

**BURST DISC / RELIEF VALVE APPLICATION DATA SHEET**

<b>COMPANY:</b>		<b>PHONE:</b>	
<b>CONTACT:</b>		<b>FAX:</b>	
<b>ADDRESS:</b>		<b>E-MAIL:</b>	
<b>DATE:</b>		<b>QUOTE DUE DATE:</b>	<b>(UPDATE:)</b>

**APPLICATION DETAILS:** (please attach customer drawing / sketch)

Brief Description: \_\_\_\_\_

Annual quantities: \_\_\_\_\_ # of years: \_\_\_\_\_ RFQ Quantities: \_\_\_\_\_

Is This a New Design?  Yes  No Are Modifications Possible?  Yes  No

Drawing or Sketch Attached?  Yes  No Reference Drawing/Spec #: \_\_\_\_\_

**SERVICE CONDITIONS:**

Working Pressure: \_\_\_\_\_ @ Temp. = \_\_\_\_\_ Life Expectancy: \_\_\_\_\_

Housing Maximum Design Pressure: \_\_\_\_\_ @ Temp. = \_\_\_\_\_ Media: \_\_\_\_\_

Max/Proof Pressure: \_\_\_\_\_ @ Temp. = \_\_\_\_\_ Max Temperature: \_\_\_\_\_ @ Pressure = \_\_\_\_\_

Burst Pressure: \_\_\_\_\_ @ Temp. = \_\_\_\_\_ Min. Temperature: \_\_\_\_\_ @ Pressure = \_\_\_\_\_

Thermal Cycles: \_\_\_\_\_ External Leak rate (Max., Helium): \_\_\_\_\_ Std.cc/sec

**Burst Disc (BD):** Contains Burst Disc: Yes  No

Diaphragm Rupture Pressure: \_\_\_\_\_ psi ± \_\_\_\_\_

BD Internal Leak rate (Max., Helium): \_\_\_\_\_ Std.cc/sec @ Pressure = \_\_\_\_\_

BD Flow capacity, Minimum: \_\_\_\_\_

BD Pressure Cycles: \_\_\_\_\_

Reverse pressure protection:  Yes  No outlet pressure: \_\_\_\_\_ Inlet Pressure: \_\_\_\_\_ Reverse Pressure cycles: \_\_\_\_\_

**Relief Valve (RV):** Contains Relief Valve: Yes  No

RV Cracking Pressure: \_\_\_\_\_ psi ± \_\_\_\_\_ psi

RV Reseal Pressure \_\_\_\_\_ psi ± \_\_\_\_\_ psi @ \_\_\_\_\_ Std.cc/sec GHe

RV Flow capacity, Minimum: \_\_\_\_\_

RV Pressure Cycles: \_\_\_\_\_

RV Internal Leak rate (Max., Helium): \_\_\_\_\_ Std.cc/sec GHe @ Pressure = \_\_\_\_\_

**Testing Requirements:**

Functional only: Yes  No  Vibration: \_\_\_\_\_

Shock: \_\_\_\_\_ Climatic: \_\_\_\_\_

Other Tests: \_\_\_\_\_

**OTHER:**

Internal Filter:  Inlet  Outlet  Between RV & BD Filter rating (microns): \_\_\_\_\_ Nominal \_\_\_\_\_ Absolute \_\_\_\_\_

Inlet ø \_\_\_\_\_ Outlet ø \_\_\_\_\_

Max. desired Weight: \_\_\_\_\_ Special quality / inspection specifications: \_\_\_\_\_

Other: \_\_\_\_\_

## Equivalent Leakage Rates

Std cc/sec*	mbar-l/sec	Torr Liters/sec	Time for one cc to Leak	Time for one bubble** to leak
10 <sup>-1</sup>	1.01 x 10 <sup>-1</sup>	7.6 x 10 <sup>-2</sup>	10 seconds	0.25 seconds
10 <sup>-2</sup>	1.01 x 10 <sup>-2</sup>	7.6 x 10 <sup>-3</sup>	100 seconds	2.5 seconds
10 <sup>-3</sup>	1.01 x 10 <sup>-3</sup>	7.6 x 10 <sup>-4</sup>	16.7 minutes	25 seconds
10 <sup>-4</sup>	1.01 x 10 <sup>-4</sup>	7.6 x 10 <sup>-5</sup>	2.8 hours	4 minutes
10 <sup>-5</sup>	1.01 x 10 <sup>-5</sup>	7.6 x 10 <sup>-6</sup>	28 hours	40 minutes
10 <sup>-6</sup>	1.01 x 10 <sup>-6</sup>	7.6 x 10 <sup>-7</sup>	11.5 days	7 hours
10 <sup>-7</sup>	1.01 x 10 <sup>-7</sup>	7.6 x 10 <sup>-8</sup>	3.8 months	3 days
10 <sup>-8</sup>	1.01 x 10 <sup>-8</sup>	7.6 x 10 <sup>-9</sup>	3.2 years	1 month
10 <sup>-9</sup>	1.01 x 10 <sup>-9</sup>	7.6 x 10 <sup>-10</sup>	32 years	9 months
10 <sup>-10</sup>	1.01 x 10 <sup>-10</sup>	7.6 x 10 <sup>-11</sup>	320 years	8 years
10 <sup>-11</sup>	1.01 x 10 <sup>-11</sup>	7.6 x 10 <sup>-12</sup>	3200 years	80 years

\* Std cc/sec = One cubic centimeter of gas flow per second at 14.7 psi of pressure and a temperature of 77°F

\*\* Bubble diameter is 3mm

Leak Legend	Approximate Leak Rates per meter of circumference	Actual leak rate in service will depend on the following:
Ultra-Helium	≤ 1 x 10 <sup>-11</sup> std.cc/sec He	<b>Seal Load:</b> Wall Thickness or Spring Load <b>Surface Finish:</b> Seal and Cavity <b>Surface Treatment:</b> Coating/Plating/Jacket Material
Helium	≤ 1 x 10 <sup>-9</sup> std.cc/sec He	
Bubble	≤ 1 x 10 <sup>-4</sup> std.cc/sec He	
Low Bubble	≤ 25 cc/sec @ 50 psig Nitrogen per inch of diameter	



## Typical Bolt / Fastener Information

Size / Nominal Diameter	Nominal Diameter inches	Pitch (THD/IN)	Area at Root of Thread sq. in.	30000 PSI Stress		45000 PSI Stress		60000 PSI Stress	
				Fastener Preload lbs	Torque Req'd K= .15 lbs-in	Fastener Preload lbs	Torque Req'd K= .15 lbs-in	Fastener Preload lbs	Torque Req'd K= .15 lbs-in
#6	0.138	32	0.008	225	5	338	7	450	9
#8	0.164	32	0.012	360	9	540	13	720	18
#10	0.190	24	0.015	435	12	653	19	870	25
#12	0.226	24	0.021	618	21	927	31	1236	42
1/4"	0.250	20	0.027	807	30	1211	45	1614	61
5/16"	0.313	18	0.045	1362	64	2043	96	2724	128
3/8"	0.375	16	0.068	2034	114	3051	172	4068	229
7/16"	0.438	14	0.093	2799	184	4199	276	5598	367
1/2"	0.500	13	0.126	3771	283	5657	424	7542	566
9/16"	0.563	12	0.162	4860	410	7290	615	9720	820
5/8"	0.625	11	0.202	6060	568	9090	852	12120	1136
3/4"	0.750	10	0.302	9060	1019	13590	1529	18120	2039
7/8"	0.875	9	0.419	12570	1650	18855	2475	25140	3300
1"	1.000	8	0.551	16530	2480	24795	3719	33060	4959
1-1/8"	1.125	8	0.728	21840	3686	32760	5528	43680	7371
1-1/4"	1.250	8	0.929	27870	5226	41805	7838	55740	10451
1-3/8"	1.375	8	1.155	34650	7147	51975	10720	69300	14293
1-1/2"	1.500	8	1.405	42150	9484	63225	14226	84300	18968
1-3/4"	1.750	8	1.980	59400	15593	89100	23389	118800	31185
2"	2.000	8	2.652	79560	23868	119340	35802	159120	47736

### NOTES:

1. For fasteners larger than one inch, it is often customary to use a thread pitch of 8 in place of UNC thread pitch.
2. Contact Applications Engineering for other sizes.
3. These values/estimates are offered as guidelines only. There are many other factors that the flange designer must consider such as: thermal cycling, vibration, cyclic fatigue, flange thickness, flange rotation, bolt stress relaxation, additional bolt preload, externally applied loads, etc. The customer is responsible for the flange design and for ensuring that the flanges, bolts and bolt loads are sufficient for the application. Please refer to Section VIII of the ASME Boiler and Pressure Vessel Code for code requirements.