

Operating Manual

Knürr CoolTrans 300 KW

Modular, Dewpoint-controlled Cooling Water Compact Station with Integrated Cold-water Supply-temperature Control

Divided version

Cooling capacity 300 KW per module



date / Datum	issue / Ausgabe	author / erstellt	reviewed / geprüft
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0. General

The Knürr CoolTrans offers dewpoint-controlled temperature control of the cooling water, also depending on humidity, and the hydraulic separation of the secondary cooling water circuit for the data center infrastructure from the cooling water supply of the building.

The Knürr CoolTrans can be supplied in a divided version and serves the cooling water supply of server cabinets in a closed circuit.

The secondary cooling water temperature is controlled via a two-way valve that controls the volume flow in the primary cooling water circuit.

The control as well as the electrical connection, incl. the terminal strip, is housed in a switch box arranged inside the Knürr CoolTrans.

1. Safety

1.1 Safety Symbols

The following symbols refer to certain hazards or provide information for safe operation.



Warning! Dangerous spot! Safety notice!



Hazard due to electrical power or high voltage



Caution! Hot surface



Caution! Rotating parts



Disconnect prior to any works!



Warning! Marks possible damage to the device



Hazard due to dangerous voltage



Attention! Marks possible hazard to the environment



Important note, information

1.2. Safety Advice



Our engineers can give you comprehensive advice regarding the assembly of the Knürr CoolTrans. Extensive material, functional and quality tests guarantee long-term usefulness of the device and long service life. Still, these devices may bear hazards if operated by unskilled staff and if not used in accordance with their intended purpose.



Carefully read these assembly and operating instructions prior to any assembly of the Knürr CoolTrans or prior to taking it into operation.

Its electrical installation complies with applicable VDE regulations and rules for preventing accident. Hazardous voltage (higher than 50VAC or higher than 100V DC) can be encountered:

→ behind switch cabinet doors

Use original fuses of prescribed amperage only.
Disconnect the device immediately if the electrical power supply or the cold-water supply are disturbed.



Voltage hazard
Maintenance and cleaning works must be performed by specialists only, who must take every precaution to disconnect the device from any power supply at the time of maintenance and cleaning. Therefore, take the device out of operation prior to any works and according to instructions.



The device has been designed in compliance with the following directives, guidelines and provisions:

89/393/EEC	Machinery Directive of 01 Jan 1995
89/336/EEC	Directive on Electro-magnetic compatibility, of 01 Jan 1996
73/23/EEC	Low-voltage Directive of 02 Jan 1997
ENEV	Energy Saving Ordinance
DIN 1988	Technical Rules for Freshwater Installation
DIN 4747-1	Heating plants for district heating; Safety requirements for domestic substations, stations and domestic systems
DIN- EN 292-1, 2	Safety of Machines, Principal Rules, General Design Guidelines
DIN- EN 50081-1, 2	Electro-magnetic Compatibility (EMC) Specific Basic Standard of Emitted Interference
DIN- EN 6100-3-2; 3	Electro-magnetic Compatibility (EMC) Limit Values
DIN- EN 60204-1	Machine Safety – Electrical Equipment of Machines General Safety
DIN- EN 60335-1	Safety of Electrical Devices for Domestic Use and Similar Purposes



Hazard by improperly handling the device
Cleaning and maintenance must be carried out by specialists only.
For keeping the device operationally reliable and for safeguarding its long service life, its maintenance and cleaning intervals must unconditionally be observed.



Operate the Knürr CoolTrans only within the specified capacity limits and using approved operating material only.



When working on and with the device, please bear in mind:

- Respectively applicable regulations (e.g., VDE regulations or other nationally applicable directives)
- Applicable accident-prevention provisions (BGV)
- Relevant regulations
- Applicable laws for the protection of the environment

Operate the device only in its perfect condition. In the event of malfunctions or faults, the device must immediately be taken out of operation and the operator's person in charge must be informed of this incident.

The device must not be taken into operation again until its fault-free functionality has been restored.



Caution! Hot surface

Faulty pumps, power supply units, control boards may have run hot. Allow them to cool down prior to assembly.



Arbitrary modification or making of spare parts

- Modification and alterations are only admissible after approval by the manufacturer. Original spare parts and accessories approved by the manufacturer guarantee safety. The application of other than genuine parts may exempt the manufacturer of the cooling water compact station from any liability for consequences resulting thereof.



Inadmissible operation

- Operational safety of the supplied station is only guaranteed if applied according to its intended purpose.
- The limit values specified must not be exceeded in any case.



Warranty

- Any claim for warranty requires expert assembly and commissioning in accordance with the assembly, commissioning and operating instructions applicable to the device.
- Necessary assembly, commissioning and maintenance works must be carried out by authorized expert personnel only.

2. Operating Conditions



Purposeful use

The device represents a heat transfer station for heat discharge via cooling water out of water-cooled server cabinets.

The Knürr CoolTrans serves to separate, by way of a heat exchanger set in between, the primary cooling water network from the secondary cooling water network.

The pumps within the cold-water network have been designed to guarantee sufficient heat discharge from the server cabinets.

In order to facilitate safe heat discharge, the connection (piping network) between the Knürr CoolTrans and the equipment to be cooled needs to be designed according to the rules of technology and to the performance parameters.

By means of diffusion-proof insulation, the installation of the Knürr CoolTrans itself is dependent on the humidity of the ambient air.

All insulation of piping connections (primary and secondary) installed in rooms that are not included in the dewpoint control must be diffusion-proof.



The Knürr CoolTrans must be installed frost-proof.

The floor must be capable of bearing the load of the Knürr CoolTrans (distributed among four legs carrying a lumped load each).

When assembling the two parts, make sure components of the same production number are assembled.

Temperature at the place of installation:	5°C bis 35°C
Water temperature, supply, primary:	10°C
Water temperature, return, primary:	15°C
Water temperature, supply, secondary:	14°C
Water temperature, return, secondary:	20°C
Temperature spread, primary, water	5K
Temperature spread, secondary, water:	6K
Application of antifreezers in the cooling water:	primary circuit up to 35% secondary circuit upon inquiry
Max. operating pressure:	primary 16 bar secondary 6 bar
Blowing-off pressure, safety valve	secondary 2.5 bar
Water connection, primary:	possible from either side of the unit
Water connection, secondary	possible from either side of the unit
Power connection:	3 x 400V / 16A 50 Hz

2.1 Water Quality Requirements



For safely operating the Knürr CoolTrans, the cooling water must be available at specified quantity, temperature and pressure. The water quality must comply with VGB-R 455 P.

The requirements of the primary and secondary water quality are, apart from those data as specified in the Annex, as follows:

In order to safeguard maximum service life of the system, the supplied cooling water must comply with the VGB-Kühlwasser-Richtlinien (VGB-R 455 P) (VGB Cooling Water Guidelines VGB-R 455 P). The applied cooling water must be soft enough to prevent any depositing; however, it must not be too soft since this might result in corroding the system.

The following table contains the most important impurities as well as methods for their removal:

Impurification of the water	Method of removal
Mechanical impurification (dp > 0.8 mm)	Filtering the water
Excess hardness	Softening the water by ion exchange
Moderate content of mechanical impurification and hardeners	Addition of dispersion or stabilizing agents
Moderate content of chemical impurification	Addition of passivation agents and inhibitors
Biological impurification (bacteria and algae)	Addition of biocides
pH-value too high or too low	Refilling prepared water

It is recommended to meet the following hydrological data:

Hydrological data		
pH-values	6 – 9	
Free carbonic acid	< 20	mg/l
Nitrates	< 100	mg/l
Sulphates	< 50	mg/l
Sulphides	not detectable	
Chlorides (at 25°C)	< 800	mg/l
Ammonia	< 2	mg/l
Iron	< 1.5	mg/l
Manganese	< 0.5	mg/l
Conductivity	< 30	µS/cm

Max. concentration of antifreezers (glycol) 35%

*** The application of a dirt trap of an aperture of < 0.8mm in the primary supply is generally recommended in order to avoid probable disturbances in the plate heat exchanger. We recommend a second dirt trap as a by-pass line for uninterruptible maintenance.**

3. Description

The Knürr CoolTrans has a modular design and is connected to the cooling water circuit of the building (e.g., to the cooling water circuit of the air conditioning of the building). The high-performance heat exchanger installed in the Knürr CoolTrans separates the cooling water circuit of the server cabinets from the cooling water circuit of the building.

The secondary cooling water temperature is controlled by the cooling water volume flow by way of a two-way motor-driven valve on the primary side. The control valve is equipped with an emergency function, i.e. in the event of any disturbance, it will open automatically and the entire heat can be discharged from the secondary circuit.

3.1 Automatic Dewpoint-controlled Temperature

The dewpoint temperature is monitored within the Knürr CoolTrans. The secondary cooling water supply temperature is increased automatically to such a level as not to allow condensate forming at the server cabinets. For that purpose, the included moisture sensor is to be positioned in the installation room of the server cabinet and connected to the Knürr CoolTrans. The included combisensor records temperature and relative humidity in the installation room and evaluates them with the help of the Knürr CoolTrans control, thereby calculating the actual dewpoint. The Knürr CoolTrans is programmed in such a way that the cooling water temperature is always 1K above the dewpoint temperature.

3.2 Dimensions and Technical Specifications

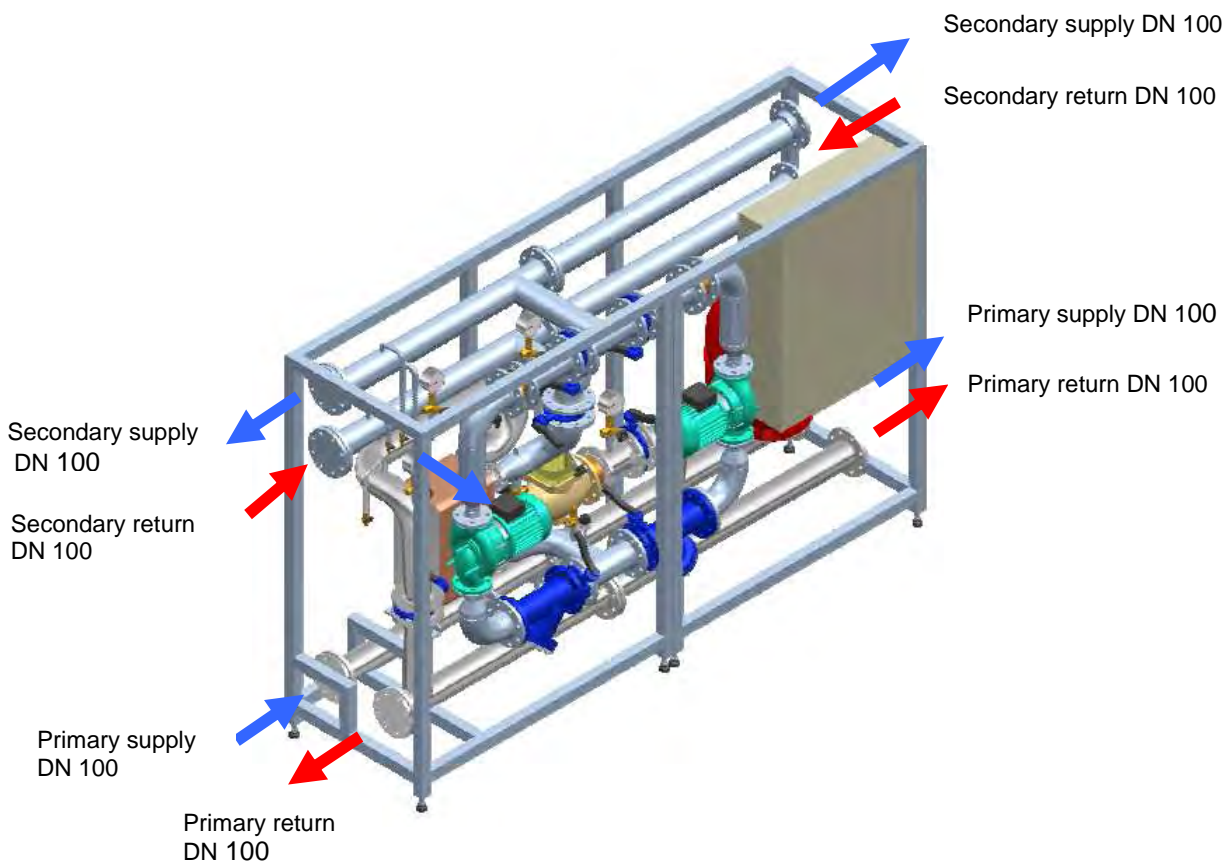


Figure: Knürr CoolTrans 300 KW (separated version)

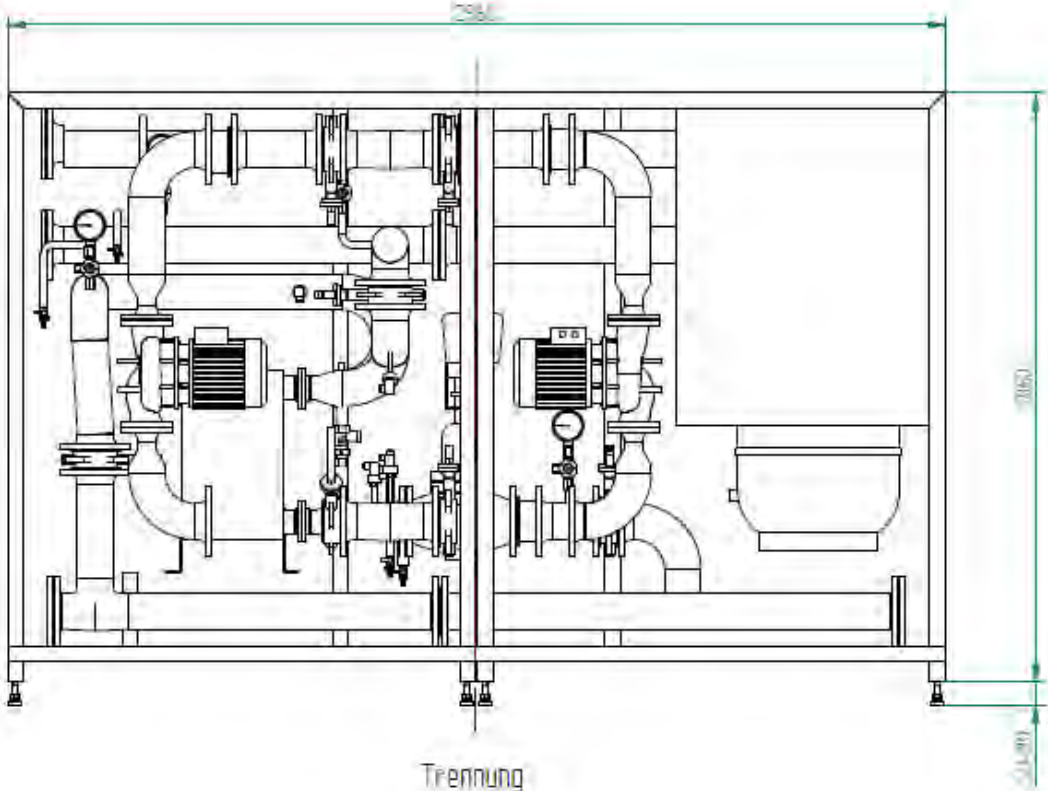


Figure: Knürr CoolTrans 300 (standard) side view

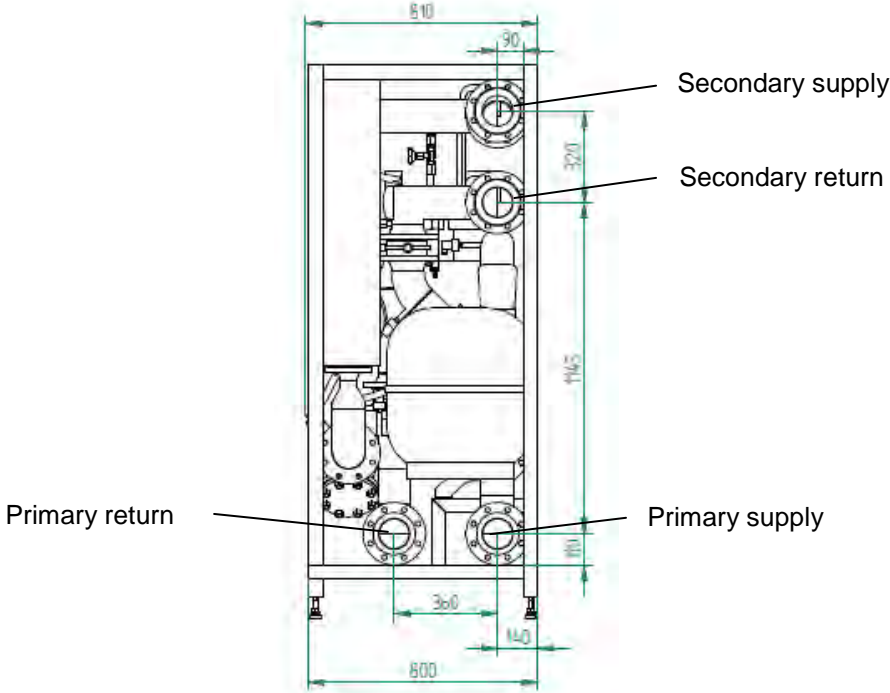
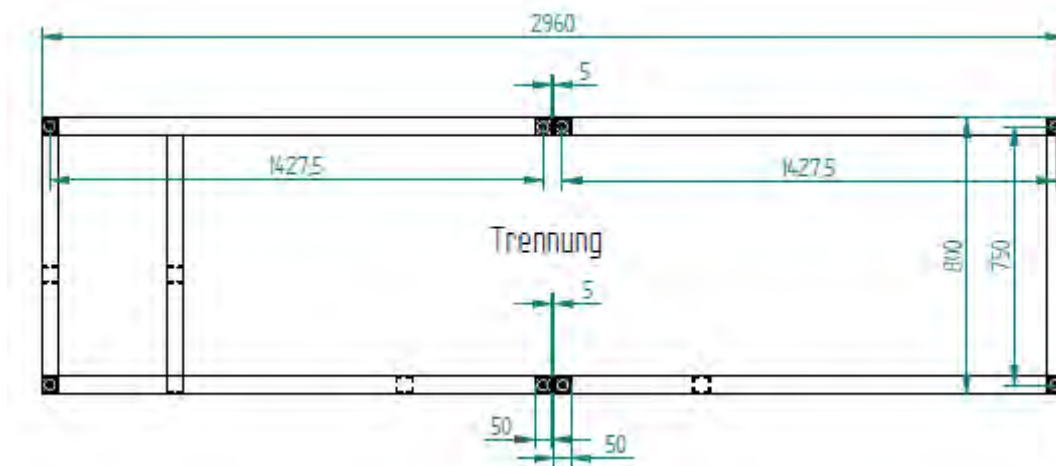


Figure: Knürr CoolTrans 300, dimensions, top view (separated version)



Overview of technical specifications of the CoolTrans design sizes

Article No.	Capacity (kW)	Height)* (mm)	Width)* (mm)	Depth)* (mm)	Weight (kg)	Pipe connection		Pressure loss, primary (KPa)	Pumping head, secondary (KPa)	Electrical connection (V, Hz, kW)
						primary	secondary			
0800966080	300	1910	2960	800	1216	4 x DN 100	4 x DN 100	150	110	400 / 50 / 3.5

Article No.	Capacity (kW)	Cooling water-temperature, primary (°C)	Cooling water-temperature, secondary (°C)	Water volume flow, primary (at 35% glycol) (m³/h)	Water volume flow, secondary (m³/h)	Admissible operating pressure, primary (bar)	Admissible operating pressure, secondary (bar)
0800966080	300	10 / 15	14 / 20	60 26	42 99	16	6 (SV 2.5)**

*) dimensions with sheet-metal casing

***) blow-off pressure of the safety valve

4. Storage, Handling and Installation

The CoolTrans must be stored and handled only in its completely drained condition.
(possible damage by freezing)

The Knürr CoolTrans unit is prepared for shipment ex works and placed on a wooden pallet.
After removing the blinds, a forklift, for example, may drive underneath the frame to lift the unit from the pallet.

The Knürr CoolTrans includes the separated Knürr CoolTrans on wooden pallets. The armatures and flange/armature insulations are attached to the unit in a separate cardboard box.

The unit can be transported to the installation room with the help of a low lift platform or forklift.
Please observe admissible areas and lumped loads on floors.

When placing the Knürr CoolTrans, it must be balanced horizontally by means of adjustable legs.
Small tolerances in height can be adjusted during installation. (+/- 2.5 cm)

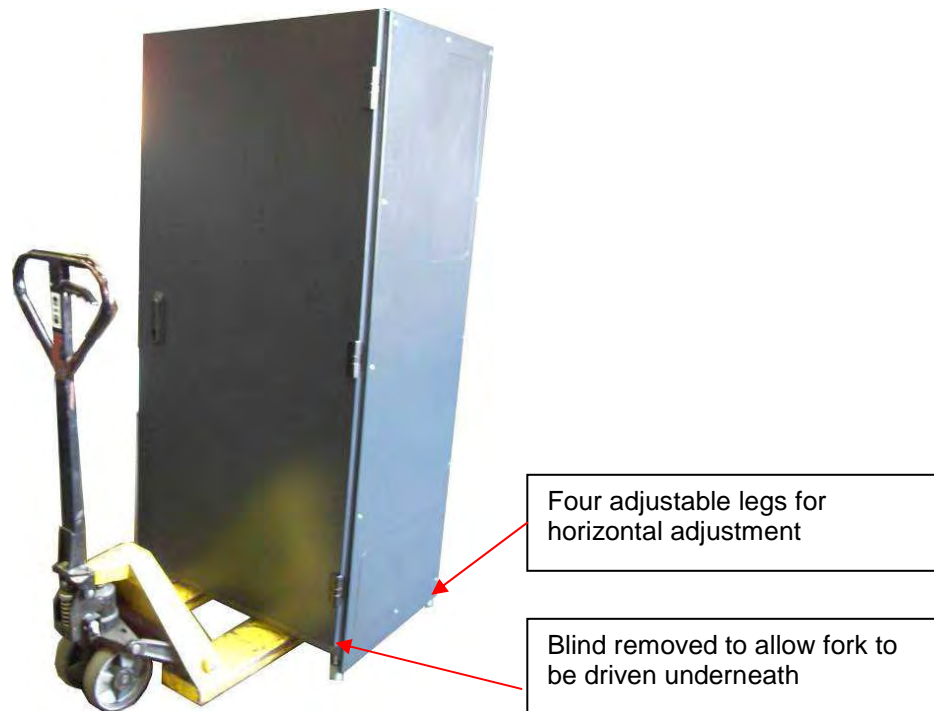
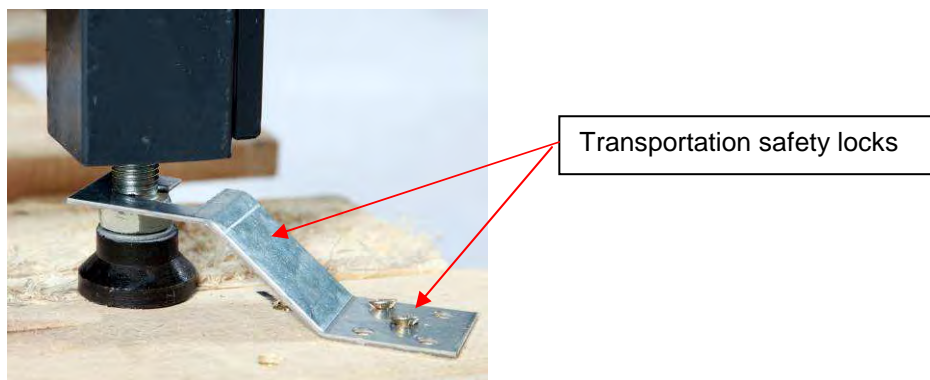


Figure: Transport by way of low lift platform

Remove transportation safety locks, take Knürr CoolTrans from the pallet and adjust the Knürr CoolTrans in height at the place of installation by way of its legs.



5. Taking the System into Operation

5.1 Mechanical / Hydraulic Components

- After its alignment, the primary and secondary connection flanges need to be connected to the piping systems. Outlets that are not required must be closed with blind caps and insulated diffusion-proof.

For better access to the left secondary flanges, the control cabinet can be disassembled:

- 1.) Loosen the four fastening screws of the control cabinet

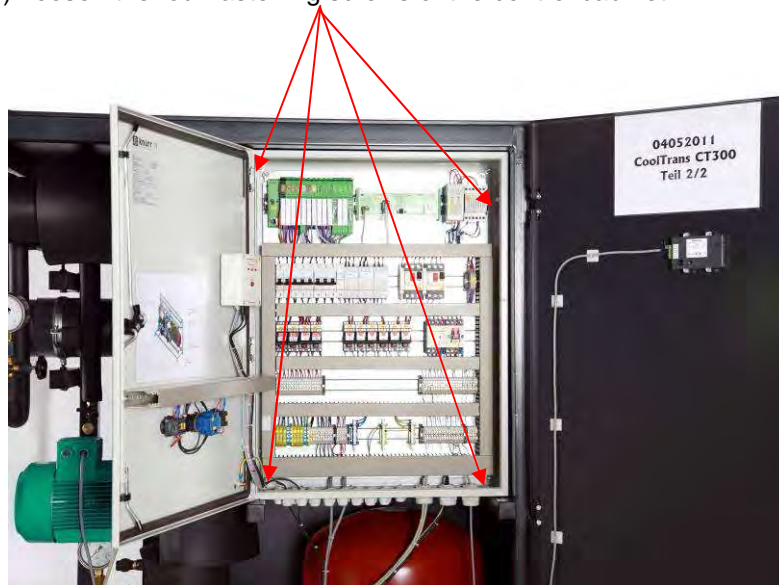
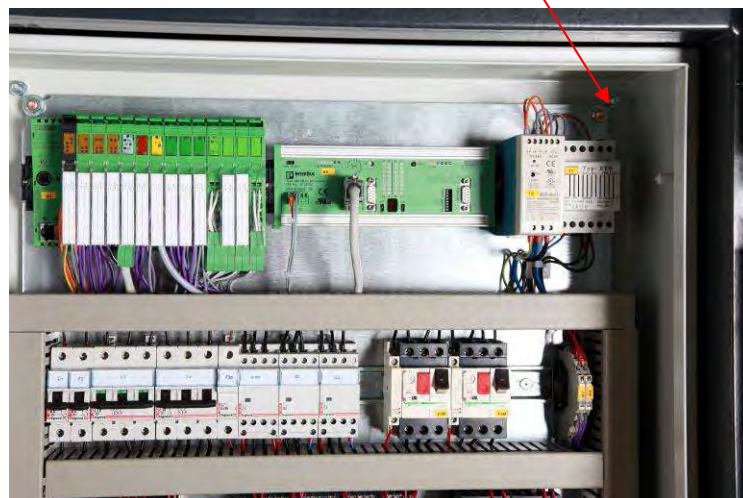
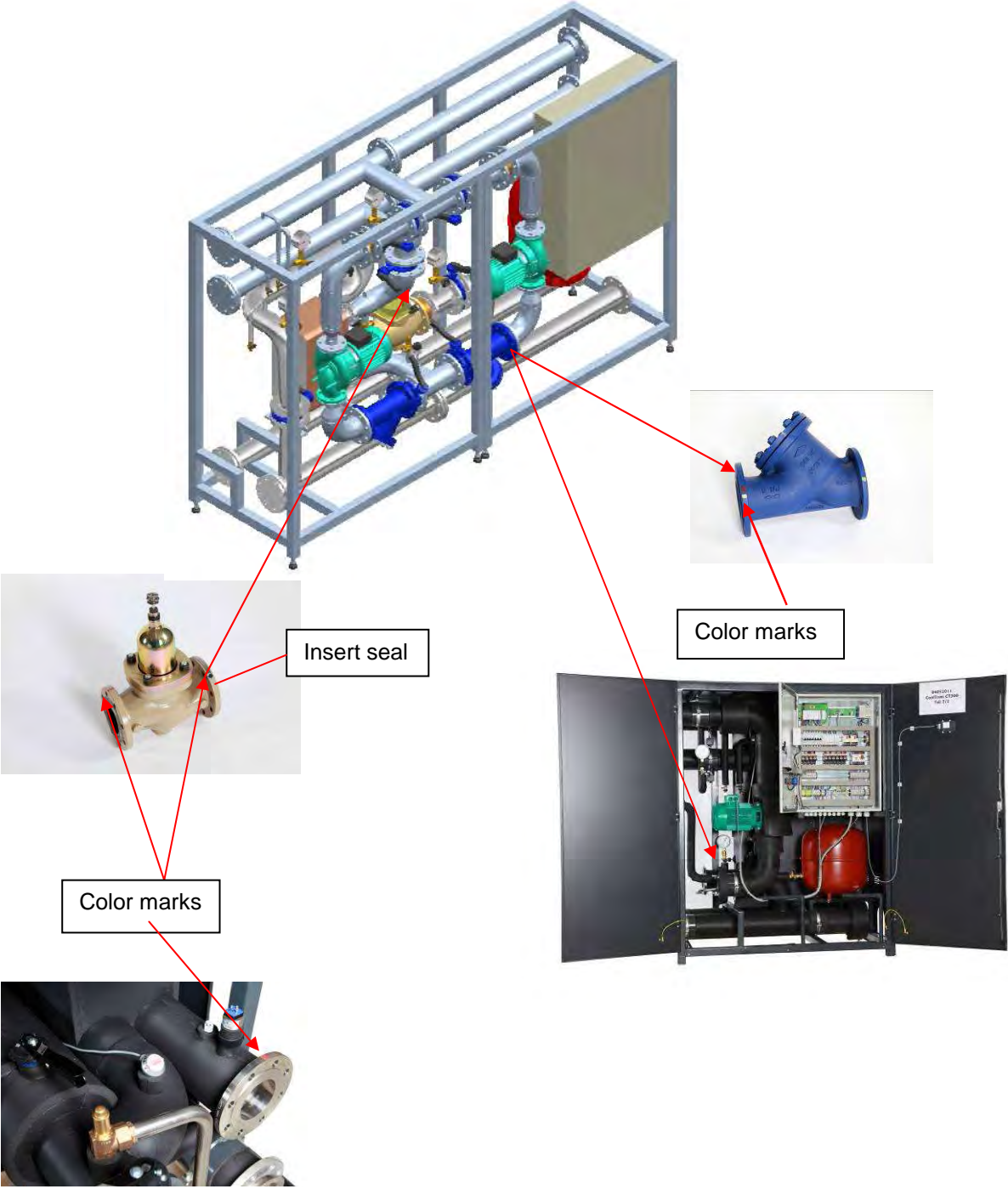


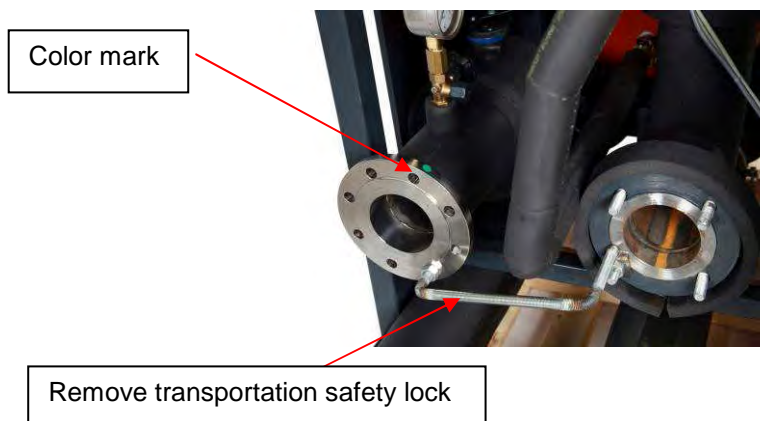
Figure: Fastening screws in the control cabinet

1. Loosen the fastening screws with the help of a socket key



In accordance with the 3D drawing, mount the loosely attached dirt trap and the two-way control valve, fitting the armatures to the flanges of the piping in such a way that the color marks on the flanges match with each other. Insert flange seals into each of the flanges.





Attention! Avoid misalignment of flange connections when assembling the two Knürr CoolTrans parts. Connect the two parts with the same production number only. (for the production No., see inside the connection box)

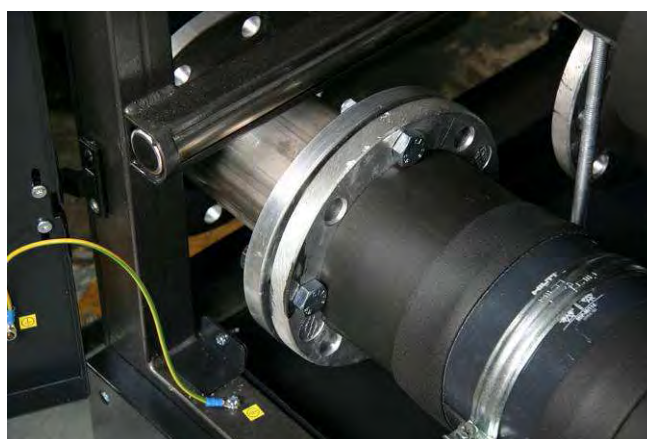


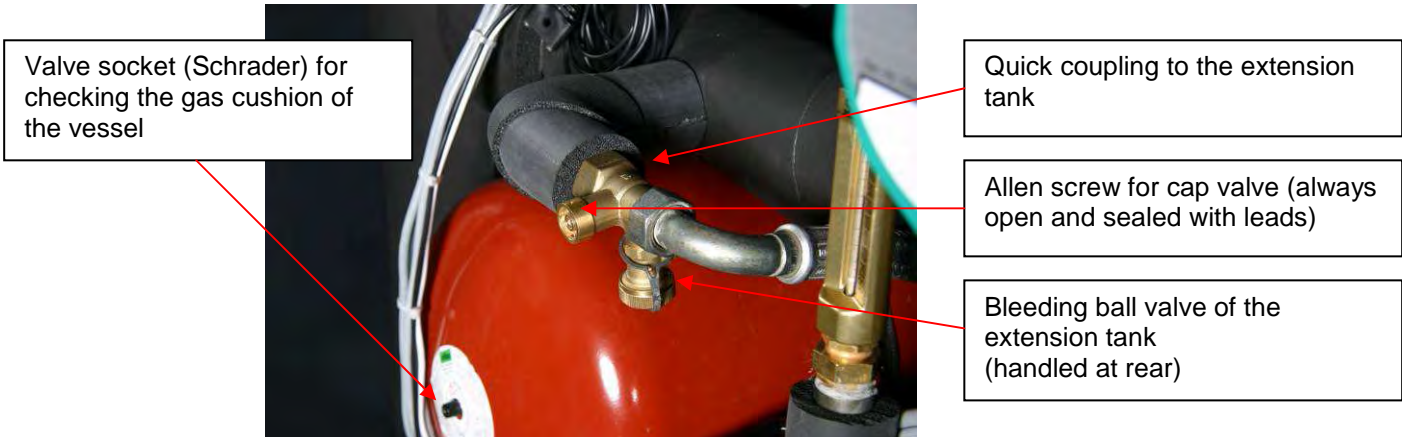
Figure: Flange connection; here: intermediate flange for connection to another CTU

Note:
Bends can be connected directly to the flange to immediately reach the existing piping in the false floor.



Connect safety pipe to the extension tank

- Setting of the admission pressure at the diaphragm extension tank**
 For that purpose, the vessel must be drained of water completely and relieved without any counter-pressure (open bleeding screw at quick coupling).



Valve socket (Schrader) for checking the gas cushion of the vessel

Quick coupling to the extension tank

Allen screw for cap valve (always open and sealed with leads)

Bleeding ball valve of the extension tank (handled at rear)

Figure: Diaphragm extension tank with quick coupling

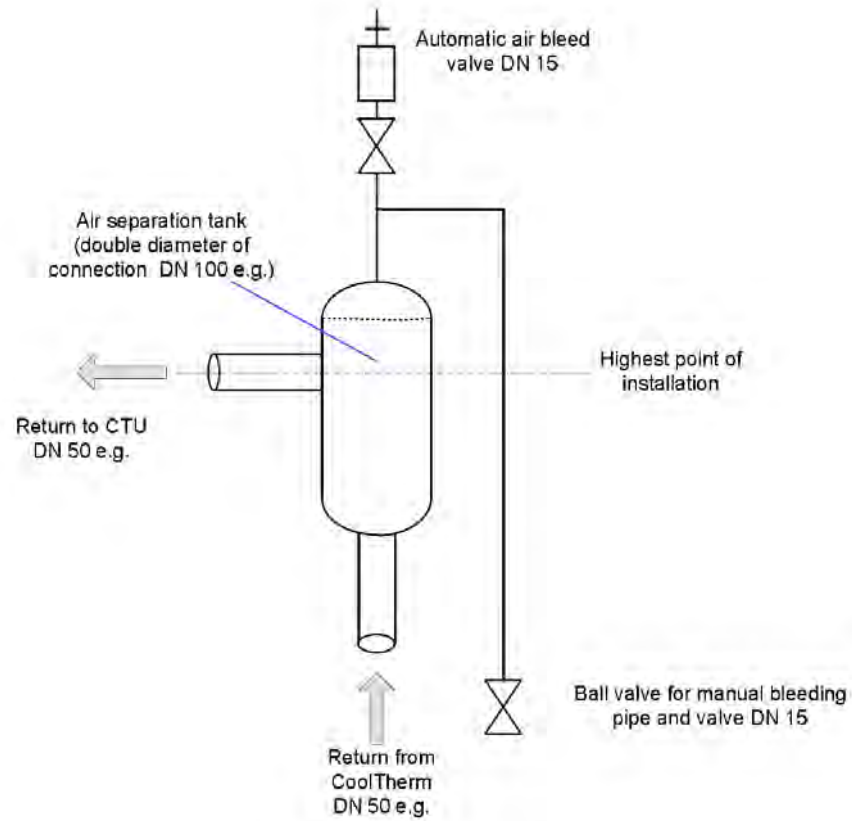
Rule of thumb: $P_{supp} = \text{min. } 1 \text{ bar,}$

Formula: Filling pressure of the extension tank = static pressure (geodetic height) + 20 KPa

Note for pipe installation outside the CTU:

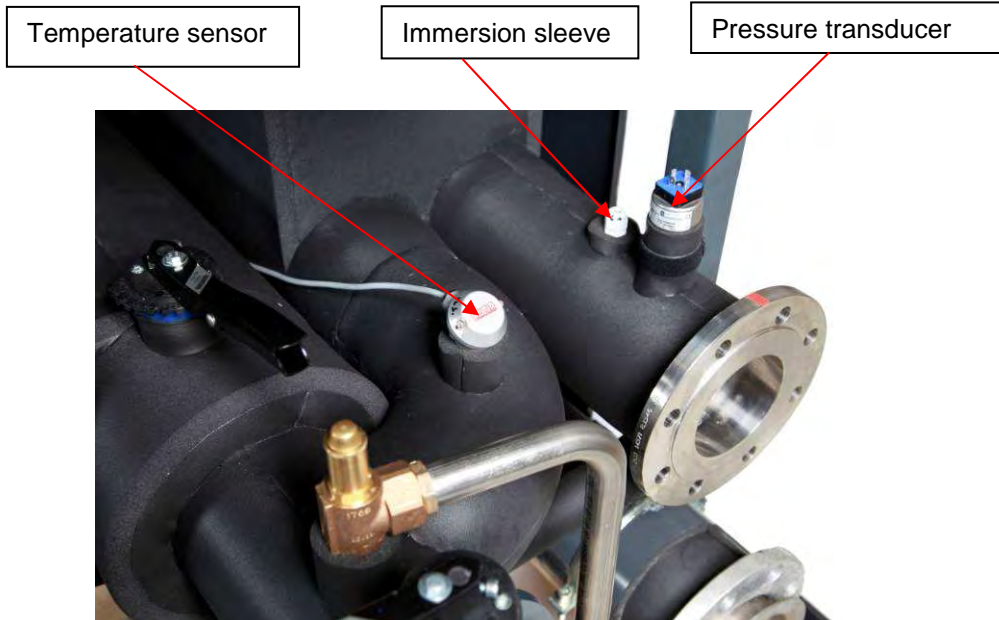
Create a topmost elevation for central bleeding

Example:

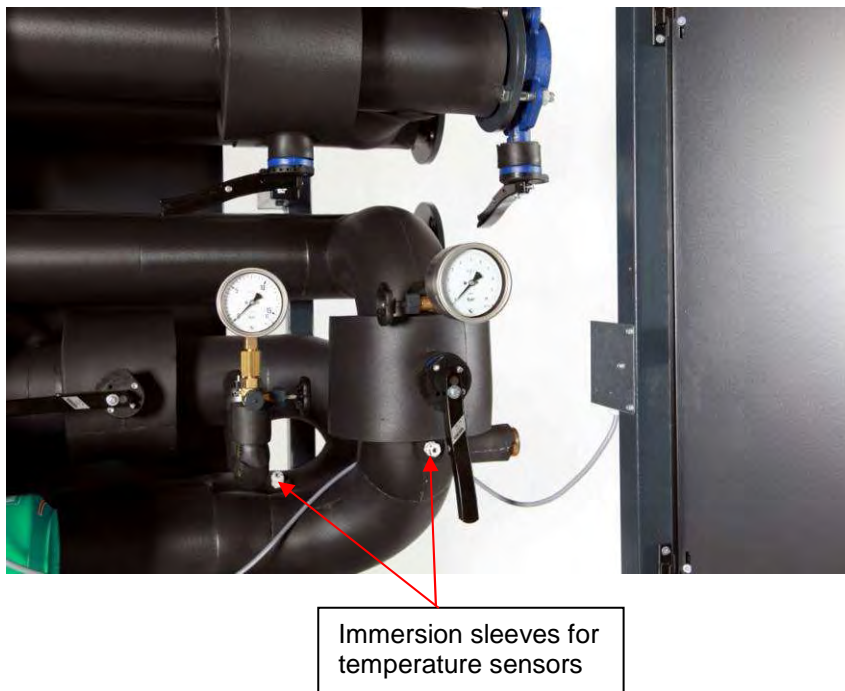


5.2 Electrical Connections

The pressure sensors and temperature sensors are connected to the control cabinet by way of the cables included. The cables have been dimensioned sufficiently long. In order to avoid mixing up cable and sensor, they have been marked clearly.



The position of the temperature sensor [No. 75] and pressure transducer [76] can be seen in the hydraulic circuit diagram in Section 9.1.



Plugs for power supply of second pump to be connected with each other



5.3 Default Settings

The CTU comes with the following default settings of relevance to the user:

Pumps toggling:	On Mondays 10:00am
Set temperature, secondary supply:	14°C (without dewpoint-controlled cooling water temperature control)
	As soon as the dewpoint-controlled control is activated, the set value of the secondary supply will be 1°C above the dewpoint
Change-over to CE DST:	March 25, 2:00am
Change-back to CET:	October 25, 3:00am
Admission pressure at diaphragm extension tank:	1.5 bar
Response pressure of the two minimum pressure limiters, each:	pre-alarm 0.5 bar main alarm 0.2 bar
IP address:	1.1.199.88

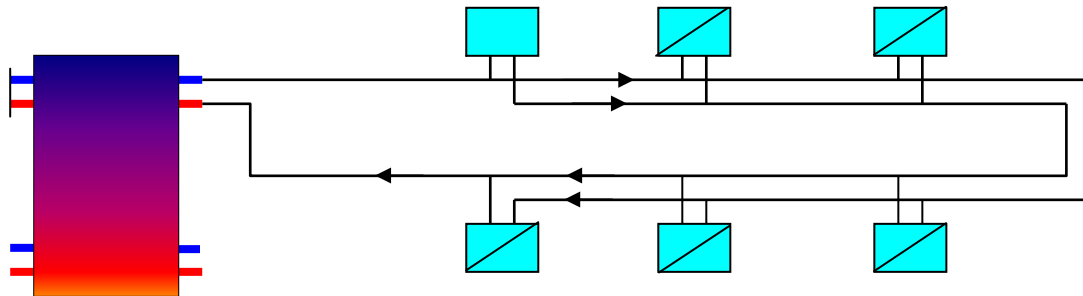
5.4 Examples of Setup for Balancing Hydraulically

A) Individual setup or serial setup, with a subsequent Tichelmann ring

The connection of the secondary and primary cooling water circuit is possible on one or also on two sides.

The connection that is not required can be closed by means of a blind flange.

Cooling water secondary network

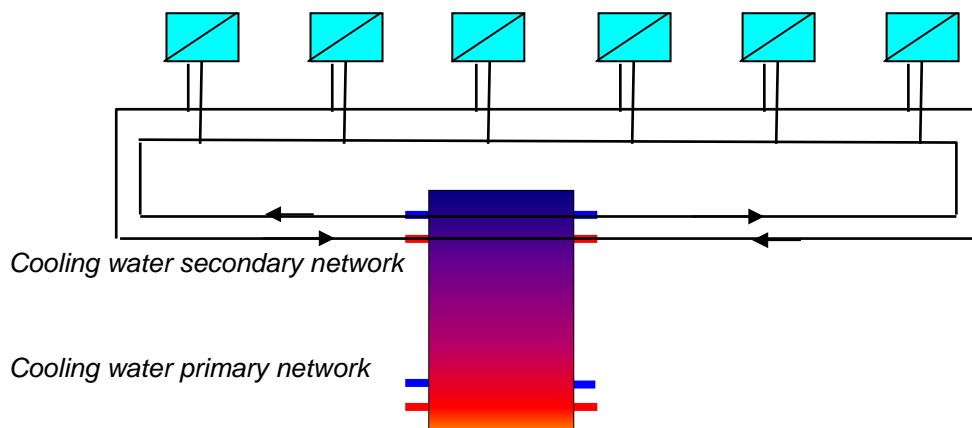


Cooling water primary network

D) Individual setup or serial setup, with a subsequent supply ring

The connection of the secondary and primary cooling water circuit is possible on two sides.

Feeding-in into the ring from both sides facilitates a redundancy of $n+1$.



6. Control

6.1 Introduction

The Knürr CoolTrans controls the monitoring, and configuration of the Knürr CoolTrans. A 10/100MBit Ethernet connection is available for communication. It supports TCP/IP, HTTP, FTP, SNMP v2c and NTP protocols. An integrated web server, an FTP server as well as an SNMP agent serve configuration and monitoring.

6.2 Visualization

Configuration and monitoring requires no additional software. All settings and status request are made by a web browser.

6.3 Login

Access to control is enabled by entering the IP address into the browser. Default setting ex works: 1.1.199.88 as a standard.

Registration as a user on two levels can be made in the login window popping up.

Level 1:

Authorized to watch only

User name: *user*

Password: *1111*

Ebene 2:

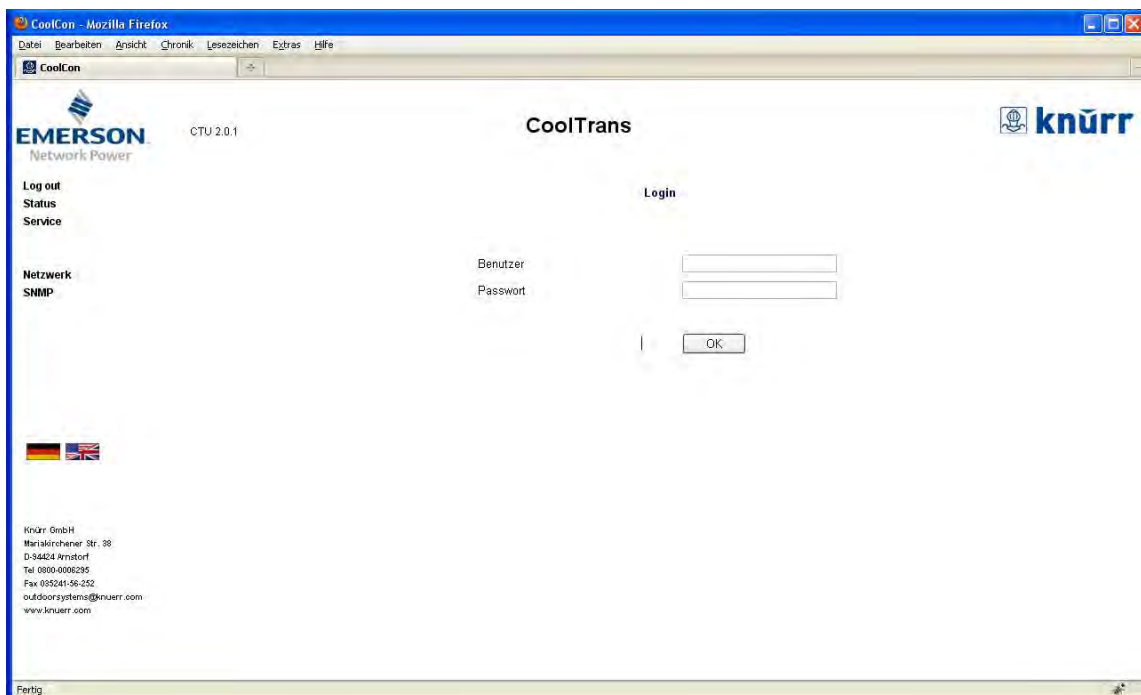
Authorized to watch and to configure

User name *admin*

Password *knuerr*

User names and passwords can be changed after logging onto Level 2 in the window *Network*. Neither must be longer than ten characters.

German and English are supported as display languages. Switch from one language to the other by using the two flag symbols in the navigation bar.



Login page

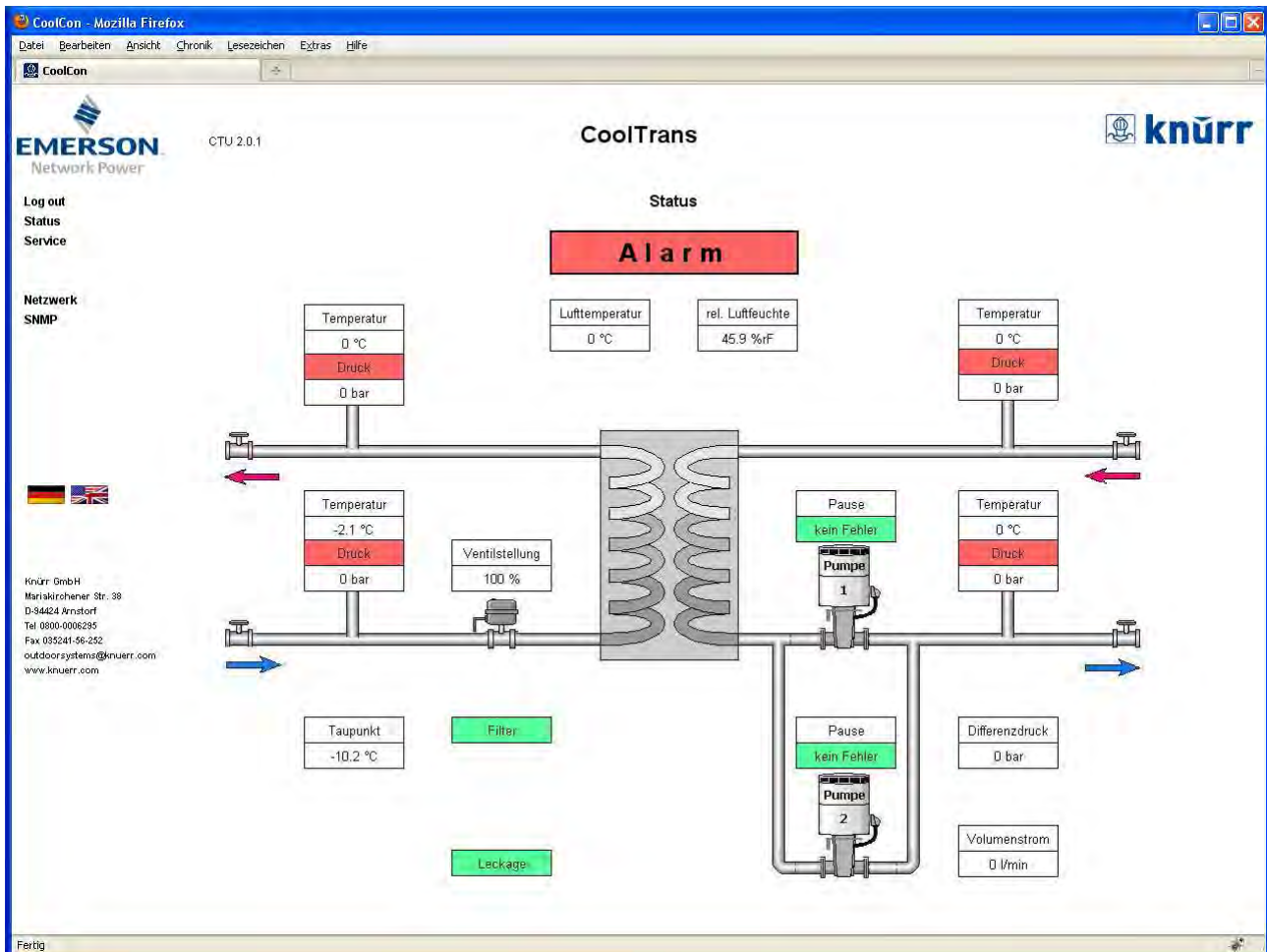
6.4 Status

After having successfully logged on, the status page will appear displaying all current states, temperatures, pressures and air humidity. The page can be viewed with user rights for Levels 1 and 2, settings cannot be made here.

All contacts are shown in *green* in their normal states and change to *red* in the event of an alarm. The name boxes for the analog values are not shaded in color in their normal state, but change to red when reaching the set threshold values. Additionally, in the event of an alarm, a message window displaying “Alarm” will pop up.

The threshold values for alarms can be set on user level 2 on the *Service* page only.

Status page



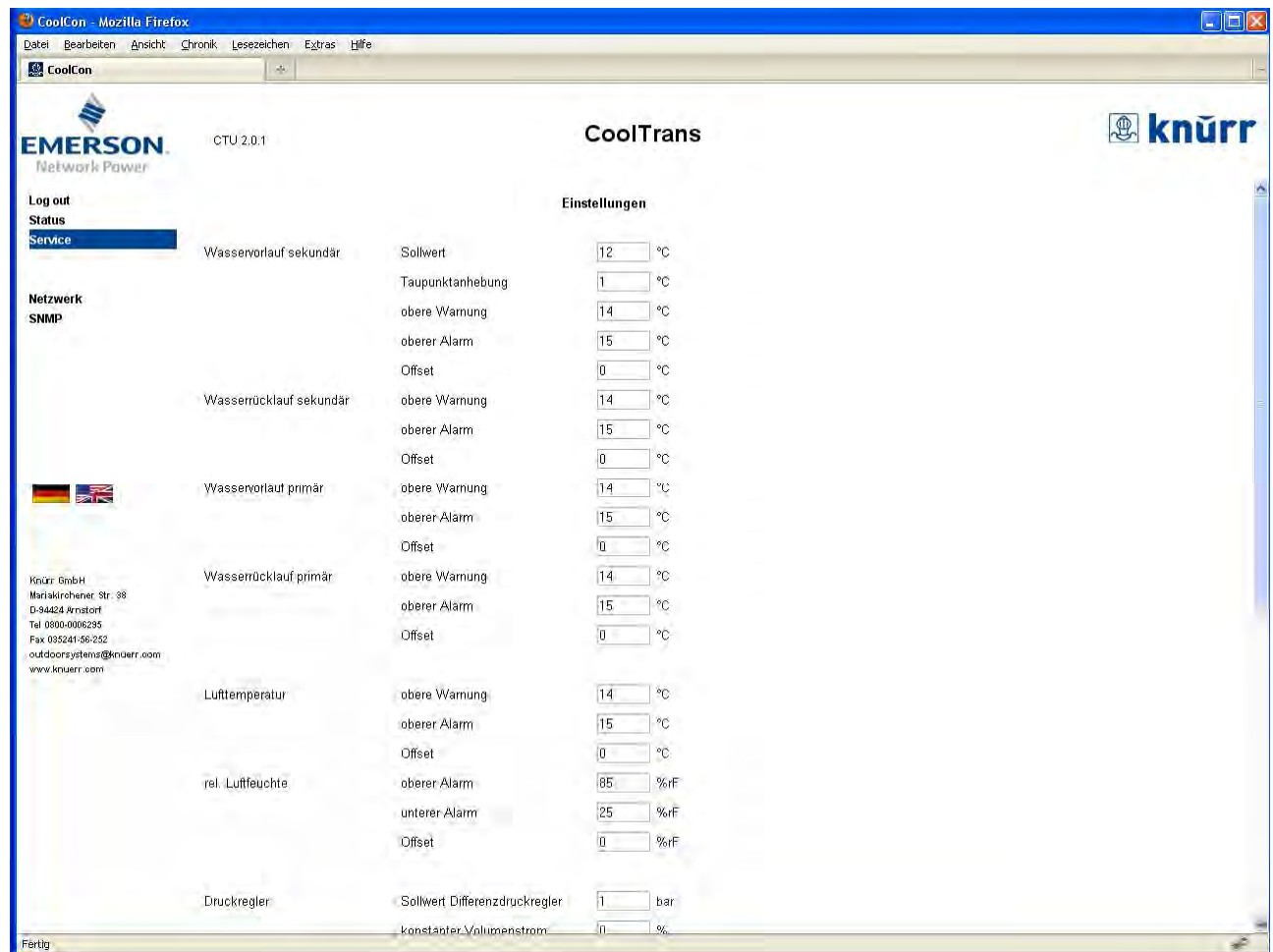
6.5 Service

On this page, the set value of the secondary water supply temperature of the alarm threshold values for temperature, pressures and relative humidity are configured. Moreover, the set value of the pressure control (optional) or a constant volume flow can be set.

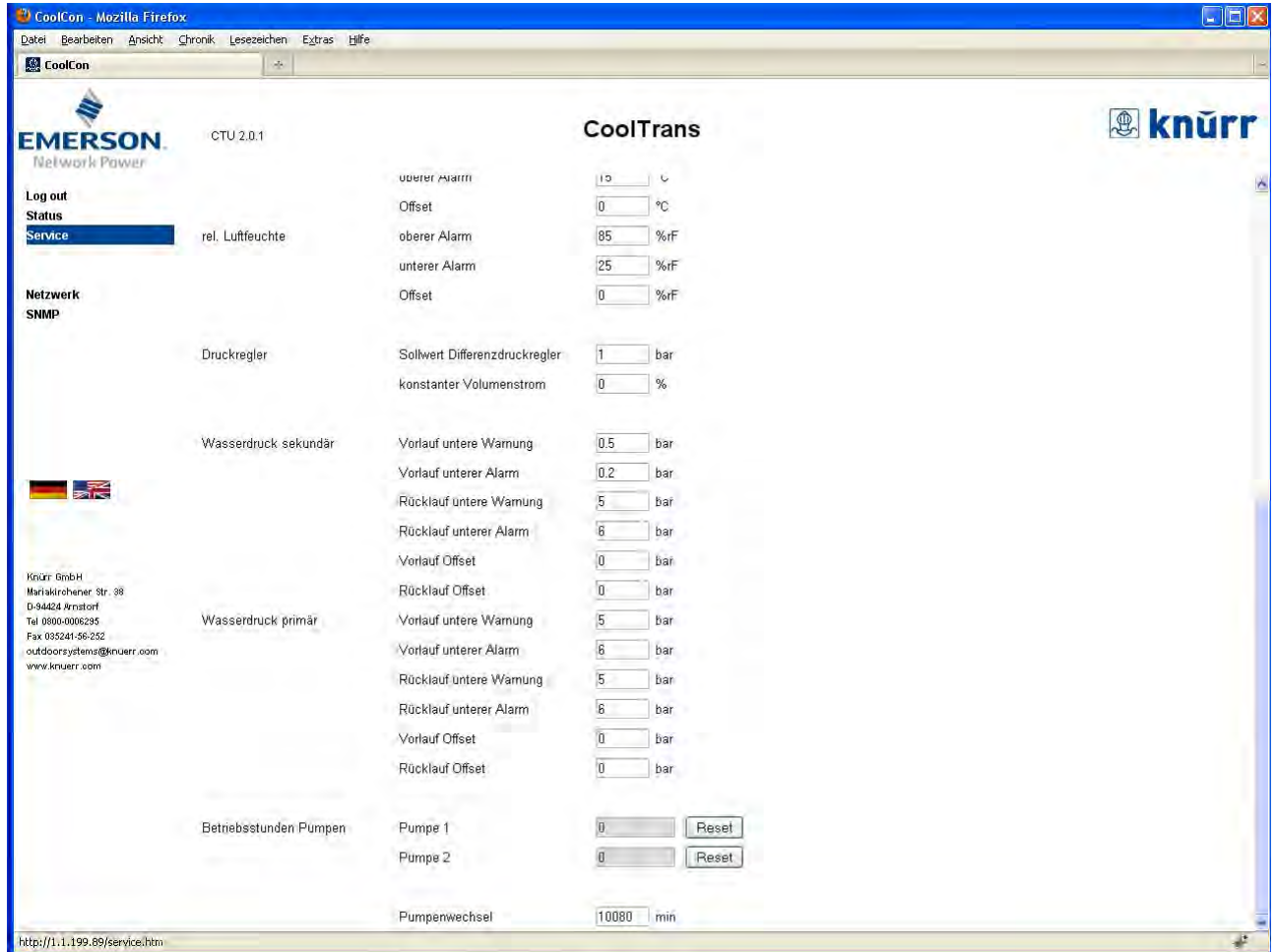
The operating hours of the pumps are displayed here and can be reset upon requirement (e.g., when the pumps are replaced).

In the event of a pump exchange, the interval (in minutes) is entered after which the pumps are toggled.

Service page



Parameter	Setting	Value	Unit
Wasservorlauf sekundär	Sollwert	12	°C
	Taupunktanhebung	1	°C
	obere Warnung	14	°C
	oberer Alarm	15	°C
Wasserrücklauf sekundär	Offset	0	°C
	obere Warnung	14	°C
	oberer Alarm	15	°C
Wasservorlauf primär	Offset	0	°C
	obere Warnung	14	°C
	oberer Alarm	15	°C
	Offset	0	°C
Wasserrücklauf primär	obere Warnung	14	°C
	oberer Alarm	15	°C
	Offset	0	°C
	Offset	0	°C
Lufttemperatur	obere Warnung	14	°C
	oberer Alarm	15	°C
	Offset	0	°C
rel. Luftfeuchte	oberer Alarm	85	%rF
	unterer Alarm	25	%rF
	Offset	0	%rF
Druckregler	Sollwert Differenzdruckregler	1	bar
	konstanter Volumenstrom	0	%



CoolCon - Mozilla Firefox

Datei Bearbeiten Ansicht Chronik Lesezeichen Extras Hilfe

CoolCon

EMERSON Network Power CTU 2.0.1 **CoolTrans** **knürr**

Log out
Status
Service rel. Luftfeuchte

Netzwerk
SNMP

Druckregler

Wasserdruck sekundär

Wasserdruck primär

Betriebsstunden Pumpen

oberer Alarm 15 °C
Offset 0 °C
oberer Alarm 85 %rF
unterer Alarm 25 %rF
Offset 0 %rF

Sollwert Differenzdruckregler 1 bar
konstanter Volumenstrom 0 %

Vorlauf untere Warnung 0.5 bar
Vorlauf unterer Alarm 0.2 bar
Rücklauf untere Warnung 5 bar
Rücklauf unterer Alarm 6 bar
Vorlauf Offset 0 bar
Rücklauf Offset 0 bar

Vorlauf untere Warnung 5 bar
Vorlauf unterer Alarm 6 bar
Rücklauf untere Warnung 5 bar
Rücklauf unterer Alarm 6 bar
Vorlauf Offset 0 bar
Rücklauf Offset 0 bar

Pumpe 1 0 [Reset]
Pumpe 2 0 [Reset]

Pumpenwechsel 10080 min

Knürr GmbH
Mariakirchener Str. 98
D-94424 Arnstorf
Tel 0800-006235
Fax 093241-56-252
outdoorsystems@knueerr.com
www.knueerr.com

http://1.1.199.89/service.htm

Default settings:

Value	Basic setting
Water supply, secondary, set value	14°C
Dewpoint increase	1°C
Water supply, secondary temperature, upper warning	16°C
Water supply, secondary temperature, upper alarm	17°C
Water return, secondary temperature, upper warning	22°C
Water return, secondary temperature, upper alarm	23°C
Water supply, primary temperature, upper warning	12°C
Water supply, primary temperature, upper alarm	13°C
Water return, primary temperature, upper warning	17°C
Water return, primary temperature, upper alarm	18°C
Air temperature, upper warning	is possible
Air temperature, upper alarm	is possible
Relative humidity, upper alarm	is possible
Relative humidity, lower alarm	is possible
Set value at differential pressure control	is possible
Constant volume flow	0%
Water supply, secondary pressure, upper warning	0.5bar
Water supply, secondary pressure, upper alarm	0.2bar
Water return, secondary pressure, upper warning	is possible
Water return, secondary pressure, upper alarm	is possible
Water supply, primary pressure, upper warning	is possible
Water supply, primary pressure, upper alarm	is possible
Water return, primary pressure, upper warning	is possible
Water return, primary pressure, upper alarm	is possible
Pump replacement interval	10080min

6.6 Network Settings

Network settings can be changed after successfully logging onto Level 2 via the page *Network*. Default settings are as follows:

IP address: 1.1.199.88
Network mask: 255.255.255.0

There is only the possibility to allocate fixed IP addresses; DHCP is not supported. When taking up connection, make sure that the PC is within the same IP address area as the control; otherwise communication is impossible.

For changing the IP address, the new values are to be entered into the respective boxes and confirmed by *OK*. After waiting for a short while, during which the control restarts, the new data will be active. The web page must then be newly started by using the new address.

SNMP:

Here the settings are made which are required for the SNMP management. Traps can be sent to two different recipients; the respective check boxes must be activated. The community name for traps needs to be entered only once for all recipients.

Read-community and write-community names are required for GET and SET operations of a network management system. The default setting for this is *public*.

NTP server:

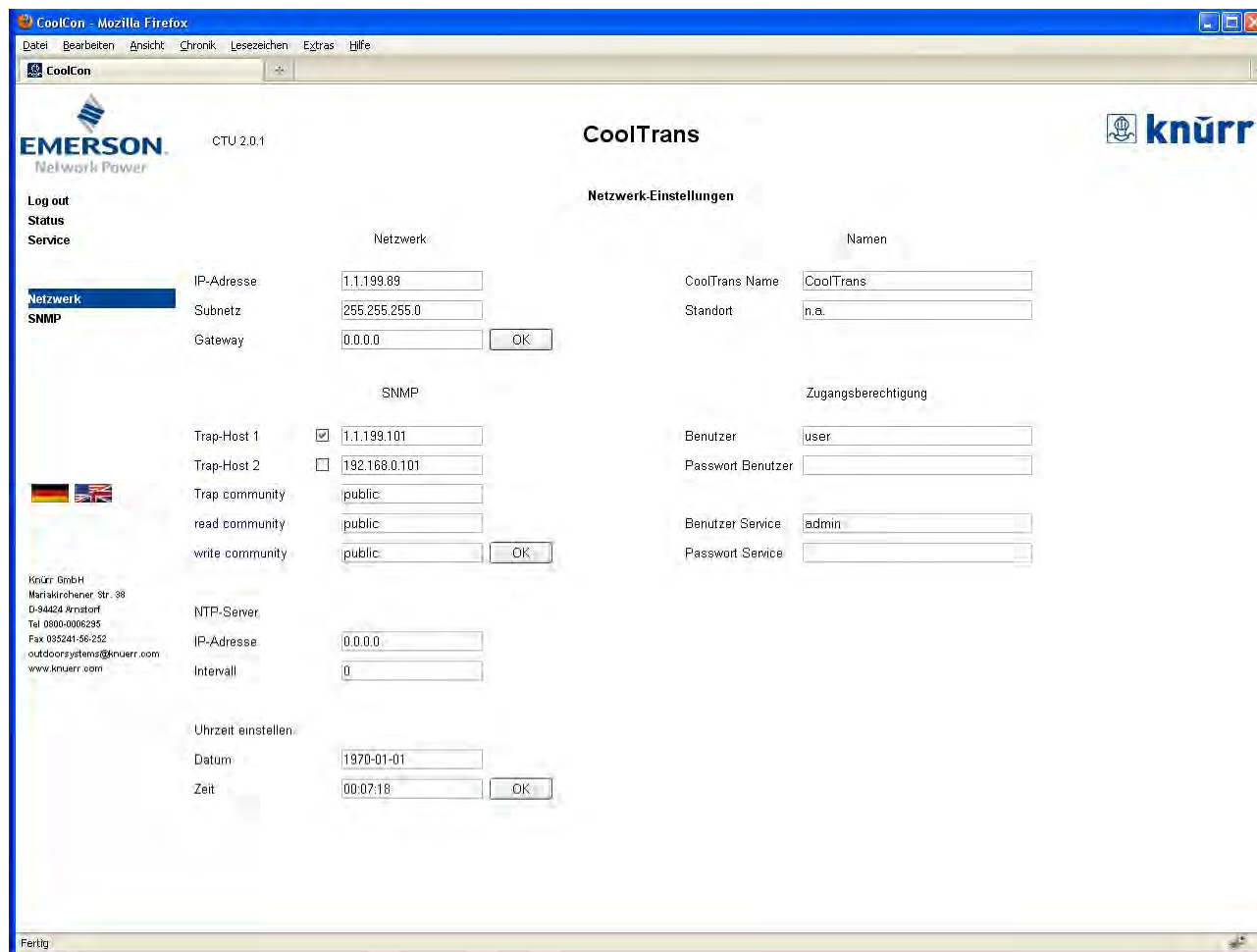
For synchronizing the internal real-time clock with a time server, its address as well as the updating interval in seconds is entered here. As another option, the clock can be set manually. The manual setting works only if *0* has been entered into *Interval* of the NTP server.

Names:

Knürr CoolTrans Name is the name that appears in the header of the web page and, in SNMP, as *sysName*. *Location* is relevant to SNMP only relevant and appears there under *sysLocation*.

Access authorization:

User name and password to the two user levels can be changed here. Default settings are here: *user* and *1111* for the user level (Level 1) and *admin* and *knürr* for the service level (Level 2).



CoolCon - Mozilla Firefox

EMERSON Network Power CTU 2.0.1

CoolTrans

Netzwerk-Einstellungen

Netzwerk

IP-Adresse: 1.1.199.89
Subnetz: 255.255.255.0
Gateway: 0.0.0.0 [OK]

SNMP

Trap-Host 1: 1.1.199.101
Trap-Host 2: 192.168.0.101
Trap community: public
read community: public
write community: public [OK]

NTP-Server

IP-Adresse: 0.0.0.0
Intervall: 0

Uhrzeit einstellen

Datum: 1970-01-01
Zeit: 00:07:18 [OK]

Namen

CoolTrans Name: CoolTrans
Standort: n.a.

Zugangsberechtigung

Benutzer: user
Passwort Benutzer:
Benutzer Service: admin
Passwort Service:

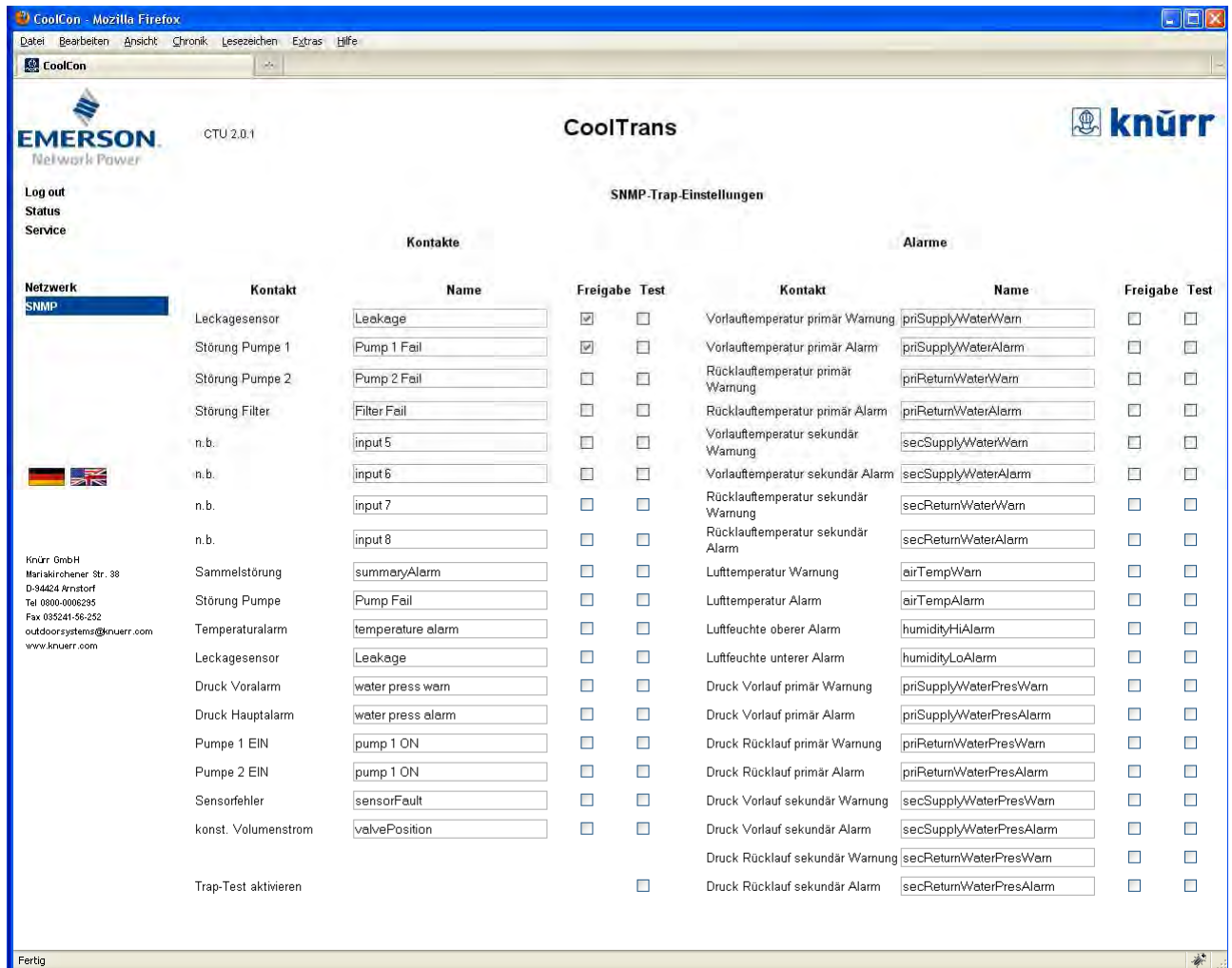
Knürr GmbH
Mariakirchener Str. 38
D-84424 Arnstorf
Tel 0890-006295
Fax 089241-56-252
outdoorsystems@knuerr.com
www.knuerr.com

Fertig

6.7 SNMP

This page serves to define at which of the occurring alarms an SNMP trap is to be sent out. This is released by activating the respective check box.

The communication to a trap recipient can be tested via the trap test function. For testing, activate the check box *Activate trap test* and release the desired alarm. Via *Test*, an alarm trap can be sent out; deactivating the *Test* check box sends out a normal trap.



SNMP-Trap-Einstellungen

Kontakte				Alarmer			
Kontakt	Name	Freigabe	Test	Kontakt	Name	Freigabe	Test
Leckagesensor	Leakage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vorlauftemperatur primär Warnung	priSupplyWaterWarn	<input type="checkbox"/>	<input type="checkbox"/>
Störung Pumpe 1	Pump 1 Fail	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vorlauftemperatur primär Alarm	priSupplyWaterAlarm	<input type="checkbox"/>	<input type="checkbox"/>
Störung Pumpe 2	Pump 2 Fail	<input type="checkbox"/>	<input type="checkbox"/>	Rücklauftemperatur primär Warnung	priReturnWaterWarn	<input type="checkbox"/>	<input type="checkbox"/>
Störung Filter	Filter Fail	<input type="checkbox"/>	<input type="checkbox"/>	Rücklauftemperatur primär Alarm	priReturnWaterAlarm	<input type="checkbox"/>	<input type="checkbox"/>
n.b.	input 5	<input type="checkbox"/>	<input type="checkbox"/>	Vorlauftemperatur sekundär Warnung	secSupplyWaterWarn	<input type="checkbox"/>	<input type="checkbox"/>
n.b.	input 6	<input type="checkbox"/>	<input type="checkbox"/>	Vorlauftemperatur sekundär Alarm	secSupplyWaterAlarm	<input type="checkbox"/>	<input type="checkbox"/>
n.b.	input 7	<input type="checkbox"/>	<input type="checkbox"/>	Rücklauftemperatur sekundär Warnung	secReturnWaterWarn	<input type="checkbox"/>	<input type="checkbox"/>
n.b.	input 8	<input type="checkbox"/>	<input type="checkbox"/>	Rücklauftemperatur sekundär Alarm	secReturnWaterAlarm	<input type="checkbox"/>	<input type="checkbox"/>
Sammelstörung	summaryAlarm	<input type="checkbox"/>	<input type="checkbox"/>	Lufttemperatur Warnung	airTempWarn	<input type="checkbox"/>	<input type="checkbox"/>
Störung Pumpe	Pump Fail	<input type="checkbox"/>	<input type="checkbox"/>	Lufttemperatur Alarm	airTempAlarm	<input type="checkbox"/>	<input type="checkbox"/>
Temperaturalarm	temperature alarm	<input type="checkbox"/>	<input type="checkbox"/>	Luftfeuchte oberer Alarm	humidityHiAlarm	<input type="checkbox"/>	<input type="checkbox"/>
Leckagesensor	Leakage	<input type="checkbox"/>	<input type="checkbox"/>	Luftfeuchte unterer Alarm	humidityLoAlarm	<input type="checkbox"/>	<input type="checkbox"/>
Druck Voralarm	water press warn	<input type="checkbox"/>	<input type="checkbox"/>	Druck Vorlauf primär Warnung	priSupplyWaterPresWarn	<input type="checkbox"/>	<input type="checkbox"/>
Druck Hauptalarm	water press alarm	<input type="checkbox"/>	<input type="checkbox"/>	Druck Vorlauf primär Alarm	priSupplyWaterPresAlarm	<input type="checkbox"/>	<input type="checkbox"/>
Pumpe 1 EIN	pump 1 ON	<input type="checkbox"/>	<input type="checkbox"/>	Druck Rücklauf primär Warnung	priReturnWaterPresWarn	<input type="checkbox"/>	<input type="checkbox"/>
Pumpe 2 EIN	pump 1 ON	<input type="checkbox"/>	<input type="checkbox"/>	Druck Rücklauf primär Alarm	priReturnWaterPresAlarm	<input type="checkbox"/>	<input type="checkbox"/>
Sensorfehler	sensorFault	<input type="checkbox"/>	<input type="checkbox"/>	Druck Vorlauf sekundär Warnung	secSupplyWaterPresWarn	<input type="checkbox"/>	<input type="checkbox"/>
konst. Volumenstrom	valvePosition	<input type="checkbox"/>	<input type="checkbox"/>	Druck Vorlauf sekundär Alarm	secSupplyWaterPresAlarm	<input type="checkbox"/>	<input type="checkbox"/>
Trap-Test aktivieren		<input type="checkbox"/>	<input type="checkbox"/>	Druck Rücklauf sekundär Warnung	secReturnWaterPresWarn	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	Druck Rücklauf sekundär Alarm	secReturnWaterPresAlarm	<input type="checkbox"/>	<input type="checkbox"/>

Page for SNMP trap settings

6.8 Interfaces, Optional

Profibus DP

For linking-in into a Profibus-DP network, the Knürr CoolTrans can be equipped with a Profibus-DP-Slave interface. The following values can be passed through this interface:

Specification	Active	Weighting	Address	Access
Summary alarm	1	0/1	Byte 0. Bit 0	read
Pump failure	1	0/1	Byte 0. Bit 1	read
Temperature alarm	1	0/1	Byte 0. Bit 2	read
Leakage sensor	1	0/1	Byte 0. Bit 3	read
Water pressure pre-alarm	1	0/1	Byte 0. Bit 4	read
Water pressure main alarm	1	0/1	Byte 0. Bit 5	read
Set temperature		WORD (0.1°C)	Byte 2, 3	read/write
Water supply temp., primary		WORD (0.1°C)	Byte 4, 5	read
Water supply temp., secondary		WORD (0.1°C)	Byte 6, 7	read
Water return temp., secondary		WORD (0.1°C)	Byte 8, 9	read
Water pressure, supply primary		WORD (0.1bar)	Byte 10, 11	read
Water pressure, return primary		WORD (0.1bar)	Byte 12, 13	read
Water pressure, supply secondary		WORD (0.1bar)	Byte 14, 15	read
Water pressure, return secondary		WORD (0.1bar)	Byte 16, 17	read
Valve setting		WORD (0..100%)	Byte 18, 19	read

6.9 Determination of the Dewpoint Temperature

There is a program in the SPS control to calculate the prevailing dewpoint temperature. The combisensor, which is loosely attached to the Knürr CoolTrans, measures the ambient relative humidity and room temperature in the installation room and forwards it to the SPS control. To that end, a connection cable of at least 5 wires is to be laid from the humidity calculator. Recommended type of cable: JY(St) Y 4x2x0.8



Do not position the combisensor in niches or behind curtains. Avoid exposure to direct sun irradiation.

The combisensor is to be placed in the coolest place at the place where the CoolTherm or other HDCS products are installed, e.g., in the false floor.

The assembly instructions are printed on the device packaging.

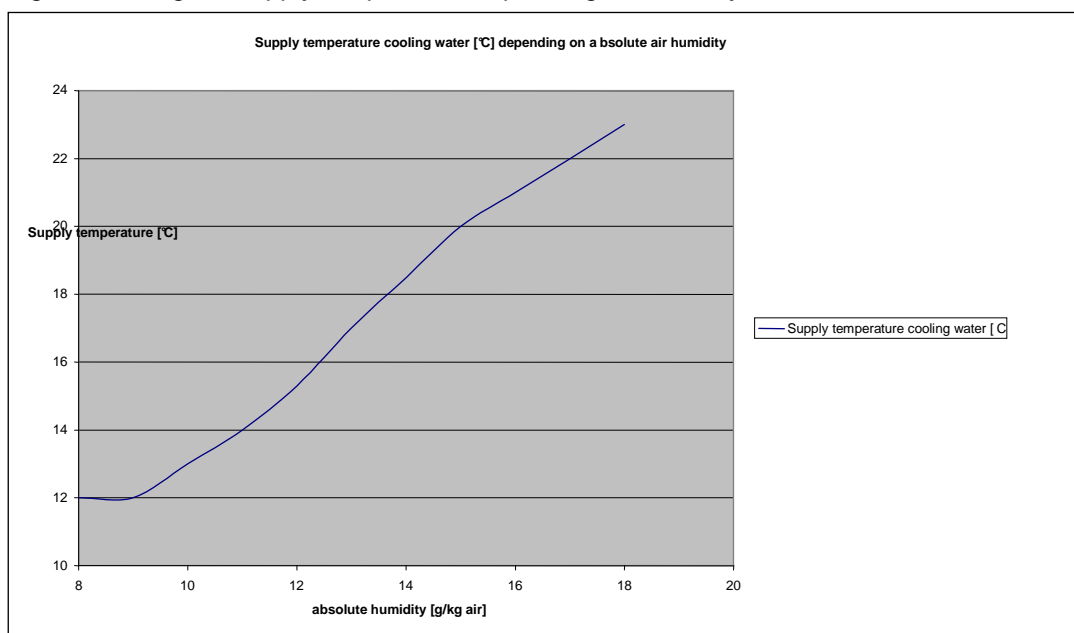


Combisensor
Dimensions: 100 x 90 x 32 mm

Figure: Combisensor

The basis for the cooling water temperature increase in the secondary network is the dewpoint temperature calculated from air humidity and the cooling water supply temperature.

Figure: Raising the supply temperature depending on humidity measured



6.10 Function of the Water Sensor inside the Tub



Alarm-reset button



Sensor with cable (sensor in tub)

Up to three water sensors can be connected to the basic unit. The standard version comes equipped with one sensor cable, two more sensor cables can be connected optionally.

An alarm is triggered by the built-in potential-free relay contact. For raising an alarm, a signal transmitter has been installed in the SPS.

The respectively triggered loop can be detected by means of the three LEDs.

The alarm is deleted by pressing the reset button.

The leak-water detector will trigger an alarm at a water-film level of 0.5 mm in the tub.

7. Maintenance

7.1 Maintenance Intervals



The operator takes responsibility for carrying out maintenance and replacement measures as described in the following and for observing the prescribed time intervals.

Knürr recommends the following intervals for replacements:

- Exchange of the pump group after two years in operation at *high* availability
- Exchange of the valve drive after two years in operation at *high* availability

Knürr recommends the following check intervals:

- Annual check of the admission pressure at the extension tank, refill nitrogen, if required
- Annual check of the non-return flap for functionality
- Annual check of control valve for functionality
- Annual check of the safety valve for functionality
- Annual check of the temperature sensor / pressure sensor for functionality
- Annual check of filter sieves on the secondary side, check sieve for damage, clean sieve
- Annual check of the packed valves of the pumps for leakage

Dirt trap



Check at least once a year for impurification and, if necessary, clean the filter sieve. In the secondary circuit, a dirt trap is installed on the suction side before each pump.

Figure: Dirt trap

- Regularly check the secondary-side pressure and, if necessary, refill cooling water
- Regularly check the safety subassembly for leakage
- Regularly check the system for damage, corrosion, leakage
- Regularly check insulation for damage and for being complete
- Regularly check temperature and pressure-measuring devices
- Regularly check the bearings of the pump for noise

Control cabinet

- Regularly check the optical and acoustic controls in the control cabinet
- Regularly check contactors and relays for wear-and-tear and damage
- Check switch and control processes once a year
- Check emergency setting once a year
- Check settings and limit-value actuators for functionality once a year
- Check control circuit once a year for accordance with set values

7.2 Safety Subassembly

Extension tank

Regularly check the admission pressure at the extension tank.
If the extension tank is leaking or defect, it must be replaced.

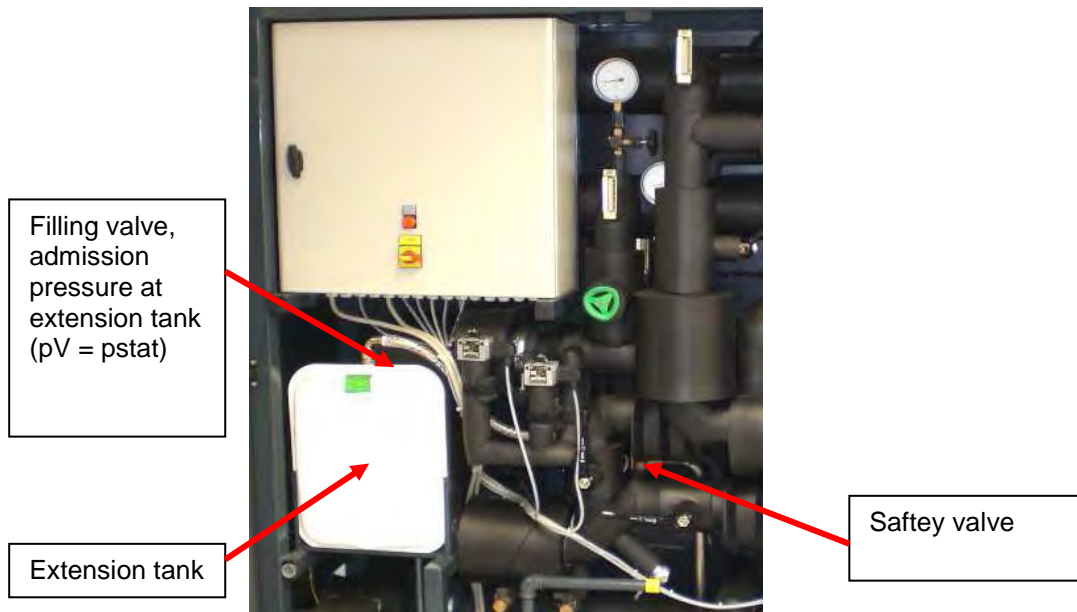


Figure: Safety subassembly

- ▶ max. Betriebsüberdruck 3 bar (Typ N in bekannter Ausführung bis ca. Mal 2000, dann einfließend in EU-Ausführung max. Betriebsüberdruck 6 und 10 bar ab 50 Liter)
- ▶ max. Betriebstemperatur 393 K (120 °C)
- ▶ max. Temperaturbelastung der Membrane 343 K (70 °C)

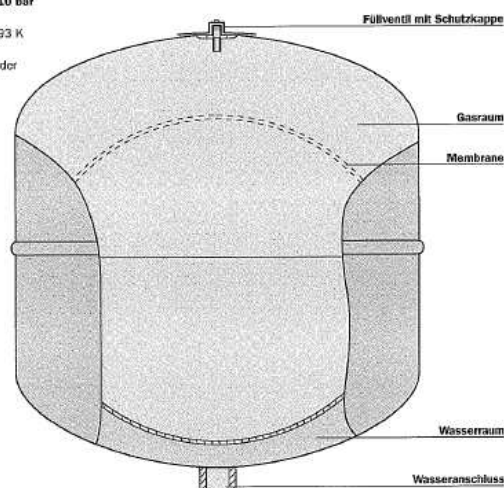


Figure: Cross-section of the diaphragm extension tank

Safety valve



Safety valve

The operating pressure of the secondary cooling water network shall be at least 5% below the closing pressure of the safety valve (2.5 bar). The valve is to be checked for its functionality once a year by briefly opening and closing it. Take care prior to disassembly that the safety valve has been relieved.

Cap valve



Annual maintenance also requires checking the admission pressure in the extension tank.

For that purpose, drain the water-side connection of the extension tank. To do so, remove the lead seal from the cap valve, remove the cap and close the valve by turning it down using an Allen key.

Thus, the diaphragm extension tank is separated from the cooling water system.

Then open the bleeding valve. Then check the admission pressure with a measuring gauge, compare it with the pressure indicated on the product plate and probably refill with nitrogen. Slowly open the cap valve after the pressure test. Close it again as soon as water emerges from the bleeding valve. Return the cap again and seal it with leads again.

8. Customer Service, Manufacturers' Addresses

All Knürr products are subject to permanent quality control and comply with applicable regulations. In case of any issues relating to our products, please do not hesitate to contact the fitters of our system or contact the company directly at:

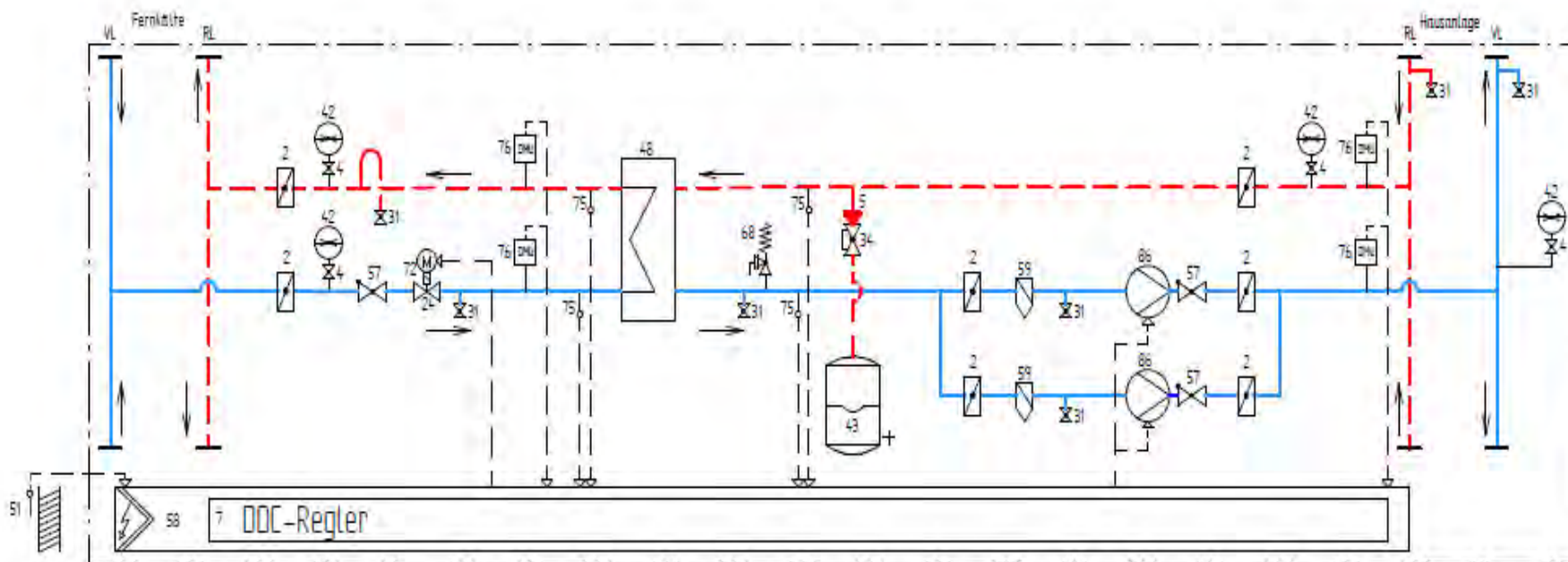
Knürr GmbH
Glashüttenstraße 1
01623 Lommatzsch

Phone: +49 (0) 800 000 6295

E-mail: service@knuerr.com

9. Annexes

9.1 Hydraulic Circuit Diagram



No.: Specification

2	shut-off flap	42	pressure gauge	59	dirt trap
4	shut-off valve	43	pressure extension tank	68	safety valve
5	connection to extension tank	48	heat exchanger	72	motor drive
7	DDC regulator / SPS	51	combined sensor ('combisensor')	75	temperature sensor
24	straight-way valve	57	non-return valve	76	pressure transducer
31	filling and emptying valve	58	control cabinet	86	circulation pump
34	cap shut-off valve				