

# MODEL B7

## BACK PRESSURE RELIEF REGULATOR

### OVERVIEW

The Model B7 is a self-contained, back pressure/relief regulator designed to control inlet setpoint pressure levels between 10-1150 psig (.69-79.3 Barg). Pressure builds up to 30% above setpoint are possible.

### FEATURES

- Large Piston Sensor Gives Excellent Sensitivity
- Low Operating Torque
- Material Traceability on Wetted Parts
- Anti-Resonance Design

### TYPICAL APPLICATIONS

The B7 can be applied on hyperbaric chambers, air compressors, pressurized ballast tanks, high pressure testing equipment, life support applications, manifold systems, tube trailers, and gas transfer stations.

### FUNCTIONAL PERFORMANCE

Design Proof Pressure:	150% Max Operating Pressure
	2250 psig (155.1 Barg)
Internal Volume:	1.77 in <sup>3</sup> (29 cm <sup>3</sup> )
Design Leakage:	Bubble Tight
Maximum Inlet* Pressure:	1500 psig (103.4 Barg)
<b>NOTE</b> These pressure ratings may be further derated by limitations through the Pressure Equipment Directive (2014/68/EU). See Table 1.	



Angle Design



Globe Design



**INLET/OUTLET SIZES**  
1/2" (DN15), 3/4" (DN20)



**END CONNECTIONS**  
NPT, FLANGED, TRI-CLAMP



**COMMON APPLICATIONS**  
HYPERBARIC CHAMBERS, AIR COMPRESSORS, PRESSURIZED BALLAST TANKS, TUBE TRAILERS, GAS TRANSFER STATIONS



**DESIGN PRESSURE**  
MAXIMUM INLET:  
1500 psig (103.4 Barg)

## GENERAL SPECIFICATIONS

Inlet & Outlet Port Size:	1/2" and 3/4" (DN15 and DN20)	Material:	<u>Sanitary Construction:</u> Interior of body surface Electro Polished to 16 micro-inch Ra finish with Electro Polished exterior.						
Cv Capability:	2.5 Cv								
Inlet Pressure:	10-1150 psig (.69-79.3 Barg) See Position 11 - Spring Ranges.	Wetted Trim Material:	See Position 6.						
Body End Connections:	FNPT in Brass or SST; 300#, 600#, 1500#RF Flanges & Tri-Clamp in SST.		<table><tr><td>Trim</td><td>Temperature</td></tr><tr><td>Std Brass or SST</td><td>-20° to 400°F</td></tr><tr><td>NACE SST</td><td>-35° to 200°</td></tr></table>	Trim	Temperature	Std Brass or SST	-20° to 400°F	NACE SST	-35° to 200°
Trim	Temperature								
Std Brass or SST	-20° to 400°F								
NACE SST	-35° to 200°								
Body and Spring Chamber	316L SST/316L SST -ASTM A479 Brass/Brass - ASTM B16 Brass/316L SST	Operating Temp Range:	<u>W/Plastic Knob</u> -15° to 165°F (-25° to 75° C) <u>W/High Temp Spring Chamber</u> -35° to 400°F (-37° to 205°C).						

## OPTIONS

**NACE Construction - (6 or 7)** in Position 6. - Internal wetted portions meet NACE std MR0175, when exterior of regulator is not directly exposed to a sour gas environment, buried, insulated or otherwise denied direct atmospheric exposure. SST body/spring chamber materials only. Inconel w/TFE liner, Inconel X-750 spring, Neoprene O-rings.

**Panel Mount - (C)** 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. - Control knob spins freely around adjusting screw. To change set point, remove knob cover, snap ring & knob. Rotate adjusting screw CW to increase set point or CCW to decrease set point.

**High Temperature Spring Chamber- (U)** in Position 15. - Uses a Metal adjusting screw for temperatures up to 400°F (205° C). (SST Spring Chamber Only.)

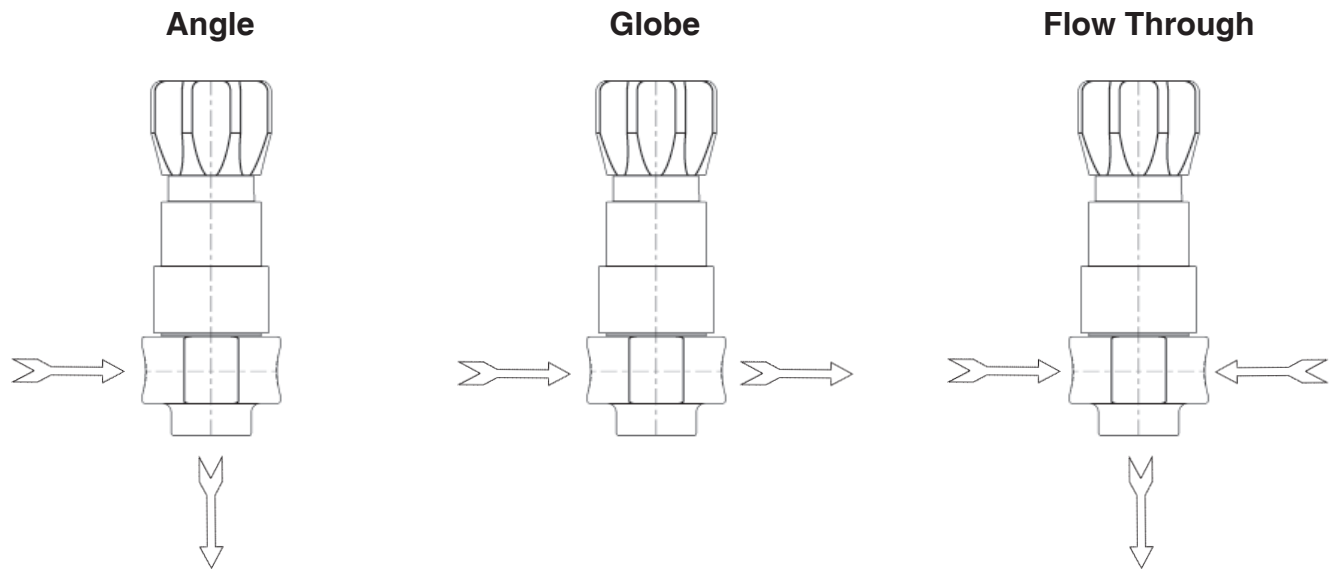
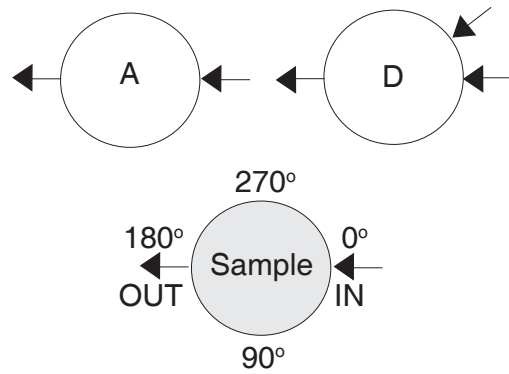
**Cleaned for Oxygen Service #S-1134- (M)** in Position 17. - This is a requirement for gaseous oxygen environments. All regulators requiring advanced cleaning shall be processed according to strict guidelines. **NOTE:** Design Pressure Rating shall not exceed 375 psig (25.8 Barg) when body material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

**Sanitary Construction #S-1576- (P)** in Position 17. - SST Construction - Interior of body surface Electro Polished to 16 micro-inch Ra finish with Electro Polished exterior. Tri-Clamp Ends 1/2" Size only. Unit is cleaned to Cashco Spec. #S-1576. Comply with FDA 21 CFR 177 2600 & USP Class VI material classification.

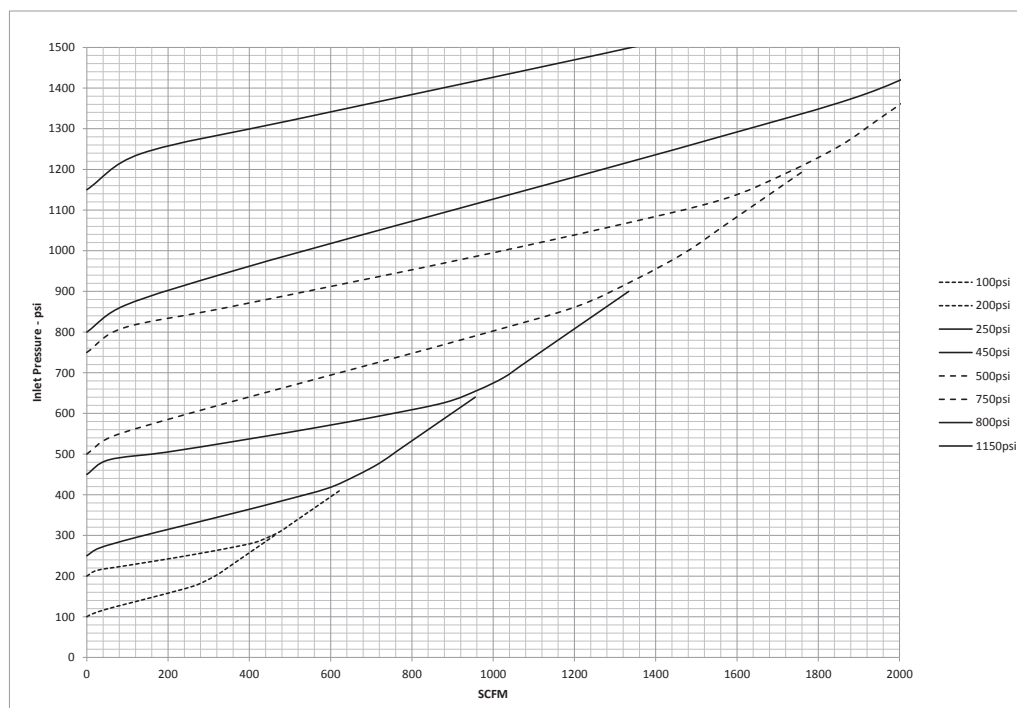
TABLE 1 Design Pressure -Temperature - End Conn Rating			
Temperature Range	Flange End Connection PSIG (Barg)		
Deg °F (° C)	300#	600#	1500#
-15 to +100 (-25 to +38)	720 (49.6)	1440 (99.2)	1500 (103.4)
+165 (+75)	655 (45.1)	1310 (90.3)	1500 (103.4)
+ 200 (94)	620 (42.7)	1240 (85.5)	1500 (103.4)
+ 300 (149)	560 (38.6)	1120 (77.2)	1500 (103.4)
+ 400 (205)	515 (35.5)	1025 (70.6)	1500 (103.4)
<b>NOTE:</b> Design Pressure Rating shall not exceed 375 psig (25.8 Barg) when body material is SST and process medium is oxygen.			

## PORTING CONFIGURATION GUIDE



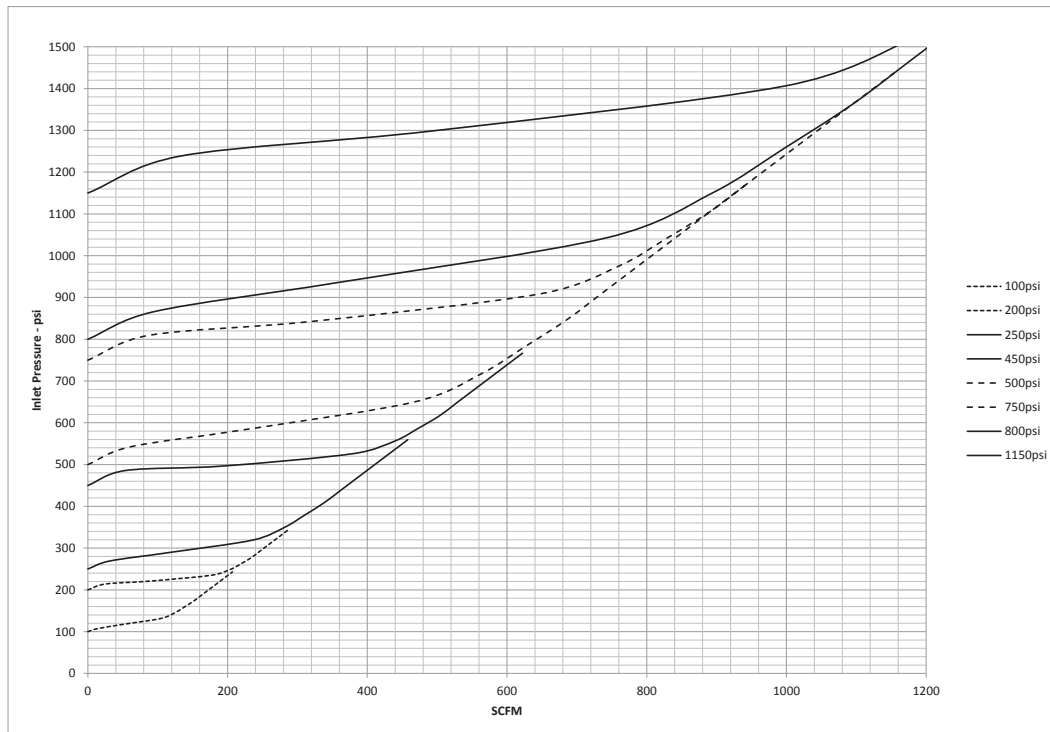
## FLOW CHART for FULL PORT

Cv = 2.5

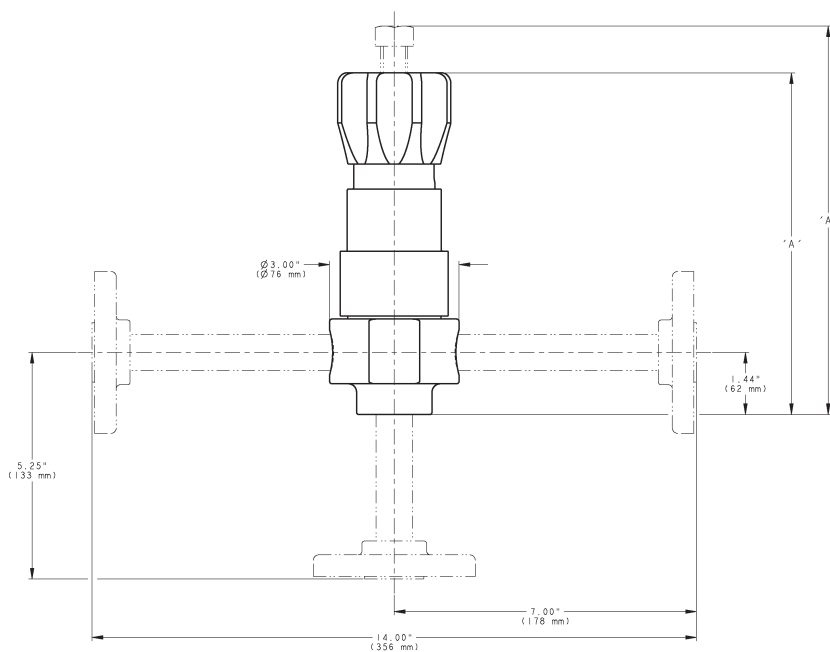


## FLOW CHART for REDUCED PORT

$C_v = 1.3$

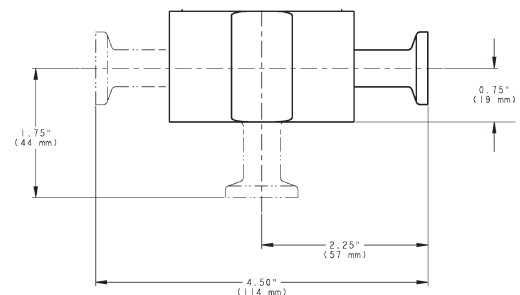


## DIMENSIONS



Option	Dim "A"
Std Spring Chamber	8.0" (203 mm)
High Temp Spring Chamber	9.0" (229 mm)

Weight  
NPT: 7.50 lbs (3.4 kgs)  
-W / Flanges: upwards  
to 22 lbs. (10.0 kgs)



Tri-Clamp Ends

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# MODEL B7 PRODUCT CODER 02/07/20

## (COMPOSITE BLACK KNOB STANDARD)

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

<b>B7</b>	POS 3	—	POS 5	POS 6	POS 7	<b>7</b>	—	POS 10	POS 11	POS 12	POS 13	POS 14	POS 15	<b>0</b>	POS 17	<b>A</b>
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POSITION 3 - BODY SIZE/ CONN./Cv			
Size	Conn. Orientation	Cv	CODE
1/2" (DN15)	Angle	1.3	1
		2.5	2
	Globe	1.3	3
		2.5	4
	Flow Thru	1.3	5
		2.5	6
3/4" (DN20)	Angle	1.3	7
		2.5	8
	Globe	1.3	9
		2.5	A
	Flow Thru	1.3	B
		2.5	C

POSITION 5 - BODY/SPRING CHAMBER	
Body/Spring Chamber Mat'l.	CODE
Brass/Brass	B
316L SST/316L SST *	S
Brass/316L SST	T
* Select for NACE or Sanitary Construction	

POSITION 6 - TRIM & SEAT MATERIALS			NACE
Trim	Seat	CODE	
Brass	Brass	1	
	PTFE	2	
SST	SST *	3	6
	PTFE *	4	7
SST w/Stellite Orifice	Stellite	5	
* Select for Sanitary Construction - Only available for Port "A". Comply with FDA 21 CFR 177.2600 & USP Class VI material classification. Sanitary Construction not available with NACE.			

POSITION 7 - PORTING CONFIGURATION	
Description	CODE
See Porting Guide	**** A
	** D
If specifying gauges in Position 13 review asterisks as follows: <b>NOTE:</b> ** Inlet gauge port only **** No gauge ports available	

POSITION 10 - END CONNECTIONS	
End Connection(s)	CODE
FNPT ***	1
300 # RF Flange *	7
600 # RF Flange *	8
1500 # RF Flange *	A
Tri-Clamp End * **	S
* Not available for Brass body material. ** (Tri-Clamp Available in 1/2" Size Only) *** Not available for Sanitary Construction - Clean per #S-1576	

POSITION 11 - RANGE SPRING INLET PRESSURE	
Psig (Barg)	CODE
10 - 225 (.69 - 15.5)	2
15 - 450 (1.0 - 31.0)	3
20 - 750 (1.4 - 51.7)	5
50 - 1150 (3.4 - 79.3)	6

POSITION 12 - STD OR SPECIAL DRAWING	CODE
Standard Construction	Q
For Special Construction Contact Cashco for Special Product Code	X

**\* For information on ATEX see pages 7 & 8 on the IOM.**

POSITION 13 - INLET GAUGE (See "NOTE" - Position 7)	
Psig (Barg)	CODE
0 - 300 (0 - 20.7)	F
0 - 600 (0 - 41.3)	G
0 - 1000 (0 - 69.0)	H
0 - 2000 (0 - 138.0)	J
No Inlet Gauge	0

POSITION 14 - OPTIONS			
OPTIONS	CODE	OPTIONS	CODE
No Option	0	Panel Mount	C

POSITION 15 - OPTIONS			
OPTIONS	CODE	OPTIONS	CODE
No Option	0	Tamper Proof	1
		High Temperature Spr Chmbr Constr. *	U
* Available with SST Spring Chamber Only			

POSITION 17 - CLEANING SERVICE			
OPTIONS	CODE	OPTIONS	CODE
No Option	0	Oxygen Cleaned Per Spec #S-1134	M
		* Special Cleaning: Per Spec #S-1542.	N
		Sanitary Construction - Clean per #S-1576	P
* NOT suitable for Oxygen Service.			

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