

CERTIFIED K_R AND MNFA VALUES

Design codes like EN 4126-6 and ASME Section VIII, Division 1 provide guidance for the use of a bursting disc device in a pressure relieving system. Two of the basic methodologies for sizing bursting disc devices are the resistance to flow and the coefficient of discharge methods. The coefficient of discharge method, K_D , is used for simple systems. This method uses the minimum net flow area (MNFA, cm^2) to calculate the appropriate capacity of the system. The resistance to flow method represents the velocity head loss due to the bursting disc device. This head loss is included in the overall system loss calculations to determine the size of the relief system. See technical bulletin "TB8102 Bursting Disc Sizing" for guidance in selecting the applicable method for bursting disc sizing.

The resistance of the bursting disc is denoted by a dimensionless K_R value established by testing during the certification process. Due to the variation in the opening characteristics of the bursting disc between compressible vapour and incompressible liquid, there are certified K_R values that are denoted by the applicable service media.

- K_{RG} : Use K_{RG} when the media is a gas or vapour, or when the media is liquid but there is a significant vapour volume directly in contact with the disc at the time of rupture
- K_{RL} : Use K_{RL} when the media is liquid and the liquid against the disc at the time of rupture
- K_{RGL} : Use K_{RGL} for any service conditions

Abbreviations:

- BT = single disc holder type for bolted flange joint type
- DD = double disc holder type for bolted flange joint type
- VT = viscous tee holder type for bolted flange joint type
- ST = screw type for threaded connection
- UT = union type for threaded connection
- SH = single hinge (1 petal)
- DH = double hinge (2 petals)
- CS = cross scored (4 petals)
- MP = multiple petals (4 or more)
- FS = flat seat option only



The values shown have been certified by the National Board of Pressure Vessel Inspectors and are published in NB-18.

		AXIUS Low Pressure ¹	AXIUS High Pressure ²	AXIUS	ATLAS	SRX	SRL	SRL	AXIUS SC	SR-H
Holder		BT	BT	DD	BT	BT	BT	DD	Ferrule	Ferrule
K_{RG}		-	0.45	0.68	0.65	0.99	0.43	-	-	-
K_{RL}		-	1.25	1.1	1.5	-	-	-	-	-
K_{RGL}		0.45	-	-	-	-	0.59	1.18	1.88	1.88
DN	Inch	Minimum Net Flow Area (cm²)								
15	0.5	-	-	-	-	-	-	-	-	-
20	0.75	-	-	-	-	-	-	-	-	-
25	1	5.57	5.57	5.57	4.52	5.57	5.57	5.57	2.64	-
40	1.5	13.16	13.16	13.16	11.61	9.93	10.77	10.77	7.15	8.64
50	2	21.68	21.68	21.68	18.90	21.68	21.68	21.68	13.61	16.45
80	3	47.68	47.68	47.68	40.96	47.68	47.68	47.68	32.30	39.35
100	4	81.93	81.29	81.29	70.31	81.93	81.93	81.93	58.20	70.96
150	6	151.61	139.35	139.35	-	163.22	162.58	162.58	-	-
200	8	269.68	247.74	247.74	-	279.35	289.03	289.03	-	-
250	10	418.71	383.87	383.87	-	449.03	-	-	5.57	-
300	12	607.74	557.42	557.42	-	658.06	-	-	10.77	-
350	14	-	-	-	784.84	890.32	-	-	21.68	-
400	16	-	-	-	987.09	1180.64	-	-	47.68	-
450	18	-	-	-	1258.06	1509.67	-	-	81.93	-
500	20	-	-	-	1541.93	1877.42	-	-	162.58	-
600	24	-	-	-	2232.25	2741.93	-	-	289.03	-
650	26	-	-	-	2632.25	-	-	-	-	-
700	28	-	-	-	3058.06	-	-	-	-	-
750	30	-	-	-	3490.32	-	-	-	-	-
800	32	-	-	-	3980.64	-	-	-	-	-
850	34	-	-	-	-	-	-	-	-	-
900	36	-	-	-	5058.05	-	-	-	-	-
950	38	-	-	-	-	-	-	-	-	-
1000	40	-	-	-	-	-	-	-	-	-
1050	42	-	-	-	6877.41	-	-	-	-	-
1100	44	-	-	-	-	-	-	-	-	-
1200	48	-	-	-	-	-	-	-	-	-
ISO DN38		-	-	-	-	-	-	-	7.15	8.64
DIN DN40		-	-	-	-	-	-	-	8.58	10.32
DIN DN50		-	-	-	-	-	-	-	13.61	17.55
ISO DN51		-	-	-	-	-	-	-	13.61	16.45
ISO DN76		-	-	-	-	-	-	-	32.30	39.35

- (1) AXIUS low pressures K_{RGL} values are for the following ambient 22°C burst pressures:
 < 4.48 barg (sizes DN25 – DN200) // < 3.44 barg (size DN250) // < 2.41 barg (size DN300)
- (2) AXIUS high pressure K_R values are for burst pressures in excess of those listed in note 1. Consult Fike if specific K_R values need to be confirmed at time of specification.

This document is only intended to be a guideline and is not applicable to all situations. Information subject to full disclaimer at <http://www.fike.com/disclaimer>



	SCRD FSR	SCRD FSR	Poly-SD ² SH	Poly-SD ² SH	Poly-SD ² DH	Poly-SD ² DH	Poly-SD ² DH	Poly-SD ² CS	Poly-SD ² CS	Poly-SD SCR-D-V FS CS	SCR-D-V FS CS	SCRD FS CS	SCRD FS DH	
Holder	BT	VT	BT	BT	BT	BT	BT	BT	BT	DD	BT	ST	ST	
K_{RG}	0.55	2.38	-	-	-	-	3.04	0.99	2.39 3.03 ³	-	-	-	-	
K_{RL}	2.40	8.71	-	-	-	-	5.30	1.10	5.71	-	-	-	-	
K_{RGL}	-	-	0.34	0.90	0.34	2.40	-	-	-	1.50	1.50	5.39	5.39	
Minimum Net Flow Area (cm ²)														
DN	Inch													
15	0.5	-	-	-	-	-	-	1.26	-	1.26	-	-	1.26 0.97 ⁴	1.26 0.97 ⁴
20	0.75	-	-	-	2.85	-	2.85	-	2.85	-	-	-	-	-
25	1	5.06 3.81 ¹	5.06 3.81 ¹	5.06	-	5.06	-	-	5.06	-	-	-	-	-
40	1.5	11.42 8.71 ¹	11.42 8.71 ¹	11.42	-	11.42	-	-	11.42	-	-	-	-	-
50	2	21.68	21.68	21.68	-	21.68	-	-	21.68	-	21.68	21.68	-	-
80	3	47.68	47.68	47.68	-	47.68	-	-	47.68	-	47.48	47.42	-	-
100	4	81.93	81.93	81.93	-	81.93	-	-	81.93	-	81.93	81.93	-	-
150	6	186.45	-	186.45	-	186.45	-	-	186.45	-	143.87	143.87	-	-
200	8	322.58	-	-	-	-	-	-	322.58	-	262.58	262.58	-	-
250	10	509.03	-	-	-	-	-	-	509.03	-	433.55	433.55	-	-
300	12	729.03	-	-	-	-	-	-	729.03	-	641.29	641.29	-	-
350	14	890.32	-	-	-	-	-	-	890.32	-	890.32	890.32	-	-
400	16	1180.64	-	-	-	-	-	-	1180.64	-	1180.64	1180.64	-	-
450	18	1509.67	-	-	-	-	-	-	1509.67	-	1509.67	1509.67	-	-
500	20	1877.42	-	-	-	-	-	-	1877.42	-	1877.42	1877.42	-	-
600	24	2741.93	-	-	-	-	-	-	2741.93	-	2471.93	2741.93	-	-
650	26	3232.25	-	-	-	-	-	-	-	-	-	-	-	-
700	28	3761.28	-	-	-	-	-	-	-	-	-	-	-	-
750	30	4335.47	-	-	-	-	-	-	-	-	-	-	-	-
800	32	4948.38	-	-	-	-	-	-	-	-	-	-	-	-
850	34	5599.99	-	-	-	-	-	-	-	-	-	-	-	-
900	36	6296.76	-	-	-	-	-	-	-	-	-	-	-	-
950	38	-	-	-	-	-	-	-	-	-	-	-	-	-
1000	40	-	-	-	-	-	-	-	-	-	-	-	-	-
1050	42	-	-	-	-	-	-	-	-	-	-	-	-	-
1100	44	-	-	-	-	-	-	-	-	-	-	-	-	-
1200	48	-	-	-	-	-	-	-	-	-	-	-	-	-

- (1) MNFA for gas service = 5.06, while MNFA for liquid service = 3.81 cm². SCR-D-FSR sizes DN25 and DN40 have reduced MNFA values in liquid service.
- (2) Poly-SD score patterns for sizes DN15 to DN150 will be selected at the discretion of Fike Europe once bursting disc specifications are received. All Poly-SD sizes DN200 and larger are only CS style. Consult Fike if specific K_R values need to be confirmed at time of specification.
- (3) DN15 Poly-SD CS with liner increases K_{RG} to 3.03
- (4) ½" SCR-D-FS bursting discs used in the ½"-150 (15000 psig rating) ST holder reduces MNFA to 0.97cm².
- (5) Poly-SD CS bursting discs in liquid service with liners are not UD certified.

This document is only intended to be a guideline and is not applicable to all situations. Information subject to full disclaimer at <http://www.fike.com/disclaimer>



	HO, HOV	HOV-FS (SH or MP)	HO, HOV	P, CP, CPC	PV, CP- C, CPV, CPV-C	P, CP, CPC	PV, CP- C, CPV, CPV-C	P FS	MRK, RKB	PLHO, PLHOV	
Holder	BT	BT	UT	BT	BT	UT	UT	ST	BT	BT	
K_{RG}	-	-	-	-	-	-	-	-	1.56	5.75	
K_{RL}	-	-	-	-	-	-	-	-	-	-	
K_{RGL}	2.02	0.99	3.50	1.35	3.50	4.80	8.80	5.39	-	-	
DN	Inch	Minimum Net Flow Area (cm²)									
15	0.5	-	-	-	-	-	1.26	0.89	1.26 0.97 ¹	-	-
20	0.75	-	-	-	2.85	2.63	2.79	2.13	-	-	-
25	1	4.48	-	4.48	5.06	4.48	4.64	3.63	-	5.06	4.48
40	1.5	9.23	-	9.23	11.42	9.23	11.42	7.48	-	10.06	9.23
50	2	21.55	-	19.03	51.55	21.55	19.03	15.42	-	21.68	21.55
80	3	47.16	-	-	47.55	47.16	-	-	-	47.68	47.16
100	4	81.93	-	-	81.93	81.93	-	-	-	81.93	81.93
150	6	174.84	-	-	186.45	174.84	-	-	-	176.13	174.84
200	8	304.52	-	-	322.58	304.52	-	-	-	303.22	304.52
250	10	432.26	-	-	506.45	432.26	-	-	-	509.03	-
300	12	641.29	-	-	729.03	641.29	-	-	-	696.77	-
350	14	890.32	-	-	890.32	890.32	-	-	-	890.32	-
400	16	1180.64	-	-	1180.64	1180.64	-	-	-	1180.64	-
450	18	1509.67	-	-	1509.67	1509.67	-	-	-	1509.67	-
500	20	1877.42	-	-	1877.42	1877.42	-	-	-	1877.42	-
600	24	2741.93	2496.77	-	2741.93	2741.93	-	-	-	2741.93	-
650	26	-	2961.28	-	-	-	-	-	-	-	-
700	28	-	3477.41	-	-	-	-	-	-	3761.28	-
750	30	-	4025.80	-	-	-	-	-	-	4335.47	-
800	32	-	4619.35	-	-	-	-	-	-	4948.38	-
850	34	-	5251.60	-	-	-	-	-	-	5599.99	-
900	36	-	5922.57	-	-	-	-	-	-	6296.76	-
950	38	-	6645.15	-	-	-	-	-	-	7032.24	-
1000	40	-	7419.34	-	-	-	-	-	-	7806.44	-
1050	42	-	8193.53	-	-	-	-	-	-	8645.14	-
1100	44	-	9032.24	-	-	-	-	-	-	9483.85	-
1200	48	-	10838.69	-	-	-	-	-	-	-	-

(1) ½" P FS bursting discs used in the ½"-150 (15000 psig rating) ST holder reduces MNFA to 0.97cm².

This document is only intended to be a guideline and is not applicable to all situations. Information subject to full disclaimer at <http://www.fike.com/disclaimer>



		GD	GDI, GDL	GDV BAR	GDV CROSS	GDV PLATE	GDV RING
Holder		N/A	N/A	N/A	N/A	N/A	N/A
K_{RG}		-	-	-	-	-	-
K_{RL}		-	-	-	-	-	-
K_{RGL}		0.26	0.64	2.40	5.40	15.70	12.50
Minimum Net Flow Area (cm²)							
DN	Inch						
15	0.5	1.93	1.93	-	-	-	-
20	0.75	3.42	3.42	-	-	-	-
25	1	5.03	5.03	3.87	3.03	2.06	2.84
40	1.5	11.35	11.35	8.64	6.77	4.64	-
50	2	20.26	20.26	15.42	12.00	8.39	-
80	3	45.55	45.55	35.87	27.81	19.03	-
100	4	81.03	81.03	68.13	56.84	35.29	-
150	6	182.39	182.39	143.68	111.42	77.74	-
200	8	322.71	322.71	259.74	205.29	136.39	-
250	10	506.64	506.64	409.87	327.61	210.71	-
300	12	729.61	729.61	574.77	445.74	304.77	-
350	14	889.55	889.55	697.16	537.48	374.64	-
400	16	1178.38	1178.38	932.38	726.45	545.10	-
450	18	1507.74	1507.74	1173.87	991.61	672.97	-
500	20	1877.61	1877.61	1505.03	1190.32	790.26	-
600	24	2739.03	2739.03	2289.03	1897.42	1229.74	-
650	26	-	-	-	-	-	-
700	28	-	-	-	-	-	-
750	30	-	-	-	-	-	-
800	32	-	-	-	-	-	-
850	34	-	-	-	-	-	-
900	36	-	-	-	-	-	-
950	38	-	-	-	-	-	-
1000	40	-	-	-	-	-	-
1050	42	-	-	-	-	-	-
1100	44	-	-	-	-	-	-
1200	48	-	-	-	-	-	-

This document is only intended to be a guideline and is not applicable to all situations. Information subject to full disclaimer at <http://www.fike.com/disclaimer>