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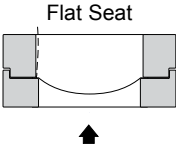

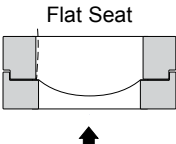

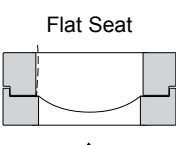

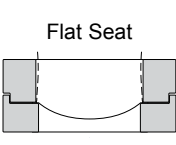

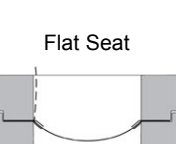

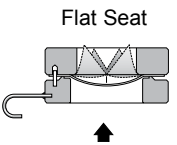

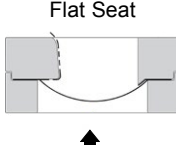

# Rupture Disk Selection Guide

# ZOOK®




**Safety through knowledge and performance.**

## 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
<b>RA4</b>		in. 1 – 12 mm 25 – 300	psig 2 – 40 barg 0.14 – 2.76	95%	NO	ASME UD PED TÜV		Liquid & Gas
<i>Solid metal, non-fragmenting design disk</i>								
<b>RA6</b>		in. 1 – 12 mm 25 – 300	psig 12 – 200 barg 0.83 – 13.79	95%	NO	ASME UD PED TÜV		Liquid & Gas
<i>Solid metal, non-fragmenting design disk</i>								
<b>RA8</b>		in. 1 – 12 mm 25 – 300	psig 26 – 1,000 barg 1.79 – 68.97	95%	NO	ASME UD PED TÜV		Liquid & Gas
<i>Solid metal, non-fragmenting design disk</i>								
<b>RAX</b>		in. 1 – 12 mm 25 – 300	psig 27 – 1,480 barg 1.86 – 102	95%	NO	ASME UD PED TÜV		Gas
<i>Solid scored metal, non-fragmenting design disk</i>								
<b>RLP</b>		in. 1 – 12 mm 25 – 300	psig 2 – 40 barg 0.14 – 2.76	95%	NO	ASME UD PED TÜV		Liquid & Gas
<i>Solid metal, non-fragmenting design disk</i>								
<b>SRA</b>		in. 1 – 12 mm 25 – 300	psig 20 – 1,480 barg 1.38 – 102	95%	NO	ASME UD PED TÜV		Gas
<i>Solid scored metal, non-fragmenting design disk</i>								
<b>URA</b>		in. 1 – 30 mm 25 – 750	psig 12 – 1,000 barg 0.83 – 68.9	95%	NO	ASME UD PED TÜV		Liquid & Gas
<i>Solid metal, non-fragmenting design disk</i>								

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

## Forward Acting (Tension-Loaded) Metal Rupture Disks

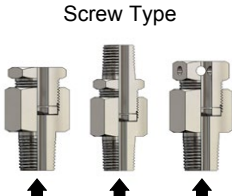

Disk Series	Seat Configuration Flow Direction	Sizes in./mm	Pressures psig/barg	Standard Operating Ratio	Vacuum Support Required	Certifications	Standard Mating Holder	Service
<b>ARD</b>	Flange Mounted	in. 1 to 44  mm 25 – 1117	psig 1 – 60  barg 0.07 – 4	50% <sup>1</sup>	YES	PED TÜV	Mounts between ANSI & DIN flanges *no holder required*	Liquid & Gas
<p><i>Composite metal, fragment resistant design disk</i></p> <p>ARD ARD-L ARD-S ARD-V</p> <p>Bi-Directional, Bursts at the specified pressure in both directions Uni-Directional, Bursts at the specified pressure in one direction Bi-Directional, Bursts at two different set pressures as specified Uni-Directional, Bursts at the specified pressure in one direction, withstands full vacuum</p>								
<b>D</b>	30° Angle Seat	in. 1/2 – 24  mm 13 – 600	psig 3 – 2,500  barg 0.21 – 172	85%	YES	ASME UD PED TÜV	<p><b>7A</b></p>  <p><b>Screw Type</b> <b>Union Type</b></p>	Liquid & Gas
<p><i>Composite metal, fragment resistant design disk (when supplied with non metallic seal)</i></p> <p>D D-R D-R-D D-V L-D TLDV</p> <p>Slotted metal top section and a Teflon or metal seal D Disk with a protective bottom ring D Disk with a top and bottom protective ring D Disk with a bottom vacuum support D Disk with a Teflon seal and top liner D Disk designed to withstand full vacuum and top liner (Non-ASME UD)</p>								
<b>FAC</b>	Flat Seat	in. 1 – 12  mm 25 – 300	psig 3 – 2,500  barg 0.21 – 172	85%	YES	PED TÜV	<b>FAH</b>	Liquid & Gas
<p><i>Composite metal, fragment resistant design disk (when supplied with non metallic seal)</i></p> <p>FAC FAC-R FAC-V</p> <p>Slotted metal top section and a Teflon or metal seal FAC Disk with a protective bottom ring FAC Disk with a bottom vacuum support</p>								
<b>FAX</b>	Flat Seat	in. 1 – 12  mm 25 – 300	psig 45 – 1,500  barg 3.10 – 103	90%	Contact ZOOK	ASME PED TÜV	<b>FAH</b>	Liquid & Gas
<p><i>Solid metal scored, non-fragmenting design disk</i></p>								
<b>FDZ</b>	Flat Seat	in. 1/2 – 36  mm 13 – 914	psig 3 – 2,500  barg 0.21 – 172	85%	YES	PED TÜV	<b>UHZ</b>	Liquid & Gas
<p><i>Composite metal, fragment resistant design disk (when supplied with non metallic seal)</i></p> <p>FDZ FDZ-R R-FDZ-R FDZ-V FDZ-H</p> <p>Slotted metal top section and a Teflon or metal seal FDZ Disk with a protective bottom ring FDZ Disk with a top and bottom protective ring FDZ Disk with a bottom vacuum support FDZ Disk with a bottom handling support</p>								

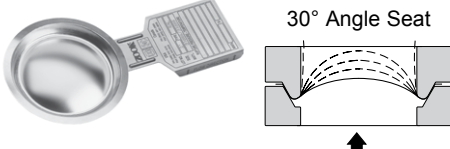

**Note:**  
• Standard operating ratio is stated as a % of minimum burst pressure (including burst tolerance)

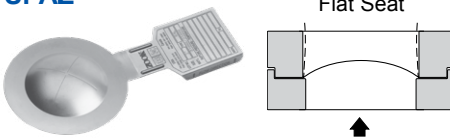

<sup>1</sup> ARD operating ratio is applied to the marked rating on the disk tag.




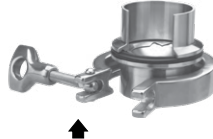

## Forward Acting (Tension-Loaded) Metal Rupture Disks

Disk Series	Seat Configuration Flow Direction	Sizes in./mm	Pressures psig / barg	Standard Operating Ratio	Vacuum Support Required	Certifications	Standard Mating Holder	Service
<b>FPB</b>		in. 3/16 - 11/16  mm 4.8 - 17.5	psig 60 - 60,000  barg 4.14 - 4137	75%	YES	PED TÜV		Liquid & Gas
<i>Solid metal, fragmenting design disk</i>								

<b>PB</b>		in. 1/4 - 24  mm 6 - 600	psig 3 - 60,000  barg 0.21 - 4138	75%	YES	ASME UD PED TÜV		Liquid & Gas
<i>Solid metal, fragmenting design disk</i>								


<b>SFAZ</b>		in. 1/2 - 24  mm 13 - 600	psig 15 - 6,000  barg 1.03 - 413	90%	Contact ZOOK	ASME UD PED TÜV		Liquid & Gas
<i>Solid metal scored, non-fragmenting design disk</i>								

## Sanitary Rupture Disks

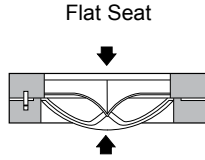

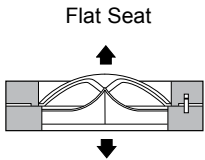

Disk Series	Sizes in./mm	Pressures psig / barg	Standard Operating Ratio	Vacuum Support Required	Certifications	Features	Disk Mounting Flow Direction	Service
<b>RAUS</b>	in. 1 - 4  mm 25 - 100	psig 18 - 300  barg 1.24 - 20.69	95%	NO	ASME UD PED KOSHA	Standard black Buna-N, EPDM, Viton gasket supplied with disk. PTFE optional. Other materials on request.		Liquid & Gas
<i>Solid metal, non-fragmenting design disk, unscored</i>								
<b>RLPS</b>	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
<i>Solid metal, non-fragmenting design disk, unscored</i>								
<b>SD</b>	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
<i>Graphite rupture disk</i>								

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

## Ultra-Low Pressure Sanitary Fitting Rupture Disks

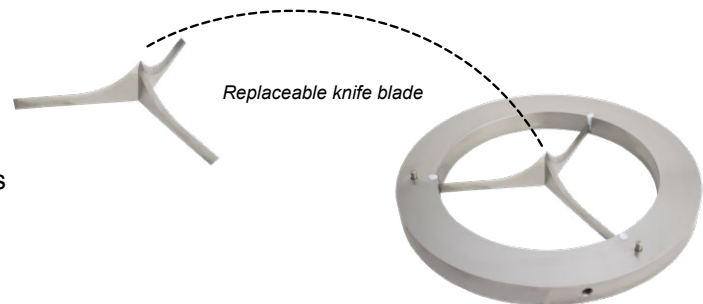
Disk Series	Disk Size in./mm	Pressures	Standard Operating Ratio	Vacuum Support Required	Certifications	Features	Standard Mating Holder	Service
<b>ProVAC-S / ProPOS-S</b>	in. 2 - 4  mm 50 - 100	Ultra low rating 1" of water column to 109"  Burst Cap 7 to 150 psig	60% w/316 girdle  85%	Non opening support 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
<b>Z-POS (ProPos)</b>		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
<b>Z-VAC (ProVac)</b>		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


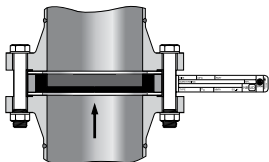

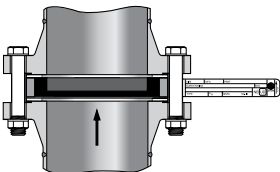

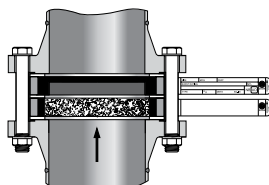

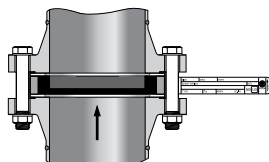

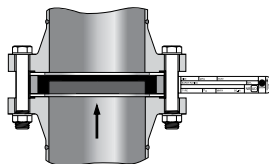

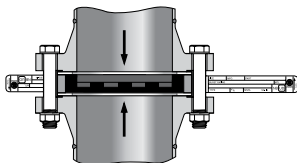

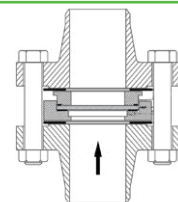
- Dull blades can result in collapsed tanks
- Allows higher level of safety maintenance
- Availability of spare blades on site leads to quick changeovers and greater operational safety
- Provides lower cost inventory compared to other designs
- Lower costs, less downtime, enhanced safety
- Replacement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



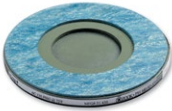





## How Does Z-VAC/Z-POS Work?

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.

## 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
<b>FS INVERTED</b>			in. 1/2 – 24  mm 13 – 600	psig 1.00 – 1,000  barg 0.07 – 69	90%	Consult ZOOK	ASME UD PED Liquid & Gas
<i>Best choice for highly corrosive and broad temperature range applications</i>							
<b>FS-V INVERTED</b>	FS Inverted Disk with internal vacuum support						
<b>DUPLEX</b>			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
<i>Highly corrosive applications</i>							
<b>INSULATED UNIT</b>			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
<i>For temperatures exceeding 430°F (221°C) to 700°F (371°C)</i>							
<b>INVERTED</b>			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
<i>Best choice for higher burst ratings</i>							
<b>MONO</b>			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
<i>Best choice for low and intermediate burst ratings</i>							
<b>TWO-WAY</b>			in. 1/2 – 24  mm 40 – 600	psig 0.25 – 150  barg 0.02 – 10.34	90%	PED	Liquid & Gas
<i>Dual rated to protect against two different pressures in opposite directions</i>							
<b>RT2 RT2T</b>			in. 1 – 10  mm 25 – 250	psig 1 – 250  barg 1.07 – 17.25	90%	Contact ZOOK on pressures less than 25 psig	PED Liquid & Gas
<i>Replaceable element for use in graphite or stainless steel holder</i>							

## 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
<b>AC (Acid Car)</b>	2" AAR rubber covered safety vents	in. 2 mm 50	psig 60, 100, 165 barg 4.14, 6.89, 11.38	90%	NO	PED	<ul style="list-style-type: none"> <li>PTFE &amp; Viton liner on process side</li> <li>Carbon Steel Armor</li> <li>TFE coated green</li> <li>Non-Asbestos gasket on vent side</li> </ul>	Liquid & Gas
 Graphite rupture disk								
<b>RC (Rail Car)</b>	2" AAR metal seated safety vents	in. 2 mm 50	psig 60, 100, 165 barg 4.14, 6.89, 11.38	90%	NO	PED	<ul style="list-style-type: none"> <li>PTFE &amp; Viton liner on process side</li> <li>Carbon Steel Armor</li> <li>TFE coated green</li> <li>Non-Asbestos gasket on vent side</li> </ul>	Liquid & Gas
 Graphite rupture disk								
<b>TD</b>	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	<ul style="list-style-type: none"> <li>PTFE liner on process side</li> <li>Carbon Steel Armor</li> <li>TFE gasket on pressure side</li> <li>Non-Asbestos gasket on vent side</li> <li>TFE coated green</li> </ul>	Liquid & Gas
 Graphite rupture disk								
<b>ICP</b>	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	<ul style="list-style-type: none"> <li>Nickel disk construction</li> <li>PTFE gasket &amp; PFA liner on process side</li> <li>316 locating ring and PTFE gasket on vent side</li> <li>Custom pressures also available</li> </ul>	Liquid & Gas
 Solid metal scored, non-fragmenting design disk								
<b>TCP-NR / TCP-R</b>	Fits standard tank car safety vents	in. 2 mm 50	psig 75, 100, 165 barg 5.17, 6.90, 11.38	55%	NO	PED TÜV	<ul style="list-style-type: none"> <li>316 construction w/PFA seal</li> <li>316 locating ring on vent side</li> <li>Supplied with PTFE inlet gasket</li> <li>Custom pressures also available</li> </ul>	Liquid & Gas
 Composite metal, fragment resistant design disk	<p>TCP-NR</p> <p>Fits standard tank car safety vents</p> <p>TCP-R</p>							
<b>TCP-S</b>	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	<ul style="list-style-type: none"> <li>Nickel disk construction</li> <li>PTFE gasket &amp; PFA liner on process side</li> <li>316 locating ring and PTFE gasket on vent side</li> <li>Custom pressures also available</li> </ul>	Liquid & Gas
 Solid metal scored, non-fragmenting design disk								

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

## 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  $\pm 10\%$  with typical standard deviation of  $\pm 1\%$  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



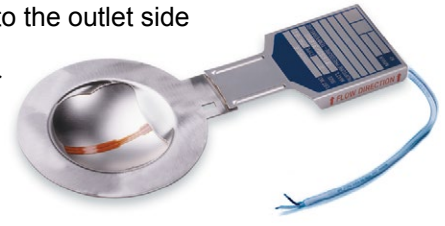
### BA Burst Indicator

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.





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