

#### Tender specification:

Oventrop “Unibox TSH” in surface heating systems for individual room temperature control.

#### 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 TSH” installation set for individual room temperature control with thermostatic valve (room temperature control) in surface heating systems consisting of:

Wall box unit with presettable thermostatic valve, venting and flushing valve, angle pattern adapter, frame, cover plate and thermostat “Uni SH” 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.: 1022612

#### Application:

The “Unibox TSH” is suitable for the operation of a surface heating in a room with a heating surface up to 20 m<sup>2</sup>. It is designed for the connection of one surface heating circuit. 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.

Two circuits are required for larger heating surfaces. In this case, the pipes must be of the same length and have to be gathered in front of the “Unibox”. The pressure loss can be reduced with the help of a larger sized return pipe.

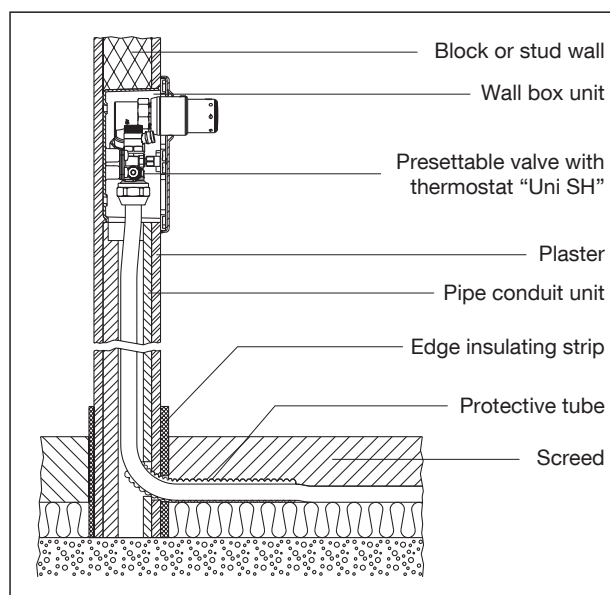
When laying the pipe, it is to be observed that the supply and the return pipe are alternately laid side by side. See, for instance, the spiral laying in the installation sketches. The example of calculation on page 3 shows an example of laying.

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

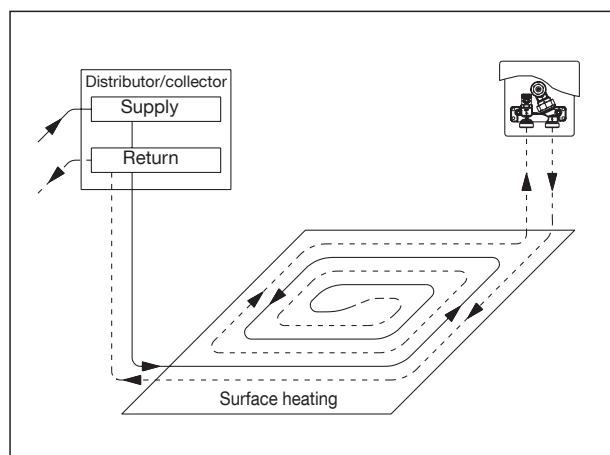
#### Function:

The “Unibox TSH” may only be operated with a maximum flow temperature of 55 °C (low temperature heating installation). It offers a fully-fledged individual room temperature control via the surface heating system. It is recommended to install the “Unibox TSH” 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 SH” controls the required room temperature exactly. Hydronic balancing is carried out at the presettable valve insert.

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



“Unibox TSH”



System illustration - Individual room temperature control at the distributor/collector

### Installation and assembly:

If the floor is used as surface heating, the lower edge of the “Unibox TSH” 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 TSH” 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 TSH” right above the floor level. The fixing channel which is adjustable in height is screwed to the wall box unit of the “Unibox TSH”. 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 TSH”:

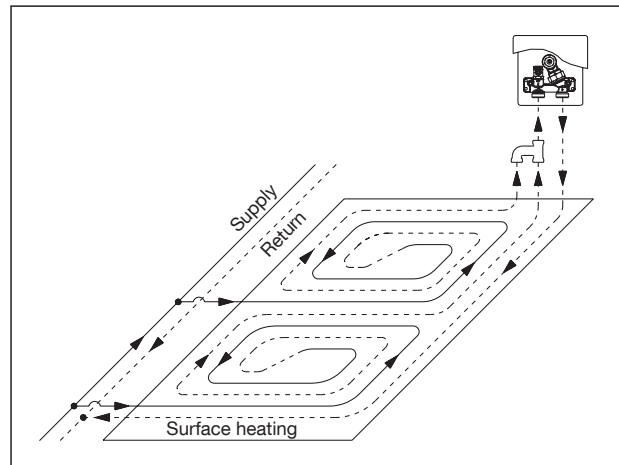
- Provide a connection at the junction of the distributor/collector.
- Laying of the surface heating circuit in an spiral pattern.
- When connecting the pipework to the “Unibox TSH”, the marked direction of flow has to be observed. **Valve always behind the surface heating circuit.** Remove the protection cover of the “Unibox TSH” as well as the front cover of the pipe conduit unit or the fixing channel.
- Provide the connecting pipe to the return collector of the distributor/collector.

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

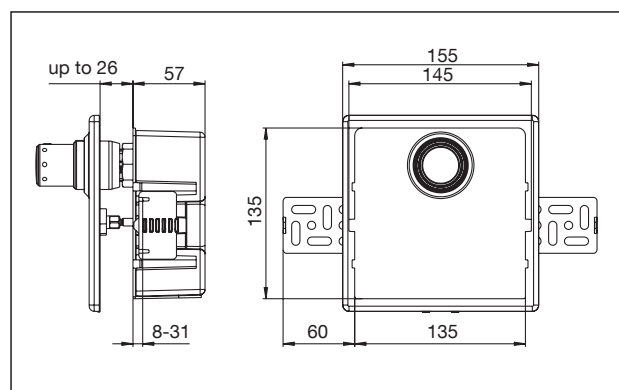
The Oventrop programme includes suitable compression fittings. The corresponding installation instructions must be observed.

**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.

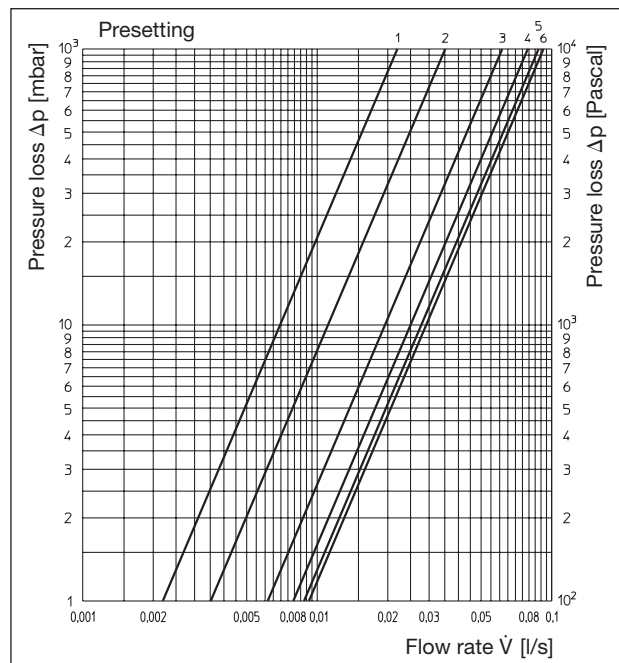
The heating installation is filled and bled, for instance at the valve. Carry out leakage test and refit the protection cap of the valve as well as the front cover of the pipe conduit unit or the fixing channel.



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



Dimensions “Unibox TSH”, depth 57 mm



Pressure loss chart “Unibox TSH” at 1 K P-deviation

#### 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 TSH” by turning the protection cap about 1 turn.

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 SH” is fitted to the angle pattern adapter.

Align the frame supports with the height of the wall surface and secure with counternut. Mount the frame onto the frame supports and tighten the screws after alignment. Finally, reattach the white cover plate to the frame.

#### Important advice regarding commissioning:

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 TSH” have been installed too deep, the stem extension (20 mm), item no. 1022698, can be used.

#### Example of calculation:

“Unibox TSH”

Application: Living area

Pipe material: Composition pipe “Copipe” 16 x 2 mm

Condition:

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)

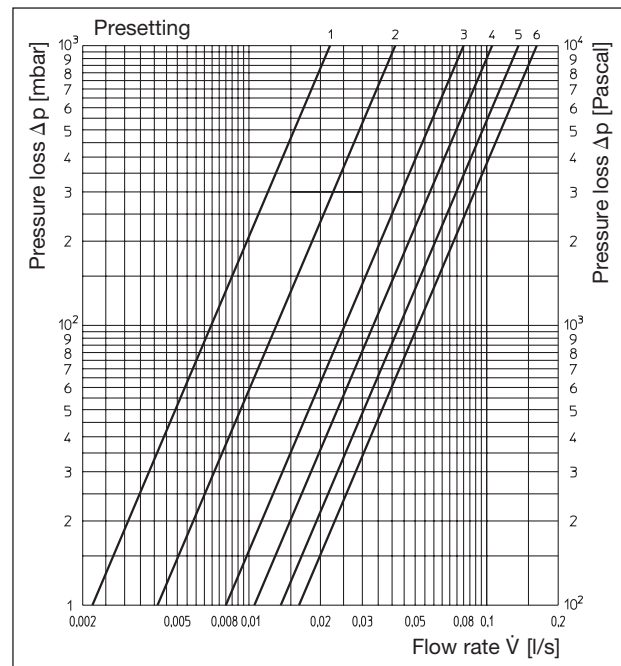
Flow temperature: 50 °C

Laying distance [mm]	Pipe length [m]	Heating surface [m <sup>2</sup> ]	Specific heat output [W/m <sup>2</sup> ]	Pressure loss pipework [mbar]	Flow rate [l/s]
100	75	7.5	85	14	0.0111
150	100	15	73	41	0.0175
200	100	20	63	46	0.0189
300	67	20	54	30	0.0186

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

#### Performance data “Unibox T SH”:

Presetting	1	2	3	4	5	6	7	8	9
$k_v$ value at 1 K P-deviation	0.05	0.09	0.13	0.17	0.21	0.25	0.28	0.32	0.34
$k_v$ value at 2 K P-deviation	0.05	0.09	0.13	0.18	0.24	0.30	0.39	0.50	0.57
$k_{vs}$									0.81



Pressure loss chart “Unibox TSH” at 2 K P-deviation

Subject to technical modifications without notice.

Product range 2  
ti 268-EN/20/MW  
Edition 2018