

made for closing pipe connections of valves.

(c) Inner container may be equipped with a vacuum relief valve of approved design. Protective housing is not required.

(d) When a gauging device is required in §179.221-1, an outage scale visible through the manway opening must be provided. If loading devices are applied to permit tank loading with cover closed, a telltale pipe may be provided. The telltail pipe must be capable of determining that required outage is provided. The pipe must be equipped with ¼-inch maximum, NPT control valve mounted outside tank and enclosed within a protective housing. Other approved devices may be used in place of an outage scale or a telltale pipe.

(e) The bottom of the tank shell may be equipped with a sump or siphon bowl, or both, welded or pressed into the shell. These sumps or siphon bowls, if applied, are not limited in size and must be made of cast, forged, or fabricated metal. Each sump or siphon bowl must be of good welding quality in conjunction with the metal of the tank shell. When the sump or siphon bowl is pressed in the bottom of the tank shell, the wall thickness of the pressed section must not be less than that specified for the shell. The section of a circular cross section tank to which a sump or siphon bowl is attached need not comply with the out-of-roundness requirement specified in appendix W, W14.06 of the AAR Specifications for Tank Cars. Any portion of a sump or siphon bowl not forming a part of a cylinder of revolution must have walls of such thickness and must be so reinforced that the stresses in the walls caused by a given internal pressure are not greater than the circumferential stress which would exist under the same internal pressure in the wall of a tank of circular cross section designed in accordance with §§179.220-6(a) and 179.220-9. In no case shall the wall thickness be less than that specified in §179.221-1.

(f) Protective housing, when required, must be of approved material and must have cover and sidewalls not less than 0.119 inch in thickness.

[Amdt. 179-9, 36 FR 21341, Nov. 6, 1971, as amended at 69 FR 54047, Sept. 7, 2004]

#### § 179.220-18 Bottom outlets.

(a) The inner container may be equipped with a bottom outlet of approved design and an opening provided in the outer shell of its access. If applied, the bottom outlet must comply with the following requirements:

(1) The extreme projection of the bottom outlet equipment may not be more than that allowed by appendix E of the AAR Specifications for Tank Cars (IBR, see §171.7 of this subchapter). All bottom outlet reducers and closures and their attachments shall be secured to car by at least ⅜-inch chain, or its equivalent, except that bottom outlet closure plugs may be attached by ¼-inch chain. When the bottom outlet closure is of the combination cap and valve type, the pipe connection to the valve shall be closed by a plug, or cap. The bottom outlet equipment should include only the valve, reducers and closures that are necessary for the attachment of unloading fixtures. The permanent attachment of supplementary exterior fittings shall be approved by the AAR Committee on Tank Cars.

(2) Each bottom outlet must be provided with a liquid tight closure at its lower end.

(3) The valve and its operating mechanism must be applied to the outside bottom of the inner container. The valve operating mechanism must be provided with a suitable locking arrangement to insure positive closure during transportation.

(4) Valve outlet nozzle and valve body must be of cast, fabricated or forged metal. If welded to inner container, they must be of good weldable quality in conjunction with metal of tank.

(5) To provide for the attachment of unloading connections, the bottom of the main portion of the outlet nozzle or valve body, or some fixed attachment thereto, must be provided with threaded cap closure arrangement or bolted flange closure arrangement having minimum 1-inch threaded pipe plug.

(6) If outlet nozzle and its closure extends below the bottom of the outer shell, a V-shaped breakage groove shall be cut (not cast) in the upper part of the outlet nozzle at a point immediately below the lowest part of the valve closest to the tank. In no case

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may the nozzle wall thickness at the root of the "V" be more than ¼-inch. The outlet nozzle or the valve body may be steam jacketed, in which case the breakage groove or its equivalent must be below the steam chamber but above the bottom of the center sill construction. If the outlet nozzle is not a single piece or its exterior valves are applied, provision shall be made for the equivalent of the breakage groove. On cars without continuous center sills, the breakage groove or its equivalent may not be more than 15 inches below the outer shell. On cars with continuous center sills, the breakage groove or its equivalent must be above the bottom of the center sill construction.

(7) The valve body must be of a thickness which will prevent distortion of the valve seat or valve by any change in contour of the shell resulting from expansion of lading, or other causes, and which will insure that accidental breakage of the outlet nozzle will occur at or below the "V" groove, or its equivalent.

(8) The valve must have no wings or stem projection below the "V" groove or its equivalent. The valve and seat must be readily accessible or removable for repairs, including grinding.

(b) Inner container may be equipped with bottom washout of approved design. If applied, bottom washout must comply with the following requirements:

(1) The extreme projection of the bottom washout equipment may not be more than that allowed by appendix E of the AAR Specifications for Tank Cars.

(2) Bottom washout must be of cast, forged or fabricated metals. If it is welded to the inner container, it must be of good weldable quality in conjunction with metal of tank.

(3) If washout nozzle extends below the bottom of the outer shell, a V-shaped breakage groove shall be cut (not cast) in the upper part of the nozzle at a point immediately below the lowest part of the inside closure seat or plug. In no case may the nozzle wall thickness at the root of the "V" be more than ¼-inch. Where the nozzle is not a single piece, provisions shall be made for the equivalent of the breakage groove. The nozzle must be of a

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thickness to insure that accidental breakage will occur at or below the "V" groove or its equivalent. On cars without a continuous center sill, the breakage groove or its equivalent may not be more than 15 inches below the outer shell. On cars with continuous center sills, the breakage groove or its equivalent must be above the bottom of the center sill construction.

(4) The closure plug and seat must be readily accessible or removable for repairs.

(5) The closure of the washout nozzle must be equipped with a ¾-inch solid screw plug. Plug must be attached by at least a ¼-inch chain.

(6) Joints between closures and their seats may be gasketed with suitable material.

[Amdt. 179-9, 36 FR 21342, Nov. 6, 1971, as amended by Amdt. 179-40, 52 FR 13048, Apr. 20, 1987; 68 FR 75763, Dec. 31, 2003]

**§ 179.220-20 Reinforcements, when used, and appurtenances not otherwise specified.**

All attachments to inner container and outer shell must be applied by approved means.

[Amdt. 179-9, 36 FR 21342, Nov. 6, 1971]

**§ 179.220-22 Closure for openings.**

(a) All plugs must be solid, with NPT threads, and must be of a length which will screw at least six threads inside the face of fitting or tank. Plugs, when inserted from the outside of the outer shell tank heads, must have the letter "S" at least three-eighths inch in size stamped with steel stamp or cast on the outside surface to indicate the plug is solid.

(b) Openings in the outer shell used during construction for installation must be closed in an approved manner.

[Amdt. 179-9, 36 FR 21343, Nov. 6, 1971]

**§ 179.220-23 Test of tanks.**

(a) Each inner container or compartment must be tested hydrostatically to the pressure specified in §179.221-1. The temperature of the pressurizing medium must not exceed 100 °F. during the test. The container must hold the prescribed pressure for at least 10 minutes without leakage or evidence of