

2400S Series Stainless Steel Control Valves (S, SF, SWF, and SMF Included)

2400S, 2400SF, 2400SWF AND 2400SMF SERIES STAINLESS STEEL CONTROL VALVES

This economical line of versatile pneumatic control valves may be used for the control of pressure, temperature, level and flow. Sizes 1/2" through 3" available with NPT and flanged end connections. The type 316 stainless steel body will withstand mildly corrosive fluids, yet is economical enough to use in applications where carbon steel is normally specified.

FEATURES:

- Compact and light weight design reduces installed piping costs.
- Several end connection options to choose from to meet your piping standards.
- Epoxy powder coated actuator with stainless steel fasteners for maximum corrosion resistance.
- High quality type 316 stainless steel valve internals.
- Multiple trim capacity reductions available to meet changing process requirements.
- Multi-spring field reversible actuator with reduced deadband permits direct operation from remote signal devices.
- Fieldvue digital valve controller available for remote calibration and diagnostics.



**2400S NPT
Control Valve**

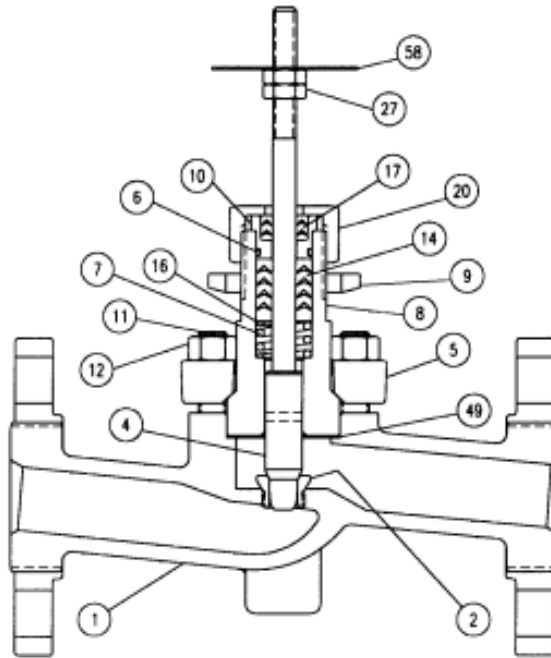


**2400SF Flanged
Control Valve**



MODEL NUMBERING SYSTEM

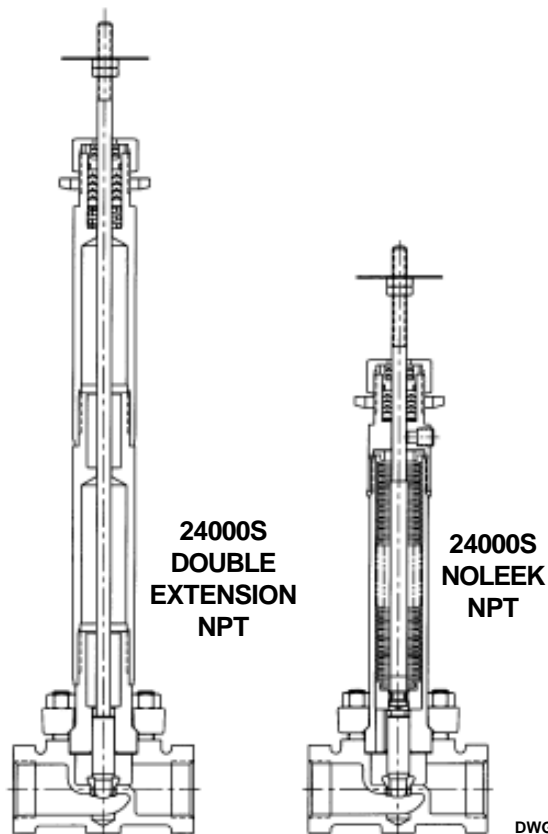
	24			
ACTUATOR	BODY SERIES	PLUG SERIES	CHARACTERISTIC	SEAT LEAKAGE
32		102	Linear / Metal Seat	IV
54		177	Mod.Equal % /PTFE Seat	VI
70		577	Equal % / PTFE Seat	VI
		588	Equal % / Metal Seat	IV
		677	Linear / PTFE Seat	VI
		688	Linear / Metal Seat	IV
			END CONNECTIONS	
			S	NPT
			SF	Flanged, 1/2 - 1-1/2"
			SWF	Flanged, 2 & 3"
			SMF	Flanged, metric
			BONNET STYLE	
			Omit	Standard
			E	Extended
			EB	NoLeak



DWG 24944 R04

MATERIALS OF CONSTRUCTION

KEY NO.	DESCRIPTION	MATERIAL
1	Body	316 SS ASTM A351, GR, CF8M
2	Seat Ring	316SS (used for 1/4" & 3/8" (6.3 mm & 9.5 mm) orifice diameters only)
4	Plug (Metal Seat)	Cv < 2.5 are Nitronic 60 / Cv > 4.0 are 316 SS
	Plug (Soft Seat)	316SS with PTFE Insert (KeI-F optional)
5	Bonnet Flange	316SS
6	O-Ring	Viton
7	Compression Spring	302 SS
8	Bonnet (Standard)	316SS ASTM A479
	Bonnet (Extended)	316SS
	Bonnet (NOLEEK)	316SS ASTM A479
9	Drive Nut (Yoke)	304 SS ASTM A194 GR.8
10	Packing Follower	Type 303SS Patented Dual Follower with PTFE Inner V-Ring Packings(17) and Viton [®] O-Ring Outer Seal(6)
11/12	Bonnet, Studs & Nuts	304SS ASTM A193, GR.B8 CL 1/A194 GR.8
14	Packing, Standard	Spring Loaded PTFE V-Ring
	Packing, Optional	Grafoil
16	Washer	316 SS
17	V-Ring Set	PTFE
20	Packing Nut	303 SS ASTM A582
27	Locknut	18-8 SS
49	Bonnet Gasket	316SS Wire Reinforced Graphite
58	Travel Indicator	304 SS



DWG M24000S-2

ALLOWABLE PRESSURE DROPS (psi)

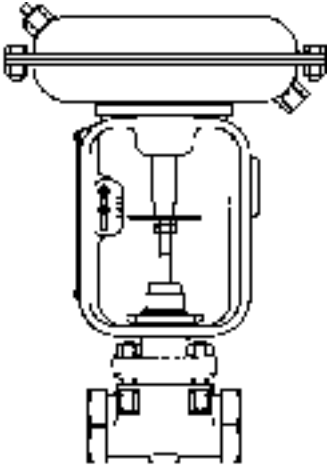
ORIFICE DIA. (in.)	PLUG TRAVEL (in.)	ACT. SIZE	AIR-TO-OPEN ACTION					AIR-TO-CLOSE ACTION				
			BENCH RANGE (psig)	3-15 PSI SIGNAL TO ACTUATOR		WITH POSITIONER		BENCH RANGE (psig)	3-15 PSI SIGNAL TO ACTUATOR		WITH POSITIONER	
				Max CLIV Shutoff Pressure	Max. CLVI Shutoff Pressure	Max. CLIV Shutoff Pressure	Max. CLVI Shutoff Pressure		Max CLIV Shutoff Pressure	Max. CLVI Shutoff Pressure	Max. CLIV Shutoff Pressure	Max. CLVI Shutoff Pressure
0.25	1/2	32	5-15	720	720	720	720	3-13	720	606	720	720
0.3125	1/2	32	5-15	---	600	---	720	3-13	---	550	---	720
0.375	1/2	32	5-15	459	284	720	720	3-13	426	251	720	720
0.8125	1/2	32	5-15	115	20	229	135	3-13	106	12	373	278
		32	7-15	210	115	314	220	3-10	266	171	532	438
		54	4-15	85	---	256	162	3-13	170	75	594	499
		54	7-15	342	247	513	418	3-10	424	329	720	720
		54	9-15	513	418	684	589	---	---	---	---	---
1.25	3/4	32	5-15	50	---	101	36	3-13	47	---	166	101
		32	---	---	---	---	---	3-10	118	54	237	172
		54	5-15	76	11	151	86	3-13	75	11	264	199
		54	7-13	152	87	227	163	3-10	188	124	377	312
		54	10-14	265	201	341	277	---	---	---	---	---
		70	10-15	364	299	468	403	---	---	---	---	---
1.5	3/4	32	5-15	35	---	71	16	3-13	33	---	117	62
		32	---	---	---	---	---	3-10	83	29	167	112
		54	5-15	53	---	107	52	3-13	53	---	186	131
		54	7-13	107	52	161	106	3-10	133	78	266	211
		54	10-14	187	133	241	186	---	---	---	---	---
		70	10-15	257	202	330	275	---	---	---	---	---
		70	12-18	---	---	403	349	---	---	---	---	---
2.0	3/4	32	5-15	20	---	41	---	3-13	19	---	67	25
		32	---	---	---	---	---	3-10	48	6	96	54
		54	5-15	31	---	61	19	3-13	31	---	107	65
		54	7-13	61	20	92	50	3-10	76	34	153	111
		54	10-14	107	66	138	96	---	---	---	---	---
		70	10-15	147	105	189	147	---	---	---	---	---
		70	12-18	---	---	231	190	---	---	---	---	---

ALLOWABLE PRESSURE DROPS (bar)

ORIFICE DIA. (mm)	PLUG TRAVEL (mm)	ACT. SIZE	AIR-TO-OPEN ACTION						AIR-TO-CLOSE ACTION					
			BENCH RANGE (barg)	0.2-1.0 BAR SIGNAL TO ACTUATOR		WITH POSITIONER		BENCH RANGE (barg)	0.2-1.0 BAR SIGNAL TO ACTUATOR		WITH POSITIONER			
				Max CLIV Shutoff Pressure	Max. CLVI Shutoff Pressure	Max. CLIV Shutoff Pressure	Max. CLVI Shutoff Pressure		Max CLIV Shutoff Pressure	Max. CLVI Shutoff Pressure	Max. CLIV Shutoff Pressure	Max. CLVI Shutoff Pressure		
6.3	12.7	32	0.34-1.0	49.6	49.6	49.6	49.6	0.20-0.89	49.6	41.7	49.6	49.6		
7.9	12.7	32	0.34-1.0	---	41.3	---	49.6	0.20-0.89	---	37.9	---	49.6		
9.5	12.7	32	0.34-1.0	31.6	19.5	49.6	49.6	0.20-0.89	29.3	17.3	49.6	49.6		
20.5	12.7	32	0.34-1.0	7.93	1.37	15.7	9.31	0.20-0.89	7.31	0.82	25.7	19.1		
		32	0.48-1.0	14.4	7.93	21.6	15.1	0.20-0.68	18.3	11.7	36.6	30.2		
		54	0.28-1.0	5.86	---	17.6	11.1	0.20-0.89	5.17	0.75	18.2	13.7		
		54	0.48-1.0	23.5	17.	035.3	28.8	0.20-0.68	29.2	22.6	49.6	49.6		
		54	0.62-1.0	35.3	28.8	47.1	40.6	---	---	---	---	---		
31.8	19.1	32	0.34-1.0	3.44	---	6.96	2.48	0.20-0.89	3.24	---	11.4	6.96		
		32	---	--	---	---	---	0.20-0.68	8.13	3.72	16.3	11.8		
		54	0.34-1.0	5.24	0.75	10.4	5.93	0.20-0.89	5.17	0.75	18.2	13.7		
		54	0.58-0.96	10.4	6.00	15.6	11.2	0.20-0.68	12.9	8.55	26.0	21.5		
		54	0.68-1.0	18.2	13.8	23.5	19.1	---	---	---	---	---		
		70	0.68-1.0	25.1	20.6	32.2	27.7	---	---	---	---	---		
38.1	19.1	32	0.34-1.0	2.41	---	4.89	1.10	0.20-0.89	2.27	---	8.06	4.27		
		32	---	---	---	---	---	0.20-0.68	5.72	2.00	11.5	7.72		
		54	0.34-1.0	3.65	---	7.37	3.58	0.20-0.89	3.65	---	12.8	9.03		
		54	0.48-0.89	7.37	3.58	11.1	7.31	0.20-0.68	9.17	5.34	18.3	14.5		
		54	0.68-0.96	10.8	7.17	14.5	10.7	---	---	---	---	---		
		70	0.68-1.0	17.7	13.9	22.7	18.9	---	---	---	---	---		
		70	0.82-1.24	---	---	22.7	24.0	---	---	---	---	---		
50.8	19.1	32	0.34-1.0	1.37	---	2.82	---	0.20-0.89	1.31	---	4.62	1.72		
		32	---	---	---	---	---	0.20-0.68	3.31	0.41	6.62	3.72		
		54	0.34-1.0	2.13	---	4.20	1.31	0.20-0.89	2.13	---	7.37	4.48		
		54	0.48-0.89	4.20	1.37	6.34	3.44	0.20-0.68	5.24	2.34	10.5	7.65		
		54	0.68-0.96	6.27	3.37	8.34	5.44	---	---	---	---	---		
		70	0.68-1.0	10.1	7.24	13.0	10.1	---	---	---	---	---		
		70	0.82-1.24	---	---	15.9	13.1	---	---	---	---	---		

AVAILABLE CONNECTIONS

Please refer to dimension table on page 7
for appropriate valve face-to-face dimensions.



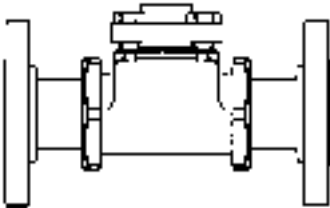
24000S:
Universal valve body includes NPT threads and flangeless construction (fits between RF line flanges).

VALVE SIZE	1/2 in/DN 15	3/4 in/DN 20	1 in/DN25	1-1/2 in/DN 40	2 in/DN 50	3 in/DN80
ANSI CLASS	No	N/A	150 / 300	150 / 300	150	150
DIN	No	N/A	PN 16	PN 16	PN 16	PN 16
NPT	Yes	N/A	Yes	Yes	Yes	No



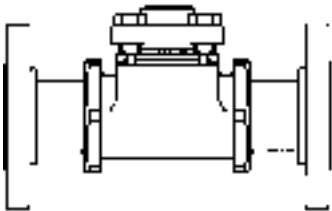
24000SF:
With integral ANSI RF flanges.

VALVE SIZE	1/2 in/DN 15	3/4 in/DN 20	1 in/DN25	1-1/2 in/DN 40	2 in/DN 50	3 in/DN80
ANSI CLASS	150 / 300	150 / 300	150 / 300	150 / 300	N/A	N/A
DIN	N/A	N/A	N/A	N/A	N/A	N/A



24000SMF:
With welded-on metric (DIN) RF flanges..

VALVE SIZE	1/2 in/DN 15	3/4 in/DN 20	1 in/DN25	1-1/2 in/DN 40	2 in/DN 50	3 in/DN80
ANSI CLASS	N/A	N/A	N/A	N/A	N/A	N/A
DIN	PN 10-40	PN 10-40	PN 10-40	PN 10-40	PN 10-40	PN 10, 16



24000SWF:
With welded-on ANSI RF flanges..

VALVE SIZE	1/2 in/DN 15	3/4 in/DN 20	1 in/DN25	1-1/2 in/DN 40	2 in/DN 50	3 in/DN80
ANSI CLASS	N/A	N/A	N/A	N/A	150 / 300	150
DIN	N/A	N/A	N/A	N/A	N/A	N/A

DWG M24000S-1 R00

Kvs or Cvs VALUES @ 100% PLUG OPENING

VALVE SIZE		PORT DIAMETER		PLUG TRAVEL		PLUG SERIES											
						177		102		577		588		677		688	
in	DN	in	mm	in	mm	Cv	Kv	Cv	Kv	Cv	Kv	Cv	Kv	Cv	Kv	Cv	Kv
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
		0.3125	7.9	1/2	12.7	0.0005, 0.001, 0.002, 0.005, 0.01, 0.02, 0.05	0.0005, 0.0009, 0.002, 0.004, 0.009, 0.02, 0.04	---	---	---	---	---	---	---	---	---	---
		0.375	9.5	1/2	12.7	---	---	---	---	1.0, 1.5, 2.5	0.86, 1.3, 2.2	1.5, 2.5	1.3, 2.2	0.1, 0.2, 0.5, 1.0, 2.5	0.09, 0.17, 0.43, 0.86, 2.2	1.5, 2.5	1.3, 2.2
3/4	20	0.8125	20.6	1/2	12.7	---	---	---	---	4, 7.5	3.4, 6.5	4, 8.2	3.4, 7.09	4	3.4	4, 8.2	3.4, 7.1
1	25	0.8125	20.6	1/2	12.7	---	---	---	---	4, 8.5	3.4, 7.3	4, 9.5	3.4, 8.2	4	3.4	4, 9.5	3.4, 8.2
1-1/2	40	1.25	31.8	3/4	19.1	---	---	---	---	17.5	15.1	9, 17.5	7.8, 15.1	17.5	15.1	17.5	15.1
2	50	1.5	38.1	3/4	19.1	---	---	---	---	10, 18, 30.5	8.6, 15.6, 26.4	10, 17.5, 30.5	8.6, 15.1, 26.4	10, 17.5	8.6, 15.1	10, 17.5, 30.5	8.6, 15.1, 26.4
3	80	2.0	50.8	3/4	19.1	---	---	---	---	35	30.3	35, 61	30.3, 52.8	35, 61	30.3, 52.8	35, 61	30.3, 52.8

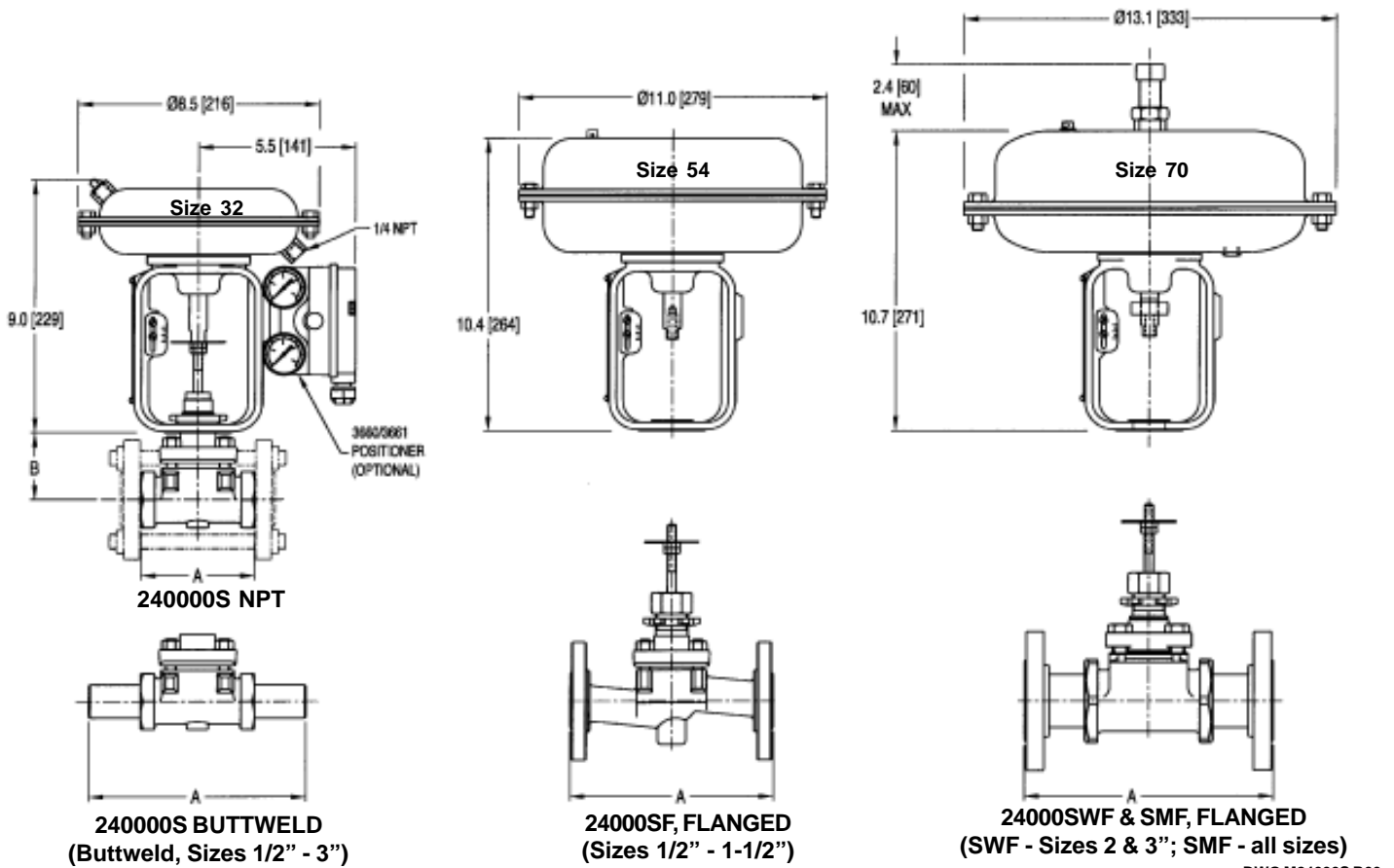
TECHNICAL SPECIFICATIONS

NOMINAL SIZE	1/2", 3/4", 1", 1-1/2", 2", & 3" / DN 15, 20, 25, 40, 50, & 80	
BODY RATING	CL 300 (CL 150 for 3" per ASME/ANSI B16.34)	
CONNECTIONS:		
24000S	Screwed (NPT) / Flangeless / Buttweld	
24000SF	Class 150 or 300 RF Flanges (1/2" - 1-1/2")	
24000SWF	CL 150 or 300 RF Flanges (Size 2") / CL 150 (Size 3")	
24000SMF	PN10, 16, 25 & 40 RF Flanges (PN 10, 16 ONLY for DN 80)	
SEAT PLUG SEALING	PTFE Soft Seat	-100°F to 450°F (-73°C to 232°C)
		-320°F to 1000°F (-195°C to 537°C)
BONNET	Standard	-100°F to 450°F (-73°C to 232°C)
	Extended	-320°F to 750°F (-195°C to 398°C); PTFE V-Ring Packing -320°F to 1000°F (-195°C to 537°C); Grafoil Packing
	NOLEEK Bellows	-320°F to 750°F (-195°C to 398°C)
CHARACTERISTIC	Equal Percentage or Linear	
RANGEABILITY	Exceeds 50:1	

ACTUATOR SPECIFICATIONS

TYPE	32, 54, 70 Multi-Spring Diaphragm (Single Acting)
NOMINAL SIZE	32, 54, 70 in ² / 210, 350, 450 cm ²
ACTION	Push Down to Close
AIR FAILURE	Open or Closed (Field-Reversible)
TRAVEL	1/2 & 3/4 inch / 12.7 & 19.1 mm
AMBIENT TEMPERATURE RANGE	-20 to 160°F / -30 to 70°C
MAXIMUM AIR PRESSURE	35 psig / 2.5 barg
DIAPHRAGM MATERIAL	Neoprene, Fabric Reinforced
SPRING CASES	Steel, Powder Epoxy-Coated with SST Fasteners
YOKE	Ductile Iron, Powder Epoxy-Coated

NOTE: Optional reinforced silicon elastomer diaphragm with viton o-ring actuator stem seal for high ambient temperature conditions (-20°F to 250°F / -30°C to 121°C) is available with type 32 and 54 actuators ONLY.



DWG M24000S R00

DIMENSIONS

VALVE SIZE		"A"										"B" BONNET							
		24000S		24000SF		24000SWF		24000SMF		STANDARD		EXTENSION		NOLEEK					
		NPT (Except 3")	BUTTWELD SCH 40	CL 150 & CL 300	CL 150	CL 300	PN 10, 16, 25, 40												
in	DN	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1/2	15	3.1	79	14.38	365	7.25	184	---	---	---	---	5.12	130	2.4	61	7.8	198.1	8.2	208.3
3/4	20	---	---									5.91	150	2.4	61	7.8	198.1	8.2	208.3
1	25	4.0	102	15.00	381	7.25	184	---	---	---	---	6.30	160	2.4	61	7.8	198.1	8.2	208.3
1-1/2	40	4.5	114	15.25	387	8.75	222	---	---	---	---	7.87	200	3.1	78.7	8.5	215.9	8.4	213.4
2	50	4.9	124	15.50	394	---	---	10.00	254	10.5	267	9.06	230	3.1	78.7	8.5	215.9	8.4	213.4
3	80	6.5	165	13.25	337	---	---	11.75	298	---	---	12.20	310(A)	3.9	78.7	9.3	215.9	8.4	213.4

Note (A): PN10 & PN16 ONLY

NOTES: Actuator requires 4-1/2" (115 mm) vertical clearance.
Face-to-Face Dimensions per ISA-S75.03.

VALVE ASSEMBLY WEIGHTS

VALVE SIZE		WEIGHTS			
		Lbs		KG	
in	DN	24S	24SF/ SWF/ SMF	24S	24SF/ SWF/ SMF
1/2	15	5	8	2.3	3.6
3/4	20	--	9	---	4.1
1	25	6	10	2.7	4.5
1-1/2	40	9	15	4.1	6.8
2	50	11	33	5.0	10.5
3	80	20	35	9.1	15.9

ACTUATOR WEIGHTS

TYPE	WEIGHTS	
	Lbs	KG
32	10	4.5
54	25	11.3
70	34	15.4

This product may be covered under one or more of the following patents 4,577,873, 4,434,965, 5,058,861 or under pending patent applications.

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