

## Pneumatic Piston Actuators

Conoflow's Pneumatic Piston Actuators are compact units designed to function in today's high performance instrument systems.

Piston diameters of 3" to 8" are available with standard strokes up to 10" (for stroke lengths greater than 10", consult the factory). Integral positioners are standard for modulating service.

Force produced is a function of the supply pressure which can be varied from 20 to 100 PSI (138 to 690 kPa). Fast stroking speeds are made possible through the use of a high capacity positioner coupled with a unique cushion-loading regulator. The GB50 Series Piston Actuators are designed for use in corrosive atmospheres or adverse weather conditions.



### Optional Accessories:

1. Model FR95XBKEX(C,F,G) Airpak® (Filter Regulator) with gauge. Specify 0-60 or 0-125 PSI (0-414 or 0-861 kPa) range. (Bracket mounting is standard).
2. I/P or E/P Transducer. Specify range. (See Transducer Data Sheets).
3. Airlock Feature, Solenoid Valve, Limit Switch and other accessories are available, consult the factory.

### Dimensional Data – Advertising Drawings:

GB50: A7-107, 108, 108 and 110

GB51: A7-114, 115, 116, and 117

GB50 Series (Yoke Type): A7-100, 101, 102 and 103

GB50 Series (On/Off): A6-41 and 113

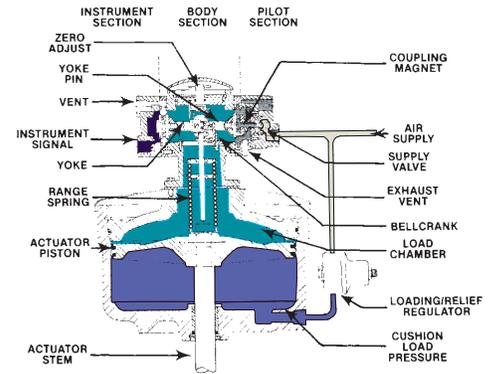
Piping: A50-48

# Principle of Operation

These units are actuated by a differential pressure across the moving piston. The piston is forced upward by a pressure from a cushion-loading regulator. This pressure can be adjusted to accommodate force requirements of the stem. The chamber above the piston is dynamically loaded through the positioner which operates on the force-balance principle. In the most conventional positioner form, an increase in instrument signal permits air flow into the chamber above the piston, increasing the pressure and moving the piston downward. This extends the range spring until the positioner is brought back into balance, at which point it is in a position corresponding to the instrument signal. A decrease in instrument signal reverses the procedure.

Actuators may also be supplied with a reverse acting positioner allowing the piston to retract with an increase or decrease in instrument signal.

When stem strokes are greater than 10", or when characterization is required, consult the factory for catalog number and pricing.



## Specifications

### Operating Characteristics

	GB50 (1)	GB51 (1)	GB52 (1)	GB53 (1)
<b>Piston Diameter</b>	3"	4"	6"	8"
<b>Effective Area</b>	7 in <sup>2</sup> (6.45 cm <sup>2</sup> )	12 in <sup>2</sup> (77.42 cm <sup>2</sup> )	28.5 in <sup>2</sup> (183.87 cm <sup>2</sup> )	50 in <sup>2</sup> (322.58 cm <sup>2</sup> )
<b>Stroke Length</b>	¼" to 10". Longer strokes are available, consult the factory.			
<b>Supply Pressure</b>	20 to 100 PSI (138 to 690 kPa)			
<b>Air Consumption with Positioner</b>	<b>Static:</b> 0.30 SCFM (0.008 m <sup>3</sup> /min) at 40 PSI (275 kPa) supply <b>Dynamic:</b> 5 SCFM (0.142 m <sup>3</sup> /min) at 100 PSI (690 kPa) supply			
<b>Thrust</b>	Thrust, T, equals the product of piston effective area, A, multiplied by supply pressure differential, ΔP, [up to 100 PSI (690 kPa)]. T = (A)ΔP. Example: Develop the thrust of a GB51 actuator with a 100 PSI (690 kPa) supply and a 20 PSI (138 kPa) cushion load. 12 in <sup>2</sup> x 80 PSI = 960 lbs. (77.42 cm <sup>2</sup> x 551 kPa = 435 Kg) of thrust.			
<b>Positioner</b>	Suitable for all standard instrument air signals; direct or reverse acting, top or bottom loading (3)			
<b>Standard Accessories</b>	Integrally piped cushion-loading regulator and gauge (for units with positioners only)			
<b>Materials of Construction</b>	Cylinder: Aluminum Piston: Aluminum Stem: 303 Stainless Steel		Lipseals: Buna "N" Spacer Bars: Steel	
<b>Approximate Shipping Weight</b>	2" = 15 lbs. (6.80 Kg) 5" = 15 lbs. (6.8 Kg) 8" = 25 lbs. (11.34 Kg)	3" = 20 lbs. (9.1 Kg) 4" = 20 lbs. (9.1 Kg)	1 1/8" = 15 lbs. (6.80 Kg) 4" = 25 lbs. (11.34 Kg) 6" = 35 lbs. (15.9 Kg) (4)	1 1/2" = 20 lbs. (9.1 Kg) 4" = 30 lbs. (13.6 Kg) (5) 6" = 40 lbs. (18.1 Kg) (5) 8" = 45 lbs. (20.4 Kg) (5) 10" = 50 lbs. (22.7 Kg) (5)

- Notes:**
1. For catalog number make-up, refer to Control Engineering Data Sheets.
  2. Weights for Yoke Style Mounting Actuators are as follows:  
GB52U : 15 lbs. (6.80 Kg)  
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  3. For proper positioner selection, refer to Positioner Data Sheets.
  4. Maximum piston travel is 6.750" (without collars).
  5. Maximum piston travel without collars is:  
4" Stroke = 4.125"  
6" Stroke = 6.750"  
8" Stroke = 8.750"  
10" Stroke = 10.750"
  6. For proper positioner selection, refer to Positioner Data Sheets.