

Climate  
Control

IMI Heimeier

# 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.

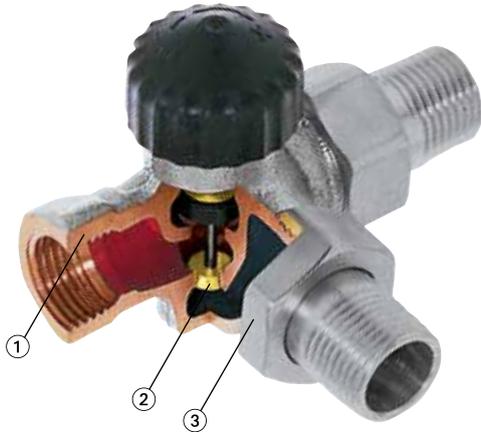
#### Pipe connection:

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:

IMI 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.

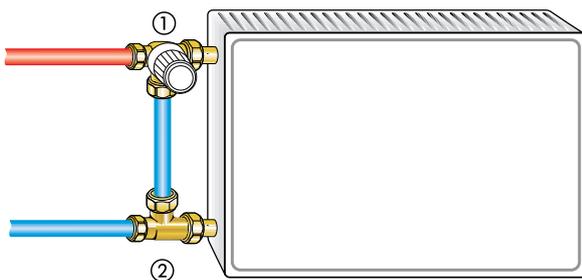
The total flow of the three-wayvalve body has a Kv value of 1.45 m<sup>3</sup>/h (see curve 2 in the diagram). 1 three-way valve is allocated for each heating circuit. For normal systems, for almost every 18 kW.

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

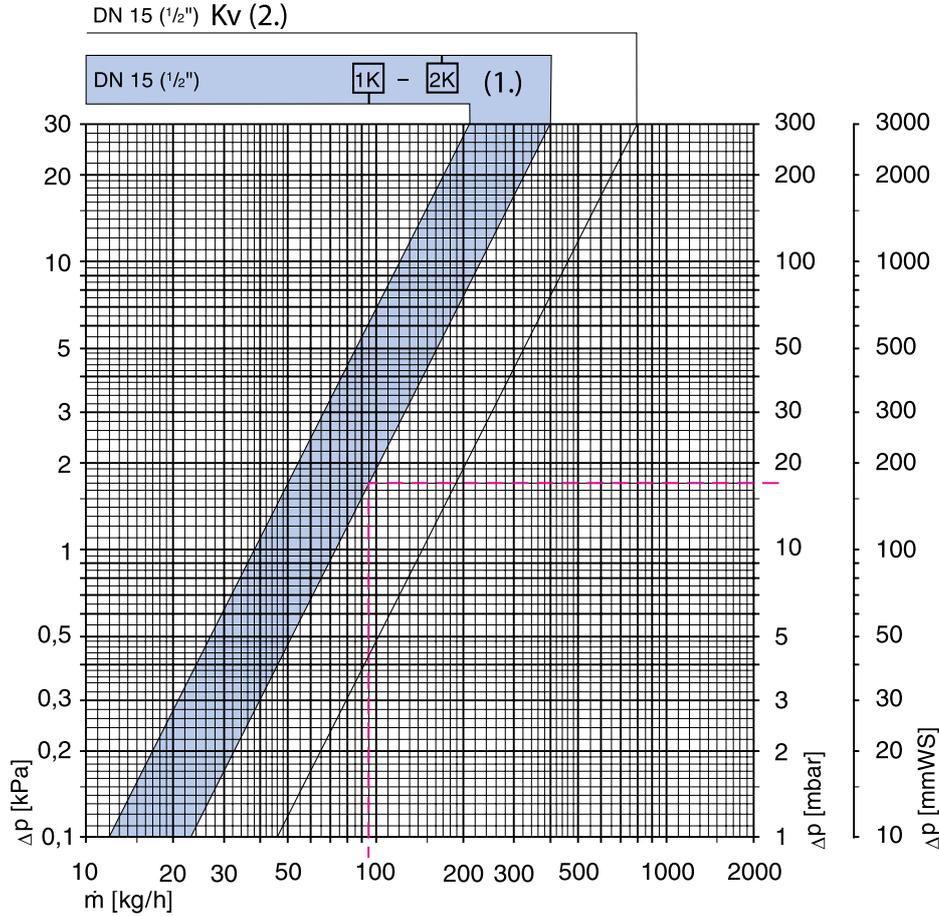
– To avoid damage and the formation of scale deposit in the hot-water heating system, the composition of the heat transfer medium should be in accordance with the VDI guideline 2035. For industrial and long-distance energy systems, see the applicable codes VdTÜV and 1466/AGFW FW 510. A heat transfer 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 IMI Heimeier thermostatic heads and IMI Heimeier or IMI 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 with thermostatic head	Kv P-band xp [K]			Kv total <sup>1)</sup>	Permitted differential pressure, during which the valve is kept closed Δp [bar]		
	1,0	1,5	2,0		Th.- head	EMO T-TM/NC EMOtec/NC TA-TRI	EMO T/NO EMOtec/NO 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:

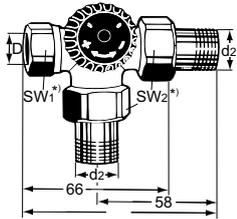
Mass flow  $m = Q / (c \cdot \Delta t) = 1660 / (1,163 \cdot 15) = 95$  kg/h

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

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

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

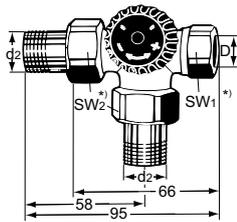
## Articles



### Thermostatic three-way valve body

Connection on the radiator left

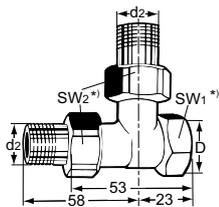
Bypass connection	DN	D	d2	Kv Radiator [xp] 1 K / 2 K <sup>1)</sup>	Kv total <sup>2)</sup>	EAN	Article No
DN 15 (1/2") Screwed nipple	15	Rp1/2	R1/2	0,38 / 0,73	1,45	4024052221714	4151-02.000



### 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
DN 15 (1/2") Screwed nipple	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
DN 15 (1/2") Screwed nipple	15	Rp1/2	R1/2	4024052222117	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

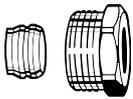
For the application of thermostatic three-way valve bodies in one-pipe heating systems.

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	Article No
4024052217410	4101-03.300



### Compression fitting

for copper or precision steel pipes.  
Internal 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.

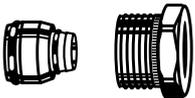
Ø Pipe	DN	EAN	Article No
12	10 (3/8")	4024052174614	2201-12.351
15	15 (1/2")	4024052175017	2201-15.351
16	15 (1/2")	4024052175116	2201-16.351
18	20 (3/4")	4024052175215	2201-18.351



### Support sleeve

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

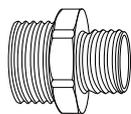
Ø Pipe	L	EAN	Article No
12	25,0	4024052127016	1300-12.170
15	26,0	4024052127917	1300-15.170
16	26,3	4024052128419	1300-16.170
18	26,8	4024052128815	1300-18.170



### Compression fitting

For multi-layer pipes.  
Internal thread connection Rp1/2.  
Nickel-plated brass.

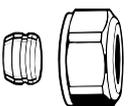
Ø Pipe	EAN	Article No
16 x 2	4024052138616	1335-16.351



### 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

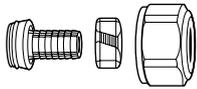
for copper or precision steel pipes.  
External thread connection G3/4.  
Metal-to-metal joint.  
Nickel-plated brass.  
Support sleeves should be used for a pipe wall thickness of 0.8 – 1 mm.  
Follow the specifications of the pipe manufacturer.

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.  
External 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.  
External 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.  
External 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".



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