

Pressure Regulators K Series

KCY1FWM427A20000



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

Contents

Features, 2

Operation, 3

Selection, 3

Testing, 4

Cleaning and Packaging, 4

Pressure-Reducing



**General-Purpose
(KPR Series), 6**



**Two-Stage
(KCY Series), 8**



**High-Sensitivity
(KLF Series), 10**



**High-Flow,
High-Sensitivity
(KHF Series), 12**



**Compact
(KCP Series), 14**



**Medium- to
High-Pressure
(KPP Series), 16**



**High-Flow
(KPF Series), 18**



**High-Pressure
(KHP Series), 20**



**High-Pressure
Hydraulic
(KHR Series), 22**

Back-Pressure



**General-Purpose
(KBP Series), 24**



**High-Flow,
High-Sensitivity
(KFB Series), 26**



**Compact
(KCB Series), 28**



**Medium- to
High-Pressure
(KPB Series), 30**



**High-Pressure
(KHB Series), 32**

Specialty Pressure-Reducing



**Gas Cylinder
Changeover
(KCM Series), 34**



**Steam-Heated
Vaporizing
(KSV Series), 36**



**Electrically Heated
Vaporizing
(KEV Series), 38**

Flow Data

Pressure-Reducing Regulators, 41

Back-Pressure Regulators, 49

Port Configurations, 52

Options and Accessories, 53

Maintenance Kits, 56

Two-Stage Diaphragm-Sensing, Pressure-Reducing Regulators (KCY Series)

The KCY series is designed for use in applications requiring constant outlet pressure even with wide variations in inlet pressure. This two-stage regulator is comparable to two single-stage regulators connected in series. The first stage is factory set to reduce the inlet pressure to 500 psig (34.4 bar). The second stage can be adjusted with the handle to achieve the required outlet pressure.

This two-stage arrangement minimizes the supply-pressure effect caused by fluctuating inlet pressure, such as with a depleting gas cylinder. As inlet pressure drops below the setting of the first stage, the regulator then functions as a single-stage regulator. The first-stage pressure setting can be reduced while monitoring the pressure at the interstage port, but lower flow may result.



Features

- Convoluted, nonperforated diaphragm
- Metal-to-metal diaphragm seal
- Excellent set-point stability
- High-flow, dual-gauze type filter positively retained in inlet port

Technical Data

Maximum Inlet Pressure

- 3600 psig (248 bar)
- 6000 psig (413 bar) with PEEK seat

Pressure Control Ranges

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

Flow Coefficient (C_v)

- 0.06 and 0.20
See page 42 for flow graphs.
- 0.50 also available

Supply-Pressure Effect

Flow Coefficient (C _v)	Pressure Control Range	
	Up to 100 psig (6.8 bar)	250 psig (17.2 bar) and Higher
	Supply Pressure Effect, %	
0.06	0.01	0.02
0.20	0.02	0.06
0.50	0.05	0.13

Maximum Operating Temperature

- 176°F (80°C) with PCTFE seat
- 392°F (200°C) with PEEK seat
- 212°F (100°C) with PEEK seat and maximum inlet pressure greater than 3600 psig (248 bar)

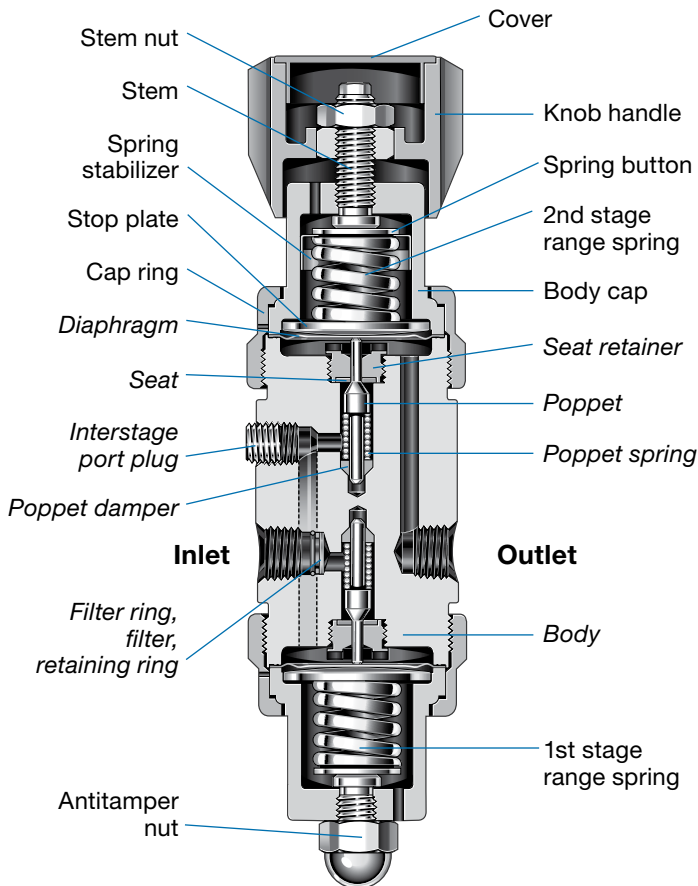
Weight

- 4.2 lb (1.9 kg)

Ports

- 1/4 in. female NPT inlet, outlet, and gauge ports

Materials of Construction



Component	316 SS	Brass CW721R
	Material	
Knob handle, cover	Nylon with 316 SS insert	
Spring buttons	316 SS (1st stage) Zinc-plated steel (2nd stage)	
Spring stabilizer ^①	301 SS	
Range springs	316 SS (0 to 10 through 0 to 100 psig control ranges) ^② Zinc-plated steel (0 to 250 and 0 to 500 psig control ranges)	
Stems, stem nut, cap rings, stop plates, body caps, panel nuts, ^③ antitamper nut	316 SS	
Nonwetted lubricant	Hydrocarbon-based	
Seat retainers, filter, retaining ring	316 SS	
Seats	PCTFE or PEEK	
Diaphragms, ^④ poppet springs	Alloy X-750	
Poppets	S17400 SS	
Poppet dampers, filter ring	PTFE	
Interstage port plug	316 SS with PTFE tape	
Self-vent seal ^③	Fluorocarbon FKM	
Body	316 SS	Brass CW721R
Wetted lubricant	PTFE-based	

Wetted components listed in *italics*.

① Not required in all configurations.

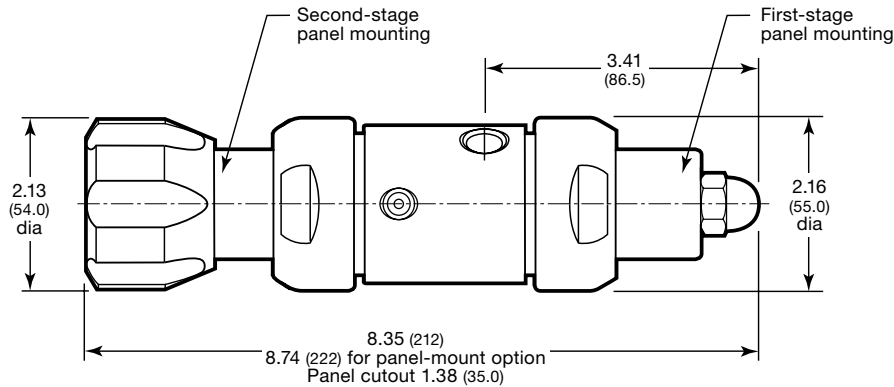
② Regulators with control range 0 to 100 psig (0 to 6.8 bar) and 0.20 C_v have zinc-plated steel range spring.

③ Not shown.

④ 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 KCY 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
KCY 1 F R F 4 1 2 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

- P = 3000 psig (206 bar)^①
- R = 3600 psig (248 bar)^②
- T = 4351 psig (300 bar)^{②③}
- W = 6000 psig (413 bar)^{②③④}

- ① Available for regulators assembled with CGA cylinder connection or inlet hose only.
- ② Not available for regulators assembled with CGA cylinder connection or inlet hose.
- ③ Available only with 316 SS body material and PEEK seat material. Not available with SC-11 cleaning.
- ④ Not available for regulators assembled with isolation valves.

7 Port Configuration

A, B, C, E, F, H, K, L, M, N

See **Port Configurations**, page 52.

8 Ports

- 4 = 1/4 in. female NPT

9 Seat Material

- 1 = PCTFE
- 2 = PEEK

10 Flow Coefficient (C_v)

- 2 = 0.06
- 5 = 0.20
- 7 = 0.50

11 Sensing Mechanism, Vent

- A = Alloy X-750 diaphragm, no vent
- C = Alloy X-750 diaphragm, self vent^①
- E = Alloy X-750 diaphragm, captured vent, no self vent
- F = Alloy X-750 diaphragm, self and captured vent^①

① Available with 0.06 and 0.2 C_v only. Self vent through second stage only.

12 Handle, Mounting^①

- 2 = Knob
- 3 = Antitamper nut
- 6 = Knob, second-stage panel mount
- 7 = Antitamper nut, second-stage panel mount
- 9 = Knob, first-stage panel mount

For knob handle color options, see page 56.

① First stage assembled with antitamper nut.

13 Isolation and Relief Valves

- 0 = No valves

For isolation and relief valve options, see page 54.

14 Cylinder Connections

- 0 = No connections

For CGA cylinder connection options, see page 53.

15 Gauges

- 0 = No gauges

For inlet and outlet gauge options, see page 54.

16 Options

- 0 = No options
- 3 = 3 ft, 1/4 in. FM series metal flexible hose, 1/4 in. female NPT inlet^①
- 4 = 3 ft, 1/4 in. TH series PTFE-lined, stainless steel braided hose, 1/4 in. female NPT inlet^①

For more information about hoses, see page 56.

① Hoses are not available for ASTM G93 Level E-cleaned and SC-11 cleaned regulators.

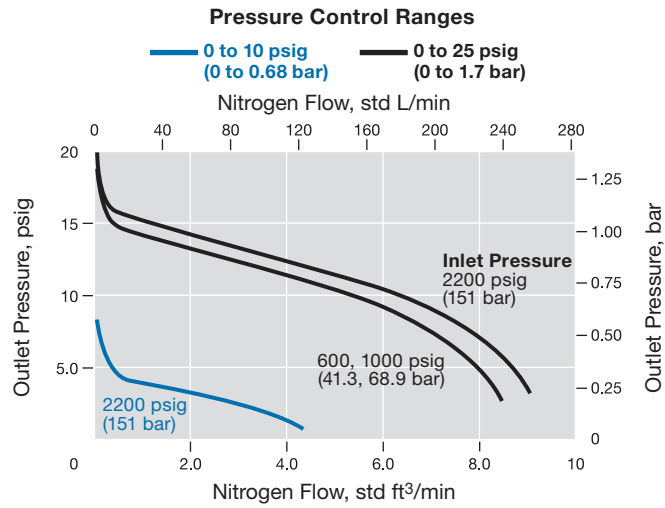
Select KCY series regulators are available that meet the testing requirements of ASTM G175, "Standard Test Method for Evaluating the Ignition Sensitivity and Fault Tolerance of Oxygen Regulators Used for Medical and Emergency Applications." Contact your authorized Swagelok representative.

K Series Pressure-Reducing Regulator Flow Data

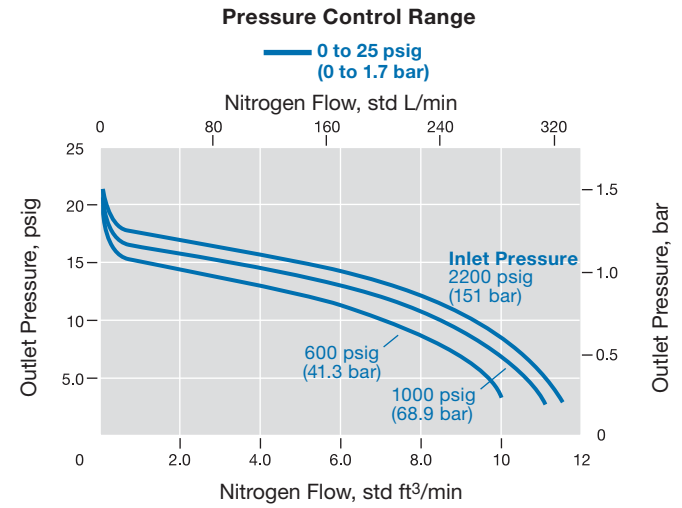
The graphs illustrate the change or “droop” in outlet pressures as the flow rate increases.

KCY Series

**Flow Coefficient 0.06;
Maximum Inlet Pressure 3600 psig (248 bar)**



**Flow Coefficient 0.20;
Maximum Inlet Pressure 3600 psig (248 bar)**



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