



INSTALLATION & OPERATION

TYPE: ASME AIR SEPARATORS
FOR HEATING & COOLING SYSTEMS

MODELS: SPA SERIES
I/O Sheet No. IOSPA03

Date: 2-03

VESSEL DESCRIPTION

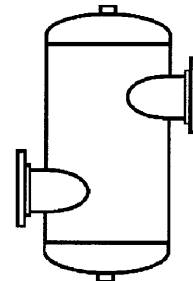
Patterson Type SPA air separators are ASME constructed, plain steel, with tangential openings to create low velocity vortex to promote separation of entrained air in water. They are designed to eliminate system air in heating and chilled water systems.

CONSTRUCTION

Shell: Carbon Steel
Exterior: Primer paint

PERFORMANCE LIMITATIONS

Maximum Design Temperature: 375°F
Maximum Design Pressure: 125 PSIG*
*200 & 250 PSIG available



SPA-STYLE
AIR SEPARATOR

Visually inspect air separator for damage, which may occur during transit.

Model SPA-S have strainers that must be removed and cleaned after 24 hours of operation.

A manual drain can be added to help facilitate purging sediment from the separator.

Use the following guide to reveal the recommended distance required to access the strainer:

<u>Size</u>	<u>Distance</u>	<u>Size</u>	<u>Distance</u>
2"	9"	12"	35"
2 1/2"	9"	14"	40"
3"	12"	16"	44"
4"	14"	18"	55"
5"	17"	20"	58"
6"	20"	22"	60"
8"	25"	24"	65"
10"	30"	30"	81"

9201 Ayersville Rd • Toccoa, GA 30577 • (706) 886-2101 • (706) 886-0023 FAX • www.pattersonpump.com



SUBMITTAL

TYPE: SPA ASME AIR SEPARATOR WITHOUT STRAINER

MODELS: SPA 2 TO SPA 24

Submittal Sheet No. B-3301

Date: 11/01

<p>JOB</p> <p>Unit Tag No. _____</p> <p>Engineer _____</p> <p>Contractor _____</p>	<p>Patterson Representative _____</p> <p>Order No. _____ Date _____</p> <p>Submitted By _____ Date _____</p> <p>Approved By _____ Date _____</p>
--	--

DESCRIPTION

Patterson SPA Vortex type Air Separators eliminate air quickly and efficiently from open and closed loop heating/cooling systems. Water enters and exits through unique "tangential" connections, which promote a low velocity swirling effect in the center of the unit. Natural centrifugal forces allow the heavier air-free water to move towards the outer edges while entrained air is captured within the "eye" of the vortex and released out the top of the separator. The water then exits near the bottom of the unit, bubble free, protecting the system against the noise, corrosion, and damage commonly caused by entrained air.

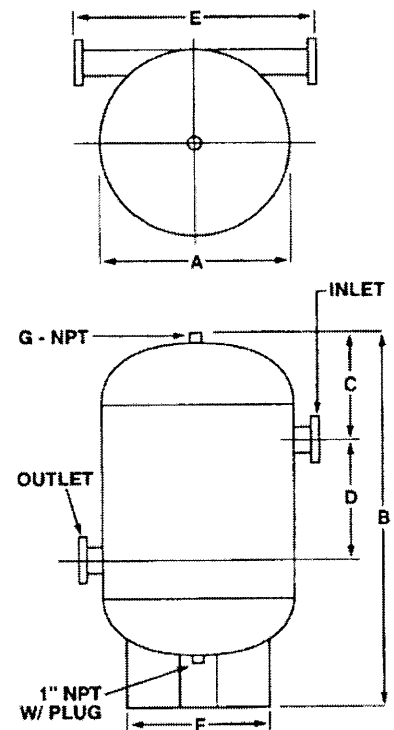
CONSTRUCTION

Shell: Carbon steel
Heads: Carbon steel

PERFORMANCE LIMITATIONS

Maximum Design Pressure: 125 PSIG
Maximum Design Temperature: 450°F

Model Number	Max GPM	Conn. Size	Type	Dimensions in inches							Approx. Lbs.
				A	B	C	D	E	F	G	
SPA 2	56	2	NPT	12	22 1/2	5 1/2	8 1/2	16 5/8	9 1/2	1 1/4	50
SPA 2-1/2	90	2.5	NPT	12	22 1/2	5 1/2	8 1/2	16 5/8	9 1/2	1 1/4	55
SPA 3	190	3	FLANGED	12	22 1/2	5 3/4	8	19 3/4	9 1/2	1 1/4	60
SPA 4	300	4	FLANGED	14	32	9 1/8	10 3/4	21 3/4	11 1/2	1 1/2	90
SPA 5	530	5	FLANGED	14	32	9 1/8	10 3/4	21 3/4	11 1/2	1 1/2	148
SPA 6	850	6	FLANGED	20	44	13 1/4	14 1/2	28	18	2	191
SPA 8	1900	8	FLANGED	20	44	13 1/4	14 1/2	28	18	2	379
SPA 10	3200	10	FLANGED	30	60 1/2	19	20	41	24	2	598
SPA 12	4800	12	FLANGED	30	60 1/2	19	20	41	24	2	947
SPA 14	6100	14	FLANGED	36	78	22	31 1/2	46 3/8	30	2	1680
SPA 16	8000	16	FLANGED	48	108	30	40	60	38	2	2300
SPA 18	9700	18	FLANGED	54	124	33	50	66	44	2	3235
SPA 20	12000	20	FLANGED	60	138	35	60	72	50	2	5100
SPA 22	15000	22	FLANGED	66	150	38	66	78	56	2	6150
SPA 24	17000	24	FLANGED	66	150	38	66	78	56	2	6400



TYPICAL SPECIFICATION

Furnish and install as shown on plans, a vortex type air separator Model SPA _____ sized for _____ GPM, with _____" (NPT / Flanged) tangential connections, as manufactured by Patterson. The air separator shall be designed in accordance with the latest revisions of the ASME Code for Boilers and Pressure Vessels, Section VIII, Division 1, and shall be constructed and stamped for 125 PSI working pressure @ 450°F. A blowdown connection shall be provided to facilitate routine cleaning of the unit. Each air separator shall be Patterson SPA _____ or approved equal.

9201 Ayersville Rd • Toccoa, GA 30577 • (706) 886-2101 • (706) 886-0023 FAX • www.pattersonpump.com



SUBMITTAL

TYPE: SPA ASME AIR SEPARATOR WITH STRAINER

MODELS: SPA2 TO SPA 16

SUBMITTAL SHEET No. B-3305

Date: 2-01

<p>JOB</p> <p>Unit Tag No. _____</p> <p>Engineer _____</p> <p>Contractor _____</p>	<p>Patterson Representative _____</p> <p>Order No. _____ Date _____</p> <p>Submitted By _____ Date _____</p> <p>Approved By _____ Date _____</p>
--	--

DESCRIPTION

Patterson SPA Vortex type Air Separators eliminate air quickly and efficiently from open and closed loop heating/cooling systems. Water enters and exits through unique "tangential" connections, which promote a low velocity swirling effect in the center of the unit. Natural centrifugal forces allow the heavier air-free water to move towards the outer edges while entrained air is captured within the "eye" of the vortex and released out the top of the separator. The water then exits near the bottom of the unit, bubble free, protecting the system against the noise, corrosion, and damage commonly caused by entrained air. SPA shall have a system strainer.

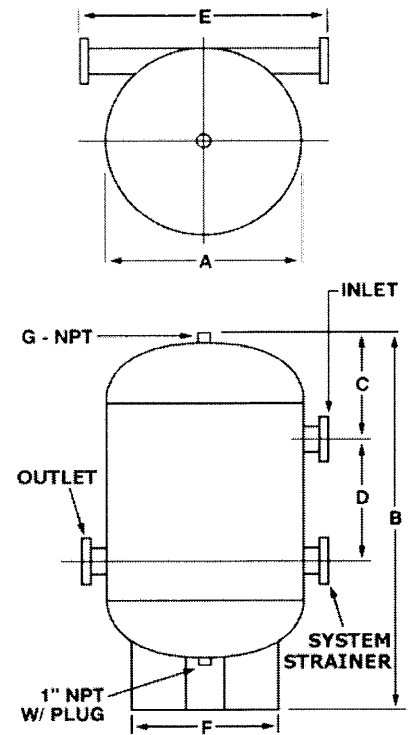
CONSTRUCTION

Shell: Carbon steel
Heads: Carbon steel

PERFORMANCE LIMITATIONS

Maximum Design Pressure: 125 PSIG
Maximum Design Temperature: 450°F

Model Number	Max GPM	Conn. Size	Type	Dimensions in inches							Approx. Lbs.
				A	B	C	D	E	F	G	
SPA 2S	56	2	NPT	12	22 1/2	5 1/2	8 1/2	16 5/8	9 1/2	1 1/4	55
SPA 2-1/2S	90	2.5	NPT	12	22 1/2	5 1/2	8 1/2	16 5/8	9 1/2	1 1/4	61
SPA 3S	190	3	FLANGED	12	22 1/2	5 3/4	8	19 3/4	9 1/2	1 1/4	66
SPA 4S	300	4	FLANGED	14	32	9 1/8	10 3/4	21 3/4	11 1/2	1 1/2	99
SPA 5S	530	5	FLANGED	14	32	9 1/8	10 3/4	21 3/4	11 1/2	1 1/2	163
SPA 6S	850	6	FLANGED	20	44	13 1/4	14 1/2	28	18	2	210
SPA 8S	1900	8	FLANGED	20	44	13 1/4	14 1/2	28	18	2	417
SPA 10S	3200	10	FLANGED	30	60 1/2	19	20	41	24	2	658
SPA 12S	4800	12	FLANGED	30	60 1/2	19	20	41	24	2	1042
SPA 14S	6100	14	FLANGED	36	78	22	31 1/2	46 3/8	30	2	1848
SPA 16S	8000	16	FLANGED	48	108	30	40	60	38	2	2530
SPA 18S	9700	18	FLANGED	54	124	33	50	66	44	2	3559
SPA 20S	12000	20	FLANGED	60	138	35	60	72	50	2	5610
SPA 22S	15000	22	FLANGED	66	150	38	66	78	56	2	6765
SPA 24S	17000	24	FLANGED	72	150	38	66	78	56	2	7931



TYPICAL SPECIFICATION

Furnish and install as shown on plans, a vortex type air separator Model SPA _____ with system strainer, sized for _____ GPM, with _____ (NPT / Flanged) tangential connections, as manufactured by Patterson. The air separator shall be designed in accordance with the latest revisions of the ASME Code for Boilers and Pressure Vessels, Section VIII, Division 1, and shall be constructed and stamped for 125 PSI working pressure @ 450°F. A blowdown connection shall be provided to facilitate routine cleaning of the unit. Each air separator shall be Patterson SPA _____ or approved equal.

9201 Ayersville Rd • Toccoa, GA 30577 • (706) 886-2101 • (706) 886-0023 FAX • www.pattersonpump.com



SUBMITTAL

TYPE: In-Line Air Purgers

MODELS: AP-Series
 Submittal Sheet No. B-3804

Date: 10-02

JOB _____ Unit Tag No. _____ Engineer _____ Contractor _____	Patterson Representative _____ _____ _____ Order No. _____ Date _____ Submitted By _____ Date _____ Approved By _____ Date _____
---	---

DESCRIPTION

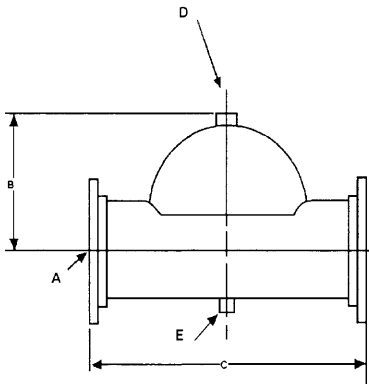
Patterson In-Line Air Purgers are used for commercial and industrial hydronic systems, to effectively control and eliminate entrained air. The purger is rated to 450°F and 150 PSI. The purger is designed with an embossed flow indicator arrow for proper installation. The purgers are fabricated to conform to ASME requirements.

CONSTRUCTION

AP-104 - Cast Iron
 ALL OTHERS FABRICATED STEEL

PERFORMANCE LIMITATIONS

Maximum Design Temperature: 450°F
 Maximum Design Pressure: 150 PSI



Model	Dimensions			Tappings		Ship
	A	B	C	D	E	Wt (lbs.)
AP-104	4"	5"	8 1/2"	3/4"	1/2"	55
AP-105	5"	7-1/2"	20"	1-1/4"	1 1/2"	60
AP-106	6"	8-1/2"	24"	1-1/4"	1 1/2"	65
AP-108	8"	11-1/4"	32"	1-1/4"	1 1/2"	110
AP-110	10"	14"	40"	1-1/4"	1 1/2"	165
AP-112	12"	16-3/4"	48"	1-1/4"	1 1/2"	315
AP-114	14"	19-3/8"	56"	1-1/4"	1 1/2"	475
AP-116	16"	20"	48"	1-1/4"	1 1/2"	315
AP-118	18"	23-1/2"	72"	1-1/4"	1 1/2"	545

TYPICAL SPECIFICATION

Furnish and install as shown on plans, an in-line type air purger Model AP-_____, equipped with integral flow baffle, as manufactured by Patterson. The air purger shall be designed in accordance with the latest revisions of the ASME Code for Boilers and Pressure Vessels, Section VIII, Division 1, and shall be constructed for 150 PSI working pressure @ 450°F. Each air purger shall be Patterson AP-_____ or approved equal.

9201 Ayersville Rd • Toccoa, GA 30577 • (706) 886-2101 • (706) 886-0023 FAX • www.pattersonpump.com



PRESSURE DROP PERFORMANCE

TYPE: ASME AIR SEPARATORS
FOR HEATING & COOLING SYSTEMS

MODELS: SPA SERIES 2" TO 10"
PS: Sheet No. PSSPA03

Date: 11-04

VESSEL DESCRIPTION

Patterson Type tangential Air Separators are ASME constructed, plain steel, with tangential openings to create low velocity vortex to promote separation of entrained air in water. They are designed to eliminate system air in heating and chilled water systems.

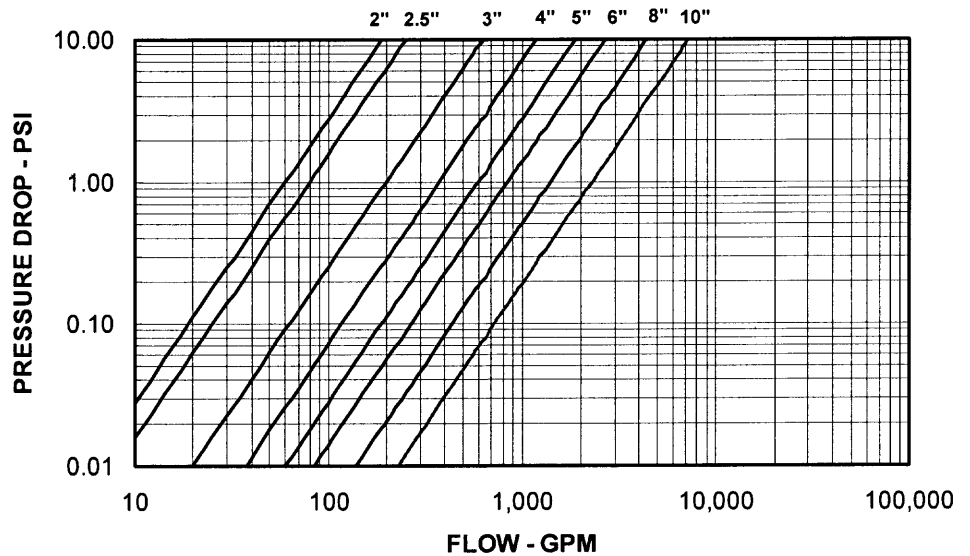
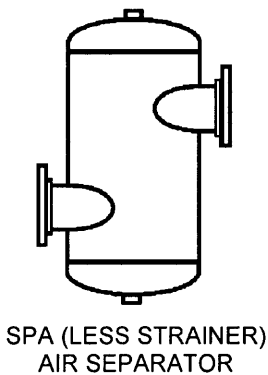
CONSTRUCTION

Shell: Carbon Steel
Exterior: Primer paint

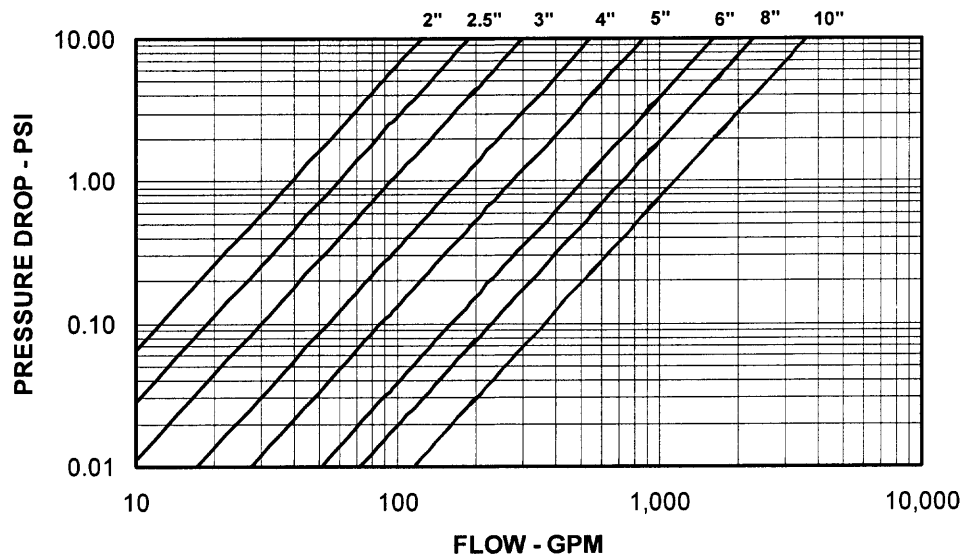
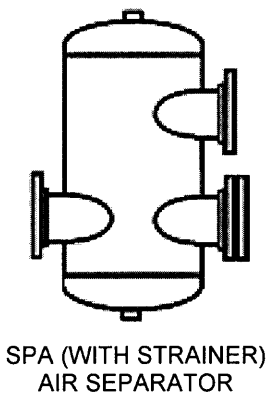
PERFORMANCE LIMITATIONS

Maximum Design Temperature: 375°F
Maximum Design Pressure: 125 PSIG*
*200 & 250 PSIG available

SPA (LESS STRAINER)- FLOW PERFORMANCE



SPA (WITH STRAINER)- FLOW PERFORMANCE





PRESSURE DROP PERFORMANCE

TYPE: ASME AIR SEPARATORS
FOR HEATING & COOLING SYSTEMS

MODELS: SPA SERIES 12" TO 24"
PS: Sheet No. PSSPA04

Date: 11-04

VESSEL DESCRIPTION

Patterson Type tangential Air Separators are ASME constructed, plain steel, with tangential openings to create low velocity vortex to promote separation of entrained air in water. They are designed to eliminate system air in heating and chilled water systems.

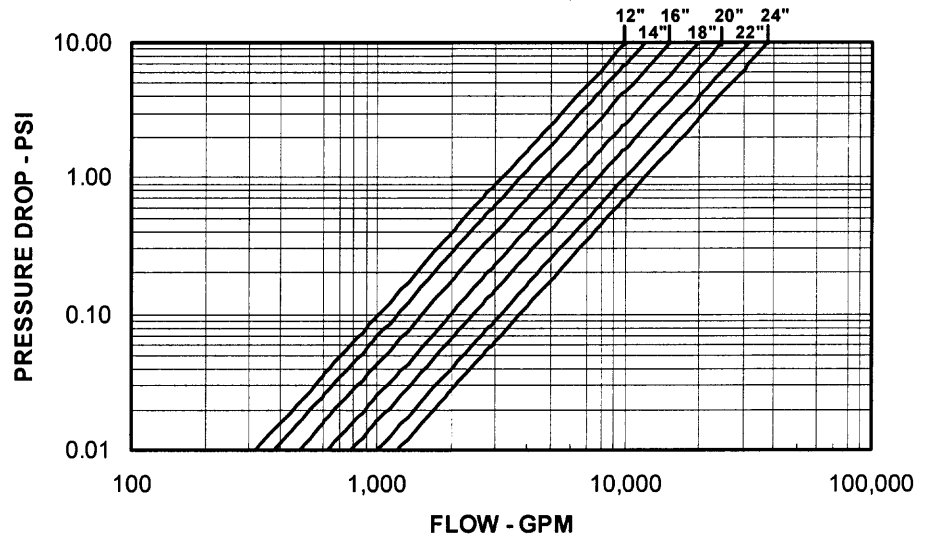
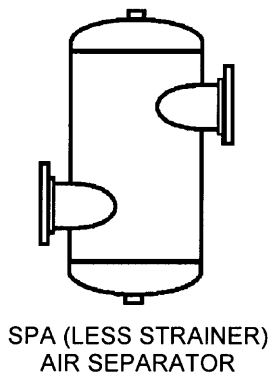
CONSTRUCTION

Shell: Carbon Steel
Exterior: Primer paint

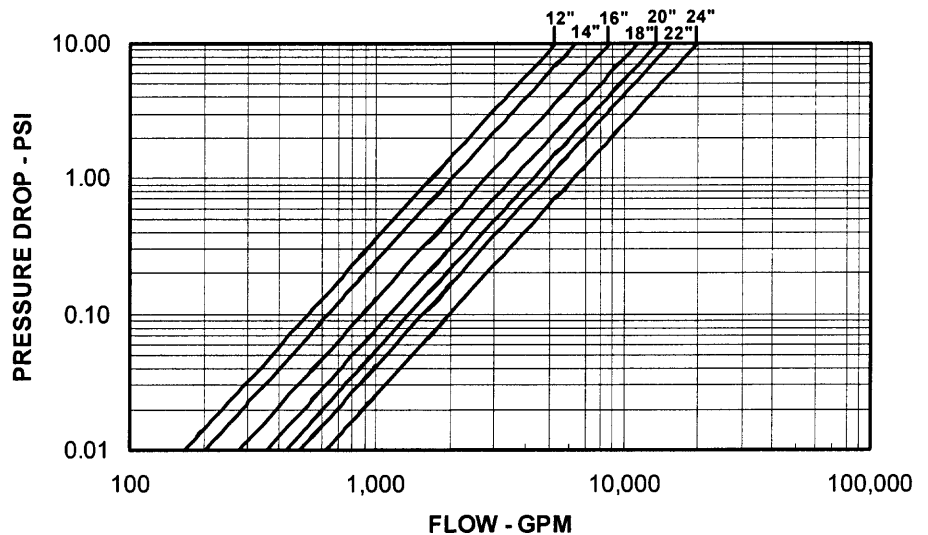
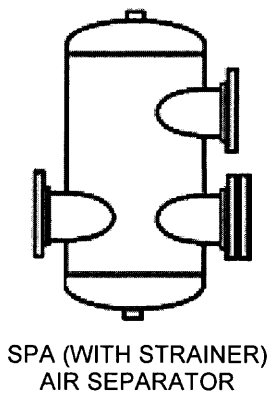
PERFORMANCE LIMITATIONS

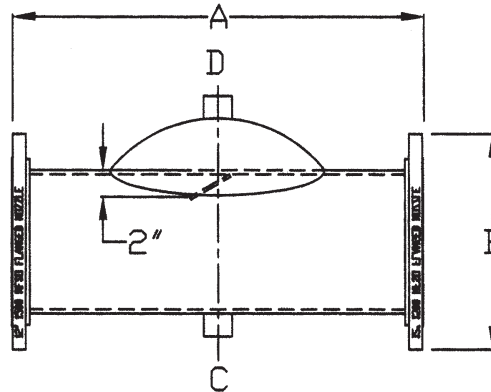
Maximum Design Temperature: 375°F
Maximum Design Pressure: 125 PSIG*
*200 & 250 PSIG available

SPA (LESS STRAINER)- FLOW PERFORMANCE



SPA (WITH STRAINER)- FLOW PERFORMANCE





PART NUMBER	SYSTEM CONNECTION	A (IN.)	B (IN.)	C (IN.)	D (IN.)	WEIGHT
AP-003	3"	12	8	3/4	3/4	42
AP-004	4"	12	9	3/4	3/4	51
AP-005	5"	15	10	1 1/2	1 1/2	65
AP-006	6"	18	11	1 1/2	1 1/2	83
AP-008	8"	24	13 1/2	1 1/2	1 1/2	135
AP-010	10"	30	16	1 1/2	1 1/2	235
AP-012	12"	36	19	1 1/2	1 1/2	352
AP-014 *	14"	42	21	1 1/2	1 1/2	435
AP-016 *	16"	48	23 1/2	1 1/2	1 1/2	525
AP-018 *	18"	54	25	1 1/2	1 1/2	650
AP-020 *	20"	60	27 1/2	2	2	825

*** Non-stock Items**

Larger Sizes can be fabricated to meet your needs. Please contact us.

For tangential air separators with and without strainers please see series ASL and ASW.

USE:

For removal of entrained air in hydronic and pumping systems.
 Helps prolong life of heating or cooling systems.
 Provides protection against possible pipe damage and system noise.

SPECIFICATION:

Carbon Steel Construction
 Working Pressure rated at 150 P.S.I.
 Maximum Temperature 345° F
 Non A.S.M.E.



FOR AUTOMATIC AIR REMOVAL WE RECOMMEND ADDING OUR HIGH CAPACITY AIR VENT PART #HCA-075

DESCRIPTION:

CAST IRON BODY AND COVER
 STAINLESS STEEL INTERNAL FLOAT AND ASSEMBLY

PART NUMBER	HEIGHT	WIDTH	INLET	OUTLET	WEIGHT
HCA-075	5-1/4"	4-1/4"	3/4"	3/8"	5 LBS

JOB NAME _____
LOCATION _____

CONTRACTOR _____
CONTRACTOR P.O. NO. _____