

## V2100PI

### Kombi-TRV

Pressure Independent Thermostatic Radiator Valve

#### APPLICATION

Kombi-TRV is a pressure independent thermostatic radiator valve, designed to be fitted on the supply of radiators in two-pipe heating systems with medium flow rates.

The combination of a presettable thermostatic radiator valve and a differential pressure control valve in one product enable a significant increase of the two-pipe heating systems efficiency.

Standard dimensions according to EN215 make Kombi-TRV a perfect and simple solution for new buildings, renovation and retrofit projects.

#### APPROVALS

- EN 215
- Keymark

#### SPECIAL FEATURES

- Flow rate easily adjustable by standard wrench size 7 or a special setting key (see "Accessories")
- Integrated differential pressure controller
- Standard dimensions according to EN215
- Kombi-TRV valves are compatible with
  - Honeywell radiator thermostats with M30 x 1.5 connection
  - Honeywell MT4 actuators
  - Honeywell M5410 2-point actuators
  - Honeywell HR types of Home and Roomtronic actuators
  - Honeywell M4410E/K and M7410E5001 modulating actuators
- The valve insert can be replaced while the system is operating and without draining using the service tool (see 'Accessories')
- Valve housing and insert does not fit to Honeywell AT-Concept design

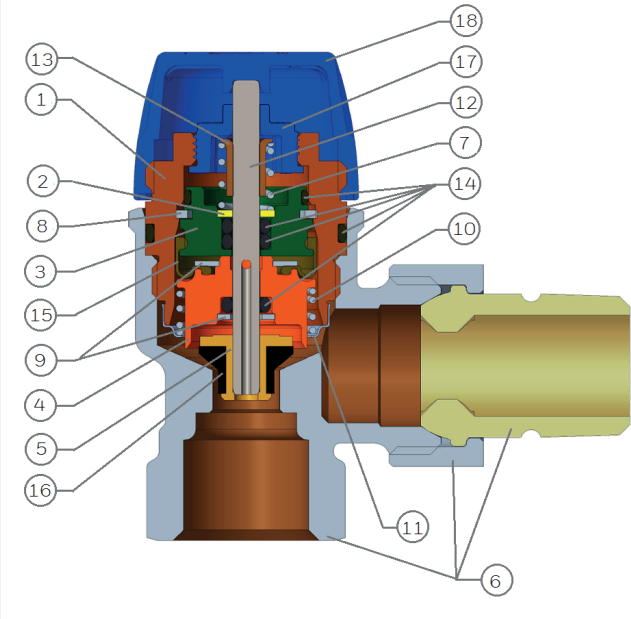
#### TECHNICAL DATA

Media	
Standard medium:	Water or water-glycol mixture, quality to VDI 2035
pH-value:	8 - 9.5
Connections/Sizes	
Body-head connection:	M30 x 1.5
Sizes:	DN10, DN15, DN20
Operating temperatures	
Max. operating temperature medium:	90 °C (194 °F)



Operating temperatures	
Min. operating temperature medium:	2 °C (35.6 °F)
Pressure values	
Max. operating pressure:	PN10, 10 bar (1000kPa)
Max. differential pressure:	0.6 bar (60 kPa)
Min. differential pressure:	0.1 bar (10 kPa)
Flow rates	
Flow range:	10 - 160 l/h
Presetting accuracy:	± 15 %
Max. nominal flow at 10 kPa (EN 215):	110 l/h
Specifications	
Closing dimension:	11.5 mm
Factory setting:	position 6
Identification	
- Blue protection cap with embossed 'PI' on the top	
- Blue plastic dial on the top of valve insert	

## CONSTRUCTION

Overview	Components	Materials
	<b>1</b> Insert body	Brass
	<b>2</b> Washer	
	<b>3</b> Holder	
	<b>4</b> Pressure regulation bell	
	<b>5</b> Plunger	
	<b>6</b> Valve body, tailpiece, nut	
	<b>7</b> Return spring	Stainless steel
	<b>8</b> Retaining ring	
	<b>9</b> Washer	
	<b>10</b> Pressure regulation spring	
	<b>11</b> Spring holder	
	<b>12</b> Spindle	
	<b>13</b> Spindle holder	Cu
	<b>14</b> O-rings	EPDM
	<b>15</b> Regulator membrane	
	<b>16</b> Plunger seal	
	<b>17</b> Setting dial	PBT
	<b>18</b> Protection cap	PP

### METHOD OF OPERATION

Kombi-TRV is controlled by the radiator thermostat. Air from the room passing over the sensor of the radiator thermostat causes the sensor to expand when the temperature rises.

The sensor push the valve spindle and closing the valve.

When the temperature falls the sensor contracts and the spring-loaded valve spindle is opened.

The TRV opens in proportion to the temperature of the sensor. Only the amount of water required to maintain the room temperature set on the radiator thermostat can flow into the radiator.

Kombi-TRV has also an in-built flow limiter, allowing easy presetting of the maximum design flow through the radiator according to system requirements.

The defined flow can be set directly by turning the blue dial on the top of the valve to a particular number.

Kombi-TRV has also in-built pressure regulator, keeping the differential pressure at a constant level and therefore maintaining the set design flow constant.

As Kombi-TRV maintains the set flow rate stable independently from differential pressure, only the heating capacity and the resulting maximum flow rate have to be defined.

Consequently, complex calculations to determine the valve settings can be avoided.

### TRANSPORTATION AND STORAGE

Keep parts in their original packaging and unpack them shortly before use.

The following parameters apply during transportation and storage:

Parameter	Value
Environment:	clean, dry and dust free
Min. ambient temperature:	0 °C
Max. ambient temperature:	40 °C
Max. ambient relative humidity:	75 % *

\*non condensing

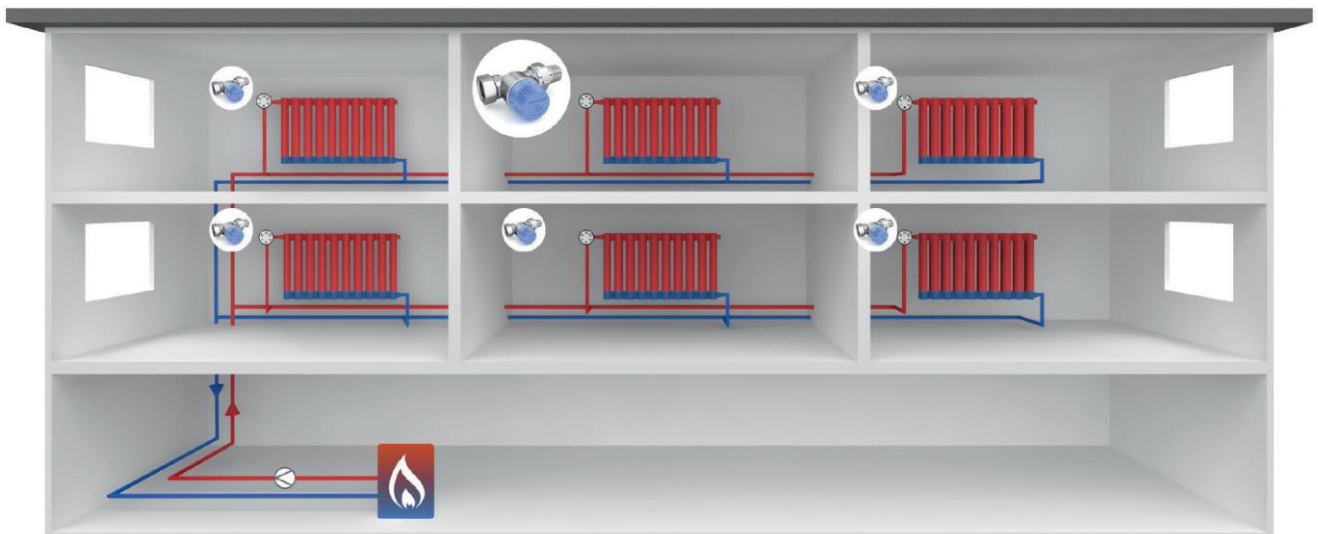
### INSTALLATION GUIDELINES

#### Kombi-TRV suitable:

- Especially for thermostatic control of radiators with design flow up to 110 l/h
- In particular for two-pipe heating systems
- In particular for smaller and medium-size heating circuits
- In energy-efficient renovations of smaller systems where detailed calculation is not required
- For systems where the differential pressure across the Kombi-TRV will be between 10 kPa and 60 kPa

**Kombi-TRV cannot be used in:**

- Thermostatic radiator valve applications requiring higher nominal flows than 110 l/h
- Applications with on/off or modulating control requiring flows exceeding 160 l/h
- Applications where differential pressure across the Kombi-TRV could exceed 60 kPa, for example in direct connection to central heating plant with high pump head or where water hammer could occur due to fast closing actuators. With fast closing actuators, the recommended max. differential pressure in the system is 45 kPa.
- Flow direction reverse to the arrow on the body

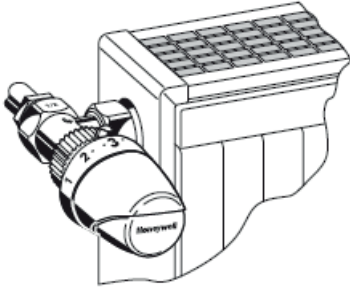
**Two-pipe radiator systems****Setup requirements**

- To avoid stone deposit and corrosion the composition of the medium should conform with VDI-Guideline 2035
- All additives and lubricants used for heating medium treatment have to be suitable for EPDM seals to avoid their disintegration. Use of mineral oils should be avoided
- For industrial and long-distance energy systems please refer to applicable codes VdTÜV and 1466/AGFW FW 510
- Heavy polluted existing heating systems must be flushed thoroughly before replacing thermostatic valves
- The heating system must be fully deaerated
- The blue protection cap must not be used as manual shut off device. A special manual handwheel cap should be used (see accessories)
- Any complaints or costs resulting from non-compliance with above rules will not be accepted by Honeywell

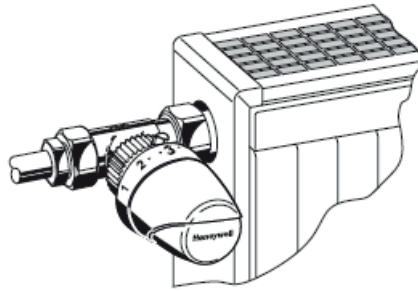
**Recommended actuators**

- Kombi-TRV flow characteristics are designed for control by thermostatic heads, which provide for proportional regulation within the 2K p-band stroke (0.45 mm). Kombi-TRV is therefore best controlled by a mechanical or electronic thermostatic head
- All Honeywell thermostatic radiator heads with M30x1.5 connection fit the Kombi-TRV
- Honeywell HR90, HR91 and HR92 electronic controllers are suitable for the Kombi-TRV
- Honeywell MT4 thermoelectric actuators, and M5410 2-point actuators can be used for on/off control of the Kombi-TRV
- Thermostatic radiator valves are intentionally designed such that the max. flow rate exceeds the nominal flow rate at 2K p-band stroke (0.45mm) by only about 40%. Thus, modulating actuators can effectively provide for proportional flow control only over a limited stroke range, because at higher strokes, the flow is limited by the presetting
- Honeywell M4410E/K and M7410E5001 modulating actuators are recommended for the Kombi-TRV

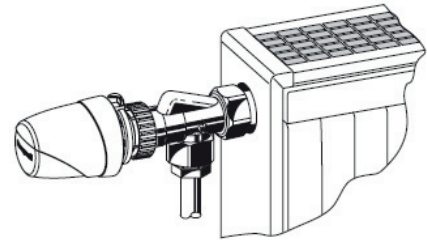
**Installation Example**



Angle



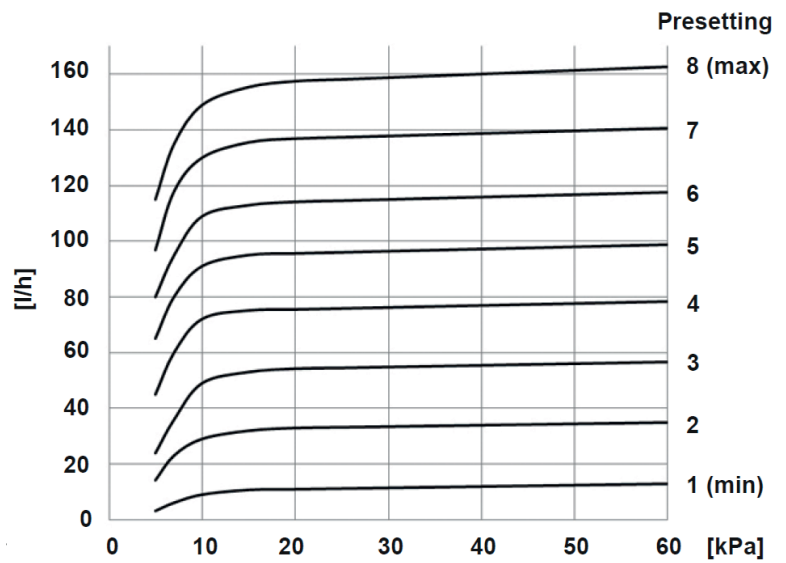
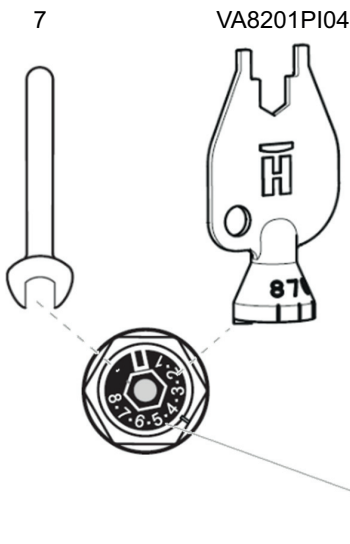
Straight



Horizontal angle

**TECHNICAL CHARACTERISTICS**

**Flow chart and settings**



n	1	*	2	*	3	*	4	*	5	*	6	*	7	*	8
Q (l/h), 1 K, 10 kPa	10	20	30	40	50	60	60	60	60	60	60	60	60	60	60
Q (l/h), 2 K, 10 kPa	10	20	30	40	50	65	75	85	95	105	110	110	110	110	110
Q <sub>max</sub> (l/h)	10	20	30	40	50	65	75	85	95	105	115	125	140	150	160

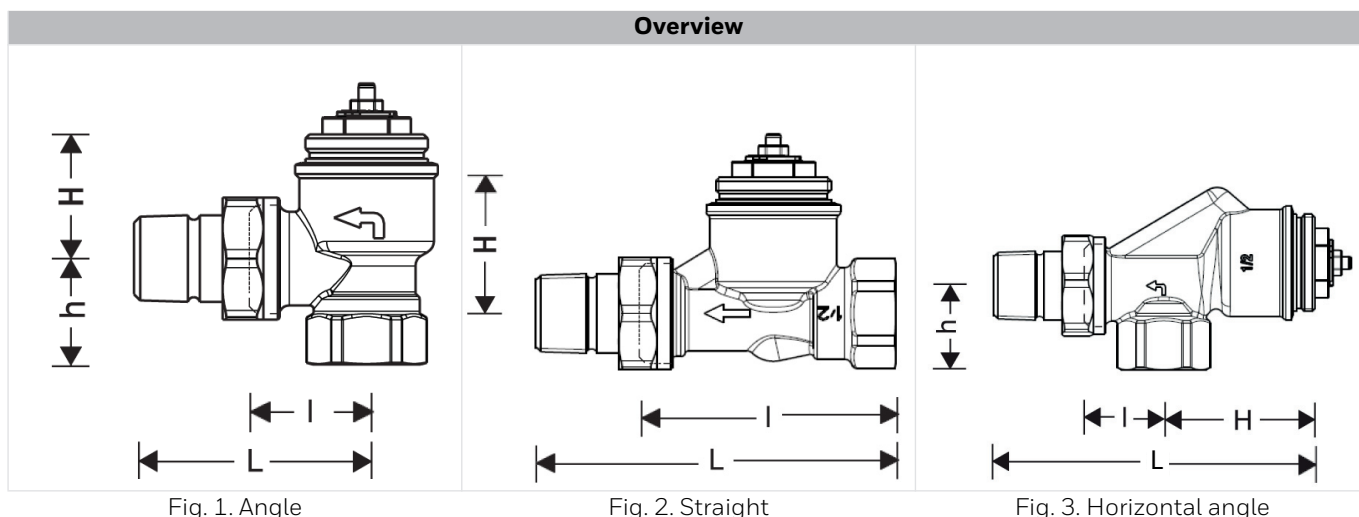
**Presetting**

- The flow rates can be steplessly adjusted between 1 to 8 (10 to 160 l/h)
- The default factory setting is position 6
- The setting is changed using either a special setting key (see accessories) or a standard 7 mm wrench
  - Slide the setting key on the hexagon of the blue plastic dial, ensuring that the 'embossed' part fits to the positioning slot (see Tab.)
  - Turn the setting key until the desired setting value reach the position of the index recess in the valve insert body
  - Remove the key or wrench
  - Do not try to set the valve to a setting higher than 8

**Design example**

- Type 22 compact radiator 2200 x 500 mm
- Required heat: 1900 W
- Radiator ΔT: 15 °C
- Calculated design flow: 109 l/h
- Min. ΔP: 0,1 bar
- Valve setting: 6 (see also Tab.)

## DIMENSIONS



Body type	DN	EN 215 certified	Pipe connection	I	L	h	H	OS-No.
<b>For the supply</b>								
Angle to EN215 (D) (Fig. 1)	10	•	Rp 3/8"	26	52	22	29	V2100EPI10
	15	•	Rp 1/2"	29	58	26	31	V2100EPI15
	20	•	Rp 3/4"	34	66	29	27	V2100EPI20
Straight to EN215 (D) (Fig. 2)	10	•	Rp 3/8"	60	86	-	37	V2100DPI10
	15	•	Rp 1/2"	66	95	-	37	V2100DPI15
	20	•	Rp 3/4"	74	106	-	37	V2100DPI20
Horizontal angle (Fig. 3)	10	•	Rp 3/8"	24	89	22	46	V2100API10
	15	•	Rp 1/2"	26	96	26	48	V2100API15

Note: All dimensions in mm unless stated otherwise.



## ORDERING INFORMATION

The following tables contain all the information you need to make an order of an item of your choice. When ordering, please always state the type, the ordering or the part number.

### Accessories

	Description	Dimension	Part No.
	<b>FIG1/2CS</b> <b>Compression fitting for COPPER and STEEL pipe</b> Consisting of compression nut and compression ring. For valves with internal thread. Note: Support inserts have to be used for copper or soft steel pipe with 1.0 mm wall thickness. Max. operating temperature 120 °C, max. operating pressure 10 bar.		
	3/8", DN10	10 mm	FIG3/8CS10
	3/8", DN10	12 mm	FIG3/8CS12
	1/2", DN15	10 mm	FIG1/2CS10
	1/2", DN15	12 mm	FIG1/2CS12
	1/2", DN15	14 mm	FIG1/2CS14
	1/2", DN15	15 mm	FIG1/2CS15
	1/2", DN15	16 mm	FIG1/2CS16
	3/4", DN20	18 mm	FIG3/4CS18
	3/4", DN20	22 mm	FIG3/4CS22

	<p><b>FIG1/2CSS Compression fitting for COPPER and STEEL pipe</b></p> <p>Consisting of compression nut and compression ring and support insert. For valves with internal thread.</p> <p>Note: Support inserts have to be used for copper or soft steel pipe with 1.0 mm wall thickness. Max. operating temperature 120 °C, max. operating pressure 10 bar.</p> <table border="1" data-bbox="576 293 1463 533"> <tbody> <tr> <td>3/8", DN10</td> <td>12 mm</td> <td>FIG3/8CSS12</td> </tr> <tr> <td>1/2", DN15</td> <td>12 mm</td> <td>FIG1/2CSS12</td> </tr> <tr> <td>1/2", DN15</td> <td>14 mm</td> <td>FIG1/2CSS14</td> </tr> <tr> <td>1/2", DN15</td> <td>15 mm</td> <td>FIG1/2CSS15</td> </tr> <tr> <td>1/2", DN15</td> <td>16 mm</td> <td>FIG1/2CSS16</td> </tr> <tr> <td>1/2", DN15</td> <td>18 mm</td> <td>FIG1/2CSS18</td> </tr> <tr> <td>3/4", DN20</td> <td>18 mm</td> <td>FIG3/4CSS18</td> </tr> </tbody> </table>	3/8", DN10	12 mm	FIG3/8CSS12	1/2", DN15	12 mm	FIG1/2CSS12	1/2", DN15	14 mm	FIG1/2CSS14	1/2", DN15	15 mm	FIG1/2CSS15	1/2", DN15	16 mm	FIG1/2CSS16	1/2", DN15	18 mm	FIG1/2CSS18	3/4", DN20	18 mm	FIG3/4CSS18
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	<p><b>FIG1/2M Compression fitting for MULTILAYER pipe. Consisting of compression nut, compression ring and support insert. For valves with internal thread.</b></p> <p>Note: Max. operating temperature 90°C, max. operating pressure 10 bar</p> <table border="1" data-bbox="576 622 1463 770"> <tbody> <tr> <td>1/2", DN15</td> <td>16 mm</td> <td>FIG1/2M16X2</td> </tr> </tbody> </table>	1/2", DN15	16 mm	FIG1/2M16X2																		
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	<p><b>VA6290 Reduction</b></p> <table border="1" data-bbox="576 801 1463 981"> <tbody> <tr> <td>1" pipe &gt; 1/2" valve</td> <td></td> <td>VA6290A260</td> </tr> <tr> <td>1 1/4" pipe &gt; 1/2" valve</td> <td></td> <td>VA6290A280</td> </tr> <tr> <td>1" pipe &gt; 3/4" valve</td> <td></td> <td>VA6290A285</td> </tr> <tr> <td>1 1/4" pipe &gt; 3/4" valve</td> <td></td> <td>VA6290A305</td> </tr> </tbody> </table>	1" pipe > 1/2" valve		VA6290A260	1 1/4" pipe > 1/2" valve		VA6290A280	1" pipe > 3/4" valve		VA6290A285	1 1/4" pipe > 3/4" valve		VA6290A305									
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	<p><b>VA5201Axxx Radiator tailpiece with thread up to collar</b></p> <table border="1" data-bbox="576 1016 1463 1146"> <tbody> <tr> <td>for valves DN10 (3/8")</td> <td></td> <td>VA5201A010</td> </tr> <tr> <td>for valves DN15 (1/2")</td> <td></td> <td>VA5201A015</td> </tr> <tr> <td>for valves DN20 (3/4")</td> <td></td> <td>VA5201A020</td> </tr> </tbody> </table>	for valves DN10 (3/8")		VA5201A010	for valves DN15 (1/2")		VA5201A015	for valves DN20 (3/4")		VA5201A020												
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	<p><b>VA5204Bxxx Extended radiator tailpiece, nickel-plated, to be shortened as required</b></p> <table border="1" data-bbox="576 1182 1463 1321"> <tbody> <tr> <td>3/8" x 70 mm (for DN10) thread approx. 50 mm</td> <td></td> <td>VA5204B010</td> </tr> <tr> <td>1/2" x 76 mm (for DN15) thread approx. 65 mm</td> <td></td> <td>VA5204B015</td> </tr> <tr> <td>3/4" x 70 mm (for DN20) thread approx. 60 mm</td> <td></td> <td>VA5204B020</td> </tr> </tbody> </table>	3/8" x 70 mm (for DN10) thread approx. 50 mm		VA5204B010	1/2" x 76 mm (for DN15) thread approx. 65 mm		VA5204B015	3/4" x 70 mm (for DN20) thread approx. 60 mm		VA5204B020												
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	<p><b>VA2200Dxxx Manual handwheel cap</b></p> <table border="1" data-bbox="576 1352 1463 1541"> <tbody> <tr> <td>Pre-settable, with integrated locking device</td> <td></td> <td>VA2200D001</td> </tr> </tbody> </table>	Pre-settable, with integrated locking device		VA2200D001																		
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	<p><b>VA2202Axxx Pressure cap – for shutting off valves on radiator outlet</b></p> <table border="1" data-bbox="576 1576 1463 1706"> <tbody> <tr> <td>for valves DN10 (3/8")</td> <td></td> <td>VA2202A010</td> </tr> <tr> <td>for valves DN15 (1/2")</td> <td></td> <td>VA2202A015</td> </tr> <tr> <td>for valves DN20 (3/4")</td> <td></td> <td>VA2202A020</td> </tr> </tbody> </table>	for valves DN10 (3/8")		VA2202A010	for valves DN15 (1/2")		VA2202A015	for valves DN20 (3/4")		VA2202A020												
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	<p><b>VA5090 Sealing ring for pressure cap</b></p> <table border="1" data-bbox="576 1742 1463 1863"> <tbody> <tr> <td>for valves DN10 (3/8")</td> <td></td> <td>VA5090A010</td> </tr> <tr> <td>for valves DN15 (1/2")</td> <td></td> <td>VA5090A015</td> </tr> <tr> <td>for valves DN20 (3/4")</td> <td></td> <td>VA5090A020</td> </tr> </tbody> </table>	for valves DN10 (3/8")		VA5090A010	for valves DN15 (1/2")		VA5090A015	for valves DN20 (3/4")		VA5090A020												
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	<p><b>VA8200A Service tool to replace valve insert</b></p> <table border="1" data-bbox="576 1899 1463 2087"> <tbody> <tr> <td>for all PI types</td> <td></td> <td>VA8200A003</td> </tr> </tbody> </table>	for all PI types		VA8200A003																		
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	<b>VA8201      Presetting key</b>		
	<b>VS1200      Replacement valve insert</b>		
	for all PI, VS, FS, FV and SL type valves		VA8201PI04
	PI type		VS1200PI01

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