

## Safe-Gard (SGD) Technical Information

Including specifications, performance data, temperature ranges 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 <sub>r</sub> 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.

### 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 <sup>2</sup>	inch <sup>2</sup>	mm <sup>2</sup>	inch <sup>2</sup>	mm <sup>2</sup>	inch <sup>2</sup>
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%

## Standard temperature ranges °C (°F)

Please note: For temperatures below zero, caution is needed if shock loading is involved.

### Metals

Metal	Min temp	Max temp
Hastelloy B2 SB33 5N10665	-200 (-328)	426 (800)
Hastelloy C22 SB574 N06022	-196 (-321)	600 (1112)
Hastelloy C276 SB575 N10276	-196 (-321)	600 (1112)
Inconel Alloy SB 166 N06600	-196 (-321)	482 (900)
Inconel Alloy SB 443 N06625	-196 (-321)	400 (750)
Inconel Alloy SB 425 N08825	-182 (-296)	400 (750)
Monel Alloy SB 164 N04400 Annealed	-182 (-296)	400 (750)
Monel Alloy SB 164 N04400 Hot Worked	-253 (-423)	537 (1000)
Nickel Alloy 2200	-185 (-301)	315 (600)
Nickel Alloy 2201	-185 (-301)	400 (750)
Steel - Stainless Steel (316 & 304)	-196 (-321)	600 (1112)
Steel - Duplex Steel UNS31803 UN32205	-50 (-58)	300 (572)
Titanium SB348 R50400 Gr2	-196 (-321)	315 (600)
Zirconium SB550 R60702 (Zr)	No info	371 (700)
Zirconium SB550 R60705 (Zr +5%Nb)	No info	371 (700)

### PFA, PTFE and graphite

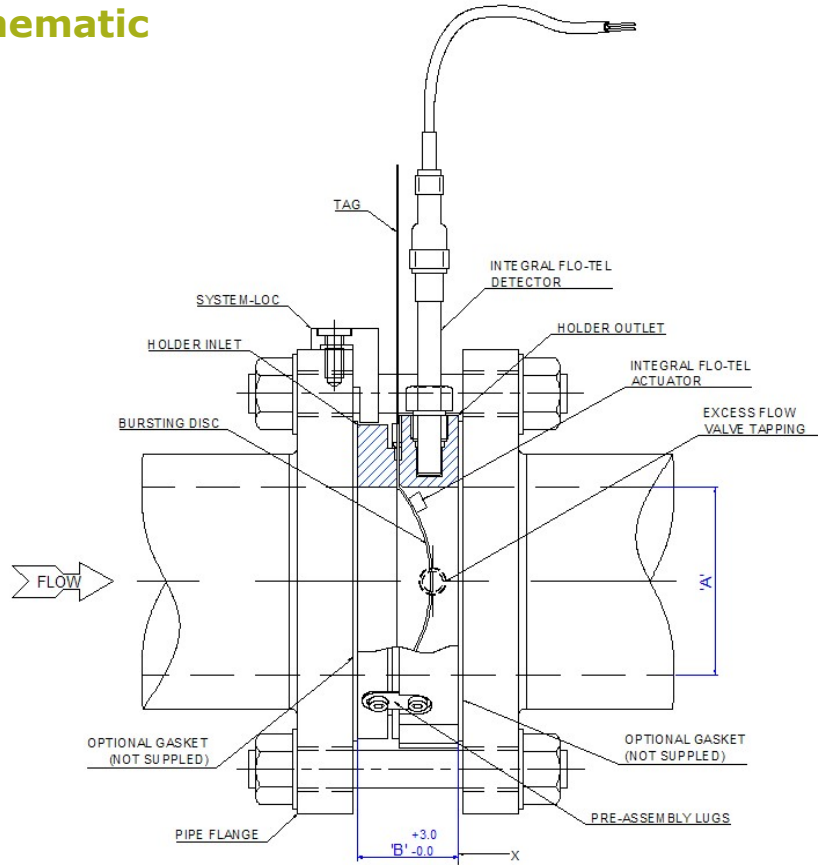
Material	Min temp	Max temp
PFA	-200 (-392)	200 (392)*
PTFE	-200 (-392)	200 (392)*
Graphite MXAS600	-50 (-58)	180 (356)

\*Low temperature embrittlement is at -268°C (-450.4°F)

### Standard testing ranges °C (°F)

Discs up to 200mm	-45°C (-49°F) to 450°C (842°F)
Discs up to 500mm	Ambient to 450°C (842°F)
OEM products	-75°C (-103°F) to 450°C (842°F)

## 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

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.