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.