

Opti-Gard (OPR)

Technical Information

Including specifications, performance data and schematic

General specifications

Size range	25mm to 600mm (1" to 24")
Burst pressure range	0.35 barg to 70 barg (5 psig to 1015 psig)
Temperature range	-200°C to 600°C
Materials available	Hastelloy as standard, others available on request
Maximum operating ratio	95% of minimum burst pressure (92% of nominal burst pressure)
Performance tolerance	+/- 3% (zero manufacturing design range)
Fragmenting / non-fragmenting	Non-fragmenting
Vacuum service	Full vacuum
Fluid compatibility	Gas+liquid, gas, vapour
K _r value	1.74
Torque sensitive	No
Cycle life	Tested to over 100,000 pressure vacuum cycles*
Reversal ratio	n/a with offset tag + System-Loc
Damage ratio	<1 fail-safe
Protective linings	Available on vent and process side
Relief valve isolation	Excellent
Leak tightness	Excellent
Disc surface finish	n/a

Opti-Gard (OPR)

Performance data

Burst pressure range in barg (psig) at 15-30°C (59-86°F)

Nominal bore		Material					
		Hastelloy		Stainless Steel/Inconel		Nickel/Monel	
mm	inch	min	max	min	max	min	max
25	1	3.5 (50)	70 (1015)	3.5 (50)	70 (1015)	3.5 (50)	55 (797)
40	1.5	1.9 (27)	70 (1015)	1.9 (27)	70 (1015)	1.9 (27)	55 (797)
50	2	0.9 (13)	60 (870)	1.0 (14)	60 (870)	1.0 (14)	45 (652)
65	2.5	0.9 (13)	60 (870)	1.0 (14)	60 (870)	1.0 (14)	45 (652)
80	3	0.5 (7)	50 (725)	0.5 (7)	50 (725)	0.5 (7)	38 (551)
100	4	0.35 (5)	50 (725)	0.35 (5)	50 (725)	0.35 (5)	38 (551)
150	6	0.7 (10)	40 (580)	0.7 (10)	40 (580)	0.7 (10)	30 (435)
200	8	0.6 (8.5)	30 (435)	0.6 (8.5)	30 (435)	0.6 (8.5)	23 (334)
250	10	0.5 (7)	20 (290)	0.5 (7)	20 (290)	0.5 (7)	15 (217)
300	12	0.5 (7)	15 (217)	0.5 (7)	15 (217)	0.5 (7)	11 (159)
350	14	0.4 (5.7)	12 (174)	0.4 (5.7)	12 (174)	0.4 (5.7)	9.5 (137)
400	16	0.4 (5.7)	6 (87)	0.4 (5.7)	6 (87)	0.4 (5.7)	4.5 (65)
450	18	0.4 (5.7)	6 (87)	0.4 (5.7)	6 (87)	0.4 (5.7)	4.5 (65)
500	20	0.4 (5.7)	6 (87)	0.4 (5.7)	6 (87)	0.4 (5.7)	4.5 (65)
600	24	0.4 (5.7)	6 (87)	0.4 (5.7)	6 (87)	0.4 (5.7)	4.5 (65)

Performance tolerance (Zero manufacturing design range)

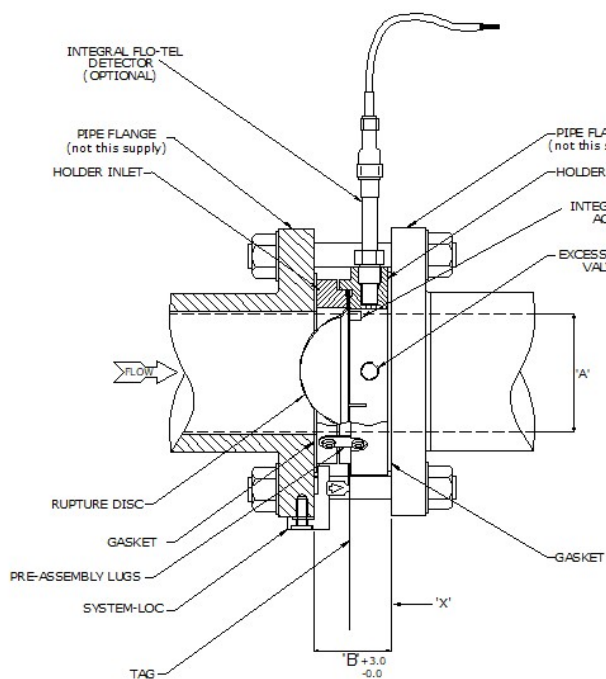
Burst Pressure	Tolerance	Burst Pressure	Tolerance
≤4.48 barg	+/- 0.14 barg	≤65 psig	+/- 2.0 psig
>4.48 barg	+/- 3%	>65 psig	+/-3%

Free flow area / Minimum net flow area (MNFA)

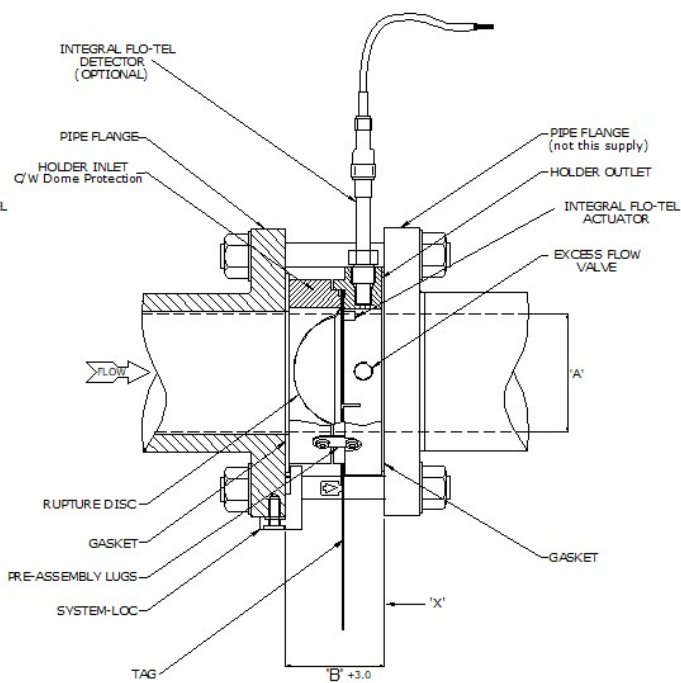
Nominal bore		MNFA with no vacuum support (XXX)	
mm	inch	mm ²	inch ²
25	1	494	0.766
40	1.5	1065	1.651
50	2	1799	2.789
65	2.5	2657	4.119
80	3	4336	6.722
100	4	7047	10.923
150	6	15046	23.322
200	8	28625	44.37
250	10	42095	65.248
300	12	61294	95.006
350	14	81278	125.982
400	16	110674	171.545
450	18	137932	213.795
500	20	167571	259.735
600	24	240048	372.075

Opti-Gard (OPR)

Product Schematic



Without Dome Protection



With Dome Protection

Nominal Bore (A)		Face To Face (B)	
mm	Inch	Dome Protection mm	No Dome Protection mm
25	1	40.4 (Std)	-
40	1.5	42.4 (Std)	-
50	2	44.4 (Std)	-
65	2.5	50 (Std)	-
80	3	55 (Std)	-
100	4	58 (Std)	-
150	6	74.5 (Std)	-
200	8	90.5	51.5 (Std)
250	10	105.5	51.5 (Std)
300	12	120.5	51.5 (Std)
350	14	145	51 (Std)
400	16	166	51 (Std)
450	18	182	51 (Std)
500	20	201	51 (Std)
600	24	238	51 (Std)

Flange Specifications	
EN 1092-1 PN Designated	BS EN 1759-1 ANSI Designated
PN 6	ANSI 150
PN 10	ANSI 300
PN 16	ANSI 600
PN 20	ANSI 900
PN 25	ANSI 1500
PN 40	ANSI 2500
PN 50	-
PN 63	-
PN 100	-

Face to face dimensions account for the disc and holder assembly only. They do not account for gasket thickness.

Safe-Gard (SGD)

Technical Information

Including specifications, performance data and schematic

General specifications

Size range	15mm to 500mm (1/2" to 20")
Burst pressure range	3.1 barg to 185 barg (51 psig to 2680 psig)
Temperature range	-200°C to 600°C
Materials available	Stainless Steel as standard, others available on request
Maximum operating ratio	90% of minimum burst pressure (86% of nominal burst pressure)
Performance tolerance	+/- 5% (zero manufacturing design range)
Fragmenting / non-fragmenting	Non-fragmenting
Vacuum service	Full vacuum
Fluid compatibility	Liquid, gas, vapour
K _r value	0.68
Torque sensitive	No
Cycle life	Very good
Reversal ratio	<1 fail-safe
Damage ratio	<1 fail-safe
Protective linings	Available
Relief valve isolation	Excellent
Leak tightness	Excellent
Disc surface finish	n/a

Burst pressure range in barg (psig) at 15-30°C (59-86°F)

Nominal bore		Material										Withstand vacuum w/out support*
		Stainless Steel		Hastelloy		Inconel		Monel		Nickel		
mm	inch	min	max	min	max	min	max	min	max	min	max	
15	0.5	15(218)	185(2,683)	17(247)	185(2,683)	15(218)	185(2,683)	13.5(196)	175(2,538)	12(174)	170(2,466)	n/a
25	1	4(58)	185(2,683)	4.6(67)	185(2,683)	4(58)	185(2,683)	3.6(52)	160(2,320)	3.2(46)	150(2,176)	5(73)
40	1.5	3.8(55)	140(2,031)	4.4(64)	140(2,031)	3.8(55)	140(2,031)	3.4(49)	125(1,813)	3(45)	120(1,740)	6(87)
50	2	3.5(51)	125(1,813)	4(58)	125(1,813)	3.5(51)	125(1,813)	3.2(46)	110(1,595)	2.8(41)	100(1,450)	7(102)
65	2.5	3.5(51)	105(1,523)	4(58)	105(1,523)	3.5(51)	105(1,523)	3.2(46)	90(1,309)	2.8(41)	85 (1,233)	9(131)
80	3	3.1(45)	90(1,309)	3.6(52)	90(1,309)	3.1(45)	90(1,309)	2.8(41)	80(1,160)	2.5(36)	70 (1,015)	10(145)
100	4	3.1(45)	75(1,088)	3.6(52)	75(1,088)	3.1(45)	75(1,088)	2.8(41)	68(986)	2.5(36)	60 (870)	12(174)
150	6	3.0(44)	55(798)	3.5(51)	55(798)	3.0(44)	55(798)	2.7(39)	50(725)	3(44)	40 (580)	17(247)
200	8	3.5(51)	40(580)	4(58)	40(580)	3.5(51)	40(580)	3.2(46)	38(551)	2.4(35)	30 (435)	Contact us to discuss vacuum capability at these sizes
250	10	4.5(65)	33(479)	5.2(75)	33(479)	4.5(65)	33(479)	4.0(58)	30(435)	3.6(52)	24 (348)	
300	12	5.0(73)	30(435)	5.8(84)	30(435)	5.0(73)	30(435)	4.5(65)	28(406)	4(45)	20 (290)	
350	14	6(87)	28(406)	6.9(100)	28(406)	6(87)	28(406)	5.4(78)	24(348)	4.8(80)	18 (261)	
400	16	6(87)	24(348)	6.9(100)	24(348)	6(87)	24(348)	5.4(78)	20(290)	4.8(80)	16 (232)	
450	18	6(87)	20(290)	6.9(100)	20(290)	6(87)	20(290)	5.4(78)	18(261)	4.8(80)	14 (203)	
500	20	6(87)	18(261)	6.9(100)	18(261)	6(87)	18(261)	5.4(78)	16(232)	4.8(80)	12 (174)	

*Disc will withstand full vacuum without a support when burst pressure is equal or greater than the specified value.

Safe-Gard (SGD)

Free flow area / Minimum net flow area (MNFA)

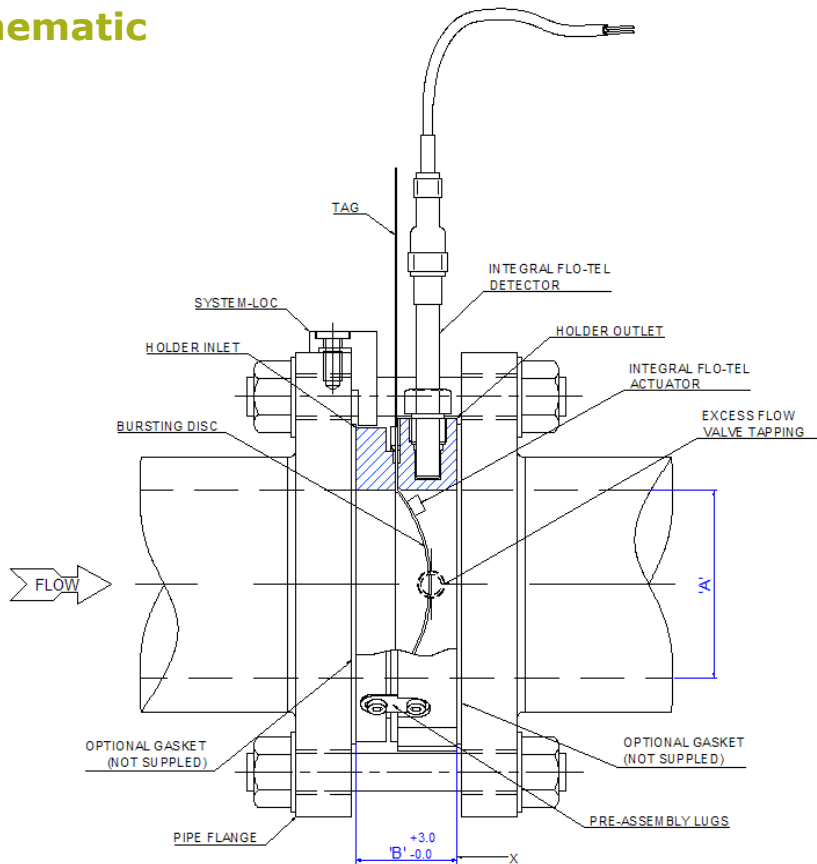
Nominal bore		With no vacuum support (XXX)		With non-opening vacuum support (NVS)		With opening vacuum support (OVS)	
mm	inch	mm ²	inch ²	mm ²	inch ²	mm ²	inch ²
25	1	322	0.5	244	0.38	322	0.5
40	1.5	800	1.24	608	0.95	800	1.25
50	2	1,290	2	943	1.47	1,290	2.01
65	2.5	2,112	3.27	1,564	2.44	2,112	3.29
80	3	3,200	4.96	2,421	3.77	3,200	4.99
100	4	5,161	8	3,823	5.96	5,161	8.05
150	6	11,250	17.43	7,091	11.06	11,250	17.55
200	8	20,000	31	12,629	19.7	20,000	31.19
250	10	31,250	48.44	20,036	31.25	31,250	48.74
300	12	45,000	69.75	-	-	45,000	70.18
350	14	61,250	94.94	-	-	61,250	95.53
400	16	80,000	124	-	-	80,000	124.77
450	18	101,250	156.94	-	-	101,250	157.91
500	20	125,000	193.75	-	-	125,000	194.96

Performance tolerance (Zero manufacturing design range)

Burst Pressure	Tolerance	Burst Pressure	Tolerance
≤2.76	+/- 0.28 barg	<40 psig	+/- 4 psig
>2.76 barg	+/- 5%	>40 psig	+/- 5%

Safe-Gard (SGD)

Product Schematic



Nominal Bore (A)		Face to face (B)
mm	Inch	mm
25	1	37.9
40	1.5	37.9
50	2	37.9
65	2.5	40
80	3	42
100	4	46.5
150	6	62
200	8	58
250	10	58
300	12	58
350	14	50
400	16	50
450	18	50
500	20	50
600	24	50

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PN 20	ANSI 900
PN 25	ANSI 1500
PN 40	ANSI 2500
PN 50	-
PN 63	-
PN 100	-

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