



Air Vents

Armstrong



Armstrong[®]

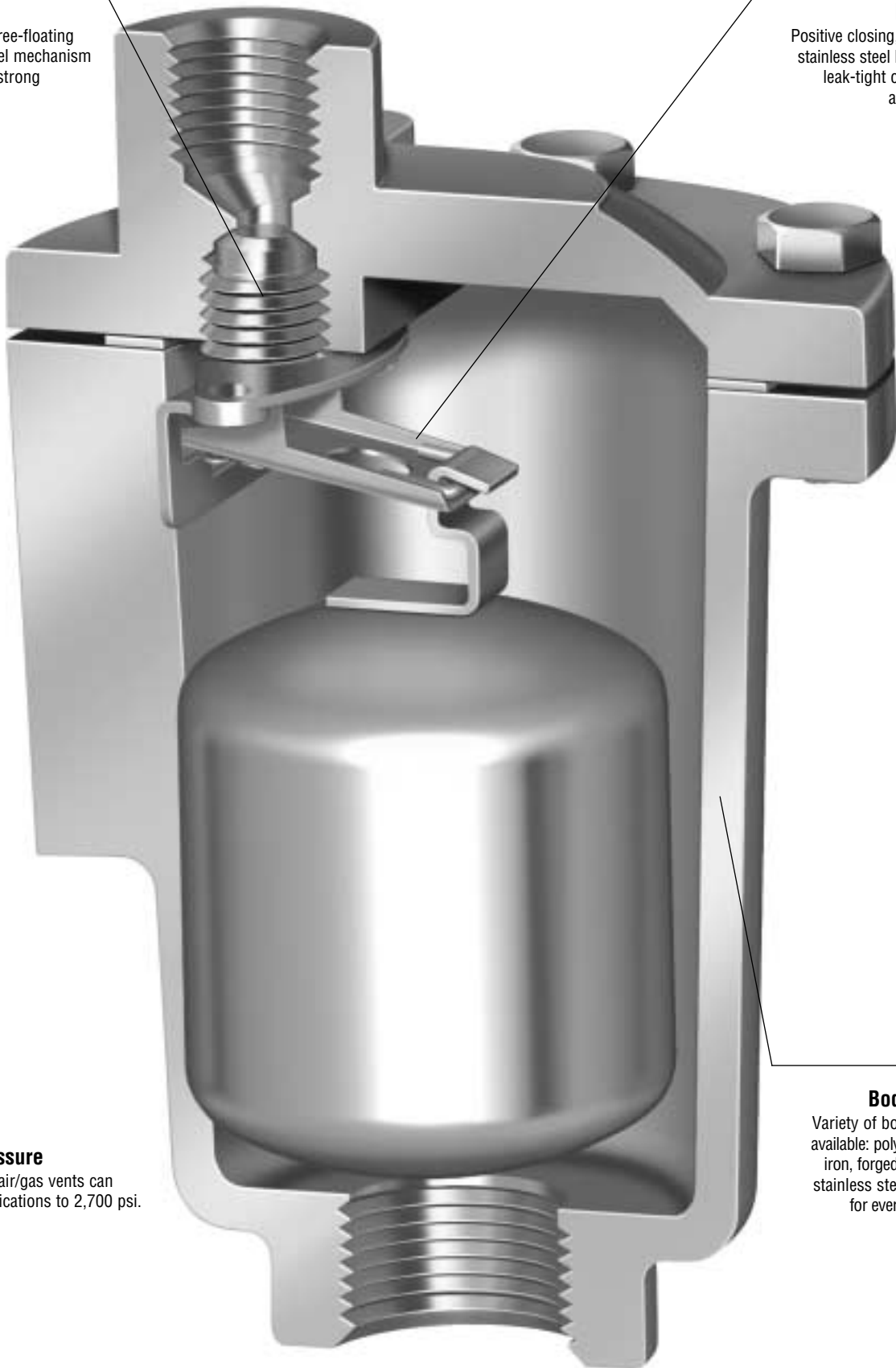
Intelligent System Solutions[™]

STEAM • AIR • HOT WATER

Next

Proven
Same proven, free-floating all stainless steel mechanism as used in Armstrong steam traps.

Leak-tight
Positive closing, free-floating stainless steel lever ensures leak-tight closing under all conditions.



High pressure
Armstrong air/gas vents can handle applications to 2,700 psi.

Body options
Variety of body materials available: polysulfone, cast iron, forged steel and all stainless steel. A material for every application.

Selecting The Armstrong Air/Gas Vent

With the desired CFM capacity known, find the orifice size required from the table on this page. Then find the vent or vents with the correct orifice size on pages AV-6, AV-8, AV-10 or AV-14 that will operate at the required pressure with a liquid of the specific gravity being handled.

$$V = \frac{W}{d} = \frac{2.05 C A P_2 \times 60}{d} \sqrt{\frac{\left(\frac{P_1}{P_2}\right)^{2.83} \left[\left(\frac{P_1}{P_2}\right)^{2.83} - 1\right]}{T}}$$

Example—Find a model number that will vent 52 cfm of air (including safety factor of 1.5 - 2.0) from a liquid with a specific gravity of 0.93 at 250 psi. Using the table below, follow the 250 psi line across to the number 60.9. Orifice size is 5/32". Now go to pages AV-6, AV-8, AV-10 or AV-14 checking the 5/32" orifice lines to locate a vent for 250 psi or higher with 0.90 gravity liquid.

Where:

- V = Volume flow rate, ft³/min
- W = Mass flow rate, lb/min
- d = Density, 0.07494 lb/ft³ at standard conditions
- C = Flow coefficient = 0.65
- A = Orifice area, in²
- P1 = Upstream pressure, psia
- P2 = Pressure at throat orifice or downstream pressure = greater of 0.53 P1 or 14.7 psia
- T = Upstream temperature = 530°R

NOTE: Since specific gravity falls between 0.95 and 0.90, use 0.90 gravity data. The model 3-AV on page AV-7 is the one to use.

Ref: Baumeister & Marks, *Standard Handbook for Mechanical Engineers*, 7th edition.

For Venting During Filling Only

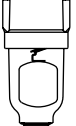

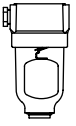

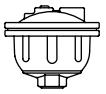

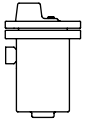
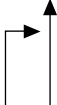
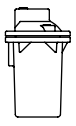
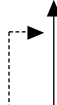
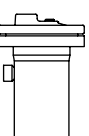
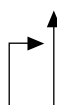
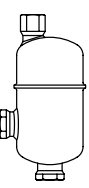

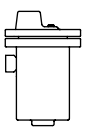
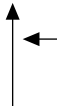
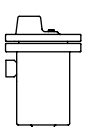
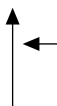
If a vent is required only for getting rid of air when a system is started up, such as when starting up a deep well pump or filling an empty pipe, tank or other vessel, ability of the vent to open at operating pressure can be ignored. In these cases, a model number with a large orifice for fast venting may be selected, **but the vent will not open after air is expelled and the system reaches operating pressure.**

Discharge of Air Through an Orifice in Standard Cubic Feet per Minute at a Standard Atmospheric Pressure of 14.7 psia and 70°F																						
Pressure psig	Orifice Diameter, inch																					
	1/16	5/64	3/32	#38	7/64	1/8	9/64	5/32	3/16	7/32	1/4	9/32	5/16	11/32	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1-1/16
5	0.65	1.01	1.45	1.55	1.98	2.58	3.27	4.03	5.81	7.90	10.3	13.1	16.1	19.5	23.2	31.6	41.3	52.3	64.5	92.9	126	186
6	0.71	1.10	1.59	1.70	2.16	2.82	3.57	4.41	6.35	8.64	11.3	14.3	17.6	21.3	25.4	34.5	45.1	57.1	70.5	102	138	204
7	0.76	1.19	1.71	1.83	2.33	3.04	3.85	4.75	6.84	9.31	12.2	15.4	19.0	23.0	27.3	37.2	48.6	61.5	76.0	109	149	220
9	0.86	1.34	1.93	2.07	2.63	3.43	4.34	5.36	7.72	10.5	13.7	17.4	21.4	25.9	30.9	42.0	54.9	69.4	85.7	123	168	248
12	0.98	1.54	2.21	2.37	3.01	3.93	4.98	6.14	8.85	12.0	15.7	19.9	24.6	29.7	35.4	48.2	62.9	79.6	98.3	142	193	284
15	1.09	1.71	2.46	2.63	3.34	4.37	5.53	6.82	9.83	13.4	17.5	22.1	27.3	33.0	39.3	53.5	69.9	88.4	109	157	214	316
20	1.25	1.95	2.81	3.01	3.82	4.99	6.32	7.80	11.2	15.3	20.0	25.3	31.2	37.7	44.9	61.1	79.8	101	125	180	245	361
25	1.38	2.16	3.11	3.33	4.23	5.53	6.99	8.63	12.4	16.9	22.1	28.0	34.5	41.8	49.7	67.7	88.4	112	138	199	271	399
30	1.54	2.40	3.46	3.70	4.71	6.15	7.78	9.61	13.8	18.8	24.6	31.1	38.4	46.5	55.3	75.3	98.4	125	154	221	301	444
35	1.73	2.71	3.90	4.17	5.31	6.93	8.77	10.8	15.6	21.2	27.7	35.1	43.3	52.4	62.4	84.9	111	140	173	250	340	501
40	1.93	3.01	4.34	4.64	5.90	7.71	9.75	12.0	17.3	23.6	30.8	39.0	48.2	58.3	69.4	94.4	123	156	193	277	378	557
45	2.12	3.31	4.77	5.10	6.49	8.47	10.7	13.2	19.1	26.0	33.9	42.9	53.0	64.1	76.3	104	136	172	212	305	415	612
50	2.31	3.61	5.20	5.56	7.07	9.24	11.7	14.4	20.8	28.3	37.0	46.8	57.7	69.9	83.1	113	148	187	231	333	453	667
60	2.69	4.20	6.05	6.48	8.23	10.8	13.6	16.8	24.2	32.9	43.0	54.4	67.2	81.3	96.8	132	172	218	269	387	527	777
70	3.06	4.79	6.90	7.38	9.39	12.3	15.5	19.2	27.6	37.5	49.0	62.1	76.6	92.7	110	150	196	248	306	441	601	886
80	3.44	5.37	7.74	8.28	10.5	13.8	17.4	21.5	31.0	42.1	55.0	69.7	86.0	104	124	169	220	279	344	495	674	994
90	3.81	5.96	8.58	9.20	11.7	15.3	19.3	23.8	34.3	46.7	61.0	77.2	95.3	115	137	187	244	309	381	549	747	1,102
100	4.19	6.54	9.42	10.1	12.8	16.7	21.2	26.2	37.7	51.3	67.0	84.8	105	127	151	205	268	339	419	603	820	1,210
110	4.56	7.12	10.3	11.0	14.0	18.2	23.1	28.5	41.0	55.8	72.9	92.3	114	138	164	223	292	369	456	656	893	1,317
125	5.11	7.99	11.5	12.3	15.7	20.5	25.9	32.0	46.0	62.7	81.8	104	128	155	184	251	327	414	511	737	1,003	1,478
150	6.04	9.44	13.6	14.6	18.5	24.2	30.6	37.8	54.4	74.0	96.7	122	151	183	217	296	387	489	604	870	1,184	1,746
200	7.89	12.3	17.8	19.0	24.2	31.6	40.0	49.3	71.0	96.7	126	160	197	239	284	387	505	639	789	1,136	1,547	2,281
250	9.74	15.2	21.9	23.5	29.8	39.0	49.3	60.9	87.6	119	156	197	243	295	351	477	623	789	974	1,402	1,909	2,814
300	11.6	18.1	26.1	27.9	35.5	46.3	58.6	72.4	104	142	185	235	290	350	417	568	741	938	1,158	1,668	2,271	3,348
400	15.3	23.9	34.4	36.8	46.8	61.1	77.3	95.5	137	187	244	309	382	462	550	748	978	1,327	1,527	2,199	2,994	4,414
500	19.0	29.6	42.7	45.7	58.1	75.8	96.0	119	171	232	303	384	474	574	683	929	1,214	1,536	1,896	2,731	3,717	5,480
600	22.6	35.4	51.0	54.6	69.4	90.6	115	142	204	277	362	459	566	685	815	1,110	1,450	1,835	2,265	3,261	4,439	6,546
750	28.2	44.0	63.4	67.9	86.3	113	143	176	254	345	451	571	704	852	1,014	1,381	1,803	2,283	2,818	4,058	5,523	8,144
1,000	37.4	58.4	84.1	90.1	115	150	189	234	337	458	598	757	935	1,131	1,346	1,832	2,393	3,029	3,740	5,385	7,329	10,807

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.



Armstrong® Air Vent ID Charts

Illustration	Type	Flow Direction	Connection Type	Max. Allow. Press. psig	TMA °F	Body Material	Model	Max. Oper. Press. psig	Connection Size							Located on Page	
									1/8"	1/4"	1/2"	3/4"	1"	1-1/2"	2"		
	Series 1-AVCW See-Thru Free Floating Lever Air Vents for Ozone Applications		Screwed	150	150	PBT Cap (Polybutylene Terephthalate) Polysulfone Body	1-AVCW	150			▲	★★					AV-20
	Series 1-AVC See-Thru Free Floating Lever Air/Gas Vents		Screwed	150	150	Nylon Cap Polysulfone Body	1-AVC	150				★★					AV-5
	Series 21-AR Fixed Pivot Ball Float Air/Gas Vents		Screwed	250	450	ASTM A48 Class 30 Cast Iron	21-AR	250									AV-6
	Series 21-312 Fixed Pivot Ball Float Air/Gas Vents		Screwed Socketweld Flanged †††	600 or 500	100 or 750	ASTM A105 Forged Steel	21-312AR 21-312VAR	68 600									AV-6
	Series 1, 2, 3, 6 Free Floating Lever Air/Gas Vents		Screwed	300 250	200 450	ASTM A48 Class 30 Cast Iron	1-AV † 2-AV 3-AV 6-AV	300 250 250 250				★	★				AV-7
	Series 30 Free Floating Lever Air/Gas Vents		Screwed Socketweld Flanged †††	600 or 500 1,000 or 600 1,000 or 600	100 or 750 100 or 750 100 or 750	ASTM A105 Forged Steel	32-AV 33-AV 36-AV	600 900 1000									AV-9
	Series 10 Free Floating Lever Air/Gas Vents		Screwed Socketweld (22 and 13 only)	500 or 440 555 or 475 570 or 490	100 or 500 100 or 500 100 or 500	304-L Stainless Steel	11-AV †† 22-AV 13-AV	400 555 570									AV-13
	Series HLAR High Leverage Air/Gas Vents		Screwed Socketweld Flanged †††	100 or 600	100 or 750	ASTM A105 Forged Steel	2313 HLAR 2315 HLAR 2316 HLAR	1,000									AV-11
	Series HLAR High Leverage Air/Gas Vents		Screwed Socketweld Flanged †††	1,500 or 900 1,800 or 900	100 or 850 100 or 900	ASTM A182 Gr. F22 Forged Steel	2413 HLAR 2415 HLAR 2416 HLAR	1,500 1,800 1,500									AV-11

★ 1/4" outlet connection ★★ 1/2" outlet connection † Side connection available ▲ Alternate inlet 1/2"
 †† Side connection not available ††† Flange selection may limit pressure and temperature rating.

Air Vent ID Charts



Illustration	Type	Flow Direction	Connection Type	Max. Allow. Press. psig	TMA °F	Body Material	Model	Max. Oper. Press. psig	Connection Size							Located on Page	
									1/8"	1/4"	1/2"	3/4"	1"	1-1/2"	2"		
	Series HLAR High Leverage Air/Gas Vents		Screwed Socketweld Flanged †††	2,120 or 1,700	100 or 900	ASTM A182 Gr. F22 Forged Steel	25133G- HLAR	2,125			●	●	●				AV-11
				2,520 or 2,000	100 or 900		25155G- HLAR	2,500				●	●	●	1-1/4"		
				3,700 or 3,000	100 or 900		26155G- HLAR	2,700					●	●	1-1/4"		
	Series TTF Thermostatic Air Vents		Straight-Thru Right Angle	300	450	304-L Stainless Steel	TTF-1	300			●	●				AV-15	
							TTF-1R										
	Series TV-2 Thermostatic Air Vents		Screwed	125	350	ASTM B62 Cast Bronze	TV-2	125			●					AV-16	
	Series TS-2 Thermostatic Air Vents		Threaded	50	300	ASTM B62 Bronze	TS-2	50			●	●				AV-17	
	AV-11, AV-13 Air Vents		Screwed	50 150	210	Brass	AV-11 AV-13	50 150	●		●	●				AV-18	
	SV-12 Steam Radiator Air Vent		Threaded	15	250	Nickel Plated Brass	SV-12	15	●	●	●	●				AV-19	

★ 1/4" outlet connection ★★ 1/2" outlet connection † Side connection available ▲ Alternate Inlet 1/2"
 †† Side connection not available ††† Flange selection may limit pressure and temperature rating.

Air Vents