Thermostatic radiator valves

Function:
Oventrop thermostatic radiator valves in combination with Oventrop thermostats are proportional regulators working without auxiliary energy. They regulate the room temperature by varying the volume flow of the heating water.

Oventrop thermostatic radiator valves comply with the requirements of the German Energy Saving Directive and allow for the design of thermostatic radiator valves with a proportional control range of 1 to 2 Kelvin.

Technical data
- Nominal flow rate: (see charts)
- Max. flow of heating water: (see charts)
- Max. differential pressure against which the valve closes:
  3 bar: “AF”
- Valve body material: Bronze, brass, nickel plated
- Differential pressure effect: 0.1 K-0.7 K/0.5 bar
- Fluid: Water or suitable ethylene/propylene glycol water mixtures according to VDI 2035/ÖNORM 5195 (max. glycol proportion 50 %, ph value 6.5-10). Not suitable for steam, oily and aggressive fluids.

KEYMARK - The Oventrop thermostatic radiator valves “A”, “AV 9”, “RF”, “AV 6”, “AF” (angle and straight pattern valves DN 10-DN 20) and “AZ H” (straight pattern valves DN 20 + DN 25) with the thermostats “Uni XH”, “Uni LH”, “Uni SH”, “vindo TH”, “pinox H”, “Uni LGH”, “Uni L” and “Uni LH” with remote sensor as well as the thermostatic radiator valve “VN” with the thermostat “Uni LD” are Keymark tested and certified (reg.-no. 011-6T0002).

Refer to the installation instructions for more details.
Oventrop thermostatic radiator valve “AV 9”
With infinitely adjustable presetting visible from outside to adapt the volume flows to the required heat demand.
Operating temperature \( t_{op} \): 2 °C up to 120 °C (for short periods up to 130 °C)
Max. operating pressure \( p_{op} \): 10 bar
Recommended differential pressure control range: 30 up to 200 mbar
Max. differential pressure: 1 bar
Body made of nickel plated brass, stem made of stainless steel with double stem seal.
Connection thread M 30 x 1.5
Connection for threaded and copper pipes or composition pipe “Copipe”.
Complete valve insert replaceable by using the special tool “Demo-Bloc” without draining the system.

### Angle pattern valve
- DN 10 Angle 1183703
- DN 15 Angle 1183704
- DN 20 Angle 1183706
- DN 25 Angle 1183708

### Straight pattern valve
- DN 10 Straight 1183803
- DN 15 Straight 1183804
- DN 20 Straight 1183806
- DN 25 Straight 1183808

### Reversed angle pattern valve
especially for panel radiators
- DN 10 Reversed angle 1183903
- DN 15 Reversed angle 1183904
- DN 20 Reversed angle 1183906

### Double angle pattern valve
- DN 10 Double angle left 1183470
- DN 10 Double angle right 1183471
- DN 15 Double angle left 1183472
- DN 15 Double angle right 1183473

### Angle pattern valve with press connection
For the direct connection of copper pipes according to DIN EN 1057/DVGW GW 392,
stainless steel pipes according to DIN EN 10088/DVGW GW 541 and thin walled C-steel pipe according to DIN EN 10305-3.
Pressing must be carried out to tighten the connection. Only use press jaws with the original contours SANHA (SA), Geberit-Mapress (MM) or Viega (V) in corresponding size. Processing must be carried out according to the installation instructions.
- DN 15 Ø 15 mm Angle 1183775

### Straight pattern valve with press connection
- DN 15 Ø 15 mm Straight 1183875

Oventrop thermostatic radiator valve “CV 9”
chrome plated
With infinitely adjustable presetting visible from outside to adapt the volume flows to the required heat demand.
Operating temperature \( t_{op} \): 2 °C up to 120 °C (for short periods up to 130 °C)
Max. operating pressure \( p_{op} \): 10 bar
Recommended differential pressure control range: 30 up to 200 mbar
Max. differential pressure: 1 bar
Body made of chrome plated brass, stem made of stainless steel with double stem seal.
Connection thread M 30 x 1.5
Connection for threaded and copper pipes or composition pipe “Copipe”.
Complete valve insert replaceable by using the special tool “Demo-Bloc” without draining the system.

### Angle pattern valve
- DN 15 Angle 1162004

### Straight pattern valve
- DN 15 Straight 1162104

### Reversed angle pattern valve
- DN 15 Double angle left 1162472
- DN 15 Double angle right 1162473

### Double angle pattern valve
- DN 15 Double angle left 1183446
- DN 15 Double angle right 1183447

### Presetting key
for all valves “AV 9”, “ADV 9”, “RFV 9” and “CV 9” 1183962

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2 2018
Oventrop thermostatic radiator valves

### A

- **Operating temperature** $t_s$: 2 °C up to 120 °C (for short periods up to 130 °C)
- **Max. operating pressure** $p_{op}$: 10 bar
- **Recommended differential pressure control range**: 30 up to 200 mbar
- **Max. differential pressure**: 1 bar
- Body made of nickel plated brass, stem made of stainless steel with double stem seal.
- Connection thread M 30 x 1.5
- Complete valve insert replaceable by using the special tool “Demo-Bloc” without draining the system.

#### Angle pattern valve
- DN 10 Angle
- DN 15 Angle
- DN 20 Angle
- DN 25 Angle
- DN 32 Angle

#### Straight pattern valve
- DN 10 Straight
- DN 15 Straight
- DN 20 Straight
- DN 25 Straight
- DN 32 Straight

#### Reversed angle pattern valve
- DN 10 Reversed angle
- DN 15 Reversed angle
- DN 20 Reversed angle

#### Double angle pattern valve
- DN 10 Double angle left
- DN 10 Double angle right
- DN 15 Double angle left
- DN 15 Double angle right

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### RF

- **Reduced dimensions**
- **Operating temperature** $t_s$: 2 °C up to 120 °C (for short periods up to 130 °C)
- **Max. operating pressure** $p_{op}$: 10 bar
- **Recommended differential pressure control range**: 30 up to 200 mbar
- **Max. differential pressure**: 1 bar
- Body made of nickel plated brass, stem made of stainless steel with double stem seal.
- Connection thread M 30 x 1.5
- Complete valve insert replaceable by using the special tool “Demo-Bloc” without draining the system.

#### Straight pattern valve
- DN 10 Straight
- DN 15 Straight
- DN 20 Straight

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### ADV 9

- With infinitely adjustable presetting visible from outside to adapt the volume flows to the required heat demand.
- The double function of this valve provokes and automatic closing of the valve to 5% of the nominal flow (frost protection) should the thermostat be removed or destroyed. Not suitable for use with electric actuators.
- **Operating temperature** $t_s$: 2 °C up to 120 °C (for short periods up to 130 °C)
- **Max. operating pressure** $p_{op}$: 10 bar
- **Recommended differential pressure control range**: 30 up to 200 mbar
- **Max. differential pressure**: 1 bar
- Body made of nickel plated brass, stem made of stainless steel with double stem seal.
- Complete valve insert replaceable by using the special tool “Demo-Bloc” without draining the system.

### Presetting key

- for all valves “AV 9”, “ADV 9”, “RFV 9” and “CV 9”

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### Presetting key

- for all valves “AV 9”, “ADV 9”, “RFV 9” and “CV 9”
Thermostatic radiator valves

Oventrop thermostatic radiator valve “AF”
With concealed infinitely adjustable fine presetting.
Operating temperature $t_p$ $\geq$ 2 °C up to 120 °C (for short periods up to 140 °C)
Max. operating pressure $p_{op}$ 16 bar
Recommended differential pressure control range: 30 up to 200 mbar
Max. differential pressure: 0.8 bar
Flow rates limited to a maximum $P$-deviation of 2 K.
Body made of nickel plated brass, stem made of stainless steel with double stem seal.
Connection thread M 30 x 1.5
Connection for threaded pipes. Not suitable for installation with compression fittings.
Complete valve insert replaceable by using the special tool “Demo-Bloc” without draining the system.

Conversion valve PN 20
for the replacement of manual radiator valves
Prus, Model 120, angle (not suitable for the replacement
of the valve insert “QA”) 1188051
incl. coupling set for valve insert “QA” 1188051

Reinforcing sleeves
For the additional stabilisation of soft pipes with a wall thickness of 1 mm
10 mm 1029561
12 mm 1029562
14 mm 1029563
16 mm 1029564
18 mm 1029565
22 mm 1029567

Oventrop thermostatic radiator valves “AZ H”
Valves with high flow capacities.
Operating temperature $t_p$ 2 °C up to 120 °C (for short periods up to 130 °C)
Max. operating pressure $p_{op}$ 10 bar
Recommended differential pressure control range: 30 up to 200 mbar
Max. differential pressure: 0.8 bar
Body made of nickel plated brass, stem made of stainless steel with double stem seal.
Connection thread M 30 x 1.5
Connection for threaded pipes. Not suitable for installation with compression fittings.
Complete valve insert replaceable by using the special tool “Demo-Bloc” without draining the system.

Fittings for conversion valves

<table>
<thead>
<tr>
<th>Nickel plated brass</th>
<th>Threads</th>
<th>DN 10</th>
<th>DN 15</th>
<th>DN 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>left hand side connection</td>
<td>1181460</td>
<td>1181461</td>
<td>1181462</td>
<td></td>
</tr>
<tr>
<td>right hand side connection</td>
<td>1181461</td>
<td>1181462</td>
<td>1181463</td>
<td></td>
</tr>
</tbody>
</table>

Pipe coupling for valves with connection thread M 30 x 1.5
inl. coupling set for valve insert “QA” 1188051
Cleaning head 1188409
Coupling set for valve insert “HRV” 1188092
Coupling set for valve insert “QA” 1188094
Differential pressure measuring stem 1188093
Coupling set for valve insert “HRV/Combi LR” 1188095
Coupling set for valves with connection thread M 30 x 1.0 1188098
Coupling set for valves with connection thread M 30 x 1.5 (not suitable for the replacement of the valve insert “QA”) 1188091

For the additional stabilisation of soft pipes with a wall thickness of 1 mm
10 mm 1029561
12 mm 1029562
14 mm 1029563
16 mm 1029564
18 mm 1029565
22 mm 1029567

Reinforcing Sleeves
For the additional stabilisation of soft pipes with a wall thickness of 1 mm
10 mm 1029561
12 mm 1029562
14 mm 1029563
16 mm 1029564
18 mm 1029565
22 mm 1029567

Oventrop thermostatic radiator valve insert “Demo-Bloc”
for replacing thermostatic radiator valve inserts without draining the system

Suitable for all thermostatic radiator valves
M 30 x 1.5 (except for “AZ H”)
incl. coupling set for valve insert “QA” 1188051

DIN EN 16313 (cone “Euro”)
The permissible operating temperatures and temperatures depend on the application classes of the respective standards of the plastic piping systems (e.g. PE-X, DIN EN ISO 18375).

Oventrop thermostatic radiator valve “AZ H”
Valves with high flow capacities.
Operating temperature $t_p$ 2 °C up to 120 °C (for short periods up to 130 °C)
Max. operating pressure $p_{op}$ 10 bar
Recommended differential pressure control range: 30 up to 200 mbar
Max. differential pressure: 0.8 bar
Body made of nickel plated brass, stem made of stainless steel with double stem seal.
Connection thread M 30 x 1.5
Connection for threaded pipes. Not suitable for installation with compression fittings.
Complete valve insert replaceable by using the special tool “Demo-Bloc” without draining the system.

Fittings for conversion valves

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<thead>
<tr>
<th>Nickel plated brass</th>
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<td>1181461</td>
<td>1181462</td>
<td>1181463</td>
<td></td>
</tr>
</tbody>
</table>

Pipe coupling for valves with connection thread M 30 x 1.5
inl. coupling set for valve insert “QA” 1188051
Cleaning head 1188409
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Coupling set for valve insert “QA” 1188094
Differential pressure measuring stem 1188093
Coupling set for valve insert “HRV/Combi LR” 1188095
Coupling set for valves with connection thread M 30 x 1.0 1188098
Coupling set for valves with connection thread M 30 x 1.5 (not suitable for the replacement of the valve insert “QA”) 1188091

For the additional stabilisation of soft pipes with a wall thickness of 1 mm
10 mm 1029561
12 mm 1029562
14 mm 1029563
16 mm 1029564
18 mm 1029565
22 mm 1029567

Reinforcing Sleeves
For the additional stabilisation of soft pipes with a wall thickness of 1 mm
10 mm 1029561
12 mm 1029562
14 mm 1029563
16 mm 1029564
18 mm 1029565
22 mm 1029567

Oventrop thermostatic radiator valve insert “Demo-Bloc”
for replacing thermostatic radiator valve inserts without draining the system

Suitable for all thermostatic radiator valves
M 30 x 1.5 (except for “AZ H”)
incl. coupling set for valve insert “QA” 1188051

DIN EN 16313 (cone “Euro”)
The permissible operating temperatures and temperatures depend on the application classes of the respective standards of the plastic piping systems (e.g. PE-X, DIN EN ISO 18375).
Thermostatic radiator valves

Oventrop two pipe connection piece “Duo”
with shut off, for simplified installation of two pipe heating systems
Operating temperature $t_0$: 2°C up to 120°C (for short periods up to 130°C)
Max. operating pressure $p_{op}$: 10 bar
Body made of nickel plated brass.
Connection G ¾ male thread according to DIN EN 16313 (cone “Euro”) for copper pipes, precision steel pipes, plastic pipes and composition pipe “Copipe”.
Distance between pipe centres: 50 mm

$\text{DN 15 G ¾ M} \quad 1013361$

Oventrop two pipe connection piece “Duo” without shut off or with shut off and infinitely adjustable presetting
Connection for copper and plastic pipes.
Distance between pipe centres: 35 mm

without shut off
$\text{DN 15 M 24 x 1.5 M} \quad 1182551$

with shut off and infinitely adjustable presetting
$\text{DN 15 M 24 x 1.5 M} \quad 1182651$

Oventrop one pipe radiator valve “Bypass-Combi Uno”
Operating temperature $t_0$: 2°C up to 120°C (for short periods up to 130°C)
Max. operating pressure $p_{op}$: 10 bar
With upper and lower connection to the radiator consisting of:
Reversed angle pattern or double angle pattern valve, or straight pattern valve with pipe elbow, connecting pipe, one pipe connection piece and set of compression fittings.
With infinite bypass adjustable during operation, for radiator isolation and with isolating fitting between distributor and radiator.
Body made of nickel plated brass.

Reversed angle pattern valve
$\text{DN 15 Reversed angle} \quad 1181404$

Double angle pattern valve
$\text{DN 15 Double angle left} \quad 1181392$

$\text{DN 15 Double angle right} \quad 1181393$

or
Straight pattern valve with pipe elbow
$\text{DN 15 Straight} \quad 1181304$

Connecting pipe
15 x 500 mm 1016951
15 x 1120 mm 1016953
15 x 2000 mm 1016954

Connecting pipe
15 x 500 mm 1016951
15 x 1120 mm 1016953
15 x 2000 mm 1016954

Connecting pipe
15 x 500 mm 1016951
15 x 1120 mm 1016953
15 x 2000 mm 1016954

Example of a complete one pipe radiator valve set see page 1.

Oventrop two pipe radiator valve with insertion tube with shut off
Operating temperature $t_0$: 2°C up to 120°C (for short periods up to 130°C)
Max. operating pressure $p_{op}$: 10 bar
For horizontal or vertical connection to the lower radiator nipple (Rp ½ female thread);
Body nickel plated, with horizontal insertion tube
$\text{DN 15 G ¾ M} \quad 1183561$
with vertical insertion tube
$\text{DN 15 G ¾ M} \quad 1183571$

Oventrop two pipe radiator valve with insertion tube
with shut off
Operating temperature $t_0$: 2°C up to 120°C (for short periods up to 130°C)
Max. operating pressure $p_{op}$: 10 bar
For horizontal or vertical connection to the lower radiator nipple (Rp ½ female thread);
Body nickel plated, with horizontal insertion tube
$\text{DN 15 G ¾ M} \quad 1643561$
with vertical insertion tube (kv 0.90)
$\text{DN 15 G ¾ M} \quad 1183581$

Oventrop one pipe radiator valve for “TKM” system
Operating temperature $t_0$: 2°C up to 120°C (for short periods up to 130°C)
Max. operating pressure $p_{op}$: 10 bar
For vertical connection to the lower radiator nipple (G ¾ collar nut);
Body nickel plated.
$\text{DN 15 G ¾ M} \quad 1183671$

Oventrop two pipe radiator valve for “TKM” system
Operating temperature $t_0$: 2°C up to 120°C (for short periods up to 130°C)
Max. operating pressure $p_{op}$: 10 bar
For vertical connection to the lower radiator nipple (G ¾ collar nut);
Body nickel plated.
$\text{DN 15 G ¾ M} \quad 1183661$
### Plastic Rosette Cover

<table>
<thead>
<tr>
<th>Distance between pipe centres: 50 mm</th>
<th>Perforation</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 mm</td>
<td>1016671</td>
<td></td>
</tr>
<tr>
<td>14 mm</td>
<td>1016672</td>
<td></td>
</tr>
<tr>
<td>15 mm</td>
<td>1016673</td>
<td></td>
</tr>
<tr>
<td>16 mm</td>
<td>1016674</td>
<td></td>
</tr>
<tr>
<td>18 mm</td>
<td>1016675</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distance between pipe centres: 35 mm</th>
<th>Perforation</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-20 mm</td>
<td>1016684</td>
<td></td>
</tr>
</tbody>
</table>

### Thermostatic Radiator Valves

**Sets of Compression Fittings**

- **“Ofix CEP” 2-fold for connecting pipe, metal to metal sealing**
  - Collar nut nickel plated
  - for female threaded connection Rp \( \frac{1}{2} \)
  - Operating temperature \( t_p: \) 2 °C up to 120 °C
  - Max. operating pressure \( p_{op}: \) 10 bar
    - 15 mm 1016853

- **“Ofix CEP” 2-fold for copper pipes according to DIN EN 1057**
  - Collar nut nickel plated
  - for male threaded connection G \( \frac{1}{2} \) according to DIN EN 16313 (cone “Euro”)
  - Operating temperature \( t_p: \) 2 °C up to 120 °C
  - Max. operating pressure \( p_{op}: \) 10 bar
    - 10 mm 1016860
    - 12 mm 1016861
    - 14 mm 1016862
    - 15 mm 1016863
    - 16 mm 1016864
    - 18 mm 1016865

- **“Ofix CEP” 2-fold for copper pipes according to DIN EN 1057, precision steel pipes according to DIN 10305-1/2 and stainless steel pipes**
  - Collar nut nickel plated, with double compression ring function, one-piece pre-assembled, soft sealing, for male threaded connection G \( \frac{1}{2} \) according to DIN EN 16313 (cone “Euro”)
  - Operating temperature \( t_p: \) 2 °C up to 95 °C
  - Max. operating pressure \( p_{op}: \) 10 bar
    - 10 mm 1016840
    - 12 mm 1016841
    - 14 mm 1016842
    - 15 mm 1016843
    - 16 mm 1016844
    - 18 mm 1016845

- **“Ofix K” 2-fold for plastic pipes according to DIN 4726, PE-X according to DIN 16892/16893, PB according to DIN 16998, PP according to DIN 8078 A1**
  - Collar nut nickel plated
  - for male threaded connection G \( \frac{1}{2} \) according to DIN EN 16313 (cone “Euro”)
  - The permissible operating pressure and operating temperatures depend on the application classes of the respective standards of the plastic pipework systems (e.g. PE-X, DIN EN ISO 15875).
    - 12 x 1.1 mm 1016883
    - 12 x 2.0 mm 1016870
    - 14 x 2.0 mm 1016873
    - 15 x 2.5 mm 1016885
    - 16 x 1.5 mm 1016882
    - 16 x 2.0 mm 1016874
    - 17 x 2.0 mm 1016876
    - 18 x 2.0 mm 1016877
    - 20 x 2.0 mm 1016879

- **“Cofit S” 2-fold universal application for composition pipe and, provided similar preparation is used, for plastic pipes (PE-X pipes)**
  - Collar nut nickel plated
  - for male threaded connection G \( \frac{1}{2} \) according to DIN EN 16313 (cone “Euro”)
  - The permissible operating pressure and operating temperatures depend on the application classes of the respective standards of the plastic pipework systems (e.g. PE-X, DIN EN ISO 15875).
    - 14 x 2.0 mm 1507854
    - 16 x 2.0 mm 1507855

- **“Ofix K” 2-fold for plastic pipes according to DIN EN 1057, Collar nut nickel plated**
  - for male threaded connection M 24 x 1.5
  - Operating temperature \( t_p: \) 2 °C up to 120 °C
  - Max. operating pressure \( p_{op}: \) 10 bar
    - 15 mm 1016813

- **“Ofix K” 2-fold for plastic pipes according to DIN 4726, PE-X according to DIN 16892/16893, PB according to DIN 16998, PP according to DIN 8078 A1**
  - Collar nut nickel plated
  - for male threaded connection M 24 x 1.5
  - The permissible operating pressure and operating temperatures depend on the application classes of the respective standards of the plastic pipework systems (e.g. PE-X, DIN EN ISO 15875).
    - 14 x 2.0 mm 1507834
    - 16 x 2.0 mm 1507835
    - 17 x 2.0 mm 1507937
    - 18 x 2.0 mm 1507938
    - 20 x 2.0 mm 1507939
    - 20 x 2.5 mm 1507940

- **“Cofit S” 2-fold universal application for composition pipe and, provided similar preparation is used, for plastic pipes (PE-X pipes)**
  - Collar nut nickel plated
  - for male threaded connection M 24 x 1.5
  - The permissible operating pressure and operating temperatures depend on the application classes of the respective standards of the plastic pipework systems (e.g. PE-X, DIN EN ISO 15875).
    - 14 x 2.0 mm 1507854
    - 16 x 2.0 mm 1507855
### Thermostatic radiator valves

<table>
<thead>
<tr>
<th>Valve inserts:</th>
<th>Stem made of stainless steel with double seal. All valve inserts (except for valve insert for three-way conversion valves) may be combined with all thermostatic radiator valve bodies.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AV 9</strong> Valve insert with infinitely adjustable presetting</td>
<td>suitable for all thermostatic radiator valves/fittings “AV 9”, “RFV 9”, “CV 9”, “E”, and “Multiblock T-RTL” (manufactured since 2016)</td>
</tr>
<tr>
<td><strong>AV 6</strong> Valve insert with presetting</td>
<td>suitable for all thermostatic radiator valves/fittings “AV 6”, “RFV 6”, “E” and “Multiblock T-RTL” (manufactured since 2016)</td>
</tr>
<tr>
<td><strong>A</strong> Valve insert</td>
<td>suitable for all thermostatic radiator valves “A” (manufactured since 2013) and “RF” (manufactured since 2014), DN 20 - DN 32, ( k_v = 1.00-1.10 )</td>
</tr>
<tr>
<td><strong>A</strong> Valve insert</td>
<td>suitable for all thermostatic radiator valves “A” and “RF” (manufactured since 2015), DN 10 - DN 15, ( k_v = 0.95 )</td>
</tr>
<tr>
<td><strong>AF</strong> Valve insert with infinitely adjustable fine presetting</td>
<td>suitable for all thermostatic radiator valves “AF”</td>
</tr>
<tr>
<td><strong>QA</strong> Valve insert with “Q-Tech” and infinitely adjustable presetting</td>
<td>suitable for all thermostatic radiator valves/fittings “QA”, “RFQ”, “EQ”, “Multiblock TQ/TQ-RTL” and “Unibox TQ/Q plus”</td>
</tr>
<tr>
<td><strong>ADV 9</strong> Valve insert with double function and infinitely adjustable presetting</td>
<td>suitable for all thermostatic radiator valves “ADV 9”</td>
</tr>
<tr>
<td><strong>ADV 6</strong> Valve insert with double function and presetting</td>
<td>suitable for all thermostatic radiator valves “ADV 6”</td>
</tr>
<tr>
<td><strong>PTB</strong> Valve insert</td>
<td>with linear flow characteristic line ( k_v = 0.45 ) (P1)</td>
</tr>
<tr>
<td><strong>PTB</strong> Valve insert</td>
<td>with linear flow characteristic line ( k_v = 0.80 ) (P2)</td>
</tr>
<tr>
<td>Valve insert with stainless steel seat</td>
<td>for conversion of the thermostatic radiator valves “A” and “RF”, especially suitable for steam installations</td>
</tr>
<tr>
<td>Valve insert with presetting</td>
<td>suitable for all three-way conversion valves</td>
</tr>
</tbody>
</table>

**Gland nut**

Thermostatic radiator valves

Dimensions of S-connection fitting

Horizontal insertion tube

Lateral insertion tube

Dimensions of radiator valves with insertion tube (one/two pipe)

Dimensions of valve for “TKM” system (one/two pipe)

Dimensions “Bypass-Combi Uno/Duo”
Thermostatic radiator valves

Thermostatic radiator valves “A”, “AV 9”, “ADV 9”, “CV 9”, “AF” and “AQ”

Dimensions of angle pattern valve

Dimensions of straight pattern valve

Dimensions of reversed angle pattern valve DN 10 and DN 15

Dimensions of reversed angle pattern valve DN 20

Dimensions of double angle pattern valve, illust.: right hand side connection

The dimensions of the valves for the return pipe are identical with those for the supply pipe

<table>
<thead>
<tr>
<th>DN</th>
<th>D1</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>L4</th>
<th>L5</th>
<th>L6</th>
<th>L7</th>
<th>L8</th>
<th>L9</th>
<th>L10</th>
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<th>H3</th>
<th>H4</th>
<th>H5</th>
<th>H6</th>
<th>H7</th>
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<tbody>
<tr>
<td>10</td>
<td>R ⅛</td>
<td>Rp ⅛</td>
<td>52</td>
<td>22</td>
<td>52</td>
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<td>31</td>
<td>41.5</td>
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<td>15</td>
<td>R ⅜</td>
<td>Rp ⅜</td>
<td>58</td>
<td>27</td>
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<td>95</td>
<td>34</td>
<td>54</td>
<td>83</td>
<td>-</td>
<td>56</td>
<td>23</td>
<td>53</td>
<td>31</td>
<td>40</td>
<td>30</td>
<td>-</td>
<td>50</td>
</tr>
<tr>
<td>20</td>
<td>R ⅝</td>
<td>Rp ⅝</td>
<td>66</td>
<td>29</td>
<td>63</td>
<td>106</td>
<td>-</td>
<td>63</td>
<td>98</td>
<td>69</td>
<td>63</td>
<td>26</td>
<td>53</td>
<td>29</td>
<td>37</td>
<td>-</td>
<td>39</td>
<td>50</td>
</tr>
<tr>
<td>25</td>
<td>R 1</td>
<td>Rp 1</td>
<td>75</td>
<td>34</td>
<td>80</td>
<td>125</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>80</td>
<td>-</td>
<td>-</td>
<td>61</td>
<td>30</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>39</td>
</tr>
<tr>
<td>32</td>
<td>R 1 ¼</td>
<td>Rp 1 ¼</td>
<td>86</td>
<td>39</td>
<td>90</td>
<td>150</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>68.5</td>
<td>33.5</td>
<td>-</td>
<td>-</td>
</tr>
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</table>

2018 9
Thermostatic radiator valves

Models

Thermostatic radiator valves “AV 9”, “RFV 9” and “CV 9”

Model with infinitely adjustable presetting; for central heating system with normal temperature difference.

The valves “AV 9”, “RFV 9” and “CV 9” are fitted with a valve insert with infinitely adjustable presetting and allow for a problem-free adaptation of the volume flows.

Thermostatic radiator valves “A” and “RF”

Model for all one and two pipe heating systems.

Adaptation of the volume flows is carried out via the presettable radiator lockshield valve (e.g. "Combi 4").

Thermostatic radiator valve “ADV 9”

Model with infinitely adjustable presetting and double function.

The double function provokes an automatic closing of the valve to 5% of the nominal flow (frost protection) should the thermostat be removed or destroyed.

Thermostatic radiator valves “AF”

Model with infinitely adjustable fine presetting; for central heating systems with high temperature difference and low flow rates.

"Bypass-Combi"

One pipe radiator valve “Bypass-Combi Uno”

Installation set for a problem-free installation of one pipe heating systems.

Radiator valves with insertion tube

Radiator valves with insertion tube for one pipe heating systems
**Thermostatic radiator valves**

**k_ν and Zeta values**

**Thermostatic radiator valves “AV 9”, “RFV 9” and “CV 9” (with infinitely adjustable presetting)**

<table>
<thead>
<tr>
<th>Size</th>
<th>kv at P-deviation (presetting 9)</th>
<th>Zeta at P-deviation (presetting 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 K</td>
<td>1.5 K</td>
</tr>
<tr>
<td>Angle pattern valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN 10</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 15</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 20</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 25</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>Straight pattern valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN 10</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 15</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 20</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 25</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>Reversed angle pattern valve, double angle pattern valve sizes DN 10 and DN 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN 10</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 15</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 20</td>
<td>0.36</td>
<td>0.52</td>
</tr>
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</table>

**Thermostatic radiator valves “ADV 9”, “RFV 9” and “CV 9” (with infinitely adjustable presetting)**

<table>
<thead>
<tr>
<th>Size</th>
<th>kv at P-deviation (presetting 9)</th>
<th>Zeta at P-deviation (presetting 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 K</td>
<td>1.5 K</td>
</tr>
<tr>
<td>Angle pattern valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN 10</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 15</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 20</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 25</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>Straight pattern valve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN 10</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 15</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 20</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 25</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>Reversed angle pattern valve, double angle pattern valve sizes DN 10 and DN 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DN 10</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 15</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 20</td>
<td>0.36</td>
<td>0.52</td>
</tr>
</tbody>
</table>

**Thermostatic radiator valves “ADV 9” (with double function and infinitely adjustable presetting)**

<table>
<thead>
<tr>
<th>Size</th>
<th>kv at P-deviation (presetting 9)</th>
<th>Zeta at P-deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 K</td>
<td>1.5 K</td>
</tr>
<tr>
<td>DN 10</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 15</td>
<td>0.36</td>
<td>0.52</td>
</tr>
<tr>
<td>DN 20</td>
<td>0.36</td>
<td>0.52</td>
</tr>
</tbody>
</table>

**Thermostatic radiator valve “AF” (with infinitely adjustable fine presetting)**

<table>
<thead>
<tr>
<th>Size</th>
<th>kv at P-deviation (presetting 6)</th>
<th>Zeta at P-deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 K</td>
<td>1.5 K</td>
</tr>
<tr>
<td>DN 10</td>
<td>0.20</td>
<td>0.29</td>
</tr>
<tr>
<td>DN 15</td>
<td>0.20</td>
<td>0.29</td>
</tr>
<tr>
<td>DN 20</td>
<td>0.20</td>
<td>0.29</td>
</tr>
</tbody>
</table>

Zeta values related to the inner pipe diameter according to DIN EN 10255 (DN 10 = 12.6 mm, DN 15 = 16.1 mm, DN 20 = 21.7 mm, DN 25 = 27.3 mm, DN 32 = 36.0 mm)
Thermostatic radiator valves

Chart 1
Oventrop thermostatic radiator valves “A” and “RF”, DN 10 and DN 15
All patterns at 1 bis 2 K P-deviation and $k_{V5}$
Oventrop thermostatic radiator valves "A", DN 20-DN 32 and "RF", DN 20
All patterns at 1 to 2 K P-deviation and kvs
All patterns at 1 K P-deviation

Oventrop thermostatic radiator valves “A” and “RF”, DN 10 and DN 15
and radiator lockshield valves “Combi 4”, “Combi C”, “Combi 3” or “Combi 2”

<table>
<thead>
<tr>
<th>Presetting (turns)</th>
<th>¼</th>
<th>½</th>
<th>¾</th>
<th>1</th>
<th>1½</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>$k_v$ value at 1 K P-deviation</td>
<td>0.060</td>
<td>0.122</td>
<td>0.178</td>
<td>0.224</td>
<td>0.320</td>
<td>0.430</td>
<td>0.460</td>
<td>0.480</td>
</tr>
<tr>
<td>$k_v$ value at 1.5 K P-deviation</td>
<td>0.060</td>
<td>0.124</td>
<td>0.184</td>
<td>0.237</td>
<td>0.360</td>
<td>0.540</td>
<td>0.630</td>
<td>0.670</td>
</tr>
<tr>
<td>$k_v$ value at 2 K P-deviation</td>
<td>0.060</td>
<td>0.125</td>
<td>0.186</td>
<td>0.242</td>
<td>0.380</td>
<td>0.620</td>
<td>0.750</td>
<td>0.830</td>
</tr>
</tbody>
</table>

Performance data for all patterns
Oventrop thermostatic radiator valves “A” and “RF”, DN 20 - DN 32 and radiator lockshield valves “Combi 4”, “Combi C”, “Combi 3” or “Combi 2”

<table>
<thead>
<tr>
<th>Presetting (turns)</th>
<th>¼</th>
<th>½</th>
<th>¾</th>
<th>1</th>
<th>1½</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>$k_v$ value at 1 K P-deviation</td>
<td>0.060</td>
<td>0.123</td>
<td>0.180</td>
<td>0.228</td>
<td>0.330</td>
<td>0.460</td>
<td>0.500</td>
<td>0.520</td>
</tr>
<tr>
<td>$k_v$ value at 1.5 K P-deviation</td>
<td>0.060</td>
<td>0.125</td>
<td>0.185</td>
<td>0.239</td>
<td>0.370</td>
<td>0.580</td>
<td>0.680</td>
<td>0.740</td>
</tr>
<tr>
<td>$k_v$ value at 2 K P-deviation</td>
<td>0.060</td>
<td>0.125</td>
<td>0.187</td>
<td>0.244</td>
<td>0.390</td>
<td>0.660</td>
<td>0.820</td>
<td>0.920</td>
</tr>
</tbody>
</table>

Performance data for all patterns
All patterns and sizes at 1 K P-deviation

All patterns and sizes at 2 K P-deviation

Chart 5

Oventrop thermostatic radiator valves “AV 9” with infinitely adjustable presetting

<table>
<thead>
<tr>
<th>Presetting</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>$k_v$ value at 1 K P-deviation</td>
<td>0.05</td>
<td>0.09</td>
<td>0.13</td>
<td>0.17</td>
<td>0.21</td>
<td>0.25</td>
<td>0.29</td>
<td>0.33</td>
<td>0.36</td>
</tr>
<tr>
<td>$k_v$ value at 1.5 K P-deviation</td>
<td>0.05</td>
<td>0.09</td>
<td>0.14</td>
<td>0.19</td>
<td>0.24</td>
<td>0.29</td>
<td>0.38</td>
<td>0.47</td>
<td>0.52</td>
</tr>
<tr>
<td>$k_v$ value at 2 K P-deviation</td>
<td>0.05</td>
<td>0.09</td>
<td>0.14</td>
<td>0.20</td>
<td>0.26</td>
<td>0.32</td>
<td>0.43</td>
<td>0.57</td>
<td>0.67</td>
</tr>
</tbody>
</table>

Performance data for all patterns and sizes

Flow tolerances depending on the presetting:
According to DIN EN 215 at 2 K P-deviation
Oventrop thermostatic radiator valves “AF” with infinitely adjustable fine presetting

Flow tolerances depending on the presetting:
According to DIN EN 215 at 2 K P-deviation

<table>
<thead>
<tr>
<th>Presetting</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>$k_v$ value at 1 K P-deviation</td>
<td>0.025</td>
<td>0.051</td>
<td>0.088</td>
<td>0.131</td>
<td>0.16</td>
<td>0.20</td>
</tr>
<tr>
<td>$k_v$ value at 1.5 K P-deviation</td>
<td>0.025</td>
<td>0.051</td>
<td>0.095</td>
<td>0.152</td>
<td>0.20</td>
<td>0.29</td>
</tr>
<tr>
<td>$k_v$ value at 2 K P-deviation</td>
<td>0.025</td>
<td>0.051</td>
<td>0.095</td>
<td>0.152</td>
<td>0.228</td>
<td>0.323</td>
</tr>
</tbody>
</table>

Performance data for all patterns and sizes
Thermostatic radiator valves

Chart 7

Oventrop thermostatic radiator valves “AZ H”
Thermostatic radiator valves

Chart 8

Design ranges Oventrop thermostatic radiator valves “A”, “AV 9”, “CV 9”, “RF”, “ADV 9”, “RFV 9” and “AF”

Example: $q_m = 120 \text{ kg/h}$, $\Delta p = 30 \text{ mbar}$. $k_v = 0.7$ (read off flow chart).

Valves “A” and “RF” can be used. Choice of valves see charts 1-6.

Radiator valve design:

Oventrop thermostatic radiator valves permit “room-by-room” adaptation of the heat output by using

- thermostatic radiator valve with infinitely adjustable presetting (“AV 9”, “CV 9”, “RFV 9”, “ADV 9” with infinitely adjustable presetting and “AF” with infinitely adjustable fine presetting)
- thermostatic radiator valves without presetting (“A” and “RF”) combined with presettable radiator lockshield valves “Combi 4”, “Combi C”, “Combi 3” and “Combi 2”.

Official approvals:

Oventrop thermostatic radiator valves comply with:

- the EN 215 standard (KEYMARK tested and certified, reg.-no. 011-6T0002)
- BS 7556 standard

In addition, the Oventrop thermostatic radiator valves “AF” comply with:

- the directives of the Association for District Heating (AGFW, work sheet FW 507).
- the conditions of the company ESSO AG (TA list).

The Oventrop thermostatic radiator valves fulfil the demands of the German Energy Saving Directive (EnEV). They are “automatic devices for individual room temperature control” (EnEV §14).
Thermostatic radiator valves

Valve design of “Bypass-Combi Uno” with a distance of 50 mm between the pipe centres

Before leaving the factory, the distributor is adjusted to a radiator flow share of 35% at 2 K P-deviation (valves “A”). This setting can be restored at any time by first turning the setting screw clockwise until stop and then turning it back anticlockwise by 3.25 turns.

The infinitely presettable bypass provides the optimum design of the heating system. There is a reciprocal relationship between the following three values:
- Radiator share
- Radiator heat output
- Pressure loss

By fixing any of these three values, the other two are determined. To achieve optimum matching of radiator output and pressure loss (pump output), preference can often be given to establishing the lowest possible Δp pressure loss (low pump running costs).

Valve design of one pipe connection piece “Uno” with a distance of 35 mm between the pipe centres

The distributor is preset at works to a radiator flow share of 50% at 2 K P-deviation (valves “A”).

Valve design of radiator valves with insertion tube

The valves have a fixed radiator flow share of 35% at 2 K P-deviation. $k_v$ value: 1.8

Even with the valves being closed, radiators in one pipe heating systems can become slightly warm due to the heat flow through the bypass.

Valve design of valve for “TKM “ system (one pipe)

The valve is preset at works to a radiator flow share of 50% at 2 K P-deviation. $k_v$ value: 1.5

Resistances in equivalent pipe lengths (meter)

For valve with insertion tube: Radiator share 35 %

<table>
<thead>
<tr>
<th>Radiator share</th>
<th>$k_v$</th>
<th>Pipe length [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>2.05</td>
<td>12 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18 x 1</td>
</tr>
<tr>
<td>35%</td>
<td>2.05</td>
<td>12 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18 x 1</td>
</tr>
<tr>
<td>30%</td>
<td>1.72</td>
<td>12 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14 x 1</td>
</tr>
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<td></td>
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<td>16 x 1</td>
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<td>18 x 1</td>
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<tr>
<td>25%</td>
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<td>3.0 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.5 x 1</td>
</tr>
<tr>
<td>20%</td>
<td>1.55</td>
<td>1.5 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.0 x 1</td>
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<td></td>
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<td>3.0 x 1</td>
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<td></td>
<td></td>
<td>3.5 x 1</td>
</tr>
</tbody>
</table>

Copper pipe

<table>
<thead>
<tr>
<th>Radiator share</th>
<th>$k_v$</th>
<th>Pipe length [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>40%</td>
<td>2.05</td>
<td>12 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14 x 1</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>16 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18 x 1</td>
</tr>
<tr>
<td>35%</td>
<td>1.88</td>
<td>1.2 x 1</td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
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<td>2.4 x 1</td>
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<td>30%</td>
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<td>1.7 x 1</td>
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<td>2.3 x 1</td>
</tr>
<tr>
<td></td>
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<td>2.6 x 1</td>
</tr>
<tr>
<td>25%</td>
<td>1.63</td>
<td>1.5 x 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.8 x 1</td>
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<tr>
<td></td>
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<td>2.1 x 1</td>
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<td>20%</td>
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<td>1.6 x 1</td>
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<td>1.9 x 1</td>
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<td>2.5 x 1</td>
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<td></td>
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<td>2.8 x 1</td>
</tr>
</tbody>
</table>

Soft steel pipe

* Factory setting “Bypass-Combi Uno”/ Fixed setting of valves with insertion tube
Thermostatic radiator valves

With fixed bypass without shut off

With infinitely adjustable bypass and shut off

Chart 10
One pipe connection piece “Uno” (distance between pipe centres 35 mm) and thermostatic radiator valve “A”, DN 15

<table>
<thead>
<tr>
<th>P-deviation</th>
<th>1 K</th>
<th>1.5 K</th>
<th>2 K</th>
</tr>
</thead>
<tbody>
<tr>
<td>$k_v$ value</td>
<td>1.5</td>
<td>1.64</td>
<td>1.71</td>
</tr>
<tr>
<td>Radiator share</td>
<td>25%</td>
<td>35%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Performance data

<table>
<thead>
<tr>
<th>Number of turns of setting screw</th>
<th>2</th>
<th>2.25</th>
<th>2.5</th>
<th>3</th>
<th>4*</th>
</tr>
</thead>
<tbody>
<tr>
<td>$k_v$ value</td>
<td>1.32</td>
<td>1.42</td>
<td>1.53</td>
<td>1.64</td>
<td>1.71</td>
</tr>
<tr>
<td>Radiator share</td>
<td>30%</td>
<td>35%</td>
<td>40%</td>
<td>45%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Performance data

* Factory setting one pipe connection piece “Uno”
Two pipe connection piece “Duo” (distance between pipe centres 35 mm) and thermostatic radiator valve “A”, DN 15

<table>
<thead>
<tr>
<th>P-deviation</th>
<th>1 K</th>
<th>1.5 K</th>
<th>2 K</th>
</tr>
</thead>
<tbody>
<tr>
<td>$k_v$ value</td>
<td>0.4</td>
<td>0.55</td>
<td>0.7</td>
</tr>
</tbody>
</table>
Chart 12
“Bypass-Combi Duo”
Two pipe connection piece “Duo” with shut off (distance between pipe centres 50 mm)
Note: Pressure loss chart for composition pipe “Copipe” see technical information “Combi-System”

Note:
The protection cap is provided with 7 graduations. The change from one graduation to another corresponds to an alteration of the flow rate of 1 K P-deviation at the valve.

The protection cap may not be used for a permanent closure of the valve, e.g. while radiator is removed. A metal cap has to be fitted to the connection nipple at the outlet port of the valve.