



# Model DFN Diaphragm Actuator



**Figure 1** Model DFN Actuator

The Model DFN actuator is a bracket-mounted, direct acting, spring and diaphragm actuator. Common applications include operation of butterfly valves, chokes, and louvers. DFN actuators can be used in either throttling or on/off service.

## FEATURES

**Mounting Versatility** - Four holes in the actuator base permit bracket or plate mounting.

**Square Yoke** - A square yoke provides a versatile mounting surface for accessories.

**Long Actuator Travel** - Deep casings provide up to 4-1/8 inches (105 mm) of travel for a size 156 actuator.

**Easy Installation** - The actuator may be installed in any position. Dimensions are shown in Figure 3.

**Rugged Design** - Steel welded design provides necessary stability and reliability under extreme working conditions.

## Specifications

### Recommended Casing Operating Pressure

35 psig (241 kPag)

### Maximum Allowable Casing Pressure

If this pressure is exceeded, damage may be caused to the diaphragm, diaphragm casing or other parts.

Actuator Size	Maximum Casing Rating, psig (kPa)
069	65 (448)
156	40 (276)

**Net Stem Force Output** - See Table 3

**Spring Commonly used with Rotary Valves** - See Table 4

### Maximum Travel

Actuator Size	Maximum Rated Stem Travel inches (mm)	
	Standard Travel Stop	Optional Travel Stop
069	3-1/2 (89)	3 (76)
156	4-1/8 (105)	3-13/16 (97)

### Actuator Weight

Actuator Size	Shipping Weight Approximate Lb (kg)
069	54 (24.5)
156	147 (67)

**Construction Material** - See Table 1 and Figure 2

### Effective Diaphragm Area With Stem Fully Extended

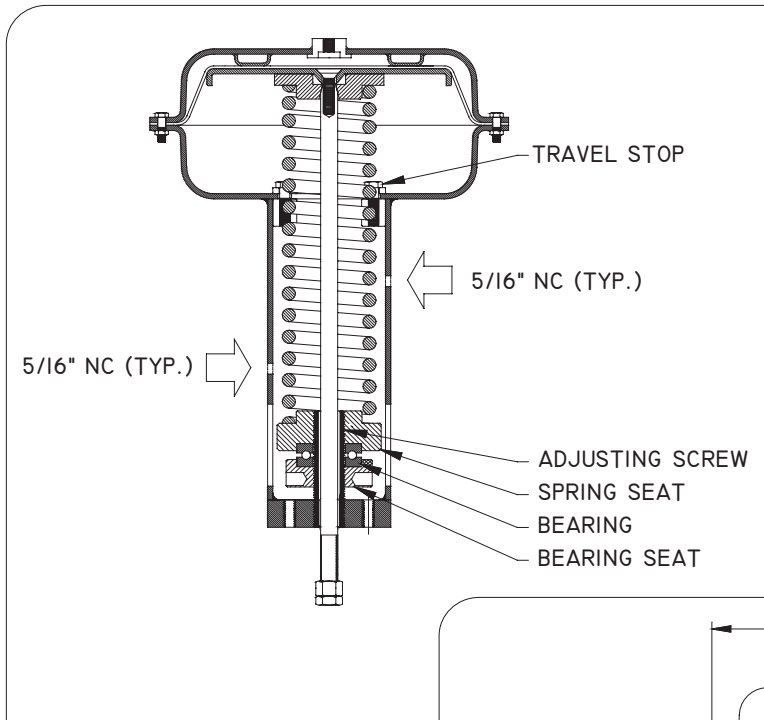
Actuator Size	Effective Area Square Inches (square cm)
069	69 (445)
156	160 (1032)

**Casing Connection** - 1/4 inch NPT Female

**Mounting and Stem Information**  
See Figure 2 and 3

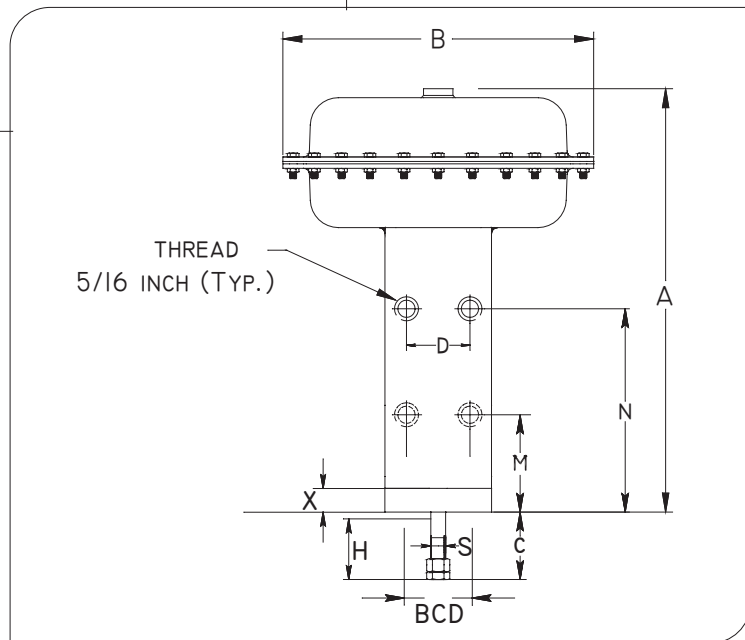


# Model DFN Diaphragm Actuator



**Figure 2** Typical Construction  
(See Table 1 at right)

**Figure 3** Dimensional Drawing  
(See Table 1 at right)



**Table 1**

**Construction Materials**

Part Description	Construction Materials
Diaphragm	Nitrile
Diaphragm Plate	Steel
Yoke	Steel
Casing	Steel
Spring Seats	Steel
Travel Stop	Steel
Stem	Steel
Bearing	Steel
Bearing Seat	Steel
Bearing Race	Steel
Adjustment Screw	Brass

**Table 2**

**Dimensions**

Actuator Size										Bolt Circle Diameter	
	A	B	C	D	H	M	N	S	BCD	Thread	
069	17.875 (454)	13.125 (333)	3.125 (79)	2.25 (57)	2.25 (57)	3.25 (83)	6.5 (165)	0.75 (19)	2.875 (73)	3/8 inch 16 UNC	
156	27.25 (692)	18.625 (473)	3.125 (79)	2.25 (79)	2.5 (64)	3.25 (83)	8.5 (203)	0.75 (19)	3.875 (99)	1/2 inch 13 UNC	



## Model **DFN** Diaphragm Actuator

**Table 3**

### Stem Force Output and Other Actuator Data

Actuator Size	Typical Springs <sup>1</sup>		Net Stem Force <sup>2</sup>			
	Part Number	Color Code	Maximum Range	Stem Fully Retracted <sup>3</sup>	Stem Fully Extended with Diaphragm Loading as Shown <sup>4</sup>	
			psig (kPa)	lbf (Newtons)	lbf (Newtons)	psig (kPa)
069	1L21742704D	White	3.1 to 12.7 (21 to 88)	330 (1468)	545 (1205)	20 (138)
069	1L21732704D	Dark Green	6.0 to 27.4 (41 to 190)	630 (2802)	270 (1201)	30 (207)
156	1K16272708D	Part Number Stamped on Spring	3.7 to 13.1 (26 to 90)	796 (3541)	1205 (5360)	20 (140)
156	1K16282708D	Gold / Blue	7.1 to 27.0 (49 to 190)	1462 (6503)	682 (3034)	30 (207)

**Notes**

- 1 Consult Dyna-Flo for other springs
- 2 For maximum rated stem travel with standard travel stop
- 3 Stem force equals initial spring compression with zero loading pressure
- 4 Stem force equals loading pressure X diaphragm area with stem fully extended minus force at maximum compression

**Table 4**

### Spring Commonly Used With Rotary Valves

Actuator Size	Maximum Rated Travel Inches (mm)	Spring
069	3.50 (89)	1L21742704D <sup>1,2</sup>
069	3.50 (89)	1L21732704D <sup>3,4</sup>
156	4.13 (105)	1K16272708D <sup>1,2</sup>
156	4.13 (105)	1K16282708D <sup>3,4</sup>

**Notes**

- 1 With positioner input is 20 psig (138 kPag)
- 2 Without positioner input is 3 to 15 psig (21 to 103 kPa)
- 3 With positioner input is 35 psig (241 kPa)
- 4 Without positioner input is 6 to 30 psig (42 to 207 kPa)



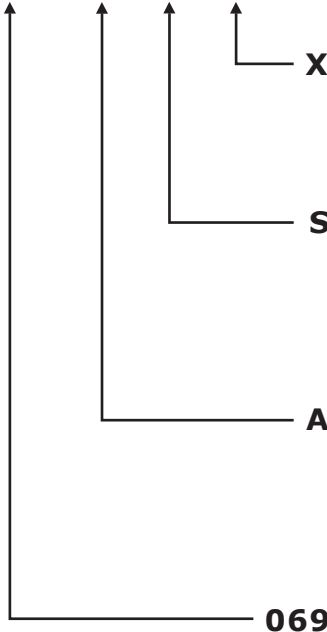
# Model DFN Diaphragm Actuator

## Ordering Guide

### Dyna-Flo DFN Series Control Valve | Model Numbering System

Sample Part Number

**DFN - 069 - A - S - X**



#### Denotes Special Construction

- X** Special
- H** Top Mounted Handwheel

#### Travel

- S** Standard (See Page 1)
- O** Optional (See Page 1)

#### Spring

- A** 1L21742704D Size 069, 20 psig
- B** 1L21732704D Size 069, 35 psig
- C** 1K16272708D Size 156, 20 psig
- D** 1K16282708D Size 156, 35 psig

#### Actuator Size

- 069** Effective Area 69 square inches
- 156** Effective Area 160 square inches

### Our Commitment of Quality

Dyna-Flo is committed to continuous improvement. All efforts have been taken to maximize the accuracy of this information. Without notification, product specifications and designs may be modified at any time. The issue of this document is for information only, and does not imply suitability, a warranty, or guarantee for a specific service.