

D-4300 & D-4400 Piston Actuators

The D-4000 series Pneumatic Piston Actuators are multi-purpose positioning devices used primarily in air conditioning systems for operating dampers and mixing boxes in response to the output signals of pneumatic controllers.

These actuators are available in two basic sizes, adjustable stroke and different positioning power (see specification table).

They incorporate several important features that add functional and application flexibility:

- External case in die cast aluminium and extending shaft in stainless steel offer good corrosion resistance.
- Completely enclosed housing to protect internal parts from dirt and damage.
- Synthetic elastomer diaphragm for extended life.

Operation

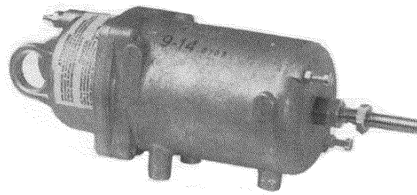
Air pressure from a pneumatic controller is applied to the diaphragm of the actuator which drives the piston and shaft against the forces of the internal spring and the external load.

The piston and shaft will move to a position where the applied force of air pressure and the combined spring force and external force are in equilibrium.

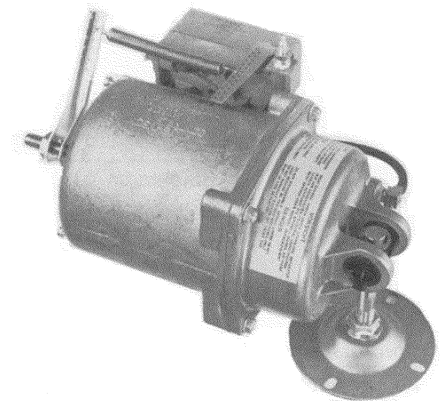
Where sequential operation of two or more actuators is desired or full positioning power is necessary, a V-9502 Pilot Positioner should be used.

Mounting

The D-4300 and D-4400 allow either feet or swivel mounting.



D-4300 piston actuator



**D-4400 piston actuator
 shown with pilot positioner
 and swivel mounting plate**

Feet mounting is recommended when very rigid mounting of the actuator to its base is required:

The swivel mounting is used where space is limited or offset mounting conditions exist; it allows the actuator to be positioned in various planes both horizontally and vertically to achieve the necessary alignment.

A wide range of mounting plates and accessories is available for various types of actuator mounting on Johnson D-8000 dampers (see Product Data Bulletin D-8000 A.2) and allied equipment manufacturers products (see Product Data Bulletin D-4000 A.1).

Servicing

The following repair parts are available for Field

- Servicing:
- Diaphragm
 - Springs

Warning!

- Actuators must be serviced by trained mechanics only: the internal spring is under a heavy load.
- Control air tubing must be disconnected before servicing. Failure to do so may result in personal injury.
- Do not manually extend or twist the shaft of the actuator.
- The actuator is provided with external stops and stroke adjusting screws. These must be properly adjusted for the required actuator stroke in order to prevent premature diaphragm failure.



Specifications

Models	D-4300	D-4400
Mounting Type:	Feet and Swivel	
	Minimum	64 mm
	Maximum	80 mm
Stroke:	Factory set	70 mm
Effective diaphragm area	40 cm ²	97 cm ²
	3 to 7 psi (21 to 48 kPa)	3 to 7 psi (21 to 48 kPa)
	5 to 10 psi (35 to 69 kPa)	5 to 10 psi (35 to 69 kPa)
Spring Ranges (nominal)	9 to 14 psi (62 to 96 kPa)	9 to 14 psi (62 to 96 kPa)
	3 to 15 psi (21 to 103 kPa)	3 to 15 psi (21 to 103 kPa)
Material:	Body	Die cast aluminium, natural finish (*)
	Shaft	AISI 300 Stainless Steel
	Diaphragm	Synthetic elastomer
	Piston	Nylon
	Spring	Carbon steel wire, enamel finish
	Spring guide (on 9 to 14 psi spring range only)	Nylon
Control air pressure	25 PSIG (172 kPa) maximum	
Air Connection	Barbed fitting for 5/32" or 1/4" O.D. Polytubing	
Ambient temperature limits	-30°C to +65°C (*)	
Accessories	V-9502 Pilot Positioner, available also factory mounted. See V-9502 Product Data Bulletin	
	Mounting plates: see D-4000 A.1 and D-8000 A.2 Product Data Bulletins (order separately)	
	Linkages: see D-4000 A.1 Product Data Bulletin (order separately)	
Approx. Net weight (kg) without accessory	1,2	2,2

(*) The D-4300 and D-4400 are available on request with nickel electroplated finish, for use in severe corrosion environmental applications, as approved by Johnson Controls.

NOTE 1: D-4300 is available on request also with special cylinder head without swivel attachment to reduce total overall length: consult factory for full detail.

ACTUATOR FORCE VALUES (N) WITH 20 PSI (138 kPa) CONTROL PRESSURE

Models	Nominal Spring Ranges							
	3 to 7 PSI (21 to 48 kPa)		5 to 10 PSI (35 to 69 kPa)		9 to 14 PSI (62 to 96 kPa)		3 to 15 PSI (21 to 103 kPa)	
	POWER	RETURN	POWER	RETURN	POWER	RETURN	POWER	RETURN
D-4300	335	73	275	142	166	260	138	73
D-4400	815	186	635	323	450	598	375	186

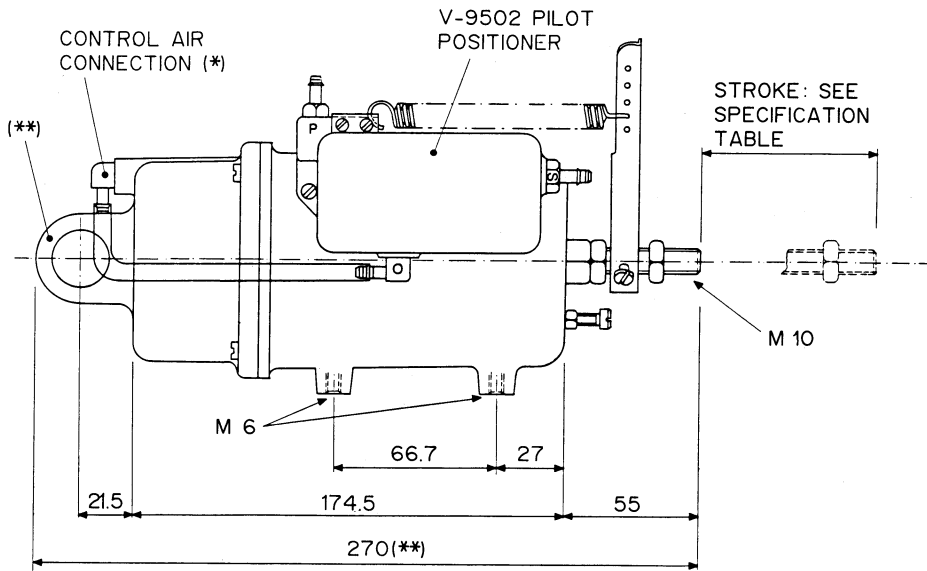
Table 1: Model selection

Ordering Code:	Nominal Spring Ranges				
	3 to 7 psi (21 to 48 kPa)	5 to 10 psi (35 to 69 kPa)	9 to 14 psi (62 to 96 kPa)	9 to 14 psi with Pilot Positioner (62 to 96 kPa)	3 to 15 psi (21 to 103 kPa)
D-4300	D-4300-8320	D-4300-8330	D-4300-8340	D-4300-8300	D-4300-8350
D-4400	D-4400-8320	D-4400-8330	D-4400-8340	D-4400-8300	D-4400-8350
V-9502 Pilot Positioner and Mounting Kit, for Field Mounting			D-9502-8005		
Mounting Kit only for Field Mounting V-9502 Pilot Positioner			D-9502-8015		

Dimensions - mm

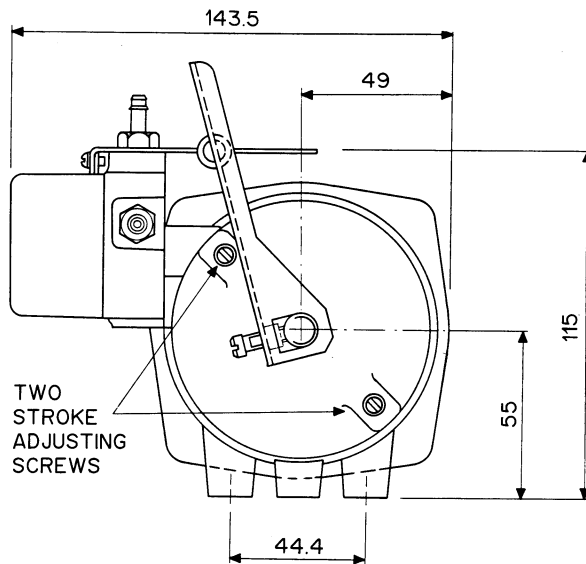
D-4300

side view; shown with Pilot Positioner



(*) On Actuator without Pilot Positioner, this fitting is straight.
(**) See note 1 under the Specification table.

front view; shown with Pilot Positioner

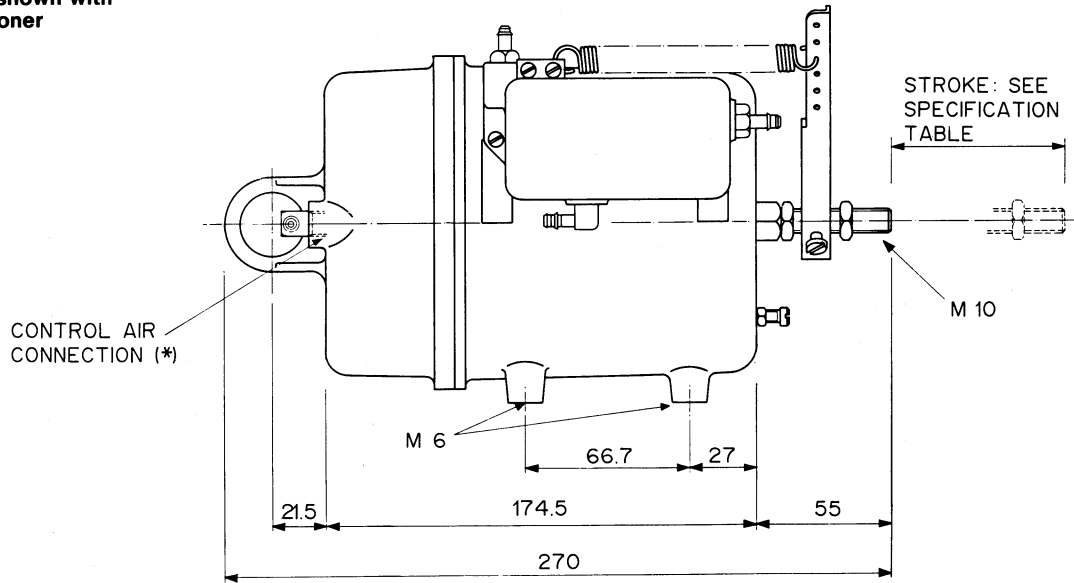


D-4000

Dimensions - mm

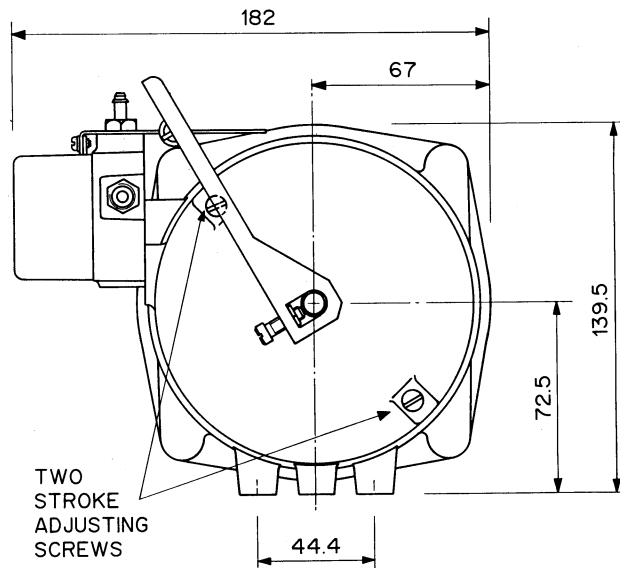
D-4400

side view; shown with
Pilot Positioner



(*) On Actuator without Pilot Positioner, this fitting is straight.

front view; shown with
Pilot Positioner



Performance specifications are nominal and are subject to accepted manufacturing tolerances and application variables.

Johnson Controls International, Inc.

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