

Operating Instructions

LAUDA Through-flow Coolers

DLK 5, DLK 15, DLK 30

From series 950
04/93 E
YAFE0001

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Functional Principle

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Summary of LAUDA Thermostats

1. Brief operating instructions

Check through-flow cooler during unpacking for possible transport damage, and, if necessary, notify carrier or post office.

1.1 Set up unit according to Section 4.

1.2 Connect tubing according to Section 5.

Thermostat and through-flow cooler without external system: Section 5.1.

Thermostat and through-flow cooler with pressure-tight external system: Section 5.21.

Thermostat with DUPLEX pump, through-flow cooler and open bath: Section 5.3.

1.3 Secure tubing with clips to prevent slipping !

1.4 Check the supply voltage against the data on the rating label.
Plug in power cord.

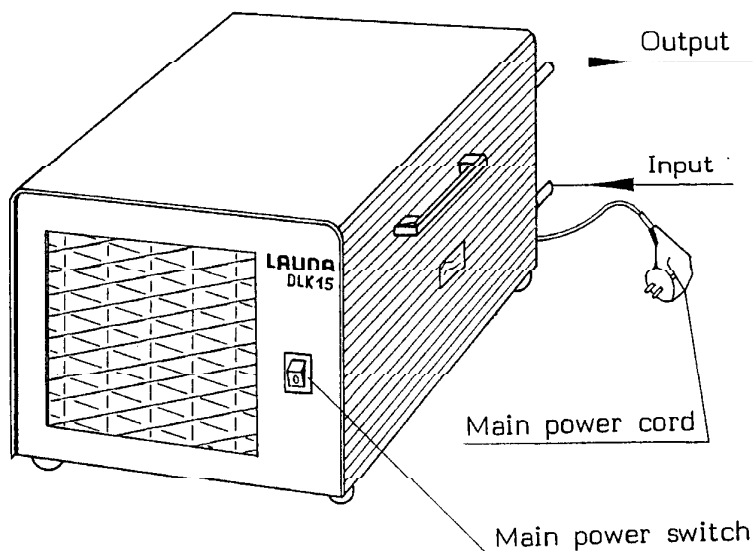
Attention:

Switching on: First switch-on the thermostat, then switch-on through-flow cooler at the main power switch (green lamp lights up).

Switching off: First switch-off the through-flow cooler, then the thermostat.

Never allow the through-flow cooler to run without liquid.

LAUDA Through-flow Coolers
DLK 5, DLK 15, DLK 30



2. Table of Data

Type	Through-flow cooler		
	DLK 5	DLK 15	DLK 30
Cooling capacity (W)	20°C/100	-10°C/115	-20°C/170
Bench area W x D x H (mm)	195x375x285	430x420x280	500x460x300
Weight (kg)	14	25	34
Power supply	220-240 V, 50/60 Hz 0.1 kW	220-240 V, 50 Hz 0.2 kW	220-240 V, 50 Hz 0.5 kW
Interference suppression		N	
Ref. No.:	LFD 001	LFD 102	LFD 103

3. Basic Construction

These operating instructions apply to three through-flow coolers of various cooling capacity.

Common feature of all three units are the air-cooled, fully hermetically sealed and thus maintenance-free refrigerating units.

4. Unpacking and setting up

Carefully packaging should prevent transport damage. If, however, the units should arrive damaged, the carrier, the post office, or the railway authorities have to be informed so that it can be inspected.

Standard Accessories

2 pieces of 50 cm silicone tubing, insulated
Operating instructions

Setting up

The condenser of the refrigerating machine is air-cooled. Fresh air is drawn in at the front of the unit and blown out at the back. Thus the unit must be set up so that the free air flow is not obstructed. It is particularly important that the air drawn in is not excessively warm, i.e. the unit must not be placed near a radiator or any other source of heat.

Higher ambient temperatures result in a reduced performance. When the compressor is overloaded, e.g. due to high refrigerant pressure or high ambient temperature, the power supply is automatically interrupted via a bimetallic strip (KLIXON). The compressor switches on automatically as soon as the overload has been rectified, i.e. the compressor has cooled down.

5. Connection of external systems

A through-flow cooler can only be connected to thermostats which are provided with a circulating pump and connectors for the connection of external circulating systems. For connection the use of insulated tubing (8-9 mm int. dia.) is recommended.

In order to ensure a good circulation of the pump the tubing should not be too long. If possible the through-flow cooler should be set up close to the thermostat.

5.1 Thermostats without external systems

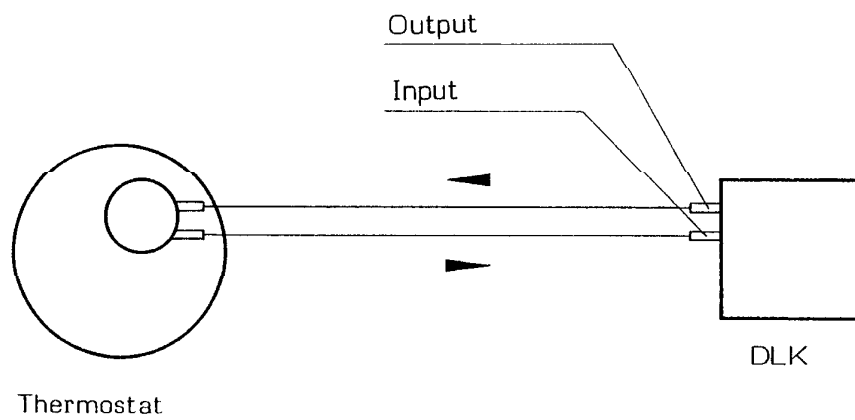


Fig. 2 Thermostat and through-flow cooler without external system

Fig. 2 shows the easiest possibility of connection. The connectors of the circulating pump are connected to the fittings of the through-flow cooler.
Note: Observe the through-flow direction ! The thermostat will not be damaged if the connections are interchanged, however, the cooling capacity will be considerably reduced as an air cushion develops in the counter-flow heat-exchanger.

5.2 Thermostats with connected pressure-tight external system

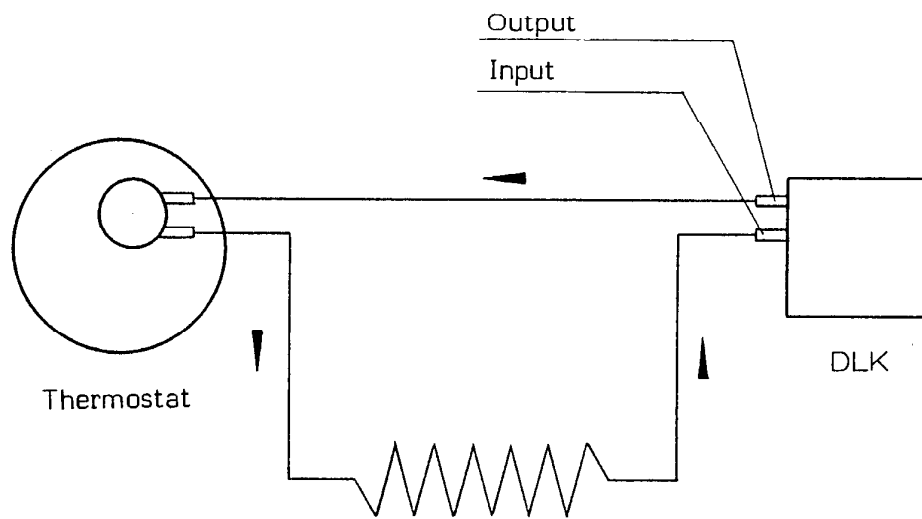


Fig. 3 Thermostat and through-flow cooler with pressure-tight external system

If a pressure-tight external system is connected to an Ultra-thermostat, the through-flow cooler must be incorporated in the return line of external system and thermostat.

5.3 Thermostats with DUPLEX pump, through-flow cooler and open bath

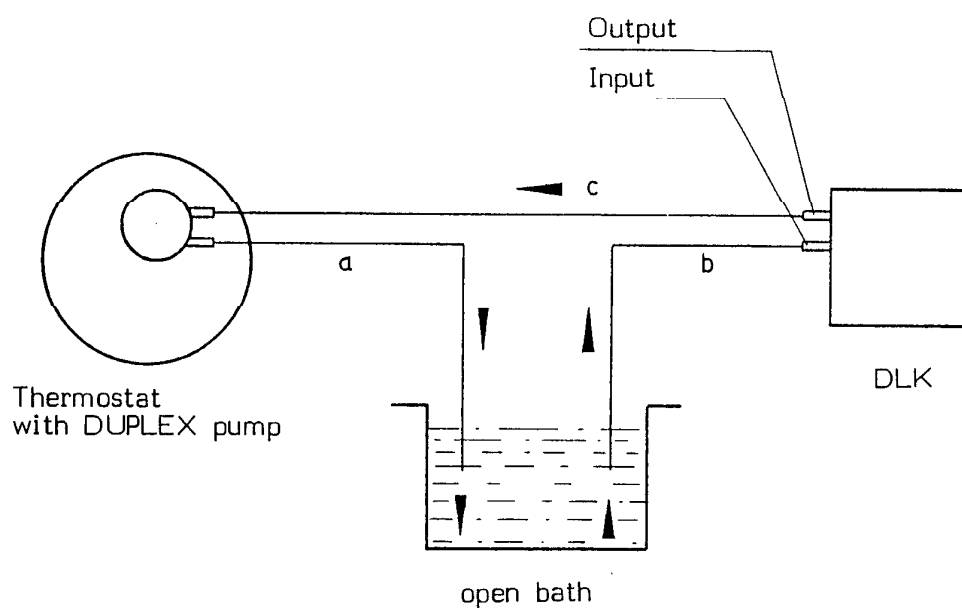


Fig. 4 Thermostat with DUPLEX pump, through-flow cooler and connected open bath

In case the Ultra-thermostat is equipped with a DUPLEX pump and an open bath is controlled the connection of the through-flow cooler is also possible. The through-flow cooler must be incorporated on the return line (suction line).

It is recommended that when connecting to an open bath the tubing should have the same diameter and the same length. When this requirement is observed, there will be an equal pressure loss in both tubings.

Please observe: In order to ensure good functioning of the DUPLEX pump while using the through-flow cooler, the length of the two return tubes must add up to the same length as the outflow tube.

$$\text{Length a} = \text{Length b} + \text{Length c}$$

6. Starting up

6.1 Always connect the unit to a grounded socket only. Check details on the type label against the supply voltage.

6.2 Prevent the tubing from slipping.

6.3 CAUTION:

Switching on: first switch-on the thermostat, then switch-on the through-flow cooler at the main power switch (green lamp lights up).

Switching off: first switch-off the through-flow cooler, then the thermostat.

Never allow the through-flow cooler to run without liquid as in this case the remaining liquid in the exchanger will be excessively cooled. It will freeze resulting in damaging the exchanger.

6.4 Thermostats fitted with a lever for control of the pump flow allow cooling adjustment. It should be very "sensitive" in order to achieve the best temperature control.

6.5 Contrasting to the normal continuous cooling mode, Ultra-thermostats, i.e. thermostats with the relay boxes R 2, R 3, R 300 or R 325, perform cooling in the "modulated" mode using the MV-relay R 16 and a solenoid valve.

7. Maintenance

LAUDA through-flow coolers are designed for continuous operation. They operate largely without any major maintenance.

We are always happy to deal with inquiries, suggestions and complaints.

Accessories

Silicone tubing, uninsulated
Silicone tubing, insulated

Ref. No. RKJ 016
Ref. No. LZS 001

Operating principle

The built-in refrigeration compressor continuously cools down a counter-flow heat-exchanger (condenser) insulated with polyurethane foam. The connections of the heat-exchanger are to the back and are provided with tube fittings.

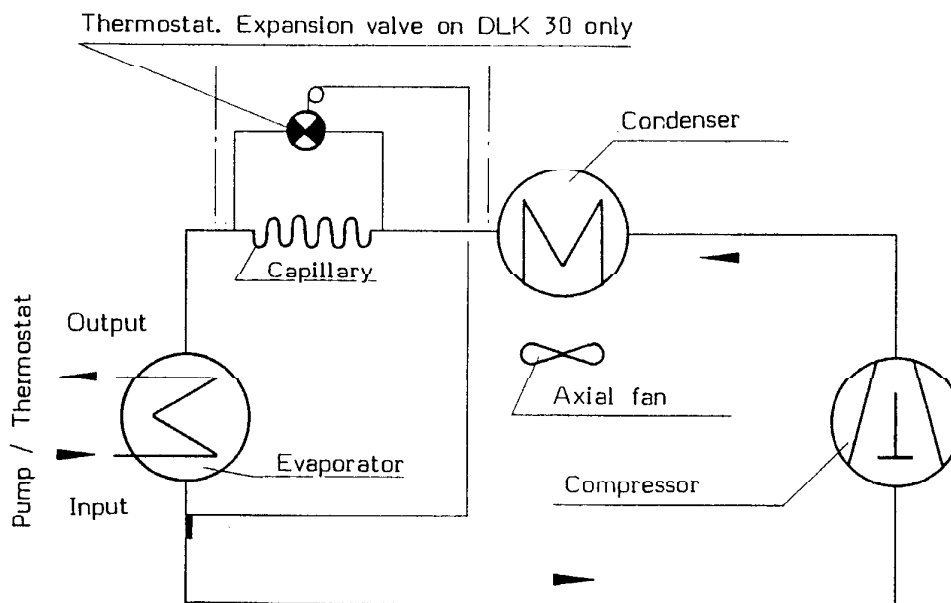
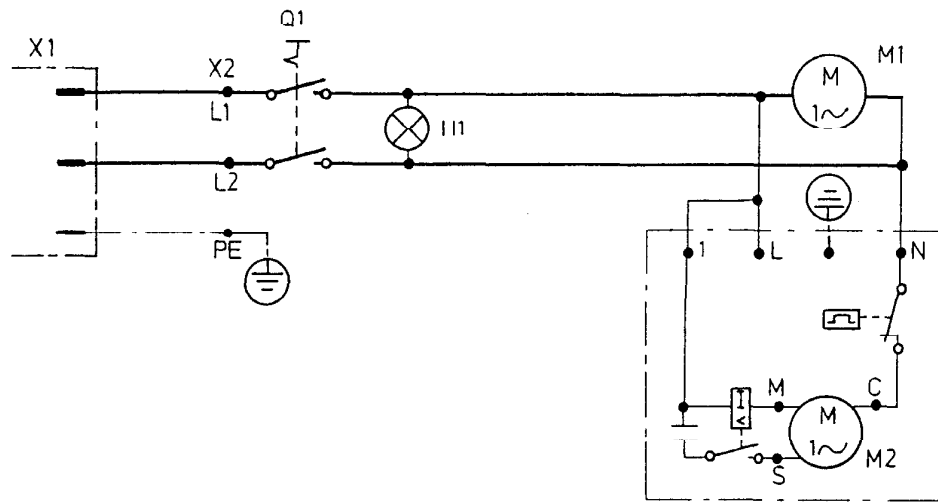


Fig. 5 Diagram of the refrigerant circuit of through-flow cooler DLK

The refrigeration system is charged with refrigerant (R 22) ready for operation and is largely maintenance-free. The completely hermetically sealed motor-compressor also operates largely maintenance-free. Control of the evaporation temperature is performed by means of a capillary on DLK 5 and DLK 15 and by means of an injection valve on DLK 30. All tubing connections are hard soldered using inert gas which should largely prevent the occurrence of leakage.

Circuit Diagram



H 1	Pilot lamp Mains
M 1	Fan
M 2	Compressor
Q 1	Main power switch
X 1	Mains input
X 2	Terminal