

Vestfrost Solutions

Maintenance and Repair Presentation VLS 054A/094A/154A SDD

Topics

1. Overview of VLS 054A_094A_154A SDD
2. General required maintenance
3. Vital components
4. Warning
5. Required basic Tools
6. Replacement of components
 - Thermostat
 - Starting Device ECU
 - Thermometer
 - Thermostat Sensor
 - Fan
 - Fuse
7. Trouble shooting
8. On-Site Checklist
9. Technical Support

Overview of VLS 054A/094A/154A SDD

Vaccine Chest Refrigerators

SDD – Solar Direct Drive

WHO PQS Approved Codes:

- E003/106
- E003/107
- E003/108

Technical specifications:

- +43°C hot zone
- Grade A
- Compressor Secop BD35K
- Refrigerant R600a
- Galvanized pre-painted cabinet
- Inner lining pre-painted aluminium
- Insulation cyclopentane 100mm
- Automatic temperature control
- Solar connection - Plug & Play
- Voltage 10-45V
- Lock and key



General required maintenance

Daily Check:

Monitor Temperature
Internal lid is placed properly
Lid fits and lock tight to cabinet
Lid gasket not faulty

Monthly:

Clean grill for compressor compartment

6 Month:

Clean condenser coils

Yearly:

Check electrical connections and components
Check electrical connections, cables, wirings from PV panel system

Regularly:

Clean Solar Panels
Check Solar Panels are not shaded at any time of the day



Vital Components

Position	Item no	Description
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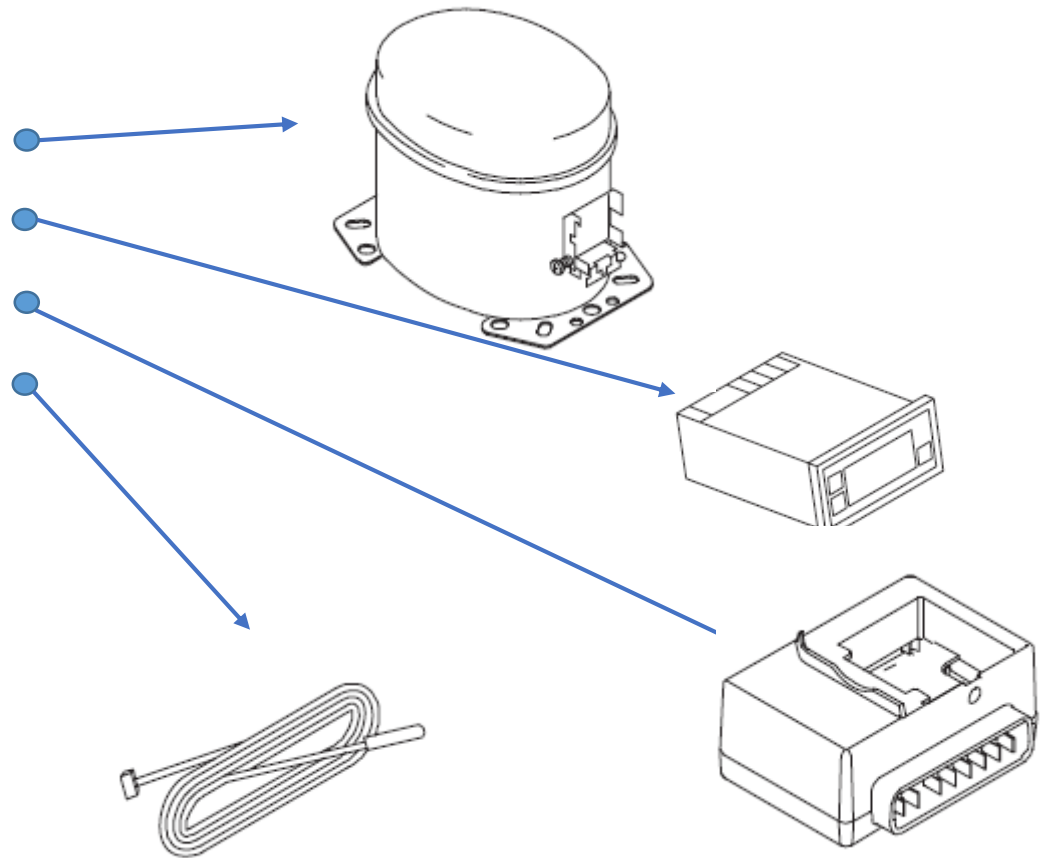
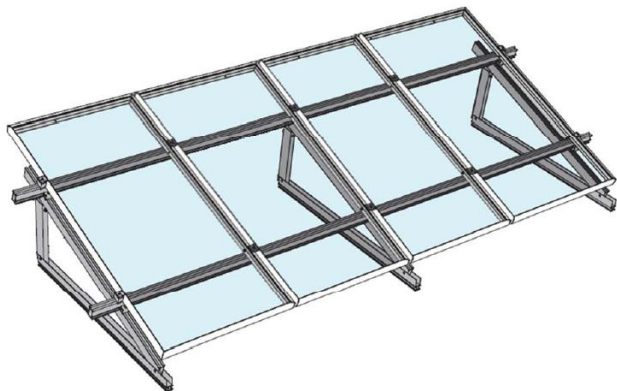
129	8-036510214	Compressor
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5712	702090013	Thermostat
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5727	6520845	Starting Device ECU
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0899	7020311	Thermostat sensor
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PV Solar Panel Kit



Warning!

Before any repair job be aware of following!

WARNING:

Before servicing or cleaning the appliance, disconnect it from power source.

WARNING:

Danger risk of fire or explosion. Flammable refrigerant used.
To be repaired only by trained personnel.



Required Basic Tools

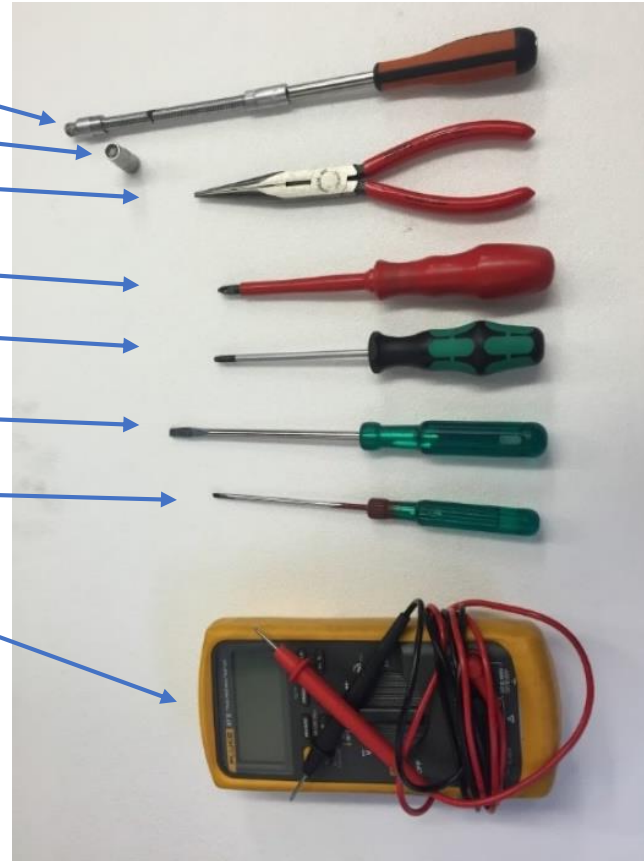
1. Flexible socket wrench
2. Socket wrench - size 7mm
3. Nose plier
4. Phillips screwdriver
5. Torx screwdriver - size t10+t20
6. Screwdriver - size 1,0x6,0
7. Screwdriver – size 0,6x3,5
8. Multimeter

Proposed additional service
kit/items

Sealing kit

Tar tape

Extra self-tapping screws



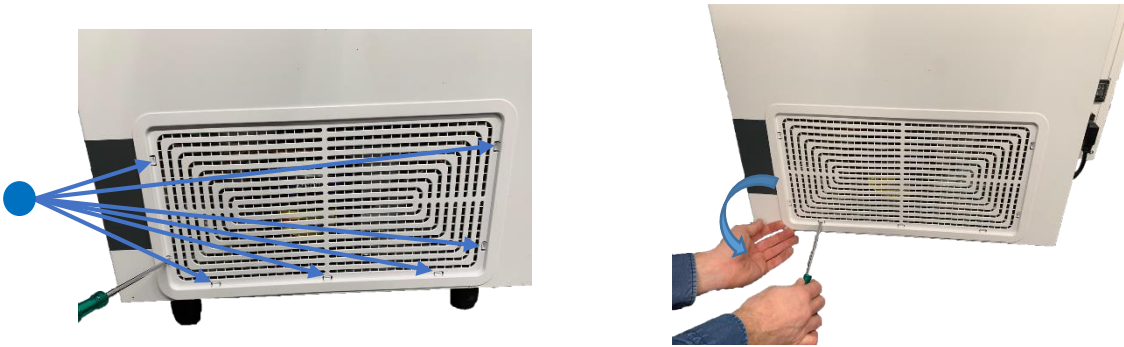
Replacement of components

1. Motor Compartment
2. Thermostat
3. Starting Device ECU
4. Thermometer
5. Thermostat sensor
6. Fan

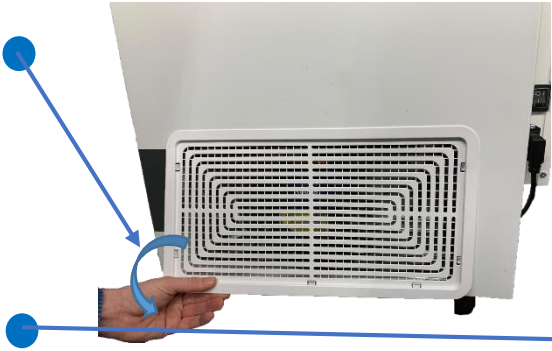
Motor Compartment

How to get access to the motor compartment.

- Use a screwdriver to Unlock all 7 clamps



- Gently pull out the bottom of the grill

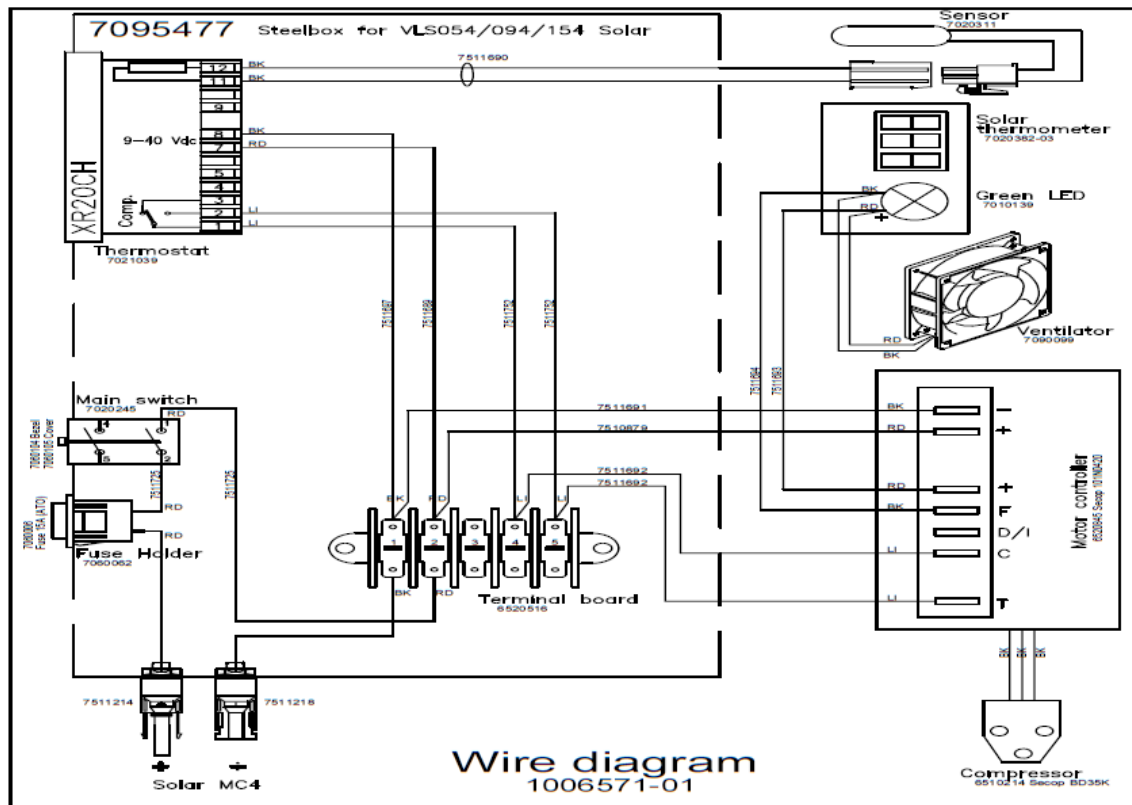


- Pull the compressor grill down



Thermostat

Wiring Diagram

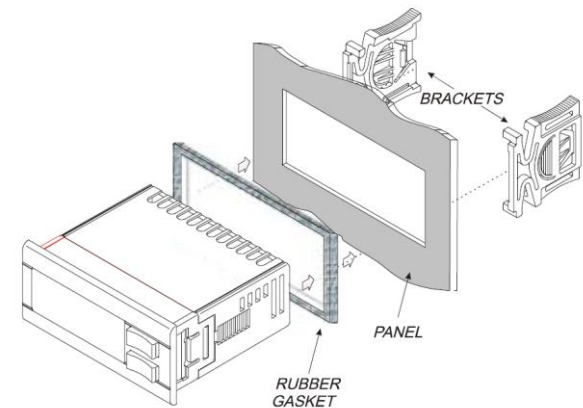


Thermostat Replacement

The thermostat is in the junction box located on the backside

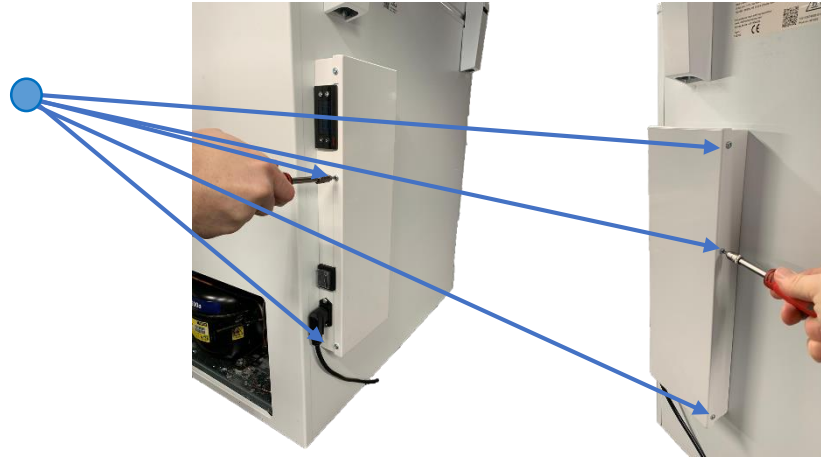


Thermostat specs:
 Dixell XR20
 Power: 3VA Max.
 Probe: NTC
 Coated PCB

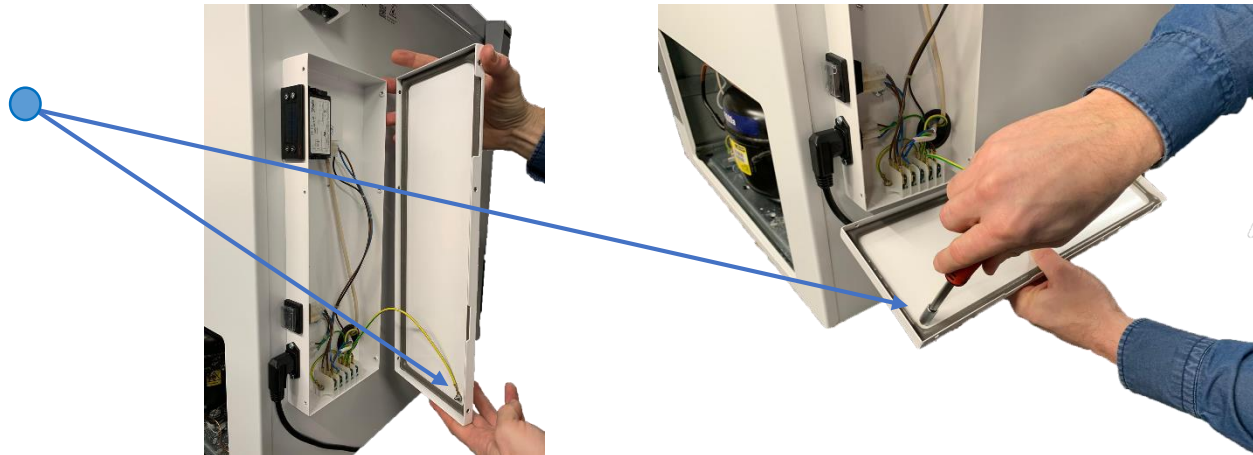


Thermostat Replacement

1: Open the junction box by unscrewing the 6 screws Torx 20

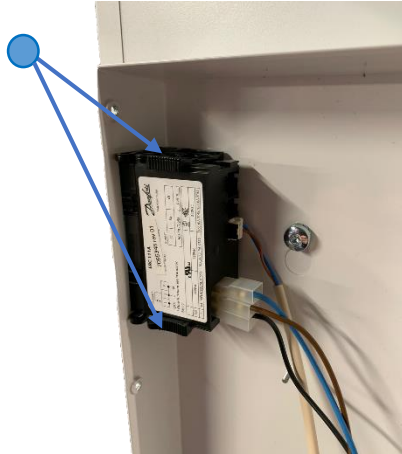


2: Remove grounding cable

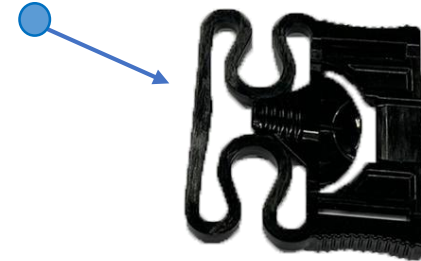


Thermostat Replacement

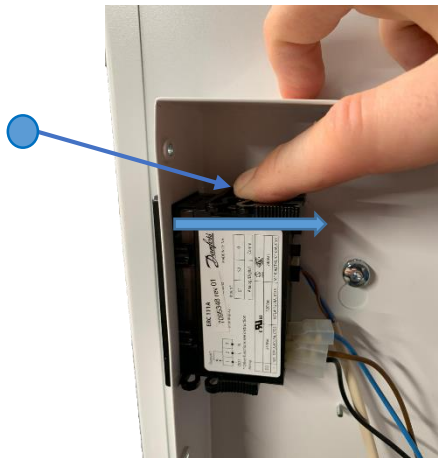
3: Remove 2 clamps from thermostat



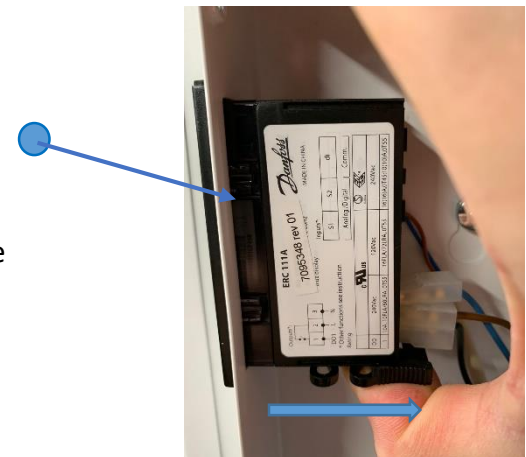
Fixing clamp



4: Use your finger to press and slide the lower clamp backwards to remove from the thermostat body

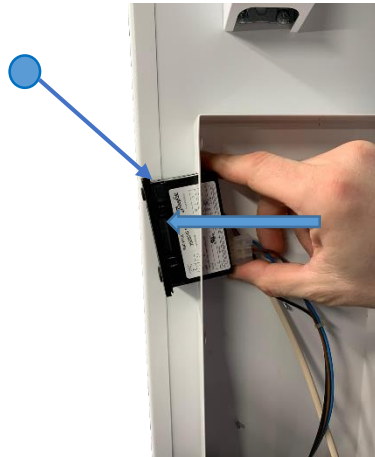


5: Use your finger to press and slide the lower clamp backwards to remove from the thermostat body

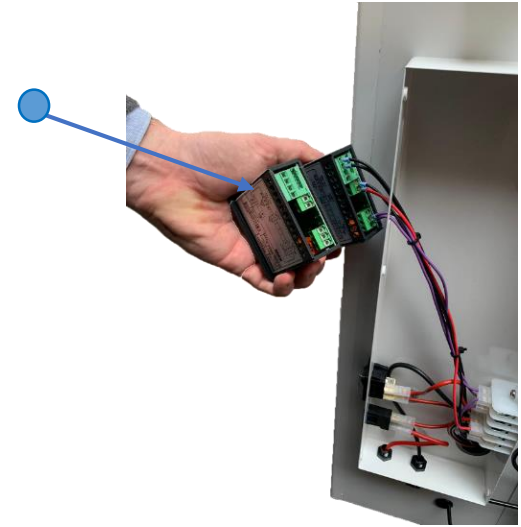


Thermostat Replacement

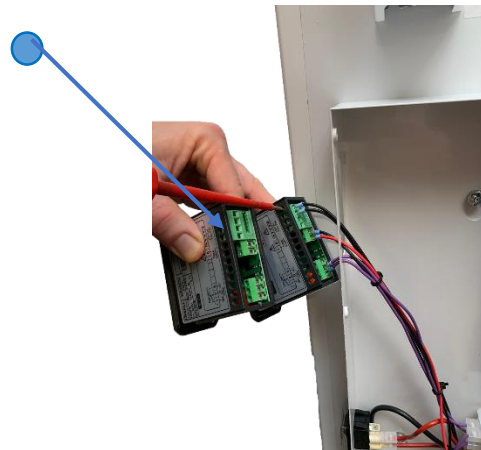
5: Push the thermostat out of the junction box



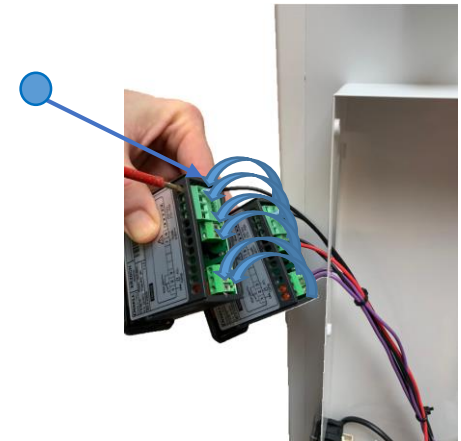
6: Get the new thermostat



7: Uncrew wires fomr socket

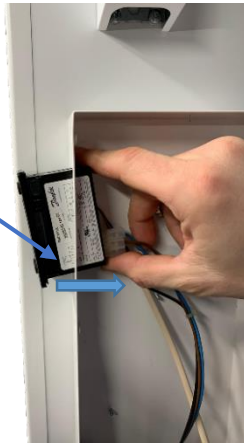


8: Switch the wires from old to new thermostat one by one



Thermostat Replacement

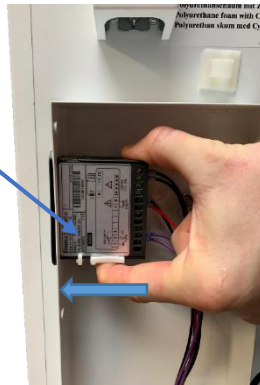
9: Place the thermostat back in place of the junction box



10: Use your finger to press/slide the back the fixing clamps to fasten the thermostat body



11: Use your finger to press/slide the back the fixing clamps to fasten the thermostat body

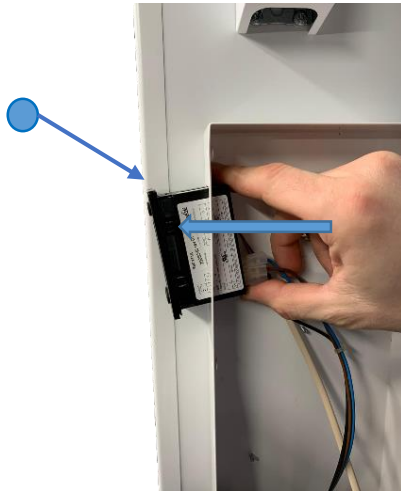


12: Remount grounding wire and junction box lid



Thermostat Replacement

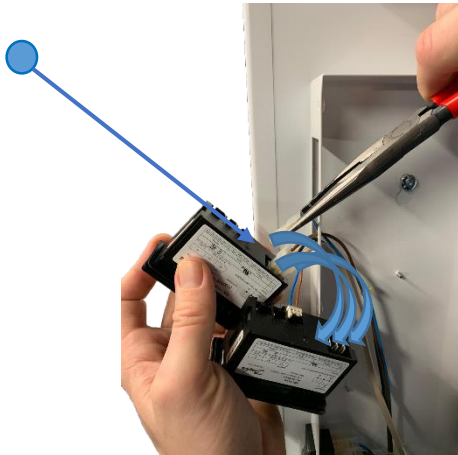
6: Push the thermostat out



7: Switch the sensor wire plug from old socket to the new



8: Switch the 3 power the wires from old to new thermostat one by one





Thermostat Programming


4. FRONT PANEL COMMANDS





SET: To display target set point; in programming mode it selects a parameter or confirm an operation.

 **(DEF)** To start a manual defrost

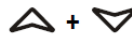
 **(UP)**: To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value.


 **(DOWN)** To see the min stored temperature; in programming mode it browses the parameter codes or decreases the displayed value.


 To switch the instrument off, if onF = oFF.

 Not enabled

KEY COMBINATIONS:


 To lock & unlock the keyboard.

SET +  To enter in programming mode.



SET +  To return to the room temperature display.

6. MAIN FUNCTIONS

6.1 HOW TO SEE THE SETPOINT


- SET** 
1. Push and immediately release the **SET** key: the display will show the Set point value;
 2. Push and immediately release the **SET** key or wait for 5 seconds to display the probe value again.

6.2 HOW TO CHANGE THE SETPOINT

1. Push the **SET** key for more than 2 seconds to change the Set point value;
2. The value of the set point will be displayed and the “°C” or “°F” LED starts blinking;
3. To change the Set value push the  or  arrows within 10s.
4. To memorise the new set point value push the **SET** key again or wait 10s.

6.4 HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value operate as follows:

1. Enter the Programming mode by pressing the **Set** +  keys for 3s (the “°C” or “°F” LED starts blinking).
2. Select the required parameter. Press the “**SET**” key to display its value
3. Use “**UP**” or “**DOWN**” to change its value.
4. Press “**SET**” to store the new value and move to the following parameter.

To exit: Press **SET** + **UP** or wait 15s without pressing a key.

NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

Thermostat Adjustment

Thermostats are default factory set at:
Refrigerator: 4.0°C

Important!

Incorrect parameter settings can lead to unsatisfactory cooling, risking damage to stored vaccines.

If adjustment is required ONLY to be performed by trained technicians.

Adjust the controller max. 1°C at a time.
After adjustment monitor appliance carefully for min. 24 hours

Higher setpoint adjustment
Video



Lower setpoint adjustment
Video



ECU - Starting Device Replacement

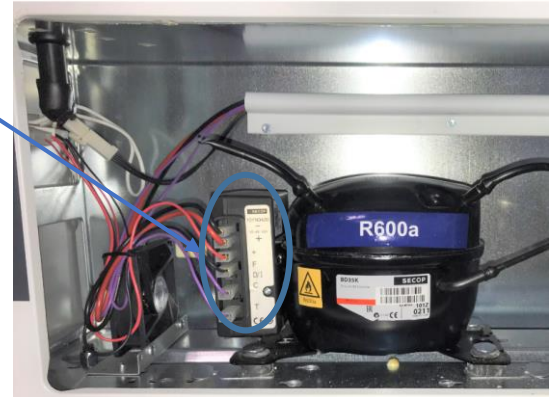
Starting device

Back

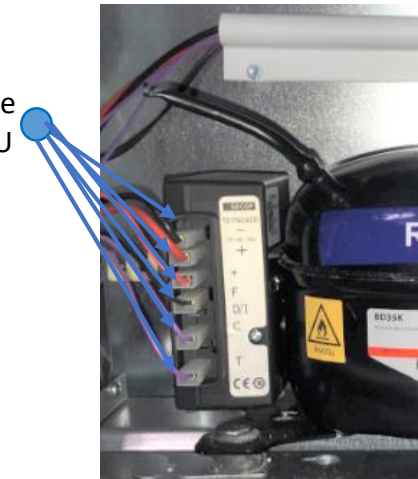
Front
with terminal
board



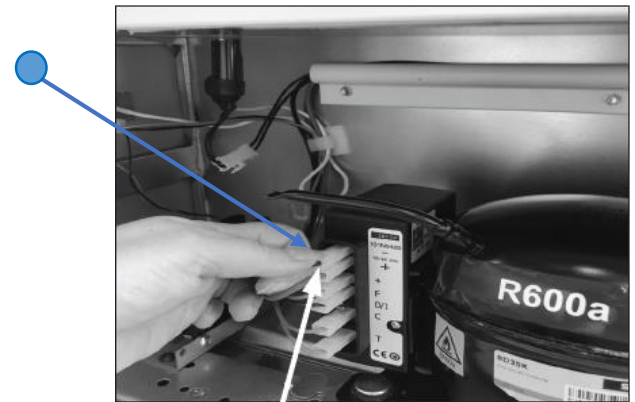
The starting device
is mounted to the
left side of the
compressor



1: Dismount the
6 wires from ECU



2: Grab the wire
socket and pull
gently



ECU - Starting Device Replacement

3: Loosen the phillips screw a couple of turns



4: Place a screwdriver in the small vent in the plastic cover



5: Unclick plastic cover/starting device from compressor bracket



6: Use a screwdriver to disconnect the socket from compressor



Thermometer replacement

The thermometer is placed in at the front of the appliance



The temperature probe is placed inside the compartment of the appliance



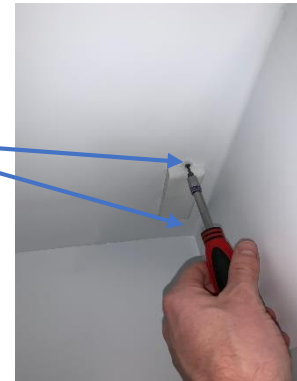
2: Unclip the sensor probe from the fixation clamps



Thermometer display



1: Dismount the temperature sensor cover by loosen the 2torx screws – size 10



3: Remove sealing kit

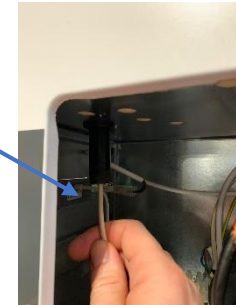


Thermometer replacement

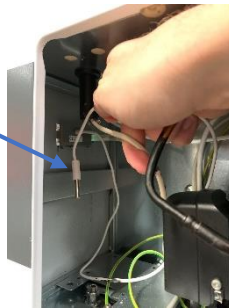
4: Remove sealing kit



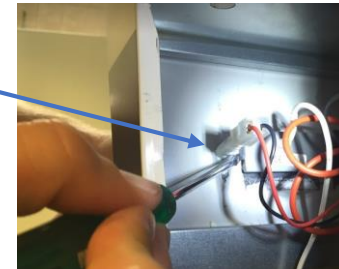
5: Gently pull the wire down



6: Temperature sensor is loose from refrigeration compartment



7: Use a screw driver to gently push the socket of the thermometer



8: Temperature monitor is loose from cabinet



9: Thermometer comes with wire, PV solar cell, display and sensor

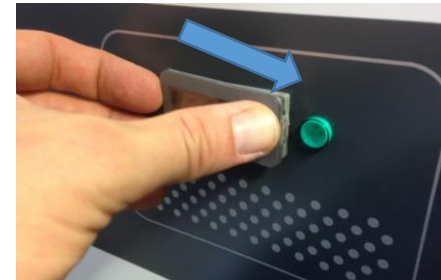


Thermometer replacement

10: Installation of thermometer display



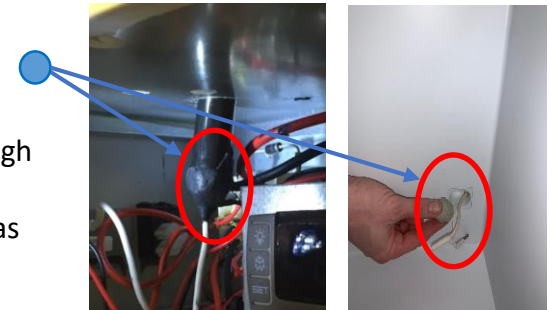
11: Push until display is fixed to cabinet



12: Thermometer display is in place



13: **IMPORTANT!**
When re-mounting the new thermometer remember to properly seal the wire feedthrough with sealing kit
Inside vaccine- as well as in compressor compartment.



Thermostat sensor replacement

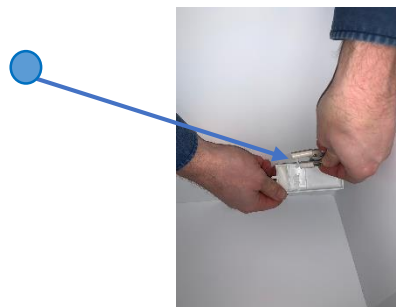
The thermostat sensor is placed inside the compartment of the appliance



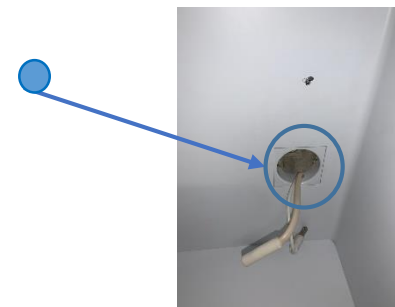
1: Dismount the temperature sensor cover by loosen the 2xtorx screws – size 10



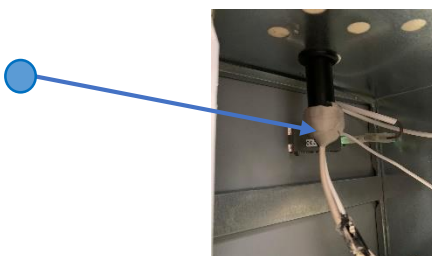
2: Unclip the sensor probe from the fixation clamps



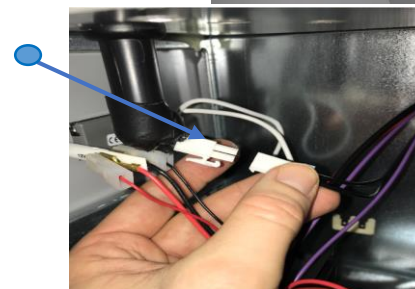
3: Remove sealing kit from wirefeedthrough inside vaccine compartment



4: Remove sealing kit from wirefeedthrough inside compressor compartment

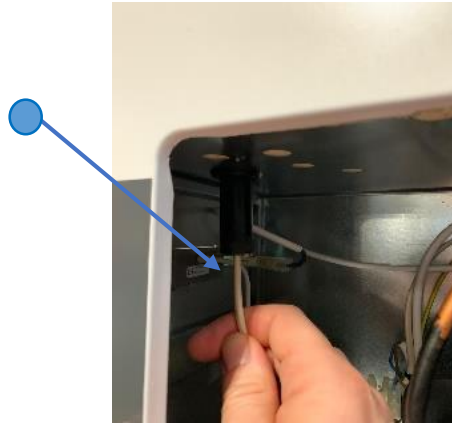


5: Unplug the probe connector wire from thermostat extension wire



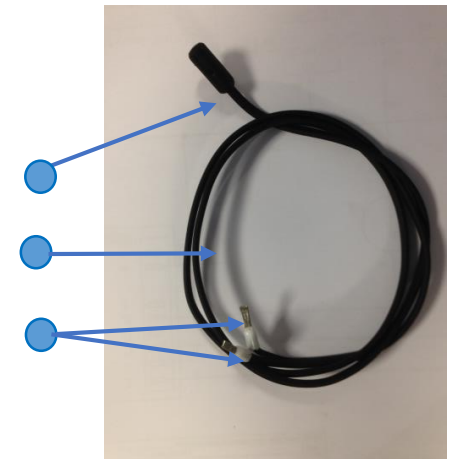
Thermostat sensor replacement

6: gently pull the wire down

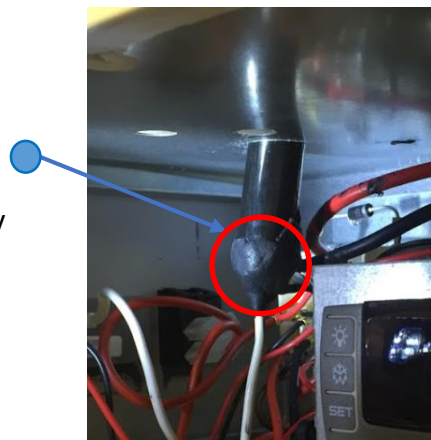


7: The thermostat sensor comes with

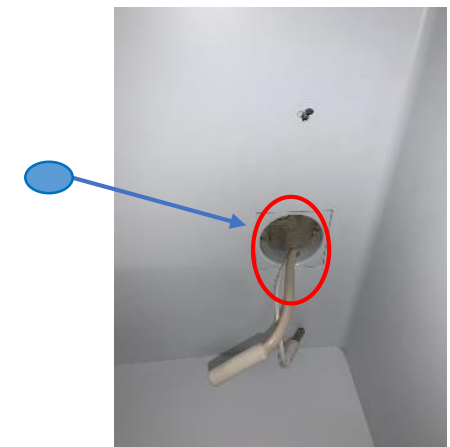
- Probe
- Wire
- Cable sockets



8: **IMPORTANT!**
When re-mounting the new thermostat remember to properly seal the wire feedthrough in compressor compartment



9: **IMPORTANT!**
When re-mounting the new thermostat remember to properly seal the wire feedthrough in vaccine compartment

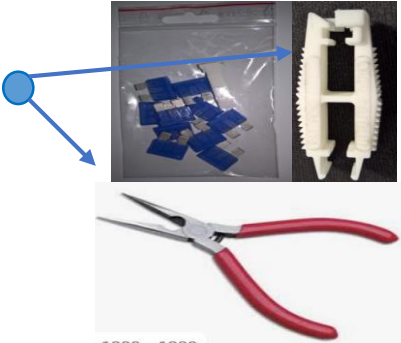


Fuse exchange

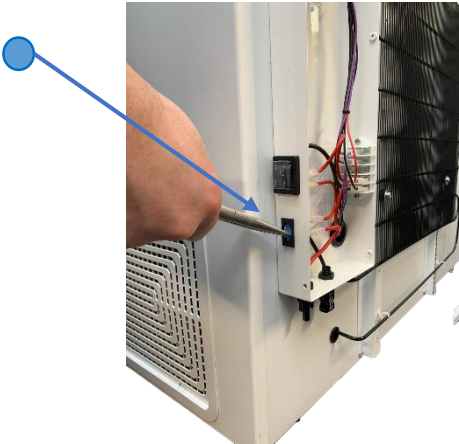
If the fuse is burned
It need to be replaced.
The fuse is placed in the in
the lower part of the
electric junction box



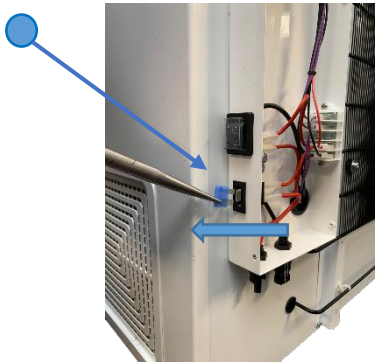
1: Use the small
fuse-grabber
supplied together
with spare fuses in
the small plastic bag
together with
appliance or a plier.



2: Pinch the fuse
using the fuse
grabber or a plier

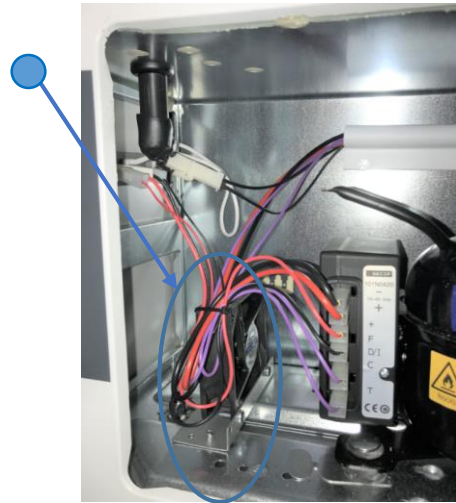


3: Pull the fuse

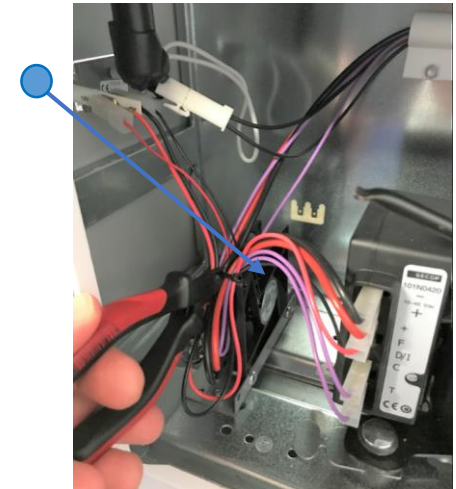


Fan

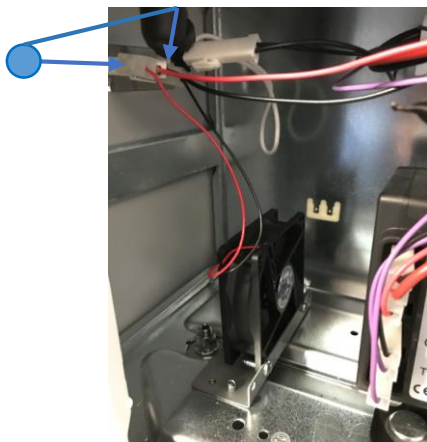
The fan is placed in the motor compartment on the fan/thermostat bracket



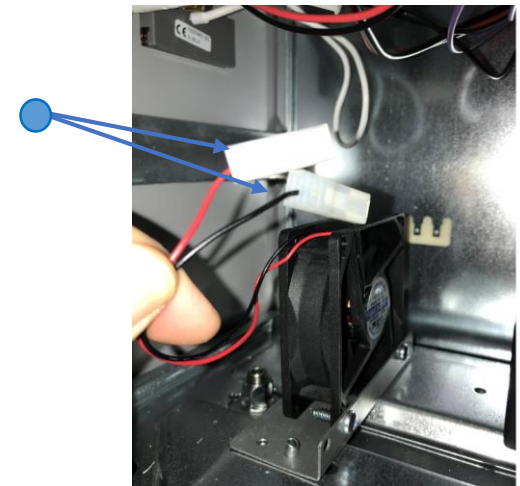
1: Cut the cable tie to release wires



2: Unplug the fan power wires (Black/Red) gently from the terminal using a plier or by hand

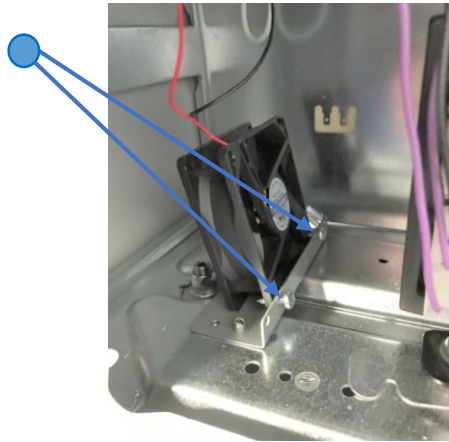


3: Wires are loose

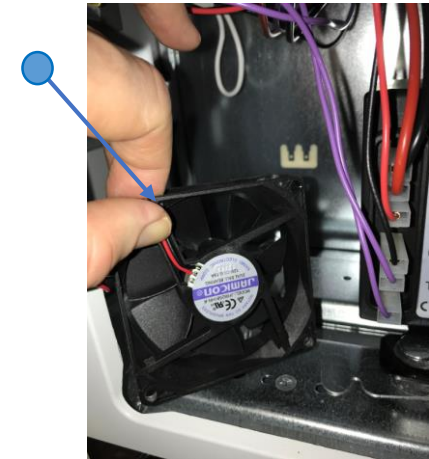


Fan

4: Untighten the two Torx 10 screws from the fan bracket



5: The fan is loose



6: Fan can be replaced by new one



Compressor Replacement

Procedure of compressor switch.

- 1: WARNING! Drain coolant R600a from refrigeration system by vacuum suction
- 2: IMPORTANT! Blow refrigeration system with NO/Nitrogen

3: Cut

- A: Suction and pressure tube
- B: Capillary tube
- C: Dry filter

- 4: Dismount starting device ECU
- 5: Dismount old compressor
- 6: Insert new compressor
- 7: Install starting device ECU

8: Solder

- A. Suction and pressure tube
- B. Capillary tube
- C. Dry filter

IMPORTANT! When solder copper tubes to iron tubes use silver tin

Filling of new refrigerant

- 8: Drain refrigeration system by vacuum suction
- 9: Fill 50g of R600a refrigerant on the system

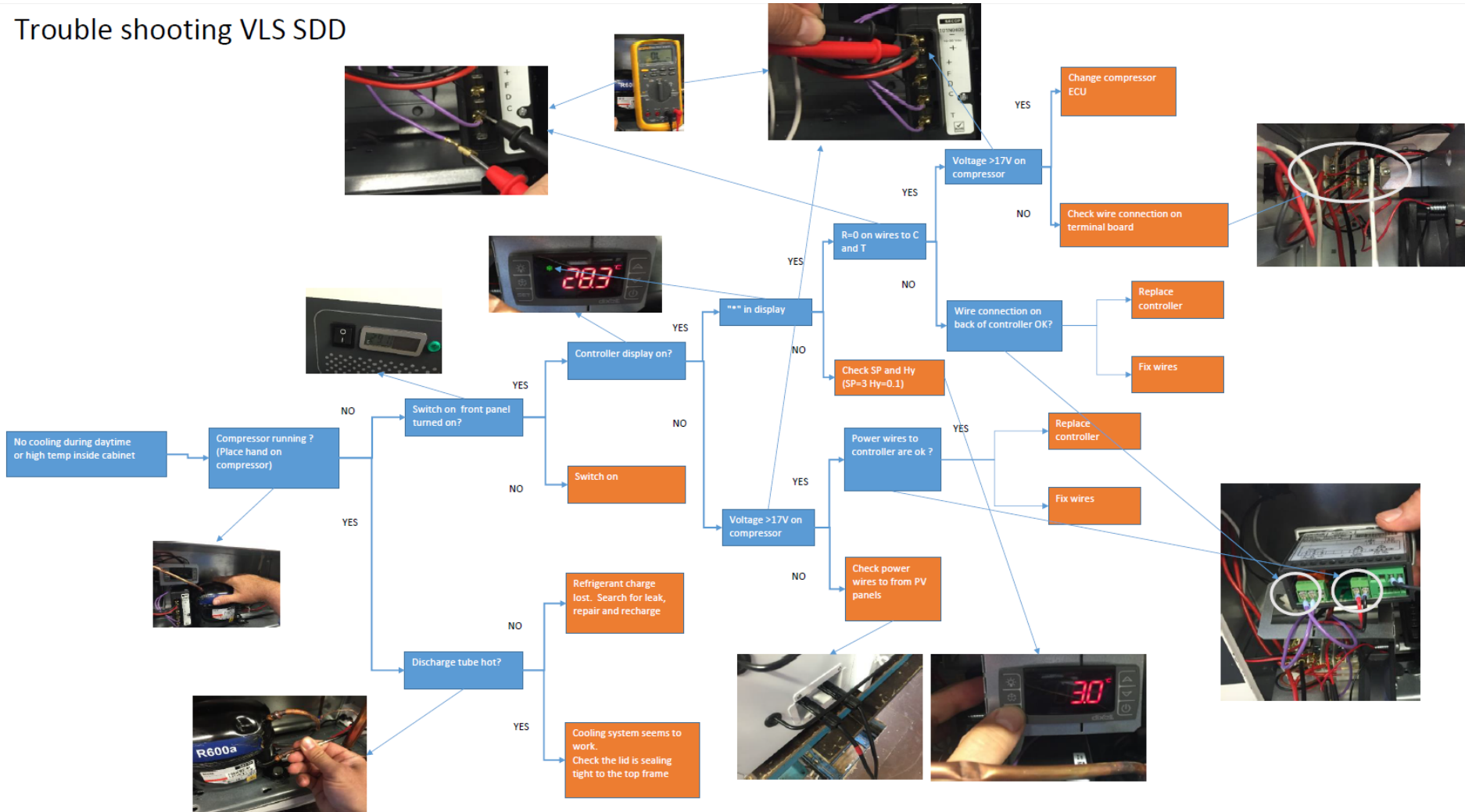
Trouble-shooting

Fault	Possible cause	Remedy
Compressor is not running	Be patient, it is most likely that the compressor will start within a few minutes.	If this is not the case, check the following: - Check that power is connected and that the wire from the solar panel to the appliance is intact. - Check the fuse and replace it if necessary. - If the above is OK, call technical supervisor.
Compressor is running, and the temperature is too high	The ventilation grill is blocked.	Ensure unhindered air circulation.
	The lid is not closed properly.	Ensure that the lid is closed properly.
	The fan in the compressor compartment is blocked or defective.	Check that the fan is running, if not it should be replaced. See section: Service
The temperature in the room in which the appliance is installed is too high.		Shield the appliance against direct sun light and ensure more ventilation to the room.
Temperature in VLS 054 SDD is too low	To low set point on digital controller	Contact technical supervisor for adjustment.
No temperature is displayed	There is not enough light for the solar sensor.	Turn on the light.
No light in green diode during day time	Switch is turned OFF	Turn on the switch
	Fuse is burned	Replace the fuse.
	Diode is defect	Replace diode.



Diagnostic

Trouble shooting VLS SDD



On-site Checklist

Service technician to check

- Is the green diode in the control panel on (Power check)
- Is the internal temperature inside the acceptable range of +2° to +8°
- Is the vaccine compartment clean and without condensation (water)
- Is the Compressor is running
- Is baskets used and in place
- Is the appliance placed according to instruction in the manual.
- Does the lid close tight to cabinet and is the lid gasket in good condition
- Is the grill for compressor compartment clean
- Is the condenser coils on the backside clean
- Is all electrical components working properly
- Is there condensation on electric parts (water condensation)?
- Is there a risk of water leakage from the refrigeration compartment to the thermostat? (where temperature sensor cable is passing through?)
- Over all condition of the cabinet –internal and external: any corrosion, rusting, cracks?
- Inspection of the refrigeration line (the condenser, evaporator, the whole refrigeration circuit/line)
- Panel installation condition and the power reaching at the input of the compressor during sunshine
- Condition of the cables from the panel to the compressor including the lightning protection
- Temperature records (manual records, FT2 data)
- Action taken by local technicians to address the problem
- Is the Solar panels clean and mounted according to the instruction



Technical Support

If contacting Vestfrost Solutions technical support please supply below information:

1. Model
2. Serial number
3. What is the issue

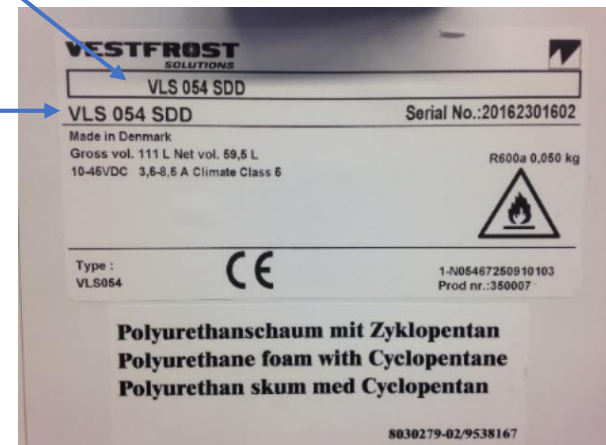


Rating plate



Serial no

Model





VESTFROST

SOLUTIONS