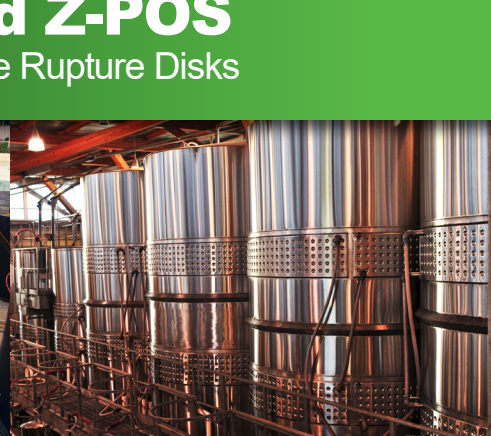


# ZOOK®



## Z-VAC and Z-POS Ultra Low-Pressure Rupture Disks



Safety through knowledge and performance.

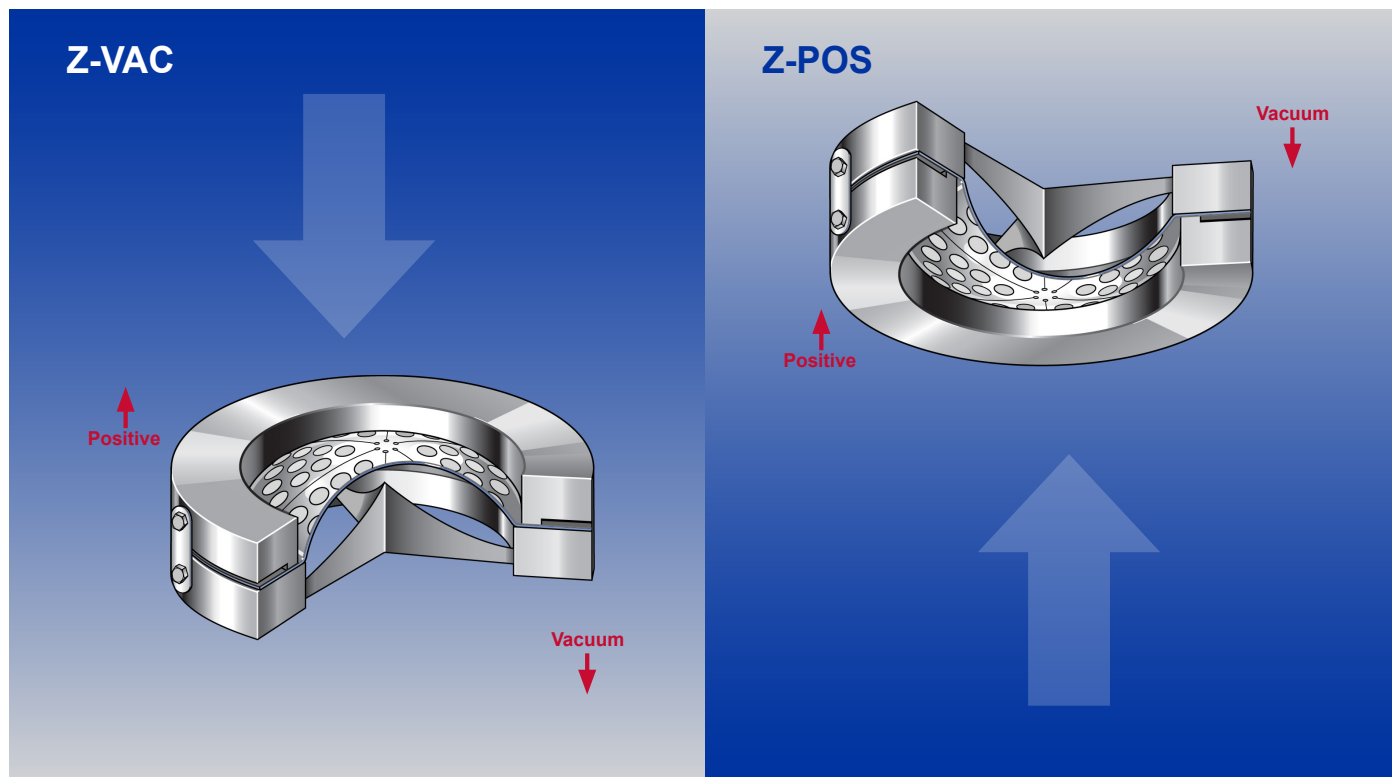
## Protect your Processing or Storage Tank from Vacuum and/or Over-Pressurization in a Single Device

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.



## 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 a full range of vacuum pressures ensures clean opening of the seal at a specified pressure
- Burst ratings from 1" (25 mm) of the 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\*

\*See table 1 on minimum burst rating requirements



## 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



## 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
- Replaceable knife blade Material: Stainless Steel 301 series
- 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



### Replaceable Knife Blades

Enhances operational safety with easy-to-change spare blades, enabling quick changeovers and lower inventory costs.



### 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.

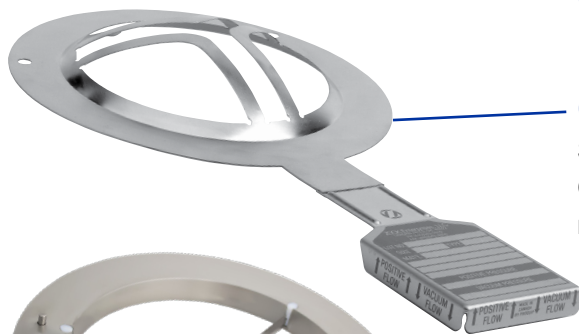


### Seal

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.





## Sanitary Fitting Disks

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

## Sanitary Fitting Holders

Sanitary fitting holders are ideal for high purity environments.

- Mounts to industry standard Tri-clamp® / Tri-clover® sanitary fittings. For alternate fittings, contact ZOOK
- ProVAC-S & Pro-POS-S holders require a clamp one size larger than the nominal rupture disk size. See Table below

| ProVAC-S & ProPOS-S Holder and Companion Clamp Size |                                               |                           |                                  |        |
|-----------------------------------------------------|-----------------------------------------------|---------------------------|----------------------------------|--------|
| Disk & Holder Size                                  | Companion Fitting and Clamp Size <sup>◆</sup> | Holder OAH (without Disk) | Holder Material                  |        |
|                                                     |                                               |                           | Inlet                            | Outlet |
| 2"<br>DN50                                          | 3"<br>DN80                                    | 3"                        | 316 Stainless Steel <sup>▲</sup> |        |
| 3"<br>DN80                                          | 4"<br>DN100                                   | 3"                        |                                  |        |
| 4"<br>DN100                                         | 6"<br>DN150                                   | 4"                        |                                  |        |

◆ Holder comes with one clamp to join the inlet to the outlet.

▲ Contact the factory for alternate materials.



**Table 1**  
Z-VAC & Z-POS Burst Ratings

| Disk Size  |        | Higher Pressure Relief |     |        |      | Ultra Low Pressure Girdle Relief |     |         |       |                               |     |         |       | Burst Tolerances |
|------------|--------|------------------------|-----|--------|------|----------------------------------|-----|---------|-------|-------------------------------|-----|---------|-------|------------------|
|            |        | Burst Pressure Range   |     |        |      | Burst Pressure Range             |     |         |       | With Integral Burst Indicator |     |         |       |                  |
|            |        | Burst Cap              |     |        |      | Metal Girdle                     |     |         |       | Metal Girdle                  |     |         |       |                  |
|            |        | psi(g)                 |     | bar(g) |      | in.wc(g)                         |     | mbar(g) |       | in.wc(g)                      |     | mbar(g) |       |                  |
| in         | mm     | Min                    | Max | Min    | Max  | Min                              | Max | Min     | Max   | Min                           | Max | Min     | Max   |                  |
| 2"         | 50 mm  | 15                     | 150 | 1.03   | 10.3 | 1                                | 109 | 2.5     | 271.5 | 28                            | 109 | 69.7    | 271.5 |                  |
| 3"         | 80 mm  | 8                      | 150 | 0.55   | 10.3 | 1                                | 109 | 2.5     | 271.5 | 20                            | 109 | 49.8    | 271.5 |                  |
| 4"         | 100 mm | 7                      | 125 | 0.48   | 8.62 | 1                                | 64  | 2.5     | 159.4 | 10                            | 64  | 24.9    | 159.4 |                  |
| 6"         | 150 mm | 4                      | 100 | 0.28   | 6.89 | 1                                | 64  | 2.5     | 159.4 | 10                            | 64  | 24.9    | 159.4 |                  |
| 8"         | 200 mm | 3                      | 75  | 0.21   | 5.17 | 1                                | 64  | 2.5     | 159.4 | 10                            | 64  | 24.9    | 159.4 |                  |
| 10"        | 250 mm | 3                      | 50  | 0.21   | 3.45 | 1                                | 54  | 2.5     | 134.5 | 10                            | 54  | 24.9    | 134.5 |                  |
| 12"        | 300 mm | 2                      | 40  | 0.14   | 2.76 | 1                                | 54  | 2.5     | 134.5 | 10                            | 54  | 24.9    | 134.5 |                  |
| Max. Temp. |        | 500°F (260°C)          |     |        |      | 500°F (260°C)                    |     |         |       | 400°F (204°C)                 |     |         |       |                  |

**Max Rating**  
7 to 45 in.wc(g)  
Minus 6 in.wc

**Max Rating**  
Above 45 in.wc(g)  
Minus 15 in.wc

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**Max Rating**  
17.4 to 112.0 mbar(g)  
Minus 14.9 mbar

**Max Rating**  
Above 112.0 mbar(g)  
Minus 37.4 mbar

- Notes:**
- Series Minimum and Maximum Pressure Ratings @ 72°F (22°C)
  - Z-POS Standard Operating Ratio (pos/neg): 60% with 316SS girdle / 85%
  - Z-VAC Standard Operating Ratio (pos/neg): 85% / 60% with 316SS girdle
  - Operating Ratios are of the low end the tolerance

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

| Burst Pressure Range (psig) |         | ZOOK and ASME Manufacturing Design Range (psig) |      |                   |      |         |      |       |      | Burst Tolerance |
|-----------------------------|---------|-------------------------------------------------|------|-------------------|------|---------|------|-------|------|-----------------|
|                             |         | Standard                                        |      | Reduced Tolerance |      |         |      |       |      |                 |
|                             |         |                                                 |      | Half              |      | Quarter |      | Zero  |      |                 |
| Minimum                     | Maximum | Minus                                           | Plus | Minus             | Plus | Minus   | Plus | Minus | Plus |                 |
| Min                         | <1.0    | 0                                               | 0.3  | 0.00              | 0.15 | 0.00    | 0.08 | 0.00  | 0.00 | ± 0.25 psig     |
| 1.0                         | <2.5    | 0.5                                             | 0.5  | 0.25              | 0.25 | 0.13    | 0.13 | 0.00  | 0.00 | ± 0.33 psig     |
| 2.5                         | <4.0    | 1                                               | 1    | 0.50              | 0.50 | 0.25    | 0.25 | 0.00  | 0.00 | ± 0.5 psig      |
| 4.0                         | <7.0    | 1                                               | 2    | 0.50              | 1.00 | 0.25    | 0.50 | 0.00  | 0.00 | ± 0.5 psig      |
| 7.0                         | <11.0   | 1.5                                             | 2.5  | 0.75              | 1.25 | 0.38    | 0.63 | 0.00  | 0.00 | ± 0.8 psig      |
| 11.0                        | <15.0   | 2                                               | 3    | 1.00              | 1.50 | 0.50    | 0.75 | 0.00  | 0.00 | ± 1.3 psig      |
| 15.0                        | <17     | 2                                               | 3    | 1.00              | 1.50 | 0.50    | 0.75 | 0.00  | 0.00 | ± 2.0 psig      |
| 17                          | <26     | 2                                               | 4    | 1.00              | 2.00 | 0.50    | 1.00 | 0.00  | 0.00 | ± 2.0 psig      |
| 26                          | <40     | 3                                               | 5    | 1.50              | 2.50 | 0.75    | 1.25 | 0.00  | 0.00 | ± 2.0 psig      |
| 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                         | <151    | 6                                               | 12   | 3.00              | 6.00 | 1.50    | 3.00 | 0.00  | 0.00 | ± 5%            |
| 151                         | <201    | 9                                               | 16   | 4.50              | 8.00 | 2.25    | 4.00 | 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 |                   |        |             |
|-----------------------------|---------|-----------------------------|-------------------|--------|-------------|
|                             |         | Standard                    | Reduced Tolerance |        |             |
| Minimum                     | Maximum |                             | Good              | Better | Best        |
| Min                         | <0.069  | ±75%                        | ±73%              | ±70%   | ±0.017 barg |
| 0.069                       | <0.172  | ±65%                        | ±45%              | ±35%   | ±0.023 barg |
| 0.172                       | <0.276  | ±50%                        | ±30%              | ±20%   | ±0.035 barg |
| 0.276                       | <0.483  | ±50%                        | ±30%              | ±20%   | ±0.035 barg |
| 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  | ±25%                        | ±20%              | ±15%   | ±0.138 barg |
| 1.793                       | <2.758  | ±20%                        | ±15%              | ±10%   | ±0.138 barg |
| 2.758                       | <4.552  | ±15%                        | ±10%              | ±7.5%  | ±5%         |
| 4.552                       | <6.966  | ±15%                        | ±10%              | ±7.5%  | ±5%         |
| 6.966                       | <10.412 | ±10%                        | ±7.5%             | ±6.5%  | ±5%         |
| 10.412                      | <13.859 | ±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* |         | Gauge Tap (Optional) |
|---------------------|--------|--------------------|----------|--------------------|--------|---------|---------|----------------------|
| 2"                  | 50 mm  | 4"                 | 101.6 mm | 4.2"               | 107 mm | 1 ¼"    | 31.7 mm | 1/8" FNPT            |
| 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 | 1/4" FNPT            |
| 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.

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**ZOOK** is committed to finding pressure relief solutions for our customers that maximize their productivity and performance while keeping them safe. ZOOK is a global market leader with over 90 years of manufacturing expertise of high 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 in Canada and the USA.

Our products are sold in 65+ countries and to-date have over 6,000 customers buying our products worldwide.

We are dedicated to investing heavily in the latest technology and production to stay competitive in the marketplace, and are able to offer comprehensive solutions to the selection and sizing of products best suited for each customer application.

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