

Agenda Item: 650-1097

Title: API-620 Outlet Allowance

Date: November 12, 2021

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Purpose: To allow the use of studded outlets as shown in API-620 figure.

Source: Jimmy Schroeder

Revision: 3

Impact: None

Rationale: Studded outlets are allowed in API-620. Currently they are not allowed in API-650. There are certain applications in which is desirable to have a studded outlet to limit the distance from the outside of the shell to the face of the flange.

Proposal: Current wording in API 650 13th Edition:

4.6.1.1 Forged slip on, ring-type, welding neck, long welding neck, and lap joint flanges shall conform to the material requirements of ASME B.16.5..

Proposed wording:

4.6.1.1 Forged slip on, ring-type, welding neck, long welding neck, **studding outlets**, and lap joint flanges shall conform to the material requirements of ASME B.16.5.

Add sketches to appropriate figures.

Revision 2 proposed changes: (changes shown in blue)

Revision 3 proposed changes. (changes shown in green)

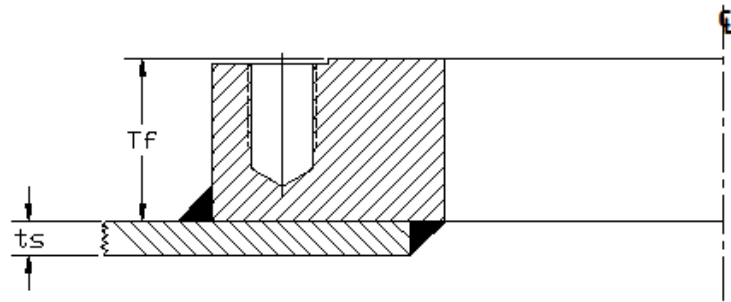
5.7.2.1 Openings in tank shells larger than required to accommodate a NPS 2 flanged or threaded nozzle shall be reinforced. **All studding outlets inserted into the shell or studding outlets placed on the outside of the shell and are larger than NPS 2 shall be reinforced and their required area of reinforcing, available area of reinforcing, and weld strengths shall be calculated in accordance with 5.7.2.** The minimum cross-sectional area of the required reinforcement shall not be less than the product of the vertical diameter of the hole cut in the shell and the nominal plate thickness, but when calculations are made for the maximum required thickness considering all design and hydrostatic test load conditions, the required thickness may be used in lieu of the nominal plat thickness. **For studding outlets the area of the bolt hole within the limits of reinforcement shall be added to the minimum cross-sectional are of the required reinforcement.** The cross-sectional area of the reinforcement shall be measured vertically, coincident with the diameter of the opening.

5.7..2.2 The only shell openings that may utilize welds having less than full penetration through the shell are those that do not require reinforcement, **studding outlets of any size placed on the outside of the shell**, and those that utilize a thickened insert plate as shown in Figure 5.7b and Figure 5.8. However, any openings listed in Table 3 of the Data Sheet that are marked “yes” under “Full Penetration on Openings” shall utilize welds that fully penetrate

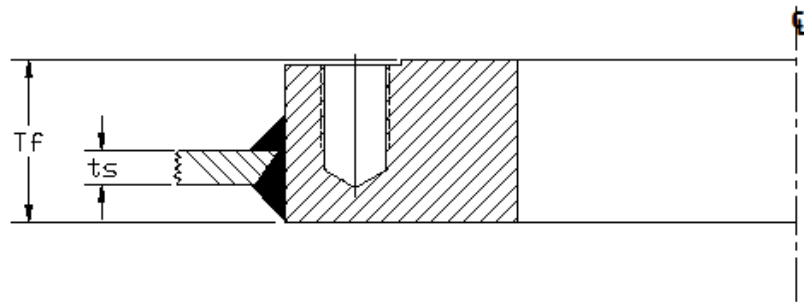
the shell and the reinforcement, if used.

Notes: -

Add sketch to Figure 4.3

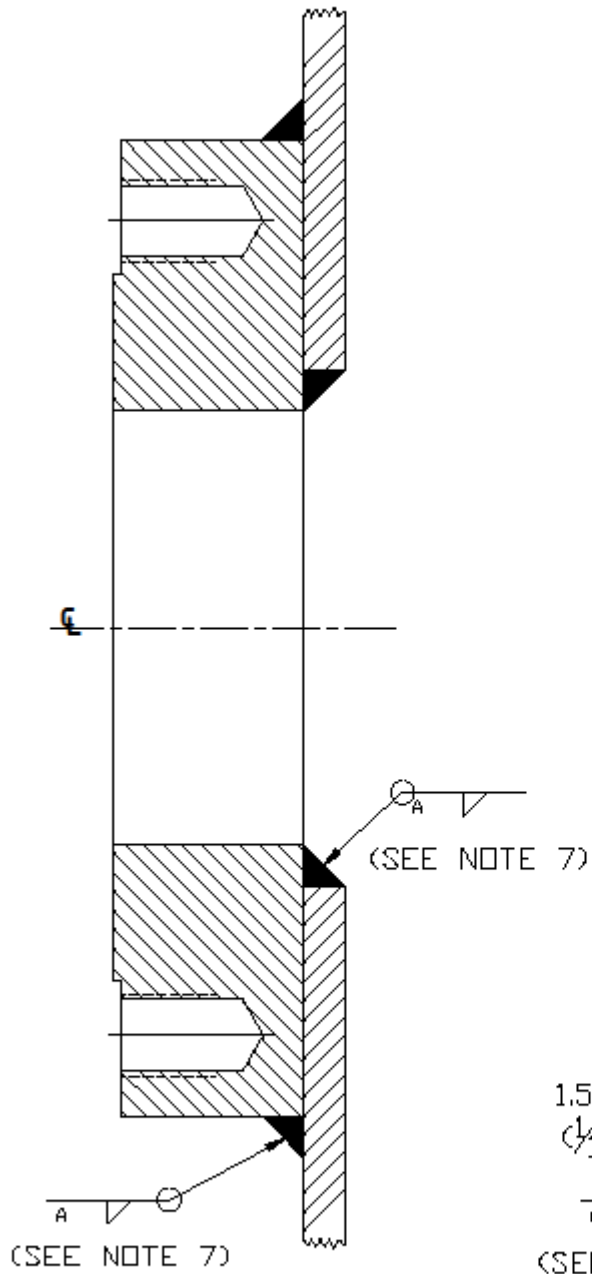


Studding Outlet (Option 1)

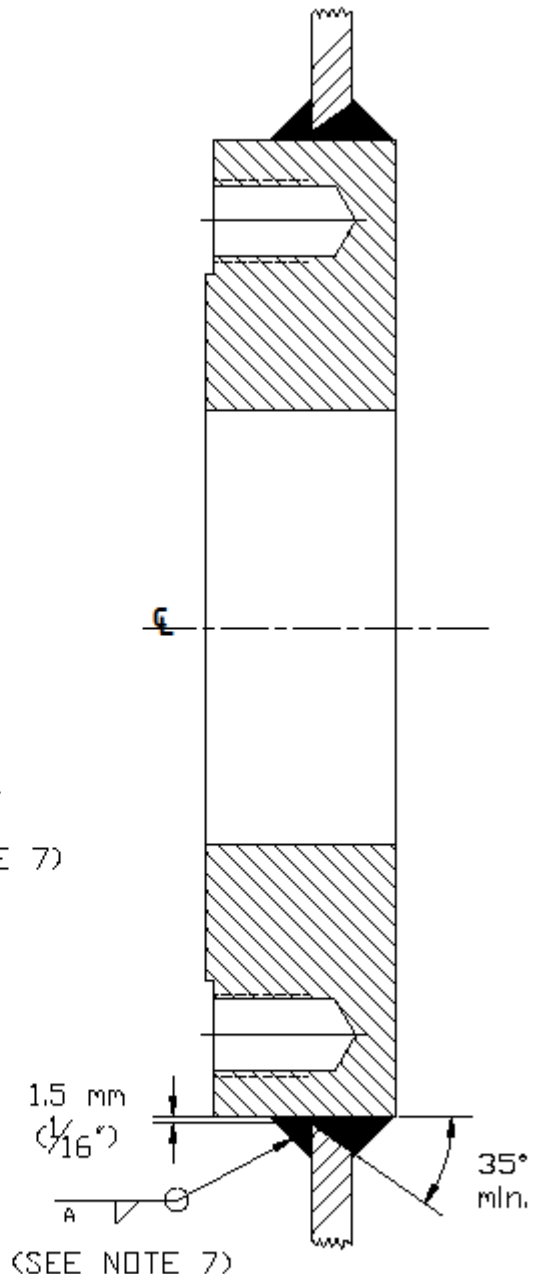


Studding Outlet (Option 2)

Add sketch to Figure 5.8



Studding Outlet (Option 1)



Studding Outlet (Option 2)