

TANGENTIAL AIR SEPARATORS ASME

For Closed Hydronic Heating
& Chilled Water Systems



WHERE BETTER IDEAS FLOW

Table of Contents

The AMTROL® Advantage	2
Advantages	2
Benefits.....	2
Features.....	3
1" - 24" Air Separator Specifications	3
Designing the Ideal System Flow Rate.....	4

The AMTROL® Advantage

- AMTROL – A world-leading provider of advanced water system solutions supplies a complete line of quality-engineered, cost efficient, heating and water systems that you can count on.
- First to design and patent EXTROL®, expansion tanks, redefining hydronic heating and chilled water systems forever.
- ISO 9001 – 2000 Certified.
- With over 50 years experience, AMTROL sets the standard for service, reliability, innovation, design, and manufacture of water system equipment.
- Fully qualified technical staff available to help ensure solid solutions for your water and heating needs.

Advantages of Air Separation and Elimination

The proper application of both the pressurization (EXTROL®, Expansion Tanks) and air elimination (AMTROL Tangential Air Separator) devices will solve your “System Air” problems. These key components are necessary in the design and construction of closed circulation systems.

The AMTROL line of tangential air separators are ASME vessels designed with tangential openings to create a low velocity vortex where entrained air is separated and removed from circulating water or anti-freeze in a closed system. In addition, these tangential air separators can be supplied with a stainless steel strainer to collect unwanted system debris.

AMTROL tangential air separators are ideally suited to help eliminate problems often associated with trapped system air such as blocked terminal units, inefficient pump operation and performance, and costly corrosion and fouling of equipment.

AMTROL's *Engineering Handbook* reviews this subject in detail. Ask your local AMTROL representative for your copy.

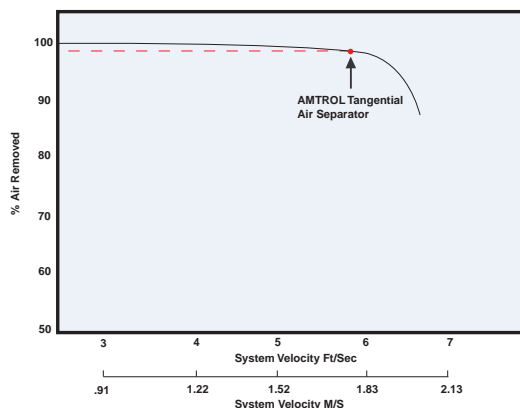
The keys to efficient air separation and elimination:

- Laminar flow
- Low pressure drop across the air separator
- Recommended maximum system fluid velocity of 6 feet/second (1.83 M/S)

Benefits

- Efficient system operation:
 - Decreased maintenance costs
 - Lower energy consumption
 - Noise reduction
- Minimizes oxygen induced corrosion and costly chemical water treatment
 - Protects valves and mechanical seals
- Reduces sludge creation
- Optimizes pump performance:
 - Reduces pump power requirements (Kwh)
 - Allows for lower pumping capacity
 - Helps prevent harmful pump cavitation
- More effective than conventional “straight flow” separators

Rate of Air Elimination Vs. System Velocity



TANGENTIAL AIR SEPARATORS ASME Models AS and AS-L

Materials of Construction

- Steel – ANSI 150# flange construction
- All steel body construction
- Stainless steel strainer

Maximum Operating Conditions

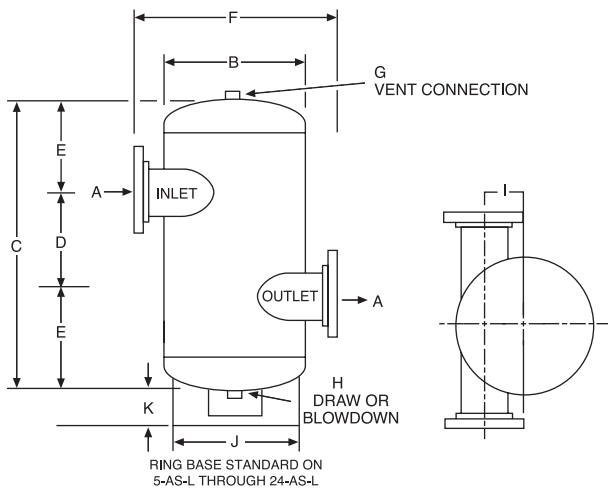
Maximum working pressure: 125 psig (8.8 bar)
150 psig (10.5 bar)

Maximum operating temperature: 350°F/177°C

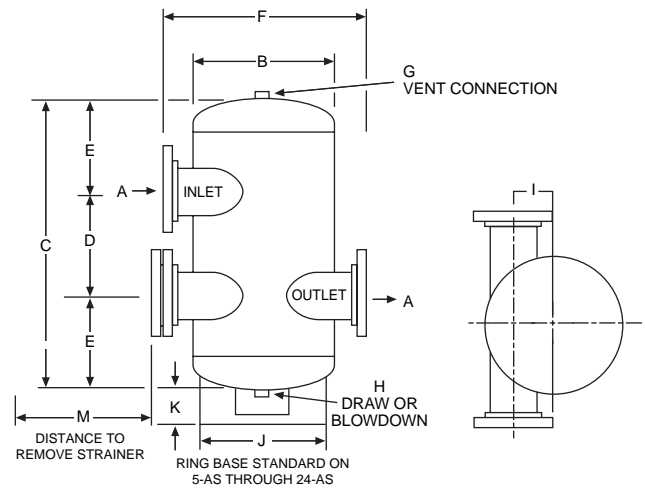
Features

- Designed, constructed, and tested per ASME Section VIII, Division 1 standards
- 1 to 24 inch sizes
- Tangential design with low velocity vortex action
- Flanged or grooved pipe connectors
- Removable, stainless steel strainer available
- Blowdown connection to enable cleaning of unit and strainer
- NPT vent connection

1" - 24" Air Separators without Strainers



2" - 24" Air Separators with Strainers



1" - 24" Air Separators Specifications

Model Number without Strainer	Model Number with Strainer	Dimensions																		Ship Wt. without Strainer		Ship Wt. with Strainer			
		A		B		C		D		E		F		G		H		I						J	
		in.	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	in.	in.	in.	mm	in.	mm	in.	mm	lbs.	kg	lbs.	kg
1-AS-L	—	1	4½	114	12	305	4	102	4	102	7	178	¾	¾	1⅝ ₁₆	-	-	-	-	-	-	15	7	-	-
2-AS-L	2-AS	2	10	254	23	584	8	203	7½	191	16¼	413	¾	¾	3	-	-	-	-	14	356	65	30	70	32
2½-AS-L	2½-AS	2½	10	254	23	584	8	203	7½	191	16¼	413	¾	¾	3	-	-	-	-	14	356	65	30	70	32
3-AS-L	3-AS	3	10	254	23	584	8	203	7½	191	17	432	¾	¾	3	-	-	-	-	14	356	70	32	75	34
4-AS-L	4-AS	4	12	305	24½	622	10	254	7¼	184	20¾	527	¾	¾	3½	-	-	-	-	16½	419	75	34	80	36
5-AS-L	5-AS	5	16	406	34½	876	12	305	11¼	286	24	610	¾	¾	4¼	12¾	324	4⅝	117	21½	546	145	66	180	82
6-AS-L	6-AS	6	18	457	41	1041	14	356	13½	343	26	660	¾	¾	4¼	14	356	4⅝	117	23	584	200	91	250	114
8-AS-L	8-AS	8	24	610	52	1321	18	457	17	432	32	813	¾	¾	5¾	16	406	4⅝	117	29	737	375	170	455	207
10-AS-L	10-AS	10	30	762	59½	1511	22	559	18¾	476	40	1016	¾	¾	7¾	24	610	4⅝	117	35	889	650	295	770	350
12-AS-L	12-AS	12	36	914	70	1778	26	660	22	559	46	1168	¾	¾	7¾	30	762	12⅝	321	40	1016	960	436	1150	523
14-AS-L	14-AS	14	42	1067	74	1880	30	762	22	559	52	1321	¾	¾	13	30	762	13⅝	340	48	1219	1950	886	2200	1000
16-AS-L	16-AS	16	48	1219	90	2286	32	813	29	737	64	1626	3	3	15	42	1067	12½	318	56	1422	3800	1727	4300	1955
18-AS-L	18-AS	18	54	1372	102	2591	36	914	33¼	845	64	1626	3	3	16	42	1067	12⅝	314	62	1575	4300	1955	4900	2227
20-AS-L	20-AS	20	60	1524	102	2591	30	762	36	914	70	1778	3	3	19	45	1143	6⅝ ₁₆	176	68	1727	4800	2182	5600	2545
22-AS-L	22-AS	22	60	1524	119	3023	48	1219	35⅜	899	70	1778	3	3	18	45	1143	7	178	68	1727	5300	2409	6300	2864
24-AS-L	24-AS	24	72	1829	137	3480	43	1092	44⅝	1133	82	2083	3	3	22	45	1143	8	203	80	2032	6900	3136	8000	3636

* M dimension refers to models with strainer only.

* All dimensions and weights are approximate.

TANGENTIAL AIR SEPARATORS ASME Models AS and AS-L

Pressure Drop Performance Curves

The AMTROL air separator flow chart indicates pressure drop in feet (meters) of water versus flow in gallons per minute (L/sec) with strainer. This is the recommended method for properly computing pressure drop in AMTROL Air Separators.

Designing the Ideal System Flow Rate

AMTROL Sizing Theorem The closer you can design your system flow rate to six feet/second (1.83 m/s), the greater the percentage of air elimination on each pass through the air separator.

Maximum Flow Rate Based On Design Velocity

Model No.	Vel. 4 ft./sec. gpm	Vel. 1.2 m/sec. L/sec.	Vel. 6 ft./sec. gpm	Vel. 1.8 m/sec. L/sec.	Vel. 8 ft./sec. gpm	Vel. 2.4 m/sec. L/sec.	Vel. 10 ft./sec. gpm	Vel. 3 m/sec. L/sec.
1 AS-L	10	.631	15	1	20	1.26	25	1.57
2 AS-L	42	2.65	63	4	84	5	105	7
2 1/2 AS-L	60	3.78	90	6	120	7.5	150	9.5
3 AS-L	93	6	140	9	185	12	230	15
4 AS-L	160	10	240	15	320	20	400	25
5 AS-L	250	16	375	24	500	32	630	40
6 AS-L	360	23	540	34	720	45	900	57
8 AS-L	630	40	940	59	1250	79	1580	100
10 AS-L	990	62	1500	95	1980	125	2470	156
12 AS-L	1400	88	2100	133	2800	177	3500	221
14 AS-L	1680	106	2500	158	3350	211	4200	265
16 AS-L	2200	139	2800	177	3500	221	5000	316
19 AS-L	3300	208	4200	265	5200	328	7500	473
20 AS-L	4500	284	5600	353	7000	442	10000	631
24 AS-L	5500	347	7000	442	8800	555	12500	789

Typical Specifications

Furnish and install, as shown on plans, a centrifugal type air separator. The unit shall have ____ (NPT/flanged/grooved) inlet and outlet connections tangential to the vessel shell. An NPT vent connection shall be fitted to the top of the vessel to enable installation of piping. Air separators shall have all steel body construction.

The unit shall have a removable stainless steel system strainer with 3/16" (4.8mm) diameter holes (perforations). A blowdown connection shall be provided to facilitate routine cleaning of the strainer. (Disregard this paragraph if system strainer is not specified).

Manufacturer to furnish data sheet specifying air collection efficiency and pressure drop at rated flow.

The air separator must be designed, constructed, and stamped for 125 psig (8.8 bar), 150 psig (10.5 bar) @ 350° F (177°C) in accordance with Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code, and registered with the National Board of Boiler and Pressure Vessel Inspectors. The air separator(s) shall be painted with one shop coat of red oxide primer.

A manufacturers' Data Report for Pressure Vessels, Form U-1 as required by the provisions of the ASME Boiler and Pressure Vessel Code shall be furnished for each air separator upon request.

Each air separator shall be AMTROL, Model ____ - AS - L (without system strainer) or ____ - AS (with system strainer) air separator for ____ GPM (L/Sec).

*Refer to installation manual for warranty information or visit our website at www.amtrol.com



www.amtrol.com

Corporate Headquarters

1400 Division Road, West Warwick, RI USA 02893
Telephone: 401-884-6300 • Fax: 401-884-5276

AMTROL Canada, Ltd.

275 Shoemaker Street, Kitchener, Ontario N2E 3B3
Telephone: 519-478-1138 • Fax: 519-748-4231

AMTROL Asia Pacific Ltd.

89 Owen Road, Singapore 218902
Telephone: 65-6294 4611 • Fax: 65-6294 3231

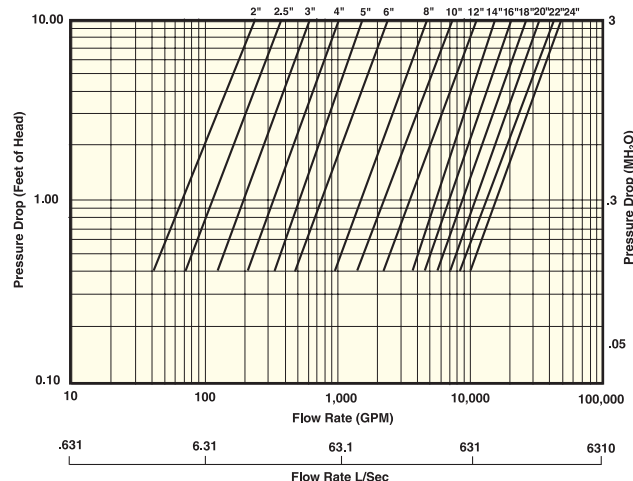


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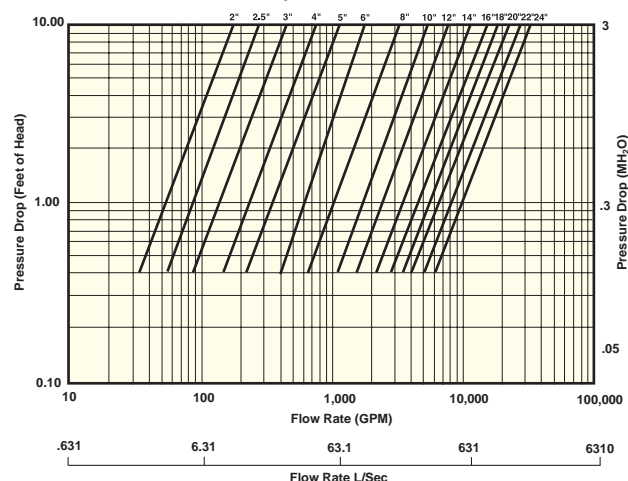
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AMTROL Air Separator without Strainer Flow Chart



AMTROL Air Separator with Strainer Flow Chart



Data confirmed by independent 3rd party testing.