

## Selection

k <sub>VS</sub> [m <sup>3</sup> /h]	DN		Type			Suitable rotary actuators									
	mm	Inches	Internal thread	External thread	Flange	1-wire		2-wire		Emergency control function					
8.6	15	1/2"	R315	R515	R715R	LR24(-S) AC/DC 24 V	LR230(-S) AC 230 V	NR230-1-T AC 230 V	TR24-3 AC 24 V	NR24-3(-S) AC 24 V	NR230-3(-S) AC 230 V	LF24(-S) AC/DC 24 V	LF230(-S) AC 230 V	AFR24(-S) AC 24 V	AFR230(-S) AC 230 V
21	20	3/4"	R320	R520	R720R										
26	25	1"	R325	R525	R725R										
16	32	1 1/4"	R330	R530	-										
32	32	1 1/4"	R332	R532	R732R										
32	40	1 1/2"	R340	R540	R740R										
49	50	2"	R350	R550	R750R										



## 3-way open-close ball valves DN 15...50

**Change-over function and 2-point controls in cold and hot water circuits**

## Applications

For changing over cold and hot water circuits in heating and ventilation systems on the water side or for 2-point control of these circuits.

## Mode of operation

The open-close ball valve is operated by a rotary actuator. The rotary actuators are controlled by an open-close signal.

## Product features

**Manual operation by lever** after disengaging the gearing latch on the Type TR.., LR.. or NR.. rotary actuator (manual operation not possible with LF../AFR..).

## Ordering

An order for an R2.. open-close ball valve includes a suitable rotary actuator.

### Ordering examples: (with LR230)

- R315 open-close ball valve with LR230
  - Rotary actuator fitted
  - Order code: R315+LR230
- R315 open-close ball valve and LR230
  - Rotary actuator supplied separately
  - Order code: R315/LR230

## Technical data

Flow media	Cold and hot water, Water with max. 50% volume of glycol
Temperature of medium	+5 °C...+110 °C (lower or higher temperatures on request)
Rated pressure p <sub>s</sub>	See table below
Flow rate	Bypass B-AB: approx. 50% of k <sub>VS</sub>
Leakage rate	Control path A-AB: air bubble-tight (BO 1, DIN 3230 Part 3) Bypass B-AB: 1% of k <sub>VS</sub>
Pipe connector	R3.. Internal thread to ISO 7/1 R5.. External thread to ISO 228/1 R7.. Flange PN 6 to EN 1092/1
Differential pressure Δp <sub>max</sub>	1000 kPa (200 kPa for low-noise operation)
Closing pressure Δp <sub>s</sub>	1400 kPa
Angle of rotation	90°
Installation position	Upright to horizontal (in relation to the stem)
Maintenance	Maintenance-free

## Materials

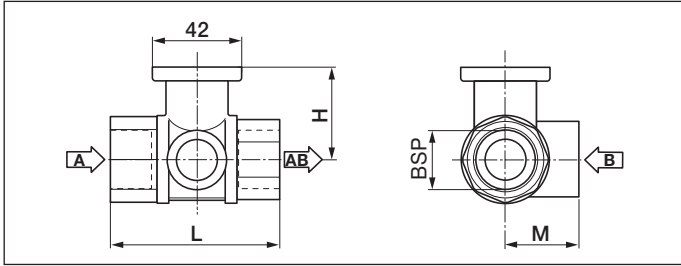
Fitting	Forged, nickel-plated brass body
Valve cone	Stainless steel / R7.. chrome-plated brass
Seal	PTFE
Stem	Stainless steel / R7.. chrome-plated brass
Stem seal	EPDM
Flange ring	DN 15/20 Zinc-plated steel DN 25...80 Aluminum
Flange joint surface	Nickel-plated brass

Type	Rated pressure p <sub>s</sub> [kPa]
R315 – R330	4140
R515 – R530	4140
R332 – R350	2760
R532 – R550	2760
R715R – R750R	600

## Important

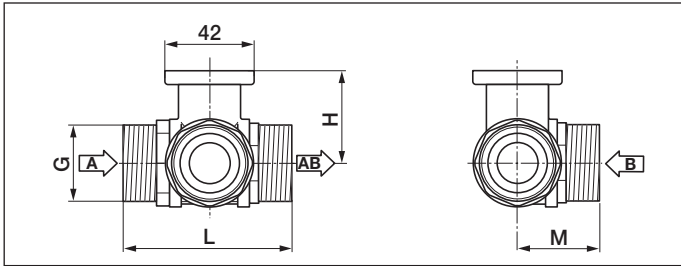
- Sizing diagram for characterized control valves: page 7
- Dimensions: pages 12, 33, 34 and 36
- Installation instructions: pages 33, 34, 36
- Please note the information provided on pages 2 and 38 to 40 regarding use, installation, project design, commissioning and maintenance
- Pipe connectors can be supplied as an accessory: page 13

## 3-way ball valves with internal thread



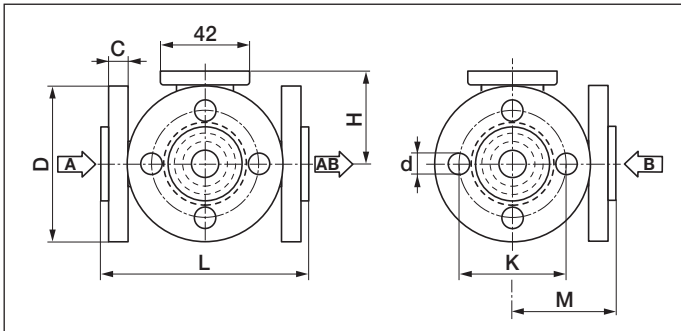
DN	Dimensions			Thread		Weight [kg]
	L	H	M	BSP	Max. screwing depth	
[mm]	[mm]	[mm]	[mm]	[Inches]	[mm]	
10	52	35	28	3/8"	10	0.35
15	67	45	39	1/2"	13	0.45
20	78	47.5	41.5	3/4"	13	0.6
25	87	47.5	45	1"	17	0.9
32	105	47.5	55.5	1 1/4"	19	1.2
32	105	52	55.5	1 1/4"	19	1.3
40	111	52	56	1 1/2"	19	1.5
50	125	58	68	2"	22	2.4

## 3-way ball valves with external thread



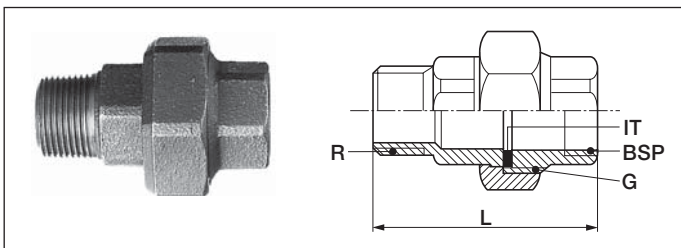
DN	Dimensions			Thread	Weight [kg]
	L	H	M	G	
[mm]	[mm]	[mm]	[mm]	[Inches]	
10	69	31.5	34	3/4"	0.4
15	74	44	38	1"	0.7
20	85.5	46	42.5	1 1/4"	1.0
25	84.5	46	47.5	1 1/2"	1.1
32	103.5	46	56	2"	1.7
32	108	50.5	56	2"	1.8
40	114	50.5	60.5	2 1/4"	2.3
50	131.5	56	71.5	2 3/4"	3.8

## 3-way ball valves with flanges



DN	Dimensions			Flange				Weight [kg]
	L	H	M	D	C	K	d	
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	
15	101.5	45	73	80	15	55	4 x 11	1.8
20	112	47.5	79	90	15	65	4 x 11	2.4
25	132	47.5	92	100	20	75	4 x 11.5	2.5
32	143.5	52	102.5	120	17	90	4 x 14	3.4
40	149.5	52	105	130	18	100	4 x 14	4
50	165	58	121	140	18	110	4 x 14	5.6

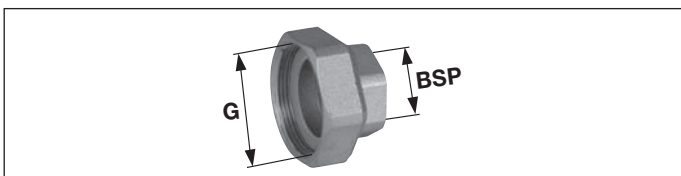
## Pipe connectors (accessory)



Included in scope of delivery of ZR23...: 1 male part (R thread),  
1 union nut (G thread),  
1 female part (BSP thread),  
1 flat gasket (IT)

Type	DN	Dim. L	Weight [kg]
	[mm]	[mm]	
ZR2310	10	58	0.1
ZR2315	15	66	0.2
ZR2320	20	72	0.35
ZR2325	25	80	0.45
ZR2332	32	90	0.8
ZR2340	40	95	0.9
ZR2350	50	107	1.4

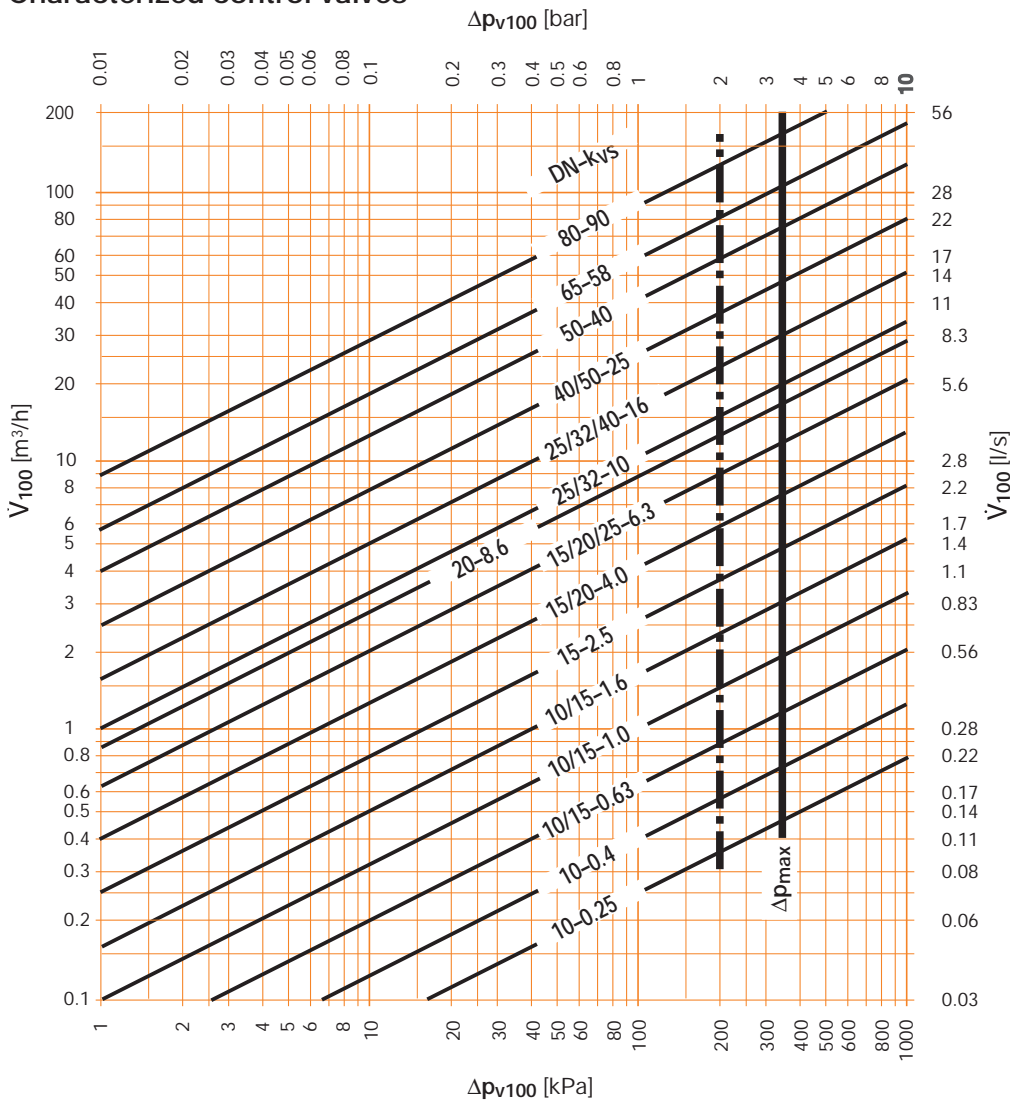
## Pipe connectors for ball valve



Included in scope of delivery of ZR45...: Female part, union nut,  
flat gasket

Type	DN	Dim. G	Dim. BSP
	[mm]		
ZR4510	10	G 3/4"	3/8"
ZR4515	15	G 1"	1/2"
ZR4520	20	G 1 1/4"	3/4"
ZR4525	25	G 1 1/2"	1"
ZR4532	32	G 2"	1 1/4"
ZR4540	40	G 2 1/4"	1 1/2"
ZR4550	50	G 2 3/4"	2"

## Sizing diagram Characterized control valves



### Legend

- $\Delta p_{max}$   
Maximum permitted pressure difference for a long service life across control path A-AB referred to the whole range of opening
- $\Delta p_{max}$   
For low-noise operation
- $\Delta p_{v100}$   
Pressure difference with ball valve fully open
- $\dot{V}_{100}$   
Nominal flow rate with  $\Delta p_{v100}$

### Formula $k_{vs}$

$$k_{vs} = \sqrt{\frac{\dot{V}_{100}}{\frac{\Delta p_{v100}}{100}}}$$

$k_{vs}$  [m<sup>3</sup>/h]  
 $\dot{V}_{100}$  [m<sup>3</sup>/h]  
 $\Delta p_{v100}$  [kPa]

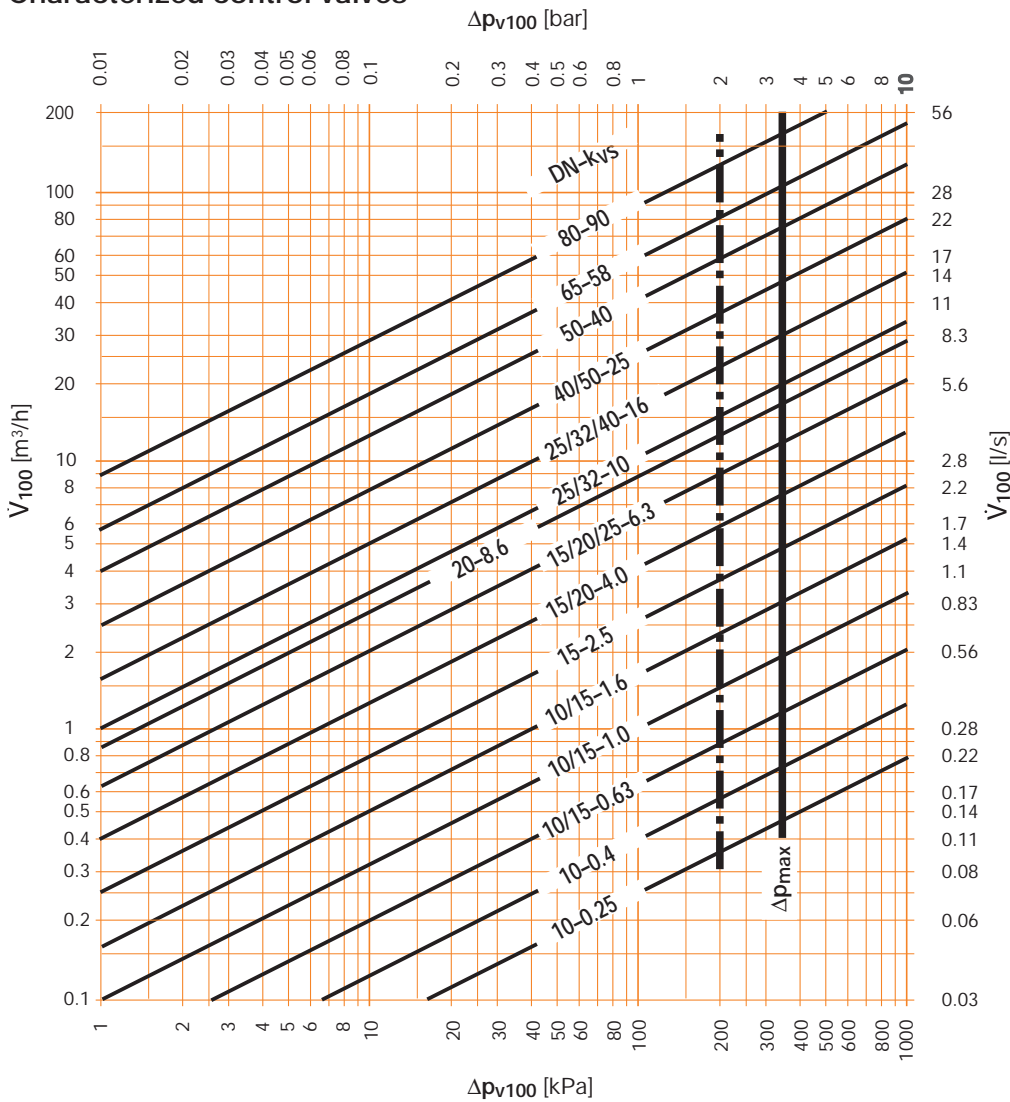
### Definition of $\Delta p_s$

Closing pressure at which the actuator can still seal the valve tightly allowing for the appropriate leakage rate

## Sizing table Open-close ball valves

Differential pressure $\Delta p_{v100}$ [kPa]					Connection			
	0.1	1	3	10	$k_{vs}$ [m <sup>3</sup> /h]	DN [mm]	2-way 	3-way 
Flow rate $\dot{V}_{100}$ [m <sup>3</sup> /h]	0.27	0.86	1.49	2.72	8.6	15	R215 R415 R615R	R315 R515 R715R
	0.66	2.1	3.6	6.6	21	20	R220 R420 R620R	R320 R520 R720R
	0.82	2.6	4.5	8.2	26	25	R225 R425 R625R	R325 R525 R725R
	0.51	1.6	2.77	5.06	16	32	R230 R430	R330 R530
	1.01	3.2	5.54	10.12	32	32	R232 R432 R632R	R332 R532 R732R
	1.01	3.2	5.54	10.12	32	40	R240 R440 R640R	R340 R540 R740R
	1.55	4.9	8.49	15.5	49	50	R250 R450 R650R	R350 R550 R750R
	5.05	16	27.73	50.63	160	65	R665R	-
	5.05	16	27.73	50.63	160	80	R680R	-

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**Legend**

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Maximum permitted pressure difference for a long service life across control path A-AB referred to the whole range of opening
- $\Delta p_{max}$   
For low-noise operation
- $\Delta p_{v100}$   
Pressure difference with ball valve fully open
- $\dot{V}_{100}$   
Nominal flow rate with  $\Delta p_{v100}$

**Formula  $k_{vs}$**

$$k_{vs} = \sqrt{\frac{\dot{V}_{100}}{\frac{\Delta p_{v100}}{100}}}$$

$k_{vs}$  [m<sup>3</sup>/h]  
 $\dot{V}_{100}$  [m<sup>3</sup>/h]  
 $\Delta p_{v100}$  [kPa]

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	5.05	16	27.73	50.63	160	65	R665R	-
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