

7. In the said regulations, after regulation 278, the following regulation shall be inserted, namely:-

"278A. Internal doors:- Internal doors shall be of wrought steel in accordance with chapter II and constructed in accordance with the following:-

- (a) doors shall be formed to fit closely to the internal joint surface and should be fitted with studs, nuts and crossbars;
- (b) doors for circular opening larger than 250mm or elliptical/rectangular opening larger than 250mm x 175mm shall have two studs but for opening of 250mm x 170mm or less only one stud may be fitted. Doors for opening not larger than 123mm x 90mm may have the stud forged integrally with door;
- (c) doors studs shall be of welding quality steel having a minimum specified tensile strength of not less than 360N/mm² and those for manholes shall be not less than 30mm;

They shall be fixed in any of the following way:-

- (1) screwed through the plate and fillet welded on inside.
 - (2) Fillet welded each side of the plate with a leg length of not less than 10mm;
 - (3) attached to the door by an intermediate plate or lugs so that the strength of the attachment is not less than the strength of the studs and the studs are prevented from turning; or
 - (4) provided with an integrated collar and be riveted or screwed onto the door plate and be prevented from turning in which case the strength of the attachment shall be not less than the strength of the studs;
- (d) door spigot when the door is in the central position shall have a clearance of approximately 105mm all around and at no point shall the clearance exceed 3mm. The spigot depth shall be sufficient to trap the gasket;
 - (e) the nuts shall be of appropriate material compatible to that of bolts and be placed on the seating surface;
 - (f) the cross-bars shall be substantial proportions and of mild or wrought steel.

Note:- Eye bolts of suitable legs on the door plate or headed bolts engaging with slotted sections on the door plate may be used instead of studs.

The minimum calculated thickness of the door of the flat plate construction (i.e. unstiffened made from one plate shall be not less than that determined by the following formula:-

$$T^2 = \frac{0.35 P \times d^2 + W}{f} \quad \text{for a circular door}$$

$$T^2 = \frac{0.35 P (2-a/b) \times a^2 + W}{f} \quad \text{for an elliptical door}$$

where,

- T is the minimum calculated thickness of the flat door (in mm)
P is the working pressure of boiler (in N/mm²)
d is the diameter of the opening to which the door is fitted, if round (in mm)
a is the minor axis of the opening to which the door is fitted, if elliptical (in mm)
b is the major axis of the opening to which the door is fitted, if elliptical (in mm)
W is the full load capacity of one stud (effective stud area X design stress value at design temperature) in (N)
f is the maximum allowable stress of the plate at the design temperature (in N/mm²)

Note: A design stress of value of 50N/mm² may be used for carbon steel bolts for design temperature not exceeding 300 °C.