



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 1-30" WC in one direction and 2-150 psi 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" (25mm) of water column differential.

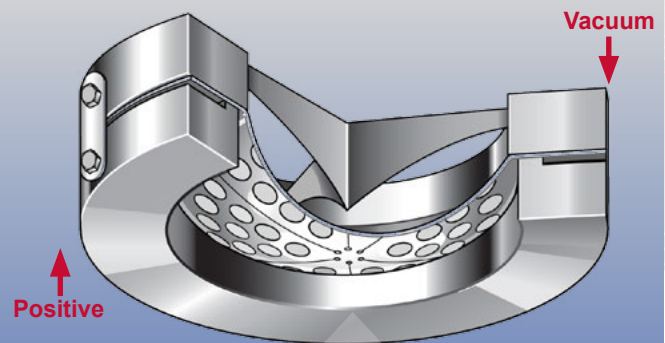
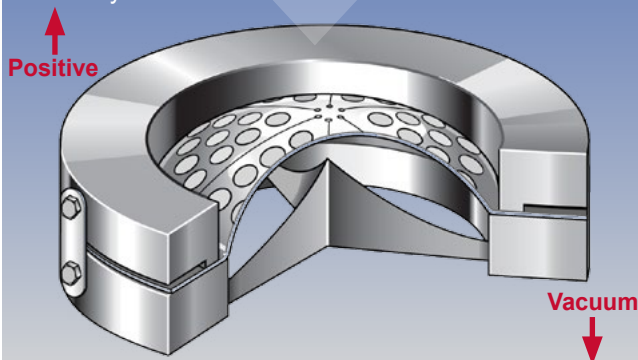
How Z-VAC Works:

Ultra low vacuum relief is controlled by a laser cut collapsible girdle.

Vacuum pressure in the system presses the Teflon seal against the girdle deflecting it towards the razor sharp knife-blades built into the holder. As the vacuum pressure approaches the relief setting the girdle collapses allowing the seal to be cut through by the knife-blades. Laser cut holes in the positive pressure control cap or non-opening pressure support cap provide optimum flow when the rupture disk relieves in the negative (vacuum) direction.

Positive pressure relief is controlled by a laser cut top metal control cap.

The burst cap, under tension loading, relieves positive pressure when pressurization occurs in the system.



How Z-POS Works:

Positive pressure relief is controlled by the girdle.

As the pressure in the system approaches the positive burst setting, the Teflon seal presses against the girdle, deflecting it towards the knife blades built into the holder outlet. As the girdle passes the knife blades, the seal is cut relieving the positive pressure. The laser cut holes in the burst cap or non-opening pressure support cap provide optimum flow when the rupture disk relieves in the positive pressure direction.

Vacuum relief is controlled by metal top section.

The burst cap, under tension loading, relieves negative (vacuum) pressure.

Z-VAC & Z-POS Disk

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 (when ordered in 316SS)
- Sizes 2" to 12" / 50 mm to 300 mm
- Standard 316SS 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

Sanitary Fitting Disks

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

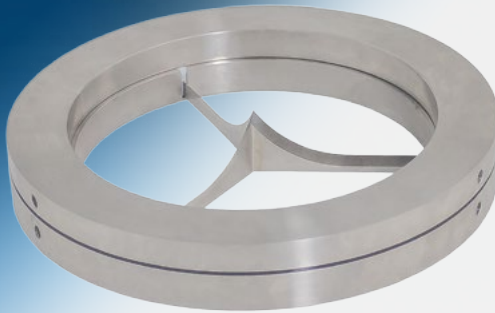
BI Integral Sensor Available

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

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



Z-VAC & Z-POS Holder



Rupture Disk Holder Features

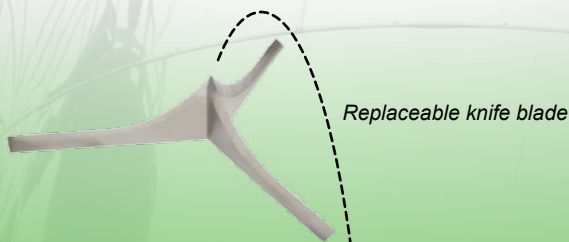
- Designed for installation between standard pipe flanges
- Designed exclusively for use with the Z-VAC and Z-POS series rupture disks
- User-replaceable knife blades
- Non-torque sensitive flat seal design
- The Z-VAC & Z-POS Holder and rupture disk are pre-assembled using safety designed clips
- Standard materials of construction: 316SS 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



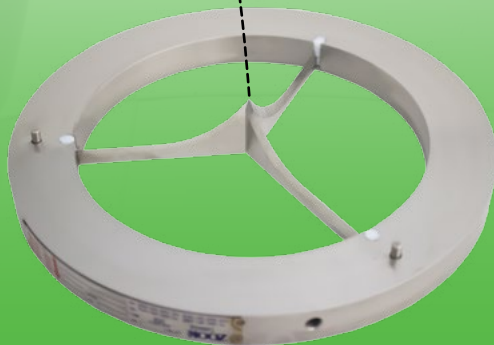
Sanitary Fitting Holders

Sanitary fitting holders are ideal for corrosive and high purity environments.

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



Replaceable knife blade



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

Components

Note: Z-VAC Configuration

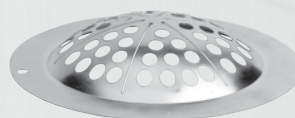
Overpressure
Relief Direction

Outlet Holder

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

Non-Opening Pressure Support

Provides protection to seal in case of positive pressure.



OPTIONS: Laser Cut Burst Cap

Provides positive pressure relief at specified rating.



Protective Ring

Provides seat area protection for seal on applications that do not require negative (vacuum) pressure relief

Seal

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

OPTION: Burst Indicator BI Integral Sensor

Girdle

Standard material is 316SS. Also, available in TEFLON.

(Z-VAC) - Controls the standard min. to max. inches of water column negative (vacuum) pressure rating.

(Z-POS) - Controls the standard min. to max. inches of water column positive pressure rating.

Inlet Holder

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

Vacuum Relief
Direction

Specifications

Table 1
Z-VAC & Z-POS Burst Ratings

Disk Size		Burst Cap Relief				Ultra Low Pressure Girdle Relief					
						Start Relief Rating (minimum) inches of water column		Full Relief Rating (maximum) inches of water column		Minimum Burst Ratings For BI	
						316SS Girdle		316SS Girdle		316SS Girdle	
		Min		Max							
		psig	barg	psig	barg	Min	Max				
2"	50 mm	15	1.03	150	10.3	1	109	For MAX ratings up to & including 45 InWC: MAX Rating minus 6 InWC For MAX ratings above 45 InWC: MAX Rating minus 15 InWC	2" min. 28" of WC 3" min. 20" of WC 4" thru 12" min. 10" of WC		
3"	80 mm	6	0.55	150	10.3	1	109				
4"	100 mm	7	0.48	125	8.62	1	64				
6"	150 mm	4	0.28	100	6.89	1	64				
8"	200 mm	3	0.21	75	5.17	1	64				
10"	250 mm	3	0.21	50	3.45	1	54				
12"	300 mm	2	0.14	40	2.76	1	54				
Max. Temp.		316 Girdle Material				500°F / 260°C					
Note: Z-VAC Series Minimum and Maximum Pressure Ratings @ 72°F (22°C)											

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

Table Tolerance - ZOOK										
Burst Pressure Range		ZOOK Manufacturing Design Range (psi)								Rupture Tolerance (psi)
		Standard		Reduced Tolerance						
				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

Table Tolerance - PED					
Burst Pressure Range (Bar)		Total Performance Tolerance			
		Standard	Reduced Tolerance		
Minimum	Maximum		Half	Quarter	Zero
0.14	<0.172	± 65%	± 45%	± 35%	± 0.023 Bar
0.172	<0.276	± 50%	± 30%	± 20%	± 0.035 Bar
0.276	< 0.483				
0.483	< 0.759	± 50%	± 30%	± 20%	± 0.055 Bar
0.759	<1.034	± 25%	± 20%	± 15%	± 0.090 Bar
1.034	<1.172	± 25%	± 20%	± 15%	± 0.138 Bar
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 ¼"	107 mm	1 ¼"	31.7 mm
3"	80 mm	5 ¼"	133.3 mm	5 ½"	142 mm	1 ¼"	31.7 mm
4"	100 mm	6 ¾"	171.4 mm	6 ½"	162 mm	1 ¼"	31.7 mm
6"	150 mm	8 ⅝"	219.0 mm	8 ½"	218 mm	1 ¼"	31.7 mm
8"	200 mm	10 ⅞"	276.2 mm	8 ¾"	273 mm	1 ⅝"	34.9 mm
10"	250 mm	13 ¼"	336.5 mm	12 ⅞"	328 mm	1 ¾"	44.4 mm
12"	300 mm	16"	406.4 mm	14 ⅞"	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.
 PTFE / Teflon - TM DUPONT



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