

## USER MANUAL

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## Introduction

The HERZ HIU Bregenz is a wall mounted unit for providing hot water. In contrast to a hot water boiler which heats and then stores the water before it is being used, the unit operates only when hot water is required.

Due to inner system division incorporating two heat exchangers, domestic hot water and heating is supplied completely separately. The HERZ HIU Bregenz ensures constant temperature and flow of hot water, no matter how much or how often water is drawn from a tap.

### Advantages of the HERZ HIU:

- enables individual room heating and supply of domestic hot water
- System separation with two heat exchangers
- the continuous-flow heating enables a permanent supply when domestic hot water is required
- the HERZ HIU can be customized to the individual requirements of the consumer
- minimal space required
- needs no domestic hot water boiler
- the constant water temperature in the heat exchanger reduces the danger of legionella- and lime formation
- low return temperature
- minimal heat losses in the system
- easy to install
- optimal heating comfort

### 1. Function

In the stand-by mode the heating water flows from the primary circuit (district heating main) via a bypass which is kept at operating temperature with a return temperature limiter. If hot water is drawn from a tap by a domestic user connected to the system, the control valve for the cold and heating water is opened by the difference in pressure. Cold water flows through the heat exchanger, is heated up and promptly available as hot water at the domestic hot water tap. The temperature of the domestic hot water is controlled by a thermostat. Using an immersion sensor, this thermostat controls the temperature of the hot water that exits the heat exchanger, which in turn regulates the pressure and temperature controller. If

### 4. Equipment

Important components of the HERZ HIU Manchester

#### PT-controller

As the central control valve in the HERZ HIU the HERZ PT-controller ensures the provision of hot water and constant temperatures. Reacting to the difference in pressure the valve opens or shuts the heating water and the cold water inlet to the exchanger. Simultaneously, the temperature of the hot water is controlled by a thermostat. The PT-controller closes so that maximum power is used for the domestic hot water processing.

#### Thermostat

The HERZ thermostat is an automatic temperature regulator, which is independently regulating the water flow through the control valve in reference to the capillary sensor temperature. The factory settings of the hand wheel keep temperature fixed and through automatic opening and closing temperature is constant. The HERZ thermostat does not require any maintenance.

Length of capillary: 500mm

#### Return Temperature Limiter

Used for controlling the return temperature in the HERZ HIU between 25-60°C.

Limitation and locking of the set value range can be achieved by means of stop pins, which need to be ordered separately.

#### Actuating drive

Electro thermal actuating drive for heating regulation valves, installation in combination with an electrical room thermostat for twopoint- regulation in heating and cooling systems.

there is no demand from the hot water taps, the primary heating water flows in to the second heat exchanger and is used for the heating circuit

An integrated circulation pump is installed in the heating flow, to ensure constant circulation in the heating circuit and an expansion vessel holds the pressure constant in the system. A Pressure Relief safety valve is installed into the return, it opens automatically if the pressure in the system is too high. A zone valve with an actuating drive is installed into the return of the HIU to shut off the heating circuit, when not required.

A thermostatic bypass valve fitted with a return temperature limiter is installed into the return of the HIU Bregenz to regulate the return temperature. Strainers with a fine-mesh screen of 0.5 mm are fitted in the primary heating flow and secondary heating return to catch impurities.

### 2. General notes on installation

1. For installation please refer to the drawings and manual included in the packaging.
2. When choosing where to mount the HERZ HIU, the weight of the unit itself as well as the weight of the water must be taken into account.
3. If the HERZ HIU is built in or installed in confined spaces, intermediate ceilings, etc., the front of the unit must be freely accessible for repair and maintenance purposes.
4. Before mounting the HERZ HIU, check that the wall is vertical.
5. Depending on the type of wall where the unit is mounted, the appropriate wall anchors and screws must be used.

### 3. Safety notes

1. The unit must be installed and connected by professional plumbing and heating engineers only.
2. Only use original HERZ spare parts to replace faulty parts or heating components.
3. Check all connections for leakages prior to starting up the heating system.
4. All screws must be checked and tightened after the unit has been installed.



### Differential pressure controller with zone valve

Differential pressure controllers are proportional controller, which are working without auxiliary energy. They are used in heating and chilling systems to hold the differential pressure constant and to control it in a fixed pressure range, but the differential pressure has to be preset. Differential pressure controllers in substations additional have an actuator. Differential pressure fixed at 13 kPa.



### Differential pressure controller

Differential pressure controllers are proportional controller, which are working without auxiliary energy. They are used in heating and chilling systems to hold the differential pressure constant and to control it in a fixed pressure range, but the differential pressure has to be preset. In substations the differential pressure controller is incorporated in primary side to holt the differential pressure constant. Differential pressure fixed at 50 kPa.



### Strainer

Strainer with external thread and finely woven mesh out of chrome nickel steel. Mesh: 0,5 mm



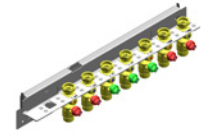
### Thermostatic bypass valve

HERZ thermostatic valve, nickel coated brass, with screw cap. In the HERZ HIU Bregenz, this valve is installed in a bypass.



### Premounting unit

Supplied as first fix mounting rail, complete with ball valves for isolating heating, cold- and hot water circuits, connection to the vall valves is possible from the wall, or underneath. The HIU can be connected at a later date by using the connections and fittings included. The HERZ premounting unit needs to be ordered separately.



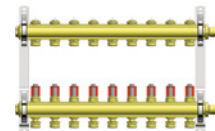
### Circulating pump

Type: Wilo Yonos PARA RS 15/6 - 130  
Hmax: 6,2m  
Qmax: 3,3m<sup>3</sup>/h  
Power supply: 1~230 V +10%/-15%, 50/60 Hz (acc. to IEC 60038)



### Rod-type distributor

The rod-type distributor is used for allocation of single heating cycles in low temperature heating. Depending on model it is possible to control and close single heating cycles. Shipment either with thermostatic or closing valve and additional Flowmeter.



### Safety thermostat

HERZ safety thermostat 1 8100 00 has to be adjusted at a temperature 5 K higher than target value. Max. Temperature: 50 °C.

Operation: If the thermostatic head with contact sensor went off, than the contact thermostat serves as protection against temperature raising in the system. This is able through the electrical separation of pump and zone valve.



## 5. Operating data

Hot water extraction:

With limiting valve (15 [l/min])  
primary pressure 2,5 [bar]

	Flow temperature [°C]		
	60	70	80
Draw-off rate [l/min]	15	15	15
Cold water temperature [°C]	10	10	10
$\Delta p_{tot.}$ [kPa]	30	25	20
$V_{tot.}$ [l/h]	880	780	640
Temperature after heat exchanger [°C]	50	50	50
Thermal rating of heat exchanger [kW]	42		

## Heating

kv-Wert  $_{Anlage} = 1,5$  [m³/h]

Differential pressure regulator = 23 [kPa]

RTB at 3[K] p-deviation

$\Delta t = 5$  [K]

Delivery head 1m

dp FW [kPa]	Q [l/h]	P [kW]
20	450	2,6
30	530	3,1
40	600	3,5
50	650	3,8

Differential pressure regulator = 23 [kPa]

RTB at 3[K] p-deviation

$\Delta t = 5$  [K]

Delivery head 2m

dp FW [kPa]	Q [l/h]	P [kW]
20	540	3,2
30	610	3,6
40	670	4,0
50	730	4,3

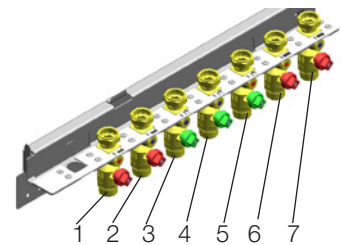
The differential pressure loss in counting devices like heat meter, and water meter has to be considered.

## 6. Dimensions of the HIU

Dimensions of substation	
Dimensions of connections	
Flow long-distance heating	G 3/4 external thread
Return long-distance heating	G 3/4 external thread
Cold water supply	G 3/4 external thread
Hot water removal	G 3/4 external thread
Flow underfloor heating	G 3/4 external thread
Return underfloor heating	G 3/4 external thread

Distribution of the connections:

1. Flow district heating plant
2. Return district heating plant
3. Cold water supply
4. Cold water outlet
5. Hot water outlet
6. Heating flow
7. Heating return



## 7. Construction

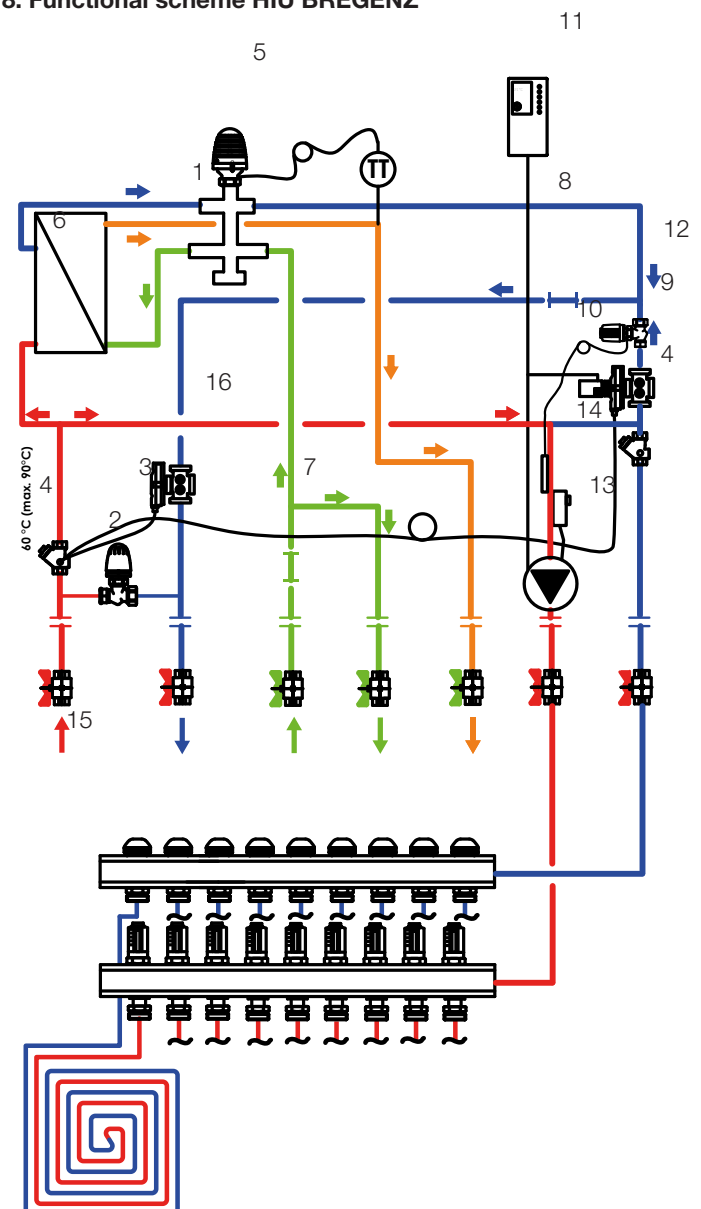
Due to its compact design the HERZ- HIU can be surface or flush mounted, so the HERZ HIU can be installed in any convenient position (e.g.: instead of a classic hot water tank).

The HERZ-HIU can be delivered in two versions, as a surface mounted or flush mounted version. In both cases the substation is mounted on a metal steel plate and either fitted in the inwall unit or surface mounted and fitted with the cover. The pre mounting unit needs to be ordered separately and can be fitted at first fix stage, the HIU can be installed at a later stage.

Either the heating circuit or the domestic hot water can be isolated by closing the ball valves, so in a case of malfunction the problems can be solved independently from each other.

All elements of the HERZ- HIU are mounted with detachable connections so they can be changed or maintained.

## 8. Functional scheme HIU BREGENZ



1	PT- Regulator
2	Bypass- thermostatic valve
3	Return temperature limiter
4	Strainer
5	Thermostat
6	Heat exchanger
7	Water meter adapter
8	Heat meter adapter
9	Differential pressure regulator, Fix-TS, 13kPa
10	Actuator
11	Ambient temperature controller
12	Thermostat with contact sensor
13	Pump
14	Safety temperature limiter
15	Distributor
16	Differential pressure regulator FIX, 50kPa

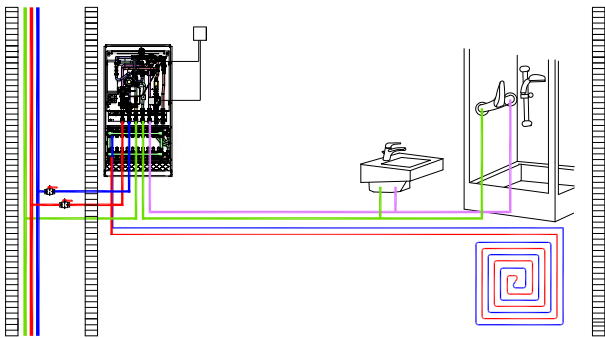
System description:

The control system consist of heat exchanger (6) with DP- Regulator in return, which serves for fluently hot water supply and constant water temperature in substation. Due to differential pressure the membrane is opening and closing heating water and cold water flow of the heat exchanger, at the same time the temperature of hot water is thermostatic controlled. Through ball valves extraction of hot water is possible.

Temperature regulator of under floor heating

Heating water in flow is regulated by thermostat with contact sensor in preset temperature range. The target value range is adjustable between 20°C and 50°C. By reaching the target value temperature the thermostatic valve will close.

## 9. Grid connection



The substation is connected parallel to long-distance heating grid. If it is possible the substation should be installed ahead of the first load.

## 10. Operating conditions

Besides the national rules and regulations, the industrial standards as well as the connection conditions of the local water supplier need to be met and, furthermore, installation and operating instructions need to be followed.

The room where the HIU will be installed should be frost-free and the place of installation has to be chosen in such a way that the unit is easily accessible for maintenance and repair work. The incoming water temperature should range between a minimum of 60 °C and a maximum of 80 °C. A primary static pressure of 10 bar and a primary differential pressure of 0.5 bar are fine. Furthermore, in case of system failure, all connecting pipes must be able to withstand a maximum temperature of 95 °C.

## 11. Starting-up

The HERZ HIU is easy to operate and user-friendly. All you have to do is open up the ball valves in the following order so as to avoid water hammer:

1. Open heating water inlet slowly (red ball valve).
2. Open cold water inlet slowly (green ball valve).
3. Open heating water return slowly (red ball valve).
4. Open hot and cold water outlet slowly (green ball valve).

## 12. Temperature setting

The HERZ HIU Bregenz is set to a default temperature of max. 55 °C. The settings of the thermostat cannot be changed to ensure the optimal tap water temperature at all times.

## Electric connection plan

Electrical connection and maintenance work have to be done by qualified personnel. The following laws and standards have to be considered during installation:

- IEC 364-4-41/VDE 0100 Part 410 Protection against electric shock
- IEC 364-3/VDE 0100 Part 310 Protection against indirect touching with shutdown or signal
- IEC 364-4-1/VDE 0100 Part 410 Protection device and shutdown conditions
- ÖVE / ÖNORM E 8001 in the actually valid version.

Note: National and international standards have to be followed.

## 13. Initial start-up

Prior to first commissioning of the HIU Bregenz, according to ÖNORM H5195-1 it is necessary to note that clean and standard-compliant pipe materials (without scale, rust and inner burrs, as well as contamination), fittings and devices (boiler, radiators, convector heaters, expansion vessels, etc.) must be used. Furthermore, ÖNORM H5195 also requires clean and professional production (without welding beads, sealing material residues or soldering aids, burrs, metal shavings and similar), as well as the cleaning of all heating system parts prior to their installation. Otherwise damage to the controller may arise due to the deposits in the pipes.

The set-up and operation of a heating system must take place such that air entering the closed heating system is prevented insofar as possible.

When commissioning the heating system for the first time, flush the secondary side through with a quantity at least 2 times the volume of the system. Afterwards, fill the heating system with clear, filtered water (pore size < 25µm) with water quality in accordance with ÖNORM H 5195. Avoid partially or completely emptying the heating system for extended periods of time without treating it, because this may result in intensified corrosion processes in the system. In order that sufficient frost protection of the system is guaranteed with low temperatures, the hot water quality must comply with ÖNORM H5195 and the requisite antifreeze (e.g. max. 50% glycol) must be added.

Although antifreeze is miscible with water at any ratio, systems with pumps should initially be filled with roughly two thirds of the required quantity of water. The antifreeze should then be added to the system with water. Thorough mixing is achieved by starting up the circuit. However, gravity systems should be filled with prepared, frost-protected heat mediums. If it is necessary to add antifreeze to heating systems that have not previously been protected against frost then observe the following points:

- It is necessary to ensure that the sealing materials are suitable for this.
- The systems should be carefully flushed through
- After adding antifreeze it is necessary to watch for any leaks even more carefully

#### 14. Shutting down, emptying

Shutting down the HERZ HIU Bregenz for a prolonged period of time or dismantling it for whatever reason is done by shutting all ball valves.

In rooms exposed to temperatures below freezing the HERZ HIU Bregenz have to be drained down prior to the start of the cold season if the unit is to be shut down for several days. To drain the substation, place a vessel with a capacity of 4 to 8 liters underneath the unit and drain the hot water from the ball valves till the HERZ HIU Bregenz heater is completely empty.

If temperatures are liable to drop below freezing point, be aware that not only the water is in the substation and the hot water pipes may freeze but also the water in the cold water inlet pipes leading to the fittings and to the unit itself. Therefore it is best to drain all water pipes and pipe fittings up to the frost-proof part of the domestic heating system.

#### 15. Servicing and maintenance

Owing to its outstanding design, the HERZ HIU Bregenz requires comparably little maintenance work. However, in hard water areas lime-scale can build up in the system. Depending on the hardness of the water, your system should be de-scaled by a professional every one to two years. In case scale in the system has damaged the valves, these should be replaced immediately to ensure smooth operation of your heating system.

Do not clean the unit with scouring or harsh cleaning products. Wipe it down with a damp cloth which has been rinsed in water with a few drops of mild detergent.

#### Heat exchanger

Parameter	Recommended limits for the tap water quality on the secondary side
Temperature	Depends on the composition of the water, but under 60°C, to reduce the risk of stress corrosion of the stainless steel and pitting corrosion in the copper through the hot water.
Sulfate	$[SO_4^{2-}] < 70 \text{ mg/l}$
Conductance	10 - 500 $\mu\text{S/cm}$
pH	7,5 - 9,0
Chloride	$[Cl^-] < 300 \text{ mg/l}$
Free chlorine	$[Cl_2] < 1$



#### Note:

The given reference values of the heat exchanger producer are considered with regard to the required water quality

#### High efficiency circulating pump

Type: Wilo Yonos PARA RS 15/6 - 130

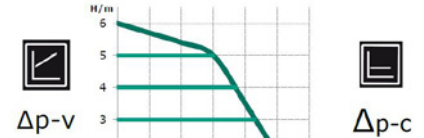
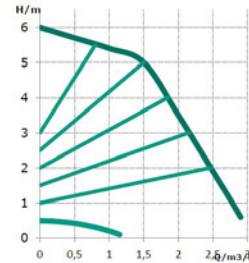
Hmax: 6,2m

Qmax: 3,3m³/h

Power supply: 1~230 V +10%/-15%, 50/60 Hz (gem. IEC 60038)

Minimum suction head at the suction connection for avoiding cavitation with water pumping temperature:

Minimum suction head at 50/95/110°C - 0,5 / 4,5 / 11 m

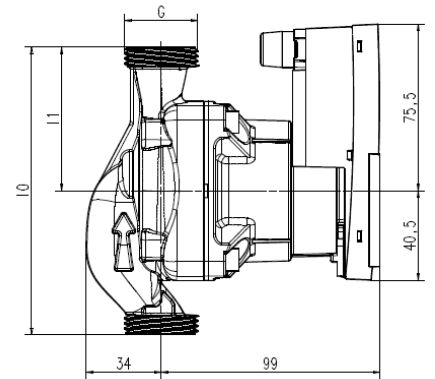
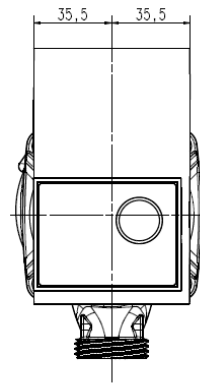


Variable differential pressure ( $\Delta p-v$ ):

The target differential pressure value H is increased on a linear basis above the permissible pumped flow range between 1/2 H and H. The differential pressure generated by the pump is regulated to the corresponding target differential pressure value. This form of regulation is particularly expedient in the case of heating systems with radiators because the flow noise at the thermostatic valves is reduced.

Constant differential pressure ( $\Delta p-c$ ):

The target value H for the differential pressure is held constant at the set target differential pressure value above the permissible pumped flow range up to the maximum characteristic curve. Wilo recommends this form of regulation with underfloor heating circuits or older heating systems with pipes with large dimensions, and with all applications that do not have variable pipe network characteristic curves.

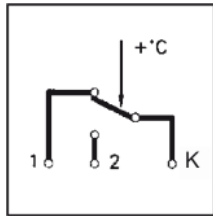


#### Safety thermostat

##### Safety thermostat

- Max. Contact temperature 130 °C
- Temperature range 10 °C – 90 °C
- Switching differential 6 K  $\pm$  2 K
- Protection class IP 40
- Switching contact 16 (4)A 250 V~ - 6 (1)A 400 V~







## 16. Spare parts

Article	
PT- controller	
Thermostat	
Return temperature limiter	
Thermostatic bypass valve	
Premounting unit	
Actuator	
Differential pressure regulator 4002 FIX TS 13kPa	
Differential pressure regulator 4002 FIX 50kPa	
Heat exchanger E8TH-40	
<b>Circulating pump</b> Yonos Para RS 15/6 - 130 230V / 50Hz	
<b>Safety thermostat</b>	

## 17. Accessory

<p>Electric Room Temperature Controller</p> <p>1 reverse contact</p> <p>Set value range 10–30 °C</p> <p>Switching difference <math>\pm 0,2</math> K fixed</p>	
<p>Room Temperature Controller</p> <p>For individual time and temperature programmable adjustment. Digital timer with program on weekly yearly basis, automatic switching between summer and winter time.</p> <ul style="list-style-type: none"> <li>Set value range 8–38 °C</li> <li>Switching difference as 2-point controller 0,4–8 K</li> <li>Metering precision 0,3 K at a temperature of 20 °C</li> </ul>	

## 18. Troubleshooting, malfunctioning

Problem: The hot water temperature is too high

Solution: The HERZ PT controller must be checked and, if necessary, replaced by a qualified and approved plumbing and heating engineer.

Problem: The hot water temperature is too low

Solution: The heat exchanger must be checked and, if necessary, replaced by a qualified and approved plumbing and heating engineer. Check with your district heating provider whether there is a failure in their system. Check that the red ball valves are turned on. The thermostat controller must be checked and, if necessary, replaced by a qualified and approved plumbing and heating engineer. The whole system must be checked by a qualified and approved plumbing and heating engineer for scale buildup.

## 19. Recycling and disposal

The HIU as well as the packaging are mainly made of recyclable raw material

### Substation

The HIU and accessories should be disposed of sensibly and properly and not in household waste.

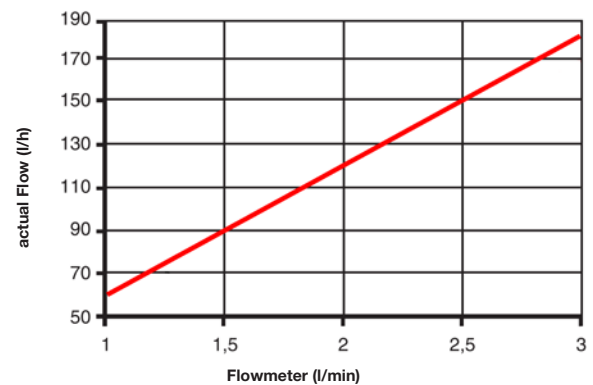
### Packaging

The disposal of the packaging is the responsibility of the installer

HIU BREGENZ consists out of substation, pre-mounting bracket, rod-type distributor with flowmeter and thermostatic head and in-wall box white and powder-coated (RAL 9013).

Bestellnummer	Ausführung
1 4022 03	HIU BREGENZ, 3-outlet distributor
1 4022 04	HIU BREGENZ, 4-outlet distributor
1 4022 05	HIU BREGENZ, 5-outlet distributor
1 4022 06	HIU BREGENZ, 6-outlet distributor
1 4022 07	HIU BREGENZ, 7-outlet distributor
1 4022 08	HIU BREGENZ, 8-outlet distributor
1 4022 09	HIU BREGENZ, 9-outlet distributor
1 4022 10	HIU BREGENZ, 10-outlet distributor

## Flowmeter

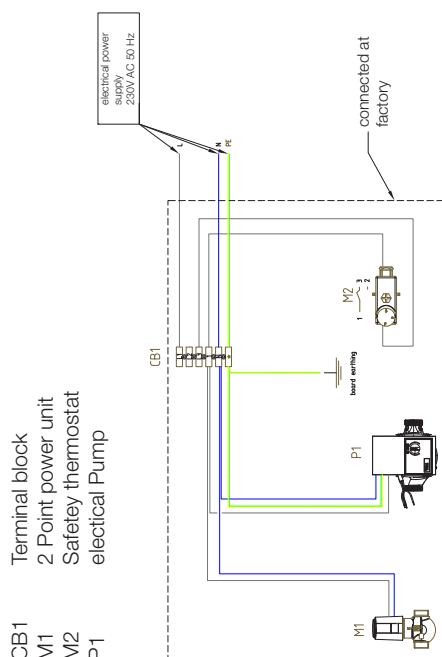


## Thermal motor

On the return distributor are thermal heads together with thermal motors (currentless closed) mounted. These thermal motors 1 7708 23 are connected to the regulation and they are controlled by room thermostats.

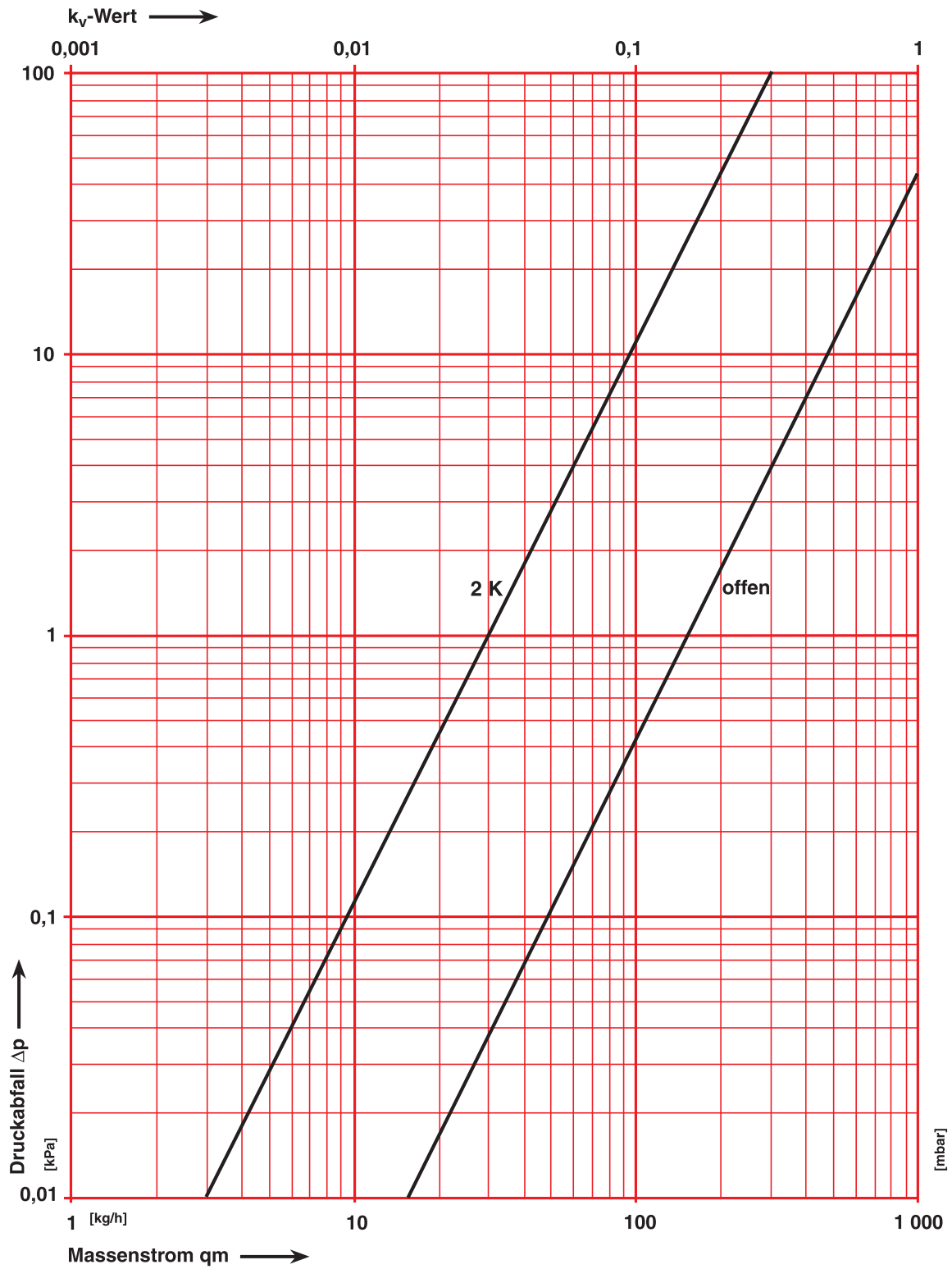
## Connection

The pipe connection of underfloor heating happens in bottom up method. The distributor's threads are in dimension G 3/4. The pipe connection happens through HERZ clamps or through HERZ plastic pipe connections. For connection of pipes to the regulation center we recommend the use of HERZ 3 F110 0x.



Maximum electric power supply of HIU BREGENZ				
Art. No.	Model	Nominal voltage [V]	electric power [W]	Frequenz [Hz]
1 4022 03	3-fach	230V/AC	99 W	50 Hz
1 4022 04	4-fach	230V/AC	100 W	50 Hz
1 4022 05	5-fach	230V/AC	101 W	50 Hz
1 4022 06	6-fach	230V/AC	102 W	50 Hz
1 4022 07	7-fach	230V/AC	103 W	50 Hz
1 4022 08	8-fach	230V/AC	104 W	50 Hz
1 4022 09	9-fach	230V/AC	105 W	50 Hz
1 4022 10	10-fach	230V/AC	106 W	50 Hz





2 K	k <sub>v</sub> 0,3	for HERZ-Thermostats 934X and 935X
open	k <sub>v</sub> 1,5	for HERZ-Thermal motor 7708

