Designation: F1196 – 00 (Reapproved 2013) F1196 – 19

An American National Standard

Standard Specification for
Sliding Watertight Door Assemblies[1]

This standard is issued under the fixed designation F1196; 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 covers the design, manufacture, and testing of sliding watertight door assemblies intended to ensure the watertight integrity of personnel access openings in watertight bulkheads.

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

1.3 *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
F1197 Specification for Sliding Watertight Door Control Systems

2.2 *Military Specification:*[3]
MIL-S-901MIL-DTL-901 Shock Test, H.I. (High Impact); Shipboard Machinery, Equipment and Systems, Requirements for

2.3 *American Bureau of Shipping:ABS Standard:*[4]
Rules for Building and Classing Steel Vessels

2.4 *Code of Federal Regulations:Regulations (CFR) Standards:*[5]
Title 46 Part 159.010, Independent Laboratory: Acceptance, Listing and Termination
Title 46 Part 163.001, Doors, Watertight, Sliding (and Door Controls), for Merchant Vessels (through the 1991 edition)

2.5 *International Maritime Organization:IMO Standard:*[6]
International Code for the Application of Fire Test Procedures (FTP)

3. Terminology

3.1 *Definitions:*

3.1.1 *door assembly—assembly, n—*a door panel and its associated panel stiffening.

3.1.2 *frame assembly—assembly, n—*a rigid frame designed to be attached to a watertight bulkhead. The guide tracks necessary to ensure proper door and frame alignment are also included as part of the frame assembly.

3.1.3 *horizontal sliding watertight door—door, n—*a sliding watertight door that opens and closes with a horizontal movement.

3.1.4 *opening hand—hand, n—*the direction in which a horizontal sliding watertight door opens. A left-hand opening door opens to the left when viewed from the side of the bulkhead on which the door assembly is located. A right-hand opening door opens to the right when viewed from the side of the bulkhead on which the door assembly is located.

---

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

Current edition approved May 1, 2013March 1, 2019. Published May 2013April 2019. Originally approved in 1989. Last previous edition approved in 20082013 as F1196 – 00 (2008).(2013). DOI: 10.1520/F1196-00R13.10.1520/F1196-19.

[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'sstandard's Document Summary page on the ASTM website.

[3] Available from DLA Document Services, Building 4/D, 700 Robbins Ave., Philadelphia, PA 19111-5094, http://quicksearch.dla.mil.

[4] Available from American Bureau of Shipping (ABS), ABS Plaza, 16855 Northchase Dr., Houston, TX 77060,1701 City Plaza Dr., Spring, TX 77389, http://www.eagle.org.

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

[6] Available from the International Maritime Organization (IMO), 4 Albert Embankment, London, SE1 7SR UK, http://www.imo.org.

3.1.5 *pressure ~~head~~—head, n*—the pressure which a sliding watertight door assembly is designed to withstand. For a door located below the bulkhead deck, it is equivalent to the pressure exerted by a column of water the height of which is equal to the vertical distance from the bulkhead deck to the door sill in its installed location. For a door located above the bulkhead deck, it is equivalent to the pressure exerted by the maximum head of water for its location, as determined in the damage stability calculations.

3.1.6 *sliding watertight door ~~assembly~~—assembly, n*—a steel door assembly and a steel frame assembly fitted with a replaceable interface between the two that ensures watertightness between door and frame at the design pressure head.

3.1.7 *vertical sliding watertight ~~door~~—door, n*—a sliding watertight door that opens and closes with a vertical movement.

4. Classification

4.1 Sliding watertight doors consist of four types:

4.1.1 *Type IA*—Horizontal doors that conform to the sizes specified in Table 1 as illustrated in Fig. 1.

4.1.2 *Type IB*—Vertical doors that conform to the sizes specified in Table 2 as illustrated in Fig. 2.

4.1.3 *Type IIA*—Horizontal doors that conform generally to the requirements of this specification, but that necessitate special requirements as indicated in Section 5.

4.1.4 *Type IIB*—Vertical doors that conform generally to the requirements of this specification, but that necessitate special requirements as indicated in Section 5.

4.2 Watertight doors consist of three classes:

NOTE 1—These classifications are in agreement with those defined and accepted by the International Convention for the Safety of Life at Sea (SOLAS), regulatory bodies, and classification societies.

4.2.1 *Class 1*—Doors that are hinged and dogged. This specification is not applicable to this class of door.

4.2.2 *Class 2*—Sliding doors that are operable both locally and remotely by hand gear.

4.2.3 *Class 3*—Sliding doors that are operable both locally and remotely by hand and by power.

5. Ordering Information

5.1 The following shall be specified when ordering:

5.1.1 Quantity,

5.1.2 Type,

5.1.3 Class,

5.1.4 Size,

5.1.5 Opening hand,

5.1.6 Door and frame material,

5.1.7 Pressure head (if other than standard),

5.1.8 Supplementary requirements (if any),

5.1.9 Additional requirements as contracted by the manufacturer and purchaser, and

5.1.10 ASTM specification designation.

TABLE 1 Type IA Door Dimensions

Size	Door Size	A, in.[A]	B, in.	C, in.	D, in.	E, in.	F, in.
~~1~~	~~2 ft. 2 in. by 5 ft. 6 in.~~	~~26~~	~~66~~	~~64~~	~~76~~	~~17~~	~~78~~
~~2~~	~~2 ft. 6 in. by 5 ft. 0 in.~~	~~30~~	~~60~~	~~72~~	~~84~~	~~16~~	~~72~~
~~3~~	~~2 ft. 6 in. by 6 ft. 0 in.~~	~~30~~	~~72~~	~~72~~	~~84~~	~~18~~	~~84~~
~~4~~	~~3 ft. 0 in. by 5 ft. 6 in.~~	~~36~~	~~66~~	~~84~~	~~96~~	~~18~~	~~78~~

TABLE 1 Type IA Door Dimensions

Size	Door Size	A, in.[A]	B, in.	C, in.	D, in.	E, in.	F, in.
1	2 ft 2 in. by 5 ft 6 in.	26	66	64	76	17	78
2	2 ft 6 in. by 5 ft 0 in.	30	60	72	84	16	72
3	2 ft 6 in. by 6 ft 0 in.	30	72	72	84	18	84
4	3 ft 0 in. by 5 ft 6 in.	36	66	84	96	18	78

[A] 1 in. = 25.4 mm.

2
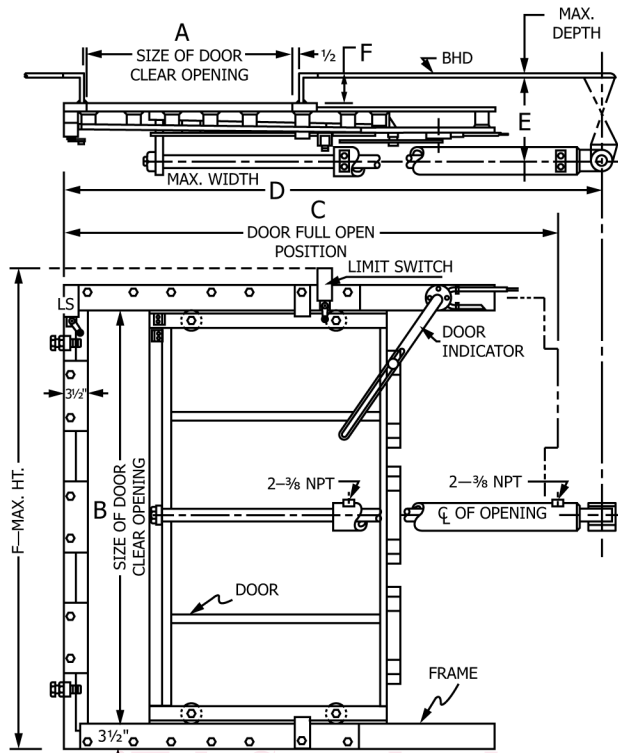
FIG. 1 Type IA Door and Frame

TABLE 2 Type IB Door Dimensions

Size	Door Size	A, in.[A]	B, in.	C, in.	D, in.	E, in.
~~1~~	~~2 ft. 2 in. by 5 ft. 6 in.~~	~~26~~	~~66~~	~~142~~	~~155~~	~~17~~
~~2~~	~~2 ft. 6 in. by 5 ft. 0 in.~~	~~30~~	~~60~~	~~130~~	~~143~~	~~16~~
~~3~~	~~2 ft. 6 in. by 6 ft. 0 in.~~	~~30~~	~~72~~	~~154~~	~~167~~	~~18~~
~~4~~	~~3 ft. 0 in. by 5 ft. 6 in.~~	~~36~~	~~66~~	~~142~~	~~155~~	~~18~~

TABLE 2 Type IB Door Dimensions

| Size	Door Size	A, in.[A]	B, in.	C, in.	D, in.	E, in.
1	2 ft 2 in. by 5 ft 6 in.	26	66	142	155	17
2	2 ft 6 in. by 5 ft 0 in.	30	60	130	143	16
3	2 ft 6 in. by 6 ft 0 in.	30	72	154	167	18
4	3 ft 0 in. by 5 ft 6 in.	36	66	142	155	18

[A] 1 in. = 25.4 mm.

6. Design

6.1 Sliding watertight door assemblies shall be designed to maintain watertightness within the limits set forth in this specification. Doors shall be designed to open and close within the limitations specified in Specification F1197.

6.2 Assemblies shall be of substantial and rigid construction to ensure that doors can be closed under a static head equivalent to a water height of at least 1 m above the sill on the centerline of the door.

6.3 There shall be a replaceable interface between the door and frame assemblies, such as a brass rubbing strip or resilient gasket, to ensure watertightness between door and frame at the design pressure head.

6.3.1 The replaceable interface may be incorporated into the door assembly, the frame assembly, or both.

6.3.2 Assemblies shall be designed and constructed so as to be capable of preventing the passage of smoke and flame to the end of the 1-h standard fire test described by IMO FTP. When specified by the purchaser, assemblies shall also be insulated to prevent the transfer of heat to at least the same degree as the adjacent bulkhead. A fire test is not required if the assembly design
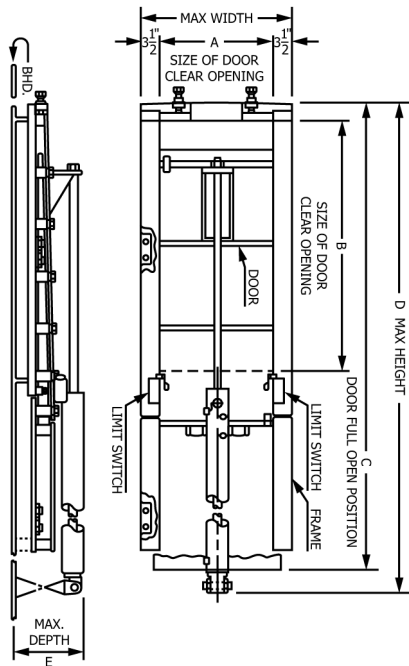
VERTICAL DOOR, FRAME & CYL. ASS'Y.

FIG. 2 Type IB Door and Frame

incorporates details that have been demonstrated such as by a fire test on a similar door with smaller dimensions, to prevent the passage of smoke and flame. Also, a separate pressure test to determine continued watertightness after the standard fire test is not required.

6.3.3 Assembles shall be designed in such a manner that the replaceable interface will be protected from damage when the door is in the open position.

6.4 Sliding watertight door assemblies shall be designed to provide sufficient allowance or means of adjustment to maintain the original watertight integrity as the watertight joint wears through normal usage.

6.5 Means shall be provided for lubrication of all parts necessary for satisfactory operation.

6.6 Sliding watertight door assemblies shall have a maximum horizontal opening of 48 in. (122 cm).

6.7 *Door Assemblies*—Type I (standard) doors are designed for a pressure head of 20 ft (6 m) of water. Type II (nonstandard) doors shall be designed for the pressure head as specified in 3.1.5 and 5.1.7, but not less than 20 ft (6 m) for doors installed below the bulkhead deck.

6.7.1 The door panel and panel stiffener assembly shall be designed based on 40 % of the yield strength of the material used to construct the panel and its stiffeners (see 7.1).

6.7.2 The door panel and stiffener assembly shall have a maximum deflection of span/240.

6.7.3 Retaining grooves or aligning strips shall be provided at the tops and bottoms of horizontal assemblies and at the sides of vertical assemblies to maintain doors in proper alignment when they are not in the closed position.

6.8 *Frame Assemblies*—The door frame shall be continuous on all four sides. The door frame shall be of sufficient rigidity to maintain a watertight seal under the applicable operating conditions and the design head as specified in 6.7.

6.8.1 If the door frame is to be welded to the bulkhead on a reinforcing member, which acts as a secondary frame and which is continuous around the door opening, the *I* of that member may be included to obtain the required frame *I* value. (See also the Appendix X1.)

6.8.2 The frame extension for sliding watertight doors shall be made in one continuous piece, or suitable construction shall be used to ensure proper alignment.

6.8.3 Horizontal doors shall be supported by lubricated rollers to maintain alignment and minimize friction.

6.8.4 The bottom of the frame assembly shall be designed so the door will not be prevented from closing properly by lodgements of dirt or debris.

6.8.5 A sill plate of 3/16-in. (5-mm) minimum thickness may be used to cover the bottom trackway provided it is designed to retract automatically when the door closes. Sill plate hinges shall be designed and located to prevent clogging with dirt.

4