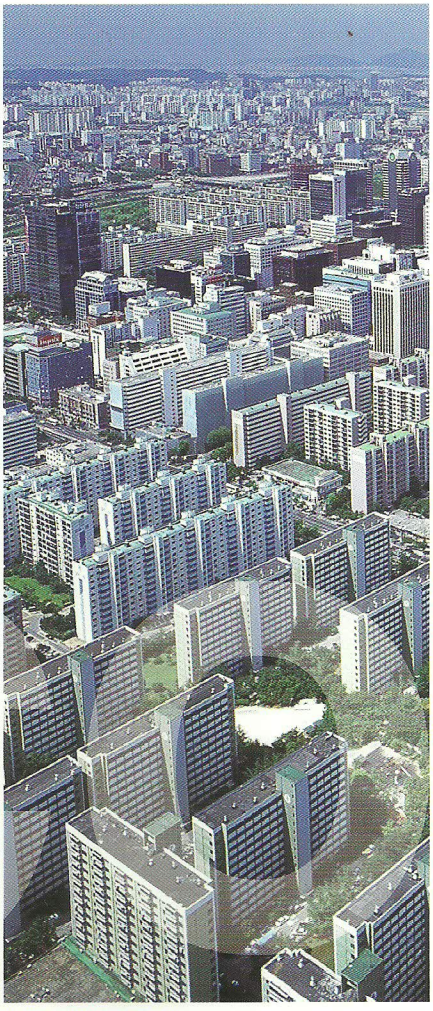
ASME SETTING THE STANDARD

ISO International Organization for Standardization

QA INTERNATIONAL

UKAS MANAGEMENT SYSTEMS



JACO AIR ELIMINATION & CONTROL

CLOSED EXPANSION TANK
AIR SEPARATOR

JACO WATER SYSTEMS

JOONG ANG ENGINEERING CO., LTD

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JACO AIR ELIMINATION & CONTROL

CLOSED EXPANSION TANK

The JACO Closed Expansion Tank acts as a substitute of open expansion tank to prevent the corrosion of pipes. It guarantees smooth operation by completely intercepting the contact of pipe water in cooling, heating and hot water heating pipes with air and filling proper pressure to receive and restore expansion water. The JACO Expansion Tank is available in variety of sizes and capacities to fit your application.

FEATURES & BENEFITS

CLOSED EXPANSION TANK

PREVENTS PIPE CORROSION

As contact with air is intercepted completely, air cannot get mixed with water so the span of pipes is prolonged as corrosion is prevented.

WATER SUPPLY UNNECESSARY

No make-up water is needed as no pipe water is lost by evaporation or overflow.

COMPLETE AIR DISCHARGE FUNCTION

The air venting system of pipe is good as its pressure is properly maintained.

LIMITLESS INSTALLATION APPLICATION

As it can be installed in every place including basements, roof tops, and mid-stories, it is not frozen to burst and space can be utilized.

EXTENDED OPERATIONAL TEMPERATURE RANGE

Pressure needed for pipe system can be easily maintained, so operational temperature over 100℃ from medium or high temperature water systems can be easily obtained.

GUARANTEED SMOOTH OPERATING PERFORMANCE

Effective operation is possible without problems of pipe circulation, pump efficiency, pipe noise and vibration caused by air mixture.

SANITARY SYSTEM OPERATION

Hot air heating system is sanitary because hot air is not opened to the air.

GUARANTEED SMOOTH OPERATING PERFORMANCE

No maintenance is needed and the lifespan of tank and membrane is semi-permanent. no heat loss exists and energy is saved. The lifespan of piping guarantees economical system in life cycle cost.

CLOSED EXPANSION TANK

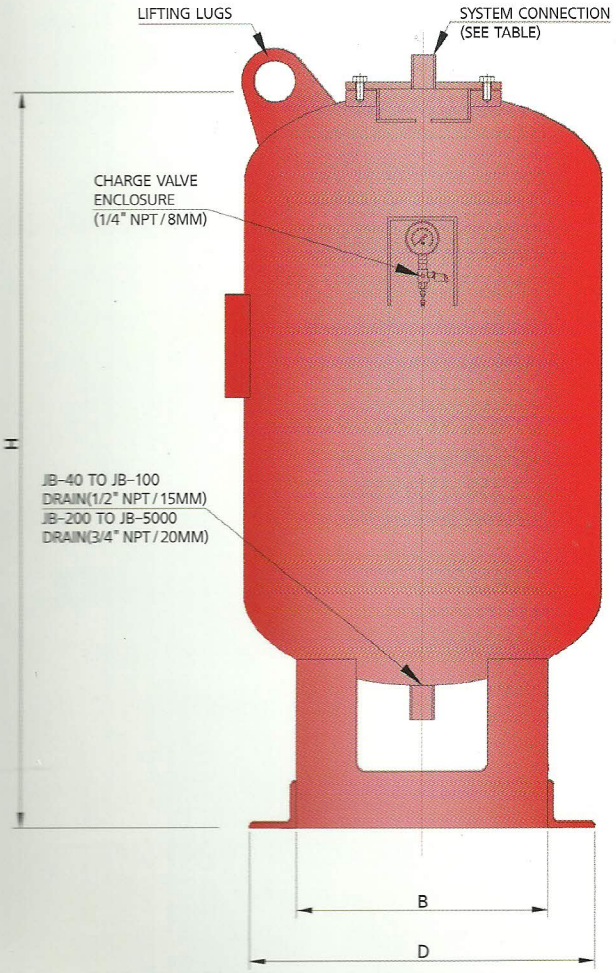
PRODUCT DATA

CONSTRUCTION

Bladder type for permanent separation of air and water

Water expands into bladder, air precharge on shell side

Bladder is replaceable for maintenance and field removable for inspection



SPECIFICATION

Shell Fabricated steel designed and constructed as per ASME Section VIII, Div.1

Bladder Butyl Rubber

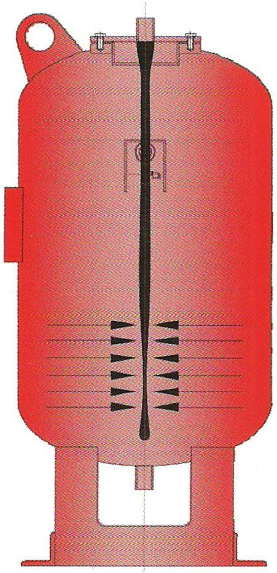
	Standard	Optional
Design Pressure	125 psiG (862 kPa)	150 psiG (1034 kPa)
		175 psiG (1206 kPa)
		250 psiG (1723 kPa)
		300 psiG (2068 kPa)
Design Temperature	240 ℉ (116 ℃)	Consult Factory

PRODUCT DATA TABLE

NO	MODEL NUMBER	TANK VOLUME		DIAMETER (D)		HIGHT (H)		SKIRT DIAMETER (B)		SYSTEM CONNECTION SIZE
		GAL.	LITER	INCH	MM	INCH	MM	INCH	MM	
1	JB-40	11	40	15	380	24 13/16	630	12 1/2	318	3/4" NPT (20A)
2	JB-60	16	60	15	380	30 3/4	780	12 1/2	318	3/4" NPT (20A)
3	JB-80	21	80	17 3/4	450	30 1/8	766	12 1/2	318	3/4" NPT (20A)
4	JB-100	26	100	17 3/4	450	36 1/16	916	12 1/2	318	1 1/4" NPT (32A)
5	JB-200	53	200	23 1/8	588	43 1/16	1094	18	456	1 1/4" NPT (32A)
6	JB-300	79	300	23 1/8	588	57 3/8	1458	18	456	1 1/4" NPT (32A)
7	JB-400	106	400	29 15/16	760	48 13/16	1239	24	610	1 1/4" NPT (32A)
8	JB-500	132	500	29 15/16	760	60 13/16	1544	24	610	1 1/4" NPT (32A)
9	JB-600	159	600	29 15/16	760	72 13/16	1849	24	610	2" NPT (50A)
10	JB-800	211	800	33 7/8	860	72 1/16	1830	28 3/8	720	2" NPT (50A)
11	JB-1000	264	1000	33 7/8	860	88 3/4	2254	28 3/8	720	2" NPT (50A)
12	JB-1200	317	1200	38 7/16	980	82 1/4	2090	31 7/8	810	2" NPT (50A)
13	JB-1400	370	1400	38 7/16	980	94 1/8	2390	31 7/8	810	2" NPT (50A)
14	JB-1500	396	1500	38 7/16	980	98 1/16	2490	31 7/8	810	2" NPT (50A)
15	JB-1600	423	1600	38 7/16	980	103 1/8	2619	31 7/8	810	2" NPT (50A)
16	JB-1800	476	1800	50 13/16	1290	76 9/16	1944	42 1/2	1080	2" NPT (50A)
17	JB-2000	528	2000	50 13/16	1290	85 1/8	2163	42 1/2	1080	2" NPT (50A)
18	JB-2500	660	2500	50 13/16	1290	97 3/16	2468	42 1/2	1080	2" NPT (50A)
19	JB-2800	740	2800	50 13/16	1290	109 3/16	2773	42 1/2	1080	2" NPT (50A)
20	JB-3000	793	3000	55 1/8	1400	99 3/8	2524	43 3/8	1100	2" NPT (50A)
21	JB-3500	925	3500	55 1/8	1400	111 13/16	2840	43 3/8	1100	2" NPT (50A)
22	JB-4000	1057	4000	61	1550	107 5/16	2726	49 1/4	1250	2" NPT (50A)
23	JB-4500	1189	4500	61	1550	119 1/8	3026	49 1/4	1250	2" NPT (50A)
24	JB-5000	1320	5000	61	1550	129	3276	49 1/4	1250	2" NPT (50A)

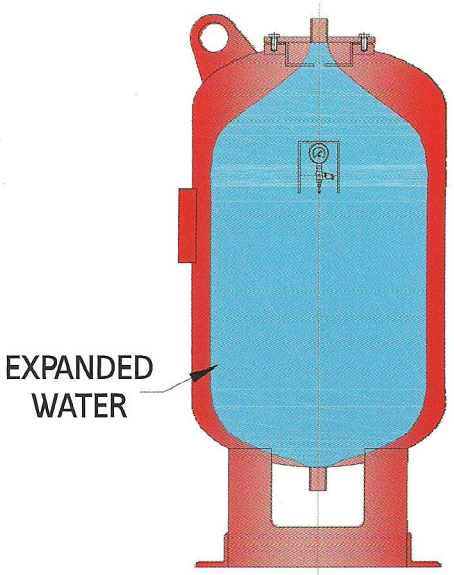
APPLICATIONS — CLOSED EXPANSION TANK

A. AFTER SYSTEM HAS BEEN FILLED P_1



Pre-pressurized air cushion at minimum operating pressure. (Bladder in collapsed condition)

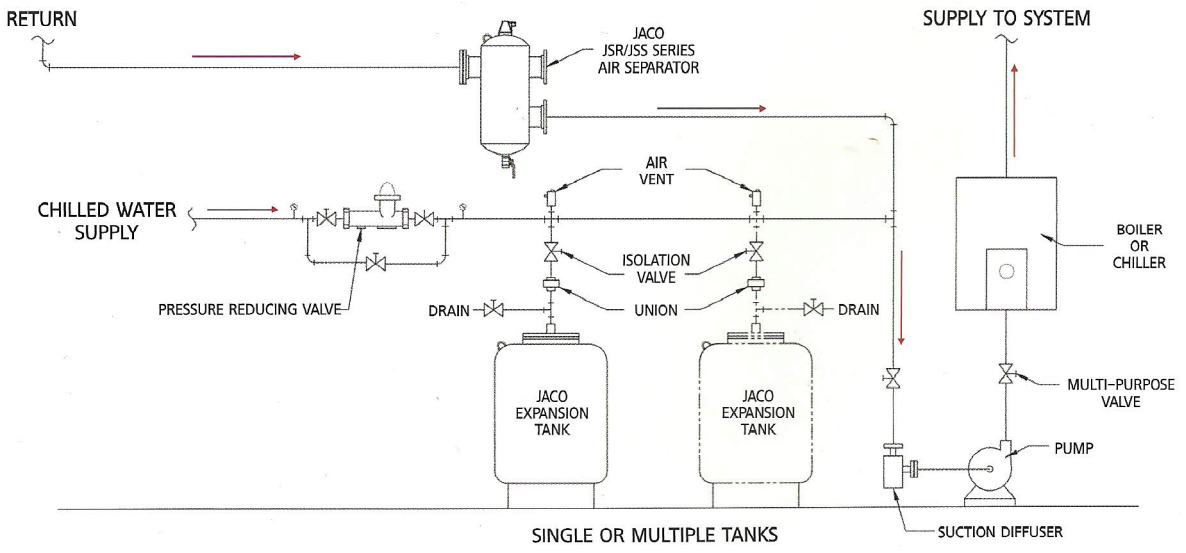
B. AT OPERATING PRESSURE BOILER IN OPERATION P_0



Pre-pressurized air cushion at maximum operating pressure. (Bladder accommodating expansion volume)

CAPTIVE AIR PRESSURIZATION PROCESS

RECOMMENDED INSTALLATION FOR HEATING SYSTEM OR CHILLED WATER APPLICATIONS



JACO AIR ELIMINATION & CONTROL

JSR TANGENTIAL AIR SEPARATOR
JSS IN-LINE AIR SEPARATOR

JSR TANGENTIAL AIR SEPARATOR

Save money and extend the life of system pumps, piping and components with JACO JSR Series air removal units. the JSR Air Separator is designed and constructed to the ASME Boiler & Pressure Vessel Code, Section VIII, Div.1 for Unfired Vessels.

JSS IN-LINE AIR SEPARATOR

The JSS Series of air separators deliver all the quality and performance you expect from JACO products. The highly efficient JSS Air Seperator clears the system of free air and reduces un-dissolved sediment to save money, energy and component wear.

FEATURES & BENEFITS

JSR TANGENTIAL AIR SEPARATOR
JSS IN-LINE AIR SEPARATOR

DEFLATION OF LARGE PIPES

JACO Air Elimination System has a good application for deflation of large pipes in a cyclone way.

AUTOMAIC AIR VENT

Air bubbles collected in the upper part are discharged through automatic air vent.

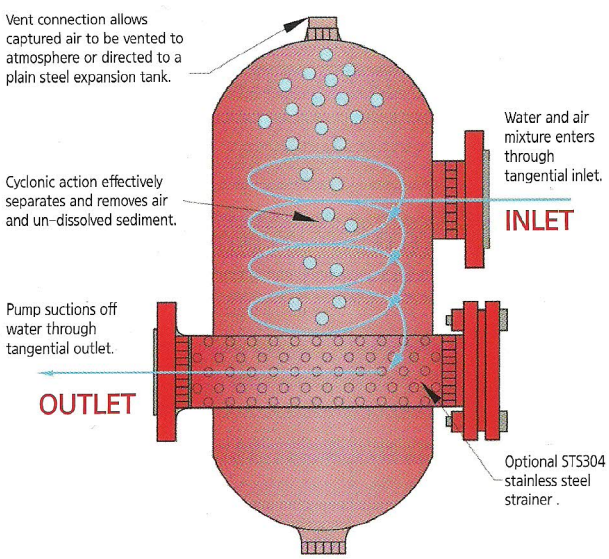
THE ASCENT OF AIR BUBBLES BY VORTEX FLUID

Water flowed through a pipe rotates quickly along with the unit of air separator and pressure in the center of air separator drops, so light air bubbles rise up and heavy sediments go down to the bottom.

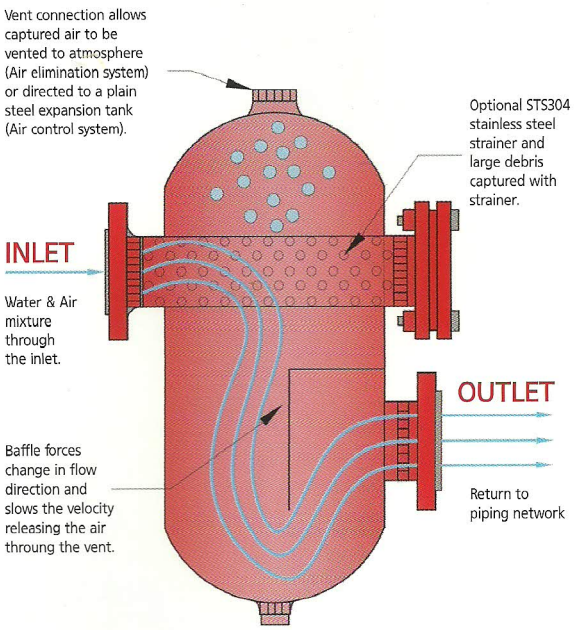
DISCHARGE OF UN-DISSOLVED SEDIMENTS

Heavy sediments such as rust, sand, floating matters from welding can be discharged through the drain valve of the lower part.

JSR AIR SEPARATOR FLOW PATTERN



JSS AIR SEPARATOR FLOW PATTERN



JSR TANGENTIAL AIR SEPARATOR

PRODUCT DATA

CONSTRUCTION

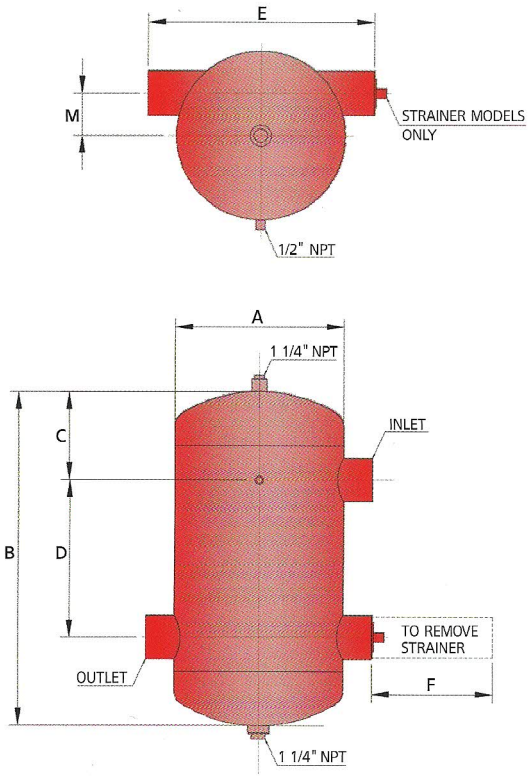
JACO offers JSR air separators with or without strainers, in standard pipe line sizes from 2" to 20".

Consult the factory for higher working pressures, larger sizes or non-standard materials of construction.

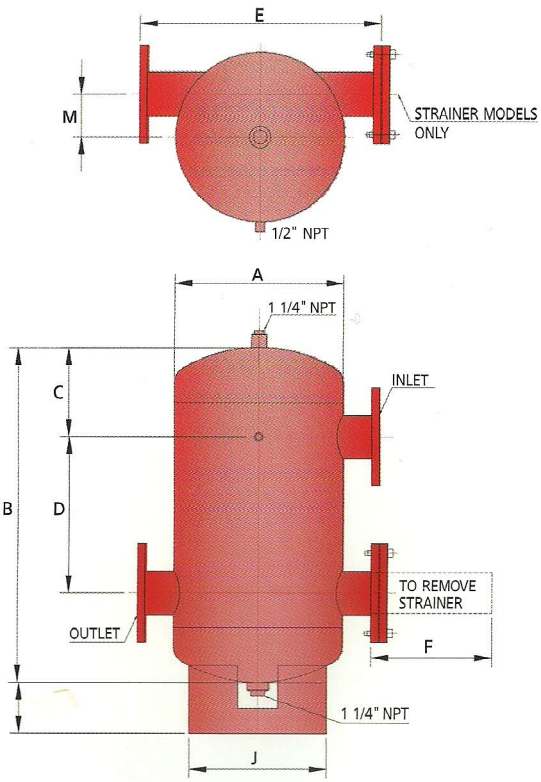
SPECIFICATION

Shell Fabricated steel designed and constructed as per ASME Sec. VIII, Div.1

Flange ASME 125, 150, 250, 300 psi working pressures, up to a maximum operating temperature of 375 ℉



JSR-02 TO JSR-025 / JSR-02F TO JSR-025F



JSR-03 TO JSR-20 / JSR-03F TO JSR-20F

PRODUCT DATA TABLE

PIPE SIZE	MODEL NUMBER		A	B	C	D	E	F	J	K	M	OPTIMAL FLOW
INCH(MM)	LESS STRAINER	WITH STRAINER	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)
2 (50A)	JSR-02	JSR-02F	12 (319)	19 1/2 (495)	5 1/2 (140)	8 1/2 (216)	16 5/8 (422)	16 1/2 (419)	9 1/2 (241)	6 (150)	4 5/16 (110)	80
2 1/2 (65A)	JSR-025	JSR-025F	12 (319)	19 1/2 (495)	5 1/2 (140)	8 1/2 (216)	16 5/8 (422)	16 1/2 (419)	9 1/2 (241)	6 (150)	4 1/16 (103)	130
3 (80A)	JSR-03	JSR-03F	12 (319)	19 1/2 (495)	5 3/4 (146)	8 (203)	19 3/4 (502)	17 1/8 (435)	9 1/2 (241)	6 (150)	3 3/4 (95)	190
4 (100A)	JSR-04	JSR-04F	14 (356)	29 (737)	9 1/8 (232)	10 3/4 (237)	21 3/4 (552)	19 1/2 (495)	11 1/2 (292)	6 (150)	4 1/4 (108)	330
5 (125A)	JSR-05	JSR-05F	14 (356)	29 (737)	9 1/8 (232)	10 3/4 (237)	21 3/4 (552)	19 3/4 (501)	11 1/2 (292)	6 (150)	3 3/4 (95)	550
6 (150A)	JSR-06	JSR-06F	20 (508)	41 (1041)	13 1/4 (337)	14 1/2 (368)	28 (771)	25 1/8 (638)	18 (457)	6 3/4 (170)	6 1/16 (157)	900
8 (200A)	JSR-08	JSR-08F	20 (508)	41 (1041)	13 1/4 (337)	14 1/2 (368)	28 (771)	25 5/8 (651)	18 (457)	6 3/4 (170)	5 3/16 (132)	1500
10 (250A)	JSR-10	JSR-10F	30 (762)	58 (1473)	19 (483)	20 (508)	41 (1041)	37 1/2 (953)	24 (610)	7 7/8 (200)	9 1/8 (232)	2600
12 (300A)	JSR-12	JSR-12F	30 (762)	58 (1473)	19 (483)	20 (508)	41 (1041)	39 (990.5)	24 (610)	7 7/8 (200)	7 7/16 (189)	3400
14 (350A)	JSR-14	JSR-14F	36 (914)	75 1/2 (1918)	22 (559)	31 1/2 (800)	46 3/8 (1178)	44 3/8 (1127)	30 (762)	7 7/8 (200)	9 13/16 (249)	4700
16 (400A)	JSR-16	JSR-16F	48 (1219)	98 1/2 (2502)	29 1/4 (743)	40 (1016)	60 (1524)	58 (1473)	40 (1016)	11 13/16 (300)	14 3/4 (375)	6000
18 (450A)	JSR-18	JSR-18F	54 (1372)	113 (2870)	31 1/2 (800)	50 (1270)	66 (1676)	64 (1626)	44 (1118)	11 13/16 (300)	16 5/8 (432)	8000
20 (500A)	JSR-20	JSR-20F	60 (1524)	130 (3302)	35 (889)	60 (1524)	72 (1829)	66 (1676)	50 (1270)	11 13/16 (300)	18 1/8 (460)	10000

PRODUCT DATA

JSS IN-LINE AIR SEPARATOR

CONSTRUCTION

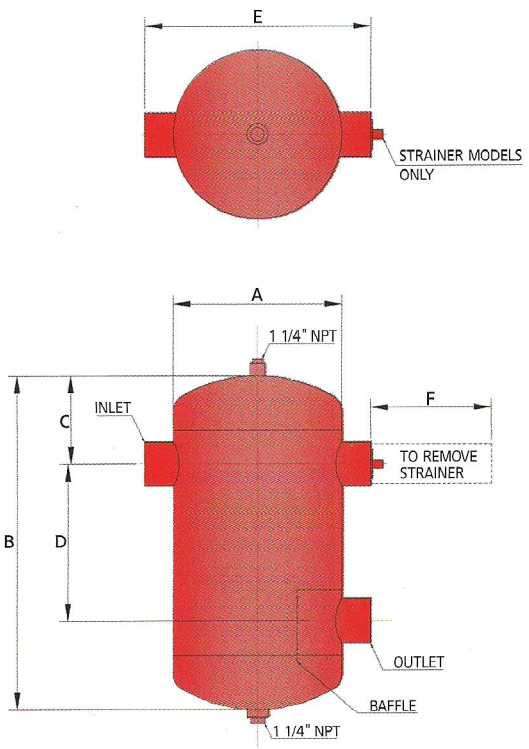
JACO offers JSS air separators with or without strainers, in standard pipe line sizes from 2" to 20".

Consult the factory for higher working pressures, larger sizes or non-standard materials of construction.

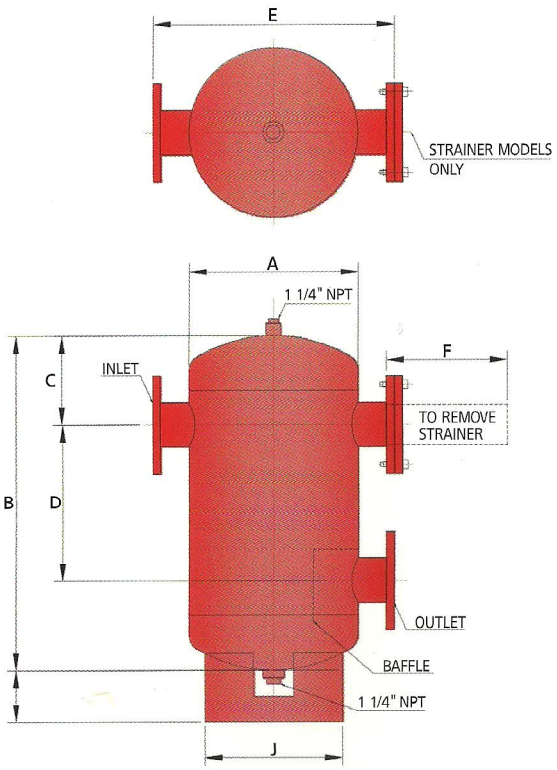
SPECIFICATION

Shell Fabricated steel designed and constructed as per ASME Sec. VIII, Div.1

Flange ASME 125, 150, 250, 300 psi working pressures, up to a maximum operating temperature of 375 ℉



JSS-02 TO JSS-025 / JSS-02F TO JSS-025F



JSS-03 TO JSS-20 / JSS-03F TO JSS-20F

PRODUCT DATA TABLE

PIPE SIZE	MODEL NUMBER		A	B	C	D	E	F	J	K	OPTIMAL FLOW
INCH(MM)	LESS STRAINER	WITH STRAINER	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)	INCH(MM)
2 (50A)	JSS-02	JSS-02F	12 (319)	22 1/8 (562)	7 9/16 (193)	7 (178)	14 (356)	13 (330)	-	-	80
2 1/2 (65A)	JSS-025	JSS-025F	12 (319)	22 1/8 (562)	7 9/16 (193)	7 (178)	14 (356)	13 (330)	-	-	130
3 (80A)	JSS-03	JSS-03F	14 (356)	27 1/4 (692)	8 (203)	11 1/4 (286)	24 (610)	22 (559)	12 (319)	6 (150)	190
4 (100A)	JSS-04	JSS-04F	16 (406)	31 3/8 (797)	9 5/16 (237)	12 3/4 (323)	26 (660)	24 (610)	12 (319)	6 (150)	330
5 (125A)	JSS-05	JSS-05F	16 (406)	32 1/2 (826)	9 3/8 (239)	13 3/4 (349)	26 (660)	24 (610)	12 (319)	6 (150)	550
6 (150A)	JSS-06	JSS-06F	20 (508)	36 7/8 (937)	11 1/16 (281)	14 3/4 (375)	30 (762)	27 (686)	16 (406)	6 3/4 (170)	900
8 (200A)	JSS-08	JSS-08F	20 (508)	45 1/2 (1156)	14 1/16 (358)	17 3/8 (441)	30 (762)	27 (686)	16 (406)	6 3/4 (170)	1500
10 (250A)	JSS-10	JSS-10F	24 (610)	47 3/4 (1213)	14 15/16 (379)	17 7/8 (455)	36 (914)	32 (813)	20 (508)	6 3/4 (170)	2600
12 (300A)	JSS-12	JSS-12F	30 (762)	59 3/4 (1518)	17 5/8 (448)	24 1/2 (622)	42 (1067)	37 (940)	24 (610)	7 7/8 (200)	3400
14 (350A)	JSS-14	JSS-14F	36 (914)	68 1/2 (1740)	20 3/4 (527)	27 (686)	48 (1219)	44 (1174)	30 (762)	7 7/8 (200)	4700
16 (400A)	JSS-16	JSS-16F	36 (914)	75 1/2 (1918)	22 1/4 (565)	31 (787)	48 (1219)	43 (1092)	30 (762)	7 7/8 (200)	6000
18 (450A)	JSS-18	JSS-18F	48 (1219)	84 1/4 (2140)	24 5/8 (626)	35 (889)	64 (1626)	56 (1422)	40 (1016)	11 13/16 (300)	8000
20 (500A)	JSS-20	JSS-20F	48 (1219)	91 (2311)	26 (660)	39 (991)	64 (1626)	56 (1422)	40 (1016)	11 13/16 (300)	10000

JSR TANGENTIAL AIR SEPARATOR

APPLICATIONS

System fluid within a tangential air separator is forced to the wall of the separator due to centrifugal force. The less dense air then migrates to the center of the separator for venting at the top of the unit. Tangential air separators produce higher pressure drops than in-line or micro-bubble separators due to the vortex development within the unit.

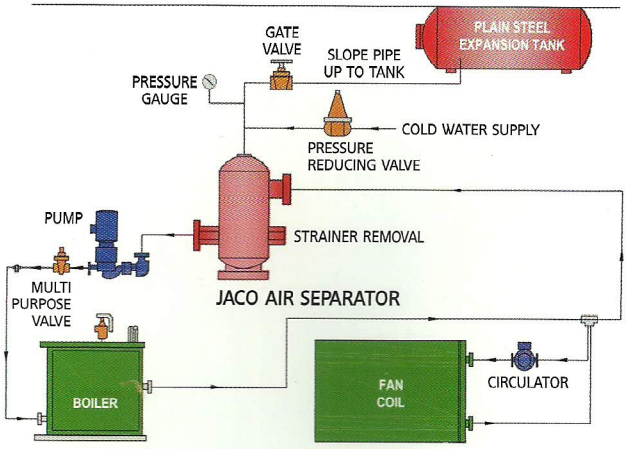
Optional stainless steel strainers are specified to capture and allow the removal of large debris. These screens are normally specified with 3/16 inch perforations and free area of not less than 5 times the open area of the nozzle to minimize pressure drop. Most manufacturers provide a blow-down connection at the bottom of the unit.

When tangential air separators are installed in conventional air control systems with plain steel expansion tanks care must be taken to insure that piping between the air vent and the plain steel tank is pitched at least 3 degrees to facilitate the migration of captured air back into the expansion vessel. Systems with plain steel expansion tanks must not have automatic air vents installed as this will lead to the loss of the expansion tank compression cushion. When tangential air separators are installed in air elimination systems with captive air bladder or diaphragm style expansion tanks, automatic air vents should be installed at the top of each air separator. As air elimination systems have a permanent separation provided by the bladder or diaphragm between the initial tank pre-charge and the system fluid no loss of pre-charge will occur.

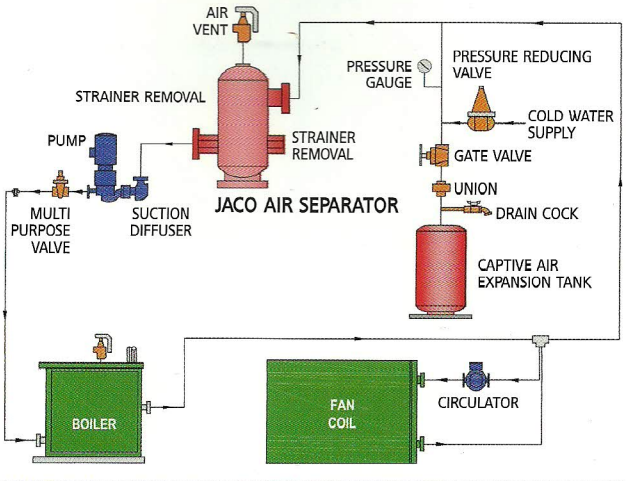
APPLICATIONS

- Larger systems
- Removal of Larger particles

AIR SEPARATOR WITH PLAIN STEEL EXPANSION TANK



AIR SEPARATOR WITH CAPTIVE AIR TANK



APPLICATIONS

JSS IN-LINE AIR SEPARATOR

JACO in-line air separators are applied in commercial, institutional and applications for the removal of free air in water or water/glycol systems. The in-line designed air separator utilizes the advantages resulting from large body diameter in relation to the entering nozzle diameter.

The design of in-line air separators depends upon the lowering of the system fluid velocity within the separator, the change in direction of fluid flow within the unit, and buoyant force direct air to the automatic air vent normally positioned at the top of the separator.

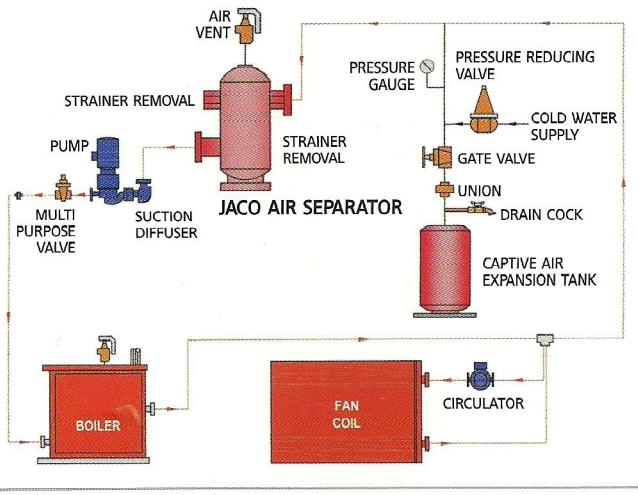
When in-line air separators are installed in conventional air control systems with plain steel expansion tanks care must be taken to insure that piping between the air separator and the plain steel expansion tank is pitched at least 3 degrees to facilitate the migration of captured air back into the expansion vessel. Systems with plain steel expansion tanks must not have automatic vents installed as this will lead to the loss of the expansion tank compression cushion. When in-line air separators are installed in air elimination systems with captive air bladder or diaphragm style expansion tanks, automatic air vents should be installed at the top of each separator.

As air elimination systems have a permanent separation provided by the bladder of diaphragm between the initial tank pre-charge and the system fluid no loss of pre-charge air will occur.

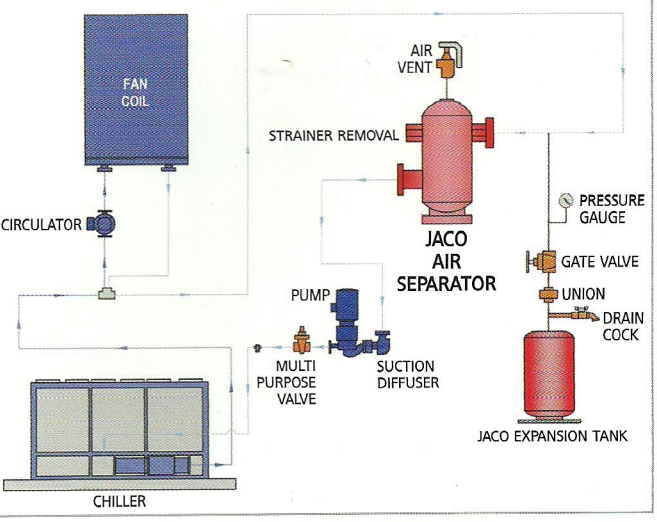
APPLICATIONS

- Larger systems
- Lower pressure drop
- Removal of Larger particles

BOILER AND AIR SEPARATOR LOCATION



CHILLER AND AIR SEPARATOR LOCATION



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Management Innovation Business

INNOBIZ
Management Innovation Business

ASME U S

JACO AIR ELIMINATION & CONTROL

CLOSED EXPANSION TANK
AIR SEPARATOR

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