

D-4070 Pneumatic Piston Damper Actuator

Description

The D-4070 Two-Stage Pneumatic Actuator is a multipurpose positioning device used to accurately position small dampers primarily on unit ventilators, VAVs, terminal units, and small ventilating dampers in response to output signals of a pneumatic controller or electro-pneumatic transducer.

The D-4070 is specifically designed to provide ASHRAE Cycle II and W control of unit ventilators where a minimum of outdoor air (15 to 50%) is admitted during the heating and ventilating stage and gradually increased to 100%, if needed, during the cooling and ventilating stage.

The D-4070 is a direct replacement for existing D-3070 actuators and a functional replacement for older D-255 actuators.

Refer to the *D-4070 Two-Stage Pneumatic Actuator Product Bulletin (LIT-2681082)* for important product application information.

Features

- two-way swivel connection ensures non-binding movement and full power delivery
- glass-reinforced polymer housing, which is lightweight and corrosion- and chemical-resistant

- telescoping linkage for fast and flexible installation
- economical because has two springs for two-stage operation, which function as two separate actuators
- designed to provide ASHRAE Cycle 11 and W controls of unit ventilators

Applications

The D-4070 has a first-stage nominal spring range of 3 to 6 psig (21 to 42 kPa) and can be furnished with a second-stage spring range of either 9 to 12 psig (63 to 84 kPa) or 11 to 14 psig (77 to 98 kPa). The control air pressure for normal HVAC operation is 0 to 20 psig. The total stroke of the D-4070 is 2-3/4 in. (70 mm) and is adjustable from 0 to 50% during the first stage of operation.

The D-4070 incorporates several internal and external features that add functional flexibility. A two-way swivel connection on the actuator cylinder head provides nonbinding movement. All actuators have a telescoping piston rod for easy linkage of the damper for attachment points up to 8-3/4 in. (214 mm) away from the face of the actuator. A swivel ball joint and slotted crankarm connector are furnished on all actuators for optional methods of linkage to the damper.



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When used with proportional control, the damper size is limited by the torque requirement.

Repair Information

If the D-4070 Pneumatic Actuator fails to operate within its specifications, replace the unit. For a replacement actuator, contact the nearest Johnson Controls® representative.

Selection Chart¹

Code Number	Nominal Spring Range, psig (kPa)
D-4070-1	3 to 6 (21 to 42) First Stage, 9 to 12 (63 to 84) Second Stage with Auxiliary Mounting Bracket
D-4070-2	3 to 6 (21 to 42) First Stage, 11 to 14 (35 to 70) Second Stage with Auxiliary Mounting Bracket
D-4070-6001	3 to 6 (21 to 42) First Stage, 9 to 12 (63 to 84) Second Stage Body Only
D-4070-6002	3 to 6 (21 to 42) First Stage, 11 to 14 (35 to 70) Second Stage Body Only

- Check your UV standard equipment sheets for the various models for the unit ventilator manufacturers. When a unit ventilator manufacturer specifies a D-4070, be sure to select the one that is designed for that unit.

Technical Specifications

D-4070 Pneumatic Piston Damper Actuator	
Stroke	2-3/4 in. (70 mm)
Control Air Pressure	0 to 20 psig for HVAC, 25 psig (171 kPa) Maximum
Air Connections	1/8 in. NPT Straight Barbed Fitting for 1/4 in. O.D. Poly tubing (Furnished)
Ambient Storage Condition	-20 to 150°F (-29 to 66°C)
Ambient Operating Conditions	35 to 150°F (2 to 66°C)
Effective Diaphragm Area	6.7 in ² (45 cm ²)
Housing Material	Glass-Reinforced Polymer, UL 94 HB Flame Class Rating
Diaphragm Material	Synthetic Elastomer
Dimensions	3-7/8 in. Diameter x 9-15/16 in. Long
Shipping Weight	3.5 lb (1.6 kg)

Accessories

Code Number	Description	Weight, lb (kg)
D-3073-105	Mounting Post Kit, 5 per Kit	0.5 (0.23)
D-3073-604	Ball Joint - Weather Resistant	0.5 (0.23)
D-3153-103	Rod - 8-3/4 in. (222 mm) Replacement	1.0 (0.45)
D-3153-106	Auxiliary Mounting Bracket	1.0 (0.45)
D-3153-111	E-Rings for Pivot Post, 10 per Kit	0.5 (0.23)
D-3153-112	Mounting Nuts for Pivot Post, 10 per Kit	0.5 (0.23)
DMPR-KC050	Crankarm: 7/16 in. Shaft Radius Adjustable to 2-3/4 in. Radius	0.5 (0.23)
DMPR-KC051	Crankarm: 3/8 in. Shaft Radius Adjustable to 2-3/4 in. Radius	0.5 (0.23)
DMPR-KC053	Crankarm: 1/2 in. Shaft Radius Adjustable to 2-3/4 in. Radius	0.5 (0.23)
DMPR-KC054	Blade Arm Kit	1.3 (0.59)
DMPR-KC102	Rod - 4 ft (122 cm)	2.0 (0.91)
DMPR-KC251	Universal Mounting Bracket	3.5 (1.13)
DMPR-KC300	Swivel Ball Joint, 10 per Kit	0.5 (0.23)

Maximum Force¹ Values at 20 psig (140 kPa) Supply

First-Stage Spring Range, psig (kPa)	Second-Stage Spring Range, psig (kPa)	Stroke	Force, lb (Newton)	Torque Output for 90° Rotation
3 to 6 (21 to 42)	9 to 12 (63 to 84)	Power	53.6 (239)	73.7 lb-in (8.4 N-m)
		Return	20.1 (89)	27.6 lb-in (3.1 N-m)
3 to 6 (21 to 42)	11 to 14 (77 to 98)	Power	40.2 (179)	55.3 lb-in (6.3 N-m)
		Return	20.1 (89)	27.6 lb-in (3.1 N-m)

- Force calculated using 6.7 lb/psig available actuator force