



## Model P3 Two Stage Cylinder Gas Pressure Reducing Regulator

The Model P3 is designed for gases with inlet pressures up to 3600 psig (248 Barg). Standard adjustable outlet ranges from 1-10 (.07-.69 Barg) thru 10-500 psig (.69-34.5 Barg). Flow coefficient of 0.02, 0.06, and 0.20 available. This versatile cylinder gas regulator can be ordered with a variety of options to meet your system demands. Standard construction includes 40 micron integral filter and diffusion resistant stainless steel diaphragm. Gauges and CGA fitting is optional.

### GENERAL SPECIFICATIONS

Inlet / Outlet Size: 1/4", 3/8" & 1/2"  
(DN8, DN10 & DN15)

Maximum Inlet Pressure: 3,600 psig (248.2 Barg)

Outlet Pressure: 1-500 psig (.07-.34.5 Barg)  
Position 11 for Spring Ranges.

Body End Connections: FNPT  
CGA End Connection

Body and Spring Chamber Material: 316L SST/316 SST  
Brass/6061 AL

Wetted Material: See Position 6  
Temp. Limits:  
PCTFE -45 to 185°F (-42.7 to 85°C)  
Polyimide -45 to 575°F (-42.7 to 301°C)  
TFE -45 to 275°F (-42.7 to 135°C)

Operating Temp. Range:  
Brass - -20 to 400°F (-28.9 to 204°C)  
SST - -20 to 500°F (-28.9 to 260°C)

Composite Knob: -50 to 200°F (-45.6 to 93°C)  
(Standard)  
For temperatures outside (Std.) knob range see Options for Colored Knobs.

### TYPICAL APPLICATIONS

- Cylinder Gas
- Carrier Gas
- Calibration Gas
- Laser Gas
- Medical Gas

### FUNCTIONAL PERFORMANCE

Supply Pressure Effect: 0.01/100 psig (0.0007/6.9 Barg)

Temperature Coefficient: 0.16 psig/ °F (0.01Barg/ °C)

Design Proof Pressure: 150% of Max Operating Pressure  
5,400 psig (372.3 Barg)

Internal Volume: 13.8 cc

Design Leakage  
Outboard: 1x10<sup>-9</sup> scc/sec He  
Inboard 1x10<sup>-9</sup> scc/sec He

Cv Capability: 0.02, 0.06 and 0.20

## **STANDARD CONSTRUCTION**

### **Captured Vent**

The captured vent feature is designed to safely vent process fluid when handling toxic or hazardous media. The user can easily pipe this vent to a safe location. It features a 1/8" FNPT port located on the spring housing. This feature can be incorporated into a self-relieving regulator that provides an additional port to permit the piping away of the expelled media.

## **OPTIONS**

**NACE Construction - ( P or R )** in Position 6. - Internal wetted portions meet NACE standard MR0175, when exterior of the regulator is not directly exposed to a sour gas environment, buried, insulated or otherwise denied direct atmospheric exposure. SST/SST body/spring chamber materials only. Inconel w/TFE liner, Inconel X-750 spring.

**Panel Mount - (A or B)** in Position 14. - The panel mount feature requires a panel minimum of 11 gauge (.12) thick with a 1-3/8" hole cut out, complete with a threaded spring housing, and a panel mount ring to secure the regulator.

**Tamper Proof - (1)** in Position 15. - In this feature the control knob is removed and replaced with an acorn nut. The user can set the outlet pressure and securely tighten the nut, preventing any unwanted adjustments on the regulator.

**Colored Knobs - (2, 8 and W)** in Position 15. - In this feature the control knob is anodized aluminum either in black, blue or red, compared to the standard red composite knob. This allows for color coding of processes. Temperature range: -55 to 300°F (-45.6 to 149 °C).

**Diaphragm Valve - (F)** in Position 16. - The diaphragm valve is a shutoff valve. The resolution is coarse. The extended leg allows easy access to the knob when it is attached to a regulator. The valve is 1/4" male x 1/4" female outlet. This type of valve is sold about 90% of the time.

**Packed Valve - (G)** in Position 16. - The packed valve is a metering valve. The resolution is very fine. The packing around the stem is Teflon. The valve is 1/4" male x 1/4" male outlet.

**Relief Valve - (H, J, K, or L)** in Position 16. - The relief valve main function is to relieve excess downstream pressure due to system malfunctions. This feature prevents over pressurization by automatically venting of gas or liquid. The valve is fully adjustable and is 1/4" male x 1/4" male.

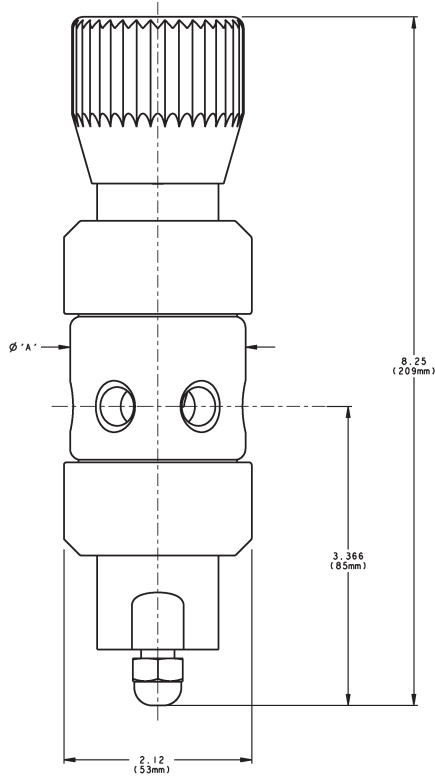
**Cleaned for Oxygen Service #S-1134 - (M)** in Position 17. - This is a requirement for gaseous oxygen environments. All regulators requiring advanced cleaning shall be processed according to strict guidelines. **NOTE:** Design Pressure Rating shall not exceed 375 psig (25.8 Barg) when body material is SST and process medium is oxygen.

**Cleaned per Spec. #S-1542 - (N)** in Position 17. - Cleaning identical to that of #S-1134, but not labeled for application in oxygen service. NOT suitable for Oxygen Service.

## **About Two Stage Regulators**

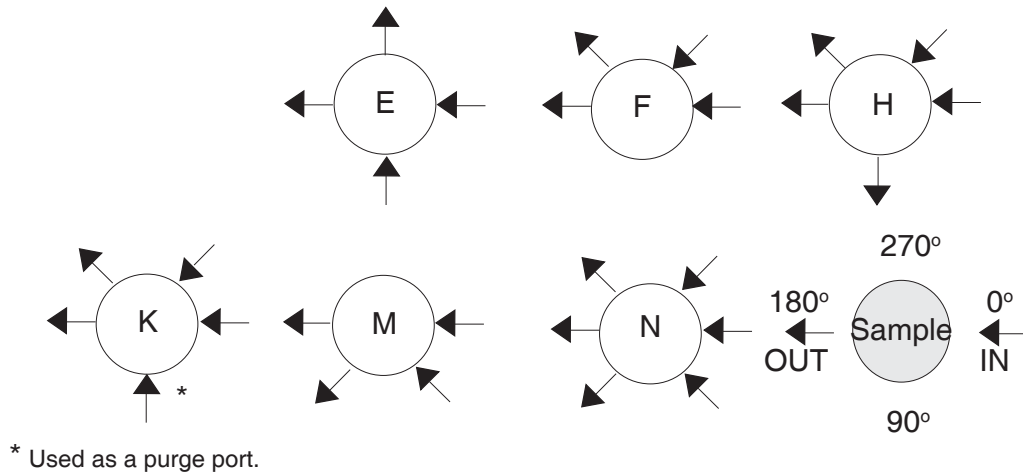
Two stage regulators provide precise outlet pressure control of gases with variation in supply pressure. The P3 features low operating torque, accurate adjustment and is capable of high flows with minimal pressure drop.

## DIMENSIONS



English Units In. & lbs.		
Size	A	Wt
1/4" & 3/8"	2.00	3
1/2"	2.48	3
Metric Units mm & kg		
DN8 & DN10	50	1.3
DN15	63	1.3

## Porting Configuration Guide



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**MODEL P3 PRODUCT CODER** 02/07/20  
**(COMPOSITE RED KNOB STANDARD)**

An "X" in POS 12 followed by a 5-digit control number overrides remaining selections.

**P3** POS 3 — POS 5 POS 6 POS 7 **7** — POS 10 POS 11 POS 12 POS 13 POS 14 POS 15 POS 16 POS 17 **A**

POSITION 3 - BODY SIZE / Cv		
Size	Cv	CODE
1/4" (DN8)	0.02	1
	0.06	2
	0.20	3
3/8" (DN10)	0.02	4
	0.06	5
	0.20	6
1/2" (DN15)	0.02	7
	0.06	8
	0.20	9

POSITION 5 - BODY & SPRING CHAMBER MATERIAL	
Body / Spring Chamber	CODE
316L SST / 316 SST *	S
Brass / 6061 AL	B
* Select for NACE Construction	

POSITION 6 - TRIM MATERIALS		
Diaphragm , Seat Retainer, Poppet & Poppet Spring	Seat Material	CODE
302 SST w/Tefzel ring, 316L SST, 316L SST, Inconel X-750	PCTFE	1
	Polyimide	2
	TFE	3
Inconel w/TFE liner, Monel R-405, Monel R-405 Inconel X-750	PCTFE	4
	Polyimide	5
	TFE	6
NACE - Inconel w/TFE liner, 316L SST, 316L SST, Inconel X-750	PCTFE	P
	TFE	R

POSITION 10 - END CONNECTIONS	
End Connection(s)	CODE
FNPT	1
CGA End Connection #320 *	4
CGA End Connection #330 *	5
CGA End Connection #346 *	2
CGA End Connection #350 *	3
CGA End Connection #540 *	A
CGA End Connection #580 *	H
CGA End Connection #590 *	L
CGA End Connection #660 *	R
Consult factory for other CGA connections. *1/4" Body Size only.	

POSITION 11 - RANGE SPRING/OUTLET PRESSURE	
Psig (Barg)	CODE
1 - 10 (.07 - .69)	1
2 - 25 (.14 - 1.7)	2
2 - 50 (.14 - 3.4)	3
2 - 100 (.14 - 6.9)	4
3 - 250 (.21 - 17.2)	5
5 - 500 (.34 - 34.5)	6

POSITION 7 - PORTING CONFIGURATION	
Description	CODE
See Porting Chart	E
	F
	H
	K
	M
	N

POSITION 12 - OUTLET GAUGE	
Psig (Barg)	CODE
0 - 15 (0 - 1.0)	A
0 - 30 (0 - 2.1)	B
0 - 60 (0 - 4.1)	C
0 - 100 (0 - 6.9)	D
0 - 160 (0 - 11.0)	E
0 - 300 (0 - 20.7)	F
0 - 600 (0 - 41.4)	G
No Outlet Gauge	0
For Special Construction Contact Cashco for Special Product Code	X

POSITION 13 - INLET GAUGE	
Psig (Barg)	CODE
0 - 15 (0 - 1.0)	A
0 - 30 (0 - 2.1)	B
0 - 60 (0 - 4.1)	C
0 - 100 (0 - 6.9)	D
0 - 160 (0 - 11.0)	E
0 - 300 (0 - 20.7)	F
0 - 600 (0 - 41.4)	G
0 - 1000 (0 - 69.0)	H
0 - 2000 (0 - 137.9)	I
0 - 3000 (0 - 206.9)	J
0 - 5000 (0 - 344.9)	K
No Inlet Gauge	0

POSITION 14 - OPTIONS			
OPTIONS	CODE	OPTIONS	CODE
No Option	0	Panel Mount 2nd Stage.	B
Panel Mount 1st Stage.	A		

POSITION 15 - OPTIONS			
OPTIONS	CODE	OPTIONS	CODE
No Option	0	Blue Knob.	8
Tamper Proof.	1	Red Knob.	W
Black Knob.	2		

POSITION 16 - OPTIONS			
OPTIONS	CODE	OPTIONS	CODE
No Option	0	Relief Valve: 50-150 psig. *	J
Diaphragm Valve.	F	Relief Valve: 150-350 psig. *	K
Packed Valve.	G	Relief Valve: 350-600 psig.*	L
Relief Valve: 3-50 psig. *	H		
* When selecting Relief Valve indicate SET POINT PRESSURE in Special Instructions on order. If outlet gauge is also specified, Body Port Configuration must have two outlet ports. See Porting Guide page 3.			

POSITION 17 - OPTIONS			
OPTIONS	CODE	OPTIONS	CODE
No Option	0	Oxygen Cleaned Per Spec #S-1134.	M
		* Special Cleaning: Per Spec #S-1542.	N
* NOT suitable for Oxygen Service.			

**\* For information on ATEX see pages 8 & 9 on the IOM.**

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