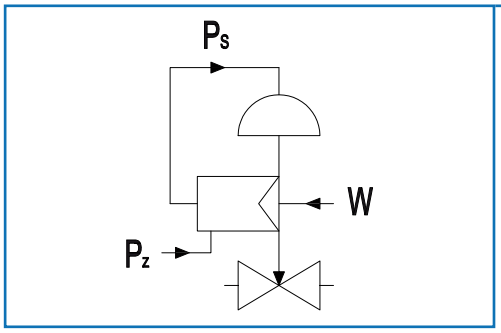
von Rohr
Armaturen AG

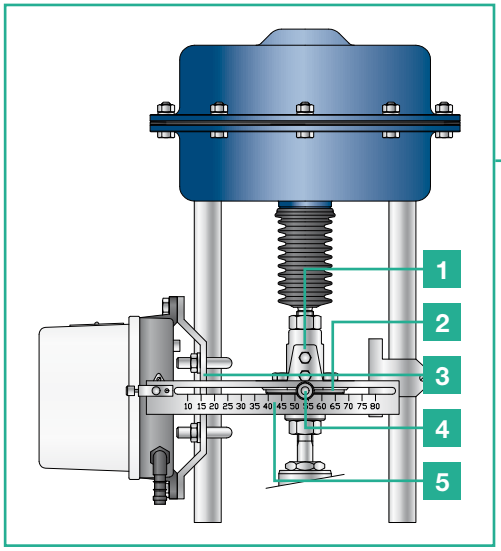
Series 800 SRP and SReP

Positioner customized for specific control tasks



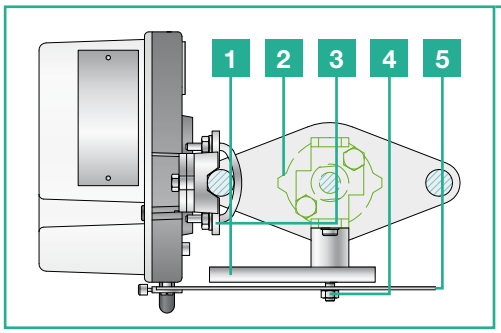
Functioning

A linear function between the input signal and stroke is the best way to ensure maximum control precision. Control valves with pneumatic actuators, however, are subject to friction, media pressure, and high flow forces, which means that this linearity is not intrinsic in the system. Only a positioner can eliminate positioning errors. To do so, it compares the input signal (reference variable w) with the actual stroke (control variable x). Depending on the control deviation (x_w), the positioner uses the air supply pressure (p_z) to yield the actuating pressure (p_s) for the actuator (actuating variable y). The input signal is either pneumatic 0.2 to 1.0 bar, or electric 4 to 20 mA.



Positioner mounting according to IEC 534 (NAMUR)

The standard mounting method to IEC 534 is based on manufacturer-independant mechanical interface between the pillars and the actuator spindle. In general it is attached by an adapter (3), while the position feedback comprises a lever (5) and a carrier rail (1). The air supply is connected to the positioner, while the pneumatic connection to the actuator is realized by means of a pipe or hose.



Stroke feedback

The carrier rail (1) connects the spindle coupling (2) with the feedback lever (5), of the positioner. Here, the transmission pin (4) engages the feedback lever (5) so that the stroke feedback is nearly free from backlash and no hysteresis occurs. Even strong vibrations or shocks do not cause wear and tear.

Pneumatic positioner type SRP

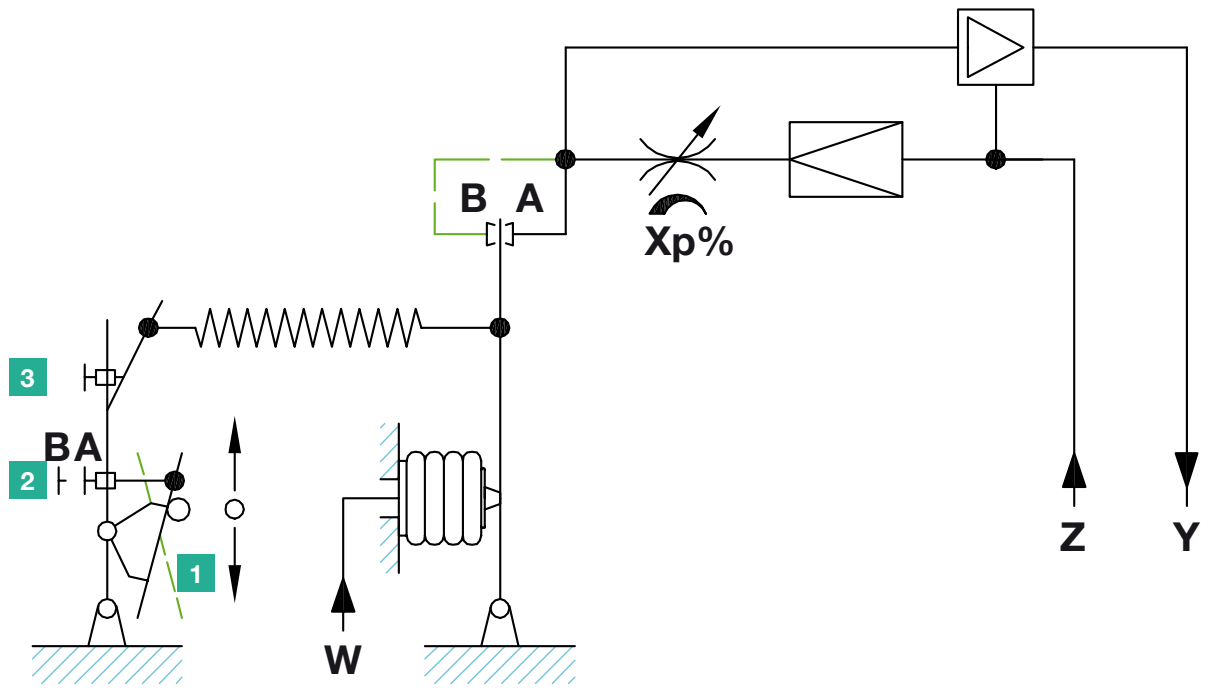
Function

The positioner works on the principle of comparing two forces, whereby on is formed by the actual value x, the other by input value w. The actual value x is the stroke of a linear or rotating element, in most cases a valve; the input variable w is the value from a pre-set pneumatic controller.

The characteristic curve of the final control element can be influenced by different shaped cams. The stroke adjustment is basically made by a feedback lever. A finer adjustment is possible by altering the inclination of the control cam. The stroke adjustment for split ranges can be set – as far as possible – on the feedback lever. A further adjustment is possible by altering the inclination of the control cam. This however only applies to the linear cam no° 1. Equilibrium is obtained through the nozzle-vane system. Should there be an imbalance of the two forces, the associated amplifier is controlled until the valve shaft and the mechanical feedback are in the state of equilibrium again.

Each single acting positioner is equipped basically with 2 counter-current control nozzles, which can be switched selectively to the amplifier for direct or reverse action.

Pneumatic positioner type SRP (single acting)



1 feedback from actuator
2 stroke
3 zero point

Z air supply
w input signal
y output signal

Electropneumatic positioner type SReP

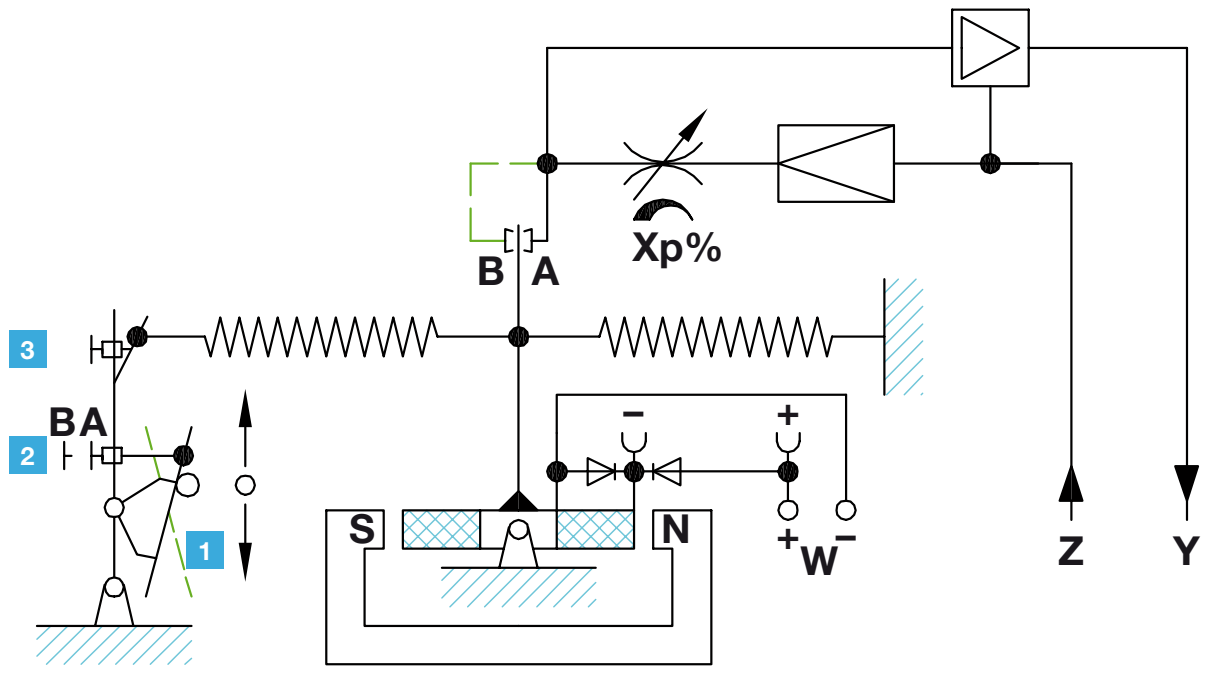
Function

The positioner works on the principle of comparing two torsional moments formed from the moment of the valve position x and the moment of the moving coil magnetic system from the input current w.

The characteristic curve of the final control element can be influenced by different shaped cams. The stroke adjustment is basically made by a feedback lever. A finer adjustment is possible by altering the inclination of the control cam. The stroke adjustment for split ranges can be set – as far as possible – on the feedback lever. A further adjustment is possible by altering the inclination of the control cam. This however only applies to the linear cam no° 1. Equilibrium is obtained through the nozzle-vane system. Should there be an imbalance of the two torsional moments, the associated amplifier is controlled until the valve shaft and the mechanical feedback are in the state of equilibrium again.

Each single acting positioner is equipped basically with 2 counter-current control nozzles, which can be switched selectively to the amplifier for direct or reverse action.

Electropneumatic positioner type SReP (single acting)



1 feedback from actuator
2 stroke
3 zero point

Z air supply
w input signal
y output signal

Series 800 SRP and SReP

SRP pneumatic positioner

SReP electropneumatic positioner

Features	Advantages
Compact design	● Space saving installation
Any installation position from horizontal to vertical	● Flexible installation
Input signal 0 to 10 V (by using a resistor)	● Use in building automation possible
NAMUR mounting	● Easy mounting
For linear actuators (10 to 120 mm stroke)	● Variable applications
Low working resistance	● Allows serial split range operation with several positioners
Easy setting without instruction	● Allows operation by untrained staff
Repairable	● Cost savings

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Series 800 SRP and SReP

General data	
Housing material/top cover	anodized aluminium/colour coated aluminium
Temperature range	–20…+100° C
Permanent control deviation	< 0.5%
Linearity error	< 2%
Deadband	self-adapting (< 0.3%) or adjustable (0.1% to 10%)

Protection classes	
SRP	without
SReP	intrinsically safe Ex II 2G EEx ib IIC T6

Input signal	
Standard SRP	0.2 to 1.0 bar
Standard SReP	4 to 20 mA

Pneumatic data	
Air supply pressure	1.4 to 6 bar
Constant air consumption	0.35 to 0.95 Nm^3/h (1.4 to 6 bar)
Air delivery	4.5 to 20 Nm^3/h (1.4 to 6 bar)

Mounting	
Linear actuators	according to IEC 534, stroke 10 to 120 mm

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