



Inspired by temperature

Betriebsanleitung · Operation manual · Manual de instrucciones · Manuel d'utilisation · Manuale de d'uso · 사용 설명서 · Manual de instruções · Инструкция по эксплуатации · Kullanım talimatı · 操作说明书

Unipump®

This documentation does not contain a device-specific technical appendix.

You can request the full operating instructions from info@huber-online.com. Please give the model designation and serial number of your temperature control unit in your e-mail.

huber



OPERATION MANUAL

Unipump®

Pressure booster pump

This operation manual is a translation of the original operation manual.

VALID IN CONJUNCTION WITH:

HUBER temperature control unit

VALID FOR:

Unipump® I DC
Unipump® IV MC
Unipump® V MC

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Foreword

Dear customer,

Thank you for choosing accessories from Peter Huber Kältemaschinenbau SE. You made a good choice. Thank you for your trust.

Please read this operation manual carefully before putting the unit into operation. Strictly follow all notes and safety instructions.

Follow the operation manual concerning transport, start-up, operation, maintenance, repair, storage and disposal.

We offer a full warranty for your accessory subject to proper operation.

In this operation manual, the component listed on page 5 is referred to as accessory, and Peter Huber Kältemaschinenbau SE as Huber company or Huber.

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1 Introduction

1.1 Representation of textual emphases

The following emphases are used in the texts and illustrations.

Overview	Emphasis	Description
	 ➤ Abc	Step-by-step explanation of the procedure.
	→	Reference to information or procedures.
	»Abc«	Reference to a paragraph in the document.
	>Abc< [123]	Reference to the wiring diagram in the annex, specifying the designation and search string (number).
	>Abc< [ABC]	Reference to a drawing in the same paragraph with specification of designation and search string (character).
	▪	List, first level
	–	List, second level

1.2 Information on the EU Declaration of Conformity



The temperature control unit complies with the basic safety and occupational health requirements of the European guidelines listed below:

- Machinery Directive
- Low Voltage Directive
- EMC Directive

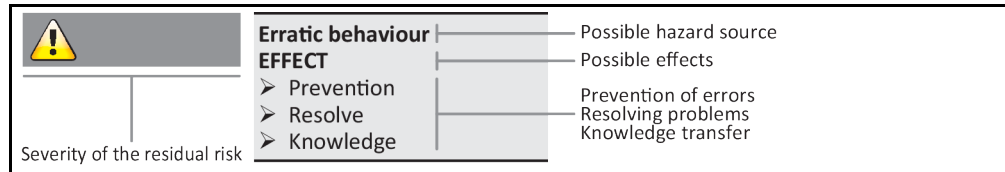
1.3 Safety

1.3.1 Symbols used for Safety Instructions

The documentation uses the following combinations of characters and signal word as safety information. The signal word describes the classification of the residual risk when the safety information is disregarded.

 DANGER	Denotes an immediate hazardous situation that will result in death or serious injuries.
 WARNING	Denotes a general hazardous situation that may result in death or serious injuries.
 CAUTION	Denotes a hazardous situation that can result in injury.
NOTE	Denotes a situation that can result in property material damage.
INFORMATION	Denotes important notes and usable hints.

Explanation



The safety information is designed to protect the operating company, the operators and the overall system from damage. Before starting the respective activity, you must inform yourself about the residual risks involved with incorrect handling.

1.3.2 Representation of symbols on the accessory

The following characters are used.

Overview

Sign	Description
Mandatory sign	
	- Observe the instructions
Warning sign	
	- General warning sign - Observe the instructions
	- Warning of electrical voltage
	- Warning of hot surface
	- Warning of flammable substances
Miscellaneous	
	Follow the national and local instructions for the disposal of electrical appliances.

1.3.3 Safety during commissioning

The following chapters are relevant for accessories in connection with a Huber temperature control unit, and apply in addition to the operation manual of the temperature control unit used here. If you have any questions, please contact our Customer Support. → Page 32, section »Contact data«. Keep this operation manual for future reference.

1.3.4 Extension of specified normal operation

The accessory is suitable for compensating pressure losses in external systems when properly installed at the Huber temperature control unit. The accessory can only be used when the temperature control unit is connected. Otherwise the intended use applies as described in the operation manual of the Huber temperature control unit.

1.4 Obligations of the responsible body

Keep the operation manual easily accessible in the immediate vicinity of the accessories. Only adequately qualified operators (e.g. machine operators, chemists, chemical technical assistants, physicist etc.) are allowed to work with the accessories. Operators must be trained before handling the accessories. Check that the operators have read and understood the operation manual. Define precise responsibilities for the operators. Personal protective equipment must be provided to the operators.

- The responsible body must install a condensation water / heat transfer fluid drip tray below the temperature control unit (including accessories).
- The use of a drip tray may be prescribed by national legislation for the installation area of the temperature control unit (incl. accessory). The responsible body must check and apply the national regulations applicable for it accordingly.
- The temperature control unit (including accessory) complies with all applicable safety standards.
- Your system, which uses our temperature control unit (including accessory), must be equally safe.
- The responsible body must design the system to ensure it is safe.
- Huber is not responsible for the safety of your system. The responsible body is responsible for the safety of the system.
- Whilst the temperature control unit (including accessory) provided by Huber meets all the applicable safety standards, integration into a system may give rise to hazards that are characteristic of the other system's design and beyond the control of Huber.
- It is the responsibility of the system integrator to ensure that the overall system into which this temperature control unit (including accessory) is integrated is safe.
- The **>Mains isolator< [36]** on the temperature control unit/accessory can be locked in the off position to facilitate safe system installation and maintenance of the temperature control unit (including accessory). Accessories with own power supply must be **additionally** disconnected from the power grid connection! It is the responsibility of the responsible body to develop any lock-out/tag-out procedure for the energy source in accordance with local regulations (e.g. CFR 1910.147 for the US).

1.4.1 Proper disposal

The operating company must check and apply the national and local regulations applicable for it accordingly.

Overview

Material	Description
Packaging material	Keep the packaging material for future use (e.g. transport).
Heat transfer fluid	Disposal see safety data sheet of heat transfer fluid. Use original containers to dispose of larger amounts.
Filling accessories	Clean filling accessories (such as beaker) for re-use. Auxiliary material and cleaning agents used must also be properly disposed of.
Aids	Absorption of heat transfer fluid: The aids used (such as cloths and cleaning rags) must be disposed of according to the heat transfer fluid used. Use of cleaning agents: The aids used (such as cloths and cleaning rags) must be disposed of according to the cleaning agent used.
Cleaning agent	Disposal see safety data sheet of cleaning agent. Use original containers to dispose of larger amounts.
Consumables	Disposal see data sheet of consumables (such as air filter mats, temperature control hoses).
Refrigerants	Work on the coolant circuit must be carried out by approved refrigeration/air-conditioning system contractors!

1.5 Obligations of the operators

Carefully read the operation manual before you handle the temperature control unit / accessories. Always observe the safety instructions. Wear appropriate personal protective equipment (e.g. safety goggles, protective gloves, non-slip shoes) when operating the temperature control unit / accessories.

1.5.1 Requirements for operators

Work on the temperature control unit / accessory is reserved for appropriately qualified specialists, who have been assigned and trained by the responsible body to do so. Operators must be at least 18 years old. Persons under the age of 18 years may operate the temperature control unit / accessory only under the supervision of a qualified specialist. The operators are responsible for third parties within the unit's working range.

1.6 Description of workstation

The workstation is located at the control panel in front of the temperature control unit. The workstation is determined by the customer's connected peripherals. Accordingly, it must be designed safe by the responsible body. The workstation design also depends on the applicable requirements of the German occupational health and safety regulations [BetrSichV] and the risk analysis for the workstation.

1.7 Further protective devices

INFORMATION

Emergency strategy – interrupt the power grid connection!

To determine the type of switch used or the switch combination installed, please refer to the connection sketch. → From page 34, section »Annex«.

Overview of switch types

Switch	Designation	Interrupting the power grid connection
 / 	>Mains isolator< [36] (red-yellow) or >Mains isolator< [36] (grey)	Turn the >Mains isolator< [36] to the "0" position.
 + 	>Mains isolator< [36] (red-yellow) and additional >Appliance switch< [37] (gray):	Turn the >Mains isolator< [36] to the "0" position, then the >Appliance switch< [37] to the "0" position.
 + 	>Emergency stop switch< [70] (red-yellow) and >Mains isolator< [36] (gray):	Press the >Emergency stop switch< [70], then set the >Mains isolator< [36] to the "0" position.
 / 	>Power switch< [37]	Power connection via socket: Pull the plug, then set the >Power switch< [37] to the "0" position. Connection via hard wiring: Use the building's circuit breaker, then set the >Power switch< [37] to the "0" position.
–	Without a switch or inside a protective housing	Power connection via socket: Pull the plug. Power connection via hard wiring: Use the building's circuit breaker.

2 Commissioning

2.1 In-plant transport

CAUTION

Accessories are not transported / moved in accordance with the specifications in these operation manual

INJURIES DUE TO CRUSHING

- Always transport / move accessories in accordance with the specifications in these operation manual.
- Wear personal protective equipment during transport.

NOTE

Accessories are transported in a horizontal position

PROPERTY DAMAGE

- Only transport accessories in an upright position.

NOTE

Transport of filled temperature control unit and/or accessory

MATERIAL DAMAGE DUE TO OVERFLOWING HEAT TRANSFER FLUID

- Only transport empty temperature control unit and/or accessory.

- If available, use the eyes on the top side of the accessory for transportation.
- Use an industrial truck for transportation.
- The casters (if present) on the accessory are not suitable for transportation. The casters are each symmetrically loaded with 25% of the total mass of the accessory.
- Remove the packing material (e.g. the pallet) only at the place of installation.
- Protect the accessory from transport damage.
- Do not transport the accessory alone and not without aids.
- Check the load bearing capacity of the transportation route and the place of installation.
- The parking brakes at the casters (if present) must be activated and/or the leveling feet (if present) must be unscrewed/activated before the temperature control unit is put into operation.
→ Page 19, section »Activating the leveling feet«.

2.1.1 Lifting and transporting the accessories

2.1.1.1 Accessories with lifting eyes

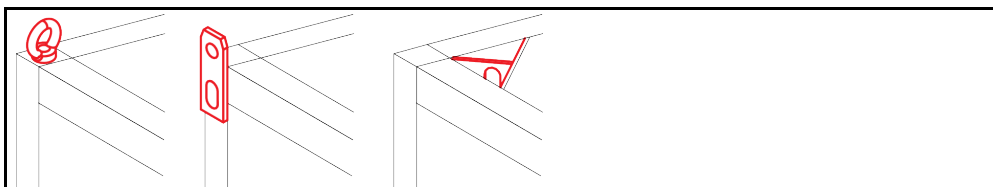
NOTE

The accessories are lifted at the lifting eyes without load handling equipment

DAMAGE TO THE ACCESSORY

- Use load handling equipment to lift and transport the accessory.
- The lifting eyes are only designed for a load **without** inclination (0°).
- The load handling attachment used must be adequately dimensioned. Take the dimensions and weight of the accessory into account.

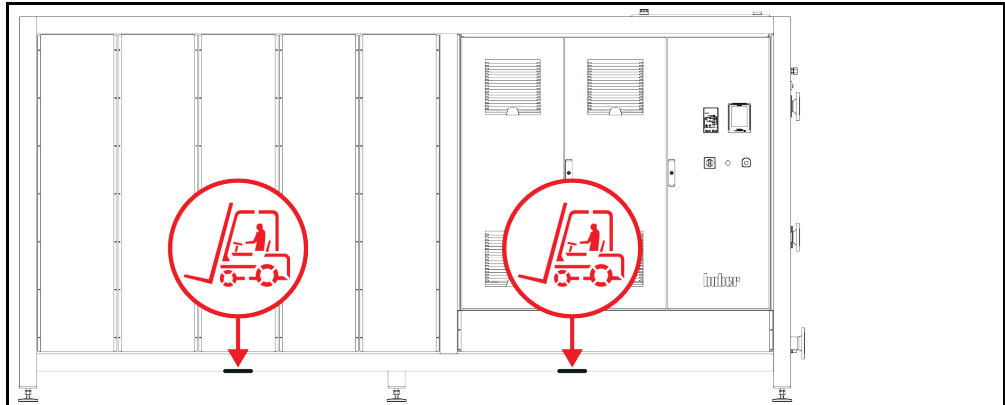
Example: lifting eyes
(round, angular, and
recessed (left to right))



- Never lift and transport the accessory on the lifting eyes on your own and without aids.
- Lift and transport the accessory at the lifting eyes only with a crane or an industrial truck.
- The lifting force of the crane or industrial truck must correspond at least to the weight of the accessory. You will find the weight of the accessory on the data sheet. → From page 34, section »Annex«.
- If the leveling feet have been removed for shipping: Only lower the accessory when all leveling feet have been installed. → Page 15, section »Mounting/removing leveling feet«.

2.1.1.2 Accessories without lifting eyes

Example: Supporting points for forklift arms for free-standing models from a certain overall size. For the exact position please refer to the wiring diagram in the annex.



- Do not lift and transport the accessory on your own and without aids.
- Lift and transport the accessory only with an industrial truck.
- The industrial truck must have a lifting force equal to or greater than the weight of the accessory. You will find the weight of the accessory on the data sheet. → From page 34, section »Annex«.
- If the leveling feet have been removed for shipping: Only lower the accessory when all leveling feet have been installed. → Page 15, section »Mounting/removing leveling feet«.

2.1.2 Mounting/removing leveling feet

Only valid if the leveling feet have been removed for shipping.

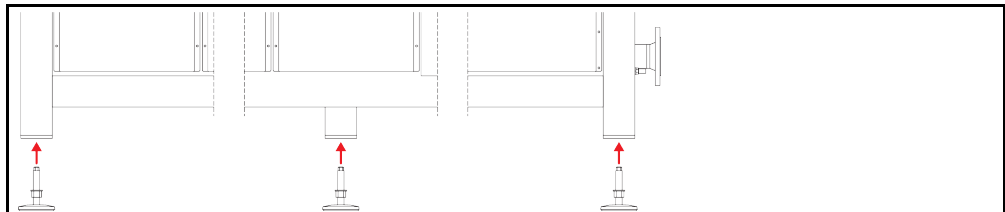
WARNING

The temperature control unit/accessory is not secured against sliding and/or lowering

DEATH OR SERIOUS INJURY DUE TO CRUSHING

- Secure the temperature control unit/accessory against slipping and/or lowering before installing the leveling feet.
- Do not stand or lie down under the temperature control unit/accessory for installation.

Example: mounting the leveling feet



INFORMATION

The leveling feet were dismantled for shipping the temperature control unit/accessory. Before putting down / positioning the temperature control unit/accessory, all leveling feet must be mounted. If the temperature control unit/accessory is re-shipped: Dismantle all leveling feet prior to packaging.

- The leveling feet can only be mounted while the temperature control unit/accessory is lifted.
- Secure the temperature control unit/accessory against sliding and/or lowering.
- Do not stand or lie underneath the temperature control unit/accessory during installation of the leveling feet.
- Only lower the temperature control unit/accessory when all leveling feet have been installed.

2.1.3 Positioning the accessories

2.1.3.1 Accessories with casters

- Do **not** use the casters for transportation to the place of installation. → Page 14, section »Lifting and transporting the accessories«.
- Use the casters only for positioning at the place of installation.

- Only move the accessory on the casters when the surface is level, without gradient, non-slip and stable.
- Do not move the accessory on your own.
- **At least 2 persons** are required to move the accessory on the casters. **At least 5 persons** are required to move the accessory on the casters if the total weight of the accessory **exceeds 500 kg**.
- The accessory is equipped with casters without locking brakes. Prior to putting the accessory into operation, unscrew/activate the integrated leveling feet. → Page 19, section »**Activating the leveling feet**«.

2.1.3.2 Accessories without casters

- An industrial truck must be used for positioning the accessory.
- Do not move the accessory on your own.
- **At least 2 persons** are required to move the accessory.
- The industrial truck must have a lifting force equal to or greater than the weight of the accessory. You will find the weight of the accessory on the data sheet. → From page 34, Section »**Annex**«.
- The leveling feet (if present) must be unscrewed/activated before the accessory is put into operation. → Page 19, section »**Activating the leveling feet**«.

2.2 Unpacking



WARNING

Commissioning damaged accessories

DANGER TO LIFE FROM ELECTRIC SHOCK

- Do not start up damaged accessories.
- Please contact Customer Support. → Page 32, section »**Contact data**«.

PROCEDURE

- Check for damage to the packaging. Damage can indicate property damage to the accessory.
- Check for any transport damage when unpacking the accessory.
- Exclusively contact your forwarding agent regarding the settlement of claims.
- Observe the proper disposal of packaging material. → Page 12, section »**Proper disposal**«.

2.3 Ambient conditions



CAUTION

Unsuitable ambient conditions / unsuitable installation

SERIOUS INJURY DUE TO CRUSHING

- Comply with all requirements! → Page 16, section »**Ambient conditions**« and → Page 18, section »**Installation conditions**«.

INFORMATION

Make sure there is adequate fresh air available at the site for the accessory. The warm exhaust air must be able to escape upwards unhindered.

Use of the accessory is permitted only under normal ambient conditions in accordance with the currently valid DIN EN 61010-1.

- Use only indoors. The illuminance must be at least 300 lx.
- Installation altitude up to 2,000 meters above sea level.
- Maintain wall and ceiling clearance for adequate air exchange (dissipation of waste heat, supply of fresh air for the accessory and work area). Ensure adequate floor clearance for air-cooled accessories. Do not operate the accessory from within the box or with an inadequately dimensioned bath as this inhibits the air exchange.
- Ambient temperature values are provided on the technical data sheet; to ensure trouble-free operation, compliance with the ambient conditions is mandatory.
- Relative humidity max 80% to 32 °C and 40 °C decreasing linearly to 50%.
- Short distance to supply connections.
- The accessory must not be installed so as to hinder or prevent access to the disconnecting device (to the power grid).

- For the magnitude of the mains voltage fluctuations, refer to the datasheet. → From page 34 in the section »Annex«.
- Transient surges, as would normally occur in the power supply system.
- Installation Class 3
- Applicable degree of soiling: 2.
- Surge category II.

Wall clearances

Side	Minimum clearance in cm	
Top	[A] 0 / –	[A1] 0 / –
Left	[B] 0 / 20	[B1] 0 / 20
Right	[C] 0 / 20	[C1] 0 / 20
Front	[D] 0 / 20	[D1] 0 / 20
Rear	[E] 0 / 20	[E1] 0 / 20
a.) [A] - [E]: Operation without bath, [A1] - [E1]: Operation in a bath b.) Values in the table: without air outlet or connections / with air outlet or connections c.) Value “–” in the table: free standing		

2.3.1 EMC-specific notes

INFORMATION

Connecting cables in general

Prerequisites for a failure-free operation of the temperature control units/accessories incl. their connections with external applications: Installation and wiring must be carried out professionally. Related topics: “Electrical safety” and “EMC-compliant wiring”.

Cable lengths

For flexible/fixed cable routing of more than 3 meters, the following must amongst other things be observed:

- Equipotential bonding, grounding (see also technical data sheet “Electromagnetic compatibility EMC”)
- Compliance with “external” and/or “internal” lightning/overvoltage protection.
- Design protection measures, professional cable selection (UV resistance, steel pipe protection, etc.)

Attention:

The operating company is responsible for compliance with national/international directives and laws. This also includes the testing of the installation/wiring required by law or standards.

This device is suitable for operation in “**industrial electromagnetic environments**”. It meets the “**immunity requirements**” of the currently applicable **EN61326-1**, which are required for this environment.

It also meets the “**interference emission requirements**” for this environment. It is a **Group 1** and **Class A** device according to the currently applicable **EN55011**.

When operating the temperature control unit in another environment, its electromagnetic compatibility can in rare cases not be ensured.

Group 1 specifies that high frequency (HF) is only used for the function of the device. **Class A** defines the interference emission limits to be observed.

2.4 Installation conditions

WARNING

The accessory is put onto the power supply line

DEATH FROM ELECTRICAL SHOCK BY DAMAGE TO THE POWER CABLE.

- Do not put the accessory on power cables.

CAUTION

Operation of accessories with casters without activated brakes

CRUSHING LIMBS

- Activate brakes on the wheels.

- Allow the accessory to acclimate for about 2 hours when changing from a cold to a warm environment (or vice versa). Do not turn on the accessory beforehand!
- Install upright, stable and tilt-proof.
- The accessory **must be aligned horizontally**.
- Use a non-combustible, sealed foundation.
- Keep the environment clean: Prevent slip and tilt hazards.
- Wheels, if installed, must be locked after installation!
- Spilled/leaked heat transfer fluid must be disposed of immediately and correctly. Observe the proper disposal of heat transfer fluid and aids. → Page 12, Section »Proper disposal«.
- Observe the floor load bearing capacity for large units.
- Observe the ambient conditions.

2.5 Recommended temperature control hoses

CAUTION

Use of unsuitable/defective hoses and/or hose connections

INJURIES

- Pay attention to the permissible pressure and temperature range when selecting temperature control hoses.
- Use appropriate hoses and/or hose connections.
- Check periodically for leaks and the quality of the hoses and hose connections and take suitable measures (replace) as required.
- Insulate and protect temperature control hoses against contact/mechanical load.

CAUTION

Hot or cold heat transfer fluid and surfaces

BURNS TO LIMBS

- Avoid direct contact with the heat transfer fluids or the surfaces.
- Wear your personnel protective equipment (e.g. temperature-resistant safety gloves, safety goggles, safety footwear).

CAUTION

Uncontrolled formation of ice at the connections and hoses of the heat transfer fluid circuit

RISK OF SLIPPING AND OVERTURNING

- If the temperature is controlled in the minus range, ice forms at the hoses and connections of the heat transfer fluid circuit. This occurs by condensing and freezing of atmospheric humidity.
- Check the thickness of the ice formation. Too much ice increases the risk of the accessories tipping over. Secure the accessories against tipping over if this is the case.
- Check the ground below the ice formation for condensation water. Collect the condensation water with a suitable container or thoroughly remove it at regular intervals. You thus prevent the danger of slipping caused by condensation.

To connect applications, use only temperature control hoses that are compatible with the heat transfer fluid used.

- We recommend you use only temperature-insulated temperature control hoses with your accessory. The user is responsible for the insulation of connection valves.

2.6 Wrench sizes and torques

Sizes of the connections vary depending on the model. Please refer to the table for the correct wrench sizes and torques. The maximum torque values must **not** be exceeded. To avoid twisting the connections during assembly, they must be secured by holding them in place. Carry out a leak test after connecting.

Overview
Wrench size and
torques

Connection	Sleeve nut wrench size	Connector wrench size	Recommended torques in Nm	Maximum torques in Nm
M16x1	19	17	30	35
M24x1.5	27	27	47	56
M30x1.5	36	32	79	93
	36	36	79	93
M38x1.5	46	41/46	130	153
M45x1.5	50	50	200	210
G-thread (flat-sealing)	Adapt the torque to the material of the flat seal used. Only hand-tighten the connection at first. When using adapter pieces, do not overtighten the G thread. To avoid twisting the adapter piece during installation, it must be secured by holding them in place.			

2.7 Accessory for outdoor installation incl. winter operation

The accessory is **not** suitable for outdoor installation, including operation in winter.

2.8 Preparations for operation

2.8.1 Activating the leveling feet

Only valid for temperature control units with extendible leveling feet.



WARNING

The leveling feet are not unscrewed/activated before turning on the accessory

DEATH OR SERIOUS INJURY DUE TO CRUSHING

- The parking brakes at the casters (if installed) must be activated and/or the leveling feet must be unscrewed/activated before the accessory is put into operation.
- The accessory may move if the parking brakes at the casters (if installed) are not activated and/or the leveling feet are not unscrewed/activated.

Ensure that the leveling feet are unscrewed/activated before you operate the accessories. Uneven floors can be compensated for by adjusting these leveling feet.

PROCEDURE

- Verify that the parking brakes of the casters (if any) have been activated.
- Unscrew the leveling feet.
- Compensate uneven floors by adjusting the leveling feet, if necessary. Use a spirit level to horizontally align the accessory.
- Tighten the lock screws on the leveling feet after aligning the accessory. This prevents the leveling feet from changing their height during operation.

2.8.2 Checking the knurled screws

PROCEDURE

- Check whether the knurled screw at the >Drain< [8] has been mounted (hand-tight).

2.8.3 Connecting the accessory to the temperature control unit

NOTE

Overpressure in the application (e.g. > 0.5 bar (g) with glass apparatus)

MATERIAL DAMAGE TO THE APPLICATION

- Observe the max. system pressure specified in the data sheet of the temperature control unit.
→ From page 34, Section »Annex«.
- Provide an overpressure protective device to prevent damage to the application.
- Do not install valves/quick-release couplings in the feed/discharge lines from the temperature control unit to the application and from the application to the temperature control unit.
- The specified maximum discharge pressure can be briefly exceeded: In case of a sudden shut-off of the system return or an unexpected error occurring.
- **If valves/quick-release couplings are required:**
- Install an overpressure protection device on the application itself (at the feed and discharge lines).
- Install a bypass upstream of the valves/quick-release couplings for the application.
- Matching accessories (e.g. bypasses to reduce pressure) can be found in the Huber catalog.

INFORMATION

The accessory must be connected to your temperature control unit as an **externally closed** application. Follow the operation manual of the temperature control unit when connecting the device. Avoid bending the temperature control hoses. Use suitable angle pieces and lay the hose connections with a large radius. Take the minimum bending radius from the data sheet of the temperature control hoses used.

INFORMATION

Some heat transfer fluids become viscous at low temperatures. Consequently, when used in combination with the accessory, the permissible pressure in the heat transfer fluid circuit may be exceeded. Ensure that your application is protected against such overpressure in the heat transfer fluid circuit. To protect the application, use a bypass and/or an overpressure protection device, for example.

PROCEDURE

- Remove the protective plastic caps on your accessory from the connections **>Circulation flow< [1]** and **>Circulation return< [2]**.
- Remove the protective plastic caps on your temperature control unit from the connections **>Circulation flow< [1]** and **>Circulation return< [2]**.
- Use a temperature control hose to connect the **>Circulation flow< [1]** on the temperature control unit with the **>Circulation return< [2]** on the accessory.
- Use a temperature control hose to connect the **>Circulation flow< [1]** on the accessory with the input of your external application.
- Use a temperature control hose to connect the output of your external application with the **>Circulation return< [2]** on the temperature control unit.

2.8.4 Connecting the control cable

NOTE

Establishing a connection with the interfaces on the accessory during operation

DAMAGE TO THE INTERFACES

- When devices in operation are connected with interfaces of the accessory, interfaces may get damaged.
- Before connecting, ensure the accessory and the device to be connected are turned off.

PROCEDURE

- Connect the connection **>External control signal< [48]/>Floating contact< [51]** on the accessory to the connection **>POKO (floating contact) Alarm<** on the temperature control unit.
The cable required is included.

2.8.5 Connecting the (optional) jumper plug

NOTE

Inserting the jumper plug during operation

DAMAGE TO THE INTERFACE

- Inserting the jumper plug during operation may damage the interface.
- Prior to inserting, make sure that the accessory is switched off.

INFORMATION

Fitting the jumper plug enables the accessory to be used in continuous operation. The temperature control unit used does **not** regulate the temperature. Ensure that this operating mode does **not expose the operator or the equipment to any hazards**.

PROCEDURE

- Insert the jumper plug into the **>External control signal< [48]** / **>Floating contact< [51]** connection on the accessory.

2.8.6 Connecting the functional ground

PROCEDURE

- If required, connect the **>functional ground terminal< [87]** on the accessory with the building grounding point. Use a ground strap for this purpose. For the exact position and thread size please refer to the wiring diagram. → From page 34, section »Annex«.

2.9 Connecting to the power supply

DANGER

Connecting to a power socket without protective earth (PE)

RISK OF DEATH FROM ELECTRIC SHOCK

- Always connect the accessory to safety sockets (PE).
- In case of uncertainties about an existing protective earth (PE), have the connection inspected by a qualified (certified) electrician.
- Do not use a power cable that is longer than **3 m**.

DANGER

Connection/adjustment through hardwiring is not carried out by a qualified (certified) electrician

RISK OF DEATH FROM ELECTRIC SHOCK

- Have the connection/adjustment through hardwiring carried out by a qualified (certified) electrician.

DANGER

Damaged power cable/power cable connection

MORTAL DANGER FROM ELECTRIC SHOCK

- Do not start up the accessory.
- Isolate the accessory from the power supply.
- Have the power cable/power cable connection replaced and inspected by a qualified (certified) electrician.

NOTE

Incorrect power supply connection

DAMAGE TO THE ACCESSORY

- Your building's existing power supply voltage and frequency must match the data provided on the rating plate of the accessory.

INFORMATION

Do not exceed the maximum length when replacing the power cable. Connections with 1 or 2 phases have a maximum length of **3 meters**; connections with 3 phases a maximum length of **4 meters**. Have the replacement performed only by a qualified (certified) electrician. If there are several power supply connections: Operation is only possible once all power supply connections have been properly connected to the building's power supply.

3 Function description

3.1 Function description of the accessory

3.1.1 General functions

The **pressure booster pump** can be used in combination with a **temperature control unit**. It compensates for pressure losses in external systems.

The **pressure booster pump** is connected in series to the pump in the temperature control unit. It is controlled through the interface "POKO alarm" (POKO = floating contact).

If required, the **pressure booster pump** can be used with an optional jumper plug without control by a temperature control unit.

3.2 To be noted when planning the test

INFORMATION

Please also note: → Page 11, section »Extension of specified normal operation«.

The focus is on your application. Bear in mind that system performance is influenced by heat transfer, temperature, heat transfer fluid viscosity, volume flow, and flow speed.

- Make sure that the electrical connection is adequately dimensioned.
- The place of installation of the accessory should be selected so as to ensure adequate fresh air.
- A cross-section reduction or shut-off in the heat transfer fluid circulation must be avoided.
- Avoid bending the temperature control and cooling water hoses (if required). Use suitable angle pieces and lay the hose connections with a large radius. Take the minimum bending radius from the data sheet of the temperature control hoses used.
- The selected hose connections must be resistant to the heat transfer fluid, the working temperatures and the permitted maximum pressure.
- Check the hoses at regular intervals for any material fatigue (e.g. cracks, leaks).

4 Setup mode

4.1 Setup mode

CAUTION

Extremely hot or cold surfaces, connections and heat transfer fluids

BURNS OR FREEZING OF LIMBS

- Surfaces, connections and the tempered heat transfer fluid can be extremely hot or cold depending on the operating mode.
- Avoid direct contact!
- Wear personnel protective equipment. For example heat-resistant protective gloves and safety goggles.

CAUTION

Moving the accessory during operation

SERIOUS BURNS/FREEZING DUE TO HOUSING PARTS/ESCAPING HEAT TRANSFER FLUID

- Do not move the accessory when in operation.

NOTE

When the accessory is switched off, the heat transfer fluid temperature is higher/lower than the room temperature

MATERIAL DAMAGE TO THE ACCESSORY

- Use the temperature control unit to temper the heat transfer fluid in the accessory to room temperature (20 °C).
- Do not close the isolating valves in the heat transfer fluid circuit.

4.1.1 Turning on the accessory

NOTE

The accessory is turned on before filling

DAMAGE TO THE ACCESSORY

- Dry running can damage the pump if the temperature control unit and the accessory are not filled.
- Turn on the accessory only **after** filling it.

INFORMATION

The accessory can be turned on only if

- the temperature control unit is filled and turned on
- the connection **>External control signal< [48]** / **>Floating contact< [51]** on the accessory is connected to the temperature control unit.

PROCEDURE

- Switch on the temperature control unit.
The temperature control unit must be filled and vented.
- Turn on the accessory using the **>Mains switch< [36]** or the **>Mains isolator< [37]**.

4.1.2 Switching off the accessories

PROCEDURE

- Warm the heat transfer fluid to room temperature.
- Stop the thermoregulation at the temperature control unit.
- Turn off the temperature control unit.
- Turn off the accessories using the **>Mains switch< [36]** or the **>Mains isolator< [37]**.

4.2 Filling and draining the accessory

Observe the wiring diagram. → From page 34, section »Annex«.

CAUTION

Non-compliance with the safety data sheet for the heat transfer fluid to be used

INJURIES

- Risk of injury to the eyes, skin, respiratory tract.
- The safety data sheet for the heat transfer fluid to be used must be read prior to using it and its content must be respected.
- Observe the local regulations/work instructions.
- Wear your personal protective equipment (e.g. temperature-resistant safety gloves, safety goggles, safety footwear).
- Danger of slipping because floor and work area are contaminated. Clean the workplace; observe the proper disposal of heat transfer fluid and aids. → Page 12, section »Proper disposal«.

CAUTION

Extremely hot or cold surfaces, connections and heat transfer fluids

BURNS OR FREEZING OF LIMBS

- Surfaces, connections and the tempered heat transfer fluid can be extremely hot or cold depending on the operating mode.
- Avoid direct contact!
- Wear personnel protective equipment. For example heat-resistant protective gloves and safety goggles.

NOTE

During an active circulation, the heat transfer fluid circuit is shut off by isolating valves

MATERIAL DAMAGE

- Do not close the heat transfer fluid circuit with isolating valves during an active circulation.
- Warm the heat transfer fluid to room temperature before stopping the circulation.

4.2.1 Filling the accessory

NOTE

The accessory is turned on before filling

DAMAGE TO THE ACCESSORY

- Dry running can damage the pump if the temperature control unit and the accessory are not filled.
- Turn on the accessory only **after** filling it.

PROCEDURE

- Check whether the steps were implemented. → Page 19, section »Preparations for operation«.
- For filling, venting and degassing of the temperature control unit, proceed as described in its operation manual.

4.2.2 Draining the accessory

CAUTION

Hot or very cold heat transfer fluid

SEVERE BURNS/FROSTBITE OF LIMBS

- Before draining, ensure that the heat transfer fluid has room temperature (20 °C).
- If, at this temperature, the heat transfer fluid is too viscous to be drained: Control the temperature of the heat transfer fluid for a few minutes until the viscosity will allow drainage. Never control the temperature of the heat transfer fluid when the drain is open.
- Danger of burns when draining heat transfer fluids at temperatures above 20 °C.
- Wear your Personal Protective Equipment for draining.
- Only drain using suitable drainage hose and collecting container. These must be compatible with the heat transfer fluid and its temperature.

PROCEDURE

- For draining the temperature control unit, proceed as described in its operation manual. The accessory is drained via the temperature control unit. Follow the instructions for the proper disposal of heat transfer fluid. → Page 12, Section »**Proper disposal**«.
- Wait until the temperature control unit, the application and the accessory have been drained.
- Remove the temperature control hose from the accessory at the **>Circulation flow<** [1].
- Remove the temperature control hose from the accessory at the **>Circulation return<** [2].
- Leave the accessory open for a while to allow it to dry out and the residue to drain.
- On the accessory, connect the temperature control hose with the **>Circulation flow<** [1].
- On the accessory, connect the temperature control hose with the **>Circulation return<** [2].
- The accessory is now drained.

5 Normal operation

5.1 Automatic operation

CAUTION

Extremely hot or cold surfaces, connections and heat transfer fluids

BURNS OR FREEZING OF LIMBS

- Surfaces, connections and the tempered heat transfer fluid can be extremely hot or cold depending on the operating mode.
- Avoid direct contact!
- Wear personnel protective equipment. For example heat-resistant protective gloves and safety goggles.

NOTE

During an active circulation, the heat transfer fluid circuit is shut off by isolating valves

MATERIAL DAMAGE

- Do not close the heat transfer fluid circuit with isolating valves during an active circulation.
- Warm the heat transfer fluid to room temperature before stopping the circulation.

5.1.1 Temperature control

5.1.1.1 Starting the temperature control process

The temperature control can be started only by means of the connected temperature control unit. Prerequisite: The temperature control unit and the accessory are filled and vented. Both are connected via the control line and are turned on.

5.1.1.2 Ending the temperature control process

NOTE

When the accessory is switched off, the heat transfer fluid temperature is higher/lower than the room temperature

MATERIAL DAMAGE TO THE ACCESSORY

- Use the temperature control unit to temper the heat transfer fluid in the accessory to room temperature (20 °C).
- Do not close the isolating valves in the heat transfer fluid circuit.

The temperature control process can be terminated at any time on the temperature control unit. If the accessory is turned off, the temperature control process in the temperature control unit continues. The temperature control process must be terminated on the temperature control unit.

6 Maintenance

6.1 Electrical fuse

For entry >Fuse< [61] in the wiring diagram: The thermal overcurrent circuit breakers have been installed to provide all-pole disconnection (L and N). If there is no function after switching on, please check the overcurrent circuit breakers. If the circuit breakers trip again after being reset, disconnect the power plug and contact our Customer Support.

6.2 Maintenance



Maintenance work on the running temperature control unit and accessory

RISK OF DEATH FROM ELECTRIC SHOCK

- Stop an ongoing temperature control process.
- Switch off the temperature control unit and the accessory.
- Disconnect the temperature control unit and the accessory from the power supply.
- Before the start of any work, the heat transfer fluid must have reached room temperature.

NOTE

Maintenance work that is not described is carried out

MATERIAL DAMAGE

- For maintenance work that is not described, please contact the Huber company.
- Maintenance work that is not described is reserved for qualified specialists trained by the Huber company.
- Safety-relevant components may only be replaced by equivalent components. The specified safety values for the respective component must be observed.

6.2.1 Function check and visual inspection

Control intervals

Cooling*	Description	Maintenance interval	Comment	Person responsible
A/W	Visually inspect hoses and hose connections	Prior to switching on the temperature control unit / accessory	Replace leaking hoses and hose connections before you switch on the temperature control unit / accessory. → Page 28, Section »Replacing temperature control hoses«.	Operating company and / or operators
A/W	Check the power cable	Prior to turning on the accessory or on relocation	Do not start-up the accessory if the power cable is damaged.	Qualified (certified) electrician
A	Clean the perforated sheet	As required	Clean the perforated sheet of the accessory with a damp cloth	Operating company
A/W	Heat transfer fluid inspection	As required		Operating company and / or operators
A/W	Check mechanical seals (drip tray)	Monthly	→ Page 28, Section »Inspect the mechanical seal«.	Operating company and / or operators
A/W	Inspect the accessory for damage and stability	Every 12 months or after relocation		Operating company and / or operators
A/W	Exchange safety-relevant electric and electromechanical components	20 years	Have the exchange only carried out by certified personnel (such as Huber service engineers). Please contact Customer Support. → Page 32, Section »Contact data«.	Operating company
*A = Air cooling; W = Water cooling				

6.2.2 Replacing temperature control hoses

Replace defective temperature control hoses **before** you switch on the temperature control unit / accessories.

PROCEDURE

- Drain the temperature control unit and the accessory as described in the respective operation manual.
- Replace defective temperature control hoses. Follow the instructions for the proper disposal.
→ Page 12, Section »Proper disposal«.
- Reconnect your external application as described in the respective operation manual.
- Fill the temperature control unit with heat transfer fluid as described in the respective operation manual.
- Vent the temperature control unit as described in the respective operation manual. An externally open application does not need to be vented.
- Start the function "Degassing" as described in the respective operation manual. An externally open application does not need to be de-gassed.
- Restart the temperature control unit and the accessory in normal mode.

6.3 Heat transfer fluid inspection, replacement and circuit cleaning

PROCEDURE

- Do not disconnect the accessory.
- Proceed as described in the operation manual of the temperature control unit when performing the heat transfer fluid inspection and changing and cleaning the heat transfer fluid circuit.

6.4 Cleaning the surfaces



Extremely hot or cold surfaces, connections and heat transfer fluids

BURNS OR FREEZING OF LIMBS

- Surfaces, connections and the tempered heat transfer fluid can be extremely hot or cold depending on the operating mode.
- Avoid direct contact!
- Wear personnel protective equipment. For example heat-resistant protective gloves and safety goggles.

NOTE

Open plug contacts

DAMAGE CAUSED BY FLUID INGRESS

- Protect plug contacts that are not required with the protective caps supplied.
- Clean surfaces only with a damp cloth.

A standard stainless steel cleaning agent is suitable for cleaning the stainless steel surfaces. Carefully clean painted surfaces (damp only) using a solution of sensitive-fabrics detergent. Observe the proper disposal of cleaning agents and aids. → Page 12, section »Proper disposal«.

6.5 Inspect the mechanical seal

NOTE

No visual inspection of the mechanical seal

MATERIAL DAMAGE IN THE ACCESSORY CAUSED BY LEAKING MECHANICAL SEALS

- Check the mechanical seals once a month.
- In case of leakage, stop the accessory and contact Customer Support. → Page 32, section »Contact data«.

Expect the formation of drops at the mechanical seal when operating with heat transfer fluids that evaporate only very slowly, as mechanical seals are never absolutely tight. These drops must be removed if necessary. → Page 27, section »Function check and visual inspection«. The tightness of the mechanical seal must be visually checked. In case of a leakage, more heat transfer fluid exits at the bottom of the accessory. Follow the instructions for the proper disposal of heat transfer fluid. → Page 12, section »Proper disposal«.

6.6 Plug contacts

NOTE

Open plug contacts

DAMAGE CAUSED BY FLUID INGRESS

- Protect plug contacts that are not required with the protective caps supplied.
- Clean surfaces only with a damp cloth.

All plug contacts are provided with protective caps. Plug contacts that are not required must be protected with the protective caps.

6.7 Decontamination before shipping

CAUTION

Shipping temperature control units or accessories that are not decontaminated

PERSONAL INJURIES AND DAMAGE DUE TO RESIDUES OF HAZARDOUS SUBSTANCES

- Carry out suitable decontamination.
- The scope of decontamination depends on the type and amount of the substances used.
- The corresponding safety data sheet must be observed.
- You will find a prepared return receipt at www.huber-online.com.

The operating company is responsible for carrying out a decontamination. Decontamination must be carried out **before** the temperature control unit or accessory is shipped. For example for repair or inspection. It must be ensured that third-party personnel do **not** come into contact with a contaminated temperature control unit or accessory. A written note pointing out that decontamination has been carried out must be attached clearly visible on the temperature control unit or accessory.

To simplify the process, we have prepared a form for you. This is available for download at www.huber-online.com.

7 Shutting down

7.1 Safety instructions and basic principles

DANGER

Connection/adjustment to the power supply not carried out by a qualified (certified) electrician and/or connection to a power socket without protective earth (PE)

MORTAL DANGER FROM ELECTRIC SHOCK

- Have the connection/adjustment to the power supply carried out by a qualified (certified) electrician.
- Always connect the accessory to safety sockets (PE).

DANGER

Damaged power cable/power cable connection

MORTAL DANGER FROM ELECTRIC SHOCK

- Do not start up the accessory.
- Isolate the accessory from the power supply.
- Have the power cable/power cable connection replaced and inspected by a qualified (certified) electrician.

WARNING

Risk of tipping due to unstable accessory

SEVERE INJURIES AND MATERIAL DAMAGE

- Avoid risk of tipping due to unstable accessory.

CAUTION

Non-compliance with the safety data sheet for the heat transfer fluid to be used

INJURIES

- Risk of injury to the eyes, skin, respiratory tract.
- The safety data sheet for the heat transfer fluid to be used must be read prior to using it and its content must be respected.
- Observe the local regulations/work instructions.
- Wear your personal protective equipment (e.g. temperature-resistant safety gloves, safety goggles, safety footwear).
- Danger of slipping because floor and work area are contaminated. Clean the workplace; observe the proper disposal of heat transfer fluid and aids. → Page 12, section »Proper disposal«.

CAUTION

Hot or very cold heat transfer fluid

SEVERE BURNS/FROSTBITE OF LIMBS

- Before draining, ensure that the heat transfer fluid has room temperature (20 °C).
- If, at this temperature, the heat transfer fluid is too viscous to be drained: Control the temperature of the heat transfer fluid for a few minutes until the viscosity will allow drainage. Never control the temperature of the heat transfer fluid when the drain is open.
- Danger of burns when draining heat transfer fluids at temperatures above 20 °C.
- Wear your Personal Protective Equipment for draining.
- Only drain using suitable drainage hose and collecting container. These must be compatible with the heat transfer fluid and its temperature.

INFORMATION

All safety instructions are important and must be followed accordingly during working operations!

7.2 Switch-off

PROCEDURE

- Switch off the accessory.
- Disconnect the accessory from the power supply connection.

7.3 Disconnecting the control cable

PROCEDURE

- Disconnect the connection >External control signal< [48]/>Floating contact< [51] on the accessory from the connection >POKO (floating contact) Alarm< on the temperature control unit.

7.4 Draining the accessory

PROCEDURE

- Drain the accessory. → From page 24, Section »Filling and draining the accessory«.

7.5 Separating the accessory from the temperature control unit

PROCEDURE

- Drain the temperature control unit **before** you disconnect the accessory. For more information, please refer to the operation manual of the temperature control unit.
- Remove the temperature control hose from the >Circulation return< [2] on the temperature control unit and from the output of your external application.
- Remove the temperature control hose from the input of your external application and from the >Circulation flow< [1] of the accessory.
- Remove the temperature control hose from the >Circulation return< [2] on the accessory and from the >Circulation flow< [1] on the temperature control unit.
- Mount the protective plastic caps onto the accessory connections >Circulation flow< [1] and >Circulation return< [2].
- Mount the protective plastic caps onto the temperature control unit connections >Circulation flow< [1] and >Circulation return< [2].

7.6 Deactivating the leveling feet

Only valid for temperature control units with extendible leveling feet.

Ensure that the leveling feet are screwed in/deactivated before you pack the temperature control unit.

PROCEDURE

- Ensure that the locking brakes of the casters (if present) are activated.
- Loosen the lock screws on the leveling feet.
- Screw in the leveling feet.
- Ensure that the locking brakes of the casters (if installed) are deactivated.

7.7 Mounting the knurled screws

PROCEDURE

- Check whether the knurled screws on the drains have been mounted and hand-tightened.

7.8 Packing

Always use the original packaging! → Page 16, section »Unpacking«.

7.9 Shipping

NOTE

Accessories are transported in a horizontal position

PROPERTY DAMAGE

- Only transport accessories in an upright position.

NOTE

Improper transportation of the accessory

MATERIAL DAMAGE

- Do not transport the unit in a truck when the unit rests on its casters or leveling feet.
- Comply with all requirements in this section to avoid damage to the accessory.

If fitted, use the lugs located on the top of the accessory for transportation. Do not transport the accessory alone and without aids.

- Always use the original packaging for transportation.
- Indicate the upright transport position with arrows on the packaging.
- Always transport the accessories upright on a pallet!
- Protect attachments from damage during transportation!
- During transportation, place the accessories on squared timber to protect the casters/feet.
- Secure with tensioning belts/lashing straps that are suitable for the weight.
- Additionally secure (depending on model) with plastic film, cardboard and straps.

7.10 Disposal

The operating company must comply with national and local regulations for the disposal.

NOTE

Improper disposal

ENVIRONMENTAL DAMAGE

- Immediately dispose of spilled or leaked heat transfer fluid in a professional manner. → Page 12, Section »Proper disposal«.
- Environmental damage must be avoided.
- Only commission approved specialized companies in the field of cooling and air-conditioning to carry out the disposal.

Huber temperature control units and Huber accessories are manufactured from high quality, recyclable materials. For example: Stainless steel 1.4301 / 1.4401 (V2A), copper, nickel, FKM, Perbunan, NBR, ceramic, carbon, Al-Oxid, red brass, brass, nickel-plated brass and silver solder. With proper recycling you actively contribute to the reduction of the CO₂ emissions during the manufacture of these materials.

7.11 Contact data

INFORMATION

Please contact your supplier and/or local dealer **before** you return your accessories. The contact information can be found "Contact" on our home page www.huber-online.com. Please have the serial number of the accessories ready. The serial number can be found on the rating plate of the accessories.

7.11.1 Telephone number: Customer Support

If your country is not mentioned in the list below: The responsible service partner can be found on our homepage www.huber-online.com under the heading „Contact“.

- Huber Deutschland: +49 781 9603-244
- Huber France: +33 3 88 44 97 10
- Huber China: +86 20 8900 1381
- Huber India: +91 80 2364 7966
- Huber Ireland: +353 1 835 9443
- Huber Italia: +39 0331 181493
- Huber Swiss: +41 41 854 10 10
- Huber UK: +44 1773 82 3369
- Huber USA: +1 800 726 4877 | +1 919 674 4266

7.11.2 Telephone number: Sales

Telephone: +49-781-9603-123

7.11.3 Email address: Customer Support

Email: support@huber-online.com

7.12 Clearance certificate

This certificate must be enclosed with the temperature control unit. → Page 29, section »**Decontamination before shipping**«.

8 Annex

Inspired by **temperature** designed for you

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