

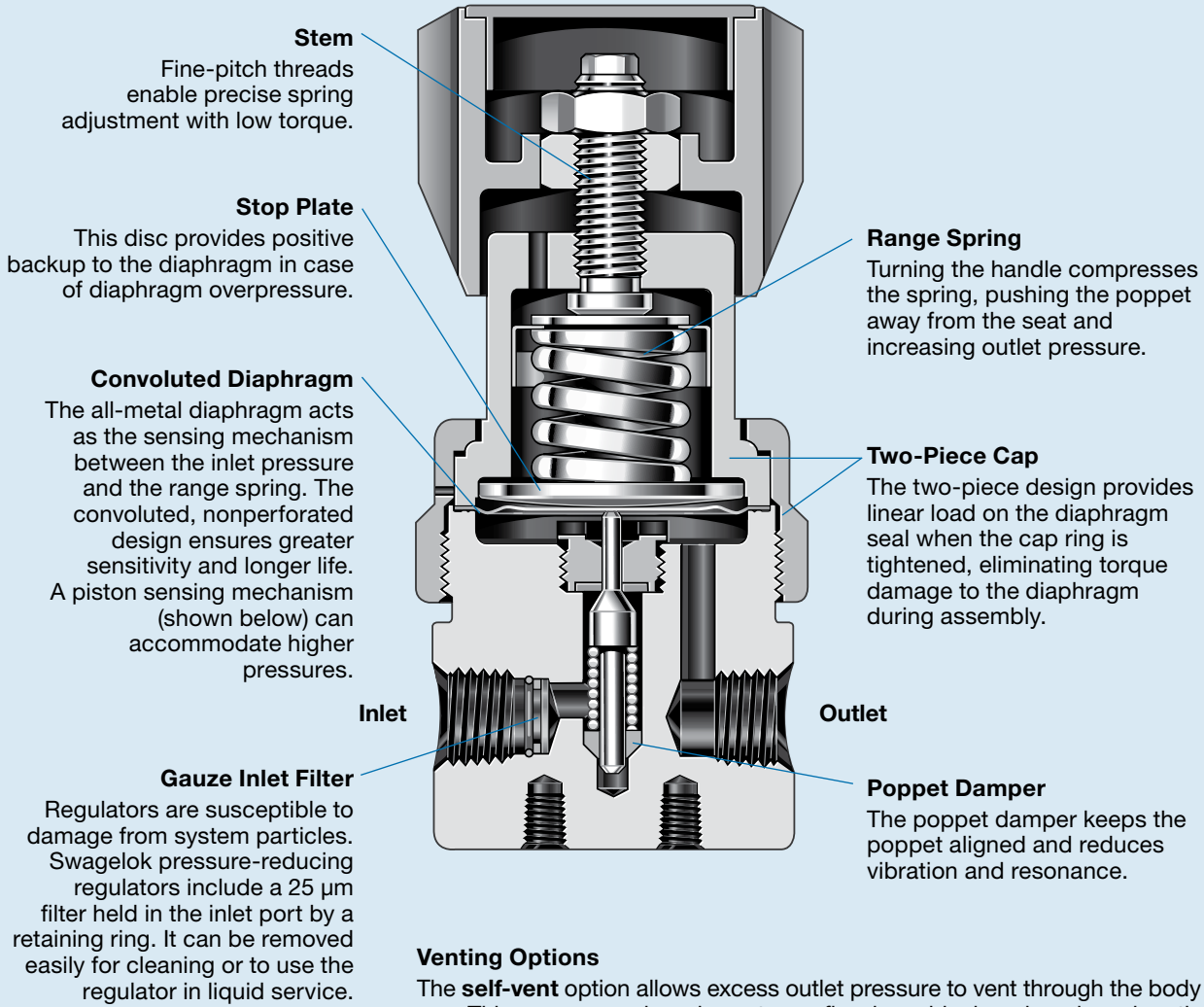
Pressure Regulators K Series

KBP1J0A4D5A20000



- Pressure-reducing models
- Back-pressure models
- Gas cylinder changeover model
- Vaporizing models

Swagelok® K Series Pressure Regulator Features



Venting Options

The **self-vent** option allows excess outlet pressure to vent through the body cap. This can occur when downstream flow is suddenly reduced or when the handle is adjusted to a lower pressure with little or no flow downstream.

The **captured-vent** option includes a 1/8 in. female NPT connection and stem seal in the body cap^① to allow monitoring of the diaphragm or piston sensing mechanism. It also allows containment of hazardous gas or liquid media should a diaphragm or piston rupture.

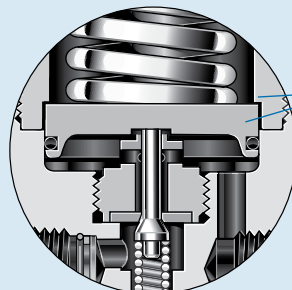
Self-vent and captured-vent options can be ordered together so that hazardous gas or liquid media can be contained if vented.

^① The captured-vent port is in the bottom of the KHR series body.



Piston Sensing Mechanism

Piston sensing mechanisms typically are used to regulate higher pressures than a diaphragm can withstand. They are also more resistant to damage caused by pressure spikes and have a short stroke to maximize cycle life.



Fully-Contained Piston

The piston is contained by a shoulder in the regulator body cap to prevent piston blowout if the regulator outlet is overpressurized.

General-Purpose Diaphragm-Sensing Back-Pressure Regulators (KBP Series)

The KBP series is a high-sensitivity, general-purpose regulator designed to control back-pressure levels in analytical or process systems upstream of the regulator. The convoluted diaphragm provides excellent sensitivity and set-point repeatability. The metal-to-metal diaphragm seal minimizes the potential for leakage.

Features

- Convoluted, nonperforated diaphragm
- Metal-to-metal diaphragm seal
- Low internal volume
- Two-piece cap design provides linear load on the seal

Technical Data

Maximum Inlet Pressure

- Equal to pressure control range

Pressure Control Ranges

- 0 to 10 psig (0.68 bar) through 0 to 500 psig (34.4 bar)

Flow Coefficient (C_v)

- 0.20
- See page 49 for flow graphs.

Maximum Operating Temperature

- 176°F (80°C) with PCTFE retainer seal
- 392°F (200°C) with PEEK retainer seal

Weight

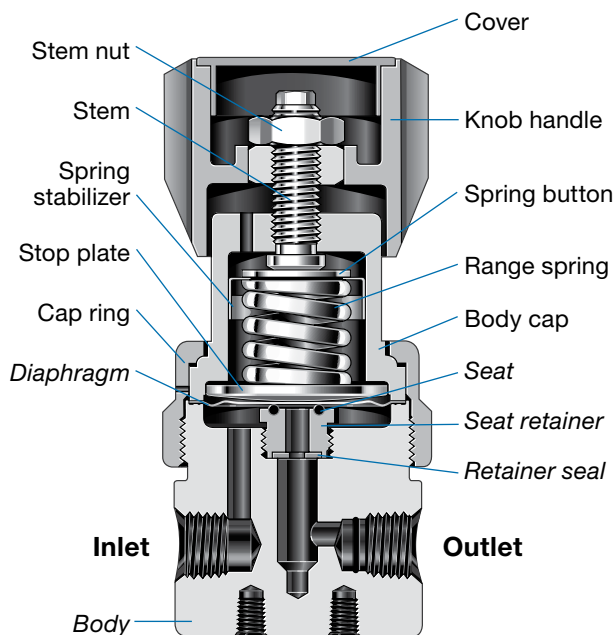
- 2.4 lb (1.1 kg)

Ports

- 1/4 in. female NPT inlet, outlet, and gauge ports (all body materials)
- 1/4 in. tube butt weld inlet, outlet, and gauge ports (316 SS body material only)
- 1/4 in. VCR inlet, outlet, and gauge ports (316 SS body material only)



Materials of Construction



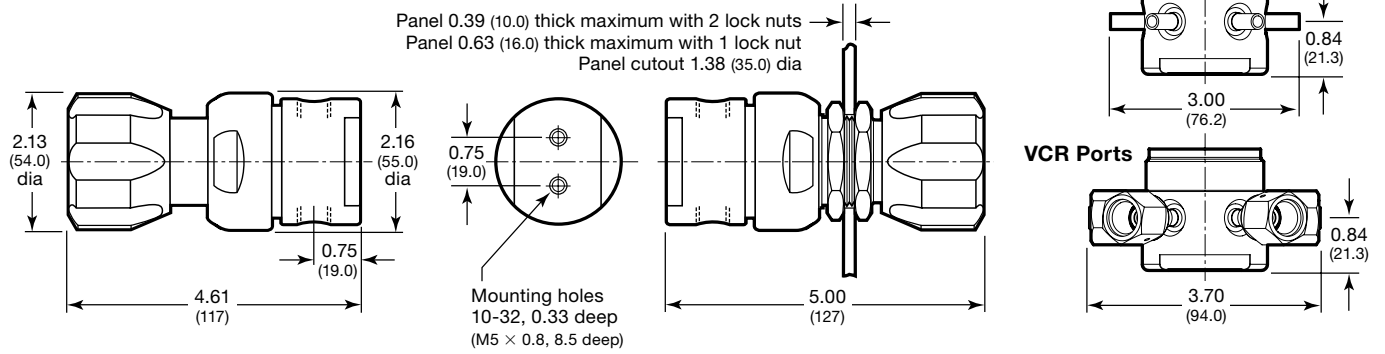
| Component | 316 SS | Brass CW721R |
|---|---|--------------|
| | Material | |
| Knob handle, cover | Nylon with 316 SS insert | |
| Spring button | 316 SS (0 to 500 psig range) Zinc-plated steel (all other ranges) | |
| Spring stabilizer ^① | 301 SS | |
| Range spring | 316 SS (0 to 10 through 0 to 50 psig control ranges) Zinc-plated steel (0 to 100 through 0 to 500 psig control ranges) | |
| Stem, stem nut, cap ring, stop plate, body cap, panel nuts ^② | 316 SS | |
| VCR nuts ^② | 316 SS | — |
| Nonwetted lubricant | Hydrocarbon-based | |
| Seat retainer | 316 SS | |
| Retainer seal | PCTFE or PEEK | |
| Seat | Fluorocarbon FKM or Kalrez | |
| Diaphragm ^③ | Alloy X-750 | |
| Body | 316 SS | Brass CW721R |
| Tube butt weld ports, ^② VCR gland ports ^② | 316L SS | — |
| Wetted lubricant | PTFE-based | |

Wetted components listed in *italics*.

- ① Not included in regulators with 0 to 500 psig (0 to 34.4 bar) control range.
- ② Not shown.
- ③ Regulators with control ranges higher than 0 to 100 psig (0 to 6.8 bar) are assembled with two diaphragms.

Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.



Ordering Information

Build a KBP series regulator ordering number by combining the designators in the sequence shown below.

4 5 6 7 8 9 10 11 12 13 14 15 16
KBP 1 J 0 A 4 D 5 A 2 0 0 0 0

4 Body Material

- 1 = 316 SS
- 2 = Brass CW721R
- A = 316 SS, ASTM G93 Level E-cleaned
- B = Brass, ASTM G93 Level E-cleaned
- C = 316 SS, SC-11-cleaned
- D = Brass, SC-11-cleaned

5 Pressure Control Range

- C = 0 to 10 psig (0 to 0.68 bar)
- D = 0 to 25 psig (0 to 1.7 bar)
- E = 0 to 50 psig (0 to 3.4 bar)
- F = 0 to 100 psig (0 to 6.8 bar)
- G = 0 to 250 psig (0 to 17.2 bar)
- J = 0 to 500 psig (0 to 34.4 bar)

6 Maximum Inlet Pressure

- 0 = Not applicable (equal to pressure control range)

7 Port Configuration

- A, D, G, V
- See *Port Configurations*, page 52.

8 Ports

- 4 = 1/4 in. female NPT
- T = 1/4 in. x 0.035 in. tube butt weld^①
- V = 1/4 in. VCR gland, no nuts^{①②}
- X = 1/4 in. rotatable female VCR fitting^①
- Y = 1/4 in. rotatable male VCR fitting^①

^① Available only with 316 SS body material in A port configuration. Not available ASTM G93 Level E-cleaned.

^② For use with VCR split-nuts, which can be ordered separately. See the Swagelok *VCR Metal Gasket Face Seal Fittings* catalog, MS-01-24.

9 Seat, Seal Material

- A = Fluorocarbon FKM, PCTFE
- B = Kalrez, PCTFE
- C = Fluorocarbon FKM, PEEK
- D = Kalrez, PEEK

10 Flow Coefficient (C_v)

- 5 = 0.20

11 Sensing Mechanism, Vent

- A = Alloy X-750 diaphragm, no vent
- E = Alloy X-750 diaphragm, captured vent, no self vent

12 Handle, Mounting

- 2 = Knob
- 3 = 316 SS antitamper nut
- 6 = Knob, panel mount
- 7 = 316 SS antitamper nut, panel mount

For knob handle color options, see page 56.

13 Valves

- 0 = No valves

14 Cylinder Connections

- 0 = No connections

15 Gauges

- 0 = No gauges

For inlet gauge options, see page 54.

16 Options

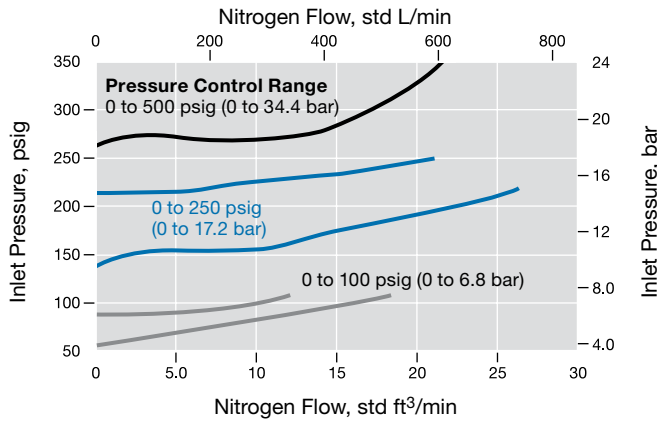
- 0 = No options

K Series Back-Pressure Regulator Flow Data

The graphs illustrate the change in inlet pressure as the flow rate increases.

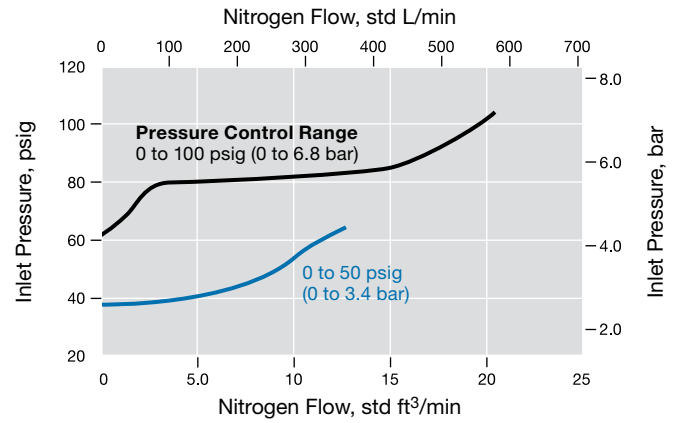
KBP Series

Flow Coefficient 0.20



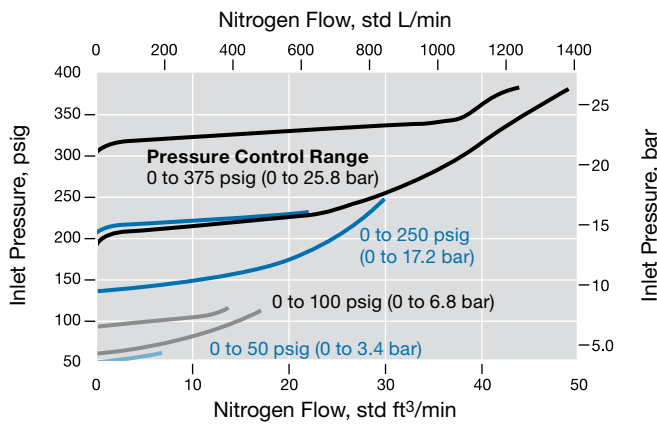
KFB Series

Flow Coefficient 1.0



KCB Series

Flow Coefficient 0.20



Port Configurations

Port configurations are available as shown in the regulator ordering information pages. The symbols indicate the port location of *factory-assembled* accessories. For alternative accessory locations, contact your authorized Swagelok representative.

Port Configuration Symbols

- Inlet
- Filtered inlet
- Outlet
- G_i Inlet gauge
- G_o Outlet gauge
- R Relief valve
- G_o/R Outlet gauge or relief valve

Factory-assembled *cylinder connections* are placed on a filtered inlet port; *isolation valves* are placed on an outlet port 180° from the cylinder connection.

Select regulators are available on special order with additional port configurations. Contact your authorized Swagelok representative for more information.

Pressure-Reducing Regulators

Right-to-Left Flow

| | | | | | | | |
|---------------|---|---|---|---|---|---|---|
| Configuration | | | | | | | |
| Designator | A | C | E | F | H | L | K |

Left-to-Right Flow

| | | | | | |
|---------------|---|---|---|---|---|
| Configuration | | | | | |
| Designator | A | B | E | M | N |

Back-Pressure Regulators

Right-to-Left Flow

| | | | |
|---------------|---|---|---|
| Configuration | | | |
| Designator | A | D | V |

Left-to-Right Flow

| | | |
|---------------|---|---|
| Configuration | | |
| Designator | A | G |

MPC Port Configurations

Pressure Reducing

| | | |
|---------------|---|---|
| Configuration | | |
| Designator | 5 | 6 |

Back Pressure

| | | |
|---------------|---|---|
| Configuration | | |
| Designator | 7 | 8 |