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REVERSE CONTROL VALVES

200 line

with BELIMO actuators



200 line

RV / HU 211
RV / HU 221
RV / HU 231

Two-way single-seated control valve with reverse function

RV / HU 213
RV / HU 223
RV / HU 233

Two-way single-seated control valve with reverse function and pressure balanced plug

RV 215
RV 225
RV 235

Three-way control valve with reverse function

Control valves **200 line** designed for regulation and shut-off of process liquid flow. The selected materials correspond to recommendations stipulated by ČSN EN 12516-1 (8/2015) - steel and ČSN EN 1503-3 (1/2002) - cast. The maximal permissible operating pressures in behaviour with types of material and temperature are specified in the table on page 15 of this catalogue.

Control

By their reverse design - valves **RV / HU 200** are especially designed for Belimo actuators

Application

RV / HU 2xx - heating, ventilation, power generation and chemical processing industries

Process media

RV / HU 2xx - liquids, gases and vapours without abrasive particles
e.g. water, steam, air and other media compatible with material of the valve inner parts

The usage of the valve made of spheroidal cast iron (RV 210) for steam is limited by the following parameters. The steam must be superheated (its dryness at valve outlet $x_1 \leq 0,98$) and inlet pressure $p_1 \geq 0,4$ MPa when differential pressure is of above-critical value, and $p_1 \leq 1,6$ MPa when differential pressure is of under critical value. In case these two conditions are not kept, it is necessary to use the valve made of cast steel (RV 220). To ensure a reliable regulation, the producer recommends to pipe a strainer in front of the valve into pipeline or ensure in any other way that process medium does not contain abrasive particles or impurities.

Installation

The valve can be installed in any position except position when the actuator is under the valve body. The valve is to be piped the way so that the direction of medium flow will coincide with the arrows on the body.

It is necessary to protect the actuator from excessive heat from the pipeline at medium temperatures above 150 °C, eg by appropriately insulating the pipeline and valve and tilting the actuator from the vertical axis. When the valve is used as diverting, process medium flows through common valve port AB and split streams leave through valve ports A and B.). Detailed informations are given in the instruction for installation and service.

Packings

O-Ring EPDM

Packing is designed for non-aggressive media with temperature from 0 to 140 °C. Packing excels with its reliability and long time tightness. It has ability of sealing even if the valve stem is a bit damaged. Low frictional forces enables valve to be actuated with a low linear force actuator. Service life of sealing rings depends on operating conditions and it is more than 400 000 cycles on average.

DRSpack® (PTFE)

DRSpack® (Direct Radial Sealing Pack) is a packing with high tightness at both low and high operating pressure values. It is the most used type of packing suitable for temperatures ranging from 0 °C to 260 °C. The pH range is from 0 to 14. The packing enables using of actuators with low linear force. The design enables an easy change of the whole packing. The average service life of DRSpack® is more than 500 000 cycles.

Graphite

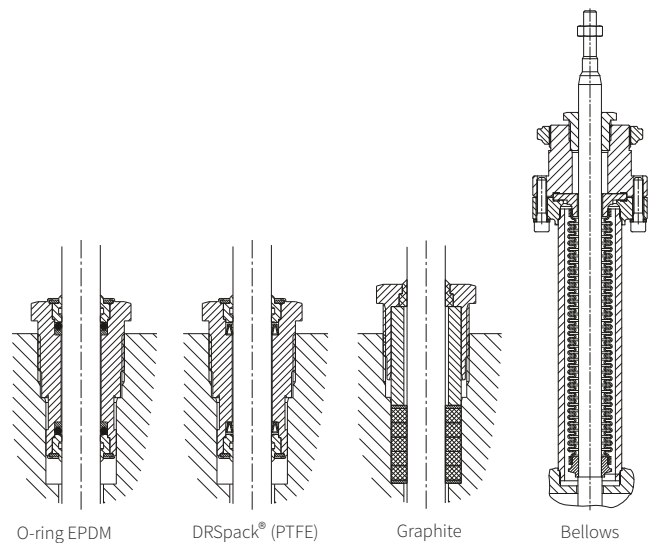
This type of packing can be used for media with temperature up to 550 °C and pH range: 0 to 14. Packing can be "sealed up" either by screwing the packing screw in or adding another sealing ring. In regard of intensive frictional forces, graphite packing is suitable for actuators with a sufficient linear force.

Bellows

Bellows packing is suitable for low and high temperatures ranging from -50 °C to 550 °C. Bellows ensures absolute tightness to environment. Packing is equipped with safety PTFE packing as standard to prevent medium from leaking in case of damage to bellows. Intensive linear forces are not required.

Application of bellows packing

Bellows packing is suitable for applications with very aggressive, toxic or other dangerous media that require absolute tightness to environment. In such case, it is necessary to check compatibility of used body material as well as the valve inner parts material with process medium. It is recommended to use bellows with safety packing preventing medium from leaking in case of damage to bellows when there is an extremely dangerous process medium used. Bellows is also a great solution to use of process medium either with temperature below zero when ice accretions cause premature damage to packing or with high temperatures when bellows ensures medium cooling.



Service life of bellows packing

Bellows material	Temperature				
	200°C	300°C	400°C	500°C	550°C
1.4541	100 000	40 000	28 000	7 000	inappropriate
1.4571	90 000	34 000	22 000	13 000	8 000

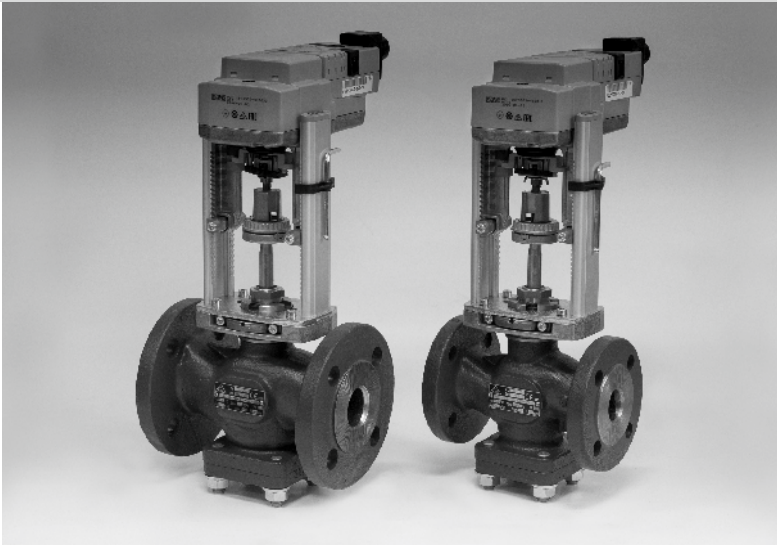
Values specified in the table above show minimal guaranteed number of cycles with the valve full stroke when the bellows is fully lengthened and pressed. In regulation, when the valve plug moves only in a portion of the stroke range at the inner centre of the valve, the service life of the bellows is many times longer then depending on concrete operating conditions.

Principles for plug type selection

V-ported plugs should not be used in above - critical differential pressures with inlet pressure $p \geq 0,4$ MPa and for regulation of saturated steam. In these cases we recommend to use a perforated plug. The perforated plug should be also used always when cavitation may occur due to a high differential pressure value or valve ports erosion caused by high speed of process medium flow. If the parabolic plug is used (because of small Kvs) for above critical differential pressures, it is necessary to close both plug and seat with a hard metal overlay, i.e. stellite trim.

Rangeability

Rangeability is the ratio of the biggest value of flow coefficient to the smallest value. In fact it is the ratio (under the same conditions) of highest regulated flow rate value to its lowest value. The lowest or minimal regulated flow rate is always higher than 0.



RV / HU 2x1

Control valves and
Fail-safe action
valves

DN 15 - 150
PN 16 and 40

Control valves **RV 211**, **RV 221** and **RV 231** are single-seated valves designed for regulation and shut-off of process medium flow.

Valves with a fail-safe action **HU 211**, **HU 221** and **HU 231** have the same design as RV 2x1 with addition of increased seat sealing. Valves are equipped with fail-safe action actuators (valve closes upon power failure).

Technical data			
Series	RV / HU 211	RV / HU 221	RV / HU 231
Type of valve	Two-way single-seated control valve with reverse function		
Nominal size range	DN 15 to 150		
Nominal pressure	PN 16, PN 40		
Body material	Spheroidal cast iron EN-JS 1025 (EN-GJS-400-10-LT)	Cast steel 1.0619 (GP240GH) 1.7357 (G17CrMo5-5)	Stainless steel 1.4581 (GX5CrNiMoNb19-11-2)
Seat material:	DN 15 - 50	1.4028 / 17 023.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 65 - 150	1.4027 / 42 2906.5	1.4581 / 42 2941.4
Plug material:	DN 15 - 65	1.4021 / 17 027.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 80 - 150	1.4027 / 42 2906.5	1.4581 / 42 2941.4
Operating temp. range	-10 to 300 °C		
Face to face dimensions	Line 1 acc. to ČSN-EN 558+A1 (5/2012)		
Connection flanges	Acc. to ČSN-EN 1092-2 (1/1999)	Acc. to ČSN-EN 1092-1 (4/2002) + A1(7/2013)	
Flange faces	Type B1 (raised-faced) acc. to ČSN-EN 1092-2 (1/1999)	Type B1 (raised-faced) nebo Typ F (female) or Type D (groove) acc. to ČSN-EN 1092-1 (2/2003) + A1(7/2013)	
Type of plug	V-ported, parabolic, perforated		
Flow characteristic	Linear, equal-percentage, LDMspline®, parabolic		
Kvs value	0.4 to 360 m ³ /h		
Leakage rate	Class III. acc. to ČSN-EN 1349 (5/2001) (<0.1% Kvs) for control valves with metal-metal seat sealing Class IV. acc. to ČSN-EN 1349 (5/2001) (<0.01% Kvs) for control valves with metal-PTFE seat sealing		
Rangeability r	50 : 1		
Packing	O - ring EPDM t _{max} = 140°C, DRSpack®(PTFE) t _{max} = 260°C, Exp. graphite, bellows t _{max} = 500°C		

Průtokové součinitele Kvs a diferenční tlaky

Δp_{max} value is the valve max. differential pressure when open-close function is always guaranteed. In regard of service life of seat and plug, it is recommended so that permanent differential pressure would not exceed 1.6 MPa. Otherwise it is suitable to use perforated plug or sealing surfaces of seat and plug with a hard metal overlay.

For further information on actuating, see actuators' catalogue sheets

		Actuating (actuator)							series NV	series SV	series EV	series RV			
		Marking in valve spec. No.							EBM	EBM	EBN	EBN			
		Linear force							1000 N	1500 N	2500 N	4500 N			
DN	H	Kvs [m ³ /h]							Δp_{max} [Mpa]	Δp_{max} [Mpa]	Δp_{max} [Mpa]	Δp_{max} [Mpa]			
		1	2	3	4	5	6	7	met PTFE	met PTFE	met PTFE	met PTFE			
15	20	---	2.5 ¹⁾	1.6 ¹⁾	1.0 ¹⁾	0.6 ¹⁾	0.4 ¹⁾	0.25 ¹⁾	4.00	---	4.00	---			
15		4.0 ¹⁾	---	---	---	---	---	---	4.00	---	4.00	---			
20		---	---	2.5 ¹⁾	1.6 ¹⁾	1.0 ¹⁾	0.6 ¹⁾	---	4.00	---	4.00	---			
20		---	4.0 ¹⁾	---	---	---	---	---	4.00	---	4.00	---			
20		6.3 ¹⁾	---	---	---	---	---	---	2.15	---	3.63	---			
25		---	---	---	2.5 ¹⁾	1.6 ¹⁾	---	---	---	4.00	---	4.00	---		
25		10.0	6.3 ²⁾	4.0 ²⁾	---	---	---	---	1.24	1.65	2.16	2.57	---		
32		---	---	---	4.0 ¹⁾	---	---	---	---	4.00	---	4.00	---		
32		16.0	10.0	6.3 ²⁾	---	---	---	---	0.67	0.99	1.23	1.55	---		
40		25.0	16.0	10.0	---	---	---	---	0.38	0.63	0.73	0.99	---		
50	40.0	25.0	16.0	---	---	---	---	0.18	0.37	0.40	0.59	---			
65	63.0	40.0	25.0	---	---	---	---	0.07	0.22	0.20	0.35	---			
80	40	100.0	63.0	40.0	---	---	---	---	---	---	0.29	0.42	0.65	0.78	
100		160.0	100.0	63.0	---	---	---	---	---	---	0.16	0.27	0.40	0.50	
125		250.0	160.0	100.0	---	---	---	---	---	---	0.09	0.17	0.24	0.32	
150		360.0	250.0	160.0	---	---	---	---	---	---	---	0.05	0.12	0.15	0.23

1) parabolic plug

2) V-ported plug with linear characteristic, parabolic plug with equal-percentage, LDMspline® and parabolic characteristic

Perforated plug available only with Kvs values in shadowed frames with the following restrictions:

- Kvs values 2.5 to 1.6 m³/hour available with linear characteristic only
- Perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only.

Max. differential pressure Δp for valves PN 16 must be 1.6 MPa

metal - version with metal - metal seat sealing

PTFE - version with metal - PTFE seat sealing (is not applicable to contoured plugs)

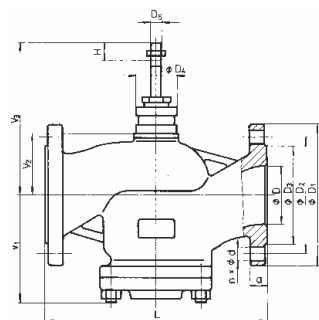
Max. differential pressures specified in table apply to PTFE and O-ring packing.

Δp for bellows must be consulted with the producer. max

Values Δp_{max} are set for the most unfavourable pressure ratios on the valve PN 40, but in concrete cases the real Δp value can be higher than values specified in the table above.

Dimensions and weights for the type RV / HU 2x1

DN	PN 16					PN 40					PN 16, PN 40												
	D ₁ mm	D ₂ mm	D ₃ mm	d mm	n	D ₁ mm	D ₂ mm	D ₃ mm	d mm	n	D mm	D ₄ mm	D ₅ mm	L mm	V ₁ mm	V ₂ mm	*V ₂ mm	V ₃ mm	*V ₃ mm	a mm	m ₁ kg	m ₂ kg	*m _v kg
15	95	65	45	14	4	95	65	45	14	4	15	44	10	130	68	47	---	143	---	16	4.5	5.5	---
20	105	75	58			105	75	58			20			150	68	47	---	143	---	18	5.5	6.5	---
25	115	85	68			115	85	68			25			160	85	52	250	148	346	18	6.5	8	3.5
32	140	100	78			140	100	78			32			180	85	52	250	148	346	20	8	9.5	3.5
40	150	110	88			150	110	88			40			200	85	52	250	148	346	20	9	11	3.5
50	165	125	102			165	125	102			50			230	117	72	270	168	366	20	14	21	3.5
65	185	145	122			185	145	122			65			290	117	72	270	168	366	22	18	27	3.5
80	200	160	138			200	160	138			80			310	152	106	452	222	568	24	26	40	4.5
100	220	180	158			220	180	158			100			350	152	106	452	222	568	24	38	49	4.5
125	250	210	188			250	210	188			125			400	175	134	480	250	596	26	58	82	5
150	285	240	212	285	240	212	150	480	200	134	480	250	596	28	78	100	5						



¹⁾ with regard of the standard previously in force, there is an option to have the number of connection bolts as stipulated in ČSN-EN 1092-1

²⁾ m_v - weight to be added to weight of valve equipped bellows packing

m₁ - valves RV / HU 211

m₂ - valves RV / HU 221 a RV / HU 231



RV / HU 2x3

Control valves and
Fail-safe action
valves

DN 25 - 150
PN 16 and 40

Control valves **RV 213**, **RV 223** and **RV 233** are single-seated valves with pressure-balanced plug designed for regulation and shut-off of process medium flow. Valves with a fail-safe action series **HU 213**, **HU 223** and **HU 233** have the same design as RV 2x3 with addition of increased seat sealing. Valves are equipped with fail-safe action actuators (valve closes upon power failure).

Technical data

Series	RV / HU 213	RV / HU 223	RV / HU 233
Type of valve	Two-way single-seated control valve with pressure balanced plug and with reverse function		
Nominal size range	DN 25 to 150		
Nominal pressure	PN 16, PN 40		
Body material	Spheroidal cast iron EN-JS 1025 (EN-GJS-400-10-LT)	Cast steel 1.0619 (GP240GH) 1.7357 (G17CrMo5-5)	Stainless steel 1.4581 (GX5CrNiMoNb19-11-2)
Seat material:	DN 25 - 50 1.4028 / 17 023.6	1.4028 / 17 023.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 65 - 150 1.4027 / 42 2906.5	1.4027 / 42 2906.5	1.4581 / 42 2941.4
Plug material:	DN 25 - 65 1.4021 / 17 027.6	1.4021 / 17 027.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 80 - 150 1.4027 / 42 2906.5	1.4027 / 42 2906.5	1.4581 / 42 2941.4
Operating temp. range	-10 to 260 °C	-10 to 260 °C	-10 to 260 °C
Face to face dimensions	Line 1 acc. to ČSN-EN 558+A1 (5/2012)		
Connection flanges	Acc. to ČSN-EN 1092-2 (1/1999)	Acc. to ČSN-EN 1092-1+A1 (7/2013)	
Flange faces	Type B1 (raised-faced) acc. to ČSN-EN 1092-2 (1/1999)	Type B1 (raised-faced) or Type F (female) nebo Type D (groove) acc. to ČSN-EN 1092-1+A1 (7/2013)	
Type of plug	V-ported, perforated		
Flow characteristic	Linear, equal-percentage, LDMspline®, parabolic		
Kvs value	4 to 360 m ³ /h		
Leakage rate	Class III. acc. to ČSN-EN 1349 (5/2001) (<0.1% Kvs) for control valves with metal-metal seat sealing Class IV. acc. to ČSN-EN 1349 (5/2001) (<0.01% Kvs) for control valves with metal-PTFE seat sealing		
Rangeability r	50 : 1		
Packing	O - ring EPDM t _{max} = 140 °C, DRSpack®(PTFE) t _{max} = 260 °C, bellows t _{max} = 260 °C		

Kvs values and differential pressures

Δp_{max} value is the valve max. differential pressure when open-close function is always guaranteed. In regard of service life of seat and plug, it is recommended so that permanent differential pressure would not exceed 1.6 MPa. Otherwise it is suitable to use perforated plug or sealing surfaces of seat and plug with a hard metal overlay.

For further information on actuating, see actuators' catalogue sheets		Actuating (actuator)			series NV		series SV		series EV		series RV	
		Marking in valve spec. no.			EBM		EBM		EBN		EBN	
		Linear force			1000 N		1500 N		2500 N		4500 N	
		Kvs [m ³ /h]			Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]		Δp_{max} [MPa]	
DN	H	1	2	3	metal		PTFE		metal		PTFE	
25	20	10	6.3 ¹⁾	4.0 ¹⁾	1.60	(1.60)	1.60	(1.60)	---	---	---	---
32		16.0	10.0	6.3 ¹⁾	1.60	(1.60)	1.60	(1.60)	---	---	---	---
40		25.0	16.0	10.0	1.60	(1.60)	1.60	(1.60)	---	---	---	---
50		40.0	25.0	16.0	1.60	(1.60)	1.60	(1.60)	---	---	---	---
65		63.0	40.0	25.0	1.60	(0.89)	1.60	(1.60)	---	---	---	---
80	40	100.0	63.0	40.0	---	---	---	---	4.0	(4.0)	4.0	(4.0)
100		160.0	100.0	63.0	---	---	---	---	4.0	(3.7)	4.0	(4.0)
125		250.0	160.0	100.0	---	---	---	---	4.0	(2.9)	4.0	(4.0)
150		360.0	250.0	160.0	---	---	---	---	4.0	(2.4)	4.0	(4.0)

¹⁾ linear characteristic only

metal - version with metal - metal seat sealing

PTFE - version with metal - PTFE seat sealing

(xx) - Δp_{max} values specified in parentheses apply to perforated plug

Max. differential pressure Δp for valves PN 16 must be 1.6 MPa.

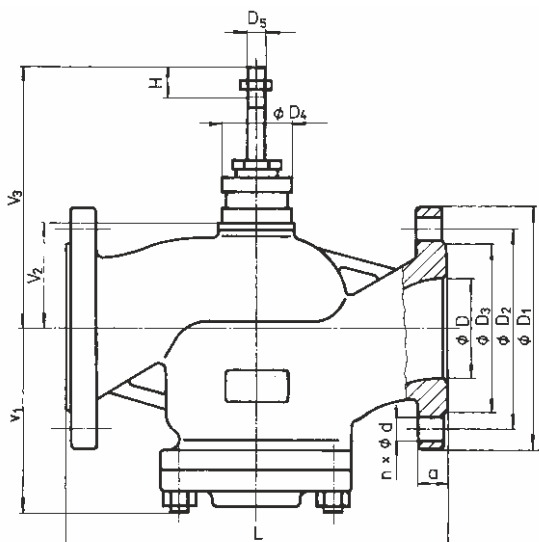
Max. differential pressures specified in table apply to PTFE and O-ring packing. Δp_{max} for bellows must be consulted with the producer.

Perforated plug available only with Kvs values in shadowed frames with the following restrictions:

- perforated plug with Kvs value acc. to column No. 2 available with linear or parabolic characteristic only

Dimensions and weights for the type RV / HU 2x3

DN	PN 16					PN 40					PN 16, PN 40												
	D ₁ mm	D ₂ mm	D ₃ mm	d mm	n	D ₁ mm	D ₂ mm	D ₃ mm	d mm	n	D mm	D ₁ mm	D ₃ mm	L mm	V ₁ mm	V ₂ mm	[#] V ₂ mm	V ₃ mm	[#] V ₃ mm	a mm	m ₁ kg	m ₂ kg	[#] m ₁ kg
25	115	85	68	14	4	115	85	68	14	4	25	10	10	160	85	52	250	148	346	18	6.5	8	3.5
32	140	100	78	140		100	78	14	32		180			85	52	250	148	346	20	8	9.5	3.5	
40	150	110	88	150		110	88	18	40		200			85	52	250	148	346	20	9	11	3.5	
50	165	125	102	165		125	102	18	50		230			117	72	270	168	366	20	14	21	3.5	
65	185	145	122	18	4 ¹⁾	185	145	122	22	8	65	44	14	290	117	72	270	168	366	22	18	27	3.5
80	200	160	138	200	160	138	22	80			310			152	106	452	222	568	24	26	40	4.5	
100	220	180	158	220	180	158	26	100			350			152	106	452	222	568	24	38	49	4.5	
125	250	210	188	250	210	188	26	125			400			175	134	480	250	596	26	58	82	5	
150	285	240	212	22	300	250	218	26	150	480	200	134	480	250	596	28	78	100	5				



¹⁾ with regard of the standard previously in force, there is an option

^{#)} to have the number of connection bolts as stipulated in ČSN-EN 1092-1 - for valve with bellows packing

m_v - weight to be added to weight of valve equipped with bellows packing

m₁ - valves RV / HU 213

m₂ - valves RV / HU 223 and RV / HU 233



RV 2x5

Control valves

DN 15 - 150
PN 16 a 40

Control valves **RV 215**, **RV 225** and **RV 235** are three-way valves with mixing or flow-diverting function.

Technical data				
Series		RV 215	RV 225	RV 235
Type of valve	Three-way control valve with reverse function			
Nominal size range	DN 15 to 150			
Nominal pressure	PN 16, PN 40			
Body material		Spheroidal cast iron EN-JS 1025 (EN-GJS-400-10-LT)	Cast steel 1.0619 (GP240GH) 1.7357 (G17CrMo5-5)	Stainless steel 1.4581 (GX5CrNiMoNb19-11-2)
Seat material:	DN 25 - 50	1.4028 / 17 023.6	1.4028 / 17 023.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 65 - 150	1.4027 / 42 2906.5	1.4027 / 42 2906.5	1.4581 / 42 2941.4
Plug material:	DN 25 - 65	1.4021 / 17 027.6	1.4021 / 17 027.6	1.4571 / 17 347.4
DIN W.Nr./ČSN	DN 80 - 150	1.4027 / 42 2906.5	1.4027 / 42 2906.5	1.4581 / 42 2941.4
Operating temp. range	-10 to 300 °C			
Face to face dimensions	Line 1 acc. to ČSN-EN 558+A1 (5/2012)			
Connection flanges	Acc. to ČSN-EN 1092-2 (1/1999)		Acc. to ČSN-EN 1092-1+A1 (7/2013)	
Flange face	Type B1 (raised-face) acc. to ČSN-EN 1092-2 (1/1999)		Typ B1 (raised-face) nebo Typ F (female) nebo Typ D (groove) acc. to ČSN-EN 1092-1+A1 (7/2013)	
Type of plug	V-ported, perforated			
Flow characteristic	Linear, equal-percentage, LDMspline®, parabolic			
Kvs value	1.6 to 360 m ³ /h			
Leakage rate in A-AB way	Class III. acc. to ČSN-EN 1349 (5/2001) (<0.1% Kvs) for control valves with metal-metal seat sealing Class IV. acc. to ČSN-EN 1349 (5/2001) (<0.01% Kvs) for control valves with metal-PTFE seat sealing			
Leakage rate in B-AB way	Not guaranteed, to 2% Kvs			
Rangeability r	50 : 1			
Packing	O - ring EPDM t _{max} = 140 °C, DRSpack® (PTFE) t _{max} = 260 °C, bellows t _{max} = 260 °C			

Kvs values and differential pressures

Δp_{max} value is the valve max. differential pressure when open-close function is always guaranteed. In regard of service life of seat and plug, it is recommended so that permanent differential pressure would not exceed 1.6 MPa. Otherwise it is suitable to use perforated plug or sealing surfaces of seat and plug with a hard metal overlay.

For further information on actuating, see catalogue sheets		Actuating (actuator) Marking in valve specification No.	series NV	series SV	series EV	series RV						
		Linear force	EBM	EBM	EBN	EBN						
			1000 N	1500 N	2500 N	4500 N						
DN	H	Kvs [m ³ /h]			Δp_{max}		Δp_{max}		Δp_{max}		Δp_{max}	
		1	2	3	metal	PTFE	metal	PTFE	metal	PTFE	metal	PTFE
15	20	4.0 ¹⁾	2.5 ¹⁾	1.6 ¹⁾	3.40	---	4.00	---	4.00	---	---	---
20		6.3 ¹⁾	4.0 ¹⁾	2.5 ¹⁾	1.56	---	2.15	---	4.00	---	---	---
25		10.0	6.3 ²⁾	4.0 ²⁾	0.88	1.29	1.24	1.65	4.00	4.00	---	---
32		16.0	10.0	6.3 ²⁾	0.45	0.77	0.67	0.99	2.66	2.89	---	---
40		25.0	16.0	10.0	0.23	0.49	0.38	0.63	1.66	1.91	---	---
50	40	40.0	25.0	16.0	0.10	0.29	0.18	0.37	0.95	1.14	---	---
65		63.0	40.0	25.0	0.02	0.17	0.07	0.22	0.54	0.69	---	---
80		100.0	63.0	40.0	---	---	---	---	---	---	0.34	0.47
100		160.0	100.0	63.0	---	---	---	---	---	---	0.20	0.30
125		250.0	160.0	100.0	---	---	---	---	---	---	0.11	0.19
150	360.0	250.0	160.0	---	---	---	---	---	---	0.06	0.14	

¹⁾ parabolic plug in straight way, V-ported plug in angle way

²⁾ V-ported plug in angle way, in straight way for linear characteristic V-ported plug and for equal-percentage characteristic parabolic plug

metal - version with metal - metal seat sealing

PTFE - version with metal - PTFE seat sealing (does not apply to contoured plugs)

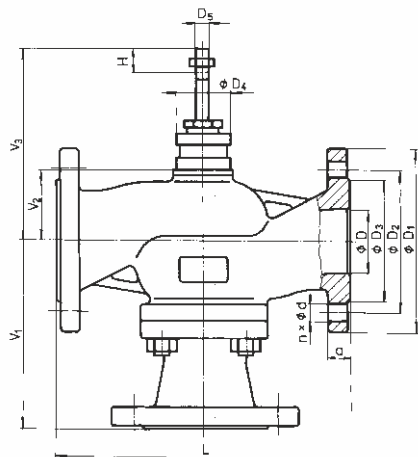
Max. differential pressures specified in table apply to PTFE and O-ring packing. Δp_{max} for bellows must be consulted with the producer.

Bellows packing can be used with V-ported plug only.

Max. differential pressure Δp for valves PN 16 must be 1.6 MPa.

Dimensions and weight of valves RV 2x5

DN	PN 16					PN 40					PN 16, PN 40													
	D ₁ mm	D ₂ mm	D ₃ mm	d mm	n	D ₁ mm	D ₂ mm	D ₃ mm	d mm	n	D mm	D ₄ mm	D ₅ mm	L mm	V ₁ mm	V ₂ mm	*V ₂ mm	V ₃ mm	*V ₃ mm	a mm	m ₁ kg	m ₂ kg	*m _v kg	
15	95	65	45	14	4	95	65	45	14	4	15	44	10	130	110	47	---	143	---	16	5.5	6	---	
20	105	75	58			105	75	58			14			20	150	115	47	---	143	---	18	6.5	7	---
25	115	85	68			115	85	68			18			25	160	130	52	250	148	346	18	8.3	9.5	3.5
32	140	100	78			140	100	78			18			32	180	135	52	250	148	346	20	10.5	12	3.5
40	150	110	88			150	110	88			18			40	200	140	52	250	148	346	20	12	13.5	3.5
50	165	125	102	18	4 ¹⁾	165	125	102	18	8	50	14	14	230	175	72	270	168	366	20	17	24	3.5	
65	185	145	122			185	145	122			22			65	290	180	72	270	168	366	22	22	31	3.5
80	200	160	138			200	160	138			22			80	310	220	106	452	222	568	24	31	43	4.5
100	220	180	158			235	190	162			22			100	350	230	106	452	222	568	24	44	55	4.5
125	250	210	188			270	220	188			26			125	400	260	134	480	250	596	26	65	90	5
150	285	240	212	22	8	300	250	218	26	150	480	290	134	480	250	596	28	94	120	5				



¹⁾ with regard of the standard previously in force, there is an option

²⁾ to have the number of onnection bolts as stipulated in ČSN-EN 1092-1 - for valve with bellows packing

m_v - weight to be added to weight of valve equipped with bellows packing

m₁ - valves RV 215

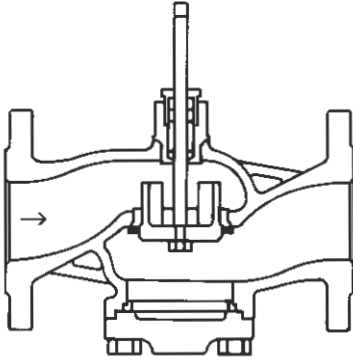
m₂ - valves RV 225 and RV 235

Valve complete specification No. for ordering RV / HU 2x1, RV / HU 2x3, RV 2x5									
		XX	XXX	XXX	XXXX	XX	- XX	/ XXX	- XXX
1. Valve	Control valve	RV							
	Fail-safe action valve	HU							
2. Series	Valves made of sph. cast iron EN-JS 1025		2 1						
	Valves made of cast steel 1.0619, 1.7357		2 2						
	Valves made of stainless steel 1.4581		2 3						
	Reverse valve		1						
	Pressure-balanced, reverse valve		3						
	Mixing (diverting), reverse valve		5						
3. Actuating	Electric actuator			E					
¹⁾ Fail-safe action actuators	NV230A-RE (AC230V, 3-bod)			E B M					
	NV24A-RE (AC/DC24V, 3-bod)			E B M					
	NV24A-MP-RE (AC/DC24V, (0)2...10V)			E B M					
	NVC24A-MP-RE (AC/DC24V, (0)2...10V)			E B M					
	NVK24A-3-RE (AC/DC24V, 3-bod) ¹⁾			E B M					
	NVK24A-MP-RE (AC/DC24V, (0)2...10V) ¹⁾			E B M					
	NVK230A-3-E (AC230V, 3-bod) ¹⁾			E B M					
	NVKC24A-MP-RE (AC/DC24V, (0)2...10V) ¹⁾			E B M					
	SV24A-MP-RE (AC/DC24V, (0)2...10V)			E B M					
	SVC230A-RE (AC230V, 3-bod)			E B M					
	SV24A-RE (AC/DC24V, 3-bod)			E B M					
	SVC24A-MP-RE (AC/DC24V, (0)2...10V)			E B M					
	EV230A-RE (AC230V, 3-bod)			E B N					
	EV24A-RE (AC/DC24V, 3-bod)			E B N					
	EV24A-MP-RE (AC/DC24V, (0)2...10V)			E B N					
	EVC24A-MF-RE (AC/DC24V, (0)2...10V)			E B N					
	RV24A-MF-RE (AC/DC24V, (0)2...10V)			E B N					
4. Connection	Raised flange				1				
	Female flange				2				
	Groove flange				3				
5. Body material	Cast steel 1.0619 (-20 to 400 °C)				1				
(Operating temperature ranges are specified in parentheses)	Spherooidal cast iron EN-JS 1025 (-20 to 300 °C)				4				
	CrMo steel 1.7357 (-20 to 500 °C)				7				
	Stainless steel 1.4581 (-20 to 400 °C)				8				
	Other material on request				9				
6. Seat sealing	Metal - Metal				1				
²⁾ from DN 25; t _{max} = 260 °C	Soft sealing (metal - PTFE) in straight way ²⁾				2				
	Hard metal overlay on sealing surfaces				3				
7. Packing	O - ring EPDM				1				
	DRSpack® (PTFE)				3				
	Bellows				7				
	Bellows with safety PTFE packing				8				
8. Flow characteristic	Linear					L			
³⁾ Not applicable to RV 2x5	Equal-percentage in straight way					R			
	LDMspline ³⁾					S			
	Parabolic ³⁾					P			
	Linear - perforated plug ³⁾					D			
	Equal-percentage - perforated plug ³⁾					Q			
	Parabolic - perforated plug ³⁾					Z			
9. Kvs	Column No. acc. to Kvs values table					X			
10. Jmenovitý tlak PN	PN 16						16		
	PN 40						40		
11. Max. operating temperature °C	O - ring EPDM							140	
⁴⁾ Not applicable for RV / HU 2x3	DRSpack® (PTFE), bellows							220	
	DRSpack® (PTFE), bellows							260	
	Bellows ⁴⁾							300	
12. Nominal size DN	DN								XXX

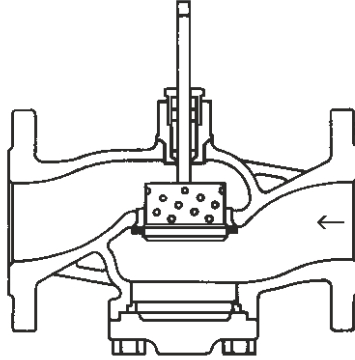
Ordering example: Two-way control valve DN 65, PN 40, with Belimo actuator NV230A-RE, body material: spheroidal cast iron, flange with raised face, metal-metal seat sealing, PTFE packing, linear characteristic, Kvs = 63 m³/hour is specified as follows: **RV 211 EBM 1413 L1 40/150-65**

Valves RV / HU 2x1

Section of valve with V-ported plug

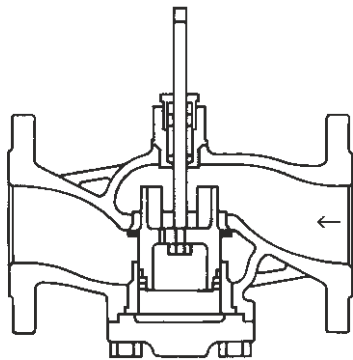


Section of valve with perforated plug

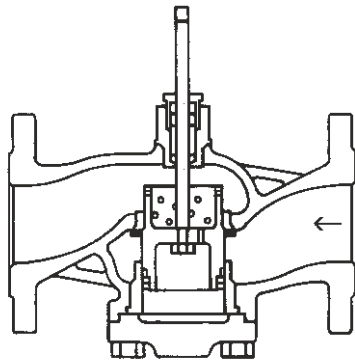


Valves RV / HU 2x3

Section of pressure-balanced valve with V-ported plug

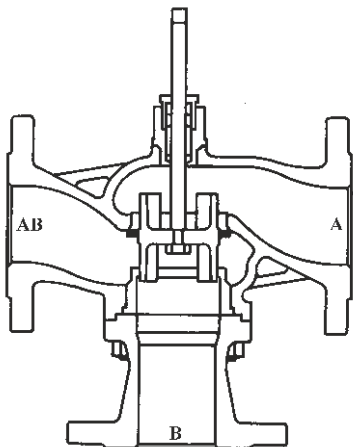


Section of pressure-balanced valve with perforated plug



Valves RV 2x5

Section of three-way valve with V-ported plug





Elektrické pohony

Belimo

NV..., SV... EV..., RV...

Technical data

Type	NV230A-RE	NV24A-RE	NV24A-MP-RE	NVC24A-MP-RE	NVK24A-3-RE	NVK24A-MP-RE
Marking in valve specification No.	EBM					
Voltage	AC 230 V	AC/DC 24 V				
Frequency	50 / 60 Hz					
Motor power	2 W / 4,5 VA	1,5 W / 3 VA	3,5 W / 5,5 VA		2,5 W / 6 VA	
Control	3 - point		DC (0)2...10V parameterisable		3 - point	DC (0)2...10V parameterisable
Running time	150 s		35 s		150 s	
Fail-safe mode	---		---		35 s	
Fail-safe function	---		---		NC, NO, adjustable	
Nominal force	1000 N					
Travel	20 mm					
Enclosure	IP 54					
Process medium max. temp.	+5 to 200 °C, with cooling adapter up to 240 °C					
Ambient temperature range	0 to 50°C					
Ambient humidity limit	5 ... 95 %					
Weight	2,6 kg	2,5 kg	2,6 kg	2,6 kg	2,8 kg	

Technical data

Type	NVK230A-3-RE	NVKC24A-MP-RE	SV24A-MP-RE	SVC230A-RE	SV24A-RE	SVC24A-MP-RE
Marking in valve specification No.	EBM			EBM		
Voltage	AC 230 V	AC/DC 24 V		AC 230 V	AC/DC 24 V	
Frequency	50 / 60 Hz					
Motor power	2 W / 4,5 VA	4,5 W / 9 VA	2 W / 3,5 VA	2 W / 4 VA	2,5 W / 5 VA	4 W / 6 VA
Control	3 - point	DC (0)2...10V parameterisable		3 - point		DC (0)2...10V parameterisable
Running time	150 s	35 s	150 s		35 s	
Fail-safe mode	35 s		---			
Fail-safe function	NC, NO, adjustable		---			
Nominal force	1000 N			1500 N		
Travel	20 mm					
Enclosure	IP 54					
Process medium max. temp.	+5 to 200 °C, with cooling adapter up to 240 °C					
Ambient temperature range	0 up to 50°C					
Ambient humidity limit	5 ... 95 %					
Weight	2,9 kg	2,8 kg	2,6 kg		2,6 kg	

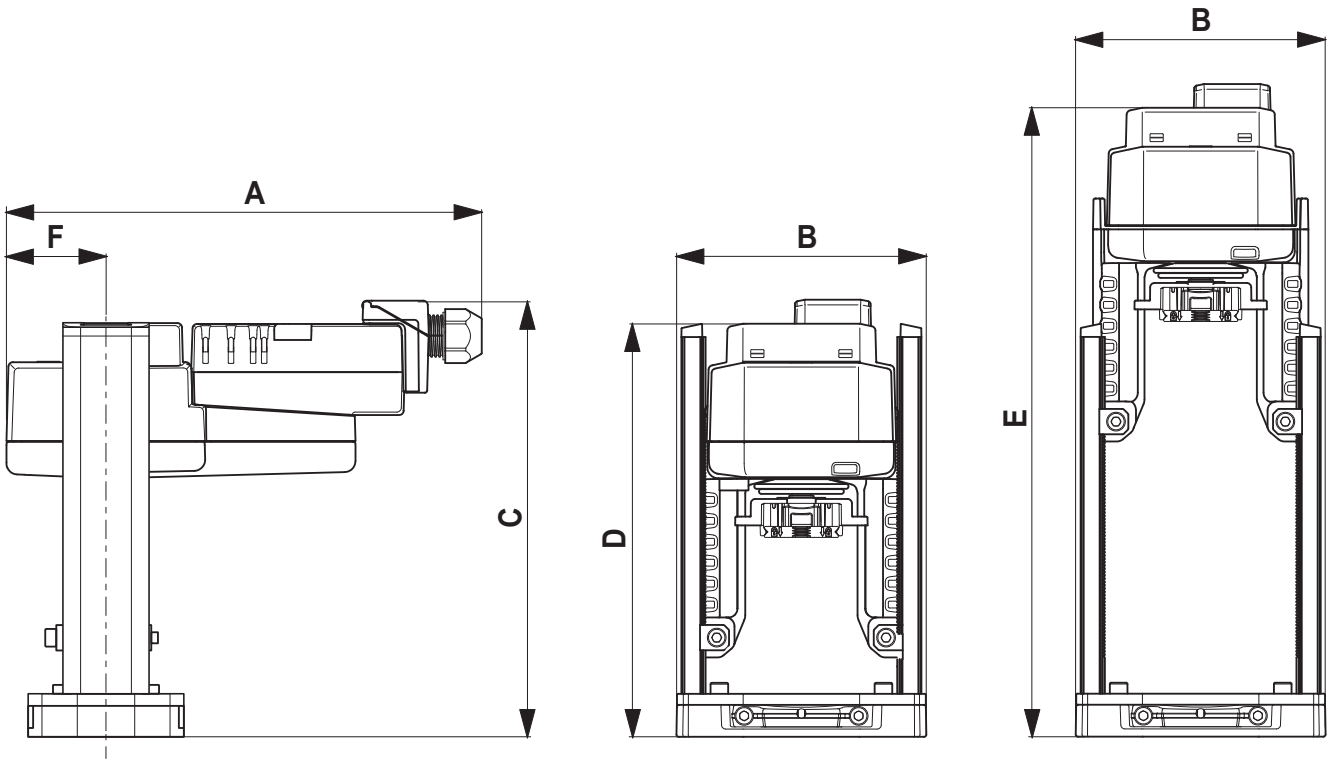
Technical data

Type	EV230A-RE	EV24A-RE	EV24A-MP-RE	EVC24A-MF-RE	EVC24A-MF-RE	RV24A-MF-RE
Marking in valve specification No.	EBN					
Voltage	AC 230 V	AC/DC 24 V				
Frequency	50 / 60 Hz					
Motor power	5,5 W / 9,5 VA	2 W / 4,5 VA	4 W / 6 VA	11 W / 18 VA	6 W / 11 VA	
Control	3 - point			DC (0)2...10V parameterisable		
Running time	150 s			35 s	150 s	
Fail-safe mode	---					
Fail-safe function	---					
Nominal force	2500 N					4500 N
Travel	40 mm					
Enclosure	IP 54					
Process medium max. temp.	+5 to 200°C, with cooling adapter up to 240°C					
Ambient temperature range	0 to 50°C					
Ambient humidity limit	5 ... 95 %					
Weight	7,4 kg			7,5 kg		

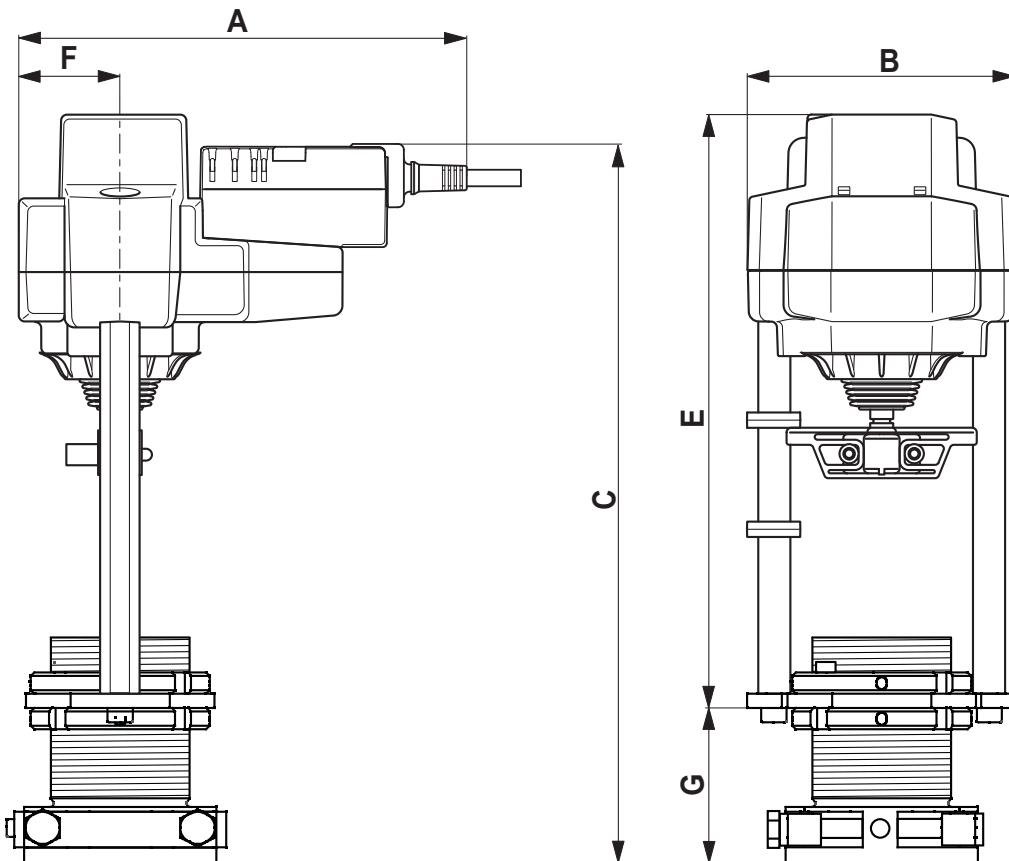
Note: Specifications and technical data are for information only.

Detailed technical informations can be found in producer's data sheet or on the website www.belimo.ch

Actuator marking	Dimensions [mm]							drawing
	A	B	C	D	E	F	G	
NV230A-RE	193	113	200	190	290	45	---	no. 1
NV24A-RE	193	113	200	190	290	45	---	
NV24A-MP-RE	215	113	200	190	290	45	---	
NVC24A-MP-RE	215	113	200	190	290	45	---	
NVK24A-3-RE	244	113	217	207	307	45	---	
NVK24A-MP-RE	244	113	217	207	307	45	---	
NVK230A-3-RE	250	113	209	207	307	45	---	no. 1
NVKC24A-MP-RE	244	113	217	207	307	45	---	
SV24A-MP-RE	215	113	200	190	290	45	---	
SV230A-RE	215	113	200	190	290	45	---	
SV24A-RE	193	113	200	190	290	45	---	
SVC24A-MP-RE	215	113	200	190	290	45	---	no. 2
EV230A-RE	227	140	342...408	---	315	53	44...110	
EV24A-RE	205	140	342...408	---	315	53	44...110	
EV24A-MP-RE	227	140	342...408	---	315	53	44...110	
EVC24A-MF-RE	233	140	344...410	---	315	53	44...110	
RV24A-MF-RE	233	140	344...410	---	315	53	44...110	



drawing 1: Actuators NV..., SV...



drawing 2: Actuators EV..., RV...

Maximal permissible operating pressures [MPa] acc. to ČSN EN 12516-1, ČSN EN 1092-2															
Material	PN	Temperature [°C]													
		RT ¹⁾	100	120	150	200	250	300	350	375	400	425	450	475	500
Spher. cast iron EN-JS 1025 (EN-GJS-400-18-LT)	16	1,60	1,60	1,60	1,55	1,47	1,39	1,28	1,12	---	---	---	---	---	---
	25	2,50	2,50	2,50	2,43	2,30	2,18	2,00	1,75	---	---	---	---	---	---
	40	4,00	4,00	4,00	3,88	3,68	3,48	3,20	2,80	---	---	---	---	---	---
Cast steel 1.0619 (GP240GH)	16	1,56	1,36	1,32	1,27	1,14	1,04	0,94	0,88	0,86	0,84	---	---	---	---
	25	2,44	2,13	2,07	1,98	1,78	1,62	1,47	1,37	1,35	1,32	---	---	---	---
	40	3,90	3,41	3,31	3,17	2,84	2,60	2,35	2,19	2,16	2,11	---	---	---	---
Chrommolybden steel 1.7357 (G17CrMo5-5)	16	1,63	1,63	1,61	1,58	1,49	1,43	1,33	1,23	1,20	1,15	1,11	1,07	1,00	0,89
	25	2,55	2,54	2,51	2,48	2,33	2,23	2,08	1,93	1,88	1,80	1,73	1,67	1,56	1,39
	40	4,08	4,07	4,02	3,96	3,74	3,57	3,33	3,09	3,00	2,89	2,77	2,67	2,50	2,23
Stainless steel 1.4581 (GX5CrNiMoNb19-11-2)	16	1,59	1,44	1,39	1,33	1,25	1,17	1,10	1,06	1,05	1,02	1,02	1,01	1,00	0,89
	25	2,49	2,25	2,18	2,08	1,95	1,84	1,72	1,66	1,63	1,60	1,59	1,58	1,56	1,39
	40	3,98	3,60	3,49	3,33	3,13	2,94	2,75	2,65	2,61	2,56	2,54	2,52	2,50	2,23
Stainless steel 1.4308 (GX5CrNi19-10)	16	1,52	1,17	1,12	1,06	0,96	0,89	0,83	0,79	0,77	0,74	0,74	0,72	0,71	0,70
	25	2,37	1,84	1,76	1,66	1,50	1,40	1,30	1,23	1,20	1,16	1,15	1,13	1,11	1,09
	40	3,79	2,94	2,82	2,65	2,41	2,24	2,08	1,97	1,91	1,86	1,84	1,80	1,78	1,74

¹⁾ -10°C to 50°C



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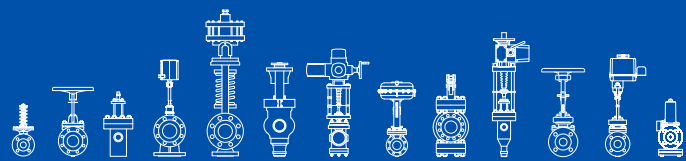
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