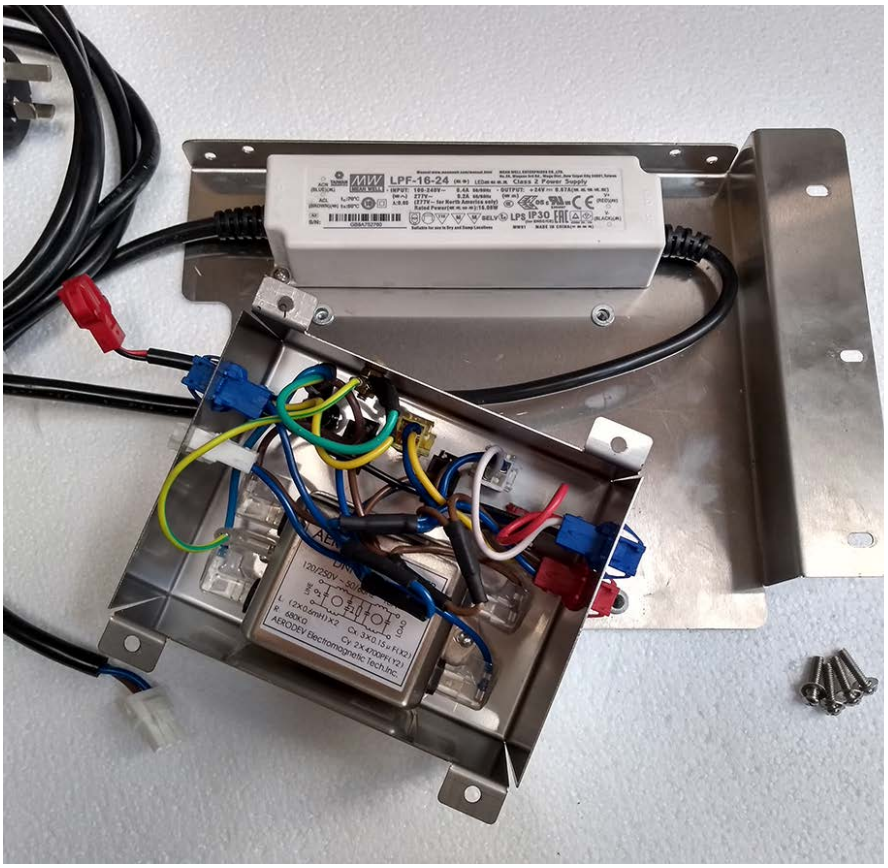
Electric defrosting is used for both fridges and freezers. Defrost parameters vary depending on product type, and can be reviewed in the SCS Connect Field app.

Cartridge Electrics Panel

The cartridge electrics panel (including light power supply) is matched to the cabinet, and must be left with the cabinet when exchanging the cartridge. Replacement spare part cartridges are not supplied with an electrics panel.

The cartridge electrics panel assembly contains the light power supply, EMI filter and panel mount socket connectors for the cartridge and cabinet.

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



Procedure 16: To remove the cartridge electrics panel and open the electrics box

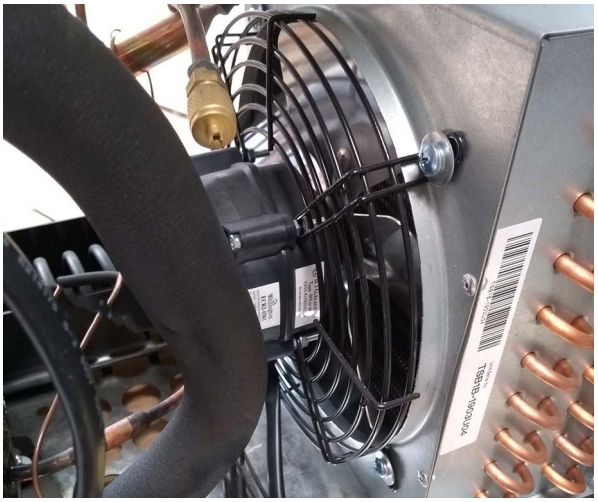
Before you start
If a customer reports a “not cooling” fault, and it has been established that the cabinet is not cooling, follow the “On-site Work Procedure” on page 48 when making the service visit.

1. Remove the cartridge from the cabinet (see page 31).
2. Unscrew the panel from the cartridge (5 × screws).
3. To open the box, unscrew the four screws and lift the box off the panel.

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.



IMPORTANT

Replace the motor with the same SKOPE OEM part.
DO NOT use alternative parts.

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

Table 10: Recommended torque settings

Fan motor manufacturer	Torque setting
Wellington Drive	1.4 Nm

Procedure 17: To access and remove the condenser fan assembly

Before you start

1. If a customer reports a “not cooling” fault, and it has been established that the cabinet is not cooling, follow the “On-site Work Procedure” on page 48 when making the service visit.
2. Make sure you take note of the original condenser fan motor cable’s path, e.g. a photo.

1. Remove the cartridge from the cabinet (see page 31).
2. Remove the electrics panel (see page 36).
3. Cut the cable ties holding the condenser fan motor cable along the cartridge, and free up the condenser fan motor cable.
4. Unscrew the condenser fan assembly from the condenser coil, and remove the assembly (fan motor, fan blade, mounting brackets) from the cartridge by lifting the shroud up and out.

Procedure 18: To replace the condenser fan blade

Before you start

1. If a customer reports a “not cooling” fault, and it has been established that the cabinet is not cooling, follow the “On-site Work Procedure” on page 48 when making the service visit.
2. Make sure you take note of the original cable’s path, e.g. a photo.

1. Remove the condenser fan assembly (see Procedure 17, on page 38).
2. Remove the screw and washer from the centre of the fan blade, and lift the blade from the motor.

Procedure 18: To replace the condenser fan blade (continued)

3. Replace new blade and fix with a 12 mm flat washer and serrated head screw. Tighten the blade to 1.4 Nm (the recommended torque setting).
4. Refit the condenser fan assembly to the cartridge. Following the same path as the original, secure the condenser fan motor cable with cable ties as necessary.
5. Reassemble and test.

Procedure 19: To replace the condenser fan motor

Before you start

1. If a customer reports a “not cooling” fault, and it has been established that the cabinet is not cooling, follow the “On-site Work Procedure” on page 48 when making the service visit.
2. Make sure you take note of the original condenser fan motor cable’s path, e.g. a photo.

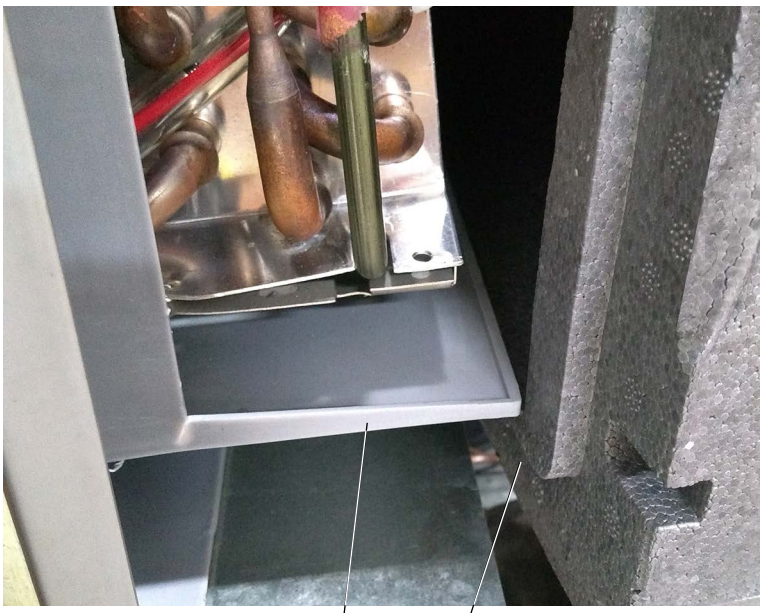
1. Remove the condenser fan assembly and the fan blade (see Procedure 17, on page 38).
2. Detach the fan motor from the fan mounting brackets by removing the four screws from the mounting bracket.
3. Fit new motor and reattach fan blade with a 12 mm flat washer and serrated head screw. Tighten the blade to 1.4 Nm (the recommended torque setting).
4. Refit the condenser fan assembly to the cartridge. Following the same path as the original cable, secure the condenser fan motor cable with cable ties as necessary.
5. Reassemble and test.

Evaporator Tub

The evaporator tub is screwed onto the evaporator assembly via plastic corner brackets, and is supported with a metal strap which wraps around the tub and screws onto the evaporator assembly.

Only remove the evaporator tub if it is strictly necessary, not for routine maintenance.

When refitting the tub, start at the bottom and take care with the plastic drain tray which could damage the tub if misaligned.



Evaporator Fan

The evaporator fan assembly is a one piece assembly which can be replaced if necessary. The fan assembly is fixed to evaporator shroud with screws and metal bars.

If the fan stops for any reason, check all connections to ensure no plugs have come loose.

IMPORTANT

Replace the motor with the same SKOPE OEM part.
DO NOT use alternative parts.

It is important that the assembly is replaced with the same part to ensure safety, correct alignment and refrigeration performance, and compliance.

Procedure 20: To access and replace the evaporator fan assembly

Before you start

1. If a customer reports a “not cooling” fault, and it has been established that the cabinet is not cooling, follow the “On-site Work Procedure” on page 48 when making the service visit.
2. Make sure you take note of the original evaporator fan motor cable’s path, e.g. a photo.

1. Remove the cartridge from the cabinet (see page 31).

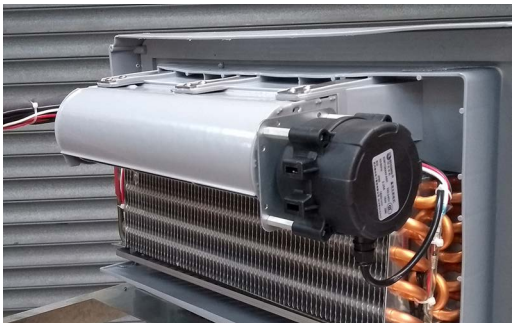
2. Unscrew and remove the evaporator tub strap (2 × screws at each end of the strap).

3. Unscrew and gently remove the evaporator tub (4 × screws, 1 at each corner).

4. Cut the cable ties holding the evaporator fan motor cable along the cartridge, and free up the evaporator fan motor cable.

Procedure 20: To access and replace the evaporator fan assembly (continued)

5. Unscrew the fan assembly (6 × screws located on top of assembly) and replace it.
   Ensure the metal bars at the top of the assembly are reused when refixing the fan assembly.



6. Following the same path as the original cable, secure the evaporator fan motor cable with cable ties as necessary.
7. Reassemble and test.

Compressor

The compressor is located at the back of the refrigeration cartridge. It must be supplied with consistent voltage over 220 volts.

If considering replacing the compressor (e.g. it is causing excessive noise, it has a distinctive hissing sound and is running with a very hot body temperature, it is not going):

- check the mountings to ensure there is no damage to the rubber or the washers, nuts and screws.
- check all plug connections and ensure the electrics are operating correctly.
- ensure the voltage is not dropping at start-up. If the voltage does drop, ensure the cartridge has a direct power supply (not from a multi-box or extension cord).

IMPORTANT

To eliminate possible vibration noise, ensure no pipes touch the cartridge housing and condenser assembly.

Defrost Element

Electric defrosting is used for both fridges and freezers. Defrost parameters vary depending on product type, and can be reviewed in the SCS Connect Field app.

Note: The freezer model design was updated in May 2020 to have two defrost elements on the evaporator coil: one located on the base and one on the rear face of the coil.

The cartridge is fitted with a defrost element which can be replaced if necessary. The element is located within the evaporator assembly, below the evaporator coil.

Procedure 21: To replace the defrost elements

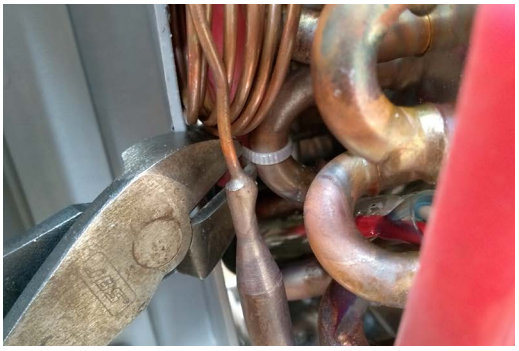
Before you start

1. If a customer reports a “not cooling” fault, and it has been established that the cabinet is not cooling, follow the “On-site Work Procedure” on page 48 when making the service visit.
2. Make sure you take note of the original defrost element cable’s path, e.g. a photo.

1. Remove the cartridge from the cabinet (see page 31).
2. Gain access to the evaporator fan assembly (see steps 2 and 3, Procedure 20, on page 40).

Procedure 21: To replace the defrost elements

3. Carefully cut the cable ties to release the defrost element from the evaporator coil and pipes.
   Trace the cable back to electrics panel, cutting cable ties as required.



4. Remove the element on the base:
   - Drill out the rivets securing the element tray using a non-sparking brushless drill.
   - Gently remove the element tray from the evaporator coil feet, and carefully move the element out from under the coil.

5. Remove the element on the rear face of the coil by unclipping it without tools.

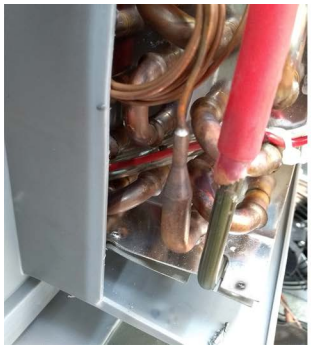
6. Fit the replacement elements.
   - Base element: rivet in place. Install the element cable following the same path as the original cable. Secure with cable ties as necessary.
   - Rear element: clip back in place without using tools. Install the element cable following the same path as the original cable. Secure with cable ties as necessary

7. Reassemble and test.

Defrost Element Fuses

The element is fitted with two thermal fuses (one at each end of the evaporator coil). If a fuse fails, diagnostic work to determine the cause of failure is required.

If the evaporator probe fails, the defrost element thermal fuse may activate due to prolonged defrosting. Due to this, if you replace the evaporator probe, you must check the resistance of the thermal fuse, and replace it if required.



Procedure 22: To check fuse resistance

1. Unplug the cabinet from the mains power supply (see page 24).
2. Unscrew and remove the front panel.
3. Unplug the defrost element plug from the top of the electrics box (yellow 4-way).
4. Use a multimeter to check for resistance across the defrost element plug connections. If open circuit, replace the fuses.

Electronic Controller

The electronic controller and electrics panel (including the light power supply) is matched to the cabinet, and must be left with the cabinet when exchanging the cartridge. Replacement spare part cartridges are not supplied with controller and electrics panel.

Different controller parameter sets are used across different models. Ensure the controller is set up with the correct parameter set for the cabinet model (see Table 4, “Controller parameters,” on page 16).

Controller Location

The electronic controller is located on the electrics panel at the front of the refrigeration cartridge.

Procedure 23: To access and remove the controller

1. Disconnect the cabinet from the mains power supply (see page 24).
2. Remove the cartridge cover from the cabinet.
3. To remove the controller, press and hold the tabs on each side of the electronic controller to unlock, and push the controller through the front of the controller box.
4. Unplug the electronic controller from the cartridge.

Replacing the Controller

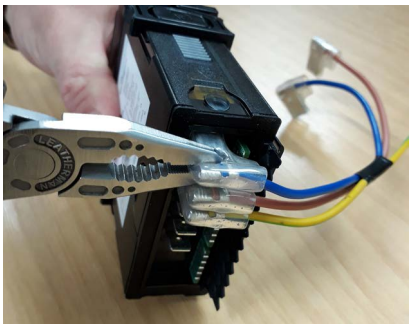
Follow the steps below to replace the controller.

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.

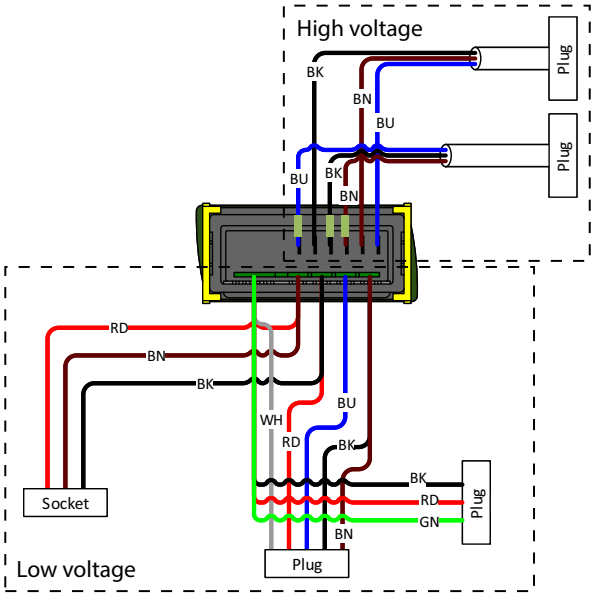
Procedure 24: To replace the controller

1. Disconnect the cabinet from the mains power supply and access the electronic controller (see Procedure 23, on page 43).

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



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



4. Reassemble, perform an electrical safety test, and reconnect to the mains power supply.

5. Use a mobile device to connect to the controller with the SCS Connect Field app (see Procedure 2, “To connect to a controller,” on page 14).

6. Navigate to the LOAD PARAMETER FILE menu.

7. Select the appropriate parameter file from LOCAL. If not available in LOCAL, search for the parameter file in SERVER (internet access required), and download to LOCAL.

8. Confirm correct file and WRITE TO SCS.

9. After WRITE TO SCS is complete, select MENU DISCONNECT to save parameter set on SCS.

Procedure 24: To replace the controller (continued)

10. Power cycle the controller, reconnect via SCS Connect Field app and check that correct parameter set has been applied (see Table 4, “Controller parameters,” on page 16).
11. Navigate to the SCS SETUP menu and select the model (as per the cabinet rating label).
12. Set up controller and cabinet links as required:
    - **Corporate**
      The service tech must link to the controller to the cabinet serial number in the SCS Connect Field app.
    - **General Market**
      The owner must set up SKOPE-connect (if in use).

Door Switch

The cabinet is fitted with a door switch above each door, which tells the electronic controller when a door is opened. A small magnet on the top edge of the door activates the switch.

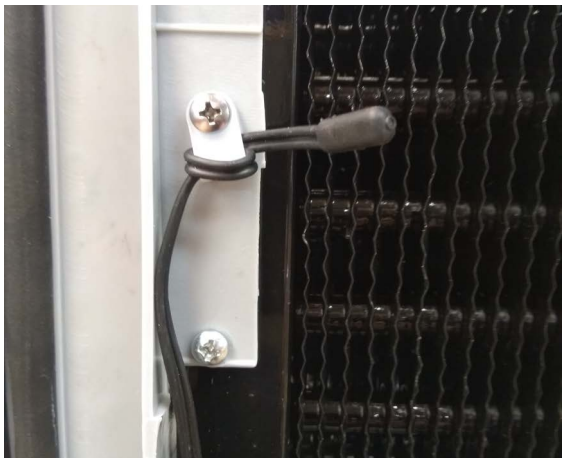
Procedure 25: To replace the door switch

1. Disconnect the cabinet from the mains power supply.
2. Unscrew the 2 screws and remove the door switch cover.
3. Unplug and replace the door switch.
4. Refit the cover.

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

Control Probe

The control probe is clipped to the inside of the evaporator assembly.



Procedure 26: To replace the control probe

Before you start
Make sure you take note of the original control probe cable's path, e.g. a photo.

1. Remove the cartridge from the cabinet (see page 31).
2. Gain access to the evaporator fan assembly (see steps 2 to 3, Procedure 20, on page 40).
3. Carefully cut cable ties to release the probe cable. Detach the probe from the evaporator assembly, trace back to its connector and unplug it.
4. Replace the probe. Following the same path as the original probe, fit the new probe with cable ties as necessary. Ensure the probe cable is securely connected and cable tied in place.
5. Reassemble 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.

If the evaporator probe fails, the defrost element thermal fuses may activate due to prolonged defrosting. Due to this, if you replace the evaporator probe, you must check the resistance of the thermal fuses and replace them if required (see Procedure 21, on page 41).

Procedure 27: To replace the evaporator probe

Before you start
Make sure you take note of the original evaporator probe cable's path, e.g. a photo.

1. Remove the cartridge from the cabinet (see page 31).
2. Gain access to the evaporator fan assembly (see steps 2 to 3, Procedure 20, on page 40).
3. Carefully cut cable ties to release the probe cable. Carefully separate the coil fins around the probe, withdraw the probe from the evaporator coil, trace back to its connector and unplug it.
4. Replace the probe. Following the same path as the original probe, fit the new probe with cable ties as necessary.
5. Ensure the probe is put in the same location (between the 4th and 5th fins), secured in place with the evaporator fins, and that the probe cable is securely connected and cable-tied in place.
6. Reassemble and test for correct operation.

Condenser Probe

The condenser probe is located on the side of the condenser coil.

Procedure 28: To replace the condenser probe

Before you start
Make sure you take note of the original condenser probe cable's path, e.g. a photo.

1. Disconnect the cabinet from the mains power supply (see page 24).
2. Remove the refrigeration cartridge (see page 31).
3. Carefully cut the cable ties to release the probe cable. Detach the probe from the side of the condenser coil, trace the probe cable back to its connector, and unplug it.
4. Following the same path as the original probe, run the new probe to the condenser coil and secure with cable ties. Position the probe in the same location as the original probe.
5. Reassemble and test for correct operation.

Ambient Probe

The ambient probe is located in front of the condenser coil. It monitors the temperature around the refrigeration cartridge. **Note**: The ambient probe is wired in series with the door switch.

Procedure 29: To replace the ambient probe

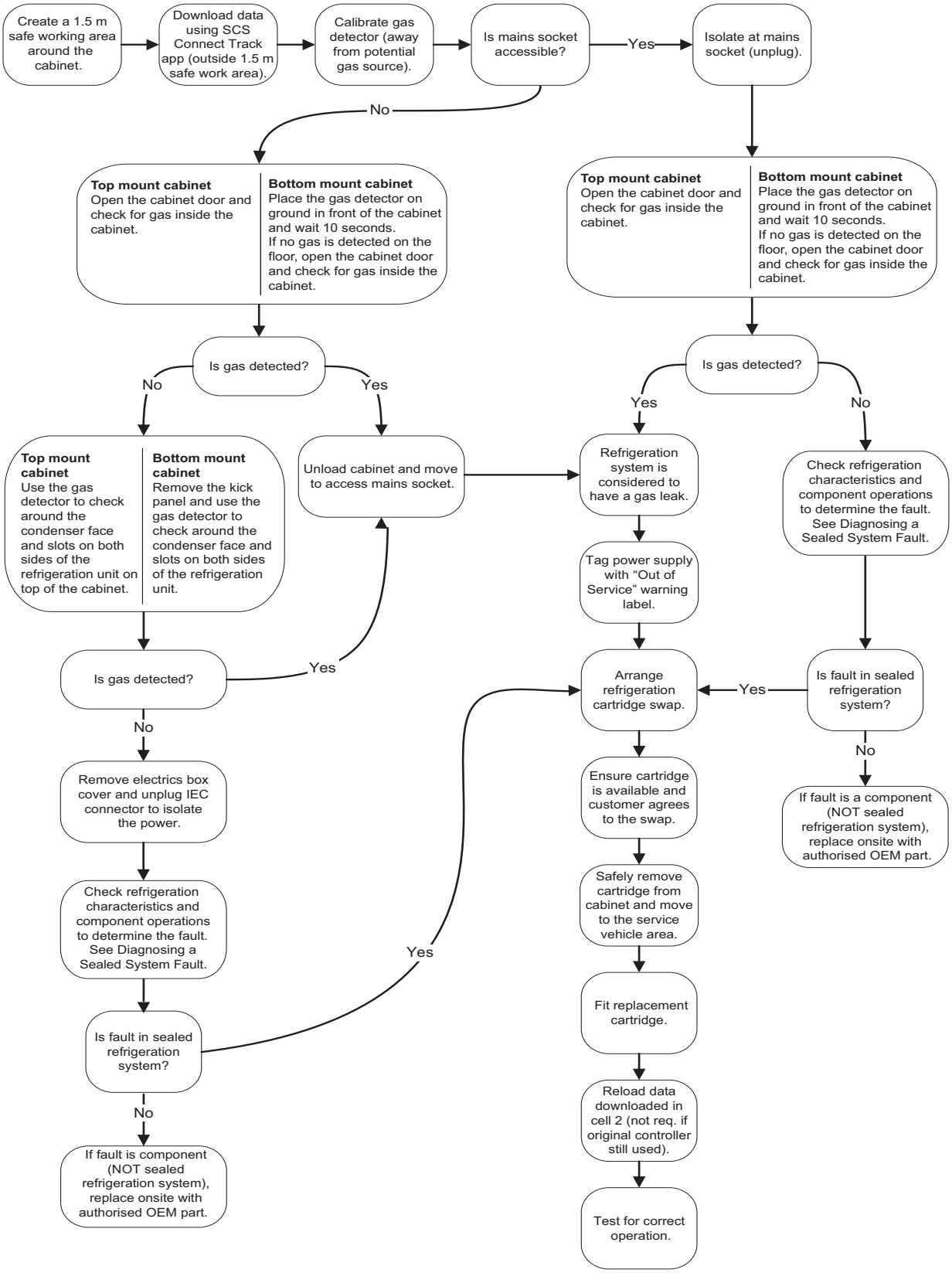
Before you start
Make sure you take note of the original ambient probe cable's path, e.g. a photo.

1. Disconnect the cabinet from the mains power supply (see page 24).
2. Remove the refrigeration cartridge (see page 31).
3. Carefully cut cable ties to release the probe cable. Detach the probe from the front of the cartridge, trace the probe cable back to its connector, and unplug it.
4. Following the same path as the original probe, run the new probe to the condenser coil and secure with cable ties. Position the probe in the same location as the original probe.
5. Reassemble and test for correct operation.

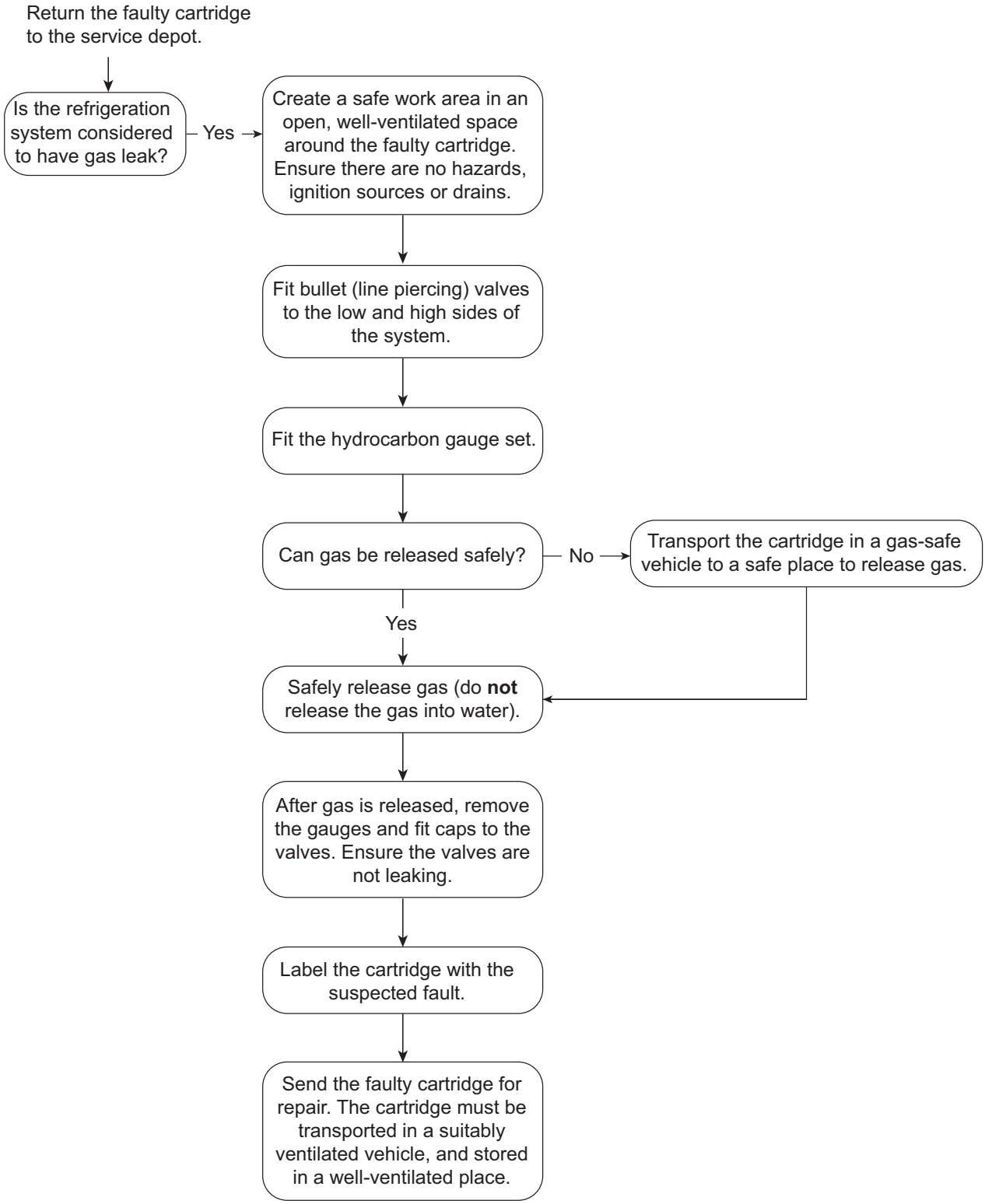
On-site Work Procedure

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

Swap Cartridge



Return Faulty Cartridge



7 Spare Parts

Cabinet Assembly

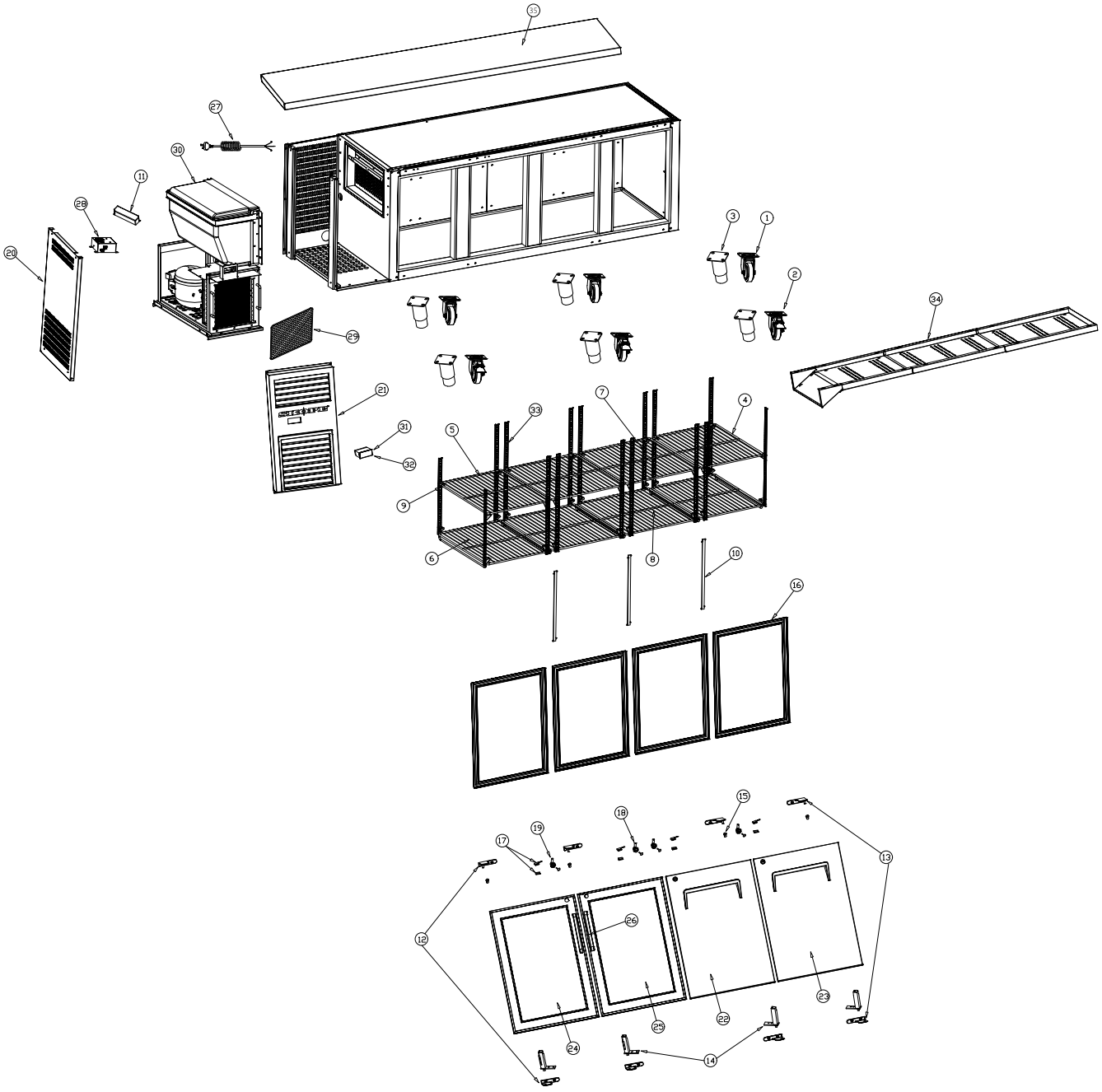


Table 11: Parts – Cabinet assembly

No.	Description	Part No.	RF7.UBR.2.GD	RF7.UBR.2.SD	RF7.UBR.2XL.SD	RF7.UBF.2.SD	RF7.UBR.3.GD	RF7.UBR.3.SD	RF7.UBF.3.SD	RF7.UBR.4.GD	RF7.UBR.4.SD
1	CASTOR-UNBRAKED	KN-SXX11990	2	2	2	2	2	2	2	3	3
2	CASTOR-BRAKED	KN-SXX11991	2	2	2	2	2	2	2	3	3
3	FOOT ADJUSTABLE UB	KN-SXX12132	4	4	4	4	4	4	4	6	6
4	SHELF SET-2DR U/BENCH	KN-WRK11995	1	1		1					
	SHELF SET-3DR U/BENCH	KN-WRK11996					1	1	1		
	SHELF SET-4DR U/BENCH	KN-WRK11997								1	1
	SHELF SET-1500 U/BENCH	KN-WRK12618			1						
5	SHELF-U/BENCH SIDE TOP 396 × 510	KN-WRK12029	2	2		2	2	2	2	2	2
	SHELF-U/BENCH TOP	KN-WRK12619			2						
6	SHELF-U/BENCH SIDE BOT 396 × 510	KN-WRK12030	2	2		2	2	2	2	2	2
	SHELF-U/BENCH BOT	KN-WRK12620			2						
7	SHELF-U/BENCH MID TOP 454 × 510	KN-WRK12031					1	1	1	2	2
8	SHELF-U/BENCH MID BOT 454 × 510	KN-WRK12032					1	1	1	2	2
9	SHELF-CLIP	KN-SSY11998	8	8	8	8	12	12	12	16	16
10	LIGHT-LED-UB	KN-ELL12000	1	1	1	1	2	2	2	3	3
11	POWER SUPPLY-LPF-16	KN-ELZ12002	1	1	1	1	1	1	1	1	1
12	HINGE SET-LH-UB	KN-HIN12007	1	1	1	1	1	1	1	1	1
13	HINGE SET-RH-UB	KN-HIN12008	1	1	1	1	1	1	1	1	1
14	HINGE-SELF CLOSING	KN-HIN12021	2	2	2	2	3	3	3	4	4
15	BUSH DOOR UB TOP	KN-PLM12133	2	2	2	2	3	3	3	4	4
16	GASKET-DOOR-UB	KN-GKT12012	2	2		2	3	3	3	4	4
	GASKET-DOOR-1500 U/B	KN-GKT12621			2						
17	KIT-DOOR SENSOR	KN-ELS12013	2	2	2	2	3	3	3	4	4
18	KIT-LOCK PIN AND KEY-UB	KN-SXX12015		2	2	2		3	3		4
19	KIT-LOCK PIN AND KEY-UB GD	KN-SXX12137	2				3			4	
20	CABINET PANEL-UB-LH	KN-STY12019	1	1	1	1	1	1	1	1	1
21	CABINET PANEL-LOUVRE-UB	KN-STY12020	1	1	1	1	1	1	1	1	1
22	DOOR-SOLID-LH-U/BENCH	KN-SDR12025-LH		1		1		2	2		2
	DOOR-SOLID-LH-1500 U/BENCH	KN-SDR12622-LH			1						
23	DOOR-SOLID-RH-U/BENCH	KN-SDR12025-RH		1		1		1	1		2
	DOOR-SOLID-RH-1500 U/BENCH	KN-SDR12623-RH			1						
24	DOOR-GLASS-LH-U/BENCH	KN-GLD12134	1				2			2	
25	DOOR-GLASS-RH-U/BENCH	KN-GLD12135	1				1			2	
26	HANDLE-DOOR-GLASS-UB	KN-HAN12136	2				3			4	
27	MAINS FLEX AUS/NZ 3M	KN-FLX12138	1	1	1	1	1	1	1	1	1
	MAINS FLEX UAE 3M	KN-FLX12138-AE	1	1	1	1	1	1	1	1	1
28	WIRING BOX-U/BENCH	KN-ELZ12142	1	1	1	1	1	1	1	1	1
29	FILTER CONDENSER 224 × 257	KN-FIL12144	1	1	1	1	1	1	1	1	1
30	REFRIGERATION UNIT UBR	ULKCNI-0021-P		1	1						
	REFRIGERATION UNIT UBR	ULKCNI-0022-P						1			1
	REFRIGERATION UNIT UBF	ULKDNI-0023-P				1			1		
	REFRIGERATION UNIT UBR-GD	ULKCNI-0027	1								
	REFRIGERATION UNIT UBR-GD	ULKCNI-0028					1			1	
31	CONTROLLER WDTL	ELZ11749 - 1627	1	1	1	1	1	1	1	1	1

Table 11: Parts – Cabinet assembly (continued)

No.	Description	Part No.	RF7.UBR.2.GD	RF7.UBR.2.SD	RF7.UBR.2XL.SD	RF7.UBF.2.SD	RF7.UBR.3.GD	RF7.UBR.3.SD	RF7.UBF.3.SD	RF7.UBR.4.GD	RF7.UBR.4.SD
32	CONTROLLER PROGRAM 610	ELZ11749-610		1	1						
	CONTROLLER PROGRAM 611	ELZ11749-611						1			1
	CONTROLLER PROGRAM 612	ELZ11749-612				1			1		
	CONTROLLER PROGRAM 614-GD	ELZ11749-614	1								
	CONTROLLER PROGRAM 615-GD	ELZ11749-615					1			1	
33	SHELF SUPPORT STRIP UB	KN-SXX12624	8	8	8	8	12	12	12	16	16
34	DUCT SET-2DR UB	KN-STY12154	1	1		1					
	DUCT SET-3DR UB	KN-STY12155					1	1	1		
	DUCT SET-4DR UB	KN-STY12156								1	1
	DUCT SET-1500 UB	KN-SSY12625			1						
35	BENCH TOP-2DR UB	KN-STY12157	1	1		1					
	BENCH TOP-3DR UB	KN-STY12158					1	1	1		
	BENCH TOP-4DR UB	KN-STY12159								1	1
	BENCH TOP-1500 UB	KN-SSY12626			1						
–	CONTROLLER WINDOW	PLY12470	1	1	1	1	1	1	1	1	1

Cabinet Drawer Assembly

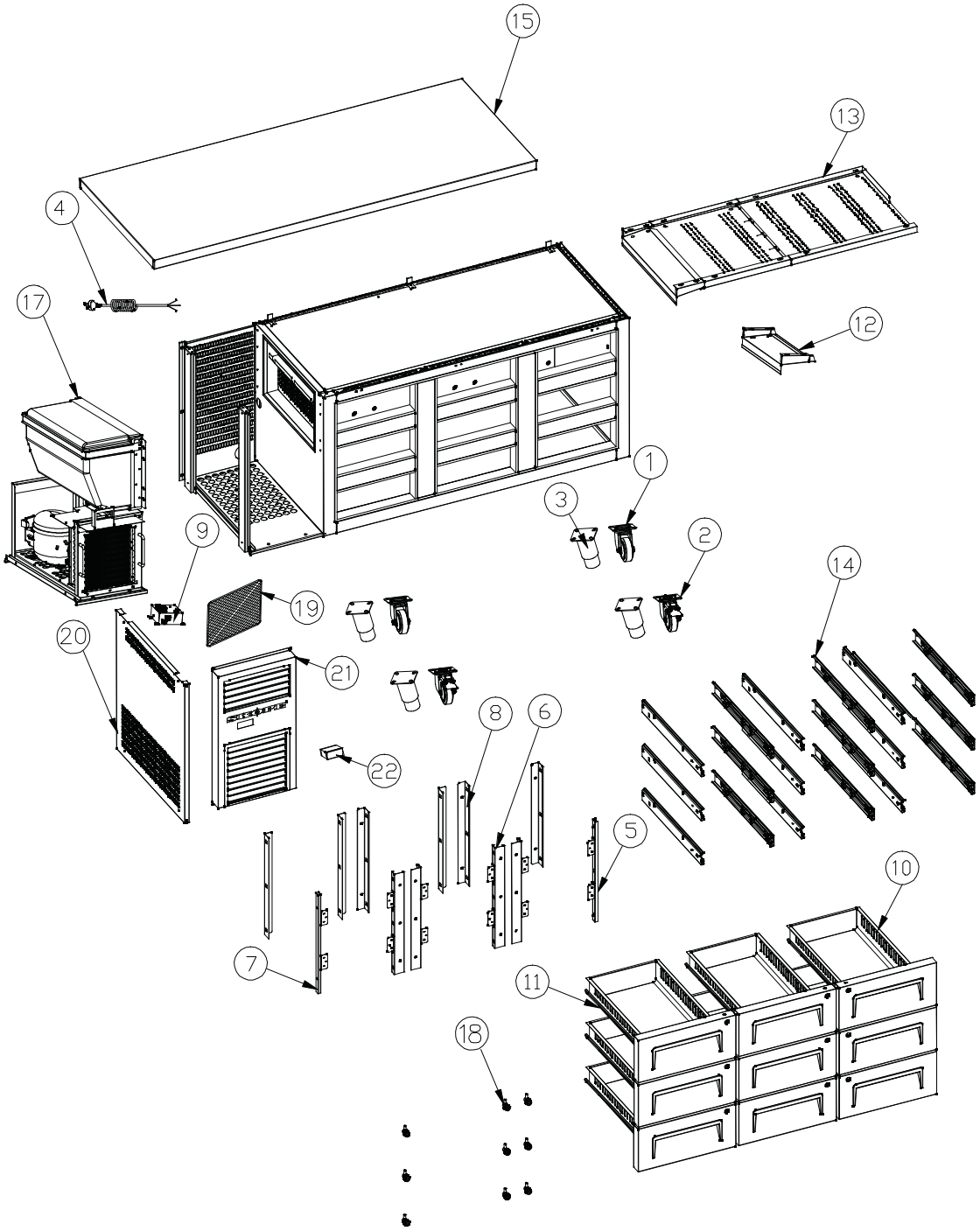


Table 12: Parts – Cabinet drawer assembly

No.	Description	Part No.	RF7.UBR.2.D6	RF7.UBR.3.D9
1	CASTOR-UNBRAKED	KN-SXX11990	2	2
2	CASTOR-BRAKED	KN-SXX11991	2	2
3	FOOT ADJUSTABLE UB	KN-SXX12132	4	4
4	MAINS FLEX AUS/NZ UP 3M	KN-FLX12138	1	1
5	DRAWER RAIL FRONT RH	KN-SSY12240R	1	1
6	DRAWER RAIL FRONT CENTRE	KN-SSY12240C	2	4
7	DRAWER RAIL FRONT LH	KN-SSY11240L	1	1
8	DRAWER RAIL REAR	KN-SSY11240B	4	6
9	WIRING BOX-U/BENCH	KN-ELZ12142	1	1
10	DRAWER ASSEMBLY-LH LOCK	KN-SSY12242L	3	6
11	DRAWER ASSEMBLY-RH LOCK	KN-SSY12242R	3	3
12	DUCT SET – 6 DRAWER	KN-SSY11244	1	
13	DUCT SET – 9 DRAWER	KN-SSY12243		1
14	DRAWER SLIDE-PAIR	KN-SSY12246	6	9
15	BENCH TOP-D6 UB	KN-SSY12253	1	
	BENCH TOP-D9 UB	KN-STY12157		1
16	GASKET-DRAWER-UB	KN-GKT12245	6	9
17	REFRIGERATION CARTRIDGE	ULKCNI-0041		1
	REFRIGERATION CARTRIDGE	ULKCNI-0040	1	
18	KIT-LOCK PIN AND KEY-UB	KN-SXX12015	6	9
19	FILTER CONDENSER U/BENCH	KN-FIL12144	1	1
20	CABINET PANEL-UB-LH	KN-STY12019	1	1
21	CABINET PANEL-LOUVRE-UB	KN-STY12020	1	1
22	CONTROLLER WDTL	ELZ11749 - 1627	1	1

Cartridge Assembly

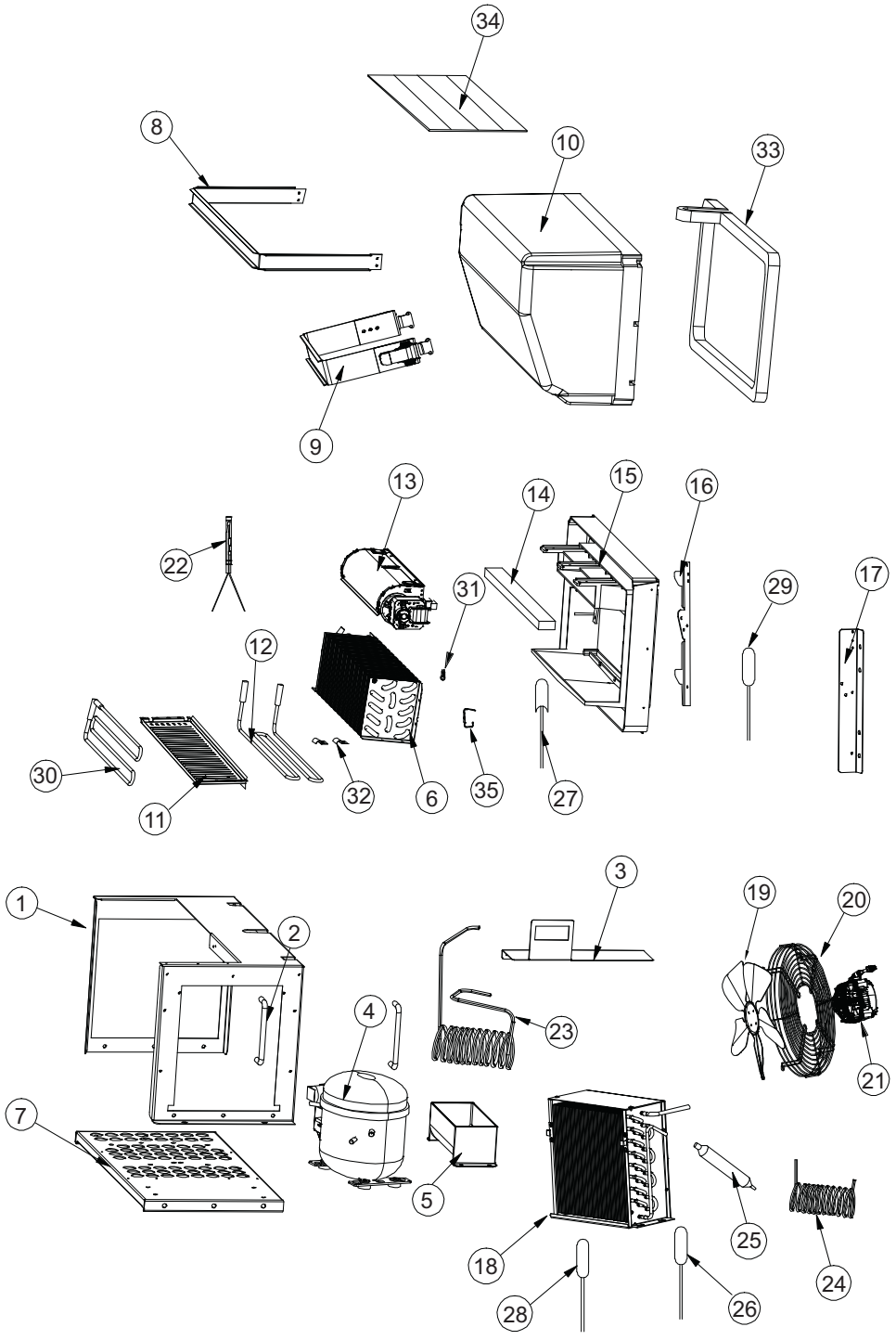


Table 13: Parts – Cartridge assembly

No.	Description	Part No.	RF7.UBR.2.GD/SD RF7.UBR.2XL.SD **ULKCNI-0027-P** (GD) **ULKCNI-0021-P** (SD)	RF7.UBF.2.SD **ULKDNI-0023-P**	RF7.UBR.3.GD/SD **ULKCNI-0028-P** (GD) **ULKCNI-0022-P** (SD)	RF7.UBF.3.SD **ULKDNI-0023-P**	RF7.UBR.4.GD/SD **ULKCNI-0028-P** (GD) **ULKCNI-0022-P** (SD)	RF7.UBR.2.D6 **ULKCNI-0040-P**	RF7.UBR.3.D9 **ULKCNI-0041-P**
1	UNIT FRAME	KN-SXX12120	✓	✓	✓	✓	✓	✓	✓
2	HANDLE UNIT UB	KN-HAN12121	✓	✓	✓	✓	✓	✓	✓
3	CONTROLLER MOUNTING PLATE	KN-SXX12122	✓	✓	✓	✓	✓	✓	✓

Table 13: Parts – Cartridge assembly (continued)

No.	Description	Part No.	RF7.UBR.2.GD/SD RF7.UBR.2XL.SD **ULKCNI-0027-P** (GD) **ULKCNI-0021-P** (SD)	RF7.UBF.2.SD **ULKDNI-0023-P**	RF7.UBR.3.GD/SD **ULKCNI-0028-P** (GD) **ULKCNI-0022-P** (SD)	RF7.UBF.3.SD **ULKDNI-0023-P**	RF7.UBR.4.GD/SD **ULKCNI-0028-P** (GD) **ULKCNI-0022-P** (SD)	RF7.UBR.2.D6 **ULKCNI-0040-P**	RF7.UBR.3.D9 **ULKCNI-0041-P**
4	COMPRESSOR EM2X3117U	KN-CPR12098	✓					✓	
	COMPRESSOR NEU2168U	KN-CPR12123		✓		✓			
	COMPRESSOR EM2X3125U	KN-CPR12100			✓		✓		✓
5	CONDENSATE TRAY	KN-SXX12124	✓	✓	✓	✓	✓	✓	✓
6	COIL EVAPORATOR 4R5K372L	KN-CLS12125	✓					✓	
	COIL EVAPORATOR 5R5K372L	KN-CLS12126		✓	✓	✓	✓		✓
7	UNIT BASE UB	KN-SXX12127	✓	✓	✓	✓	✓	✓	✓
8	RETAINING STRAP EVAP TUB	KN-SXX12128	✓	✓	✓	✓	✓	✓	✓
9	RETAINING STRAP ASSY-TUB	KN-STY12264		✓		✓			
10	EVAPORATOR TUB UB	KN-SXX12083	✓	✓	✓	✓	✓	✓	✓
11	DEFROST TRAY UB – FRIDGE	KN-SXX12082	✓		✓		✓	✓	✓
	DEFROST TRAY UB – FREEZER	KN-SXX12636		✓		✓			
12	HEATER ELEMENT DEFROST UB 150W	KN-ELE12080	✓		✓	✓	✓	✓	✓
	HEATER ELEMENT DEFROST UB 250W	KN-ELE12081		✓					
13	FAN ASSEMBLY EVAPORATOR	KN-ELM12079	✓	✓	✓	✓	✓	✓	✓
14	PORT DIVIDER	KN-SXX12078	✓	✓	✓	✓	✓	✓	✓
15	EVAPORATOR HOUSING	KN-SXX12077	✓	✓	✓	✓	✓	✓	✓
16	MOUNTING BRACKET REAR	KN-SXX12076	✓	✓	✓	✓	✓	✓	✓
17	MOUNTING BRACKET FRONT	KN-SXX12075	✓	✓	✓	✓	✓	✓	✓
18	COIL CONDENSER 3R9K210L	KN-CLS12103	✓					✓	
	COIL CONDENSER 5R10K210L	KN-CLS12074		✓		✓			
	COIL CONDENSER 4R10K210L	KN-CLS12129			✓		✓		✓
19	FAN BLADE DIA 200 V28	KN-FAN12096	✓	✓	✓	✓	✓	✓	✓
20	FAN GUARD/MOTOR MOUNT	KN-SXX12102	✓	✓	✓	✓	✓	✓	✓
21	FAN MOTOR WDTL ECR2-0361	ELM11309	✓	✓	✓	✓	✓	✓	✓
22	THERMAL FUSE	KN-ELZ12110	✓	✓	✓	✓	✓	✓	✓
23	CONDENSATE LINE UB	KN-COT12130	✓	✓	✓	✓	✓	✓	✓
24	CAPILLIARY DIA 1 × 3000	KN-COT12111	✓					✓	
	CAPILLIARY DIA 1.17 × 4000	KN-COT12113			✓		✓		✓
	CAPILLIARY DIA 1 × 2500	KN-COT12131		✓		✓			
25	DRIER DIA 3.1-DIA 6.2-B	KN-DRY12107	✓	✓	✓	✓	✓	✓	✓
26	PROBE CONDENSER	KN-ELZ12116	✓	✓	✓	✓	✓	✓	✓
27	PROBE EVAPORATOR	KN-ELZ12117	✓	✓	✓	✓	✓	✓	✓
28	PROBE AMBIENT	KN-ELZ12118	✓	✓	✓	✓	✓	✓	✓
29	PROBE CABINET	KN-ELZ12119	✓	✓	✓	✓	✓	✓	✓
30	HEATER ELEMENT DEFROST UB 150 W	KN-ELE12265		✓		✓			
31	P CLIP	KN-SXX12266		✓		✓			
32	SADDLE CLAMP	KN-SXX12267							
33	INSEAL TAPE STRIP (12 × 5 × 2000mm)	KN-RUE12238		✓		✓			
34	INSEAL TAPE STRIP (60 × 3 × 2100mm)	KN-RUE12268	✓		✓		✓	✓	✓
35	BRACKET-PROBE	KN-SXX12269		✓		✓			
–	KIT REFLEX UBF FIELD UPDATE	REFLEX-FIELD-UPDATE-KIT				✓			
–	KIT REFLEX UBF STOCK UPDATE	REFLEX-STOCK-UPDATE-KIT				✓			

8 Maintenance

Drawers

Where fitted, drawers should be removed for cleaning. Pull the drawer out of the cabinet, release latches at side of drawer as shown, and lift the drawer out at an angle. The drawer slider can also be removed by releasing the side catches as shown. Reverse operation to refit drawers to cabinet after cleaning. (see “Drawers” on page 9).

Cabinet

Ensure the cabinet is disconnected from the mains power supply before cleaning.

Wipe the outside of the cabinet with a damp cloth, and the inside of the cabinet with standard stainless steel cleaners suitable for food preparation areas. Take care to keep moisture away from electrical parts.

IMPORTANT

Do **NOT** use abrasive, corrosive or solvent based cleaners, as this could damage the protective coating on the cabinet exterior.

Condenser Coil

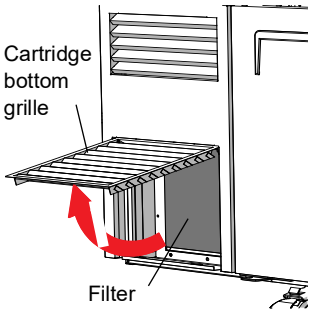
The condenser coil must be kept clean. SKOPE strongly recommends monthly cleaning of the condenser coil and air filter. Do NOT use hard or sharp tools to clean the coil as these may cause damage.

WARNING

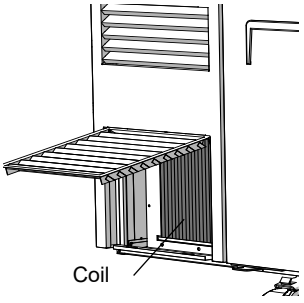
Unplug the cabinet from the mains power supply before cleaning the condenser coil.

Procedure 30: To clean the condenser coil and condenser filter

1. Disconnect the cabinet from the mains power supply.
2. The filter is located behind the cartridge bottom grille. Rotate the grille out and slide the filter up and off the cabinet.
3. Clean the filter with a vacuum cleaner, wash with cold water and shake off any excess water before refitting. Do **NOT** apply hot water, blow-dry or place in dishwasher. If necessary, discard and refit new filter.



4. With the cabinet disconnected from the mains power supply and the filter removed (see steps above), brush the condenser coil with a soft brush to remove any dust and fluff.
5. Refit the filter, close the bottom grille and reconnect to the mains power supply.



9 Troubleshooting and Diagnostics

Electronic Controller

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

Cabinet and Refrigeration Cartridge

For problems with the cabinet and refrigeration cartridge use Table 14.

Table 14: Cabinet and cartridge troubleshooting

Problem	Possible cause	Recommended action
• Cabinet not operating • No controller display	• Loss of power supply	• Check the mains power supply.
	• Loose plug	• Check that all plugs are connected correctly.
• Cabinet not operating as usual • Defrost cycle incorrect length	• Incorrect parameters	AoFrio: Reload the parameter set.
• Fan not working	• Loose plug	Check all plugs are connected correctly.
• Lights not on	• Electronic controller is in Night mode	• 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	• Switch the light on via the app, or the light button on the electronic controller faceplate.
	• 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.
• Segment of light not working	• 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 tub bottom surface, evaporator tub support legs, plastic base, or condenser coil assembly.
	• Refrigeration check valve (only present at low compressor speed)	No action. This is not a fault.
• Excess compressor noise	• Noise variation is usual as the variable speed compressor speed changes	No action. This is not a fault.
	• Damaged mountings	Check the mountings to ensure there is no damage to the rubber, or the washers, nuts or screws.

Table 14: Cabinet and cartridge troubleshooting (continued)

Problem	Possible cause	Recommended action
• Compressor not operating	• Compressor electrics	• 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	Check and replace the evaporator probe.
	• Setpoint is too low	Check and raise the setpoint.
	• Electronic controller fault	Replace the controller.
	• Short of refrigerant	Perform refrigeration system diagnostics and service as required.
• Ice build-up inside the evaporator tub	• Leaking cartridge seal	Check that the evaporator tub seals are fully clamped, and the cabinet top seal is good without gaps. Micro-gaps will allow ice build-up in the cabinet.
• Ice build-up inside cabinet	• Cabinet door is opened too often	Unplug the cabinet and thaw any visible ice.
• Power consumption is higher than expected	• Cabinet door is opened too often	Ensure the door is closed more often.
	• Cartridge is operating too hot	• Clean the condenser. • Ensure the cabinet has good ventilation around the refrigeration cartridge. • Ensure the cabinet is within the maximum operating temperature.
	• Product is too cold	Raise the setpoint.
• Product is too warm	• Door not closing properly	• Check and clean the door gasket. • Ensure the cabinet is on a level surface. • Check the torsion bar adjustment.
	• Excessive door opening	Limit door openings.
	• 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.
	• 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.
	• Cartridge is operating too hot • Excessive refrigeration heat load	• Ensure the cabinet has good ventilation around the refrigeration cartridge. • Ensure the cabinet is within the maximum operating conditions.
	• Setpoint is too high	Lower the setpoint.
	• The cabinet is recently loaded	Allow the product time to cool down.
	• The cabinet is overstocked	• Remove some product. • Product must not hang over the shelves.
	• 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.
• Moisture build up on cabinet exterior	• Frequent door opening	Limit door openings.
	• Door not closing properly	• Check and clean the door gasket. • Ensure the cabinet is on a level surface. • Check the torsion bar adjustment.
	• High humidity	Check the ambient operating temperature and reposition the cabinet if necessary.

Table 14: Cabinet and cartridge troubleshooting (continued)

Problem	Possible cause	Recommended action
• Cabinet door does not close properly	• Cabinet is on an uneven surface	Level the cabinet.
	• Door is obstructed	Check the shelves and product.
	• Door gasket is dirty	Check and clean the door gasket.
• Warm cabinet temperatures • Compressor operating for long periods (more than 1 hour)	• Blocked condenser coil	Clean the condenser coil.
	• Poor ventilation around the refrigeration cartridge	• Ensure the cabinet has good ventilation around the refrigeration cartridge. • Ensure the cabinet is within the maximum operating temperature.

SKOPE Contacts

SKOPE Industries Limited

ABN: 73 374 418 306
AU: 1800 121 535
NZ: 0800 947 5673
skope@skope.com
www.skope.com