

SC112N-A

Four Glass Sided Fridge

Type: HSC112N/Z156



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Type: HSC112N/Z156
Service Manual

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1 Servicing Hydrocarbon

Overview

This cooler uses hydrocarbon (HC) R600a as its refrigerant. R600a is a natural refrigerant that has a very low environmental impact.

Special service requirements are needed as R600a is a flammable refrigerant.

Safety hazards

The main R600a safety hazards are:

- Flammable refrigerant.
- Venting of R600a and compressor oil.
- Asphyxiation.

SKOPE does NOT recommend performing hazardous activities on the refrigeration system.



2 Specifications

SC112N-A Description: Four Glass Sided Fridge

Type: HSC112N/Z156

Table 1: SC112N-A specifications

Dimensions		
	<i>External</i>	<i>Internal</i>
<i>Height</i>	1080 to 1095 mm	725 mm
<i>Width</i>	470 mm	382.6 mm
<i>Depth</i>	470 mm	369.5 mm
<i>Floor area</i>	0.22 m ²	
Refrigeration system	Bottom-mounted, integral, electronically controlled refrigeration system	
Electronic controller	CAREL S4	
Refrigerant	R600a/40 g (natural refrigerant)	
Operating temperature range	0°C to 5°C	
Tested climate	25°C @ 60% relative humidity (climatic class 3)	
Electrical	220-240 volts a.c. 50 Hz, single phase supply, 1.5 amps	
Nominal capacity	250 watts	
Sign lighting	Bottom sign: 2 × horizontal LED lights (total 3 W)	
Internal lighting	4 × vertical corner LED lights (total 8 W)	
Doors	2 × double-glazed, single low-e, lockable, toughened glass swing doors (right hand hinge)	
Shelves	3 × adjustable height wire shelves (346 mm wide × 281 mm deep)	
Internal volume	109 litres	
Total weight:	55 kg	

Tools required for servicing may include:

- Screwdriver with Pozidriv PZ1 and PZ2 bit
- Small slotted screwdriver (for electrical connectors)

3 Electronic Controller

Electronic Controller Operations

Overview The SC112N-A fridge is fitted with a CAREL S4 electronic controller. The electronic controller is visible on the front panel and is housed inside the controller box at the front of the refrigeration system.

The electronic controller controls and displays the fridge temperature and signals temperature alarms. It uses two temperature probes within the refrigeration system to collect data and runs the fridge accordingly.

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

IMPORTANT

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



Figure 1: CAREL S4 electronic controller

Faceplate Because the electronic controller plays such an important role, it's helpful to know the parts of the faceplate you may use.

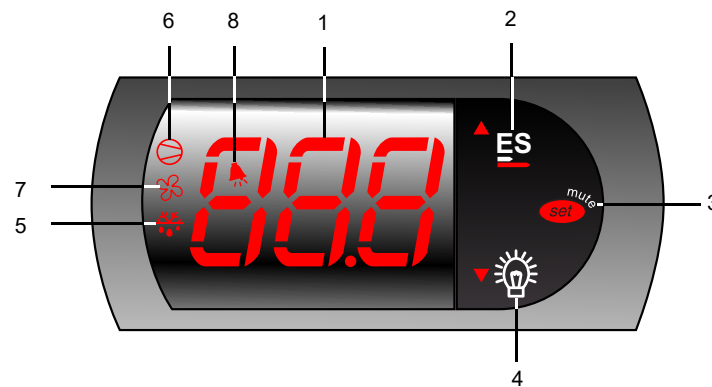










Table 2: Controller faceplate

No.	Item	Description
1		Digital display of cabinet temperature or messages. The temperature is what the sensor inside the fridge detects, and not necessarily the product temperature. However, they may be very close depending on how the controller is set to sense temperature.
2		Energy Save (up): Press to view the current fridge mode. "EnS" = Energy Saving and "nor" = Normal. Press and hold for 3 seconds to switch the fridge between "Energy Save" and "Normal" mode.
3		Set (mute): Press to mute the alarm. Press and hold to access parameters.
4		Light (down): Press and hold to switch the cabinet lights on and off.
5		Defrost: ON when the defrost is activated. Flashes when the activation of the defrost is temporarily delayed due to procedures in progress.
6		Compressor: ON when the compressor and condenser fan starts. Flashes when activation of the compressor is temporarily delayed.
7		Fan: ON when the internal cabinet fans are activated. Flashes when activation of the fans is temporarily delayed.
8		Alarm: ON when alarm is signalled.

Running the Fridge

- Operating Modes** The electronic controller will automatically switch the fridge between Normal and Energy Saving modes depending on use. If the front door (electronic controller side) is not opened for four hours, the fridge will automatically enter Energy Saving mode and the sign and interior lights will switch off. To manually switch the fridge between Normal and Energy Saving modes, press and hold the Energy Save (up) button on the electronic controller faceplate. The fridge can also be brought into Day mode by opening the front door (electronic controller side).
- Compressor** The compressor cycles on and off during Normal and Energy Saving modes. It does not run when the fridge is in defrost mode. If the electronic controller displays "Err" there is a fault within the refrigeration system and the compressor will not run.
- Evaporator Fan** The evaporator fan starts a few minutes after the fridge is turned on and runs continuously during normal operation defrost and CCP mode, and stops when the front door is open or if the electronic controller displays "Err" indicating a fault within the refrigeration system.
- Condenser Fan** The condenser fan runs continuously when the fridge is on except if the electronic controller displays "Err" indicating a fault within the refrigeration system.
- Temperature Probes** Two temperature probes feed data to the electronic controller – the control probe and the evaporator probe. The control probe controls the fridge temperature, provides the fridge temperature for the electronic controller to display, and notifies the electronic controller of any erratic or abnormal temperatures that could identify a problem within the refrigeration system. The evaporator probe controls the refrigeration system defrost initiation and termination.
- Door Switch** The fridge is fitted with a door switch below the front door (electronic controller side). A small magnet in the door frame activates the switch. The door switch tells the electronic controller to turn off the evaporator fan motor (i.e. if door opened) during normal run operation, initiate Energy Saving mode if the door is not opened for four hours, and to reactivate Normal mode if the door is opened for a period of time during Energy Saving (Night) mode.
- Defrost Cycle** The first automatic defrost occurs 3 hours after the fridge is switched on. During the defrost cycle the compressor stops and the evaporator fan runs continuously. The defrost cycle will stop when the evaporator probe reaches 6°C or after the defrost cycle has been running for 60 minutes.
- Lighting** The fridge is fitted with bottom sign lights and interior pillar lights. The lights will come on when the fridge is first plugged in. When in Normal mode the sign and interior lights are on. When in Energy Saving mode the sign and interior lights are off. Press the Light button on the electronic controller faceplate to manually switch the sign and interior lights on and off (see page 8).

Messages and Alarms

Controller Display The following table explains messages that the electronic controller displays, and related alarms. Alarms signal unexpected operational changes in the fridge and can be muted by pressing the Set (mute) button on the electronic controller faceplate (see page 8).

Table 3: Controller display

Display	Description
20	The fridge is in Normal mode and the electronic controller displays the fridge temperature.
E75	The fridge is in Energy Saving mode. When in Energy Saving mode the temperature inside the fridge is moderated and the cabinet lights turn off. The lights can be switched on and off by pressing the Light button on the controller faceplate, and the fridge can be switched into Normal mode by pressing the Energy Saving button on the electronic controller faceplate.
door	The front door has remained open for over 2 minutes. An alarm sounds, and the compressor and evaporator fan turn off.
E0	Control probe fault.
E1	Evaporator probe fault.
E3	There is a refrigeration system error and the controller has turned the fridge off to avoid damage. An alarm sounds, and the compressor and evaporator fan turn off.

Programming the Electronic Controller

Parameters The parameter configuration program is set by SKOPE at the factory. A label on the controller box indicates the parameter configuration program number (e.g. the SC112N-A fridge uses program 102).

The electronic controller parameters can be modified using the keypad. Access to the parameters is protected by a password to prevent accidental or unauthorised modifications. Only an authorised service agent should modify the parameters.

Procedure 1: To access the parameters

1. Press and hold the **Set (mute)** button for 5 seconds until the display shows **PS** (password).
2. Press the **Set (mute)** button. The display shows **0**.
3. Use the **ES (up)** and **Light (down)** buttons to select password **22** (default password).
4. Press the **Set (mute)** button to confirm the password. The display shows **PS**.
5. Use the **ES (up)** and **Light (down)** buttons to scroll through the parameter codes and locate the required parameter.

Parameter categories can be identified by the initial symbol or letter of the code, and the icon displayed on the electronic controller faceplate:

Category	Initial	Icon
Probe parameters	/	—
Control parameters	r	—
Compressor parameters	c	
Defrost parameters	d	
Alarm parameters	A	
Fan parameters	F	

6. Press the **Set (mute)** button to display the value associated with the parameter code.
7. Use the **ES (up)** and **Light (down)** buttons to increase or decrease the value of the parameter.
8. Press the **Set (mute)** button to save the new value temporarily. The display shows the parameter code.

Note: If no buttons are pressed for 60 seconds or the power is disconnected before the temporarily saved values are permanently saved, the temporarily saved values will be cancelled and the previous setting will be restored.

9. If necessary, repeat steps 5 to 9 to change other parameters as required.
10. Press and hold the **Set (mute)** button for 3 seconds to permanently save the parameters and exit the parameter menu.

Parameter list – SC112N-A program 102



Electronic Controller Parameter Sheet

Application **SC112N-A**
 Controller Type **SKOPE S4 EVO**
 Controller Model & Revision **PZSKCOH002K (Rev 1.414)**
 SKOPE Part Number **ELZ11478-102**

102

Revision: 3.0

Full List

SET0

CPS1017-102-SET0

Last revised on
5-Mar-2021

Parameter	Setting	Unit	Access Level	Range		Description
				Min	Max	
Probe Parameters						
PS	22		F	0	200	Password (Read Only)
/2	4		C	1	15	Measurement stability (Applies to all probes)
/4	1		C	1	5	Select probe displayed
/5	0		C	0	1	Select °C/°F (0=°C ; 1=°F)
/6	0		C	0	1	Disable decimal point
/8	0	°C	C	-99.00	99.0	Display Offset (Only if /E > 0)
/9	0	°C	C	-40.0	/A	Minimum Display value (Only if /E > 0)
/E	1		C	0	50	Display Dampening Coefficient
/C1	3.5	°C	C	-50.0	50.0	Probe 1 Calibration Offset
/C2	0.0	°C	C	-50.0	50.0	Probe 2 Calibration Offset
/C3	0.0	°C	C	-50.0	50.0	Probe 3 Calibration Offset
Regulation Parameters						
St	3.0	°C	F	r1	r2	Set point
rd	3.0	°C	C	0.0	19.0	DAY differential
r1	0.0	°C	C	-50.0	r2	Minimum set point value
r2	4.0	°C	C	r1	150	Maximum set point value
r3	1		C	0	1	Enable Auto Day/Night Mode Switching
r4	2.0	°C	C	-50.0	50.0	Night Mode set point delta (added to St)
r5	3.0	°C	C	0.0	19.0	Night differential
r6	90	hrs	F	0	90	Night Mode Start Delay (time period with no door openings)
r7	8	hrs	F	1	90	Night Mode Timeout (time period in night mode)
r10	0	hrs	C	0	24	Light Delay On Time after entering DAY mode
Cold Climate Protection Parameters						
CCt	2.0	°C	C	0.1	20.0	Cold Climate Protection Temperature Delta
CCd	30	mins	C	0	199	Cold Climate Protection Delay
Pull Down Mode Parameters						
Pt	127	°C	C	0	127	Pull-down Mode - Activation Temperature
Pd	250	hrs	C	0	250	Pull-down Mode - Maximum Duration
Compressor Parameters						
c0	2	mins	C	0	200	Comp. and Fan start delay at power-up.
c1	6	mins	C	0	100	Minimum time between consecutive compressor starts
c2	5	mins	C	0	100	Minimum compressor off time
c3	0	mins	C	0	100	Minimum compressor on time
c4	15	mins	C	0	100	Compressor on time with duty setting
c5	1		C	0	1	Enable mains voltage protection (0 = disabled, 1 = enabled)
Defrost Parameters						
d0	0		C	0	1	Type of defrost (0 = Electric, 1 = Hot Gas)
d1	3	hrs	C	0	199	Defrost interval time (Time between defrosts)
d2	1		C	0	1	Run defrost interval timer only when compressor running
dt	6	°C	C	-50.0	127	Defrost Termination temperature
dP	60	mins	C	1	199	Maximum defrost duration
d4	0		C	0	1	Defrost request at power-on: (0 = no, 1 = yes)
d5	0	mins	C	0	199	Defrost delay on power-up (when d4=1)
d6	1		C	0	1	Display during defrost (0 = "dEF", 1 = Temperature at start of defrost)
dd	3	mins	C	0	15	Dripping time (compressor and fans stopped after defrost)
d8	0	mins	C	0	199	Bypass high temperature alarm after defrost or door opening
d9	0		C	0	1	Defrost priority over compressor protectors
d/1	-	°C	F	-	-	Probe reading on 2nd Input (read only)



Electronic Controller Parameter Sheet

Application **SC112N-A**
 Controller Type **SKOPE S4 EVO**
 Controller Model & Revision **PZSKCOH002K (Rev 1.414)**
 SKOPE Part Number **ELZ11478-102**

102Revision: **3.0**

Full List

SET0

CPS1017-102-SET0

Last revised on
5-Mar-2021

Parameter	Setting	Unit	Access Level	Range		Description
				Min	Max	
d/2	-	°C	F	-	-	Probe reading on 3rd Input (read only)
d10	-50.0	°C	C	-50.0	127	On demand defrost Start Temperature
d11	0	mins	C	0	60	On demand defrost: start delay
d12	127	°C	C	-50.0	127	Enabling defrost condition: Control probe threshold
d13	1		C	0	1	Evaporator Fans During Defrost (0 = Off 1 = ON)
d19	30	mins	C	0	200	No Downward Tendency Defrost - Start Delay (0 = function disabled)
d20	3	mins	C	1	< d19	No Downward Tendency Evaluation (Sample Time)
d21	3		C	0	5	Number of NDT defrosts before R.S.F. "Err" alarm (0 = function disabled)
d22	0.1	°C	C	0.0	5.0	No Downward Tendency Evaluation (Temperature Delta)
Alarm & Input Configuration Parameters						
A0	2.0	°C	C	-20.0	20.0	Temperature Alarm Differential
AL	0.0	°C	C	-50.0	150	Low temperature alarm setpoint. (Relative if A0>0, Absolute (A0≤0))
AH	0.0	°C	C	-50.0	150	High temperature alarm setpoint. (Relative if A0>0, Absolute (A0≤0))
Ad	0	mins	C	0	199	Temperature alarm delay (0 = AL and AH alarms disabled)
A10	2	mins	C	0	10	Door Open Alarm delay (0 = door open alarm disabled)
A11	1		C	0	5	2nd Input Configuration
A12	3		C	0	16	Number of cA alarm events to trigger manual reset 'CA' alarm
A13	24	hrs	C	0	240	cA alarm counter reset delay
A14	60	mins	C	0	240	cA alarm reset delay
A15	1		C	0	1	Lights switched OFF when CHt, cA or CA alarm occurs
A18	1		C	0	1	Allow power cycle to reset CA alarm
A20	4	mins	C	A10	60	Faulty door/curtain switch E2 alarm delay
Ac	70.0	°C	C	-50.0	250	High condenser temperature alarm set point
AE	5.0	°C	C	0.1	20.0	High condenser temperature alarm differential
Acd	0	mins	C	0	250	High condenser temperature alarm delay
Acr	1		C	0	2	High condenser temperature alarm reset method
A21	2		C	0	5	3rd Input Configuration
Evaporator Fan Parameters						
F0	3	secs	C	1	100	Loads Activation Delay
Fd0	20	mins	C	1	100	Fan DAY Duty Cycle : ON time
FdF	0	mins	C	0	100	Fan DAY Duty Cycle : OFF time
Fn0	25	mins	C	1	100	Fan NIGHT Duty Cycle : ON time
FnF	0	mins	C	0	100	Fan NIGHT Duty Cycle : OFF time
Other Parameters						
H0	1		C	0	207	Supervisor Serial address
H01	1		C	0	1	Baud Rate (0 = 9600, 1 = 19200)
H02	2		C	0	2	Stop Bits
H03	0		C	0	2	Parity (0 = None, 1 = Odd, 2 = Even)
H2	1		C	0	3	Enable Keypad
H4	0		C	0	1	Disable buzzer (0 = Buzzer Enabled, 1 = Buzzer Disabled)
H5	102		F	0	199	ID code (read-only)

Warning

1. Only make program modifications with reference to relevant Operating Manual.
2. This programming sheet is exclusively for SKOPE refrigeration systems with its dedicated Carel controller.
3. Any alteration from this program may adversely affect the SKOPE Refrigeration System operation.
4. Specification may change without notice. Please check with SKOPE Customer Service for latest revision.

4 Replacement Procedures

Shelves

Adjusting the Shelves The fridge is supplied with three wire shelves which may be positioned at different heights to suit various products. Each shelf is held in place with four shelf clips which engage in the corner shelf support strips.

Procedure 2: To adjust the cabinet shelves

1. Remove the shelves from the fridge.
 2. Remove the shelf clips from the four shelf support strips at each corner of the fridge interior.
 3. Securely engage a shelf clip in each of the shelf support strips at the required height.
 4. Sit the shelves onto the shelf support clips.
-
-



Figure 2: Shelf detail

Lights

The fridge is lit by four interior pillar lights and two bottom sign lights. All lights are powered by a 12Vdc LED power supply located within the refrigeration system (see page 20). If one or several individual light/s fail on a light strip, the remaining lights will still receive power and should work. If an LED strip is damaged (and the circuit is broken) no lights will go (including the sign lights). If all the lights are off, check operation via the light switch on the electronic controller (see page 9) before replacing the LED strip lighting.

Interior Lights The cabinet interior is lit by four vertical corner pillar LED lights. Each corner pillar light is made up of two LED strip lights (see page 35 for spare parts).

Procedure 3: To replace a single LED interior light strip

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
2. Remove the shelves from the fridge.

3. Access the fridge interior via the appropriate door, and unclip the diffuser to expose the failed LED light strip.



4. Unplug the failed LED strip and remove it by unscrewing it from the pillar.



5. Fit the new light and plug it into the circuit.
6. Refit the diffuser and the shelves.
7. Test the cabinet for correct operation.

Bottom Sign Lights The fridge has two bottom lit signs, one at the front and one at the back. Each sign is lit by one LED strip light (see page 35 for spare parts).

Procedure 4: To replace a bottom sign light

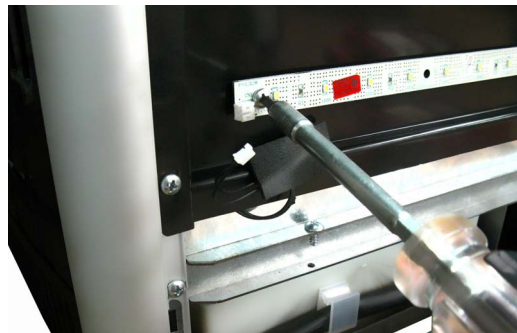
1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
-

2. Remove the lower bottom panel by undoing the three fixing screws.
-

3. Remove the sign panel and decal from the sign.
-



4. Unplug and unclip the LED strip light, and remove it from the fridge.
-



5. Fit the new light and plug it into the circuit.
 6. Reassemble the cabinet and test for correct operation.
-
-

Doors

The fridge is fitted with a front and a back door. The front door is on the electronic controller side and is fitted with a door switch to monitor door openings. The front door should be directed towards the customer. The rear door is not fitted with a door switch and should face away from the customer. It is used for restocking product.

Replacing the Door Gasket The one-piece door gasket clips into the door frame and runs around the perimeter of the door. You can remove the gasket by peeling it from the door frame, starting at a corner.

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



Figure 3: Door gasket

Removing and Fitting Doors

For ease of servicing, the doors can be removed from the fridge.

Procedure 5: To remove a door

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.

2. Detach the top hinge from the cabinet by opening the door and undoing the two fixing screws.



3. Lift the door up and off the cabinet.

Procedure 6: To refit a door

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.

2. Use a flat hex spanner or strong 2 mm steel pin to rotate the capstan about half a turn in the direction the door closes.

3. While holding the tension with the spanner, slot the capstan into the hole on the bottom of the door opening and lock in place.



4. Reattach the top hinge and fix in place with two fixing screws.
5. Check the tension.

Adjusting Door Tension

Each glass door has an internal torsion bar, pre-tensioned at the factory, that lets the door self-close. If necessary, you can adjust the tension by rotating the capstan mounted at the bottom of the door.

Procedure 7: To adjust the door tension

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
2. Remove the door from the cabinet (see Procedure 5).
3. Refit the door to the cabinet (see Procedure 6), adjusting the tension via the capstan as necessary.

Refrigeration System

Before Servicing Overview

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

Important

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

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

Check all components including the electronic controller and electrical systems.

Ensure your work area is well ventilated.

IMPORTANT

Use only dedicated hydrocarbon SKOPE OEM spare parts.
DO NOT use alternative parts.
 For safety compliance, use only SKOPE-supplied components specified for the appliance.



Safety hazards

The main hydrocarbon safety hazards are:

- Flammability
- Venting of hydrocarbon and compressor oil
- Asphyxiation

Refrigerant identification

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

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

Personal protective equipment (PPE)

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

Service equipment

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

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

- Intrinsically safe refrigeration vacuum pump, rated by the manufacturer as suitable for use with hydrocarbon refrigerant

- Dedicated hydrocarbon gauge set
- Flammable gas detector to warn if flammable refrigerant is present
- Charging scales, rated by the manufacturer as suitable for use with hydrocarbon refrigerant, accurate to 1 gram

Leak detector

A leak detector is used to track and locate the source of hydrocarbon gas leaks. It is:

- recommended for servicing hydrocarbon units on-site.
- required for servicing hydrocarbon units off-site.

Service vehicle

- Must be suitable for transporting flammable gas.
- Vehicle cargo area:
 - Must be well ventilated to outside the vehicle only.
 - Must have no ignition sources, nor any areas where the gas may pool.
- Must be able to transport swap units.
- Should carry minimum SKOPE hydrocarbon service parts.

On-site Work The service technician must have required knowledge, skills, qualifications, and tools before beginning any on-site work on the refrigeration sealed system.

Minimum knowledge and skills

- Qualifications and certifications required by local/state regulatory bodies to service hydrocarbon refrigeration systems
- Safe working practices, including a safe working environment at all times

Minimum tools and equipment

- Safety signs and/or barrier – suitable to create a safe work zone 1.5 m around the cabinet
- Hydrocarbon gas detector
- Dedicated hydrocarbon gauge set
- Bullet valves/line piercing valves suitable for a 6 mm tube

Off-site Work Hydrocarbon workshop

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

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

The SC112N-A refrigeration system is a bottom-mounted, electronically controlled serviceable system. It is made up of three levels, each containing specific parts and assemblies. Specifications for the refrigeration system are in the following table. Verify basic requirements before servicing.

Table 4: Refrigeration system specifications

Compressor	Wanbao Compressor ETA110L
Compressor capacity	250 watts
Refrigerant	R600a
Charge	40 g

Refrigeration Cartridge

Refrigeration Cartridge Assembly

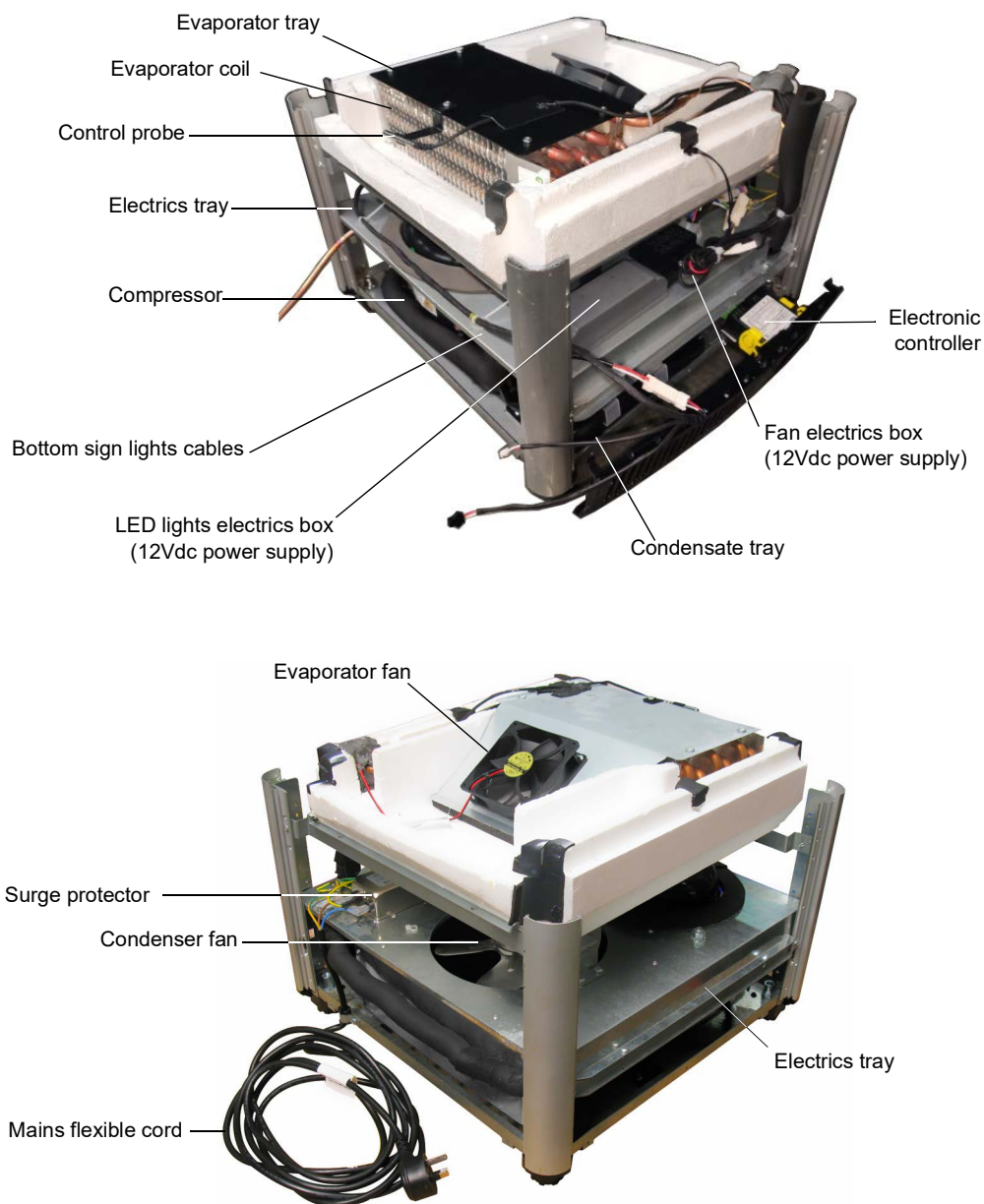


Figure 4: Refrigeration cartridge components

Refrigeration System Access

The following instructions explain how to access the refrigeration system. Servicing can be completed by separating the top cabinet assembly from the bottom refrigeration system.

Procedure 8: To access the refrigeration system

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.

2. Remove the front and back lower bottom panels by undoing the three fixing screws and sliding them down.



3. Remove the sign panel and decal from the sign.

4. Remove the side lower bottom panels by undoing the three fixing screws and sliding the panels down.



5. Unclip the upper bottom panels.

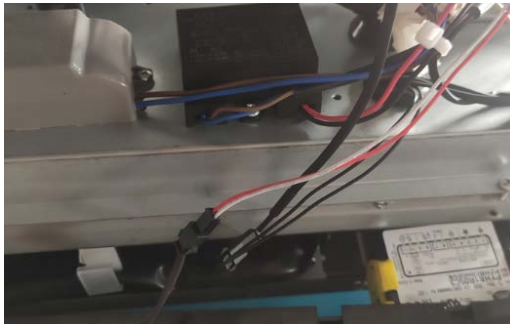
6. Remove the front and back light panels by undoing the fixing screws.



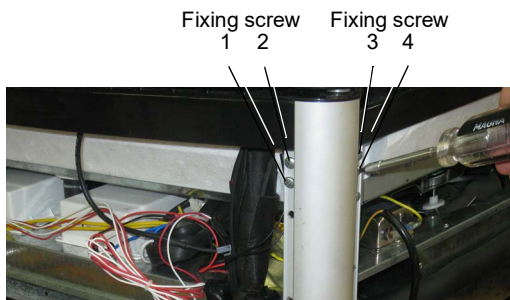
7. Unplug the light panels.

Procedure 8: To access the refrigeration system (continued)

8. Unplug the two plugs from the front of the cabinet (above the electronic controller).



9. Undo the top four screws from each refrigeration system pillar support bracket (16 screws in total) to detach the top part of the fridge.



10. Lift the top cabinet assembly from the bottom refrigeration system. It may be necessary for a second person to hold the bottom refrigeration system while separating them.

Refrigeration System Dismantling

The refrigeration system is made up of three layers, each containing specific components and parts listed in the table below.

Table 5: Refrigeration system layers

Level	Components and parts
1 (bottom)	Compressor, compressor electrics, condensate tray, condenser coil
2 (middle)	Condenser fan, fan motor power supply electrics, LED light power supply electrics, surge protector
3 (top)	Evaporator fan, evaporator coil

Follow the instructions below to dismantle the refrigeration system and access the different levels.

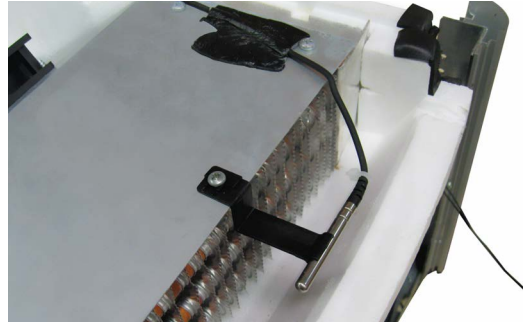
Procedure 9: To dismantle the refrigeration system

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
2. Separate the top cabinet assembly from the from the bottom refrigeration system to access the refrigeration system (see Procedure 8 on page 21).

You can now access the components on level three.

Procedure 9: To dismantle the refrigeration system (continued)

3. Unclip and detach the control probe and cable from the evaporator shroud.



4. Detach the evaporator shroud by undoing the four fixing screws. Place aside.



5. Free all pipes and cables from the putty on the evaporator tray edge.

6. Detach the drain pipe from the bottom of the evaporator tray, and carefully pivot the evaporator tray out from under the evaporator coil.



7. Place the tray aside.

You can now access the components on level two.

8. Remove the two horizontal struts from the sides of the refrigeration system by undoing the two fixing screws from each strut.



9. Detach the mains flexible cord from the base of the assembly by undoing the mains flexible cord bracket fixing screw.



Procedure 9: To dismantle the refrigeration system (continued)

10. Detach the electrics tray from the assembly by undoing the eight fixing screws (two on each edge).



11. Tilt the electrics tray up and support with a block.



You can now access the components on level one.

Evaporator Fan The evaporator fan is located on level three (the top) of the refrigeration system. It is mounted on the evaporator shroud, on top of the evaporator tray. The complete fan (motor and blade) is replaced as one part.

Procedure 10: To replace the evaporator fan

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
2. Separate the top cabinet assembly from the bottom refrigeration system (see Procedure 8 on page 21).
3. Gain access to level three of the refrigeration system (see Procedure 9 on page 22).

4. Trace the evaporator fan cable back to its connector plug, and unplug it.



Procedure 10: To replace the evaporator fan (continued)

5. Detach the failed evaporator fan from the evaporator shroud by undoing the four fixing screws.



6. Fit the new fan, ensuring the cables follow the original path.
7. Reassemble the cabinet and test for correct operation.

Condenser Fan The condenser fan is located on level two (the middle) of the refrigeration system. It is mounted on the electrics tray. The fan blade and fan motor can be replaced individually if necessary.

Procedure 11: To replace the condenser fan blade and condenser fan motor

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
2. Separate the top cabinet assembly from the bottom refrigeration system (see Procedure 8 on page 21).
3. Gain access to level two of the refrigeration system (see Procedure 9 on page 22).

4. Detach the condenser fan assembly by undoing the four fixing screws from condenser fan bracket.



5. Remove the fan blade by undoing the fixing nut. Either:
 - Replace the fan blade, or
 - Continue following the steps to replace the fan motor.

6. Trace the condenser fan cable to its connector plug and unplug the condenser fan, cutting the cable ties if necessary.

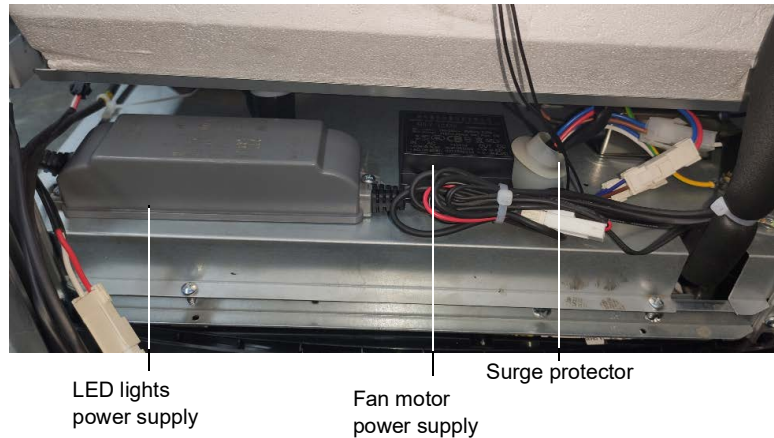


7. Detach the condenser fan motor by undoing the two nuts on the underside of the condenser fan baffle.
8. Fit the new condenser fan motor, ensuring the cables follow the original path and are cable-tied in place.
9. Reassemble the cabinet and test for correct operation.

Power Supply and Surge Protector

The evaporator and condenser fan motor power supply, the sign and interior LED lights power supply, and the surge protector are located on level two (the middle) of the refrigeration system. Parts within each power supply cannot be replaced individually. If a power supply has failed, you must replace the assembly.

Figure 5: Fan and light power supply, and surge protector



Procedure 12: To access the power supplies

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
2. Separate the top cabinet assembly from the bottom refrigeration system (see Procedure 8 on page 21).
3. Gain access to level two of the refrigeration system (see Procedure 9 on page 22).
4. Service as necessary.
5. Reassemble the cabinet and test for correct operation.

Compressor

The compressor is located on level one (the bottom) of the refrigeration system. If the compressor is causing excessive noise, check the mountings to ensure there is no damage to the rubber or the washers, nuts or screws.

Before replacing the compressor, check all plugs and connections, and ensure that the compressor electrics are operating correctly (see below). 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 refrigeration system has a direct power supply (not from a multi-box or extension cord).

Procedure 13: To access the compressor

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
2. Separate the top cabinet assembly from the bottom refrigeration system (see Procedure 8 on page 21).
3. Gain access to level one of the refrigeration system (see Procedure 9 on page 22).
4. Service as necessary.
5. Reassemble the cabinet and test for correct operation.

- Compressor Electrics** The compressor electrics are located on the side of the compressor and include the start PTC (positive temperature coefficient) and motor protector. The complete assembly is supplied as a spare part if required.

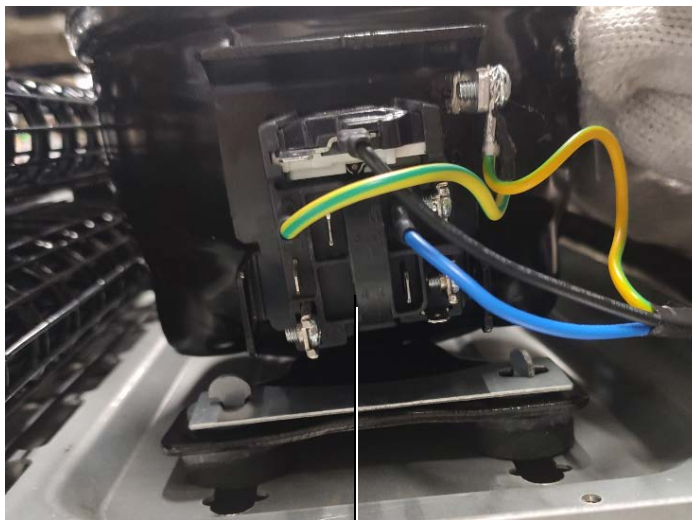


Figure 6: Compressor electrics

PTC and overload protector (OLP) combined

Procedure 14: To access the compressor electrics

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
2. Separate the top cabinet assembly from the bottom refrigeration system (see Procedure 8 on page 21).
3. Gain access to level one of the refrigeration system (see Procedure 9 on page 22).

4. Lever the compressor electrics cover off with a slotted screwdriver.



5. Service as necessary.
6. Reassemble the cabinet and test for correct operation.

Electronic Controller

- Electronic Controller Assembly** The electronic controller is located at the front of the fridge behind the lower bottom panel and is visible from the front of the fridge. For information on operation and programming, refer to "Electronic Controller" on page 7.

Procedure 15: To access the electronic controller terminals

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.

2. Remove the front lower bottom panel by undoing the three fixing screws and sliding down.

You can now access the terminals at the rear of the electronic controller.



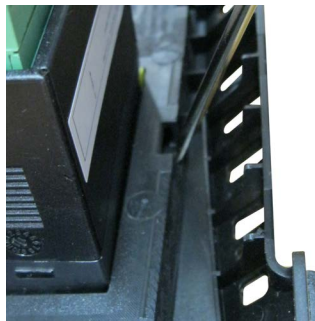
Procedure 16: To remove the electronic controller terminals

1. Follow Procedure 15 above to access the rear of the electronic controller.
2. Unplug the terminals from the rear of the controller.

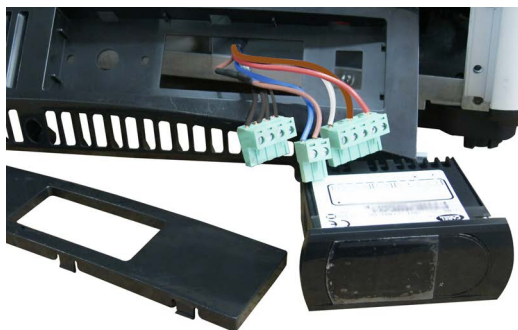
3. Detach the electronic controller from its housing by pressing in the yellow tabs and sliding the tabs off.



4. Gently lever the front panel controller insert from the front lower bottom panel with a small slotted screwdriver.

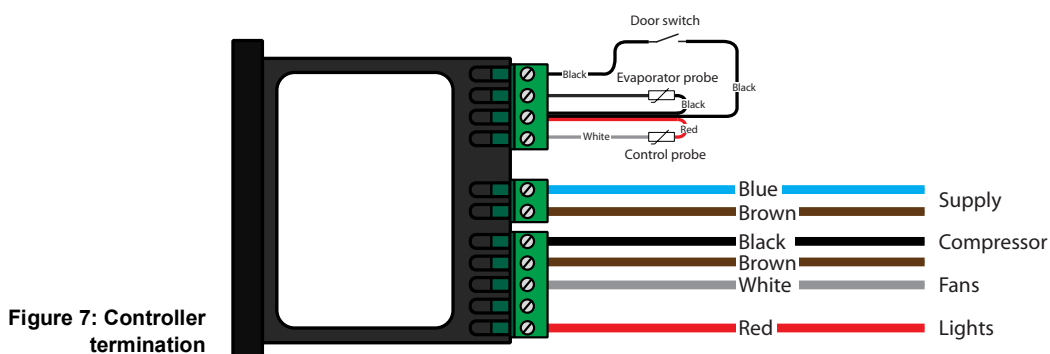


5. Pull the electronic controller through the front lower bottom panel to remove it.



Controller Terminals

Refer to Figure 7 below for controller termination details.



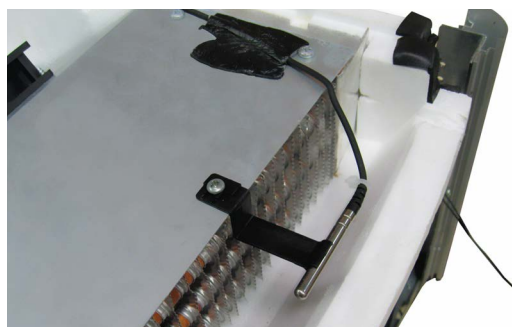
Control Probe

The control probe is attached to a bracket on the evaporator shroud and plugs into the rear of the electronic controller.

Procedure 17: To replace the control probe

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
2. Separate the top cabinet assembly from the bottom refrigeration system (see Procedure 8 on page 21).
3. Gain access to level three of the refrigeration system (see Procedure 9 on page 22).
4. Gain access to the terminals at the rear of the electronic controller (see Procedure 15 on page 28).

5. Unclip and detach the control probe and cable from the evaporator shroud.



6. Trace the cable back to the terminals at the rear of the electronic controller and detach it.
7. Attach the new control probe cable to the terminals at the rear of the electronic controller and fit the cable following the same path as the original probe cable.
8. Clip the probe into the bracket on the evaporator shroud.
9. Reassemble the cabinet and test for correct operation.

Evaporator Probe The evaporator probe is located inside the evaporator coil and plugs into the rear of the electronic controller.

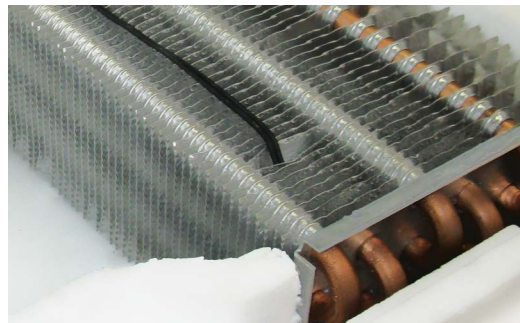
Procedure 18: To replace the evaporator probe

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
 2. Separate the top cabinet assembly from the bottom refrigeration system (see Procedure 8 on page 21).
 3. Gain access to level three of the refrigeration system (see Procedure 9 on page 22).
 4. Gain access to the terminals at the rear of the electronic controller (see Procedure 15 on page 28).
 5. Unclip and detach the control probe and cable from the evaporator shroud (see Procedure 17 above).
-

6. Detach the evaporator shroud by undoing the four fixing screws and place aside.

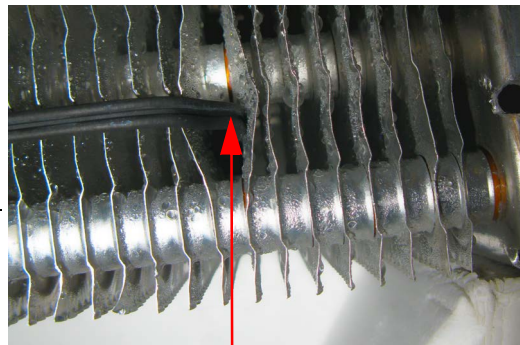


7. Pull the probe from the evaporator coil and trace the probe cable back to the terminals at the rear of the electronic controller.



8. Unplug the cable from the controller.

9. Attach the new evaporator probe cable to the terminals at the rear of the electronic controller and fit the cable following the same path as the original probe cable.



Probe entry point

10. Position the probe between the first and second pipes, in between the eighth and ninth fins.

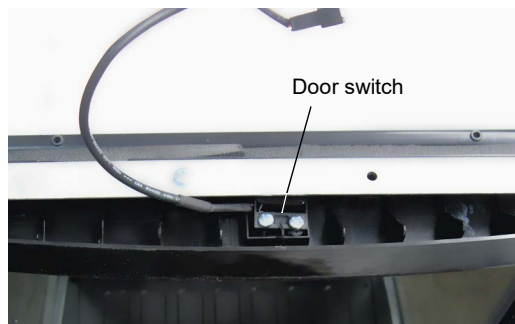
11. Reassemble the cabinet and test for correct operation.
-

Door Switch The front door (electronic controller side) is fitted with a door switch (see page 9). The switch is located under the liner bottom below the front door and is activated by a magnet at the bottom of the front door frame.

Procedure 19: To replace the door switch

1. Disconnect the fridge from the mains power supply by unplugging it from the wall socket.
 2. Remove the shelves from the cabinet.
 3. Lock/secure the doors.
 4. Separate the top cabinet assembly from the bottom refrigeration system (see page 21).
-

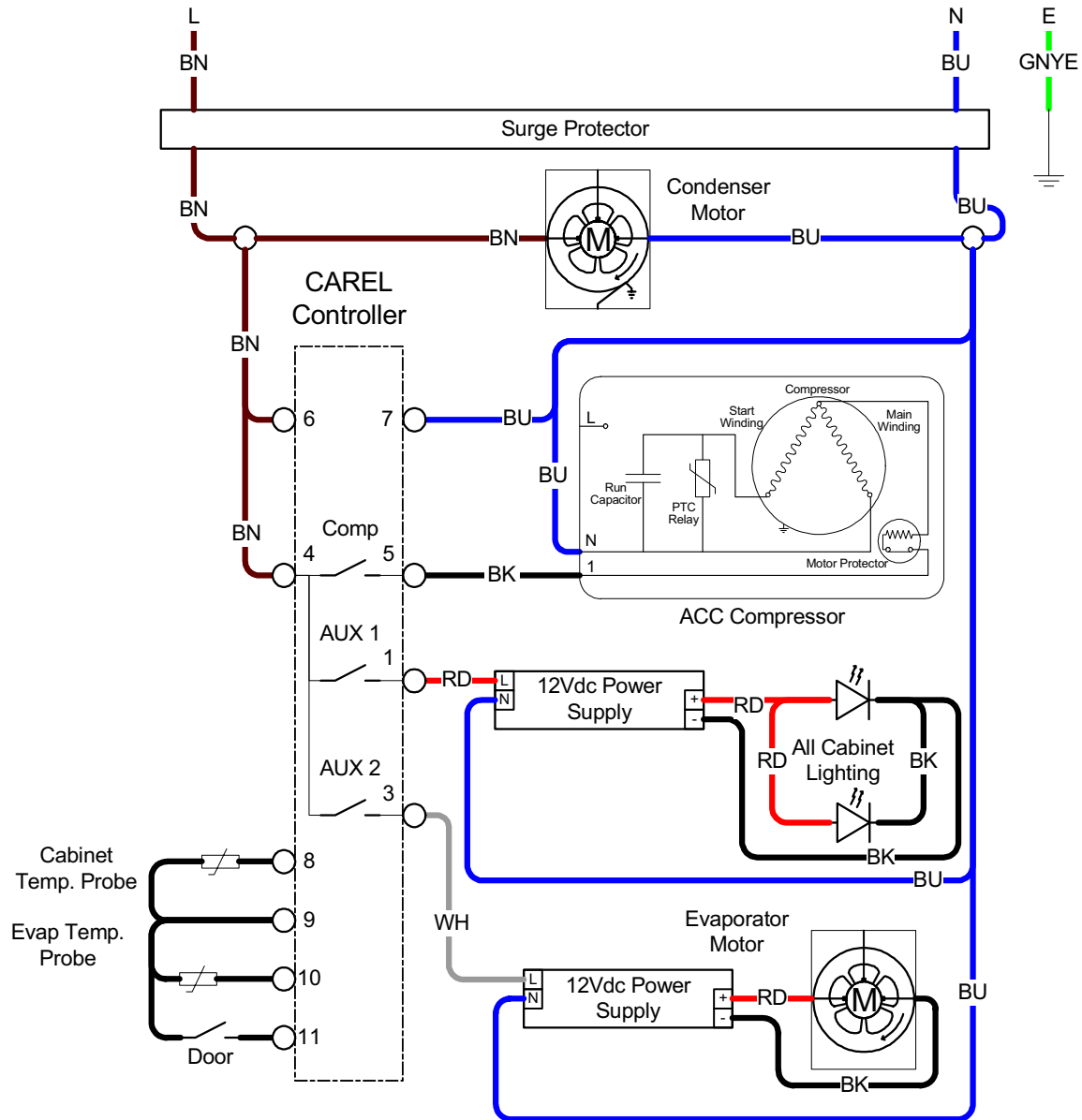
5. Flip the cabinet assembly over and place gently onto its roof to access the door switch.



6. Undo and replace the door switch.
 7. Reassemble the cabinet and test for correct operation.
-
-

5 Wiring

Model: SC112N-A



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	

Notes

This image shows a full page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, providing a template for handwriting practice or general note-taking. There are no margins, text, or other markings on the page.

6 Spare Parts

Cabinet Assembly

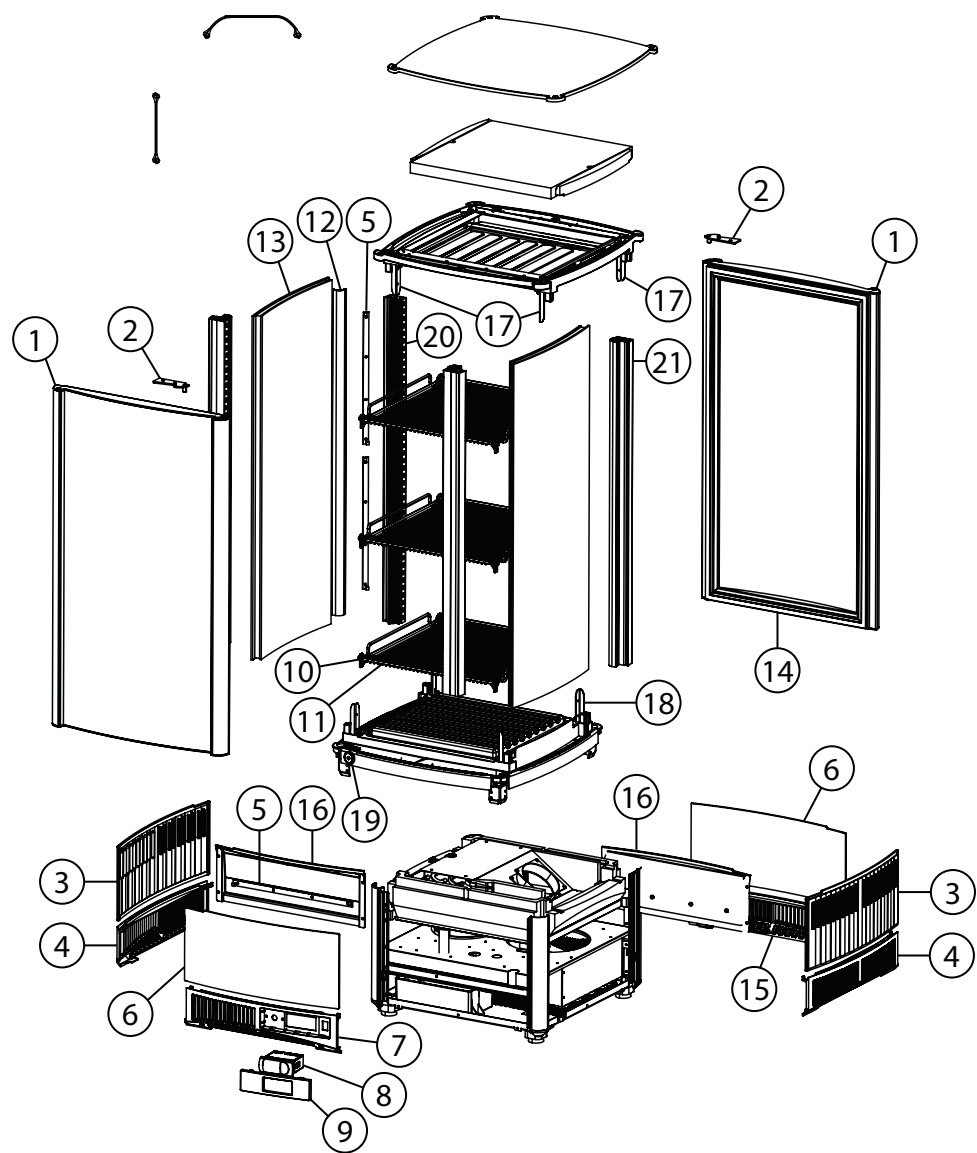


Table 6: Parts – Cabinet

Item	Description	SKOPE part no.	Customer part no.
1	Glass door assembly	HB0070807597	
2	Top hinge	HB0070109359	
3	Side panel	HB0070204927	
4	Lower side panel	HB0070204933	
5	LED strip light (bottom sign)	HB0071800053	
6	Bottom sign panel (transparent)	HB0070509671	
7	Lower control panel	HB0070204936	
8	Electronic controller (CAREL S4)	ELZ11478-102	
–	Control probe (not shown)	ELZ1255	
–	Evaporator probe (not shown)	ELZ7644	
–	Door switch (including cable and magnet) (not shown)	HB0074091496	
9	Controller insert	HB0070204937	
10	Shelf clip	HB0070204928	
11	Wire shelf	HB0070109355	
12	Diffuser	HB0070204930	
13	Side glass	HB0071400156	
14	Door gasket	HB0070204932	
15	Lower side panel	HB0070204933	
16	LED reflector	HB0070204935	
17	Top cover bracket	HB0070109297	
18	Floor bracket	HB0070109301	
19	Door lock	HB0070804947	
20	Shelf support strip LH	HB0070204934	
21	Shelf support strip RH	HB0070204934A	
–	Lighting wiring (not shown)	HB0070402809	

Refrigeration System Assembly

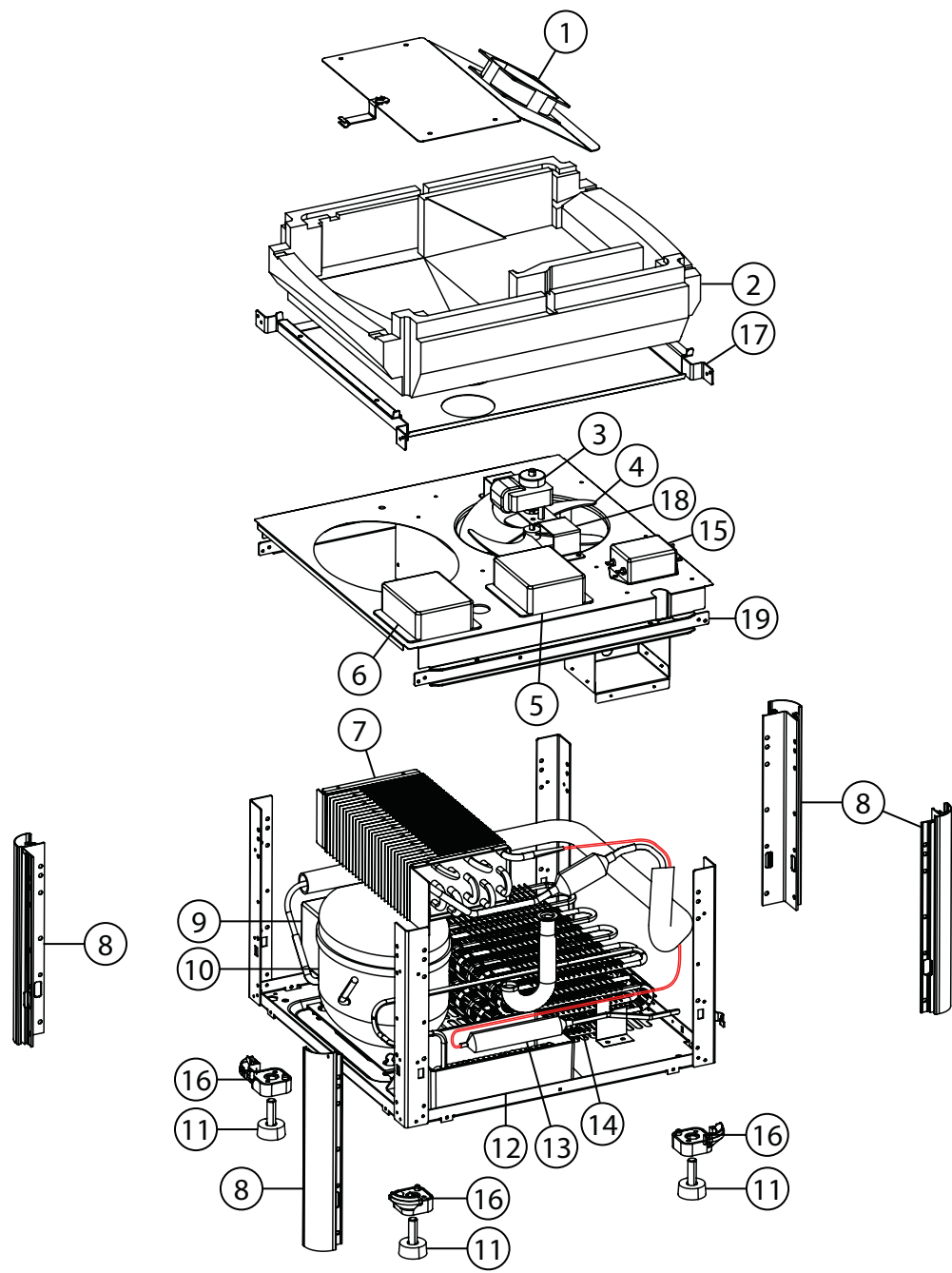


Table 7: Parts – Refrigeration System

Item	Description	SKOPE part no.	Customer part no.
1	Evaporator fan motor	HB0074001220	
2	Evaporator tub	HB0070509640	
3	Condenser fan motor	HB0074001214	
4	Condenser fan blade	HB0074000311	
5	Fan motor 12Vdc power supply	HB0071800116	
6	LED lights 12Vdc power supply	HB0071800202	
7	Evaporator coil	HB0070700492	
8	Lower outer extrusion	HB0070109356A	
9	PTC starter	HB0074000381FJ	
10	Wanbao compressor ETA110L	HB0074000910	
11	Adjustable foot	HB0070101405	
12	Condensate tray	HB0070204929	
13	Drier	HB0060703262	
14	Condenser coil	HB0070700493	
15	Surge protector	HB0074600001	
16	Base foot	HB0070204924	
17	Tub side support	HB0070109349	
18	Condenser fan bracket	HB0070109354	
19	Side chassis support	HB0070109350	
–	Wiring in the unit (not shown)	HB0070402808	
–	Suction line (not shown)	HB0070702925	

7 Troubleshooting

Diagnostics For problems with the cabinet and refrigeration cartridge, refer to Table 8.

Table 8: Cabinet and refrigeration cartridge troubleshooting

Problem	Possible cause	Suggestions
• Fridge not operating	• Loss of power supply.	• Check the mains power supply.
• Sign and/or interior lights not on	• Electronic controller displays “EnS” indicating the fridge is in Energy Saving (Night) mode.	• Switch the light on while keeping the fridge in Energy Saving mode by pressing the Light button on the electronic controller faceplate. • Change the fridge into Normal mode by pressing and holding the ES 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.
	• Electronic controller displays “Err” indicating a refrigeration system error.	• Arrange a service call.
	• Failed LED light.	• Arrange a service call.
• Product is too warm	• Frequent door opening.	• Limit door openings.
	• Door not closing properly.	• Check and clean the door gasket.
	• Refrigeration cartridge operating too hot.	• Ensure the cabinet has good ventilation around the refrigeration cartridge. • Ensure the cabinet is within the maximum operating conditions.
	• Electronic controller displays “EnS” indicating the fridge is in Energy Saving (Night) mode.	• Change the fridge into Normal mode by pressing and holding the ES button on the electronic controller faceplate, or holding the door open for 10 seconds.
• Moisture build-up on the door or exterior of the cabinet	• High humidity.	• Check the ambient operating temperature and reposition the fridge if necessary.
	• Frequent door opening.	• Limit door openings.
	• Door not closing properly.	• Check and clean the door gasket.
• Fridge door does not shut properly	• Fridge is on an uneven surface.	• Level the fridge.
	• Door is obstructed.	• Check the shelves and product.

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