



ISO Registered Company



Model 6987

MODEL 6987

HIGH PRESSURE BACK PRESSURE / RELIEF REGULATOR

The Model 6987 is a heavy duty, high pressure, self-contained back pressure/relief regulator for controlling fluid pressure between 50 and 800 psig (3.4 and 55.2 Barg) setpoint levels. Pressure builds up to 20% above setpoint pressure are possible. The body design is an angle configuration with a side inlet and bottom outlet. Available options include flanged end connections, stellite seating surfaces and NACE construction.

FEATURES

- High Pressure:** High inlet and outlet pressures; high pressure drops.
- Adjustment Ease:** Ball bearing reduces frictional forces and assures proper transmission of forces.
- Wide Setpoint Range:** Six range springs from which to select.
- Third Body Connection:** Optional. Allows in-line, flow-thru installation.

APPLICATIONS

Designed for controlling a wide range of fluids including air, inert gases, water, fuel oil and chemicals. Model 6987 is not normally utilized in steam service.



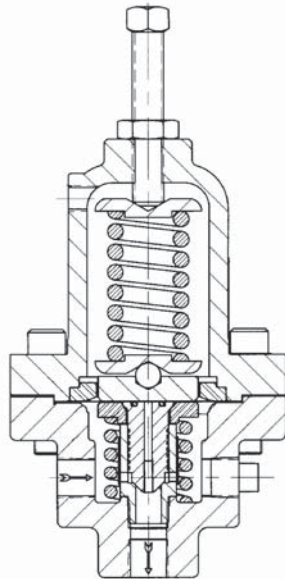
CAUTION

This is not a safety device and must not be substituted for a code approved pressure safety relief valve or a rupture disc.

STANDARD / GENERAL SPECIFICATIONS

- Body Size:** 1/2" and 3/4" (DN15, 20). **Diaphragm Bolting:** Standard: Alloy steel socket head screws.
- End Connections:** Standard: NPT female.
Opt-30: 300# or 600# RF flanges **Orifice Size:** Standard: 0.50 inch (13 mm)
Opt-32: Extended Nipples Optional: Opt-12+15; 0.25 inch (6 mm)
Opt-33: Third Body Connection
- Body Material:** CS - Cast Steel; WCB. **Gaskets:** Standard: Aramid/SBR.
SST - Cast 316SST; CF8M
- Spring Chamber:** CS - Cast Steel **Range Springs:** Plated steel.
- Trim:** S1 & S40M Trim: See Table 3

Range Springs	
psig	(Barg)
50 - 100	(3.4 - 6.9)
75 - 200	(5.2 - 13.8)
150 - 300	(10.3 - 20.7)
200 - 450	(13.8 - 31.0)
400 - 600	(27.6 - 41.4)
500 - 800	(34.5 - 55.2)



Standard Model 6987

- Max. Inlet Pressure:** 1500 psig (103.4 Barg)
- Operating Temperature:** -20° to +450°F (-29° to +232°C)
- Capacity - Cv:** Full Orifice - Up to 2.2 Cv
Reduced Orifice - Up to 1.1 Cv
- Painting:** Standard: All non-corrosion resistant portions to be painted with corrosion resistant epoxy paint per Cashco Spec #S-1606.
Alternate: See Opt-95 or -95OS.

OPTION SPECIFICATIONS

- OPTION -1:** CLOSING CAP. A removable ductile iron cap which discourages tampering with spring setting. Includes a 1/4" NPT female vent connection. piping vent to remote location in event of diaphragm failure.
- OPTION -1+6:** DIFFERENTIAL CONSTRUCTION. Model 6987 is not available as a differential valve. A special variation Model 123-1+6+S is applicable within the same pressure/temperature ranges and sizes. Consult the factory with application details.
- OPTION -12+15:** REDUCED & STELLITED SEATS. Includes a 0.25" reduced orifice, stellite insert in the cylinder, and a stellited seating surface for the piston.
- OPTION -25:** TAPPED VENT. 1/4" NPT (DN8) tapped opening in spring chamber for **OPTION -25S:** VENT SCREEN: Cap.
- OPTION -30:** FLANGE END CONNECTIONS. 300# or 600# raised face flanges. Schedule 80 pipe nipples. The raised face flange is welded to the nipple using a socket weld connection. Steel bodies have steel nipples and flanges. Stainless steel bodies have 316SST nipples and flanges.
- With either of the above flange pressure classes, the flange pressure ratings are the pressure limiting factors, not the body inlet rating. (Refer to ASME B16.5 for allowable working pressure vs. temperature tables.)

OPTION-32: EXTENDED NIPPLES. Schedule 80 plain end nipples are welded to the body to facilitate field welding into the piping. The nipples are screwed into the body and seal welded. Available in steel or SST materials; nipple material match body material.

OPTION-33: THIRD BODY CONNECTION. Normally plugged side inlet connection is removed providing a third body connection. May be used with Opt-30 and -32. Third connection is at same pressure level as inlet and is in-line with inlet connection, allowing in-line, flow-thru installation.

OPTION-40: CS NACE CONSTRUCTION. Internal wetted portions meet NACE standard MRO 175 when the exterior of the regulator is not directly exposed to a sour gas environment, buried, insulated or otherwise denied direct atmospheric exposure. CS/CS body/spring chamber materials only. Use only S40M trim. Opt-30 and -32 require post-weld stress relieving by heat treating.

OPTION-40SST: SST NACE CONSTRUCTION. Same as Option-40, except uses SST body.

OPTION-56: SPECIAL CLEANED. Cleaned per Cashco Spec. #S-1542. Utilize when better than normal cleanliness level is required and unit is not for oxygen service.

OPTION-95: EPOXY PAINT. Special epoxy painting of all non-corrosion resistant external surfaces per Cashco Spec #1547. Utilized in harsh atmospheric conditions.

OPTION-95OS: EPOXY PAINT. Special epoxy painting of all non-corrosion resistant external surfaces per Cashco Spec #1687 for OFFSHORE installations.

TECHNICAL SPECIFICATIONS

**TABLE 1
DESIGN PRESSURE –TEMPERATURE
MATERIAL SPECIFICATIONS**

Temperature °F	Working Pressure Classes								Temperature °C		
	Carbon Steel Body- ASTM A216 Gr. WCB				Stainless Steel Body-ASTM A351 Gr. CF8M						
	NPT & Opt-32	300# Flanges		600# Flanges		NPT & Opt-32	300# Flanges			600# Flanges	
		psig	(Barg)	psig	(Barg)		psig	(Barg)		psig	(Barg)
-20 to +100	1500 psig (103.4 Barg)	740	(51.0)	1480	(102.0)	1500 psig (103.4 Barg)	720	(49.6)	1440	(99.3)	(-29 to +38)
200		680	(46.9)	1360	(93.8)		620	(42.8)	1240	(85.5)	(93)
300		655	(45.2)	1310	(90.3)		560	(38.6)	1120	(77.2)	(149)
400		635	(43.8)	1265	(87.2)		515	(35.5)	1025	(70.7)	(205)
450		615	(42.4)	1235	(85.2)		495	(34.1)	990	(68.3)	(232)

**TABLE 2
MAXIMUM ALLOWABLE PRESSURE DROPS**

Fluid	Maximum Recommended Operating Pressure Drop				Seat Design	Trim Designation Number
	Clean Fluid Industrial Quality		Unclean Fluid Pipeline Quality			
	psid	(Bard)	psid	(Bard)		
Liquid	600	(41.4)	400	(27.6)	Standard	S1, S40M
	960 ¹	(49.7)	600 ¹	(41.4) ¹	Opt-12+15 Stellite	S1
Gas	960	(66.2)	600	(41.3)	Standard	S1, S40M
	960	(66.2)	960	(66.2)	Opt-12+15 Stellite	S1

¹Non-cavitating.

**TABLE 3
TRIM MATERIAL**

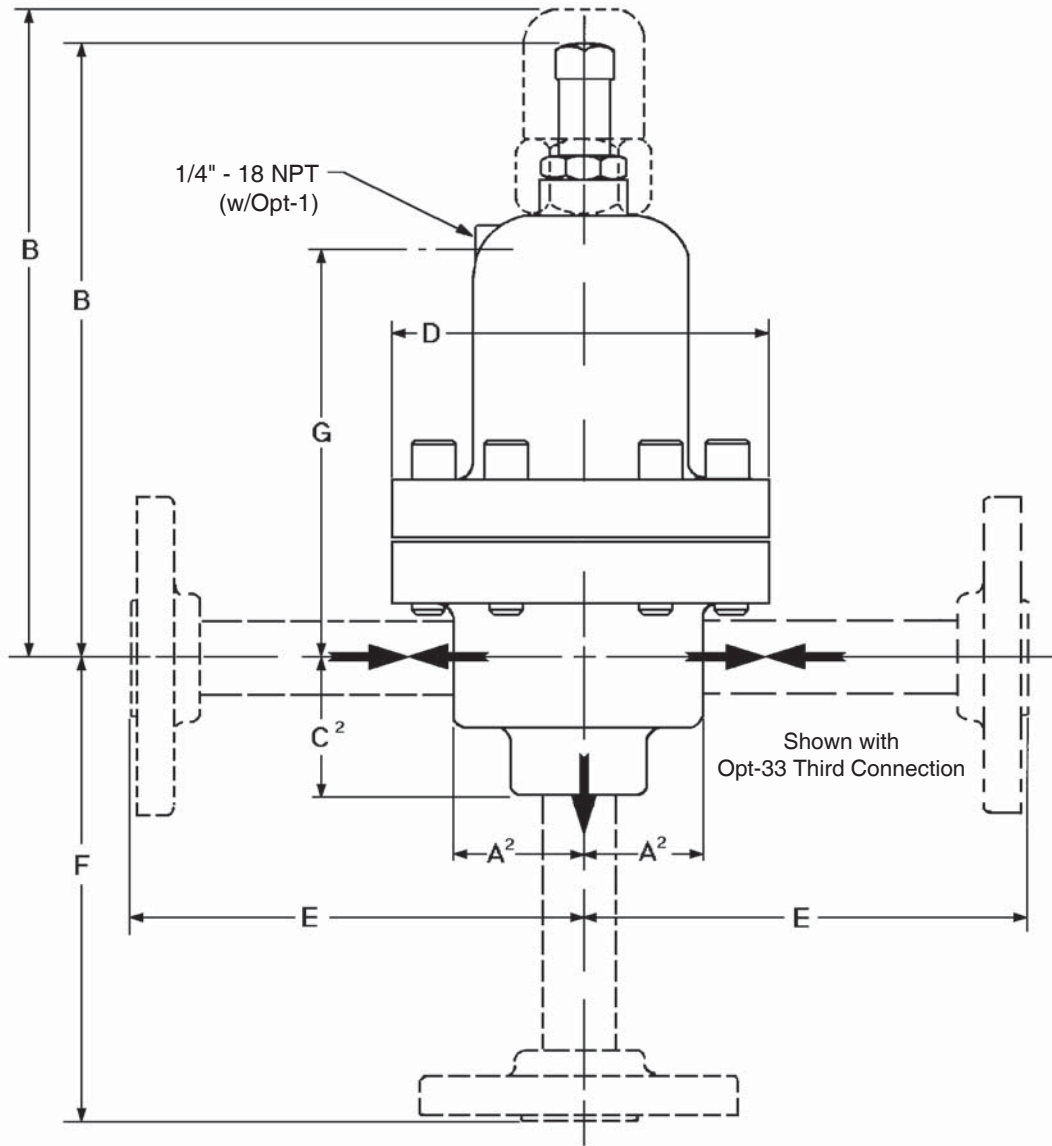
Trim Designation No.	Dia-phragm	1Cylinder	Piston	O-ring	Spring Button	Piston Spring	Temperature	
							°F	(°C)
S1	302 SST	316 SST	316 SST	TFE	STEEL	302 SST	-20 to +450	(-29 to +232)
S40M	ELGILOY	316 SST	316 SST	TFE	STEEL	INCONELL X-750		

¹A stellite #6 insert is press fit into the cylinder when an Opt-12+15 is specified - S1 Trim only

**TABLE 4
Capacity - C_v
F_L = 0.95**

Set Pressure		Full Orifice		Stellited Seats & Reduced Orifice Opt-12+15	
		% Build		% Build	
psig	(Barg)	10%	20%	10%	20%
50	(3.4)	.42	.78	.25	.46
75	(5.2)	.50	.95	.31	.57
100	(6.9)	.65	1.20	.35	.69
150	(10.3)	.68	1.30	.40	.73
250	(17.2)	.82	1.52	.17	.37
350	(24.1)	.35	.66	.21	.35
450	(31.0)	.40	.75	.23	.43
550	(38.0)	.47	.85	.25	.45
650	(44.8)	.48	.88	.26	.46
800	(55.2)	.50	1.00	.30	.57

DIMENSIONS AND WEIGHTS



ENGLISH UNITS (Inches & lbs)									
Body Size	A ²	B	B	C ²	D	E ¹	F ¹	G	Shipping Weight
1/2" & 3/4"	1.82	9.44	10.00	2.00	5.50	5.25	5.25	5.59	34 lbs
METRIC UNITS (mm & kg)									
Body Size	A ²	B	B	C ²	D	E ¹	F ¹	G	Shipping Weight
DN 15 & DN 20	46	240	254	51	140	133	133	142	15.4 kgs.
¹ Applies to Model 6987 -30+33 or Model 6987-32+33. ² Applies to NPT (screwed) bodies. NOTE: Dimensions "E" and "F" apply to Opt-30 Flanged end connections or Opt-32 Plain End Pipe Nipples.									

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MODEL 6987 PRODUCT CODER 02-19-16

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



POSITION 3 - SIZE		
Size		CODE
in	(DN)	
1/2"	(15)	4
3/4"	(20)	5

POSITION 5 - BODY & SP. CHAMBER MATERIAL	
Body/Spring Chamber	CODE
CS/CS	5
SST/CS	9

POSITION 6 & 7 - TRIM DESIGNATION NUMBERS	
Stainless Steel Trim	
Desig.	CODE
S1	S1
S40M	4M

POSITION 10 - END CONNECTIONS		
Description	2-End Conn.	3-End Conn. (Opt-33)
	CODE	CODE
NPT Screwed	1	4
Opt-30 - 300 LB RF Flanges *	7	D
Opt-30 - 600 LB RF Flanges *	8	H
Opt-32 - SCH 80 PE EXT Nipples *	E	F

*Nipples & Flanges same material as body.

POSITION 11 - RANGE SPRING		
Range		CODE
psig	(Barg)	
50 - 100	(3.4-6.9)	1
75 - 200	(5.2-1.8)	2
150 - 300	(10.3-20.7)	3
200 - 450	(13.8-31.0)	A
400 - 600	(27.6-41.4)	B
500 - 800	(34.5-55.2)	C

POSITION 12 - TRIM OPTIONS		
Description	Option	CODE
No Option	—	0
Reduced & Stellite Seat Surface - S1 Trim Only.	-12+15	A
For Special Construction Contact Cashco for Special Product Code.	SPQ	X

POSITION 13 - FEATURE OPTIONS		
Description	Option	CODE
No Option	—	0
Closing Cap.	-1	1

POSITION 14 - SPRING CHAMBER OPTIONS		
Description	Option	CODE
No Option	—	0
1/4" NPT Vent Tap	-25	E
SST Rain-proof Bug Vent. (includes Opt-25)	-25S	H

POSITION 16 - CERTIFICATE OPTIONS		
Description	Option	CODE
No Option	—	0
NACE Construction: CS/CS/S40M Per MR0175.	-40	J
NACE Construction: SS/CS/S40M Per MR0175.	-40SST	K
Special Cleaning: Per Cashco Spec #S-1542.	-56	N

POSITION 17 - PAINT OPTIONS		
Description	Option	CODE
No Option	—	0
Epoxy Painted Per Cashco Spec #S-1547	-95	W
Epoxy Painted Per Cashco Spec #S-1687 OFFSHORE Applic.	-95OS	Y

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