

September 2025

Anderson Greenwood™ Type 4142 Piped Away Pressure Relief Valves

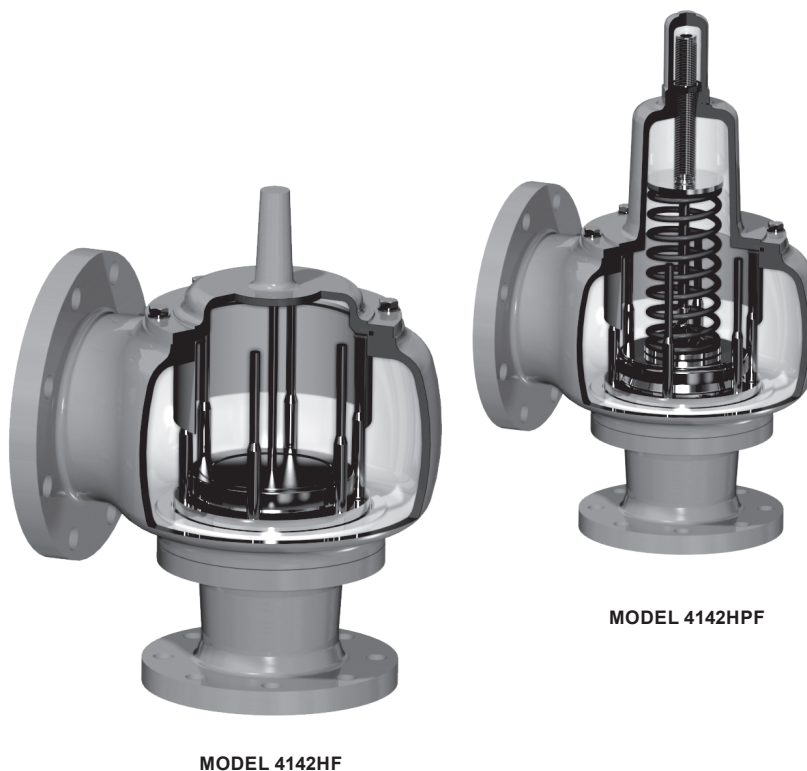


Figure 1. Type 4142 Pressure Relief Valves

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 maximum allowable working pressure (MAWP) and minimizing tank emissions.
- Large body for increased capacity providing high flow performance for full conformance to API2000/ISO28300.
- Leakage rate of 0.015 Nm³/hr / 0.5 SCFH 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.

Type 4142

Specifications

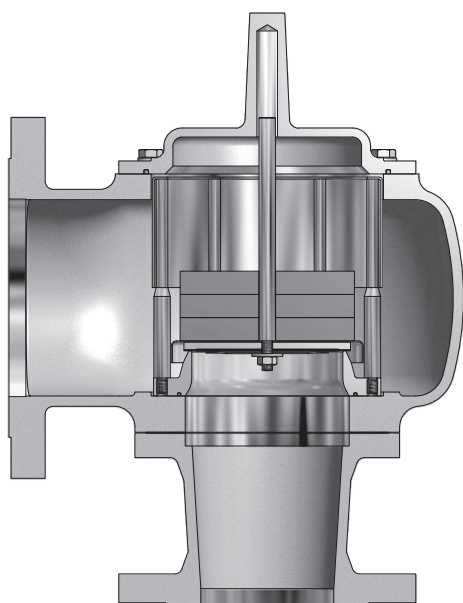
The Specifications section lists the specifications for the Type 4142 Pressure Relief Valve. Factory specification is stamped on the nameplate fastened on the relief valves at the factory.

Sizes DN 50 x 80 to 300 x 350 / 2 x 3 to 12 x 14 in.	Materials Aluminum, Carbon steel, Stainless steel
End Connection Style Aluminum Body: Drilled to ANSI CL150 FF dimensions Drilled to DIN 2633 (PN 16) dimensions (Flat Face) Carbon steel and Stainless steel Body: Drilled to ANSI CL150 RF/FF dimensions Drilled to imperial DIN 2633 (PN 16) dimensions (Raised or Flat Face)	Options • Polytetrafluoroethylene (PTFE) coated trim to minimize ice build-up • Stainless steel weights • Steam jackets • Proximity sensors to monitor valve opening and closing
Pressure Settings⁽¹⁾ Weight Loaded: up to 0.1 barg / 1.5 psig Spring Loaded: up to 1.0 barg / 15 psig	Certificates ATEX Directive 2014/34/EU
Testing Each valve is tested for proper setting, for a leakage rate of less than 0.015 Nm ³ /hr / 0.5 SCFH of air at 90% of the set point and for leak tightness at 75% of set point as required in API standard 2000.	

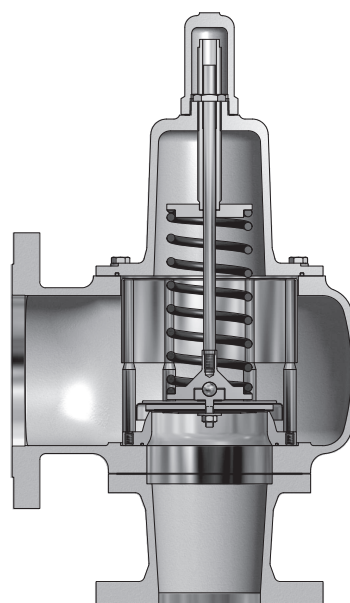
1. The pressure/temperature limits in this Bulletin or any applicable standard limitation should not be exceeded.

4142HF	04	H	1	1	S
Model	Tank Connection	Pressure Load	Body Material	Trim (pallet/seat)	All-weather code
4142HF	02 = 2 in. (2 x 3 in.)	V = Weight Loaded - very low pressure pallet	1 = Aluminum	1 = AL pallet/AL seat	S = Standard, no coating
4142HPF	03 = 3 in. (3 x 4 in.)	L = Weight Loaded - low pressure pallet	3 = Carbon Steel	2 = 316 SS pallets/316 SS seat	W = PTFE coated winterization
	04 = 4 in. (4 x 6 in.)	H = Weight Loaded - high pressure pallet	5 = 316 Stainless steel (CF8M)	3 = 316L SS pallets/316L SS seat	
	06 = 6 in. (6 x 8 in.)	X = Spring Loaded	7 = 316L Stainless steel (CF3M)		
	08 = 8 in. (8 x 10 in.)	O = Not Applicable			
	10 = 10 in. (10 x 12 in.)				
	12 = 12 in. (12 x 14 in.)				
T	F	F	B	N	
Insert	Flange drilling	Flange Face	Soft Goods	Options	
T = Carbon impregnated PTFE (standard for HP pallet)	F = ANSI 150 for imperial studs	F = Flat face	B = Nitrile (NBR) (standard)	N = None (standard)	
B = PFA (standard for VLP and LP pallet)	0 = DIN PN10 for metric studs	R = Raised face (not available for aluminum bodies)	T = PTFE	H = Purge holes	
V = FKM	6 = DIN PN16 for metric studs		V = FKM	S = Stainless steel weights	
				J = Steam jackets	
				B = Proximity switch	

Figure 2. Type 4142 Selection Guide



MODEL 4142HF - WEIGHT LOADED



MODEL 4142HPF - SPRING LOADED

Figure 2. Type 4142 Variants

Introduction

The Anderson Greenwood™ Type 4142 Pressure Relief Valves (PRV) 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 (see Figure 3):

Model 4142HF offers weight-loaded pressure relief.
Model 4142HPF offers spring-loaded pressure relief.

The Type 4142 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.

By controlling tank venting, Type 4142 PRV not only minimize emissions to the environment but also the loss of product to evaporation. When combined with

a well-designed vapor recovery system, the loss can be cut to essentially zero. 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 seats which, along with the flexible PTFE seat insert, provides additional protection against pallets freezing closed.

Principle of Operation

The Anderson Greenwood Type 4142 PRV is a direct acting vent valve based on the weight or spring of the pallet to keep the valve closed. When tank pressure acting on the seat sealing area equals the opposing force acting on the pallet, the valve is on the threshold of opening. Any further increase in pressure will cause the pressure pallet to lift allowing the contents of the tank to vent through the valve (out-breathing).

In order for the valve to open and achieve its design lift, an overpressure will be required. The Type 4142 PRV has been designed to achieve this design lift and rated capacity within 10% overpressure. Since the weight on the pallet or compression of spring determines the set pressure of the valve, the settings are changed by varying the weight on the pallet or by altering the compression on the pressure setting spring.

Type 4142

Table 1. Minimum Set Pressures - Weight Loaded

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

Note:
V = very low pressure pallet
L = low pressure pallet
H = high pressure pallet

Table 2. Minimum Set Pressures - Spring Loaded

SIZE		ALUMINUM				STAINLESS STEEL			
DN	In.	V, mbarg	L, mbarg	H, mbarg	Spring, mbarg	V, mbarg	L, mbarg	H, mbarg	Spring, mbarg
50	2	1.04	2.42	4.87	----	2.38	5.91	9.70	70
80	3	0.84	1.74	4.36	----	1.84	3.98	8.46	70
100	4	0.90	1.64	4.48	----	1.93	3.63	8.90	70
150	6	0.96	1.60	6.33	----	1.92	3.90	13.37	70
200	8	1.10	1.30	13.00	----	2.50	3.80	20.00	70
250	10	1.10	1.20	14.00	----	2.50	3.50	22.00	70
300	12	1.10	1.20	14.00	----	2.50	3.20	24.00	70

Note:
V = very low pressure pallet
L = low pressure pallet
H = high pressure pallet

Table 3. Flow Coefficients (K_d) - Model 4142HF

SIZE		FLOW AREA, cm ²	API CONNECTION PRESSURE	CONICAL REDUCER PRESSURE
DN	In.			
50	2	21.239	0.729	0.864
80	3	46.568	0.729	0.814
100	4	83.322	0.729	0.831
150	6	186.264	0.729	0.768
200	8	326.851	0.629	0.708
250	10	510.702	0.574	0.644
300	12	730.747	0.537	0.617

Sizing

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.

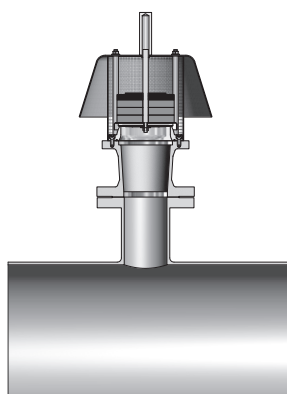
Metric units:

$$A = \frac{R F o}{12515 \times (P_{10} + A t) \times K_d \times F o} \sqrt{\frac{K}{M x T x Z (K-1)} \left[\left(\frac{P_2 + A t}{P_{10} + A t} \right)^{\frac{2}{K}} - \left(\frac{P_2 + A t}{P_{10} + A t} \right)^{\frac{K+1}{K}} \right]}$$

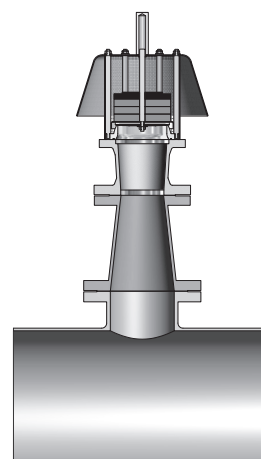
Where:

- VR = air venting requirements (Nm³/h Air)
- A = required flow area of valve (cm²)
- K_d = coefficient of discharge (see Table 3)
- P_1 = inlet flowing pressure, barg (Set + over pressure – inlet pressure loss)⁽¹⁾
- P_2 = outlet pressure, barg (Back pressure)
- K = ratio of specific heats (Air = 1.4)
- T = temperature at valve inlet (273 K)
- M = molecular weight (Air = 28.97)
- Z = compressibility factor (Air = 1.0)
- A t = atmospheric pressure (1.013 bar)
- F = over pressure factor
(Use 1 for Type 4142 valves)

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



API 2000 CONNECTION



CONICAL REDUCER

Figure 3. Type 4142 Connections

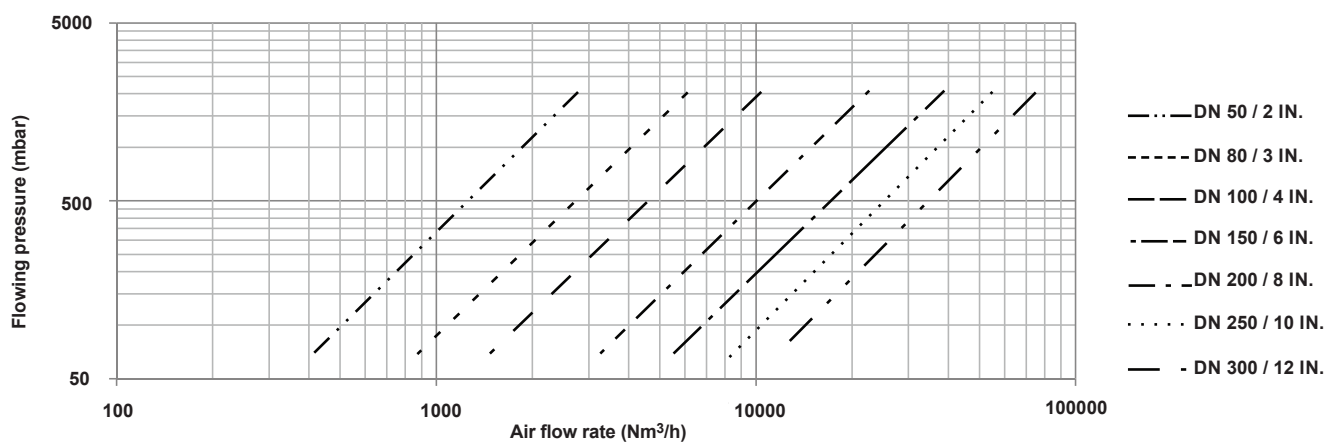
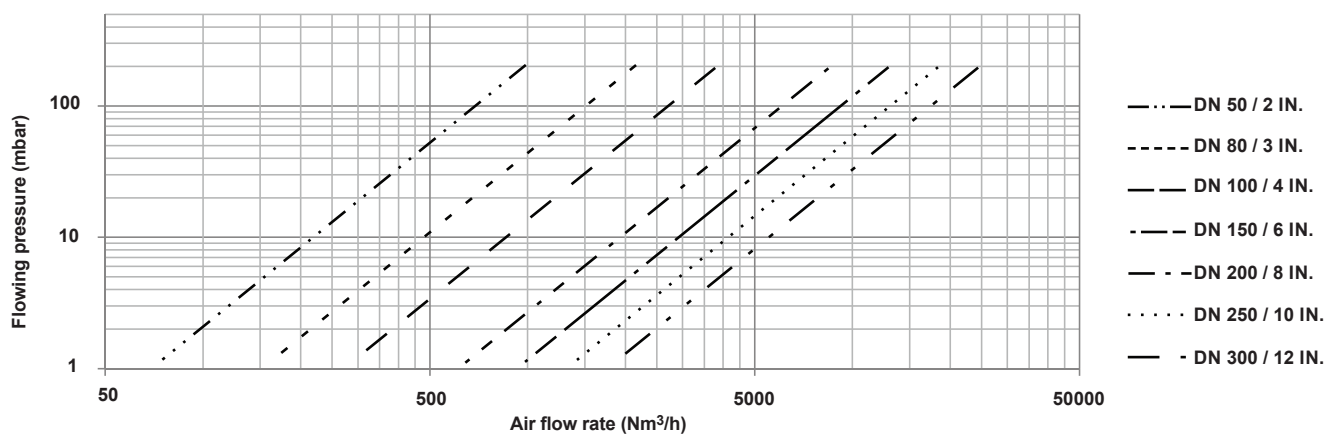


Figure 4. Type 4142 API Connection Flow Capacity

Type 4142

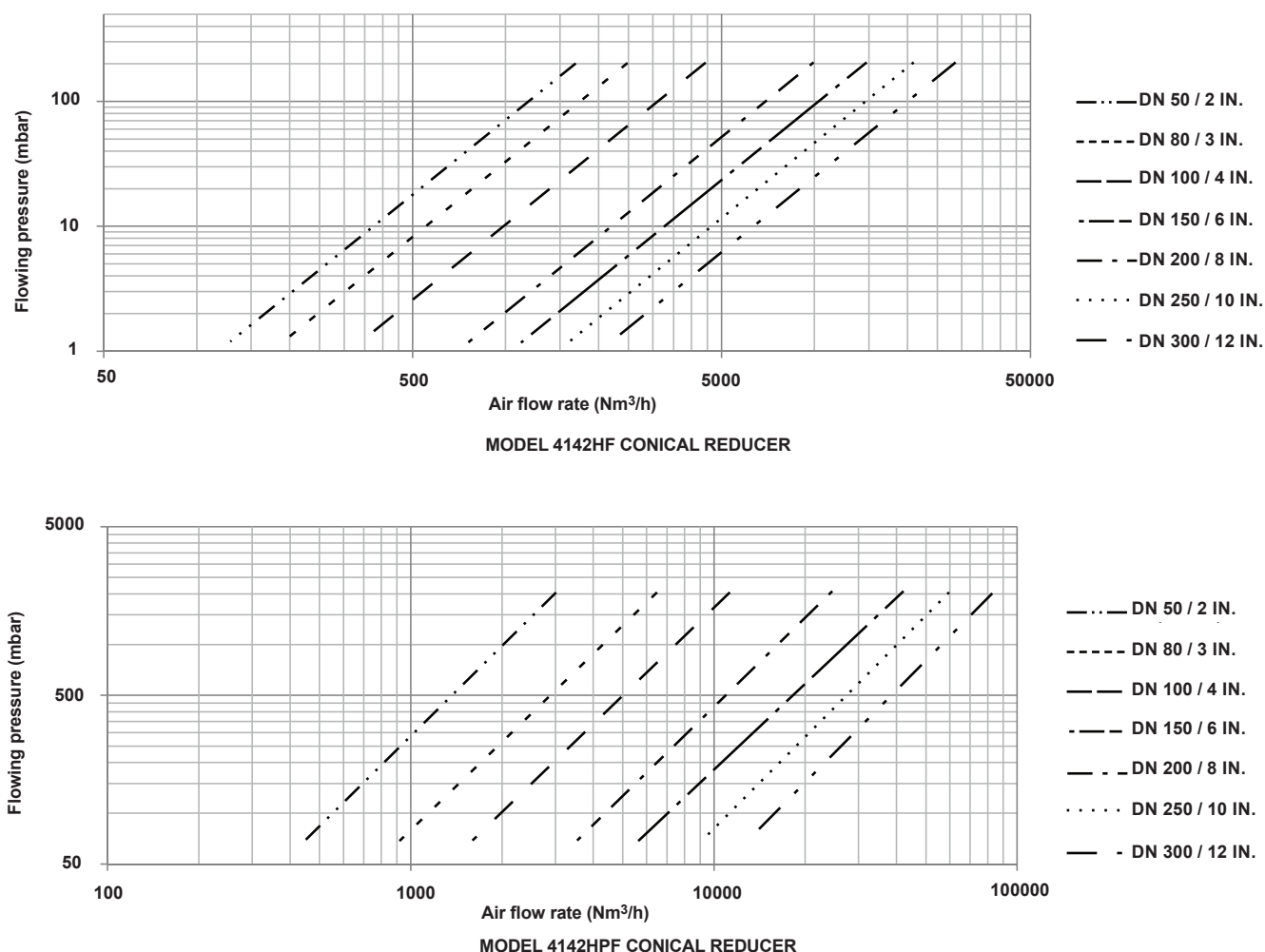


Figure 5. Type 4142 Conical Reducer Flow Capacity

Flow Capacities

API 2000 Connection (see Figure 4)

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.

Conical Reducer (see Figure 5)

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.

Ordering Information

Use the Specifications section on page 2 and carefully review the description to the right of each specification. Use this information to complete the Ordering Guide on pages 7 and 8. Specify the desired selection wherever there is a choice to be made. Then send the Ordering Guide to your local Sales Office.

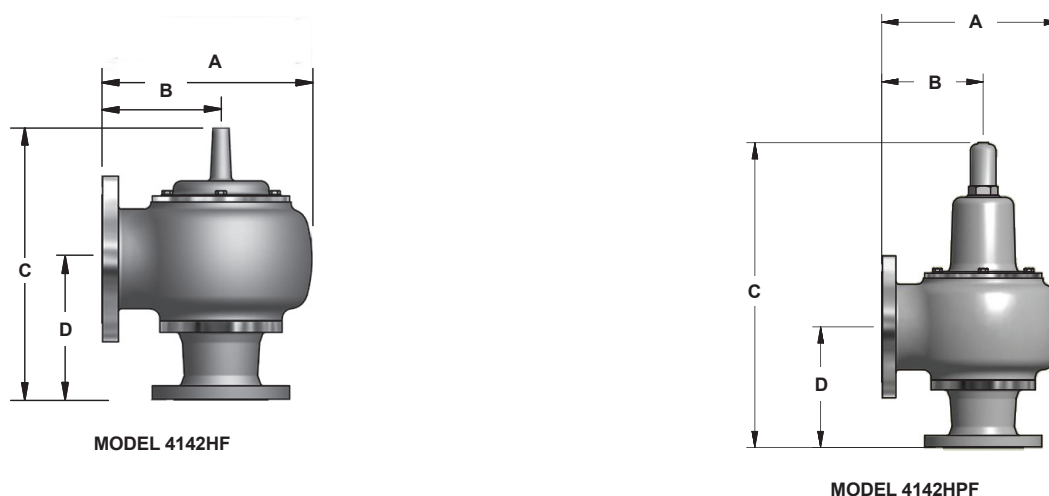


Figure 6. Type 4142 Dimensions

Table 4. 4142HF Series Dimensions

SIZE		A		B		C		D	
DN	In.	mm	In.	mm	In.	mm	In.	mm	In.
50	2	253	9.96	153	5.98	329	13.0	156	6.14
80	3	323	12.7	193	7.60	392	15.4	190	7.48
100	4	352	13.9	200	7.87	458	18.0	238	9.37
150	6	435	17.1	245	9.65	592	23.3	298	11.7
200	8	592	23.3	330	13.0	742	29.2	371	14.6
250	10	730	28.7	410	16.1	854	33.6	422	16.6
300	12	854	33.6	480	18.9	961	37.8	465	18.3

Table 5. 4142HPF Series Dimensions

SIZE		A		B		C		D	
DN	In.	mm	In.	mm	In.	mm	In.	mm	In.
50	2	253	9.96	153	5.98	452	17.8	156	6.14
80	3	323	12.7	193	7.60	518	20.4	190	7.48
100	4	352	13.9	200	7.87	601	23.7	238	9.37
150	6	435	17.1	245	9.65	832	32.8	298	11.7
200	8	592	23.3	330	13.0	1073	42.2	371	14.6
250	10	730	28.7	410	16.1	1298	51.1	422	16.6
300	12	854	33.6	480	18.9	1501	59.1	465	18.3

Ordering Guide

Model (Select One)

- ☐ 4142HF
- ☐ 4142HPF

Size (Select One)

- ☐ DN 50 x 80 / 2 x 3 in
- ☐ DN 80 x 100 / 3 x 4 in
- ☐ DN 100 x 150 / 4 x 6 in
- ☐ DN 150 x 200 / 6 x 8 in
- ☐ DN 200 x 250 / 8 x 10 in
- ☐ DN 250 x 300 / 10 x 12 in
- ☐ DN 300 x 350 / 12 x 14 in

Pressure Load (Select One)

- ☐ Weight loaded – very low pressure pallet
- ☐ Weight loaded – low pressure pallet
- ☐ Weight loaded – high pressure pallet
- ☐ Spring Loaded

Body Material (Select One)

- ☐ Aluminum
- ☐ Carbon steel
- ☐ 316 Stainless steel (CF8M)
- ☐ 316L Stainless steel (CF3M)

Trim (Pallet/Seat) (Select One)

- ☐ AL pallets/AL seat
- ☐ 316SS pallets/316SS seat
- ☐ 316LSS pallets/316LSS seat

All-weather Coating (Select One)

- ☐ Standard, no coating
- ☐ PTFE coated winterization

Type 4142

Ordering Guide (continued)

Insert (Select One)

- ☐ Carbon impregnated PTFE (standard for HP pallet)
- ☐ PFA (standard for VLP and LP pallet)
- ☐ FKM

Flange drilling (Select One)

- ☐ ANSI 150 for imperial studs
- ☐ DIN PN10 for metric studs
- ☐ DIN PN16 for metric studs

Flange face (Select One)

- ☐ Flat face
- ☐ Raised face (not available for aluminum bodies)

Soft Goods (Select One)

- ☐ Nitrile (NBR) (standard)
- ☐ PTFE
- ☐ FKM

Options (Select One)

- ☐ Purge holes
- ☐ Stainless steel weights
- ☐ Steam jackets
- ☐ Proximity switch

Regulators Quick Order Guide	
***	Readily Available for Shipment
**	Allow Additional Time for Shipment
*	Special Order, Constructed from Non-Stocked Parts. Consult your local Sales Office for Availability.
Availability of the product being ordered is determined by the component with the longest shipping time for the requested construction.	

Specification Worksheet

Application:

Specific Use _____

Line Size _____

Fluid Type _____

Specific Gravity _____

Temperature _____

Does the Application Require Overpressure Protection?

☐ Yes ☐ No

Pressure:

Maximum Inlet Pressure (P_{1max}) _____

Minimum Inlet Pressure (P_{1min}) _____

Downstream Pressure Setting(s) (P₂) _____

Set Pressure _____

Maximum Flow (Q_{max}) _____

Accuracy Requirements:

Less Than or Equal To:

☐ 5% ☐ 10% ☐ 20% ☐ 40%

Construction Material Requirements (if known):

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