

METROPOLITAN NY CHAPTER Refrigeration Service Engineers Society

Continuing Education for the HVAC/R Industry

“Better Service Through Knowledge”

November 2018

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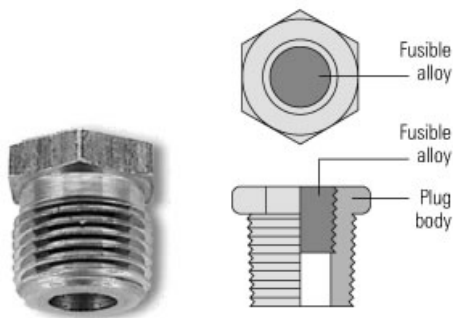
Relief Valves

A safety device used on many refrigeration systems is the relief valve. Relief valves are used to release abnormally high pressure inside a vessel before that pressure causes the vessel to erupt. There are three general types of relief valves:

- fusible plug
- rupture disc
- pressure relief valve

A one-time relief valve, sometimes called a "fusible plug," is normally constructed from a fitting with a drilled hole filled in with a low temperature solder. At a specific temperature the solder will soften and pressure within the vessel will cause the solder plug to "blow-out".

The rupture disc contains a thin disc of metal designed to rupture at a certain pressure. Neither the fusible plug nor the ruptured disc reseal after opening. Consequently, all the refrigerant is discharged from the storage vessel or protected part of the system, should they open. These relief devices would then have to be replaced.



Pressure relief valves are spring-loaded valves normally encased in a brass body with a neoprene seat. They are designed to automatically reset once the pressure inside the vessel reaches a safe level. They will be located on a section of the vessel where refrigerant vapor is located. This allows only the vapor to be released from the vessel, rather than any liquid refrigerant.

Some pressure relief valves will also have a thread connection on the top to allow piping to be attached to it so the released refrigerant can be vented out of the building or mechanical room where the vessel is located.

A popular type of pressure relief valve is the spring-loaded or "pop" type. When pressure rises above the spring setting refrigerant will initially begin to seep through. When enough flow develops the piston will pop open, allowing full discharge. The pop type relief valve has its advantages,

including simple design, low initial cost, and high discharge capacity.

There are limits on the length of discharge pipe from a safety pressure relief valve. The limits are based on pipe size and relief valve discharge capacity in pounds of air per minute. Pressure relief valves are designed to re-close as the pressure is reduced. However, the valve may not completely reseal.

Manufacturers generally recommend replacement after it has been opened. Failure to reseal tightly is generally due to an accumulation of dirt and foreign matter that attaches to the valve seat disc while the valve is discharging. For this reason, it is impossible to predict the reliability of the relief valve resealing after it has discharged in service.

All relief valves must comply with the ASME Code for Un-fired Pressure Vessels. Discharge rates are certified by the National Board of Boiler and Pressure Vessel Inspectors. A code symbol is stamped on relief valves indicating this certification. It includes the letters "UV" in a clover leaf design. The letters "NB" are stamped directly below this symbol. The pressure setting and capacity are also stamped on the valve.

The exact number, location, and type of relief devices required are set forth in detail in the American Standard Safety Code for Mechanical Refrigeration. Local codes vary somewhat in this respect, and should also be considered in designing an installation.



Never eliminate or seal off a relief valve as they serve a very important safety function in the systems we service, maintain and install. Without these safety devices serious harm could occur to those working around these systems.

Never, NEVER, **NEVER** place a new pressure relief valve on top of a leaking relief valve to stop the leak. This could potentially double the pressure at which it will blow off.

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***In the unlikely event of scheduled meeting cancellations,
announcement will be posted on our web site***

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PRESIDENT'S MESSAGE

Imagine a year without a seminar. We are running out of topics for future seminars. The topics for seminars can come from you, the membership, or from your Board of Directors. However, it is getting harder for your Board to come up with interesting and educational topics. You have read many times in this message a request for suggestions for seminar topics. There has been little response. Well here we go again. The Spring seminar is now in the final stages. That means planning for a Fall seminar begins with developing a list of topics. So I am asking you once again to take a few minutes and send a seminar suggestion to Stan Hollander CMS at info@metronyrses.org. There are links to all board members on our web site www.metronyrses.org. One final thought. Everyone has some area that they could use more training. That is the topic you should suggest. I am asking you to help your fellow technicians and your chapter. **MAKE A SUGGESTION NOW.**