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ZOOK®

PRODUCT CATALOG 2020

Safety through knowledge and performance.

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Table of Contents

Table of Contents

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Rupture Disk Selection Guide

Reverse Acting (Compression-Loaded) Metal Rupture Disks

Disk Series	Seat Configuration Flow Direction	Sizes in./mm	Pressures psig/barg	Standard Operating Ratio	Vacuum Support Required	Certifications	Standard Mating Holder	Service
RA4	Flat Seat	in. 1 – 12 mm 25 – 300	psig 2 – 40 barg 0.14 – 2.76	95%	NO	ASME UD PED TÜV	**RAH**	Liquid & Gas
Solid metal, non-fragmenting design disk								
RA6	Flat Seat	in. 1 – 12 mm 25 – 300	psig 12 – 200 barg 0.83 – 13.79	95%	NO	ASME UD PED TÜV	**RAH**	Liquid & Gas
Solid metal, non-fragmenting design disk								
RA8	Flat Seat	in. 1 – 12 mm 25 – 300	psig 26 –1,000 barg 1.79 – 68.97	95%	NO	ASME UD PED TÜV	**RAH**	Liquid & Gas
Solid metal, non-fragmenting design disk								
RAX	Flat Seat	in. 1 – 12 mm 25 – 300	psig 27 –1,480 barg 1.86 – 102	95%	NO	ASME UD PED TÜV	**RAH**	Gas
Solid scored metal, non-fragmenting design disk								
RLP	Flat Seat	in. 1 – 12 mm 25 – 300	psig 2 – 40 barg 0.14 – 2.76	95%	NO	ASME UD PED TÜV	**RLP-I**	Liquid & Gas
Solid metal, non-fragmenting design disk								
SRA	Flat Seat	in. 1 – 12 mm 25 – 300	psig 27 – 1,480 barg 1.86 – 102	95%	NO	ASME UD PED TÜV	**SR7A**	Gas
Solid scored metal, non-fragmenting design disk								
URA	Flat Seat	in. 1 – 30 mm 25 – 750	psig 12 – 1,000 barg 0.83 – 68.9	95%	NO	ASME UD PED TÜV	**URA-I**	Liquid & Gas
Solid metal, non-fragmenting design disk								

Note: Standard operating ratio is stated as a % of minimum burst pressure (including burst tolerance)

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Rupture Disk Selection Guide

Forward Acting (Tension-Loaded) Metal Rupture Disks

Disk Series	Seat Configuration Flow Direction	Sizes in. / mm	Pressures psig / barg	Standard Operating Ratio	Vacuum Support Required	Certifications	Standard Mating Holder	Service
ARD	Flange Mounted	in. 1 to 44 mm 25 – 1,100	psig 1 – 15 barg 0.07 – 1.03	50%[1]	YES	PED TÜV	Mounts between ANSI & DIN flanges *no holder required*	Liquid & Gas
Composite metal, fragment resistant design disk								
ARD	Bi-Directional, Bursts at the specified pressure in both directions							
ARD-L	Uni-Directional, Bursts at the specified pressure in one direction							
ARD-S	Bi-Directional, Bursts at two different set pressures as specified							
ARD-V	Uni-Directional, Bursts at the specified pressure in one direction, withstands full vacuum							
D	30° Angle Seat	in. 1/2 – 24 mm 13 – 600	psig 3 –2,500 barg 0.21 – 172	85%	YES	ASME UD PED TÜV	**7A** Screw Type **Union Type**	Liquid & Gas
Composite metal, fragment resistant design disk (when supplied with non metallic seal)								
D	Slotted metal top section and a Teflon or metal seal							
D-R	D Disk with a protective bottom ring							
R-D-R	D Disk with a top and bottom protective ring							
D-V	D Disk with a bottom vacuum support							
L-D	D Disk with a Teflon seal and top liner							
TLDV	D Disk designed to withstand full vacuum and top liner (Non-ASME UD)							
FAC	Flat Seat	in. 1 – 12 mm 25 – 300	psig 3 – 2,500 barg 0.21 –172	85%	YES	PED TÜV	**FAH**	Liquid & Gas
Composite metal, fragment resistant design disk (when supplied with non metallic seal)								
FAC	Slotted metal top section and a Teflon or metal seal							
FAC-R	FAC Disk with a protective bottom ring							
FAC-V	FAC Disk with a bottom vacuum support							
FAX	Flat Seat	in. 1 – 12 mm 25 – 300	psig 45 – 3,600 barg 3.10 – 248	90%	Contact ZOOK	ASME PED TÜV	**FAH**	Liquid & Gas
Solid metal scored, non-fragmenting design disk								
FDZ	Flat Seat	in. 1/2 – 30 mm 13 – 762	psig 3 – 2,500 barg 0.21 – 172	85%	YES	PED TÜV	**UHZ**	Liquid & Gas
Composite metal, fragment resistant design disk (when supplied with non metallic seal)								
FDZ	Slotted metal top section and a Teflon or metal seal							
FDZ-R	FDZ Disk with a protective bottom ring							
R-FDZ-R	FDZ Disk with a top and bottom protective ring							
FDZ-V	FDZ Disk with a bottom vacuum support							
FDZ-H	FDZ Disk with a bottom handling support							

Note:

- Standard operating ratio is stated as a % of minimum burst pressure (including burst tolerance)

[1] ARD operating ratio is applied to the marked rating on the disk tag.

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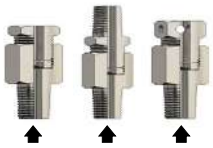
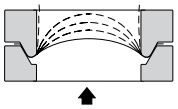
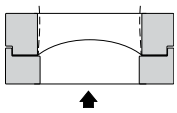
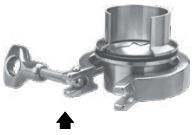
Rupture Disk Selection Guide

Forward Acting (Tension-Loaded) Metal Rupture Disks

Disk Series	Seat Configuration Flow Direction	Sizes in./mm	Pressures psig/barg	Standard Operating Ratio	Vacuum Support Required	Certifications	Standard Mating Holder	Service
FPB	Screw Type 	in. 3/16 - 24 mm .19 - 610	psig 5 - 50,000 barg 0.34 - 3,447	75%	YES	PED TÜV	**Screw Type** 	Liquid & Gas
Solid metal, fragmenting design disk								
PB	30° Angle Seat 	in. 1/4 – 24 mm 6 – 610	psig 3 – 60,000 barg 0.21 – 4,137	75%	YES	ASME UD PED TÜV	**7A**  **Screw Type**  **Union Type** 	Liquid & Gas
Solid metal, fragmenting design disk								
SFAZ	Flat Seat 	in. 1/2 – 24 mm 13 – 610	psig 15 – 3,600 barg 1 – 248	90%	Contact ZOOK	ASME UD PED TÜV	**UHZ** 	Liquid & Gas
Solid metal scored, non-fragmenting design disk								

Sanitary Rupture Disks

Disk Series	Sizes in./mm	Pressures psig/barg	Standard Operating Ratio	Vacuum Support Required	Certifications	Features	Disk Mounting Flow Direction	Service
RAUS 	in. 1 – 4 mm 25 – 100	psig 18 – 300 barg 1.24 – 20.69	95%	NO	ASME UD PED KOSHA	Standard black Buna-N, EPDM, Viton gasket supplied with disk. PTFE optional. Other materials on request.		Liquid & Gas
Solid metal, non-fragmenting design disk, unscored								
RLPS 	in. 1 – 4 mm 25 – 100	psig 4 – 83 barg 0.27 – 5.72	95%	Consult ZOOK	PED KOSHA	Standard black Buna-N, EPDM, Viton gasket supplied with disk. PTFE optional. Other materials on request.		Liquid & Gas
Solid metal, non-fragmenting design disk, unscored								
SD 	in. 1 – 4 mm 25 – 100	psig 1.5 – 50 barg 0.10 – 3.45	90%	Contact ZOOK for pressures less than 25 psig	ASME UD PED TÜV	FEP liner on process side. Mounts using standard sanitary style process side gasket and vent side O-ring.		Liquid & Gas
Graphite rupture disk								

Note: Standard operating ratio is stated as a % of minimum burst pressure (including burst tolerance)

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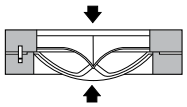
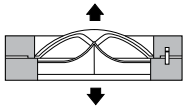
Ultra-Low Pressure Sanitary Fitting Rupture Disks

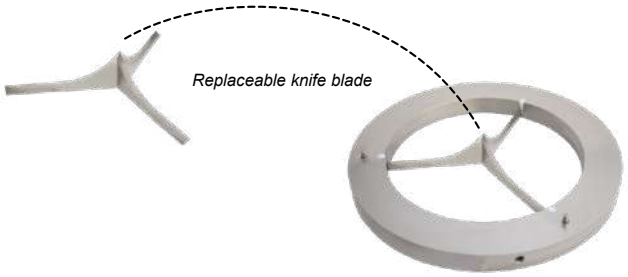
Disk Series	Disk Size in./mm	Pressures	Standard Operating Ratio	Vacuum Support Required	Certifications	Features	Standard Mating Holder	Service
ProVAC-S / ProPOS-S 	in. 2 - 4 mm 50 - 100	Ultra low rating 1" of water column to 109" Burst Cap 7 to 150 psig	60% w/316 girdle 85%	Non opening support is included as standard	PED TÜV	Dual-acting sanitary fitting design with laser cut metal top section and girdle		Liquid & Gas

Ultra-Low Pressure Rupture Disks

Disk Series	Seat Configuration Flow Direction	Sizes in./mm	Pressures pos/neg	Standard Operating Ratio pos/neg	Certifications	Standard Mating Holder	Service
Z-POS (ProPos) 	Flat Seat 	in. 2 – 12 mm 50 – 300	positive 1" of water column to 109" negative 2 psig to 150 psig	60% w/316 girdle 85%	PED TÜV		Liquid & Gas
Z-VAC (ProVac) 	Flat Seat 	in. 2 – 12 mm 50 – 300	positive 2 psig to 150 psig negative 1" of water column to 109"	85% 60% w/316 girdle	PED TÜV		Liquid & Gas

Z-VAC/Z-POS Unique Replaceable Knife Blade Design

- Dull blades can result in collapsed tanks
- Allows higher level of safety maintenance
- Availability of spare blades on site leads to quick changeovers and greater operational safety
- Provides lower cost inventory compared to other designs
- Lower costs, less downtime, enhanced safety
- Replacement blades - easy to change



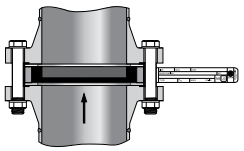
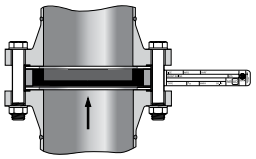
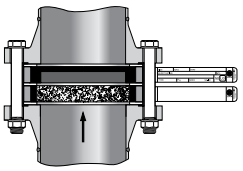
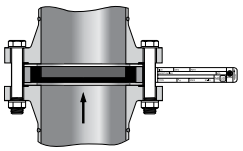
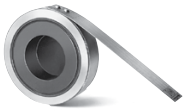
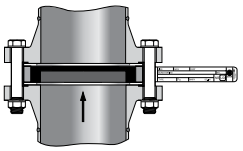
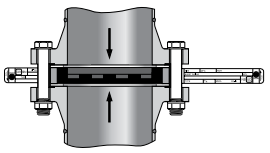
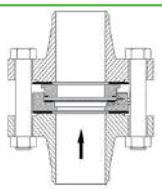
How Does Z-VAC/Z-POS Work?

Ultra-Low pressure relief is controlled by a laser cut collapsible girdle. For Ultra-Low vacuum protection (Z-VAC) vacuum pressure pulls the Teflon seal against the girdle. For Ultra-Low over pressure protection (Z-POS) positive pressure pushes the Teflon seal against the girdle deflecting it towards the razor sharp knife-blades built into the holder. As pressure approaches the relief setting, the girdle collapses allowing the seal to be cut by the knife-blades. Laser cut holes in the mid pressure burst cap or non-opening support provide optimum flow when the rupture disk relieves in the Ultra-Low pressure direction.

Note: Standard operating ratio is stated as a % of minimum burst pressure (including burst tolerance)

Rupture Disk Selection Guide

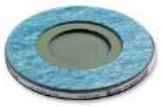
Graphite Rupture Disks

Disk Series	Mounts directly between standard ASME B16.5 Class, DIN, or JIS flanges	Sizes in./mm	Pressures psig/barg	Maximum Operating Ratio	Vacuum Support Required	Certifications	Service
FS INVERTED	 	in. 1 – 24 mm 25 – 610	psig 1.00 – 1,000 barg 0.07 – 69	90%	Consult ZOOK	ASME UD PED	Liquid & Gas
Best choice for highly corrosive and broad temperature range applications							
FS-V INVERTED	FS Inverted Disk with internal vacuum support						
DUPLEX	 	in. 1/2 – 24 mm 13 – 610	psig 0.50 – 1,000 barg 0.03 – 69	90%	Contact ZOOK on pressures less than 25 psig	ASME UD PED	Liquid & Gas
Highly corrosive applications							
INSULATED UNIT	 	in. 1 – 24 mm 25 – 600	psig 0.25 – 150 barg 0.02 – 10.34	90%	Contact ZOOK on pressures less than 25 psig		Gas
For temperatures exceeding 430°F (221°C) to 700°F (371°C)							
INVERTED	 	in. 1/2 – 24 mm 13 – 600	psig 0.25 – 1,000 barg 0.02 – 69	90%	Contact ZOOK on pressures less than 25 psig	ASME UD PED	Liquid & Gas
Best choice for higher burst ratings							
MONO	 	in. 1/2 – 24 mm 13 – 600	psig 0.25 – 150 barg 0.02 – 10.34	90%	Yes on pressures less than 25 psig	ASME UD PED	Liquid & Gas
Best choice for low and intermediate burst ratings							
TWO-WAY	 	in. 1-1/2 – 24 mm 38 – 610	psig 0.25 – 150 barg 0.02 – 10.34	90%		PED	Liquid & Gas
Dual rated to protect against two different pressures in opposite directions							
RT2 **RT2T**	 	in. 1 - 12 mm 25 - 300	psig 1 – 250 barg 1.07 – 17.25	90%	Contact ZOOK on pressures less than 25 psig	PED	Liquid & Gas
Replaceable element for use in graphite or stainless steel holder							

Note: Standard operating ratio applies to the marked rating on the disk tag on disks marked above 40 psig. Contact ZOOK for operating ratio on disks marked

Rupture Disk Selection Guide

Transportation Rupture Disks

Disk Series	Disk Mounting Flow Direction	Sizes in./mm	Standard Pressures psig / barg	Standard Operating Ratio	Vacuum Support Required	Certifications	Features	Service
AC (Acid Car)  Graphite rupture disk	2" AAR rubber covered safety vents 	in. 2 mm 50	psig 60, 100, 165 barg 4.14, 6.89, 11.38	90%	NO	PED	• PTFE & Viton liner on process side • Carbon Steel Armor • TFE coated green • Non-Asbestos gasket on vent side	Liquid & Gas
RC (Rail Car)  Graphite rupture disk	2" AAR metal seated safety vents 	in. 2 mm 50	psig 60, 100, 165 barg 4.14, 6.89, 11.38	90%	NO	PED	• PTFE & Viton liner on process side • Carbon Steel Armor • TFE coated green • Non-Asbestos gasket on vent side	Liquid & Gas
TD  Graphite rupture disk	Standard ASME B16.5 Class 150 flanges 	in. 2, 3, 4 mm 50, 80, 100	psig 30, 35, 40, 45, 50 barg 2.07, 2.41, 2.76, 3.10, 3.45	90%	NO	ASME UD PED	• PTFE liner on process side • Carbon Steel Armor • TFE gasket on pressure side • Non-Asbestos gasket on vent side • TFE coated green	Liquid & Gas
ICP  Solid metal scored, non-fragmenting design disk	Standard ASME B16.5 Class 150 & ISO flanges 	in. 2 1/2 & 3 mm 65, 80	psig 54.4, 63.8 barg 3.75, 4.40	90%	Consult ZOOK	PED TÜV	• Nickel disk construction • PTFE gasket & PFA liner on process side • 316 locating ring and PTFE gasket on vent side • Custom pressures also available	Liquid & Gas
TCP-NR / TCP-R  Composite metal, fragment resistant design disk	Fits standard tank car safetv vents  **TCP-NR** Fits standard tank car safety vents  **TCP-R**	in. 2 mm 50	psig 75, 100, 165 barg 5.17, 6.90, 11.38	55%	NO	PED TÜV	• 316 construction w/PFA seal • 316 locating ring on vent side • Supplied with PTFE inlet gasket • Custom pressures also available	Liquid & Gas
TCP-S  Solid metal scored, non-fragmenting design disk	Fits standard tank car safety vents 	in. 2 mm 50	psig 75, 100, 165 barg 5.17, 6.90, 11.38	90%	NO	PED TÜV	• Nickel disk construction • PTFE gasket & PFA liner on process side • 316 locating ring and PTFE gasket on vent side • Custom pressures also available	Liquid & Gas

Note: Standard operating ratio is stated as a % of minimum burst pressure (including burst tolerance)

Rupture Disk Selection Guide

Custom Welded Assemblies (CWA)

Custom welded assemblies are ideal for customers that have special requirements in the manufacturing, production and testing of rupture disks that can not be met using standard rupture disk products.

The advanced welding technology of CWA provides additional precision resulting in the ability to relieve excessive pressure conditions from enclosed pressure circuits in just milliseconds. They are manufactured to exacting specifications to meet very low leakage levels, close pressure tolerances, weight restrictions and can also incorporate various material selection. CWA products can also be used as pressure activation devices in control sequences.

CWA are manufactured with the highest quality control:

- 100% leak testing
- Burst testing in accordance to specified standards
- Weld & body pressure testing
- Digital inspection of threads & body dimensions
- Ultra sonically cleaned
- 100% Material Traceability

Extrusion Burst Plugs

Extrusion Burst Plugs are pressure relief devices designed for over-pressure protection of plastic and rubber extrusion processes

- Each EBP assembly consists of a threaded tubular body with a rupture disk welded onto the process end
- ZOOK has the ability to supply any specific combinations of dimensions, threading, and body configuration
- Stocked burst ratings 1,000 psig to 15,000 psig in 500 psig increments (for higher pressures contact ZOOK)
- 0% manufacturing range
- Burst tolerance ± 10% with typical standard deviation of ±1% throughout the temp range of 300°F to 750°F (149°C to 399°C)
- Many standard EBPs in stock

Explosion Vents

CV-F Series
Flat composite design with single hinge bursting pattern

CV-P Series
Domed composite design with single hinge bursting pattern

CV-II-F Series
Flat composite design with segmented bursting pattern

CV-II-P Series
Domed composite design with segmented bursting pattern

Burst Sensors / Indicators

BA Burst Indicator

The BA Rupture Disk Burst Sensor alerts personnel to take immediate action to protect system components from further damage upon an overpressure event.
The BA installs on vent side of the disk holder or alone and requires minimal flange face-to-face clearance.

BI Integral Burst Indicator

The BI Series integral burst indication offers a simple and effective means of indication over-pressure or discharge indication for metal rupture disk applications. Affixed to the outlet side of the rupture disk isolating the indicator from process media.

RDI Burst Indicator

Over pressure or discharge indication for rupture disk and relief valve applications. The RDI installs onto the vent side of a rupture disk assembly or onto the discharge side of a relief valve.
One time use, LOW COST.

ZAM Plus Monitor

The ZAM series Alarm Monitor is a surface mounted monitor designed to remotely detect the condition of a rupture disk in service. Used in conjunction with the ZOOK ZENSOR®, BA, RDI, BI or similar devices, it will immediately warn the operator of a ruptured disk.

ZENSOR®

Designed for use with ZOOK Impervious Graphite Rupture disks 1” and larger.
It can be used with ZOOK Two-Way Disks in systems with pressure and/or vacuum conditions and with ZOOK Bak-Pressure™ Disks in systems where extreme back pressures develop.

Z-Alert

The non-invasive detection device is situated remote of the disk allowing maintenance and inspection without interfering with the disk assembly.
This product meets global Exd certification requirements and its robust design makes it suitable for use in arduous and hazardous environments.

Accessories

Pipe End Covers

Applications include protection of safety relief valves, rupture disks, manifold piping systems, ductwork, common header systems, flame stacks, etc.

Accessory Kit

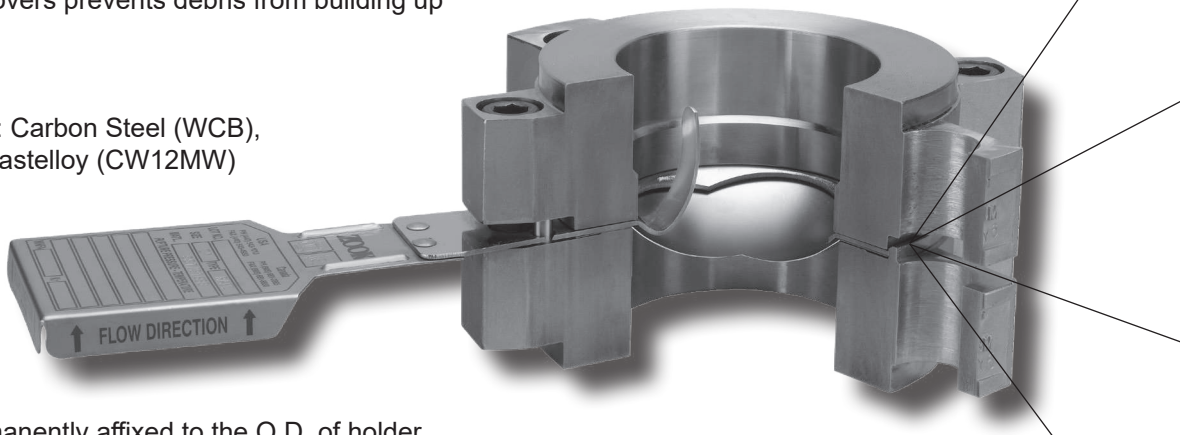
Used to monitor the air gap between a rupture disk and relief valve or the presence of back pressure in a header system.

Reverse Acting Rupture Disks
RA Series

In a continued effort to provide cutting edge products and technologies for rupture disk users, ZOOK is pleased to introduce our RA Series of Rupture Disks and Holders. The RA Series offers one unique holder design for use with multiple types of ZOOK Reverse-Acting metal rupture disks.

Rupture Disk Holder Features

- RAH Series offers one unique holder design that fits with multiple types of ZOOK Reverse-Acting metal rupture disks (RA4, RA6, RA8, RAX)
- Pre-Torque Design allows for:
  a) Pre-assembly of a rupture disk into a holder prior to field installation
  b) Removal of the assembly from the piping system for inspection without disturbing the seal integrity of the rupture disk
  c) Pre-torque bolts properly seat the disk by engaging the holder bite
- Disk Dome is contained within holder's inlet, which prevents damaging the disk during installation into mating flanges
- Locating Pin allows only reverse-acting type disks to be mounted into holder
- Fluoropolymer coated socket head cap screws resists corroding to holder assembly and provides easy removal without special sockets
- Polyethylene cap screw covers prevents debris from building up in cap screw head
- Sizes 1" thru 12"
- Standard holder materials: Carbon Steel (WCB), Stainless Steel (CF3M), Hastelloy (CW12MW)



RAH "Pre-Torque" Holder

- Holder information is permanently affixed to the O.D. of holder
- Bubble tight metal-to-metal bite and disk seal
- Flow direction arrows on disk tag and holder provides permanent visual verification that holder assembly is properly oriented in the piping system
- ANSI, DIN, and JIS Flange class and type specific, guards against installing an assembly into mating flanges with a different pressure rating than the rupture disk holder
- Positioning hole in mounting lug is located in the exact position as the mating flange and allows for proper alignment. It can also be used as an extra "hand" when installing into horizontal piping
- For custom materials and alternative flanges (types/ratings) ZOOK offers custom inserts (RAHI) or full flanges (RAH7) and custom overall heights

RAHI (Insert holder)

RAH7 (Full flanged pre-torque holder)

Reverse Acting Rupture Disks
RA Series

RA4

- Solid metal design
- Ultra low pressure range
- Burst ratings from 2 psig (0.14 barg) to 40 psig (2.76 barg)

RA6

- Solid metal design
- Low pressure range
- Burst ratings from 12 psig (0.83 barg) to 200 psig (13.79 barg)

RA8

- Solid metal design
- Mid pressure range
- Burst ratings from 26 psig (1.79 barg) to 1000 psig (68.97 barg)

RAX

- Solid metal cross-scored design
- High pressure range
- Gas service only
- Burst ratings from 27 psig (1.86 barg) to 3705 psig (255.45 barg)

Rupture Disk Features

- Designed for Non-fragmentation
- Operating ratios up to 95% of the low end of burst tolerance
- Disk design offers high cycle life
- Suitable for liquid, gas, or two-phase applications (RAX available for gas service only)
- Standard manufacturing design range and total tolerance ensures marked rating on disk tag does not exceed the MAWP of equipment
- Withstands full vacuum without vacuum support
- Wide range of standard and exotic materials available
- Sizes from 1” (25mm) through 12” (300mm)
- Unique alignment pin design ensures proper disk orientation into RAH Series disk holder
- 3-dimensional stainless steel tag permanently attached and engraved with complete disk specifications
- ASME UD, CE (PED), and TÜV compliance available

Options

RA4-L*, RA6-L*, RA8-L*, RAX-L*
A process side PFA Teflon liner provides protection from corrosive media. The process side liner is placed between the disk and process side ring.

RA4-BI*, RA6-BI*, RA8-BI*, RAX-BI*
Equipped with ZOOK’s Integral Burst Indicator.

RA4+, RA6+, RA8+, RAX+
Factory tested to 100% of the low end of the tolerance to ensure no disks will burst low.

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.

Certified Flow Resistance Factors (Kr)

Type	Krl (Liquid)	Krg (Gas)
RA4 Series	1.63	1.63
RA6 Series	0.98	0.80
RA8 Series	1.16	0.59
RAX Series	▲	2.00

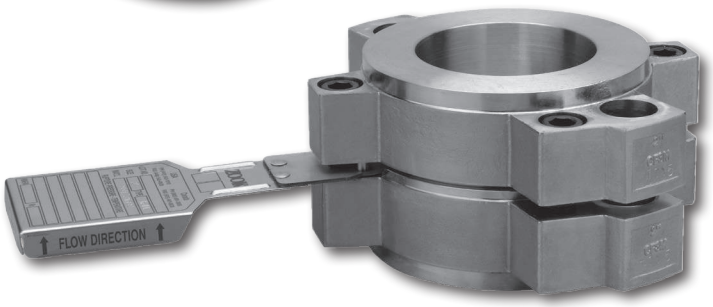
▲ – Not Available

Reverse Acting Rupture Disks
RA4 Series

The RA Series of rupture disks are complementary designs to cover the majority of rupture disk applications and are designed to be used in the RAH Series disk holder.

Features

- Designed for Non-fragmentation
- Operating ratios up to 95% of the low end of burst tolerance
- Disk design offers high cycle life
- Suitable for liquid, gas, or two-phase applications
- Standard manufacturing design range and total tolerance ensures marked rating on disk tag does not exceed the MAWP of equipment
- Withstands full vacuum
- Wide range of standard and exotic materials available
- Sizes from 1” (25mm) through 12” (300mm)
- Burst ratings from 2 psig (0.14 barg) to 40 psig (2.76 barg)
- Unique alignment pin design ensures proper disk orientation into RAH Series disk holder
- 3-dimensional stainless steel tag permanently attached and engraved with complete disk specifications
- ASME UD, CE (PED), and TÜV compliance available

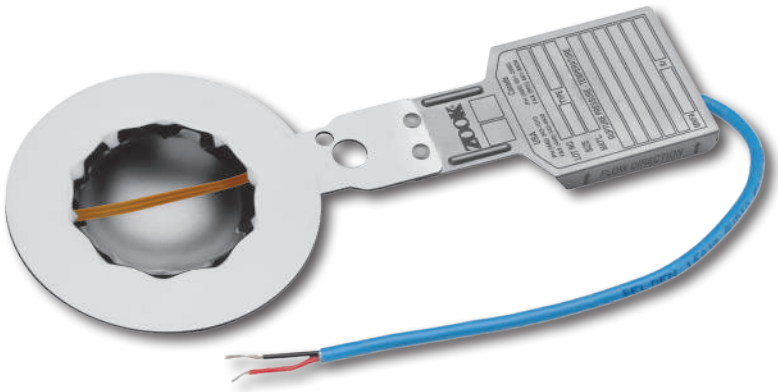


RA4 Series disk mounts into RAH Series disk holder (refer to RAH Series data sheet)

Options

RA4-L*	A process side PFA Teflon liner provides protection from corrosive media. The process side liner is placed between the disk and process side ring.
RA4-BI*	Equipped with ZOOK’s Integral Burst Indicator.
RA4+	Factory tested to 100% of the low end of the tolerance to insure no disks will burst low.

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.



Safety Relief Valve Protection

When a disk is mounted under a Safety Relief Valve, the working components of the valve are isolated from hostile environments.

Reverse Acting Rupture Disks
RA4 Series

Minimum and Maximum Pressure Ratings - psig @ 72°F (barg @ 22°C)

Disk Size	Minimum Burst Pressure							Maximum Burst Pressure	MNFA in² (mm²)
	316	Inconel 600	Monel 400	Nickel 200/201	Hastelloy C276	RA4-L[1]	RA4-BI		
1"	13	15	15	15	23	+5	Same as minimum material	40	0.86
25 mm	0.89	1.03	1.03	1.03	1.58	+0.34		2.76	554
1-1/2"	9	10	10	10	15	+5		25	1.63
40 mm	0.62	0.69	0.69	0.69	1.03	+0.34		1.72	1,051
2"	6	6	6	6	8	+3		25	2.78
50 mm	0.41	0.41	0.41	0.41	0.55	+0.21		1.72	1,790
3"	4	5	5	5	6	+2		25	5.69
80 mm	0.27	0.34	0.34	0.34	0.41	+0.14		1.72	3,670
4"	3	4	4	4	5	+2		20	9.51
100 mm	0.21	0.28	0.28	0.28	0.34	+0.14		1.38	6,135
6"	2	4	4	3	5	+1		18	19.46
150 mm	0.14	0.28	0.28	0.21	0.34	+0.07		1.24	12,554
8"	2	3	3	3	4	+1		18	33.28
200 mm	0.14	0.21	0.21	0.21	0.28	+0.07		1.24	21,470
10"	2	3	3	3	4	+1		14	50.78
250 mm	0.14	0.21	0.21	0.21	0.28	+0.07		0.97	32,761
12"	2	3	3	3	4	+1		14	71.97
300 mm	0.14	0.21	0.21	0.21	0.28	+0.07		0.97	46,432
Max. Temp.	900°F (482°C)	900°F (482°C)[2]	800°F (427°C)	750°F (399°C)	900°F (482°C)	500°F (260°C)	400°F (204°C)		

Notes: For materials, sizes, burst ratings and temperatures not shown, contact ZOOK
[1] Add pressure to min for material
[2] Contact ZOOK for higher temperatures

Manufacturing Design Range & Total Performance Tolerance

ASME						PED				
Burst Pressure (psig)		Manufacturing Design Range			Burst Tolerance	Burst Pressure (barg)		Total Performance Tolerance		
Minimum	Maximum	Good	Better	Best		Minimum	Maximum	Good	Better	Best
1.0	<2.5	-10%	-5%	-0%	±0.33 psig	0.069	<0.172	±50%	-	±0.023 barg
2.5	<5.0	-10%	-5%	-0%	±0.5 psig	0.172	<0.345	±30%	±25%	±0.035 barg
5.0	<7.0	-10%	-5%	-0%	±0.5 psig	0.345	<0.483	±20%	±17.5%	±0.035 barg
7.0	<11.0	-10%	-5%	-0%	±0.8 psig	0.483	<0.759	±20%	±15%	±0.055 barg
11.0	<15	-10%	-5%	-0%	±1.3 psig	0.759	<1.034	±20%	±15%	±0.090 barg
15.0	<26	-10%	-5%	-0%	±2.0 psig	1.034	<1.793	±20%	±15%	±0.138 barg
26.0	<40	-10%	-5%	-0%	±2.0 psig	1.793	<2.758	±15%	±12.5%	±0.138 barg
40.0	Max	-10%	-5%	-0%	±5%	2.758	Max	±10%	±7.5%	±5%

Notes:
- 0% manufacturing range might not be available in all materials
- Burst tolerances are the maximum expected variation from the disk's marked burst pressure

Certified Flow Resistance Factors

Krl (Liquid)	Krg (Gas)
1.63	1.63

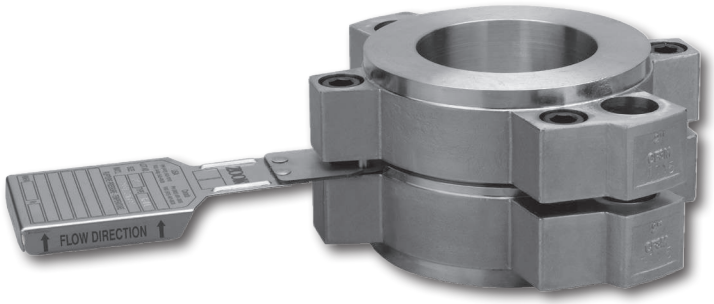
Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

Reverse Acting Rupture Disks
RA6 Series

The RA Series disk of rupture disks are complementary designs to cover the majority of rupture disk applications and are designed to be used in the RAH Series disk holder.

Features

- Designed for Non-fragmentation
- Operating ratios up to 95% of the low end of burst tolerance
- Disk design offers high cycle life
- Suitable for liquid, gas, or two-phase applications
- Standard manufacturing design range and total tolerance ensures marked rating on disk tag does not exceed the MAWP of equipment
- Withstands full vacuum without vacuum support
- Wide range of standard and exotic materials available
- Withstands back pressure up to the positive set pressure of the disk
- Sizes from 1” (25 mm) through 12” (300 mm)
- Burst ratings from 12 psig (0.83 barg) to 200 psig (13.79 barg)
- Resists product build-up. The smooth convex side of the disk is exposed to the process media
- Damage ratio of 1.0 or less
- Unique alignment pin design ensures proper disk orientation into RAH Series disk holder
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- ASME UD, CE (PED), and TÜV compliance available

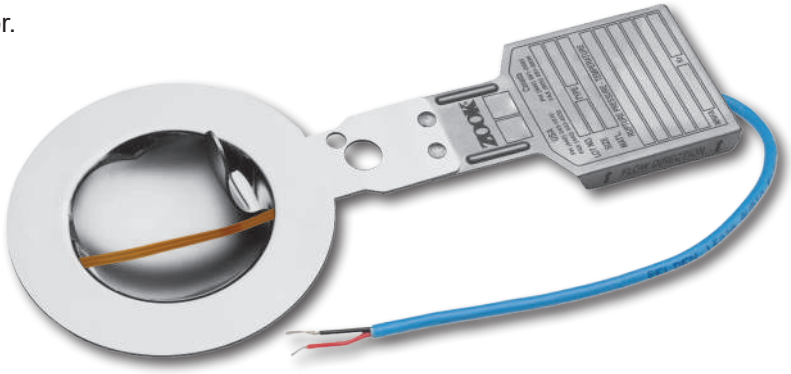


RA6 Series disk mounts into RAH Series disk holder (refer to RAH Series data sheet)

Options

RA6-L*	A process side PFA Teflon liner provides protection from corrosive media.
RA6-BI*	Equipped with ZOOK’s Integral Burst Indicator.
RA6+	Factory tested to 100% of the low end of the tolerance to insure no disks will burst low.

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.



Safety Relief Valve Protection

When a disk is mounted under a Safety Relief Valve, the working components of the valve are isolated from hostile environments.

Reverse Acting Rupture Disks
RA6 Series

Minimum and Maximum Pressure Ratings - psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressure							Maximum Burst Pressure		MNFA in² (mm²)
	316	Inconel 600	Monel 400	Nickel 200/201	Hastelloy C276	RA6-L	RA6-BI	Liquid	Gas	
1”	26	26	26	26	40	+8[1]	Same as minimum material	200	144	0.86
25 mm	1.79	1.79	1.79	1.79	2.89	+0.55		13.79	9.93	554
1-1/2”	22	20	20	20	22	Same as minimum material		167	120	2.00
40 mm	1.52	1.38	1.38	1.38	1.51			11.52	8.28	1,290
2”	20	18	18	18	20			118	100	3.36
50 mm	1.38	1.24	1.24	1.24	1.38			8.14	6.90	2,167
2-1/2”	19	17	17	17	20			93	83	4.79
64 mm	1.31	1.17	1.17	1.17	1.38			6.41	5.72	1,612
3”	18	16	16	16	18			68	65	7.25
80 mm	1.24	1.10	1.10	1.10	1.24			4.69	4.48	4,677
4”	16	14	14	14	16			69	55	12.53
100 mm	1.10	0.97	0.97	0.97	1.10			4.76	3.79	8,083
6”	14	12	12	12	14			67	45	26.59
150 mm	0.97	0.83	0.83	0.83	0.97			4.62	3.10	17,154
8”	12	12	12	12	12			54	35	45.48
200 mm	0.83	0.83	0.83	0.83	0.83			3.72	2.41	29,341
10”	12	12	12	12	12			46	30	70.52
250 mm	0.83	0.83	0.83	0.83	0.83			3.17	2.07	45,496
12”	12	12	12	12	12			38	26	98.33
300 mm	0.83	0.83	0.83	0.83	0.83			2.62	1.79	63,438
Max. Temp.	900°F (482°C)	900°F (482°C)[2]	800°F (427°C)	750°F (399°C)	900°F (482°C)	500°F (260°C)	400°F (204°C)			

Note: For materials, sizes, burst ratings and temperatures not shown, contact ZOOK
[1] Add pressure to minimum for metal
[2] Contact ZOOK for higher temperatures

Manufacturing Design Range & Total Performance Tolerance

ASME						PED				
Burst Pressure (psig)		Manufacturing Design Range			Burst Tolerance	Burst Pressure (barg)		Total Performance Tolerance		
Minimum	Maximum	Good	Better	Best		Minimum	Maximum	Good	Better	Best
1.0	<2.5	-10%	-5%	-0%	±0.33 psig	0.069	<0.172	±50%	-	±0.023 barg
2.5	<5.0	-10%	-5%	-0%	±0.5 psig	0.172	<0.345	±30%	±25%	±0.035 barg
5.0	<7.0	-10%	-5%	-0%	±0.5 psig	0.345	<0.483	±20%	±17.5%	±0.035 barg
7.0	<11.0	-10%	-5%	-0%	±0.8 psig	0.483	<0.759	±20%	±15%	±0.055 barg
11.0	<15	-10%	-5%	-0%	±1.3 psig	0.759	<1.034	±20%	±15%	±0.090 barg
15.0	<26	-10%	-5%	-0%	±2.0 psig	1.034	<1.793	±20%	±15%	±0.138 barg
26.0	<40	-10%	-5%	-0%	±2.0 psig	1.793	<2.758	±15%	±12.5%	±0.138 barg
40.0	Max	-10%	-5%	-0%	±5%	2.758	Max	±10%	±7.5%	±5%

Notes:
- 0% manufacturing range might not be available in all materials
- Burst tolerances are the maximum expected variation from the disk’s marked burst pressure

Certified Flow Resistance Factors

Krl (Liquid)	Krg (Gas)
0.98	0.80

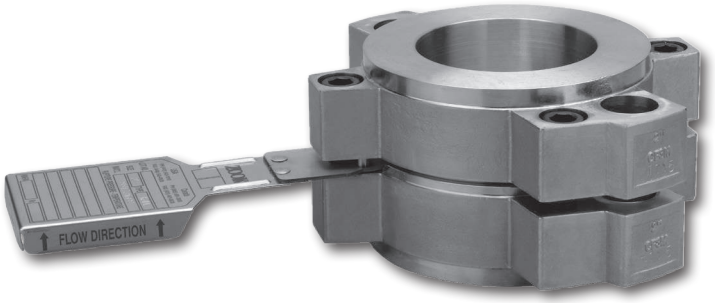
Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

Reverse Acting Rupture Disks
RA8 Series

The RA Series of rupture disks are complementary designs to cover the majority of rupture disk applications and are designed to be used in the RAH Series disk holder.

Features

- Designed for Non-fragmentation
- Operating ratios up to 95% of the low end of burst tolerance
- Disk design offers high cycle life
- Suitable for liquid, gas, or two-phase applications
- Standard manufacturing design range and total tolerance ensures marked rating on disk tag does not exceed the MAWP of equipment
- Withstands full vacuum without vacuum support
- Wide range of standard and exotic materials available
- Withstands back pressure up to the positive set pressure of the disk
- Sizes from 1” (25 mm) through 12” (300 mm)
- Burst ratings from 26 psig (1.79 barg) to 1000 psig (68.97 barg)
- Resists product build-up. The smooth convex side of the disk is exposed to the process media
- Damage ratio of 1.0 or less
- Unique alignment pin design ensures proper disk orientation into RAH Series disk holder
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- ASME UD, CE (PED), and TÜV compliance available

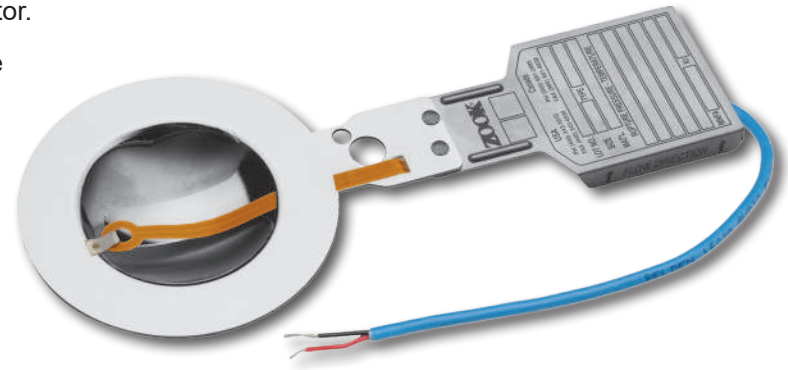


RA8 Series disk mounts into RAH Series disk holder (refer to RAH Series data sheet)

Options

RA8-L*	A process side PFA Teflon liner provides protection from corrosive media.
RA8-BI*	Equipped with ZOOK’s Integral Burst Indicator.
RA8+	Factory tested to 100% of the low end of the tolerance to insure no disks will burst low.

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.



Safety Relief Valve Protection

When a disk is mounted under a Safety Relief Valve, the working components of the valve are isolated from hostile environments.

Reverse Acting Rupture Disks
RA8 Series

Minimum and Maximum Pressure Ratings - psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressure										RA8-L	RA8-BI	Maximum Burst Pressure		MNFA in² (mm²)
	316		Inconel 600		Monel 400		Nickel 200/201		Hastelloy C276						
	Liquid	Gas	Liquid	Gas	Liquid	Gas	Liquid	Gas	Liquid	Gas			Liquid	Gas	
1"	200	144	200	144	200	144	200	144	200	144	Same as minimum material	Same as minimum material	1000	720	0.86
25 mm	13.79	9.93	13.79	9.93	13.79	9.93	13.79	9.93	13.79	9.93			68.97	49.66	554
1-1/2"	167	120	167	120	167	120	167	120	167	120			1000	720	2.00
40 mm	11.52	8.28	11.52	8.28	11.52	8.28	11.52	8.28	11.52	8.28			68.97	49.66	1,290
2"	118	100	118	100	118	100	118	100	118	100			850	720	3.36
50 mm	8.14	6.90	8.14	6.90	8.14	6.90	8.14	6.90	8.14	6.90			58.62	49.66	2,167
2-1/2"	92	83	92	83	92	83	92	83	92	83			640	450	4.79
65 mm	6.34	5.72	6.34	5.72	6.34	5.72	6.34	5.72	6.34	5.72			44.12	31.02	3,090
3"	68	65	68	65	68	65	68	65	68	65			425	285	7.25
80 mm	4.69	4.48	4.69	4.48	4.69	4.48	4.69	4.48	4.69	4.48			29.31	19.66	4,677
4"	69	55	69	55	69	55	69	55	69	55			425	285	12.53
100 mm	4.76	3.79	4.76	3.79	4.76	3.79	4.76	3.79	4.76	3.79			29.31	19.66	8,083
6"	67	45	67	45	67	45	67	45	67	45			350	225	26.59
150 mm	4.62	3.10	4.62	3.10	4.62	3.10	4.62	3.10	4.62	3.10			24.14	15.52	17,154
8" **	54	35	54	35	54	35	54	35	54	35			300	180	45.48
200 mm **	3.72	2.41	3.72	2.41	3.72	2.41	3.72	2.41	3.72	2.41			20.69	12.41	29,341
10" **	46	30	46	30	46	30	46	30	46	30			150	100	70.52
250 mm **	3.17	2.07	3.17	2.07	3.17	2.07	3.17	2.07	3.17	2.07			10.34	6.9	45,496
12" **	38	26	38	26	38	26	38	26	38	26			110	75	98.33
300 mm **	2.62	1.79	2.62	1.79	2.62	1.79	2.62	1.79	2.62	1.79			7.59	5.17	63,438
Max. Temp.	900°F (482°C)		900°F (482°C)*		800°F (427°C)		750°F (399°C)		900°F (482°C)		500°F (260°C)	400°F (204°C)			

Notes: For materials, sizes, burst ratings and temperatures not shown, contact ZOOK
* Contact ZOOK for higher temperatures
** Process media fluid state (Liquid or Gas) is required on 8" and larger RA8 disks

Manufacturing Design Range & Total Performance Tolerance

ASME						PED				
Burst Pressure (psig)		Manufacturing Design Range			Burst Tolerance	Burst Pressure (barg)		Total Performance Tolerance		
Minimum	Maximum	Good	Better	Best		Minimum	Maximum	Good	Better	Best
1.0	<2.5	-10%	-5%	-0%	±0.33 psig	0.069	<0.172	±50%	-	±0.023 barg
2.5	<5.0	-10%	-5%	-0%	±0.5 psig	0.172	<0.345	±30%	±25%	±0.035 barg
5.0	<7.0	-10%	-5%	-0%	±0.5 psig	0.345	<0.483	±20%	±17.5%	±0.035 barg
7.0	<11.0	-10%	-5%	-0%	±0.8 psig	0.483	<0.759	±20%	±15%	±0.055 barg
11.0	<15	-10%	-5%	-0%	±1.3 psig	0.759	<1.034	±20%	±15%	±0.090 barg
15.0	<26	-10%	-5%	-0%	±2.0 psig	1.034	<1.793	±20%	±15%	±0.138 barg
26.0	<40	-10%	-5%	-0%	±2.0 psig	1.793	<2.758	±15%	±12.5%	±0.138 barg
40.0	Max	-10%	-5%	-0%	±5%	2.758	Max	±10%	±7.5%	±5%

Notes: • 0% manufacturing range might not be available in all materials
• Burst tolerances are the maximum expected variation from the disk's marked burst pressure

Certified Flow Resistance Factors

Krl (Liquid)	Krg (Gas)
1.16	0.59

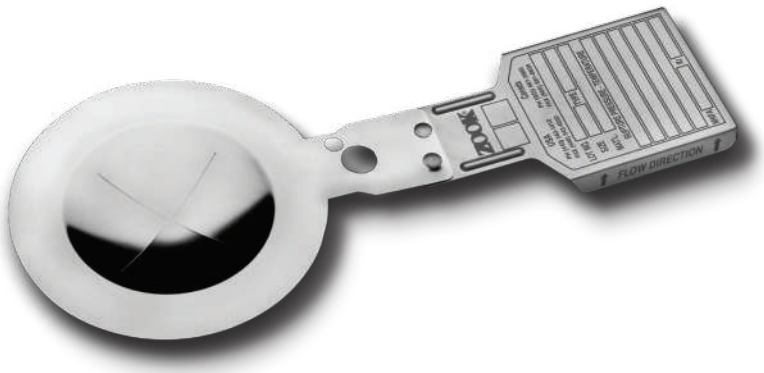
Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

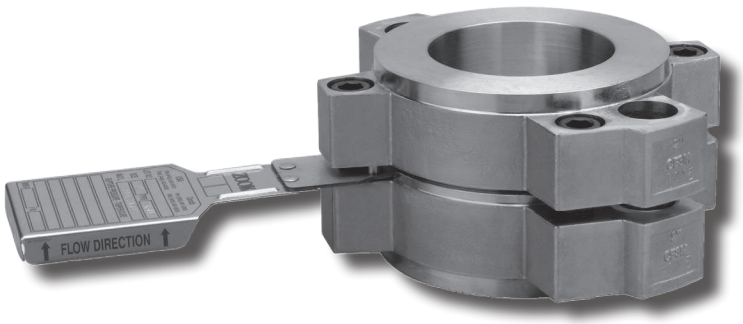
Reverse Acting Rupture Disks
RAX Series

The RA Series of rupture disks are complementary designs to cover the majority of rupture disk applications and are designed to be used in the RAH Series disk holder.

Features

- Designed for Non-fragmentation
- Operating ratios up to 95% of the low end of burst tolerance
- Disk design offers high cycle life
- Suitable for gas service only
- Standard manufacturing design range and total tolerance ensures marked rating on disk tag does not exceed the MAWP of equipment
- Withstands full vacuum without vacuum support
- Wide range of standard and exotic materials available
- Withstands back pressure up to the positive set pressure of the disk
- Sizes from 1” (25mm) through 12” (300mm)
- Burst ratings from 27 psig (1.86 barg) to 1480 psig (102.04 barg)
- Resists product build-up. The smooth convex side of the disk is exposed to the process media
- Unique alignment pin design ensures proper disk orientation into RAH Series disk holder
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- ASME UD, CE (PED), and TÜV compliance available



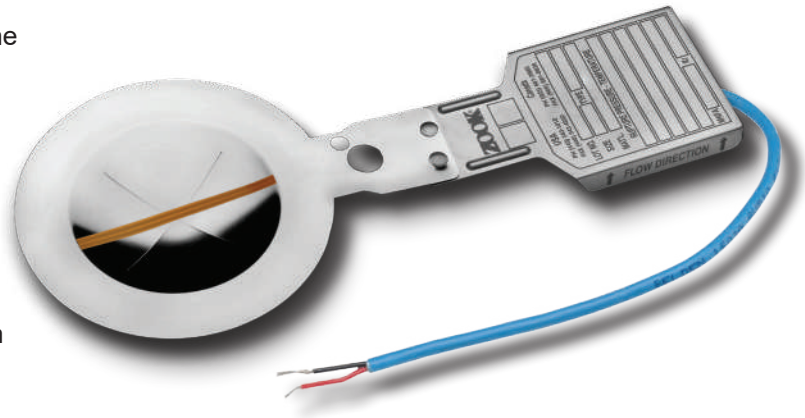


RAX Series disk mounts into RAH Series disk holder (refer to RAH Series data sheet)

Options

RAX-L*	A process side PFA Teflon liner provides protection from corrosive media.
RAX-BI*	Equipped with ZOOK’s Integral Burst Indicator.
RAX+	Factory tested to 100% of the low end of the tolerance to insure no disks will burst low.

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.



Safety Relief Valve Protection

When a disk is mounted under a Safety Relief Valve, the working components of the valve are isolated from hostile environments.

Reverse Acting Rupture Disks
RAX Series

Minimum and Maximum Pressure Ratings - psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressure							Maximum Burst Pressure	MNFA in² (mm²)
	316	Inconel	Monel	Nickel	Hastelloy C276	RAX-L	RAX-BI		
	Gas Services Only - A gas pocket is required below disk for liquid applications - Contact ZOOK for additional information								
1"	221	141	122	92	221	Same as minimum material	Same as minimum material	1480	0.86
25 mm	15.24	9.72	8.41	6.34	15.24			102.04	554
1-1/2"	234	98	98	81	234			1480	2.04
40 mm	16.14	6.76	6.76	5.59	16.14			102.04	1,316
2"	188	83	83	60	188			1480	3.36
50 mm	12.97	5.72	5.72	4.14	12.97			102.04	2,167
3"	154	66	65	55	154			1480	7.39
80 mm	10.62	4.55	4.48	3.79	10.62			102.04	4,767
4"	122	54	55	48	122			1480	12.73
100 mm	8.41	3.72	3.79	3.31	8.41			102.04	8,212
6"	94	47	44	35	94			1480	28.89
150 mm	6.48	3.24	3.03	2.41	6.48			102.04	18,638
8"	42	44	41	33	42			700	50.03
200 mm	2.89	3.03	2.83	2.28	2.89			48.28	32,277
10"	36	40	39	30	36			700	78.85
250 mm	2.48	2.76	2.69	2.07	2.48			48.28	50,870
12"	33	37	36	27	33			600	112
300 mm	2.28	2.55	2.48	1.86	2.28			41.38	72,257
Max. Temp.	900°F (482°C)	900°F (482°C)*	800°F (427°C)	750°F (399°C)	900°F (482°C)	500°F (260°C)	400°F (204°C)		

Notes: For materials, sizes, burst ratings and temperatures not shown, contact ZOOK
* Contact ZOOK for higher temperatures

Manufacturing Design Range & Total Performance Tolerance

ASME						PED				
Burst Pressure (psig)		Manufacturing Design Range			Burst Tolerance	Burst Pressure (barg)		Total Performance Tolerance		
Minimum	Maximum	Good	Better	Best		Minimum	Maximum	Good	Better	Best
1.0	<2.5	-10%	-5%	-0%	±0.33 psig	0.069	<0.172	±50%	-	±0.023 barg
2.5	<5.0	-10%	-5%	-0%	±0.5 psig	0.172	<0.345	±30%	±25%	±0.035 barg
5.0	<7.0	-10%	-5%	-0%	±0.5 psig	0.345	<0.483	±20%	±17.5%	±0.035 barg
7.0	<11.0	-10%	-5%	-0%	±0.8 psig	0.483	<0.759	±20%	±15%	±0.055 barg
11.0	<15	-10%	-5%	-0%	±1.3 psig	0.759	<1.034	±20%	±15%	±0.090 barg
15.0	<26	-10%	-5%	-0%	±2.0 psig	1.034	<1.793	±20%	±15%	±0.138 barg
26.0	<40	-10%	-5%	-0%	±2.0 psig	1.793	<2.758	±15%	±12.5%	±0.138 barg
40.0	Max	-10%	-5%	-0%	±5%	2.758	Max	±10%	±7.5%	±5%

Notes:
- 0% manufacturing range might not be available in all materials
- Burst tolerances are the maximum expected variation from the disk's marked burst pressure

Certified Flow Resistance Factors

Krg (Gas)
2.00

Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

Reverse Acting Rupture Disks
RLP Series

Features

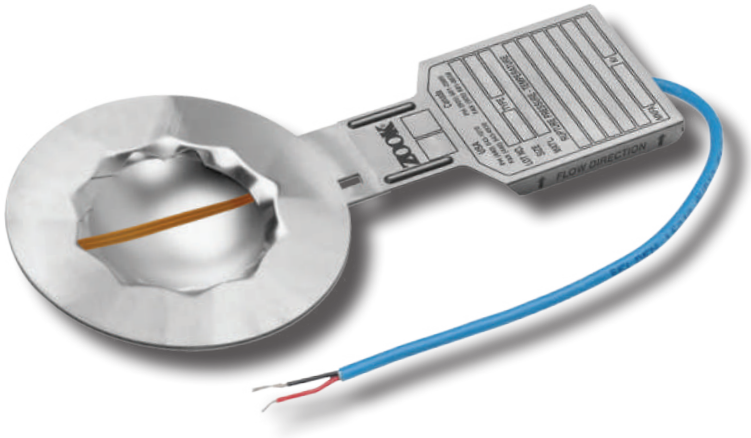
- Designed for Non-fragmentation
- Operating ratios up to 95% of the low end of burst tolerance
- Disk design offers high cycle life
- Suitable for liquid, gas, or two-phase applications
- Standard manufacturing design range and total tolerance ensures marked rating on disk tag does not exceed the MAWP of equipment
- Withstands full vacuum
- Wide range of standard and exotic materials available
- Sizes from 1” (25mm) through 12” (300mm)
- Burst ratings from 2 psig (0.14 barg) to 40 psig (2.76 barg)
- Unique alignment pin design ensures proper disk orientation into RLP-I Series disk holder
- 3-dimensional stainless steel tag permanently attached and engraved with complete disk specifications
- ASME UD, CE (PED), and TÜV compliance available

RLP Series disk mounts into RLP-I Series disk holder

Options

RLP-L*	A process side PFA Teflon liner provides protection from corrosive media. The process side liner is placed between the disk and process side ring.
RLP-BI*	Equipped with ZOOK’s Integral Burst Indicator.
RLP+	Factory tested to 100% of the low end of the tolerance to insure no disks will burst low.

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.



Safety Relief Valve Protection

When a disk is mounted under a Safety Relief Valve, the working components of the valve are isolated from hostile environments.

Reverse Acting Rupture Disks
RLP Series

Minimum and Maximum Pressure Ratings - psig @ 72°F (barg @ 22°C)

Disk Size	Minimum Burst Pressure							Maximum Burst Pressure	MNFA in^2 (mm^2)
	316	Inconel 600	Monel 400	Nickel 200/201	Hastelloy C276	RLP-L[1]	RLP-BI		
1”	13	15	15	15	23	+5	Same as minimum material	40	0.86
25 mm	0.89	1.03	1.03	1.03	1.58	+0.34		2.76	554
1-1/2”	9	10	10	10	15	+5		25	1.63
40 mm	0.62	0.69	0.69	0.69	1.03	+0.34		1.72	1,051
2”	6	6	6	6	8	+3		25	2.78
50 mm	0.41	0.41	0.41	0.41	0.55	+0.21		1.72	1,790
3”	4	5	5	5	6	+2		25	5.69
80 mm	0.27	0.34	0.34	0.34	0.41	+0.14		1.72	3,670
4”	3	4	4	4	5	+2		20	9.51
100 mm	0.21	0.28	0.28	0.28	0.34	+0.14		1.38	6,135
6”	2	4	4	3	5	+1		18	19.46
150 mm	0.14	0.28	0.28	0.21	0.34	+0.07		1.24	12,554
8”	2	3	3	3	4	+1		18	33.28
200 mm	0.14	0.21	0.21	0.21	0.28	+0.07		1.24	21,470
10”	2	3	3	3	4	+1		14	50.78
250 mm	0.14	0.21	0.21	0.21	0.28	+0.07		0.97	32,761
12”	2	3	3	3	4	+1		14	71.97
300 mm	0.14	0.21	0.21	0.21	0.28	+0.07		0.97	46,432
Max. Temp.	900°F (482°C)	900°F (482°C)[2]	800°F (427°C)	750°F (399°C)	900°F (482°C)	500°F (260°C)	400°F (204°C)		

Notes: For materials, sizes, burst ratings and temperatures not shown, contact ZOOK
[1] Add pressure to min for material
[2] Contact ZOOK for higher temperatures

Manufacturing Design Range & Total Performance Tolerance

ASME						PED				
Burst Pressure (psig)		Manufacturing Design Range			Burst Tolerance	Burst Pressure (barg)		Total Performance Tolerance		
Minimum	Maximum	Good	Better	Best		Minimum	Maximum	Good	Better	Best
1.0	<2.5	-10%	-5%	-0%	±0.33 psig	0.069	<0.172	±50%	-	±0.023 barg
2.5	<5.0	-10%	-5%	-0%	±0.5 psig	0.172	<0.345	±30%	±25%	±0.035 barg
5.0	<7.0	-10%	-5%	-0%	±0.5 psig	0.345	<0.483	±20%	±17.5%	±0.035 barg
7.0	<11.0	-10%	-5%	-0%	±0.8 psig	0.483	<0.759	±20%	±15%	±0.055 barg
11.0	<15	-10%	-5%	-0%	±1.3 psig	0.759	<1.034	±20%	±15%	±0.090 barg
15.0	<26	-10%	-5%	-0%	±2.0 psig	1.034	<1.793	±20%	±15%	±0.138 barg
26.0	<40	-10%	-5%	-0%	±2.0 psig	1.793	<2.758	±15%	±12.5%	±0.138 barg
40.0	Max	-10%	-5%	-0%	±5%	2.758	Max	±10%	±7.5%	±5%

Notes:
- 0% manufacturing range might not be available in all materials
- Burst tolerances are the maximum expected variation from the disk's marked burst pressure

Certified Flow Resistance Factors

Krl (Liquid)	Krg (Gas)
1.63	1.63

Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

Reverse Acting Rupture Disks
SRA Series

Features

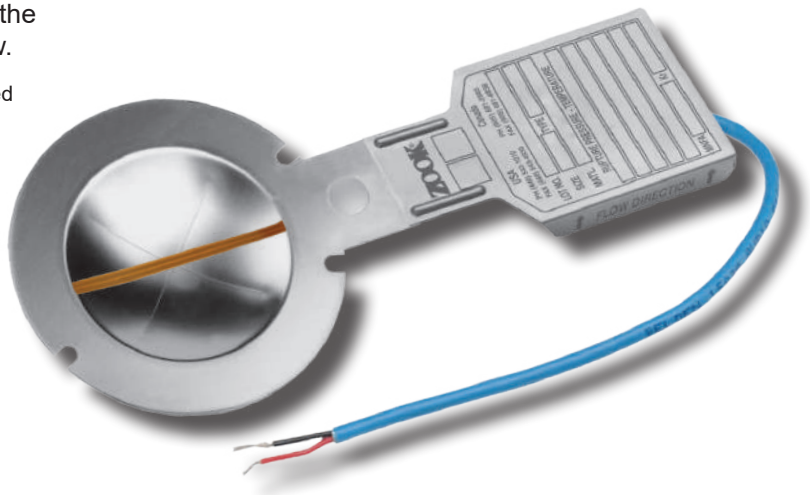
- Designed for Non-fragmentation
- Operating ratios up to 95% of the low end of burst tolerance
- Disk design offers high cycle life
- Suitable for gas service only
- Standard manufacturing design range and total tolerance ensures marked rating on disk tag does not exceed the MAWP of equipment
- Withstands full vacuum without vacuum support
- Wide range of standard and exotic materials available
- Withstands back pressure up to the positive set pressure of the disk
- Sizes from 1” (25mm) through 12” (300mm)
- Burst ratings from 27 psig (1.86 barg) to 1480 psig (102.04 barg)
- Resists product build-up. The smooth convex side of the disk is exposed to the process media
- Unique alignment pins design ensures proper disk orientation into SR7A Series disk holder
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- ASME UD, CE (PED), and TÜV compliance available

SRA Series disk mounts into SR7A Series disk holder

Options

SRA-L*	A process side PFA Teflon liner provides protection from corrosive media.
SRA-BI*	Equipped with ZOOK’s Integral Burst Indicator.
SRA+	Factory tested to 100% of the low end of the tolerance to ensure no disks will burst low.

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.



Safety Relief Valve Protection

When a disk is mounted under a Safety Relief Valve, the working components of the valve are isolated from hostile environments.

Reverse Acting Rupture Disks
SRA Series

Minimum and Maximum Pressure Ratings - psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressure							Maximum Burst Pressure	MNFA in² (mm²)	SR7A Holder (Overall Height)
	316	Inconel	Monel	Nickel	Hastelloy C276	SRA-L	SRA-BI			
	Gas Services Only - A gas pocket is required below disk for liquid applications - Contact ZOOK for additional information									
1”	221	141	122	92	221	Same as minimum material	Same as minimum material	1480	0.86	1-7/8
25 mm	15.24	9.72	8.41	6.34	15.24			102.04	554	47.63
1-1/2”	234	98	98	81	234			1480	2.04	1-7/8
40 mm	16.14	6.76	6.76	5.59	16.14			102.04	1,316	47.63
2”	188	83	83	60	188			1480	3.36	1-7/8
50 mm	12.97	5.72	5.72	4.14	12.97			102.04	2,167	47.63
3”	154	66	65	55	154			1480	7.39	2-1/4
80 mm	10.62	4.55	4.48	3.79	10.62			102.04	4,767	57.15
4”	122	54	55	48	122			1480	12.73	2-15/16
100 mm	8.41	3.72	3.79	3.31	8.41			102.04	8,212	74.62
6”	94	47	44	35	94			1480	28.89	3-5/8
150 mm	6.48	3.24	3.03	2.41	6.48			102.04	18,638	92.08
8”	42	44	41	33	42			700	50.03	3-1/4
200 mm	2.89	3.03	2.83	2.28	2.89			48.28	32,277	107.95
10”	36	40	39	30	36			700	78.85	4-1/8
250 mm	2.48	2.76	2.69	2.07	2.48			48.28	50,870	104.78
12”	33	37	36	27	33			600	112	4-5/8
300 mm	2.28	2.55	2.48	1.86	2.28			41.38	72,257	117.48
Max. Temp.	900°F (482°C)	900°F (482°C)*	800°F (427°C)	750°F (399°C)	900°F (482°C)	500°F (260°C)	400°F (204°C)			

Notes: For materials, sizes, burst ratings and temperatures not shown, contact ZOOK
* Contact ZOOK for higher temperatures

Manufacturing Design Range & Total Performance Tolerance

ASME						PED				
Burst Pressure (psig)		Manufacturing Design Range			Burst Tolerance	Burst Pressure (barg)		Total Performance Tolerance		
Minimum	Maximum	Good	Better	Best		Minimum	Maximum	Good	Better	Best
1.0	<2.5	-10%	-5%	-0%	±0.33 psig	0.069	<0.172	±50%	-	±0.023 barg
2.5	<5.0	-10%	-5%	-0%	±0.5 psig	0.172	<0.345	±30%	±25%	±0.035 barg
5.0	<7.0	-10%	-5%	-0%	±0.5 psig	0.345	<0.483	±20%	±17.5%	±0.035 barg
7.0	<11.0	-10%	-5%	-0%	±0.8 psig	0.483	<0.759	±20%	±15%	±0.055 barg
11.0	<15	-10%	-5%	-0%	±1.3 psig	0.759	<1.034	±20%	±15%	±0.090 barg
15.0	<26	-10%	-5%	-0%	±2.0 psig	1.034	<1.793	±20%	±15%	±0.138 barg
26.0	<40	-10%	-5%	-0%	±2.0 psig	1.793	<2.758	±15%	±12.5%	±0.138 barg
40.0	Max	-10%	-5%	-0%	±5%	2.758	Max	±10%	±7.5%	±5%

Notes:
- 0% manufacturing range might not be available in all materials
- Burst tolerances are the maximum expected variation from the disk’s marked burst pressure

Certified Flow Resistance Factors

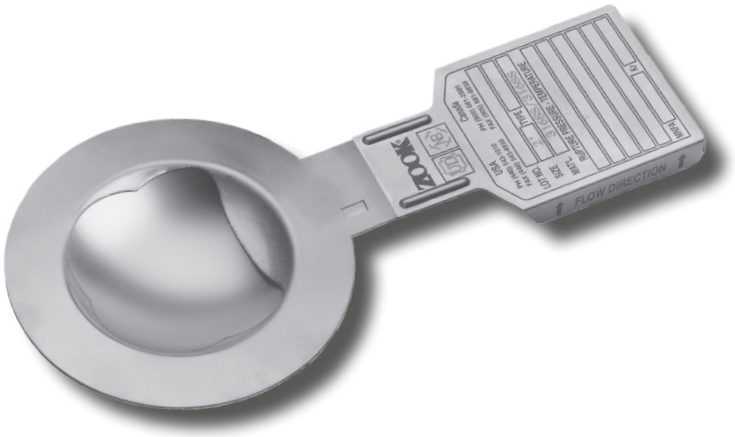
Krg (Gas)
2.00

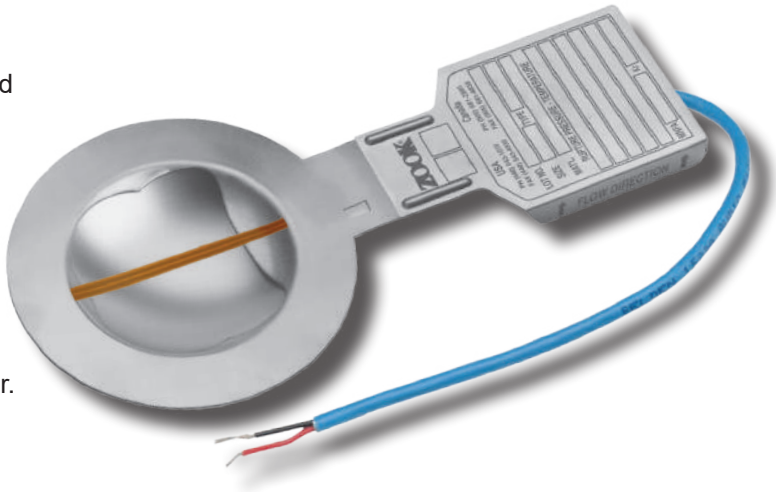
Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

Reverse Acting Rupture Disks
URA Series

Disk Features

- Designed for Non-fragmentation
- Operating ratios up to 95% of the low end of burst tolerance
- Disk design offers high cycle life
- Suitable for liquid, gas, or two-phase applications
- Standard manufacturing design range and total tolerance ensures marked rating on disk tag does not exceed the MAWP of equipment
- Withstands full vacuum without vacuum support
- Wide range of standard and exotic materials available
- Withstands back pressure up to the positive set pressure of the disk
- Sizes from 1” (25 mm) through 30” (750 mm)
- Burst ratings from 12 psig (0.83 barg) to 1000 psig (68.97 barg)
- Resists product build-up. The smooth convex side of the disk is exposed to the process media
- Damage ratio of 1.0 or less
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- ASME UD, CE (PED), and TÜV compliance available





Options

URA-L*	A process side PFA Teflon liner provides protection from corrosive media.
URA-BI*	Equipped with ZOOK’s Integral Burst Indicator.
URA+	Factory tested to 100% of the low end of the tolerance to insure no disks will burst low.

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.

Disk Holder Features

- Unique holder ensures proper disk orientation
- Non-torque sensitive flat seat design
- Standard material of construction is Stainless Steel. Other materials available upon request.
- Available options include: gauge tap; nipple and tee; excess flow valve; pressure gauge; J-hook; special facings and coatings

URA Series disk mounts into URA-I Series disk holder

Reverse Acting Rupture Disks
URA Series

Minimum and Maximum Pressure Ratings - psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressure										URA-L	URA-BI	MNFA in² (mm²)	URA-I Holder (Overall Height)
	316		Inconel 600		Monel 400		Nickel 200/201		Hastelloy C276					
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.				
1”	24	1000	22	1000	22	1000	22	1000	24	1000	34	Same as minimum material	0.86	1-1/2
25 mm	1.66	68.97	1.52	68.97	1.52	68.97	1.52	68.97	1.66	68.97	2.34		554	38.10
1-1/2”	22	1000	20	1000	20	900	20	900	22	1000	Same as minimum material		2.00	1-5/8
40 mm	1.52	68.97	1.38	68.97	1.38	62.07	1.38	62.07	1.52	68.97			1,290	41.28
2”	20	900	18	900	18	850	18	850	20	1000			3.36	1-3/4
50 mm	1.38	62.07	1.24	62.07	1.24	58.62	1.24	58.62	1.38	68.97			2,167	44.45
3”	18	900	16	900	16	750	16	750	18	1000			7.25	2-1/8
80 mm	1.24	62.07	1.10	62.07	1.10	51.72	1.10	51.72	1.24	68.97			4,677	53.98
4”	16	800	14	800	14	650	14	650	16	900			12.53	2-7/8
100 mm	1.10	55.17	0.97	55.17	0.97	44.83	0.97	44.83	1.10	62.07			8,063	73.03
6”	14	450	12	450	12	400	12	400	14	500			26.59	3-11/16
150 mm	0.97	31.03	0.83	31.03	0.83	27.59	0.83	27.59	0.97	34.48			17,154	93.68
8”	12	300	12	300	12	250	12	250	12	350			45.48	3-13/16
200 mm	0.83	20.69	0.83	20.69	0.83	17.24	0.83	17.24	0.83	24.14			29,341	96.85
Max. Temp.	900°F (482°C)		900°F (482°C)*		800°F (427°C)		750°F (399°C)		900°F (482°C)		500°F (260°C)	400°F (204°C)		

Note: For materials, sizes, burst ratings and temperatures not shown, contact ZOOK
* Contact ZOOK for higher temperatures
• Refer to ASME/ANSI B16.5 pipe flanges and flange fittings (Table 2) for max allowable pressure/temperature ratings per flange class.

Manufacturing Design Range & Total Performance Tolerance

ASME						PED				
Burst Pressure (psig)		Manufacturing Design Range			Burst Tolerance	Burst Pressure (barg)		Total Performance Tolerance		
Minimum	Maximum	Good	Better	Best		Minimum	Maximum	Good	Better	Best
1.0	<2.5	-10%	-5%	-0%	±0.33 psig	0.069	<0.172	±50%	-	±0.023 barg
2.5	<5.0	-10%	-5%	-0%	±0.5 psig	0.172	<0.345	±30%	±25%	±0.035 barg
5.0	<7.0	-10%	-5%	-0%	±0.5 psig	0.345	<0.483	±20%	±17.5%	±0.035 barg
7.0	<11.0	-10%	-5%	-0%	±0.8 psig	0.483	<0.759	±20%	±15%	±0.055 barg
11.0	<15	-10%	-5%	-0%	±1.3 psig	0.759	<1.034	±20%	±15%	±0.090 barg
15.0	<26	-10%	-5%	-0%	±2.0 psig	1.034	<1.793	±20%	±15%	±0.138 barg
26.0	<40	-10%	-5%	-0%	±2.0 psig	1.793	<2.758	±15%	±12.5%	±0.138 barg
40.0	Max	-10%	-5%	-0%	±5%	2.758	Max	±10%	±7.5%	±5%

Notes:
• 0% manufacturing range might not be available in all materials
• Burst tolerances are the maximum expected variation from the disk’s marked burst pressure

Certified Flow Resistance Factors

Krg (Gas)	Krl (Liquid)
0.78	0.78

Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

Double Disk Assembly

Double Rupture Disk Assembly is a Good Solution for Severe Process Environments.

The ZOOK® Double Rupture Disk Assembly is such a versatile device to guarantee safety even in the harshest of operating conditions. The assembly consists of using a primary and secondary rupture disk installed in a permanent holder made of three separate components—the inlet, mid-flange and outlet. Disks are either forward-acting or reverse-acting type or can even be a combination depending on the application.

Whom Would Benefit Using A Double Disk Assembly?

Environments containing corrosive, toxic or valuable media are ideal for the double disk assembly. In extremely corrosive and toxic conditions the process-exposed rupture disk could leak in volatile conditions. A pressure gauge acting as a Tell-tale indicator in the mid-flange would indicate the leak, while the secondary rupture disk retains the system leak-free. The primary rupture disk could then be changed out at an opportune time.

Benefits of Double Disk Assembly

- Zero Maintenance
- Zero Calibration
- Control of Fugitive Emissions
- Eliminate Back Pressure
- Extreme Temperature
- Quick Opening Device
- Corrosive Applications

Another common application for a double disk assembly is protecting the primary rupture disk from variable back pressure. This condition can occur when multiple rupture disk assemblies are used that are protecting multiple processes. If one rupture disk assembly bursts, the resulting discharge into the common header could subject the remaining rupture disk assemblies to a transient elevated back pressure condition. Another example would be a flare stack system.

In all cases, the secondary rupture disk withstands the system back pressure, isolating the primary rupture disk. Any change in pressure differential across the primary rupture disk induced by back pressure is eliminated and it will rupture at its marked burst pressure.

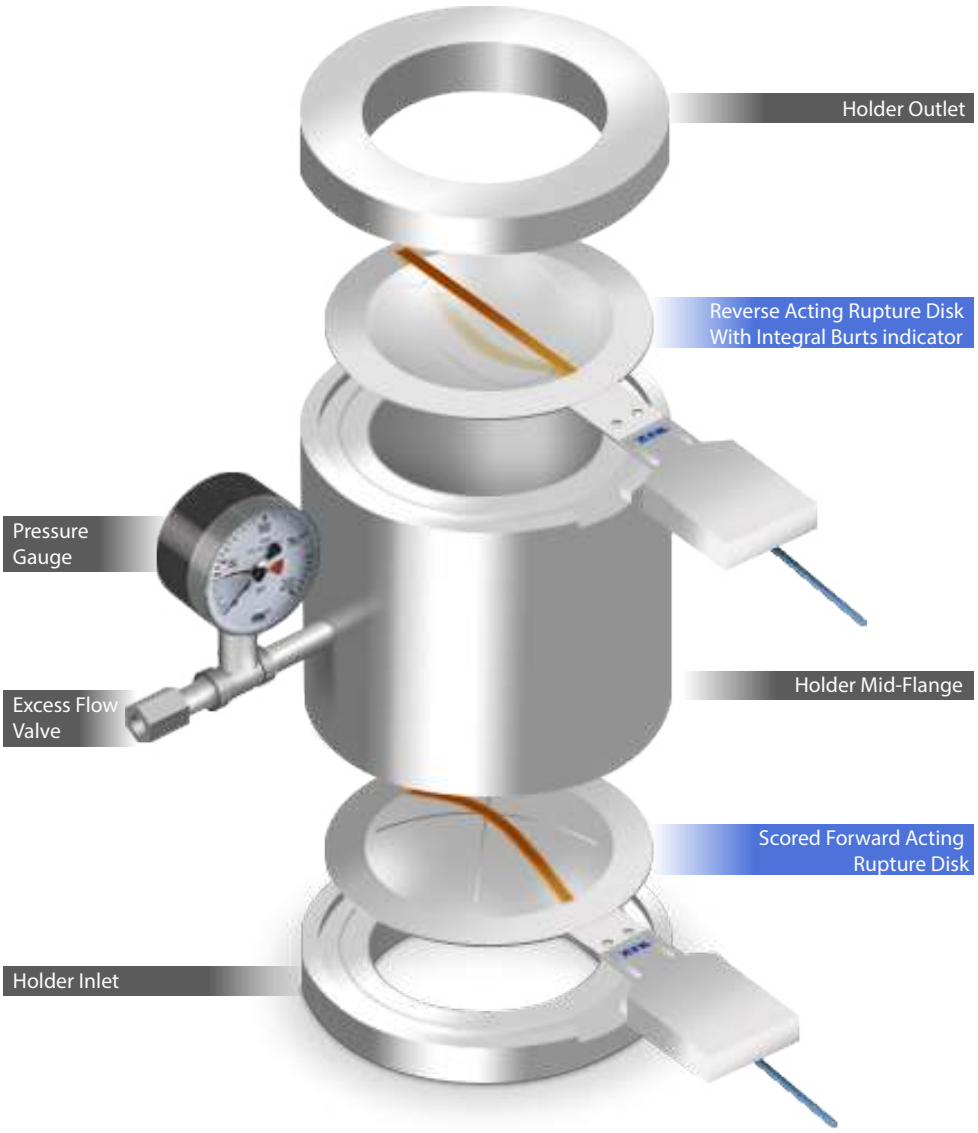
The Double Disk Assembly, as a quick opening device, has been used in activating pressure systems and used in many applications in the oil and gas industries. This very fast response is even attainable in large nominal bores.

Reverse Acting Rupture Disks
Double Disk Assembly

Double Disk Assembly uses a primary and secondary rupture disk installed in a permanent holder made of three separate components:

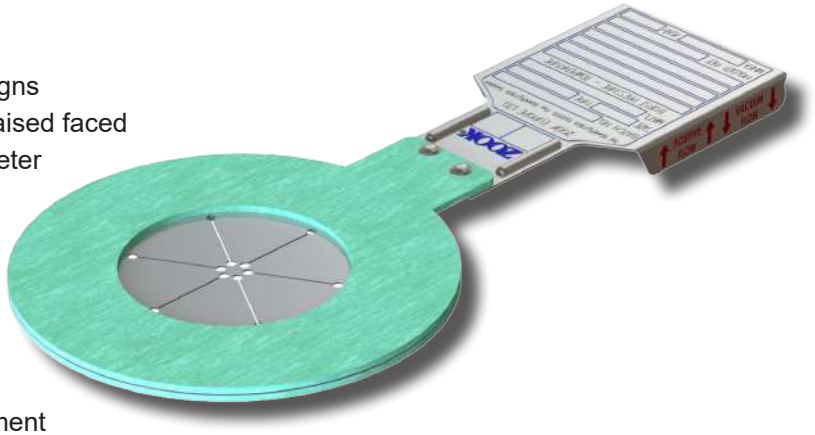
- Inlet
- Mid-Flange
- Outlet

Note: Disks can either be forward-acting, reverse-acting or a combination depending on the application.



Forward Acting Rupture Disks
ARD Series

Features



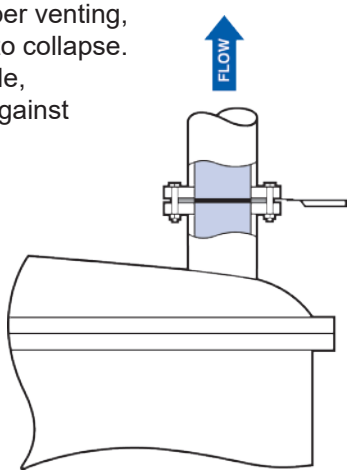
- State-of-the-art laser slotted metal section
- Available in uni-directional or bi-directional designs
- Mounts between standard ANSI, DIN and JIS raised faced flange bore, or equivalent with same bore diameter
- No disk holder required
- Standard materials of construction: 316 metal section(s), Teflon seal, Compressed fiber gaskets (Other materials available)
- Operating pressures to 50% of the disk's marked burst pressure
- Flange specific O.D. ensures proper disk alignment
- Sizes 1" (25 mm) thru 44" (1100 mm)
- Burst ratings 1 psig (0.07 barg) to 60 psig (4.14 barg)
- Temperature ratings to 500°F (260°C)
- 0% manufacturing range

Options

- Burst Indication
- Teflon Gaskets

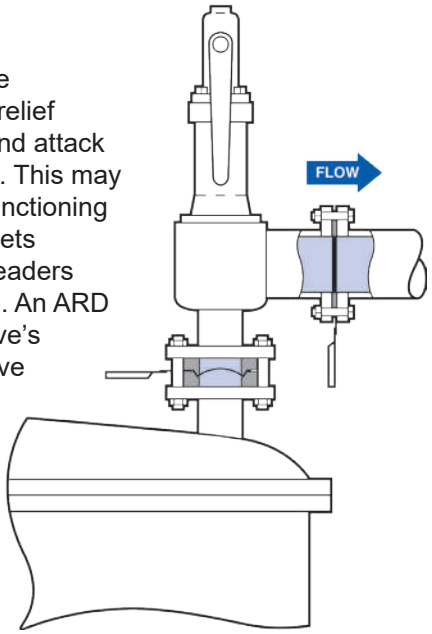
Storage Tank Protection

Storage tanks are made from relatively light gauge materials. This limits their ability to contain pressure and, if they are emptied without proper venting, makes them vulnerable to collapse. ARD Disks provide simple, inexpensive protection against either condition.



Relief Valve Protection

Corrosive elements in the atmosphere can enter a relief valve through its outlet and attack the valve's working parts. This may prevent the valve from functioning properly. Valves with outlets connected to common headers are especially vulnerable. An ARD Disk mounted on the valve's outlet flange protects valve components from hostile environments. Consult ZOOK for guidance on applicable code issues related to this application.



CAUTION

Disk size should be at least equal to the size of the flow inlet or outlet connection (whichever is greater) to the tank. Maximum rupture pressure should be no greater than the design pressure or vacuum (whichever is smaller) of the tank. Minimum rupture pressure should be at least double the maximum working pressure or vacuum (whichever is greater) to which the tank will be exposed.

CAUTION

Disk size should be the same as the outlet flange of the valve. Maximum rupture pressure should be no greater than the set pressure of the valve. Minimum rupture pressure should be at least double the maximum working pressure in the header.

Teflon - TM The Chemours Company

Forward Acting Rupture Disks
ARD Series

Disk Type Specifications

Disk Type	Materials of Construction	Function	Features	Nominal Thickness
ARD	Gasket/Seal/Cap/Seal/Gasket	Bi-Directional	Bursts at the specified pressure in both directions	1/8" (3.18 mm)
ARD-L	Gasket/Cap/Seal/Gasket	Uni-Directional	Bursts at the specified pressure in one direction	
ARD-S	Gasket/Cap/Seal/Cap/Gasket	Bi-Directional	Bursts at two different set pressures as specified	
ARD-V*	Gasket/Cap/Seal/Support/Gasket	Uni-Directional	Bursts at the specified pressure in one direction, withstands full vacuum	

Notes:
*ARD-V series disk has a non-opening vacuum support. Contact ZOOK for flow and free area specifications
Standard gasket material is non-asbestos compressed fiber. Contact ZOOK for optional materials

Minimum and Maximum Pressure Ratings psig (barg) @ 72°F (22°C)

Disk Size	ARD-L, ARD-S, ARD-V	ARD	Maximum Burst Rating (all Types)
	Minimum Burst Rating	Minimum Burst Rating	
1"	10	20	60
25 mm	0.69	1.38	4.14
1-1/2"	6	10	60
40 mm	0.41	0.69	4.14
2"	6	7	60
50 mm	0.41	0.48	4.14
2-1/2"	5	6	60
65 mm	0.34	0.41	4.14
3"	4	5	60
80 mm	0.28	0.34	4.14
4"	3	4	60
100 mm	0.21	0.28	4.14
5"	2.5	3	60
125 mm	0.17	0.21	4.14
6"	2	2	60
150 mm	0.14	0.14	4.14
8"	1.5	1.6	60
200 mm	0.10	0.11	4.14
10"	1.25	1.25	60
250 mm	0.08	0.08	4.14
12"	1	1	60
300 mm	0.07	0.07	4.14
Max. Temp.	500°F (260°C)		

Notes: • See website for additional disk pressure ratings 14" (350 mm) - 44" (1100 mm)
• Contact ZOOK if disk is to be mounted into other style flanges

Manufacturing Design Range & Total Performance Tolerance

Burst Pressure				Burst Tolerance	Total Performance Tolerance
Minimum		Maximum			
psig	barg	psig	barg	psig	barg
1.0	0.07	<2.5	0.17	±0.33	±0.023
2.5	0.17	<5.0	0.34	±0.5	±0.035
5.0	0.34	<7.0	0.48	±0.5	±0.035
7.0	0.48	<11.0	0.76	±0.8	±0.055
11.0	0.76	<15	1.03	±1.3	±0.090
15.0	1.03	<26	1.79	±2.0	±0.138
26.0	1.79	<40	2.76	±2.0	±0.138
40.0	2.76	Max		±5%	±5%

Note: Burst tolerances are the maximum expected variation from the disk's marked burst pressure

Forward Acting Rupture Disks
D Series

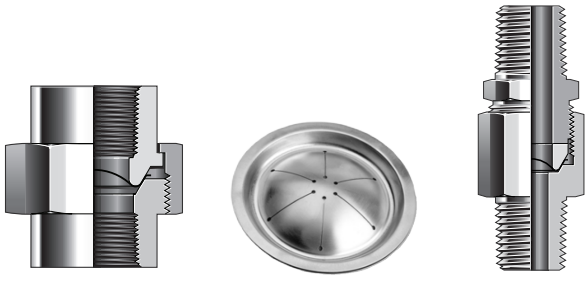
Features

- The D Series is a slotted metal top section and allows the use of metal & teflon seal materials. A wide variety of corrosive resistant seal materials are available.
- State-of-the-art laser slotted metal burst cap
- Operating ratios up to 85% of the low end of burst tolerance
- Disk design offers high cycle life
- Excellent for liquid, gas or 2 phased flow
- Wide range of standard and exotic materials available
- Sizes from 1/2” (13mm) through 24” (600mm)
- Burst ratings from 3 psig (0.21 barg) to 2500 psig (172.37 barg)
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- ASME, CE (PED), and TÜV compliance available

D Series disk mounts into 7A - Angle Seat disk holder (refer to 7A - Angle Seat data sheet)

Options

D-V & TLDV	**Vacuum Supports** are required on vacuum services. Vacuum supports allow the disk to support full system vacuum
D-R & R-D-R	**Protective Rings** are recommended with D Series disks to protect delicate materials and/or to provide stability when vacuum supports are not supplied
D-H	**Handling Supports** are attached to the process side of the disk to protect disk seals when vacuum supports are not supplied
L-D & TLDV	**Atmospheric liners** add extra protection against corrosive process conditions downstream of the disk



Contact ZOOK for Union & Screw-type options

Forward Acting Rupture Disks
D Series

D Series Minimum and Maximum Pressure Ratings psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressures with Listed Seal Materials									
	Top Section 316SS, Nickel, Inconel, Monel or Hastelloy C276							Maximum Burst Pressures (Any Seal)	MNFA in² (mm²)	
	316	Inconel	Monel	Nickel	Hastelloy C276	Aluminum	PFA		D DUT	D-V DUT-V
1/2"	1100	880	600	540	1100	140	90	2500	0.17	0.13
12.70 mm	75.86	60.69	41.38	37.24	75.86	9.66	6.21	172.41	109	83.87
3/4"	800	700	460	440	800	110	60	2500	0.44	0.35
19.05 mm	55.17	48.28	31.72	30.34	55.17	7.59	4.14	172.41	283	225
1"	400	300	240	185	400	60	25	2500	0.71	0.51
25 mm	27.59	20.69	16.55	12.76	27.59	4.14	1.72	172.41	458	329
1-1/2"	275	200	155	125	275	35	20	2000	1.54	1.05
40 mm	18.97	13.79	10.69	8.62	18.97	2.41	1.38	137.93	993	677
2"	165	120	90	80	165	25	15	1500	3.36	3.19
50 mm	11.38	8.28	6.21	5.52	11.38	1.72	1.03	103.45	2167	2058
3"	125	95	70	55	125	15	10	1000	7.39	7.02
80 mm	8.62	6.55	4.83	3.79	8.62	1.03	0.69	68.97	4767	4529
4"	90	75	50	40	90	12	8	900	12.73	12.18
100 mm	6.21	5.17	3.45	2.76	6.21	0.83	0.55	62.07	8212	7858
6"	75	60	40	35	75	10	6	700	28.27	21.76
150 mm	5.17	4.14	2.76	2.41	5.17	0.69	0.41	48.28	18238	14038
8"	60	40	35	25	60	8	5	600	50.01	35.92
200 mm	4.14	2.76	2.41	1.72	4.14	0.55	0.34	41.38	32264	23174
10"	45	30	30	22	45	7	4	500	78.54	57.96
250 mm	3.1	2.07	2.07	1.52	3.1	0.48	0.28	34.48	50670	37393
12"	40	25	25	19	40	7	3	400	113.10	85.54
300 mm	2.76	1.72	1.72	1.31	2.76	0.48	0.21	27.59	72967	55186
Max. Seal Temp.	900°F (482°C)	900°F (482°C)*	800°F (427°C)	750°F (399°C)	900°F (482°C)	600°F (316°C)	500°F (260°C)			

Notes: * Contact ZOOK for higher temperatures
- For sizes, burst ratings and temperatures not shown, contact ZOOK.

L-D and TLDV Series Minimum and Maximum Pressure Ratings psig (barg) @ 72°F (22°C)

Disk Size	L-D		TLDV			
	Top Section 316, Nickel, Inconel or Monel		Top Section			
			316, Inconel or Monel		Nickel	
	Seal Material: PFA		Seal Material: PFA		Seal Material: PFA	
	min.	max.	min.	max.	min.	max.
1"	50	1000	80	1000	80	600
25 mm	3.45	68.97	5.52	68.97	5.52	41.38
1-1/2"	40	700	75	700	75	450
40 mm	2.76	48.28	5.17	48.28	5.17	31.03
2"	25	550	35	550	35	395
50 mm	1.72	37.93	2.41	37.93	2.41	27.24
3"	20	450	25	450	25	315
80 mm	1.38	31.03	1.72	31.03	1.72	21.72
4"	15	410	18	410	18	300
100 mm	1.03	28.28	1.24	28.28	1.24	20.69
6"	10	320	14	320	14	225
150 mm	0.69	22.07	0.97	22.07	0.97	15.52
8"	7.5	290	11	290	11	200
200 mm	0.52	20.00	0.76	20.00	0.76	13.79
10"	5	240	8	240	8	160
250 mm	0.34	16.55	0.55	16.55	0.55	11.03
12"	5	200	8	200	8	140
300 mm	0.34	13.79	0.55	13.79	0.55	9.66
Max. Temp.	500°F (260°C)		500°F (260°C)		500°F (260°C)	

Notes: • For sizes, burst ratings and temperatures not shown, contact ZOOK

Table Tolerance

Table Tolerance - ZOOK and ASME											Table Tolerance - PED					
Burst Pressure Range (psig)		ZOOK and ASME Manufacturing Design Range (psig)								Burst Tolerance	Burst Pressure Range (barg)		Total Performance Tolerance			
		Standard		Reduced Tolerance										Reduced Tolerance		
				Half		Quarter		Zero					Standard			
Minimum	Maximum	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus		Minimum	Maximum		Good	Better	Best
Min	<1.0	0	0.3	0.00	0.15	0.00	0.08	0.00	0.00	± 0.25 psig	Min	<0.069	±75%	±73%	±70%	±0.017 barg
1.0	<2.5	0.5	0.5	0.25	0.25	0.13	0.13	0.00	0.00	± 0.33 psig	0.069	<0.172	±65%	±45%	±35%	±0.023 barg
2.5	<4.0	1	1	0.50	0.50	0.25	0.25	0.00	0.00	± 0.5 psig	0.172	<0.276	±50%	±30%	±20%	±0.035 barg
4.0	<7.0	1	2	0.50	1.00	0.25	0.50	0.00	0.00	± 0.5 psig	0.276	<0.483	±50%	±30%	±20%	±0.035 barg
7.0	<11.0	1.5	2.5	0.75	1.25	0.38	0.63	0.00	0.00	± 0.8 psig	0.483	<0.759	±50%	±30%	±20%	±0.055 barg
11.0	<15.0	2	3	1.00	1.50	0.50	0.75	0.00	0.00	± 1.3 psig	0.759	<1.034	±25%	±20%	±15%	±0.090 barg
15.0	<17	2	3	1.00	1.50	0.50	0.75	0.00	0.00	± 2.0 psig	1.034	<1.172	±25%	±20%	±15%	±0.138 barg
17	<26	2	4	1.00	2.00	0.50	1.00	0.00	0.00	± 2.0 psig	1.172	<1.793	±25%	±20%	±15%	±0.138 barg
26	<40	3	5	1.50	2.50	0.75	1.25	0.00	0.00	± 2.0 psig	1.793	<2.758	±20%	±15%	±10%	±0.138 barg
40	<66	4	6	2.00	3.00	1.00	1.50	0.00	0.00	± 5%	2.758	<4.552	±15%	±10%	±7.5%	±5%
66	<101	5	9	2.50	4.50	1.25	2.25	0.00	0.00	± 5%	4.552	<6.966	±15%	±10%	±7.5%	±5%
101	<151	6	12	3.00	6.00	1.50	3.00	0.00	0.00	± 5%	6.966	<10.412	±10%	±7.5%	±6.5%	±5%
151	<201	9	16	4.50	8.00	2.25	4.00	0.00	0.00	± 5%	10.412	<13.859	±10%	±7.5%	±6.5%	±5%
201	<351	12	23	6.00	11.50	3.00	5.75	0.00	0.00	± 5%	13.859	<24.201	±10%	±7.5%	±6.5%	±5%
351	<500	15	30	7.50	15.00	3.75	7.50	0.00	0.00	± 5%	24.201	<34.474	±10%	±7.5%	±6.5%	±5%
500	Max	3%	6%	1.5%	3.0%	0.75%	1.5%	0.00	0.00	± 5%	34.474	Max	±10%	±7.5%	±6.5%	±5%

Certified Flow Resistance Factors

Disk Type	Krgl
D	2.40
D-V	6.21

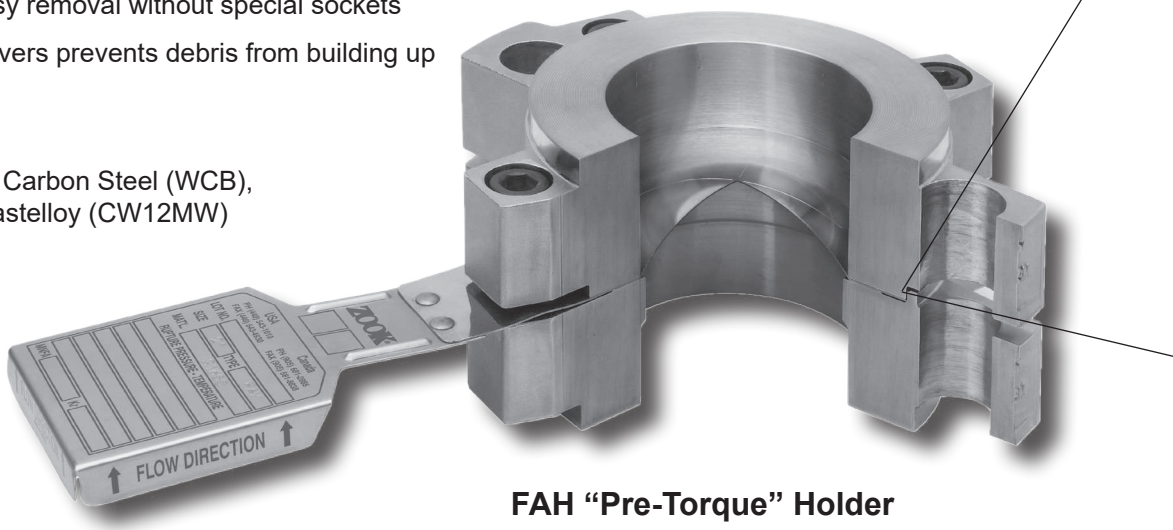
Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

Forward Acting Rupture Disks
FA Series

In a continued effort to provide cutting edge products and technologies for rupture disk users, ZOOK is pleased to introduce our FA Series of rupture disks and holders. The FA Series offers one unique holder design for use with multiple types of ZOOK Forward-Acting metal rupture disks.

Rupture Disk Holder Features

- FAH Series offers one unique holder design that fits with ZOOK Forward-Acting metal rupture disks (FAC, FAX)
- Pre-Torque Design allows for:
  a) Pre-assembly of a rupture disk into a holder prior to field installation
  b) Removal of the assembly from the piping system for inspection without disturbing the seal integrity of the rupture disk
  c) Pre-torque bolts properly seat the disk by engaging the holder bite
- Disk Dome is contained within holder's outlet, which prevents damaging the disk during installation into mating flanges
- Locating Pin allows only forward-acting type disks to be mounted into holder
- Fluoropolymer coated socket head cap screws resists corroding to holder assembly and provides easy removal without special sockets
- Polyethylene cap screw covers prevents debris from building up in cap screw head
- Sizes 1" thru 12"
- Standard holder materials: Carbon Steel (WCB), Stainless Steel (CF3M), Hastelloy (CW12MW)



FAH "Pre-Torque" Holder

- Holder information is permanently affixed to the O.D. of holder
- Bubble tight metal-to-metal bite and disk seal
- Flow direction arrows on disk tag and holder provides permanent visual verification that holder assembly is properly oriented in the piping system
- ANSI, DIN, and JIS Flange class and type specific, guards against installing an assembly into mating flanges with a different pressure rating than the rupture disk holder
- Positioning hole in mounting lug is located in the exact position as the mating flange and allows for proper alignment. It can also be used as an extra "hand" when installing into horizontal piping
- For custom materials and alternative flanges (types/ratings) ZOOK offers custom inserts (FAHI) or full flanges (FAH7) and custom overall heights

FAHI (Insert holder)

FAH7 (Full flanged pre-torque holder)

Forward Acting Rupture Disks
FA Series

FAC Options

FAC-V* **Vacuum Supports** are required on vacuum services. Vacuum supports are attached to the process side of the disk and allow the disk to support a full system vacuum

FAC-R* **Protective Rings** are recommended with FAC Series Disks to protect delicate materials and/or to provide stability when vacuum supports are not supplied

FAC-H* **Handling Supports** are attached to the process side of the disk to protect disk seals when vacuum supports are not supplied

FAC-BI* Equipped with ZOOK's Integral **Burst Indicator**

FAX Options

FAX-L* A process side **PFA Teflon liner** provides protection from corrosive media.

FAX-BI* Equipped with ZOOK's Integral **Burst Indicator**

*Note: The maximum temperature rating of rupture disks supplied with liners or seal and BI's is lower than the base disk material.

Certified Flow Resistance Factors (Kr)

Type	Krl (Liquid)	Krg (Gas)
FAX Series	1.78	0.39

FAC Rupture Disk Features

- The FAC series is a slotted metal top section and allows the use of metal & teflon seal materials. A wide variety of corrosive resistant seal materials are available.
- State-of-the-art laser slotted metal burst cap
- Operating ratios up to 85% of the low end of burst tolerance
- Unique alignment pin design ensures proper disk orientation into FAH series disk holder
- Disk design offers high cycle life
- Excellent for liquid, gas or 2 phased flow
- Wide range of standard and exotic materials available
- Sizes from 1" (25mm) through 12" (300mm)
- Burst ratings from 3 psig (0.21 barg) to 2500 psig (172.37 barg)
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- CE (PED), and TÜV compliance available

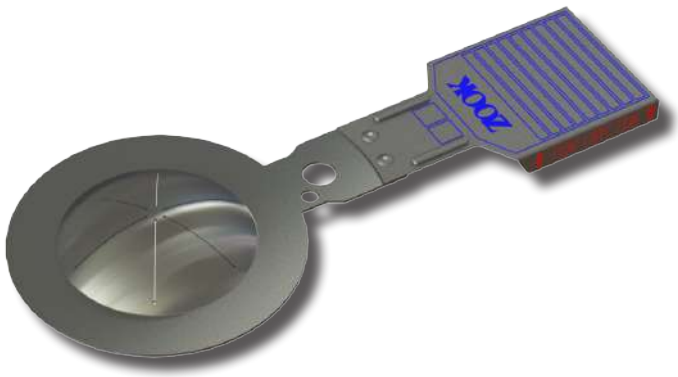
FAX Rupture Disk Features

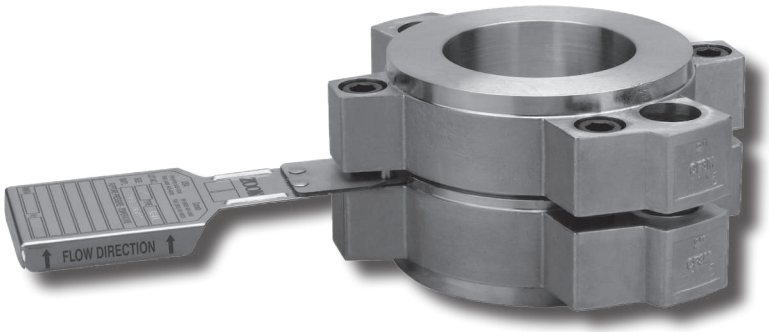
- A Fail-Safe Design. If the disk is damaged or incorrectly installed, it will always burst at or below the marked burst rating as indicated on the disk tag
- Designed for Non-fragmentation
- Operating ratios up to 90% of the low end of burst tolerance
- Disk design offers high cycle life
- Excellent for liquid, gas or 2 phased flow
- Standard manufacturing design range and total tolerance ensures marked rating on disk tag does not exceed the MAWP of equipment
- Withstands full vacuum without vacuum support
- Wide range of standard and exotic materials available
- Sizes from 1" (25mm) through 12" (300mm)
- Burst ratings from 45 psig (3.10 barg) to 3600 psig (248.28 barg)
- Resists product build-up. The smooth concave side of the disk is exposed to the process media
- Unique alignment pin design ensures proper disk orientation into FAH Series disk holder
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- ASME UD, CE (PED), and TÜV compliance available

Forward Acting Rupture Disks
FAC Series

Features

- The FAC Series is a slotted metal top section and allows the use of metal & teflon seal materials. A wide variety of corrosive resistant seal materials are available.
- State-of-the-art laser slotted metal burst cap
- Operating ratios up to 85% of the low end of burst tolerance
- Unique alignment pin design ensures proper disk orientation into FAH series disk holder
- Disk design offers high cycle life
- Excellent for liquid, gas or 2 phased flow
- Wide range of standard and exotic materials available
- Sizes from 1” (25mm) through 12” (300mm)
- Burst ratings from 3 psig (0.21 barg) to 2500 psig (172.37 barg)
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- CE (PED), and TÜV compliance available



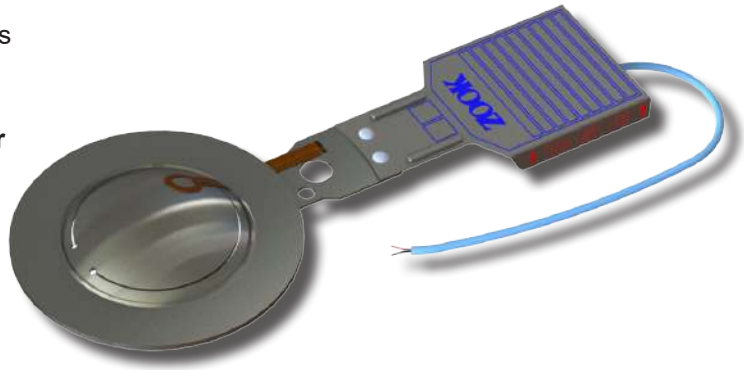


FAC Series disk mounts into FAH Series disk holder (refer to FAH Series data sheet)

Options

FAC-V*	**Vacuum Supports** are required on vacuum services. Vacuum supports are attached to the process side of the disk and allow the disk to support a full system vacuum
FAC-R*	**Protective Rings** are recommended with FAC Series disks to protect delicate materials and/or to provide stability when vacuum supports are not supplied
FAC-H*	**Handling Supports** are attached to the process side of the disk to protect disk seals when vacuum supports are not supplied
FAC-BI*	Equipped with ZOOK’s Integral **Burst Indicator**

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.



Minimum and Maximum Pressure Ratings - psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressures with Listed Seal Materials							Maximum Burst Pressure	MNFA in² (mm²)	
	Burst Cap Materials: 316, Inconel, Monel, Nickel or Hastelloy C276									
	316	Inconel	Monel	Nickel	Hastelloy C276	Aluminum	PFA Teflon		FAC	FAC-V FAC-V-BI FAC-BI
1"	400	300	240	185	400	60	25	2500	0.86	0.77
25 mm	27.59	20.69	16.55	12.76	27.59	4.14	1.72	172.41	554	496
1-1/2"	275	200	155	125	275	35	20	2000	2.04	1.68
40 mm	18.97	13.79	10.69	8.62	18.97	2.41	1.38	137.93	1316	1083
2"	165	120	90	80	165	25	15	1500	3.36	3.23
50 mm	11.38	8.28	6.21	5.52	11.38	1.72	1.03	103.45	2167	2083
2-1/2"	145	105	80	65	145	20	13	1250	4.79	4.16
65 mm	10.00	7.24	5.52	4.48	10.00	1.38	0.90	86.19	3090	2683
3"	125	95	70	55	125	15	10	1000	7.39	6.34
80 mm	8.62	6.55	4.83	3.79	8.62	1.03	0.69	68.97	4767	4090
4"	90	75	50	40	90	12	8	900	12.73	10.30
100 mm	6.21	5.17	3.45	2.76	6.21	0.83	0.55	62.07	8212	6645
6"	75	60	40	35	75	10	6	700	28.89	24.31
150 mm	5.17	4.14	2.76	2.41	5.17	0.69	0.41	48.28	18638	15683
8"	60	40	35	25	60	8	5	600	50.03	38.34
200 mm	4.14	2.76	2.41	1.72	4.14	0.55	0.34	41.38	32277	24735
10"	45	30	30	22	45	7	4	500	78.85	67.52
250 mm	3.1	2.07	2.07	1.52	3.1	0.48	0.28	34.48	50870	43561
12"	40	25	25	19	40	7	3	400	113.10	90.08
300 mm	2.76	1.72	1.72	1.31	2.76	0.48	0.21	27.59	72967	58116
Max. Temp.	900°F (482°C)	900°F (482°C)*	800°F (427°C)	750°F (399°C)	900°F (482°C)	600°F (316°C)	500°F (260°C)			

Notes: * Contact ZOOK for higher temperatures

- For materials, sizes, burst ratings and temperatures not shown, contact ZOOK
- Maximum temperature rating of rupture disks supplied with a BI is 400°F (200°C)

Table Tolerance

Table Tolerance - ZOOK											Table Tolerance - PED					
Burst Pressure Range (psig)		ZOOK Manufacturing Design Range (psig)								Burst Tolerance	Burst Pressure Range (barg)		Total Performance Tolerance			
		Standard		Reduced Tolerance										Reduced Tolerance		
				Half		Quarter		Zero					Standard			
Minimum	Maximum	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus		Minimum	Maximum		Good	Better	Best
Min	<1.0	0	0.3	0.00	0.15	0.00	0.08	0.00	0.00	± 0.25 psig	Min	<0.069	±75%	±73%	±70%	±0.017 barg
1.0	<2.5	0.5	0.5	0.25	0.25	0.13	0.13	0.00	0.00	± 0.33 psig	0.069	<0.172	±65%	±45%	±35%	±0.023 barg
2.5	<4.0	1	1	0.50	0.50	0.25	0.25	0.00	0.00	± 0.5 psig	0.172	<0.276	±50%	±30%	±20%	±0.035 barg
4.0	<7.0	1	2	0.50	1.00	0.25	0.50	0.00	0.00	± 0.5 psig	0.276	<0.483	±50%	±30%	±20%	±0.035 barg
7.0	<11.0	1.5	2.5	0.75	1.25	0.38	0.63	0.00	0.00	± 0.8 psig	0.483	<0.759	±50%	±30%	±20%	±0.055 barg
11.0	<15.0	2	3	1.00	1.50	0.50	0.75	0.00	0.00	± 1.3 psig	0.759	<1.034	±25%	±20%	±15%	±0.090 barg
15.0	<17	2	3	1.00	1.50	0.50	0.75	0.00	0.00	± 2.0 psig	1.034	<1.172	±25%	±20%	±15%	±0.138 barg
17	<26	2	4	1.00	2.00	0.50	1.00	0.00	0.00	± 2.0 psig	1.172	<1.793	±25%	±20%	±15%	±0.138 barg
26	<40	3	5	1.50	2.50	0.75	1.25	0.00	0.00	± 2.0 psig	1.793	<2.758	±20%	±15%	±10%	±0.138 barg
40	<66	4	6	2.00	3.00	1.00	1.50	0.00	0.00	± 5%	2.758	<4.552	±15%	±10%	±7.5%	±5%
66	<101	5	9	2.50	4.50	1.25	2.25	0.00	0.00	± 5%	4.552	<6.966	±15%	±10%	±7.5%	±5%
101	<151	6	12	3.00	6.00	1.50	3.00	0.00	0.00	± 5%	6.966	<10.412	±10%	±7.5%	±6.5%	±5%
151	<201	9	16	4.50	8.00	2.25	4.00	0.00	0.00	± 5%	10.412	<13.859	±10%	±7.5%	±6.5%	±5%
201	<351	12	23	6.00	11.50	3.00	5.75	0.00	0.00	± 5%	13.859	<24.201	±10%	±7.5%	±6.5%	±5%
351	<500	15	30	7.50	15.00	3.75	7.50	0.00	0.00	± 5%	24.201	<34.474	±10%	±7.5%	±6.5%	±5%
500	Max	3%	6%	1.5%	3.0%	0.75%	1.5%	0.00	0.00	± 5%	34.474	Max	±10%	±7.5%	±6.5%	±5%

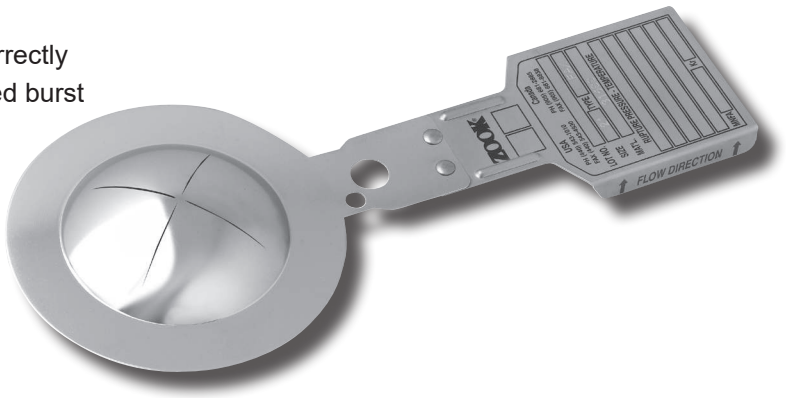
Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

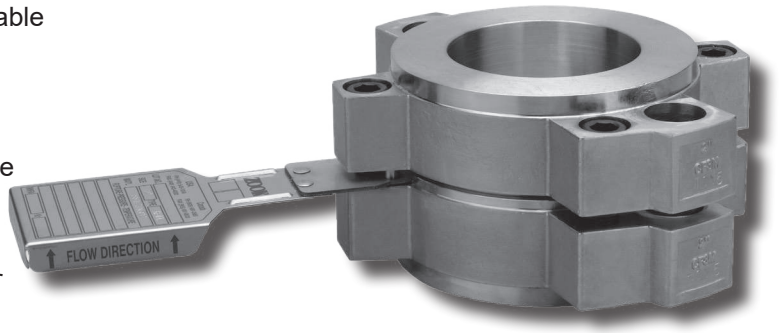
Forward Acting Rupture Disks
FAX Series

The FA Series of rupture disks are complementary designs to cover the majority of rupture disk applications and are designed to be used in the FAH Series disk holder.

Features

- A Fail-Safe Design. If the disk is damaged or incorrectly installed, it will always burst at or below the marked burst rating as indicated on the disk tag
- Designed for Non-fragmentation
- Operating ratios up to 90% of the low end of burst tolerance
- Disk design offers high cycle life
- Excellent for liquid, gas or 2 phased flow
- Standard manufacturing design range and total tolerance ensures marked rating on disk tag does not exceed the MAWP of equipment
- Withstands full vacuum without vacuum support
- Wide range of standard and exotic materials available
- Sizes from 1” (25mm) through 12” (300mm)
- Burst ratings from 45 psig (3.10 barg) to 3600 psig (248.28 barg)
- Resists product build-up. The smooth concave side of the disk is exposed to the process media
- Unique alignment pin design ensures proper disk orientation into FAH Series disk holder
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- ASME UD, CE (PED), and TÜV compliance available



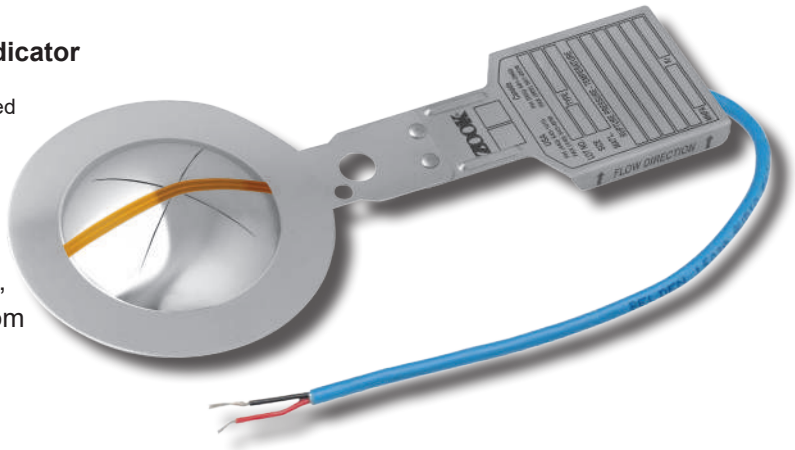


FAX Series disk mounts into FAH Series disk holder (refer to FAH Series data sheet)

Options

FAX-L*	A process side **PFA Teflon liner** provides protection from corrosive media.
FAX-BI*	Equipped with ZOOK’s Integral **Burst Indicator**

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.



Safety Relief Valve Protection

When a disk is mounted under a Safety Relief Valve, the working components of the valve are isolated from hostile environments.

www.rometec.it - Tel. 06 5061635 - info@rometec.it

Forward Acting Rupture Disks
FAX Series

Minimum and Maximum Pressure Ratings - psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressure							Maximum Burst Pressure	MNFA in² (mm²)
	316	Inconel	Monel	Nickel	Hastelloy C276	FAX-L	FAX-BI		
1"	110	110	100	79	165	Same as minimum material	Same as minimum material	3600	0.86
25 mm	7.59	7.59	6.90	5.45	11.38			248.28	554
1-1/2"	80	85	73	73	125			3600	2.04
40 mm	5.52	5.86	5.03	5.03	8.62			248.28	1316
2"	61	70	65	61	102			3600	3.36
50 mm	4.21	4.82	4.48	4.21	7.03			248.28	2167
2 1/2"	60	60	60	45	87			2159	4.79
64 mm	4.14	4.14	4.14	3.10	6.00			148.90	3090
3"	60	60	60	45	87			2159	7.39
80 mm	4.14	4.14	4.14	3.10	6.00			148.90	4767
4"	60	60	55	45	84			2159	12.73
100 mm	4.14	4.14	3.79	3.10	5.79			148.90	8212
6"	60	60	55	45	96			1440	28.89
150 mm	4.14	4.14	3.79	3.10	6.62			99.31	18638
8"	60	60	55	45	93			1440	50.03
200 mm	4.14	4.14	3.79	3.10	6.41			99.31	32277
10"	72	72	60	45	111			1440	78.85
250 mm	4.97	4.97	4.14	3.10	7.66			99.31	50870
12"	82	82	65	45	120			720	113.10
300 mm	5.66	5.66	4.48	3.10	8.28			49.66	72967
Max. Temp.	900°F (482°C)	900°F (482°C)*	800°F (427°C)	750°F (399°C)	900°F (482°C)	500°F (260°C)	400°F (204°C)		

Notes: * Contact ZOOK for higher temperatures
- For materials, sizes, burst ratings and temperatures not shown, contact ZOOK

Teflon liner may be added to provide additional protection against corrosive media
Requirements/Limitations when liner is added:
1. A protective ring is recommended
2. Max. Temperature of 500°F (260°C) – Limitations of liner material
3. Liner may be applied to all ratings. Contact ZOOK if liner is required on both sides of rupture disk
4. The maximum temperature rating of rupture disks supplied with liners and BI's is lower than the base disk material

Manufacturing Design Range & Total Performance Tolerance

ASME						PED				
Burst Pressure (psig)		Manufacturing Design Range			Burst Tolerance	Burst Pressure (barg)		Total Performance Tolerance		
Minimum	Maximum	Good	Better	Best		Minimum	Maximum	Good	Better	Best
1.0	<2.5	-10%	-5%	-0%	±0.33 psig	0.069	<0.172	±50%	-	±0.023 barg
2.5	<5.0	-10%	-5%	-0%	±0.5 psig	0.172	<0.345	±30%	±25%	±0.035 barg
5.0	<7.0	-10%	-5%	-0%	±0.5 psig	0.345	<0.483	±20%	±17.5%	±0.035 barg
7.0	<11.0	-10%	-5%	-0%	±0.8 psig	0.483	<0.759	±20%	±15%	±0.055 barg
11.0	<15	-10%	-5%	-0%	±1.3 psig	0.759	<1.034	±20%	±15%	±0.090 barg
15.0	<26	-10%	-5%	-0%	±2.0 psig	1.034	<1.793	±20%	±15%	±0.138 barg
26.0	<40	-10%	-5%	-0%	±2.0 psig	1.793	<2.758	±15%	±12.5%	±0.138 barg
40.0	Max	-10%	-5%	-0%	±5%	2.758	Max	±10%	±7.5%	±5%

Note: Burst tolerances are the maximum expected variation from the disk's marked burst pressure

Certified Flow Resistance Factors

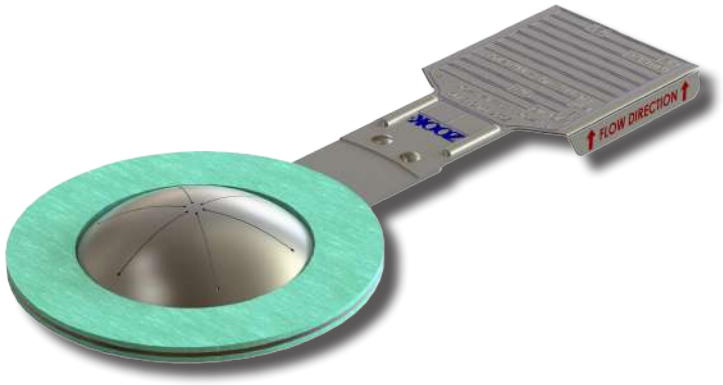
Krl (Liquid)	Krg (Gas)
1.78	0.39

Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

Forward Acting Rupture Disks
FD Series

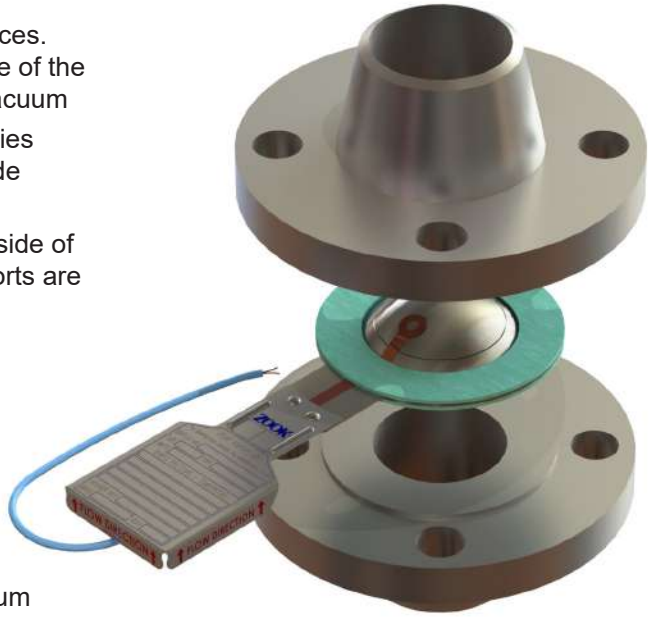
Features

- The FD Series has a slotted metal top section and allows the use of metal & Teflon seal materials. A wide variety of corrosive resistant seal materials are available.
- State-of-the-art laser slotted metal burst cap
- Disk design offers high cycle life
- Operating ratios up to 85% of the low end of burst tolerance
- Excellent for liquid, gas or 2 phased flow
- Flange mounted - no holder required, c/w Compressed fiber gaskets (Other gasket materials available)
- Sizes from 1” (25 mm) to 44” (1100 mm)
- Burst ratings from 1 psig (0.07 barg) to 285 psig (19.5 barg)
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- CE (PED), and TÜV compliance available



Options

FD-V	**Vacuum Supports** are required on vacuum services. Vacuum supports are attached to the process side of the disk and allow the disk to support a full system vacuum
FD-R	**Protective Rings** are recommended with FD Series disks to protect delicate materials and/or to provide stability when vacuum supports are not supplied
FD-H	**Handling Supports** are attached to the process side of the disk to protect disk seals when vacuum supports are not supplied
FD-BI	Equipped with ZOOK’s Integral **Burst Indicator**



Ordering Information

- Always consult the factory with your complete flange specifications to determine if tooling is available. Minimum Flange requirements: Type, Size, Pressure Rating, Standard, and I.D.
- Customer’s must have flexibility in their piping to facilitate installation & removal of the rupture disk, proving sufficient clearance of the disks dome.
- If the flange I.D. cannot be confirmed or the piping is rigid ZOOK can supply a reusable outlet spacer ring.

Typical Installation

Forward Acting Rupture Disks
FD Series

Minimum and Maximum Pressure Ratings with Teflon Seal - psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressure	Maximum Burst Pressure	MNFA in² (mm²)	
			FD-R	FD-V
1"	30	285	0.86	0.78
25 mm	2.07	19.65	554	503
1.5"	14	285	2.04	1.33
40 mm	0.96	19.65	1316	858
2"	10	285	3.36	3.02
50 mm	0.69	19.65	2167	1948
2.5"	8	285	4.79	4.31
65 mm	0.55	19.65	3090	2780
3"	7	285	7.39	6.65
80 mm	0.48	19.65	4767	4290
4"	6	285	12.73	11.46
100 mm	0.41	19.65	8212	7393
5"	6	260	19.03	19.03
125 mm	0.41	17.93	12277	12277
6"	6	230	28.89	26.00
150 mm	0.41	15.86	18638	16774
8"	5	200	50.03	45.02
200 mm	0.34	13.79	32277	29045
10"	2	175	78.85	70.97
250 mm	0.14	12.07	50870	45787
Max. Temp.	500°F (260°C)			

Disk Size	Minimum Burst Pressure	Maximum Burst Pressure	MNFA in² (mm²)	
			FD-R	FD-V
12"	2	150	113.10	101.79
300 mm	0.14	10.34	72967	65670
14"	1	120	137.89	124.10
350 mm	0.07	8.27	88961	80064
16"	1	100	182.65	164.39
400 mm	0.07	6.89	117838	106057
18"	1	80	233.71	210.33
450 mm	0.07	5.52	150780	135696
20"	1	70	291.04	261.94
500 mm	0.07	4.83	187767	168993
24"	1	60	424.56	382.10
600 mm	0.07	4.14	273909	246515
26"	1	55	500.74	450.67
650 mm	0.07	3.79	323057	290754
28"	1	50	583.21	524.89
700 mm	0.07	3.45	376261	338638
30"	1	50	671.96	604.76
750 mm	0.07	3.45	433519	390166
32"	1	50	766.99	690.29
800 mm	0.07	3.45	494831	445347
Max. Temp.	500°F (260°C)			

Disk Size	Minimum Burst Pressure	Maximum Burst Pressure	MNFA in² (mm²)	
			FD-R	FD-V
34"	1	50	868.31	781.48
850 mm	0.07	3.45	560196	504179
36"	1	40	975.91	878.32
900 mm	0.07	2.76	629615	566656
38"	1	40	1089.79	980.81
950 mm	0.07	2.76	703088	632779
40"	1	40	1209.95	1088.96
1000 mm	0.07	2.76	780614	702553
42 "	1	40	1336.40	1202.76
1050 mm	0.07	2.76	862194	775972
44"	1	40	1469.14	1322.22
1100 mm	0.07	2.76	947828	853043
Max. Temp.	500°F (260°C)			

Notes: • For materials, sizes, burst ratings and temperatures not shown, contact ZOOK
• Maximum temperature rating for rupture disk equipped with BI is 400°F (204°C)

Table Tolerance

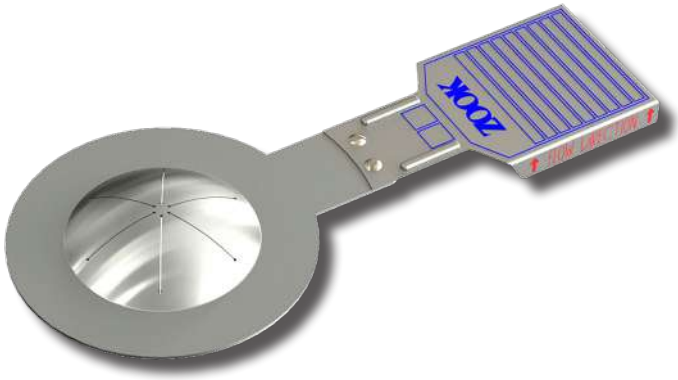
Table Tolerance - ZOOK											Table Tolerance - PED					
Burst Pressure Range (psig)		ZOOK Manufacturing Design Range (psig)								Burst Tolerance	Burst Pressure Range (barg)		Total Performance Tolerance			
		Standard		Reduced Tolerance										Reduced Tolerance		
				Half		Quarter		Zero					Standard			
Minimum	Maximum	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus		Minimum	Maximum		Good	Better	Best
Min	<1.0	0	0.3	0.00	0.15	0.00	0.08	0.00	0.00	± 0.25 psig	Min	<0.069	±75%	±73%	±70%	±0.017 barg
1.0	<2.5	0.5	0.5	0.25	0.25	0.13	0.13	0.00	0.00	± 0.33 psig	0.069	<0.172	±65%	±45%	±35%	±0.023 barg
2.5	<4.0	1	1	0.50	0.50	0.25	0.25	0.00	0.00	± 0.5 psig	0.172	<0.276	±50%	±30%	±20%	±0.035 barg
4.0	<7.0	1	2	0.50	1.00	0.25	0.50	0.00	0.00	± 0.5 psig	0.276	<0.483	±50%	±30%	±20%	±0.035 barg
7.0	<11.0	1.5	2.5	0.75	1.25	0.38	0.63	0.00	0.00	± 0.8 psig	0.483	<0.759	±50%	±30%	±20%	±0.055 barg
11.0	<15.0	2	3	1.00	1.50	0.50	0.75	0.00	0.00	± 1.3 psig	0.759	<1.034	±25%	±20%	±15%	±0.090 barg
15.0	<17	2	3	1.00	1.50	0.50	0.75	0.00	0.00	± 2.0 psig	1.034	<1.172	±25%	±20%	±15%	±0.138 barg
17	<26	2	4	1.00	2.00	0.50	1.00	0.00	0.00	± 2.0 psig	1.172	<1.793	±25%	±20%	±15%	±0.138 barg
26	<40	3	5	1.50	2.50	0.75	1.25	0.00	0.00	± 2.0 psig	1.793	<2.758	±20%	±15%	±10%	±0.138 barg
40	<66	4	6	2.00	3.00	1.00	1.50	0.00	0.00	± 5%	2.758	<4.552	±15%	±10%	±7.5%	±5%
66	<101	5	9	2.50	4.50	1.25	2.25	0.00	0.00	± 5%	4.552	<6.966	±15%	±10%	±7.5%	±5%
101	<151	6	12	3.00	6.00	1.50	3.00	0.00	0.00	± 5%	6.966	<10.412	±10%	±7.5%	±6.5%	±5%
151	<201	9	16	4.50	8.00	2.25	4.00	0.00	0.00	± 5%	10.412	<13.859	±10%	±7.5%	±6.5%	±5%
201	<351	12	23	6.00	11.50	3.00	5.75	0.00	0.00	± 5%	13.859	<24.201	±10%	±7.5%	±6.5%	±5%
351	<500	15	30	7.50	15.00	3.75	7.50	0.00	0.00	± 5%	24.201	<34.474	±10%	±7.5%	±6.5%	±5%
500	Max	3%	6%	1.5%	3.0%	0.75%	1.5%	0.00	0.00	± 5%	34.474	Max	±10%	±7.5%	±6.5%	±5%

Teflon - TM The Chemours Company

Forward Acting Rupture Disks
FDZ Series

Features

- The FDZ Series is a slotted metal top section and allows the use of metal & Teflon seal materials. A wide variety of corrosive resistant seal materials are available.
- State-of-the-art laser slotted metal burst cap
- Operating ratios up to 85% of the low end of burst tolerance
- Disk design offers high cycle life
- Excellent for liquid, gas or 2 phased flow
- Wide range of standard and exotic materials available
- Sizes from 1/2” (13mm) through 30” (750mm)
- Burst ratings from 3 psig (0.21 barg) to 2500 psig (172.37 barg)
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- CE (PED), and TÜV compliance available

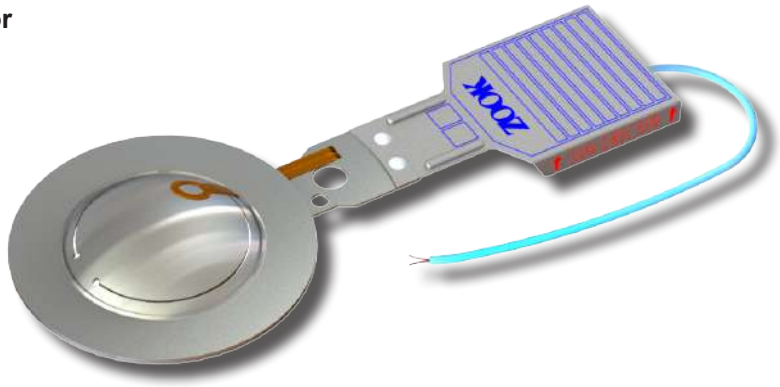


FDZ Series disk mounts into UHZ Series disk holder (refer to UHZ Series data sheet)

Options

FDZ-V*	**Vacuum Supports** are required on vacuum services. Vacuum supports are attached to the process side of the disk and allow the disk to support a full system vacuum
FDZ-R*	**Protective Rings** are recommended with FDZ Series disks to protect delicate materials and/or to provide stability when vacuum supports are not supplied
FDZ-H*	**Handling Supports** are attached to the process side of the disk to protect disk seals when vacuum supports are not supplied
FDZ-BI*	Equipped with ZOOK’s Integral **Burst Indicator**

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.



Forward Acting Rupture Disks
FDZ Series

Minimum and Maximum Pressure Ratings - psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressures with Listed Seal Materials									
	Burst Cap Materials: 316, Inconel, Monel, Nickel or Hastelloy C276							Maximum Burst Pressure	MNFA in² (mm²)	
	316	Inconel	Monel	Nickel	Hastelloy C276	Aluminum	PFA Teflon		FDZ	FDZ-V FDZ-V-BI FDZ-BI
1/2"	1100	880	600	540	1100	140	90	2500	0.30	0.18
13 mm	75.86	60.69	41.38	37.24	75.86	9.66	6.21	172.41	193	116
3/4"	800	700	460	440	800	110	60	2500	0.53	0.49
20 mm	55.17	48.28	31.72	30.34	55.17	7.59	4.14	172.41	341	316
1"	400	300	240	185	400	60	25	2500	0.86	0.77
25 mm	27.59	20.69	16.55	12.76	27.59	4.14	1.72	172.41	554	496
1-1/2"	275	200	155	125	275	35	20	2000	2.04	1.68
40 mm	18.97	13.79	10.69	8.62	18.97	2.41	1.38	137.93	1316	1083
2"	165	120	90	80	165	25	15	1500	3.36	3.23
50 mm	11.38	8.28	6.21	5.52	11.38	1.72	1.03	103.45	2167	2083
2-1/2"	145	105	80	65	145	20	13	1250	4.79	4.16
65 mm	10.00	7.24	5.52	4.48	10.00	1.38	0.90	86.19	3090	2683
3"	125	95	70	55	125	15	10	1000	7.39	6.34
80 mm	8.62	6.55	4.83	3.79	8.62	1.03	0.69	68.97	4767	4090
4"	90	75	50	40	90	12	8	900	12.73	10.30
100 mm	6.21	5.17	3.45	2.76	6.21	0.83	0.55	62.07	8212	6645
6"	75	60	40	35	75	10	6	700	28.89	24.31
150 mm	5.17	4.14	2.76	2.41	5.17	0.69	0.41	48.28	18638	15683
8"	60	40	35	25	60	8	5	600	50.03	38.34
200 mm	4.14	2.76	2.41	1.72	4.14	0.55	0.34	41.38	32277	24735
10"	45	30	30	22	45	7	4	500	78.85	67.52
250 mm	3.1	2.07	2.07	1.52	3.1	0.48	0.28	34.48	50870	43561
12"	40	25	25	19	40	7	3	400	113.10	90.08
300 mm	2.76	1.72	1.72	1.31	2.76	0.48	0.21	27.59	72967	58116
Max. Temp.	900°F (482°C)	900°F (482°C)*	800°F (427°C)	750°F (399°C)	900°F (482°C)	600°F (316°C)	500°F (260°C)			

Notes: * Contact ZOOK for higher temperatures
- For materials, sizes, burst ratings and temperatures not shown, contact ZOOK

Table Tolerance

Table Tolerance - ZOOK											Table Tolerance - PED					
Burst Pressure Range (psig)		ZOOK Manufacturing Design Range (psig)								Burst Tolerance	Burst Pressure Range (barg)		Total Performance Tolerance			
		Standard		Reduced Tolerance										Reduced Tolerance		
				Half		Quarter		Zero					Standard			
Minimum	Maximum	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus		Minimum	Maximum		Good	Better	Best
Min	<1.0	0	0.3	0.00	0.15	0.00	0.08	0.00	0.00	± 0.25 psig	Min	<0.069	±75%	±73%	±70%	±0.017 barg
1.0	<2.5	0.5	0.5	0.25	0.25	0.13	0.13	0.00	0.00	± 0.33 psig	0.069	<0.172	±65%	±45%	±35%	±0.023 barg
2.5	<4.0	1	1	0.50	0.50	0.25	0.25	0.00	0.00	± 0.5 psig	0.172	<0.276	±50%	±30%	±20%	±0.035 barg
4.0	<7.0	1	2	0.50	1.00	0.25	0.50	0.00	0.00	± 0.5 psig	0.276	<0.483	±50%	±30%	±20%	±0.035 barg
7.0	<11.0	1.5	2.5	0.75	1.25	0.38	0.63	0.00	0.00	± 0.8 psig	0.483	<0.759	±50%	±30%	±20%	±0.055 barg
11.0	<15.0	2	3	1.00	1.50	0.50	0.75	0.00	0.00	± 1.3 psig	0.759	<1.034	±25%	±20%	±15%	±0.090 barg
15.0	<17	2	3	1.00	1.50	0.50	0.75	0.00	0.00	± 2.0 psig	1.034	<1.172	±25%	±20%	±15%	±0.138 barg
17	<26	2	4	1.00	2.00	0.50	1.00	0.00	0.00	± 2.0 psig	1.172	<1.793	±25%	±20%	±15%	±0.138 barg
26	<40	3	5	1.50	2.50	0.75	1.25	0.00	0.00	± 2.0 psig	1.793	<2.758	±20%	±15%	±10%	±0.138 barg
40	<66	4	6	2.00	3.00	1.00	1.50	0.00	0.00	± 5%	2.758	<4.552	±15%	±10%	±7.5%	±5%
66	<101	5	9	2.50	4.50	1.25	2.25	0.00	0.00	± 5%	4.552	<6.966	±15%	±10%	±7.5%	±5%
101	<151	6	12	3.00	6.00	1.50	3.00	0.00	0.00	± 5%	6.966	<10.412	±10%	±7.5%	±6.5%	±5%
151	<201	9	16	4.50	8.00	2.25	4.00	0.00	0.00	± 5%	10.412	<13.859	±10%	±7.5%	±6.5%	±5%
201	<351	12	23	6.00	11.50	3.00	5.75	0.00	0.00	± 5%	13.859	<24.201	±10%	±7.5%	±6.5%	±5%
351	<500	15	30	7.50	15.00	3.75	7.50	0.00	0.00	± 5%	24.201	<34.474	±10%	±7.5%	±6.5%	±5%
500	Max	3%	6%	1.5%	3.0%	0.75%	1.5%	0.00	0.00	± 5%	34.474	Max	±10%	±7.5%	±6.5%	±5%

Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

Forward Acting Rupture Disks
PB Series

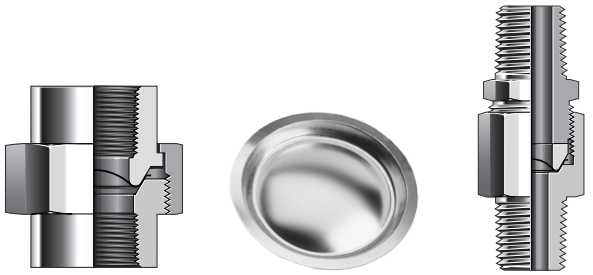
Features

- The PB series is a forward-acting, tension-loaded design
- Operating ratios up to 75% of the low end of burst tolerance
- Excellent for liquid, gas or 2 phase flow
- Wide range of standard and exotic materials available
- Sizes from 1/4” (6mm) through 24” (600mm)
- Burst ratings from 3 psig (0.21 barg) to 60,000 psig (4136.85 barg)
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- ASME, CE (PED), and TÜV compliance available

Options

PB-V	**Vacuum Supports** are required on vacuum services. Vacuum supports are attached to the process side of the disk and allow the disk to support a full system vacuum
PB-L	**Liners / Coatings** Teflon liners are available to provide protection from corrosive media if required. Coatings are also available. Refer to Table for maximum temperature ratings for disk, liner and coatings
PB-R	**Protective Rings** are recommended with PB Series Disks to protect delicate materials and/or to provide stability when vacuum supports are not supplied

PB Series disk mounts into 7A - Angle Seat disk holder (refer to 7A - Angle Seat data sheet)



Contact ZOOK for Union & Screw-type options

Forward Acting Rupture Disks
PB Series

Minimum and Maximum Pressure Ratings - psig (barg) @ 72°F (22°C)

Protective Ring and Temperature Specifications

Disk Size	316			Inconel			Monel			Hastelloy C276			Nickel			Aluminum			MNFA in² (mm²)	
	Min.	P.R.*	Max.	Min.	P.R.*	Max.	Min.	P.R.*	Max.	Min.	P.R.*	Max.	Min.	P.R.*	Max.	Min.	P.R.*	Max.	PB PBUT	PB-V PBUT-V
1/4"	1228	▲	60000	1065	▲	60000	445	▲	30000	1228	▲	30000	495	▲	30000	180	▲	1600	0.05	-
6.35 mm	84.69	▲	4139.94	73.45	▲	4139.94	30.69	▲	2068.97	84.69	▲	2069.97	34.14	▲	2068.97	12.41	▲	110.34	32.26	-
1/2"	600	1000	9000	450	1000	9000	360	1000	9000	600	1000	9000	275	1000	9000	75	150	1500	0.17	0.13
12.70 mm	41.38	68.97	620.69	31.03	68.97	620.69	24.83	68.97	620.69	41.38	68.97	620.69	18.97	68.97	620.69	5.17	10.34	103.45	109	83.87
3/4"	400	900	9000	350	900	9000	230	700	9000	400	900	9000	220	700	9000	60	125	1000	0.44	0.35
19.05 mm	27.59	62.07	620.69	24.14	62.07	620.69	15.86	48.28	620.69	27.59	62.07	620.69	15.17	48.28	620.69	4.14	8.62	68.97	283	225
1"	300	700	9000	220	700	9000	175	500	9000	300	700	9000	135	500	9000	35	60	1000	0.71	0.51
25 mm	20.69	48.28	620.69	15.17	48.28	620.69	12.07	300.00	620.69	20.69	48.28	620.69	9.31	34.48	620.69	2.41	4.14	68.97	458	329
1-1/2"	200	500	6000	140	500	6000	115	300	6000	200	500	6000	90	300	6000	23	40	800	1.54	1.05
40 mm	13.79	34.48	413.79	9.66	34.48	413.79	7.93	20.69	413.79	13.79	34.48	413.79	6.21	20.69	413.79	1.59	2.76	55.17	993	677
2"	110	350	6000	95	300	6000	65	300	4000	110	350	6000	60	300	4000	15	35	600	3.36	3.19
50 mm	7.59	24.14	413.79	6.55	20.69	413.79	4.48	20.69	275.86	7.59	24.14	413.79	4.14	20.69	275.86	1.03	2.41	41.38	2167	2058
3"	90	300	3600	75	250	3600	50	250	3000	90	300	3600	40	200	3000	10	30	500	7.39	7.02
80 mm	6.21	20.69	248.21	5.17	17.24	248.21	3.45	17.24	206.90	6.21	20.69	248.21	2.76	13.79	206.90	0.69	2.07	34.48	4767	4529
4"	60	250	3600	55	250	3000	40	175	2000	60	250	3600	30	140	2000	8	40	390	12.73	12.18
100 mm	4.14	17.24	248.21	3.79	17.24	206.90	2.76	12.07	137.93	4.14	17.24	248.21	2.07	9.66	137.93	0.55	2.76	26.90	8212	7858
6"	50	200	3500	40	200	2500	30	175	1500	50	200	3500	25	100	1500	7	40	290	28.27	21.76
150 mm	3.45	13.79	241.38	2.76	13.79	172.41	2.07	12.07	103.45	3.45	13.79	241.38	1.72	6.90	103.45	0.48	2.76	20.00	18238	14038
8"	40	210	1500	30	200	1500	25	100	1200	40	210	1500	18	100	1200	6	30	225	50.01	35.92
200 mm	2.76	14.48	103.45	2.07	13.79	103.45	1.72	6.90	82.76	2.76	14.48	103.45	1.24	6.90	82.76	0.41	2.07	15.52	32264	23174
10"	30	170	750	25	170	750	20	125	750	30	170	750	16	125	750	6	25	175	78.54	57.96
250 mm	2.07	11.72	51.72	1.72	11.72	51.72	1.38	8.62	51.72	2.07	11.72	51.72	1.10	8.62	51.72	0.41	1.72	12.07	50670	37393
12"	25	180	700	22	180	750	18	125	700	25	180	700	14	80	700	5	25	150	113.10	85.54
300 mm	1.72	12.41	48.28	1.52	12.41	51.72	1.24	8.62	48.28	1.72	12.41	48.28	0.97	5.52	48.28	0.34	1.72	10.34	72967	55186
Max. Temp.	900°F (482°C)			900°F (482°C)**			800°F (427°C)			900°F (482°C)			750°F (399°C)			250°F (121°C)				

Notes: ▲ Not Available

* Protective Ring - Process side protective ring is required when specified burst pressure is at or below the value shown in this column

** Contact ZOOK for higher temperatures

- Other materials and sizes are available upon request
- For sizes, burst ratings and temperatures not shown, contact ZOOK
- Maximum temperature for lined PB-L with Teflon material liner: 500°F (260°C)
- Not all pressures are achievable with PB Series Disks. If Manufacturing tests do not yield desired results, consideration must be given to alternate materials, alternate disk designs, or a broader manufacturing design range

Table Tolerance

Table Tolerance - ZOOK and ASME									Table Tolerance - PED				
Burst Pressure Range (psig)		ZOOK and ASME Manufacturing Design Range (psig)						Burst Tolerance	Burst Pressure Range (barg)		Total Performance Tolerance		
		Standard		Reduced Tolerance								Reduced Tolerance	
				Half		Quarter					Standard		
Minimum	Maximum	Minus	Plus	Minus	Plus	Minus	Plus		Minimum	Maximum		Good	Better
Min	<1.0	0	0.3	0.00	0.15	0.00	0.08	± 0.25 psig	Min	<0.069	±75%	±73%	±70%
1.0	<2.5	0.5	0.5	0.25	0.25	0.13	0.13	± 0.33 psig	0.069	<0.172	±65%	±45%	±35%
2.5	<4.0	1	1	0.50	0.50	0.25	0.25	± 0.5 psig	0.172	<0.276	±50%	±30%	±20%
4.0	<7.0	1	2	0.50	1.00	0.25	0.50	± 0.5 psig	0.276	<0.483	±50%	±30%	±20%
7.0	<11.0	1.5	2.5	0.75	1.25	0.38	0.63	± 0.8 psig	0.483	<0.759	±50%	±30%	±20%
11.0	<15.0	2	3	1.00	1.50	0.50	0.75	± 1.3 psig	0.759	<1.034	±25%	±20%	±15%
15.0	<17	2	3	1.00	1.50	0.50	0.75	± 2.0 psig	1.034	<1.172	±25%	±20%	±15%
17	<26	2	4	1.00	2.00	0.50	1.00	± 2.0 psig	1.172	<1.793	±25%	±20%	±15%
26	<40	3	5	1.50	2.50	0.75	1.25	± 2.0 psig	1.793	<2.758	±20%	±15%	±10%
40	<66	4	6	2.00	3.00	1.00	1.50	± 5%	2.758	<4.552	±15%	±10%	±7.5%
66	<101	5	9	2.50	4.50	1.25	2.25	± 5%	4.552	<6.966	±15%	±10%	±7.5%
101	<151	6	12	3.00	6.00	1.50	3.00	± 5%	6.966	<10.412	±10%	±7.5%	±6.5%
151	<201	9	16	4.50	8.00	2.25	4.00	± 5%	10.412	<13.859	±10%	±7.5%	±6.5%
201	<351	12	23	6.00	11.50	3.00	5.75	± 5%	13.859	<24.201	±10%	±7.5%	±6.5%
351	<500	15	30	7.50	15.00	3.75	7.50	± 5%	24.201	<34.474	±10%	±7.5%	±6.5%
500	Max	3%	6%	1.5%	3.0%	0.75%	1.5%	± 5%	34.474	Max	±10%	±7.5%	±6.5%

Certified Flow Resistance Factors

Disk Type	Krgl
PB	0.92
PB-V	5.46

Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

Forward Acting Rupture Disks
SFAZ Series

Features

- A Fail-Safe Design. If the disk is damaged or incorrectly installed, it will always burst at or below the marked burst rating as indicated on the disk tag
- Designed for Non-fragmentation
- Operating ratios up to 90% of the low end of burst tolerance
- Disk design offers high cycle life
- Excellent for liquid, gas or 2 phased flow
- Standard manufacturing design range and total tolerance ensures marked rating on disk tag does not exceed the MAWP of equipment
- Withstands full vacuum without vacuum support
- Wide range of standard and exotic materials available
- Sizes from 1/2” (13 mm) through 24” (600 mm)
- Burst ratings from 15 psig (1 barg) to 3600 psig (248.28 barg)
- Resists product build-up. The smooth concave side of the disk is exposed to the process media
- 3-dimensional stainless steel tag permanently engraved with complete disk specifications
- ASME UD, CE (PED), and TÜV compliance available

UHZ Disk Holder

Options

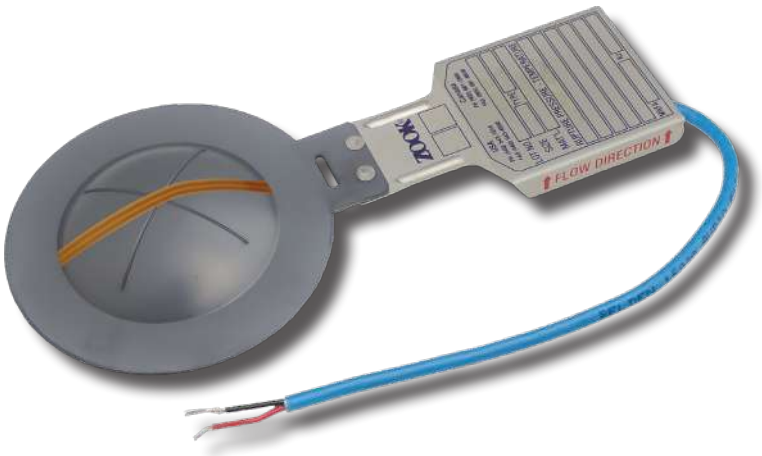
SFAZ-L* A process side **PFA Teflon liner** provides protection from corrosive media.

SFAZ-BI* Equipped with ZOOK’s Integral **Burst Indicator**

*Note: The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.

Safety Relief Valve Protection

When a disk is mounted under a Safety Relief Valve, the working components of the valve are isolated from hostile environments.



Forward Acting Rupture Disks
SFAZ Series

Minimum and Maximum Pressure Ratings - psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressure							Maximum Burst Pressure	MNFA in² (mm²)
	316	Inconel	Monel	Nickel	Hastelloy C276	SFAZ-L	SFAZ-BI		
1/2"	200	200	200	200	300	Same as minimum material	Same as minimum material	3600	0.30
13 mm	13.79	13.79	13.79	13.79	20.68			248.28	193
3/4"	150	125	125	125	225			3600	0.53
19 mm	10.34	8.62	8.62	8.62	15.51			248.28	341
1"	110	110	100	79	165			3600	0.86
25 mm	7.59	7.59	6.90	5.45	11.38			248.28	554
1-1/2"	80	85	73	73	125			3600	2.04
40 mm	5.52	5.86	5.03	5.03	8.62			248.28	1,316
2"	61	70	65	61	102			3600	3.36
50 mm	4.21	4.82	4.48	4.21	7.03			248.28	2,167
2 1/2"	60	60	60	45	87			2159	4.79
65 mm	4.14	4.14	4.14	3.10	6.00			148.90	3,090
3"	60	60	60	45	87			2159	7.39
80 mm	4.14	4.14	4.14	3.10	6.00			148.90	4,767
4"	60	60	55	45	84			2159	12.73
100 mm	4.14	4.14	3.79	3.10	5.79			148.90	8,212
6"	60	60	55	45	96			1440	28.89
150 mm	4.14	4.14	3.79	3.10	6.62			99.31	18,638
8"	60	60	55	45	93			1440	50.03
200 mm	4.14	4.14	3.79	3.10	6.41			99.31	32,277
10"	72	72	60	45	111			1440	78.85
250 mm	4.97	4.97	4.14	3.10	7.66			99.31	50,870
12"	82	82	65	45	120			720	113.10
300 mm	5.66	5.66	4.48	3.10	8.28			49.66	72,967
Max. Temp.	900°F (482°C)	900°F (482°C)*	800°F (427°C)	750°F (399°C)	900°F (482°C)	500°F (260°C)	400°F (204°C)		

Notes: * Contact ZOOK for higher temperatures
- For materials, sizes, burst ratings and temperatures not shown, contact ZOOK

Teflon liner may be added to provide additional protection against corrosive media
Requirements/Limitations when liner is added:
1. A protective ring is recommended
2. Max. Temperature of 500°F (260°C) – Limitations of liner material
3. Liner may be applied to all ratings. Contact ZOOK if liner is required on both sides of rupture disk
4. The maximum temperature rating of rupture disks supplied with liners and BI's is lower than the base disk material

Manufacturing Design Range & Total Performance Tolerance

ASME						PED				
Burst Pressure (psig)		Manufacturing Design Range			Burst Tolerance	Burst Pressure (barg)		Total Performance Tolerance		
Minimum	Maximum	Good	Better	Best		Minimum	Maximum	Good	Better	Best
1.0	<2.5	-10%	-5%	-0%	±0.33 psig	0.069	<0.172	±50%	-	±0.023 barg
2.5	<5.0	-10%	-5%	-0%	±0.5 psig	0.172	<0.345	±30%	±25%	±0.035 barg
5.0	<7.0	-10%	-5%	-0%	±0.5 psig	0.345	<0.483	±20%	±17.5%	±0.035 barg
7.0	<11.0	-10%	-5%	-0%	±0.8 psig	0.483	<0.759	±20%	±15%	±0.055 barg
11.0	<15	-10%	-5%	-0%	±1.3 psig	0.759	<1.034	±20%	±15%	±0.090 barg
15.0	<26	-10%	-5%	-0%	±2.0 psig	1.034	<1.793	±20%	±15%	±0.138 barg
26.0	<40	-10%	-5%	-0%	±2.0 psig	1.793	<2.758	±15%	±12.5%	±0.138 barg
40.0	Max	-10%	-5%	-0%	±5%	2.758	Max	±10%	±7.5%	±5%

Note: Burst tolerances are the maximum expected variation from the disk's marked burst pressure

Certified Flow Resistance Factors

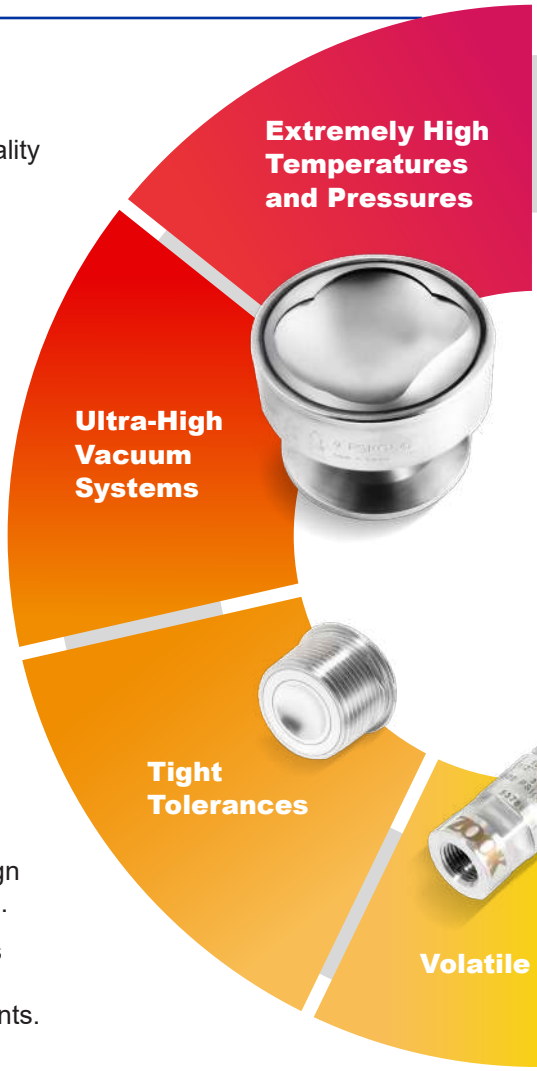
Krl (Liquid)	Krg (Gas)
1.78	0.39

Teflon - TM The Chemours Company
Inconel - TM Special Metals Corporation
Monel - TM Special Metals Corporation
Hastelloy - TM Haynes International

About ZOOK

ZOOK is a global market leader with over 90 years of manufacturing expertise of quality metal & graphite rupture disks and other pressure relief products. ZOOK has global locations in the USA, United Kingdom, Canada and Malaysia, with state-of-the-art manufacturing facilities.

ZOOK designs custom and standard pressure relief solutions in both metal and graphite for numerous industries such as, oil and gas, chemical processing, petroleum refining, OEM, pharmaceutical, food and beverage, transportation and powder / bulk.



Welded Solutions for Challenging Applications

Many customer applications cannot be met using standard rupture disk designs. ZOOK's Welded Solutions department is dedicated to the design and development of customized rupture disk assemblies tailored to specific customer applications.

ZOOK offers a large assortment of welded designs for a wide variety of applications with custom fittings and connections for stringent applications such as ultra-high vacuum, OEM markets, military, aerospace, and many other high-end engineering industries.

ZOOK has combined state-of-the-art equipment with in-house design engineers to ensure that customers' needs are met with the best solutions for their specific needs. ZOOK Design Engineers will work with your engineering team to streamline the design and implement a fact-finding process to develop the best solution for your application.

Building a robust solution not only necessitates an excellent design, but also requires validation to back it up. ZOOK Engineering and Manufacturing have invested heavily in validation equipment and techniques to test the design, fit, and quality of components.




Benefits of Using a Welded Solution

- One-Piece Welded Design that meets customers specified pressure protection requirements or pressure event management
- Hermetic Seal provides maximum leak tightness with helium leak rates as low as $1x10^{-9}$ std.cc/sec
- Custom Housing and Connections
- Optimized Assembly Geometry
- Easy to Install which Reduces the Chance of Damage or Premature Failure
- Especially for Aerospace applications, ZOOK recognizes the importance of weight savings in its design considerations

Standard Disk Types:

- Pre-Bulged
- Scored Forward Acting
- Reverse Acting (RA4, RA6, RA8 & RAX)
- ZANITARY® Series

ZOOK Offers the Highest Quality Control:

- 100% Leak Testing
- Burst Testing
- Weld & Body Pressure Testing
- Digital Inspection of Threads & Body Dimensions
- Ultra Sonically Cleaned
- 100% Material Traceability

ZOOK®

Custom Solutions
Custom Welded Assemblies

Many Applications are Perfect for Welded Pressure Relief Devices

Containment Vessels Bioreactors Pipeline Pumps
Compressor/Pump Stations Lab Instrumentation
Battery Transportation Flare Stacks
Chillers HVAC Pressure Activation Equipment
Marine Cargo Containers Accumulators
Compressed & Cryogenic Gas Containment Process Vessels
Distillation Fracking Filtration Systems
Storage Pump & Valve Protection Power Plants
Boilers Air Conditioners & Refrigeration Systems
Compressed Gas Fermenters Cementing
Wellhead Protection Cryogenic Gas
Desalination Autoclave Overpressure of Equipment
Overpressure of Equipment Separation
Heat Exchangers Research & Testing Process Piping
Cooling Towers Ocean Tanker Hull Protection Boiler Feed Piping
Hazardous Materials Boiler Extrusion Barrel

Industries We Serve

- Aviation
- Magnetic Resonance Imaging
- Military and Defense
- OEM (Original Equipment Manufacturers)
- Oil and Gas
- Outer Space Equipment
- Plastic Extrusion
- Power and Energy
- Refrigeration Systems
- Research Universities and Laboratories
- Ultra-Pure Applications

- Outsourced 3rd Party Welded Joint and Component Non-destructive Testing
- Cycle Testing
- 3rd Party Precision Cleaning
- Test Plan Development
  - Inspection and Test Plans
  - PPAP (Production Part Approval Process) Submissions
  - Control Plans
  - Video / Photographic Borescope Inspections
- Custom Packaging
- Private Labelling
- Application Specific Design Review Directly with the Customers End Users

ZOOK Welded Rupture Disks are Manufactured in Accordance to Global Standards:

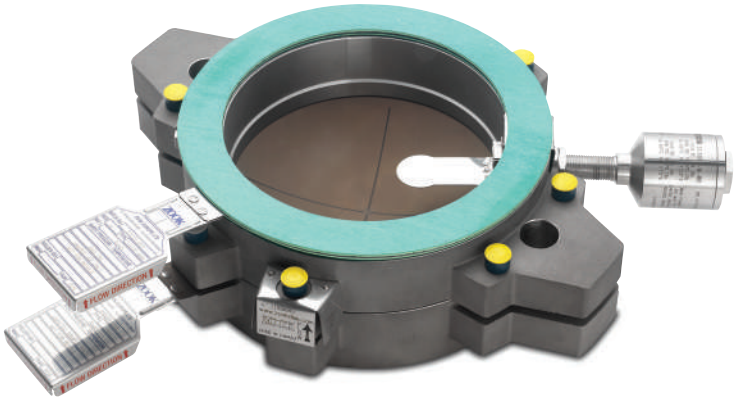
- EN ISO 4126-2
- Pressure Equipment Directive
- ASME Section VIII
- AWS D17.1
- ASME Section IX

Common Disk Materials (Contact ZOOK for other disk materials):

- 316 & 304 Stainless Steel
- 600 Inconel
- 200/201 Nickel
- 400 Monel
- 316L Stainless Steel

Skid-Safe Unit

Reduce the number of premature failures and unsafe operations on well-head skids with ZOOK's Skid-Safe Unit; a unique pressure protection system for the Oil and Gas industry.






ZOOK has designed a revolutionary unit ready for immediate installation

All too often damage to pressure relief devices can result in situations with the rupture disk failing below rated pressure or producing an ineffectual burst whereby the vent area is seriously reduced by the rupture disk malfunction. To undertake maintenance on a rupture disk assembly in remote areas is a highly costly operation and a serious source of inconvenience.

What are the components of the Skid-Safe unit?

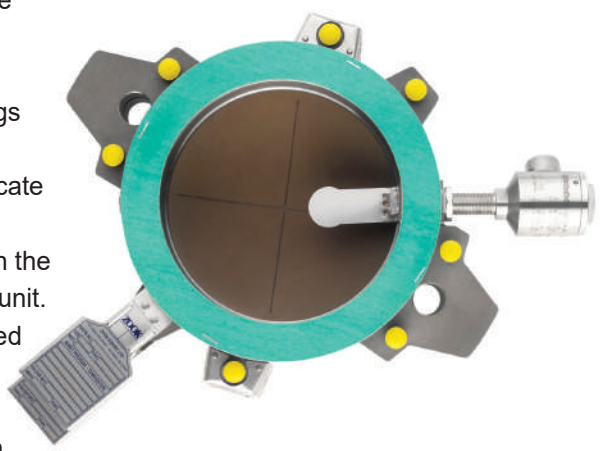
1. Reverse Acting Disk
2. RAH Pre-Torque Holder
3. Z-Alert non-intrusive proximity switch & magnetic sensor

- The RA reverse acting disk comes in four different types, a low pressure RA4, a medium pressure RA6 and a higher pressure RA8 all of these suitable for both liquid and gas service and are solid metal non-scored designs. The fourth member of the RA disk family is the RAX, a scored disk suitable for gas service only.
- The RAH "Skid-Safe" pre-torque holder ensures the domed membrane does not extend beyond the holder connection face ensuring that protection is given.
- There is no one fixed height to the assembly and various dimensions can be achieved to allow the Skid-Safe unit to be installed into existing plant geometry.

Custom Solutions
Skid-Safe Unit

The Skid-Safe unit provides numerous technical and commercial advantages compared to conventional alternatives:

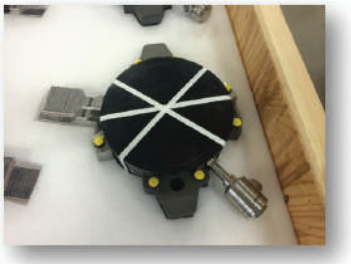
- Fully assembled and ready for immediate installation between flanges, which reduces installation time and assembly difficulties
- Reverse acting disk has full dome membrane protection from the RAH holder
- Skid-Safe unit can be easily installed using integral flange bolt holes
- Self-centralization of the Skid-Safe unit within the pipework
- Specific integral flange guide holes ensure the Skid-Safe unit cannot be installed into non-compatible flange ratings
- Installation only needs one engineer. Simply hang or locate one flange bolt through the pipework flange and through the guide hole in the Skid-Safe unit.
- Z-Alert detect device is tested for function and continuity during assembly as part of a comprehensive Inspection and test plan.



- Z-Alert detect device is the most current technology of non-intrusive rupture disk detection devices and is included in the Skid-Safe unit.
- Z-Alert proximity switch, is the counterpart to the Z-Alert detect device and is remote to the rupture disk thus ensuring that the operation of the rupture disk is not compromised by the addition of extra disk components. This is important since other magnetic burst detection systems can add significantly to the assembly Kr value.

Additional Technical Features

- Various disk materials available
- Holder available in a variety of flange ratings and materials including Carbon Steel, Stainless Steel, NORSOK certified Super-Duplex and Duplex amongst others
- Dual certification of the disk to ASME UD and PED CE available
- Proximity switch certified to ATEX, IP66 to 68, UL, IECExd, TRCU, and SIL2
- Various gasket materials available
- Skid-Safe unit arrives in internationally accepted packaging and can be taken directly from the crate and installed immediately



The 'Skid-Safe' unit is the latest ZOOK Innovation in rupture disk technology promoting a safer, more reliable and cost effective solution for the fracking LNG industry.

The Skid-Safe system is the ultimate pressure relief protection on infrastructures used for the extraction of Coal Seam Gas, Liquid Natural Gas by way of fracking and other industry methods.

ZOOK's Skid-Safe System Advantage

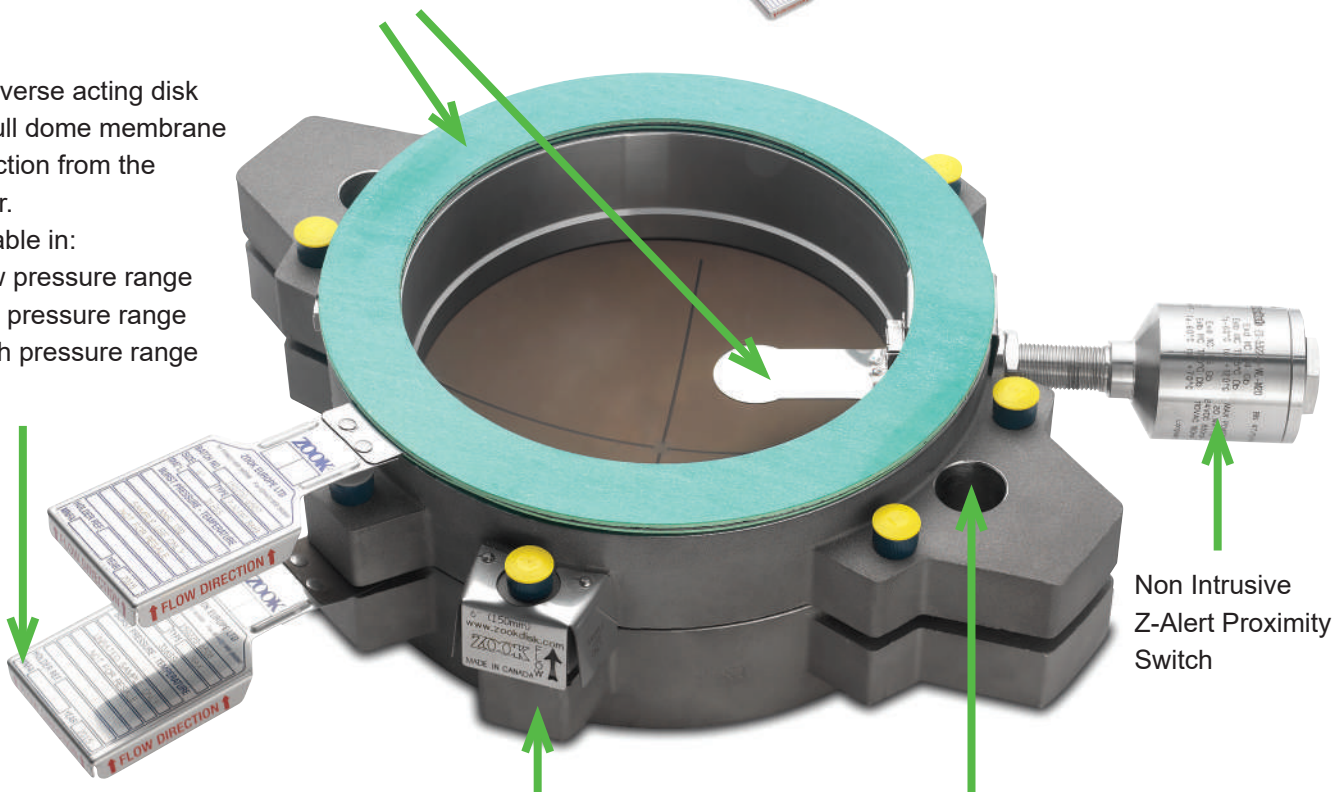
- Fully assembled and ready for immediate installation between flanges, substantially reduces installation time and assembly difficulties
- Reverse acting disk has full dome membrane protection from the RAH holder
- Skid-Safe unit can be easily installed using integral flange bolt holes
- Self-centralization of the Skid-Safe unit within the pipework
- Specific integral flange guide holes ensure the Skid-Safe unit cannot be installed into non-compatible flange ratings

The Components

Z-Alert detect device is the most current technology of rupture disk detection. It is situated remote of the disk allowing maintenance and inspection without interfering with the disk assembly.

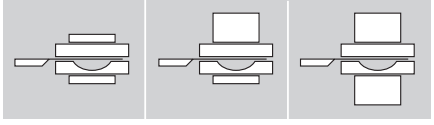
RA reverse acting disk has full dome membrane protection from the holder.
Available in:

- Low pressure range
- Mid pressure range
- High pressure range



Non Intrusive Z-Alert Proximity Switch

Can be machined to meet existing piping specifications.



Flange bolt holes drilled to the exact flange specification for which it is being installed. This guarantees the total assembly is centrally located within the specific pipework flange rating enabling unobstructed flow when the disk ruptures.

Rupture Disk

RA4

- Low pressure range
- Suitable for both liquid and gas

RA6

- Mid pressure range
- 95% Operating ratio
- Suitable for both liquid and gas

RA8

- Low pressure range
- 95% Operating ratio
- Suitable for both liquid and gas

RAX

- High pressure range
- Scored metal design
- GAS SERVICE ONLY

Various disk materials available. Skid-Safe can also be used with forward acting disks.

Holder

- Various holder dimensions available.
- Holders are available for all major flange standards.
- Skid-Safe holder can be a reverse acting holder or forward acting holder. Please specify when ordering.

Z-Alert

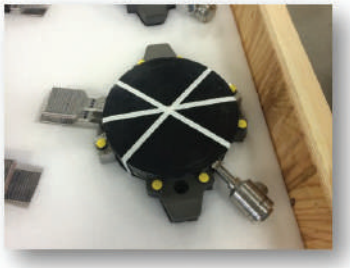
- Z-Alert is installed in all Skid-Safe units.
- Z-Alert (Non-instrusive proximity switch & magnetic sensor) is pre-assembled onto the RAH holder ready for installation directly between pipework flanges.
- Z-Alert is certified to:
  ATEX, IECExd, IP66 to 68, UL, TRCU, SIL2

Z-Alert Magnetic Sensor

Z-Alert Proximity Switch

Preassembled & Shipped for Immediate Installation

- ZOOK will fully assemble the Skid-Safe unit to customer's specifications
- Skid-Safe unit arrives in internationally accepted package and can be taken directly from the crate and installed immediately



OEM

ORIGINAL EQUIPMENT MANUFACTURER

ZOOK has a comprehensive standardized product line of rupture disks for every industry that requires overpressure protection of containment vessels, process piping, and equipment used in manufacturing. Specially designed pressure activation devices (PAD's) and developed by ZOOK and their unique research and development laboratory.

However, ZOOK engineers have the experience and technical expertise to design and custom manufacture rupture disks for new and application specific applications to meet unique dimensional requirements, material compatibilities and operating parameters for OEM applications.

As an Original Equipment Manufacturer (OEM), you can count on ZOOK to deliver high quality pressure relief solutions that meet your specific application requirements. ZOOK is dedicated to OEMs around the world looking for a tailor-made and fully integrated pressure relief solution.

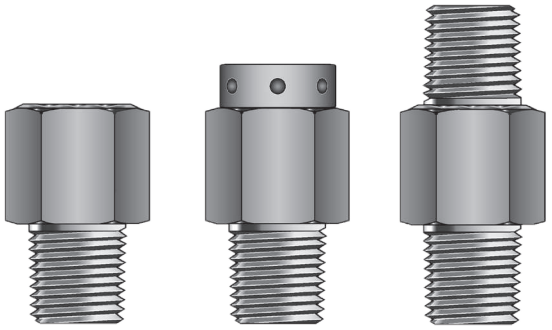
We Offer the Following:

- In-House Design and Manufacturing
- Full Range of Engineering Services
- Full Testing on Materials and Products
- Worldwide Approvals & Accreditation

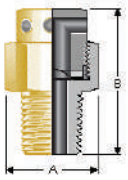
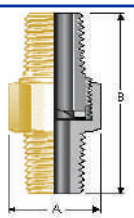
Custom Solutions
TA Series

The TA series rupture disk assembly is a one-time-use disposable brass unit that comes pre-assembled and tested to meet your relieving pressure requirements.

- Ideal for small pressurized systems such as:
  Air conditioning systems, refrigeraton units, hydraulic accumulators, gas cylinders, portable compressed air systems, high pressure cleaning systems, and laboratory equipment.
- Alternate body materials, disk styles and thread types are available upon request.
  Contact ZOOK for more information.



Free Outlet | Muffled Outlet | Threaded Outlet

	Assembly Number	Connections		Hex Size A	Approximate End-To-End Dimensions B
		Inlet	Outlet		
	0200-00	1/8" MNPT	FREE	1-1/8"	1-3/8"
	0300-00	1/4" MNPT	FREE	1-1/8"	1-3/8"
	0400-00	3/8" MNPT	FREE	1-1/8"	1-3/8"
	0500-00	1/2" MNPT	FREE	1-1/8"	1-3/8"
	0600-00	3/4" MNPT	FREE	1-3/8"	1-9/16"
	0700-00	1" MNPT	FREE	1-3/4"	1-3/4"
	0201-00	1/8" MNPT	MUFFLED	1-1/8"	1-3/4"
	0301-00	1/4" MNPT	MUFFLED	1-1/8"	2"
	0401-00	3/8" MNPT	MUFFLED	1-1/8"	1-7/8"
	0501-00	1/2" MNPT	MUFFLED	1-1/8"	2"
	0601-00	3/4" MNPT	MUFFLED	1-3/8"	2-3/8"
	0701-00	1" MNPT	MUFFLED	1-3/4"	2-3/4"
	0202-00	1/8" MNPT	1/8" MNPT	1-1/8"	2-3/16"
	0303-00	1/4" MNPT	1/4" MNPT	1-1/8"	2-3/16"
	0404-00	3/8" MNPT	3/8" MNPT	1-1/8"	2-3/16"
	0505-00	1/2" MNPT	1/2" MNPT	1-1/8"	2-3/16"
	0606-00	3/4" MNPT	3/4" MNPT	1-3/8"	2-3/8"
	0707-00	1" MNPT	1" MNPT	1-3/4"	2-7/8"

Disk Type ▲	Assembly Series	Burst Pressures psig @ 72°F (22°C)				
		Min.				Max.
		Nickel	Monel	Inconel	316SS	ALL
FPB	TA1-	275	360	450	600	1000
FPB-V	TA2-	275	360	450	600	1000
FD*	TA3-	60	90	90	90	1000
FD-V*	TA4-	60	90	90	90	1000

Notes:

▲ Manufacturing Range, Burst Tolerance, and Max. Temperatures per standard disk type

* Standard Seal Material = Teflon

When ordering a TA assembly, specify:

Assembly Number: _____

Assembly Series:_____

Materials:

Disk: ( ) Nickel ( ) Monel
( ) Inconel ( ) 316SS
( ) Other_____

Body: ( ) Brass
( ) Other_____

Operating Specifications:

_____psig@ _____°F

Burst Specifications:

_____psig@ _____°F

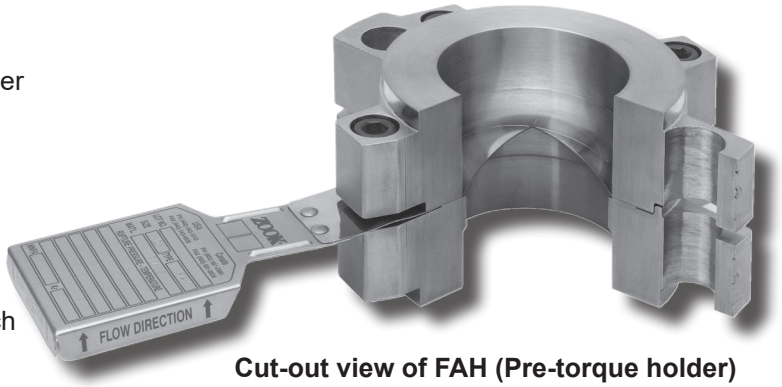
Quantity:

_____each /_____ pcs/yr

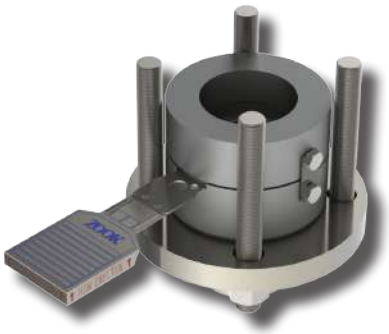
Rupture Disk Holders
FAH Series

Features

- FAH Series offers one unique holder design that fits with multiple types of ZOOK Forward-Acting metal rupture disks (FAC, FAX)
- Pre-Torque Design allows for:
  a) Pre-assembly of a rupture disk into a holder prior to field installation
  b) Removal of the assembly from the piping system for inspection without disturbing the seal integrity of the rupture disk
  c) Pre-torque bolts properly seat the disk by engaging the holder bite
- Disk Dome is contained within holder's outlet, which prevents damaging the disk during installation into mating flanges
- Locating Pin allows only forward-acting type disks to be mounted into holder
- Fluoropolymer coated socket head cap screws resists corroding to holder assembly and provides easy removal without special sockets
- Polyethylene cap screw covers prevents debris from building up in cap screw head
- Sizes 1" thru 12"
- Standard cast holder materials: Carbon Steel (WCB), Stainless Steel (CF3M), Hastelloy (CW12MW)
- Holder information is permanently affixed to the O.D. of holder
- Bubble tight metal-to-metal bite and disk seal
- Flow direction arrows on disk tag and holder provides permanent visual verification that holder assembly is properly oriented in the piping system
- ANSI, DIN, and JIS Flange class and type specific, guards against installing an assembly into mating flanges with a different pressure rating than the rupture disk holder
- Positioning hole in mounting lug is located in the exact position as the mating flange and allows for proper alignment. It can also be used as an extra "hand" when installing into horizontal piping
- For custom materials and alternative flanges (types/ratings) ZOOK offers custom inserts (FAHI) or full flanges (FAH7) and custom overall heights



Cut-out view of FAH (Pre-torque holder)



FAHI (Insert holder)

FAH7 (Full flanged pre-torque holder)

Rupture Disk Holders
FAH Series

Holder Dimensions / Specifications

Nominal Size	Available Flange Class* (ANSI / DIN)	Minimum Height (in. / mm)	Standard Height (in. / mm)			Weight (Short Pattern) (lbs / kgs)	Number of Cap Screws	Cap Screws Hex Size (in.)	Gauge tap (NPT) (in.)
			Short Pattern FAH	Mid Pattern FAH-LP1	Long Pattern FAH-LP2				
1”	150/300/600	1-9/16	2-1/8	2-11/32	2-9/16	3.8 lbs	4	3/16	1/8, 1/4
25 mm	10/16/25/40	39.68	53.97	59.53	65.09	1.72 kgs	4	3/16	1/8, 1/4
1-1/2”	150/300/600	1-11/16	2-1/4	2-29/32	3-9/16	6.4 lbs	4	1/4	1/8, 1/4
40 mm	10/16/25/40	42.86	57.15	73.82	90.49	2.9 kgs	4	1/4	1/8, 1/4
2”	150/300/600	2-5/32	2-23/32	3-15/16	5-5/32	9.0 lbs	4	5/16	1/8, 1/4, 1/2
50 mm	10/16/25/40	54.77	69.06	100	130.97	4.08 kgs	4	5/16	1/8, 1/4, 1/2
2-1/2”	150/300/600	2-9/16	3-1/8	4-15/16	6-23/32	16.6 lbs	4	3/8	1/8, 1/4, 1/2
65 mm	10/16/25/40	65.09	79.38	125.41	170.66	7.5 kgs	4	3/8	1/8, 1/4, 1/2
3”	150/300/600	2-9/16	3-1/8	4-15/16	6-23/32	16.6 lbs	4	3/8	1/8, 1/4, 1/2
80 mm	10/16/25/40	65.09	79.38	125.41	170.66	7.5 kgs	4	3/8	1/8, 1/4, 1/2
4”	150/300	2-19/32	3-5/32	5-31/32	8-3/4	22.5 lbs	4	3/8	1/8, 1/4, 1/2
100 mm	10/16/25/40	65.88	80.17	151.61	222.25	10.2 kgs	4	3/8	1/8, 1/4, 1/2
6”	150/300	3-7/32	3-7/16	6-25/32	10-3/32	36.00 lbs	8	5/16	1/8, 1/4, 1/2
150 mm	10/16/25/40	81.76	87.31	172.24	256.38	16.33 kgs	8	5/16	1/8, 1/4, 1/2
8”	150/300	4-1/16	4-5/8	9-1/32	13-15/32	53.4 lbs	8	3/8	1/8, 1/4, 1/2
200 mm	10/16	103.19	117.48	229.39	342.11	24.22 kgs	8	3/8	1/8, 1/4, 1/2
10”	150	4-3/4	5-21/32	11-5/32	16-11/16	99.8 lbs	12	3/8	1/8, 1/4, 1/2
250 mm	10/16	120.65	143.67	283.37	423.86	45.27 kgs	12	3/8	1/8, 1/4, 1/2
12”	150/300	5-1/16	6-17/32	13-5/32	19-25/32	136.00 lbs	12	1/4	1/8, 1/4, 1/2
300 mm	10/16	128.59	165.89	334.17	502.44	61.69 kgs	12	1/4	1/8, 1/4, 1/2

Notes:

* Holders are also available to fit JIS flanging. Contact ZOOK for details.

Minimum height specified in table above will maintain the pre-torque feature of the rupture disk holder.

- Refer to ASME/ANSI B16.5 pipe flanges and flange fittings (Table 2) for max allowable pressure/temperature ratings per flange class.

Options / Accessories

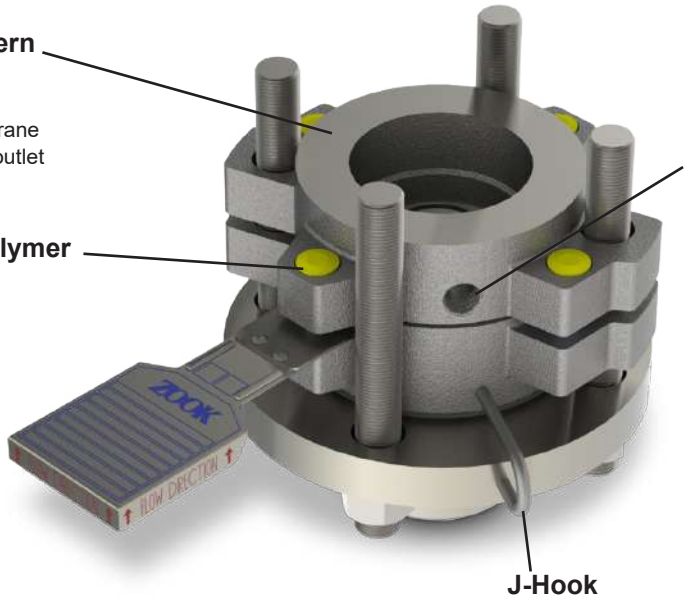
Short / Mid / Long Pattern

- Can be machined to meet existing piping specifications
- Prevents rupture disk membrane from protruding beyond the outlet holder after burst

Replacement Fluoropolymer Coated Cap Screws

Cap Screw Specifications**	
Type	Socket Head
Material	Alloy Steel
Hardness	38-43-RC
Threads	UNRF 3A

** Required to meet Pre-Torque specifications



J-Hook

Eye Bolt

- To assist in lifting

Gauge Tap

- Used for monitoring pressure/temperature at rupture disk location
- Also available on inlet holder

PTFE Sleeved Holder Inlet

- Ideal for corrosive applications and reducing product build-up (Refer to PTFE Sleeved Holder Inlet Data Sheet)

Tantalum Coating

- Ideal for extreme corrosive applications and higher temperatures

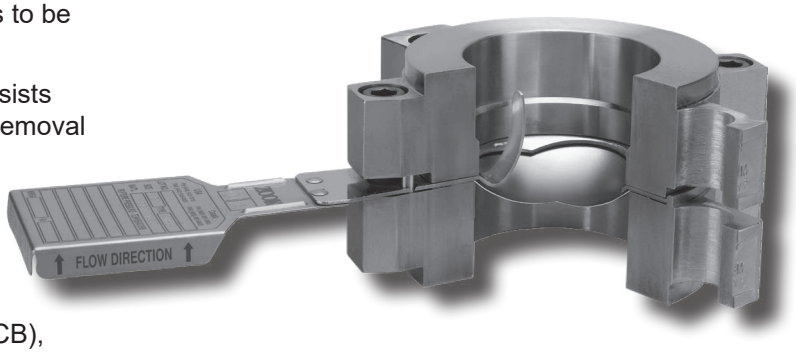
Teflon - TM The Chemours Company
Hastelloy - TM Haynes International

Rupture Disk Holders
RAH Series

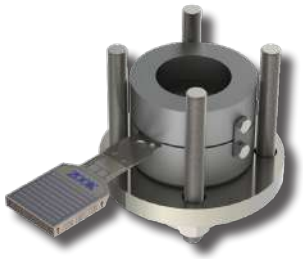
Features

- RAH Series offers one unique holder design that fits with multiple types of ZOOK Reverse-Acting metal rupture disks (RA4, RA6, RA8, RAX)
- Pre-Torque Design allows for:
  a) Pre-assembly of a rupture disk into a holder prior to field installation
  b) Removal of the assembly from the piping system for inspection without disturbing the seal integrity of the rupture disk
  c) Pre-torque bolts properly seat the disk by engaging the holder bite
- Disk Dome is contained within holder's inlet, which prevents damaging the disk during installation into mating flanges
- Locating Pin allows only reverse-acting type disks to be mounted into holder
- Fluoropolymer coated socket head cap screws resists corroding to holder assembly and provides easy removal without special sockets
- Polyethylene cap screw covers prevents debris from building up in cap screw head
- Sizes 1" thru 12"
- Standard cast holder materials: Carbon Steel (WCB), Stainless Steel (CF3M), Hastelloy (CW12MW)
- Holder information is permanently affixed to the O.D. of holder
- Bubble tight metal-to-metal bite and disk seal
- Flow direction arrows on disk tag and holder provides permanent visual verification that holder assembly is properly oriented in the piping system
- ANSI, DIN, and JIS Flange class and type specific, guards against installing an assembly into mating flanges with a different pressure rating than the rupture disk holder
- Positioning hole in mounting lug is located in the exact position as the mating flange and allows for proper alignment. It can also be used as an extra "hand" when installing into horizontal piping
- For custom materials and alternative flanges (types/ratings) ZOOK offers custom inserts (RAHI) or full flanges (RAH7) and custom overall heights

RAH (Pre-torque holder)



Cut-out view of RAH (Pre-torque holder)



RAHI (Insert holder)

RAH7 (Full flanged pre-torque holder)

Rupture Disk Holders
RAH Series

Holder Dimensions / Specifications

Nominal Size	Available Flange Class* (ANSI / DIN)	Minimum Height⛰ (in. / mm)	Standard Height (in. / mm)			Weight (Short Pattern) (lbs / kgs)	Number of Cap Screws	Cap Screws Hex Size (in.)	Gauge tap (NPT) (in.)
			Short Pattern RAH	Mid Pattern RAH-LP1	Long Pattern RAH-LP2				
1”	150/300/600	1-9/16	2-1/8	2-11/32	2-9/16	3.8 lbs	4	3/16	1/8, 1/4
25 mm	10/16/25/40	39.68	53.97	59.53	65.09	1.72 kgs	4	3/16	1/8, 1/4
1-1/2”	150/300/600	1-11/16	2-1/4	2-29/32	3-9/16	6.4 lbs	4	1/4	1/8, 1/4
40 mm	10/16/25/40	42.86	57.15	73.82	90.49	2.9 kgs	4	1/4	1/8, 1/4
2”	150/300/600	2-5/32	2-23/32	3-15/16	5-5/32	9.0 lbs	4	5/16	1/8, 1/4, 1/2
50 mm	10/16/25/40	54.77	69.06	100	130.97	4.08 kgs	4	5/16	1/8, 1/4, 1/2
2-1/2”	150/300/600	2-9/16	3-1/8	4-15/16	6-23/32	16.6 lbs	4	3/8	1/8, 1/4, 1/2
65 mm	10/16/25/40	65.09	79.38	125.41	170.66	7.5 kgs	4	3/8	1/8, 1/4, 1/2
3”	150/300/600	2-9/16	3-1/8	4-15/16	6-23/32	16.6 lbs	4	3/8	1/8, 1/4, 1/2
80 mm	10/16/25/40	65.09	79.38	125.41	170.66	7.5 kgs	4	3/8	1/8, 1/4, 1/2
4”	150/300	2-19/32	3-5/32	5-31/32	8-3/4	22.5 lbs	4	3/8	1/8, 1/4, 1/2
100 mm	10/16/25/40	65.88	80.17	151.61	222.25	10.2 kgs	4	3/8	1/8, 1/4, 1/2
6”	150/300	3-7/32	3-7/16	6-25/32	10-3/32	36.00 lbs	8	5/16	1/8, 1/4, 1/2
150 mm	10/16/25/40	81.76	87.31	172.24	256.38	16.33 kgs	8	5/16	1/8, 1/4, 1/2
8”	150/300	4-1/16	4-5/8	9-1/32	13-15/32	53.4 lbs	8	3/8	1/8, 1/4, 1/2
200 mm	10/16	103.19	117.48	229.39	342.11	24.22 kgs	8	3/8	1/8, 1/4, 1/2
10”	150	4-3/4	5-21/32	11-5/32	16-11/16	99.8 lbs	12	3/8	1/8, 1/4, 1/2
250 mm	10/16	120.65	143.67	283.37	423.86	45.27 kgs	12	3/8	1/8, 1/4, 1/2
12”	150/300	5-1/16	6-17/32	13-5/32	19-25/32	136.00 lbs	12	1/4	1/8, 1/4, 1/2
300 mm	10/16	128.59	165.89	334.17	502.44	61.69 kgs	12	1/4	1/8, 1/4, 1/2

Notes:

* Holders are also available to fit JIS flanging. Contact ZOOK for details.

⛰ Minimum height specified in table above will maintain the pre-torque feature of the rupture disk holder.

• Refer to ASME/ANSI B16.5 pipe flanges and flange fittings (Table 2) for max allowable pressure/temperature ratings per flange class.

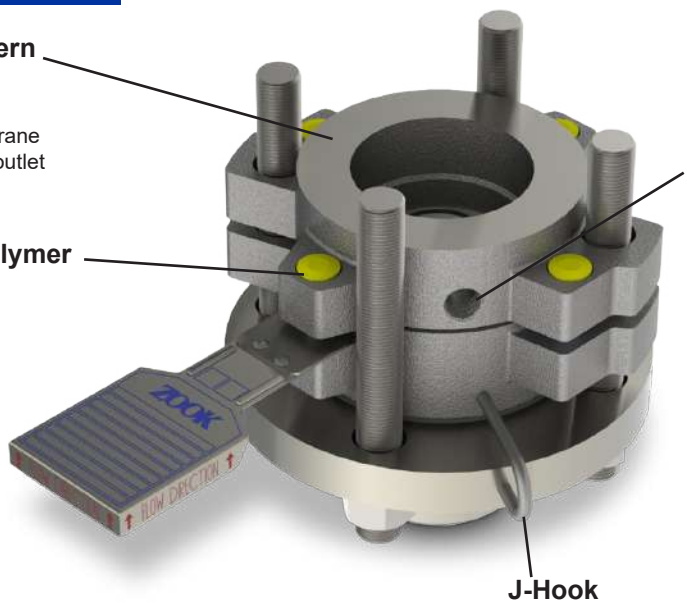
Options / Accessories

Short / Mid / Long Pattern
- Can be machined to meet existing piping specifications
- Prevents rupture disk membrane from protruding beyond the outlet holder after burst

Replacement Fluoropolymer Coated Cap Screws

Cap Screw Specifications**	
Type	Socket Head
Material	Alloy Steel
Hardness	38-43-RC
Threads	UNRF 3A

** Required to meet Pre-Torque specifications



J-Hook

Eye Bolt
- To assist in lifting

Gauge Tap
- Used for monitoring pressure/temperature at rupture disk location
- Also available on inlet holder

PTFE Sleeved Holder Inlet
- Ideal for corrosive applications and reducing product build-up (Refer to PTFE Sleeved Holder Inlet Data Sheet)

Tantalum Coating
- Ideal for extreme corrosive applications and higher temperatures

Teflon - TM The Chemours Company
Hastelloy - TM Haynes International

Rupture Disk Holders
Bolted Type

Features

- 30° angle seat design
- Designed for use with forward acting PB or D Series metal rupture disks.
- Angle seat positions disk between the inlet and outlet holder to ensure proper installation
- Refer to the back of this bulletin for available holder mounting configurations
- Materials of construction: Carbon steel and 316. Other materials available upon request
- Sizes 1/2” (13 mm) thru 24” (600 mm) diameters
- ANSI and DIN Flange class and type specific, guards against installing an assembly into mating flanges with a different pressure rating than the rupture disk holder
- Stainless steel safety designed side clips are standard, allowing for pre-assembly of disk into holder
- Flow direction arrows on disk tag and holder provides permanent visual verification that holder assembly is properly oriented in the piping system
- Available options include: gauge tap; nipple and tee; excess flow valve; pressure gauge; J-hook; special facings and coatings

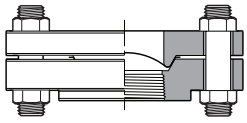
Assembly 7A

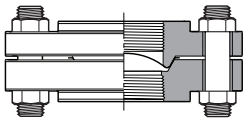
Size	Burst Pressure psig (barg) @ 72°F (22°C)	Standard Lip (SL) 	Heavy Duty Lip (HDL) 
1/2”	Min-2159	+	
	2160-Max		+
13 mm	Min-148.86	+	
	148.93-Max		+
3/4”	Min-2159	+	
	2160-Max		+
19 mm	Min-148.86	+	
	148.93-Max		+
1”	Min-2159	+	
	2160-Max		+
25 mm	Min-148.86	+	
	148.93-Max		+
1-1/2”	Min-2159	+	
	2160-Max		+
40 mm	Min-148.86	+	
	148.93-Max		+
2”	Min-2159	+	
	2160-Max		+
50 mm	Min-148.86	+	
	148.93-Max		+
3” - 16”	Min-Max	+	N/A
80 mm - 400 mm	Min-Max	+	N/A
18” - 24”	Min-Max	N/A	+
450 mm - 600 mm	Min-Max	N/A	+

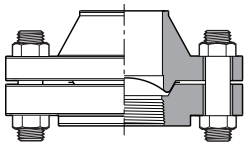
Note: N/A – Not Available

CAUTION
If holder is exposed to elevated temperature during normal operation, contact ZOOK for pressure/temperature ratings for holders and flanges.

Rupture Disk Holders
Bolted Type


Assembly 1


Assembly 2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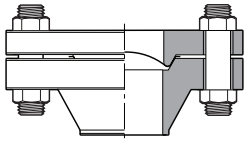
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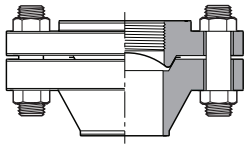
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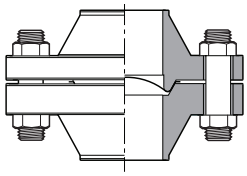
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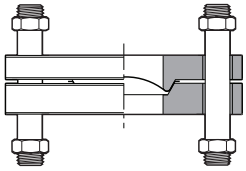
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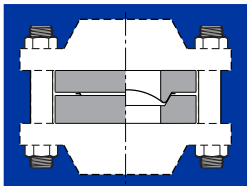
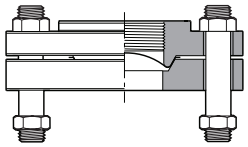

Assembly 7A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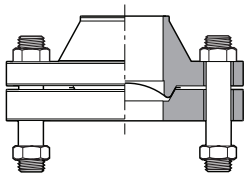

Assembly 9

Size	ASME B16.5 Class Flanges	Outside Diameter		Approximate End-To-End Dimensions									
				Assembly Number									
		7A	Others	1	2	3	4	5	6	7	7A	8	9
1/2”	150 300/600	1-3/4” 1-3/4”	3-1/2” 3-3/4”	1-3/8” 1-7/8”	1-3/8” 1-7/8”	2-5/8” 2-7/8”	2-1/2” 2-3/4”	2-5/8” 2-7/8”	3-7/8” 4-1/4”	1-11/16” 1-11/16”	1-11/16” 1-11/16”	1-3/8” 1-7/8”	2-3/4” 3”
3/4”	150 300/600	2-1/8” 2-1/2”	3-7/8” 4-5/8”	1-7/16” 2-3/16”	1-3/8” 2-1/16”	2-13/16” 3-3/16”	2-11/16” 3-1/8”	2-13/16” 3-3/16”	4-1/4” 4-5/8”	1-3/4” 1-3/4”	1-3/4” 1-3/4”	1-7/16” 2-3/16”	3” 3-3/16”
1”	150 300/600	2-1/2” 2-3/4”	4-1/4” 4-7/8”	1-1/2” 2-1/4”	1-1/2” 2-1/4”	3-1/8” 3-1/2”	2-7/8” 3-1/4”	3-1/8” 3-1/2”	4-1/2” 5”	1-3/4” 1-3/4”	1-3/4” 1-3/4”	1-1/2” 2-1/4”	3-1/8” 3-3/8”
1-1/2”	150/ 300/600	3-1/4” 3-5/8”	5” 6-1/8”	1-3/4” 2-1/8”	1-7/8” 2-1/2”	3-1/2” 3-7/8”	3-1/4” 3-5/8”	3-1/2” 3-7/8”	5” 5-1/2”	1-3/4” 1-3/4”	1-3/4” 1-3/4”	1-3/4” 2-1/8”	3-1/4” 3-5/8”
2”	150 300/600	4” 4-1/4”	6” 6-1/2”	1-7/8” 2-3/8”	2-1/8” 2-3/4”	3-5/8” 4”	3-3/8” 3-3/4”	3-5/8” 4”	5-1/8” 5-5/8”	1-3/4” 1-3/4”	1-3/4” 1-3/4”	1-7/8” 2-3/8”	3-3/8” 3-3/4”
3”	150 300/600	5-1/4” 5-3/4”	7-1/2” 8-1/4”	2-1/8” 3-1/8”	2-1/2” 3-1/2”	4-1/8” 4-5/8”	3-7/8” 4-3/8”	4-1/8” 4-5/8”	5-3/8” 6-3/8”	1-3/4” 1-3/4”	1-3/4” 1-3/4”	2-1/8” 3-1/8”	3-5/8” 4-3/8”
4”	150 300 600	6-3/4” 7” 7-1/2”	9” 10” 10-3/4”	2-3/8” 3-1/4” -	2-3/4” 3-7/8” -	4-1/2” 5” -	4-1/8” 4-3/4” 5-5/8”	4-1/2” 5” -	6-1/8” 6-7/8” 8-1/4”	1-3/4” 1-3/4” 1-3/4”	1-3/4” 1-3/4” 1-3/4”	2-3/8” 3-1/4” -	3-7/8” 4-1/2” 5-1/8”
6”	150 300	8-5/8” 9-3/4”	11” 12-1/2”	- -	- -	- -	4-5/8” 5-1/2”	- -	7-1/8” 7-7/8”	2-1/4” 2-1/4”	2-1/4” 2-1/4”	- -	4-1/2” 5”
8”	150 300	10-7/8” 12”	13-1/2” 15”	- -	- -	- -	5-1/4” 5-5/8”	- -	8-1/8” 8-7/8”	2-1/2” 2-1/2”	2-1/2” 2-1/2”	- -	5-1/8” 5-1/2”
10”	150 300	13-1/4” 14-1/8”	16” 17-1/2”	- -	- -	- -	5-3/8” 6-3/8”	- -	8-1/8” 9-3/8”	2-1/2” 2-1/2”	2-1/2” 2-1/2”	- -	5-1/8” 5-1/2”
12”	150 300	16” 16-1/2”	19” 20-1/2”	- -	- -	- -	5-7/8” 7-1/4”	- -	9-1/8” 10-3/8”	2-9/16” 2-9/16”	2-9/16” 2-9/16”	- -	5-5/8” 6-1/4”
14”	150	17-5/8”	21”	-	-	-	6-1/2”	-	10-1/4”	3”	3”	-	6-1/8”
16”	150	20-1/8”	23-1/2”	-	-	-	6-5/8”	-	10-1/4”	3”	3”	-	6-1/8”
18”	150	21-1/2”	25”	-	-	-	7-1/4”	-	11-1/4”	3-3/16”	3-3/16”	-	6-5/8”
20”	150	23-3/4”	27-1/2”	-	-	-	7-1/2”	-	11-5/8”	3-7/32”	3-7/32”	-	6-7/8”
24”	150	28-1/8”	32”	-	-	-	8”	-	12-1/4”	3-11/32”	3-11/32”	-	7-1/8”

Note: For alternate flanges contact ZOOK.

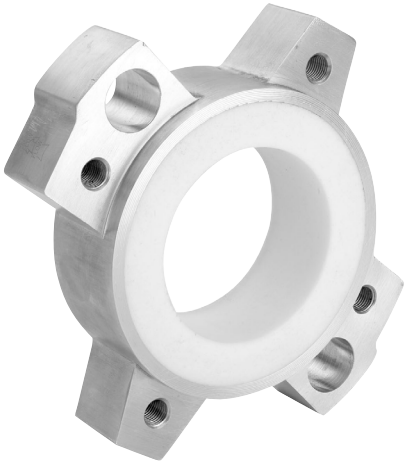
Rupture Disk Holders
PTFE Sleeved Holder Inlet

Features

- Ideal for corrosive applications and reducing the effect of product build-up
- A good cost effective alternative to exotic materials
- PTFE sleeve on all wetted surfaces of the rupture disk holder inlet
- PTFE sleeve is available on the inlet only, and outlet can be Fluoropolymer Teflon Sintered (FS) coated
- The ZOOK PTFE sleeved holder utilizes a Teflon encapsulated Viton O-Ring as standard. The O-Ring seal prevents the process media getting into contact with the bite-ring, this prolongs the high performance of the holder
- PTFE sleeve is available for ZOOK flat seat series reverse acting and forward acting disk holders, in sizes from 1” (25 mm) through to 8” (200 mm) ASME Class 150
- The operating temperature range for the PTFE sleeve is -20ºF to 450ºF (-29ºC to 232ºC)
- The ZOOK design utilizes a mechanical lock to engage Teflon for a rigid assembly
- PTFE sleeves are not torque sensitive and follow standard holder torquing procedures
- The PTFE sleeve option can be used for most burst pressure ranges as shown on the data sheets for ZOOK rupture disks
- Teflon liners are available to minimize product build-up and corrosion on rupture disk
- Consult ZOOK for further application information

Ideal for Corrosive Applications and Reducing Product Build-Up

View of the inlet holder disk face
This shows PTFE Lined Inlet, and O-Ring Seal



View of the flange face of the holder inlet
This shows the PTFE sleeve across the flange sealing face of the holder

Teflon - TM The Chemours Company
Hastelloy - TM Haynes International

Rupture Disk Holders
Screw Type

Features

- Designed for use with PBST, FPBST, DST or FDST Series Rupture Disks
- Available in Standard 30° angle or flat seat designs
- Ideal for application pressures up to 15,000 psig (1034.2 barg)
- Standard material of construction is stainless steel. Other materials are available, contact ZOOK
- Standard inlet connections: 1/4” MNPT or 1/2” MNPT
- Standard outlet connections: muffled, free (open to atmosphere) or threaded. Muffled outlets reduce noise levels and redirect fragments or product released when the rupture disk bursts
- Standard unit consists of 3 components: Inlet, Hold-down Ring and Outlet. The rupture disk mounts between the inlet and the hold-down ring. The outlet provides compression required to seal the disk
- ASME UD* marking is available upon request, contact ZOOK for more information

Notes:

* ASME available on free and threaded outlets
• Maximum pressures are reduced with increased temperatures

ST1 and ST2

ST3 and ST4

ST5 and ST6

1/2” Angle Seated Hold-down rings are hardened Stainless Steel

Seat / Size based on pressure:

Min – 1,000 psi (68.9 barg): 11/16” flat seat
1,000 – 3,000 psi (206.8 barg): 1/2” angle seat
3,000 – 15,000 psi (1034.2 barg): 1/2” flat seat

Refer to PB or D series rupture disk series data sheet for additional information

Assembly Number	Connections		Hex Size		Approximate End-To-End Dimensions
	Inlet	Outlet	Inlet	Outlet	
ST1	1/4” MNPT	FREE	1-1/4” (31.8mm)	1-1/8” (28.6 mm)	2-3/8” (60.33 mm)
ST2	1/2” MNPT	FREE	1-1/4” (31.8mm)	1-1/8” (28.6 mm)	2-3/8” (60.33 mm)
ST3	1/4” MNPT	1/2” MNPT	1-1/4” (31.8mm)	1-1/8” (28.6 mm)	3-3/16” (81.00 mm)
ST4	1/2” MNPT	1/2” MNPT	1-1/4” (31.8mm)	1-1/8” (28.6 mm)	3-3/16” (81.00 mm)
ST5	1/4” MNPT	MUFFLED	1-1/4” (31.8mm)	1-1/8” (28.6 mm)	2-9/16” (65.1 mm)
ST6	1/2” MNPT	MUFFLED	1-1/4” (31.8mm)	1-1/8” (28.6 mm)	2-9/16” (65.1 mm)

Rupture Disk Holders
UHZ Type

Features

- Designed for use with forward acting SFAZ and FDZ series disks
- Flat seat provides improved rupture disk sealing
- Available in nominal sizes ranging from 1/2” (13 mm) thru 30” (750 mm) in standard flange classes
- Standard materials of construction are: 316 and carbon steel. Other materials available on request
- Flow direction arrows on disk tag and holder provides permanent visual verification that holder assembly is properly oriented in the piping system
- Stainless steel safety designed side clips are standard, allowing for pre-assembly of disk into holder

Options / Accessories

Eye Bolt

- To assist in lifting

PTFE Sleeved Holder Inlet

- Ideal for corrosive applications and reducing product build-up (Refer to PTFE Sleeved Holder Inlet Data Sheet)

Tantalum Coating

- Ideal for extreme corrosive applications and higher temperatures

Gauge Tap

- Used for monitoring pressure/ temperature at rupture disk location
- Also available on inlet holder

UHZ

UHZ7

Rupture Disk Holders
UHZ Type

Holder Dimensions / Specifications

Nominal Size	Flange Class	Height (in / mm)	Holder O.D. (in / mm)	Estimated Weight (lbs / kgs)
1/2"	150	1.63	1.75	1.1
	300/600		2	1.4
13 mm	10/16/25/40	41.3	51	0.7
3/4"	150	1.63	2.125	1.3
	300/600		2.5	2.0
20 mm	10/16/25/40	41.3	61	0.8
1"	150	1.63	2.5	1.8
	300/600		2.75	2.3
25 mm	10/16/25/40	41.3	71	1.1
1-1/2"	150	1.63	3.25	2.9
	300/600		3.63	3.9
40 mm	10/16/25/40	41.3	92	1.8
2"	150	1.63	4	4.0
	300/600		4.25	4.8
50 mm	10/16/25/40	41.3	107	2.1
2-1/2"	150	1.63	4.75	5.5
	300/600		5	6.5
65 mm	10/16/25/40	41.3	127	3.0
3"	150	1.63	5.25	6.3
	300/600		5.75	8.5
80 mm	10/16/25/40	41.3	142	3.5
4"	150	1.875	6.75	11.9
	300		7	13.3
100 mm	10/16	47.6	162	4.4
6"	150	2.5	8.63	20.2
	300		9.75	33.2
150 mm	10/16	63.5	218	9.0
8"	150	2.875	10.88	33.2
	300		12	51.8
200 mm	10/16	73	273	14.2

Nominal Size	Flange Class	Height (in / mm)	Holder O.D. (in / mm)	Estimated Weight (lbs / kgs)
10"	150	3.25	13.25	53.3
	300		14.13	72.9
250 mm	10	82.6	328	20.9
	16		329	21.3
12"	150	3.63	16	90.9
	300		16.5	105.7
300 mm	10	92.1	378	27.0
	16		384	29.9
14"	150	3.88	17.63	111.6
	300		19	160.7
350 mm	10	98.4	438	44.8
	16		444	48.4
16"	150	4.38	20.13	163.9
	300		21.13	209.2
400 mm	10	111.1	489	57.2
	16		495	61.7
18"	150	4.75	21.5	165.0
	300		23.38	265.5
450 mm	10	120.7	539	68.4
	16		555	83.1
20"	150	5.5	23.75	226.8
	300		25.63	354.8
500 mm	10	139.7	594	92.1
	16		617	119.2
24"	150	6.5	28.13	351.3
	300		30.38	566.3
600 mm	10	165.1	695	128.0
	16		734	192.0
30"	150	4.75	34.63	338.8

Contact ZOOK for alternate sizes and/or flange classes

Rupture Disk Holders
Union Type

Features

- Designed for use with PBUT, DUT or SFAZUT series rupture disks
- Low cost, ideal where installation space is limited
- Standard 30° angle seat design. Flat seat in stainless steel and 6000# only
- Sizes: 1/2” (13mm), 3/4” (20mm), 1” (25mm), 1-1/2” (40mm), 2” (50mm)
- Standard materials of construction: carbon steel and stainless steel. Other materials are available, contact ZOOK
- 2U Threaded (FNPT) inlet and outlet connections standard. Contact ZOOK regarding Butt-Weld or Socket-Weld connections
- ASME UD and CE marking available upon request. Contact ZOOK for more information

Reusable units for use on:

- Oil and Gas
- Air Conditioning Systems
- High Pressure Cleaning Equipment
- Gas Cylinders
- Laboratory Equipment
- Autoclaves

30° Angle Seat

Threaded	Butt-Weld	Socket-Weld
		
2U	6U	6USW

Flat Seat

		
FS2U	FS6U	FS6USW

Rupture Disk Holders
Union Type

Size	Rating	Approximate Dimensions (in/mm)		Burst Pressure psig (barg) @ 72°F (22°C)*		Standard Lip (SL) 	Heavy Duty Lip (HDL) 	Flat Seat 
		Across Flats	Height	SST	CS			
1/2”	3000#	1-13/16	2-1/8	Min - 2430	Min - 3000	+		
	6000#	2-3/8	2-1/4	Min - 4860	Min - 6000		+	
								+
13 mm	3000#	46	55	Min - 167.54	Min - 206.84	+		
	6000#	60	56	Min - 335.09	Min - 413.69		+	
								+
3/4”	3000#	2-1/4	2-5/8	Min - 2430	Min - 3000	+		
	6000#	2-3/4	2-5/8	Min - 4860	Min - 6000		+	
								+
20 mm	3000#	56	66	Min - 167.54	Min - 206.84	+		
	6000#	70	66	Min - 335.09	Min - 413.69		+	
								+
1”	3000#	2-1/2	2-5/8	Min - 2430	Min - 3000	+		
	6000#	3-1/4	2-15/16	Min - 4860	Min - 6000		+	
								+
25 mm	3000#	63	66	Min - 167.54	Min - 206.84	+		
	6000#	86	74	Min - 335.09	Min - 413.69		+	
								+
1-1/2”	3000#	3-1/4	3-1/8	Min - 2430	Min - 3000	+		
	6000#	4	3-1/2	Min - 4860	Min - 6000		+	
								+
40 mm	3000#	86	85	Min - 167.54	Min - 206.84	+		
	6000#	100	93	Min - 335.09	Min - 413.69		+	
								+
2”	3000#	4-1/2	3-1/2	Min - 2430	Min - 3000	+		
50 mm	3000#	113	93	Min - 167.54	Min - 206.84	+		

Notes:

* Contact ZOOK for alternate temperatures.

• Refer to PB, D or SFAZ series rupture disk series data sheets for additional information

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Graphite Rupture Disks
Graphite Overview

ZOOK is the first and largest company in the world committed to manufacturing quality impervious graphite rupture disks, through product innovations and superior service. ZOOK is the first graphite rupture disk manufacturer to earn the ASME Code UD symbol stamp and certificate of authorization. ZOOK is certified in accordance with the Pressure Equipment Directive (PED 2014/68/EU) and can provide CE marked graphite rupture disks. ZOOK has been certified to AS9100D:2016 (ISO9001:2015), meaning that our Quality Management System at our graphite manufacturing facility has been certified to the Aviation, Aerospace and Defense industry compliance standards. The AS9100 Standard includes the ISO9001 standard as its foundation, but is much more stringent in its requirements.

ZOOK graphite rupture disks protect capital equipment and personnel from the effects of overpressurization in static and dynamic pressurized systems. The disk is designed to rupture at a predetermined burst rating when installed. Each disk is made from a single piece of graphite, a high-purity form of carbon, which is resin impregnated. The resulting material, called impervious graphite, is impermeable and is resistant to most corrosives.

ZOOK offers 1-day shipment of disks with over 100 pressure ratings and diameter combinations. Our service personnel are also available 24 hours-a-day, 7 days-a-week to handle your emergency shut-down needs. We produce a standard line of graphite disks as small as 1/2” (13 mm) diameter and disks with burst ratings as low as 0.25 psig (0.02 barg). To optimize ZOOK graphite disk performance, ZOOK always undertakes cryogenic and elevated temperatures.

Our graphite rupture disks are easy to install and maintain:

- Are tamperproof
- Have no springs or moving parts
- Mount directly between standard flanges

Options and accessories are also available to increase the flexibility of standard graphite disks. Mounting sensors, special gaskets and stainless steel armor are also available. Spacer rings let you replace metal rupture disks without requiring piping modification.

Applications

ZOOK graphite disks enhance SAFETY in chemical, petrochemical, pharmaceutical, food, medical, and related processing systems around the world. Other applications include: storage tanks, tank trailers, rail cars, barges, pressurized switchgear, and air conditioning compressors.

Graphite disks also increase system efficiency by:

- Eliminating back pressure effects on overpressure devices in common vent lines
- Solving sourcing and cost problems for disks used with highly corrosive fluids
- Offering ultra low rated pressure settings

ZOOK Differentiator

For ultimate chemical resistance and enhanced temperature range, choose FDA compliant FS Sintered disks - exclusive only to ZOOK.

Graphite Rupture Disks
Mono Type

Features

- The best choice for low and intermediate burst ratings
- Sizes 1/2” (13 mm) thru 24” (610 mm) diameters
- Designed to fit industry standard flanges ASME B16.5, ISO and JIS
- Burst ratings 0.25 psig (0.02 barg) to 150 psig (10.34 barg)
- 0% manufacturing range
- Operating pressures to 90% of the disk’s marked burst pressure. Contact ZOOK for operating ratio for burst pressures below 40 psig (2.76 barg)
- Temperature ratings –290°F to +700°F (–143°C to +371°C). Maximum temperature rating without insulation is 430°F (221°C) or 700°F (371°C) with insulation. Contact ZOOK for higher temperature ratings. The specified temperature shall be at the disk location at the time when the disk is expected to rupture
- Counterbore side of the disk contacts the process media
- Vacuum supports are available for ratings below 25 psig (1.72 barg)
- May be configured to withstand high back pressure generated in closed piping systems
- Stocked Mono disks, ready for immediate shipment

  Sizes: 1”, 1-1/2”, 2”, 3”, 4”, 6”, 8” to fit ASME B16.5 Class 150 flanges

  Burst Ratings: 10, 15, 20, 25, 30, 40, 50, 75, 100, 125, 150 psig @ 72°F (22°C)

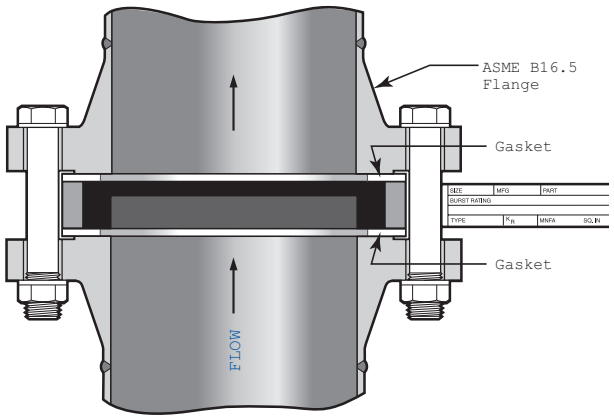
  Note: • Sizes 3”, 4”, 6” and 8” with burst ratings 125 and 150 psig @ 72°F (22°C) are stocked in Inverted Type
  • Stocked Mono disks are not PED or ASME compliant
- ASME (UD) and PED (CE) compliance available

Specifications

Disk Size					MNFA										Thickness* (Flange Group 1)			
NPS		DN	Actual ID		Full Bore		Vacuum Support Style								ASME Cl 150 PN6 / 10 / 16 / 20 JIS 5K / 10K / 16K			
							Ring		Bar		Cross		Plate		Standard Disk		Insulated Unit	
in	mm	mm	in	mm	in²	mm²	in²	mm²	in²	mm²	in²	mm²	in²	mm²	in	mm	in	mm
½	13	15	0.62	15.7	0.30	193	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.63	15.8	1.75	44.4
¾	19	20	0.82	20.8	0.53	341	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.63	15.8	1.75	44.4
1	25	25	1	25.4	0.78	503	0.44	283	0.60	387	0.47	303	0.32	206	0.88	22.2	2.25	57.1
1-½	38	40	1.50	38.1	1.76	1,135	N/A	N/A	1.34	864	1.05	677	0.72	464	0.88	22.2	2.25	57.1
2	50	50	2	50.8	3.14	2,025	N/A	N/A	2.39	1,541	1.86	1,200	1.30	838	0.88	22.2	2.25	57.1
2-½	64	65	2.50	63.5	4.78	3,083	N/A	N/A	3.65	2,354	2.94	1,896	2.04	1,316	0.88	22.2	2.25	57.1
3	76	80	3	76.2	7.06	4,554	N/A	N/A	5.56	3,587	4.31	2,780	2.95	1,903	0.88	22.2	2.25	57.1
4	102	100	4	101.6	12.56	8,103	N/A	N/A	10.56	6,812	8.81	5,683	5.47	3,529	0.88	22.2	2.25	57.1
5	127	125	5	127.0	19.63	12,664	N/A	N/A	15.88	10,245	12.70	8,193	8.39	5,412	0.88	22.2	2.25	57.1
6	152	150	6	152.4	28.27	18,238	N/A	N/A	22.27	14,367	17.27	11,141	12.05	7,774	0.88	22.2	2.25	57.1
8	203	200	8	203.2	50.02	32,270	N/A	N/A	40.26	25,974	31.82	20,528	21.14	13,638	1.13	28.5	2.75	69.8
10	254	250	10	254.0	78.53	50,664	N/A	N/A	63.53	40,987	50.78	32,761	32.66	21,070	1.50	38.1	3.38	85.8
12	305	300	12	304.8	113.09	72,961	N/A	N/A	89.09	57,477	69.09	44,574	47.24	30,477	2.00	50.8	4.38	111.2
14	356	350	13.25	336.5	137.88	88,954	N/A	N/A	108.06	69,715	83.31	53,748	58.07	37,464	2.25	57.1	4.88	123.9
16	406	400	15.25	387.3	182.65	117,838	N/A	N/A	144.52	93,238	112.65	72,677	84.49	54,509	2.50	63.5	5.38	136.6
18	457	450	17.25	438.1	233.70	150,773	N/A	N/A	181.95	117,386	153.70	99,161	104.31	67,296	2.75	69.8	5.88	149.3
20	508	500	19.25	488.9	291.03	187,760	N/A	N/A	233.28	150,502	184.53	119,051	122.49	79,025	3.00	76.2	6.38	162.0
24	610	600	23.25	590.5	424.55	273,902	N/A	N/A	354.80	228,902	294.05	189,709	190.61	122,973	3.00	76.2	6.38	162.0

Notes:
*Standard disk thickness does not include gaskets. Insulated unit thickness includes all gaskets
- Disks w/pressure ratings of 25 psig (1.72 barg) and above will support full vacuum w/o additional support
- Maximum pressure rating of ASME B16.5 Class 150 flanges is 290 psig (19.99 barg) @ 100°F (38°C). The maximum pressure rating is lower at higher temperatures. Reference ASME/ANSI B16.5
- All pressures shown are based on an ambient temperature of 72°F (22°C)
- Not all minimum/maximum pressure and temperature combinations are available. Please contact ZOOK for more information
- Unless otherwise noted, stated MNFA and Kr values apply to the rupture disk only and does not include the addition of external vacuum supports or insulated units

Graphite Rupture Disks
Mono Type



Required Vacuum Support Style for Full Vacuum Service

Disk Size / Range		Burst Pressure Range		Vacuum Support Style			
				○	⊖	⊕	⊛
in	mm	psig	barg	Ring	Bar	Cross	Plate
1	25	<25	<1.72	X	-	-	-
1-½	38	<25	<1.72	-	X	-	-
2 thru 14	50 thru 356	9 to 25	0.62 to 1.72	-	X	-	-
		5 to <9	0.34 to <0.62	-	-	X	-
		<5	<0.34	-	-	-	X

Certified Flow Resistance Factor (Krgl)

Support Style	Krgl
Mono – no support	0.26
Mono – with bar	2.40
Mono – with cross	5.40
Mono – with ring	6.44
Mono – with plate	15.70

Outside Diameter																		Burst Ratings			
ASME B16.5 Class		DIN & ISO						ISO ONLY		JIS								Min Pressure (All Flanges)		Max Pressure (Flange Group 1)	
150		PN6		PN10		PN16		PN20		5K		10K		16K		20K					
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	psig	barg	psig	barg
1.75	44.4	1.73	43.9	2.01	51.0	2.01	51.0	1.75	44.4	1.89	48.0	2.17	55.1	2.17	55.1	2.17	55.1	25.00	1.72	150.00	10.34
2.13	53.9	2.13	54.1	2.40	60.9	2.40	60.9	2.13	54.1	2.09	53.0	2.36	59.9	2.36	59.9	2.36	59.9	25.00	1.72	150.00	10.34
2.50	63.5	2.52	64.0	2.80	71.1	2.80	71.1	2.50	63.5	2.48	62.9	2.80	71.1	2.80	71.1	2.80	71.1	10.00	0.69	150.00	10.34
3.25	82.5	3.39	86.1	3.62	91.9	3.62	91.9	3.25	82.5	3.15	80.0	3.39	86.1	3.39	86.1	3.39	86.1	7.00	0.48	150.00	10.34
4.00	101.6	3.78	96.0	4.21	106.9	4.21	106.9	4.00	101.6	3.54	89.9	3.98	101.0	3.98	101.0	3.98	101.0	3.00	0.21	150.00	10.34
4.75	120.6	4.59	116.5	5.00	127.0	5.00	127.0	4.75	120.6	4.52	114.8	4.76	120.9	4.76	120.9	4.76	120.9	3.00	0.21	125.00	8.62
5.25	133.3	5.20	132.0	5.59	141.9	5.59	141.9	5.25	133.3	4.96	125.9	5.16	131.0	5.39	136.9	5.39	136.9	2.00	0.14	100.00	6.89
6.75	171.4	5.98	151.8	6.38	162.0	6.38	162.0	6.75	171.4	5.75	146.0	6.14	155.9	6.38	162.0	6.38	162.0	1.50	0.10	100.00	6.89
7.75	196.8	7.16	181.8	7.55	191.7	7.55	191.7	7.75	196.8	7.12	180.8	7.36	186.9	7.87	199.9	7.87	199.9	1.50	0.10	100.00	6.89
8.63	219.0	8.15	207.0	8.58	217.9	8.58	217.9	8.63	219.2	8.31	211.0	8.54	216.9	9.25	234.9	9.25	234.9	1.00	0.07	100.00	6.89
10.88	276.2	10.31	261.8	10.75	273.0	10.75	273.0	10.88	276.3	10.12	257.0	10.51	266.9	11.20	284.4	11.20	284.4	0.50	0.03	100.00	6.89
13.25	336.5	12.48	316.9	12.91	327.9	12.95	328.9	N/A	N/A	12.68	322.0	12.99	329.9	13.90	353.0	N/A	N/A	0.25	0.02	100.00	6.89
16.00	406.4	14.69	373.1	14.88	377.9	15.12	384.0	N/A	N/A	14.45	367.0	14.76	374.9	15.87	403.1	N/A	N/A	0.25	0.02	75.00	5.17
17.63	447.6	16.65	422.9	17.24	437.9	17.48	443.9	N/A	N/A	16.14	409.9	16.54	420.1	17.60	447.0	N/A	N/A	0.25	0.02	50.00	3.45
20.13	511.1	18.62	472.9	19.25	488.9	19.49	495.0	N/A	N/A	18.50	469.9	19.02	483.1	19.96	506.9	N/A	N/A	0.25	0.02	50.00	3.45
21.50	546.1	20.79	528.0	21.22	538.9	21.85	554.9	N/A	N/A	20.87	530.1	21.81	553.9	22.52	572.0	N/A	N/A	0.25	0.02	50.00	3.45
23.75	603.2	22.76	578.1	23.39	594.1	24.29	616.9	N/A	N/A	22.83	579.8	23.35	593.0	24.69	627.1	N/A	N/A	0.25	0.02	40.00	2.76
23.13	587.3	26.73	678.9	27.36	694.9	28.90	734.0	N/A	N/A	27.09	688.0	27.44	696.9	28.78	731.0	N/A	N/A	0.25	0.02	25.00	1.72

Graphite Rupture Disks
Inverted Type

Features

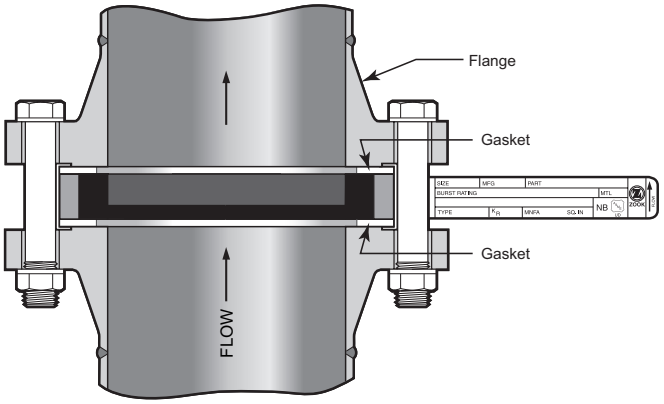
- The best choice for higher burst ratings
- Fail-Safe Design: If the disk is damaged or incorrectly installed, it will always burst at or below the marked burst rating
- Designed to fit industry standard flanges ASME B16.5, ISO and JIS
- Burst ratings 0.25 psig (0.02 barg) to 1,000 psig (68.95 barg) or higher
- 0% manufacturing range
- Flat surface of the disk contacts the process media
- Operating pressures to 90% of the disk's marked burst pressure. Contact ZOOK for operating ratio for burst pressures below 40 psig (2.76 barg)
- Temperature ratings –290°F to +700°F (–179°C to +371°C) Maximum temperature rating without insulation is 430°F (221°C) or 700°F (371°C) with insulation. Contact ZOOK for higher temperature ratings. The specified temperature shall be at the disk location at the time when the disk is expected to rupture
- Stocked Inverted disks, ready for immediate shipment. Sizes: 1", 1-1/2", 2", and 3" to fit ASME B16.5 Class 300 flanges Burst Ratings: 175, 200, 225, 250, 275, 300 psig @ 72°F (22°C) Note: Sizes 3", 4", 6", and 8" ASME B16.5 Class 150 flanges with burst ratings 125, 150 psig @ 72°F (22°C) are stocked in Inverted type
- All flange group 2 disks are armored
- ASME (UD) and PED (CE) compliance available

Specifications

Disk Size					MNFA				Thickness*															
									(Flange Group 1)				(Flange Group 2)				ASME B16.5 Class							
NPS		DN	Actual ID		Full Bore		w/ External Vacuum Support		ASME Cl 150 PN6 / 10 / 16 / 20 JIS 5K / 10K / 16K				ASME Cl 300 / 600 PN25 / 40 / 50 JIS 20K / 30K				150		300		600		PN6	
									Standard Disk		Insulated Unit		Standard Disk		Insulated Unit									
in	mm	mm	in	mm	in²	mm²	in²	mm²	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
½	13	15	0.62	15.7	0.30	193	-	-	0.63	16.0	1.75	44.4	0.625	15.8	1.75	44.4	1.75	44.4	2.00	50.8	2.00	50.8	1.73	43.9
¾	19	20	0.82	20.8	0.53	341	-	-	0.63	16.0	1.75	44.4	0.625	15.8	1.75	44.4	2.13	54.1	2.50	63.5	2.50	63.5	2.13	54.1
1	25	25	1	25.4	0.78	503	0.34	219	0.88	22.3	2.25	57.1	1.000	25.4	2.50	63.5	2.50	63.5	2.75	69.8	2.75	69.8	2.52	64.0
1-½	38	40	1.50	38.1	1.76	1,135	0.76	490	0.88	22.3	2.25	57.1	1.000	25.4	2.50	63.5	3.25	82.5	3.63	92.2	3.63	92.2	3.39	86.1
2	50	50	2	50.8	3.14	2,025	1.36	877	0.88	22.3	2.25	57.1	1.000	25.4	2.50	63.5	4.00	101.6	4.25	107.9	4.25	107.9	3.78	96.0
2-½	64	65	2.50	63.5	4.78	3,083	2.58	1,664	0.88	22.3	2.25	57.1	1.000	25.4	2.50	63.5	4.75	120.6	5.00	127.0	5.00	127.0	4.59	116.5
3	76	80	3	76.2	7.06	4,554	3.87	2,496	0.88	22.3	2.25	57.1	1.250	31.7	3.00	76.2	5.25	133.3	5.75	146.0	5.75	146.0	5.20	132.0
4	102	100	4	101.6	12.56	8,103	5.77	3,722	0.88	22.3	2.25	57.1	1.250	31.7	3.00	76.2	6.75	171.4	7.00	177.8	-	-	5.98	151.8
5	127	125	5	127.0	19.63	12,664	8.39	5,412	0.88	22.3	2.25	57.1	■	■	-	-	7.75	196.8	8.28	210.3	-	-	7.16	181.8
6	152	150	6	152.4	28.27	18,238	14.78	9,535	0.88	22.3	2.25	57.1	1.750	44.4	4.00	101.6	8.63	219.2	9.75	247.6	-	-	8.15	207.0
8	203	200	8	203.2	50.02	32,270	25.81	16,651	1.13	28.7	2.75	69.8	2.250	57.1	5.00	127.0	10.88	276.3	12.00	304.8	-	-	10.31	261.8
10	254	250	10	254.0	78.53	50,664	32.70	21,096	1.50	38.1	3.38	85.8	-	-	-	-	13.25	336.5	-	-	-	-	12.48	316.9
12	305	300	12	304.8	113.09	72,961	47.24	30,477	2.00	50.8	4.38	111.2	-	-	-	-	16.00	406.4	-	-	-	-	14.69	373.1
14	356	350	13.25	336.5	137.88	88,954	-	-	2.25	57.1	4.88	123.9	-	-	-	-	17.63	447.8	-	-	-	-	16.65	422.9
16	406	400	15.25	387.3	182.65	117,838	-	-	2.50	63.5	5.38	136.6	-	-	-	-	20.13	511.3	-	-	-	-	18.62	472.9
18	457	450	17.25	438.1	233.70	150,773	-	-	2.75	69.8	5.88	149.3	-	-	-	-	21.50	546.1	-	-	-	-	20.79	528.0
20	508	500	19.25	488.9	291.03	187,760	-	-	3.00	76.2	6.38	162.0	-	-	-	-	23.75	603.2	-	-	-	-	22.76	578.1
24	610	600	23.25	590.5	424.55	273,902	-	-	3.00	76.2	6.38	162.0	-	-	-	-	28.13	714.5	-	-	-	-	26.73	678.9

Notes:
*Standard disk thickness does not include gaskets. Insulated unit thickness includes all gaskets
▲ Max pressure based on max design Pressure/Temperature of companion flanging selected
■ Contact ZOOK
- Disks w/pressure ratings of 25 psig (1.72 barg) and above will support full vacuum w/o additional support
- Contact ZOOK Engineering for applications with less than full vacuum or Bak-Pressure
- Maximum pressure rating of ASME B16.5 Class 150 flanges is 290 psig (19.99 barg) @ 100°F (38°C). ASME B16.5 Class 300 flanges is 750 psig (51.71 barg) @ 100°F (38°C). The maximum pressure rating is lower at higher temperatures. Reference ASME/ANSI B16.5
- All pressures shown are based on an ambient temperature of 72°F (22°C)
- Not all minimum/maximum pressure and temperature combinations are available. Please contact ZOOK for more information
- Unless otherwise noted, stated MNFA and Kr values apply to the rupture disk only and does not include the addition of external vacuum supports or insulated units

Graphite Rupture Disks
Inverted Type



Certified Flow Resistance Factor (Krgl)

Krgl	0.64

Outside Diameter																							Burst Ratings					
DIN & ISO								ISO ONLY				JIS											Min Pressure (All Flanges)		Max Pressure (Flange Group 1)		Max Pressure (Flange Group 2)	
PN10		PN16		PN25		PN40		PN20		PN50		5K		10K		16K		20K		30K									
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm		psig	barg	psig	barg	psig	barg
2.01	51.0	2.01	51.0	2.01	51.0	2.01	51.0	1.75	44.4	2.00	50.8	1.89	48.0	2.17	55.1	2.17	55.1	2.17	55.1	2.40	60.9		25.00	1.72	▲	▲	▲	▲
2.40	60.9	2.40	60.9	2.40	60.9	2.40	60.9	2.13	54.1	2.50	63.5	2.09	53.0	2.36	59.9	2.36	59.9	2.36	59.9	2.60	66.0		25.00	1.72	▲	▲	▲	▲
2.80	71.1	2.80	71.1	2.80	71.1	2.80	71.1	2.50	63.5	2.75	69.8	2.48	62.9	2.80	71.1	2.80	71.1	2.80	71.1	2.99	75.9		10.00	0.69	▲	▲	▲	▲
3.62	91.9	3.62	91.9	3.62	91.9	3.62	91.9	3.25	82.5	3.63	92.2	3.15	80.0	3.39	86.1	3.39	86.1	3.39	86.1	3.82	97.0		7.00	0.48	▲	▲	▲	▲
4.21	106.9	4.21	106.9	4.21	106.9	4.21	106.9	4.00	101.6	4.25	107.9	3.54	89.9	3.98	101.0	3.98	101.0	3.98	101.0	4.37	111.0		3.00	0.21	▲	▲	500.00	34.47
5.00	127.0	5.00	127.0	5.00	127.0	5.00	127.0	4.75	120.6	5.00	127.0	4.52	114.8	4.76	120.9	4.76	120.9	4.76	120.9	5.39	136.9		3.00	0.21	▲	▲	500.00	34.47
5.59	141.9	5.59	141.9	5.59	141.9	5.59	141.9	5.25	133.3	5.75	146.0	4.96	125.9	5.16	131.0	5.39	136.9	5.39	136.9	5.79	147.0		2.00	0.14	▲	▲	500.00	34.47
6.38	162.0	6.38	162.0	6.61	167.8	6.61	167.8	6.75	171.4	7.00	177.8	5.75	146.0	6.14	155.9	6.38	162.0	6.38	162.0	6.69	169.9		1.50	0.10	250.00	17.24	500.00	34.47
7.55	191.7	7.55	191.7	7.64	194.0	7.64	194.0	7.75	196.8	8.38	212.8	7.12	180.8	7.36	186.9	7.87	199.9	7.87	199.9	8.07	204.9		1.50	0.10	170.00	11.72	450.00	31.03
8.58	217.9	8.58	217.9	8.82	224.0	8.82	224.0	8.63	219.2	9.75	247.6	8.31	211.0	8.54	216.9	9.25	234.9	9.25	234.9	9.76	247.9		1.00	0.07	170.00	11.72	450.00	31.03
10.75	273.0	10.75	273.0	11.18	283.9	11.42	290.0	10.88	276.3	12.00	304.8	10.12	257.0	10.51	266.9	11.20	284.4	11.20	284.4	11.54	293.1		0.50	0.03	170.00	11.72	450.00	31.03
12.91	327.9	12.95	328.9	-	-	-	-	-	-	-	-	12.68	322.0	12.99	329.9	-	-	-	-	-	-		0.25	0.02	150.00	10.34	-	-
14.88	377.9	15.12	384.0	-	-	-	-	-	-	-	-	14.45	367.0	14.76	374.9	-	-	-	-	-	-		0.25	0.02	150.00	10.34	-	-
17.24	437.9	17.48	443.9	-	-	-	-	-	-	-	-	16.14	409.9	16.54	420.1	-	-	-	-	-	-		0.25	0.02	150.00	10.34	-	-
19.25	488.9	19.49	495.0	-	-	-	-	-	-	-	-	18.50	469.9	19.02	483.1	-	-	-	-	-	-		0.25	0.02	150.00	10.34	-	-
21.22	538.9	21.85	554.9	-	-	-	-	-	-	-	-	20.87	530.1	21.81	553.9	-	-	-	-	-	-		0.25	0.02	■	■	-	-
23.39	594.1	24.29	616.9	-	-	-	-	-	-	-	-	22.83	579.8	23.35	593.0	-	-	-	-	-	-		0.25	0.02	■	■	-	-
27.36	694.9	28.90	734.0	-	-	-	-	-	-	-	-	27.09	688.0	27.44	696.9	-	-	-	-	-	-		0.25	0.02	■	■	-	-

Graphite Rupture Disks
Duplex Type

Features

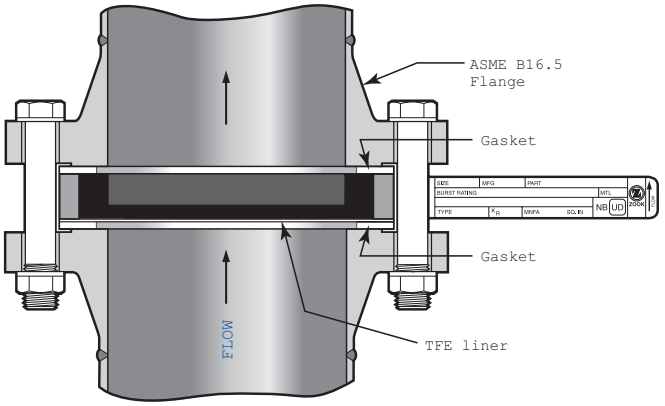
- The best choice for applications involving highly oxidizing agents and halogens
- Disks extend corrosion resistance by utilizing a liner on the flat surface of the disk that contacts the process media
- Disks are capable of resisting virtually any corrosive except elemental free fluorine
- Sizes 1/2” (13 mm) thru 24” (610 mm) diameters
- Designed to fit industry standard flanges ASME B16.5, ISO and JIS
- Burst ratings 0.50 psig (0.03 barg) to 1000 psig (68.95 barg) or higher
- 0% manufacturing range
- Operating pressures to 90% of the disk’s marked burst pressure. Contact ZOOK for operating ratio for burst pressures below 40 psig (2.76 barg)
- Temperature ratings –290°F to +700°F (–143°C to +371°C) Maximum temperature rating without insulation is 430°F (221°C) or 700°F (371°C) with insulation. Contact ZOOK for higher temperature ratings. The specified temperature shall be at the disk location at the time when the disk is expected to rupture
- External type vacuum supports are available for vacuum service (Contact ZOOK when vacuum is present)
- All flange group 2 disks are armored
- Liners available: PTFE (Standard Liner), PFA and FEP. Contact ZOOK for further materials available
- ASME (UD) and PED (CE) compliance available

Specifications

Disk Size					MNFA				Thickness*															
									(Flange Group 1)				(Flange Group 2)											
NPS		DN	Actual ID		Full Bore		w/ External Vacuum Support		ASME Cl 150 PN6 / 10 / 16 / 20 JIS 5K / 10K / 16K				ASME Cl 300 / 600 PN25 / 40 / 50 JIS 20K / 30K				ASME B16.5 Class							
									Standard Disk		Insulated Unit		Standard Disk		Insulated Unit		150		300		600		PN6	
in	mm	mm	in	mm	in²	mm²	in²	mm²	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
½	13	15	0.62	15.7	0.30	193	-	-	0.63	16.0	1.75	44.4	0.63	16.0	1.75	44.4	1.75	44.4	2.00	50.8	2.00	50.8	1.73	43.9
¾	19	20	0.82	20.8	0.53	341	-	-	0.63	16.0	1.75	44.4	0.63	16.0	1.75	44.4	2.13	54.1	2.50	63.5	2.50	63.5	2.13	54.1
1	25	25	1	25.4	0.78	503	0.34	219	0.88	22.3	2.25	57.1	1.00	25.4	2.50	63.5	2.50	63.5	2.75	69.8	2.75	69.8	2.52	64.0
1-½	38	40	1.50	38.1	1.76	1,135	0.76	490	0.88	22.3	2.25	57.1	1.00	25.4	2.50	63.5	3.25	82.5	3.63	92.2	3.63	92.2	3.39	86.1
2	50	50	2	50.8	3.14	2,025	1.36	877	0.88	22.3	2.25	57.1	1.00	25.4	2.50	63.5	4.00	101.6	4.25	107.9	4.25	107.9	3.78	96.0
2-½	64	65	2.50	63.5	4.78	3,083	2.58	1,664	0.88	22.3	2.25	57.1	1.00	25.4	2.50	63.5	4.75	120.6	5.00	127.0	5.00	127.0	4.59	116.5
3	76	80	3	76.2	7.06	4,554	3.87	2,496	0.88	22.3	2.25	57.1	1.25	31.7	3.00	76.2	5.25	133.3	5.75	146.0	5.75	146.0	5.20	132.0
4	102	100	4	101.6	12.56	8,103	5.77	3,722	0.88	22.3	2.25	57.1	1.25	31.7	3.00	76.2	6.75	171.4	7.00	177.8	-	-	5.98	151.8
5	127	125	5	127.0	19.63	12,664	8.39	5,412	0.88	22.3	2.25	57.1	■	■	■	■	7.75	196.8	8.28	210.3	-	-	7.16	181.8
6	152	150	6	152.4	28.27	18,238	14.78	9,535	0.88	22.3	2.25	57.1	1.75	44.4	4.00	101.6	8.63	219.2	9.75	247.6	-	-	8.15	207.0
8	203	200	8	203.2	50.02	32,270	25.81	16,651	1.13	28.7	2.75	69.8	2.25	57.1	5.00	127.0	10.88	276.3	12.00	304.8	-	-	10.31	261.8
10	254	250	10	254.0	78.53	50,664	32.70	21,096	1.50	38.1	3.38	85.8	-	-	-	-	13.25	336.5	-	-	-	-	12.48	316.9
12	305	300	12	304.8	113.09	72,961	47.24	30,477	2.00	50.8	4.38	111.2	-	-	-	-	16.00	406.4	-	-	-	-	14.69	373.1
14	356	350	13.25	336.5	137.88	88,954	-	-	2.25	57.1	4.88	123.9	-	-	-	-	17.63	447.8	-	-	-	-	16.65	422.9
16	406	400	15.25	387.3	182.65	117,838	-	-	2.50	63.5	5.38	136.6	-	-	-	-	20.13	511.3	-	-	-	-	18.62	472.9
18	457	450	17.25	438.1	233.70	150,773	-	-	2.75	69.8	5.88	149.3	-	-	-	-	21.50	546.1	-	-	-	-	20.79	528.0
20	508	500	19.25	488.9	291.03	187,760	-	-	3.00	76.2	6.38	162.0	-	-	-	-	23.75	603.2	-	-	-	-	22.76	578.1
24	610	600	23.25	590.5	424.55	273,902	-	-	3.00	76.2	6.38	162.0	-	-	-	-	28.13	714.5	-	-	-	-	26.73	678.9

Notes:
*Standard disk thickness does not include gaskets. Insulated unit thickness includes all gaskets
▲ Max pressure based on max design Pressure/Temperature of companion flanging selected
■ Contact ZOOK
- Disks w/pressure ratings of 25 psig (1.72 barg) and above will support full vacuum w/o additional support
- Contact ZOOK Engineering for applications with less than full vacuum or Bak-Pressure
- Maximum pressure rating of ASME B16.5 Class 150 flanges is 290 psig (19.99 barg) @ 100°F (38°C). ASME B16.5 Class 300 flanges is 750 psig (51.71 barg) @ 100°F (38°C). The maximum pressure rating is lower at higher temperatures. Reference ASME/ANSI B16.5
- All pressures shown are based on an ambient temperature of 72°F (22°C)
- Not all minimum/maximum pressure and temperature combinations are available. Please contact ZOOK for more information
- Unless otherwise noted, stated MNFA and Kr values apply to the rupture disk only and does not include the addition of external vacuum supports or insulated units

Graphite Rupture Disks
Duplex Type



Certified Flow Resistance Factor (Krgl)

Krgl	0.64

Outside Diameter																						Burst Ratings					
DIN & ISO								ISO ONLY				JIS										Min Pressure (All Flanges)		Max Pressure (Flange Group 1)		Max Pressure (Flange Group 2)	
PN10		PN16		PN25		PN40		PN20		PN50		5K		10K		16K		20K		30K							
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	psig	barg	psig	barg	psig	barg
2.01	51.0	2.01	51.0	2.01	51.0	2.01	51.0	1.75	44.4	2.00	50.8	1.89	48.0	2.17	55.1	2.17	55.1	2.17	55.1	2.40	60.9	25.00	1.72	▲	▲	▲	▲
2.40	60.9	2.40	60.9	2.40	60.9	2.40	60.9	2.13	54.1	2.50	63.5	2.09	53.0	2.36	59.9	2.36	59.9	2.36	59.9	2.60	66.0	25.00	1.72	▲	▲	▲	▲
2.80	71.1	2.80	71.1	2.80	71.1	2.80	71.1	2.50	63.5	2.75	69.8	2.48	62.9	2.80	71.1	2.80	71.1	2.80	71.1	2.99	75.9	10.00	0.69	▲	▲	▲	▲
3.62	91.9	3.62	91.9	3.62	91.9	3.62	91.9	3.25	82.5	3.63	92.2	3.15	80.0	3.39	86.1	3.39	86.1	3.39	86.1	3.82	97.0	7.00	0.48	▲	▲	▲	▲
4.21	106.9	4.21	106.9	4.21	106.9	4.21	106.9	4.00	101.6	4.25	107.9	3.54	89.9	3.98	101.0	3.98	101.0	3.98	101.0	4.37	111.0	3.00	0.21	▲	▲	500.00	34.47
5.00	127.0	5.00	127.0	5.00	127.0	5.00	127.0	4.75	120.6	5.00	127.0	4.52	114.8	4.76	120.9	4.76	120.9	4.76	120.9	5.39	136.9	3.00	0.21	▲	▲	500.00	34.47
5.59	141.9	5.59	141.9	5.59	141.9	5.59	141.9	5.25	133.3	5.75	146.0	4.96	125.9	5.16	131.0	5.39	136.9	5.39	136.9	5.79	147.0	2.00	0.14	▲	▲	500.00	34.47
6.38	162.0	6.38	162.0	6.61	167.8	6.61	167.8	6.75	171.4	7.00	177.8	5.75	146.0	6.14	155.9	6.38	162.0	6.38	162.0	6.69	169.9	1.50	0.10	250.00	17.24	500.00	34.47
7.55	191.7	7.55	191.7	7.64	194.0	7.64	194.0	7.75	196.8	8.38	212.8	7.12	180.8	7.36	186.9	7.87	199.9	7.87	199.9	8.07	204.9	1.50	0.10	170.00	11.72	450.00	31.03
8.58	217.9	8.58	217.9	8.82	224.0	8.82	224.0	8.63	219.2	9.75	247.6	8.31	211.0	8.54	216.9	9.25	234.9	9.25	234.9	9.76	247.9	1.00	0.07	170.00	11.72	450.00	31.03
10.75	273.0	10.75	273.0	11.18	283.9	11.42	290.0	10.88	276.3	12.00	304.8	10.12	257.0	10.51	266.9	11.20	284.4	11.20	284.4	11.54	293.1	0.75	0.05	170.00	11.72	450.00	31.03
12.91	327.9	12.95	328.9	-	-	-	-	-	-	-	-	12.68	322.0	12.99	329.9	-	-	-	-	-	-	0.50	0.03	150.00	10.34	-	-
14.88	377.9	15.12	384.0	-	-	-	-	-	-	-	-	14.45	367.0	14.76	374.9	-	-	-	-	-	-	0.50	0.03	150.00	10.34	-	-
17.24	437.9	17.48	443.9	-	-	-	-	-	-	-	-	16.14	409.9	16.54	420.1	-	-	-	-	-	-	0.50	0.03	150.00	10.34	-	-
19.25	488.9	19.49	495.0	-	-	-	-	-	-	-	-	18.50	469.9	19.02	483.1	-	-	-	-	-	-	0.50	0.03	150.00	10.34	-	-
21.22	538.9	21.85	554.9	-	-	-	-	-	-	-	-	20.87	530.1	21.81	553.9	-	-	-	-	-	-	0.50	0.03	■	■	-	-
23.39	594.1	24.29	616.9	-	-	-	-	-	-	-	-	22.83	579.8	23.35	593.0	-	-	-	-	-	-	0.50	0.03	■	■	-	-
27.36	694.9	28.90	734.0	-	-	-	-	-	-	-	-	27.09	688.0	27.44	696.9	-	-	-	-	-	-	0.50	0.03	■	■	-	-

Graphite Rupture Disks
FS-Inverted Type

ZOOK's new Fluoropolymer Sintered Graphite Rupture Disk offers enhanced features when compared to resin impregnated graphite disks. The Fluoropolymer coating is sintered at a high temperature onto a graphite blank. The durable coating seals the graphite material enhancing the corrosive capability and allows the disk to operate at sub-zero to elevated temperatures with minimal effect on the burst performance of the rupture disk.

Features

- The best choice for highly corrosive and broad temperature range applications
- Non-stick surface conforms to FDA regulations
- Resists product build-up – only the coated flat surface of the disk is exposed to the process medium
- Durable coating offers exceptional corrosion resistance
- Sizes 1" (25 mm) thru 24" (610 mm) diameters
- Designed to fit industry standard flanges ASME B16.5, ISO and JIS
- Burst ratings to 1,000 psig (68.95 barg)
- 0% manufacturing range is standard
- Operating pressures to 90% of the disk's marked burst pressure (Contact ZOOK for operating ratio for burst pressures below 40 psig)
- Extended temperature range: –290°F to +500°F (–143°C to +260°C)
- Vacuum support not required for disks with burst pressures of 25 psig and above (Use FS-V Inverted Type for vacuum service)
- All flange group 2 disks are armored
- ASME (UD) and PED (CE) compliance available

Graphite Rupture Disks
FS-V Inverted Type

ZOOK's new Fluoropolymer Sintered Graphite Rupture Disk offers enhanced features when compared to resin impregnated graphite disks. The Fluoropolymer coating is sintered at a high temperature onto a graphite blank. The durable coating seals the graphite material enhancing the corrosive capability and allows the disk to operate at sub-zero to elevated temperatures with minimal effect on the burst performance of the rupture disk.

Features

- The best choice for highly corrosive, broad temperature range and low burst applications where vacuum is present
- Sizes 1-1/2" (38 mm) thru 10" (254 mm) diameters
- Burst ratings up to 30 psig (2.07 barg) (Use FS Inverted Type for higher burst ratings)
- 0% manufacturing range is standard
- Carbon steel armor standard, 316 optional
- Furnished complete with set of PTFE gaskets – attached
- Extended temperature range: –290°F to +500°F (–143°C to +260°C)
- PED (CE) compliance available

Graphite Rupture Disks
Two-Way Type

Features

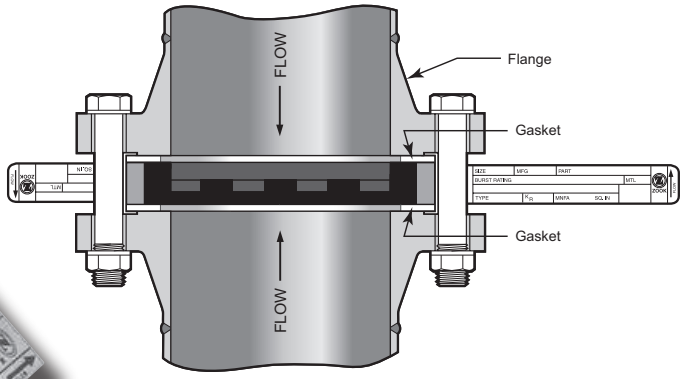
- Dual rated to protect against two different pressures in opposite directions
- Applications include protection of storage tanks against both excess vacuum and overpressure when single vessel entry is required
- Sizes 1-1/2” (38 mm) thru 24” (610 mm) diameters
- Designed to fit industry standard flanges ASME B16.5, ISO and JIS
- Burst ratings 0.25 psig (0.02 barg) to 1000 psig (68.95 barg) or higher
- 0% manufacturing range
- Operating pressures to 90% of the disk’s marked burst pressure. Contact ZOOK for operating ratio for burst pressures below 40 psig (2.76 barg)
- Temperature ratings –290°F to +430°F (–179°C to +221°C). Contact ZOOK for higher temperature ratings. The specified temperature shall be at the disk location at the time when the disk is expected to rupture
- Carbon steel armor standard, 316SS optional
- Furnished complete with PTFE gaskets attached. Other gasket materials are available
- Generally a minimum differential of 10 psi is required between burst ratings. Contact ZOOK for other burst rating combinations
- PED (CE) compliance available

Specifications

Disk Size					Thickness*									
NPS		DN	Actual ID		(Flange Group 1) ASME CI 150 PN6 / 10 / 16 / 20 JIS 5K / 10K / 16K		ASME B16.5 Class		DIN & ISO					
							150		PN6		PN10		PN16	
in	mm	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
1-½	38	40	1.5	38	1.13	28.7	3.25	82.5	3.39	86.1	3.62	91.9	3.62	91.9
2	50	50	2	51	1.13	28.7	4.00	101.6	3.78	96.0	4.21	106.9	4.21	106.9
2-½	64	65	2.5	64	1.13	28.7	4.75	120.6	4.59	116.5	5.00	127.0	5.00	127.0
3	76	80	3	76	1.13	28.7	5.25	133.3	5.20	132.0	5.59	141.9	5.59	141.9
4	102	100	4	102	1.13	28.7	6.75	171.4	5.98	151.8	6.38	162.0	6.38	162.0
5	127	125	5	127	1.13	28.7	7.75	196.8	7.16	181.8	7.55	191.7	7.55	191.7
6	152	150	6	152	1.13	28.7	8.63	219.2	8.15	207.0	8.58	217.9	8.58	217.9
8	203	200	8	203	1.38	35.0	10.88	276.3	10.31	261.8	10.75	273.0	10.75	273.0
10	254	250	10	254	1.78	45.2	13.25	336.5	12.48	316.9	12.91	327.9	12.95	328.9
12	305	300	12	305	2.25	57.1	16.00	406.4	14.69	373.1	14.88	377.9	15.12	384.0

Notes:
*Overall thickness dimension includes two 1/8” (3.18 mm) thick gaskets
▲ Generally a minimum differential of 10 psig is required between burst ratings. Contact ZOOK for other burst rating combinations
• Contact ZOOK Engineering for disk sizes above 12” (305 mm)
• All pressures shown are based on an ambient temperature of 72°F (22°C)
• Not all minimum/maximum pressure and temperature combinations are available. Please contact ZOOK for more information
• Unless otherwise noted, stated MNFA and Kr values apply to the rupture disk only and does not include the addition of external vacuum supports or insulated units

Graphite Rupture Disks
Two-Way Type



Outside Diameter										Burst Ratings					
ISO ONLY		JIS								Low Pressure Direction			High Pressure Direction		
PN20		5K		10K		16K		20K		Min		Max	Min	Max	
in	mm	in	mm	in	mm	in	mm	in	mm	psig	barg			psig	barg
3.25	82.5	3.15	80.0	3.39	86.1	3.39	86.1	3.39	86.1	7.00	0.48	Full Vacuum	▲	150.00	10.34
4.00	101.6	3.54	89.9	3.98	101.0	3.98	101.0	3.98	101.0	3.00	0.21	Full Vacuum	▲	150.00	10.34
4.75	120.6	4.52	114.8	4.76	120.9	4.76	120.9	4.76	120.9	3.00	0.21	Full Vacuum	▲	125.00	8.62
5.25	133.3	4.96	125.9	5.16	131.0	5.39	136.9	5.39	136.9	2.00	0.14	Full Vacuum	▲	100.00	6.89
6.75	171.4	5.75	146.0	6.14	155.9	6.38	162.0	6.38	162.0	1.50	0.10	Full Vacuum	▲	100.00	6.89
7.75	196.8	7.12	180.8	7.36	186.9	7.87	199.9	7.87	199.9	1.50	0.10	Full Vacuum	▲	100.00	6.89
8.63	219.2	8.31	211.0	8.54	216.9	9.25	234.9	9.25	234.9	1.00	0.07	Full Vacuum	▲	100.00	6.89
10.88	276.3	10.12	257.0	10.51	266.9	11.20	284.4	11.20	284.4	0.50	0.03	Full Vacuum	▲	100.00	6.89
13.25	336.5	12.68	322.0	12.99	329.9	13.90	353.0	-	-	0.25	0.02	Full Vacuum	▲	100.00	6.89
16.00	406.4	14.45	367.0	14.76	374.9	15.87	403.1	-	-	0.25	0.02	Full Vacuum	▲	75.00	5.17

Graphite Rupture Disks
RT2 / RT2T Type

Features

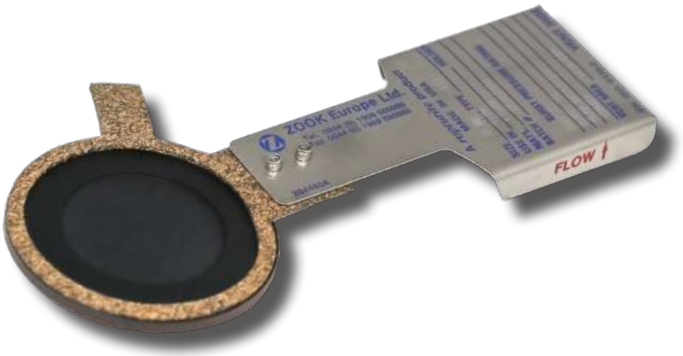
- The RT2 disk is suitable for gas, liquid or vapour service
- Available in nominal sizes from 1” (25 mm) thru 12” (300 mm)
- Fits into a re-usable disk holder
- The ZOOK RT2 type Graphite bursting disk is equivalent to most other manufacturers replacement element type graphite disks, i.e. EHG2, G2, Series 2, E2, and in most cases will fit into their holders (Consult ZOOK first)
- The RT2 disk can handle an operating pressure of up to 90% of the minimum rated burst pressure of the disk
- Standard burst tolerances are +/- 10% for 5 psig (0.34 barg) and above, and +/- ¾ psig (0.05 barg) for below 5 psig (0.34 barg)
- The RT2 disk can withstand full vacuum if rated at 25 psig (1.72 barg) and above. For disks rated below 25 psig (1.72 barg), a reverse pressure support (RPS) must be fitted into the disk holder. (Note: The RPS is a fixed type vacuum support and will reduce the free flow area of the disk on burst)
- For additional corrosion resistance and wider temperature range special fluoropolymer sintered RT2T disk is available. (Minimum pressure may vary)
- Burst detection available for most applications by fitting RDI detector in place of holder outlet side gasket
- The RT2 disks will be manufactured, where applicable, in accordance to the latest pressure equipment directive (PED) 2014/68/EU (Category IV) and EN-ISO-4126-2 and are CE Marked. Burst test certificates will be supplied with the disks (Third party witness testing is also available if required)
- Standard holder materials available: Graphite, Stainless Steel and FS (fluoropolymer coated stainless steel)

Specifications

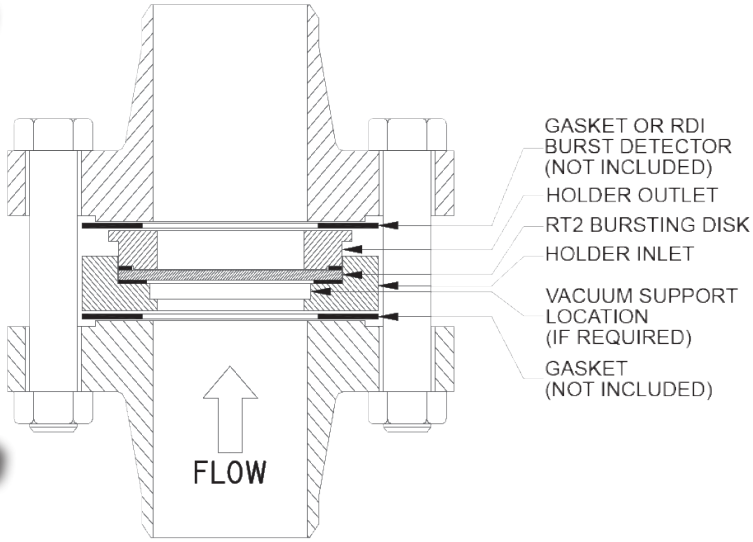
Disk Size					Assembly Heights*				MNFA									
NPS		DN	Actual ID		Metal Holder		Graphite Holder		Graphite & Metal Holder w/o Vacuum Support		Metal Holder w/ Vacuum Support		Graphite Holder w/ Vacuum Support		ASME B16.5 Class			
															150		PN6	
in	mm	mm	in	mm	in	mm	in	mm	in²	mm²	in²	mm²	in²	mm²	in	mm	in	mm
1	25	25	1	25.4	0.84	21.3	1.16	29.4	0.76	490	0.46	297	0.46	299	2.50	63.5	2.52	64.0
1-½	38	40	1.5	38.1	0.96	24.3	1.26	32.0	1.94	1,251	1.08	693	1.10	712	3.25	82.5	3.39	86.1
2	50	50	2	50.8	1.03	26.1	1.33	33.7	3.04	1,961	2.15	1,385	1.88	1,218	4.00	101.6	3.78	96.0
2-½	64	65	2.5	63.5	1.26	32.0	1.50	38.1	5.13	3,309	2.81	1,816	2.97	1,920	4.75	120.6	4.59	116.5
3	76	80	3	76.2	1.33	33.7	1.68	42.6	7.79	5,025	4.28	2,759	3.74	2,415	5.25	133.3	5.20	132.0
4	102	100	4	101.6	1.47	37.3	1.92	48.7	12.17	7,851	8.17	5,272	7.80	5,037	6.75	171.4	5.98	151.8
6	152	150	6	152.4	1.63	41.4	2.53	64.2	27.39	17,670	17.11	11,036	17.64	11,385	8.63	219.2	8.15	207.0
8	203	200	8	203.2	2.02	51.3	3.35	85.0	48.69	31,412	26.75	17,259	27.6	17,806	10.88	276.3	10.31	261.8
10	254	250	10	254.0	2.27	57.6	4.23	107.4	76.08	49,083	51.84	33,442	38.33	24,730	13.25	336.5	12.48	316.9
12	305	300	12	304.8	2.72	69.0	5.07	128.7	109.56	70,683	58.91	38,007	60.80	39,225	16.00	406.4	14.69	373.1

Notes:
*Assembly heights exclude flange gaskets
▲ Max pressure based on max design Pressure/Temperature of companion flanging selected
• All pressures shown are based on an ambient temperature of 72°F (22°C)
• Not all minimum/maximum pressure and temperature combinations are available. Please contact ZOOK for more information

Graphite Rupture Disks
RT2 / RT2T Type



RT2 Series disk fits into re-usable disk holder



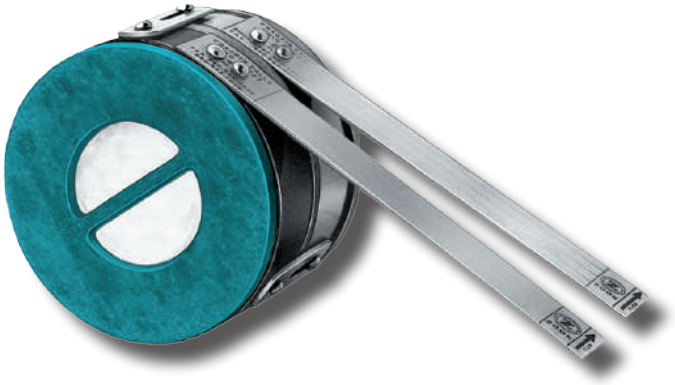
RT2 Disk and Holder Typical Installation

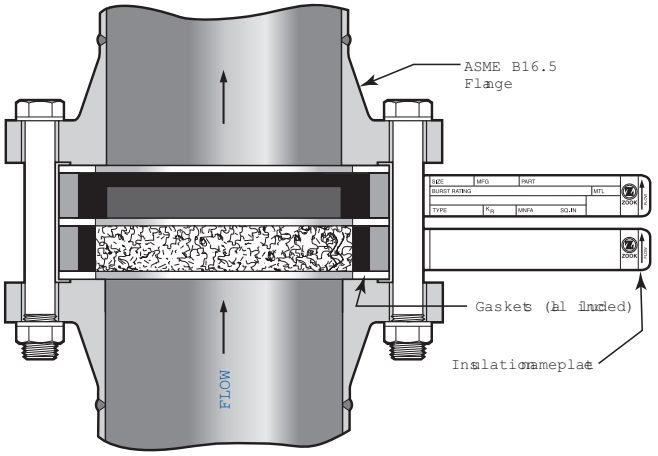
Outside Diameter														Burst Ratings			
DIN & ISO				ISO ONLY		JIS								RT2 Type Disk			
PN10		PN16		PN20		5K		10K		16K		20K		Min		Max	
in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	psig	barg	psig	barg
2.80	71.1	2.80	71.1	2.50	63.5	2.48	62.9	2.80	71.1	2.80	71.1	2.80	71.1	10.00	0.69	▲	▲
3.62	91.9	3.62	91.9	3.25	82.5	3.15	80.0	3.39	86.1	3.39	86.1	3.39	86.1	7.00	0.48	▲	▲
4.21	106.9	4.21	106.9	4.00	101.6	3.54	89.9	3.98	101.0	3.98	101.0	3.98	101.0	3.00	0.21	200.00	13.79
5.00	127.0	5.00	127.0	4.75	120.6	4.52	114.8	4.76	120.9	4.76	120.9	4.76	120.9	3.00	0.21	175.00	12.07
5.59	141.9	5.59	141.9	5.25	133.3	4.96	125.9	5.16	131.0	5.39	136.9	5.39	136.9	2.50	0.17	150.00	10.34
6.38	162.0	6.38	162.0	6.75	171.4	5.75	146.0	6.14	155.9	6.38	162.0	6.38	162.0	1.75	0.12	100.00	6.89
8.58	217.9	8.58	217.9	8.63	219.2	8.31	211.0	8.54	216.9	8.54	216.9	8.54	216.9	1.50	0.10	75.00	5.17
10.75	273.0	10.75	273.0	10.88	276.3	10.12	257.0	10.51	266.9	10.51	266.9	10.51	266.9	1.00	0.07	50.00	3.45
12.91	327.9	12.91	327.9	13.25	336.5	12.68	322.0	12.99	329.9	12.99	329.9	12.99	329.9	1.00	0.07	50.00	3.45
14.88	377.9	14.88	377.9	16.00	406.4	14.45	367.0	14.76	374.9	14.76	374.9	14.76	374.9	1.00	0.07	50.00	3.45

Insulated Unit Type

Features

- For temperatures exceeding 430°F (221°C) to 700°F (371°C)
- Furnished as an attached unit. Disk's nameplate rating must be established at the cold face temperature of the insulation
- NOT available for Two-Way disks or disks with ring or plate vacuum supports
- Insulated Units are supplied armored with required insulation and gaskets for service above 430°F (221°C) to 700°F (371°C). Standard armor is carbon steel, gaskets are compressed fiber, and insulation is spun alumina/silica. This insulation prohibits use with liquids and some corrosives
- For temperatures exceeding 700°F (371°C) contact ZOOK
- Contact ZOOK for flow reduction factor when using Insulated Unit





Note:
Insulated Disks cannot be used with liquids, hydrofluoric and phosphoric acids or concentrated alkalis

Graphite Screw Type (GST)

By utilizing a graphite rupture disk mounted between stainless steel inlet and outlet connection sealing on an O-ring, ZOOK can provide low burst ratings, operating ratios of 90%, and leak rates better than 1 X 10^{-5} std. cc/sec helium gas.*

Features

- Designed for use with Inverted Type rupture disks
- Ideal for pressure ratings from 20 psig (1.38 barg) to 1000 psig (68.97 barg)
- Unit consists of 3 components: Inlet, Outlet, and O-ring
- Standard outlet connections: muffled**, free (open to atmosphere) or threaded
- O-ring is supplied with the rupture disk. The outlet nut provides the compression required to seal the disk against the O-ring
- Standard materials of construction: 316 Stainless Steel (Other materials available, contact ZOOK)

Notes:
*Leak rate based on graphite disk and o-ring seal
**Muffled outlets reduce noise levels and redirect fragment or product released when the rupture disk bursts

Graphite Rupture Disks
Gaskets

Gaskets can be supplied loose or attached to the disk (Note: field replacement of gaskets NOT recommended on Two-Way Disks or Insulated Units).

When supplying your own gaskets, follow dimensions in the chart, especially the inside diameter which provides proper clearance to ensure accurate burst. 1/8" (3.18 mm) thick gasket is recommended. Gaskets for Insulated Disks are made from high-temperature material and are always supplied attached.

Gaskets used with graphite or metal disks are stocked in the following materials:

- Neoprene
- Compressed fiber
- Solid PTFE
- PTFE envelope

Contact ZOOK for the entire selection of gasket sizes and gasket materials available.

Nominal Size		ID		OD														
		ANSI, ISO, PN20 & PN50	DIN, ISO, & JIS	ANSI			DIN & ISO					ISO ONLY		JIS				
NPS	DN			150	300	600	PN6	PN10	PN16	PN25	PN40	PN20	PN50	5K	10K	16K	20K	30K
1/2"		0.88	0.93	1.75	2.00	2.00	1.73	2.01	2.01	2.01	2.01	1.75	2.00	1.89	2.17	2.17	2.17	2.40
12 mm	15	22.3	23.6	44.4	50.8	50.8	43.9	51.0	51.0	51.0	51.0	44.45	50.8	48.0	55.1	55.1	55.1	60.9
3/4"		1.13	1.13	2.13	2.50	2.50	2.13	2.40	2.40	2.40	2.40	2.13	2.50	2.09	2.36	2.36	2.36	2.60
19 mm	20	28.7	28.7	54.1	63.5	63.5	54.1	60.9	60.9	60.9	60.9	54.10	63.5	53.0	59.9	59.9	59.9	66.0
1"		1.31	1.43	2.50	2.75	2.75	2.52	2.80	2.80	2.80	2.80	2.50	2.75	2.48	2.80	2.80	2.80	2.99
25 mm	25	33.2	36.3	63.5	69.8	69.8	64.0	71.1	71.1	71.1	71.1	63.50	69.8	62.9	71.1	71.1	71.1	75.9
1-1/2"		1.91	2.10	3.25	3.63	3.63	3.39	3.62	3.62	3.62	3.62	3.25	3.63	3.15	3.39	3.39	3.39	3.82
38 mm	40	48.5	53.3	82.5	92.2	92.2	86.1	91.9	91.9	91.9	91.9	82.55	92.2	80.0	86.1	86.1	86.1	97.0
2"		2.50	2.65	4.00	4.25	4.25	3.78	4.21	4.21	4.21	4.21	4.00	4.25	3.54	3.98	3.98	3.98	4.37
50 mm	50	63.5	67.3	101.6	107.9	107.9	96.0	106.9	106.9	106.9	106.9	101.60	107.9	89.9	101.0	101.0	101.0	111.0
2-1/2"		3.25	3.25	4.75	5.00	5.00	4.59	5.00	5.00	5.00	5.00	4.75	5.00	4.52	4.76	4.76	4.76	5.39
64 mm	65	82.5	82.5	120.6	127.0	127.0	116.5	127.0	127.0	127.0	127.0	120.65	127.0	114.8	120.9	120.9	120.9	136.9
3"		3.75	4.00	5.25	5.75	5.75	5.20	5.59	5.59	5.59	5.59	5.25	5.75	4.96	5.16	5.39	5.39	5.79
76 mm	80	95.2	101.6	133.3	146.0	146.0	132.0	141.9	141.9	141.9	141.9	133.35	146.0	125.9	131.0	136.9	136.9	147.0
4"		5.00*	5.00*	6.75	7.00	*	5.98	6.38	6.38	6.61	6.61	6.75	7.00	5.75	6.14	6.38	6.38	6.69
102 mm	100	127.0	127.0	171.4	177.8	*	151.8	162.0	162.0	167.8	167.8	171.45	177.8	146.0	155.9	162.0	162.0	169.9
5"		6.13	6.13	7.63	8.38	*	7.16	7.55	7.55	7.80	7.80	7.63	8.38	7.13	7.36	7.87	7.87	8.07
127 mm	125	155.7	155.7	193.8	212.8	*	181.8	191.7	191.7	198.1	198.1	193.80	212.8	181.1	186.9	199.9	199.9	204.9
6"		7.13	7.13	8.63	9.75	*	8.15	8.58	8.58	8.82	8.82	8.63	9.75	8.31	8.54	9.25	9.25	9.76
152 mm	150	181.1	181.1	219.2	247.6	*	207.0	217.9	217.9	224.0	224.0	219.20	247.6	211.0	216.9	234.9	234.9	247.9
8"		8.88*	9.00	10.88	12.00	*	10.31	10.75	10.75	11.18	11.42	10.88	12.0	10.12	10.51	11.20	11.20	11.54
203 mm	200	225.5	228.6	276.3	304.8	*	261.8	273.0	273.0	283.9	290.0	276.35	304.8	257.0	266.9	284.4	284.4	293.1
10"		11.63	11.38	13.25	*	*	12.48	12.91	12.95	*	*	*	*	12.68	12.99	13.90	*	*
254 mm	250	295.4	289.0	336.5	*	*	316.9	327.9	328.9	*	*	*	*	322.0	329.9	353.0	*	*
12"		13.75	13.25	16.00	*	*	14.69	14.88	15.12	*	*	*	*	14.45	14.76	15.87	*	*
305 mm	300	349.2	336.5	406.4	*	*	373.1	377.9	384.0	*	*	*	*	367.0	374.9	403.1	*	*
14"		14.50	15.31	17.63	*	*	16.65	17.24	17.48	*	*	*	*	16.14	16.54	17.60	*	*
356 mm	350	368.3	388.8	447.8	*	*	422.9	437.9	443.9	*	*	*	*	409.9	420.1	447.0	*	*
16"		17.00	17.41	20.13	*	*	18.62	19.25	19.49	*	*	*	*	18.50	19.02	19.96	*	*
406 mm	400	431.8	442.2	511.3	*	*	472.9	488.9	495.0	*	*	*	*	469.9	483.1	506.9	*	*
18"		19.50	19.50	21.50	*	*	20.79	21.22	21.85	*	*	*	*	20.87	21.81	22.52	*	*
457 mm	450	495.3	495.3	546.1	*	*	528.0	538.9	554.9	*	*	*	*	530.1	553.9	572.0	*	*
20"		21.75	21.53	23.75	*	*	22.76	23.39	24.29	*	*	*	*	22.83	23.35	24.69	*	*
508 mm	500	552.4	546.8	603.2	*	*	578.1	594.1	616.9	*	*	*	*	579.8	593.0	627.1	*	*
24"		25.00	25.00*	28.13	*	*	26.73	27.36	28.90	*	*	*	*	27.09	27.44	28.78	*	*
610 mm	600	635.0	635.0	714.5	*	*	678.9	694.9	734.0	*	*	*	*	688.0	696.9	731.0	*	*

Note: *4*-300 ANSI and ISO PN50 ID equals 4.75" (120.65 mm); 8.00" (203.20 mm)-300 ANSI and ISO PN50 ID equals 9.00" (228.60 mm); 24" (609.60 mm) DIN PN16 and JIS 16K equals 25.80" (655.32 mm)

Graphite Rupture Disks
Corrosion Guide

Refer to the chart to determine which disk is best suited for your system fluid. Corrosives not shown can typically be accommodated by our unlined graphite rupture disks. If in doubt, use the Duplex or FS Disks or contact ZOOK to obtain a material sample for testing.

Depending on the type of options, ZOOK graphite rupture disks can be subjected to almost any corrosive with the exception of free fluorine. A reference guide with corrosion resistance information is available upon request for use when specifying ZOOK graphite rupture disks. This guide offers compatibility with common corrosives. Where there is doubt about compatibility, a sample of ZOOK graphite can be supplied on request for your on-site evaluation. Please contact the factory if you have any questions.

Chemicals requiring ZOOK Duplex & FS Type Disk F = Specify Duplex Disk with FEP liner or FS Disk	
Aluminum Hydroxide	Iodine – F
Aststine	Lithium
Bromine – F	Nitric Acid
Bromine (water) – F	Nitrous Acid
Calcium Chlorate	Nitrous Oxide
Calcium Hydroxide	Oleum
Calcium Hypochlorite	Potassium (Liquid)
Castor Oil	Potassium Chlorate
Caustic Potash	Potassium Hydroxide
Caustic Soda	Potassium Hypochlorite
Chloral – F	Potassium Persulfate
Chlorine Triflouride – F	Rubidium (Liquid)
Chlorobenzene – F	Sodium Chlorate
Chloroform – F	Sodium Hydroxide
Chromic Acid	Sodium Hypochlorite
Francium	Sulfuric Acid
Hydrofluoric Acid	Sulfurous Acid
Hydrogen Peroxide	Sulfur Trioxide (Oleum)

Note:
Standard liner materials is PTFE. Other liner materials available upon request: FEP, PFA, Kynar®, Halar®

The information in this chart should be used as a general guide to the selection of the suitable material. Variations in the chemical behavior could be different due to factors such as temperature, pressure, concentration or mixture of chemicals. While utmost care was used in compiling this chart, we assume no responsibility for it's accuracy and completeness. Specifications are subject to change without notice.

Interchanging with Other Manufacturer's Product

ZOOK's manufacturing process utilizes synthetic graphite impregnated with a particular resin utilizing a proprietary process; therefore, it is not a safe assumption that different brands of graphite rupture disks are equal and interchangeable.

Warning

If a disk ruptures, material may:

- Vent at high velocity with significant reaction thrust force
- Contain disk particles and other solids and liquids
- Be toxic or flammable

The end user must make provisions to prevent personal injury and equipment damage. Use of disks described in this bulletin are intended for use only by persons with requisite technical skill and at their own discretion and risk. Because application, installation, and use are beyond our control, we make no warranties expressed or implied and do not assume any liability exceeding purchase price of the disk. It is the responsibility of the end user to fully understand his process and determine the disk needed to properly protect the system.

Testing Method

Testing is conducted to the standard selected by the client including PED and ASME codes. Maximum accuracy testing is carried out at the disk rated temperature.

ASME Code and EU Jurisdictional Regulations

Many jurisdictions in North America require ASME Code compliance on Boiler and Pressure Vessel construction. All pressure vessels within the scope of the ASME Code Section VIII, Div. 1 shall be provided with pressure relief devices. It is the responsibility of the user to ensure that the required devices are properly installed prior to initial operation of the pressure vessels

If company policy or jurisdictional regulation requires ASME Code compliance, the rupture disk devices used for pressure vessel overpressure protection shall bear the ASME Code UD symbol. The UD marking is the manufacturer's declaration that the device was manufactured in full compliance with the ASME Code.

Disks specified to ASME Code requirements are rated using a 0% MDR unless a special MDR is specified and agreed upon. 0% MDR disks are marked with the specified burst rating. Refer to the certified type for the flow resistance factors (Kr) and the Minimum Net Flow Area (MNFA).

European jurisdictions may require compliance with the Pressure Equipment Directive (PED 2014-68-EU). PED has been a requirement in the European community since May 29th, 2002 and covers vessels, piping, safety accessories, steam generators, and accessories and assemblies with a pressure greater than 0.5 barg. Pressure equipment in compliance with the PED is affixed with the CE marking. ZOOK has a range of rupture disk types approved to carry the CE marking.

Each lot of rupture disks required to carry the CE mark is tested in accordance to PED 2014-68-EU and EN ISO 4126 standards. Disks with marked burst pressures 0.5 barg or below do not require PED compliance, but may be tested under EN ISO 4126.

Pressure Ratings and Burst Tolerances

Burst ratings range from 0.25 psig (0.02 barg) to above 1000 psig (68.95 barg) for sizes 1/2" (13 mm) thru 24" (600 mm). Refer to minimum and maximum values in tables provided for each disk. Standard burst tolerances are:

Pressure Rating @ 72°F (22°C)		Burst Tolerance	
psig	barg	psi	bar
Above 40	Above 2.76	+/- 5%	+/- 5%
15 to 40	1.03 to 2.76	+/- 2.00	+/- 0.14
5 to less than 15	0.34 to less than 1.03	+/- 1.00	+/- 0.07
Above 1 to less than 5	Above 0.07 to less than 0.34	+/- 0.75	+/- 0.05
1 or less	0.07 or less	+0.75 / -0	+0.05 / -0

O2 Cleaning

For use in oxygen environments, ZOOK can provide oxygen cleaning services for graphite rupture disks and all associated parts including gaskets and liners. If disk is armored, stainless steel is required.

Vacuum

Disks are self-supporting up to full vacuum at burst ratings of 25 psig (1.72 barg) and higher. At lower pressures, integral vacuum supports are available for MONO and FSV Disks. External vacuum supports are available for Duplex and FS Disks. Contact ZOOK for partial vacuum services.

Dimensional Standards

Standard disks fit directly between industry standard flanges ASME B16.5, ISO and JIS with flat or raised faces. Flat ring gaskets are required and can be attached to the disk before shipment.

Capacity and Flow Resistance

Full bore opening at time of rupture is a consistent characteristic of ZOOK Disks and results in very low flow resistance values (Kr). Refer to Kr values in tables provided for each disk type.

Service Life

Each installation of a rupture disk has unique operating conditions that cumulatively affect the service life of the disk on an installation by installation basis. User experience is the best indicator in determining the frequency of planned maintenance change-out of a rupture disk. Cyclic service requires a more frequent change out schedule than static service due to material fatigue.

Good practice is to schedule inspection of the disk when scheduling preventative maintenance. Indicators that it's time to replace a graphite rupture disk may include premature burst, exposure to pressure above the operating ratio, corrosion, product build-up, damage including cracks or scratches, and leakage. Replace the disk immediately if any of these indicators are identified during preventative maintenance and update the change out schedule accordingly. Flange mounted disks with integral gaskets are designed for one-time installation only, and should be replaced with a new disk once it's been removed from its mating flanges.

Burst Sensors

For remote and quick detection of a ruptured condition, ZOOK offers various burst sensors. ZENSOR™: Rupture disk and sensing element are integral parts of the electrical circuit to eliminate false readings. Model BA: An external re-usable and replaceable indicator. Specify Model BA-L for optional leak detection. RDI: One time use rupture disk indicator.

Armor

Armor is available on any standard style, size and rating of graphite rupture disk.
Standard material is Carbon Steel (316SS optional).
Armor is required on the following:

- Disks for ASME B16.5 Class 300 flanges
- Two-way Type Disks
- Disks rated for temperatures above 338°F (170°C), regardless of disk style or flange class
- Disks for ASME B16.5 Class 150 flanges. See table at right with the following sizes and burst ratings:
- Higher PN/JIS flange rating would also require armor (PN25/40) in addition to CL300
- Armor is required when designing/sizing for overpressure protection in fire case scenario

Sizes		Rated Over @ 72°F (22°C)	
in	mm	psig	barg
1/2 - 3	15 - 80	150	10.34
4	100	100	6.89
6 - 10	150 - 250	75	5.17
12 - 24	300 - 600	50	3.45

Disks not covered above are furnished unarmored unless armor is specifically ordered. Armor is highly recommended for: Added safety, Greater reliability, and Easier installation.

Installation

ZOOK graphite rupture disks fit directly between standard flanges without the need for additional holders.

A flow arrow on each disk indicates proper orientation.

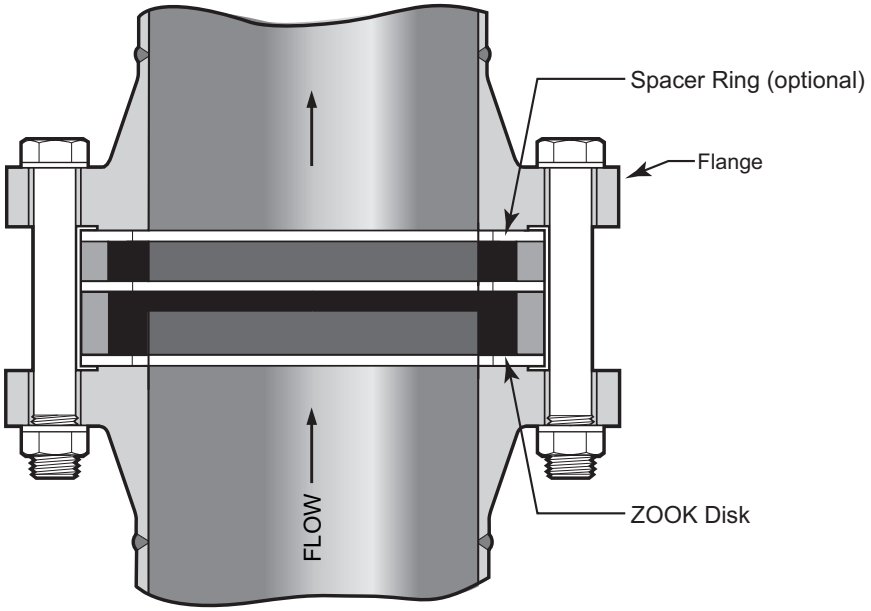
Armor provides additional protection from extraneous stress to the disk resulting from misaligned piping. Armor is standard on selected diameter and burst ratings and is required in fire case and toxic services.

Gaskets should be ring type, nonmetallic, relatively soft, and properly sized.

Normal good practice should be followed when making flange connections. Particular attention should be paid to ensure:

- Concentric alignment of the disk and gaskets
- Uniform cross-tightening of flange bolts
- Adequate support of piping to withstand external loading and thrust during blowdown
- Protection of personnel and equipment against high velocity open discharge of process material and rupture disk particles

When replacing a metal rupture disk with a ZOOK graphite rupture disk, a graphite lined armored spacer ring can be provided to fill the space of existing flange face-to-face distance, eliminating the need for piping modifications. Detailed installation instructions are provided with each disk.



Graphite Rupture Disk Replacement

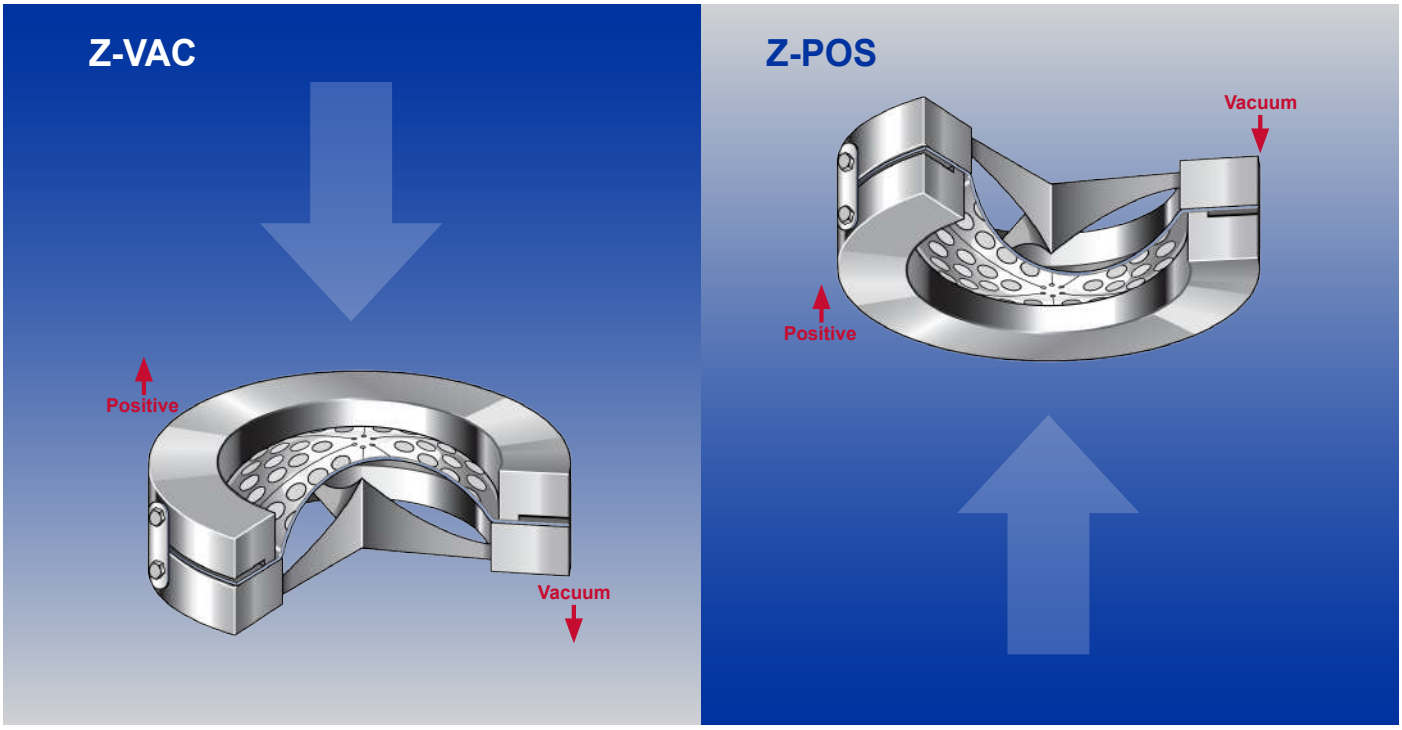
Protect your Processing or Storage Tank from Vacuum and/or Over-Pressurization in a Single Device

The ZOOK Z-VAC and Z-POS Series are a range of bi-directional rupture disk and holder assemblies designed to relieve between 1” - 109” (25 mm to 2768.6 mm) water column in one direction and 2 psig - 150 psig (0.14 barg to 10.34 barg) in the other direction uniquely protecting processing, fermentation, storage tanks and low strength vessels from vacuum implosion or over-pressure failure in a single device.

Both designs relieve ultra-low pressure settings. The Z-VAC allows ultra-low pressure relief in the vacuum direction starting at 1” (25 mm) of water column differential and features user friendly replaceable knife blades to ensure optimum performance. The Z-POS allows ultra-low pressure relief in the positive direction starting at 1” (25 mm) of water column differential.

How Does Z-VAC/Z-POS Work?

Ultra-Low pressure relief is controlled by a laser cut collapsible girdle. For Ultra-Low vacuum protection (Z-VAC) vacuum pressure pulls the Teflon seal against the girdle. For Ultra-Low over pressure protection (Z-POS) positive pressure pushes the Teflon seal against the girdle deflecting it towards the razor sharp knife-blades built into the holder. As pressure approaches the relief setting, the girdle collapses allowing the seal to be cut by the knife-blades. Laser cut holes in the mid pressure burst cap or non-opening support provide optimum flow when the rupture disk relieves in the Ultra-Low pressure direction.



Ultra-Low Pressure & Bi-Directional
Z-VAC / Z-POS

Rupture Disk Features

- Highly accurate, ultra-low burst pressures starting at 1” (25 mm) water column
- Dual-acting design, with laser cut metal top section and girdle
- Sizes 2” to 12” / 50 mm to 300 mm and above
- Standard 316 girdle for full range of vacuum pressures ensures clean opening of seal at specified pressure
- Burst ratings from 1” (25 mm) of water column to 150 psig (10.34 barg)
- Temperature ratings to 500˚F (260˚C)
- Permanently attached 3D stainless steel tag shows positive and vacuum flow directions
- Optional integral burst indication*

Z-VAC

Z-POS

Sanitary Fitting Disks

Sanitary fitting holders are available to allow direct connection to systems utilising ferrule connections. For more information on our ProVAC-S / ProPOS-S sanitary disks, contact a ZOOK representative.

BI Integral Indicator Available

The BI Series offers a simple and effective means of remote monitoring of the disk.

- The BI is installed on the atmospheric side of the Teflon seal protecting it from the process.
- Provides signal indication instantly upon rupture of the disk

*See table 1 on minimum burst rating requirements

Z-VAC & Z-POS Holder

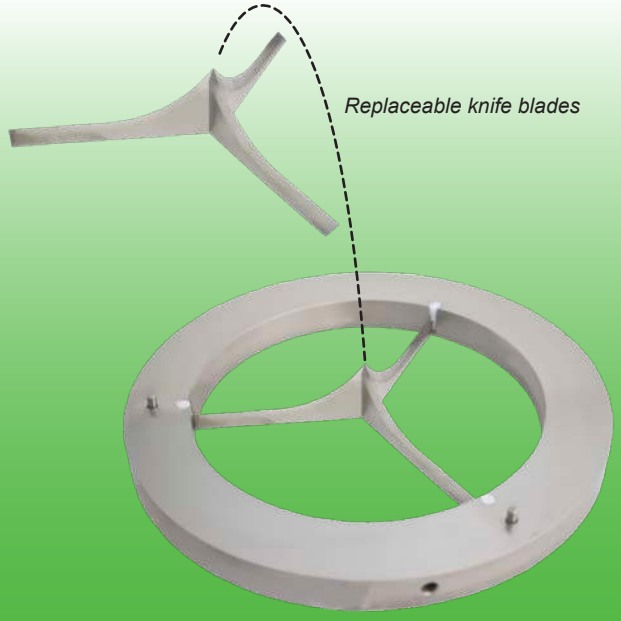
Rupture Disk Holder Features

- Designed for installation between standard pipe flanges
- Designed exclusively for use with the Z-VAC and Z-POS series rupture disks
- Replaceable knife blades ensure optimal performance
- Non-torque sensitive flat seal design
- The Z-VAC & Z-POS Holder and rupture disk are pre-assembled using side-clips
- Standard materials of construction: 316 or carbon steel. Other materials available upon request
- Permanently attached stainless steel nameplates are standard. Nameplates show positive and vacuum flow directions to provide visual verification that holder assembly is properly oriented in the piping system

Sanitary Fitting Holders

Sanitary fitting holders are ideal for high purity environments.

For more information on our ProVAC-S / ProPOS-S sanitary holders, contact a ZOOK representative.



ZOOK Differentiator

ZOOK'S Unique Replaceable Knife Blade Design

- Dull blades can result in collapsed tanks
- Allows higher level of safety maintenance
- Availability of spare blades on site leads to quick changeovers and greater operational safety
- Provides lower cost inventory compared to other designs
- Lower costs, less downtime, enhanced safety
- Replacement blades - easy to change

Ultra-Low Pressure & Bi-Directional
Z-VAC / Z-POS

Components

Note: Z-VAC Configuration

Holder Outlet

Insert type rupture disk holder manufactured from 316 or carbon steel.
Other materials also available.

Non-Opening Pressure Support

Provides protection to seal in case of positive pressure.

OPTIONS: Laser Cut Burst Cap

Provides higher pressure relief at specified rating.

Protective Ring

Provides seat area protection for seal on applications that do not require positive relief or operation.

Seal

Evenly distributes pressure in both the vacuum and positive pressure direction.

OPTION: Integral Burst Indication

Girdle

Standard material is 316SS. Also, available in TEFLON.
Controls the standard min. to max. inches of water column negative (vacuum) pressure rating.

Holder Inlet

Insert type rupture disk holder manufactured from 316 or carbon steel.

Table 1
Z-VAC & Z-POS Burst Ratings

Disk Size		Higher Pressure Relief				Ultra Low Pressure Girdle Relief								Burst Tolerance
		Burst Pressure Range				Burst Pressure Range				With Integral Burst Indicator				
		Burst Cap				Metal Girdle				Metal Girdle				
		psig		barg		InWC		mmWC		InWC		mmWC		
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
2”	50 mm	15	150	1.03	10.3	1	109	25	2768	28	109	711	2768	MAX ratings 7 to 45 InWC: minus 6 InWC MAX ratings above 45 InWC: minus 15 InWC
3”	80 mm	8	150	0.55	10.3	1	109	25	2768	20	109	508	2768	
4”	100 mm	7	125	0.48	8.62	1	64	25	1625	10	64	254	1625	
6”	150 mm	4	100	0.28	6.89	1	64	25	1625	10	64	254	1625	
8”	200 mm	3	75	0.21	5.17	1	64	25	1625	10	64	254	1625	
10”	250 mm	3	50	0.21	3.45	1	54	25	1371	10	54	254	1371	
12”	300 mm	2	40	0.14	2.76	1	54	25	1371	10	54	254	1371	
Max. Temp.		500°F (260°C)				500°F (260°C)				400°F (204°C)				
Note: Series Minimum and Maximum Pressure Ratings @ 72˚F (22˚C)														

Table 2A
Z-VAC & Z-POS Series Disk with Rated Burst Cap – Manufacturing Range

Burst Pressure Range Standard (psig)		ZOOK Manufacturing Design Range (psig)								Burst Tolerance (psig)
		Standard		Reduced MDR’s						
				Half		Quarter		Zero		
Minimum	Maximum	Minus	Plus	Minus	Plus	Minus	Plus	Minus	Plus	
2.0	<2.5	0.5	0.5	0.25	0.25	0.13	0.13	0.00	0.00	± 0.33
2.5	<4.0	1	1	0.50	0.50	0.25	0.25	0.00	0.00	± 0.33
4.0	<7.0	1	2	0.50	1.00	0.25	0.50	0.00	0.00	± 0.5
7.0	<11.0	1.5	2.5	0.75	1.25	0.38	0.63	0.00	0.00	± 0.8
11.0	<15.0	2	3	1.00	1.50	0.50	0.75	0.00	0.00	± 1.3
15.0	<17	2	3	1.00	1.50	0.50	0.75	0.00	0.00	± 2.0
17	<26	2	4	1.00	2.00	0.50	1.00	0.00	0.00	± 2.0
26	<40	3	5	1.50	2.50	0.75	1.25	0.00	0.00	± 2.0
40	<66	4	6	2.00	3.00	1.00	1.50	0.00	0.00	± 5%
66	<101	5	9	2.50	4.50	1.25	2.25	0.00	0.00	± 5%
101	<150	6	12	3.00	6.00	1.50	3.00	0.00	0.00	± 5%

Table 2B
Z-VAC & Z-POS Series Disk with Rated Burst Cap – Total Performance Tolerance

Burst Pressure Range (barg)		Total Performance Tolerance (barg)			
		Standard	Reduced Tolerance		
Minimum	Maximum		Better	Intermediate	Best
0.14	<0.172	± 65%	± 45%	± 35%	± 0.023 barg
0.172	<0.276	± 50%	± 30%	± 20%	± 0.035 barg
0.276	< 0.483				
0.483	< 0.759	± 50%	± 30%	± 20%	± 0.055 barg
0.759	<1.034	± 25%	± 20%	± 15%	± 0.090 barg
1.034	<1.172	± 25%	± 20%	± 15%	± 0.138 barg
1.172	< 1.793				
1.793	<2.759	± 20%	± 15%	± 10%	
2.759	<4.552	± 15%	± 10%	± 7.5%	± 5%
4.552	<6.966				
6.966	10.3	± 10%	± 7.5%	± 6.5%	± 5%

Table 3
Z-VAC & Z-POS Series Disk Holder Dimensions

Holder Nominal Size		ANSI 150 Holder OD		DIN PN10 Holder OD		Height*	
2”	50 mm	4”	101.6 mm	4.2”	107 mm	1 ¼”	31.7 mm
3”	80 mm	5 ¼”	133.3 mm	5.6”	142 mm	1 ¼”	31.7 mm
4”	100 mm	6 ¾”	171.4 mm	6.4”	162 mm	1 ¼”	31.7 mm
6”	150 mm	8 ⅝”	219.0 mm	8.6”	218 mm	1 ¼”	31.7 mm
8”	200 mm	10 ⅞”	276.2 mm	10.7”	273 mm	1 ⅜”	34.9 mm
10”	250 mm	13 ¼”	336.5 mm	12.9”	328 mm	1 ¾”	44.4 mm
12”	300 mm	16”	406.4 mm	14.9”	378 mm	1 ¾”	44.4 mm

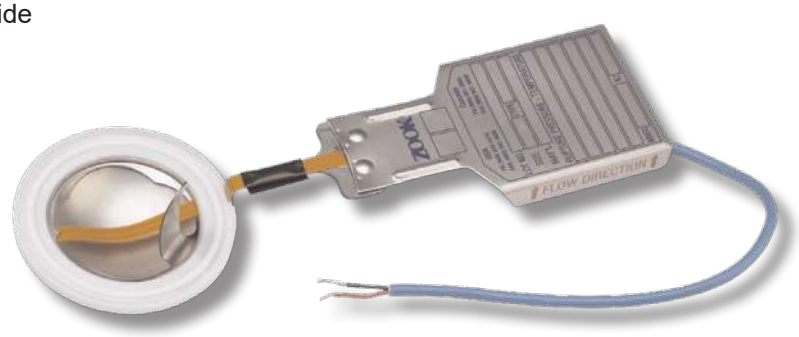
Contact ZOOK for alternative flanges.
*Note: Holder height does not include the rupture disk allow approximately 0.020” to 0.040” (0.5mm to 1.0mm). Disk dome extends past holder faces and allowance for this should be made in the installation.
Teflon - TM The Chemours Company

Sanitary Rupture Disks
RAUS Series

The RAUS Sanitary Disk is a Reverse Acting Metal Rupture Disk design. Applications include: food processing, dairy, breweries, pharmaceutical, distilling, baking, canning, cosmetics, biotechnology, and petrochemical industries.

Features

- Provides over-pressure protection in sanitary piping system
- Ideal for high purity and corrosion resistance service
- Designed for Non-fragmentation
- Rugged, scoreless design offers higher cycle life
- Excels in liquid, gas, or two-phase applications
- 0% manufacturing range is standard
- Operating ratios up to 95% of the low end of burst tolerance
- Self supporting under full vacuum
- Resists product buildup. Only the smooth convex side of the disk is exposed to the process medium
- Installs using industry standard Tri-clamp®/Tri-clover® fittings (NA-Connect mounting also available)
- Standard gasket materials: Black Buna-N, Black Viton, Black EPDM, White PTFE (see chart on reverse page for alternate materials)
- Sizes 1” (25mm) through 4” (100mm)
- ASME UD, CE, KOSHA and TÜV compliance available
- 3-A available for applicable materials and options. Contact ZOOK for more information



Shown with optional BI Burst Indicator and PTFE gaskets

Options

RAUS-L*	A process side **PFA Teflon liner** provides extra protection from corrosion or viscous process build-up (PEEK liner required for 3A compliance).
RAUS-BI*	Equipped with ZOOK’s Integral **Burst Indicator.**

Note: *The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.

Optional Torque-Rite® Nut

Torque-Rite Nut Features

- An audible “click” indicating correct torque setting
- Maintains the recommended constant 50 inch/pounds force
- Retrofits all sanitary clamps, 1” to 6”
- No torque wrench or special training required
- Torque-rite® sanitary clamp nut (eliminates the problems associated with over/under tightening)

Sanitary Rupture Disks
RAUS Series

Minimum and Maximum Pressure Ratings

Size in. (mm)	Burst Pressure – psig (barg)			MNFA in² (mm²)	Tri-Clover Ferrule Dimensions in (mm)	
	Minimum		Maximum			
	316*	w/liner			Ferrule OD	Tube ID
1"	83	88	300	0.36	1.984	0.856
25 mm	(5.72)	(6.07)	(20.69)	(232)	(50.4)	(21.7)
1-1/2"	27	30	250	0.94	1.984	1.356
40 mm	(1.86)	(2.07)	(17.24)	(606)	(50.4)	(34.4)
2"	24	27	180	1.79	2.516	1.856
50 mm	(1.66)	(1.86)	(12.41)	(1154)	(63.9)	(47.1)
3"	20	22	120	4.34	3.579	2.865
80 mm	(1.38)	(1.52)	(8.28)	(2799)	(90.9)	(72.5)
4"	18	20	80	7.80	4.682	3.810
100 mm	(1.24)	(1.38)	(5.52)	(5032)	(118.9)	(96.8)

Notes:
Maximum disk temperature is dependent on gasket material selected
* Alternate sizes, disk materials, gasket materials and lower burst ratings may be available on request. Contact ZOOK for more information.

Gaskets

Standard Gasket Materials (Stocked)			Temperature Range	
Materials	Cured	Colour	Min	Max
Viton	Bisphenol	Black	0° F (-18° C)	400° F (204° C)
Buna	Sulfur		-20° F (-29° C)	230° F (110° C)
EPDM	Peroxide		-67° F (-55° C)	347° F (175° C)
PTFE	-	White	-20 F (-29° C)	500° F (260° C)
Other Available Gasket Materials			**Temperature Range**	
Materials	Cured	Colour	Min	Max
Silicone	Peroxide	Red	-67° F (-55° C)	400° F (204° C)
		White		
		Black		
		Clear		
	Platinum	Clear		
Buna	Sulfur	White	0° F (-18° C)	400° F (204° C)
Viton	Bisphenol		-20 F (-29° C)	230° F (110° C)
EPDM	Peroxide		-67° F (-55° C)	347° F (175° C)

Manufacturing Design Range & Total Performance Tolerance

ASME						PED				
Burst Pressure (psig)		Manufacturing Design Range			Burst Tolerance	Burst Pressure (barg)		Total Performance Tolerance		
Min	Max	Good	Better	Best		Min	Max	Good	Better	Best
1.0	<2.5	-10%	-5%	-0%	±0.33 psig	0.069	<0.172	±50%	-	±0.023 barg
2.5	<5.0	-10%	-5%	-0%	±0.5 psig	0.172	<0.345	±30%	±25%	±0.035 barg
5.0	<7.0	-10%	-5%	-0%	±0.5 psig	0.345	<0.483	±20%	±17.5%	±0.035 barg
7.0	<11.0	-10%	-5%	-0%	±0.8 psig	0.483	<0.759	±20%	±15%	±0.055 barg
11.0	<15	-10%	-5%	-0%	±1.3 psig	0.759	<1.034	±20%	±15%	±0.090 barg
15.0	<26	-10%	-5%	-0%	±2.0 psig	1.034	<1.793	±20%	±15%	±0.138 barg
26.0	<40	-10%	-5%	-0%	±2.0 psig	1.793	<2.758	±15%	±12.5%	±0.138 barg
40.0	Max	-10%	-5%	-0%	±5%	2.758	Max	±10%	±7.5%	±5%

Certified Flow Resistance Factors

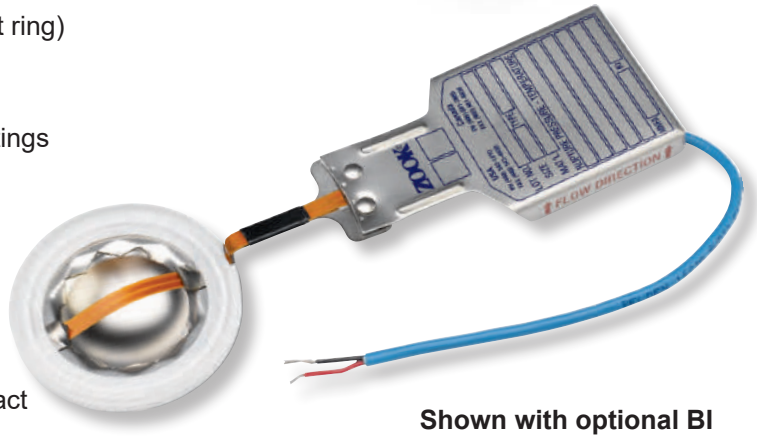
Disk Type	K_{ri} (liquid)	K_{rg} (Gas)
RAUS	11.67	11.67

Sanitary Rupture Disks
RLPS Series

The RLPS Sanitary Disk is an extension of ZOOK's Reverse Acting Metal Rupture Disk design. Applications include: food processing, dairy, breweries, pharmaceutical, distilling, baking, canning, cosmetics, biotechnology, and petrochemical industries.

Features

- Provides over-pressure protection in sanitary piping system
- Ideal for high purity and corrosion resistance service
- Designed for Non-fragmentation
- Rugged, scoreless design offers higher cycle life
- Excels in liquid, gas, or two-phase applications
- 0% manufacturing range is standard
- Operating ratios up to 95% of the low end of burst tolerance
- Self supporting under full vacuum (with included support ring)
- Resists product buildup. Only the smooth convex side of the disk is exposed to the process medium
- Installs using industry standard Tri-clamp®/Tri-clover® fittings (NA-Connect mounting also available)
- Standard gasket materials: Black Buna-N, Black Viton, Black EPDM, White PTFE (see chart on reverse page for alternate materials)
- Sizes 1" (25mm) through 4" (100mm)
- CE, KOSHA and TÜV compliance available
- 3-A available for applicable materials and options. Contact ZOOK for more information



Shown with optional BI Burst Indicator and PTFE gaskets

Options

RLPS-L*	A process side **PFA Teflon liner** provides extra protection from corrosion or viscous process build-up
RLPS-R*	A **Vacuum Ring** is required to withstand Vacuum
RLPS-BI*	Equipped with ZOOK's Integral **Burst Indicator**

Note: *The maximum temperature rating of rupture disks supplied with liners and BI's is lower than the base disk material.

Optional Torque-Rite® Nut

Torque-Rite Nut Features

- An audible "click" indicating correct torque setting
- Maintains the recommended constant 50 inch/pounds force
- Retrofits all sanitary clamps, 1" to 6"
- No torque wrench or special training required
- Torque-rite® sanitary clamp nut (eliminates the problems associated with over/under tightening)

Sanitary Rupture Disks
RLPS Series

Minimum and Maximum Pressure Ratings

Size in. (mm)	Burst Pressure – psig (barg)			MNFA in² (mm²)	Tri-Clover Ferrule Dimensions in (mm)	
	Minimum		Maximum			
	316*	w/liner			Ferrule OD	Tube ID
1"	11	16	83	0.35	1.984	0.856
25 mm	(0.76)	(1.10)	(5.72)	(225)	(50.4)	(21.7)
1-1/2"	9	11	27	0.79	1.984	1.356
40 mm	(0.62)	(0.76)	(1.86)	(509)	(50.4)	(34.4)
2"	7	11	24	1.63	2.516	1.856
50 mm	(0.48)	(0.76)	(1.66)	(877)	(63.9)	(47.1)
3"	6	10	20	3.86	3.579	2.865
80 mm	(0.41)	(0.69)	(1.38)	(2490)	(90.9)	(72.5)
4"	3	8	18	6.82	4.682	3.810
100 mm	(0.21)	(0.55)	(1.24)	(4399)	(118.9)	(96.8)

Notes:
Maximum disk temperature is dependent on gasket material selected
* Alternate sizes, disk materials, gasket materials and lower burst ratings may be available on request. Contact ZOOK for more information.

Gaskets

Standard Gasket Materials (Stocked)			Temperature Range	
Materials	Cured	Colour	Min	Max
Viton	Bisphenol	Black	0° F (-18° C)	400° F (204° C)
Buna	Sulfur		-20° F (-29° C)	230° F (110° C)
EPDM	Peroxide		-67° F (-55° C)	347° F (175° C)
PTFE	-	White	-20 F (-29° C)	500° F (260° C)
Other Available Gasket Materials			**Temperature Range**	
Materials	**Cured**	**Colour**	**Min**	**Max**
Silicone	Peroxide	Red	-67° F (-55° C)	400° F (204° C)
		White		
		Black		
		Clear		
	Platinum	Clear		
Buna	Sulfur	White	0° F (-18° C)	400° F (204° C)
Viton	Bisphenol		-20 F (-29° C)	230° F (110° C)
EPDM	Peroxide		-67° F (-55° C)	347° F (175° C)

Manufacturing Design Range & Total Performance Tolerance

ASME						PED				
Burst Pressure (psig)		Manufacturing Design Range			Burst Tolerance	Burst Pressure (barg)		Total Performance Tolerance		
Min	Max	Good	Better	Best		Min	Max	Good	Better	Best
1.0	<2.5	-10%	-5%	-0%	±0.33 psig	0.069	<0.172	±50%	-	±0.023 barg
2.5	<5.0	-10%	-5%	-0%	±0.5 psig	0.172	<0.345	±30%	±25%	±0.035 barg
5.0	<7.0	-10%	-5%	-0%	±0.5 psig	0.345	<0.483	±20%	±17.5%	±0.035 barg
7.0	<11.0	-10%	-5%	-0%	±0.8 psig	0.483	<0.759	±20%	±15%	±0.055 barg
11.0	<15	-10%	-5%	-0%	±1.3 psig	0.759	<1.034	±20%	±15%	±0.090 barg
15.0	<26	-10%	-5%	-0%	±2.0 psig	1.034	<1.793	±20%	±15%	±0.138 barg
26.0	<40	-10%	-5%	-0%	±2.0 psig	1.793	<2.758	±15%	±12.5%	±0.138 barg
40.0	Max	-10%	-5%	-0%	±5%	2.758	Max	±10%	±7.5%	±5%

Teflon - TM The Chemours Company
Tri-clamp/Tri-clover – TM Alfa Laval
Torque-Rite – TM Rubber Fab

Sanitary Rupture Disks
SD Series

Features

- SD Disks are an extension of ZOOK's impervious Graphite Rupture Disk Design
- Provides over-pressure protection in sanitary piping system
- Ideal for high purity and corrosion service
- Rugged design
- TFE lined to help resist product buildup
- Full bore opening upon rupture
- FDA compliant when FEP liner attached
- Nominal I.D. equals the fitting size
- Self-Supporting under full vacuum at set pressures of 25 psig (1.72 barg) or higher
- Excels in liquid, gas, or two-phase applications
- 0% manufacturing range is standard
- Standard operating ratio of 90% of the marked rating on the disk tag. Higher operating ratio may be available upon request. Contact ZOOK for operating ratio on pressures below 40 psig (2.76 barg)
- Installs using industry standard Tri-clamp®/Tri-clover® fitting
- Wide body clamp required (Stocked by ZOOK)
- Standard gasket material: Black Buna-N
- Sizes 1" (25mm) through 4" (100mm)
- ASME (UD), and PED (CE) compliance available (Third party witness testing is also available if required)

Applications

Food processing, dairy, breweries, pharmaceutical, distilling, baking, canning, cosmetics, biotechnology, and petrochemical industries.

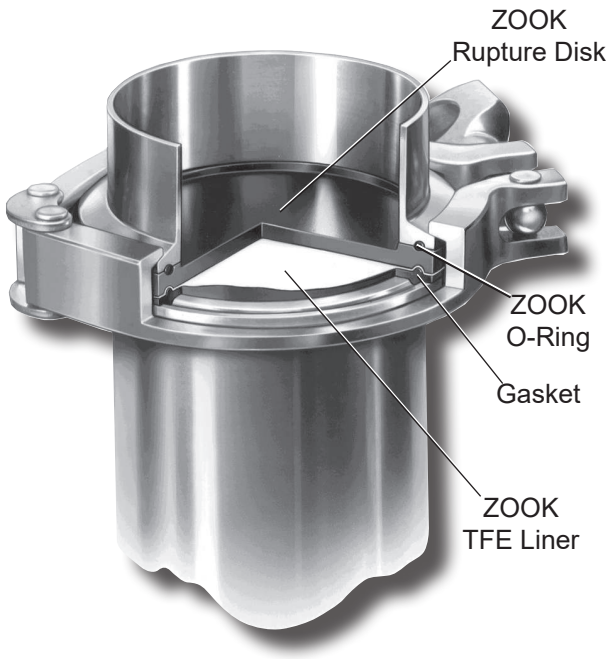
Optional Features

- Burst indication (Ferrule mounted)
- Torque-rite® sanitary clamp nut (eliminates the problems associated with over/under tightening)

Specifications

Disk Dimensions - inches (mm)			Burst Pressures psig (barg) @72°F (22°C)	
I.D. (Nominal)	O.D.	Thk.	Minimum	Maximum
1"	1.984	0.250	10	50
25 mm	50.3	6.3	(0.6)	(3.4)
1-1/2"	1.984	0.250	7	50
40 mm	50.3	6.3	(0.4)	(3.4)
2"	2.516	0.250	3	50
50 mm	63.9	6.3	(0.2)	(3.4)
2-1/2"	3.047	0.250	2	50
65 mm	77.3	6.3	(0.1)	(3.4)
3"	3.579	0.250	2	50
80 mm	90.9	6.3	(0.1)	(3.4)
4"	4.682	0.250	1.5	50
100 mm	118.9	6.3	(0.1)	(3.4)
	Standard burst tolerances apply			

Notes:
- Max disk temperature is dependent on gasket material selected
- * Alternate sizes, disk materials, gasket materials and lower burst ratings may be available on request. Contact ZOOK for more information.
- Maximum disk pressure based on clamp rating

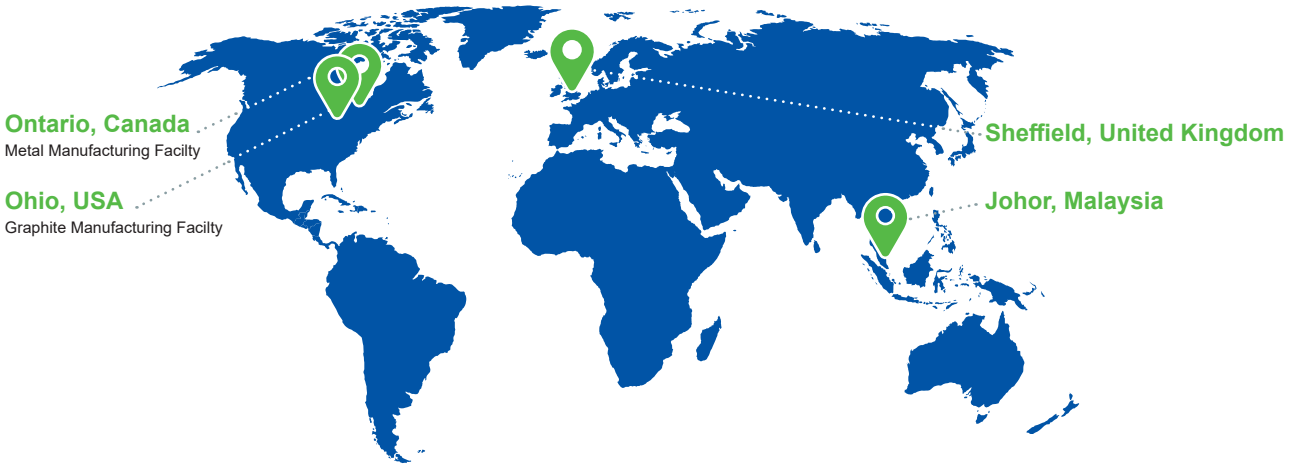


About ZOOK

ZOOK is a global market leader with over 90 years of manufacturing expertise, developing high-performance sanitary pressure relief solutions for the pharmaceutical, life sciences, biotech and food & beverage industries. ZOOK is committed to developing pressure relief solutions for customers requiring rigorous sanitary and hygienic standards while maximizing customers' productivity and keeping their people safe.

Global Reach

ZOOK has global locations in the USA, United Kingdom, Canada and Malaysia, with two state-of-the-art manufacturing facilities supplying to over 90 channel partners worldwide.



ZOOK Unique Technology

The new patent pending technology incorporates completely new and unique design and manufacturing processes. Utilizing a materials' natural properties, this exclusive process delivers a superior fatigue resistant and high performance rupture disk. Without indentations or crevices meeting the demanding geometric 3-A requirements, the new ZANITARY disk design ensures that the process side is inherently smooth providing a high purity service.

Sanitary Rupture Disks
ZANITARY® Series

The ZANITARY® Series is an advanced sanitary disk designed for the biotechnology, pharmaceutical and food processing industries. The new design effortlessly fits between standard sanitary ferrules.

ZANITARY® Rupture Disk Features

- Ideal for high purity and corrosion resistant service that is required from the Life Science Industry.
- Designed for non-fragmentation
- Solid metal robust design provides greater protection for low pressure rated disks
- Operating ratios up to 95% of the marked burst pressure.
  For pressures under 40 psig (2.76 barg) see table.
- Plus Testing available for a true engineering 95% operating ratio with ±5% performance tolerance
- Passivation finish to reduce the possibility of contamination
- Standard surface finish 4 - 20 Ra µin (0.1 - 0.5 Ra µm)
- Disks suitable for Clean In Place (CIP) and Steam In Place (SIP)
- Withstands full vacuum without the need of a separate vacuum support
- Suitable for liquid, gas, or two-phase applications
- Damage ratio of 1.0 or less*
- Expected cycle life of this new disk technology is 30,000 with full vacuum cycling and approximately 5,000,000 without full vacuum
- Disks available in 316L and Hastelloy
- Suitable for use with NovAseptic flange mountings
- Unique design is Patent Pending
- No dents or crevices to the process side of the disk

- Ferrule design compliant and certified to 3-A Sanitary Standard
- Sizes from 1”(25mm) through 4”(100mm)
- Cleaned for O_2 service available
- Nitrogen bagging available
- 3-dimensional stainless steel tag permanently laser engraved with disk information in accordance to ASME and PED
- No paint or enamel used on tagging to ensure non-contamination of the sterile environment.
- Electropolishing available meeting ASME BPE SF4
- CRN registered for use in Canada
- Complies ASME BPE Standard
- ASME UD, CE (PED) and TÜV compliance available*

Hastelloy – TM Haynes International
NovAseptic – TM Millipore Corporation

*Hastelloy and Liner equipped disks have a damage ratio of 1.5 or less.

Sanitary Rupture Disks
ZANITARY® Series

Ferrule Standard and NovAseptic Flanges

The ZANITARY® can be installed into the Tri-Clover, BS, DIN, and ISO Standard ferrules along with the NA tank connectors as per the following:

- Tri-Clover
- ASME BPE
- BS4825-3 1991
- ISO 2852-1993 (Second Edition 1883-06-15)
- DIN 32676-2001-02

Temperature Testing

Every batch of ZANITARY® disks is tested in environmental chambers at the coincident temperature as specified by the end-user. The use of chart compensation factors are not utilized to ensure the disk meets the exact operating environment as specified by the client.

Stress Relieving

During the production process, stresses are introduced into the disk membrane material from mechanical operations. A heat stress relieving process is applied to each disk to ensure these localized high stress points are eliminated to protect the operating performance of the disk. After stress relieving is complete, all disks are then processed through an eco-friendly passivation operation.

Welded Cartridge

Looking for a welded custom solution? The welded cartridge combines the ZANITARY® product with ZOOK's in-house welding technology:

- Creates a cartridge style design which eliminates risk of disk damage
- Eliminates the need to separate piping system, a true "plug and play" unit
- Eliminates the effect of misaligned or improper line loading on rupture disk
- Creates hermetic seals between disk and ferrule components upstream and downstream of cartridge
- Eliminates the risk of installation damage

Sanitary Rupture Disks
ZANITARY® Series

Torque-Rite Nut Features

- An audible “click” indicating correct torque setting
- Maintains the recommended constant 50 inch/pounds force
- Retrofits all sanitary clamps, 1” to 4”
- No torque wrench or special training required
- Torque-rite® sanitary clamp nut (eliminates the problems associated with over/under tightening)

Options

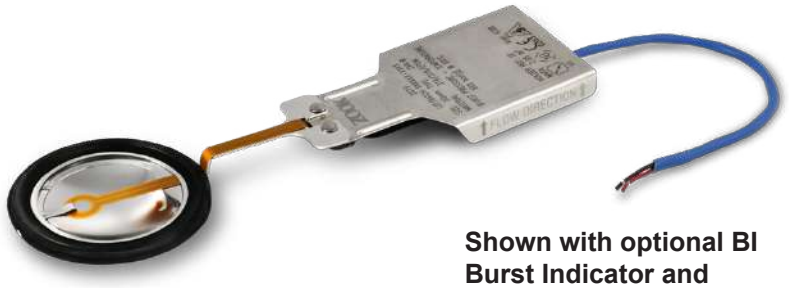
ZAN-L*	A process side PFA Teflon liner provides extra protection from corrosion or viscous process build-up (PEEK liner required for 3A compliance).
ZAN-BI*	Equipped with ZOOK’s Integral Burst Indicator.
ZAN95	Factory tested to 100% of the low end of the tolerance for optimized performance in demanding applications.
ZANEP	Electropolishing available in accordance to ASME BPE SF4

Note: *The maximum temperature rating of rupture disks supplied with liners and BI’s is lower than the base disk material.

Sensors and Detectors

- BI Burst Indicator Available*
- Remote Sensor RDI-S Available
- Leak Detector Device Available

* Maximum temperature for a BI is 400˚F (204˚C)



Shown with optional BI Burst Indicator and EPDM gaskets

ECO-Friendly Packaging

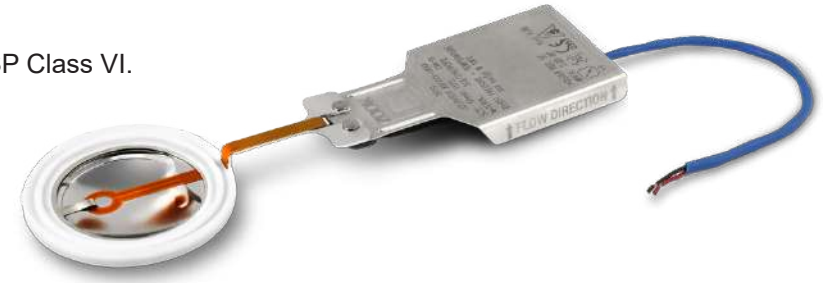
- Packaging utilizes FDA compliant coating
- Eco-Friendly Packaging does not contain any plastic
- Individually packed
- Nitrogen atmosphere bagging available

Gaskets

All gasket materials available are certfied to FDA USP Class VI.

Gaskets available (other materials on request):

- Viton
- EPDM
- Buna
- PTFE (Teflon)
- Silicone



Sanitary Rupture Disks
ZANITARY® Series

Minimum and Maximum Pressure Ratings - psig (barg) @ 72°F (22°C)

Disk Size	Minimum Burst Pressure (psig/barg)				Maximum Burst Pressure (psig/barg)	MNFA in² (mm²)	Tri-Clover Ferrule Dimensions in (mm)	
	316L	Hastelloy C276	ZAN-L*	ZAN-BI			Ferrule OD	Tube ID
1”	35	65	85	+5 psig (+0.34 barg) of base material	300	0.43	1.98	0.87
25 mm	2.41	4.48	5.86		20.7	277	50.4	22.1
1-1/2”	15	25	45		250	1.08	1.98	1.37
40 mm	1.03	1.72	3.10		17.24	696	50.4	34.8
2”	11	25	35		180	2.05	2.52	1.87
50 mm	0.76	1.72	2.41		12.41	1322	63.9	47.5
2-1/2”	11	25	35		145	3.25	3.05	2.37
64 mm	0.76	1.72	2.41		10	2096	77.4	60.2
3”	11	20	30		120	4.71	3.58	2.87
80 mm	0.76	1.38	2.07		8.27	3038	90.9	72.9
4”	11	20	30		80	8.49	4.68	3.83
100 mm	0.76	1.38	2.07		5.52	5477	118.9	97.4
Max. Temp.	Dependant on the gasket material used							

Notes:

* For PFA Liner, contact ZOOK for PEEK minimums
- For materials, sizes, burst ratings and temperatures not shown, contact ZOOK
- Contact ZOOK for higher temperatures

Manufacturing Design Range & Total Performance Tolerance

	ASME					PED			
	Burst Pressure (psig)		Manufacturing Design Range	Burst Tolerance	Operating Ratio*	Burst Pressure (barg)		Total Tolerance	Operating Ratio
	Minimum	Maximum				Minimum	Maximum		
Premium	11.0	<15	0%	±1.3 psig	100%	0.690	<1.034	±0.090 barg	100%
Standard	11.0	<15	0%	±1.3 psig	95%	0.690	<1.034	±0.090 barg	95%
Premium	15.0	<26	0%	±2.0 psig	100%	1.034	<1.793	±0.138 barg	100%
Standard	15.0	<26	0%	±2.0 psig	95%	1.034	<1.793	±0.138 barg	95%
Premium	26.0	<40	0%	±2.0 psig	100%	1.793	<2.758	±0.138 barg	100%
Standard	26.0	<40	0%	±2.0 psig	95%	1.793	<2.758	±0.138 barg	95%
Premium	40	Max	0%	±5 %	100%	2.758	Max	±5%	100%
Standard	40	Max	0%	±5 %	95%	2.758	Max	±5%	95%

* Operating ratio from minimum of burst tolerance

Notes:

- 0% manufacturing range might not be available in all materials
- Burst tolerances are the maximum expected variation from the disk’s marked burst pressure

Gaskets (other materials on request)

Standard Gasket Materials (Stocked)			Temperature Range	
Materials	**Cured**	**Colour**	**Min**	**Max**
Viton	Bisphenol	Black	0° F (-18° C)	400° F (204° C)
Buna	Sulfur		-20° F (-29° C)	230° F (110° C)
EPDM	Peroxide		-67° F (-55° C)	347° F (175° C)
PTFE	-	White	-20 F (-29° C)	500° F (260° C)
Other Available Gasket Materials			**Temperature Range**	
Materials	**Cured**	**Colour**	**Min**	**Max**
Silicone	Peroxide	Red	-67° F (-55° C)	400° F (204° C)
		White		
		Black		
		Clear		
	Platinum	Clear		
Buna	Sulfur	White	0° F (-18° C)	400° F (204° C)
Viton	Bisphenol		-20 F (-29° C)	230° F (110° C)
EPDM	Peroxide		-67° F (-55° C)	347° F (175° C)

Teflon-TM The Chemours Company
Tri-clamp/Tri-clover – TM Alfa Laval
Torque-Rite – TM Rubber Fab

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Sanitary Rupture Disks
ZANITARY® Series

The ZANITARY® Series includes a ground-breaking rupture disk technology for rigorous sanitary and hygienic applications, utilizing the patent pending ZOOK Unique technology. The innovative manufacturing process and advanced design provides the best solution for high-performance pressure relief solutions.

Industries


Pharmaceutical


Life Sciences


Biotechnology


Food & Beverage

Applications

∘ Autoclaves	∘ Drying & Mixing Equipment	∘ Process Piping
∘ Bioreactors	∘ Fermenters	∘ Process & Transport Vessels
∘ CIP & SIP Skids	∘ Filters	∘ Safety Valve Protection
∘ Clean Steam Piping	∘ Heat Exchangers	∘ Storage Tanks


ZANITARY®
Series
USP Class VI Certified Sanitary Gaskets
3-A Certified
Patent Pending
Max. Operating Ratio 95%
Broad Range of Pressures
Temperature Testing
Performance Tolerance above 40 psig (2.8 barg) +/- 5%
Size Range 1" (25mm) – 4" (100mm)
Fits NovAseptic Tank Connections
Eco-Friendly Packaging
Ultra-Clean Passivation Finish
Plus Testing an option
Triclover/DIN Ferrules
O2 Service Cleaning Available
Designed for CIP & SIP Applications
ZOOK Unique Technology
Fully Vacuum Resistant
Electropolishing available
Wide Selection of Gaskets Available
Hygenic Design
4 – 20 Ra µin (0.1 – 0.5 Ra µm)
≤1.0 Damage Ratio
Integral and Remote Burst Indication Options
Plastic-Free Packaging
Non-Fragmenting Design
Fluoropolymer Liners Available
Excellent for Liquid, Gas/Vapor Service
Paint Free Tag

Sanitary Rupture Disks
Accessories and Differentiators

Sanitary Clamps

ZOOK offers tri-clamp fittings for use with sensors and ZANITARY® Series disks. Options are also available for high burst pressure disks.

Torque Rite Nut

The Torque Rite Nut retrofits all sanitary clamps, with no torque wrench or special training required and eliminates the problems associated with over/under tightening. An audible “click” indicates the correct inch/pounds force maintaining the recommended constant 50 inch/pounds force.

RDI-S Sensor

The RDI-S is a one-time use sensor that installs into a sanitary spool located on the ventside of a sanitary bursting disk assembly. Upon rupture of the disk, the RDI-S alarm circuit is opened by the flowing media. Fits easily into existing piping systems.

Sanitary Ferrules

ZOOK can supply 316L ferrule connections and spool pieces to meet the appropriate standard required by the customer.

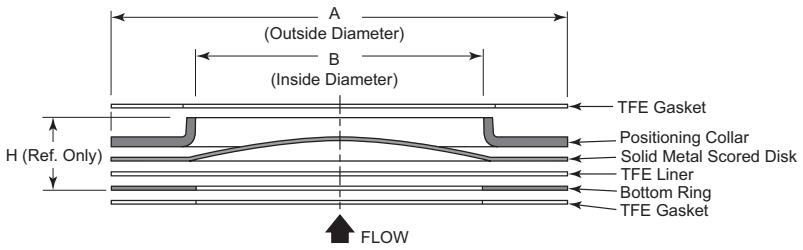
Transportation/Railcar Rupture Disks
ICP Series

Features

- Provides over-pressure protection for intermodal tank containers
- Scored, forward-acting,non-fragmenting design
- Fits standard tank car safety vents or mount between ASME B16.5 Class 150 and ISO standard flanges
- Operating pressures to 85% of the disk's marked burst pressure
- Total performance tolerance ±5%
- See table below showing disk sizes with pressure ratings and burst temperatures ready for immediate shipment
- Materials of construction

  Disk: Nickel
  Positioning collar, bottom ring: 316SS
  Lining and gaskets: TFE
  Other Materials available

ICP Standard Disk Construction



Standard Ratings and Temperatures

Disk Size		Pressure Rating		Burst Temperature	
in.	mm	psig	bar	°F	°C
2.50	65	54.4	3.75	68	20
2.50	65	63.8	4.40	68	20
2.50	65	54.4	3.75	140	60
2.50	65	63.8	4.40	140	60
3.00	80	54.4	3.75	140	60
3.00	80	63.8	4.40	140	60

ICP Disk Dimensions

Disk Size		Standard Dimensions – inches (mm)					
		A		B		H	
in.	mm	in.	mm	in.	mm	in.	mm
2.50	65	3.75	95	2.50	64	0.25	6.4
3.00	80	5.00	127	2.90	74	0.38	9.7

Transportation/Railcar Rupture Disks
RC / AC Series

Features

- Ideal for Railroad tank cars
- Allows extended use for a full year without change-out regardless of number of trips logged
- Unaffected by virtually all corrosives except elemental Fluorine
- Supplied in two styles to fit either metal seated or fully rubber covered 2” (50 mm) AAR safety vents
- Both Model AC and RC carried in stock for immediate delivery
- Flexible liner used on pressure side to automatically provide a degree of temporary reclosure after venting an overpressure incident
- Supports full vacuum
- PTFE lined on pressure side
- PTFE coated on vent side to prevent chemical attack from either side
- High Visibility Green PTFE Coating: Visual indication of disk integrity and easy inspection

Model RC

Designed to fit standard AAR 2” (50 mm) metal seated safety vents

Gasketing

Non asbestos on vent side VITON on pressure side. AAR 2” (50 mm) metal seated safety vent accepts ZOOK Model RC Disk.

Models	Burst Rating		Outside Diameter	
	psig	barg	in	mm
RC60	60	4.14	3-1/8	79.3
RC100	100	6.89		
RC165	165	11.38		

Model AC

Designed for fully rubber covered 2” (50 mm) safety vents without precise seats. This disk features a larger outside diameter.

Gasketing

Non asbestos on vent side VITON on pressure side. AAR 2” (50 mm) rubber covered safety vent accepts ZOOK Model AC Disk.

Models	Burst Rating		Outside Diameter	
	psig	barg	in	mm
AC60	60	4.14	4-3/4	120.6
AC100	100	6.89		
AC165	165	11.38		

VITON - TM DuPont

Note:

From each lot of ZOOK Rupture Disks, at least two disks are burst in the appropriate AAR safety vent to qualify burst rating as specified in AAR A5.03. Additionally, these disks have been qualified for –15% +0% tolerance per AAR A5.04.

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Transportation/Railcar Rupture Disks
TCP Series

Features

- Provides over-pressure protection for Railroad tank cars and tanker trailers
- Fits standard tank car safety vents or mount between ASME B16.5 Class flanges
- Conforms to AAR, ICC and CTC standards
- Total performance tolerance: +0% –15%

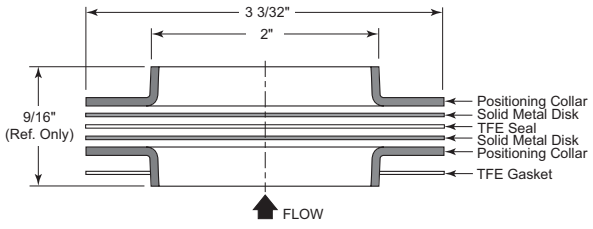
Standard Ratings and Temperatures

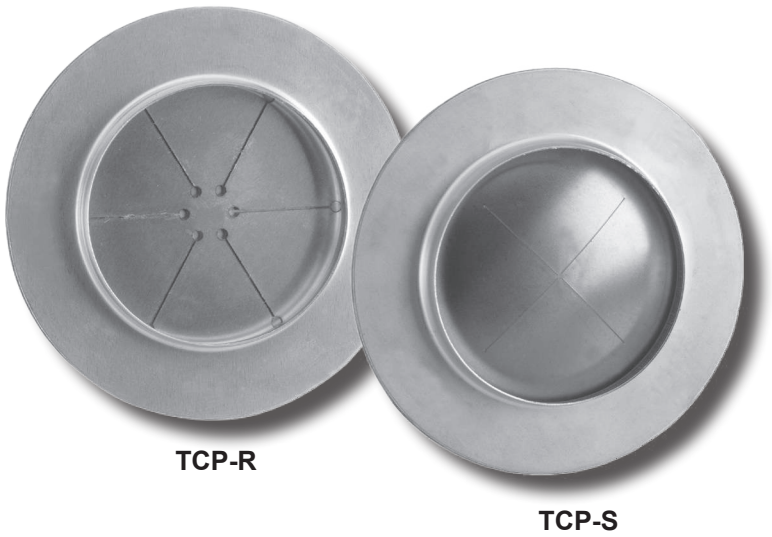
Burst Pressure @ 72°F (22°C)		TCP-R	TCP-NR	TCP-S
psig	bar			
30	2.07	●	●	N/A
45	3.10	●	●	●
52	3.59	●	●	●
60	4.14	●	●	●
75	5.17	●	●	●
100	6.90	●	●	●
165	11.38	●	●	●

NA - Not Available

TCP-R Reversible Disks

- Cannot be installed incorrectly
- Composite design
- TFE seal and gasket
- 316SS positioning collar and cap standard (other materials available on request)



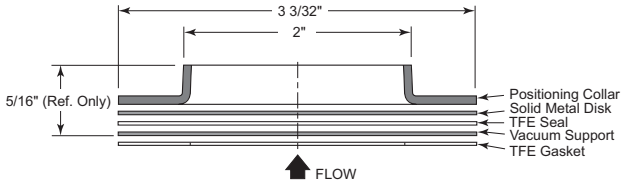


TCP-R

TCP-S

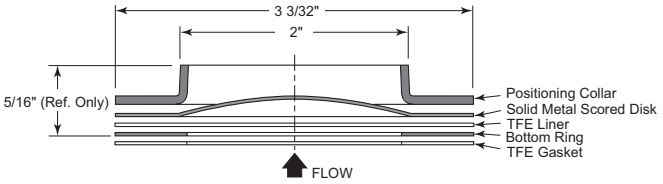
TCP-NR Non-Reversible Disks

- Composite design
- 316SS construction with TFE seal and vacuum support (other materials available on request)



TCP-S Non-Reversible Disks

- Solid metal scored design eliminates fragmenting
- Nickel disk standard (other materials available on request)
- TFE liner and gasket
- 316SS positioning collar



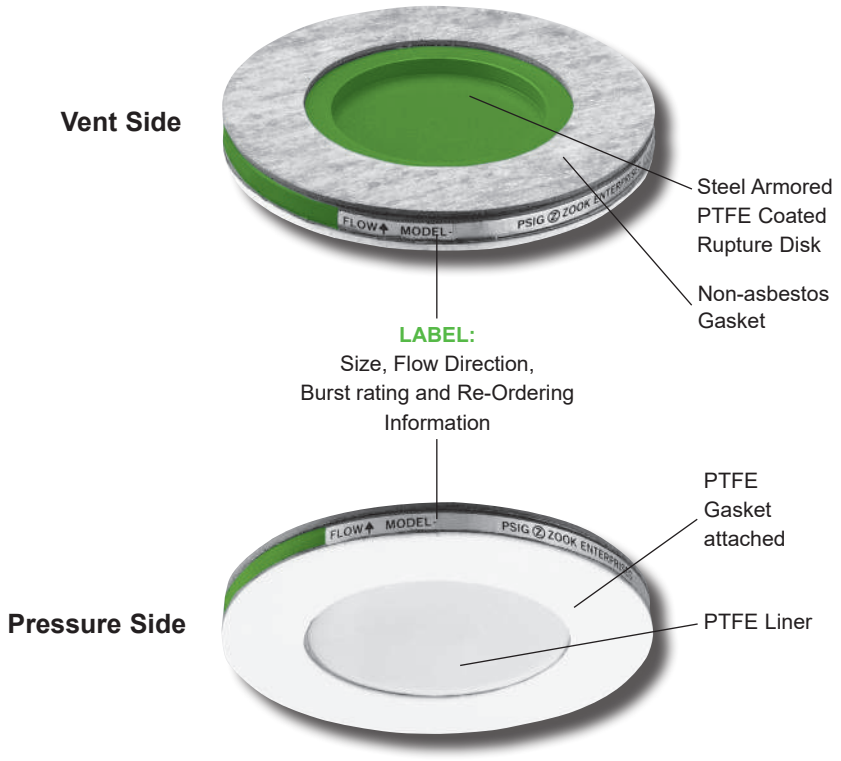
Transportation/Railcar Rupture Disks
TD Series

Features

- Superior fatigue resistance allows extended use for a full year without change-out regardless of number of trips logged
- Fail Safe Design: TD Disks will rupture prematurely when installed upside down
- High Visibility Green PTFE Coating: Visual indication of disk integrity and easy inspection
- Designed specifically for use in over-the-road tank trailer applications
- Provides reliable high performance at low cost
- Unaffected by virtually all corrosives except elemental Fluorine
- Replaces lesser performing metal and graphite type disks
- Operating pressures to 90% of the disk's marked burst pressure
- No disk holder required
- Supports full vacuum
- Fits ANSI Class 150 flanges
- Sizes 2", 3", 4"
- Stocked ratings 30, 35, 40, 45, 50 psi
- Temperature ratings to 72°F (22°C) (Contact ZOOK for other sizes, burst and temperature ratings)
- Burst performance: ± 5% of the marked burst rating
- 0% manufacturing range
- ASME UD marking available

Dimensions

Rupture Disk Nominal Size		Thickness Includes Gaskets		Outside Diameter	
in	mm	in	mm	in	mm
2	50	.375	9.5	4	100
3	80	.375	9.5	5 ¼	133.35
4	100	.375	9.5	6 ¾	171.45



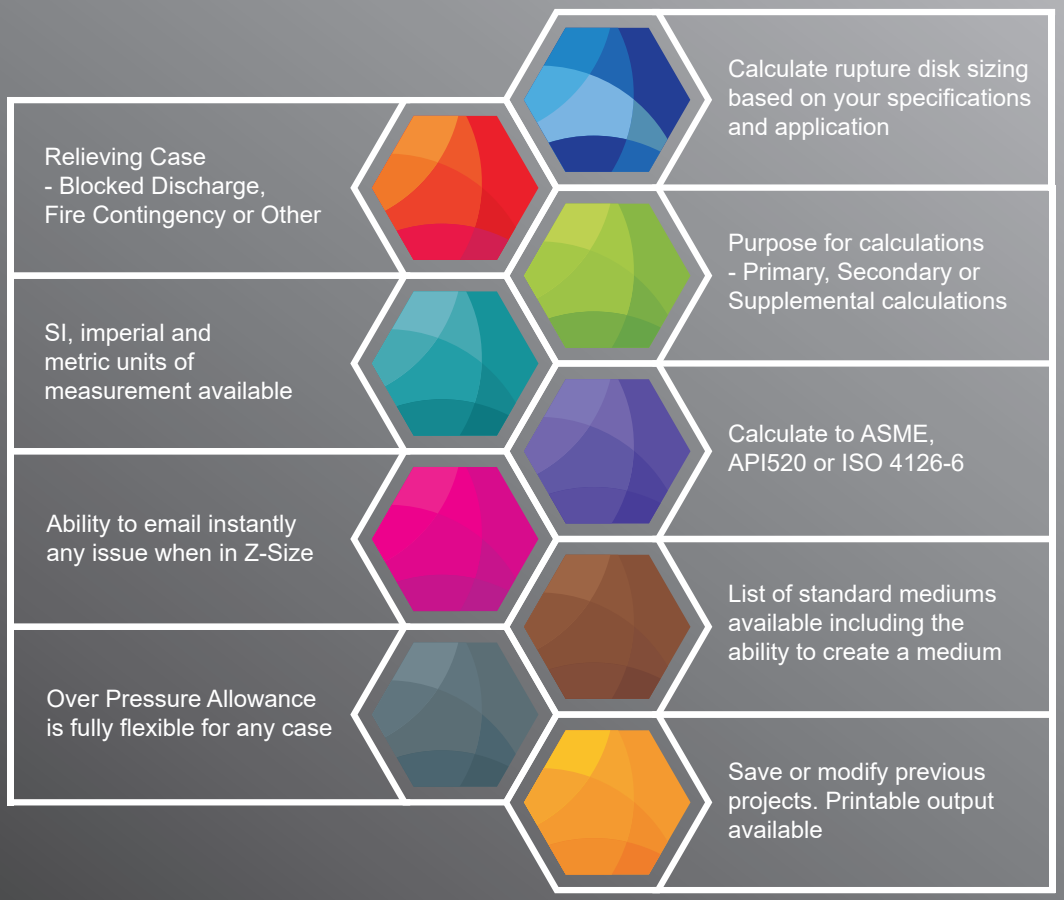
ZOOK®

Z-Size

The Z-Size tool is intuitive, which saves you time and helps you eliminate errors that happen so often when sizing rupture disks.

All you have to do is provide a few important values into the sizing configurator and Z-Size will automatically calculate the accurate rupture disk size for your application within minutes.

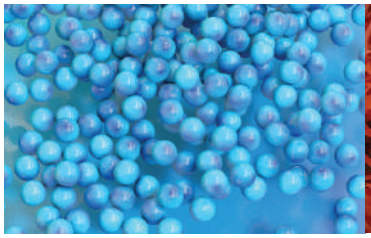
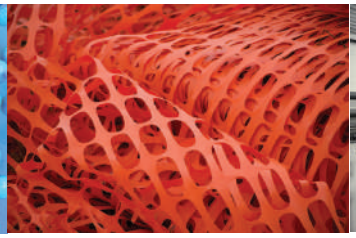
Z-Size has many built-in features to help you calculate the correct rupture disk size!



Visit Z-Size at https://www.zookdisk.com/z-size/

Extrusion Burst Plug Solutions

ZOOK is a leading global manufacturer of a complete line of standard and custom extrusion burst plugs

We have a state of the art manufacturing facility that is designed to produce only the highest quality products in the industry, and meet rapid delivery times while exceeding the exacting requirements placed on us by our customers. ZOOK's technical expertise, manufacturing advantages and our service excellence has put us at the forefront as an industry leader.

The over pressure protection devices designed and manufactured by ZOOK deliver unique engineering and commercial solutions which supply unprecedented safety to plant operators and overall protection to capital equipment investments.

Not all rupture disks are create equal! ZOOK's welded design offers the following benefits:

- Competitive soldered designs require a counter bore in the tip to accept the soldering process. ZOOK's welded design provides flush attachment eliminating potential product build up
- Welded joints are stronger and more resistant to increased temperatures, which eliminates spurious bursts and ultimately product contamination
- Joint failure is eliminated due to increased temperature and pressure cycling
- Material creep is removed ensuring burst repeatability
- Superior joint design reduces c onfusing temperature correction factors
- Additional stability ensures the device will burst within tolerance throughout the specified temperature range
- Offers a proven known repeatable procedure resulting in improved quality and predictable results

Burst Plugs
Extrusion Burst Plugs (EBP)

ZOOK's unmatched quality control produces a world-class high performance product

- 0% Manufacturing range
- Burst tolerance +/-10%
- Typical standard deviation is +/- 1%
- 100% Leak tested
- 100% Electronic thread verification
- utilizing an optical comparator
- 100% Statistically controlled
- 100% Ultra-sonically cleaned prior to shipment

At ZOOK we constantly strive to produce the highest quality safety products that our customers have grown to expect

- Manufacturing facility is fully certified by the ASME Boiler and Pressure Vessel Code and the European Pressure Equipment Directive
- Comprehensive material traceability available
- CE marking available as a standard
- Mininum of three qualifiifcation burst tests performed per manufacturing lot with an additional test for each twenty five parts manufactured providing evidence of accuracy
- Burst test certification document provided with every order
- Packaging and parts marked and recorded with manufactures name and manufacturing lot number verifying critical origin.

ZOOK Commercial advantages to our customers

- Customized packaging and labelling available
- Highly competitive pricing due to state of the art manufacturing.
- Visible product origin and batch control
- Full range of material choice
- Full range of pressure available
- Total flexibility to geometry of extrusion burst plug

The ZOOK Innovation

Burst indication/sensor designs are available allowing automatic shut-down on rupture of the extrusion burst plug avoiding a costly clean-up operation.

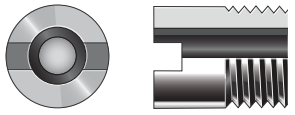
Burst Plugs
Extrusion Burst Plugs (EBP)

Features

- Each EBP assembly consists of a threaded tubular body with a rupture disk welded onto the process end
- The EBP assembly is mounted directly into the extruder equipment through a pressure port or thermocouple-well where critical pressures are experienced
- Body materials: 304 series Stainless Steel
- Standard rupture disk material: Inconel
- Stocked burst ratings 1,000 psig to 15,000 psig in 500 psi increments (for higher pressures contact ZOOK)
- 0% manufacturing range
- Burst tolerance ± 10% with typical standard deviation of ± 1% throughout the temp range of 300°F to 750°F (149°C to 399°C)
- Standard EBPs in stock
- 100% factory leak-tested
- 100% electronic thread verification of every assembly utilizing digital imaging
- 100% ultra-sonically cleaned prior to shipment
- Private labeling, custom packaging and other options available

Stocked Configurations

Inset Hex



Screwdriver End

Assemblies

ZOOK inventories standard Inset Hex End and Screwdriver End configurations.

ZOOK can offer many other custom welded designs for a wide variety of applications with custom fittings and connections for stringent applications such as ultra-high vacuum, OEM markets, military, aerospace, and many other applications. Please contact your representative or ZOOK.

ZOOK's Welded Design Advantage

ZOOK's Extrusion Burst Plugs (EBP Series) are superior to competitors' soldered designs:

- Welded joints are stronger and more resistant to increased temperatures, which eliminates spurious bursts and product contamination
- Joint failure is eliminated due to increased temperature and pressure cycling
- Material creep is removed ensuring burst repeatability
- Superior joint design reduces confusing temperature correction factors
- The additional stability ensures the device will burst within tolerance throughout the specified temperature range
- Improved quality and operational excellence

Burst Plugs
Extrusion Burst Plugs (EBP)

Ordering/Re-ordering

For ordering please reference table below and for re-ordering, please specify previous lot number.

Installation

It is important that the Extrusion Burst Plug be mounted flush with the inner wall of the extrusion device (see Fig.1). An improperly designed device would present an area for excessive product build-up, rendering the Extrusion Burst Plug ineffective (see Fig.2).

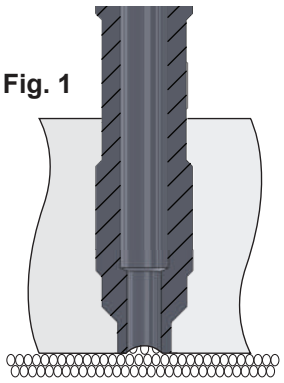


Fig. 1

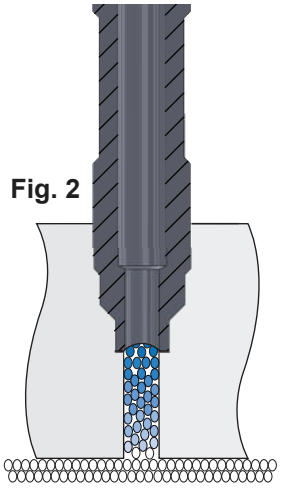
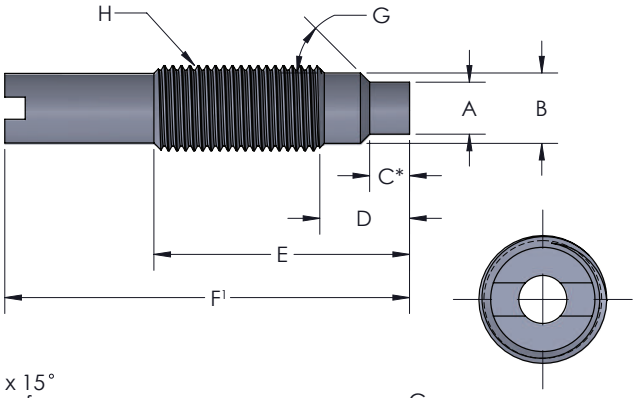
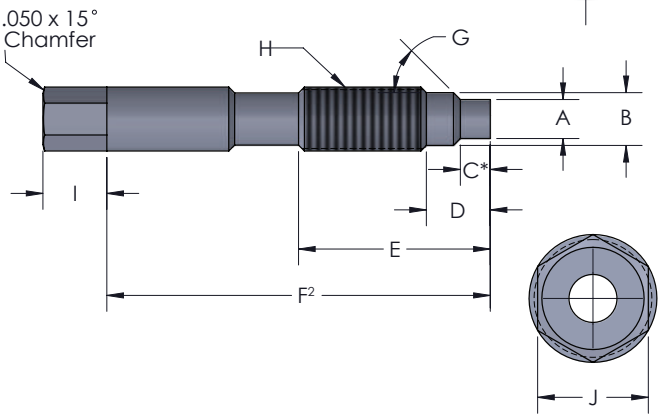


Fig. 2

Dimensions





MODEL NUMBERS							
		EBP-1000	EBP-1001	EBP-1002	EBP-1003	EBP-1004	EBP-1005
DIMENSIONS	A	0.305-0.310	0.305-0.310	0.305-0.310	0.305-0.310	0.305-0.310	0.305-0.310
	B	0.413	0.413	0.413	0.413	0.413	0.413
	C*	0.234 – 0.265	0.234 – 0.265	0.234 – 0.265	0.234 – 0.265	0.234 – 0.265	0.234 – 0.265
	D	0.50	0.50	0.50	0.50	0.50	0.50
	E	1.50	1.50	1.50	1.50	1.50	1.50
	F^1	2.375					
	F^2		3.00	4.00	6.00	9.00	12.00
	G	45°	45°	45°	45°	45°	45°
	H	1/2-20 UNF-2A	1/2-20 UNF-2A	1/2-20 UNF-2A	1/2-20 UNF-2A	1/2-20 UNF-2A	1/2-20 UNF-2A
	I		0.50	0.50	0.50	0.50	0.50
	J	0.433	0.433	0.433	0.433	0.433	0.433

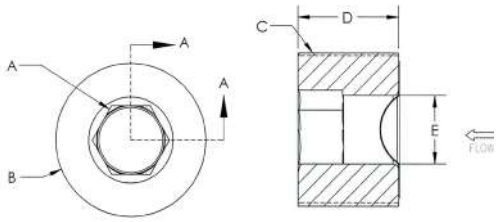
Note:
*Dimension C includes disk thickness

Burst Plugs
WDHT Series Downhole Tool

The WDHT Series of rupture disks were designed for pressure relief of oil tools to safely protect downhole components. There are many other applications that can benefit from this design, including wellhead protection, cementing, pressure activation equipment, spray washers, OEM's, laboratories, and more.

Features

- Each WDHT assembly consists of a threaded body with rupture disk welded onto the process side
- Body materials: 304 series Stainless Steel with other materials available on request
- Standard rupture disk material: Inconel (other materials available)
- Burst ratings 500 psig to 15,000 psig (for higher pressures contact ZOOK)
- 0% manufacturing range
- Operating ratios up to 75% of the low end of burst tolerance
- Requires Hex Key installation
- NPT threaded bodies
- Burst tolerance ± 10%
- Standard WDHTs in stock
- Customized designs available
- 100% factory leak-tested to bubble tight in liquid. For gas service or helium leak testing, please contact ZOOK
- 100% electronic thread verification of every assembly utilizing digital imaging
- 100% ultra-sonically cleaned prior to shipment
- 100% disk material traceability and burst test certification available
- CE (PED) compliance available



ZOOK's Welded Design Advantage

- Welded joints are stronger and more resistant to increased temperatures, which eliminates spurious bursts and product contamination
- Joint failure is eliminated due to increased temperature and pressure cycling compared to soldered joints
- Material creep is removed ensuring burst repeatability
- Improved quality and operational excellence

WDHT Dimensions

NPT Size	Min (psig)	Max (psig)	Hex Size "A"	Nom. 0D "B"	Thread Size "C"	Approximate Length "D"	Approximate Bore Size "E"
1/8"	1,000	15,000	3/16"	0.405"	1/8-27 NPT	5/16"	3/16"
1/4"	1,000	15,000	1/4"	0.540"	1/4-18 NPT	7/16"	3/16"
3/8"	1,000	15,000	5/16"	0.675"	3/8-18 NPT	1/2"	5/16"
1/2"	800	15,000	3/8"	0.840"	1/2-14 NPT	9/16"	3/8"
3/4"	500	7,350	9/16"	1.050"	3/4-14 NPT	5/8"	9/16"
1"	500	3,500	5/8"	1.315"	1-11-1/2 NPT	3/4"	5/8"

The WDHT Series of rupture disks were designed for pressure relief of oil tools to safely protect downhole components.

There are many other applications that can benefit from this design, including wellhead protection, cementing, pressure activation equipment, spray washers, OEM's, laboratories, and more.

www.rometec.it - Tel. 06 5061635 - info@rometec.it

Burst Plugs
WEB Series

Features

- Each WEB assembly consists of a threaded tubular body with a rupture disk welded onto the process end
- Each extruder barrel application is unique and requires a specific combination of dimensions, threading, and body configuration
- The WEB assembly is mounted directly into the extruder equipment through a pressure port or thermocouple-well where critical pressures are experienced
- One piece construction
- Operating ratios up to 75% of the low end of burst tolerance
- Burst tolerance ± 10% with typical standard deviation of ± 1% throughout the temp range of 300°F to 750°F (149°C to 399°C)
- Body materials: 304 series Stainless Steel with other materials available on request
- Disk Material: Inconel Standard
- Burst ratings 750 to 15,000 psig (for higher pressures contact ZOOK)
- 0% manufacturing range
- Standard barrels in stock
- Custom barrels available on request
- 100% factory leak-tested
- 100% thread verification of every assembly
- Private labeling, custom packaging, and other options available. Contact ZOOK

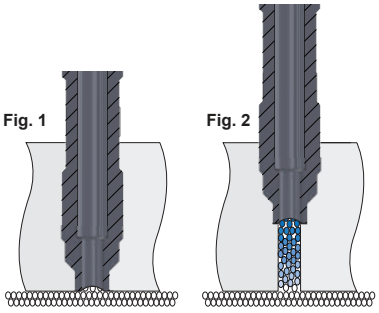
ZOOK Welded Extruder Rupture Disks are pressure relief devices designed for over-pressure protection of plastic and rubber extrusion processes

Ordering / Re-ordering

Please see back of this data sheet for complete dimensions and specifications.
For re-ordering, please specify previous LOT

Installation

It is important that the rupture disk of an extruder barrel be mounted flush with the inner wall of the extrusion device. (see Fig. 1) An improperly designed device would present an area for excessive product build-up, rendering the extruder barrel ineffective. (see Fig. 2)



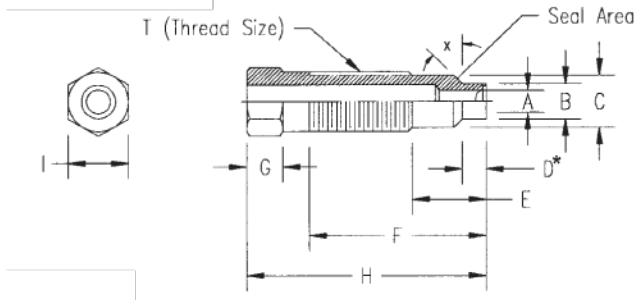
Assemblies

Four basic configurations: Hex End, NPT End, Wrench Flat End, Screwdriver End that are dependent on the outlet end of the body. Selection depends on how much space is available for installation and how venting of process media is intended

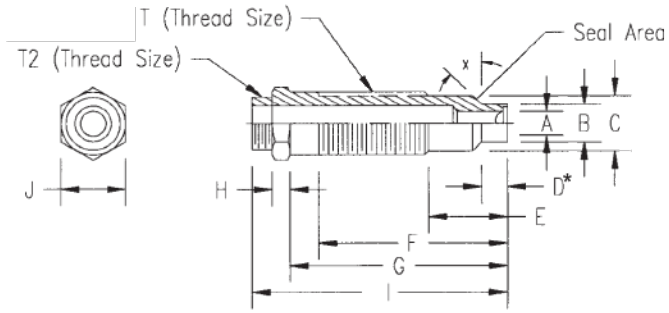
ZOOK can offer many other custom welded designs for a wide variety of applications with custom fittings and connections for stringent applications such as ultra-high vacuum, OEM markets, military, aerospace and many other applications. Please contact your representative or ZOOK.

WEB Dimensions and Specifications

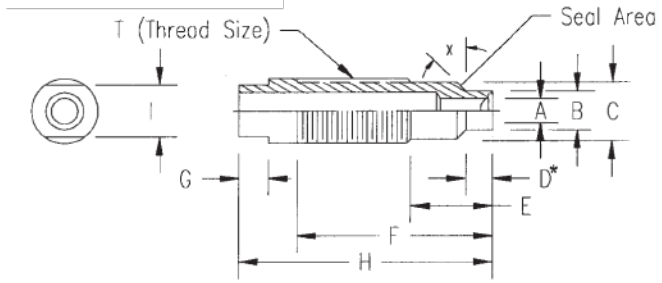
Hex End



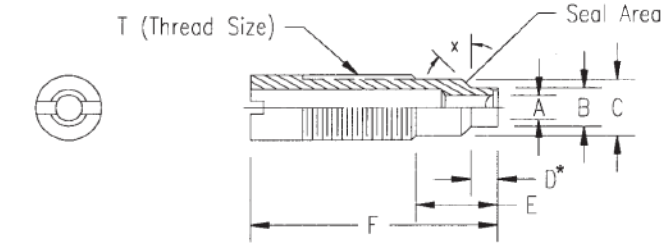
NPT End



Wrench Flat End



Screwdriver End



*Dimension D does not include disk thickness

When ordering an WEB assembly, specify:

End Configuration

( ) Hex ( ) NPT ( ) Wrench ( ) Screwdriver

Materials

Disk: ( ) Inconel ( ) Other _____

Body: ( ) 300 Series SS ( ) Other _____

Burst Specifications

_____psig@ _____°F

Quantity

_____each /_____ pcs/yr

Dimensions

All Dimensions are to be recorded in inches.

A _____
B _____
C _____
D* _____
E _____
F _____
G _____
H _____
I _____
J _____
X ( ) 45° ( ) Other _____
T _____
T2 _____

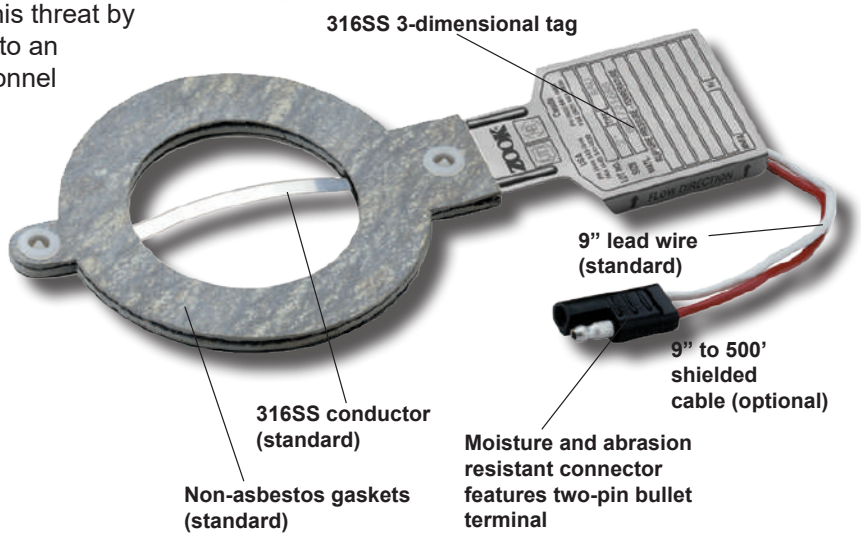
Standard Manufacturing Range -0-
Standard Burst Tolerance +/- 10%
Current Extruder Rupture Disk Assembly may be returned to ZOOK for dimensional evaluation. Contact ZOOK for more information.
Maximum burst pressure and temperature is 15,000 psg @ 800°F for 3/16" diameter disk size. Contact ZOOK for greater pressures and temperatures.

Burst Sensors/Indicators
BA Series

Over pressure indication for rupture disk or relief valve applications

When a pressure surge causes a relief valve to open, it also destroys the rupture disk under the valve. This leaves the valve vulnerable to chemical attack. The BA Burst Sensor reduces this threat by constantly monitoring the disk. When connected to an electrical alarm, the BA Burst Sensor alerts personnel to take immediate action to protect system components from further damage.

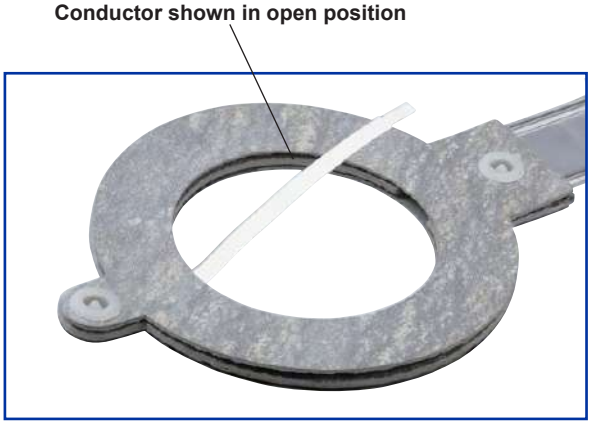
Operation
When a disk bursts, flow pulls one end of the BA Burst Sensor's conductor out of its retaining slot and opens the electrical circuit. The BA Burst Sensor can be reset by re-inserting the conductor into the retaining slot.



Features

- Re-Settable
- Sizes 1" thru 24"
- Electrically conductive
- Installs on vent side of the disk holder or alone
- Requires minimal flange face-to-face clearance
- Adapts to virtually all makes/types of rupture disks, including Graphite types
- Fits easily into existing pipe systems
- Optional leak detection (BA-LD) for damaged rupture disks or fugitive emissions from relief valves or atmospheric designed systems
- BA-LD functions with or without a rupture disk

BA Operating Limits	
Max. Temperature	700°F
Max. Continuous Temp	400°F
Max. Voltage	24 VDC
Max. Current	20 mA



Note: BA and BA-LD is considered a simple device, therefore, approval is not required. Installation must be in accordance with ANSI/ISA RP12.6 and the NEC (ANSI/NFPA 70)

Specifications

Disk Size	Minimum Burst Pressure* psi @ 72°F (22°C)	Nominal Indicator Thickness	Thickness with Optional LD
1" - 2"	5	3/16"	1/4"
3"	3		
4"	2		
6" - 24"	1		

*If burst pressures are near the min, if flow or volume is low, or if detection is critical, we recommend redundant indication or the consideration of other ZOOK indicators (Applies to both BA and BA-LD). Please consult your local ZOOK representative or contact us at **sales@zookdisk.com.**

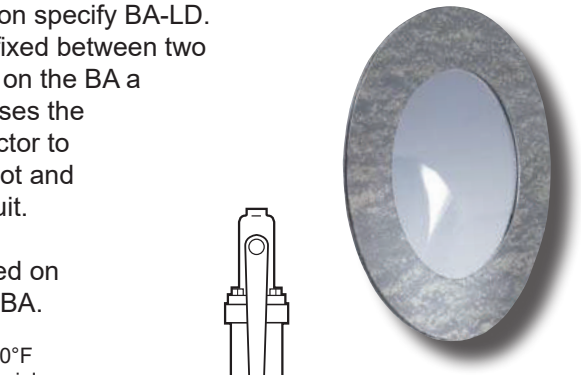
Ordering Information
When ordering BA Series, specify: flange size, flange series, relieving pressure of pressure relief device, and coincident temperature.

Optional Leak Detector (LD) for BA Burst Sensor

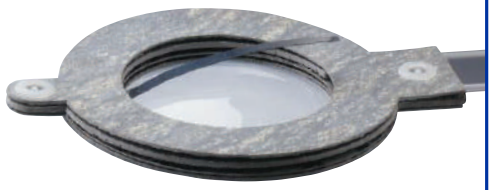
For optional leak detection specify BA-LD. The LD is a TFE seal affixed between two gaskets. When installed on the BA a build-up in pressure causes the BA Burst Sensor Conductor to pull out of its retaining slot and opens the electrical circuit.

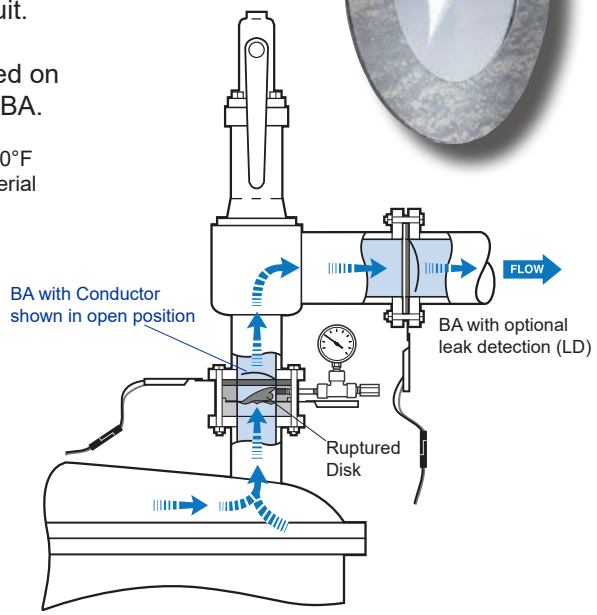
The LD is always installed on the pressure side of the BA.

Note: Max. Temperature of 500°F (260°C) Limitation of liner material

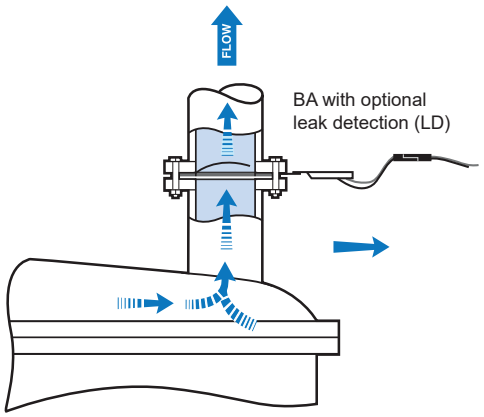


Optional Leak Detection (LD) with conductor shown in open position





Relief Valve with BA and BA-LD Burst Sensor Applications

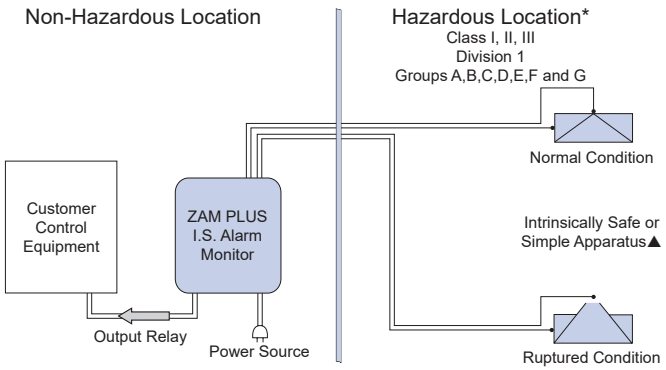


Storage Tank Application with BA-LD

Monitor

The BA Burst Sensor works with ZOOK ZAM Plus Alarm Monitor or any other monitoring system. Consult ZOOK for additional information. The monitor wired to the BA Burst Sensor will be activated providing immediate local or remote warning of a ruptured disk. The ZAM Plus monitor allows output to control pumps, valves, and other equipment which may be activated to control or shutdown a process.

CAUTION
The BA Burst Sensor is an electrical device suitable for use in hazardous locations (Class I, II, and III, Division 1 and 2, Group A thru G) provided that it is used with an approved intrinsically safe electrical alarm monitor. For services involving highly electrically conductive fluids, consult the ZOOK factory for this type of application.



Notes:
*Contact ZOOK for information about mounting the ZAM Plus Alarm Monitor in hazardous locations.
▲Hazardous location equipment must be NEC compliant or simple apparatus.

Integral Burst Indication for Flat Seated Metal Rupture Disks

Over-pressure or discharge indication for metal rupture disk installations. The BI Integral Burst Indicator is a simple and effective means of indicating when the process media ruptures a disk.

Operation
The BI is integrated into the vent side of the rupture disk assembly. Upon rupture of the disk, the BI alarm circuit is opened.

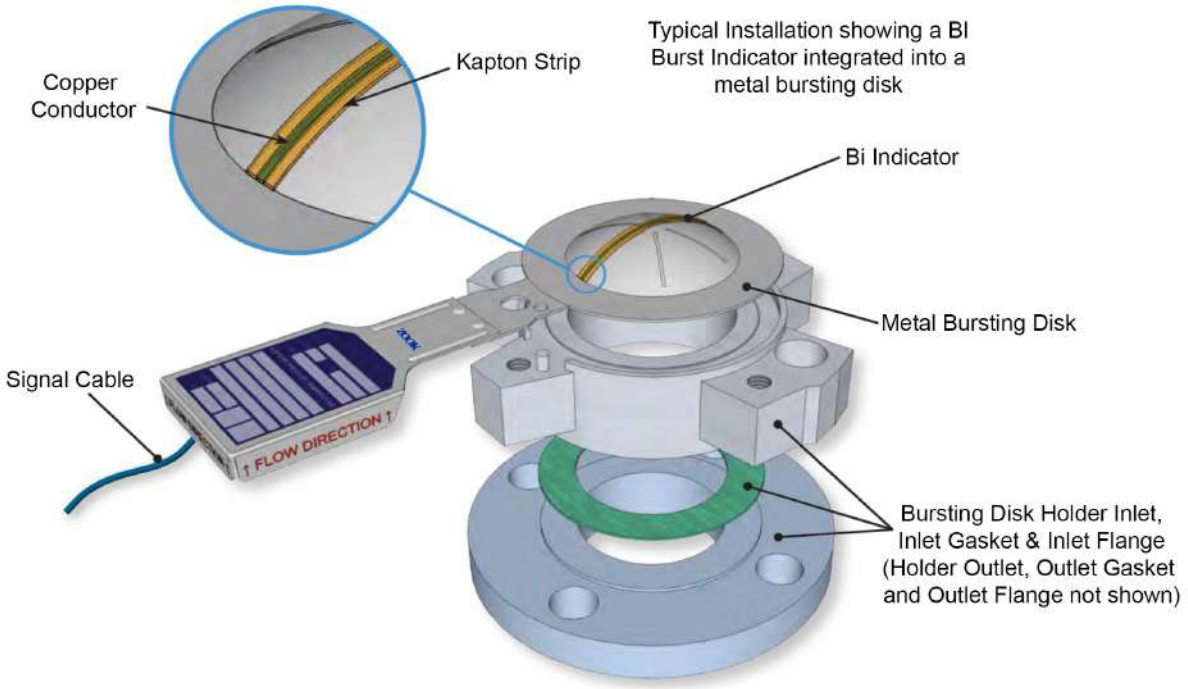
Example of the BI Integral Burst Indicator on a ZOOK Rupture Disk

Features

- Less affected by back pressure from common discharge manifolds
- Compatible with most ZOOK flat-seat metal and sanitary rupture disks
- Classified as a simple apparatus and may be used in a hazardous environment. Must be used in conjunction with intrinsically safe certified electrical apparatus and installed & maintained to meet all other requirements of an intrinsically safe installation & local codes
- Cost effective against traditional remote membrane type detectors, especially in larger sizes
- Reduces stock inventory by incorporating the burst indicator and disk into a single unit
- Supplied complete with 2 m signal cable

Materials
Membrane – Kapton®
Conductive material – Copper
Leadwire – 2 m, 24 AWG, 2 conductor

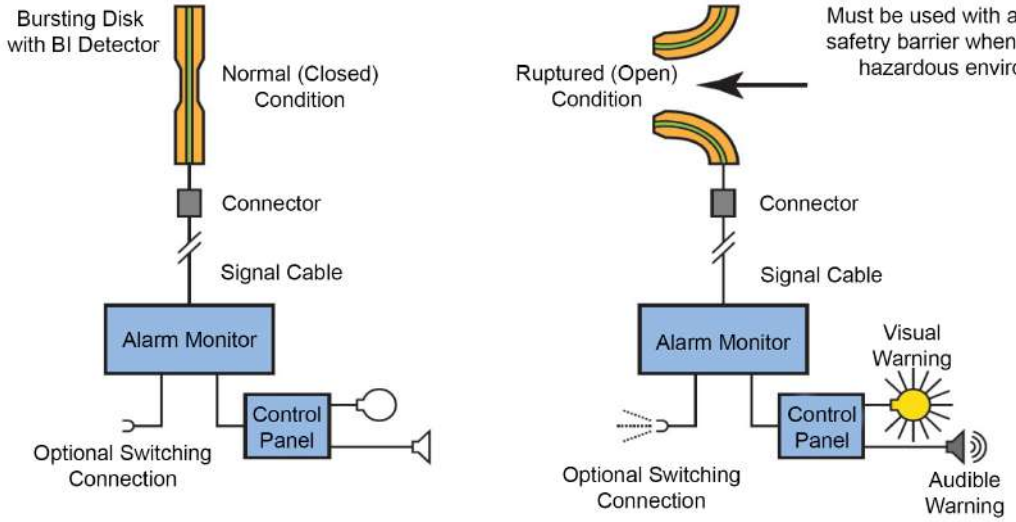
Examples of BI Indicator on ZOOK Sanitary Rupture Disks



Electrical Properties

Maximum Pre-Rupture Resistance	20 Ω	**Maximum Voltage**	24 V DC
Temperature Range	-40 to 400°F (-40 to 204°C)	**Maximum Current**	50 mA

Operating Schematic



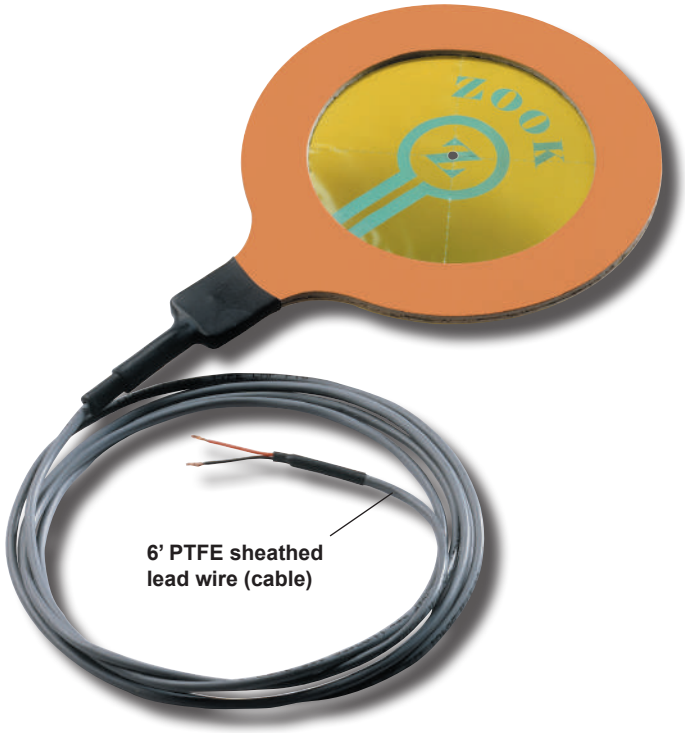
Burst Sensors/Indicators
RDI Series

Over pressure or discharge indication for rupture disk and safety relief valve applications

The Rupture Disk Indicator RDI is a simple and effective means of indicating when the process media ruptures a disk or opens a safety relief valve.

Operation

The RDI installs onto the vent side of a rupture disk assembly or onto the discharge side of a relief valve. Upon rupture of the disk or discharge of the relief valve, the RDI alarm circuit is opened by the flowing media.



Features

- One time use, LOW COST
- Sizes 1" thru 24"
- Compatible with Metal or Graphite Rupture Disks or for stand alone use (relief valve applications)
- Resistant to most chemicals
- Minimizes downtime due to immediate burst indication
- Supplied ready for installation
- Installs easily into existing pipe systems
- Furnished with attached 6 foot PTFE sheathed lead wire (cable)
- No routine maintenance required
- Installs on outlet side of rupture disk or rupture disk holder isolating the RDI from the process media

Materials

Gaskets – Compressed fiber
Membrane – Kapton®
Conductive material – Silver
Leadwire – 6 foot, 24 AWG, 2 conductor PTFE sheathed leadwire (cable)

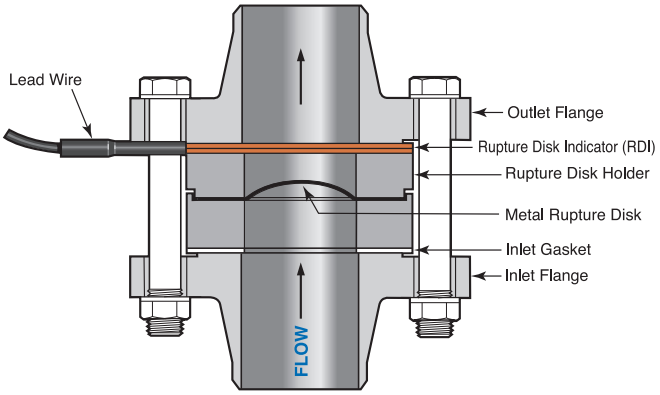
RDI Operating Limits	
Max. Voltage	24 VDC
Max. Current	150 mA
Temp. Range	-40 to +392°F

Specifications

Disk Size	Minimum Burst Pressure* psi @ 72°F (22°C)	Nominal Indicator Thickness
1" - 2"	5	3/16"
3"	3	
4"	2	
6" - 24"	1	

KAPTON - Registered TM DuPont

Typical Installation



Note: RDI is considered a simple device, therefore, approval is not required. Installation must be in accordance with ANSI/ISA RP12.6 and the NEC (ANSI/NFPA 70)

Ordering Information

When ordering RDI, specify: flange size, flange series, relieving pressure of pressure relief device, and coincident temperature.

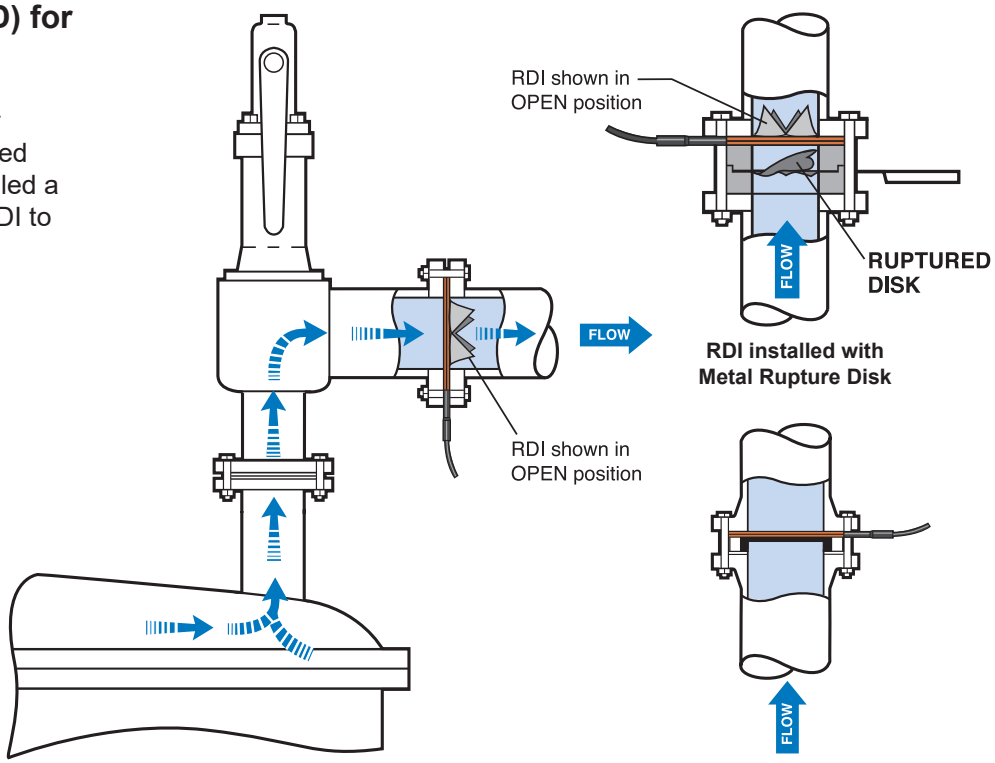
Contact ZOOK for stocked sizes ready for immediate shipment.

Optional Leak Detector (LD) for RDI Burst Sensor

For optional leak detection specify RDILD. The LD is a TFE seal affixed between two gaskets. When installed a build-up in pressure causes the RDI to open the electrical circuit.

The LD is always installed on the pressure side of the RDI.

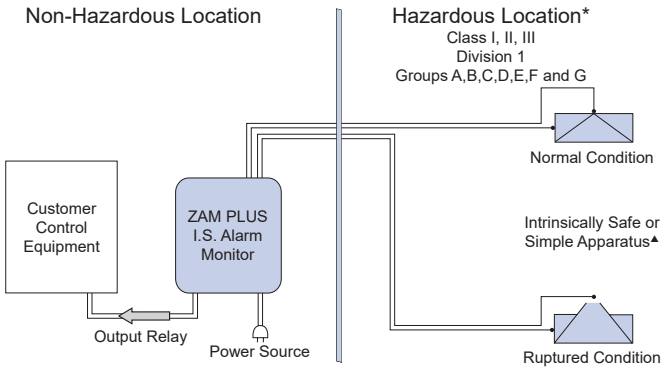
Note: Max. Temperature of 500°F (260°C) Limitation of liner material



Monitor

The RDI Rupture Disk Indicator works with ZOOK ZAM Plus Alarm Monitor or any other monitoring system. Contact ZOOK for additional information. The monitor wired to the RDI will be activated providing immediate local or remote warning of a ruptured disk. The ZAM Plus monitor allows output to control pumps, valves, and other equipment which may be activated to control or shutdown a process.

CAUTION
The RDI is an electrical device suitable for use in hazardous locations (Class I, II, and III, Division 1 and 2, Group A thru G) provided that it is used with an approved intrinsically safe electrical alarm monitor. For services involving highly electrically conductive fluids, contact ZOOK for this type of application.



Notes:
*Contact ZOOK for information about mounting the ZAM Plus Alarm Monitor in hazardous locations.
▲Hazardous location equipment must be NEC compliant or simple apparatus.

Burst Sensors/Indicators
RDI-S Series

Burst Indication for use in Sanitary Tri Clamp Fittings

Over-pressure or discharge indication for bursting disk installations. The RDI-S Disk Burst Indicator is a simple and effective means of indicating when the process media ruptures a disk.

Operation
The RDI-S installs onto the vent side of a sanitary bursting disk assembly. Upon rupture of the disk, the RDI-S alarm circuit is opened by the flowing media.

- One-time use, low cost design compatible with metal or graphite bursting disks
- Fits easily into existing piping systems
- Installs on the outlet side of bursting disk or bursting disk holder, isolating the RDI-S from the process media

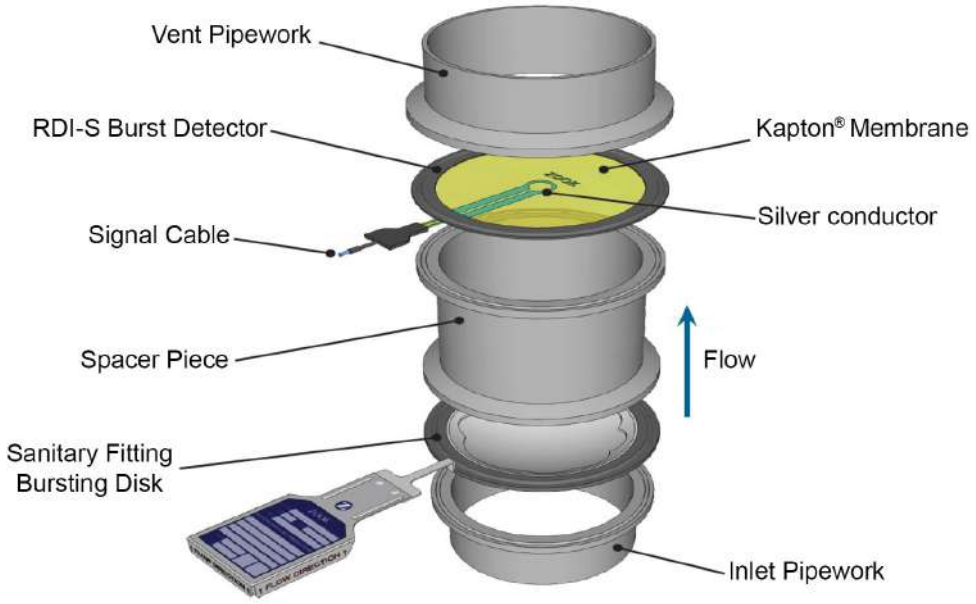
Features

- One time use, LOW COST
- 25mm (1”) to 100mm (4”) diameter
- Early indication of burst minimizes product waste and environmental damage from release of harmful process fluids
- Supplied ready for installation
- Fits standard Tri Clover and NA couplings used with sanitary ferrules to BS4825[1]
- Burst is detected by breakage of silver conductor element printed to the chemically resistant polymide detector membrane. Signal may be used to activate a variety of alarm or control equipment
- Signals instantly when the bursting disk ruptures
- The RDI-S sensor has been ATEX system certified to ATEX directive 94/9/EC and standard EN50039[2]

Materials
Membrane – Kapton®
Standard gasket materials – Viton or EPDM*
Conductive materials – Silver
Cable – 2m, 24 AWG, 2 conductor PTFE screened cable

* Consult ZOOK for other materials
[1] Consult ZOOK for ferrules to other standards (e.g. DIN32676, ISO 2582/ISO1127)
[2] Epsilon Certificate No. 055YS1448X available on request

Typical Installation



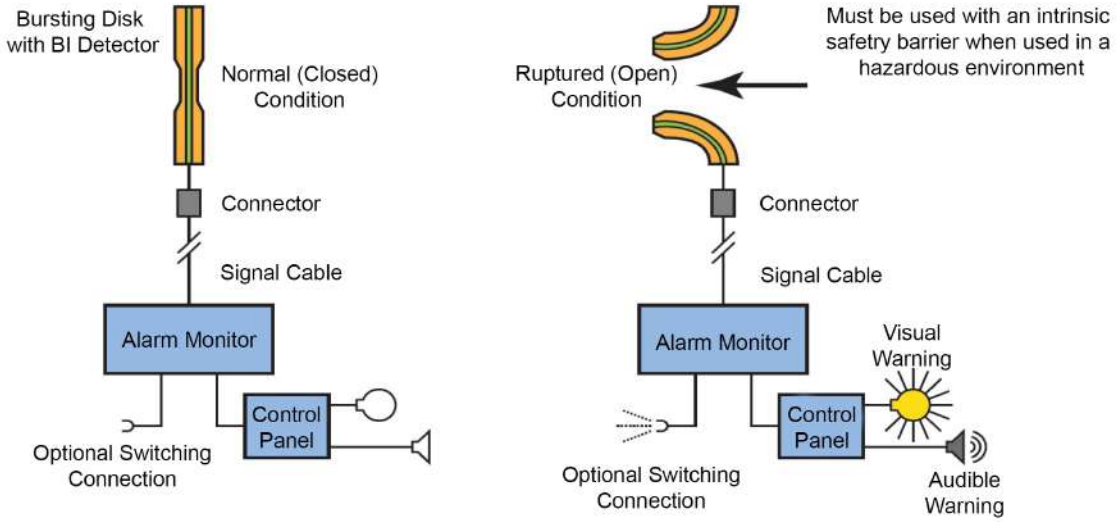
Electrical Properties

Max. Pre-Burst Resistance	20 Ω
Maximum Voltage	24 V AC/DC
Maximum Current	150 mA
Temperature Range	-40 to +200°C (-40 to +392°F)

Minimum Burst Pressure required to activate RDI-S

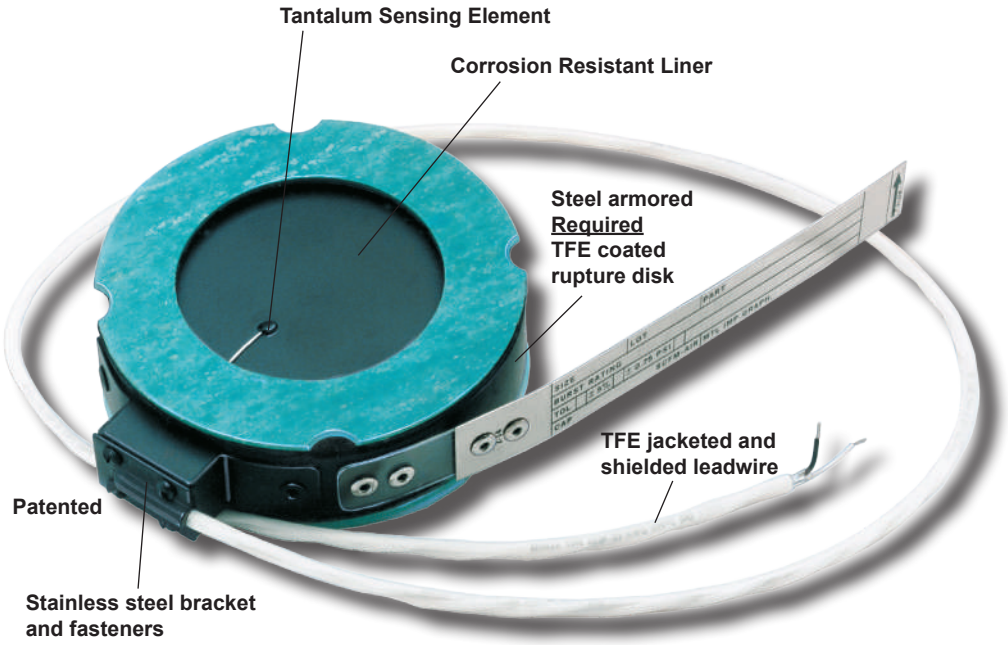
Nominal Size	Barg (Psig)
25 mm (1”)	0.62 barg (9 psig)
40 mm (1.5”)	0.62 barg (9 psig)
50 mm (2”)	0.55 barg (8 psig)
80 mm (3”)	0.41 barg (6 psig)
100 mm (4”)	0.28 barg (4 psig)

Operating Schematic



Burst Sensors/Indicators
ZENSOR Series

The ZENSOR from ZOOK is specifically designed for use with ZOOK Impervious Graphite Rupture disks 1” and larger. ZENSOR is ideal for a wide range of applications. It can be used with ZOOK Two-Way Disks in systems with pressure and/or vacuum conditions and with ZOOK Bak-Pressure™ Disks in systems where extreme back pressures develop. ZENSOR temperature and pressure ratings are the same as those for the rupture disks.



Features

- Rugged design withstands rough handling and severe service conditions
- Rupture disk and tantalum sensing element are TFE-coated for maximum corrosion resistance
- Rupture disk and sensing element are integral parts of the electrical circuit to eliminate false readings
- Sensing element mounts on the vent side of the disk
- Shipped complete (including gaskets), ready for easy installation

ZENSOR Operating Limits	
Max. Voltage	24 VDC
Max. Current	20 mA

CAUTION

The ZENSOR is an electrical device suitable for use in hazardous locations (Class I, II, and III, Division 1 and 2, Group A thru G) provided that it is used with an approved intrinsically safe electrical alarm monitor. For services involving highly electrically conductive fluids, contact ZOOK for this type of application.

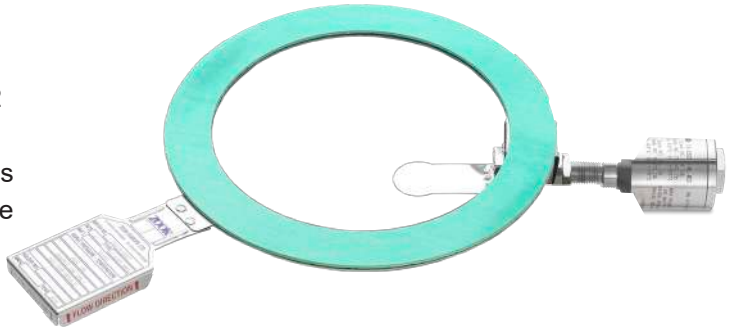
Note: Rupture Disks with ZENSOR is considered a simple device, therefore, approval is not required. Installation must be in accordance with ANSI/ISA RP12.6 and the NEC (ANSI/NFPA 70)

Burst Sensors/Indicators
Z-Alert

Z-Alert is a Non-Invasive magnetic rupture disk detection system. The detection device is situated remote of the disk allowing maintenance and inspection without interfering with the disk assembly.

Features

- Z-Alert is certified to: ATEX, IECExd, IP66 to 68, UL, TRCU, SIL2
- Rated for use in Gas & Dust Zones Zones 1, 2, 21 & 22
- Z-Alert has a 316 Stainless Steel Wireable Connection Head – Side Entry Housing with volt free contacts. It has a maximum switching current of 2.5A. It requires the use of a magnetic target to operate
- Using the latest production methods and materials this product meets global certification requirements and its robust design makes it suitable for use in arduous and hazardous environments



Specifications

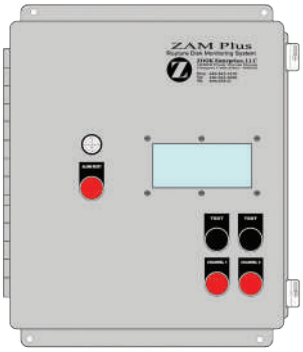
Body Shape: Wireable Connection Head - Side Entry
Body Material: 316 Stainless Steel
Max Current: 2.5A
Connection: M20 x 1.5mm Conduit Entry
Body Type: 5/8” UNF
Operating Temperature: -60°C to +120°C

Supply Voltage	Max Switching Current	Max Voltage	Max Switching Power
4 VDC	2.5A	400 V AC/DC	60W VA
110 VAC	540mA		
230 VAC	250mA		

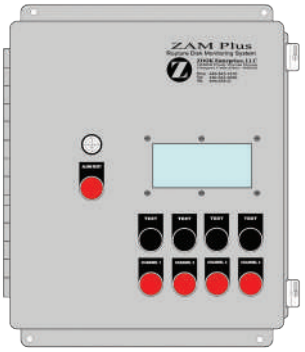
Burst Sensors/Indicators
ZAM Series

The ZAM series Alarm Monitor is a surface mounted monitor designed to remotely detect the condition of a rupture disk in service. Used in conjunction with the ZOOK ZENSOR®, BA, RDI, BI or similar devices, it will immediately warn the operator of a ruptured disk. The alarm system uses a normally closed electrical circuit. When the disk ruptures, it breaks the circuit, triggering the alarm.

The ZOOK ZAM alarm system is capable of detecting a ruptured disk condition in applications involving highly electrically conductive fluids. Contact ZOOK for more information regarding this type of application.



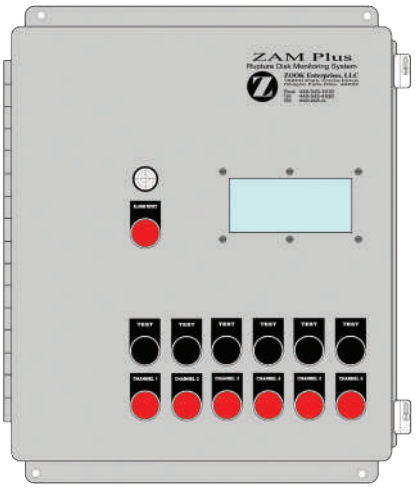
ZAM2
2 Channel Monitor



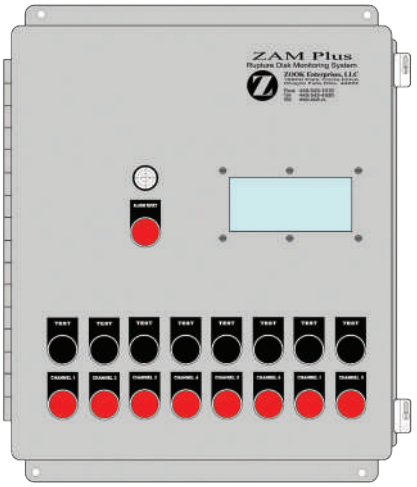
ZAM4
4 Channel Monitor

Features

- Intrinsically safe output for Class I, II, and III, Division 1, Groups A, B, C, D, E, F, and G hazardous locations
- Utilizes FM approved, Ex, CE, and CSA, compliant I.S. barrier
- Enclosure: NEMA Type 12, constructed of 14 gauge steel with continuously welded seams and oil resistant seals
- Provides an audio/visual signal and an output relay for each channel. Channel will automatically reset once the burst indicating device is replaced or reset
- Audio alarm can be silenced with push button switch
- Contains front panel push buttons for testing each channel. This function can also be performed remotely
- Field replaceable I.S. barrier module and power supply



ZAM6
6 Channel Monitor



ZAM8
8 Channel Monitor

Specifications		
Intrinsically safe sensing signal level	10.5 VDC @ 13 mA max.	
Input Voltage	100–240 VAC @ 50/60Hz	
Monitor Sensing Level	Open (Ruptured)	
Output Relay Contacts	1NO & 1NC (DPST) rated 4 Amps, 126.5 VAC (Resistive)	
Operating Temperature	–4°F to + 140°F	
Dimensions	ZAM2 & ZAM4	129 H x 109 W x 89 D
	ZAM6 & ZAM8	149 H x 129 W x 89 D

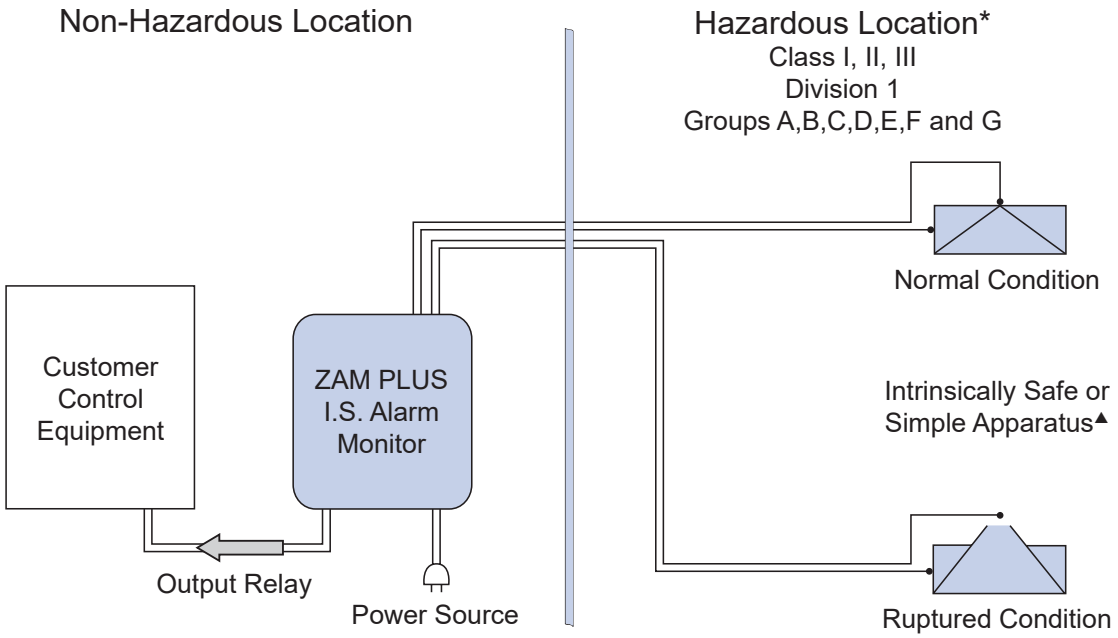
Under normal conditions, the alarm system is in a normally closed state. When the disk ruptures due to an over pressure condition, separation of the membrane (pressure sensing portion of the rupture disk) occurs – breaking the alarm electrical circuit.

The monitor wired to the burst indicating device will be activated providing immediate local or remote warning of a ruptured disk. The ZAM monitor allows output to control pumps, valves, and other equipment which may be activated to control or shutdown a process.

The ZAM Alarm Monitor can be used with the following burst indicating devices: ZENSOR®, BA, RDI, BI or similar devices. It will immediately warn the operator of a ruptured disk.

Contact ZOOK for compatibility with other manufacturers indication devices.

Note: A rupture disk with burst indicating device is considered a simple device, therefore, approval is not required. Installation must be in accordance with ANSI/ISA RP12.6 and the NEC (ANSI/NFPA 70)



Notes:
*Contact ZOOK for information about mounting the ZAM Plus Alarm Monitor in hazardous locations.
▲Hazardous location equipment must be NEC compliant or simple apparatus.

Explosion Vents
CV-F Series

Features

- Flat composite design with single hinge bursting pattern
- Designed to be non-fragmenting
- Interchangeable with existing vent installations
- Materials: SST/TFE/SST
- Square, Rectangular, and Round configurations
- Burst ratings from 0.50 to 8.00 psi
  (Contact ZOOK for greater pressures)
- 0% Manufacturing range is standard
- CV vents have no moving parts, therefore are maintenance free
- Manufactured to mount into standard angle frames
- Custom sizes and materials available upon request

Options

- Integral Burst Indication
- Insulation
- Gaskets

Operating Specifications	CV-F	CV-FS	CV-FSB
Max Operating Pressure[1]	60%	60%	60%
Max Vacuum Rating	50% of Pstat	= to Pstat	> Pstat
Maximum Temperature	500°F (260°C)	500°F (260°C)	500°F (260°C)

	Relieving Pressure	Tolerance
Burst Pressure Tolerance	0.50 to 0.99 psi	+/- 0.33 psi
	1.00 to 3.99 psi	+/- 0.50 psi
	4.00 to 8.00 psi	+/- 1.00 psi

Notes:
[1]Calculation based on low end of burst pressure tolerance

CV-F	Design offers 100% venting area
CV-FS	Designed with integral support to withstand vacuum or back-pressure up to the static burst pressure of the vent panel
CV-FSB	Designed to be used with support bars in the inlet frame, used when vacuum or back-pressure exceeds the static burst pressure of the vent panel

All ZOOK explosion vents are tested in accordance with the National Fire Protection Association standard NFPA 68 and meet the low mass per unit area requirement “The weight of the vent closure shall not exceed 2.5 lbs/sq. ft. of free vent area.”

Square / Rectangular

Nominal Size		Relief Area*		Minimum Burst Pressure	
Inches	cm	sq. in.	sq. cm.	psig	bar
9 X 12	23 X 30	88	568	2.0	0.14
12 X 12	30 X 30	121	781	2.0	0.14
12 X 18	30 X 46	187	1206	1.5	0.10
12 X 24	30 X 61	253	1632	1.5	0.10
18 X 18	46 X 46	289	1865	1.0	0.07
18 X 24	46 X 61	391	2523	1.0	0.07
18 X 30	46 X 76	493	3181	1.0	0.07
18 X 35	46 X 89	578	3729	1.0	0.07
24 X 24	61 X 61	529	3413	1.0	0.07
24 X 30	61 X 76	667	4303	1.0	0.07
24 X 36	61 X 91	805	5194	0.5	0.03
24 X 44	61 X 112	989	6381	0.5	0.03
30 X 30	76 X 76	841	5426	0.5	0.03
30 X 36	76 X 91	1015	6548	0.5	0.03
30 X 40	76 X 102	1131	7297	0.5	0.03
30 X 44	76 X 112	1247	8045	0.5	0.03
36 X 36	91 X 91	1225	7903	0.5	0.03
36 X 44	91 X 112	1505	9710	0.5	0.03
44 X 44	112 X 112	1849	11929	0.5	0.03
44 X 69	112 X 175	2924	18864	0.5	0.03

Round

Nominal Size (Diameter)		Relief Area*		Minimum Burst Pressure	
Inches	cm	sq. in.	sq. cm.	psig	bar
8	20	38	248	3.0	0.21
10	25	64	410	2.5	0.17
12	30	95	613	2.0	0.14
14	36	133	856	1.5	0.10
16	41	177	1140	1.3	0.09
18	46	227	1464	1.0	0.07
20	51	284	1829	1.0	0.07
24	61	415	2680	1.0	0.07
30	76	661	4261	0.5	0.03
32	81	755	4869	0.5	0.03
36	91	962	6207	0.5	0.03
40	102	1195	7707	0.5	0.03
42	107	1320	8518	0.5	0.03
44	112	1452	9369	0.5	0.03

Notes:

For larger sizes or sizes not shown, contact ZOOK.

* Relief area is based on relieving area of CV-F type vent panel. Actual relief area will be reduced on other vent types or if support bars are used in inlet frame. Contact ZOOK for more information.

Explosion Vents
CV-P Series

Features

- Domed composite design with single hinge bursting pattern
- Better fatigue and cycle life when compared to flat single hinge designs
- Designed to be non-fragmenting
- Interchangeable with existing vent installations
- Materials: SST/TFE/SST
- Square, Rectangular, and Round configurations
- Burst ratings from 0.50 to 8.00 psi (Contact ZOOK for greater pressures)
- 0% Manufacturing range is standard
- CV vents have no moving parts, therefore are maintenance free
- Manufactured to mount into standard angle frames
- Custom sizes and materials available upon request

Options

- Integral Burst Indication
- Insulation
- Gaskets

Operating Specifications	CV-PS	CV-PVS
Max Operating Pressure[1]	80%	80%
Max Vacuum Rating	50% of Pstat	See Note[2]
Maximum Temperature	500°F (260°C)	500°F (260°C)

	Relieving Pressure	Tolerance
Burst Pressure Tolerance	0.50 to 0.99 psi	+/- 0.33 psi
	1.00 to 3.99 psi	+/- 0.50 psi
	4.00 to 8.00 psi	+/- 1.00 psi

Notes:
[1]Calculation based on low end of burst pressure tolerance
[2] Round: Full vacuum for sizes up to 24". 50% Vacuum for 30" and above Rectangular / Square: Contact ZOOK

CV-PS	Designed with integral light duty handling support to withstand back-pressure or vacuum up to 50% of the static burst pressure of the vent panel
CV-PVS	Designed with integral support to withstand vacuum or back-pressure up to 14.7 psi (full vacuum)

All ZOOK explosion vents are tested in accordance with the National Fire Protection Association standard NFPA 68 and meet the low mass per unit area requirement "The weight of the vent closure shall not exceed 2.5 lbs/sq. ft. of free vent area."

Square / Rectangular

Nominal Size		Relief Area*		Minimum Burst Pressure	
Inches	cm	sq. in.	sq. cm.	psig	bar
9 X 12	23 X 30	88	568	2.0	0.14
12 X 12	30 X 30	121	781	2.0	0.14
12 X 18	30 X 46	187	1206	1.5	0.10
12 X 24	30 X 61	253	1632	1.5	0.10
18 X 18	46 X 46	289	1865	1.0	0.07
18 X 24	46 X 61	391	2523	1.0	0.07
18 X 30	46 X 76	493	3181	1.0	0.07
18 X 35	46 X 89	578	3729	1.0	0.07
24 X 24	61 X 61	529	3413	1.0	0.07
24 X 30	61 X 76	667	4303	1.0	0.07
24 X 36	61 X 91	805	5194	0.5	0.03
24 X 44	61 X 112	989	6381	0.5	0.03
30 X 30	76 X 76	841	5426	0.5	0.03
30 X 36	76 X 91	1015	6548	0.5	0.03
30 X 40	76 X 102	1131	7297	0.5	0.03
30 X 44	76 X 112	1247	8045	0.5	0.03
36 X 36	91 X 91	1225	7903	0.5	0.03
36 X 44	91 X 112	1505	9710	0.5	0.03
44 X 44	112 X 112	1849	11929	0.5	0.03
44 X 69	112 X 175	2924	18864	0.5	0.03

Round

Nominal Size (Diameter)		Relief Area*		Minimum Burst Pressure	
Inches	cm	sq. in.	sq. cm.	psig	bar
8	20	38	248	3.0	0.21
10	25	64	410	2.5	0.17
12	30	95	613	2.0	0.14
14	36	133	856	1.5	0.10
16	41	177	1140	1.3	0.09
18	46	227	1464	1.0	0.07
20	51	284	1829	1.0	0.07
24	61	415	2680	1.0	0.07
30	76	661	4261	0.5	0.03
32	81	755	4869	0.5	0.03
36	91	962	6207	0.5	0.03
40	102	1195	7707	0.5	0.03
42	107	1320	8518	0.5	0.03
44	112	1452	9369	0.5	0.03

Notes:

For larger sizes or sizes not shown, contact ZOOK.

* Relief area is based on relieving area of CV-P type vent panel. Actual relief area will be reduced on other vent types or if support bars are used in inlet frame. Contact ZOOK for more information.

Explosion Vents
CV-II-F Series

Features

- Flat composite design with single hinge bursting pattern
- Superior fatigue and cycle life when compared to flat single hinge designs
- Designed to be non-fragmenting
- Interchangeable with existing vent installations
- Materials: SST/TFE/SST
- Square, Rectangular, and Round configurations
- Burst ratings from 0.50 to 8.00 psi (Contact ZOOK for greater pressures)
- 0% Manufacturing range is standard
- CV vents have no moving parts, therefore are maintenance free
- Manufactured to mount into standard angle frames
- Custom sizes and materials available upon request

Options

- Insulation
- Gaskets

Operating Specifications	CV-II-F	CV-II-FS	CV-II-FSB
Max Operating Pressure[1]	60%	60%	60%
Max Vacuum Rating	50% of Pstat	= to Pstat	> Pstat
Maximum Temperature	500°F (260°C)	500°F (260°C)	500°F (260°C)

	Relieving Pressure	Tolerance
Burst Pressure Tolerance	0.50 to 0.99 psi	+/- 0.33 psi
	1.00 to 3.99 psi	+/- 0.50 psi
	4.00 to 8.00 psi	+/- 1.00 psi

Notes:
[1]Calculation based on low end of burst pressure tolerance

CV-II-F	Design offers 100% venting area
CV-II-FS	Designed with integral support to withstand vacuum or back-pressure up to the static burst pressure of the vent panel
CV-II-FSB	Designed to be used with support bars in the inlet frame, used when vacuum or back-pressure exceeds the static burst pressure of the vent panel

All ZOOK explosion vents are tested in accordance with the National Fire Protection Association standard NFPA 68 and meet the low mass per unit area requirement “The weight of the vent closure shall not exceed 2.5 lbs/sq. ft. of free vent area.”

Square / Rectangular

Nominal Size		Relief Area*		Minimum Burst Pressure	
Inches	cm	sq. in.	sq. cm.	psig	bar
9 X 12	23 X 30	88	568	2.0	0.14
12 X 12	30 X 30	121	781	2.0	0.14
12 X 18	30 X 46	187	1206	1.5	0.10
12 X 24	30 X 61	253	1632	1.5	0.10
18 X 18	46 X 46	289	1865	1.0	0.07
18 X 24	46 X 61	391	2523	1.0	0.07
18 X 30	46 X 76	493	3181	1.0	0.07
18 X 35	46 X 89	578	3729	1.0	0.07
24 X 24	61 X 61	529	3413	1.0	0.07
24 X 30	61 X 76	667	4303	1.0	0.07
24 X 36	61 X 91	805	5194	0.5	0.03
24 X 44	61 X 112	989	6381	0.5	0.03
30 X 30	76 X 76	841	5426	0.5	0.03
30 X 36	76 X 91	1015	6548	0.5	0.03
30 X 40	76 X 102	1131	7297	0.5	0.03
30 X 44	76 X 112	1247	8045	0.5	0.03
36 X 36	91 X 91	1225	7903	0.5	0.03
36 X 44	91 X 112	1505	9710	0.5	0.03
44 X 44	112 X 112	1849	11929	0.5	0.03
44 X 69	112 X 175	2924	18864	0.5	0.03

Round

Nominal Size (Diameter)		Relief Area*		Minimum Burst Pressure	
Inches	cm	sq. in.	sq. cm.	psig	bar
8	20	38	248	3.0	0.21
10	25	64	410	2.5	0.17
12	30	95	613	2.0	0.14
14	36	133	856	1.5	0.10
16	41	177	1140	1.3	0.09
18	46	227	1464	1.0	0.07
20	51	284	1829	1.0	0.07
24	61	415	2680	1.0	0.07
30	76	661	4261	0.5	0.03
32	81	755	4869	0.5	0.03
36	91	962	6207	0.5	0.03
40	102	1195	7707	0.5	0.03
42	107	1320	8518	0.5	0.03
44	112	1452	9369	0.5	0.03

Notes:

For larger sizes or sizes not shown, contact ZOOK.

* Relief area is based on relieving area of CV-II-F type vent panel. Actual relief area will be reduced on other vent types or if support bars are used in inlet frame. Contact ZOOK for more information.

Explosion Vents
CV-II-P Series

Features

- Domed composite design with segmented bursting pattern
- Superior fatigue and cycle life when compared to domed single hinge designs
- Designed to be non-fragmenting
- Interchangeable with existing vent installations
- Materials: SST/TFE/SST
- Square, Rectangular, and Round configurations
- Burst ratings from 0.50 to 8.00 psi (Contact ZOOK for greater pressures)
- 0% Manufacturing range is standard
- CV vents have no moving parts, therefore are maintenance free
- Manufactured to mount into standard angle frames
- Custom sizes and materials available upon request

Options

- Insulation
- Gaskets

Operating Specifications	CV-II-PS	CV-II-PVS
Max Operating Pressure[1]	80%	80%
Max Vacuum Rating	50% of Pstat	See Note[2]
Maximum Temperature	500°F (260°C)	500°F (260°C)

	Relieving Pressure	Tolerance
Burst Pressure Tolerance	0.50 to 0.99 psi	+/- 0.33 psi
	1.00 to 3.99 psi	+/- 0.50 psi
	4.00 to 8.00 psi	+/- 1.00 psi

Notes:
[1]Calculation based on low end of burst pressure tolerance
[2] Round: Full vacuum for sizes up to 24". 50% Vacuum for 30" and above Rectangular / Square: Contact ZOOK

CV-II-PS	Designed with integral light duty handling support to withstand back-pressure or vacuum up to 50% of the static burst pressure of the vent panel
CV-II-PVS	Designed with integral support to withstand vacuum or back-pressure up to 14.7 psi (full vacuum)

All ZOOK explosion vents are tested in accordance with the National Fire Protection Association standard NFPA 68 and meet the low mass per unit area requirement "The weight of the vent closure shall not exceed 2.5 lbs/sq. ft. of free vent area."

Square / Rectangular

Nominal Size		Relief Area*		Minimum Burst Pressure	
Inches	cm	sq. in.	sq. cm.	psig	bar
9 X 12	23 X 30	88	568	2.0	0.14
12 X 12	30 X 30	121	781	2.0	0.14
12 X 18	30 X 46	187	1206	1.5	0.10
12 X 24	30 X 61	253	1632	1.5	0.10
18 X 18	46 X 46	289	1865	1.0	0.07
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24 X 36	61 X 91	805	5194	0.5	0.03
24 X 44	61 X 112	989	6381	0.5	0.03
30 X 30	76 X 76	841	5426	0.5	0.03
30 X 36	76 X 91	1015	6548	0.5	0.03
30 X 40	76 X 102	1131	7297	0.5	0.03
30 X 44	76 X 112	1247	8045	0.5	0.03
36 X 36	91 X 91	1225	7903	0.5	0.03
36 X 44	91 X 112	1505	9710	0.5	0.03
44 X 44	112 X 112	1849	11929	0.5	0.03
44 X 69	112 X 175	2924	18864	0.5	0.03

Round

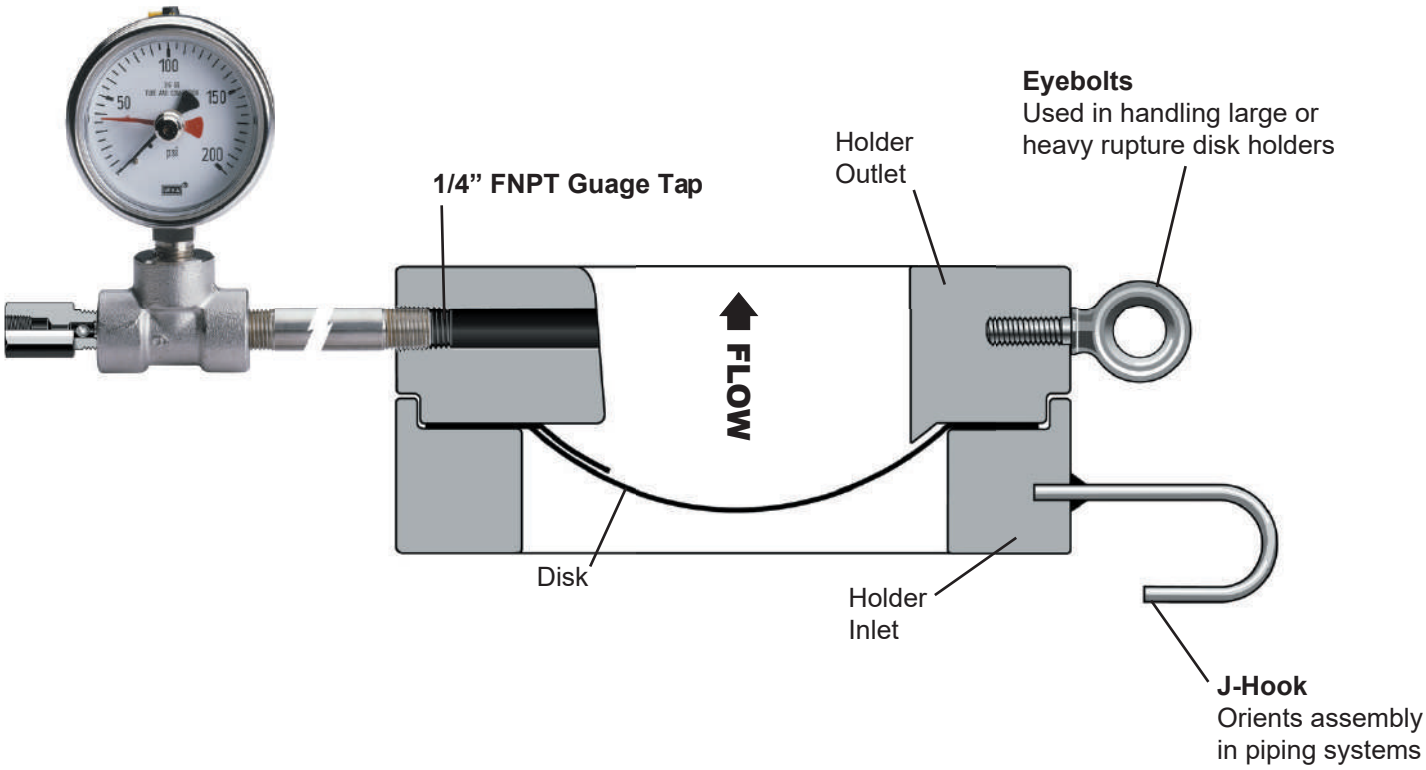
Nominal Size (Diameter)		Relief Area*		Minimum Burst Pressure	
Inches	cm	sq. in.	sq. cm.	psig	bar
8	20	38	248	3.0	0.21
10	25	64	410	2.5	0.17
12	30	95	613	2.0	0.14
14	36	133	856	1.5	0.10
16	41	177	1140	1.3	0.09
18	46	227	1464	1.0	0.07
20	51	284	1829	1.0	0.07
24	61	415	2680	1.0	0.07
30	76	661	4261	0.5	0.03
32	81	755	4869	0.5	0.03
36	91	962	6207	0.5	0.03
40	102	1195	7707	0.5	0.03
42	107	1320	8518	0.5	0.03
44	112	1452	9369	0.5	0.03

Notes:

For larger sizes or sizes not shown, contact ZOOK.

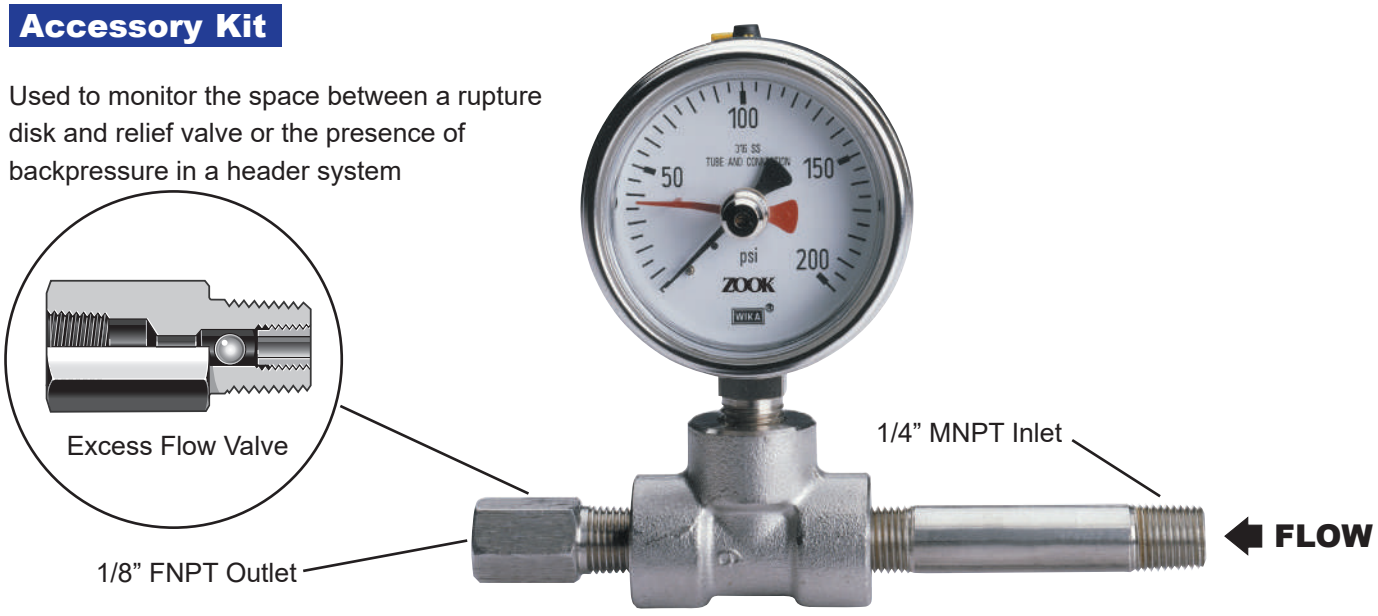
* Relief area is based on relieving area of CV-II-P type vent panel. Actual relief area will be reduced on other vent types or if support bars are used in inlet frame. Contact ZOOK for more information.

Accessories
Tel-Tale Indicator



Accessory Kit

Used to monitor the space between a rupture disk and relief valve or the presence of backpressure in a header system



Accessories
Pipe End Covers

Features

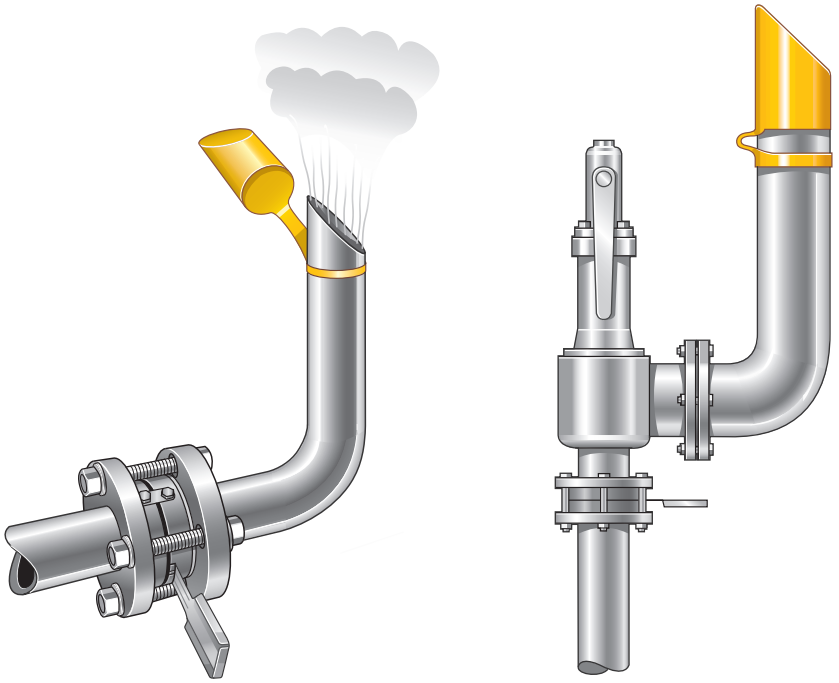
- Fits 1/2” thru 24” nominal pipe sizes (Consult ZOOK if using on TUBING)
- High visibility Chrome Yellow color
- Installs without tools
- Withstands severe weather conditions: rain, ice, snow and seals out insects, birds, nests, sand, dust and salt spray
- Eliminates equipment deterioration caused by external environment
- Reduces operating and repair costs – extending equipment life
- Visual indication of fugitive emissions
- Chemically resistant – will not shrink or discolor
- Non-toxic PVC construction blended with ultraviolet inhibitors
- Non-combustible
- Minimal interior pressure surge removes Pipe Guard from pipe
- Durable and reusable
- Five year unconditional guarantee against environmental degradation

Industries

- Petrochemical
- Pharmaceutical
- Transportation
- Off-shore platforms
- Oil and Gas exploration
- Food Processing
- Paper Mills

Applications

Protection of SRV, Rupture Disks, Manifold piping systems, Ductwork, Common header systems, Flame stacks, Storage tanks



Notes:
- PG Series Pipe Guard should not be used on applications where relieving pressures are less than 5 psi
- PG Series is not recommended for use on PVC, Plastic, or Vinyl piping
- PG Series cannot be used on vent piping that is installed to provide vacuum relief
- ZOOK PG Series Pipe Guards are manufactured in accordance with the Code of Federal Regulation 49 192.199 (requirements for design of pressure relief and limiting devices).

Industries We Serve
Aerospace

The aerospace industry has stringent design and operating regulations for processes and components. Many applications have unique operating parameters and undergo special simulation and testing procedures prior to approval for use in aerospace applications.

Fuel Storage and Transport

Storage tanks for jet fuel, as well as transportation containment tanks are equipped with pressure relief provided by ZOOK rupture disks to prevent dangerous conditions which can result from over-pressurization.

Compressed Gas

There are several gases including oxygen, liquid nitrogen, helium, hydrogen, nitrogen and CO2 which are stored, transported and utilized in compressed form. Rupture disks from ZOOK are designed to activate should compressed gas pressures exceed acceptable levels rated for containment tanks and compressed gas cylinders.

Research and Testing

ZOOK manufactures rupture disks which are used as over-pressure safety devices for simulation and testing of pressurized systems in the aerospace industry.

Pressure Activation Devices

Jet Propulsion Systems

Applications

There are many other pressure relief applications we provide to the Aerospace Industry. Please contact ZOOK for applications not listed.

Recommended Products	Fuel Storage & Transport	Compressed Gas	Research & Testing
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦
Custom Weded Assemblies (CWA)		✦	✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦		✦
Sanitary Disks RAUS | RLPS | SD			✦
Extrusion Burst Plugs		✦	✦
Screw Type Holders		✦	✦
Union Type Holders		✦	✦
Burst Sensors & Indicators	✦	✦	✦

Industries We Serve
Chemical Processing

Safety is of primary concern in Chemical Process Industries as many of the of the process liquids and gasses used can produce a variety of unsafe conditions. Over-pressurization of reactor and process containment vessels, as well as fluid transfer piping is a potential hazard that can result in catastrophic results to the process, the environment, and plant personnel.

Reactors & Process Vessels

A chemical reactor is an enclosed volume in which a chemical reaction takes place and is generally understood to be a process vessel used to carry out a chemical reaction. Whether a batch or continuous reactor vessel, chemical reactions often result in the release of gases or the generation of heat, which in either situation, increase internal vessel pressure. To insure the integrity of the vessel, connected piping, valves and process instrumentation, rupture disks provide safe release of excess pressure.

Chillers

A Chiller is a machine that removes heat from a liquid via a vapor-compression or absorption refrigeration cycle. This liquid can then be circulated through a heat exchanger to cool equipment, or another process stream. There are several methods used to compress the refrigerant gas during the vapor-compression cycle. Rupture disks provide protection against over pressurization.

Heat Exchangers

Heat exchangers are used to transfer heat between solid object and a fluid or from one fluid to another. The fluids, liquids or gas are typically separated by a solid wall to prevent mixing. Used in a broad range of industries including chemical, power generation, refining and waste treatment, the safety concerns regarding over-pressurization heat exchangers, steam jacketed vessels and piping, just to name a few, are addressed using rupture disks.

Bulk Storage Tanks

Storage tanks containing raw materials, as well as finished processed chemical products require protection against over-pressurization. Liquid, gas and dry chemicals can be flammable, corrosive, and extremely hazardous to people and the environment are stored and transported in compressed form in pressurized containers under high pressure. Dry products, such as fertilizers, processed grains, and thermoplastic beads stored in silos, can produce explosive dust, for which vent panels are used to help relieve excessive forces.

Safety Relief Valve Isolation

A safety relief valve automatically releases pressure from a boiler, pressure vessel or other pressure system when the pressure exceeds pre-set limits. A rupture disk is an excellent solution for isolating the pressure relief valve from a chemical process when the process fluid is highly corrosive to the safety relief valves internal components (trim). By installing a rupture disk fabricated from special alloy rather than the valve trim will dramatically reduce the cost of the safety relief valve. In addition, using a rupture disk in combination with a safety relief valve provides zero process leakage, the release of fugitive emissions and allows in-situ testing of the safety relief valve and extends the working life of the safety relief valve.

Applications

There are many other pressure relief applications we provide to the Chemical Processing Industry. Please contact ZOOK for applications not listed.

Recommended Products	Reactors & Process Vessels	Chillers	Heat Exchangers	Bulk Storage Tanks	Safety Relief Valve Isolations
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦	Consult ZOOK
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	✦	Consult ZOOK
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS				✦	
Sanitary Disks RAUS | RLPS | SD	✦				
Screw Type Holders	✦	✦	✦		✦
Union Type Holders	✦	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦
Explosion Vents				✦	

Industries We Serve
Power & Energy

Power plants generate energy through the production of steam to drive turbines and generators. The process of creating and transporting steam under pressure, as well as condensing and recirculating systems require precautions to safely relieve excess system pressure. Volatile and combustible fuel containment tanks, silos and bins benefit from pressure relief devices as well.

Bulk Storage

Storage tanks containing liquid petroleum, biofuels, natural gas & propane, as well as coal bins containing combustible dust, require safety pressure relief. Rupture disks and vent panels provide instantaneous relief of excess pressure within the storage tank and connected piping.

Boiler and Boiler Feed Piping

Most fossil and nuclear fuel power plants rely on the production of pressurized steam to drive turbines and generators to produce electricity. Rupture disks from ZOOK ensure that the systems maintain safe operating pressure levels in boilers and connected steam and condensate piping.

Cooling Towers & Chillers

Liquid fuel pumps, chemical feed pumps for conditioning fuel & boiler water, as well as pumps used for moving cooling water, rely on pressure relief devices to protect against over pressurization on the discharge side of the pump. Rupture disks by ZOOK provide relief from backpressure reduding the chances of permanent damage to the pump, valves and process instrumentation.

Safety Relief Valve Isolation

A safety relief valve automatically releases pressure from a boiler, pressure vessel or other pressure system when the pressure exceeds pre-set limits. A rupture disk is an excellent solution for isolating the pressure relief valve from power plants when the process fluid is highly corrosive to the safety relief valves internal components (trim). By installing a rupture disk fabricated from special alloy rather than the valve trim will dramatically reduce the cost of the safety relief valve. In addition, using a rupture disk in combination with a safety relief valve provides zero process leakage, the release of fugitive emissions and allows in-situ testing of the safety relief valve and extends the working life of the safety relief valve.limits.

Nuclear Plants

Applications

There are many other pressure relief applications we provide to the Power & Energy Industry. Please contact ZOOK for applications not listed.

Recommended Products	Bulk Storage	Boiler & Boiler Feed Piping	Cooling Towers & Chillers	Pump & Valve Protection	Safety Relief Valve Isolations
Reverse Acting Disks RA4 | RA6 | RA8 | RAX		Consult ZOOK	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦	Consult ZOOK
Custom Welded Assemblies (CWA)		✦	✦	✦	✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	Consult ZOOK	
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦				
Sanitary Disks RAUS | RLPS | SD				✦	✦
Extrusion Burst Plugs		✦	✦	✦	
Screw Type Holders	✦	✦	✦	✦	✦
Union Type Holders	✦	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦

Industries We Serve
Oil & Gas (Upstream)

The upstream sector of the oil and gas industry is the essential first step in the entire extraction of the refining process.

ZOOK recognizes that upstream applications have a significant degree of complexity. Our engineering experts have solved many customer applications by designing the right solution. In drilling applications, ZOOK offers rupture disk devices for both pressure activation and pressure relief including:

- Overpressure protection within the casing, drill string or downhole tool
- Pressure activation of equipment or tools
- Hydraulic fracking
- Over-pressure protection of liquid/gas seperators
- Perforation guns
- Testing of the tubing string
- Pressure vessels ie. towers, knock-out, drums, heat exchangers, separators, accumulators, flare stacks, sulfur recovery units, etc.
- Downhole applications with customized backpressure support
- Wellhead protection
- Cementing Pumps

Applications

There are many other pressure relief applications we provide to the Oil & Gas, Upstream Industry. Please contact ZOOK for applications not listed.

Recommended Products	Fracking	Wellhead Protection	Pipeline Pumps	Cementing	Pressure Activation Equipment
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦	✦
Custom Welded Assemblies (CWA)	✦	✦	✦	✦	✦
Screw Type Holders	✦	✦	✦	✦	✦
Union Type Holders	✦	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦

Industries We Serve
Oil & Gas (Midstream)

Transportation

When intermodal tanks are used ZOOK's ICP series rupture disks are the ideal solution. For this application, ZOOK's TD rupture disk is recommended to protect the tank trailer. Other transportation methods might include barge or rail.

Storage

Rupture disks are another common component found in midstream operations.

Compressor / Pump Stations

Rupture disks are required near the pump to prevent an over-pressure in the event of a blockage in the line. They can also be utilized to drastically reduce fugitive emissions from the compressor/pump.

Applications

There are many other pressure relief applications we provide to the Oil & Gas, Midstream Industry. Please contact ZOOK for applications not listed.

Recommended Products	Transportation	Storage	Compressor / Pump Stations
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦
Custom Welded Assemblies (CWA)	✦	✦	✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	
Transportation Disks ICP | RC | TCP | TD	✦		
Screw Type Holders	✦	✦	✦
Union Type Holders	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦

Industries We Serve
Oil & Gas (Downstream)

The final stage in the production process is downstream, where the oil and natural gas are processed and refined into usable products. ZOOK offers a complete solution for all downstream production processes. In refineries and petrochemical plants, a variety of pressure relief devices are required including:

- Towers
- Knock out drums
- Heat exchangers
- Separators
- Accumulators
- Flare stacks
- Sulphur recovery units
- Pressure relief valves
- Storage tanks/batteries

Pressure Relief Valve Isolation

The primary reasons for applying rupture disks downstream of pressure relief valves are:

- Prevent corrosion of relief valve
- Reduce cost of relief valve by negating costly special alloy trim/internals
- Prevent fouling or sticking of the relief valve
- Prevent variable superimposed backpressure from affecting relief valve
- Detect opening or leakage of relief valve
- Elimination SRV emissions -valve isolation

Applications

There are many other pressure relief applications we provide to the Oil & Gas, Downstream Industry. Please contact ZOOK for applications not listed.

Recommended Products	Heat Exchangers	Flare Stacks	Storage Tanks	Knock-Out Drums	Accumulators
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦	✦
Custom Welded Assemblies (CWA)	✦	✦	✦	✦	✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦	✦	✦
Screw Type Holders	✦	✦	✦	✦	✦
Union Type Holders	✦	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦

Industries We Serve
Oil & Gas (Service)

ZOOK works closely with service companies who are often the OEM's, the innovators that are researching and designing the newest technological advances in oil and natural gas exploration and production. As a service company for the oil and gas industry you require high quality, high performing pressure relief or pressure activation devices.

Rupture disks are required in many areas:

- Deep water oil exploration
- Building rigs
- Supplying the hardware for rig upgrades and maintenance
- Operations in the oilfield
- Saltwater disposal
- Transportation

Applications

There are many other pressure relief applications we provide to the Oil & Gas, Service Industry. Please contact ZOOK for applications not listed.

Recommended Products	Seismic Imaging	Deep Water Oil Exploration	Constructing Rigs	Transportation
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦
Custom Welded Assemblies (CWA)	✦	✦	✦	✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	✦
Transportation Disks ICP | RC | TCP | TD				✦
Screw Type Holders	✦	✦	✦	✦
Union Type Holders	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦

Industries We Serve
Life Sciences

In the pharmaceutical industry, there are many applications where rupture disks protect against over- pressure and vacuum conditions. ZOOK provides specialized rupture disk pressure relief solutions for pharmaceutical and biotech applications which are additionally designed to maintain sanitary and sterile process conditions.

Autoclave Pressure Relief

Autoclaves rely on pressurized heat or steam to sterilize components and instrumentation used in biotechnology research and development, as well as production of pharmaceutical products. Rupture disks from ZOOK are utilized to protect against over-pressure conditions while also maintaining an ultra-pure environment for autoclaves and other sterilization equipment.

Fermenters/Bioreactors

During the fermentation process utilized in the development and manufacture of pharmaceutical products, a considerable amount of heat is created. Cooling systems are in place to maintain safe operating temperatures and pressures within fermenters and bioreactors. Should cooling systems fail, excess heat generated can result in over-pressurization of the system. If this condition should occur, rupture disks from ZOOK provide pressure relief, thereby maintaining overall system integrity.

Process Vessels

Process vessels used in pharmaceutical manufacturing are subject to both over-pressurization, as well as conditions of extreme vacuum. In addition, pressure and vacuum relief devices must comply with sanitary and sterile standards to maintain product purity. ZOOK manufactures rupture disks which meet standards for sanitary and sterile applications.

Separation Technologies

Chromatography, distillation and other separation methods typically involve containment columns, vessels and piping under pressure. Rupture disks from ZOOK are utilized to protect against over-pressurization.

Compressed Gas

Compressed gas cylinders and containment vessels, as well as cooling systems which utilize liquid nitrogen and other refrigerants, require safety pressure relief provided by rupture disks.

Dry Bulk Storage

Bulk powder storage vessels and pneumatic conveyors which handle pharmaceutical powders can produce combustible dust and benefit from over-pressure protection provided by ZOOK rupture disks and vent panels.

Safety Relief Valve Isolation

A safety relief valve automatically releases pressure from a boiler, pressure vessel or other pressure system when the pressure exceeds pre-set limits. A rupture disk is an excellent solution for isolating the pressure relief valve from a chemical process when the process fluid is highly corrosive to the safety relief valves internal components (trim). By installing a rupture disk fabricated from special alloy rather than the valve trim will dramatically reduce the cost of the safety relief valve. In addition, using a rupture disk in combination with a safety relief valve provides zero process leakage, the release of fugitive emissions and allows in-situ testing of the safety relief valve and extends the working life of the safety relief valve.

Applications

There are many other pressure relief applications we provide to the Life Sciences Industry. Please contact ZOOK for applications not listed.

Recommended Products	Autoclave	Fermenters/ Bioreactors	Process Vessels	Separation	Dry Bulk Storage
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦	✦
Custom Welded Assemblies (CWA)	✦	✦	✦	✦	
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦	✦	✦
Sanitary Disks RAUS | RLPS | SD | ZANITARY	✦	✦	✦	✦	✦
Screw Type Holders	✦	✦	✦	✦	
Union Type Holders	✦	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦
Explosion Vents				✦	✦

Industries We Serve
Medical & Research

From over-pressure protection for compressed specialty gases to laboratory and analytical instrumentation, ZOOK manufactures rupture disks ideal for medical and research applications.

Compressed and Cryogenic Gas Containment

There are many gases used for medical and research applications including oxygen for resuscitation and inhalation therapy, CO2 for respiratory stimulation during and after anesthesia, Nitrogen (stored as a cryogenic liquid) for cryosurgery and tissue storage, and Nitrous Oxide for both an anesthetic and analgesic. In addition, there are several specialty gases commonly used for laboratory research including, helium, nitrogen, hydrogen, oxygen, argon, and gaseous fuels just to name a few. All of these, transported and stored using cylinders and pressurized bulk containment, benefit from the protection provided by ZOOK rupture disks in the event of an over-pressure condition.

Autoclave Pressure Relief

Autoclaves used to sterilize medical instruments, as well as labware used for research, often rely on pressurized heat or steam. Rupture disks from ZOOK are utilized to protect against over-pressure conditions while also maintaining an ultra-pure environment for autoclaves and other sterilization equipment.

Process Vessels

Process vessels used in pharmaceutical manufacturing are subject to both over-pressurization, as well as conditions of extreme vacuum. In addition, pressure and vacuum relief devices must comply with sanitary and sterile standards to maintain product purity. ZOOK manufactures rupture disks which meet standards for sanitary and sterile applications.

Laboratory Instrumentation

Chromatography, distillation and other separation methods typically involve containment columns, vessels and piping under pressure. Rupture disks from ZOOK are utilized to protect against over-pressurization.

Safety Relief Valve Isolation

A safety relief valve automatically releases pressure from a boiler, pressure vessel or other pressure system when the pressure exceeds pre-set limits. A rupture disk is an excellent solution for isolating the pressure relief valve from a chemical process when the process fluid is highly corrosive to the safety relief valves internal components (trim). By installing a rupture disk fabricated from special alloy rather than the valve trim will dramatically reduce the cost of the safety relief valve. In addition, using a rupture disk in combination with a safety relief valve provides zero process leakage, the release of fugitive emissions and allows in-situ testing of the safety relief valve and extends the working life of the safety relief valve.

Applications

There are many other pressure relief applications we provide to the Medical/Research Industry. Please contact ZOOK for applications not listed.

Recommended Products	Cryogenic Gas	Autoclave	Lab Instrumentation	Safety Relief Valve Isolations
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦
Custom Welded Assemblies (CWA)	✦	✦	✦	✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS			✦	
Sanitary Disks RAUS | RLPS | SD | ZANITARY		✦	✦	✦
Screw Type Holders	✦	✦	✦	✦
Union Type Holders	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦

Industries We Serve
Fermentation/Wineries/Distilled Spirits

There are many applications and processes in the alcohol producing beverage industry which benefit from pressure relief provided using rupture disks. From bulk storage to sanitary process, distillation and fermentation applications, rupture disks from ZOOK provide pressure relief for bulk storage, process vessels and piping.

Dry Bulk Storage

Pressure relief for bulk powder storage vessels and pneumatic conveyors which handle grains, malts and other dry ingredients that can produce methane, as well as combustable dust, benefit from over-pressure protection provided ZOOK rupture disks and vent panels.

Chillers

A Chiller is a machine that removes heat from a liquid via a vapor-compression or absorption refrigeration cycle. This liquid can then be circulated through a heat exchanger to cool equipment, or another process stream. There are several methods used to compress the refrigerant gas during the vapor-compression cycle. Rupture disks provide protection against over pressurization.

Process Vessels

ZOOK provides rupture disks designed to meet strict sanitary standards, provide pressure relief for fermentation tanks, brewing kettles, distillation systems, and piping.

Distillation

Chromatography, distillation and other separation methods typically involve containment columns, vessels and piping under pressure. Rupture disks from ZOOK are utilized to protect against over-pressurization.

Jacketed Heat Exchangers

In the brewing industry, heating and control of process vessel temperature is accomplished using steam jacketed kettles. The closed pressurized system consisting of a steam generator, piping and heat exchange jacket incorporate rupture disks to provide pressure relief safety.

Boilers

Boilers and piping used to generate hot water and steam to heat process vessels, as well as in HVAC systems, use ZOOK rupture disks to provide relief for overpressure conditions.

Safety Relief Valve Isolation

A safety relief valve automatically releases a substance from a boiler, pressure vessel, or other system, when the pressure or temperature exceeds preset limits. Rupture disks from ZOOK are an excellent solution for isolating the pressure relief valve from a sanitary food or beverage process. In addition, using a rupture disk in combination with a relief valve provides zero process leakage through the safety valve and extends the life of the safety valve, as well.

Applications

There are many other pressure relief applications we provide to the Fermentation/Wineries/Distilled Spirits Industry. Please contact ZOOK for applications not listed.

Recommended Products	Dry Bulk Storage	Process Vessels	Distillation	Heat Exchangers	Boilers
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦	✦
Custom Welded Assemblies (CWA)	✦	✦	✦	✦	
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦	✦	✦
Sanitary Disks RAUS | RLPS | SD | ZANITARY		✦	✦	✦	
Screw Type Holders	✦	✦	✦	✦	✦
Union Type Holders	✦	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦
Explosion Vents	✦	✦			

Industries We Serve
Refineries

Refineries can be thought of as large chemical process plants where crude oil is transformed and refined into more useful products such as gasoline, diesel fuel, kerosene, jet fuel and liquified petroleum gas. The refinery contains an extensive network of fluid processes, vessels and piping requiring relief for overpressure conditions.

Separators

An oil/gas separator is a pressure vessel used for separating a well stream into gaseous and liquid components. They are installed either in an onshore processing station or on an offshore platform. Installation of a rupture disk will, often in tandem with a pressure relief valve, provide over-pressure protection.

Distillation Towers

Distillation towers are industrial fractioning columns used in oil and gas refining as a petroleum separation technology. Rupture disks are added to the distillation column in the event of an over-pressure situation due to an uncontrolled reaction.

Coking Drums

A coker unit is an oil refinery processing unit that converts the residual oil from the vacuum distillation column into low molecular weight hydrocarbon gases, naphtha, light and heavy gas oils, and petroleum coke. At extremely high thermal cracking temperature of about 480 °C, rupture disks from ZOOK provide over-pressure protection.

Pump & Valve Protection

Throughout the refining process, petroleum and biproducts are moved throughout the refinery using a variety of pumping technologies. If there is blockage on the discharge side of the pump, typically due to a failed or closed valve, a rupture disk will release the excess backpressure and prevent permanent damage to the pump, as well as other components of the fluidic system.

Safety Relief Valve Isolation

A safety relief valve automatically releases pressure from a boiler, pressure vessel or other pressure system when the pressure exceeds pre-set limits. A rupture disk is an excellent solution for isolating the pressure relief valve from a chemical process when the process fluid is highly corrosive to the safety relief valves internal components (trim). By installing a rupture disk fabricated from special alloy rather than the valve trim will dramatically reduce the cost of the safety relief valve. In addition, using a rupture disk in combination with a safety relief valve provides zero process leakage, the release of fugitive emissions and allows in-situ testing of the safety relief valve and extends the working life of the safety relief valve.

Applications

There are many other pressure relief applications we provide to the Refinery Industry. Please contact ZOOK for applications not listed.

Recommended Products	Separators	Distillation Towers	Coking Drums	Pump & Valve Protection	Safety Relief Valve Isolations
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦	✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦	✦	
Sanitary Disks RAUS | RLPS | SD	✦			✦	✦
Screw Type Holders	✦	✦	✦	✦	✦
Union Type Holders	✦	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦

Industries We Serve
Transportation & Shipping

ZOOK rupture disks are the overpressure solution for rail, intermodal tank containers, over-the-road tank trailer, ocean and inland shipping applications. ZOOK rupture disks are designed to meet the stringent requirements for transportation of hazardous or dangerous materials.

Compressed Gas Bulk Containers

Many products which exist as a gas under atmospheric pressure are transported and delivered in compressed liquefied form. Although some of these, are considered hazardous including petroleum gas (LPG), propane, butane, while others such as carbon dioxide and liquid nitrogen are not. However, both hazardous and non-hazardous liquids and gasses, transported under pressure, are ideal applications for ZOOK rupture disk for protection against over-pressure conditions.

Hazardous Materials

Hazardous materials are products that pose a risk to health, safety, and property during transportation. Hazardous materials include flammable and combustible liquids, corrosive chemicals, materials harmful to the environment, municipal, industrial and biohazard waste.

Compressed Gas Cylinders

Compressed gas transported in cylinders is generally transported in three forms including, compressed gas, liquified compressed gas, and cryogenic compressed gas. Often referred to as bottled gas, typical products transported by this method serve the medical, pharmaceutical, food, semiconductor and numerous industrial applications. Because the contents are under pressure and are sometimes hazardous materials, handling bottled gases are regulated. Rupture disks from ZOOK installed in the base of the valve between the cylinder and the valve seat provide safe release of pressure should the internal pressure exceed the mechanical limitations of the cylinder.

Marine Cargo Containers

ZOOK rupture disks provide over-pressure protection for bulk liquid containers designed for oceangoing vessels.

Ocean Tanker Hull Protection

Ocean vessels and tankers which have integral containment compartments for transport of petroleum and other liquid products in bulk rely on ZOOK rupture disks to maintain hull integrity should an overpressure condition occur.

Applications

There are many other pressure relief applications we provide to the Transportation/Shipping Industry. Please contact ZOOK for applications not listed.

Recommended Products	Autoclave	Fermenters/ Bioreactors	Process Vessels	Separation	Dry Bulk Storage
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦	✦
Custom Welded Assemblies (CWA)	✦	✦	✦	✦	
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦	✦	✦
Sanitary Disks RAUS | RLPS | SD	✦	✦	✦	✦	✦
Screw Type Holders	✦	✦	✦	✦	
Union Type Holders	✦	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦
Explosion Vents				✦	✦

Industries We Serve
Food & Beverage

There are many applications and processes in the Food and Beverage industry which benefit from pressure relief provided using rupture disks. From dry bulk storage to sanitary liquid process applications, rupture disks from ZOOK provide instantaneous pressure relief for bulk storage, process vessels and piping used for food and beverage manufacturing.

Dry Bulk Storage

Pressure relief for bulk powder storage vessels and pneumatic conveyors which handle grains and other dry food products that can produce methane or combustible dust.

Process Vessels

For cookers and kettles, as well as piping which is in contact with food products, ZOOK has engineered rupture disks designed to meet strict sanitary standards.

Steam Generators and Vessel Jackets

In the food and beverage industry, heating and control of process vessel temperature is often accomplished using steam jacketed kettles. The closed pressurized system consisting of a steam generator, piping and jacket surrounding the vessel, benefit from incorporating rupture disks which provide pressure relief safety.

Boilers

Boilers and piping used to generate hot water and steam to heat process vessels, as well as in facility HVAC systems, use rupture disks to provide relief for overpressure conditions.

Distilling

Distillation systems, which generate both heat and pressure in the production of alcoholic beverages, utilize rupture disks as over-pressure protection devices.

Compressed Gas

Compressed gas cylinders and vessels which contain liquid nitrogen and CO2 gas typically used for process cooling, as well as carbonation of beverages, require safety pressure relief provided by rupture disks.

Applications

There are many other pressure relief applications we provide to the Food & Beverage Industry. Please contact ZOOK for applications not listed.

Recommended Products	Dry Bulk Storage	Process Vessels	Steam Generators & Vessel Jackets	Boilers	Distilling
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦	✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦		✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦		✦
Sanitary Disks RAUS | RLPS | SD | ZANITARY		✦			✦
Union Type Holders	✦	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦
Explosion Vents	✦				

Industries We Serve
Extrusion

Extrusion Barrel

The pressure inside the extruder barrel during the extrusion process is high, typically ranging between 1,000 and 15,000 psi. Excessive build-up of pressure could rupture the barrel and lead to major machine malfunction, costly downtime and operator safety issues. To protect the extruder barrel from over-pressurization, rupture disks (extrusion burst plugs) from ZOOK can be installed at (or near) the die end of the barrel.burst plugs) from ZOOK can be installed at (or near) the die end of the barrel.

Bulk Storage

Plastic pellets are the raw material used in the extrusion and thermoplastic blow molding processes. Typically stored in silos, the combination of dust vapors and static build up from pneumatic pellet transfer can create a hazardous condition. Rupture disks and vent panels from ZOOK provide relief from over-pressurization of the silo should ignition occur.

Applications

There are many other pressure relief applications we provide to the Extrusion Industry. Please contact ZOOK for applications not listed.

Recommended Products	Extrusion Barrel	Bulk Storage
Reverse Acting Disks RA4 | RA6 | RA8 | RAX		✦
Forward Acting Disks ARD | D | FAX | FDZ | PB		✦
Custom Welded Assemblies (CWA)	✦	
Graphite Disks Mono | Duplex | FS Inverted		✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS		✦
Extrusion Burst Plugs	✦	
Burst Sensors & Indicators	✦	
Explosion Vents		✦

ZOOK has a comprehensive standardized product line of rupture disks for every industry that requires overpressure protection of containment vessels, process piping, and equipment used in manufacturing. Specially designed pressure activation devices (PAD's) and developed by ZOOK and their unique research and development laboratory.

However, ZOOK engineers have the experience and technical expertise to design and custom manufacture rupture disks for new and application specific applications to meet unique dimensional requirements, material compatibilities and operating parameters for OEM applications.

Applications

There are many other pressure relief applications we provide to the OEM Market. Please contact ZOOK for applications not listed.

Recommended Products	Process Piping	Over Pressure of Equipment	Containment Vessels
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦
Custom Welded Assemblies (CWA)	✦	✦	✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦
Sanitary Disks RAUS | RLPS | SD	✦	✦	✦
Screw Type Holders	✦	✦	✦
Union Type Holders	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦
Explosion Vents	✦		

Industries We Serve
Mining

ZOOK's worldwide team of pressure relief experts recognize the challenges in providing safe and reliable rupture disks for the mining industry, while also recognizing the increasing need to be sensitive to the environment. From dry bulk product applications including coal and ore dust storage to aqueous ore extraction processes (hydrometallurgy) and slurry streams, there are a variety of mining processes that benefit from over-pressurization protection provided by rupture disks from ZOOK.

Slurry Applications

Slurry applications present the pressure relief industry with unique challenges. These include slurry fluid streams with high solid levels and attendant erosion, solidification in dead-flow areas, esoteric and corrosive chemical combinations, as well as high pressures and demanding cycling conditions. Any release of such material is subject to environmental scrutiny and rupture disks from ZOOK prevent possible ecological impact resulting from over-pressurization of slurry stream piping and containment.

Blasting Operations

ZOOK leads in standardizing on fine grain graphite as the base disk material, superior in consistency to standard materials. Installation safety, reliability and performance can be further enhanced with ZOOK's armor rings which eliminate pipeline stresses from affecting the disk.

Leaching

Leaching involves the use of aqueous solutions to extract metal ore from metal bearing materials. There are several leaching methods used including In-situ, Heap, Vat, Tank & Autoclave. All these processes deliver aqueous solutions driven by pumps. At various stages of the leaching process, over-pressure protection to maintain integrity of the system, as well as protect pumps, valves and process monitoring equipment is essential. In addition, autoclave reactors operate at higher temperature and use gaseous reagents. ZOOK rupture disks provide vital pressure-relief.

Extraction

The extraction process relies on combinations of solvents, acids and diluting agents to further extract and purify minerals. Driven by pumps and controlled by valves, these fluid systems benefit from possible over-pressure conditions using rupture disks from ZOOK.

Bulk Storage

Stored in silos, bins and hoppers, dust generated from coal and other dry minerals has the potential to ignite. Rupture disks and vent panels from ZOOK provide over-pressure protection for silos and conveying systems.

Wastewater Treatment

There are several processes in the mining industry which produce water mixed with chemicals and fine particulates that must be treated before being released back into the environment. For metal mines, this can include unwanted metals such as zinc and other materials such as arsenic. Extraction of high value metals such as gold and silver, as well as coal washing may generate slimes containing very fine particles in which physical removal of contaminants becomes particularly difficult. These industrial wastewater treatment systems utilize storage tanks, pumps, valves, and piping which all benefit from the over-pressure protection provided using ZOOK rupture disks.

Applications

There are many other pressure relief applications we provide to the Mining Industry. Please contact ZOOK for applications not listed.

Recommended Products	Slurry Applications	Blasting Operations	Leaching	Extraction	Wastewater Treatment
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦	✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦	✦	✦
Transportation Disks ICP | RC | TCP | TD	✦	✦	✦	✦	
Sanitary Disks RAUS | RLPS | SD	✦	✦	✦	✦	✦
Union Type Holders	✦	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦
Explosion Vents	✦	✦	✦	✦	

Industries We Serve
Education, Government & Hospital Facilities

HVAC

Boilers which produce steam for heating and hot water for personnel use, as well as steam and hot water piping systems utilize ZOOK rupture disks to protect over-pressure conditions. Cooling Systems, which operate under pressure, benefit from the protection against over-pressure conditions provided by ZOOK rupture disks.

Power Plants

Larger Government buildings, College Universities, and Hospitals often have their own power plants and cogeneration facilities to provide heating and cooling, as well as electric power services. Like their larger municipal counterparts, bulk fuel storage tanks, boilers, steam piping, and cooling towers use Rupture disks from ZOOK to ensure systems maintain safe operating pressure levels.

Wastewater Treatment

Similar to large municipal wastewater treatment facilities, many government, colleges, and hospitals have small wastewater treatment facilities to decrease the burden of treatment by municipal facilities. Most of the processes in these facilities are driven by pumps, and protection from excessive backpressure is provided by ZOOK rupture disks.

Compressed and Cryogenic Gas Containment

Many gases are used in the hospital environment including oxygen for resuscitation and inhalation therapy, CO2 for respiratory stimulation during and after anesthesia, Nitrogen (stored as a cryogenic liquid) for cryosurgery and tissue storage, and Nitrous Oxide for both an anesthetic and analgesic. All of these, transported and stored using cylinders and pressurized bulk containment, benefit from the protection provided by ZOOK rupture disks in the event of an over-pressure condition.

Safety Relief Valve Isolation

A safety relief valve automatically releases pressure from a boiler, pressure vessel, or other system, when the pressure or temperature exceeds preset limits. A rupture disk is an excellent solution for isolating the pressure relief valve from a chemical process when the process fluid is highly corrosive to the relief valve's internal components. In addition, using a rupture disk in combination with a relief valve provides zero process leakage through the safety valve and extends the life of the safety valve, as well.

Applications

There are many other pressure relief applications we provide to the Education, Government & Hospital Industry. Please contact ZOOK for applications not listed.

Recommended Products	HVAC	Power Plants	Wastewater Treatment	Compressed & Cryogenic Gas Containment
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦
Custom Welded Assemblies (CWA)	✦	✦		✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦	
Transportation Disks ICP | RC | TCP | TD				✦
Screw Type Holders	✦	✦	✦	✦
Union Type Holders	✦	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦
Explosion Vents		✦	✦	

Industries We Serve
Pulp & Paper

From the processing of wood into wood pulp, which consists mainly of cellulose fibers the main component of paper, to various batch finishing and recovery processes, heated pressurized vessels require over-pressure protection provided by ZOOK rupture disks.

Bulk Storage

Silos containing wood chips and pulp raw material generate combustible dust. Rupture disks and vent panels provide instantaneous relief of excess pressure within the storage tank.

Conveying Systems

Moving wood chips and pulp using mechanical and pneumatic conveying systems generates combustible dust as well as static which can become a source for ignition. Rupture disks and vent panels from ZOOK aid in providing instantaneous pressure relieve in the event of ignition of dust in conveying systems.

Digesters

The method for producing paper products begins with wood chips which go through a series of batch preparation and processing stages including being cooked in pressurized vessels called digesters. The heat generated during the cooking process generates pressure within the digester. In the event of an over-pressure condition, ZOOK rupture disks are designed to activate providing relief of excess pressure before damage can occur to vessels and process fluid transfer systems.

Bleaching & Conditioning Tanks

The production of white paper, the wood pulp is bleached to remove any color. Specialty papers used which contain characteristics ideal for printing, packaging, special coatings, pigments or enhanced tensile strength, will go through a variety of additional chemical and heated treatment processes. Heat generated, as well as volatile fumes have the potential of creating pressures which exceed designed operating levels. Rupture disks from ZOOK safely relieve excess process pressure in bleaching and conditioning tanks to maintain system integrity.

Recovery Processing

Black liquor and other byproducts are often reprocessed in recovery boilers to recover the inorganic chemicals for reuse in the pulping process. Some of these byproducts are volatile in nature and pressure relief using ZOOK rupture disks provides safety for process, facility and facility personnel.

Boiler and Boiler Feed Piping

Digesters and other vessels are heated using steam and hot water. In the event of an over- pressure condition, ZOOK rupture disks are designed to activate providing relief of excess pressure before damage can occur to boilers and connected piping.

Safety Relief Valve Isolation

A safety relief valve automatically releases pressure from a boiler, pressure vessel or other pressure system when the pressure exceeds pre-set limits. A rupture disk is an excellent solution for isolating the pressure relief valve from a chemical process when the process fluid is highly corrosive to the safety relief valves internal components (trim). By installing a rupture disk fabricated from special alloy rather than the valve trim will dramatically reduce the cost of the safety relief valve. In addition, using a rupture disk in combination with a safety relief valve provides zero process leakage, the release of fugitive emissions and allows in-situ testing of the safety relief valve and extends the working life of the safety relief valve.

Applications

There are many other pressure relief applications we provide to the Pulp & Paper Industry. Please contact ZOOK for applications not listed.

Recommended Products	Bulk Storage	Conveying Systems	Digesters	Bleaching & Conditioning Tanks	Recovery Processing
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦	✦	✦
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦	✦	✦
Sanitary Disks RAUS | RLPS | SD			✦	✦	✦
Screw Type Holders	✦		✦	✦	✦
Union Type Holders	✦		✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦
Explosion Vents	✦	✦			

Industries We Serve
Textile

Textile manufacturing begins with the conversion of fiber into yarn, then yarn into fabric. These are then dyed or printed, fabricated into clothing. Cotton, wool, silk, and a variety of bast fibers (hemp, f lax, and jute) undergo several mechanical operations in preparation for several available finishing processes which are typically chemical in nature. In addition to chemical finishing, synthetic fibers are produced using an extrusion process. Extrusion, as well as all chemical finishing processes utilize chemical treatment tanks and piping which benefit from the over-pressure protection provided by ZOOK rupture disks.

Bulk Storage Tanks

A chemical reactor is an enclosed volume in which a chemical reaction takes place and is generally understood to be a process vessel used to carry out a chemical reaction. Whether a batch or continuous reactor vessel, chemical reactions often result in the release of gases or the generation of heat, which in either situation, increase internal vessel pressure. To insure the integrity of the vessel, connected piping, valves and process instrumentation, rupture disks provide safe release of excess pressure.

Scouring

Scouring, is a chemical washing process carried out on cotton fabric to remove natural wax and takes place in closed heated iron boilers, called kiers, which washes the fibers with sodium hydroxide under pressure.

Bleaching

Bleaching improves whiteness by removing natural coloration and remaining trace impurities by adding an oxidizing agent, typically hypochlorite or peroxide.

Synthetic Fiber Extrusion

Most synthetic and cellulosic manufactured fibers (acrylic, nylon, rayon, polyester, spandex) are created by “extrusion” — forcing a thick, viscous liquid through the tiny holes of a device called a spinneret to form continuous filaments of semi-solid polymer. The pressure required for extrusion is high and rupture disks from ZOOK protect the extrusion equipment against over-pressurization.

Boiler and Boiler Feed Piping

Textile processing and conditioning vessels are heated using steam and hot water. In the event of an over-pressure condition, ZOOK rupture disks are designed to activate providing relief of excess pressure before damage can occur to boilers and connected piping.

Safety Relief Valve Isolation

A safety relief valve automatically releases pressure from a boiler, pressure vessel, or other system, when the pressure or temperature exceeds preset limits. A rupture disk is an excellent solution for isolating the pressure relief valve from a chemical process when the process fluid is highly corrosive to the relief valve’s internal components. In addition, using a rupture disk in combination with a relief valve, extends the life of the safety valve.

Applications

There are many other pressure relief applications we provide to the Textile Industry. Please contact ZOOK for applications not listed.

Recommended Products	Bulk Storage Tanks	Scouring	Bleaching	Synthetic Fiber Extrusion	Boiler & Boiler Feed Piping
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦		✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦		✦
Custom Welded Assemblies (CWA)				✦	
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦		✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦		✦
Extrusion Burst Plugs				✦	
Screw Type Holders	✦	✦			✦
Union Type Holders	✦	✦			✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦
Explosion Vents	✦				

Industries We Serve
Battery

Advanced lithium ion batteries are manufactured for the automotive, marine, RV, and many more industries. ZOOK rupture disks provide over-pressure relief for advanced lithium batteries in the event of an abnormal rise in the internal pressure in the battery.

Applications

There are many other pressure relief applications we provide to the Battery Industry. Please contact ZOOK for applications not listed.

Recommended Products	Battery
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦
Custom Welded Assemblies (CWA)	✦
Graphite Disks Mono | Duplex | FS Inverted	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦
Sanitary Disks RAUS | RLPS | SD	✦
Extrusion Burst Plugs	✦
Transportation Disks ICP | RC | TCP | TD	✦
Screw Type Holders	✦
Union Type Holders	✦
Burst Sensors & Indicators	✦
Explosion Vents	✦

Boiler and Boiler Feed Piping

Boilers and piping used to generate and transfer steam and hot water for heating operate under pressure. Rupture disks from ZOOK ensure that the systems maintain safe operating pressure levels in boilers and connected steam and condensate piping.

Air Conditioners and Refrigeration Systems

Air conditioning and refrigeration systems utilize refrigerants under high pressure. ZOOK rupture disks provide over-pressure relief if the system exceeds acceptable operating pressures. ZOOK rupture disks in series with safety relief valves help provide zero process leakage to reduce fugitive emissions.

Cooling Towers & Chillers

Cooling towers are large scale heat exchangers used to cool and condense steam after it passes through a turbine as it returns back to the boiler. Installation of ZOOK rupture disks ensure that the system does not exceed preset pressure limits.

Applications

There are many other pressure relief applications we provide to the HVAC Industry. Please contact ZOOK for applications not listed.

Recommended Products	Boiler & Boiler Feed Piping	Air Conditioners & Refrigeration Systems	Cooling Towers & Chillers
Reverse Acting Disks RA4 | RA6 | RA8 | RAX	✦	✦	✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦
Custom Welded Assemblies (CWA)		✦	
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS			✦
Extrusion Burst Plugs		✦	
Screw Type Holders	✦	✦	✦
Union Type Holders	✦	✦	✦
Burst Sensors & Indicators	✦	✦	✦

Industries We Serve
Water, Reverse Osmosis & Wastewater Treatment

Treatment for drinking water involves the removal of contaminants from raw water to produce water that is pure enough for human consumption. The processes involved in removing the contaminants include physical processes such as settling and filtration, as well as chemical processes which can include disinfection, pH conditioning, and coagulation of dissolved solids. Wastewater treatment plants process wastewater both physically through filtration and chemically as well, before releasing treated water to the environment. ZOOK manufactures rupture disks for water and wastewater treatment systems and are ideal for use with potable water.

Bulk Storage Tanks

A variety of chemicals are used to treat and condition drinking water including concentrated sodium hypochlorite (bleach) used as a disinfectant and concentrated sodium hydroxide (caustic soda) to balance pH. Both chemicals are very harmful in their concentrated form to facility personnel and the environment and are stored in tanks which require safety precautions for over-pressure conditions.

Filtration Systems

Filtration systems are designed to remove suspended particles, certain types of bacteria and unwanted dissolved substances. Membrane and ultra-membrane filters remove particles and some dissolved solids. Ion-exchange filters use resins to filter out unwanted ions, while other systems remove dissolved solids through a precipitation process. In each of these filtration processes, back pressure is created as large capacity pumps convey water through filters. For pump protection, as well as protection of the integrity of the overall system, rupture disks from ZOOK can provide relief from an over-pressure condition.

Desalination

Desalination is a separation process used to reduce the dissolved salt content of saline water, typically from seawater or groundwater, to a level usable for potable drinking water. One process utilized to accomplish this is reverse osmosis (RO). In the RO process, water from a pressurized saline solution is separated from the dissolved salts by flowing through a water- permeable membrane. Rupture disks from ZOOK, suitable for contact with potable drinking water, are idea for protection against an over-pressure condition.

Wastewater Treatment

Similar to the water treatment industry, there are several physical filtration and chemical treatment processes that wastewater undergoes before being acceptable for released into the environment. Most of these processes are pump driven and protection from excessive backpressure is provided using rupture disks from ZOOK, preventing potential environmental impact from untreated wastewater.

Safety Relief Valve Isolation

A safety relief valve automatically releases pressure from a boiler, pressure vessel or other pressure system when the pressure exceeds pre-set limits. A rupture disk is an excellent solution for isolating the pressure relief valve from a water process when the process fluid is highly corrosive to the safety relief valves internal components (trim). By installing a rupture disk fabricated from special alloy rather than the valve trim will dramatically reduce the cost of the safety relief valve. In addition, using a rupture disk in combination with a safety relief valve provides zero process leakage, the release of fugitive emissions and allows in-situ testing of the safety relief valve and extends the working life of the safety relief valve."

Applications

There are many other pressure relief applications we provide to the Textile Industry. Please contact ZOOK for applications not listed.

Recommended Products	Bulk Storage Tanks	Scouring	Bleaching	Synthetic Fiber Extrusion	Boiler & Boiler Feed Piping
Reverse Acting Disks RA4 | RA6 | RA8 | RAX		✦	✦		✦
Forward Acting Disks ARD | D | FAX | FDZ | PB	✦	✦	✦		✦
Custom Welded Assemblies (CWA)				✦	
Graphite Disks Mono | Duplex | FS Inverted	✦	✦	✦		✦
Ultra-Low & Bi-Directional Disks Z-VAC/Z-POS	✦	✦	✦		✦
Extrusion Burst Plugs				✦	
Screw Type Holders	✦	✦			✦
Union Type Holders	✦	✦			✦
Burst Sensors & Indicators	✦	✦	✦	✦	✦
Explosion Vents	✦				