



ZANITARY® Series Sanitary Metal Rupture Disks



Safety through knowledge and performance.

ZANITARY® Series

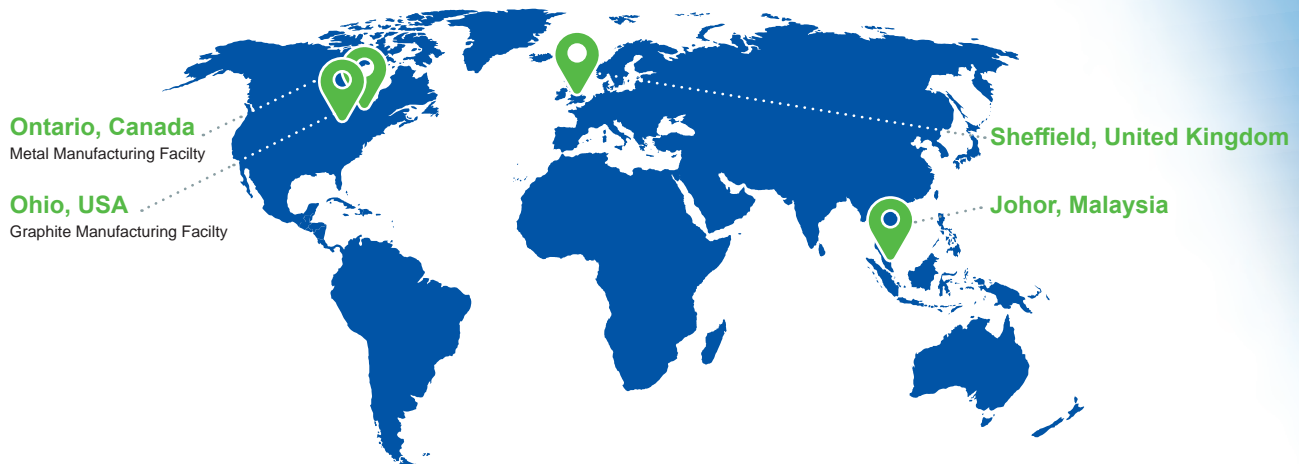
Metal Rupture Disks

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 3A requirements, ensuring the process side is inherently smooth providing a high purity service.



Safety through knowledge and performance.

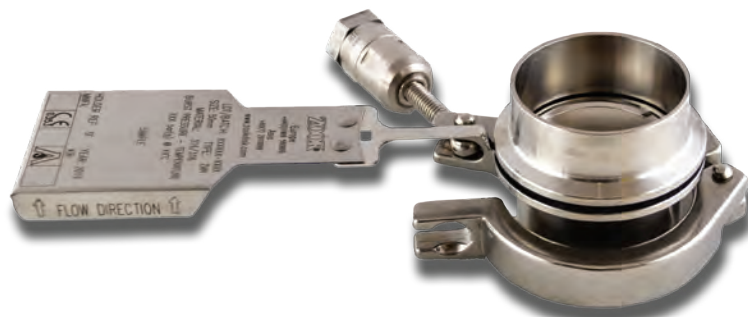
ZANITARY® Series

Metal Rupture Disks

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.

Sanitary 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 $\pm 5\%$ performance tolerance
- Passivation finish to reduce the possibility of contamination
- Standard surface finish 4-20 $\mu\text{m Ra}$
- 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 3A sanitary standard
- Sizes from 1"(25mm) through 4"(100mm)
- Cleaned for O₂ service 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.

ZANITARY® Series Metal Rupture Disks

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



ZANITARY® Series

Metal Rupture Disks

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.



Optional
Torque-Rite® Nut

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)

ECO Friendly Packaging

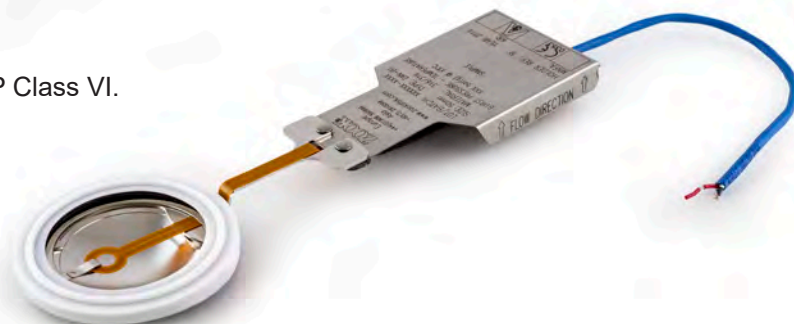
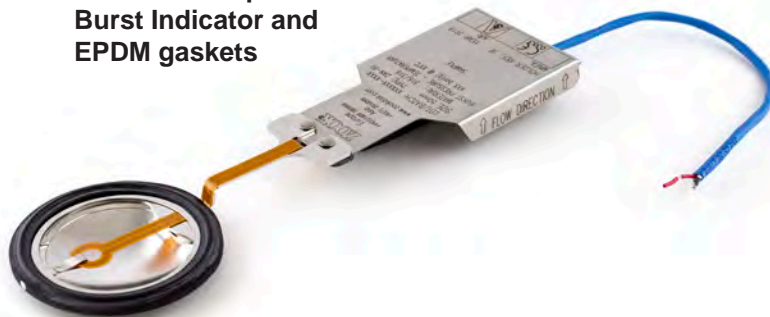
- Packaging utilizes FDA compliant coating
- Packaging does not contain any plastic
- Individually packed
- Nitrogen atmosphere bagging available

Gaskets

All gasket materials available are certified to FDA USP Class VI.
Gaskets available (other materials on request):

- Black Viton
- EPDM
- Black and White Buna
- White PTFE (Teflon)
- Red and Clear Silicone

Shown with optional BI
Burst Indicator and
EPDM gaskets



ZANITARY® Series Specifications

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

| Disk Size | Minimum Burst Pressure (psig/barg) | | | | Maximum Burst Pressure (psig/barg) | MNFA in ² (mm ²) | Tri-Clover Ferrule Dimensions in (mm) | |
|------------|---------------------------------------|----------------|--------|--------------------------|--|--|---|---------|
| | 316L | Hastelloy C276 | ZAN-L* | ZAN-BI | | | Ferrule OD | Tube ID |
| 1" | 35 | 65 | +10** | +5** | 300 | 0.43 | 1.98 | 0.87 |
| 25 mm | 2.41 | 4.48 | 0.69 | 0.34 | 20.7 | 277 | 50.29 | 22.10 |
| 1-1/2" | 15 | 25 | 30 | +5 psig of base material | 250 | 1.08 | 1.98 | 1.37 |
| 40 mm | 1.03 | 1.72 | 2.07 | | 17.24 | 697 | 50.29 | 34.80 |
| 2" | 11 | 25 | 25 | | 180 | 2.05 | 2.52 | 1.87 |
| 50 mm | 0.76 | 1.72 | 1.72 | | 12.41 | 1323 | 64 | 47.50 |
| 2-1/2" | 11 | 25 | 25 | | 145 | 3.25 | 3.05 | 2.37 |
| 64 mm | 0.76 | 1.72 | 1.72 | | 10 | 2097 | 77.47 | 60.20 |
| 3" | 11 | 20 | 20 | | 120 | 4.71 | 3.58 | 2.87 |
| 80 mm | 0.76 | 1.38 | 1.38 | | 8.27 | 3052 | 90.93 | 72.90 |
| 4" | 11 | 20 | 20 | | 80 | 8.49 | 4.68 | 3.83 |
| 100 mm | 0.76 | 1.38 | 1.38 | | 5.52 | 5619 | 118.87 | 97.28 |
| Max. Temp. | Dependant on the gasket material used | | | | | | | |

Notes:

- * For PFA Liner, contact ZOOK for PEEK minimums
- ** Add pressure to minimum for metal
- For materials, sizes, burst ratings and temperatures not shown, contact ZOOK
- Contact ZOOK for higher temperatures
- 1" disk size is under evaluation by ASME and PED

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 | 95% |
| Standard | 11.0 | <15 | 0% | ±1.3 psig | 95% | 0.690 | <1.034 | ±0.090 barg | 90% |
| Economical | 11.0 | <15 | -10% | ±1.3 psig | 95% | 0.690 | <1.034 | ±20% | 90% |
| | | | | | | | | | |
| Premium | 15.0 | <26 | 0% | ±2.0 psig | 100% | 1.034 | <1.793 | ±0.138 barg | 95% |
| Standard | 15.0 | <26 | 0% | ±2.0 psig | 95% | 1.034 | <1.793 | ±0.138 barg | 90% |
| Economical | 15.0 | <26 | -10% | ±2.0 psig | 95% | 1.034 | <1.793 | ±20% | 90% |
| | | | | | | | | | |
| Premium | 26.0 | <40 | 0% | ±2.0 psig | 95% | 1.793 | <2.758 | ±0.138 barg | 95% |
| Standard | 26.0 | <40 | 0% | ±2.0 psig | 90% | 1.793 | <2.758 | ±0.138 barg | 90% |
| Economical | 26.0 | <40 | -10% | ±2.0 psig | 90% | 1.793 | <2.758 | ±15% | 90% |
| | | | | | | | | | |
| Premium | 40 | Max | 0% | ±5 % | 95% | 2.758 | Max | ±5% | 95% |
| Standard | 40 | Max | 0% | ±5 % | 90%* | 2.758 | Max | ±5% | 90%* |
| Economical | 40 | Max | -10% | ±5 % | 90%* | 2.758 | Max | ±10% | 90%* |

* Below 40psi(g), operating ratios are from the minimum of burst/total 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)

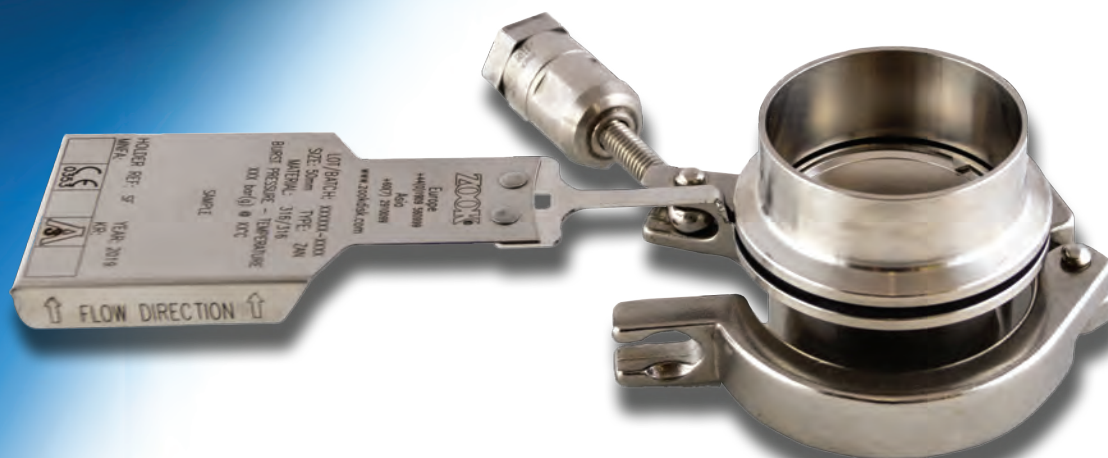
| Material | Min. Temperature | Max Temperature |
|----------------|------------------|-----------------|
| Black Buna-N▲ | -20°F (-29°C) | 230°F (110°C) |
| White Buna-N | -20°F (-29°C) | 230°F (110°C) |
| Black EPDM▲ | -67°F (-55°C) | 347°F (175°C) |
| Black Viton▲ | -0.4°F (-18°C) | 400°F (204°C) |
| Clear Silicone | -65°F (-54°C) | 400°F (204°C) |
| Red Silicone | -65°F (-54°C) | 400°F (204°C) |
| PTFE▲ | -20°F (-29°C) | 500°F (260°C) |

▲ – Stocked material

Tri-clamp/Tri-clover – TM Alfa Laval
Torque-Rite – TM Rubber Fab

ZANITARY® Series

Metal Rupture Disks



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



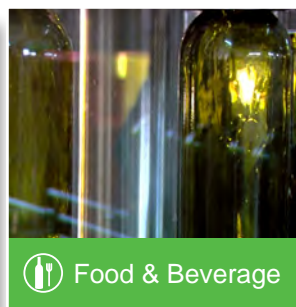
 Pharmaceutical



 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

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.





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