

Model 361 Control Valves

Technical Sales Bulletin



Figure 1 Model 361 Control Valve

The Model 361 control valve (Figure 1) is a heavy-duty globe style control valve. These valves are used in all kinds of demanding applications, including oil and gas production and chemical process industries.

Model 361 control valves are cage guided, single port valves that can be used for either throttling or on-off control of either liquids or gasses.

The standard actuator for the Model 361 valve is a Dyna-Flo model DFC or DFO linear actuator. These heavy-duty actuators are spring return diaphragm style, and can be used for throttling or on-off service, with or without a valve positioner.

Model 361 control valves are manufactured to a high level of quality specifications to ensure superior performance and customer satisfaction.

FEATURES

Sour Service Capability

Available in standard configurations that comply with NACE MR0175-2002.

Versatility

A wide range of trim options including Low-Noise and Anti-Cavitation make the 361 our most versatile control valve.

Field Service Friendly

No special tools are required to change or inspect trim. Top access makes in-line service easy.

Pressure Drop Capabilities

Model 361 control valves can shut off against inlet pressures equal to the ASME B16.34 rating.

Industrial High Quality External Coatings

Our standard industrial high quality external coatings provide long lasting resistance to the harshest environments.

Shut Off Capability

Shut off options are available from ASME / FCI Class II, III, & IV.

Emissions Reducing Packing

Help prevent the loss of process media and reduce packing maintenance with the use of Dyna-Flo's Live Loaded PTFE packing systems.



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SPECIFICATIONS

Configurations

The Model 361 control valve is a high capacity single port, globe style valves, with a bolted type bonnet. The standard valve plug action is push down to close.

Consult your Dyna-Flo sales office for other available configurations.

Sizes and Connection Styles

Models: 361
 Size: 1", 1-1/2", 2", 3", 4", 6", 8"
 Body: Globe (All Sizes), Angle (1" to 6")
 Rating: ASME 150 / 300 / 600
 Connections: RF / RTJ / BWE - All Sizes
 NPT and SWE - 1", 1-1/2" and 2"

Maximum Inlet Temperature and Pressures

Flanged valves consistent with ASME Class rating as per ASME B16.34, unless limited by either material pressure and temperature limitations.

Maximum Pressure Drops

Maximum pressure drop is the same as maximum inlet pressure unless otherwise rated by a specific trim construction.

Standard Shut-off Classifications

In accordance with ASME / FCI 70.2
 Standard Class II (See Table 1).

Flow Direction

Flow Down (Low Noise Trim - Flow Up).

Dimensions

Valve and Actuator Outline Dimension Diagram

See Figure 2.

Valve and Actuator Assembly Dimensions

See Tables 6 to 16.

Approximate Valve Body and Actuator Weights

See Table 5 of Sales Bulletin.

Materials

Body and bonnet material options include LCC, WCC, and CF8M. See Figure 5 for typical construction materials. See Table 28 for trim selections.

Cross-Section of the Model 360 Control Valves

See Figure 3.

Port Diameters and Maximum Valve Plug Travel

See Tables 2 to 4.

Packing Type

The Standard packing is PTFE V-ring. Live-loaded low emission, graphite and other packing arrangements are available.

Valve Sizing Coefficients

For Globe Body valves see Tables 17 to 24.
 For Angle Body valves see Tables 25 & 26.

Actuator Sizing

Fail Open Actuator

See Table 32.

Fail Close Actuator

See Table 33.

Service Application

See Tables 28, 29, 30, and 31.

For more information and other options contact your Dyna-Flo sales office.

Valve Shutoff Classifications			Table 1
Valve Model	Shut Off Capability	Port Diameter Inch (mm)	Seal Rings
361	Class II Standard	1-5/16 - 8 (33 - 203)	Standard with Single Graphite Piston Rings
	Class III	3-7/16 (87) or larger	Optional for Single Graphite Piston Rings
	Class IV	4-3/8 (111) or larger	Multiple Graphite Piston Rings

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Table 2

Globe Valve Size, Port Diameters, Plug Travel, Stem and Yoke Boss Diameters

Port	Valve Size	Port Diameter		Max Valve Plug Travel		Standard Yoke Boss Diameter (YBD)			
						Stem Diameter		YBD	
		Inch	Inch	mm	Inch	mm	Inch	mm	Inch
Full Port	1	1-5/16	33.3	3/4	19.1	3/8	9.5	2-1/8	54.0
	1-1/2	1-7/8	33.3	3/4	19.1	3/8	9.5	2-1/8	54.0
	2	2-5/16	58.7	1-1/8	28.6	1/2	12.7	2-13/16	71.4
	3	3-7/16	87.3	1-1/2	38.1	1/2	12.7	2-13/16	71.4
	4	4-3/8	111.1	2	50.8	1/2	12.7	2-13/16	71.4
	6	7	177.7	2	50.8	3/4	19.1	3-9/16	90.5
Reduced Port	8	8	203.2	3	76.2	3/4	19.1	3-9/16	90.5
	1-1/2	1-5/16	33.3	3/4	19.1	3/8	9.5	2-1/8	54.0
	2	1-5/16	33.3	3/4	19.1	1/2	12.7	2-13/16	71.4
	3	2-5/16	58.7	1-1/8	28.6	1/2	12.7	2-13/16	71.4
	4	2-7/8	73.0	1-1/2	38.1	1/2	12.7	2-13/16	71.4
	6	4-3/8	111.1	2	50.8	3/4	19.1	3-9/16	90.5

Table 3

Anti-Cavitation Valve Size, Port Diameters, Plug Travel, Stem and Yoke Boss Diameters

Valve Size	1 Stage				2 Stage				Standard Yoke Boss Diameter (YBD)			
	Port Diameter		Max Valve Plug Travel		Port Diameter		Max Valve Plug Travel		Stem Diameter		YBD	
	Inch	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch
1	1-5/16	33.3	1	25.4	1	25.4	1	25.4	3/8	9.5	2-1/8	54.0
1-1/2	1-7/8	47.6	7/8	22.2	1-5/16	33.3	1-1/2	38.1	3/8	9.5	2-1/8	54.0
2	2-5/16	58.7	1-1/8	28.6	1-7/8	47.6	2	50.8	1/2	12.7	2-13/16	71.4
3	3-7/16	87.3	1-5/8	41.3	2-7/8	73.0	3	76.2	1/2	12.7	2-13/16	71.4
4	4-3/8	111.1	2-1/8	54.0	2-7/8	73.0	4	101.6	1/2	12.7	2-13/16	71.4
6	7	177.8	2-1/4	57.2	5-3/8	136.5	4	101.6	3/4	19.1	3-9/16	90.5
8	8	203.2	3-3/8	85.7	7	177.8	6	152.4	3/4	19.1	3-9/16	90.5

Table 4

Angle Valve Size, Port Diameters, Plug Travel, Stem and Yoke Boss Diameters

Port	Valve Size	Port Diameter		Max Valve Plug Travel		Standard Yoke Boss Diameter (YBD)			
						Stem Diameter		YBD	
		Inch	Inch	mm	Inch	mm	Inch	mm	Inch
Full Port	1	1-5/16	33.3	3/4	19.1	3/8	9.5	2-1/8	54.0
	2	1-7/8	47.6	3/4	19.1	3/8	9.5	2-1/8	54.0
	3	2-7/8	73.0	1-1/2	38.1	1/2	12.7	2-13/16	71.4
	4	3-7/16	87.3	1-1/2	38.1	1/2	12.7	2-13/16	71.4
	6	4-3/8	111.1	2	50.8	1/2	12.7	2-13/16	71.4
Reduced Port	2	1-5/16	33.3	3/4	19.1	3/8	9.5	2-1/8	54.0
	4	2-5/16	58.7	1-1/8	28.6	1/2	12.7	2-13/16	71.4
	6	2-7/8	73.0	1-1/2	38.1	1/2	12.7	2-13/16	71.4



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Table 5

Valve Body / Actuator Configurations and Approximate Weights

Valve Size (inch)	Body Only lb (Kg)	With Fail Open Actuator Size	Valve and Actuator Assembly Weight lb (Kg)	With Fail Closed Actuator Size	Valve and Actuator Assembly Weight lb (Kg)
1	30 (14)	DFO - 1069	70 (32)	DFC - 1069	78 (26)
1-1/2	45 (20)	DFO - 1069	85 (39)	DFC - 1069	93 (42)
2	85 (39)	DFO - 2069	136 (62)	DFC - 2069	135 (61)
		DFO - 2105	167 (76)	DFC - 2105	175 (78)
3	125 (57)	DFO - 2069	176 (80)	DFC - 2069	175 (78)
		DFO - 2105	207 (94)	DFC - 2105	215 (98)
4	170 (77)	DFO - 2105	252 (114)	DFC - 2105	260 (118)
		DFO - 2156	277 (126)	DFC - 2156	291 (132)
6	350 (159)	DFO - 3156	466 (211)	DFC - 3156	471 (214)
		DFO - 3220	585 (266)	DFC - 3220	604 (275)
8	900 (408)	DFO - 3220	1135 (515)	DFC - 3220	1154 (523)

Table 6

Valve Body Dimensions with BWE* End Connection Inches (mm)

For 'C' Dimensions See Tables 12 to 16 on Pages 8 & 9.

Valve Size Inch	Globe Body		Angle Body
	A	B	A
1	8.25 (210)	2.38 (60)	4.12 (105)
1-1/2	9.75 (248)	2.81 (71)	—
2	11.12 (282)	3.06 (78)	5.62 (143)
3	13.25 (337)	3.81 (97)	6.62 (168)
4	15.50 (394)	5.06 (129)	7.75 (197)
6	20.00 (508)	5.51 (140)	10.00 (254)
8	24.00 (610)	7.50 (191)	—

*NOTE: BWE - Butt weld.

Table 7

Valve Body Dimensions with SWE* End Connection Inches (mm)

For 'C' Dimensions See Tables 12 to 16 on Pages 8 & 9.

Valve Size Inch	Globe Body		Angle Body
	A	B	A
1	8.25 (210)	2.38 (60)	4.12 (105)
1-1/2	9.88 (251)	2.81 (71)	—
2	11.25 (286)	3.06 (78)	5.62 (143)
3	—	—	6.62 (168)
4	—	—	7.75 (197)
6	—	—	10.00 (254)
8	—	—	—

*NOTE: SWE - Socket weld.

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Table 8

Angle Valve Body Dimensions with RF* End Connection Inches (mm)
 (Refer to Figure 2 on Page 10) (For 'C' Dimensions see Tables 15 & 16 on Page 9)

Valve Size Inch	End Connection	A
1 Inch	150	3.62 (92)
	300	3.88 (99)
	600	4.12 (105)
2 Inch	150	5.00 (127)
	300	5.25 (133)
	600	5.62 (143)
3 Inch	150	5.88 (149)
	300	6.25 (159)
	600	6.62 (168)
4 Inch	150	6.94 (176)
	300	7.25 (184)
	600	7.75 (197)
6 Inch	150	8.88 (226)
	300	9.31 (236)
	600	10.00 (254)

*NOTE: RF - Raised Face.

Table 9

Angle Valve Body Dimensions with RTJ* End Connection Inches (mm)
 (Refer to Figure 2 on Page 10) (For 'C' Dimensions see Tables 15 & 16 on Page 9)

Valve Size Inch	End Connection	A
1 Inch	150	3.88 (99)
	300	4.12 (105)
	600	4.12 (105)
2 Inch	150	5.25 (133)
	300	5.56 (141)
	600	5.69 (145)
3 Inch	150	6.12 (155)
	300	6.56 (167)
	600	6.69 (170)
4 Inch	150	7.19 (183)
	300	7.56 (192)
	600	7.81 (198)
6 Inch	150	9.12 (232)
	300	9.62 (244)
	600	10.06 (256)

*NOTE: RTJ - Raised Type Joint.



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Table 10

Valve Assembly (RF End Connection) with Standard Actuator Envelope Dimensions Inches (mm)
(with common stem diameter) (Refer to Figure 2 on Page 10)

Valve Size	End Connection	Actuator Size	A	B	C*	D		E	
						DFC	DFO		
1 Inch	150	1069	7.25 (184)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)	
	300	1069	7.75 (197)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)	
	600	1069	8.25 (210)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)	
	NPT	1069	8.25 (210)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)	
1-1/2 Inch	150	1069	8.75 (222)	2.81 (71)	4.88 (124)	27.56 (700)	24.13 (613)	13.12 (333)	
	300	1069	9.25 (235)	2.81 (71)	4.88 (124)	27.56 (700)	24.13 (613)	13.12 (333)	
	600	1069	9.88 (251)	2.81 (71)	4.88 (124)	27.56 (700)	24.13 (613)	13.12 (333)	
	NPT	1069	9.88 (251)	2.81 (71)	4.88 (124)	27.56 (700)	24.13 (613)	13.12 (333)	
2 Inch	150	2069	10.00 (254)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)	
	150	2105	10.00 (254)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)	
	300	2069	10.50 (267)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)	
	300	2105	10.50 (267)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)	
	600	2069	11.25 (286)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)	
	600	2105	11.25 (286)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)	
	NPT	2069	11.25 (286)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)	
	NPT	2105	11.25 (286)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)	
3 Inch	150	2069	11.75 (299)	3.81 (97)	7.50 (191)	30.88 (784)	28.70 (729)	13.12 (333)	
	150	2105	11.75 (299)	3.81 (97)	7.50 (191)	37.75 (959)	33.22 (844)	16.00 (406)	
	300	2069	12.50 (318)	3.81 (97)	7.50 (191)	30.88 (784)	28.70 (729)	13.12 (333)	
	300	2105	12.50 (318)	3.81 (97)	7.50 (191)	37.75 (959)	33.22 (844)	16.00 (406)	
	600	2069	13.25 (337)	3.81 (97)	7.50 (191)	30.88 (784)	28.70 (729)	13.12 (333)	
	600	2105	13.25 (337)	3.81 (97)	7.50 (191)	37.75 (959)	33.22 (844)	16.00 (406)	
	4 Inch	150	2105	13.88 (353)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	16.00 (406)
		150	2156	13.88 (353)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (460)
300		2105	14.50 (368)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	16.00 (406)	
300		2156	14.50 (368)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (460)	
600		2105	15.50 (394)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	16.00 (406)	
600		2156	15.50 (394)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (460)	
600		3220	15.50 (394)	5.06 (129)	8.69 (221)*	45.17 (1147)	41.38 (1051)	21.10 (536)	
6 Inch	150	3156	17.75 (451)	5.50 (140)	9.88 (311)	40.79 (1036)	37.98 (888)	18.62 (473)	
	150	3220	17.75 (451)	5.50 (140)	9.88 (311)	46.36 (1178)	42.57 (1081)	21.10 (536)	
	300	3156	18.62 (473)	5.50 (140)	9.88 (311)	40.79 (1036)	37.98 (888)	18.62 (473)	
	300	3220	18.62 (473)	5.50 (140)	9.88 (311)	46.36 (1178)	42.57 (1081)	21.10 (536)	
	600	3156	20.00 (508)	5.50 (140)	9.88 (311)	40.79 (1036)	37.98 (888)	18.62 (473)	
	600	3220	20.00 (508)	5.50 (140)	9.88 (311)	46.36 (1178)	42.57 (1081)	21.10 (536)	
8 Inch	150	3220	21.38 (543)	7.50 (191)	16.56 (421)*	53.04 (1347)	49.25 (1251)	21.10 (536)	
	300	3220	22.38 (556)	7.50 (191)	16.56 (421)*	53.04 (1347)	49.25 (1251)	21.10 (536)	
	600	3220	24.00 (610)	7.50 (191)	16.56 (421)*	53.04 (1347)	49.25 (1251)	21.10 (536)	

*NOTE: 'C' dimensions (and 'D' dimensions) will vary depending on valve stem diameter, refer to Tables 12 to 16.

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Table 11

Valve Assembly (RTJ End Connection) with Standard Actuator Envelope Dimensions Inches (mm)
(with common stem diameter) (Refer to Figure 2 on Page 10)

Valve Size	End Connection	Actuator Size	A	B	C*	D		E	
						DFC	DFO		
1 Inch	150	1069	7.75 (197)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)	
	300	1069	8.25 (210)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)	
	600	1069	8.25 (210)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)	
	NPT	1069	8.25 (210)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)	
1-1/2 Inch	150	1069	9.25 (235)	2.81 (71)	4.88 (124)	27.56 (700)	24.13 (613)	13.12 (333)	
	300	1069	9.75 (248)	2.81 (71)	4.88 (124)	27.56 (700)	24.13 (613)	13.12 (333)	
	600	1069	9.88 (251)	2.81 (71)	4.88 (124)	27.56 (700)	24.13 (613)	13.12 (333)	
	NPT	1069	9.88 (251)	2.81 (71)	4.88 (124)	27.56 (700)	24.13 (613)	13.12 (333)	
2 Inch	150	2069	10.50 (267)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)	
	150	2105	10.50 (267)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)	
	300	2069	11.12 (282)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)	
	300	2105	11.12 (282)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)	
	600	2069	11.38 (289)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)	
	600	2105	11.38 (289)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)	
	NPT	2069	11.25 (286)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)	
	NPT	2105	11.25 (286)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)	
3 Inch	150	2069	12.25 (311)	3.81 (97)	7.50 (191)	30.88 (784)	28.70 (729)	13.12 (333)	
	150	2105	12.25 (311)	3.81 (97)	7.50 (191)	37.75 (959)	33.22 (844)	16.00 (406)	
	300	2069	13.12 (333)	3.81 (97)	7.50 (191)	30.88 (784)	28.70 (729)	13.12 (333)	
	300	2105	13.12 (333)	3.81 (97)	7.50 (191)	37.75 (959)	33.22 (844)	16.00 (406)	
	600	2069	13.38 (340)	3.81 (97)	7.50 (191)	30.88 (784)	28.70 (729)	13.12 (333)	
	600	2105	13.38 (340)	3.81 (97)	7.50 (191)	37.75 (959)	33.22 (844)	16.00 (406)	
	4 Inch	150	2105	14.38 (365)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	16.00 (406)
		150	2156	14.38 (365)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (460)
300		2105	15.12 (384)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	16.00 (406)	
300		2156	15.12 (384)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (460)	
600		2105	15.62 (397)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	16.00 (406)	
600		2156	15.62 (397)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (460)	
600		3220	15.62 (397)	5.06 (129)	8.69 (221)*	45.17 (1147)	41.38 (1051)	21.10 (536)	
6 Inch	150	3156	18.25 (464)	5.50 (140)	9.88 (311)	40.79 (1036)	37.98 (888)	18.62 (473)	
	150	3220	18.25 (464)	5.50 (140)	9.88 (311)	46.36 (1178)	42.57 (1081)	21.10 (536)	
	300	3156	19.25 (489)	5.50 (140)	9.88 (311)	40.79 (1036)	37.98 (888)	18.62 (473)	
	300	3220	19.25 (489)	5.50 (140)	9.88 (311)	46.36 (1178)	42.57 (1081)	21.10 (536)	
	600	3156	20.12 (511)	5.50 (140)	9.88 (311)	40.79 (1036)	37.98 (888)	18.62 (473)	
	600	3220	20.12 (511)	5.50 (140)	9.88 (311)	46.36 (1178)	42.57 (1081)	21.10 (536)	
8 Inch	150	3220	21.88 (556)	7.50 (191)	16.56 (421)*	53.04 (1347)	49.25 (1251)	21.10 (536)	
	300	3220	23.00 (584)	7.50 (191)	16.56 (421)*	53.04 (1347)	49.25 (1251)	21.10 (536)	
	600	3220	24.12 (613)	7.50 (191)	16.56 (421)*	53.04 (1347)	49.25 (1251)	21.10 (536)	

*NOTE: 'C' dimensions (and 'D' dimensions) will vary depending on valve stem diameter, refer to Tables 12 to 16.



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Table 12

Valve Dimensions for Standard Bonnet Assembly - Inches (mm) (Refer to Figure 2, Page)
 For Valve Dimensions with Anti-Cavitation 2 Stage Trim See Table 13.

Valve Size (Inch)	C			
	3/8 (9.5) Stem Diameter	1/2 (12.7) Stem Diameter	3/4 (19.1) Stem Diameter	1 (25.4) Stem Diameter
1	5.00 (127)	5.88 (149)	—	—
1-1/2	4.88 (124)	5.75 (146)	—	—
2	—	6.50 (165)	6.38 (162)	—
3	—	7.50 (191)	7.38 (187)	—
4	—	8.69 (221)	8.56 (217)	10.38 (264)
6	—	—	9.88 (251)	10.62 (270)
6 ⁽¹⁾	—	—	12.26 (312)	13.00 (330)
8	—	—	See Style 1 in Table	
NOTES:	1 - Dimensions for Low-Noise trim.			
	2 - With WCC body.			

Table 13

Valve Dimensions for Standard Bonnet Assembly with Anti-Cavitation 2 Stage Trim
 Inches (mm) (Refer to Figure 2, Page 10)

Valve Size (Inch)	C			
	3/8 (9.5) Stem Diameter	1/2 (12.7) Stem Diameter	3/4 (19.1) Stem Diameter	1 (25.4) Stem Diameter
1	—	7.25 (184)	—	—
1-1/2	6.09 (155)	6.97 (177)	—	—
2	—	7.91 (201)	7.78 (198)	—
3	—	10.22 (260)	10.09 (256)	—
4	—	12.25 (311)	12.12 (308)	13.94 (354)
6	—	—	13.22 (336)	14.97 (380)
8	—	—	20.12 (511)	22.06 (560)

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Table 14

Extension Bonnet Valve Dimensions - Inches (mm) (Refer to Figure 2, Page)
For Anti-Cavitation 2 Stage Dimensions See Table 13.

Valve Size (Inch)	C						
	Stem Diameter Inch (mm)						
	Style 1 - Standard for 8 inch				Style 2		
	3/8 (9.5)	1/2 (12.7)	3/4 (19.1)	1 (25.4)	3/8 (9.5)	1/2 (12.7)	3/4 (19.1)
1	8.38 (213)	9.88 (251)	—	—	11.94 (303)	12.56 (319)	—
1-1/2	8.25 (210)	9.75 (248)	—	—	11.81 (300)	12.44 (316)	—
2	—	10.50 (267)	10.69 (272)	—	—	18.31 (465)	—
3	—	11.50 (292)	11.69 (297)	—	—	19.50 (495)	19.19 (487)
4	—	12.69 (322)	12.88 (327)	14.56 (370)	—	20.69 (526)	20.38 (518)
6	—	—	14.06 (357)	15.81 (402)	—	—	21.38 (543)
6 ⁽¹⁾	—	—	16.44 (418)	18.19 (462)	—	—	23.76 (604)
8	—	—	16.56 (421)	17.75 (451)	—	—	24.44 (621)

NOTES: 1 - Dimensions for Low-Noise trim.

Table 15

Valve Dimensions for Angle Body Bonnet Assembly - Inches (mm) (Refer to Figure 2, Page 10)

Valve Size (Inch)	C			
	3/8 (9.5) Stem Diameter	1/2 (12.7) Stem Diameter	3/4 (19.1) Stem Diameter	1 (25.4) Stem Diameter
1	4.38 (111)	5.25 (133)	—	—
2	3.88 (99)	4.75 (121)	—	—
3	—	5.88 (149)	5.75 (146)	—
4	—	5.50 (140)	5.38 (137)	—
6	—	5.69 (145)	5.56 (141)	7.38 (187)

Table 16

Valve Dimensions for Angle Body Bonnet Assembly - Inches (mm) (Refer to Figure 2, Page 10)

Valve Size (Inch)	C					
	Stem Diameter Inch (mm)					
	Style 1 - Standard for 8 inch			Style 2		
	3/8 (9.5)	1/2 (12.7)	3/4 (19.1)	3/8 (9.5)	1/2 (12.7)	3/4 (19.1)
1	7.75 (197)	9.95 (253)	—	11.44 (291)	12.00 (305)	—
2	7.25 (184)	8.75 (222)	—	10.94 (278)	11.44 (291)	—
3	—	9.88 (251)	10.06 (256)	—	17.88 (454)	—
4	—	9.50 (241)	9.69 (170)	—	17.50 (445)	17.19 (437)
6	—	9.69 (246)	9.88 (251)	—	17.69 (449)	17.38 (441)

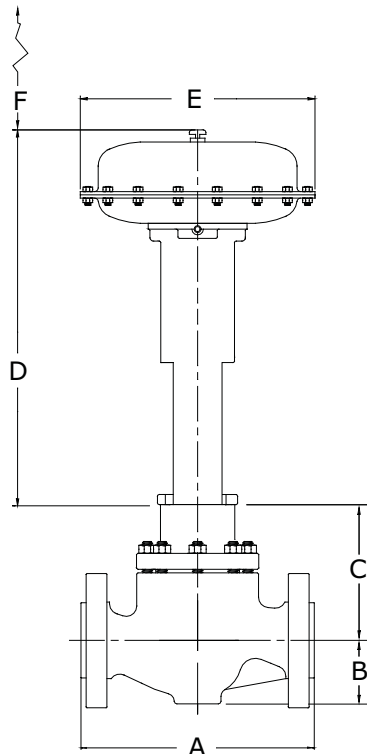
NOTE: For Low-Temp. bonnet dimensions, consult Dyna-Flo.



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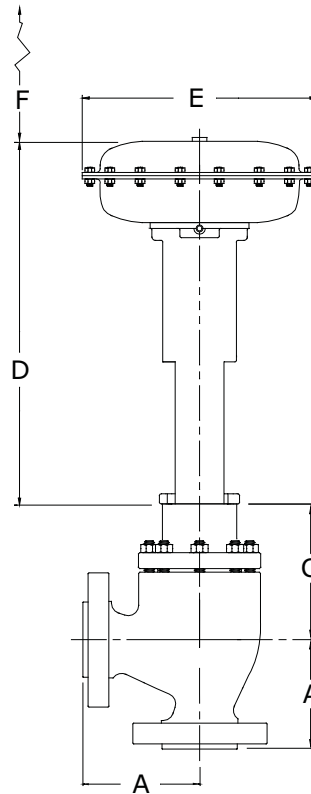
Technical Sales Bulletin

DFC
ACTUATOR



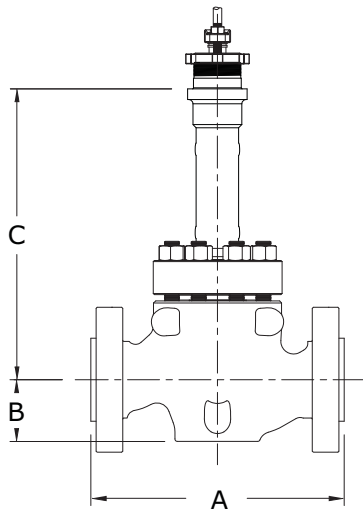
GLOBE BODY

DFO
ACTUATOR

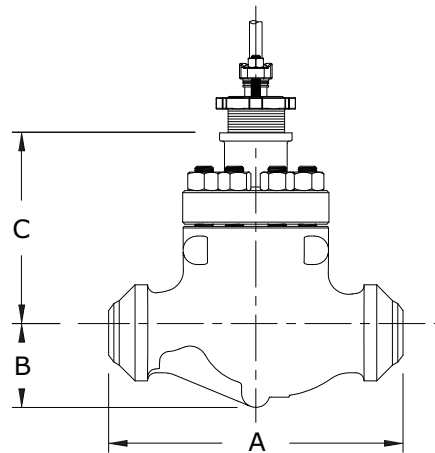


ANGLE BODY

STYLE 1
EXTENSION
BONNET



BUTTWELD
(BWE)



F Dimension

2" Valve - 6.88" (175 mm)

4" Valve - 9.12" (232 mm)

3" Valve - 6.88" (175 mm)

6" Valve - 9.12" (232 mm)

3" Valve - 9.12" (232 mm) For DFC/DFO 3156

Figure 2 Typical Valve Assembly Diagrams

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Table 17

Equal Percentage Trim Sizing Coefficients, Flow Down (Globe Body)

FULL SIZED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1	1-5/16 (33)	3/4 (19)	C _v	0.783	1.54	2.20	2.89	4.21	5.76	7.83	10.9	14.1	17.2
			X _T	0.77	0.61	0.59	0.94	0.67	0.69	0.74	0.76	0.73	0.67
			F _L	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
1-1/2	1-7/8 (48)	3/4 (19)	C _v	1.52	2.63	3.87	5.41	7.45	11.2	17.4	24.5	30.8	35.8
			X _T	0.77	0.61	0.59	0.67	0.67	0.69	0.74	0.76	0.73	0.67
			F _L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
2	2-5/16 (59)	1-1/8 (29)	C _v	1.66	2.93	4.66	6.98	10.8	16.5	25.4	37.3	50.7	59.7
			X _T	0.83	0.83	0.77	0.73	0.69	0.68	0.70	0.74	0.69	0.69
			F _L	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
3	3-7/16 (87)	1-1/2 (38)	C _v	4.32	7.53	10.9	17.1	27.2	43.5	66.0	97.0	120	136
			X _T	0.77	0.71	0.68	0.64	0.62	0.60	0.66	0.69	0.67	0.68
			F _L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
4	4-3/8 (111)	2 (51)	C _v	5.85	11.6	18.3	30.2	49.7	79.7	125	171	205	224
			X _T	0.73	0.65	0.64	0.65	0.63	0.63	0.67	0.74	0.74	0.72
			F _L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
6	7 (178)	2 (51)	C _v	12.9	25.8	43.3	67.4	104	162	239	316	368	394
			X _T	0.69	0.68	0.68	0.71	0.70	0.72	0.74	0.74	0.78	0.78
			F _L	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
8	8 (203)	2 (51)	C _v	18.5	38.0	58.4	86.7	130	189	268	371	476	567
			X _T	0.73	0.62	0.60	0.59	0.58	0.59	0.59	0.61	0.67	0.72
			F _L	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
8	8 (203)	3 (76)	C _v	27.0	58.1	105	188	307	478	605	695	761	818
			X _T	0.64	0.65	0.64	0.61	0.64	0.62	0.73	0.81	0.80	0.81
			F _L	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86

REDUCED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1-1/2	1-5/16 (33)	3/4 (19)	C _v	1.12	1.56	2.22	3.10	4.27	6.17	9.0	13.1	18.2	23.1
			X _T	0.82	0.86	0.82	0.70	0.72	0.68	0.67	0.64	0.65	0.70
			F _L	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
2	1-5/16 (33)	3/4 (19)	C _v	0.92	1.42	2.09	2.84	4.11	5.83	8.58	12.8	18.5	24.3
			X _T	0.78	0.74	0.74	0.71	0.72	0.71	0.71	0.64	0.62	0.65
			F _L	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
3	2-5/16 (59)	1-1/8 (29)	C _v	1.75	3.11	4.77	7.07	10.7	17.0	27.9	41.5	58.0	70.7
			X _T	0.94	0.84	0.80	0.76	0.74	0.64	0.53	0.61	0.63	0.70
			F _L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
4	2-7/8 (73)	1-1/2 (38)	C _v	3.82	7.65	11.4	16.9	25.5	38.2	60.5	85.7	105	112
			X _T	0.75	0.70	0.69	0.67	0.64	0.63	0.59	0.64	0.74	0.81
			F _L	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
6	4-3/8 (111)	2 (51)	C _v	5.40	10.1	15.8	26.7	45.2	71.2	110	169	232	274
			X _T	0.83	0.83	0.74	0.65	0.63	0.61	0.61	0.61	0.63	0.70
			F _L	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88

Relationships of note: $C_1 = 39.76\sqrt{X_T}$ $C_G = C_V C_1$ $K_M = F_L^2$



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Table 18

Quick Opening Trim Sizing Coefficients (Globe Body)

FULL SIZED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1	1-5/16 (33)	3/4 (19)	C_v	4.86	9.39	13.4	16.8	18.9	20.2	21.0	21.8	21.9	22.0
			X_T	0.555	0.744	0.724	0.665	0.626	0.584	0.566	0.550	0.553	0.555
			F_L	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
1-1/2	1-7/8 (48)	3/4 (19)	C_v	7.78	14.4	20.5	26.7	32.0	36.5	39.4	41.3	42.7	44.0
			X_T	0.493	0.640	0.680	0.680	0.685	0.660	0.649	0.638	0.616	0.597
			F_L	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
2	2-5/16 (59)	1-1/8 (29)	C_v	13.4	26.8	39.8	51.2	62.8	70.6	73.7	75.6	76.8	77.6
			X_T	0.605	0.695	0.737	0.760	0.702	0.658	0.640	0.635	0.626	0.623
			F_L	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
3	3-7/16 (87)	1-1/2 (38)	C_v	27.1	52.2	77.8	99.5	124	140	148	154	158	161
			X_T	0.626	0.672	0.745	0.796	0.703	0.657	0.619	0.602	0.590	0.577
			F_L	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
4	4-3/8 (111)	2 (51)	C_v	37.7	75.0	125	162	193	220	238	247	251	251
			X_T	0.623	0.689	0.733	0.764	0.762	0.723	0.689	0.669	0.683	0.694
			F_L	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
6	7 (178)	2 (51)	C_v	73.6	150	232	306	353	389	416	441	451	460
			X_T	0.664	0.651	0.667	0.694	0.722	0.742	0.728	0.723	0.719	0.710
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
8	8 (203)	2 (51)	C_v	80.2	188	290	389	480	554	615	658	705	744
			X_T	0.670	0.628	0.678	0.730	0.766	0.806	0.829	0.859	0.863	0.866
			F_L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
8	8 (203)	3 (76)	C_v	135	290	434	550	639	706	759	807	840	863
			X_T	0.643	0.699	0.757	0.807	0.838	0.861	0.857	0.841	0.838	0.827
			F_L	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85

REDUCED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1-1/2	1-5/16 (33)	3/4 (19)	C_v	5.05	9.99	14.7	20.0	24.0	25.6	26.1	27.4	28.6	29.9
			X_T	0.803	0.904	0.946	0.872	0.838	0.848	0.872	0.831	0.795	0.756
			F_L	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
2	1-5/16 (33)	3/4 (19)	C_v	4.80	9.58	14.8	20.1	25.7	29.3	31.2	31.2	31.2	31.2
			X_T	0.578	0.733	0.695	0.698	0.665	0.689	0.735	0.791	0.805	0.805
			F_L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
3	2-5/16 (59)	1-1/8 (29)	C_v	15.9	31.7	47.2	60.7	74.4	83.6	87.2	89.5	91.0	91.8
			X_T	0.718	0.838	0.889	0.905	0.842	0.784	0.763	0.760	0.744	0.744
			F_L	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
4	2-7/8 (73)	1-1/2 (38)	C_v	25.0	47.2	70.1	88.5	101	116	123	127	128	130
			X_T	0.707	0.879	0.948	0.988	0.956	0.875	0.851	0.834	0.840	0.834
			F_L	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
6	4-3/8 (111)	2 (51)	C_v	52.2	101	150	199	246	284	310	329	345	358
			X_T	0.774	0.763	0.770	0.778	0.763	0.760	0.717	0.699	0.707	0.690
			F_L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87

Relationships of note:

$$C_1 = 39.76 \sqrt{X_T}$$

$$C_G = C_V C_1$$

$$K_M = F_L^2$$

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Table 19

Linear Trim Sizing Coefficients (Globe Body)

FULL SIZED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1	1-5/16 (33)	3/4 (19)	C_V	3.20	5.50	8.18	10.9	13.2	15.0	16.9	18.6	19.9	20.6
			X_T	0.340	0.644	0.494	0.509	0.532	0.580	0.610	0.629	0.628	0.636
			F_L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
1-1/2	1-7/8 (48)	3/4 (19)	C_V	4.23	7.84	11.8	15.8	20.4	25.2	30.1	34.7	37.2	39.2
			X_T	0.656	0.709	0.758	0.799	0.738	0.729	0.708	0.686	0.683	0.656
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
2	2-5/16 (59)	1-1/8 (29)	C_V	7.87	16.0	24.8	33.4	42.0	51.8	62.0	68.1	70.6	72.9
			X_T	0.641	0.720	0.728	0.767	0.793	0.754	0.683	0.658	0.652	0.638
			F_L	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77	0.77
3	3-7/16 (87)	1-1/2 (38)	C_V	14.5	32.9	52.1	70.4	88.5	105	118	133	142	148
			X_T	0.671	0.699	0.697	0.720	0.733	0.718	0.707	0.650	0.630	0.620
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
4	4-3/8 (111)	2 (51)	C_V	23.3	50.3	78.0	105	127	152	181	203	223	236
			X_T	0.690	0.714	0.720	0.731	0.764	0.757	0.748	0.762	0.732	0.688
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
6	7 (178)	2 (51)	C_V	46.2	107	171	228	279	327	367	402	420	433
			X_T	0.656	0.727	0.744	0.781	0.802	0.800	0.784	0.758	0.755	0.740
			F_L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
8	8 (203)	2 (51)	C_V	60.1	129	206	285	363	444	526	581	640	688
			X_T	0.704	0.721	0.657	0.650	0.683	0.713	0.740	0.801	0.821	0.839
			F_L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
8	8 (203)	3 (76)	C_V	91.3	207	325	440	550	639	711	760	795	846
			X_T	0.651	0.624	0.676	0.746	0.786	0.803	0.823	0.836	0.843	0.807
			F_L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87

REDUCED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1-1/2	1-5/16 (33)	3/4 (19)	C_V	2.91	5.70	9.05	12.5	15.6	18.5	21.0	23.9	26.8	29.1
			X_T	0.690	0.650	0.633	0.634	0.650	0.665	0.708	0.718	0.737	0.733
			F_L	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
2	1-5/16 (33)	3/4 (19)	C_V	3.52	6.36	9.92	13.3	16.5	19.7	22.7	25.6	29.3	33.3
			X_T	0.456	0.529	0.549	0.582	0.611	0.633	0.670	0.723	0.727	0.693
			F_L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
3	2-5/16 (59)	1-1/8 (29)	C_V	8.05	16.8	26.7	37.5	49.0	61.4	73.8	85.3	94.7	102
			X_T	0.592	0.614	0.662	0.672	0.674	0.676	0.694	0.722	0.736	0.732
			F_L	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
4	2-7/8 (73)	1-1/2 (38)	C_V	9.77	22.6	37.2	51.8	65.7	77.5	87.5	97.9	107	113
			X_T	0.926	0.899	0.873	0.904	0.919	0.962	0.972	0.937	0.891	0.872
			F_L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
6	4-3/8 (111)	2 (51)	C_V	16.7	38.6	65.4	93.7	123	156	194	244	290	322
			X_T	0.762	0.698	0.675	0.684	0.681	0.660	0.676	0.657	0.685	0.703
			F_L	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88

Relationships of note: $C_1 = 39.76\sqrt{X_T}$ $C_G = C_V C_1$ $K_M = F_L^2$



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Table 20

Low Noise 1 (Linear) Trim Sizing Coefficients (Globe Body)

FULL SIZED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1	1-5/16 (33)	3/4 (19)	C_V	3.28	7.39	12.0	14.2	14.9	15.3	15.7	16.0	16.4	16.8
			X_T	0.581	0.605	0.617	0.644	0.764	0.790	0.809	0.813	0.795	0.768
1-1/2	1-7/8 (48)	3/4 (19)	C_V	2.62	7.42	13.9	20.8	23.1	24.2	24.9	25.4	26.1	26.7
			X_T	0.890	0.766	0.632	0.498	0.614	0.771	0.876	0.919	0.900	0.894
2	2-5/16 (59)	1-1/8 (29)	C_V	7.30	19.2	34.6	42.2	45.5	47.0	47.1	47.2	47.2	48.0
			X_T	0.604	0.467	0.318	0.387	0.526	0.689	0.843	0.899	0.940	0.938
3	3-7/16 (87)	1-1/2 (38)	C_V	16.5	40.3	70.8	88.0	92.1	90.7	90.3	92.6	95.6	99.1
			X_T	0.685	0.471	0.331	0.378	0.532	0.753	0.929	0.983	0.968	0.923
4	4-3/8 (111)	2 (51)	C_V	33.9	76.6	117	135	137	137	140	149	157	169
			X_T	0.607	0.385	0.352	0.467	0.682	0.887	0.977	0.958	0.921	0.811
6	7 (178)	2 (51)	C_V	55.8	125	196	245	270	286	297	308	323	338
			X_T	0.294	0.323	0.286	0.322	0.406	0.494	0.579	0.644	0.673	0.662
8 ¹	8 (203)	3 (76)	C_V	100	226	337	436	502	581	641	655	659	681
			X_T	0.456	0.490	0.470	0.427	0.452	0.468	0.521	0.624	0.703	0.701
8	8 (203)	4 (102)	C_V	142	303	428	542	611	652	669	689	700	726
			X_T	0.549	0.450	0.436	0.441	0.513	0.624	0.707	0.709	0.729	0.718

REDUCED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1-1/2	1-5/16 (33)	3/4 (19)	C_V	3.12	7.36	13.0	18.5	20.7	21.4	21.8	23.1	23.9	25.2
			X_T	0.559	0.605	0.460	0.383	0.472	0.622	0.768	0.823	0.874	0.857
2	1-5/16 (33)	3/4 (19)	C_V	2.86	6.79	11.7	18.4	23.6	27.9	30.9	33.5	35.3	36.7
			X_T	0.672	0.755	0.547	0.386	0.358	0.377	0.398	0.431	0.470	0.483
3	2-5/16 (59)	1-1/8 (29)	C_V	8.15	19.0	33.2	47.6	60.8	72.1	81.8	90.1	97.4	103
			X_T	0.720	0.660	0.500	0.439	0.406	0.412	0.437	0.472	0.504	0.510
4	2-7/8 (73)	1-1/2 (38)	C_V	13.6	32.5	54.3	75.5	94.6	112	127	141	153	160
			X_T	0.674	0.480	0.374	0.344	0.345	0.354	0.370	0.385	0.407	0.428

Relationships of note:

$$C_1 = 39.76 \sqrt{X_T}$$

$$C_G = C_V C_1$$

$$K_M = F_L^2$$

NOTE:

1 Travel restricted to 2.75 Inches (70 mm) with Class IV valve plug.

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Table 21

Low-Noise III B3 (Linear) Trim Sizing Coefficients (Globe Body)

FULL SIZED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
2	1-5/16 (33)	1-1/4 (32)	C_V	2.20	4.10	6.70	9.20	11.6	13.9	16.1	18.2	20.1	22.0
			X_T	0.577	0.581	0.587	0.574	0.530	0.549	0.556	0.569	0.569	0.573
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
3	2-5/16 (59)	1-1/2 (38)	C_V	7.60	15.2	22.1	28.4	34.1	39.1	43.6	47.3	50.5	53.0
			X_T	0.551	0.556	0.562	0.569	0.579	0.575	0.587	0.569	0.578	0.569
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
4	3-7/16 (87)	2 (51)	C_V	12.9	24.3	35.0	45.0	54.2	62.7	70.4	77.3	83.5	89.0
			X_T	0.527	0.577	0.581	0.585	0.590	0.549	0.565	0.577	0.575	0.572
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
6	5-3/8 (137)	3 (76)	C_V	19.1	38.2	66.9	94.5	120	144	167	190	211	228
			X_T	0.473	0.473	0.473	0.473	0.473	0.473	0.473	0.473	0.473	0.473
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82

Relationships of note:

$$C_1 = 39.76 \sqrt{X_T}$$

$$C_G = C_V C_1$$

$$K_M = F_L^2$$

Table 22

Low-Noise III D3 (Linear) Trim Sizing Coefficients (Globe Body)

FULL SIZED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
2	1-5/16 (33)	1-1/4 (32)	C_V	1.00	2.80	4.50	6.20	7.80	9.40	10.8	12.2	13.6	14.8
			X_T	0.579	0.582	0.587	0.573	0.549	0.547	0.556	0.571	0.603	0.568
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
4	3-7/16 (87)	2 (51)	C_V	3.60	8.80	16.2	23.4	30.4	37.3	44.0	50.5	56.8	63.0
			X_T	0.578	0.574	0.573	0.575	0.591	0.562	0.565	0.565	0.545	0.561
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
6	5-3/8 (137)	3 (76)	C_V	3.80	7.40	12.0	19.9	31.4	46.0	61.0	75.7	89.7	104
			X_T	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82

Relationships of note:

$$C_1 = 39.76 \sqrt{X_T}$$

$$C_G = C_V C_1$$

$$K_M = F_L^2$$



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Table 23

Low-Noise III C3 (Linear) Trim Sizing Coefficients (Globe Body)

FULL SIZED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel										
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
2	1-5/16 (33)	1-1/4 (32)	C_V	1.00	2.80	4.50	6.20	7.80	9.40	10.8	12.2	13.6	14.8	
			X_T	0.579	0.582	0.587	0.573	0.549	0.547	0.556	0.571	0.603	0.568	
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
2	2-5/16 (59)	1-1/2 (38)	C_V	1.60	4.90	8.00	11.1	14.0	16.8	19.4	21.9	24.3	26.6	
			X_T	0.515	0.516	0.525	0.536	0.548	0.549	0.555	0.554	0.570	0.572	
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
2	1-7/8 (48)	1-1/8 (29)	C_V	5.30	10.0	14.4	18.5	22.3	25.8	29.0	31.9	34.4	36.7	
			X_T	0.515	0.516	0.524	0.536	0.545	0.549	0.550	0.554	0.569	0.572	
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
3	2-5/16 (59)	1-1/2 (38)	C_V	3.10	5.80	9.40	12.9	16.2	19.4	22.4	25.3	28.1	30.7	
			X_T	0.527	0.532	0.549	0.540	0.574	0.572	0.573	0.604	0.577	0.574	
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
4	3-7/16 (87)	2 (51)	C_V	3.60	8.80	16.2	23.4	30.4	37.3	44.0	50.5	56.8	63.0	
			X_T	0.578	0.574	0.573	0.575	0.591	0.562	0.565	0.565	0.545	0.561	
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
6	5-3/8 (137)	3 (76)	C_V	14.1	28.0	41.3	55.3	69.3	83.0	97.0	110	124	138	
			X_T	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563	0.563
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82

Relationships of note: $C_1 = 39.76 \sqrt{X_T}$ $C_G = C_V C_1$ $K_M = F_L^2$

Table 24

Low-Noise III D1 (Linear) Trim Sizing Coefficients (Globe Body)

FULL SIZED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
3	1-7/8 (48)	1-1/2 (38)	C_V	1.70	4.00	6.70	9.20	11.6	13.9	16.1	18.2	20.1	22.0
			X_T	0.549	0.556	0.564	0.560	0.554	0.556	0.560	0.569	0.579	0.577
			F_L	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82

Relationships of note: $C_1 = 39.76 \sqrt{X_T}$ $C_G = C_V C_1$ $K_M = F_L^2$

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Table 25

Equal Percentage Trim Sizing Coefficients, Flow Down (Angle Body)

FULL SIZED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
2	1-7/8 (47.6)	3/4 (19.1)	C_v	1.67	2.60	3.82	5.43	7.79	12.2	18.9	27.4	37.8	47.2
			X_T	0.680	0.690	0.702	0.725	0.707	0.619	0.622	0.621	0.619	0.623
			F_L	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
3	2-7/8 (73.0)	1-1/2 (38.1)	C_v	4.59	8.29	12.0	16.9	25.0	37.7	57.3	85.1	121	148
			X_T	0.779	0.744	0.715	0.684	0.630	0.582	0.583	0.579	0.578	0.580
			F_L	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
4	3-7/16 (87.3)	1-1/2 (38.1)	C_v	2.51	5.10	8.03	12.0	18.7	30.7	47.4	80.3	116	156
			X_T	0.890	0.770	0.744	0.701	0.696	0.637	0.668	0.572	0.566	0.565
			F_L	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
6	4-3/8 (111.1)	2 (50.8)	C_v	5.51	10.9	17.9	30.2	50.5	82.0	133	200	269	328
			X_T	0.705	0.701	0.663	0.646	0.612	0.604	0.606	0.605	0.596	0.604
			F_L	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78

REDUCED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
2	1-5/16 (33.3)	3/4 (19.1)	C_v	1.11	1.55	2.05	2.87	4.07	5.95	8.84	13.4	19.6	26.8
			X_T	0.938	0.899	0.848	0.789	0.761	0.692	0.636	0.568	0.519	0.507
			F_L	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
3	1-7/8 (47.6)	3/4 (19.1)	C_v	1.56	2.51	3.68	5.40	7.65	11.7	18.2	27.0	37.3	47.8
			X_T	0.834	0.807	0.768	0.718	0.756	0.723	0.679	0.627	0.615	0.615
			F_L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
4	2-5/16 (58.7)	1-1/8 (28.6)	C_v	2.33	3.56	5.64	8.18	11.9	18.0	28.2	42.6	62.2	81.8
			X_T	0.753	0.846	0.702	0.666	0.682	0.656	0.619	0.609	0.559	0.530
			F_L	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
6	2-7/8 (73.0)	1-1/2 (38.1)	C_v	4.00	7.63	11.1	15.0	23.3	35.0	53.3	79.6	112	144
			X_T	0.670	0.698	0.725	0.731	0.637	0.629	0.599	0.597	0.573	0.571
			F_L	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78

Relationships of note:

$$C_1 = 39.76 \sqrt{X_T}$$

$$C_G = C_v C_1$$

$$K_M = F_L^2$$



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Table 26

Linear Trim Sizing Coefficients, Flow Down (Angle Body)

FULL SIZED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
2	1-7/8 (47.6)	3/4 (19.1)	C_v	3.68	6.98	11.3	15.9	20.8	26.4	32.7	39.2	45.7	52.5
			X_T	0.676	0.667	0.684	0.666	0.624	0.627	0.632	0.625	0.655	0.679
			F_L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
3	2-7/8 (73.0)	1-1/2 (38.1)	C_v	10.9	25.1	41.3	58.4	75.7	93.9	112	128	143	153
			X_T	0.736	0.638	0.591	0.548	0.538	0.532	0.543	0.583	0.619	0.631
			F_L	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
4	3-7/16 (87.3)	1-1/2 (38.1)	C_v	14.0	33.8	56.3	80.2	104	127	148	169	185	201
			X_T	0.640	0.638	0.611	0.588	0.570	0.568	0.593	0.622	0.660	0.664
			F_L	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
6	4-3/8 (111.1)	2 (50.8)	C_v	24.2	51.2	81.8	109	140	171	208	256	300	341
			X_T	0.643	0.697	0.666	0.693	0.672	0.668	0.684	0.663	0.668	0.662
			F_L	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78

REDUCED TRIM / PORT

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
2	1-5/16 (33.3)	3/4 (19.1)	C_v	3.01	5.45	8.95	12.5	15.9	19.1	23.3	28.4	33.2	37.6
			X_T	0.790	0.768	0.661	0.618	0.608	0.611	0.582	0.545	0.535	0.516
			F_L	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
3	1-7/8 (47.6)	3/4 (19.1)	C_v	3.61	6.92	11.1	15.5	20.6	26.4	33.2	41.4	50.1	60.2
			X_T	0.623	0.721	0.694	0.684	0.663	0.630	0.602	0.570	0.568	0.546
			F_L	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
4	2-5/16 (58.7)	1-1/8 (28.6)	C_v	7.02	15.7	25.7	36.9	48.6	60.9	72.9	84.6	97.2	108
			X_T	0.712	0.626	0.625	0.597	0.587	0.577	0.590	0.604	0.580	0.566
			F_L	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
6	2-7/8 (73.0)	1-1/2 (38.1)	C_v	10.2	22.8	36.6	52.1	68.0	84.5	102	124	147	168
			X_T	0.592	0.651	0.661	0.635	0.619	0.619	0.615	0.584	0.568	0.556
			F_L	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74

Relationships of note:

$$C_1 = 39.76 \sqrt{X_T}$$

$$C_G = C_v C_1$$

$$K_M = F_L^2$$

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Table 27

Typical Construction Materials

Part Description	Standard Construction	NACE Construction
BODY		See Figure 5
BONNET		See Figure 5
PACKING BOX RING	S31600**	S31600**
PACKING SPRING	S30400	N/A
LANTERN RING	-	S31600**
SPECIAL WASHER	S30400	N/A
V-RING PACKING SET	PTFE	PTFE (Double)
PACKING FOLLOWER	S31600**	S31600**
STEM WIPER	FELT	FELT
CAGE	S17400	S17400 DH1150
VALVE PLUG - STEM ASSRMBLY	S41600 HT PLUG - S20910 STEM	N/A
	S31600 PLUG - S20910 STEM***	S31600** PLUG - S20910 STEM
	S31600** / ALLOY 6 PLUG - S20910 STEM*	S31600** / ALLOY 6 PLUG - S20910 STEM*
SEAT RING	S41600 HT	N/A
	S31600***	S31600**
	S31600 / ALLOY 6***	S31600 / ALLOY 6***
PISTON RING	GRAPHITE*	GRAPHITE*
PACKING FLANGE	CARBON STEEL-PLATED	CARBON STEEL-PLATED
PACKING NUT	2H	2H
PACKING STUD	B7	B7
BONNET STUD	B7	B7M* (150-300 ASME Class)
	B8M*	S17400 DH1150 (600 ASME Class)
BONNET NUT	2H	2HM
SHIM	S31600	S31600
SPIRAL WOUND GASKET	S30400 / GRAPHITE	S30400 / GRAPHITE
	N06600 / GRAPHITE	N06600 / GRAPHITE
GASKETS	GRAPHITE / S31600	GRAPHITE / S31600
LOAD RING (8" valve only)	S17400	S17400
	N06600*	N06600*

** All S31600 barstock is dual grade S31600/s31603 (316/316L).

See Tables for service limits

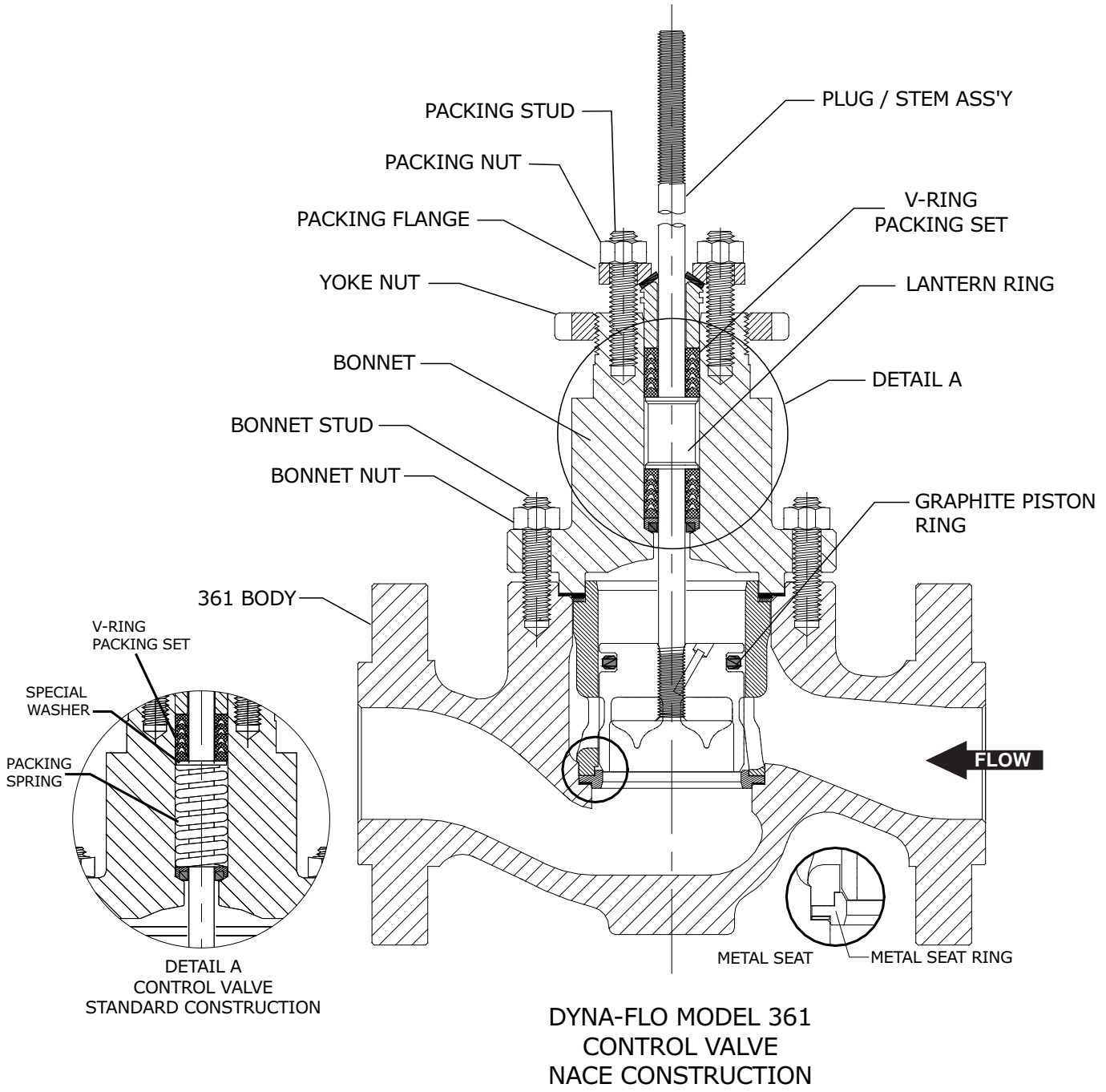
NOTE: S31600 ENC cages are available as special. Consult Dyna-Flo sales department.



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Figure 3 Cross-section of 361 Control Valve Standard Construction



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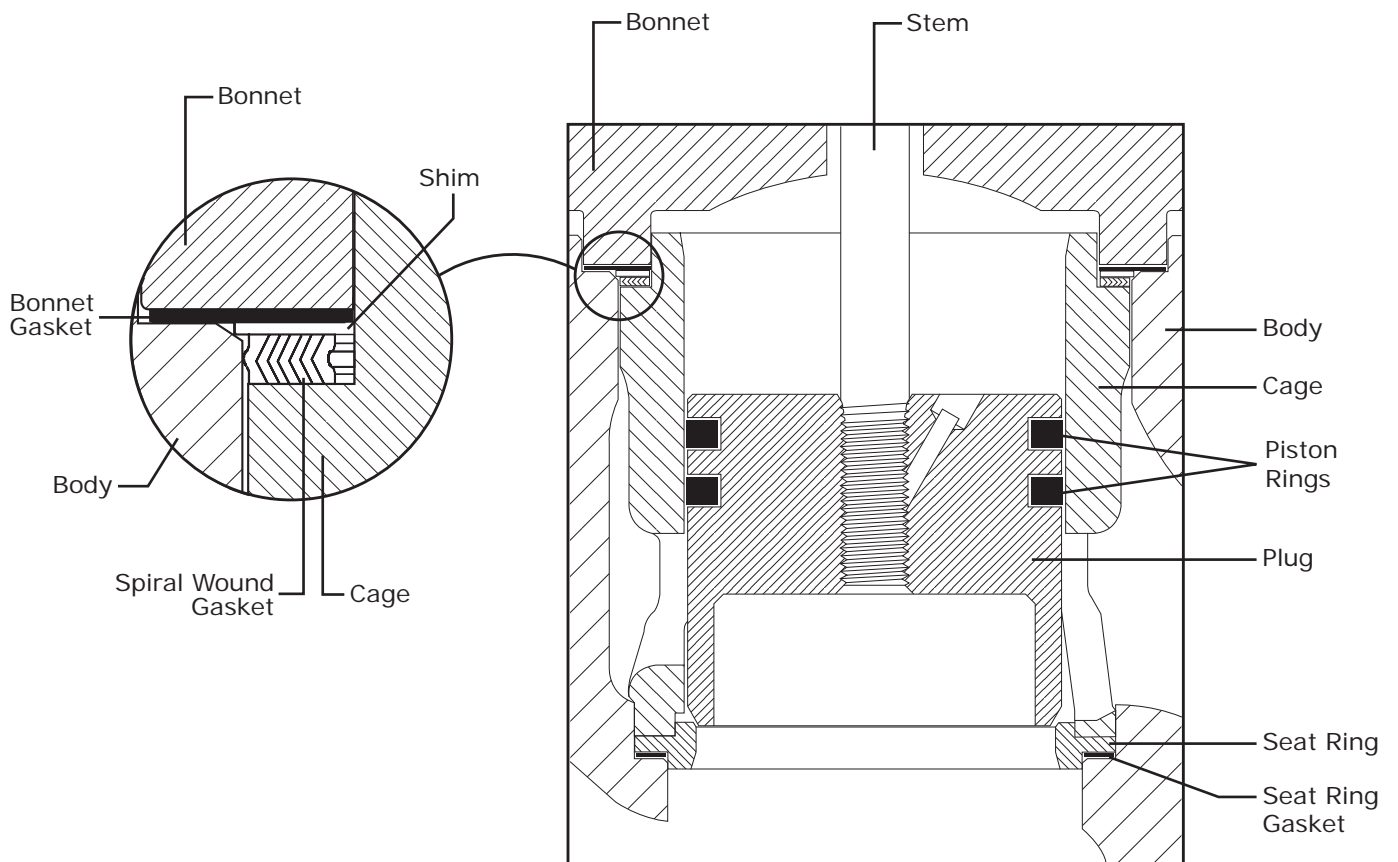


Figure 4 Multiple Piston Ring and Gasket Detail



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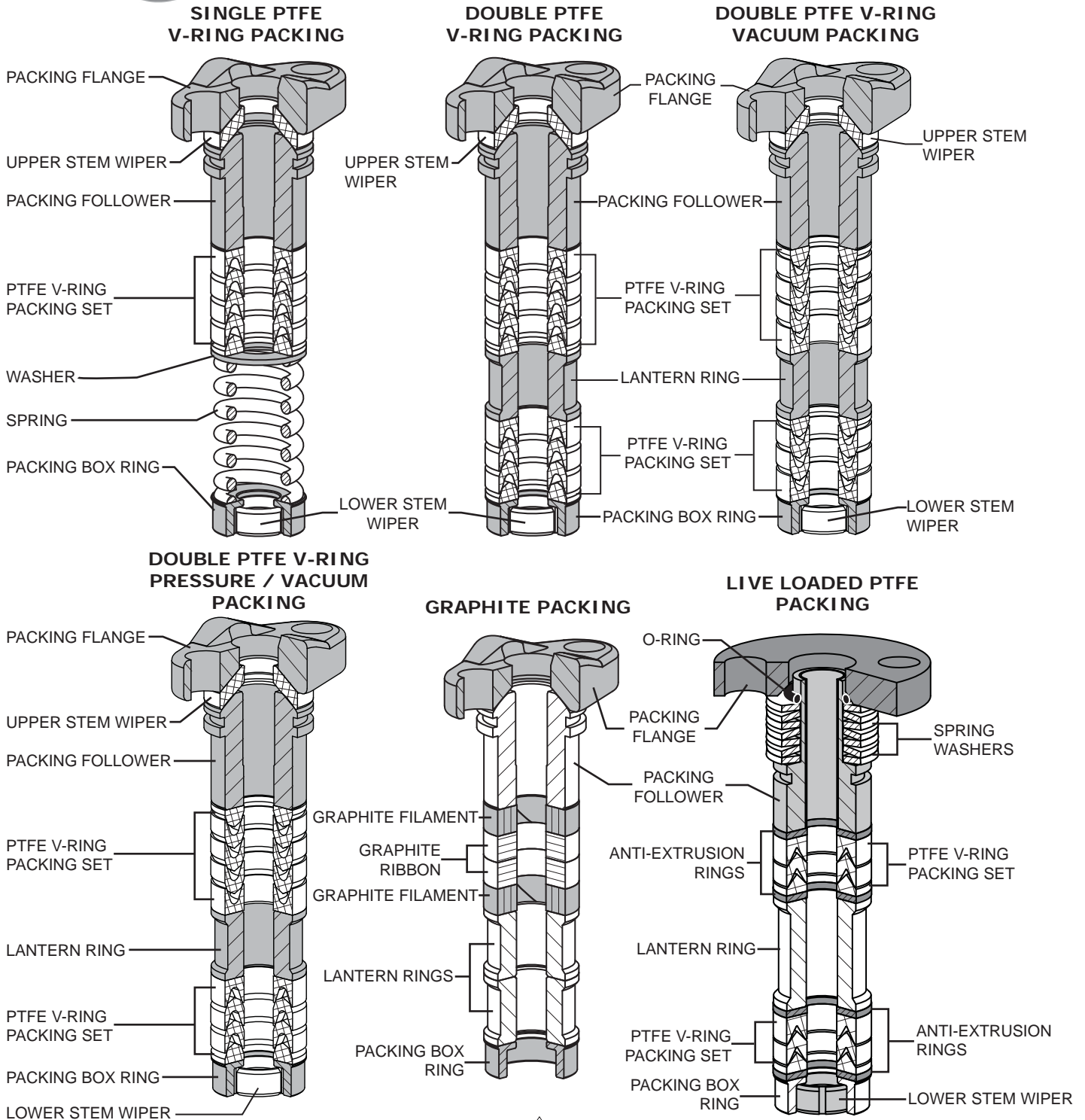


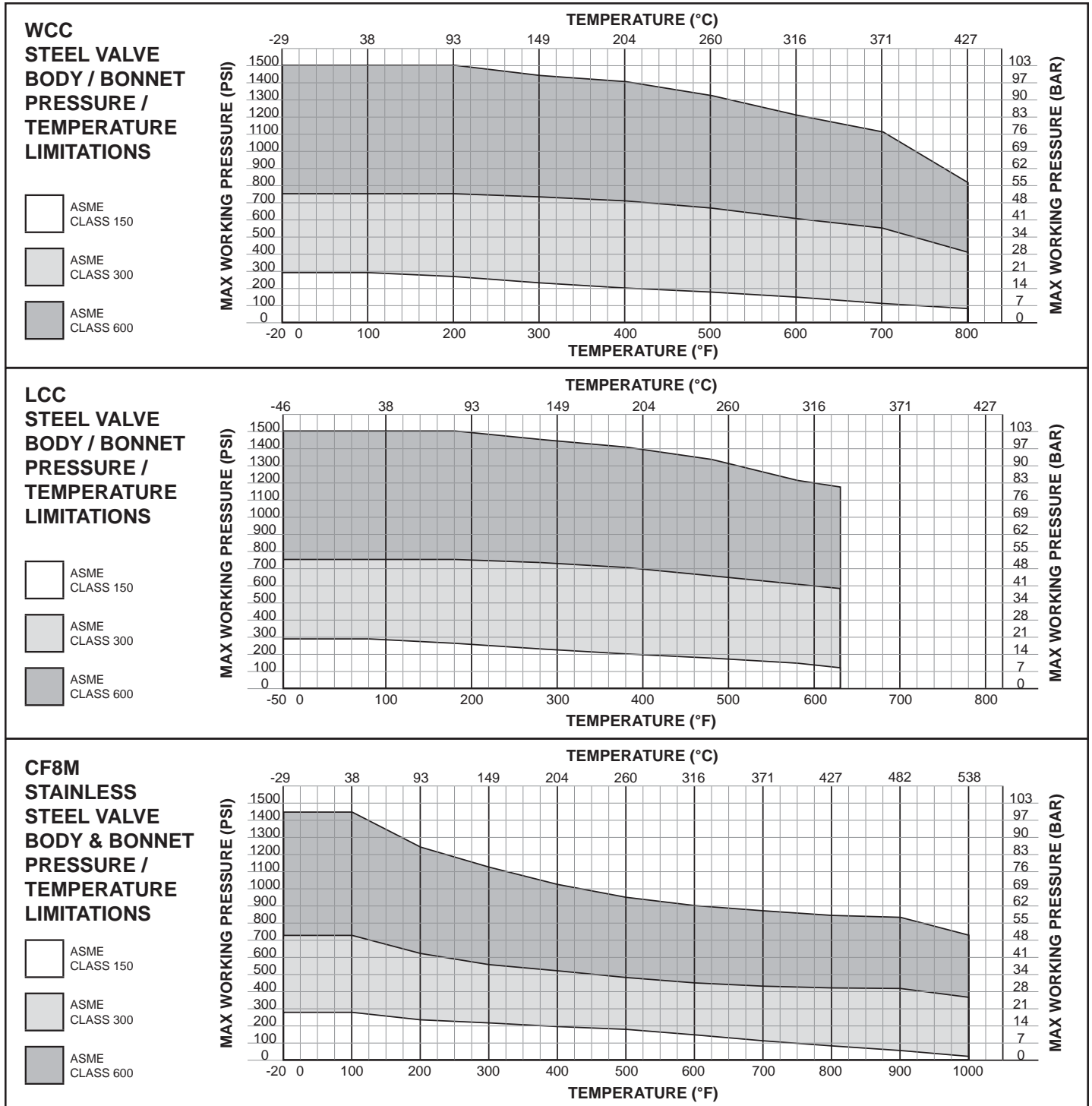
Figure 5 Typical Packing Arrangements

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Figure 6



Maximum Inlet Temperature and Pressures - Flanged valves consistent with ASME Class rating as per ASME B16.34, unless limited by either material, pressure or temperature limitations.



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Table 28

Trim Options (See Figure 7 for pressure / temperature limits)

Trim Spec	Valve Plug	Stem	Cage	Seat Ring	Service
D1	S41600 HT	S20910	S17400 H900	S41600 HT	Standard / Non-corrosive / High Temp
	Temperature Limitation: -20°F to 800°F (-29°C TO 427°C)				
D2	S31600 ² / Alloy 6 Hard Faced Seat	S20910	S17400 DH1150 ¹	S31600 ² / Alloy 6 Hard Faced Seat	Corrosive / NACE High Temperature
	Temperature Limitation: -80°F to 600°F (-62°C TO 316°C)				
D4	S31600 ²	S20910	S17400 H900	S31600 ²	General / Mild Corrosive
	Temperature Limitation: -80°F to 600°F (-62°C TO 316°C)				
D6	S31600 ² / Alloy 6 Hard Faced Seat & Guide	S20910	S17400 H900	S31600 ² / Alloy 6 Hard Faced Seat	Standard / Mild Corrosive / Mild Erosive
	Temperature Limitation: -80°F to 600°F (-62°C TO 316°C)				
D7	S31600 ² / Alloy 6 Hard Faced Seat & Guide	S20910	S17400 DH1150 ¹	S31600 ² / Alloy 6 Hard Faced Seat	Corrosive / High Temp / NACE / Mild Erosive
	Temperature Limitation: -80°F to 600°F (-62°C TO 316°C)				
D8	S31600 ²	S20910	S17400 DH1150 ¹	S31600 ²	NACE / Corrosive
	Temperature Limitation: -80°F to 600°F (-62°C TO 316°C)				
DL	S42000	S20910	S17400 H900	S17400 H900	Anti-Cavitation
	Temperature Limitation: -20°F to 0°F (-29°C TO 0°C)				
DJ	S31600 ²	S20910	S31600 ² / ENC	S31600 ²	NACE
	Temperature Limitation: -0°F to 600°F (-0°C TO 316°C)				
DE	S31600 ² / Alloy 6 Hard Faced Seat & Guide	S20910	S31600 ² / ENC	S31600 ² / Alloy 6 Hard Faced Seat	NACE
	Temperature Limitation: -0°F to 600°F (-0°C TO 316°C)				
DN	S31600 ² / Alloy 6 Hard Faced Seat & Guide	S20910	S31600 ² / ENC	S31600 ²	NACE Class VI Soft Metal
	Temperature Limitation: -0°F to 600°F (-0°C TO 316°C)				
DR	S31600 ² / Alloy 6 Hard Faced Seat & Guide	S20910	S17400 DH1150	S31600 ²	NACE Class VI Soft Metal
	Temperature Limitation: -0°F to 600°F (-0°C TO 316°C)				

NOTE:

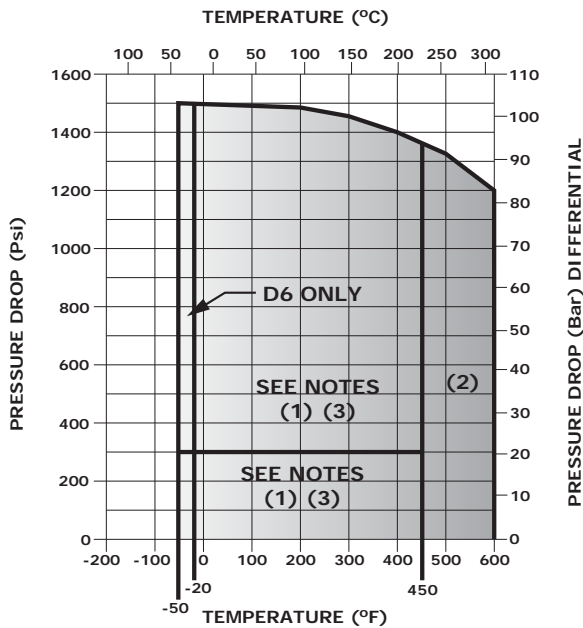
- 1 - S31600 (ENC)* available by special request (*Electroless Nickel Coating).
- 2 - All S31600 barstock is dual grade S31600/S31603 (316/316L).

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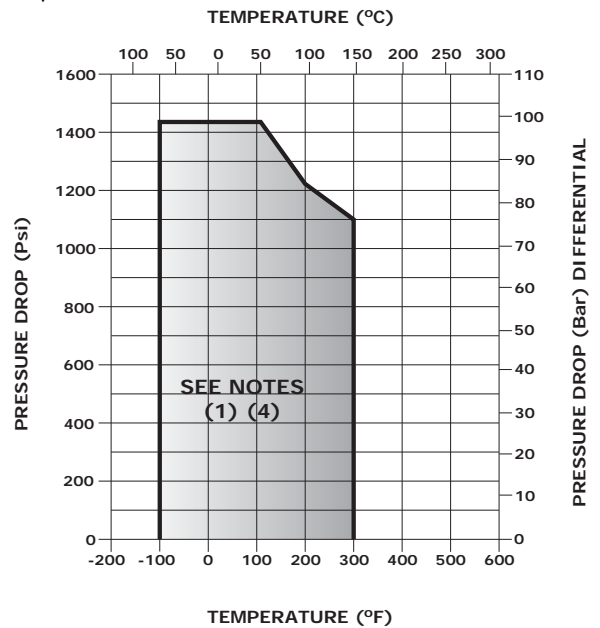
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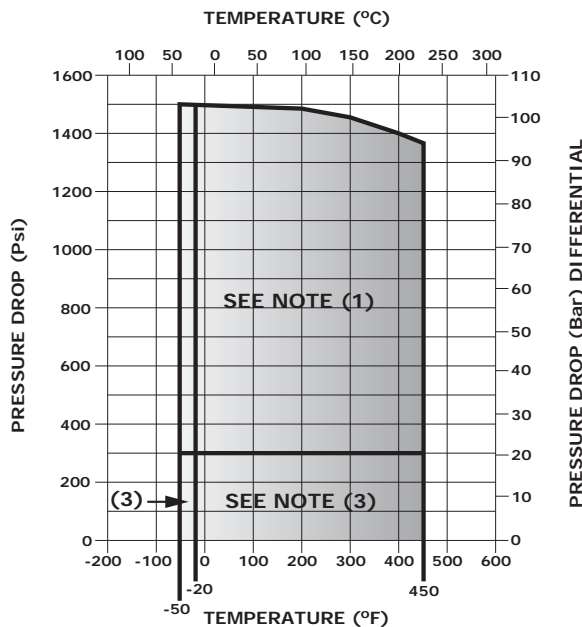
Figure 7 Typical Valve Trim Pressure and Temperature Limitations



TRIM D1 & D6 WITH LCC



TRIM D2



TRIM D4 WITH LCC

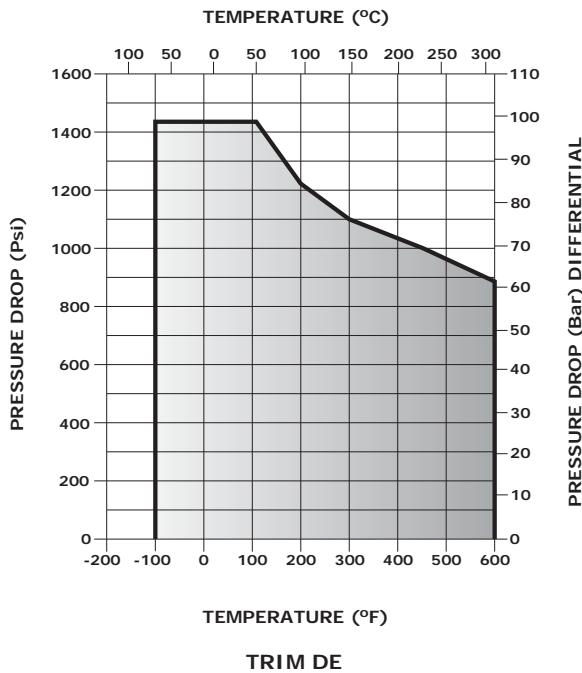
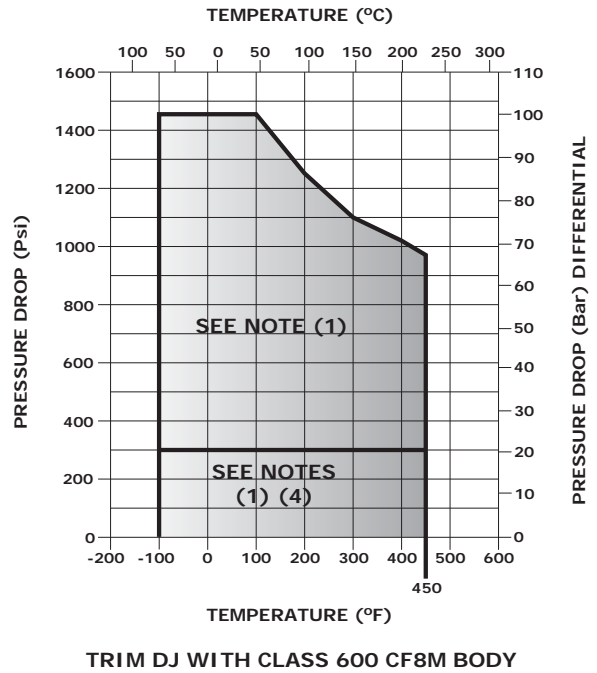
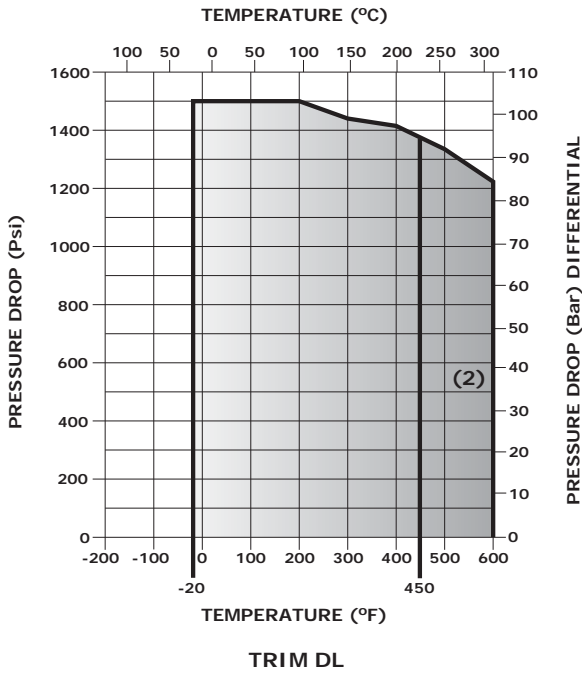
NOTES:	1	Trim can be used to 1,440 Psi (99 Bar) when used with clean dry gas. When used with other process fluids, do not exceed 300 Psi (21 Bar).
	2	Trim temperature limitations can be extended to 600°F (316°C) when used for non-oxidizing service or 260°F (500°C) with oxidizing service when using PEEK anti-extrusion rings and spring-loaded seal rings.
Continued on Page 26.		



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Figure 7 Continued Typical Valve Trim Pressure and Temperature Limitations



NOTES:	3 Temperatures above 450°F (232°C) require a spring-loaded seal ring and PEEK anti-extrusion rings.
	4 Use other trim for non-lubricating fluids (such as dry gas or steam) between 300°F (149°C) and 450°F (232°C).

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Table 29

Valve Bolting Temperature Limitations

Stud Material	Temperature Limitation
B7 (Standard)	-50°F to 900°F (-46°C TO 482°C)
B7M (NACE 150-300 ASME Class)	-50°F TO 900°F (-46°C TO 482°C)
B8M (Stainless Steel Option)	-325°F TO 1000°F (-198°C TO 538°C)
S17400 DH1150 (NACE 600 ASME Class)	-50°F TO 650°F (-46°C TO 343°C)
Inconel 718	
B7 FLUOROKOTE #1	-50°F to 500°F (-46°C TO 260°C)
B7M FLUOROKOTE #1	-50°F TO 500°F (-46°C TO 260°C)
S17400 FLUOROKOTE #1	-50°F TO 500°F (-46°C TO 260°C)
Nut Material	Temperature Limitation
2H, 2HM & 8M	Not Limiting Factors

Table 30

Piston Ring, Gasket, & Load Ring Temperature Limitations

Part Description	Temperature Limitation
Graphite Piston Ring	-50°F to 1100°F (-46°C TO 593°C)
Spiral Wound Gaskets (S30400/Graphite) Standard	-50°F to 650°F (-46°C TO 343°C)
Spiral Wound Gaskets (N06600/Graphite)	-325°F TO 1100°F (-198°C TO 593°C)
Seat Ring, Bonnet and Cage Gaskets (Graphite)	-325°F TO 1100°F (-198°C TO 593°C)
Load Ring (S17400) Standard	-150°F TO 600°F (-101°C TO 316°C)
Load Ring (N06600) High Temp.	-425°F TO 1100°F (-254°C TO 593°C)

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Table 31

Model 360 Bonnet and Packing Selection

Bonnet Style	Packing Material	In-Body Process Temperature Limitations ¹
Standard Bonnet: Standard for all valve sizes 1 through 6.	PTFE V-Ring	0°F to 450°F (-18°C to 232°C)
	Graphite (Ribbon/Filament)	0°F to Maximum Body Temperature Limit (-18°C to Maximum Body Temperature Limit)
Extension Bonnet Style 1: Standard for all 8 inch valves, optional for valves 1 through 6 inch.	PTFE V-Ring	-50°F to 600°F (-46°C to 316°C)
	Graphite (Ribbon/Filament)	-50°F to 800°F (-46°C to 427°C)
Extension Bonnet Style 2: Optional for 1 though 8 inch valve sizes.	PTFE V-Ring	-150°F to 600°F (-101°C to 316°C)
	Graphite (Ribbon/Filament)	-150°F to 800°F (-101°C to 427°C)
¹ The above temperatures assume the presence of an ambient temperature outside the valve body of 70°F (21°C) with no bonnet insulation. An extension bonnet may be required when operating valves in low temperatures to prevent damage that could occur from the formation of valve stem frost. Other limiting factors, such as trim material components, will have to be considered.		

NOTE: For temperatures above or below these standard temperatures consult Dyna-Flo.

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Model 361 Control Valves

MODEL NUMBERING SYSTEM

SAMPLE PART NUMBER: 361-3AFL-5FP2-GES2

BODY STYLE						-
-	GLOBE	A	ANGLE			
VALVE SIZE						3
7	3/4 INCH	1	1 INCH	5	1-1/2 INCH	2
3	3 INCH	4	4 INCH	6	6 INCH	8
E	10 X 8 INCH					
ASME RATING						A
A	150	B	300	C	600	
END CONNECTION						F
F	RF	J	RTJ	N	NPT	T
L	BWE SCH 80	S	SOCKET WELD			
BODY MATERIAL						L
L	LCC	W	WCC	M	CF8M	
BOLTING						-
-	B7 / 2H (STANDARD)	A	B7M / 2HM			
B	B8M / 8M	C	S17400 DH1150 / 2HM			
E	INCONEL 718 / 2HM	K	B7 / 2H FLUOROKOTE #1			
L	B7M / 2HM FLUOROKOTE #1	M	S17400 / 2HM FLUOROKOTE #1			
TRIM						5
1	TRIM D1	2	TRIM D2	4	TRIM D4	6
7	TRIM D7	8	TRIM D8	L	TRIM DL	J
E	TRIM DE	N	TRIM DN	R	TRIM DR	
PORT SIZE						F
F	FULL PORT	R	REDUCED PORT			
PACKING STYLE						P
P	SINGLE PTFE V-RING (PRESSURE)	J	DOUBLE PTFE V-RING (PRESSURE)			
G	SINGLE GRAPHITE (PRESSURE)	V	DOUBLE PTFE V-RING (VACUUM)			
R	DOUBLE PTFE V-RING (VACUUM / PRESSURE)	L	LIVE LOADED PTFE V-RING (PRESSURE)			
T	LIVE LOADED GRAPHITE (PRESSURE)	D	LIVE LOADED DUPLEX (PRESSURE)			
YOKE BOSS SIZE						2
1	2-1/8" (3/8" STEM)	2	2-13/16" (1/2" STEM)	3	3-9/16" (3/4" STEM)	5
PAINT						-
-	DFPS-01 (STANDARD)	2	DFPS-02 (SEVERE SERVICE)			
3	DFPS-03 (HIGH TEMPERATURE)					
PISTON RING						G
G	GRAPHITE PISTON RING	H	MULTIPLE GRAPHITE PISTON RINGS			
CHARACTERISTIC						E
E	EQUAL PERCENT	L	LINEAR	Q	QUICK OPENING	
N	LOW-NOISE I (LINEAR)	Z	LOW-NOISE III A1 (LINEAR)			
Y	LOW-NOISE III B3 (LINEAR)	C	LOW-NOISE III C3 (LINEAR)			
1	LOW-NOISE III D1 (LINEAR)	D	LOW-NOISE III D3 (LINEAR)			
CHARACTERISTIC (EXTENDED TRAVEL)						
R	MODIFIED EQUAL PERCENT	S	MODIFIED LINEAR			
T	MODIFIED QUICK OPENING	P	MODIFIED LOW-NOISE I (LINEAR)			
W	MODIFIED LOW-NOISE III A1 (LINEAR)					
BONNET STYLE						S
S	STANDARD	T	STANDARD TAPPED	E	EXTENSION STYLE 1	
H	EXTENSION STYLE 2					
SHUT-OFF CLASS						2
2	CLASS II	3	CLASS III	4	CLASS IV	

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