

# MODEL 3500

## PRESSURE VENT WITH PIPE-AWAY

### OVERVIEW

The Model 3500 inline conservation pressure relief vent is designed for use on atmospheric and low-pressure storage tanks where pressure relief is required.

### SPECIAL FEATURES

#### Maintains Accurate Settings:

Minimum setting available is approximately 0.25 OZ/IN<sup>2</sup> for pressure relief. Maximum setting upwards to 2.5 psig for pressure, see Set Point Limits Table 4. If higher settings are required, see Valve Concepts Series 4000 Spring Loaded Vents or Valve Concepts Series 5000 Pilot Operated Vents. All vents are tested to Valve Concepts high standards for both leakage and set point prior to shipment. A certified test certificate is included with each vent verifying the accuracy of the pressure setting and leakage. The leakage rate meets or exceeds API Std 2000.

#### Condensate Drainage:

Self-draining body and specially designed seat ring keeps condensate away from seating surfaces, preventing freezing, binding and clogging.

#### Air-Cushioned Seating:

Air-cushion seating provides tight sealing to reduce evaporation losses and the release of toxic vapors. The pallets have outer guiding and center stabilizing stem to provide self alignment and tight seating.

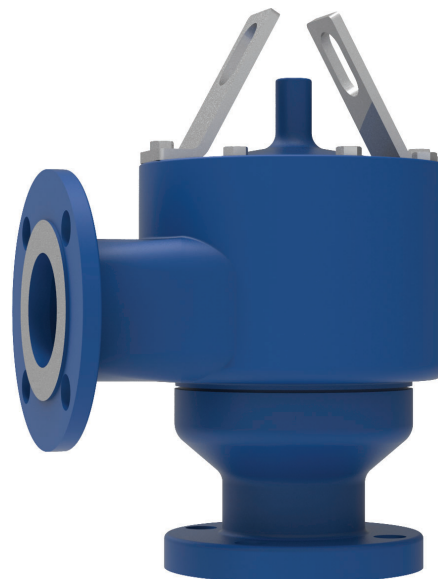
#### Sizes-Connections:

Available in sizes 2" (DN50) through 12" (DN300). Carbon steel and stainless steel vents have raised face tank connection flanges. All other vent materials come standard with flat face flanges. Standard flanged bolt patterns are available to mate with ASME 150, PN16, or PN10 flanged connections.

\* Derakane 470 and Hetron 800 are registered trademarks of Ashland, Inc.

### TECHNIQUE

Weight loaded pallets in the vent housing allow the escape of vapors as the tank outbreathes due to thermal changes and product movement into the tank.



MODEL 3500



### LINE SIZES AVAILABLE

2" (DN50), 3" (DN80), 4" (DN100), 6" (DN150), 8" (DN200), 10" (DN250), 12" (DN300)



### END CONNECTIONS

FLANGED



### COMMON APPLICATIONS

ATMOSPHERIC AND LOW PRESSURE STORAGE TANKS WHERE PRESSURE RELIEF IS REQUIRED



### DESIGN PRESSURE

MULTIPLE SET PRESSURE RANGES AVAILABLE

## CONSTRUCTION

|                          |                                                                                                                                                              |                            |                                                                                                                                                                                                                                                   |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Housing Material:</b> | Available in aluminum, carbon steel, 316 stainless steel or corrosion resistant fiberglass reinforced plastic (FRP) with Derakane 470* or Hetron 800* resins | <b>Pallets Assemblies:</b> | Replaceable 316 stainless steel pallet assemblies are standard for metal vents. Pallet assemblies lower than 0.5 OZ/IN <sup>2</sup> may contain a polycarbonate pallet material. Replaceable FRP pallet assemblies match the body resin material. |
| <b>Seat Rings:</b>       | Replaceable metal seat rings available in aluminum or 316 stainless steel. FRP vents have integral seats that match the body resin material.                 | <b>Pallet Diaphragms:</b>  | Standard diaphragm material is FEP film. Also available in FKM, EPDM, and Buna-N.                                                                                                                                                                 |

## STANDARD/GENERAL SPECIFICATIONS

|                            |                                                                                                                            |                                 |                                                                                                                                                                                                                                               |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Gaskets:</b>            | Expanded PTFE for FEP diaphragm materials. Gasket materials match the diaphragm materials for BUNA-N, EPDM, and FKM.       | <b>Calibration Certificate:</b> | Calibration certificates are issued standard with every line item demonstrating acceptable set point accuracy and seat leakage rates.                                                                                                         |
| <b>Set Point Accuracy:</b> | Pressure setpoints are calibrated to be within +/-2% of customer requested setting across the range of available settings. | <b>Painting:</b>                | All carbon steel surfaces are epoxy coated VCI blue per Cashco specification S-1777. Flange mating surfaces, threaded holes, and corrosion resistant parts are excluded. Non-coated surfaces have lubricant applied for corrosion prevention. |
| <b>Seat Leakage:</b>       | Meets or exceeds current edition of API Standard 2000. Tighter seat leakage requirements available upon request.           |                                 |                                                                                                                                                                                                                                               |

## OPTION SPECIFICATIONS

|                            |                                                                                                                                                                                                                                                                                                                |                                    |                                                                                                                                                                                    |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Flame Screen:</b>       | Replaceable 30x30 stainless steel mesh screen with integral gasket that inserts between the outlet flange and goose neck. The outlet flame screen is not a suitable replacement for applications requiring deflagration or detonation arrestors.                                                               | <b>Oxygen Cleaning:</b>            | All components oxygen cleaned, bagged, and tagged in accordance to Cashco specification S-1134. Must select 316 stainless steel body material and stainless steel loading weights. |
| <b>Sizing Report:</b>      | Formal report documenting tank breathing requirements and vent performance per customer application. Displacement flow requirements and vent performance are in accordance with the current edition of API 2000 Std.                                                                                           | <b>ATEX 2014/34/EU:</b>            | Available for IIB gases only. See Model 3500 IOM for more details.                                                                                                                 |
| <b>NACE Certification:</b> | Internal wetted portions meet NACE standard MR0175 when exterior of the vent is not directly exposed to a sour gas environment, buried, insulated, or otherwise denied direct atmospheric exposure. Available for carbon steel or 316 stainless steel body materials only. Must be requested at time of order. | <b>PED 2014/34/EU Certificate:</b> | Sound Engineering Practice (SEP) certificate available for pressures up to 0.5 barg.                                                                                               |

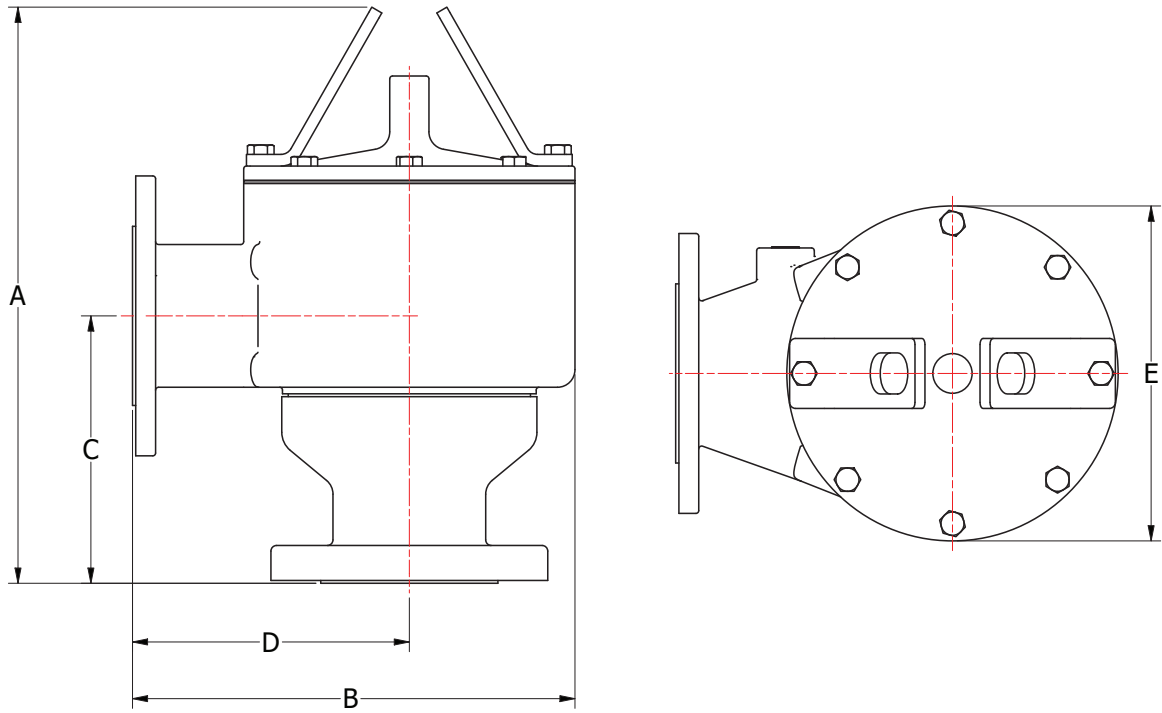
| TABLE 1 - MATERIALS OF CONSTRUCTION                                                                                                                                                                                                                                               |                           |                           |                           |                           |                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------------------------|
| COMPONENT MATERIALS                                                                                                                                                                                                                                                               | BODY MATERIALS            |                           |                           |                           |                         |
|                                                                                                                                                                                                                                                                                   | ALUM                      | CS                        | 316 SST                   | DERAKANE 470              | HETRON 800              |
| COVER                                                                                                                                                                                                                                                                             | ALUM                      | CS                        | 316 SST                   | DERAKANE 470              | HETRON 800              |
| SEAT RINGS                                                                                                                                                                                                                                                                        | ALUM, 316 SST             | 316 SST                   | 316 SST                   | DERAKANE 470              | HETRON 800              |
| PALLET ASSEMBLY                                                                                                                                                                                                                                                                   | PC <sup>2</sup> , 316 SST | PC <sup>2</sup> , 316 SST | PC <sup>2</sup> , 316 SST | DERAKANE 470              | HETRON 800              |
| PALLET GUIDES                                                                                                                                                                                                                                                                     | 316 SST                   | 316 SST                   | 316 SST                   | DERAKANE 470              | HETRON 800              |
| FASTENERS                                                                                                                                                                                                                                                                         | 316 SST                   | 316 SST                   | 316 SST                   | 316 SST, ALLOY C276       | 316 SST, ALLOY C276     |
| PALLET WEIGHTS                                                                                                                                                                                                                                                                    | CS <sup>3</sup> , SST     | CS <sup>3</sup> , SST     | CS <sup>3</sup> , SST     | DERAKANE 470 <sup>4</sup> | HETRON 800 <sup>4</sup> |
| 2 - Polycarbonate pallet material may be used for settings less than 0.5 OZ/IN <sup>2</sup> . All other parts are 316 SST.<br>3 - Carbon steel pallet weights are epoxy coated per Cashco specification S-1777.<br>4 - FRP encapsulated carbon steel utilizes same resin as body. |                           |                           |                           |                           |                         |

| TABLE 2 - PRESSURE/TEMPERATURE RATINGS                                                                                                  |      |        |             |             |
|-----------------------------------------------------------------------------------------------------------------------------------------|------|--------|-------------|-------------|
| BODY MATERIAL                                                                                                                           | MAWP |        | Temperature |             |
|                                                                                                                                         | PSI  | (BAR)  | °F          | (°C)        |
| Aluminum                                                                                                                                | 15   | (1)    | -325/+250   | (-198/+121) |
| Carbon Steel                                                                                                                            | 15   | (1)    | -20/+400    | (-28/+204)  |
| 316 Stainless Steel                                                                                                                     | 15   | (1)    | -325/+400   | (-198/+204) |
| Derakane 470*                                                                                                                           | 2    | (0.14) | N/A         |             |
| Hetron 800*                                                                                                                             | 2    | (0.14) | N/A         |             |
| * Temperature limits vary based on resin material, media, concentration, and storage temperature. Consult factory for more information. |      |        |             |             |

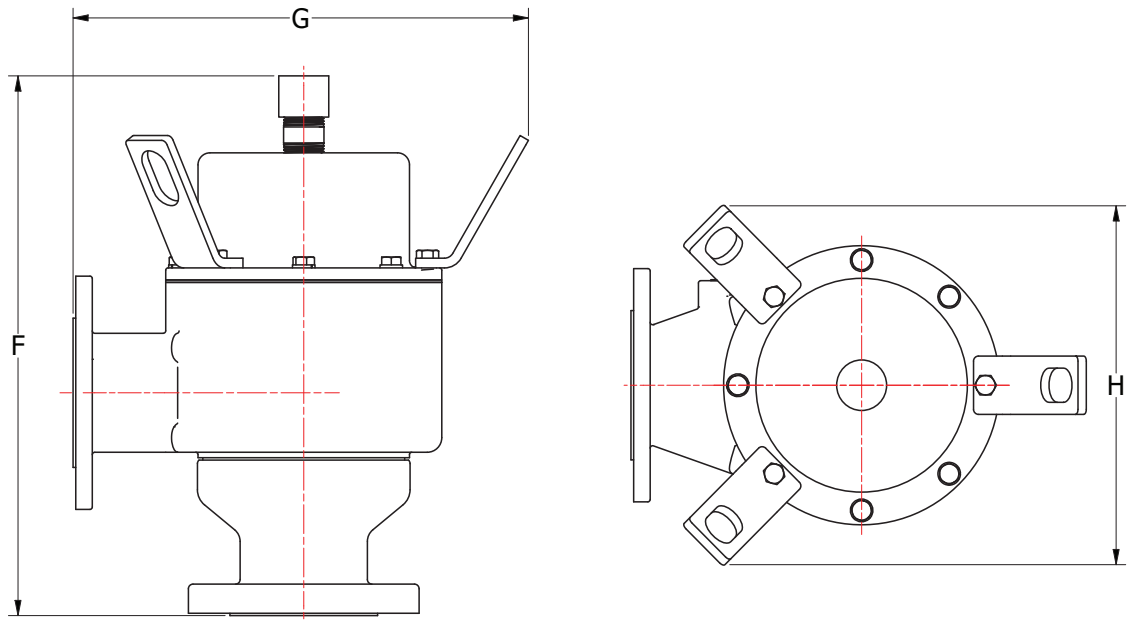
| TABLE 3 - DIAPHRAGM TEMPERATURE LIMITS |           |             |
|----------------------------------------|-----------|-------------|
| Material                               | °F        | (°C)        |
| FEP                                    | -400/+400 | (-240/+204) |
| Buna-N                                 | -40/+250  | (-40/+121)  |
| EPDM                                   | -40/+225  | (-40/+107)  |
| FKM                                    | -20/+400  | (-28/+204)  |

| TABLE 4 - SET POINT LIMITS           |          |       |                                 |          |       |
|--------------------------------------|----------|-------|---------------------------------|----------|-------|
| Metallic Vents (OZ/IN <sup>2</sup> ) |          |       | FRP Vents (OZ/IN <sup>2</sup> ) |          |       |
| Size                                 | Pressure |       | Size                            | Pressure |       |
|                                      | MIN      | MAX   |                                 | MIN      | MAX   |
| 2"                                   | 0.30     | 34.10 | 2"                              | 0.50     | 32.00 |
| 3"                                   | 0.27     | 36.90 | 3"                              | 0.50     | 32.00 |
| 4"                                   | 0.19     | 43.10 | 4"                              | 0.50     | 32.00 |
| 6"                                   | 0.19     | 39.80 | 6"                              | 0.50     | 32.00 |
| 8"                                   | 0.19     | 39.70 | 8"                              | 0.50     | 32.00 |
| 10"                                  | 0.20     | 42.10 | 10"                             | 0.50     | 32.00 |
| 12"                                  | 0.20     | 35.70 | 12"                             | 0.50     | 32.00 |

## DIMENSIONS



STANDARD CONFIGURATION



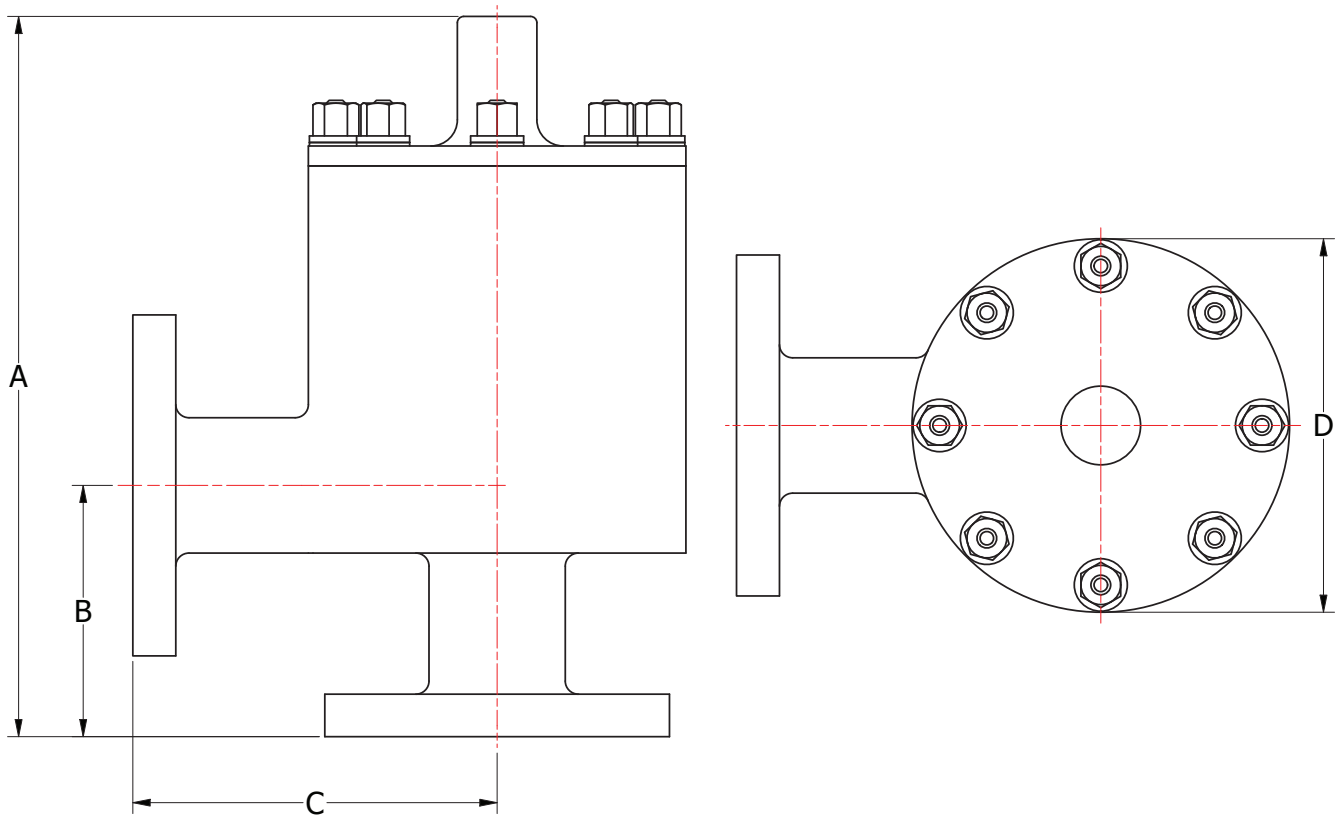
WITH EXTENDED COVER

| ENGLISH UNITS - in<br>Aluminum, Carbon Steel & Stainless Steel Body                                       |         |          |                     |         |         |         |          |         |                |        |                |        |
|-----------------------------------------------------------------------------------------------------------|---------|----------|---------------------|---------|---------|---------|----------|---------|----------------|--------|----------------|--------|
| SIZE (in)                                                                                                 | A       | B        | C                   | D       | E       | F       | G        | H       | WEIGHT* (lbs)  |        |                |        |
|                                                                                                           |         |          |                     |         |         |         |          |         | STANDARD COVER |        | EXTENDED COVER |        |
|                                                                                                           |         |          |                     |         |         |         |          |         | ALUM           | CS/SST | ALUM           | CS/SST |
| 2" x 2"                                                                                                   | 12 3/8  | 9 9/16   | 5 3/4               | 6       | 7 3/16  | 13 7/8  | 9 9/16   | 9 1/4   | 14             | 41     | 16             | 46     |
| 2" x 3"                                                                                                   | 12 5/16 | 9 3/4    | 6 1/4               | 6 3/16  | 7 3/16  | 14 7/16 | 9 3/4    | 9 1/4   | 14             | 42     | 16             | 48     |
| 3" x 3"                                                                                                   | 14 1/8  | 10 1/2   | 6 15/16             | 6 1/2   | 8       | 16 7/8  | 10 1/2   | 9 7/8   | 20             | 58     | 22             | 64     |
| 3" x 4"                                                                                                   | 14 1/8  | 10 1/2   | 7 7/16              | 6 1/2   | 8       | 16 7/8  | 12 3/4   | 9 7/8   | 21             | 60     | 23             | 66     |
| 4" x 4"                                                                                                   | 19 5/16 | 13 3/8   | 8 3/4               | 8       | 10 3/4  | 19 5/16 | 13 3/8   | 10 3/4  | 32             | 94     | 34             | 98     |
| 4" x 6"                                                                                                   | 19 3/16 | 13 3/8   | 9 3/4               | 7 15/16 | 10 3/4  | 19 3/16 | 13 3/8   | 10 3/4  | 36             | 105    | 37             | 109    |
| 6" x 6"                                                                                                   | 22 1/4  | 15 3/4   | 10 5/16             | 9       | 13 7/16 | 22 3/16 | 15 3/4   | 13 7/16 | 49             | 144    | 52             | 153    |
| 6" x 8"                                                                                                   | 22 5/16 | 15 3/4   | 11 1/2              | 9       | 13 7/16 | 22 3/16 | 15 3/4   | 13 7/16 | 52             | 152    | 54             | 159    |
| 8" x 10"                                                                                                  | 27 7/16 | 18 1/2   | 13 3/4 <sup>1</sup> | 11      | 15      | 27 3/8  | 18 1/2   | 15      | 70             | 203    | 73             | 212    |
| 10" x 12"                                                                                                 | 29 5/16 | 20 13/16 | 15 5/8              | 12 1/4  | 17 1/8  | 30 3/4  | 20 13/16 | 17 1/8  | 91             | 265    | 98             | 287    |
| 12" x 14"                                                                                                 | 38 7/8  | 23 1/16  | 21 3/16             | 14      | 19      | 38 7/8  | 23 1/16  | 19      | 126            | 368    | 130            | 379    |
| * Estimated weight based on minimum setpoints. Weight will increase with higher set points and packaging. |         |          |                     |         |         |         |          |         |                |        |                |        |
| <sup>1</sup> Aluminum only. Carbon steel and stainless steel are 14in (355 mm).                           |         |          |                     |         |         |         |          |         |                |        |                |        |

| METRIC UNITS - mm<br>Aluminum, Carbon Steel & Stainless Steel Body                                        |     |     |                  |     |     |     |     |     |                |        |                |        |
|-----------------------------------------------------------------------------------------------------------|-----|-----|------------------|-----|-----|-----|-----|-----|----------------|--------|----------------|--------|
| SIZE (DN)                                                                                                 | A   | B   | C                | D   | E   | F   | G   | H   | WEIGHT* (kg)   |        |                |        |
|                                                                                                           |     |     |                  |     |     |     |     |     | STANDARD COVER |        | EXTENDED COVER |        |
|                                                                                                           |     |     |                  |     |     |     |     |     | ALUM           | CS/SST | ALUM           | CS/SST |
| 50 x 50                                                                                                   | 314 | 243 | 146              | 152 | 183 | 352 | 243 | 235 | 6              | 19     | 7              | 21     |
| 50 x 80                                                                                                   | 313 | 248 | 159              | 157 | 183 | 367 | 248 | 235 | 7              | 19     | 7              | 22     |
| 80 x 80                                                                                                   | 359 | 267 | 176              | 165 | 203 | 429 | 267 | 251 | 9              | 26     | 10             | 29     |
| 80 x 100                                                                                                  | 359 | 267 | 189              | 165 | 203 | 429 | 324 | 251 | 9              | 27     | 10             | 30     |
| 100 x 100                                                                                                 | 491 | 340 | 222              | 203 | 273 | 491 | 340 | 273 | 15             | 43     | 15             | 44     |
| 100 x 150                                                                                                 | 487 | 340 | 248              | 202 | 273 | 487 | 340 | 273 | 16             | 48     | 17             | 49     |
| 150 x 150                                                                                                 | 565 | 400 | 262              | 229 | 341 | 564 | 400 | 341 | 22             | 65     | 24             | 69     |
| 150 x 200                                                                                                 | 567 | 400 | 292              | 229 | 341 | 564 | 400 | 341 | 24             | 69     | 25             | 72     |
| 200 x 250                                                                                                 | 697 | 470 | 348 <sup>1</sup> | 279 | 381 | 695 | 470 | 381 | 32             | 92     | 33             | 96     |
| 250 x 300                                                                                                 | 745 | 529 | 397              | 311 | 435 | 781 | 529 | 435 | 41             | 120    | 45             | 130    |
| 300 x 350                                                                                                 | 987 | 586 | 538              | 356 | 483 | 987 | 586 | 483 | 57             | 167    | 59             | 172    |
| * Estimated weight based on minimum setpoints. Weight will increase with higher set points and packaging. |     |     |                  |     |     |     |     |     |                |        |                |        |
| <sup>1</sup> Aluminum only. Carbon steel and stainless steel are 14in (355 mm).                           |     |     |                  |     |     |     |     |     |                |        |                |        |

## DIMENSIONS

### FRP CONSTRUCTION



| ENGLISH Units - in<br>Corrosion Resistant Fiberglass (FRP) Body |        |        |        |           |
|-----------------------------------------------------------------|--------|--------|--------|-----------|
| SIZE In                                                         | A      | B      | C      | D (diam.) |
| 2" x 2"                                                         | 13.73" | 4.79"  | 7.50"  | 8.38"     |
| 2" x 3"                                                         | 13.73" | 5.29"  | 7.50"  | 8.38"     |
| 3" x 3"                                                         | 13.79" | 5.29"  | 7.50"  | 8.38"     |
| 3" x 4"                                                         | 13.79" | 5.78"  | 7.50"  | 8.38"     |
| 4" x 4"                                                         | 16.61" | 5.78"  | 9.00"  | 12.75"    |
| 4" x 6"                                                         | 16.61" | 6.79"  | 9.00"  | 12.75"    |
| 6" x 6"                                                         | 17.27" | 6.79"  | 9.50"  | 12.75"    |
| 6" x 8"                                                         | 17.27" | 7.75"  | 9.50"  | 12.75"    |
| 8" x 10"                                                        | 21.75" | 9.51"  | 12.00" | 16.75"    |
| 10" x 12"                                                       | 23.13" | 10.25" | 12.00" | 16.38"    |
| 12" x 14"                                                       | 25.81" | 11.13" | 13.00" | 18.50"    |

| METRIC Units - (mm)<br>Corrosion Resistant Fiberglass (FRP) Body |     |     |     |           |
|------------------------------------------------------------------|-----|-----|-----|-----------|
| SIZE (DN)                                                        | A   | B   | C   | D (diam.) |
| (50) x (50)                                                      | 349 | 122 | 190 | 213       |
| (50) x (80)                                                      | 349 | 134 | 190 | 213       |
| (80) x (80)                                                      | 350 | 134 | 190 | 213       |
| (80) x (100)                                                     | 350 | 147 | 190 | 213       |
| (100) x (100)                                                    | 422 | 147 | 229 | 324       |
| (100) x (150)                                                    | 422 | 172 | 229 | 324       |
| (150) x (150)                                                    | 439 | 172 | 241 | 324       |
| (150) x (200)                                                    | 439 | 197 | 241 | 324       |
| (200) x (250)                                                    | 552 | 241 | 305 | 425       |
| (250) x (300)                                                    | 588 | 260 | 305 | 416       |
| (300) x (350)                                                    | 656 | 283 | 330 | 470       |

# 3500 Series PRODUCT CODE

09/05/23

|          |          |          |          |          |          |          |          |          |           |           |           |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|----------|----------|----------|----------|----------|----------|
| <b>3</b> | <b>5</b> | POS<br>3 | POS<br>4 | POS<br>5 | <b>C</b> | POS<br>7 | POS<br>8 | <b>0</b> | POS<br>10 | POS<br>11 | POS<br>12 | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>0</b> |
|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|----------|----------|----------|----------|----------|----------|

| POSITION 3 -<br>FLANGE CONNECTION |          |
|-----------------------------------|----------|
| ASME 150                          | <b>A</b> |
| PN16                              | <b>B</b> |
| PN10                              | <b>C</b> |

| POSITION 4 - FLANGE SIZE  |          |
|---------------------------|----------|
| NPS (DIN)                 | CODE     |
| 2" x 2" - (50) x (50)     | <b>2</b> |
| 2" x 3" - (50) x (80)     | <b>H</b> |
| 3" x 3" - (80) x (80)     | <b>3</b> |
| 3" x 4" - (80) x (100)    | <b>J</b> |
| 4" x 4" - (100) x (100)   | <b>4</b> |
| 4" x 6" - (100) x (150)   | <b>K</b> |
| 6" x 6" - (150) x (150)   | <b>6</b> |
| 6" x 8" - (150) x (200)   | <b>L</b> |
| 8" x 10" - (200) x (250)  | <b>8</b> |
| 10" x 12" - (250) x (300) | <b>A</b> |
| 12" x 14" - (300) x (350) | <b>B</b> |

| POSITION 5 -<br>BODY/SEAT RING MATERIAL |                     |          |
|-----------------------------------------|---------------------|----------|
| BODY MATERIAL                           | SEAT MATERIAL       | CODE     |
| Aluminum                                | Aluminum            | <b>1</b> |
| Aluminum                                | 316 Stainless Steel | <b>4</b> |
| Carbon Steel                            | 316 Stainless Steel | <b>5</b> |
| 316 Stainless Steel                     | 316 Stainless Steel | <b>6</b> |
| Derakane 470 w/ SST Studs               | Derakane 470        | <b>D</b> |
| Derakane 470 w/ Hast C Studs            | Derakane 470        | <b>E</b> |
| Hetron 800 w/ SST Studs                 | Hetron 800          | <b>F</b> |
| Hetron 800 w/ Hast C Studs              | Hetron 800          | <b>G</b> |

| POSITION 7 -<br>DIAPHRAGM MATERIAL |          |
|------------------------------------|----------|
| FEP (Std)                          | <b>A</b> |
| Buna-N                             | <b>B</b> |
| EPDM                               | <b>D</b> |
| FKM                                | <b>F</b> |

| POSITION 8 -<br>PRESSURE PALLET CONFIGURATION    |          |
|--------------------------------------------------|----------|
| Set Point Range - OZ/IN²                         | CODE     |
| MIN - 0.49                                       | <b>1</b> |
| 0.50 - 0.74                                      | <b>2</b> |
| 0.75 - 7.99                                      | <b>3</b> |
| 8.00 - MAX                                       | <b>4</b> |
| See Table 4 for MIN and MAX pressure set points. |          |

| POSITION 10 -<br>WEIGHT MATERIAL |          |
|----------------------------------|----------|
| Epoxy Coated Carbon Steel        | <b>0</b> |
| Stainless Steel                  | <b>S</b> |
| FRP Encapsulated Steel           | <b>E</b> |

| POSITION 11 -<br>VACUUM SCREEN |          |
|--------------------------------|----------|
| Standard Screen                | <b>0</b> |
| Flame Screen                   | <b>F</b> |

| POSITION 12 -<br>CLEANING METHOD |          |
|----------------------------------|----------|
| Standard Cleaning                | <b>0</b> |
| Oxygen Cleaning                  | <b>M</b> |

**\* For information on ATEX see pages 12 & 13 on the IOM.**

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