

Accurate Regulation of your Flow

SPC-2 Sanitary Electro-Pneumatic Modulating Valve

Application

SPC-2 is a sanitary electro-pneumatic modulating valve for use in stainless steel pipe systems.

Typical applications of SPC-2 are control of pressure, flow, temperature, level in tanks etc.

Working principle

SPC-2 is remote-controlled by an electrical signal and compressed air. The valve is available with a normally open (NO) actuator as standard but can be supplied with a normally closed (NC) actuator. The actuator can easily be changed from a NO-version to a NC-version or vice versa.

The IP-converter, which is an integrated part of the actuator, converts the electrical signal to a pneumatic signal. This signal conversion is extremely insensitive to pressure shocks.

The pneumatic signal is transmitted to the integrated positioner which operates by means of the force-balance principle, ensuring that the position of the actuator piston is directly proportional to the input signal. Signal range and zero point can be adjusted individually.

The actuator can be used for split-range operation by using a different measuring spring.

Standard Design

The valve consists of valve body, valve plug, lip seal, bonnet and an external actuator. The actuator with the bonnet is fitted to the valve body by means of a clamp.

The actuator has an integrated IP-converter and positioner which offers substantial advantages compared to externally fitted positioners. All the moving parts are enclosed in the actuator and therefore well protected against damage and dirt.

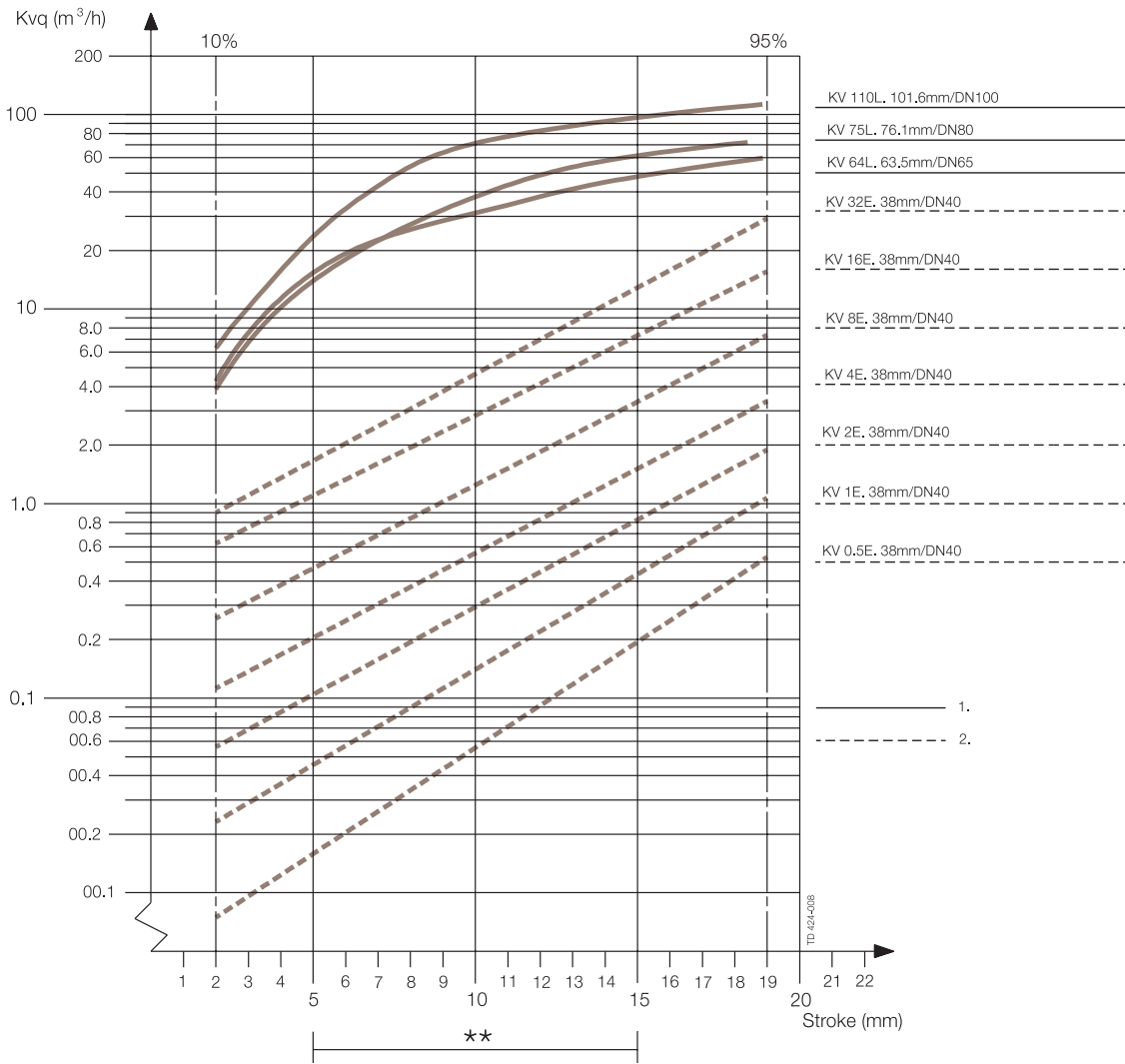
The actuator has few moving parts, and two main actuator sizes cover all valve sizes.



SPC-2, normally open (NO).

Capacity diagram

For $\Delta p = 100 \text{ kPa}$ (1bar).



** Recommended working area

Conversion Table

100 kPa = 1 bar = 14.5 PSI

10 mm = 0.39 inch

10 m³/h = 44.03 US GPM

Note! For the diagram the following applies:
 Medium: Water (68°F).
 Measurement: In accordance with VDI 2173.

Pressure drop calculation

The Kv designation is the flow rate in m³/h at a pressure drop of 1 bar when the valve is fully open (water at 68°F or similar liquids).

To select the Kv value it is necessary to calculate the Kv_q value using the following formula:

$$Kv_q = \frac{Q}{\sqrt{\Delta p}}$$

Where:

Kv_q = Kv value at specific flow and specific pressure drop.

Q = Flow rate (m³/h).

Δp = Pressure drop over valve (bar).

Technical data

Valve

Max. product pressure:1000 kPa (145 PSI).
 Min. product pressure:Full vacuum.
 Temperature range:50°F to 284°F (EPDM).
 Flow range Kv ($\Delta p = 1\text{bar} = 14.5\text{ PSI}$):2.2 -484.32 US GPM
 Max. pressure drop:500 kPa (72.52 PSI).

Actuator

Air quality

Air connection:6/4 air tube with air fitting R1/8" (BSP)
 Max. pressure:600 kPa (87 PSI).
 Working pressure:400 kPa (58 PSI).
 Max. size of particles:0.0003936996 inch.
 Max. oil content:0.08 ppm.
 Dew point:50°F below ambient temp. or lower.
 Max. water content:0.17 lbs/lbs

I/P converter

Signal range:4 - 20 mA (standard).
 Input resistance:200 Ω
 Inductivity/capacitance:Negligible.

Accuracy

Deviation: $\leq 1.5\%$
 Hysteresis: $\leq 0.5\%$.
 Sensitivity: $< 0.1\%$.
 Influence of air supply pressure: $\leq 0.1\%$ between 20.3 and 87 bar.

Air consumption at steady state condition:With 8.7 PSI signal pressure and supply pressures up to 87 PSI $\leq 100\text{ l/h}$.

Protection class:IP 54.

Ambient temperature:-13°F to +158°F.

Materials

Valves

Product wetted steel parts:Acid-resistant steel, AISI 316L (1.4404).
 Other steel parts:Stainless steel, AISI 304 (1.4301).
 Product wetted seals:EPDM rubber.
 Finish:Semi-bright.

Actuator

Actuator cases:Aluminium with plastic coating.
 Diaphragms:NBR with reinforced fabric insert.
 Springs:Stainless steel uncovered/spring steel epoxy resin coated.
 Actuator stem:Polyamide.
 Screws, nuts:Stainless steel, polyamide.
 Other parts:Stainless steel.

Dimensions

| Size | 38 mm | 51 mm | 63.5 mm | 76.1 mm | 101.6 mm | | 1½" | 2" | 2½" | 3" | 4" | |
|-----------------------|-------|-------|---------|---------|----------|-------|-------|-------|-------|-------|-------|-------|
| | | | | | NO | NC | | | | | NO | NC |
| A | 414 | 419 | 444 | 455 | 491 | 509 | 16.3 | 16.5 | 17.48 | 17.91 | 19.33 | 20.04 |
| E | 55 | 62 | 67 | 84 | 96 | 96 | 2.17 | 2.44 | 2.64 | 3.31 | 3.78 | 3.78 |
| G | 49.5 | 62 | 82 | 87 | 134 | 134 | 1.95 | 2.44 | 3.23 | 3.43 | 5.28 | 5.28 |
| H | 168 | 168 | 168 | 168 | 168 | 280 | 6.61 | 6.61 | 6.61 | 6.61 | 6.61 | 11.02 |
| OD | 37.9 | 50.8 | 63.5 | 76.1 | 101.6 | 101.6 | 1.49 | 2 | 2.5 | 3 | 4 | 4 |
| ID | 34.9 | 47.6 | 60.3 | 72.1 | 97.6 | 97.6 | 1.37 | 1.87 | 2.37 | 2.84 | 3.84 | 3.84 |
| t | 1.5 | 1.6 | 1.6 | 2.0 | 2.0 | 2.0 | 0.06 | 0.06 | 0.06 | 0.08 | 0.08 | 0.08 |
| M/ISO clamp | 21 | 21 | 21 | 21 | 21 | 21 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| M/ISO male | 21 | 21 | 21 | 21 | 21 | 21 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 | 0.83 |
| M/DIN male | | | | | | | | | | | | |
| M/SMS male | 20 | 20 | 24 | 24 | 35 | 35 | 0.79 | 0.79 | 0.94 | 0.94 | 1.38 | 1.38 |
| M/BS male | 22 | 22 | 22 | 22 | 27 | 27 | 0.87 | 0.87 | 0.87 | 0.87 | 1.06 | 1.06 |
| Weight (kg) and (lbs) | 7.5 | 8.2 | 14.0 | 15.0 | 18.3 | 27.3 | 16.53 | 18.08 | 30.86 | 33.07 | 40.34 | 60.19 |

Flow sizes/tube connections

| Kv | Seat diam. | | Tube connections | | Actuator (type no.) | |
|-------|------------|------|------------------|------|---------------------|--------|
| | (mm) | inch | ISO (mm) | Inch | NO | NC |
| 0,5 E | 6 | 0.24 | 38 | 1½" | 3277-5 | 3277-5 |
| 1,0 E | 10 | 0.39 | 38 | 1½" | 3277-5 | 3277-5 |
| 2 E | 12 | 0.47 | 38 | 1½" | 3277-5 | 3277-5 |
| 4 E | 14 | 0.55 | 38 | 1½" | 3277-5 | 3277-5 |
| 8 E | 23 | 0.91 | 38 | 1½" | 3277-5 | 3277-5 |
| 16 E | 29 | 1.14 | 38 | 1½" | 3277-5 | 3277-5 |
| 32 E | 48.5 | 1.91 | 51 | 2" | 3277-5 | 3277-5 |
| 64 L | 51 | 2.01 | 63.5 | 2½" | 3277-5 | 3277-5 |
| 75 L | 51 | 2.01 | 76.1 | 3" | 3277-5 | 3277-5 |
| 110 L | 72 | 2.83 | 101.6 | 4" | 3277-5 | 3277 |

Options

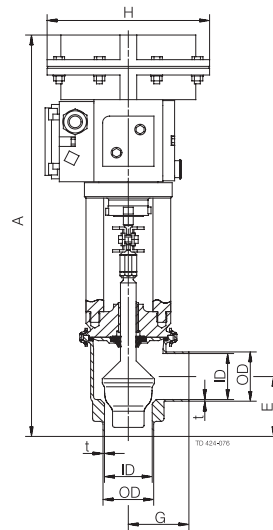
- A. Male parts or clamp liners in accordance with required standard.
- B. Aseptic version based on ARC diaphragm system.
- C. 3A approved version (polished).
- D. Explosion protection (EEX ia IIc T6) on request.
- E. 3A (Sanitary Standard) labelling on request.
- F. Lip seal of Nitrile (NBR) or Fluorinated rubber (FPM).

Ordering

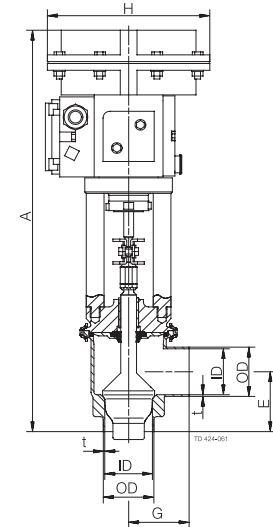
Please state the following when ordering:

- Valve size (Kv or flow and pressure drop).
- Actuator version, NO or NC.
- Connections if not welding ends.
- Other options.

Note! For further details, see also PD 65036 and instruction IM 70736.



a. SPC-2, normally open (NO).



b. SPC-2, normally closed (NC).

Fig. 1 Dimensions