

Operating Instruction

LAUDA Immersion Cooler
ETK 30, ETK 50

Valid from serie A 01 (see item 9)
06/03
YAFE0002

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1 Brief operating instruction

Check if the immersion cooler has sustained damage. If necessary inform the forwarding agent or post office.

Set up the instrument according to section 4.

Compare the voltage and the frequency mentioned on the rating label with your network. Put in the power supply plug.

1.1 Starting up

Immerse the cooling coil into the consuming device concerned.

Maximum cooling capacity is only obtained with completely immersed cooling coil.

During operation the bending radius must not be smaller than 150mm

ETK 50: Adjust the desired temperature. ETK 30 has no temperature control.

Switch on the instrument at the mains switch (green lamp goes on).

ETK 50: If the thermostating liquid has obtained the desired value the control device operates. Pilot lamp "Cooling" goes on and out.

ETK 30: Cools down to its lowest temperature.

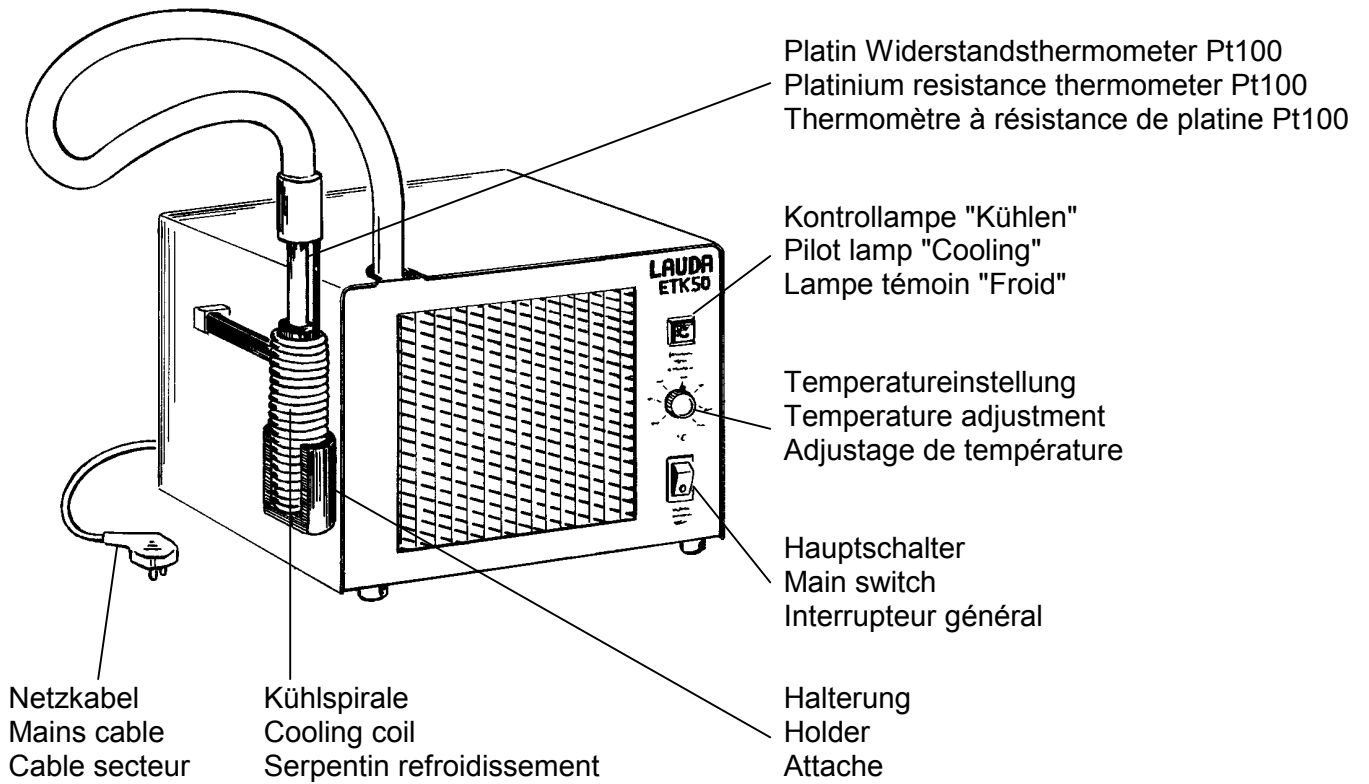
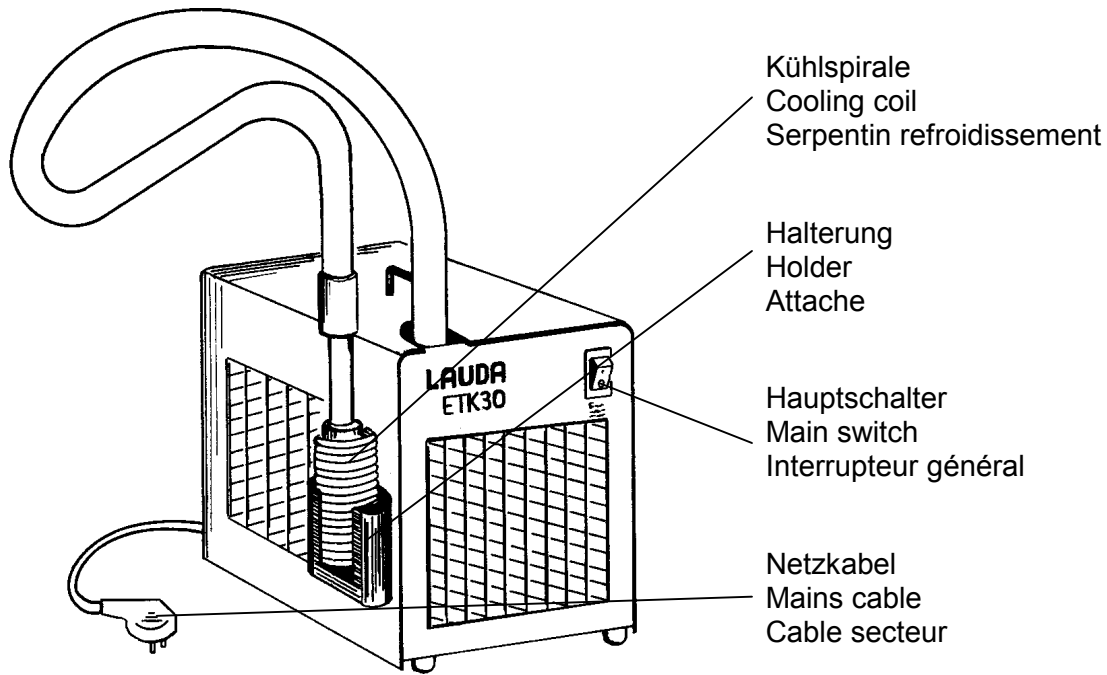
2 Technical Data

Type		ETK 30	ETK 50
Operating temperature (without external heating)	[°C]	-30...20°C	-50...20°C
Operating temperature (with external heating)	[°C]	-30...100°C	-50...100°C
Probe		---	Pt 100
Control action		---	2-point action
Temperature accuracy (at -10°C)	[±°C]	±0.5°C	±0.5°C
Kühlleistung	20°C	[kW]	0.15
	-10°C		0.13
	-30°C		0.04
	-50°C		---
			0.04
Cooling unit		Air-cooled, fully hermetical	
Base (W x D x H)	[mm]	250x360x285	460x410x270
Weight	[kg]	17	33
Power supply	[V;Hz]	230V; 50/60Hz	230V; 50Hz
		Safety class 1 according to VDE 0100	
Interference level	[kW]	0,2	0,3
Ref.-no			
230V; 50Hz		LFE 002	LFE 103

Units to EU Directive 89/336/EWG (EMC) and 73/ 23/ EWG (low-voltage) with CE-mark.

We reserve the right to make technical alterations!

LAUDA Immersion Coolers
ETK 30, ETK 50



3 General design

The immersion coolers ETK 30 und ETK 50 have air-cooled fully hermetically encased condensing units which are completely maintenance-free.

The cooling coil made from stainless steel is connected with the condensing unit by an insulated flexible metal tube of 1,5m length. The electronic temperature controller of Immersion Cooler ETK 50 controls a solenoid valve in the cooling circuit. The temperature probe (Pt 100) is mounted in the cooling coil.

ETK 30 has no temperature control.

4 Unpacking and Set-up

The careful packing largely protects from damages during transit. If, however, the Immersion Coolers is damaged inform the forwarding agent or the post office.

Standard accessories:

Operating Instruction

4.1 Set-up

The condenser of the cooling unit is air-cooled. Fresh air is sucked at the front of the instrument and the warmed air is removed at the back. In order to guarantee good air circulation the venting slots must be free. Take care that no extremely warm air is sucked. Do not place the instrument near a heater.

Increased ambient temperature results in reduced capacity. In case of an excessive overloading of the compressor, caused by too high refrigerant pressure or too high ambient temperature, the instrument is switched off automatically by a bimetal switch (KLIXON). It is switched on automatically as soon as the compressor has cooled down.

5 Cooling of Consuming Devices

By simple suspending of the cooling coil any bath contents can be cooled. In this way Thermostats or other baths to be tempered can be operated also below ambient temperature. It is possible to obtain operating temperatures to -30°C (ETK 30) and -50°C (ETK 50) depending on size and insulation of the baths concerned.

6 Starting up

Connect the instrument only at an earthed wall socket. Compare the voltage and the frequency mentioned on the rating label with your network.

Suspend the cooling coil made from high-grade stainless steel into the consuming device to be cooled. Note that the maximum cooling capacity is only obtained with completely immersed cooling coil. Clamp the cooling coil at a laboratory stand.

The temperatures at the surface of the cooling coil are clearly lower than in the bath directly especially if the baths are not circulated. If the surface temperature is lower than the freezing point of the bath liquid, ice will be formed which results in a reduced cooling capacity. Use bath liquid with a lower freezing point (see leaflet "LAUDA bath liquids").

The bending radius of the flexible tube must not be smaller than 150mm. Otherwise the tube might break.

ETK 50: Adjust the desired temperature.
ETK 30: Without temperature control

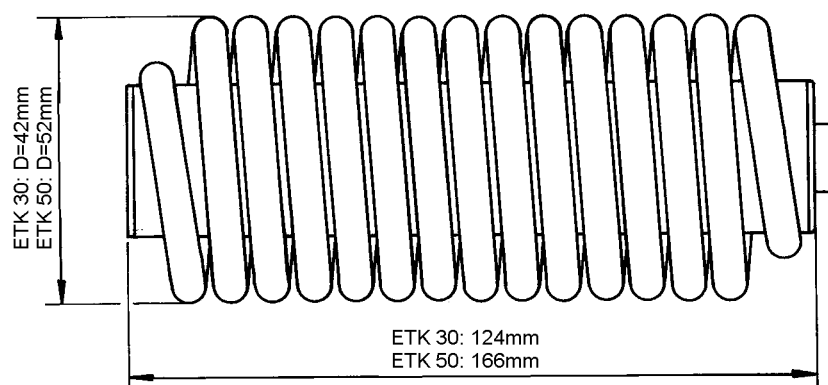
Switch on the instrument at the mains switch (green lamp goes on).

Both condensing units are switched on by the mains switch. However the cooling only starts with delay of approx. 3-5 minutes.

If the thermostating liquid has obtained the desired value the control device operates. Pilot lamp "Cooling" goes on and out.

ETK 50: The indicated temperature accuracy of $\pm 0.5^{\circ}\text{C}$ can be obtained only at slight stirring in the bath. In stagnant liquid there is a thermal stratification.

If the cooling coil is no longer required put in into the holder.



7 Cooling circuit (Design and Maintenance)

Page 13 shows you schemes of the cooling circuit.

The cooling unit operates largely maintenance free. If the ambient of the Immersion Coolers is dust-laden we recommend to clean the condenser of the cooling unit every 4 to 6 months. For this reason blow compressed air into the venting slots for some minutes.

The motor of the compressor is secured against overloading by a double acting bimetal switch (KLIXON). This switch responds to the temperature of the casing and additionally to the current consumption of the compressor motor. If ventilation is insufficient temperature of the housing increases and then the condensation pressure. Both results in an excessive overloading of the motor which is now switched off. It is switched on again automatically as soon as the housing has cooled down. For quick cooling the cooling unit can also be started at temperatures around 100°C. However it is possible that at higher temperatures the KLIXON switches of the compressor several times.

8 Maintenance

LAUDA Immersion Coolers are designed for continuous operation and do not require maintenance routine.

8.1 Note on repair and disposal

The refrigeration circuit is filled with a CFC-free refrigerant. Type and charging quantity are indicated on the unit. Repair and disposal by a qualified refrigeration engineer only!

9 Ordering spare parts

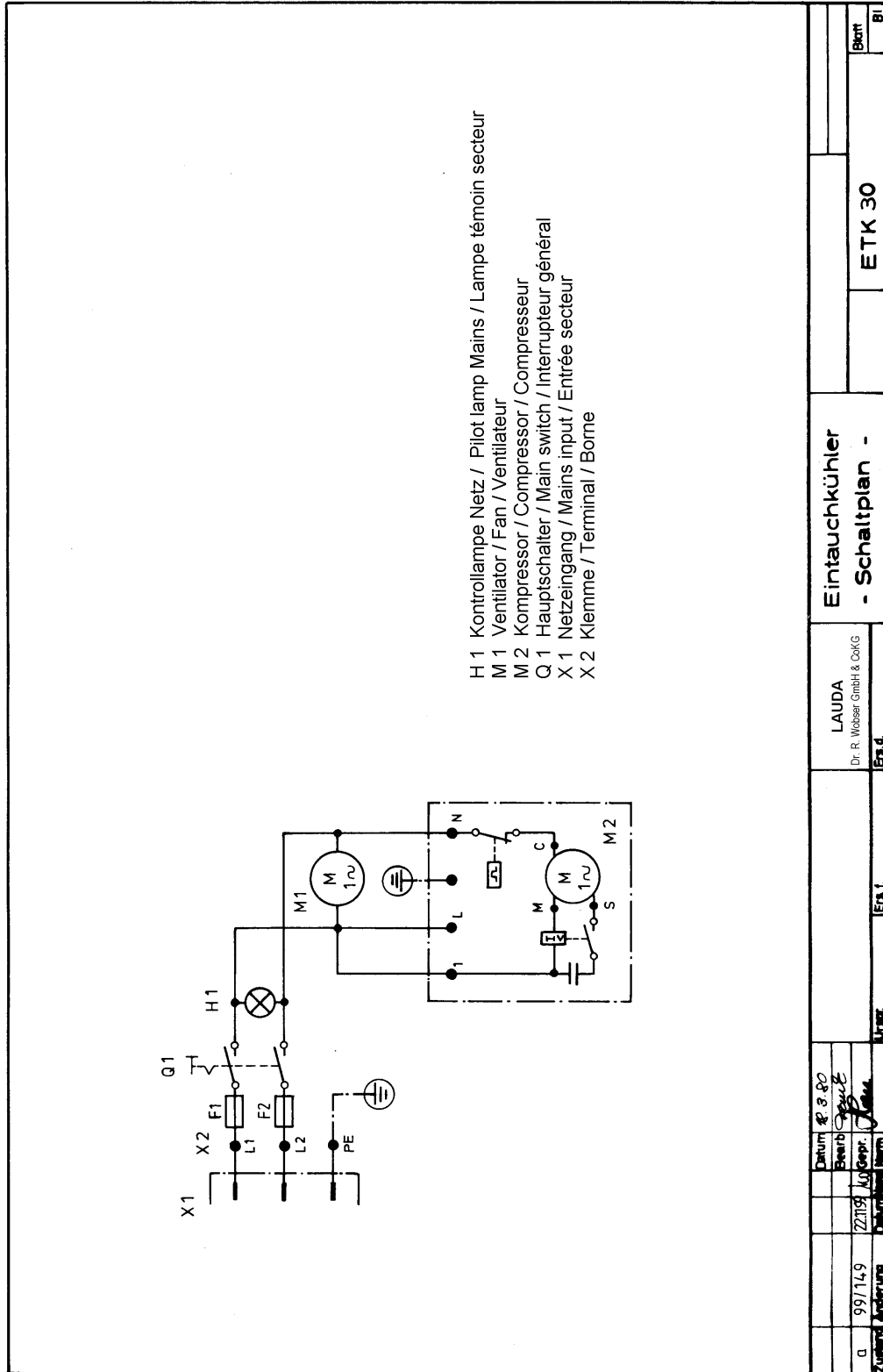
When ordering spares please quote instrument type and serial number from the rating label. This avoids queries and supply of incorrect items.

The capital letter of the serial number (first position) shows the year of manufacture, e.g. A = 2002, B = 2003

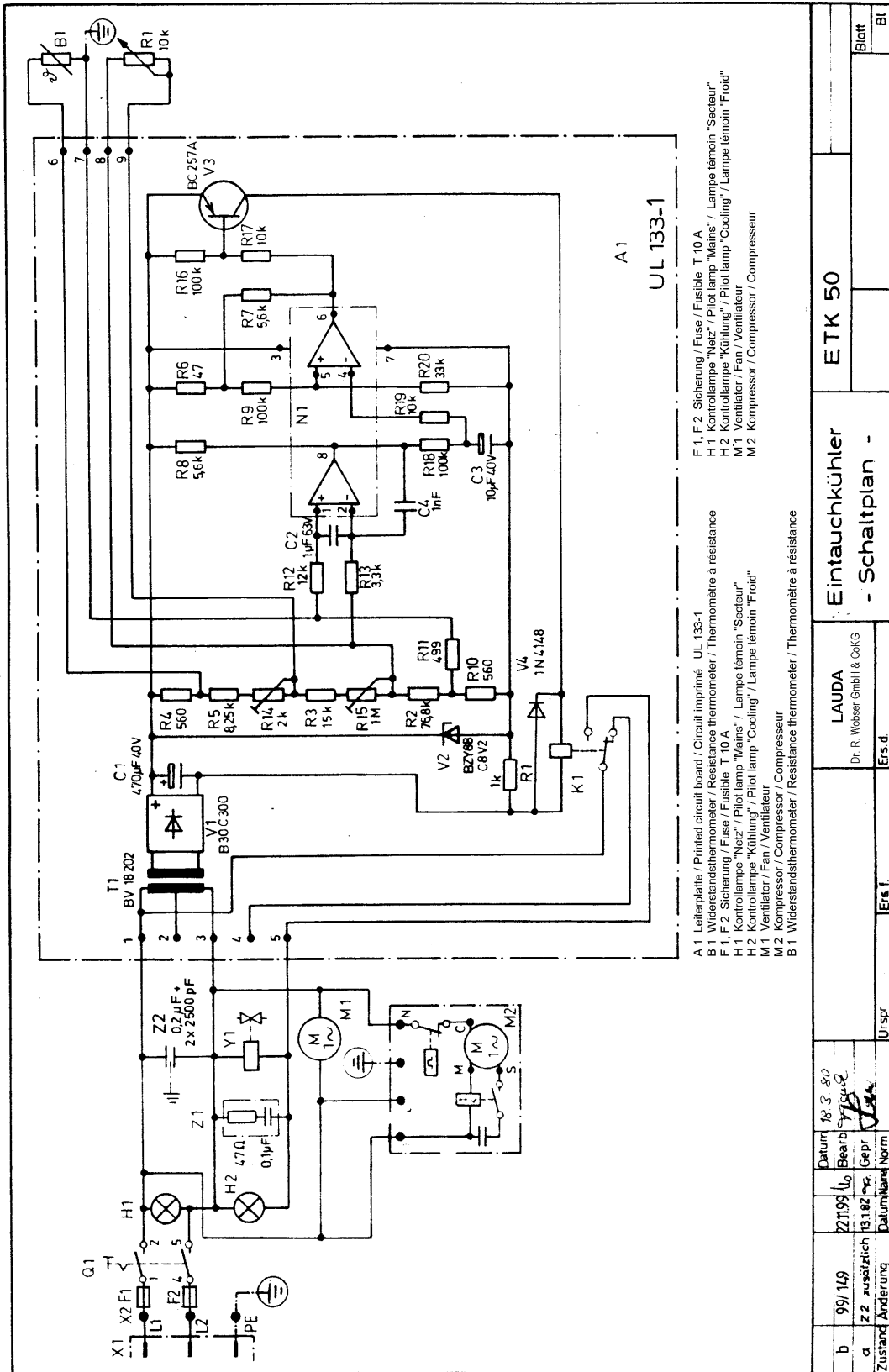
We shall always be happy to deal with queries and to receive suggestions and criticism.

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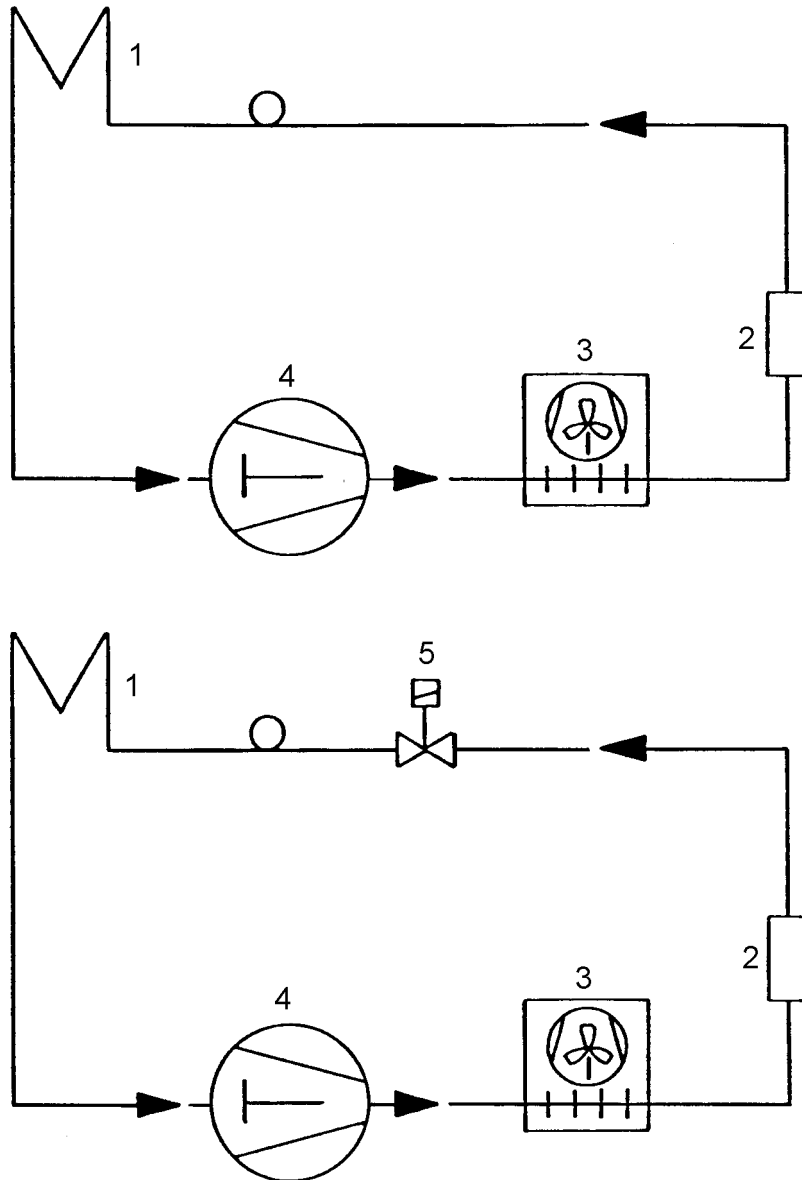
10 Circuit diagram



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11 Pipe plan



<u>Nr.</u>	<u>Teil / Part / Pièce</u>
1	Kühlspirale / Cooling coil / Serpentin refroidissement
2	Trockner / Drier / Sécheur
3	Kondensator / Condenser / Condensateur
4	Kompressor / Compressor / Compresseur
5	Magnetventil / Solenoid valve / Electro-vanne

An / To / A:

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Von / From / De :

Firma / Company / Entreprise: _____

Straße / Street / Rue: _____

Ort / City / Ville: _____

Tel.: _____

Fax: _____

Betreiber / Responsible person / Personne responsable: _____

Hiermit bestätigen wir, daß nachfolgend aufgeführtes LAUDA-Gerät (Daten vom Typenschild):

We herewith confirm that the following LAUDA-equipment (see label):

Par la présente nous confirmons que l'appareil LAUDA (voir plaque signalétique):

Typ / Type / Type :	Serien-Nr. / Serial no. / No. de série:

mit folgendem Medium betrieben wurde

was used with the below mentioned media

a été utilisé avec le liquide suivant

Darüber hinaus bestätigen wir, daß das oben aufgeführte Gerät sorgfältig gereinigt wurde, die Anschlüsse verschlossen sind, und sich weder giftige, aggressive, radioaktive noch andere gefährliche Medien in dem Gerät befinden.

Additionally we confirm that the above mentioned equipment has been cleaned, that all connectors are closed and that there are no poisonous, aggressive, radioactive or other dangerous media inside the equipment.

D'autre part, nous confirmons que l'appareil mentionné ci-dessus a été nettoyé correctement, que les tubulures sont fermées et qu'il n'y a aucun produit toxique, agressif, radioactif ou autre produit nocif ou dangereux dans la cuve.

Stempel Seal / Cachet.	Datum Date / Date	Betreiber Responsible person / Personne responsable

Formblatt / Form / Formulaire:

Unbedenk.doc

Erstellt / published / établi:

LSC

Änd.-Stand / config-level / Version:

0.1

Datum / date:

30.10.1998

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