

DISTECH
CONTROLS™

Submittal
23 09 13.33-1

AUTHORIZED PARTNER

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Project Data

Date: 10/04/2024
Project Number: 24184
Project Name: Danville High School
Owner: Danville Community School Corporation

Customer

A.A. Huber & Sons, Inc.
500 North Jackson Street
Greencastle, IN 46135
United States

Customer PO Number: Contract 21544

Contracting Team

Project Manager: Ryan Jackson
Project Engineer: Dave Moor

Engineer

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225 Airport North Office Park
Fort Wayne, IN 46825
United States

Architect

Barton-Coe-Vilamaa
225 Airport North Office Park
Fort Wayne, IN 46825
United States

We are pleased to provide the enclosed submittal for your review

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Company: A.A. Huber & Sons, Inc. Contact: _____ Address: 500 North Jackson Street _____ Greencastle, Indiana 46135 _____ USA Phone: 765.6533133 Fax: _____ E-Mail: _____ Customer Number: 390846 _____	My Belimo Partner: Jackson Systems Contact: Dave Moor Address: 55418 Elmwood Avenue _____ Indianapolis, IN 46203 _____ USA Phone: 317.222.7224 Fax: _____ E-Mail: dave.moor@jacksonsystem.com _____ _____
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Water

Pos	Qty	Tag	Control Signal	Valve Pattern	Flow	ΔP	Req. Cv	Pipe Size	Body Size	Valve Cv	Actual ΔP	Close Off Pressure	Valve Part Nr.	Connection	Actuator Part Nr.	Set Up	P-Code
1	2	RTU-A1 HW ; RTU-C3 HW	2-10 VDC	2W	10.01	5.00	4.48	1-1/2"	1"	7.4	1.83	200 psi	B222	Screwed/NPT	LF24-SR US	NO/FO	
2	2	RTU-A1 CHW ; RTU-C3 CHW	2-10 VDC	2W	28.23	5.00	12.62	2"	1-1/4"	18.2	2.41	200 psi	B230	Screwed/NPT	LF24-SR US	NC/FC	
3	6	RTU-A3 HW ; RTU-A4 HW ; RTU-A5 HW ; RTU-F1 HW ; RTU-F2 HW ; RTU-G1 HW	2-10 VDC	2W	15.01	5.00	6.71	2"	1-1/4"	10	2.25	200 psi	B229	Screwed/NPT	LF24-SR US	NO/FO	
4	4	RTU-A3 CHW ; RTU-A5 CHW ; RTU-F1 CHW ; RTU-F2 CHW	2-10 VDC	2W	42.95	5.00	19.21	2-1/2"	1-1/4"	25	2.95	200 psi	B231	Screwed/NPT	AFRB24-SR	NC/FC	
5	2	RTU-A4 CHW ; RTU-G1 CHW	2-10 VDC	2W	28.93	5.00	12.94	2"	1-1/4"	18.2	2.53	200 psi	B230	Screwed/NPT	LF24-SR US	NC/FC	
6	2	RTU-A2 HW ; RTU-C4 HW	2-10 VDC	2W	18.01	5.00	8.05	1-1/2"	3/4"	10	3.24	200 psi	B219B	Screwed/NPT	TFRB24-SR	NO/FO	
7	2	RTU-A2 CHW ; RTU-C4 CHW	2-10 VDC	2W	51.24	5.00	22.92	2-1/2"	2"	29	3.12	200 psi	B248	Screwed/NPT	AFRB24-SR	NC/FC	
8	2	RTU-B1 HW ; RTU-C2 HW	2-10 VDC	2W	34.60	5.00	15.47	2-1/2"	1-1/2"	19	3.32	200 psi	B238	Screwed/NPT	AFRB24-SR	NO/FO	
9	2	RTU-B1 CHW ; RTU-C2 CHW	MFT (Configurable)	2W	95.59	5.00	42.75	3"	2-1/2"	58	2.72	100 psi	B261	Screwed/NPT	AFRX24-MFT	NC/FC	A01
10	4	RTU-B2 HW ; RTU-B3 HW ; RTU-C1 HW ; RTU-E1 HW	2-10 VDC	2W	24.02	4.00	12.01	2-1/2"	1-1/2"	19	1.6	200 psi	B238	Screwed/NPT	AFRB24-SR	NO/FO	
11	4	RTU-B2 CHW ; RTU-B3 CHW ; RTU-C1 CHW ; RTU-E1 CHW	2-10 VDC	2W	67.53	5.00	30.2	2-1/2"	1-1/2"	34	3.94	200 psi	B240	Screwed/NPT	AFRB24-SR	NC/FC	
12	1	RTU-D1 HW	2-10 VDC	2W	40.03	5.00	17.9	2-1/2"	1-1/2"	19	4.44	200 psi	B238	Screwed/NPT	AFRB24-SR	NO/FO	

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Water (Continued)

Pos	Qty	Tag	Control Signal	Valve Pattern	Flow	ΔP	Req. Cv	Pipe Size	Body Size	Valve Cv	Actual ΔP	Close Off Pressure	Valve Part Nr.	Connection	Actuator Part Nr.	Set Up	P-Code
13	1	RTU-D1 CHW	MFT (Configurable)	2W	112.46	5.00	50.29	3"	2-1/2"	58	3.76	100 psi	B261	Screwed/NPT	AFRX24-MFT	NC/FC	A01
14	1	RTU-D2 HW	2-10 VDC	2W	22.52	4.00	11.26	2"	1-1/2"	19	1.4	200 psi	B238	Screwed/NPT	AFRB24-SR	NO/FO	
15	1	RTU-D2 CHW	2-10 VDC	2W	42.41	5.00	18.97	2-1/2"	2"	29	2.14	200 psi	B248	Screwed/NPT	AFRB24-SR	NC/FC	
16	1	RTU-G3 HW	2-10 VDC	2W	9.01	4.00	4.51	1-1/2"	1"	7.4	1.48	200 psi	B222	Screwed/NPT	LF24-SR US	NO/FO	
17	1	RTU-G3 CHW	2-10 VDC	2W	16.94	5.00	7.58	2"	1-1/4"	10	2.87	200 psi	B229	Screwed/NPT	LF24-SR US	NC/FC	
18	1	RTU-G2 HW	2-10 VDC	2W	17.88	5.00	8	1-1/2"	1-1/4"	10	3.2	200 psi	B229	Screwed/NPT	LF24-SR US	NO/FO	
19	1	RTU-G2 CHW	2-10 VDC	2W	27.35	5.00	12.23	2"	1-1/2"	19	2.07	200 psi	B238	Screwed/NPT	AFRB24-SR	NC/FC	
20	1	DHU-1 HW	2-10 VDC	2W	86.40	5.00	38.64	3"	2"	46	3.53	200 psi	B249	Screwed/NPT	AFRB24-SR	NO/FO	
21	1	AHU-E1 HW	2-10 VDC	2W	25.18	5.00	11.26	1-1/2"	1"	19	1.76	200 psi	B224	Screwed/NPT	LF24-SR US	NO/FO	
22	1	AHU-E1 CHW	2-10 VDC	2W	34.54	5.00	15.45	2"	1-1/2"	19	3.3	200 psi	B238	Screwed/NPT	AFRB24-SR	NC/FC	
23	1	AHU-E2 HW	2-10 VDC	2W	67.15	5.00	30.03	2"	1-1/2"	35	3.68	200 psi	B240	Screwed/NPT	AFRB24-SR	NO/FO	
24	1	AHU-E2 CHW	2-10 VDC	2W	88.58	5.00	39.61	3"	2"	46	3.71	200 psi	B249	Screwed/NPT	AFRB24-SR	NC/FC	
25	1	AHU-E3 HW	2-10 VDC	2W	4.20	5.00	1.88		1/2"	1.9	4.89	200 psi	B211B	Screwed/NPT	TFRB24-SR	NO/FO	
26	1	AHU-E3 CHW	2-10 VDC	2W	5.54	5.00	2.48		1/2"	3	3.41	200 psi	B212B	Screwed/NPT	TFRB24-SR	NC/FC	
27	2	AHU-H1 HW ; AHU-H2 HW	2-10 VDC	2W	62.95	5.00	28.15	2"	1-1/2"	29	4.71	200 psi	B239	Screwed/NPT	AFRB24-SR	NO/FO	
28	2	AHU-H1 CHW ; AHU-H2 CHW	2-10 VDC	2W	82.10	5.00	36.72	3"	2"	46	3.19	200 psi	B249	Screwed/NPT	AFRB24-SR	NC/FC	
29	1	AHU-J1 HW	2-10 VDC	2W	20.98	5.00	9.38	1-1/2"	1"	10	4.4	200 psi	B223	Screwed/NPT	LF24-SR US	NO/FO	
30	1	AHU-J1 CHW	2-10 VDC	2W	28.64	5.00	12.81	1-1/2"	3/4"	14	4.18	200 psi	B220B	Screwed/NPT	TFRB24-SR	NC/FC	
31	1	AHU-J2 HW	2-10 VDC	2W	28.96	5.00	12.95	1-1/2"	3/4"	14	4.28	200 psi	B220B	Screwed/NPT	TFRB24-SR	NO/FO	
32	1	AHU-J2 CHW	2-10 VDC	2W	38.23	5.00	17.1	2-1/2"	1-1/2"	19	4.05	200 psi	B238	Screwed/NPT	AFRB24-SR	NC/FC	
33	2	AHU-J3 HW ; AHU-J5 HW	2-10 VDC	2W	30.22	5.00	13.51	1-1/2"	1"	19	2.53	200 psi	B224	Screwed/NPT	LF24-SR US	NO/FO	
34	2	AHU-J3 CHW ; AHU-J5 CHW	2-10 VDC	2W	39.89	5.00	17.84	2-1/2"	1-1/2"	19	4.41	200 psi	B238	Screwed/NPT	AFRB24-SR	NC/FC	

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Water (Continued)

Pos	Qty	Tag	Control Signal	Valve Pattern	Flow	ΔP	Req. Cv	Pipe Size	Body Size	Valve Cv	Actual ΔP	Close Off Pressure	Valve Part Nr.	Connection	Actuator Part Nr.	Set Up	P-Code
35	1	AHU-J4 HW	2-10 VDC	2W	68.83	5.00	30.78	2"	1-1/2"	35	3.87	200 psi	B240	Screwed/NPT	AFRB24-SR	NO/FO	
36	1	AHU-J4 CHW	2-10 VDC	2W	92.25	5.00	41.26	3"	2"	46	4.02	200 psi	B249	Screwed/NPT	AFRB24-SR	NC/FC	
37	1	HCFC-D1 HW	2-10 VDC	2W	2.20	5.00	0.98	3/4"	1/2"	1.2	3.36	200 psi	B210B	Screwed/NPT	TR24-SR-T US	NO	
38	1	HCFC-D1 CHW	2-10 VDC	2W	2.20	5.00	0.98	3/4"	1/2"	1.2	3.36	200 psi	B210B	Screwed/NPT	TR24-SR-T US	NC	
39	3	HCFC-G1 HW ; HCFC-G2 HW ; HCFC-G3 HW	2-10 VDC	2W	0.56	5.00	0.25	3/4"	1/2"	0.3	3.48	200 psi	B207B	Screwed/NPT	TR24-SR-T US	NO	
40	3	HCFC-G1 CHW ; HCFC-G2 CHW ; HCFC-G3 CHW	2-10 VDC	2W	0.96	5.00	0.43	3/4"	1/2"	0.46	4.36	200 psi	B208B	Screwed/NPT	TR24-SR-T US	NC	
41	1	BC-H1 HW	2-10 VDC	2W	4.26	5.00	1.91	3/4"	1/2"	1.9	5.03	200 psi	B211B	Screwed/NPT	TR24-SR-T US	NO	
42	1	BC-H1 CHW	2-10 VDC	2W	4.51	5.00	2.02	3/4"	1/2"	3	2.26	200 psi	B212B	Screwed/NPT	TR24-SR-T US	NC	
43	1	BC-H2 HW	2-10 VDC	2W	3.18	5.00	1.42	3/4"	1/2"	1.9	2.8	200 psi	B211B	Screwed/NPT	TR24-SR-T US	NO	
44	1	BC-H2 CHW	2-10 VDC	2W	6.69	5.00	2.99	3/4"	1/2"	3	4.97	200 psi	B212B	Screwed/NPT	TR24-SR-T US	NC	
45	1	HC-D1	2-10 VDC	2W	16.28	5.00	7.28	1-1/2"	1"	7.4	4.84	200 psi	B222	Screwed/NPT	LXR24-SR-T	NO	000
46	1	HC-D2	2-10 VDC	2W	2.44	5.00	1.09	3/4"	1/2"	1.2	4.13	200 psi	B210B	Screwed/NPT	TR24-SR-T US	NO	
47	3	HC-D3 ; HC-D5 ; HC-D6	2-10 VDC	2W	6.10	5.00	2.73	1-1/4"	3/4"	4.7	1.68	200 psi	B217B	Screwed/NPT	TR24-SR-T US	NO	
48	1	HC-D4	2-10 VDC	2W	9.44	5.00	4.22	1-1/4"	3/4"	4.7	4.03	200 psi	B217B	Screwed/NPT	TR24-SR-T US	NO	
49	1	HC-D7	2-10 VDC	2W	4.34	5.00	1.94	1"	1/2"	3	2.09	200 psi	B212B	Screwed/NPT	TR24-SR-T US	NO	
50	5	CH-A1 ; CH-A2 ; CH-A3 ; CH-G1 ; CH-G2	On/Off/Floating Point	3W M/D	2.52	5.00	1.13	1"	1/2"	1.2	4.41	200 psi	B310B	Screwed/NPT	TR24-3-T US	NO	
51	9	CH-A4 ; CH-B1 ; CH-B2 ; CH-C1 ; CH-C2 ; CH-F1 ; CH-F2 ; CH-H1 ; CH-H2	On/Off/Floating Point	3W M/D	1.62	5.00	0.72	3/4"	1/2"	0.8	4.1	200 psi	B309B	Screwed/NPT	TR24-3-T US	NO	
52	3	CH-C3 ; CH-C4 ; CH-D3	On/Off/Floating Point	3W M/D	1.15	5.00	0.51	3/4"	1/2"	0.8	2.07	200 psi	B309B	Screwed/NPT	TR24-3-T US	NO	
53	1	CH-D1	On/Off/Floating Point	3W M/D	1.28	5.00	0.57	3/4"	1/2"	0.8	2.56	200 psi	B309B	Screwed/NPT	TR24-3-T US	NO	
54	1	CH-D2	On/Off/Floating Point	3W M/D	4.05	5.00	1.81	1"	1/2"	1.9	4.54	200 psi	B311B	Screwed/NPT	TR24-3-T US	NO	
55	1	CH-H3	On/Off/Floating Point	3W M/D	3.36	5.00	1.5	1"	1/2"	1.9	3.13	200 psi	B311B	Screwed/NPT	TR24-3-T US	NO	
56	4	UH-D1 ; UH-F1 ; UH-F2 ; UH-G1	On/Off	2W	1.80	4.00	0.9	3/4"	1/2"	1.2	2.25	200 psi	B210B	Screwed/NPT	TFRB120	NO/FO	

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Water (Continued)

Pos	Qty	Tag	Control Signal	Valve Pattern	Flow	ΔP	Req. Cv	Pipe Size	Body Size	Valve Cv	Actual ΔP	Close Off Pressure	Valve Part Nr.	Connection	Actuator Part Nr.	Set Up	P-Code
57	5	UH-G2 ; UH-G3 ; UH-G4 ; UH-G5 ; UH-H1	On/Off	2W	0.80	5.00	0.36	3/4"	1/2"	0.46	3.02	200 psi	B208B	Screwed/NPT	TFRB120	NO/FO	
58	10	VAV-A1 ; VAV-A2 ; VAV-A3 ; VAV-A4 ; VAV-A5 ; VAV-A6 ; VAV-A7 ; VAV-A8 ; VAV-A9 ; VAV-A11	On/Off/Floating Point	2W	0.50	5.00	0.22	3/4"	1/2"	0.3	2.78	200 psi	B207B	Screwed/NPT	TR24-3-T US	NO	
59	9	VAV-A14 ; VAV-A22 ; VAV-A25 ; VAV-A30 ; VAV-B15 ; VAV-C14 ; VAV-C15 ; VAV-C20 ; VAV-C25	On/Off/Floating Point	2W	0.50	5.00	0.22	3/4"	1/2"	0.3	2.78	200 psi	B207B	Screwed/NPT	TR24-3-T US	NO	
60	8	VAV-A10 ; VAV-A17 ; VAV-A29 ; VAV-A40 ; VAV-B14 ; VAV-B16 ; VAV-C37 ; VAV-F5	On/Off/Floating Point	2W	1.21	5.00	0.54	3/4"	1/2"	0.8	2.29	200 psi	B209B	Screwed/NPT	TR24-3-T US	NO	
61	13	VAV-A12 ; VAV-A23 ; VAV-A27 ; VAV-A31 ; VAV-A32 ; VAV-A36 ; VAV-A39 ; VAV-B29 ; VAV-C18 ; VAV-C23 ; VAV-C28 ; VAV-E3 ; VAV-G4	On/Off/Floating Point	2W	2.63	5.00	1.18	3/4"	1/2"	1.2	4.8	200 psi	B210B	Screwed/NPT	TR24-3-T US	NO	
62	10	VAV-A13 ; VAV-A21 ; VAV-A37 ; VAV-C1 ; VAV-C2 ; VAV-C3 ; VAV-C4 ; VAV-C5 ; VAV-C8 ; VAV-C9	On/Off/Floating Point	2W	2.98	5.00	1.33	3/4"	1/2"	1.9	2.46	200 psi	B211B	Screwed/NPT	TR24-3-T US	NO	
63	9	VAV-C16 ; VAV-C34 ; VAV-F6 ; VAV-F7 ; VAV-F8 ; VAV-F9 ; VAV-J1 ; VAV-J2 ; VAV-J3	On/Off/Floating Point	2W	2.98	5.00	1.33	3/4"	1/2"	1.9	2.46	200 psi	B211B	Screwed/NPT	TR24-3-T US	NO	
64	3	VAV-A16 ; VAV-A33 ; VAV-A34	On/Off/Floating Point	2W	2.51	5.00	1.12	3/4"	1/2"	1.2	4.38	200 psi	B210B	Screwed/NPT	TR24-3-T US	NO	
65	8	VAV-B1 ; VAV-B2 ; VAV-B3 ; VAV-B4 ; VAV-B5 ; VAV-B8 ; VAV-B9 ; VAV-B10	On/Off/Floating Point	2W	2.51	5.00	1.12	3/4"	1/2"	1.2	4.38	200 psi	B210B	Screwed/NPT	TR24-3-T US	NO	
66	10	VAV-B11 ; VAV-B12 ; VAV-B17 ; VAV-B18 ; VAV-B19 ; VAV-B20 ; VAV-B21 ; VAV-B22 ; VAV-B23 ; VAV-B24	On/Off/Floating Point	2W	2.51	5.00	1.12	3/4"	1/2"	1.2	4.38	200 psi	B210B	Screwed/NPT	TR24-3-T US	NO	
67	11	VAV-B25 ; VAV-B26 ; VAV-B27 ; VAV-B28 ; VAV-B30 ; VAV-B31 ; VAV-B32 ; VAV-B33 ; VAV-B36 ; VAV-B37 ; VAV-B38	On/Off/Floating Point	2W	2.51	5.00	1.12	3/4"	1/2"	1.2	4.38	200 psi	B210B	Screwed/NPT	TR24-3-T US	NO	
68	12	VAV-C10 ; VAV-C11 ; VAV-C17 ; VAV-C19 ; VAV-C21 ; VAV-C26 ; VAV-C27 ; VAV-C32 ; VAV-C33 ; VAV-C35 ; VAV-C36 ; VAV-C38	On/Off/Floating Point	2W	2.51	5.00	1.12	3/4"	1/2"	1.2	4.38	200 psi	B210B	Screwed/NPT	TR24-3-T US	NO	
69	7	VAV-E2 ; VAV-F1 ; VAV-F2 ; VAV-F3 ; VAV-F4 ; VAV-G1 ; VAV-G2	On/Off/Floating Point	2W	2.51	5.00	1.12	3/4"	1/2"	1.2	4.38	200 psi	B210B	Screwed/NPT	TR24-3-T US	NO	
70	8	VAV-A18 ; VAV-A24 ; VAV-A38 ; VAV-A41 ; VAV-C6 ; VAV-C7 ; VAV-E1 ; VAV-F10	On/Off/Floating Point	2W	1.73	5.00	0.77	3/4"	1/2"	0.8	4.68	200 psi	B209B	Screwed/NPT	TR24-3-T US	NO	
71	6	VAV-A19 ; VAV-A20 ; VAV-B6 ; VAV-B7 ; VAV-B13 ; VAV-G3	On/Off/Floating Point	2W	1.98	5.00	0.89	3/4"	1/2"	1.2	2.72	200 psi	B210B	Screwed/NPT	TR24-3-T US	NO	
72	11	VAV-A26 ; VAV-A28 ; VAV-A35 ; VAV-C12 ; VAV-C13 ; VAV-C22 ; VAV-C24 ; VAV-C31 ; VAV-E4 ; VAV-E5 ; VAV-E9	On/Off/Floating Point	2W	0.60	5.00	0.27	3/4"	1/2"	0.3	4	200 psi	B207B	Screwed/NPT	TR24-3-T US	NO	
73	5	VAV-C29 ; VAV-C30 ; VAV-E6 ; VAV-E7 ; VAV-E8	On/Off/Floating Point	2W	3.69	5.00	1.65	3/4"	1/2"	1.9	3.77	200 psi	B211B	Screwed/NPT	TR24-3-T US	NO	
74	1	CHILLER BYPASS	MFT (Configurable)	2W	646.00	5.00	288.9	6"	5"	290	4.96	100 psi	B6500S-290	Flanged	GKRX24-MFT	NO/FO	A01
75	2	CHILLER ISOLATION	On/Off/Floating Point	2W	0.00	0.00	0	8"	8"	3136	0	200 psi	F6200L	Flanged	PRBUP-3-T-200	NC	

Butterfly Valve with Lug types

- Disc 304 stainless steel
- Bubble tight shut-off
- Resilient seat
- Valve face-to-face dimensions comply with API 609 & MSS-SP-67
- Completely assembled and tested, ready for installation



5-year warranty

Type overview

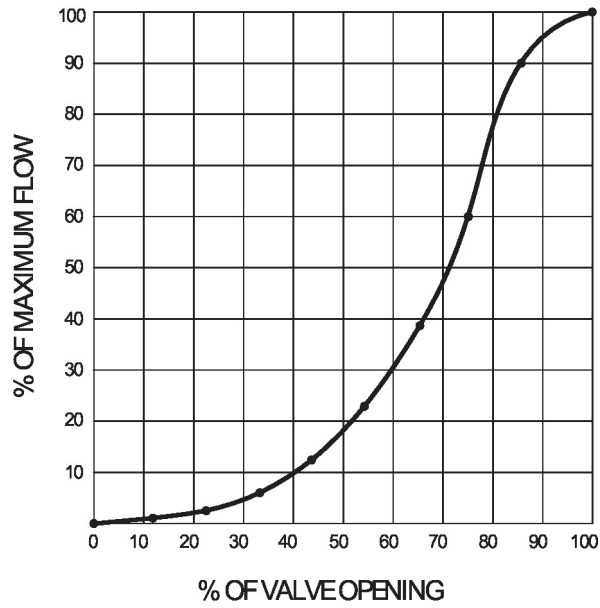
Type	DN
F6200L	200

Technical data

Functional data	Valve size [mm]	8" [200]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	-22...250°F [-30...120°C]
	Body Pressure Rating	ANSI Class Consistent with 125, 232 psi CWP
	Close-off pressure Δps	200 psi
	Flow characteristic	modified equal percentage
	Servicing	maintenance-free
	Flow Pattern	2-way
	Leakage rate	0%
	Controllable flow range	90° rotation
	Cv	3136
	Maximum Velocity	12 FPS
Lug threads	3/4-10 UNC	
Materials	Valve body	Ductile cast iron ASTM A536
	Body finish	polyester powder coated
	Stem	420 stainless steel
	Seat	EPDM
	Pipe connection	for use with ANSI class 125/150 flanges
	Bearing	Steel, PTFE, Bronze
	Disc	304 stainless steel
	Gear operator materials	Gears - hardened steel
Suitable actuators	Non-Spring	PRB(X)
	Electrical fail-safe	PKRB(X)

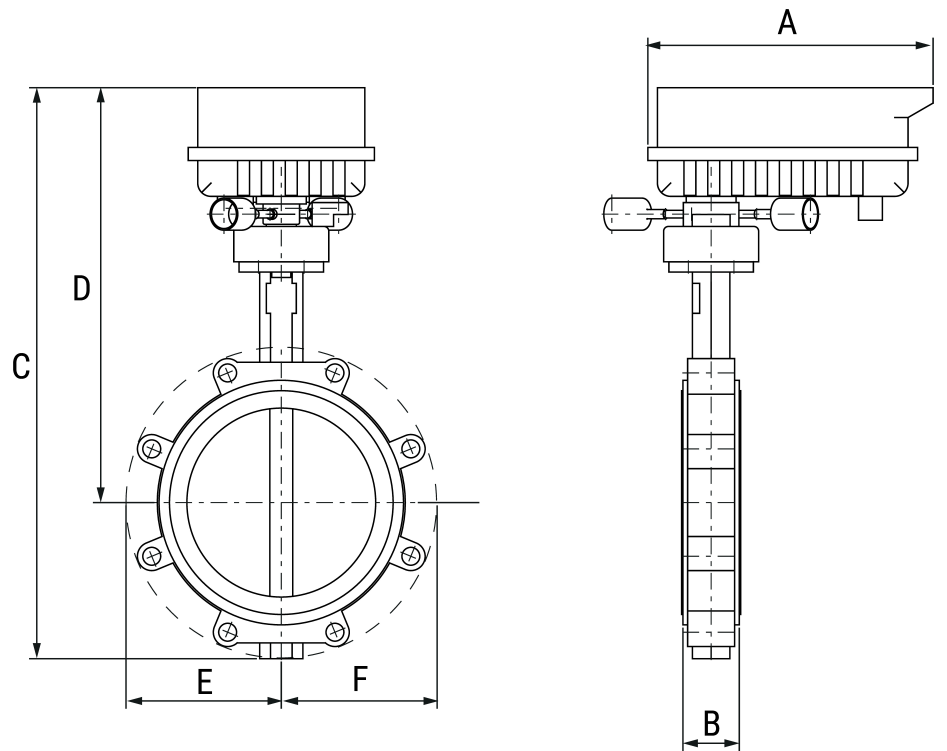
Product features

Flow/Mounting details



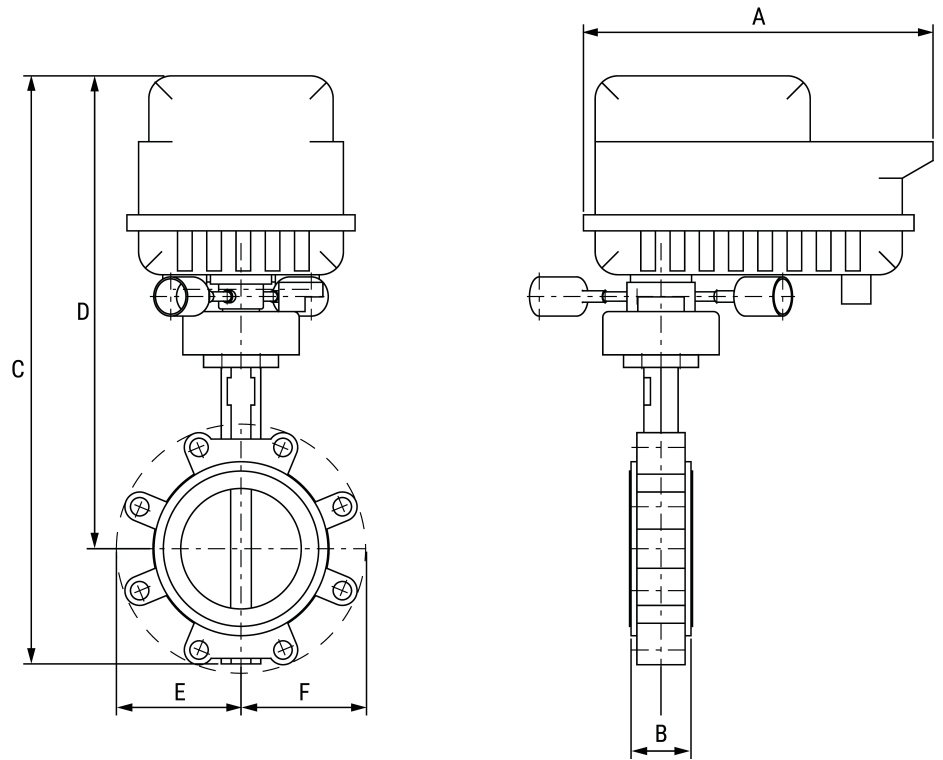
Dimensions

Type	DN	Weight
F6200L	200	34 lb [17 kg]



Valve with PRB(X) Actuator

A	B	C	D	E	F	Number of Bolt Holes
12.0" [304]	2.5" [63]	26.1" [664]	19.6" [498]	6.5" [165]	6.5" [165]	8



Valve with PKR Actuator

A	B	C	D	E	F	Number of Bolt Holes
12.0" [304]	2.4" [60]	26.1" [664]	19.6" [498]	6.5" [165]	6.5" [165]	8

On/Off, Floating point, Non fail-safe, 24...240 V



5-year warranty



Technical data

Electrical data	Nominal voltage	AC 24...240 V / DC 24...125 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...264 V / DC 19.2...137.5 V
	Power consumption in operation	20 W
	Power consumption in rest position	7 W
	Transformer sizing	with 24 V 20 VA / with 240 V 52 VA
	Auxiliary switch	2x SPDT, 1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V (II, reinforced insulation), 1x 10° / 1x 0...90° (default setting 85°)
	Switching capacity auxiliary switch	1 mA...3 A (0.5 A inductive), DC 5 V...AC 250 V (II, reinforced insulation)
	Electrical Connection	Terminal blocks, (PE) Ground-Screw
	Overload Protection	electronic throughout 0...90° rotation
Functional data	Direction of motion motor	reversible with app
	Manual override	7 mm hex crank, supplied
	Angle of rotation	90°
	Running Time (Motor)	35 s / 90°
	Noise level, motor	68 dB(A)
	Position indication	integral pointer
Safety data	Power source UL	Class 2 Supply
	Degree of protection IEC/EN	IP66/67
	Degree of protection NEMA/UL	NEMA 4X
	Enclosure	UL Enclosure Type 4X
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU
	Quality Standard	ISO 9001
	Ambient humidity	Max. 100% RH
	Ambient temperature	-22...122°F [-30...50°C]
	Storage temperature	-40...176°F [-40...80°C]
	Servicing	maintenance-free
Weight	Weight	13 lb [6.1 kg]

Technical data

Materials	Housing material	Die cast aluminium and plastic casing
------------------	------------------	---------------------------------------

Safety notes



- For maintenance work, the correct valve position must be set via the control signal. Additionally, the actuator must be disconnected from the power source. The hand crank and manual override shall not be used as a safety measure to maintain the valve position.

Product features

- Application** PR Series valve actuators are designed with an integrated linkage and visual position indicators. For outdoor applications, the installed valve must be mounted with the actuator at or above horizontal. For indoor applications the actuator can be in any location including directly under the valve.
- Operation** The PR series actuator provides 90° of rotation and a visual indicator shows the position of the valve. The PR Series actuator uses a low power consumption brushless DC motor and is electronically protected against overload. A universal power supply is furnished to connect supply voltage in the range of AC 24...240 V and DC 24...125 V. Included is a smart heater with thermostat to eliminate condensation. Two auxiliary switches are provided; one set at 10° open and the other is field adjustable. Running time is field adjustable from 30...120 seconds by using the Near Field Communication (NFC) app and a smart phone.
 †Use 60°C/75°C copper wire size range 12...28 AWG, stranded or solid. Use flexible metal conduit. Push the listed conduit fitting device over the actuator’s cable to butt against the enclosure. Screw in conduit connector. Jacket the actuators input wiring with listed flexible conduit. Properly terminate the conduit in a suitable junction box. Rated impulse Voltage 4000 V. Type of action 1. Control pollution degree 3.

Accessories

Mechanical accessories	Description	Type
	Hand crank for PR, PKR, PM	ZG-HND PR

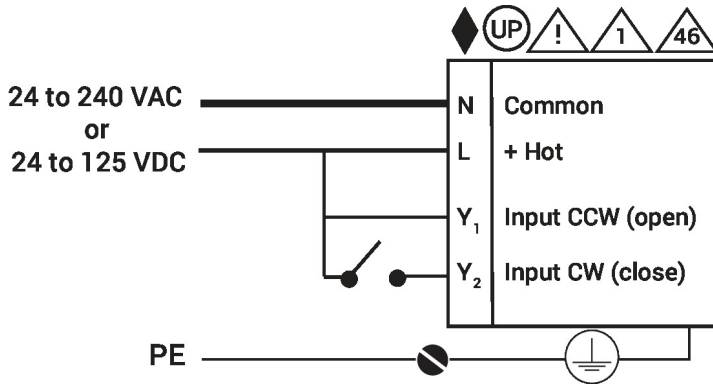
Electrical installation

- Meets cULus requirements without the need of an electrical ground connection.
- Universal Power Supply (UP) models can be supplied with AC 24...240 V, or DC 24...125 V.
- Disconnect power.
- Provide overload protection and disconnect as required.
- Two built-in auxiliary switches (2x SPDT), for end position indication, interlock control, fan startup, etc.
- Actuators may be controlled in parallel. Current draw and input impedance must be observed.
- Warning! Live electrical components!**
 During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

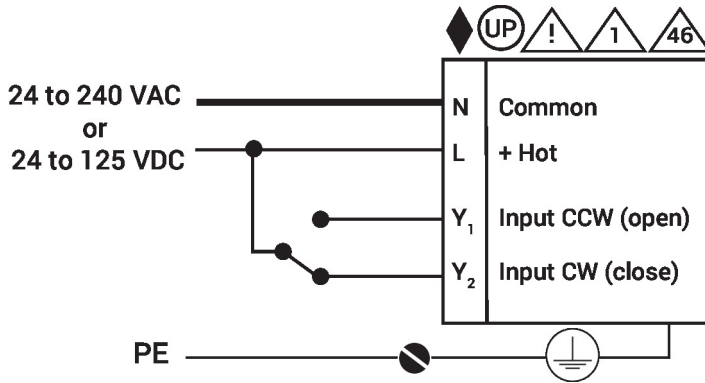
Electrical installation

Wiring diagrams

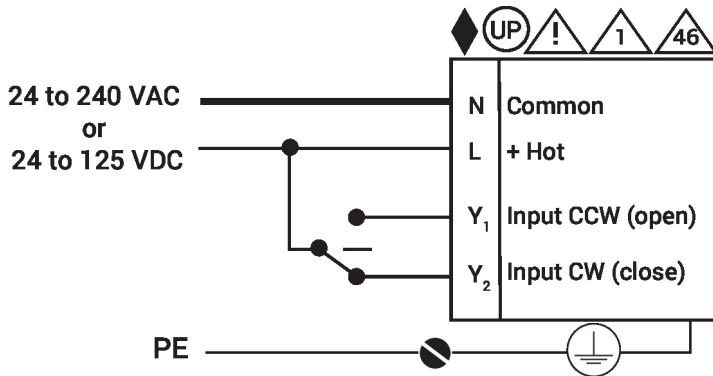
On/Off



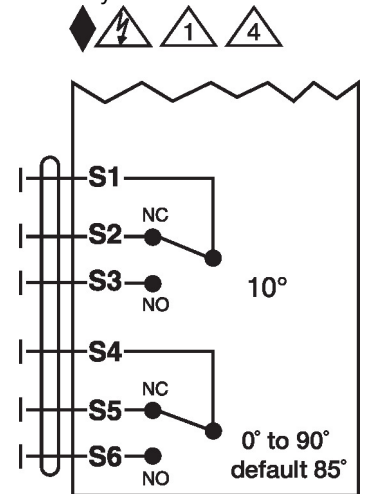
On/Off



Floating Point

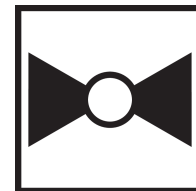


Auxiliary Switches





5-year warranty



Technical data

Functional data	Valve Size	5" [125]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	ANSI Class 125, standard class B
	Close-off pressure Δ ps	175 psi
	Flow characteristic	equal percentage
	Servicing	maintenance-free
	Flow Pattern	2-way
	Leakage rate	0% for A – AB
	Controllable flow range	75°
	Cv	290
	ANSI Class	125
	Body pressure rating note	standard class B
	Cv Flow Rating	A-port: as stated in chart B-port: 70% of A – AB Cv
Materials	Valve body	Cast iron - GG 25
	Stem seal	EPDM (lubricated)
	Seat	PTFE
	Pipe connection	pattern to mate with ANSI 125 flange
	O-ring	EPDM (lubricated)
	Ball	stainless steel
Suitable actuators	Non-Spring	GRB(X)
	Electronic fail-safe	GKRB(X)

Safety notes

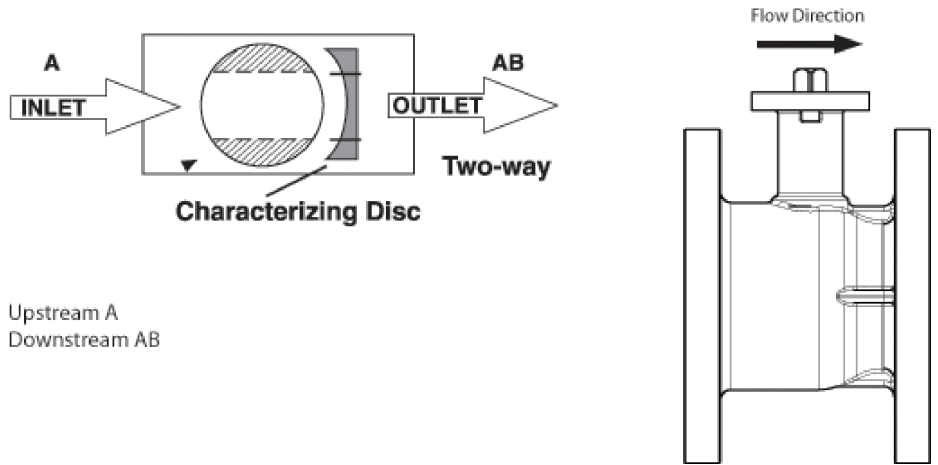


- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

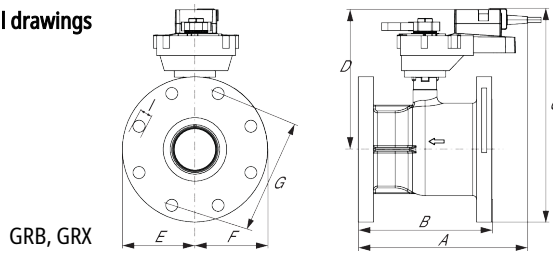
Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

Flow/Mounting details

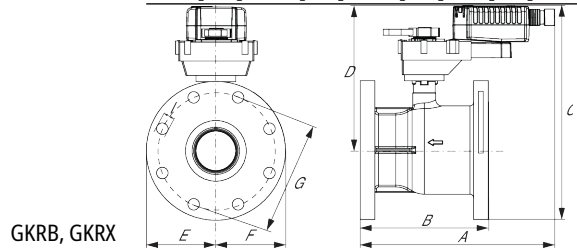


Dimensions

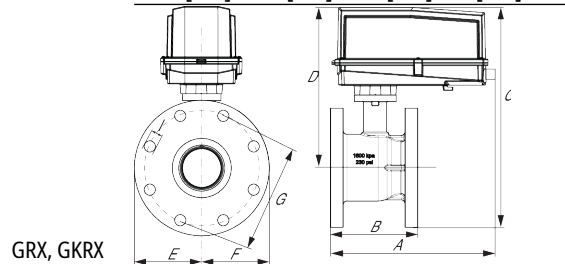
Dimensional drawings



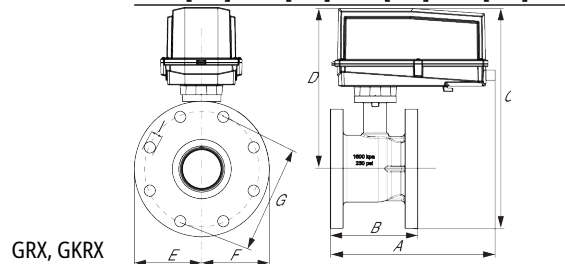
A	B	C	D	E	F	G	I	Number of Bolt Holes
13.3" [338]	10.3" [262]	14.4" [366]	9.4" [239]	5.0" [127]	5.0" [127]	8.5" [216]	0.9" [22]	8



A	B	C	D	E	F	G	I	Number of Bolt Holes
13.5" [343]	10.3" [262]	14.4" [366]	9.7" [246]	5.0" [127]	5.0" [127]	8.5" [216]	0.9" [22]	8



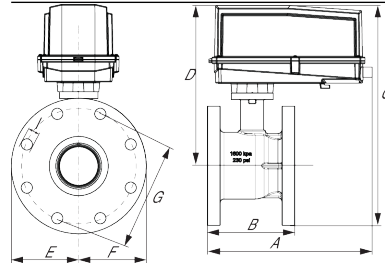
A	B	C	D	E	F	G	I	Number of Bolt Holes
17.5" [444]	10.3" [262]	17.0" [433]	13.6" [345]	5.0" [127]	5.0" [127]	8.5" [216]	0.9" [22]	8



A	B	C	D	E	F	G	I	Number of Bolt Holes
17.5" [444]	10.3" [262]	17.0" [433]	13.6" [345]	5.0" [127]	5.0" [127]	8.5" [216]	0.9" [22]	8

A	B	C	D	E	F	G	I	Number of Bolt Holes
17.5" [444]	10.3" [262]	17.0" [433]	13.6" [345]	5.0" [127]	5.0" [127]	8.5" [216]	0.9" [22]	8

GRX, GKRX



A	B	C	D	E	F	G	I	Number of Bolt Holes
17.5" [444]	10.3" [262]	17.0" [433]	13.6" [345]	5.0" [127]	5.0" [127]	8.5" [216]	0.9" [22]	8



5-year warranty



Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Power consumption in operation	12 W
	Power consumption in rest position	3 W
	Transformer sizing	21 VA (class 2 power source)
	Electrical Connection	18 GA plenum cable, 3 ft [1 m], with 1/2" conduit connector (10 ft [3 m] and 15 ft [5 m] available)
	Overload Protection	electronic throughout 0...90° rotation
Functional data	Operating range Y	2...10 V
	Operating range Y note	4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)
	Input Impedance	100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA, 1500 Ω for PWM, On/Off and Floating point
	Operating range Y variable	Start point 0.5...30 V End point 2.5...32 V
	Options positioning signal	variable (VDC, on/off, floating point)
	Position feedback U	2...10 V
	Position feedback U note	Max. 0.5 mA
	Position feedback U variable	VDC variable
	Bridging time	programmable 0...10 s (2 s default) delay before fail-safe activates
	Pre-charging time	5...26 s
	Direction of motion motor	selectable with switch 0/1
	Direction of motion fail-safe	reversible with switch
	Manual override	external push button
	Angle of rotation	Max. 90°, adjustable with mechanical stop
	Angle of rotation note	adjustable with mechanical stop
	Running Time (Motor)	default 150 s, variable 90...150 s
	Running time motor variable	90...150 s
	Running time fail-safe	<35 s
	Noise level, motor	52 dB(A)
	Noise level, fail-safe	61 dB(A)
Position indication	Mechanically, 30...65 mm stroke	
Safety data	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2 UL Enclosure Type 2
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU; Listed to UL 2043 - suitable for use in air plenums per Section 300.22(c) of the NEC and Section 602.2 of the IMC
	Quality Standard	ISO 9001

Ambient temperature	-22...122°F [-30...50°C]
Storage temperature	-40...176°F [-40...80°C]
Ambient humidity	max. 95% r.H., non-condensing
Servicing	maintenance-free
Weight	Weight 3.8 lb [1.8 kg]

Safety notes

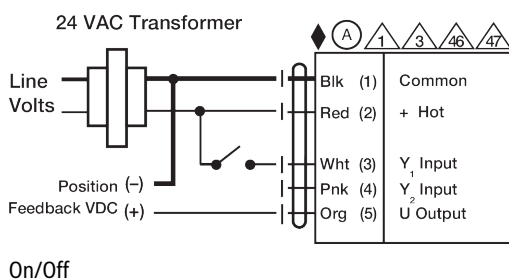
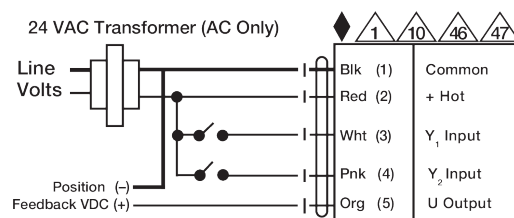

- PVC W/Shld for GV w/UGLK (AM)
- Classic GM to GMB(X) retrofit bracket.
- Battery Back Up System for SY(7-10)-110
- 120 to 24 VAC, 40 VA transformer.
- PC Tool computer programming interface, serial port.

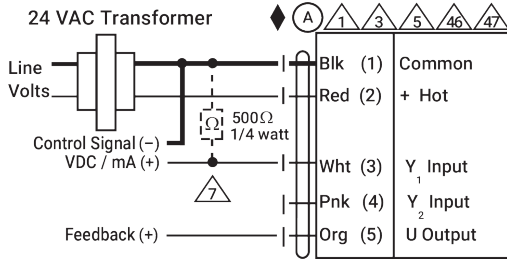
Accessories

Gateways	Description	Type
	Gateway MP to BACnet MS/TP	UK24BAC
	Gateway MP to LonWorks	UK24LON
	Gateway MP to Modbus RTU	UK24MOD
Service tools	Description	Type
	Connection cable 10 ft [3 m], A: RJ11 6/4 ZTH EU, B: 3-pin Weidmüller and supply connection	ZK4-GEN
	Service Tool, with ZIP-USB function, for parametrisable and communicative Belimo actuators, VAV controller and HVAC performance devices	ZTH US

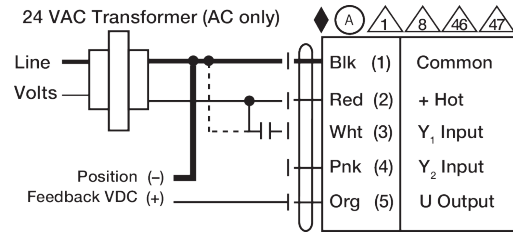
Electrical installation
INSTALLATION NOTES

- Actuators with appliance cables are numbered.
- Provide overload protection and disconnect as required.
- Actuators may also be powered by 24 VDC.
- Only connect common to negative (-) leg of control circuits.
- A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 V line.
- For triac sink the Common connection from the actuator must be connected to the Hot connection of the controller. Position feedback cannot be used with a triac sink controller; the actuator internal common reference is not compatible.
- IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).
- Actuators may be controlled in parallel. Current draw and input impedance must be observed.
- Master-Slave wiring required for piggy-back applications. Feedback from Master to control input(s) of Slave(s).
- Meets cULus requirements without the need of an electrical ground connection.
- Warning! Live Electrical Components!**
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

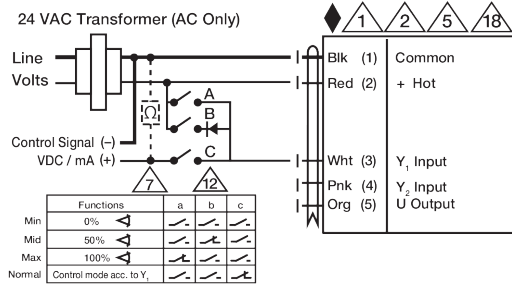

On/Off

Floating Point



VDC/mA Control

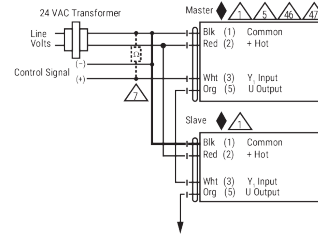


PWM Control



Override Control

Functions	a	b	c
Min	0%	<input type="checkbox"/>	<input type="checkbox"/>
Mid	50%	<input type="checkbox"/>	<input type="checkbox"/>
Max	100%	<input type="checkbox"/>	<input type="checkbox"/>
Normal	Control mode acc. to Y ₁		

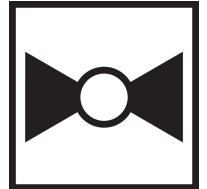


Master - Slave

2-way, Characterized Control Valve, Stainless Steel Ball and Stem



5-year warranty



Type overview

Type	DN
B249	50

Technical data

Functional data	Valve size [mm]	2" [50]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	400 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	46
	Materials	Valve body
Stem		stainless steel
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		stainless steel
Suitable actuators	Non Fail-Safe	ARB(X) ARQB(X) ARB(X) N4
	Spring	AFRB(X)

Safety notes



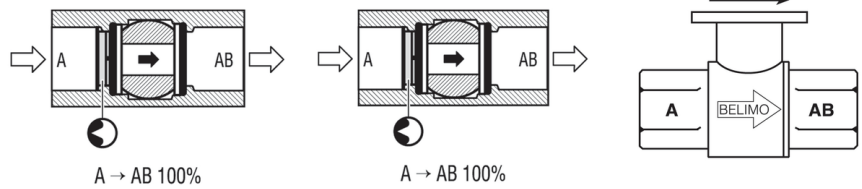
- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

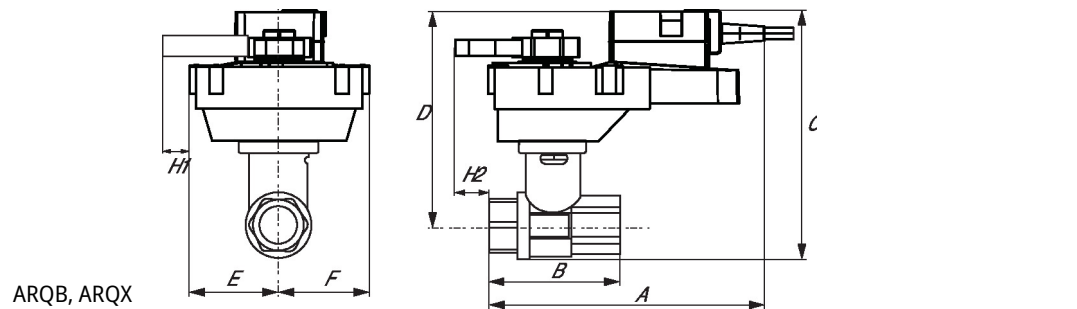
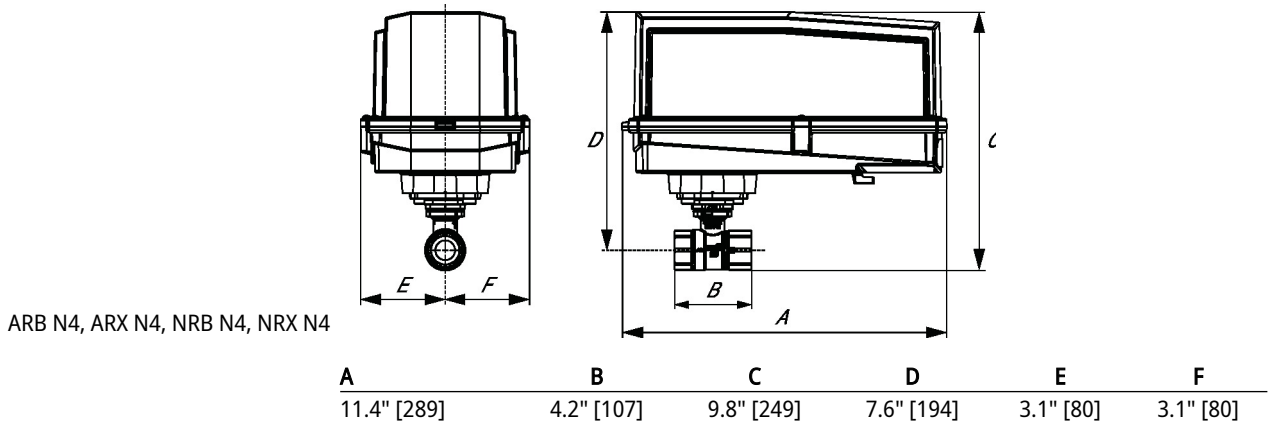
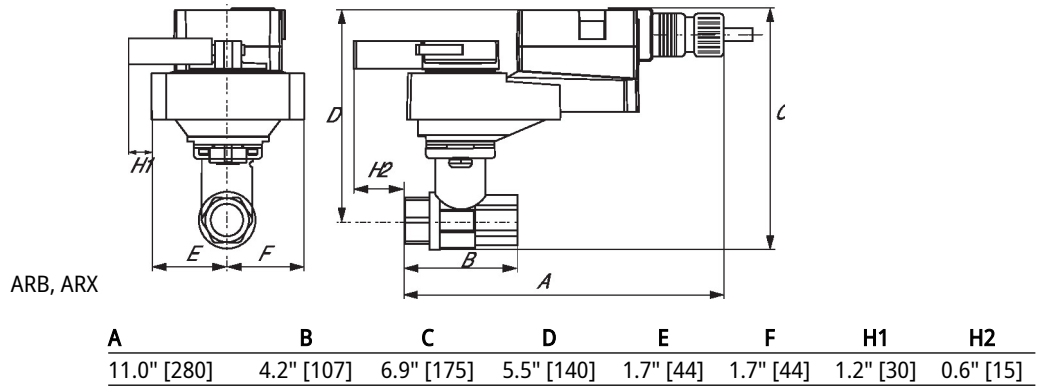
Flow/Mounting details

Two-way valves should be installed with the disc upstream.



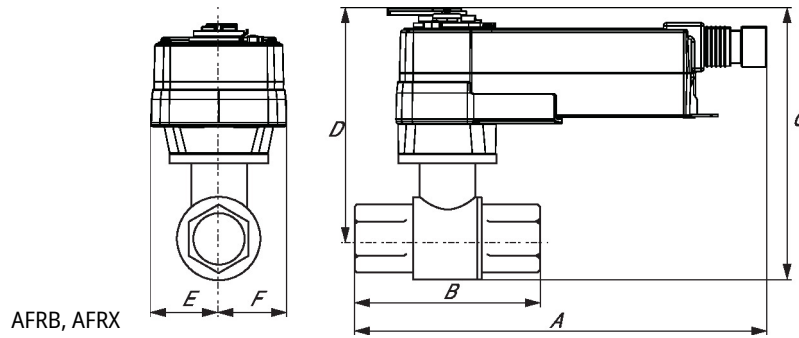
Dimensions

Type	DN	Weight
B249	50	2.8 lb [1.3 kg]

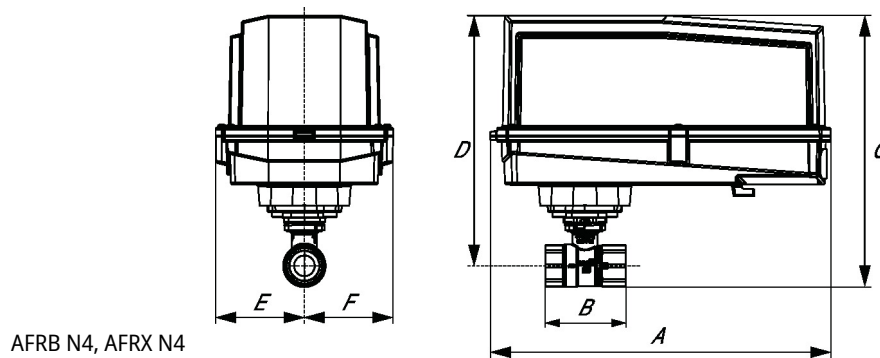


Dimensions

A	B	C	D	E	F	H1	H2
11.0" [280]	4.2" [107]	7.5" [191]	6.1" [155]	2.3" [58]	2.3" [58]	0.8" [20]	0.6" [15]



A	B	C	D	E	F
10.8" [275]	4.2" [107]	9.5" [241]	8.1" [206]	2.0" [51]	2.0" [51]

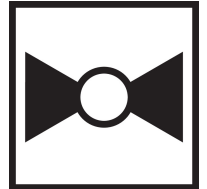


A	B	C	D	E	F
13.0" [330]	4.2" [107]	10.3" [262]	9.3" [235]	3.4" [86]	3.4" [86]

2-way, Characterized Control Valve, Stainless Steel Ball and Stem



5-year warranty



Type overview

Type	DN
B240	40

Technical data

Functional data	Valve size [mm]	1.5" [40]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	400 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	37
	No Characterized Disc	TRUE
	Materials	Valve body
Stem		stainless steel
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		stainless steel
Suitable actuators	Non Fail-Safe	ARB(X) ARQB(X) NRQB(X) ARB(X) N4
	Spring	AFRB(X)

Safety notes



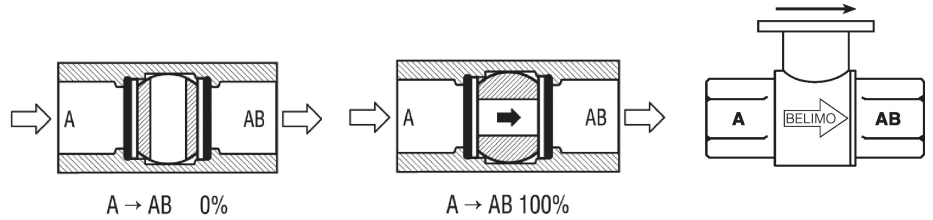
- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

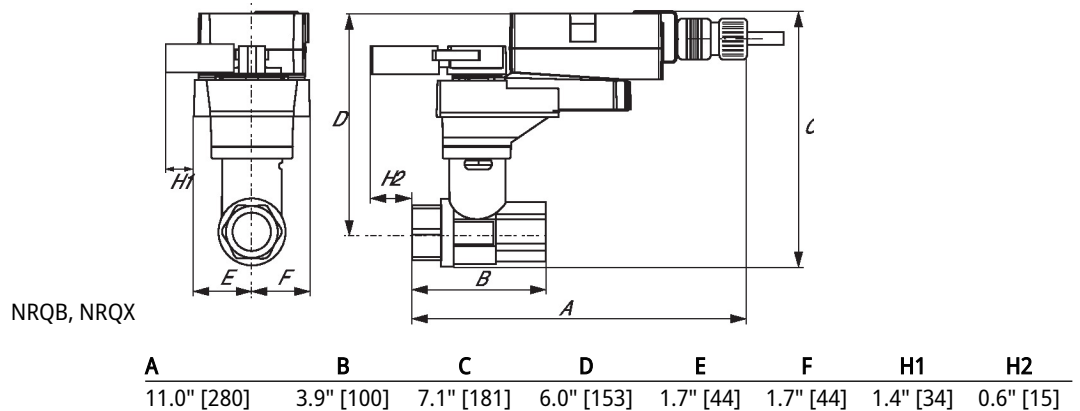
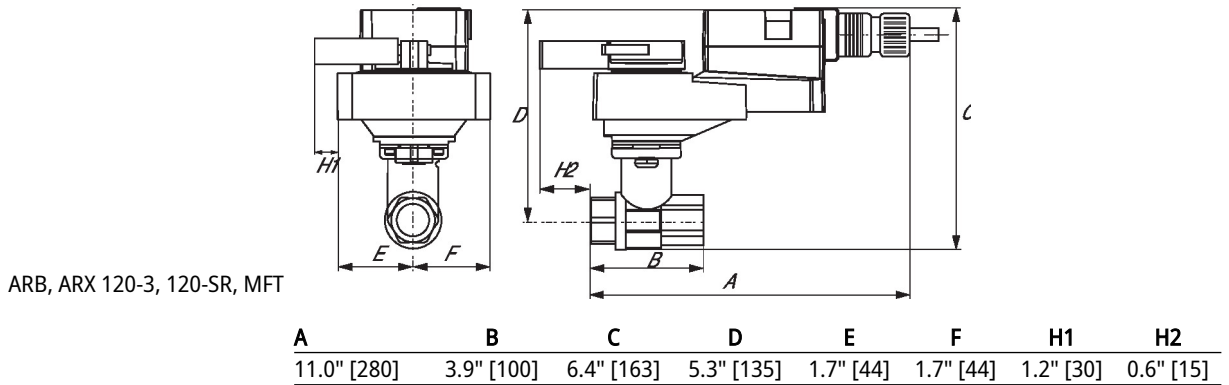
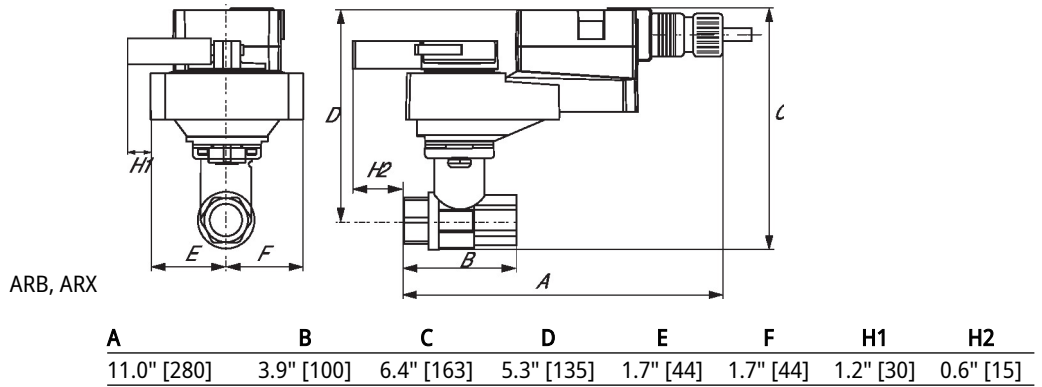
Flow/Mounting details

Two-way valves should be installed with the disc upstream.

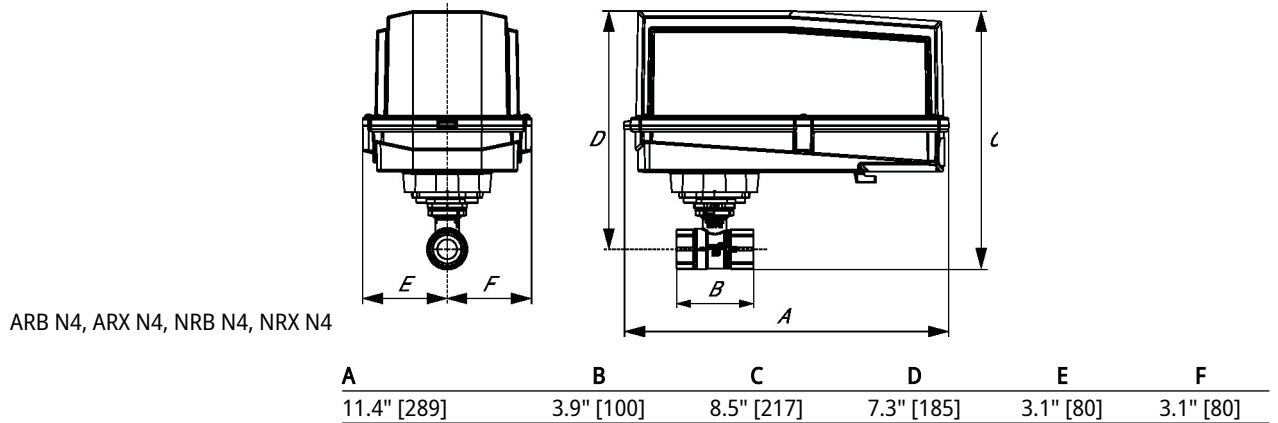
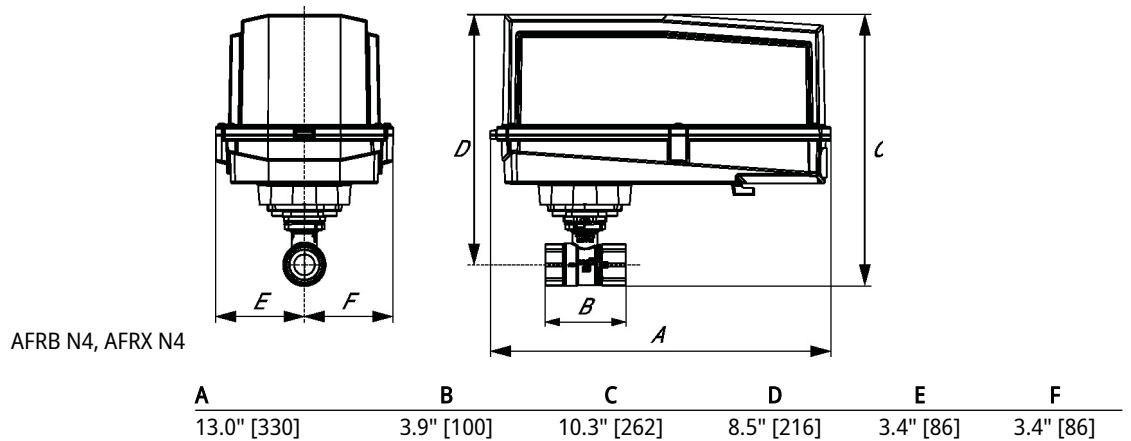
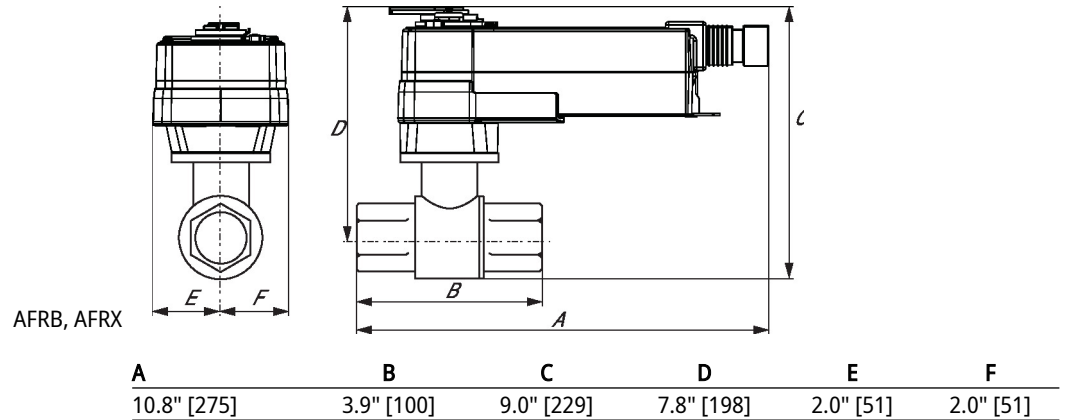


Dimensions

Type	DN	Weight
B240	40	1.9 lb [0.86 kg]



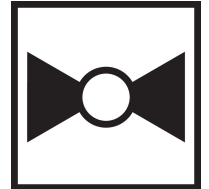
Dimensions



2-way, Characterized Control Valve, Stainless Steel Ball and Stem



5-year warranty



Type overview

Type	DN
B238	40

Technical data

Functional data	Valve size [mm]	1.5" [40]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	400 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	19
	Materials	Valve body
Stem		stainless steel
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		stainless steel
Suitable actuators	Non Fail-Safe	ARB(X) ARQB(X) NRQB(X) ARB(X) N4
	Spring	AFRB(X)

Safety notes



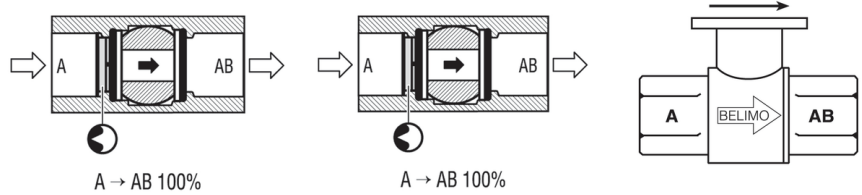
- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

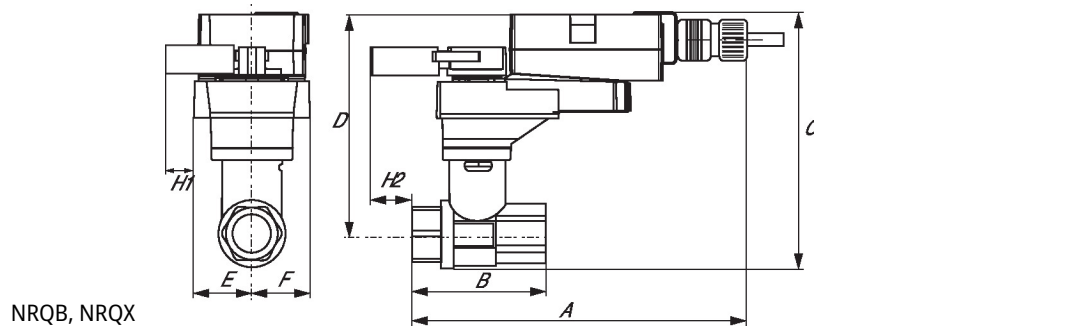
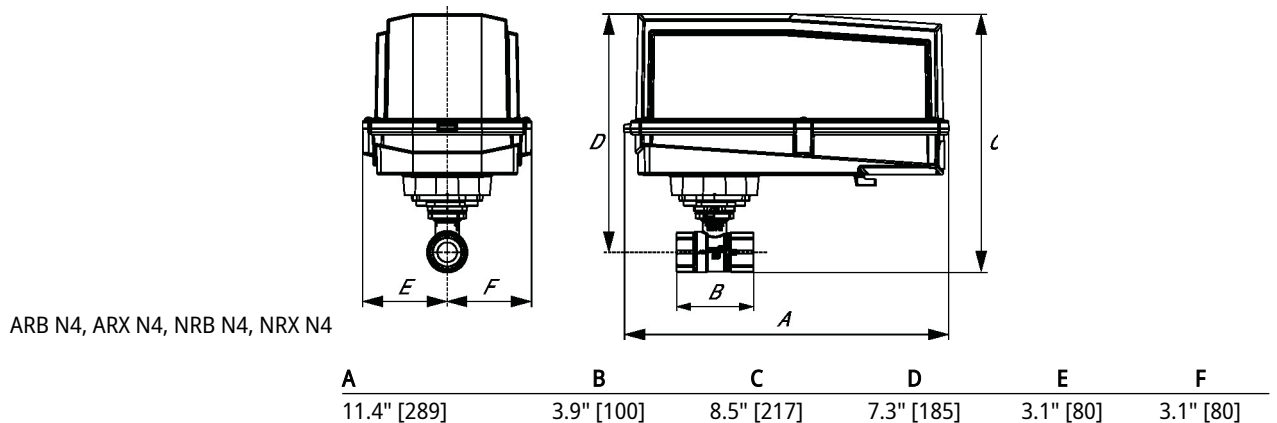
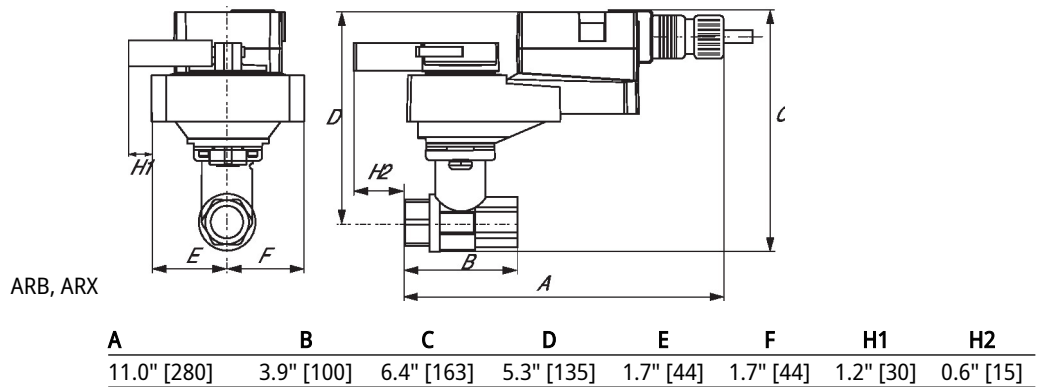
Flow/Mounting details

Two-way valves should be installed with the disc upstream.



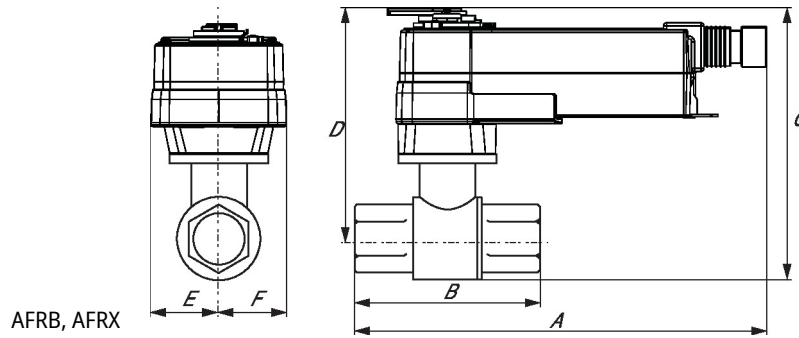
Dimensions

Type	DN	Weight
B238	40	1.9 lb [0.86 kg]

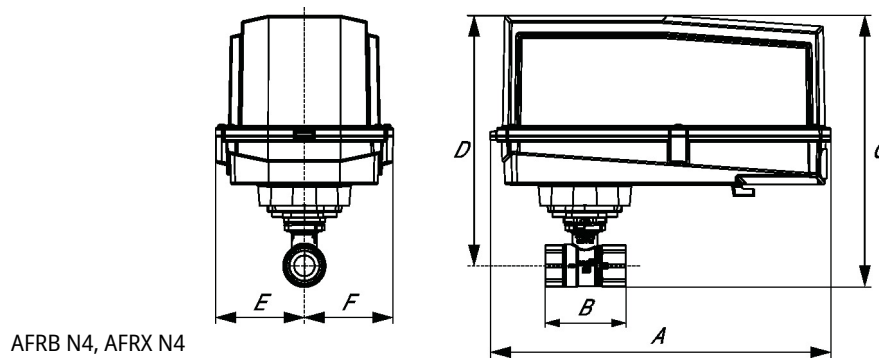


Dimensions

A	B	C	D	E	F	H1	H2
11.0" [280]	3.9" [100]	7.1" [181]	6.0" [153]	1.7" [44]	1.7" [44]	1.4" [34]	0.6" [15]



A	B	C	D	E	F
10.8" [275]	3.9" [100]	9.0" [229]	7.8" [198]	2.0" [51]	2.0" [51]

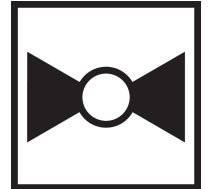


A	B	C	D	E	F
13.0" [330]	3.9" [100]	10.3" [262]	8.5" [216]	3.4" [86]	3.4" [86]

2-way, Characterized Control Valve, Stainless Steel Ball and Stem



5-year warranty



Type overview

Type	DN
B231	32

Technical data

Functional data	Valve size [mm]	1.25" [32]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	400 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	25
	Materials	Valve body
Stem		stainless steel
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		stainless steel
Suitable actuators	Non Fail-Safe	ARB(X) NRQB(X) ARB(X) N4
	Spring	AFRB(X)

Safety notes

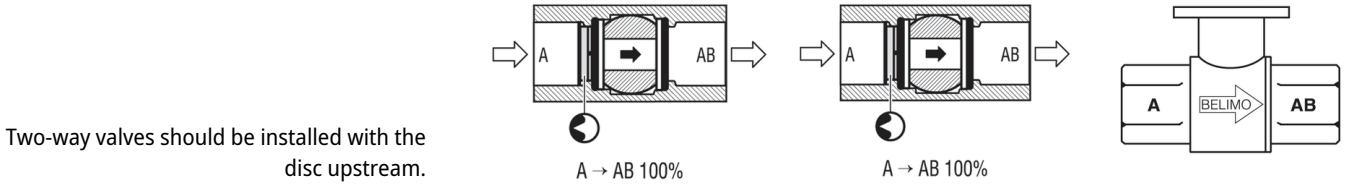


- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

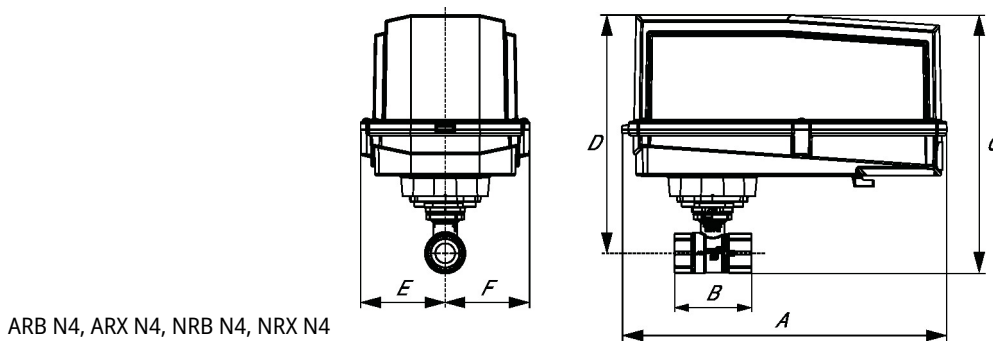
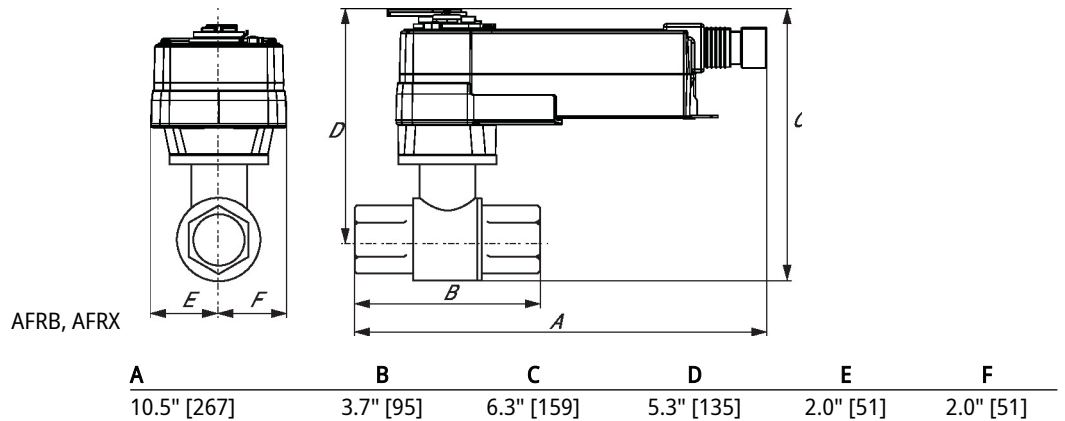
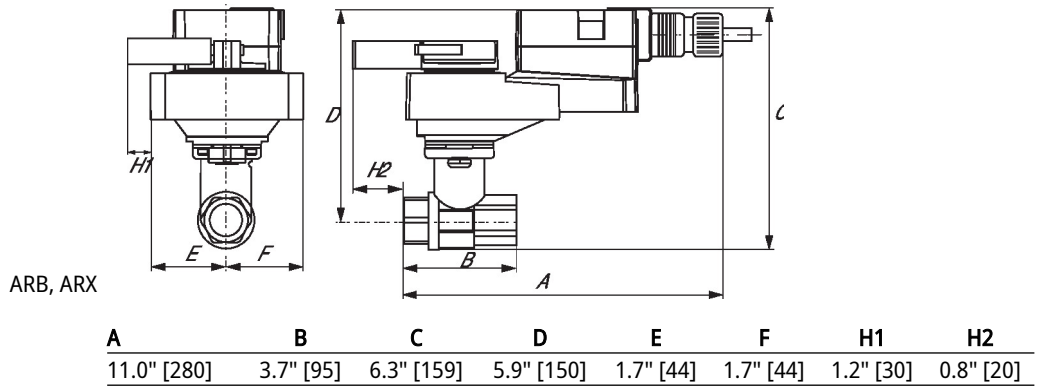
Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

Flow/Mounting details



Dimensions

Type	DN	Weight
B231	32	1.6 lb [0.73 kg]





5-year warranty



Technical data

Electrical data	Nominal voltage	AC/DC 24 V	
	Nominal voltage frequency	50/60 Hz	
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V	
	Power consumption in operation	5.5 W	
	Power consumption in rest position	3 W	
	Transformer sizing	8.5 VA	
	Electrical Connection	18 GA appliance cable, 1 m, with 1/2" NPT conduit connector	
	Overload Protection	electronic throughout 0...95° rotation	
Functional data	Operating range Y	2...10 V	
	Operating range Y note	4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)	
	Input impedance	100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA	
	Position feedback U	2...10 V	
	Position feedback U note	Max. 0.5 mA	
	Direction of motion motor	selectable with switch	
	Direction of motion fail-safe	reversible with cw/ccw mounting	
	Manual override	5 mm hex crank (3/16" Allen), supplied	
	Angle of rotation	90°	
	Running Time (Motor)	95 s / 90°	
	Running time fail-safe	<20 s	
	Noise level, motor	45 dB(A)	
	Noise level, fail-safe	62 dB(A)	
	Position indication	Mechanical	
Safety data	Power source UL	Class 2 Supply	
	Degree of protection IEC/EN	IP54	
	Degree of protection NEMA/UL	NEMA 2	
	Enclosure	UL Enclosure Type 2	
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02 CE acc. to 2014/30/EU and 2014/35/EU	
	Quality Standard	ISO 9001	
	UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC	
	Ambient humidity	Max. 95% RH, non-condensing	
	Ambient temperature	-22...122°F [-30...50°C]	
	Storage temperature	-40...176°F [-40...80°C]	
	Servicing	maintenance-free	
	Weight	Weight	5.4 lb [2.4 kg]

Materials Housing material Galvanized steel and plastic housing

Footnotes †Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3

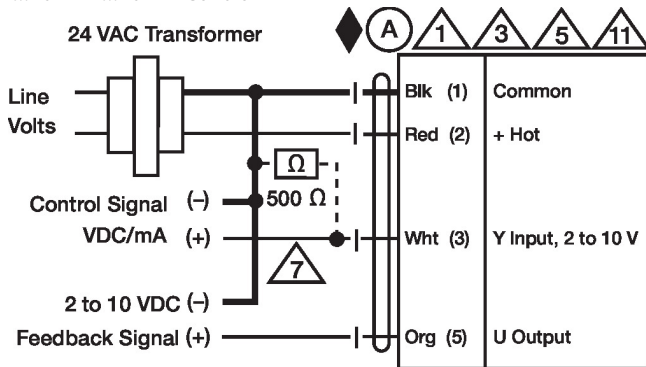
Electrical installation

✂ INSTALLATION NOTES

- (A)** Actuators with appliance cables are numbered.
- (1)** Provide overload protection and disconnect as required.
- (3)** Actuators may also be powered by DC 24 V.
- (5)** Only connect common to negative (-) leg of control circuits.
- (7)** A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- (11)** Actuators may be connected in parallel if not mechanically linked. Power consumption and input impedance must be observed.
- ◆** Meets cULus requirements without the need of an electrical ground connection.
- (1) Warning! Live electrical components!**
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

Wiring diagrams

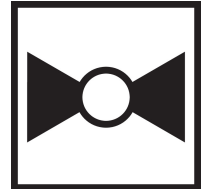
2...10 V / 4...20 mA Control



2-way, Characterized Control Valve, Stainless Steel Ball and Stem



5-year warranty



Type overview

Type	DN
B230	32

Technical data

Functional data	Valve size [mm]	1.25" [32]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	19
	No Characterized Disc	TRUE
	Materials	Valve body
Stem		stainless steel
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		stainless steel
Suitable actuators	Non Fail-Safe	LRB(X) LRQB(X) NRB(X) N4
	Spring	LF

Safety notes



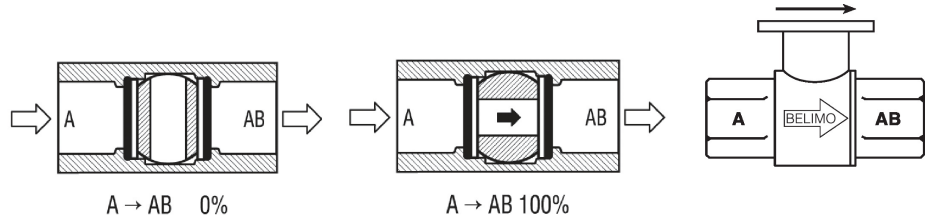
- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

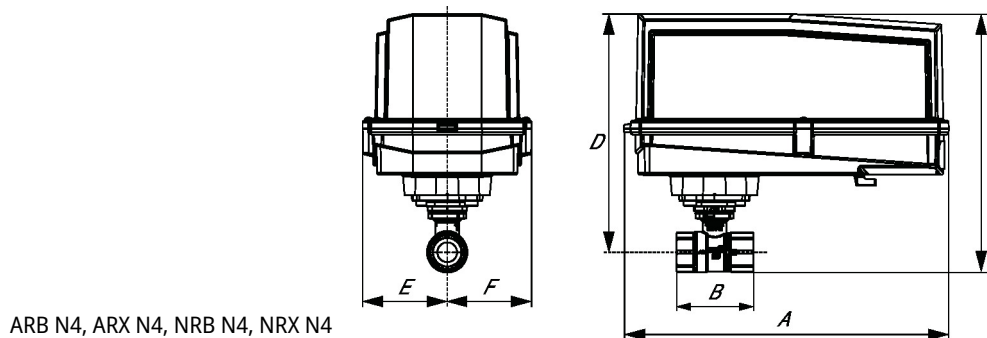
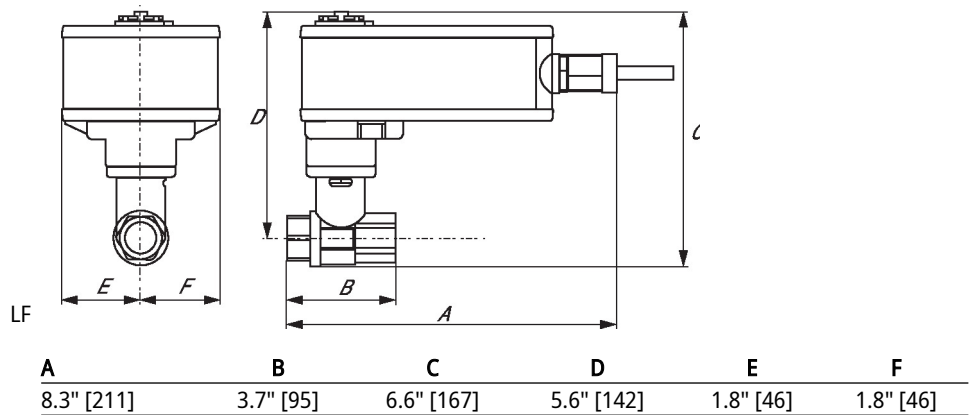
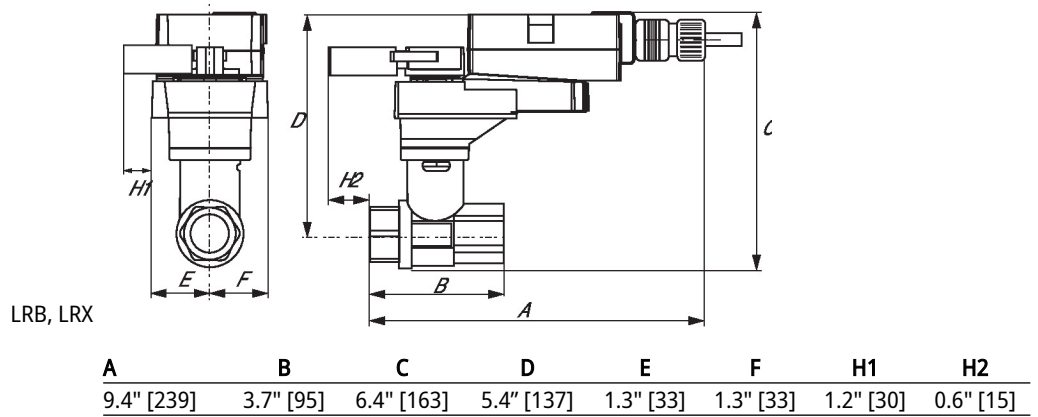
Flow/Mounting details

Two-way valves should be installed with the disc upstream.



Dimensions

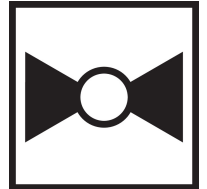
Type	DN	Weight
B230	32	1.4 lb [0.62 kg]



2-way, Characterized Control Valve, Stainless Steel Ball and Stem



5-year warranty



Type overview

Type	DN
B224	25

Technical data

Functional data	Valve size [mm]	1" [25]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	19
	Materials	Valve body
Stem		stainless steel
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		stainless steel
Suitable actuators	Non Fail-Safe	LRB(X) LRQB(X) NRB(X) N4
	Spring	LF

Safety notes

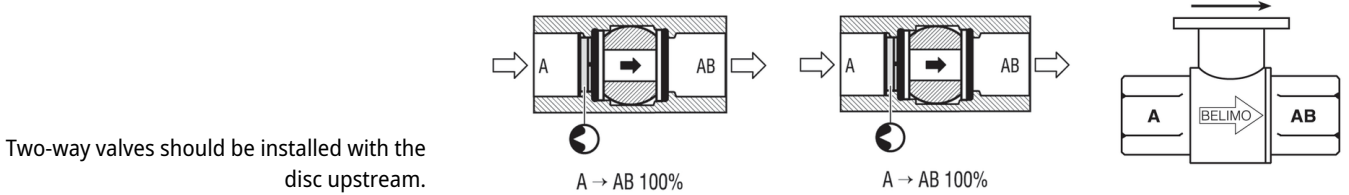


- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

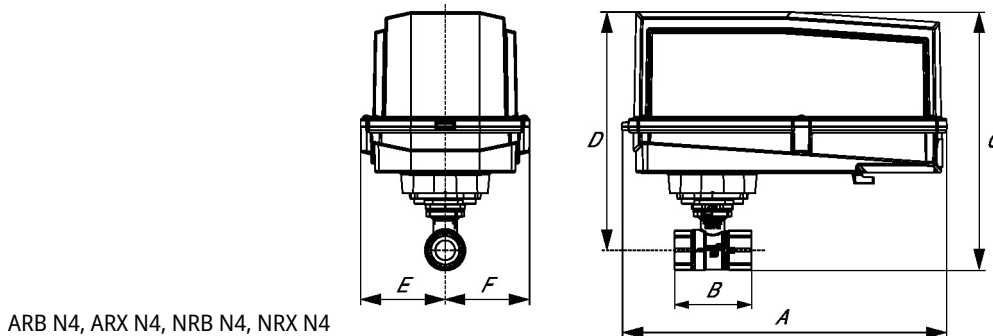
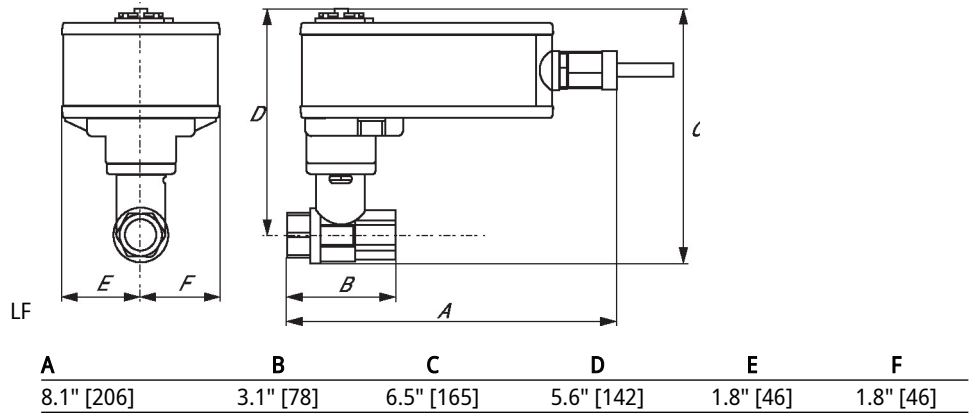
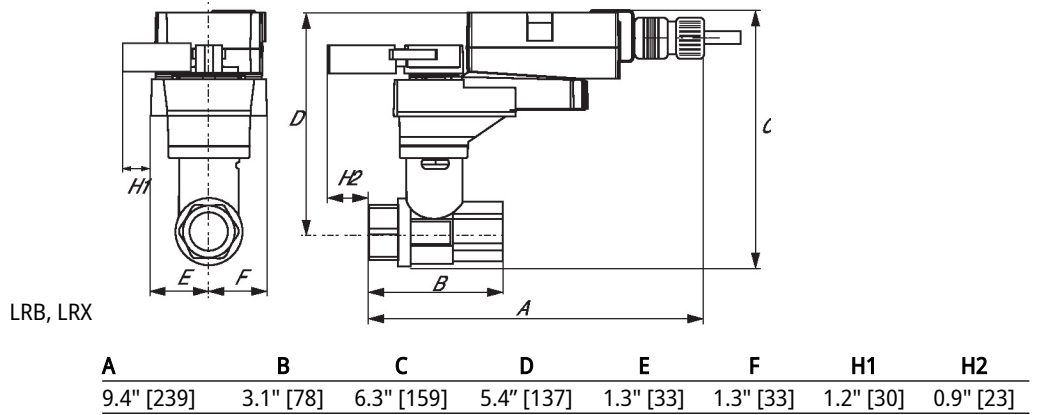
Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

Flow/Mounting details



Dimensions

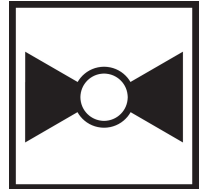
Type	DN	Weight
B224	25	1.1 lb [0.49 kg]



2-way, Characterized Control Valve, Stainless Steel Ball and Stem



5-year warranty



Type overview

Type	DN
B222	25

Technical data

Functional data	Valve size [mm]	1" [25]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	7.4
	Materials	Valve body
Stem		stainless steel
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		stainless steel
Suitable actuators	Non Fail-Safe	LRB(X) LRQB(X) NRB(X) N4
	Spring	LF

Safety notes

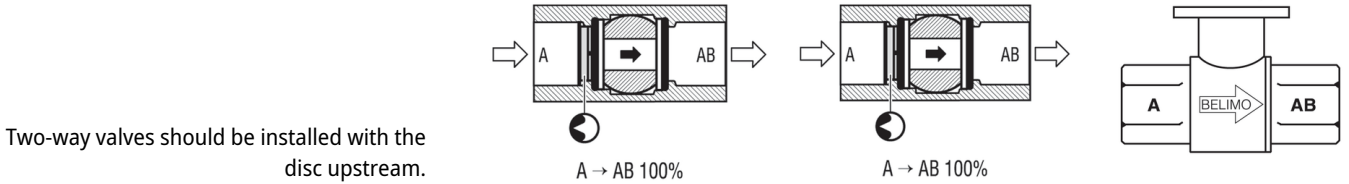


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Product features

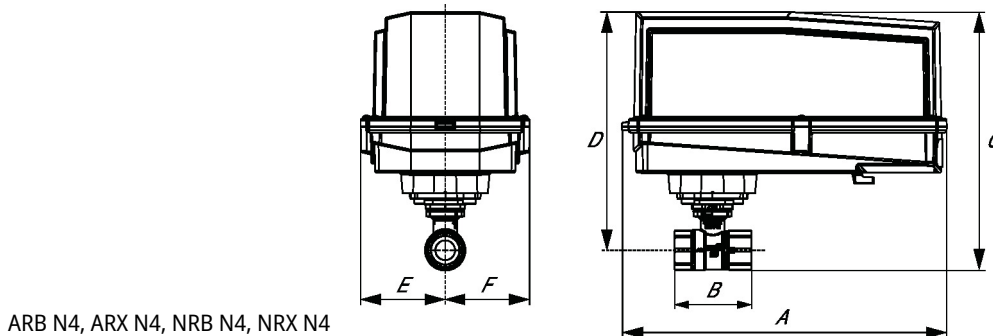
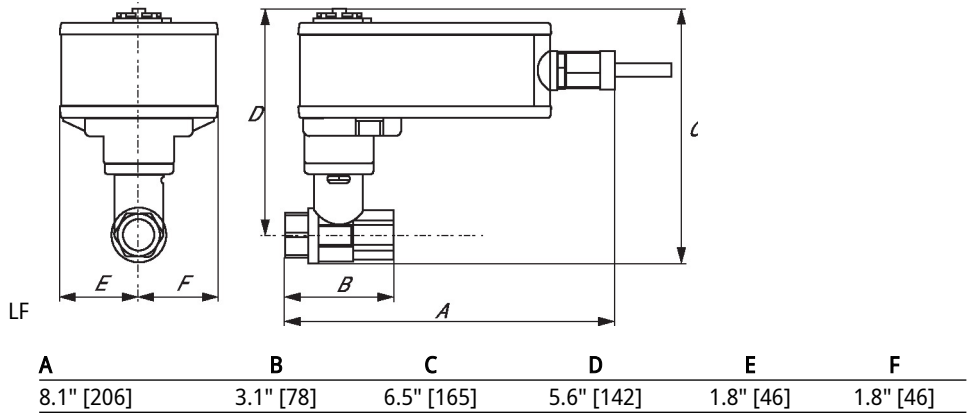
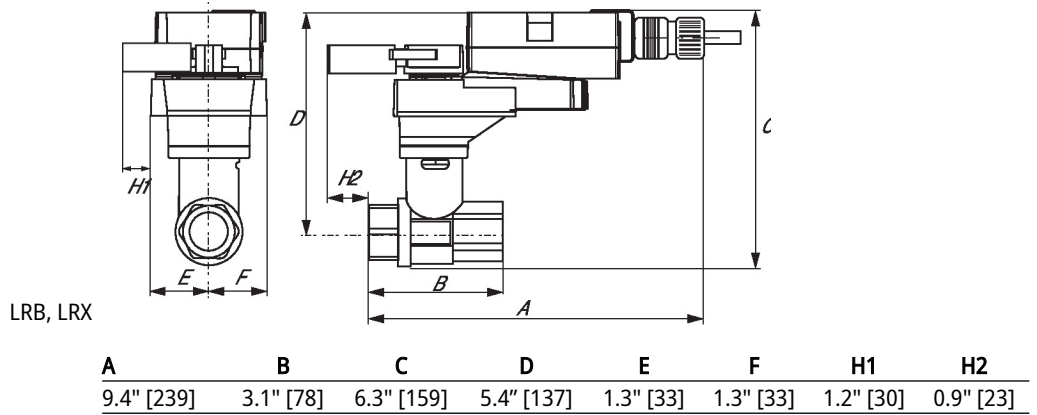
Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

Flow/Mounting details



Dimensions

Type	DN	Weight
B222	25	1.1 lb [0.49 kg]





5-year warranty



Technical data

Electrical data	Nominal voltage	AC/DC 24 V	
	Nominal voltage frequency	50/60 Hz	
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V	
	Power consumption in operation	2.5 W	
	Power consumption in rest position	1 W	
	Transformer sizing	5 VA	
	Electrical Connection	18 GA plenum cable, 1 m, with 1/2" NPT conduit connector	
	Overload Protection	electronic throughout 0...95° rotation	
Functional data	Operating range Y	2...10 V	
	Operating range Y note	4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)	
	Input impedance	100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA	
	Position feedback U	2...10 V	
	Position feedback U note	Max. 0.7 mA	
	Direction of motion motor	selectable with switch 0/1	
	Direction of motion fail-safe	reversible with cw/ccw mounting	
	Angle of rotation	90°	
	Running Time (Motor)	150 s / 90°	
	Running time motor note	constant, independent of load	
	Running time fail-safe	<25 s @ -4...122°F [-20...50°C], <60 s @ -22°F [-30°C]	
	Noise level, motor	50 dB(A)	
	Noise level, fail-safe	62 dB(A)	
	Position indication	Mechanical	
Safety data	Power source UL	Class 2 Supply	
	Degree of protection IEC/EN	IP54	
	Degree of protection NEMA/UL	NEMA 2	
	Enclosure	UL Enclosure Type 2	
	Agency Listing	cULus acc. To UL 873 and CAN/CSA C22.2 No. 24-93	
	Quality Standard	ISO 9001	
	UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC	
	Ambient humidity	Max. 95% RH, non-condensing	
	Ambient temperature	-22...122°F [-30...50°C]	
	Storage temperature	-40...176°F [-40...80°C]	
	Servicing	maintenance-free	
	Weight	Weight	[]
		Materials	Housing material

Footnotes †Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3

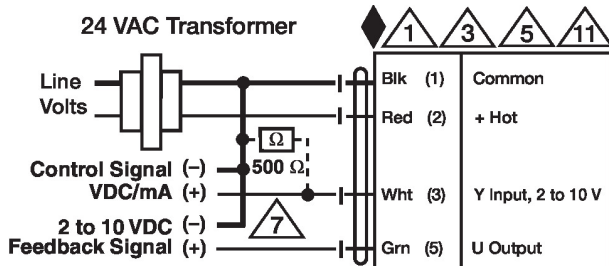
Electrical installation

✂ INSTALLATION NOTES

- (A)** Actuators with appliance cables are numbered.
- (1)** Provide overload protection and disconnect as required.
- (3)** Actuators may also be powered by DC 24 V.
- (5)** Only connect common to negative (-) leg of control circuits.
- (7)** A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- (11)** Actuators may be connected in parallel if not mechanically linked. Power consumption and input impedance must be observed.
- ◆** Meets cULus requirements without the need of an electrical ground connection.
- (1) Warning! Live electrical components!**
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Wiring diagrams

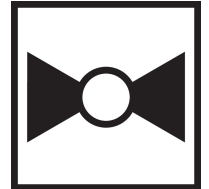
2...10 V / 4...20 mA Control



2-way, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B220B	20

Technical data

Functional data	Valve size [mm]	0.75" [20]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	14
	No Characterized Disc	TRUE
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		chrome plated brass
Suitable actuators	Non Fail-Safe	TR LRB(X)
	Spring	TFRB(X) LF

Safety notes



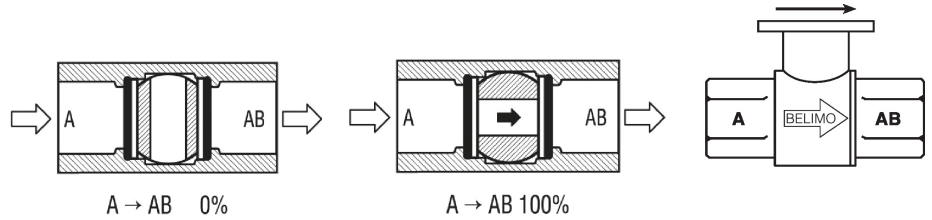
- WARNING: This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

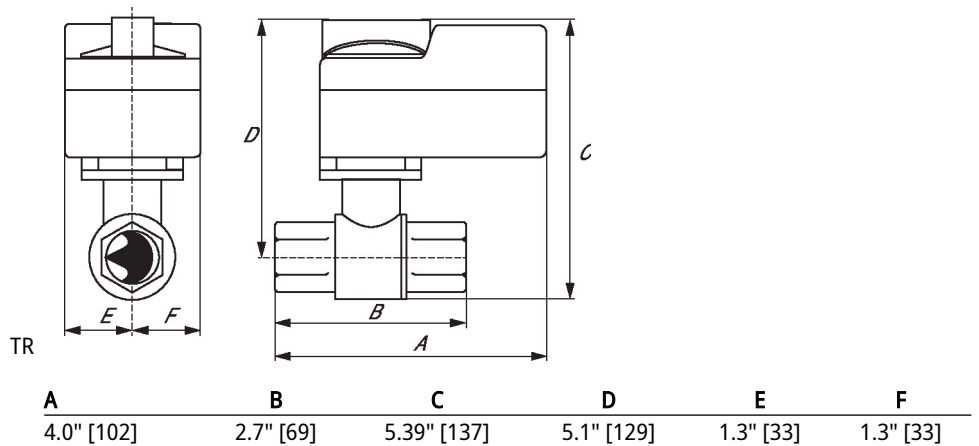
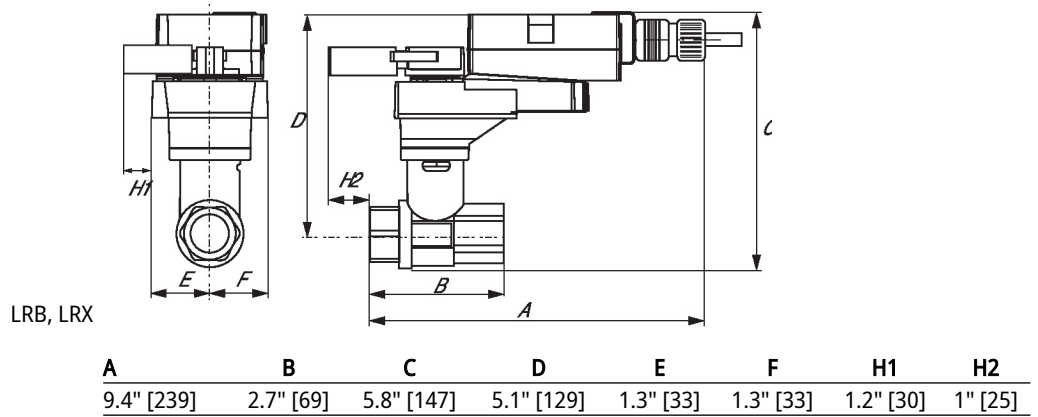
Flow/Mounting details

Two-way valves should be installed with the disc upstream.

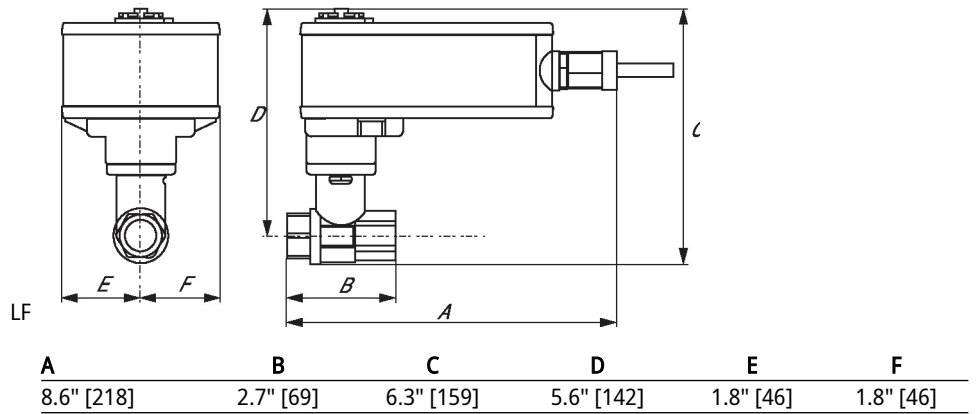
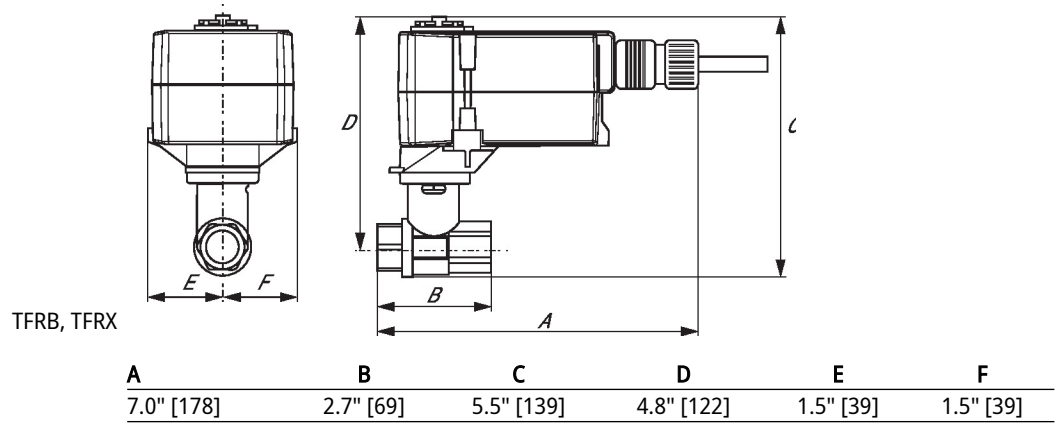


Dimensions

Type	DN	Weight
B220B	20	0.74 lb [0.34 kg]



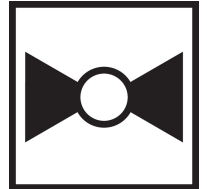
Dimensions



2-way, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B219B	20

Technical data

Functional data	Valve size [mm]	0.75" [20]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	10
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		chrome plated brass
Suitable actuators	Non Fail-Safe	TR LRB(X)
	Spring	TFRB(X) LF

Safety notes



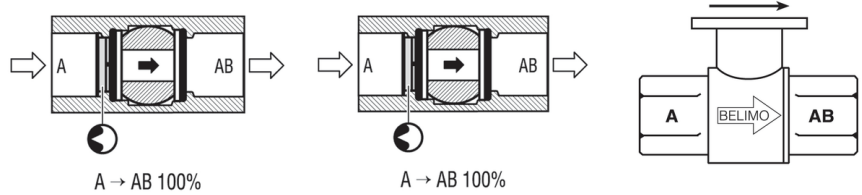
- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

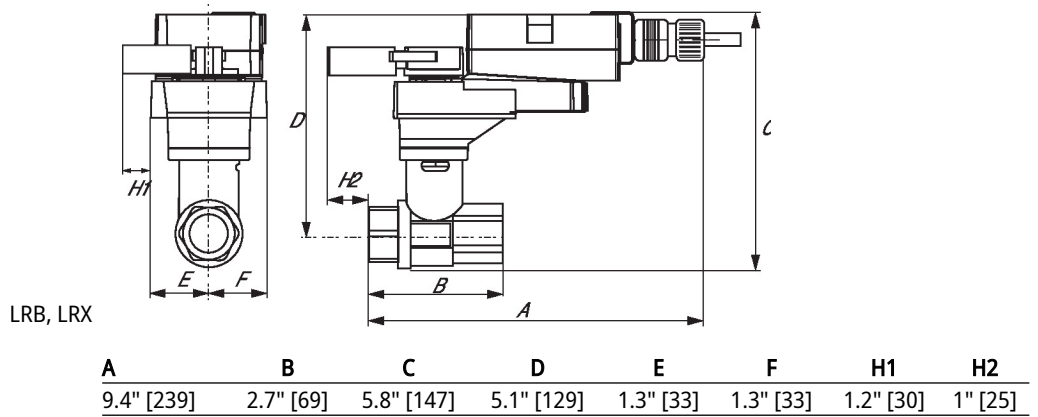
Flow/Mounting details

Two-way valves should be installed with the disc upstream.

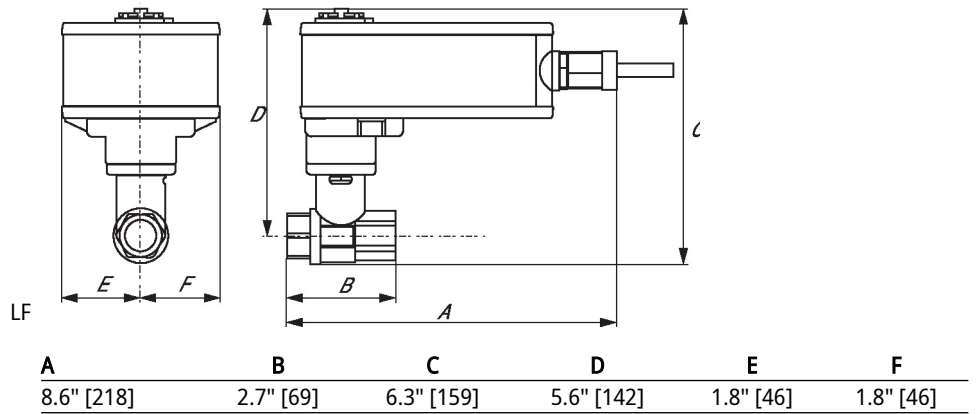
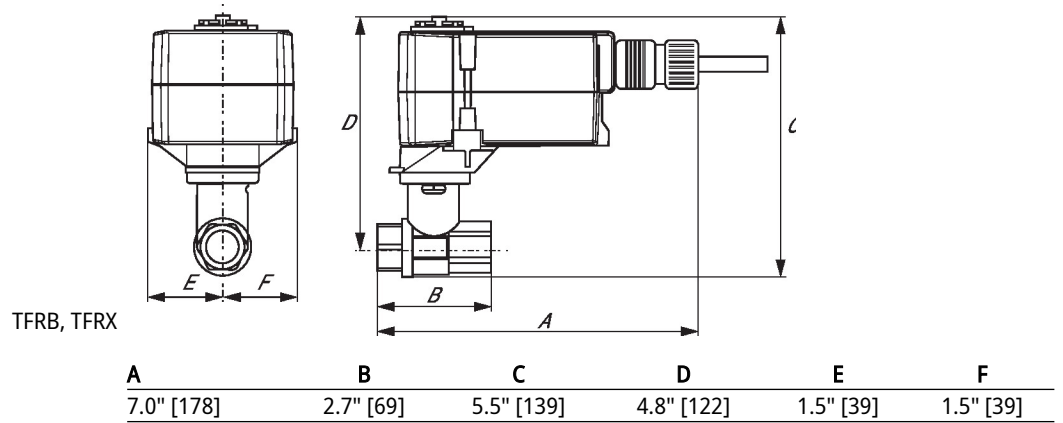


Dimensions

Type	DN	Weight
B219B	20	0.73 lb [0.33 kg]



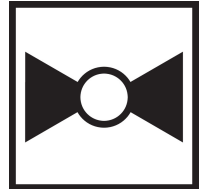
Dimensions



2-way, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B217B	20

Technical data

Functional data	Valve size [mm]	0.75" [20]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	A-port equal percentage, B-port modified for constant common port flow
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	4.7
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		chrome plated brass
Suitable actuators	Non Fail-Safe	TR LRB(X)
	Spring	TFRB(X) LF

Safety notes



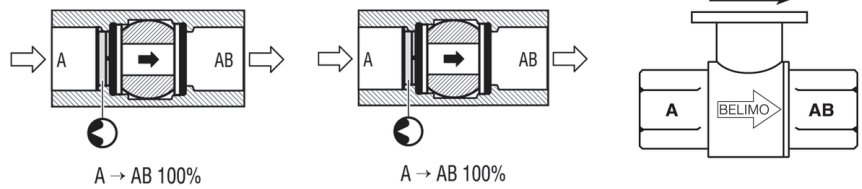
- WARNING: This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

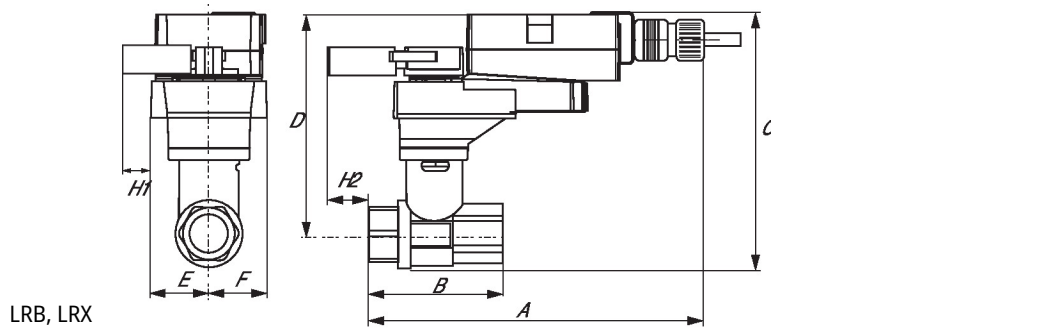
Flow/Mounting details

Two-way valves should be installed with the disc upstream.



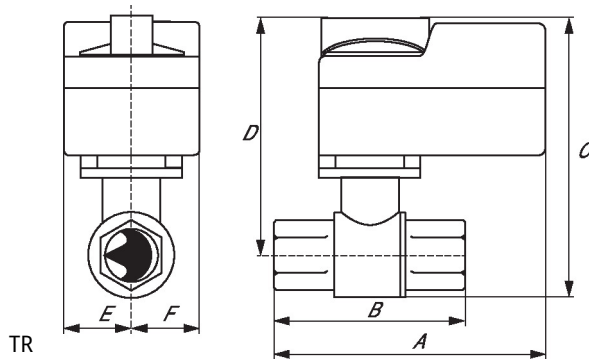
Dimensions

Type	DN	Weight
B217B	20	0.74 lb [0.33 kg]



LRB, LRX

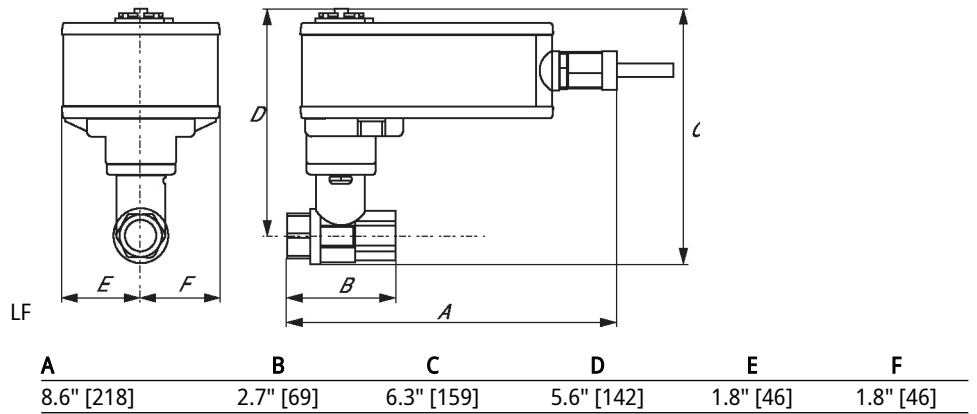
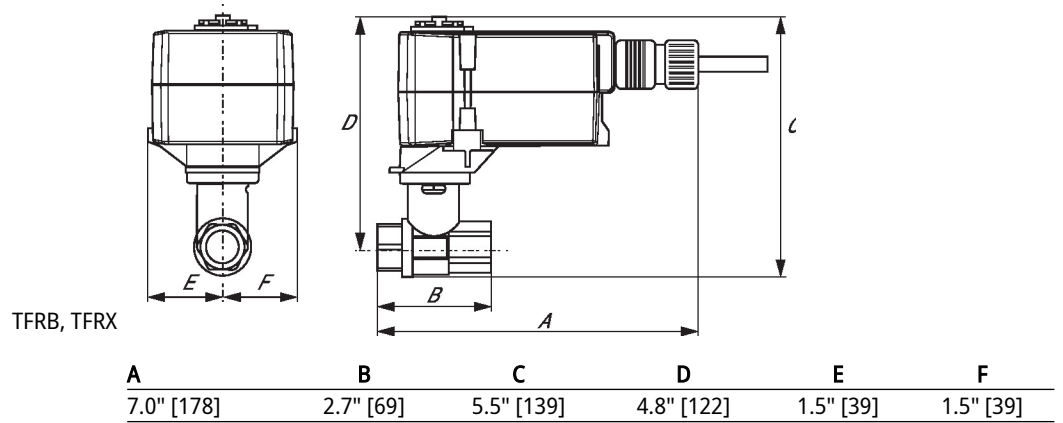
A	B	C	D	E	F	H1	H2
9.4" [239]	2.7" [69]	5.8" [147]	5.1" [129]	1.3" [33]	1.3" [33]	1.2" [30]	1" [25]



TR

A	B	C	D	E	F
4.0" [102]	2.7" [69]	5.4" [137]	4.7" [120]	1.3" [33]	1.3" [33]

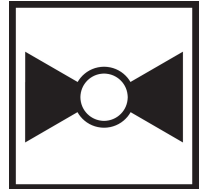
Dimensions



2-way, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B212B	15

Technical data

Functional data	Valve size [mm]	0.5" [15]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	3
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		chrome plated brass
Suitable actuators	Non Fail-Safe	TR LRB(X)
	Spring	TFRB(X) LF

Safety notes

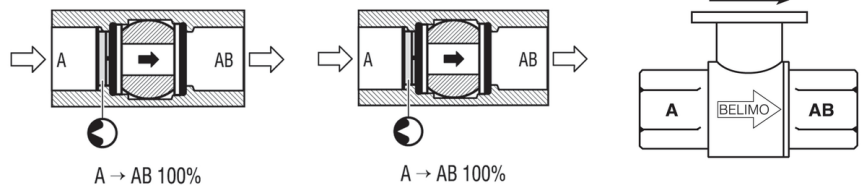


- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

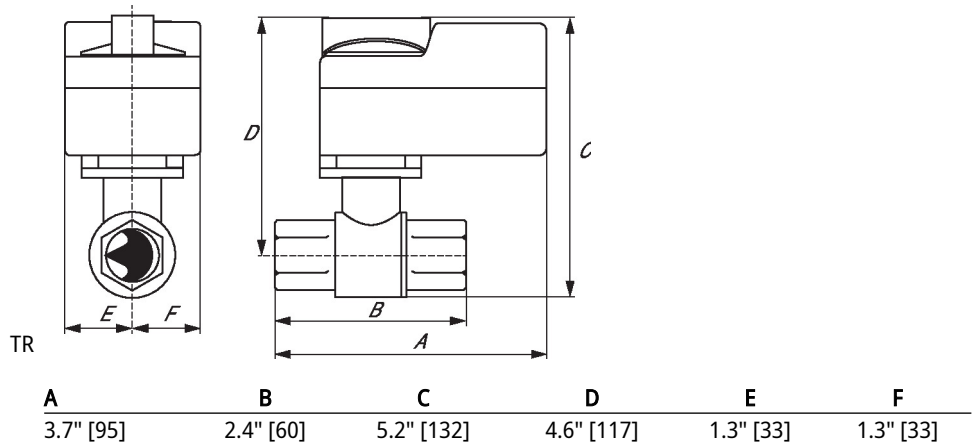
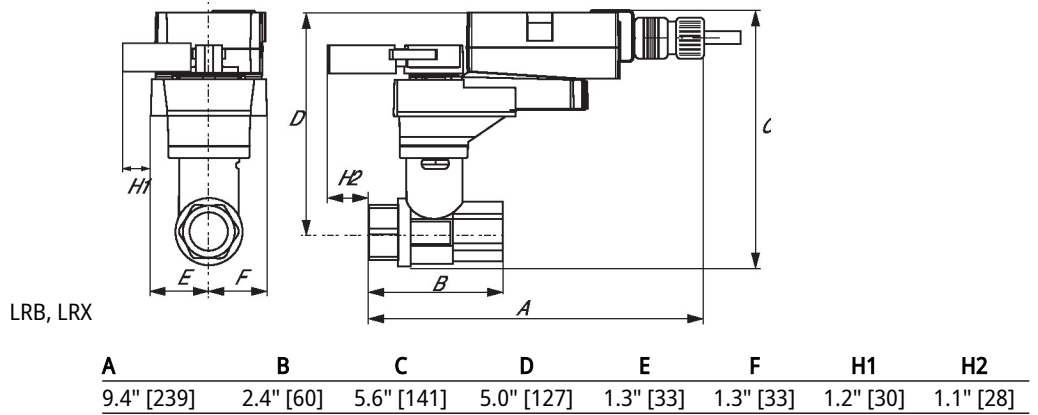
Flow/Mounting details



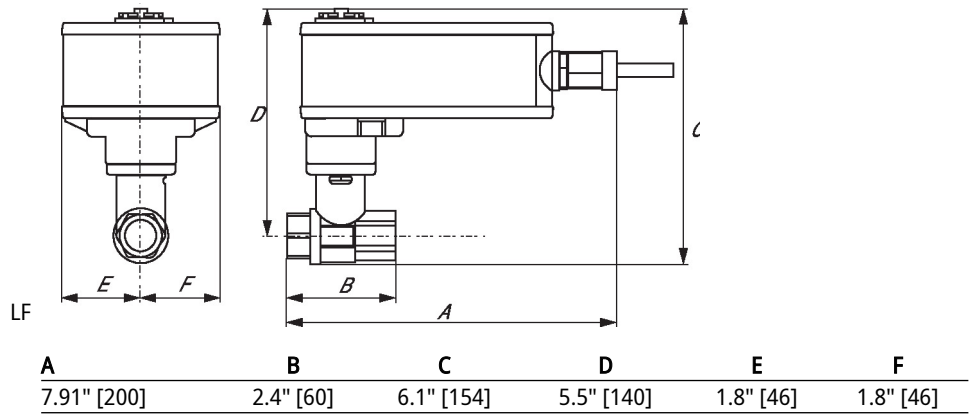
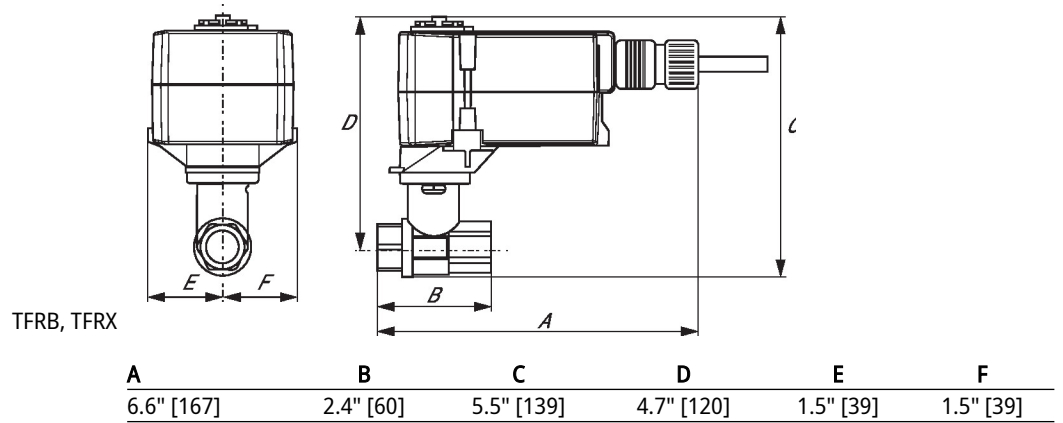
Two-way valves should be installed with the disc upstream.

Dimensions

Type	DN	Weight
B212B	15	0.68 lb [0.31 kg]



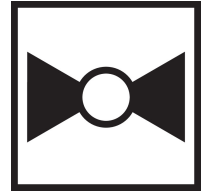
Dimensions



2-way, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B211B	15

Technical data

Functional data	Valve size [mm]	0.5" [15]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	1.9
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Suitable actuators	Non Fail-Safe	TR
		LRB(X)
	Spring	TFRB(X)
		LF

Safety notes

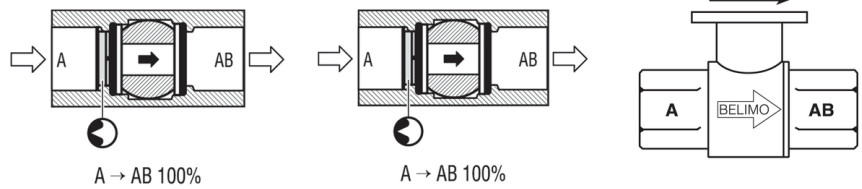


- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

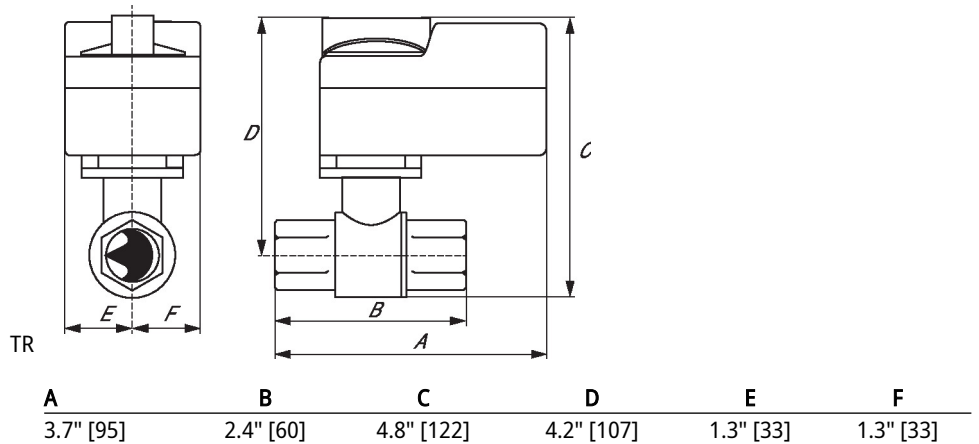
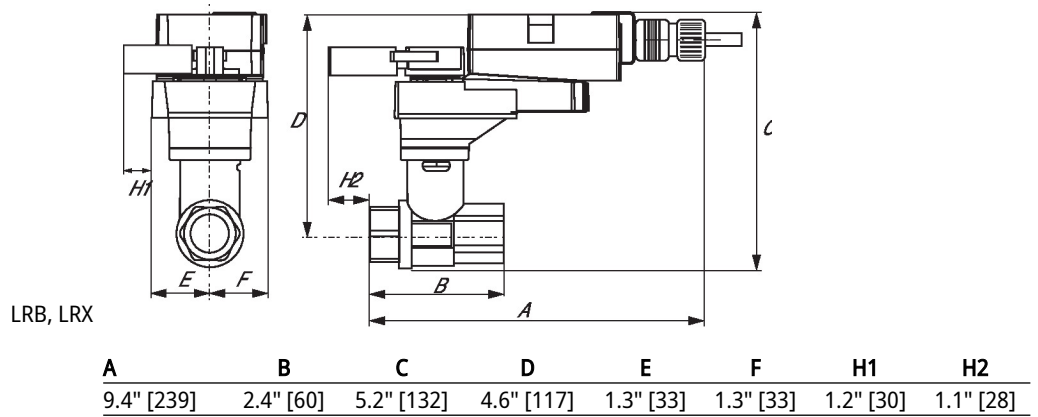
Flow/Mounting details



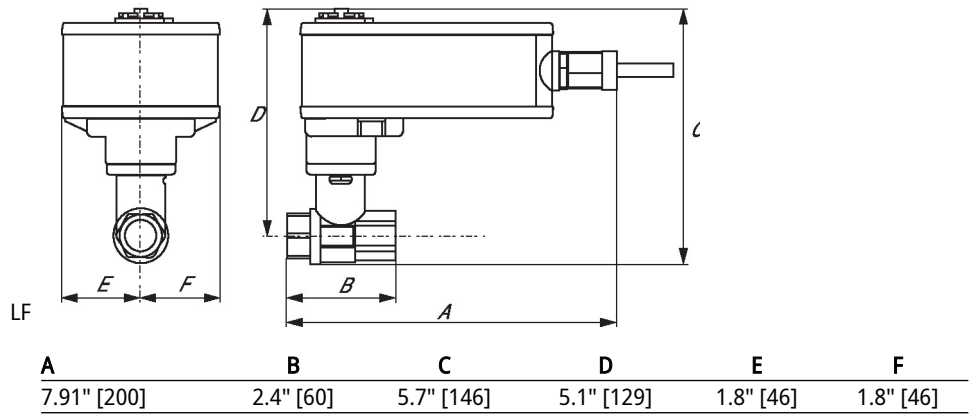
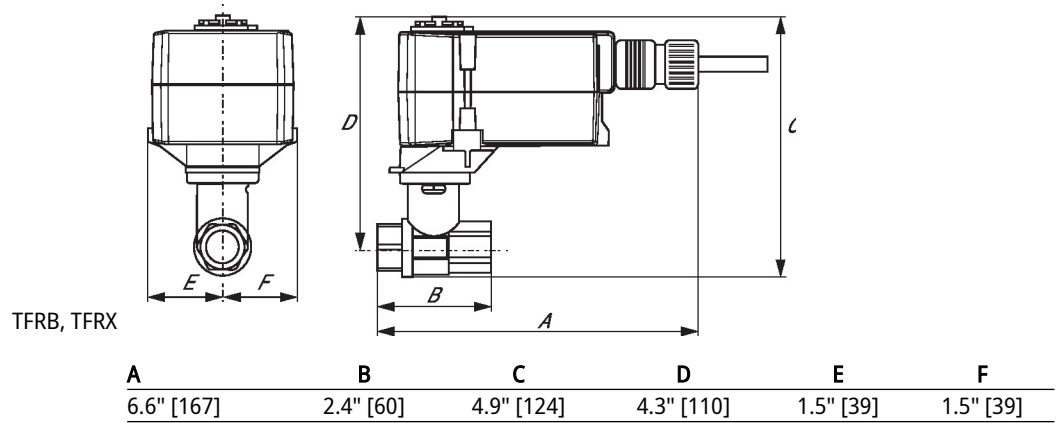
Two-way valves should be installed with the disc upstream.

Dimensions

Type	DN	Weight
B211B	15	0.51 lb [0.23 kg]



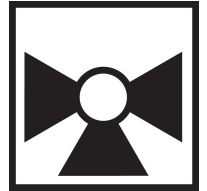
Dimensions



3-way Mixing/Diverting, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B311B	15

Technical data

Functional data	Valve size [mm]	0.5" [15]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow	A-port: as stated in chart B-port: 70% of A – AB Cv
	Flow characteristic	A-port equal percentage, B-port modified for constant common port flow
	Leakage rate	0% for A – AB, <2.0% for B – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	3-way Mixing/Diverting
	Controllable flow range	75°
	Cv	1.9
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		chrome plated brass
Suitable actuators	Non Fail-Safe	TR LRB(X)
	Spring	TFRB(X) LF

Safety notes

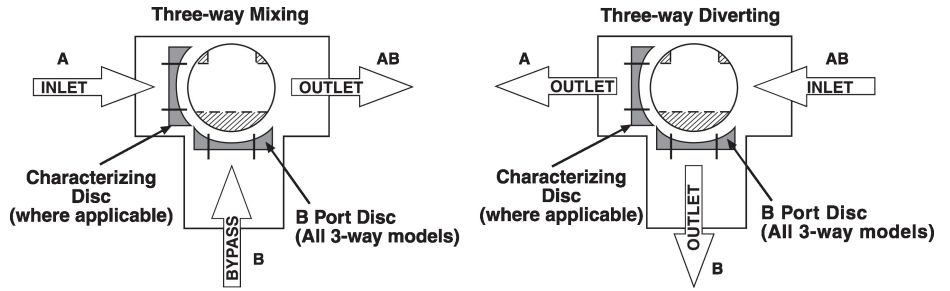


- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

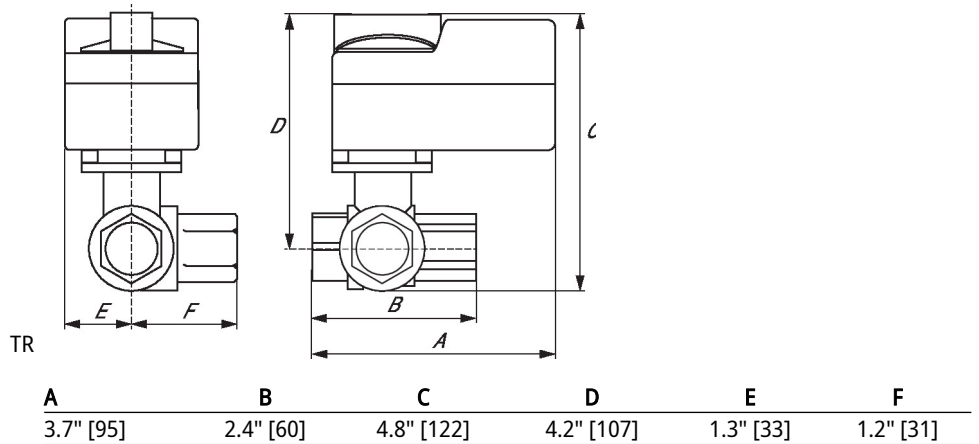
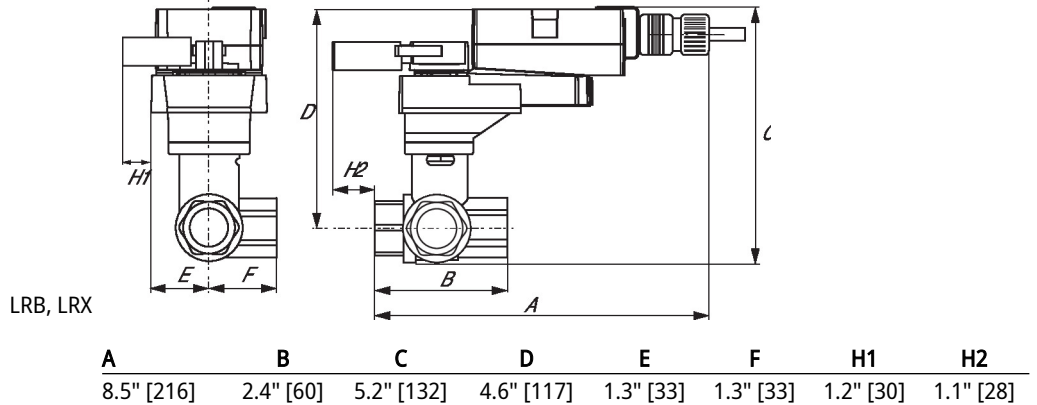
Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable or constant flow.

Flow/Mounting details

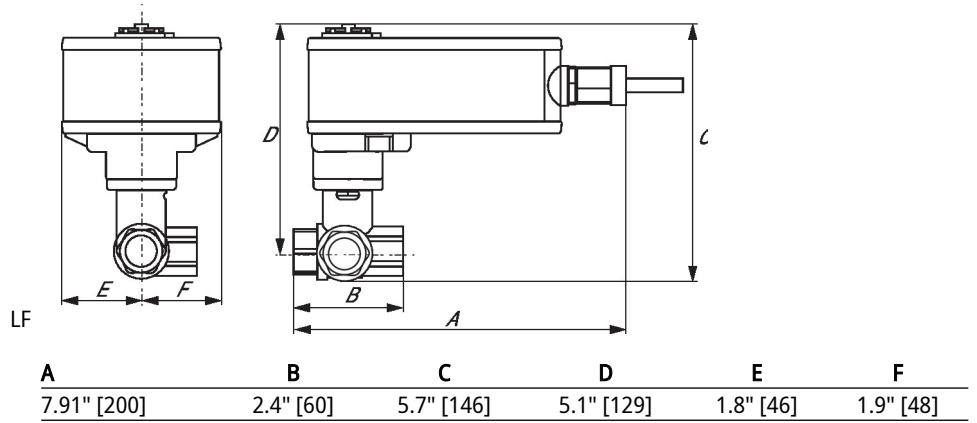
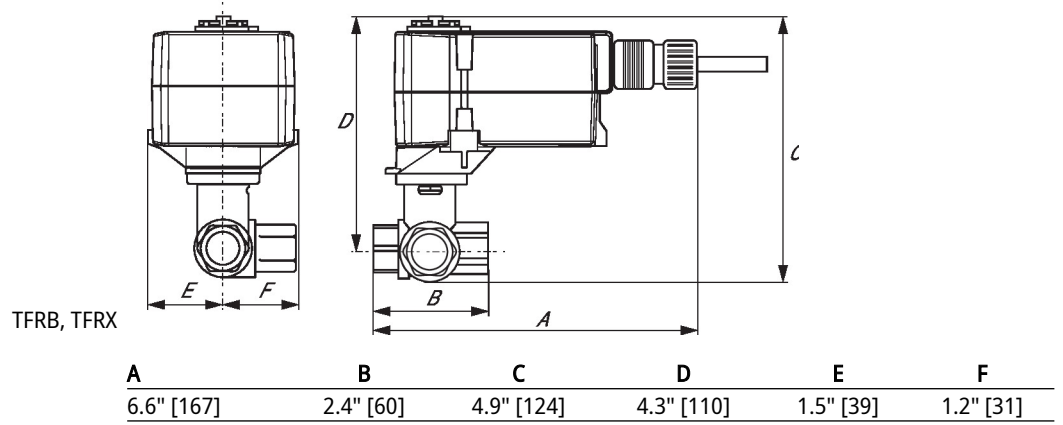


Dimensions

Type	DN	Weight
B311B	15	0.59 lb [0.27 kg]



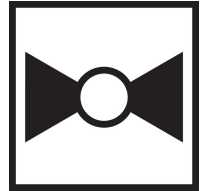
Dimensions



2-way, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B210B	15

Technical data

Functional data	Valve size [mm]	0.5" [15]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	1.2
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Suitable actuators	Non Fail-Safe	TR
		LRB(X)
	Spring	TFRB(X)
		LF

Safety notes

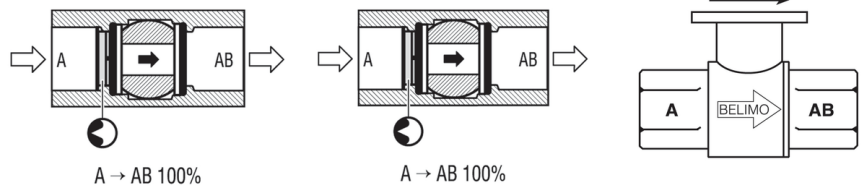


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Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

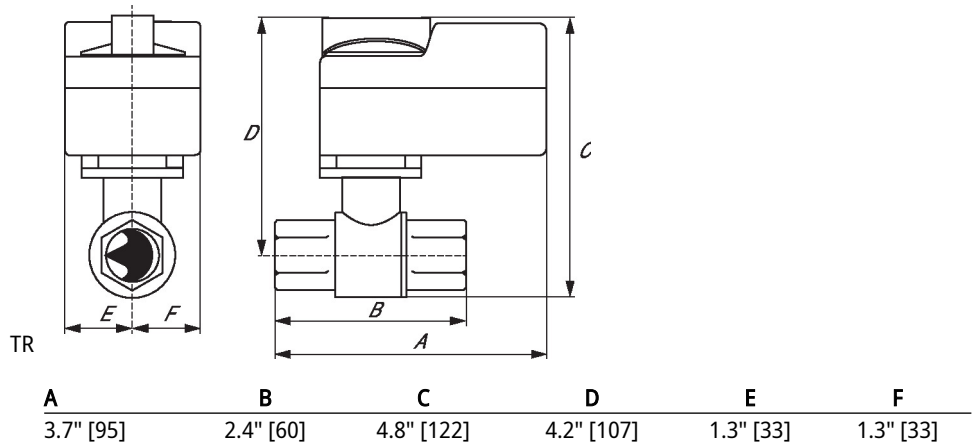
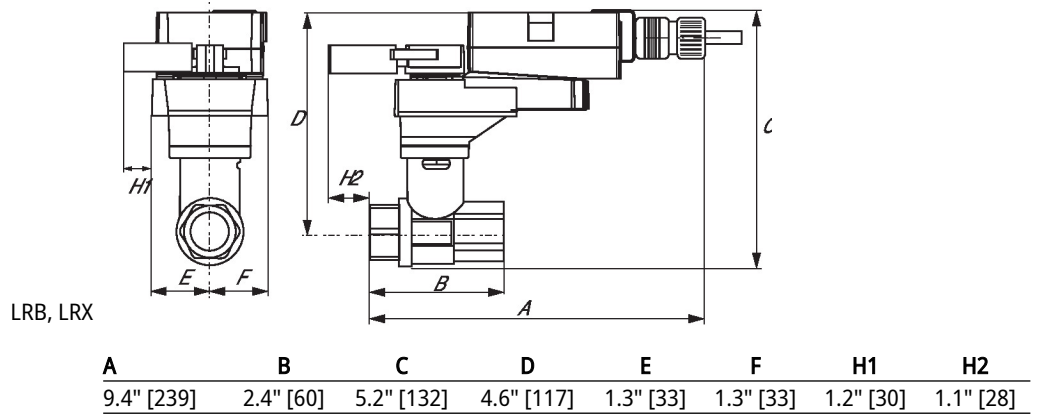
Flow/Mounting details



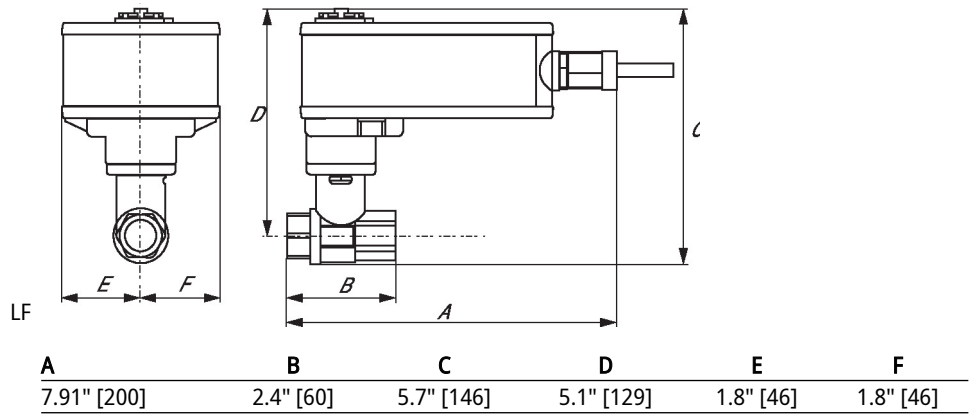
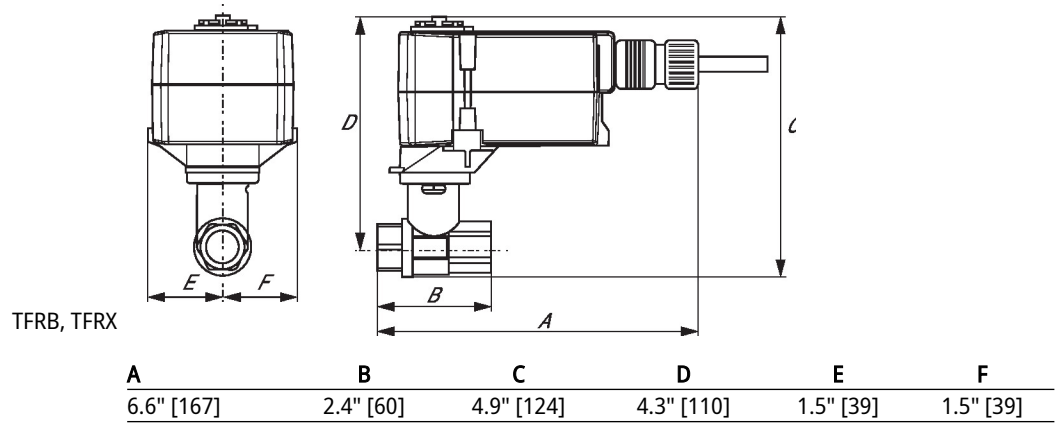
Two-way valves should be installed with the disc upstream.

Dimensions

Type	DN	Weight
B210B	15	0.51 lb [0.23 kg]



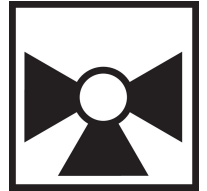
Dimensions



3-way Mixing/Diverting, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B310B	15

Technical data

Functional data	Valve size [mm]	0.5" [15]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow	A-port: as stated in chart B-port: 70% of A – AB Cv
	Flow characteristic	A-port equal percentage, B-port modified for constant common port flow
	Leakage rate	0% for A – AB, <2.0% for B – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	3-way Mixing/Diverting
	Controllable flow range	75°
	Cv	1.2
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		chrome plated brass
Suitable actuators	Non Fail-Safe	TR LRB(X)
	Spring	TFRB(X) LF

Safety notes

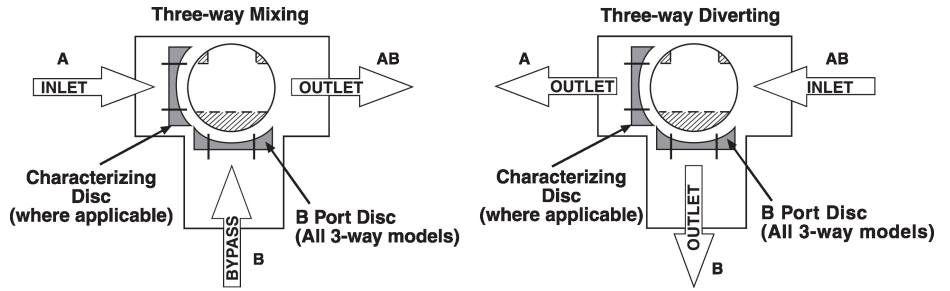


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Product features

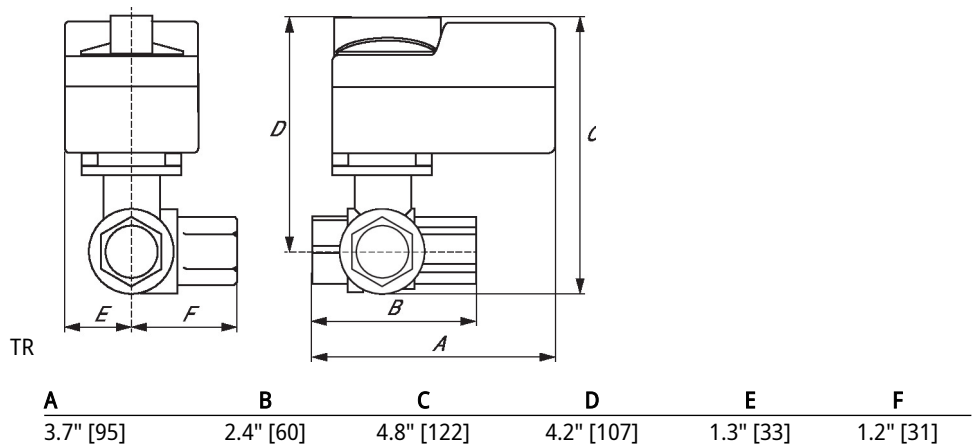
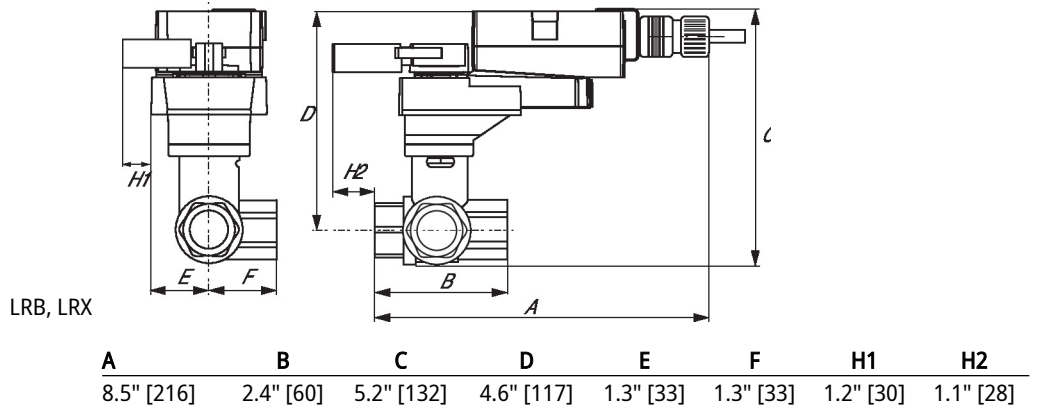
Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable or constant flow.

Flow/Mounting details

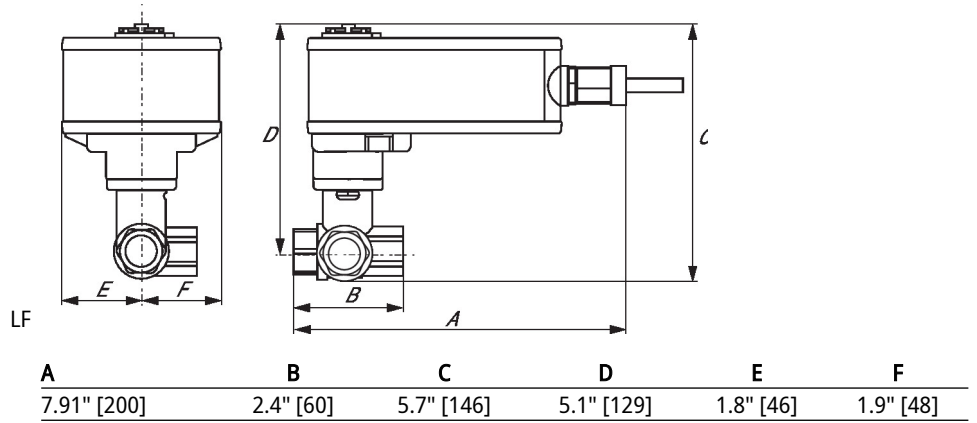
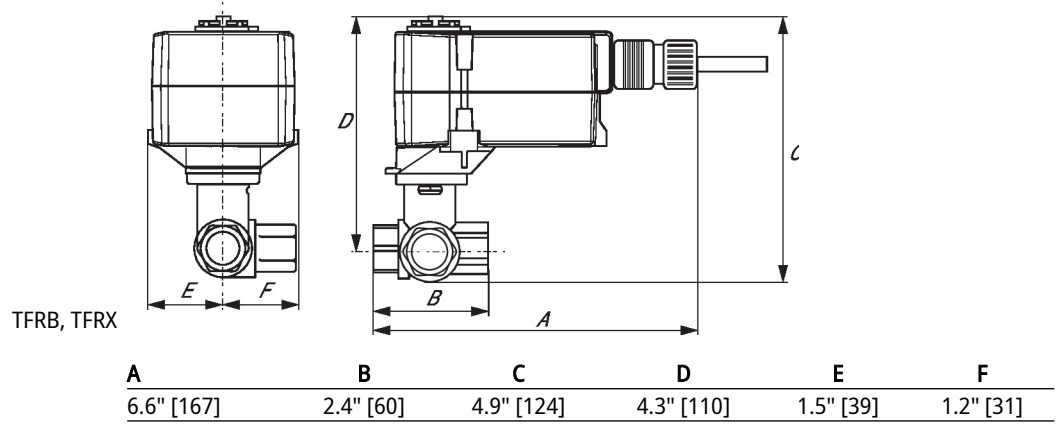


Dimensions

Type	DN	Weight
B310B	15	0.59 lb [0.27 kg]



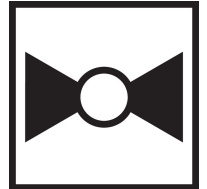
Dimensions



2-way, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B209B	15

Technical data

Functional data	Valve size [mm]	0.5" [15]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	0.8
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		chrome plated brass
Suitable actuators	Non Fail-Safe	TR LRB(X)
	Spring	TFRB(X) LF

Safety notes

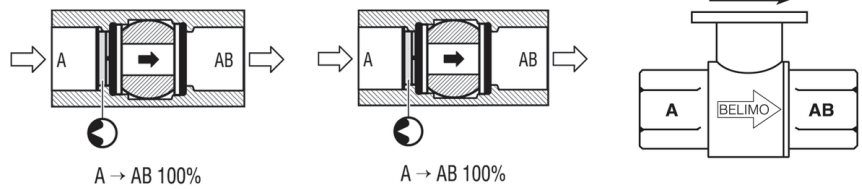


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Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

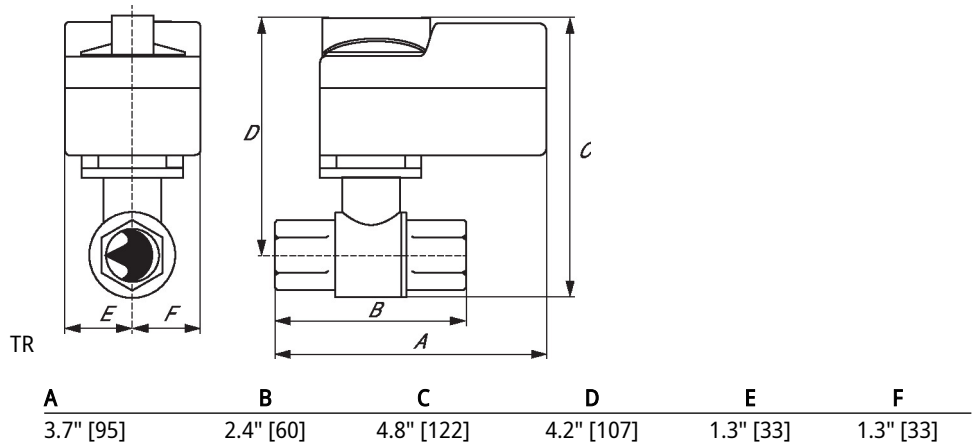
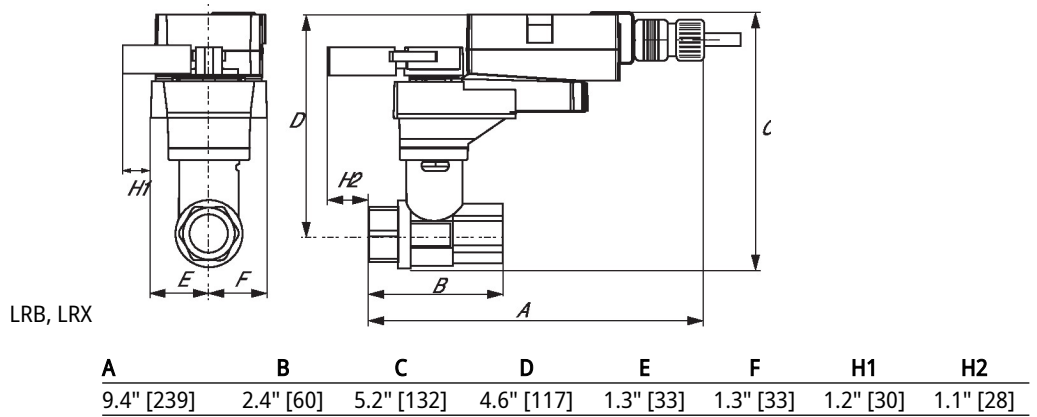
Flow/Mounting details



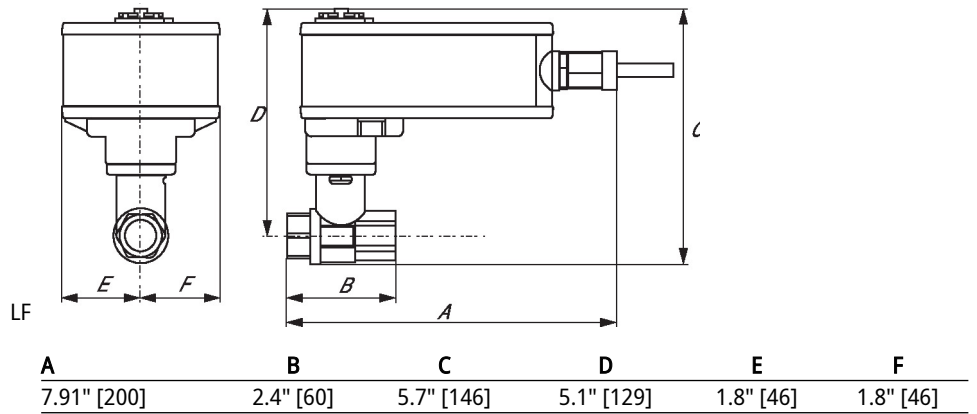
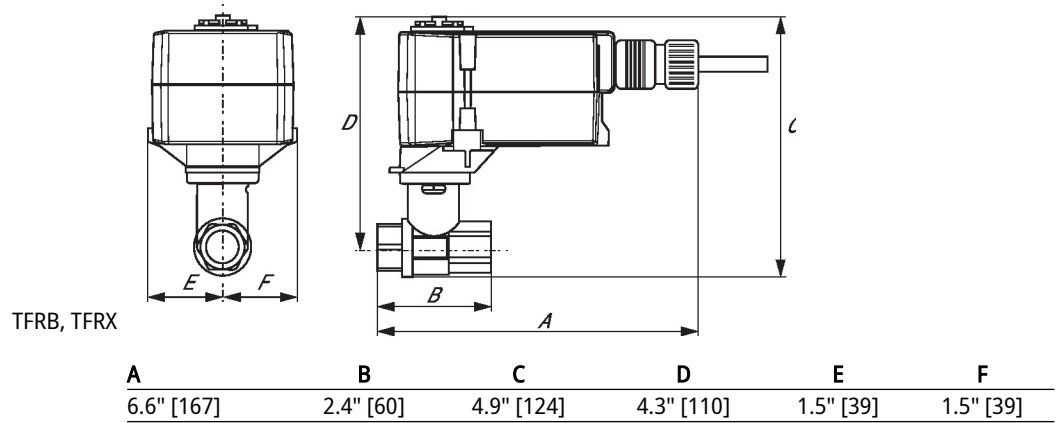
Two-way valves should be installed with the disc upstream.

Dimensions

Type	DN	Weight
B209B	15	0.51 lb [0.23 kg]



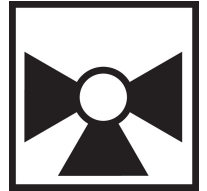
Dimensions



3-way Mixing/Diverting, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B309B	15

Technical data

Functional data	Valve size [mm]	0.5" [15]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow	A-port: as stated in chart B-port: 70% of A – AB Cv
	Flow characteristic	A-port equal percentage, B-port modified for constant common port flow
	Leakage rate	0% for A – AB, <2.0% for B – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	3-way Mixing/Diverting
	Controllable flow range	75°
	Cv	0.8
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		chrome plated brass
Suitable actuators	Non Fail-Safe	TR LRB(X)
	Spring	TFRB(X) LF

Safety notes

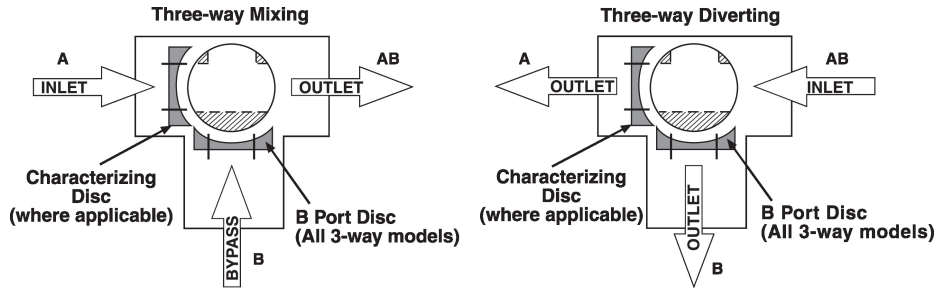


- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

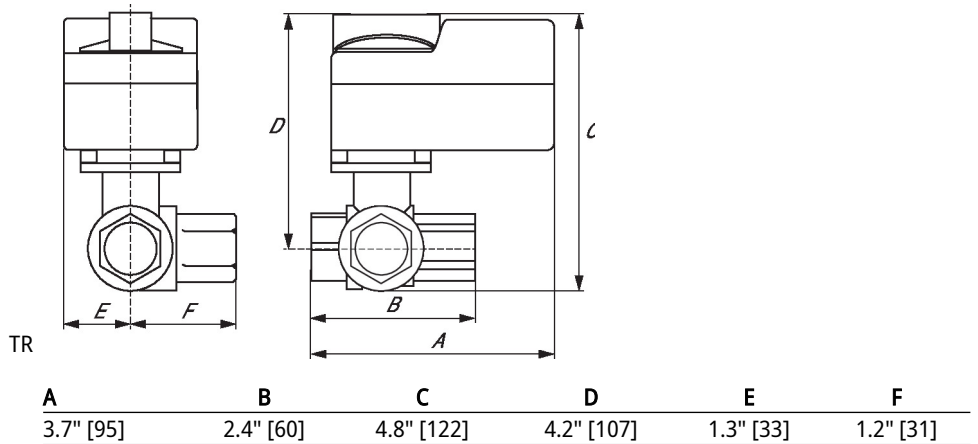
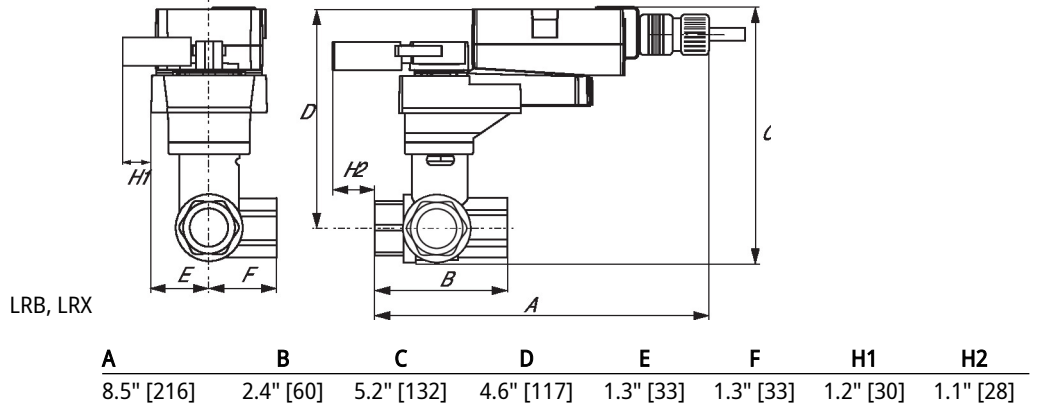
Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable or constant flow.

Flow/Mounting details

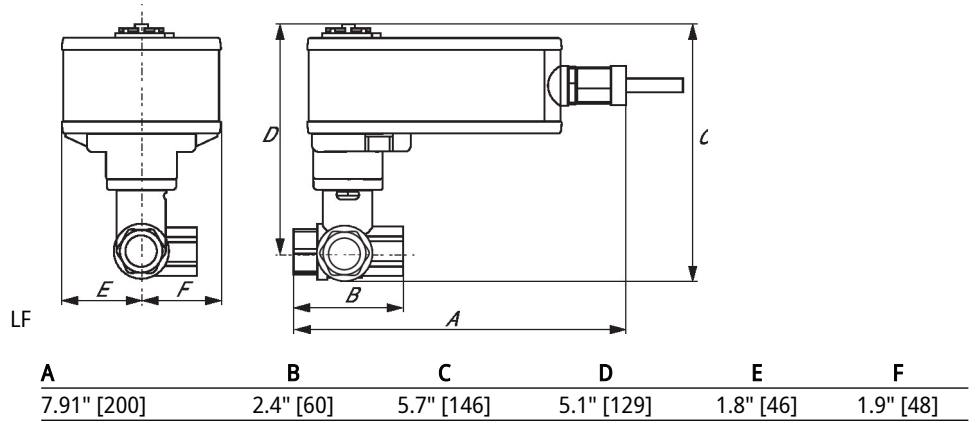
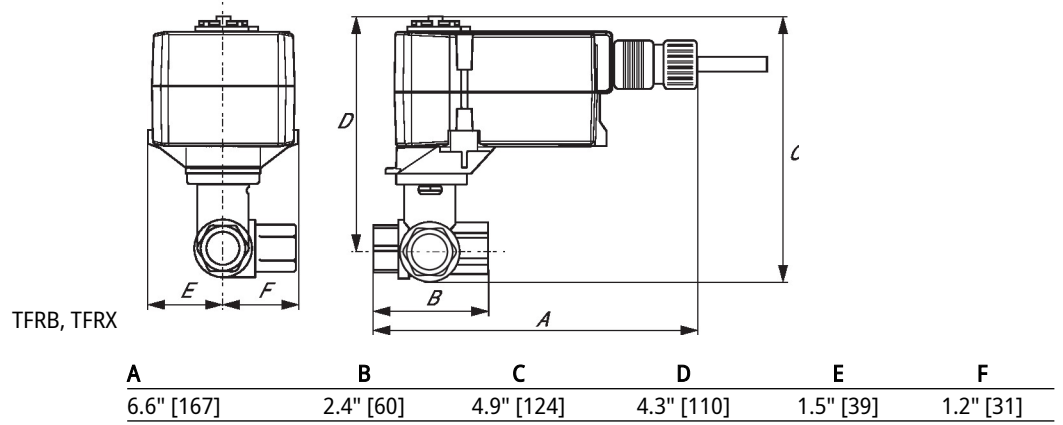


Dimensions

Type	DN	Weight
B309B	15	0.59 lb [0.27 kg]



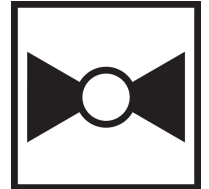
Dimensions



2-way, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B208B	15

Technical data

Functional data	Valve size [mm]	0.5" [15]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	0.46
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Suitable actuators	Non Fail-Safe	TR
		LRB(X)
	Spring	TFRB(X)
		LF

Safety notes



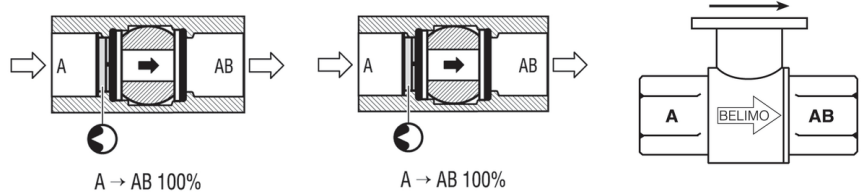
- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

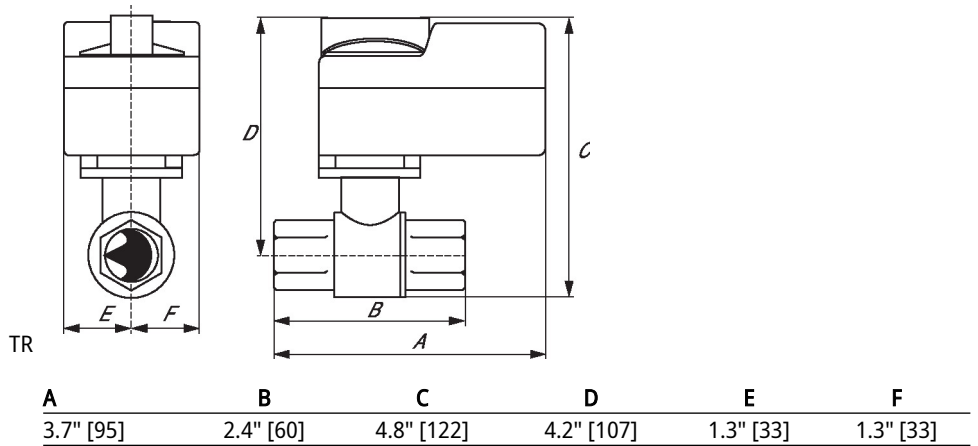
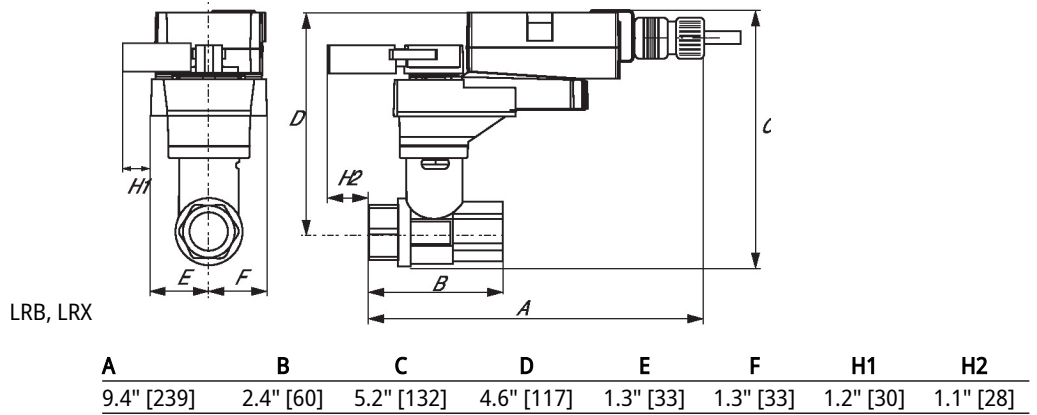
Flow/Mounting details

Two-way valves should be installed with the disc upstream.

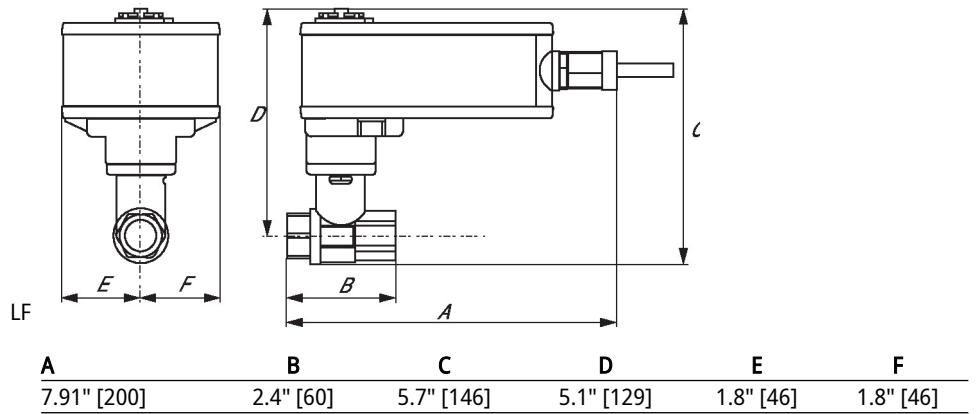
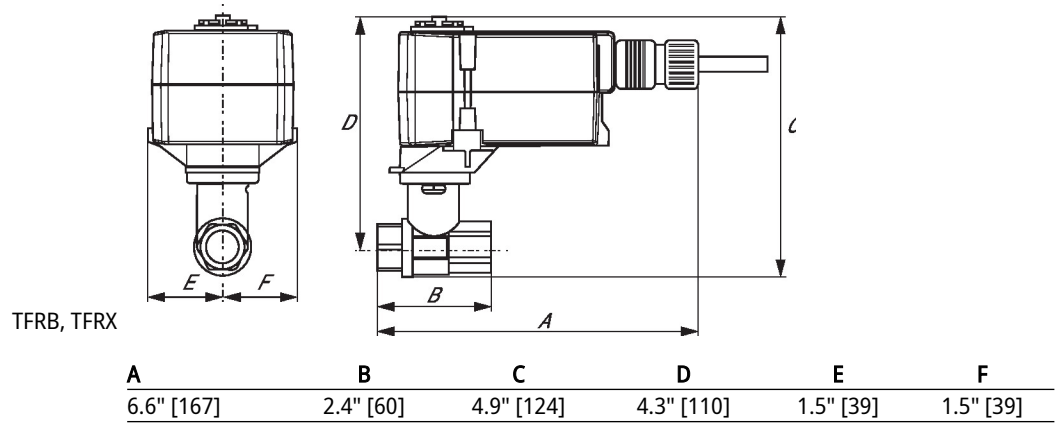


Dimensions

Type	DN	Weight
B208B	15	0.51 lb [0.23 kg]



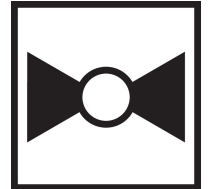
Dimensions



2-way, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



5-year warranty



Type overview

Type	DN
B207B	15

Technical data

Functional data	Valve size [mm]	0.5" [15]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	600 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	equal percentage
	Leakage rate	0% for A – AB
	Pipe connection	Internal thread NPT (female)
	Servicing	maintenance-free
	Flow Pattern	2-way
	Controllable flow range	75°
	Cv	0.3
	Materials	Valve body
Stem		nickel-plated brass
Stem seal		EPDM (lubricated)
Seat		PTFE
Characterized disc		TEFZEL®
O-ring		EPDM (lubricated)
Ball		chrome plated brass
Suitable actuators	Non Fail-Safe	TR LRB(X)
	Spring	TFRB(X) LF

Safety notes

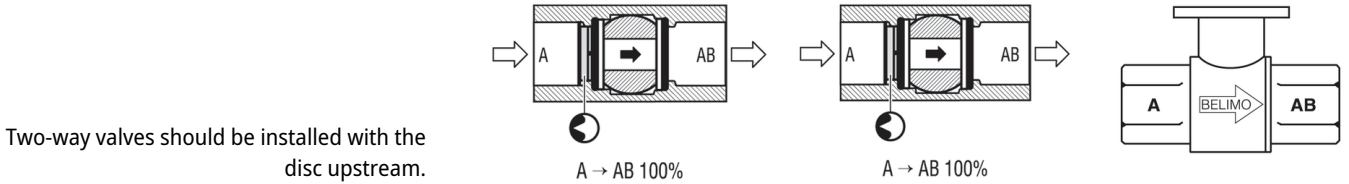


- **WARNING:** This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

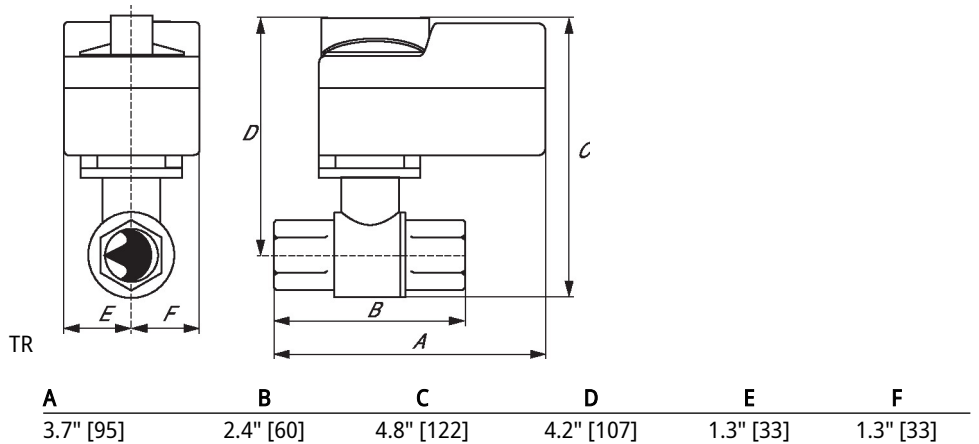
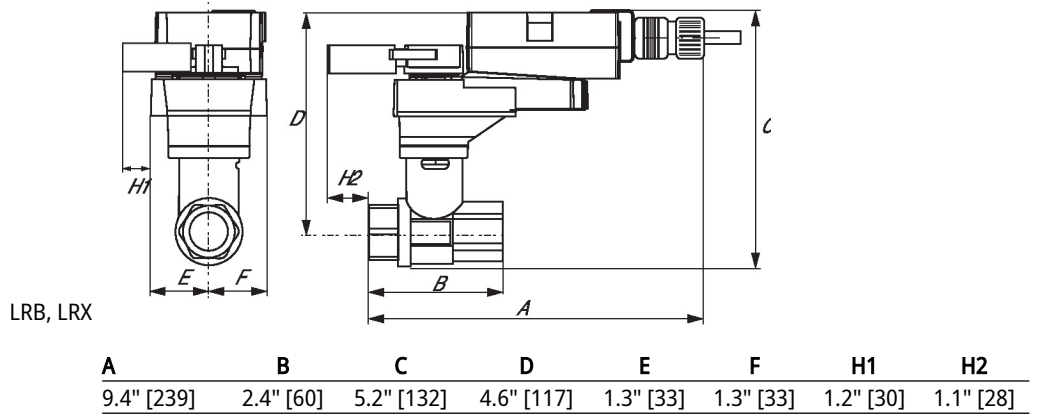
Application This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

Flow/Mounting details

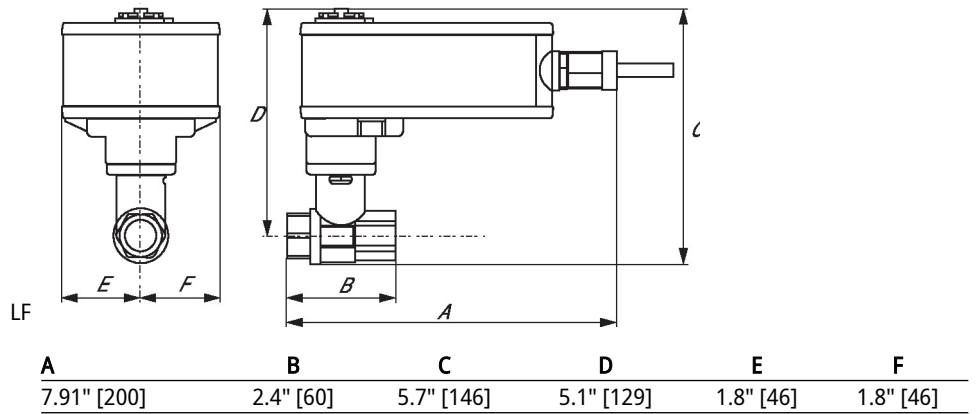
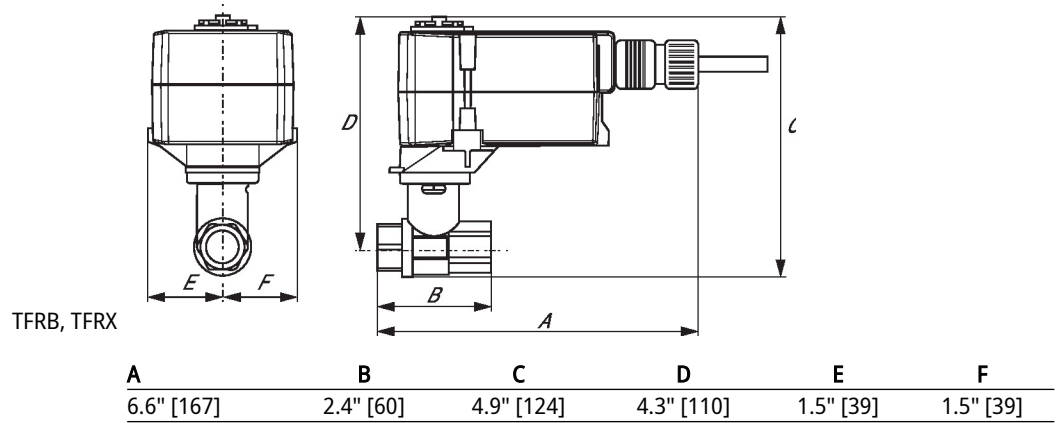


Dimensions

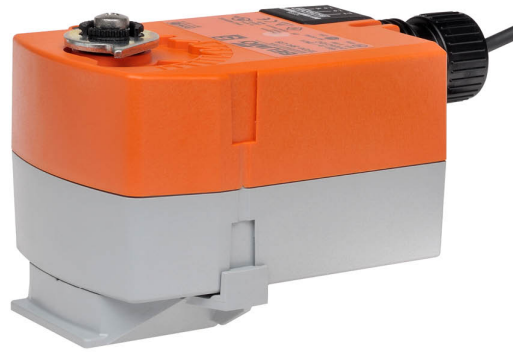
Type	DN	Weight
B207B	15	0.51 lb [0.23 kg]



Dimensions



Modulating, Spring return, 24 V



5-year warranty


Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Power consumption in operation	2.5 W
	Power consumption in rest position	1 W
	Transformer sizing	4 VA
	Electrical Connection	18 GA plenum cable, 3 ft [1 m], with 1/2" NPT conduit connector
	Overload Protection	electronic throughout 0...95° rotation
Functional data	Operating range Y	2...10 V
	Operating range Y note	4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)
	Input impedance	100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA
	Position feedback U	2...10 V
	Position feedback U note	Max. 0.5 mA
	Direction of motion motor	selectable with switch 0/1
	Direction of motion fail-safe	reversible with cw/ccw mounting
	Angle of rotation	Max. 95°
	Running Time (Motor)	95 s
	Running time fail-safe	<25 s @ 20°C
	Noise level, motor	35 dB(A)
	Noise level, fail-safe	62 dB(A)
	Position indication	Mechanical
Safety data	Power source UL	Class 2 Supply
	Degree of protection IEC/EN	IP42
	Degree of protection NEMA/UL	NEMA 2
	Enclosure	UL Enclosure Type 2
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02 CE acc. to 2014/30/EU and 2014/35/EU
	Quality Standard	ISO 9001
	UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-22...122°F [-30...50°C]

Technical data

Safety data	Storage temperature	-40...176°F [-40...80°C]
	Servicing	maintenance-free
Weight	Weight	1.5 lb [0.69 kg]
Materials	Housing material	UL94-5VA

Footnotes †Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3

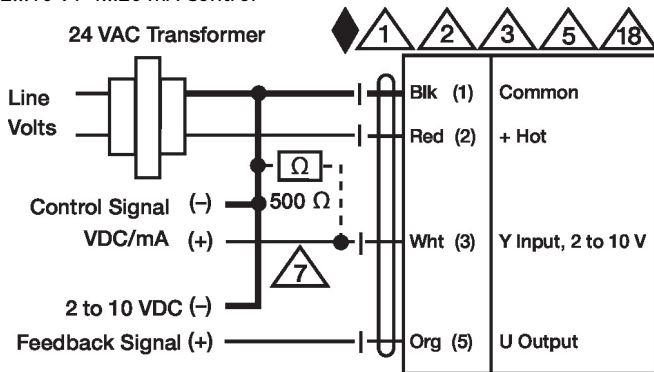
Electrical installation

✂ INSTALLATION NOTES

- 1 Provide overload protection and disconnect as required.
- 2 Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- 3 Actuators may also be powered by DC 24 V.
- 5 Only connect common to negative (-) leg of control circuits.
- 7 A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- 18 Actuators with plenum cable do not have numbers; use color codes instead.
- ◆ Meets cULus requirements without the need of an electrical ground connection.
- 1 **Warning! Live electrical components!**
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

Wiring diagrams

2...10 V / 4...20 mA Control



Modulating, Non fail-safe, 24 V



5-year warranty


Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Power consumption in operation	0.5 W
	Transformer sizing	1 VA
	Electrical Connection	Screw terminal (for 26 to 14 GA wire)
	Overload Protection	electronic throughout full rotation
	Functional data	Operating range Y
Operating range Y note		4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)
Input impedance		100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA
Direction of motion motor		selectable with switch
Manual override		push down handle
Angle of rotation		90°
Running Time (Motor)		90 s / 90°
Noise level, motor		35 dB(A)
Position indication		integrated into handle
Safety data		Power source UL
	Degree of protection IEC/EN	IP40
	Degree of protection NEMA/UL	NEMA 1
	Enclosure	UL Enclosure Type 1
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02 CE acc. to 2014/30/EU and 2014/35/EU
	Quality Standard	ISO 9001
	UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-22...122°F [-30...50°C]
	Storage temperature	-40...176°F [-40...80°C]
	Servicing	maintenance-free
	Weight	Weight

Accessories

Electrical accessories	Description	Type
	Battery backup system, for non-spring return models	NSV24 US
	Battery, 12 V, 1.2 Ah (two required)	NSV-BAT

Electrical installation

✂ INSTALLATION NOTES

- Provide overload protection and disconnect as required.
- Actuators may also be powered by DC 24 V.
- Only connect common to negative (-) leg of control circuits.
- A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.
- Actuators are provided with a numbered screw terminal strip instead of a cable.
- Meets cULus requirements without the need of an electrical ground connection.

Warning! Live electrical components!

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

Wiring diagrams

2...10 V / 4...20 mA Control

