



Model 570 Control Valve

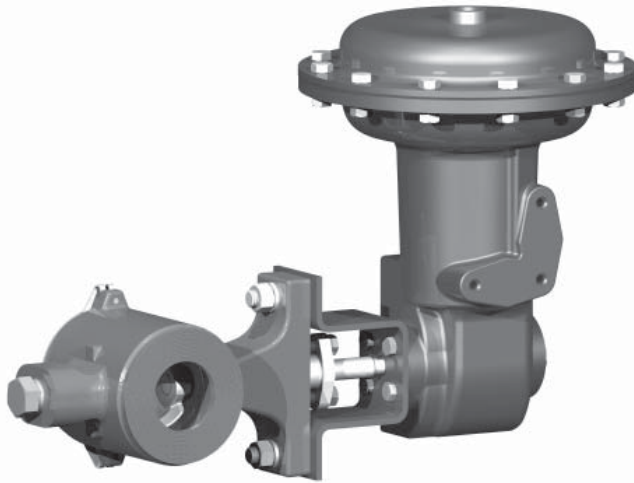


Figure 1 Dyna-Flo Model 570 Control Valve with DFR025 Actuator Assembly

The Model 570 series Segmented Ball style control valve is used in all kinds of demanding applications, in oil and gas production and chemical process industries. It is also suited to high flow, low pressure drop services. The Model 570 is used in both throttling and on/off control of liquids or gases.

These control valves are a flangeless Segmented Ball style rotary control valve (Figure 1). The valves mate with ANSI class 150, 300, and 600 raised face flanges. The straight through unrestricted flow path provides higher capacity than globe style valves. A splined shaft provides accurate control in throttling operations and flexibility in actuation options. The Model 570, when combined with a Model DFR spring and diaphragm actuator, is a rugged control valve assembly, to which a wide variety of positioners and accessories can be attached.

The Model 570 series control valves are manufactured to a high level of quality specifications to ensure superior performance and customer satisfaction.

Features

Valve Sizes and Connections

The 2", 3", 4", 6" and 8" flangeless valves will mate ANSI Class 150, 300, and 600 raised face flanges.

Maximum Temperatures

650°F (343°C) Maximum.

NACE Service

Standard trim and bolting materials are available for applications handling sour fluids and gases. These construction materials comply with the recommendations of (NACE) National Association of Corrosion Engineers MR 0175.

Easy Maintenance

A unique ball to shaft connection makes for their easy disassembly, and reduces packing replacement time as well. Replacing the ball seal is easily done by removing two screws.

Lightweight Installation

The Model 570 is a rugged yet, light weight flangeless ball valve that is designed to easily fit in between ASME flanges.

Adjustable Shaft Packing

The shaft to body interface is sealed to atmosphere by externally adjustable PTFE or optional graphite packing rings. Live loaded packing is available for reduced emissions.

Field Reversible

The action of all valve and actuator combinations is easily changed between fail closed and fail open.



Model **570** Control Valve

Specifications

Maximum Pressure / Temperature Ratings

Consistent with applicable pressure/temperature ratings per ASME B16.34-2004. See Table 3.

Maximum Allowable Shutoff Pressure Drop

See Table 4.

740 psig (5,100 kPag) @ 100°F (38°C).

Material Temperature Capabilities

Standard: -50°F to 450°F (-46°C to 232°C)

Optional: High Temp -50°F to 650°F (-46°C to 232°C)

Construction Materials

See Tables 1 for construction details

Contact your Dyna-Flo sales office for more information and other options.

Flow Direction

Forward (through seal into ball)

Actuator Mounting

Right-hand, or Left-hand (as viewed from seal end of valve).

In one of 4 positions (12 (Std.), 3, 6, and 9 o'clock) with respect to the valve body in a horizontal pipe.

Maximum Ball Rotation

90 degrees

Shutoff Classification

- Composition Ball Seal: Class VI
- Classes and testing per ASME/FCI 70-2
- Tested at the service pressure drop, or 50 psig (345 kPag), whichever is lower
- Flow Ring Design

Valve Dimensions

See Figure 6 for valve diagram

See Table 2 for valve dimensions

Sizing Coefficients

See Table 5 for throttling values

Maximum flow coefficients, C_v at 90 degree ball rotation are as follows:

- 2 Inch: 122
- 3 Inch: 320
- 4 Inch: 500
- 6 Inch: 1093
- 8 Inch: 1819

Approximate Weights - Bare Valve

- 2 Inch: 23 pounds (10 kg)
- 3 Inch: 34 pounds (15 kg)
- 4 Inch: 48 pounds (22 kg)
- 6 Inch: 80 pounds (36 kg)
- 8 Inch: 136 pounds (62 kg)

Valve with Standard DFR actuator

- 2 Inch: 50 pounds (23 kg)
- 3 Inch: 84 pounds (38 kg)
- 4 Inch: 138 pounds (63 kg)
- 6 Inch: 303 pounds (138 kg)
- 8 Inch: 339 pounds (154 kg)
408 pounds (185 kg)
for a 8" / DFR220

Options

Line Flange Bolting

Stainless Steel Construction

Internal Coatings

Shaft Connections

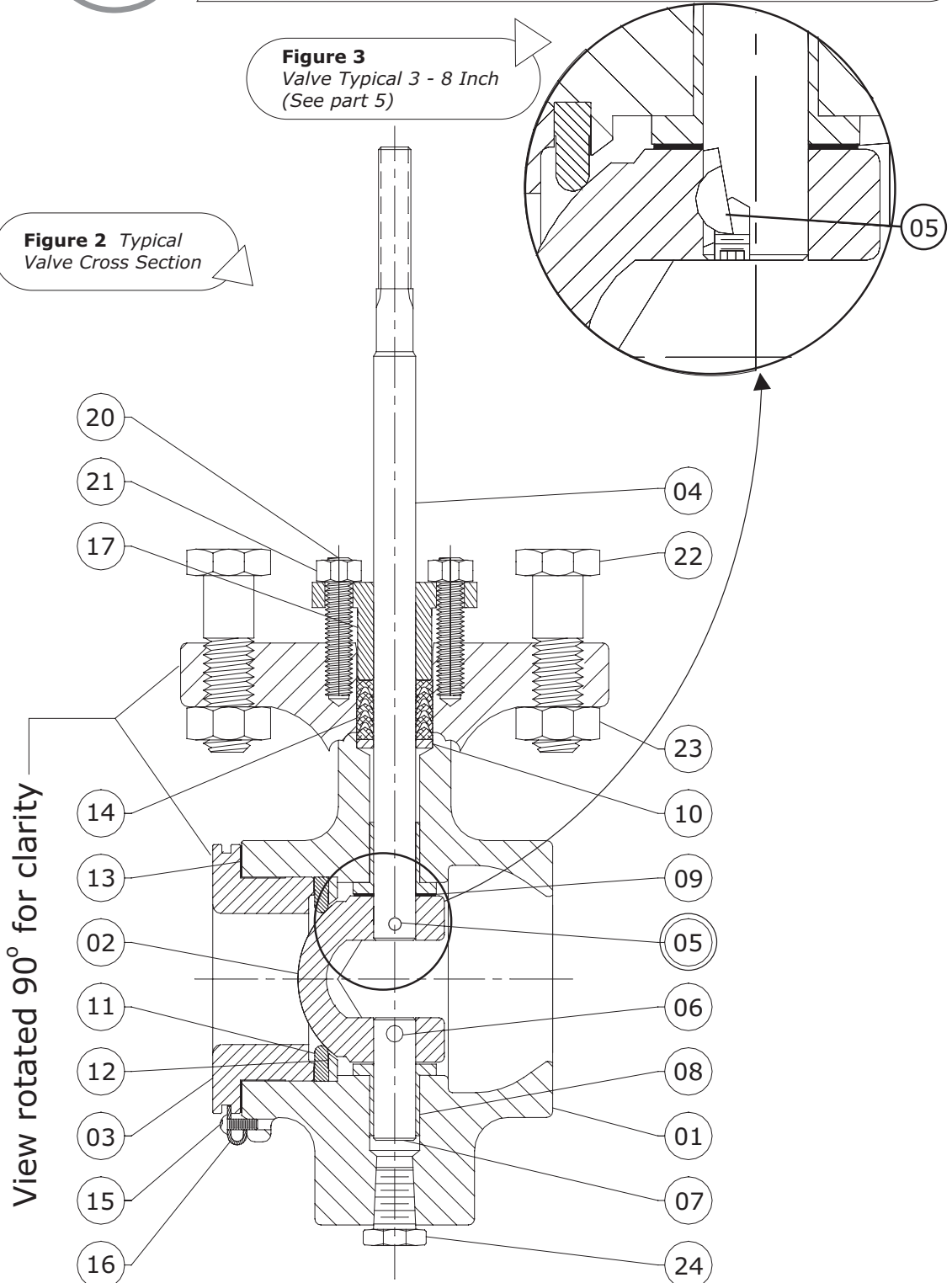
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Model **570** Control Valve

Figure 3
Valve Typical 3 - 8 Inch
(See part 5)

Figure 2 Typical
Valve Cross Section

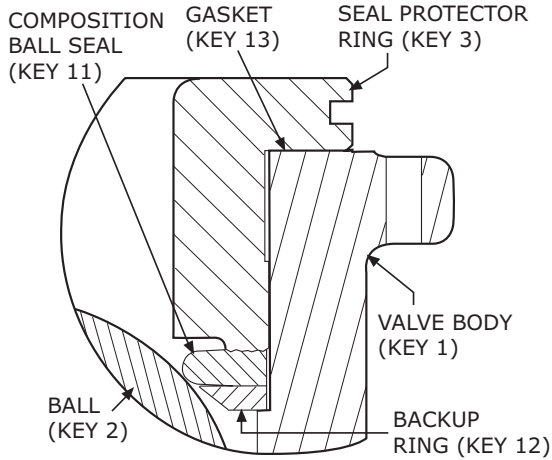


2 INCH VALVE DIAGRAM

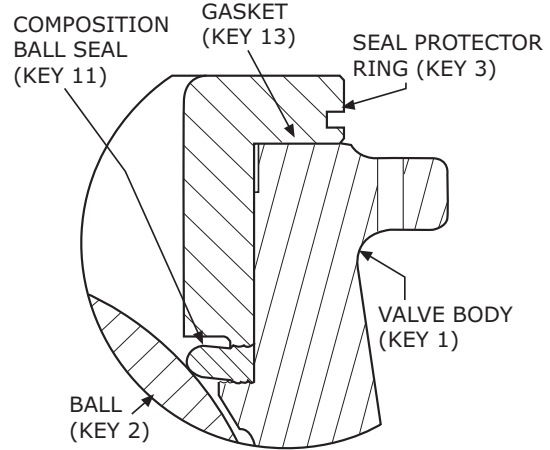


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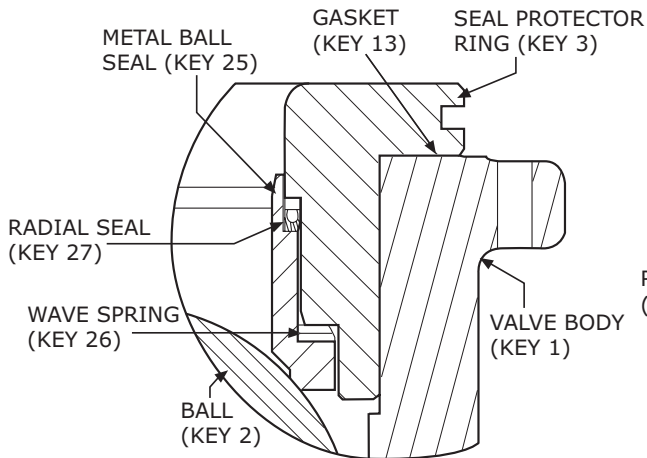
Figure 4 Ball Seal Assembly Diagrams for Valve Sizes 2 Through 8 Inch



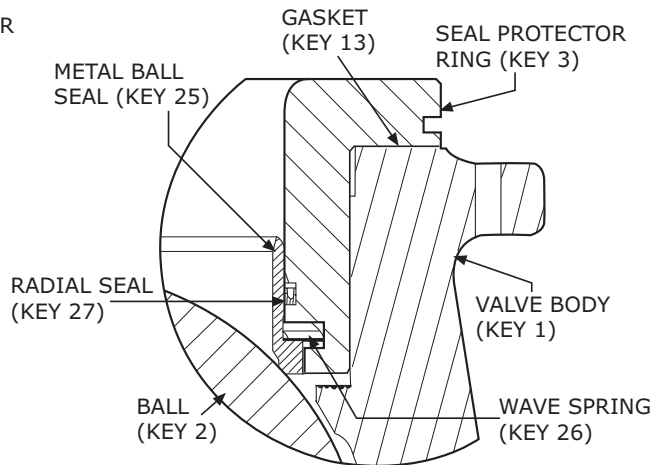
2 INCH COMPOSITION BALL SEAL & BACKUP RING



SIZE 3 THROUGH 8 INCH COMPOSITION BALL SEAL



2 INCH METAL BALL SEAL



SIZE 3 THROUGH 8 INCH METAL BALL SEAL



Model
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Table 1

Model 570 Construction Materials

Key	Part Description	Material
01	Body	ASTM (A352 LCC), ASTM (A216 WCC), ASTM (A351 CF8M)
02	Ball	CG8M (317 SST) Chrome Plated
03	Seal Protector Ring	ASTM (A350 LCC), ASTM (A216 WCC), ASTM (A351 CF8M)
*04	Shaft	S20910 (Nitronic 50), S17400 (17-4PH SST)
05	Pin for 2", Key for 3"	S20910 (Nitronic 50)
06	Pin	S31600 (316 SST)
*07	Follower Shaft	S20910 (Nitronic 50 SST), S17400 (17-4PH SST)
08	Bearing	S21800 (Nitronic 60) / Carbon PTFE Lined, S31600 (316 SST) / Carbon PTFE Lined, S44004 (440C SST), R30006 (COCRA Alloy 6) (2 req'd)
09	Thrust Washer	N06625 (Monel 625)
10	Packing Box Ring	S31600 (316 SST)
11	Composition Ball Seal	PTFE Composite
12	Back Up Ring (2" Valve Only)	S31600 (316 SST)
13	Gasket	Graphoil Laminate
14	Packing Set	PTFE, Carbon PTFE, Graphite, Live Loaded
15	Seal Protector Screw	S30400 (18-8 SST) (2 req'd)
16	Seal Protector Clip	Stainless Steel (2 req'd)
17	Packing Follower	CF8M (316 SST)
18	Live Loaded Packing Follower	CF8M (316 SST)
19	Packing Flange	CF8M (316 SST)
20	Packing Stud	S31600 (316 SST), B8M (with CF8M Body) (2 req'd)
21	Packing Nut	S31600 (316 SST), 8M (with CF8M Body) (2 req'd)
22	Actuator Mounting Bolt	Plated Steel (2 req'd)
23	Actuator Mounting Nut	Plated Steel (2 req'd)
24	Pipe Plug	A105 Steel, S31600 (316)
25	Metal Ball Seal	S21800 (Nitronic 60), R30006 (Alloy 6)
26	Wave Spring	N07750 (Inconel X750)
27	Radial Seal	Carbon PTFE / R3003 (Elgiloy)
28	Spring Washers	Inconel 718

* Standard Service For NACE, use Nitronic 50 SST.



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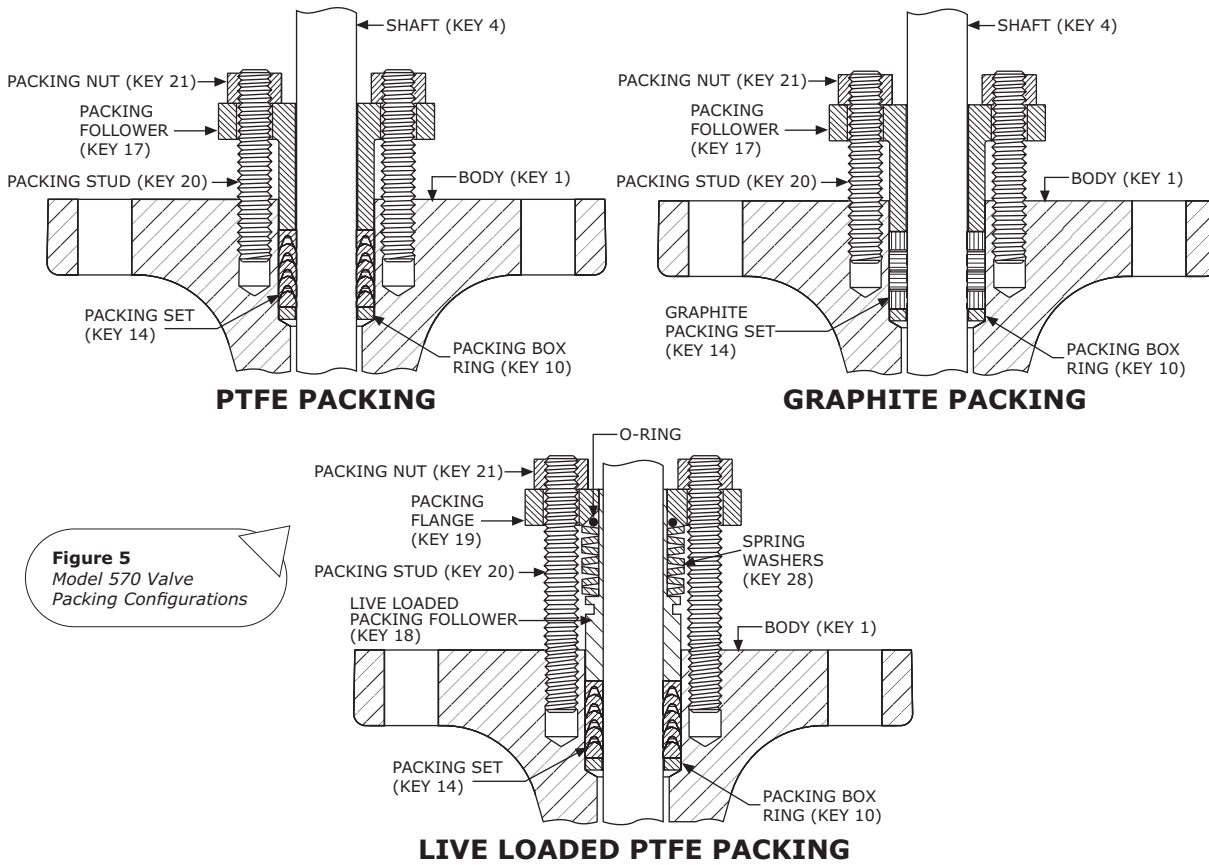


Figure 5
Model 570 Valve
Packing Configurations

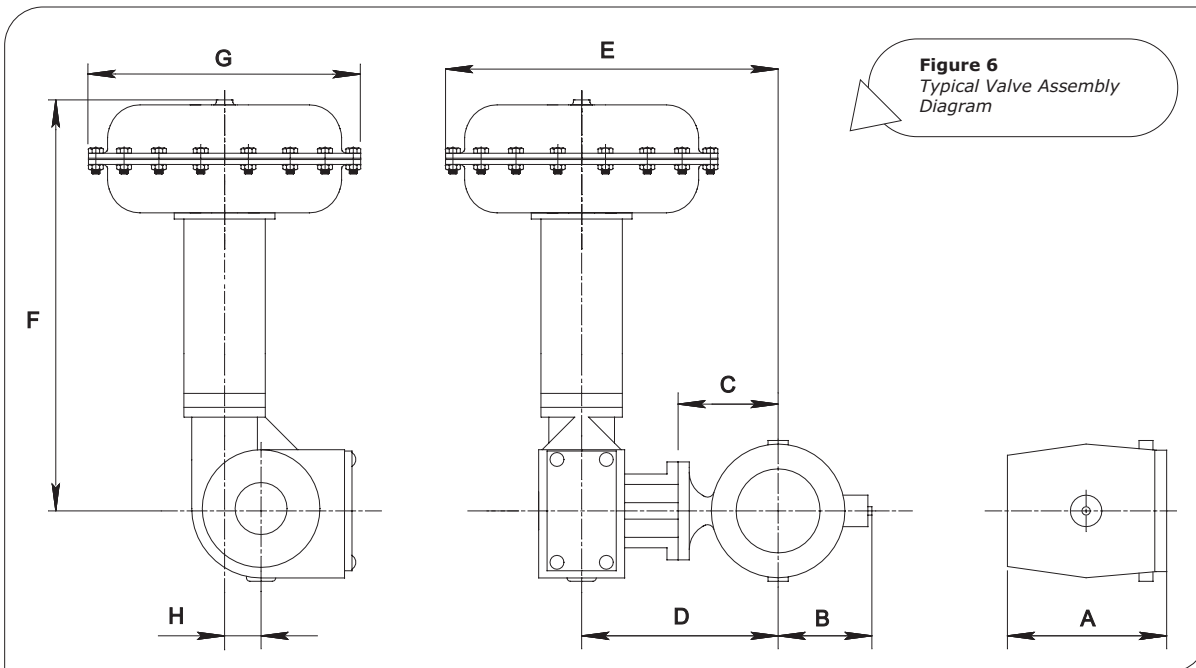


Figure 6
Typical Valve Assembly
Diagram



Model
570 Control Valve

Table 2

Model 570 Valve Dimensions Inch (mm)

Dimensional Reference	Valve Size / Actuator					
	2" / DFR025	3" / DFR047	4" / DFR070	6" / DFR156	8" / DFR156	8" / DFR220
A	4.88 (124)	6.50 (165)	7.62 (194)	9.00 (229)	9.56 (243)	9.56 (243)
B	4.19 (106)	4.62 (117)	5.25 (133)	6.25 (159)	7.69 (195)	7.69 (195)
C	5.00 (127)	5.12 (130)	5.56 (141)	7.06 (179)	9.12 (232)	9.12 (232)
D	10.4 (264)	11.4 (290)	11.9 (302)	12.4 (315)	14.9 (378)	14.9 (378)
E	15.3 (389)	17.1 (434)	18.4 (467)	21.8 (548)	24.2 (615)	25.5 (648)
F	10.1 (257)	13.3 (338)	23.9 (607)	34.5 (876)	34.5 (876)	33.4 (848)
G	9.90 (251)	11.4 (290)	13.1 (333)	18.6 (472)	18.6 (472)	21.1 (536)
H	0.70 (17.8)	1.31 (33.3)	2.12 (53.8)	2.50 (63.5)	2.50 (63.5)	2.50 (63.5)
Shaft Diameter inch (mm)	0.625 (15.9)	0.75 (19.1)	0.75 (19.1)	1.00 (25.4)	1.25 (31.8)	1.25 (31.8)
Assembly Weight lb (kg)	53 (24)	80 (36)	147 (67)	283 (128)	339 (154)	408 (185)

ANSI Class: 150 / 300 / 600

- Envelope Dimensions are + / - 0.25 in. (6.4 mm)
- Face to Face Tolerance Per ASME



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Table 3

Model 570 Body Pressure Temperature Ratings

Temperature Range	ASME Pressure Class								
	WCC Class 150	LCC ¹ Class 150	CF8M Class 150	WCC Class 300	LCC ¹ Class 300	CF8M Class 300	WCC Class 600	LCC ¹ Class 600	CF8M Class 600
°C	kPa								
-46 to -29	—	1,999	1,896	—	5,171	4,964	—	10,342	9,928
-29 to 38	1,999	1,999	1,896	5,171	5,171	4,964	10,342	10,342	9,928
93	1,793	1,793	1,620	5,171	5,171	4,275	10,342	10,342	8,549
149	1,586	1,586	1,482	5,033	5,033	3,861	10,032	10,032	7,222
204	1,376	1,379	1,344	4,861	4,861	3,551	9,722	9,722	7,067
260	1,172	1,172	1,172	4,585	4,585	3,309	9,170	9,170	6,584
316	965	965	965	4,171	4,171	3,103	8,343	8,343	6,205
343	862	862	862	4,068	4,068	3,034	8,101	8,101	6,102
371	758	—	758	3,827	—	2,999	7,826	—	5,998
399	655	—	655	3,842	—	2,930	6,964	—	5,895
427	552	—	552	3,482	—	2,896	5,688	—	5,826
°F	Psi								
-50 to -20	—	290	275	—	750	720	—	1,500	1,440
-20 to 100	290	290	275	750	750	720	1,500	1,500	1,440
200	260	260	235	750	750	620	1,500	1,500	1,240
300	230	230	215	730	730	560	1,455	1,455	1,120
400	200	200	195	705	705	515	1,410	1,410	1,025
500	170	170	170	665	665	480	1,330	1,330	955
600	140	140	140	605	605	450	1,210	1,210	900
650	125	125	125	590	590	440	1,175	1,175	885
700	110	—	110	555	—	435	1,135	—	870
750	95	—	95	505	—	425	1,010	—	855
800	80	—	80	410	—	420	825	—	845

Pressure Temperature Ratings as per ASME B16.34, 2004
For ratings above 800°F (427 °C) consult factory.

Notes:

1 - Do not use over 650 °F (343 °C)

NOTE: Do not exceed the allowable shutoff pressure drops of the valve trim material as per Table 4



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Table 4

Maximum Allowable Shutoff Pressure Drops for Bearing and Ball Seal Material

Bearing Material	Ball Seal	Temperature Range °F (°C)	Valve Size, Inches				
			2	3	4	6	8
			Psi (kPa)				
Nit 60/PTFE	Compositon	-50 to 100 (-46 to 38)	740 (5,100)	740 (5,100)	740 (5,100)	740 (5,100)	740 (5,100)
		200 (93)	550 (3,792)	550 (3,792)	550 (3,792)	550 (3,792)	550 (3,792)
		300 (149)	350 (2,413)	350 (2,413)	350 (2,413)	350 (2,413)	350 (2,413)
		400 (204)	150 (1,034)	150 (1,034)	150 (1,034)	150 (1,034)	150 (1,034)
		450 (232)	50 (345)	50 (345)	50 (345)	50 (345)	50 (345)
	Metal	-50 to 500 (-46 to 260)	740 (5,100)	740 (5,100)	740 (5,100)	740 (5,100)	740 (5,100)
	Flow Ring	-50 to 500 (-46 to 260)	1500 (10,342)	1500 (10,342)	1050 (7,239)	1090 (7,515)	1070 (7,377)
440C	Metal	-50 to 550 (-46 to 288)	371 (2,558)	252 (1,737)	160 (1,103)	157 (1,082)	162 (1,117)
	Flow Ring	-50 to 800 (-46 to 427)	386 (2,661)	272 (1,875)	157 (1,082)	162 (1,117)	160 (1,103)
R30006	Metal	-50 to 550 (-46 to 288)	371 (2,558)	252 (1,737)	160 (1,103)	157 (1,082)	162 (1,117)
	Flow Ring	-50 to 800 (-46 to 427)	386 (2,661)	272 (1,875)	157 (1,082)	162 (1,117)	160 (1,103)
R30006 Silver Plated	Composition	-50 to 550 (-46 to 288)	740 (5,100)	508 (3,503)	320 (2,206)	316 (1,634)	326 (2,248)
	Metal	500 to 800 (228 to 427)	555 (3,827)	380 (2,620)	240 (1,627)	236 (1,634)	245 (1,689)
	Flow Ring	-50 to 800 (-46 to 427)	776 (5,350)	546 (3,765)	316 (2,179)	326 (2,248)	322 (2,220)

NOTE: Do not exceed the pressure/temperature rating of the valve body material as per Table 3



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Table 7

Model 570

Sizing Coefficients

Forward Flow, Composition And Metal Seals
1:1 Pipe To Valve Size Ratio

Valve Size		Degrees Opening								
		10	20	30	40	50	60	70	80	90
2 inch	C _V	0.054	3.05	9.20	18.1	30.1	42.4	61.0	84.4	112
	X _T	0.648	0.788	0.775	0.688	0.610	0.590	0.487	0.418	0.379
	F _L	0.94	0.90	0.91	0.86	0.85	0.84	0.79	0.76	0.76
3 inch	C _V	1.08	10.5	24.8	41.2	69.4	112	163	230	303
	X _T	0.689	0.608	0.640	0.636	0.588	0.558	0.461	0.399	0.315
	F _L	0.91	0.89	0.89	0.86	0.84	0.82	0.78	0.78	0.75
4 inch	C _V	3.9	21.4	47.2	77.8	117	116	248	375	519
	X _T	0.737	0.854	0.813	0.724	0.657	0.559	0.504	0.355	0.230
	F _L	0.88	0.91	0.91	0.87	0.84	0.81	0.78	0.70	0.63
6 inch	C _V	6.40	31.1	77.9	141	216	310	435	685	1012
	X _T	0.608	0.775	0.797	0.740	0.635	0.540	0.514	0.362	0.230
	F _L	0.94	0.93	0.92	0.89	0.85	0.80	0.79	0.72	0.62
8 inch	C _V	6.99	50.9	122	225	353	518	714	1030	1820
	X _T	0.580	0.790	0.741	0.642	0.611	0.543	0.569	0.370	0.210
	F _L	0.94	0.94	0.92	0.90	0.85	0.80	0.79	0.72	0.62

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 6

Model 570 Actuator Sizing Chart

PTFE Composite Seal Ring and SST / PTFE Bearing
Forward Flow
35 Psig Supply Pressure
Pressure Drops as Specified

Valve Size	Actuator Action	Shutoff Pressure Differential Psig (kPag)						
		100 (690)	200 (1,380)	300 (2,070)	400 (2,760)	500 (3,450)	600 (4,140)	740 (5,100)
		DFR Acuator Size						
2 Inch	FAIL OPEN	026	026	026	026	026	026	026
	FAIL CLOSED	026	026	026	026	026	047	047
3 Inch	FAIL OPEN	047	047	047	047	047	047	047
	FAIL CLOSED	047	047	047	047	047	047	047
4 Inch	FAIL OPEN	047	047	047	047	047	047	047
	FAIL CLOSED	070	070	070	070	070	070	070
6 Inch	FAIL OPEN	156	156	156	156	156	156	156
	FAIL CLOSED	156	156	156	156	156	156	156
8 Inch	FAIL OPEN	156	156	156	156	156	156	156
	FAIL CLOSED	156	156	156	156	156	156	156



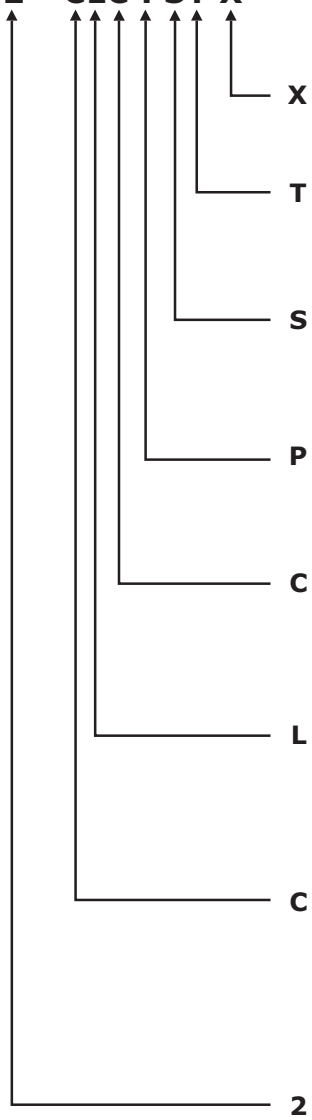
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Ordering Guide

Dyna-Flo 570 Series Control Valve | Model Numbering System

Sample Part Number

570 - 2 - CLC PST X



Code	Description
X	Denotes Special Construction (Consult Dyna-Flo Offices)
T F	Bearings 316 SST / PTFE A Alloy 6 440C SST H Nitronic 60 / PTFE
S P N	Shaft S 17-4PH SST D1150 Splined P 17-4PH SST D1150 Stub-pinned N Nitronic 50 SST Splined
P G L	Packing Material P PTFE G Graphite L Live Loaded PTFE
C H A	Ball Seal Material C PTFE Composition H Nitronic 60 A Alloy 6
L W C	Body Material L LCC W WCC C CF8M
C A B C D E F	ASME Rating A 150 Wafer B 300/600 Wafer C 150/300/600 Wafer D 150/300 Wafer E 300 Wafer F 600 Wafer
2 3 4 6 8	Body Sizes 2 2" 3 3" 4 4" 6 6" 8 8"

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