Operation Manual

Water-Water Cooler WW 5001

Version 1.0

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History of Changes

Date	Index	Reason for Change	Name	Page
11-Sep-2014	V. 1.0		Dany/Gimm	

1 About this Manual

This document is the English translation of the orignal Operation Manual in German language for the Water-Water Cooler WW 5001 (called device in the following). It is based on German safety regulations. In your country other regulations may apply.

This Operational Manual addresses the needs of the user of the device. Its intention is to allow the safe operation of the device. Thus, it should be read carefully and be kept in a space accessable for the users of the device at any time.

All chapters of this Operation Manual can be read independently and thus can be used for look-up purposes.

1.1 Terms of Guarantee

General sale and delivery terms of LAIRD apply. The buyer accepts these terms, at the latest when signing the contract of purchase.

The particular terms of guarantee and duration of guarantee of the device in question can be taken from the contract documents as well as from the order confirmation.

Warranty claims and liability are excluded in case of one of the following situations:

- Use of the device in an unintended way
- Inaccurate installation, putting into service, operation, repair or maintenance of the product by people that are not fully authorized
- Use of the product despite of defect, wrongly implemented or non-functional safety devices or protective gear
- Unauthorized or forbidden modifications by the user concerning the electrical equipment of the device
- Unauthorized or forbidden modifications by the user concerning the mechanical structure of the device
- Unauthorized or forbidden modifications by the user concerning the operating parameters
- Use of unauthorized tools
- Use of unauthorized operating supplies
- Exceedance of mandatory maintenance intervals
- Cases of disaster caused by foreign matter influence or act of nature beyond control

PLEASE NOTE

Any form of unintended use of the device and any structural change caused by the user without prior authorization in written form by LAIRD will lead to the termination of warranty as well the termination of the declaration of conformation and will free LAIRD from product liability. This concern includes safety devices as well.

In case of authorized changes or when adding optional equipment it is the sole responsibility of the customer to assure the accurate implementaion of the safety devices required.

1.2 Contact Information

If you have questions with respect to this device please use the contact information given below. Always communicate the following:

- Your name and address,
- Name of contact at your address,
- Product data as on identification plate: Type of device, serial number and year of manufacture

Company contact:

Mail:	Laird Technologies GmbH Borsigstrasse 1 D-24568 Kaltenkirchen Deutschland
Internet:	http://www.lairdtech.com
E-Mail:	info-lcs@lairdtech.com
Phone:	+49 4191 9993-0
Fax:	+49 4191 9993-33

2 Product Identification

2.1 Device Specifications

Manufacturer	Laird Technologies GmbH
Type of product	Water-Water cooler
Type of device	WW 5001
Item number	1109.30

Table 1: *Device specifications*

2.2 Identification Plates

The identification plate is attached to the front side of the device (see picture 1).

Fig. 1: *Position of identification plate*

1	GE Identification	2	LAIRD Identification

Identification plates of the device

Fig. 2: *Unit specific identification plate*

1	Unit type	2	Date of manufacture
3	Article number	4	Serial number
5	Electrical specification		

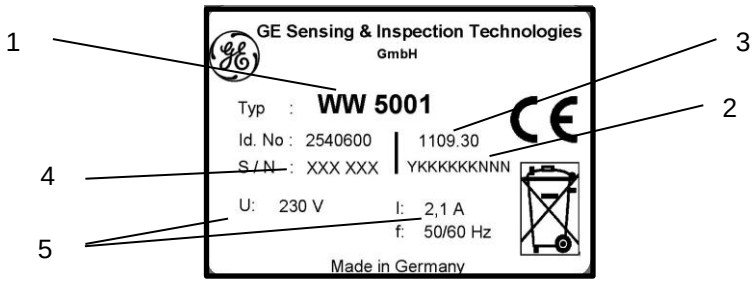


Fig. 3: *Unit specific identification plate*

1	Unit type	2	Date of manufacture
3	Article number	4	Serial number
5	Electrical specification		

3 Safety Regulations

3.1 Hazard classes

In this document safety instructions are using standardized representation and symbols. Depending on the probality of their incidence and the severeness of consequences three hazard classes are used

DANGER

Reference to direct danger for humans.

Inobservance will lead to irreversible injuries or exitus.

CAUTION

Reference to noticeable danger for humans or possible damage to property.

Inobservance may lead to reversible injuries or to damage to property.

3.2 Safety Symbols

In this Operation Manual concrete safety instructions are given in order to point out unpreventable residual risks when operating the device. These risks include danger for

- Human beeings
- The device and other equipment
- The environmentt

The safety symbols used in this manual are indicated below. The main reason for their use is to point the reader to the safety instruction given in the text field.

Symbol	Meaning
	Warning with respect to general danger or damage to property
	Warning with respect to electrical hazard

Table 2: *Warning signs*

Table 3:

Symbol	Meaning
	This symbol indicates the requirement of protection goggles.
	This symbol indicates the requirement of protection gloves
	This symbol indicates the requirement of disconnecting from mains.

Table 4: *Signs giving orders*

3.3 Hints for Safe Operation

PLEASE NOTE

Conduct inspections on a regular time base.
This will ensure that the appropriate measures will be carried out indeed

The device is operational save. It was built according to the existing state of technology.

Despite this the device could cause hazards if it:

- Is used in a way it was not intended for,
- Is used improperly,
- Is operated under unsuitable conditions

3.3.1 Prevent Hazards

Hazards can be prevented by safety-conscious and anticipatory behaviour of staff.

Everybody working with the device should keep the following in mind:

- Make this Operation Manual available for everybody at the operational location of the device in a complete and perfectly readable form
- Use the device exclusively for what it was intended
- The device must be operational and errorfree. Check the condition of the device before working with it and within a regular time frame
- Make sure that nobody can injure themselves by any part of the device
- Any disruption or recognizable change concerning the device should be reported to the person responsable
- Stick to the accident prevention regulations as well as any regional regulations
- Use personal protection equipment

3.3.2 Hints Regarding the Electrical Equipment

DANGER

Danger to life through electrical shock when working on the electrical equipment of the device!

- Switch-off the device before starting your work
- Disconnect the device from mains by pulling the mains plug
- Verify that the installation is dead (volt-free)
- Carry out grounding or short circuiting

When working on electrical installations the following principles should be observed:

- Works on the electrical installations may only be accomplished by qualified electrical staff!
- When connecting electrical equipment to mains regional regulations have to be observed. Be aware of the connection diagram information
- The device is powered by electricity. Electrical shock hazard exists, if the electrical installations are defective or the insulation fails during operation
- When switched-off the device is not disconnected from mains. This is only the case when the mains plug is pulled
- Any changes regarding the control elements of the device can have an influence on the save operation. All changes intended must be authorized by the manufacturer
- After the implementation of a change the operativeness of the safeguards must be verified
- No unauthorized changes on the device are allowed. All intended changes must be authorized by the manufacturer

3.3.3 Environmental Issues

Environmentally concious and anticipatory behaviour of staff avoids environmentally hazardous impacts

The following principles apply for environmentally conscious behaviour:

- Environmentally hazardous substances must not get into the ground or in the drains. They should be kept in appropriate containers
- Environmentally hazardous substances must be fed to utilization or disposal according to regional regulations

When dealing with operating supplies always keep aware of the safety data sheet of the corresponding manufacturer.

3.3.4 Exclusion Criteria

PLEASE NOTE

Operating Personal

Personal is only allowed to operate the device. They are neither allowed to open the device chassis, remove parts, connect or disconnect power or coolant fluids nor to do maintenance.

3.3.5 Protective Gear

During cleaning, on-site maintenance, repair and upkeep it might be required to wear the following personal protective gear.

	Protection goggles
	Protection gloves

3.4 Safety Equipment

PLEASE NOTE

The safety equipment listed below must be integrated in the local control environment by the customer, unless otherwise noted. These works must be carried out solely by trained experts. All information required can be taken from the wiring diagram shown in the addendum.

Safety equipment must not be modified, removed or taken out of operation. All parts of the safety equipment must be accessible at all times.

Familiarize yourself with all safety equipment - this can prevent or minimize bodily harm and/or device failure in case of disaster.

3.4.1 Safety and Signalling Equipment included in the Device

The device is equipped with safety equipment at danger spots (see Fig. 2)

- The maximum temperature of the cooling circuit is controlled by a non-variable thermostat with an opener contact that must be integrated into the safety circuit of the device to be cooled
- The maximum pump pressure is limited by a safety valve that bypasses the liquid stream when the pressure pre-set is exceeded.

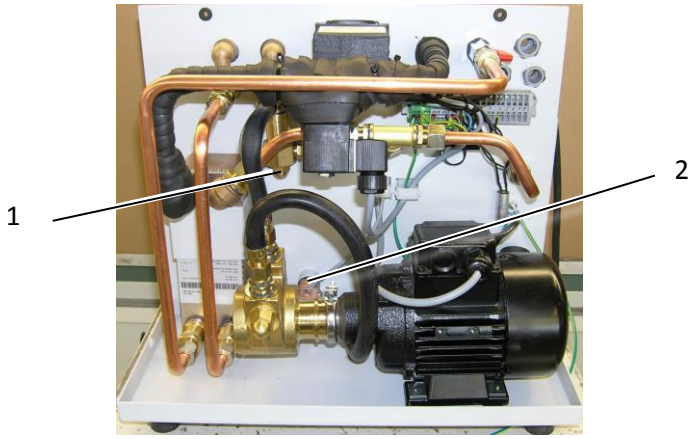


Fig. 4: *Safety equipment*

1	Safety valve	2	Thermostat

3.4.2 Guards

Direct access to hazardous parts or areas of the device is restricted by the device cover. The cover may only be removed for the purpose of maintenance or repair works and shall be replaced prior to taking the device back into operation. The device cover is fixed by four M5x16 screws.

The electrical terminal area is accessable after removing the back cover. For opening/closing of the fasteners an AF8 wrench is required.

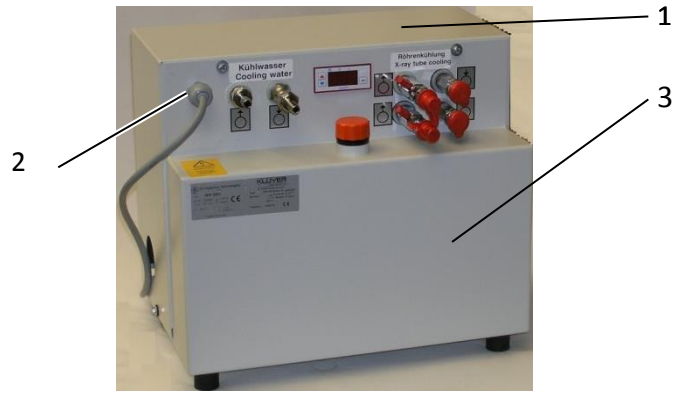


Fig. 5: *Guards*

1	Removable device cover	2	Access bushing for electric terminal block
3	Device body		

3.4.3 Caution Labels

Danger spots on the device are indicated corresponding to German safety regulation BGV A8 "Sicherheits- und Gesundheitsschutzkennzeichnung am Arbeitsplatz".

Caution labels on the device must be easily readable at all times. Illegible caution labels must be exchanged immediately.

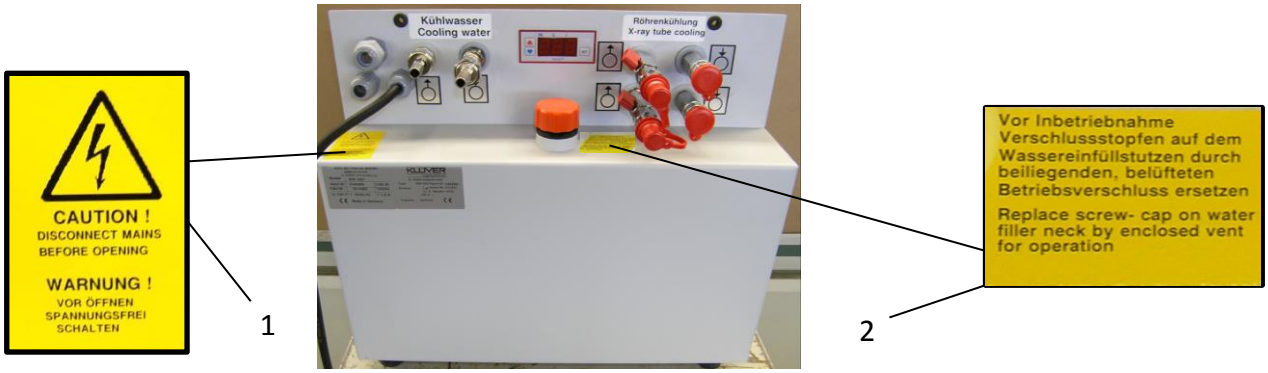


Fig. 6: *Caution labels on the device*

1	Hint on electrical hazardous area	2	Tank cap instructions

3.5 In Case of Accidents

Should you or an other person be injured when working with the device:

- Stay calm,
- Render first aid,
- Address the company first-aider without exception.

4 Product Description

4.1 Intended Use

The water-water cooler WW 5001 is intended for the cooling of a water circuit. As a coolant water or a water/glycol mixture can be used. The coolant circulates between the cooling device and the device to be cooled. It is recooled by a water-cooled heat exchanger operating on the principle of opposed flows. The maximum cooling capacity depends on the difference between the temperature of the water supply intake and the temperature of the coolant forward flow. Its value is 5000 Watts for a temperature difference of 12K.

The device is exclusively intended for use in industrial and commercial environments.

The intended use also includes the observance and following of all hints given in this Operation Manual.

4.2 Non-Conformity with the Intended Use

Operation of the device under improper operational conditions is not allowed, since otherwise the operation safety can not be granted.

When using the device in a way not compliant with the intended use, hazardous situations may occur.

Operation of the device is not allowed under the following conditions:

- The device is used for a purpose other than the one it is intended for
- The device or parts of it are damaged, the electrical installation is not correct or the insulation is broken
- Protective or safety equipment is not functional or defect, improperly installed or missing
- The device is not working properly
- The device has been modified in any way.
- Controlling devices were modified in a way that is not permitted
- Operational parameters were changed in a way that is not permitted
- Operation in areas exposed to explosion hazards
- Operation with cooling media not according to specification
- Use of unauthorized tools
- Exceedance of the compulsary maintenance intervals

PLEASE NOTE

The manufacturer is not liable for damage occuring when using the device in a way it was not intended. When using the device in a way it was not intended for, the manufactorer's waranty given by LAIRD will expire.

4.3 Predictable errors during operation

The device may not be used to cool a different medium than detaield in its technical specification. Furthermore the device my only be operated in its defined temperature range (refer to technical specification at p. 23).

4.4 Device Components

Additional information can be retrieved from the flow scheme shown in the addendum. The device consists of the following main components:

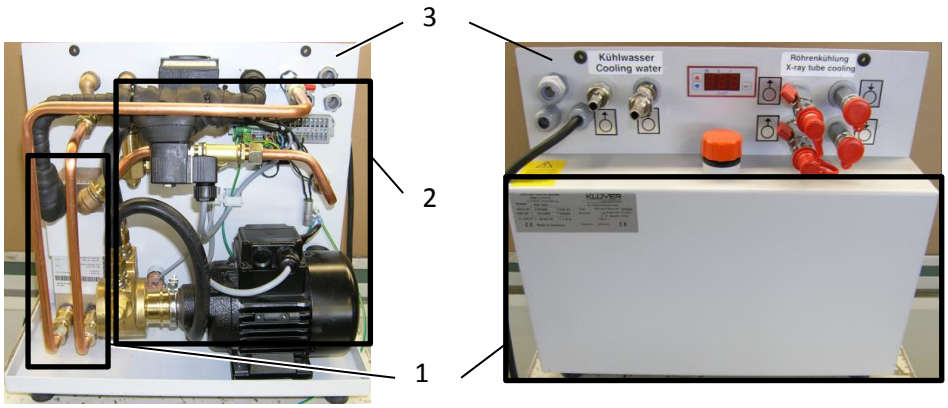


Fig. 7: *Main components*

1	Coolant container and heat exchanger	2	Cooling circuit
3	Device body		

4.4.1 Operation console

The operation console provides the following elements (s. Fig. 8):

Temperatur controler with display

The temperature controller has a numeric display for visualisation of set and actual temperature values as well as 3 LEDs to indicate operation modes. The temperature settings can be changed via three control keys.

Fig. 8: *Temperaturcontroller with Display*

1	Control key UP	2	Control key DOWN
3	Control key *SET*	4	Control key NOT IN USE
5	3 Digit 7 Segment Display		

Changes to system settings are made through the control panel. During normal operation the display will show the current temperature of the cooling circuit. If changes are made the current paramenter will be presented in the display.

Warnings

An underrun of the cooling fluid („Water level low“) and reaching of the allowed maximum temperature (“Temperature MAX“) in the cooling circuit are indicated.

4.4.1.1 Restarting the controller in case of error

PLEASE NOTE

In some rare instances the controller might register a sensor or EEPROM Error (Display shows „PPP“ or „EEE“). In this case the controller will be locked and needs to be reset.
All program data will be lost !

1) Press the key ▲ and SET simultaneously for approx. 5 sec.

⇨ The controller has been reset.

4.4.2 Cooling cycle

In the cooling circuit the coolant is driven by the pump to the device that is to be cooled and back via the return flow. The heat is dissipated into the ambient air by an air-cooled heat exchanger. Exceedance of the maximum pump pressure is prevented by a bypass-circuit.

The water temperature is controlled by an electric thermostat, whereas water throughput is controlled by a flow control device. Both indications are made potential-free and must be integrated into the safety circuit of the device to be cooled.

The WW5001 can be used to cool down up to two target devices at the same time. For equal cooling capacity the length of the cooling hoses must be the same on each loop (to the target device and back to the cooling unit). Furthermore care must be taken that there are no sharp corners and the hoses do not fall short of a minimal bending radius.

PLEASE NOTE

The WW5001 has a **overall** cooling capacity of 5.0kW. This must be taken into account when both target devices are operated at the same time.

4.5 Specifications

Dimensions and weight

Length:	450 mm (w/o hose nipples)
Width:	300 mm
Height:	400 mm
Weight:	ca. 25kg (empty)
Coolant capacity:	8.5 liters

Table 5: *Dimmensions and weight*

Performance data

Cooling capacity:	5.0 kW at 5,0l/min
Throughput:	> 10.0 lpm @ 4,0 bars
Mains voltage:	230 VAC, 50/60 Hz
Current draw:	1.1 A
Operating noise:	≤ 47 dB (60 Hz), @ 1 m distance

Table 6: *Performance data*

Environmental conditions

Operating temperature:	0 °C ... +40 °C
Storage temperature:	-2 °C ... +70 °C (empty)
Relative humidity:	10% … 90%
Protection class	IP20

Table 7: *Environmental conditions*

Settings

Water outlet temperature	25 °C
Temperature control switch	35 °C (fixed), ± 3°C tolerance, 15°C hysteresis
Maximuim forward pressure	6.5 ± 0.2 bars

Table 8: *Settings*

4.6 Setting-up Requirements

4.6.1 Installation Location

- The location must be even.
- When choosing the installation location the following must be kept in mind:
    - forward and back flow connections must be easily accessable
    - all tubes must be installed without sharp bends.

4.6.2 Environmental Conditions

CAUTION

Risk of damage through unsuitable environmental conditions.

Damage to property and corrosion damage may result and are not covered by manufacturer's liability.

- The device is only authorized for use in indoor environments
- The device must not be stored or operated in agressive, humid environments
- The device must not be stored or operated outdoor

Take care of the environmental conditions as given in the specifications on page 20.

4.6.3 Infrastructure

The following infrastructure is required for connecting the device:

Physical variable	Rated value
Operating voltage	230 VAC, 50/60Hz

Table 9: *Required infrastructure*

5 Transport

5.1 Safety Indications for Transportation and Setting-up

CAUTION

Risk of injury by lifting the device!
The weight of the device is almost 25 kg.
- Do not lift the device manually
- Always use proper auxiliary means such as a forklift or a jack lift
- Ask a collegue for assistance when moving the unit

CAUTION

Risk of damage through improper transportation
The mounting suspensions of different components inside the device are not secured with transportation locks. In case of improper transportation these can be damaged beyond repair and would need to be replaced.
- Transport the device upright
- Device is not to be tilted or subjected to mechanical impact

5.2 Transportation of the Device

The device is delivered shrinked in foil on a transportable pallet. Leave the device on the pallet until bringing it into service. Use a forklift or jack lift for transportation to the installation location.

5.3 Unpacking and disposal of packaging material

Remove the foil before setting up the device

Inspect the device with regard to:

- Damage caused by transporation
- Completeness of delivery

Lift the device with a forklift or jack lift off the transportable pallet.

Dispose of the packaging material in accordance with regional regulations

PLEASE NOTE

LAIRD advises to keep the transportable pallet for later transportation of the device.

6 Initial Operation

6.1 Safety Indications Related to Initial Operation

CAUTION

Danger of malfunction caused by faulty connections during initial operation.

Before switching-on the device make sure that:
- All safety equipment of the device is implemented and functional
- All connections were properly made

Please follow the rules in chapter Safety Regulations on page 10.

6.2 Setting to Work

6.2.1 Placement

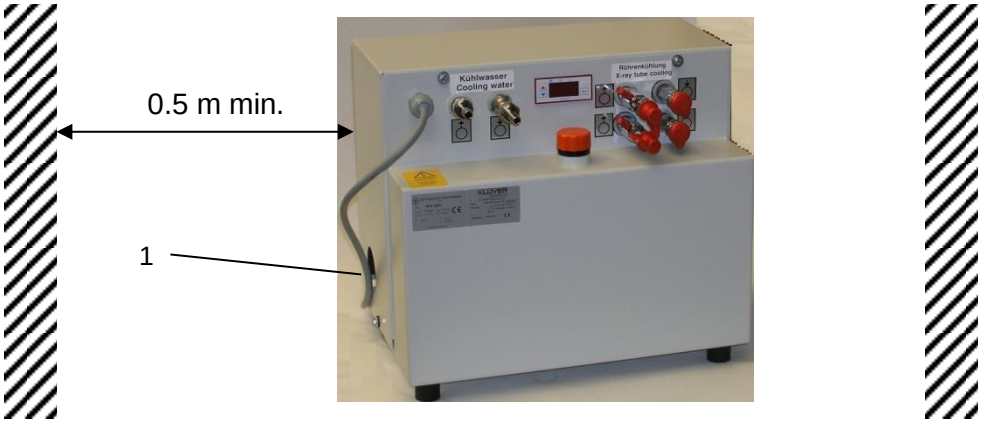


Fig. 9: *Minimum clearance for air entrance and air exit*

1	Ventilation grid

1) Move the device to its installation location as mentioned in chapter 5.2.
2) Position the device in a way that air entrance and air exit are not obstructed. Wall clearance must not be less than 0,5 m, otherwise cooling capacity may be restricted

PLEASE NOTE

In case of storage of the device at temperatures lower than 5°C or higher than 40°C for longer periods please wait 3 hours prior to initial operation to allow for temperature adjustment.

6.2.2 Cooling Circuit Connection and Filling

CAUTION

Risk of damage by using improper cooling hoses.
This may lead to damage to persons, damage to property or corrosion damage.
- When choosing cooling hoses pay attention to sufficient burst strength and compatibility with coolant
- Only use cooling hoses without any signs of damage
- In case water is beeing used as coolant ensure that non transparent hoses are used to prevent the growth of alge in the water. Othere wise appropriate additives have to be used

The cooling hoses with an internal diameter of 9 mm are connected to the device by means of hose nipples. Water outlet and water inlet are indicated with respective symbols.

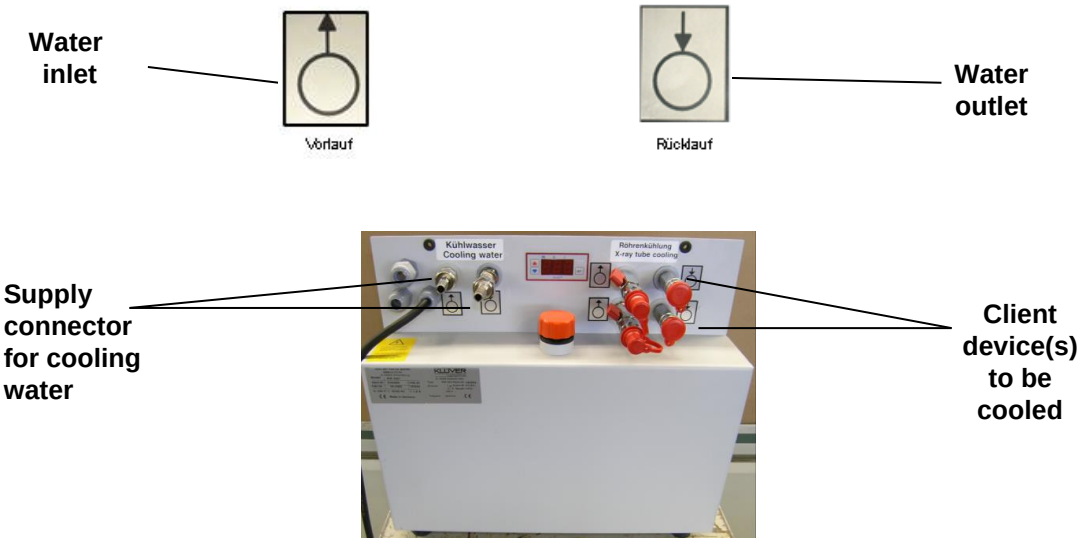


Fig. 10: *Labelling of water inlet and water outletf*

1) Connect a suitable hose to the hose nipples for water inlet and water outlet and secure it with a clamp, respectively
2) Connect the hoses of the device(s) to be cooled to the corresponding couplings

PLEASE NOTE

When connecting the cooling hoses pay attention to flow direction. Follow the documentation released by the manufacturer of the device to be cooled.
Transparent hoses stimulate algae growth that may increase the error-proneness of the components built into the device. Thus, only use non-transparent hoses.

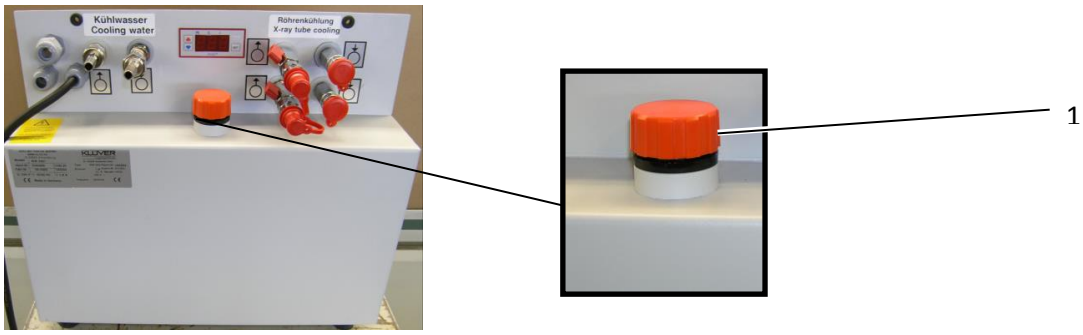


Fig. 11: *Cap of coolant container*

1	Cap

3) Open the coolant container by removing the cap
4) Fill the coolant container with about 8,5 liters of water (filling height is 2 cm below the intake). If necessary use anti-freeze according to table 11
5) Tutrn on the device and let it run for about 10 minutes to vent the system.
6) Refill coolant if required.
7) Close the coolant container by re-fitting the cap

PLEASE NOTE

LAIRD recommends GLYCOSHELL as an anti-freeze in the following concentration (based on 10 l water). Ensure to blend the anti-freeze with the water prior to filling it into the coolant reservoir. Thus it is ensured that the maximum capacity is not exceeded.

Ambient temperature [°C]	+5	0	-5	-10	-15	-20	-25	-30	-35	-40
GLYCOSHELL [Liter]	0,7	1,2	1,7	2,3	3,0	3,5	4,0	4,5	5,0	6,0

Table 10: *Amount of anti-freeze depending on ambient temperature (based on 10 l water)*

6.2.3 Electrical Connections

DANGER

Danger to life through electrical shock when working on the electrical equipment of the device!

- Switch-off the devicebefore starting your work
- Disconnect the device from mains by pulling the mains plug
- Verify that the installation is dead (volt-free)
- Carry out earthing or short circuiting

CAUTION

Risk of damage through improper connections.
Improper integration of the device into the safety circuit of the device to be cooled will lead to the inoperativeness of the safety equipment listed in chapter 3.4.1 on page 13.

- All connections required must be incorporated according to the wiring diagram shown in the addendum.
- Ensure yourself that all connected safety equipment is properly functioning.
- All works should be carried out solely by an expert.

PLEASE NOTE

The device is delivered without a mains cable. The electrical connection as well as the integration into the safety circuit of the device to be cooled are the customer's responsibility and must be accomplished by expert staff.
Information required can be drawn from the specifications listed on page 20 and the wiring diagram to be looked up in the addendum.

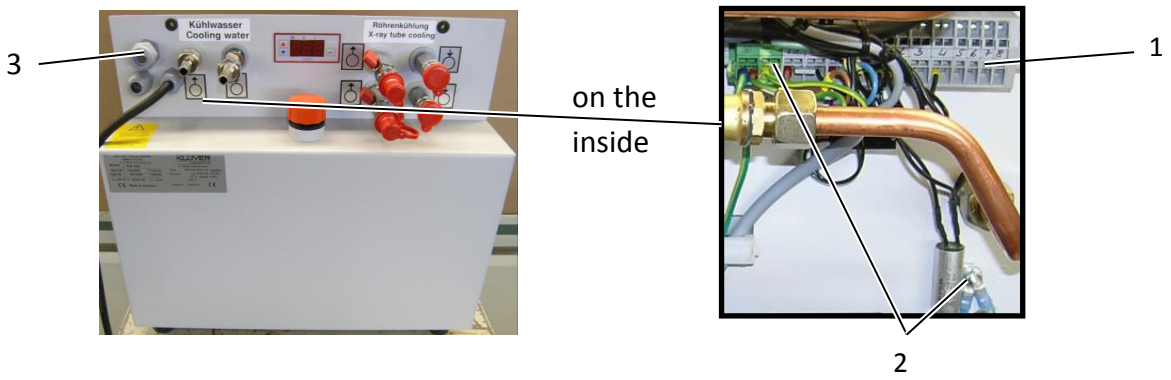


Fig. 12: *Electrical terminal behind access plate*

1	Electric terminal stripe	2	Earth Connectors (bolt M5 and pins)
3	Cable bushings		

1) Remove the back cover
2) Feed the mains cable through one of the cable bushings and make the connection to the terminal. Then do the same with the wires for the implementation of the safety circuit
3) Remount the back cover

After installation of the mains cable connect the device to mains by inserting the mains plug or making a mains connection as required by the particular scenario.

6.2.4 Carrying out Setting to Work

After connecting the cooling circuit, filling the coolant container and finishing the electrical connections follow the steps below for the setting to work for the device:

1) Remove the cap on the coolant container
2) Switch-on the device and let it run for about 10 minutes in order to fill and vent the cooling circuit. Continously check the filling level during this procedure.

CAUTION

Lack of coolant may destroy the pump.
When looking into the filling plug of the coolant container the filling level must always be at least 3/4 of the hight

3) If required, refill coolant
4) Check the compliance with the operational parameters as specified on page 20
5) Remount cap on coolant container
6) Switch-off the device

⇨ The device is ready for operation

6.3 Daily Start-up

Switch-on the device about 1 minute prior to using the equipment that is to be cooled.

6.4 Setting to work after Storage

Setting-to-work after storage will have to follow the same procedures as required for initial operation (see chapter 6.2).

7 Controlling the Device

The device is controlled using the controls of the equipment that is to be cooled.

All alarm and error signalling is only indicated on the control panel of the equipment that is to be cooled.

7.1 Safety Indications for Controlling the Device

CAUTION

Lack of coolant may destroy the pump.
- Operate the device only when the filling of coolant container is sufficient
- Check the filling level oft he coolant container periodically

Also pay attention to the hints given in the chapter Safety indications on page 10.

7.2 Switching-on the Device

➢ The device is ready for switching-on

1) Switch-on the device about 1 minute prior to operation of the device to be cooled using the appropriate control of that device
2) Check the compliance with the operational data according to the specifications listed on 20

⇨ The device is running

7.3 Switching-off the Device

➢ Cooling operation has come to an end

1) Switch-off the device using the control of the device to be cooled
2) Close all valves that may exist in the extension of the hoses running to and from the device

⇨ The device is out of operation

7.4 Settings

PLEASE NOTE

The flow switch and the bypass-valve are set according to specification and sealed. Any modifications to these settings lie in the sole responsibility of the customer and must only be carried out by expert staff.

7.4.1 Bypass value

The bypass-valve is set by the manufacturer to a maximum pressure of 2.5 bars. If any modification to this setting should be required, please contact the LAIRD service department to receive briefing.

7.4.2 Temperature Controller

PLEASE NOTE

The settings of the anti-freeze thermostate are made during production and are not to be changed. Should a change to these settings become necessary please contact LAIRD Services.

The temperature settings are made according to customer specifications

The electronic temperature controller controls the solenoid valve in the cooling circruit and the contact for maximum water ouztlet temperature. The controller has 11 paramerters, wich are set according to the specifications of the cooling unit WW 5001

PLEASE NOTE

To ensure the function of the cooling unit, only parameter P0, P1 and P3 are to be changed by the customer.

To change the temperature values of the water forerun (temperature Max T1) or the alarm value(T3) proceed as follows:

Fig. 13: *Temperaturecontroller with displayr*

1	Control key UP	2	Control key DOWN
3	Control key *SET*	4	Control key NOT USED
5	3 digit 8 segment display		

7.4.2.1 Temperature of water outlet - nominal value (T0) set up

1) Press the SET-key longer then 1 second, display shows “P0”
   ⇨ The current temperature setting is displayed. Set up mode is activated
2) Press the SET key briefly, display shows the currently stored value
3) Use the keys ▲ and ▼ to set the desired value
4) Press the SET-key
   ⇨ Set up mode is now disabled. The new nominal value of the water forerun is displayed briefly

⇨ New temperature of water outlet has been set

If no input is entered the temperature controller will automatically return to normal operation mode after 5 seconds

7.4.2.2 Hysteresis of water forerun nominal value (T1) setup

PLEASE NOTE

The hysteresis value of T0 is set as factory default to 1K . The value itself is stored in the internal parameter “P1” of the temperature controller.

1) Press the SET key longer then 1 second.

⇨ The display shows „P0“

2) Use the key ▲ once to select parameter „P1“

3) Press the SET key briefly.

⇨ The display shows the current value for the T1- hysteresis. Setup mode is activated.

4) Use the keys ▲ and ▼ to set the desired value

5) Press the SET-key

⇨ Set up mode is now disabled. The display shows „P1“

⇨ New hysteresis value for T1 has been set

If no input is entered the temperature controller will automatically return to normal operation mode after 5 seconds

7.4.2.3 Alarm value (P3) setup

PLEASE NOTE

By default the nominal value of the anti-freeze temperature is set to 5 °C by the manufacturer. It is stored in the internal parameter „P3“ of the temperature controller.

Example:
The hysteresis specifies a temperature range of 4K below the parameter P3. This would result in the following values for start and end oft he alarm signal.

Nominal value of water outlet is set to 25°C.
Upper maximum 35°C
Alarm signal ON at >35°C.
Alarm signal OFF at <31°C.

1) Press and hold the SET-key longer then 1 second

⇨ The display shows „P0“

2) Press the key ▲ twice to select parameter „P3“

3) Press the SET-key briefly.

⇨ The display shows the current value for the P3- alarm value. Setup mode is activated

4) Use the keys ▲ and ▼ to set the desired value.

5) Press the SET-key briefly

⇨ Setup mode is now disabled. The display shows „P3“

⇨ New anti-freeze value for P3 has been set

If no input is madwe the temperature controller will automatically return to normal operation mode after 5 seconds [[zurück]]

8 Disruptions

8.1 Disruption in Operation

The most common reason for disruption in operation of the device is improper maintenance. Maintenance should be carried out regularly according to the maintenance intervals defined in chapter 9 on page 33

In case of disruption start with checking the follwing:

- Fan polluted or blocked?
- Coolant polluted?
- Low coolant contents because of leakage, evaporation or an extended cooling circuit with long hoses?

More help can be found in the following paragraph.

In case you do not succeed in identifying the problem cause by means of this manual please contact the service department of LAIRD.

8.1.1 Trouble Shooting

For trouble shooting you may rely on the following:

- Alarm signalling within the safety circuit of the device to be cooled
- Wiring diagram
- Flow scheme
- Trouble shooting table given below

Problem	Possible reasons	Countermeasure
The device does not start	Electrical connection not correct or no mains connection	Check connection, insert mains plug, check main power switch
The device is running but cooling capacity is not available or too low	External hoses sharply bent?	Re-install hoses avoiding sharp bends
	Device properly located?	Clearance to walls not less than 0.5 m
	Is there flow in cooling circuit?	Flow is signalled potential-free by the safety equipment of the device and can be visualized in the range of controls of the device to be cooled.
	Coolant in coolant container is low	Check coolant level, refill coolant if necessary page → 27
	Polluted supply water imparing magnetic valve	Clean magnetic valve
	Water supply temperature too high?	Check specifications → page 20
Noisy device	Coolant in coolant container is low	Check coolant level, refill coolant if necessary page → 27

Table 11: *Trouble shooting list*

9 Maintenance and Cleaning

Diligent maintenance is the prime factor for assuring an error-free and efficient operation of the device. Operating personnel can perform these tasks when properly trained.

9.1 Safety instructions on Maintenance

Ensure to adhere to safety regulation as detailed on page 11**Fehler! Textmarke nicht definiert.**.

9.2 Maintenance Schedule

Device	Activity	Interval	Criteria	Tools	Performer
Coolant container	Check filling	Weekly	Coolant level well above mesh	Visual inspection	Operating personnel
Filter	Clean, replace if required	Every 3 months,more often when coolant polluted	Filter undamaged and clean	Metric AF 24 wrench,cloth or vessel	Operating personnel

Table 12: *Maintenance schedule*

9.3 Refilling of Coolant

Since the cooling circuit is an open circuit, evaporation of coolant may occur. Thus, the filling level of the coolant container has to be checked regularly and coolant might have to be refilled as described on page 27.

9.4 Cleaning of Filter

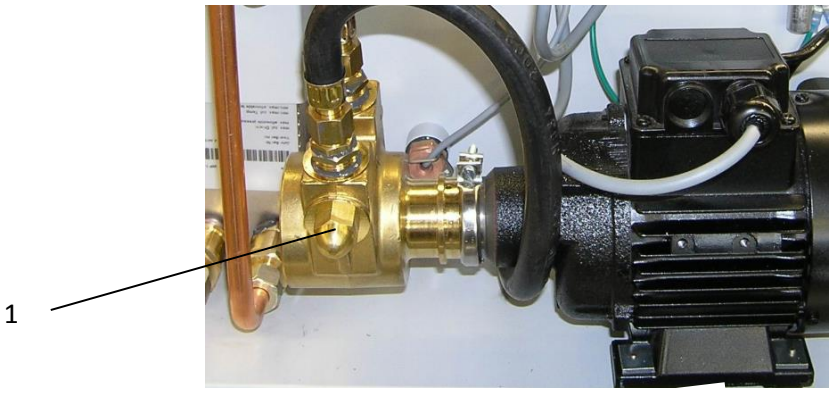


Fig. 14: *Locations of ball valve and strainer*

1	Strainer cover

1) Disconnect the device from mains
2) Remove the device cover
3) Close the ball valve

CAUTION

A small amount of coolant will leak from the pump.
Use a cloth or an appropriate vessel for absorption

4) Remove the filter cover using a metric AF 24 wrench
5) Take the filter and clean it. In case of damage the filter must be replaced
6) Remount the filter and screw on the cover
7) Re-open the ball valve and screw on the cover
8) Should any coolant leak from the strainer the cover must be screwed on using a little more force
9) Remount the side panel

CAUTION

Risk of damage to the pump if the device is operated with a fully closed ball valve.
Never start the device, when the ball valve is closed.

10) Start-up the device for venting the cooling circuit (s. page 27)

11) Check the coolant level and refill, if required

9.5 Cleaning of Device Body

CAUTION

Risk of damage through use of improper cleansing material.

When using aggressive or abrasive cleaning agents corrosion damage may occur as result of a disordered paint film.

- For cleaning the device body only use mild cleaning agents (e.g.dish washing detergents)
- Use clean and lintless cloth for cleaning

Regularly remove dirt from the casing of the device to prevent corrosion damage and clogging of the air grids. Pay attention that all the plates at the device are always clean and legible.

10 Repair

In case of misfunctioning during the warranty period the device must be sent to the LAIRD service department for repair (see page 7). When warranty has expired, no restrictions from the side of LAIRD exist with respect to repair work carried out by the customer as long as guarantee and warranty conditions remain untouched. In any case only expert staff is authorized for doing repair work.

PLEASE NOTE

When doing repair work on the device always be aware of the safety regulations as defined on page 10.

11 Dismounting, Disposal, Storage

11.1 Temporary Shut down of Operation

To take the device out of operation mode for maintenance, repair or process interruptions proceed as follows:

:

➢ Cooling operation is finished

1) Disconnect the device from mains

2) Shut off all necessary valves on connected componens

2) Separate all removable hoses from the device

3) Remove all hoses to and from the device

PLEASE NOTE

The coolant has to be collected and disposed of according to valid regulations.

4) Let the coolant container run empty into an appropriate vessel

5) Clean the device

⇨ The device is placed out of operation

11.2 Re-packaging of the device

➢ The device has been emptied (see chapter11.1)

1) Lift the device with a forklift or jacklift and place a transportable pallet under it.
2) Wrap the main power cord into a circle and attach it securely to the devices top frame with duct tape
3) Package the device including the transportable pallet with shrinking foil and shrink the foil tight.

⇨ The device is ready for transportation

11.3 Storing the Device

The storage area must be even and the device should not stand on an edge or other obstructive object.

The environmental conditions for storage of the device or parts of it can be found in the specification paragraph on page 20.

11.4 Disposal of the device

The device was manufactured mainly from recycable material.

Make sure the components of the device end up at a qualified company for disposal and recycling.

Contact LAIRD for take back of end-of-life devices (see company contact on page 7 or ask an expert company for disposal and recycling.

11.5 Disposal of Operating Materials

The operating materials of the device can be hazardous to the environment and to health.

- Make sure the operating materials are disposed of or recycled according to local regulations
- Also, the safety specifications of the coolant manufacturer must be obeyed

11.6 Return of the device to LAIRD

PLEASE NOTE

Declaration of decontamination
Before re-shipment of the device a declaration of decontamination must be sent to LAIRD.

12 Wear Parts and Spare Parts

12.1 General Information

Spare parts must comply with the technical specifications defined by LAIRD. Genuine LAIRD parts are subject to strict obligations and fulfill these requirments.

LAIRD does not provide warranty service in case of damages caused by the use of spare parts made by manufacturers other than LAIRD.

PLEASE NOTE

Identification data concerning the device and spare parts
The type of device and the article number can be found on the identification plate of the device. The corresponding numbers in Fig. 12 as well as the part descriptions are listed in the spare part list.

Please direct your enquiries and orders to LAIRD (contact see page 7) with the following detailed information

- Type and name of device
- Serial number
- Article number
- Part description
- Quantity
- Shipping details
- Picture oft he Part in question

12.2 Parts Overview

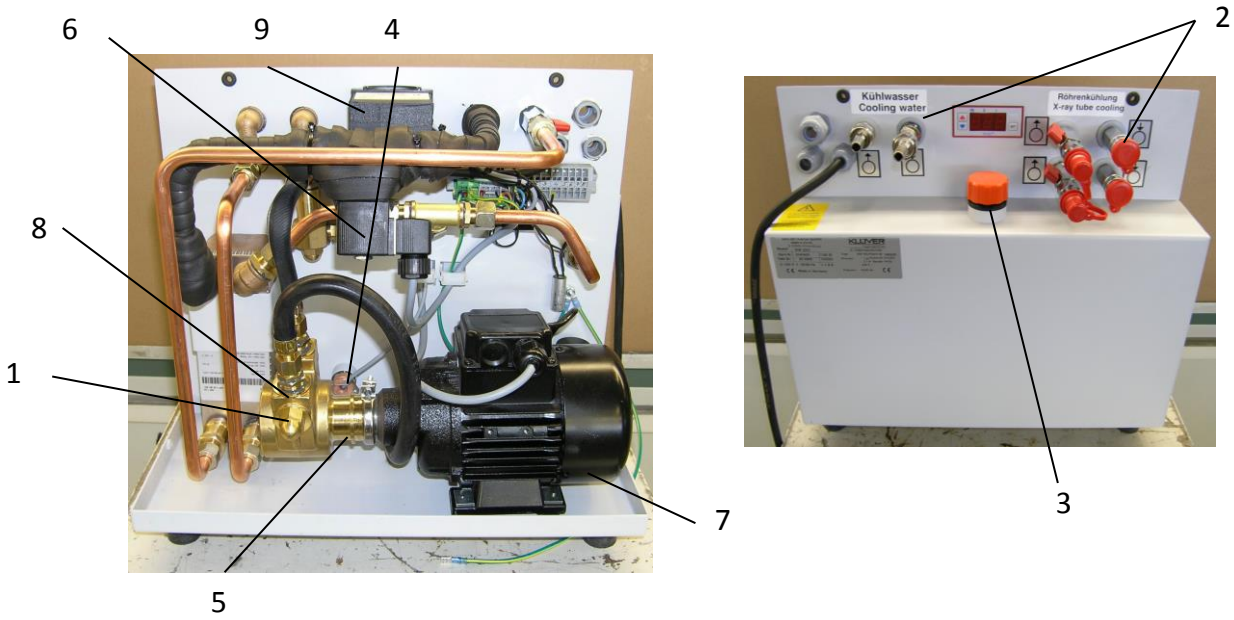


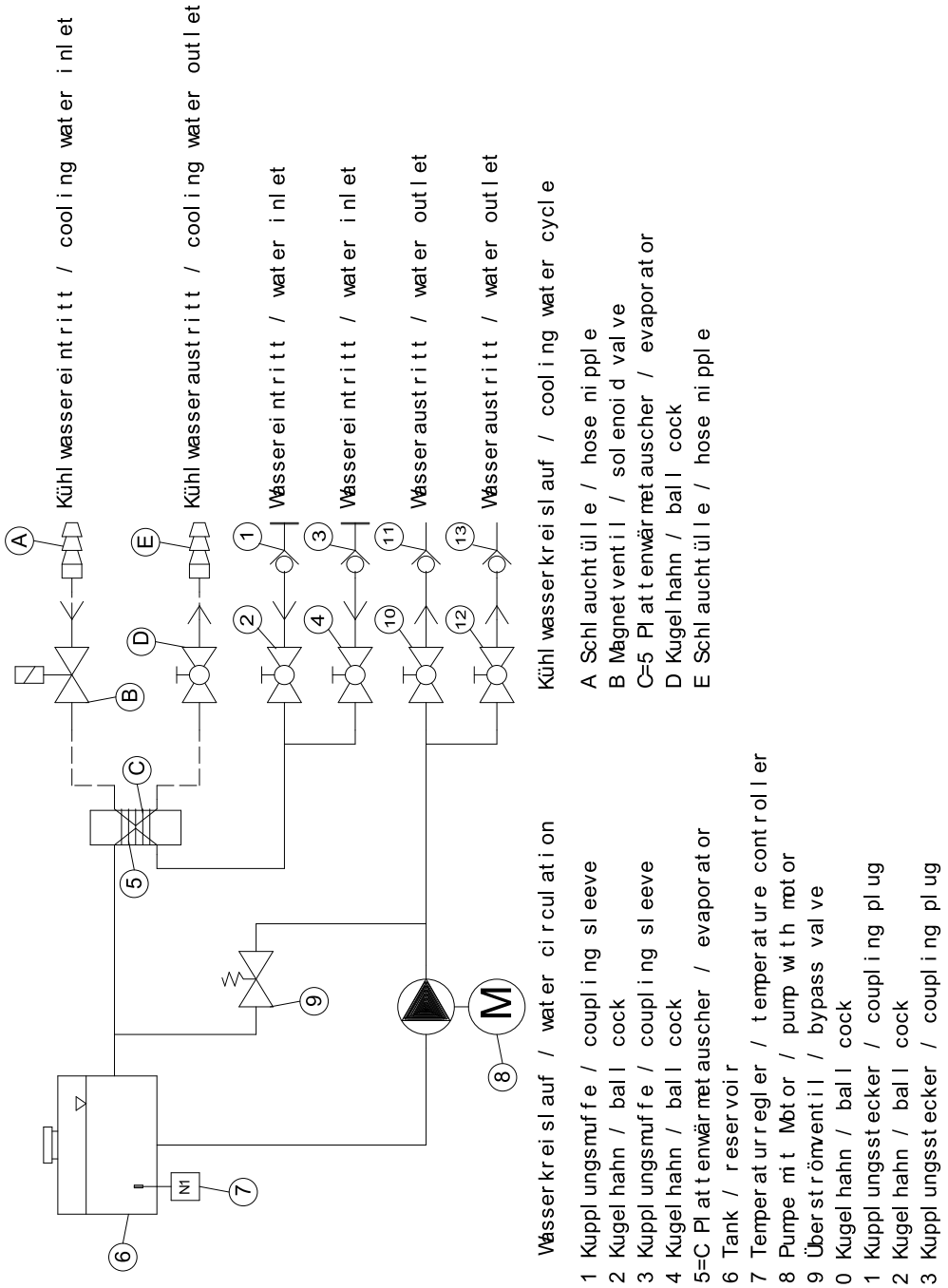
Fig. 15: *Spare parts overview*

Pos.	Qty	Description	Article No.
1	1	Filter	96299012
2	1	Hose liner, water supply, inlet and outlet, 3 parts	91725013
3	1	Tank cap	95288005
4	1	Temperature sensor	95160050
5	1	Element for pump – motor connection, plastic	95205203
6	1	Solenoid valve	95200102
7	1	Motot 230V, 50/60 Hz	95205201
8	1	Pump repair set	110419.70
9	1	Temperature controller	95160049

Table 13: *Spare parts*

Addendum

Flow scheme



Wiring diagram