

Free Floating Lever Air/Gas Vents

Models 1AV, 2AV, 3AV, 6AV, 32AV, 33AV and 36AV

Installation and Operation Manual




Models 1AV, 2AV, 3AV and 6AV-Cast Iron



Models 32AV, 33AV and 36AV- Forged Steel

Overview

 **Warning:** *This bulletin should be used by experienced personnel as a guide to the installation and maintenance of the Armstrong Air/Gas Vents. Selection or installation of equipment should always be accompanied by competent technical assistance. We encourage you to contact Armstrong or your local representative if further information is required.*

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Installation Procedures.....3

Troubleshooting.....4

Technical Data Charts.....5

Installation Procedures

■ Install air vents at all the high points on liquid service systems, hydronic systems, or any liquid storage or distribution system. See Figures 1, 2 & 3 for typical installations.

- 1 Do not exceed the maximum allowable pressure noted on the cap or nameplate.
- 2 Be certain the vent is installed properly, with the **cap at the top** for air and gas venting service.
- 3 Before installing the vent, flush out the line to remove loose dirt. Use pipe dope or teflon tape sparingly and on male threads only. Leave the end thread exposed to avoid introducing sealant into the system.
- 4 The inlet and outlet piping should be the same size as the air vent connections. **Do not reduce the size of the inlet on light loads**; however, smaller pipe or tubing may be used on the outlet. Keep the piping as short as possible, with a minimum of fittings and valves. **Do not use elbows in the inlet line from the equipment to the vent.**
- 5 Install gate valves or full ported ball valves (**do not use globe valves**) so the air vent can be isolated from the system to permit cleaning and repair. If the air vent is installed in a closed piping arrangement, install a union on each side of the air vent.
- 6 **Do not** use a pipeline strainer in the line leading to the air vent.
- 7 Air vents should be installed so that they can be checked periodically. A drain line should be piped to a floor drain or to a visible location where it can be regularly checked for leakage.
- 8 The pipe plug in the cap of the air vent can be replaced with a test cock or test valve for vent testing or even manual venting should the automatic vent fail. A test cock, if installed, makes it possible to check that the vent is not air bound due to the orifice being plugged.

Caution: Do not install air vents with an open discharge where a malfunction could cause damage i.e. above false ceilings.

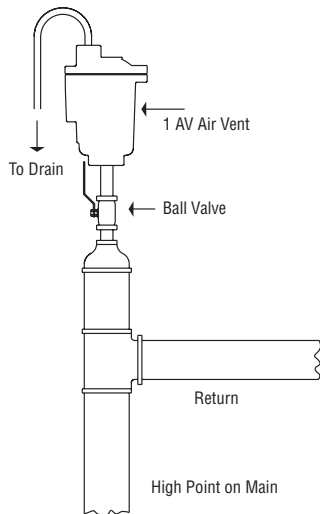


Figure 1. Installation of a Model 1 AV automatic air vent on high point of system.

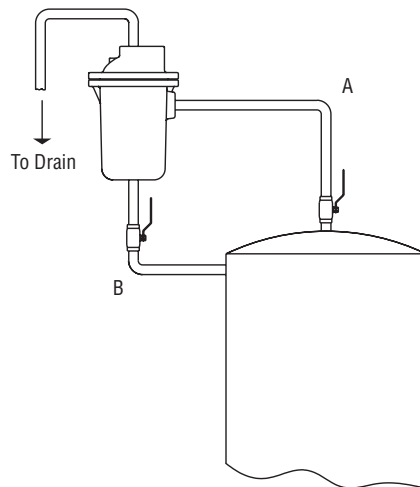


Figure 2. Continuous venting using a Model 3 AV with an equalizing line where large amounts of air must be vented. As air enters line A, water leaves the through line B.

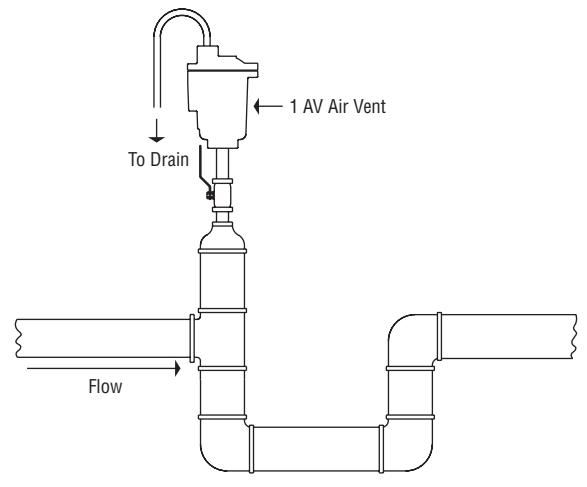


Figure 3. Installation of a Model 1 AV automatic air vent on loop in piping.

Troubleshooting

- **Check operation.** It is normal on hydronic systems to have no discharge from the vent, but this is not proof that the vent is functioning properly. To check the air vent, crack the test cock, if installed. If the vent is working correctly, a little air should escape, followed by liquid.
- **Vent does not open. If a lot of air escapes out the test cock (if installed) before liquid begins to discharge, it is a sign that the vent body was full of air and that the float did not sink to open the valve, or that the valve seat was plugged. Isolate the vent by closing the inlet gate valve before opening for inspection.**
 - Remove the air vent's cap.
 - Check the complete mechanism and the valve seat in particular for dirt and then clean all parts. If parts appear worn order a new mechanism.
 - On new installations, an air vent may fail to open if the orifice selected is too large for the operating pressure being encountered. Replace the mechanism with one sized properly for your operating pressure. Consult your Armstrong Representative.
 - An unusual increase in system pressure may cause the air vent to lock shut. Also, check to see if the air/gas vent has the proper maximum differential pressure rating for your particular application.
- **Air Vent fails to close tightly (leaks liquid).**
 - Dirt may be lodged in the valve seat. Clean the valve seat and all other parts, including the cap and body.
 - If the valve and seat appear to be worn. Replace the entire mechanism.
 - There may be a leak in the float. Disconnect the float and shake it close to your ear. If liquid has leaked into the float you will be able hear it moving (note some floats are weighed with liquid so this may not be a true test). Replace the float.
 - An unlikely possibility is that the float has collapsed. If it has, replace the float.

For assistance with an unusual installation or service problems, contact your Armstrong Representative or Armstrong International's Application Engineering Department

Free Floating Lever Air/Gas Vents - Cast Iron

Models 1AV, 2AV, 3AV AND 6AV

Maximum Operating Pressures of free floating lever vents with weighted floats for different orifice sizes, and the specific gravities on which they can be used.

1-AV Maximum Operating Pressures		
Minimum Specific Gravity	0.80	
Float wt., oz (g)	2.43 (69)	
Orifice Size (in)	Maximum Operating Pressure	
	psi	bar
1/8	146	10
7/64	173	12
#38	219	15
5/64	300	21

2-AV Maximum Operating Pressures																								
Specific Gravity*	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	Maximum Operating Pressure												
Float wt., oz (g)	7.7 (217)	7.3 (206)	6.9 (195)	6.5 (184)	6.1 (174)	5.7 (163)	5.4 (152)	5.0 (141)	4.6 (130)	4.2 (119)	3.8 (109)													
Orifice Size (in)	Maximum Operating Pressure																							
	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
5/16	27	1.8	25	1.8	24	1.7	23	1.6	22	1.5	20	1.4	19	1.3	18	1.2	16	1.1	15	1.0	14	0.9		
1/4	44	3.0	42	2.9	40	2.7	38	2.6	35	2.4	33	2.3	31	2.1	29	2.0	27	1.8	24	1.7	22	1.5		
3/16	97	6.7	92	6.4	88	6.0	83	5.7	78	5.4	73	5.0	68	4.7	64	4.4	59	4.1	54	3.7	49	3.4		
5/32	167	12	159	11	151	10.4	142	9.8	134	9.3	126	8.7	118	8.1	110	7.6	101	7.0	93	6.4	85	5.8		
1/8	250	17	250	17	250	17	244	17	230	16	216	15	202	14	187	13	173	12	159	11	145	10.0		
7/64	250	17	250	17	250	17	250	17	250	17	250	17	250	17	240	17	222	15	204	14	186	13		
#38	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	231	16		
5/64	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17		

3-AV Maximum Operating Pressures																					
Specific Gravity*	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	Maximum Operating Pressure											
Float wt., oz (g)	14.9 (423)	14.2 (402)	13.4 (381)	12.7 (360)	12.0 (339)	11.2 (318)	10.5 (296)	9.7 (275)	9.0 (254)												
Orifice Size (in)	Maximum Operating Pressure																				
	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
1/2	21	1.5	20	1.4	19	1.3	18	1.3	17	1.2	16	1.1	15	1.0	14	1.0	13	0.9			
3/8	45	3.1	43	3.0	41	2.8	38	2.7	36	2.5	34	2.3	32	2.2	30	2.0	27	1.9			
5/16	72	5.0	69	4.7	65	4.5	61	4.2	58	4.0	54	3.8	51	3.5	47	3.3	44	3.0			
9/32	96	6.6	91	6.3	87	6.0	82	5.6	77	5.3	72	5.0	68	4.7	63	4.3	58	4.0			
1/4	144	9.9	137	9.4	130	8.9	123	8.5	116	8.0	109	7.5	102	7.0	94	6.5	87	6.0			
7/32	206	14	196	13	186	13	176	12	165	11	155	10.7	145	10.0	135	9.3	125	8.6			
3/16	250	17	250	17	250	17	250	17	249	17	234	16	218	15	203	14	188	13			
5/32	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17			

6-AV Maximum Operating Pressures																										
Specific Gravity*	1.00	0.95	0.90	0.85	0.80	0.75	0.70	0.65	0.60	0.55	0.50	0.45	0.40	Maximum Operating Pressure												
Float wt., oz (g)	73.5 (2,084)	69.8 (1,979)	66.2 (1,875)	62.5 (1,771)	58.8 (1,667)	55.1 (1,563)	51.5 (1,459)	47.8 (1,354)	44.1 (1,250)	40.4 (1,146)	36.8 (1,042)	33.1 (938)	29.4 (833)													
Orifice Size (in)	Maximum Operating Pressure																									
	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
1-1/16	22	1.5	21	1.5	20	1.4	19	1.3	18	1.2	17	1.2	16	1.1	14	1.0	13	0.9	12	0.8	11	0.8	10	0.70	9	0.62
7/8	35	2.4	33	2.3	31	2.2	30	2.0	28	1.9	26	1.8	24	1.7	23	1.6	21	1.5	19	1.3	18	1.2	16	1.1	14	1
3/4	50	3.5	48	3.3	45	3.1	43	3.0	40	2.8	38	2.6	35	2.4	33	2.3	30	2.1	28	1.9	25	1.8	23	1.6	20	1.4
5/8	77	5.3	73	5.0	69	4.8	66	4.5	62	4.3	58	4.0	54	3.7	50	3.5	46	3.2	43	2.9	39	2.7	35	2.4	31	2.2
9/16	102	7.0	97	6.7	92	6.3	87	6.0	82	5.6	77	5.3	72	4.9	67	4.6	62	4.2	57	3.9	51	3.6	46	3.2	41	3.9
1/2	148	10.2	140	9.7	133	9.2	126	8.7	119	8.2	111	7.7	104	7.2	97	6.7	89	6.2	82	5.6	75	5.1	67	4.6	60	4.1
7/16	210	14	200	14	189	13	179	12	168	12	158	11	148	10.2	137	9.5	127	8.7	116	8.0	106	7.3	96	6.6	85	5.9
3/8	250	17	250	17	250	17	250	17	250	17	249	17	233	16	216	15	200	14	184	13	167	12	151	10.4	134	9.3
11/32	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	245	17	223	15	201	14	179	12
5/16	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	230	16
9/32	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17
1/4	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17	250	17

*If specific gravity falls between those shown, use next lowest: i.e., if actual gravity is 0.73, use 0.70 specific gravity data.

Free Floating Lever Air/Gas Vents- Forged Steel

Models 32AV, 33AV and 36AV

Maximum Operating Pressures of free floating lever vents with weighted floats for different orifice sizes, and the specific gravities on which they can be used.

32-AV Maximum Operating Pressures																
Specific Gravity*	1.00		0.95		0.90		0.85		0.80		0.75		0.70		0.65	
Float wt., oz (g)	11.8 (335)		11.2 (318)		10.6 (301)		10.0 (285)		9.4 (268)		8.9 (251)		8.3 (234)		7.7 (218)	
Orifice Size (in)	Maximum Operating Pressure															
	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
5/16	41	2.8	39	2.7	37	2.6	35	2.4	33	2.3	31	2.1	29	2.0	27	1.9
1/4	68	4.7	64	4.4	61	4.2	58	4.0	54	3.7	51	3.5	47	3.3	44	3.0
3/16	149	10.3	142	9.8	134	9.3	127	8.8	120	8.2	112	7.7	105	7.2	97	6.7
5/32	257	18	244	17	231	16	219	15	206	14	193	13	180	12	168	12
1/8	439	30	417	29	396	27	374	26	352	24	330	23	309	21	287	20
7/64	562	39	534	37	506	35	478	33	450	31	423	29	395	27	367	25
#38	600	41	600	41	600	41	595	41	561	39	526	36	491	34	457	31
5/64	600	41	600	41	600	41	600	41	600	41	600	41	600	41	600	41

33-AV Maximum Operating Pressures																		
Specific Gravity*	1.00		0.95		0.90		0.85		0.80		0.75		0.70		0.65		0.60	
Float wt., oz (g)	14.9 (423)		14.2 (402)		13.4 (381)		12.7 (360)		12.0 (339)		11.2 (318)		10.5 (296)		9.7 (275)		9.0 (254)	
Orifice Size (in)	Maximum Operating Pressure																	
	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
1/2	21	1.5	20	1.4	19	1.3	18	1.3	17	1.2	16	1.1	15	1.0	14	1.0	13	0.9
3/8	45	3.1	43	3.0	41	2.8	38	2.7	36	2.5	34	2.3	32	2.2	30	2.0	27	1.9
5/16	72	5.0	69	4.7	65	4.5	61	4.2	58	4.0	54	3.8	51	3.5	47	3.3	44	3.0
9/32	96	6.6	91	6.3	87	6.0	82	5.6	77	5.3	72	5.0	68	4.7	63	4.3	58	4.0
1/4	144	9.9	137	9.4	130	8.9	123	8.5	116	8.0	109	7.5	102	7.0	94	6.5	87	6.0
7/32	206	14	196	13	186	13	176	12	165	11	155	10.7	145	10.0	135	9.3	125	8.6
3/16	309	21	294	20	279	19	264	18	249	17	234	16	218	15	203	14	188	13
5/32	484	33	460	32	437	30	413	28	389	27	365	25	342	24	318	22	294	20
1/8	900	62	900	62	883	61	835	58	787	54	739	51	691	48	643	44	595	41
7/64	900	62	900	62	900	62	900	62	900	62	900	62	883	61	822	57	760	52

36-AV Maximum Operating Pressures																										
Specific Gravity*	1.00		0.95		0.90		0.85		0.80		0.75		0.70		0.65		0.60		0.55		0.50		0.45		0.40	
Float wt., oz (g)	73.5 (2,084)		69.8 (1,979)		66.2 (1,875)		62.5 (1,771)		58.8 (1,667)		55.1 (1,563)		51.5 (1,459)		47.8 (1,354)		44.1 (1,250)		40.4 (1,146)		36.8 (1,042)		33.1 (938)		29.4 (833)	
Orifice Size (in)	Maximum Operating Pressure																									
	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
1-1/16	22	1.5	21	1.5	20	1.4	19	1.3	18	1.2	17	1.2	16	1.1	14	1.0	13	0.9	12	0.8	11	0.8	10	0.70	9	0.62
7/8	35	2.4	33	2.3	31	2.2	30	2.0	28	1.9	26	1.8	24	1.7	23	1.6	21	1.5	19	1.3	18	1.2	16	1.1	14	1
3/4	50	3.5	48	3.3	45	3.1	43	3.0	40	2.8	38	2.6	35	2.4	33	2.3	30	2.1	28	1.9	25	1.8	23	1.6	20	1.4
5/8	77	5.3	73	5.0	69	4.8	66	4.5	62	4.3	58	4.0	54	3.7	50	3.5	46	3.2	43	2.9	39	2.7	35	2.4	31	2.2
9/16	102	7.0	97	6.7	92	6.3	87	6.0	82	5.6	77	5.3	72	4.9	67	4.6	62	4.2	57	3.9	51	3.6	46	3.2	41	3.9
1/2	148	10.2	140	9.7	133	9.2	126	8.7	119	8.2	111	7.7	104	7.2	97	6.7	89	6.2	82	5.6	75	5.1	67	4.6	60	4.1
7/16	210	14	200	14	189	13	179	12	168	12	158	11	148	10.2	137	9.5	127	8.7	116	8.0	106	7.3	96	6.6	85	5.9
3/8	331	23	315	22	299	21	282	19	266	18	249	17	233	16	216	15	200	14	184	13	167	12	151	10.4	134	9.3
11/32	441	30	419	29	398	27	376	26	354	24	332	23	310	21	288	20	266	18	245	17	223	15	201	14	179	12
5/16	567	39	539	37	511	35	483	33	455	31	427	29	399	27	371	26	342	24	250	17	250	17	250	17	230	16
9/32	743	51	706	49	669	46	633	44	596	41	559	39	522	36	485	33	449	31	250	17	250	17	250	17	250	17
1/4	1,000	69	1,000	69	979	67	925	64	871	60	817	56	763	53	710	49	656	45	250	17	250	17	250	17	250	17
7/32	1,000	69	1,000	69	1,000	69	1,000	69	1,000	69	1,000	69	1,000	69	1,000	69	926	64	250	17	250	17	250	17	250	17
3/16	1,000	69	1,000	69	1,000	69	1,000	69	1,000	69	1,000	69	1,000	69	1,000	69	250	17	250	17	250	17	250	17	250	17

*If specific gravity falls between those shown, use next lowest: e.g., if actual gravity is 0.73, use 0.70 specific gravity data.



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