Specification for Bolted Tanks for Storage of Production Liquids

API SPECIFICATION 12B
EIGHTEENTH EDITION
MONTH 202X

(TOC to be updated during publication process)

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Specification for Bolted Tanks for Storage of Production Liquids

1 Scope

1.1 Purpose

This specification provides the oil production industry with safe, economical tanks for storing liquids.

1.2 Scope

This specification establishes minimum requirements for material, design, fabrication, erection, inspection, and marking of vertical, cylindrical, aboveground, unanchored, closed- and open-top, bolted storage tanks in standard sizes designed for the loads specified in Section 5.

2 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any addenda) applies.
~~The following documents are referenced by this specification. For dated references, only the edition cited applies:~~

AISC 360-16[1], *Specification for Structural Steel Buildings*

API Standard 12R1, *Installation, Operation, Maintenance, Inspection, and Repair of Tanks in Production Service*~~, 6th Edition~~

API Specification 5L, *Line Pipe*~~, 46th Edition~~

API Specification 6A, *Specification for Wellhead and Christmas Tree Equipment*~~, 20th Edition~~

API Specification 12F, *Specification for Shop-Welded Tanks for Storage of Production Liquids*~~, 13th Edition~~

API Standard 650, *Welded Steel Tanks for Oil Storage*~~, 12th Edition, Addendum 2~~

API Standard 2000, *Venting Atmospheric and Low-pressure Storage Tanks*~~, 7th Edition~~

ASCE 7-16[2], *Minimum Design Loads for Buildings and Other Structures*

ASME B1.1~~-2003~~[3], *Unified Inch Screw Threads, (UN and UNR Thread Form)*

ASME B16.11~~-2016~~, *Forged Fittings, Socket-Welding and Threaded*

ASME B18.2.1~~-2012~~, *Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series)*

ASME B18.2.2~~-2015~~, *Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)*

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[1] American Institute of Steel Construction, 130 East Randolph, Suite 2000, Chicago, Illinois 60601, www.aisc.org.
[2] American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, Virginia 20191, www.asce.org.
[3] ASME International, 2 Park Avenue, New York, New York 10016-5990, www.asme.org.

ASTM A36/A36M-14[4], *Standard Specification for Carbon Structural Steel*

ASTM A53/A53M-18, *Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless*

ASTM A105/A105M-18, *Standard Specification for Carbon Steel Forgings for Piping Applications*

ASTM A106/A106M-18, *Standard Specification for Seamless Carbon Steel Pipe for High-Temperature Service*

ASTM A123/A123M-17, *Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products*

ASTM A153/A153M, *Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware*

ASTM A181/A181M-14, *Standard Specification for Carbon Steel Forgings, for General-Purpose Piping*

ASTM A216/A216M, *Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High- Temperature Service*

ASTM A307-14, *Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength*

ASTM A350/A350M-18, *Standard Specification for Carbon and Low-Alloy Steel Forgings, Requiring Notch Toughness Testing for Piping Components*

ASTM A572/A572M-18, *Standard Specification for High-Strength Low-Alloy Columbian-Vanadium Structural Steel*

ASTM A992/A992M, *Standard Specification for Structural Steel Shapes*

ASTM A1011/A1011M-18, *Standard Specification for Steel Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low Alloy, High-Strength Low Alloy with improved Formability, and Ultra-High Strength*

ASTM B695-04, *Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel*

SAE J429-2014[5], *Mechanical and Material Requirements for Externally Threaded Fasteners*

3 Terms and Definitions

3.1
stave
A stave is a plate or sheet component of the tank shell.

[4] ASTM International, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428, www.astm.org.
[5] SAE International, 400 Commonwealth Drive, Warrendale, Pennsylvania 15096, www.sae.org.

4 Material

4.1 Finish

Materials other than bolts and nuts shall be mill finish unless the purchaser specifies paint, galvanizing, or other coating. Galvanizing of plates, sheets, and structural shapes shall be done after fabrication and comply with ASTM A123.

4.2 Plates

Plates shall comply with ASTM A36 or A572. Manufacturers shall order plates by nominal thickness.

4.3 Sheets

Sheets shall comply with ASTM A1011 Grade 36. Sheets with yield strength greater than 36 ksi shall be used if the purchaser and the manufacturer agree. Manufacturers shall order sheets by weight or thickness.

4.4 Structural Shapes

Structural shapes shall comply with ASTM A36, A572, or A992.

4.5 Piping

Pipe shall comply with API 5L Grade A or B, ASTM A53, or ASTM A106.

4.6 Flanges

Cast steel flanges (for non-welded use only) shall comply with ASTM A216. Forged steel flanges shall comply with ASTM A181, A105, or A350.

4.7 Couplings

Couplings shall comply with API 5L Grade B or ASME B16.11. Couplings for threaded connections may be supplied with or without recess.

4.8 Bolts and Nuts Used in the Tank Bottom, Shell, and Roof

4.8.1 Bolts

Bolts shall be square head or hex head and comply with ASME B18.2.1, or, if the purchaser specifies, round head. Bolts shall be $^1/_2$ in. diameter and no longer than $1^1/_2$ in.

Round-head bolts shall have a ribbed neck or fin neck to prevent turning upon tightening. The head height shall be 0.25 in. to 0.27 in., with a diameter of 1 in. to 1.06 in. Ribbed-neck bolts shall have at least 16 ribs with a length of 0.186 in. to 0.206 in. and an outside diameter of 0.540 in. to 0.550 in. Fin-neck bolts shall have four radial fins equally spaced under the head. The longitudinal length of the fins shall be 0.156 in. to 0.187 in., and their outside diameter 0.675 in. to 0.695 in.

If the purchaser specifies, the head of the bolt shall be encapsulated with polyvinylidene fluoride (PVDF), ABS, or polyester, and a sealing ring shall be molded under the head of the bolt.

4.8.2 Nuts

Nuts shall be square or hex and comply with ASME B18.2.2. If the purchaser specifies, nuts in contact with the stored liquid shall be protected with threaded PVDF nut caps or encapsulated with polyester.

4.8.3 Strength

The tensile strength of hex and square head bolts, tested full size, shall not be less than 11,350 lb, equivalent to a tensile strength of 80,000 lb/in.^{2} on the tensile stress area. The tensile strength of round-head bolts, tested full size, shall not be less than 17,000 lb, equivalent to a tensile strength of 120,000 lb/in.^{2} on the tensile stress area.

4.8.4 Testing

If the purchaser specifies, one tension test shall be made from each lot of 5000 pieces or fraction thereof. Load shall be applied between the head and nut with at least three bolt threads in the grip. If failure occurs due to threads stripping before reaching the minimum required tensile strength, failure occurs at the junction of the head and shank, or the tensile strength is less than required, two additional samples shall be tested. Unless both samples pass, the lot shall be rejected.

4.8.5 Threads

Before plating, threads shall be Class 2A for bolts and Class 2B for nuts, as specified by ASME B1.1. After galvanizing, the maximum pitch and major diameter shall exceed Class 2A by no more than 0.021 in.

4.8.6 Finish

Bolts and nuts shall be hot-dip galvanized, mechanically galvanized, or electro-zinc plated.

Hot-dip galvanizing shall comply with ASTM A153, coating weight Class C. Nuts shall be tapped after galvanizing.

Mechanically galvanized bolts and nuts shall comply with ASTM B695 Class 50 or ASTM A153 Class C. Mechanically zinc-coated nuts for assembly with mechanically zinc-coated bolts shall be tapped oversize prior to coating, and need not be retapped afterwards.

Electro-zinc plated bolts and nuts shall have a minimum zinc coating of 0.0005 in. with a yellow dichromate dip. Electro-zinc plated nuts do not require oversize tapping before plating.

4.8.7 Marking

Bolt heads shall be marked to identify the bolt manufacturer. Round-head bolts shall include three marks indicating SAE J429 Grade 5. Marks may be raised or depressed.

4.9 Other Bolts

Bolts used in other than the tank bottom, shell, or roof shall comply with ASTM A307.

4.10 Gaskets

Gaskets shall be suitable for the intended purpose and compatible with the product stored as applicable.
~~Gaskets shall be as specified by the purchaser.~~

5 Design

5.1 Loads and Load Combinations

5.1.1 Loads

a) hydrostatic pressure: the tank filled with water (62.4 lb/ft^3) to the design liquid level;

b) internal pressure: as shown in Table 1;

c) wind: 6 psf on vertical projected areas of tank shells and 8 psf uplift on horizontal projected areas of tank roofs, which corresponds to ASCE 7 90-mph design wind speed, Exposure C;

d) roof live load: 20 psf;

e) external pressure: 0.5 oz/in.^{2}.

5.1.2 Load Combinations

a) hydrostatic pressure, internal pressure, and dead load;

b) wind and dead load;

c) roof live load and dead load;

d) external pressure and dead load;

e) internal pressure and dead load.

5.2 Dimensions

Tanks shall have the dimensions shown in Table 1. The purchaser shall specify the tank size.

Table 1—Sizes and General Dimensions

(1)	(2)	(3)	(4)	(5)	(6)
Nominal Capacity 42-gal bbl	**Number of Rings**	**Inside Diameter** [a] ft, in.	**Height of Shell** [b] ft, in.	**Calculated Capacity** [c] 42-gal bbl	**Internal Pressure** oz/in^2
100	1	9, 2 3/4	8, 1/2	96	1
200	2	9, 2 3/4	16, 1	192	3
250	1	15, 4 5/8	8, 1/2	266	1
High 500	2	15, 4 5/8	16, 1	533	3
750	3	15, 4 5/8	24, 1 1/2	799	3
Low 500	1	21, 6 1/2	8, 1/2	522	1
High 1000	2	21, 6 1/2	16, 1	1044	2
1500	3	21, 6 1/2	24, 1 1/2	1566	2

(1)	(2)	(3)	(4)	(5)	(6)
Nominal Capacity 42-gal bbl	**Number of Rings**	**Inside Diameter** [a] ft, in.	**Height of Shell** [b] ft, in.	**Calculated Capacity** [c] 42-gal bbl	**Internal Pressure** oz/in^2
Low 1000	1	29, 8 5/8	8, 1/2	994	1
2000	2	29, 8 5/8	16, 1	1987	2
3000	3	29, 8 5/8	24, 1 1/2	2981	2
5000	3	38, 7 5/8	24, 1 1/2	5037	1
10,000	3	54, 11 3/4	24, 2	10,218	1

[a] The inside diameter is an approximate dimension. The values shown are 2 in. less than the bottom bolt-circle diameters.

[b] Shell heights shown do not include thickness of gaskets.

[c] The calculated capacity is based on the inside diameter (Column 3) and height of the shell (Column 4).

5.3 Bottoms

Bottoms shall be flat unless the purchaser specifies a cone bottom.

Flat bottoms shall comply with Table 2, Figure 2, and Figure 3. Bottom segments shall be supplied with a 1/4 in. identification hole, as shown in Figure 2 and Figure 3.

Cone bottoms are limited to tanks 29 ft, 0 5/8 in. in diameter and less, and shall comply with Figure 1. Cone bottom segments shall have the same dimensions as roof segments for the tank (see Figure 5), except without plate flange and flanged roof dome. The roof support shall extend to the sump bottom, unless the purchaser specifies that the sump opening be bridged and the roof support be attached to such bridge.

5.4 Staves (Shell Plates/Sheets)

Tank staves shall conform to the requirements of Table 2 and Figure 4.

5.5 Roof

5.5.1 Type

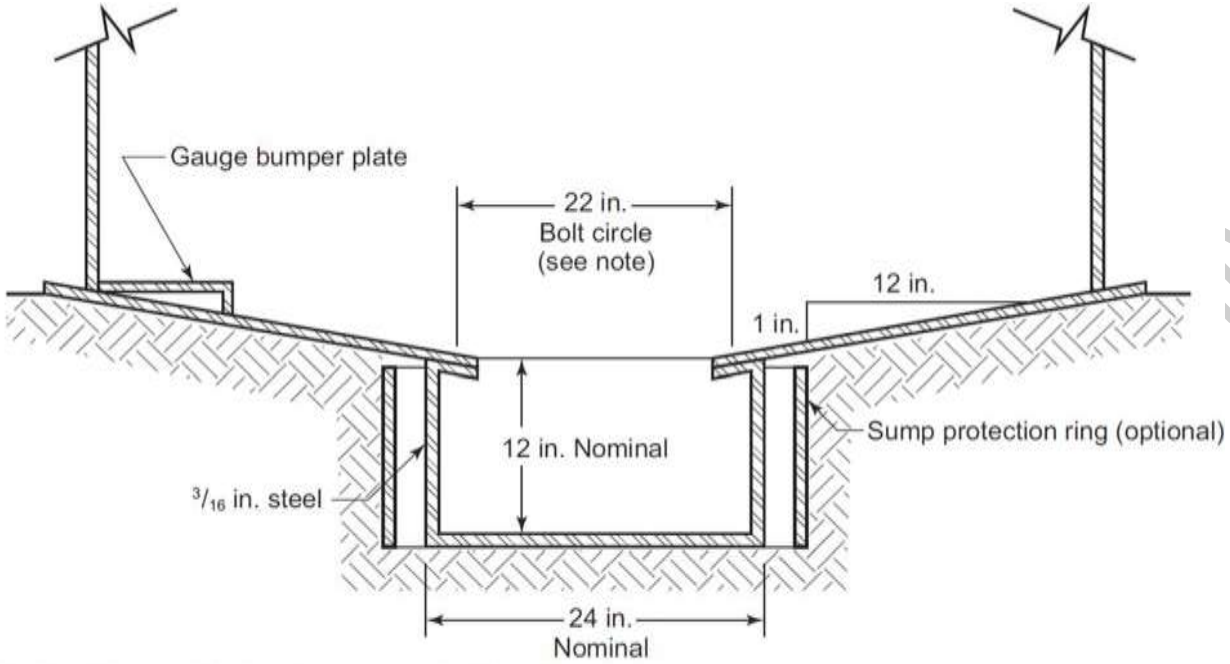
Tanks shall have either:

a) a fixed roof that complies with Table 2 and Figure 5;

b) a fixed roof that complies with API 650, Annex G and a wind girder that complies with API 650; or

c) an open top with a bolted wind girder that complies with API 650's section modulus requirements.

If an internal floating roof is provided, it shall comply with API 650, Annex H. If an external floating roof is provided, it shall comply with API 650, Annex C. Shells for tanks with floating roofs shall be furnished with round-head bolts.



NOTE 30 holes $^{17}/_{32}$ in. diameter required for all sizes, except 21 ft, $6^{1}/_{2}$ in. diameter tanks, which require 28 holes $^{17}/_{32}$ in. in diameter.

Figure 1—Cone Bottoms (see 5.3)

Table 2—Details of Bottoms, Shells, and Roofs

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Bottom		Shell							Roof	
Nominal Capacity 42-gal bbl	No. of Bottom Segments (See Figure 2 and Figure 3)	Thickness of Bottom Elements [a] in.	No. of Staves per Ring	Thickness of Staves [a] in.			No. of Rows of Bolts in Vertical Seams			No. of Roof Segments (See Figure 5)	Thickness of Roof Elements [a] in.
				1st Ring [b]	2nd Ring	3rd Ring	1st Ring [b]	2nd Ring	3rd Ring		
100	2	0.105	6	0.105	—	—	1	—	—	6	0.105
200	2	0.105	6	0.105	0.105	—	1	1	—	6	0.105
250	10	0.105	10	0.105	—	—	1	—	—	10	0.105
High 500	10	0.105	10	0.105	0.105	—	1	1	—	10	0.105
750	10	0.105	10	0.135	0.105	0.105	1	1	1	10	0.105
Low 500	14	0.105	14	0.105	—	—	1	—	—	14	0.105
High 1000	14	0.105	14	0.105	0.105	—	1	1	—	14	0.105
1500	14	0.105	14 [c]	0.105	0.105	0.105	2	1	1	14	0.105
Low 1000	20	0.105	20	0.105	—	—	2	—	—	20	0.105
2000	20	0.105	20	0.105	0.105	—	2	2	—	20	0.105
3000	20	0.105	20	0.135	0.105	0.105	2	2	2	20	0.105
5000	26 [d]	0.135	26	0.135	0.135	0.105	2	2	2	26 [d]	0.105
10,000	37 [d]	0.135	37	3/16	0.135	0.135	3	2	2	37 [d]	0.105

[a] Thickness of bottoms, staves, and roofs are minimum, and may be increased to 0.135 in., 3/16 in., or 1/4 in. by agreement between the purchaser and the manufacturer. Sheets (less than 3/16 in.) shall be ordered to decimal thickness. Tolerance shall be per ASTM A6. Corresponding AISC gauge numbers and thickness are:

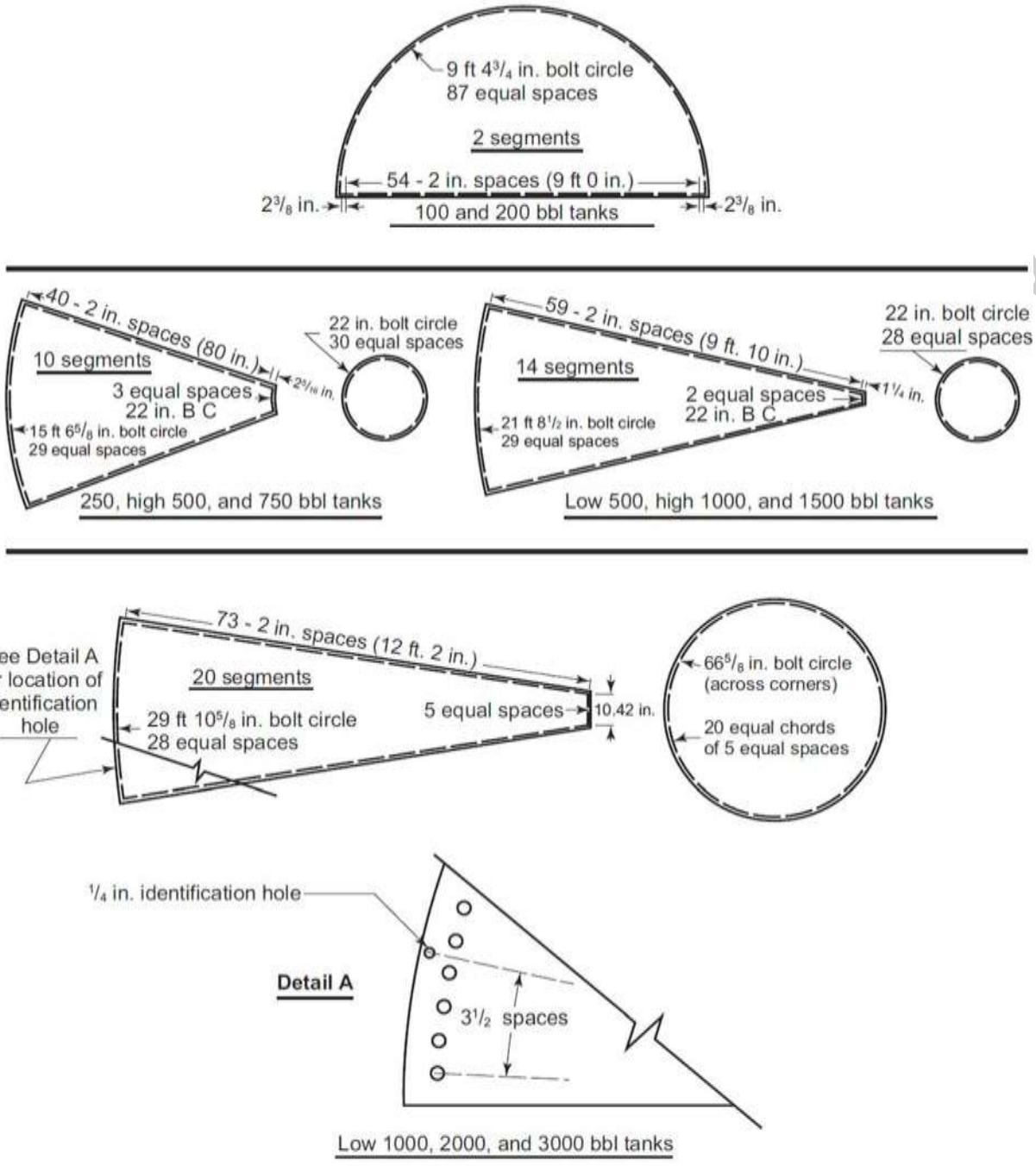
— 12-gauge: [0.1045 (0.105) in.]; and

— 10-gauge: [0.1345 (0.1345) in.]. Plate (3/16 in. and over) shall be ordered to nominal thickness. Tolerance shall be per ASTM A6.

[b] The first ring is the bottom ring.

[c] The first ring of the 1500-bbl tank shall consist of 14 regular staves with 56-in. coverage, and a fill-in stave having 15 bolt-hole spaces with 28-in. coverage on the chimes or, alternately, 14 staves with 58-in. coverage.

[d] Two piece segments.



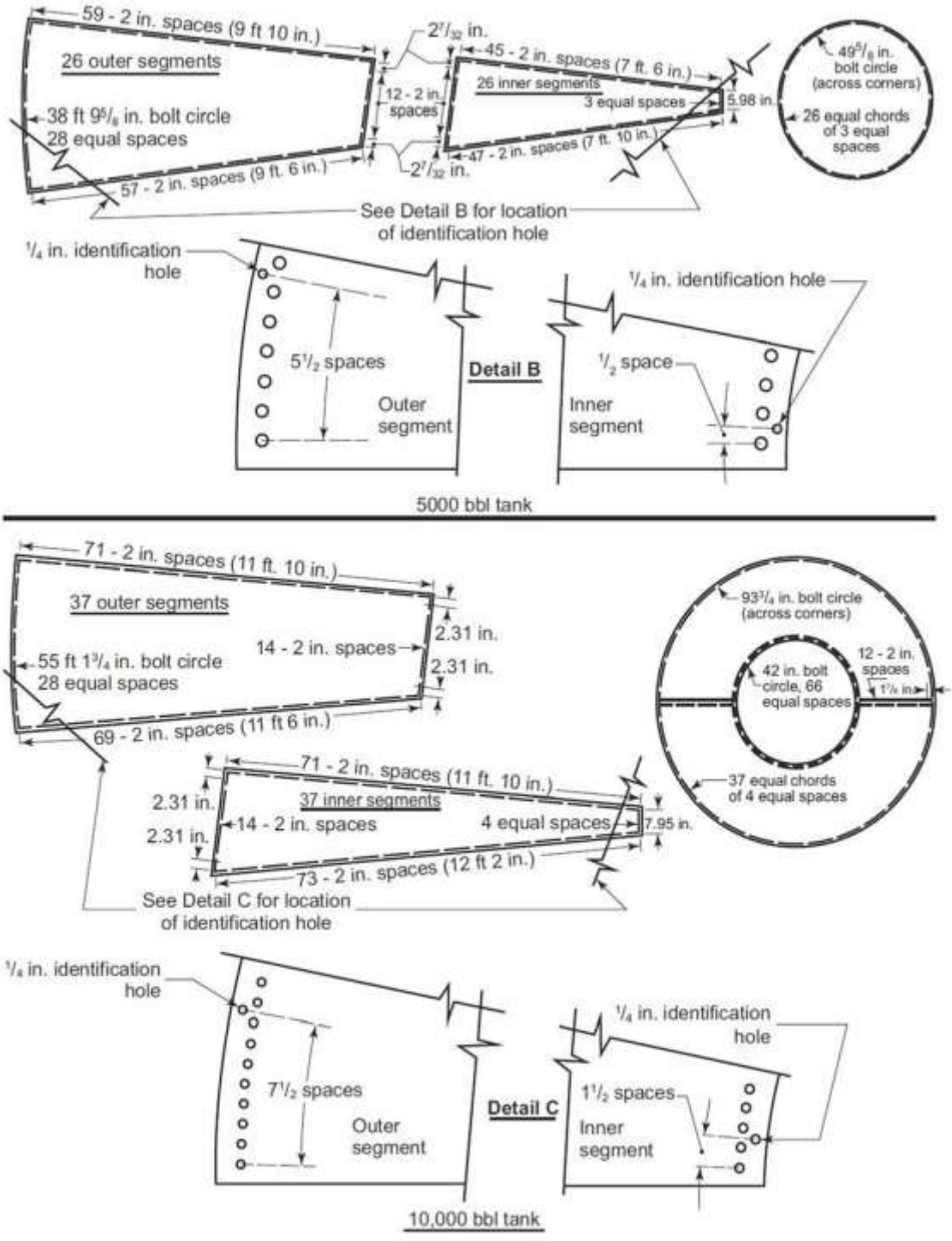
NOTE 1 Edge distance, all seams = 3/4 in. min.

NOTE 2 Bolt-hole diameter = 17/32 in.

NOTE 3 Bolt diameter = 1/2 in.

NOTE 4 All bolt-circle dimensions are diameter measurements.

Figure 2—Bottom Elements (see 5.3)



NOTE 1 Edge distance, all seams = ¾ in. min.
NOTE 2 Bolt-hole diameter = 17/32 in.
NOTE 3 Bolt diameter = ½ in.
NOTE 4 All bolt-circle dimensions are diameter measurements.

Figure 3—Bottom Elements

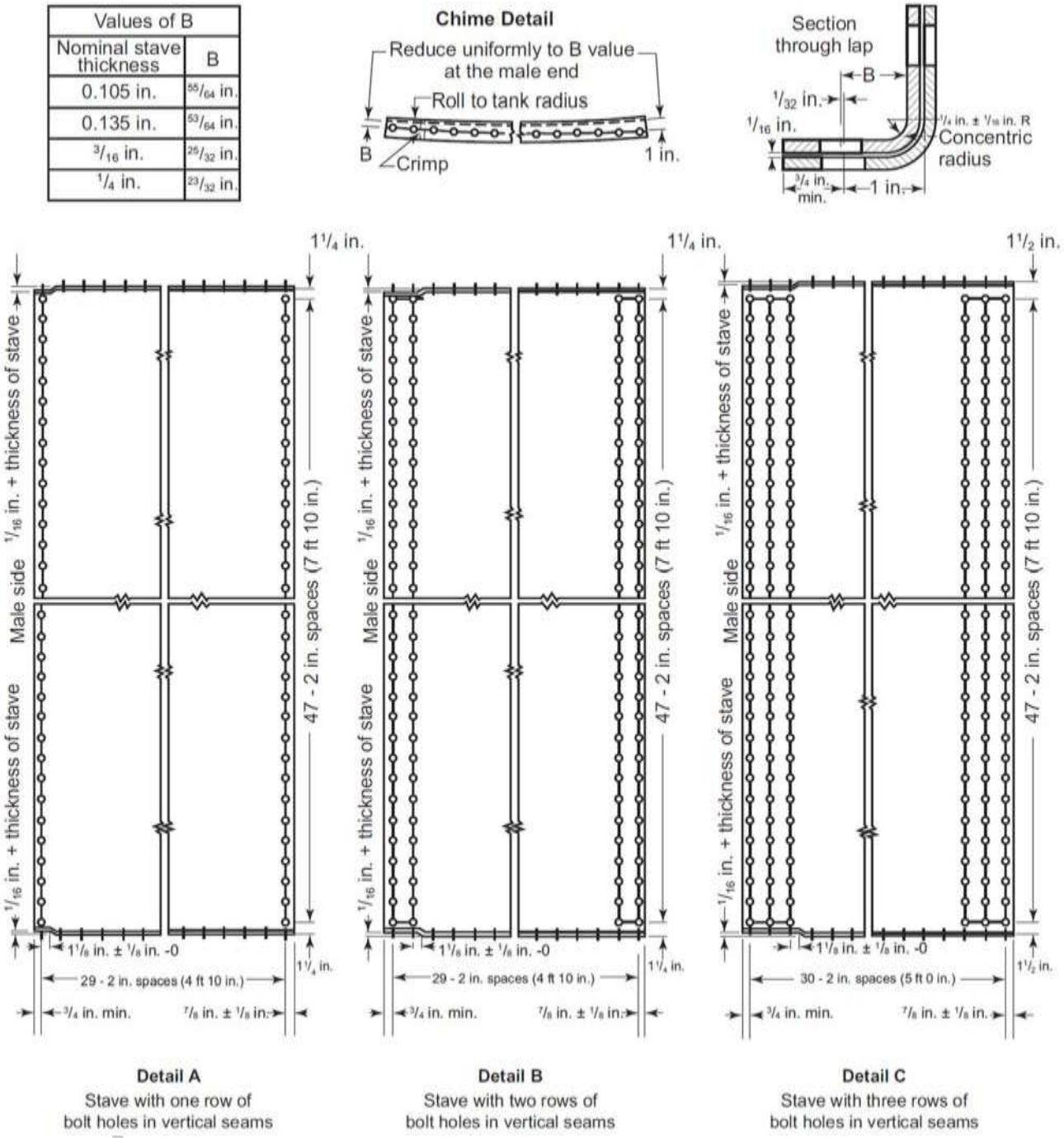


Figure 4—Stave Elements (see 5.4)

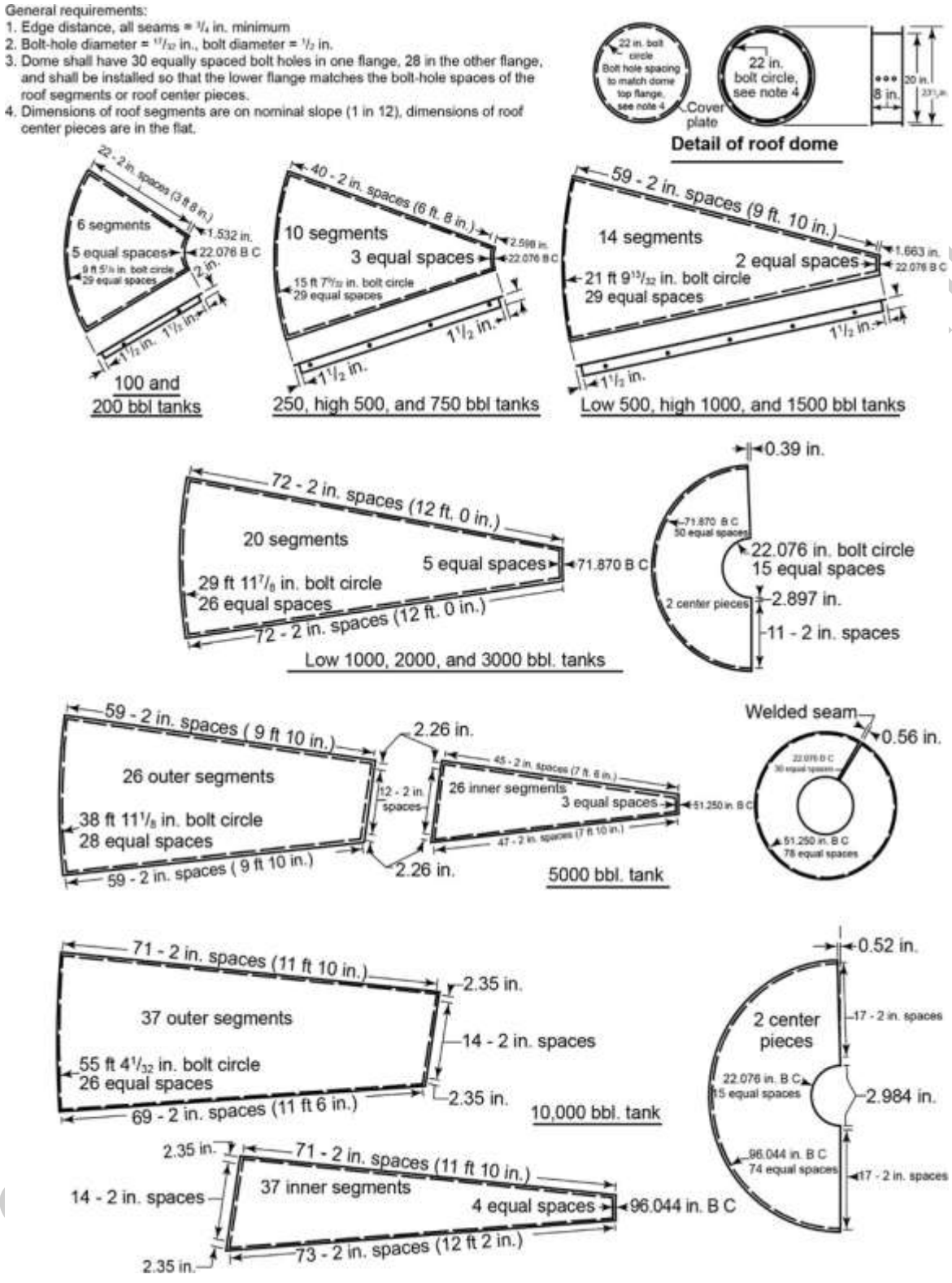


Figure 5—Roof Elements (see 5.5)

5.5.2 Fixed Roofs

Supporting members for fixed roofs shall comply with AISC 360. Unless otherwise specified by the purchaser:

a) Roofs for tanks with a diameter under 29 ft, $8\frac{5}{8}$ in. shall be self-supporting.

b) Roofs for tanks with a diameter of 29 ft, $8\frac{5}{8}$ in. shall be furnished with a structural- or pole-type center column.

c) Roofs for tanks with a diameter greater than 29 ft, $8\frac{5}{8}$ in. shall be furnished with a pole-type center column.

Tanks with a diameter greater than 29 ft, $8\frac{5}{8}$ in. shall be furnished with rafters attached to each radial roof joint. Each rafter shall be attached to the center support ring and by brackets to the shell's top chime area. The depth of rafters shall be $5\frac{1}{2}$ in. for low 1000-bbl, 2000-bbl, 3000-bbl, and 5000-bbl tanks, and $6\frac{3}{4}$ in. for 10,000-bbl tanks, or the rafter size shall be determined in accordance with AISC 360. Rafters shall be punched or drilled to accommodate supporting clips for bolt retainers.

5.6 Bolted Joints

Bolt holes shall be $\frac{17}{32}$ in. or $\frac{9}{16}$ in. nominal diameter. Channels or other shapes shall be provided outside of bottom joints and inside of staves, cleanouts, and roofs to prevent inaccessible square or hex bolt heads from turning.

5.7 Joint Gaskets

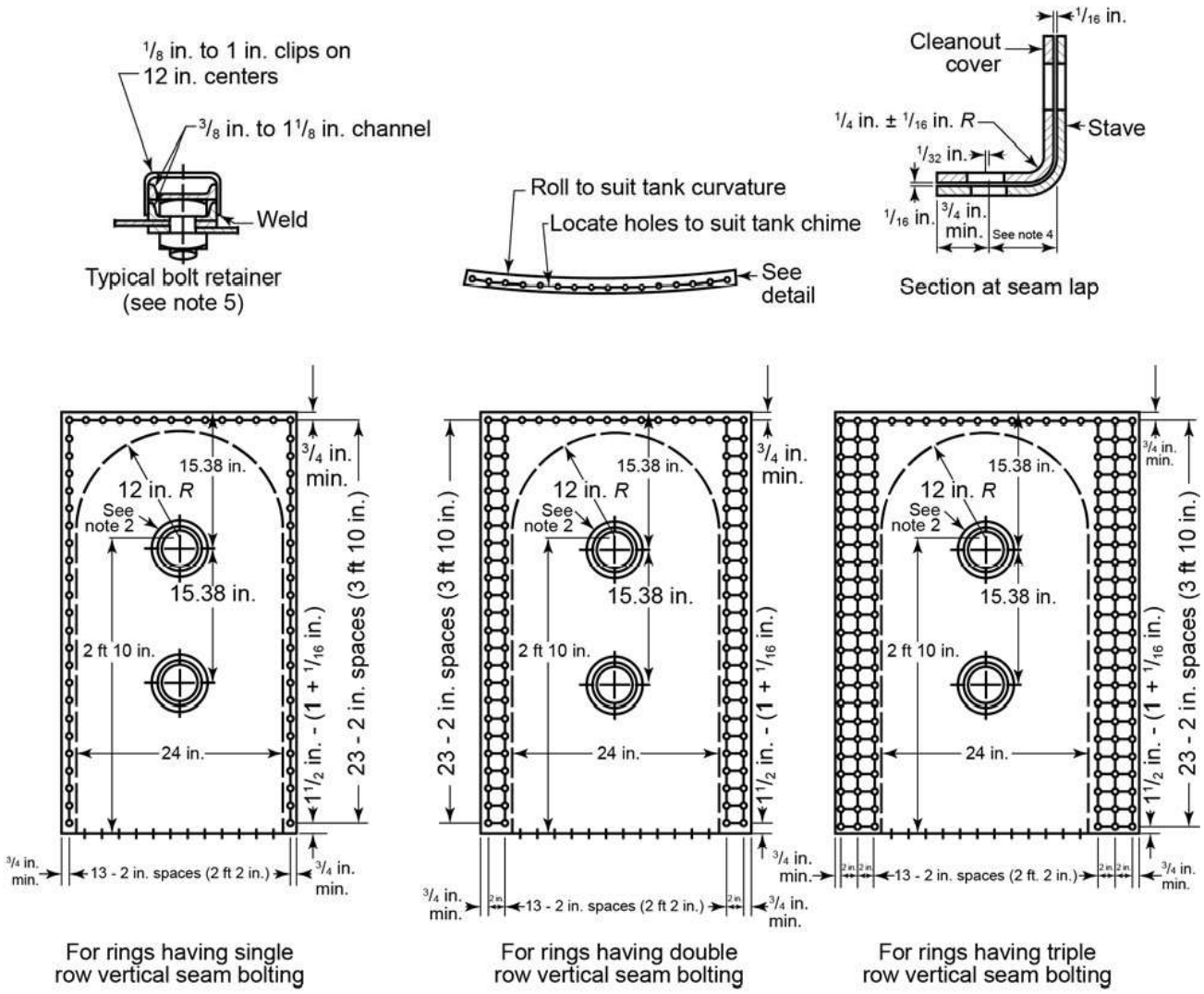
Joint gaskets shall be dimensioned so that their installed thickness is $\frac{1}{16}$ in.

5.8 Cleanouts

Cleanouts shall be furnished at locations specified by the purchaser. Cleanouts shall be flush-type, extended-neck type, or another type specified by the purchaser, using the material type and strength matching the staves.

5.8.1 Flush-type Cleanouts

Flush-type cleanouts shall comply with Figure 6, except that alternative widths and heights of the cleanout openings shall be supplied if the purchaser specifies.



NOTE 1 The nominal thickness of the cleanout cover shall be not less than that of the stave to which attached.

NOTE 2 Cleanouts shall be furnished with bolt retainers, handles, or both, if so specified on the purchase order. If not otherwise specified, retainers only shall be supplied. Alternative types of retainers may be substituted if demonstrated adequate.

NOTE 3 See 5.8.2 for alternative designs.

NOTE 4 See Figure 4.

NOTE 5 Bolt retainers are not required when round-head bolts are used.

Figure 6—Flush-type Cleanout

5.8.2 Extended-neck or Other Type Cleanouts

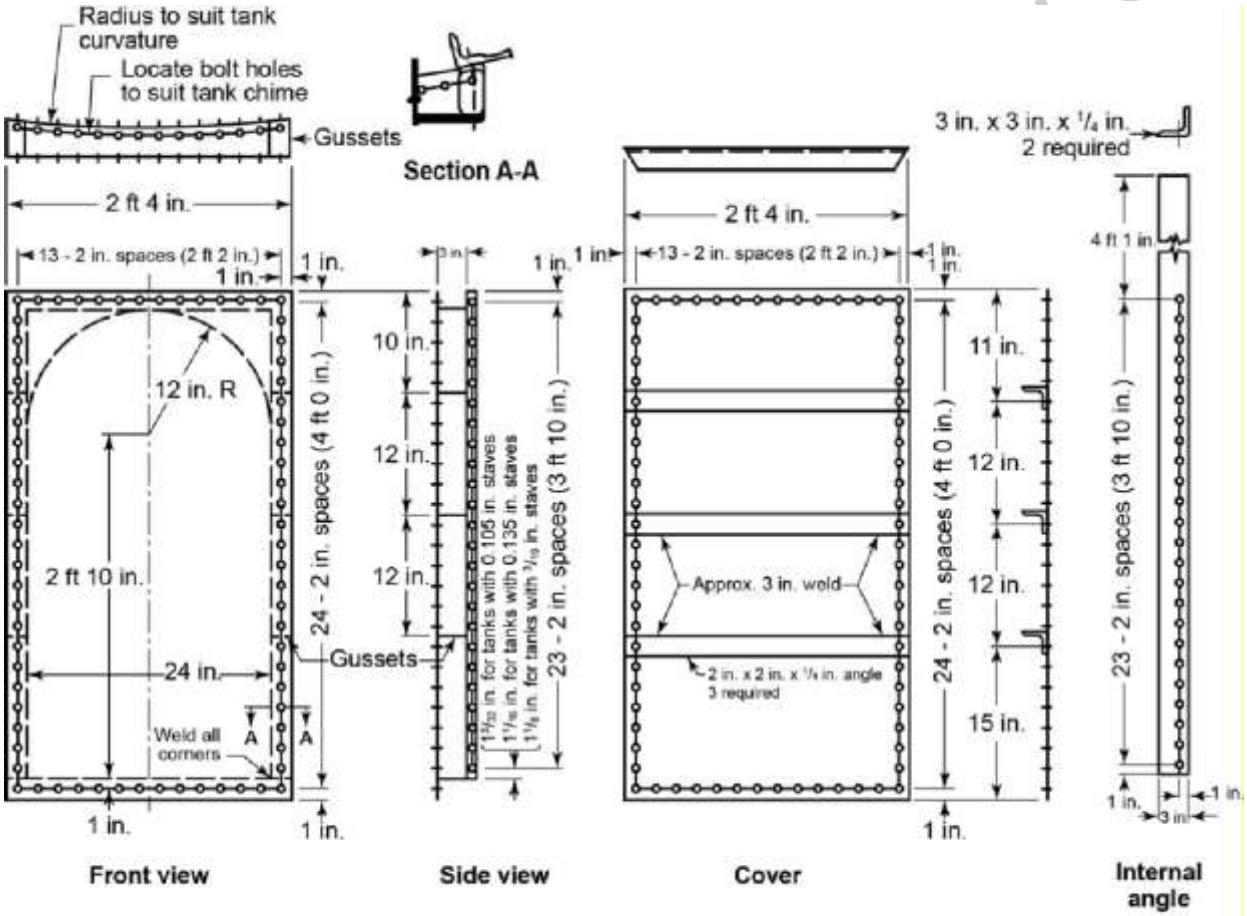
Extended-neck or other type cleanouts shall comply with the following:

a) The height of the cleanout opening in the stave shall be 3 ft, 10 in., unless the purchaser specifies a 3-ft height.

b) Bolting attaching the cleanout neck to the stave shall comply with Figure 7.

c) The design shall comply with AISC 360.

d) The design of the extended-neck cleanout in Figure 7 is adequate for tanks of high 1000-bbl and smaller- capacity sizes in Table 1. If used on such tanks, the requirements of 5.8.2(c) shall be considered to have beensatisfied.



NOTE 1 All sheet and strip shall be 0.135 in. nominal thickness.

NOTE 2 See 5.8.2 for alternative height of cleanout.

Figure 7—Extended-neck-type Cleanout

5.8.3 Cleanout Cover Plate

Cover plates for all cleanouts shall be of one-piece construction, or two-piece construction if the purchaser specifies. The pieces shall be joined by a horizontal lap seam having one row of 1/2-in. bolts spaced 2 in. on centers.

5.9 Inlet and Outlet Connections

Inlet and outlet connections shall comply with the sizes and locations specified by the purchaser. Flanges of alternative types shall be furnished if the purchaser specifies.

5.9.1 Bolted Pipe Flanges

Bolted flanges shall be attached by bolts or studs and shall comply with the following:

a) The manufacturer shall furnish flanges specified by the purchaser per Table 3 and Figure 8.

b) The inner flange shall be provided with bolt-head or stud nut retainers.

c) The length of thread shall comply with Table 3. In all other respects, threads shall comply with API 6A.

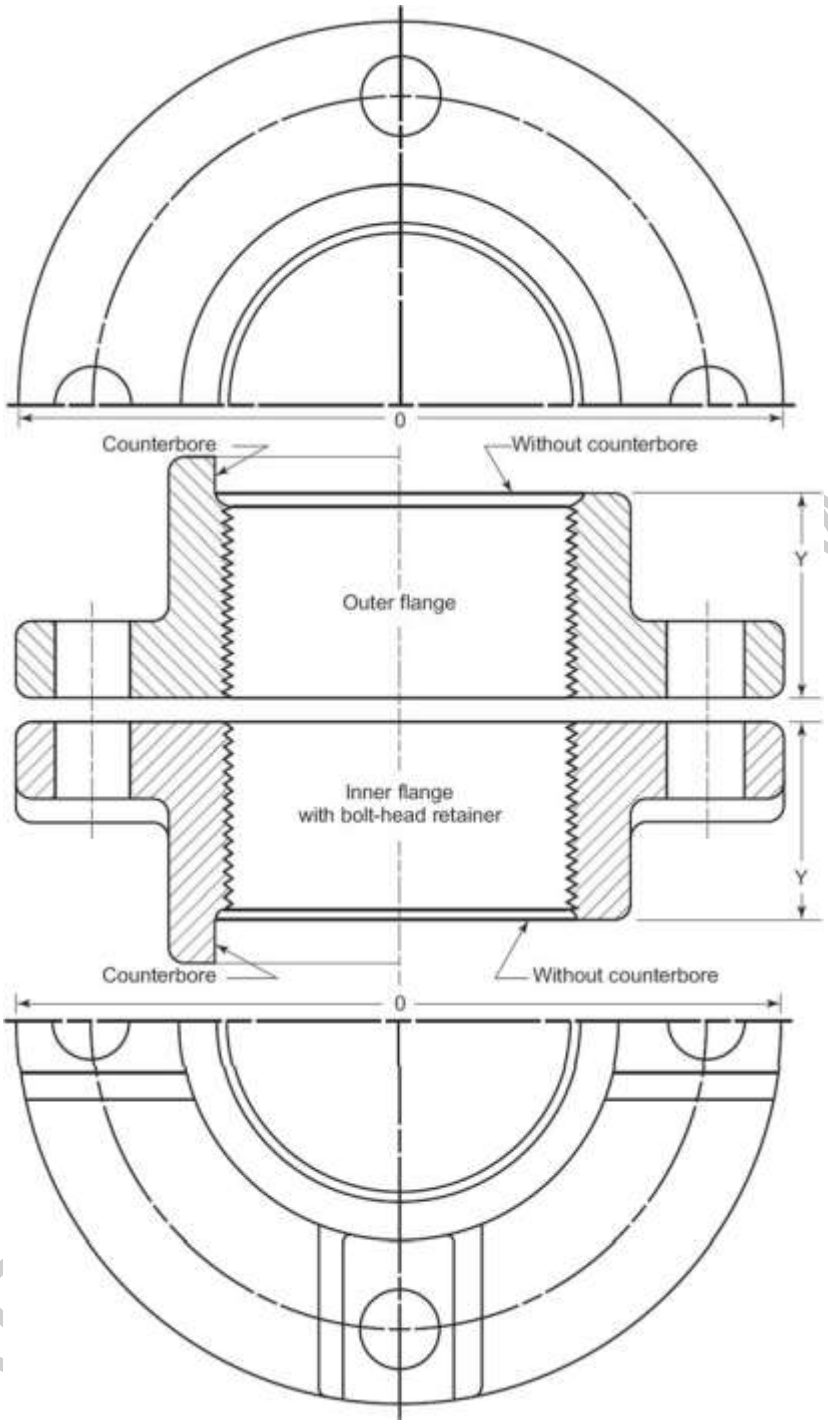


Figure 8—Bolted Piping Flanges (see Table 3 for dimensions)

Table 3—Bolted Pipe Flanges (see Figure 8)

(1)	(2)	(3)	(4)	(5)	(6)
Size, in.	2	3	4	6	8
Diameter of bolt circle, in.	4	5 3/8	6 3/8	9	11 1/4
Number of bolts	4	4	5	6	8
Diameter of bolts, in.	1/2	5/8	5/8	5/8	5/8
Diameter of bolt holes, in.	5/8	3/4	3/4	3/4	3/4
Minimum thread length, Y, in.	7/8	1 3/16	1 5/16	1 9/16	1 3/4
Depth of counterbore	Optional with manufacturer	Optional with manufacturer	Optional with manufacturer	Optional with manufacturer	Optional with manufacturer
Outside diameter of flange, 0, in.	5 1/8	6 5/8	7 3/4	10 1/2	12 3/4

5.9.2 Flange Attachment

If the purchaser specifies, the manufacturer shall furnish bolted pipe flanges complying with Table 3 and Figure 8, and the tank drilled for flange attachment as follows:

a) Bolt-hole size shall accommodate the size of bolts given in Table 3.

b) Bolt holes shall straddle the radial centerlines on roofs and bottoms and vertical centerlines on staves, except that for the 4-in., 5-hole flange, the odd hole shall be located on the centerline toward the center of the roof or the top of the stave.

5.10 Bolting Patterns for the Gauge Hatches and Relief Valve

If the purchaser specifies, the manufacturer shall cut and drill the tank roof for the attachment of bolted gauge hatches or vents with bolting patterns as shown in Figures 9, 10, and 11.

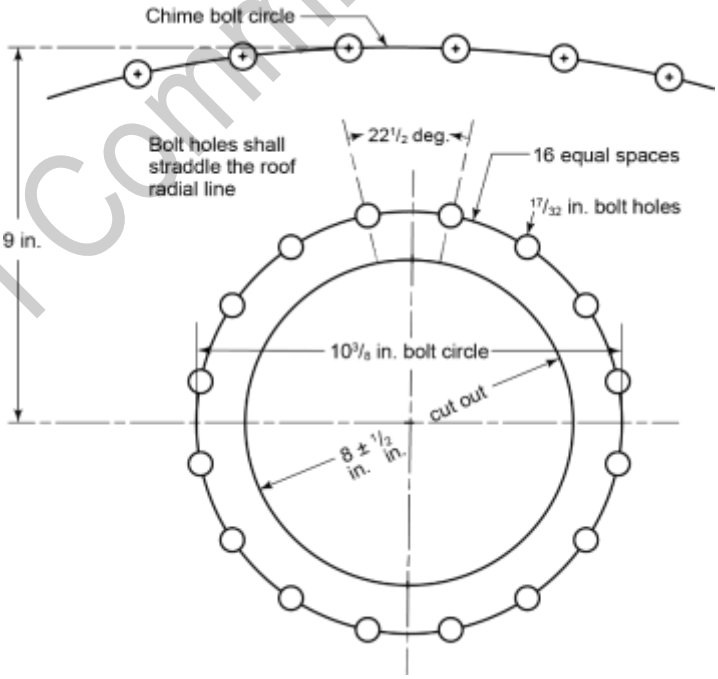


Figure 9—Bolt Pattern for 8-in. Circular Gauge Hatches and Vents

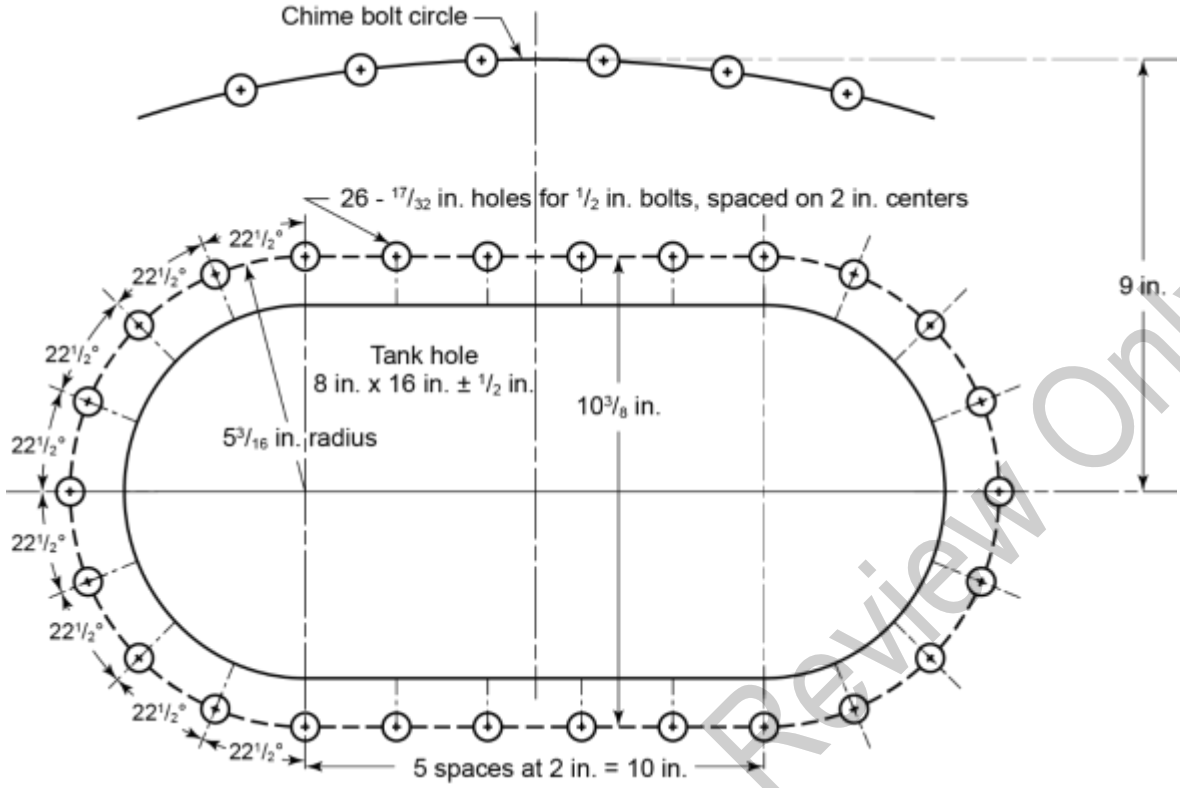


Figure 10—Bolt Pattern for 8-in. x 18-in. Oblong Gauge Hatches and Vents

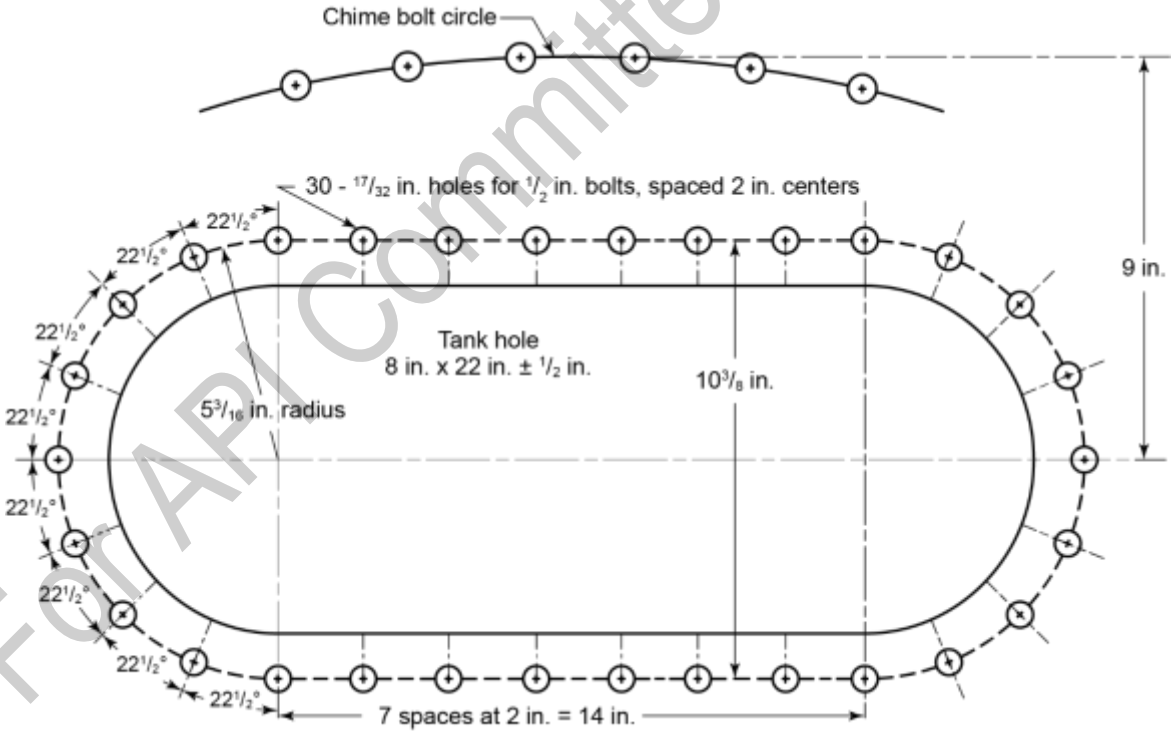


Figure 11—Bolt Pattern for 8-in. x 22-in. Oblong Gauge Hatches and Vents

5.11 Downcomer Pipe

If the purchaser specifies, the manufacturer shall provide a downcomer pipe with details specified by the purchaser.

5.12 Walkways, Stairways, Ladders, and Platforms

When specified by the purchaser, the manufacturer shall provide walkways, stairways, ladders, and/or platforms that comply with API 12R1 or API 12F, Annex B.

5.13 Venting

5.13.1 Normal Venting

The purchaser shall specify the number, size, and location of connections in the roof to provide inbreathing and outbreathing due to temperature changes and liquid movement into and out of the tank, sized in accordance with API 2000. The pressure setting shall be at least $^1/_2$ oz/in.^{2} less than the opening pressure of the emergency vents.

5.13.2 Emergency Venting

The purchaser shall specify the number, size, and location of connections in the roof for emergency venting, sized in accordance with API 2000. The pressure at full flow of the emergency vents shall not exceed the tank design internal pressure given in Table 1.

6 Fabrication

6.1 Straightening

Local application of heat or mechanical means is permitted to introduce or correct camber, curvature, and straightness. The temperature of heated metal shall not exceed 1200 °F.

6.2 Edges

Edges shall be mill edges or prepared by shearing, machining, chipping, or mechanically guided oxygen or plasma arc cutting. Shearing is permitted for material $^1/_2$ in. (13 mm) or less in thickness. Oxygen or plasma arc cut surfaces shall be uniform, smooth, and cleaned of slag.

6.3 Tolerances

The tolerance on bolt-hole spacing shall be ± $^1/_{32}$ in. between any two holes, measured in the flat before forming.

7 Erection

Erection shall comply with API 12R1. Tank staves shall be erected with the male side on the left when facing the outside surface of the stave (see Figure 4).

8 Inspection

8.1 Notice

If the purchaser specifies an inspection of the manufacturer's work, the manufacturer shall give reasonable notice of the time when the work will be performed.

6.1 Inspection by purchaser

The purchaser's inspector shall have access to the manufacturer's facilities while the manufacturer is performing the work. The manufacturer shall afford the inspector reasonable facilities to ensure the work complies with this specification. Inspection shall not interfere with the manufacturer's operations.

6.2 Compliance

The manufacturer is responsible for complying with this specification. The purchaser may make any investigation necessary to assure compliance and may reject any material that does not comply with this specification.

7 Marking

Tanks shall be furnished with a nameplate bearing the information shown in Figure 12. Nameplates shall be made from a corrosion-resistant material and installed on the cleanout stave approximately 8 in. above the top of the cleanout cover or frame. Nameplates shall be attached at the point of manufacture or, if the tank is erected by the manufacturer, at the time of field erection.

Manufactured in Accordance with API Specification 12B

Manufacturer _____

Serial Number _____

Year Built _____

Nominal Diameter _____

Nominal Height _____

Design Pressure _____ oz

Nominal Capacity _____ bbl

Figure 12—Nameplate Format

Annex A
(informative)

Suggestions for Ordering Tanks

In placing orders for tanks to be manufactured in accordance with API 12B, purchasers should specify the following on their purchase order:

Specification	API 12B
Number of tanks	_____
Nominal capacity	Table 1, Column 1
Size	_____
Inside diameter	Table 1, Column 3
Height of shell	Table 1, Column 4
Type of cleanout	5.8
Design of flush-type cleanout	5 8.1 and Figure 6, Note 2
Design of extended neck cleanout	5.8.2
Cut-outs for gauge hatch and PV relief valve	5.10
Delivery date and shipping instructions	_____
Inspection by purchaser	Section 8

The purchaser shall state requirements on the purchase order for the following options:

Finish	4.1
Bolting	4.8
Bottom, stave, and roof thickness	Table 2, Footnote a
Open-top tanks	5.5.1 c)
Two-piece cleanout cover plates	5.8.3
Cleanout location	5.8
Inlet and outlet connections	5.9
Piping flanges	5.9
Walkways, stairways, and ladders	5.12
Venting connections	5.10 and 5.13
Downcomer pipe and design	5.11
Alternative designs of tank bottoms	5.3
Alternative design of roofs	5.5
Rafter design	5.5.2
Alternative widths and heights of cleanout	5.8.2
Alternative designs of piping flanges	5.9