User Instruction
Refrigeration Pressure Relief Valve

System Pressure	25"Hg Vacuum to 700 PSIG Maximum Working Pressure
Compatibility	Compatible with all HFC, HCFC, & CFC Refrigerants
Valve Set Pressure	Marked on each valve
Discharge Capacity	Marked on each valve
Temperature rating:	T min = -40° C (-40°F) to +149°C (+ 300°F)
Shelf Life	2 years prior to system installation

The user is responsible for proper installation, sizing for system and venting of Relief Valves. Refer to ANSI/ASHRAE Safety Code for Mechanical Refrigeration for guidance.

Mueller Pressure Relief Valves are not fitted with external seals. Potential adjustments are prevented by staking the internal components into a permanent position. Additionally, internal staking is the primary tamper-evident feature of Mueller Pressure Relief Valves (see page 4). The "staking" method is approved by the National Board of Boiler and Pressure Vessel Inspectors (NB), Canadian Standards Association (CSA), Notified Body (2797) in the EU, and Approved Body (0086) in the UK.

Per section 4.11 in ASHRAE Handbook 2018, relief valve set pressures should be 25% above maximum system pressure (i.e., maximum system pressure should not exceed 75% of relief valve setting).

Replacement Requirements Although valves will reseat if unobstructed, it is recommended that valves be replaced after discharge, refrigerant changes, and after equipment rebuilds. Replace valves after any system cleanout or burnout.

Precautions

a. Do not stand on valve.
b. Do not obstruct the inlet or outlet end of valve
c. Care must be taken to eliminate foreign material from getting into the valve from either end
d. A trained technician must install valve.
e. Avoid overtorque of the valve into the system and/or the discharge end. (torques listed below)
f. Do not attempt to reset or calibrate valve.
g. Valves may be installed either vertically or horizontally, but must be above the system's liquid level in order to function properly

Thread Torque Recommendations

FLARE THREADS			NPTF THREADS		
Size	**Min. (ft-lbs)**	**Max. (ft-lbs)**	**Size**	**Min. (in-lbs)**	**Max. (in-lbs)**
¼"	8	10	**1/8"**	180	190
3/8"	15	25	¼"	240	300
½"	25	35	**3/8"**	360	420
5/8"	40	55	½"	420	480
¾"	50	60	¾"	540	600

Field evaluation of refrigerant pressure relief valves often raises questions concerning the actual performance of the valves in accordance with ASME requirements. Field testing of pressure relief valves often includes the following test:

- Internal and External Leak Test
- Thermal Shock Test
- Open/Pop Performance Test
- Refrigerant Compatibility Test

There are two primary questions regarding pressure relief valve testing: Internal seat leakage and overall leak-to-atmosphere performance.

Internal Seat Leakage

Field testing for leak rate evaluation of pressure relief valves is a crucial and critical test. Valves are often tested with hand held refrigerant leak detection devices. These devices along with the procedural methods often conclude a valve is leaking past the seat. Due to the nature of the refrigerants and design of relief valves, refrigerant is often accumulated in the area of the outlet end of the valve sending a false signal that the valve is leaking. It is recommended by both Mueller and leak detection equipment manufacturers that the area to be metered shall be evacuated or cleared prior to testing. This eliminates the potential for leak accumulation. An additional recommendation to minimize false readings is to carefully read and follow the equipment manufacturer's recommendations for testing methods.

Leak-to-atmosphere Performance

Field testing for evaluation of performance of pressure relief valves includes the start-to-discharge (open) and full discharge (pop). Often in field evaluations, an inert gas is utilized for the testing media. This media is foreign to actual application of the valve. The valve seat is designed for installation in a refrigerant and oil environment. This controlled atmosphere provides the necessary lubricants for the valve to function correctly. Without these ingredients, field testing may often find valves that perform higher than the stamped setting on the valve. Field testing for performance should be limited to applying the valve to its natural environment before final acceptance or rejection.

MUELLER REFRIGERATION

OPENING TOLERANCES
(as defined by ASME SECTION VIII, DIVISION 1)

VALVE PRESSURE (*psig*)	VALVE PRESSURE (*bar*)	Allowable Tolerance	
		-3% (MIN P.S.I.G.)	+3% (MAX P.S.I.G.)
116	7.99	112.5	119.5
150	10.34	145.5	154.5
175	12.07	169.8	180.3
200	13.79	194.0	206.0
225	15.51	218.3	231.8
250	17.24	242.5	257.5
275	18.96	266.8	283.3
300	20.68	291.0	309.0
325	22.41	315.3	334.8
350	24.13	339.5	360.5
375	25.86	363.8	386.3
400	27.58	388.0	412.0
425	29.30	412.3	437.8
450	31.03	436.5	463.5
475	32.75	460.8	489.3
500	34.47	485.0	515.0
525	36.20	509.3	540.8
550	37.92	533.5	566.5
575	39.64	557.8	592.3
600	41.37	582.0	618.0
625	43.09	606.3	643.8
650	44.82	630.5	669.5
675	46.54	654.8	695.3
700	48.26	679.0	721.0

+/- 3% tolerance also fulfills EN ISO 4126-1 requirements

Internal Staking

Internal staking is the primary tamper-evident and tamper-proof feature of Mueller Pressure Relief Valves. To ensure the continuous integrity of each valve's factory setting, Mueller Refrigeration employs physical deformation of the valve's internal threads. This thread deformation preserves the valve setting by staking the internal components into place. Additionally, the staking location provides a visual, tamper-evident indicator of the original factory configuration.