

§ 179.400-19 Valves and gages.

(a) *Valves.* Manually operated shut-off valves and control valves must be provided wherever needed for control of vapor phase pressure, vapor phase venting, liquid transfer and liquid flow rates. All valves must be made from approved materials compatible with the lading and having satisfactory properties at the lading temperature.

(1) Liquid control valves must be of extended stem design.

(2) Packing, if used, must be satisfactory for use in contact with the lading and of approved materials that will effectively seal the valve stem without causing difficulty of operation.

(3) Each control valve and shut-off valve must be readily operable. These valves must be mounted so that their operation will not transmit excessive forces to the piping system.

(b) *Gages.* Gages, except portable units, must be securely mounted within suitable protective housings. A liquid level gage and a vapor phase pressure gage must be provided as follows:

(1) *Liquid level gage.* (i) A gage of approved design to indicate the quantity of liquefied lading within the inner tank, mounted where it will be readily visible to an operator during transfer operations or storage, or a portable gage with a readily accessible connection, or

(ii) A fixed length dip tube, with a manually operated shut-off valve located as close as practicable to the outer jacket. The dip tube must indicate the maximum liquid level for the allowable filling density. The inner end of the dip tube must be located on the longitudinal centerline of the inner tank and within four feet of the transverse centerline of the inner tank.

(2) *Vapor phase pressure gage.* A vapor phase pressure gage of approved design, with a manually operated shut-off valve located as close as practicable to the outer jacket. The gage must indicate the vapor pressure within the inner tank and must be mounted where it will be readily visible to an operator. An additional fitting for use of a test gage must be provided.