

MODEL 3200

PRESSURE/VACUUM VENT WITH PIPE-AWAY



OVERVIEW

The Model 3200 in-line conservation breather vent is designed for use on atmospheric and low-pressure storage tanks where pressure and vacuum relief is required

SPECIAL FEATURES

Modular Design:

The Model 3200 in-line conservation breather vent is part of the Valve Concepts, Inc. modular vent product line. The Model 3200 can easily be field converted to a vacuum only vent, a pressure/vacuum vent to atmosphere and can either be direct acting or pilot operated. Only Valve Concepts offers complete modularity throughout its complete vent product line.

Maintains Accurate Settings:

Minimum setting available is approximately 0.25 oz/in² for both pressure and vacuum relief. Maximum setting upwards to 2.5 psig for pressure and 2 psig for vacuum, see Set Point Limits Tables 4(a) and 4(b). 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, Inc. high standards for both leakage and set point prior to shipment. A certified test certificate is included with each vent verifying the accuracy of both the pressure and vacuum setting and leakage.

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 line sizes 2" (DN50) through 12" (DN300). Carbon steel and stainless steel vents have raised face tank connection flange. 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 intake of air and the escape of vapors as the tank breathes due to thermal changes and product movement in and out of the tank. The pallets open and close to permit in breathing and out breathing necessary to maintain the tank pressure within permissible limits to avoid damage to the tank.

MODEL 3200

LINE SIZES AVAILABLE

2" x 2" (DN50 x DN50), 2" x 3" (DN50 x DN80), 3" x 3" (DN80 x DN80), 3" x 4" (DN80 x DN100), 4" x 4" (DN100 x DN100), 4" x 6" (DN100 x DN150), 6" x 6" (DN150 x DN150), 6" x 8" (DN150 x DN200), 8" x 10" (DN200 x DN250), 10" x 12" (DN250 x DN300), 12" x 14" (DN300 x DN350)



END CONNECTIONS FLANGED



COMMON APPLICATIONS ATMOSPHERIC & LOW-PRESSURE STORAGE TANKS



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CONSTRUCTION

Housing Material: Available in aluminum, carbon steel, 316 stainless steel, 304 stainless steel or corrosion resistance fiberglass reinforced plastic (FRP) with Derakane 470* or Hetron 800* resins.

Seat Rings: Replaceable metal seat rings available in aluminum, 304 stainless steel, or 316 stainless steel. FRP vents have integral seats that match the body resin material.

Pallets Assemblies: Replaceable 316 stainless steel pallet assemblies are standard for metal vents. Pallet assemblies lower than 0.5 oz/in² may contain a polycarbonate pallet material. Replaceable FRP pallet assemblies match the body resin material.

Pallet Diaphragms: Standard diaphragm material is FEP film. Also available in FKM, EPDM, and BUNA-N.

STANDARD/GENERAL SPECIFICATIONS

Gaskets: Expanded PTFE for FEP diaphragm materials. Gasket materials match the diaphragm materials for BUNA-N, EPDM, and FKM.

Pressure and Vacuum Protection Screens: Replaceable 4x4 welded mesh screens in 304 stainless steel to prevent obstructions to pressure and vacuum relief flow paths. FRP vents use polyethylene mesh material.

Set Point Accuracy: Pressure and vacuum setpoints are calibrated to be within +/-2% of customer requested setting across the range of available settings. Exceeds API Bulletin 2521.

Seat Leakage: Meets or exceeds current edition of API Standard 2000.

Calibration Certificate: Calibration certificates are issued standard with every line item demonstrating acceptable set point accuracy and seat leakage rates.

Painting: 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.

Flange Studs: 304 stainless steel studs supplied for threaded holes in connection flange. UNC threaded studs are supplied for Class 150 threaded holes. Metric studs are supplied for PN10 and PN16 threaded holes. Flange bolting is not supplied for remaining thru holes in connection flange or with FRP body materials.

OPTION SPECIFICATIONS

Flame Screen: Replaceable 30x30 mesh screen in 304 stainless steel. Used to help prevent ignition of internal vapors through the outlet flange and vacuum relief port. This option replaces the standard vacuum protection screen and adds a gasket/flame screen assembly to be inserted between the outlet flange and downstream piping.

Sizing Report: Formal report documenting tank inbreathing/outheating requirements and vent performance per customer application. Displacement flow requirements and vent performance are in accordance with the current edition of API Standard 2000.

NACE MR0175: 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. For use with carbon steel or 316 stainless steel body materials only.

Oxygen Cleaning: All components oxygen cleaned, bagged, and tagged in accordance to Cashco specification S-1134. Must select either 304 or 316 stainless steel body materials and stainless steel loading weights.

ATEX 2014/34/EU: Declaration of Conformity and appropriate nameplate markings available. Must be requested at time of order. See Model 3200 IOM for more details.

PED 2014/34/EU Certificate: Sound Engineering Practice (SEP) certificate available for pressures up to 0.5 barg. Must be requested at time of order.

TABLE 1 - MATERIALS OF CONSTRUCTION

| COMPONENT MATERIALS | BODY MATERIALS | | | | | |
|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------------------------|
| | ALUM | CS | 316 SST | 304 SST | DERAKANE 470 | HETRON 800 |
| BODY COVERS | ALUM | CS | 316 SST | 304 SST | DERAKANE 470 | HETRON 800 |
| SEAT RINGS | ALUM, 316 SST | 316 SST | 316 SST | 304 SST | DERAKANE 470 | HETRON 800 |
| PALLET ASSEMBLIES | PC ¹ , 316 SST | PC ¹ , 316 SST | PC ¹ , 316 SST | PC ¹ , 316 SST | DERAKANE 470 | HETRON 800 |
| PALLET GUIDES | 316 SST | 316 SST | 316 SST | 316 SST | DERAKANE 470 | HETRON 800 |
| FLANGE STUDS | 304 SST | 304 SST | 304 SST | 304 SST | N/A | N/A |
| FASTENERS | 316 SST | 316 SST | 316 SST | 316 SST | 316 SST, ALLOY C276 | 316 SST, ALLOY C276 |
| PALLET WEIGHTS | CS ² , SST | CS ² , SST | CS ² , SST | CS ² , SST | DERAKANE 470 ³ | HETRON 800 ³ |
| SCREENS | 304 SST | 304 SST | 304 SST | 304 SST | POLYETHYLENE | POLYETHYLENE |

- 1 - Polycarbonate pallet material may be used for settings less than 0.5 oz/in². All other parts are 316 SST.
 2 - Carbon steel pallet weights are epoxy coated per Cashco specification S-1777.
 3 - 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) |
| 304 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(a) - SET POINT LIMITS (oz/in²)

| Size (NPS) | Metallic Vents | | | | FRP Vents | | | |
|------------|------------------|------------------|------------------|------------------|-----------|-----|--------|-----|
| | Pressure | | Vacuum | | Pressure | | Vacuum | |
| | MIN ¹ | MAX ² | MIN ¹ | MAX ² | MIN | MAX | MIN | MAX |
| 2" | 0.27 | 34.6 | 0.27 | 34.5 | 0.5 | 32 | 0.5 | 8 |
| 3" | 0.22 | 36.6 | 0.22 | 36.6 | 0.5 | 32 | 0.5 | 8 |
| 4" | 0.20 | 35.6 | 0.18 | 38.2 | 0.5 | 32 | 0.5 | 8 |
| 6" | 0.26 | 33.0 | 0.25 | 32.9 | 0.5 | 32 | 0.5 | 8 |
| 8" | 0.26 | 39.3 | 0.25 | 39.2 | 0.5 | 32 | 0.5 | 8 |
| 10" | 0.24 | 36.2 | 0.23 | 32.5 | 0.5 | 32 | 0.5 | 8 |
| 12" | 0.24 | 36.2 | 0.23 | 36.3 | 0.5 | 32 | 0.5 | 8 |

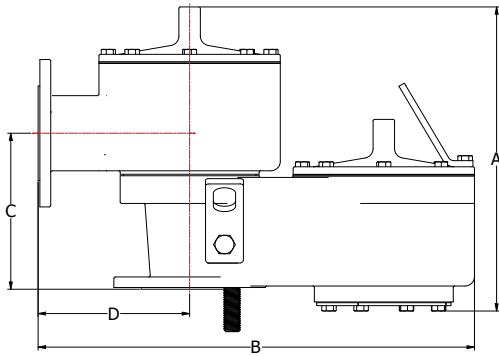
TABLE 4(b) - SET POINT LIMITS (mBar)

| Size (DN) | Metallic Vents | | | | FRP Vents | | | |
|-----------|------------------|------------------|------------------|------------------|-----------|-----|--------|-----|
| | Pressure | | Vacuum | | Pressure | | Vacuum | |
| | MIN ¹ | MAX ² | MIN ¹ | MAX ² | MIN | MAX | MIN | MAX |
| 50 | 1.2 | 149 | 1.2 | 149 | 2 | 138 | 2 | 34 |
| 80 | 0.9 | 158 | 0.9 | 158 | 2 | 138 | 2 | 34 |
| 100 | 0.9 | 153 | 0.8 | 165 | 2 | 138 | 2 | 34 |
| 150 | 1.1 | 142 | 1.1 | 142 | 2 | 138 | 2 | 34 |
| 200 | 1.1 | 169 | 1.1 | 169 | 2 | 138 | 2 | 34 |
| 250 | 1.0 | 156 | 1.0 | 140 | 2 | 138 | 2 | 34 |
| 300 | 1.0 | 156 | 1.0 | 156 | 2 | 138 | 2 | 34 |

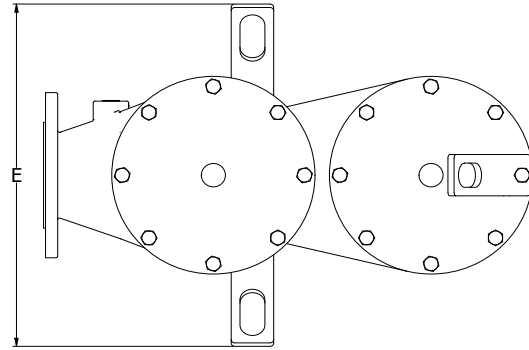
Notes:

- 1) MIN set points may utilize polycarbonate pallet material at factory discretion.
 2) MAX set points may utilize extended covers at factory discretion.

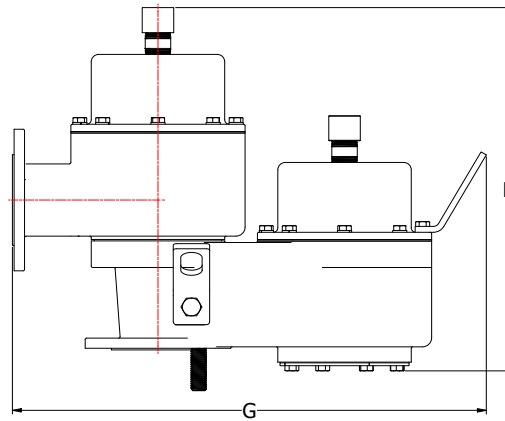
DIMENSIONS
Aluminum, Carbon Steel & Stainless Steel Body



Standard Configuration - Front View



Standard Configuration - Top View



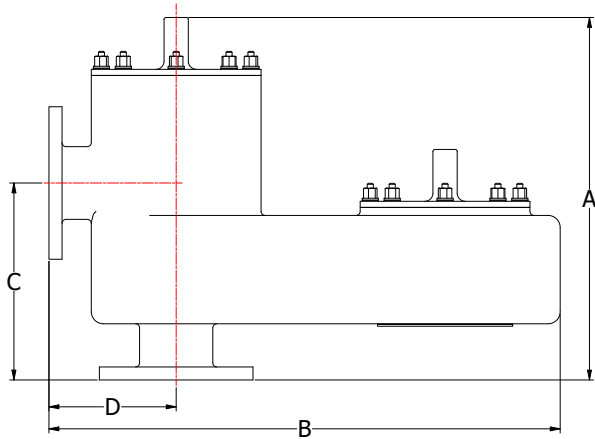
Extended Configuration

| Aluminum, Carbon Steel, & Stainless Steel Construction | | | | | | | | | | | |
|--|------------|----------|---------|--------|----------|---------|----------|----------------|--------|----------------|--------|
| SIZE (NPS) IN X OUT | DIMENSIONS | | | | | | | WEIGHT* (lbs) | | | |
| | A | B | C | D | E | F | G | STANDARD COVER | | EXTENDED COVER | |
| | | | | | | | | ALUM | CS/SST | ALUM | CS/SST |
| 2" x 2" | 12 3/8 | 17 5/16 | 6 3/8 | 6 | 12 7/16 | 15 7/8 | 19 9/16 | 22 | 64 | 25 | 74 |
| 2" x 3" | 12 3/8 | 17 1/2 | 6 15/16 | 6 3/16 | 12 7/16 | 15 7/8 | 19 3/4 | 22 | 65 | 26 | 76 |
| 3" x 3" | 14 13/16 | 18 13/16 | 8 1/16 | 6 1/2 | 14 1/16 | 18 7/8 | 21 1/16 | 29 | 85 | 33 | 95 |
| 3" x 4" | 14 13/16 | 18 13/16 | 8 9/16 | 6 1/2 | 14 1/16 | 18 7/8 | 21 1/16 | 30 | 88 | 34 | 98 |
| 4" x 4" | 20 1/4 | 24 3/8 | 9 9/16 | 8 | 16 1/4 | 20 3/4 | 26 1/2 | 49 | 142 | 53 | 156 |
| 4" x 6" | 20 1/4 | 24 3/8 | 10 9/16 | 8 | 16 1/4 | 20 3/4 | 26 1/2 | 49 | 143 | 54 | 157 |
| 6" x 6" | 23 3/4 | 28 1/16 | 11 1/16 | 9 | 16 13/16 | 24 3/16 | 28 1/16 | 68 | 199 | 76 | 222 |
| 6" x 8" | 23 3/4 | 28 1/16 | 12 1/4 | 9 | 16 13/16 | 24 3/16 | 28 1/16 | 70 | 205 | 78 | 228 |
| 8" x 10" | 29 9/16 | 34 1/2 | 15 9/16 | 11 | 24 5/8 | 29 3/16 | 34 1/2 | 107 | 311 | 120 | 350 |
| 10" x 12" | 32 3/8 | 39 13/16 | 16 1/2 | 12 1/4 | 21 5/16 | 32 3/8 | 39 13/16 | 138 | 403 | 157 | 459 |
| 12" x 14" | 37 1/8 | 44 11/16 | 19 1/4 | 14 | 24 3/8 | 37 1/8 | 44 11/16 | 142 | 414 | 170 | 497 |

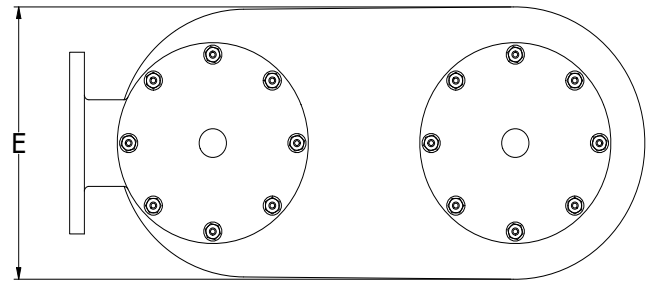
| Aluminum, Carbon Steel, & Stainless Steel Construction | | | | | | | | | | | |
|--|------------|------|-----|-----|-----|-----|------|----------------|--------|----------------|--------|
| SIZE (DN) IN X OUT | DIMENSIONS | | | | | | | WEIGHT* (kg) | | | |
| | A | B | C | D | E | F | G | STANDARD COVER | | EXTENDED COVER | |
| | | | | | | | | ALUM | CS/SST | ALUM | CS/SST |
| 50 x 50 | 314 | 440 | 162 | 152 | 316 | 403 | 497 | 10 | 29 | 12 | 34 |
| 50 x 80 | 314 | 445 | 176 | 157 | 316 | 403 | 502 | 10 | 29 | 12 | 34 |
| 80 x 80 | 376 | 478 | 205 | 165 | 357 | 479 | 535 | 13 | 39 | 15 | 43 |
| 80 x 100 | 376 | 478 | 217 | 165 | 357 | 479 | 535 | 14 | 40 | 15 | 44 |
| 100 x 100 | 514 | 619 | 243 | 203 | 413 | 527 | 673 | 22 | 64 | 24 | 71 |
| 100 x 150 | 514 | 619 | 268 | 203 | 413 | 527 | 673 | 22 | 65 | 24 | 71 |
| 150 x 150 | 603 | 713 | 281 | 229 | 427 | 614 | 713 | 31 | 90 | 35 | 101 |
| 150 x 200 | 603 | 713 | 311 | 229 | 427 | 614 | 713 | 32 | 93 | 35 | 103 |
| 200 x 250 | 751 | 876 | 395 | 279 | 625 | 741 | 876 | 48 | 141 | 54 | 159 |
| 250 x 300 | 822 | 1011 | 419 | 311 | 541 | 822 | 1011 | 63 | 183 | 71 | 208 |
| 300 x 350 | 943 | 1135 | 489 | 356 | 619 | 943 | 1135 | 64 | 188 | 77 | 225 |

* Estimated weight based on minimum setpoints. Weight will increase with higher set points and packaging.

DIMENSIONS
Corrosion Resistant Fiberglass (FRP) Body



Standard Configuration - Front View



Standard Configuration - Top View

| FRP Construction | | | | | | |
|------------------------|------------|----------|---------|--------|--------|-------------------|
| SIZE (NPS) IN X OUT | DIMENSIONS | | | | | Weight * (lbs) |
| | A | B | C | D | E | |
| 2" x 2" | 18 7/8 | 24 13/16 | 9 7/8 | 6 7/8 | 10 5/8 | 21 |
| 2" x 3" | 18 7/8 | 24 13/16 | 10 7/16 | 6 7/8 | 10 5/8 | 21 |
| 3" x 3" | 18 7/8 | 24 13/16 | 10 7/16 | 7 3/8 | 10 5/8 | 24 |
| 3" x 4" | 18 7/8 | 24 13/16 | 10 7/8 | 7 3/8 | 10 5/8 | 24 |
| 4" x 4" | 22 9/16 | 31 5/8 | 12 1/4 | 7 7/8 | 14 1/4 | 38 |
| 4" x 6" | 22 9/16 | 31 5/8 | 13 7/8 | 7 7/8 | 14 1/4 | 38 |
| 6" x 6" | 24 7/8 | 32 1/8 | 13 5/16 | 9 1/4 | 14 1/4 | 43 |
| 6" x 8" | 24 7/8 | 32 1/8 | 14 1/4 | 9 1/4 | 14 1/4 | 43 |
| 8" x 10" | 29 3/4 | 43 1/4 | 17 1/2 | 10 7/8 | 19 | 63 |
| 10" x 12" | 31 5/8 | 43 | 18 1/4 | 12 | 19 | 77 |
| 12" x 14" | 33 7/8 | 46 | 19 1/2 | 13 | 20 | 93 |

| FRP Construction | | | | | | |
|-----------------------|------------|------|-----|-----|-----|------------------|
| SIZE (DN) IN X OUT | DIMENSIONS | | | | | Weight * (kg) |
| | A | B | C | D | E | |
| 50 x 50 | 479 | 630 | 251 | 175 | 270 | 10 |
| 50 x 80 | 479 | 630 | 265 | 175 | 270 | 10 |
| 80 x 80 | 479 | 630 | 265 | 187 | 270 | 11 |
| 80 x 100 | 479 | 630 | 276 | 187 | 270 | 11 |
| 100 x 100 | 573 | 803 | 311 | 200 | 362 | 17 |
| 100 x 150 | 573 | 803 | 352 | 200 | 362 | 17 |
| 150 x 150 | 632 | 816 | 338 | 235 | 362 | 20 |
| 150 x 200 | 632 | 816 | 362 | 235 | 362 | 20 |
| 200 x 250 | 756 | 1099 | 445 | 276 | 483 | 29 |
| 250 x 300 | 803 | 1092 | 464 | 305 | 483 | 35 |
| 300 x 350 | 860 | 1168 | 495 | 330 | 508 | 42 |

* Estimated weight based on minimum setpoints. Weight will increase with higher set points and packaging.

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3200 Series PRODUCT CODE 10/04/21



| POSITION 3 - FLANGE CONNECTION | |
|--------------------------------|---|
| ASME 150 | A |
| PN16 | B |
| PN10 | C |

| POSITION 4 - FLANGE SIZE | | CODE |
|---------------------------|--|------|
| Size | | |
| 2" x 2" - DN50 x DN50 | | 2 |
| 2" x 3" - DN50 x DN80 | | H |
| 3" x 3" - DN80 x DN80 | | 3 |
| 3" x 4" - DN80 x DN100 | | J |
| 4" x 4" - DN100 x DN100 | | 4 |
| 4" x 6" - DN100 x DN150 | | K |
| 6" x 6" - DN150 x DN150 | | 6 |
| 6" x 8" - DN150 x DN200 | | L |
| 8" x 10" - DN200 x DN250 | | 8 |
| 10" x 12" - DN250 x DN300 | | A |
| 12" x 14" - DN300 x DN350 | | B |

| POSITION 5 - BODY/SEAT RING MATERIAL | | |
|--------------------------------------|---------------------|------|
| BODY MATERIAL | SEAT MATERIAL | CODE |
| Aluminum | Aluminum | 1 |
| Aluminum | 316 Stainless Steel | 4 |
| Carbon Steel | 316 Stainless Steel | 5 |
| 316 Stainless Steel | 316 Stainless Steel | 6 |
| 304 Stainless Steel | 304 Stainless Steel | 7 |
| Derakane 470 w/ SST Studs | Derakane 470 | D |
| Derakane 470 w/ Hast C Studs | Derakane 470 | E |
| Hetron 800 w/ SST Studs | Hetron 800 | F |
| Hetron 800 w/ Hast C Studs | Hetron 800 | G |

| POSITION 7 - DIAPHRAGM MATERIAL | |
|---------------------------------|---|
| FEP (Std) | A |
| BUNA-N | B |
| EPDM | D |
| FKM | F |

| POSITION 8 - PRESSURE PALLET CONFIGURATION | | |
|--|-------------|------|
| Set Point Range | | CODE |
| OZ/IN ² | mBar | |
| MIN - 0.49 | MIN - 2.11 | 1 |
| 0.50 - 0.74 | 2.12 - 3.19 | 2 |
| 0.75 - 7.99 | 3.20 - 34.4 | 3 |
| 8.00 - MAX | 34.5 - MAX | 4 |

See Table 4 for MIN and MAX pressure set points.

| POSITION 9 - VACUUM PALLET CONFIGURATION | | |
|--|-------------|------|
| Set Point Range | | CODE |
| OZ/IN ² | mBar | |
| MIN - 0.49 | MIN - 2.11 | 1 |
| 0.50 - 0.74 | 2.12 - 3.19 | 2 |
| 0.75 - 7.99 | 3.20 - 34.4 | 3 |
| 8.00 - MAX | 34.5 - MAX | 4 |

See Table 4 for MIN and MAX vacuum set points.

| POSITION 10 - WEIGHT MATERIAL | |
|-------------------------------|---|
| Epoxy Coated Carbon Steel | 0 |
| Stainless Steel | S |
| FRP Encapsulated Steel | E |

| POSITION 11 - VACUUM SCREEN | |
|-----------------------------|---|
| Standard Screen | 0 |
| Flame Screen | F |

| POSITION 12 - CLEANING METHOD | |
|-------------------------------|---|
| Standard Cleaning | 0 |
| Oxygen Cleaning | M |

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