

1513.0180 PRESSURE RELIEF DEVICES.

Subpart 1. **Standards.** Every container used in systems covered by parts 1513.0300 to 1513.0380 and 1513.1000 to 1513.1070 must be provided with one or more pressure relief valves of the spring-loaded type conforming with the applicable requirements of UL 132, Standard on Safety Relief Valves for Anhydrous Ammonia and LP-Gas.

Subp. 2. **Direct contact with vapor space.** Pressure relief valves with a rating not greater than the designed working pressure of the container or appurtenances must be in direct contact with the vapor space of the container.

Subp. 3. **Discharge.** The discharge from pressure relief valves must be vented away from the container, upward and unobstructed to the atmosphere. Pressure relief valves shall not be painted or contain other foreign substances. All pressure relief valve discharge openings shall have rain caps that will allow free discharge of the vapor and prevent the entrance of water. Provision must be made for draining condensate which may accumulate. The rate of the discharge must be in accordance with part 1513.1100.

Subp. 4. **Start to discharge.** Container pressure relief valves with relation to the design pressure of the container must be set to start to discharge as follows:

Containers	Minimum Percent	Maximum Percent
ASME U-68,U-69	110	125
ASME U-200,U-201	95	100
ASME 1952, 1956, 1959, 1962, 1965, 1968, 1971, 1974, 1977, 1980, 1983, 1986, and 1989	95	100
API-ASME	95	100
U.S. Coast Guard (As required by USCG regulations)		
DOT (As required by DOT regulations)		

Subp. 5. **Discharge rates.** Pressure relief valves used on containers covered by parts 1513.0300 to 1513.0380 and 1513.1000 to 1513.1070 shall be constructed to discharge at not less than the rates required in subpart 3 before the pressure is in excess of 120 percent (not including the ten percent tolerance referred to in subpart 4) of the maximum permitted start to discharge pressure setting of the device.

Subp. 6. **Tampering.** Pressure relief valves must be so arranged that the possibility of tampering will be minimized. If the pressure setting adjustment is external, the relief valves must be provided with means for sealing the adjustment.

Subp. 7. **Shut-off valve locations.** Shut-off valves must not be installed between the pressure relief valves and the containers or systems covered by parts 1513.0300 to 1513.0380 and 1513.1000 to 1513.1070 except that a shut-off valve may be used where the arrangement of the shut-off valve is such as always to afford the full capacity flow specified in subpart 3 through a nonisolated pressure relief valve which must remain operative.

Subp. 8. **Marking.** Each pressure relief valve used with systems covered by parts 1513.0300 to 1513.0380 and 1513.1000 to 1513.1070 must be plainly and permanently marked as follows:

- A. with the letters "AA" or the symbol "NH₃";
- B. the pressure in pounds per square inch gauge at which the valve is set to start to discharge;
- C. the rate of discharge of the valve in cubic feet per minute of air at 60 degrees Fahrenheit and atmospheric pressure; and
- D. the manufacturer's name and catalog number.

Subp. 9. **Restriction of flow capacity.** The flow capacity of the pressure relief valve must not be restricted by any connection to it on either the upstream or downstream side.

Subp. 10. **Data; testing.** The manufacturer or supplier of a pressure relief valve manifold must publish complete data showing the flow rating through the combined assembly of the manifold with pressure relief valves installed. The manifold flow rating must be determined by testing the manifold with all but one valve discharging. If one or more openings have restrictions not present in the remaining openings, the restricted opening or openings, or those having the lowest flow, must be used to establish the flow rate marked on the manifold nameplate. The marking must be in accordance with subpart 8 for individual valves.

Subp. 11. **Hydrostatic relief valve.** A hydrostatic relief valve or equivalent, with a rating of 350-400 psig, must be installed in each section of piping, including hose, in which liquid ammonia can be isolated between shut-off valves to relieve the pressure which could develop from the trapped liquid. In no case may the hydrostatic relief valve or equivalent setting exceed system design pressure.

Subp. 12. **Discharge opening.** The discharge opening from any pressure relief valve may not terminate inside any building or below the highest roof line of a building.

Subp. 13. **Periodic inspection.** A pressure relief device must be subject to a periodic visual external inspection by the facility operator to determine that it:

- A. is free of evidence of tampering, damage, corrosion, or foreign matter that might prevent proper operation;

B. is free of leakage when subject to pressures below the minimum allowable start to discharge setting;

C. has a properly secured rain cap or other device to avoid entry of moisture or other matter into the relief valve outlet; and

D. has an open weep hole to permit moisture to escape.

Subp. 14. **Replacement.** No nonrefrigerated container pressure relief valve may be used over five years after the date of installation of the pressure relief device. Records must be maintained which identify each container and indicate the date of installation for each container pressure relief device.

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