

D-4073 Pneumatic Actuator

The D-4073 Pneumatic Actuator is a multipurpose positioning device used to accurately position small dampers primarily on unit ventilator, Variable Air Volume (VAV), terminal units, and small ventilating dampers in response to output signals of a pneumatic controller or electro-pneumatic transducer.

The actuator is also recommended for use on other air flow control dampers, in interior locations, up to a maximum area of 6.75 square feet for proportional volume control and 11.7 square feet for two position actuation provided that the torque requirements are compatible with the specific application.

The D-4073 is a direct replacement for existing D-3073 actuators and a functional replacement for former D-251 actuators.

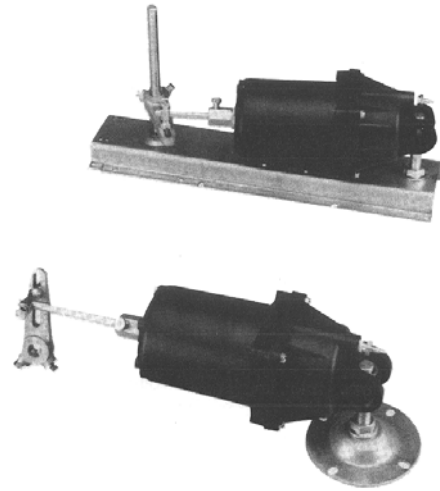


Figure 1: D-4073

Features and Benefits	
<input type="checkbox"/> High Power to Size Ratio	Location in confined spaces
<input type="checkbox"/> Glass Reinforced Polymer Housing	Lightweight, corrosion and chemical resistant
<input type="checkbox"/> Telescoping Linkage	Fast, flexible installation
<input type="checkbox"/> Optional Mounting Kits	Covers any application or replacement of obsolete units

Application

When an 8 to 13 psig spring range is used with proportional control, the damper size is limited to 6.75 square feet maximum. As a two position control, damper size is limited to 11.7 square feet.

Three nominal spring ranges are available: 3 to 7 psi, 5 to 10 psi, and 8 to 13 psi. The control air pressure for normal HVAC operation is 0-20 psig.

The D-4073 incorporates several internal and external features that add functional flexibility. A 2-way swivel connection on the actuator cylinder head provides non-binding movement. All actuators have a telescoping piston rod for easy linkage of the damper for attachment points up to 8-3/4 inches (222 mm) away from the face of the actuator (see Figure 2). A swivel ball joint and slotted crank arm connector are furnished on all actuators for optional methods of linkage to the damper.

Operation

Air pressure from a pneumatic controller is applied to the diaphragm of the actuator, which moves the piston against the forces of the internal spring and the load. The external load force shifts the operating range from the nominal spring range. The piston will move to a position where the applied force and the spring plus external forces are in equilibrium. However, with a pilot positioner added, the piston will move to a position proportional to the control signal regardless of the load.

Installation

The D-4073 can be mounted in a variety of positions to operate unit ventilators, VAV boxes as well as normally open or normally closed dampers.

Figures 3 and 4 illustrate the two standard mounting kits available for various applications and mounting arrangements; refer to Table 2 for ordering details.

The D-4073 with universal mounting bracket contains all parts required for the actuator to be mounted inside or outside the duct with D-1300 series dampers.

The auxiliary mounting bracket assembly facilitates applying the D-4073 actuator to allied equipment manufacturer's products, and non-Johnson Controls installations for actuator conversions. These assemblies are furnished with a crank arm linkage and pedestal style bracket.

Refer to the installation instructions packaged with the actuator for complete recommended procedures.

Other mountings are available to suit special applications. The linkage face of the actuator contains four mounting holes to facilitate other brackets or competitive conversions.

A 1/8 inch NPT straight barbed fitting for 5/32 or 1/4 inch O.D. polytubing is furnished for standard HVAC installation.

A stop screw kit is available for special applications to limit the power stroke of the actuator when required. A 4 foot (122 cm) linkage rod is also available for special applications to reach extended linkage when required.

Where precision sequential operation is desired, or additional positioning power is necessary, use a D-9502 positioner. Up to four more D-4073 actuators may be slaved from one pilot for coupled dampers.

Repair Information

Field repairs can not be made. For a replacement, contact the nearest Johnson Controls representative.

Refer to reference bulletins in the Pneumatic Control Manual (FAN 717.1) for models applying to unit ventilators and other types of units.

Table 1: Force Values at 20 PSIG (140 kPa) Supply

Spring Range psig (kPa)	Stroke	Force, lb (Newtons)	Torque Output for 90° Rotation
8 to 13 (56 to 91)	Power	47 (209)	71 in·lb (8.0 N·m)
	Return	54 (240)	81 in·lb (9.1 N·m)
5 to 10 (35 to 70)	Power	67 (298)	101 in·lb (11.3 N·m)
	Return	34 (151)	51 in·lb (5.8 N·m)
3 to 7 (21 to 49)	Power	87 (388)	131 in·lb (14.8 N·m)
	Return	20 (89)	30 in·lb (3.4 N·m)

Note: Force calculated using 6.7 lb/psig available actuator force.

Dimensions

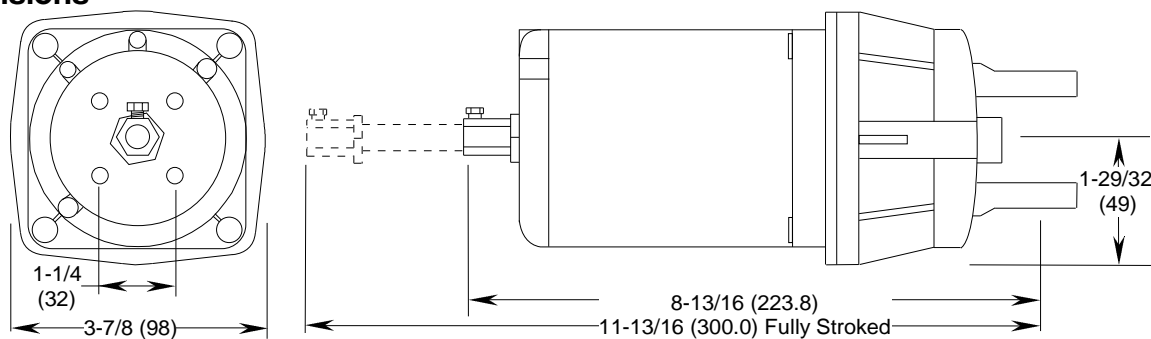


Figure 2: D-4073 Dimensions, inches (mm)

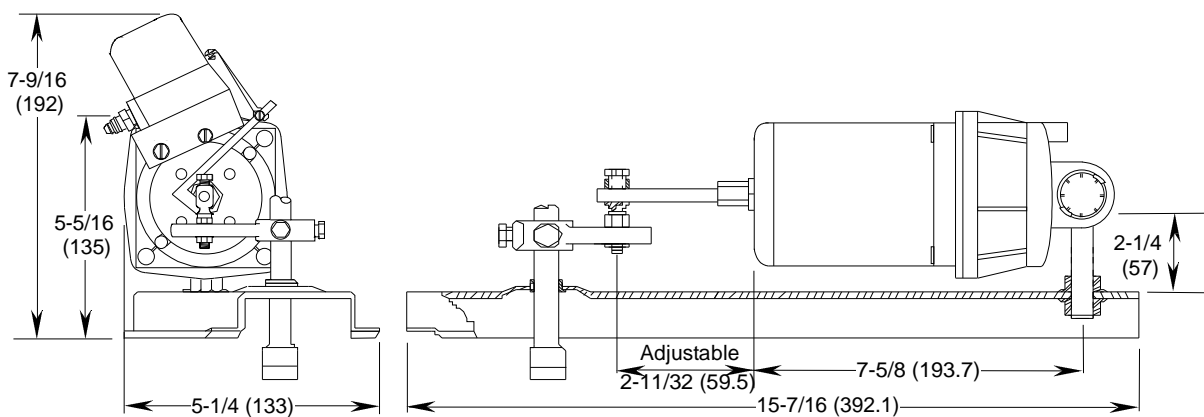


Figure 3: D-4073 with Universal Mounting Bracket and Pilot Positioner, inches (mm)

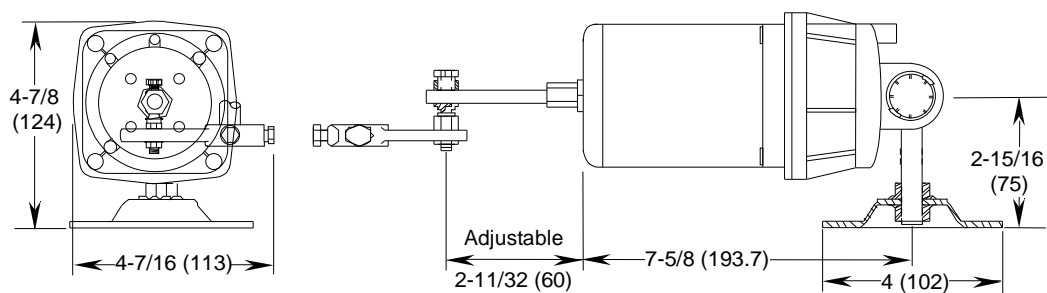


Figure 4: D-4073 with Auxiliary Mounting Bracket, inches (mm)

Table 2: Actuator Ordering Information

Nominal Spring Range, psig	with Universal Mounting Bracket	with Auxiliary Mounting Bracket	Actuator Body Only
8-13	D-4073-2	D-4073-5	D-4073-6003
8-13 w/D-9502	D-4073-1	D-4073-4	-
5-10	D-4073-3	D-4073-6	D-4073-6002
3-7	-	D-4073-7	D-4073-6001

Table 3: Accessories

Code Number	Description	Weight, lb (kg)
D-3073-100	Rubber Boot Kit (Includes Ball Joint and Cover)	0.2 (0.10)
D-3153-104	Stop Screw Kit	0.5 (0.23)
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	0.5 (0.23)
D-9502-12	Proportional Pilot Positioner Kit	2.0 (0.91)

Technical Specifications

Product	D-4073 Pneumatic Actuator			
Stroke	3 inches (76 mm)			
Control Air Pressure	0-20 psig for HVAC 25 psig (175 kPa) Maximum			
Air Connections	1/8 inch NPT straight barbed fitting for 5/32 or 1/4 inch O.D. polytubing (furnished)			
Ambient Operating Conditions	-20 to 150°F (-29 to 66°C)			
Effective Diaphragm Area	6.7 in. ² (45 cm ²)			
Housing Material	Glass reinforced polymer, UL 94 HB flame class rating			
Dimensions (H x W x D)	See Figure 2.			
Shipping Weight, lb (Kg)	D-4073-1 7.9 (3.6)	D-4073-3 6.4 (2.9)	D-4073-5 4.9 (2.2)	D-4073-7 4.9 (2.2)
	D-4073-2 6.4 (2.9)	D-4073-4 6.4 (2.9)	D-4073-6 4.9 (2.2)	

For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.



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