

94110 Vacuum Vent

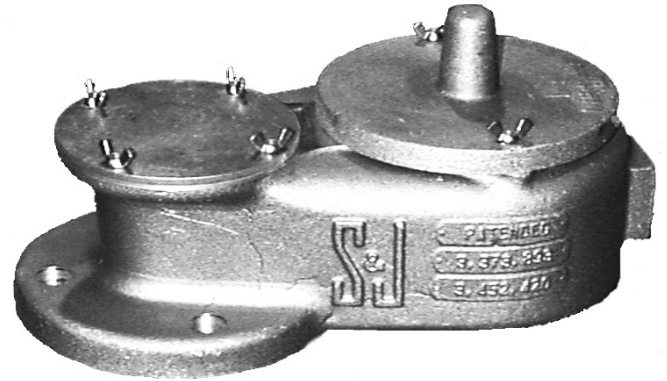
The Shand & Jurs 94110 Vacuum Vent has been designed utilizing over 90 years experience in the development of quality safety and conservation fittings. The function of this vent is to relieve vacuum conditions in liquid product storage tanks, and also withstand the pressure of the stored product when not operating under a vacuum.

Vacuum breathing requirements of some petroleum products may vary so much from pressure breathing, that it is sometimes desirable and more economical to have separate vents to perform these respective functions.

A minimum number of model options are required to cover the wide variety of fluids and temperatures encountered in the petroleum, chemical and general process industries. Many trims, body materials and settings are standard options for those few conditions where standard construction is unsuited.

Standard materials of construction include low copper aluminum, steel, stainless steel or cast iron body. Metal seats are provided to withstand high pressures to which the vent may be subjected.

The body is self-draining and drip rings keep condensates from the seating surfaces. The FEP diaphragm of the pallet has high resistance to adhesion by ice and gum formation, thus preventing sticking to the seat ring.



Features

- Less need for special materials in corrosive and extreme temperature
- Unique floating diaphragm construction assures tight seal
- Peripheral and stem guided vacuum pallet assures reliable operation
- Vertical Lift Pallet contributes to high flow capacity
- Heavy duty construction, yet compact enough for easy handling

Vacuum Vent Specifications:

Body:

Cast Aluminum, Cast Steel, Cast Iron, Ductile Iron or 316 Stainless Steel

Diaphragm:

FEP (Fluorinated Ethylene Propylene), FKM (Fluoroelastomer), NBR (Nitrile-Butadiene), PFA (Fluoroplastic Film)

Back-up Disc:

Fiber, Glass Filled Teflon (GPTFE)

Temperature Range:

Process Temperature ranges for body material:
 -65°F to 250°F (Aluminum)
 -65°F to 350°F (316 Stainless Steel)
 -20°F to 350°F (Carbon Steel)
 -20°F to 325°F (Iron)

Type of Flange Connection:

Screwed or flanged for: 2" & 3" sizes
 Flanged for: 4", 6", 8", 10" & 12" sizes
 Raised face flange available, except for aluminum body material.

Standard Materials of Construction:

Service	Body	Vacuum Cover	Seat		Pallets	Stem Guides	Screen
			2, 3, 4	6, 8, 10 & 12			
Normal Alum	Cast Alum.	Aluminum	Aluminum	Aluminum	Aluminum	Galv. Steel	Galv. Steel
Severe Iron	Cast Iron	Carbon Steel	316 SS	316 SS	316 SS	Galv. Steel	304 SS
Severe Steel	Cast Steel	Carbon Steel	* 316 SS	* 316 SS	316 SS	Galv. Steel	304 SS
Severe 316 SS	Cast 316 SS	316 SS	316 SS	316 SS	316 SS	316 SS	316 SS

* SS Overlay on Integral Seat

Service	Pallet Stem	Diaphragm	Spacer	Cover O-Ring	Size Guides	Hardware
Normal Alum	**Alum.	FEP	NBR	NBR	316 SS	Stainless Steel
Severe Iron	316 SS	FEP	NBR	NBR	316 SS	316 SS
Severe Steel	316 SS	FEP	NBR	NBR	316 SS	Stainless Steel
Severe 316 SS	316 SS	FEP	NBR	NBR	316 SS	316 SS

** 316 SS for elevated settings > 2.9 oz/in²

Materials of construction in this equipment have been selected as representing the most suitable commercially available material for use in the service intended. However, they do not constitute a guarantee against corrosion since processes vary from plant to plant and concentration of harmful fluids, gasses or solids vary from time to time in a given process. Empirical experience by users should be the final guide and alternate materials based on this are generally available.

Standard Max Pressure (PSIG)

Size	Alum. Pallet	S.S. Pallet
2"	15	17.5
3"	15	8
4"	8.5	4
6"	4.0	2.25
8"	2.3	1.25
10"	1.4	1.2
12"	1.2	1.2

*Max Std Vacuum Setting (oz/sq²)

Size	Lead Weights	S.S. Weights
2"	7.5 oz.	6.0 oz.
3"	9 oz.	7.5 oz.
4"	10.5 oz.	7.5 oz.
6"	12 oz.	7.5 oz.
8"	13.5 oz.	9 oz.
10"	16.5 oz.	12 oz.
12"	21 oz.	15 oz.

*Higher settings maybe available. Consult Factory.

Principle of Operation:

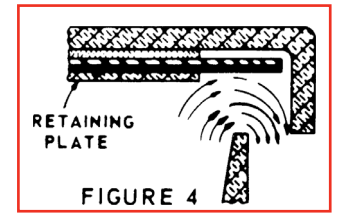
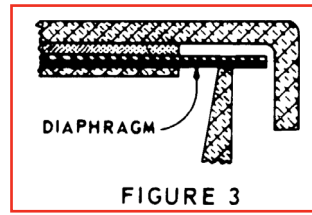
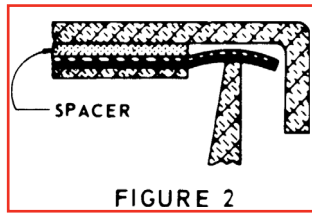
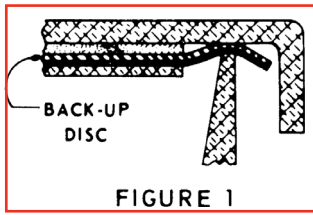
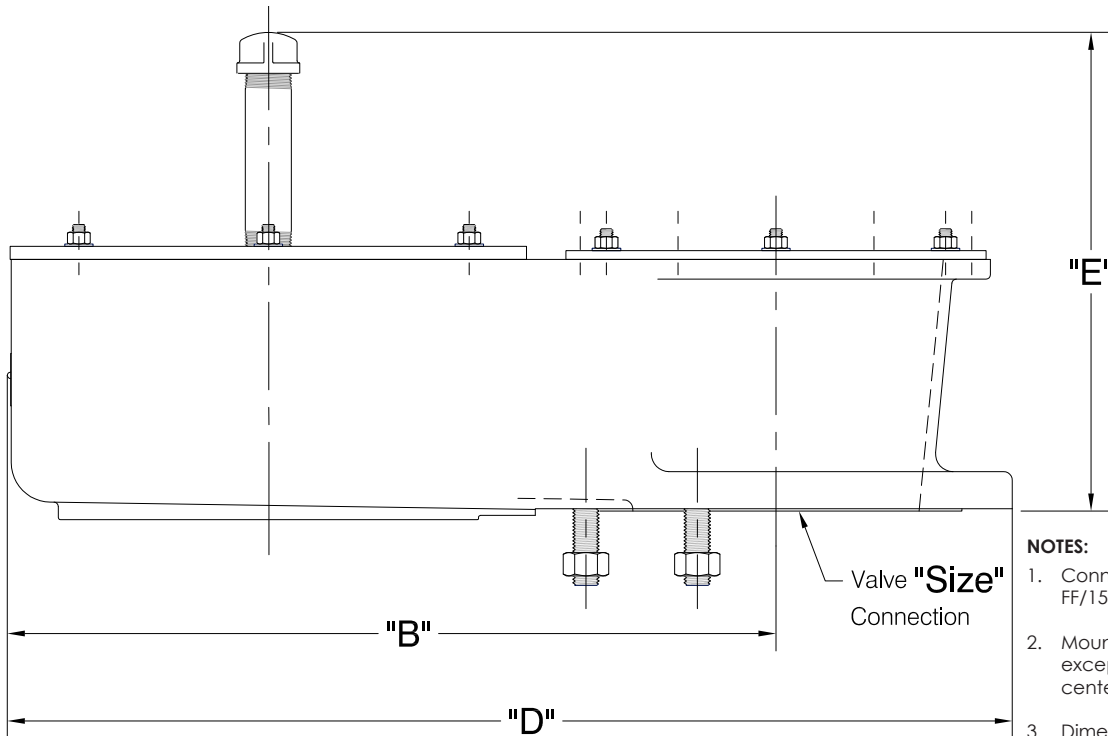


Figure 1 shows the relation of the vacuum pallet assembly to the seat when atmospheric and tank pressures are equal. The "wrap around" effect of the resilient diaphragm on the edge of the seat and the resulting high ratio of seating force to seating area affords a tight seal.

As the vacuum increases, the pallet begins to rise as shown in Figure 2. Because there is still a wrap around effect on the edge of the seat, good sealing is maintained. FEP diaphragm memory and lapped seating surface further enhance sealing characteristics.

As increasing vacuum continues to lift the pallet (see Figure 3) the diaphragm is held in close proximity to the seat by the flat plane memory of the diaphragm material. As set vacuum is reached, the diaphragm leaves the seat (see Figure 4) and the in-rushing vapor lifts the pallet even further. The vacuum pallet lifts vertically permitting incoming air to enter the valve body. This relieves the vacuum condition.

In the closing cycle, incoming air on the pallet holds the Teflon diaphragm close to the pallet surface until peripheral seat contact is very near 100%, causing closure to occur at a value very close to the setting value.



Vent Size	"B"	"D"	"E"
2"	8 ¾	11 25/32	5 ¼
3"	11	14 15/16	6 ¼
4"	13 ¾	17 7/8	7 ¼
6"	17 7/8	23 7/16	10 ½
8"	22 1/8	28 19/32	12 ¾
10"	26 ½	34 ¼	16
12"	31 1/8	40 1/16	17

All designs subject to change. Certified dimensions and specifications available upon request.

94110 Ordering Guide

Model Number Selection

The model number will consist of a base number **94110** followed by 8 digit numbers. These digits will represent 7 option tables.

94110 - AB - CD - EF - GH

Ordering Information

Specify:

1. Model 94110 Vacuum Vent
2. Size and Body Material
3. Screwed or Flanged Connection on 2" and 3" Size
4. Vacuum Setting, if Other Than Normal
5. Optional Materials of Construction, as Required
6. Maximum Static Pressure
7. To Specify CE for Ordinary EU Locations use Table H2
8. To Specify ATEX Certification for Group IIB, IIA EU Locations use 94110A AB CD EF GH. ATEX Certification includes CE Mark.

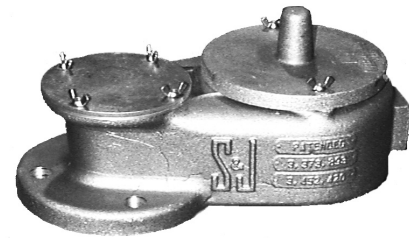


Table AB - Size and Body

Option AB	Size	Connection	Body Material
11	2"	Threaded	Aluminum
12	2"	Flanged	Aluminum
13	3"	Threaded	Aluminum
14	3"	Flanged	Aluminum
15	4"	Flanged	Aluminum
16	6"	Flanged	Aluminum
17	8"	Flanged	Aluminum
18	10"	Flanged	Aluminum
19	12"	Flanged	Aluminum
31, 41	2"	Threaded	Cast Iron, Ductile Iron
32, 42	2"	Flanged	Cast Iron, Ductile Iron
33, 43	3"	Threaded	Cast Iron, Ductile Iron
34, 44	3"	Flanged	Cast Iron, Ductile Iron
35, 45	4"	Flanged	Cast Iron, Ductile Iron
36, 46	6"	Flanged	Cast Iron, Ductile Iron
37, 47	8"	Flanged	Cast Iron, Ductile Iron
38, 48	10"	Flanged	Cast Iron, Ductile Iron
39, 49	12"	Flanged	Cast Iron, Ductile Iron

Option AB	Size	Connection	Body Material
51	2"	Threaded	Cast Steel
52	2"	Flanged	Cast Steel
53	3"	Threaded	Cast Steel
54	3"	Flanged	Cast Steel
55	4"	Flanged	Cast Steel
56	6"	Flanged	Cast Steel
57	8"	Flanged	Cast Steel
58	10"	Flanged	Cast Steel
59	12"	Flanged	Cast Steel
61	2"	Threaded	316 Stainless Steel
62	2"	Flanged	316 Stainless Steel
63	3"	Threaded	316 Stainless Steel
64	3"	Flanged	316 Stainless Steel
65	4"	Flanged	316 Stainless Steel
66	6"	Flanged	316 Stainless Steel
67	8"	Flanged	316 Stainless Steel
68	10"	Flanged	316 Stainless Steel
69	12"	Flanged	316 Stainless Steel

Table C - Flange Type

Option C	Description
0	ANSI 125/150lb. FF
1	ANSI 125/150lb. RF*
2	EN1092-1 PN16 FF
3	EN1092-1 PN16 RF*
4	JIS 10K FF
5	JIS 10K RF*

* RF not available in Aluminum

Table D - Vacuum Range & Load Weight Material

Option D	Description	Weights
0	Standard Setting 0.5 oz/in ²	Lead
1	Above Standard to 2.9 oz/in ²	Lead
2	Above 2.9 oz/in ²	Lead
3	Standard Setting 0.5 oz/in ²	316 SS
4	Above Standard to 2.9 oz/in ²	316 SS
5	Above 2.9 oz/in ²	316 SS

Selected seal type material may alter minimum setting.

STD Vacuum Setting:

0.5 oz/in²

(2" Stainless Steel Pallets 0.608 oz/in²)

Table E - Seat & Pallet Material

Option G	Seat	Pallet
0	Standard*	Standard*
4	316 Stainless Steel	Standard*
5	Teflon Coated SS	Standard*
A	Aluminum	316 Stainless Steel
E	316 Stainless Steel	316 Stainless Steel
F	Teflon Coated SS	316 Stainless Steel

*See Materials of Construction

Table F - Cleaning

Option F	Cleaning
0	Normal
1	LOX
2	LIN

Table G - Diaphragm Seal Type

Option G	Diaphragm
0	FEP
1	PFA
2	FKM
4	NBR

Temperature Limits

Diaphragm Material	Temperature Range
FEP	-65°F to 400°F
FKM	-15°F to 400°F
NBR	-40°F to 250°F
PFA	-65°F to 500°F

Table H - Trim

Option H	Description
0	Standard Trim*
1	Stainless Steel Trim**

* See Materials of Construction

** Includes stem, stem guides, side guides, nuts, bolts and screen
For ATEX Certified Models, select Option 1.