

PRESSURE RELIEF VALVES

The main function of a Pressure Relief Valve is to protect against accidental over-pressure of a pressure vessel due to system malfunction or fire.

Applications

Henry Technologies' Relief Valves are designed to be used in refrigeration systems to prevent over-pressure due to system malfunction or excessive external heat. They are to be used only with refrigerant vapor or gas, where they are typically installed on the top section of a pressure vessel, i.e. liquid receiver or suction accumulator.

Most states and municipalities which have refrigeration safety codes conform to the "American Standard Safety Code for Mechanical Refrigeration (ANSI/ASHRAE 15)". This code and ASME states that the Relief Valve setting is not to exceed the design working pressure of the vessel on which the Relief Valve is installed. The discharge capacity of relief valves varies with pressure setting. The discharge capacity required is based on the size of the vessel and the refrigerant used. See "Determining Minimum Required Discharge Capacity" section for more information, or contact Technical Support at 1-800-627-5148.

Whenever conditions permit, it is highly advisable to have the Relief Valve pressure setting (which must not exceed the design working pressure of the vessel) at least 25% higher than the normal operating pressure for the refrigerant used.

52 series Pressure Relief Valves are suitable for use with HCFC and HFC refrigerants and their associated oils, as well as other industrial fluids non-corrosive to brass, steel and Teflon.

53 and 56 series Pressure Relief Valves are suitable for use with ammonia, HCFC and HFC refrigerants and their associated oils, as well as other industrial fluids non-corrosive to steel, iron and Teflon.

How it works

All Henry Technology Relief Valves are 100% tested and manufactured to guidelines as indicated in ASME Section VIII Division I. Every Relief Valve is calibrated to indicate a pre-determined set pressure, where the valve begins to allow gas or vapor to pass through. The valve will open to a full discharge within 10% over set pressure. After discharge Pressure Relief Valves will blow down and reset once the pressure falls below the valves set pressure.

Main Features

- NPT and SAE flare connections
- High pressure line available (500 – 675 PSI) suitable for R410a & CO2. See model numbers 5233A, 5234A & 5235A
- Valves fully open before 10% overpressure when taken from the average set pressure
- Reset pressure ranges typically 10-40% (blowdown) from pop pressure
- Valves bear individual serial numbers
- UV-1 pressure test reports available upon request

Technical Specifications

All Henry Technologies PRV's have a set pressure range +/- 3% of the stamped pressure.

Set pressure range = see tables

Allowable operating temperature = -20°F to +225°F (-29°C to +107°C)

Henry Technologies' Relief Valves are stamped with the ASME UV symbol and NB to indicate National Board certification as to capacities. Additionally, Pressure Relief Valves are designed and registered for use in Canada. Please contact Technical Support at 1-800-627-5148 for CRN details and list of approved provinces and territories.

Materials of Construction

The 52 series Relief Valves have brass valve bodies. The internal parts are made of brass and carbon steel. The 53 series valves have stainless steel valve bodies. Internal parts are made from stainless steel and carbon steel. The 56 series valves have cast or ductile iron valve bodies. The internal parts are made from stainless steel and carbon steel. All valves have Teflon valve seats.



CRN

Relief Valve Capacity Ratings

Henry Technology Relief Valves are marked with a discharge capacity in unit lbs-air/min, and marked in accordance with the requirements of the ASME (Boiler and Pressure Vessel Code Section VIII, Division 1). These valves are also approved by many local refrigeration and air conditioning codes in the USA and Canada for relief of excess pressure.

Angle Relief Valve - Brass

Part No	Fig No	Conn Size (inch)		Dimensions (inch)		Orifice Diameter (inch)	Weight (lbs)
		Inlet	Outlet	A	B		
526E-XXX	1	3/8 MPT	3/8 SAE Flare	2.99	1.41	0.250	0.40

Angle Relief Valve - Steel

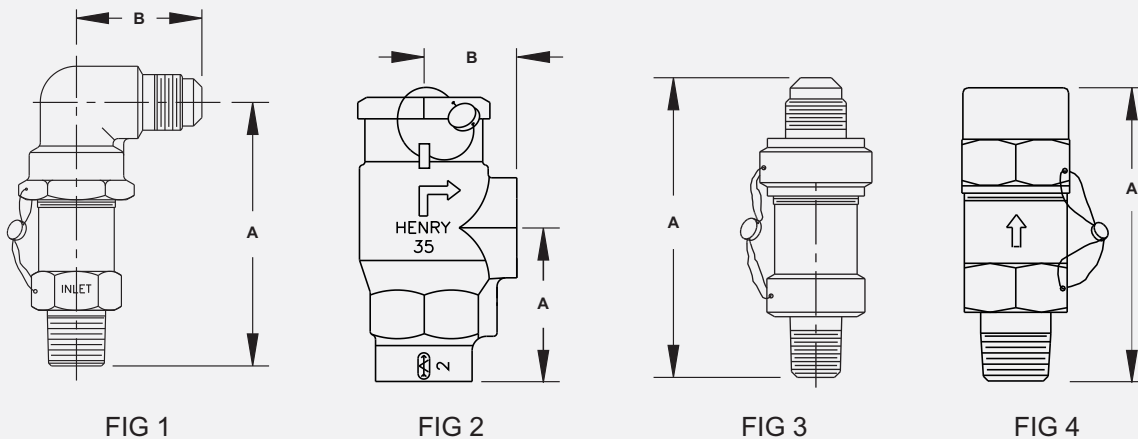
Part No	Fig No	Conn Size (inch)		Dimensions (inch)		Orifice Diameter (inch)	Weight (lbs)
		Inlet	Outlet	A	B		
5600-XXX	2	1/2 FPT	3/4 FPT	2.69	1.63	0.703	3.60
5601-XXX	2	1/2 FPT	1 FPT	2.69	1.63	0.703	3.44
5602-XXX	2	3/4 FPT	1 FPT	2.69	1.63	0.921	3.40
5603-XXX	2	1 FPT	1 1/4 FPT	2.88	2.00	1.000	4.75
5604-XXX	2	1 1/4 FPT	1 1/2 FPT	4.13	2.31	1.125	6.50

Straight-through Relief Valves - Brass

Part No	Fig No	Conn Size (inch)		Dimensions (inch)	Orifice Diameter (inch)	Weight (lbs)
		Inlet	Outlet	A		
5230-XXX	3	1/4 MPT	3/8 SAE Flare	3.16	0.250	0.38
5231-XXX	3	3/8 MPT	3/8 SAE Flare	3.16	0.250	0.39
5250A-1/2-XXX	4	1/2 MPT	1/2 FPT	4.26	0.375	0.85
5250-1/2-XXX	4	1/2 MPT	3/4 FPT	4.04	0.375	0.97
5252-3/4-XXX	4	3/4 MPT	3/4 FPT	4.05	0.375	0.95
5244-3/4-XXX	4	3/4 MPT	1 FPT	4.16	0.500	1.46
5244-1-XXX	4	1 MPT	1 FPT	4.16	0.500	1.46
5246A-1-XXX	4	1 MPT	1 1/4 FPT	5.82	0.719	2.50
5246A-1-1/4-XXX	4	1 1/4 MPT	1 1/4 FPT	5.82	0.719	2.60
5233A-XXX	3	3/8 MPT	7/8 SAE Flare	4.58	0.250	1.05
5234A-XXX	4	3/8 MPT	3/4 FPT	4.21	0.250	1.05
5235A-XXX	4	1/2 MPT	3/4 FPT	4.41	0.250	1.12

Straight-through Relief Valves - Stainless Steel

Part No	Fig No	Conn Size (inch)		Dimensions (inch)	Orifice Diameter (inch)	Weight (lbs)
		Inlet	Outlet	A		
5350-1/2-XXX	4	1/2 MPT	3/4 FPT	4.00	0.375	0.95
5352-3/4-XXX	4	3/4 MPT	3/4 FPT	4.00	0.375	1.03
5344-3/4-XXX	4	3/4 MPT	1 FPT	4.18	0.500	1.46
5344-1-XXX	4	1 MPT	1 FPT	4.19	0.500	1.46
5345A-XXX	4	1 MPT	1 1/4 FPT	5.81	0.719	2.50
5346A-1-1/4-XXX	4	1 1/4 MPT	1 1/4 FPT	5.81	0.719	2.60



Order Information

- To order, add desired pressure setting to Pressure Relief Valve part number suffix (i.e. 5230-300)
- Pressure certificates (ASME UV-1) are available with each order for an extra charge. Specify a "-C" suffix on the part number.
- Pressure settings outside the range stated for each model are not available. Henry only supplies relief valves bearing the NV-NB stamps.

Part No	Certified Pressure Range (PSI)	Valve Capacity Ratings (lbs. Air/min) for Brass						
		Standard Pressure Setting (PSI)						
		150	235	300	350	400	450	500
5230	150-450	5.0	7.6	9.6	11.2	12.7	14.3	N/A
5231	150-450	5.0	7.6	9.6	11.2	12.7	14.3	N/A
526E	150-450	5.0	7.6	9.6	11.2	12.7	14.3	N/A
5250A-1/2	200-500	N/A	29.0	36.5	42.4	48.2	54.0	59.9
5250-1/2	200-500	N/A	29.0	36.5	42.4	48.2	54.0	59.9
5252-3/4	200-500	N/A	29.0	36.5	42.4	48.2	54.0	59.9
*5350-1/2	200-500	N/A	29.0	36.5	42.4	48.2	54.0	59.9
*5352-3/4	200-500	N/A	29.0	36.5	42.4	48.2	54.0	59.9
5244-3/4	150-450	33.2	50.5	63.8	73.9	84.1	94.3	N/A
5244-1	150-450	33.2	50.5	63.8	73.9	84.1	94.3	N/A
*5344-3/4	150-450	33.2	50.5	63.8	73.9	84.1	94.3	N/A
*5344-1	150-450	33.2	50.5	63.8	73.9	84.1	94.3	N/A
5246A-1	150-400	70.5	107.2	135.2	156.8	178.4	N/A	N/A
5246A-1-1/4	150-400	70.5	107.2	135.2	156.8	178.4	N/A	N/A
*5345A	150-400	70.5	107.2	135.2	156.8	178.4	N/A	N/A
*5346A-1-1/4	150-400	70.5	107.2	135.2	156.8	178.4	N/A	N/A

Part No	Certified Pressure Range (PSI)	Valve Capacity Ratings (lbs. Air/min) for High Pressure Brass				
		Standard Pressure Setting (PSI)				
		500	550	600	650	675
5233A	500-675	31.2	34.2	37.2	40.3	41.8
5234A	500-675	31.2	34.2	37.2	40.3	41.8
5235A	500-675	31.2	34.2	37.2	40.3	41.8

Part No	Certified Pressure Range (PSI)	Valve Capacity Ratings (lbs. Air/min) for Steel (Stainless and Cast)		
		Standard Pressure Setting (PSI)		
		150	250	300
5600	150-450	30.9	49.9	59.4
5601	150-450	35.8	57.7	68.7
5602	150-450	35.8	57.7	68.7
5603	150-450	37.5	60.4	71.9
5604	150-450	72.0	116.1	138.1

Determining Minimum Required Discharge Capacity

ASHRAE has a guideline to determine the minimum required discharge capacity for refrigeration relief valves. Reference ASHRAE 15-2001 Section 9.7.5. Use the following equation and refrigerant factors given to determine the minimum required capacity.

C = Min. Required Capacity (lbs-air/min)

D = Outside Diameter of Vessel, ft

L = Length of Vessel, ft

f = refrigerant factor, see chart.

$$C = f * D * L$$

Refrigerant	f	Refrigerant	f
R-11	1.00	R-401A (MP-39)	1.60
R-12	1.60	R-402A (HP-80)	2.50
R-13, R-13B1	2.00	R-404A (HP-62)	2.50
R-14	2.50	R-406A	1.60
R-22	1.60	R-407C	1.60
R-113	1.00	R-408A	2.00
R-114	1.60	R-409A (FX-56)	1.60
R-115	2.50	R-410A (AZ-20)	2.50
R-123	1.00	R-500	1.60
R-134a	1.60	R-502	2.50
R-142b	1.00	R-600 (n-Butane)	1.00
R-152a	1.00	R-600a (Isobutane)	1.00
R-170 (Ethane)	1.00	R-717 (Ammonia)	0.50
R-290 (Propane)	1.00	R-744 (CO2)	1.00
R-1150 (Ethylene)	1.00	R764	1.00

Installation Notes

- The installation location of the Pressure Relief Valve shall be above the liquid line, where the inlet to the relief valve should only be exposed to vapor or gas.
- The Pressure Relief Valve should not be discharged prior to installation or when pressure testing the system.
- Pressure Relief Valves should be mounted vertically.
- Henry Technologies' Pressure Relief Valves are designed to be replaced after opening to full discharge. The set pressure after a discharge will most often be 5-15% lower than the original setting. This can be due to debris exiting the system through the valve which had deposited upon the seat disc, and altering the alignment of the internal parts.
- Additional installation notes are shown on the instruction sheet accompanying the Pressure Relief Valve, instruction sheet drawing number 5-025-002.
- Pressure Relief Valves should not be installed on discharge lines, as the continuous high temperatures may have adverse affects on the relief valve's performance.
- Henry Technologies follows the recommendation provided by the International Institute of Ammonia Refrigeration (IIAR) in their Bulletin 109 "IIAR Minimum Safety Criteria For a Safe Ammonia Refrigeration System" recommends to replace Pressure Relief Valves on a five year interval. If a Pressure Relief Valve opens to full discharge it should be replaced immediately.