Continental Disc® Corporation

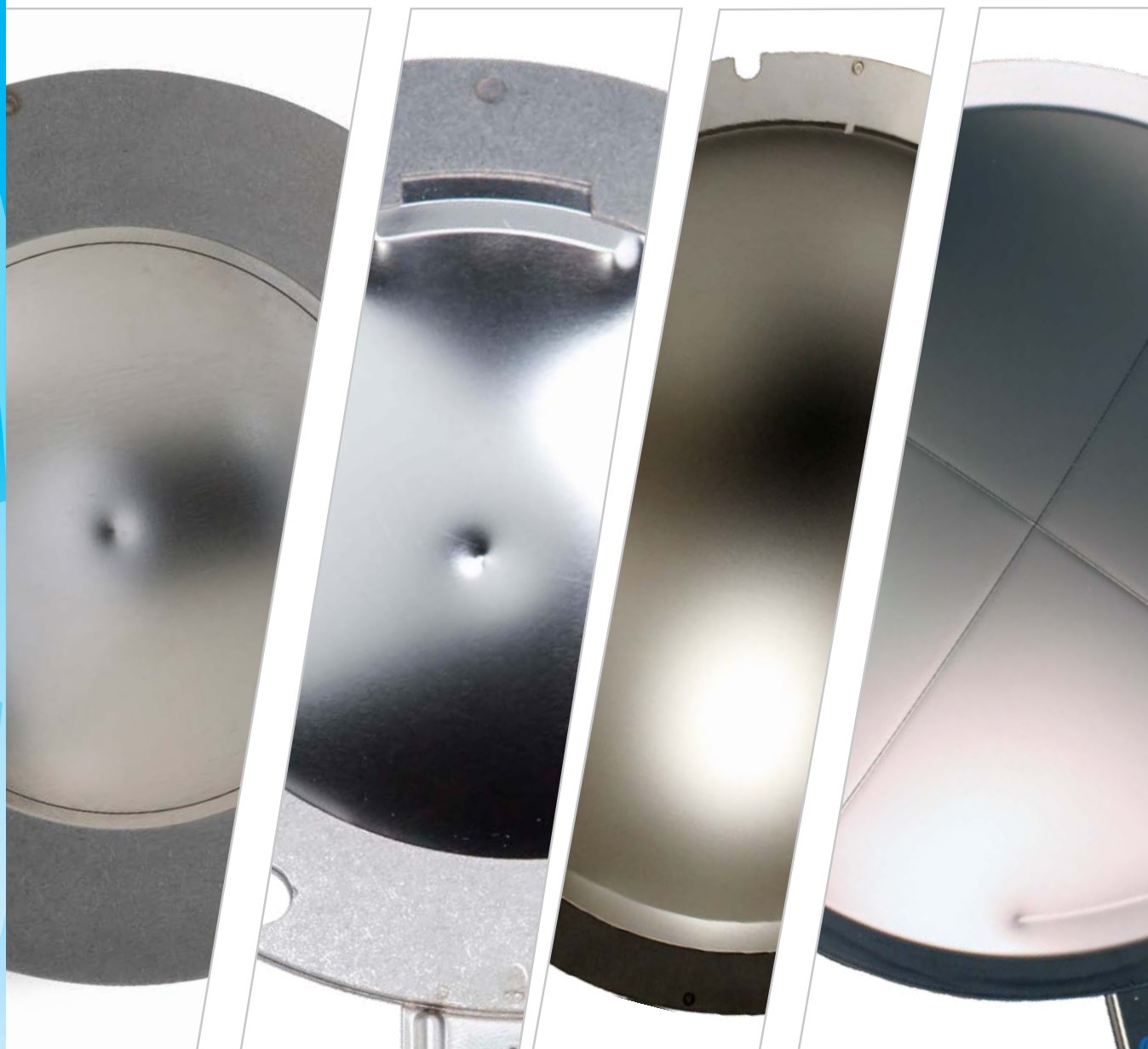
# REVERSE ACTING RUPTURE DISCS & HOLDERS

LOTRX® // RCS®

RUPTURE DISCS, HOLDERS & ACCESSORIES

# RUPTURE DISCS

## FOR OVERPRESSURE PROTECTION



GENERAL INFORMATION

**Continental Disc's solid metal, scored, reverse acting rupture discs are differential pressure relief devices that provide an instantaneous fully-open, non-reclosing design for protecting vessels, equipment and systems from an overpressure condition.**

**The LOTRX® and RCS® Rupture Discs offer a wide range of pressures and reliable features, including:**

- 90% maximum recommended operating ratio
  *(see Burst Pressure Ratings tables for details)*
- Available with a ZERO MANUFACTURING RANGE
- Non-fragmenting design
- Permanently attached 3-dimensional flow direction tag
- Alignment pins and J-hooks are utlitilized for proper rupture disc and holder orientation on the LOTRX product line

## BENEFITS

### OPTIMUM FLOW

Continental Disc's scored, reverse acting rupture discs have precision controlled indentations on the surface of the rupture disc dome to initiate reversal when the specified burst pressure is achieved.

The LOTRX Rupture Disc's semicircular score provides a clean, consistent opening pattern. When an overpressure situation initiates disc reversal, the single-petal, non-fragmenting rupture disc opens, folding back against the holder, resulting in an optimum flow condition.

The RCS Rupture Disc's cross-scored pattern provides a clean, consistent opening pattern. When an overpressure situation initiates disc reversal, the rupture disc opens in a non-fragmenting four petal design, resulting in an optimum flow condition.

### CORROSIVE PROTECTION

Reverse acting rupture discs are superior for use in a corrosive media environment. A wide range of materials and the use of thicker rupture disc materials contribute to the superior corrosive resistance. A fluoropolymer liner or coating may be used on the process side of these rupture discs for additional corrosion protection.

### SAFETY RATIO

Should your reverse acting rupture disc be damaged during installation or handling, it has been designed to provide pressure relief at or less than the rated (marked) burst pressure for the LOTRX Rupture Disc, and at or less than 1.5 times the rated (marked) burst pressure for the RCS Rupture Disc.

HPX® PRODUCT FAMILY

## HPX® Rupture Disc Product Family

Built on years of research and development, the **HPX®** and **SANITRX HPX® Rupture Discs** are high precision pressure relieving devices that protect personnel, equipment and the environment. The versatility of the HPX® Rupture Disc Product Family offers pressure protection for a wide range of applications in many processing industries, including: chemical, oil and gas, food, beverage, pharmaceutical, biotech, pulp and paper, power and more.

The HPX® Rupture Disc Product Family is the most advanced line of rupture discs available, incorporating proven performance in excess of a quarter million cycles*, operating up to 95% of burst pressure and offered in a wide range of burst pressures, materials and sizes. These features support reduced down time and lower maintenance costs, increasing the productivity of your facility!

The **HPX® Rupture Disc Product Family** contains a wealth of reverse acting products:

HPX®

HPX-Ta™

SANITRX HPX®

SANITRX HPX® II

*FOR MORE INFORMATION, PLEASE SEE THE **HPX® RUPTURE DISC PRODUCT FAMILY LITERATURE.***

*Test performed on HPX-95 316 SS and HASTELLOY® C

# REVERSE ACTING RUPTURE DISC SELECTION TABLE

The most advanced and preferred choice for reverse acting rupture discs come from the HPX® Rupture Disc Product Family.

The LOTRX® and RCS Rupture Discs are available in sizes and pressures outside the scope of the HPX® Rupture Disc Product Family.

SANITRX®, SANITRX® LP, ULTRX®, MINTRX®, STAR X® KBA & ZAP Rupture Discs are available for maintenance replacement only.

| | PROCESS ENVIRONMENT | |
|---|---|---|
| **LOTRX®** | Gas or Liquid (static, cyclic or pulsating) | |
| **RCS** | Gas Only (static, cyclic or pulsating) | |

# EVOLUTION OF THE CDC REVERSE ACTING RUPTURE DISC

**1971**
Introduction of KBA reverse acting rupture disc design

**1973**
Patented first reverse buckling disc with replaceable knife blades

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Introduction of ZAP Rupture Disc design with encapsulating rings

**1975**
ZAP design receives the John C. Valor Award for innovative new product for the chemical industry

**1985**
CDC's state-of-the-art ULTRX® scored reverse acting rupture disc design introduced

**1986**
ULTRX® design receives Missouri Governor's Award for Product Innovation

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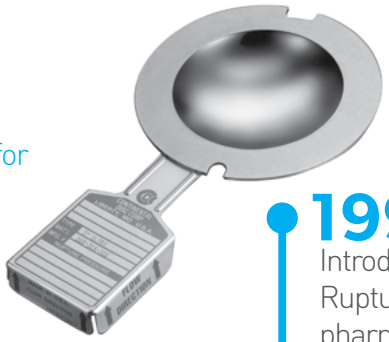
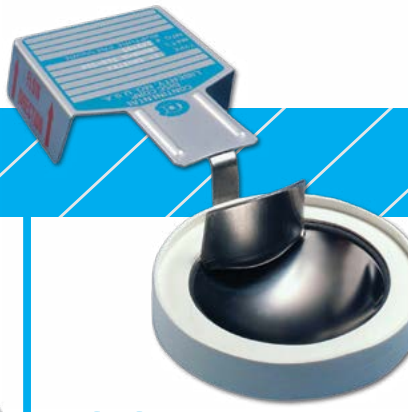
ULTRX® design receives the John C. Valor Award for innovative new product for the chemical industry



**1989**
Introduced MINTRX® a low pressure scored reverse acting rupture disc

**1993**
Introduction of SANITRX® Rupture Disc design for pharmaceutical industry



**1994**
SANITRX® design receives "Innovation in Pharmaceutical Processing" award

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STAR X® Rupture Disc design introduced

| | SIZE | BURST PRESSURE RANGE | RECOMMENDED MAX. OPERATING TO BURST PRESSURE RATIO | MANUFACTURING RANGE | VACUUM SUPPORT REQUIRED TO WITHSTAND FULL VACUUM | STANDARD MATERIALS | | | | | | FLOW DIRECTION | COMPATIBLE HOLDERS | | | RECOMMENDED FOR ISOLATION OF SAFETY RELIEF VALVE | AVAILABLE BURST DISC INDICATOR (B.D.I.®) | AVAILABLE ASME Ⓤ CERTIFICATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | MONEL | INCONEL | NICKEL | 316 SS or 316L SS | HASTELLOY® C | TANTALUM | | INSERT | PRE-TORQUED | DOUBLE DISC | | | |
| | 1" - 8"<br>25 - 200 mm | 1.5 - 30 psig<br>0,103 - 2,07 barg | 90% | ZERO<br>-5%<br>-10% | NO* | ✦ | ✦ | ✦ | ✦ | ✦ | ✦ | | ✦ | ✦ | ✦ | ✦ | ✦ | ✦ |
| | 14" - 32"<br>350 - 800 mm | 20 - 180 psig<br>1,38 - 12,4 barg | 90% | ZERO<br>-5%<br>-10% | NO | ✦ | ✦ | ✦ | ✦ | ✦ | | | ✦ | ✦ | ✦ | ✦ | ✦ | ✦ |

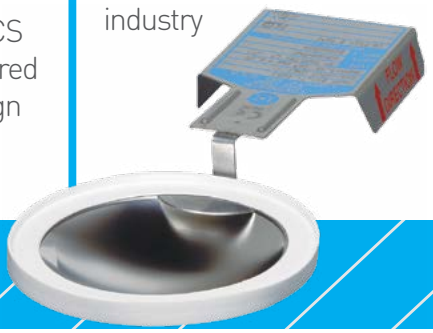
**Designed to withstand full vaccum for burst pressure ratings above 5 psig (0,345 barg)*

Much of the growth of Continental Disc Corporation is due to the development of innovative products to meet the needs of its customers. All one needs to do is look at the evolution of the reverse acting rupture disc product line below to see this fact.

## 1996
Introduction of RCS reverse cross scored rupture disc design

## 2001
Introduction of low pressure scored reverse acting rupture disc design...LOTRX®

## 2003
Introduction of SANITRX® LP Rupture Disc, a low pressure design for the pharmaceutical industry



## 2010
Introduction of the HPX® and SANITRX HPX® high precision pressure relieving devices

## 2011
SANITRX® LPX released for lower pressure sanitary applications

## 2012
Introduced... SANITRX HPX® II for higher pressures than the SANITRX HPX®

## 2013
Released... HPX®-Ta Tantalum Rupture Disc for highly corrosive areas

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Increased pressures for HPX® up to 2,000 psig (138 barg)

CODES

# CODE COMPLIANCE

When specified, LOTRX and RCS Rupture Discs will be manufactured in accordance with ASME Code Sections III or VIII or other codes as required. For these applications, Continental Disc Corporation will manufacture, temperature test and mark the rupture discs to comply with specific code requirements.

Compliance with ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 is available when requested for the LOTRX and RCS Rupture Disc Assembles.

CE Marked LOTRX and RCS Rupture Discs in compliance with Pressure Equipment Directive 97/23 EC are available when requested.

LOTRX and RCS Rupture Disc Assemblies are available to be manufactured to comply with other codes or standards as required.

Continental Disc maintains an in-house ASME accepted flow testing laboratory to conduct flow testing for rupture discs, relief valves and rupture disc/valve combinations.

# LOTRX® RUPTURE DISC

The **LOTRX® Rupture Disc** is a scored reverse acting rupture disc that utilizes a failure initiating indent, a highly accurate manufacturing method to achieve and control a burst pressure at close tolerances, plus a precision semicircular score to provide a clean, consistent opening pattern.

## FEATURES/SPECIFICATIONS

**Sizes:**
1" - 8" (25mm - 200mm)

**Burst Pressure:**
1.5 - 40 psig (0,103 - 2,07 barg)

**Manufacturing Range:**
ZERO, -5%, -10%
*(see burst pressure rating on pages 10 & 11)*

**Maximum Recommended Operating Ratio:**
90%
*(see burst pressure rating on pages 10 & 11)*

**Available Maximum Temperature Limit:**
1000° F (538° C)
*(see table 3 on page 9)*

**Service:**
Gas or Liquid

**Nonfragmenting Design:**
Yes

**Withstand Full Vacuum:**
Yes*

**Operating Conditions:**
Static, Cyclic or Pulsating

**Material(s):**
316 SS, 316L SS, HASTELLOY® C, Nickel, MONEL®, INCONEL® and Tantalum

**Seat Configuration:**
Flat seat

**Holders:**
LOTRX Insert Holder

**Compatible with the Following Alarm System:**
BDI-FLX™** or B.D.I.

**Tagging:**
Three dimensional stainless steel flow direction tag attached to all sizes

* *Designed to withstand full vacuum for burst pressure ratings above 5 psig (0,345 barg)*
** *BDI-FLX™ Burst Disc Sensor System should not be used for pressure ratings below the minimum rating listed in the BDI-FLX™ Burst Disc Sensor System Datasheet.*

The LOTRX Rupture Disc provides all the benefits of Continental's scored, reverse acting discs, with additional features that make it ideal for extremely low pressure applications.

The LOTRX Rupture Disc is an ideal choice for primary and/or secondary system relief protection and provides an effective means of fugitive emission control when used to isolate a safety relief valve.

### LOTRX Rupture Disc Features:

- Failure Initiating Indent, located at or near the apex of the rupture disc dome, lowers the pressure at which reversal occurs
- Notched Outlet Ring facilitates opening of the rupture disc along the precision semicircular score at extremely low reversal pressures
- Backpressure Support Inlet Ring permits operation under full vacuum conditions for burst pressure ratings 5 psig (0,345 barg) and above

### Optional Features:

- Fluoropolymer outlet protective cover available for corrosion protection on the vent side of the rupture disc and holder in 1" (above 4 psig) and 1 1/2"-8" (all pressures)
- Fluoropolymer coating is available for corrosion protection on the process and/or vent side of the rupture disc
- Safety Ratio 1 to 1 or less. If the rupture disc becomes damaged, it will relieve at or below the burst pressure
- Ideal for liquid or gas/vapor applications
- Available to be cleaned for Oxygen or Chlorine service
- Stainless steel encapsulating rings are standard, optional ring materials available
- To optimize service life and rupture disc performance, Continental Disc manufactures and tests each LOTRX rupture disc order for compressible or incompressible relief conditions as required by your application. LOTRX rupture discs manufactured and tested only for compressible (gas/vapor) relief conditions may not function properly in an incompressible (liquid) application. Please state in your specifications and orders if a scenario exists for relief of incompressible media or if relief conditions exist only for compressible media

RCS® RUPTURE DISC

# RCS® RUPTURE DISC

The **RCS Rupture Disc** is a reverse acting, cross-scored, solid metal rupture disc, providing reliable pressure relief protection, and easy installation. It is a non-reclosing differential pressure relief device that provides instantaneous full opening for protection of equipment, vessels and systems from overpressure conditions.

## FEATURES/SPECIFICATIONS

**Sizes:**
14" - 32" (350mm - 800mm)

**Burst Pressure:**
20 - 180 psig (1,38 - 12,4 barg)

**Manufacturing Range:**
ZERO, -5%, -10%
*(see burst pressure rating on pages 10 & 11)*

**Maximum Recommended Operating Ratio:**
90%
*(see burst pressure rating on pages 10 & 11)*

**Available Maximum Temperature Limit:**
1000° F (538° C)
*(see table 3 on page 9)*

**Service:**
Gas Only

**Nonfragmenting Design:**
Yes

**Withstand Full Vacuum:**
Yes

**Operating Conditions:**
Static, Cyclic or Pulsating

**Material(s):**
316 SS, 316L SS, HASTELLOY® C, Nickel, MONEL®, INCONEL®

**Seat Configuration:**
Flat seat

**Holders:**
RCS Insert Holder, RCS Double Disc Insert Holder

**Compatible with the Following B.D.I. Alarm System:**
Universal

**Tagging:**
Three dimensional stainless steel flow direction tag attached to all sizes

The RCS Rupture Disc utilizes failure initiating indents, a highly accurate manufacturing method to achieve and control a burst pressure at close tolerances to provide a clean, consistent opening pattern.

The RCS Rupture Disc is an ideal choice for primary and/or secondary system relief protection and provides an effective means of fugitive emission control when used to isolate a safety relief valve.

### RCS Rupture Disc Features Include:

- Failure initiating indent to control the reversal action
- The cross-scoring pattern is placed on the vent side of the rupture disc, thus preventing process build-up or corrosion along the score lines

### Optional Features:

- Available with a fluoropolymer liner for corrosion protection on the process side of the rupture disc
- Fluoropolymer outlet protective cover available for corrosion protection on the vent side of the rupture disc and holder
- Safety Ratio 1.5 to 1 or less. If the rupture disc becomes damaged, it will relieve at or below 1.5x the burst pressure
- Designed and tested for gas/vapor service only
- Available to be cleaned for Oxygen or Chlorine service

RUPTURE DISC TABLES

## TABLE 1 // LOTRX® Min/Max Burst Pressures at 72°F (22°C)

White bars indicate 'psig'.
Grey bars indicate 'barg'

**NOTE:** Minimum and maximum pressures are based upon corresponding minimum and maximum of the manufacturing range at 72°F (22°C).

| Model | Size | Nickel/MONEL® | | 316 SS / 316L SS, INCONEL® | | HASTELLOY C® | |
|---|---|---|---|---|---|---|---|
| | | MIN | MAX | MIN | MAX | MIN | MAX |
| LOTRX® Rupture Disc | 1 in | 2 | 15 | 2 | 15 | 4 | 30 |
| | 25 mm | 0,138 | 1,03 | 0,138 | 1,03 | 0,276 | 2,07 |
| | 1 ½ in | 2 | 10 | 2 | 10 | 4 | 20 |
| | 40 mm | 0,138 | 0,689 | 0,138 | 0,689 | 0,276 | 1,38 |
| | 2 in | 2 | 10 | 2 | 10 | 4 | 15 |
| | 50 mm | 0,138 | 0,689 | 0,138 | 0,689 | 0,276 | 1,03 |
| | 3 in | 3 | 10 | 3 | 10 | 5 | 15 |
| | 80 mm | 0,207 | 0,689 | 0,207 | 0,689 | 0,345 | 1,03 |
| | 4 in | 1.5 | 10 | 1.5 | 10 | 3 | 15 |
| | 100 mm | 0,104 | 0,689 | 0,104 | 0,689 | 0,207 | 1,03 |
| | 6 in | 2.5 | 10 | 2.5 | 10 | 7 | 15 |
| | 150 mm | 0,173 | 0,689 | 0,173 | 0,689 | 0,483 | 1,03 |
| | 8 in | 3.5 | 10 | 3.5 | 10 | 10.5 | 15 |
| | 200 mm | 0,242 | 0,689 | 0,242 | 0,689 | 0,724 | 1,03 |

## TABLE 2 // RCS® Min/Max Burst Pressures at 72°F (22°C)

White bars indicate 'psig'.
Grey bars indicate 'barg'

**NOTE:** Minimum and maximum pressures are based upon corresponding minimum and maximum of the manufacturing range at 72°F (22°C).

| Model | Size | Nickel | | 316 SS / 316L SS, INCONEL® | | MONEL®/INCONEL® | |
|---|---|---|---|---|---|---|---|
| | | MIN | MAX | MIN | MAX | MIN | MAX |
| RCS® Rupture Disc | 14 in | 23 | 100 | 28 | 180 | 28 | 180 |
| | 350 mm | 1,59 | 6,89 | 1,93 | 12,4 | 1,93 | 12,4 |
| | 16 in | 22 | 95 | 26 | 160 | 26 | 160 |
| | 400 mm | 1,52 | 6,55 | 1,79 | 11,0 | 1,79 | 11,0 |
| | 18 in | 21 | 85 | 24 | 145 | 24 | 145 |
| | 450 mm | 1,45 | 5,86 | 1,65 | 10,0 | 1,65 | 10,0 |
| | 20 in | 20 | 70 | 22 | 120 | 22 | 120 |
| | 500 mm | 1,38 | 4,83 | 1,52 | 8,27 | 1,52 | 8,27 |
| | 24 in | 20 | 60 | 22 | 115 | 22 | 115 |
| | 600 mm | 1,38 | 4,14 | 1,52 | 7,93 | 1,52 | 7,93 |
| | 30 in | 20 | 55 | 22 | 100 | 22 | 100 |
| | 760 mm | 1,38 | 3,79 | 1,52 | 6,89 | 1,52 | 6,89 |
| | 32 in | 20 | 50 | 22 | 95 | 22 | 95 |
| | 800 mm | 1,38 | 3,45 | 1,52 | 6,55 | 1,52 | 6,55 |

## TABLE 3 // Maximum Recommended Temperature Limits

| Disc Material | Fahrenheit | Celsius |
|---|---|---|
| Nickel / MONEL® | 800° | 427° |
| 316 SS / 316L SS, HASTELLOY® C | 900° | 482° |
| INCONEL® | 1000° | 538° |

| Disc Material | Fahrenheit | Celsius |
|---|---|---|
| Tantalum | 500° | 260° |
| Fluoropolymer Liner | 500° | 260° |

BURST PRESSURE RATINGS TABLES

# BURST PRESSURE RATINGS

The rupture discs in the following tables illustrate:

- Standard burst pressure rating types and ranges available
- The associated tolerances for the burst pressure rating
- How to determine the maximum recommended operating pressure

*Special ranges are available upon request.*

## Keep in mind:

- For compliance to ASME Section VIII, Division 1, the **RATED** rating type must be used.
- For compliance to the Pressure Equipment Directive 97/23/EC (to carry the CE Mark) and the ISO 4126-2 standard, either the **SPECIFIED** or **MIN/MAX** rating type must be used.

*FOR MORE INFORMATION ON RATING TYPES, PLEASE SEE THE **BURST RATING TYPES DATASHEET***

## TABLE 4 // RATED RUPTURE DISC RATING TYPE

| PRODUCT | RATED BURST PRESSURE | MANUFACTURING RANGE | BURST TOLERANCE AROUND RATED (MARKED) BURST PRESSURE | MAXIMUM RECOMMENDED OPERATING PRESSURE |
|---|---|---|---|---|
| LOTRX | above 20 psig<br>above 1,38 barg | Zero | -2 psig / +2 psig<br>-0,138 barg / +0,138 barg | 90% of [Rated (Marked) Burst Pressure - 2 psig]<br>90% of [Rated (Marked) Burst Pressure - 0,138 barg] |
| | | -5% | | |
| | | -10% | | |
| | above 6 up to and including 20 psig<br>above 0,414 up to and including 1,38 barg | Zero | -10% / +10% | 90% of [Rated (Marked) Burst Pressure - 10%] |
| | | -5% | | |
| | | -10% | | |
| | above 5 up to and including 6 psig<br>above 0,345 up to and including 0,414 barg | Zero | -10% / +10% | 90% of [Rated (Marked) Burst Pressure - 10%] |
| | | -0.3 psig<br>-0,021 barg | | |
| | | -0.6 psig<br>-0,041 barg | | |
| | up to and including 5 psig<br>up to and including 0,345 barg | Zero | -15% / +15% | 90% of [Rated (Marked) Burst Pressure - 15%] |
| | | -0.3 psig<br>-0,021 barg | | |
| | | -0.6 psig<br>-0,041 barg | | |
| RCS | above 50 psig<br>above 3,45 barg | Zero | -5% / +5% | 90% of Rated (Marked) Burst Pressure |
| | | -5% | | |
| | | -10% | | |
| | above 40 up to and including 50 psig<br>above 2,76 up to and including 3,45 barg | Zero | -5% / +5% | 90% of Rated (Marked) Burst Pressure |
| | | -2.5 psig<br>-0,173 barg | | |
| | | -5 psig<br>-0,345 barg | | |
| | up to and including 40 psig<br>up to and including 2,76 barg | Zero | -2 psig / +2 psig<br>-0,138 barg / +0,138 barg | 90% of [Rated (Marked) Burst Pressure - 2 psig]<br>90% of [Rated (Marked) Burst Pressure - 0,138 barg] |
| | | -2.5 psig<br>-0,173 barg | | |
| | | -5 psig<br>-0,345 barg | | |

*Rating and Range is based on psig values, barg values are provided for reference*

# TABLE 5 // SPECIFIED RUPTURE DISC RATING TYPE

| PRODUCT | SPECIFIED BURST PRESSURE | PERFORMANCE TOLERANCE | EQUIVALENT MANUFACTURING RANGE | MAXIMUM RECOMMENDED OPERATING PRESSURE |
|---|---|---|---|---|
| LOTRX | above 20 psig<br>above 1,38 barg | -2 psig /+2 psig<br>-0,138 barg / +0,138 barg | Zero | 90% of Min of Performance Tolerance |
| | | SPEC × 0.95-2 psig - SPEC /+ 2 psig<br>SPEC × 0.95-0,138 barg - SPEC /+ 0,138 barg | -5% | |
| | | SPEC × 0.9-2 psig - SPEC /+ 2 psig<br>SPEC × 0.9-0,138 barg - SPEC /+ 0,138 barg | -10% | |
| | above 6 up to and including 20 psig<br>above 0,414 up to and including 1,38 barg | -10% / +10% | Zero | 90% of Min of Performance Tolerance |
| | | -14.5% / +10% | -5% | |
| | | -19% / +10% | -10% | |
| | above 5 up to and including 6 psig<br>above 0,345 up to and including 0,414 barg | -10% / +10% | Zero | 90% of Min of Performance Tolerance |
| | | $\left(\frac{(SPEC\ -0.3\ psig)\ 0.9}{SPEC} -1\right)$ 100% / +10%<br>$\left(\frac{(SPEC\ -0,021\ barg)\ 0.9}{SPEC} -1\right)$ 100% / +10% | -0.3 psig<br>-0,021 barg | |
| | | $\left(\frac{(SPEC\ -0.6\ psig)\ 0.9}{SPEC} -1\right)$ 100% / +10%<br>$\left(\frac{(SPEC\ -0,041\ barg)\ 0.9}{SPEC} -1\right)$ 100% / +10% | -0.6 psig<br>-0,041 barg | |
| | up to and including 5 psig<br>up to and including 0,345 barg | -15% / +15% | Zero | 90% of Min of Performance Tolerance |
| | | $\left(\frac{(SPEC\ -0.3\ psig)\ 0.85}{SPEC} -1\right)$ 100% / +15%<br>$\left(\frac{(SPEC\ -0,021\ barg)\ 0.85}{SPEC} -1\right)$ 100% / + 15% | -0.3 psig<br>-0,021 barg | |
| | | $\left(\frac{(SPEC\ -0.6\ psig)\ 0.85}{SPEC} -1\right)$ 100% / +15%<br>$\left(\frac{(SPEC\ -0,041\ barg)\ 0.85}{SPEC} -1\right)$ 100% / + 15% | -0.6 psig<br>-0,041 barg | |
| RCS | above 50 psig<br>above 3,45 barg | -5% / +5% | Zero | 95% of Min of Performance Tolerance |
| | | -9.75% / +5% | -5% | |
| | | -14.5% / +5% | -10% | |
| | above 40 up to and including 50 psig<br>above 2,76 up to and including 3,45 barg | -5% / +5% | Zero | 95% of Min of Performance Tolerance |
| | | $\left(\frac{(SPEC\ -2.5\ psig)\ 0.95}{SPEC} -1\right)$ 100% / +5%<br>$\left(\frac{(SPEC\ -0,173\ barg)\ 0.95}{SPEC} -1\right)$ 100% / +5% | -2.5 psig<br>-0,173 barg | |
| | | $\left(\frac{(SPEC\ -5\ psig)\ 0.95}{SPEC} -1\right)$ 100% / +5%<br>$\left(\frac{(SPEC\ -0,345\ barg)\ 0.95}{SPEC} -1\right)$ 100% / +5% | -5 psig<br>-0,345 barg | |
| | up to and including 40 psig<br>up to and including 2,76 barg | -2 psig /+2 psig<br>-0,138 barg / +0,138 barg | Zero | 90% of Min of Performance Tolerance |
| | | -4.5 psig / +2 psig<br>-0,311 barg / +0,138 barg | -2.5 psig<br>-0,173 barg | |
| | | -7 psig / +2 psig<br>-0,483 barg / +0,138 barg | -5 psig<br>-0,345 barg | |

*In table: SPEC = Specified Burst Pressure*
*Rating and Range is based on psig values, barg values are provided for reference*

BURST PRESSURE RATINGS TABLES

# BURST PRESSURE RATINGS TABLES

## TABLE 6 // MIN/MAX RUPTURE DISC RATING TYPE

| PRODUCT | MAX BURST PRESSURE | MIN = | EQUIVALENT MANUFACTURING RANGE | MAXIMUM RECOMMENDED OPERATING PRESSURE |
|---|---|---|---|---|
| LOTRX | above 22 psig<br>above 1,52 barg | MAX - 4 psig<br>MAX - 0,279 barg | Zero | 90% of Min Burst Pressure |
| | | (MAX - 2 psig) x 0.95 - 2 psig<br>(MAX - 0,138 barg) x 0.95 - 0,138 barg | -5% | |
| | | (MAX - 2 psig) x 0.9 - 2 psig<br>(MAX - 0,138 barg) x 0.9 - 0,138 barg | -10% | |
| | above 6.6 up to and including 22 psig<br>above 0,455 up to and including 1,52 barg | MAX / 1.1 x 0.9 | Zero | 90% of Min Burst Pressure |
| | | MAX / 1.1 x 0.95 x 0.9 | -5% | |
| | | MAX / 1.1 x 0.9 x 0.9 | -10% | |
| | above 5.75 up to and including 6.6 psig<br>above 0,345 up to and including 0,414 barg | MAX / 1.1 x 0.9 | Zero | 90% of Min Burst Pressure |
| | | (MAX / 1.1 - 0.3 psig) 0.9<br>(MAX / 1.1 - 0,021 barg) 0.9 | -0.3 psig<br>-0,021 barg | |
| | | (MAX / 1.1 - 0.6 psig) 0.9<br>(MAX / 1.1 - 0,041 barg) 0.9 | -0.6 psig<br>-0,041 barg | |
| | up to and including 5.75 psig<br>up to and including 0,396 barg | MAX / 1.15 x 0.85 | Zero | 90% of Min Burst Pressure |
| | | (MAX / 1.15 - 0.3 psig) 0.85<br>(MAX / 1.15 - 0,021 barg) 0.85 | -0.3 psig<br>-0,021 barg | |
| | | (MAX / 1.15 - 0.6 psig) 0.85<br>(MAX / 1.5 - 0,041 barg) 0.85 | -0.6 psig<br>-0,041 barg | |
| RCS | above 52.5 psig<br>above 3,62 barg | MAX / 1.05 x 0.95 | Zero | 95% of MIN Burst Pressure |
| | | MAX / 1.05 x 0.95 x 0.95 | -5% | |
| | | MAX / 1.05 x 0.9 x 0.95 | -10% | |
| | above 42 up to and including 52.5 psig<br>above 2,90 up to and including 3,62 barg | MAX / 1.05 x 0.95 | Zero | 95% of MIN Burst Pressure |
| | | (MAX / 1.05 - 2.5 psig) 0.95<br>(MAX / 1.05 - 0,173 barg) 0,95 | -2.5 psig<br>-0,173 barg | |
| | | (MAX / 1.05 - 5 psig) 0.95<br>(MAX / 1.05 - 0,345 barg) 0,95 | -5 psig<br>-0,345 barg | |
| | up to and including 42 psig<br>up to and including 2,90 barg | MAX - 4 psig<br>MAX - 0,276 barg | Zero | 90% of MIN Burst Pressure |
| | | MAX - 6.5 psig<br>MAX - 0,449 barg | -2.5 psig<br>-0,173 barg | |
| | | MAX - 9 psig<br>MAX - 0,621 barg | -5 psig<br>-0,345 barg | |

*In table: MAX = MAX Burst Pressure and MIN = MIN Burst Pressure*
*Rating and Range is based on psig values, barg values are provided for reference*

# REVERSE ACTING RUPTURE DISC HOLDERS



Reverse Acting Rupture Disc Holders are designed to optimize flow, assure proper orientation of the rupture disc in your piping system, provide a tight seal, prevent fragmentation of the rupture disc and enable direct mounting underneath a safety relief valve. Continental Disc Corporation offers an extensive line of holders including Insert Holders and Double Disc Holders.

## Sealing Capabilities

Continental's holder designs provide superior sealing capabilities to prevent product loss or contamination. The tapered or flat raised seat configuration of Continental's LOTRX and RCS holders outperforms other, similar designs, without the need for "pre-torque" arrangements.

**Insert Type Rupture Disc Holders** are flat faced assemblies that fit between two ASME, DIN or JIS companion flanges. Insert holders to fit other standards are available. The holder inlet protects the rupture disc dome during installation of the assembly into the piping system. A proper holder is an integral part of the rupture disc relief system. The holder provides a controlled environment for the rupture disc to operate properly, providing maximum performance and process safety.

**Common features of Continental Disc Corporation's Insert Holders include:**

- Fit within companion flange bolts, allowing easy installation and removal
- Pre-assembly clips or cap screws are standard and provide means to assemble the rupture disc and holder together before installation in piping system
- Stainless steel flow direction nameplates permanently attached to the holder

**LOTRX Insert Holders** are designed with a flat raised seat on the holder inlet. This design allows a uniform seal load on the mating rupture disc. Proper orientation of the rupture disc is assured by the three alignment pins in the holder inlet that properly align and orient the rupture disc in the holder. The holder outlet bore incorporates an arcuate that provides a radiused hinge for the disc petal to form around preventing fragmentation of the disc. A J-Hook and flow direction arrows on the nameplates aid in the correct assembly orientation between companion flanges.

**The RCS Insert Holder** The tapered seat configuration allows a uniform seal load on the rupture disc. Flow direction arrows on the nameplates aid in the correct assembly orientation between companion flanges.

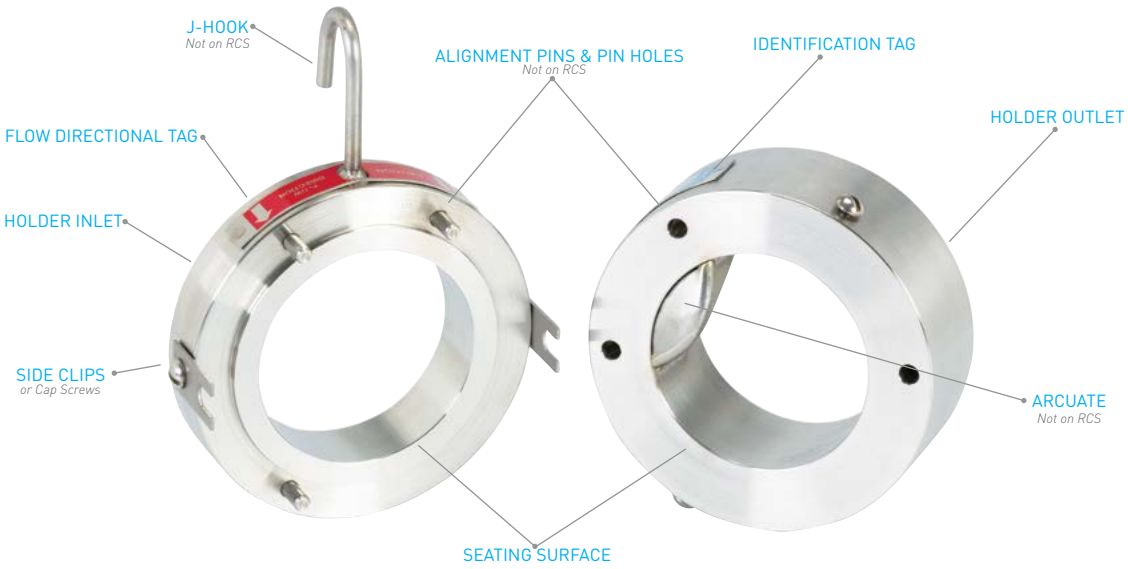
**A Double Disc Holder Assembly** consists of three holder components: an inlet, a mid-flange and an outlet piece, along with two rupture discs. The first of the two rupture discs is located between the inlet and the mid-flange, and the second rupture disc is located between the mid-flange and outlet. This assembly arrangement provides the solution to multiple applications without the need of a more complicated piping arrangement.

# RUPTURE DISC HOLDERS

## Additional Holder Features Include:

- Holder assemblies are made from standard materials including Carbon Steel, 316 stainless steel, HASTELLOY® C and MONEL®. Other materials are available upon request.
- As a standard, the holder will come with spiral groove facing per ASME BI6.5, which will provide a surface finish between 125 and 250 microinches (3,2 to 6,3 micrometers).
- Available with optional 1/4", 3/8" or 1/2" gauge taps in the holder's inlet, midflange and/or outlet.
- CORROSION RESISTANCE can be enhanced by a fluoropolymer coating of the holder inlet, midflange and/or outlet.
- For additional corrosion protection of LOTRX holders, TANTALUM lining is available on the inlet portion of the holder as well as TANTALUM coating of the holder inlet, midflange and/or outlet.
- Holder assemblies can also be manufactured in a pre-torqued design, at customer request. The pre-torqued holder allows the disc to be correctly fitted in the workshop using precise recommended torque levels, prior to installation of the complete assembly between the companion flanges in the process system.

## INSERT HOLDER



# HOLDER ACCESSORIES

**STUDS AND NUTS** of the appropriate length to engage the reverse acting rupture disc insert holder with an inlet and outlet flange are available in alloy steel[1] or 316 SS[2] materials

**JACKSCREWS,** case hardened steel: 3/set

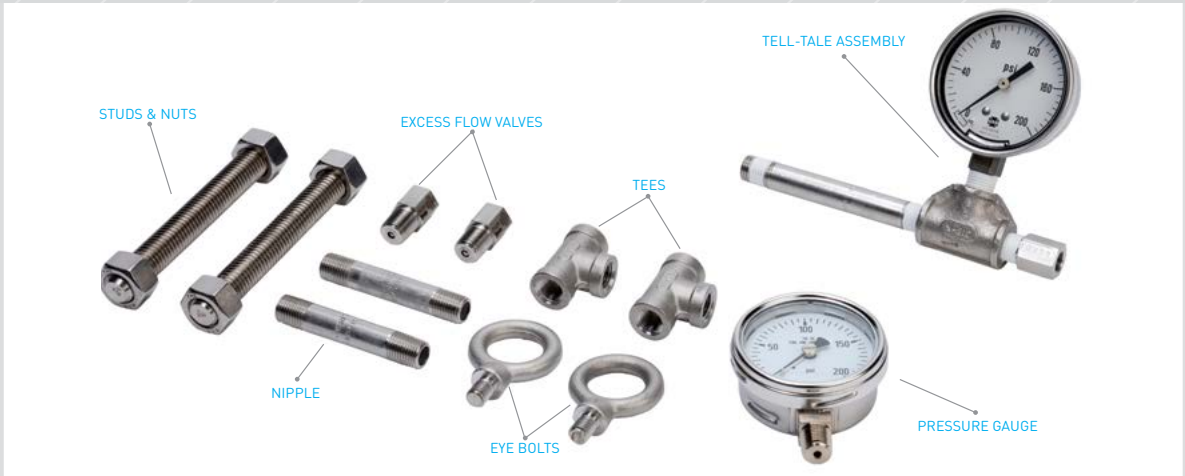
**EYEBOLTS,** carbon steel

**CLEANING FOR OXYGEN** or **CHLORINE SERVICE**

**TELL-TALE INDICATOR** components between any two inline pressure relief devices can include the following:

- Gauge taps in the holder outlet: 1/4", 3/8" & 1/2" threaded (tap size, location & type may impact holder height)
- Pipe nipples and tees, CS or SS: 1/4" or 1/2"
- Excess Flow Valve, 316 SS: 1/4" or 1/2"
- Gauges

## HOLDER ACCESSORIES




[1] ASME SA-193-B7 studs, SA-194-2H nuts [2] ASME SA-193-B8M Class 2 studs, SA-194-8M nuts

# ALARM MONITORS

Continental Disc Corporation provides two systems for monitoring the burst of a rupture disc, the **BDI-FLX™ Burst Disc Sensor System** and the **B.D.I.® Alarm System**. Common features include:

- Detects venting, provides instantaneous notification of the bursting of a rupture disc
- Signals emergency equipment, control room and/or operating personnel to alter or stop a process
- Can be combined with a CDC Alarm Monitor to protect equipment, lives and the environment

The **BDI-FLX™ Burst Disc Sensor System** provides many benefits, which include:

- Allows direct interface to PLC's, DCS (Distributed Control System), alarm monitors or isolating barriers and can provide dry contacts for industrial controls
- Improved durability:
  - The conductive element is fully encapsulated in corrosive resistant polyimide film
  - The advanced technologies of the sensor strip minimize the risk of damage due to excessive stress beyond recommended bolting load
  - The alignment ring provides a rigid support for the new sensor cable, minimizing cable strain
- Modernized output cable connectors in accordance with IEC 61076-2-101. IP67 rated M12 connector

*FOR MORE INFORMATION ON OUR BDI-FLX BURST DISC SENSOR SYSTEM, PLEASE SEE THE: BDI-FLX BURST DISC SENSOR SYSTEM DATASHEET*

The **B.D.I. Alarm System** provides many benefits, which include:

- Expanded availability in sizes up to 36" (900mm)
- Available as integral design to many rupture disc and vent panel products

*FOR MORE INFORMATION ON OUR B.D.I. ALARM SYSTEM, PLEASE SEE THE: B.D.I. ALARM SYSTEM DATASHEET*

# REVERSE ACTING HOLDER TABLE

## TABLE 8 // WEIGHTS & DIMENSIONS FOR REVERSE ACTING HOLDERS

| HOLDER SIZES AVAILABLE | | NOMINAL SIZE | ASME | | DIN | | JIS | | LOTRX Height | RCS Height | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOTRX | RCS | | Class | Outside Diameter (inch/mm) | Class | Outside Diameter (mm) | Class | Outside Diameter (mm) | (inch/mm) | (inch/mm) | (lb/kg) |
| ✓ | | 1 in 25 mm | 150 | 2.50 / 63,5 | | | | | 1.84 / 46,7 | | 2.0 / 0,9 |
| | | | 300 / 600 | 2.75 / 69,9 | 10 / 40 | 69,9 | 10 / 20 | 69,9 | 1.84 / 46,7 | | 2.5 / 1,1 |
| | | | | | | | 30 / 40 | 76,0 | 1.84 / 46,7 | | 3.0 / 1,4 |
| ✓ | | 1 ½ in 40 mm | 150 | 3.25 / 82,6 | | | | | 2.08 / 52,8 | | 4.5 / 2,0 |
| | | | 300 / 600 | 3.63 / 92,2 | 10 / 40 | 92,2 | | | 2.08 / 52,8 | | 4.7 / 2,1 |
| | | | | | | | 10 / 20 | 86,0 | 2.08 / 52,8 | | 4.9 / 2,2 |
| | | | | | | | 30 / 40 | 97,0 | 2.08 / 52,8 | | 5.0 / 2,3 |
| ✓ | | 2 in 50 mm | 150 | 4.00 / 101,6 | | | 10 | 101,6 | 2.40 / 61,0 | | 5.9 / 2,8 |
| | | | | | | | 16/20 | 101,6 | 2.40 / 61,0 | | 5.9 / 2,8 |
| | | | | | 10 / 40 | 108,0 | | | 2.40 / 61,0 | | 6.5 / 2,9 |
| | | | 300 / 600 | 4.25 / 108,0 | | | | | 2.40 / 61,0 | | 6.7 / 3,0 |
| | | | | | | | 30 / 40 | 111,0 | 2.40 / 61,0 | | 7.2 / 3,3 |
| | | | | | 63 | 113,0 | | | 2.40 / 61,0 | | 7.6 / 3,4 |
| ✓ | | 3 in 80 mm | 150 | 5.25 / 133,4 | | | 10 | 132,0 | 3.21 / 81,5 | | 15 / 6,9 |
| | | | | | | | 16 / 20 | 137,0 | 3.21 / 81,5 | | 16 / 7,3 |
| | | | | | 10/40 | 142,0 | | | 3.21 / 81,5 | | 19 / 8,8 |
| | | | 300 / 600 | 5.75 / 146,1 | 63 | 146,1 | 30 / 40 | 146,1 | 3.21 / 81,5 | | 21 / 9,5 |
| ✓ | | 4 in 100 mm | | | | | 10 | 156,0 | 3.97 / 100,8 | | 17 / 7,7 |
| | | | | | 10 / 16 | 162,0 | 16 /20 | 162,0 | 3.97 / 100,8 | | 20 / 9,1 |
| | | | | | 25 / 40 | 168,0 | 30 | 168,0 | 3.97 / 100,8 | | 23 / 10 |
| | | | 150 | 6.75 / 171,5 | | | | | 3.97 / 100,8 | | 24 / 11 |
| | | | 300 | 7.00 / 177,8 | | | | | 3.97 / 100,8 | | 27 / 12 |
| | | | | | | | 40 | 180,0 | 3.97 / 100,8 | | 27 / 12 |
| ✓ | | 6 in 150 mm | 150 | 8.63 / 219,2 | 10 / 16 | 217,0 | | | 5.64 / 143,3 | | 55 / 25 |
| | | | | | 25 / 40 | 233,0 | | | 5.64 / 143,3 | | 62 / 28 |
| | | | | | | | 16 / 20 | 235,0 | 5.64 / 143,3 | | 69 / 31 |
| | | | 300 | 9.75 / 247,7 | | | 30 | 247,7 | 5.64 / 143,3 | | 85 / 39 |
| | | | | | | | 40 | 262,0 | 5.64 / 143,3 | | 99 / 45 |
| ✓ | | 8 in 200 mm | | | | | 10 | 267,0 | 7.26 / 184,4 | | 83 / 38 |
| | | | | | 10/16 | 272,0 | | | 7.26 / 184,4 | | 95 / 43 |
| | | | 150 | 10.88 / 276,4 | | | | | 7.26 / 184,4 | | 95 / 43 |
| | | | | | | | 16 / 20 | 280,0 | 7.26 / 184,4 | | 100 / 45 |
| | | | | | 25 | 283,0 | | | 7.26 / 184,4 | | 104 / 47 |
| | | | | | 40 | 290,0 | | | 7.26 / 184,4 | | 108 / 49 |
| | | | 300 | 12.00 / 304,8 | | | | | 7.26 / 184,4 | | 136 / 62 |
| | ✓ | 14 in 350 mm | | | | | 10 | 420,0 | | 5.19 / 131,8 | 90 / 41 |
| | | | | | 10 | 437,0 | | | | 5.19 / 131,8 | 115 / 52 |
| | | | | | 16 | 443,0 | | | | 5.19 / 131,8 | 125 / 57 |
| | | | 150 | 17.63 / 447,8 | | | | | | 5.19 / 131,8 | 133 / 60 |
| | | | | | | | 16 / 20 | 447,8 | | 5.19 / 131,8 | 133 / 60 |
| | | | | | 25 | 457,0 | | | | 5.19 / 131,8 | 147 / 67 |
| | | | | | | | 30 | 462,0 | | 5.19 / 131,8 | 155 / 70 |
| | | | | | 40 | 474,0 | | | | 5.19 / 131,8 | 175 / 79 |
| | | | | | | | 40 | 474,0 | | 5.19 / 131,8 | 175 / 79 |
| | | | 300 | 19.00 / 482,6 | | | | | | 5.19 / 131,8 | 190 / 86 |
| | ✓ | 16 in 400 mm | | | 10 | 488,0 | 10 | 483,0 | | 6.37 / 161,8 | 163 / 74 |
| | | | | | 16 | 495,0 | | | | 6.37 / 161,8 | 178 / 81 |
| | | | | | | | 16 / 20 | 507,0 | | 6.37 / 161,8 | 204 / 93 |
| | | | 150 | 20.13 / 511,3 | | | | | | 6.37 / 161,8 | 213 / 97 |
| | | | | | 25 | 514,0 | | | | 6.37 / 161,8 | 220 / 100 |
| | | | | | | | 30 | 521,0 | | 6.37 / 161,8 | 235 / 107 |
| | | | | | | | 40 | 531,0 | | 6.37 / 161,8 | 258 / 117 |
| | | | 300 | 21.13 / 536,7 | | | | | | 6.37 / 161,8 | 271 / 123 |
| | | | | | 40 | 546,0 | | | | 6.37 / 161,8 | 293 / 133 |
| | ✓ | 18 in 450 mm | | | | | 10 | 538,0 | | 7.37 / 187,2 | 208 / 94 |
| | | | 150 | 21.50 / 546,1 | | | | | | 7.37 / 187,2 | 230 / 104 |
| | | | | | | | 16 / 20 | 572,0 | | 7.37 / 187,2 | 303 / 137 |
| | ✓ | 20 in 500 mm | | | 10 | 593,0 | 10 | 593,0 | | 8.44 / 214,4 | 278 / 126 |
| | | | 150 | 23.75 / 603,3 | | | | | | 8.44 / 214,4 | 323 / 142 |
| | | | | | 16 | 617,0 | | | | 8.44 / 214,4 | 361 / 164 |
| | | | | | | | 16 / 20 | 627,0 | | 8.44 / 214,4 | 398 / 181 |
| | ✓ | 24 in 600 mm | | | 6 | 678,0 | | | | 10.25 / 260,4 | 321 / 146 |
| | | | | | 10 | 695,0 | | | | 10.25 / 260,4 | 402 / 182 |
| | | | | | | | 10 | 697,0 | | 10.25 / 260,4 | 412 / 187 |
| | | | 150 | 28.13 / 714,5 | | | | | | 10.25 / 260,4 | 499 / 226 |
| | | | | | | | 16 / 20 | 731,0 | | 10.25 / 260,4 | 582 / 264 |
| | | | | | 16 | 734,0 | | | | 10.25 / 260,4 | 598 / 271 |
| | ✓ | 30 in 750 mm | | | | | 10 | 867,0 | | 12.79 / 324,9 | 766 / 347 |
| | | | 150 | 34.63 / 879,6 | | | | | | 12.79 / 324,9 | 863 / 391 |
| | | | | | | | 16 | 893,0 | | 12.79 / 324,9 | 967 / 469 |
| | | | | | | | 20 | 914,0 | | 12.79 / 324,9 | 1131 / 513 |
| | ✓ | 32 in 800 mm | | | 6 | 890,0 | | | | 13.64 / 346,5 | 635 / 288 |
| | | | | | 10 | 917,0 | 10 | 917,0 | | 13.64 / 346,5 | 861 / 390 |
| | | | | | 16 | 911,0 | | | | 13.64 / 346,5 | 811 / 368 |
| | | | 150 | 36.88 / 936,8 | | | | | | 13.64 / 346,5 | 1032 / 468 |
| | | | | | | | 16 | 942,0 | | 13.64 / 346,5 | 1078 / 489 |
| | | | | | | | 20 | 974,0 | | 13.64 / 346,5 | 1364 / 619 |

# SPECIAL ASSEMBLIES

## Solutions...for Tough Pressure Relief Problems

Whether it's from the standard product line, or a custom-manufactured rupture disc for a one-of-a-kind application, Continental Disc Corporation has built a reputation for solving the toughest pressure relief problems...for OEM's...Defense..Space Exploration..Aircraft and Aerospace...Chemical and Petrochemical...Food Processors... Electronics... and countless more.

## Problem Solving

Continental Disc Corporation's custom manufacturing capabilities have been tapped for such wide-ranging projects as air conditioning units, oxygen supply systems, aircraft ejection seats, sonobouys and the space shuttle.

The same engineering, testing, and manufacturing talent that has solved one-of-a-kind problems for worldwide industries is now available to deliver innovative solutions for your specific pressure relief problems.

## Working With Specialized Technologies...Like Yours

Solving pressure relief problems for you is the special role played by Continental Disc Corporation's Product Development Group and the Special Products Group. This pool of product development expertise has been retrofitting Continental Disc Corporation products into clients' systems for nearly 50 years. They are engineers who are at home with special or exotic materials, ultrahigh or ultralow burst pressures, as well as state-of-the-art processing and testing requirements.

Whether your needs are for quantities of one or one hundred thousand, Continental Disc Corporation is ready to solve your pressure relief obstacles.

MARKETS SERVED

# MARKETS & APPLICATIONS SERVED BY CONTINENTAL DISC CORPORATION PRODUCTS

From very tiny to very large, from extreme compression to barely a breath, Continental Disc Corporation has been manufacturing rupture discs (bursting discs) to operate in every application you can imagine. The list below shows just a few of the places where Continental rupture discs are doing the job. If you don't see your application listed, just contact us and let us show you how we have handled pressure problems just like yours.

## CHEMICAL INDUSTRY

- Pressure Vessels for Primary Pressure Relief
  - Reactors, Spheres, Towers, Cylinders
  - Safety Relief Valve Isolation
- Shell and Tube Heat Exchangers
  - Low Pressure Side
  - High Pressure Side
- Pump Discharge to Prevent Blocked Discharge
- Utilities
  - Heating or Cooling Systems (Dowtherm®, Ammonia, Freon)
  - Steam
  - Cryogenic Gases
  - Headers, Knock Out Drums, Flares, Thermal Oxidizers

## OIL & GAS INDUSTRY

- Land-Based & Offshore Well-Drilling & Servicing
- Offshore Platforms & Pumping Stations
  - Double Discs for FPSO Heat Exchangers
- Refinery Operations
- Pipeline Pumping Stations

## PHARMACEUTICAL & COSMETICS INDUSTRY

- Specialty Chemical (API) Manufacturing
- Hygienic Service for Human & Animal Health Products
  - Chemical Processing Vessels
  - Specialty Chemical Processing Equipment—Filters, Chromatographs, Autoclaves, Fermentation
  - Clean Steam for Cleaning or Process System
  - Storage Tanks for Chemicals & Finished Product
  - Clean-In-Place & Sterilize-In-Place Systems
  - Skid & Module Manufacturers

## PULP & PAPER INDUSTRY

- Digester Pressure Protection
- Bleaching System
- Refiner Housing Pressure Protection
- Non-Condensable Gas Recovery & Discharge Header
- Chemical Processing Vessels

## FOOD & BEVERAGE INDUSTRY

- Process Vessels for Aseptic Service
- Storage Vessels for Aseptic Service
- Stainless Steel Storage Vessels
- Clean Steam Systems for Processing & Cleaning Systems
- Fermentation Vessels
- Pump Discharge Lines
- Special Process Equipment

## SPECIALTY GAS INDUSTRY

- Separation Towers (Oxygen, Nitrogen, Hydrogen, $CO_2$, Argon)
- Shell & Tube Heat Exchangers
- High & Low Pressure Storage Vessels
- Field Service Applications
- Transportation Tanks
- OEM's for Cylinders, Vessels, Trailers

## ADDITIONAL SPECIALTY MARKETS

- Plastic Extrusion
- Chiller Systems (Ammonia or Freon)
- Mining
- Oilfield Service Industry
- Electrical Switchgear or Transformers
- Aircraft, Aerospace & Military Equipment
- Ultra-Pure Semiconductor Gas Systems
- High Pressure Hydraulics
- High Pressure Tanks
- Desalination
  - Municipal & Industrial Plants
  - Transition from Thermal to RO Technology
- Geothermal Energy
- LNG (Import And Export)
- Solar Energy
- Wind Energy
- Syngas
  - Biodiesel
  - Ethanol
  - Algae
  - Coal to Gas

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