

SAFETY INFORMATION...

Warning: Ammonia gas or liquid produces potentially hazardous mist that can irritate skin, eyes, nose, and throat, and can cause temporary or permanent respiratory injury. Permanent respiratory injury can lead to disability or death.

- Use local ventilation and respiratory protection when installing. See *ASHRAE 15 Safety Code and OSHA Standard 1910.133A*.
- Avoid breathing of and prolonged skin contact with ammonia.
- Use goggles and a gas mask when gas is in the area.
- Maintain ammonia levels below OSHA and ACGIH levels.
- Wash hands after handling, before eating, or smoking.
- Dispose of materials according to local, state, and /or federal regulations.

Ammonia relief valves or any ammonia valve installation should only be done by trained personnel and in accordance with the ASME Boiler & Pressure Vessel Code, Section VIII.

The purpose of a spring loaded relief valve is to relieve excess vapor or liquid pressure. Back pressure or pressure on the upper relief valve seat can change the valve's popping or opening pressure setting. In applications of excess pressure or back pressure on the upper relief valve seat, add the back pressure to relief valve setting to arrive at the actual setting where the valve will open.

When Ammonia Relief Valves Discharge into Water:

CORROSION: There is a concern about corrosion in relief valves when the discharge is piped into a tank of water. This corrosion is due to exposure to water vapor and air in the piping. Shank safety relief valves use ductile iron, steel, or aluminum for bodies, and stainless steel and Teflon for internal parts. Since these materials resist corrosion, the accepted industry practice of inspecting or replacing safety relief valves every five (5) years should provide adequate protection from corrosion in the valves.

BACK PRESSURE: Another concern is the reduction of relief valve capacity caused by the head of water over the discharge pipe outlet when it is submerged. The various codes do not provide methods to address this subject except to require "due allowance for pressure drop in the downstream section."

VACUUM SERVICE 1: When safety relief valves are connected to systems that operate below atmospheric pressure, a reasonable precaution is to install a check valve in the discharge line before it enters the water tank. This will prevent a vacuum from sucking water into the system should a relief valve leak or not reseat after a release. The check valve may also prevent the migration of water vapor so as to reduce the potential for corrosion in the relief valve. The pressure drop in the check valve must be considered within the allowable back pressure, at the outlet of the relief valve, that is developed by the flow in the event of a release.

VACUUM SERVICE 2: An alternative is to use a check valve mounted in a "tee" in the run of the discharge piping. This will not affect the pressure drop in the discharge, but will act as a "vacuum breaker." Either of these two suggested methods will protect against diluting the ammonia with water should the relief valve leak after operating.

WHERE WATER TANKS ARE REQUIRED: The requirement for discharge into a tank of water appears in the Uniform Mechanical Code, published by ICBO, Section 1119 for ammonia systems. The International Mechanical Code, now used by BOCA and SBCCI, does not have this provision, but does require that refrigerating systems in an industrial occupancy conform to IAR-2 Equipment, Design and Installation of Ammonia Mechanical Refrigerating Systems. ASHRAE-15 offers three methods for ammonia discharge (i.e., into the atmosphere, into a tank of water, or into other approved treatment systems). Appendix B therein provides guidelines for emergency discharge of refrigerants when required by local codes. In IAR-2, the preferred discharge of safety and emergency relief valves is to the atmosphere. The optional method is to discharge into a tank of water. When local mechanical codes require the use of a water tank for absorbing the discharge from ammonia relief valves, refer to ASHRAE 15-1994 paragraph 9.7.8.2(b) for details. NOTE: IAR-2 is in the process of revision to conform to the specifications now in ASHRAE-15.

ICBO - International Conference Building Officials Located in California
BOCA—Building Owners Code Association located in Chicago, Illinois
SBCCI—Southern Building Code Conference International