

OPERATION MANUAL

LAUDA
ultracool



DMI-0164
rev.15
07.07.2016

Ultracool
UC-0300/2400 50/60Hz

Warnings

This Operation Manual is to be followed by all persons working with the unit. It is imperative that this Manual is made freely available at all times to service personnel and is kept at the point where the unit is installed.

The basic maintenance should be carried out by properly trained personnel and, if necessary, under the supervision of a person qualified for this job.

LAUDA Ultracool S.L. personnel, or personnel authorized by LAUDA Ultracool S.L., should carry out any work in the refrigerating or electric circuit during the warranty period. After the warranty period, the work must be carried out by qualified personnel.

Disposal of Waste Equipment by Users in Private Household in the European Union.



This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

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Attention. Points of special interest to keep in mind.

1 Introduction

1.1 General notes

- This water chiller complies fully with CE.
- The Company does not accept responsibility if safety regulations are not met during handling, operation, maintenance and repair, even though these may not be strictly stated in this operation manual.
- We recommend the translation of this operation manual into the native language of foreign workers.
- The usability and life cycle of the water chiller as well avoiding premature repairs depends on proper operation, maintenance, care and competent repair under consideration of this operation manual.
- We are constantly updating our products and are confident that they respond to the latest scientific and technological demands. However, as manufacturers, we do not always know the end use or the total range of our product's applications. Therefore we cannot accept liability for our products in applications where additional safety measures may be necessary. We highly recommend that users inform us of the intended application in order to undertake additional safety measures, if necessary.

1.2 Safety regulations



The operator has to observe the national working, operating and safety regulations. Also, existing internal factory regulations must be met. Maintenance and repair work must only be carried out by specially trained personnel and, if necessary, under supervision of a person qualified for this work.

- Protective or safety devices must not be removed, modified or readjusted.
- During operation of the water chiller none of the protective or safety devices must be removed, modified or readjusted, temporarily or permanently.
- Only use the correct tools for maintenance and repair work.
- Use original spare parts only.



- All maintenance and repair work must only be carried out to the machine once it has been stopped and disconnected from the power supply. Ensure that the water chiller cannot be switched on by mistake by unplugging it.
- Do not use flammable solvents for cleaning.
- Keep the surrounding area absolutely clean during maintenance and repair work. Keep free of dirt by covering the parts and free openings with clean cloth, paper or adhesive tape.
- Ensure that no tools, loose parts or similar are left inside the system.

2 Installation

2.1 Reception and Inspection



On receipt of the Ultracool unit, it must be inspected for damage during transport. In the case of any damage, external or internal, this cannot be referred to the manufacturer because all units are checked before dispatch. **If any damage is observed, this should be documented and reported to the forwarding company. The LAUDA Ultracool S.L. warranty does not include any damages incurred during transportation.**

The refrigerant circuit controls are set before shipment of the unit. They should not be re-adjusted under any circumstances (except by our LAUDA Ultracool S.L. service department). This would void the warranty of the unit

2.2 Transport



Keep the unit upright at all times. Do not tilt when shipping or moving. **The tilting of the Ultracool unit may affect the internal suspension of the refrigerating compressor.**

UC-0300/0800 - These units must be transported by palet jack or fork-lift truck.
UC-1000/2400 - These units must be transported by crane.

2.3 Site

The Ultracool unit must be installed in an atmosphere where the range of temperatures is within the indicated margins mentioned in point 3.1.

The chiller must be installed on a solid level surface that is capable of supporting a minimum weight of the sum of the weight of the unit and the weight of the water tank full filled. See technical specifications section.

We recommend the installation of the Ultracool unit in a well-ventilated site and in a corrosive-free, dust-free atmosphere. The air renewal of the room should be at least $\frac{3}{4}$ of chiller's motor fan flow. See technical specifications section.

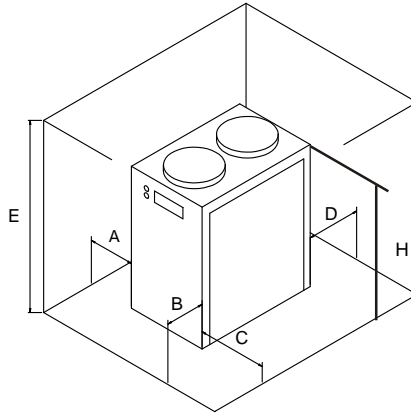
The electrical protection degree of the Ultracool unit is IP54. In the case of out-door installation it is recommended to protect the Ultracool unit from rain with a roof and it should be installed in such way that the control panel receives as few direct sunlight as possible.

The inlet of fresh air onto the condenser should be in the most direct way possible, avoiding any chance of air recycling (the ceiling above should not be at less than 2 m (79") from the chiller's roof).

See in the picture the minimum distances (in m) that must be left around the Ultracool unit.

2

Installation



	A	B	C	D	E
Minimum distance m (in)	2 (79")	2 (79")	2 (79")	2 (79")	H+2 (H+79")

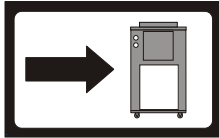
In case of installation in a small room it is imperative that the room, has an appropriate ventilation system to evacuate all the heat generated by the chiller as explained before on this same point. If the heat is not removed the temperature in the room will quickly increase beyond the operating limits of the unit and it will stop by high pressure alarm.



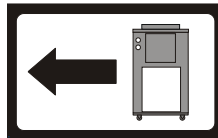
The Ultracool units must always operate with the panels closed to enable the inlet of fresh air only through the condenser.

2.4 Identification Labels on the Ultracool unit

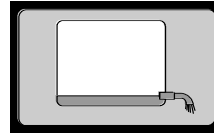
You can find the following labels stuck on the Ultracool unit:



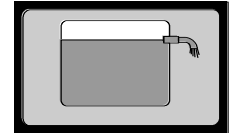
Water inlet from the installation to the Ultracool unit (**UC-0300/0650** inside the housing).



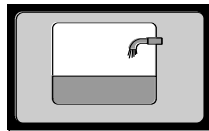
Water outlet from the Ultracool unit to the installation (**UC-0300/0650** inside the housing).



Drain (**UC-0300/0650** inside the housing).



Connection for the tank overflow (**UC-0300/0650** inside the housing).



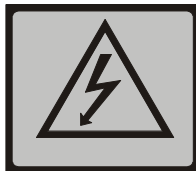
Connection to fill the tank (**Only UC-0800/2400**).



Danger of cuts!
Completely disconnect the chiller power supply before opening this cover.



Indicative arrow showing the pump turn direction (**UC-0800/2400** inside the unit).



Power supply depending on version.

2.5 Water Connection

The water connection of the Ultracool unit must be carried out according to the indications of the labels (stickers) onto the unit.

Minimize the number of bends in the water lines. The length of pipe, number of fittings, valves, etc. will also cause an increase of the pressure drop.

The chiller should be located as close as possible to the application. Pressure drop in the pipe should not exceed 0.7 bar.



To perform the water connections **make sure the chiller is turned Off and disconnected from any power supply** and open the lateral and back panels of the chiller.



Always install thermal insulation for all pipes or, at least, make sure that the pipes are opaque to the light.



When possible install the water lines at the same level as the chiller until reaching the application. The height difference between the chiller and the application should never exceed 10m (33 feet). **In the installations in which the water level of the circuit exceeds the maximum level of the tank inside the Ultracool unit, it will be necessary to install a check valve in the water outlet of the Ultracool unit and a solenoid valve in the water inlet.** The power supply of this solenoid valve will be carried out by terminals designed for that purpose (see electrical diagrams).

To prevent rusting of the water pipes, we recommend plastic pipes and plastic or brass fittings.

Where flexible tubing is used, it should be of reinforced construction and rating for a minimum working pressure of 10 bar g (145 psig) within -5°C and 30°C (23°F and 86°F).

Superplus models (only UC-0800/2400): It is mandatory to install a manual valve at the chiller's water inlet and one at the chiller's water outlet.

Standard models: The user pump must provide the chiller with the flow indicated in the Ultracool characteristics plate (see Technical specifications sheet). Take into account that the maximum pressure at the chiller's inlet cannot exceed 10 bar (145 psi).

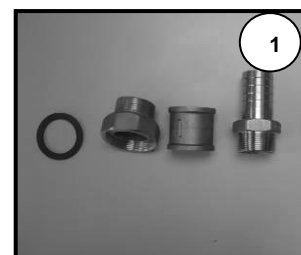
Standard with pump models: If the pump is to draw liquid from a level lower than the pump suction port, a foot/non-return valve must be fitted to the water inlet from the installation to the Ultracool unit.

2.5.1 Ultracool 0300/0650 Water Connection

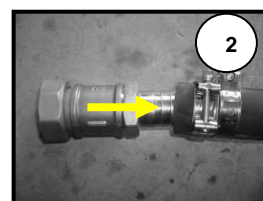
The water lines must be pipes of at least 1 ½”.

1.- Enclosed with the chiller are supplied the necessary fittings to make the inlet and outlet process water connections. For each connection there are:

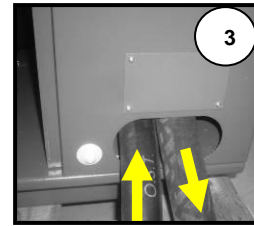
- Gasket D.43/58 X 3
- 2”1½” Quick threaded connection
- 1½” F-F Fitting
- 1½” x 40 Hose carrier



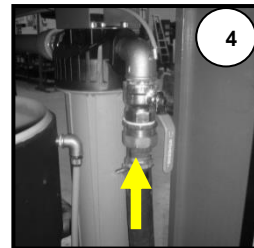
2.- Assemble the fittings according to picture 2 and insert them into the inlet and outlet hoses for the process water.



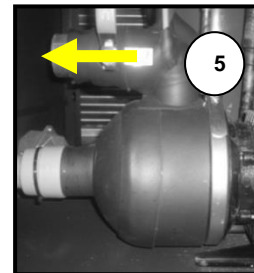
3.- Introduce the inlet and outlet water hoses with the corresponding fittings already assembled inside the chiller housing through the connection port. There are two connection ports available at back panel (see dimensional diagram at the end of the manual): Process water circuit and drain & overflow tap.



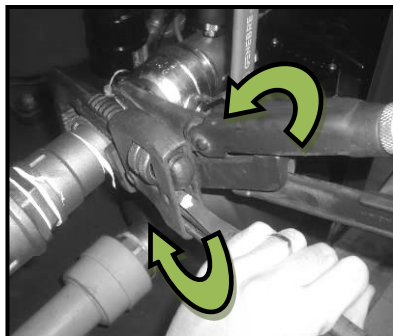
4.- Connect the inlet water hose coming from the application to the 2" nipple located at the inlet of the water filter.



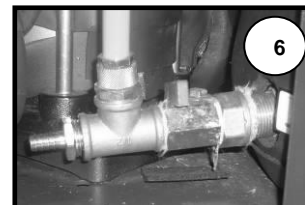
5.- Connect the outlet water hose going to the application to the 2" nipple located at the pump outlet (superplus models) or evaporator outlet (standard models). See the identification labels.



Connect the fittings of the inlet/outlet using a wrench and counter wrench in order to avoid forcing the water components of the chiller.



6.- Connect a hose to the drain and overflow connection located at the bottom of the water tank. Use a flexible hose with 10mm internal diameter.



2.5.2 Ultracool 0800/2400 Water Connection

The diameters of the inlet and outlet lines must be the same size or larger than those corresponding to the water inlet and outlet of the Ultracool unit.

2.6 Electrical Connection

Operating voltage: 400VAC +/-10%, 50Hz, 3 Ph or 460VAC +/-10% 60Hz, 3 Ph depending on the version. It must be checked that the supply voltage does not exceed a maximum variation of 10% referring to nominal.

The electrical design of Ultracool unit is according to EN-60204 norms.

For the electric supply to the Ultracool unit use an appropriate electrical line according to the data in the characteristics plate.

The chiller has some special terminals prepared for the following functions:

- **Terminals 23 and 24, remote On/Off operation:** The Ultracool unit can be turned On and Off automatically by an external signal. This remote On/Off signal can be transmitted to these terminals by a dry contact in the application or by a remote switch (open contact = chiller Off, closed contact = chiller On).

Note: During the initial commissioning, the Ultracool unit must stay turned Off but connected to the power supply (Main power switch On) for at least 6 hours (see point 3.2). During this time the Ultracool unit must not receive any On signal; do not connect the wire bridge supplied between terminals 23 and 24 yet. If the remote On/Off function is being used do not send any On signal to the chiller yet.

- **Terminals 25 and 26, external solenoid valve connection (only for superplus models):** See electrical diagram for the correct power supply for the solenoid valve. If the pipes of the application are installed above the level of the chiller's outlet this valve prevents backflow when the chiller is stopped (see point 2.5). These terminals only receive power supply when the water pump is working.
- **Terminals 56 and 57, unit On/Off indicator:** These terminals provide a dry contact to indicate when the unit is turned on or turned off. This contact is open as long as the Ultracool unit is turned off.
- **Terminals 57 and 61, external alarm report signal:** These terminals provide a dry contact for a general alarm of the chiller. This contact can be adjusted in order to open or close when there is an alarm (see section 4.2.1).



A system of fuses or circuit breakers must be installed before the power inlet connection to the Ultracool unit. The maximum size of these protections is defined in the Ultracool characteristics plate.

3 Start-up

3.1 Operating Conditions

The control thermostat in the chiller will control it in order to maintain the preset cold water temperature.

Water temperature at the inlet:

Nominal: 15°C (59°F)
Maximum: 35°C (95°F)

Cold water temperature at the outlet:

Nominal: 10°C (50°F)
Minimum: 7°C (45°F) (1)
Maximum: 25°C (77°F)

Temperature of the ambient air:

Nominal: 25°C (77°F)
Minimum: 0°C (32°F) / -15°C (5°F) with speed regulator option (2)
Maximum: 45°C (113°F)

(1) The Ultracool units can work with cold water temperatures lower than 7°C (45°F). To do so, add ethylene glycol to the water and contact an authorized technical service to adjust the chiller.

(2) In order to work at temperatures lower than 0°C (32°F) it is necessary to add ethylene glycol to the water and contact an authorized technical service to adjust the chiller. The units can work below 0°C (32°F) by using the speed regulator option. The minimum ambient temperature with this option is -15°C (5°F).



Only an authorized technical service can adjust the antifreeze set point.

The following table shows the ethylene glycol concentration and the antifreeze adjustment required:

Glycol concentration (3) and antifreeze adjustment		Min Ambient Temperature		
		0°C or more	Less than 0°C until -5°C	Less than -5°C until -15°C
Cold Water Set Point	7°C or more	0% 0°C	15% -5°C	30% -15°C
	Less than 7°C until 5°C	15% -5°C	15% -5°C	30% -15°C
	Less than 5°C until 0°C	30% -15°C	30% -15°C	30% -15°C
	Less than 0°C until -5°C	30% -15°C	30% -15°C	30% -15°C

Glycol concentration (3) and antifreeze adjustment		Min Ambient Temperature		
		32°F or more	Less than 32°F until 23°F	Less than 23°F until 5°F
Cold Water Set Point	45°F or more	0% 32°F	15% 23°F	30% 5°F
	Less than 45°F until 41°F	15% 23°F	15% 23°F	30% 5°F
	Less than 41°F until 32°F	30% 5°F	30% 5°F	30% 5°F
	Less than 32°F until 23°F	30% 5°F	30% 5°F	30% 5°F

(3) The ethylene glycol percentage is given as % measured as weight of the total mixture. In case of any modification in the quantity of water in the installation, the concentration of ethylene glycol should be checked.

If more volume is required it is necessary to keep the ethylene glycol concentration



Do not use automotive antifreeze. Use lab grade ethylene glycol only! Do not use an ethylene glycol concentration above 30%; this would damage the water pump.

3.2 Chiller start-up



Clean the application water circuit with tap water in order to be sure that there are no free particles. Otherwise the filter element can block up during the start up process.

Turn Off the Main power switch (to avoid any possibility of unexpected start up of the equipment during this operation). Open the lateral and back panels, open the tank cover and fill the tank **with water of the required quality (see annex 9), the suitable glycol concentration according to point 3.1 of this manual and all the Refrfluid B additive supplied with the chiller (2 liters per each 100 liters of water tank volume)**. Fill the mixture directly to the tank or using the filling port (only UC-0800 to 2400) until the maximum level of the tank is reached.

In superplus models, check that the level switch has switched to the “full” position (you will feel it “click” if you lift by the hand).

Prime the pump in order to release any air inside,

in superplus models:

1. Remove the priming plug (P, see diagram below).
2. Keep the priming plug open until only liquid runs out the priming plug.
3. Replace the priming pump and tighten securely.

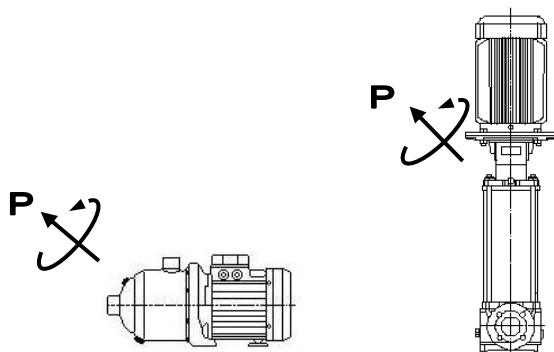
in standard with pump models:

1. Close the external manual valve at the Ultracool outlet.
2. Remove the priming plug (P, see diagram below).

3

Start-up

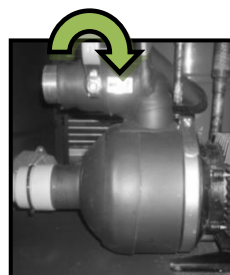
3. Pump priming:
 - a. **If the liquid level in the tank is below the pump inlet:** Pour water through the priming port. Make sure that the suction pipe and pump are completely filled and vented.
 - b. **If the liquid level in the tank is above the pump inlet:** Keep the priming plug open until only liquid runs out the priming plug.
4. Replace the priming plug and tighten securely.
5. Open the external manual valve at the Ultracool outlet.



Do not start the Ultracool unit until the pump has been properly vented.



Open the water inlet valve completely and close the outlet water valve completely as shown on the following pictures for UC-0300 to 0650. On UC-0800 to 2400 do the same with the water inlet and outlet valves installed.



Make sure that the external fuses are installed. See electrical diagram.

Make sure that the Remote On/Off control is not connected between terminals 23 and 24 and a wire-bridge is not installed between them either.



When the Ultracool unit is started for the first time, it is necessary to turn On the Main power switch (element 1 in the control panel, see point 4) and wait six hours before continuing with the start-up sequence. This time is necessary for the crankcase of the compressor to heat up. **The compressor can be damaged if this procedure is not followed.**

Close the lateral and back panels and **switch OFF the main power switch during any electrical intervention.**

Connect the Remote ON/OFF control in terminals 23 and 24 (see point 2.6). If you do not use a remote control, connect the wire-bridge supplied inside the electrical box to link terminals 23 and 24.

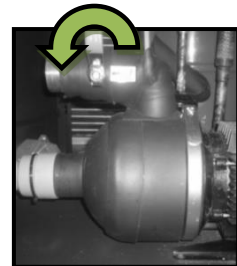
Switch ON the general switch and, if necessary, give an ON signal through the remote ON/OFF, then **the unit will start up**.

In superplus models: Check that the working pressure of the pump is higher than nominal pressure indicated at the characteristics plate. If it is below this value the pump is turning in the wrong direction. If this happens, **switch OFF the main power switch, disconnect the chiller from the power supply** and exchange two phases in the main power supply. It will not be necessary to check the turn direction of the fans, because they are delivered in phase with the pumps. Since it may be difficult to see the pump's rotation direction, verify that you did this operation correctly when the motor fans start working: The air should enter the condenser and go out through the top of the Ultracool unit. If the air is moving in the opposite direction then exchange two phases in the main power supply.

Pump pressure adjustment UC-0300 to 0650:

Increase the cold water set point up to the maximum allowed value (see point 4) to prevent the compressor from starting. Switch the main power switch OFF and then back ON. Open the lateral and back panel and adjust the water outlet valves so the pump works at the nominal pressure indicated in the chiller's data plate.

If the water tank temperature is above the programmed setpoint, the compressor will start 1 minute after switching the main power switch ON. If this happens switch the main power switch OFF and perform the operation again within 1 minute. If the compressor works with the lateral and/or back panel open the chiller will trip by high pressure alarm, see point 6.



Pump pressure adjustment UC-0800 to 2400:

Adjust the outlet valve so the pump works at the nominal pressure indicated in the chiller's data plate.

After 5 minutes stop the unit, open the left and back panels (only UC-0300/0650) and check the level in the tank. If the level is below the maximum then refill the water tank again. Repeat this operation until water level in the tank remains constant.

When refilling the tank respect the ethylene glycol concentration as per point 3.1.

In the standard models, **it will be necessary to check the direction of rotation of the compressor**. To do so, wait until the compressor starts up. If the direction of rotation is wrong then the compressor produces a loud and disgusting noise. Moreover, as the compressor is not compressing the refrigerant, the high pressure gauge (see element 5 point 4.1) will not increase its pressure and the low pressure gauge (see element 6 point 4.1) will not

decrease its pressure. In this case exchange two phases in the main power supply.

Once the two phases are changed, check the turn direction of the fans, because they are delivered in phase with the compressor. Verify that you did this operation correctly when the motor fans start working: The air should enter the condenser and go out through the top of the Ultracool unit. If the air is moving in the opposite direction then exchange two phases in the main power supply.

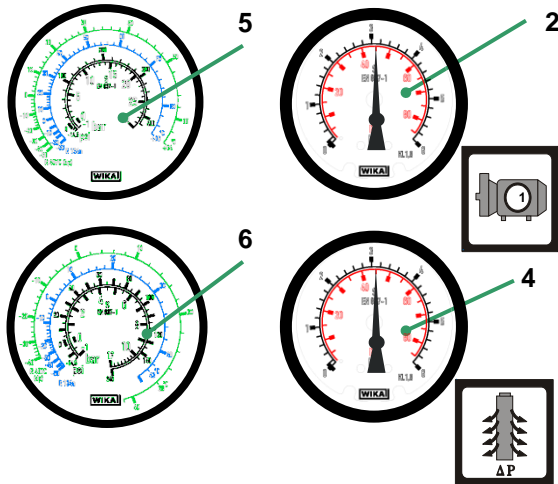
On the control thermostat select the desired temperature of the cold water outlet (see point 4.2.1). The Ultracool units are delivered with a pre-set temperature of 10°C (50°F).



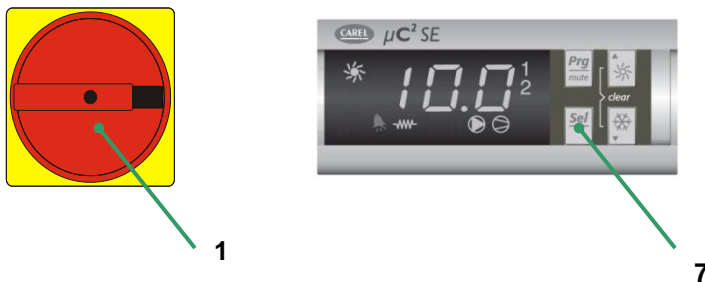
If the pump pressure is higher than the Pnom. value indicated in the characteristics plate and the outlet manual valve is already fully open, check that all manual valves in the circuit are fully open. If the pressure is still above Pnom. then check that the water pipes meet the requirements on point 2.5.

4 Control Panel

Pressure gauges



Control Panel

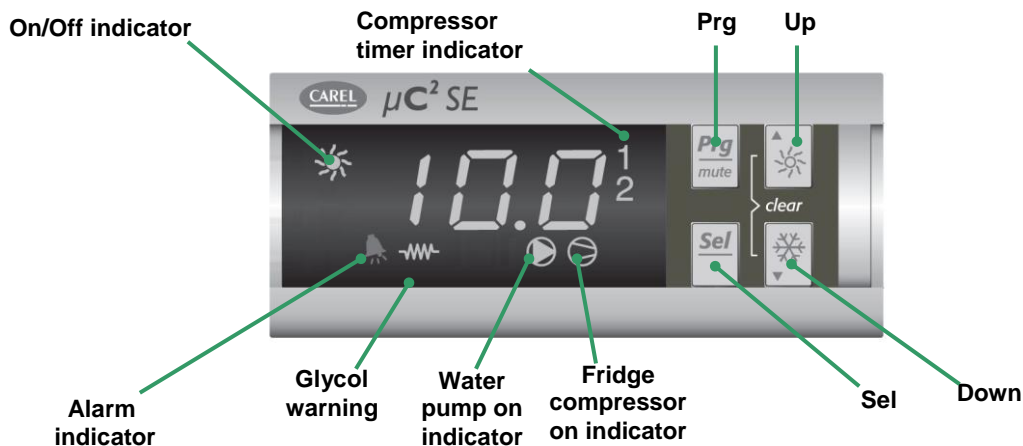


4.1 Components of the Control Panel

The control panel includes of the following elements:

1. **Main power switch:** connects and disconnects the Ultracool unit from the power supply.
2. **Water pressure gauge:** indicates the pressure supplied by the pump (superplus and standard with pump models) or the pressure at the inlet (standard models).
4. **Water filter pressure gauge:** indicates the pressure drop of the water filter and the evaporator (superplus models), or the water outlet pressure (standard models).
5. **High pressure gauge:** indicates the pressure at the high-pressure side of the refrigerating circuit (after the compressor). Models from UC-0800 to UC-2400, that have two refrigerating circuits, have also two pressure gauges.
6. **Low pressure gauge:** indicates the pressure at the low-pressure side of the refrigerating circuit (before the compressor). Models from UC-0800 to UC-2400, that have two refrigerating circuits, have also two pressure gauges.
7. **Control thermostat:** indicates the cold water temperature at the outlet of the Ultracool unit and enables it to be regulated.

4.2 Control Thermostat



4.2.1 Operation

As long as the main power switch is on, the display of the control thermostat shows the water temperature measured in the water tank. In the 50Hz version the display shows the temperature in °C and in the 60Hz version it shows it in °F.

Remote On/Off: The chiller cannot be started without an On signal through Remote On/Off control from the application (circuit closed between terminals 23 and 24). **See point 2.6.**

On/Off memory: The control thermostat comes back to the last mode/status (“On” or “Stand by”) at which the control thermostat it was powered off the last time. This means that, if the chiller was initially in Standby mode, if you turn Off and On the Main Power Switch, the chiller will still continue in Standby instead of turning On automatically.

To start the chiller again you should give an On signal locally through the thermostat keypad, with the UP key as indicated above or remotely through remote On/Off terminals 23 and 24.

Local On/Off: As long as the remote On/Off is connected, the chiller can be also turned On and Off locally through the control thermostat keypad. In order to start/stop the chiller press the UP button during a few seconds. When the chiller turns On the On/Off indicator signal is lit in the thermostat display as depicted above.

Temperature probe reading: During normal thermostat operation, pressing Up for less than 5 seconds allows displaying the current values of the different probes of the chiller. In this mode, pressing UP and DOWN selects the probe and pressing SEL displays the value of the selected probe.

To exit this mode, press PRG button or do not press any button for at least 60 seconds.

Setting the temperature: to introduce the required working temperature (between -5°C (23°F) and 20°C (68°F)) use the following procedure:

- Press **Sel** button for about 5 seconds, the display will show "- / -".
- Press **Down** button several times until the display shows "- r -".
- Press **Sel** button and the display will show "r01". This parameter is the setpoint.
- Press **Sel** button to display the current setpoint value.
- To increase or to decrease the value of the setpoint, use the **Up** and **Down** buttons.
- Press **Sel** button to confirm the new value. The display will show "r01".
- Press **Prg** button three times to exit the setpoint modification procedure. The display will show again the water tank temperature.

1. **On/Off indicator:** it indicates when the chiller is turned On.

2. **Alarm indicator:** this is lit when there is an alarm. Depending on the alarm it can cause fridge circuit or all the Ultracool unit to stop. The display will show the alarm code:

- Alarm code FL: Low water level alarm or pump overload.
- Alarm code A1: Circuit 1 antifreeze alarm.
- Alarm code A2: Circuit 2 antifreeze alarm.
- Alarm code tC1: Circuit 1 overload alarm.
- Alarm code tC2: Circuit 2 overload alarm.
- Alarm code LP1: Circuit 1 low refrigerant pressure.
- Alarm code LP2: Circuit 2 low refrigerant pressure.
- Alarm code HP1: Circuit 1 high refrigerant pressure.
- Alarm code HP2: Circuit 2 high refrigerant pressure.
- Alarm code Ht: High water temperature.
- Alarm code E1, E2, E3, E6: Temperature sensor disconnected, short-circuited or faulty.
- Alarm code EPr : EEPROM error during operation.
- Alarm code EPb: EEPROM error at start-up.
- Alarm code ELS: Low supply voltage.
- Alarm code EHS: High supply voltage.
- Alarm code EL1: Electromagnetic noise detected in the power supply.
- Alarm code Hc1, Hc2, Hc3, Hc4: Maintenance warning.

3. **External alarm contact adjustment (see electrical diagram):**

The UC unit has two terminals that provide a dry contact for a general alarm of the chiller. In order to modify the behaviour of this contact it is necessary to modify the value of the following control thermostat parameter:

If P21=0 (default value): The contact closes when there is an active alarm

If P21=1: The contact opens when there is an active alarm.

The procedure to modify the P21 parameter is the following:

- Press for about 5 seconds the button **Sel** and the display will show "- / -".
- Press **DOWN** button until the display shows "- P -".
- Press **Sel** button and the display will show "P21".
- Press **Sel** button.
- To adjust the P21 value to 0 or 1, use the **UP** and **DOWN** buttons.
- Press **Sel** button to confirm the new value. The display will show "P21".
- Press **Prg** button three times to exit the modification procedure.

- 3. Glycol warning:** this indicator is lit when the working conditions of the chiller require ethylene glycol as antifreeze agent in the water circuit to avoid freezing. Be sure that the water mixture has the suitable ethylene glycol concentration when this lit is on. Please check **point 3.1** from this manual to adjust the ethylene glycol concentration of the water mixture according to the ambient temperature and antifreeze set point.
- 4. Pump On indicator:** this remains lit when the pump is working.
- 5. Compressor On indicator:** this remains lit when at least one of the compressors is working.
- 6. Compressor timer indicator:** When “1” , “2” , “3” or “4” blinks it means that the thermostat is delaying the compressors start up. Once a compressor starts the number stays lit fix on the display.

5 Maintenance

5.1 Basic Maintenance

Weekly:

Verify that the water temperature indicated on the control thermostat is approximately at the setpoint.

Verify that the pressure of the pump is the same as the nominal pressure (P_{nom}) indicated in the characteristics plate.

Verify the water level in the tank.

Verify the state of the water filter element; if the pressure drop exceeds 1,5 bar (22 psi), change the filter element (the filter is installed at the water inlet line inside the chiller).

Monthly:

With the Unit disconnected (Main power switch OFF), clean the condenser with a blast of compressed air, from the inside towards the outside.

Clean the housing, internally and externally, eliminating the dust present especially on the water pump rack.

Yearly:

Change the filter element and refill the water circuit with water of the required quality (see annex 9), the suitable glycol concentration according to point 3.1 of this manual and the Refrfluid B additive supplied with the chiller (2 liters per each 100 liters of water tank volume).

Preventive maintenance warning (Hc1, Hc2, Hc3 or Hc4)

The control thermostat has a preventive maintenance warning based on the working hours. When this warning appears, contact an authorised technical service to perform the preventive maintenance.

6 Troubleshooting

6.1 Possible Causes of Defaults

In the following chart the possible causes for an alarm are given together with their solution:

DEFAULT	CAUSE	SOLUTION	RESTART PROCEDURE
HP1/2 Alarm due to high pressure of the refrigerant: the pressure of the refrigerating circuit 1 (HP1) or circuit 2 (HP2) is higher than maximum allowed (28 bar (406 psi)). It stops the compressors of the respective circuit	Lateral and back panels of the housing open Low airflow into the condenser The ambient temperature is too high Water temperature too high High pressure switch failure Motor fan not working	Close the panels Check that there is enough free space in front of the condenser and clean the condenser if necessary Wait until the ambient temperature is lower (see point 3.1) Try to cool down the water in the circuit running the chiller with the application stopped. If the unit still stops, try doing this with the outlet valve completely closed Check that the high pressure switch is tripping at the right pressure (28 bar (406 psi)). Contact an authorized technical service to replace it Check the motor fan circuit breakers. If the problem persists contact authorized technical service	Disconnect the chiller and connect it again by turning Off/On the main power switch (element 1 on point 4.1)
LP1/2 Alarm due to low pressure of the refrigerant: the pressure of the fridge circuit 1 (LP1) or circuit 2 (LP2) is below the minimum allowed (1,7 bar (25 psi)). It stops the compressors of respective circuit	Ambient temperature too low Low pressure switch failure Water freezing Gas leakage	The minimum ambient temperature is 0°C (32°F). With the speed regulator option it is -15°C (5°F) Check that low pressure switch is tripping at the right pressure (1,7 bar (25 psi)). Contact an authorized technical service to replace it Verify the ethylene glycol content. See point 3.1. If the problem persists contact an authorized technical service Contact authorized technical service	The Low-pressure safety switch (SLP) automatically resets itself when the pressure is back to normal

DEFAULT	CAUSE	SOLUTION	RESTART PROCEDURE
tC1/2 Circuit 1 (tC1) compressors overload alarm Circuit 2 (tC2) compressors overload alarm	Excess current	Check if the electrical connections are correct. Check supply voltage and power surges	Disconnect the chiller (turn Off the main power switch, see element 1 on point 4.1). Open the electrical box and reset the corresponding circuit breaker. Turn On the main power switch and start the unit through the remote On/Off control
FL Water level alarm (Only SP units)	<p>Level switch did not switch to the “full” position</p> <p>Water leak in the internal circuit of the Ultracool unit</p> <p>Water leak in the external water circuit</p> <p>Water leak in the water pump</p>	<p>Check that the level switch works properly and that the tank is full enough. After disconnecting the Main Power switch open the back panel, open the water tank, lift the level switch manually. If it works correctly you should feel its contact “click”. Close the tank and the panel and try to start the unit again</p> <p>Contact authorized technical service</p> <p>Find the leak and get it repaired</p> <p>If there is a leak in the water pump seal contact authorized technical service to replace the whole water pump. Check that the water quality is inside the limits (see point 9)</p>	<p>The level switch automatically resets itself when there is enough water in the tank</p>
or Water pump overload (Only SP units)	Circuit breaker (see electrical diagram) is Off	Check if the electrical connections are correct. Check voltages, intensities and variations. Check water pressure. Check water quality. Check if the pump is blocked	Disconnect the chiller (turn off the main power switch, see element 1 on point 4). Open the electrical box of the chiller and reset the circuit breaker. Turn the Main power switch On and start the unit through the remote On/Off control

DEFAULT	CAUSE	SOLUTION	RESTART PROCEDURE
or Differential pressure switch trip / flow switch trip (Only ST units and units with Flow Switch option)	Water filter blocked Water filter blocked Possible freezing	Replace the water filter element and check the water quality Clean the water circuit Check the proportion of ethylene glycol	Switch the chiller Off and back ON to reset the alarm
A1/2. Circuit 1 antifreeze control (A1) operates continuously Circuit 2 antifreeze control (A2) operates continuously	Water circuit blocked Possible freezing due to low ambient temperature Water tank temperature sensor fault	Clean the water circuit, if necessary replace the water filter element. Check for closed valves in the circuit The ethylene glycol concentration must be according to point 3.1 and the antifreeze setpoint also has to be adjusted according to it. Contact authorized technical service Measure the water temperature inside the tank and check that it is approximately the same as shown on the control thermostat's display. If it isn't contact authorized technical service	The control will go back to normal operation when the problem is solved
Ht High water temperature	The water tank temperature is above 35°C (95°F) for some minutes	Check the cold water set point is within the limits indicated on point 3.1. Disconnect the application from the chiller for a while and run the chiller without load. If the problem persists contact authorized technical service	The chiller is still working normally
The control thermostat displays the following codes: E1, E2, E3, E6 EPr, EPb ELS, EHS	A temperature sensor (NTC sensor) is faulty, disconnected or short-circuited There is an internal memory error The power supply voltage is out of limits	Contact authorized technical service Contact authorized technical service Check that the power supply is within the specifications on point 2.6	The chiller can be restarted when the faulty part is replaced The chiller will go back to normal operation when the problem is solved

DEFAULT	CAUSE	SOLUTION	RESTART PROCEDURE
EL1	There are electromagnetic disturbances in the power supply	Check the quality of the power being supplied to the chiller. Eliminate the source of the disturbances or connect the chiller to a different power supply	The chiller is still working normally. The message disappears when the disturbances stop
Hc1, Hc2, Hc3, Hc4 Maintenance warning	The chiller has exceeded the working hours defined between preventive maintenances.	Contact authorised technical service for a preventive maintenance of the unit.	The chiller is still working normally. The authorised technical service will reset the warning during the preventive maintenance.

7 Technical Features

7.1 Technical features 50Hz

UC CE			300	400	500	650	800	1000	1350	1700	2400
Cooling capacity	kcal/h		29335	37232	41897	55403	75577	91463	119674	151097	227934
	kW		34,1	43,3	48,7	64,4	87,9	106,4	139,2	175,7	265,0
Water flow	l/h		5882	7415	8982	11765	14830	17964	23530	29660	43963
Water pressure	3 bar		3,9	3,6	3,3	3,7	3,4	3,3	4,3	3,4	3,6
	5 bar		6,2	5,9	5,5	6,5	6,2	5,1	5,7	5,0	5,4
Refrigerant circuits	Nº		1	1	1	1	2	2	2	2	2
Compressor	Nº		1	1	1	1	2	4	4	4	4
	kW (each)		6,7	8,7	10,9	13,8	11,5	6,7	8,7	11,5	14,1
	kW (total)		6,7	8,7	10,9	13,8	22,9	27,0	34,7	45,8	56,4
Condenser	Nº		1	1	1	1	2	2	2	2	2
	kW (each)		40,8	52,0	59,6	78,2	55,4	66,7	86,9	110,8	160,7
	kW (total)		40,8	52,0	59,6	78,2	110,8	133,3	173,8	221,5	321,5
Evaporator	Nº		1	1	1	1	2	2	2	2	2
	kW (each)		34,1	43,3	48,7	64,4	43,9	53,2	69,6	87,8	132,5
	kW (total)		34,1	43,3	48,7	64,4	87,9	106,4	139,2	175,7	265,0
Motor fan	Nº		2	2	2	2	4	4	6	6	6
	kW (each)		0,6	0,6	0,6	1,3	0,6	0,6	0,6	0,6	1,3
	kW (total)		1,2	1,2	1,2	2,5	2,4	2,4	3,6	3,6	7,5
	m3/h (total)		18000	18000	18000	23000	36000	40800	57000	55200	66000
3 bar pump	kW		1,5	1,5	1,5	2,2	2,2	3,0	5,5	5,5	7,5
	max	l/h	14000	14000	14000	25000	25000	20000	45000	40000	58000
	min		1400	1400	1400	2500	2500	2000	4500	4000	5800
	max	bar	4,6	4,6	4,6	4,7	4,6	4,8	5,2	5,2	5,3
	min		1,5	1,5	1,5	1,5	1,5	3	1,8	2,5	2,8
5 bar pump	kW		3,2	3,2	3,2	5,8	5,8	5,8	7,4	7,5	11,0
	max	l/h	15000	15000	15000	22000	25000	30000	30000	40000	58000
	min		1500	1500	1500	2200	2500	3000	3000	4000	5800
	max	bar	6,5	6,5	6,5	6,9	6,2	5,5	7,2	7,1	8,1
	min		3,4	3,4	3,4	4,5	7,2	3,8	3,5	3,5	4,2
Water filter	Nº		1	1	1	1	1	1	1	1	1
Volume water tank	l		210	210	210	300	300	500	500	500	500
Sound Pressure Level (1)	dB(A)		50,2	53,5	55,3	59,2	58,3	63,1	62,2	61,3	62,7
Power	ST	kW	7,9	9,9	12,1	16,3	25,3	29,4	38,3	49,4	63,9
	SP 3bar	kW	9,4	11,4	13,6	18,5	27,5	32,4	43,8	54,9	71,4
	SP 5bar	kW	11,1	13,1	15,3	22,1	31,1	35,2	45,7	56,9	74,9
Max. Fuse	A		40	40	50	63	80	100	150	150	200
Voltage	V/Ph/Hz		400V/3Ph/50Hz								
Nominal COP			4,30	4,39	4,03	3,95	3,47	3,62	3,64	3,55	4,15

(1) Sound Pressure Level at 5 meters from the chiller in free-field conditions

Data related to nominal conditions: Water outlet temperature 10°C and ambient temperature 25°C

7.2 Technical features 60Hz

UC USA		300	400	500	650	800	1000	1350	1700	2400	
Cooling capacity	ton	11,7	14,4	16,3	21,6	29,4	36,2	46,8	58,7	88,9	
	kW	41,3	50,8	57,5	76,1	103,4	127,3	164,6	206,7	313,0	
Water flow	US gal/min	25,9	32,6	39,5	51,8	65,3	79,1	103,6	130,6	193,6	
Water pressure	40 psi	68	65	62	55	44	65	71	61	42	
	70 psi	88	84	83	74	71	65	71	86	74	
Refrigerant circuits	Nº	1	1	1	1	2	2	2	2	2	
	Nº	1	1	1	1	2	4	4	4	4	
Compressor	kW (each)	8,4	10,9	14,1	17,4	14,8	8,7	11,1	14,8	17,8	
	kW (total)	8,4	10,9	14,1	17,4	29,6	34,9	44,5	59,3	71,2	
Condenser	Nº	1	1	1	1	2	2	2	2	2	
	ton (each)	14,1	17,5	20,3	26,6	18,9	23,0	29,7	37,8	54,6	
	ton (total)	14,1	17,5	20,3	26,6	37,8	46,1	59,4	75,5	109,1	
Evaporator	Nº	1	1	1	1	2	2	2	2	2	
	ton (each)	11,7	14,4	16,3	21,6	14,7	18,1	23,4	29,3	44,4	
	ton (total)	11,7	14,4	16,3	21,6	29,4	36,2	46,8	58,7	88,9	
Motor fan	Nº	2	2	2	2	4	4	6	6	6	
	kW (each)	0,81	0,81	0,81	2,91	0,81	0,81	0,81	0,81	2,91	
	kW (total)	1,6	1,6	1,6	5,8	3,2	3,2	4,9	4,9	17,5	
	scfm	11889	11889	11889	18482	23543	28252	38847	37081	54032	
40 psi pump	kW	2,5	2,5	2,5	2,5	2,5	4,0	6,0	6,0	7,5	
	max min	US gal/min	79,3	79,3	79,3	79,3	79,3	114,5	158,5	158,5	308,2
			7,9	7,9	7,9	7,9	7,9	11,4	15,9	15,9	30,8
	max min	psi	70	70	70	70	70	75	78	78	54
			36	36	36	36	36	49	55	55	26
70 psi pump	kW	3,4	3,4	3,4	4,0	4,0	4,0	6,0	11,0	11,0	
	max min	US gal/min	70,4	70,4	70,4	114,5	114,5	114,5	158,5	206,9	308,2
			7,0	7,0	7,0	11,4	11,4	11,4	15,9	20,7	30,8
	max min	psi	99	99	99	75	75	75	78	106	90
			42	42	42	49	49	49	55	55	42
Water filter	Nº	1	1	1	1	1	1	1	1	1	
Volume water tank	US gal	55	55	55	79	79	132	132	132	132	
Sound Pressure Level (1)	dB(A)	55,6	57,4	58,3	64,8	61,3	65,2	64,3	64,3	68,5	
Power	ST	kW	10,0	12,5	15,8	23,2	32,9	38,1	49,3	64,2	88,6
	SP 40psi	kW	12,5	15,0	18,3	25,7	35,4	42,1	55,3	70,2	96,1
	SP 70psi	kW	13,4	15,9	19,2	27,2	36,9	42,1	55,3	75,2	99,6
Max. Fuse	A	40	40	50	63	80	100	150	150	250	
Voltage	V/Ph/Hz	460V/3Ph/60Hz									
Nominal COP		4,13	4,06	3,65	3,28	3,14	3,34	3,34	3,22	3,53	

(1) Sound Pressure Level at 5 meters from the chiller in free-field conditions

Data related to nominal conditions: Water outlet temperature 10°C (50°F) and ambient temperature 25°C (77°F)

8

Log Book

8 Log Book

8.1 Log Book

Date	Observations	Signature

9 Annexes

9.1 Water quality

In order to protect the water circuit of the Ultracool units, the water to be cooled must have specific physical/chemical properties so that it is not aggressive. If this water is outside any of the limits listed in the table below, it can seriously damage some of the materials of the Ultracool unit.

Parameter	Limit values
pH	7 – 8
Total Hardness (TH)	< 150 ppm
Conductivity	50 – 500 $\mu\text{S/cm}$
NH ₃	< 2 ppm
Total iron ions (Fe ²⁺ and Fe ³⁺)	< 0,2 ppm
Chloride (Cl ⁻)	< 300 ppm
H ₂ S	< 0,05 ppm
Solid particles	< 300 μm
Ethylene glycol	30%

The Total Hardness is specified in ppm (mg/L) of Ca₂CO₃.

Please note that ultra pure waters like deionised water can also be harmful for some of the materials of the Ultracool units as they have a conductivity below 50 $\mu\text{S/cm}$.



LAUDA Ultracool S.L. will not accept any warranty for any damage caused by water that is out of one or more of the above limits.



Do not use automotive antifreeze. Use lab grade ethylene glycol only! Do not use an ethylene glycol concentration above 30%; this would damage the water pump.

9.2 MSDS Refrfluid B

TECHNICAL SHEET

CHARACTERISTICS

Concentrated fluid specially designed for the treatment and conservation of the inside of tanks and piping in cooling equipment or water recirculating chillers (closed circuit). Its composition has been designed to accomplish two different objectives using a single fluid, resistant to temperature changes:

- It contains an anticorrosive, that protects against all types of corrosion to the metal components of the system, such as iron, aluminum, copper and welds of different alloys.
- It includes protectors for refrigeration systems and industrial processes.

INSTRUCTIONS FOR USE

REFRI-FLUID-B has to be used diluted into a proportion of 2 litres of REFRI-FLUID-B in 100 litres of demineralised water.

If the machine has to work at temperatures below 0 °C it is necessary to use ethylene glycol as antifreeze agent.

With a 20% of ethylene glycol it has a large antifreeze capacity, preventing freezing at temperatures as low as -7°C. To achieve this, dilute 2 litres of REFRI-FLUID-B into a proportion of 80 litres of demineralised water and 20 litres of ethylene glycol.

It is recommended to change the cooling water at least once per year.
For other temperatures or more information see the Operation Manual.

SAFETY DATA SHEET

In accordance with Regulation (EC) No. 1907/2006 (REACH)

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY /UNDERTAKING

Product identifier: REFRI-FLUID B

Relevant identified uses: Concentrated protector and anticorrosive for closed circuits.

Details of the supplier of the safety data sheet: SENIGRUP, S.L.

C-55 Km.25 Polígono Industrial Raval dels Torrents Nave-A

08297 Castellgalí (Barcelona).

Tel. +34 93 833 28 88 – Fax.+34 93 833 28 89

Emergency telephone number: +34 93 833 28 88

e-mail: senigrup@senigrup.com

2. HAZARDS IDENTIFICATION

Classification: The product has been classified and labeled according to current EC Regulations for classification of dangerous substances and preparations.

- Labelling according to Directives 67/548/EEC and 1999/45/EC



Harmful (Xn)

Risk Phrases:

R63 Possible risk of harm to the unborn child.

Safety phrases:

S2 Keep out of the reach of children.

S36/37 Wear suitable protective clothing and gloves.

S46 If swallowed, seek medical advice immediately and show this container or label.

Other hazards / phrases:

Do not swallow.

Contains: sodium 2-ethylhexanoate

- Labelling according Regulation (EC) No 1272/2008 [CLP]

Pictogram



Signal Word: Warning

Hazard Statements

H361d - Suspected of damaging the unborn child

Precautionary Statements

P102 Keep out of the reach of children.

P281 - Use personal protective equipment as required

Contains: sodium 2-ethylhexanoate

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance or mixture: Mixture

Chemical name	CAS number	EC number	REACH number	%	Classification	Regulation (EC) No 1272/2008
sodium 2-ethylhexanoate	19766-89-3	243-283-8	**	5-15	Xn/Repro. Cat. 3; R63	Repr. 2; H361d

** Not available or substance currently exempt from REACH registration.

For full text of R phrases, H and EUH mentioned in this Section, see Section 16. Occupational exposure limits, if available, are listed in section 8.

4. FIRST AID MEASURES

In case of accident phone to the Spanish Toxicological Information Service.Tf.+34 915620420

In case of eye contact: Rinse with plenty of water during 15 minutes keeping the eyes open and consult a doctor.

In case of skin contact: Wash off immediately with plenty of water and soap.

If swallowed: Rinse mouth, drink water, does not provoke the throwing out. Call a physician immediately.

If inhaled: Remove the fresh air. Give oxygen. Consult a physician. Move the person to fresh air and keep at rest in a comfortable position for breathing. If symptoms persist, seek medical advice and show the label or the container.

5. FIREFIGHTING MEASURES

Suitable extinguishing media: Pulverized water, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media: High volume water jet.

Special protection equipments: In case of fire, wear appropriate protective equipment and self contained breathing apparatus with a full face protection operating in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Human beings protection: Restrict the area. In case of contact with the product take out the contaminated clothes and clean with plenty of water the area.

Environment protection: Do not canalize the product to public water conductions.

Clearing and collection: Collect the product with absorbent material. Clean the remaining with plenty of water.

7. HANDLING AND STORAGE

Handling: Handle in accordance with good industrial hygiene precautions and observe safety practices. Do not eat, drink or smoke in areas where this material is handled or stored.

Storage: Store according to local legislation. Store the containers in a dry, well-ventilated area away from heat and direct sunlight. Keep container tightly closed and sealed until ready for use. Store in original container. Do not store in unlabeled containers. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Do not store this material near food or drinking water.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limits:

Chemical name	Exposure limit values	
	VLA-ED (daily exposure)	VLA-EC (short-term exposure)
sodium 2-ethylhexanoate	Not established	Not established

Special person's protection equipment: Proper clothes for chemical products handling.

Breathing protection: not required.

Hands protection: rubber gloves.

Eyes protection: safety glasses.

Skin protection: body and shoes protectors.

General protection measures: Do not eat, drink nor smoke during the use of this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: liquid.

Color: red-pink

Smell: sweet.

Fusion point: Under 0°C.

Boiling point: Over 100°C.

Ignition temperature: -

Density (at 20°C): 1.01-1.02 g/cm³.

Solubility in water: may be mixed with water at all proportions.

Solubility in water (20 ° C): miscible in water.

Solubility in other solvents: alcohols and organic solvents.

PH value at 20 ° C: 9.5-10.0

Viscosity: 5-20 centipoise in Brookfield

10. STABILITY AND REACTIVITY

Conditions to avoid: Avoid the contact with rusted products.

Dangerous reactions: any special

Materials to avoid: oxidizing agents

Products of dangerous decomposition: It does not decomposed.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects: There are no experimental data available

Inhalation: No known significant effects or critical risks.

Contact with skin: In cases of severe exposure, may produce irritation.

Toxicity for reproduction: Possible risk of harm to the unborn child. Pregnant women should not be exposed to this product.

12. ECOLOGICAL INFORMATION

Behavior in the environment: Biodegradable product.

Toxic effects: Slightly hazardous.

13. DISPOSAL CONSIDERATIONS

Product: The product has to be eliminated considering European standards, national, regional and local. In waste management companies authorized.

Containers / packaging: Eliminate as the product.

The user must take into account the existence of possible regulations European, national, regional and local respect.

14. TRANSPORT INFORMATION

This product is not classified for transport

15. REGULATORY INFORMATION

15.1 Regulatory and safety, health and environment legislation for the substance or mixture.

No data available.

15.2 Chemical safety assessment

Not done a chemical safety assessment for the mixture

16. OTHER INFORMATION

Text of R phrases mentioned in Section 3:

R63 Possible risk of harm to the unborn child.

Text of H and EUH phrases mentioned in Section 3:

H361d - Suspected of damaging the unborn child

The information contained in this safety data sheet is until this date, considered true and correct. However, the data supplied and the recommendations do not imply a warranty. Because the conditions of use are beyond the control of our company, it is responsibility of the user to ensure the correct the conditions for a safe use of the product. The information contained in this safety data sheet does not represent the technical specifications. For these owes please read our data sheet technical.

CE EC Declaration of conformity **GB**

97/23/EC (Defined by pressure equipment directive)

2006/42/EC (Known as the 'Machinery Directive')

LAUDA Ultracool S.L.

Based in Terrassa-Barcelona-Spain, Colom II Street, nº 606, Postal Code 08228

Declares that under our sole responsibility for supply/manufacture of the product:

Model

UC-0300/0400/0500/0650/0800/1000/1350/1700/2400

To which this declaration relates, is in conformity with the Directive 97/23/EC issued by the EUROPEAN COMMUNITY

CE EC Konformitäts Erklärung **D**

97/23/EC (Definiert in der Druckgeräteverordnung)

2006/42/EC (Bekannt als 'Maschinen Weisung')

LAUDA Ultracool S.L.

Mit Sitz in Terrassa-Barcelona-Spain, Colom II Strasse, nr. 606, Postfach 08228

Erklärt, daß unserer alleinigen Verantwortung unterliegt, das Lieferung/Herstellung des Produktes:

Modell

UC-0300/0400/0500/0650/0800/1000/1350/1700/2400

Auf welches diese Erklärung Bezug nimmt, den erlassenen Weisungen 97/23/EC der EUROPÄISCHEN GEMEINSCHAFT

CE Declaration de conformité CE **F**

97/23/EC (Défini par la directive des équipements sous pression)

2006/42/EC (connue comme 'Directive Machine')

LAUDA Ultracool S.L.

Domicilié à Terrassa-Barcelona-Espagne, rue Colom II, no. 606

Déclare sous sa seule responsabilité de fournisseur/fabriqueur du produit:

Modél

UC-0300/0400/0500/0650/0800/1000/1350/1700/2400

Objet de cette déclaration, est en conformité avec la Directive 97/23/EC issue de la COMMUNAUTE EUROPEENNE

CE Declaración de conformidad CE **E**

97/23/EC (Definida por la directiva de equipos a presión)

2006/42/EC (Conocida como 'Directiva de maquinaria')

LAUDA Ultracool S.L.

Con sede en Terrassa-Barcelona-España, calle Colom II nº 606, C.P. 08228

Declara que, bajo nuestra responsabilidad como proveedores/fabricantes, el producto:

Model

UC-0300/0400/0500/0650/0800/1000/1350/1700/2400

Es conforme a la Directiva 97/23/EC establecida por la COMUNIDAD EUROPEA.

CE EC Konformitäts Erklärung **NL**

97/23/EC (Ontworpen volgens de Pressure Equipment Directive - richtlijnen)

2006/42/EC (Bekend als 'machine richtlijn')

LAUDA Ultracool S.L.

Gezeteld in Terrassa-Barcelona-Spanje, Colom II Straat, nr. 606, Postcode 08228

Verklaart dat onder volledig eigen verantwoordelijkheid voor de levering/fabricage van onderstaand product

Model

UC-0300/0400/0500/0650/0800/1000/1350/1700/2400

Waartoe deze verklaring behoort, conform is aan de richtlijn 97/23/EC, uitgegeven door de EUROPESE GEMEENSCHAP

CE Declaration de conformité CE **I**

97/23/EC (Definita dalla direttiva dei recipienti a pressione)

2006/42/EC (conforme alla 'Direttiva Macchine')

LAUDA Ultracool S.L.

Colom II Street, nº 606, Terrassa-Barcelona Codice Postale 08228

Dichiara la responsabilità per la produzione prodotto:

Model

UC-0300/0400/0500/0650/0800/1000/1350/1700/2400

Il contenuto della presente relazione è in conformità con la Direttiva 97/23/EC della COMUNITÀ EUROPEA

CE Declaración de conformidad CE **CZ**

97/23/EC (Definováno směrnici pro tlaková zařízení)

2006/42/EC (Machinery Directives)

LAUDA Ultracool S.L.

Se sídlem Terrassa-Barcelona-Spain, Colom II Street, nº 606, Postal Code 08228

Z titulu své odpovědnosti výrobce a dodavatele prohlašuje ze toto prohlášení o shodě se vztahuje k zařízení:

Model

UC-0300/0400/0500/0650/0800/1000/1350/1700/2400

A je plně v souladu se směrnicí Evropského společenství c. 97/23/EC

CE EC Konformitäts Erklärung **DK**

97/23/EC (Defineret af direktivet for trykluftudstyr)

2006/42/EC (Kendt som 'Maskindirektivet')

LAUDA Ultracool S.L.

Bosiddende i Terrassa-Barcelona-Spain, Colom II Street, nº 606, Postal code 08228

Erklærer under eneansvar for levering/fremstilling af produktet:

Model

UC-0300/0400/0500/0650/0800/1000/1350/1700/2400

Hvortil denne erklæring relaterer, at produktet er i overensstemmelse med Direktivet 97/23/EC udstedt af det EUROPÆISKE FÆLLESSKAB

CE Declaration de conformité CE **RO**

97/23/EC (Conform reglementarilor de utilizare a echipamentelor sub presiune)

2006/42/EC (Cunoscuta ca 'Directiva Constructiilor de Masini')

LAUDA Ultracool S.L.

Domicilié à Terrassa-Barcelona-Espagne, rue Colom II, no. 606

Declara pe proprie raspundere ca furnizarea/fabricarea produsului:

Model

UC-0300/0400/0500/0650/0800/1000/1350/1700/2400

La care se refera aceasta declaratie este in conformitate cu Directiva 97/23/EC emisa de COMUNITATEA EUROPEANA

LAUDA
ultracool

Xavi Prats
Technical Director