

Masoneilan® 39003 Series High Performance Butterfly Valves (HPBV)

Specification Data

CM9003

4/00



Table of Contents

Foreword	2
Features	3
Numbering System	4-5
General Data	6
Pressure/Temperature Ratings	7-8
Body Assembly Data	9
Actuator Data	9
Rated Flow Coefficients (CV) and Pressure Recovery Coefficients (FL)	10
Standard Valve Components	11
Standard Materials of Construction	12-13
Allowable Pressure Drops	14
Weights	15-16
Dimensions	17-18
Options and Accessories	19
Masoneilan Sales Offices	20

Foreword

The Masoneilan 39003 Series High Performance Butterfly Valve (HPBV) is a heavy duty automatic throttling control valve that incorporates the two basic features of the HPBV types. These features differentiate the HPBV from the conventional swing-through butterfly valve in regards to sealing method and operational characteristics. Specifically, the two basic features are: (1) A PTFE, RTFE, or metal seal ring instead of a liner, and (2) The employment of double offset (eccentric operation). Each of these features contributes to the improved performance of HPBV's compared to conventional butterfly valves.

The use of a seal ring (PTFE, RTFE, or metal) eliminates the inherent problems of high sealing forces, due to interference fit, and the resultant high wear rates due to scraping and scuffing of liners. Also, due to the design of the seal itself, which is a dynamic pressure-assisted member, ANSI Class VI shutoff rates are available throughout the full range of ANSI Class 150, 300 and 600 ratings (soft-sealed constructions only).

The double offset (eccentric) operating principles of both seal offset (the seal ring centerline is offset from the shaft centerline - see Figure 1) and shaft offset (the shaft centerline is offset from the valve

centerline – see Figure 1) allows the disc to get off the seal quickly due to the camming rotation with respect to the valve/seal centerlines. This results in minimal sliding (friction producing) contact between the disc and the seal ring with complete separation after only a few degrees of rotation.

The overall characteristics of the 39003 Series are listed below:

- Long seal life – Offset (eccentric) operation gets the disc off the seal quickly, minimizing sliding contact and friction, resulting in reduced seal wear and lower breakaway and seating torque requirements.
- Fast/dynamic operation – Offset (eccentric) operation eliminates disc-to-seal friction throughout the operating range resulting in fast response to input signals. Also, the disc tends to move in the direction of flow, assisting the valve and actuator to maximize the allowable operating pressures.

Trade names noted are for reference only. Masoneilan reserves the right to supply trade-named material or equivalent.

- Excellent flow characteristics - the offset (eccentric) disc design provides an approximate equal percentage flow characteristic through its full travel of 90° rotation yielding a Cv ratio of 100:1.
- Extra heavy shafts with keyed ends for actuator mounting - precise and accurate positioning without lost motion or backlash.

PTFE-lined low-friction bearing – Reduces operating torque and promotes fast response to valve and actuator action. The triple bearing support of the shaft prevents deflection of the shaft due to side-loading and incorporates a grounding circuit.

Field replaceable components – Unlike most competitive valves, shaft and disc need not be purchased as a set. The 39003 Series uses tapered pins to attach the shaft and disc positively, yet provide component interchangeability.

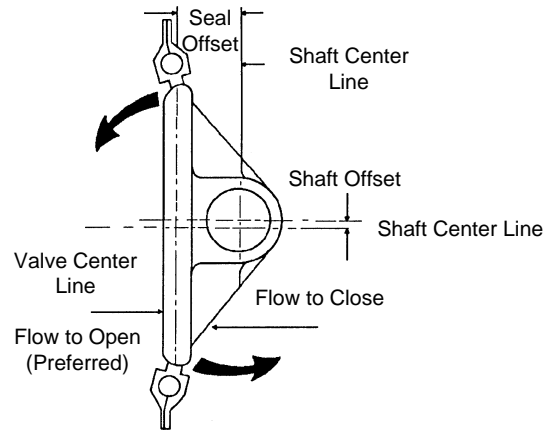
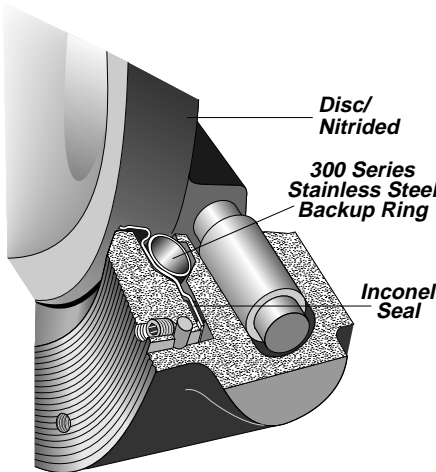


Figure 1

Features

The Masoneilan 39003 HPBV includes unique valve seal designs for metal, soft seal, and fire-safe configurations.

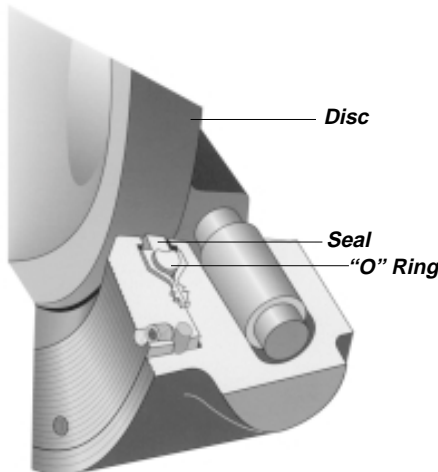


Metal Seal Design

The metal seal design incorporates an Inconel seal for higher tensile strength, a 300 series stainless steel back-up ring in the seal cavity for axial seal support, and a disc that is case hardened by nitriding.

The Inconel seal, by its dynamic and flexible design, applies enough force per linear inch against the disc edge (Rockwell Hardness of C66 to C70) to obtain an optimum sealing characteristic while controlling the loads between the metal surfaces.

The metal seal design can be utilized for temperatures up to 900°F, in compliance with ANSI B16.34 pressure/temperature specifications. Leakage is rated at Class IV per ANSI FCI 70-2.

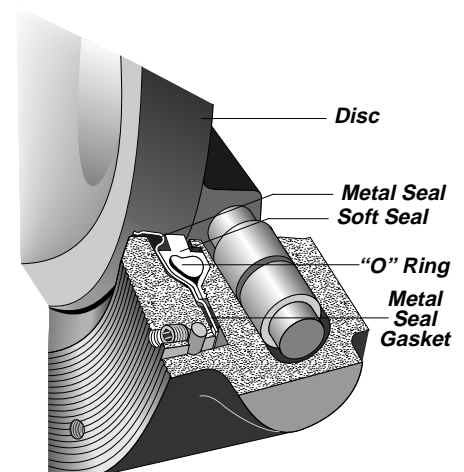


Soft Seal Design

The soft seal design provides a bi-directional bubble tight shutoff (zero leakage) through the use of a patented seal. This unique seal design creates a self-energized seal in vacuum-to-low pressure applications.

Under higher pressure conditions, the seal is also designed to confine and direct movement of the soft seal against the disc edge, up to the full ANSI Class 150, 300 and 600 Cold Working Pressures.

The soft seal is designed for high services with minimal wear and low torque. Seal replacement is a simple procedure requiring no special tools.



Fire-Safe Seal Design

The fire-safe seal design incorporates two patented seals which function together to seal off pipeline flow. In normal operation, the soft seal provides a bi-directional "bubble tight" shutoff (zero leakage); the metal seal provides bi-directional shutoff in the event of a fire, in conformance to industry fire-safe requirements.

With little or no pressure, the fire-safe seal creates a self-energized seal against the disc. Higher line pressures act on the geometry of both seals to dynamically load them against the disc, creating higher sealing forces in either direction.

The metal seal is made of Inconel material which is shaped by a proprietary hydroforming process into its unique, patented design. Stainless steel outer bearings are included for post-fire disc and shaft alignment. Fireproof packing is used to prevent external shaft leakage.

Numbering System

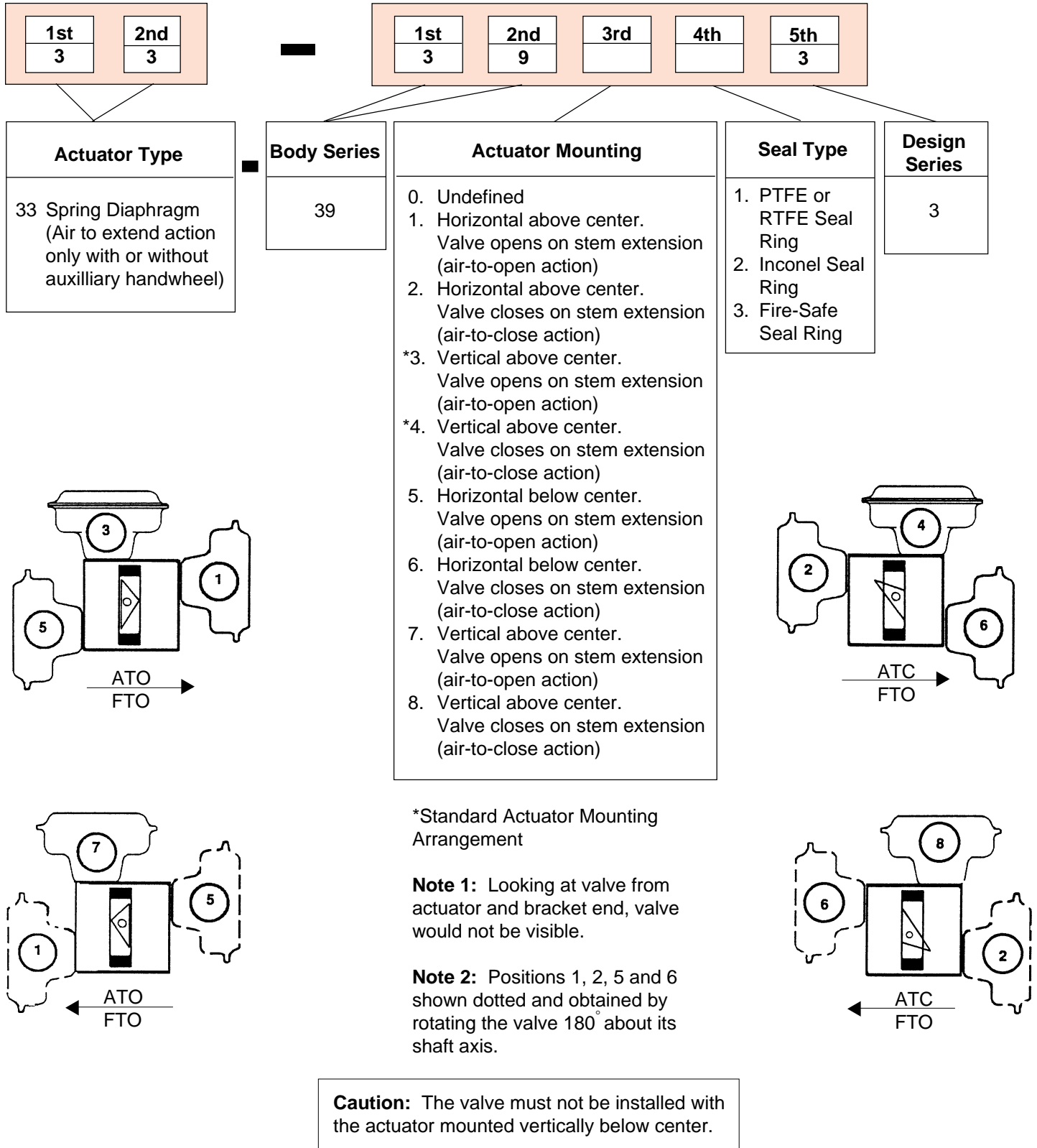
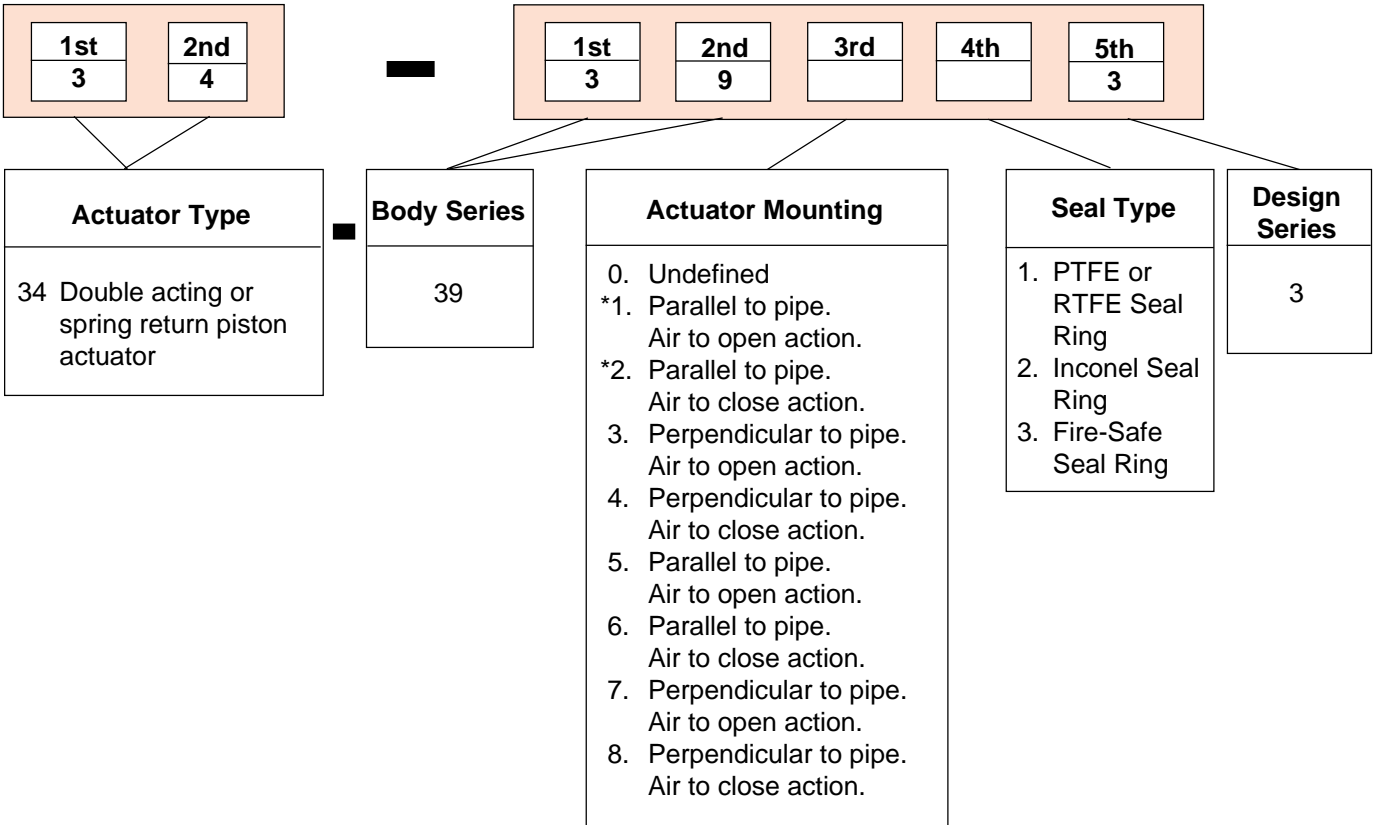


Figure 2

Numbering System



*Standard Actuator Mounting Arrangement

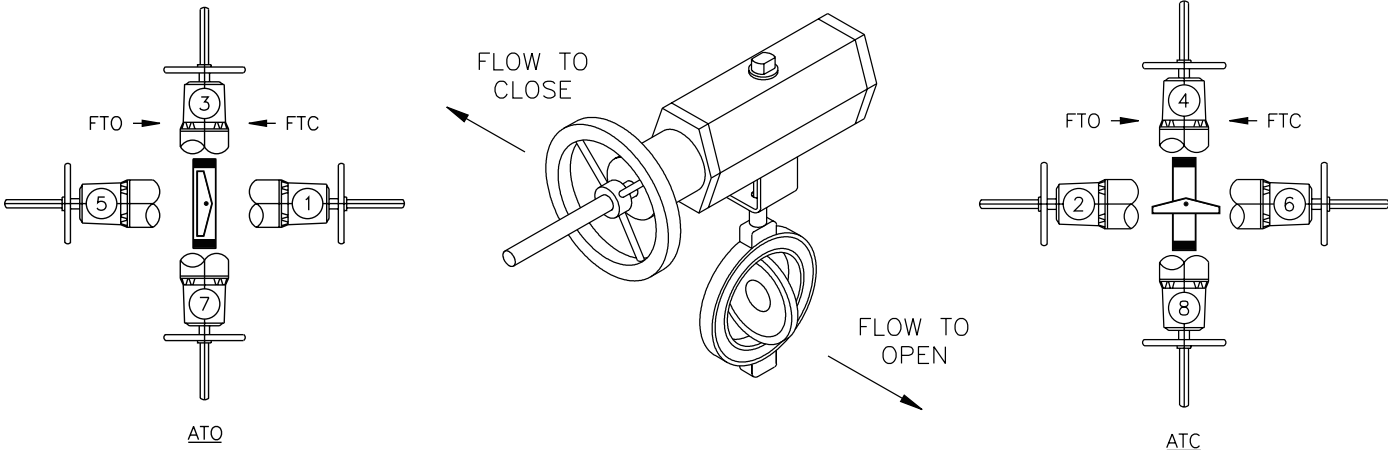


Figure 3

General Data

flow characteristic: equal percentage

flow direction: bi-directional

seal leakage: per ANSI FCI 70-2
Class VI, PTFE, RTFE
Class IV, metal seals

Cv ratio: 100:1

Valve Sizes		ANSI Class		
inches	mm	150 Carbon & St. St.	300 Carbon & St. St.	600 Carbon & St. St.
2	50	•	•	•
3	80	•	•	•
4	100	•	•	•
6	150	•	•	•
8	200	•	•	•
10	250	•	•	•
12	300	•	•	•
14	350	•	•	•
16	400	•	•	•
18	450	•	•	
20	500	•	•	
24	600	•	•	
30	750	•	•	
36	900	•		
42	1050	•		
48	1200	•		

Soft and Fire-Safe Seal

As temperature increases, the pressure retaining capability of materials decreases. The graph below illustrates the pressure/temperature ratings for ANSI Class 150, Class 300 and Class 600.

The heavy lines define the ratings of the carbon steel and stainless steel valve body (or “shell”) in conformance to ANSI B16.34. The shaded areas define the ratings of the PTFE and RTFE Seal materials (Soft Seal).

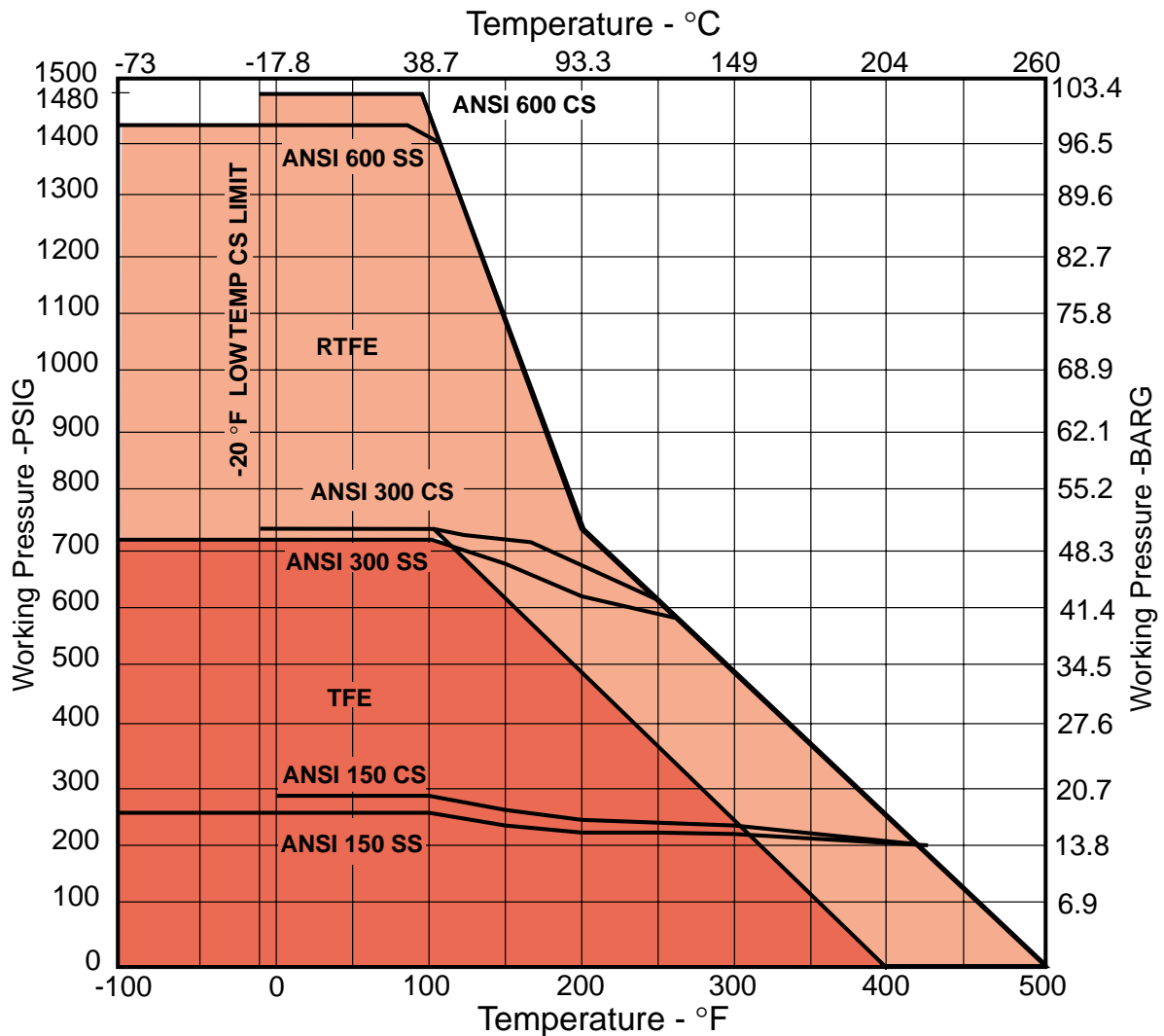
Seal ratings are based on differential pressure with the disc in the fully closed position.*

Steam Service (Soft Seal only)

PTFE sealed valves are rated for 50 psi saturated steam.

Valves with "O" seal configuration (RTFE seal/AFLAS O-ring) are rated to 100 psi steam service.

ANSI B16.34 Body and Flowseal Soft Seat Pressure - Temperature Ratings



* Valves with 316SS shafts are rated for maximum pressure differentials of 150 psi for Class 150, 300 psi for Class 300, and 600 psi for Class 600.

Pressure/Temperature Ratings

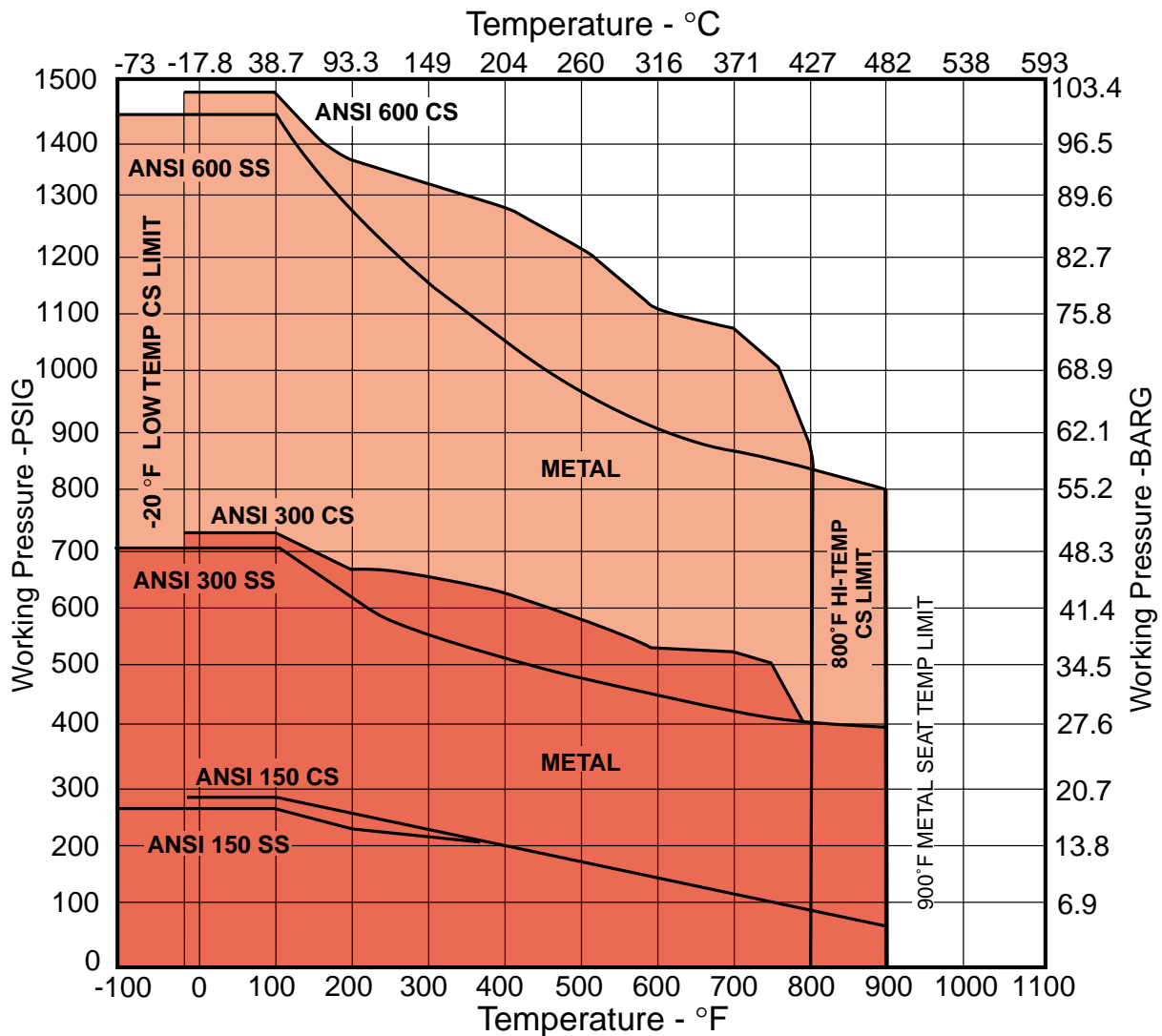
Metal Seal

As temperature increases, the pressure retaining capability of materials decreases. The graph below illustrates the pressure/temperature ratings for ANSI Class 150, Class 300 and Class 600.

The heavy lines define the ratings of the carbon steel and stainless steel valve body (or “shell”) in conformance to ANSI B16.34. The shaded areas define the ratings of the metal seal.

Seal ratings are based on differential pressure with the disc in the fully closed position.*

ANSI B16.34 Body and Flowseal Metal Seal Pressure - Temperature Ratings



* Valves with 316SS shafts are rated for maximum pressure differentials of 150 psi for Class 150, 300 psi for Class 300, and 600 psi for Class 600.

Body Assembly Data

- Body Type:** wafer or lug with integral bonnet
Sizes: 2", 3", 4", 6", 8", 10", 12", 14", 16", 18", 20", 24", 30", 36", 42", 48" (50 mm-1200 mm)
Materials: carbon steel ASTM A216 Gr WCB or ASTM A105
 stainless steel ASTM A351 Gr CF8M or ASTM A182-F316
Connections: flangeless - clamped between ANSI Class 150, 300 or 600 line flanges
 single flanged - bolts between ANSI Class 150, 300 or 600 line flanges
Rating: ANSI Class 150 - carbon steel and stainless steel 2" - 48" sizes (50 mm-1200 mm)
 ANSI Class 300 - carbon steel and stainless steel 2" - 30" sizes (50 mm-750 mm)
 ANSI Class 600 - carbon steel and stainless steel 2" - 16" sizes (50 mm-400 mm)
Seal: PTFE, RTFE or Inconel with 304 stainless steel O-Ring
Disc Type: offset eccentric disc
 Materials: stainless steel ASTM A351 Gr CF8M or ASTM A182-F316 Nitrided
Shaft Type: Keyed on outboard end
 Materials: 17-4 PH stainless steel A564 Gr 630 (others optional)
Valve Bearings: PTFE-lined fiberglass
 bronze (up to 750° F) stainless steel (above 750° F)
Packing Box: bolted
 Packing: PTFE V-ring
 graphite (optional)

Actuator Data

(Model 33) – Sizes 3" – 8" (80mm-200mm)

- Type: spring-diaphragm, floating stem
 pneumatic actuator
 Action: increasing air extends stem
 Bench Range: B size 7-16 psig (48-110 kPa)
 C size 9-16 psig (62-110 kPa)
 Connection: 1/4" NPT
 Fail Safe Action: field reversible
 Yoke: carbon steel
 Bracket: cast iron
 Handwheel:
 (optional) push type tilting, rising stem, permanently
 lubricated materials: 17-4 PH and AISI
 416 stainless steel adjustable limit stops
 Bracket Bearing: a sealed, permanently lubricated ball bearing

Actuator Size	Valve Size in. (mm)	Effective Area sq.in. (sq. cm)	Travel in. (mm)
B	3 (80)	70 (452)	2.625 (66.5)
	4 (100)		
C	6 (150)	140 (903)	2.625 (66.5)
	8 (200)		
	optional		
	3 (80)		
	4 (100)		

(Model 34) – Sizes 3" – 48" (80mm – 1200mm)

- Type: Spring-return, or double-acting scotch yoke piston
 Body: Extruded aluminum, anodized finish – sizes 210 to 280 & 88
 Ductile Iron – sizes 90 and 100
 Seals: Buna-N
 Pressure Rating: 150 psi (1034 kPa) maximum working pressure
 Manual Override: Declutchable direct mount – sizes 210 to 280
 Hydraulic – size 88
 Bevel Gear – sizes 90 and 100
 Optional
 Construction: Low temperature or high temperature seals, low pressure hydraulic.

Rated Flow Coefficients (C_v) and Pressure Recovery Coefficients (F_L)

Rated Flow Coefficients (C_v)

The values shown are for the valve installed in the seal upstream ("SUS") position.

Degree Open	% Full C_v	10° 1.5%	20° 6%	30° 14%	40° 25.2%	50° 38%	60° 55%	70° 75%	80° 97%	90° 100%
2"	150	1.5	6	14	25	39	56	76	99	102
	300	1.4	6	13	24	36	52	71	95	100
	600	1.4	5	13	23	35	51	70	90	93
3"	150	3.4	14	32	57	87	125	171	221	228
	300	3.2	13	30	53	81	117	159	212	223
	600	3.1	12	29	52	79	114	156	202	208
4"	150	6.8	27	63	114	171	248	338	437	451
	300	6.2	25	58	104	157	228	310	414	435
	600	5.8	23	54	98	147	213	290	375	387
6"	150	16.5	66	154	278	419	607	827	1070	1103
	300	14.9	60	139	250	377	546	744	992	1041
	600	14.7	59	137	247	372	538	734	950	979
8"	150	30.9	124	289	520	784	1135	1584	2002	2064
	300	27.3	109	255	459	692	1001	1365	1820	1911
	600	26.8	107	250	451	679	983	1341	1734	1788
10"	150	52.8	211	492	886	1336	1934	2638	3411	3517
	300	45.6	183	426	767	1156	1673	2282	3042	3194
	600	41.2	165	384	692	1044	1511	2060	2665	2747
12"	150	72.6	290	677	1219	1838	2660	3628	4690	4837
	300	63.3	253	590	1063	1602	2319	3163	4217	4428
	600	58.4	233	545	981	1479	2140	2918	3774	3891
14"	150	90	392	914	1646	2481	3592	4898	6530	6857
	300	81	326	760	1368	2063	2986	4072	5430	5702
	600	73	292	682	1228	1838	2680	3655	4727	4873
16"	150	132	531	1230	2229	3361	4865	6634	8845	9287
	300	109	435	1015	1827	2755	3988	5438	7850	8243
	600	96	385	899	1619	2423	3533	4818	6231	6424
18"	150	171	684	1596	3873	4332	6270	8550	11270	11400
	300	139	555	1295	2331	3515	5088	6938	9250	9712
	600	127	500	1170	2112	3185	4611	6288	8132	8384
20"	150	207	828	1932	3478	5244	7590	10350	13800	14420
	300	158	630	1470	2646	3990	5775	7875	10150	10658
	600	142	560	1320	2352	3531	5103	6975	9175	9588
24"	150	315	1260	2940	5292	7890	11550	15750	21000	22050
	300	242	966	2254	4057	6118	8855	12075	16100	16205
	600	214	840	1980	3642	5352	7800	10575	14100	14405
30"	150	491	1965	4585	8253	12445	18012	24563	32750	34388
	300	404	1614	3766	6779	10222	14795	20175	26900	28245
	600	357	1413	3269	5907	8700	12525	16875	22350	23390
36"	150	707	2830	6602	11884	17920	25938	35370	45745	47160
	300	565	2264	5361	9507	14176	20750	27825	36475	37720
	600	491	1965	4585	8253	12445	18012	24563	32750	34388
42"	150	963	3851	8987	16176	24392	35304	48143	62264	64190
	300	770	3081	7189	12941	19514	28620	38570	50211	52152
	600	670	2630	6157	11117	16650	24675	33112	43175	44940
48"	150	1258	5030	11738	21128	31859	46111	62881	81324	83840
	300	1006	3944	9390	17062	25687	37388	50505	66019	68480
	600	875	3375	8032	14717	22050	32475	43425	56775	58720

Pressure Recovery Coefficients (F_L)

DISC DEGREE OPENING	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
SEAL UPSTREAM	.95	.91	.84	.81	.78	.80	.77	.74	.74	.73	.70	.66	.63	.60	.57	.53
SEAL DOWNSTREAM	.94	.89	.84	.82	.80	.77	.75	.72	.69	.66	.63	.60	.58	.55	.54	.53

Standard Valve Components

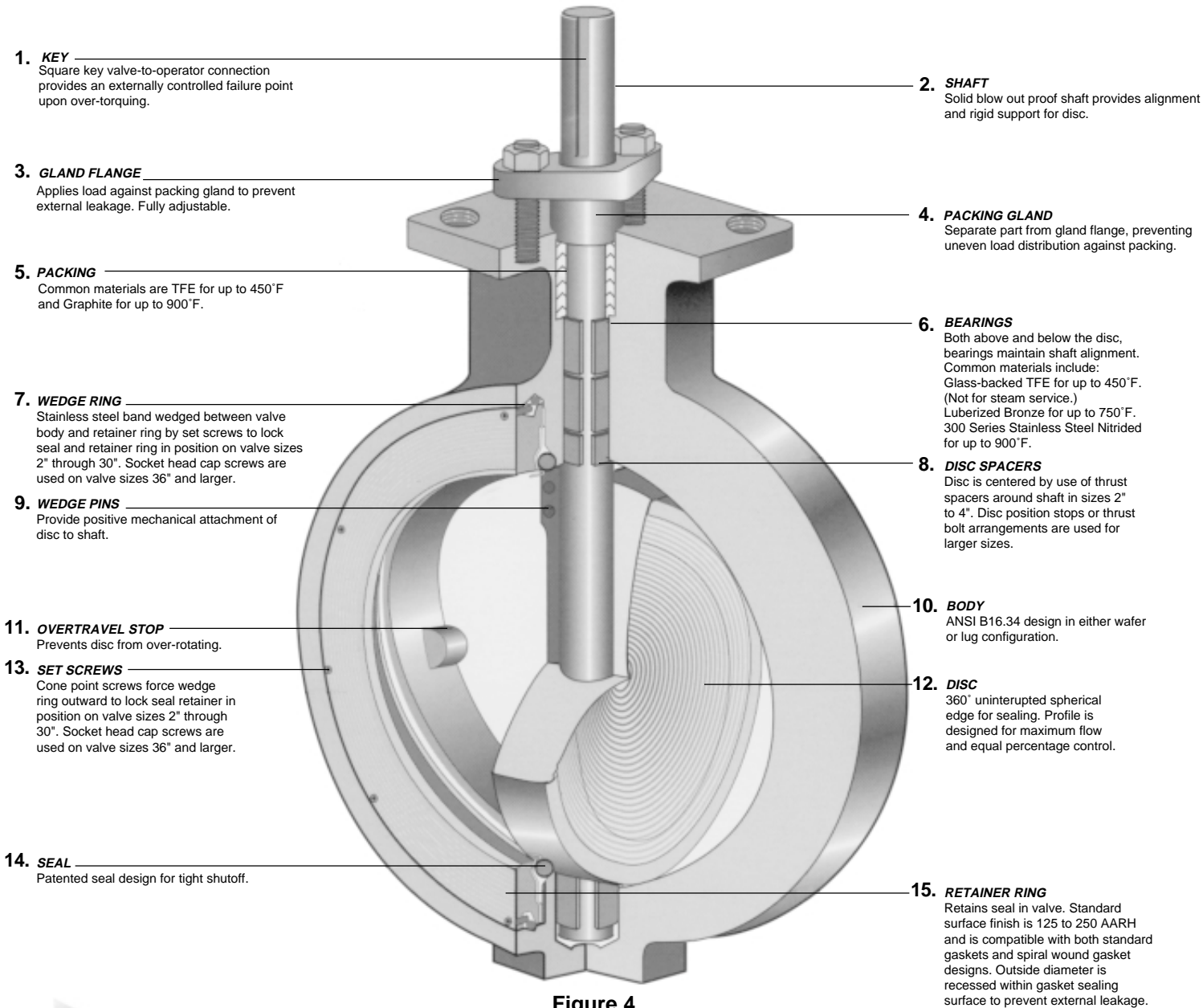
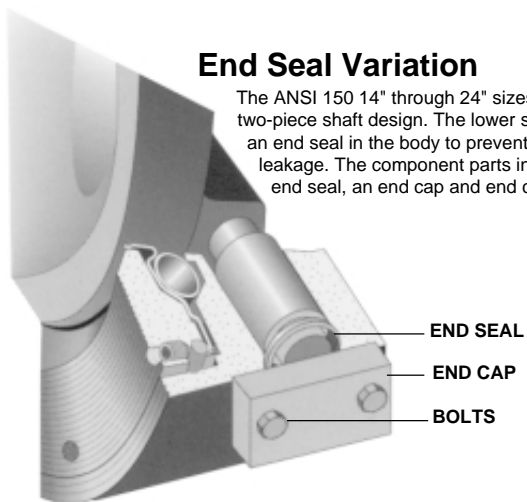


Figure 4

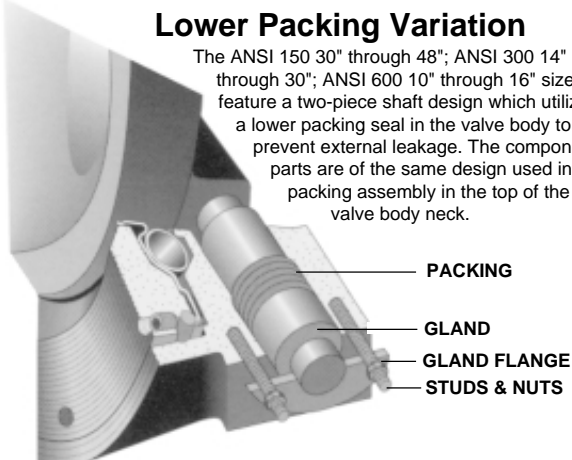
End Seal Variation

The ANSI 150 14" through 24" sizes feature a two-piece shaft design. The lower shaft utilizes an end seal in the body to prevent external leakage. The component parts include an end seal, an end cap and end cap bolts.



Lower Packing Variation

The ANSI 150 30" through 48"; ANSI 300 14" through 30"; ANSI 600 10" through 16" sizes feature a two-piece shaft design which utilizes a lower packing seal in the valve body to prevent external leakage. The component parts are of the same design used in the packing assembly in the top of the valve body neck.



Metal Seal Design

Carbon Steel Construction

Item Number	Description	-20°F to +450°F (- 29°C to +232°C)	+451°F to +750°F (+233°C to +399°C)	+751°F to +800°F (+400°C to +427°C)
2	Shaft	17-4 PH Stainless Steel ASTM A564 Gr 630		
5	Packing	PTFE	Graphite	
6	Bearings	Glass-Backed PTFE	Bronze	316 Stainless Steel Nitrided
10	Body	Carbon Steel A216 Gr WCB or A105		
12	Disc	316 Stainless Steel A351 CF8M or A182 F316 Nitrided		
14	Seal	Inconel		

Stainless Steel Construction

Item Number	Description	-20°F to +450°F (-29°C to +232°C)	+451°F to +750°F (+233°C to +399°C)	+751°F to +900°F (+400°C to +482°C)
2	Shaft	17-4 PH Stainless Steel ASTM A564 Gr 630		316 Stainless* Steel ASTM A479 Gr 316
5	Packing	PTFE	Graphite	
6	Bearings	Glass-Backed PTFE	Bronze	316 Stainless Steel Nitrided
10	Body	316 Stainless Steel A351 CF8M or A182 F316		
12	Disc	316 Stainless Steel A351 CF8M or A182 F316 Nitrided		
14	Seal	Inconel		

* Metal seal valves with 316 SS shafts are rated for maximum pressure differentials of 150 psi for Class 150, 300 psi for Class 300, and 600 psi for Class 600. Monel, Nitronic 50, and Inconel (718 or X750) shafts may be substituted for higher differential pressures at elevated temperatures. Please consult factory for additional information.

Soft Seal Design

Item Number	Description	-100°F to +400°F (- 88°C to +204°C)	+400°F to +500°F (+204°C to +260°C)
2	Shaft	17-4 PH Stainless Steel ASTM A564 Gr 630	
		Optional: 316 SS, Inconel 718/750, Monel, Alloy 20, Nitronic 50, Hastelloy C, and Others	
5	Packing	TFE	
		Optional: Graphite	
6	Bearings	Glass Backed PTFE	
		Optional: 316 SS Backed TFE, Hastelloy C Backed TFE	
10	Body	Carbon Steel A216 Gr WCB or A105	
		Optional: 316 SS ASTM A351 CF8M or A182 F316, Monel, Alloy 20, Aluminum Bronze, or Hastelloy C	
12	Disc	316 Stainless Steel A351 CF8M or A182 F316	
		Optional: Monel, Alloy 20, Aluminum Bronze, or Hastelloy C	
14	Seal	PTFE	
		Optional: RTFE, Polyethylene (UHMWPE)	

Fire-Safe Design

Item Number	Description	-100°F to +400°F (- 88°C to +204°C)	+400°F to +500°F (+204°C to +260°C)
2	Shaft	17-4 PH Stainless Steel ASTM A564 Gr 630	
		Optional: 316 Stainless Steel	
5	Packing	Fire-Safe	
6	Bearings	Fire-Safe (Garfil & 316 SS)	
10	Body	Carbon Steel A216 Gr WCB or A105	
		Optional: 316 SS ASTM A351 CF8M or A182 F316, Monel, Alloy 20, Hastelloy C, and Others	
12	Disc	316 Stainless Steel A351 CF8M or A182 F316 - ENP	
		Consult Factory for Optional Materials	
14	Seal	Fire-Safe (TFE & Inconel)	RTFE & Inconel
		Optional: TFE & Monel, TFE & Hastelloy C	RTFE & Monel, RTFE & Hastelloy C

Allowable Pressure Drops

Dresser Valve Division has created a simple actuator sizing and selection program, which allows for quick and accurate actuator sizing based on the specific service conditions. This program is designed to run in Microsoft® Excel®, and is available from your local Masoneilan sales representative.

The opening screen of the sizing program is shown below. Operating variables can be selected from a number of pull-down menus. The program will then

provide an actuator recommendation, along with calculations for the required torque (with safety margins) for valve seating, unseating, and throttling conditions.

This program covers standard product construction only. Please consult with your local Masoneilan sales representative, or with the factory, for applications and conditions not covered by this program.

39003 HPBV Actuator Quick Selector	
I. Specification Inputs	II. Actuator Selection Output
ANSI Pressure Class	300 Class
Size (Inches)	4"
Flow Direction	Flow-to-Open
Air Action	Air-to-Close
Seat Construction	Soft Seat
Air Supply (Psig)	25 Psig
Shaft Material	17-4 PH
Service Sizing Factor	Normal
Shutoff Delta P (Psig)	600 Psig
Throttling Delta P (Psig)	150 Psig
Throttling Position (Deg)	50 Deg
	Actuator Model
	33-C
	Seating/Unseating Torque (in-lbs)
	790
	Throttling Torque (in-lbs)
	1,250
	<u>Notes</u>
	Shaft Material Acceptable
	Select SEVERE Service Sizing Factor for Soft Seat applications < 40 °F

150 CLASS ASSEMBLIES

ACTUATOR TYPE		VALVE WT	BRACKET WT	RC210		RC220		RC230		RC240		RC250		RC260		RC270		RC280		RC88		RC190		RCG100		33 ACTUATOR		
VALVE SIZE	TYPE			DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	YOKE WT	"B" 32	"C" 85
				3.1	4	4	5.85	8	10.4	10.6	15.5	20.4	26.8	27	40	69	69	89	142	162	330	618	772	684	1102			
2"	WAFER	8	12	23.1	24	24	25.85	28	30.4	30.6	35.5														24	64	117	
	LUG	11	12	26.1	27	27	28.85	31	33.4	33.6	38.5														24	67	120	
3"	WAFER	11	12	26.1	27	27	28.85	31	33.4	33.6	38.5														24	67	120	
	LUG	13	12	28.1	29	29	30.85	33	35.4	35.6	40.5														24	69	122	
4"	WAFER	17	12	32.1	33	33	34.85	37	39.4	39.6	44.5														24	73	126	
	LUG	25	12	40.1	41	41	42.85	45	47.4	47.6	52.5														24	81	134	
6"	WAFER	30	12					50	52.4	52.6	57.5	62.4	68.8	69	82										24		139	
	LUG	35	12					55	57.4	57.6	62.5	67.4	73.8	74	87										24		144	
8"	WAFER	44	12							71.5	76.4	82.8	83	96	125	125									24		153	
	LUG	48	12							75.5	80.4	86.8	87	100	129	129									24		157	
10"	WAFER	71	14									105.4	111.8	112	125	154	154	174	227									
	LUG	191	14									125.4	131.8	132	145	174	174	194	247									
12"	WAFER	110	14											157	170	199	199	219	272									
	LUG	127	14											174	187	216	216	236	289									
14"	WAFER	135	16											182	195	224	224	244	297									
	LUG	183	16											230	243	272	272	292	345									
16"	WAFER	182	20												271	271	291	344	364	532								
	LUG	250	20												339	339	359	412	432	600								
18"	WAFER	234	20												323	323	343	396	416	584	872	1026	938					
	LUG	305	20												394	394	414	467	487	655	943	1097	1009					
20"	WAFER	320	20													429	482	502	670	958	1112	1024						
	LUG	414	20													523	576	596	764	1052	1206	1118						
24"	WAFER	505	25																692	860	1148	1302	1214	1632				
	LUG	702	25																889	1057	1345	1499	1411	1829				
30"	WAFER	925	25																	1112	1280	1568	1722	1634	2052			
	LUG	1130	25																	1317	1485	1773	1927	1839	2257			
36"	WAFER	1630	25																		1985	2273	2427	2339	2757			
	LUG	1890	25																		2245	2533	2687	2599	3017			
42"	WAFER	2475	25																			2830	3118	3272	3184	3602		
	LUG	2700	25																			3055	3343	3497	3409	3827		
48"	WAFER	2815	25																				3170	3458	3612	3524	3942	
	LUG	3085	25																				3440	3728	3882	3794	4212	

NOTES: 1. The weights of actuators are without handwheel
 2. The weights are in lbs.
 3. DA = Double Acting / SR = Spring Return

HANDWHEEL WEIGHTS

ACTUATOR TYPE	RC210 DA/SR	RC220 DA/SR	RC230 DA/SR	RC240 DA/SR	RC250 DA/SR	RC260 DA/SR	RC270 DA/SR	RC280 DA/SR	RC88 DA/SR	RC90&100 DA	RC90&100 SR	33 ACT.
WEIGHT	1.5	1.5	2.5	2.5	6.5	6.5	26	26	250	185	66	22

NOTES: 1. The weights are in lbs.

Weights

300 CLASS ASSEMBLIES

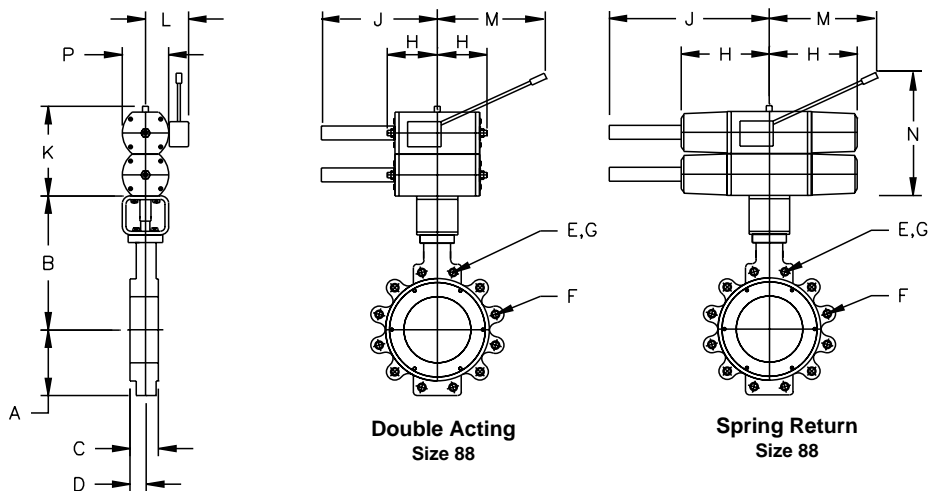
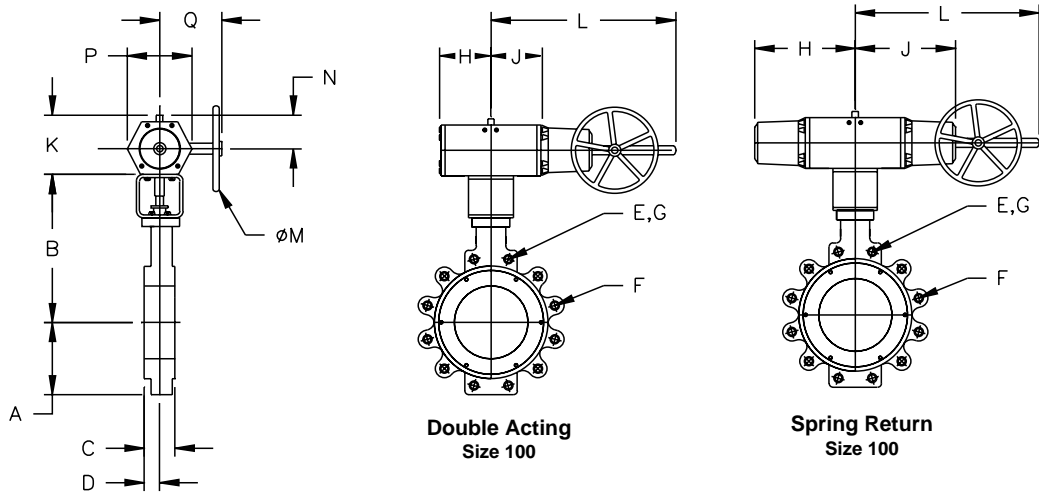
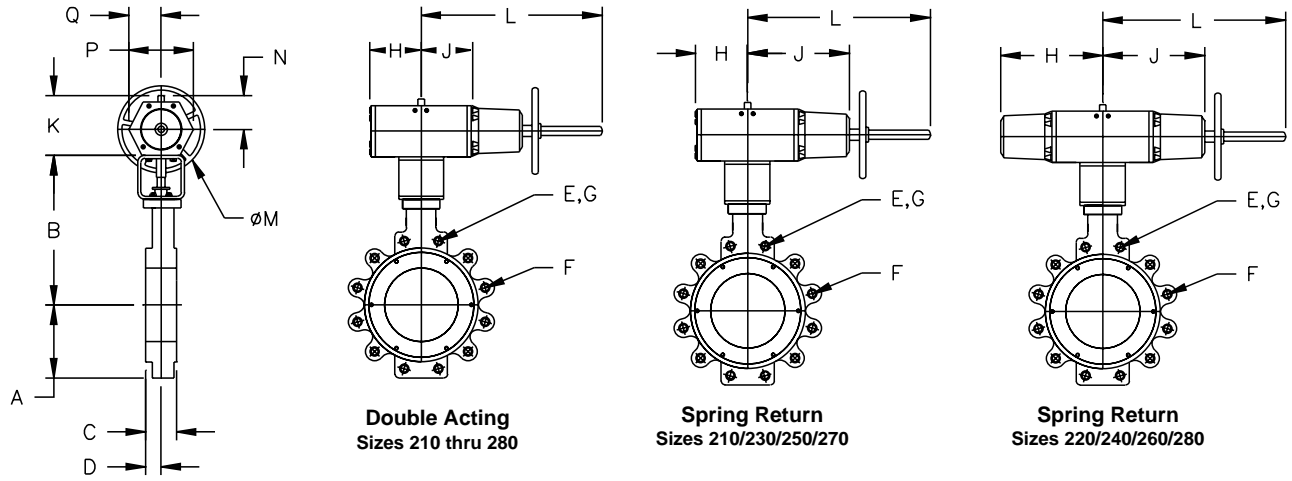
ACTUATOR TYPE		VALVE WT	BRACKET WT	RC210		RC220		RC230		RC240		RC250		RC260		RC270		RC280		RC88		RCI90		RCG100		33 ACTUATOR											
VALVE SIZE	TYPE			DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	YOKE WT	"B"	"C"									
				3.1	4	4	5.85	8	10.4	10.6	15.5	20.4	26.8	27	40	69	69	89	142	162	330	618	772	684	1102	32	85										
2"	WAFER	8	12	23.1	24	24	25.85	28	30.4	30.6	35.5																24	64	117								
	LUG	11	12	26.1	27	27	28.85	31	33.4	33.6	38.5																24	67	120								
3"	WAFER	12	12	27.1	28	28	29.85	32	34.4	34.6	39.5																24	68	121								
	LUG	17	12	32.1	33	33	34.85	37	39.4	39.6	44.5																24	73	126								
4"	WAFER	17	12			33	34.85	37	39.4	39.6	44.5																24	73	126								
	LUG	24	12			40	41.85	44	46.4	46.6	51.5																24	80	133								
6"	WAFER	30	12					50	52.4	52.6	57.5	62.4	68.8	69	82											24		139									
	LUG	49	12					69	71.4	71.6	76.5	81.4	87.8	88	101											24		158									
8"	WAFER	52	12							79.5	84.4	90.8	91	104	133	133									24		161										
	LUG	80	12							107.5	112.4	118.8	119	132	161	161									24		189										
10"	WAFER	88	14									122.4	128.8	129	142	171	171	191	244																		
	LUG	115	14									149.4	155.8	156	169	198	198	218	271																		
12"	WAFER	153	14											194	207	236	236	256	309																		
	LUG	199	14											240	253	282	282	302	355																		
14"	WAFER	285	16													328	341	370	370	390	443	463	631														
	LUG	324	16													367	380	409	409	429	482	502	670														
16"	WAFER	336	20															425	425	445	498	518	686	974	1128	1040	1458										
	LUG	401	20															490	490	510	563	583	751	1039	1193	1105	1523										
18"	WAFER	393	20																	482	482	502	555	575	743	1031	1185	1097	1515								
	LUG	517	20																	606	606	626	679	699	867	1155	1309	1221	1639								
20"	WAFER	510	20																			619	672	692	860	1148	1302	1214	1632								
	LUG	735	20																			844	897	917	1085	1373	1527	1439	1857								
24"	WAFER	733	25																					847	900	920	1088	1376	1530	1442	1860						
	LUG	1020	25																					1134	1187	1207	1375	1663	1817	1729	2147						
30"	WAFER	1745	25																										1932	2100	2388	2542	2454	2872			
	LUG	2145	25																										2332	2500	2788	2942	2854	3272			

600 CLASS ASSEMBLIES

ACTUATOR TYPE		VALVE WT	BRACKET WT	RC210		RC220		RC230		RC240		RC250		RC260		RC270		RC280		RC88		RCI90		RCG100		33 ACTUATOR								
VALVE SIZE	TYPE			DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	DA	SR	YOKE WT	"B"	"C"						
				3.1	4	4	5.85	8	10.4	10.6	15.5	20.4	26.8	27	40	69	69	89	142	162	330	618	772	684	1102	32	85							
2"	WAFER	11	12	26.1	27	27	28.85	31	33.4	33.6	38.5																24	67	120					
	LUG	13	12	28.1	29	29	30.85	33	35.4	35.6	40.5																24	69	122					
3"	WAFER	13	12	28.1	29	29	30.85	33	35.4	35.6	40.5																24	69	122					
	LUG	18	12	33.1	34	34	35.85	38	40.4	40.6	45.5																24	74	127					
4"	WAFER	30	12			46	47.85	50	52.4	52.6	57.5																24	86	139					
	LUG	52	12			68	69.85	72	74.4	74.6	79.5																24	108	161					
6"	WAFER	42	12					62	64.4	64.6	69.5	74.4	80.8	81	94											24		151						
	LUG	85	12					105	107.4	107.6	112.5	117.4	123.8	124	137											24		194						
8"	WAFER	72	12							99.5	104.4	110.8	111	124	153	153									24		181							
	LUG	127	12							154.5	159.4	165.8	166	179	208	208									24		236							
10"	WAFER	170	14											204.4	210.8	211	224	253	253	273	326	346	514	802	956	868	1286							
	LUG	233	14											267.4	273.8	274	274	316	316	336	389	409	577	865	1019	931	1349							
12"	WAFER	245	14													286	299	328	328	348	401	421	589	877	1031	943	1361							
	LUG	379	14													420	433	462	462	482	535	555	723	1011	1165	1077	1495							
16"	WAFER	1170	20																			1255	1255	1275	1328	1348	1516	1804	1958	1870	2288			
	LUG	1170	20																			1255	1255	1275	1328	1348	1516	1804	1958	1870	2288			

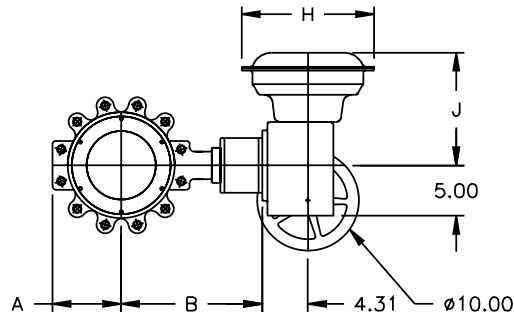
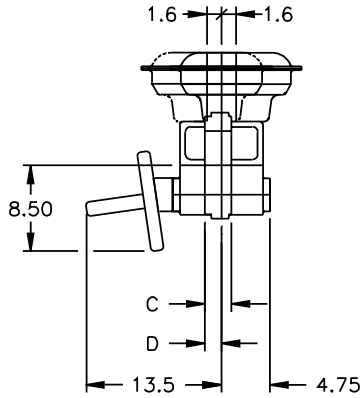
- NOTES: 1. The weights of actuators are without handwheel
 2. The weights are in lbs.
 3. DA = Double Acting / SR = Spring Return

Model 34 (RC) Actuators - Dimensional Data



Dimensions

Model 33 Actuator - Dimensional Data



Note: ANSI Class 150/300;
Sizes 3", 4", 6" & 8" available only.

MODEL 39003 BUTTERFLY VALVE TABLE

	VALVE	WAFER	LUG	B	C	D	THREAD	# OF	BOLT
	SIZE	A*	A**				SIZE	HOLES	CIRCLE
							E	F	G**
ANSI CLASS 150	2"	3.00	3.00	10.25	1.75	1.06	5/8-11	4	4.75
	3"	3.00	3.38	11.00	1.92	1.20	5/8-11	4	6.00
	4"	3.50	4.13	11.75	2.13	1.26	5/8-11	8	7.50
	6"	4.88	5.12	13.00	2.31	1.38	3/4-10	8	9.50
	8"	5.88	6.01	14.13	2.50	1.49	3/4-10	8	11.75
	10"	6.88	7.88	14.88	2.81	1.70	7/8-9	12	14.25
	12"	9.50	9.50	16.63	3.23	1.86	7/8-9	12	17.00
	14"	11.07	11.07	17.25	3.62	2.19	1-8	12	18.75
	16"	12.05	12.05	22.69	4.00	2.31	1-8	16	21.25
	18"	13.18	13.18	24.00	4.50	2.45	1 1/8-8	16	22.75
	20"	13.94	13.94	25.13	5.00	2.94	1 1/8-8	20	25.00
	24"	16.44	16.44	27.25	6.06	3.12	1 1/4-8	20	29.50
	30"	22.73	22.73	34.62	6.75	3.53	1 1/4-8	28	36.00
	36"	32.11	32.11	38.50	8.38	4.34	1 1/2-8	32	42.75
	42"	35.62	35.62	44.00	9.25	5.03	1 1/2-8	36	49.50
	48"	38.25	38.25	47.25	10.62	5.62	1 1/2-8	44	56.00
ANSI CLASS 300	2"	3.00	3.00	10.25	1.75	1.06	5/8-11	8	5.00
	3"	3.00	3.38	11.00	1.92	1.20	3/4-10	8	6.63
	4"	3.50	4.12	11.75	2.13	1.25	3/4-10	8	7.88
	6"	5.12	5.50	13.00	2.29	1.38	3/4-10	12	10.63
	8"	5.88	7.28	14.14	2.88	1.54	7/8-9	12	13.00
	10"	7.38	7.88	15.38	3.25	1.70	1-8	16	15.25
	12"	10.50	10.50	21.00	3.62	1.86	1 1/8-8	16	17.75
	14"	14.57	14.57	22.38	4.62	2.48	1 1/8-8	20	20.25
	16"	16.32	16.32	24.00	5.25	2.59	1 1/4-8	20	22.50
	18"	17.26	17.26	25.13	5.88	3.03	1 1/4-8	24	24.75
	20"	18.49	18.49	26.39	6.31	3.24	1 1/4-8	24	27.00
	24"	21.67	21.67	29.38	7.19	3.62	1 1/2-8	24	32.00
30"	30.50	30.50	38.88	8.88	4.39	1 3/4-8	28	39.25	
ANSI CLASS 600	3"	3.00	3.00	11.00	2.12	1.20	3/4-10	8	6.63
	4"	4.62	4.62	12.00	2.50	1.40	7/8-9	8	8.50
	6"	5.56	6.75	13.62	3.06	1.68	1-8	12	11.50
	8"	7.38	8.03	15.13	4.00	1.85	1 1/8-8	12	13.75
	10"	13.25	13.25	19.00	4.62	2.00	1 1/4-8	16	17.00
	12"	14.67	14.67	22.63	5.50	2.53	1 1/4-8	20	19.25
	16"	-	18.87	30.00	7.00	3.50	1 1/2-8	20	23.75

* - Dimensions apply to wafer valves only
** - Dimensions apply to lugged valves only

MODEL 34 (RC) ACTUATOR TABLE

	SIZE	H	J	K	L	M	N	P	Q
SPRING RETURN	RC210	1.8	5.7	3.7	11.4	7.1	2.3	2.9	1.3
	RC220	5.7	5.7	3.7	11.4	7.1	2.3	2.9	1.3
	RC230	2.6	7.7	5.0	13.4	7.9	2.9	4.1	1.9
	RC240	7.7	7.7	5.0	13.4	7.9	2.9	4.1	1.9
	RC250	3.5	11.2	6.9	19.7	12.6	3.8	5.7	2.7
	RC260	11.2	11.2	6.9	19.7	12.6	3.8	5.7	2.7
	RC270	5.7	20.1	10.9	31.5	15.7	6.1	8.7	4.3
	RC280	20.5	20.5	10.9	31.5	23.6	6.1	8.7	4.3
	RC88	20.5	37.9	19.5	9.1	19.5	39.8	8.7	4.3
RC100	33.5	33.5	19.0	56.0	31.5	10.7	13.8	6.9	
DOUBLE ACTING	RC210	1.8	3.9	3.7	11.4	7.1	2.3	2.9	1.3
	RC220	3.9	3.9	3.7	11.4	7.1	2.3	2.9	1.3
	RC230	2.6	5.3	5.0	13.4	7.9	2.9	4.1	1.9
	RC240	5.3	5.3	5.0	13.4	7.9	2.9	4.1	1.9
	RC250	3.5	7.5	6.9	19.7	12.6	3.8	5.7	2.7
	RC260	7.5	7.5	6.9	19.7	12.6	3.8	5.7	2.7
	RC270	5.7	11.6	10.9	31.5	15.7	6.1	8.7	4.3
	RC280	12.2	12.2	10.9	31.5	23.6	6.1	8.7	4.3
	RC88	12.2	29.6	19.5	9.1	19.5	39.8	8.7	4.3
RC100	20.5	20.5	19.0	56.0	31.5	10.7	13.8	6.9	

MODEL 33 ACTUATOR TABLE

	SIZE	H	J	K	L	M	N	P	Q
CL 150	3"	13.00	11.50	-	-	-	-	-	-
	4"	13.00	11.50	-	-	-	-	-	-
	6"	17.50	15.20	-	-	-	-	-	-
	8"	17.50	15.20	-	-	-	-	-	-
CL 300	3"	13.00	11.50	-	-	-	-	-	-
	4"	13.00	11.50	-	-	-	-	-	-
	6"	17.50	15.20	-	-	-	-	-	-
	8"	17.50	15.20	-	-	-	-	-	-

Options and Accessories

4700P Series Pneumatic Positioner
 Instrument signals 0.2-1 and 0.4-2 bar
 3-15 and 6-30 psig
 (See Specification Data CS2007)

4700E Series Electropneumatic Positioners
 (See Specification Data CS2007)
 Input range 4-20 mA
 Split range

Double Acting Positioners
 Moore 750P/760P Pneumatic Positioner
 Instrument signals 0.2-1 and 0.4-2 bar
 3-15 and 6-30 psig
 Moore 750E/760E Electropneumatic Positioner
 Input range 4-20 mA

7000 Electropneumatic (I/P) Transducer
 Input range 4-20 mA
 Split range
 Output 0.2-1 bar, adjustable
 0.4-2 bar, adjustable
 3-15 psi, adjustable
 6-30 psi, adjustable
 (See TS-Model 7000)

Smart Valve Interface (SVI®)
 Digital Positioner and Process Controller
 Input range 4-20 mA
 Split range
 HART Communication
 (See Manual EW2000)

ValVue Software
 Calibration, Configuration, Diagnostic, and
 Operator Interface Tool
 (See Manual EW1000)

2700 Controllers
 (See Specification Data CW6000)

80-4 or 80-40 Airset
 (See Specification Data CY7800)
 77-6 or 77-60 Lockup Valve
 2" Gauge 0-2 bar

496 Rotary Electric Switches
 (See Specification Data CS7000 E)
 496-1 (1-Switch SPDT)
 496-2 (2-Switches SPDT)
 496-3 (Potentiometer Position Transmitter)
 496-6 (1-Switch DPDT)
 496-7 (2-Switches DPDT)
 496-8 Opto-Electronic Position Transmitter
 (See Specification Data CS7050 E)

Other Limit Switches

Solenoid Valves

Options

Limit Stops
NACE Compliance
Other Materials
Non-Destructive Examination
Oxygen Cleaning
Electric Actuators

Consult Dresser for additional Options and Accessories.

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