Designation: F1142 – 19

An American National Standard

Standard Specification for Manhole Cover Assembly, Bolted, Semi-Flush, Oiltight and Watertight[1]

This standard is issued under the fixed designation F1142; 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.

1. Scope

1.1 This specification provides design and construction criteria for a semi-flush, oiltight and watertight bolted manhole cover assembly.

1.2 The manhole cover assembly depicted in this specification is for use in decks or bulkheads requiring oiltight and watertight covers that are not required to be completely flush. Manhole cover assemblies shall be complete with covers, mounting rings, gaskets, welded studs, washers, and nuts.

1.3 Handles, if required, shall be as specified in the ordering information.

1.4 This specification is not applicable to certain hazardous cargos (see Section 46 CFR 153.254 and 46 CFR 154.340).

1.5 This specification provides design and construction for manhole cover assemblies subjected to lateral pressures such as resulting from vehicle loads or hydrostatic pressures. Where manhole cover assemblies are subjected to primary or cyclic loads, other reinforcement or construction criteria may be necessary to integrate the manhole assembly with the required structural reinforcement for openings in decks or bulkheads. Design of the manhole cover assembly for primary or cyclic loads is beyond the scope of this specification.

1.6 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A36/A36M Specification for Carbon Structural Steel

A131/A131M Specification for Structural Steel for Ships

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

B36/B36M Specification for Brass Plate, Sheet, Strip, And Rolled Bar

D1974/D1974M Practice for Methods of Closing, Sealing, and Reinforcing Fiberboard Boxes

D2000 Classification System for Rubber Products in Automotive Applications

D5118/D5118M Practice for Fabrication of Fiberboard Shipping Boxes

D5168 Practice for Fabrication and Closure of Triple-Wall Corrugated Fiberboard Containers

D6251/D6251M Specification for Wood-Cleated Panelboard Shipping Boxes

D6880/D6880M Specification for Wood Boxes

F783 Specification for Staple, Handgrab, Handle, and Stirrup Rung

2.2 *ASME Standards:*[3]

B1.1 Unified Inch Screw Threads, UN and UNR Thread Form

Y14.5 Dimensioning and Tolerancing

B18.2.1 Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series)

2.3 *ABS Standard:*[4]

Rules for Building and Classing Steel Vessels

2.4 *NACE Standard:*[5]

NACE No. 2/SSPC-SP 10 Near-White Metal Blast Cleaning

[1] This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.03 on Outfitting and Deck Machinery.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, http://www.asme.org.

[4] Available from American Bureau of Shipping (ABS), ABS Plaza, 16855 Northchase Dr., Houston, TX 77060, http://www.eagle.org.

[5] Available from NACE International (NACE), 15835 Park Ten Pl., Houston, TX 77084, http://www.nace.org.

2.5 *Code of Federal Regulations Standard:*[6]
CFR 46 Code of Federal Regulations

3. Terminology

3.1 *Definitions:*

3.1.1 *manhole, n*—an accessway located in a tank structure.

3.1.2 *semi-flush, n*—placement of the cover over the ringed opening (without coaming).

4. Classification

4.1 *Type I*—15- by 23-in. (381- by 584-mm) size of access opening. *Type II*—18- by 24-in. (457- by 610-mm) size of access opening.

4.2 *Grade 1*—¼-in. (6.35-mm) thick cover plate. *Grade 2*—⅜-in. (9.5-mm) thick cover plate. *Grade 3*—½-in. (12.7-mm) thick cover plate.

4.3 *Class A Manhole Cover Assemblies*—Class A manhole cover assemblies shall be abrasive blasted to near-white metal in accordance with NACE No. 2/SSPC-SP 10, and a commercial marine quality, nonhazardous, corrosion-inhibiting, and oil-resistant primer coating be applied for protection for a period of one year during shipping and in shipyard handling.

4.4 *Class B Manhole Cover Assemblies*—Class B manhole cover assemblies shall be galvanized in accordance with Specification A153/A153M.

5. Ordering Information

5.1 The purchasers ordering information shall include the following:

5.1.1 ASTM designation and year of issue,

5.1.2 Type (see 4.1),

5.1.3 Grade (see 4.2),

5.1.4 Class (see 4.3),

5.1.5 Quantity,

5.1.6 *Remarks*—Handles (are/are not) required,

5.1.7 *Approval*—Classification Society approval (is/is not) required, and

5.1.8 Gasket, if other than specified (see 6.6).

6. Materials and Manufacture

6.1 Plate for the cover and the ring shall be of Specifications A36/A36M or A131/A131M steel.

6.2 Round bar for the handle shall be in accordance with Specification F783, Type A.

6.3 Welded studs shall be ¾-in. (19.05-mm) 10 UNC-2A by 1¾ in. (44.4 mm) long and manufactured of ordinary steel to commercial standards. Threads shall be the coarse thread series as specified in the latest issue of ASME B1.1.

6.4 Washers shall be ASME B18.2.1 Type A, ¾-in. (19.05-mm) washer, 2-in. (50.8-mm) by 0.148-in. (3.8-mm) thick standard flat manufactured of yellow brass, Specification B36/B36M.

6.5 Heavy hex nuts shall be ¾-in. (19.05-mm) 10 UNC-2B and manufactured of yellow brass, Specification B36/B36M. Threads in nuts shall conform to the dimensions for coarse threads with tolerances prescribed in ASME B1.1. The nuts shall conform to dimensions prescribed in ASME B18.2.1.

6.6 Unless otherwise specified in ordering information, gasket shall be rubber, 3⁄16 in. (4.8 mm) thick, 50 ± 5 durometer prescribed in accordance with Classification System D2000 5BC507 A14 E034. Manhole cover assemblies for government application, see Annex A2 for type of gasket.

6.7 Welding shall conform to the latest issue of the ABS Rules for Building and Classing Steel Vessels or other classification society rules as may be applicable.

6.8 Details of bolted manhole cover assembly are shown in Fig. 1.

7. Dimensions

7.1 Dimensions of manhole cover assembly shall be as indicated in Table 1.

7.2 For plating up to and including ¼-in. (6.4-mm) thickness, use cover plate of ¼-in. (6.4-mm) thickness. Plating over ¼ in. (6.4 mm) up to, and including ⅜-in. (9.5-mm) thickness, use cover plate of ⅜-in. (9.5-mm) thickness. Plating over ⅜-in. (9.5-mm) thickness, use cover plate of ½-in. (12.7-mm) thickness.

8. Workmanship, Finish, and Appearance

8.1 Items produced under this specification shall be free of splinters, sharp edges, burrs, projections, and weld spatters.

9. Sampling

9.1 For orders for one or two manhole cover assemblies, each manhole cover assembly shall be inspected.

9.2 For orders for three to ten manhole cover assemblies, two manhole cover assemblies shall be selected at random. If any one of them fails to meet requirements, then all manholes in the order shall be inspected.

9.3 For orders for more than ten manhole cover assemblies, they shall be separated into groups of ten (or fraction thereof) for sampling purposes.

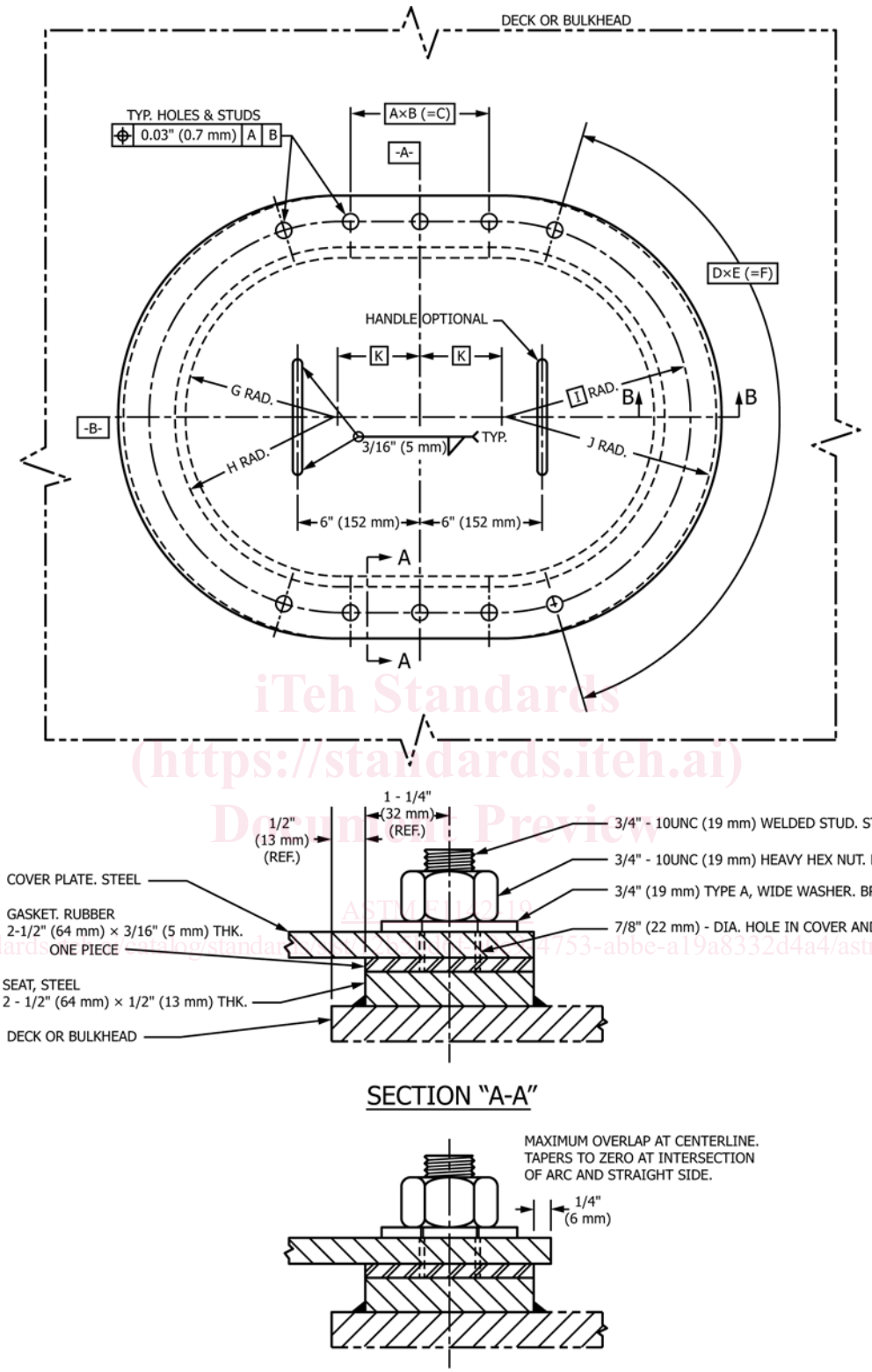
10. Inspection and Testing

10.1 *Responsibility*—Unless otherwise specified in the order, the manufacturer is responsible for the performance of all inspection and testing specified herein. The manufacturer may use his own facilities or any commercial facility acceptable to the purchaser. The purchaser reserves the right to perform any of the inspections and tests set forth where such are deemed necessary to assure that supplies conform to prescribed requirements. Nonconforming manhole cover assemblies shall not be offered for delivery.

10.2 *Inspection*—The dimensions of the manhole cover assembly and its components shall be checked to ensure that they are within specified tolerances.

10.3 *Test Methods*—Each manhole cover assembly shall be designed to the pressure listed in Table 1 and tested to a

[6] Available from U.S. Government Printing Office, Superintendent of Documents, 732 N. Capitol St., NW, Washington, DC 20401-0001, http://www.access.gpo.gov.



SECTION "A-A"

SECTION "B-B"

NOTE 1—1 in. = 25.4 mm.

FIG. 1 Manhole Cover Assembly, Bolted, Semi-Flush, Oiltight and Watertight