Protectoseal Series 30 Spring Operated Blanketing Valve
Options & Part Numbering Worksheet

PROTECTOSEAL
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Date: Issued by:

Company Name:

Address:

Address:

City: State: Zip:

Country: Phone: Fax:

Email:

Project:

Tag No:

Tank No:

Notes:

PART NO:

DIGIT #	1	2	3	4	5	6	7	8	9	10	11	12
		3	0	B								

Note 1 - When properly completed, this column will indicate your part number.

Please make sure that an option code is filled in for each of the 12 categories.

DIGIT	DESIGNATION	OPTION CODE	SPECIFICATION	OPTION CODE
1	Material, Metal Type	F	316 Stainless Steel	
		K	Cleaned to PURE-TECH Specs	
2 & 3	Series Number	30		30
4	Series Revision Level	B		B
5	Connections	A	1/2" - FNPT / FNPT	
	Pipe Size-Inlet / Outlet Type	B	1/2" - FNPT / 150# Flange	
		C	1/2" - FNPT / 300# Flange	
		D	1/2" - 150# Flange / 150# Flange	
		E	1/2" - 300# Flange / 300# Flange	
6	Setting Range (in. W.C.)	A	-0.1 and including 3.0	
	Refer to Table 4 on Sheet 2	B	Above 3.0" and including 7.0"	
		C	Above 7.0" and including 25.0"	
		D	Above 25.0" and including 69.2"	
7	Material, Seals & Gaskets *	A	Buna-N	
		B	Neoprene	
		C	Viton	
		D	EPDM	
		E	Kalrez® *	
		F	Chemraz® *	

* For units specified with Kalrez® or Chemraz® seals and gaskets, the diaphragm case gasket will be Buna-N.

** Sense line & supply line gage included. Digit #10 should be Option Code "3".

DIGIT	DESIGNATION	OPTION CODE	SPECIFICATION	OPTION CODE
8	Flow Capacity (Flow Plug)	A	100% (no plug)	
	Refer to Valve Sizing Specs on Sheet 2	B	75%	
		C	50%	
		D	25%	
9	Filter Type	0	No Filter	
	Filter not assembled to valve	1	1/2" FNPT Aluminum Filter	
		2	1/2" FNPT Stainless Steel Filter	
10	Pressure Gage Option	0	No Pressure Gages	
		1	Supply Line Filter	
		2	Sense Line Filter	
		3	Both, w/o Field Test Kit (Digit #12 = "0")	
		3	Both, w/ Field Test Kit (See Digit #12)	
11	Integral Purge Option	0	No Integral Purge	
		1	Outlet line only	
		2	Sense line only	
		3	Both	
12	Field Test Kit Option **	0	No Field Test Kit	
		1	Yes **	
		2	Yes, with Outlet Line 3-way Valve **	
		3	Yes, with Sense line Shut-off Valve **	
		4	Yes, with both Outline 3-way & Sense Line Shut-off Valves **	

VALVE SIZING TO MEET FLOW REQUIREMENTS - Series 30 Spring Operated Blanketing Valve

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Blanketing valve flow requirements are based upon two factors:

1) The maximum possible emptying rate out of the tank, Table 1.
2) The possible effects of cooling during atmospheric changes, Table 2.

Using the total required flow determined from these two factors, the necessary specifications for the blanketing valve can be determined. Follow the three steps below. Steps 1 and 2 are based upon API 2000 recommendations.

STEP 1:

Use Table 1 below to determine the flow required to accommodate the maximum possible emptying rate.

STEP 2:

Use Table 2 below to determine the flow required to accommodate the possible effects of atmospheric cooling.

Table 1

Flow Required to Accommodate Pumping Out Rate

For Maximum Liquid Emptying Rate in:	To obtain SCFH Air Required Multiply by:	To Obtain N m^3/h Air Required Multiply By:
US gpm	8.000	0.22700
US gph	0.133	0.00379
barrels/hour	5.600	0.15900
barrels/day	0.233	0.00662
m^3/h	35.220	1.00000

SCFH is at 60°F and 14.7 psia. Nm^3/h is at 0°C and 101.3 kPA (absolute).

Table 2

Flow Required to Accommodate Thermal Effects

Tank Capacity			Inbreathing Required	
Barrels	Gallons	m^3	SCFH	N m^3/h
60	2,500	10	60	1.7
100	4,200	16	100	2.8
500	21,000	79	500	14
1,000	42,000	159	1,000	28
2,000	84,000	318	2,000	55
3,000	126,000	477	3,000	83
4,000	168,000	636	4,000	110
5,000	210,000	795	5,000	138
10,000	420,000	1,590	10,000	276
15,000	630,000	2,385	15,000	413
20,000	840,000	3,180	20,000	551
25,000	1,050,000	3,975	24,000	661
30,000	1,260,000	4,770	28,000	772
35,000	1,470,000	5,565	31,000	854
40,000	1,680,000	6,360	34,000	937
45,000	1,890,000	7,155	37,000	1,020
50,000	2,100,000	7,950	40,000	1,102
60,000	2,520,000	9,540	44,000	1,212
70,000	2,940,000	11,130	48,000	1,323
80,000	3,360,000	12,720	52,000	1,433
90,000	3,780,000	14,310	56,000	1,542
100,000	4,200,000	15,900	60,000	1,653
120,000	5,040,000	19,080	68,000	1,874
140,000	5,880,000	22,260	75,000	2,067
160,000	6,720,000	25,440	82,000	2,260
180,000	7,560,000	28,620	90,000	2,580

Interpolate between values as necessary.

STEP 3:

Add the values from Step 1 and Step 2 to determine the total flow requirement. The flows stated in Table 3 will be achieved by a pressure of 1 1/2" W.C. below the set point of the Protectoseal Series 30 Blanketing Valve (no flow plugs). Optional flow plugs can be used to restrict flow to 75%, 50% or 25% of the flows shown in Table 3.

Table 3 - Maximum Flow through Protectoseal Blanketing Valve

Supply Pressure			Air		Nitrogen		0.6g Natural gas	
psig	kPa (g)	$kg/cm^2(g)$	SCFH	N m^3/h	SCFH	N m^3/h	SCFH	N m^3/h
10	69	0.7	246	6.8	250	6.9	317	8.7
20	138	1.4	345	9.5	351	9.6	445	12.2
40	276	2.8	543	14.9	552	15.2	701	19.3
60	414	4.2	742	20.4	754	20.7	958	26.4
80	552	5.6	941	25.9	957	26.3	1,215	33.4
100	690	7.0	1,140	31.4	1,159	31.9	1,472	40.5
120	827	8.4	1,339	36.9	1,361	37.5	1,728	47.6
140	965	9.8	1,537	42.3	1,563	43.0	1,984	54.6
160	1,103	11.2	1,736	47.8	1,765	48.6	2,241	61.7
180	1,241	12.7	1,935	53.3	1,968	54.2	2,498	68.8
200	1,379	14.1	2,134	58.8	2,170	59.8	2,755	75.9

Interpolate between values as necessary. SCFH is at 60°F and 14.7 psia. Nm^3/h is at 0°C and 101.3 kPA (absolute).
Supply pressure limits are 10 PSIG (69 kPa) minimum / 200 PSIG (1,379 kPa) maximum. Production testing will be done at the given supply pressure.

Table 4 - Guidelines for Blanketing Valve and Conservation Vent Set Points

The blanketing valve is set to OPEN at the set point pressure. If used in conjunction with pressure / vacuum vents or other relieving devices, the following guidelines should be adhered to (all values in inches W.C.).

Blanketing Valve Set Point	MINIMUM Pressure Vent Set Point	MINIMUM Vacuum Vent Set Point (gauge)
-0.5 to 10.0	2.0 ABOVE Valve Set Point	0.5 BELOW Valve Set Point
10.1 to 20.0	4.0 ABOVE Valve Set Point	For Blanketing Valve Set Points BELOW
20.1 to 30.0	6.0 ABOVE Valve Set Point	0.5 gauge, set Vacuum Vent at least
Above 30.0	8.0 ABOVE Valve Set Point	0.5 gauge BELOW Valve Set Point

Note: Set point ranges may vary. Contact factory for specific applications outside the stated guidelines.