



# 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

## Flow Control Cube

Betriebsanle... Manual de  
instruccione... ale de d'uso  
· 사용 설명... нструкция  
по эксплуа... 说明书  
Betriebsan... Manual de  
instruccione... ale de d'uso  
· 사용 설명서 · Manual de instruções · Инструкция по эксплуатации · Kullanım talimatı · 操作说明书

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

You can request the full installation guide from [info@huber-online.com](mailto:info@huber-online.com). Please give the model designation and serial number of your temperature control unit in your e-mail.

**huber**





OPERATION MANUAL

# Flow Control Cube



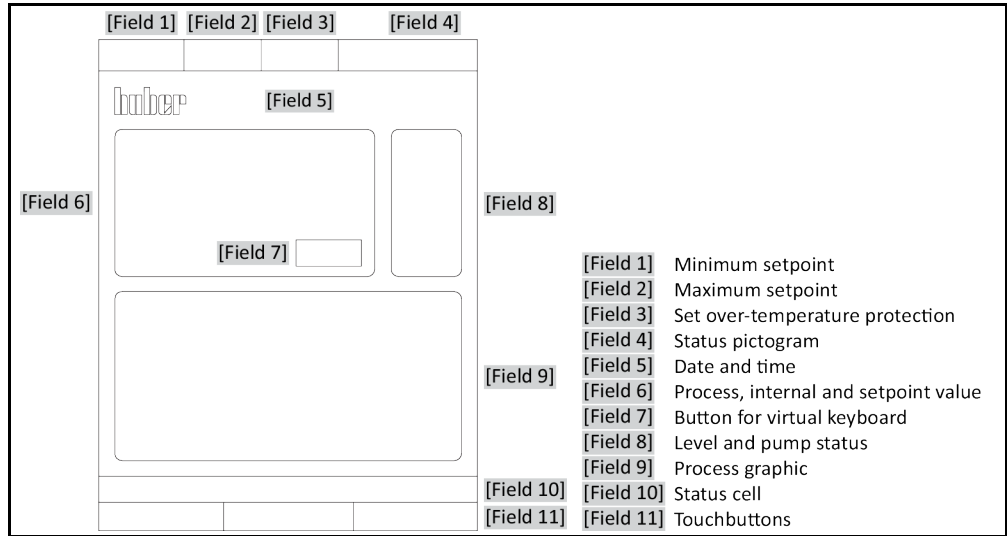
# Flow Control Cube

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

**VALID IN CONJUNCTION WITH:**

**Huber temperature control units  
with Pilot ONE®**

Layout of the "Home" screen



# Table of contents

V1.3.0en/30.08.21

<b>1</b>	<b>Introduction</b>	<b>12</b>
<b>1.1</b>	<b>Identification / symbols in the operation manual</b>	<b>12</b>
<b>1.2</b>	<b>Information on the EU Declaration of Conformity</b>	<b>12</b>
<b>1.3</b>	<b>Safety</b>	<b>12</b>
1.3.1	Symbols used for Safety Instructions	12
1.3.2	Representation of safety identifiers on the accessory	13
1.3.3	Safety during commissioning	13
1.3.4	Extension of specified normal operation	13
1.3.5	Reasonably foreseeable misuse	14
<b>1.4</b>	<b>Responsible bodies and operators – Obligations and requirements</b>	<b>15</b>
1.4.1	Obligations of the responsible body	15
1.4.1.1	Proper disposal of resources and consumables	15
1.4.2	Requirements for operators	16
1.4.3	Obligations of the operators	16
<b>1.5</b>	<b>General information</b>	<b>16</b>
1.5.1	Description of workstation	16
1.5.2	Further protective devices	16
<b>2</b>	<b>Commissioning</b>	<b>17</b>
<b>2.1</b>	<b>In-plant transport</b>	<b>17</b>
2.1.1	Lifting and transporting the accessories	17
2.1.1.1	Accessories with lifting eyes	17
2.1.1.2	Accessories without lifting eyes	18
2.1.2	Mounting/removing leveling feet	18
2.1.3	Positioning the accessories	19
2.1.3.1	Accessories with casters	19
2.1.3.2	Accessories with casters including leveling feet	19
2.1.3.3	Accessories without casters	19
<b>2.2</b>	<b>Unpacking</b>	<b>19</b>
<b>2.3</b>	<b>Ambient conditions</b>	<b>20</b>
2.3.1	EMC-specific notes	21
<b>2.4</b>	<b>Installation conditions</b>	<b>22</b>
<b>2.5</b>	<b>Recommended temperature control hoses</b>	<b>22</b>
<b>2.6</b>	<b>Wrench sizes and torques</b>	<b>23</b>
<b>2.7</b>	<b>Preparations for operation</b>	<b>23</b>
2.7.1	Unscrewing/activating the leveling feet (if any)	23
2.7.2	Connecting the accessory to the temperature control unit	23
2.7.2.1	Valid for factory-fitted accessories	24
2.7.2.2	Valid for independent accessories	24
2.7.3	Connecting the functional earth	25
<b>2.8</b>	<b>Connecting to the power supply</b>	<b>25</b>
2.8.1	Connection using socket with protective earth (PE)	25
2.8.2	Connection via hard wiring	25
<b>3</b>	<b>Function description</b>	<b>26</b>
<b>3.1</b>	<b>Function description of the accessory</b>	<b>26</b>
3.1.1	General functions	26

<b>3.2</b>	<b>Information on the thermal fluids .....</b>	<b>26</b>
<b>3.3</b>	<b>To be noted when planning the test .....</b>	<b>27</b>
<b>3.4</b>	<b>Dimensions: Unistat with connection set .....</b>	<b>28</b>
<b>3.5</b>	<b>Display instruments .....</b>	<b>29</b>
3.5.1	Flow meter LED display .....	29
<b>3.6</b>	<b>Function examples .....</b>	<b>29</b>
3.6.1	Changing the closed-loop control mode .....	29
3.6.2	Changing the flow rate .....	29
3.6.3	Changing the thermal fluid .....	30
3.6.4	Restore factory settings .....	30
<b>4</b>	<b>Setup mode .....</b>	<b>31</b>
<b>4.1</b>	<b>Setup mode .....</b>	<b>31</b>
4.1.1	Turning on the accessory .....	31
4.1.1.1	Valid for factory-fitted accessories .....	31
4.1.1.2	Valid for independent accessories .....	32
4.1.2	Switching off the accessories .....	32
<b>4.2</b>	<b>Filling and draining the accessory .....</b>	<b>32</b>
4.2.1	Filling the accessory .....	33
4.2.2	Draining the accessory .....	33
4.2.2.1	Valid for factory-fitted accessories .....	33
4.2.2.2	Valid for independent accessories .....	34
<b>5</b>	<b>Normal operation .....</b>	<b>35</b>
<b>5.1</b>	<b>Automatic operation .....</b>	<b>35</b>
5.1.1	Temperature control .....	35
5.1.1.1	Starting the temperature control process .....	35
5.1.1.2	Ending the temperature control process .....	35
<b>6</b>	<b>Interfaces and software update .....</b>	<b>36</b>
<b>6.1</b>	<b>Interfaces on the accessory .....</b>	<b>36</b>
6.1.1	Connection jack for external pressure sensor .....	36
<b>7</b>	<b>Service/maintenance .....</b>	<b>37</b>
<b>7.1</b>	<b>Electrical fuse .....</b>	<b>37</b>
<b>7.2</b>	<b>Maintenance .....</b>	<b>37</b>
7.2.1	Function check and visual inspection .....	37
7.2.2	Replacing temperature control hoses .....	38
<b>7.3</b>	<b>Thermal fluid inspection, replacement and circuit cleaning .....</b>	<b>38</b>
<b>7.4</b>	<b>Cleaning the surfaces .....</b>	<b>38</b>
<b>7.5</b>	<b>Plug contacts .....</b>	<b>38</b>
<b>7.6</b>	<b>Decontamination/repairs .....</b>	<b>39</b>
<b>8</b>	<b>Shutting down .....</b>	<b>40</b>
<b>8.1</b>	<b>Safety instructions and basic principles .....</b>	<b>40</b>
<b>8.2</b>	<b>Switch-off .....</b>	<b>40</b>
<b>8.3</b>	<b>Draining the accessory .....</b>	<b>41</b>
<b>8.4</b>	<b>Separating the accessory from the temperature control unit .....</b>	<b>41</b>
8.4.1	Valid for factory-fitted accessories .....	41
8.4.2	Valid for independent accessories .....	41
<b>8.5</b>	<b>Screw in/deactivate the leveling feet (if installed) .....</b>	<b>41</b>
<b>8.6</b>	<b>Packing .....</b>	<b>42</b>
<b>8.7</b>	<b>Shipping .....</b>	<b>42</b>



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<b>8.8</b>	<b>Disposal .....</b>	<b>42</b>
<b>8.9</b>	<b>Contact data .....</b>	<b>43</b>
8.9.1	Telephone number: Customer Support .....	43
8.9.2	Telephone number: Sales .....	43
8.9.3	Email address: Customer Support.....	43
<b>8.10</b>	<b>Certificate of Compliance .....</b>	<b>43</b>
<b>9</b>	<b>Annex</b>	<b>44</b>



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

Follow this operation manual for transport, start-up, operation, maintenance, repair, storage and disposal.

We fully warrant the accessory for the specified normal 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.

Liability for errors and misprints excluded.

The following trademarks and the Huber logo are registered trademarks of Peter Huber Kältemaschinenbau SE in Germany and/or other countries worldwide: BFT®, CC®, Chili®, Com.G@te®, Compatible Control®, CoolNet®, DC®, E-grade®, Grande Fleur®, Huber Piccolo®, KISS®, Minichiller®, Ministat®, MP®, MPC®, Peter Huber Minichiller®, Petite Fleur®, Pilot ONE®, RotaCool®, Rotostat®, SpyControl®, SpyLight®, Tango®, TC®, UC®, Unical®, Unichiller®, Unimotive®, Unipump®, Unistat®, Unistat Tango®, Variostat®. The following trademarks are registered in Germany to DWS Synthesetechnik: DW-Therm®, DW-Therm HT®. The following trademark is a registered trademark of BASF SE: Glystantin®.

# 1 Introduction

## 1.1 Identification / symbols in the operation manual

The following identifications and symbols are used in the texts and illustrations.

Overview	Identification / symbol	Description
	→	Reference to information / procedure.
	»TEXT«	Reference to a chapter in the operation manual. In the digital version, the text is clickable.
	>TEXT< [NUMBER]	Reference to the wiring diagram in the annex. The designation and the search digit are specified.
	>TEXT< [LETTER]	Reference to a drawing in the same paragraph. The designation and the search digit are specified.
	▪	List, first level
	–	List, second level

## 1.2 Information on the EU Declaration of Conformity

The equipment complies with the basic health and safety requirements of the European Directives listed below:

- Machinery Directive
- Low Voltage Directive
- EMC Directive

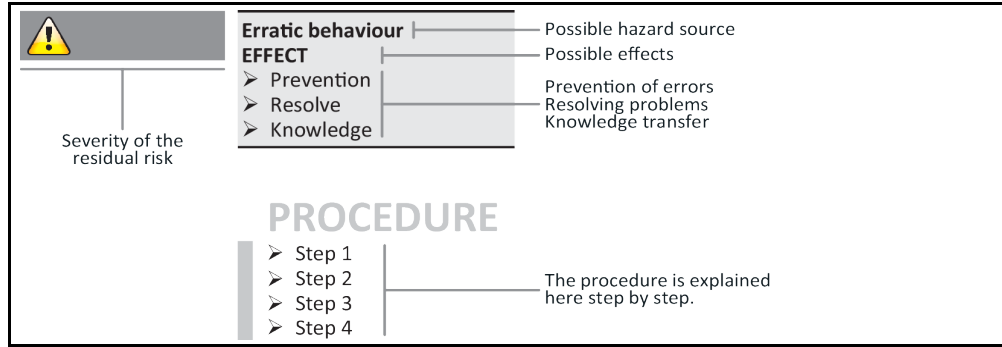
## 1.3 Safety

### 1.3.1 Symbols used for Safety Instructions

Safety instructions are marked by the below combinations of pictograms and signal words. The signal word describes the classification of the residual risk when disregarding the operation manual.

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

Safety information and procedure



The safety information in this operation manual is designed to protect the operating company, the operator and the equipment from damage. First inform yourself about any residual risks due to misuse before you start an operation.

### 1.3.2 Representation of safety identifiers on the accessory

The following pictograms are used as safety identifiers. The table gives an overview of the safety identifiers used here.

Identifier	Description
<b>Mandatory sign</b>	
	- Observe the instructions
<b>Warning sign</b>	
	- General warning sign - Observe the instructions
	- Warning of electrical voltage
	- Warning of hot surface
	- Warning of flammable substances

### 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 43, section »Contact data«. Keep this operation manual for future reference.

### 1.3.4 Extension of specified normal operation



**The accessories are operated in a potentially explosive area**  
**DEATH FROM EXPLOSION**  
 ➤ Do NOT install or start up the accessories within an ATEX zone.

**WARNING****Improper use****SEVERE INJURIES AND MATERIAL DAMAGE**

- Keep the operation manual easily accessible in the immediate vicinity of the temperature control unit and/or the accessories.
- Only adequately qualified operators may work with the temperature control unit and/or the accessories.
- Operators must be trained before handling the temperature control unit and/or its accessories.
- Check to ensure that the operators have read and understood the operation manual.
- Define precise responsibilities of the operators.
- Personal protective equipment must be provided to the operators.
- Be sure to follow the safety rules of the responsible body to protect life and limb and to limit damages!

**NOTE****Modifications to the accessory by third-parties****DAMAGE TO THE ACCESSORY AND THE TEMPERATURE CONTROL UNIT**

- Do not allow third parties to make technical modifications to the accessories.
- Any modification that is not approved by Huber invalidates all EU Declarations of Conformity for the accessories.
- Only specialists trained by Huber may carry out modifications, repairs or maintenance work.
- **It is imperative to observe:**
- Only use the accessories in a fault-free condition!
- Have the start-up and repairs carried out by specialists only!
- Do not ignore, bypass, dismantle or disconnect any safety devices!

**NOTE****A pressure-sensitive external application is run with the accessory without a rupture disc being installed****MATERIAL DAMAGE TO THE EXTERNAL APPLICATION**

- To protect a pressure-sensitive external application (such as a glass apparatus), use a rupture disk in the supply line.
- Do not use accessories as a shut-off valve. The outputs cannot be completely closed due to the design.
- The external application can be damaged by excessive pressure if the return is closed.

The accessory is used for flow rate control or pressure control or flow rate control with max. pressure limit. For this, the accessory must be properly installed on the temperature control unit. The accessory is intended for use with an **externally closed application**. The accessory itself can **not** be used without being connected to a temperature control unit. Otherwise the intended use applies as described in the temperature control unit's operation manual.

The accessory is not a safety device for the unrestricted protection of a pressure-sensitive external application (e.g. a glass apparatus). The maximum pump pressure may be applied to your external application if the accessory is defective. A sufficiently dimensioned rupture disc must be installed in the supply line (pressure side) to protect your external application. The installed rupture disc is destroyed in the event of a fault and thus protects the external application against damage. The approved temperature range is indicated on the nameplate of the accessory.

### 1.3.5 Reasonably foreseeable misuse

Use with medical devices (e.g. in Vitro diagnostic procedure) or for direct foodstuff temperature control is **NOT** permissible.

The temperature control unit / accessory **must not be used** for any purposes other than temperature control in accordance with the operation manuals.

The manufacturer accepts **NO** liability for damage caused by **technical modifications** to the temperature control unit / accessory **improper handling** or use of the temperature control unit / accessory if the operation manuals are **not observed**.

## 1.4 Responsible bodies and operators – Obligations and requirements

### 1.4.1 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 / thermal fluid drip tray below the temperature control unit (including accessory).
- The use of a drip tray may be prescribed by national legislation for the installation area of the temperature control unit (including 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 **>Main switch<** [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).

#### 1.4.1.1 Proper disposal of resources and consumables

Do comply with all national disposal regulations applicable for you. Contact your local waste management company for any questions concerning disposal.

Overview

Material / Aids	Disposal / Cleaning
Packaging material	Keep the packaging material for future use (e.g. transport).
Thermal fluid	Please refer to the safety data sheet of the thermal fluid used for information on its proper disposal. Use the original thermal fluid container when disposing it.
Filling accessories, e.g. beaker	Clean the filling accessories for reuse. Make sure that the materials and cleaning agents used are properly disposed of.
Aids such as towels, cleaning cloths	Tools used to take up spilled thermal fluid must be disposed of in the same fashion as the thermal fluid itself. Tools used for cleaning must be disposed of depending on the cleaning agent used.
Cleaning agents such as stainless steel cleaning agents, sensitive-fabrics detergents	Please refer to the safety data sheet of the cleaning agent used for information on its proper disposal. Use the original containers when disposing of large quantities of cleaning agents.
Consumables such as air filter mats, temperature control hoses	Please refer to the safety data sheet of the consumables used for information on their proper disposal.

## 1.4.2 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 operator is responsible for other people within the unit's working range.

## 1.4.3 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 General information

### 1.5.1 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 peripheries. 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.

### 1.5.2 Further protective devices

#### INFORMATION

Emergency strategy – interrupt the power grid connection!

To determine the type of switch or switch combination your accessory is equipped with, please refer to the connection sketch. → From page 44, section »Annex«.

**Accessory with >Main switch< [36] (red/yellow or grey):** Turn the >Main switch< [36] to the "0" position.

**Accessory with >Main switch< [36] (red/yellow) and additional >Appliance switch< [37] (gray):** Turn the >Main switch< [36] to the "0" position. Then turn the >Appliance switch< [37] to the "0" position!

**Accessory with >Main switch< [36] (gray) and >Emergency stop switch< [70] (red/yellow):** Press the >Emergency stop switch< [70]. Then turn the >Main switch< [36] to the "0" position!

**Accessory with >Mains isolator< [37]:** Power supply via socket: Disconnect the accessory from the power grid. Then turn the >Mains isolator< [37] to the "0" position! Power supply via hard wiring: Disconnect the power grid supply by means of the building's circuit breaker. Then turn the >Mains isolator< [37] to the "0" position!

**Accessory without a switch or inside a protective housing:** Connection via socket: Disconnect the accessory from the power grid. Connection via hard wiring: Disconnect the power grid supply by means of 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 THERMAL FLUID

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

#### Accessories installed at the factory:

- Protect accessories from transport damage.
- Observe the specifications in the operation manual of the temperature control unit.

#### Independent 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 palette) only at the place of installation.
- Protect accessory from transport damage.
- Do not transport the accessory alone and without aids.
- Check the load bearing capacity of the transportation route and the place of installation.
- The parking brakes must be activated at the casters before the accessory is put into operation.

#### 2.1.1 Lifting and transporting the accessories

##### 2.1.1.1 Accessories with lifting eyes

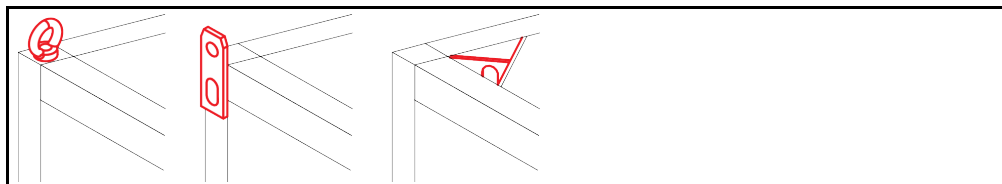
#### NOTE

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

#### DAMAGE TO THE ACCESSORIES

- Always use load handling equipment when lifting and transporting the accessories.
- 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 temperature control unit into account.

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

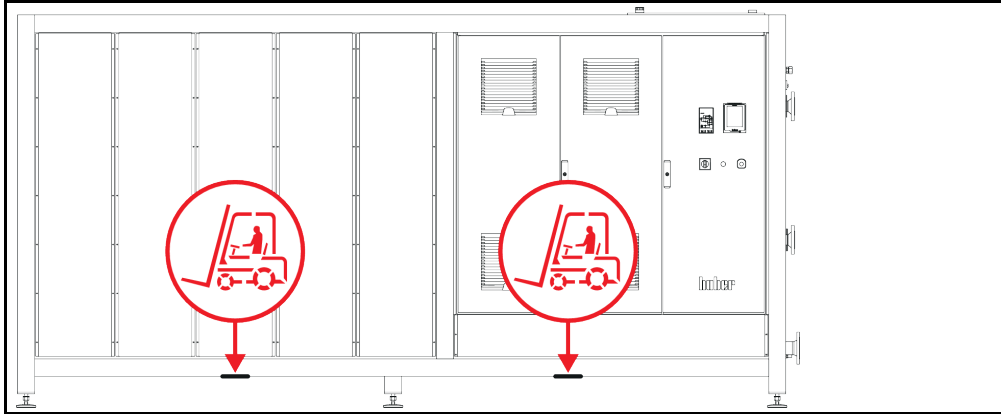


- Never lift and transport the accessory on the lifting eyes on your own and without aids.
- Lift and transport the accessory at the lifting eyes only with a crane or an industrial truck.
- The lifting force of the crane or industrial truck must correspond at least to the weight of the accessory. You will find the weight of the accessory on the data sheet. → From page 44, section »Annex«.

- If the leveling feet have been removed for shipping: Only lower the accessory when all leveling feet have been installed. → Page 18, 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 44, section »Annex«.
- If the leveling feet have been removed for shipping: Only lower the accessory when all leveling feet have been installed. → Page 18, section »Mounting/removing leveling feet«.

**2.1.2 Mounting/removing leveling feet**

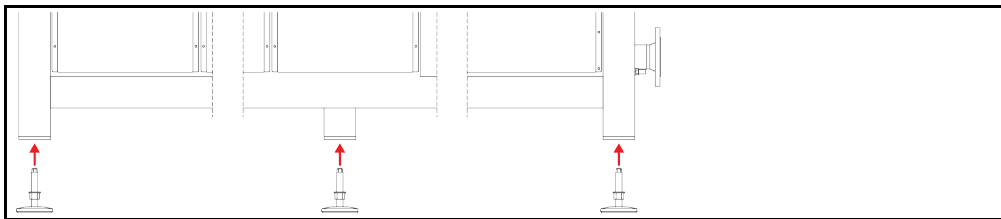
Only valid if the leveling feet have been removed for shipping.

**! 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 17, 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 1.5 tons**.
- The parking brakes at the casters must be activated before the accessory is put into operation.

### 2.1.3.2 Accessories with casters including leveling feet

- Do **not** use the casters for transportation to the place of installation. → Page 17, 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 23, section »**Unscrewing/activating the leveling feet (if any)**«.

### 2.1.3.3 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 44, section »**Annex**«.

## 2.2 Unpacking



### WARNING

#### Commissioning damaged accessories

#### DANGER TO LIFE FROM ELECTRIC SHOCK

- Do not start up damaged accessories.
- Please contact Customer Support. → Page 43, 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 15, section »**Proper disposal of resources and consumables**«.

## 2.3 Ambient conditions

**CAUTION**

**Unsuitable ambient conditions / unsuitable installation**

**SERIOUS INJURY DUE TO CRUSHING**

- Comply with all requirements! → Page 20, section »Ambient conditions« and → Page 22, 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 44 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	Distance in cm	
	Air cooling	Water cooling
[A1] Top	Air outlet on top of unit: free standing	–
[A2] Top	can be located under a bench	can be located under a bench
[B] Left	min. 20	min. 10
[C] Right	min. 20	min. 10
[D] Front	min. 20	min. 10
[E] Rear	min. 20	min. 20

Side	Distance in cm (for operation in a tub)	
	Air cooling	Water cooling
[A1] Top	Air outlet on top of unit: free standing	–
[A2] Top	can be located under a bench	can be located under a bench
[B] Left	min. 20	min. 20
[C] Right	min. 20	min. 20
[D] Front	min. 20	min. 20
[E] Rear	min. 20	min. 20

### 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/fix 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**.

**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 without tilt.
- Use a non-combustible, sealed foundation.
- Keep the environment clean: Prevent slip and trip hazards.
- Wheels, if installed, must be locked after installation!
- Spilled/leaked thermal fluid must be disposed of immediately and correctly. Observe the proper disposal of thermal fluid and aids. → Page 15, section »Proper disposal of resources and consumables«.
- Observe the ambient conditions.

## 2.5 Recommended temperature control hoses

### CAUTION

**Use of unsuitable/defective hoses and/or hose connections**

**INJURIES**

- Use appropriate hoses and/or hose connections.
- Check periodically for leaks and the quality of the hose and hose connections and take suitable measures (replace) as required.
- Isolate and protect temperature control hoses against contact/mechanical load.

### CAUTION

**Hot or cold thermal fluid and surfaces**

**BURNS TO LIMBS**

- Avoid direct contact with the thermal 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 thermal 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 thermal 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 thermal fluid used. When selecting temperature control hoses, also pay attention to the temperature range in which the hoses are to be 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

Observe the proper wrench sizes for the pump connection at the accessory. The following table lists the pump connections and the resulting wrench sizes, as well as the torque values. Always perform a leak test afterwards and re-tighten the connections if required. The values of the maximum torque (see table) must **not** be exceeded.

Connection	Sleeve nut wrench size	Connector wrench size	Recommended torques in Nm	Maximum torques in Nm
M16x1	19	17	20	24
M24x1.5	27	27	47	56
M30x1.5	36	32	79	93
	36	36	79	93
M38x1.5	46	46	130	153
G-thread (flat-sealing)	Adapt the torque to the material of the flat seal used. First hand-tighten the temperature control hose. When using adapters, do not overtighten the G-thread on the pump connection when connecting a temperature control hose. When connecting a temperature control hose to the adapter piece, secure the G thread against overwinding.			

## 2.7 Preparations for operation

### 2.7.1 Unscrewing/activating the leveling feet (if any)

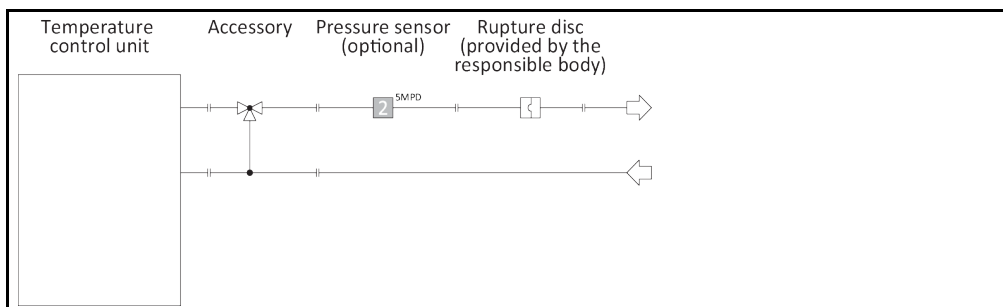
Ensure that the leveling feet are unscrewed/activated before you operate the accessories. Uneven floors can be compensated for by adjusting these leveling feet.

### PROCEDURE

- Ensure that the locking brakes of the casters (if installed) are activated.
- Turn the casters inwards so that you can easily reach the red setting wheels.
- Turn the red setting wheel on each caster clockwise. This extends the leveling feet. Rotate the red wheels counterclockwise to retract the leveling feet.
- Compensate uneven floors by adjusting these leveling feet, if necessary. Use a spirit level to level the accessories horizontally.

### 2.7.2 Connecting the accessory to the temperature control unit

Example: Schematic representation of installation



### INFORMATION

Follow the operation manual of the temperature control unit when connecting the device. Only use temperature control hoses that match the specifications of the thermal fluid used. Avoid bending / squeezing 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. Make sure the temperature control hoses are attached to the respective unit connections such that they cannot slip off. Secure the temperature control hoses with hose clamps.

**INFORMATION**

Option:

Connect an external pressure sensor to the “**external pressure**” port of the accessory (otherwise the internal pressure sensor in the accessory takes control).

**2.7.2.1 Valid for factory-fitted accessories**

## PROCEDURE

- Make sure that the temperature control unit has not yet been filled with thermal fluid.
- Disconnect the temperature control unit from the power grid connection.
- Remove the protective caps from the connections on the accessory.
- Connect the **>Circulation outlet<** [1] on the accessory with the external application. For further information, please refer to the operation manual of the temperature control unit. There can be maximum pump pressure at your external application if accessories are defective. A sufficiently dimensioned rupture disc must be installed in the supply line (pressure side) to protect your external application. The installed rupture disc is destroyed in the event of a fault and thus protects the external application against damage. Ensure that the emerging thermal fluid can be collected and disposed of. → Page 15, section »**Proper disposal of resources and consumables**«. In case you use an external pressure sensor:  
Install the external pressure sensor between the accessory and the external application.
- Connect the **>Circulation outlet<** [2] on the accessory with the external application. For further information, please refer to the operation manual of the temperature control unit.
- Check the connections for leaks.
- Ex factory, the **>control line<** [117] on the accessory is connected either with the connection **>Service interface<** [50] on the **>Unistat Control ONE<** [40], or with the connection **>socket RS232/RS485 serial<** on the **>Com.G@te<** [46].
- In case you use an external pressure sensor:  
Connect the external pressure sensor with the **>Connection external pressure sensor<** [66] on the accessory.

**2.7.2.2 Valid for independent accessories**

## PROCEDURE

- Make sure that the temperature control unit has not yet been filled with thermal fluid.
- Disconnect the temperature control unit from the power grid connection.
- Remove the protective caps from the connections on the accessory.
- Connect the **>Circulation outlet<** [1] on the temperature control unit with the **>Circulation inlet<** [2] on the accessory.
- Connect the **>Circulation inlet<** [2] on the temperature control unit with the **>Circulation outlet<** [1] on the accessory.
- Connect the **>Circulation outlet<** [1] on the accessory with the external application. For further information, please refer to the operation manual of the temperature control unit. There can be maximum pump pressure at your external application if accessories are defective. A sufficiently dimensioned rupture disc must be installed in the supply line (pressure side) to protect your external application. The installed rupture disc is destroyed in the event of a fault and thus protects the external application against damage. Ensure that the emerging thermal fluid can be collected and disposed of. → Page 15, section »**Proper disposal of resources and consumables**«. In case you use an external pressure sensor:  
Install the external pressure sensor between the accessory and the external application.
- Connect the **>Circulation inlet<** [2] on the accessory with the external application. For further information, please refer to the operation manual of the temperature control unit.
- Check the connections for leaks.
- Connect the **>control line<** [117] of the accessory either with the connection **>Service interface<** [50] on the **>Unistat Control ONE<** [40] or with the connection **>socket RS232/RS485 serial<** on the **>Com.G@te<** [46].
- In case you use an external pressure sensor:  
Connect the external pressure sensor with the **>Connection external pressure sensor<** [66] on the accessory.



### 2.7.3 Connecting the functional earth

## 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 44, section »Annex«.

## 2.8 Connecting to the power supply

### INFORMATION

Based on local circumstances, it may be that you need to use an alternative power cable instead of the supplied original power cable. Do not use a power cable that is longer than **3 m** to be able to disconnect the accessory from the mains at any time. Have the mains cable only installed by a qualified electrician.

### 2.8.1 Connection using socket with protective earth (PE)

#### DANGER

**Connecting to a power socket without protective earth (PE)**

**MORTAL DANGER FROM ELECTRIC SHOCK**

- 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 supply cable/power supply connection replaced and inspected by an electrician.
- Do not use a power cable that is longer than **3 m**.

### 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

In case of uncertainties about an existing protective earth (PE), have the connection inspected by an electrician.

### 2.8.2 Connection via hard wiring

#### DANGER

**Connection/adjustment to the power supply not carried out by an electrician**

**MORTAL DANGER FROM ELECTRIC SHOCK**

- Have the connection/adjustment to the power supply carried out by an 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 supply cable/power supply connection replaced and inspected by an electrician.
- Do not use a power cable that is longer than **3 m**.

### 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.

## 3 Function description

### 3.1 Function description of the accessory

#### 3.1.1 General functions

The accessory was developed for temperature control units that are **not** equipped with a sensor to control the flow rate or the pressure or the flow rate with max. pressure limit. The accessory permits sensitive external applications (e.g.: glass reactors) to be operated with a lower flow rate or pressure in normal operation. The accessory ensures a soft startup. It regulates and limits the flow rate or pressure that acts on the external application.

To avoid power losses, evaporator and heater are sufficiently circulated by the primary circuit (temperature control unit – accessory). The secondary circuit feeds the external application.

The accessory is available in two different versions:  
 - Ex factory installed on the temperature control unit.  
 - As an independent unit.

The accessories come with one of two measuring methods (TURB (turbine) or MID (magnetic-inductive flow meter)). The installed flow meter is specified on the data sheet. → From page 44, section »Annex«. The "TURB" flow meter permits conductive and non-conductive thermal fluids to be used. The "MID" flow meter, in contrast, can **only** be used with conductive thermal fluids.

The accessory can detect pressure in two ways:  
 – Internal pressure sensor: Measuring point in accessory (standard).  
 – External pressure sensor: Measuring point is external, e.g. directly at the external application. This requires an additional pressure sensor.

### 3.2 Information on the thermal fluids

 **CAUTION**

**Non-compliance with the safety data sheet for the thermal fluid to be used**

**INJURIES**

- Risk of injury to the eyes, skin, respiratory tract.
- The safety data sheet for the thermal 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 thermal fluid and aids. → Page 15, section »Proper disposal of resources and consumables«.

 **CAUTION**

**The temperature range of the accessory is exceeded**

**BURNS OF LIMBS**

- The temperature range of the employed temperature control unit is limited by the use of the accessory.
- Do not exceed the temperature range of the accessory (see data sheet). → From page 44, section »Annex«.
- Select the upper temperature limit on the temperature control unit. To do this, adjust the maximum setpoint in Pilot ONE.
- Wear your personal protective equipment (e.g. temperature-resistant safety gloves, safety goggles, safety footwear).

**NOTE**

**Non-compliance with the compatibility between the thermal fluid and your accessories**

**MATERIAL DAMAGE**

- Take note of the thermal fluid that is preselected in the accessories (see rating plate on the accessories).

**NOTE****Mixing different thermofluids in a thermal fluid circuit****PROPERTY DAMAGE**

- Do **not** mix different types of thermofluid (such as mineral oil, silicone oil, synthetic oil, water, etc.) in a thermofluid circuit.
- The thermal fluid circuit **must** be rinsed when changing from one type of thermal fluid to another. No residues of the previous type of thermal fluid may remain in the thermal fluid circuit.

**INFORMATION**

For thermal fluids we recommend the media listed in the Huber catalog. The name of a thermal fluid results from its working temperature range and the viscosity at 25 °C.

The "TURB" flow meter can be used with conductive and non-conductive thermal fluid! The thermal fluid is preselected at the factory. For example: Water-ethylene glycol mixture, DW-Therm, etc.

The "MID" flow meter can **only** be used with conductive thermal fluid! The flow meter adjusts automatically to the currently used thermal fluid. For example: Water, water ethylene glycol mixture, etc.

The flow meter your accessory is equipped with and the temperature range in which it can be used are specified on the data sheet. → From page 44, section »Annex«.

The thermal fluid preset in the "TURB" flow meter is indicated on the rating plate on the accessory. The thermal fluid can be changed subsequently. → Page 30, section »Changing the thermal fluid«. Attach a clearly visible note to the accessory indicating the selected thermal fluid!

### 3.3 To be noted when planning the test

**INFORMATION**

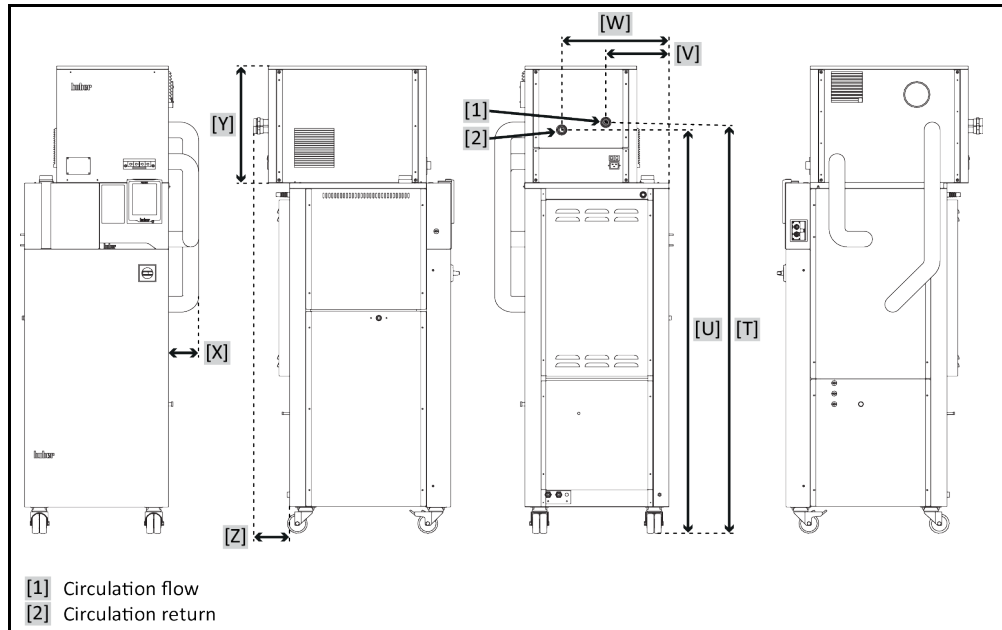
Please also note: → Page 13, section »Extension of specified normal operation«.

The focus is on your application. Bear in mind that system performance is influenced by heat transfer, temperature, thermal 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 thermal fluid circulation must be avoided.
- To prevent the danger of over-pressure in the system, the thermal fluid must always be brought to room temperature before switching off. This will prevent damage to the temperature control device, accessory, or the application. Any isolating valves must remain open (pressure equalization).
- Select the thermal fluid to be used in such a way that it not only permits the minimum and maximum working temperature but is also suitable with regard to fire point, boiling point, and viscosity. In addition, the thermal fluid must be compatible with all the materials in your system.
- 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 thermal fluid, the working temperatures and the permitted maximum pressure.
- Check the hoses at regular intervals for any material fatigue (e.g. cracks, leaks).

### 3.4 Dimensions: Unistat with connection set

Dimensions: Unistat



For the dimensions of the temperature control unit, please refer to the wiring diagram in the »Appendix« of the respective operation manual.

Dimensions: Accessory with connection set

Temperature control unit model	Order No.	Type	[T]	[U]	[V]	[W]	[X]	[Y]	[Z]
Unistat 510	10951	O	1601	1573	776	941	116	444	0
Unistat 520w, 525w	10935 <sup>1</sup>	M	1563	1535	237	402	113	445	135
Unistat (P)520w, (P)525w	10997 <sup>2</sup>	M	1563	1535	237	402	113	445	135
Unistat 527w, 530w	10930 <sup>1</sup>	M	1720	1692	226	392	115	444	43
Unistat (P)527w, (P)530w, (P)540w	10962 <sup>2</sup>	M	1749	1721	416	581	139	444	43
Unistat (P)610w, (P)615w	10980	M	1749	1721	316	481	113	444	43

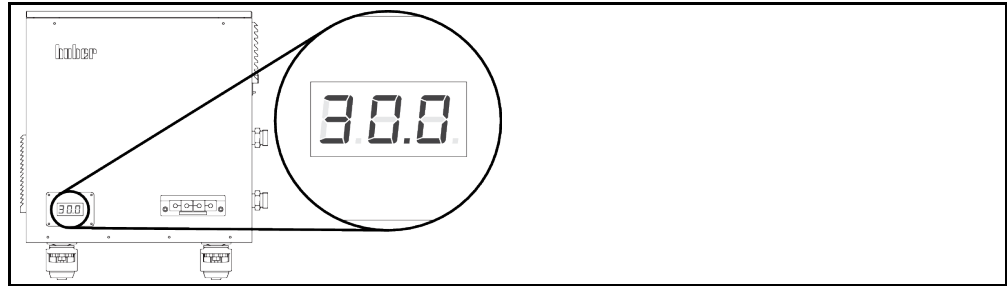
All dimensions in mm +/- 3 mm, valid for flow meters "TURB" (T) and "MID" (M).

<sup>1</sup> Valid for models with refrigerant R507

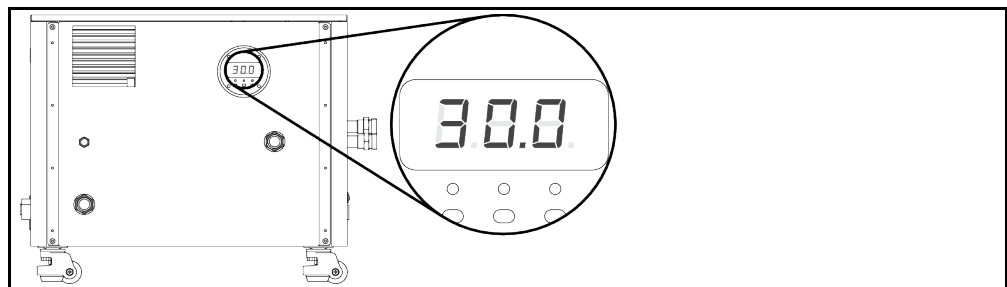
<sup>2</sup> Valid for models with refrigerant R452a

### 3.5 Display instruments

"TURB" flow meter



"MID" flow meter



#### 3.5.1 Flow meter LED display

The display shows the actual value of the flow rate.

### 3.6 Function examples

#### 3.6.1 Changing the closed-loop control mode

##### PROCEDURE

- Go to the "Categories menu".
- Touch the category "System settings".
- Touch the category "Pump".
- Touch the sub-category "Control mode".
- Touch the dialog entry "Flow control".
- Touch "OK" to confirm your entry.

#### 3.6.2 Changing the flow rate

##### PROCEDURE

- Go to the "Categories menu".
- Touch the category "System settings".
- Touch the category "Pump".
- Touch the sub-category "Control mode".
- Enter the new flow rate value via the displayed numeric keypad.
- Touch "OK" to confirm your entry.

### 3.6.3 Changing the thermal fluid

---

**INFORMATION**

The thermal fluid that can be used with the accessory is preset. These presettings must be changed when you change to another thermal fluid. To do this, call Customer Support. → Page 43, section »Contact data«.

After you have changed to a different thermal fluid, attach a clearly visible note to the accessory that indicates the newly selected thermal fluid!

---

### 3.6.4 Restore factory settings

---

**INFORMATION**

You can reset to factory settings **only** when the temperature control unit does **not** perform any tasks. Do not switch off the temperature control unit until your application allows it if a task is active. Resetting to factory setting parameters cannot be revoked.

Resetting to factory settings resets the flow rate value to a default value. If the thermal fluid had been changed, it is **not** reset to the delivery values.

---

## 4 Setup mode

### 4.1 Setup mode

**CAUTION**

**Moving the accessory during operation**  
**SERIOUS BURNS/FREEZING OF THE HOUSING PARTS/ESCAPING THERMOFLUID**  
 ➤ Do not move the accessory when in operation.

**NOTE**

**When the accessory is switched off, the thermofluid temperature is higher/lower than the room temperature**  
**DAMAGE TO THE ACCESSORY**  
 ➤ Use the temperature control unit to temper the thermofluid in the accessory to room temperature (20 °C).  
 ➤ Do not close the shut-off valves in the thermofluid circuit.

**NOTE**

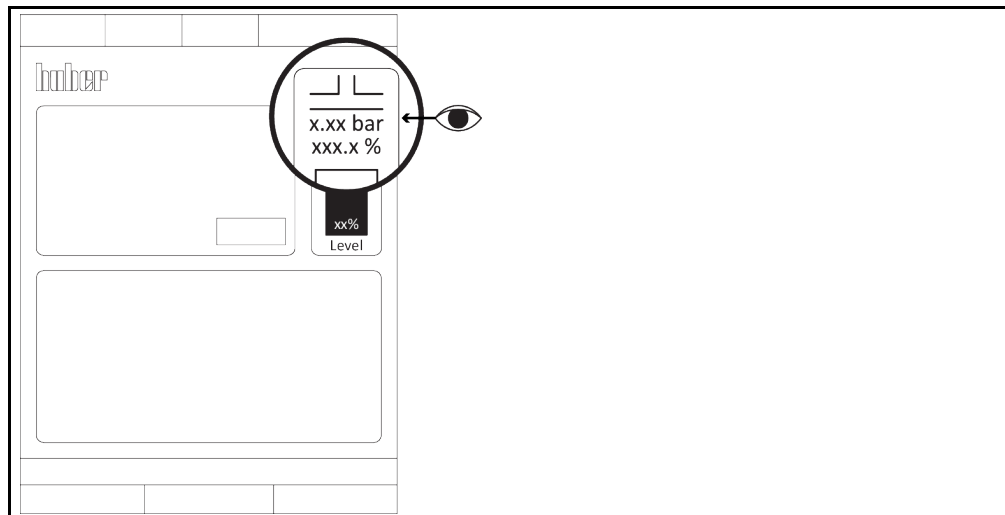
**A pressure-sensitive external application is run with the accessory without a rupture disc being installed**  
**MATERIAL DAMAGE TO THE EXTERNAL APPLICATION**  
 ➤ To protect a pressure-sensitive external application (such as a glass apparatus), use a rupture disk in the supply line.  
 ➤ Do not use accessories as a shut-off valve. The outputs cannot be completely closed due to the design.  
 ➤ The external application can be damaged by excessive pressure if the return is closed.

#### 4.1.1 Turning on the accessory

**NOTE**

**The accessory is turned on before filling**  
**DAMAGE TO THE ACCESSORY**  
 ➤ Dry running can damage the accessory if the temperature control unit and the accessory are not filled.  
 ➤ Turn on the accessory only **after** filling it.

Accessories were recognized



#### 4.1.1.1 Valid for factory-fitted accessories

### PROCEDURE

- Check whether all operation preparation steps have been taken. → Page 23, section »Preparations for operation«.
- Connect the temperature control unit with the building power grid connection.
- Connect the accessory with the building power grid connection.
- Switch on the temperature control unit.  
 The accessory is automatically recognized by the temperature control unit and switched on. If

- accessories are detected, a stylized two-way valve appears on the right edge of the display (see figure). The flow specification shows the actual flow rate at the connected flow sensor.
- Adjust the temperature control unit as described in its operation manual.
- Select the desired flow rate. → Page 29, section »Changing the flow rate«.

#### 4.1.1.2 Valid for independent accessories

### PROCEDURE

- Check whether all operation preparation steps have been taken. → Page 23, section »Preparations for operation«.
- Connect the temperature control unit with the building power grid connection.
- Connect the accessory with the building power grid connection.
- Switch on the temperature control unit.
- If accessories are detected, a stylized two-way valve appears on the right edge of the display (see figure). The flow specification shows the actual flow rate at the connected flow sensor.
- First make all settings as described in the operation manual of the temperature control unit.
- Then go to the "Categories menu".
- Touch the category "Interfaces".
- Touch the category "Analog interface".
- Touch the sub-category "Input".
- Touch the sub-category "Use / measuring range".
- Touch the dialog entry "Thermal fluid volume flow".
- Touch "OK" to confirm your selection.
- Enter the min. value via the displayed numeric keypad. Adjustable are 0 ... 95 l/min for the "TURB" flow meter and 0 ... 80 l/min for the "MID" flow meter.
- Touch "OK" to confirm your entry.
- Enter the max. range via the displayed numeric keypad. Adjustable are 0 ... 95 l/min for the "TURB" flow meter and 0 ... 80 l/min for the "MID" flow meter.
- Touch "OK" to confirm your entry.
- Touch the sub-category "Current/Voltage switchover".

#### Only valid for "TURB" flow meter (0 ... 10 V)

- Touch the dialog entry "Voltage".
- Touch "OK" to confirm your selection.

#### Only valid for "MID" flow meter (4 ... 20 mA)

- Touch the dialog entry "Current".
- Touch "OK" to confirm your selection.

- Select the desired flow rate. → Page 29, section »Changing the flow rate«.

#### 4.1.2 Switching off the accessories

### PROCEDURE

- Heat the thermal fluid up to room temperature.
- Stop temperature control at the temperature control unit.
- Switch off the temperature control unit.
- Disconnect the accessories from the power supply connection.

## 4.2 Filling and draining the accessory



### Extremely hot / cold surfaces, connections and thermal fluids

#### BURNS/FREEZING OF LIMBS

- Surfaces, connections and tempered thermal fluids can be extremely hot or cold depending on the operating mode.
- Avoid direct contact with surfaces, connections and thermal fluids!
- Wear your personnel protective equipment (e.g. temperature-resistant safety gloves, safety goggles).



**CAUTION****Non-compliance with the safety data sheet for the thermal fluid to be used****INJURIES**

- Risk of injury to the eyes, skin, respiratory tract.
- The safety data sheet for the thermal 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 thermal fluid and aids. → Page 15, section »**Proper disposal of resources and consumables**«.

**NOTE****During an active circulation, the thermal fluid circuit is shut off by shut-off valves****MATERIAL DAMAGE TO THE CIRCULATING PUMPS INSTALLED IN THE TEMPERATURE CONTROL UNIT**

- Do not close the thermal fluid circuit during an active circulation by means of shut-off valves.
- Warm the thermal 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 accessory 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 23, 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 thermal fluid****SERIOUS BURNS/FREEZING OF LIMBS**

- Before draining, ensure that the thermal fluid has room temperature (20 °C).
- If, at this temperature, the thermal fluid is too viscous to be drained: Control the temperature of the thermal fluid for a few minutes until the viscosity will allow drainage.
- Danger of burns when draining thermal fluid at temperatures above 20 °C.
- Wear your personal protective equipment when carrying out the drainage operation.

## 4.2.2.1 Valid for factory-fitted accessories

**PROCEDURE**

- Do not disconnect the accessory from the temperature control unit.
- Proceed as described in the operation manual of the temperature control unit when draining it. The accessory is emptied via the temperature control unit. Follow the instructions for the proper disposal of thermal fluid. → Page 15, section »**Proper disposal of resources and consumables**«.
- Wait until the temperature control unit, the application and the accessory have emptied.
- Remove the temperature control hose from the **>Circulation flow<** [1].
- Remove the temperature control hose from the **>Circulation return<** [2].
- Leave the accessory open for a while to allow it to dry out and the residue to drain.
- Re-connect the temperature control hose to the **>Circulation flow<** [1].
- Re-connect the temperature control hose to the **>Circulation return<** [2].

#### 4.2.2.2 Valid for independent accessories

### PROCEDURE

- Proceed as described in the operation manual of the temperature control unit when draining it. The accessory is emptied via the temperature control unit. Follow the instructions for the proper disposal of thermal fluid. → Page 15, section »**Proper disposal of resources and consumables**«.
- Wait until the temperature control unit, the application and the accessory have emptied.
- Remove the temperature control hose from the accessory's >**Circulation flow**< [1].
- Remove the temperature control hose from the accessory's >**Circulation return**< [2].
- Remove the temperature control hose from the accessory's >**Circulation flow**< [1'].
- Remove the temperature control hose from the accessory's >**Circulation return**< [2'].
- Leave the accessory open for a while to allow it to dry out and the residue to drain.
- Re-connect the temperature control hose to the accessory's >**Circulation flow**< [1].
- Re-connect the temperature control hose to the accessory's >**Circulation return**< [2].
- Re-connect the temperature control hose to the accessory's >**Circulation flow**< [1'].
- Re-connect the temperature control hose to the accessory's >**Circulation return**< [2'].

## 5 Normal operation

### 5.1 Automatic operation

#### CAUTION

**Extremely hot / cold surfaces, connections and thermal fluids**

**BURNS/FREEZING OF LIMBS**

- Surfaces, connections and tempered thermal fluids can be extremely hot or cold depending on the operating mode.
- Avoid direct contact with surfaces, connections and thermal fluids!
- Wear your personnel protective equipment (e.g. temperature-resistant safety gloves, safety goggles).

#### NOTE

**During an active circulation, the thermal fluid circuit is shut off by shut-off valves**

**MATERIAL DAMAGE TO THE CIRCULATING PUMPS INSTALLED IN THE TEMPERATURE CONTROL UNIT**

- Do not close the thermal fluid circuit during an active circulation by means of shut-off valves.
- Warm the thermal fluid to room temperature before stopping the circulation.

#### 5.1.1 Temperature control

##### 5.1.1.1 Starting the temperature control process

Temperature control is started via the connected temperature control unit. Prerequisite: The temperature control unit and the accessories, including application, are filled and vented. Temperature control unit and accessories are connected with each other via a control line. Each unit is connected to a power supply.

### PROCEDURE

- Start the temperature control process as described in the operation manual of the temperature control unit.

##### 5.1.1.2 Ending the temperature control process

#### NOTE

**When the accessory is switched off, the thermofluid temperature is higher/lower than the room temperature**

**DAMAGE TO THE ACCESSORY**

- Use the temperature control unit to temper the thermofluid in the accessory to room temperature (20 °C).
- Do not close the shut-off valves in the thermofluid circuit.

The accessories are switched off by the temperature control unit.

### PROCEDURE

- Stop the temperature control process as described in the operation manual of the temperature control unit.

## 6 Interfaces and software update

**NOTE**

**Connections with the interfaces are established during operation**

**DAMAGE TO THE INTERFACES**

- Interfaces may get damaged if devices are connected with the interfaces during operation.
- Before connecting, ensure the device to be connected is turned off.

**NOTE**

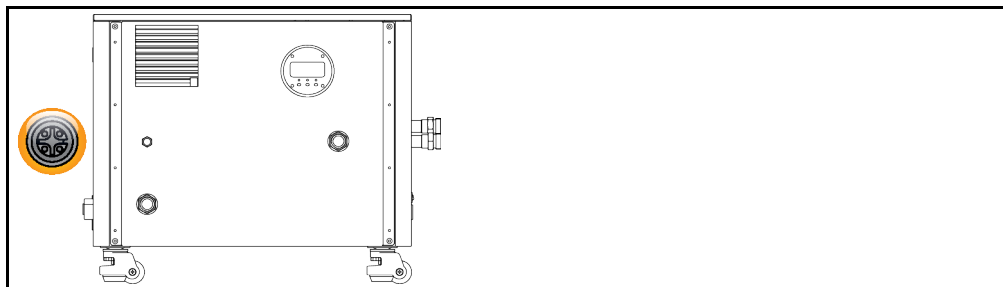
**The specifications of the interface used are not being met.**

**PROPERTY DAMAGE**

- Only connect components that meet the specifications of the interface used.

### 6.1 Interfaces on the accessory

Standard interface on the accessory



#### 6.1.1 Connection jack for external pressure sensor



This interface is used to connect an optional external pressure sensor. For the appropriate external pressure sensor, please refer to the Huber catalog under Accessories.

## 7 Service/maintenance

### 7.1 Electrical fuse

The overcurrent circuit breakers for all-pole breaking (L and N) are located on the accessory. In case of a fault (no function and no display) please first check if the overcurrent circuit breakers have tripped. If the overcurrent circuit breakers trigger again immediately after reversing, please unplug the power cord and contact Customer Support immediately. → Page 43, section »Contact data«.

### 7.2 Maintenance



#### Cleaning/maintenance while the temperature control unit/ accessory is operating

##### DANGER TO LIFE FROM ELECTRIC SHOCK

- Stop an ongoing temperature control process.
- Adjust the temperature of the thermal fluid to room temperature after switching off.
- Disconnect the temperature control unit from the power supply.
- Also disconnect the accessories from the current supply.



#### Carrying out maintenance work not described in this operation manual

##### MATERIAL DAMAGE TO THE ACCESSORY

- Please contact Huber for maintenance work that is not described in these operating instructions.
- Maintenance work not described in these operating instructions is reserved for qualified specialists trained by Huber.
- Safety-relevant components may only be replaced by equivalent components. The specified safety values for the respective component must be observed.

#### 7.2.1 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 38, section »Replacing temperature control hoses«.	Operating company and / or operators
A/W	Check the power cable	Prior to switching on the temperature control unit / accessory or when you change the installation location	Do not start up the temperature control unit / accessory if the power cable is damaged.	Qualified electrician (BGV A3)
A/W	Thermal fluid inspection	As required	–	Operating company and / or operators
A/W	Inspect the accessory for damage and stability	Every 12 months or after a change of location	–	Operating company and/or operators
A/W	Check air filter mats	Determine according to ambient conditions.	Check all air filter mats at the accessory. Clean or replace the air filter mats as required. → Page 15, section »Proper disposal of re-sources and consumables«.	Operating company and / or operators

Cooling*	Description	Maintenance interval	Comment	Person responsible
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 43, section »Contact data«	Operating company
*A = Air cooling; W = Water cooling				

### 7.2.2 Replacing temperature control hoses

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

#### PROCEDURE

- Exchange the temperature control hoses as described in the operation manual of the temperature control unit.

### 7.3 Thermal 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 thermofluid inspection and changing and cleaning the thermofluid circuit.

### 7.4 Cleaning the surfaces

#### CAUTION

**Extremely hot / cold surfaces, connections and thermal fluids  
BURNS/FREEZING OF LIMBS**

- Surfaces, connections and tempered thermal fluids can be extremely hot or cold depending on the operating mode.
- Avoid direct contact with surfaces, connections and thermal fluids!
- Wear your personnel protective equipment (e.g. temperature-resistant safety gloves, safety goggles).

#### NOTE

**Exposed plug contacts**

**DAMAGE CAUSED BY FLUID INGRESS**

- Protect unused plug contacts 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 thermal fluid and aids. → Page 15, section »Proper disposal of resources and consumables«.

### 7.5 Plug contacts

#### NOTE

**Exposed plug contacts**

**DAMAGE CAUSED BY FLUID INGRESS**

- Protect unused plug contacts with the protective caps supplied.
- Clean surfaces only with a damp cloth.

Protective caps are supplied for all plug contacts. Make sure that any plug contacts not required are protective with the caps.

## 7.6 Decontamination/repairs

**CAUTION****Returning an accessory for repair that was not decontaminated****PHYSICAL INJURY AND PROPERTY DAMAGE CAUSED BY HAZARDOUS MATERIALS IN OR ON THE ACCESSORY**

- Carry out appropriate decontamination.
- The decontamination process depends on the type and quantity of the materials used.
- Consult the relevant safety data sheet.
- You will find a prepared return receipt at [www.huber-online.com](http://www.huber-online.com).

As the responsible body you are responsible for carrying out decontamination **before** third-party personnel come into contact with the temperature control unit / accessory. Decontamination must be carried out **before** the temperature control unit / accessory is returned for repair or inspection. Attach a clearly visible written notice stating that the temperature control unit / accessory has been decontaminated.

To simplify the process, we have prepared a form for you. This is available for download at [www.huber-online.com](http://www.huber-online.com).

## 8 Shutting down

### 8.1 Safety instructions and basic principles



**Connection/adjustment to the power supply not carried out by an 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 an electrician.
- Always connect the accessory to safety sockets (PE).



**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 supply cable/power supply connection replaced and inspected by an electrician.
- Do not use a power cable that is longer than **3 m**.



**Risk of tipping due to unstable accessory**

**SERIOUS INJURY AND PROPERTY DAMAGE**

- Avoid risk of tipping due to unstable accessory.



**Non-compliance with the safety data sheet for the thermal fluid to be used**

**INJURIES**

- Risk of injury to the eyes, skin, respiratory tract.
- The safety data sheet for the thermal 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 thermal fluid and aids. → Page 15, section »Proper disposal of resources and consumables«.



**Hot or very cold thermal fluid**

**SERIOUS BURNS/FREEZING OF LIMBS**

- Before draining, ensure that the thermal fluid has room temperature (20 °C).
- If, at this temperature, the thermal fluid is too viscous to be drained: Control the temperature of the thermal fluid for a few minutes until the viscosity will allow drainage.
- Danger of burns when draining thermal fluid at temperatures above 20 °C.
- Wear your personal protective equipment when carrying out the drainage operation.



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

### 8.2 Switch-off

#### PROCEDURE

- Switch off the temperature control unit. Please refer to the operation manual of the temperature control unit
- Disconnect the temperature control unit from the current supply. Please refer to the operation manual of the temperature control unit
- Disconnect the accessory from the power supply.



## 8.3 Draining the accessory

### PROCEDURE

- Drain the temperature control unit and the accessory as described in the operation manual of the temperature control unit.

## 8.4 Separating the accessory from the temperature control unit

### 8.4.1 Valid for factory-fitted accessories

#### PROCEDURE

- Drain the temperature control unit **before** you disconnect the accessory.
- Disconnect both the temperature control unit and the accessory from the power grid connection.
- In case you use an external pressure sensor:  
Disconnect the external pressure sensor from the **>Connection external pressure sensor<** [66] on the accessory.
- Disconnect the **>Circulation inlet<** [2] on the accessory from the external application.
- Disconnect the **>Circulation outlet<** [1] on the accessory from the external application. Remove the rupture disk installed in the thermal fluid circuit, if present.  
If you have used an external pressure sensor:  
Remove the external pressure sensor from the thermal fluid circuit.
- Install the protective caps on the connections on the accessory.

### 8.4.2 Valid for independent accessories

#### PROCEDURE

- Drain the temperature control unit **before** you disconnect the accessory.
- Disconnect both the temperature control unit and the accessory from the power grid connection.
- In case you use an external pressure sensor:  
Disconnect the external pressure sensor from the **>Connection external pressure sensor<** [66] on the accessory.
- Disconnect the **>control line<** [117] of the accessory either from the connection **>Service interface<** [50] of the **>Unistat Control ONE<** [40] or from the connection **>socket RS232/RS485 serial<** on the **>Com.G@te<** [46] on the temperature control unit.
- Coil the **>control line<** [117] and secure it on the accessory.
- Disconnect the **>Circulation inlet<** [2'] on the accessory from the external application.
- Disconnect the **>Circulation outlet<** [1'] on the accessory from the external application. Remove the rupture disk installed in the thermal fluid circuit, if present.  
If you have used an external pressure sensor:  
Remove the external pressure sensor from the thermal fluid circuit.
- Disconnect the **>Circulation inlet<** [2] on the temperature control unit from the **>Circulation outlet<** [1] on the accessory.
- Disconnect the **>Circulation outlet<** [1] on the temperature control unit from the **>Circulation inlet<** [2] on the accessory.
- Install the protective caps on the connections on the accessory.

## 8.5 Screw in/deactivate the leveling feet (if installed)

Ensure that the leveling feet are screwed in/deactivated before you pack the accessories.

### PROCEDURE

- Turn the red setting wheel on each caster counterclockwise. This retracts the leveling feet and activates the casters.
- Ensure that the locking brakes of the casters (if installed) are deactivated.

## 8.6 Packing

Always use the original packaging! → Page 19, section »Unpacking«.

## 8.7 Shipping

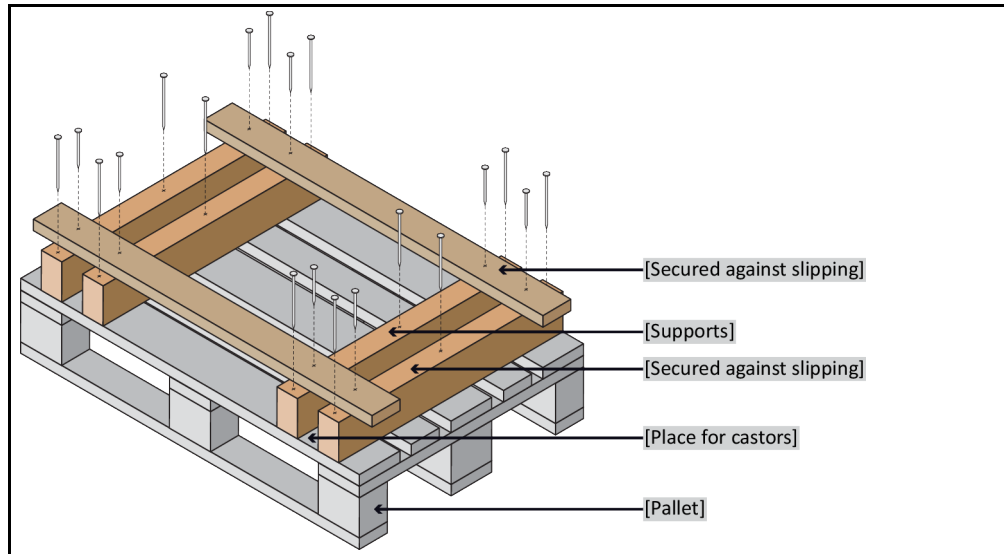
**NOTE**

**Improper transportation of accessories**

**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 accessories.

Pallet with squared timber for free-standing units



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.

## 8.8 Disposal

**NOTE**

**Improper disposal**

**ENVIRONMENTAL DAMAGE**

- Spilled/leaked thermal fluid must be removed. Observe the proper disposal of thermal fluid and aids. → Page 15, section »Proper disposal of resources and consumables«.

Huber temperature control units and Huber accessories are made of 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. Proper recycling of the temperature control unit and accessories can actively help reduce CO<sub>2</sub> emissions in the production of these materials. Follow the laws and regulations of your jurisdiction when disposing material.

## 8.9 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](http://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.

### 8.9.1 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](http://www.huber-online.com) under the heading „Contact“.

- Huber Deutschland: +49 781 9603 244
- Huber China: +86 (20) 89001381
- Huber India: +91 80 2364 7966
- Huber Ireland: +44 1773 82 3369
- Huber Italia: +39 0331 181493
- Huber Swiss: +41 (0) 41 854 10 10
- Huber UK: +44 1773 82 3369
- Huber USA: +1 800 726 4877 | +1 919 674 4266

### 8.9.2 Telephone number: Sales

Telephone: +49-781-9603-123

### 8.9.3 Email address: Customer Support

Email: [support@huber-online.com](mailto:support@huber-online.com)

## 8.10 Certificate of Compliance

This certificate must be enclosed with the temperature control unit. → Page 39, section »**Decontamination/repairs**«.

## 9 Annex



# Inspired by **temperature** designed for you

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