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An American National Standard

Standard Practice for Use of Branch Connections[1]

This standard is issued under the fixed designation F 681; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This practice lists commonly used types of branch connections for carbon steel, chromium-molybdenum steel pipe and copper-nickel alloy tubing. Branch to run size applications are given in Table 1, Table 2, and Table 3. Other types of branch connections (Fig. 1) may be used provided they comply with the requirements of Title 46 CFR Subparts 56.07-10(f) and 56.70-15(g) of the USCG Regulations.

2. Referenced Documents

2.1 *ASTM Standards:*
F 722 Specification for Welded Joints for Shipboard Piping Systems[2]

2.2 *ANSI Standard:*

B31.1 Power Piping[3]

2.3 *Other Document:*
Title 46 Code of Federal Regulations (CFR) Shipping, Parts 41 to 69[4]

3. General Requirements

3.1 Weld joint designs shall be in accordance with Specification F 722 and the limitations therein.

3.2 Fabricated branch connections shall meet the reinforcement requirements of Section 104.3 of ANSI B31.1 as modified by Title 46, CFR Subparts 56.07-10(f) and 56.70-15(g) of the USCG regulations.

3.3 Threaded fittings shall be subject to the limitations of Title 46 CFR, Subpart 56.30-20 of the USCG Regulations.

4. Keywords

4.1 branch connnections; carbon steel connections; chromium-molybdenum steel pipe; copper-nickel alloy tubing
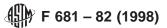

TABLE 1 Branch Connection Matrix for Carbon Steel Piping
LEGEND (see Fig. 1)

1 = Tee or lateral (butt weld)
2 = Tee or lateral (socket weld or threaded)
3 = Welded outlet (butt weld end)
4 = Welded outlet (socket weld or threaded end)
5 = Fabricated joint (cut-in branch)

BRANCH SIZE (NPS), in.

MAIN OR RUN SIZE (NPS), in.

Main \ Branch	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18
1/4	2																			
3/8	2	2																		
1/2	2	2	2																	
3/4	2	2	2	2																
1	2	2	2	2	2															
1 1/4	2,4	2,4	2,4	2	2	2														
1 1/2	2,4	2,4	2,4	2,4	2,4	2,4	2,4													
2	2,4	2,4	2,4	2,4	2,4	2,4	2,5	2,5												
2 1/2	4	4	4	4	4	4	4,5	1,5	1,5											
3	4	4	4	4	4	4	1 / 4,5	1,5	1,5	1,5										
3 1/2	4	4	4	4	4	4	1 / 4,5	1,5	1,5	1,5	1,5									
4	4	4	4	4	4	4	1 / 4,5	1 / 4,5	1,5	1,5	1,5	1,5								
5	4	4	4	4	4	4	1 / 4,5	1 / 4,5	1,5	1,5	1,5	1,5	1,5							
6	4	4	4	4	4	4	4,5	1 / 4,5	1,5	1,5	1,5	1,5	1,5	1,5						
8	4	4	4	4	4	4	4,5	1 / 4,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5					
10	4	4	4	4	4	4	4,5	4,5	3,5	3,5	3,5	3,5	1,5	1,5	1,5	1,5				
12	4	4	4	4	4	4	4,5	4,5	3,5	3,5	3,5	3,5	3,5	1,5	1,5	1,5	1,5			
14	4	4	4	4	4	4	4,5	4,5	3,5	3,5	3,5	3,5	3,5	3,5	1,5	1,5	1,5	1,5		
16	4	4	4	4	4	4	4,5	4,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	1,5	1,5	1,5	1,5	
18	4	4	4	4	4	4	4,5	4,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	3,5	1,5	1,5	1,5	1,5