

Continental Disc Corporation

CERTIFLOW®

1-1112



ASME Compliant Rupture Discs

The ASME Boiler and Pressure Vessel Code, Section VIII, Division 1, specifies that rupture disc devices, like all other pressure relief products, should be tested and certified as to their flow characteristics, and that these certified values should be used in flow and sizing calculations.

Rupture disc products manufactured in accordance with all applicable rules of ASME Code Section VIII, Division 1 must carry the UD Code Symbol Stamp (shown at left) on the tag, as well as the certified flow resistance (K_R) and minimum net flow area (MNFA) values. The "NB" stamp acknowledges The National Board of Boiler and Pressure Vessel Inspectors as the organization that certified the flow tests.

Continental Disc Corporation is accredited and authorized by the ASME to utilize the UD Code Symbol Stamp for product built in accordance with the requirements of the ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.

The complete line of CERTIFLOW® rupture discs meets all ASME Code requirements, including K_R and MNFA values. With the extensive line of CERTIFLOW rupture discs, there is one available to meet most applications and operating conditions.

Certified K_R values represent tested flow resistance values. Relief systems can be designed or evaluated more precisely and safely if certified flow resistance values are used, rather than industry practiced estimates. These estimates may not accurately reflect the flow resistance of the rupture disc. Using the certified flow resistance value, along with proper engineering practices, allows precise, efficient, and safe design of relief systems.

"K" values are pressure loss expressed as the number of velocity heads and they are available for nearly all piping system devices and components, including rupture discs.

Rupture disc devices should be included in the flow equation in the same manner as all other system components to determine the relieving capacity of the entire relief system. Design engineers are provided with certified K_R values:

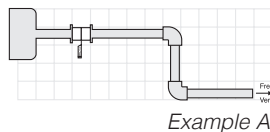
- which enable the designer to meet ASME Code Section VIII, Division 1 for relief system design
- which may permit a reduction in pipe size and associated piping costs when utilized during a relief system design
- for use when evaluating relief systems where two-phase flow may occur
- for use when re-evaluating existing relief systems to comply with design documentation requirements of OSHA CFR 1910.119, "Process Safety Management of Highly Hazardous Chemicals."

Two Ways to Use a Certified Flow Resistance Factor

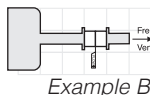
To confirm relief capacity requirements in a sole relief device system

Combining the certified flow resistance (K_R) with the K values of other piping components (shown in example A) allows the design engineer to accurately calculate and evaluate a relief system's flow capacity.

Even for simple relieving systems that can be evaluated with the coefficient of discharge method (8 & 5 rule), utilizing the certified flow resistance (K_R) along with the associated K values for the other piping components (shown in example B) will allow for the flow capacity to be more accurately evaluated.



Example A

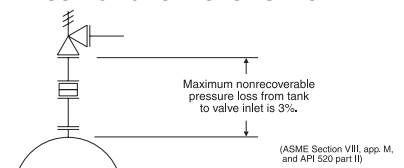


Example B

To confirm a rupture disc/PRV combination follows the "3% Rule"

The system shown might be designed new, or it might be re-evaluated to comply with OSHA CFR 1910.119, which requires that systems be designed with "recognized and generally accepted engineering practices." In the past, an estimated value for the flow resistance of the rupture disc would be used for calculations.

Combining the certified flow resistance value (K_R) with the K values of the other piping components, a design engineer can now accurately evaluate this system's nonrecoverable pressure loss.



(ASME Section VIII, app. M, and API 520 part II)

To specify a rupture disc device to comply with the ASME Code:

- 1) Select the most appropriate rupture disc model for your application. Use the Rupture Disc Selection Guide (Bulletin #1-1100) or contact your local representative for assistance
- 2) Find the type, holder, media, required options, and estimated size in Table I or II
- 3) Find the corresponding MNFA in Table III
- 4) Use the K_R and MNFA values to confirm the flow characteristics of your relieving system.

For assistance with flow of fluids calculation, consult Crane Technical Paper No. 410. There is also a variety of software titles that will automate your flow of fluid calculations. Be certain that your evaluation uses proper engineering practices such as including all piping system components into your flow calculations and multiplying the calculated relieving capacity by a factor of 0.90 or less as specified in ASME Code Section VIII, Division 1.

A copy of Continental Disc Corporation's Certificate of Authorization to use the UD Code Symbol Stamp can be found on our website at www.contdisc.com. There you will also find the most current CERTIFLOW data.

CERTIFIED VALUES

Table I — Continental Disc Corporation Certified Rupture Disc Products

| Rupture Disc Type | Seat Code | Rupture Disc Holder Type | Media | Options | Size Range | | Min. Net Flow Area Table | K _{ts} Value | National Board Certification Number |
|---|------------|------------------------------|-------------|--|------------|--------|--------------------------|-----------------------|-------------------------------------|
| | | | | | in | mm | | | |
| REVERSE ACTING DISCS FOR INSERT TYPE HOLDERS | | | | | | | | | |
| ULTRX® & ULTRX HP | FS | ULTRX | Gas | None | 1-12 | 25-300 | A | 0.36 | 75248 |
| ULTRX & ULTRX HP | FS | ULTRX | Gas, Liquid | Liners, Coatings | 1-12 | 25-300 | A | 0.62 | 75125 |
| ULTRX | DD | ULTRX (DD)* | Gas, Liquid | Liners, Coatings | 1-12 | 25-300 | A | 0.97 | 75271 |
| MINTRX® | FS | MINTRX | Gas, Liquid | None | 1-8 | 25-200 | A | 0.46 | 75237 |
| MINTRX | FS | MINTRX | Gas | Liners, Coatings | 1-8 | 25-200 | A | 0.45 | 75552 |
| MINTRX | FS | MINTRX | Liquid | Liners, Coatings | 1-8 | 25-200 | A | 0.50 | 75541 |
| STAR X® & STAR X HP | FS | STAR X | Gas | Coatings | 1-6 | 25-150 | A | 0.29 | 75529 |
| STAR X & STAR X HP | FS | STAR X | Liquid | Coatings | 1-6 | 25-150 | A | 0.38 | 75530 |
| LOTRX® | FS | LOTRX | Gas, Liquid | Coatings | 1-8 | 25-200 | A | 0.52 | 75417 |
| VRD® | FS | VRD | Gas, Liquid | Liners, Coatings | 1-8 | 25-200 | A | 0.48 | 75428 |
| RCS | FS | RCS | Gas | None | 1-32 | 25-800 | A | 0.35 | 75226 |
| RCS | FS | RCS | Gas | Liners | 1-32 | 25-800 | A | 0.59 | 75147 |
| RCS | DD | RCS (DD)* | Gas | Liners | 1-32 | 25-800 | A | 0.60 | 75518 |
| KBA | FS | KBA | Gas | Liners | 1-32 | 25-800 | E | 3.62 | 75035 |
| ZAP | FS | ZAP | Gas | Liners, Coatings | 1-8 | 25-200 | F | 5.88 | 75024 |
| REVERSE ACTING DISCS FOR SANITARY SERVICE | | | | | | | | | |
| SANITRX® | SF, IS, NA | Standard Sanitary Ferrules | Gas | Coatings, B.D.I.® | 1½-4 | 40-100 | D | 1.13 | 75462 |
| SANITRX | SF, IS, NA | Standard Sanitary Ferrules | Liquid | Coatings, B.D.I. | 1½-4 | 40-100 | D | 1.60 | 75451 |
| SANITRX MP | SF, IS, NA | Standard Sanitary Ferrules | Gas | Coatings, B.D.I. | 1-3 | 25-80 | D | 1.13 | 75574 |
| SANITRX MP | SF, IS, NA | Standard Sanitary Ferrules | Liquid | Coatings, B.D.I. | 1-3 | 25-80 | D | 1.60 | 75563 |
| SANITRX LP® | SF, IS, NA | Standard Sanitary Ferrules | Gas | Coatings, B.D.I. | 1-3 | 25-80 | D | 0.29 | 75440 |
| SANITRX LP | SF, IS, NA | Standard Sanitary Ferrules | Liquid | Coatings, B.D.I. | 1-3 | 25-80 | D | 0.32 | 75439 |
| TENSION TYPE DISCS FOR INSERT, BOLTED OR UNION HOLDERS | | | | | | | | | |
| STANDARD | LL, UL | Insert, Full Bolted, & Union | Gas | Liners, Coatings, Gaskets, Rings, B.D.I. | ½-30 | 13-750 | B | 1.13 | 75091 |
| STANDARD & STANDARD-V | LL, UL | Insert, Full Bolted, & Union | Gas, Liquid | Liners, Coatings, Gaskets, Rings, B.D.I., Vacuum Support | 1-30 | 25-750 | B | 1.88 | 75495 |
| CDC | LL, UL | Insert, Full Bolted, & Union | Gas, Liquid | Coatings, Gaskets, Rings, B.D.I. | 1-30 | 25-750 | B | 1.81 | 75057 |
| CDCV | LL, UL | Insert, Full Bolted, & Union | Gas, Liquid | Coatings, Gaskets, Rings, B.D.I. | 1-30 | 25-750 | B | 2.80 | 75507 |
| PL & PLV | LL UL | Insert, Full Bolted, & Union | Gas, Liquid | Coatings, Gaskets, Rings, B.D.I., Vacuum Support | 1-30 | 25-750 | C | 5.00 | 75170 |
| CDC | FS | RHI, UNISERT® | Gas, Liquid | Coatings, Gaskets, Rings | 1-36 | 25-900 | A | 0.34 | 75002 |
| CDCV | FS | RHI, UNISERT | Gas, Liquid | Coatings, Gaskets, Rings | 1-36 | 25-900 | A | 1.04 | 75046 |
| CDCV | FS | RHI, UNISERT | Gas, Liquid | None | 1-36 | 25-900 | A | 0.53 | 75215 |
| PL & PLV | FS | RHI, UNISERT | Gas, Liquid | Coatings, Gaskets, Rings, Vacuum Support | 1-36 | 25-900 | A | 1.60 | 75169 |
| ENVIRO-SEAL I & II** | N/A | N/A | Gas, Liquid | Coatings, B.D.I. | 1-36 | 25-900 | A | 2.00 | 75013 |
| MICRO X® | FS | RHI, UNISERT | Gas, Liquid | Liners, Coatings, Gaskets, Rings | 1-36 | 25-900 | A | 0.29 | 75079 |
| MICRO X-V | FS | RHI, UNISERT | Gas | Liners, Coatings, Gaskets, Rings | 1-36 | 25-900 | A | 0.29 | 75080 |
| MICRO X-V | FS | RHI, UNISERT | Liquid | Liners, Coatings, Gaskets, Rings | 1-36 | 25-900 | A | 1.10 | 75181 |
| MICRO X-V | DD | UNISERT (DD)* | Gas, Liquid | Liners, Coatings, Gaskets, Rings | 1-36 | 25-900 | A | 5.59 | 75473 |
| TENSION TYPE DISCS FOR CLEAN-SWEEP HOLDERS | | | | | | | | | |
| MICRO X | CF | CLEAN-SWEEP® | Gas, Liquid | Liners, Coatings, Gaskets, Rings | 1-6 | 25-150 | A | 1.52 | 75383 |
| MICRO X-V | CF | CLEAN-SWEEP | Gas, Liquid | Liners, Coatings, Gaskets, Rings | 1-6 | 25-150 | A | 1.74 | 75394 |
| CDC | CF | CLEAN-SWEEP | Gas, Liquid | Coatings, Gaskets, Rings | 1-6 | 25-150 | A | 1.57 | 75361 |
| CDCV | CF | CLEAN-SWEEP | Gas, Liquid | Coatings, Gaskets, Rings | 1-6 | 25-150 | A | 2.54 | 75372 |
| PL | CF | CLEAN-SWEEP | Gas, Liquid | Coatings, Gaskets, Rings | 1-6 | 25-150 | A | 1.57 | 75349 |
| PLV | CF | CLEAN-SWEEP | Gas, Liquid | Coatings, Gaskets, Rings | 1-6 | 25-150 | A | 2.64 | 75350 |
| TENSION TYPE OR REVERSE ACTING DISCS FOR TITE-SEAL OR SCREW TYPE HOLDERS | | | | | | | | | |
| CDCV | FS | Tite-Seal, Screw Type | Gas, Liquid | Gaskets | ¼-½ | 6-13 | G | 5.73 | 75338 |
| STANDARD | FS | Tite-Seal, Screw Type | Gas, Liquid | Coatings, Gaskets, Rings | ¼-1 | 6-25 | G | 9.59 | 75327 |
| STANDARD-V | FS | Tite-Seal, Screw Type | Gas, Liquid | Coatings, Gaskets, Rings | ¼-1 | 6-25 | G | 10.50 | 75293 |
| STANDARD | LL | Screw Type | Gas, Liquid | Coatings, Gaskets, Rings | ¼-½ | 6-13 | G | 6.09 | 75305 |
| STANDARD-V | LL | Screw Type | Gas, Liquid | Coatings, Gaskets, Rings | ¼-½ | 6-13 | G | 13.30 | 75316 |
| SRA | FS | SRA Tite-Seal | Gas, Liquid | Coatings, Gaskets, Rings | ¼-1 | 6-25 | H | 3.59 | 75282 |

* A single rupture disc device that incorporates two rupture discs into one rupture disc holder.

** ENVIRO-SEAL I & II are not offered in 28" size.

Note: • Consult the appropriate product literature for the specifications available for each device.

• All product types containing "V" denote use of vacuum support.

Table II — LAMOT® Certified Rupture Disc Products

| Rupture Disc Type | Seat Code | Rupture Disc Holder Type | Media | Options | Size Range | | Min. Net Flow Area Table | K _a Value | National Board Certification Number |
|-----------------------|-----------|------------------------------|-------------|--|------------|--------|--------------------------|----------------------|-------------------------------------|
| | | | | | in | mm | | | |
| ISOLATION SEAL I & II | N/A | N/A | Gas, Liquid | Coatings | 1-12 | 25-300 | A | 2.00 | 75013 |
| STANDARD | LL, UL | Insert, Full Bolted, & Union | Gas | Liners, Coatings, Gaskets, Rings, B.D.I.® | ½-12 | 13-300 | B | 1.13 | 75091 |
| STANDARD & STANDARD-V | LL, UL | Insert, Full Bolted, & Union | Gas, Liquid | Liners, Coatings, Gaskets, Rings, B.D.I. | 1-12 | 25-300 | B | 1.88 | 75495 |
| LD | LL, UL | Insert, Full Bolted, & Union | Gas, Liquid | Coatings, Gaskets, Rings, B.D.I. | 1-12 | 25-300 | B | 1.81 | 75057 |
| LDV | LL, UL | Insert, Full Bolted, & Union | Gas, Liquid | Coatings, Gaskets, Rings, B.D.I. | 1-12 | 25-300 | B | 2.80 | 75507 |
| LPL & LPLV | LL, UL | Insert, Full Bolted, & Union | Gas, Liquid | Coatings, Gaskets, Rings, B.D.I., Vacuum Support | 1-12 | 25-300 | C | 5.00 | 75170 |
| LDV | FS | Throwaway, Screw Type | Gas, Liquid | Gaskets | ¼-½ | 6-13 | G | 5.73 | 75338 |
| STANDARD-V | FS | Throwaway, Screw Type | Gas, Liquid | Coatings, Gaskets, Rings | ¼-1 | 6-25 | G | 10.50 | 75293 |

Table III — Minimum Net Flow Areas (MNFA) for Certified Rupture Disc Products

Minimum Net Flow Area for each rupture disc size. Gray box indicates inches squared (in²), white box indicates millimeters squared (mm²).

| A | Disc Size | 1" | 25mm | 1½" | 40mm | 2" | 50mm | 3" | 80mm | 4" | 100mm | 6" | 150mm | 8" | 200mm | 10" | 250mm | 12" | 300mm |
|---|-----------|------|-------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|-----|--------|
| | MNFA | 0.86 | 555 | 2.04 | 1316 | 3.36 | 2168 | 7.39 | 4768 | 12.7 | 8194 | 28.8 | 18581 | 50.0 | 32258 | 78.8 | 50839 | 113 | 72903 |
| | Disc Size | 14" | 350mm | 16" | 400mm | 18" | 450mm | 20" | 500mm | 24" | 600mm | 28" | 700mm | 30" | 750mm | 32" | 800mm | 36" | 900mm |
| | MNFA | 137 | 88387 | 182 | 117419 | 233 | 150322 | 291 | 187742 | 424 | 273548 | 583 | 376128 | 671 | 432902 | 766 | 494193 | 975 | 629031 |

| B | Disc Size | ½" | 13mm | ¾" | 19 mm | 1" | 25mm | 1½" | 40mm | 2" | 50mm | 3" | 80mm | 4" | 100mm | 6" | 150mm | 8" | 200mm |
|---|-----------|------|-------|------|-------|------|-------|------|--------|------|--------|------|--------|------|--------|------|--------|------|-------|
| | MNFA | 0.23 | 148 | 0.43 | 277 | 0.72 | 465 | 1.77 | 1142 | 3.36 | 2168 | 7.39 | 4768 | 12.7 | 8194 | 28.8 | 18581 | 50.0 | 32258 |
| | Disc Size | 10" | 250mm | 12" | 300mm | 14" | 350mm | 16" | 400mm | 18" | 450mm | 20" | 500mm | 24" | 600mm | 30" | 750mm | | |
| | MNFA | 78.8 | 50839 | 113 | 72903 | 137 | 88387 | 182 | 117419 | 233 | 150322 | 291 | 187742 | 424 | 273548 | 671 | 432902 | | |

| C | Disc Size | 1" | 25mm | 1½" | 40mm | 2" | 50mm | 3" | 80mm | 4" | 100mm | 6" | 150mm | 8" | 200mm | 10" | 250mm |
|---|-----------|------|-------|------|-------|------|--------|------|--------|------|--------|------|--------|------|--------|------|-------|
| | MNFA | 0.52 | 335 | 1.40 | 903 | 3.36 | 2168 | 7.39 | 4768 | 12.7 | 8194 | 28.8 | 18581 | 50.0 | 32258 | 78.8 | 50839 |
| | Disc Size | 12" | 300mm | 14" | 350mm | 16" | 400mm | 18" | 450mm | 20" | 500mm | 24" | 600mm | 30" | 750mm | | |
| | MNFA | 113 | 72903 | 137 | 88387 | 182 | 117419 | 233 | 150322 | 291 | 187742 | 424 | 273548 | 671 | 432902 | | |

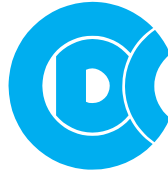
| D | Disc Size | 1" | 25mm | 1½" | 40mm | 2" | 50mm | 3" | 80mm | 4" | 100mm |
|---|-----------|-------|------|------|------|------|------|------|------|------|-------|
| | MNFA | 0.493 | 318 | 1.18 | 761 | 2.25 | 1452 | 5.49 | 3542 | 9.77 | 6303 |

| E | Disc Size | 1" | 25mm | 1½" | 40mm | 2" | 50mm | 3" | 80mm | 4" | 100mm | 6" | 150mm | 8" | 200mm | 10" | 250mm | 12" | 300mm |
|---|-----------|------|-------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|-----|-------|
| | MNFA | 0.72 | 465 | 1.77 | 1142 | 2.95 | 1903 | 6.61 | 4265 | 11.5 | 7419 | 26.0 | 16774 | 45.6 | 29419 | 71.8 | 46322 | 101 | 65161 |
| | Disc Size | 14" | 350mm | 16" | 400mm | 18" | 450mm | 20" | 500mm | 24" | 600mm | 28" | 700mm | 30" | 750mm | 32" | 800mm | | |
| | MNFA | 122 | 78710 | 160 | 103226 | 204 | 131613 | 252 | 162580 | 365 | 235483 | 498 | 321290 | 572 | 369032 | 651 | 419999 | | |

| F | Disc Size | 1" | 25mm | 1½" | 40mm | 2" | 50mm | 3" | 80mm | 4" | 100mm | 6" | 150mm | 8" | 200mm |
|---|-----------|------|------|------|------|------|------|------|------|------|-------|------|-------|------|-------|
| | MNFA | 0.56 | 361 | 1.45 | 935 | 2.36 | 1523 | 4.85 | 3129 | 7.99 | 5155 | 17.2 | 11097 | 30.1 | 19419 |

| G | Inlet Connection | ¼" MPT | ⅜" MPT | ½" MPT | ¾" MPT | 1" MPT | | | | |
|---|------------------|--------|--------|--------|--------|--------|-----|------|-----|------|
| | MNFA | 0.04 | 25.8 | 0.10 | 64.5 | 0.17 | 110 | 0.29 | 187 | 0.52 |

| H | Inlet Connection | ¼" MPT | ⅜" MPT | ½" MPT | ¾" MPT | 1" MPT | | | | |
|---|------------------|--------|--------|--------|--------|--------|-----|------|-----|------|
| | MNFA | 0.07 | 45.2 | 0.14 | 90.3 | 0.23 | 148 | 0.43 | 277 | 0.72 |



**Continental Disc
Corporation**

Performance Under Pressure®



ASME Code Symbol Stamp
Available When Specified

China Manufacture License
Available When Specified



Pressure Equipment Directive
Available When Specified

Continental Disc Corporation has representatives located throughout the world.
Contact the Continental Disc Corporation office nearest you for the authorized representative in your area.

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