

NV Electric Actuator with 24000 Series Control Valves

In response to increasing demand for high accuracy industrial temperature and HVAC applications, Baumann introduces its NV electric control valve series. We have combined the 24000 series family of control valves with advanced state of the art technology.

This unique system is specifically designed for Baumann sliding stem control valves. Used for temperature and humidity control for HVAC (hot and chilled water, steam, glycol, etc...), semiconductor manufacturing (cleanrooms, make-up air handlers, recirculation air handlers, humidification, chillers, jackets, and glycol systems) and for many more industrial environments (textiles, food & beverage, and tire manufacturing).

Features:

Actuator

- Multi function technology providing standard autocalibration and signal selectibility.
- Available valve failure modes (close, open, last position).
- Choice of power supply.
- Stem position feedback transmitter available.

Valve

- High quality nitronic 60 and type 316 stainless steel internal valve trim parts (optional TFE seating).
- Superior dual stem and plug guiding.
- Available equal percentage and linear characterized trims to match process loop dynamics.



24000 Series Little Scotty



24000C & D Series



Actuator

Specifications

TYPE	NV Electric Actuator
POWER FAILURE	Lock in last position / Fail Open / Fail Closed
ACTION	Direct or Reverse
POWER CONSUMPTION	5.5W
TRAVEL	1/2 and 3/4 inch, 12.7 and 19.1 mm
MATERIAL: Housing Yoke	Polycarbon (ABS) Powder epoxy coated ductile iron
INPUT SIGNAL	0.5 - 10 vdc or 2 - 10 vdc or 4 - 20 mA input signals
POWER SUPPLY	24 vdc or ac
AMBIENT TEMPERATURE	-22° F to 122° F / -30° C to 50° C
RELATIVE HUMIDITY RANGE	5 to 95% RH - Non Condensing
OUTPUT THRUST	180 lbf, 81 kgf
SHUT OFF CLASS	Class IV or VI per ANSI / FCI 70-2
SHUT OFF PRESSURE	See tables on pages 3, 4, and 5
TRAVEL TIME	Maximum 150 seconds for 1/2 and 3/4 inch travel ranges Spring fail time: 30 seconds for full travel
ENCLOSURE RATING	NEMA 2 / IP 54 with cable entry facing down
NOISE LEVEL	max 35 dba
MANUAL OVERRIDE	3/16" hex. 5 mm hex.
POSITION INDICATION	Travel scale on yoke
SPLIT RANGE CAPABILITY	Yes
APPROVALS	CE ⁽¹⁾ , UL 873, CSA 4813 02
(1) CE approval applies to actuator only.	

Optional Accessories

VALVE STEM POSITION FEEDBACK OUTPUT	2 - 10 vdc (2 mA max.)
VALVE STEM POSITION SWITCHES	Refer to price sheet 018
MOTOR ENCLOSURES	Plastic Weathershield Cover

* Unit can be field wired for on-off control (see instruction manuals)

24000 Bronze Control Valve

Technical Specifications

NOMINAL SIZE	1/2", 3/4", 1", 1-1/4", 1-1/2", & 2"
BODY MATERIAL	Bronze ASTM B62
CONNECTIONS	NPTF Threaded
NOMINAL PRESSURE	250 Psig @ 150°F; 150 Psig @ 400°F (Meets ANSI B16.24)
SEAT PLUG SEALING	Metal to Metal or PTFE Soft
CHARACTERISTIC	Equal Percentage or Linear
RANGEABILITY	Exceeds 50:1
TEMPERATURE RANGE	0° to 400°F / -18 to 204°C (Metal Sealing) 0° to 400°F / -18 to 204°C (PTFE Sealing)
SEAL LEAKAGE CL IV* (Metal Sealing - Standard)	0.01% of Rated Valve Capacity (Cv)

* Tested with air @ 3.5 bar / 50 psi differential.

Cv / Kv Values and Maximum Allowable Pressure Drops for 102, 588 & 688 Plug Series (CL IV)

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		PLUG SERIES						SHUTOFF	
						102		588		688			
in	mm	in	mm	in	mm	Cv	Kv	Cv	Kv	Cv	Kv	psi	bar
1/2, 3/4, & 1	15, 20, & 25	0.25	6.3	1/2	12.7	0.2	0.17	0.2, 0.5, 1.0	0.17, 0.43, 0.86	0.5, 1.0	0.43, 0.86	250	17
		0.375	9.5	1/2	12.7	---	---	1.5, 2.5	1.3, 2.2	1.5, 2.5	1.3, 2.2	250	17
1/2	15	0.8125	20.6	1/2	12.7	---	---	4, 6	3.4, 5.2	4, 6	3.4, 5.2	250	17
3/4	20	0.8125	20.6	1/2	12.7	---	---	4, 8	3.4, 6.9	4, 8	3.4, 6.9	250	17
1	25	0.8125	20.6	1/2	12.7	---	---	4, 9	3.4, 7.7	4, 9	3.4, 7.7	250	17
		1.0625	26.9	1/2	12.7	---	---	13	11.2	13	11.2	203	14
1-1/4	32	1.25	32	3/4	19.1	---	---	10, 20	8.6, 17.3	20	17.3	147	10
1-1/2	40	1.50	38.1	3/4	19.1	---	---	10, 17, 28	8.6, 14.6, 24.1	10, 17, 28	8.6, 14.6, 24.1	102	7.0
2	50	2.00	50.8	3/4	19.1	---	---	30, 50	25.8, 43	30, 50	25.8, 43	57	3.9

Cv / Kv Values and Maximum Allowable Pressure Drops for 577 & 677 Plug Series (CL VI)

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		PLUG SERIES				SHUTOFF	
						577		677			
in	mm	in	mm	in	mm	Cv	Kv	Cv	Kv	psi	bar
1/2, 3/4, & 1	15, 20, & 25	0.25	6.3	1/2	12.7	---	---	---	---	250	17
		0.375	9.5	1/2	12.7	1.0, 1.5, 2.5	0.86, 1.3, 2.2	0.1, 0.2, 0.5, 1.0, 2.5	0.09, 0.17, 0.43, 0.86, 2.2	250	17
1/2	15	0.8125	20.6	1/2	12.7	4, 6	3.4, 5.2	5	4.3	250	17
3/4	20	0.8125	20.6	1/2	12.7	4, 7.5	3.4, 6.5	5	4.3	250	17
1	25	0.8125	20.6	1/2	12.7	4, 8.5	3.4, 7.3	5	4.3	250	17
		1.0625	26.9	1/2	12.7	13	11.2	---	---	133	9.1
1-1/4	32	1.25	32	3/4	19.1	20	17.3	---	---	77	5.3
1-1/2	40	1.50	38.1	3/4	19.1	10, 17, 28	8.6, 14.6, 24.1	10, 17	8.6, 14.6	32	2.2
2	50	2.00	50.8	3/4	19.1	30	25.8	30, 50	25.8, 43	N/A	N/A

24000C & D Carbon Steel & Ductile Iron Control Valve

Technical Specifications

NOMINAL SIZE	1/2", 3/4", 1", 1-1/2", & 2" / DN15, 20, 25, 40, & 50
BODY MATERIAL	Dual Certified to ASTM A216 WCC & DIN Spec GP240GH / WN 1.0619 (Cast Steel) or DIN GGG-40.3 / WN 0.7043 (Ductile Iron)
CONNECTIONS	Mates with ANSI Class 150 RF or PN10 thru PN40 flanges
NOMINAL PRESSURE	PN40
SEAT PLUG SEALING	Metal to Metal or PTFE Soft
CHARACTERISTIC	Equal Percentage or Linear
RANGEABILITY	Exceeds 50:1
TEMPERATURE RANGE	-20° to 480°F / -29 to 250°C (Metal Sealing) -20° to 450°F / -29 to 232°C (PTFE Sealing)
SEAL LEAKAGE CL IV* (Metal Sealing - Standard)	0.01% of Rated Valve Capacity (Cv)

* Tested with air @ 3.5 bar / 50 psi differential.

Cv / Kv Values and Maximum Allowable Pressure Drops for 102, 588 & 688 Plug Series (CL IV)

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		PLUG SERIES						SHUTOFF	
						102		588		688			
in	mm	in	mm	in	mm	Cv	Kv	Cv	Kv	Cv	Kv	psi	bar
1/2, 3/4, & 1	15, 20, & 25	0.25	6.3	1/2	12.7	0.2	0.17	0.2, 0.5, 1.0	0.17, 0.43, 0.86	0.5, 1.0	0.43, 0.86	290	20
		0.375	9.5	1/2	12.7	---	---	1.5, 2.5	1.3, 2.2	1.5, 2.5	1.3, 2.2	290	20
1/2	15	0.8125	20.6	1/2	12.7	---	---	4, 6	3.4, 5.2	4, 6	3.4, 5.2	290	20
3/4	20	0.8125	20.6	1/2	12.7	---	---	4, 8	3.4, 6.9	4, 8	3.4, 6.9	290	20
1	25	0.8125	20.6	1/2	12.7	---	---	4, 9	3.4, 7.7	4, 9	3.4, 7.7	290	20
		1.0625	26.9	1/2	12.7	---	---	13	11.2	13	11.2	203	14
1-1/2	40	1.50	38.1	3/4	19.1	---	---	10, 17, 28	8.6, 14.6, 24.1	10, 17, 28	8.6, 14.6, 24.1	102	7.0
2	50	2.00	50.8	3/4	19.1	---	---	30, 50	25.8, 43	30, 50	25.8, 43	57	3.9

Cv / Kv Values and Maximum Allowable Pressure Drops for 577 & 677 Plug Series (CL VI)

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		PLUG SERIES				SHUTOFF	
						577		677			
in	mm	in	mm	in	mm	Cv	Kv	Cv	Kv	psi	bar
1/2, 3/4, & 1	15, 20, & 25	0.25	6.3	1/2	12.7	---	---	---	---	290	20
		0.375	9.5	1/2	12.7	1.0, 1.5, 2.5	0.86, 1.3, 2.2	0.1, 0.2, 0.5, 1.0, 2.5	0.09, 0.17, 0.43, 0.86, 2.2	290	20
1/2	15	0.8125	20.6	1/2	12.7	4, 6	3.4, 5.2	5	4.3	277	19
3/4	20	0.8125	20.6	1/2	12.7	4, 7.5	3.4, 6.5	5	4.3	277	19
1	25	0.8125	20.6	1/2	12.7	4, 8.5	3.4, 7.3	5	4.3	277	19
		1.0625	26.9	1/2	12.7	13	11.2	---	---	133	9.1
1-1/2	40	1.50	38.1	3/4	19.1	10, 17, 28	8.6, 14.6, 24.1	10, 17	8.6, 14.6	32	2.2
2	50	2.00	50.8	3/4	19.1	30	25.8	30, 50	25.8, 43	N/A	N/A

24000S & SF Stainless Steel Control Valve

Technical Specifications

NOMINAL SIZE	1/2", 3/4" ⁽¹⁾ , 1", 1-1/2", 2", & 3" / DN 15, 20 ⁽¹⁾ , 25, 40, 50, & 80
BODY MATERIAL	316 SS ASTM A351, GR, CF8M
CONNECTIONS:	
24000S	NPTF Threaded / Flangeless / Buttweld Class 150 or 300 RF Flanges (1/2" - 1-1/2")
24000SF	CL 150 or 300 RF Flanges (Size 2") / CL 150 (Size 3") PN10, 16, 25 & 40 RF Flanges (PN 10, 16 ONLY for DN 80)
NOMINAL PRESSURE	CL 300 (CL 150 for 3" per ASME / ANSI B16.34)
SEAT PLUG SEALING	Metal to Metal or PTFE Soft
CHARACTERISTIC	Equal Percentage or Linear
RANGEABILITY	Exceeds 50:1
TEMPERATURE RANGE	-320°F to 1000°F (-196°C to 537°C) (Metal Sealing) -100°F to 450°F (-73°C to 232°C) (PTFE Sealing)
SEAL LEAKAGE CL IV⁽²⁾ (Metal Sealing - Standard)	0.01% of Rated Valve Capacity (Cv)

(1) 3/4 inch / DN 20 available in 24000SF series only.

(2) Tested with air @ 3.5 bar / 50 psi differential.

Cv / Kv Values and Maximum Allowable Pressure Drops for 102, 588 & 688 Plug Series (CL IV)

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		PLUG SERIES						SHUTOFF	
						102		588		688			
in	DN	in	mm	in	mm	Cv	Kv	Cv	Kv	Cv	Kv	psi	bar
1/2, 3/4*, & 1	15, 20*, & 25	0.25	6.3	1/2	12.7	0.02, 0.05, 0.10, 0.20	0.02, 0.04, 0.09, 0.17	0.2, 0.5, 1.0	0.17, 0.43, 0.86	0.5, 1.0	0.43, 0.86	720	50
		0.375	9.5	1/2	12.7	---	---	1.5, 2.5	1.3, 2.2	1.5, 2.5	1.3, 2.2	720	50
1	25	0.8125	20.6	1/2	12.7	---	---	4, 9.5	3.4, 8.2	4, 9.5	3.4, 8.2	347	24
1-1/2	40	1.25	31.8	3/4	19.1	---	---	9, 17.5	7.8, 15.1	17.5	15.1	147	10
2	50	1.50	38.1	3/4	19.1	---	---	10, 17.5, 30.5	8.6, 15.1, 26.4	10, 17.5, 30.5	8.6, 15.1, 26.4	102	7.0
3	80	2.00	50.8	3/4	19.1	---	---	35, 61	30.3, 52.8	35, 61	30.3, 52.8	57	3.9

* 3/4 inch / 20 DN available in 24000SF Series ONLY.

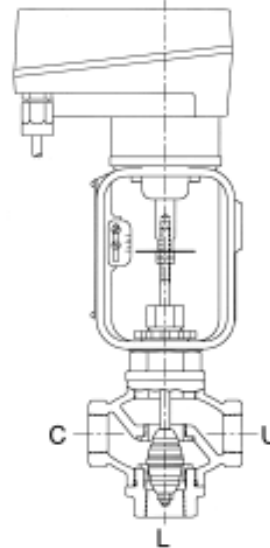
Cv / Kv Values and Maximum Allowable Pressure Drops for 577 & 677 Plug Series (CL VI)

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		PLUG SERIES				SHUTOFF	
						577		677			
in	DN	in	mm	in	mm	Cv	Kv	Cv	Kv	psi	bar
1/2, 3/4*, & 1	15, 20*, & 25	0.25	6.3	1/2	12.7	---	---	---	---	720	50
		0.375	9.5	1/2	12.7	1.0, 1.5, 2.5	0.86, 1.3, 2.2	0.1, 0.2, 0.5, 1.0, 2.5	0.09, 0.17, 0.43, 0.86, 2.2	720	50
1	25	0.8125	20.6	1/2	12.7	4, 8.5	3.4, 7.3	4	3.4	277	19
1-1/2	40	1.25	31.8	3/4	19.1	17.5	15.1	17.5	15.1	77	5.3
2	50	1.50	38.1	3/4	19.1	10, 18, 30.5	8.6, 15.6, 26.4	10, 17.5	8.6, 15.1	32	2.2
3	80	2.00	50.8	3/4	19.1	35	30.3	35, 61	30.3, 52.8	N/A	N/A

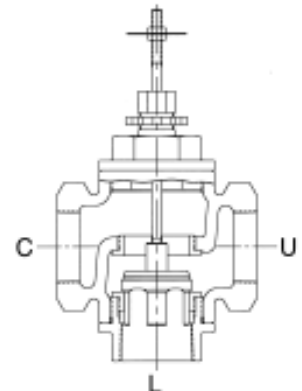
* 3/4 inch / 20 DN available in 24000SF Series ONLY.

24003 3 Way Control Valve

Series 24003 3 way valves are available in sizes 1/2 through 2" with valve body materials in bronze and stainless steel. Contact your Fisher Controls sales office for further details.



1/2 & 1" Valves



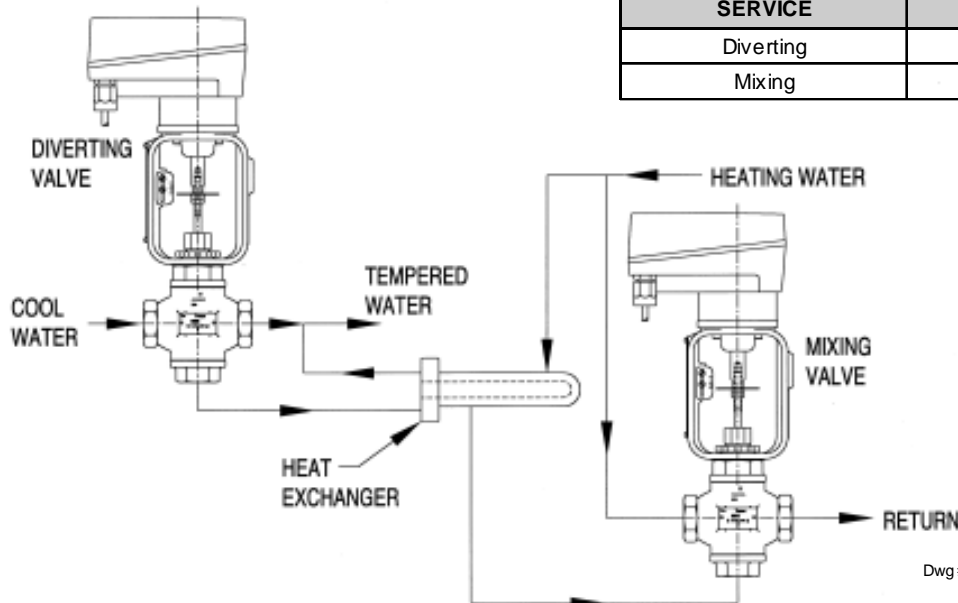
1-1/2 & 2" Valves

Dwg # M24003-8

Mixing & Diverting Applications

Operating Modes

SERVICE	INLET	OUTLET
Diverting	C	U & L
Mixing	U & L	C



Dwg # M24003-9

Cv / Kv Values and Maximum Allowable Pressure Drops

VALVE SIZE		PLUG TRAVEL		FLOW COEFFICIENT		SHUTOFF	
in	mm	in	mm	Cv	Kv	psi	bar
1/2 & 1	15 & 25	1/2	12.7	1, 2, 4	0.86, 1.7, 3.4	140	9.6
1	25	1/2	12.7	10	8.6	80	5.5
1-1/2	40	3/4	19.1	20	17.1	50	3.4
2	50	3/4	19.1	40	34.2	30	2.0

Bulletin

NV.1:ACT
December 2001

NV Series Electric Actuator

Model Number

24000, 24000C & D, 24000S, 24000SF, and 24003

[]	[]	24	[]	[]
ACTUATOR TYPE*	TRAVEL	BODY SERIES	PLUG SERIES (6)	CHARACTERISTIC
NV ⁽¹⁾	50		102	Linear / Metal Seat
NVF ⁽²⁾	75		577	Equal % / PTFE Seat
NVFE ⁽³⁾			588	Equal % / Metal Seat
			677	Linear / PTFE Seat
			688	Linear / Metal Seat
				SEAT LEAKAGE
				IV
				VI
				IV
				VI
				IV
				BODY MATERIAL / END CONNECTION
				Omit Bronze - NPT
				C Carbon Steel - Flanged
				D Ductile Iron - Flanged
				S Stainless Steel - NPT
				SF Stainless Steel - Flanged

⁽¹⁾NV24-MFT=Non Spring Return
⁽²⁾NVF24-MFT = Spring Return - Fail Open
⁽³⁾NVFE24-MFT-E = Spring Return - Fail Closed

⁽⁶⁾ See pages 3, 4, and 5 for available plug series and rated Cv.

D1	Diverting - Port "L" Fails Closed	III
D2	Diverting - Port "L" Fails Open	III
M1	Mixing - Port "L" Fails Closed	III
M2	Mixing - Port "L" Fails Open	III

3	3 Way Bronze
3S	3 Way Stainless Steel

Valve Weights

24000

VALVE SIZE		WEIGHTS	
in	DN	lbs	kgs
1/2	15	3	1.4
3/4	20	3	1.4
1	25	4	1.9
1-1/4	30	6	2.7
1-1/2	40	9	3.9
2	50	18	8.1

24000C & D

VALVE SIZE		WEIGHTS	
in	DN	lbs	kgs
1/2	15	9	3.9
3/4	20	11	4.8
1	25	14	6.4
1-1/2	40	22	10
2	50	33	15

24000S

VALVE SIZE		WEIGHTS	
in	DN	lbs	kgs
1/2	15	5	2.3
1	25	6	2.7
1-1/2	40	9	4.1
2	50	11	5.0
3	80	20	9.1

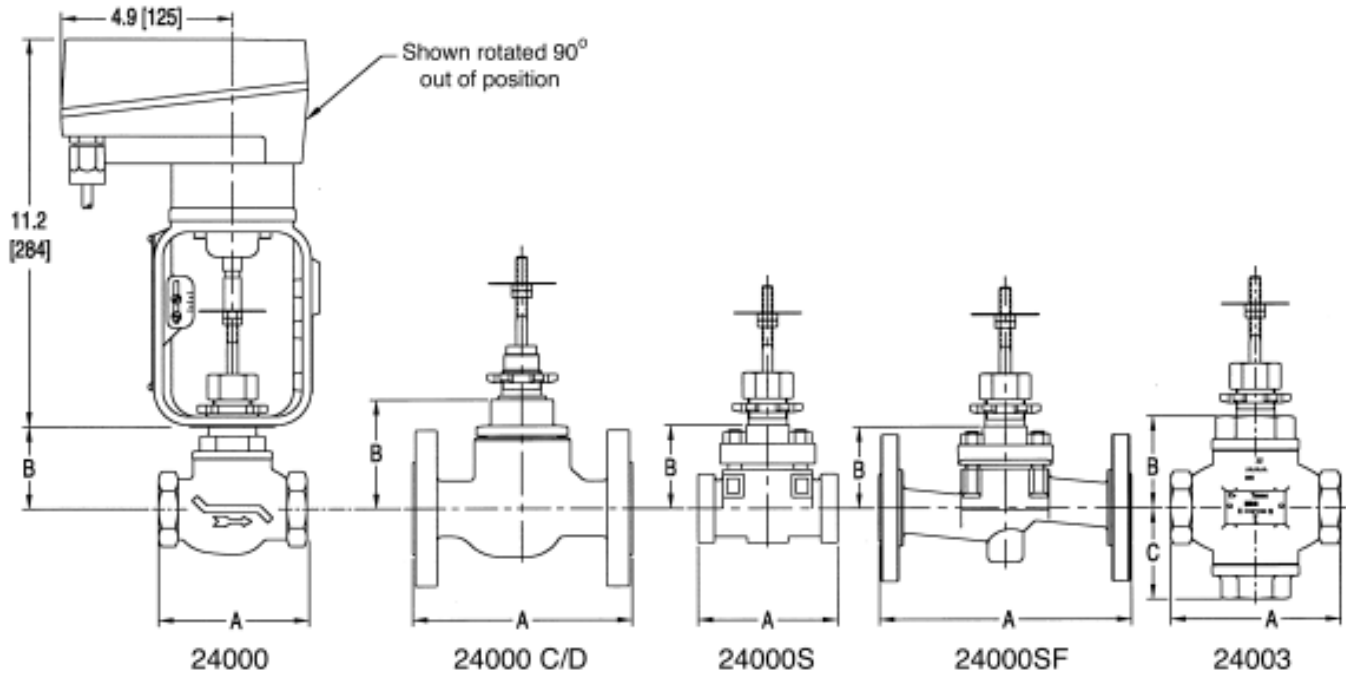
24000SF

VALVE SIZE		WEIGHTS	
in	DN	lbs	kgs
1/2	15	8	3.6
3/4	20	9	4.1
1	25	10	4.5
1-1/2	40	15	6.8
2	50	33	10.5
3	80	35	15.9

Actuator Weights

NV Electric Actuator

TYPE (1/2" or 3/4" Travel)	lbs	kgs
NV24-MFT (non spring return)	3.3	1.5
NVF24-MFT (spring return fail open)	4	1.8
NVFE24-MFT-E (spring return fail closed)	4	1.8



Valve Dimensions

24000

VALVE SIZE		"A"		"B"	
in	mm	in	mm	in	mm
1/2, 3/4	15, 20	3.5	89	2.4	61
1	25	4.3	109	2.4	61
1-1/4	30	4.6	117	2.8	71
1-1/2	40	5.3	135	2.7	68
2	50	6.6	168	4.1	104

24000S & SF

VALVE SIZE		"A"						"B"	
		24000S		24000SF					
		NPT (Except 3")		CL 150		PN 10-40			
in	DN	in	mm	in	mm	in	mm	in	mm
1/2	15	3.1	79	7.25	184	5.1	130	2.4	61
3/4	20	---	---			5.9	150	2.4	61
1	25	4.0	102	7.25	184	6.3	160	2.4	61
1-1/2	40	4.5	114	8.75	222	7.9	200	3.1	79
2	50	4.9	124	10.00	254	9.1	230	3.7	94
3	80	N/A	N/A	11.75	298	12.2	310(A)	3.8	97

Note (A): PN10 & PN16 ONLY

24000C & D

VALVE SIZE		"A"				"B"	
		CL 150		PN10-40			
in	DN	in	mm	in	mm	in	mm
1/2	15	7.25	184	5.1	130	3.1	79
3/4	20	7.25	184	5.9	150	3.1	79
1	25	7.25	184	6.3	160	3.3	83
1-1/2	40	8.75	222	7.9	200	3.9	99
2	50	10.00	254	9.1	230	4.2	107

24003

VALVE SIZE		"A"		"B"		"C"		"A"		"B"		"C"	
		BRONZE				STAINLESS STEEL							
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/2, 1	15, 25	4.88	124	2.75	70	2.75	70	4.81	122	2.75	70	2.75	70
1-1/2	40	5.75	146	3.31	84	3.81	97	6.13	156	3.31	84	3.38	86
2	50	6.50	165	3.63	92	4.00	102	6.50	165	3.63	92	3.75	95

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