

94645 Pilot Operated Vacuum Relief Valve (Diaphragm Pilot)

The Shand & Jurs 94645 Pilot Operated Relief Valve is designed to meet very specific vacuum needs. The high accuracy of the valve allows the vacuum to be set between -1.1 psig to -5.0 psig using sensitive springs for discrete ranges. The valve operates as follows.

As the internal vacuum reaches the valve's set point, the upward force on the sensing diaphragm overcomes the downward spring force. This causes the pilot seat to slightly lift, resulting in a small release of flow and marginal vacuum relief. This enables the large diaphragm cavity to create a large, upward force which fully opens the pilot seat. This causes a large pressure reduction on the upper side of the main valve diaphragm which results in a full lift of the main valve seat. When the vacuum reduces to the point its resulting upward force is less than the spring force, the pilot seat begins to close. This, in turn, builds up pressure on the upper side of the main valve diaphragm which closes the main valve seat. The pressures are again returned to their normal operating levels.

The valve's set point and blowdown can both be adjusted externally with blowdown adjustment range from 5-20%. The valve operates in a snap action mode only, and provides full opening at set point.

Applications

Meeting emissions standards for process and storage tanks requiring pressure relief

Hot hydrocarbon vapors or liquids, corrosive liquids, gas, cryogenics

Tanker ships, vessels, petroleum, chemical, oil, gas, marine, environmental plants, sanitary and cryogenic industries. Tank applications operating very close to set point

Low vacuum safety-relief valve for vessel applications, from general product tank storage to transportation vessels



Features

- Set pressure between -1.1 psig to -5.0 psig
- Valve sizes: 2" x 3", 3" x 4", 4" x 6", 6" x 8", 8" x 10", 10" x 12", and 12" x 16"
- Adjustment of the valve can be made externally
- Bubble tight seat to set pressure
- Snap action mode
- Fully open at set point
- Minimize VOC's and odor emissions
- Backflow Preventer

Specifications:

Vacuum Setting:

-.11 psig to -5.0 psig available in discrete ranges

Standard Blowdown:

5% - 20% (adjustable)

Body Construction:

Aluminum, Carbon Steel, or 316 Stainless Steel

Diaphragm

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

Flange Connection:

150 lb ANSI

Pressure:

See Model 94640

Accessories:

Backflow Preventer
(Valve has to remain closed under positive pressure.)

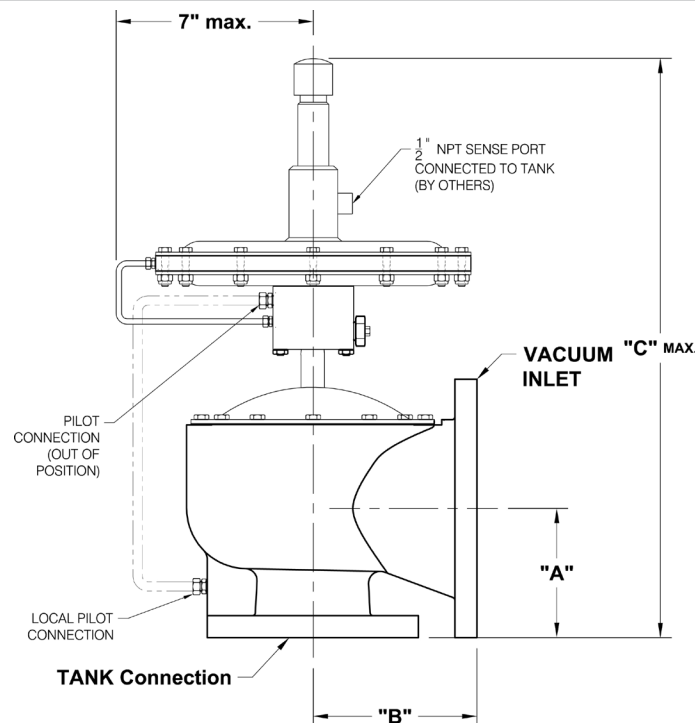
Flow Capacities (SCFM Vacuum, 60°F)

| Inlet Size | 2" | 3" | 4" | 6" | 8" | 10" | 12" |
|------------|-----|------|------|------|------|-------|-------|
| Set Vacuum | | | | | | | |
| .11 psig | 77 | 174 | 295 | 660 | 1228 | 1721 | 2835 |
| .18 psig | 99 | 223 | 378 | 845 | 1573 | 2204 | 3630 |
| .36 psig | 140 | 316 | 536 | 1199 | 2231 | 3126 | 5148 |
| .54 psig | 172 | 388 | 658 | 1472 | 2740 | 3838 | 6322 |
| 1.0 psig | 236 | 532 | 901 | 2017 | 3753 | 5259 | 8662 |
| 5.0 psig | 555 | 1251 | 2120 | 4743 | 8827 | 12368 | 20371 |

Valve Size

| Valve Size | Approximate Dimensions in Inches | | | | |
|------------|----------------------------------|-------|------|--------------|----------|
| | A | B | C | Weight (Al.) | SS/STL |
| 2" x 3" | 3.75 | 5.0 | 21.0 | 24 lbs. | 81 lbs. |
| 3" x 4" | 4.5 | 5.8 | 22.5 | 28 lbs. | 105 lbs. |
| 4" x 6" | 5.5 | 7.0 | 25.0 | 38 lbs. | 147 lbs. |
| 6" x 8" | 6.75 | 9.3 | 28.0 | 63 lbs. | 228 lbs. |
| 8" x 10" | 8.0 | 11.0 | 30.0 | 90 lbs. | 315 lbs. |
| 10" x 12" | 9.5 | 12.5 | 33.0 | 123 lbs. | 426 lbs. |
| 12" x 16" | 11.75 | 14.25 | 40.0 | 200 lbs. | 600 lbs. |

Dimensions



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

94645 Ordering Guide

Model Number Selection

The model number will consist of a base number **94645** followed by 8 digit numbers. These digits will represent 6 option tables.

94645 - A - B - CD - E - F - G - H

Ordering Information

Specify:

1. Model 94645 Pilot Operated Vacuum Relief Valve
2. Body Material
3. Valve and Inlet Size
4. Seal Material and Set Point
5. Accessories
6. CE for Ordinary EU Locations use Table F1
7. ATEX Certification for II 1 G Ex h II B T1...T6 Ga EU Locations



Table A - Material & Flange

| Option A | Material |
|----------|-------------------------|
| 0 | Aluminum 150lb. ANSI-FF |
| 1 | Carbon Steel ANSI-FF |
| 2 | Carbon Steel ANSI-RF |
| 3 | 316SS ANSI-FF |
| 4 | 316SS ANSI-RF |

Table B - Valve Size

| Option B | (Inlet, X Outlet) |
|----------|-------------------|
| 2 | 2 x 3 |
| 3 | 3 x 4 |
| 4 | 4 x 6 |
| 5 | 6 x 8 |
| 6 | 8 x 10 |
| 7 | 10 x 12 |
| 8 | 12 x 16 |

Table CD - Pressure Setting Ranges

| Option CD | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
|------------|------|-----|-----|-----|-----|-----|-----|-----|-----|
| Range From | 0.11 | .25 | .35 | .5 | .75 | 1.0 | 2.0 | 2.5 | 4.0 |
| Range To | .25 | .35 | .5 | .75 | 1.0 | 2.0 | 2.5 | 4.0 | 5.0 |

ATEX Models Limited to Table CD Options 01-09

Table E - Valve Size

| Option E | Material |
|----------|-----------|
| 2 | 2" Valve |
| 3 | 3" Valve |
| 4 | 4" Valve |
| 5 | 6" Valve |
| 6 | 8" Valve |
| 7 | 10" Valve |
| 8 | 12" Valve |

Table F - Main Body Diaphragm

| Option F | Material |
|----------|----------|
| A | FEP |
| B | FKM |
| C | NBR |

94645 Ordering Guide

Table G - Certification

| Option G | Description |
|----------|-------------|
| 0 | Standard |
| 1 | ATEX |

Table H - Accessories

| Option H | Description |
|----------|---|
| 0 | None |
| 1 | Backflow Preventer (BP) & Vacuum Preventer (VP) |