BELIMO

Technical data sheet R4..

Characterized control valves, 2-way, with external 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**

Type overview

Type	k_{vs} [m^3/h]	DN [mm]	G [Inches]	p_s [kPa]	n(gl) [1]	S_v
R405K	0.25	10	3/4"	4140	3.2	>50
R406K	0.4	10	3/4"	4140	3.2	>50
R407K	0.63	10	3/4"	4140	3.2	>50
R408K	1	10	3/4"	4140	3.2	>50
R409K	1.6	10	3/4"	4140	3.2	>50
R409	0.63	15	1"	4140	3.2	>50
R410	1	15	1"	4140	3.2	>50
R411	1.6	15	1"	4140	3.2	>50
R412	2.5	15	1"	4140	3.2	>50
R413	4	15	1"	4140	3.9	>100
R414	6.3	15	1"	4140	3.9	>100
R417	4	20	1 1/4"	4140	3.9	>100
R418	6.3	20	1 1/4"	4140	3.9	>100
R419	8.6	20	1 1/4"	4140	3.9	>100
R422	6.3	25	1 1/2"	4140	3.9	>100
R423	10	25	1 1/2"	4140	3.9	>100
R424	16	25	1 1/2"	4140	3.9	>100
R429	10	32	2"	4140	3.9	>100
R431	16	32	2"	2760	3.9	>100
R438	16	40	2 1/4"	2760	3.9	>100
R439	25	40	2 1/4"	2760	3.9	>100
R448	25	50	2 3/4"	2760	3.9	>100
R449	40	50	2 3/4"	2760	3.9	>100

[1] optimized in the opening range

Technical data

Functional data	Flow media	Cold and hot water, water with max. 50% volume of glycol
	Temperature of medium	+5°C ... +110°C [1] (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»
	Rangeability S_v	See «Type overview»
	Leakage rate	Control path A – AB: Air bubble-tight (BO 1, DIN3230 T3)
	Pipe connector	External thread to ISO 228/1
	Differential pressure Δp_{max} Closing pressure Δp_s	350 kPa (200 kPa for low-noise operation) 1400 kPa
	Angle of rotation	90°∢ (Operating range 15 ... 90°∢)
	Installation position	Upright to horizontal (in relation to the stem)
	Maintenance	Maintenance-free
Materials	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
Dimensions / Weights	see «Dimensions and weights», page 3	
Motorizing	see the complete overview of water solutions	

[1] 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.

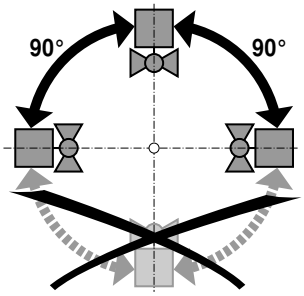
Flow characteristic

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

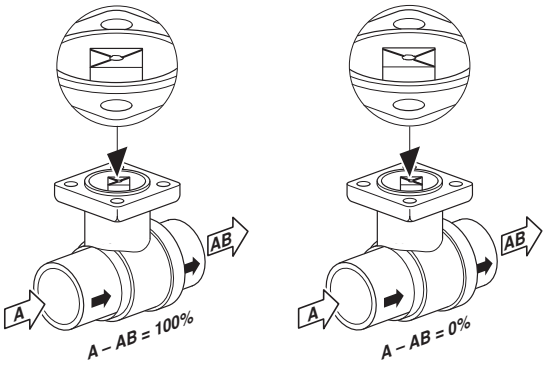
- The water quality requirements specified in VDI 2035 must be adhered to.
- Characterized control valves are relatively sensitive control devices. In order to ensure a long service life, it is advisable to fit **strainers**.

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.



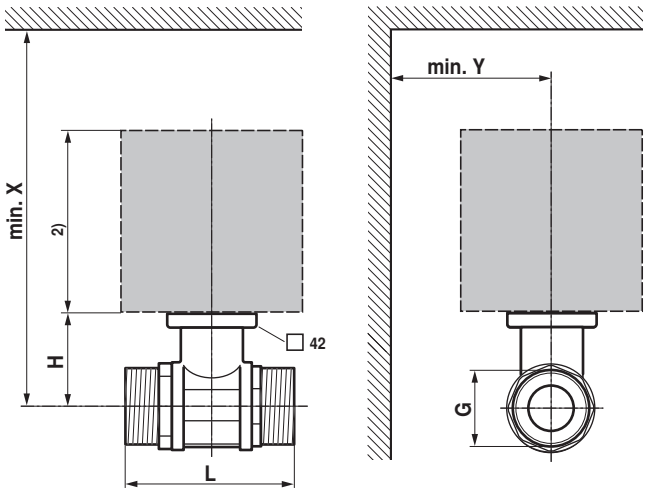
Accessories

	Description
Mechanical accessories	Stem heating ZR24-1 [1]
	Pipe connector ZR45..

[1] No stem heating is available for R4..K

Dimensions and weights

Dimensional drawings



DN [mm]		L [mm]	H [mm]	G [Inches]	X 1) [mm]	Y 1) [mm]	Weight [kg]
10		69	31.5	3/4"	220	90	0.4
15		74	44	1"	220	90	0.6
20		85.5	46	1 1/4"	220	90	0.8
25		84.5	46	1 1/2"	220	90	0.9
32	R429	97.5	46	2"	220	90	1.1
32	R431	102	50.5	2"	230	90	1.3
40		103	50.5	2 1/4"	230	90	1.4
50		115.5	56	2 3/4"	240	90	2.3

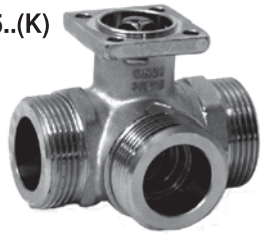
1) Minimum distance with respect to the valve centre.
2) The actuator dimensions can be found on the respective actuator data sheet.

Further documentations

- Complete overview «The complete range 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.)

BELIMO

R4..(K)



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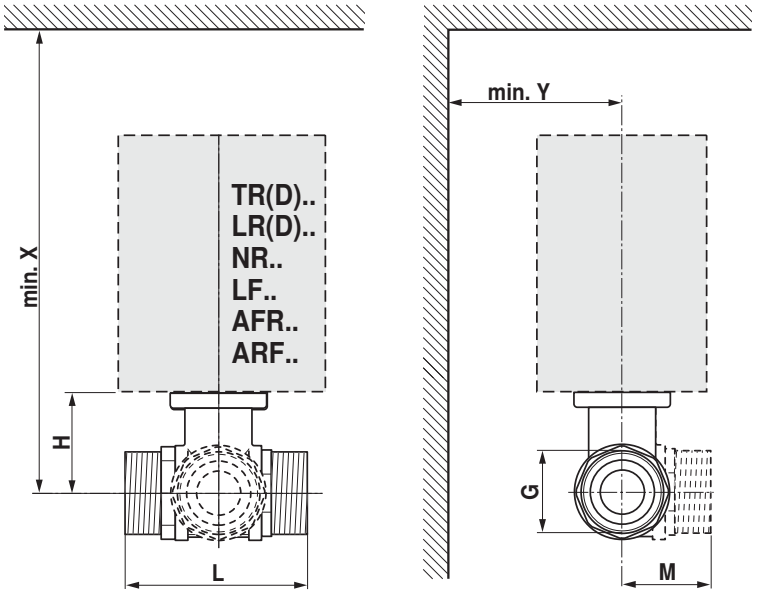
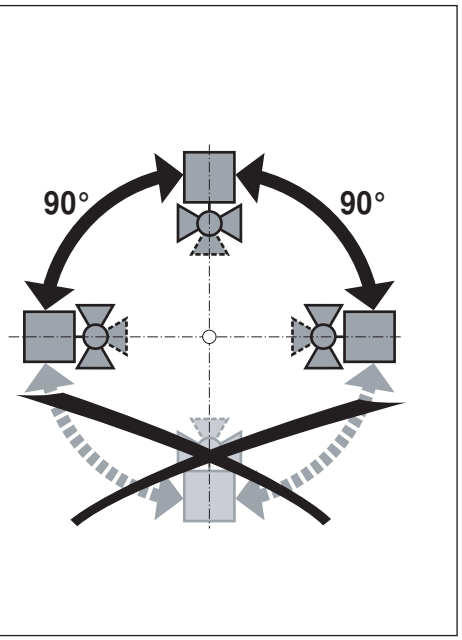
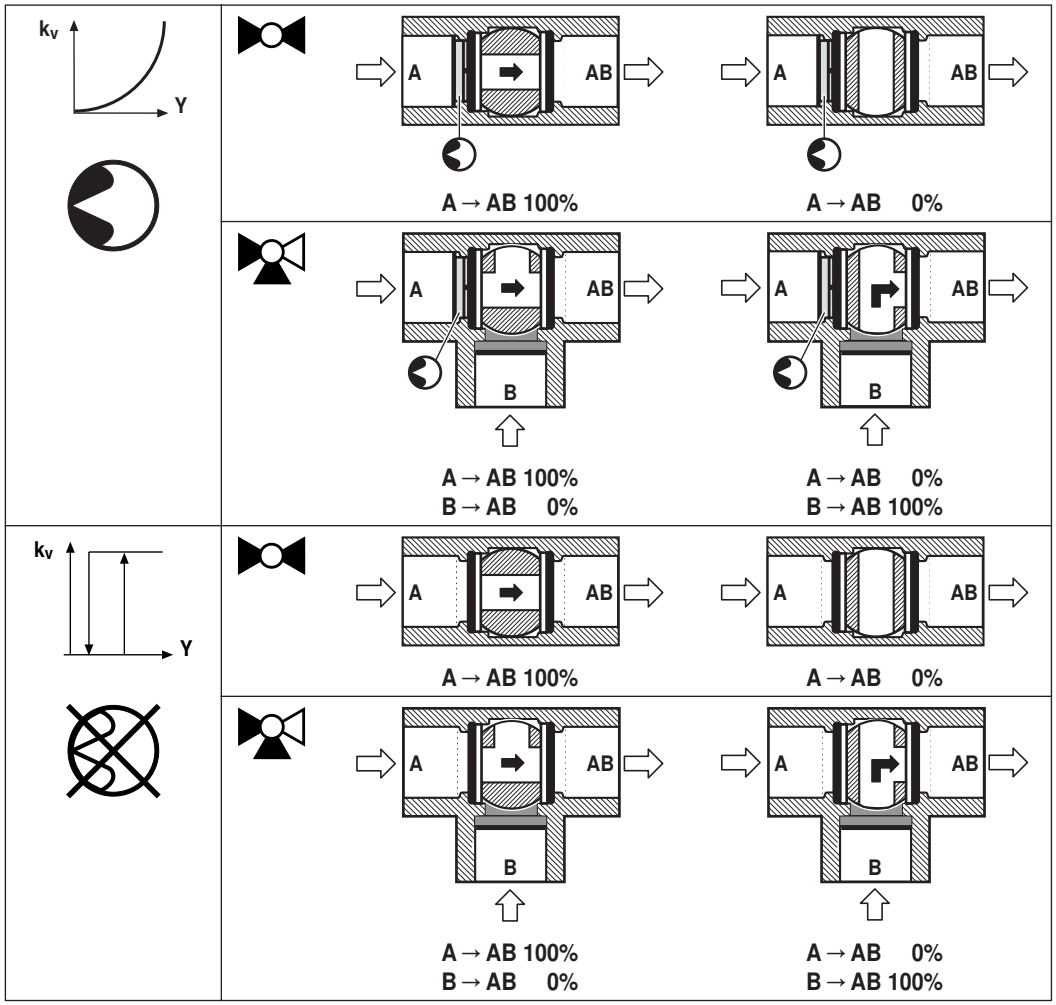




		DN			mm			TR(D)..		LR(D)..		NR..		LF..		AFR.. / ARF..	
		mm	”	G	L	H	M	X	Y	X	Y	X	Y	X	Y	X	Y
R405K...R409K	R505K...R508K	10	3/8”	3/4”	69	31.5	34	171	75	185	75	216	80				
R409...R415	R509...R515	15	1/2”	1“	74	44	38	183	75	197	75	229	80	202	90	202	90
R417...R420	R517...R520	20	3/4”	1 1/4“	85.5	46	42.5			199	75	231	80	204	90	204	90
R422...R425	R522...R525	25	1“	1 1/2“	84.5	46	47.5			199	75	231	80	204	90	204	90
R429...R430	R529...R530	32	1 1/4“	2“	97.5	46	56			199	75	231	80	204	90	204	90
R431...R432	R531...R532	32	1 1/4“	2“	102	50.5	56					235	80			208	90
R438...R440	R538...R540	40	1 1/2“	2 1/4“	103	50.5	60.5					235	80			208	90
R448...R450	R548...R550	50	2“	2 3/4“	115.5	56	71.5					241	80			214	90



t	(–10°) +5° ... +110° (+120°) C					
Δp_{max}	< 350 kPa				< 1000 kPa	
p_s	4140 kPa			2760 kPa	4140 kPa	2760 kPa
→	R405K	R409	R417	R431	R415	R432
	R406K	R410	R418	R438	R420	R440
	R407K	R411	R419	R439	R425	R450
	R408K	R412	R422	R448	R430	
	R409K	R413	R423	R449		
		R414	R424			
			R429			
	R505K	R509	R517	R531	R515	R532
	R506K	R510	R518	R538	R520	R540
	R507K	R511	R522	R548	R525	R550
	R508K	R512	R523		R530	
		R513	R529