ZOOK®

# Rupture Disk Selection Guide

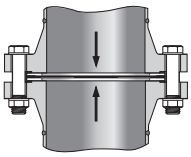
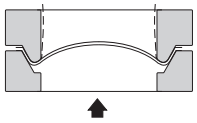
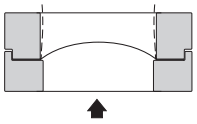
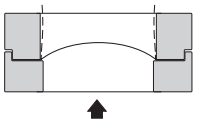
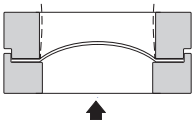
Safety through knowledge and performance.

# 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 |
|---|---|---|---|---|---|---|---|---|
| **RA4** | Flat Seat | in.<br>1 – 12<br>mm<br>25 – 300 | psig<br>2 – 40<br>barg<br>0.14 – 2.76 | 95% | NO | ASME UD<br>PED<br>TÜV | **RAH** | Liquid & Gas |
| *Solid metal, non-fragmenting design disk* | | | | | | | | |
| **RA6** | Flat Seat | in.<br>1 – 12<br>mm<br>25 – 300 | psig<br>12 – 200<br>barg<br>0.83 – 13.79 | 95% | NO | ASME UD<br>PED<br>TÜV | **RAH** | Liquid & Gas |
| *Solid metal, non-fragmenting design disk* | | | | | | | | |
| **RA8** | Flat Seat | in.<br>1 – 12<br>mm<br>25 – 300 | psig<br>26 –1,000<br>barg<br>1.79 – 68.95 | 95% | NO | ASME UD<br>PED<br>TÜV | **RAH** | Liquid & Gas |
| *Solid metal, non-fragmenting design disk* | | | | | | | | |
| **RAX** | Flat Seat | in.<br>1 – 12<br>mm<br>25 – 300 | psig<br>27 –1,480<br>barg<br>1.86 – 102.04 | 95% | NO | ASME UD<br>PED<br>TÜV | **RAH** | Gas |
| *Solid scored metal, non-fragmenting design disk* | | | | | | | | |
| **RLP** | Flat Seat | in.<br>1 – 12<br>mm<br>25 – 300 | psig<br>2 – 40<br>barg<br>0.14 – 2.76 | 95% | NO | ASME UD<br>PED<br>TÜV | **RLP-I** | Liquid & Gas |
| *Solid metal, non-fragmenting design disk* | | | | | | | | |
| **SRA** | Flat Seat | in.<br>1 – 12<br>mm<br>25 – 300 | psig<br>20 – 1,480<br>barg<br>1.38 – 102.04 | 95% | NO | ASME UD<br>PED<br>TÜV | **SR7A** | Gas |
| *Solid scored metal, non-fragmenting design disk* | | | | | | | | |
| **URA** | Flat Seat | in.<br>1 – 30<br>mm<br>25 – 750 | psig<br>12 – 1,000<br>barg<br>0.83 – 68.95 | 95% | NO | ASME UD<br>PED<br>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)

# 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<br>mm 25 – 1100 | psig 1 – 60<br>barg 0.07 – 4.14 | 50%[1] | YES | PED<br>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<br>mm 13 – 600 | psig 3 –2,500<br>barg 0.21–172 | 85% | YES | ASME UD<br>PED<br>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<br>mm 25 – 300 | psig 3 – 2,500<br>barg 0.21 –172.37 | 85% | YES | PED<br>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<br>mm 25 – 300 | psig 45 – 3,600<br>barg 3.10 – 248.28 | 90% | Contact ZOOK | ASME<br>PED<br>TÜV | **FAH**  | Liquid & Gas |
| *Solid metal scored, non-fragmenting design disk* | | | | | | | | |
| **FDZ**  | Flat Seat  | in. 1/2 – 30<br>mm 13 – 750 | psig 3 – 2,500<br>barg 0.21 – 172.37 | 85% | YES | PED<br>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.

## 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 -11/16<br>mm 4.8 - 17.5 | psig 60 - 60,000<br>barg 4.14 - 4137 | 75% | YES | PED<br>TÜV | **Screw Type** | Liquid & Gas |
| *Solid metal, fragmenting design disk* | | | | | | | | |
| **PB** | 30° Angle Seat | in. 1/4 – 24<br>mm 6 – 600 | psig 3 – 60,000<br>barg 0.21 – 4137 | 75% | YES | ASME UD<br>PED<br>TÜV | **7A**<br>**Screw Type**<br>**Union Type** | Liquid & Gas |
| *Solid metal, fragmenting design disk* | | | | | | | | |
| **SFAZ** | Flat Seat | in. 1/2 – 24<br>mm 13 – 600 | psig 15 – 3,600<br>barg 1– 248 | 90% | Contact ZOOK | ASME UD<br>PED<br>TÜV | **UHZ** | Liquid & Gas |
| *Solid metal scored, non-fragmenting design disk* | | | | | | | | |

## Sanitary Rupture Disks

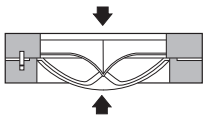
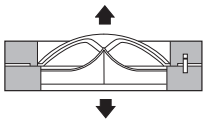
| Disk Series | Sizes in./mm | Pressures psig/barg | Standard Operating Ratio | Vacuum Support Required | Certifications | Features | Disk Mounting Flow Direction | Service |
|---|---|---|---|---|---|---|---|---|
| **RAUS** | in. 1 – 4<br>mm 25 – 100 | psig 18 – 300<br>barg 1.24 – 20.69 | 95% | NO | ASME UD<br>PED<br>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<br>mm 25 – 100 | psig 4 – 83<br>barg 0.27 – 5.72 | 95% | Consult ZOOK | PED<br>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<br>mm 25 – 100 | psig 1.5 – 50<br>barg 0.10 – 3.45 | 90% | Contact ZOOK for pressures less than 25 psig | ASME UD<br>PED<br>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)

## Ultra-Low Pressure Sanitary Fitting Rupture Disks

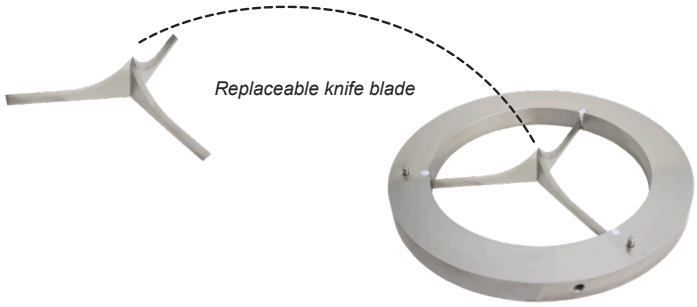
| Disk Series | Disk Size in./mm | Pressures | Standard Operating Ratio | Vacuum Support Required | Certifications | Features | Standard Mating Holder | Service |
|---|---|---|---|---|---|---|---|---|
| **ProVAC-S / ProPOS-S**  | in.<br>2 - 4<br><br>mm<br>50 - 100 | Ultra low rating 1" of water column to 109"<br><br>Burst Cap 7 to 150 psig | 60% w/316 girdle<br><br>85% | Non opening support is included as standard | PED<br><br>TÜV | Dual-acting sanitary fitting design with laser cut metal top section and girdle |  | Liquid<br>& 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.<br>2 – 12<br><br>mm<br>50 – 300 | positive 1" of water column to 109"<br><br>negative 2 psig to 150 psig | 60% w/316 girdle<br><br>85% | PED<br><br>TÜV |  | Liquid<br>& Gas |
| **Z-VAC (ProVac)**  | Flat Seat  | in.<br>2 – 12<br><br>mm<br>50 – 300 | positive 2 psig to 150 psig<br><br>negative 1" of water column to 109" | 85%<br><br>60% w/316 girdle | PED<br><br>TÜV |  | Liquid<br>& 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

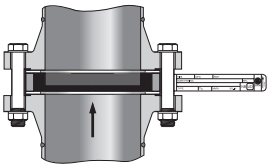
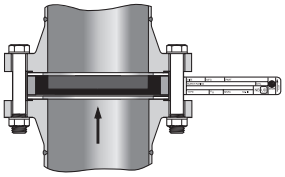
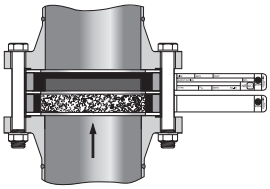
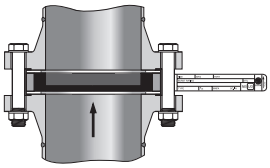
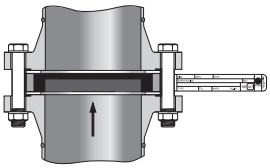
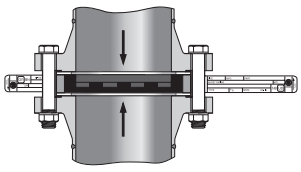
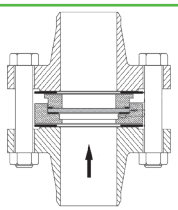



## How Does Z-VAC/Z-POS Work?

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)

# Graphite Rupture Disks

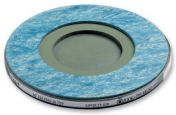
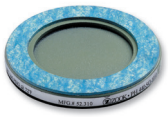
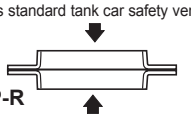
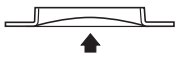
| Disk Series | Mounts directly between standard ASME B16.5 Class, DIN, or JIS flanges | Sizes in./mm | Pressures psig/barg | Maximum Operating Ratio | Vacuum Support Required | Certifications | Service |
|---|---|---|---|---|---|---|---|
| **FS INVERTED**  |  | in.<br>1 – 24<br><br>mm<br>25 – 600 | psig<br>1.00 – 1,000<br><br>barg<br>0.07 – 68.95 | 90% | Consult ZOOK | ASME UD<br>PED | Liquid<br>& Gas |
| *Best choice for highly corrosive and broad temperature range applications* | | | | | | | |
| **FS-V INVERTED** | FS Inverted Disk with internal vacuum support | | | | | | |
| **DUPLEX**  |  | in.<br>1/2 – 24<br><br>mm<br>13 – 600 | psig<br>0.50 – 1,000<br><br>barg<br>0.02 – 68.95 | 90% | Contact ZOOK on pressures less than 25 psig | ASME UD<br>PED | Liquid<br>& Gas |
| *Highly corrosive applications* | | | | | | | |
| **INSULATED UNIT**  |  | in.<br>1 – 24<br><br>mm<br>25 – 600 | psig<br>0.25 – 150<br><br>barg<br>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.<br>1/2 – 24<br><br>mm<br>13 – 600 | psig<br>0.25 – 1,000<br><br>barg<br>0.02 – 68.95 | 90% | Contact ZOOK on pressures less than 25 psig | ASME UD<br>PED | Liquid<br>& Gas |
| *Best choice for higher burst ratings* | | | | | | | |
| **MONO**  |  | in.<br>1/2 – 24<br><br>mm<br>13 – 600 | psig<br>0.25 – 150<br><br>barg<br>0.02 – 10.34 | 90% | Yes on pressures less than 25 psig | ASME UD<br>PED | Liquid<br>& Gas |
| *Best choice for low and intermediate burst ratings* | | | | | | | |
| **TWO-WAY**  |  | in.<br>1/2 – 24<br><br>mm<br>40 – 600 | psig<br>0.25 – 150<br><br>barg<br>0.02 – 10.34 | 90% | | PED | Liquid<br>& Gas |
| *Dual rated to protect against two different pressures in opposite directions* | | | | | | | |
| **RT2**<br>**RT2T**  |  | in.<br>1 - 10<br><br>mm<br>25 - 250 | psig<br>1 – 250<br><br>barg<br>1.07 – 17.25 | 90% | Contact ZOOK on pressures less than 25 psig | PED | Liquid<br>& 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 below 40 psig.

ZOOK®

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

**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 ± 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 busting 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

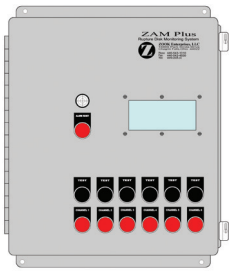
The BI Series integral burst indication offers a simple and effective means of indication over-pressure or discharge indication for metal rupture disk applications. Affixed to the outlet side of the rupture disk isolating the indicator from process media.

### 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.

ZOOK®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