

## Product Data Sheet

PDS 102-201.A01

June, 2007

# Rosemount Analytical Pneumatic Power Positioners

## PRODUCT DESCRIPTION

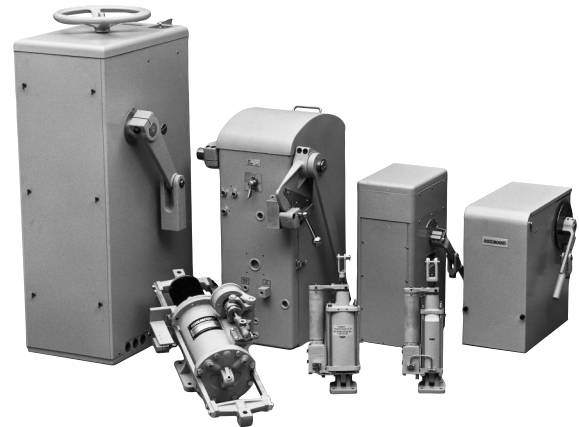
Industry needs muscle to control process valves, dampers and feed mechanisms accurately and in response to a demand signal. Emerson's Rosemount Analytical pneumatic power positioners have been satisfying these exacting control requirements for many years in countless applications – from steel mills to refineries – where positioning speed and accuracy are taken for granted.

Rosemount Analytical power positioners are manufactured in cylinder sizes from 2-1/2 to 8 inches in diameter with strokes of 5 to 14 inches. They come in thrust and torque models for wall, swivel or floor mounting and with accessories such as limit switches, position transmitters, heated enclosures, air failure lock and characterized cams that provide an output motion that is a function of the input signal.

The miniature 2-1/2 x 5 positioner is so compact that 24 to 48 of these units are often used to control secondary air on one boiler.

## FEATURES

- True Positioning Devices – All power positioners assume a definite position of the crosshead or operating lever for each demand signal variation through the action of an integral feedback mechanism.
- Mounting Variety – Models are available for convenient wall, swivel, or floor mounting. These positioners are often mounted directly on lever type valves by the valve manufacturer.
- Characterized Positioner – All positioners are equipped with a standard rotary cam or cam bar which produces a straight line relationship between input signal and output motion. Square or square root and blank cams are available.
- Air Lock – Designated models are equipped with an internal locking mechanism which stops and locks the positioner in the control position existing at the moment of air supply failure until air pressure is restored. System air locking schemes are also available.
- Fail Safe – Designated models can be equipped to drive the positioner to full open or full closed in case of air supply failure. NOTE: This feature should not be used with the air lock feature.



- Manual Operators – All torque type positioners are equipped with either a manual operating lever or a manual operating handwheel.
- Ambient Temperature – Positioners are generally suitable for operation from 0 to 140°F (-17,8 to 60°C) with a maximum rating of 300°F (149°C) for certain high temperature models.
- Dust Cover and Internal Heater – A dust cover is provided with or without heater and thermostat for certain torque type models.
- Limit Switches and Position Transmitters – Limit switches and position transmitters are available on designated models.
- Power Air Supply – Clean dry instrument air at 45 to 120 psig is required for cylinders of 8 inch diameter or less. For cylinders over 8 inches in diameter, the maximum air pressure for standard service is 100 psig and 250 psig for heavy duty service.

## BENEFITS

- Accuracy
- Reliability
- Simple maintenance because of rugged frame construction
- Efficient torque and power at a minimum cost
- Fast response to small input signal changes due to high internal gain

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## OPERATION

Non-characterized (spring) feedback produces a straight line (1:1) relationship between the input signal and output response.

The linear shape produces a straight line (1:1) relationship between the input signal and output response.

Characterized (cam) feedback provides choice of linear/ square or square root characteristic for more versatility and better zeroing ability.

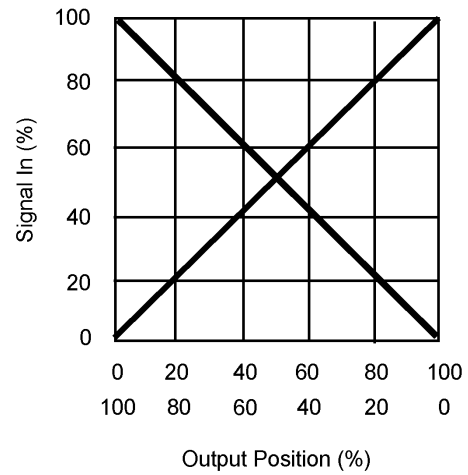
The square ( $x^2$ ) shape will produce a small output change for large input changes during the lower portion of the signal range. When operating in the upper portion of the signal range, a small input change will be required to produce a large output change.

Conversely, the square-root ( $\sqrt{x}$ ) shape will produce a relatively large output change for small input changes during approximately the first 10% of signal range. When operating in the upper portion of the signal range, a large input change will be required to produce a small output change.

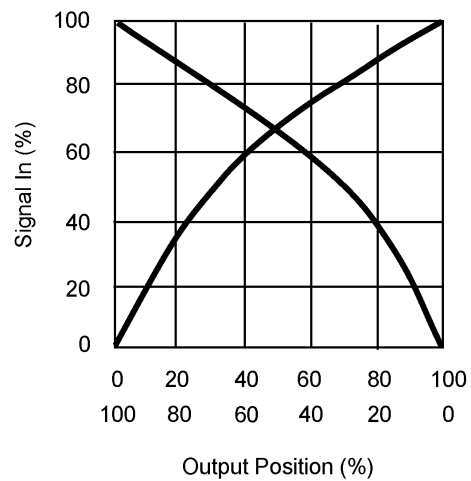
Note: Stall torques and thrusts are noted in the specifications.  
Rosemount Analytical recommends oversizing actuators by 40 percent above force required to ensure responsive operation.

## Input-Output Characteristics

Linear (x)



Square ( $x^2$ )



Square Root ( $\sqrt{x}$ )

