

# Model DF234 Control Valves

## Technical Sales Bulletin



**Figure 1** DF234 Control Valve

The Dyna-Flo Model DF234 control valve is primarily designed for on/off control of a variety of gases or fluids. These tough valves are manufactured for use as dump valves and feature a low profile and lightweight design that fits into tight locations and makes for easier handling. The DF234 is well suited for many other high pressure gas or fluid applications up to 2,250 Psig (15,513 kPag). The DF234 is available in 1 inch and 2 inch sizes, either in a globe or angle style valve body with threaded NPT or flanged connections.

The Dyna-Flo Model DF234 control valve is manufactured to a high level of quality specifications to ensure superior performance and customer satisfaction.

### Features

#### **NACE Service Ready**

Standard construction for the DF234 control valve features NACE trim. The valve bonnet and body also conform to NACE MR0175 (National Association of Corrosion Engineers) recommendations.

#### **ASME Class 900/1500**

The DF234 is designed and rated for ASME B16.34 Class 150 - 1500 service.

#### **Live Loaded Packing**

Packing for the DF234 control valve is designed to provide a quality stem seal and to prevent the loss of hazardous gases or fluids. The live loaded feature provides for reduced maintenance and positive sealing in temperature and pressure cycling conditions.

#### **Field-Reversible Actuator**

Field conversion of the DF234 actuator is designed to be quick and easy. Switch the DF234 from a spring-close to spring-open actuator without any additional parts.

#### **Easily Maintained**

The hammer union body to bonnet connection allows for easy removal of the bonnet/actuator for access to trim and packing. Trim removal requires no special tools and is quick and simple. The two piece cage seat allows replacement of the seat ring while using the existing cage making port changes and maintenance more economical.

#### **Low Temperature Materials**

The DF234 valve and actuator are constructed with materials that are capable of functioning in temperatures of -40°C.

#### **Open Yoke**

The DF234 features an open yoke that allows for the mounting of a feedback arm to facilitate positioners and indicators.

#### **Versatile Trim Material Options**

Plug and seat ring materials are available in S17400 DH1150 and S30300 / Tungsten Carbide.



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### SPECIFICATIONS

#### Port Diameter

1/4", 3/8", 1/2", 3/4", and 1"

Refer to Table 1 & 2 for details and Port Diameters.

#### Sizes and Connection Styles

Size: 1 & 2 inch

Rating: ASME 150 / 300 / 600 / 900 / 1500

FNPT: 2,250 Psi (15,513 kPa) CWP

Connections: FNPT / RF / RTJ

Refer to Table 1, 2, & 3 for details and Port Diameters.

#### Standard Shut-off Classification

ANSI Class IV ASME / FCI 70-2

Optional Soft Seat ASME Class VI ASME / FCI 70-2

#### Dimensions

Refer to Table 5 (Page 6) & Figures 4 - 5 (Page 7)

#### Flow Characteristics

Quick Opening

#### Flow Direction

Up or down (Refer to Table 2)

#### Maximum Travel

3/8 inch (10 mm)

#### Material Temperature Capabilities

##### Body Assembly

-46 to 150°C (-50 to 300°F)

##### Actuator Assembly

-40 to 82°C (-40 to 180°F)

#### Body Style

Available in Globe and Angle style.

#### Bonnet/Body Connection

Threaded Hammer Nut.

#### Actuator Configuration

The DF234 utilizes a on/off style spring and diaphragm actuator. Fail action is field-reversible.

#### Maximum Actuator Casing Pressure

50 Psig (345 kPag)

#### Effective Actuator Diaphragm Area

33 inches<sup>2</sup> (213 cm<sup>2</sup>)

#### Actuator Pressure Connections

NPS 1/4 inch NPT

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

Maximum Pressures and Temperatures <sup>(1)</sup>		
Valve Size	200°F (93°C)	300°F (150°C)
NPS 1 inch FNPT	2,250 Psig (15,513 kPag)	2,185 Psig (15,044 kPag)
NPS 1-2 inch Flanged Class 600	1,500 Psig (10,342 kPag)	1,454 Psig (10,024 kPag)
NPS 1-2 inch Flanged Class 900	2,250 Psig (15,513 kPag)	2,185 Psig (15,650 kPag)
NPS 2 inch Flanged Class 900/1500	3,750 Psig (25,855 kPag)	3,640 Psig (25,097 kPag)

**1** - The limitations shown are as per ASME B16.34. Refer to the pressure temperature ratings in this standard for all other flange ratings. Do not exceed these ratings.

Port Diameter inch (mm)	Connection Style							
	Threaded lb (kg)	Raised Face (RF) Flanged lb (kg)				Ring Type Joint (RTJ) Flanged lb (kg)		
<b>1 Inch Valve</b> 1/4 (6.4) 3/8 (9.5) 1/2 (12.7) 3/4 (19.7) 1 (25.4)	<b>FNPT</b>	<b>Class 150</b>	<b>Class 300</b>	<b>Class 600</b>	<b>Class 900</b>	<b>Class 600</b>	<b>Class 900</b>	
	25 (11)	29 (13)	35 (16)	35 (16)	64 (29)	35 (16)	64 (29)	
	<b>2 Inch Valve</b> 1/4 (6.4) 3/8 (9.5) 1/2 (12.7) 3/4 (19.1) 1 (25.4)	<b>FNPT</b>	<b>Class 150</b>	<b>Class 300</b>	<b>Class 600</b>	<b>Class 900/1500</b>	<b>Class 600</b>	<b>Class 900/1500</b>
		30 (14)	34 (15)	50 (23)	50 (23)	89 (40)	50 (23)	89 (40)

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Table 2

### Maximum Shut-off Pressure Drops

Actuator Action	Flow Direction (pressure tends to)	Port Diameter	Number of Springs 0-20 Psig Operating Signal		Number of Springs 0-35 Psig Operating Signal	
			3	6	3	6
			Psi (kPa)	Psi (kPa)	Psi (kPa)	Psi (kPa)
Fail Closed	Flow Up (open valve)	1/4"	2,250 (15,513)	2,250 (15,513)	2,250 (15,513)	2,250 (15,513)
		3/8"	1,672 (11,528)	2,250 (15,513)	1,672 (11,528)	2,250 (15,513)
		1/2"	770 (5,309)	1,867 (12,873)	770 (5,309)	1,867 (12,873)
		3/4"	Contact Dyna-Flo	684 (4,716)	Contact Dyna-Flo	684 (4,716)
		1"	Contact Dyna-Flo	290 (2,000)	Contact Dyna-Flo	290 (2,000)
	Flow Down (close valve)	1/4"	1,469 (10,128)	2,250 (15,513)	1,469 (10,128)	2,250 (15,513)
		3/8"	2,139 (14,748)	2,250 (15,513)	2,139 (14,748)	2,250 (15,513)
		1/2"	2,250 (15,513)	2,250 (15,513)	2,250 (15,513)	2,250 (15,513)
		3/4"	1,710 (11,790)	942 (6,495)	2,250 (15,513)	2,250 (15,513)
		1"	784 (5,405)	392 (2,703)	1,512 (10,425)	1,064 (7,336)
Fail Open	Flow Up (open valve)	1/4"	2,250 (15,513)	Contact Dyna-Flo	2,250 (15,513)	2,250 (15,513)
		3/8"	2,250 (15,513)	Contact Dyna-Flo	2,250 (15,513)	2,250 (15,513)
		1/2"	1,193 (8,225)	Contact Dyna-Flo	2,250 (15,513)	2,035 (14,031)
		3/4"	385 (2,654)	Contact Dyna-Flo	1,507 (10,390)	759 (5,233)
		1"	177 (1,220)	Contact Dyna-Flo	807 (5,564)	345 (2,379)
	Flow Down (close valve)	1/4"	2,244 (15,472)	Contact Dyna-Flo	2,250 (15,513)	2,250 (15,513)
		3/8"	2,250 (15,513)	Contact Dyna-Flo	2,250 (15,513)	2,250 (15,513)
		1/2"	2,250 (15,513)	Contact Dyna-Flo	2,250 (15,513)	2,250 (15,513)
		3/4"	897 (6,185)	Contact Dyna-Flo	897 (6,185)	1,646 (11,349)
		1"	672 (4,633)	Contact Dyna-Flo	672 (4,633)	1,288 (8,880)

Table 3

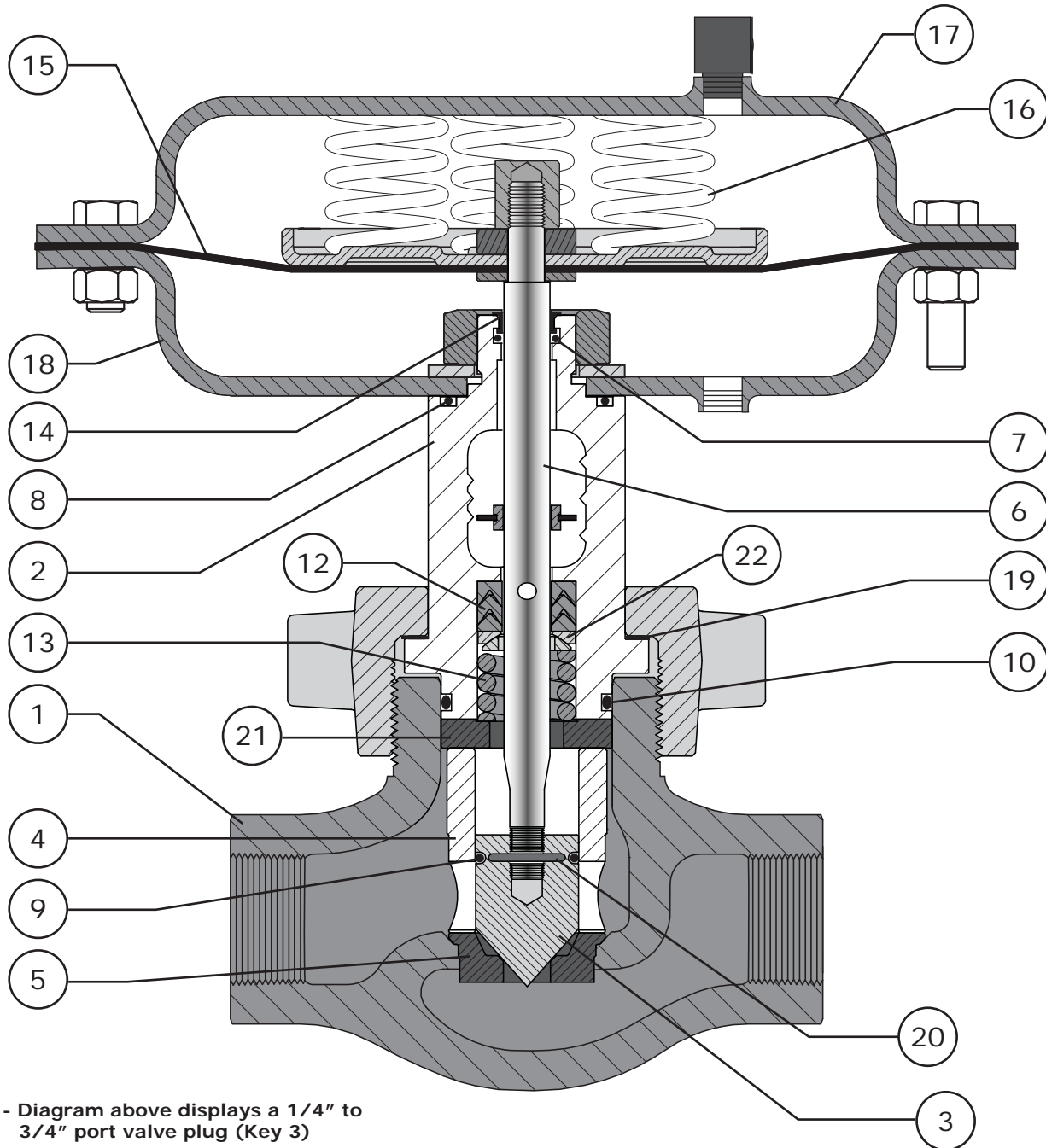
### DF234 C<sub>v</sub> Values

Body	Port Size Inch (mm)	C <sub>v</sub> Value (100% Travel)
Flow Up	1/4 (6.4)	1.68
	3/8 (9.5)	3.82
	1/2 (12.7)	5.70
	3/4 (19.1)	11.6
	1 (25.4)	15.5
Flow Down	1/4 (6.4)	1.68
	3/8 (9.5)	3.82
	1/2 (12.7)	6.19
	3/4 (19.1)	13.0
	1 (25.4)	18.0



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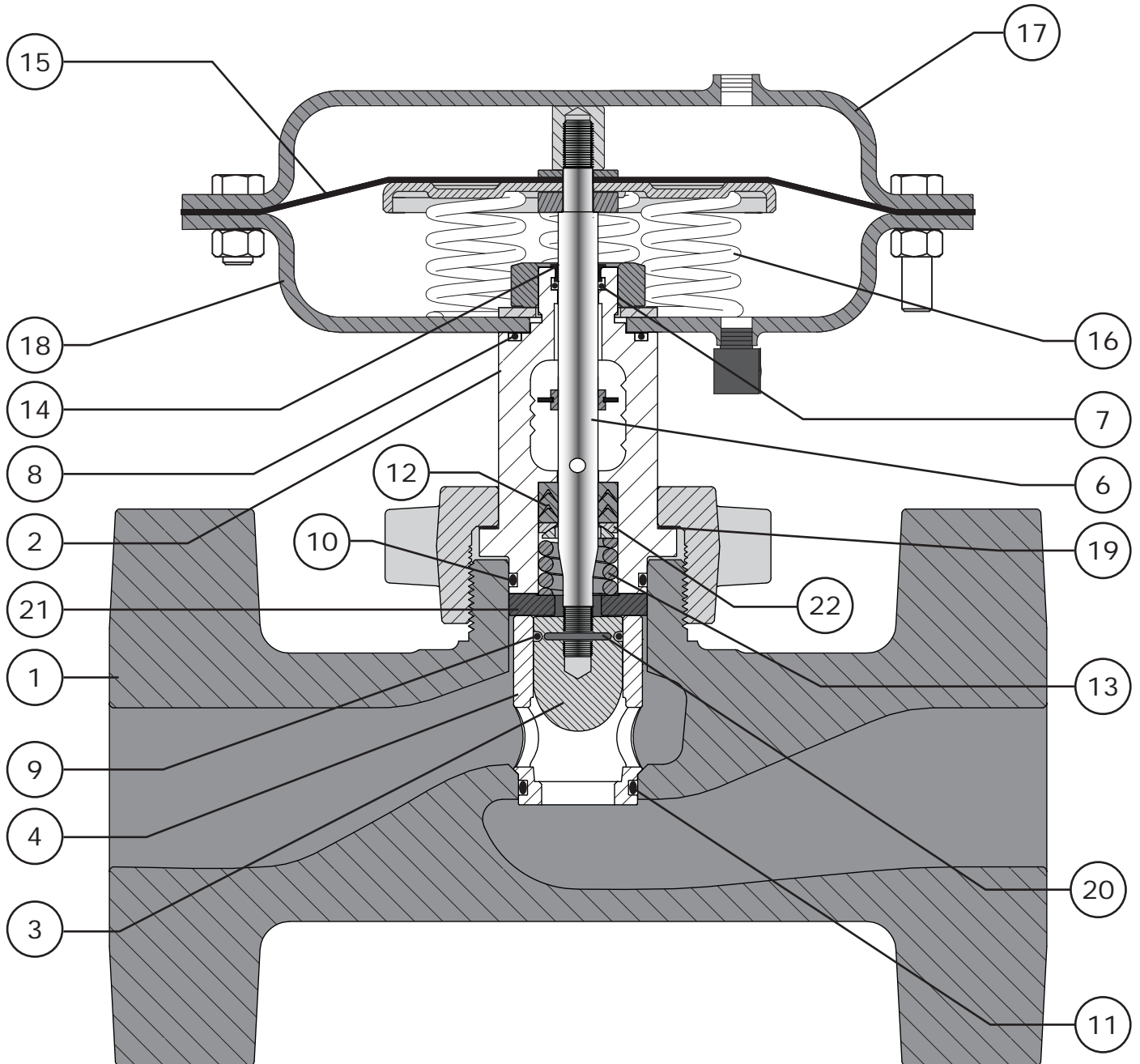


NOTE - Diagram above displays a 1/4" to 3/4" port valve plug (Key 3)

Figure 2 Cross-section of DF234 1 inch NPT Valve Body Fail Closed Configuration

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NOTE - Diagram above displays a 1" port valve plug (Key 3)

Figure 3 Cross-section of DF234 2 inch Flanged Valve Body Fail Open Configuration



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Table 4

Standard Construction Materials		
Key	Part Description	Standard Construction
1	Valve Body	LCC
2	Bonnet	LCC
3	Valve Plug	S17400 DH1150 (NACE), S30300 / Tungsten Carbide (optional)
4	Cage/Seat Ring (1 Piece Design)	S17400 DH1150 (NACE)
4A	Cage (2 Piece Design)	S17400 DH1150 (NACE)
5	Seat Ring (2 Piece Design)	S17400 DH1150 (NACE), S30300 / Tungsten Carbide (optional)
6	Valve Stem	S31600 - All S31600 barstock is dual grade S31600/S31603 (316/316L)
7, 8, 9, 10, 11	O-Ring	HNBR
12	Packing	PTFE / CPTFE
13	Spring	Inconel X750
14	Valve Stem Bushing	Nylon
15	Actuator Diaphragm	Nitrile / Nylon
16	Actuator Spring	Steel / Zinc
17	Upper Diaphragm Casing	Steel / Zinc
18	Lower Diaphragm Casing	Steel / Zinc
19	Washer	S30200
20	Pin	S31600 - All S31600 barstock is dual grade S31600/S31603 (316/316L)
21	Bonnet/Cage Spacer	S17400 DH1150 (NACE)
22	Spherical Washer	S31600 - All S31600 barstock is dual grade S31600/S31603 (316/316L)

Table 5

DF234 RF and RTJ Valve Dimensions Inches (mm)			
Valve Size	Connection Style	A	B
1"	FNPT	6.25 (159)	3.13 (80)
	ASME 150 RF	7.25 (184)	3.63 (92)
	ASME 300 RF	7.75 (197)	3.88 (99)
	ASME 600 RF	8.25 (210)	4.13 (105)
	ASME 900 RF	9.38 (238)	4.69 (119)
	ASME 600 RTJ	8.25 (210)	4.13 (105)
	ASME 900 RTJ	9.38 (238)	4.69 (119)
2"	FNPT	7.50 (191)	3.75 (95)
	ASME 150 RF	10.00 (254)	5.00 (127)
	ASME 300 RF	10.50 (267)	5.25 (134)
	ASME 600 RF	11.25 (286)	5.63 (143)
	ASME 900/1500 RF	13.38 (340)	6.69 (170)
	ASME 600 RTJ	11.38 (289)	5.69 (145)
	ASME 900/1500 RTJ	13.50 (343)	6.75 (172)

**NOTE: Refer to Figures 4 & 5**

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Figure 4 DF234 1 inch Control Valve Dimensions inch (mm)

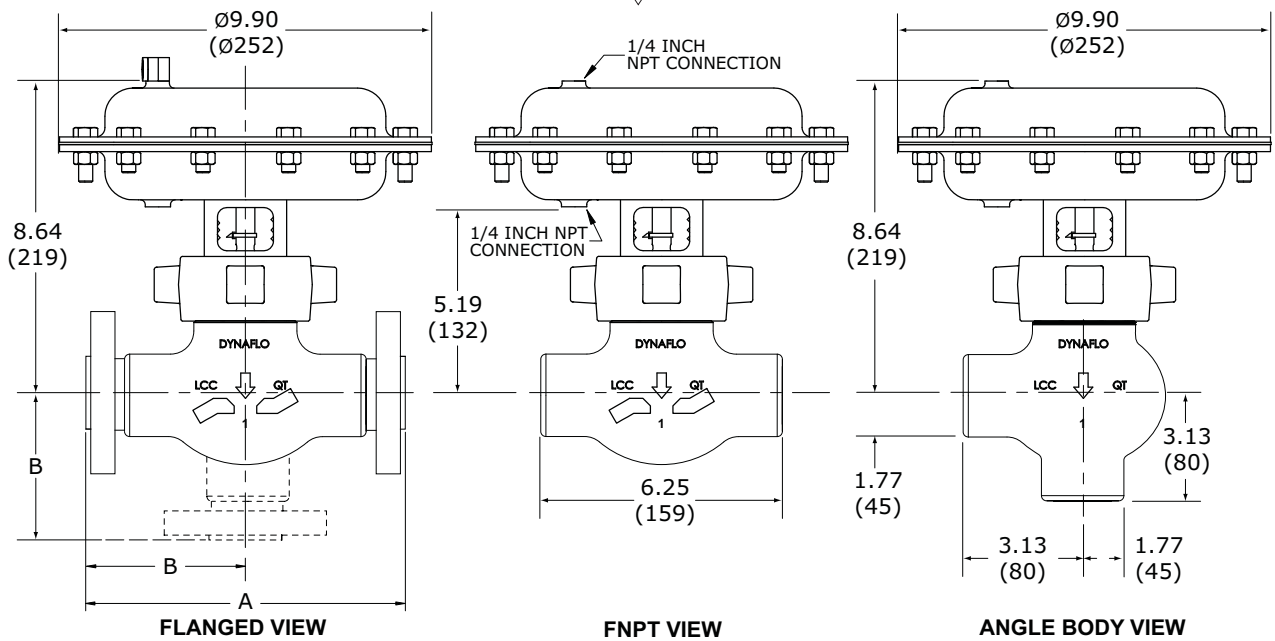
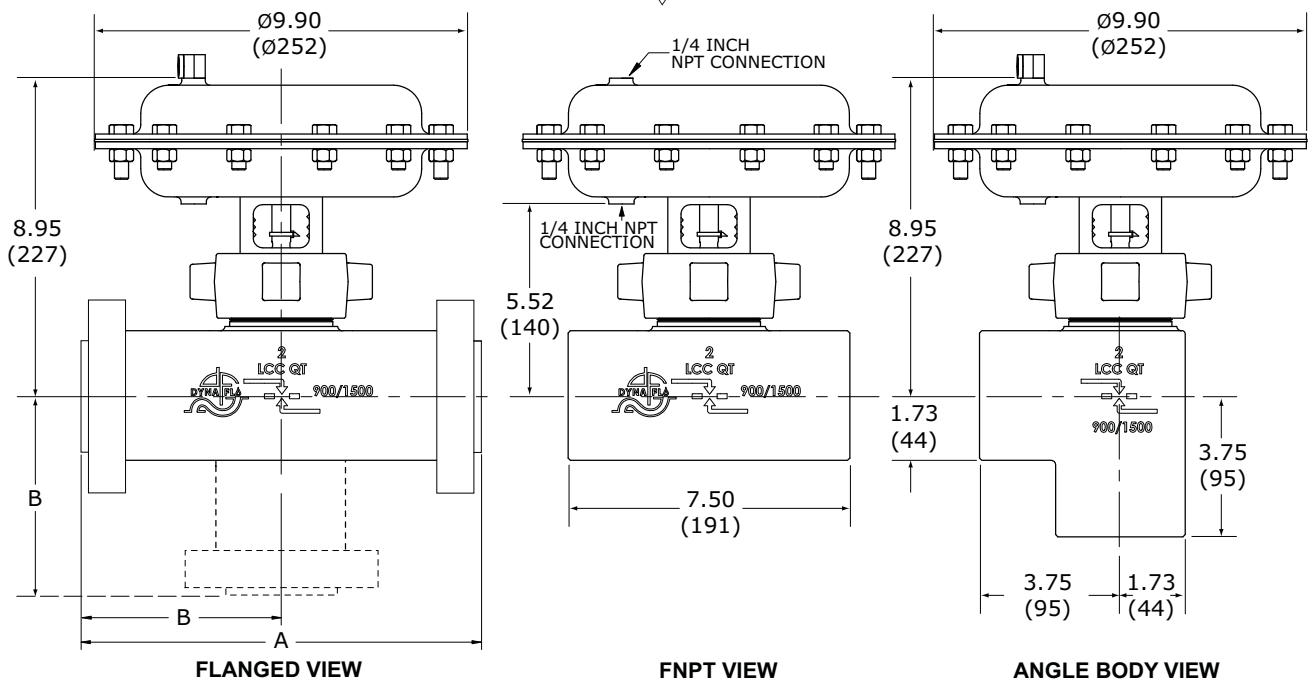


Figure 5 DF234 2 inch Control Valve Dimensions inch (mm)



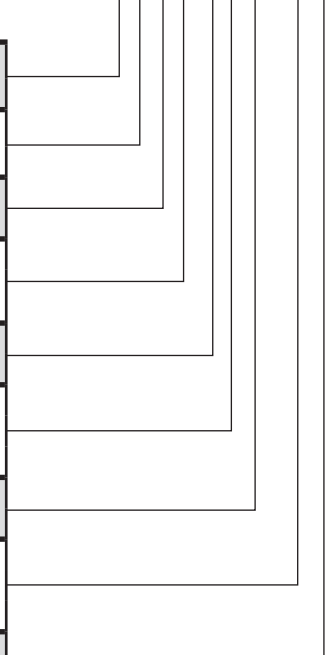


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## MODEL NUMBERING SYSTEM

**SAMPLE PART NUMBER: DF234-1GC3-6BN-14S**

<b>VALVE SIZE</b>				<b>1</b>
<b>1</b>	1 INCH	<b>2</b>	2 INCH	
<b>BODY STYLE</b>				<b>G</b>
<b>G</b>	GLOBE STYLE	<b>T</b>	ANGLE STYLE	
<b>ACTUATOR STYLE</b>				<b>C</b>
<b>C</b>	FAIL CLOSED	<b>O</b>	FAIL OPEN	
<b>SPRING RANGE</b>				<b>3</b>
<b>3</b>	SIZE 33 ACTUATOR WITH 0-22 PSIG OPERATING SIGNAL		<b>6</b>	SIZE 33 ACTUATOR WITH 0-35 PSIG OPERATING SIGNAL
<b>NUMBER OF SPRINGS</b>				<b>6</b>
<b>3</b>	3 SPRINGS	<b>6</b>	6 SPRINGS	
<b>ASME RATING</b>				<b>B</b>
<b>A</b>	150	<b>B</b>	300	<b>C</b> 600
<b>D</b>	1 INCH 900 OR 2 INCH 900/1500		<b>F</b>	1 INCH 900 NPT OR 2 INCH 900/1500 NPT
<b>CONNECTION STYLE</b>				<b>N</b>
<b>N</b>	FNPT	<b>F</b>	RF	<b>J</b> RTJ
<b>TRIM SIZE</b>				<b>14</b>
<b>14</b>	1/4 INCH	<b>38</b>	3/8 INCH	<b>12</b> 1/2 INCH <b>34</b> 3/4 INCH
<b>10</b>	1 INCH			
<b>TRIM MATERIAL</b>				<b>S</b>
<b>S</b>	S17400 DH 1150	<b>T</b>	S30300 / TUNGSTEN CARBIDE	



**DF234** - - - - -

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