Model 363 Control Valves

Technical Sales Bulletin

Figure 1 Model 363 Control Valve

The Model 363 control valve is part of the 360 Series of control Valves.

The Model 363 is a top guided, unbalanced, single port valve that is suitable for either throttling or on off control of either liquids or gases. Metal to metal seating is standard on Model 363 valves with an option for soft seating.

The standard actuator for the Model 363 control 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.

The Model 363 control valves are manufactured to a high level of quality specifications to ensure superior performance and customer satisfaction.

Features

Versatility
Multiple port sizes make the 363 an easy valve to reconfigure when process applications change.

Rugged Design
Available severe service trim and high temperature configurations are well suited to more demanding applications.

High Temperature Option
The standard temperature rating of 450°F (232°C) can be extended to 850°F (454°C), with options available for higher temperatures.

Full Pressure Drop Capabilities
363 control valves can shut off against inlet pressures equal to the ASME B16.34 rating.

Sour Gas Service Capability
There are standard construction materials that comply with the recommendations of the National Association of Corrosion Engineers (NACE) MR0175.

Shut Off Capability
Shut off options are available from ASME / FCI Class II to Class VI.

Flow Characteristic Selections
Equal percentage, linear and quick-opening flow characteristics available.

Easy Maintenance
As with all 360 Series Valves, the 363 can be serviced in line with no special tools required.

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SPECIFICATIONS

Sizes and Connection Styles

Model 363

Size:	1”, 1-1/2”, 2”
Rating:	ASME 150 / 300 / 600
Connections:	RF / RTJ - All Sizes NPT - 1”, 1-1/2” and 2”

Maximum Inlet Temperature and Pressures

Flanged valves consistent with ASME B16.34 Class rating, unless limited by either material, pressure or 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

- Model 363 - Standard Class IV - Metal Seat
- Model 363 - Optional Class V - Metal Seat
- Model 363 - Optional Class VI - Metal Seat

Refer to Tables 1 & 2 for Optional Shut-off capability

Dimensions

Valve and Actuator Assembly Diagram

Refer to Figure 2.

Valve and Actuator Assembly Dimensions

Refer to Tables 5 - 12.

Approximate Valve Body and Actuator Weights

Refer to Table 3.

Materials

Body and bonnet material options include LCC, WCC, & CF8M.
Refer to Table 24 for typical construction materials.
Refer to Table 25 for trim selections.

Cross-Section of Model 363 Control Valves

Refer to Figures 3, 4, & 5.

Flow Characteristics

Standard trim is equal percent. Other flow characteristics are available upon request. Model 363 valves normally flow up.

Port Diameters and Maximum Valve Plug Travel

Refer to Table 4.

Packing Type

The Standard packing is PTFE V-ring. Live-loaded low emission, graphite and other packing arrangements are available. Refer to Figure 8 for packing diagrams.

Valve Sizing Coefficients

Refer to Tables 13 - 23.

Trim Style Service Application

Refer to Table 25.

For more information and other options contact your Dyna-Flo Sales Office.

Table 1

Class IV Valve Shut-off Configurations

Port Size	Seat	Maximum Seat Load
All	Metal	300 lbs / Lineal Inch
All	PTFE (Soft Seat)	Consult Dyna-Flo

Table 2

Class VI Valve Shut-off Configurations

Valve Plug	Seat Ring Retainer	Seat Ring	Trim Temperature Limit
CF8M (S31600[1])	S31600[1] / CoCr-A Hard Faced Seat with standard beveled seat	S31600[1] with Radiused Seat (Special Design)	Not a limiting factor
CF8M	S31600[1] / CoCr-A Hard Faced Seat and Guide with standard beveled seat	S31600[1] with Radiused Seat (Special Design)	Not a limiting factor
CF8M	S31600[1] with PTFE Disk Seat	S31600[1] with Beveled Seat	-20°F to 300°F (-29°C to 149°C)
S17400	S41600 with Disk Seat	S41600 with Standard Beveled Seat	-20°F to 400°F (-29°C to 204°C)
NOTES:	**1 -** All S31600 barstock is dual grade S31600/S31603 (316/316L).		

Table 3

Valve Body and Actuator Assembly Approximate Weights

Valve Size (Inch)	Body Only lb (Kg)	With Fail Closed Actuator	Assembly Weight lb (Kg)	With Fail Open Actuator	Assembly Weight lb (Kg)
1/2	25 (11)	DFC - 1069	73 (33)	DFO - 1069	65 (29)
3/4	25 (11)	DFC - 1069	73 (33)	DFO - 1069	65 (29)
1	30 (14)	DFC - 1069	78 (26)	DFO - 1069	70 (32)
1-1/2	45 (20)	DFC - 1069	93 (42)	DFO - 1069	85 (39)
2	85 (39)	DFC - 2069	135 (61)	DFO - 2069	136 (62)
		DFC - 2105	165 (75)	DFO - 2105	167 (76)
		DFC - 2156	206 (94)	DFO - 2156	192 (87)
3	120 (54)	DFC - 2156	241 (109)	DFO - 2156	227 (103)
		DFC - 3220	374 (170)	DFO - 3220	355 (161)
4	165 (75)	DFC - 2156	286 (130)	DFO - 2156	272 (123)
		DFC - 3220	419 (190)	DFO - 3220	400 (181)

Table 4

Model 363 Port Diameters, Valve Travel and Mounting Connection

Valve Size inch	Port Diameter inch (mm)			Max Valve Travel inch (mm)	Valve Stem and Mounting Connection Diameter inch (mm)			
					Standard		Optional	
	Equal Percentage[1]	Linear	Quick Open		Stem	Yoke Boss	Stem	Yoke Boss
1/2 & 3/4	3/16 (4.8) 1/4 (6.4)[2] 3/8 (9.5) 1/2 (12.7) 3/4 (19.1) 1 (25.4)	1 (25.4)	—	3/4 (19.1)	3/8 (9.5)	2-1/8 (54)	1/2 (12.7)	2-13/16 (71)
1	3/16 (4.8) 1/4 (6.4)[2] 3/8 (9.5) 1/2 (12.7) 3/4 (19.1) 1 (25.4)	1 (25.4)	1 (25.4)	3/4 (19.1)	3/8 (9.5)	2-1/8 (54)	1/2 (12.7)	2-13/16 (71)
1-1/2	3/16 (4.8) 1/4 (6.4)[2] 3/8 (9.5) 1/2 (12.7) 3/4 (19.1) 1 (25.4) 1-1/2 (38.1)	1-1/2 (38.1)	1-1/2 (38.1)	3/4 (19.1)	3/8 (9.6)	2-1/8 (54)	1/2 (12.7)	2-13/16 (71)
2	3/16 (4.8) 1/4 (6.4)[2] 3/8 (9.5) 1/2 (12.7) 3/4 (19.1) 1 (25.4) 2 (50.8)	2 (50.8)	2 (50.8)	1-1/8 (29)	1/2 (12.7)	2-13/16 (71)	3/4 (19.1)	3-9/16 (90)
3	2 (50.8) 3 (76.2)	3 (76.2)	3 (76.2)	1-1/2 (38.1)	1/2 (12.7)	2-13/16 (71)	3/4 (19.1)	3-9/16 (90)
4	2 (50.8) 4 (101.6)	4 (101.6)	4 (101.6)	2 (50.8)	1/2 (12.7)	2-13/16 (71)	3/4 (19.1)	3-9/16 (90)

1 - Port Diameters 1/4 - 3/4 inch (6.4 - 19.1 mm) use Dyna-Form valve plugs.

2 - Also available in 1-flute and 3-flute Dyna-Flute valve plugs.

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Table 5

Valve Assembly (RF End Connection and Standard Bonnet) with Actuator Envelope Dimensions
Inches (mm) (Refer to Figure 2)

Valve Size (inch)	End Connection	Actuator Size	A	B	C	D		E
						DFC	DFO	
1 / 2	ASME 150	1069	7.25 (184)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 300	1069	7.75 (197)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 600	1069	8.25 (210)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	NPT	1069	8.25 (210)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
3 / 4	ASME 150	1069	7.25 (184)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 300	1069	7.75 (197)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 600	1069	8.25 (210)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	NPT	1069	8.25 (210)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
1	ASME 150	1069	7.25 (184)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 300	1069	7.75 (197)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 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	ASME 150	1069	8.75 (222)	2.81 (71)	4.88 (124)	27.56 (700)	26.08 (662)	13.12 (333)
	ASME 300	1069	9.25 (235)	2.81 (71)	4.88 (124)	27.56 (700)	26.08 (662)	13.12 (333)
	ASME 600	1069	9.88 (251)	2.81 (71)	4.88 (124)	27.56 (700)	26.08 (662)	13.12 (333)
	NPT	1069	9.88 (251)	2.81 (71)	4.88 (124)	27.56 (700)	26.08 (662)	13.12 (333)
2	ASME 150	2069	10.00 (254)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)
	ASME 150	2105	10.00 (254)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)
	ASME 300	2069	10.50 (267)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)
	ASME 300	2105	10.50 (267)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)
	ASME 600	2069	11.25 (286)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)
	ASME 600	2105	11.25 (286)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)
	ASME 600	2156	11.25 (286)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	18.62 (473)
	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)
	NPT	2156	11.25 (286)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	18.62 (473)
3	ASME 150	2156	11.75 (298)	3.81 (98)	7.50 (191)	37.75 (959)	33.22 (844)	18.62 (473)
	ASME 150	3220	11.75 (298)	3.81 (98)	7.50 (191)	43.98 (1117)	40.19 (1021)	21.12 (536)
	ASME 300	2156	12.50 (318)	3.81 (98)	7.50 (191)	37.75 (959)	33.22 (844)	18.62 (473)
	ASME 300	3220	12.50 (318)	3.81 (98)	7.50 (191)	43.98 (1117)	40.19 (1021)	21.12 (536)
	ASME 600	2156	13.25 (337)	3.81 (98)	7.50 (191)	37.75 (959)	33.22 (844)	18.62 (473)
	ASME 600	3220	13.25 (337)	3.81 (98)	7.50 (191)	43.98 (1117)	40.19 (1021)	21.12 (536)
4	ASME 150	2156	13.88 (353)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (473)
	ASME 150	3220	13.88 (353)	5.06 (129)	8.69 (221)	45.17 (1147)	41.38 (1051)	21.12 (536)
	ASME 300	2156	14.50 (368)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (473)
	ASME 300	3220	14.50 (368)	5.06 (129)	8.69 (221)	45.17 (1147)	41.38 (1051)	21.12 (536)
	ASME 600	2156	15.50 (394)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (473)
	ASME 600	3220	15.50 (394)	5.06 (129)	8.69 (221)	45.17 (1147)	41.38 (1051)	21.12 (536)

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Table 6

Valve Assembly (RTJ End Connection and Standard Bonnet) with Actuator Envelope Dimensions
Inches (mm) (Refer to Figure 2)

Valve Size (inch)	End Connection	Actuator Size	A	B	C	D		E
						DFC	DFO	
1/2	ASME 150	1069	7.75 (197)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 300	1069	8.25 (210)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 600	1069	8.25 (210)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	NPT	1069	8.25 (210)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
3/4	ASME 150	1069	7.75 (197)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 300	1069	8.25 (210)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 600	1069	8.25 (210)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	NPT	1069	8.25 (210)	2.12 (54)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
1	ASME 150	1069	7.75 (197)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 300	1069	8.25 (210)	2.38 (60)	5.00 (127)	27.68 (703)	24.25 (616)	13.12 (333)
	ASME 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	ASME 150	1069	9.25 (235)	2.81 (71)	4.88 (124)	27.56 (700)	26.08 (662)	13.12 (333)
	ASME 300	1069	9.75 (248)	2.81 (71)	4.88 (124)	27.56 (700)	26.08 (662)	13.12 (333)
	ASME 600	1069	9.88 (251)	2.81 (71)	4.88 (124)	27.56 (700)	26.08 (662)	13.12 (333)
	NPT	1069	9.88 (251)	2.81 (71)	4.88 (124)	27.56 (700)	26.08 (662)	13.12 (333)
2	ASME 150	2069	10.50 (267)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)
	ASME 150	2105	10.50 (267)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)
	ASME 300	2069	11.12 (282)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)
	ASME 300	2105	11.12 (282)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)
	ASME 600	2069	11.38 (289)	3.06 (78)	6.50 (165)	29.88 (759)	27.70 (704)	13.12 (333)
	ASME 600	2105	11.38 (289)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	16.00 (406)
	ASME 600	2156	11.38 (289)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	18.62 (473)
	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)
	NPT	2156	11.25 (286)	3.06 (78)	6.50 (165)	36.75 (933)	32.22 (818)	18.62 (473)
3	ASME 150	2156	12.25 (311)	3.81 (98)	7.50 (191)	37.75 (959)	33.22 (844)	18.62 (473)
	ASME 150	3220	12.25 (311)	3.81 (98)	7.50 (191)	43.98 (1117)	40.19 (1021)	21.12 (536)
	ASME 300	2156	13.12 (333)	3.81 (98)	7.50 (191)	37.75 (959)	33.22 (844)	18.62 (473)
	ASME 300	3220	13.12 (333)	3.81 (98)	7.50 (191)	43.98 (1117)	40.19 (1021)	21.12 (536)
	ASME 600	2156	13.38 (340)	3.81 (98)	7.50 (191)	37.75 (959)	33.22 (844)	18.62 (473)
	ASME 600	3220	13.38 (340)	3.81 (98)	7.50 (191)	43.98 (1117)	40.19 (1021)	21.12 (536)
4	ASME 150	2156	14.38 (365)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (473)
	ASME 150	3220	14.38 (365)	5.06 (129)	8.69 (221)	45.17 (1147)	41.38 (1051)	21.12 (536)
	ASME 300	2156	15.12 (384)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (473)
	ASME 300	3220	15.12 (384)	5.06 (129)	8.69 (221)	45.17 (1147)	41.38 (1051)	21.12 (536)
	ASME 600	2156	15.62 (397)	5.06 (129)	8.69 (221)	38.94 (989)	34.41 (874)	18.62 (473)
	ASME 600	3220	15.62 (397)	5.06 (129)	8.69 (221)	45.17 (1147)	41.38 (1051)	21.12 (536)

Table 7

Valve Body Dimensions with BWE* End Connection Inches (mm)
For 'C' Dimensions refer to Tables 9 to 12 on Pages 7 & 8.

Valve Size Inch	Globe Body	
	A	B
1/2	8.25 (210)	2.12 (54)
3/4	8.25 (210)	2.12 (54)
1	8.25 (210)	2.38 (60)
1-1/2	9.88 (251)	2.81 (71)
2	11.25 (286)	3.06 (78)
3	13.25 (337)	3.81 (97)
4	15.50 (394)	5.06 (129)

***NOTE:** BWE - Buttweld.

Table 8

Valve Body Dimensions with SWE* End Connection Inches (mm)
For 'C' Dimensions refer to Tables 9 to 12 on Pages 7 & 8.

Valve Size Inch	Globe Body	
	A	B
1/2	6.50	2.12
3/4	6.50	2.12
1	8.25	2.38
1-1/2	9.88	2.81
2	11.25	3.06
3	—	—
4	—	—

***NOTE:** SWE - Socketweld.

Table 9

Standard Bonnet Dimensions
inch (mm) (Refer to Figure 2)

Valve Size (Inch)	C		
	Stem Diameter inch (mm)		
	3/8 (9.5)	1/2 (12.7)	3/4 (19.1)
1/2	5.00 (127)	5.88 (149)	—
3/4	5.00 (127)	5.88 (149)	—
1	5.00 (127)	5.88 (149)	—
1.5	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)

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Table 10

Extension (Style 1) Bonnet Dimensions
Inch (mm) (Refer to Figure 2)

Valve Size (Inch)	C		
	Stem Diameter inch (mm)		
	3/8 (9.5)	**1/2 (12.7)**	**3/4 (19.1)**
1/2	8.38 (213)	9.88 (251)	—
3/4	8.38 (213)	9.88 (251)	—
1	8.38 (213)	9.88 (251)	—
1.5	8.25 (210)	9.75 (248)	—
2	—	10.50 (267)	10.69 (272)
3	—	11.50 (292)	11.69 (297)
4	—	12.69 (322)	12.88 (327)

Table 11

Extension (Style 2) Bonnet Dimensions
Inch (mm) (Refer to Figure 2)

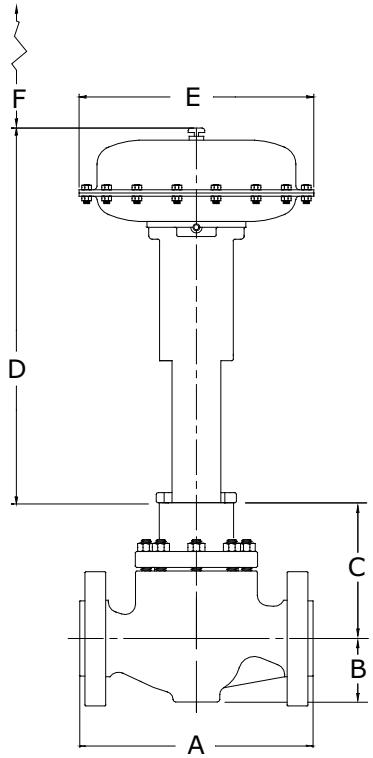
Valve Size (Inch)	C		
	Stem Diameter inch (mm)		
	3/8 (9.5)	**1/2 (12.7)**	**3/4 (19.1)**
1/2	11.94 (303)	12.56 (319)	
3/4	11.94 (303)	12.56 (319)	—
1	11.94 (303)	12.56 (319)	—
1.5	11.81 (300)	12.44 (316)	—
2	—	18.31 (465)	—
3	—	19.50 (495)	19.19 (487)
4	—	20.69 (526)	21.38 (543)

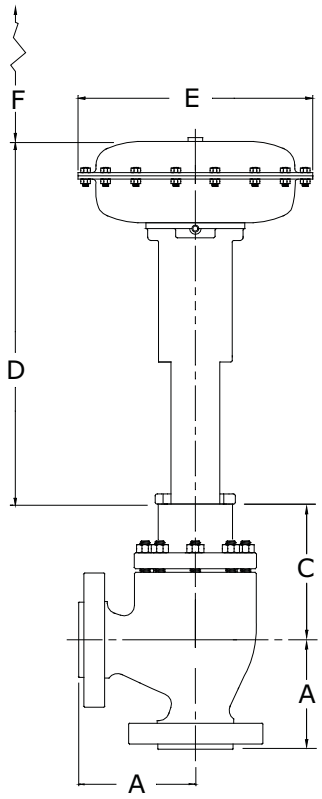
Table 12

Bellows Seal Bonnet Dimensions
Inch (mm) (Refer to Figure 2)

Valve Size (Inch)	C		
	Stem Diameter inch (mm)		
	3/8 (9.5)	**1/2 (12.7)**	**3/4 (19.1)**
1/2		—	—
3/4		—	—
1	12.62 (321)	—	—
1.5	12.50 (318)	—	—
2	—	15.12 (384)	—
3	—	20.38 (518)	20.38 (518)
4	—	21.31 (541)	—

DFC ACTUATOR

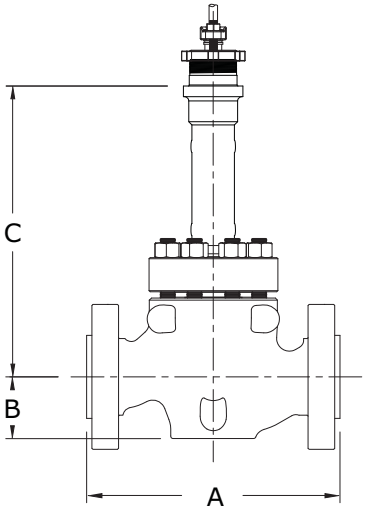




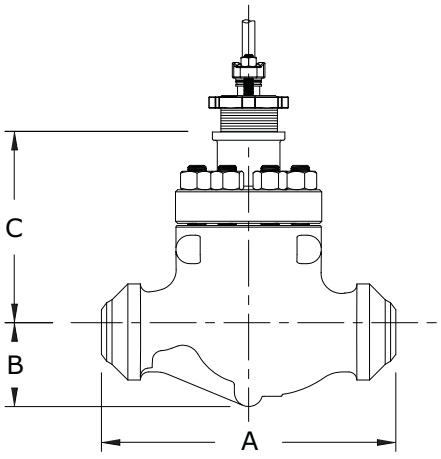
DFO ACTUATOR

GLOBE BODY

ANGLE BODY



STYLE 1 EXTENSION BONNET



BUTTWELD (BWE)

F Dimension	
1/2” to 2” Valve - 6.88” (175 mm)	3” Valve - 9.12” (232 mm) For DFC/DFO 3156
3” Valve - 6.88” (175 mm)	4” Valve - 9.12” (232 mm)

Figure 2 *Typical Valve Assembly Diagrams*

Table 13

Equal Percentage Trim Sizing Coefficients, Flow Up

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 (25.4)	3/4 (19.1)	C_V	0.79	1.25	1.80	2.53	3.63	5.28	7.59	10.7	12.7	13.2
			X_T	0.641	0.634	0.598	0.586	0.584	0.596	0.646	0.680	0.757	0.886
			F_L	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
1-1/2	1-1/2 (38.1)	3/4 (19.1)	C_V	0.795	1.23	1.91	2.95	4.30	6.46	9.84	16.4	22.2	28.1
			X_T	0.726	0.676	0.733	0.645	0.589	0.558	0.597	0.653	0.777	0.840
			F_L	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
2	2 (50.8)	1-1/8 (28.6)	C_V	1.65	2.61	4.30	6.62	11.1	20.7	32.8	44.7	50.0	53.8
			X_T	0.655	0.581	0.520	0.559	0.552	0.529	0.653	0.801	0.903	0.899
			F_L	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
3	3 (76.2)	1-1/2 (38.1)	C_V	3.11	5.77	9.12	13.7	21.7	36.0	60.4	86.4	104	114
			X_T	0.619	0.595	0.598	0.619	0.594	0.563	0.586	0.729	0.778	0.781
			F_L	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
4	4 (101.6)	2 (50.8)	C_V	4.90	8.19	13.5	20.1	31.2	52.6	96.7	140	170	190
			X_T	0.594	0.573	0.560	0.568	0.572	0.564	0.532	0.707	0.807	0.834
			F_L	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90

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 (25.4)	3/4 (19.1)	C_V	0.77	1.23	1.78	2.58	3.67	5.54	8.30	12.0	15.1	17.3
			X_T	0.654	0.619	0.601	0.605	0.561	0.534	0.518	0.575	0.704	0.861
			F_L	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
2	1 (25.4)	3/4 (19.1)	C_V	1.02	1.50	2.05	2.78	3.90	5.57	8.16	11.8	14.5	15.9
			X_T	0.596	0.616	0.600	0.580	0.572	0.555	0.523	0.547	0.671	0.905
			F_L	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
3	2 (50.8)	1-1/8 (28.6)	C_V	2.11	3.11	4.58	6.76	10.7	20.7	34.3	48.3	61.5	71.6
			X_T	0.874	0.699	0.643	0.626	0.587	0.451	0.493	0.587	0.648	0.734
			F_L	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
4	2 (50.8)	1-1/8 (28.6)	C_V	1.96	3.05	4.43	6.98	11.9	22.3	36.7	50.9	61.8	72.7
			X_T	0.619	0.575	0.624	0.610	0.678	0.639	0.646	0.673	0.778	0.781
			F_L	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92

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 14

Linear Trim Sizing Coefficients, Flow Up

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 (25.4)	3/4 (19.1)	C_V	2.20	3.86	5.27	6.55	8.21	9.80	11.1	12.0	13.1	13.5
			X_T	0.636	0.600	0.636	0.632	0.636	0.630	0.635	0.680	0.768	0.832
			F_L	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
1-1/2	1-1/2 (38.1)	3/4 (19.1)	C_V	4.00	7.52	11.1	14.6	18.6	22.5	25.6	29.0	31.1	31.9
			X_T	0.634	0.650	0.656	0.690	0.672	0.672	0.695	0.702	0.756	0.817
			F_L	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
2	2 (50.8)	1-1/8 (28.6)	C_V	6.06	11.7	18.0	24.0	30.0	36.2	42.7	49.7	52.0	52.2
			X_T	0.560	0.642	0.655	0.674	0.700	0.723	0.776	0.771	0.860	0.992
			F_L	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
3	3 (76.2)	1-1/2 (38.1)	C_V	15.4	29.6	43.4	58.3	71.8	83.9	93.8	103	108	110
			X_T	0.622	0.642	0.692	0.691	0.690	0.721	0.759	0.788	0.839	0.888
			F_L	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
4	4 (101.6)	2 (50.8)	C_V	21.3	39.7	57.5	75.8	100	129	157	180	199	209
			X_T	0.622	0.642	0.692	0.691	0.690	0.721	0.759	0.788	0.839	0.888
			F_L	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89

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 (25.4)	3/4 (19.1)	C_V	1.95	3.40	4.95	6.10	7.70	9.20	10.8	13.0	15.0	16.6
			X_T	0.497	0.577	0.600	0.690	0.651	0.654	0.636	0.624	0.718	0.795
			F_L	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
2	1 (25.4)	3/4 (19.1)	C_V	1.87	3.40	4.95	6.47	8.04	9.65	11.22	12.76	14.34	15.5
			X_T	0.607	0.592	0.596	0.622	0.620	0.625	0.641	0.632	0.750	0.909
			F_L	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
3	2 (50.8)	1-1/8 (28.6)	C_V	6.59	13.3	20.7	28.1	36.0	44.0	55.6	67.5	76.2	80.6
			X_T	0.564	0.500	0.522	0.609	0.577	0.594	0.563	0.582	0.680	0.749
			F_L	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
4	2 (50.8)	1-1/8 (28.6)	C_V	6.16	12.8	20.0	27.8	36.1	45.1	58.8	67.5	78.8	86.8
			X_T	0.740	0.644	0.642	0.619	0.602	0.605	0.552	0.614	0.644	0.736
			F_L	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90

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

Table 15

Quick Opening Trim Sizing Coefficients, Flow Up

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%
1/2	1 (25.4)	3/4 (19.1)	C_V	1.76	3.29	4.29	4.40	4.40	4.40	4.40	4.40	4.40	4.40
			X_T	0.360	0.650	0.760	0.860	0.890	0.890	0.890	0.890	0.890	0.890
			F_L	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
3/4	1 (25.4)	3/4 (19.1)	C_V	3.85	7.19	9.40	9.72	9.72	9.72	9.72	9.72	9.72	9.72
			X_T	0.310	0.560	0.650	0.740	0.770	0.770	0.770	0.770	0.770	0.770
			F_L	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
1	1 (25.4)	3/4 (19.1)	C_V	4.35	10.1	13.9	15.5	16.0	16.6	16.7	16.8	16.9	16.9
			X_T	0.400	0.450	0.522	0.537	0.535	0.510	0.500	0.500	0.490	0.494
			F_L	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
1-1/2	1-1/2 (38.1)	3/4 (19.1)	C_V	5.62	11.8	20.5	27.2	30.5	32.2	33.1	33.5	34.0	34.1
			X_T	0.621	0.734	0.726	0.812	0.841	0.855	0.860	0.860	0.853	0.848
			F_L	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
2	2 (50.8)	1-1/8 (28.6)	C_V	13.0	30.2	44.2	52.3	56.1	57.6	58.4	58.4	58.6	58.6
			X_T	0.546	0.662	0.765	0.811	0.816	0.831	0.831	0.835	0.832	0.832
			F_L	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
3	3 (76.2)	1-1/2 (38.1)	C_V	30.8	65.1	92.4	110	118	123	126	128	129	129
			X_T	0.670	0.710	0.71	0.740	0.780	0.790	0.780	0.780	0.770	0.770
			F_L	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
4	4 (101.6)	2 (50.8)	C_V	50.8	116	159	185	201	212	219	222	223	223
			X_T	0.73	0.65	0.72	0.81	0.81	0.82	0.81	0.81	0.83	0.84
			F_L	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88

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 (25.4)	3/4 (19.1)	C_V	4.15	8.93	14.5	17.2	18.1	18.6	18.8	19.0	19.1	19.3
			X_T	0.615	0.790	0.792	0.904	0.925	0.925	0.922	0.915	0.905	0.879
			F_L	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2	1 (25.4)	3/4 (19.1)	C_V	4.35	9.76	14.7	16.5	17.2	17.5	17.5	17.5	17.8	17.8
			X_T	0.522	0.595	0.695	0.876	0.935	0.942	0.958	0.958	0.941	0.941
			F_L	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
3	2 (50.8)	1-1/8 (28.6)	C_V	9.99	27.6	44.9	61.0	71.9	78.4	83.1	86.2	87.5	88.4
			X_T	0.527	0.511	0.652	0.720	0.780	0.820	0.814	0.798	0.790	0.779
			F_L	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
4	2 (50.8)	1-1/8 (28.6)	C_V	13.5	32.3	52.2	66.2	74.4	81.1	85.0	85.8	86.3	86.7
			X_T	0.490	0.556	0.609	0.672	0.793	0.772	0.728	0.714	0.711	0.704
			F_L	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85

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 16

Dyna-Form (Equal Percent) Trim Sizing Coefficients, Flow Up

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1/2	1/4 (6.4)	3/4 (19.1)	C_V	0.088	0.124	0.175	0.236	0.327	0.464	0.641	0.881	1.22	1.52
			X_T	0.771	0.717	0.658	0.645	0.620	0.585	0.596	0.596	0.603	0.647
			F_L	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
1/2	3/8 (9.5)	3/4 (19.1)	C_V	0.134	0.202	0.313	0.448	0.613	0.879	1.27	1.77	2.47	3.00
			X_T	0.711	0.679	0.618	0.602	0.588	0.564	0.580	0.599	0.593	0.723
			F_L	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
1/2	1/2 (12.7)	3/4 (19.1)	C_V	0.193	0.324	0.496	0.737	1.07	1.52	2.13	2.93	3.89	4.52
			X_T	0.689	0.631	0.595	0.603	0.602	0.592	0.604	0.636	0.687	0.754
			F_L	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
3/4	1/4 (6.4)	3/4 (19.1)	C_V	0.088	0.124	0.175	0.236	0.327	0.464	0.641	0.881	1.22	1.52
			X_T	0.771	0.717	0.658	0.645	0.620	0.585	0.596	0.596	0.603	0.647
			F_L	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
3/4	3/8 (9.5)	3/4 (19.1)	C_V	0.131	0.205	0.312	0.446	0.618	0.882	1.28	1.80	2.45	3.03
			X_T	0.751	0.642	0.655	0.616	0.597	0.603	0.601	0.607	0.650	0.736
			F_L	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
3/4	1/2 (12.7)	3/4 (19.1)	C_V	0.190	0.318	0.486	0.732	1.07	1.52	2.15	3.07	4.20	5.06
			X_T	0.720	0.655	0.628	0.606	0.598	0.598	0.596	0.596	0.636	0.722
			F_L	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
3/4	3/4 (19.1)	3/4 (19.1)	C_V	0.373	0.617	0.948	1.44	2.14	3.10	4.43	6.14	7.58	8.35
			X_T	0.702	0.618	0.634	0.605	0.607	0.646	0.670	0.699	0.730	0.693
			F_L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
1	1/4 (6.4)	3/4 (19.1)	C_V	0.088	0.124	0.175	0.236	0.327	0.464	0.641	0.881	1.22	1.52
			X_T	0.771	0.717	0.658	0.645	0.620	0.585	0.596	0.596	0.603	0.647
			F_L	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
1	3/8 (9.5)	3/4 (19.1)	C_V	0.129	0.199	0.308	0.448	0.620	0.882	1.29	1.80	2.43	3.07
			X_T	0.747	0.663	0.641	0.593	0.569	0.568	0.560	0.571	0.624	0.662
			F_L	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
1	1/2 (12.7)	3/4 (19.1)	C_V	0.189	0.319	0.492	0.735	1.08	1.53	2.12	2.99	4.17	4.91
			X_T	0.728	0.639	0.628	0.591	0.573	0.585	0.600	0.618	0.645	0.803
			F_L	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
1	3/4 (19.1)	3/4 (19.1)	C_V	0.374	0.622	0.965	1.47	2.17	3.15	4.57	6.52	8.17	8.84
			X_T	0.687	0.614	0.588	0.560	0.571	0.596	0.603	0.624	0.750	0.919
			F_L	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
1-1/2	1/4 (6.4)	3/4 (19.1)	C_V	0.088	0.124	0.175	0.236	0.327	0.464	0.641	0.881	1.22	1.52
			X_T	0.771	0.717	0.658	0.645	0.62	0.585	0.596	0.596	0.603	0.647
			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	3/8 (9.5)	3/4 (19.1)	C_V	0.121	0.19	0.302	0.435	0.600	0.864	1.26	1.80	2.56	3.20
			X_T	0.915	0.763	0.699	0.657	0.640	0.624	0.608	0.596	0.594	0.648
			F_L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84

Table continued on Page 14.

Table 16 Continued

Dyna-Form (Equal Percent) Trim Sizing Coefficients, Flow Up

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	1/2 (12.7)	3/4 (19.1)	C_V	0.199	0.323	0.503	0.735	1.07	1.54	2.14	3.08	4.36	5.18
			X_T	0.748	0.686	0.64	0.617	0.627	0.602	0.607	0.607	0.573	0.705
			F_L	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
1-1/2	3/4 (19.1)	3/4 (19.1)	C_V	0.434	0.683	1.00	1.49	2.21	3.18	4.61	6.73	8.88	10.2
			X_T	0.747	0.625	0.636	0.596	0.578	0.603	0.593	0.591	0.68	0.796
			F_L	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
2	1/4 (6.4)	3/4 (19.1)	C_V	0.088	0.124	0.175	0.236	0.327	0.464	0.641	0.881	1.22	1.52
			X_T	0.771	0.717	0.658	0.645	0.620	0.585	0.596	0.596	0.603	0.647
			F_L	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
2	3/8 (9.5)	3/4 (19.1)	C_V	0.121	0.190	0.302	0.435	0.600	0.864	1.26	1.80	2.56	3.20
			X_T	0.915	0.763	0.699	0.657	0.640	0.624	0.608	0.596	0.594	0.648
			F_L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
2	1/2 (12.7)	3/4 (19.1)	C_V	0.199	0.323	0.503	0.735	1.07	1.54	2.14	3.08	4.36	5.18
			X_T	0.748	0.686	0.640	0.617	0.627	0.602	0.607	0.607	0.573	0.705
			F_L	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
2	3/4 (19.1)	3/4 (19.1)	C_V	0.434	0.683	1.00	1.49	2.21	3.18	4.61	6.73	8.88	10.2
			X_T	0.747	0.625	0.636	0.596	0.578	0.603	0.593	0.591	0.680	0.796
			F_L	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92

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

Table 17

Dyna-Flute 1 Flute (Equal Percent) Trim Sizing Coefficients, Flow Up

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1/2	1/4 (6.4)	3/4 (19.1)	C_V	0.0385	0.0455	0.0560	0.0719	0.0942	0.1240	0.1620	0.2120	0.2780	0.3540
			X_T	0.778	0.734	0.69	0.653	0.642	0.635	0.637	0.634	0.632	0.656
			F_L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
3/4	1/4 (6.4)	3/4 (19.1)	C_V	0.0385	0.0455	0.0560	0.0719	0.0942	0.1240	0.1620	0.2120	0.2780	0.3540
			X_T	0.778	0.734	0.690	0.653	0.642	0.635	0.637	0.634	0.632	0.656
			F_L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
1	1/4 (6.4)	3/4 (19.1)	C_V	0.0385	0.0455	0.0560	0.0719	0.0942	0.1240	0.1620	0.2120	0.2780	0.3540
			X_T	0.778	0.734	0.690	0.653	0.642	0.635	0.637	0.634	0.632	0.656
			F_L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
1-1/2	1/4 (6.4)	3/4 (19.1)	C_V	0.0385	0.0455	0.0560	0.0719	0.0942	0.1240	0.1620	0.2120	0.2780	0.3540
			X_T	0.778	0.734	0.690	0.653	0.642	0.635	0.637	0.634	0.632	0.656
			F_L	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
2	1/4 (6.4)	3/4 (19.1)	C_V	0.0385	0.0455	0.0560	0.0719	0.0942	0.1240	0.1620	0.2120	0.2780	0.3540
			X_T	0.778	0.734	0.69	0.653	0.642	0.635	0.637	0.634	0.632	0.656
			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: $C_1 = 39.76\sqrt{X_T}$ $C_G = C_V C_1$ $K_M = F_L^2$

Table 18

Dyna-Flute 3 Flute (Equal Percent) Trim Sizing Coefficients, Flow Up

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1/2	1/4 (6.4)	3/4 (19.1)	C_V	0.0562	0.0725	0.1010	0.1460	0.2160	0.3120	0.4330	0.5880	0.8020	1.070
			X_T	0.692	0.648	0.639	0.625	0.600	0.586	0.597	0.613	0.620	0.624
			F_L	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
3/4	1/4 (6.4)	3/4 (19.1)	C_V	0.0562	0.0725	0.1010	0.1460	0.2160	0.3120	0.4330	0.5880	0.8020	1.070
			X_T	0.692	0.648	0.639	0.625	0.600	0.586	0.597	0.613	0.620	0.624
			F_L	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
1	1/4 (6.4)	3/4 (19.1)	C_V	0.0562	0.0725	0.1010	0.1460	0.2160	0.3120	0.4330	0.5880	0.8020	1.070
			X_T	0.692	0.648	0.639	0.625	0.600	0.586	0.597	0.613	0.620	0.624
			F_L	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
1-1/2	1/4 (6.4)	3/4 (19.1)	C_V	0.0562	0.0725	0.1010	0.1460	0.2160	0.3120	0.4330	0.5880	0.8020	1.070
			X_T	0.692	0.648	0.639	0.625	0.600	0.586	0.597	0.613	0.620	0.624
			F_L	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2	1/4 (6.4)	3/4 (19.1)	C_V	0.0562	0.0725	0.1010	0.1460	0.2160	0.3120	0.4330	0.5880	0.8020	1.070
			X_T	0.692	0.648	0.639	0.625	0.600	0.586	0.597	0.613	0.620	0.624
			F_L	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90

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

Table 19

Dyna-Flat 1° (Linear) Trim Sizing Coefficients, Flow Up

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1/2	3/16 (4.8)	3/4 (19.1)	C_V	0.003	0.003	0.003	0.003	0.005	0.008	0.011	0.015	0.019	0.022
			X_T	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
			F_L	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
3/4	3/16 (4.8)	3/4 (19.1)	C_V	0.003	0.003	0.003	0.003	0.005	0.008	0.011	0.015	0.019	0.022
			X_T	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
			F_L	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
1	3/16 (4.8)	3/4 (19.1)	C_V	0.003	0.003	0.003	0.003	0.005	0.008	0.011	0.015	0.019	0.022
			X_T	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
			F_L	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
1-1/2	3/16 (4.8)	3/4 (19.1)	C_V	0.003	0.003	0.003	0.003	0.005	0.008	0.011	0.015	0.019	0.022
			X_T	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
			F_L	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
2	3/16 (4.8)	3/4 (19.1)	C_V	0.003	0.003	0.003	0.003	0.005	0.008	0.011	0.015	0.019	0.022
			X_T	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
			F_L	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98

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

Table 20

Dyna-Flat 1° 8 min. (Linear) Trim Sizing Coefficients, Flow Up

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1/2	3/16 (4.8)	3/4 (19.1)	C_V	0.004	0.006	0.008	0.011	0.014	0.018	0.022	0.026	0.031	0.036
			X_T	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
			F_L	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
3/4	3/16 (4.8)	3/4 (19.1)	C_V	0.004	0.006	0.008	0.011	0.014	0.018	0.022	0.026	0.031	0.036
			X_T	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
			F_L	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
1	3/16 (4.8)	3/4 (19.1)	C_V	0.004	0.006	0.008	0.011	0.014	0.018	0.022	0.026	0.031	0.036
			X_T	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
			F_L	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
1-1/2	3/16 (4.8)	3/4 (19.1)	C_V	0.004	0.006	0.008	0.011	0.014	0.018	0.022	0.026	0.031	0.036
			X_T	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
			F_L	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
2	3/16 (4.8)	3/4 (19.1)	C_V	0.004	0.006	0.008	0.011	0.014	0.018	0.022	0.026	0.031	0.036
			X_T	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
			F_L	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98

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

Table 21

Dyna-Flat 1° 55 min. (Linear) Trim Sizing Coefficients, Flow Up

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1/2	3/16 (4.8)	3/4 (19.1)	C_V	0.015	0.020	0.024	0.028	0.034	0.041	0.048	0.056	0.066	0.075
			X_T	0.964	0.888	0.906	0.947	0.942	0.928	0.949	0.947	0.918	0.934
			F_L	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
3/4	3/16 (4.8)	3/4 (19.1)	C_V	0.015	0.020	0.024	0.028	0.034	0.041	0.048	0.056	0.066	0.075
			X_T	0.964	0.888	0.906	0.947	0.942	0.928	0.949	0.947	0.918	0.934
			F_L	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
1	3/16 (4.8)	3/4 (19.1)	C_V	0.015	0.020	0.024	0.028	0.034	0.041	0.048	0.056	0.066	0.075
			X_T	0.964	0.888	0.906	0.947	0.942	0.928	0.949	0.947	0.918	0.934
			F_L	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
1-1/2	3/16 (4.8)	3/4 (19.1)	C_V	0.015	0.020	0.024	0.028	0.034	0.041	0.048	0.056	0.066	0.075
			X_T	0.964	0.888	0.906	0.947	0.942	0.928	0.949	0.947	0.918	0.934
			F_L	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
2	3/16 (4.8)	3/4 (19.1)	C_V	0.015	0.020	0.024	0.028	0.034	0.041	0.048	0.056	0.066	0.075
			X_T	0.964	0.888	0.906	0.947	0.942	0.928	0.949	0.947	0.918	0.934
			F_L	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89

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 22

Dyna-Flat 3° 25 min. (Linear) Trim Sizing Coefficients, Flow Up

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel									
				10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
1/2	3/16 (4.8)	3/4 (19.1)	C_V	0.016	0.026	0.038	0.052	0.070	0.088	0.107	0.127	0.153	0.181
			X_T	0.707	0.697	0.687	0.700	0.675	0.679	0.680	0.680	0.681	0.681
			F_L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
3/4	3/16 (4.8)	3/4 (19.1)	C_V	0.016	0.026	0.038	0.052	0.070	0.088	0.107	0.127	0.153	0.181
			X_T	0.707	0.697	0.687	0.700	0.675	0.679	0.680	0.680	0.681	0.681
			F_L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
1	3/16 (4.8)	3/4 (19.1)	C_V	0.016	0.026	0.038	0.052	0.070	0.088	0.107	0.127	0.153	0.181
			X_T	0.707	0.697	0.687	0.700	0.675	0.679	0.680	0.680	0.681	0.681
			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	3/16 (4.8)	3/4 (19.1)	C_V	0.016	0.026	0.038	0.052	0.070	0.088	0.107	0.127	0.153	0.181
			X_T	0.707	0.697	0.687	0.700	0.675	0.679	0.680	0.680	0.681	0.681
			F_L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
2	3/16 (4.8)	3/4 (19.1)	C_V	0.016	0.026	0.038	0.052	0.070	0.088	0.107	0.127	0.153	0.181
			X_T	0.707	0.697	0.687	0.700	0.675	0.679	0.680	0.680	0.681	0.681
			F_L	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84

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

Table 23

Bellows Bonnet with Live Loaded Packing Valve Sizing Coefficients (C_v)

Valve Size Inch	Bellows Travel Inch (mm)	Full Size Trim Flow Up			Restricted Trim Flow Up		
		Equal Percentage	Linear	Quick Open	Equal Percentage	Linear	Quick Open
1	9/16 (14.3)	9.15	11.6	16.8	---	---	---
1-1/2	9/16 (14.3)	13.1	27.5	33.6	10.0	12.0	19.0
2	7/8 (22.2)*	38.8	46.2	58.5	15.9	15.7	17.9
3	1-1/8 (28.6)	73.4	93.4	127	71.5	80.4	88.4
4	1-1/2 (38.1)**	118	168	221	72.7	86.8	86.7

* - Travel for Restricted Trim 0.75 inch (19.1 mm)
** - Travel for Restricted Trim 1.125 inch (28.6 mm)

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

NOTE: For Bellows Bonnet valves 150 - 300 Class maximum pressure is 300 Psig at 350°F.

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Table 24

Typical Construction Materials

Part Description	Standard Construction	NACE Construction
BODY	LCC	LCC
	WCC	WCC
	CF8M	CF8M
BONNET	LCC	LCC
	WCC	WCC
	CF8M	CF8M
BAFFLE	S31600**	S31600**
BELLOWS BONNET	S31600** / N06625	S31600** / N06625
PACKING BOX RING	S31600**	S31600**
PACKING SPRING	S30400	N/A
SPRING WASHERS	N07718	N07718
O-RING	HNBR	HNBR
LANTERN RING	-	S31600**
SPECIAL WASHER	S30400	N/A
GUIDE BUSHING	CARBON GRAPHITE	N/A
V-RING PACKING SET	PTFE	PTFE (Double)
PACKING RIBBON	GRAPHITE	GRAPHITE
PACKING FILAMENT	GRAPHITE	GRAPHITE
PACKING FOLLOWER	S31600**	S31600**
PACKING FLANGE	1020 / ZINC	1020 / ZINC
UPPER WIPER	FELT	FELT
LOWER WIPER	TEFLON	TEFLON
VALVE PLUG - STEM ASSEMBLY	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 - 20910 STEM
VALVE PLUG ADAPTER	S31600**	S31600**
PIN	STEEL	STEEL
SEAT RING	S41600 HT	N/A
	S31600** / ALLOY 6	S31600** / ALLOY 6
	S31600**	S31600**
SEAT RING RETAINER	CF8M*	CF8M*
SEAT RING RETAINER BUSHING	S31600** / ALLOY 6	S31600** / ALLOY 6
	S17400 DH1150	S17400 DH1150
PACKING FLANGE	CARBON STEEL (PLATED)	CARBON STEEL (PLATED)
PACKING NUT	2H	2H
PACKING STUD	B7	B7
BONNET NUT	2H	2HM
BONNET STUD	B7	B7M
	S17400 DH1150* (600 ASME Class)	S17400 DH1150* (600 ASME Class)
GASKETS	GRAPHITE / S31600	GRAPHITE / S31600
SPIRAL WOUND GASKET	S30400 / GRAPHITE	S30400 / GRAPHITE
SHIM	S31600	S31600
STEM SET SCREW	N07718	N07718
STEM SCREW RETAINER	18-8	18-8

**All S31600 Barstock is dual grade S31600/S31603 (316/316L).

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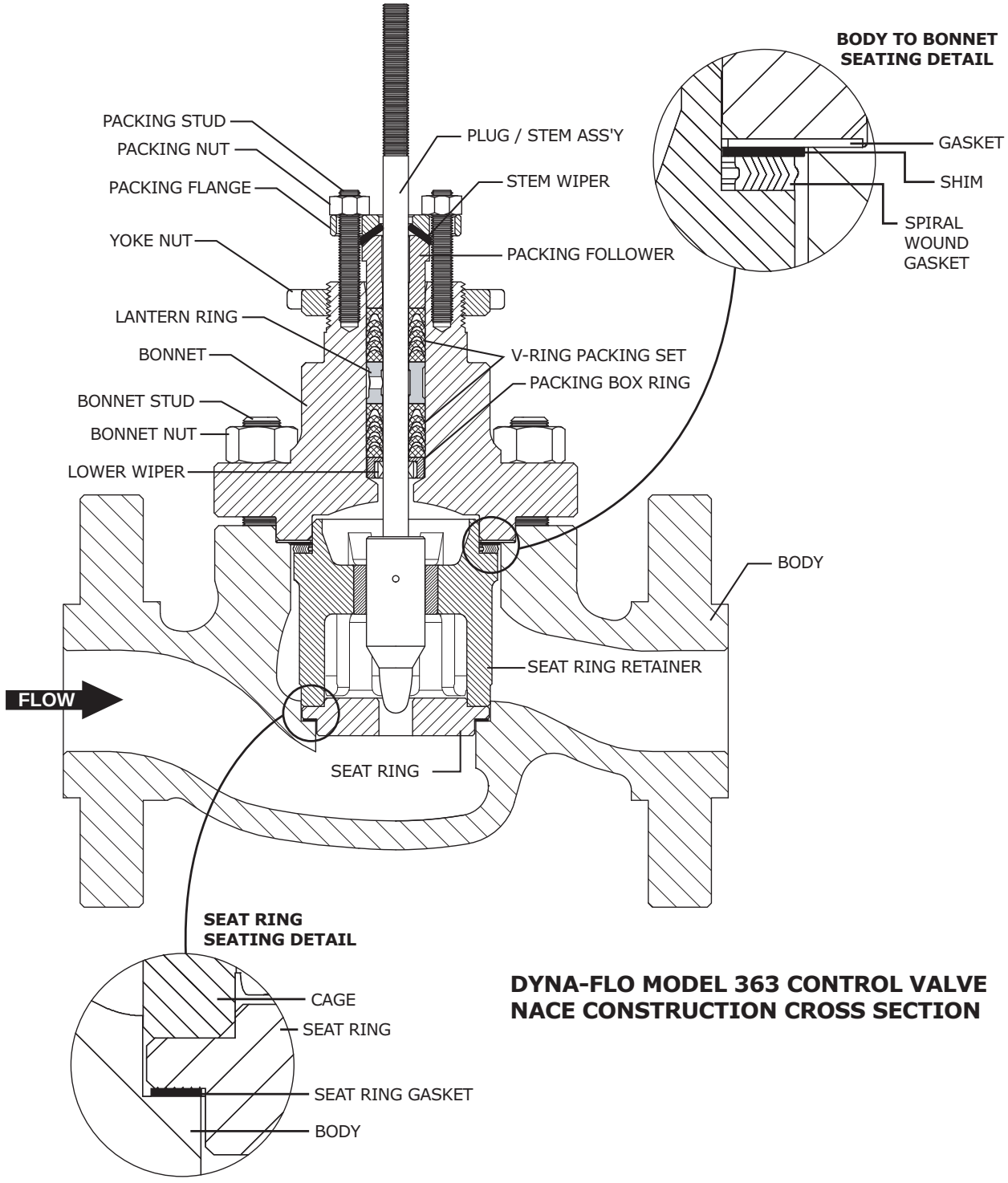
Figure 3 *Cross-section of 363 Series Control Valve with Trim Details*



DYNA-FLO MODEL 363 CONTROL VALVE
NACE CONSTRUCTION CROSS SECTION

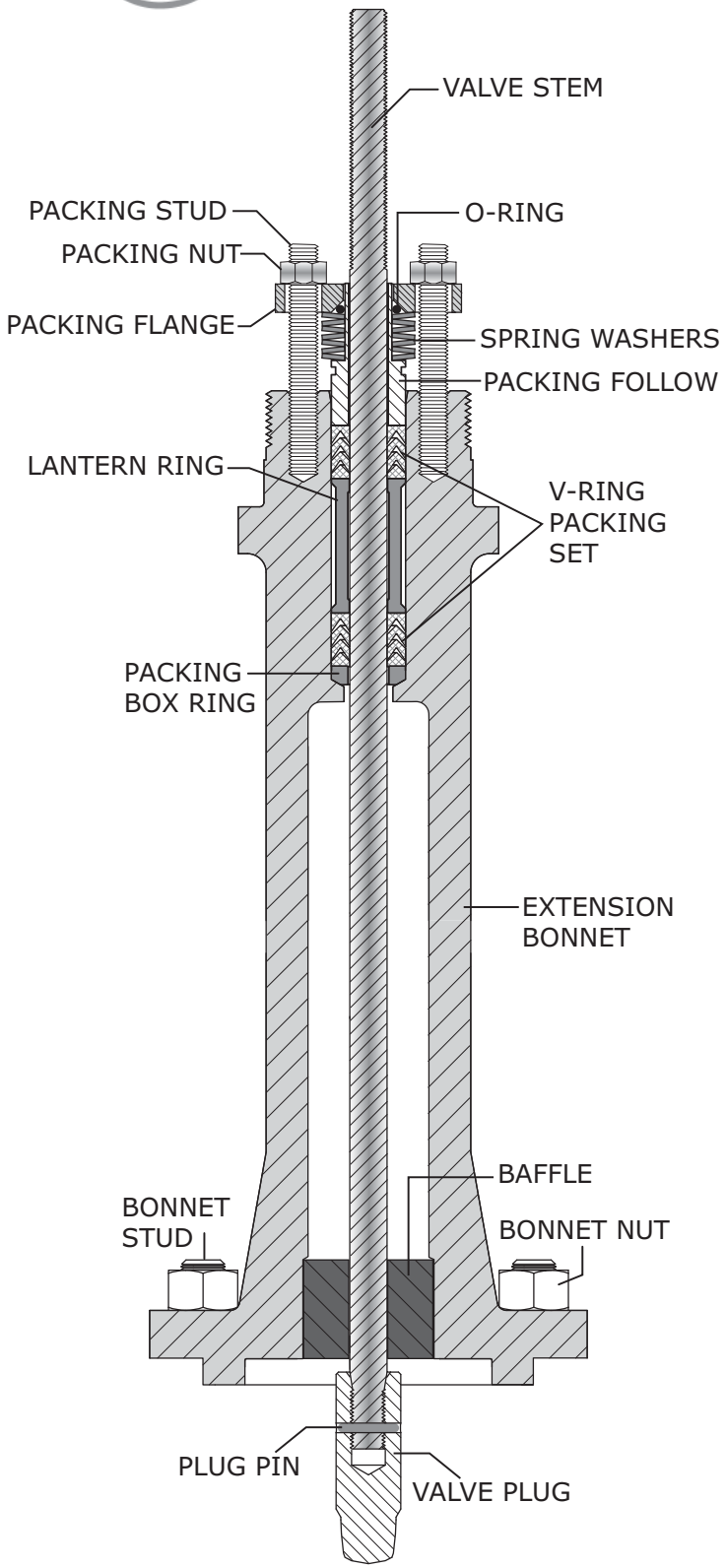


Figure 4 *Model 363 Extension Bonnet Cross Section*

Figure 5 *Valve Plug Style Diagrams*

***NOTE** - plug styles continued on Page 22.

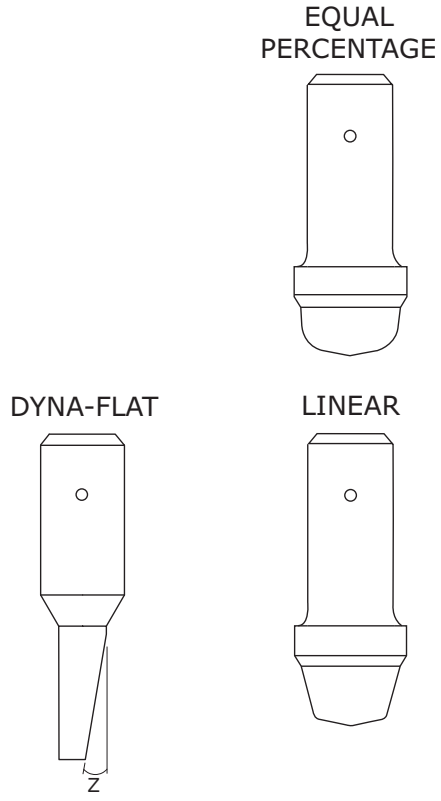
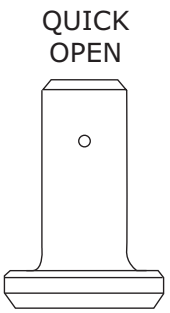
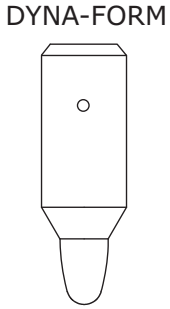


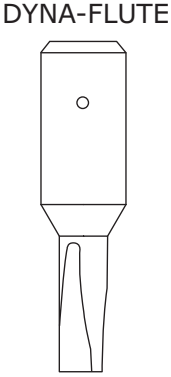
Figure 6 *Model 363 Bellows Bonnet Cross Section*

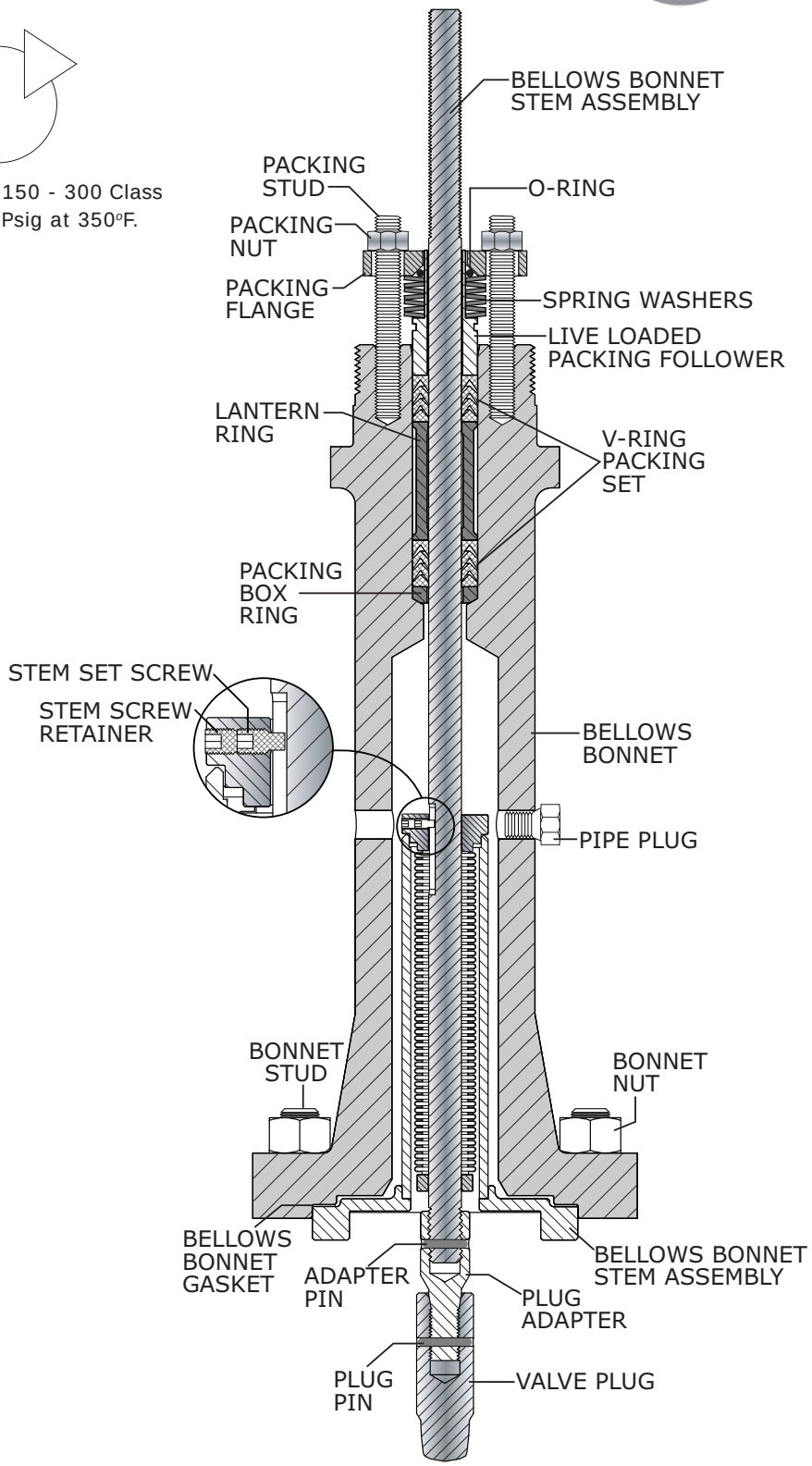
For Bellows Bonnet valves 150 - 300 Class maximum pressure is 300 Psig at 350°F.

Figure 7 *Valve Plug Style Diagrams*









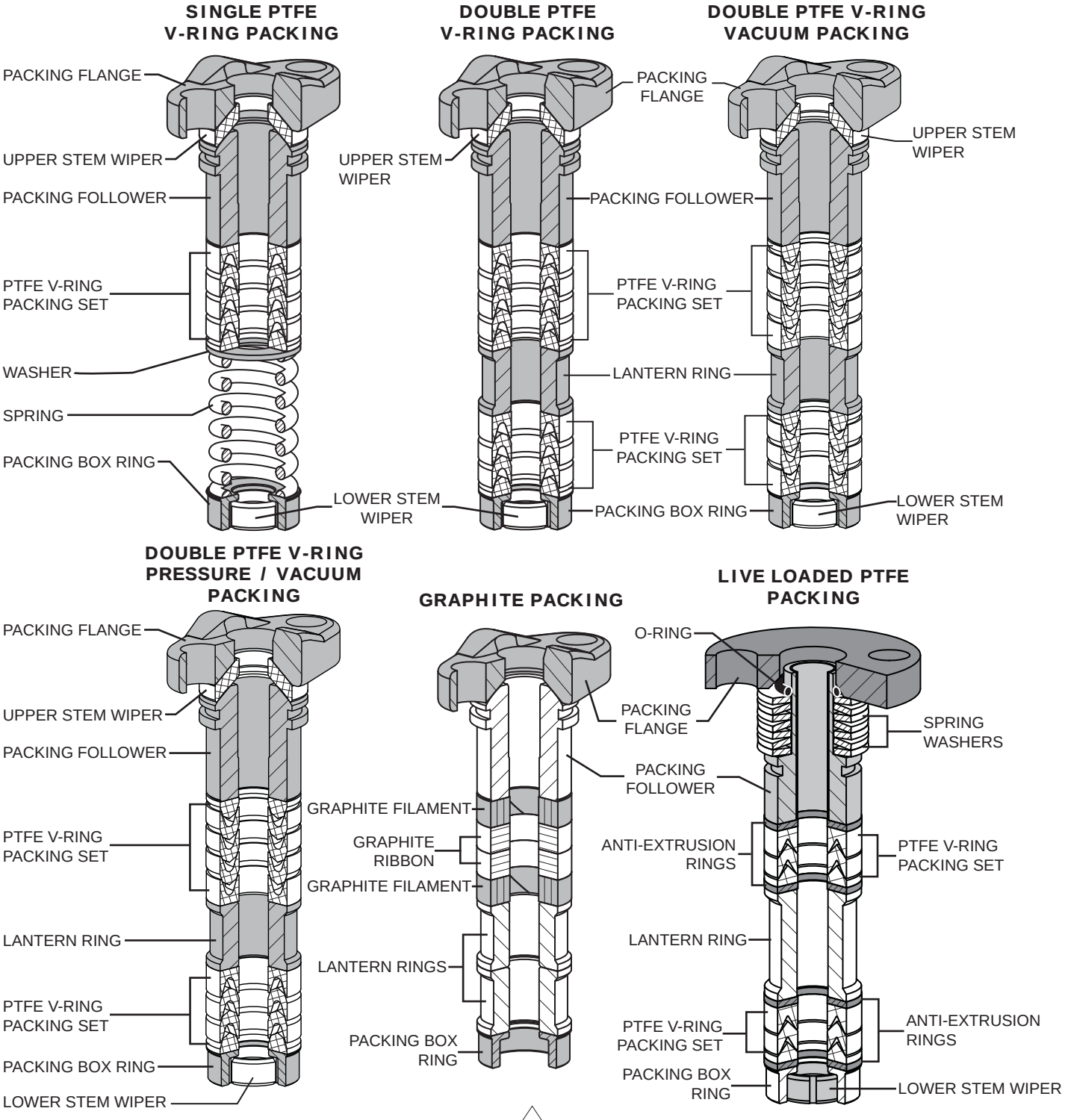
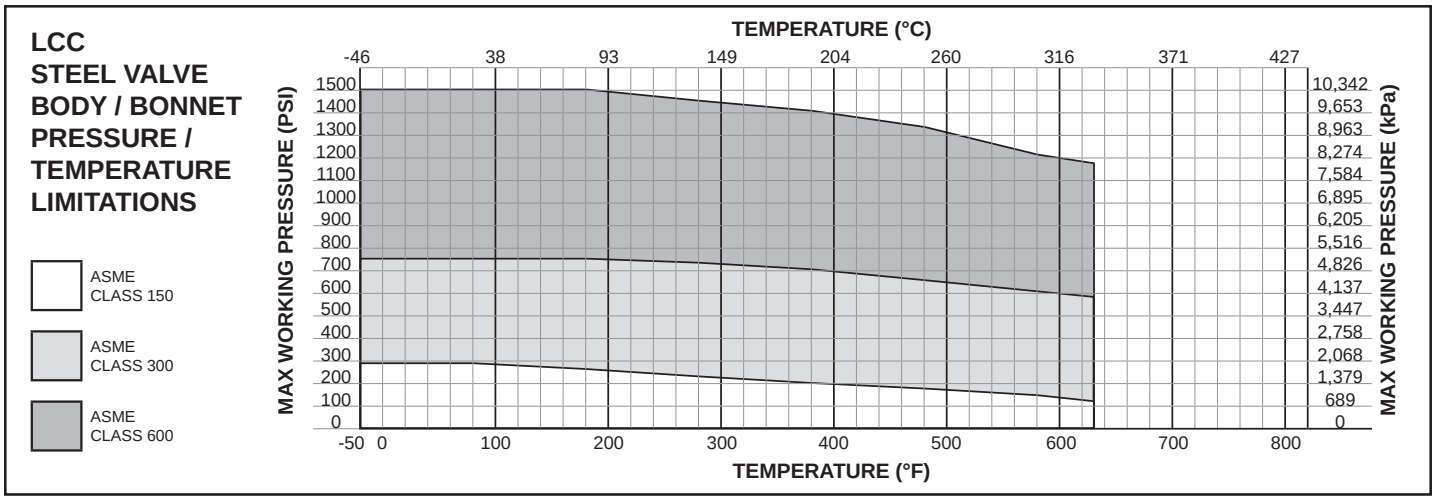
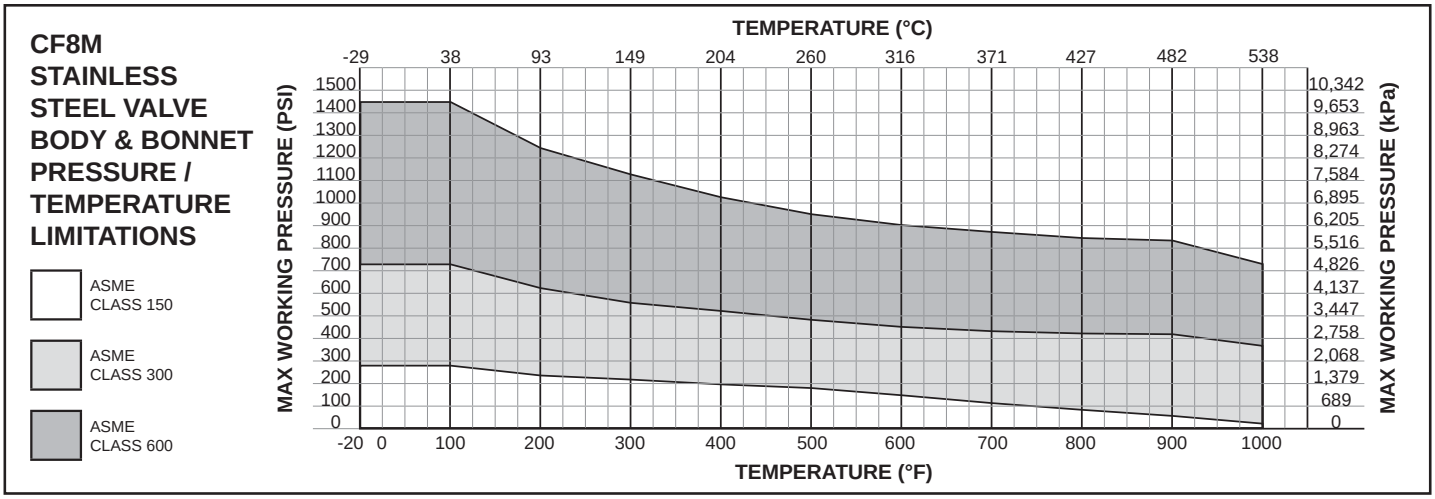


Figure 8 *Typical Packing Arrangements*



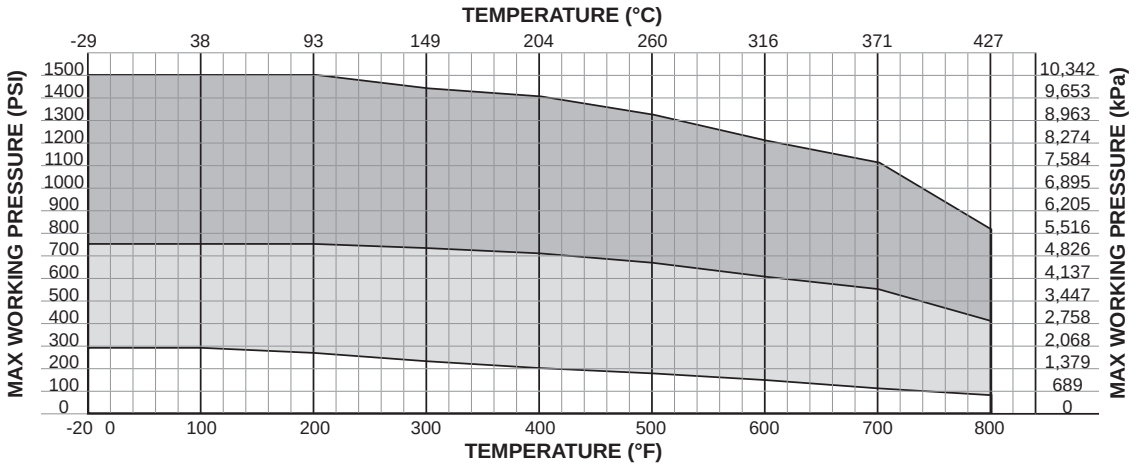


Maximum Inlet Temperature and Pressures - Valves consistent with ASME Class rating as per ASME B16.34, unless limited by either material, pressure or temperature limitations.

Figure 9 *Typical Valve Body and Bonnet Construction Materials*

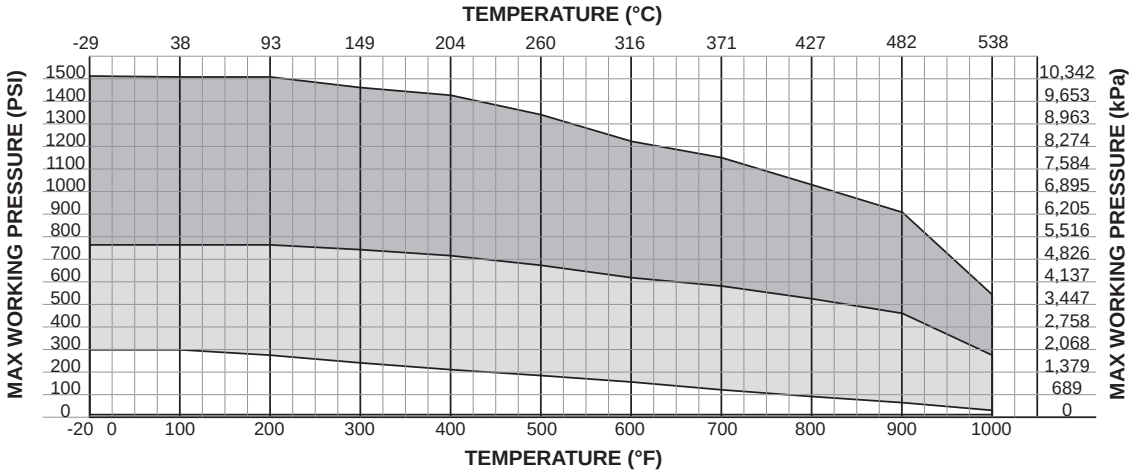
WCC
STEEL VALVE
BODY / BONNET
PRESSURE /
TEMPERATURE
LIMITATIONS

ASME CLASS 150
ASME CLASS 300
ASME CLASS 600



WC9
STAINLESS
STEEL VALVE
BODY & BONNET
PRESSURE /
TEMPERATURE
LIMITATIONS

ASME CLASS 150
ASME CLASS 300
ASME CLASS 600



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.

Figure 10 *Typical Valve Body and Bonnet Construction Materials Continued*

Table 25

Trim Options (Refer to Figures 9 & 10 for valve body pressure / temperature limits)

Trim Spec	Valve Plug	Stem	Retainer	Seat Ring	Guide Bushing
Z1	S41600	S20910	CF8M	S41600	S17400 DH1150
	Temperature Limitation: -20ºF to 800ºF (-29ºC TO 427ºC)				
Z2	S31600[2]	S20910	CF8M	S31600[2]	S17400 DH1150
	Temperature Limitation: -80ºF to 600ºF (-62ºC TO 316ºC)				
Z3	S31600[2] / Alloy 6 Hard Faced Seat	S20910	CF8M	S31600[2] / Alloy 6 Hard Faced Seat	S17400 DH1150
	Temperature Limitation: -80ºF to 600ºF (-62ºC TO 316ºC)				
Z4	S31600[2] / Alloy 6 Hard Faced Seat & Guide	S20910	CF8M	S31600[2] / Alloy 6 Hard Faced Seat	Alloy 6 (R30006)
	Temperature Limitation: -80ºF to 600ºF (-62ºC TO 316ºC)				
Z6	S31600[2]	S20910	CF8M	S31600[2]	Alloy 6 (R30006)
	Temperature Limitation: Contact Dyna-Flo Control Valve Services.				
Z7	S31600[2] / Alloy 6 Hard Faced Seat & Tip	S20910	CF8M	S31600[2] / Alloy 6 Hard Faced Seat & Bore	—
	Temperature Limitation: ºF to ºF (ºC TO ºC)				
Z8	S31600[2] / Alloy 6 Hard Faced Seat & Guide	S20910	CF8M	S31600[2] / Alloy 6 Hard Faced Seat	S17400 DH1150
	Temperature Limitation: Contact Dyna-Flo Control Valve Services.				
Z9	S31600[2] / Alloy 6 Hard Faced Seat	S20910	CF8M	S31600[2]	S17400 DH1150
	Temperature Limitation: Contact Dyna-Flo Control Valve Services.				
ZB	S31600[2] / Alloy 6 Hard Faced Seat	S20910	CF8M	S31600[2] / Alloy 6 Hard Faced Seat	Alloy 6 (R30006)
	Temperature Limitation: ºF to ºF (ºC TO ºC)				
ZF	S41600	S20910	CF8M	S41600	—
	Temperature Limitation: Contact Dyna-Flo Control Valve Services.				
ZN	S31600[2] / Alloy 6 Hard Faced Seat & Tip	S20910	CF8M	S31600[2]	—
	Temperature Limitation: Contact Dyna-Flo Control Valve Services.				
ZR	S31600[2] / Alloy 6 Hard Faced Seat & Tip	S20910	CF8M	S31600[2] / Alloy 6 Hard Faced Seat	—
	Temperature Limitation: Contact Dyna-Flo Control Valve Services.				

NOTE:

1 - S31600 (ENC)* available by special request (*Electroless Nickel Coating).

2 - All S31600 barstock is dual grade S31600/S31603 (316/316L).

Table 26

Valve Bolting Temperature Limitations

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

Table 27

Model 360 Bonnet and Packing Selection

Bonnet Style	Packing Material	In-Body Process Temperature Limitations
Standard Bonnet: Standard for all valve sizes 1 through 6.	PTFE V-Ring	0ºF to 450ºF (-18ºC to 232ºC)
	Graphite (Ribbon/Filament)	0ºF to 600ºF (-18ºC to 316ºC)[2]
Extension Bonnet Style 1: Standard for all 8 inch valves, optional for valves 1 through 6 inch.	PTFE V-Ring	-50ºF to 600ºF (-46ºC to 316ºC)[2]
	Graphite (Ribbon/Filament)	
Extension Bonnet Style 2: Optional for 1 though 8 inch valve sizes.	PTFE V-Ring	-150ºF to 600ºF (-101ºC to 316ºC)[2]
	Graphite (Ribbon/Filament)	

1 The above temperatures assume the presence of an ambient temperature outside the valve body of 70ºF (21ºC) 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.

2 Consult Dyna-Flo for temperatures above 450ºF (232ºC).

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

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Model 363 Control Valves

MODEL NUMBERING SYSTEM

SAMPLE PART NUMBER: 363-3AFL-508P2-ES4

							VALVE SIZE	**3**
9	1/2 INCH	**7**	3/4 INCH	**1**	1 INCH	**5**	1-1/2 INCH	
2	2 INCH	**3**	3 INCH	**4**	4 INCH			
							ASME RATING	**A**
A	150	**B**	300	**C**	600			
							END CONNECTION	**F**
F	RF	**J**	RTJ	**N**	NPT	**T**	BWE SCH 40	
L	BWE SCH 80	**S**	SOCKET WELD					
							BODY MATERIAL	**L**
L	LCC	**W**	WCC	**M**	CF8M	**9**	WC9	
							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 Z1	**2**	TRIM Z2	**3**	TRIM Z3	**4**	TRIM Z4	
6	TRIM Z6	**7**	TRIM Z7	**8**	TRIM Z8	**9**	TRIM Z9	
B	TRIM ZB	**F**	TRIM ZF	**N**	TRIM ZN	**R**	TRIM ZR	
							PORT SIZE	**08**
01	3/16 INCH PORT	**02**	1/4 INCH PORT	**03**	3/8 INCH PORT	**04**	1/2 INCH PORT	
06	3/4 INCH PORT	**08**	1 INCH PORT	**12**	1-1/2 INCH PORT	**16**	2 INCH PORT	
24	3 INCH 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)			
							PAINT	**-**
-	DFPS-01 (STANDARD)			**2**	DFPS-02 (SEVERE SERVICE)			
3	DFPS-03 (HIGH TEMPERATURE)							
							CHARACTERISTIC	**E**
E	EQUAL PERCENT (FULL PORT)			**Q**	QUICK OPENING (FULL PORT)			
L	LINEAR (FULL PORT)			**M**	DYNA-FORM			
G	DYNA-FLUTE - 1 FLUTE			**F**	DYNA-FLUTE - 3 FLUTE			
D	DYNA-FLAT (1°)			**C**	DYNA-FLAT (1° 8 MIN)			
A	DYNA-FLAT (1° 55 MIN)			**H**	DYNA-FLAT (3° 25 MIN)			
							BONNET STYLE	**S**
S	STANDARD			**T**	STANDARD TAPPED			
E	EXTENSION STYLE 1			**H**	EXTENSION STYLE 2			
B	BELLOWS SEAL							
							SHUT-OFF CLASS	**4**
4	CLASS IV	**5**	CLASS V	**6**	CLASS VI			

363 ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___

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