

# Thermostatic three-way valve body



## Thermostatic Radiator Valves

without presetting, with automatic bypass control

# Thermostatic three-way valve body

The thermostatic three-way-valve bodies are used in two-pipe pump heating systems. For one-pipe pump heating systems a retrofitting thermostatic insert is available. When almost all valves are closed at the same time, additional pressures build up in the heating system. If the three-way valve intercepts the radiator flow, the bypass for the return flow is fully opened. Additional pressures are avoided and the pressure is kept almost constant. The bypass can be connected with the corresponding bypass T-piece on the radiator return.



## Key features

- > **To avoid additional differential pressure**  
Due to automatic bypass control
- > **Double O-ring seal**  
for durable and maintenance free operation
- > **With bypass T-piece**  
For easy connection to the return
- > **Valve body in gunmetal**  
corrosion-resistant and safe

## Technical description

### Applications:

Two-pipe or one-pipe pump heating systems.

### Function:

Control  
Shut-off  
Avoids additional differential pressure  
Ensuring minimum amounts of water circulation

### Dimensions:

DN 15

### Pressure class:

PN 10

### Temperature:

Max. working temperature: 120°C,  
with protection cap or actuator 100°C.  
Min. working temperature: -10°C.

### Materials:

Valve body: corrosion resistant Gunmetal  
Bypass T-piece: Brass  
O-rings: EPDM rubber  
Valve disc: EPDM rubber  
Return spring: Stainless steel  
Valve insert: Brass  
Spindle: Niro-steel spindle with double  
O-ring sealing. The outer O-ring can be  
replaced under pressure.

### Surface treatment:

Valve body and fittings are nickel-plated.

### Marking:

THE and flow direction arrow.  
Black protection cap.

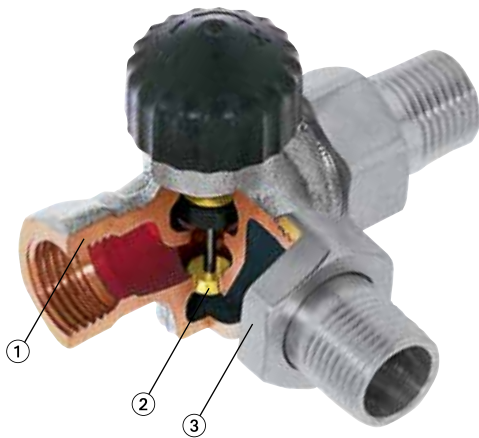
### Pipe connection:

The valve body and the bypass T-piece are designed for connection to threaded pipe, or in conjunction with compression fittings, to copper precision steel or multi-layer pipe.

### Connection to thermostatic head and actuator:

HEIMEIER M30x1.5

## Construction



1. Valve body made of corrosion-resistant nickel-plated gunmetal
2. Bypass bore hole with regulating cone
3. Bypass connection

## Application

The thermostatic three-way valve bodies are used in two-pipe pump heating systems. For one-pipe pump heating systems a retrofitting thermostatic insert is available.

When almost all valves are closed at the same time, additional pressures build up in the heating system. If the three-way valve intercepts the radiator flow, the bypass for the return flow is fully opened. Additional pressures are avoided and the pressure is kept almost constant.

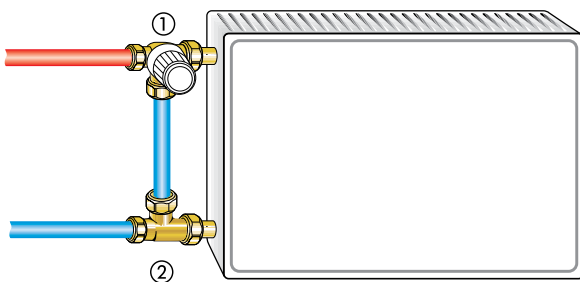
The total flow of the three-way valve body has a Kv value of 1.45 m<sup>3</sup>/h (see curve 2 in the diagram). 1 three-way valve is allocated for each heating circuit. For normal systems, for almost every 18 kW.

For wall-mounted gas fired heaters with a set minimum circulatory flow level, the number of three-way valves should be calculated from curve 2 (see diagram). Curve 1, or the Kv values of the different p-bands, acts as a pressure loss definition for the set radiator mass flow.

Corresponding to the standards EnEV and DIN V 4701-10, the valve bodies can be designed with a control difference from 1 K to 2 K thus enabling a broad flow spectrum.

For the valve installation, select the point furthest away from the pump. The ideal installation sites are the hallway or the bathroom.

### Sample application



1. Thermostatic three-way valve body
2. Bypass T-piece

### Notes

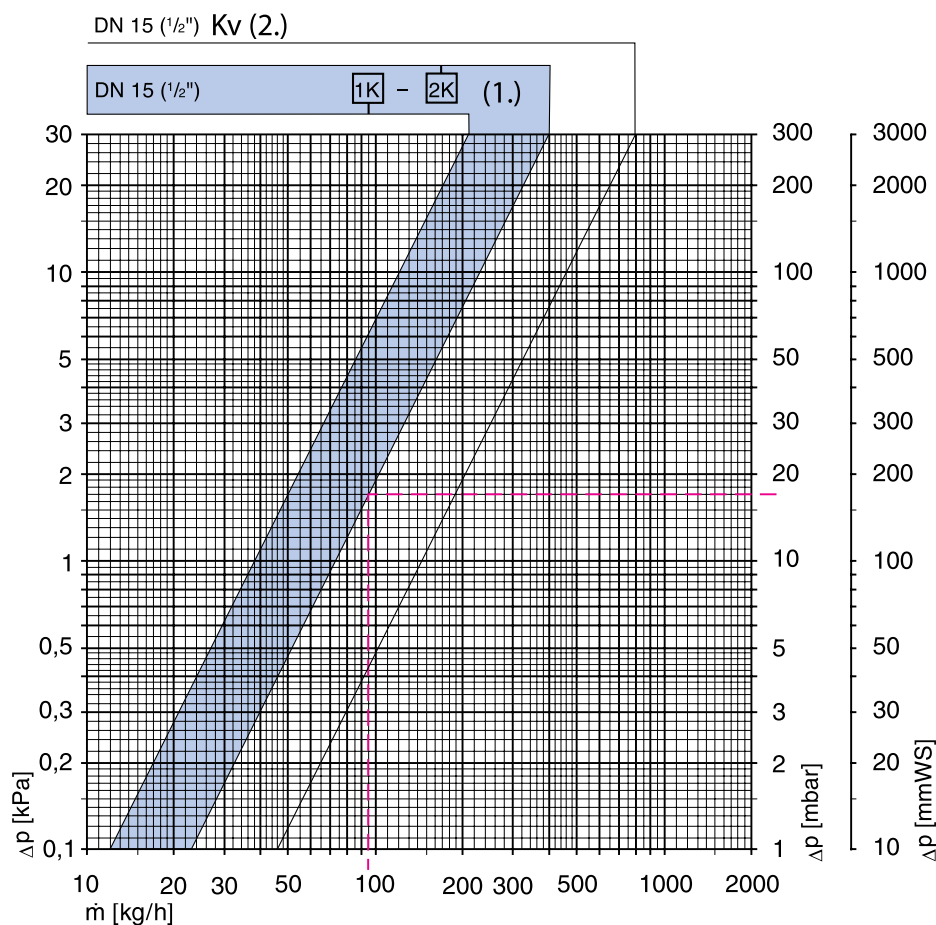
– To avoid damage and the formation of scale deposit in the hot-water heating system, the composition of the heat transfer medium should be in accordance with the VDI guideline 2035. For industrial and long-distance energy systems, see the applicable codes VdTÜV and 1466/AGFW FW 510. A heat transfer medium containing mineral oils, or any type of lubricant containing mineral oil can have extremely negative effects and usually lead to the disintegration of EPDM seals. When using nitrite-free frost and corrosion resistance solutions with an ethylene glycol base, pay close attention to the details outlined in the manufacturers' documentation, particularly concerning concentration and specific additives.

– Flush the system before changing thermostatic valves in heavy polluted existing systems.

– The thermostatic valve bodies can be used with all HEIMEIER thermostatic heads and HEIMEIER or TA thermal or motorized actuators. The optimal tuning of the components guarantees maximum safety. When using actuators from other manufacturers, make sure that the pressure power is appropriate for thermostatic valve bodies with soft sealing valve discs.

## Technical data

### Diagram, three-way valve body with thermostatic head



| Three-way valve body<br>with thermostatic head | Kv<br>P-band xp [K] |      |      | Kv<br>total <sup>1)</sup> | Permitted differential pressure, during which<br>the valve is kept closed Δp [bar] |                                   |  |
|--|---------------------|------|------|---------------------------|--|-----------------------------------|--|
|  | 1,0                 | 1,5  | 2,0  |                           | Th.- head  | EMO T-TM/NC<br>EMOtec/NC<br>EMO 3 | EMO T/NO<br>EMOtec/NO<br>TA-Slider 160 |
| DN 15 (1/2")                                   | 0,38                | 0,55 | 0,73 | 1,45                      | 1,0  | 2,0                               | 3,5                                    |

1) Total Kv value for radiator and bypass.

$Kv/Kvs = m^3/h$  at a pressure drop of 1 bar.

### Sample calculation

Target:

Pressure loss, thermostatic three-way valve body with  
p-band 2 K

Given:

Heat flow  $Q = 1660$  W

Temperature spread  $\Delta t = 15$  K (70/55°C)

Solution:

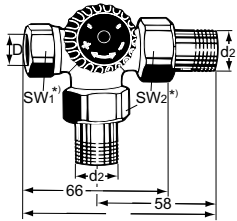
Mass flow  $m = Q / (c \cdot \Delta t) = 1660 / (1,163 \cdot 15) = 95$  kg/h

Pressure loss from diagram  $\Delta p_v = 17$  mbar

$$Cv = \frac{Kv}{0,86}$$

$$Kv = Cv \cdot 0,86$$

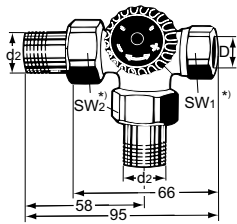
## Articles



### Thermostatic three-way valve body

Connection on the radiator left

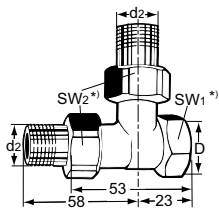
| Bypass connection                      | DN | D     | d2   | Kv Radiator [xp] 1 K / 2 K <sup>1)</sup> | Kv total <sup>2)</sup> | EAN           | Article No  |
|--|----|-------|------|--|------------------------|---------------|-------------|
| <b>DN 15 (1/2")<br/>Screwed nipple</b> | 15 | Rp1/2 | R1/2 | 0,38 / 0,73                              | 1,45                   | 4024052221714 | 4151-02.000 |



### Thermostatic three-way valve body

Connection on the radiator right

| Bypass connection                      | DN | D     | d2   | Kv Radiator [xp] 1 K / 2 K <sup>1)</sup> | Kv total <sup>2)</sup> | EAN           | Article No  |
|--|----|-------|------|--|------------------------|---------------|-------------|
| <b>DN 15 (1/2")<br/>Screwed nipple</b> | 15 | Rp1/2 | R1/2 | 0,38 / 0,73                              | 1,45                   | 4024052221615 | 4150-02.000 |



### Bypass T-piece

Connection on the radiator left or right

| Bypass connection                      | DN | D     | d2   | EAN          | Article No  |
|--|----|-------|------|--------------|-------------|
| <b>DN 15 (1/2")<br/>Screwed nipple</b> | 15 | Rp1/2 | R1/2 | 402405222117 | 4154-02.000 |

<sup>1)</sup> Distribution ratio at 2.0 K approx. 50%.

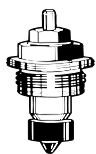
<sup>2)</sup> Total Kv-value for radiator and bypass.

\*) SW1: 27mm, SW2: 30mm

Kvs = m<sup>3</sup>/h at a pressure drop of 1 bar and fully open valve.

Kv [xp] max. 1 K / 2 K = m<sup>3</sup>/h at a pressure drop of 1 bar with thermostatic head.

## Accessories



### Retrofit thermostatic insert

For the application of thermostatic three-way valve bodies in one-pipe heating systems.

The circuit flow rate is designed to be distributed to 35% radiator and 65% bypass.

Kv-value total 2,40 [m<sup>3</sup>/h]  
(with 2 K p-band).

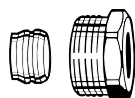
Flow diagram on request.

#### EAN

4024052217410

#### Article No

4101-03.300



### Compression fitting

for copper or precision steel pipes.

Female thread connection Rp3/8 – Rp3/4.

Metal-to-metal joint.

Brass nickel-plated.

Support sleeves should be used for a pipe wall thickness of 0.8 – 1 mm. Follow the specifications of the pipe manufacturer.

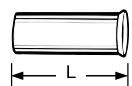
#### Ø Pipe

#### DN

#### EAN

#### Article No

|    |           |               |             |
|----|-----------|---------------|-------------|
| 12 | 10 (3/8") | 4024052174614 | 2201-12.351 |
| 15 | 15 (1/2") | 4024052175017 | 2201-15.351 |
| 16 | 15 (1/2") | 4024052175116 | 2201-16.351 |
| 18 | 20 (3/4") | 4024052175215 | 2201-18.351 |



### Support sleeve

for copper or precision steel pipe with a 1 mm wall thickness.

Brass.

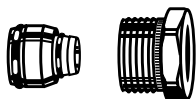
#### Ø Pipe

#### L

#### EAN

#### Article No

|    |      |               |             |
|----|------|---------------|-------------|
| 12 | 25,0 | 4024052127016 | 1300-12.170 |
| 15 | 26,0 | 4024052127917 | 1300-15.170 |
| 16 | 26,3 | 4024052128419 | 1300-16.170 |
| 18 | 26,8 | 4024052128815 | 1300-18.170 |



### Compression fitting

For multi-layer pipes.

Female thread connection Rp1/2.

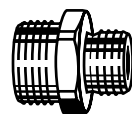
Nickel-plated brass.

#### Ø Pipe

#### EAN

#### Article No

|        |  |               |             |
|--------|--|---------------|-------------|
| 16 x 2 |  | 4024052138616 | 1335-16.351 |
|--------|--|---------------|-------------|



### Double connection fitting

For clamping plastic, copper, precision steel or multi-layer pipes.

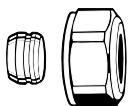
Brass, nickel-plated.

#### L

#### EAN

#### Article No

|             |    |               |             |
|-------------|----|---------------|-------------|
| G3/4 x R1/2 | 26 | 4024052308415 | 1321-12.083 |
|-------------|----|---------------|-------------|



### Compression fitting

for copper or precision steel pipes.

Male thread connection G3/4.

Metal-to-metal joint.

Nickel-plated brass.

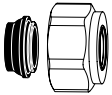
Support sleeves should be used for a pipe wall thickness of 0.8 – 1 mm. Follow the specifications of the pipe manufacturer.

#### Ø Pipe

#### EAN

#### Article No

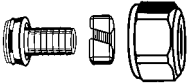
|    |  |               |             |
|----|--|---------------|-------------|
| 12 |  | 4024052214211 | 3831-12.351 |
| 14 |  | 4024052214310 | 3831-14.351 |
| 15 |  | 4024052214617 | 3831-15.351 |
| 16 |  | 4024052214914 | 3831-16.351 |
| 18 |  | 4024052215218 | 3831-18.351 |



**Compression fitting**

for copper or precision steel pipes.  
Male thread connection G3/4.  
Soft sealed.  
Nickel-plated brass.

| Ø Pipe | EAN           | Article No  |
|--------|---------------|-------------|
| 15     | 4024052515851 | 1313-15.351 |
| 18     | 4024052516056 | 1313-18.351 |



**Compression fitting**

for plastic pipes.  
Male thread connection G3/4.  
Nickel plated brass.

| Ø Pipe | EAN           | Article No  |
|--------|---------------|-------------|
| 12x1,1 | 4024052136018 | 1315-12.351 |
| 14x2   | 4024052134618 | 1311-14.351 |
| 16x1,5 | 4024052136117 | 1315-16.351 |
| 16x2   | 4024052134816 | 1311-16.351 |
| 17x2   | 4024052134915 | 1311-17.351 |
| 18x2   | 4024052135110 | 1311-18.351 |
| 20x2   | 4024052135318 | 1311-20.351 |



**Compression fitting**

for multi-layer pipes.  
Male thread connection G3/4.  
Nickel-plated brass.

| Ø Pipe | Article No  |
|--------|-------------|
| 16x2   | 1331-16.351 |

Other accessories, see catalogue leaflet "Accessories and spare parts for thermostatic radiator valves".

