

# 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/in<sup>2</sup> 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



### DESIGN PRESSURE MULTIPLE SET PRESSURE & VACUUM RANGES AVAILABLE



## 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/in<sup>2</sup> 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 <sup>1</sup> , 316 SST	PC <sup>1</sup> , 316 SST	PC <sup>1</sup> , 316 SST	PC <sup>1</sup> , 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 <sup>2</sup> , SST	CS <sup>2</sup> , SST	CS <sup>2</sup> , SST	CS <sup>2</sup> , SST	DERAKANE 470 <sup>3</sup>	HETRON 800 <sup>3</sup>
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/in<sup>2</sup>. 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/in<sup>2</sup>)**

Size (NPS)	Metallic Vents				FRP Vents			
	Pressure		Vacuum		Pressure		Vacuum	
	MIN <sup>1</sup>	MAX <sup>2</sup>	MIN <sup>1</sup>	MAX <sup>2</sup>	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)**

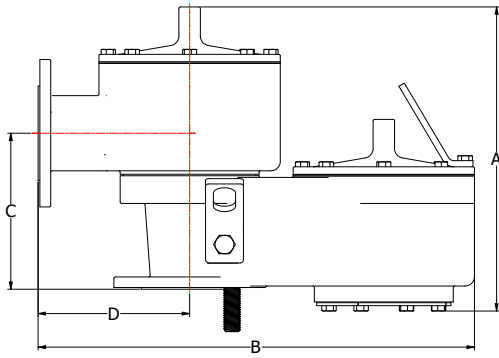
Size (DN)	Metallic Vents				FRP Vents			
	Pressure		Vacuum		Pressure		Vacuum	
	MIN <sup>1</sup>	MAX <sup>2</sup>	MIN <sup>1</sup>	MAX <sup>2</sup>	MIN	MAX	MIN	MAX
50	1.2	149	1.2	149	2	138	2	34
80	0.9	158	0.9	158	2	138	2	34
100	0.9	153	0.8	165	2	138	2	34
150	1.1	142	1.1	142	2	138	2	34
200	1.1	169	1.1	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:

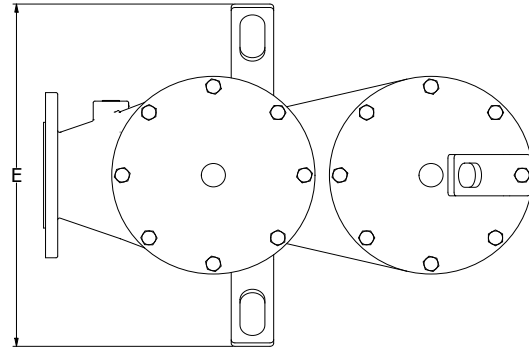
1) MIN set points may utilize polycarbonate pallet material at factory discretion.

2) MAX set points may utilize extended covers at factory discretion.

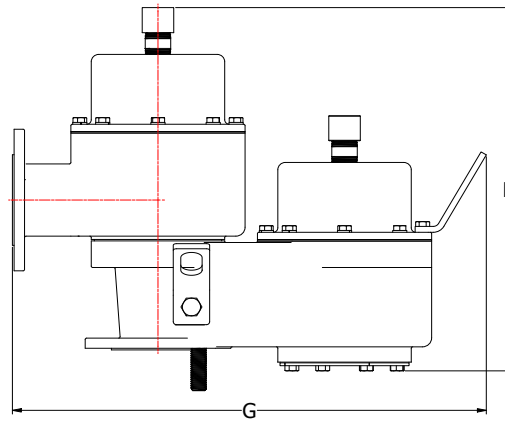
**DIMENSIONS**  
Aluminum, Carbon Steel & Stainless Steel Body



Standard Configuration - Front View



Standard Configuration - Top View



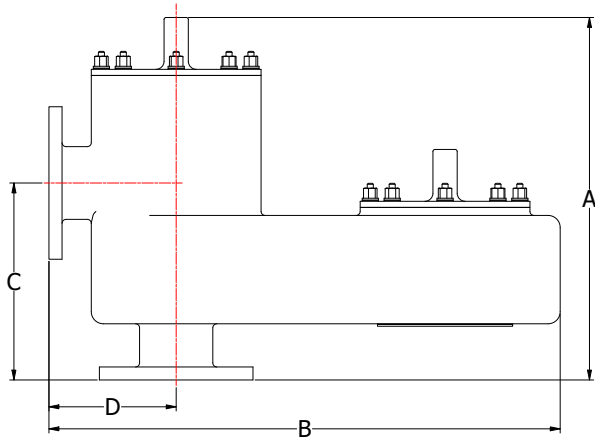
Extended Configuration

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

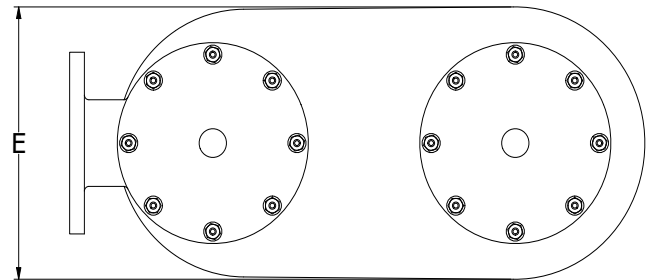
Aluminum, Carbon Steel, & Stainless Steel Construction											
SIZE (DN) IN X OUT	DIMENSIONS							WEIGHT* (kg)			
	A	B	C	D	E	F	G	STANDARD COVER		EXTENDED COVER	
								ALUM	CS/SST	ALUM	CS/SST
50 x 50	314	440	162	152	316	403	497	10	29	12	34
50 x 80	314	445	176	157	316	403	502	10	29	12	34
80 x 80	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	
Size	CODE
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 <sup>2</sup>	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 <sup>2</sup>	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

**\* For information on ATEX see pages 14 & 15 on the IOM.**

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