

Model AR

Bulletin SS03032 Issue/Rev. 0.8 (4/18)

Smith Meter® Air Eliminators

Smith Meter® Model AR Air Eliminator separates and releases air or gas from petroleum or other liquids before they are passed through the meter. Complete elimination of air or gas is essential for accurate metering, making the Smith Meter Model AR Air Eliminator a necessary part of a metering system when there is a possibility of air or gas being present in the flow stream.



Features

- For **refined products** and **crude oils**
- **Viscosity** up to 45 mPa•s (200 SSU) and 45 through 400 mPa•s (2000 SSU) with DE-2 Air Release Head.
- **A wide selection of tanks and Air Eliminator Heads for proper application** – See selection guide for further information.
- **Mechanical or Electrical Air Elimination Heads** – RB, UB or DE Series.
- **Code Conformance** – Tanks may be supplied in conformance with the ASME Code Section VIII or other.
- **Post Weld Heat Treatment (PWHT)** is standard on all AR tanks. Therefore, suitable for Ethanol or Ethanol blending services.

Principles of Operation

The air eliminators are horizontal pressure vessels with flanged end connections. The air eliminators operate by reducing fluid line velocity, allowing vapor bubbles to rise to the top of the vessel where they are vented through the air release head.

Applications

Air eliminators should always be installed as close to the pump and meter as possible. The air release head should be piped to a safe point of discharge. Never pipe to the inside of a building. Provide the end of the air release pipe with a suitable flame arrestor. The air release line should have an open drip at the lowest point, discharging back to storage or suitable container at atmospheric pressure¹. A valve may be placed in the air release line near the eliminator, provided the valve is always open except in an emergency.

Specifications

End Connections

Raised face flanges per ASME B16.5

Maximum Working Pressure

Class 150 RF: To 285 psig (1,965 kPa) at 100°F (38°C)

Class 300 RF: To 300 psig (2,068 kPa) at 100°F (38°C)

Temperature Range

Standard:	
Buna-N Elastomer:	-20°F to 225°F (-29°C to 107°C)
Optional:	
Low Swell Buna:	-20°F to 225°F (-29°C to 107°C)
Viton:	0°F to 400°F (-18°C to 205°C)
Chemraz (UB Head only):	-20°F to 450°F (-29°C to 232°C)
Other Temperatures and Pressures:	Consult Factory

¹ Follow all local, state, and federal regulations.

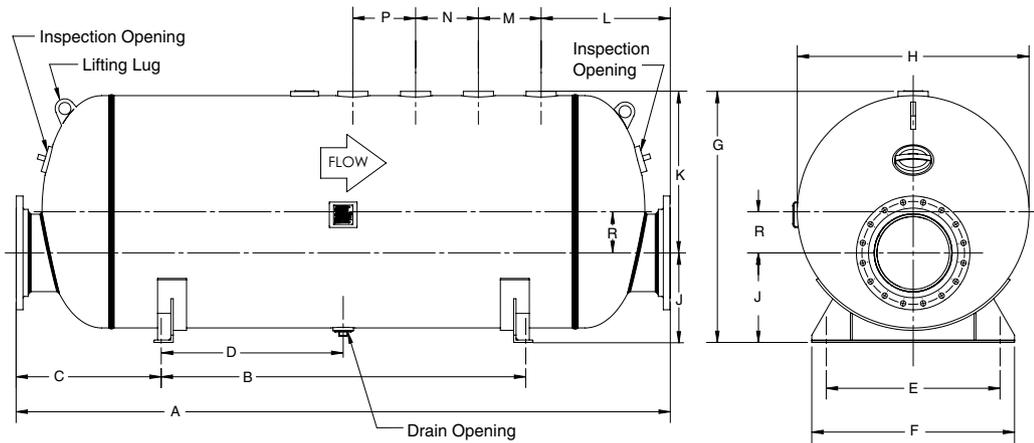
Materials of Construction

Inlet and Outlet Heads:	SA516 GR. 70
Shell:	SA516 GR. 70
Inlet and Outlet Pipes:	SA53 or SA106 GR. B Type S
Wells:	SA53 or SA106 GR. B Type S
Drain	A105
Feet	A36
Hand-Holes	SA516 GR.70
Lifting Lugs	SA516 GR. 70

Dimensions and Weights

Inches (Millimeters)

Note: Dimensions – Inches to the nearest tenth (millimeters to the nearest whole mm), each independently dimensioned from respective engineering drawings.



Dimensions	Model											
	1030 2"	1030 3"	2040 4"	3050 6"	4565 6"	45100 8"	75200 8"	75200 10"	150300 10"	150300 12"	350700 16"	
A	34.0 (864)	34.0 (864)	46.0 (1,168)	56.0 (1,422)	66.0 (1,676)	84.0 (2,134)	90.0 (2,286)	92.0 (2,337)	96.0 (2,438)	96.0 (2,438)	135.5 (3,442)	
B	14.5 (368)	14.5 (368)	23.8 (605)	29.0 (737)	36.0 (914)	54.0 (1,372)	60.0 (1,524)	60.0 (1,524)	60.0 (1,524)	60.0 (1,524)	75.5 (1,918)	
C	9.8 (249)	9.8 (249)	11.1 (282)	13.5 (343)	15.0 (381)	15.0 (381)	15.0 (381)	16.0 (406)	18.0 (457)	18.0 (457)	30 (762)	
D	7.3 (185)	7.3 (185)	11.9 (302)	14.5 (368)	18.0 (457)	27.0 (686)	30.0 (762)	30.0 (762)	30.0 (762)	30.0 (762)	37.8 (959)	
E	6.0 (152)	6.0 (152)	8.5 (216)	9.5 (241)	12.5 (318)	12.5 (318)	21.0 (533)	21.0 (533)	28.0 (711)	28.0 (711)	36 (914)	
F	9.0 (229)	9.0 (229)	11.5 (292)	12.5 (318)	15.3 (389)	15.3 (389)	25.0 (635)	25.0 (635)	31.0 (787)	31.0 (787)	42 (1,067)	
G	20.8 (528)	20.8 (528)	24.0 (610)	23.5 (597)	29.3 (744)	29.0 (737)	40.1 (1,019)	40.5 (1,029)	45.0 (1,143)	45.0 (1,143)	52 (1,318)	
H	14.0 (356)	14.0 (356)	18.0 (457)	20.0 (508)	24.0 (610)	24.0 (610)	36.0 (914)	36.0 (914)	42.0 (1,067)	42.0 (1,067)	48 (1,219)	
J	9.5 (241)	9.5 (241)	11.0 (279)	11.0 (279)	11.0 (279)	11.0 (279)	13.0 (330)	13.0 (330)	14.0 (356)	14.0 (356)	18.5 (470)	
K	11.0 (279)	11.0 (279)	13.0 (330)	12.5 (318)	18.3 (465)	18.0 (457)	27.1 (688)	27.5 (699)	31.0 (787)	31.0 (787)	33.4 (848)	
L	14.3 (363)	14.3 (279)	15.8 (401)	16.4 (417)	17.8 (452)	17.3 (439)	21.1 (536)	22.1 (561)	24.0 (610)	24.0 (610)	26.8 (680)	
M	–	–	–	–	–	10.0 (254)	12.0 (305)	12.0 (305)	13.0 (330)	13.0 (330)	13.0 (330)	
N	–	–	–	–	–	–	–	–	13.0 (330)	13.0 (330)	13.0 (330)	
P	–	–	–	–	–	–	–	–	–	–	13.0 (330)	
R	–	–	–	1.5 (38)	3.5 (89)	3.5 (89)	7.0 (179)	7.0 (179)	7.8 (197)	7.8 (197)	8.5 (216)	

Drain Opening:

1-1/4" NPT on Models 1030 through 45100
 2" NPT on Models 75200 through 150300
 3" diameter opening on Model 350700.

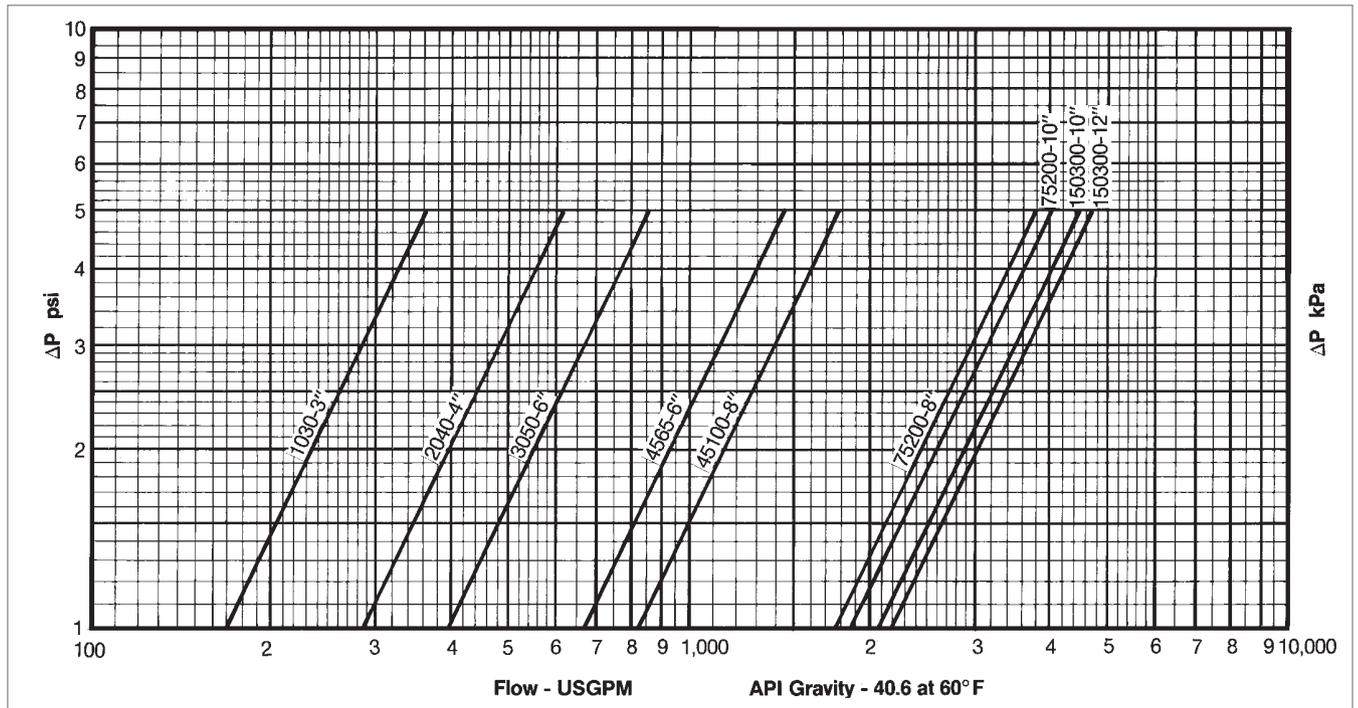
Flanges: ASME B16.5.

Hand-Holes: On Models 150300 through 350700.

Lifting Lugs: On Models 2040 through 350700.

Anchor Bolt Holes:

4 (13/16") diameter on Models 1030 through 45100
 4 (7/8") diameter on Models 75200 (8" and 10")
 4 (7/8" and 1") diameter on Models 150300 (10" and 12")
 4 (1-1/8") diameter on Model 350700 (16").

Pressure Drop (ΔP)**Selection Guide**

The selection of the correct size air eliminator is of utmost importance and will result in the highest possible efficiency of the metering accuracy. This selection guide is based upon two basic factors: (1) the maximum flow rate, and (2) air and gas conditions. Other conditions to consider are, product viscosity and vapor source/supply. Product viscosity will affect the air eliminator body or tank size. The higher the viscosity, the slower the fluid should become in order for vapor to be able to escape. Viscosities above those of diesel or kerosene may need to consider increasing the air eliminator tank by one size larger for efficiency. Additionally, considering the amount of vapor in the system from startup and operation to shutdown should be done to size the air eliminator. This can be done by analyzing the "dry" pipe and supply conditions upstream of your meter and compared to the air release head desired.

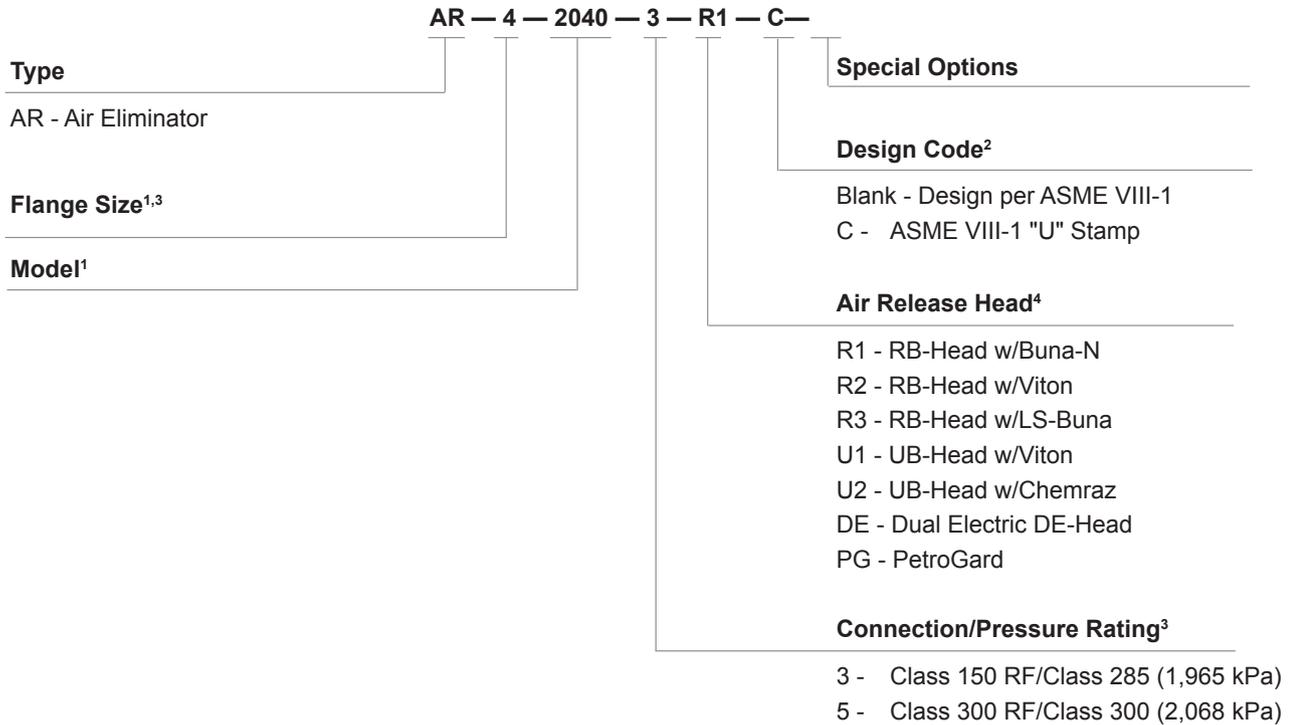
Reference Documentation

Head Type	Specification Bulletin
RB, UB	SS03040
DE-1, DE-2	SS03030
DE-3	SS03037

Selection Table

Model AR	Maximum Flowrate at 5 psi differential (API 40.6°C 60°F) USGPM (L/min)	Flange Sizes
1030	360 (1,363)	2", 3"
2040	610 (2,309)	4"
3050	850 (3,218)	6"
4565	1450 (5,489)	6"
45100	1800 (6,814)	8"
75200	4000 (15,142)	8", 10"
150300	4700 (17,791)	10", 12"
350700	5200 (19,684)	16"

Modeling



- 1 See Selection Table for flange size/model
- 2 Third party inspected and approved pressure vessel according to ASME VIII-I
- 3 Flanges per ASME B16.5
- 4 Full model codes for the air release head should be included with Air Release model code. Refer to RB, UB Specification SS03040; DE-1, DE-2 Specification SS03030; DE-3 Specifications SS03037.

Revisions included in SS03032 Issue/Rev. 0.8 (4/18) - First two bullets in the "Features" section, added.

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.