

## INSTALLATION AND OPERATING INSTRUCTIONS

### *IsoTherm* compact control unit

#### **IMPORTANT!**

Before starting work, the fitter must read/understand these installation/operating instructions and adhere to them while mounting the unit.

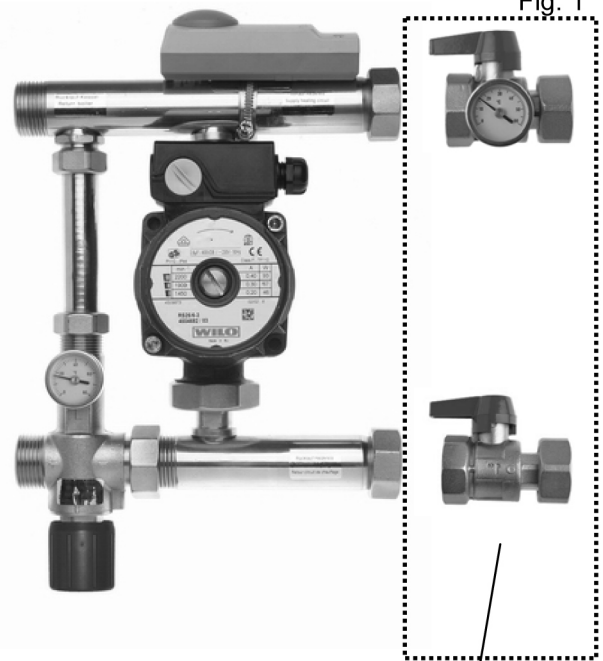
The control units may only be mounted, operated and serviced by suitably trained personnel. Personnel undergoing training may only work on the product under the supervision of an experienced fitter. Only then does liability exist on the part of the manufacturer in accordance with the legal regulations.

All the items in these operating instructions are to be observed during use and operation of the *IsoTherm* low-temperature control unit. All other use is contrary to the intended purpose.

The manufacturer cannot be held liable for damage resulting from incorrect use of the control unit. Conversions and modifications are not permitted for reasons of safety. The control unit may only be repaired by a repair workshop designated by the manufacturer.

The temperature range and the scope of delivery varies according to the type of unit and the equipping level.

#### **Subject to technical modification.**



Ball valves optional.  
Depending to type not included in scope of delivery.

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#### **1. AREA OF APPLICATION**

- The *IsoTherm* low-temperature control unit is used to keep the flow temperature constant in low-temperature surface heating systems. The flow temperature can be steplessly adjusted on the control unit.
- The *IsoTherm* is used in systems where heat output is either via consumers with high flow temperature (e.g. radiators, air heaters and similar) or via consumers with low flow temperature (e.g. underfloor/wall heating). Supply to both heating circuits is by a sole joint ascending pipe.
- The *IsoTherm* can be mounted either to the right or left of the heating circuit manifold using flat seals.

## 2. MOUNTING AND CONNECTION OF THE CONTROL UNIT

### 2.1. HYDRAULIC CONNECTIONS

The hydraulic connections are to be made as shown in Fig. 3.

The control unit is supplied ex-works for mounting to the left of the heating circuit manifold. If you want to mount it to the right of the heating circuit manifold, all you have to do is re-plug the thermometer on the injection valve. Depending on space limitations and dimensions of the heating circuit manifold, it may be necessary to rotate the pump in the axis of the screw connections. To do this, loosen the two union nuts on the pump, rotate the pump into the required position, and then tighten the screw connections while holding both the pump and the screw connection element in place.

### 2.2. ELECTRICAL CONNECTION

All electrical connections must be performed by an authorised specialist in accordance with the local regulations governing electrical installation work. The electrical cables must not come into contact with any hot parts.

Both the recirculation pump and the temperature limiter are connected with cables ex-works (see Fig. 2). In order to make sure that the pump only runs if heat requirement exists, the manufacturer recommends to connect the pump to a pump relay (e.g. pump logic of an electrical connection box, which steers also the actuators). Alternatively operate the pump by means of a time switch clock.

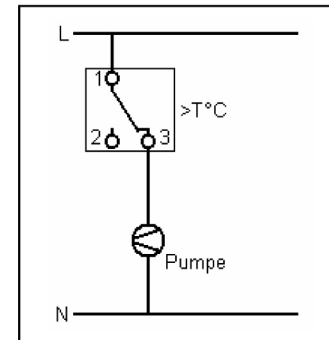


Fig. 2

### 2.3. TEMPERATURE LIMITER

In the event of malfunction, the temperature limiter switches off the recirculating pump to prevent overheating of the underfloor heating system. To avoid undesired activation, the temperature on the temperature limiter should be set several degrees above the desired flow temperature.

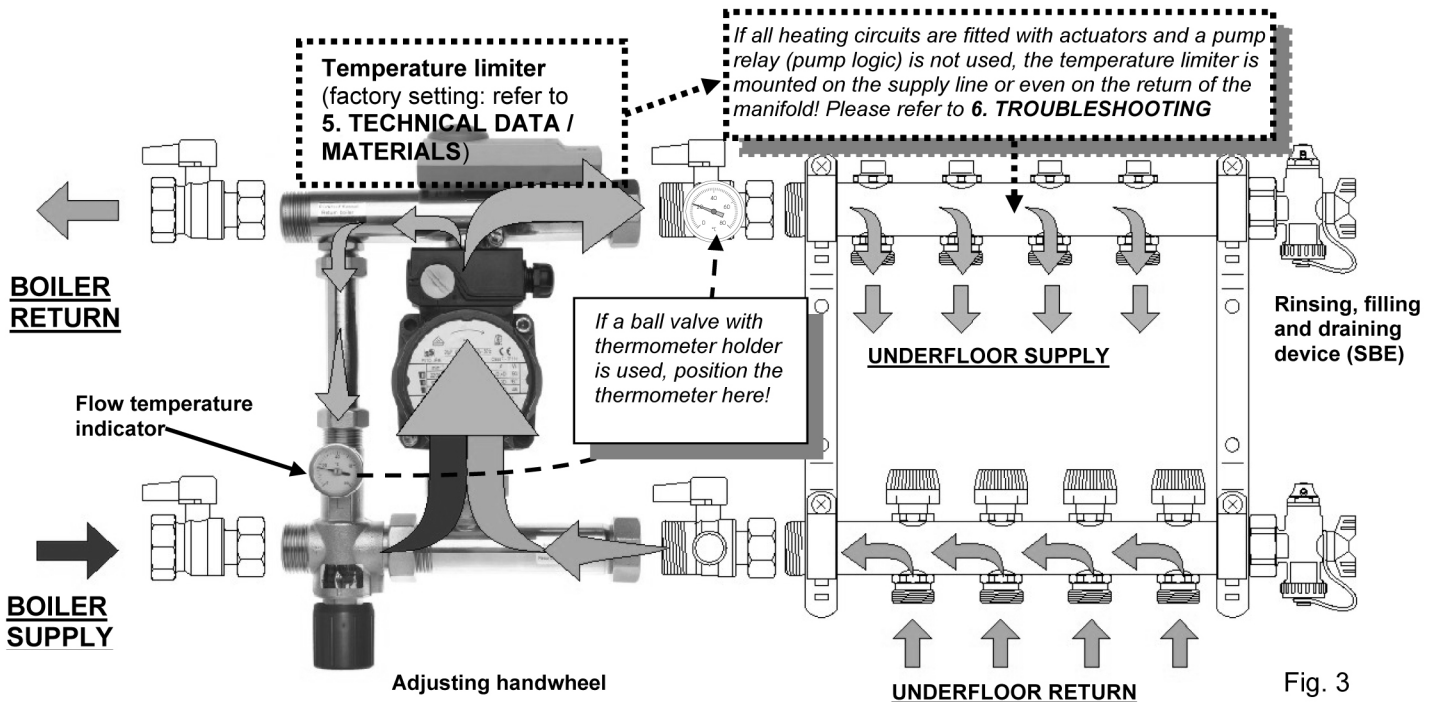


Fig. 3

## 3. START-UP

### 3.1. RINSING THE CONTROL UNIT

Shut off the *IsoTherm* from the pipe network (using the ball valves supplied with the HKV heating circuit manifold or via a customer-mounted shut-off device), switch off the pump and close all heating circuits at the manifold (it is sufficient to close only the valves in the return collector of the HKV heating circuit manifold using the protective caps).

Connect the rinsing and draining line to the SBE rinsing, filling and draining device mounted on the manifold. Rinse through the control unit.

**Important:** the drain connection must always be open; otherwise, the high water pressure could damage the heating system.

### 3.2. RINSING THE HEATING CIRCUITS

Shut off the *IsoTherm* vis-à-vis the manifold (ball valves supplied with the control unit or available as optional extras), switch off the pump and close all heating circuits at the manifold (it is sufficient to close only the valves in the return collector of the HKV heating circuit manifold using the protective caps).

Connect the rising and draining line to the SBE rinsing, filling and draining device mounted on the manifold. Open the heating circuit to be rinsed and rinse through until the air and any dirt are completely removed from the circuit.

**Important:** the drain connection must always be open; otherwise, the high water pressure could damage the heating system. Also read the instructions on rinsing as outlined in the installation/operating instructions for the heating circuit manifold.

### 3.3. ADJUSTMENT OF THE UNDERFLOOR FLOW TEMPERATURE

**In the event of maximum heat output demand (rated output), the boiler flow temperature must be at least 15°C higher than the desired flow temperature in the underfloor circuit!**



Fig. 4

The flow temperature is factory-made set to the values of chart 5. **TECHNICAL DATA / MATERIALS.** The pilot pin is flush with the adjusting hand wheel face (see Fig. 4)

By turning the adjusting hand wheel in minus or plus direction the set flow temperature is changed accordingly.

The hand wheel clicks with the rotation. Each "click" means a set temperature change of the desired value around 1 °C.

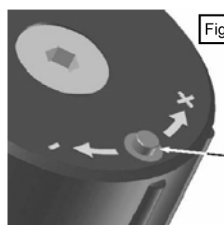


Fig. 5

#### **Decrease of the desired flow temperature:**

Turning the adjusting hand wheel in the clockwise direction.

If the pilot pin moves out from the adjusting hand wheel, this entails a lower target temperature (see Fig. 5).

Each "click" in the clockwise direction reduces the target temperature around 1 °C.

The set temperature range is between 30 and 50 °C or 45 and 60 °C according to the type used. However, the adjusting hand wheel can be moved further up and down. Outside of the temperature range, this causes only small changes of the target temperature.



Fig. 6

#### **Increase of the desired flow temperature:**

Turning the adjusting hand wheel in the anti-clockwise direction.

If the pilot pin moves into the adjusting hand wheel, this entails a higher target temperature (see Fig. 6).

Each "click" in the anti-clockwise direction rises the target temperature around 1 °C.

## 4. MODE OF OPERATION OF THE CONTROL UNIT

The injection valve is designed as a proportional controller and operates without auxiliary energy. The thermostat situated directly in the medium is in continuous contact with the flow temperature at all times.

Deviations from the target value result in an immediate change in valve stroke and, accordingly, a change in the volume of the hot water injected from the boiler circuit.

The injected water volume is mixed with the return water from the manifold at the inlet to the recirculating pump and, in this way, keeps the flow temperature constant within a narrow temperature range.

## 5. TECHNICAL DATA / MATERIALS

Max. admissible operating temperature:	90 °C	Fittings:	Brass Ms 58
Max. admissible operating pressure:	10 bar	Pipe systems:	Brass Ms 63
Temperature control range:	<b>30 - 50 °C</b> <b>45 - 60 °C</b>	Springs:	stainless steel
Factory pre-setting of flow temperature:	<b>approx. 44 °C</b> <b>approx. 55 °C</b>	O-ring seals:	EPDM
Factory pre-setting temperature limiter:	<b>55 °C</b> <b>65 °C</b>	Flat seals:	AFM 34 or EPDM
Rated thermal output:	approx. 10 kW	Ball valve seats:	PTFE
Pump output:	approx. 100 W *		

\* Please take note of pump rating plate

## 6. TROUBLESHOOTING

X.	PROBLEM	
X.X	Possible cause	Solution
1.	<b>THE HEATING CIRCUITS OF THE UNDERFLOOR HEATING (UFH)<sup>1</sup> ARE NOT HEATED UP</b>	
1.1	The temperature limiter (TL) <sup>2</sup> switches off the circulating pump of the compact control unit. <u>Cause:</u> TL is set to a very low value.	Set the TL by approximately 10 K higher than the flow temperature for UFH. <u>Attention!</u> Take into consideration the UFH's maximum allowable temperature!
1.2	The TL switches off the circulating pump of the compact control unit. <u>Cause:</u> Initially, the circulating pump remains switched on even when all of the UFH's heating circuits are blocked. The water circulating on "idle running" through the bypass is heated up by the circulating pump's waste heat. On reaching the maximum temperature, the TL switches off the circulating pump!	Instruction: The difference between the TL's switch-on temperature and switch-off temperature is around 8 K. <u>Useful tip:</u> The compact control unit may be ready for operation sooner if the TL is removed for a short time to allow its cooling down to the switch-on temperature. Remove the TL from the compact control unit and install it at the supply line or, eventually, at the return line of the heating circuit manifold.
1.3	The circulating pump is connected to a room-temperature thermostat or to a electrical connecting box. If all the actuators close, the pump is switched off. If the idle period is longer, the supply water for UFH is cooled down. Therefore, the injection mixing valve opens and hot water is injected from the primary circuit. As a result, the control unit is heated up. On reaching the TL's switch-off temperature, the contact opens. The pump will not switch on again.	Use a electrical connecting box with pump relay (pump logic). Thanks to the relay, the circulating pump operates only if at least one heating circuit of UFH is opened (requires heat). Remove the TL from the compact control unit and install it at the supply line or, eventually, at the return line of the heating circuit manifold. <i>Subsection 1.1 should also be taken into consideration.</i>
1.4	The difference between the temperature of the boiler's supply water and the required flow temperature of the UFH is too small for the existing heating load.	Set the boiler's supply water temperature to a higher value. At maximum power consumption in the UFH's heating circuits, the Heating boiler's supply water temperature should be at least 15°C higher than the required flow temperature for UFH!
1.5	The thermostatic injection valve is leaking due to debris.	Remove the manual setting wheel and the cover of the injection valve's body, take out the inside parts and clean everything. (See the special instructions.)
2.	<b>THE SUPPLY WATER TEMPERATURE CANNOT BE SET TO THE REQUIRED VALUE OR IT FLUCTUATES WITHIN A VERY WIDE RANGE</b>	
2.1	The compact control unit's supply (inlet) pipe and return (outlet) pipe are misconnected.	Check all inlets and outlets of the compact control unit for correct connection. Supply inlets and return outlets are marked with stickers. Please take into account Fig. 3.
2.2	The circulating pump's pressure head/pump stage is set at a very high value.	Increase the rotation frequency, the pump's pressure head/pump stage, respectively.
2.3	The heating load is too big for the compact control unit used, i.e., the heat consumption exceeds the rated power of the compact control unit. This state may set in temporarily, e.g., in case of heating a "cold" floor for the first time.	Check the maximum heat consumption and compare it with the rated power. If necessary, distribute the heating circuits to a second compact control unit with a respective manifold for heating circuits. If the cause is in the initial heating up of a given floor heating system, the function may be normalized after the heating up phase. This is possible chiefly in an operating mode within the top values of the rated power.

<sup>1</sup> UFH = under floor heating; <sup>2</sup> TL = temperature limiter

With installation of an IsoTherm compact control unit into a heating system with boilers with small water volumes, with combined radiator and floor heating systems or with plants with warm water priority function the installation of a hydraulic switch between boiler and heating circuit is recommended, in order to disconnect the heating circuits hydraulically from the boiler. Thus operational disturbances as well as flow noises at the boiler and/or in the heating circuits can be avoided.