



**4110A, 3610 and 3660 Series, used to protect tanks and vessels from damage or deformation caused by changes in process pressure and vacuum conditions.**

### Introduction

Varec 4110A and 3610 Series Vacuum Relief Valves relieve vacuum created by abnormal process conditions, and withstand the pressure of the stored product under normal operating conditions.

This series can also be used to provide the necessary venting capacity for routine inbreathing or backup relief. The intake of air into a tank can contaminate a product or create a flammable mixture. By controlling the process vapors, the introduction of air is minimized, increasing fire protection and safety.

These valves can be used in petroleum refineries, marketing terminals, petrochemical and chemical processes, as well as pulp and paper, food and beverage, and waste water plants.

Flow capacity tables are provided to help you select the proper size for your vacuum venting requirements. In addition, Varec's applications engineering staff and factory trained representatives are always available to assist you.

### Features

- Varec 4110A, 3610 and 3660 valve models utilize a spring-loaded pallet to provide relief settings up to 50.8 psig [3.5 barg].
- The Varec 4110A and 3610 Series offer flexible installation. Model 4110A valves are top mounted, models 3610 are side mounted, and models 3660 are provided with flanged connections on the intake and discharge sides for "in-line" applications.
- Varec 4110A and 3610 Series valves feature pallets that are statically-balanced and side and center-guided for stability. These features ensure proper alignment for non-binding, positive seating over the life of the valve. Soft seat pallet inserts are available for a tight seal. Metal-to-metal seating may be specified for elevated process temperatures.



**4110A Series**

**3660 Series**

- Model 3660 valves may be used for either pressure (top-mounted) or vacuum (side-mounted) relief. When this valve is used for vacuum relief, the bottom flange allows a dehydrator to be installed to provide dry air at the intake. When the valve is used for pressure relief, the exhaust side may be connected to a discharge header which can collect the vapors for scrubbing, incineration, etc., thereby controlling corrosive, flammable or toxic emissions.

### Technical Data

- 2" [80 mm] to 12" [300 mm] sizes available.
- Suitable for top or side mounting.
- Suitable for emissions control.
- Relief settings to 50 psig [3.5 barg].
- Side and center-guided pallets for stability.

# Varec 4110A, 3610 and 3660 Series

## Spring Loaded Vacuum Relief Valves

### Specifications

#### Setting Information

##### 4110A and 3610

Valve Size	Maximum Working Pressure	Minimum Relief Setting	Maximum Relief Setting
2" [50 mm]	72.5 psig [5.0 barg]	1 psig [0.07 barg]	11.6 psig [0.8 barg]
3" [75 mm]	72.5 psig [5.0 barg]	1 psig [0.07 barg]	11.6 psig [0.8 barg]
4" [100 mm]	72.5 psig [5.0 barg]	1 psig [0.07 barg]	11.6 psig [0.8 barg]
6" [150 mm]	72.5 psig [5.0 barg]	1 psig [0.07 barg]	11.6 psig [0.8 barg]
8" [200 mm]	58.0 psig [4.0 barg]	1 psig [0.07 barg]	11.6 psig [0.8 barg]
10" [250 mm]	36.0 psig [2.5 barg]	1 psig [0.07 barg]	11.6 psig [0.8 barg]
12" [300 mm]	36.0 psig [2.5 barg]	1 psig [0.07 barg]	11.6 psig [0.8 barg]

##### 3660

Valve Size	Maximum Working Pressure	Minimum Relief Setting	Maximum Relief Setting
2" [50 mm]	65.3 psig [4.5 barg]	1 psig [0.07 barg]	50.8 psig [3.5 barg]
3" [75 mm]	65.3 psig [4.5 barg]	1 psig [0.07 barg]	40.6 psig [2.8 barg]
4" [100 mm]	58.0 psig [4.0 barg]	1 psig [0.07 barg]	30.5 psig [2.1 barg]
6" [150 mm]	58.0 psig [4.0 barg]	1 psig [0.07 barg]	20.3 psig [1.4 barg]
8" [200 mm]	43.5 psig [3.0 barg]	1 psig [0.07 barg]	11.6 psig [0.8 barg]
10" [250 mm]	36.0 psig [2.5 barg]	1 psig [0.07 barg]	24.0 psig [1.7 barg]
12" [300 mm]	36.0 psig [2.5 barg]	1 psig [0.07 barg]	24.0 psig [1.7 barg]

All valves are factory tested for leakage and correct setting prior to shipment. Certification of valve setting is available upon request.

#### Maximum Allowable Working Pressure versus Vacuum Setting

##### Maximum Allowable Working Pressure (psig)

Size	1" WC Setting	2" WC Setting	5" WC Setting
2"	13	40	140
3"	6	40	140
4"	3	14	60
6"	2.5	14	60
8"	1	5	21
10"	1	5	18.5
12"	1	4	10

#### Sizes

2", 3", 4", 6", 8", 10", 12" or  
2" x 2", 3" x 3", 4" x 4", 6" x 6", 8" x 8",  
10" x 10", 12" x 12"

#### Materials of Construction

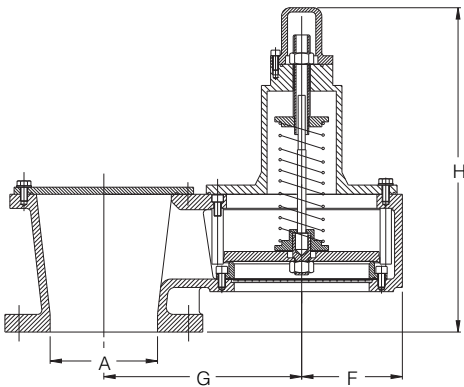
Body	Internals	Pallet Seat Insert
Aluminum	Stainless Steel	PTFE
Carbon Steel		Viton®
Stainless Steel		BUNA-N
Gray Iron		

#### Connections

##### Standard Flange Drilling

Aluminum Body	Drilled to ANSI Class 125 Flat Face dimensions
	Drilled to ANSI Class 125 DIN Flat Face dimensions
CS and SS Body	Drilled to ANSI Class 150 Raised Face dimensions
	Drilled to ANSI Class 150 DIN Raised Face dimensions

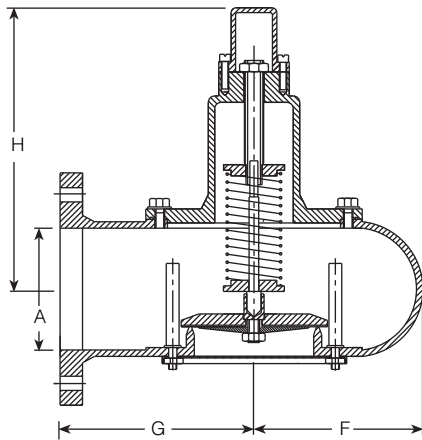
Specifications



Dimensions, inches [mm]

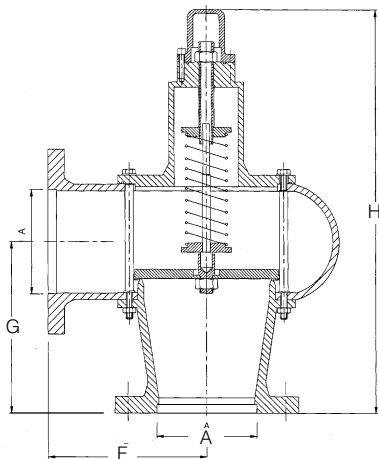
Model 4110A

Size Code	2	3	4	6	8	0	1
Nominal Pipe Size	2 [50]	3 [75]	4 [100]	6 [150]	8 [200]	10 [250]	12 [300]
A	2 [51]	3 [76]	4 [102]	6 [152]	8 [203]	10 [254]	12 [305]
F	4½ [115]	6 [150]	7 [178]	9¼ [235]	11²¹⁄₃₂ [298]	14 [355]	16³⁄₁₆ [411]
G	3½ [82]	4¼⁶⁄₄ [118]	5²⁵⁄₆₄ [120]	7 [160]	9 [212]	8⁷⁄₈ [225]	10½ [268]
H	14³¹⁄₆₄ [368]	15½ [391]	16¼ [410]	18¹³⁄₁₆ [475]	20⁷⁄₁₆ [515]	25 [637]	24⁷⁄₈ [630]



Model 3610

Size Code	2	3	4	6	8	0	1
Nominal Pipe Size	2 [50]	3 [75]	4 [100]	6 [150]	8 [200]	10 [250]	12 [300]
A	2 [51]	3 [76]	4 [102]	6 [152]	8 [203]	10 [254]	12 [305]
F	4½ [105]	5½ [140]	6¾ [162]	7⁷⁄₈ [202]	9⅓ [237]	11 [280]	12⁷⁄₈ [326]
G	5½ [140]	7 [180]	7⁷⁄₈ [200]	9½ [242]	12¹³⁄₆₄ [310]	14 [358]	15½ [393]
H	12¹³⁄₃₂ [325]	12¹³⁄₃₂ [324]	12⁷⁄₈ [337]	13½ [352]	13¾ [359]	17¾ [450]	17 [430]



Model 3660

Size Code	2	3	4	6	8	0	1
Nominal Pipe Size	2 [50]	3 [75]	4 [100]	6 [150]	8 [200]	10 [250]	12 [300]
A	2 [51]	3 [76]	4 [102]	6 [152]	8 [203]	10 [254]	12 [306]
F	5½ [140]	7 [180]	7⁷⁄₈ [200]	10³⁄₁₆ [259]	12³⁄₁₆ [310]	14 [358]	15½ [393]
G	5⁵⁄₆₄ [129]	6½ [166]	7⁷⁄₈ [200]	10³⁄₁₆ [259]	11²¹⁄₃₂ [296]	13½ [343]	14¼ [363]
H	17⁷⁄₈ [454]	19¹³⁄₃₂ [493]	21³⁄₁₆ [538]	24 [611]	25⁷⁄₈ [656]	30 [761]	33¾ [858]

Dimensions are for preliminary general information and should not be used for construction purposes. Certified dimensional drawings are available upon request.

## Flow Capacity

The following flow tables reflect the high performance characteristics of the design of the 4110A and 3610.

### Models 4110A, 3610 – English

Size	2" [50 mm]			3" [75 mm]			4" [100 mm]			6" [150 mm]			8" [200 mm]			
	Overpressure	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4
<b>Set Vacuum</b>																
1 psig	4.24	5.47	6.29	10.24	12.71	14.48	17.66	21.90	25.07	39.91	49.44	56.50	70.98	87.93	100.65	
1.3 psig	4.94	6.14	7.13	12.71	16.24	18.36	19.78	24.72	28.61	44.50	55.44	64.27	79.11	98.53	114.42	
2.0 psig	6.22	7.66	8.90	15.89	19.42	22.60	24.72	30.72	35.67	55.80	68.86	80.17	99.24	122.54	142.67	
2.8 psig	7.20	8.93	10.38	18.36	22.95	26.49	28.96	35.67	41.67	64.98	80.52	93.58	115.83	143.38	166.69	
3.5 psig	8.12	10.06	11.65	20.84	25.78	29.66	32.49	40.26	46.61	73.10	90.41	104.89	129.96	161.04	186.82	
4.2 psig	8.90	11.05	12.82	22.60	28.25	32.84	35.67	44.14	51.21	80.17	99.59	115.48	142.67	177.28	205.53	
5.0 psig	9.66	11.97	13.88	24.72	30.72	35.67	38.85	48.03	55.44	87.23	107.71	125.01	155.03	191.76	222.48	

Flow Capacity SCFH x 1000 Air

### Models 4110A, 3610 – Metric

Size	2" [50 mm]			3" [75 mm]			4" [100 mm]			6" [150 mm]			8" [200 mm]			
	Overpressure	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4
<b>Set Vacuum</b>																
0.07 barg	0.12	0.16	0.18	0.29	0.36	0.41	0.50	0.62	0.71	1.13	1.40	1.60	2.01	2.49	2.85	
0.09 barg	0.14	0.17	0.20	0.36	0.46	0.52	0.56	0.70	0.81	1.26	1.57	1.82	2.24	2.79	3.24	
0.14 barg	0.18	0.22	0.25	0.45	0.55	0.64	0.70	0.87	1.01	1.58	1.95	2.27	2.81	3.47	4.04	
0.19 barg	0.20	0.25	0.29	0.52	0.65	0.75	0.82	1.01	1.18	1.84	2.28	2.65	3.28	4.06	4.72	
0.24 barg	0.23	0.29	0.33	0.59	0.73	0.84	0.92	1.14	1.32	2.07	2.56	2.97	3.68	4.56	5.29	
0.29 barg	0.25	0.31	0.36	0.64	0.80	0.93	1.01	1.25	1.45	2.27	2.82	3.27	4.04	5.02	5.82	
0.34 barg	0.27	0.34	0.39	0.70	0.87	1.01	1.10	1.36	1.57	2.47	3.05	3.54	4.39	5.43	6.30	

Flow Capacity Nm<sup>3</sup>/H x 1000 Air

## Flow Capacity

The following flow tables reflect the high performance characteristics of the design of the 3660.

Model 3660 – English															
Size	2" [50 mm]			3" [75 mm]			4" [100 mm]			6" [150 mm]			8" [200 mm]		
Overpressure	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4
<b>Set Vacuum</b>															
1.3	4.94	6.00	7.42	12.36	15.54	18.72	19.78	25.07	29.31	44.50	56.15	66.39	79.11	99.94	117.95
2.0	6.00	7.77	9.18	15.54	19.42	23.31	24.72	31.08	36.73	55.80	69.92	82.99	99.24	124.31	147.62
2.8	7.06	9.18	10.59	18.01	22.95	27.19	28.96	36.37	43.08	64.98	81.93	96.76	115.48	145.50	171.98
3.5	8.12	10.24	12.00	20.48	25.78	30.37	32.49	40.61	48.03	73.10	91.82	108.42	129.96	163.16	192.82
4.2	8.83	11.30	13.07	22.25	28.25	33.55	35.67	44.85	52.97	80.17	101.00	119.36	142.32	179.40	212.24
5.0	9.54	12.01	14.48	24.37	30.72	36.02	38.85	48.73	57.56	87.23	109.48	129.25	155.03	194.23	229.90

Flow Capacity SCFH x 1000 Air

\*Consult your sales representative for 10" [250 mm] and 12" [300 mm] flow information.

Model 3660 – Metric															
Size	2" [50 mm]			3" [75 mm]			4" [100 mm]			6" [150 mm]			8" [200 mm]		
Overpressure	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4	1.2	1.3	1.4
<b>Set Vacuum</b>															
0.09 barg	0.14	0.17	0.21	0.35	0.44	0.53	0.56	0.71	0.83	1.26	1.59	1.88	2.24	2.83	3.34
0.14 barg	0.17	0.22	0.26	0.44	0.55	0.66	0.70	0.88	1.04	1.58	1.98	2.35	2.81	3.52	4.18
0.19 barg	0.20	0.26	0.30	0.51	0.65	0.77	0.82	1.03	1.22	1.84	2.32	2.74	3.27	4.12	4.87
0.24 barg	0.23	0.29	0.34	0.58	0.73	0.86	0.92	1.15	1.36	2.07	2.60	3.07	3.68	4.62	5.46
0.29 barg	0.25	0.32	0.37	0.63	0.80	0.95	1.01	1.27	1.50	2.27	2.86	3.38	4.03	5.08	6.01
0.34 barg	0.27	0.34	0.41	0.69	0.87	1.02	1.10	1.38	1.63	2.47	3.10	3.66	4.39	5.50	6.51

Flow Capacity Nm<sup>3</sup>/H x 1000 Air

# Varec 4110A, 3610 and 3660 Series

## Spring Loaded Vacuum Relief Valves

### Ordering Information

Model	Description
4110A	Top Mounted Vacuum Relief Valve
3610	Side mounted Vacuum Relief Valve
3660	"In-line" Pressure or Vacuum Relief Valve

Code	Size (Select one)
2	2" [50 mm]
3	3" [75 mm]
4	4" [100 mm]
6	6" [150 mm]
8	8" [200 mm]
0	10" [250 mm]
1	12" [300 mm]

Code	Body and Trim Material (Select one)
2	Aluminum body with stainless steel internals
3	Carbon steel body with stainless steel internals
4	Stainless steel body with stainless steel internals
5	Gray Iron body with stainless steel internals

Code	Soft Seat Pallet Insert (Select one)
M	Metal-to-Metal (No insert)
B	BUNA-N
T	PTFE
V	Viton®-A

Code	Flange Finish (Select one)
FF	Flat Faced Flange - 125# ANSI Drilling
RF	Raised Faced Flange - 150# ANSI Drilling (CS or SS Housing only)
DF	Flat Faced Flange - 125# ANSI DIN Drilling
DR	Raised Faced Flange - 150# ANSI DIN Drilling (CS or SS Housing only)

---

<b>4110A</b>	<b>2</b>	<b>2</b>	<b>T</b>	<b>FF</b>	<b>(Example)</b>
--------------	----------	----------	----------	-----------	------------------

Example: 2" top mounted vacuum relief valve, aluminum body with stainless steel internals, PTFE insert Flat Faced Flange.

Tyco Flow Control (TFC) provides the information herein in good faith but makes no representation as to its comprehensiveness or accuracy. This data sheet is intended only as a guide to TFC products and services. Individuals using this data sheet must exercise their independent judgment in evaluating product selection and determining product appropriateness for their particular purpose and system requirements. TFC MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT(S) TO WHICH THE INFORMATION REFERS. ACCORDINGLY, TFC WILL NOT BE RESPONSIBLE FOR DAMAGES (OF ANY KIND OR NATURE, INCLUDING INCIDENTAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES) RESULTING FROM THE USE OF OR RELIANCE UPON THIS INFORMATION. Patents and Patents Pending in the U.S. and foreign countries. Tyco reserves the right to change product designs and specifications without notice. All registered trademarks are the property of their respective owners. Printed in the USA.