



# RB-90™

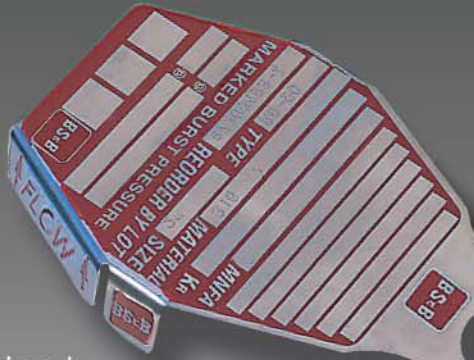
## REVERSE BUCKLING DISKS

OVERPRESSURE PROTECTION FOR GAS/VAPOR APPLICATIONS



Type RB-90™ Rupture Disk

Type RB-7R  
Quik-Sert Safety Head



# RB-90™

## Reverse Buckling Disk

- A highly specialized disk for use only when situations cannot be met by more-advanced rupture disk designs
- Designed for gas/vapor applications only
- Withstands full vacuum without support
- Endures high back pressure without damage
- Designed for minimal fragmentation, bursts into four equal segments
- Several metal choices available for specific needs
- Available in sizes 1-inch thru 36-inches
- Manufacturing ranges available in 0%, 5% and 10%
- Standard materials are 316 stainless steel, Inconel®-600, Monel®-400, Nickel-200 and aluminum
- Teflon liners available for process side of disk
- Stainless steel tag prominently displays flow arrows to visually assist proper installation and orientation

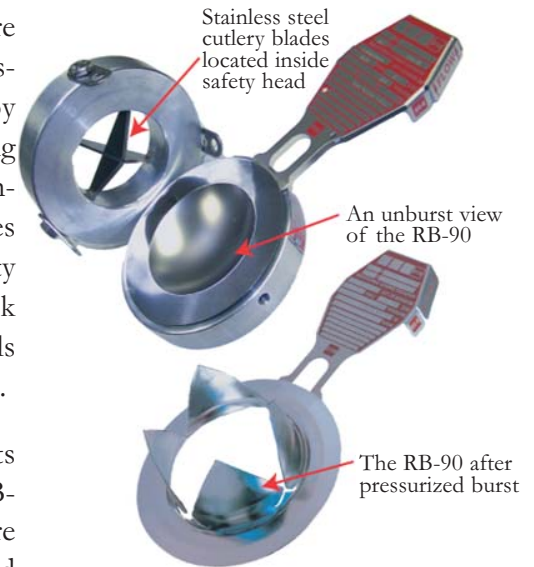
## RB-90 Rupture Disk Assembly

The RB-90 Rupture Disk provides overpressure protection by reversing and snapping against precision stainless steel cutlery blades located in the safety head, cutting the disk into four distinct petals without fragmentation.

No vacuum supports are required for the RB-90. Its disk metals are thicker than those used in conventional solid disks of the same size and pressure rating, so vacuum supports are not required. The RB-90 disk also withstands high back pressure without damage.

Product buildup is reduced when using an RB-90 Rupture Disk. Only the smooth convex side is exposed to system contents.

The disk is reverse acting, compression loaded and available in many sizes to meet a variety of complex needs. Designed for gas/vapor applications only.



## Protection You Can Count On

BS&B Safety Systems manufactures and distributes pressure relief technology throughout the World. For over 75-years the company has proven itself the global leader in overpressure protection devices.

BS&B products are designed for industrial process industries including chemical, oil and gas, pharmaceutical, biotechnology, food and beverage, and for the OEM industry ranging from fire protection to automotive. BS&B products are found in every industry that produces the material items used daily by millions of people.

BS&B products are marketed worldwide through a global sales network located in Tulsa, OK; Limerick, Ireland; Manchester, UK; Singapore; Tokyo, Japan; Sao Paulo Brazil; Suzhou, China and Chennai, India.

# SPECIFICATIONS

## DISK MATERIAL AVAILABLE FOR RB-90 RUPTURE DISKS Min/Max Disk Pressure Rating at 72°F (22°C)

Disk Size		Aluminum				Nickel Alloy 200				Tantalum				Monel Alloy 400				Inconel Alloy 600				316 SS				Hastelloy			
in.	mm	Minimum		Maximum		Minimum		Maximum		Minimum		Maximum		Minimum		Maximum		Minimum		Maximum		Minimum		Maximum		Minimum		Maximum	
		psig	bara	psig	bara	psig	bara	psig	bara	psig	bara	psig	bara	psig	bara	psig	bara	psig	bara	psig	bara	psig	bara	psig	bara	psig	bara	psig	bara
1	25	30	2.07	250	17.24	100	6.9	1600	110.32	100	6.9	1600	110.32	100	6.9	1800	124.1	100	6.9	1800	124.1	100	6.9	1800	124.1	100	6.9	1800	124.1
1.5	40	25	1.72	200	13.79	80	5.51	1500	103.41	80	5.51	1500	103.41	80	5.51	1500	103.41	80	5.51	1700	117.2	80	5.51	1700	117.2	80	5.51	1700	117.2
2	50	22	1.52	150	10.34	50	3.45	1400	96.53	50	3.45	1400	96.53	50	3.45	1600	110.32	50	3.45	1600	110.32	50	3.45	1600	110.32	50	3.45	1600	110.32
3	80	20	1.38	125	8.62	45	3.1	1300	89.63	45	3.1	1300	89.63	45	3.1	1300	89.63	45	3.1	1500	103.41	45	3.1	1500	103.41	45	3.1	1500	103.41
4	100	20	1.38	100	6.9	40	2.76	1300	89.63	40	2.76	1300	89.63	40	2.76	1300	89.63	40	2.76	1500	103.41	40	2.76	1500	103.41	40	2.76	1500	103.41
6	150	20	1.38	80	5.51	35	2.41	800	55.16	35	2.41	800	55.16	35	2.41	850	58.6	35	2.41	850	58.6	35	2.41	850	58.6	35	2.41	850	58.6
8	200	15	1.03	60	4.14	25	1.72	750	51.71	—	—	25	1.72	750	51.71	25	1.72	800	55.16	30	2.07	800	55.16	—	—	—	—	—	—
10	254	15	1.03	60	4.14	25	1.72	750	51.71	—	—	25	1.72	750	51.71	25	1.72	800	55.16	30	2.07	800	55.16	—	—	—	—	—	—
12	305	15	1.03	60	4.14	25	1.72	750	51.71	—	—	25	1.72	750	51.71	25	1.72	800	55.16	30	2.07	800	55.16	—	—	—	—	—	—
14	355	15	1.03	60	4.14	25	1.72	750	51.71	—	—	25	1.72	750	51.71	25	1.72	800	55.16	30	2.07	800	55.16	—	—	—	—	—	—
16	406	15	1.03	60	4.14	25	1.72	750	51.71	—	—	25	1.72	750	51.71	25	1.72	800	55.16	30	2.07	800	55.16	—	—	—	—	—	—
18	457	13	0.9	40	2.76	25	1.72	500	34.47	—	—	25	1.72	500	34.47	25	1.72	500	34.47	30	2.07	500	34.47	—	—	—	—	—	—
20	508	13	0.9	40	2.76	25	1.72	500	34.47	—	—	25	1.72	500	34.47	25	1.72	500	34.47	30	2.07	500	34.47	—	—	—	—	—	—
24	609	10	0.69	35	2.41	25	1.72	500	34.47	—	—	25	1.72	500	34.47	25	1.72	500	34.47	30	2.07	500	34.47	—	—	—	—	—	—
30	762	10	0.69	35	2.41	25	1.72	250	17.24	—	—	25	1.72	250	17.24	25	1.72	250	17.24	30	2.07	250	17.24	—	—	—	—	—	—
36	914	10	0.69	35	2.41	25	1.72	250	17.24	—	—	25	1.72	250	17.24	25	1.72	250	17.24	30	2.07	250	17.24	—	—	—	—	—	—

### MANUFACTURING RANGES

- All standard disks are available with 0%, 5% and 10% manufacturing ranges
- On disks with 5% and 10% manufacturing ranges, the total range is placed on the minus side of the requested rating
- Disks with 0% manufacturing range will be marked at requested rating

### EXAMPLE:

If a 100 psi burst pressure RB-90 disk is ordered with a zero manufacturing range, the disk will be tagged 100 psi burst pressure.

If a similar RB-90 Disk is ordered with a 10% manufacturing range, it may be tagged at any pressure between 90 psi and 100 psi.

### BURST TOLERANCES

Burst tolerances are the average variation from the above tagged burst pressure.

Disks tagged above 40 psig.....+5%

Disks tagged 40 psig and below.....+2psi

MAXIMUM TEMPERATURE		
DISK MATERIAL	Unlined Disks	Teflon-Lined Disks
Aluminum	250°F 121°C	250°F 121°C
Nickel/Alloy 200	750°F 399°C	400°F 204°C
Monel® Alloy 400	900°F 482°C	400°F 204°C
Inconel®/Alloy 600	1100°F 593°C	400°F 204°C
316 S.S.	500°F 255°C	400°F 204°C
Hastelloy® C-276/ Alloy C-276	900°F 482°C	400°F 204°C

### RB-90 SAFETY HEAD SPECIFICATIONS

150# ANSI											
ASSEMBLY HEIGHT DIMENSIONS								OUTSIDE DIAMETER			
Nom. Pipe & Disk Size		RB-7R		RB-7FF		RB-7FS		Assy. RB-7R		Assy. RB-7FF RB-7FS	
in.	mm	in.	mm.	in.	mm.	in.	mm.	in.	mm.	in.	mm.
1	25	1.50	38.1	1.63	41.40	1.50	38.1	2.50	63.50	4.25	107.95
1.5	38.1	1.56	39.62	1.81	45.97	1.56	39.62	3.25	82.55	5.00	127.00
2	50	1.69	42.9	1.88	47.75	1.69	42.9	4.00	101.60	6.00	152.40
3	80	2.13	54.13	2.31	58.67	2.13	54.13	5.25	133.35	7.50	190.50
4	100	2.69	68.33	2.75	69.85	2.75	69.85	6.75	171.45	9.00	228.60
6	150	3.44	87.37	3.56	90.42	3.44	87.37	8.63	219.20	11.00	279.40
8	200	4.44	112.77	4.44	112.77	4.44	112.77	10.94	277.87	13.50	342.90
10	254	5.13	130.32	5.13	130.32	5.13	130.32	13.25	336.55	16.00	406.40
12	305	5.88	149.35	5.88	149.35	5.88	149.35	16.00	406.40	19.00	482.60
14	355	6.44	163.57	6.44	163.57	—	—	17.63	447.80	21.00	533.40
16	406	7.19	182.63	7.19	182.63	—	—	20.13	511.30	23.50	596.90
18	457	7.94	201.67	7.94	201.67	—	—	21.50	546.10	25.00	635.00
20	508	8.75	222.25	8.75	222.25	—	—	23.75	603.25	27.50	698.50
24	609	11.25	285.75	11.25	285.75	10.50	266.70	28.12	714.25	32	812.80
30	762	12.12	307.85	12.12	307.85	—	—	34.62	879.35	38.75	984.25
36	914	15.00	381	15.00	381.00	—	—	41.12	1044.45	46	1168.40
300# ANSI											
4	100	2.69	68.33	2.75	69.85	2.75	69.85	6.75	171.45	9.00	228.60
6	150	3.44	87.37	3.56	90.42	3.44	87.37	8.63	219.20	11.00	279.40
8	200	4.44	112.77	4.44	112.77	4.44	112.77	10.94	277.87	13.50	342.90
10	254	5.13	130.32	5.13	130.32	5.13	130.32	13.25	336.55	16.00	406.40
12	305	5.88	149.35	5.88	149.35	5.88	149.35	16.00	406.40	19.00	482.60
14	355	6.44	163.57	6.44	163.57	—	—	17.63	447.80	21.00	533.40
16	406	7.19	182.63	7.19	182.63	—	—	20.13	511.30	23.50	596.90
18	457	7.94	201.67	7.94	201.67	—	—	21.50	546.10	25.00	635.00
20	508	8.75	222.25	8.75	222.25	—	—	23.75	603.25	27.50	698.50
600# ANSI											
1	25	1.50	38.1	1.63	41.40	1.50	38.1	2.50	63.50	4.25	107.95
1.5	38.1	1.56	39.62	1.81	45.97	1.56	39.62	3.25	82.55	5.00	127.00
2	50	1.69	42.9	1.88	47.75	1.69	42.9	4.00	101.60	6.00	152.40
3	80	2.13	54.13	2.31	58.67	2.13	54.13	5.25	133.35	7.50	190.50
4	100	2.69	68.33	2.75	69.85	2.75	69.85	6.75	171.45	9.00	228.60
6	150	3.44	87.37	3.56	90.42	3.44	87.37	8.63	219.20	11.00	279.40
8	200	4.44	112.77	4.44	112.77	4.44	112.77	10.94	277.87	13.50	342.90
10	254	5.13	130.32	5.13	130.32	5.13	130.32	13.25	336.55	16.00	406.40
12	305	5.88	149.35	5.88	149.35	5.88	149.35	16.00	406.40	19.00	482.60
14	355	6.44	163.57	6.44	163.57	—	—	17.63	447.80	21.00	533.40
16	406	7.19	182.63	7.19	182.63	—	—	20.13	511.30	23.50	596.90

## **RB-7R BOLTED TYPE SAFETY HEADS**

Pictured is the Type RB-7R Quik-Sert safety head with side-mounted screws and bars. RB-90 Rupture Disks can only be used in BS&B RB Type Safety Heads to guarantee correct burst pressures.

RB-90 Safety Heads require preassembly of reverse buckling disk in RB-90 flanges to assure proper seating. Standard RB-90 inlet and outlet flanges are flat face. Ring joint, raised face and tongue-and-groove facings are available. Standard knife blade material is heat-treated stainless steel.



RB-7R Quik-Sert Safety Head

## **BOLTING TORQUE CRITICAL IN RB-90 DESIGN**

If bolting torque is too low in an RB-90 assembly, or if the compression load slacks off over a period of time because of a cold flowing gasket, a low pressure reversal can occur. So, select a gasket material that has a minimum tendency to relax in service.

Follow the torque values included in the installation instructions packed with each disk. Accessories take the work out of installing RB-90 Safety Heads. See Union/Bolted/QUIK-SERT Safety Heads Catalog for illustration of jack screws, eye bolts, baffle plate, gauge tap, full diameter preassembly.

If the RB-90 Safety Head is located on a glass-lined outlet nozzle and minimum torque specified can damage lining, use the RB-7FS assembly. This condition requires only enough torque on bolting of mating flange to seal and hold gaskets on one or both sides of assembly.

The RB-7FS assembly has enough capscrew bolting to provide the required holding force. Jack Screw specifications for RB-90 Safety Head Assembly RB-7R are the same as for QUICK-SERT Assembly FA-7R.

## **RUPTURE DISK OPTIONS**

The RB-90 is considered a highly specialized disk for use only in situations that cannot be met by more advanced disks because of size, burst pressure or temperature.

For most uses involving reverse buckling rupture disks, BS&B recommends the STA-SAF System and SURE-SAF System for longer service life and lower maintenance costs.

The STA-SAF System combines six rupture disk types and three safety head options that provide the user with extended service life in sizes ranging from 1"/25mm to 36"/900mm at burst pressures ranging from 5 psi/0.34 bar to 2000 psi/137.9 bar

The SUR-SAF System provides optimal safety by using Structural Apex Forming, the central feature on the disk dome which enhances the reliability of the burst pressure. Available in sizes ranging from 1"/25mm to 8"/200mm at burst pressures ranging from 30 psi/2.07 bar to 500 psi/34bar.



BS&B Safety Systems Limited  
Raheen Business Park  
Limerick, Ireland  
Tel: +353 61 227022.  
Fax: +353 61 227987  
Email: sales@bsb.ie  
www.bsbipd.com

BS&B Safety Systems (Asia Pacific) Pte Ltd  
10 Ang Mo Kio Street 65 #03-19 TECHPOINT  
Singapore 569059  
Tel: +65 6556 3916 Fax: +65 6484 3711  
Email: sales@bsbipd.com  
Website: www.bsbipd.com

BS&B Safety Systems (Japan) Co., Ltd.  
TVP BILD, 3-9-13 MORIYA-CHO  
KANAGAWA-KU,  
YOKOHAMA 221-0022, JAPAN  
Phone: 81 45 450 1271  
Fax: 81 45 451 3061  
information@bsb-systems.co.jp  
www.bsbipd.com



BS&B Safety Systems, L.L.C.  
7455 E. 46th St.  
Tulsa, OK 74145, USA  
Phone: 918-622-5950  
Fax: 918-665-3904  
Email: sales@bsbsystems.com  
www.bsbipd.com

BS&B Safety Systems Discos De Ruptura LTDA  
Rua Natal, 583-Vila Bertoga  
CEP: 03186-030 Sao Paulo/SP  
Ph: 55-11-6121-2800  
Fax: 55-11-6121-3801  
Email: sales@bsbbrasil.com  
www.bsbipd.com

Products, specifications and all data in this literature are subject to change without notice. Questions regarding product selection and specifications for specific applications should be directed to BS&B. BS&B is a registered trademark of BS&B Safety Systems, Ltd.

All sales are subject to BS&B standard terms and conditions of sales.

© 2008, BS&B Safety Systems, Limited. Printed in the U.S.A.