

Climate  
Control

IMI Heimeier

For reversed flow direction



## Thermostatic Radiator Valves

With presetting or automatic flow limitation

## For reversed flow direction

The thermostatic valve bodies for reversed flow direction can be used in two-pipe pump heating systems for interchangeable supply and return flow (hammering noises). The valve bodies can be mounted into the return flow connection of radiators in a raised position or tall radiators. This makes the thermostatic head more easily accessible.



### Key features

#### Installation with interchanged supply and return pipe

Prevents hammering noises

#### Eclipse models with automatic flow limitation

For automatic hydronic balancing

#### V-exact II models with precision presetting

For exact hydraulic balancing

#### Valve body in gunmetal

Corrosion-resistant and safe

### Technical description

#### Applications:

Heating and cooling systems.

#### Function:

Control  
Flow limitation (Eclipse)  
Stepless presetting (V-exact II)  
Shut-off  
Prevents hammering noises with interchanged supply and return pipe

#### Dimensions:

DN 10-15

#### Pressure class:

PN 10

#### Temperature:

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

#### Flow range Eclipse:

The flow can be stepless pre-set within the range: 10-150 l/h.  
Delivery setting: Commissioning setting (Max. nominal flow  $q_{mN}$  at 10 kPa respecting EN 215: 115 l/h)

#### Differential pressure ( $\Delta p_V$ ) Eclipse:

Max. differential pressure:  
60 kPa (<30 dB(A))  
Min. differential pressure:  
10 – 100 l/h = 10 kPa  
100 – 150 l/h = 15 kPa

#### Materials:

Valve body: Corrosion resistant Gunmetal  
O-rings: EPDM rubber  
Valve disc: EPDM rubber  
Return spring: Stainless steel  
Valve insert: Brass, PPS and SPS (syndiotactic polystyrene)  
The complete thermostatic insert can be replaced using the fitting tool without draining the system.  
Spindle: Niro-steel spindle with double O-ring sealing. The outer O-ring can be replaced under pressure (V-exact II).

#### Surface treatment:

Valve body and fittings are nickel-plated.

#### Marking:

THE, flow direction arrow, DN and II+ Designation.  
With presetting: White protection cap.  
Eclipse: Orange protection cap.

#### Pipe connection:

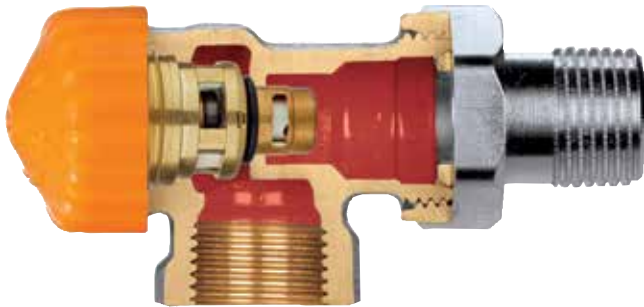
The female-threaded version is designed for connection to threaded pipe, or in conjunction with compression fittings, to copper precision steel or multi-layer pipe (only DN 15).

#### Connection to thermostatic head and actuator:

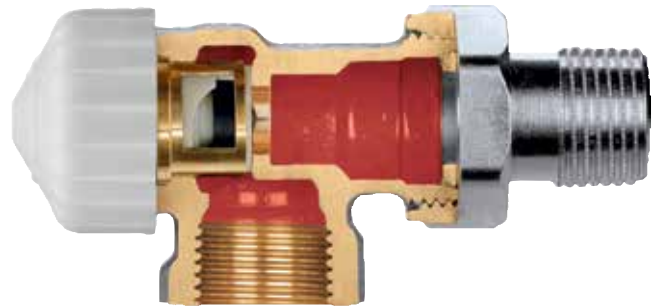
IMI Heimeier M30x1,5

## Construction

**With automatic Eclipse flow limitation**



**With stepless V-exact II precision presetting**



## Application

The thermostatic valve bodies for reversed flow direction can be used in two-pipe pump heating systems for interchangeable supply and return flow (hammering noises).

If any questions arise regarding the increased or reduced output of the radiator in relation to through-flow, ask the radiator manufacturer for information.

The valve bodies can be mounted into the return flow connection of radiators in a raised position or tall radiators. This makes the thermostatic head more easily accessible.

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

The V-exact II model enables hydraulic balancing in order to provide all radiators with the required amount of hot water.

### Eclipse

The required design flow for each radiator is set directly on the Eclipse valve. This automatic flow limitation is done with a twist and the adjusted flow will then not be exceeded. Even if there is an oversupply of pressure, due to load changes in the system, for example other valves closing or during morning start up, Eclipse will guarantee the requested flow.

### 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.

### Noise behaviour Eclipse

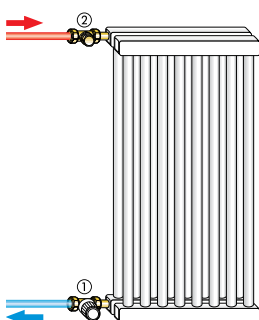
To ensure low-noise performance, the following conditions must be met:

- The differential pressure above Eclipse should not exceed 60 kPa = 600 mbar = 0,6 bar (<30 dB(A)).
- Flow must be correctly adjusted.
- The system must be completely deaerated.

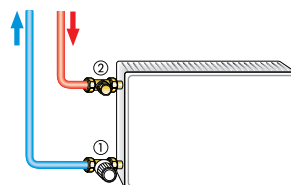
### Sample application

#### Thermostatic valve in the reverse flow connection

Radiator, room high



Radiator, raised position

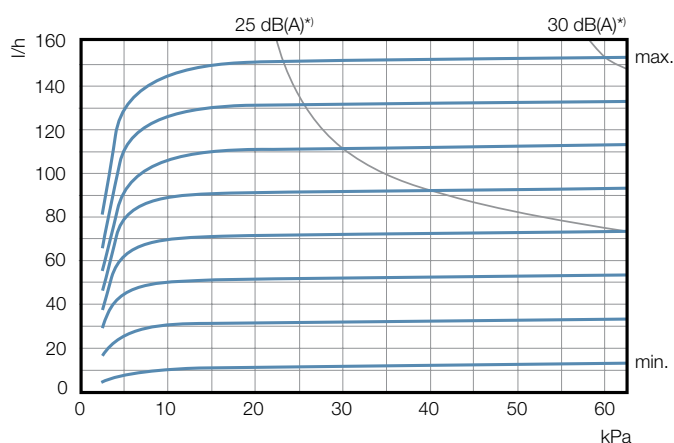


1. Thermostatic valve body for reversed flow direction
2. Regulux/Regutec lockshield

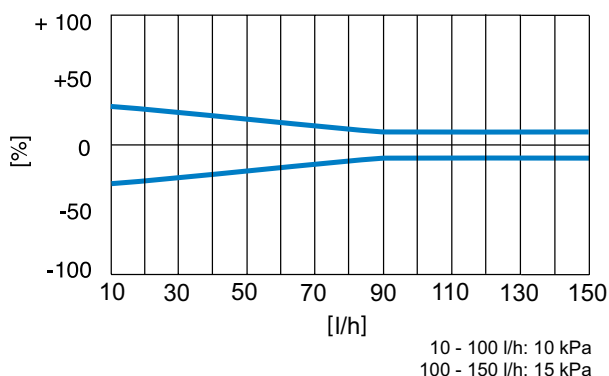
## Notes

- 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 actuators or motorized. 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 – Eclipse with automatic flow limitation



### Lowest flow tolerances



\*) P-band [xp] max. 2 K.

| Setting | 1  | 1  | 1  | 1  | 5  | 1  | 1  | 1  | 1  | 10  | 1   | 1   | 1   | 1   | 15  |
|---------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| l/h     | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 |

P-band [xp] max. 2 K.

P-band [xp] max. 1 K up to 90 l/h.

### Setting values with different radiator performances and system differential temperatures

| Q [W]  | 200 | 250 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 | 2200 | 2400 | 2600 | 2800 | 3000 | 3200 | 3400 | 3600 | 3800 | 4000 | 4800 | 5300 | 6500 | 6800 |  |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|
| Δt [K] |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 10     | 2   | 2   | 3   | 3   | 4   | 5   | 6   | 7   | 8   | 9    | 10   | 12   | 14   | 15   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |
| 15     | 1   | 1   | 2   | 2   | 3   | 3   | 4   | 5   | 5   | 6    | 7    | 8    | 9    | 10   | 12   | 13   | 14   | 15   |      |      |      |      |      |      |      |      |      |      |      |  |
| 20     | 1   | 1   | 1   | 2   | 2   | 3   | 3   | 3   | 4   | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 10   | 11   | 12   | 13   | 14   | 15   |      |      |      |      |      |      |      |  |
| 30     | 1   | 1   | 1   | 1   | 1   | 2   | 2   | 2   | 3   | 3    | 3    | 4    | 5    | 5    | 6    | 6    | 7    | 8    | 8    | 9    | 9    | 10   | 10   | 11   | 12   | 14   | 15   |      |      |  |
| 40     |     | 1   | 1   | 1   | 1   | 1   | 2   | 2   | 2   | 2    | 3    | 3    | 3    | 4    | 4    | 5    | 5    | 6    | 6    | 7    | 7    | 7    | 8    | 8    | 9    | 10   | 11   | 14   | 15   |  |

Δp min. 10 - 100 l/h = 10 kPa

Δp min. 100 - 150 l/h = 15 kPa

Q = Radiator performance

Δt = System differential temperature

Δp = Differential pressure

Sample:

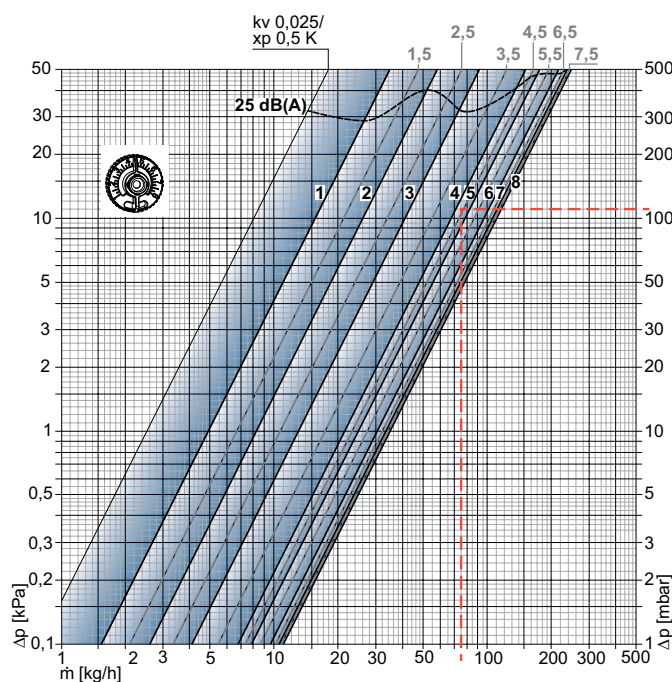
Q = 1000 W, Δt = 15 K

Setting value: 6 (≈ 60 l/h)

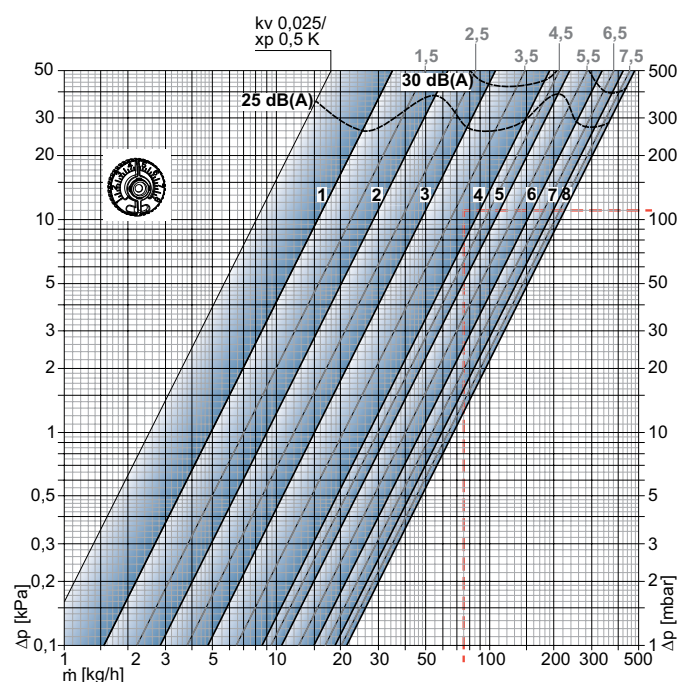
## Technical data – V-exact II with precision presetting

### Diagram, valve body with thermostatic head

P-band [xp] **1.0 K**



P-band [xp] **2.0 K**



### Valve body (DN 10/15) with thermostatic head

|                         |                         | Presetting |       |       |       |       |       |       |       | Permitted differential pressure, during which the valve is kept closed<br>Δp [bar] |                                               |
|-------------------------|-------------------------|------------|-------|-------|-------|-------|-------|-------|-------|------------------------------------------------------------------------------------|-----------------------------------------------|
|                         |                         | 1          | 2     | 3     | 4     | 5     | 6     | 7     | 8     | Th.-head                                                                           | EMO T-TM<br>EMOtec<br>TA-TRI<br>TA-Slider 160 |
| P-band [xp] <b>1.0K</b> | Kv-value                | 0,049      | 0,082 | 0,130 | 0,215 | 0,246 | 0,303 | 0,335 | 0,343 | 1,0                                                                                | 3,5                                           |
| P-band [xp] <b>2.0K</b> | Kv-value                | 0,049      | 0,090 | 0,150 | 0,265 | 0,330 | 0,470 | 0,590 | 0,670 |                                                                                    |                                               |
|                         | Kvs                     | 0,049      | 0,102 | 0,185 | 0,313 | 0,420 | 0,565 | 0,740 | 0,860 |                                                                                    |                                               |
|                         | Flow tolerance<br>± [%] | 20         | 18    | 16    | 14    | 12    | 10    | 10    | 10    |                                                                                    |                                               |

$K_v/K_{vs} = m^3/h$  at a pressure drop of 1 bar.

### Sample calculation

Target:

Setting range

Given:

Heat flow  $Q = 1308 \text{ W}$

Temperature spread  $\Delta t = 15 \text{ K}$  (65/50 °C)

Pressure loss, thermostatic valve  $\Delta p_V = 110 \text{ mbar}$

Solution:

Mass flow  $m = Q / (c \cdot \Delta t) = 1308 / (1,163 \cdot 15) = 75 \text{ kg/h}$

Setting range from Diagram:

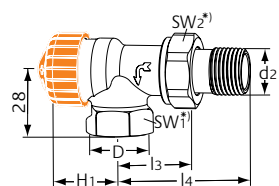
With P-band **max. 1.0 K**: 4,5

With P-band **max. 2.0 K**: 4

$$C_v = \frac{K_v}{0,86}$$

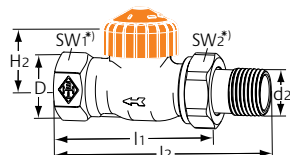
$$K_v = C_v \cdot 0,86$$

## Articles – With Eclipse automatic flow limitation



### Axial

| DN        | D     | d2   | I3 | I4 | H1   | Flow range<br>[l/h] | EAN           | Article No  |
|-----------|-------|------|----|----|------|---------------------|---------------|-------------|
| 10 (3/8") | Rp3/8 | R3/8 | 26 | 52 | 21,5 | 10-150              | 4024052931613 | 9113-01.000 |
| 15 (1/2") | Rp1/2 | R1/2 | 29 | 58 | 21,5 | 10-150              | 4024052931712 | 9113-02.000 |



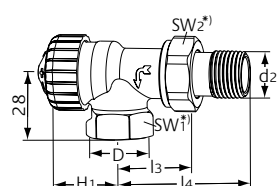
### Straight

| DN        | D     | d2   | I1 | I2 | H2   | Flow range<br>[l/h] | EAN           | Article No  |
|-----------|-------|------|----|----|------|---------------------|---------------|-------------|
| 10 (3/8") | Rp3/8 | R3/8 | 59 | 85 | 21,5 | 10-150              | 4024052931811 | 9114-01.000 |
| 15 (1/2") | Rp1/2 | R1/2 | 66 | 95 | 21,5 | 10-150              | 4024052931910 | 9114-02.000 |

\*) SW1: DN 10 = 22 mm, DN 15 = 27 mm  
SW2: DN 10 = 27 mm, DN 15 = 30 mm

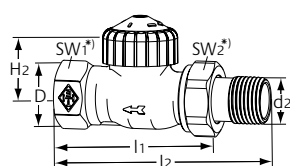
Values H1 and H2 are at the bearing surface thermostatic head or actuator.

## Articles – With V-exact II stepless precision presetting



### Axial

| DN        | D     | d2   | I3 | I4 | H1   | Kv<br>p-band max.<br>2 K | Kvs  | EAN           | Article No  |
|-----------|-------|------|----|----|------|--------------------------|------|---------------|-------------|
| 10 (3/8") | Rp3/8 | R3/8 | 26 | 52 | 21,5 | 0,025 – 0,670            | 0,86 | 4024052899012 | 9103-01.000 |
| 15 (1/2") | Rp1/2 | R1/2 | 29 | 58 | 21,5 | 0,025 – 0,670            | 0,86 | 4024052899111 | 9103-02.000 |



### Straight

| DN        | D     | d2   | I1 | I2 | H2   | Kv<br>p-band max.<br>2 K | Kvs  | EAN           | Article No  |
|-----------|-------|------|----|----|------|--------------------------|------|---------------|-------------|
| 10 (3/8") | Rp3/8 | R3/8 | 59 | 85 | 21,5 | 0,025 – 0,670            | 0,86 | 4024052899210 | 9104-01.000 |
| 15 (1/2") | Rp1/2 | R1/2 | 66 | 95 | 21,5 | 0,025 – 0,670            | 0,86 | 4024052899319 | 9104-02.000 |

\*) SW1: DN 10 = 22 mm, DN 15 = 27 mm  
SW2: DN 10 = 27 mm, DN 15 = 30 mm

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

Kvs = m³/h at a pressure drop of 1 bar and fully open valve.

Kv [xp] max. 1 K / 2 K = m³/h at a pressure drop of 1 bar with thermostatic head.

## Accessories



### Setting key

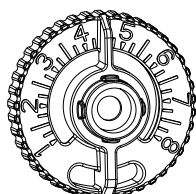
for Eclipse. Color orange.

#### EAN

#### Article No

4024052937714

3930-02.142



### Setting key

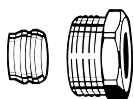
For V-exact II from 2012, Calypso exact, Calypso TRV-3 and Vekolux. Color grey.

#### EAN

#### Article No

4024052035823

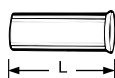
3670-01.142



### Compression fitting

for copper or precision steel pipe according to DIN EN 1057/10305-1/2. 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.

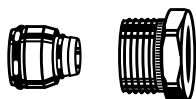
| Ø Pipe | DN        | EAN           | Article No  |
|--------|-----------|---------------|-------------|
| 12     | 10 (3/8") | 4024052174614 | 2201-12.351 |
| 14     | 15 (1/2") | 4024052174713 | 2201-14.351 |
| 15     | 15 (1/2") | 4024052175017 | 2201-15.351 |
| 16     | 15 (1/2") | 4024052175116 | 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.

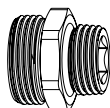
| Ø Pipe | L    | EAN           | Article No  |
|--------|------|---------------|-------------|
| 12     | 25,0 | 4024052127016 | 1300-12.170 |
| 15     | 26,0 | 4024052127917 | 1300-15.170 |
| 16     | 26,3 | 4024052128419 | 1300-16.170 |
| 18     | 26,8 | 4024052128815 | 1300-18.170 |



### Compression fitting

for Alu/PEX multi-layer pipe according to DIN 16836. Internal thread connection Rp1/2. Nickel-plated brass.

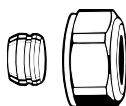
| Ø Pipe | EAN           | Article No  |
|--------|---------------|-------------|
| 16 x 2 | 4024052138616 | 1335-16.351 |



### 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 |

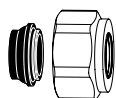


### Compression fitting

for copper or precision steel pipe according to DIN EN 1057/10305-1/2. Connection external thread G3/4 according to DIN EN 16313 (Eurocone). Metal-to-metal joint. Brass nickel-plated. With a pipe wall thickness of 0.8-1 mm insert supporting sleeves. Heed pipe manufacturer's technical advice.

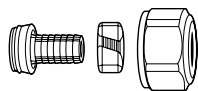
| Ø Pipe | EAN           | Article No  |
|--------|---------------|-------------|
| 12     | 4024052214211 | 3831-12.351 |
| 14     | 4024052214310 | 3831-14.351 |
| 15     | 4024052214617 | 3831-15.351 |
| 16     | 4024052214914 | 3831-16.351 |
| 18     | 4024052215218 | 3831-18.351 |



**Compression fitting**

for copper or precision steel pipe according to DIN EN 1057/10305-1/2 and stainless steel pipe. Connection external thread G3/4 according to DIN EN 16313 (Eurocone). Soft sealed, max. 95°C. Nickel-plated brass.

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

**Compression fitting**

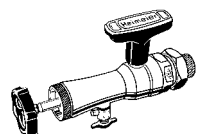
for plastic pipe according to DIN 4726, ISO 10508. PE-X: DIN 16892/16893, EN ISO 15875; PB: DIN 16968/16969. Connection external thread G3/4 according to DIN EN 16313 (Eurocone). Nickel plated brass.

| 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**

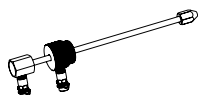
for Alu/PEX multi-layer pipe according to DIN 16836. Connection external thread G3/4 according to DIN EN 16313 (Eurocone). Nickel-plated brass.

| Ø Pipe | EAN           | Article No  |
|--------|---------------|-------------|
| 16x2   | 4024052137312 | 1331-16.351 |
| 18x2   | 4024052137411 | 1331-18.351 |

**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 |

**Measuring spindle for fitting tool**

for differential pressure measurement at thermostatic valve bodies with TA-SCOPE balancing instrument.

|  | EAN           | Article No  |
|--|---------------|-------------|
|  | 4024052942114 | 9790-01.890 |

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