



Model **DFR** Valve Actuator



Figure 1 Model DFR Actuator

The Model DFR rotary output spring and diaphragm actuators are used in all kinds of demanding applications, including both throttling and on/off control valve operations. The DFR actuators all have spring adjusters for enhanced actuator performance.

The Model DFR, when combined with a Model 560/570 segmented ball control valve is a rugged control valve assembly, to which a wide variety of instruments can be attached.

The high level of quality specifications used in the manufacture of the Model DFR rotary actuators ensures superior performance and customer satisfaction.

Features

Reliable Design

The low-pressure diaphragm, fail-safe spring, and splined connection make for accurate and safe operation.

Rugged Long Lasting Construction

Dyna-Flo's expert CNC machining process and superior quality parts come together to make DFR actuators a rugged, long lasting product. DFR actuators are manufactured to deliver a high level of safety and performance.

Failsafe Simplicity

A spring return design enables standard valve failsafe operation without lock-up valves and volume tanks.

Field Reversible

All valve and actuator assemblies are easily changed between valve closing or valve opening upon loss of instrument air.

Positioner Flexibility

The Model DFR is designed to accept the latest in positioners, either electronic or pneumatic, shaft drive or integrally mounted.

Output Shaft Options

The Model DFR can accept a splined shaft or square stub, making for easy automation of valves, lovers, dampers or any other quarter turn application.



Model DFR Valve Actuator

Specifications

Actuator Size	Active Diaphragm Area in ² (cm ²)	Maximum Casing Pressure Psig (kPag)
025	27 (174)	50 (345)
047	48 (310)	55 (379)
070	70 (452)	65 (448)
156	160 (1032)	40 (275)

Material Temperature Capabilities

Standard: -40 to 180 °F (-40 to 82 °C)

Construction Materials

See Table 5 for construction details
See Figures 4, 5 & 6 for Cross Sections and Key Numbers

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

Valve Shaft Compatibility, inches (mm)

Size 025	1/2 (12.7)
Size 047	1/2 (12.7), 5/8 (15.9), 3/4 (19.1)
Size 070	1/2 (12.7), 5/8 (15.9), 3/4 (19.1) 7/8 (22.2)*, 1 (25.4)
Size 156	1 (25.4), 1-1/4 (31.8), 1-1/2 (38.1)

* 7/8" shaft only available for a 4" 560 valve.

Approximate Weights

Size 025	30 pounds (14 kg)
Size 047	46 pounds (21 kg)
Size 070	99 pounds (45 kg)
Size 156	203 pounds (92 kg)

Actuator Dimensions

See Figure 3 for actuator diagram
See Table 2 for actuator dimensions

Output Torque

See Tables 3 and 4

Actuator Mounting Orientation Valve Applications

See Figure 2
See Table 1

Other Applications

Please specify with a sketch

Tubing Connection Size

All sizes, 1/4 inch NPT

Maximum Shaft Rotation

90 degrees

Shaft Connection Types

The standard shaft connection is a splined shaft suitable for a Dyna-Flo 560/570 control valve. A square stub or other connection is also available.

Options

- Manual override
- Reduced rotation output
- Increased tubing connection size
- Travel stops

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



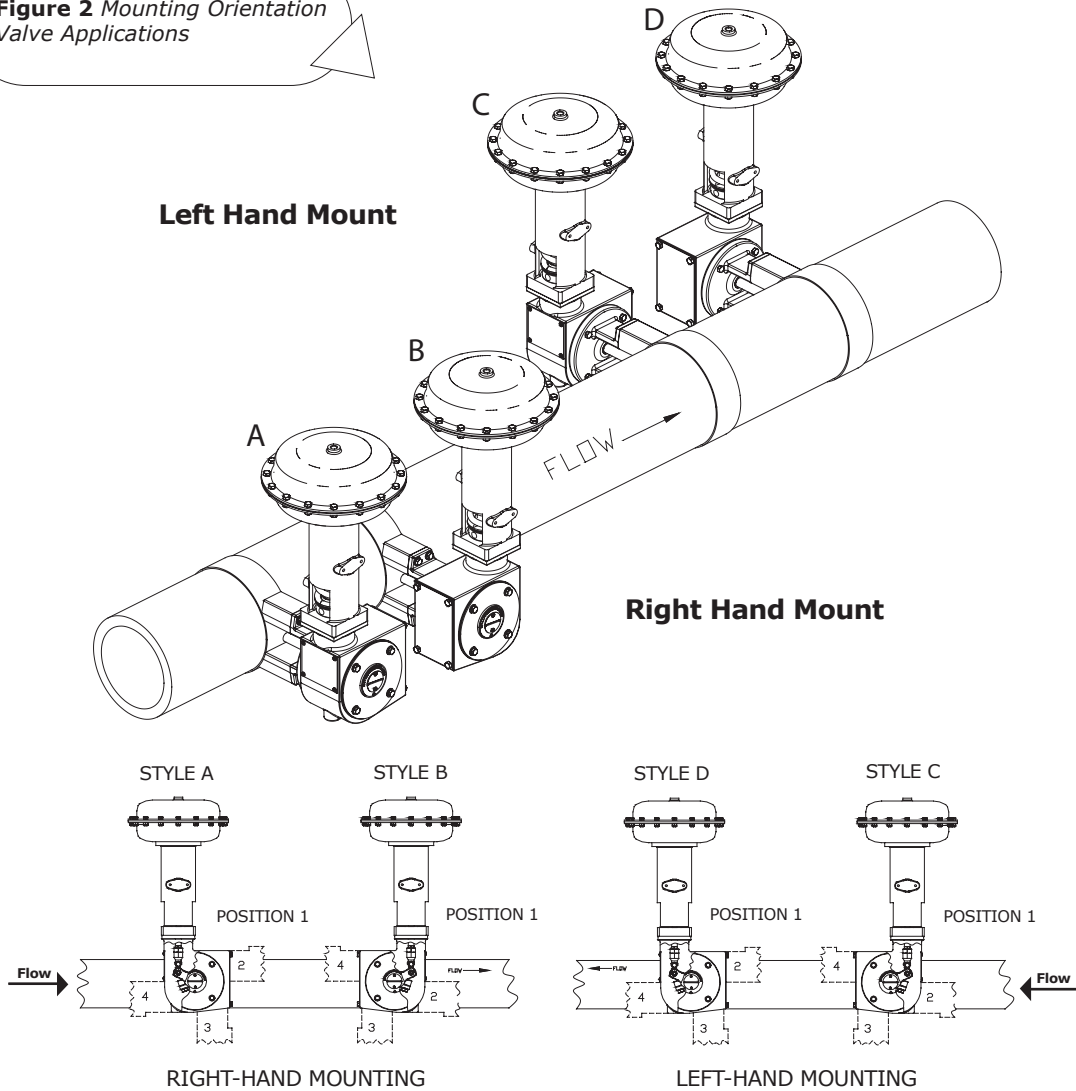
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Table 1

Model DFR Mounting Styles and Positions

Mounting	Action	Model 560 / 570 Valve
Right Hand	Fail Open	Style A
Right Hand	Fail Close	Style B
Left Hand	Fail Open	Style C
Left Hand	Fail Close	Style D

Figure 2 Mounting Orientation Valve Applications





Model DFR Valve Actuator

Table 2

Model DFR Actuator Dimensions
Inch (mm)

Dim (Ref.)	Actuator Size			
	DFR025	DFR047	DFR070	DFR156
A	5.38 (137)	5.38 (137) ¹	5.38 (137) ²	6.30 (160) ³
B	10.1 (257)	13.3 (338)	23.9 (607)	34.5 (876)
C	9.90 (251)	11.4 (290)	13.1 (333)	18.6 (473)
D	0.70 (17.8)	1.30 (33.0)	2.12 (53.8)	2.50 (63.5)
Assembly Weight lb (kg)	30 (14)	46 (21)	99 (45)	203 (92)

Envelope dimensions are + / - 0.25 inches (6.4 mm)

- 1 - Dimension A for a 3/4" Valve Shaft is 6.30 inches (160 mm)
- 2 - Dimension A for a 3/4" and 1" Valve Shaft is 6.30 inches (160 mm)
- 3 - Dimension A for a 1-1/4" and 1-1/2" Valve Shaft is 5.80 inches (147 mm)

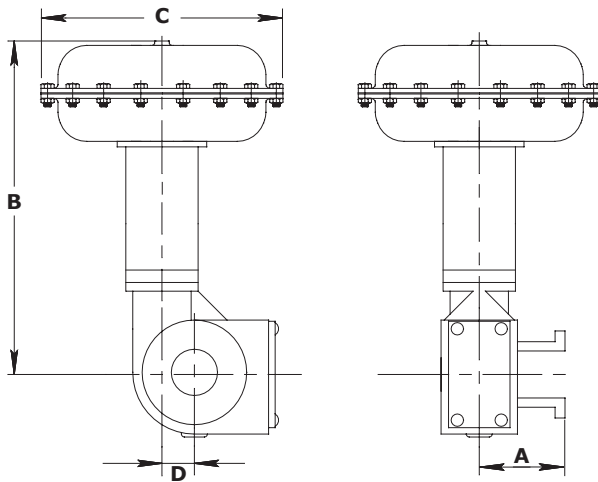


Figure 3 Typical Actuator Dimensional Diagram

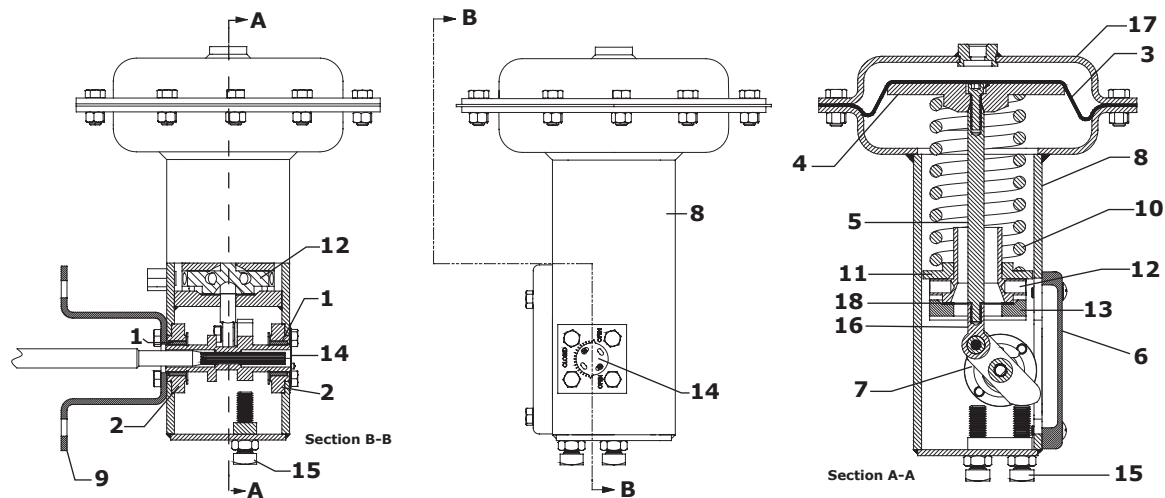


Figure 4 DFR025 Actuator Cross Section



Model DFR Valve Actuator

Tables 3

Model DFR Actuator Output Torque 23 Psig (159 kPag) supply
0-18 Psig (0 to 123 kPag) range

Size	Spring		Action					
			Fail Open			Fail Closed		
			Torque in-lb (N-m)		Start Stroke	Torque in-lb (N-m)		Start Stroke
Code	Number	Breakout	Operating	psig (kpag)	Breakout	Operating	psig (kpag)	
25	A	16A4660x01D	130 (15)	130 (15)	3.0 (21)	90 (10)	200 (23)	3.9 (27)
47	C	10B1524X01D	172 (19)	399 (45)	3.0 (21)	336 (38)	170 (19)	4.9 (34)
70	D	1P63712708D	380 (43)	980 (111)	3.0 (21)	730 (82)	620 (70)	4.3 (30)
156	F	1K16272708D	2140 (242)	2320 (262)	3.0 (21)	1630 (184)	3160 (357)	3.7 (26)

Tables 4

Model DFR Actuator Output Torque, 38 Psig (262 kPag) supply
0-33 Psig (0 to 228 kPag) range

Size	Spring		Action					
			Fail Open			Fail Closed		
			Torque in-lb (N-m)		Start Stroke	Torque in-lb (N-m)		Start Stroke
Code	Number	Breakout	Operating	psig (kpag)	Breakout	Operating	psig (kpag)	
25	B	16A4659X01D	280 (32)	160 (18)	3.0 (21)	160 (18)	370 (42)	6.8 (47)
47	C	10B1524X01D	807 (91)	555 (63)	4.9 (34)	334 (38)	1139 (129)	4.9 (34)
70	D	1P63712708D	1960 (221)	1260 (142)	4.3 (30)	730 (82)	3050 (344)	4.3 (30)
70	E	1L21732704D	—	—	—	1030 (116)	1820 (206)	6.0 (41)
156	F	1K16282708D	4160 (470)	3020 (341)	3.0 (21)	3090 (349)	4760 (538)	7.0 (48)



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Table 5

Construction Materials

Key #			Description	Material	
DFR025	DFR047	DFR070		DFR025	DFR070
		DFR156		DFR047	DFR156
-	1	1	Accessory Cover Plate	Steel	Steel
1	2	2	Bushing	Nylatron	Bronze
2	-	3	Cover Bushing	Aluminum	Fiberglass & Carbon
3	3	4	Diaphragm	Nitrile with Nylon	Nitrile with Nylon
4	4	5	Diaphragm Plate	Steel / Cast Iron	Steel / Cast Iron
5	5	6	Diaphragm Rod	Steel	Steel
6	6	7	Front Cover Plate	PVC	Steel
-	-	8	Housing	-	Cast Iron
-	7	9	Housing Cover	Steel	Steel
-	-	10	Hub	-	Aluminum
7	8	11	Lever	Steel	Cast Iron
-	-	12	Lower Diaphragm Casing	-	Steel
8	9	-	Lower Diaphragm Casing/Spring Barrel/Housing Assembly	Steel / Cast Iron*	-
9	10	13	Mounting Yoke	Steel	Cast Iron
10	11	14	Spring	Steel	Steel
11	12	15	Spring Seat	Steel	Steel
12	13	16	Spring Adjuster	Steel	Steel
13	-	17	Spring Adjuster Bearing	Steel	Steel
-	-	18	Spring Barrel	-	Cast Iron
14	14	19	Travel Indicator	SST	SST
15	15	20	Travel Stop	Steel	Steel
16	16	21	Bearing Rod End	Steel	Steel
17	17	22	Diaphragm Casing	Steel	Steel
-	18	-	Spring Adjuster Plate	Steel*	-
18	19	-	Thrust Washer	Steel / Nylon*	Steel

* indicates DFR047 materials only.

- indicates parts not present in model.

Our Commitment of Quality

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Figure 5 DFR047 Actuator Cross Section

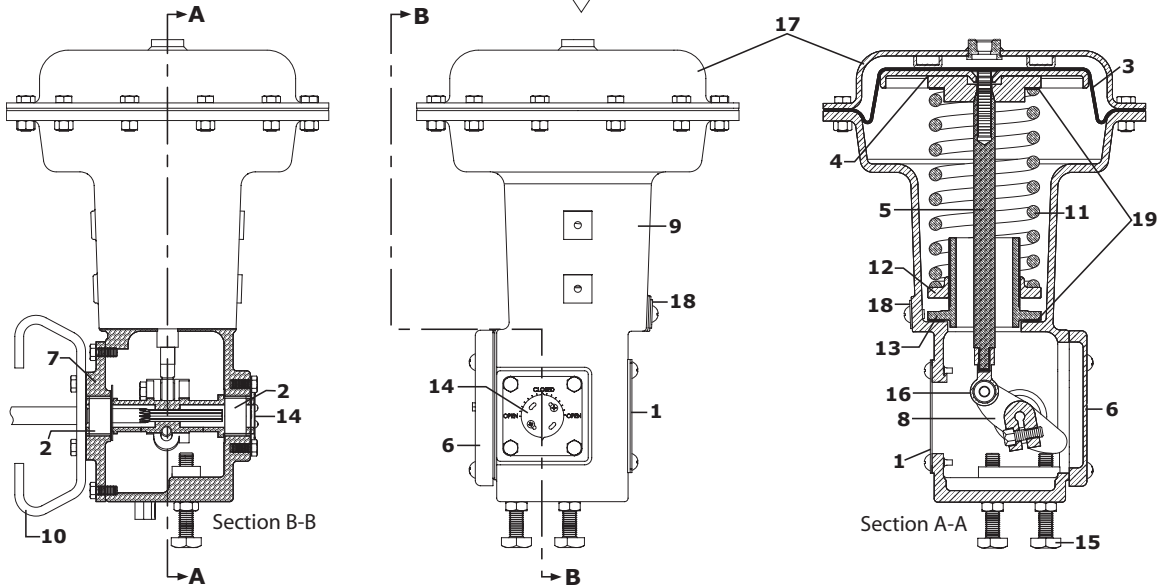
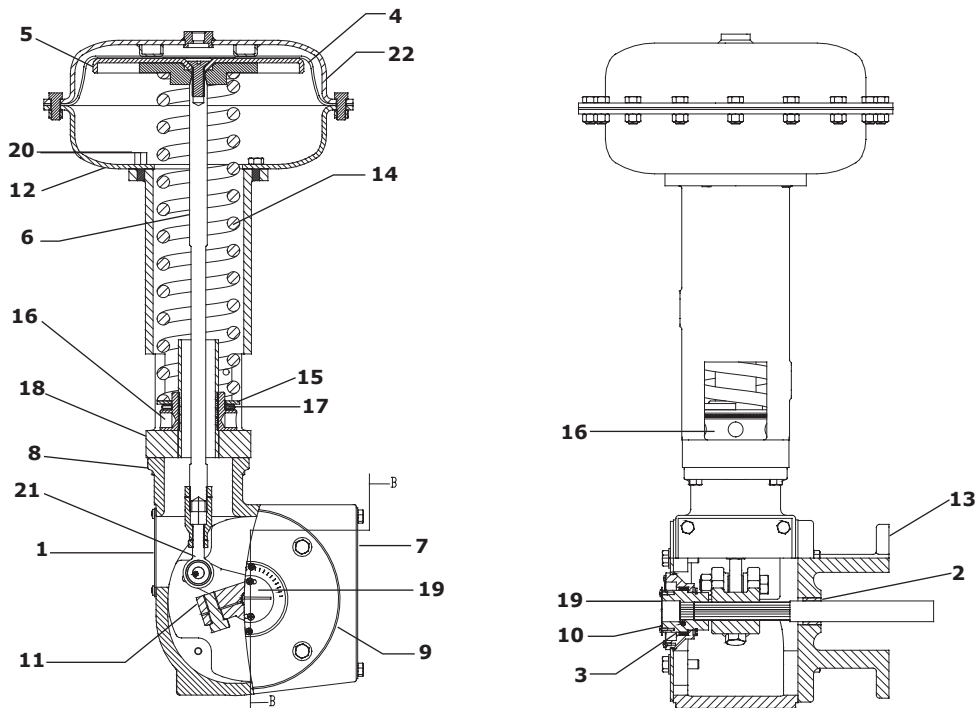


Figure 6 DFR 070 / 156 Actuator Cross Section





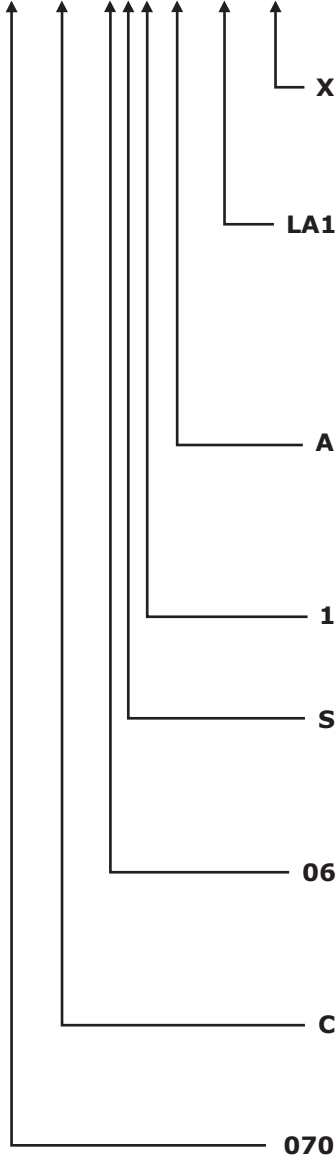
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Ordering Guide Dyna-Flo Model DFR Valve Actuator | Model Numbering System

Sample Part Number

DFR-070-C-06S1-A-LA1-X

Ordering Guide



Code	Description
Denotes Special Construction	
X	Special
Mounting	
R	Right Hand Mount
L	Left Hand Mount
A	Style A, B, C, D - See Figure 3
1	Position 1, 2, 3, 4 - See Figure 3 (default is Right Hand Position 1)
N	Not Applicable
Spring Range (See Table 3 and 4)	
A	DFR 025 0 to 18 psig range
B	DFR 025 0 to 33 psig range
C	DFR 046 0 to 18 psig range, 0 to 33 psig range
D	DFR 070 0 to 18 psig range, 0 to 33 psig Fail Open ONLY
E	DFR 070 0 to 33 psig range, Fail Close ONLY
F	DFR 156 0 to 18 psig range, 0 to 33 psig range
Operating Pressure Range, Psig	
1	0-18 Psig
3	0-33 Psig
Shaft Connection Type	
S	Standard Splined
X	Special
P	Stub Pinned
Shaft Connection Size	
04	1/2 inch
05	5/8 inch
06	3/4 inch
07	7/8 inch
08	1 inch
10	1 1/4 inch
12	1 1/2 inch
Fail Position	
C	Fail Closed
O	Fail Open
N	Not Applicable
Actuator	
025	25
047	47
070	70
156	156