



Service Manual

ULUF P390/500/610/820



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1. Working safety

This page provides general safety information for servicing the freezer.

The instruction manual includes additional information about security and cleaning of freezer.

1.1 General safety

To prevent personal and equipment damage, the electrical safety / legislation of your country must be observed.

1. Never expose the moving parts of the plant to physical overload.
2. When repairing plant parts, safety concerns must be respected.
3. When using tools, spare parts and equipment, the existing security concerns must be met.
4. Maintenance procedures described in this manual must only be performed by trained personnel.

1.2 Electrical safety

Maintenance procedures may imply a voltage hazard. Follow existing safety instructions, including the low voltage and current EU directives and other directives of your country.

Always disconnect the power to the unit before repair or parts replacement is initiated. Use only electrical equipment which is designed for the freezer.

1.3 Chemical and biological safety

Always observe the requirements for safe handling, as described below.

Read the instruction manual before using, cleaning and servicing the freezer.

Wear eye protection and gloves when working with refrigerants.

Skin contact with liquid refrigerants may cause frostbite.

Good ventilation and air extraction at the work area is required.

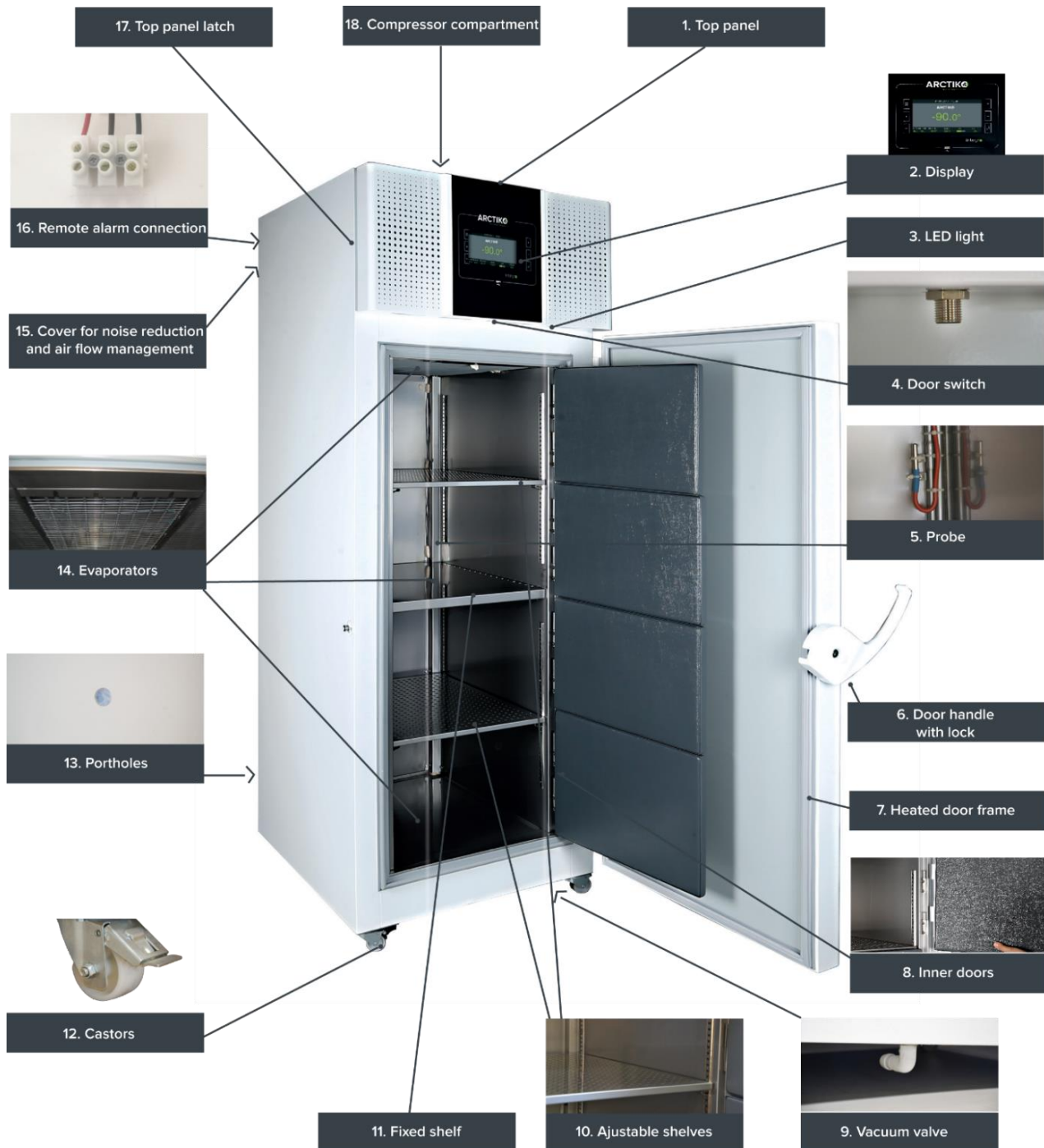
Stay in environments with high concentrations of refrigerant vapors is harmful.

Low concentrations may cause narcotic effects.

Symptoms of this may include: headache, shortness of breath, nausea and difficulties in concentration. Possibly: Mobility / consciousness.

Read the safety data sheet section 5d.

2. Information about the freezer

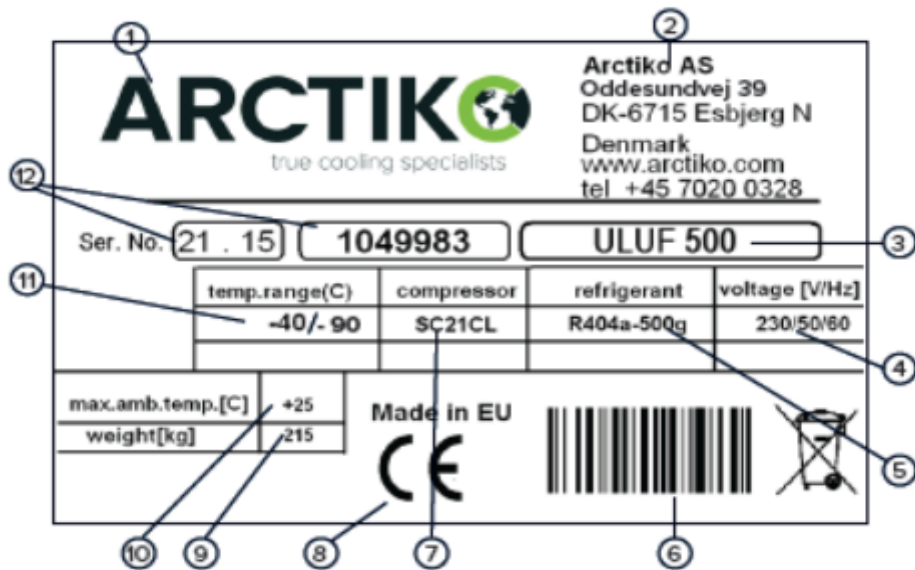


Accessories:



19. *Racks and boxes

The rating plate you will find located on the back of the unit.



- | | | |
|------------------------|--|-----------------------------|
| 1. Logo | 5. Refrigerant and quantity | 9. Weight in Kg |
| 2. Contact information | 6. WEEE "Waste from Electrical and Electronic Equipment" | 10. Max ambient temperature |
| 3. Model | 7. Compressor type | 11. Temperature range |
| 4. Voltage range | 8. CE mark | 12. Serial no. |

When contacting the supplier it is important to inform the model and serial number.

The label plate is located on the side of the unit.

For technical problems: See troubleshooting schedule (Section "3"). Furthermore, the device is equipped with:

Heated door
frame Heated
vacuum valve

The freezer must be defrosted manually. See Section 4d.

2.1 Model information

Model	ULUF P390	ULUF P500	ULUF P610	ULUF P820
Item code	DAI 1800	DAI 1805	DAI 1810	DAI 1815
Temp.range (°C)	-40/-90	-40/-90	-40/-90	-40/-90
Max.ambient temp. (°C)	25	25	25	25
Power supply (V)	230	230	230	230
Frequency (Hz)	50/60	50/60	50/60	50/60
Power consumption (KWh/24h)	15,0	15,9	17,2	20,9
Power (KW/Hp)	1182	1201	1270	1502
Compressor	SC21CNX.2	SC21CNX.2	SC21CNX.2	SC21CNX.2
No. of compressors	2	2	2	2
Refrigerant / filling / gram	EP 88	EP 88	EP 88	EP 88

*) Power consumption is monitored over time for each element. Pt. no values

3. Troubleshooting / Repair

3.1 General operating problems

Malfunction of the device, which can arise from improper handling of the device:

Moving or long periods of inactivity of the unit:

When moving or after long periods of inactivity, you must wait 1-2 hours before the freezer is

Loading the freezer

When loading large quantities of items into the freezer, the temperature will rise temporarily.

Repeated door openings

In case of repeated door openings, leaks or faulty gaskets, the humidity will cause rime and possibility of ice formation inside the device and around the door / interior door.

Component failure occurred during operation

Use the troubleshooting table section on next page.

3.2 Troubleshooting schedule

Problem	Cause	Recommended equipment	Troubleshooting	Action
The unit does not freeze and the compressor does not start.	The socket or fuse is defect.	Universal instrument test Lamp	Check the installation.	New fuse / plug.
	Power cable is defect.		Check power cables and wiring in the engine compartment.	Repair errors. Consider using wiring diagram section 5
	The controller is defect.		Test sensor.	Change controller
	The sensor is defect.		Test compressor windings.	See section 3.13
	Faulty windings in compressor.		Test start relay.	See section 3.11
	Start relay defect.		Use wiring-diagram.	See section 3.12
	Fault in electrical installation.			See section 4
The unit does not freeze. The compressor tries to start, but fails.	Low voltage	Voltmeter	Check voltage	Find the cause.
	Defect or faulty start relay/capacitor.	See section 3.13	See section 3.13	Change start relay/ capacitor
	Defect compressor windings.	Ohmmeter	Check for electrical failure in the compressor.	Change the compr. See section 3.6
	Defect rotor (compressor failure)			Change the compr. See section 3.6
	High pressure in the cooling system.	Tapping valve Manometer Filter	Open the system and rinse the system with nitrogen.	Remove 5cm of the capillary tube. Change filter. See section 3.5
	The unit has been transported horizontally.			The unit must rest a few hours before start.
	Ambient temp. low. Compr.oil too cold.	Eksternal thermometer.	Check the temp.	Find a better placement.
	May be general, if the ventilation is not sufficient.	Eksternal thermometer.	Check, that the compressor not exceeds 70°C.	Find a better placement or ventilation.
	Ambient temp. high.	Thermometer	Check ambient temp.	Find a better placement or ventilation

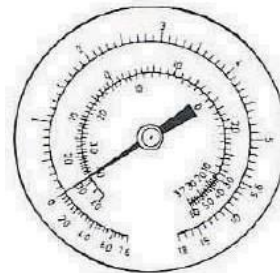
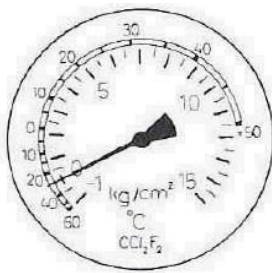
Problem	Cause	Recommended equipment	Troubleshooting	Action
The compressor runs constantly.	The sensor is incorrectly installed.			
The unit freezes normal or colder.	Sensor is defect.			
	Controller is damaged.			
	Icing on the frame.		Check the door for leaks.	See section 4.1
	The temperature is set too low.		Check the settings in the controller.	Set new values. See section 13
The compressor starts normally, but stops again.	Too high voltage.	Voltmeter	Measure the voltage.	Inform.
	Too high ambient temperature.	external thermometer	Check the temperature and ventilation.	Better placement or ventilation.
The unit cools too much, too little or not at all.	Leakage in the system.	Electronic leak-seeking, soapy water, leak seeking spray.	First check the solder points, comp, capacitor, etc.	See section 3.
The compressor may run continuously.	The fan is not running.	Voltmeter	Check for errors.	Replace the fan. See section 3.14
	The evaporator is blocked by ice.			
The unit cools too much or not at all.	Little or no compressor capacity.	service valve	Mount the valve and check pressure.	Change compressor.
Compressor running constant.		Manometer		See section 3.6
Insufficient cooling.	The device has recently been filled up with a large amount of heat.			Inform the user.
	In addition, temperature of the air is too high.	external thermometer	Check temperature.	Find better ventilation or placement.
	In addition, the air temperature is too low.	external thermometer	Check temperature.	Find better ventilation or placement.

Examples of troubleshooting with a manometer connected to the process piping of the cooling system. The system is blocked:

Suction pressure is very low.

Pressure equalization takes place very slowly or not at all.

Reason: Icing or dirt in the capillary tube or filter, or blockings in the system due to other reasons.

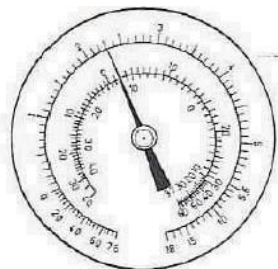


Reason: No compressor capacity

The suction pressure is too high.

The suction pressure does not change noticeably when the compressor stops.

This can be tested with a volumetric meter.

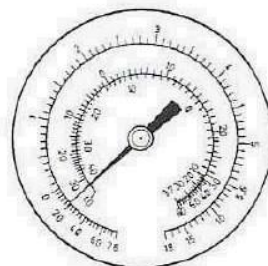


Leakage in the system

The pressure gauge indicating insufficient suction pressure. On the pressure side the temperature increases.

Pressure equalization time is short. Countervailing pressure is lower than expected.

Be sure that the pressure is sufficient for a pressure test.



3.3 Opening of the cooling system

To prevent moisture from penetrating under repair, the system must not be open for more than 15 minutes.

Prepare spare parts components before the system is opened.



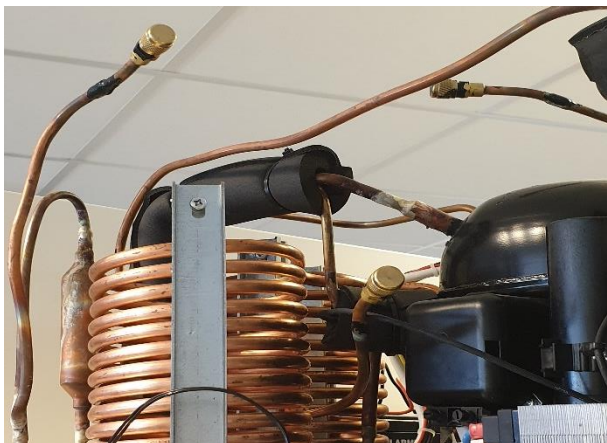
Verify that the new filter packaging is intact and that the filter is not damaged.

If the packaging has been broken for a longer period, the filter will contain moist.

3.4 Evacuation of the refrigerant

It is recommended that the compressor is running at least 25 min. before refrigerant evacuation is undertaken. This ensures that the system is hot, so that the refrigerant easier can be pulled out of the compressor oil.

The refrigerant is evacuated through both of the service valves



The cooling system is evacuated with a two-stage vacuum pump for at least 30 minutes. Both from the pressure piping and process piping.

Blow the system with nitrogen, both from the suction and the pressure side.

3.5 Changing the dry filter

The dry filter must pick up moisture in the system during operation and function as the capillary tube in front of the capillary tube, in order to avoid clogging. Clogged filter or capillary tube causes a pressure drop, by this, the filter becomes colder and ice will block the system. The compressor is overloaded with a possibility of crash.

The dry filter is placed after the condenser outlet, immediately before the capillary. Any opening of the cooling system, dry filter change to ensure the function and lifetime of the freezer.

The filter dryer must **always** be replaced when the system has been opened

To prevent moisture from penetrating during the repair, the drying filter must not be open for more than 10 minutes.

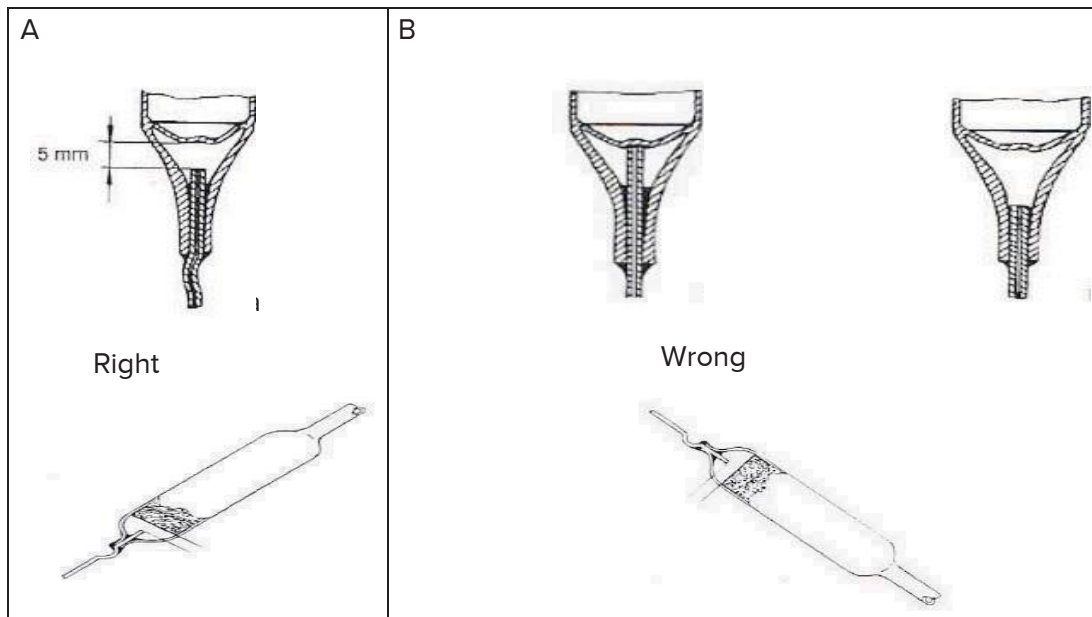
After evacuation and blowing with nitrogen, the tubes must be cleaned with a steel brush on both sides of the filter drier, before cutting. By doing this the pipe ends are free from impurities and metal pieces and ready for soldering.

Cut off the pressure pipe close to the filter with a pipe cutter.



Cut off the capillary tube with a capillary tube scissors.

It is recommended to use a special tongs to create a wave on the capillary tube which ensures the correct positioning in the filter.

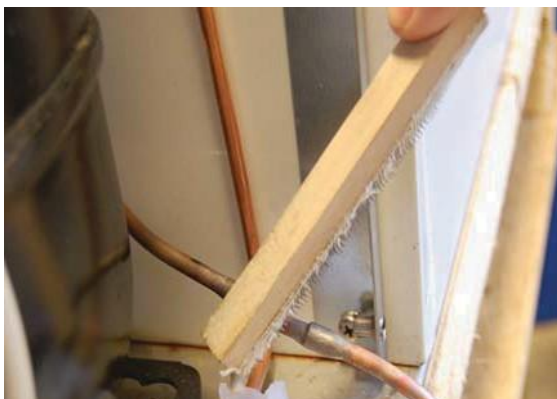


In the figure A the capillary tube is correctly installed in a dry filter. In order to ensure efficient use of the filter, it must be positioned with an inclination of at least 150 and the capillary tube must be underneath.

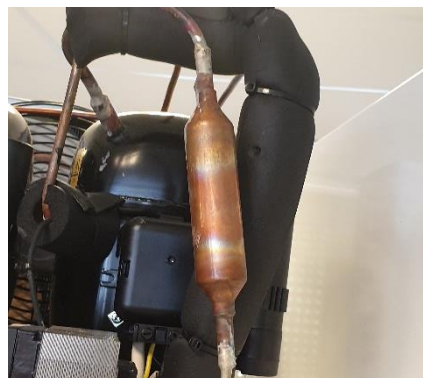
In the figure B the capillary tube is too close to the web of the filter. It provides great resistance and filter blocking after a short time. Or too far away, so it will be filled with flux or solder.

Solder the new filter.

Clean the solder points with a steel brush.



Flush the system with nitrogen.



If only the dry filter is to be replaced, the system must be pressure tested. See section 3.7.

3.6 Changing the compressor

Evacuate the refrigerant of the system. See section 3.4

All tubes are cut with a pipe cutter. Do NOT solder off due to the flammable gas.

When replacing the compressor the dry filter must also be replaced. See section 3.5

The suction and pressure pipes of the compressor must be cleaned and cut with a pipe cutter just above the soldering pipe.

Demount the compressor.

Install the new compressor, which is prepared as described before. (3.3)



In order to avoid decomposition of refrigerants which may remain in the system during the soldering operation, the system is blown with dry nitrogen, respectively, from the suction side respectively pressure side.

Solder the tubes on to the compressor.

Pressure test the system.

3.7 Pressure testing and leak detection

Pressure test the system with nitrogen. The pressure must be 10 bar during a period of 2 hours.

Check the solder points with soapy water or leak detection spray.

In case of any leaks, empty the system for nitrogen.

Repair and pressure test again.

During operation, leak detection must be performed on the pressure side with the compressor running. The suction side must be tested while the compressor is stopped, and the pressures are equalized.

The nitrogen must slowly be emptied from the system.

3.8 Vacuum suction / Vacuum check

A vacuum is made on two locations on the system, one on the process tube and one on the pipe branch used for testing located on the pressure tube with an explosion-proof 2-stage vacuum pump.



The pressure should be 2 mBar or lower for at **least 24 hours**.

The system is now ready for the filling of the refrigerant.

3.9 Refrigerant filling with EP88

Common procedures for other refrigerants can not be used.

Before filling the refrigerant, a vacuum must be sucked. See section 3.8.

EP88 is supplied in a cylinder containing a specific amount of refrigerant + 20 grams. It is therefore very important to weigh the cylinder before and after filling to ensure the exact amount is filled to the system – The correct amount can be seen on the rating plate of the unit.

The contents of the bottle must be mixed before use by shaking the bottle for at least 1 minute before the filling.

For the filling process we strongly recommend the use of a capillary tube with the valve before the filling site, instead of a conventional feeding tube.

If an ordinary filler hose is used, it must be as short as possible.

WARNING! EP88 is flammable!

The refrigerant cylinder is weighed before use.

Loading procedure

Make vacuum. See section 3.8.

The cylinder with manometer is connected to the coupler of the process piping.

The cylinder must be shaken for 1 min. before use.

Remember to first make vacuum in the filling hose to empty it.

During the filling procedure the cylinder must be upside down.

Fill the refrigerant into the system until the pressure gauge on the pressure tube shows approx. 5 bars.

Start the compressor and let it run for 5 min. Open to the cylinder again to get out the remaining refrigerant.

Now the cooling system is filled with refrigerant.

Disconnect the filling hose with pressure gauge from the process piping.

Clean the pipe with *steel/ wool/ or* emery cloth. Use rotational movement in order to avoid scratching the length of the tube.

Start the freezer and control the function of the unit.

3.10 Electrical troubleshooting

Before starting systematic troubleshooting, check the following:

Proper voltage is present.

Electrical equipment used, is suitable for the compressor.

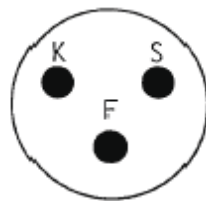
The wires are properly installed according to wiring diagram.

There is no transition between the live parts and ground.

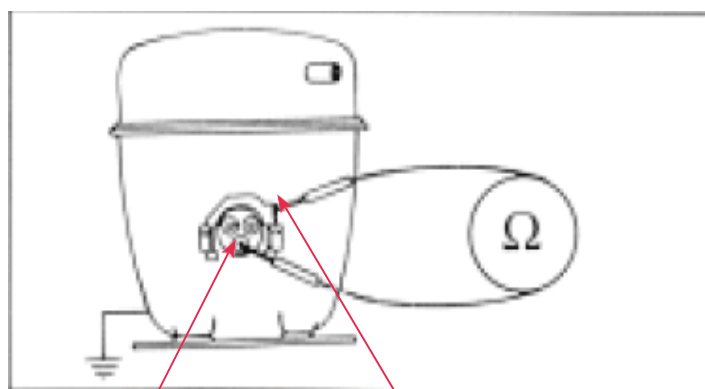
Control of the transition to ground.

In order to check whether there is a transition between the conducting components and the chassis, the insulation resistance is tested by using an ohmmeter or the second high-voltage equipment. An ohmmeter can be used for a rough check. At the Ohmmeter one clamp is placed on the compressor's ground terminal. The second clamp on the compressor shared leg (see sketch).

Showing ohmmeter a transition, the compressor is replaced.



Plug on the compressor



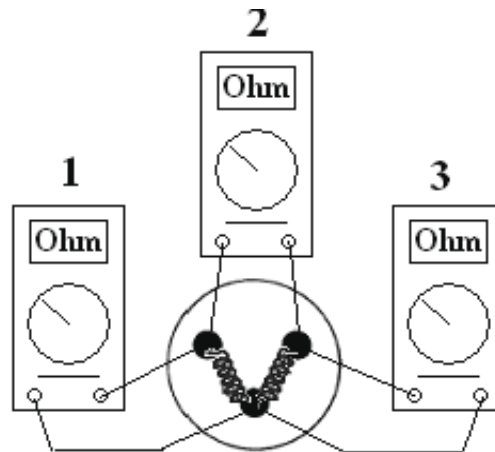
Shared leg

Ground terminal

Uses high voltage test systems with flammable refrigerants, ensure that the system is completely drained of coolant, as this can cause sparks during the test.

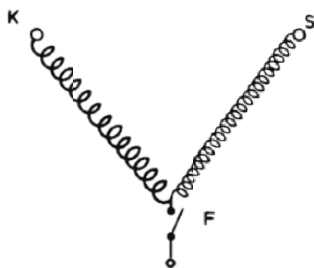
Electrical fault - compressor

Remove the start relay from the compressor and use an ohmmeter to test the compressor head and start recovery. Connect ohmmeter between the common connector and start winding, then the main winding to debug. See the picture below.



Dimensions of the compressor connections to determine whether driving and start winding are intact.

This is done by measuring the resistance of these. Carry out three resistance measurements on compressor penetrations. The sum of the two smallest measurements, the intact windings will be equal to the highest. Find if the current values of the compressor data sheet.



By measuring the compressors with built winding protector it is extremely important to measure between K and S, as this measure will tell if this is burnt windings or an open winding protector.

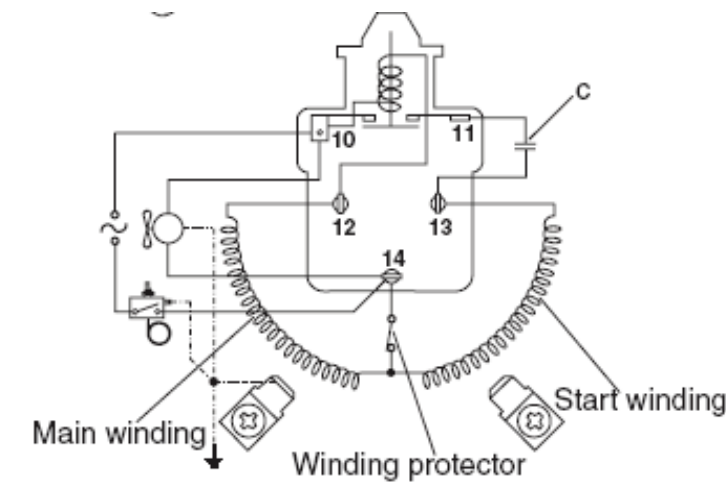
Since it is relatively small value to be measured, it would be a great advantage to use a digital ohm-meter.

Indicates the measurement error, the compressor is replaced.

3.11 HST-start relay, start capacitor

Connect a voltmeter between terminals 10 and 13 at the start of the relay. If no voltage is present, there is either a faulty cable or also start relay is defective.

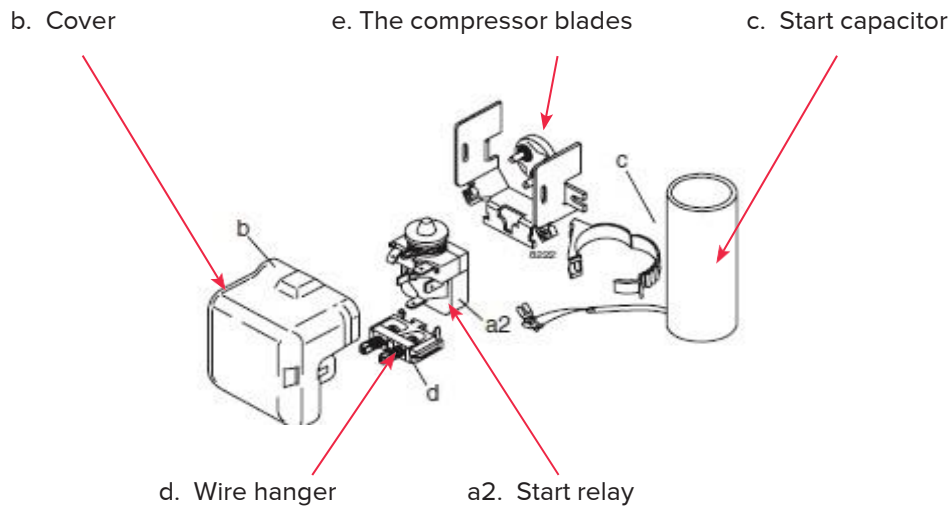
Connect a voltmeter between terminals 10 and 14. If no voltage is present, the temperature sensor or its cable is defective.



When replacing the compressor the start relay and start capacitor should also be replaced. The start relay is placed on the compressor's three terminal legs and clamped.

The voltage is connected to terminals 10 and 14

Start capacitor connected to terminals 11 and 13 and clamped.



3.12 Sensor for the controller

PT 100

A faulty sensor will typically prevent the compressor from starting.

If the sensor is covered with ice, the compressor will run more than usual and cool too much.

The easiest way to check the function of the sensor, is to place your hand around the sensor. If the temperature recorded on the display in the front panel does not rise, the sensor is faulty and needs to be replaced.

The sensor can be tested with an ohmmeter.

The PT 100 sensor is located on the right side between the top and middle shelf and is secured with strips. Note that the tip of the sensor must not be in direct contact with the evaporator tubes.

This will result in an erroneous temperature measurement.

The sensor must be introduced together with the evaporator tubes in the top of the engine compartment.

The holes are sealed with putty. Electrically, the sensor is connected to the controller board. See the wiring diagram section 4.

Change of probe:

Disconnect the power supply.

Remove the engine grille.

Remove the sealing material around the wire of the sensor on both sides of the hole.

Remove the strips.

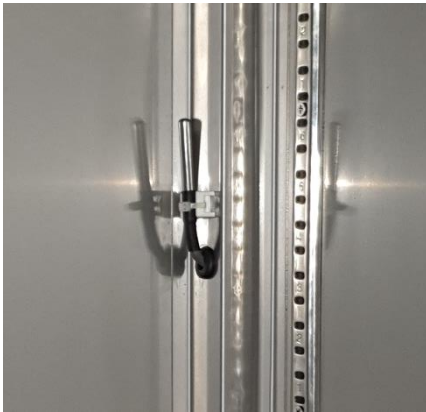
Pull the sensor into the engine compartment.

Disconnect the electrical connection of the sensor in the controller.

Mount the new sensor in reverse order.

Remember

! The sensor must be replaced with a sensor with the same characteristics as the original.



Mounting of the sensor in the freezer



Introduction of the sensor from the top of the engine compartment

3.13 Condenser – fan

The condenser is placed in the engine compartment of the freezer behind the front panel. It is fixed with 4 bolts.

The first part is a double tube condenser with fan, followed by condenser coils.

Check that the bolts are well tightened and that the rubber gaskets at the fan are not hard or defective. It is important that the cooling ribs are kept clean and the ambient temperature does not exceed 25°C.

Physically, the fan is placed on the frame of the condenser.

Electrically, the fan is connected to the controller board. See wiring diagram section 5.

If the ventilator stops, it can cause insufficient cooling of condenser and compressors.

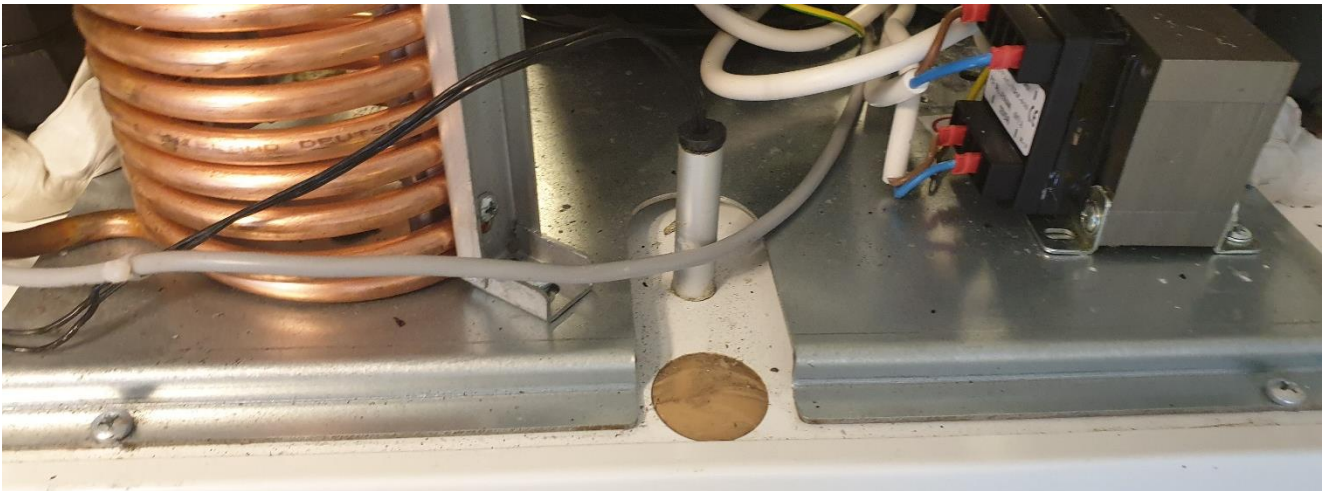
Higher condensing temperature means that the compressor must work more with less efficiency as a result. At worst, the compressors stops due to high temperature.

3.14 Vacuum valve

The freezer is equipped with a heated vacuum valve in order to avoid vacuum in case of repeated door openings.

Electrically, the heater (12V) is supplied from the controller board. See the wiring diagram section 13.

Introduction of the cable is carried out at the back of the engine compartment. A tube leads to the bottom of the freezer where the vacuum valve is located.



The top of the engine compartment



The bottom of the freezer



3.15 Heated door frame

2 pcs. heaters are installed in the door frame.

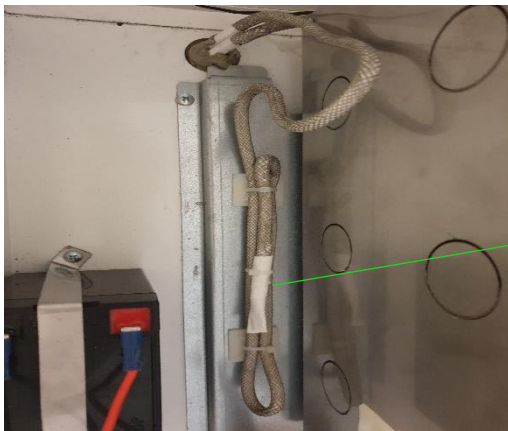
One is connected electrically. The second is as a spare heater.

Electrically, the cable (220V) is supplied by the controller board. See the wiring diagram section 12.

The cable is introduced to the door frame on the front of the engine compartment behind the front panel.



Introduction of cable



Spare cable

4. Maintenance

4.1 Silikone gasket of the door

Rub the gasket with a suitable product, so that it stays flexible and the optimal function and tightness is secured.

Make sure the door closes tightly so that no ice forms around the door frame.

- Open the door and place a piece of paper. Close the door.
- Pull the paper.
- If the paper can not be pushed back, the adjustment is OK.
- The test is made at both the left and right side.



4.2 Evaporator

The evaporator tubes are integrated into each shelf.

The Integra models have dual evaporator tubes, since there is one system for each compressor.

The door frame, inner doors and the sensor must be checked for ice. In case of large ice formation, the freezer must be defrosted.



4.3 Manual defrost, cleaning and maintenance

There will be some ice formation on the sub lids of the freezer.

The ice must be removed with a scraper on a regular basis (Remember safety gloves). Ice on the inside of the cabinet must be removed as required.

This is done by manual defrost:

- Remove the contents of the freezer.
- Unplug the unit.
- Leave the door open until the ice can be removed.
- Wipe the interior cabinet and shelves with a cloth until it is dry.

Ice formed on the inside of the door, must be removed with a wooden / plastic scraper. This ice is formed due to the low temperatures inside the cabinet, and if the ice is not removed, it will cause that the door does not close tightly.

4.4 Noise

The following must be checked in case of noise:

- The compressor is not tightened well.
- The rubber feet are defect or too hard.
- The fan blades are damaged or dirty.
- The fan is not tightened well.
- The fan bushings are worn.
- The freezer is not positioned on a flat surface.
- Long pipes can cause resonance vibrations.



Rubber feet

Process tube (too far)

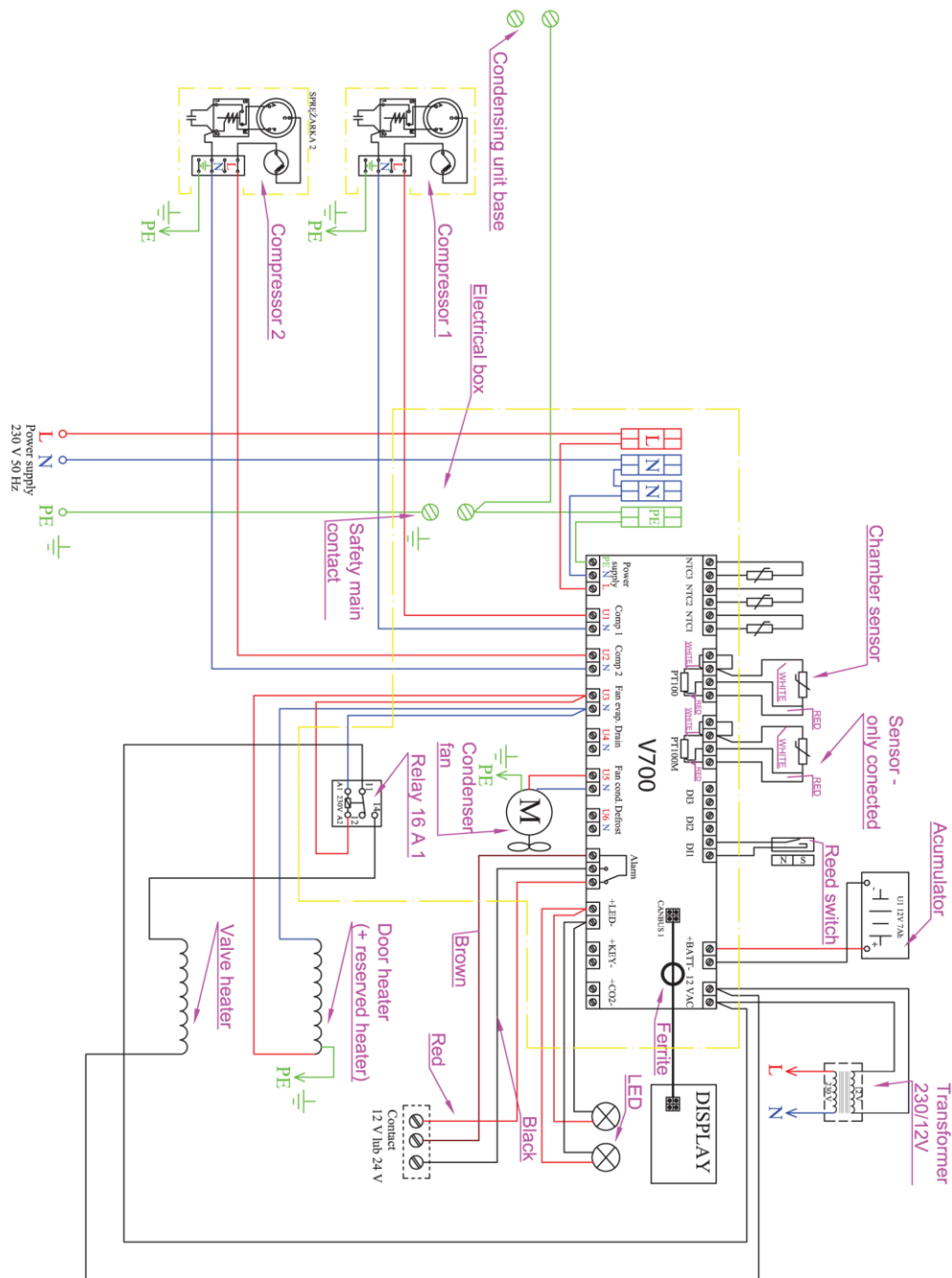
4.5 Battery backup

The battery (12V 7Ah) is located in the engine compartment behind the front panel. It has a lifespan of 2-3 years, but should be checked every six months. Check the voltage with a voltmeter.



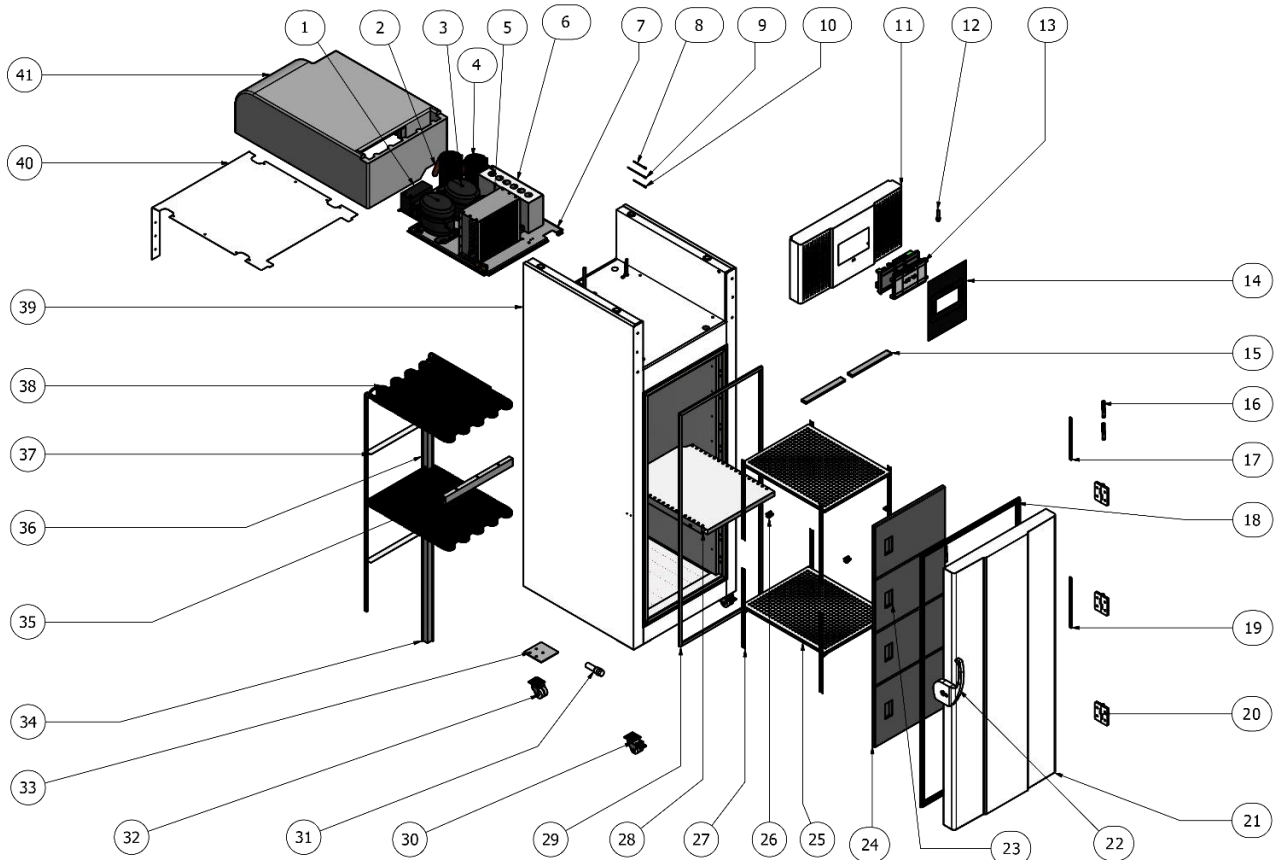
Backup batter

5. Wiring diagram



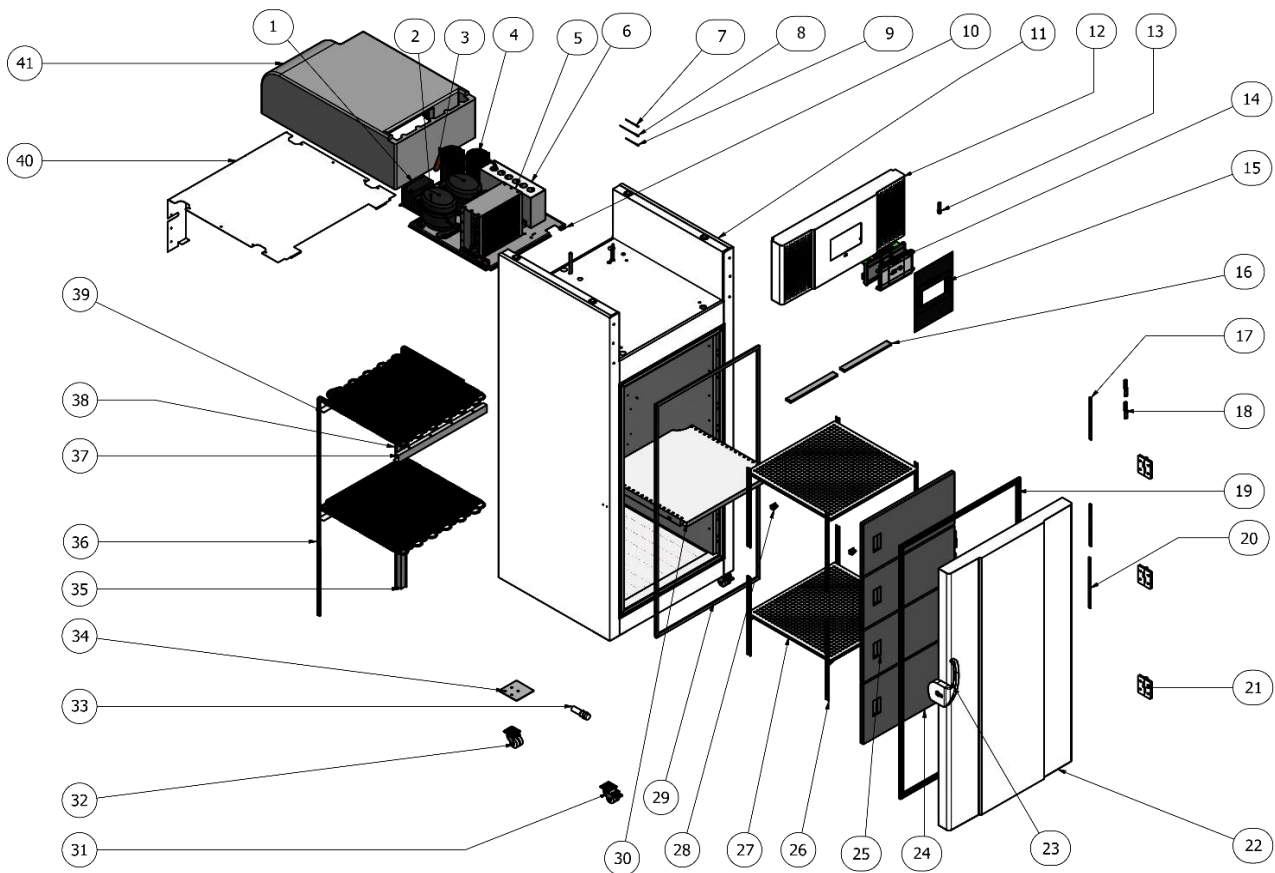
Description: Wiring diagram for ULUF P390_P500_P610_P820

6. Spare parts list ULUF P390



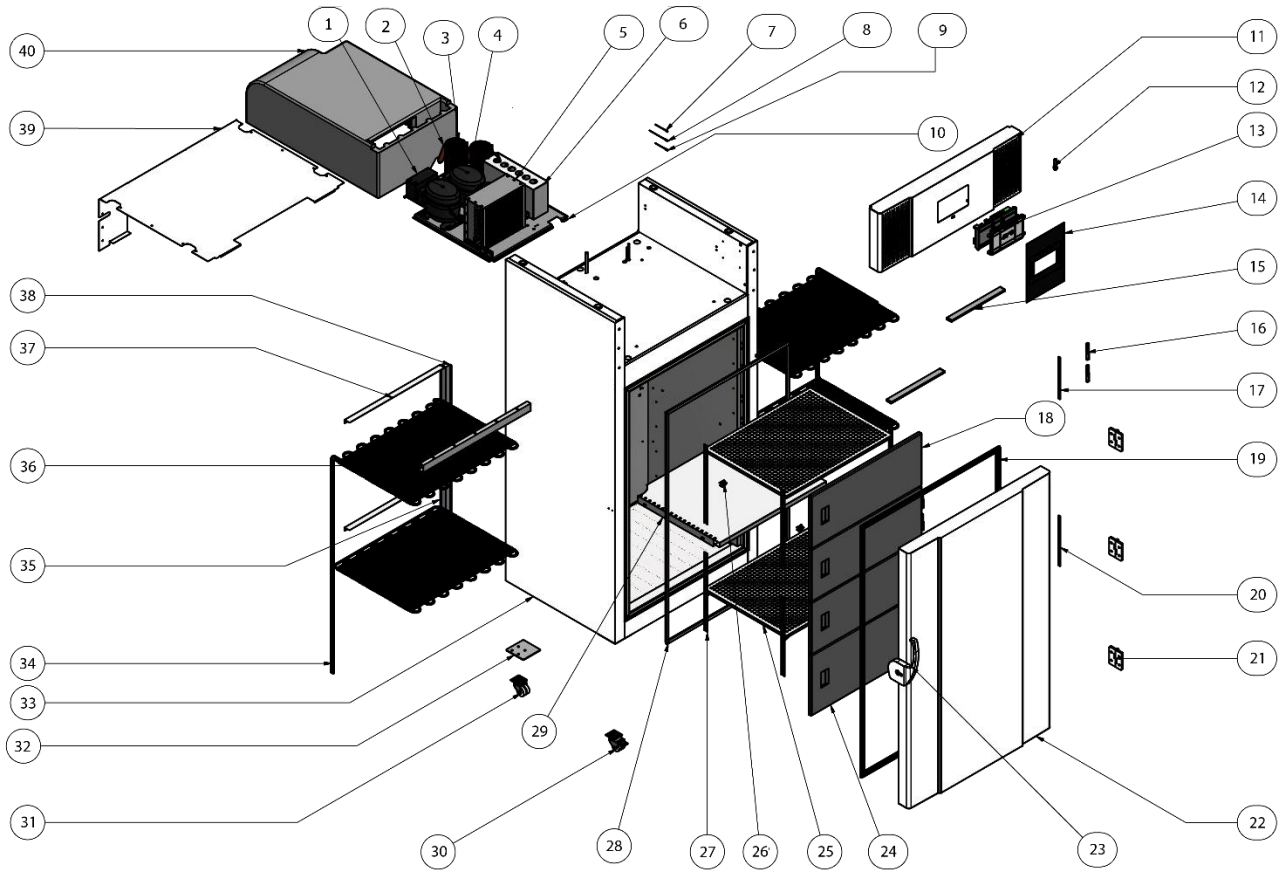
Pos. no.	Code no.	Part
1	5044016-01	Battery
2	5079000-01	Dry filter
3	5070156-01	Compressor
4	5071057-01	Subcooler
5	5071056-01	Condenser TK1900
6	5019219-01	Electrical box
7	5059036-01	Agregate base
8	5049024-01	White probe
9	5049025-01	Controller probe
10	5049026-01	Grey probe
11	5050160-01	Top panel
12	5031285-01	Bernstein
13	5043019-01	Display D4 7" TFT display
14	5083703-01	Top panel foil
15	5059035-01	LED light
16	5031287-01	Interior door hinge
17	5031288-01	Upper interior door support
18	5052186-01	Magnetic gasket
19	5031289-01	Lower interior door support
20	5031286-01	ZK 1065 hinge
21	5052184-01	Door
22	5051107-01	Door handle
23	5034021-01	Velex controller
24	5052188-01	Lower interior door
25	5060067-01	Moving shelf
26	5062032-01	Moving shelf handle
27	5062033-01	Moving shelf support
28	5060068-01	Shelf
29	5052189-01	Silicone gasket
30	5053036-01	Wheel with brake
31	5019228-01	Vacuum valve
32	5053037-01	Wheel
33	5053038-01	Wheel support
34	5073052-01	Evaporator pipes cover
35	5073053-01	Front evaporator support
36	5073054-01	Short evaporator pipes cover
37	5073055-01	Back evaporator support
38	5073056-01	Evaporator
39		Body cabinet
40	5050160-01	Top cover
41		Noise isolation box
42	5051106-01	Variable lock Integra

7. Spare parts list ULUF P500



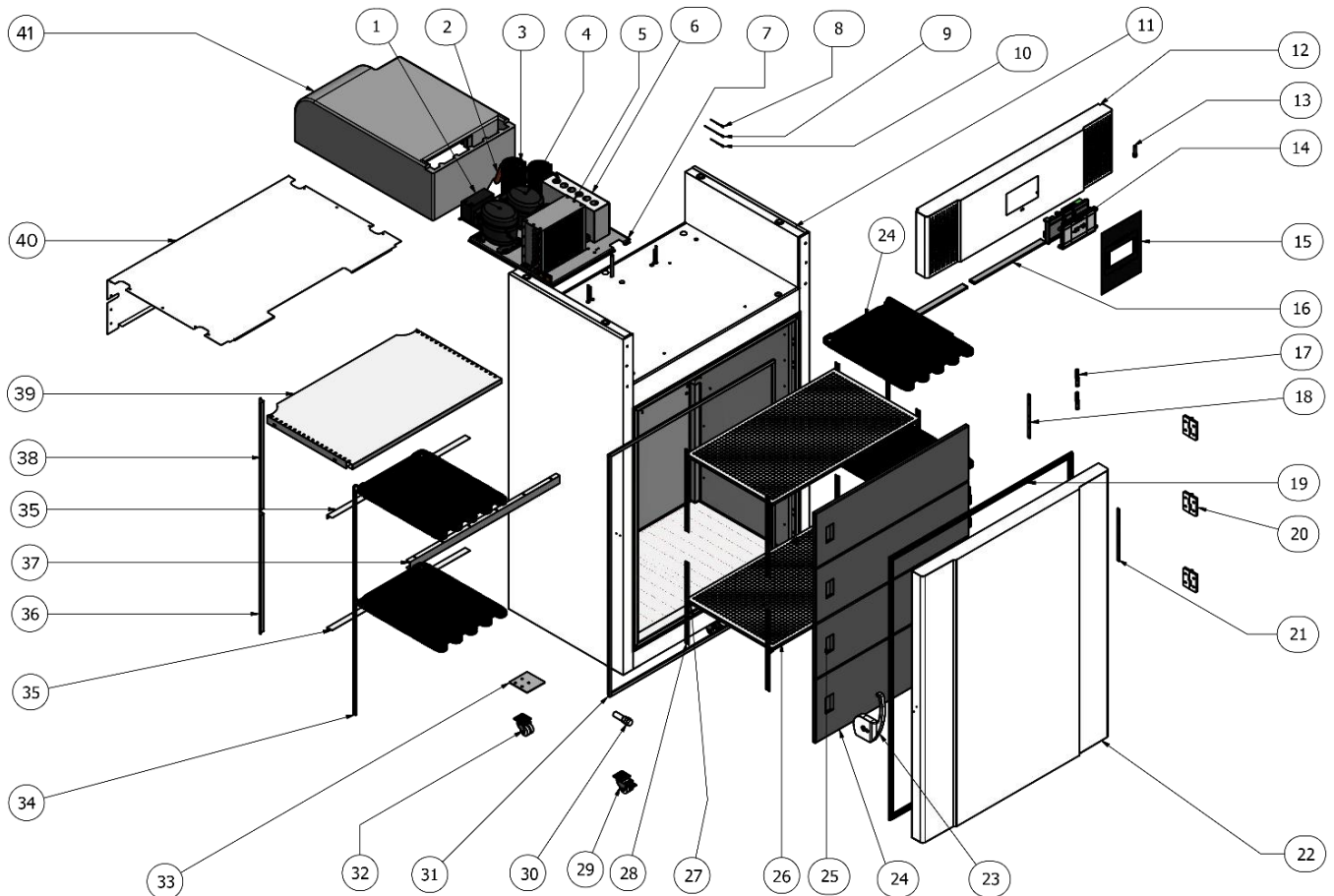
Pos. no.	Code no.	Part
1	5044016-01	Battery
2	5070156-01	Compressor
3	5079000-01	Dry filter
4	5071057-01	Subcooler
5	5071056-01	Condenser TK1900
6	5019219-01	Electrical box
7	5049024-01	White probe
8	5049025-01	Controller probe
9	5049026-01	Grey probe
10	5059036-01	Agregate base
11		Body cabinet
12	5050161-01	Top panel
13	5031285-01	Bernstein
14	5043021-01	Velex controller
15	5083703-01	Top panel foil
16	5059035-01	LED light
17	5031288-01	Upper interior door support
18	5031287-01	Interior door hinge
19	5052190-01	Magnetic gasket
20	5031289-01	Lower interior door support
21	5031286-01	ZK 1065 hinge
22	5052185-01	Door
23	5051107-01	Door handle
24	5052191-01	Lower interior door
25	5052192-01	Upper interior door
26	5062033-01	Moving shelf support
27	5060069-01	Moving shelf
28	5062032-01	Moving shelf handle
29	5052193-01	Silicone gasket
30	5060070-01	Shelf
31	5053036-01	Wheel with brake
32	5053037-01	Wheel
33	5019228-01	Vacuum valve
34	5053038-01	Wheel support
35	5073052-01	Evaporator pipes cover
36	5073057-01	Evaporator
37	5073058-01	Evaporator front support
38	5073054-01	Short evaporator pipes cover
39	5073059-01	Evaporator back support
40	5050162-01	Top cover
41		Noise reduction box
42	5051106-01	Variable lock Integra

8. Spare parts list ULUF P610



Pos. no.	Code no.	Part
1	5044016-01	Battery
2	5079000-01	Dry filter
3	5071057-01	Subcooler
4	5070156-01	Compressor
5	5071056-01	Condenser TK1900
6	5019219-01	Electrical box
7	5049024-01	White probe
8	5049025-01	Controller probe
9	5049026-01	Grey probe
10	5059036-01	Agregate base
11	5050163-01	Top panel
12	5031285-01	Bernstein
13	5043021-01	Velex controller
14	5083703-01	Top panel foil
15	5059035-01	LED light
16	5031287-01	Interior door hinge
17	5031288-01	Upper interior door support
18	5052194-01	Upper interior door
19	5052190-01	Magnetic gasket
20	5031289-01	Lower interior door support
21	5031286-01	ZK 1065 hinge
22	5052187-01	Door
23	5051107-01	Door handle
24	5052195-01	Lower interior door
25	5060071-01	Moving shelf
26	5062032-01	Moving shelf handle
27	5062033-01	Moving shelf support
28	5052196-01	Silicone gasket
29	5060072-01	Shelf
30	5053036-01	Wheel with brake
31	5053037-01	Wheel
32	5053038-01	Wheel support
33		Body cabinet
34	5073060-01	Evaporator
35	5073052-01	Evaporator pipes cover
36	5073061-01	Evaporator front support
37	5073062-01	Back evaporator support
38	5073054-01	Short evaporator pipes cover
39	5050164-01	Top cover
40		Noise reduction box
41	5051106-01	Variable lock Integra

9. Spare parts list ULUF P820



Pos. no.	Code no.	Part
1	5044016-01	Battery
2	5079000-01	Dry filter
3	5071057-01	Subcooler
4	5070156-01	Compressor
5	5071056-01	Condenser TK1900
6	5019219-01	Electrical box
7	5059036-01	Agregate base
8	5049024-01	White probe
9	5049025-01	Controller probe
10	5049026-01	Grey probe
11		Body cabinet
12	5050165-01	Top panel
13	5031285-01	Bernstein
14	5043021-01	Velex controller
15	5083703-01	Top panel foil
16	5059035-01	LED light
17	5031287-01	Interior door hinge
18	5031288-01	Upper interior door support
19	5052197-01	Magnetic gasket
20	5031286-01	ZK 1065 hinge
21	5031289-01	Lower interior door support
22	5052198-01	Door
23	5051107-01	Door handle
24	5052199-01	Lower interior door
25	5052200-01	Upper interior door
26	5060073-01	Moving shelf
27	5062032-01	Moving shelf handle
28	5062033-01	Moving shelf support
29	5053036-01	Wheel with brake
30	5019228-01	Vacuum valve
31	5052196-01	Silicone gasket
32	5053037-01	Wheel
33	5053038-01	Wheel support
34	5073060-01	Evaporator
35	5073063-01	Back evaporator support
36	5073052-01	Evaporator pipes cover
37	5073064-01	Front evaporator support
38	5073054-01	Short evaporator pipes cover
39	5060074-01	Shelf
40	5050166-01	Top cover
41		Noise isolation box
42	5051106-01	Variable lock Integra

10. Compressor data ULUF P390/500/610/820

SECO

SC21CNX.2

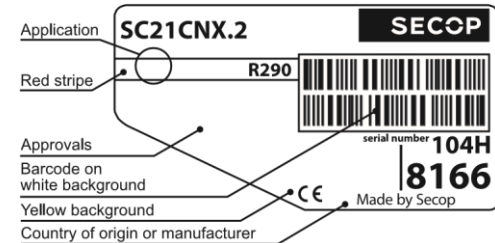
LBP Compressor

R290

220-240V 50Hz

Code number	104H8166
Approvals	EN 60335-2-34, CCC
Compressors on pallet	80

Application		LBP					
Frequency	Hz	<u>50</u>			60		
Evaporating temperature	°C	-40 to -10			—		
Voltage range	V	198 - 254			—		
Max. condensing temperature continuous (short)	°C	55 (60)			—		
Max. winding temperature continuous (short)	°C	125 (135)			—		
Frequency	Hz	50			60		
Application		LBP	MBP	HBP	LBP	MBP	HBP
32°C		F2	—	—	—	—	—
38°C		F2	—	—	—	—	—
43°C		F2	—	—	—	—	—
Remarks on application:							



General

Application

Cooling requirements

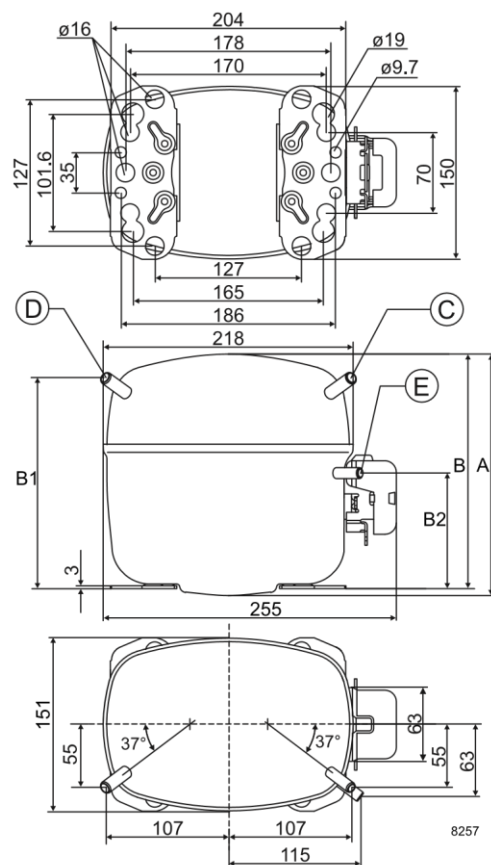
S = Static cooling sufficient
O = Oil cooling
F₁ = Fan cooling 1.5 m/s (compressor compartment temperature equal to ambient temperature)
F₂ = Fan cooling 3.0 m/s necessary
SG = Suction gas cooling normally sufficient
- = not applicable in this area

Motor

Motor type		CSIR	
LRA (rated after 4 sec. UL984), HST LST	A	23.5	–
Cut in Current, HST LST	A	23.5	–
Resistance, main start winding (25°C)	Ω	3.3	14.0

Displacement	cm ³	20.95
Oil quantity (type)	cm ³	550 (polyolester)
Maximum refrigerant charge	g	150
Free gas volume in compressor	cm ³	1410
Weight without electrical equipment	kg	13.1

Height	mm	A	219
		B	213
		B1	193
		B2	110
Suction connector	location/I.D. mm angle	C	10.2 37°
	material comment	Copper Rubber plug	
Process connector	location/I.D. mm angle	D	6.2 37°
	material comment	Copper Rubber plug	
Discharge connector	location/I.D. mm angle	E	6.2 37°
	material comment	Copper Rubber plug	
Oil cooler connector	location/I.D. mm angle	F	–
	material comment	–	
Connector tolerance	I.D. mm	±0.09	
Remarks:			



January 2020
Design

DES.D.560.O3.02

1/2

Dimensions

EN 12900 Household (CECOMAF)* $t_c = 45^\circ\text{C}$, 220V, 50Hz, fan cooling F¹

Evap. temp. in °C	-45	-40	-35	-30	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15	20
Capacity in W		339	492	654	828	891	1020	1233	1471								
Power cons. in W		431	491	555	623	647	695	772	855								
Current cons. in A		3.43	3.58	3.76	3.98	4.06	4.23	4.52	4.84								
COP in W/W		0.78	1.00	1.18	1.33	1.38	1.47	1.60	1.72								

ASHRAE LBP* $t_c = 43.3^\circ\text{C}$, 220V, 50Hz, fan cooling F₂

Evap. temp. in °C	-45	-40	-35	-30	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15	20
Capacity in W		396	564	741	931	999	1139	1371	1630								
Power cons. in W		432	493	556	623	646	693	767	846								
Current cons. in A		3.44	3.58	3.75	3.96	4.04	4.21	4.48	4.79								

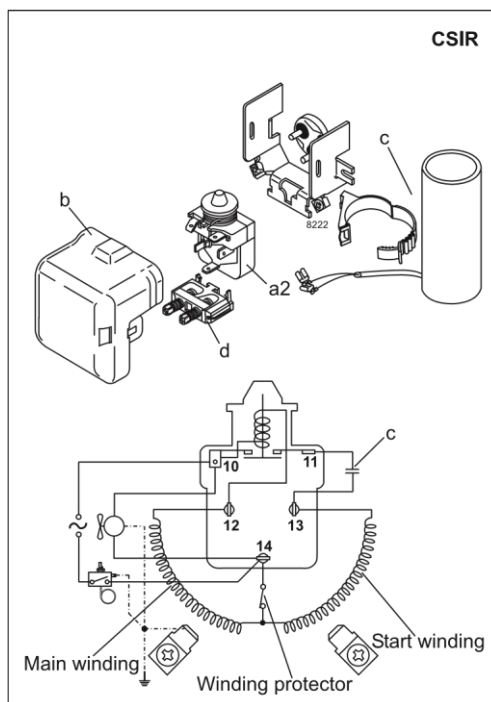
COP in W/W		0.92	1.14	1.33	1.49	1.55	1.64	1.79	1.93								
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EN 12900 Household (CECOMAF) $t_c = 55^\circ\text{C}$, 220V, 50Hz, fan cooling F₂

Evap. temp. in °C	-45	-40	-35	-30	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15	20
Capacity in W			372	536	716	781	914	1137	1387								
Power cons. in W			512	571	639	664	717	804	901								
Current cons. in A			3.59	3.83	4.10	4.20	4.41	4.75	5.13								
COP in W/W			0.73	0.94	1.12	1.18	1.28	1.41	1.54								

ASHRAE LBP $t_c = 54.4^\circ\text{C}$, 220V, 50Hz, fan cooling F₂

Evap. temp. in °C	-45	-40	-35	-30	-25	-23.3	-20	-15	-10	-6.7	-5	0	5	7.2	10	15	20
Capacity in W			462	663	882	962	1125	1398	1705								
Power cons. in W			509	568	636	662	714	801	897								
Current cons. in A			3.59	3.82	4.09	4.19	4.40	4.74	5.11								
COP in W/W			0.91	1.17	1.39	1.45	1.58	1.75	1.90								



Accessories for	SC21CNX.2	Figure	Code number	Test conditions	EN 12900/ CECOMAF(*)	ASHRAE LBP(*)
PTC starting device	6.3 mm spade connectors	—	—	Condensing temperature	55°C (*45°C)	54.4 (*43.3°C)
	4.8 mm spade connectors	—	—	Ambient temperature	32°C	32°C
Starting relay	6.3 mm spade connectors	a2	117U7013	Suction gas temperature	32°C	32°C
Cover		b	103N2009	Liquid temperature	no subcooling	32°C
Start. capacitor 125 µF	6.3 mm spade connectors	c	117U5012			
Cord relief		d	103N1004			
Protection screen for PTC		—	—			
				Mounting accessories		
				Code number		
				Bolt joint for one comp.	Ø: 16 mm	118-1917
				Bolt joint in quantities	Ø: 16 mm	118-1918

Snap-on in quantities	Ø: 16 mm	118-1919
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11. Safety data sheet for EP-88

According to EU regulation 1907/2006 (REACH)

Material Safety Data Sheet

SDS date: 26-04-2019

SDS version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product Identifier

Trade Name: EP88 mix

Product- no.: -

1.2. Relevant identified uses of the substance or mixture and uses advised against Recommended uses:
Refrigerant.

Uses advised against: This product must not be used for purposes other than those recommended without first seeking the advice of the supplier.

1.3. Details of the supplier of the safety data sheet

Company and address

Arctiko

Oddesundvej 39

6715 Esbjerg N

Tlf.: +45 70 20 03 28

Contact person and E-mail: info@arctiko.com

The Safety data sheet is completed and validated by: mediator A/S, Centervej 2, DK-6000 Kolding. Consultant:
HG

1.4. Emergency telephone number

NHS: 111

Use your national or local emergency number - See section 4 "First aid measures".

SECTION 2: Hazards identification

2.1. Classification of substance or mixture CLP (1272/2008): Flam. Gas 1;H220, Press. Gas;H280. See full text of H-phrases in section 16.

2.2. Label elements



Signal word:

Warning

Extremely flammable gas. (H220)

Contains gas under pressure; may explode if heated. (H280)

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. (P210)
Leaking gas fire: Do not extinguish, unless leak can be stopped safely. (P377) In case of leakage, eliminate all ignition sources. (P381)

Store in a well-ventilated place. (P403)

2.3. Other hazards

-

Additional labelling:

-

Additional warnings:

-

SECTION 3: Composition/information on ingredients

3.1./3.2. Substances/Mixtures

Substance	EU-Index no.	Cas / EINECS no.	CLP-classification	w/w%	Note
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Butane	601-004-00-0/ -	106-97-8/ 203-448-7	Flam. Gas 1;H220, Press.Gas;H280	30-50	-
Propane	601-003-00-5/ -	74-98-6/ 200-827-9	Flam. Gas 1;H220, Press.Gas;H280	20-40	-
Hexafluoroethane	-	76-16-4/ 200-939-8	Press.Gas;H280	20-40	-
Trifluoromethane	-	75-46-7/ 200-872-4	Press.Gas;H280	10-30	-
Tetrafluoromethane	-	75-73-0/ 200-896-5	Press.Gas;H280	10-20	-

See full text of H-phrases in section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation: Seek fresh air. Keep victim under observation. Seek medical advice in case of persistent discomfort.

Ingestion: Not relevant as the product is a gas. Wash out mouth thoroughly and drink 1-2 glasses of water in small sips.

Skin contact: Not relevant as the product is a gas.

Eye contact: Not relevant as the product is a gas.

Burns: Flush with water until pain ceases. Remove clothing that is not stuck to the skin – seek medical advice/transport to hospital. If possible, continue flushing until medical attention is obtained.

Additional information: When obtaining medical advice, show the safety data sheet or label.

4.2. Most important symptoms and effects, both acute and delayed May cause slight irritation to the skin and eyes.

4.3. Indication of any immediate medical attention and special treatment needed Show this safety data sheet to the doctor in attendance.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Extinguish with powder, foam, carbon dioxide or water mist. Do not use water stream, as it may spread the fire.

5.2. Special hazards arising from the substance or mixture

Extremely flammable gas. Avoid inhalation of vapour and fumes – seek fresh air. Product decomposes in fire conditions and toxic gases such as CO_x may be released. Fire will produce dense black smoke. Exposure to decomposition products may cause a health hazard.

5.3. Advice for firefighters

If there is a risk of exposure to vapour and flue gases, a self-contained breathing apparatus must be worn.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment – see section 8. Take precautionary measures against static discharges. Use spark-free tools and explosion proof equipment. Avoid breathing.

6.2. Environmental precautions Not relevant as the product is a gas.

6.3. Methods and material for containment and cleaning up

Not relevant as the product is a gas - See section 13 for instructions on disposal.

6.4. Reference to other sections See above.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

See section 8 for information about precautions for use and personal protective equipment. Smoking and naked flames prohibited.

7.2. Conditions for safe storage, including any incompatibilities

The product should be stored safely, out of reach of children and away from food, animal feeding stuffs, medicines, etc. Store in a dry, cool, well-ventilated area. Avoid direct sunlight. Store fireproof.

7.3. Specific end use(s) See section 1.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits according to EH40/2005 Workplace exposure limits (Third edition, 2018):

Substance	Long-term exposure limit	Short-term exposure limit	Note
Butane	600 ppm – 1450 mg/m ³	750 ppm – 1810 mg/m ³	-

DNEL and PNEC values:

DNEL – Triflouromethane:

Workers

Inhalation - Chronic Systemic 1439 mg/m³

Consumers

Inhalation - Chronic Systemic 358 mg/m³ PNEC – Hexafluoroethane:

Fresh water 0.038 mg/L

Intermittent releases (Fresh water) 0.375 mg/L

Marine water 0.004 mg/L Soil 0.071 mg/kg soil dw

PNEC – Triflouromethane:

Fresh water 0.155 mg/L

Intermittent releases (Fresh water) 1.545 mg/L

Marine water 0.016 mg/L

Soil 0.043 mg/kg soil dw

8.2. Exposure controls

There are no exposure scenarios for this product.

Appropriate engineering controls:

Wash hands before breaks, before using restroom facilities, and at the end of the work. **Personal protective equipment**

Respiratory protection:	Not required.
Hand protection:	Not required.
Eye/face protection:	Not required.
Skin protection:	Not required.

Environmental exposure controls:

Ensure compliance with local regulations for emissions.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance:	Colourless gas
Odour:	-
Odour threshold:	-
pH:	-
Melting point/ Freezing Point (°C):	-
Initial boiling point and boiling range (°C):	-

Flash point (°C):	-
Evaporation rate:	-
Flammability (solid, gas)	-
Upper / lower flammability or explosion limits (vol-%):	-
Vapour pressure (mbar, 25 °C):	-
Vapour density (air=1)	-
Relative density (g/ml):	-
Solubility(ies):	-
Partition coefficient: n-octanol/water:	-
Auto-ignition temperature (°C):	-
Decomposition temperature (°C):	-
Viscosity (mPas, 25 °C):	-
Explosive properties:	-
Oxidising properties:	-

9.2. Other information

Content of solids (%):	-
Surface tension (mN/m, 25 °C):	-

SECTION 10: Stability and reactivity

10.1. Reactivity Non-reactive 10.2. Chemical stability

The product is stable when used in accordance with the supplier's directions.

10.3. Possibility of hazardous reactions

No risk of hazardous reactions. 10.4.

Conditions to avoid

Avoid heating and contact with ignition sources.

10.5. Incompatible materials None known. 10.6. Hazardous decomposition products

Product decomposes in fire conditions or when heated to high temperatures, and toxic gases such as CO_x may be released.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity: Based on the existing data, the classification is not met.

Substance	Route of exposure	Species	Test	Result
Butane/Propane	Inhalation	Rat	LC50 / 0.25 Hours	1443 mg/L air
Hexafluoroethane	Inhalation	Rat	LC50 / 4 Hours	> 500000 ppm

Triflouromethane	Inhalation	Rat	LC50 / 4 Hours	> 663000 ppm
------------------	------------	-----	----------------	--------------

Skin corrosion/irritation: May cause slight irritation.

Serious eye damage/irritation: May cause eye irritation.

Respiratory or skin sensitisation: Based on the existing data, the classification is not met.

Germ cell mutagenicity: Based on the existing data, the classification is not met.

Carcinogenicity: Based on the existing data, the classification is not met.

Reproductive toxicity: Based on the existing data, the classification is not met.

STOT-single exposure: Based on the existing data, the classification is not met.

STOT-repeated exposure: Based on the existing data, the classification is not met.

Aspiration hazard: Based on the existing data, the classification is not met.

SECTION 12: Ecological information

12.1. Toxicity

Substance	Test duration	Species	Test	Result
Butane/Propane	96 Hours	Fish	LC50	49.9 mg/L
Butane/Propane	48 Hours	Daphnia	EC50	69.43 mg/L

Butane/Propane	96 Hours	Algae	EC50	19.37 mg/L
Hexafluoroethane	96 Hours	Fish	LC50	82.3 mg/L

Hexafluoroethane	48 Hours	Daphnia	EC50	47.4 mg/L
Hexafluoroethane	96 Hours	Algae	EC50	37.5 mg/L

12.2. Persistence and degradability

Substance	Biodegradability	Test	Result
Butane/Propane	Yes	Gas exchange-biodegradation	385.5 timer: 100%

12.3. Bioaccumulative potential

Substance	Potential bioaccumulation	LogPow	BCF
Butane/Propane	No	2.8	-
Trifluoromethane	No	0.84	-
Tetrafluoromethane	No	Approx. 1.18	-

12.4. Mobility in soil Test data are not available.

12.5. Results of PBT and vPvB assessment

The mixture does not meet the criteria for PBT or vPvB.

12.6. Other adverse effects None.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

The product is covered by the regulations on dangerous waste. Collect spills and waste in closed, leak-proof containers for disposal at the local hazardous waste site.

EWC Code

16 05 04

Specific labelling

-

Contaminated packaging:

Uncleaned packaging is to be disposed of via the local waste-removal scheme.

SECTION 14: Transport information

The product is covered by the rules for transport of dangerous goods.

14.1 -14.4.

ADR

UN number.:	UN proper shipping name	Transport hazard class(es)	Packing group
3161	LIQUEFIED GAS, FLAMMABLE, N.O.S. (Butane, Propane)	2.1	-

IMDG

UN-no.:	Proper shipping name	Transport hazard class(es)	Packing group
3161	LIQUEFIED GAS, FLAMMABLE, N.O.S. (Butane, Propane)	2.1	-

14.5. Environmental hazards

-

14.6. Special precautions for user

-

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not relevant.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Large stock of this product is regulated by the Seveso directive (2012/18). **Sources:**

EH40/2005 Workplace exposure limits (Third edition, 2018).

Restrictions for application:

Special care should be applied for employees under the age of 18. Young people under the age of 18 may not carry out any work causing harmful exposure to this product. Young people above 15 years are exempted this rule, if the product is a part of an education/training. **Demands for specific education:**

-

Additional labelling:

15.2. Chemical safety assessment

Chemical safety assessment has not been performed.

SECTION 16: Other information

Other information:

Sources:

EC regulation 1907/2006 (REACH).

Directive 2000/532/EC.

EC Regulation 1272/2008 (CLP). **Full text of H-phrases as mentioned in section 2+3:** H220 - Extremely flammable gas.

H280 - Contains gas under pressure; may explode if heated.

Classification according to Regulation (EC) Nr. 1272/2008:	
Flam. Gas 1;H220	On basis of test data
Press Gas;H280	On basis of test data

Abbreviations and acronyms used in the safety data sheet:

REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals. Regulation (EC) No 1907/2006.

CLP: Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008.

CAS-Number.: Chemical Abstracts Service number.

EC-Number.: EINECS and ELINCS Number (see also EINECS and ELINCS).

DNEL: Derived No Effect Level.

PNEC(s): Predicted No Effect Concentration(s).

STOT: Specific Target Organ Toxicity.

LD50: Lethal Dose to 50% of a test population (Median Lethal Dose).

LC50: Lethal Concentration to 50 % of a test population.

EC50: The effective concentration of substance that causes 50% of the maximum response.

PBT: Persistent, Bioaccumulative and Toxic.

vPvB: Very Persistent and Very Bioaccumulative.

Other

The information in this safety data sheet applies only to this specific product (mentioned in section 1) and is not necessarily correct for use with other chemicals/products.

Minor changes have been made in following sections:

-

This material safety data sheet replaces version:

-

12. Controller V500/700

Easy and user-friendly control panel, with a 6-key resistive keyboard. You can access a variation of settings, in order to adjust your unit for your exact needs. A 4GB microSD is provided as standard, installed internally for recording functional data every 30 seconds with a memory capacity of about 10 years.



In the single temperature configuration two types of Home Page are provided: EASY or SCIENTIFIC. The external ESCAPE key selects one mode or the other. The header shows the MACHINE_NAME (in the example LABORATORY) that can be edited from the SETTINGS MENU.

Keyboard

	MENU KEY accesses the menu panel		UP KEY increase value of selected parameter select multi-page menu
	INFO KEY accesses the info pages from Home Page level		DOWN KEY decrease value of selected parameter select multi-page menu
	ESCAPE KEY goes to previous level switch between <i>easy/scientific</i> Home Page		ENTER KEY store the selected value

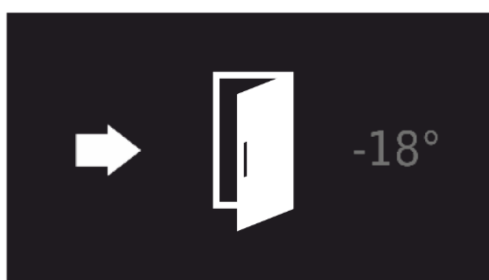
Action Icons

PAUSE	WAITING COOLING	COOLING	DEFROST	DRIPPING
<i>no icons</i>				
HEATING	WARM	DRY	CO2 BACKUP	STOP ACTIONS
				

Info events

ALARM ON	FAILURE STATUS	NOTIFY
		

Door Warning



DOOR OPENED



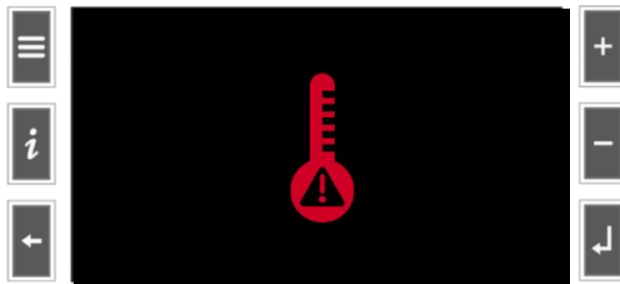
DOOR ALARM

Temperature alarm

LOW/HIGH TEMPERATURE PREALARM



ALARM OCCURRED



[JUMP TO EVENT LIST](#)

HIGH TEMPERATURE ALARM



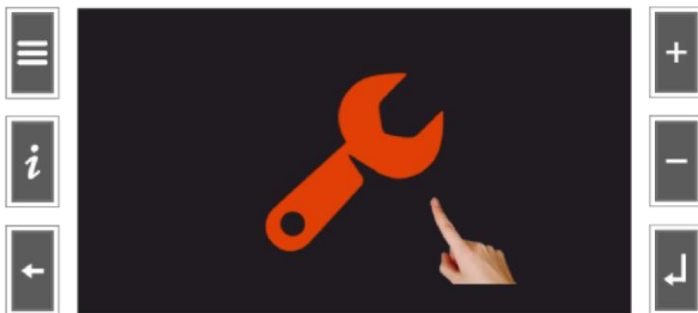
LOW TEMPERATURE ALARM



Failure events

To accept a failure, press the center of the screen.

FAIL OCCURRED



JUMP TO EVENT LIST

FAIL UNRESOLVED



EVENTS LIST			1/2
DEFROST TIME-OUT	18:49 12/06/2015		
HIGH TEMPERATURE	10:43 11/06/2015	12.5°C 10 min	
PROBE	08:55 05/06/2015	S1	
LOW TEMPERATURE	04:50 02/06/2015	1.3°C 02 min	

EVENT NAMELY



Compressor Failure Alarm

The controller is equipped with a compressor failure detection feature.

If the controller detect an unusual temperature profile on one of the compressors it will disable that compressor and activate an alert on the controller. The other compressor will keep running.

To reset the alarm and reenale the compressor; accept the alarm and turn the unit off and on again. During pulldown this alarm may be activated. If this happens please reset the alarm. If the alarm keeps reoccurring please contact your distributor or Arctiko service for help.

COMPRESSOR FAILURE ALARM OCCURED

JUMP TO EVENT LIST

EVENTS LIST				1/2
DEFROST TIME-OUT	18:49	12/06/2015		
HIGH TEMPERATURE	10:43	11/06/2015	12.9°C	10 min
PROBE	08:55	05/06/2015	S1	
LOW TEMPERATURE	04:50	02/06/2015	1.3°C	02 min

COMPRESSOR FAILURE ALARM UNRESOLVED

COMPRESSOR FAILURE ALARM UNRESOLVED

26/10/2018 15:43

ARCTIKO

-51.9 °C

COOLING

COMPRESSOR	SETPOINT	MAINS	UNIT	STATUS
-12.1° 30.3°	-86.0°	0V	1 2	✓

How to turn on the device



Press on the screen and hold, to turn on the device.



If password protection is enabled type password and press “Enter”



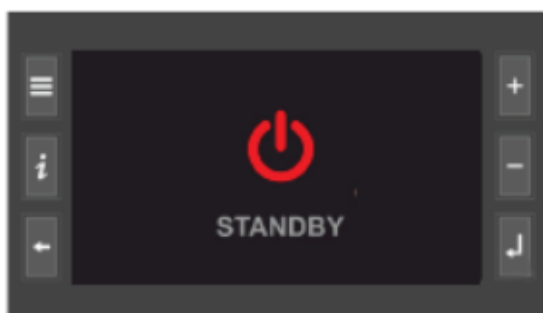
How to turn off the device



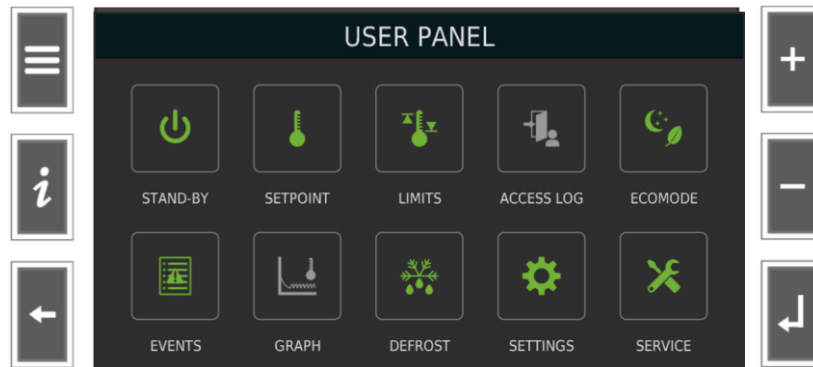
Press "Menu key" to access "Menu user". Press and hold "Standby" to turn off the device (put in standby mode).



If password protection is enabled type password and press "Enter"



Menu user



- **STAND-BY** press and hold to turn off the controller
- **SETPOINT** change the temperature setpoint
- **LIMITS** set the high/low temperature limits and alarm delay
- **ACCESS LIST** access log
- **ECOMODE** set the ECOMODE parameters
- **EVENTS** displays the alarms and failures recorded
- **GRAPHICS** displays the daily temperature graph from calendar
- **DEFROST** start the defrost and displays temperature and time phase (defrost function not available on Integra range)
- **SETTINGS** access to MENU SETTINGS
- **SERVICE** access to MENU SERVICE

How to change the setpoint

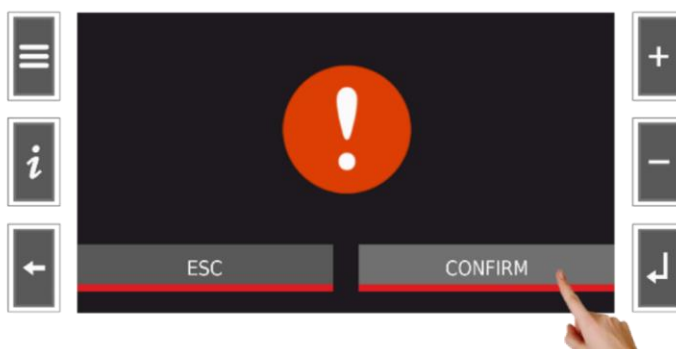


INCREASE TEMPERATURE

DECREASE TEMPERATURE

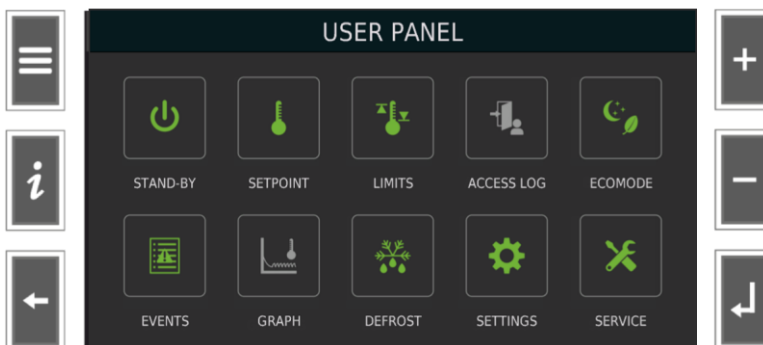
SAVE NEW VALUE AND EXIT

STANDARD	RECALL STANDARD VALUE
MIN	RECALL MINIMUM VALUE
MAX	RECALL MAXIMUM VALUE
ACTUAL	RECALL RUNNING VALUE

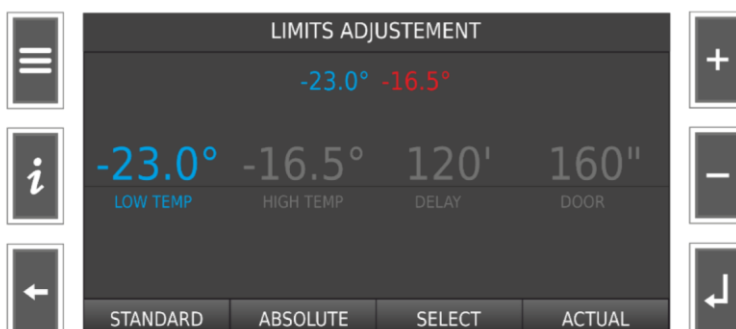


How to change the alarm limits

Press the “Menu key”  to access the menu.



- The external **UP/DW** keys increase/decrease the value selected with the **SELECT** key.
- The **STANDARD** key sets the default value
- The **ABSOLUTE/RELATIVE** key sets in rotation the type of limit setting; the high and low temperature limits in the control board are always absolute. The calculated value of the limits is displayed under the panel title.
- The **SELECT** key enables in rotation the value to be set.
- The **CURRENT/MODIFIED** key retrieves the value in progress/preset
- The **ESCAPE** key returns to the USER MENU without saving the map of values with confirm request
- The **ENTER** key returns to the USER MENU saving the map of values with confirm request



Access list

The icon pressure from LOG ACCESS from USER MENU leads to the display of the list of the last 32 events accesses . If you wish to consult previous logons make a BACK- UP data and open the contents of uSD through the application THERMO CONVERTER where in the last 4 fields to the right are the records accesses with the description by means of the actions carried icons .





USER PANEL


 STAND-BY


 SETPOINT


 LIMITS


 ACCESS LOG


 ECOMODE


 EVENTS


 GRAPH


 DEFROST


 SETTINGS


 SERVICE









ACCESS LOG 1/4

1	12/05/2016	22:30	DR ROSSI		
2	12/05/2016	20:09	DR BIANCHI		
3	12/05/2016	14:55	SERVICE		
4	12/05/2016	14:16	ADMIN		
5	10/05/2016	10:24	DR ROSSI		
6	09/05/2016	18:01	DR ROSSI		
7	09/05/2016	13:11	ANONYMOUS		
8	09/05/2016	11:24	DR BIANCHI		





POWER OFF

CHANGED SETPOINT

CHANGED PARAMETER

FORMATTED CARD/ CHANGED SETTINGS CLOUD

DOOR OPENED

CHANGED HIGH LIMIT TEMPERATURE

BURGLARY

POWER-ON

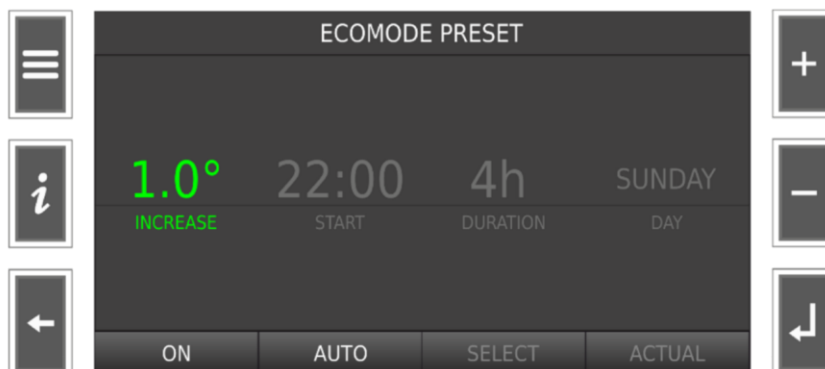
Ecomode setting

Pressing the **ECOMODE** icon displays the setting panel of the **hourly or automatic** temperature profile. With USER password **different from zero**, it is requested to access the setting of the new configuration. The password is edited via the numerical keypad and confirmed by pressing **ENTER**. If the password was correctly set the ECOMODE frame is accessed, otherwise the **ERROR** frame appears and the display goes back to the USER menu.

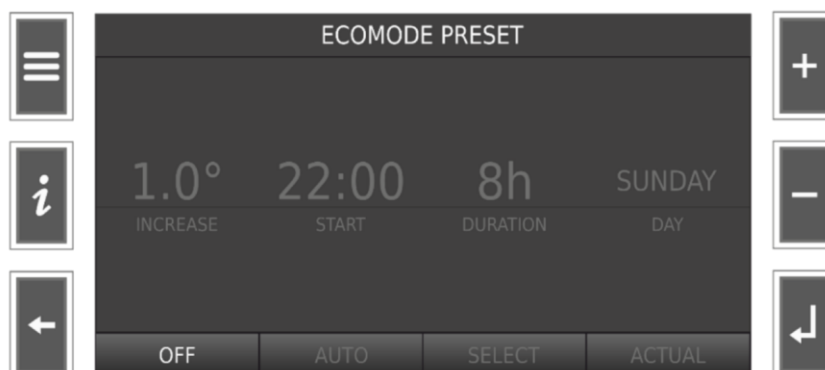
The external **UP/DW** keys increase/decrease the value selected. The map of values is saved by pressing the external **ENTER** key with request to confirm.

- The **ON/OFF** keys disables/enables ECOMODE; if the key is at **OFF** the other keys are disabled.
- The **AUTO/TIMER** key sets in rotation the ECOMODE TIMER/AUTO function; in TIMER mode the SELECT key is disabled and only the variable INCREASE is selected.
- The **SELECT** key, in TIMER mode, enables in rotation the values to be set.
- The **CURRENT/MODIFIED** key retrieves the value in progress/preset
- The external **ESCAPE** key returns to the USER MENU without saving with exit/confirm request

ECOMODE AUTO



ECOMODE OFF



Event list

Shows number of pages with events. Press or to change page.

EVENT IN PROGRESS

	EVENTS LIST			1/2
	 DEFROST TIME-OUT	18:49 12/06/2015		
	 HIGH TEMPERATURE	10:43 11/06/2015	12.5°C 10 min	
	 PROBE	08:55 05/06/2015	S1	
	 LOW TEMPERATURE	04:50 02/06/2015	1.3°C 02 min	

EVENTS RECORDED

	EVENTS LIST			1/2
	 DEFROST TIME-OUT	18:49 12/06/2015		
	 HIGH TEMPERATURE	10:43 11/06/2015	12.5°C 10 min	
	 PROBE	08:55 05/06/2015	S1	
	 LOW TEMPERATURE	04:50 02/06/2015	1.3°C 02 min	

EVENT LIST (alarms and faults)

- HIGH TEMPERATURE
- LOW TEMPERATURE
- DOOR OPEN
- BLACK-OUT
- MAINS FAULT
- Sx PROBE
- LOW EVAPORATION
- HIGH CONDENSATION
- HIGH PRESSURE
- DEFROSTING TIME
- FAULTY BATTERY
- DOOR SWITCH
- UNIT FAULT
- LOAD FAULT
- U1 RELAY FAULT
- U2 RELAY FAULT
- RELAY FAULT



Fig.1

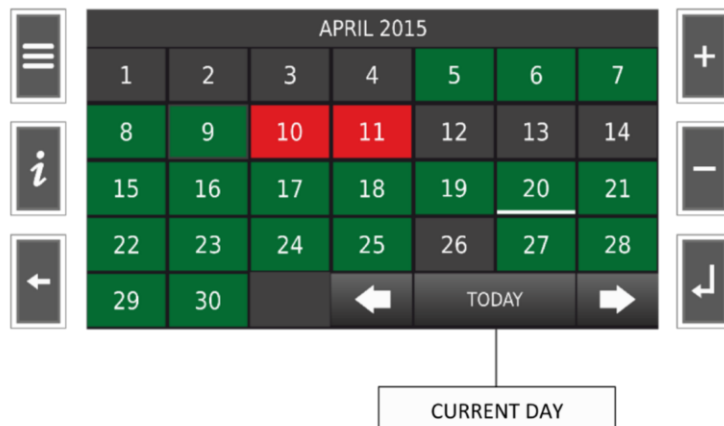
Empty List

Graphs

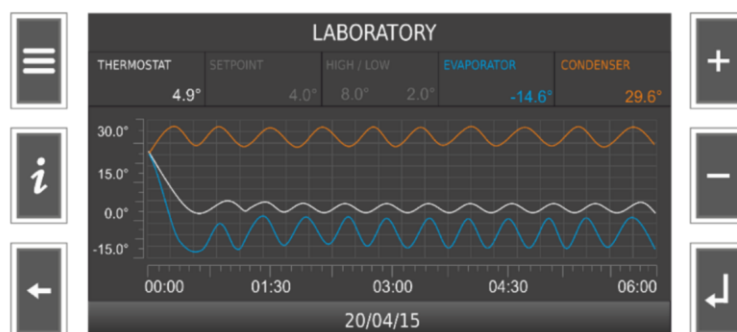
Pressing the **GRAPH** icon accesses the select menu of the historical graph. When the **CALENDAR** page opens, the selected day is the current one and it is highlighted by a white bar. Press **UP** to scroll the months forward and **DW** to scroll them back. Press the **TODAY** key to go back to the current day.

The grey boxes indicate the lack of data, the green boxes the presence of data, the red boxes the presence of a discrepancy. Press the key of the requested day to access the display frame of the daily graph.

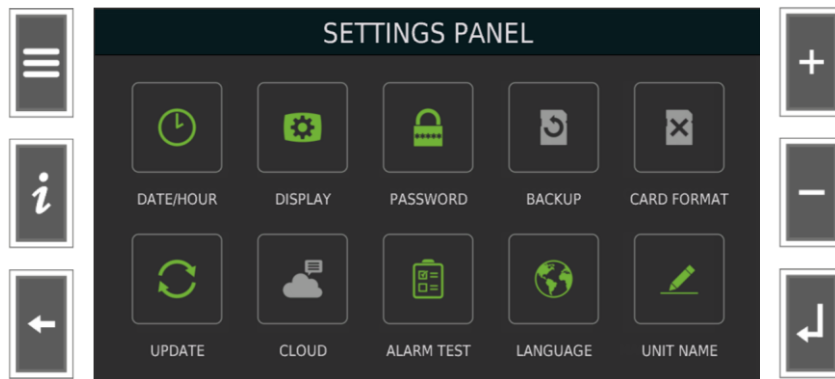
CALENDAR



The graph opens with start at 00:00 hours and end at 06:00 hours. Pressing the external **UP/DW** keys the time axis with 6-hour time slots are scrolled forward/back. To select a different day, go back to the calendar by pressing the **ESCAPE** key. The temperature of the respective probes are traced enabling with a click the corresponding box; each square shows the average temperature values calculated in the 24 hours of the current day. The boxes from left allow the cyclic selection of the relative probes.



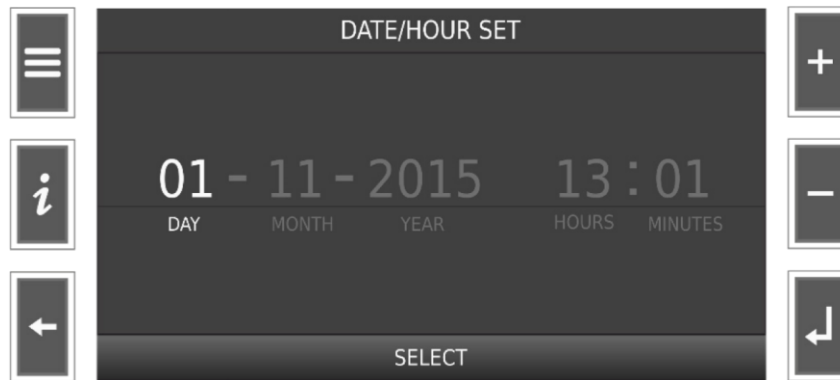
Menu user



- **DATE/HOUR** set the clock device
- **DISPLAY** set the configuration of panel display
- **PASSWORD** set the three levels of passwords
ADMINISTRATOR - USER – SERVICE
- **BACKUP** start download data through USB port
- **CARD FORMAT** erase the data recorded
- **UPDATE** read and send setup files
- **CLOUD** set the LAN configuration
- **SMS SETUP** edit the telephone numbers where to send the alert messages
- **LANGUAGE** set the language of user interface
- **MACHINE NAME** edit machine name by alphanumeric keyboard

How to set date/hour

Press select to move the highlight and +/- to change the value. To confirm press “Enter” .



The system clock does not automatically manage the Summer time.
 The connection towards the Cloud refers to the transparent UTC at the nation time conventions.
 The navigation on the VELEX Cloud refers to the zone time conventions if the device used foresees its automatic management.

Language

Pressing the **LANGUAGE** icon shows the frame for selecting the text languages. The language is selected in a mutually exclusive manner by clicking on the select box, which changes from grey to orange.

- The **UP/DW** keys browse the language setting pages, if enabled
- The **ESCAPE** key leads to the SETTINGS MENU without changing the language
- The **ENTER** key, *after confirmation*, sets the selected language.



Pasword settings

The passwords are used for limiting access to certain areas in the menus. There are 3 levels of access:

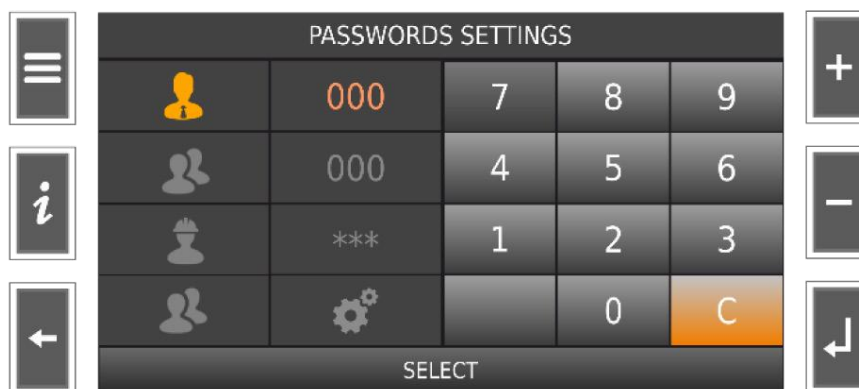
User(s): For setting basic parameters and turning the appliance on or off.
By default there is no password set.

Admin: For setting more advanced parameters and for managing users.
The default password is "111".

Service: For accessing the service menu.
The service settings are reserved for qualified Arctiko service personnel.

By entering the admin password both the admin and user passwords can be changed.

The passwords can be deactivated by setting them to "000".
By entering the multiuser menu, multiple user accounts can be setup. This is useful for tracking which user changes parameters or turns the appliance on or off.
These individual user accounts can be named to easily differentiate between them.



Alarm test

The icon pressure TEST start the alarm test WITH the following sequences :

1. 3 seconds alarm icon with buzzer on
2. Activate the alarm relay for 3 seconds according these sequences OFF / ON / OFF
3. Back to Home Page



Machine name

Pressing the **TITLE** icon shows the editing frame of the machine name that is displayed in the Home Page header. To confirm the text [max 24 characters] press **ENTER**.

The external **ESCAPE** key takes the display back to the SETTINGS MENU without saving the edited text.

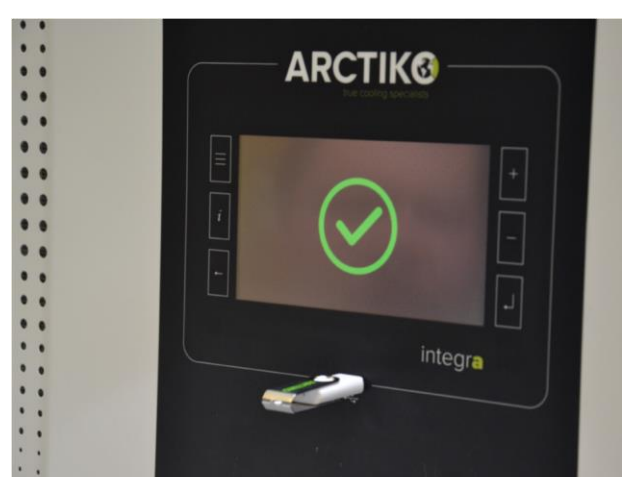


Data download

The backup menu transfers the thermoregulation data on usb pen.

Pressing the backup icon shows the usb-pen insertion request frame with 20-second time-out. If the usb-pen has been recognised, the setting page of the months to download is displayed, otherwise the display goes back to the SETTINGS MENU.

The up/dw keys increase/decrease the number of months to transfer; pressing the enter key starts the data download with the progress bar; at the end, it goes back to the setting menu. The escape key leads to the settings menu without transferring the data.



13. Default settings

Description	Unit	Default setting
Setpoint	°C	-80,0
Limits (Alarms)		
Low temp.	°C	-99.0
High temp.	°C	-65.0
Delay	Minutes	15
Door	Seconds	40
Ecomode		OFF
Display		
Screensaver	Hours	0
Buzzer		ON
User password		Deactivated by default
Admin password		111

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