IMI HEIMEIER

# With particularly low resistance

## Thermostatic Radiator Valves

Without presetting

IMI Hydronic Engineering

Breakthrough Engineering

# With particularly low resistance

The thermostatic valve bodies with particularly low resistance are used e. g. in two-pipe low temperature heating systems with a small temperature spread and conventional single pipe heating systems.

## Key features

- **Double O-ring seal**
  for durable and maintenance free operation
- **Valve body in gunmetal**
  corrosion-resistant and safe
- **Thermostatic insert replaceable under pressure**
  with DN 10 and DN 15

## Technical description

**Applications area:**
Heating and cooling systems.

**Function:**
Control
Shut-off

**Dimensions:**
DN 10-32

**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
O-rings: EPDM rubber
Valve disc: EPDM rubber
Return spring: Stainless steel
Valve insert: Brass
The complete thermostatic insert can be replaced using the fitting tool without draining the system (DN 10, DN 15).
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, country code, flow direction arrow, DN and KEYMARK-Designation.
II+ Designation for DN 10 axial and double angle.
*Blue protection cap:*
Stuffing box, blue: DN 10, DN 15 angle and straight, DN 15 straight with flat sealing, straight with bended nipple and DN 15 axial.
Stuffing box without colour identification: DN 20 angle and straight.
*Black protection cap:*
Stuffing box, black: DN 10 axial, double angle, DN 20 straight with flat sealing.
Stuffing box without colour identification: DN 25, DN 32 angle and straight.

011

**Standards:**
The thermostatic valve bodies meet the following requirements:
– KEYMARK certified and tested according to DIN EN 215.
For KEYMARK certified thermostatic heads and thermostatic valve bodies, see also datasheet ‘Thermostatic Heads’.

**Pipe connection:**
The female-threaded version is designed for connection to threaded pipe, or in conjunction with compression fittings, to copper precision steel or multi-layer pipe (only DN 15).
The male-threaded version , in conjunction with the appropriate compression fittings, permits connection to plastic pipe.

**Connection to thermostatic head and actuator:**
HEIMEIER M30x1.5

## Construction


1. Valve seat dimension designed for large massflows
2. Valve body made of corrosion-resistant nickel-plated gunmetal

## Application

The thermostatic valve bodies with particularly low resistance are used e. g. in two-pipe low temperature heating systems with a small temperature spread and conventional single pipe heating systems.
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.
A hydraulic balance, which is an additional requirement for two-pipe heating systems, can be reached with the appropriate lockshields, e. g. Regulux.

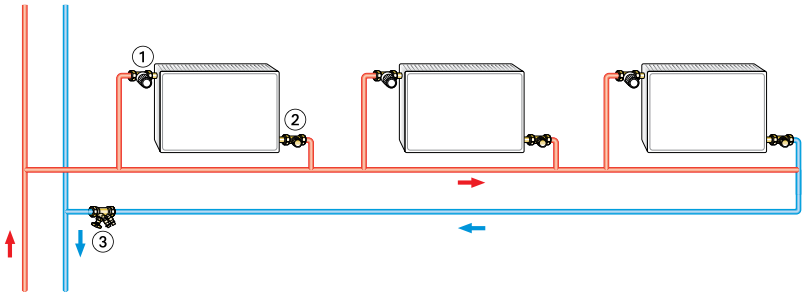
**Noise behaviour**

To ensure low-noise performance, the following conditions must be met:

- On the basis of experience, the differential pressure over the thermostatic valves should not exceed about 20 kPa = 200 mbar = 0.2 bar. If in designing the system, higher transient differentials might be experienced in the part-load flow range, differential pressure control equipment such as a STAP Differential Pressure Controller or Hydrolux bypass valves can be used.
- Mass-flow must be correctly adjusted.
- The system must be completely deaerated.

**Sample application**

Single pipe heating system




1. Thermostatic valve body with particularly low resistance
2. Lockshield
3. STAD balancing valve

**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 DN 10 (3/8”) to DN 20 (3/4”), valve body with thermostatic head**

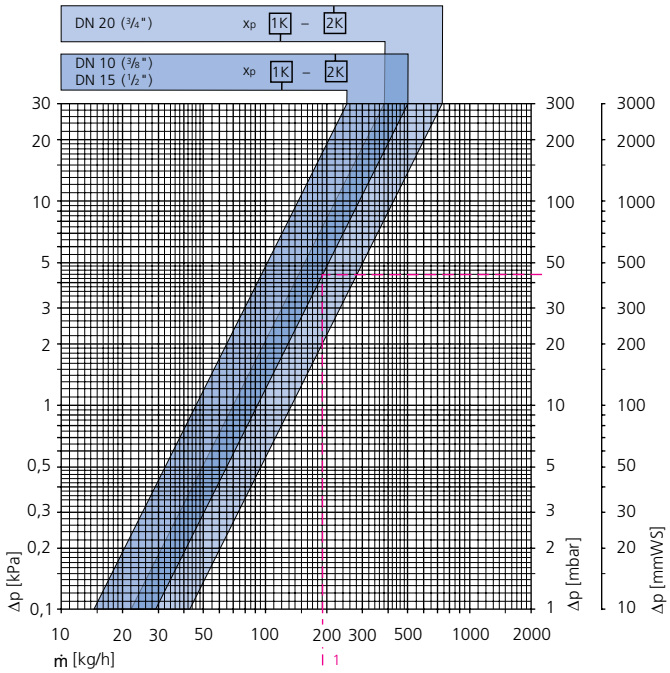
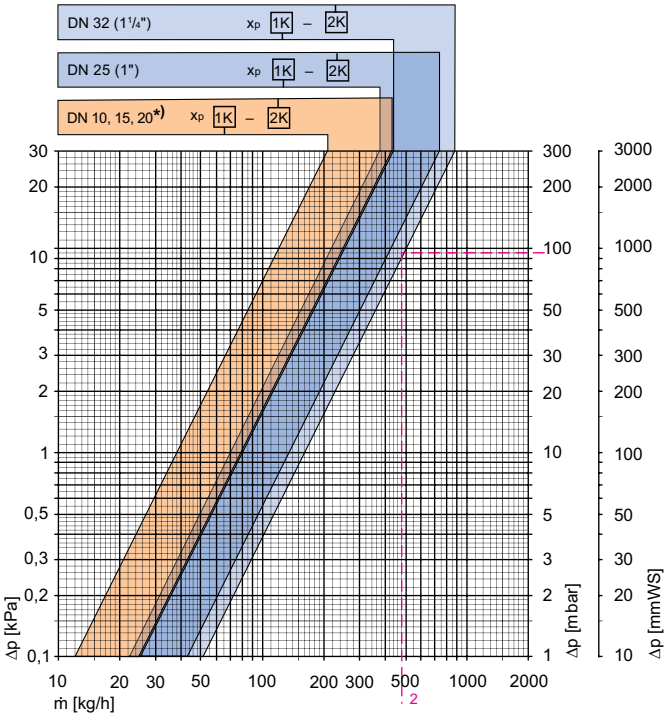



**Diagram DN 10 (3/8”) axial, DN 10 (3/8”) and DN 15 (1/2”) double angle, DN 20 (3/4”) flat sealing, DN 25 (1”) and DN 32 (1 1/4”), valve body with thermostatic head**




| Valve body with thermostatic head | kv P-band xp [K] | | | Kvs | Kvs | Kvs | Kvs | Permitted differential pressure, during which the valve is kept closed Δp [bar] | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1,0 | 1,5 | 2,0 | angle | straight | axial | double angle | Th.-head | EMO T-TM/NC EMOtec/NC EMO 3 | EMO T/NO EMOtec/NO TA-Slider 160 |
| DN 10 (3/8”) | 0,46 | 0,70 | 0,92 | 2,30 | 1,80 | | | 0,60 | 1,50 | 3,00 |
| DN 10 (3/8”) | 0,38 | 0,59 | 0,79 | | | 1,50 | 1,30 | 1,00 | 3,50 | 3,50 |
| DN 15 (1/2”) | 0,46 | 0,70 | 0,92 | 3,10 | 2,50 | 2,50 | | 0,60 | 1,50 | 3,00 |
| DN 15 (1/2”) | 0,38 | 0,59 | 0,79 | | | | 1,50 | 1,00 | 3,50 | 3,50 |
| DN 20 (3/4”) | 0,70 | 1,04 | 1,35 | 5,70 | 4,50 | | | 0,25 | 0,80 | 1,60 |
| DN 20 (1”) | 0,38 | 0,59 | 0,79 | | 2,50 *) | | | 1,00 | 3,50 | 3,50 |
| DN 25 (1”) | 0,70 | 1,04 | 1,35 | 5,70 | 5,70 | | | 0,25 | 0,80 | 1,60 |
| DN 32 (1 1/4”) | 0,80 | 1,10 | 1,60 | 6,70 | 6,70 | | | 0,25 | 0,50 | 1,00 |

Kv/Kvs = $m^3/h$ at a pressure drop of 1 bar.
*) straight flat sealing, DN 20, 2272-03.000

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

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

**Sample calculation 1**

Target:
Pressure loss, thermostatic valve body with particularly low resistance DN 15 angle, straight with p-band 2 K

Given:
Heat flow Q = 2210 W
Temperature spread Δt = 10 K (55/45 °C)

Solution:
Mass flow m = Q / (c · Δt) = 2210 / (1,163 · 10) = 190 kg/h
Pressure loss from diagram $\Delta p_v$ = 44 mbar

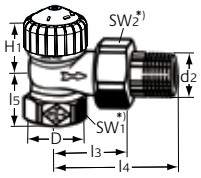
**Sample calculation 2**

Target:
Appropriate thermostatic valve body with particularly low resistance

Given:
Heat flow Q = 8375 W
Temperature spread Δt = 15 K (70/55 °C)
Pressure loss, thermostatic valve Δpv = 95 mbar

Solution:
Mass flow m = Q / (c · Δt) = 8375 / (1,163 · 15) = 480 kg/h
Thermostatic valve body with particularly low resistance from diagram: DN 32 (1 1/4”)

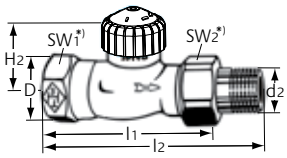
## Articles




### Angle

DN 10-20: Blue protection cap. DN 25-32: Black protection cap

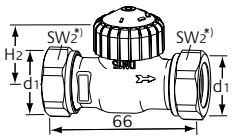
| DN | D | d2 | l3 | l4 | l5 | H1 | Kv [xp] 1 K / 2 K | Kvs | EAN | Article No |
|---|---|---|---|---|---|---|---|---|---|---|
| 10 | Rp3/8 | R3/8 | 26 | 52 | 22 | 21,5 | 0,46 / 0,92 | 2,30 | 4024052179213 | 2241-01.000 |
| 15 | Rp1/2 | R1/2 | 29 | 58 | 26 | 21,5 | 0,46 / 0,92 | 3,10 | 4024052179312 | 2241-02.000 |
| 20 | Rp3/4 | R3/4 | 34 | 66 | 29 | 21,5 | 0,70 / 1,35 | 5,70 | 4024052179510 | 2241-03.000 |
| 25 | Rp1 | R1 | 40 | 75 | 32,5 | 23 | 0,70 / 1,35 | 5,70 | 4024052174317 | 2201-04.000 |
| 32 | Rp1 1/4 | R1 1/4 | 46 | 85 | 39 | 23 | 0,80 / 1,60 | 6,70 | 4024052174416 | 2201-05.000 |




### Straight

DN 10-20: Blue protection cap. DN 25-32: Black protection cap

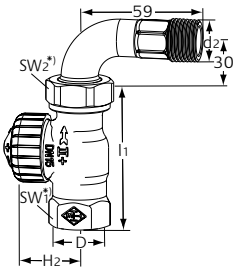
| DN | D | d2 | l1 | l2 | H2 | Kv [xp] 1 K / 2 K | Kvs | EAN | Article No |
|---|---|---|---|---|---|---|---|---|---|
| 10 | Rp3/8 | R3/8 | 59 | 85 | 21,5 | 0,46 / 0,92 | 1,80 | 4024052179718 | 2242-01.000 |
| 15 | Rp1/2 | R1/2 | 66 | 95 | 21,5 | 0,46 / 0,92 | 2,50 | 4024052179817 | 2242-02.000 |
| 20 | Rp3/4 | R3/4 | 74 | 106 | 23,5 | 0,70 / 1,35 | 4,50 | 4024052179916 | 2242-03.000 |
| 25 | Rp1 | R1 | 84 | 118 | 30,5 | 0,70 / 1,35 | 5,70 | 4024052176212 | 2202-04.000 |
| 32 | Rp1 1/4 | R1 1/4 | 95 | 135 | 30,5 | 0,80 / 1,60 | 6,70 | 4024052176311 | 2202-05.000 |




### Straight

flat sealing. DN 15: Blue protection cap. DN 20: Black protection cap.

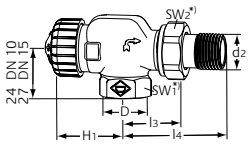
| DN | d1 | H2 | Kv [xp] 1 K / 2 K | Kvs | EAN | Article No |
|---|---|---|---|---|---|---|
| 15 | G3/4 | 21,5 | 0,46 / 0,92 | 2,50 | 4024052547722 | 2276-02.000 |
| 20 | G1 | 23,5 | 0,38 / 0,79 | 2,50 | 4024052547623 | 2272-03.000 |




### Straight

with bended nipple. Blue protection cap.

| DN | D | d2 | l1 | H2 | Kv [xp] 1 K / 2 K | Kvs | EAN | Article No |
|---|---|---|---|---|---|---|---|---|
| 15 | Rp1/2 | R1/2 | 66 | 21,5 | 0,46 / 0,92 | 2,50 | 4024052180110 | 2244-02.000 |




### Axial

DN 10: Black protection cap. DN 15: Blue protection cap.

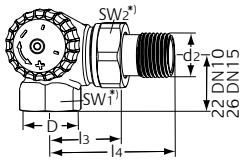
| DN | D | d2 | l3 | l4 | H1 | Kv [xp] 1 K / 2 K | Kvs | EAN | Article No |
|---|---|---|---|---|---|---|---|---|---|
| 10 | Rp3/8 | R3/8 | 26 | 52 | 31,5 | 0,38 / 0,79 | 1,50 | 4024052180417 | 2245-01.000 |
| 15 | Rp1/2 | R1/2 | 29 | 58 | 31,5 | 0,46 / 0,92 | 2,50 | 4024052180516 | 2245-02.000 |

*) SW1: DN 10 = 22 mm, DN 15 = 27 mm, DN 20 = 32 mm, DN 25 = 41 mm, DN 32 = 49 mm
SW2: DN 10 = 27 mm, DN 15 = 30 mm, DN 20 = 37 mm, DN 25 = 47 mm, DN 32 = 52 mm

Values H1 and H2 are at the bearing surface thermostatic head or actuator.

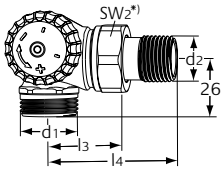
Kvs = $m^3/h$ at a pressure drop of 1 bar and fully open valve.
Kv [xp] max. 1 K / 2 K = $m^3/h$ at a pressure drop of 1 bar with thermostatic head.

For compression fittings and other accessories, see datasheet “Accessories and spare parts for thermostatic radiator valves”.



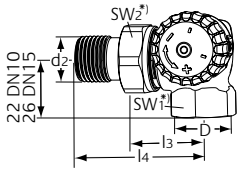

**Double angle**
Connection to radiator left. Black protection cap.

| DN | D | d2 | l3 | l4 | Kv [xp] 1 K / 2 K | Kvs | EAN | Article No |
|---|---|---|---|---|---|---|---|---|
| 10 | Rp3/8 | R3/8 | 26 | 52 | 0,38 / 0,79 | 1,30 | 4024052184019 | 2341-01.000 |
| 15 | Rp1/2 | R1/2 | 29 | 58 | 0,38 / 0,79 | 1,50 | 4024052184118 | 2341-02.000 |



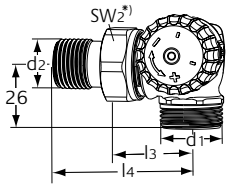

**Double angle**
with male thread G 3/4
Connection to radiator left. Black protection cap.

| DN | d1 | d2 | l3 | l4 | Kv [xp] 1 K / 2 K | Kvs | EAN | Article No |
|---|---|---|---|---|---|---|---|---|
| 15 | G3/4 | R1/2 | 29 | 58 | 0,38 / 0,79 | 1,50 | 4024052184316 | 2343-02.000 |




**Double angle**
Connection to radiator right. Black protection cap.

| DN | D | d2 | l3 | l4 | Kv [xp] 1 K / 2 K | Kvs | EAN | Article No |
|---|---|---|---|---|---|---|---|---|
| 10 | Rp3/8 | R3/8 | 26 | 52 | 0,38 / 0,79 | 1,30 | 4024052183517 | 2340-01.000 |
| 15 | Rp1/2 | R1/2 | 29 | 58 | 0,38 / 0,79 | 1,50 | 4024052183616 | 2340-02.000 |




**Double angle**
with male thread G 3/4
Connection to radiator right. Black protection cap.

| DN | d1 | d2 | l3 | l4 | Kv [xp] 1 K / 2 K | Kvs | EAN | Article No |
|---|---|---|---|---|---|---|---|---|
| 15 | G3/4 | R1/2 | 29 | 58 | 0,38 / 0,79 | 1,50 | 4024052184217 | 2342-02.000 |

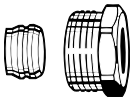
*) SW1: DN 10 = 22 mm, DN 15 = 27 mm, DN 20 = 32 mm, DN 25 = 41 mm, DN 32 = 49 mm
SW2: DN 10 = 27 mm, DN 15 = 30 mm, DN 20 = 37 mm, DN 25 = 47 mm, DN 32 = 52 mm

Values H1 and H2 are at the bearing surface thermostatic head or actuator.

Kvs = $m^3$/h at a pressure drop of 1 bar and fully open valve.
Kv [xp] max. 1 K / 2 K = $m^3$/h at a pressure drop of 1 bar with thermostatic head.

For compression fittings and other accessories, see datasheett “Accessories and spare parts for thermostatic radiator valves”.

## Accessories

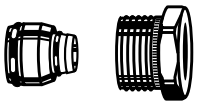


**Compression fitting**
for copper or precision steel pipes.
Female thread connection Rp 3/8 – Rp 3/4.
Metal-to-metal joint.
Nickel-plated brass.
Support sleeves should be used for a pipe wall thickness of 0.8 – 1 mm. Follow the specifications of the pipe manufacturer.

| Ø Pipe | 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 |

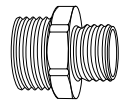

**Support sleeve**
for copper or precision steel pipe with a 1 mm wall thickness.
Brass.

| 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 |



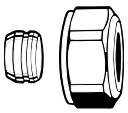
**Compression fitting**
For multi-layer pipes.
Female thread connection Rp 1/2.
Nickel-plated brass.

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



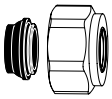
**Double connection fitting**
For clamping plastic, copper, precision steel or multi-layer pipes.
Nickel-plated brass.

| | 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 G 3/4.
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 |
| 15 | 4024052214617 | 3831-15.351 |
| 16 | 4024052214914 | 3831-16.351 |
| 18 | 4024052215218 | 3831-18.351 |

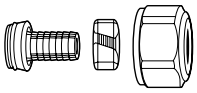


**Compression fitting**
for copper or precision steel pipes.
Male thread connection G 3/4.
Soft sealed.
Nickel-plated brass.

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

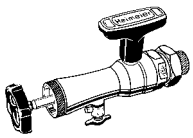
**Compression fitting**
for plastic pipes.
Male thread connection G 3/4.
Nickel-plated brass.

| Ø Pipe | EAN | Article No |
|---|---|---|
| 14x2 | 4024052134618 | 1311-14.351 |
| 16x2 | 4024052134816 | 1311-16.351 |
| 17x2 | 4024052134915 | 1311-17.351 |
| 18x2 | 4024052135110 | 1311-18.351 |
| 20x2 | 4024052135318 | 1311-20.351 |



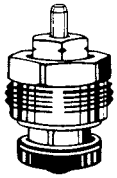
**Compression fitting**
for multi-layer pipes.
Male thread connection G 3/4.
Nickel-plated brass.

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



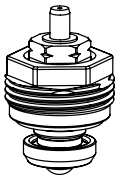
**Fitting tool**
complete with case, box spanner and replacement seals, for replacing thermostatic inserts without draining off the heating system (for DN 10 to DN 20).

| | EAN | Article No |
|---|---|---|
| Fitting tool | 4024052298914 | 9721-00.000 |



**Replacement inserts**
for axial DN 15, angle and straight, straight with bended nipple, straight with flat sealing DN 15.

| For DN valve | EAN | Article No |
|---|---|---|
| **from 1985. Blue stuffing box** | | |
| 10, 15 | 4024052183715 | 2340-02.299 |
| **without colour identification** | | |
| 20 (‘05→), 25 | 4024052159819 | 2001-04.299 |



**Replacement inserts**
for axial DN 10, double angle, straight with flat sealing DN 20.
Black stuffing box, for thermostatic valve bodies **with II-marking**, **from 2012 and II+ -marking, from 2015.**

| For DN valve | EAN | Article No |
|---|---|---|
| 10, 15, 20 | 4024052132614 | 1302-02.300 |

For other accessories, see datasheet “Accessories and spare parts for thermostatic radiator valves”.