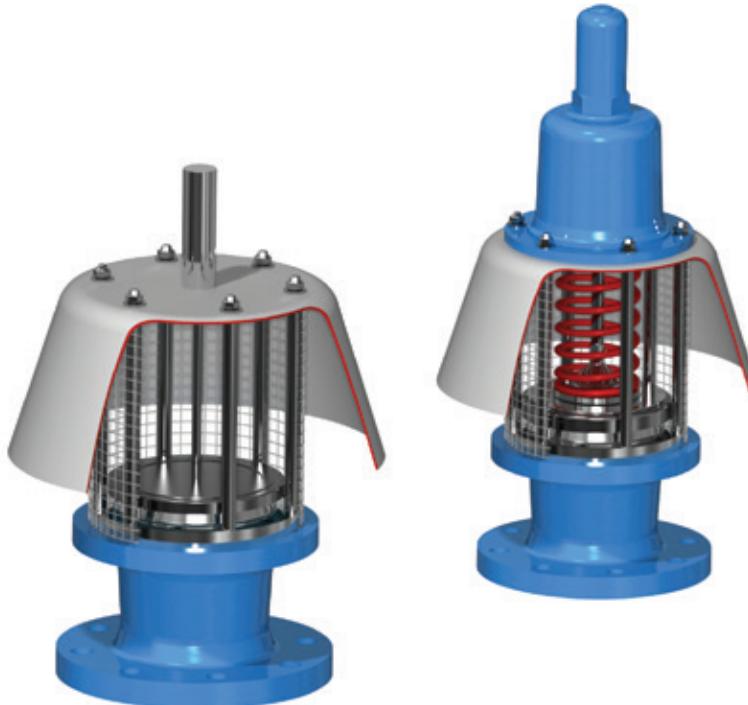


## ANDERSON GREENWOOD TYPE 4130 ATMOSPHERIC PRESSURE RELIEF VALVES

High capacity weight or spring loaded pressure relief valves that vent to atmosphere. Designed to work closer to a tank's MAWP, increasing productivity, reducing emissions and product evaporation



### GENERAL APPLICATION

Type 4130 valves allow tanks to work closer to their MAWP thus increasing productivity, reducing emissions and product evaporation. Increased flow capacities reduce the valve's size, corresponding connections and piping costs in applications for storage tank farms, oil and gas production, the petroleum, pharmaceutical and chemical sectors.

### TECHNICAL DATA

Materials:	Aluminum, carbon steel, stainless steel
Sizes:	2" to 12" (DN 50 to 300)
Pressure settings	
Weight loaded:	up to 1.5 psig (100 mbarg)
Spring loaded:	up to 15 psig (1 barg)
Certification:	ATEX 94/9 EC

### FEATURES

- Increased flow capacities reduce the required valve size and the corresponding connections and piping costs.
- Fully open at 10% overpressure, enabling setting close to MAWP and minimizing tank emissions.
- Large body for increased capacity providing high flow performance for full conformance to API2000/ISO28300.
- Leakage rate of 0.5 scfh [0.015 Nm<sup>3</sup> /hr] or less at 90% of setpoint.
- Weight or spring loaded models available.
- Choice of body materials.
- Modular design enables all components to be removed and replaced in-situ for quicker, simpler maintenance.
- Optional 'all-weather' coating prevents frozen condensate build-up and sticking of vital components in cold weather applications.

# ANDERSON GREENWOOD TYPE 4130 ATMOSPHERIC PRESSURE RELIEF VALVES

## MODELS OVERVIEW

Type 4130 valves are high capacity, full lift pressure relief valves designed for use on atmospheric and low pressure storage tanks. Their primary function is to protect the tank from physical damage or permanent deformation caused by increases in internal pressure encountered in normal operations. On smaller tanks, the valves may also provide sufficient flow capacity for emergency venting.

The valves are fully open at 10% overpressure allowing the user to have a quicker acting valve that can be set closer to the tank's maximum allowable working pressure, reducing emission losses. There are two pipe-away model variants:

Model 4130H offers weight-loaded pressure relief.

Model 4130HP, spring-loaded pressure relief.

## APPLICATION

By controlling tank venting, Type 4130 pressure relief valves not only minimize emissions to the environment but also the loss of product to evaporation. Their 'air-cushion' seating design keeps the valve sealed tightly until the pressure inside the tank approaches the valve setting.

They offer the option of a non-frosting and icing-resistant coating on the pallet perimeter, stem, guide posts and seats which, along with the flexible PTFE seat insert, provides additional protection against pallets freezing closed.

## TESTING

Each valve is tested for proper setting, for a leakage rate of less than 0.5 scfh (0.015 Nm<sup>3</sup>/hr) of air at 90% of the set point and for leak tightness at 75% of set point as required in API standard 2000.

## SPECIFICATIONS

### Available materials

- Aluminum with aluminum or stainless steel trim
- Carbon steel with stainless steel trim
- Stainless steel with stainless steel trim
- Special materials on application

### Sizes, inches (DN)

- 2" (50)
- 3" (80)
- 4" (100)
- 6" (150)
- 8" (200)
- 10" (250)
- 12" (300)

### Flanged connections –standard flange drilling

#### Aluminum body

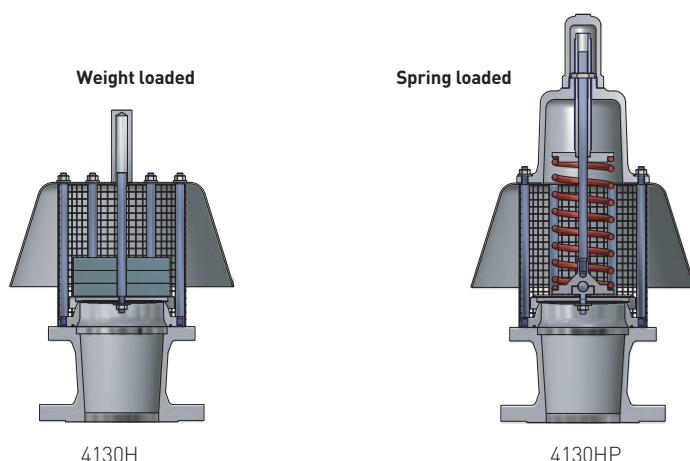
Drilled to ANSI Class 150 dimensions (flat face)  
Drilled to DIN 2633 (PN 16) dimensions (flat face)

#### CS and SS body

Drilled to ANSI Class 150 dimensions  
(raised or flat face)  
Drilled to Imperial DIN 2633 (PN 16) dimensions  
(raised or flat face)

### Options

- PTFE coated trim to minimize ice build-up
- Stainless steel weights
- Steam jackets
- Proximity sensors to monitor valve opening and closing

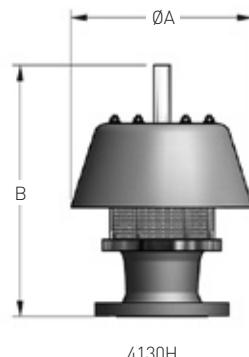


# ANDERSON GREENWOOD TYPE 4130 ATMOSPHERIC PRESSURE RELIEF VALVES

## DIMENSIONS (mm)

### 4130H

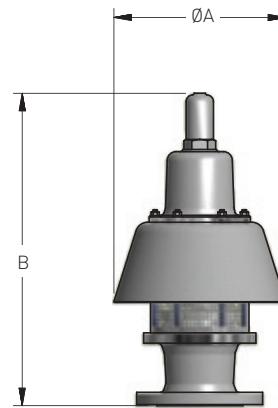
Size		<b>ØA</b>	<b>B</b>
Inches	DN		
2	50	199	306
3	80	260	372
4	100	314	436
6	150	454	573
8	200	604	727
10	250	749	842
12	300	894	955



4130H

### 4130HP

Size		<b>ØA</b>	<b>B</b>
Inches	DN		
2	50	199	427
3	80	260	493
4	100	314	571
6	150	454	800
8	200	604	1032
10	250	749	1252
12	300	894	1456



4130HP

# ANDERSON GREENWOOD TYPE 4130 ATMOSPHERIC PRESSURE RELIEF VALVES

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## SIZING

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### API 2000 - valve sizing (air)

Once the required air venting rates have been determined using data from the following pages or supplied by the customer, a calculation should be conducted to determine the required valve discharge area using the formula below. Once this area has been determined, select the first standard valve flow area above this.

#### Metric units:

$$A = \frac{RFo}{12515 \times (P_{1o} + At) \times K_{do} \times Fo} \sqrt{\frac{K}{M \times T \times Z(K-1)} \left[ \left( \frac{P_2 + At}{P_{1o} + At} \right)^{\frac{2}{K}} - \left( \frac{P_2 + At}{P_{1o} + At} \right)^{\frac{K+1}{K}} \right]}$$

#### Where:

VR	= Air venting requirements	Nm <sup>3</sup> /h Air
A	= Required flow area of valve	cm <sup>2</sup>
Kd	= Coefficient of discharge (see page 7)	
P <sub>1</sub>	= Inlet flowing pressure (Set + over pressure - inlet pressure loss)*	Barg
P <sub>2</sub>	= Outlet pressure (Back pressure)	Barg
K	= Ratio of specific heats	Air = 1.4
T	= Temperature at valve inlet	273 deg K
M	= Molecular weight	Air = 28.97
Z	= Compressibility factor	Air = 1.0
At	= Atmospheric pressure	1.013 bar
F	= Over pressure factor (Use 1 for Type 4130 valves)	

\* The inlet pressure loss is due to factors such as difficult inlet piping, flame arresters, etc. and must be less than overpressure.

# ANDERSON GREENWOOD TYPE 4130 ATMOSPHERIC PRESSURE RELIEF VALVES

## SIZING

TABLE OF FLOW COEFFICIENTS (Kd) - MODEL 4130H

Size Inches	DN	Flow area (cm <sup>2</sup> )	API connection Pressure	Conical reducer Pressure
2	50	21.239	0.901	1.000
3	80	46.568	0.901	1.000
4	100	83.322	0.901	1.000
6	150	186.264	0.901	1.000
8	200	326.851	0.858	1.000
10	250	510.702	0.746	1.000
12	300	730.747	0.755	0.962

MINIMUM SET PRESSURES – WEIGHT LOADED

Size Inches	DN	Aluminum			Stainless steel			NOTE
		V mbarg	L mbarg	H mbarg	V mbarg	L mbarg	H mbarg	
2	50	1.04	2.42	4.87	2.38	5.91	9.70	
3	80	0.84	1.74	4.36	1.84	3.98	8.46	
4	100	0.90	1.64	4.48	1.93	3.63	8.90	
6	150	0.96	1.60	6.33	1.92	3.90	13.37	
8	200	1.10	1.30	13.00	2.50	3.80	20.00	
10	250	1.10	1.20	14.00	2.50	3.50	22.00	
12	300	1.10	1.20	14.00	2.50	3.20	24.00	

MINIMUM SET PRESSURES – SPRING LOADED

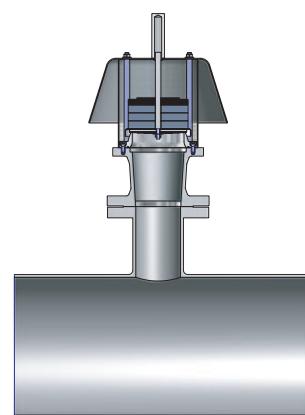
Size Inches	DN	Aluminum				Stainless steel				NOTE
		V mbarg	L mbarg	H mbarg	Spring mbarg	V mbarg	L mbarg	H mbarg	Spring mbarg	
2	50	1.04	2.42	4.87	N/A	2.38	5.91	9.70	70	
3	80	0.84	1.74	4.36	N/A	1.84	3.98	8.46	70	
4	100	0.90	1.64	4.48	N/A	1.93	3.63	8.90	70	
6	150	0.96	1.60	6.33	N/A	1.92	3.90	13.37	70	
8	200	1.10	1.30	13.00	N/A	2.50	3.80	20.00	70	
10	250	1.10	1.20	14.00	N/A	2.50	3.50	22.00	70	
12	300	1.10	1.20	14.00	N/A	2.50	3.20	24.00	70	

# ANDERSON GREENWOOD TYPE 4130 ATMOSPHERIC PRESSURE RELIEF VALVES

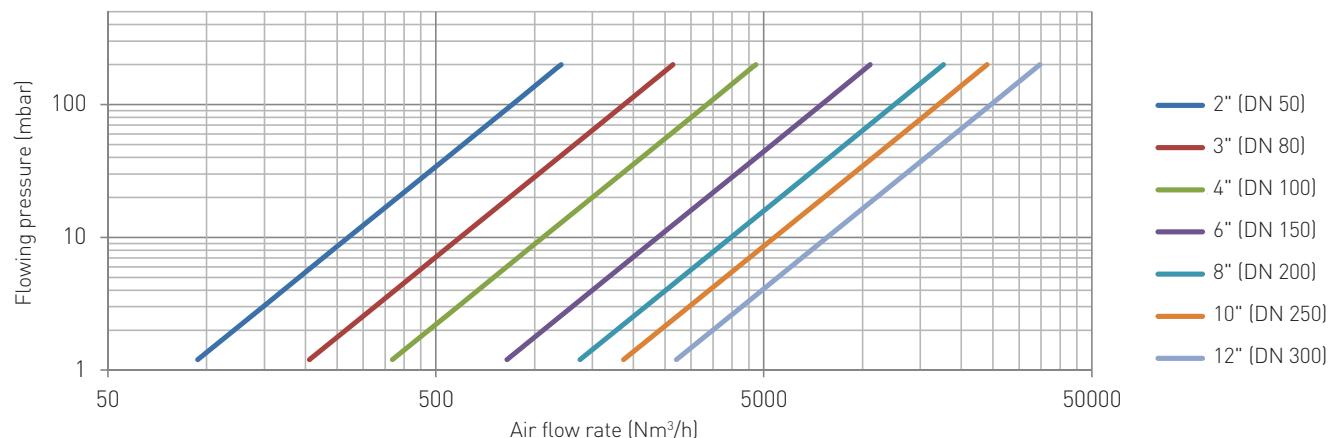
## FLOW CAPACITIES

### API 2000 connection

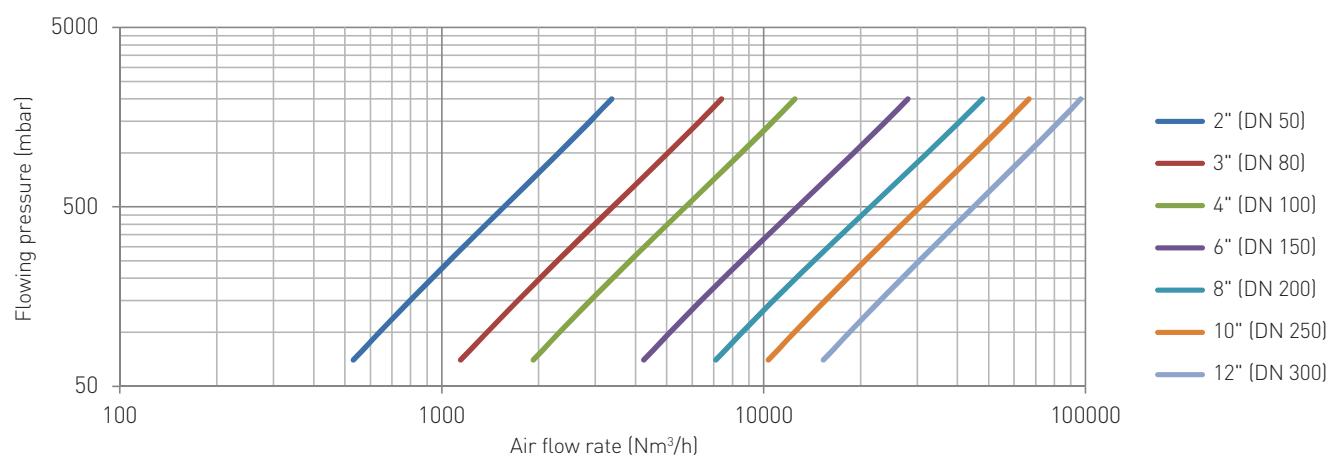
API connection testing requires a square-edge flange connection for capacity publishing. This setup mimics a typical tank connection with its inherent pressure drop/capacity.



4130H  
(ISO/API connection)



4130HP  
(ISO/API connection)



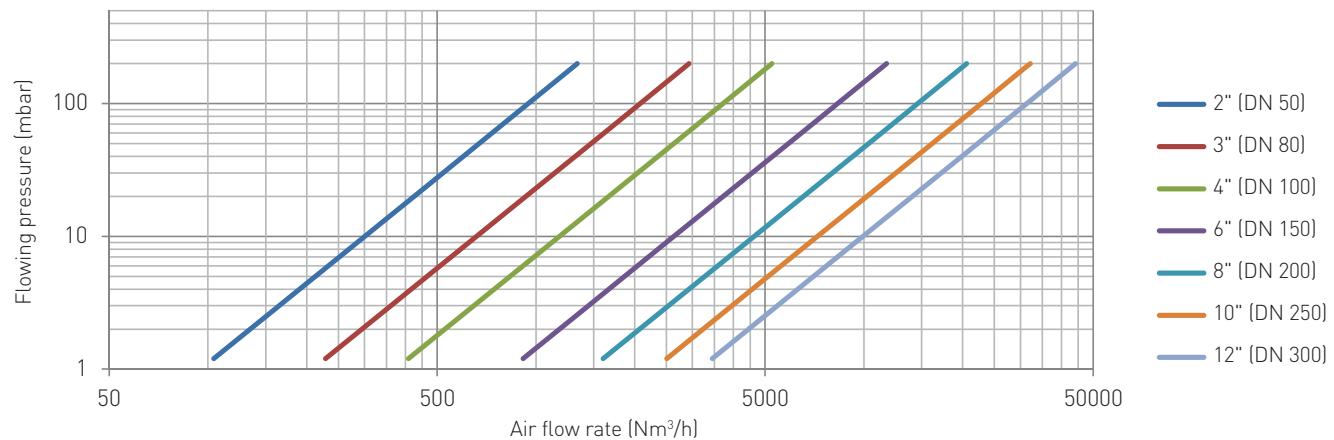
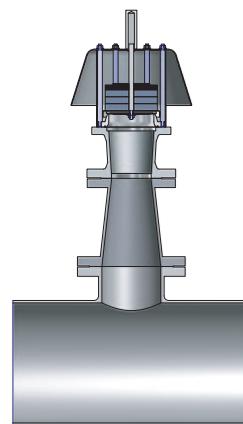
# ANDERSON GREENWOOD TYPE 4130 ATMOSPHERIC PRESSURE RELIEF VALVES

## FLOW CAPACITIES

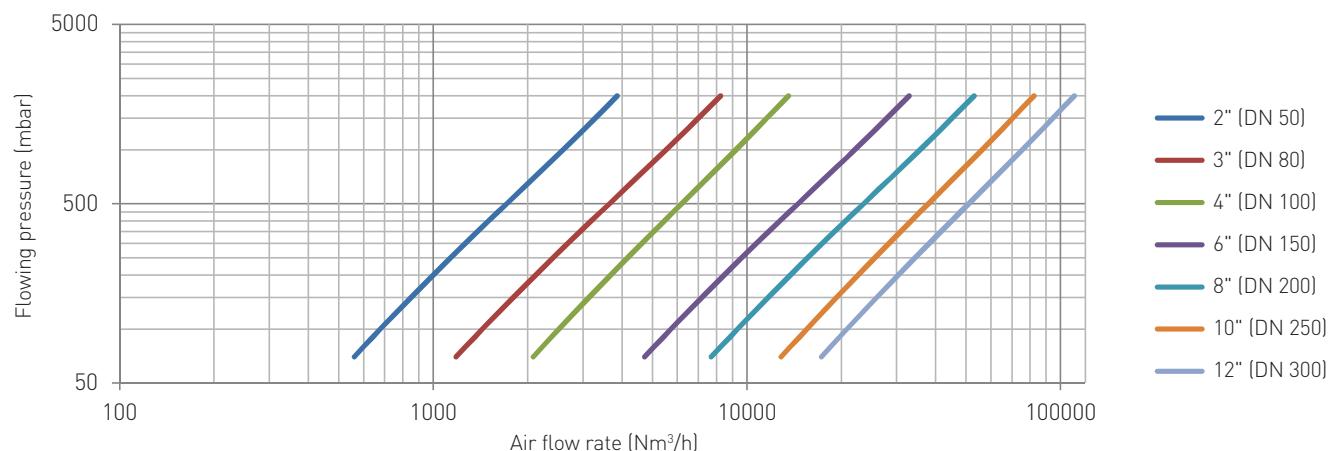
### Conical reducer

A conical reducer reduces the flow losses associated with the tank connection, providing the more accurate representation of pure valve performance. With this capacity, users can calculate their own tank connection losses and apply it to the valve flow.

4130H  
(Conical reducer)



4130HP  
(Conical reducer)



# ANDERSON GREENWOOD TYPE 4130 ATMOSPHERIC PRESSURE RELIEF VALVES

## SELECTION GUIDE

Example:	4130H	04	H	1	1	S	T	F	F	B	N
<b>Model</b>											
4130H											
4130HP											
<b>Tank connection</b>											
02 2"	04	4"	08	8"	12	12"					
03 3"	06	6"	10	10"							
<b>Pressure load</b>											
V	Weight loaded – very low pressure pallet										
L	Weight loaded – low pressure pallet										
H	Weight loaded – high pressure pallet										
O	Not applicable										
<b>Body material</b>											
1	Aluminum										
3	Carbon steel										
5	316 Stainless steel (CF8M)										
7	316L Stainless steel (CF3M)										
<b>Trim (pallet/seat)</b>											
1	AL pallets/AL seat										
2	316SS pallets/316SS seat										
3	316LSS pallets/316LSS seat										
<b>All-weather code</b>											
S	Standard, no coating										
W	PTFE coated winterization										
<b>Insert</b>											
T	Carbon impregnated PTFE (standard for HP pallet)										
B	PFA (standard for VLP and LP pallet)										
V	FKM										
<b>Flange drilling</b>											
F	ANSI 150 for imperial studs										
0	DIN PN10 for metric studs										
6	DIN PN16 for metric studs										
<b>Flange face</b>											
F	Flat face										
R	Raised face (not available for aluminum bodies)										
<b>Soft Goods</b>											
B	Nitrile/NBR (standard)										
T	PTFE										
V	FKM										
<b>Options</b>											
N	None (standard)	S	Stainless steel weights	J	Steam jackets						
B	Proximity switch	H	Purge holes								