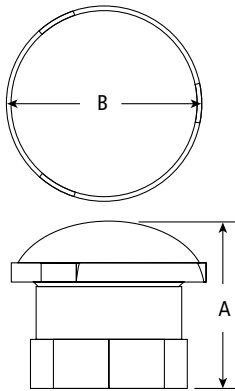


OPW 301 Emergency Vents

The OPW 301 Emergency Vent is designed to prevent an above ground storage tank from becoming over-pressurized by providing high-capacity venting in the event of a fire or blockage. The 301 is a weighted, mushroom-style emergency vent. When the AST builds pressure, the weighted cast iron lid is forced up off its seat to relieve the pressure. When pressure is relieved, the lid lowers and is automatically reset. The appropriate 301 Series vent is determined by the emergency venting capacity requirements of the AST and the type of connection at the tank's emergency vent opening. The OPW 301 Emergency Vent is available in 4", 6", 8" and 10" openings with female NPT, male NPT or flanged connections (8"-10") to allow for easy installation in new or existing above ground tanks. Various lid pressure settings determine the initial venting of the valve.



Replacement Parts

Part #	Description
201877	4" Seal
202721	6" Seal
203325	8" Seal

Materials

Lid: Cast iron with powder-coated finish

Body: Aluminum

Shaft: Zinc-plated steel

O-Ring: Buna-N

301 SCFH @ 2½ PSI
(0.17 bar)
4" - 101,000
6" - 250,000
8" - 471,000



Features

- ◆ Automatically Resets – weighted cast iron cover reseats once the pressure in the tank is relieved.
- ◆ Aluminum Body and Cast Iron Lid
- ◆ Epoxy Powder-Coated Cover – prevents rusting of the cover to protect expensive finishes on ASTs.
- ◆ UL Listed – to satisfy third party accreditation requirements of many jurisdictions.
- ◆ CARB Certified – AST Phase 1 Enhanced Vapor Recovery (EVR) System

301 Series Instruction Sheet Order Number: **203568**

Ordering Specifications

CARB APPROVED AST EQUIPMENT

Model #	Pressure		Mounting Connection	A		B		Weight		
	in.	mm		Setting	in.	mm	in.	mm	lbs.	kg
301-3080	3	76	8 oz.	Female NPT	4.7	119.4	5.1	129.5	6.7	3
301M-3081	3	76	8 oz.	Male NPT	4.7	119.4	5.1	129.5	6.7	3
301-3160	3	76	16 oz.	Female NPT	5.7	144.8	5.1	129.5	11.4	5.2
301M-3161	3	76	16 oz.	Male NPT	5.7	144.8	5.1	129.5	11.4	5.2
301-4080	4	101.5	8 oz.	Female NPT	4.9	124.5	6.1	154.9	10.6	4.8
301M-4081	4	101.5	8 oz.	Male NPT	4.9	124.5	6.1	154.9	10.6	4.8
301-4160	4	101.5	16 oz.	Female NPT	6.1	154.9	6	152.4	18.1	8.2
301M-4161	4	101.5	16 oz.	Male NPT	6.1	154.9	6	152.4	18.1	8.2
301-6080	6	152	8 oz.	Female NPT	5.9	149.9	8.1	205.7	20.9	9.5
301M-6081	6	152	8 oz.	Male NPT	5.9	149.9	8.1	205.7	20.9	9.5
301-6160	6	152	16 oz.	Female NPT	7.4	188	8.1	205.7	37.5	17
301M-6161	6	152	16 oz.	Male NPT	7.4	188	8.1	205.7	37.5	17
301-8080	8	203	8 oz.	Female NPT	6.2	157.5	10.1	256.5	33.9	15.4
301M-8081	8	203	8 oz.	Male NPT	6.2	157.5	10.1	256.5	33.9	15.4
301-8160	8	203	16 oz.	Female NPT	7.8	198.1	10.1	256.5	61.9	28
301M-8161	8	203	16 oz.	Male NPT	7.8	198.1	10.1	256.5	61.9	28
301F-8085	8	203	8 oz.	Flange	6.2	157.5	10.1	256.5	41.8	19
301F-8165	8	203	16 oz.	Flange	7.8	198.1	10.1	256.5	70	31.8
301F-1085	10	254	8 oz.	Flange	6.5	165.1	13	330.2	65.2	29.6

Approvals and Listings

CARB Certified
AST Phase 1 Enhanced Vapor Recovery (EVR) System

Emergency Venting Size Selection Guide

For Horizontal Above Ground Storage Tanks

The OPW AST Venting Guide is supplied to assist emergency venting selection for above ground storage tanks (AST). The table below contains common tank sizes and based on the Wetted Area of a horizontal cylindrical storage tank, the correct size OPW Emergency Vent. The following chart, was taken directly from NFPA 30 and UL 142.

Horizontal AST Emergency Venting Size Guide – Table 1

Capacity		Diameter		Length		Wetted Area		Required Vent Capacity		OPW 301 Vent Size
Gallons	Liters	ft. or in.	Meters	ft. or in.	Meters	sq. ft.	sq. m.	CFH	CMH	
280	1,060	3'	0.914	5'-2"	1.574	47	4.366	49,520	1,402	4"
300	1,136	38"	0.965	5'	1.524	49	4.552	51,640	1,462	4"
500	1,893	4'	1.219	5'-5"	1.651	69	6.410	72,650	2,057	4"
530	2,006	4'	1.219	6'	1.828	71	6.596	74,750	2,117	4"
550	2,082	64"	1.626	6'	1.828	75	6.967	78,950	2,236	4"
1,000	3,785	64"	1.626	10'-8"	3.251	119	11.055	124,950	3,538	6"
1,000	3,785	64"	1.626	6'	1.828	109	10.126	114,450	3,241	6"
1,500	5,678	64"	1.626	9'	2.743	147	13.657	154,350	4,371	6"
2,000	7,571	64"	1.626	12'	3.657	184	17.094	193,200	5,471	6"
2,500	9,464	64"	1.626	15'	4.572	222	20.624	223,320	6,324	6"
3,000	11,356	64"	1.626	18'	5.486	259	24.062	243,680	6,900	6"
3,000	11,356	6'	1.828	14'	4.267	240	22.297	233,400	6,609	6"
4,000	15,142	64"	1.626	24'	7.315	335	31.123	281,100	7,960	8"
4,000	15,142	6'	1.828	19'	5.791	311	28.893	270,060	7,647	8"
5,000	18,927	8'	2.438	13'-4"	4.064	326	30.286	276,960	7,843	8"
6,000	22,712	8'	2.438	16'	4.876	376	34.932	300,480	2,364	8"
8,000	30,283	8'	2.438	21'-4"	6.502	477	44.315	344,340	9,751	8"
10,000	37,854	8'	2.438	27'	8.229	584	54.255	385,920		8"
10,000	37,854	9'	2.743	21'	6.400	540	50.168	369,200	10,455	8"
10,000	37,854	10'	3.048	17'	5.181	518	48.124	360,840	10,218	8"
10,000	37,854	10'-6"	3.200	15'-7"	4.749	515	47.845	359,700	10,186	8"
12,000	45,425	8'	2.438	32'	9.753	678	62.988	420,080	11,895	8"
12,000	45,425	9'	2.743	25'	7.620	625	58.064	401,000	11,355	8"
12,000	45,425	10'	3.048	20'-6"	6.248	600	55.742	392,000	11,100	8"
12,000	45,425	11'	3.352	17'	5.181	583	54.162	385,540	10,917	8"
15,000	56,781	8'	2.438	40'	13.192	829	77.017	470,990	13,336	10"
15,000	56,781	8'	2.438	23'-5"	7.137	703	65.311	429,020	12,148	10"
20,000	75,708	10'	3.048	34'-2"	10.414	922	85.657	499,820	14,153	10"
20,000	75,708	10'-6"	3.200	31'	9.448	896	83.241	491,760	13,925	10"
20,000	75,708	11'	3.352	28'	8.534	868	80.640	483,080	13,679	10"
25,000	94,635	10'-6"	3.200	38'-6"	11.734	1,082	100.52	537,530	15,221	10"
30,000	113,562	10'-6"	3.200	46'-3"	14.097	1,274	118.36	568,100	16,087	10"

Horizontal AST Emergency Vent Selection

For Horizontal Above Ground Storage Tanks

TABLE 1 is a pre-calculated chart that may have all the information needed to choose the proper emergency vent. If the tank size is not in the pre-calculated chart, use the example below as a guide to figure out the wetted area, cubic feet per hour (CFH), and proper vent selection for the particular tank.

**EXAMPLE:

Given: Tank capacity is 10,000 gallons; 10 feet in diameter x 17 feet long.

Step 1

From TABLE 1: **WA = 518 sq. ft.**

If not in the table, do the following to calculate the wetted area:

$$\text{Formula: } WA = .75 \left[2 \frac{\pi d^2}{4} + pdl \right] = .75 \left[\frac{\pi d^2}{2} + pdl \right]$$

WA = wetted area in square feet

75% = horizontal tank factor

$\pi = 3.14$

d = diameter of tank end in feet

l = length of tank in feet

$$WA = .75 \left[\frac{3.14 \times 10^2}{2} + (3.14 \times 10 \times 17) \right]$$

WA = .75 (157.0 + 533.8) = **518 square feet rounded**

Step 2

If the tank size is in the chart, use the supplied CFH values to determine the emergency vent size needed in TABLE 1.

If not in the charts, continue the following example:

Using 518 square feet, the cubic feet per hour (CFH) can be found using TABLE 1.

Since 518 falls between the values of 500 and 600, interpolation is necessary as follows:

	600 sq. ft.	392,000 CFH	See TABLE 2 for additional CFH values.
Difference:	-500 sq. ft.	-354,000 CFH	
	100 sq. ft.	38,000 CFH	

$$\left[\frac{38,000}{100} \times \frac{x}{518-500} ; x = 6,840 \text{ CFH} \right]$$

Total CFH required = 354,000 CFH + 6,840 CFH = **360,840 CFH**

Step 3

Vent selection: using TABLE 1, find the range in which 360,840 CFH falls.

The tables show that an 8" emergency vent is needed.

**PEI Recommended Practices 200-96

Wetted Area versus Cubic Feet of Free Air Per Hour Table 2

(14.7 PSIA and 60°)

sq. ft.	sq. m.	CFH	CMH
20	1.858	21,100	597.48
30	2.787	31,600	894.81
40	3.716	42,100	1,192.13
50	4.645	52,700	1,492.29
60	5.574	63,200	1,789.62
70	6.503	73,700	2,086.95
80	7.432	84,200	2,384.27
90	8.361	94,800	2,684.43
100	9.290	105,000	2,973.26
120	11.148	126,000	3,567.92
140	13.006	147,000	4,162.57
160	14.864	168,000	4,757.23
180	16.723	190,000	5,380.20
200	18.581	211,000	5,974.85
250	23.226	239,000	6,767.72
300	27.871	265,000	7,503.96
350	32.516	288,000	8,155.25
400	37.161	312,000	8,834.85
500	46.452	354,000	10,024.16
600	55.742	392,000	11,100.20
700	65.032	428,000	12,119.61
800	74.322	462,000	13,082.38
900	83.613	493,000	13,960.20
1,000	92.903	524,000	14,838.02
1,200	111.48	557,000	16,338.82
1,400	130.06	587,000	16,621.98
1,600	148.64	614,000	17,386.54
1,800	167.23	639,000	18,094.46
2,000	185.81	662,000	18,745.75
2,400	222.97	704,000	19,935.06
>2,800	>260.13	742,000	21,011.10

SOURCE: **Flamable and Combustible Liquids Code 30, NFPA.**

Interpolate for immediate values.