

Characterized control valves, 3-way,  
with internal thread

- for open and closed cold and warm water systems
- for modulating control on the water side of air-handling and heating systems
- air bubble-tight (control path A – AB)



### Type overview

Type	$k_{vs}$ [m <sup>3</sup> /h]	DN [mm]	DN [Inches]	$p_s$ [kPa]	n(gl) <sup>1)</sup>	$S_v$
R305K	0.25	10	3/8"	4140	3.2	>50
R306K	0.4	10	3/8"	4140	3.2	>50
R307K	0.63	10	3/8"	4140	3.2	>50
R308K	1	10	3/8"	4140	3.2	>50
R309	0.63	15	1/2"	4140	3.2	>50
R310	1	15	1/2"	4140	3.2	>50
R311	1.6	15	1/2"	4140	3.2	>50
R312	2.5	15	1/2"	4140	3.2	>50
R313	4	15	1/2"	4140	3.9	>100
R317	4	20	3/4"	4140	3.9	>100
R318	6.3	20	3/4"	4140	3.9	>100
R322	6.3	25	1"	4140	3.9	>100
R323	10	25	1"	4140	3.9	>100
R329	10	32	1 1/4"	4140	3.9	>100
R331	16	32	1 1/4"	2760	3.9	>100
R338	16	40	1 1/2"	2760	3.9	>100
R348	25	50	2"	2760	3.9	>100

<sup>1)</sup> optimized in the opening range

### Technical data

<b>Functional data</b>	Flow media	Cold and hot water, water with max. 50% volume of glycol	
	Temperature of medium	+5°C...+110°C <sup>1)</sup> (lower or higher temperatures on request)	
	Rated pressure $p_s$	see «Type overview»	
	Flow characteristic	Control path A – AB: equal percentage (to VDI/VDE 2173) n(gl): see «Type overview» Bypass B – AB: linear, flow rate is 70% of $k_{vs}$ value	
	Rangeability $S_v$	See «Type overview»	
	Leakage rate	Control path A – AB: Air bubble-tight (BO 1, DIN3230 T3) Bypass B – AB: Approx. 1...2% of $k_{vs}$ value (in relation to the highest value within the DN (e.g. R313)	
	Pipe connector	Internal thread to ISO 7/1	
	Differential pressure $\Delta p_{max}$	350 kPa (200 kPa for low-noise operation)	
	Closing pressure $\Delta p_s$	1400 kPa	
	Angle of rotation	90° ↺ (Operating range of control path A – AB 15 ... 90° ↺, bypass B – AB 15 ... 70° ↺)	
	Installation position	Upright to horizontal (in relation to the stem)	
	Maintenance	Maintenance-free	
	<b>Materials</b>	Fitting	Forged, nickel-plated brass body
		Valve cone and stem	Stainless steel
Stem seal		O-Ring, EPDM	
Ball seat		PTFE, O-Ring Viton	
Characterizing disk		TEFZEL	
<b>Dimensions / Weights</b>	see «Dimensions and weights», page 3		
<b>Motorizing</b>	see the complete overview of water solutions		

<sup>1)</sup> The allowed media temperature can be limited, depending on the type of actuator. The correct values can be found in the corresponding actuator data sheets.

### Safety notes



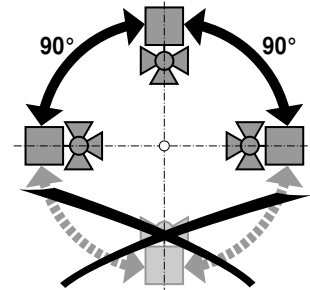
- The valve has been designed for use in stationary heating, ventilation and air conditioning systems and is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- It may only be installed by suitably trained personnel.  
All applicable legal or institutional installation regulations must be complied with.
- The valve does not contain any parts that can be replaced or repaired by the user.
- The valve is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- The recognized rules should be applied when determining the flow characteristic of final controlling elements.

### Product features

- Mode of operation** The characterized control valve is operated by a rotary actuator. The actuator is controlled by a standard modulating or 3-point control system and move the ball of the valve – the throttling device – to the opening position dictated by the control signal. Open the ball valve counterclockwise and close it clockwise.
- Flow characteristic** Equal-percentage characteristic of the flow rate ensured by the integral characterizing disc.

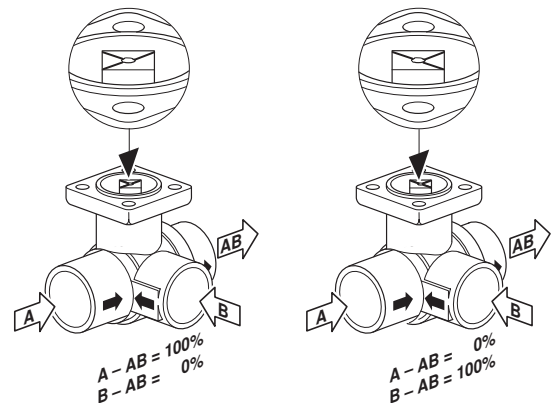
### Installation notes

- Recommended mounting positions** The valve may be mounted either **vertically** or **horizontally**. It is not permissible, mounting the valve with the stem pointing downwards.



- Water quality requirements**
- The water quality requirements specified in VDI 2035 must be adhered to.
  - Characterized control valves are relatively sensitive control devices. In order to ensure a long service life, it is advisable to fit **strainers**.
- Maintenance**
- The characterized control valves and rotary actuators are maintenance-free.
  - Before any kind of service work is carried out on actuator sets of this type, it is essential to isolate the rotary actuator from the power supply (by unplugging the power lead). Any pumps in the part of the piping system concerned must also be switched off and the appropriate isolating fittings closed (allow everything to cool down first if necessary and reduce the pressure in the system to atmospheric).
  - The system must not be returned to service until the ball valve and the rotary actuator have been properly reassembled in accordance with the instructions and the pipework has been refilled in the proper manner.

- Direction of flow** The direction of flow, specified by an arrow on the housing, is to be complied with, since otherwise the ball valve can be damaged. Please ensure that the ball is in the correct position.



## Accessories

### Mechanical accessories

#### Description

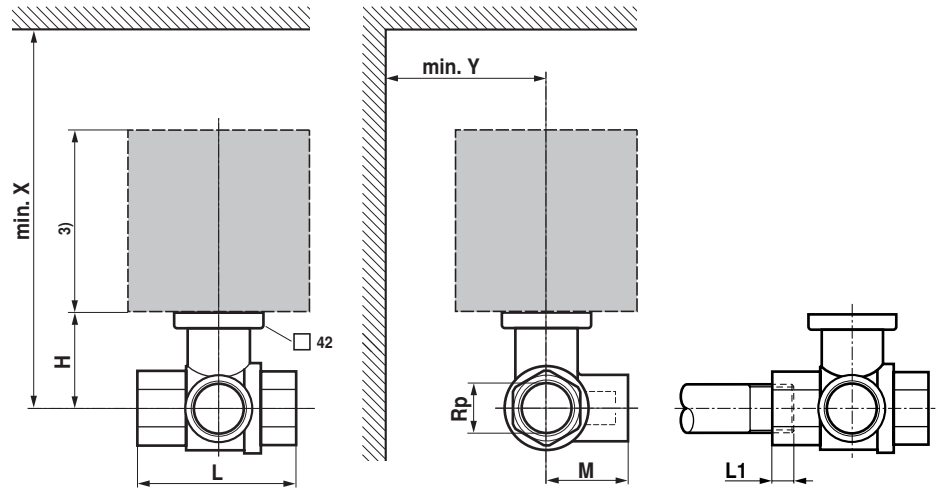
Stem heating, Type ZR24-1 <sup>1)</sup>

Pipe connector, Type ZR23..

<sup>1)</sup> No stem heating is available for R3..K

## Dimensions and weights

### Dimensional diagrams



DN [mm]	L [mm]	H [mm]	M [mm]	Rp [Inches]	L1 <sup>1)</sup> [mm]	X <sup>2)</sup> [mm]	Y <sup>2)</sup> [mm]	Weight [kg]
10	52	35	28	3/8"	10	220	90	0.35
15	67	45	39	1/2"	13	220	90	0.45
20	78	47.5	41.5	3/4"	13	220	90	0.6
25	87	47.5	45	1"	17	220	90	0.9
32	105	47.5	55.5	1 1/4"	19	220	90	1.2
32	105	52	55.5	1 1/4"	19	230	90	1.3
40	111	52	56	1 1/2"	19	230	90	1.5
50	125	58	68	2"	22	240	90	2.4

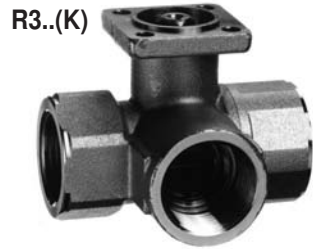
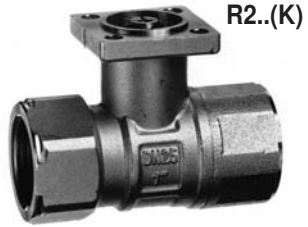
<sup>1)</sup> Maximum installation depth

<sup>2)</sup> Minimum distance with respect to the valve centre

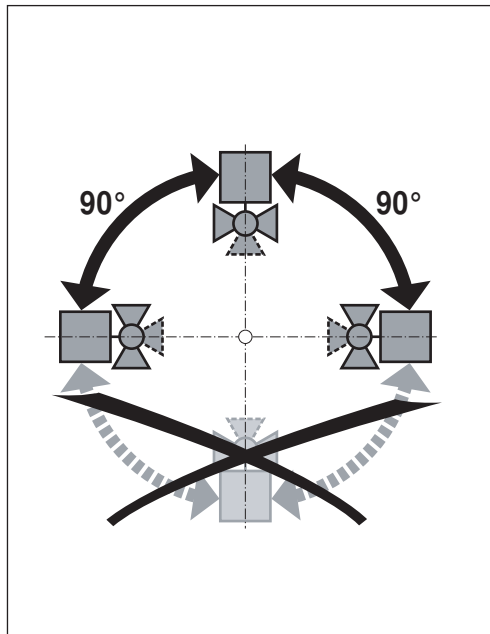
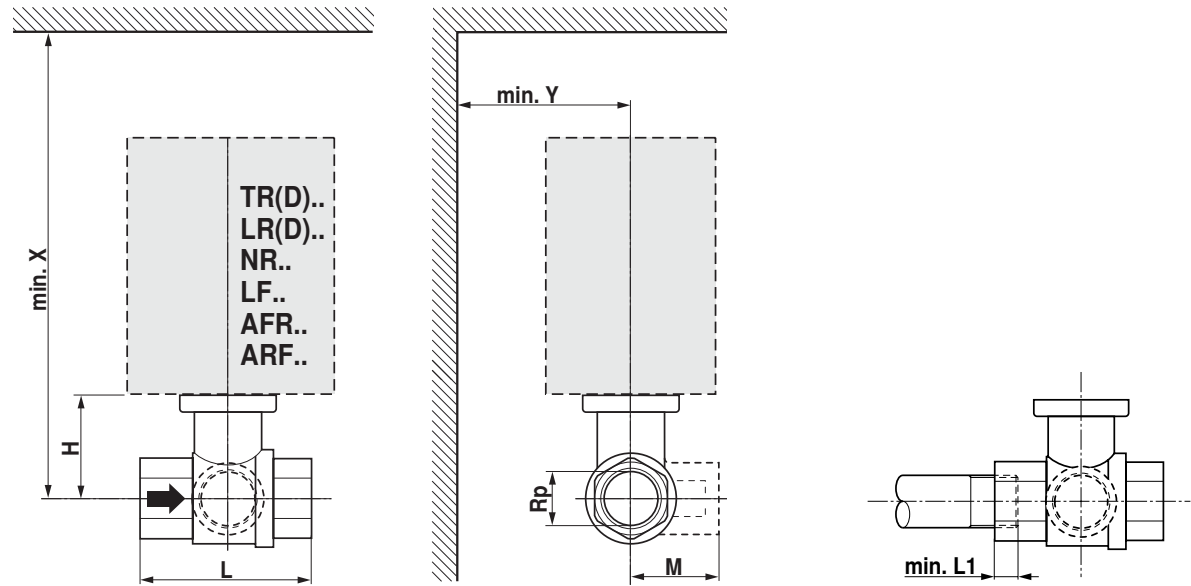
<sup>3)</sup> The actuator dimensions can be found on the respective actuator data sheet.



### Further documentations

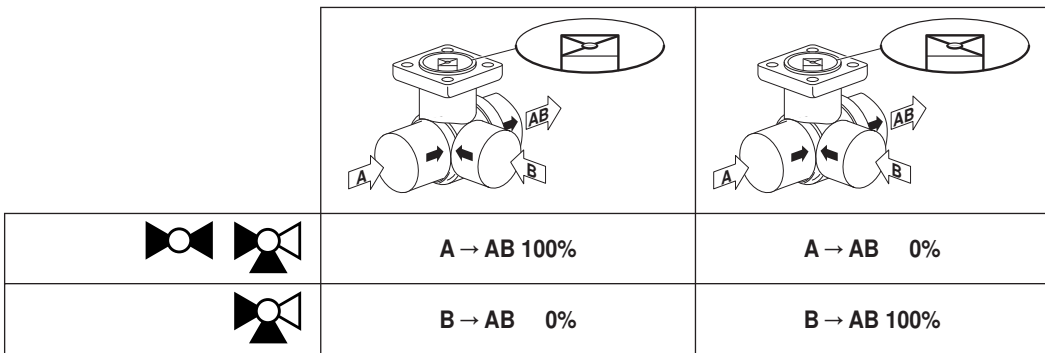
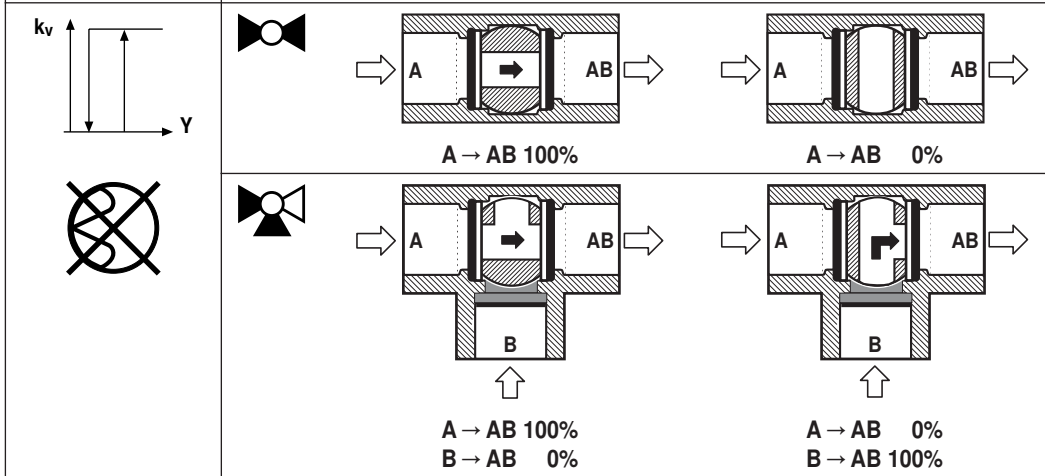
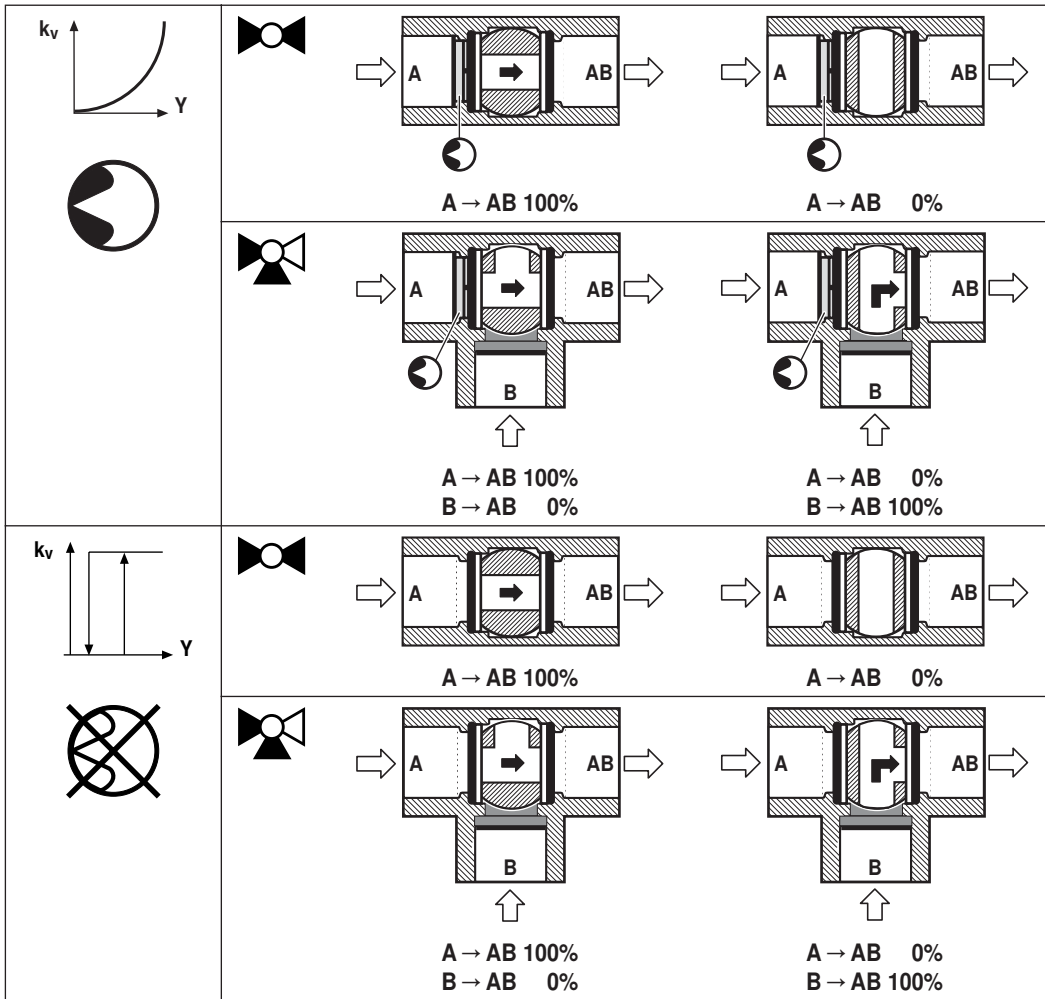
- Complete overview of water solutions
- Data sheets for actuators
- Installation instructions for ball valves and/or actuators
- Notes for project planning (hydraulic characteristic curves and circuits, installation regulations, commissioning, maintenance etc.)



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		DN		mm						TR(D)..		LR(D)..		NR..		LF..		AFR.. / ARF..		
		mm	„	Rp	L	H	M	L1	X	Y	X	Y	X	Y	X	Y	X	Y		
R205K...R209K	R305K...R308K	10	3/8"	3/8"	52	35	28	10	174	75	188	75	220	80						
R209...R215	R309...R315	15	1/2"	1/2"	67	45	39	13	184	75	198	75	230	80	203	90	203	90		
R217...R220	R317...R320	20	3/4"	3/4"	78	47.5	41.5	14			201	75	232	80	205	90	205	90		
R222...R225	R322...R325	25	1"	1"	87	47.5	45	16			201	75	232	80	205	90	205	90		
R229...R230	R329...R330	32	1 1/4"	1 1/4"	105	47.5	55.5	19			201	75	232	80	205	90	205	90		
R231...R232	R331...R332	32	1 1/4"	1 1/4"	105	52	55.5	19					237	80			210	90		
R238...R240	R338...R340	40	1 1/2"	1 1/2"	111	52	56	19					237	80			210	90		
R248...R250	R348...R350	50	2"	2"	125	58	68	23					243	80			216	90		



t	(-10°) +5° ... +110° (+120°) C					
$\Delta p_{max}$	< 350 kPa			< 1000 kPa		
$p_s$	4140 kPa			2760 kPa	4140 kPa	2760 kPa
	R205K	R209	R217	R231	R215	R232
	R206K	R210	R218	R238	R220	R240
	R207K	R211	R219	R239	R225	R250
	R208K	R212	R222	R248	R230	
	R209K	R213	R223	R249		
		R214	R224			
			R229			
	R305K	R309	R317	R331	R315	R332
	R306K	R310	R318	R338	R320	R340
	R307K	R311	R322	R348	R325	R350
	R308K	R312	R323		R330	
		R313	R329			

