two-thirds of the diameter of the check ball. The space around each ball must be not less than \( \frac{1}{8} \) in. (3.0 mm), and the travel movement from the normal resting place to the seat must be not less than \( \frac{1}{4} \) in. (6 mm).

A-18.4 The ball seat in the upper fitting must be a flat seat with either a square or hexagonal opening, or otherwise arranged so that the steam passage can never be completely closed by this valve.

A-18.5 The shutoff valve in the upper fitting must have a projection that holds the ball at least \( \frac{1}{4} \) in. (6 mm) away from its seat when the shutoff valve is closed.

A-20 Water-side plugs are fusible plugs that are inserted from the water side of the plate, flue, or tube to which they are attached. Fire-side plugs are fusible plugs inserted from the fire side of the plate, flue, or tube to which they are attached.

A-20.1 Water-side plugs shall be made of a composition conforming to SB-61 or from phosphor-bronze rods conforming to ASTM B139.

A-20.2 The casing of the fusible plugs shall be made of a composition conforming to SB-61 or from phosphor-bronze rods conforming to ASTM B139.

A-20.3 Typical designs of fusible plugs are given in Figure A-19.

A-20.4 The bore of the casing shall be tapered continuously from the water end of the casing for a distance of at least 1 in. to a diameter of not less than \( \frac{1}{8} \) in. (10 mm) at a point not less than \( \frac{1}{2} \) in. (13 mm) from the fire end. The diameter of the bore at either end shall be not less than \( \frac{1}{2} \) in. (13 mm). The hole on the fire end shall be as large as possible and may be of any shape provided the cross-sectional area at all points is greater than the area of the least cross section of the fusible metal.

A-20.5 A fusible plug shall be of such length that when installed in the water side of the plate, tube, or flue. It shall extend through the plate, tube, or flue on the fire side as little as possible but not more than 1 in. (25 mm).

A-20.6 A fire-side plug may be designed so as to be inserted by means of a plug-type wrench, so as to reduce the projection on the fire side.

A-20.7 If a fire-actuated fusible plug is inserted in a tube, the tube wall at the plug shall not be less than 0.22 in. (5.6 mm) thick, or sufficient to give four full threads.

A-20.8 Fusible plugs that comply with the requirements of A-19 and A-20 must be stamped on the casing with the name of the manufacturer, and on the water end of the fusible metal "ASME Std."

A-20.9 Fusible metal, other than specified in A-19.1, for use under temperatures exceeding 450°F (232°C), may be used and the casing may be made of other material and shape than specified in A-20.2 through A-20.4 if the metal and the casing are approved by the administrative authority. Such plugs shall not be marked as "ASME Std."

A-21 Fire-actuated fusible plugs, if used, shall be located at the lowest permissible water level as determined by the boiler manufacturer; steam-actuated plugs, if used, shall be so located that they will operate when the water level is at the point where a fire-actuated fusible plug would be located.