

### Tender specification:

Oventrop “Unibox” in surface heating systems

- for temperature balance of floor and wall surface by limiting the return temperature or
- for individual room temperature control and limitation of return temperature

### Technical data:

|                                    |        |
|------------------------------------|--------|
| Max. operating temperature $t_s$ : | 100 °C |
| Max. operating pressure $p_s$ :    | 10 bar |
| Max. differential pressure:        | 1 bar  |
| Depth:                             | 57 mm  |

„Unibox T“ installation set for individual room temperature control with thermostatic valve (room temperature control) consisting of:

Wall box unit with presettable thermostatic valve, venting and flushing valve, cover plate and thermostat “Uni LH” with ‘0’ setting. Valve connection G  $\frac{3}{4}$  for Oventrop compression fittings. Temperature range: 7-28 °C (room temperature)

0 = complete shut off

⊛ = about 7 °C, frost protection symbol

1 = about 12 °C

2 = about 16 °C

3 = about 20 °C

4 = about 24 °C

5 = about 28 °C

The minor graduations between the figures 2 -4 represent a change of the room temperature of about 1 °C.

Item no.: see table on page 5

“Unibox RTL” installation set for temperature limitation of heating surfaces with return temperature limiter consisting of:

Wall box unit with RTLH valve (valve insert with double disc), venting and flushing valve, cover plate and thermostat “Uni RTLH” with ‘0’ setting. Valve connection G  $\frac{3}{4}$  for Oventrop compression fittings.

Temperature range: 10-40 °C factory setting (return temperature) may be increased to 50 °C by cancelling the limitation (40 °C).

1 = about 10 °C

2 = about 20 °C

3 = about 30 °C

4 = about 40 °C

The minor graduations between the figures represent a change of the return temperature of about 5 °C.

Item no.: see table on page 5

“Unibox plus” installation set for individual room temperature control with thermostatic valve (room temperature control) and for temperature limitation of heating surfaces with return temperature limiter consisting of:

Wall box unit with presettable thermostatic valve and RTLH valve (valve insert with double disc), venting and flushing valve, cover plate and thermostats “Uni LH” and “Uni RTLH” with ‘0’ setting. Valve connection G  $\frac{3}{4}$  for Oventrop compression fittings.

Temperature range: 7-28 °C (room temperature)  
10-40 °C factory setting (return temperature) may be increased to 50 °C by cancelling the limitation (40 °C).

Item no.: see table on page 5

**Pipe conduit unit**, L = 1 m, completely insulated, including fixing material, for “Unibox”, depth 57 mm

Item no.: 1022650

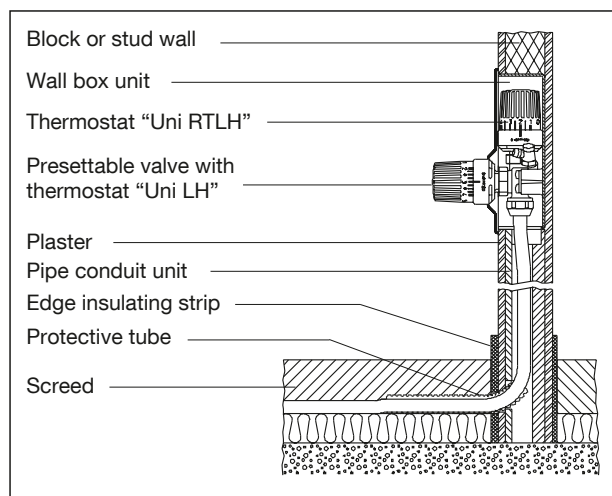
**Fixing channel**, height extendible between 275 mm and 350 mm, width: 130 mm, for “Unibox”, depth 57 mm

Item no.: 1022652

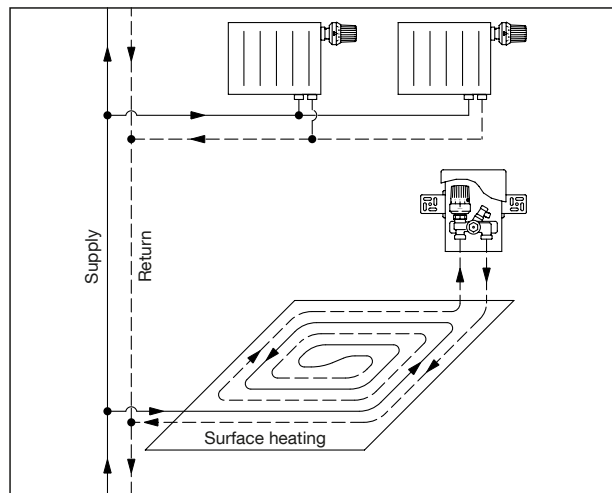
**Fixing channel**, height extendible between 440 mm and 490 mm, width: 160 mm, for “Unibox”, depth 57 mm

Item no.: 1022653

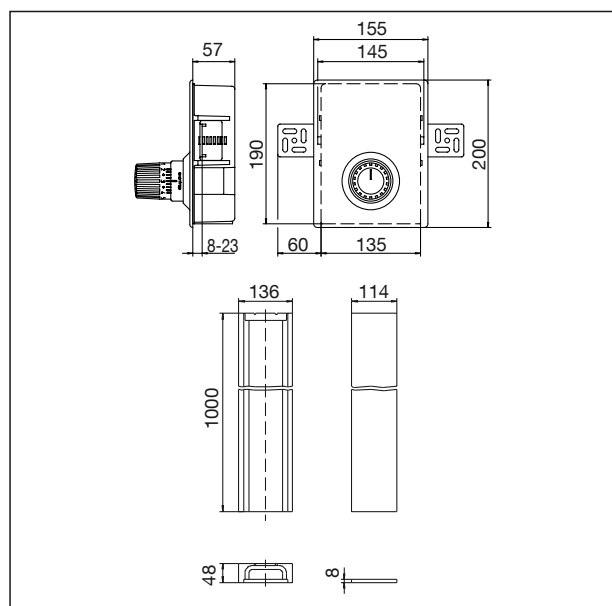
**Compression fittings** (see Oventrop catalogue “Products”)



“Unibox plus”, depth 57 mm



System illustration - Individual room temperature control and limitation of return temperature



Dimensions “Unibox”, depth 57 mm and pipe conduit unit

**Application:**

The different models of the “Unibox E” are suitable for the operation of a surface heating in a room with a heating surface up to 20 m<sup>2</sup>. They are designed for the connection of one surface heating circuit. Two circuits are required for larger heating surfaces. In this case, the pipes must be of the same length and have to be connected with the help of the Duo connection piece, item no. 1022655 or the “h” fitting, item no. 1028750 and the fitting, item no. 1016304 before entering the “Unibox” (see installation sketch on page 3). The pressure loss can be reduced with the help of a larger sized return pipe. When installing heating pipes with an inner diameter of 12 mm, a pipe length of 100 m per surface heating circuit should not be exceeded.

When laying the pipe, it is to be observed that the supply and the return pipe are alternately laid side by side. See, for instance, the spiral laying in the installation sketches. The examples of calculation on page 4 show some examples of laying.

The “Unibox RTL” allows for the temperature limitation of heating surfaces with a return temperature limiter. The room temperature is controlled via the radiator. Installation is carried out in combination with a radiator heating with a maximum flow temperature of 70 °C.

The “Unibox T” allows for the control of the room temperature via a heating surface. It is used in combination with a low temperature heating installation with a maximum flow temperature of 55 °C.

The “Unibox plus” allows for the individual room temperature control with a thermostatic valve and the temperature limitation of the heating surfaces with a return temperature limiter. As for the “Unibox RTL”, installation is carried out in combination with a radiator heating with a maximum flow temperature of 70 °C.

**Function:**

The “Unibox RTL” serves to limit the return temperature of a surface heating. The “Unibox RTL” should be installed in such a position that the heating medium passes through the surface heating circuit first and then through the valve. On its way from the entry into the heating surface to the return temperature limiter, the heating medium cools down.

The flow is automatically controlled by the valve and the sensor element inside the thermostat “Uni RTLH”. The return temperature is set at the handwheel. The guidelines regarding heating up and commissioning on page 3 are to be observed.

The temperature of the surface heating can be corrected by turning the handwheel.

Normally, the “Unibox RTL” is operated in a room with an additional radiator. The surface heating covers the basic heat demand whereas the radiator takes over the control of the room temperature.

The “Unibox T” may only be operated with a maximum flow temperature of the surface heating of 55 °C (low temperature heating installation). It offers a fully-fledged individual room temperature control via the surface heating. It is recommended to install the “Unibox T” in such a position that the heating medium passes through the surface heating circuit first and then through the valve. This way, the automatic thermostat “Uni LH” controls the required room temperature exactly. Hydronic balancing is carried out at the presettable valve insert.

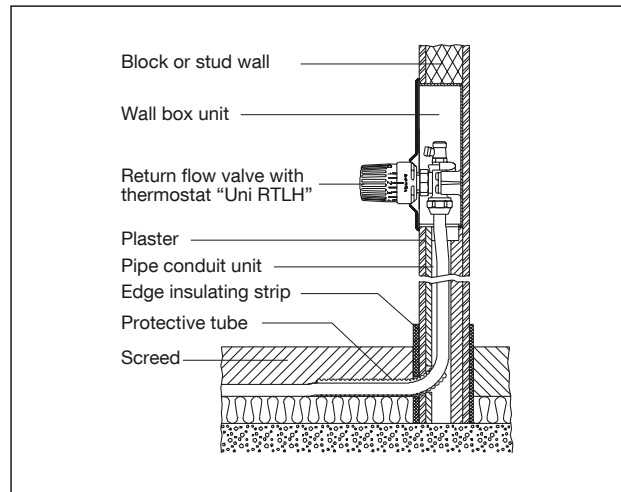
The “Unibox T” can be operated without an additional radiator provided that the heat output of the surface heating is sufficient.

The “Unibox plus” serves to control the temperature of individual rooms via the surface heating and to limit the temperature of the heating surface with the help of the return temperature limiter at the same time.

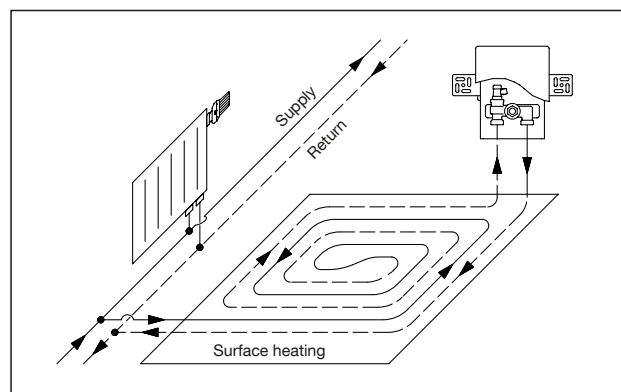
The “Unibox plus” is installed in the same position as the “Unibox RTL”. The heating medium passes through the surface heating circuit first and then through the valve. On its way from the entry into the heating surface to the return temperature limiter, the heating medium cools down.

The flow is automatically controlled by the valve and the sensor element inside the thermostat “Uni RTLH”.

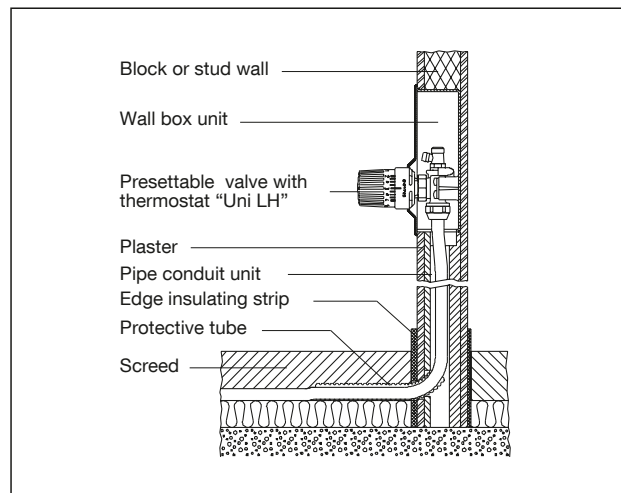
The return temperature is set at the handwheel.



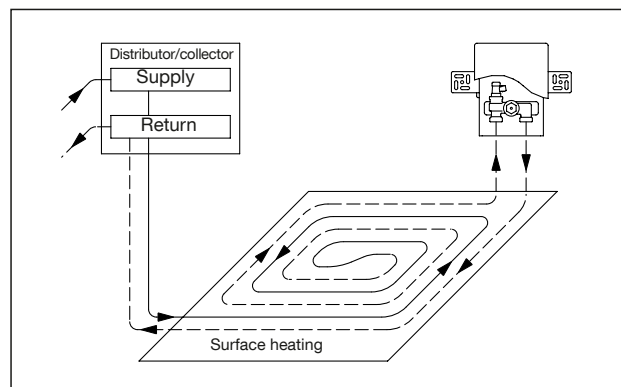
“Unibox RTL”, depth 57 mm



System illustration - Limitation of return temperature



“Unibox T”, depth 57 mm



System illustration - Individual room temperature control

The below guidelines regarding heating up and commissioning are to be observed.

The temperature of the surface heating can be corrected by turning the handwheel.

The automatic thermostat “Uni LH” controls the required room temperature. Hydronic balancing is carried out at the presettable valve insert. The “Unibox plus” can be operated without an additional radiator provided that the heat output of the surface heating is sufficient.

**RTLH valve insert:**

The “Unibox RTL” and “Unibox plus” are equipped with a valve insert with double disc. The maximum flow is reached at medium piston stroke (approx. 1.5 mm = about one turn of the protection cap starting from the shut off position). If the thermostat “Uni RTLH” or the protection cap is removed, the double disc provokes an automatic closing of the valve to a low residual flow. Frost protection is guaranteed, inadvertent overheating of the screed is avoided.

**Installation and assembly:**

If the floor is used as surface heating, the lower edge of the “Unibox E” should be at least 20 cm above the finished floor, the leading edge should be level with the finished wall. The thickness of plaster and tiles has to be observed. A comfortable operation is given if the “Unibox” is installed at the height of the light switches.

The thermostat should not be influenced by other heat sources:

- Do not install near other heat sources, such as radiators.
- Protect the thermostat from direct sunlight.
- Do not install at a location exposed to draught.

The wall box unit is to be installed with the opening pointing downwards.

Alignment and fixing are made by using the enclosed elbows. They can be fixed at the side of the wall box unit in different positions.

The wall box unit is fixed into the wall. The valve is protected by a cover made of corrugated cardboard.

For a simple installation of the vertical pipework, place the pipe conduit unit, item no. 1022650, into the wall below the wall box unit, shorten if required. Later, the front cover of the pipe conduit unit will be under plaster.

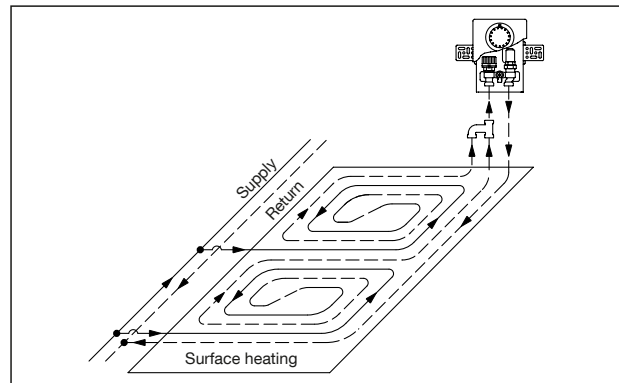
The fixing channel, item no. 1022652 or 1022653, can be used for the installation of the “Unibox” right above the floor level. The fixing channel which is adjustable in height is screwed to the wall box unit of the “Unibox”. The fixing channel is flush with the wall and the cover made of gypsum plaster board can be wallpapered or painted.

When designing the floor as a surface heating, the construction e.g. regarding thermal and sound insulation, has to comply with the valid rules, standards and regulations.

When installing the pipework, the correct sequence has to be observed to ensure a perfect functioning of the “Unibox”:

- Provide a derivation from the supply pipe of the two pipe heating system.
- Laying of the surface heating circuit. When installing a “Unibox” with limitation of return temperature, the pipes have to be laid spiral patterned (see installation sketch). This way, a constant temperature distribution is achieved.
- Connection of the pipework to the “Unibox” with due consideration of the marked direction of flow. **Valve always behind the surface heating circuit.** Remove the protection cover of the “Unibox” as well as the front cover of the pipe conduit unit or the fixing channel.
- Provide the connecting pipe to the return pipe of the two pipe heating system.

The surface heating can be installed with any standard pipe material.



System illustration - “Unibox” with two surface heating circuits of the same length

The Oventrop programme includes suitable compression fittings. The corresponding installation instructions must be observed.

**Insert the copper pipe a maximum of 5 mm deeper than the fitting.** An open ring spanner 30 mm is recommended to tighten the fittings, e.g. Oventrop item no. 1401091.

The heating installation is filled and bled, for instance at the valve. Carry out leakage test and refit the protection cap of the valve as well as the front cover of the pipe conduit unit or the fixing channel.

**Important advice regarding heating up:**

After all plastering has been completed, a concrete screed which conforms to the relevant standards has to be laid. Heating up of concrete and calcium sulphate screed has to be carried out according to EN 1264-4.

Heating up at the earliest:

- 21 days after laying of concrete screed
- 7 days after laying of calcium sulphate screed

Heat up slowly!

3 days with a flow temperature of approx. 25 °C, then 4 days at maximum design temperature.

The flow temperature is only controlled via the boiler control.

Open the valve inserts of the “Unibox” by turning the protection cap about 1 turn. For the “Unibox plus”, the thermostat “Uni RTLH” is set to position 3.

The instructions of the screed manufacturer are to be observed. After having completed all building work, the protection cover is removed and the Oventrop thermostat “Uni LH” or “Uni RTLH” is mounted.

Mount and adjust the cover plate (front cover) in white, chrome plated or stainless steel finish.

**Important advice regarding commissioning:**

The recommended temperature range of the thermostat “Uni RTLH” is between position 2.5 (25 °C) and 4 (40 °C).

The temperature range of the thermostat “Uni RTLH” is limited at works to position 4 to avoid any operating errors.

The maximum permissible screed temperature near the heating pipes must not be exceeded:

- 55 °C for concrete and calcium sulphate screed
- 45 °C for mastic asphalt screed

- or according to the instructions of the screed manufacturer

Should the “Unibox” have been installed too deep, the stem extension (20 mm), item no. 1022698 or 1022699, may be used.

**Examples of calculation:**

“Unibox RTL” or “Unibox plus”  
Application: Bathroom  
Pipe material: Composition pipe “Copipe” 16 x 2 mm  
Room temperature : 24 °C  
Room temperature of the room below: 20 °C  
Max. heating surface temperature: 33 °C  
 $R_{\lambda} = 0.01 \text{ m}^2 \text{ K/W}$  (tiles)  
Set return temperature: 35 °C

| Laying distance<br>[mm] | Pipe length<br>[m] | Heating surface<br>[m <sup>2</sup> ] | Specific heat output<br>[W/ m <sup>2</sup> ] | Pressure loss pipework<br>[mbar] | Flow rate<br>[l/s] |
|-------------------------|--------------------|--------------------------------------|--|----------------------------------|--------------------|
| 75                      | 100                | 7.5                                  | 99   | 26                               | 0.012              |
| 150                     | 100                | 15                                   | 91   | 109                              | 0.026              |
| 225                     | 89                 | 20                                   | 74   | 114                              | 0.028              |
| 300                     | 67                 | 20                                   | 61   | 62                               | 0.023              |

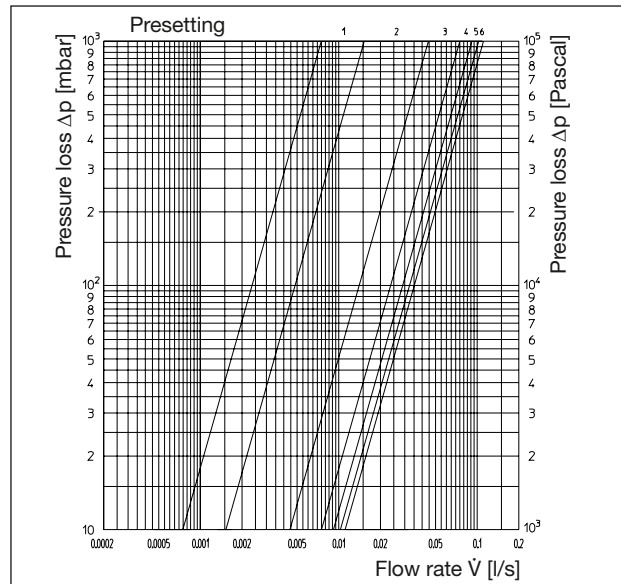
**“Unibox T”**

Application: Living area  
Pipe material: Composition pipe “Copipe” 16 x 2 mm  
Room temperature: 20 °C  
Room temperature of the room below: 20 °C  
Max. heating surface temperature: 29 °C  
 $R_{\lambda} = 0.1 \text{ m}^2 \text{ K/W}$  (parquet)  
Flow temperature: 50 °C

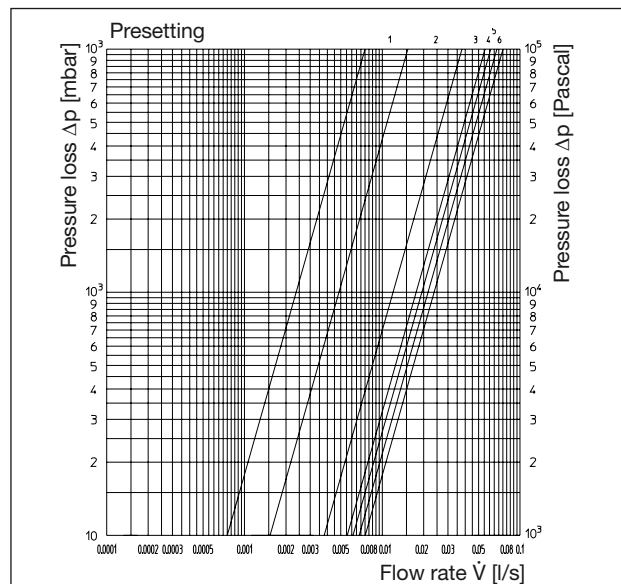
| Laying distance<br>[mm] | Pipe length<br>[m] | Heating surface<br>[m <sup>2</sup> ] | Specific heat output<br>[W/ m <sup>2</sup> ] | Pressure loss pipework<br>[mbar] | Flow rate<br>[l/s] |
|-------------------------|--------------------|--------------------------------------|--|----------------------------------|--------------------|
| 75                      | 100                | 7.5                                  | 85   | 29                               | 0.013              |
| 150                     | 100                | 15                                   | 73   | 77                               | 0.021              |
| 225                     | 89                 | 20                                   | 63   | 87                               | 0.025              |
| 300                     | 67                 | 20                                   | 54   | 51                               | 0.021              |

For the design of the installation it has to be observed that the pressure loss of the pipework and the valve may not exceed a sum of 300 mbar.

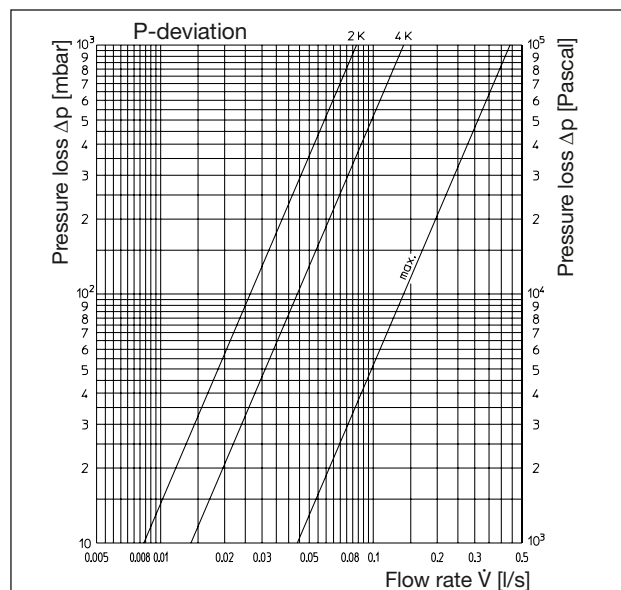
The models “Unibox plus” and “Unibox T” comply with the German Energy Saving Directive valid since July 2007 (EnEV §14).



Pressure loss chart “Unibox plus”, AV 9 insert at 2 K P-deviation and RTLH insert at 4 K P-deviation



Pressure loss chart “Unibox plus”, AV 9 insert at 1 K P-deviation and RTLH insert at 4 K P-deviation



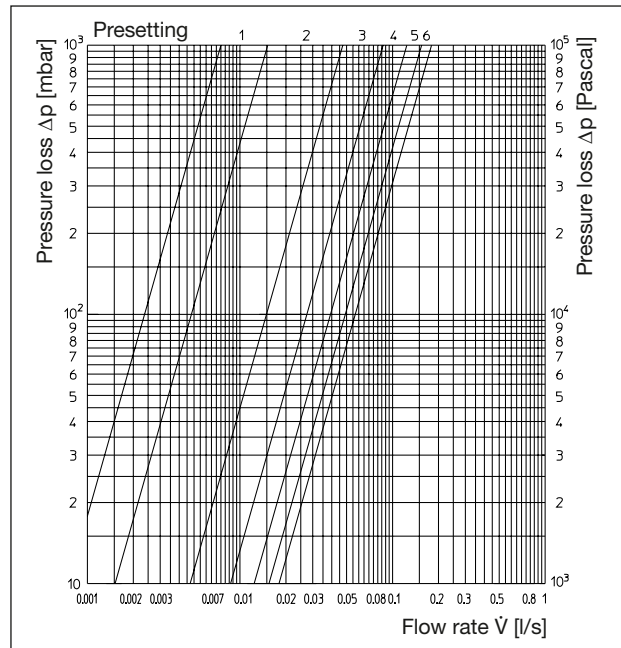
Pressure loss chart “Unibox RTL”

**Advantages:**

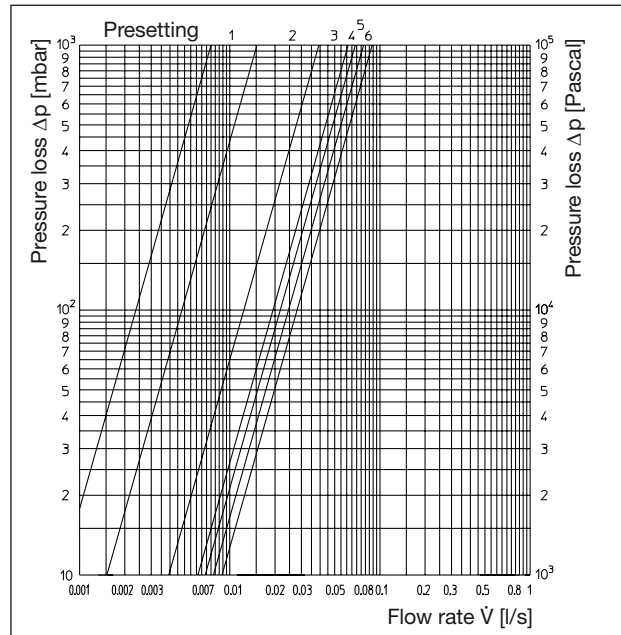
- simple installation
- stylish unit
- comfortable height for use of control
- smart optical integration into the wall
- cover plate in modern colours: white RAL 9016, chrome plated and stainless steel finish
- rotating plastic cover plate which can be fitted without screws
- the strong pipe conduit unit also serves as insulation
- suitable for the connection to any standard pipes for surface heating systems
- no auxiliary energy (current) required
- economical installation of a surface heating
- higher living comfort
- optimum control even of combined installations (surface heating/radiator connection)
- integrated deaeration
- stem extensions (20 mm) available

**Performance data “Unibox T” and “Unibox plus”**

| Presetting                     | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    |
|--------------------------------|------|------|------|------|------|------|------|------|------|
| $k_v$ value at 1 K P-deviation | 0.06 | 0.01 | 0.14 | 0.18 | 0.21 | 0.26 | 0.3  | 0.33 | 0.36 |
| $k_v$ value at 2 K P-deviation | 0.06 | 0.01 | 0.14 | 0.21 | 0.25 | 0.36 | 0.43 | 0.57 | 0.67 |
| $k_{vs}$                       |      |      |      |      |      |      |      |      | 1.1  |



Pressure loss chart “Unibox T” at 2 K P-deviation and “Unibox plus”, RTLH insert fully open



Pressure loss chart “Unibox T” at 1 K P-deviation and “Unibox plus”, RTLH insert fully open

|               | Item no.: | Thermostat |            |                       | Cover plate |               |                        | Visible thermostat |               |                        |
|---------------|-----------|------------|------------|-----------------------|-------------|---------------|------------------------|--------------------|---------------|------------------------|
|               |           | “Uni LH”   | “Uni RTLH” | “Uni LH” + “Uni RTLH” | white       | chrome plated | stainless steel finish | white              | chrome plated | stainless steel finish |
| “Unibox T”    | 1022636   | X          |            |                       | X           |               |                        | X                  |               |                        |
|               | 1022646   | X          |            |                       |             | X             |                        |                    | X             |                        |
| “Unibox RTL”  | 1022635   |            | X          |                       | X           |               |                        | X                  |               |                        |
|               | 1022645   |            | X          |                       |             | X             |                        |                    | X             |                        |
|               | 1022675   |            | X          |                       |             |               | X                      |                    |               | X                      |
| “Unibox plus” | 1022637   |            |            | X                     | X           |               |                        | X                  |               |                        |
|               | 1022647   |            |            | X                     |             | X             |                        |                    | X             |                        |

Subject to technical modifications without notice.

Product range 2  
ti 113-EN/20/MW  
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