

## V5011A, B, D-H, J Single Seated Valves

### SPECIFICATION DATA



### FEATURES

- Direct or reverse acting
- Stainless steel stem with removable Teflon disc
- Self-adjusting, spring-loaded packing material to suit application
- Bronze, brass, or stainless steel plugs provide equal percentage or linear flow characteristics
- Suitable for pneumatic or electric/electronic actuation
- Repacking kits available for field servicing

### GENERAL

V5011 Series Single-Seated, Two-Way, Straight-Through Valves ("Valves") provide proportional control of steam and hot or chilled water in HVAC systems requiring tight shutoff.



## SPECIFICATIONS

### Models:

See Table 1

### Flow Characteristics:

Equal percentage or linear. See Figure 1 and Table 1.

### Valve Pressure-Temperature Ratings:

See Figure 2

### Dimensions:

See Table 2 and Figures 3 through 6

### Close-off Ratings:

See Table 3 and Figures 7 and 8

NOTE: Close-off curves for V5011 Valves mated with Honeywell ICD (Industrial) Type 05 direct acting pneumatic actuators are shown in Figure 8. These actuators provide no close-off advantage over a 13-in. diameter, 3/4-in. stroke MP953 Actuator.

### Maximum Pressure Differential (at Full Open for Normal Disc and Seat Life):

Teflon or composition disc [425F (218C) max]:

Water, two-position service: 50 psi (345 kPa)

Water, modulating service: 25 psi (172 kPa)

Water, quiet modulating service: 20 psi (138 kPa)

Steam, two-position service: 70 psi (483 kPa)

Steam, modulating service: 35 psi (241 kPa)

Metal-to-metal seating (See Table 1):

Water, two-position or modulating service: not recommended

Steam, two-position or modulating service: 100 psi (690 kPa)

### Body Materials:

Screwed-end Valves: Bronze

Flanged-end Valves: Cast iron

### Stem Travel:

1/2- through 3-in. Valves: 3/4 in. (19 mm)

4-, 5-, and 6-in. Valves: 1-1/2 in. (38 mm)

### Trim Materials:

Stem: Stainless steel

Packing:

Teflon cone [water – 150 psi (1034 kPa), 240F (116C) max; alternating hot and cold, 140F (60C) max] for ANSI Class 125 flanged V5011A and B Valves and [steam 100 psi (689 kPa) 337F (169C) max] for ANSI Class 150 screwed V5011G and J Valves

Rubber or Teflon/rubber [water – 250 psi (1724 kPa), 250F (121C) max; alternating hot and cold, 140F (60C) max] for ANSI Class 150 screwed V5011F and H Valves

Teflon V-ring [water – 250 psi (1724 kPa), 250F (121C) max; alternating hot and cold, 140F (60C) max] for ANSI Class 250 V5011D and E Valves

Disc:

Screwed bodies: Removable Teflon

Flanged bodies: Composition

Disc Holder:

Screwed bodies: Brass

Flanged bodies: Cast iron

Plug:

Screwed bodies with Teflon disc: Contoured brass

Screwed bodies with metal-to-metal seating: Contoured stainless steel

Flanged bodies: V-ported, skirt-guided bronze

Seat:

Screwed bodies: Brass (replaceable, screwed into body; non-replaceable on V5011H, J)

Screwed bodies: Metal-to-metal stainless steel (plug and seat replaceable as matched set; not available on V5011H, J)

Flanged bodies: Bronze (replaceable, screwed into body)

### Accessories:

Actuator and linkage:

Pneumatic, see Table 4

Electric, see Table 5

Repacking kits:

14003294-003: V5011A, F, and H, 1/2 through 1-1/4 inch Valves

14003295-003: V5011A, F, and H, 1-1/2 through 3 inch Valves

14003294-001: V5011C, G, and J, 1/2 through 1-1/4 inch Valves

14003295-001: V5011C, G, and J, 1-1/2 through 3 inch Valves

### Valve Actuation:

V5011 Valves require actuation by pneumatic MP953 Actuators or Type 05 Actuators (Table 4), or by Versadrive or electric/electronic Modutrol IV motors (Table 5). Refer to Figures 9 through 13 for actuator dimensions.

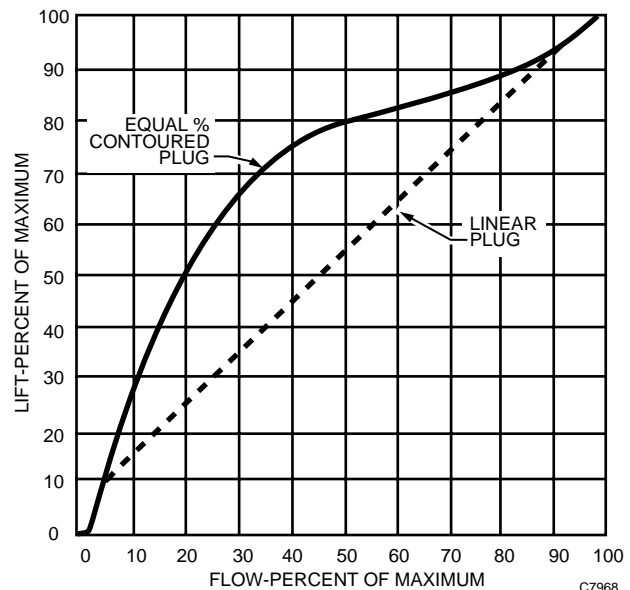


Fig. 1. Typical Flow Characteristics.

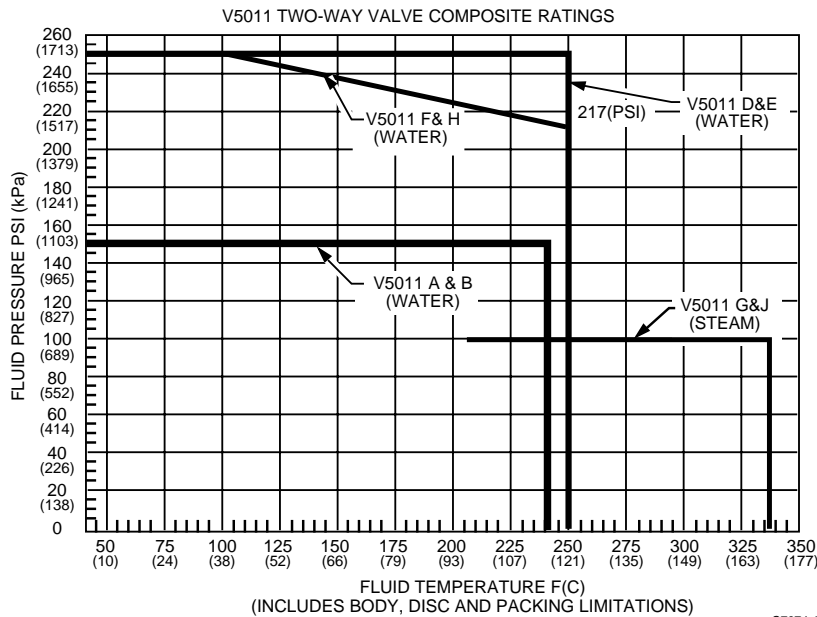
Table 1. V5011 Model Descriptions and Body Specifications.

√	Model and Plug Characteristic	Action*	End Connections	Body Size in Inches	Capacity Index (C <sub>v</sub> )†	ANSI Body Class
	V5011A Equal Percentage	Direct	Flanged	2-1/2 or 3	63; 2-1/2 in. 100; 3 in.	125
	V5011D Equal Percentage					250
	V5011A Equal Percentage	Direct	Flanged	4, 5, or 6	160; 4 in. 250; 5 in. 360; 6 in.	125
	V5011B Equal Percentage					Reverse
	V5011D Equal Percentage	Direct				250
	V5011E Equal Percentage	Reverse				
	V5011F Equal Percentage, V5011G Linear	Direct	Screwed NPT	1/2§	0.4, 0.63, 1.0, 1.6, 2.5, 4.0	150
				3/4§	6.3	
				1 §	10.0	
				1-1/4§	16	
				1-1/2§	25	
				2	40	
				2-1/2	63	
	V5011H Equal Percentage, V5011J Linear	Reverse	Screwed NPT	1/2	2.5, 4.0	150
				3/4	6.3	
				1	10.0	
				1-1/4	16	

\* Direct: stem down to close.  
Reverse: stem up to close.

† 0.4 C<sub>v</sub> available only on V5011G

§ Also available with metal-to-metal seating.



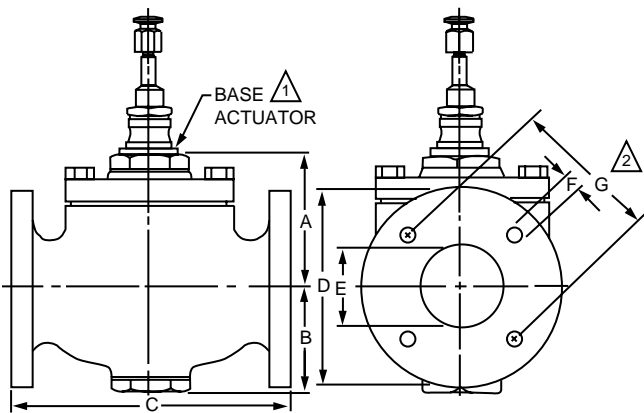
NOTES:

- For high fluid temperatures, the valve and/or piping should be insulated to prevent ambient temperature from exceeding actuator ratings.
- Maximum temperature differential in alternate hot and cold water use, 140F (60C).

Fig. 2. Valve Pressure-Temperature Ratings.

Table 2. V5011 Approximate Dimensions in Inches (Millimeters).

Model and Figure Reference	Valve Size (in.)	A	B	C	D	E	F	G	No. of Flange Bolt Holes
V5011A Flanged, Direct Body (Fig. 3)	2-1/2	4-13/16 (122)	4 (102)	9-1/2 (241)	7 (178)	2-1/2 (64)	3/4 (18)	5-1/2 (140)	4
	3	5-3/8 (137)	4-5/8 (117)	11 (279)	7-1/2 (190)	3 (76)	3/4 (18)	6 (152)	4
	4	7-9/16 (192)	5-3/16 (132)	13 (330)	9 (229)	4 (102)	3/4 (18)	7-1/2 (191)	8
	5	7 (178)	6-1/8 (156)	15 (381)	10 (254)	5 (127)	7/8 (22)	8-1/2 (216)	8
V5011B Flanged, Reverse Body (Fig. 4)	4	4-11/16 (119)	8-1/16 (205)	13 (330)	9 (229)	4 (102)	3/4 (18)	7-1/2 (191)	8
	5	5-5/8 (143)	7-1/2 (191)	15 (381)	10 (254)	5 (127)	7/8 (22)	8-1/2 (216)	8
	6	6-9/16 (167)	8-1/2 (216)	16-1/2 (419)	11 (279)	6 (152)	7/8 (22)	9-1/2 (241)	8
V5011D Flanged, Direct Body (Fig. 3)	2-1/2	4-13/16 (122)	3-3/4 (95)	11-1/2 (292)	7-1/2 (178)	2-1/2 (64)	7/8 (22)	5-7/8 (149)	8
	3	5-3/8 (137)	4-1/4 (108)	12-1/2 (318)	8-1/4 (210)	3 (76)	7/8 (22)	6-5/8 (168)	8
	4	7-9/16 (192)	5 (127)	14-1/2 (369)	10 (254)	4 (102)	7/8 (22)	7-7/8 (200)	8
	5	7 (178)	5-1/2 (140)	16-3/4 (425)	11 (279)	5 (127)	7/8 (22)	9-1/4 (235)	8
V5011E Flanged, Reverse Body (Fig. 4)	4	4-3/4 (121)	7-5/16 (186)	14-1/2 (369)	10 (254)	4 (102)	7/8 (22)	7-7/8 (200)	8
	5	5-3/4 (146)	6-3/4 (171)	16-3/4 (425)	11 (279)	5 (127)	7/8 (22)	9-1/4 (235)	8
	6	6-11/16 (170)	7-7/8 (200)	18-5/8 (473)	12-1/2 (318)	6 (152)	7/8 (22)	10-5/8 (270)	12
V5011F & G Screwed, Direct Body (Fig. 5)	1/2	2 (51)	1-3/4 (44)	3-3/8 (86)	—	2 (51)	—	—	—
	3/4	1-3/4 (44)	1-3/4 (44)	3-3/8 (86)	—	2 (51)	—	—	—
	1	1-7/8 (48)	1-3/4 (44)	4-1/4 (108)	—	2-1/8 (54)	—	—	—
	1-1/4	2 (51)	1-5/8 (41)	4-7/8 (124)	—	2-3/4 (70)	—	—	—
	1-1/2	2-7/8 (73)	1-5/8 (41)	5-5/8 (143)	—	3-1/2 (89)	—	—	—
	2	3-1/8 (79)	2 (51)	5-5/8 (143)	—	3-1/2 (89)	—	—	—
V5011H & J Screwed, Reverse Body (Fig. 6)	1/2	1-3/4 (44)	2-1/4 (57)	3-1/2 (89)	—	—	—	—	—
	3/4	1-3/4 (44)	2-1/4 (57)	3-3/8 (86)	—	—	—	—	—
	1	1-7/8 (48)	2-5/16 (59)	3-7/8 (98)	—	—	—	—	—
	1-1/4	2 (51)	2-3/16 (56)	4-1/4 (108)	—	—	—	—	

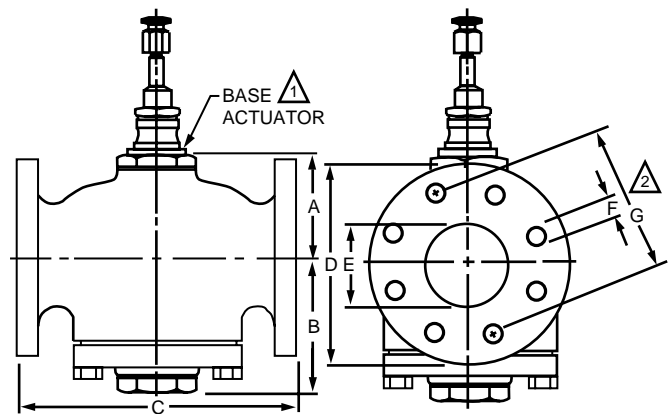


VALVE SIZE IN. (MM)	BONNET SIZE IN. (MM)-DIA
2-1/2 (64) & 3 (76)	1-3/8 (35)
4 (102), 5 (125), & 6 (152)	1-7/8 (48)

SEE TABLE FOR ACTUAL NUMBER OF BOLT HOLES.  
ONLY 2-1/2 IN. AND 3 IN. V5011A HAVE FOUR FLANGE HOLES.

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Fig. 3. V5011A and D Flanged Body Dimensions.



1 1-7/8 IN. (48MM) DIA BONNET SIZE

2 SEE TABLE FOR ACTUAL NUMBER OF BOLT HOLES

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Fig. 4. V5011B and E Flanged Body Dimensions.

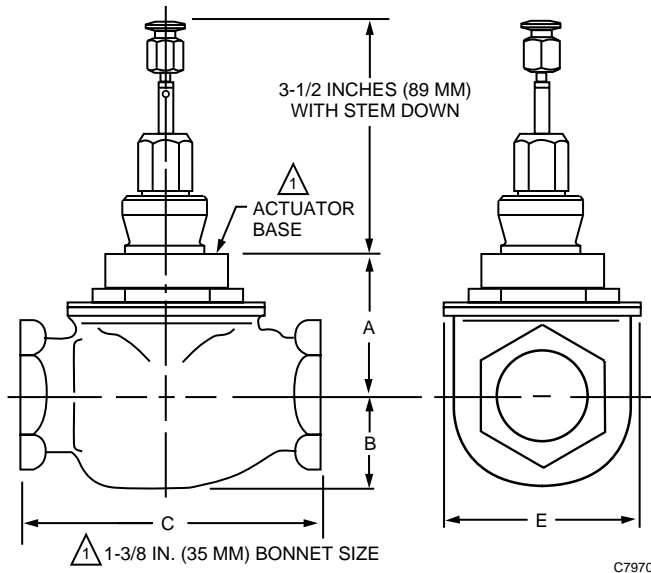


Fig. 5. V5011F and G Screwed, Direct Acting Body Dimensions.

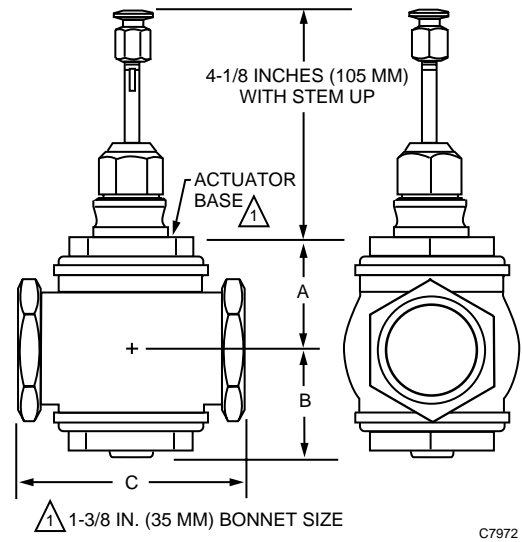


Fig. 6. V5011H and J Screwed, Reverse Acting Body Dimensions.

Table 3. Close-Off Ratings for V5011 Valves with Electric/Electronic Actuators and Q5001 Linkage.

Model	Size In Inches	Close-Off Ratings psi (kPa)*		
		Linkage Seal-Off Force		
		320 lbf (1424N) Linkage	160 lbf (712N) Linkage	80 lbf (356N) Linkage
V5011A & D Flanged	2-1/2	83 (572)	40 (276)	18 (124)
	3	40 (276)	18 (124)	7 (48)
	4	20 (138)	9 (62)	—
	5	12 (83)	5 (34)	—
	6	8 (55)	—	—
V5011F Screwed Connections	1/2 (C <sub>V</sub> = 0.63 to 2.5)	250 (1724)*	250 (1724)*	250 (1724)*
	1/2 (C <sub>V</sub> 4.0)	250 (1724)*	250 (1724)*	241 (1072)*
	3/4	250 (1724)*	250 (1724)*	141 (972)
	1	250 (1724)*	250 (1724)*	117 (807)
	1-1/4	250 (1724)*	145 (1000)	65 (448)
	1-1/2	191 (1317)*	91 (627)	39 (269)
	2	91 (627)	47 (324)	22 (152)
	2-1/2	67 (462)	32 (221)	12 (83)
V5011G Screwed Connections	3	38 (262)	19 (131)	8 (55)
	1/2	100 (689)	100 (689)	100 (689)
	3/4	100 (689)	100 (689)	100 (689)
	1	100 (689)	100 (689)	100 (689)
	1-1/4	100 (689)	100 (689)	65 (448)
	1-1/2	100 (689)	91 (627)	39 (269)
	2	97 (669)	47 (324)	22 (152)
	2-1/2	72 (496)	32 (221)	12 (83)
3	41 (283)	19 (131)	8 (55)	

\*Pressure is limited by fluid temperature. Refer to Valve Pressure Temperature Ratings.

V5011A, B, D-H, J SINGLE SEATED VALVES

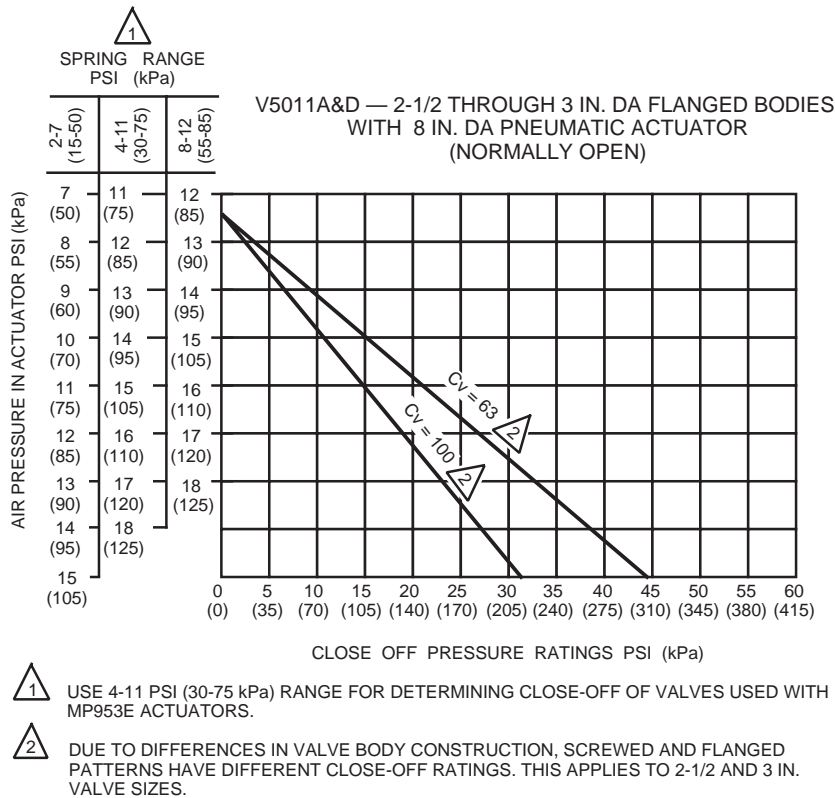
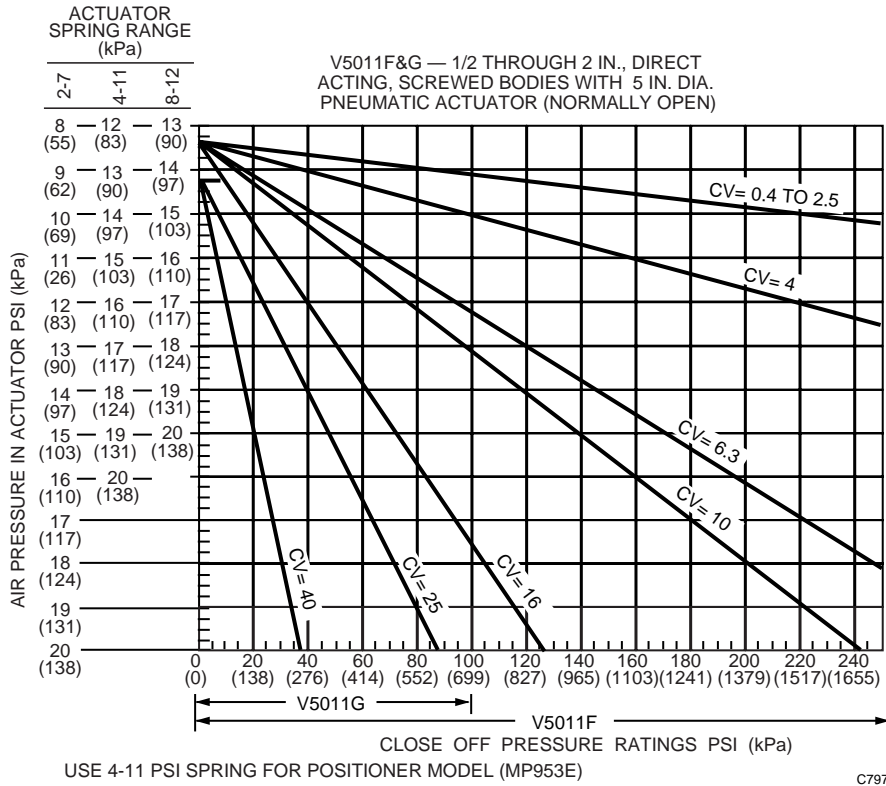
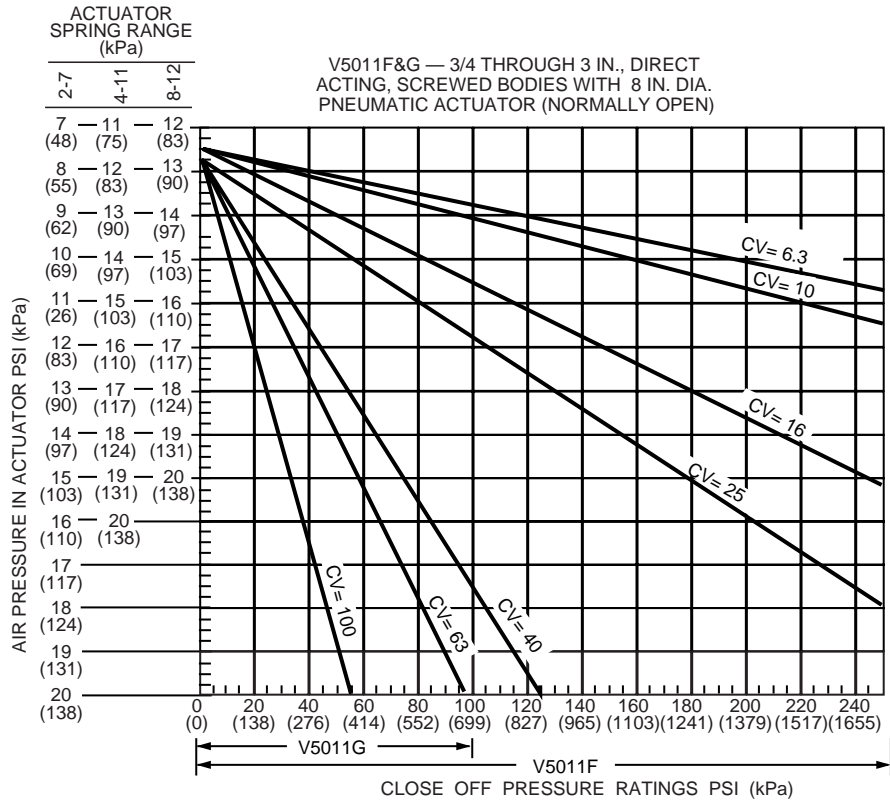
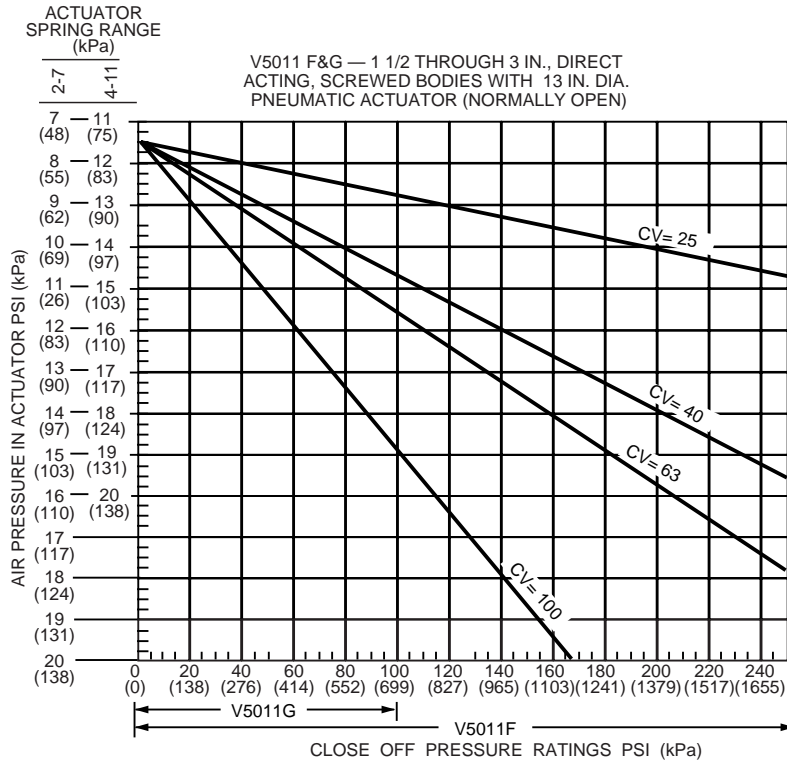


Fig. 7. Close-Off Pressures at Various Control Air Pressures for V5011 Valves and MP953 Pneumatic Actuators.

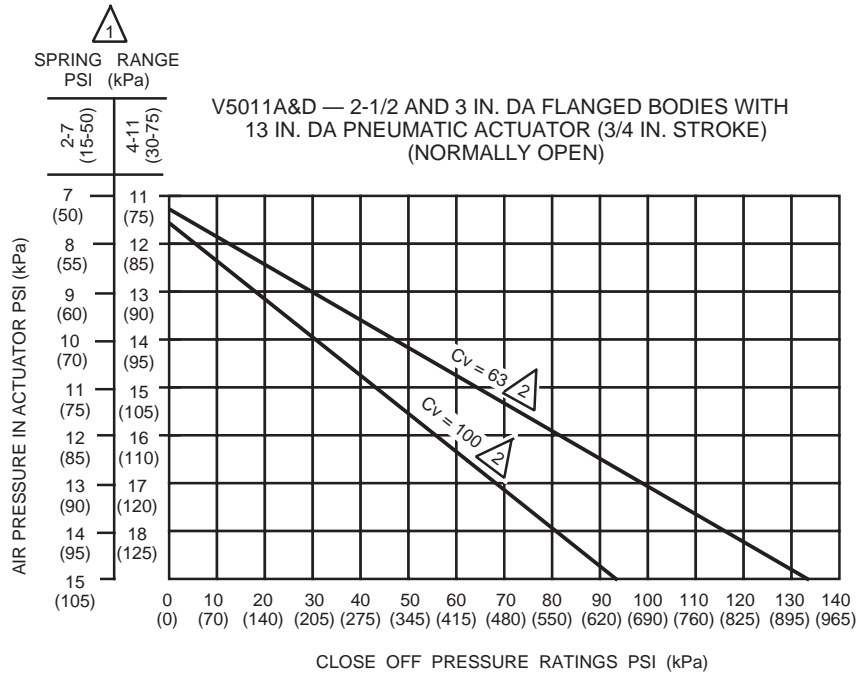


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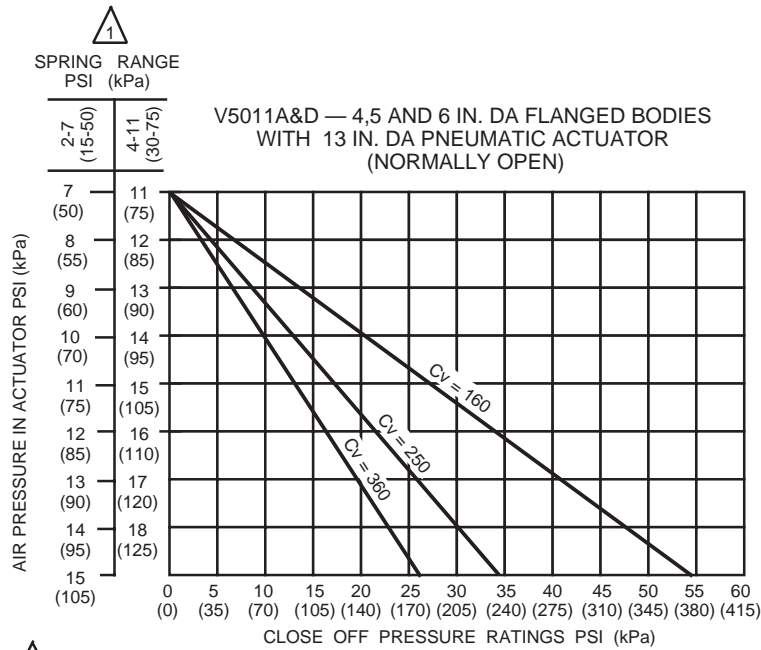
C7977

**Fig. 7. Close-Off Pressures at Various Control Air Pressures for V5011 Valves and MP953 Pneumatic Actuators. (Continued)**



- 1 USE 4-11 PSI (30-75 kPa) RANGE FOR DETERMINING CLOSE-OFF OF VALVES USED WITH MP953E ACTUATORS.
- 2 DUE TO DIFFERENCES IN VALVE BODY CONSTRUCTION, SCREWED AND FLANGED PATTERNS HAVE DIFFERENT CLOSE-OFF RATINGS. THIS APPLIES TO 2-1/2 AND 3 IN. VALVE SIZES.

C3118

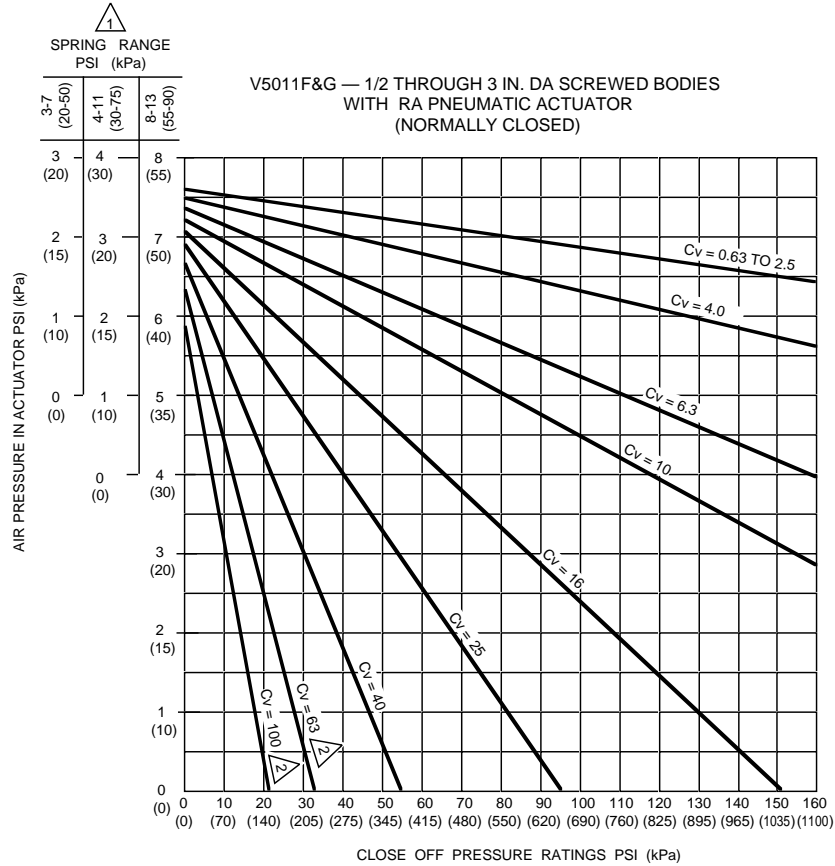


- 1 USE 4-11 PSI (30-75 kPa) RANGE FOR DETERMINING CLOSE-OFF OF VALVES USED WITH MP953E ACTUATORS.

C3120

**Fig. 7. Close-Off Pressures at Various Control Air Pressures for V5011 Valves and MP953 Pneumatic Actuators. (Continued)**

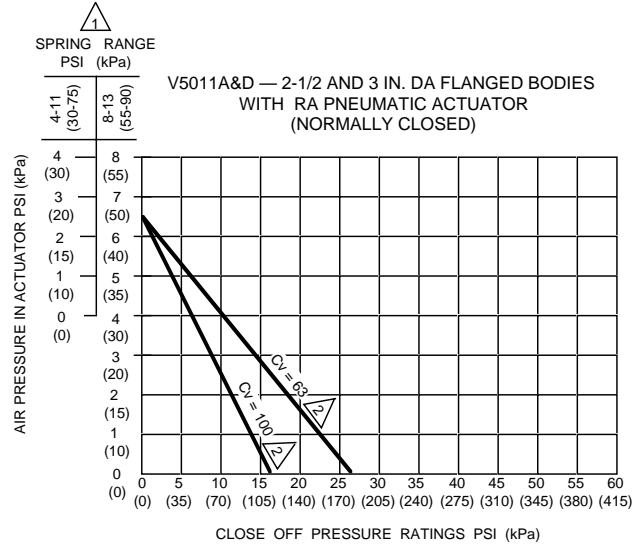




$\triangle 1$  USE 8-13 PSI (55-90 kPa) RANGE FOR DETERMINING CLOSE-OFF OF VALVES USED WITH MP953F ACTUATORS.

$\triangle 2$  DUE TO DIFFERENCES IN VALVE BODY CONSTRUCTION, SCREWED AND FLANGED PATTERNS HAVE DIFFERENT CLOSE-OFF RATINGS. THIS APPLIES TO 2-1/2 AND 3 IN. VALVE SIZES.

C3125-2

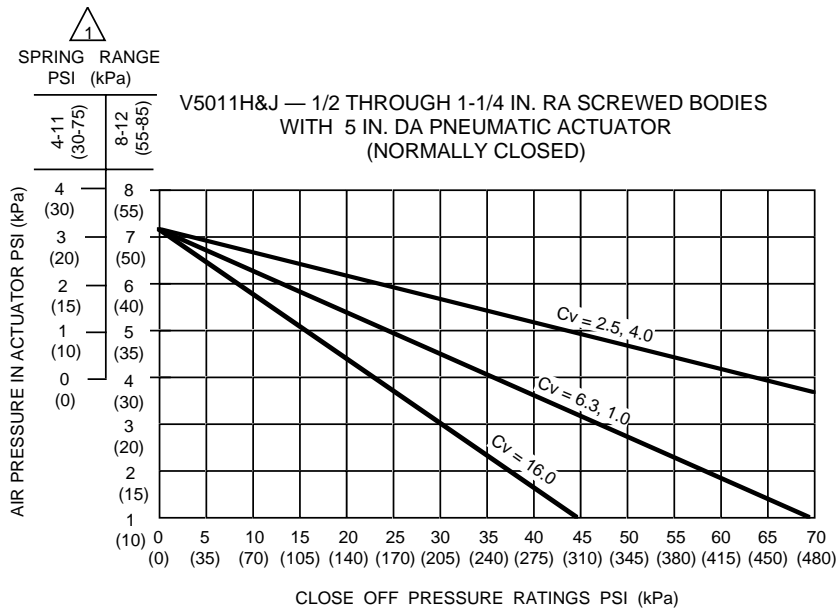


$\triangle 1$  USE 8-13 PSI (55-90 kPa) RANGE FOR DETERMINING CLOSE-OFF OF VALVES USED WITH MP953F ACTUATORS.

$\triangle 2$  DUE TO DIFFERENCES IN VALVE BODY CONSTRUCTION, SCREWED AND FLANGED PATTERNS HAVE DIFFERENT CLOSE-OFF RATINGS. THIS APPLIES TO 2-1/2 AND 3 IN. VALVE SIZES.

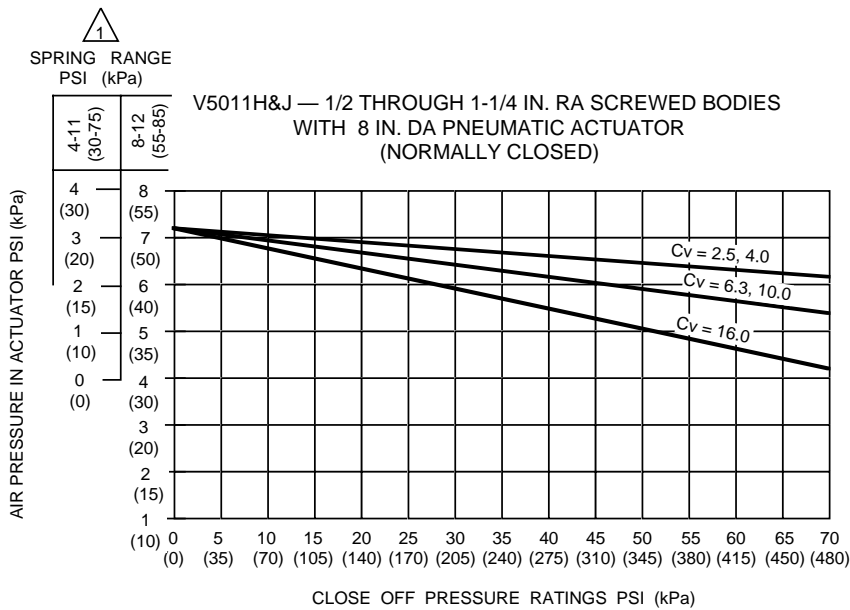
C3124-2

**Fig. 7. Close-Off Pressures at Various Control Air Pressures for V5011 Valves and MP953 Pneumatic Actuators. (Continued)**



1 USE 4-11 PSI (30-75 kPa) RANGE FOR DETERMINING CLOSE-OFF OF VALVES USED WITH MP953E ACTUATORS.

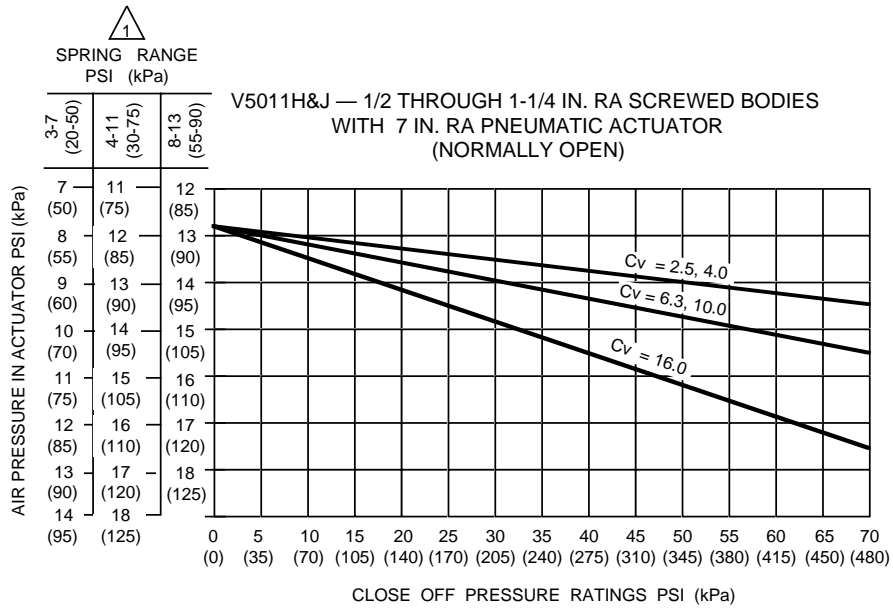
C1746-3



1 USE 4-11 PSI (30-75 kPa) RANGE FOR DETERMINING CLOSE-OFF OF VALVES USED WITH MP953E ACTUATORS.

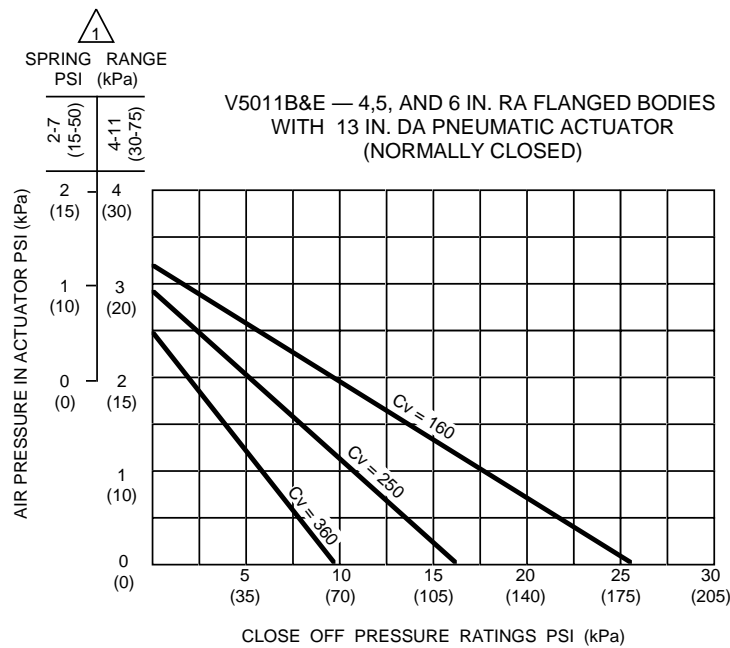
C1747-3

**Fig. 7. Close-Off Pressures at Various Control Air Pressures for V5011 Valves and MP953 Pneumatic Actuators. (Continued)**



1 USE 8-13 PSI (55-90 kPa) RANGE FOR DETERMINING CLOSE-OFF OF VALVES USED WITH MP953F ACTUATORS.

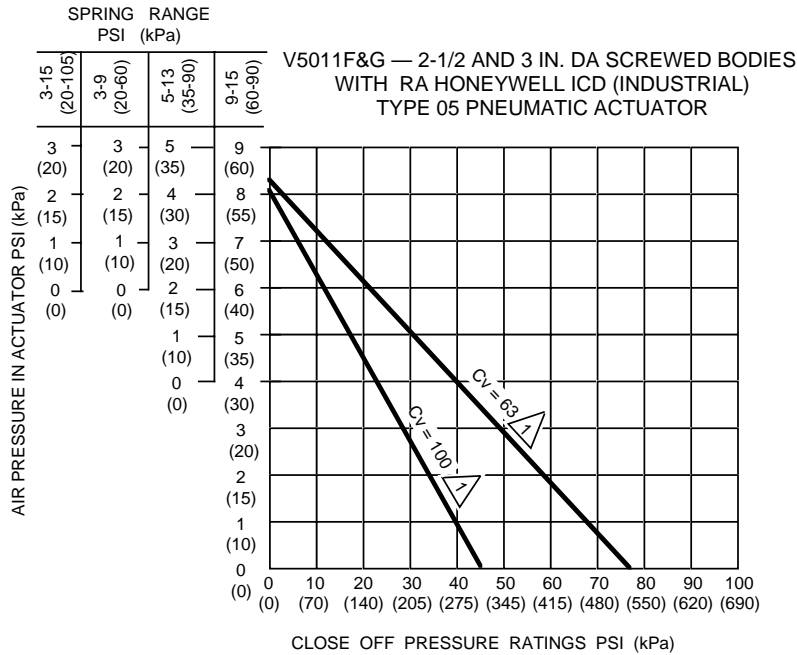
C1745-2



1 USE 4-11 PSI (30-75 kPa) RANGE FOR DETERMINING CLOSE-OFF OF VALVES USED WITH MP953E ACTUATORS.

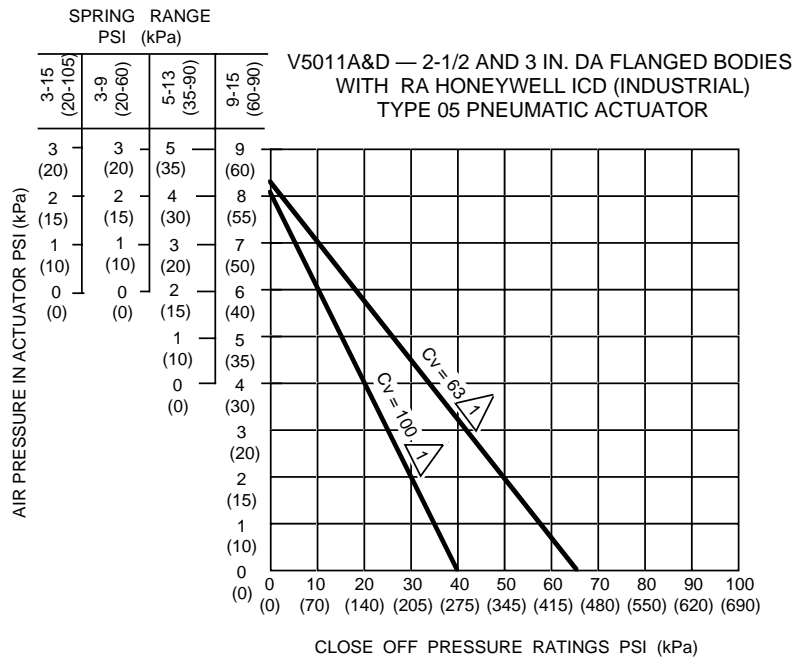
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**Fig. 7. Close-Off Pressures at Various Control Air Pressures for V5011 Valves and MP953 Pneumatic Actuators. (Continued)**



1 DUE TO DIFFERENCES IN VALVE BODY CONSTRUCTION, SCREWED AND FLANGED PATTERNS HAVE DIFFERENT CLOSE-OFF RATINGS. THIS APPLIES TO 2-1/2 AND 3 IN. VALVE SIZES.

C3117-1



1 DUE TO DIFFERENCES IN VALVE BODY CONSTRUCTION, SCREWED AND FLANGED PATTERNS HAVE DIFFERENT CLOSE-OFF RATINGS. THIS APPLIES TO 2-1/2 AND 3 IN. VALVE SIZES.

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Fig. 8. Close-Off Pressures at Various Control Air Pressures for V5011 Valves and Type 05 Pneumatic Actuators.

Table 4. Pneumatic Actuator Selection.

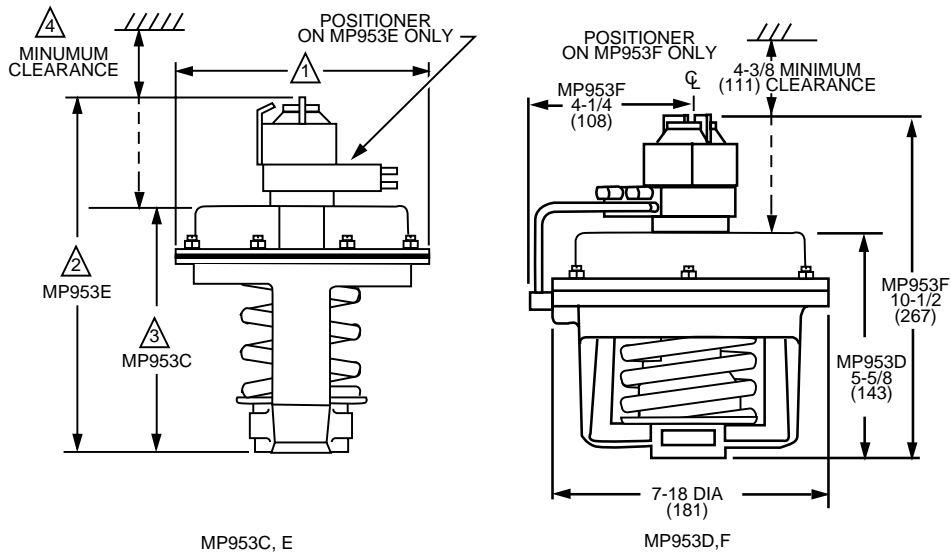
Valve Model	Size in Inches	3/4 In. Stroke								1-1/2 In. Stroke		
		With Positioner (Actuator Dia in In.)					Without Positioner (Actuator Dia in In.)			With Positioner (Actuator Dia in In.)	Without Positioner (Actuator Dia in In.)	
		DA MP953E		RA MP953F	DA or RA Industrial Type 05	DA MP953C		RA MP953D	DA MP953E	DA MP953C		
		5	8	13		7-1/8	5	8	13	7-1/8	13	13
V5011A	2-1/2	—	X	X	X	X	—	X	X	X	—	—
	3	—	X	X	X	X	—	X	X	X	—	—
	4	—	—	—	—	—	—	—	—	—	X	X
	5	—	—	—	—	—	—	—	—	—	X	X
	6	—	—	—	—	—	—	—	—	—	X	X
V5011B	4	—	—	—	—	—	—	—	—	—	X	X
	5	—	—	—	—	—	—	—	—	—	X	X
	6	—	—	—	—	—	—	—	—	—	X	X
V5011D	2-1/2	—	X	X	X	X	—	X	X	X	—	—
	3	—	X	X	X	X	—	X	X	X	—	—
	4	—	—	—	—	—	—	—	—	—	X	X
	5	—	—	—	—	—	—	—	—	—	X	X
	6	—	—	—	—	—	—	—	—	—	X	X
V5011E	4	—	—	—	—	—	—	—	—	—	X	X
	5	—	—	—	—	—	—	—	—	—	X	X
	6	—	—	—	—	—	—	—	—	—	X	X
V5011F	1/2	X	X	—	X	—	X	X	—	X	—	—
	3/4	X	X	—	X	—	X	X	—	X	—	—
	1	X	X	—	X	—	X	X	—	X	—	—
	1-1/4	X	X	—	X	—	X	X	—	X	—	—
	1-1/2	X	X	—	X	—	X	X	—	X	—	—
	2	X	X	—	X	—	X	X	—	X	—	—
	2-1/2	—	X	X	X	—	—	X	X	X	—	—
	3	—	X	X	X	X	—	X	X	X	—	—
V5011G	1/2	X	X	—	X	—	X	X	—	X	—	—
	3/4	X	X	—	X	—	X	X	—	X	—	—
	1	X	X	—	X	—	X	X	—	X	—	—
	1-1/4	X	X	—	X	—	X	X	—	X	—	—
	1-1/2	X	X	—	X	—	X	X	—	X	—	—
	2	X	X	—	X	—	X	X	—	X	—	—
	2-1/2	—	X	X	X	—	—	X	X	X	—	—
	3	—	X	X	X	X	—	X	X	X	—	—
V5011H, V5011J	1/2	X	X	—	X	—	X	X	—	X	—	—
	3/4	X	X	—	X	—	X	X	—	X	—	—
	1	X	X	—	X	—	X	X	—	X	—	—
	1-1/4	X	X	—	X	—	X	X	—	X	—	—

Table 5. Electric Actuator and Linkage Selection.

Linkage (lbf)	Linkage Model/Usage	Spring Return	Torque (lb-in.)	2-Position Model†	Floating Model†	Proportional Model†
80	Q5001A	Yes	25	M8175	—	—
160	Q5001A for 3 in. & smaller valves	Yes	60	M8185	M6285	M7285§
				M8186	M6286	M7286§
		No	75	—	M6174	M7274§
		No	150	—	M6184	M7284§
160	Q5001B for 4, 5, & 6 in. Valves	No	150	—	M6184	M7284§
320	Q5001A for 3 in. & smaller valves	No	300	—	M6194	M7294§
	Q5001B for 4, 5, & 6 in. valves					
80	Integral	—	—	ML684	ML684	—
160	Integral	—	—	ML684	ML684	ML784

Linkage (lbf)	Minimum Actuator Torque Required for Linkage	
	1/2 In. Through 3 In. Valve Sizes (lb-in.)	4, 5, 6 In. Valve Sizes
80	25	—
160	50	100
320	300	300

†Actuator shaft rotation must be 160 degrees  
§2 to 10V dc



OPERATION SIZE NOMINAL DIA	△1	△2	△3	△4
5-INCH	5-1/8 (130)	9-1/4 (235)	4-5/8 (117)	4-3/8 (111)
8-INCH	8-1/4 (210)	11-1/8 (283)	6-1/2 (165)	5-3/8 (137)
13-INCH	13-1/2 (343)	18-1/8 (460)	10 (254)	7-11/16 (195)

C7963

Fig. 9. MP953C-F Pneumatic Actuator Dimensions in Inches (Millimeters).

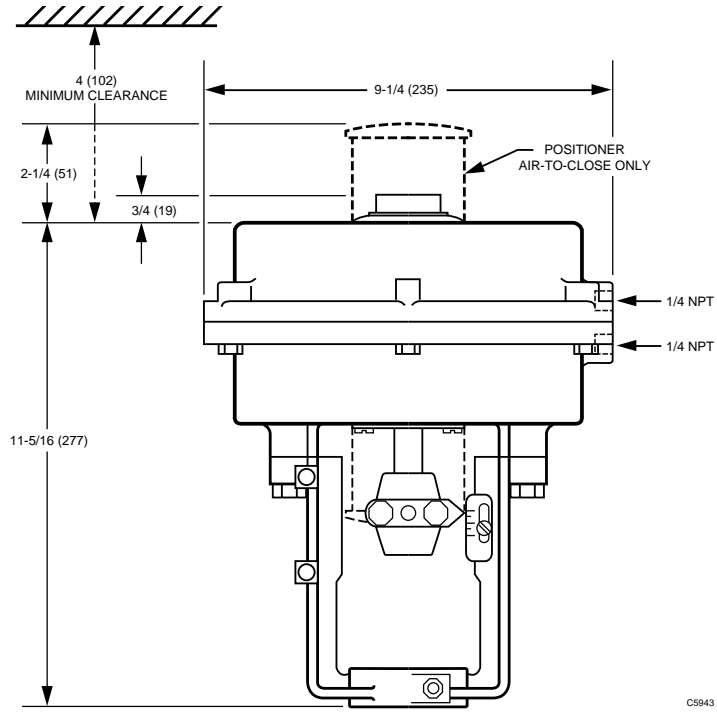


Fig. 10. Type 05 Pneumatic Actuator Dimensions in Inches (Millimeters).

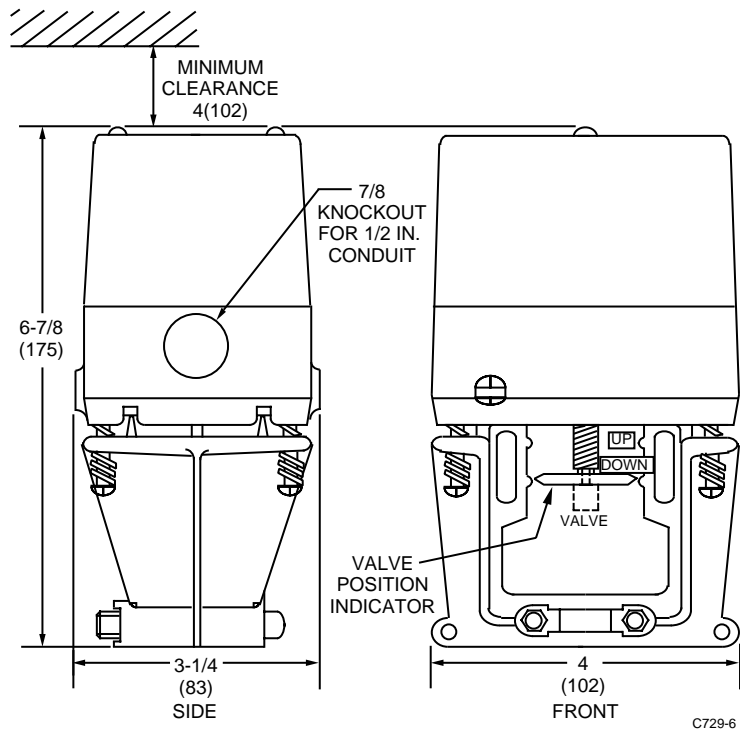


Fig. 11. Versadrive Actuator Dimensions in Inches (Millimeters).

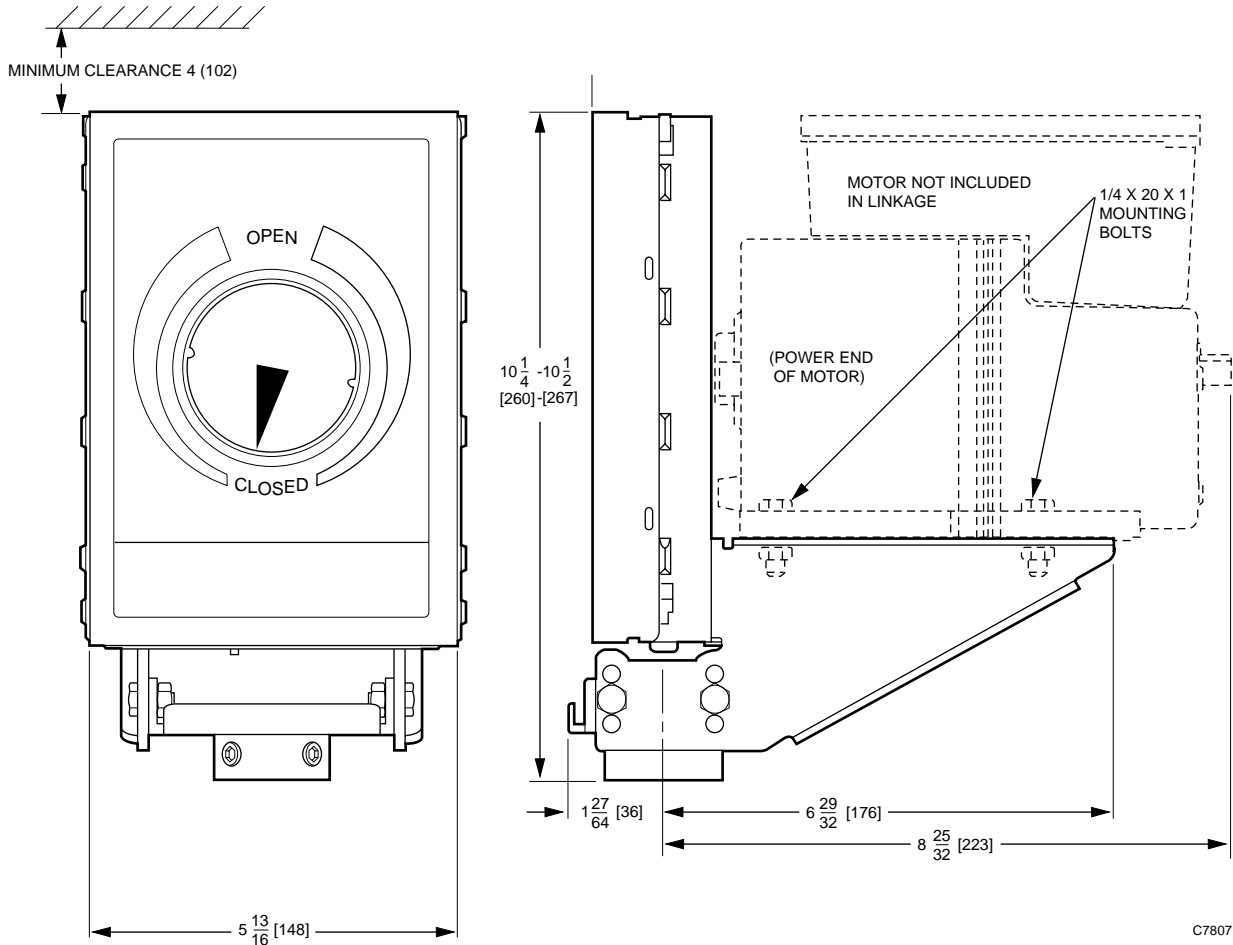


Fig. 12. Q5001 Linkage with High Torque Spring-Return Modutrol IV Motor.

**Home and Building Control**

Honeywell Inc.  
 Honeywell Plaza  
 P.O. Box 524  
 Minneapolis MN 55408-0524

**Honeywell Latin American Division**

Miami Lakes Headquarters  
 14505 Commerce Way Suite 500  
 Miami Lakes FL 33016

**Home and Building Control**

Honeywell Limited-Honeywell Limitée  
 155 Gordon Baker Road  
 North Oak, Ontario  
 M2H 2C9

**Honeywell Europe S.A.**

3 Avenue du Bourget  
 B-1140 Brussels Belgium

**Honeywell Asia Pacific Inc.**

Room 3213-3225  
 Sun Hung kai Centre  
 No. 30 Harbour Road  
 Wanchai  
 Hong Kong

**Honeywell**

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