# ReFlex Underbench

SKOPE Salad and Pizza Prep
Hydrocarbon

Service Manual

MAN80292 Rev. 1.2 May 2023

SKOPE® Refrigeration

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Hydrocarbon
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# 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 Hydrocarbon Service Requirements

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

**Hydrocarbon work – SKOPE Service Policy**

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

- MUST – Ensure all workers are trained in the SAFETY of hydrocarbon products to the appropriate level for the work required.
- MUST – Follow all Local Safety Regulations relevant to flammable refrigerant gases.
    - Australia should reference - AIRAH Flammable Refrigerants – Safety Guide
    - New Zealand should reference – Flammable Refrigerant Safety Documentation (Refrigerant License NZ)
- MUST – Adhere to all on-site (workplace) Health and Safety requirements
- MUST – Not modify or alter the design of SKOPE equipment in any way
- MUST – In cases where the refrigeration system is not readily removable from the cabinet; then the entire cabinet MUST be sent to the Hydrocarbon workshop for repair.
- MUST – ONLY use SKOPE OEM Spare Parts; or identical replacement parts. Any variation in replacement part may render the system non-compliant and unsafe.
- MUST – Follow all best practice work activities for servicing hydrocarbon refrigerants (SKOPE recommend attending specific hydrocarbon refrigeration handling training courses). Nitrogen must be used for purging system before commencing "Hot Work" – brazing.
- MUST – Adhere to relevant SKOPE Service Manual. If any contradiction, the local Regulations take precedence over SKOPE requirements
- MUST – Work only in suitable, safe and compliant work spaces. Personal Protective Equipment must always be used when working on Hydrocarbon equipment.
- MUST – Service people diagnosing refrigeration faults must always carry and utilise Flammable Gas detectors when working on Hydrocarbon equipment.
- MUST – Prior to any service work; know where and how to safely and quickly isolate power supply to cabinet
- MUST – Not perform any Hot Work (brazing etc.) in the field. These are to be completed in a suitable service depot / workshop (in a dedicated specific Hazardous Work Area compliant to local flammable gas regulations)
- MUST – Not transport a refrigeration system with a known active leak. If there is an active leak the refrigerant must be safely removed (with use of Bullet Piercing Valve or Line Tap valves) before transporting. Valves must be removed at the hydrocarbon service depot once repair is completed.
- MUST – All hydrocarbon workshop areas must have emergency plans; that includes suitable evacuation and fire control plans and equipment.
- MUST – Only use refrigerant grade hydrocarbon, to precise mass specified on removable refrigeration system serial label.
- MUST – Be accurate refrigerant charge; The refrigerant mass is ultra-low charge and must only be measured in by accurate scales to +/- 1.0gram. Refrigerant MUST not be overcharged; or added to an already charged system.
- MUST – Use identical drier replacement; as any change will affect gas charge volume; and effect reliability compliance and safety.
- MUST – Any pipework replacement, must be identical to genuine SKOPE parts.
- MUST – Not introduce a sparking device inside a cabinet or inside a removable refrigeration system. Battery drills should not be used.
- MUST – Not perform any activity that could stress a refrigeration pipe (unless in a workshop).
- MUST – Get customer authorisation to permanently swap a removable refrigeration system.
- MUST – Have the Wellington Drive SCS Field app installed on a Bluetooth enabled device carried by the service technician (exception is for cabinets that do not utilise the Wellington Drive Controller).

  The app should be utilised for safe, accurate diagnosis of the system and it is required to complete a controller replacement in the field.
- RECOMMENDED – Have the Wellington Drive SCS Track app installed on a Bluetooth enabled device carried by the service technician. This passive app collects system data from the Wellington Drive SCS Connect Controller and transmit it to the cloud.
- Logistics companies may be used to transport a complete refrigerator where no separation of the refrigeration system occurs. Logistics companies are not required to be contracted to this SKOPE Service Policy.

# 2 Specifications

## Models

This service manual is applicable to the SKOPE ReFlex salad and pizza prep models detailed in the table below. Refer to the relevant product specification sheet (available on the SKOPE website: www.skope.com) for specifications.

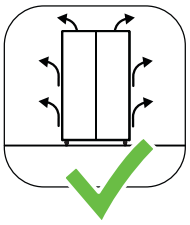
**Table 1: Model specifications**

| Model | SKOPE ID | Product Description |
|---|---|---|
| RF7.PPS.2.SD | RB2S | 2-Door Salad Prep |
| RF7.PPS.3.SD | RB3S | 3-Door Salad Prep |
| RF8.PPZ.3.SD | RB3Z | 3-Door Pizza Prep |
| RF8.PPZ.4.SD | RB4Z | 4-Door Pizza Prep |

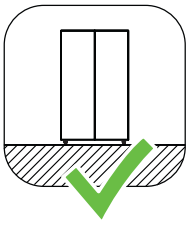
# 3 Installation

## Installation Guidelines

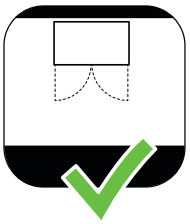
When installing this cabinet, ensure you consider and meet the installation guidelines below.



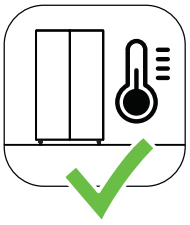
**Ventilation**
Ensure all ventilation requirements below are met.



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

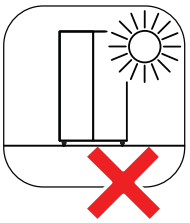


**Door Opening**
Allow adequate space for the door/s to open and close properly.

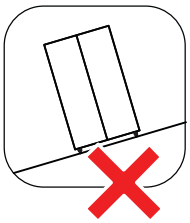


**Climate Class**
The cabinet must be installed in an environment within its climate class.

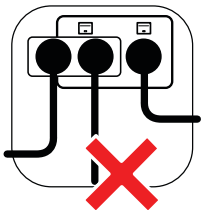
The climate class is stated on the cabinet rating label inside the cabinet.



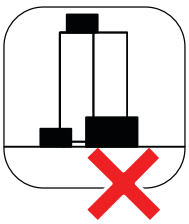
**Sunlight**
Do not install the cabinet in direct sunlight.



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



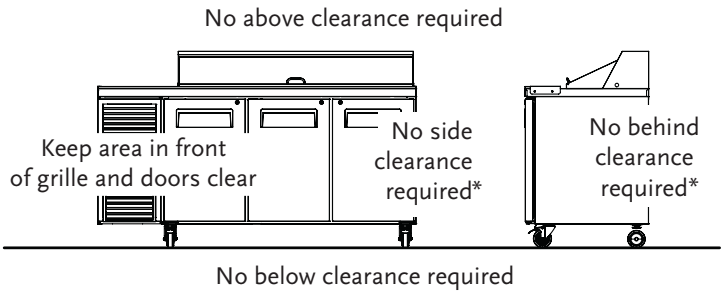
**Power Supply**
Do not overload the power supply.



**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

Thoroughly clean and sanitise the cabinet interior and food contact surfaces, such as the worktop, before using for the first time. Ensure the cabinet is unplugged from the power supply before cleaning, and use only standard stainless steel cleaners suitable for food preparation areas. You can clean the cabinet exterior as instructed in the cleaning section of this service manual (see “Routine Cleaning” on page 48).

## Shelves

Each shelf is held in place with four shelf clips, which clip into the shelf support strips. 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 it to the mains power supply.

# 4 Electronic Controller

## Overview

The cabinet is fitted with an AoFrio SCS Connect electronic controller. The controller is located in the cartridge compartment and is visible from the outside of the cabinet through the cartridge cover.

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.

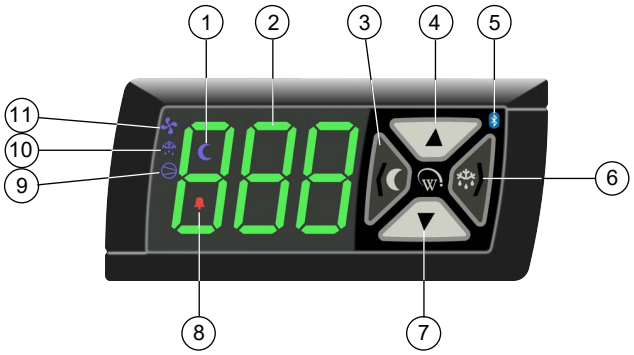



**Table 2: Controller faceplate**

| No. | Description | | | Use |
|---|---|---|---|---|
| 1 | **Night mode** | Indicator | On during Night mode. | |
| 2 | **Display** | Indicator | Digital display of:<br>• the cabinet's air (not product) temperature.<br>• alarm messages. | |
| 3 | **Light switch - Night mode (back/abort)** | Button | Used during programming. | • Press to switch the lights on or off.<br>• 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.<br>• Flashing when connected to a device. | |
| 6 | **Defrost cycle (next/enter)** | Button | Used during programming. | Press and hold to start a manual defrost. |
| 7 | **Down** | Button | Used during programming. | |
| 8 | **Fault - Alarm** | Indicator | On during a fault or alarm. | |
| 9 | **Compressor** | Indicator | On when the compressor is running. | |
| 10 | **Defrost mode** | Indicator | On during the defrost cycle. | |
| 11 | **Fan** | Indicator | On when the fans are running. | |

## Service Mode

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

Service mode includes:

**Parameters**

Allows you to access and edit individual controller parameters.

**Reset**

Returns the controller back to factory or default settings.

**Manual test**

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

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

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

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

See MAN80199 SCS Connect Electronic Controller (https://tinyurl.com/4n2dvury) for details on the SCS Connect Field app and SCS Connect Track app.

**Table 3: Parameter numbers**

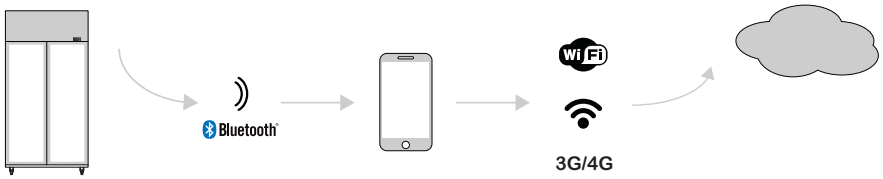
| Model no. | RF7.PPS.2.SD | RF7.PPS.3.SD | RF8.PPZ.3.SD | RF8.PPZ.4.SD |
|---|---|---|---|---|
| 620 | ✓ | ✓ | | |
| 621 | | | ✓ | ✓ |

## SCS Connect Track App

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

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

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




See MAN80199 SCS Connect Electronic Controller (https://tinyurl.com/4n2dvury) for details on the SCS Connect Field app and SCS Connect Track app.

### 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 users to adjust some electronic controller settings, including energy saving modes, open and closing hours and preset temperature set points for specific product.

## 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 4: Faults**

| Description | Possible root cause | Actions |
|---|---|---|
| Door left open<br>The door has been left open for several minutes<br>Excessive door open counts | • Door not self-closing | • Open the door and let it go. If it does not close on its own, repair the self-closing mechanism. |
| | • Door switch/circuit | • Check the door switch and replace if necessary. |
| | • Controller | • Check the controller, which may need replacing. |
| Over-voltage protection<br>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:<br>• poor line voltage | Test the incoming voltage to ensure it is correct. The test voltage needs to be between 198 and 264 volts.<br>• If outside this, the controller will shut the system down until the voltage returns to between these measurements.<br>• 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 4: Faults (continued)**

| Description | Possible root cause | Actions |
|---|---|---|
| Under-voltage protection<br>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:<br>• power supply overloaded | Test the incoming voltage to ensure it is correct. The test voltage needs to be between 198 and 264 volts.<br>• If outside this, the controller will shut the system down until the voltage returns to between these measurements.<br>• 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<br>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.<br>• Remove and clean the condenser filter.<br>• Check that the condenser is free of debris.<br>• If the coil is dirty, clean it with a vacuum cleaner or soft brush. |
| | • Poor installation or ventilation | • Check the installation guidelines.<br>• 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.<br>• 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<br>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.<br>• Check that the condenser is free of debris.<br>• 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.<br>• 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 5: Alarms**

| Code | Description | Possible root cause | Action |
|---|---|---|---|
| dor | Door left open<br>The door has been left open for several minutes. The alarm will revert to door left open **fault** after 10 minutes (see Table 4, “Faults”, on page 12. | • Door not self-closing (torsion fault)<br>• Door switch/circuit<br>• Controller | • Open the door and let it go. If it does not close on its own, repair the self-closing mechanism.<br>• Check the door switch and replace if necessary.<br>• Check the controller, which may need replacing. |
| 8 | Estimated product temperature below allowable range<br>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<br>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.<br>• 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 | |
| | | • Blocked condenser | • Remove and clean the condenser filter.<br>• Check that the condenser is free of debris.<br>• 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.<br>• Check the defrost cycle and that the defrost probe are working correctly.<br>• 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.<br>• Ensure the installation levers are lifting the cartridge up onto the case correctly. |
| | | • Compressor is overloaded from excess door openings or ambient temperature | • Make sure the door is not opened unnecessarily.<br>• 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 5: Alarms (continued)**

| Code | Description | Possible root cause | Action |
|---|---|---|---|
| 15 | Excessive condensing temperature protection<br>The system was operating at an excessive temperature and has shut down to prevent permanent damage. | | Cartridge swap is not required. |
| | | • Very high ambient temperature | • Ensure that the cabinet is operating in its climate class. |
| | | • Condenser is not clean | • Remove and clean the condenser filter.<br>• Check that the condenser is free of debris.<br>• 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:<br>  • Measure the probe resistance to make sure it is within the range.<br>  • Compare the probe's temperature with the known temperature, using an external trusted thermometer.<br>• Replace the probe if required. |
| 17 | Control probe failure<br>A critical system sensor has failed and the cabinet can no longer operate. | | Cartridge swap is not required. |
| | | • Control probe or circuit | • Either:<br>  • Measure the probe resistance to make sure it is within the range.<br>  • Compare the probe's temperature with the known temperature, using an external trusted thermometer.<br>• 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<br>The compressor was drawing too much current and has shut down to prevent permanent damage. | • Blocked condenser | • Remove and clean the condenser filter.<br>• Check that the condenser is free of debris.<br>• 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 | • Make sure the door is not opened unnecessarily.<br>• Ensure that the cabinet is operating in its climate class. |
| | | • Compressor or gas leak | • Swap the cartridge. |

**Table 5: Alarms (continued)**

| Code | Description | Possible root cause | Action |
|---|---|---|---|
| 19 | Failed to reach set temperature<br>The refrigeration system has been operating continuously for a long period without reaching the set temperature. | • Blocked condenser | • Remove and clean the condenser filter.<br>• Check that the condenser is free of debris.<br>• 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.<br>• 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.<br>• 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 | • Make sure the door is not opened unnecessarily.<br>• 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<br>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.<br>2. Change parameters accordingly. |
| | | • Controller | • The controller may be reading incorrectly and need replacing. |
| 22 | Evaporator fan over-current protection<br>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<br>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<br>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<br>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<br>Controller hardware has failed. | • Parameters | • Load the correct parameter settings. |
| | | • Controller or circuit | • Replace the controller. |

**Table 5: Alarms (continued)**

| Code | Description | Possible root cause | Action |
|---|---|---|---|
| 27 | Probe failure<br>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.<br>• Either:<br>  • Measure the probe resistance to make sure it is within the range.<br>  • Compare the probe's temperature with the known temperature, using an external trusted thermometer.<br>• Replace the probe if required. |
| | | • Controller | • The controller may be reading incorrectly and need replacing. |
| 28 | No downward tendency<br>The temperature is no longer decreasing. | • Blocked condenser | • Remove and clean the condenser filter.<br>• Check that the condenser is free of debris.<br>• 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.<br>• 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.<br>• 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<br>The compressor cut out on its internal protection or pressure switch. | • Blocked condenser | • Remove and clean the condenser filter.<br>• Check that the condenser is free of debris.<br>• 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 seal leaking | • Check that the gasket is intact and not broken and leaking. If required, replace the door gasket.<br>• Ensure the installation levers are lifting the cartridge up onto the case correctly. |
| | | • Product hot or blocking the 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 | • Make sure the door is not opened unnecessarily.<br>• 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. |

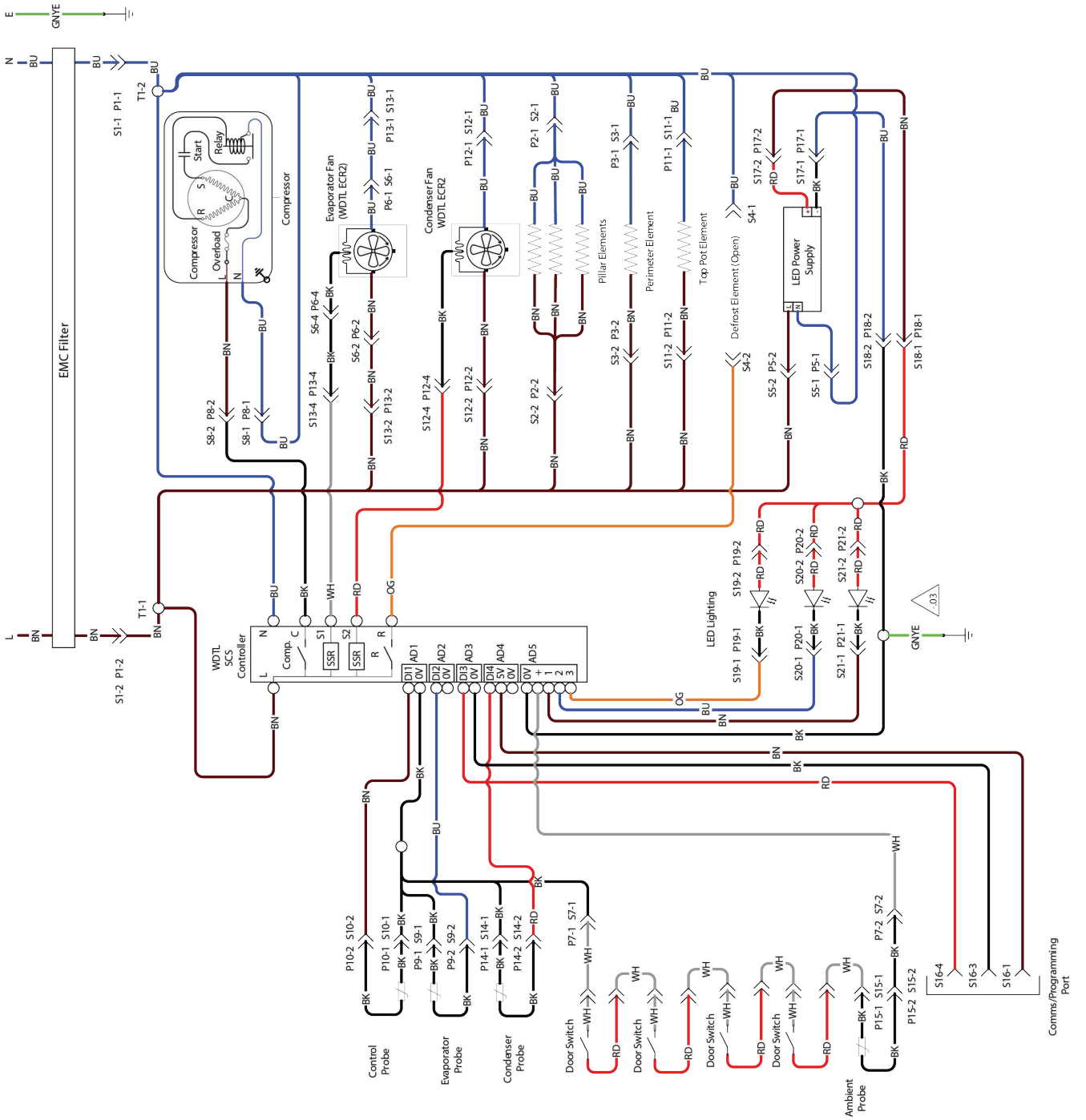
**Table 5: Alarms (continued)**

| Code | Description | Possible root cause | Action |
|---|---|---|---|
| 30 | Excessive automatic defrosting<br>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.<br>• If required, replace the door gasket. |
| | | • Evaporator probe | Either:<br>• Measure the probe resistance to make sure it is within the range.<br>• 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.<br>• 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. |
| 31 | Compressor stalling<br>The compressor is stalling on start up. | • | Take a spare cartridge in case of refrigeration system fault. |
| | | • Blocked condenser | • Remove and clean the condenser filter.<br>• Check that the condenser is free of debris.<br>• 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 seal leaking | • Check that the gasket is intact and not broken and leaking. If required, replace the door gasket.<br>• 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.<br>• If required, replace the door gasket. |
| | | • Product hot or blocking the 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 | • Make sure the door is not opened unnecessarily.<br>• 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. |

## Notes

# 5 Wiring

## ReFlex Salad and Pizza Prep




| 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

| | | |
|---|---|---|
| S1/P1 | Power Connection Socket/Plug | Black 4-way |
| S2/P2 | Pillar Element Wire Socket/Plug | Black 3-way |
| S3/P3 | Perimeter Element Wire Socket | Black 3-way |
| S4/P4 | Defrost Element Socket | Open, Yellow 4-way |
| S5/P5 | LED Driver AC Input Socket/Plug | White 3-way |
| S6/P6 | Evaporator Extension Flex Socket/Plug | White 4-way |
| S7/P7 | Door Sensor Socket/Plug | White 2-way |
| S8/P8 | Compressor Unit Socket/Plug (Blue 4-way) | Blue 4-way |
| S9/P9 | Evaporator Extension Flex Socket/Plug | Black 2-way |
| S10/P10 | Cabinet Sensor Socket/Plug | Blue 2-way |
| S11/P11 | Top Pot Element Wire Socket/Plug | Black 3-way |
| S12/P12 | Condenser Motor Unit Socket/Plug | Red 4-way |
| S13/P13 | Evaporator Motor Unit Socket/Plug | White 4-way |
| S14/P14 | Condenser Sensor Socket/Plug | Orange 2-way |
| S15/P15 | Ambient Sensor Socket/Plug | White 2-way |
| S16/P16 | Programming/Comms Port Socket | Blue 4-way |
| S17/P17 | LED Driver DC Out Put Socket/Plug | Red 2-way |
| S18/P18 | LED Driver Extension DC Out Put Flex Socket/Plug | Yellow 2-way |
| S19/P19 | LED Lighting Channel A Socket/Plug | Red 2-way |
| S20/P20 | LED Lighting Channel B Socket/Plug | Red 2-way |
| S21/P21 | LED Lighting Channel C Socket/Plug | Red 2-way |
| T1 | Unit Terminals | – |

# 6 Spare Parts

## Cabinet Assembly – Salad Prep

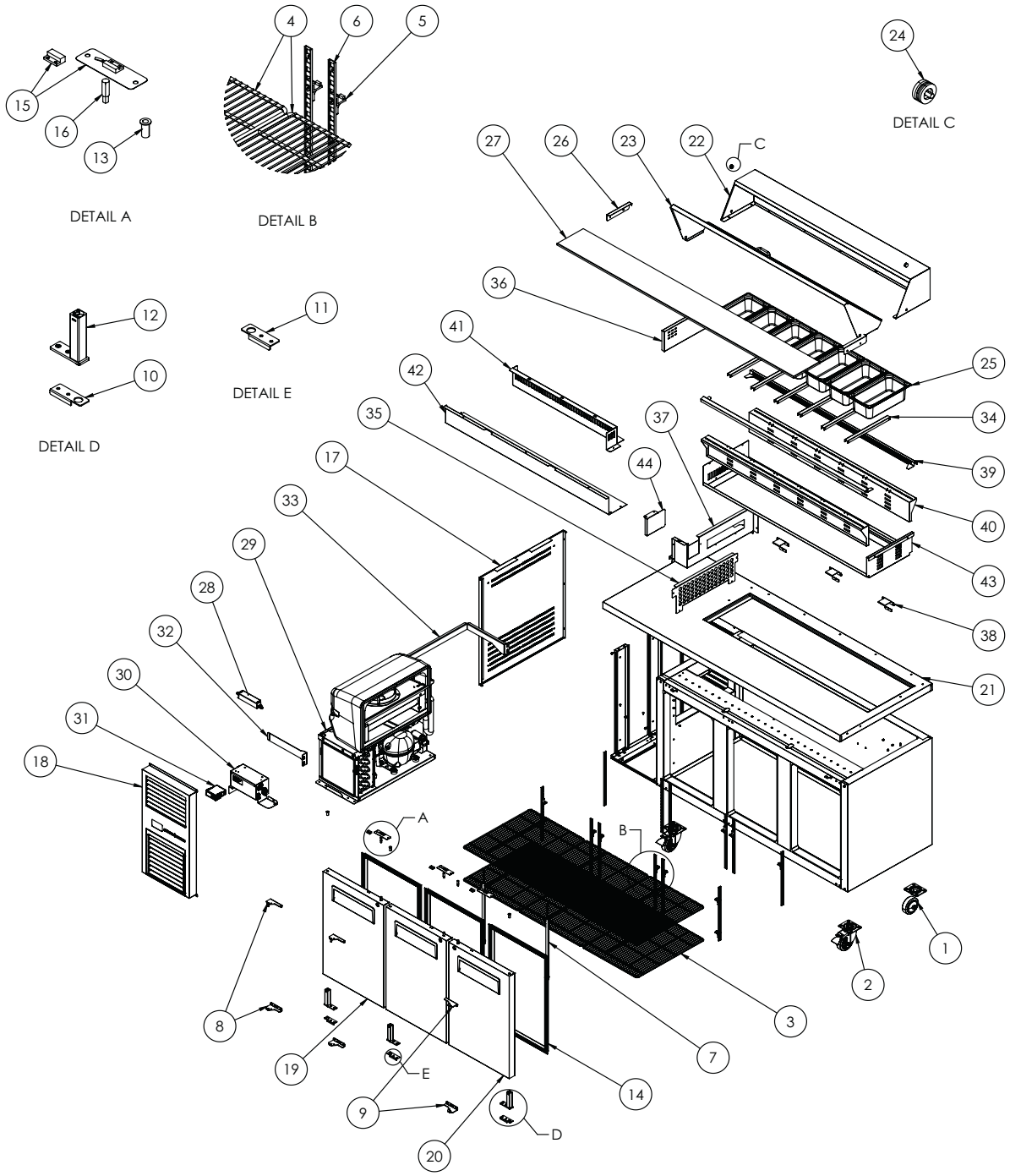



**Table 6: Parts – Cabinet Assembly: Salad Prep**

| No. | Description | Part No. | RF7.PPS.2.SD | RF7.PPS.3.SD |
|---|---|---|---|---|
| 1 | CASTOR-UNBRAKED | SKC-2-190-0048-0 | ✓ | ✓ |
| 2 | CASTOR-BRAKED | SKC-2-190-0047-0 | ✓ | ✓ |

**Table 6: Parts – Cabinet Assembly: Salad Prep (continued)**

| No. | Description | Part No. | RF7.PPS.2.SD | RF7.PPS.3.SD |
|---|---|---|---|---|
| 3 | SHELF SET-2DR SALAD | SKC-0-050-0061-0 | ✓ | |
| | SHELF SET-3DR SALAD | SKC-0-050-0062-0 | | ✓ |
| 4 | SHELF-2DR SALAD 390X510 | SKC-2-190-0061-0 | ✓ | |
| | SHELF-3DR SALAD MID 475X510 | SKC-2-190-0046-0 | | ✓ |
| | SHELF-3DR SALAD SIDE 415X510 | SKC-2-190-0045-0 | | ✓ |
| 5 | SHELF-CLIP | SKC-2-110-0625-0 | 16 | 24 |
| 6 | SHELF SUPPORT STRIP | SKC-2-190-0044-0 | 8 | 12 |
| 7 | LIGHT-LED | SKC-4-050-0155-0 | 1 | 2 |
| 8 | HINGE SET-LH | SKC-0-050-0063-0 | 1 | 2 |
| 9 | HINGE SET-RH | SKC-0-050-0064-0 | 1 | 1 |
| 10 | DOOR STOPPER-RH | SKC-2-190-0040-0 | 1 | 1 |
| 11 | DOOR STOPPER-LH | SKC-2-190-0043-0 | 1 | 1 |
| 12 | HINGE-SELF CLOSING | SKC-2-170-0410-0 | 2 | 3 |
| 13 | BUSH-DOOR-TOP | SKC-2-110-0354-0 | 2 | 3 |
| 14 | GASKET-DOOR-SMALL | SKC-2-190-0060-0 | 2 | |
| | GASKET-DOOR-LARGE | SKC-2-190-0037-0 | | 3 |
| 15 | KIT-DOOR SENSOR | SKC-4-050-0130-0 | 2 | 3 |
| 16 | KIT-LOCK PIN AND KEY | SKC-2-006-0996-0 | 2 | 3 |
| 17 | CABINET PANEL-LH | SKC-2-180-0124-0 | ✓ | ✓ |
| 18 | CABINET PANEL-LOUVRE | SKC-0-180-0011-0 | ✓ | ✓ |
| 19 | DOOR-SOLID-LH-SMALL | SKC-0-180-0020-0 | 1 | |
| | DOOR-SOLID-LH-LARGE | SKC-0-180-0010-0 | | 2 |
| 20 | DOOR-SOLID-RH-SMALL | SKC-0-180-0019-0 | 1 | |
| | DOOR-SOLID-RH-LARGE | SKC-0-180-0009-0 | | 1 |
| 21 | BENCH TOP-2DR SALAD | SKC-0-180-0016-0 | ✓ | |
| | BENCH TOP-3DR SALAD | SKC-0-180-0006-0 | | ✓ |
| 22 | HOOD-2DR SALAD | SKC-0-180-0018-0 | ✓ | |
| | HOOD-3DR SALAD | SKC-0-180-0008-0 | | ✓ |
| 23 | LID-2DR SALAD | SKC-0-180-0041-0 | ✓ | |
| | LID-3DR SALAD | SKC-0-180-0042-0 | | ✓ |
| 24 | HINGE SET-LID-SALAD | SKC-0-050-0071-0 | 2 | 2 |
| 25 | GN1/3 PANS (100mm DEEP, STAINLESS STEEL 304) | SXX12239 | 4 | 7 |
| 26 | RETAINER KIT-CUTTING BOARD SET (LH + RH) | SKC-0-050-0065-0 | ✓ | ✓ |
| 27 | CUTTING BOARD-2DR SALAD 200x1267 | SKC-2-190-0056-0 | 1 | |
| | CUTTING BOARD-3DR SALAD 200x1797 | SKC-2-190-0032-0 | | 1 |
| 28 | MEAN WELL LPF-16-24 | ELZ12161 | ✓ | ✓ |
| 29 | REFRIGERATION CARTRIDGE PACKED | ULQCNI-0029-P | ✓ | ✓ |
| 30 | CONTROLLER ELECTRICAL ASSEMBLY | UA0300026-SP | ✓ | ✓ |
| 31 | WDTL SCS FIRMWARE-REFLEX | ELZ11749-1627 | ✓ | ✓ |
| 32 | EVAP TUB MOUNT BRACKET-FRONT | US08N00005 | ✓ | ✓ |
| 33 | EVAP TUB MOUNT BRACKET-REAR | US08N00004 | ✓ | ✓ |
| 34 | PAN HOLDER | SSY12193 | 3 | 6 |
| 35 | RETURN AIR GRILL PANEL | SSY12194 | 3 | 6 |
| 36 | SIDE WELL:LEFT | SSY12195 | 1 | 1 |
| 37 | TRANSITION DUCT | SSY12196 | 1 | 1 |
| 38 | WELL HOLDER BRACKET | SSY12197 | 2 | 3 |
| 39 | AIR CURTAIN VENTING - SMALL | SSY12198 | 2 | |
| | AIR CURTAIN VENTING - MEDIUM | SSY12199 | | 2 |
| 40 | WELL SIDE VENT - SMALL | SSY12200 | 2 | |
| | WELL SIDE VENT - MEDIUM | SSY12201 | | 2 |
| 41 | DISTRIBUTOR BRACKET - SMALL | SSY12202 | 1 | |
| | DISTRIBUTOR BRACKET - MEDIUM | SSY12203 | | 1 |
| 42 | DUCT - SMALL | SSY12204 | 1 | |
| | DUCT - MEDIUM | SSY12205 | | 1 |
| 43 | WELL BOTTOM - SMALL REFLEX PREP | SSY12206 | 1 | |
| | WELL BOTTOM - MEDIUM | SSY12207 | | 1 |
| 44 | DUCT RIGHT COVER | SSY12208 | 1 | 1 |

# Cabinet Assembly – Pizza Prep

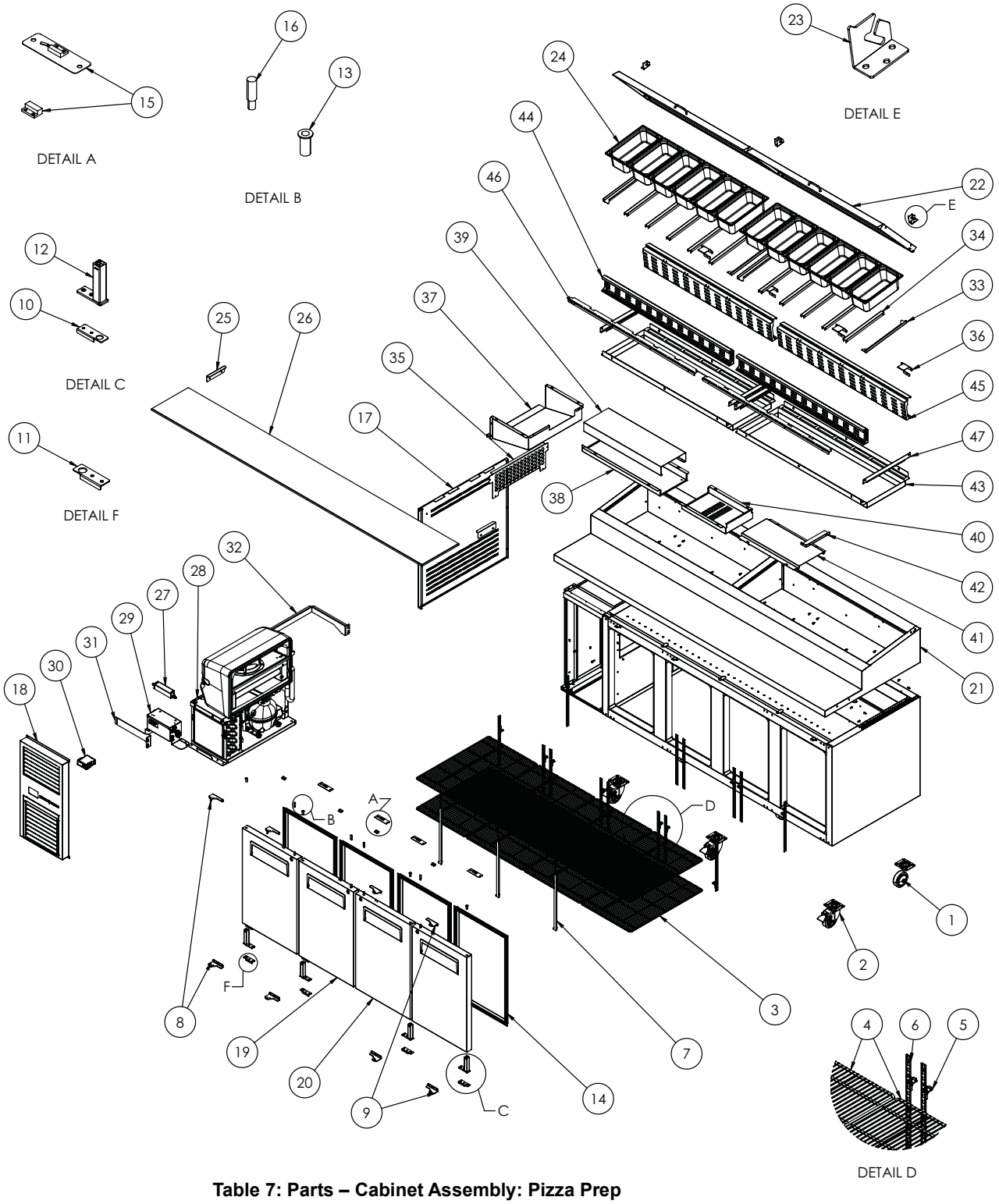



**Table 7: Parts – Cabinet Assembly: Pizza Prep**

| No. | Description | Part No. | RF8.PPZ.3.SD | RF8.PPZ.4.SD |
|---|---|---|---|---|
| 1 | CASTOR-UNBRAKED | SKC-2-190-0048-0 | ✓ | ✓ |
| 2 | CASTOR-BRAKED | SKC-2-190-0047-0 | ✓ | ✓ |
| 3 | SHELF SET-3DR PIZZA | SKC-0-050-0066-0 | ✓ | |
| | SHELF SET-4DR PIZZA | SKC-0-050-0067-0 | | ✓ |

**Table 7: Parts – Cabinet Assembly: Pizza Prep (continued)**

| No. | Description | Part No. | RF8.PPZ.3.SD | RF8.PPZ.4.SD |
|---|---|---|---|---|
| 4 | SHELF-3DR PIZZA MID 475X610 | SKC-2-190-0073-0 | ✓ | ✓ |
| | SHELF-3DR PIZZA SIDE 415X610 | SKC-2-190-0072-0 | ✓ | ✓ |
| 5 | SHELF-CLIP | SKC-2-110-0625-0 | 24 | 32 |
| 6 | SHELF SUPPORT STRIP | SKC-2-190-0044-0 | 12 | 16 |
| 7 | LIGHT-LED | SKC-4-050-0155-0 | 2 | 3 |
| 8 | HINGE SET-LH | SKC-0-050-0063-0 | 2 | 2 |
| 9 | HINGE SET-RH | SKC-0-050-0064-0 | 1 | 2 |
| 10 | DOOR STOPPER-RH | SKC-2-190-0040-0 | 1 | 2 |
| 11 | DOOR STOPPER-LH | SKC-2-190-0043-0 | 2 | 2 |
| 12 | HINGE-SELF CLOSING | SKC-2-170-0410-0 | 3 | 4 |
| 13 | BUSH-DOOR-TOP | SKC-2-110-0354-0 | 3 | 4 |
| 14 | GASKET-DOOR-LARGE | SKC-2-190-0037-0 | 3 | 4 |
| 15 | KIT-DOOR SENSOR | SKC-4-050-0130-0 | 3 | 4 |
| 16 | KIT-LOCK PIN AND KEY | SKC-2-006-0996-0 | 3 | 4 |
| 17 | CABINET PANEL-LH | SKC-2-180-0187-0 | ✓ | ✓ |
| 18 | CABINET PANEL-LOUVRE | SKC-0-180-0011-0 | ✓ | ✓ |
| 19 | DOOR-SOLID-LH-LARGE | SKC-0-180-0010-0 | 2 | 2 |
| 20 | DOOR-SOLID-RH-LARGE | SKC-0-180-0009-0 | 1 | 2 |
| 21 | BENCH TOP-3DR PIZZA | SKC-0-180-0026-0 | ✓ | |
| | BENCH TOP-4DR PIZZA | SKC-0-180-0037-0 | | ✓ |
| 22 | LID-PIZZA LARGE | SKC-0-180-0029-0 | 1 | 2 |
| | LID-PIZZA SMALL | SKC-0-180-0030-0 | 1 | |
| 23 | HINGE SET-LID-3DR PIZZA | SKC-0-050-0069-0 | ✓ | |
| | HINGE SET-LID-4DR PIZZA | SKC-0-050-0068-0 | | ✓ |
| 24 | GN1/3 PANS (100mm DEEP, STAINLESS STEEL 304) | SXX12239 | 9 | 12 |
| 25 | RETAINER KIT-CUTTING BOARD SET (2pcs) | SKC-0-050-0070-0 | ✓ | ✓ |
| 26 | CUTTING BOARD-3DR PIZZA 310x1797 | SKC-2-190-0068-0 | 1 | |
| | CUTTING BOARD-3DR PIZZA 400x1797 | SKC-2-190-0088-0 | 1 | |
| | CUTTING BOARD-4DR PIZZA 310x2279 | SKC-2-190-0081-0 | | 1 |
| | CUTTING BOARD-4DR PIZZA 400x2279 | SKC-2-190-0087-0 | | 1 |
| 27 | MEAN WELL LPF-16-24 | ELZ12161 | ✓ | ✓ |
| 28 | REFRIGERATION CARTRIDGE PACKED | ULQCNI-0030-P | ✓ | ✓ |
| 29 | CONTROLLER ELECTRICAL ASSEMBLY | UA0300026-SP | ✓ | ✓ |
| 30 | WDTL SCS FIRMWARE - REFLEX | ELZ11749-1627 | ✓ | ✓ |
| 31 | EVAP TUB MOUNT BRACKET_FRONT | US08N00005 | ✓ | ✓ |
| 32 | EVAP TUB MOUNT BRACKET_REAR | US08N00004 | ✓ | ✓ |
| 33 | WELL SIDE BKT TOP - PIZZA | SSY12225 | 4 | 4 |
| 34 | PAN HOLDER | SSY12193 | 7 | 10 |
| 35 | RETURN AIR GRILL PANEL | SSY12194 | 1 | 1 |
| 36 | WELL HOLDER BRACKET | SSY12197 | 4 | 4 |
| 37 | TRANSITION DUCT - PIZZA PREP | SSY12210 | 1 | 1 |
| 38 | CENTRE DUCT BOTTOM FLOOR PIZZA | SSY12211 | 1 | 1 |
| 39 | CENTRE DUCT TOP FLOOR PIZZA | SSY12212 | | 1 |
| 40 | RIGHT-SIDE DUCT A - PIZZA | SSY12213 | 1 | 1 |
| 41 | RIGHT-SIDE DUCT B | SSY12214 | | 1 |
| 42 | DUCT END COVER | SSY12215 | 1 | 1 |
| 43 | WELL 6 POTS - PIZZA PREP | SSY12216 | 1 | 2 |
| | WELL 3 POTS - PIZZA PREP | SSY12217 | 1 | |
| 44 | WELL DAG 6 POTS - PIZZA PREP | SSY12218 | 1 | 2 |
| | WELL DAG 3 POTS - PIZZA PREP | SSY12219 | 1 | |
| 45 | WELL RAG 6 POTS - PIZZA PREP | SSY12220 | 1 | 2 |
| | WELL RAG 3 POTS - PIZZA PREP | SSY12221 | 1 | |
| 46 | AIR DISTRIBUTOR 6 POTS | SSY12222 | 1 | 2 |
| | AIR DISTRIBUTOR 3 POTS | SSY12223 | 1 | |
| 47 | WELL SIDE BKT BOTTOM - PIZZA | SSY12224 | 4 | 4 |

# Cartridge Assembly – Salad and Pizza Prep

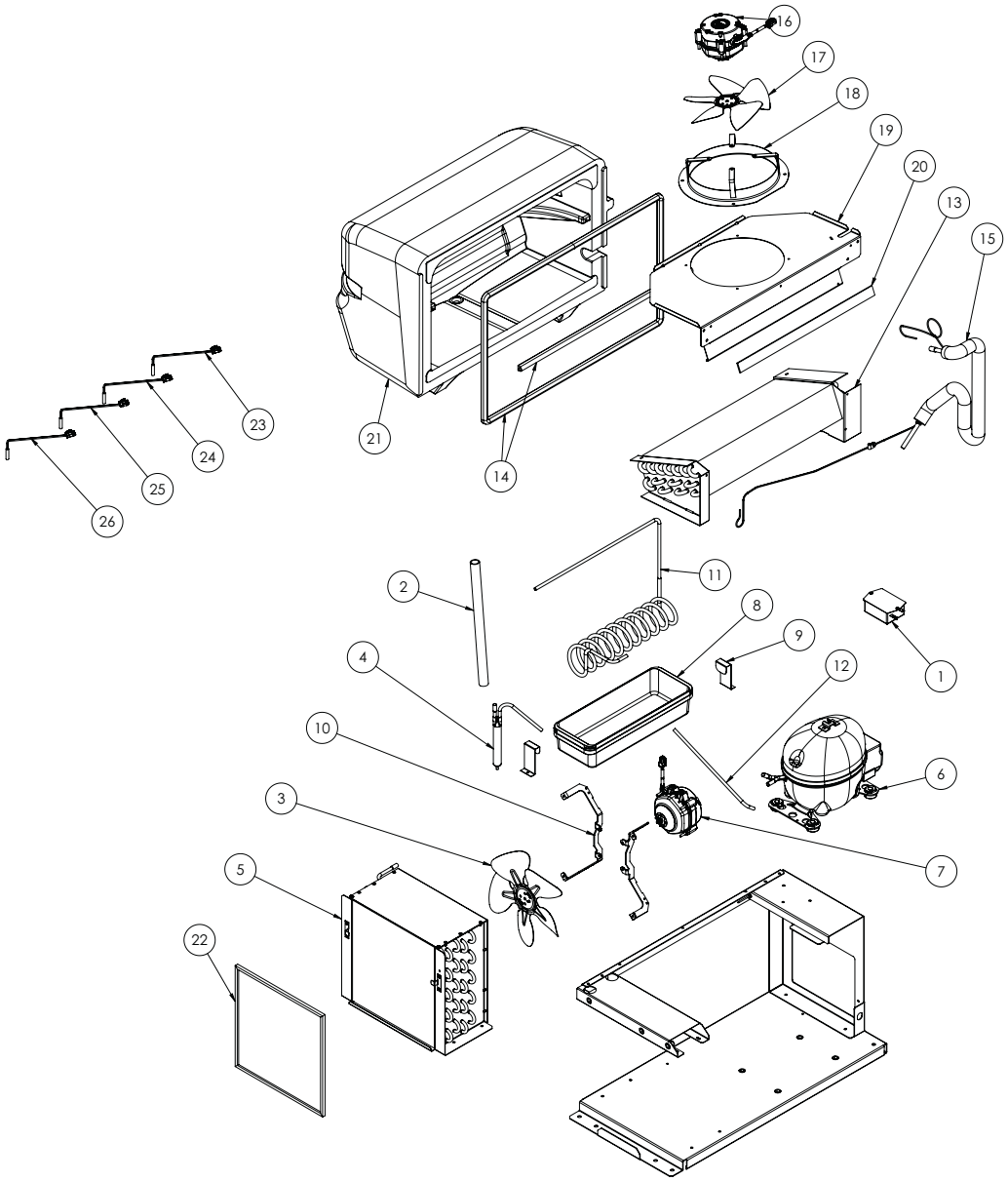



**Table 8: Parts – Cartridge assembly: Salad and Pizza Prep**

| No. | Description | Part No. | ULQCNI-0029 | ULQCNI-0030 |
|---|---|---|---|---|
| 1 | SCHAFFNER EMI FILTER FN2030Z-10-06 | ELZ10136 | ✓ | ✓ |
| 2 | 15MM ID TUBING | PLE12167-290SP | ✓ | ✓ |
| 3 | FAN BLADE Ø200 28° | 0074000313 | ✓ | ✓ |
| 4 | 10GM SPUN DRIER | DRY12258 | ✓ | ✓ |
| 5 | CONDENSER | CLS12066 | ✓ | ✓ |
| 6 | COMP EM2X3125U R290 6.09CC | CPR12100 | ✓ | |
| | COMP EMX3140U R290 9.50CC | CPR12164 | | ✓ |
| 7 | FAN MOTOR ECR2-0361 WDTL | ELM11309 | ✓ | ✓ |
| 8 | CONDENSATE TRAY | UP10N00005 | ✓ | ✓ |
| 9 | CONDENSOR TRAY BRACKET | US03N00005 | ✓ | ✓ |
| 10 | MOTOR BRACKET - 200 MM WD | US01N00001 | ✓ | ✓ |

**Table 8: Parts – Cartridge assembly: Salad and Pizza Prep (continued)**

| No. | Description | Part No. | ULQCNI-0029 | ULQCNI-0030 |
|---|---|---|---|---|
| 11 | DISCHARGE LINE | UT03N00019 | ✓ | |
| | DISCHARGE LINE | UT03N00020 | | ✓ |
| 12 | PROCESS TUBE | UT04N00001 | ✓ | ✓ |
| 13 | EVAPORATOR COIL | CLS12065 | ✓ | ✓ |
| 14 | UNIT D GASKET SET TOTAL LENGTH 2200 | RUE12210-2200 | ✓ | ✓ |
| 15 | SUCTION LINE ASSEMBLY | UA0400016 | ✓ | |
| | SUCTION LINE ASSEMBLY | UA0400017 | | ✓ |
| 16 | AN MOTOR ECR2-0F61 WDTL | ELM11858 | ✓ | ✓ |
| 17 | RH FAN BLADE 172MM-28DEG PITCH | FAN1168 | ✓ | ✓ |
| 18 | FAN MOUNT WALL RING | US01N00003 | ✓ | ✓ |
| 19 | EVAPORATOR FAN SHROUD | US02N00010 | ✓ | ✓ |
| 20 | 21 x 3.0 3829 PE INSEAL 384mm | RUE6617 | ✓ | ✓ |
| 21 | EVPORATOR BOX | UP05N00024 | ✓ | ✓ |
| 22 | FILTER | UP12N00001 | ✓ | ✓ |
| 23 | AMBIENT PROBE | UW0300037-075WH | ✓ | ✓ |
| 24 | APPLICATION PROBE | UW0300037-150BU | ✓ | ✓ |
| 25 | EVAPORATOR PROBE | UW0300037-150BK | ✓ | ✓ |
| 26 | CONDENSER PROBE | UW0300037-075OG | ✓ | ✓ |
| NS | POWER SUPPLY CORD **(NOT SHOWN)** | UW0100056 | ✓ | ✓ |
| NS | EVAP FAN EXT. LOOM **(NOT SHOWN)** | UW0100058 | ✓ | ✓ |
| NS | COMPRESSOR FLEX **(NOT SHOWN)** | UW0100059 | ✓ | |
| NS | COMPRESSOR FLEX EMX3140U **(NOT SHOWN)** | UW0100068 | | ✓ |
| NS | EARTH WIRE - EMI FILTER **(NOT SHOWN)** | W-GNYE100-0200AIC | ✓ | ✓ |

# 7 Replacement Procedures

## 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.

**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
- LED light power supply
- Interior wiring loom

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

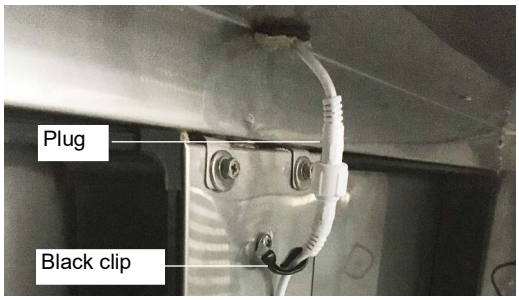
Refer to Table 10, “Cabinet and cartridge troubleshooting”, on page 50:

- to determine which component may be at fault.
- the procedures over the next few pages for component replacement instructions.

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

**Procedure 1: To replace an interior light component**

1. Unplug the cabinet from the power supply.
2. Remove the shelves from either side of the light.
3. Unhook the black clip and unplug the light.
4. Unscrew and replace the light.
5. Plug in the light and hook black clip to plug, then reassemble the shelves.




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

**Procedure 2: To replace the LED driver power supply**

1. Unplug the cabinet from the power supply.
2. Gain access to the cartridge electrics panel (see Procedure 14, “To remove the cartridge control box and open the electrics box”, on page 40).
3. Unplug, unscrew and replace the light power supply.
4. Reassemble and test the cabinet for correct operation.

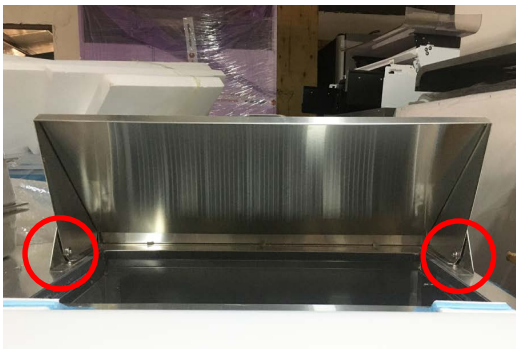
## Hood and Lid

### Removal

The salad and pizza prep cabinets are fitted with hoods and lids. These components can be easily removed for cleaning purposes or fitting a replacement part.

**Procedure 3: Salad Prep cabinet – Lid and hood removal**

1. Open the lid of the cabinet. Two sets of fasteners will need to be removed. These can be accessed on the inside of the lid.



2. A spanner or socket wrench tool will be required for lid removal. Unscrew the two sets of fasteners on both sides of the lid.

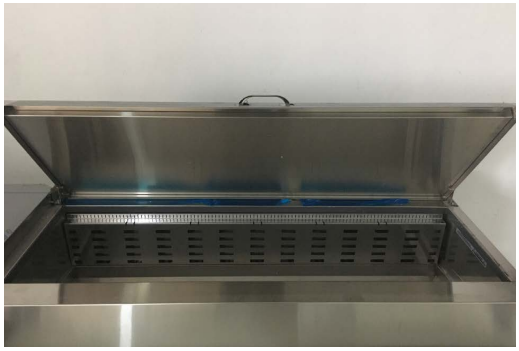
3. Take care with the lid fasteners. Secure them so they don't get lost or damaged.

4. Remove the 5 x thumb screws from mounting positions. The hood can be removed from cabinet body.

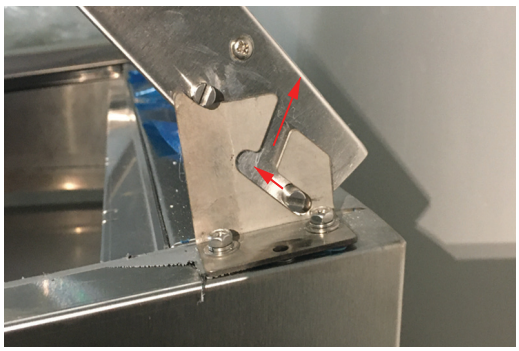
5. Simply reverse the removal process to fit a cleaned or replacement lid.

**Procedure 4: Pizza Prep cabinet – Lid removal**

1. Open the hood of the cabinet. It will naturally slide into a locked position



2. Slide the pins forward on an angle, and guide up through the exit feature on the bracket.



3. Remove the hood from cabinet brackets.

4. Simply reverse the removal process to fit a cleaned or replacement lid.

# Doors

**Alignment Adjustment**

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 5: To remove the door**

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

3. If necessary, remove top and bottom hinges, and self-closing mechanism (see “Door Hinges” on page 31).

**Procedure 6: To refit the door**

1. If necessary, refit 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

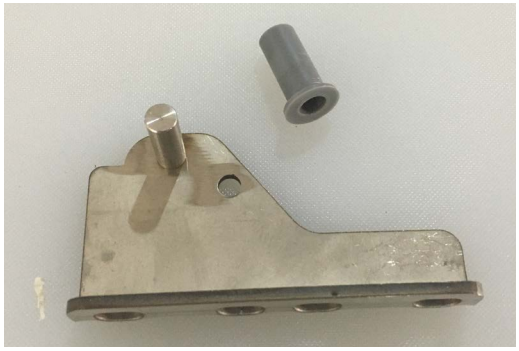
The door is fitted with a self-closing mechanism which allows the door to self-close. If door tension is lost, check that the self-closing mechanism is installed correctly, and if necessary replace (see Procedure 7, “To remove the hinges”, on page 32).

## 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 7: 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.

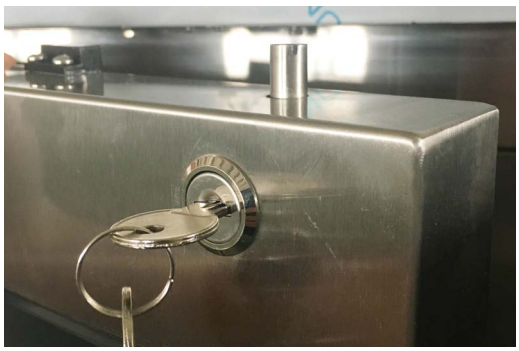
## Door Locks

Each door 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 8: 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 9: To remove the castors**

1. Raise the cabinet off the ground.

2. Unbolt the castors from the bottom of the cabinet.

**Procedure 10: To fit the height adjustable legs**

1. Fit the legs into the castor mounting holes.

**Procedure 11: 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 12: To replace the end panel**

1. Unplug the cabinet from the power supply.
2. Unscrew and remove the front panel: Two screws at the bottom and two screws at the top of the front panel.
3. Unscrew and remove the end panel: Three screws at the back of the cabinet and six screws from 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 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

## Not Cooling Fault

If a customer reports a “not cooling” fault, and it has been established that the cabinet is not cooling, follow the procedure on page 36 when making the service visit.

# Refrigeration Cartridge

## 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 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 the cabinet heating leads to the electrics box or any other power supply with the cartridge removed or you could be creating the risk of an electric shock.

**CAUTION**

Some connector colours vary depending on date of manufacture.

After unplugging the connectors, **ALWAYS** ensure you reconnect them correctly as operational faults may occur otherwise. SKOPE recommends photographing the wiring setup for future reference before unplugging them.

**Procedure 13: To remove the refrigeration cartridge**

1. Unplug the cabinet from the power supply, and cut the cable tie at the back of the cabinet to release the power cord.
2. Unscrew the front panel with a Phillips head screwdriver:
   - Two screws at the bottom
   - Two screws at the top
3. Unscrew the cartridge (Phillips head screwdriver):
   - Two screws at the bottom
   - Four screws on the right hand side of the cartridge.

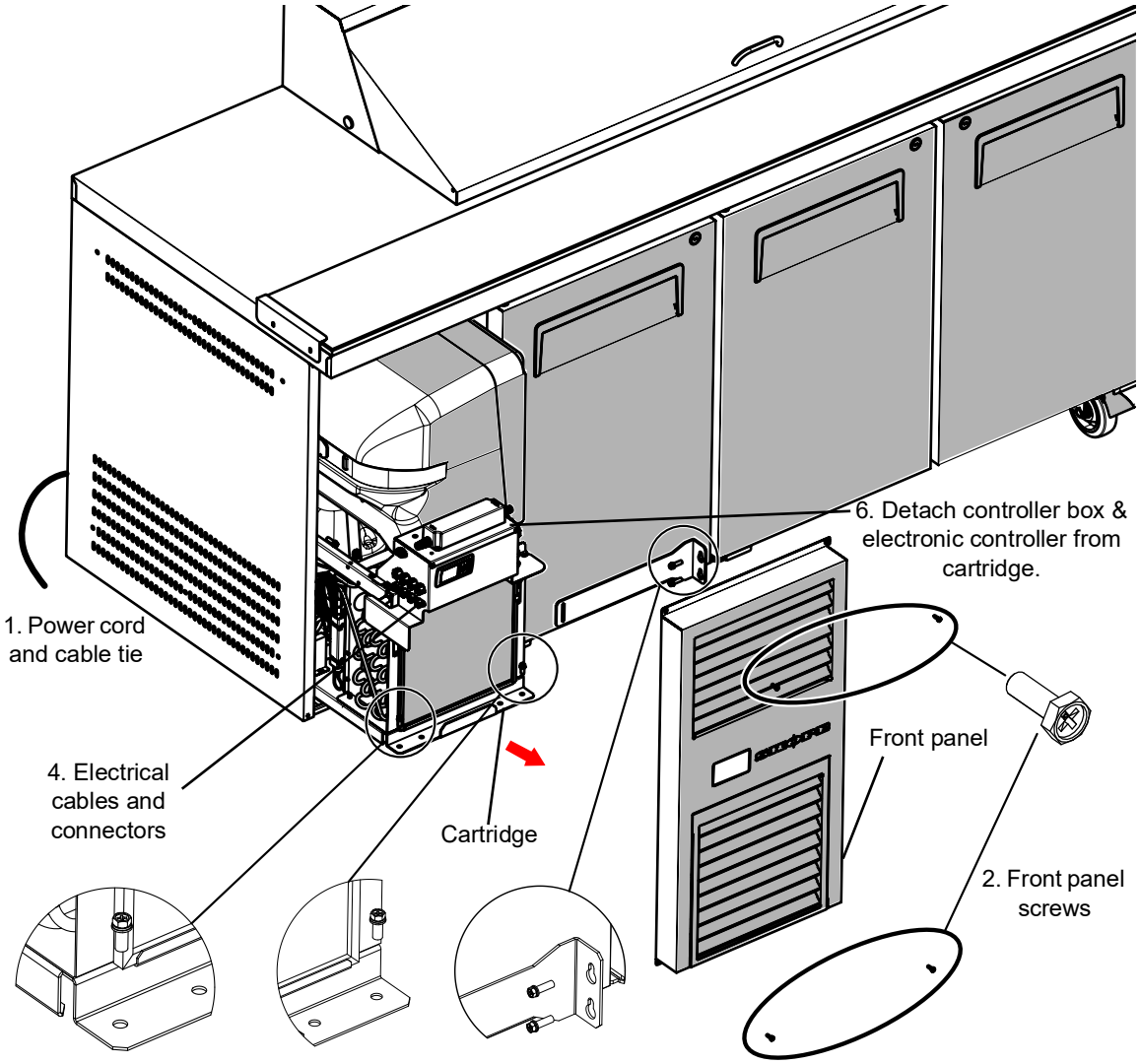
   The two screws for the rear bracket do not need to be unscrewed.
4. Unscrew the two screws for front bracket when removing the cartridge.
5. Partially slide the cartridge out. Hold the bottom of the controller box to slide the cartridge out, and take care of loose plugs, cables and the evaporator box 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.
6. Photograph wiring setup for future reference when refitting the cartridge.
7. Unplug the cartridge from the cabinet (see picture over page):
   - Black 3-way plugs (heater elements) at the front of electrics box.
   - Red 2-way plugs (LED lamps) at the front of the electrics box.
   - White 2-way plug (door switch) on wiring loom.

**Procedure 13: To remove the refrigeration cartridge (continued)**

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

9. When swapping cartridge: Detach controller box and electronic controller from the cartridge.
   - To remove the controller box: Unscrew the three screws (Phillips head screwdriver) at the bottom edge of the controller box and detach controller box from cartridge.
   - To remove the controller: Unscrew two self-tapping screws on top of the controller box, and remove LED driver from controller box. Unscrew two self-tapping screws in the front of controller box, and detach controller box lid from the controller box base. Press and hold the tabs on each side of the electronic controller to unlock, and push the AoFrio SCS controller through the front of controller box. Unplug the electronic controller from the cartridge.

10. Reverse the steps above to refit the cartridge. When refitting, ensure:
    - **IMPORTANT:** Ensure plug reconnection is undertaken correctly as operational faults may occur if incorrect. Refer to the wiring diagram on page 20, and previous recommended photograph for reference.
    - 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 hook of the rear bracket is hooked in the left side slot of the bracket.
    - The front cover is refitted.


6. Detach controller box & electronic controller from cartridge.
1. Power cord and cable tie
4. Electrical cables and connectors
Cartridge
Front panel
2. Front panel screws
3. Remove cartridge and front bracket screws

## 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 a cabinet 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.

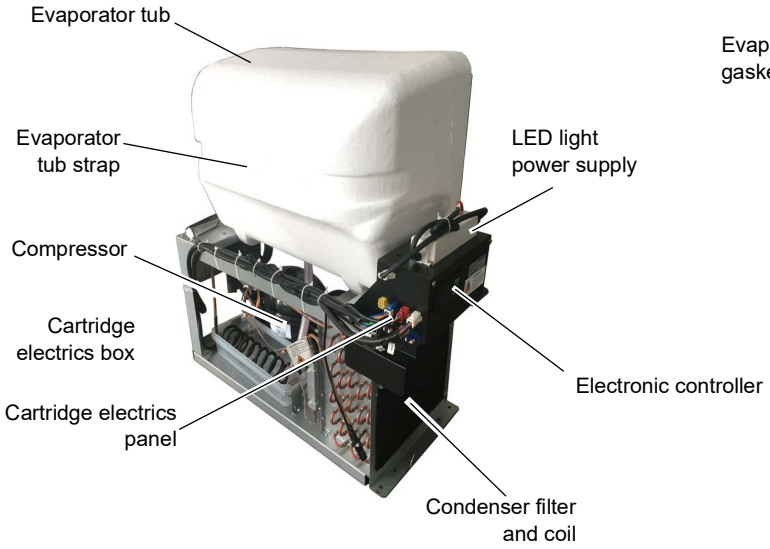
**WARNING**

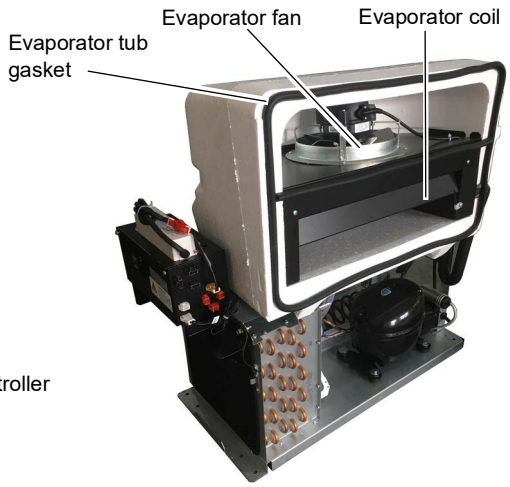
The hydrocarbon cartridge must only be used on an hydrocarbon-compliant cabinet.

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

Defrost parameters vary depending on product type. You can review them in the SCS Connect Field app.

## Cartridge Electrics Panel

The cartridge controller box (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 controller box assembly contains the LED light power supply, 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 14: To remove the cartridge control box and open the electrics box**

| | |
|---|---|
| 1. | Remove the cartridge from the cabinet (see page 36). |
| 2. | Unscrew the control box from the cartridge (3 × screws). |
| 3. | To open the controller box see Procedure 20, “To replace the controller”, on page 44. |

## 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 that the fan blade and/or fan motor is replaced with the same part to ensure safety, correct alignment, refrigeration performance, and compliance. Fan blades should be tightened to the recommended torque settings (shown in the table below).

**Table 9: Fan motor manufacturer recommended torque settings**

| Fan motor manufacturer | Torque setting |
|---|---|
| AoFrio | 1.4 Nm |

**Procedure 15: To access and remove the condenser fan assembly**

1. Remove the cartridge from the cabinet (see page 36).
2. Remove the control box (see page 40).
3. Take note of cable routing (photo recommended), then 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 16: To replace the fan blade**

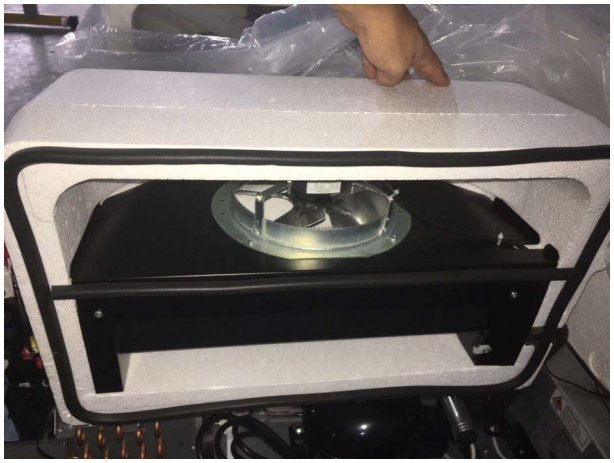
1. Remove the condenser fan assembly (see above).
2. Remove the screw and washer from the centre of the fan blade, and lift the blade from the motor.
3. Replace new blade and fix with 12mm flat washer and serrated head screw. Tighten the blade to recommended torque setting (1.4 Nm).
4. Refit the condenser fan assembly to the cartridge. Following the same path as the original probe, secure the condenser fan motor cable with cable ties as necessary.
5. Reassemble and test the cabinet for correct operation.

**Procedure 17: To replace the fan motor**

1. Remove the condenser fan assembly and the fan blade (see previous page).
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 12 mm flat washer and serrated head screw. Tighten the blade to recommended torque setting (1.4 Nm).
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 the cabinet for correct operation.

## Evaporator Tub

When refitting the tub, start at the bottom and take care of the plastic guide which could damage the tub if misaligned.



## Evaporator Fan

The evaporator fan assembly is a one-piece assembly which can be replaced if necessary.

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

The fan assembly is fixed to evaporator shroud with screws and metal bars.

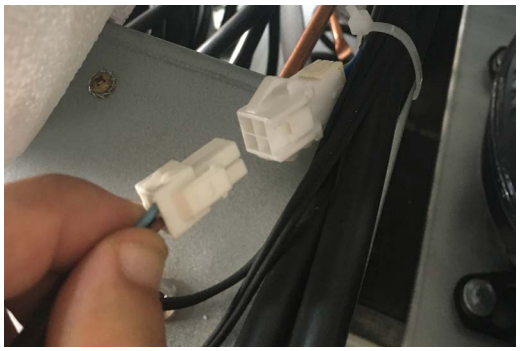
**IMPORTANT**
Replace the motor with the same SKOPE OEM part.
**DO NOT** use alternative parts.

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

**Procedure 18: To access and replace the evaporator fan assembly**

1. Remove the cartridge from the cabinet (see page 36).

2. Unplug 4-way white connector behind the tub.



**Procedure 18: To access and replace the evaporator fan assembly (continued)**

3. Unscrew two screws from evaporator assembly.

4. Remove evaporator fan assembly from tub.

5. Reassemble and test the cabinet for correct operation.

### Compressor

The compressor is located at the back of the refrigeration cartridge. If the compressor is causing excessive noise, check the mountings to ensure there is no damage to the rubber or the washers, nuts and screws.

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

**IMPORTANT**

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

## Electronic Controller

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.

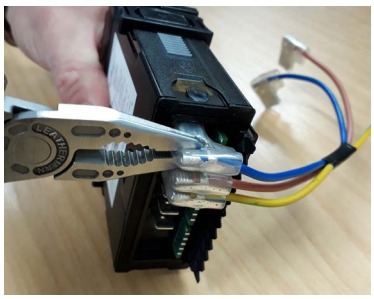
Different controller parameter sets are used across different models. Ensure the controller is set-up with the correct parameter set for the cabinet model.

### Controller Location

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

**Procedure 19: To access and remove the controller**

1. Unplug the cabinet from the power supply.
2. Remove the cartridge cover from the cabinet.
3. Unscrew two self-tapping screws on top of the controller box, and remove LED driver from controller box. Unscrew two self-tapping screws in the front of controller box, and detach controller box lid from the controller box base
4. Use needle nose pliers to press in and unlock the tabs on each side of the electronic controller, and gently remove the QC terminals.



5. Push the AoFrio SCS controller through the front of the controller box, then unplug the electronic controller from the cartridge.

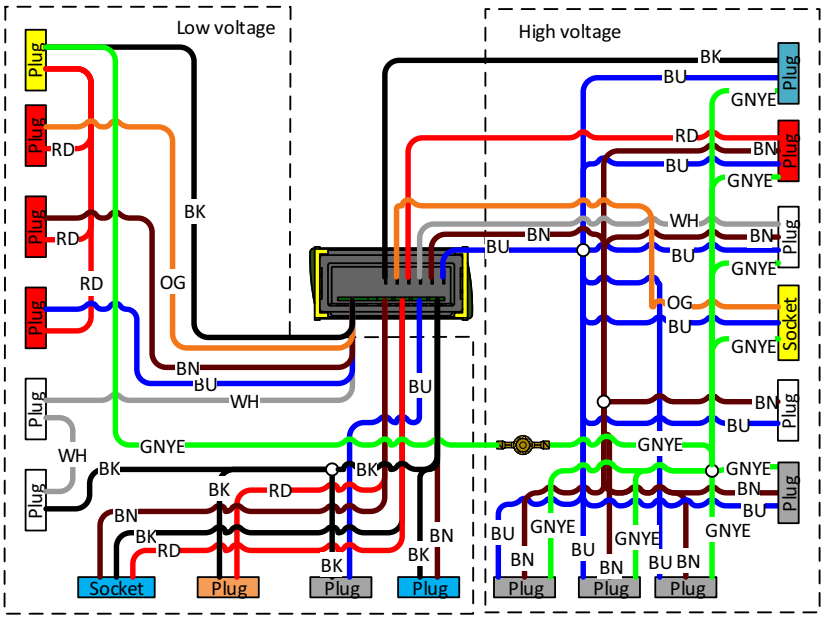
## Replacing the Controller

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 20: To replace the controller**

1. Unplug the cabinet from the mains power supply and access the electronic controller (see “Controller Location” on page 43).
2. Disconnect the terminals from 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 electrical safety test, and reconnect to the power supply.
5. Use a mobile device to connect to the controller with the SCS Connect Field app (see “SCS Connect Field App” on page 11).
6. Navigate to the LOAD PARAMETER FILE menu.

**Procedure 20: To replace the controller (continued)**

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.
10. Power cycle the controller, reconnect via SCS Connect Field app and check that correct parameter set has been applied.
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 21: To replace the door switch**

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

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

## Control Probe

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

**Procedure 22: To replace the control probe**

1. Remove the cartridge from the cabinet (see page 36).
2. Gain access to the evaporator fan assembly (see steps 2 to 3, “To access and replace the evaporator fan assembly” on page 42).
3. Take note of cable routing (photo recommended), then carefully cut cable ties to release the probe cable. Detach the probe from the evaporator assembly, trace back to its connector and unplug.
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 the cabinet for correct operation.

## Evaporator Probe

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

**Procedure 23: To replace the evaporator probe**

1. Remove the cartridge from the cabinet (see page 36).
2. Gain access to the evaporator fan assembly (see steps 2 to 3, “To access and replace the evaporator fan assembly” on page 42).
3. Take note of cable routing (photo recommended), then 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.
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 located 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 the cabinet for correct operation.

## Condenser Probe

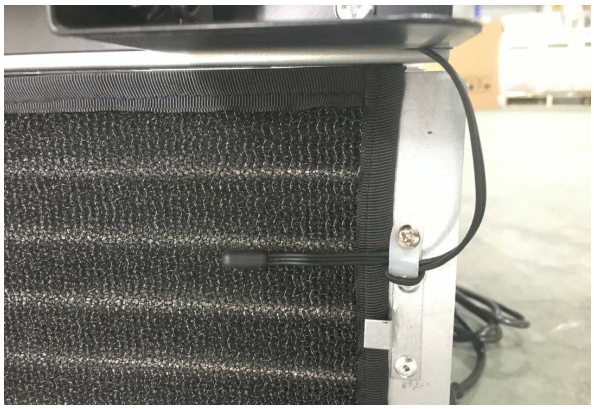
The condenser probe is located on the side of the condenser coil.

**Procedure 24: To replace the condenser probe**

1. Unplug the cabinet from the mains power supply and remove the refrigeration cartridge (see page 36).
2. Take note of cable routing (photo recommended), then carefully cut cable ties to release the probe cable. Detach the probe from the side of the condenser coil, and trace the probe cable back to its connector, and unplug.
3. Following the same path as the original probe, run the new probe to the condenser coil and secure with cable ties. Locate the probe in the same location as the original probe.
4. Reassemble and test the cabinet 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 25: To replace the ambient probe**

1. Unplug the cabinet from the mains power supply and remove the refrigeration cartridge (see page 36).
2. Take note of cable routing (photo recommended), then carefully cut cable ties to release the probe cable. Detach the probe from the front of the cartridge, and trace the probe cable back to it's connector and unplug.
3. Following the same path as the original probe, run the new probe to the condenser coil and secure with cable ties. Locate the probe in the same location as the original probe.
4. Reassemble and test the cabinet for correct operation.

# 8 Routine Cleaning

## Cabinet

Ensure the cabinet is unplugged from the 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.

The following duct and well components can be removed without a tool for routine cleaning.

**ReFlex Salad Prep** (refer to “Cabinet Assembly – Salad Prep” on page 22).

| No. | Description | Part Number |
|---|---|---|
| 33 | WELL SIDE BKT TOP - PIZZA | SSY12225 |
| 34 | PAN HOLDER | SSY12193 |
| 44 | WELL DAG 6 POTS - PIZZA PREP | SSY12218 |
| | WELL DAG 3 POTS - PIZZA PREP | SSY12219 |
| 45 | WELL DAG 6 POTS - PIZZA PREP | SSY12220 |
| | WELL DAG 3 POTS - PIZZA PREP | SSY12221 |

**ReFlex Pizza Prep** (refer to “Cabinet Assembly – Pizza Prep” on page 24).

| No. | Description | Part Number |
|---|---|---|
| 34 | PAN HOLDER | SSY12193 |
| 36 | SIDE WELL: LEFT | SSY12195 |
| 39 | AIR CURTAIN VENTING - SMALL | SSY12198 |
| | AIR CURTAIN VENTING - MEDIUM | SSY12199 |
| 40 | WELL SIDE VENT - SMALL | SSY12200 |
| | WELL SIDE VENT - MEDIUM | SSY12201 |

## Condenser Coil

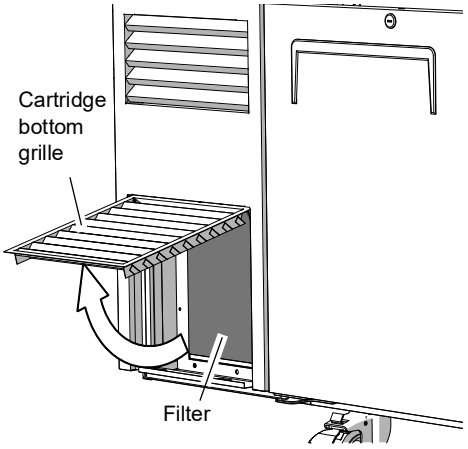
The condenser coil must be kept clean. SKOPE strongly recommends monthly cleaning of the condenser coil and air filter. Do **NOT** use hard or sharp tools to clean the coil as these may cause damage.

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

**Procedure 26: To clean the condenser coil and condenser filter**

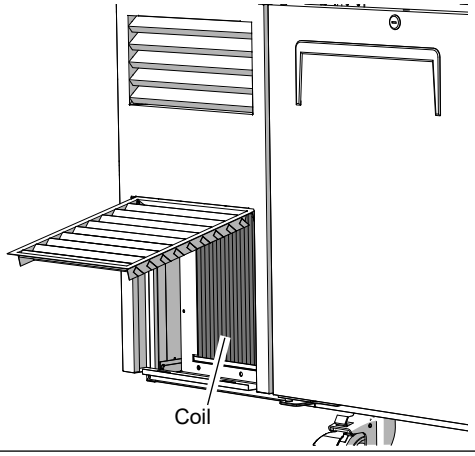
1. Unplug the cabinet from the mains power supply.

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 unplugged from the 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 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 10.

**Table 10: Cabinet and cartridge troubleshooting**

| Problem | Possible cause | Recommended action |
|---|---|---|
| • Cabinet not operating<br>• 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 | • Incorrect parameters | AoFrio: Reload the parameter set. |
| • Defrost cycle incorrect length | | |
| • 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.<br>• 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 light button on the electronic controller faceplate, or the app. |
| | • Failed LED light | • Replace the light. |
| | • Refrigeration system error (indicated by the electronic controller) | • Diagnose and repair. If a system fault is found contact SKOPE for information on how to proceed. |
| | • Plug not connected properly | • Check and clean the plugs. |
| | • Power supply fault | • Replace the light's power supply. |
| • Light component not working | • Plug not connected properly | • Check and clean the plug connection. |
| | • Faulty light | • Replace the light. |
| • 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, 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 | • Check all plug connections and ensure that the compressor electrics are operating correctly.<br>• Make sure the compressor is supplied with consistent voltage over 220 volts.<br>• 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. |

**Table 10: Cabinet and cartridge troubleshooting (continued)**

| Problem | Possible cause | Recommended action |
|---|---|---|
| • Frozen evaporator coil | • Evaporator probe fault | Replace the evaporator probe. |
| | • Setpoint is too cold | Check and raise the setpoint. |
| | • Electronic controller fault | Replace the controller. |
| | • Short of refrigerant | Perform refrigeration system diagnostics and service as required. |
| • Ice build-up inside the evaporator tub | • Leaking cartridge seal | Check that the evaporator tub seals are fully clamped. Micro-gaps will allow ice build-up in the cabinet. |
| • 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.<br>• Ensure the cabinet has good ventilation around the refrigeration cartridge.<br>• 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.<br>• Ensure the cabinet is on a level surface. |
| | • 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<br>• Excessive refrigeration heat load | • Ensure the cabinet has good ventilation around the refrigeration cartridge.<br>• 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.<br>• Product must not overhang 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.<br>• Ensure the cabinet is on a level surface. |
| | • High humidity | Check the ambient operating temperature and reposition the cabinet if necessary. |
| • 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<br>• 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.<br>• Ensure the cabinet is within the maximum operating temperature. |

# Refrigeration System

The following diagnostic test is useful for workshop diagnosis of a short of gas situation. Perform the test before opening the refrigeration system.

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

**Note:** These diagnostic procedures are indicative only.

**Procedure 27: Refrigeration system diagnostic test**

**Before you start**
Perform this procedure in a suitable workshop (see page 35).

1. Unplug the cabinet from the power supply, remove the refrigeration cartridge, including controller and wiring loom assembly.
2. Unplug the evaporator fan motor (white 4-pin plug) from the wiring loom.
3. Install door switch jumper (white 2-pin plug) into wire harness.
4. Remove the evaporator tub cover and install blocker to prevent condenser airflow from affecting the evaporator coil.
5. Connect the refrigeration cartridge to the power supply and allow to run for approximately 10 minutes until the evaporator temperature stabilises.
6. Optional: For enhanced diagnostics, connect to the controller via a Bluetooth-enabled device running the SCS Connect Field app.
7. Refer to the relevant table below as a guideline to determine if the system charge is correct at typical ambient condition around 25°C.

**Table 11: RF7.PPS.2.SD, RF7.PPS.3.SD (cartridge ULQCNI-0029)**

| Observation | 50% charged | 75% charged | 100% charged |
|---|---|---|---|
| Suction pipe at compressor | Cool / dry | Cool / dry | Cold / dry |
| Evaporator coil | 1 x U-bend frosted | 4 x U-bends frosted | 50% U-bend frosted |
| Cartridge power | 125 W / 0.6 A | 150 W / 0.7 A | 150 W / 0.7 A |
| Evaporator temperature | < 5°C | < -4°C | < -7°C |

**Table 12: RF8.PPZ.3.SD, RF8.PPZ.4.SD (cartridge ULQCNI-0030)**

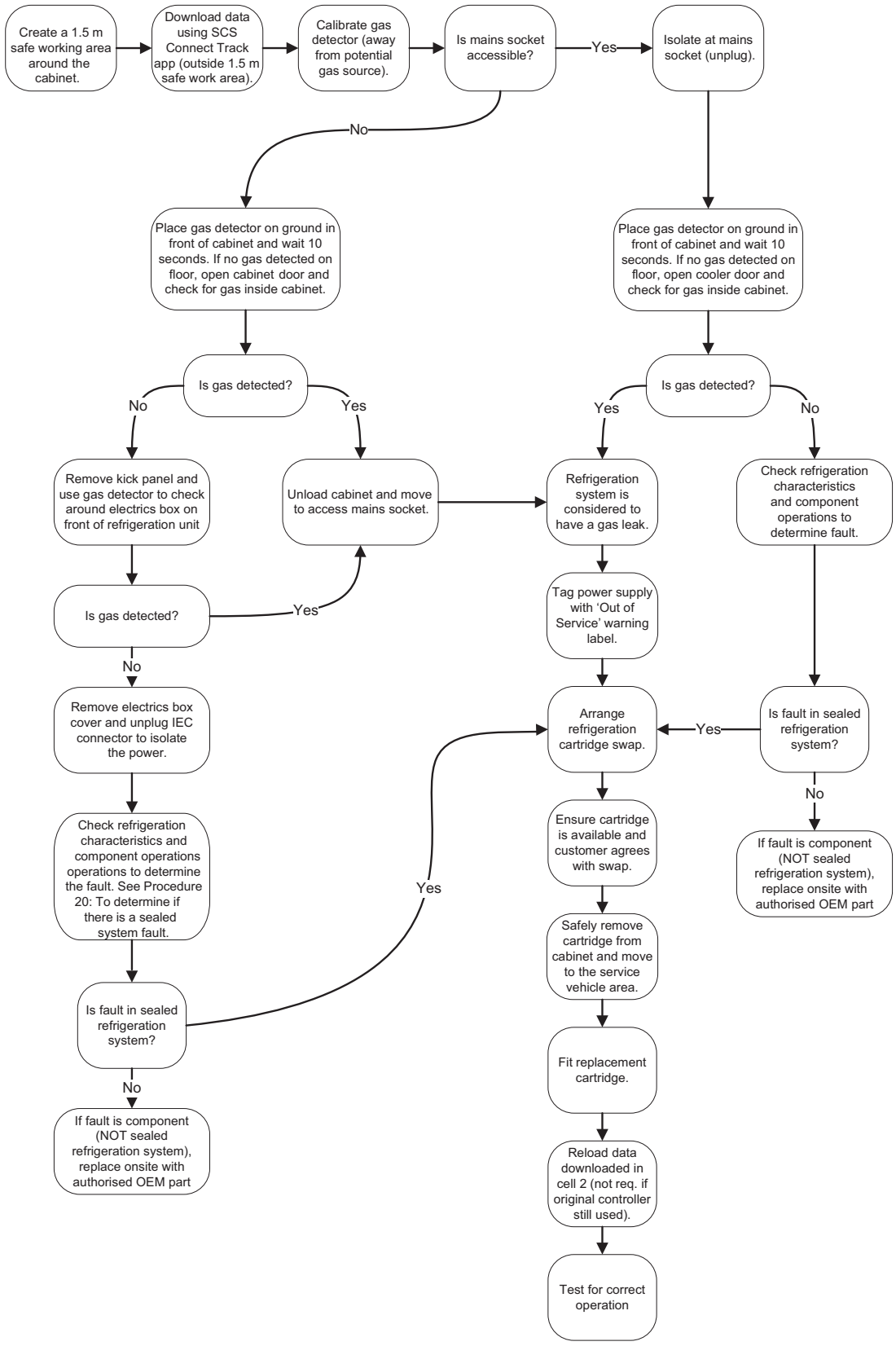
| Observation | 50% charged | 75% charged | 100% charged |
|---|---|---|---|
| Suction pipe at compressor | Cool / dry | Cool / dry | Light frost on compressor shell |
| Evaporator coil | 3 x U-bends frosted | 50% U-bend frosted | 75% U-bend frosted |
| Cartridge power | 210 W / 1.7 A | 230 W / 1.7 A | 230 W / 1.7 A |
| Evaporator temperature | < 5°C | < -4°C | < -7°C |

8. Generally, a system with the correct refrigerant charge will frost back to the compressor. If the frost does not go back to the point shown there may be a capillary blockage or compressor fault. The point where the frost stops is affected by the ambient temperature. The tables above show system characteristics at different charge and 25°C ambient condition for a cartridge running on the bench.
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 table above at 50% or 75%, the system is likely short of gas.
10. After fault has been diagnosed and repaired, reassemble the refrigeration system and test run.

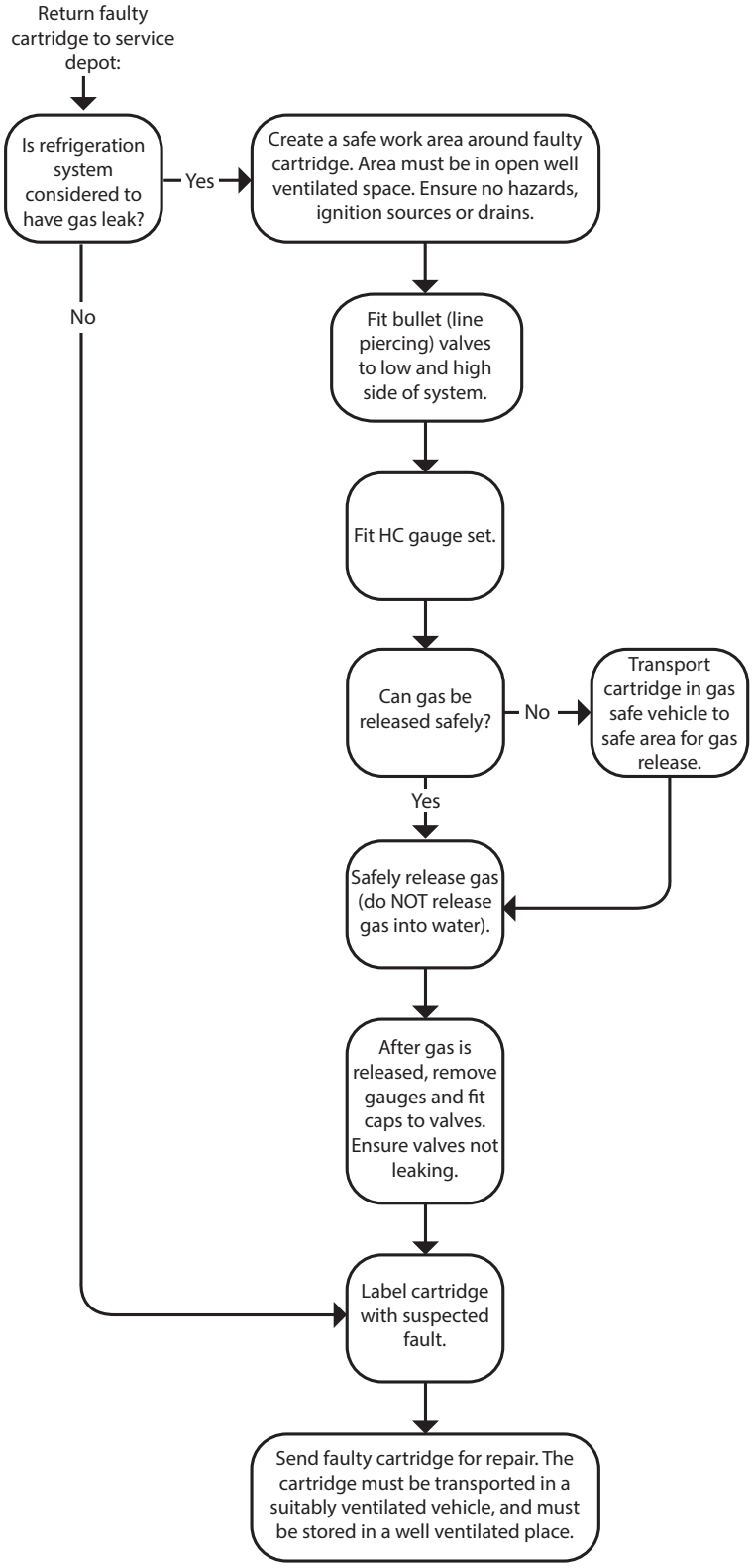
# On-site Work Procedure

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



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