OD1100N

SKOPE Open Deck Fridge
Hydrocarbon

Service Manual

SKOPE®
Refrigeration

OD1100N
SKOPE Open Deck Fridge
Service Manual

MAN80336
Rev. 1.1 Sep. 2022

SKOPE® is a registered trademark of SKOPE Industries Limited.
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
- Applies any other trade mark to the product
- Adds to the product any written material that is likely to damage the reputation of the trade mark

Notice of the above contractual obligations passes to:
- Successors or assignees of the buyer
- Future owners of the product

Contents

1 Specifications

OD1100N See also the relevant specification sheets on the SKOPE website (www.skope.com):

- PSS1040 – Open Deck Fridge with High Sign
- PSS1041 – Open Deck Fridge with Low Sign

Cabinet

Description	Free-standing Open Deck Fridge		
SKOPE ID	O11CLN		
Dimensions	**External**		**Internal**
Height (mm)	2204 (high sign)	2019 (low sign)	1432
Width (mm)	1272		1191
Depth (mm)	836 (includes 50 mm spacer)		628
Floor area (m^2)	1.06 (includes 50 mm spacer)		
Capacity (L)	1071		
Shelves	4 adjustable angle (8° or flat), adjustable height shelves + 1 adjustable angle (8° or flat) bottom shelf. Optional gravity feed system available. Top two shelves: 1170W × 360D, middle two shelves: 1170W × 380D, bottom shelf: 1179W × 400D		
Operating conditions			
Maximum ambient temperature	25°C @ 60% relative humidity (Climatic Class 3)		
Product temp. range	-1°C to +5°C		
Electrical	220-240 volts a.c. 50 Hz, single phase supply		
Current draw (A)	5.8		
Sign lighting	1 × 7.5 W sign light		
Internal lighting	5 × 7.5 W LED shelf lights		

Refrigeration Cartridge

Description	R290 (hydrocarbon) Open Deck Cartridge
Cartridge model	UBQENI-0052
Compressor	Embraco NT6230U
Controller	SCS Connect
Nominal capacity (W)	2100
Refrigerant	R290/150 g

2 Installation

The fridge is designed to operate within a climate class 3 environment (25°C @ 60% relative humidity), and should not be placed in a location that is likely to exceed these conditions.

> **IMPORTANT**
> The cabinet's recommended operating temperature is between 18°C and 24°C and 60% relative humidity.

Cabinet Location   Do not expose the cabinet to direct sunlight at any time, as this may cause plastic parts to distort.

> **IMPORTANT**
> Do **not** leave the cabinet exposed to direct sunlight as this may cause distortion of plastic parts.

Do not place the cabinet in the direct airpath of air-conditioning outlets, ventilation fans or any other fan which causes air movement directly into the cabinet opening. This will cause failure of the air curtain and compromise the airflow and product temperature in the open cabinet zone. Maximum air movement across the cabinet opening must not exceed 0.2 m/s.

> **IMPORTANT**
> There must be **no** air movement directly into the cabinet opening.

Ventilation   To prevent overheating and conserve energy, ensure there is always at least a 50 mm gap at the back, 200 mm on the top and 60 mm at the sides of the cabinet. Keep the ventilation slots in the lower front panel clear at all times. Never store cardboard cartons or other objects in front of the fridge.

To maximise airflow at the rear of the cabinet, ensure both rear stand-offs are fully extended outwards and locked into place. This will provide the necessary air gap at the rear of the cabinet for correct operation.

> **CAUTION**
> To prevent over-heating and conserve energy, ensure that air can flow freely all around the cabinet, including underneath and on top.

Power Cord   The fridge has a flexible power cord fitted with a 3-pin plug, at the rear of the cabinet. Take care not to trap the cord or plug when positioning the cabinet.

Transportation   The cabinet is not designed to be stable while in motion. Use extreme caution when moving or transporting the cabinet if it has been removed from its original crate.

- Never strap across the glass sides of the cabinet as this may cause damage.
- Ensure appropriate padding or protection is used to prevent damage when strapping.

Shelves

Adjusting the Shelves   The fridge is fitted with five metal shelves. The four top shelves are height and angle adjustable, and removable. The angled bottom shelf is angle adjustable. The top two shelves are 1170W × 360D, the middle two shelves are 1170W × 380D, and the bottom shelf is 1179W × 400D.

The four top shelves are held in place by two cantilevered shelf brackets which clip into cut-outs in the cabinet back duct. The top four shelves can be adjusted at 28 mm increments (see image below).

Position for level shelves

Position for angled shelves

Excess shelf light cable holes
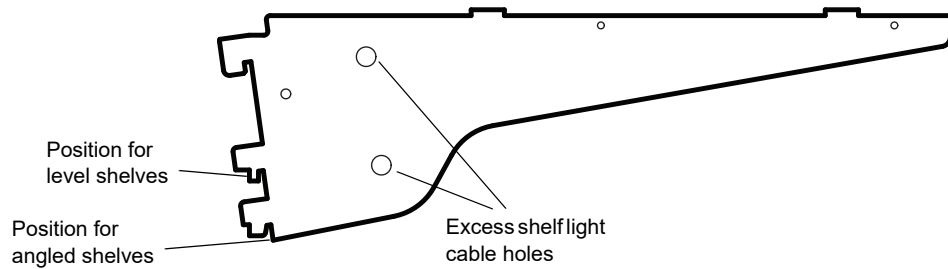
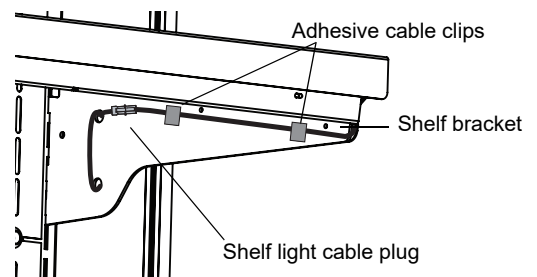## Procedure 1: To reposition a shelf

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove product from the shelf that is being moved.

3. If present, lift the gravity feed matting from the shelf and remove from the cabinet.

4. Unplug the shelf light cable at the inside of the right hand shelf bracket.

Adhesive cable clips

Shelf bracket

Shelf light cable plug

5. Lift the shelf up off the brackets and remove from the cabinet. Be careful not to damage the shelf light cable.

6. Unwind the cable from the back of the shelf bracket.

7. Select the new position and move the shelf brackets. The shelves can be repositioned as far as the shelf light cable reasonably allows.

8. Place the shelf, and if present the gravity feed matting, onto the shelf brackets. Ensure the back of the shelf clips over the rear of the brackets.

9. Push the cantilevered brackets outwards until they clip into the edge locating slots on the side of the shelf.

Shelf

Locating slot
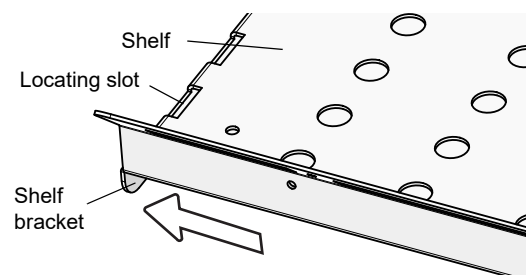
Shelf bracket

10. Take up any excess shelf light cable by winding it through the two holes at the rear of the shelf bracket, and reconnect the shelf light cable plug. Make sure that the plug is securely attached to the correct socket.

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

Gravity Shelf System

Gravity feed matting, including shelf dividers, is available for each shelf. The gravity shelf system comes in two sizes to suit the different size shelves: 350 mm depth for the top four shelves, and 385 mm for the bottom shelf. Each has 16 dividers.

Procedure 2: To fit the gravity feed matting and shelf dividers

1. Match up the shelf dividers with the corresponding matting.

2. Work across the matting and fit the centre dividers at required intervals.

3. Place the mat and dividers onto the matching shelf inside the cabinet.

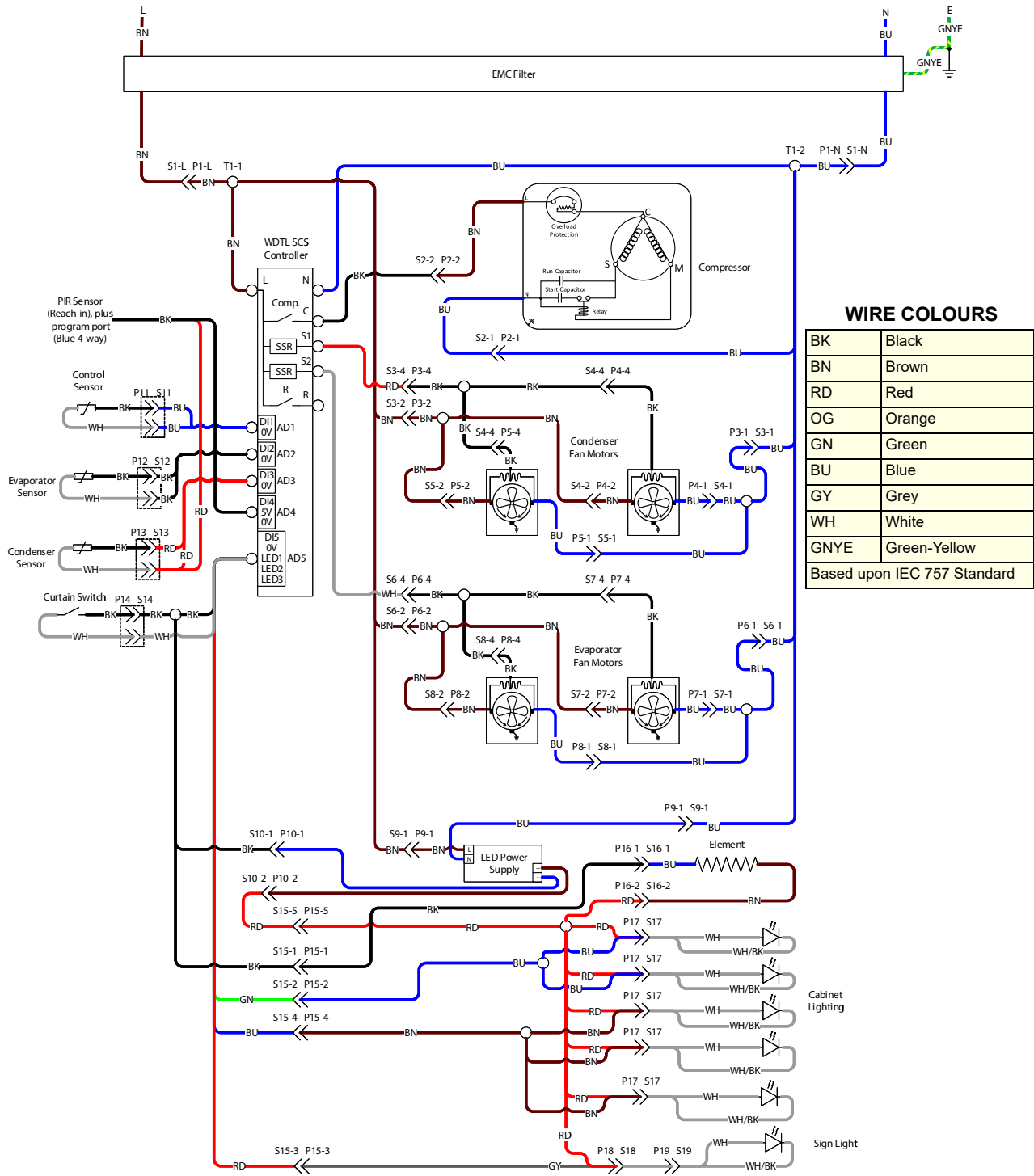4. Repeat for the remaining shelves.

5. To adjust the spacing between dividers:
   - Push the divider towards the rear of the cabinet until it unclips from the matting.
   - Move the divider to the required spacing, and insert into the slot in the matting kit.
   - Pull the matting towards the front of the cabinet to lock it in place.

3 Wiring

WIRE COLOURS

BK	Black
BN	Brown
RD	Red
OG	Orange
GN	Green
BU	Blue
GY	Grey
WH	White
GNYE	Green-Yellow
Based upon IEC 757 Standard	

LEGEND

T1	Unit junction box terminals	S11/P11	Control sensor socket/plug (blue 2-way)
S1/P1	IEC isolation socket/plug	S12/P12	Evaporator sensor socket/plug (black 2-way)
S2/P2	Compressor socket/plug (blue 4-way)	S13/P13	Condenser sensor socket/plug (red 2-way)
S3/P3	Condenser fan motor socket/plug (red 4-way)	S14/P14	Door curtain switch socket/plug (white 2-way)
S4/P4	Fan motor socket/plug (red 4-way)	S15/P15	Cabinet supply socket/plug (white 6-way)
S5/P5	Fan motor socket/plug (red 4-way)	S16/P16	Heater socket/plug (black 3-way)
S6/P6	Evaporator fan motor socket/plug (white 4-way)	S17/P17	Cabinet light sockets/plugs (red 2-way)
S7/P7	Fan motor socket/plug (red 4-way)	S18/P18	Sign light socket/plug (white 3-way)
S8/P8	Fan motor socket/plug (red 4-way)	S19/P19	Sign light top socket/plug (red 2-way)
S9/P9	LED driver input plug (on cartridge) (white 3-way)	O	Terminal block terminal
S10/P10	LED driver output socket/plug (red 2-way)	>>	Plug and socket

4 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

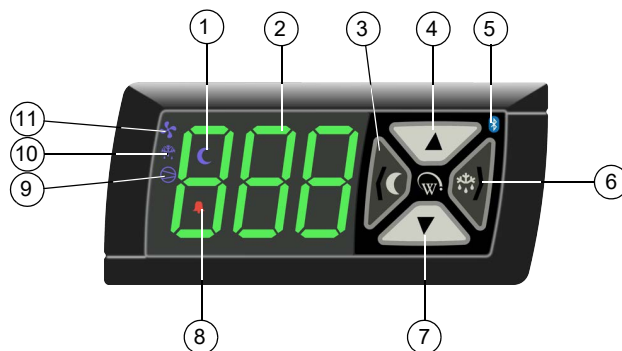The faceplate includes the front display panel and interface buttons.

Table 1: 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 fridge 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.	
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 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 Wellington Drive Technologies documentation for further information.

SCS Connect Field App

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

Procedure 3: 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 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

Procedure 3: To install the SCS Connect Field app (continued)

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.
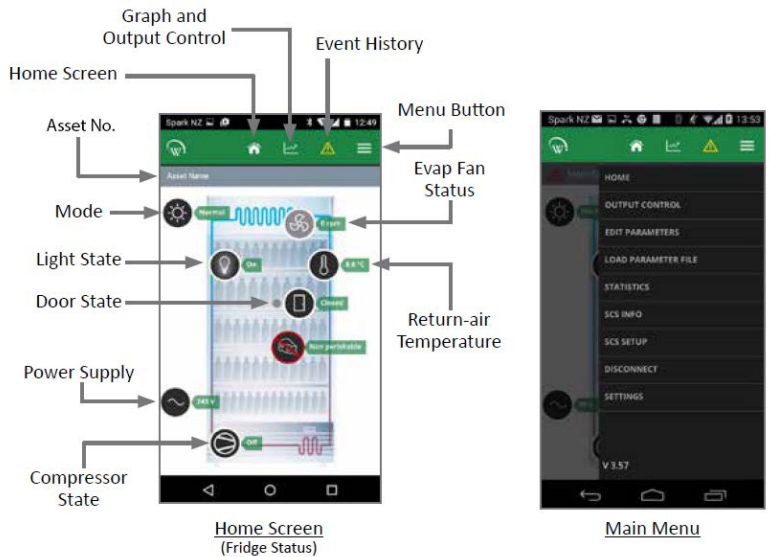
Procedure 4: To connect to a controller

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.

Home Screen
(Fridge Status)

Main Menu

Table 2: 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.

Table 2: SCS Connect Field App Home Screen (continued)

Item	Description	Action
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 fridge's activity, including temperatures 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.

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 3: 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 3: 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.
	• poor line voltage	• 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.
	• 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.
Excessive compressor cycling protection The system has been turning on and off too frequently.	• 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 gasket seals leaking	• Remove the cartridge and check the integrity of the gaskets and seals.
	• 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 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 4: 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.
9	Estimated product temperature above allowable range The estimated product temperature has been above the allowable range for longer than the permissible time.	• Disrupted air curtain	• Check that the fridge is not near an air conditioning grille which is blowing onto it, causing airflow problems.
		• 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	
		• 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 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 4: 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 ambient temperature	• Ensure that the cabinet is operating in its climate class.
		• Compressor or gas leak	• Swap the cartridge.
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 gasket leaking	• Check that the gasket is intact and not broken and leaking. • 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 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 4: Alarms (continued)

Code	Description	Possible root cause	Action
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.

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.
30	Excessive automatic defrosting The system is automatically defrosting too frequently.	• 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.

5 Replacement Procedures

Overview

This fridge 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 R290 safety hazards are:

- Flammability
- Venting of R290 and compressor oil
- Asphyxiation

SKOPE does **not** recommend performing hazardous activities on the refrigeration system.

Isolating Electrics

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

Procedure 5: To isolate the electrics

1. Switch the cabinet off at the power supply.

2. Unplug the power cord from the power supply.

Security Grille (optional)

For security purposes an optional lockable security grille is available. The security grille fits in the front opening of the cabinet and is locked by two keyed security bolts. For convenience both locks use the same key.

Procedure 6: To fit and remove the security grille

1. Position the security grille (with the tags at the top and locks on the sides) into the top of the cabinet opening.
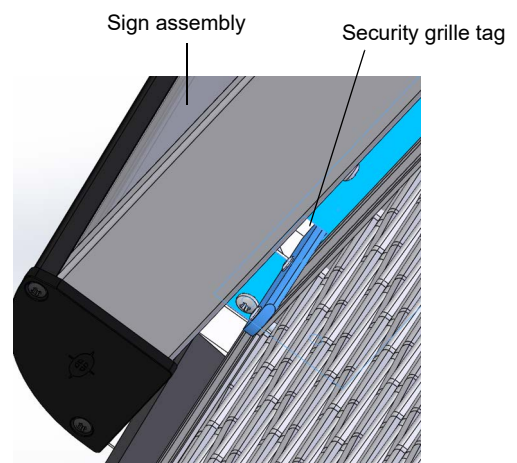
2. Manoeuvre the security grille into position so that both tags at the top of the grille fit into the slots under the night blind bracket.

Sign assembly   Security grille tag

3. Position the bottom of the grille to align both the security lock bolts with the holes on the top of the kick panel.

Procedure 6: To fit and remove the security grille (continued)

Security grille

4. Engage both the lock bolts and lock with the security key (see below).

Security grille lock

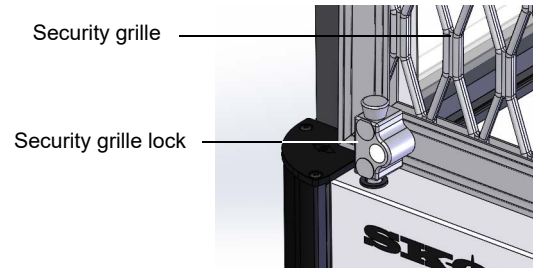5. To remove the security grille, reverse the fitting instructions (steps 1 to 4 above).

Kick Panel

The cabinet is fitted with a kick panel that hooks onto the front of the cabinet.

Procedure 7: To remove the kick panel

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the two screws from the bottom of the front panel.
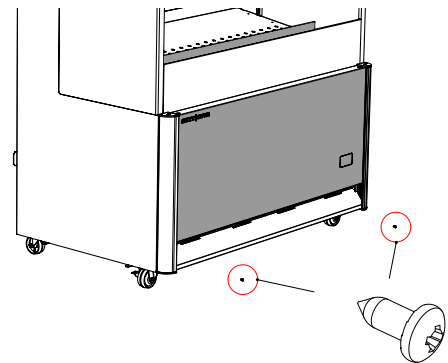
3. Lift the panel up and off the cabinet.
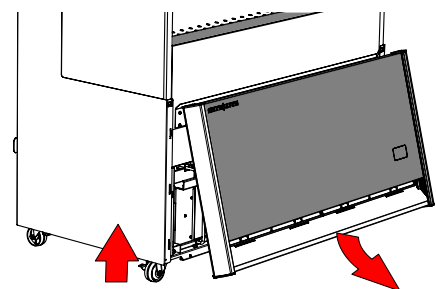
Procedure 8: To refit the kick panel

1. Lift the kick panel over and on to the retainer.

2. Fasten the two screws to the bottom of the kick panel.

Sign

The OD1100N Low Sign model comes with the sign assembly fitted to the cabinet. For transit purposes, the OD1100N standard High Sign model has the sign assembly fitted temporarily to

the cabinet, and the two side panels and rear panel packaged together in the cabinet. The high sign needs to be fitted to the cabinet on site.

Fitting and Removing the Sign

Procedure 9: To fit the high sign to the cabinet

1. Remove the high sign assembly from the cabinet.

2. Unpack the sign's side and rear panel package. There should be three pieces: two identical side panels, and one rear panel.

3. Loosen the four retaining screws on the roof of the cabinet and fit each sign side panel over the screws. Slide the sign side panels forward flush with the front of the cabinet, and tighten all four retaining screws.
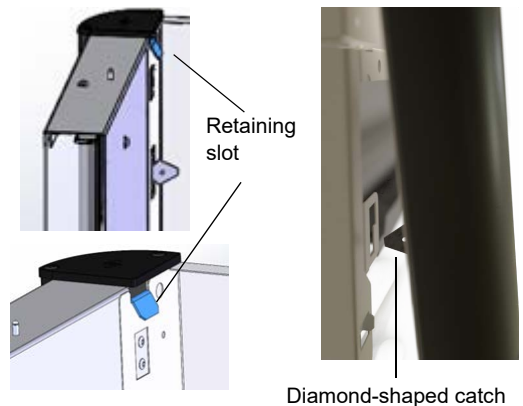
4. Fit the rear panel.

   • Remove the two screws from the back of the side panels.
   • Fit the rear panel across the back of the side panels by putting the tabs of the side panels into the top slots of the rear panel, and clipping each end tag of the rear panel into the retaining slot in the side panels.
   • Fix the two screws back into each side of the rear panel to mount it on the side panels.

Back of rear panel   **Front of rear panel**
Side panel slots
Screw   Rear panel tag   Screw
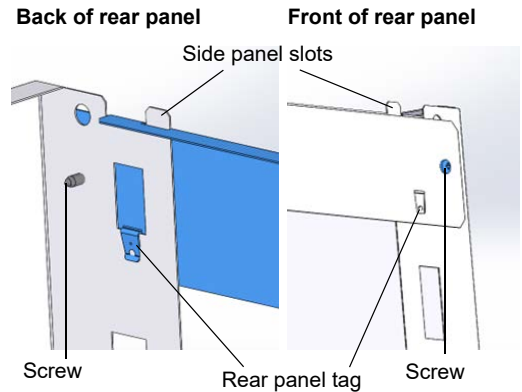
5. Attach the high sign assembly onto the cabinet.

   • Clip the top of the sign into the retaining slots at the top of both side panels.
   • Clip the diamond-shaped catches at bottom of the sign into both the bottom retaining brackets.

Retaining slot

Diamond-shaped catch

Procedure 10: To remove the sign from the cabinet

High sign only

1. Undo the two screws and unclip the two end tags of the sign rear panel from each side panel.
2. Remove the rear panel.
3. Loosen the four retaining screws on the roof of the cabinet.

High and low sign

4. Pull the bottom of the sign forward, and lift the sign up to disengage from the top retaining slot and bottom diamond-shaped catches on each side of the cabinet.

Cladding

The cabinet is clad with a metal kick panel, lit sign, front upstand, and painted metal sides. All cladding is removable and replaceable.

Left hand metal side

Lit sign

Upstand

Kick panel

Right hand metal side
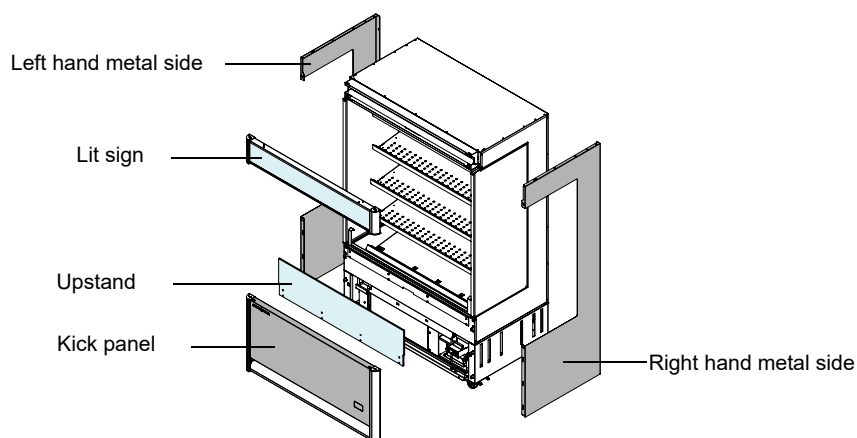
IMPORTANT
**Do not expose the cabinet to direct sunlight as this may
cause distortion of plastic parts.**

Removing and Refitting the Cladding

When changing the cladding, you will need to remove the kick panel, lit sign, and side cladding before fitting new cladding.

If you only need to remove a single cladding component, follow the steps until the specific component has been removed, then reassemble in the order the components were removed.

Removing the cladding

Follow the procedures one after the other to remove the cladding:

1. Kick panel (see page 19)
2. Lit sign (and sign sides for high sign model) (see page 20)
3. Left hand side/right hand side cladding (see page 22)

Replacing the cladding

Follow the procedures one after the other to replace the cladding:

1. Left hand side/right hand side cladding (see page 22)
2. Lit sign (and sign sides for high sign model) (see page 20)
3. Kick panel (see page 19)

Procedure 11: To remove the side cladding

1. Remove the kick panel (see page 19), and sign (see page 20).

2. Undo the fixing screws on the back edge of the side cladding and cabinet top, and lift the panel off the cabinet, detaching the cladding from the hook at the front.

Hook
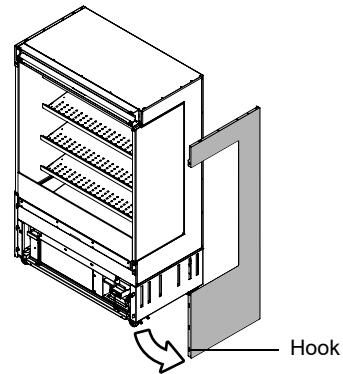
Lighting

The cabinet is fitted with shelf lights. The lights turn on and off automatically when the night blind is opened or closed. The lights can also be switched on and off manually by pressing the light button on the electronic controller faceplate (see "Controller Faceplate" on page 10). Note that the controller is only accessible once the kick panel has been removed.

Shelf lights

Bottom shelf light
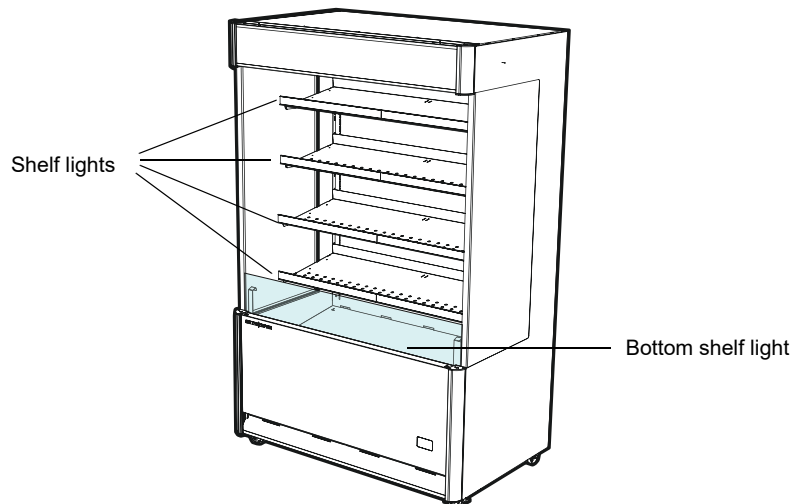
Shelf Lights The shelves are fitted with lights at the front of each shelf. The lights are connected to the power supply by cables which run under the right hand side of each shelf. The cables are fitted with plugs which must be disconnected when moving the shelves or replacing the lights.

Procedure 12: To replace a shelf light

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove product from the shelf. If present, lift the gravity feed matting and dividers from the shelf and remove from the cabinet.

3. Unplug the light and remove the shelf from the cabinet (see page 7).

4. Replace the light by sliding it out of the side of the shelf, and sliding the new light in.

5. Refit the shelf and connect the light cable plug. Make sure that the plug is securely attached to the correct socket.

Procedure 12: To replace a shelf light (continued)

6. Refit the gravity feed matting and dividers (see page 8).

7. Test and tag as per standard procedure.

8. Reconnect to the power supply, check for correct operation and reload product.

Cabinet Electrics Gear Tray

The cabinet is fitted with an electrics gear tray which houses the surge protector/EMI filter.

The surge protector/EMI filter protects the fridge from voltage spikes and eliminates possible electromagnetic interference, before feeding it into the refrigeration cartridge.

Electrics gear tray
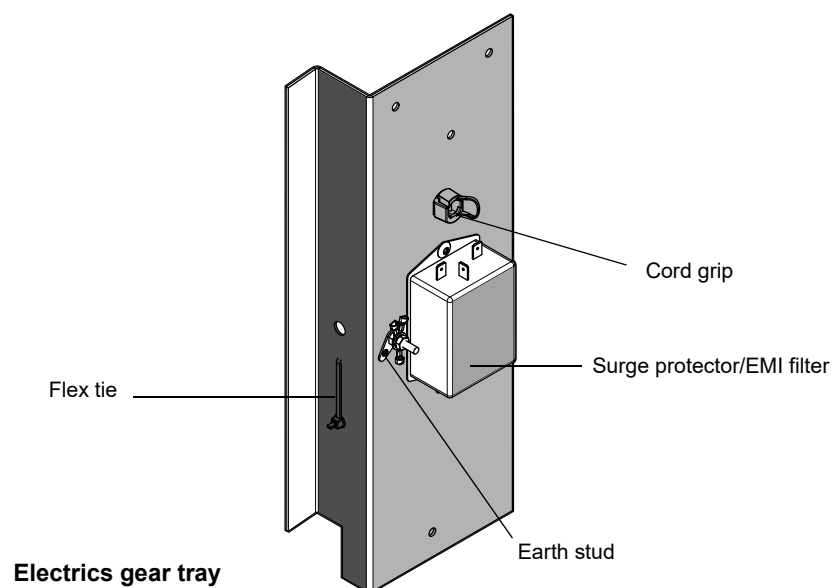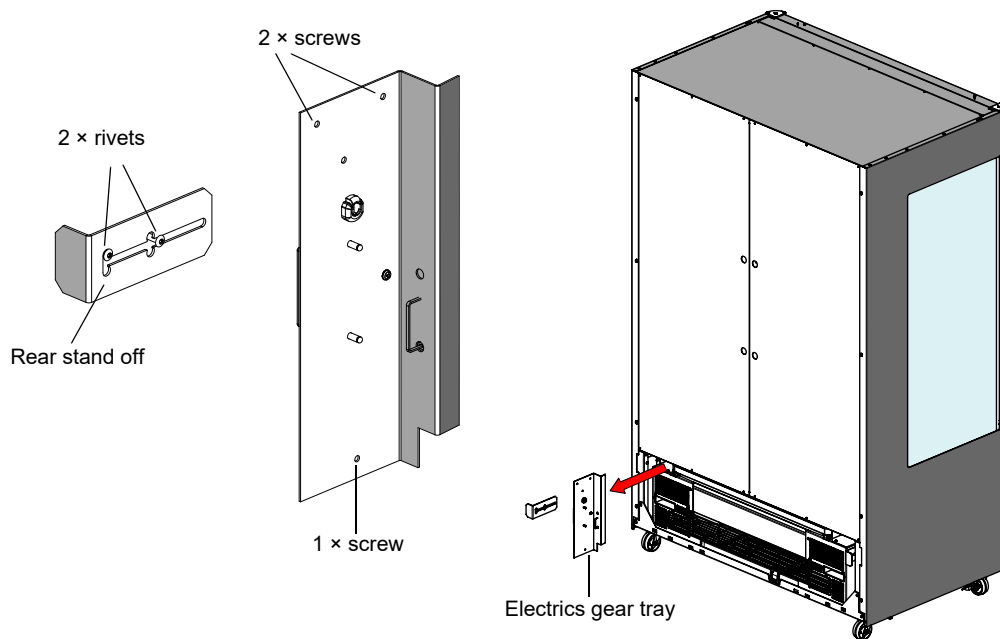
Night Blind

The cabinet is fitted with a manual night blind which should be pulled down into the closed position during store closing hours to save power. The night blind has a switch which automatically tells the electronic controller to run the fridge in night mode (with the lights off) when the blind is in the closed position, or day mode (with the lights on) when in the open position.

The night blind is located in the ceiling of the cabinet behind the sign, and is not visible when it is open.

To close the night blind, use the handle pull the blind down and hook it under the night blind retaining brackets at the bottom of the cabinet opening. To open, use the handle to release the blind from the retaining brackets and control the blind as it opens.

Night blind

Night blind retaining bracket

Night blind handle
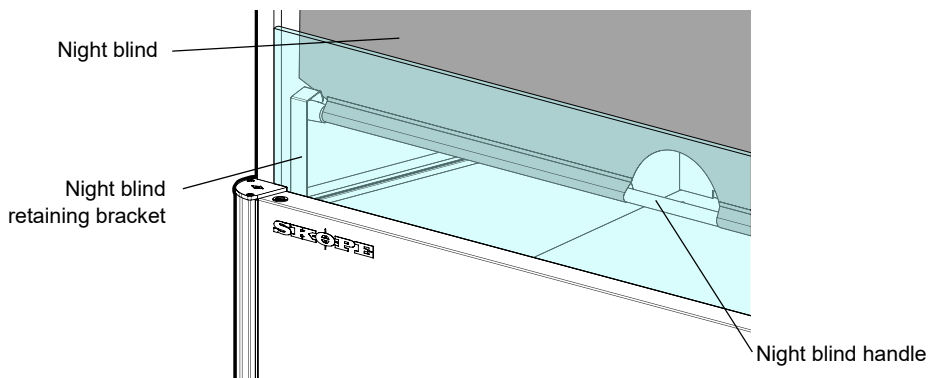
Night Blind Sensor Switch

The switch mechanism is made up of a magnet in the night blind handle and a switch fitted to a bracket at the bottom right hand side of the cabinet opening. The switch cable is connected to the cartridge.

Procedure 13: To replace the night blind magnet

1. Free the night blind handle from the cabinet opening to gain access to the right hand end of the handle, and remove the end cap to access the magnet.

Night blind handle
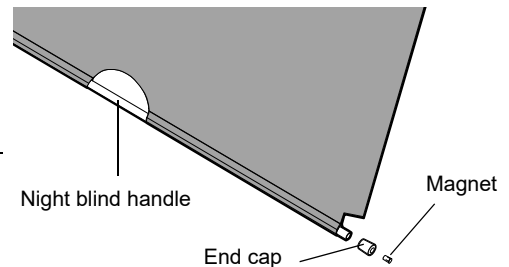
Magnet

End cap

2. Remove and replace the magnet.

3. Refit the end cap and replace the night blind back inside the cabinet.

Procedure 14: To replace the night blind sensor switch

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the kick panel (see page 28) to access the cartridge.

3. Undoing the fixing screws from the upstand and remove it.

4. Disconnect the night blind sensor switch cable from cartridge.

5. Undo the night blind sensor switch cable from the connector block on the right hand cabinet electrics panel, and draw the cable up into the cabinet.

Procedure 14: To replace the night blind sensor switch (continued)

6. Remove the right hand night blind bracket (with the night blind sensor switch fitted):

   - Undo the 2 × fixing screws and remove the return air grille.
   - Undo the 2 × screws and remove the PIR sensor bracket.
   - Undo the remaining 1 × screw and remove the right hand night blind sensor switch bracket.

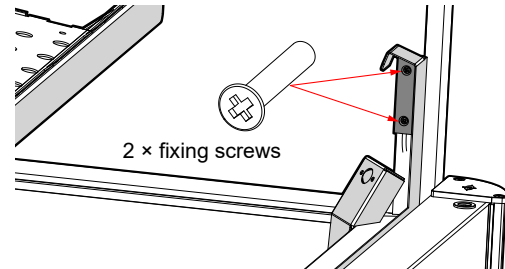7. Undo the two fixing screws and remove the night blind sensor switch from the bracket.

2 × fixing screws

8. Fit the new night blind sensor switch.

9. Run the new night blind sensor switch cable back and reconnect to the cartridge.

10. Reassemble the fridge and check for correct operation.

Refrigeration System

Before Servicing

Overview

Ensure you have read and understood this manual before starting any servicing.

Important.

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

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

Check all components including the electronic controller and electrical systems.

Ensure your work area is well ventilated.

IMPORTANT

Use only dedicated hydrocarbon SKOPE OEM spare parts.

DO NOT use alternative parts.

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

Safety hazards

The main hydrocarbon safety hazards are:

- Flammability
- Venting of hydrocarbon and compressor oil
- Asphyxiation

Refrigerant identification

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

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

Personal protective equipment (PPE)

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

Service equipment

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

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

- Intrinsically safe refrigeration vacuum pump, rated by the manufacturer as suitable for use with hydrocarbon refrigerant
- Dedicated hydrocarbon gauge set
- Flammable gas detector to warn if flammable refrigerant is present
- Charging scales, rated by the manufacturer as suitable for use with hydrocarbon refrigerant, accurate to 1 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 signage and/or barrier – suitable to create a safe work zone 1.5 m around the cabinet
- Hydrocarbon gas detector
- Dedicated hydrocarbon gauge set
- Bullet valves/line piercing valves suitable for a 6 mm tube

Off-site Work

Hydrocarbon workshop

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

- Dedicated area for hazardous work – suitable for servicing and releasing flammable hydrocarbon refrigerant

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

Diagnosing Lack of Gas

The following test is useful to do in a hydrocarbon-compliant workshop (see "Off-site Work" on page 26) 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 cartridge running beside the cartridge being serviced to compare behaviour.

Note: This diagnostic procedure is indicative only.

Procedure 15: To diagnose lack of gas

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the refrigeration cartridge (see page 28).

3. Move the control probe outside the evaporator tub.

4. Remove the cartridge's right panel.

5. Disconnect the evaporator fan motor (white plug).

6. Fit a temperature probe to the evaporator inlet tube.

7. Fit a temperature probe to the compressor suction pipe.

8. Connect the cartridge to a power supply.

9. Use the run test below to check the system performance. If there is no frost at all at the evaporator inlet tube there may be a capillary blockage or compressor fault.

Table 5: OD1100N Series (cartridge UBQENI-0052)

Time	1 min	2 min	3 min	4 min	5 min	6 min
Evaporator inlet tube (°C)	-14	-22	-26	-28	-28	-20
Compressor suction pipe (°C)	16	0	-23	-27	-28	-22
Current (amps)	2.7	2.4	2.3	2.3	2.3	0.1
Suction frost	cold	cold	wet	soft ice	soft ice	soft ice
Compressor frost			wet	soft ice	70 mm soft ice	
Compressor start	16 sec	on	on	on	on	defrost

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

Refrigeration Cartridge

The refrigeration cartridge is a bottom-mounted, electronically controlled (see page 10), removable cartridge.

For servicing or transportation, the refrigeration cartridge unplugs and pulls out of the cabinet.

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

The model and serial number are both printed on the cartridge rating label attached to the front of the cartridge. Before ordering spare parts, take note of the model and serial numbers.

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

Table 6: Cartridge specifications

| Cartridge model	UBQENI-0052
Compressor	Embraco NT6230U
Nominal capacity	2100 watts
Refrigerant	R290
Charge	150 g
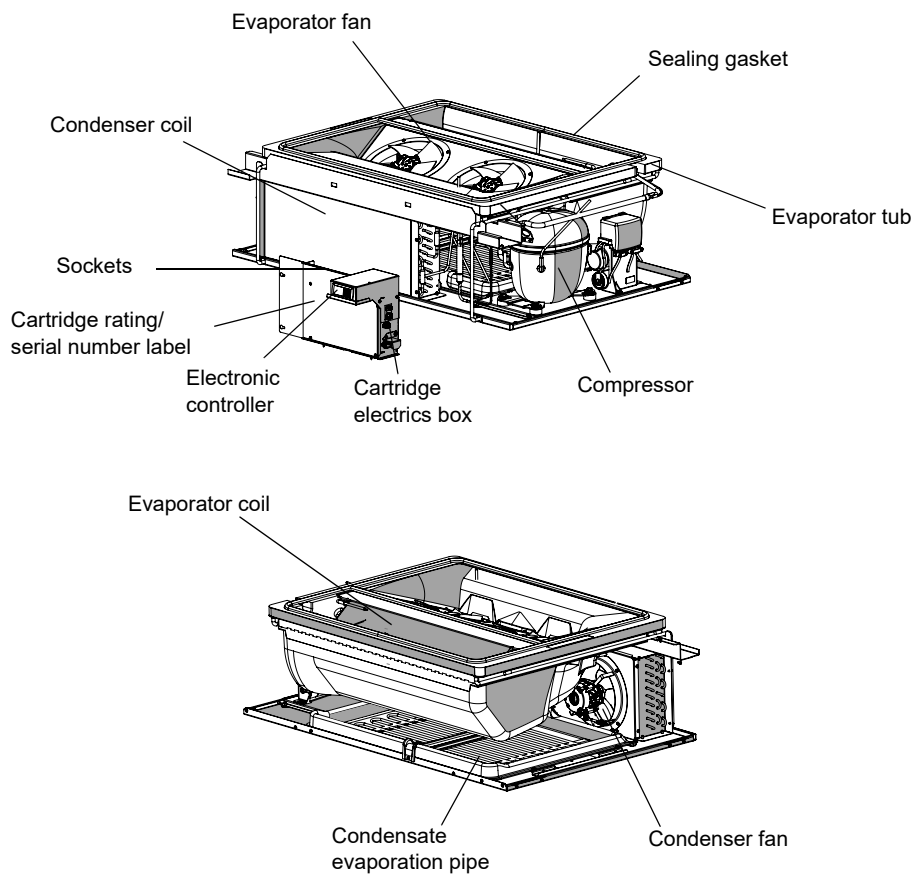
Cartridge Removal

Follow the steps below to remove the refrigeration cartridge.

**Procedure 16: To remove the refrigeration cartridge**

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the kick panel (see page 19).

Procedure 16: To remove the refrigeration cartridge (continued)

3. Pull the two cartridge lifting levers and rotate inwards to a horizontal position to lower the refrigeration cartridge evaporator tub. Remove 2 × thumb screws from the plinth cross member.


2 × thumb screws
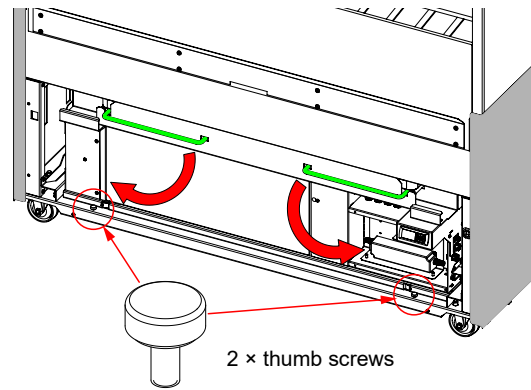
4. Pull the cartridge out approximately 200 mm. The cartridge weighs 64 kg, so use the handles (see the drawing details). Unplug all electrical connections.
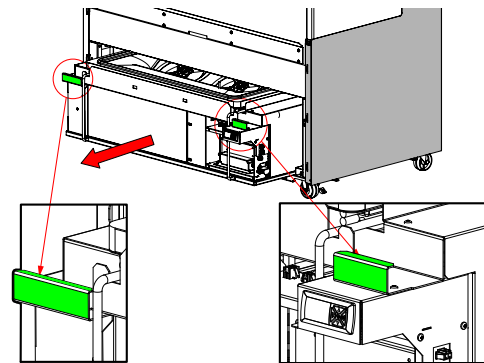
5. Using the hand holds, remove the cartridge from the cabinet. When removing, take care with loose plugs, cables, and the cartridge sealing gasket.
   Important: Ensure the cartridge remains level when it is removed from the cabinet to avoid damage to the cartridge seals.
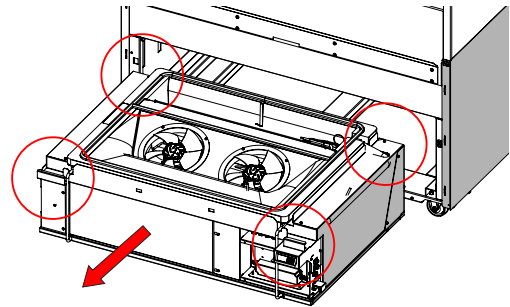
6. When refitting the refrigeration cartridge, ensure that:
   - the cartridge sealing gasket on top of the cartridge is in good condition.
   - all plugs are securely re-connected.
   - the refrigeration cartridge evaporator tub lifts and seals correctly against the cabinet.
   - you refit the kick panel.

Cartridge Electrics Box

The cartridge electrics box contains the electronic controller, the mains supply socket, the LED power supply, and panel mounted socket connectors. The lights socket, night blind socket, and PIR sensor socket are on the outside of the cartridge electrics box. These have to be disconnected when the cartridge is removed. The probe and condenser fan sockets are visible behind the electrics box front cover. The compressor and evaporator fan sockets are behind the electrics box. They can be accessed by:

- removing the cartridge's side cover.
- lifting up the evaporator tub.
- undoing the screws and pulling the electrics box out slightly.

> **Important**
> Plugs may come loose as a result of movement and vibrations. When refitting, take care that all plugs are securely attached to the correct sockets.

Procedure 17: To access the inside of the cartridge electrics box

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the kick panel (see page 19).

3. The cartridge electrics box itself can now be accessed.
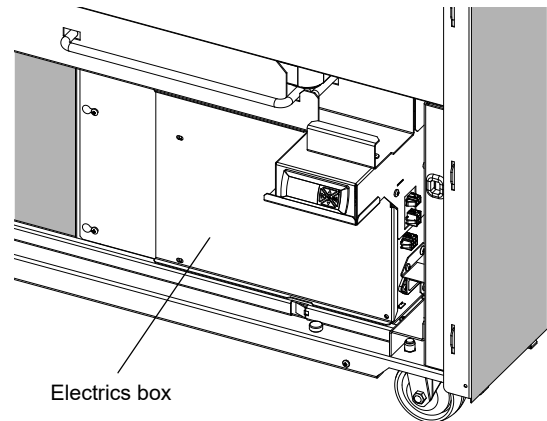
Electrics box

4. Remove 4 × screws from the front cover to get inside the cartridge electrics box.

4 × screws

Procedure 18: To remove the electrics box

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the kick panel (see page 19).

3. Remove the cartridge from the cabinet (see page 28).

Procedure 18: To remove the electrics box (continued)

4. Remove 6 × screws from the electrics box:

   • 2 × screws on the left side of the electrics box
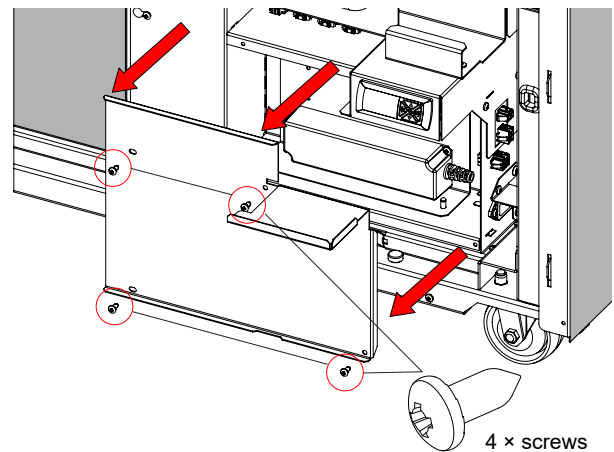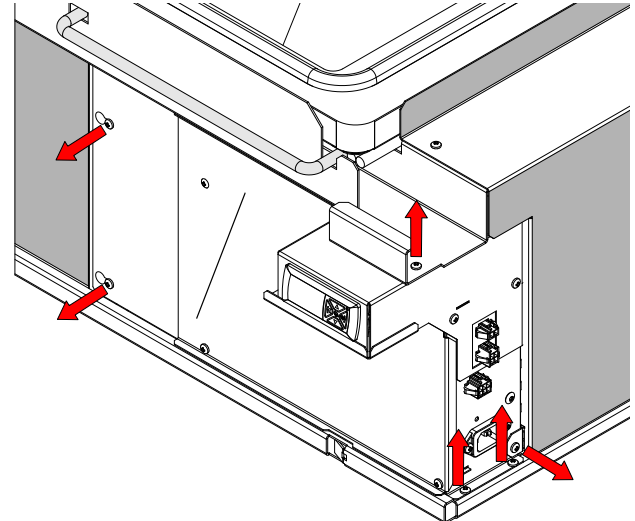
   • 1 × screw above the controller

   • 3 × screws on the right side of the electrics box

5. Carefully lift the evaporator tub to access the electrical sockets. Disconnect four sockets on the top left of the electrics box (the condenser motor and the three probes) and two on the rear (the compressor and evaporator fans). The electrics box can now be removed.

Evaporator tub

Top electrical sockets
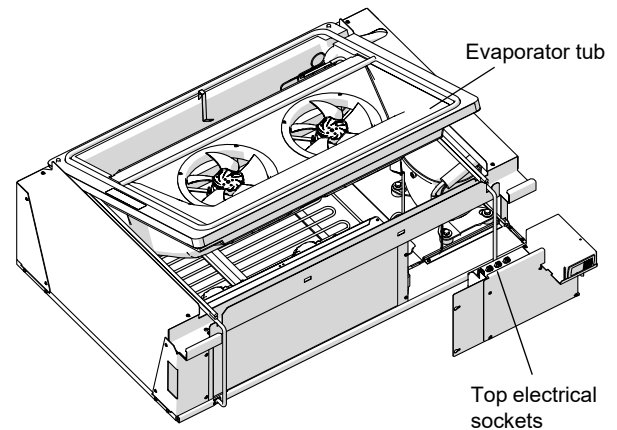
Condenser Fan

The condenser fan assembly is made up of two high speed electronically commutated (EC) fan motors, fan blades, mounting brackets, and a mounting plate. These are removed from the refrigeration cartridge as a complete assembly. The fan blades, fan motors and mounting brackets can be serviced or replaced if necessary. The condenser fan plug is red.

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

It is important that fan blades and fan motors are replaced with the same part to ensure safety, correct alignment and refrigeration performance, and compliance. When refitting or replacing fan motors, ensure that the blade screw is tightened to 1.5 Nm.

Procedure 19: To access and remove the condenser fan assembly

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the refrigeration cartridge (see page 28).

Procedure 19: To access and remove the condenser fan assembly (continued)

3. Remove the cartridge's left side panel by undoing the 5 screws:
    *   2 × screws on the top.
    *   2 × screws on the front.
    *   2 × screws on the back.
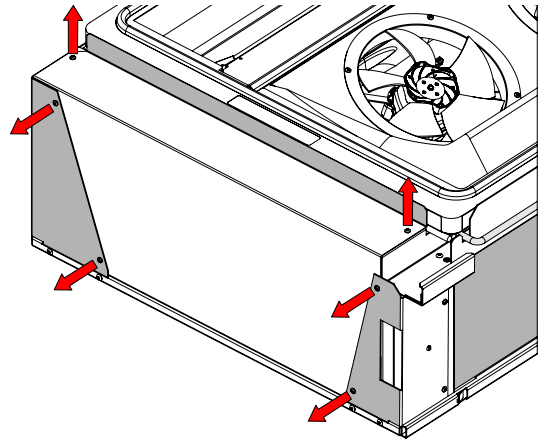
4. Remove the fan assembly (fan motor, fan blade, mounting brackets, and mounting plate) from the cartridge by:
    *   unplugging the fan motor cable connectors.
    *   removing the two screws from the fan mounting plate.
    *   pulling the fan mounting plate sideways out of the cartridge.
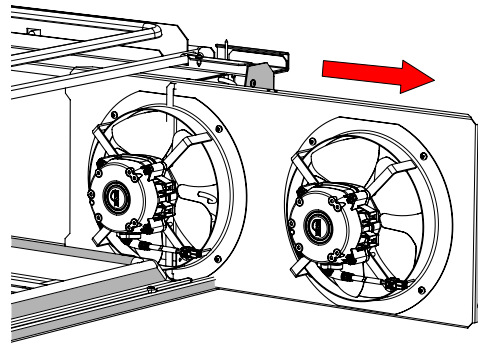
Procedure 20: To replace the condenser fan blade

1. Remove the condenser fan assembly (see "To access and remove the condenser fan assembly").

2. Remove the screw and washer from the centre of the fan blade, and lift the blade from the motor.

3. Fit the new blade and fix with a 12 mm flat washer and serrated head screw. Tighten the screw to 1.5 Nm.

4. Reassemble the cartridge and test for correct operation:
    *   "To diagnose lack of gas" on page 27.
    *   Test and tag.

Procedure 21: To replace the condenser fan motor

1. Remove the condenser fan assembly and the fan blade (see "To access and remove the condenser fan assembly" on page 31).

2. Detach the fan motor from the fan mounting brackets by removing the four nuts and spring washers from the mounting bracket.

3. Fit the new motor and reattach the fan blade with a 12 mm flat washer and serrated head screw. Tighten the screw to 1.5 Nm.

4. Reassemble the cartridge and test for correct operation.
    *   "To diagnose lack of gas" on page 27.
    *   Test and tag.

Evaporator Fan The evaporator fan assembly is made up of two high speed electronically commutated (EC) fan motors and fan blades, both of which can be replaced if necessary. The evaporator fan flexible cord has a red plug and is connected to the electrics box by a red-to-white plug cable.

The fan motors and fan blades are fixed to the evaporator shroud with brackets. The shroud (complete with fan motors and fan blades) can be lifted off the evaporator tub.
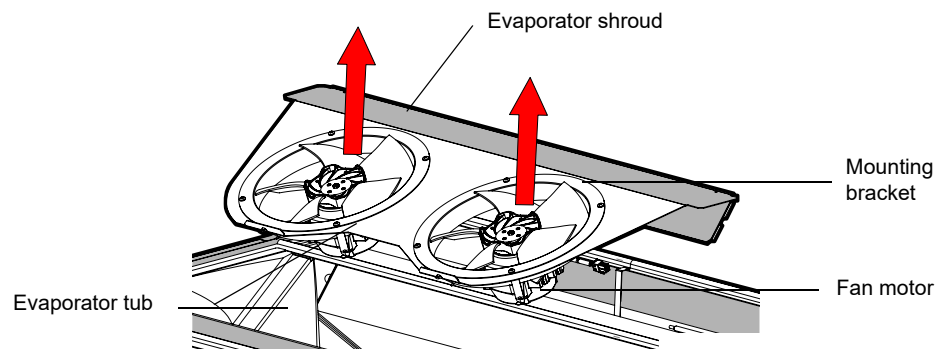
IMPORTANT
Replace the motor with the same SKOPE OEM part.
**DO NOT** use alternative parts.

It is important that fan blades and fan motors are replaced with the same part to ensure safety, correct alignment and refrigeration performance, and compliance. When refitting or replacing fan motors, ensure that the blade screw is tightened to 1.5 Nm.

Procedure 22: To access the evaporator fan assembly

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the refrigeration cartridge (see page 28). The evaporator fan assembly can now be accessed.

Procedure 23: To replace the evaporator fan blade

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the refrigeration cartridge (see page 28).

3. Remove the screw and washer from the centre of the fan blade, and lift the blade from the motor.

4. Ensure the new blade is centred within the evaporator shroud, and reattach with a 12 mm flat washer and serrated head screw. Tighten the screw to 1.5 Nm.

5. Reassemble the cartridge and test for correct operation:
   - "To diagnose lack of gas" on page 27.
   - Test and tag.

### Procedure 24: To replace the evaporator fan motor

1. Follow Procedures 22 and 23 to access the evaporator fan assembly and remove the fan blade.

2. Unscrew and remove the cartridge's right hand side panel to access the fan motor cable connectors.

3. Lift the evaporator shroud (complete with fan motor) from the evaporator tub.
   Note: The evaporator and control probe flexible cords may restrict movement when lifting the shroud from the evaporator tub.

4. Free the fan flexible cord by cutting the cable ties and removing it from the evaporator tub edge putty.

5. Remove the four nuts and spring washers from the fan mounting brackets and lift the fan motor from the bracket.

Procedure 24: To replace the evaporator fan motor (continued)

6. Attach the replacement fan motor to the fan mounting brackets using the four nuts and spring washers.

7. Reattach the fan motor so that the flexible cord will point towards the right side of the evaporator tub once reinstalled. Re-cable tie the fan cord back onto the mounting bracket to prevent high frequency vibration.

8. Place back into the evaporator tub, and ensure there is no interference between the fan motor and evaporator tub (to prevent high frequency vibration). Trace the flexible cords back through the evaporator tub edge transition putty and back into the electrical box area. Ensure that the putty fills all gaps around the edge of the evaporator tub.

9. Reattach the fan blade with a 12 mm flat washer and serrated head screw. Tighten the screw to 1.5 Nm.

10. Refit the fan guard.

11. Reassemble the cartridge and test for correct operation:
    • "To diagnose lack of gas" on page 27.
    • Test and tag.

Compressor The cartridge is designed to be used with the specified compressor only. If you need to replace the compressor, ensure that you use a SKOPE-specified compressor. Do not use other compressors in this refrigeration cartridge.

> **IMPORTANT**
> Replace the compressor with the same SKOPE OEM part.
> **DO NOT** use alternative parts.

The compressor is located at the front of the refrigeration cartridge, beside the condenser coil. It must be supplied with consistent voltage over 220 volts.

If considering replacing the compressor (e.g. it's not going):

• Check all plug connections and ensure that the compressor electrics are operating correctly.

• 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).

Start capacitor

Thermal protector and starter

Run capacitor
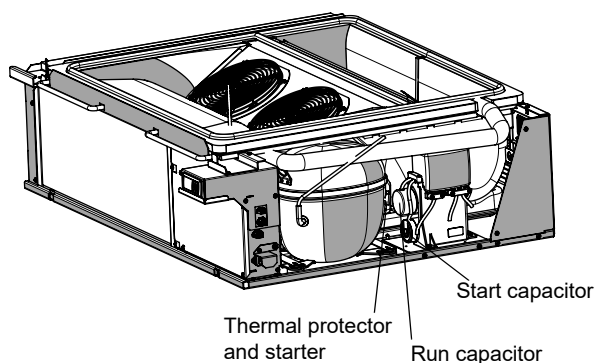
> **IMPORTANT**
> To eliminate possible vibration noise, ensure no pipes touch the evaporator tub bottom surface, evaporator tub support legs, plastic base, or condenser coil assembly.

Electronic Controller

Electronic Controller Location

The electronic controller is located within the cartridge electrics box, which is attached to the front of the refrigeration cartridge.

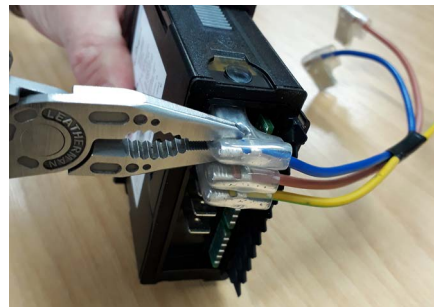**Replacing the Controller**

Procedure 25: To replace the controller

Before you start

Make sure you have the appropriate parameter file to load into the new controller.

- Open SCS Connect Field app (see "SCS Connect Field App" on page 11) and check if the parameter file is LOCAL.
- If it is not available in LOCAL, ensure you are connected to the internet, search for it in SERVER, and download to LOCAL.

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the front kick panel (see page 19).

3. Remove the cartridge electrics box (see page 30).

4. Remove the fixing screws from the electronic controller mounting, and pull out the faceplate and controller.

5. Remove the clips, and disconnect the controller from its mounting.

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

7. Fit the new electronic controller.
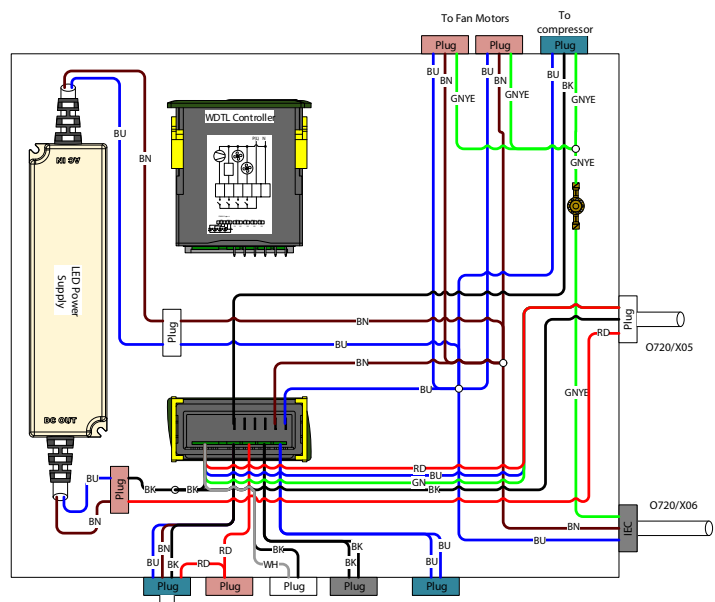
8. Reassemble.

9. Perform an electrical safety test.

Procedure 25: To replace the controller (continued)

10. Connect the cabinet to the power supply and use a mobile device to connect to the controller with the SCS Connect Field app.
11. Navigate to the LOAD PARAMETER FILE menu.
12. Select the appropriate parameter file from LOCAL.
13. Confirm you have the correct file and select WRITE TO SCS.
14. After WRITE TO SCS is complete, select MENU > DISCONNECT to save the parameter set on SCS Connect Field app.
15. Power cycle the controller and check that the parameter set has been applied.
16. Open the SCS Connect Field app and re-connect to the controller.
17. Use instruction sheet PRN80300 "Cabinet Setup using the SCS Field App" to configure the SCS Info fields of the controller.

PIR Sensor The electronic controller is fitted with a passive infrared (PIR) sensor to monitor activity inside the fridge. The PIR sensor is located at the bottom of the cabinet opening.

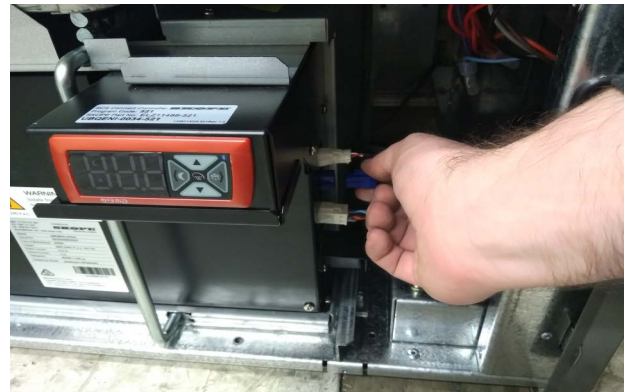**Procedure 26: To replace the PIR sensor**

Before you start
Make sure you take note of the original PIR sensor cable's path.

1. Disconnect the cabinet from the power supply (see page 18).
2. Remove the kick panel (see page 19).

3. Unplug the PIR sensor from the cartridge electrics box (blue plug).

4. Remove the two screws, and lift the return air grille out of the cabinet.
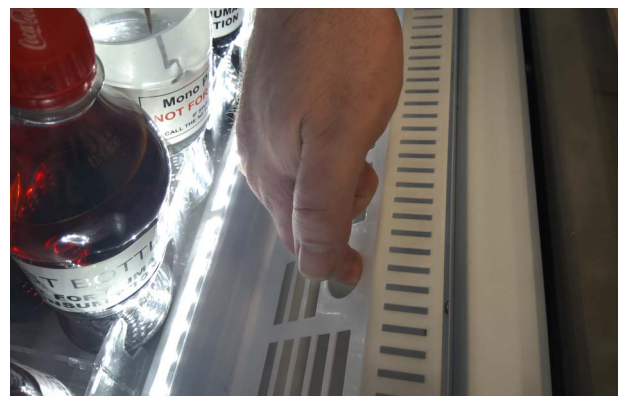
Procedure 26: To replace the PIR sensor (continued)

5. Unscrew the PIR sensor bracket from the cabinet and detach the PIR sensor from the bracket.	
6. Unscrew and remove the front upstand.	

7. To remove the PIR sensor from the cabinet, pull the cable and up through the cabinet corner.

8. Following the same path as the original cable, fit the replacement PIR sensor assembly, connect to the electrics box, and attach the sensor to the bracket and the bracket to the cabinet.

9. Reassemble the cabinet and check for correct operation by connecting to the fridge with the SCS Field app and confirming 'Motion' appears when waving in front of the PIR sensor, and 'No Motion' appears when there is no motion.

Control and Evaporator Probes

The control probe is located on a bracket at the rear of the evaporator tub. The evaporator probe is located on the right hand side of the evaporator pipe bends.

Procedure 27: To replace the control probe

Before you start
Make sure you take note of the original control probe cable's path.

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the refrigeration cartridge (see page 28).

3. Remove the cartridge's right side panel.

4. Remove the electrics box cover.

5. Unplug the control probe from the top of the electrics box (blue socket).

6. Remove the control probe from the cartridge. Cut cable ties where necessary.

7. Following the same path as the original probe, run the new probe to the original location, plug in to the electrics box, and secure with cable ties.	
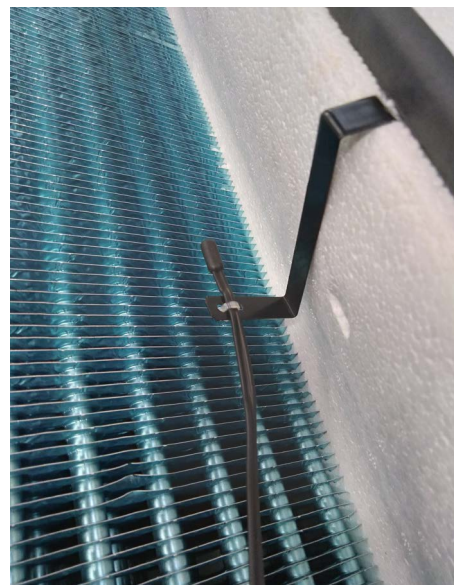
Procedure 27: To replace the control probe (continued)

8. Reassemble the cartridge and test and tag as per standard procedure.

9. Reconnect to the power supply and check for correct operation.

Procedure 28: To replace the evaporator probe
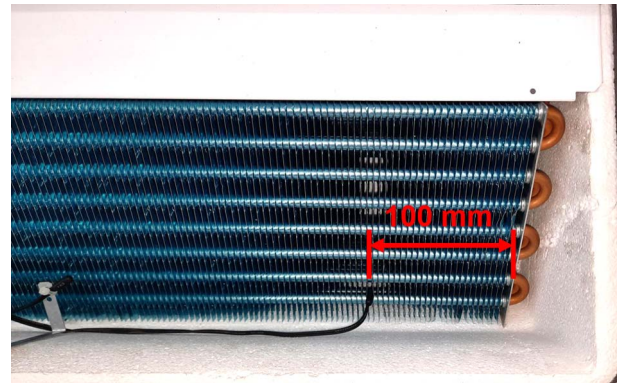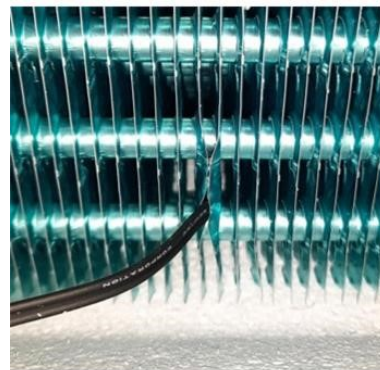
Before you start
Make sure you take note of the original evaporator probe cable's path.

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the refrigeration cartridge (see page 28).

3. Remove the cartridge's right side panel.

4. Remove the electrics box cover.

5. Unplug the evaporator probe from the electrics box (black plug).

6. Remove the evaporator probe from the cartridge, cutting cable ties where necessary.

7. Following the same path as the original probe, run the new probe to the original location and secure with cable ties.

8. Push the probe between the fins above the bottom tube, approximately 100 mm from the end (25 fins). Close the fins behind the probe.

9. Reassemble the cartridge and test and tag as per standard procedure.

10. Reconnect to the power supply and check for correct operation.

Condenser Probe

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

Procedure 29: To replace the condenser probe

Before you start
Make sure you take note of the original condenser probe cable's path.

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the refrigeration cartridge (see page 28).

3. Carefully lift the evaporator tub.

Procedure 29: To replace the condenser probe (continued)

4. Unscrew and remove the cartridge's left hand side panel to access the condenser probe.

Condenser probe

5. Detach the probe from the condenser coil. Trace the probe cable to the cartridge electrics box and unplug it.

6. Following the same path as the original probe, run the new probe to the condenser coil and secure with cable ties. Use cork tape to insulate the probe. Ensure the probe cable is securely plugged into the rear of the cartridge electrics box.

7. Reassemble the cartridge and test and tag as per standard procedure.

8. Reconnect to the power supply and check for correct operation.

6 Spare Parts

Ordering The model and serial number are both printed on the cartridge rating/serial number label attached to the front of the cartridge. Before ordering spare parts, take note of the model and serial numbers.
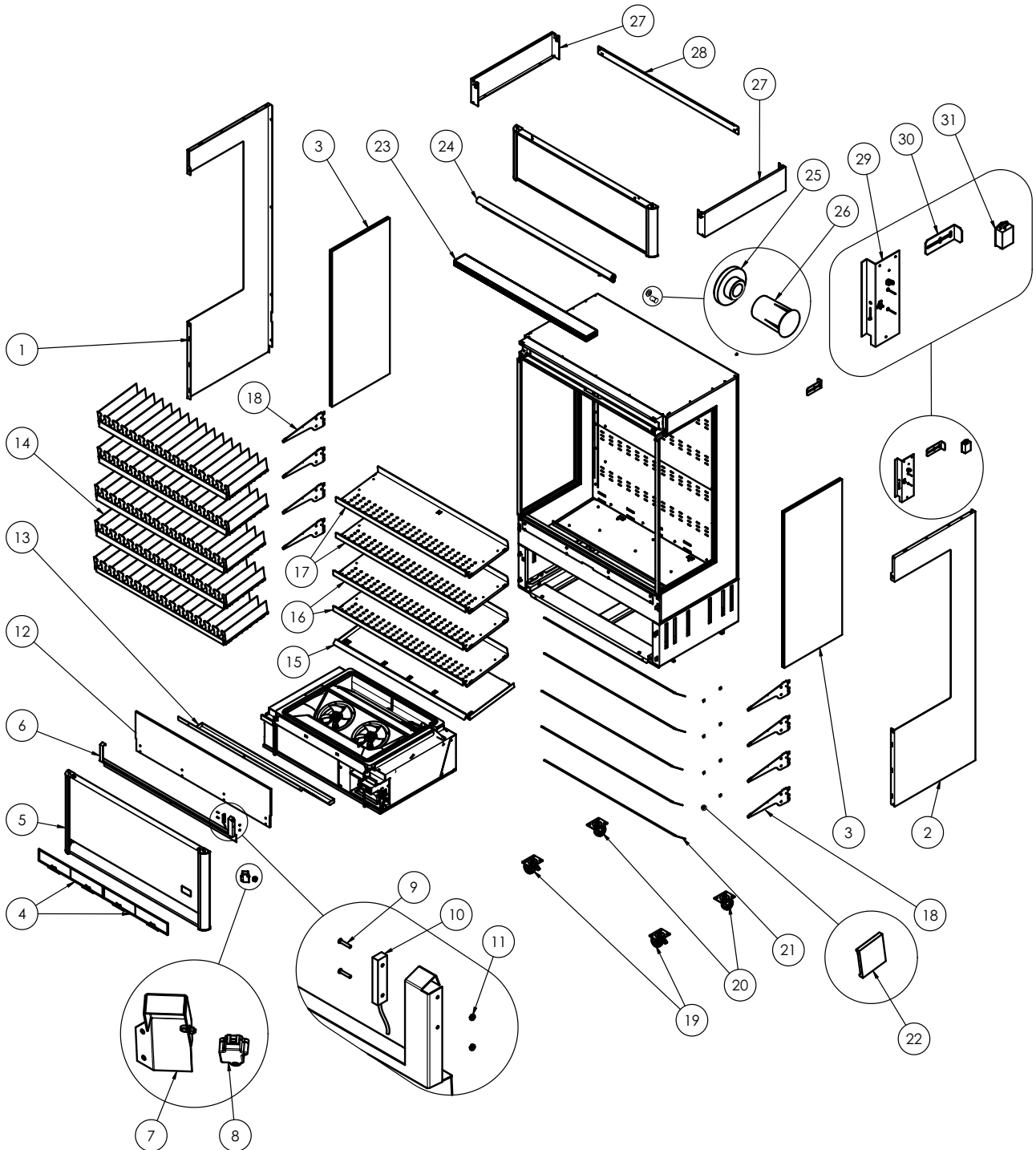
Cabinet

Table 7: Parts – Cabinet

Item	Description	SKOPE Part No.		
		White	*Black*	*Stainless steel*
1	Cladding – left hand side	O11CLN/009L-32	O11CLN/009L-49	O11CLN/009L-SS1
2	Cladding – right hand side	O11CLN/009R-32	O11CLN/009R-49	O11CLN/009R-SS1
3	Side glass	GLA12472	GLA12472	GLA12472
4	Condenser filters	HB0070204892	HB0070204892	HB0070204892
5	Kick panel assembly	O11CLN/131A-32	O11CLN/131A-49	O11CLN/131AS-SS
6	Night blind bracket	O11CLN/678-32	O11CLN/678-49	O11CLN/678S-SS1
7	Reach-in bracket	O720/U07-32	O720/U07-49	O720/U07-SS1
8	PIR sensor	O332N/X03	O332N/X03	O332N/X03
9	M3 × 16 mm nylon screw	FAS11917	FAS11917	FAS11917
10	Night blind sensor	HB0074091444	HB0074091444	HB0074091444
11	M3 nylon nut – black	FAS11918	FAS11918	FAS11918
12	Upstands	PLY12196	PLY12196	PLY12196
13	Return air grill	O11CLN/586-32	O11CLN/586-49	O11CLN/586S-SS1
14	Gravity matting kit	SXX12577WH	SXX12577BK	SXX12577WH
15	Shelf assembly – bottom	O11CLN/590A-32	O11CLN/590A-49	O11CLN/590A-SS
16	Shelf assembly – middle	O11CLN/590C-32	O11CLN/590C-49	O11CLN/590C-SS
17	Shelf assembly – top	O11CLN/590B-32	O11CLN/590B-49	O11CLN/590B-SS
18	Shelf support bracket	STY12512-49	STY12512-32	SSY12568L SSY12568R
19	Braked swivel castor	SXX4539	SXX4539	SXX4539
20	Swivel castor	SXX4339	SXX4339	SXX4339
21	Shelf lights	ELL12193	ELL12193	ELL12193
22	Shelf bracket wire clip	PLM12298	PLM12548	PLM12298
23	Top honeycomb air guide	PLX12477	PLX12477	PLX12477
24	Night blind assembly	SXX12474	SXX12474	SXX12474
25	Night blind spigot bush	PLM10342	PLM10342	PLM10342
26	Magnet for round reed switch	SXX2312	SXX2312	SXX2312
27	Sign side	O11CLN/S20-32	O11CLN/S20-49	O11CLN/S20S-SS2
28	Sign back strip	O11CLN/C53-32	O11CLN/C53-49	O11CLN/C53-SS2
29	Electric gear tray assembly	O11CLN/G29	O11CLN/G29	O11CLN/G29
30	Rear cabinet spacer	SM12BV/106	SM12BV/106	SM12BV/106
31	Schaffner EMI filter	ELZ10136	ELZ10136	ELZ10136
NS	Bottom shelf lighting lead	O720/X04	O720/X04	O720/X04
NS	Lower middle shelf lighting lead	O720/X03	O720/X03	O720/X03
NS	Upper middle shelf lighting lead	O720/X02	O720/X02	O720/X02
NS	Second top shelf lighting lead	O720/X01	O720/X01	O720/X01
NS	Top shelf lighting lead	O11CLN/X02	O11CLN/X02	O11CLN/X02
NS	Cartridge to cabinet lighting lead	O11CLN/X01	O11CLN/X01	O11CLN/X01
NS	IEC flex	O720/X06	O720/X06	O720/X06
NS	Mains flex	O720/E53	O720/E53	O720/E53

Refrigeration Cartridge
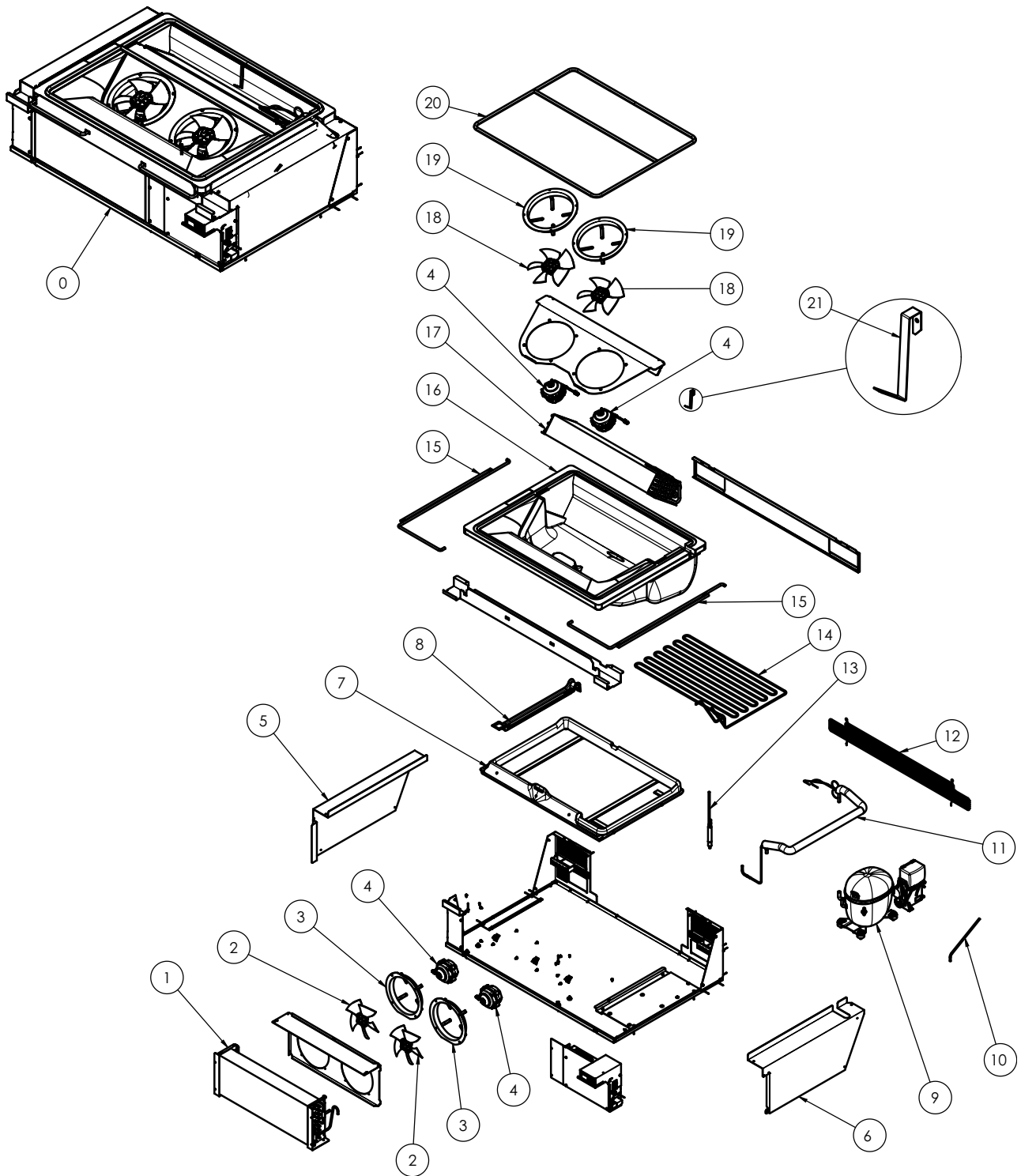
Table 8: Parts – Refrigeration Cartridge

Item	Description	SKOPE Part No.		
		White	*Black*	*Stainless steel*
0	Cartridge	UBQENI-0052-P	UBQENI-0052-P	UBQENI-0052-P
1	Condenser coil	CLS12068	CLS12068	CLS12068
2	Condenser fan blade	FAN12482	FAN12482	FAN12482
3	Condenser fan wall ring	US01N00003	US01N00003	US01N00003

Table 8: Parts – Refrigeration Cartridge (continued)

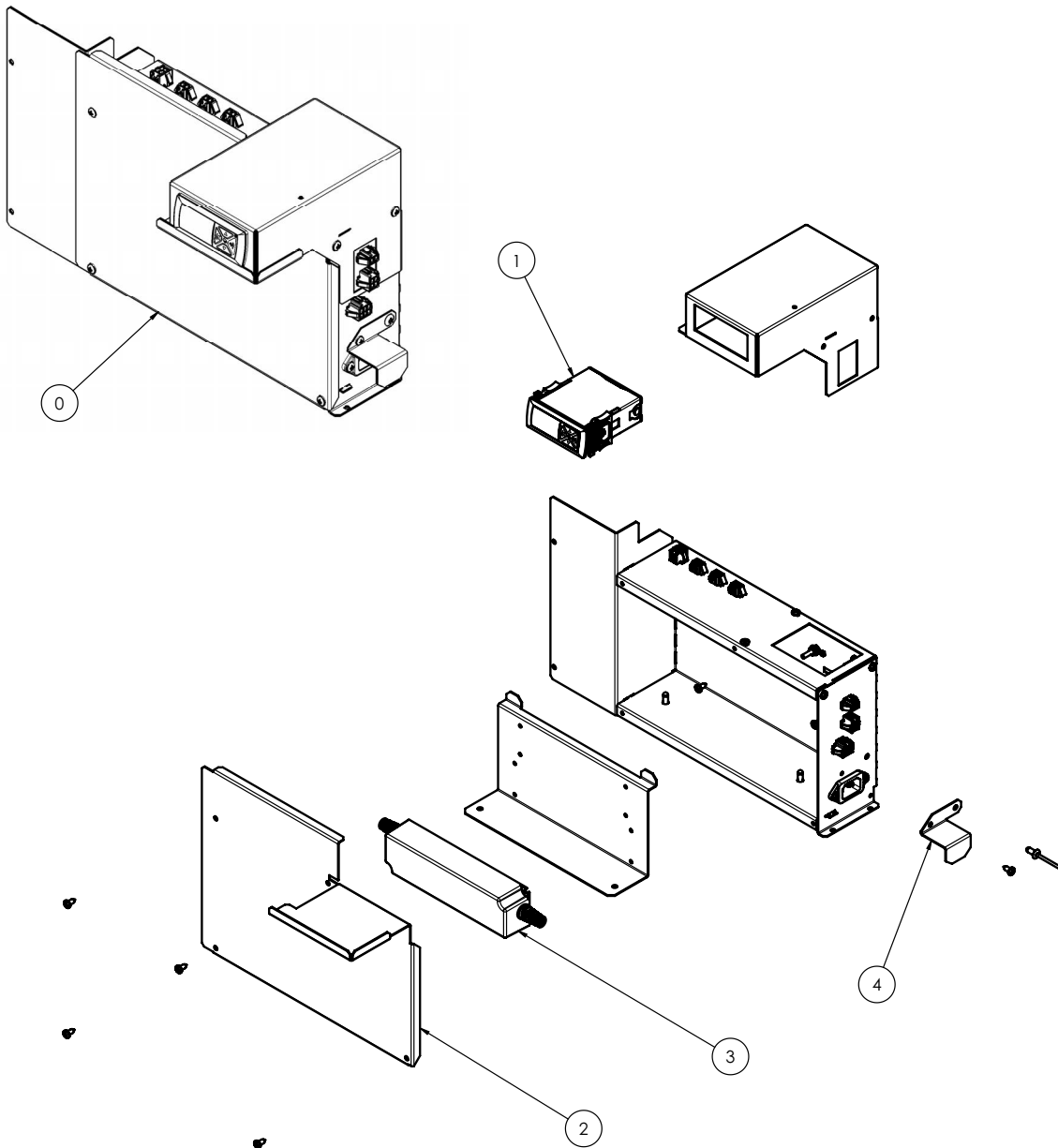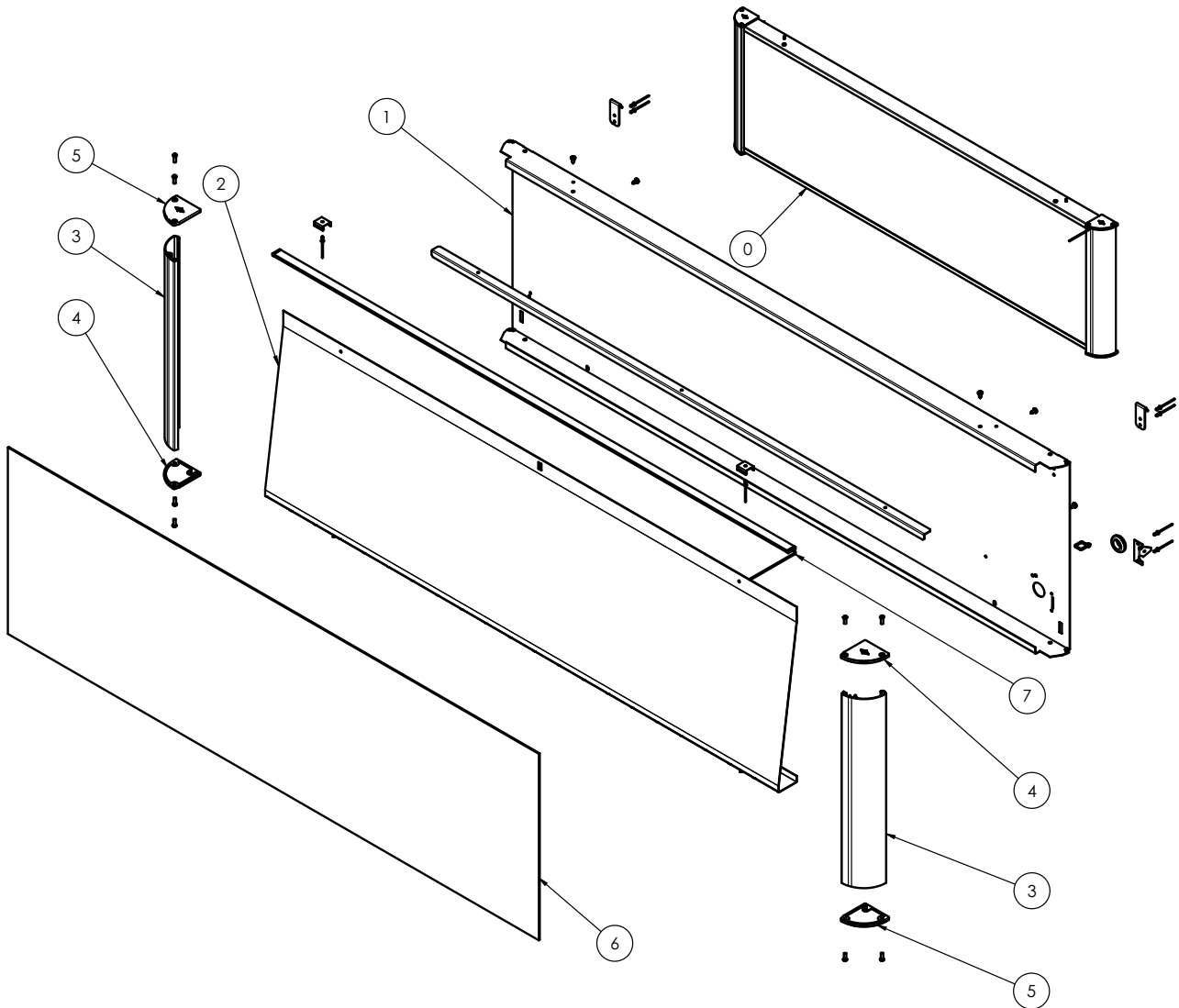| Item	Description	SKOPE Part No.		
		White	*Black*	*Stainless steel*
4	Fan motors	ELM11309	ELM11309	ELM11309
5	Side cover – left hand	US04N00023	US04N00023	US04N00023
6	Side cover – right hand	US04N00024	US04N00024	US04N00024
7	Condensate tray	UP10N00003	UP10N00003	UP10N00003
8	Condensate tray hold-down bracket	UP10N00004	UP10N00004	UP10N00004
9	Compressor	CPR12465	CPR12465	CPR12465
10	Process tube	UT04N00001	UT04N00001	UT04N00001
11	Suction line assembly	UA0400026	UA0400026	UA0400026
12	Rear guard	UX02N00002	UX02N00002	UX02N00002
13	Drier	DRY11210	DRY11210	DRY11210
14	Condensate line	UT03N00021	UT03N00021	UT03N00021
15	Lifting arm	UX01N00002	UX01N00002	UX01N00002
16	Evaporator tub	UA0500019	UA0500019	UA0500019
17	Evaporator coil	CLS12473	CLS12473	CLS12473
18	Evaporator fan blade	FAN12481	FAN12481	FAN12481
19	Evaporator fan wall ring	HB0070109669A	HB0070109669A	HB0070109669A
20	Gaskets/seals	RUE12210-OD1100N-KIT	RUE12210-OD1100N-KIT	RUE12210-OD1100N-KIT
21	Probe bracket	US09N00001	US09N00001	US09N00001
NS	Condenser probe	UW0300037-150RD	UW0300037-150RD	UW0300037-150RD
NS	Control probe	UW0300037-150BU	UW0300037-150BU	UW0300037-150BU
NS	Evaporator probe	UW0300037-150BK	UW0300037-150BK	UW0300037-150BK

Cartridge Electrics Box

Table 9: Parts – Cartridge Electrics Box

Item	Description	SKOPE Part No.		
		White	Black	Stainless steel
0	Cartridge electrics box	UA0300046	UA0300046	UA0300046
1	Controller	ELZ11749-1632	ELZ11749-1632	ELZ11749-1632
2	Electrics box lid	US07N00022-49	US07N00022-49	US07N00022-49
3	LED power supply	ELZ12205	ELZ12205	ELZ12205
4	IEC retaining bracket	US07N00017	US07N00017	US07N00017
NS	Electrics box power loom	UW0300041A	UW0300041A	UW0300041A
NS	Electrics box signal loom	UW0300041B	UW0300041B	UW0300041B

Sign

High Sign

Table 10: Parts – High Sign

Item	Description	SKOPE Part No.		
		White	*Black*	*Stainless steel*
0	High sign assembly	O11CLN/T61B-32/00	O11CLN/T61B-49/00	O11CLN/T61BS-SS
1	Wiring cover – high sign	O11CLN/T67B-32	O11CLN/T67B-49	O11CLN/T67BS-SS1
2	Sign reflector – high sign	O11CLN/T63B-32	O11CLN/T63B-32	O11CLN/T63B-32
3	Sign end extrusion – high sign	O11CLN/S89B	O11CLN/S89B	O11CLN/S89B
4	End cap – left hand	PLM12201L	PLM12201L	PLM12201L
5	End cap – right hand	PLM12201R	PLM12201R	PLM12201R
6	Sign insert panel – high sign	PLY12494	PLY12494	PLY12493
7	Sign light	ELL12193	ELL12193	ELL12193
8	Decals			

Low Sign
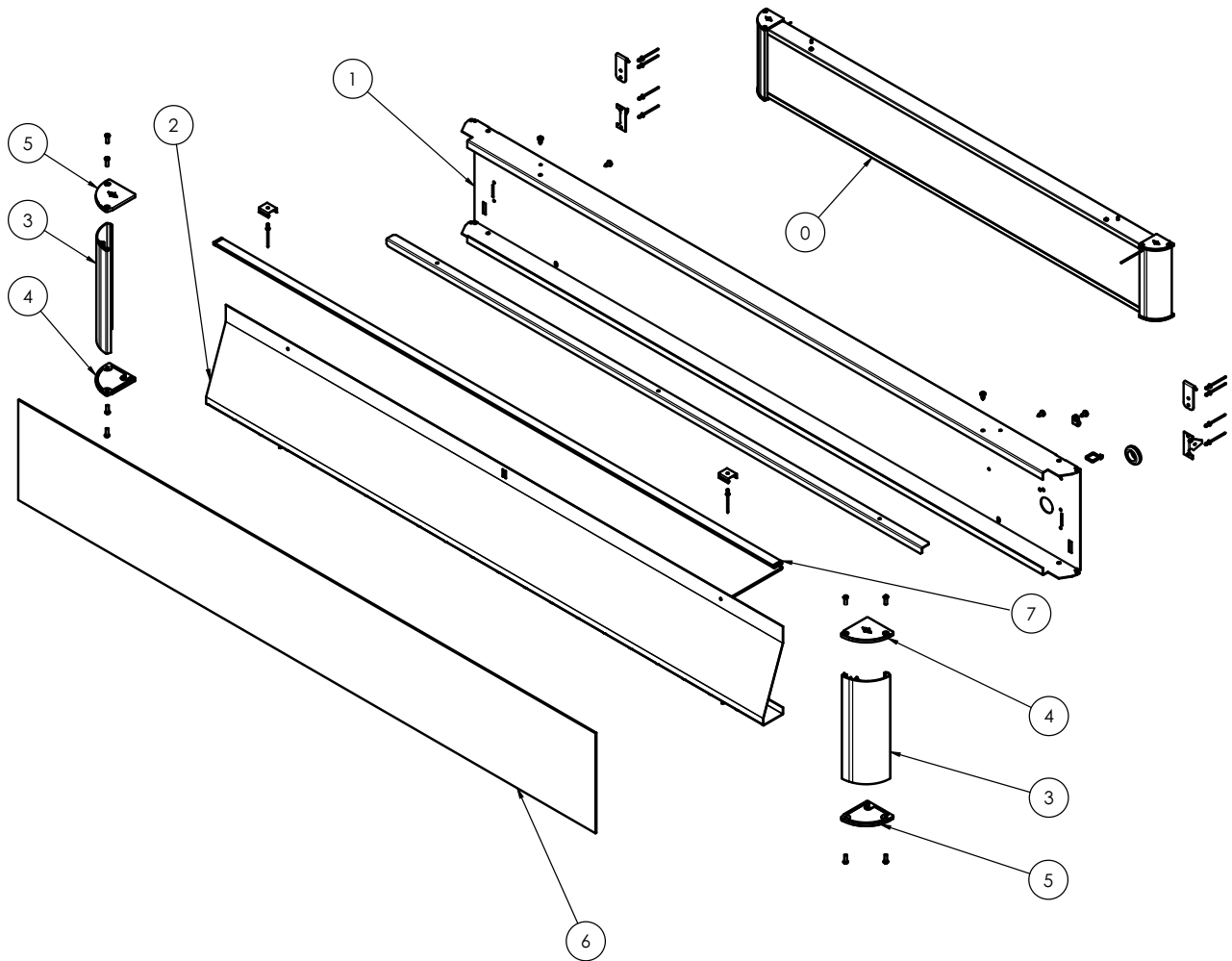
Table 11: Parts – Low Sign

Item	Description	SKOPE Part No.		
		White	*Black*	*Stainless steel*
0	Low sign assembly	O11CLN/T61A-32/00	O11CLN/T61A-49/00	O11CLN/T61AS-SS
1	Wiring cover – low sign	O11CLN/T67A-32	O11CLN/T67A-49	O11CLN/T67AS-SS1
2	Sign reflector – low sign	O11CLN/T63A-32	O11CLN/T63A-32	O11CLN/T63A-32
3	Sign end extrusion – low sign	O11CLN/S89A	O11CLN/S89A	O11CLN/S89A
4	End cap – left hand	PLM12201L	PLM12201L	PLM12201L
5	End cap – right hand	PLM12201R	PLM12201R	PLM12201R
6	Sign insert panel – low sign	PLY12493	PLY12493	PLY12493
7	Sign light	ELL12193	ELL12193	ELL12193
8	Decals			

7 Maintenance

Cleaning

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

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

Condenser Filter and Coil To ensure trouble-free performance, SKOPE strongly recommends that the condenser filter and coil are cleaned:

- every month with a soft brush to remove dust and fluff.
- every six months, by qualified service personnel.

The condenser coil and air filter **must** be kept clean for efficient and reliable operation.
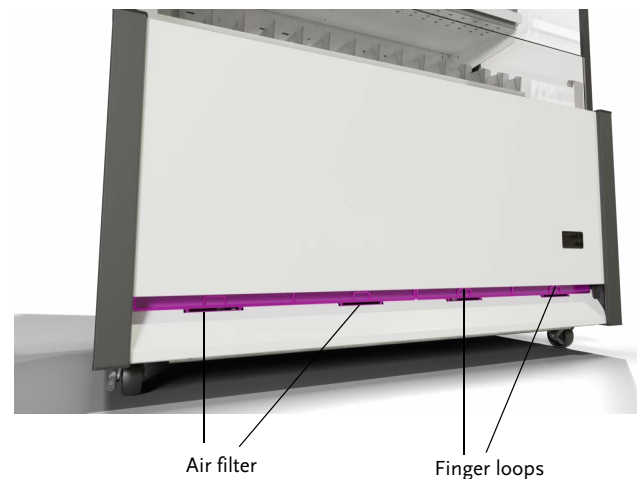
> **WARNING**
> Unplug the fridge from the power supply before cleaning the condenser coil.

Procedure 30: To clean the condenser filter

1. Disconnect the cabinet from the power supply (see page 18).

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

Air filter   Finger loops

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

4. To refit the filter, insert it up into the locating bracket on the top face of the front panel vent with the finger loops facing out. Clip into the slots on the bottom face of the front panel vent.

Procedure 31: To clean the condenser coil

1. Disconnect the cabinet from the power supply (see page 18).

2. Remove the kick panel (see page 19).

3. Gently brush the face of the condenser coil to remove any debris, and straighten any bent fins using a fin comb.

4. Once clean, refit the kick panel (see page 19).

8 Troubleshooting

Electronic Controller

Alarms signal unexpected operational changes in the fridge. 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 the following table.

Table 12: Cabinet and cartridge troubleshooting

Problem	Possible Cause	Recommended Action
• Cabinet not operating • No controller display	• Loss of power supply • Loose plug	• Check mains power supply. • Check all plugs are connected correctly.
• Cabinet not operating as usual • Defrost cycle incorrect length	• Incorrect parameters	Depending on the controller: • Wellington Drive: Reload the parameter set. • Dixell: Check each parameter individually. Get the latest parameter set by registering for and logging into the skope.com website, or contacting Customer Service.
• Fan not working	• Loose plug	• Check all plugs are connected correctly.
• Lights not on	• Electronic controller is in 'Night mode' • Light switched off/night blind closed • Failed LED light • Refrigeration system error (indicated by the electronic controller) • Plug not connected properly • Power supply fault	• 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. • Switch the light on via the light button on the electronic controller faceplate, or via the app. • Open the night blind. • Replace the light. • Diagnose and repair. If a system fault is found contact SKOPE for information on how to proceed. • Check and clean the plugs. • Replace the light's power supply.
• Light component not working	• Plug not connected properly • Faulty light	• Check and clean the plug connection in the side light channel, behind the loom cover. • 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.
• Excess compressor noise	• Noise variation is usual as the variable speed compressor speed changes • Damaged mountings	 • Check the mountings to ensure there is no damage to the rubber, or the washers, nuts or screws.
• Compressor not operating	• Compressor electrics • Failed compressor	• 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) • Replace the compressor.

Table 12: Cabinet and cartridge troubleshooting (continued)

Problem	Possible Cause	Recommended Action
• Frozen evaporator coil	• Evaporator probe fault	• Replace the evaporator probe.
	• Controller fault	• Replace the controller.
	• Short of refrigerant	• Perform refrigeration system diagnostics and service as required.
• Ice build-up inside evaporator box	• 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.
• Power consumption is higher than expected	• 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	• 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.
	• Electronic controller is in 'Night mode'	• Change the cabinet into 'Day mode' by pressing and holding the light button on the electronic controller faceplate.
	• Setpoint is too high	• Lower the setpoint.
	• Recently loaded	• Allow the product time.
	• Cabinet is overstocked	• Remove some product. • Product must not overhang the shelves, and must remain below load limit label.
	• 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.
	• 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.
• Moisture build up on cabinet exterior	• High humidity	• Check the ambient operating temperature and reposition the cabinet if necessary.
• Warm cabinet temperatures • Compressor operating for long periods (more than 1 hour)	• Blocked condenser coil	• Clean the condenser coil.
	• Poor ventilation around 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