

Model 362 Control Valves

Technical Sales Bulletin



Figure 1 362 Control Valve

The Model 362 control valve is part of the 360 Series of control Valves.

The Model 362 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 362 valves with an option for soft seating.

The standard actuator for the Model 362 control valve is a Dyna-Flo Model DFC or DFO linear actuators. 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 362 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 362 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 800°F (427°C), with options available for higher temperatures.

Emissions Reducing Packing

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

Full Pressure Drop Capabilities

362 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/ISO 15156.

Shut Off Capability

Shut off options are available from ANSI/FCI 70.2 and IEC 60534-4 Class IV and Class VI.

Flow Characteristic Selections

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

Easy Maintenance

As with all 360 Series Valves, the 362 can be serviced in line with no special tools required.



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SPECIFICATIONS

Configurations

The Model 362 control valve is a high capacity single port, globe style valve with a bolted type bonnet. The standard valve plug action is push down to close. Refer to Table 1.

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

Sizes and Connection Styles (Refer to Table 1)

Model:	362
Size:	1", 1-1/2", 2", 3", 4", 6", 8"
Body:	Globe (All Sizes), Angle (1" / 2" / 3" / 4" / 6")
Rating:	ASME 150 / 300 / 600
Connection:	RF / RTJ / BWE NPT & SWE - 1", 1-1/2", and 2"

Maximum Inlet Pressures and Temperatures

Flanged valves consistent with ASME Class 150, 300, and 600 rating as per ASME B16.34, unless limited.

Maximum Pressure Drops

Maximum pressure drop is the same as maximum inlet pressure unless restricted by the following:

Standard Valve Trim: Figures 8A to 8D.

Low-Noise Valve Trim: Figures 8A to 8D.

Characteristic and Flow Direction

- Equal Percentage (Standard) - Flow Up (Globe Body) / Flow Down (Angle Body)
- Quick Opening - Flow Up (Globe Body) / Flow Down (Angle Body)
- Linear - Flow Up (Globe Body) / Flow Down (Angle Body)
- Low-Noise 3 (Linear) - Flow Up

Dimensions

Valve Outline Dimension Diagram

Refer to Figure 2.

Valve Assembly Dimensions

Refer to Tables 6 to 16.

Approximate Valve Body Weights

Refer to Table 3.

Materials

Body and bonnet material options include:

LCC (A350-LF2 optional* bonnet material)

WCC (A350-LF2 optional* bonnet material)

WC9 (A182-F22 optional* bonnet material)

CF8M (A182-F316 optional* bonnet material)

***NOTE:** Dyna-Flo reserves the right to substitute a cast material with the forged bar equivalent in the event a casting is not available.

Refer to Figures 8A to 8D for valve construction material temperature limitations. Refer to Tables 20 to 22 for trim selections.

Cross-Section of the Model 362 Control Valves

Refer to Figure 3.

Port Diameters and Maximum Valve Plug Travel

Refer to Tables 4 & 5.

Packing Type and Examples

The Standard packing is PTFE V-ring. Live-loaded low emission, graphite, KALREZ® and other packing arrangements are available. Refer to Figure 7.

Maximum Valve Sizing Coefficients

For standard coefficients at maximum travel, refer to Table 25 & 26. For full list of coefficients refer to document P-CVSM.

Service Application

Refer to Tables 17 - 26.

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

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Table 1

Available Valve Configurations

Valve Model	Valve Size Inch	End Connection					
		NPT ⁽¹⁾	RF ⁽²⁾ and RTJ ⁽³⁾ (Flanged)			BWE ⁽⁴⁾	SWE ⁽⁵⁾
			ASME Class 150	ASME Class 300	ASME Class 600		
362	1 / 1-1/2 / 2	✓	✓	✓	✓	✓	✓
	3 / 4 / 6 / 8	✗	✓	✓	✓	✓	✗
362A	1 & 2	✗	✓	✓	✓	✓	✗
	3 / 4 / 6	✗	✓	✓	✓	✓	✗
Notes:	1 - NPT = Screwed.						
	2 - RF = Raised Face.						
	3 - RTJ = Ring Type Joint.						
	4 - BWE = Butt Weld (ASME Class 600 Only).						
	5 - SWE = Socket Weld (ASME Class 600 Only).						

Table 2

Standard Shut-Off Classifications (in accordance with ANSI/FCI 70.2 and IEC 60534-4)

Valve Trim	Seat Option	Shut-Off Class	
All	PTFE (Soft Seated)	Standard	Class VI
	Metal	Standard	Class IV

Table 3

Approximate Valve Weights

Valve Size (inch)	lb	Kg
1	30	14
1-1/2	45	20
2	85	39
3	125	57
4	170	77
6	350	159
8	900	408



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Table 4

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)			
		Inch	mm	Inch	mm	Stem Diameter		YBD	
						Inch	mm	Inch	mm
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	47.6	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	177.8	2	50.8	3/4	19.1	3-9/16	90.5
	8	8	203.2	3	76.2	3/4	19.1	3-9/16	90.5
Reduced Port	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 5

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)			
		Inch	mm	Inch	mm	Stem Diameter		YBD	
						Inch	mm	Inch	mm
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 6

Valve Body Dimensions with BWE* End Connection Inches (mm)
 (Refer to Figure 2 on Page 10) (For 'C' Dimensions refer to Tables 13 to 16 on Pages 8 & 9)

Valve Size Inch	Globe Body		Angle Body A
	A	B	
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 (ASME Class 600 Only).

Table 7

Valve Body Dimensions with SWE* End Connection Inches (mm)
 (Refer to Figure 2 on Page 10) (For 'C' Dimensions refer to Tables 13 to 16 on Pages 8 & 9)

Valve Size Inch	Globe Body		Angle Body A
	A	B	
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	—	—	—
4	—	—	—
6	—	—	—
8	—	—	—

*NOTE: SWE - Socket weld (ASME Class 600 Only).



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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 refer to Tables 13 to 16 on Pages 8 & 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 refer to Tables 13 to 16 on Pages 8 & 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 (NPT End Connection) with Standard Actuator Envelope Dimensions

(with common stem diameter) Inches (mm) (Refer to Figure 2)

Valve Size (inch)	End Connection	A	B	C*
1	NPT	8.25 (210)	2.38 (60)	5.00 (127)
1-1/2	NPT	9.88 (251)	2.81 (71)	4.88 (124)
2	NPT	11.25 (286)	3.06 (78)	6.50 (165)
	NPT	11.25 (286)	3.06 (78)	6.50 (165)
	NPT	11.25 (286)	3.06 (78)	6.50 (165)

*NOTE: 'C' dimensions will vary depending on valve stem diameter, refer to Tables 13 - 16 on Pages 8 & 9.

Table 11

Valve Assembly (RF End Connection) with Standard Actuator Envelope Dimensions

(with common stem diameter) Inches (mm) (Refer to Figure 2)

Valve Size (inch)	End Connection	A	B	C*
1	150	7.25 (184)	2.38 (60)	5.00 (127)
	300	7.75 (197)	2.38 (60)	5.00 (127)
	600	8.25 (210)	2.38 (60)	5.00 (127)
1-1/2	150	8.75 (222)	2.81 (71)	4.88 (124)
	300	9.25 (235)	2.81 (71)	4.88 (124)
	600	9.88 (251)	2.81 (71)	4.88 (124)
2	150	10.00 (254)	3.06 (78)	6.50 (165)
	300	10.50 (267)	3.06 (78)	6.50 (165)
	600	11.25 (286)	3.06 (78)	6.50 (165)
3	150	11.75 (299)	3.81 (97)	7.50 (191)
	300	12.50 (318)	3.81 (97)	7.50 (191)
	600	13.25 (337)	3.81 (97)	7.50 (191)
4	150	13.88 (353)	5.06 (129)	8.69 (221)
	300	14.50 (368)	5.06 (129)	8.69 (221)
	600	15.50 (394)	5.06 (129)	8.69 (221)
6	150	17.75 (451)	5.50 (140)	9.88 (311)
	300	18.62 (473)	5.50 (140)	9.88 (311)
	600	20.00 (508)	5.50 (140)	9.88 (311)
8	150	21.38 (543)	7.50 (191)	*
	300	22.38 (556)	7.50 (191)	*
	600	24.00 (610)	7.50 (191)	*

*NOTE: 'C' dimensions will vary depending on valve stem diameter, refer to Tables 13 - 16 on Pages 8 & 9.



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Table 12

Valve Assembly (RTJ End Connection) with Standard Actuator Envelope Dimensions

(with common stem diameter) Inches (mm) (Refer to Figure 2)

Valve Size (inch)	End Connection	A	B	C*
1	150	7.75 (197)	2.38 (60)	5.00 (127)
	300	8.25 (210)	2.38 (60)	5.00 (127)
	600	8.25 (210)	2.38 (60)	5.00 (127)
1-1/2	150	9.25 (235)	2.81 (71)	4.88 (124)
	300	9.75 (248)	2.81 (71)	4.88 (124)
	600	9.88 (251)	2.81 (71)	4.88 (124)
2	150	10.50 (267)	3.06 (78)	6.50 (165)
	300	11.12 (282)	3.06 (78)	6.50 (165)
	600	11.38 (289)	3.06 (78)	6.50 (165)
3	150	12.25 (311)	3.81 (97)	7.50 (191)
	300	13.12 (333)	3.81 (97)	7.50 (191)
	600	13.38 (340)	3.81 (97)	7.50 (191)
4	150	14.38 (365)	5.06 (129)	8.69 (221)
	300	15.12 (384)	5.06 (129)	8.69 (221)
	600	15.62 (397)	5.06 (129)	8.69 (221)
6	150	18.25 (464)	5.50 (140)	9.88 (311)
	300	19.25 (489)	5.50 (140)	9.88 (311)
	600	20.12 (511)	5.50 (140)	9.88 (311)
8	150	21.88 (556)	7.50 (191)	*
	300	23.00 (584)	7.50 (191)	*
	600	24.12 (613)	7.50 (191)	*

*NOTE: 'C' dimensions will vary depending on valve stem diameter, refer to Tables 13 - 16 on Pages 8 & 9.

Table 13

Valve Dimensions for Standard 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	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)	—
6	—	—	9.88 (251)	10.62 (270)
6 ⁽¹⁾	—	—	12.26 (312)	13.00 (330)
8	—	—	Refer to Style 1 in Table 14	

NOTES: 1 - Dimensions for Low-Noise trim.

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Table 14

Extension Bonnet Valve Dimensions - 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)	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 Standard 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	—	7.00 (178)	6.87 (175)	8.69 (221)

Table 16

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

Valve Size (Inch)	C					
	Stem Diameter Inch (mm)					
	Style 1			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	—	11.00 (279)	11.19 (284)	—	19.00 (483)	18.69 (475)

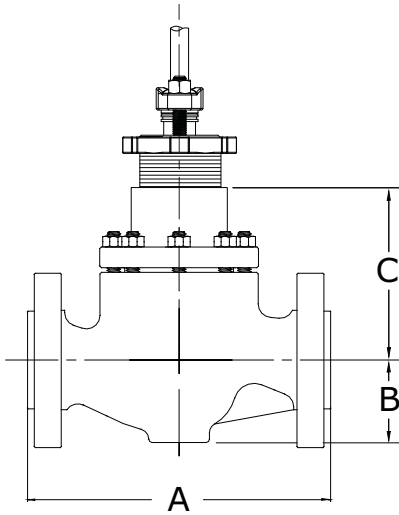
NOTE: For Low-Temperature bonnet dimensions, consult Dyna-Flo.



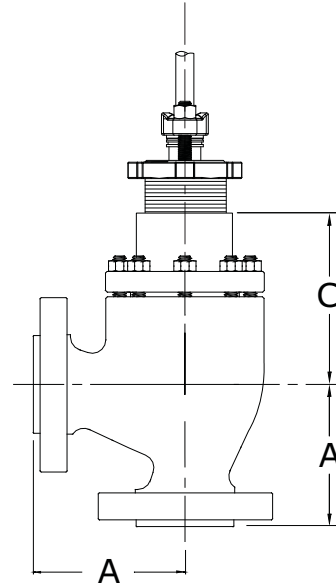
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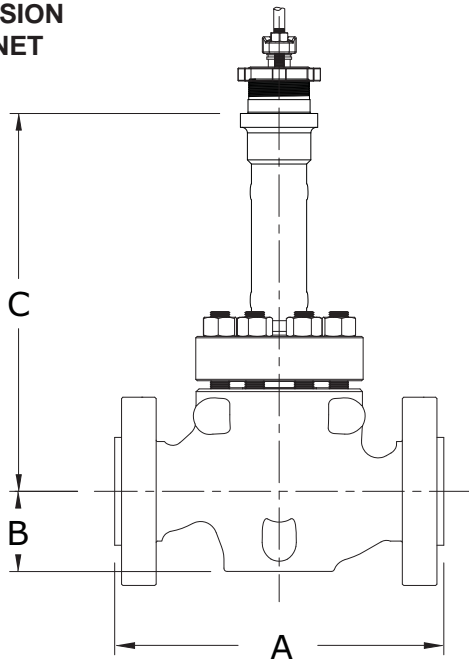
**FLANGED END
CONNECTION
GLOBE BODY**



**FLANGED END
CONNECTION
ANGLE BODY**



**STYLE 1
EXTENSION
BONNET**



**BUTTWELD
END
CONNECTION**

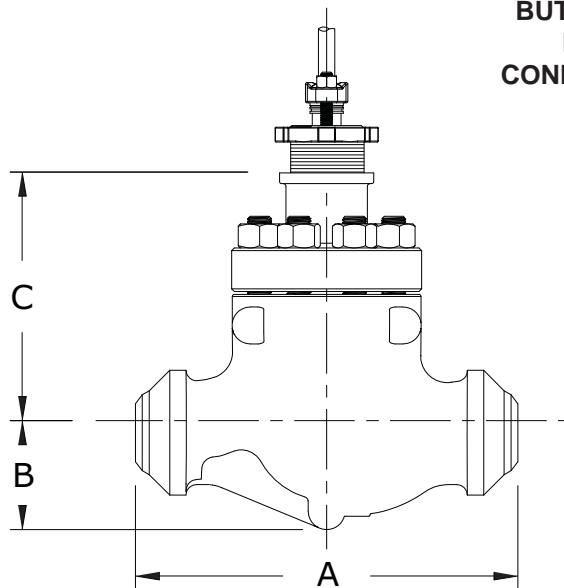


Figure 2 Typical Valve Assembly Diagrams

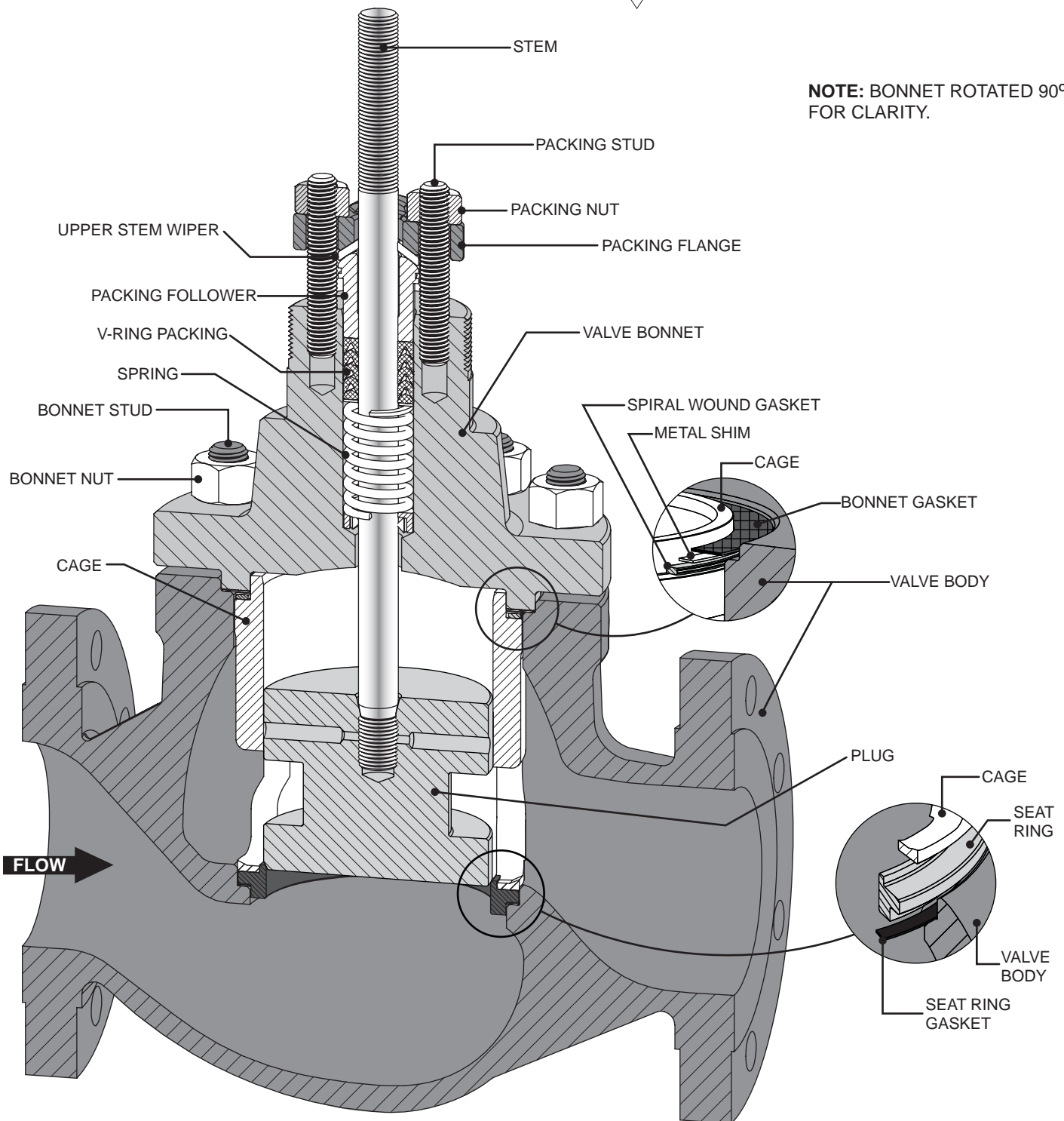
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Figure 3 Cross-section of 362 Series Control Valve

NOTE: BONNET ROTATED 90° FOR CLARITY.





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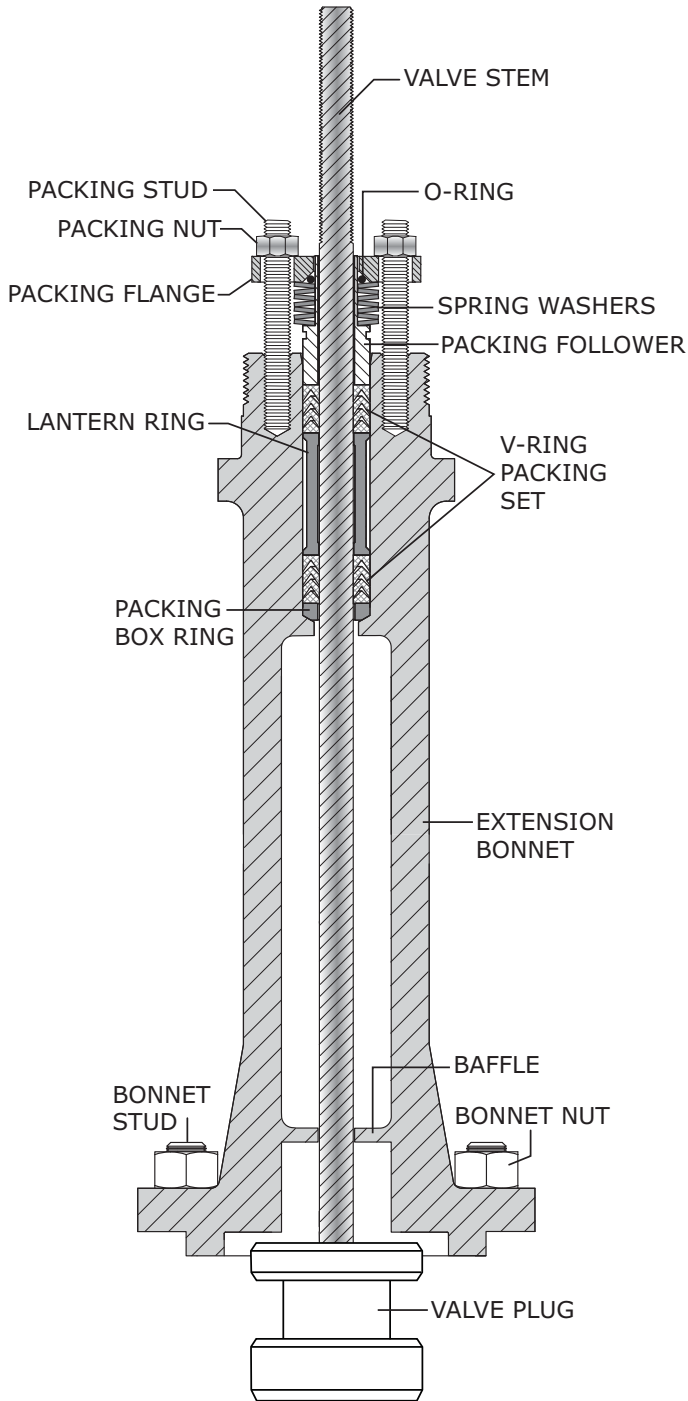


Figure 4 Model 362 Extension Bonnet Cross Section

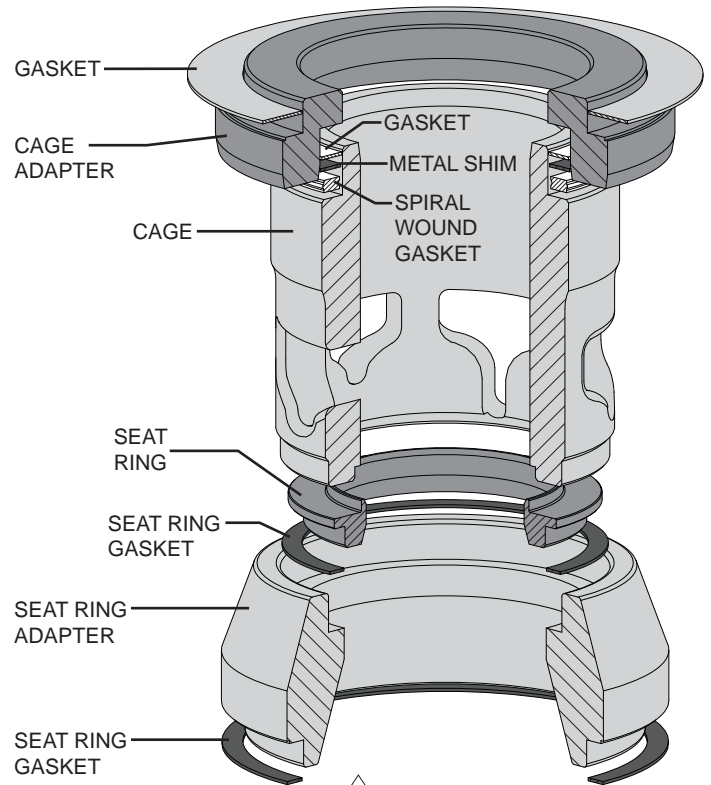


Figure 5 Reduced Port Trim Assembly Diagram

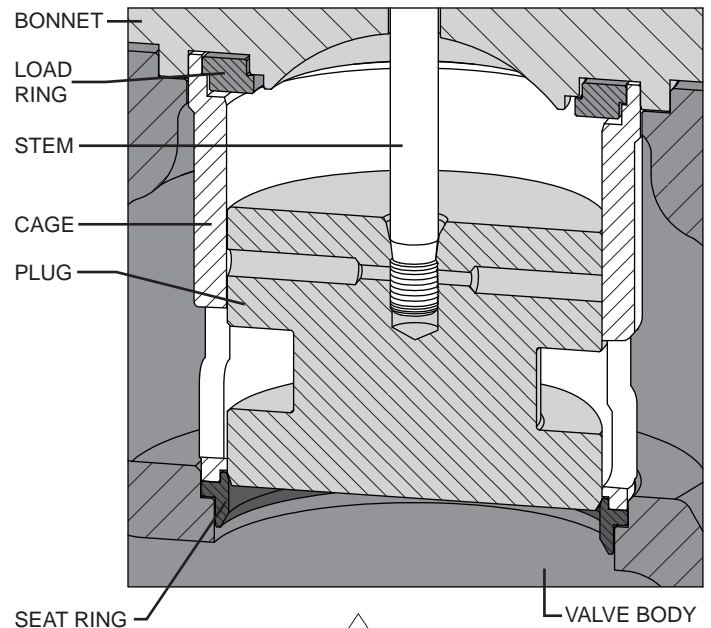


Figure 6 8 Inch Valve Assembly Load Ring Detail

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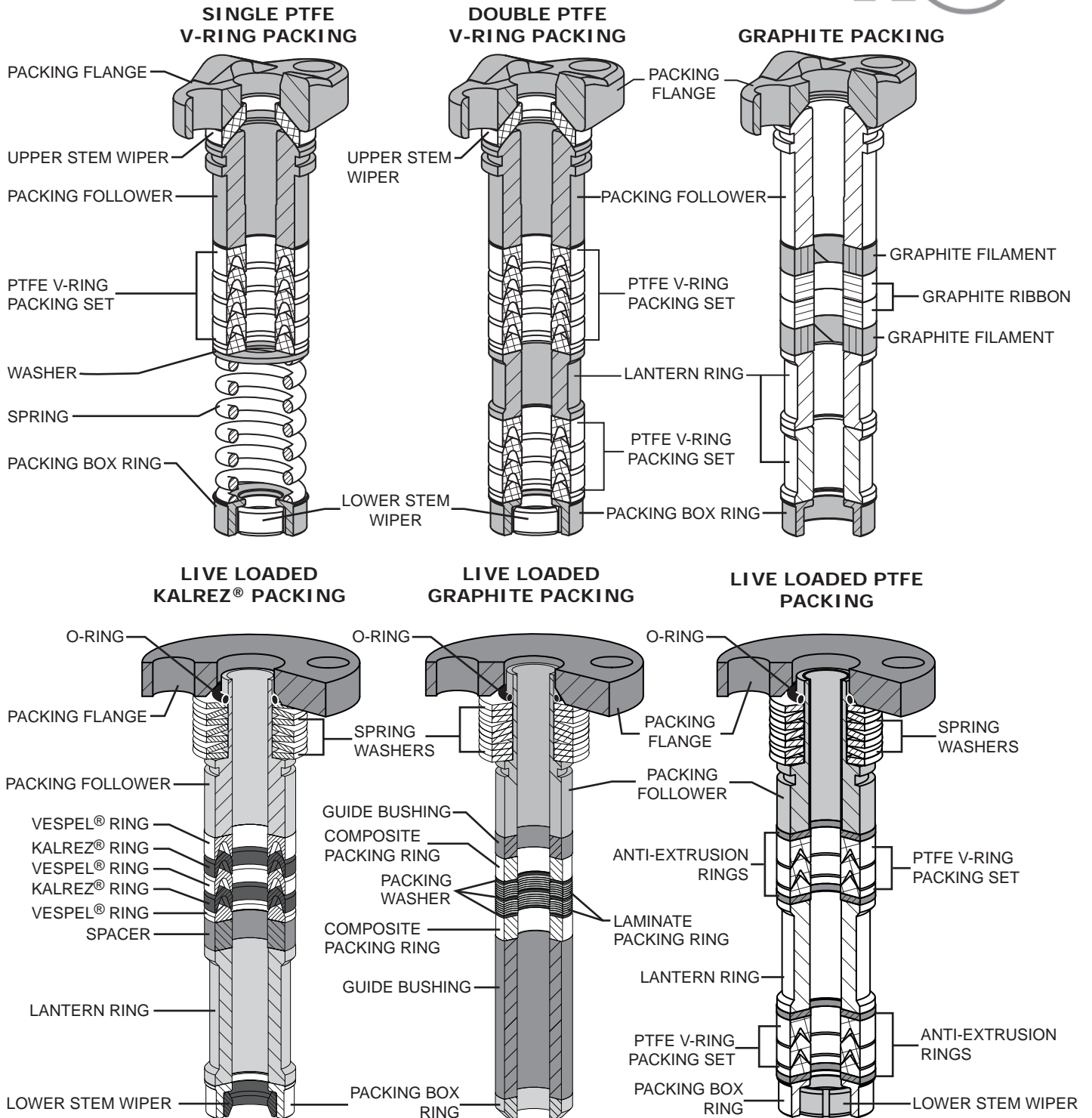


Figure 7 Typical Packing Arrangements



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Table 17

Body to Bonnet Bolting Temperature Limitations

Body Material	ASME Class	Bolt/Nut Material	Temperature Limitations			
			Min. °F	Max. °F	Min. °C	Max. °C
LCC	150/300/600	B7/2H ⁽¹⁾⁽²⁾	-50	650	-46	343
		B7M/2HM ⁽³⁾	-50	650	-46	343
WCC/WC9	150/300/600	B7/2H ⁽¹⁾⁽²⁾	-20	800	-29	427
		B7M/2HM ⁽³⁾	-20	800	-29	427
CF8M	150/300/600	B7 Fluorokote #1 / 2H Fluorokote #1 (Standard) ⁽²⁾	-50	500	-46	260
		B8M/8M ⁽²⁾	-325	800	-198	427
		B7M Fluorokote #1/ 2HM Fluorokote #1 ⁽³⁾	-50	500	-46	260

NOTES:

- 1 - Standard non-NACE option.
- 2 - NACE MR0175/ISO15156 Non-Exposed Bolting option (Bolting that is not directly exposed to sour environments and is not to be buried, insulated, equipped with flange protectors, or otherwise denied direct atmospheric exposure).
- 3 - NACE MR0175/ISO15156 Exposed Bolting option (Bolting that will be exposed directly to the sour environment or that will be buried, insulated, equipped with flange protectors, or otherwise denied direct atmospheric exposure).

Table 18

Common Valve Parts Typical Construction Materials and Temperature Limitations

Part	Material	Temperature Limitations			
		Min. °F	Max. °F	Min. °C	Max. °C
Valve Stem	S20910	NLF ⁽¹⁾	NLF ⁽¹⁾	NLF ⁽¹⁾	NLF ⁽¹⁾
Load Ring (8 Inch Valves Only)	S17400	NLF ⁽¹⁾	NLF ⁽¹⁾	NLF ⁽¹⁾	NLF ⁽¹⁾
Cage Adapter (Reduced Trim)	S31600/S31603 Dual Grade	NLF ⁽¹⁾	NLF ⁽¹⁾	NLF ⁽¹⁾	NLF ⁽¹⁾
Seat Ring Adapter (Reduced Trim)	S31600/S31603 Dual Grade	NLF ⁽¹⁾	NLF ⁽¹⁾	NLF ⁽¹⁾	NLF ⁽¹⁾
Seat Ring / Bonnet / Cage Gaskets	S31600 / Graphite	NLF ⁽¹⁾	NLF ⁽¹⁾	NLF ⁽¹⁾	NLF ⁽¹⁾
Spiral Wound Gaskets	S30400 / Graphite	-50	650	-46	343
Shim	S30400	-50	650	-46	343
Packing	PTFE V-Ring	-50	450	-46	232
	Graphite (Ribbon/Filament)	-325	1000 ⁽²⁾	-198	537 ⁽²⁾

NOTES:

- 1 - NLF - This Material is Not A Limiting Factor. For the temperature limitation refer to the valve body material temperature limit.
- 2 - Oxidizing service limited to 700°F (371°C).

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Table 19

Bonnet and Packing Selection ⁽¹⁾		
Bonnet Style	Packing Material	In-Body Process Temperature Limitations
Standard Bonnet: Standard for valve sizes 1 through 6 inch.	PTFE V-Ring	0°F to 450°F (-18°C to 232°C)
	Graphite (Ribbon/Filament)	0°F to 1000°F (-18°C to 538°C) ⁽²⁾
Extension Bonnet Style 1: Standard for 8 inch valves. Optional for valve sizes 1 through 6 inch.	PTFE V-Ring	-50°F to 600°F (-46°C to 316°C)
	Graphite (Ribbon/Filament)	-150°F to 1000°F (-101°C to 538°C) ⁽²⁾
Extension Bonnet Style 2: Optional for 1 through 8 inch valve sizes.	PTFE V-Ring	-150°F to 600°F (-101°C to 316°C)
	Graphite (Ribbon/Filament)	-150°F to 1000°F (-101°C to 538°C) ⁽²⁾
<p>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. Refer to the Live Loaded Sliding Stem Packing Manual (Part Number P-LLPS) for Live Loaded packing temperature limitations.</p> <p>2 Maximum temperature limited to 700°F (371°C) for oxidizing service.</p>		
NOTE: For temperatures above or below these standard temperatures consult Dyna-Flo.		

Table 20

High Temperature Trim Options (Refer to Figures 8A to 8D for Pressure / Temperature Limits)					
Trim Spec	Valve Plug	Stem	Cage	Seat Ring	Service
D2H	S31600 ⁽¹⁾ / Alloy 6 Hard Faced Seat	S20910	S17400 DH1150	S31600 ⁽¹⁾ / Alloy 6 Hard Faced Seat	Corrosive / NACE ⁽³⁾
Characteristics:	Equal Percentage / Linear / Quick Opening				
D4H	S31600 ⁽¹⁾	S20910	S17400 PH	S31600 ⁽¹⁾	General / Mild Corrosive
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
D6H	S31600 ⁽¹⁾ / Alloy 6 Hard Faced Seat & Guide	S20910	S17400 PH	S31600 ⁽¹⁾ / Alloy 6 Hard Faced Seat	Standard / Mild Corrosive / Mild Erosive
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise / Anti-Cavitation				
D7H	S31600 ⁽¹⁾ / Alloy 6 Hard Faced Seat & Guide	S20910	S17400 DH1150	S31600 ⁽¹⁾ / Alloy 6 Hard Faced Seat	Corrosive / NACE ⁽³⁾ / Mild Erosive
Characteristics:					
D8H	S31600 ⁽¹⁾	S20910	S17400 DH1150	S31600 ⁽¹⁾	NACE ⁽³⁾ / Corrosive
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
NOTE:					
1 - All S31600 barstock is dual grade S31600/S31603 (316/316L).					
2 - Metal trim parts compatible with NACE MR0175/ISO 15156. Environmental restrictions may apply.					



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Table 21

Standard Trim Options (Refer to Figures 8A to 8D for Pressure / Temperature Limits)

Trim Spec	Valve Plug	Stem	Cage	Seat Ring	Service
D1	S41600 HT	S20910	S17400 H900	S41600 HT	Standard / Non-corrosive
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
D2	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat	S20910	S17400 DH1150 ⁽¹⁾	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat	Corrosive / NACE ⁽³⁾
Characteristics:	Equal Percentage / Linear / Quick Opening				
D4	S31600 ⁽²⁾	S20910	S17400 H900	S31600 ⁽²⁾	General / Mild Corrosive
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
D5	S41600 HT	S20910	S17400 H900	S31600 ⁽²⁾ / PTFE	Standard / Non-corrosive / Tight Shut off
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
D6	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat & Guide	S20910	S17400 H900	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat	Standard / Mild Corrosive / Mild Erosive
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise / Anti-Cavitation				
D7	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat & Guide	S20910	S17400 DH1150	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat	Corrosive / NACE ⁽³⁾ / Mild Erosive
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise / Anti-Cavitation				
D8	S31600 ⁽²⁾	S20910	S17400 DH1150 ⁽¹⁾	S31600 ⁽²⁾	NACE ⁽³⁾ / Corrosive
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
D9	S31600 ⁽²⁾	S20910	S17400 DH1150 ⁽¹⁾	S31600 ⁽²⁾ / PTFE	NACE ⁽³⁾ / Corrosive / Tight Shut off
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
DJ	S31600 ⁽²⁾	S20910	S31600 ⁽²⁾ / ENC	S31600 ⁽²⁾	NACE ⁽³⁾
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
DT	S31600 ⁽²⁾	S20910	S31600 ⁽²⁾ / ENC	S31600 ⁽²⁾ / PTFE	NACE ⁽³⁾
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
DC	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat	S20910	S31600 ⁽²⁾ / ENC	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat	NACE ⁽³⁾
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
DE	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat & Guide	S20910	S31600 ⁽²⁾ / ENC	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat	NACE ⁽³⁾
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
DN	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat & Guide	S20910	S31600 ⁽²⁾ / ENC	S31600 ⁽²⁾	NACE ⁽³⁾ Class VI Soft Metal
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				
DR	S31600 ⁽²⁾ / Alloy 6 Hard Faced Seat & Guide	S20910	S17400 DH1150	S31600 ⁽²⁾	NACE ⁽³⁾ Class VI Soft Metal
Characteristics:	Equal Percentage / Linear / Quick Opening / Low-Noise				

NOTE:

- 1 - S31600 (ENC)* available by special request (*Electroless Nickel Coating).
- 2 - All S31600 barstock is dual grade S31600/S31603 (316/316L).
- 3 - Metal trim parts compatible with NACE MR0175/ISO 15156. Environmental restrictions may apply.

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Table 22

Class VI Shut-Off Trim Options (Refer to Figures 8A to 8D for Pressure / Temperature Limits)

Valve Plug	Stem	Cage	Seat Ring	Temperature Limit
S41600 HT	S20910	S17400 H900	S31600 ⁽²⁾ / PTFE	-20°F to 450°F (-29°C to 232°C)
S31600 ⁽²⁾	S20910	S31600 ⁽²⁾ / ENC ⁽¹⁾	S31600 ⁽²⁾ / PTFE	-325°F to 450°F (-198°C to 232°C)

NOTE:

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

Table 23

Valve Body/Trim Option Temperature Limitations (Refer to Figures 8A to 8D for Pressure/Temperature limits)

Body Material	Trim Designation	Temperature Limitations			
		Min. °F	Max. °F	Min. °C	Max. °C
LCC	D1	-20	800	-29	427
	D2, D4, D6, D7, D8, DR	-50	450	-46	232
	D5	-20	400	-29	204
	D9	-50	400	-46	204
	DC, DE, DN	-50	600	-46	316
	DJ	-50	450 ⁽¹⁾	-46	232 ⁽¹⁾
	DT	-50	400	-46	204
CF8M	DC, DE, DN	-325	650	-198	343
	DJ	-325	450 ⁽¹⁾	-73	232 ⁽¹⁾
WCC	D1	-20	800	-29	427
	D2, D4, D6, D7, D8, DR	-20	450	-29	232
	D5, D9	-20	400	-29	204
	DC, DE, DN	-20	600	-29	316
	DJ	-20	450	-29	232
	DT	-20	400	-29	204
WC9	D1	-20	800	-29	427
	D2, D4, D6, D7, D8, DR	-20	450	-29	232
	D5, D9	-20	400	-29	204
	DC, DE, DN	-20	600	-29	316
	DJ	-20	450 ⁽¹⁾	-29	232 ⁽¹⁾
	DT	-20	400	-29	204

NOTES:

- 1 - Maximum temperature limited to 300°F (149°C) for non-lubricating service such as steam or dry gas.



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Table 24

Valve Body/High Temperature Trim Option Temperature Limitations

Body Material	Trim Designation ⁽²⁾	Temperature Limitations			
		Min. °F	Max. °F	Min. °C	Max. °C
LCC	D2H, D4H, D6H, D7H, D8H	450 ⁽¹⁾	600	232	316
WCC	D2H, D4H, D6H, D7H, D8H	450 ⁽¹⁾	600	232	316
WC9	D2H, D4H, D6H, D7H, D8H	450 ⁽¹⁾	600	232	316

NOTES:

- 1 - Temperatures above 450°F (232°C) require PEEK anti-extrusion rings and a spring loaded seal ring. This allows a max temperature of 600°F (316°C) for non-oxidizing service and 500°F (260°C) for oxidizing service.
- 2 - High Temperature Trim is not to be used in non-lubricating service such as steam or dry gas.

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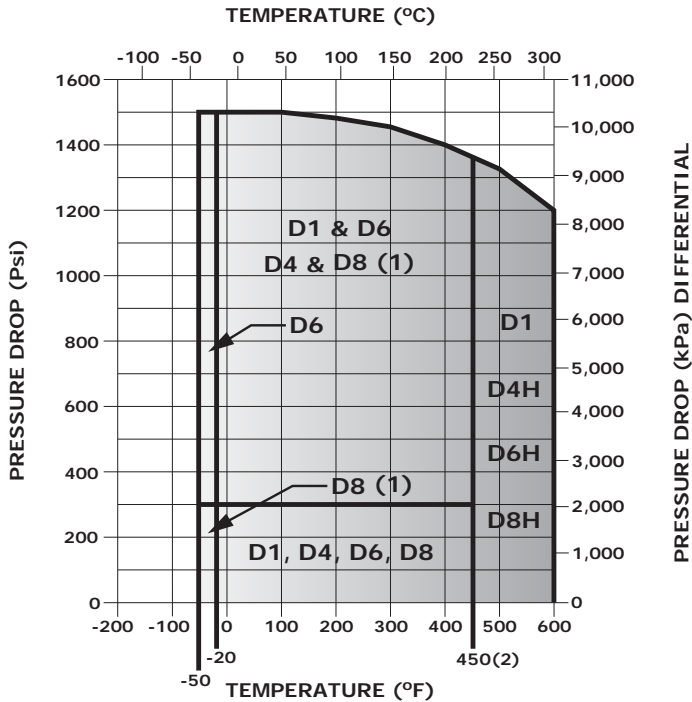


Figure 8A

Trim D1, D4, D6, D8, D4H, D6H, & D8H
Pressure and Temperature Limitations

TRIM D1, D4, D6, D8, D4H, D6H, & D8H -
METAL SEATING WITH ASME CLASS 600 LCC BODY

NOTES:	1	Trim can be used to 1,440 Psi (9,928 kPa) when used with clean dry gas. When used with other process fluids, do not exceed 300 Psi (2,068 kPa).
	2	Trim temperature limitations can be extended to 600°F (316°C) when used for non-oxidizing service.

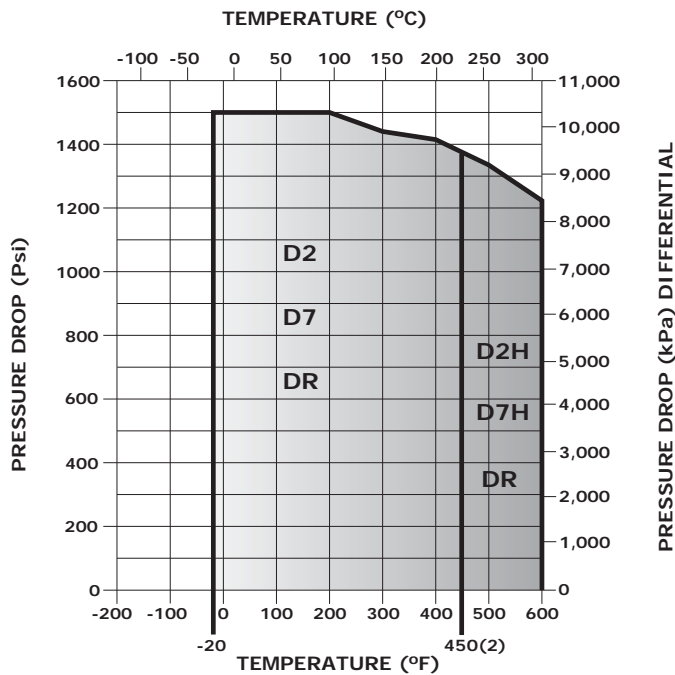


Figure 8B

Trim D2, D7, DR, D2H, D7H, & DR
Pressure and Temperature Limitations

TRIM D2, D7, DR, D2H, & D7H - FOR METAL SEATING
WITH ASME CLASS 600 WCC OR WC9 BODY

NOTES:	2	Trim temperature limitations can be extended to 600°F (316°C) when used for non-oxidizing service or 500°F (260°C) with oxidizing service when using PEEK anti-extrusion rings and spring-loaded seal rings.
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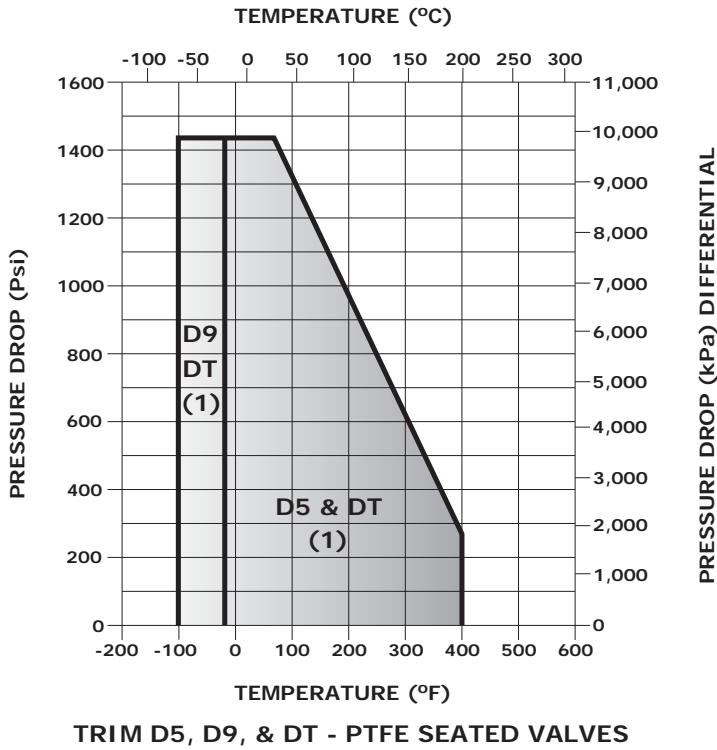


Figure 8C
Trim D5, D9, & DT
Pressure and Temperature Limitations

NOTES: 1 Trim can be used to 1,440 Psi (9,928 kPa) when used with clean dry gas. When used with other process fluids, do not exceed 300 Psi (2,068 kPa).

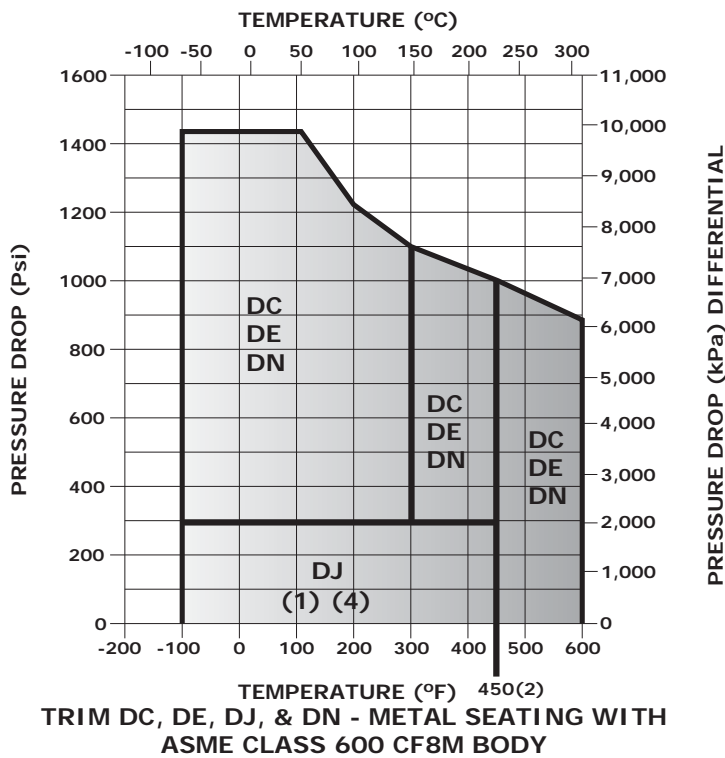


Figure 8D
Trim DE, DJ, & DN
Pressure and Temperature Limitations

NOTES:

- Trim can be used to 1,440 Psi (9,928 kPa) when used with clean dry gas. When used with other process fluids, do not exceed 300 Psi (2,068 kPa).
- Trim temperature limitations can be extended to 600°F (316°C) when used for non-oxidizing service.
- 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 25

MAXIMUM SIZING COEFFICIENTS
FULL PORT
EQUAL PERCENTAGE CHARACTERISTIC
ANGLE BODY VALVE
FLOW DOWN

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel
				100%
1	1-5/16 (33.3)	3/4 (19.1)	C _v	19.0
2	1-7/8 (47.6)	3/4 (19.1)	C _v	47.2
3	2-7/8 (73.0)	1-1/2 (38.1)	C _v	148
4	3-7/16 (87.3)	1-1/2 (38.1)	C _v	156
6	4-3/8 (111.1)	2 (50.8)	C _v	328

NOTE: For the complete list of sizing coefficients refer to catalogue P-CVSM.



Table 26

MAXIMUM SIZING COEFFICIENTS

FULL PORT

EQUAL PERCENTAGE CHARACTERISTIC

GLOBE BODY VALVE

FLOW UP

Valve Size Inches	Port Inches (mm)	Travel Inches (mm)	Coefficient	Percentage of Valve Travel
				100%
1	1-5/16 (33.3)	3/4 (19.1)	C _v	17.4
1-1/2	1-7/8 (47.6)	3/4 (19.1)	C _v	33.4
2	2-5/16 (58.7)	1-1/8 (28.6)	C _v	56.2
3	3-7/16 (87.3)	1-1/2 (38.1)	C _v	121
4	4-3/8 (111.1)	2 (50.8)	C _v	203
6	7 (177.8)	2 (50.8)	C _v	357
8	8 (203.2)	3 (76.2)	C _v	808

NOTE: For the complete list of sizing coefficients refer to catalogue P-CVSM.

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Model 362 Control Valves

MODEL NUMBERING SYSTEM

SAMPLE PART NUMBER: 362-2AFL-1FP2-ES-4

BODY STYLE						-	
-	GLOBE BODY		A	ANGLE BODY			
VALVE SIZE						2	
1	1 INCH	5	1-1/2 INCH	2	2 INCH	3	3 INCH
4	4 INCH	6	6 INCH	8	8 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						
BODY MATERIAL						L	
L	LCC	W	WCC	M	CF8M	9	WC9
BOLTING						-	
-	B7 / 2H (STANDARD)			A	B7M / 2HM		
B	B8M / 8M			K	B7 / 2H FLUOROKOTE #1		
L	B7M / 2HM FLUOROKOTE #1						
TRIM						1	
1	TRIM D1	2	TRIM D2	4	TRIM D4	5	TRIM D5
6	TRIM D6	7	TRIM D7	8	TRIM D8	9	TRIM D9
J	TRIM DJ	T	TRIM DT	C	TRIM DC	E	TRIM DE
N	TRIM DN	R	TRIM DR	2H	TRIM D2H	4H	TRIM D4H
6H	TRIM D6H	8H	TRIM D8H				
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)		
K	LIVE LOADED KALREZ®						
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	5" (1" STEM)
PAINT						-	
-	DFPS-01 (STANDARD)			2	DFPS-02 (SEVERE SERVICE)		
3	DFPS-03 (HIGH TEMPERATURE)						
CHARACTERISTIC						E	
E	EQUAL PERCENTAGE			L	LINEAR		
Q	QUICK OPEN			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)						
BONNET STYLE						S	
S	STANDARD (1" TO 6" VALVES)			E	EXTENSION STYLE 1		
H	EXTENSION STYLE 2			T	STANDARD (TAPPED)		
SHUT-OFF CLASS						4	
4	CLASS IV	6	CLASS VI				

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