



Pneumatic Actuator Accessories

Extended Descriptions

Solenoid Valves for PAD, PCD, PKD & PMD Series Actuators

General Description

The 4-way solenoid valve is used to cycle double acting, pneumatic actuators. The function of this solenoid valve is to shuttle high pressure air, 80 psi, alternately to both sides of the actuator, when the solenoid is energized and de-energized, while simultaneously, venting the opposite or atmospheric side.

Solenoid Valves for PAS, PCS, PKS & PMS Series Actuators

General Description

The 3-way solenoid valve is used to cycle spring return, failsafe pneumatic actuators. The function of this solenoid valve is to supply high pressure air, 80 psi, to the side of the actuator opposite the spring. When energized, the solenoid allows the air pressure to enter the actuator chamber, cycling the actuator and at the same time, further compressing the spring. When the solenoid is de-energized, the air is vented to atmosphere which allows the spring to cycle both the actuator & valve.

All descriptions as to function of solenoid valves assumes valve to be fail closed. Both 4-way and 3-way solenoids can be specified to fail the valve open or closed.

Solenoid Valves, 4-Way, for PAD & PKD Series Double Acting

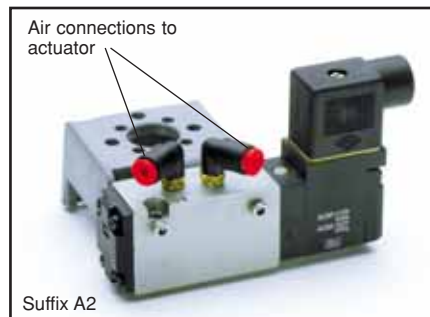
Discrete, NEMA 4, 4-Way Air/Air, Suffix A2

(for PAD3 & PKD2 actuators)

Model Specification

The 4-way solenoid valve is mounted firmly to the mounting bracket with stainless steel hardware and connected to each side of the actuator with poly tube.

Features of this 4-way solenoid include: P-port or high pressure air inlet port is 1/8" NPT, NEMA 4, 100% duty cycle, input voltage of 115/120 VAC, 60 hz., Plug in "DIN" connector with SJ connector, non-locking manual override, aluminum die cast body with epoxy paint. Maximum operating pressure 100 psi, CV of 0.16. Weight 1 lb. Many voltage options.



Solenoid shown for PAD3 and PKD2 actuators

How the PAD3 & PKD2 Actuators Work

When the 4-way solenoid is energized, the high pressure air, 80 psi, flows through the poly tube to the actuator's vane, rotating it CCW, (opening valve). When the 4-way solenoid is de-energized, the high pressure air rotates the actuator's vane CW, closing the valve.

Solenoid Valves, 3-Way, for PAS & PKS Series Spring Return, Failsafe

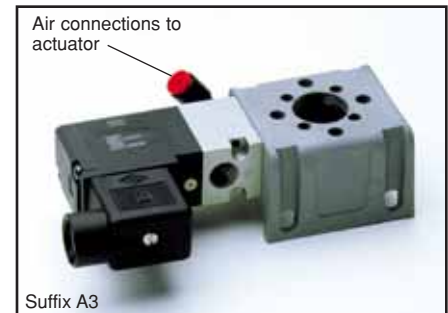
Discrete, NEMA 4, 3-Way Air/Spring, Suffix A3

(for PAS3 & PKS2 actuators)

Model Specification

The 3-way solenoid valve is mounted firmly to the mounting bracket with stainless steel hardware and connected to one side of the actuator with poly tube. Features of this 3-way solenoid include: P-port or high pressure air inlet port is 1/8" NPT, NEMA 4, 100% duty cycle, input voltage of 115/120 VAC, 60 hz., Plug in DIN connector with "SJ" connector, non-locking manual override, aluminum die cast body with epoxy

paint. Maximum operating pressure 100 psi, Cv of 0.08. Weight 1 lb. Many voltage options.



How the PAS3 & PKS2 Actuators Work

When the 3-way solenoid is energized, the high pressure air, 80 psi, flows through the poly tube to the actuator's vane, rotating it CCW, (rotating valve), and simultaneously further winding the clock type spring. When the 3-way solenoid is de-energized, the spring rotates the actuator's vane, CW, rotating the valve either closed or open.

Solenoid Valves, 4-Way, for PCD Series Double Acting

Integral, NEMA 4, 4-Way, Air/Air, Suffix A4

Integral, NEMA 7, 4-Way, Air/Air, Suffix AA4

(for PCD15 actuators)

Model Specification

The 4-way solenoid valve used on the PHD series of actuators is mounted on top and fastened directly to the actuator. Features of this 4-way solenoid include: P- port or high pressure air inlet port is 1/8" NPT, NEMA 4 or 7, 100% duty cycle, input voltage of 115/120 VAC, 60 hz., 1/2" conduit connection, locking manual override, aluminum body with black anodize coating. Maximum operating pressure of 100 psi, CV of 0.1. Weight 1 lb. Many voltage options.



How the PCD Actuators Work

When the 4-way solenoid is energized, the high pressure air, 80 psi, flows through the actuator's internal manifold into the center chamber, pushing the 4 pistons outward, rotating the actuator shaft CCW. When the 4-way solenoid is de-energized, the high pressure air flows to the outside of the pistons,

How the PCS Actuators Work

When the 3-way solenoid is energized, the high pressure air, 80 psi, flows through the actuator's internal manifold into the center chamber, pushing the 4 pistons outward, rotating the actuator shaft CCW. This action simultaneously compresses the actuator springs. When the 3-way solenoid is de-ener-

Model Specification

The 4-way solenoid used on the PKD series of actuators is mounted and fastened directly to the front of the actuator. Features of this 4-way solenoid include: P port or high pressure air inlet port is 1/8" npt, NEMA 4, 100% duty cycle,



Solenoid Valve for PKD/PKS Actuators



Solenoid Valve for PCD/PCS and PMD/PMS Actuators

pushing them inward. This rotates the actuator shaft CW, in turn opening or closing the valve as required.

Solenoid Valves, 3-Way, for PCS & PMS Series Spring Return, Failsafe Actuators

Integral, NEMA 4, 3-way, Air/Spring, Suffix A9

Integral NEMA 7, 3-way, Air/Spring, Suffix AA9

Model Specification

(for actuators larger than PHS15)

The 3-way solenoid valve used on the PHS series of actuators is mounted directly to the actuator. Features of this 3-way solenoid include: P port or high pressure air inlet port is 1/8" NPT, NEMA 4 or 7, 100% duty cycle, locking manual override, aluminum body with anodize coating. Maximum operating pressure of 100 psi, Cv of 0.15, weight of 1 lb., and many voltage options.

gized, the springs push the pistons, rotating the actuator shaft CW. In turn, the valve either closes or opens as required.

Solenoid Valves, 4-Way, for PCD & PMD Double Acting Actuator

Integral, NEMA 4, 4-Way, Air/Air, Suffix A8

Integral, NEMA 7, 4-Way, Air/Air, Suffix AA8

(for actuators larger than PHD15)

Model Specification

This 4-way solenoid valve is exactly the same as the A9 & AA9 in terms of physical size, but varies in terms of operational function. Cv of 0.2. Weight 1 lb. Many voltage options.

Solenoid Valves, 4-Way, for PKD Series Double Acting Actuators

Integral, NEMA 4, 4-Way, Air/Air, Suffix A8

(for PKD3, PKD5, PKD7, PKD9 actuators)

input voltage of 120 VAC, 60 hz., 1/2" conduit connection (rotatable 180°), locking manual override, zinc diecast body with corrosion resistant coating. Maximum operating pressure of 100 psi, Cv of 0.2 and weight of 1 lb. Special features are finger adjustable needle valves for speed controls in both directions, exhaust muffler of sintered bronze, "UL" recognized solenoid, warranted for 10 million cycles and many voltage options.

How the PKD Actuators Work

When the 4-way solenoid is energized, the high pressure air, 80 psi, flows through the actuator's internal porting to the actuator's vane, rotating it CCW (opening valve). When the 4-way solenoid is de-energized, the high pressure air rotates the actuator's vane CW, closing the valve. All air passages are internal within the actuator.



Solenoid Valves, 3-Way, for PKS Series Spring Return, Failsafe Actuators Integral, NEMA 4, 3-Way, Air/Spring, Suffix A9

(for PKS3, PKS5, PKS7, PKS9 actuators)

Model Specification

The 3-way solenoid used on the PKS series of actuators is mounted and fastened directly to the front of the actuator. Features of this 3-way solenoid include: P- port or high pressure air inlet port is 1/8" NPT, NEMA 4, 100% duty cycle, input voltage of 120 VAC, 60 Hz., 1/2" conduit connection (rotatable 180°), locking manual override, zinc diecast body with corrosion resistant coating. Maximum operating pressure of 100 psi, Cv of 0.2 and weight of 1 lb. Special features are finger adjustable needle valves for speed controls in both directions, exhaust muffler of sintered bronze, UL recognized solenoid, warranted for 10 million cycles. Many voltage options.

How PKS Actuators Work

When the 3-way solenoid is energized, the high pressure air, 80 psi, flows through the actuator's internal porting, directly to the vane, rotating it CCW and winding the clock type spring. When the 3-way solenoid is de-energized, the spring rotates the actuator's vane, CW, rotating the valve either closed or open.

Pneumatic Positioner Suffix C

(For PCD, PCS, PKD & PKS series Actuators)

General Description

The pneumatic positioner controls the position of a double acting or spring return, pneumatic actuator and valve by modulating the flow of supply air, 80 psi, to the actuator in response to an input signal, (normally 3 to 15 psi) from a controller or other device. The positioner and actuator shafts are tightly coupled and are related to the input signal depending on the type of feedback cam, (Suffix E2 to E4), installed.

Electro/Pneumatic Positioner - Suffix C2 & C4

(For PCD, PCS, PKD & PKS series actuators)

General Description

The electro/pneumatic positioner, (normally referred to as I/P) typically requires the input signal to be 4 to 20 mA. The I/P converts this signal to the 3 to 15 psi air signal for proportional use by the positioner.

Pneumatic Positioner, (Ryton), Suffix C

3-15 psi Input, Air/Air & Air/Spring

(for PCD, PHS, PKD & PKS series actuators)

strength, (pps) polyphenylene sulfide (Ryton) enclosure with 300 stainless captive hardware, NASA rated for fire safety, single & double acting, direct & reverse acting, full & split ranges, 0° to 90° & 0° to 180° rotation. Advanced balanced port spool valve for vibration & corrosion resistance, reliability, low air consumption, gauge block with (3) gauges, (2)-1/2" conduit entries, supply connection 1/8" NPT, air consumption 0.25 scfm @ 80 psi, weight 2 lbs. Additionally, this positioner offers extensive options as: Integral position indicator with color lenses; stainless steel



Suffix C Positioner

Model Specification

This pneumatic positioner is mounted on the top of either the double acting or spring return pneumatic actuator, with low profile mounting hardware specifically designed to minimize hysteresis. Features of this positioner include: precise performance for economical operation, standard flat lens position indicator for 90° and 0°-180° indication, color coded proportional sections to improve interpretation over single-color indicators. Both the flat lens and beacon lens indicators are field adjustable. Colors are - (red/green)-Lexan, NEMA 4, 4x, dusttight, corrosion resistant in hostile process & outdoor environments, high

gauges, (1) 0-30 psi & (2) 0-160 psi; integral position transmitter, 4-20 mA or resistive outputs; integral limit switches, mechanical & proximity.

Note: All air ports, NPT, must be sealed with Teflon paste, non-hardening type. Never use Teflon tape. Maximum applied torque to air fittings is 12 ft-lbs for 1/4" NPT and 6 ft-lbs. for 1/8" NPT.

PNEUMATIC ACTUATION & OPTIONS

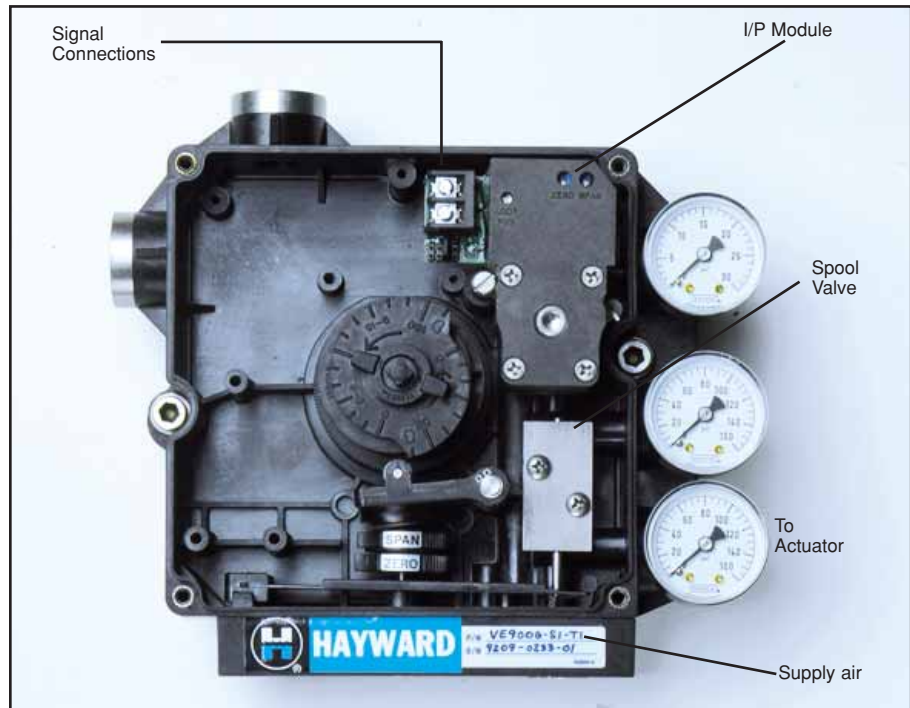
Electro/Pneumatic Positioner (Ryton), Suffix C2

4-20 mA Input, Air/Air & Air/Spring

(for PCD, PCS, PKD & PKS series actuators)

Model Specification

Conversion of the pneumatic positioner to an electro/pneumatic positioner requires only the simple addition of a single module inside the positioner enclosure using (2) captive mounting screws. Features of this electro/pneumatic positioner include: continuously adjustable split ranging, red LED loop power indication, reversible and depluggable current loop connections, selectable speed control, I/P final air supply filtration-30 micron-replaceable, automatic compensation for supply air pressure, atmospheric pressure and ambient temperature changes, radio frequency interference (RFI) and transient protection, vibration resistant construction, linear speed control.



Suffix C2 Electro-pneumatic positioner

Integral Position Indicator, Beacon with Color

Suffix R2

(for Ryton positioners C & C2 only)



Suffix R2 shown

Model Specification

The standard flat lens position indicator on top of the positioner can be changed to a beacon type. This like the flat lens is color coded and proportionally sectional to improve interpretation over single color indicators. Features include: wide angle visibility, NEMA 4, 4x, 0° to 90° indication, high impact corrosion resistant & UV stabilized, high visibility fluorescent red & green rotor and contrasting black lens, on/off & proportional indication.

Integral Position Transmitter

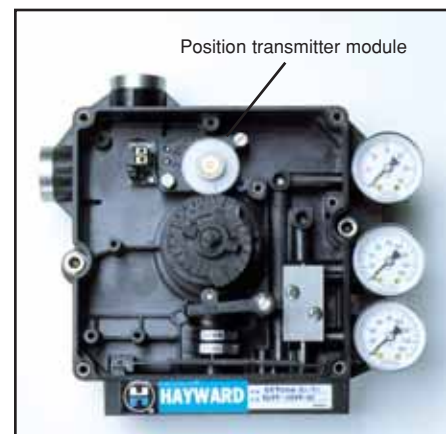
4-20 mA Output, Suffix R5 to R8

(for Ryton positioners C & C2 only)

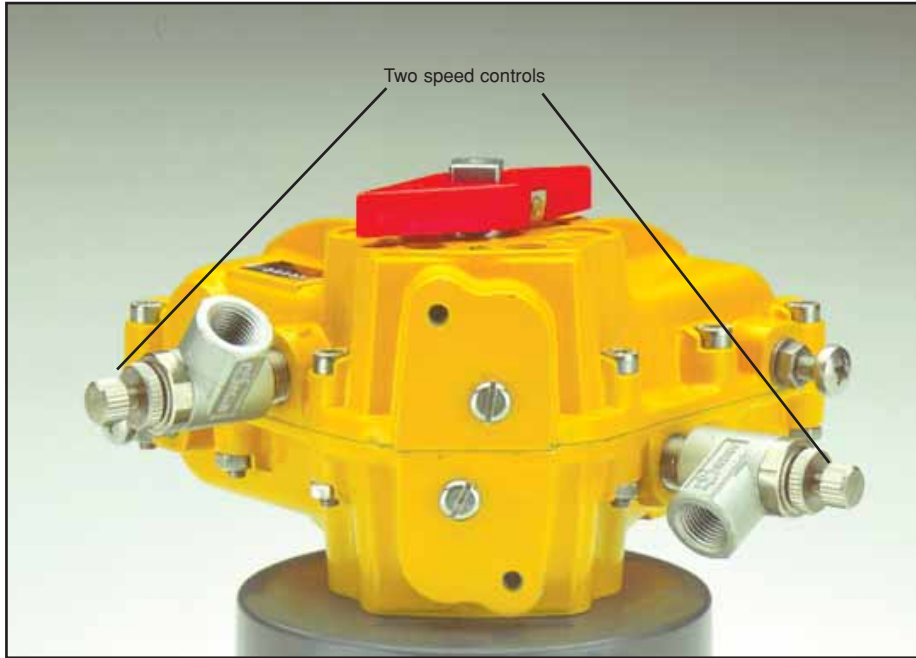
Model Specification

The integral position transmitter is mounted inside the positioner enclosure with position pickup directly from the positioner shaft. Easily mounted with captive stainless steel screws, direct driven, polarity reversible 2-wire connections, environmentally sealed, potentiometer type zero & span adjustments, red-LED power loop indicator, depluggable terminal block and jumper selectable for reverse output. The position transmitter must be specified by the output signal desired.

- 4 to 20 mA ----- add suffix R5
- 0 to 1000 ohms resistor ---- add suffix R6
- 0 to 5000 ohms resistor ---- add suffix R7
- 0 to 10,000 ohms resistor -- add suffix R8



Suffix R5, shown within positioner enclosure



Suffix T4 mounted to PKD3

Top Mounted Limit Switches Zytel Enclosure Suffix S2 and S4

(For PCD, PCS, PKD, PKS, PMD & PMS Series actuators)

General Description

This top mounted limit switch is designed to survive corrosive environments. High performance polyamide resin offers a viable alternative to metal enclosures. The “supertough” glass-reinforced enclosure combines chemical resistance with high impact strength and immunity to weathering.

NEMA 4x, Flat Cover, 2 SPDT, 15 amps - Suffix S2

NEMA 4x, Beacon, 2 SPDT, 15 amps - Suffix S4

Top Mounted Limit Switches Aluminum/Epoxy Enclosure Suffix SA2 and SA4

(For PCD, PCS, PKD & PKS Series actuators)

NEMA 4 & 7, Flat Cover, 2 SPDT, 15 amps - Suffix SA2

NEMA 4 & 7, beacon, 2 SPDT, 15 amps - Suffix SA4



Suffix T3 mounted to PKS3

Speed Controls Suffix T3 and T4

(for PAD/S, PCD/S, PKD/S, PMD/S Series Actuators)

Discrete Speed Control, Spring Return, Air/Spring, 1 Required Suffix T3

Model Specification

(1) speed control is mounted in the air inlet or exhaust port of the spring return actuator.*

The internal design allows restricted and adjustable flow control of air leaving the actuator while allowing unrestricted flow of air entering the actuator. The restricted adjustment can be set from a few seconds to approximately 60 seconds.

Discrete Speed Control, Double Acting, Air/Air, 2 Required Suffix T4

Model Specification

(2) speed controls are mounted, (1) in each air inlet or exhaust port of the double acting actuator.* The internal design allows restricted and adjustable flow control of the air leaving the actuator while allowing unrestricted flow of air entering the actuator. The restricted adjustment can be set from a few seconds to approximately 60 seconds.

316 Stainless Steel Labels with Stamped Valve Numbers - Suffix YSS2

(For all actuators, electric & pneumatic)

General Description

For applications where permanent valve numbers must be attached to the automated assembly. Hayward will stamp or etch the provided customer supplied designation and affix the tag to the assembly with a stainless steel chain.

* May be mounted to solenoid valve at discretion of factory.